

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	3	75

Notes

Sawcuts are Subsidiary

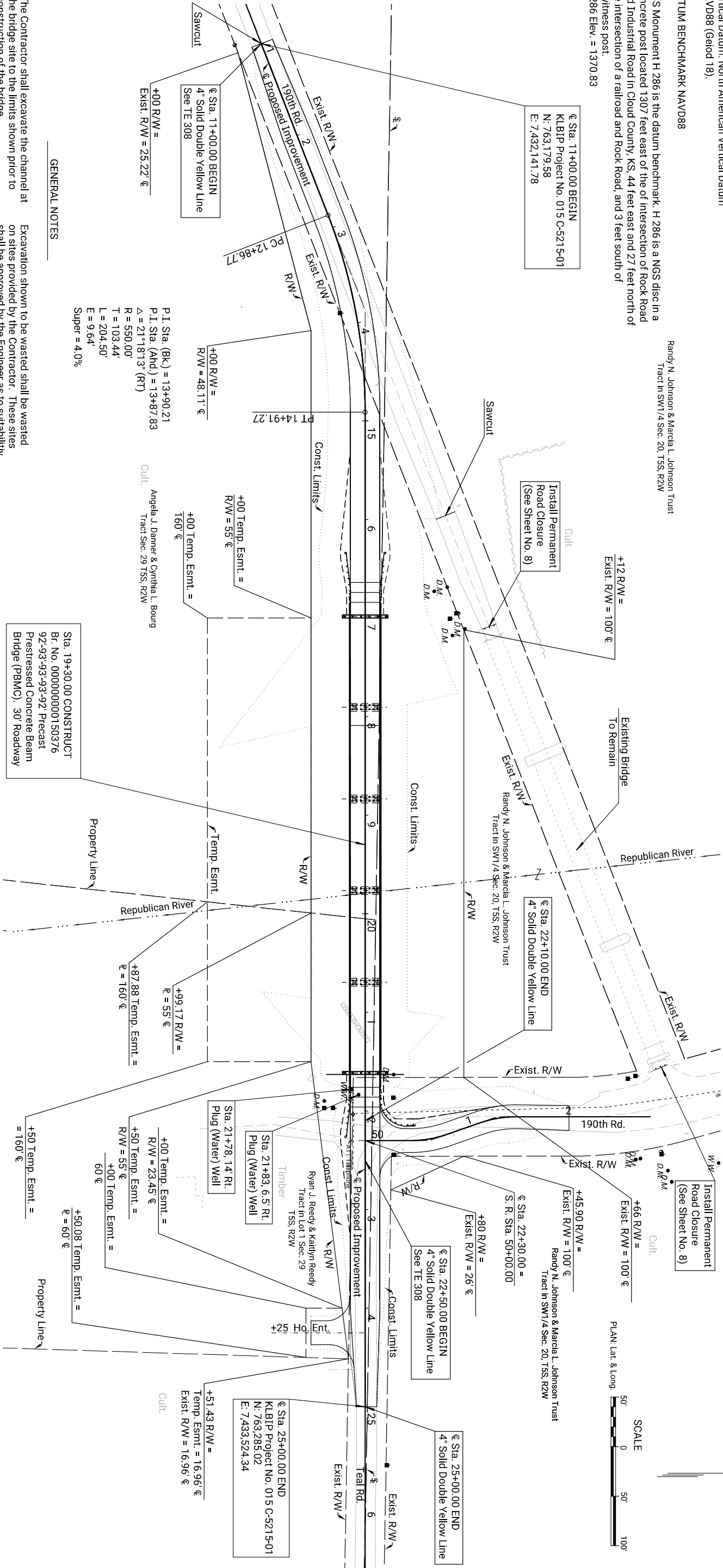
UTILITIES		CP #1		CP #2		CP #3	
Telephone	ATTD	Sta. 08+97.07, 11.72' Lt. N = 763,116.80 E = 7,431,948.50		Sta. 16+01.23, 98.74' Lt. N = 763,383.76 E = 7,432,625.57		Sta. 21+58.15, 336.77' Lt. N = 763,621.79 E = 7,433,182.49	
Power	ROLLING HILLS ELECTRIC	765-545-6960		1. Set 5/8" Rebar/Pink KM Cap Flush 2. App. ϕ of Rd to E. 11.3 S 3. App. ϕ of Rd. to S. 13.0 W		1. Set 5/8" Rebar/Pink KM Cap Flush 2. App. ϕ of E-W Rd. 14.2 SSE 3. W. End of Ex. Bridge 123.8' ENE	
Horizontal Project Datum: KRCS Zone 7 Salina for project coordinates.						1. Set 5/8" Rebar/Pink KM Cap Flush 2. App. ϕ of N-S Rd. 25.8 E 3. App. ϕ of Rd. to W. 35.8 S	

Vertical Datum: North American Vertical Datum NAVD88 (Geoid 18).

DATUM BENCHMARK NAVD88

NGS Monument H 286 is the datum benchmark. H 286 is a NGS disc in a concrete post located 1307 feet east of the of intersection of Rock Road and Industrial Road in Cloud County, KS. 44 feet east and 27 feet north of the intersection of a railroad and Rock Road, and 3 feet south of a witness post.
H 286 Elev. = 1370.83

Randy N. Johnson & Marcia L. Johnson Trust
Tract in SW1/4 Sec. 20, T5S, R2W



GENERAL NOTES

The Contractor shall excavate the channel at the bridge site to the limits shown prior to construction of the bridge.

The Contractor shall complete the Embankment as shown on the bridge excavation sheet prior to the driving of the abutment piling.

All trees, hedge rows, shelterbelts, and woody shrubs not shown to be removed and located between the construction limits and the right-of-way line or easement line shall be spared unless directed by the Engineer to be removed.

All disposal sites must be approved by the Kansas Department of Health and Environment. Material either stockpiled or disposed of in a flood plain would require a Kansas State Dept. of Agriculture permit. Any material dumped in waters of the United States or wetlands is subject to U.S. Corps of Engineers permitting regulations.

NW Cor. Sec. 29 T5S, R2W
N = 763,314.72 E = 7,431,929.54
1. Fd. 1/2" Rebar 2' Deep
2. Lone Fc. Post
3. In line w/ ϕ of Rd. to S.
4. Set Spk./Wshtr. in Top of Fc. Post
5. Fd. Spk./Wshtr. in E. Face of PP

NE Cor. Sec. 29 T5S, R2W
N = 763,222.57 E = 7,437,275.24
1. Fd. 5/8" Rebar 1' Deep
2. Fd. Nail/Wshtr. in PP
3. In App. ϕ of N-S Rd.
4. In App. ϕ of E-W Rd.
5. Top Center of E. End of Steel Pipe Culvert 36.3 NE
6. NE Face of Gas Warning Sign

PLAN

STA. 11+00.00 TO STA. 25+00.00

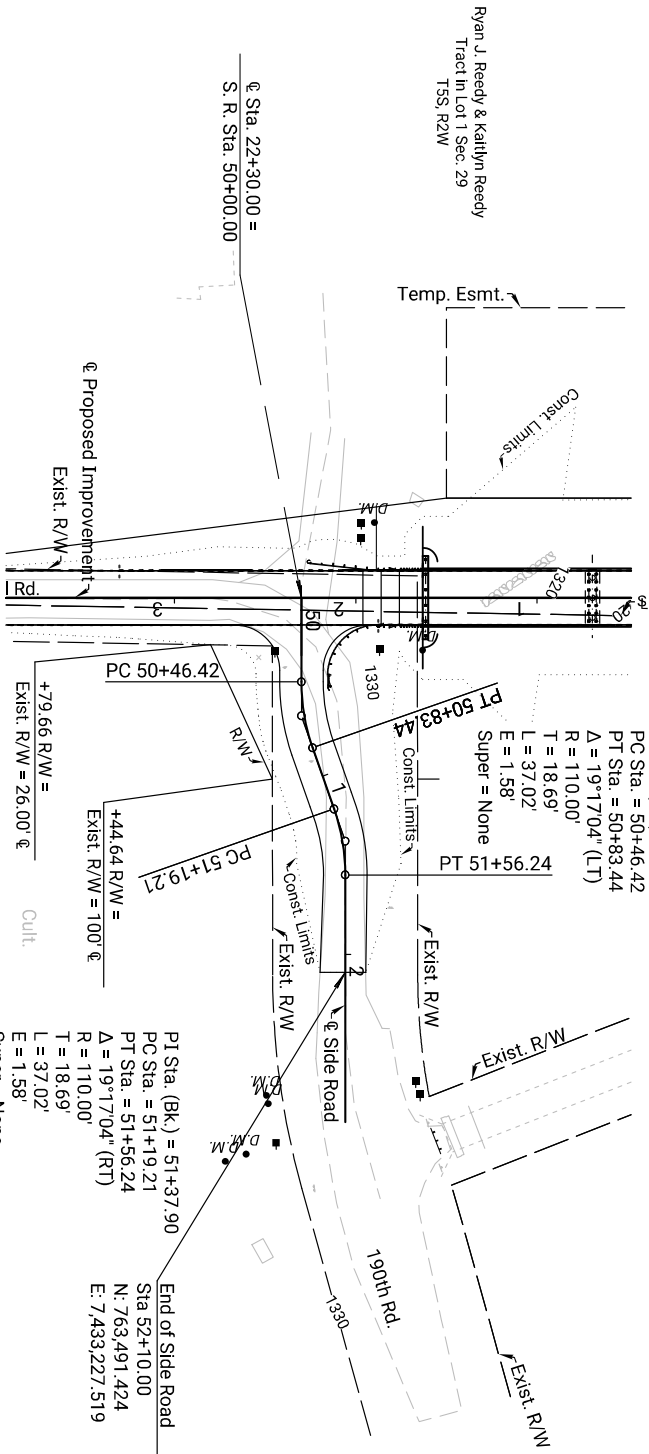
DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

UTILITIES
ATTD
ROLLING HILLS ELECTRIC
316-833-1488
785-545-6960

Telephone
Power

- CP #1
Sta. 08+97.07, 11.72' Lt.
N = 763,116.80 E = 7,431,948.50
1. Set 5/8" Rebar/Pink KM Cap Flush
2. App. ϕ of Rd to E. 11.3' S
3. App. ϕ of Rd. to S. 13.0' W
- CP #2
Sta. 16+01.23, 98.74' Lt.
N = 763,383.76 E = 7,432,625.57
1. Set 5/8" Rebar/Pink KM Cap Flush
2. App. ϕ of E-W Rd. 14.2' SSE
3. W. End of Ex. Bridge 123.8' ENE
- CP #3
Sta. 21+58.15, 336.77' Lt.
N = 763,621.79 E = 7,433,182.49
1. Set 5/8" Rebar/Pink KM Cap Flush
2. App. ϕ of N-S Rd. 25.8' E
3. App. ϕ of Rd. to W. 35.8' S

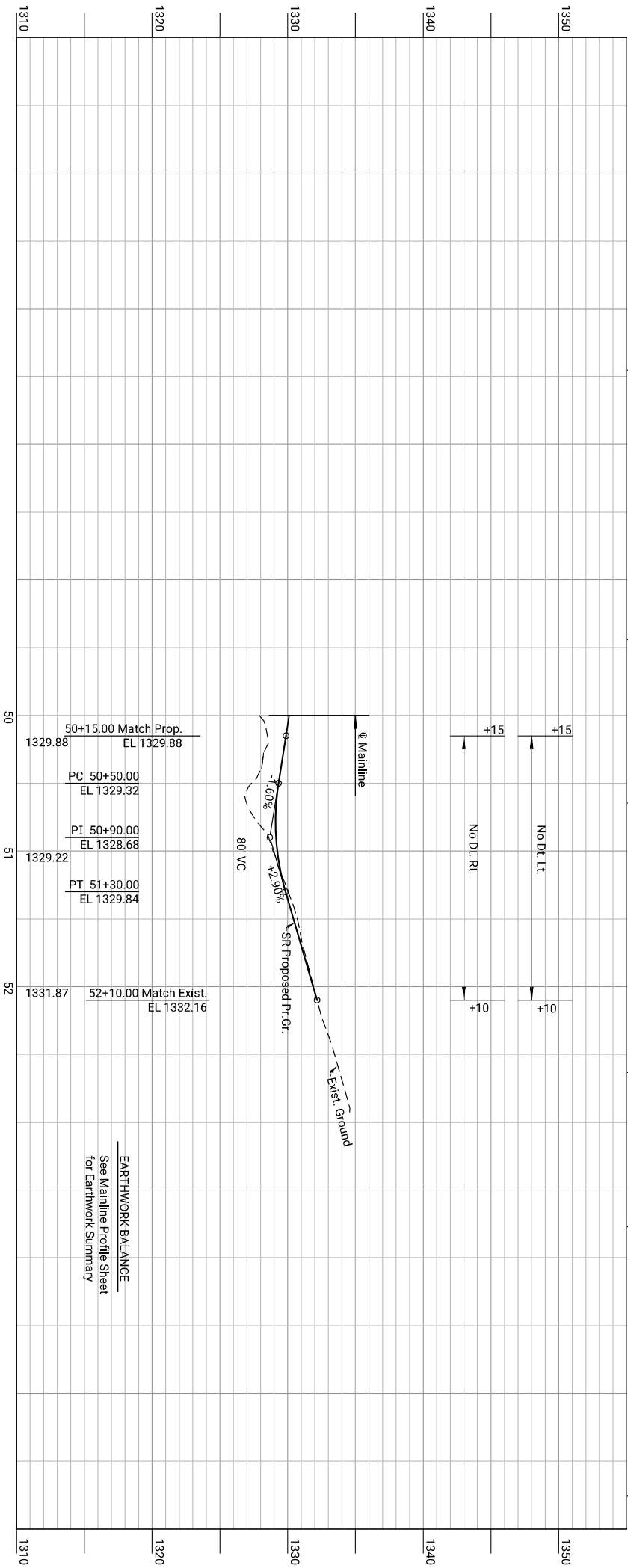
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	5	75



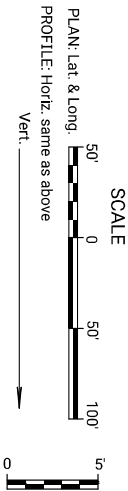
BM #1: Top of Driven "T" Post 1' N of PP
25.42' Rt., Sta. 10+91.66 Elev. = 1327.60

BM #2: Top of Driven "T" Post 1' N of PP
94.51' Lt., Sta. 16+95.47 Elev. = 1328.67

BM #3: Top of Driven "T" Post 1' W of PP
300.15' Lt., Sta. 22+41.55 Elev. = 1326.93



EARTHWORK BALANCE
See Mainline Profile Sheet
for Earthwork Summary



DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : ewisbey 30-AUG-2024 14:10
File : 2212890_Sideroad_Plan and Profile.dgn

KANSAS DEPARTMENT OF TRANSPORTATION
SIDEROAD (190TH RD)
PLAN AND PROFILE
STA. 50+00.00 TO STA. 52+92.50

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	6	75

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

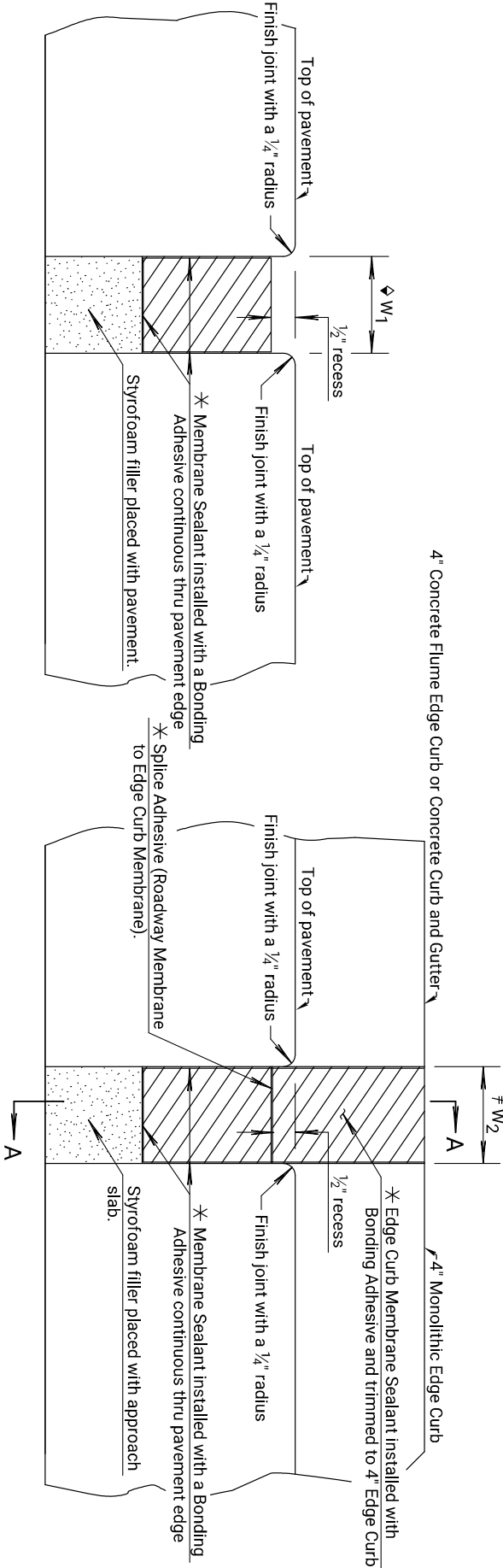
Pay for the Bridge Approach Slab Footing at the unit price bid per cubic yard for "Bridge Approach Slab Footing". This price will be full compensation for furnishing all materials and labor including Concrete Grade 4.0 (AE) Pavement, Reinforcing Steel (Gr. 60) (Epoxy Coated), excavation, Type "A" Compaction 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)									
Y Temperature (F°)	40°	50°	60°	70°	80°	90°	100°		
Formed Concrete Opening Size	4.0"	3¾"	3½"	3¼"	3.0"	2¾"	2½"		

Y Average Ambient Temperature over previous 24 hours.

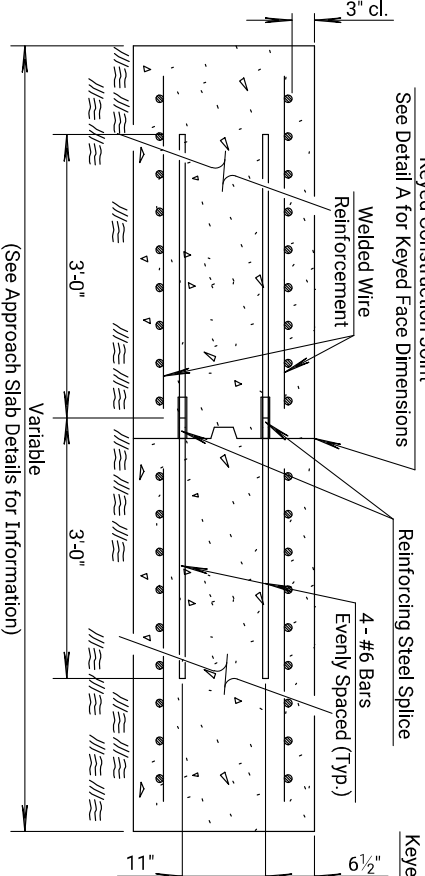
EXPANSION JOINT WIDTH DETAILS (W2)

See bridge construction layout sheet for details.



ELEVATION PRESSURE RELIEF JT.

ELEVATION EXPANSION JT.

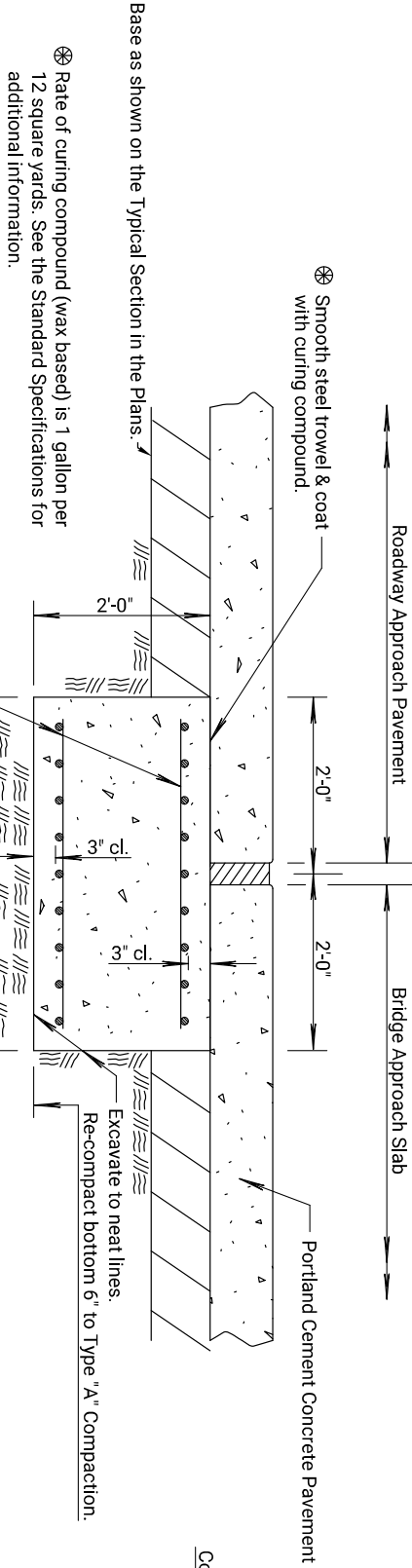


DETAIL A

SECTION A-A

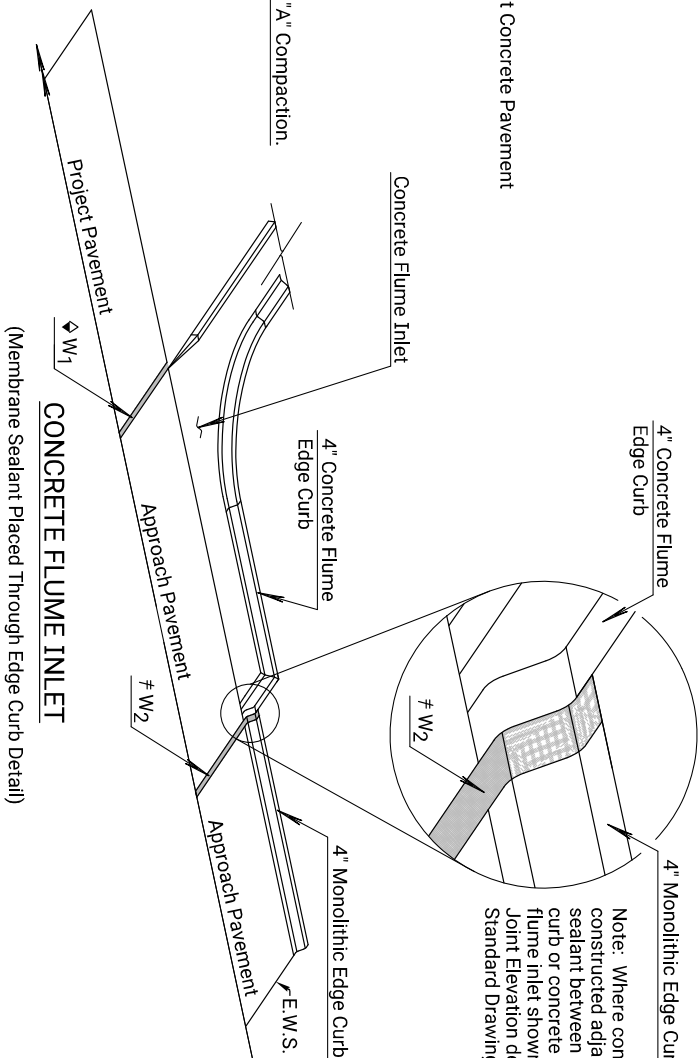
(See Std. Drawing RD711 for details of 4" Edge Curb.)

BRIDGE APPROACH SLAB FOOTING (PHASING DETAILS)



Welded Wire Reinforcement 6 x 6 - W4 x W4
(May substitute #3 bars @ 1'-0" Ctrs. longitudinally & #3 bars @ 1'-6" Ctrs. transversely (Short bars).)

BRIDGE APPROACH SLAB FOOTING



LEGEND
■ Membrane Sealant

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.

KANSAS DEPARTMENT OF TRANSPORTATION				
NO.	DATE	REVISIONS	BY	APP'D.
10	10-22-16	Add Del. Keyed Joint & Flume Inlet	T.J.R.	S.W.K.
09	10-16-13	Revised General Note	S.W.K.	J.O.B.
08	04-04-13	Rev. Joint Width Del. Table	S.W.K.	J.O.B.

BRIDGE APPROACH SLAB DETAILS
EXPANSION/PRESSURE RELIEF JOINT/
BRIDGE APPROACH SLAB FOOTING

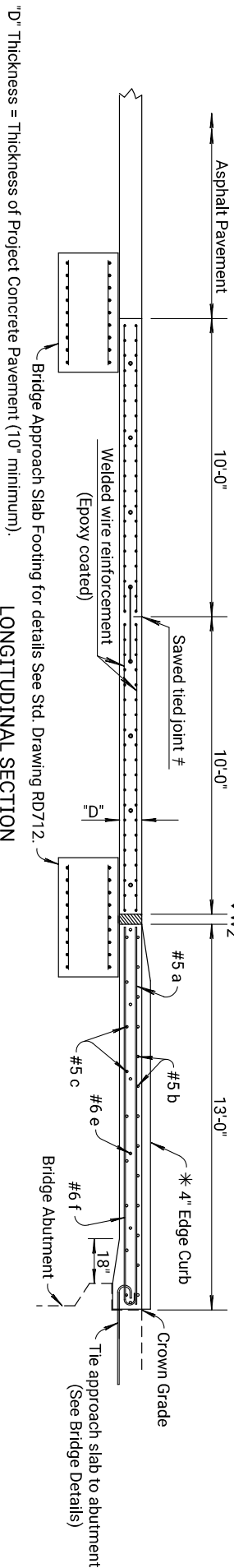
RD712			
DESIGNED	DETAIL	QUANTITIES	TRACED
CK	CK	CK	CK

KDOT Graphics Certified 07-18-2022

Sh. No. 6

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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KANSAS	015-C-5215-01	2025	7	75



"D" Thickness = Thickness of Project Concrete Pavement (10" minimum).

LONGITUDINAL SECTION

GENERAL NOTE

- * For details of 4" Edge Curb, See Standard Drawing RD711.
- W₁ and W₂ for Expansion/Pressure Relief Joint width and details See Standard Drawing RD712.
- # Contractor has the option of substituting a Tied Keyed Construction Joint.

Special Concrete Bridge Approach shall be paid for as Sq. Yds. of Concrete Pavement (10" Unif.) (AE) (Br. App.) and includes all work and materials required to construct the approach slab as shown on this sheet.

All work and materials required for installation of expansion joints and pressure relief joints shall be subsidiary to this bid item.

At the Contractor's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.

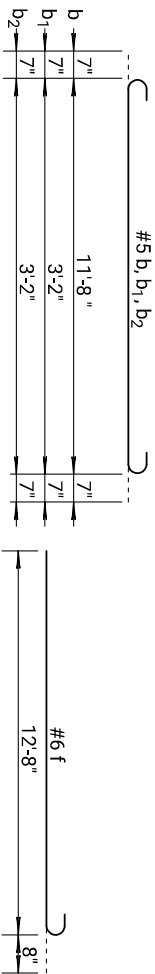
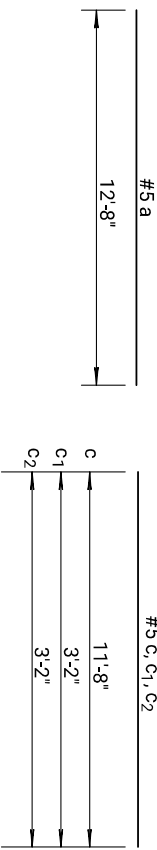
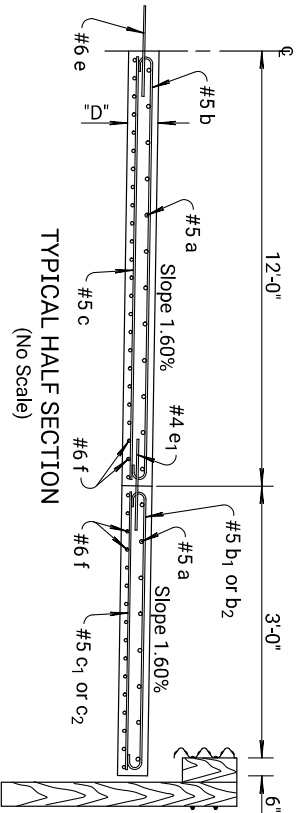
All reinforcing steel shall be epoxy coated.

See Standard Drawing RD711 for details of joints, welded wire reinforcement and edge curb.

Clearance from the face of concrete for all reinforcing steel shall be 2 inches.

Standard reinforcing bar hooks in accordance with the latest ACI specifications shall be used throughout.

The pressure relief joint shall be omitted when the concrete bridge approach pavement abuts asphalt pavement.



Note: All dimensions are out to out on bars unless noted otherwise.

BENDING DIAGRAMS

BILL OF MATERIALS

Bar Schedule													
Bar No.	a	b	b ₁	b ₂	c	c ₁	c ₂	e	e ₁	f			
34	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5
Size	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5	#5
Length	12'-8"	12'-10"	4'-4"	4'-4"	11'-8"	3'-2"	3'-2"	3'-0"	3'-0"	13'-4"			
Reinforcing Steel (Grade 60) (Epoxy Coated)											2,555	lbs.	
Concrete Pavement (10" Unif.) (AE)											112	Sq. Yds.	
Expansion Jt. Membrane Sealant											30	Lin. Ft.	
Pressure Relief Jt. Membrane Sealant											N/A	Lin. Ft.	

Note: Quantities listed for one approach slab only. Two required per bridge.

Reinforcing steel and joint lengths shown for information only.

NO.	DATE	REVISIONS	SWK.	JOB.
12	04-04-13	Rev. Exp./Pr. Relief Joint Dim.	SWK.	JOB.
11	04-09-09	Revised Reinforcing Steel Detailing	SWK.	JOB.
10	05-14-09	Revised pressure relief Jt. material	SWK.	JOB.

KANSAS DEPARTMENT OF TRANSPORTATION CONCRETE BRIDGE APPROACH PAVEMENT NORMAL APPROACH

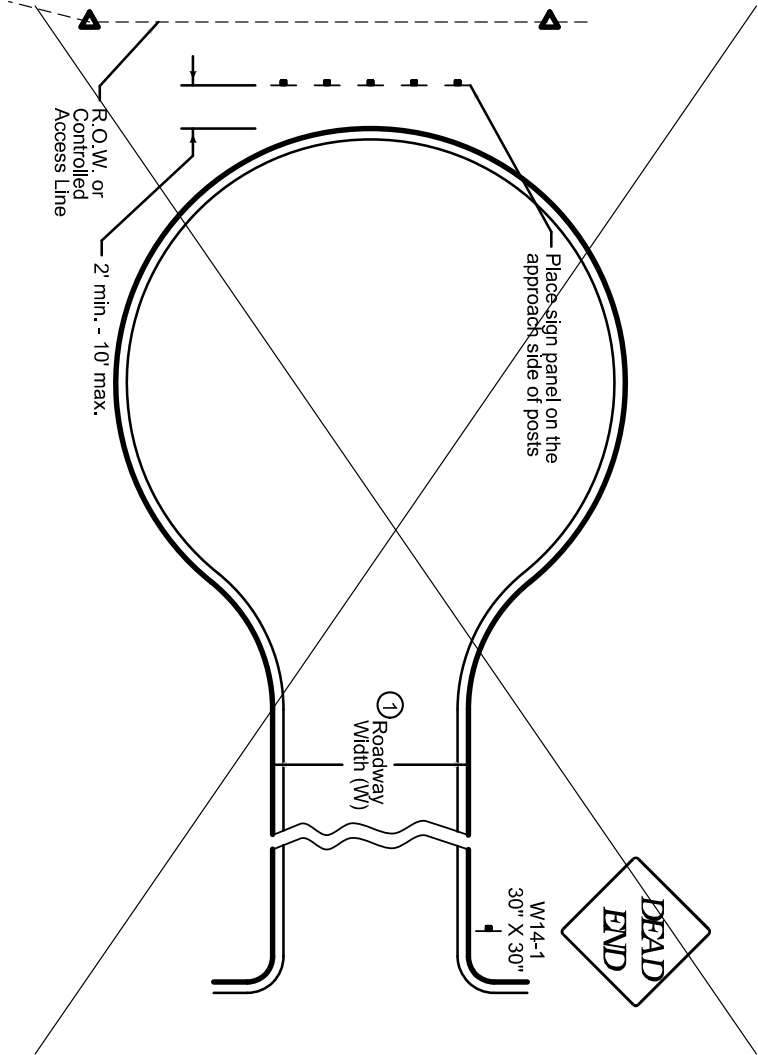
DESIGNED	DETAIL CK.	APPROD.	QUANTITIES	TRACED
RD713-	RD713-	RD713-	RD713-	RD713-

Note to Designer: The designer shall be responsible for designating pavement thickness and computing reinforcing steel and concrete quantities and dimensions necessary to complete this sheet.

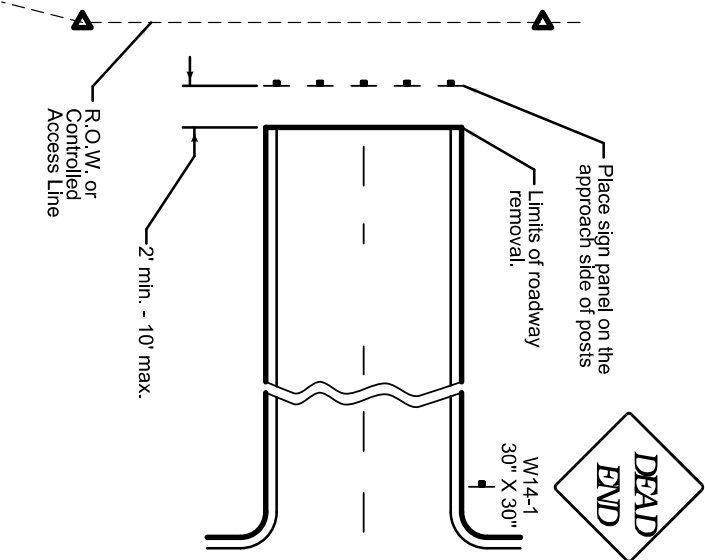
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	8	75

Price bid for "Permanent Road Closure" includes furnishing and installing the closure, signs, posts, and hardware. Closures will be counted and the contractor will be paid the contract unit price for each closure.

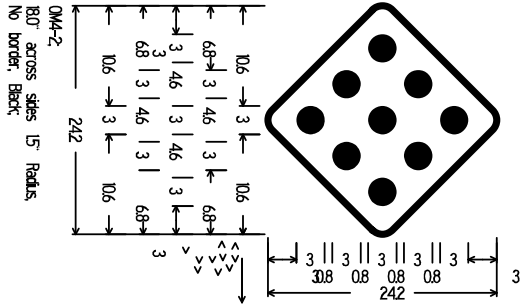
- ① Width includes the width of the existing roadway and shoulders.
- ② 2 Lb./Ft. Steel "U" posts.
- ③ Use Flat Sheet Blanks with High Performance retro reflective sheeting for sign panel.



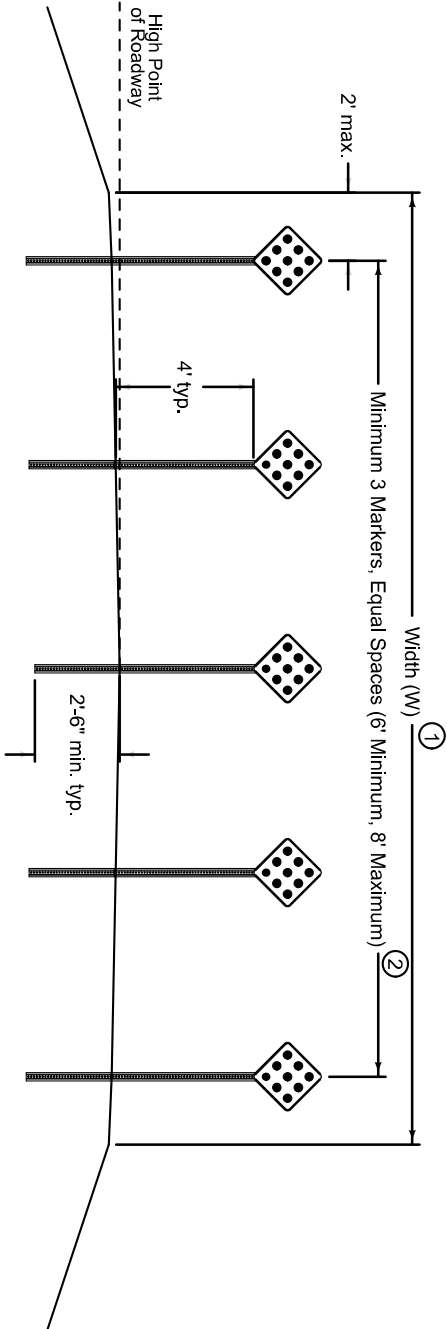
DEAD END WITH CUL-DE-SAC



DEAD END WITHOUT CUL-DE-SAC

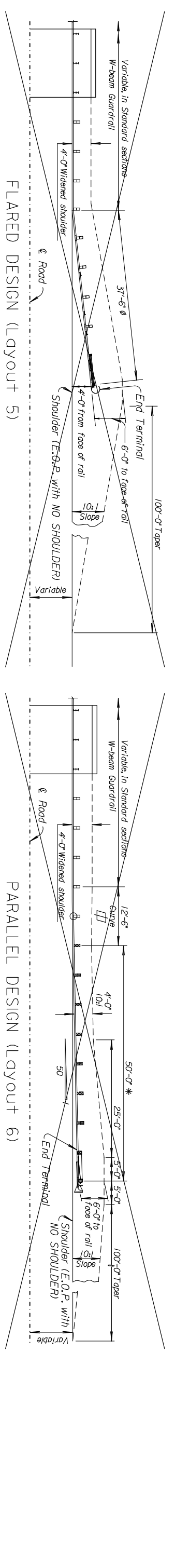
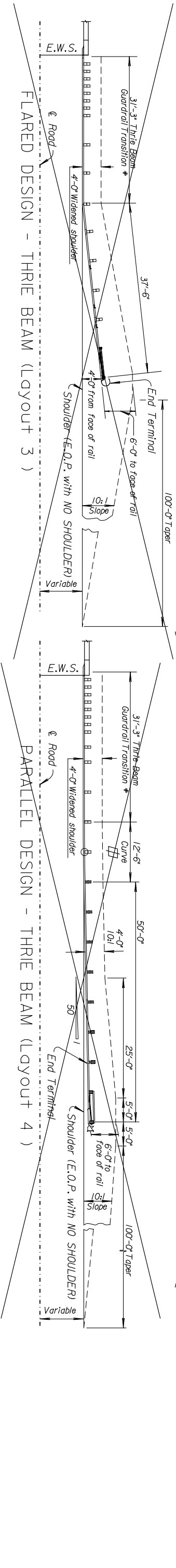
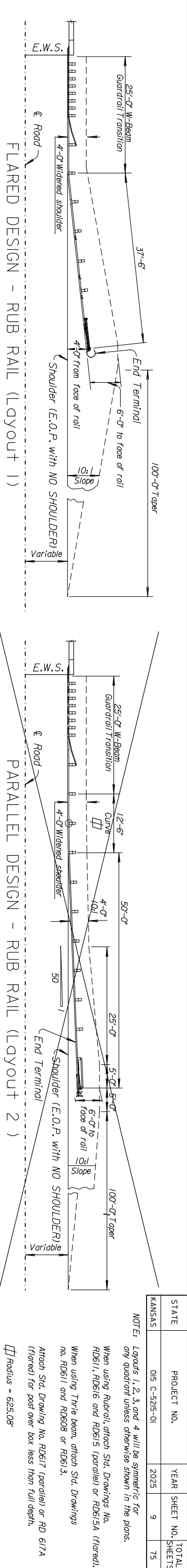


END OF ROADWAY MARKER FABRICATION ③



APPROACH VIEW

PERMANENT ROAD CLOSURE
DETAILS



ALLOWABLE END TERMINALS

[illegible]

SUMMARY OF STEEL PLATE GUARDRAIL

Location	D/S	Layout		Additional Standard Sections Lin. Ft.	Total Pay Length Lin. Ft.	Layout 1 or 3		Layout 2, 4, or 6	Layout 5		Notes	
		No.	Lin. Ft.*			Gd. Roll End Term. (SRT) Alt. #1 Each	Gd. Roll End Term. (FLEAT) Alt. #2 Each		Gd. Roll. End Term. (SKT) Each	Gd. Roll End Term. (SRT) Alt. #1 Each		Gd. Roll End Term. (FLEAT) Alt. #2 Each
NW Quad.	Lt. /		25		25	/	/					
SW Quad.	Rt. /		25		25	/	/					
NE Quad	Lt. -		25	50	75						Δ	
SE Quad	Rt. /		25		25	/	/					
										</		

*See Guardrail Auxiliary Details (RD606) for Measurement Details.
Does Not Include End Terminal.

△ See Guardrail End Terminal Type II (RD618) for End Terminal Details.
See Details for Guardrail Installation at Intersecting Roadway (RD619) for Layout Details.

NO.	DATE	REVISIONS	REA	BY	APPROD
12	02-19-17	Updated per Room Memo 18-02	WFL	MAS	
11	10-30-17	Removed X-11te	WFL	MAS	
10	01-06-15	Added X-11te, removed 1-F-1US	TLS	RUS	
9	11-9-05	Added brnght for 11te beam transition	REA	RUS	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
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GENERAL NOTE

Terminal end posts consist of a wood post inserted into a steel tube see details on this sheet.

The steel soil tubes may be driven with an approved driving head. Set steel tube and soil plate before installing wood anchor post assembly. Do not drive steel soil tubes with wood post in the tube. Backfill and satisfactorily compact around steel soil tubes placed in drilled holes to prevent tube settlement.

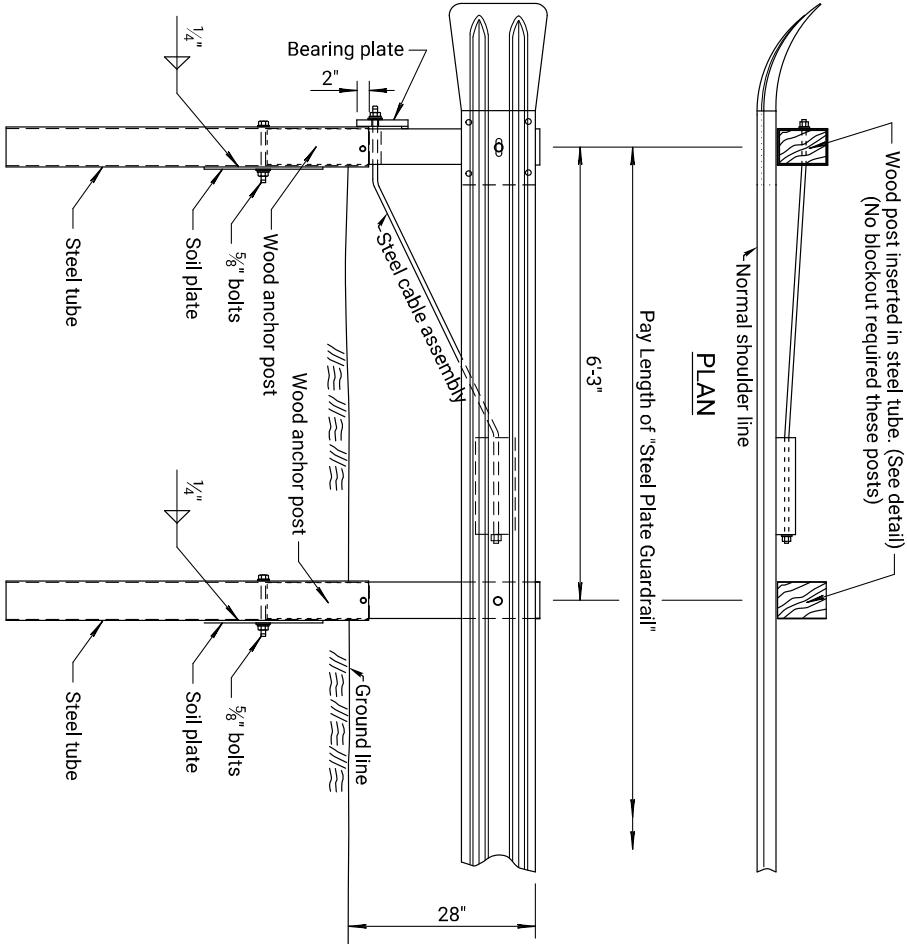
Galvanize all steel parts after fabrication.

Lap guardrail splices, including terminal connector, in the direction of traffic.

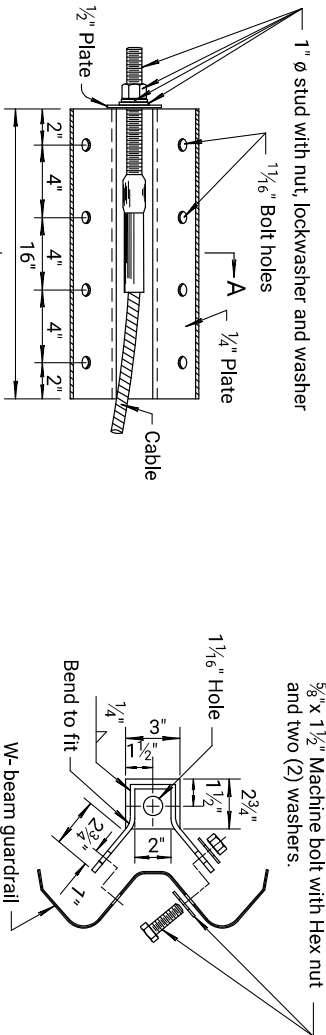
Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of the permanent traffic.

All work and materials required for the installation of Barrier Terminal Type II are considered subsidiary to the bid item "Steel Plate Guardrail".

Include Type II end terminal in pay length of "Steel Plate Guardrail".

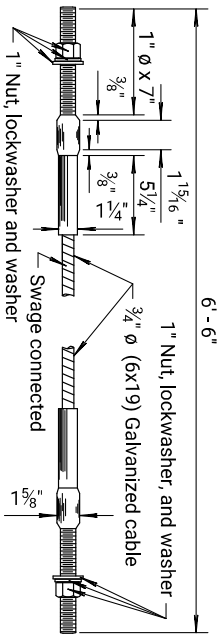


DETAIL OF ANCHOR ASSEMBLY

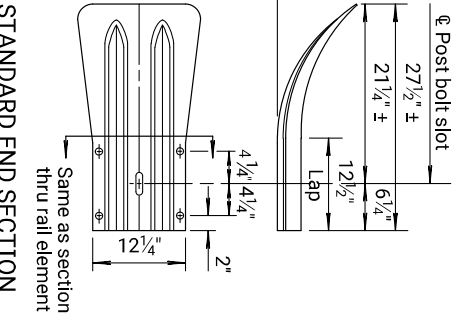


ANCHOR PLATE

MODIFIED SECTION A-A



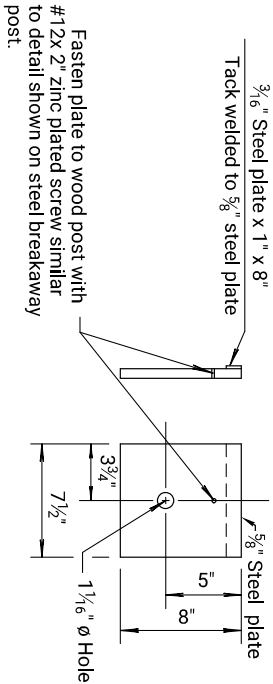
CABLE ASSEMBLY (1 each)
(40,000 lbs. min. breaking strength)
Tighten cable to taut tension.



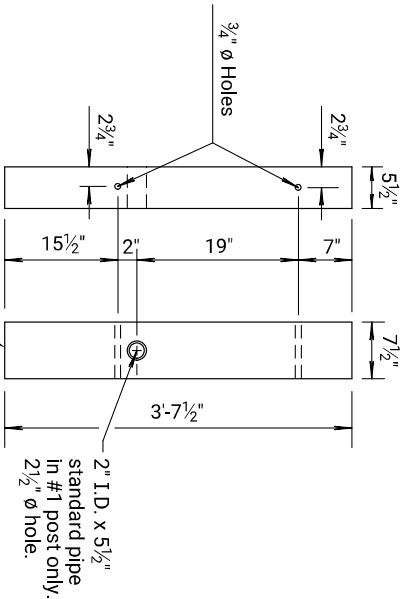
STANDARD END SECTION

(1 each)
(Subsidiary to Steel Plate Guardrail)

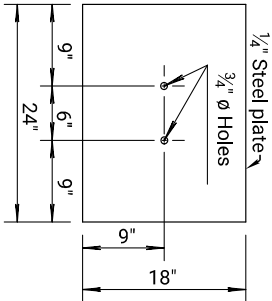
BEARING PLATE



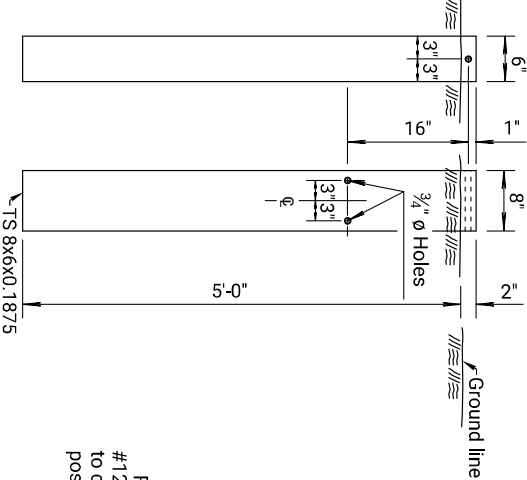
BCT WOOD POST



SOIL PLATE



STEEL TUBE

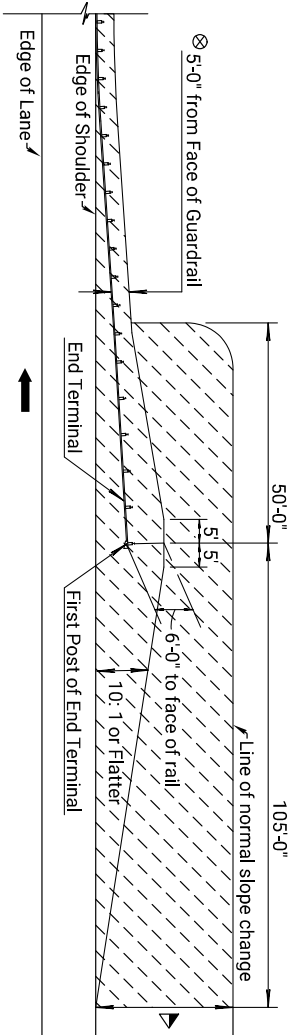


RD618				GUARDRAIL END TERMINAL TYPE II			
DESIGNED				TRACED			
DETAIL CK				QUAN CK			
DESIGN CK				TRACE CK			
KANSAS DEPARTMENT OF TRANSPORTATION				James D Brewer			
06	12-14-10	Rev. notes, details & 28' rail height.	S.W.K.	J.O.B.			
05	07-20-04	Changed Guard Fence to Guardrail	S.W.K.	J.O.B.			
04	05-18-00	Added note for temporary traffic	R.J.S.	J.O.B.			
NO	DATE	REVISIONS	BY	APP'D			

Note to Designer - Design guardrail installations 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

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 three-beam installation.

Use approved polymer (preferred) or wood blockouts provided by the Manufacturer. The guardrail end terminal blockout size and type may be independent of the blockout size and type used in the remainder of the installation. For blockout size and types for the remaining w-beam and three-beam portion of the installation see the details shown on KDOT's 'Guardrail Post Details' and 'Guardrail Three-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 three-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 three-beam transition and the guardrail end terminal is 12'-6" for all installations, unless otherwise stated in the Manufacturer's Installation Manual.

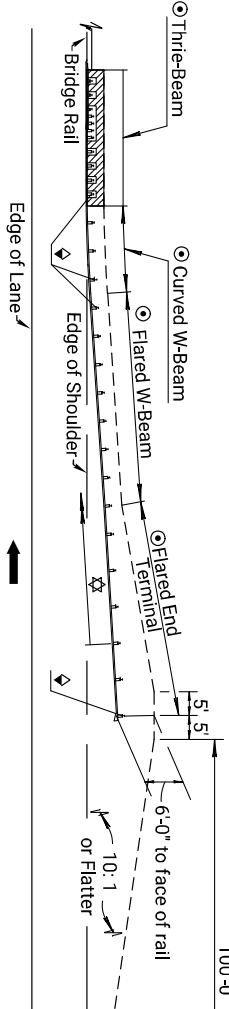
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered 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 three-beam 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.

FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



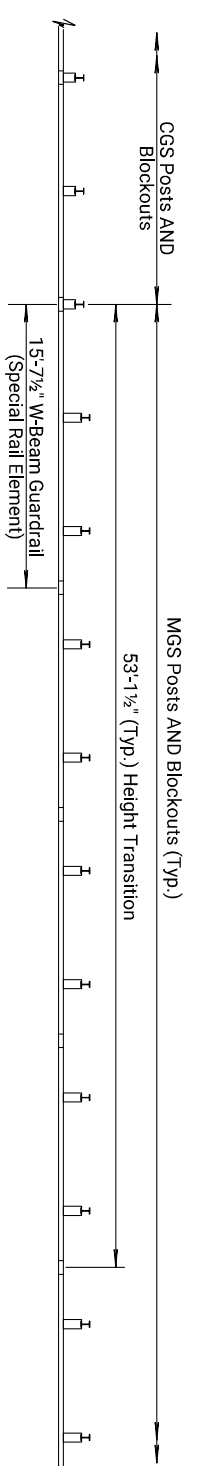
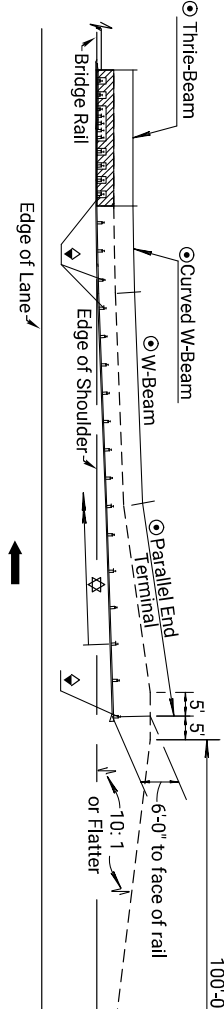
See Guardrail Layout Sheets for Details

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

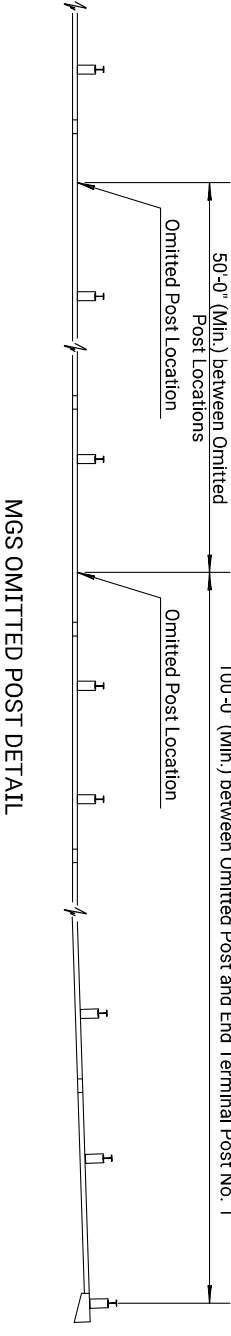
Length of Need (Begins at Post 3)

PARALLEL GUARDRAIL DETAIL

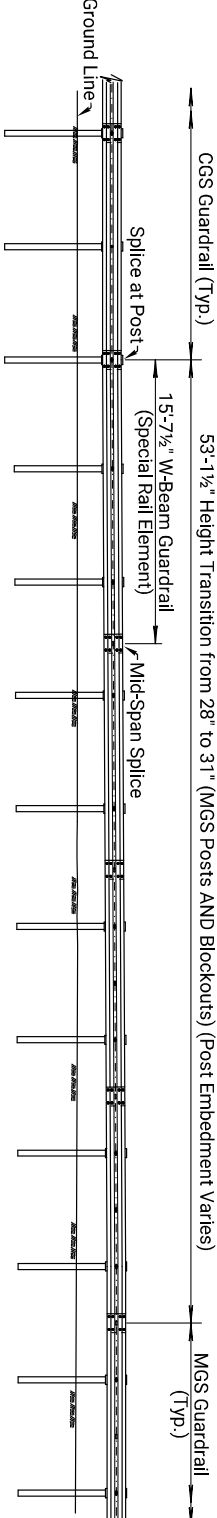
Applies to CGS AND MGS (MGS Shown)



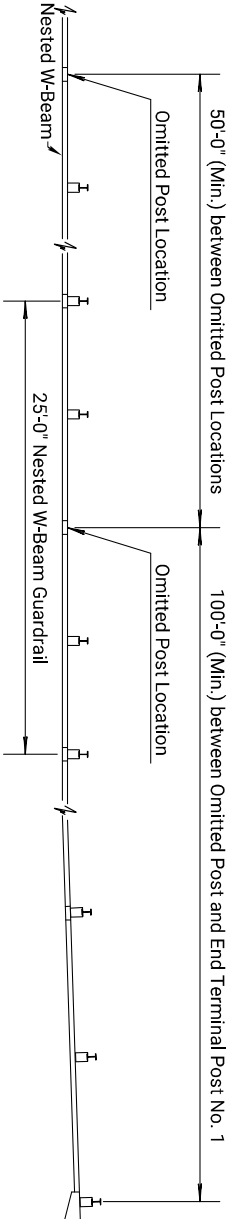
CGS TO MGS TRANSITION DETAILS (PLAN)



MGS OMITTED POST DETAIL



CGS TO MGS TRANSITION DETAILS (ELEVATION)



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'-7 1/2"	37'-6"
Guardrail End Terminal (MGS-SRT)	Flared	31"	NCHRP 350	Yes	Yes	No	Trinity Industries	40'-7 1/2"	37'-6"
Guardrail End Terminal (MGS-MSKT)	Parallel	31"	MASH	Yes	No	Yes	Road Systems	46'-10 1/2"	46'-10 1/2"
Guardrail End Terminal (MGS-SOFTSTOP)	Parallel	31"	MASH	Yes	No	Yes	Trinity Industries	46'-10 1/2"	50'-9 1/2"

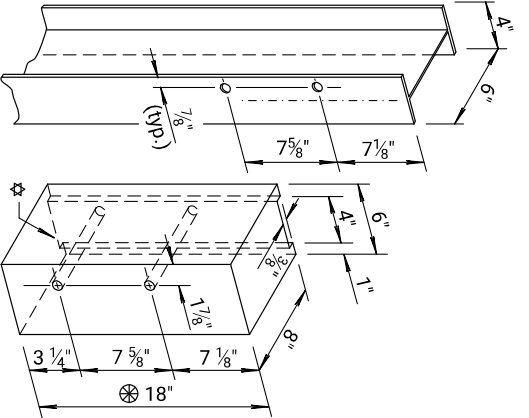
CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS

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	Trinity Industries	37'-6"	37'-6"
Guardrail End Terminal (SKT)	Parallel	28"	NCHRP 350	Yes	Yes	Yes	Road Systems	50'-0"	50'-0"

KANSAS DEPARTMENT OF TRANSPORTATION			
02	09-25-18	ADD OMITTED POST AND TRANS DETAILS	ALL R
01	06-05-18	INITIAL RELEASE	ALL R
NO	DATE	REVISIONS	BY
KANSAS DEPARTMENT OF TRANSPORTATION			
RD606			
DESIGNED	09-25-18	APPROVED	SCOTT W. KING
DETAIL CK	DETAIL CK	QUANTITY CK	TRACED CK

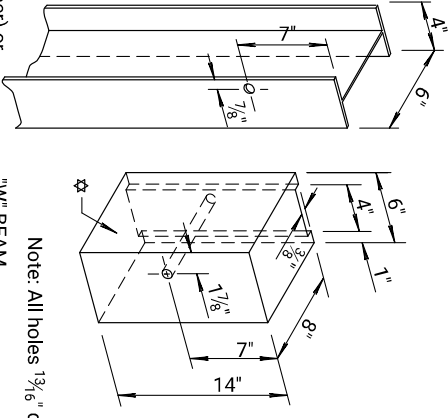
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	13	75

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



Note: All holes 1 3/16" dia.

THRIE BEAM HOLE PUNCHING DETAILS



Note: All holes 1 3/16" dia.

"W" BEAM HOLE PUNCHING DETAILS

⚡ Non-Metallic (Polymer) or Treated Wood Block

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 requirements 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 and 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.

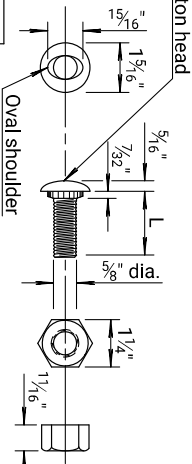
NO.	DATE	REVISIONS	BY	APP'D
13	09-05-18	Added Det. Post In Pavement	A.L.R.	T.T.R.
12	12-14-10	Revised notes 28" wide	S.W.K.	J.O.B.
11	05-25-04	Remove steel blockout and notes	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST DETAILS

RD611	09-25-18	APPROVED	SCOTT W. KIRK
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACED CK.

BOLT & NUT DETAILS

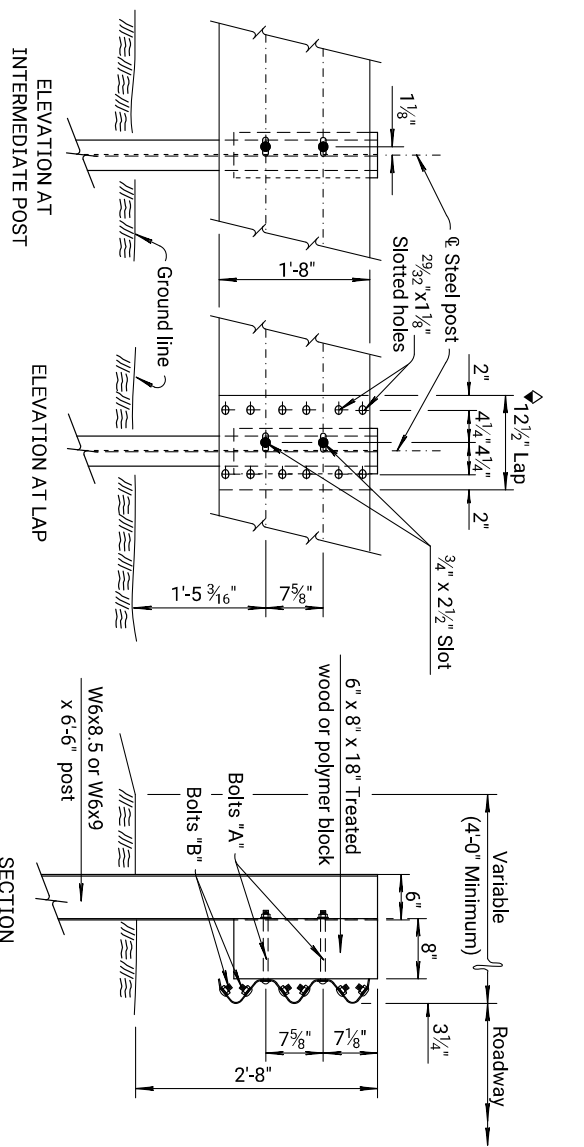


BOLT SIZE SCHEDULE

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

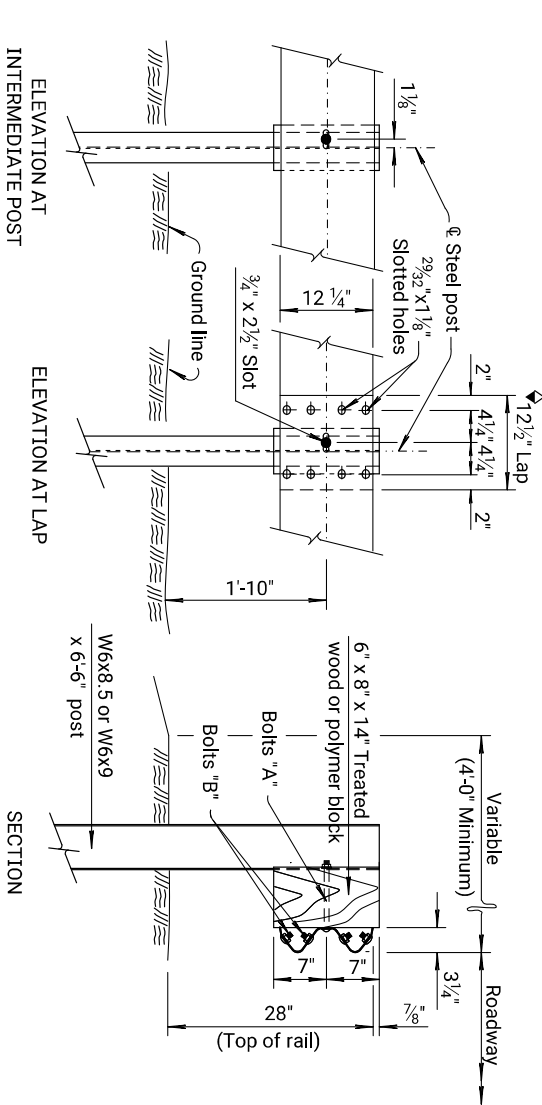
Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's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

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



THRIE BEAM POST DETAILS

⧫ 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.

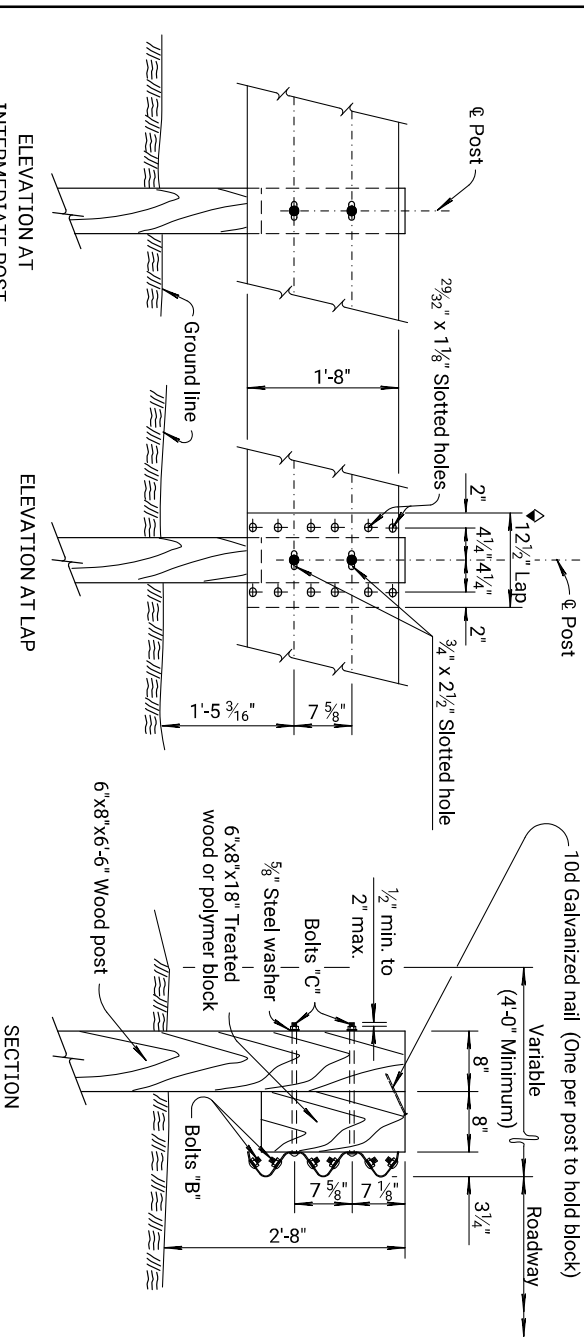


W-BEAM POST DETAILS

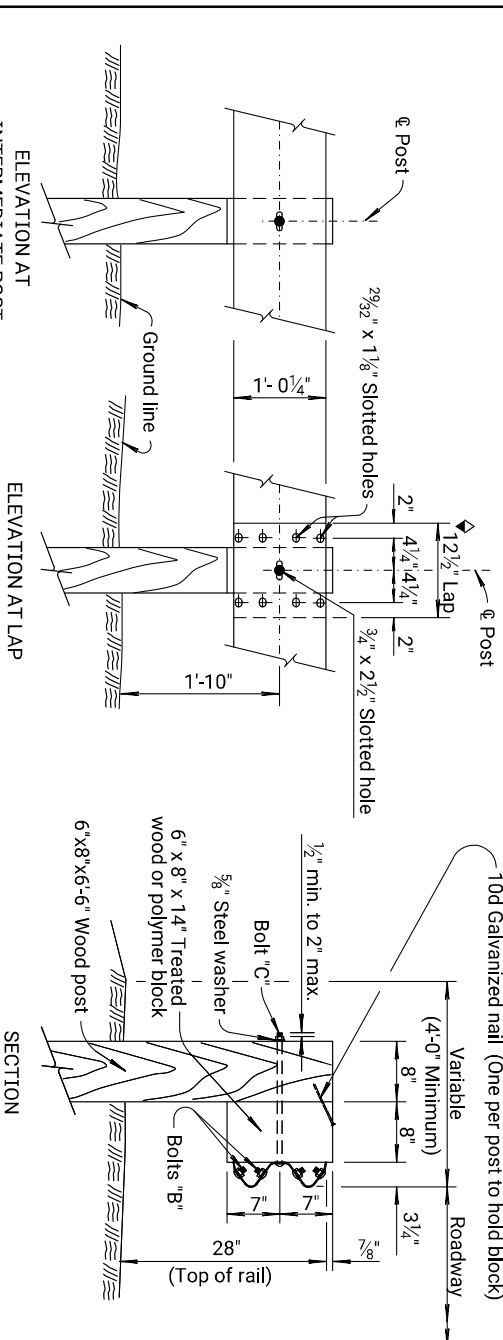
STEEL POSTS

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 requirements 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 and 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.



THRIE BEAM POST DETAILS



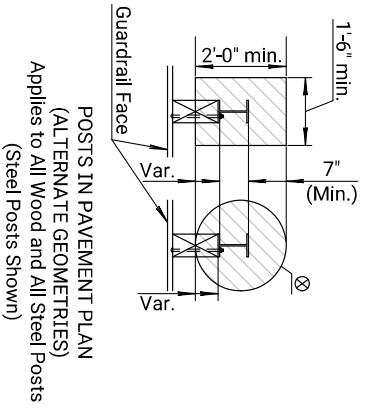
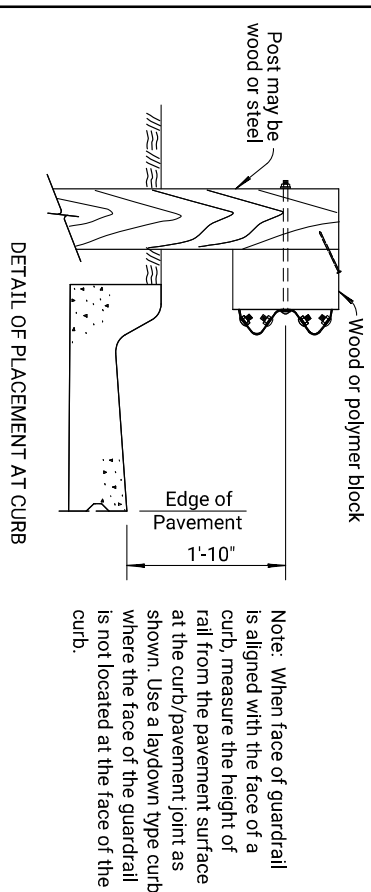
W-BEAM POST DETAILS

⧫ 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 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.



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.

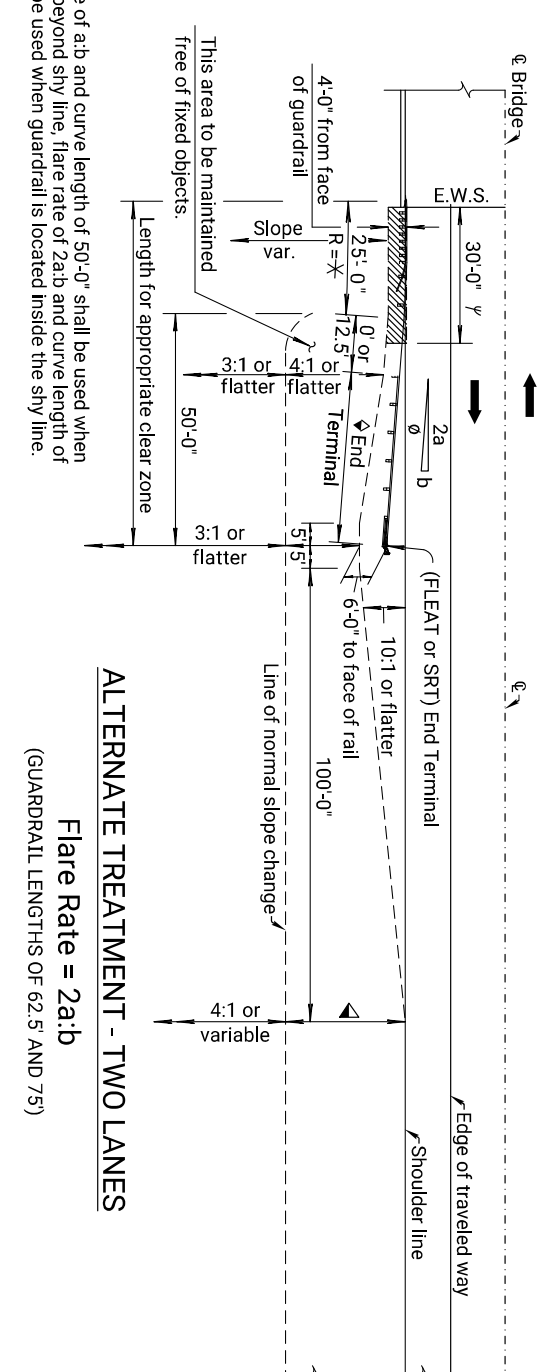
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	14	75

GENERAL NOTE

For guardrail and rubrail sections, details, and general notes see KDOT's W-Beam with Rubrail Bridge Approach Transition Details Standard Drawings. For post details see KDOT's Guardrail Post Details Standard Drawings.

The ratio of a:b may be specified as zero for long runs of guardrail in high fill areas.
Widening, slopes & transition for Four Lane will be similar to that shown on two lane detail.

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'



FLARE RATE = 2a:b
(GUARDRAIL LENGTHS OF 62.5' AND 75')

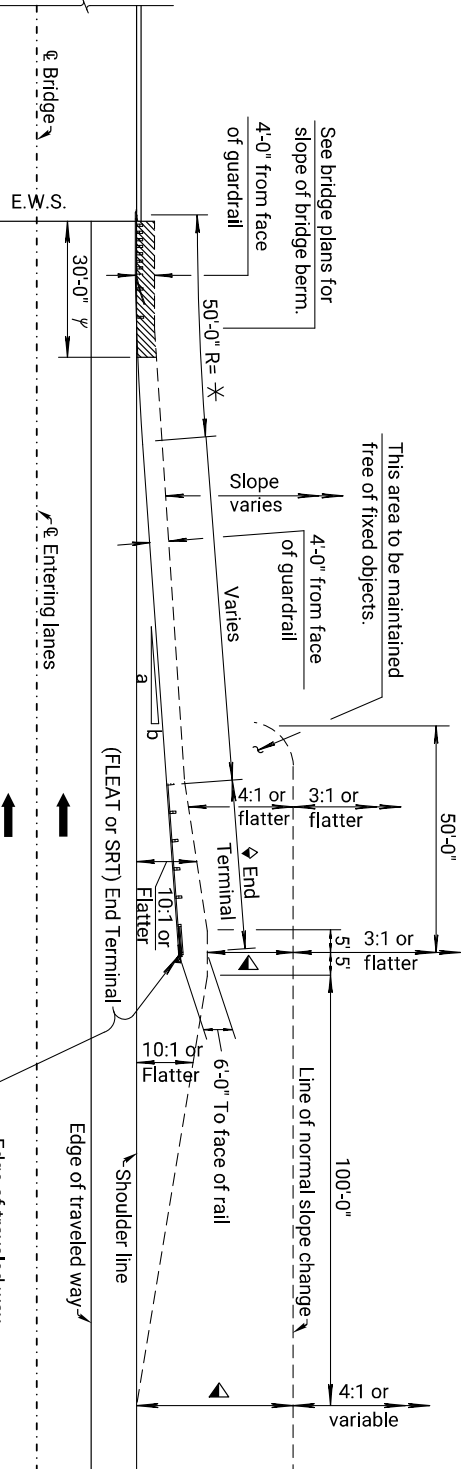
Note: Flare rate of a:b and curve length of 50'-0" shall be used when guardrail is beyond shy line, flare rate of 2a:b and curve length of 25'-0" shall be used when guardrail is located inside the shy line.

TWO LANES

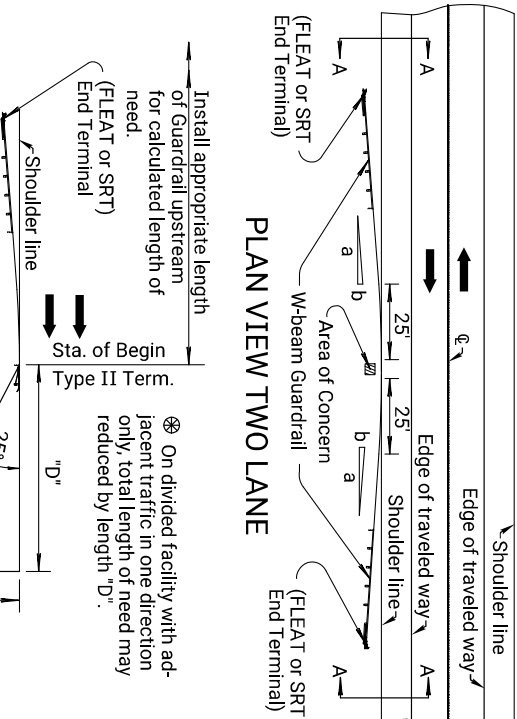
This area to be maintained free of fixed objects.

This area to be maintained free of fixed objects.

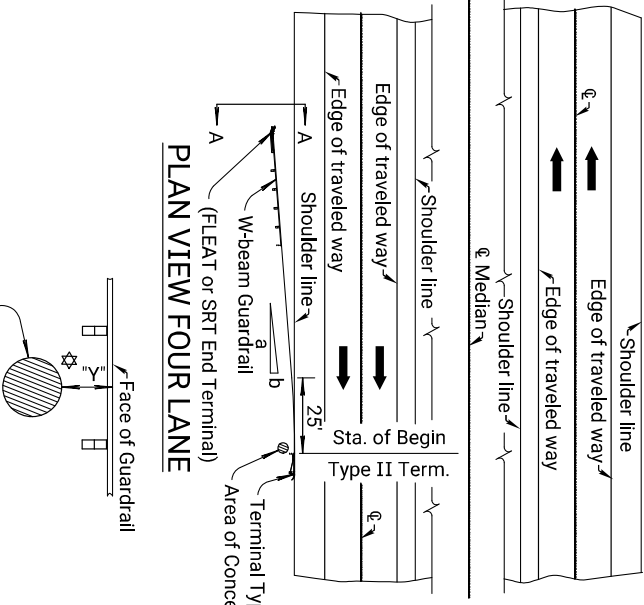
See bridge plans for slope of bridge berm. 4'-0" from face of guardrail



PLAN VIEW TWO LANE



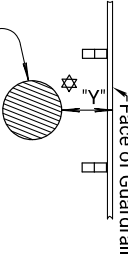
PLAN VIEW FOUR LANE



☆ Guardrail shall be nested and post spacing reduced to one half of normal spacing when "v" is less than 5'. Rigid barrier shall be used when "v" is less than 3'-3".

DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE

ENLARGEMENT - AREA OF CONCERN



NO.	DATE	REVISIONS	BY	APP'D.
08	06-05-18	Removed Flare beyond shy line	ALR	TTR
07	05-15-17	Removed XLITE	ALR	SWK
06	07-02-09	Added roadside obstacle details	SWK	JOB

W-BEAM WITH RUBRAIL
BRIDGE APPROACH TRANSITION
TYPICAL ALIGNMENTS (FLARED)

RD615A	ENGR. APPROVAL	06-19-18	APPRO.	SCOTT W. KING
	DESIGNED	DETAIL	CK	TRACED
	DESIGN	CK		CK

KDOT Graphics Certified 05-16-2022

Sh. No. 14

Notes to Designer: Guardrail length of need shall be determined in accordance with the AASHTO Roadside Design Guide using L₁= 25' for flare rate of a:b and L₁=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.

Plotted by : ewisbey 30-AUG-2024 14:13
File : 2212890-rd615a_W Beam with Rubrail .dgn

SUMMARY OF QUANTITIES														
Item Location	Excavation		Concrete		Reinforcing Steel		Prestressed Concrete Beams (NU43) Lin. Ft.	* Piles Steel HP12x53 Lin. Ft.	Cast Steel Pile Points Each	Contractor Furnished PDA Each	Slope Protection (Riprap Stone) Cu. Yds.	Bridge Deck Grooving Sq. Yds.	Bridge Backwall Protection System Sq. Yds.	Abutment Strip Drain Sq. Yds.
	Class I	Class II	(Grade 4.0) (AE) (SW) Cu. Yds.	(Grade 4.0) (AE) Cu. Yds.	(Grade 60) (Epoxy Coated) Lbs.	(Grade 60) Lbs.								
Abutment No. 1	128	-	**	20.7	**	2,850		472	6	1	278		39	36
Pier No. 1	50	192	**	76.3	**	10,510		868	14	--	--			
Pier No. 2	--	194	**	81.1	**	11,180		878	14	1	--			
Pier No. 3	--	205	**	81.1	**	11,180		868	14	--	--			
Pier No. 4	--	224	**	81.1	**	11,180		780	14	1	--			
Abutment No. 2	128	-	**	20.7	**	2,850		432	6	--	163		39	36
Substr. Total	306	815		361.0		49,750		4,298	68	3	441		78	72
Superstr. Total			564.5		155,660		1,840					1,346		
Total	306	815	564.5	361.0	155,660	49,750	1,840	4,298	68	3	441	1,346	78	72

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

# Summary of Piling			
Abutment No. 1	5 @ 77' & 1 @ 87' for use with the PDA	Pier No. 4	13 @ 55' & 1 @ 65' for use with the PDA
Pier No. 1	14 @ 62'	Abutment No. 2	6 @ 72'
Pier No. 2	13 @ 62' & 1 @ 72' for use with the PDA		
Pier No. 3	14 @ 62'		

* NOTE: Only steel pile HP12X53 shall be used on this project.

GENERAL NOTES

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

BRIDGE EXCAVATION: Elevation 1317.70 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: Compact backfill at the abutments.

PILING: Drive all piling to penetrate or bear upon the Weathered Shale Bedrock. 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	91 Tons
Pier No. 1	106 Tons
Pier No. 2	106 Tons
Pier No. 3	106 Tons
Pier No. 4	106 Tons
Abutment No. 2	91 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.

CONTRACTOR FURNISHED PDA: Use the Pile Driving Analyzer equipment at the locations shown on the Construction Layout. Use Pile Driving Analyzer equipment and methods compliant with KDOT Special Provisions. The piling shall remain in place as permanent piling. Drive the piling to the resistance value of 140 tons at the Abutments and 163 tons at the Piers (Strength I divided by Phi).

PILING SPLICE LOCATION: Integral pile splice locations and weld testing criteria for, Abutments No. 1 and No. 2 and Piers No. 1, No. 2, No. 3 and No. 4, will follow the "Standard Pile Details" Sheet (BR110).

CORRAL RAIL: Build the corral rail after the falsework is struck.

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0)(AE)(SW). Substructure concrete is bid as concrete (Grade 4.0)(AE). Bevel all exposed edges of all concrete with a ¾" triangular molding, except as otherwise noted on the plans. Construction joints are optional with the Contractor, but if used, place only at locations shown, or at locations approved by the Engineer.

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 C.Y./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)(SW)". Approval of the Contractor's alternate sequence is required prior to placement of concrete in the deck.

CONSTRUCTION LOADS: Limited traffic is permitted on the new sub-deck, one-course deck or any concrete overlay during the curing period. Keep any exposed deck wet during the curing period. See KDOT Specifications Section 710 Tables 710-1 & 710-2 for additional information.

TEMPERATURE: The design temperature for all dimensions is 60° F.

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.

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.

CONSTRUCTION SPECIFICATIONS: Kansas Department of Transportation, Standard Specifications for Road and Bridge Construction, 2015 Version, and Special Provisions.

SLOPE PROTECTION (Riprap Stone): Place Slope Protection (Riprap Stone) to the limits and thickness shown on the plans or as directed by the Engineer. Use Riprap Stone Classified as Light 200 Pounds. Place a 10 foot wide mat of geotextile under the slope protection on the berm and berm slopes and centered on the drip lines of the slab. The geotextile shall not be paid for directly, but shall be considered subsidiary to the bid item "Slope Protection (Riprap Stone)".

INDEX TO BRIDGE DRAWINGS	
Sheet No.	Drawing
16-17	General Notes and Quantities
18	Contour Map
19	Construction Layout
20-21	Engineering Geology
22-24	Abutment Details
25-27	Pier Details
28-32	Superstructure Details
33	Handrail Details
34	Bridge Number Plate Details
35	Bill of Reinforcing Steel and Bending Diagrams
Standards	
36	Bridge Excavation
37	Standard Pile Details
38	Supports and Spacers for Reinforcing Steel

DESIGN DATA

DESIGN SPECIFICATIONS: AASHTO Specifications, 2020 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)(AE) f'c = 4 ksi
Concrete (Grade 4.0)(AE)(SW) f'c = 4 ksi
Reinforcing Steel (Grade 60) fy = 60 ksi
Steel Piers fy = 50 ksi

LRFD DESIGN PILE LOAD:		Strength	Service	Phi
Design Loading (Tons/Pile)		91	67	0.65
Abutments 1 & 2:				
Piers 1, 2, 3 & 4:		106	78	0.65

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

6	ID/9/15	Added Asbestos NOT6221 Option	JPL	GER
5	2/4/15	Modified Per 2015 Specification	JPL	GER
4	4/7/14	Current Release	JPL	GER
3	2/12/14	Added Benchmark	JPL	GER
2	06/22/12	ADDED NOT1315 & NOT1345	JPL	TIF
1	04/29/10	ADDED RATING TABLES	JPL	KFH
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

GENERAL NOTES AND QUANTITIES

SHEET NO.	OF	SCALE	APPRO. QUANTITIES	CADD
DESIGNED		DETAILED	QUANT. CK.	CADD CK.
DESIGN CK.				

Std. Base File:	
Plotted By: ewisbey	Plot Location:
File: 22/2890_bbr-01_General Notes and Quantities.dgn	
Plot Date: 30-AUG-2024 14:13	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2024	17	75

GENERAL NOTES

BRIDGE DECK GROOVING: After the bridge deck has cured, transversely groove the deck in accordance with KDOT Specifications. For phased construction groove each completed phase before opening to traffic. Align the grooves from each adjacent phase across the bridge deck without jogs or discontinuities. For skewed bridges all grooving will be perpendicular to the centerline of the bridge.

COLUMN CONSTRUCTION: Cure the column 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.

BRIDGE BACKWALL PROTECTION SYSTEM: Apply a Bridge Backwall Protection 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, not including the top of the pavement rest. Prior to backfilling, repair any damage done to the system at no extra cost to the County.

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

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 approved by the Engineer. 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 or the pier beam concrete has 0.75f'c strength as tested.

PRESTRESSED BEAM CONCRETE: Use air entrained concrete with select coarse aggregate as specified in the Special Provisions. 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.

ERECTION 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 ($\pm \frac{1}{4}$ ").

Std. Base File:	
Plotted By: ewisbey	Plot Location:
File: 22/2890_bbr-01_General Notes and Quantities.dgn	
Plot Date: 30-AUG-2024 14:13	

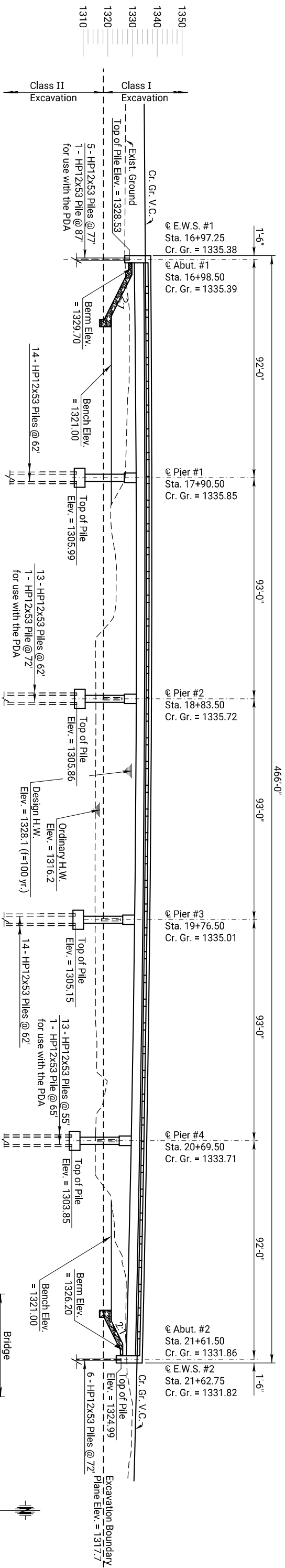
6	10/19/15	Added Asbestos NOT1621 Option	JPJ	CER
5	2/4/15	Modified Per 2015 Specification	JPJ	CER
4	4/7/14	Current Release	JPJ	CER
3	2/12/14	Added Benchmark	JPJ	TIF
2	08/22/12	ADDED NOT1335 & NOT1345	JPJ	KFH
1	04/29/10	ADDED RATING TABLES	JPJ	KFH
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

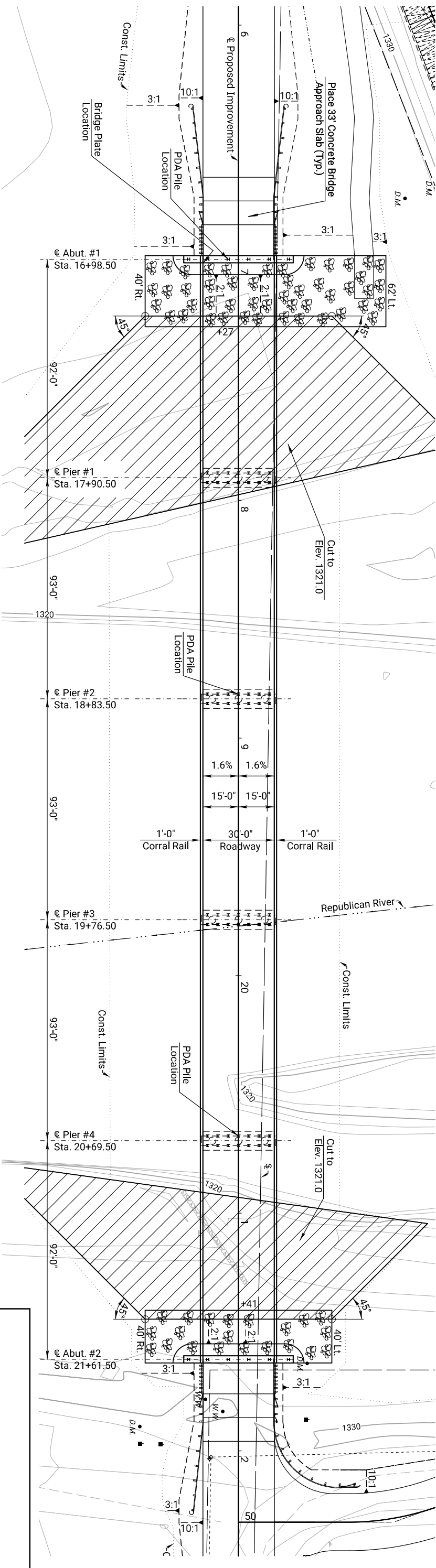
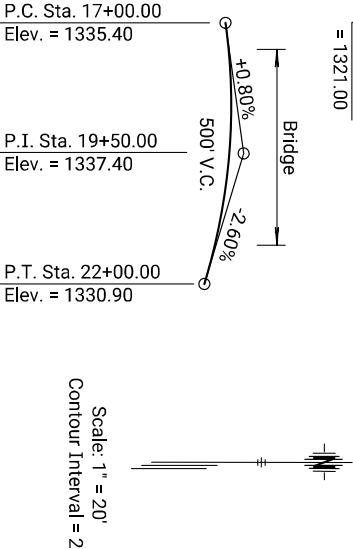
SHEET NO.	OF	SCALE	APP'D
DESIGNED		DETAILED	CADD
DESIGN CK.		DETAIL CK.	CADD CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	19	75

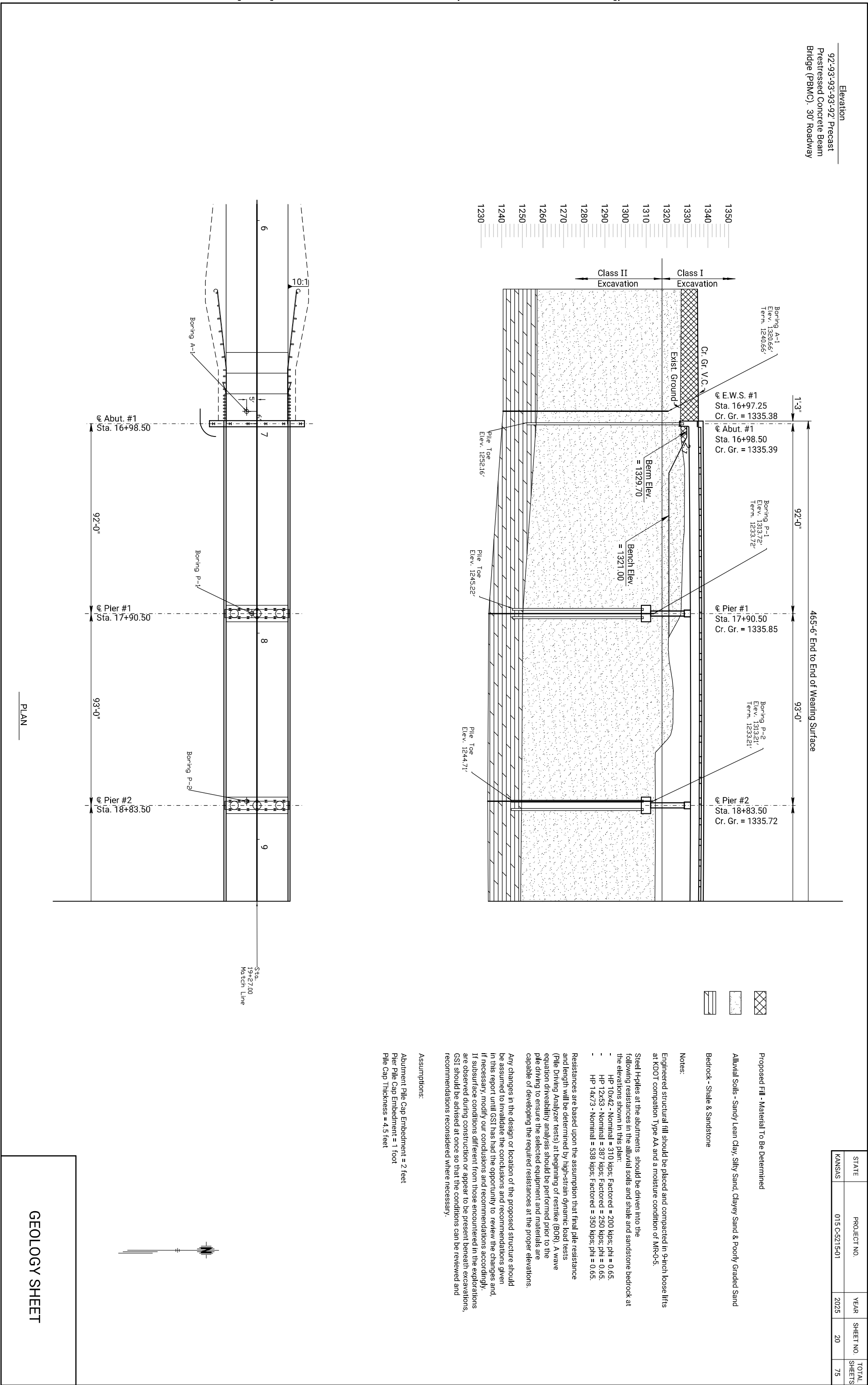


Drainage Data				
Drainage Area	16,976	sq. mi.	Discharge at Q100	41,100 cfs
Design Frequency	100	yrs	Change in Backwater at Q100	-0.4 ft.
Design Discharge (Q100)	41,100	cfs	Backwater Elevation at Q100	1,329.8 ft.
Design High Water Elevation	1,328.1	ft.		
Change in Design Backwater	-0.4	ft.	Ordinary High Water Elevation	1,316.2 ft.
Design Backwater Elevation	1,329.8	ft.	Total Waterway Provided	6,391 sq. ft.
			Design Waterway Provided	4,723 sq. ft.
Overtopping Elevation (Sta. 10+00)	1329.35	ft.	Estimated Ordinary High Water Discharge	1,008 cfs
Overtopping Discharge	71,000	cfs	Change in Waterway Opening	+1,201 sq. ft.
Overtopping Frequency	>500	yr		

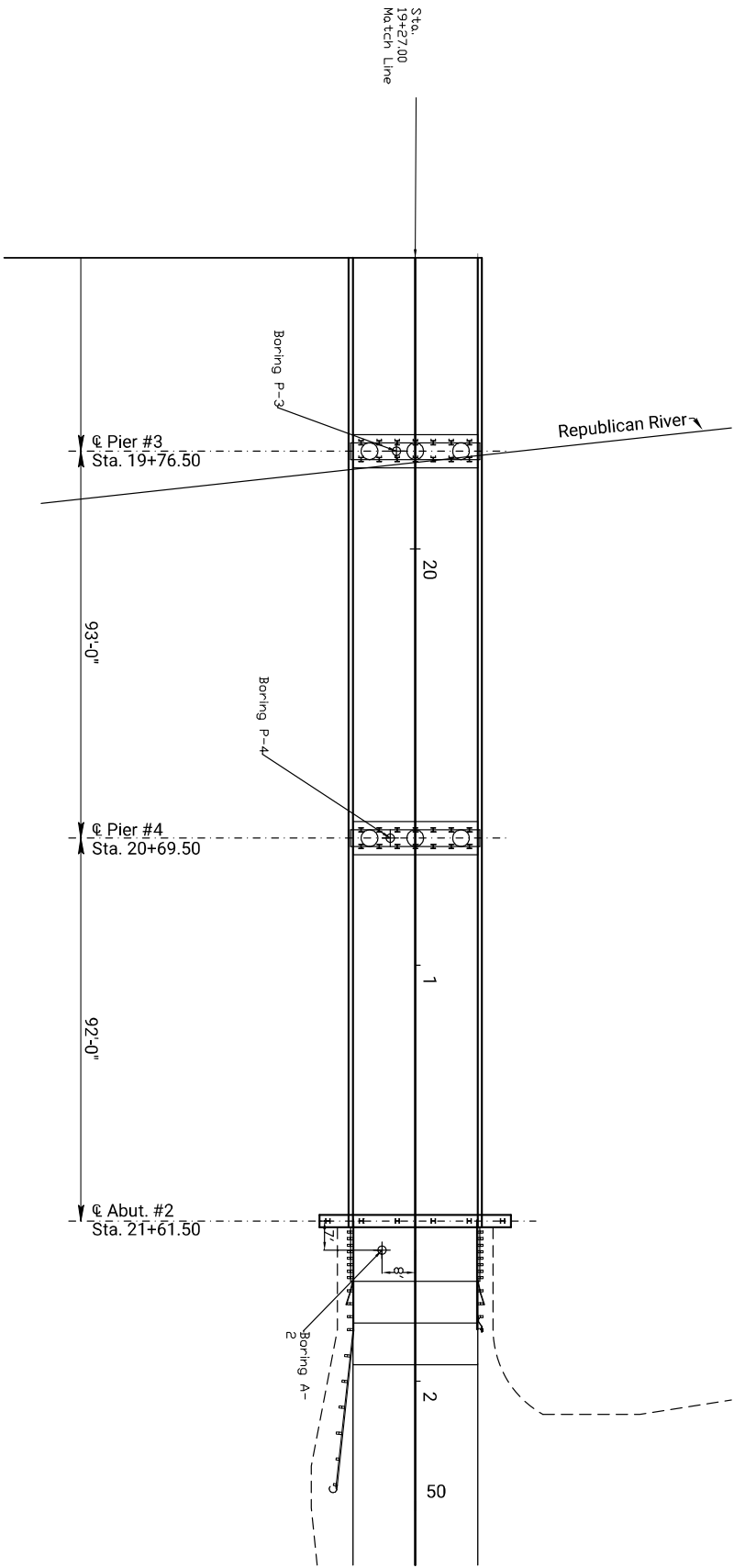
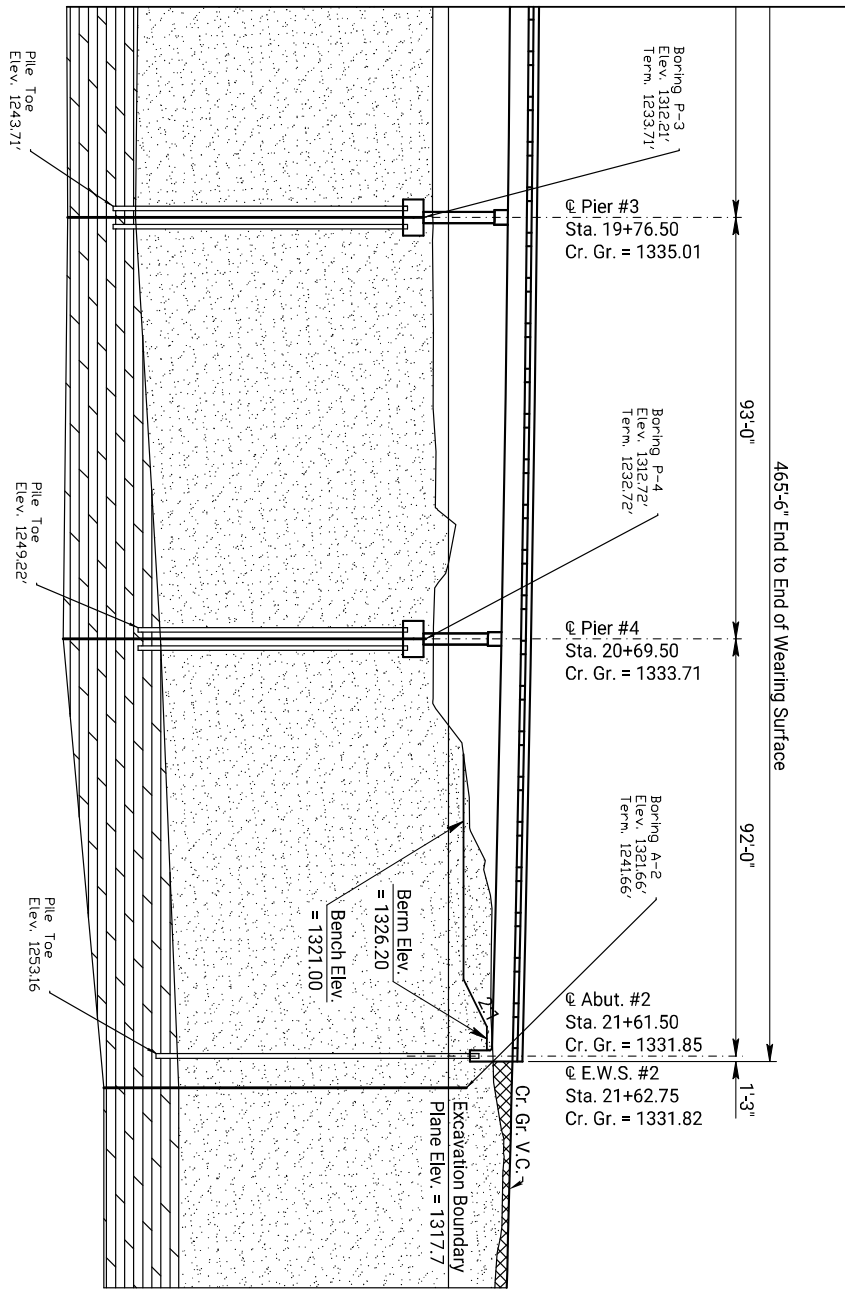
EXPANSION JOINT WIDTH DETAILS (W2)						
Y Temperature (F°)	40°	50°	60°	70°	80°	90°
Formed Concrete Opening Size	2 3/8"	2 1/4"	2"	1 7/8"	1 3/8"	1 1/2"

[†] Average Ambient Temperature over previous 24 hours.

CONSTRUCTION LAYOUT



Elevation
92-93-93-93-92 Precast
Prestressed Concrete Beam
Bridge (PBM). 30' Roadway



PLAN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015-C-5215-01	2025	21	75

Proposed Fill - Material To Be Determined

Alluvial Soils - Sandy Lean Clay, Silty Sand, Clayey Sand & Poorly Graded Sand

Bedrock - Shale & Sandstone

Notes:

Engineered structural fill should be placed and compacted in 9-inch loose lifts at KDOT compaction Type AA and a moisture condition of MR-0-5.

Steel H-piles at the abutments should be driven into the following resistances in the alluvial soils and shale and sandstone bedrock at the elevations shown in this plan:

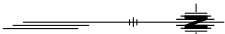
- HP 10x42 - Nominal = 310 kips; Factored = 200 kips; phi = 0.65;
- HP 12x53 - Nominal = 387 kips; Factored = 250 kips; phi = 0.65;
- HP 14x73 - Nominal = 538 kips; Factored = 350 kips; phi = 0.65.

Resistances are based upon the assumption that final pile resistance and length will be determined by high-strain dynamic load tests (Pile Driving Analyzer tests) at beginning of restrike (BOR). A wave equation drivability analysis should be performed prior to the pile driving to ensure the selected equipment and materials are capable of developing the required resistances at the proper elevations.

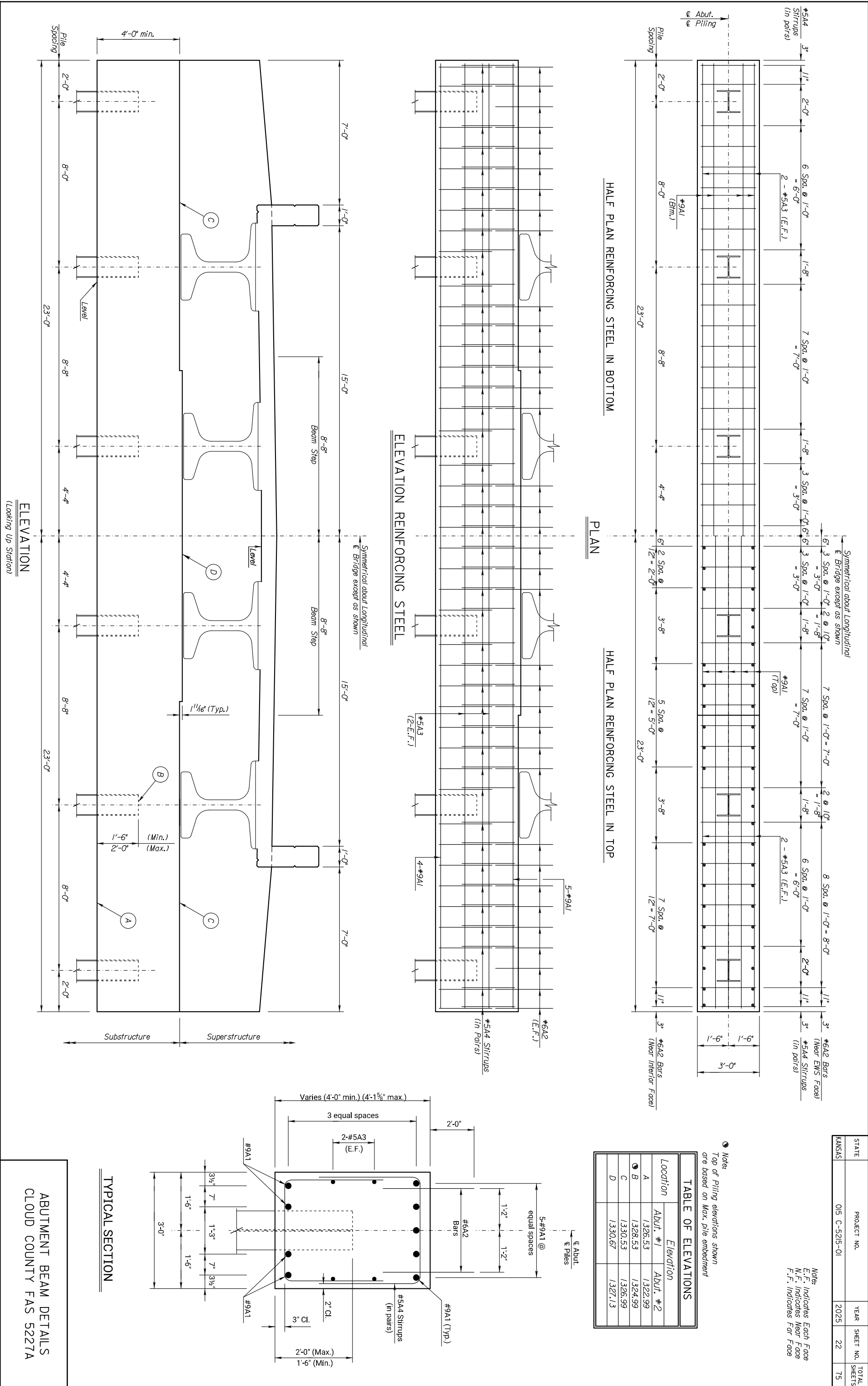
Any changes in the design or location of the proposed structure should be assumed to invalidate the conclusions and recommendations given in this report until GSI has had the opportunity to review the changes and, if necessary, modify our conclusions and recommendations accordingly. If subsurface conditions different from those encountered in the explorations are observed during construction or appear to be present beneath excavations, GSI should be advised at once so that the conditions can be reviewed and recommendations reconsidered where necessary.

Assumptions:

- Abutment Pile Cap Embedment = 2 feet
- Pier Pile Cap Embedment = 1 foot
- Pile Cap Thickness = 4.5 feet

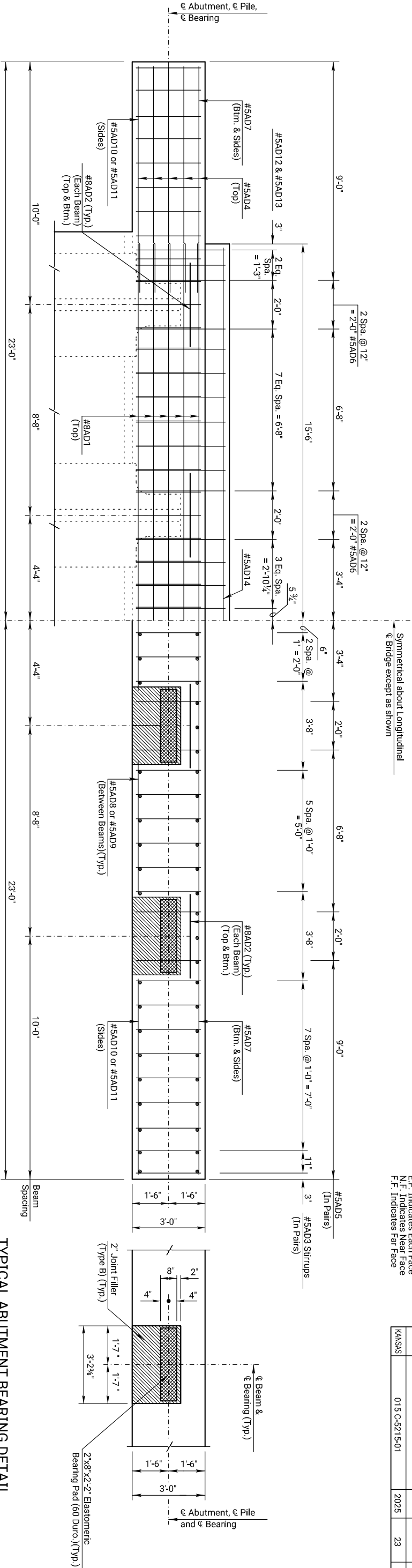


GEOLOGY SHEET



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	23	75

Note:
E.F. Indicates Each Face
N.F. Indicates Near Face
F.F. Indicates Far Face

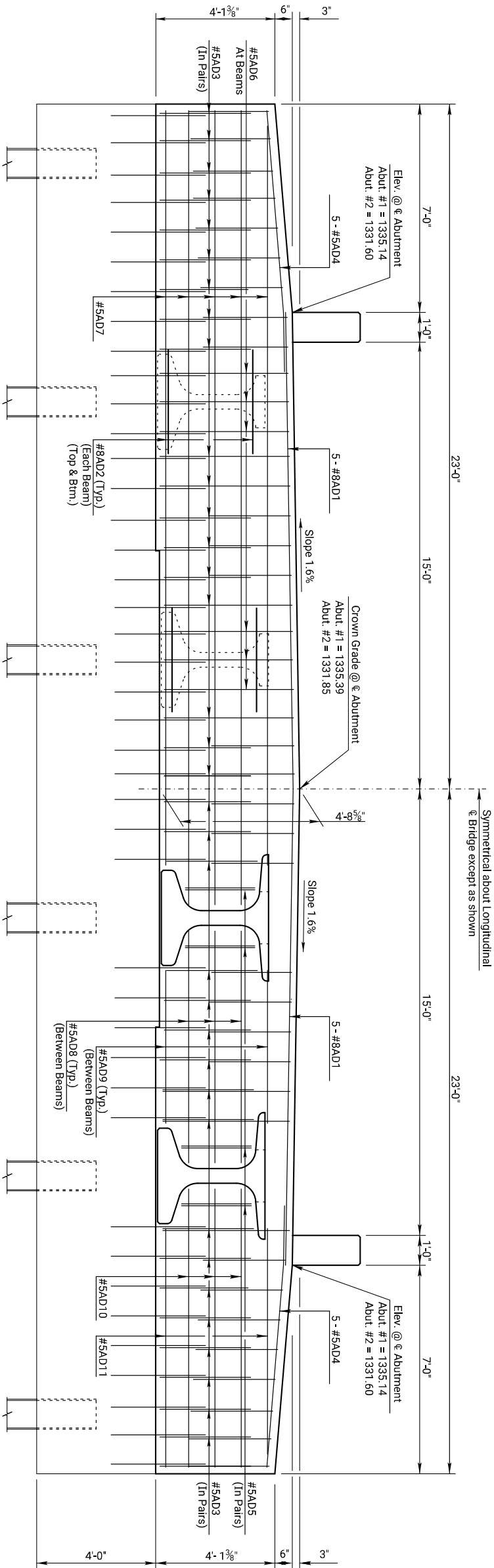
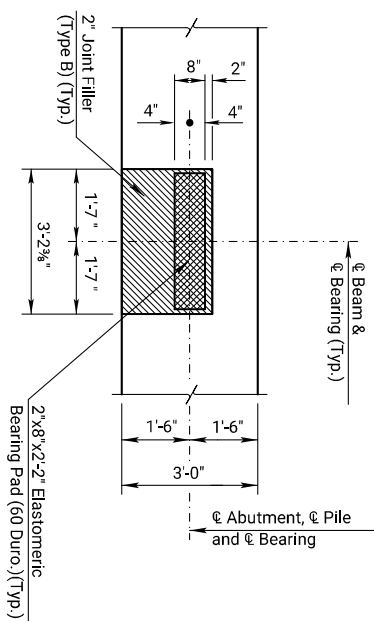


PLAN

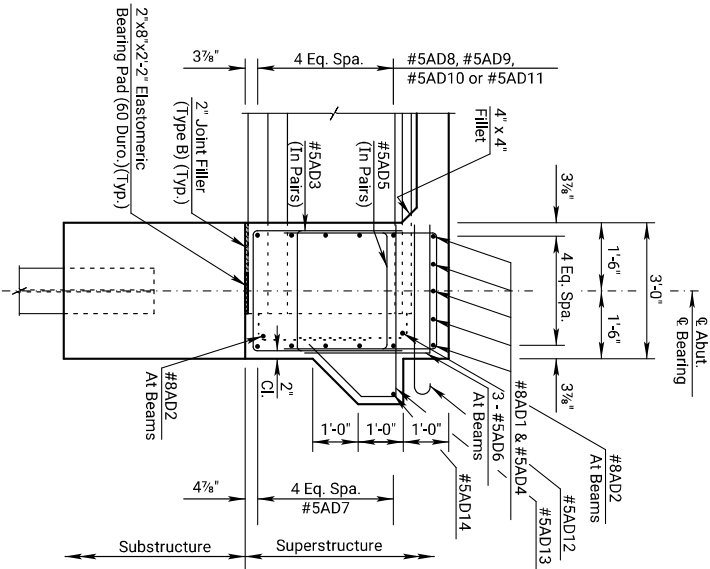
Half Plan Reinforcing Steel in Top Diaphragm

Half Plan Reinforcing Steel in Bottom Diaphragm

TYPICAL ABUTMENT BEARING DETAIL



TYPICAL ABUTMENT SECTION



Reinforcing Steel Near EWS Face

ELEVATION

Reinforcing Steel Near Interior Face

Abutment Diaphragm Details

Cloud County FAS 5227A

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	24	75

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.

BRIDGE BACKWALL PROTECTION SYSTEM: Apply a Bridge Backwall Protection 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.

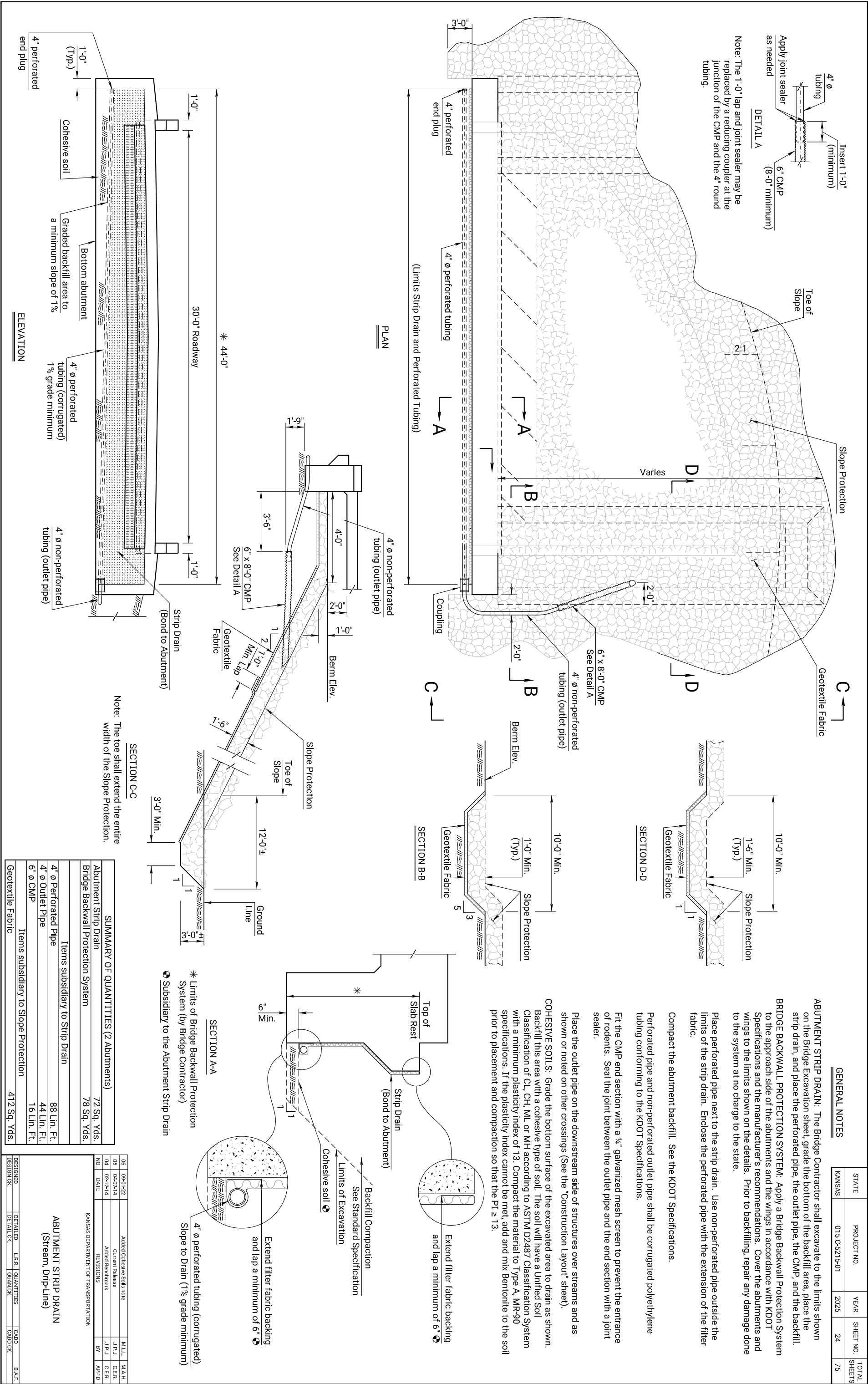
Compact the abutment backfill. See the KDOT Specifications.

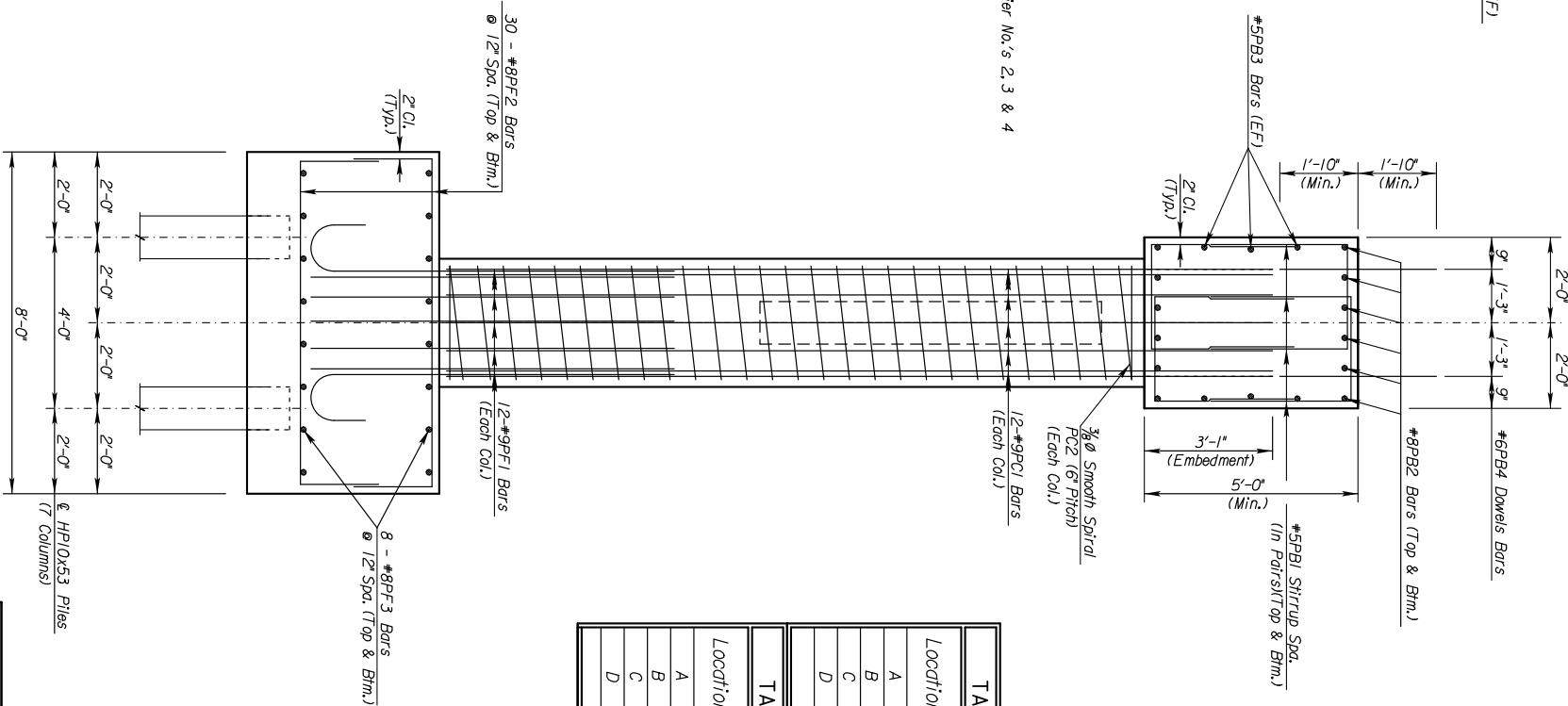
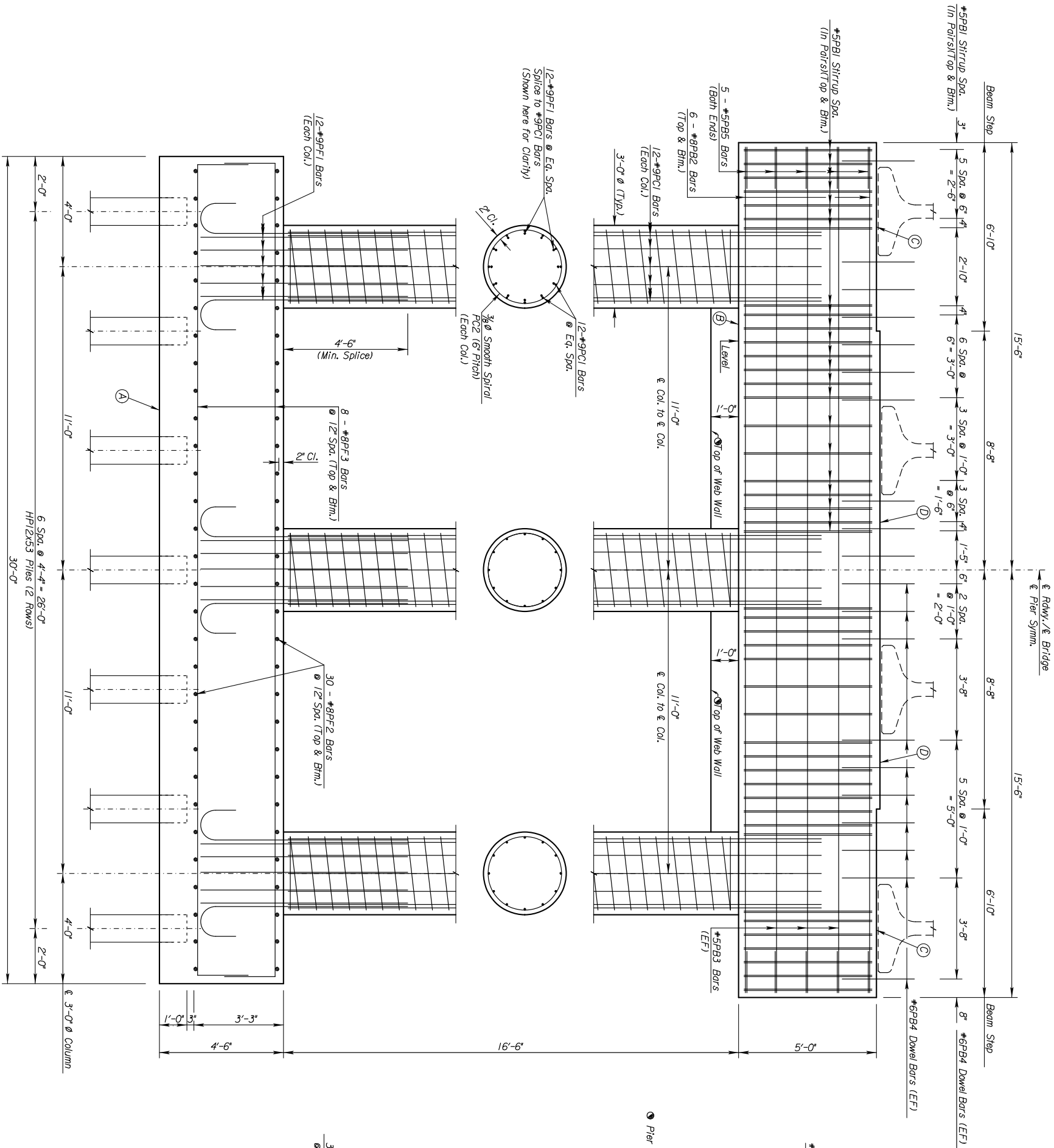
Perforated pipe and non-perforated outlet pipe shall be corrugated polyethylene tubing conforming to the KDOT Specifications.

Fit the CMP end section with a ¼" 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 the outlet pipe on the downstream side of structures over streams and as shown or noted on other crossings (See the "Construction Layout" sheet).

COHESIVE SOILS: Grade the bottom surface of the excavated area to drain as shown. Backfill this area with a cohesive type of soil. The soil will have a Unified Soil Classification of CL, CH, ML or MH according to ASTM D2487 Classification System with a minimum plasticity index of 13. Compact the material to Type A, MR-90 specifications. If the plasticity index cannot be met, add and mix Bentonite to the soil prior to placement and compaction so that the PI ≥ 13.





STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	25	75

LEGEND
EF Indicates Each Face
NF Indicates Near Face
FF Indicates Far Face

TABLE OF ELEVATIONS		
Location		Elevation
A	Pier No. 1	Pier No. 2
A	1304.99	1304.86
B	1325.99	1325.86
C	1330.99	1330.86
D	1331.12	1331.00

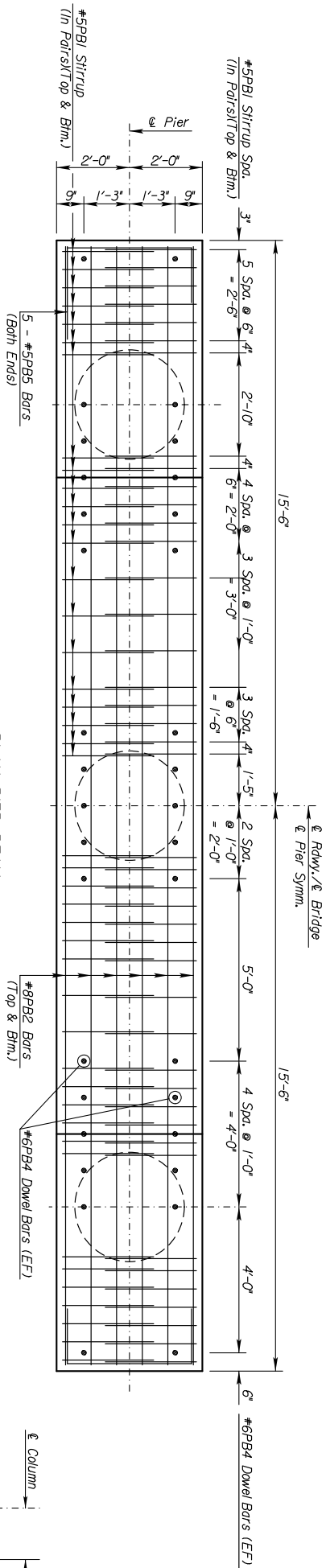
TABLE OF ELEVATIONS		
Location		Elevation
A	Pier No. 3	Pier No. 4
A	1304.15	1302.85
B	1325.15	1323.85
C	1330.15	1328.85
D	1330.29	1328.99

PIER ELEVATION

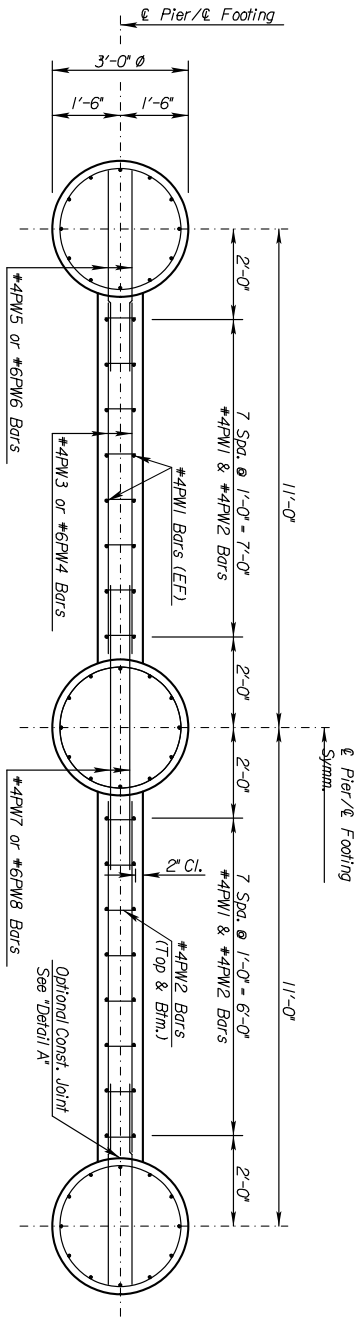
TYPICAL SECTION

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	27	75

LEGEND
EF Indicates Each Face
NF Indicates Near Face
FF Indicates Far Face

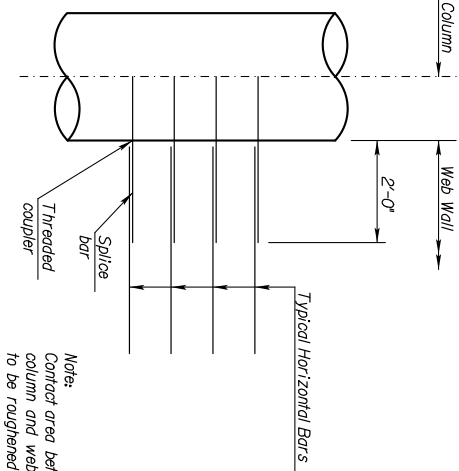


PLAN PIER BEAM



PLAN WEB WALL

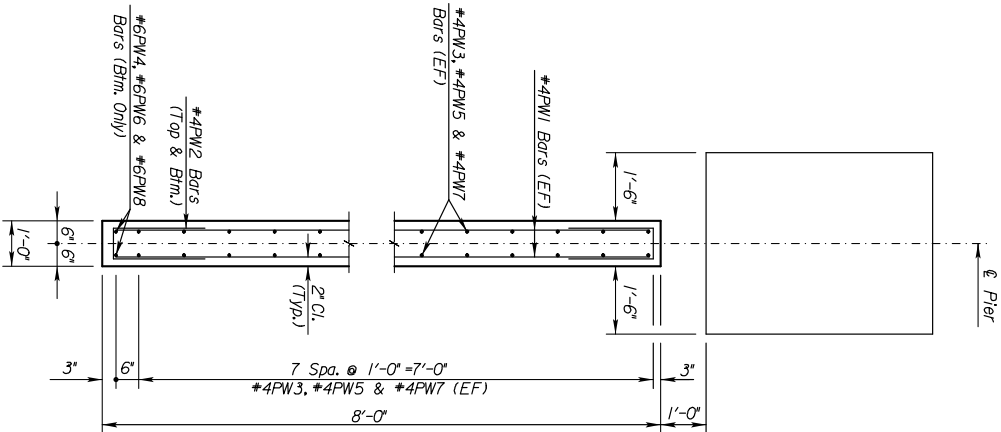
(Pier Nos. 2, 3 & 4)



DETAIL A

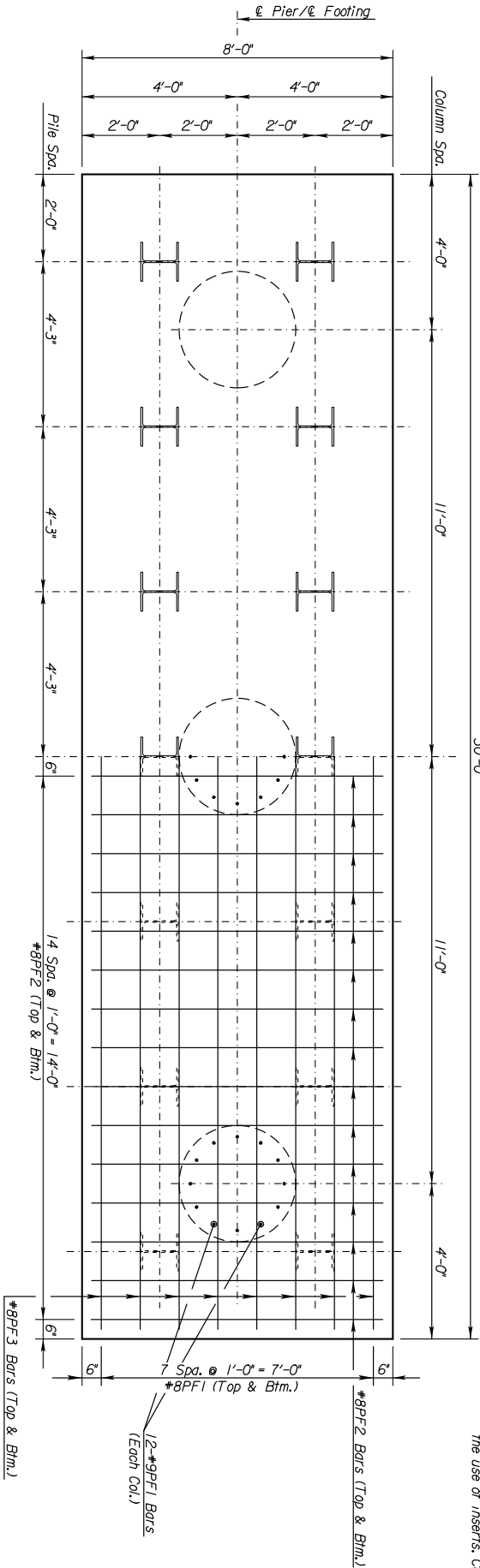
Note:
Contact area between
column and web wall
to be roughened

Either cast the columns and pier web monolithically or cast the columns separately using a keyed joint. If the columns are cast separately, use threaded deformed bars in lieu of the #4PW5, #6PW6, #4PW7 and #6PW8 splice bars. The inserts shall develop the full yield strength of the bars. No change in compensation is allowed with the use of inserts. Coll inserts are not allowed.



SECTION THRU WEB WALL

(Pier Nos. 2, 3 & 4)



HALF PLAN OF PILE LAYOUT

PLAN FOOTING

HALF PLAN OF REINFORCING

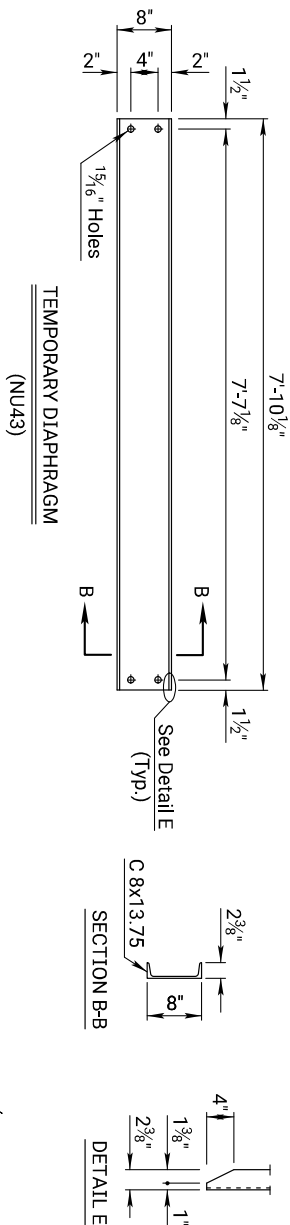
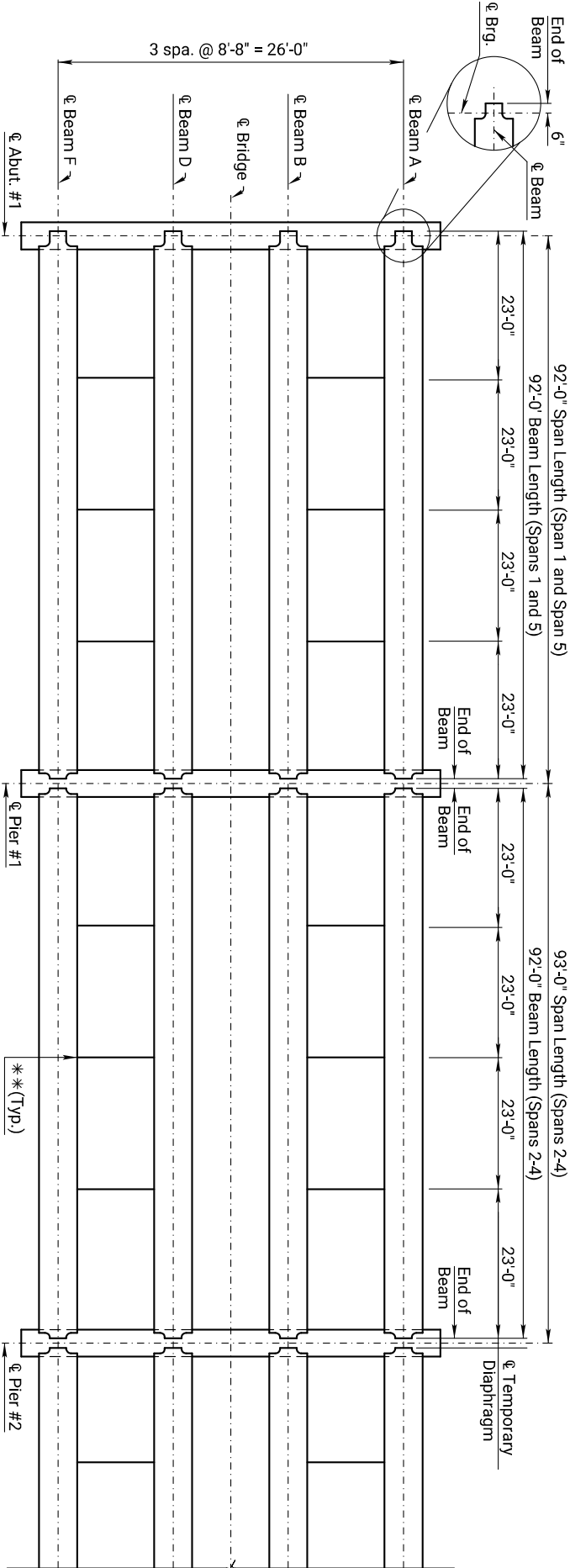
PIER FOOTING DETAILS
CLOUD COUNTY FAS 5227A

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	30	75

TEMPORARY DIAPHRAGMS: Use 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 F3125 Gr. A325, Type 1. Galvanize the angles, bolts, nuts, and washers in accordance with the KDOT Specifications. Use hardened steel washers over any oversized holes. Use $\frac{7}{16}$ " plate washers over any slotted holes along with hardened washers under the turned elements. Use the turn-of-the-nut tightening method. DITs 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 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".

* TEMPORARY DIAPHRAGM SPAN REQUIREMENT	
SPAN	REQUIRED
≤ 80 ft.	1st & 3rd Quarter Points
80 - 120 ft.	All Quarter Points
≥ 120 ft.	Special Design

FRAMING PLAN



TEMPORARY DIAPHRAGM
(NU43)



7" CONNECTION ANGLE
(60 each Req'd.)
(Weight = 9.45 lb. each)
(NU43)

TYPICAL SECTION

CONNECTION ANGLE DETAILS
(or equivalent)

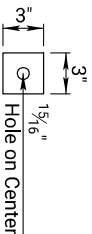
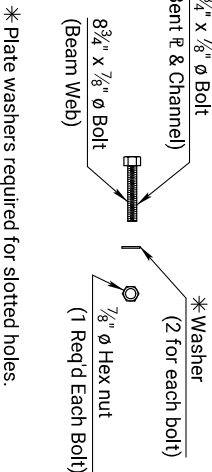
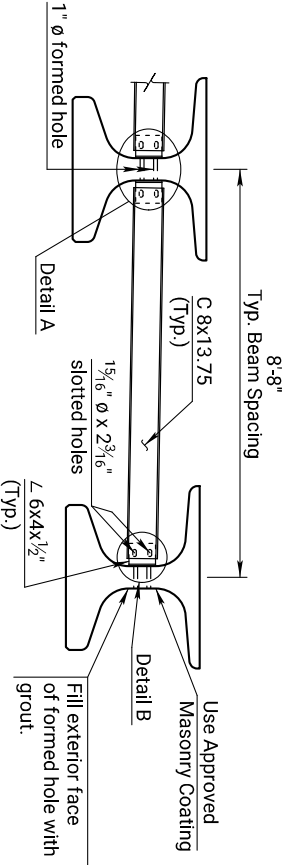


PLATE WASHER



FASTENER DETAILS



ELEVATION OF TEMPORARY DIAPHRAGMS
(NU43)

NO.	DATE	REVISIONS	BY	APP'D
03	01-27-22	Temporary Diaphragm table update	MLL	MAH
02	02-05-19	Galvanizing clarification	MLL	J.P.J.
01	09-11-18	Current Release	MLL	J.P.J.

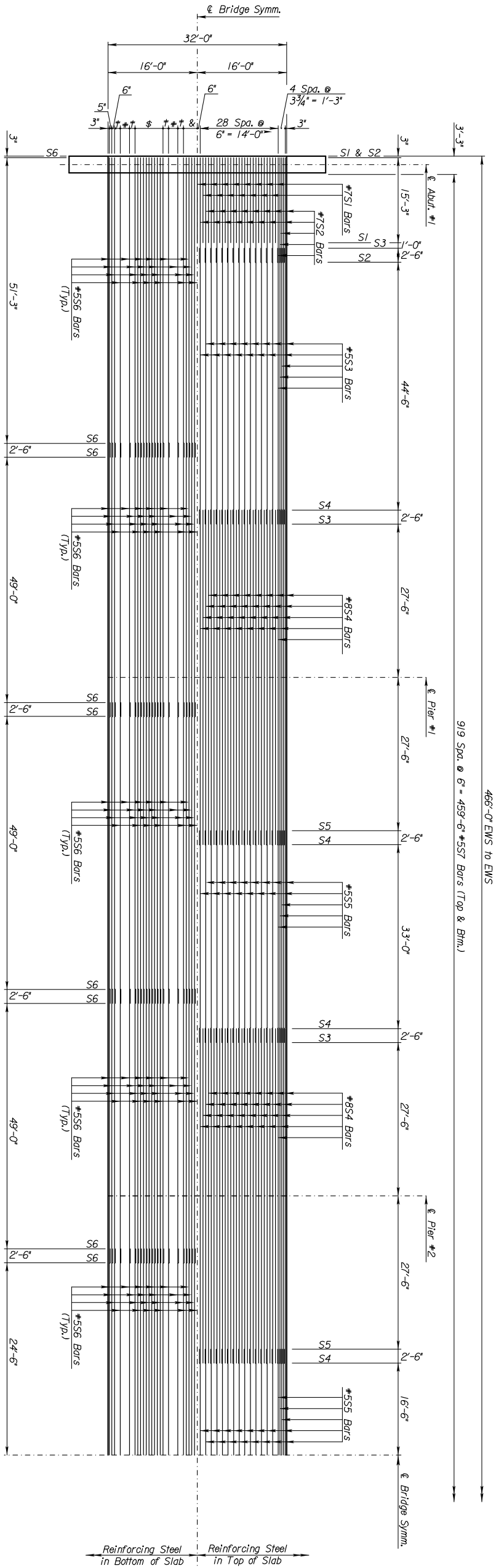
KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY DIAPHRAGM DETAILS
NU GIRDERS

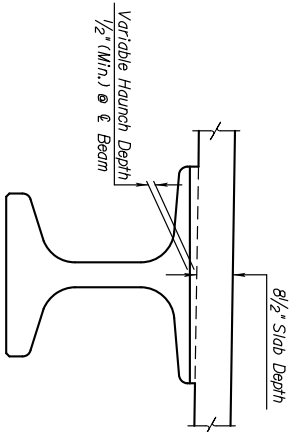
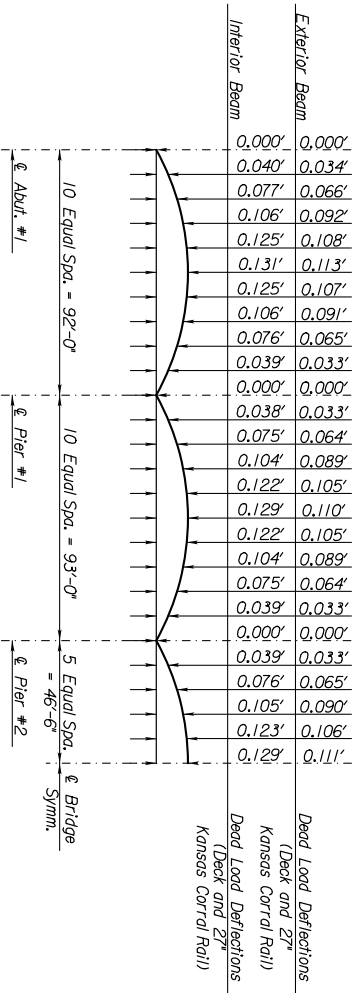
DESIGNED	DETAILED	MLL	QUANTITIES	CADD	MLL
DESIGN CK	DETAIL CK	S.G.B.	QUAN CK	CADD CK	S.G.B.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	31	75

LEGEND
+ = 1'-0"
= 1'-8"
& = 5 @ 6" = 2'-6"
\$ + 10 @ 6" = 5'-0"



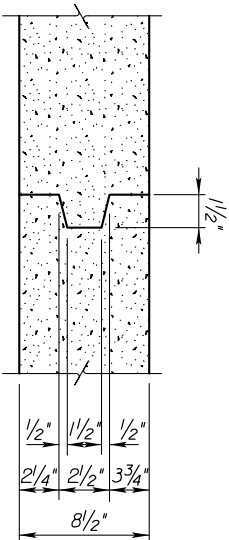
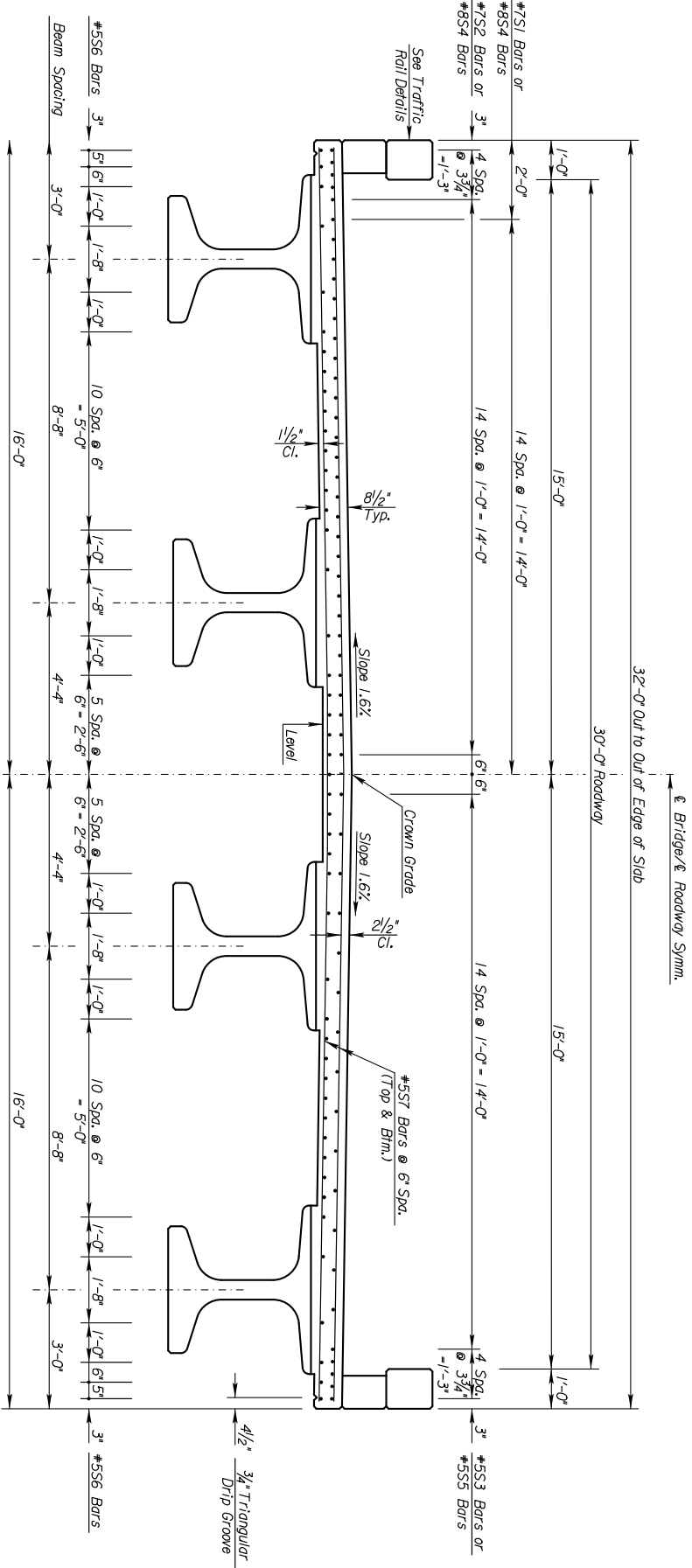
HALF PLAN



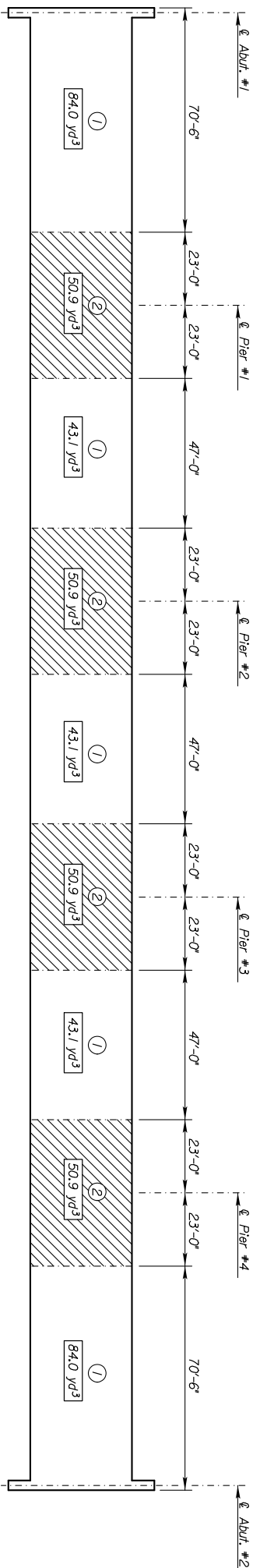
CONCRETE HAUNCH DETAIL

SLAB PLAN
CLOUD COUNTY FAS 5227A

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	32	75



TRANSVERSE CONSTRUCTION JOINT



TYPICAL SECTION
(Perpendicular to & Roadway)

CONCRETE PLACING SEQUENCE DIAGRAM

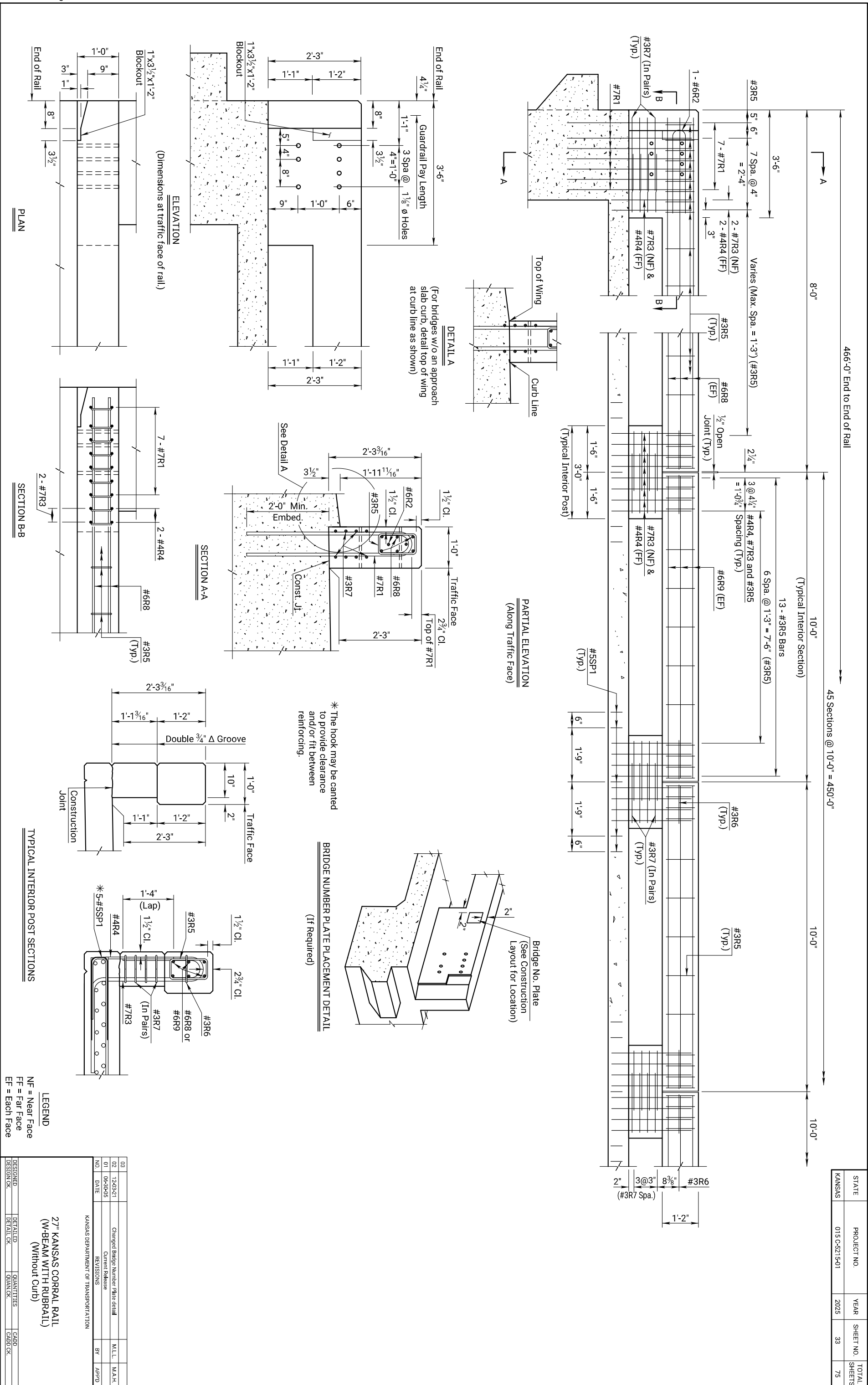
PLACING SEQUENCE: The Contractor will adhere to the placing direction/sequence shown on the plans. Changes will be accepted only if the Contractor's Engineer adjusts the deflection diagram so that the Contractor can adjust the filler depth accordingly. This revised diagram will be approved by the design Engineer prior to deck forming. If profile grinding decreases the clearance to the top mat of reinforcement to less than $\frac{2}{3}d$, a polymer overlay will be placed at no cost to the County.

Place and haul vibrated all concrete for the pier diaphragms and the abutments above the construction joint 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.

TYPICAL SECTION

CLOUD COUNTY FAS 5227A

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015-C-5215-01	2025	33	75



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015-C-5215-01	2025	34	75

COMMISSIONERS

1ST DISTRICT

MICHAEL CLEVELAND

2ND DISTRICT

GARY CASPERS

3RD DISTRICT

RON COPPLE

FAS BRIDGE NO. 5227A

HIGHWAY ADMINISTRATOR

RODNEY MICHAUD

ENGINEERS

KIRKHAM MICHAEL & ASSOCIATES, INC.

CONTRACTOR

XXXXXXXXXXXXXX

HL-93 LOADING

2025

BRIDGE PLATE

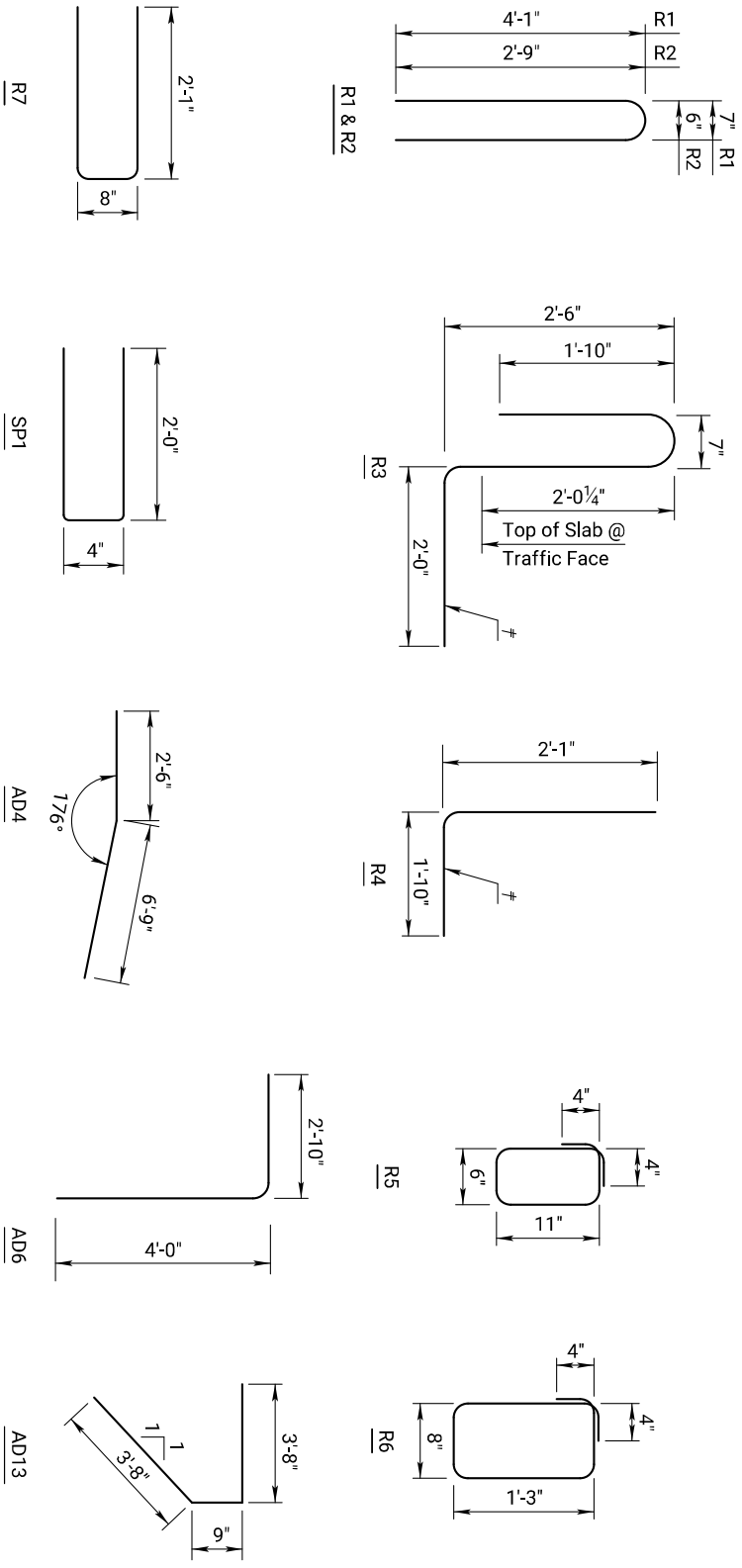
BRIDGE NUMBER PLATE DETAILS

NOTES:
Furnish a rubbing of the Bridge Plate to the Engineer for approval prior to casting.

The Bridge Plate is to be furnished and installed by the Contractor. All materials and labor required to furnish and install the Bridge Plate shall not be paid for directly, but shall be subsidiary to the bid item "Concrete (Grade 4.0)(AE)(SW) (1 Required).

Plate is to be black with bronze lettering and border.

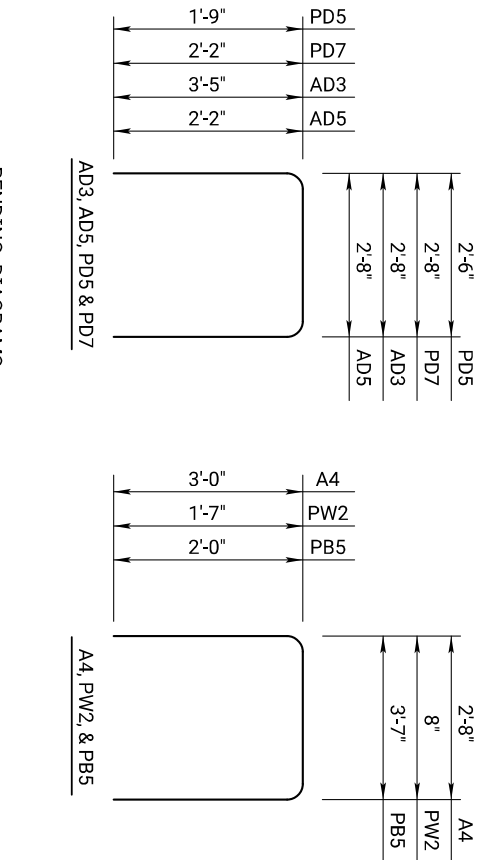
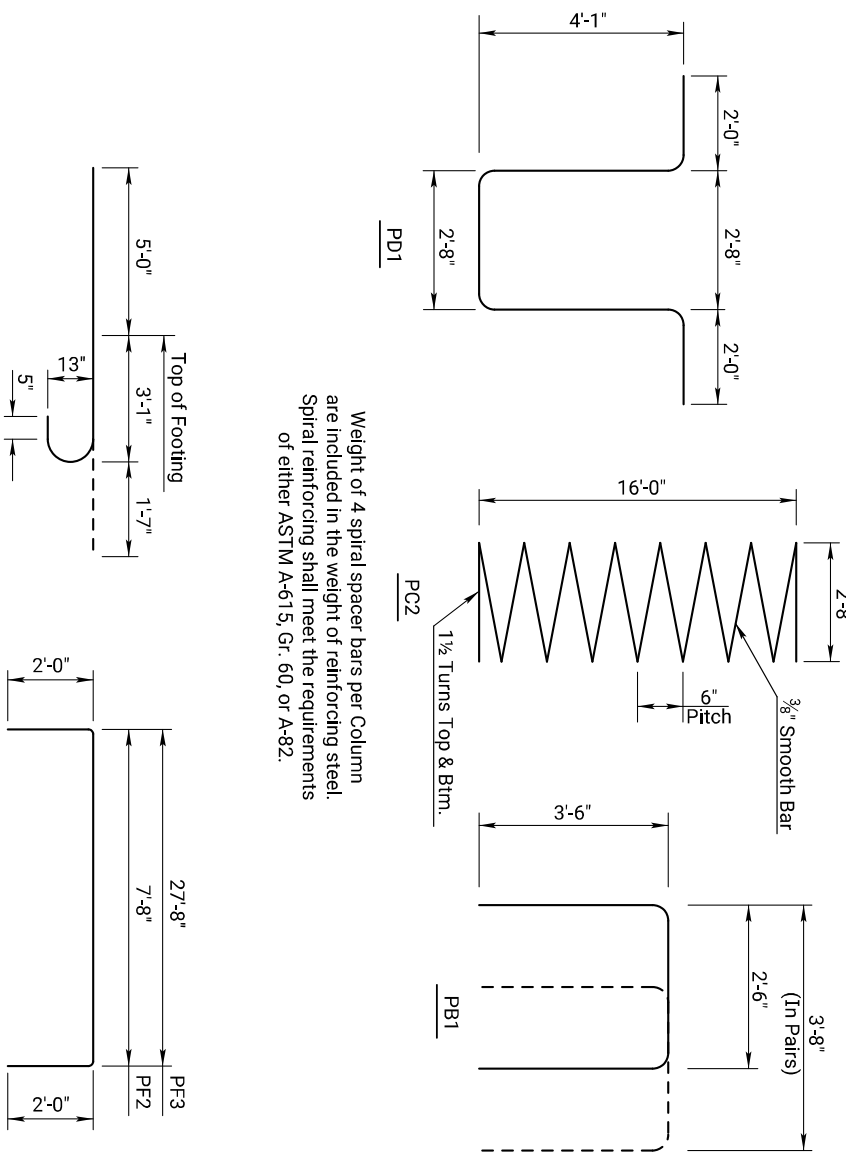
The Contractor shall provide a shop drawing to the County and Engineer prior to ordering the Bridge Plate.



BILL OF REINFORCING STEEL									
Non-Epoxy Coated - Grade 60									
Straight Bars				⊗ Bent Bars					
Mark	Size	Number	Length	Mark	Size	Number	Length		
A1	9	18	45'-8"	PF1	9	144	9'-8"		
PC1	9	144	19'-6"						
				PF2	8	240	11'-8"		
PB2	8	48	30'-8"	PF3	8	64	33'-8"		
A2	6	168	4'-0"	A4	5	168	8'-8"		
PW4	6	12	7'-8"	PB1	5	704	9'-6"		
PW6	6	12	5'-4"	PB5	5	40	7'-7"		
PW8	6	6	8'-1"						
				PW2	4	96	3'-10"		
A3	5	8	45'-8"						
PB3	5	24	30'-8"	PC2	⊗	12	⊗		
PB4	5	160	4'-0"						
PW1	4	96	7'-8"						
PW3	4	96	7'-8"						
PW5	4	96	4'-7"						
PW7	4	48	5'-0"						
Substructure									

[illegible]

Weight of 4 spiral spacer bars per Column are included in the weight of reinforcing steel. Spiral reinforcing shall meet the requirements of either ASTM A-615, Gr. 60, or A-82.



BENDING DIAGRAMS

All dimensions are out to out of bars.

[#] Bend this leg to match the slope of the roadway.

03			
02			
01	06-30-05	Current Release	
NO.	DATE	REVISIONS	BY APPD

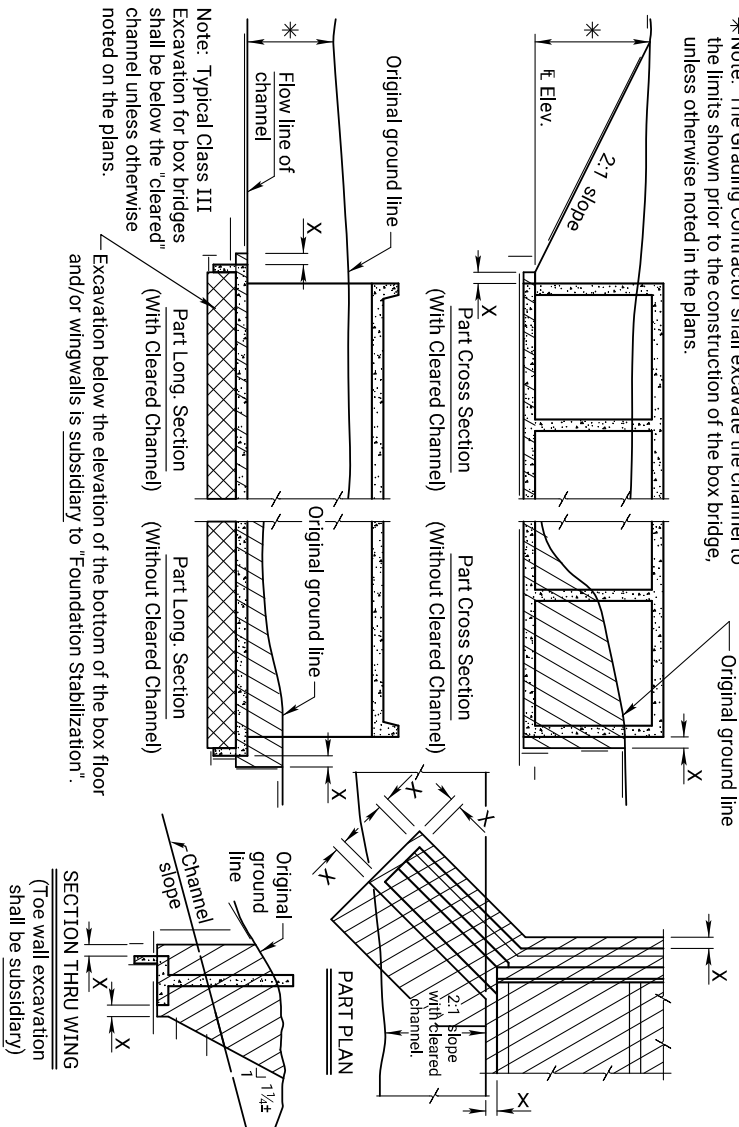
**BILL OF REINFORCING STEEL AND
BENDING DIAGRAM FOR
27" KANSAS CORRAL RAIL
(W-BEAM WITH RUBRAIL)**

DESIGNED	DETAILED	QUANTITIES	CADD
DESIGN CK.	DETAIL CK.	QUAN.CK.	CADD CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	35	75

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	36	75

*Note: The Grading Contractor shall excavate the channel to the limits shown prior to the construction of the box bridge, unless otherwise noted in the plans.

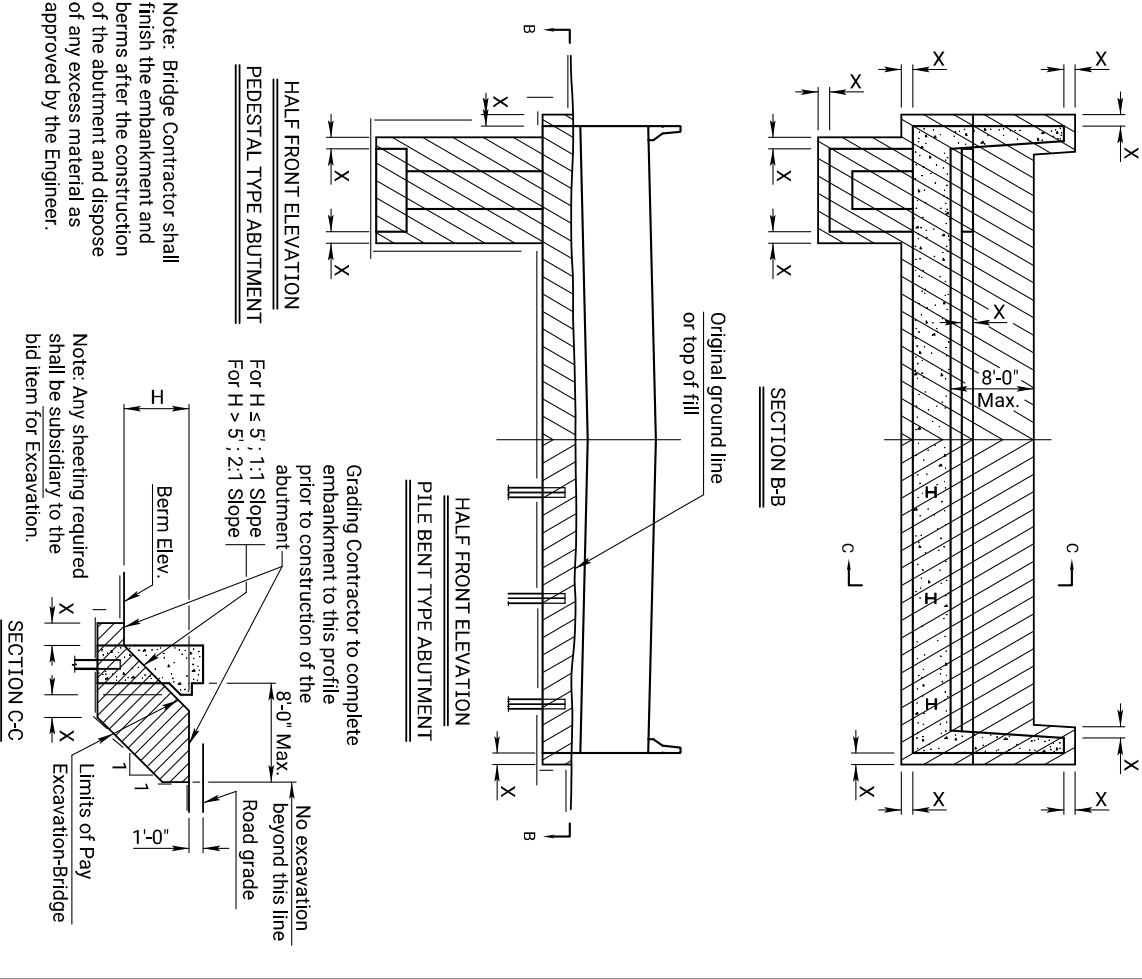
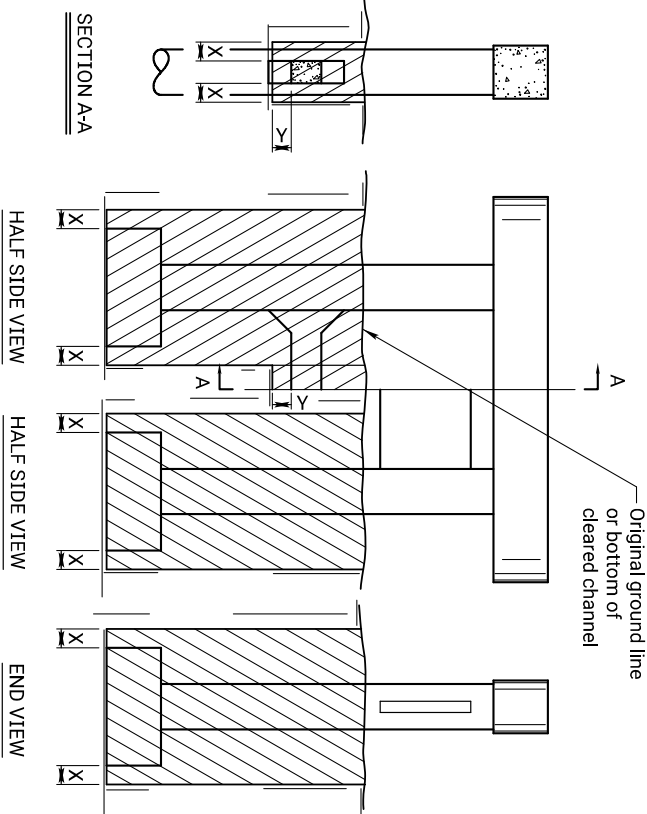


EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.

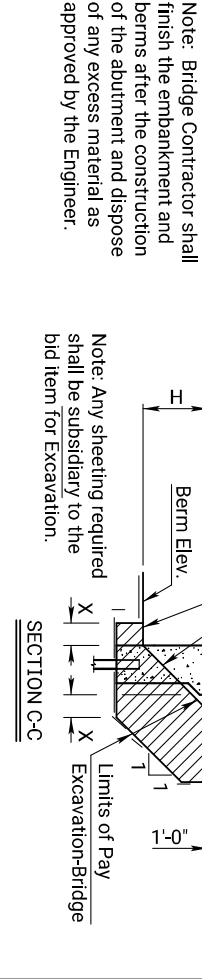
See detail when rock or shale (rock) is encountered. ☼

EXCAVATION DETAILS FOR TYPICAL PIERS



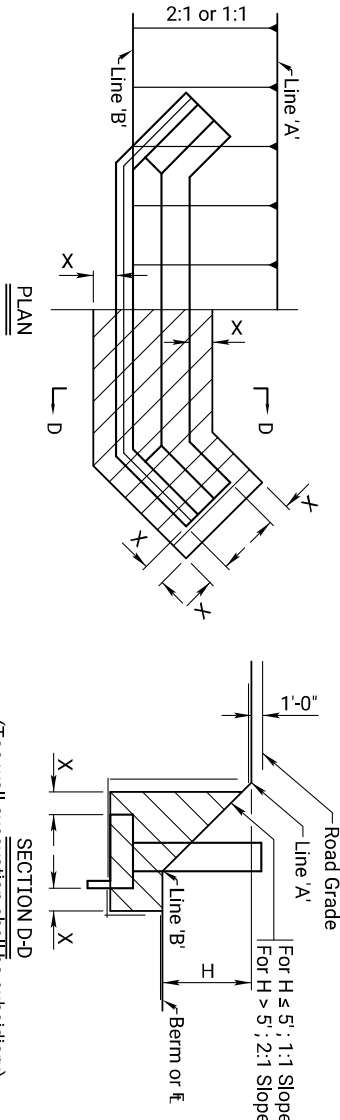
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

See detail when rock or shale (rock) is encountered. ☼

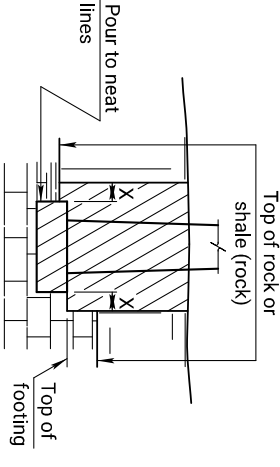


EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS

(Toe wall excavation shall be subsidiary)



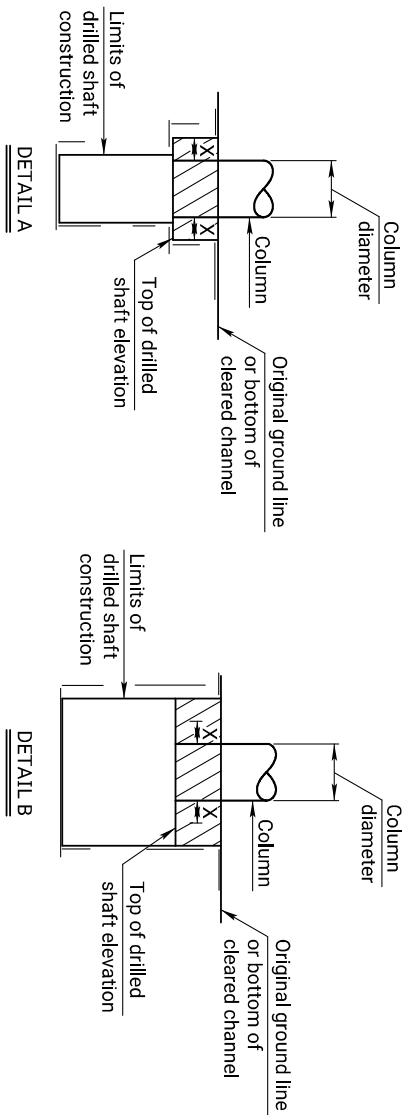
EXCAVATION DETAIL FOR FOOTINGS IN ROCK
OR SHALE (ROCK)
(Piers and Abutments)



Note: Excavation below top of rock, hard shale or below top of footing, whichever is lower, shall be to neat lines of the concrete construction.

DRILLED SHAFT DETAILS

Note: Whenever the limits of the drilled shaft construction are greater than the Column Diameter + 2X, the limits of Class I, II or III Excavation shall be the limits of the drilled shaft construction. (See Detail B)



Note: All bridge excavation shall be computed on the basis of the cross-hatch areas and boundary lines indicated on this sheet and the Excavation Boundary Plane on the Construction Layout.

Sides of trenches in hard or compacted soil including embankments shall be shored, sheeted, braced or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of the shoring, the sides of the trench above the 5 foot level may be sloped to preclude collapse. The slope for average soils shall be 1:1. If the angle of repose of the soil is less, flatter slopes shall be required.

NO.	DATE	REVISIONS	J.P.L.	T.L.F.
06	08-15-12	Embedment Excavation Subsidiary	J.P.L.	T.L.F.
05	05-15-12	Revised Wing Excavation	J.P.L.	T.L.F.
04	03-03-10	Revised Wing Excavation	J.P.L.	T.L.F.
NO.	DATE	REVISIONS	BY	APPD.

BRIDGE EXCAVATION
(LRFD)

BR100B	04-13-10	APPRO.	TEMP. RECK.
DESIGNED	DETAILED	R.R. QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	L.R.R. QUANT CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	37	75

SPECIFICATIONS: Standard Specifications for State Road and Bridge Construction as currently used by the Kansas Department of Transportation.

CONCRETE: Concrete for cast-in-place shall be $f'_c = 3,500$ PSI. Concrete for prestressed shall be $f'_c = 5,000$ PSI.

WELDING: All field welding shall meet the requirements of the Standard Specifications.

Use only Shielded Metal Arch Welding SMAW (stick welding) for pile splices.

Use only low hydrogen E7018, 7016, or 7015 series welding rod (electrode) for all welding applications during pile splicing.

New electrodes are to be purchased for each KDOT project. The electrodes shall arrive on the project in factory hermetically sealed containers, opened and labeled with indelible ink in front of the engineer. The label shall include the current date and the project number. If the container seal is questionable or shows signs of damage the electrode is to be dried in an oven at least one hour at a temperature of 700°F to 800°F.

Upon removal from intact hermetically sealed factory packaging or the drying oven the electrode is to be placed in a storage oven with a minimum temperature of 250°F.

When electrodes are removed from the hermetically sealed container or storage oven and exposed to the atmosphere for less than 4 hours place into the storage oven for at least 4 hours before removing for use.

If electrode is exposed to the atmosphere for 4 hours or more (or 9 hours for moisture resistant electrodes designated with an R in their labeling) then electrode can be dried in a drying oven at a temperature of 450°F to 550°F.

If the electrode is exposed to the atmosphere for 4 hours or more a second time or the rod becomes wet discard rod.

CAST-IN-PLACE SHELLS: Steel shells for cast-in-place concrete piles shall conform to the requirements of the Standard Specifications.

All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

Remove, replace or correct to the satisfaction of the Engineer improperly driven, broken or otherwise defective pipe piles. Otherwise drive an additional pile at no extra cost.

The Contractor shall maintain a light suitable for visual inspection of the pile on the job at all times prior to and during the filling of the pipe.

PAINT: All paint shall comply with the Standard Specifications, or as specified on the plans.

MILL TEST REPORTS: Steel piles test reports and steel shell test reports shall comply with the Standard Specifications.

NO.	DATE	REVISIONS	J.P.L.	T.L.F.	APPD.
04	05-16-18	Add splice web section, clarify note	J.P.L.		
03	05-15-15	Clarify Notes	J.P.L.		
02	05-15-12	Clarify f _c rod type, use and weld	J.P.L.		
01			J.P.L.		

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

BR110	DESIGNED	J.P.L.	DETAIL CK	TRACED	B.A.A.
	DESIGN CK			TRACE CK	

GENERAL NOTES

PRESTRESSED PILES: Fabricate prestressed concrete pile splices in accordance with the Manufacturer's recommendations subject to the approval of the Engineer.

Method of attachment of pile to build-up may be by any of the methods given in the notes on "Alternate Methods." If mild reinforcing steel is used for attachment, the area shall be no less than that used in the build-up.

ALTERNATE METHODS: Method of attachment of a pile to build-up may be by any of the following methods:

1. Cut off at least 2'-0" of pile and expose a minimum of 2'-0" of strands.
2. Cast 8-#6, or 8-#5 bars (equally spaced) into pile head. All bars shall extend into pile head and project from pile head a minimum of 2'-0".
3. Drill 8 holes in pile head (equally spaced) for installation of 8 grouted dowel bars of same size and length as in 2.
4. Provide cored holes for bars as in 3.

No bars or strands are to extend from head of pile or build-up into footing or pile cap unless approved by the Engineer.

TEST PILES: Drive test piles where called for on the bridge plans. The test piles located within the limits of the substructure will become a part of the bridge pile system.

DRIVING FORMULA: Driving formula shall conform to the Standard Specifications.

MEASUREMENT AND PAYMENT: Measurement and payment for all piles shall comply with the Standard Specifications.

REINFORCEMENT: Use reinforcing steel conforming to ASTM A615, Grade 60. Hoops and spirals may be either plain or deformed bars.

PRESTRESSING STEEL: Use uncoated seven-wire low relaxation prestressing strand conforming to ASTM A416, Gr. 270.

STEEL PILE: Steel pile shall conform to the requirements of the Standard Specifications.

PILE POINTS: Pile points shall conform to the dimensions shown and to requirements of the Standard Specifications.

FOR INFORMATION ONLY EQUIVALENT POINT BEARING PILES		
STEEL PILES	CONCRETE PILES	Pre-stress
HP10x42	10¾	
HP12x53	12¾	
HP14x73	14	12
HP14x102		14
HP14x117		16

SPLICES: Splices for steel piles and shell piling shall be in accordance with details shown on this sheet and the Standard Specifications.

For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

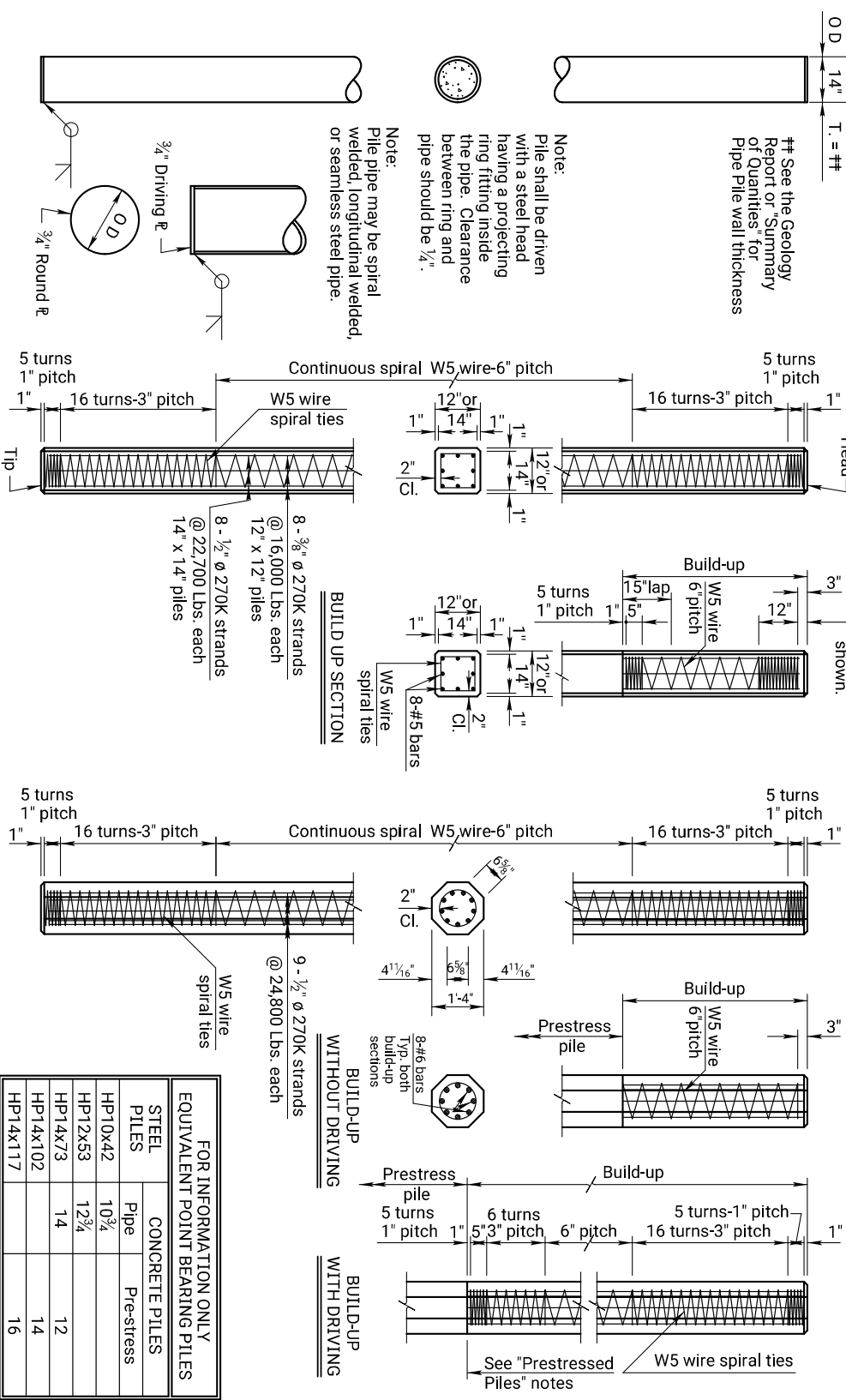
With the approval of the Engineer, one splice per bent may be allowed in the region described above without testing. If additional splices are anticipated, based on the geology, the Contractor prior to driving, will locate the splice so that the splice will not fall within the regions described above.

† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Contractor will test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested will have written confirmation of results. Report these results to the Engineer. This work is not paid for directly, but is subsidiary to "Piles."

* Minimum as required by welding process.

BG = Backgouge

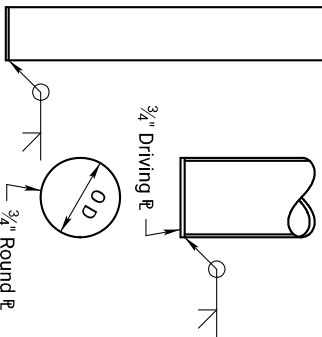
Note: If additional driving is required, use 1" pitch as shown.



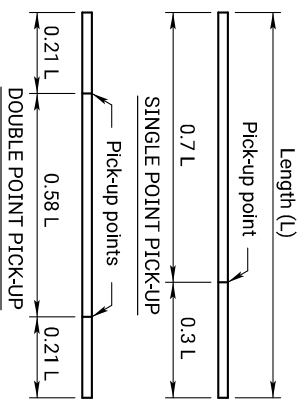
See the Geology Report or Summary of Quantities for Pipe Pile wall thickness



Note:
Pile pipe may be spiral welded, longitudinal welded, or seamless steel pipe.



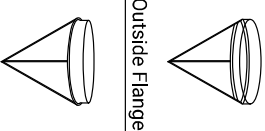
PLAIN ROUND CAST-IN-PLACE CONCRETE PILES



PICK-UP POINTS FOR PRESTRESSED PILING

Max. length - 55' single point pick-up
Max. length - 80' double point pick-up
Note: Piles shall be marked at Pick-up points to indicate proper points for attaching handling lines.

PRESTRESSED CONCRETE PILES



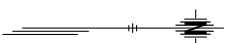
SHELL PILE POINT



CAST STEEL PILE POINT

The pile point shall be a one-piece unit of cast steel. Weld pile points in accordance with manufacturer's recommendations to each steel pile before driving.

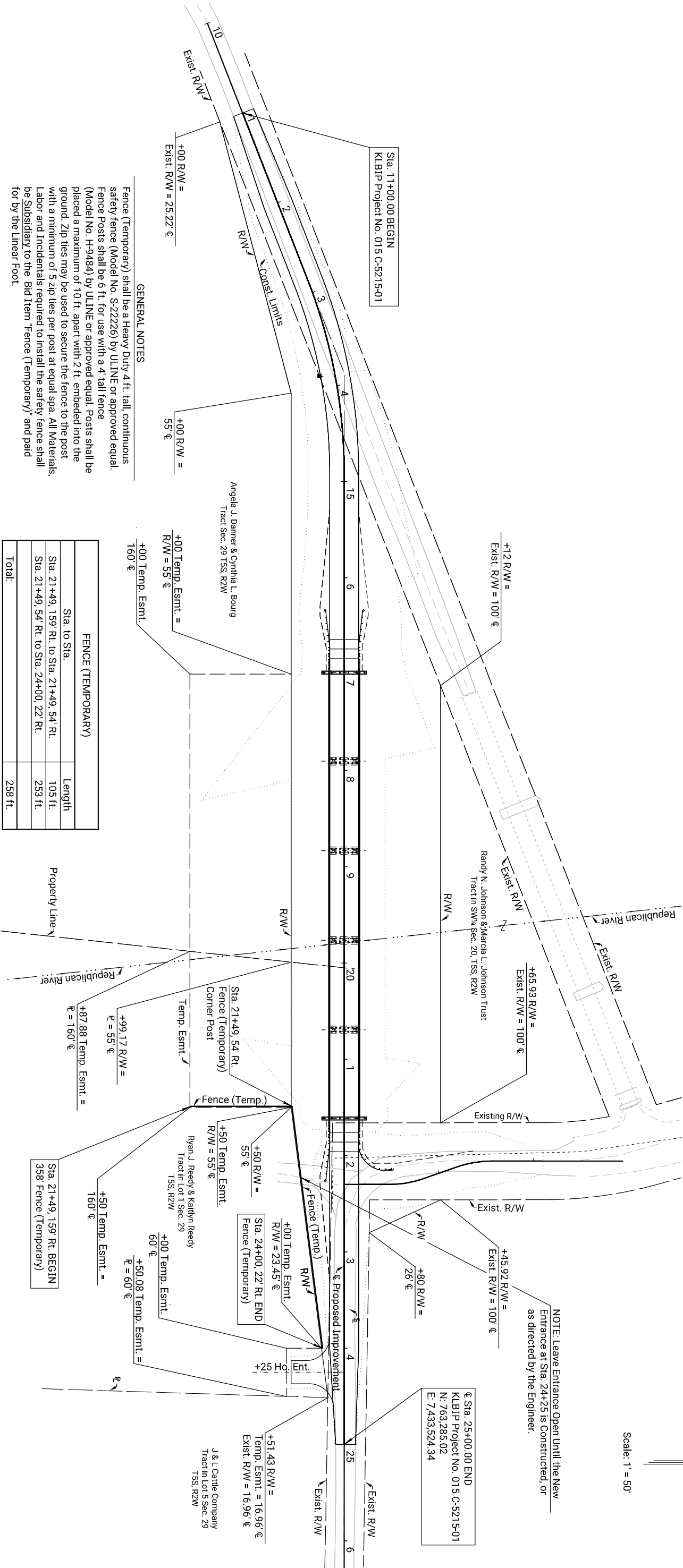
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	39	75



Scale: 1" = 50'

NOTE: Leave Entrance Open Until the New Entrance at Sta. 24+25 is Constructed, or as directed by the Engineer.

Sta. 25+00.00 END
KLBIP Project No. 015 C-5215-01
N: 763,285.02
E: 7,433,524.34



GENERAL NOTES

Fence (Temporary) shall be a Heavy Duty 4 ft. tall, continuous safety fence (Model No. S-22226) by ULINE or approved equal. Fence Posts shall be 6 ft. for use with a 4 tall fence (Model No. H-9484) by ULINE or approved equal. Posts shall be placed a maximum of 10 ft. apart with 2 ft. embedded into the ground. Zip ties may be used to secure the fence to the post with a minimum of 5 zip ties per post at equal spa. All Materials, Labor and Incidentals required to install the safety fence shall be Subsidiary to the Bid Item "Fence (Temporary)" and paid for by the Linear Foot.

FENCE (TEMPORARY)	
Sta. to Sta.	Length
Sta. 21+49, 159' Rt. to Sta. 21+49, 54' Rt.	105 ft.
Sta. 21+49, 54' Rt. to Sta. 24+00, 22' Rt.	253 ft.
Total:	258 ft.

FENCE (TEMPORARY)

DESIGNED	DETAILED	QUANTITIES	CADD
DESIGN CK	DETAIL CK	QUAN CK	CADD CK

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	40	75

GENERAL NOTES

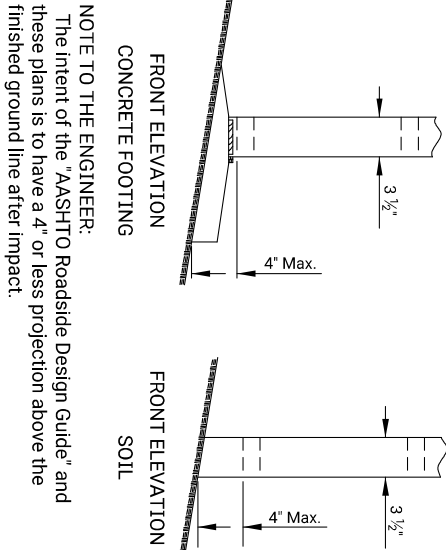
The post sleeve shall be formed from 10 gauge sheet steel to meet the requirements of ASTM A653 and zinc coated to meet the requirements of coating designation A123. If galvanized sheet steel is used, no other galvanization is required. It is permissible to close the bottom of the sleeve with a metal plate. Basis of acceptance shall be visual inspection of the finished sleeve and determination of zinc thickness by magnetic gage.

All sign mounting holes in the wood posts shall be drilled prior to treating.

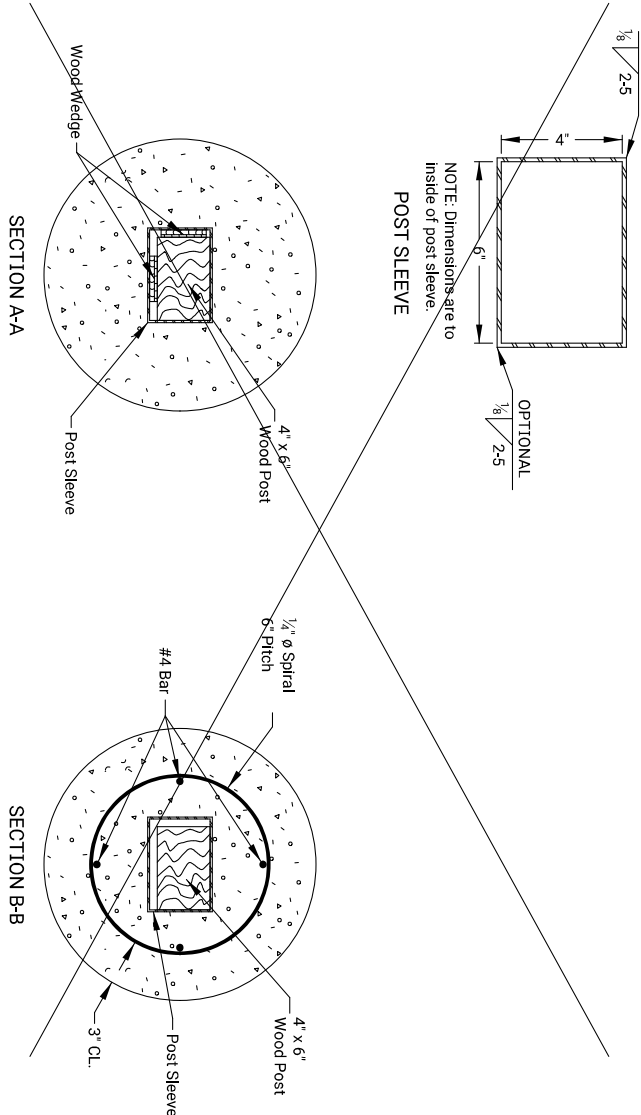
Breakaway holes, field drilled sign mounting holes, and field cuts shall be treated in accordance with the preservative treatment specifications.

Prior to sealing the opening between the wood post and the top of the concrete footing, secure the post by placing 3" wide by 2" long wood wedges into the opening on two adjacent sides of the post. The wedges are be flush with up to a maximum of 3/8" sticking up above the top of the footing.

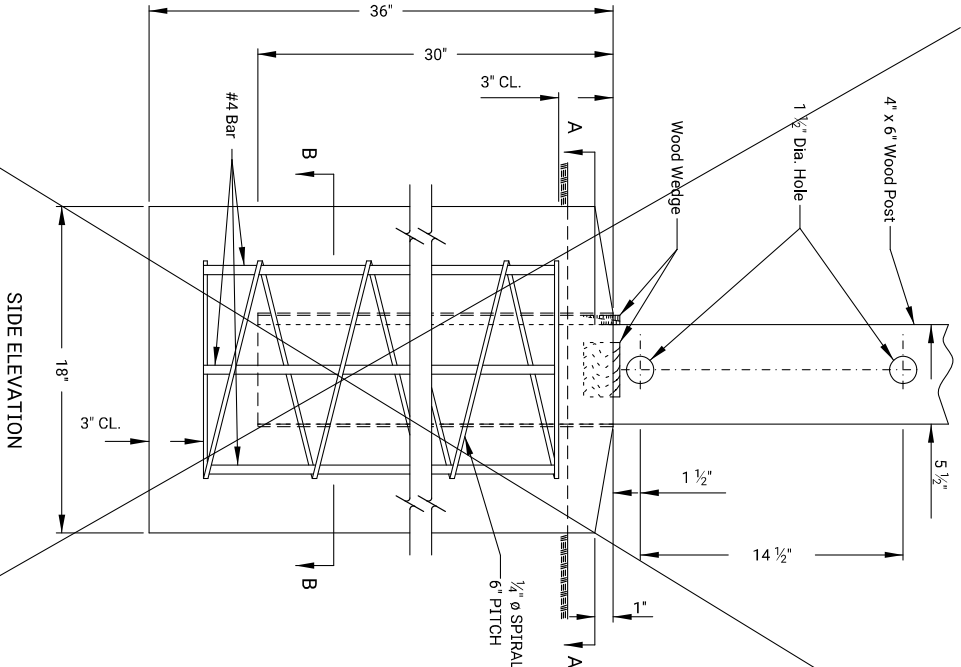
Commercial grade concrete may be substituted for sign support footings.



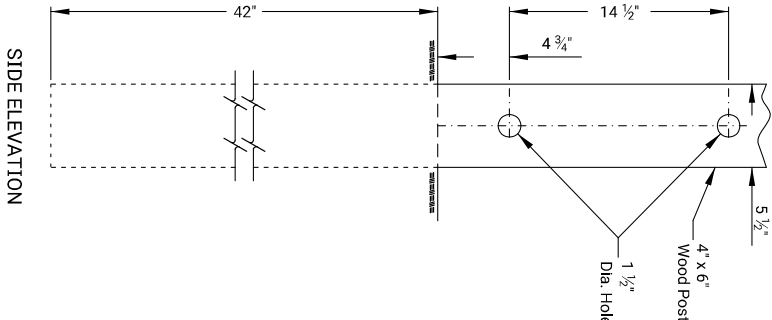
BREAKAWAY CLEARANCE



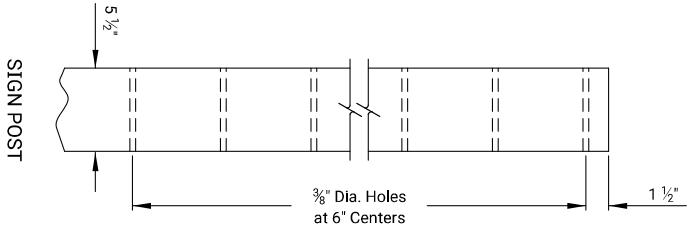
NOTE: Use Only Wood Post In Soil.



WOOD POST IN CONCRETE FOOTING



WOOD POST IN SOIL



SIGN MOUNTING HOLES

All dimensions in inches unless otherwise noted.

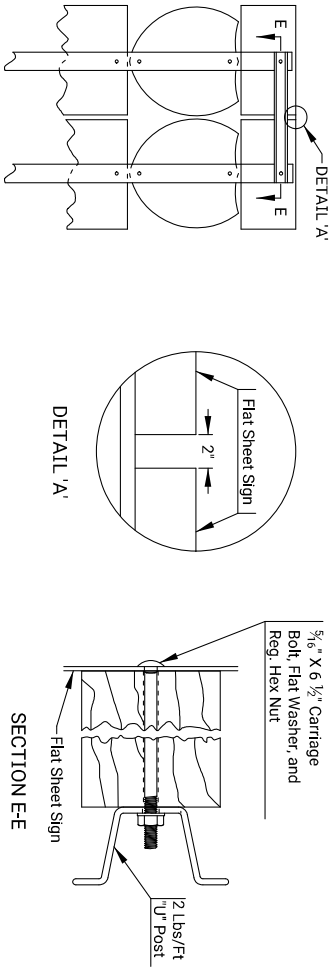
NO.	DATE	Change detail and note	REVISIONS	D.D.G.	E.W.N.
01	10-01-19				

KANSAS DEPARTMENT OF TRANSPORTATION

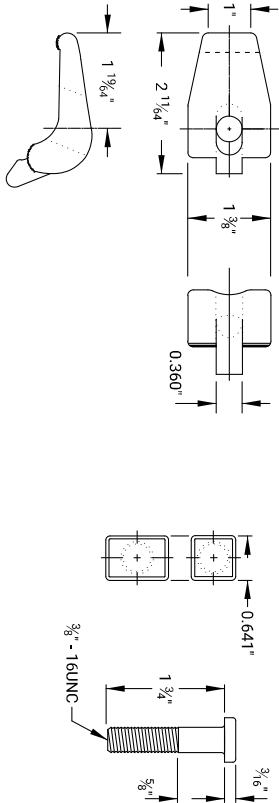
DETAILS FOR WOOD POSTS

TE460-				07-01-03			
FHWA APPROVAL		10-01-19		APPRO.		Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED		
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.	TRACE CK.		

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	41	75



ROUTE MARKER ASSEMBLIES ATTACHMENT



ALUMINUM POST CLIP AND POST CLIP BOLT

NOTES:

The top of the post shall not extend above the top of the sign.

When signs are mounted back to back, the signs shall be mounted at their prescribed height. In general installations, the bottom holes of the signs should be aligned. In order to prevent having to drill holes in the signs or posts, the sign on the back should be raised and positioned such that the holes are aligned. When a sign is mounted on the back of the R1-1 (Stop) sign, that sign is to be centered vertically on the R1-1 sign. When a sign is mounted on the back of the R1-2 (Yield) sign, the top holes of the signs should be aligned.

The primary sign and supplemental sign are to be mounted at their prescribed height, but under no circumstances shall the signs overlap each other. If the primary sign cannot be mounted without overlapping, then it shall be raised above the supplemental sign.

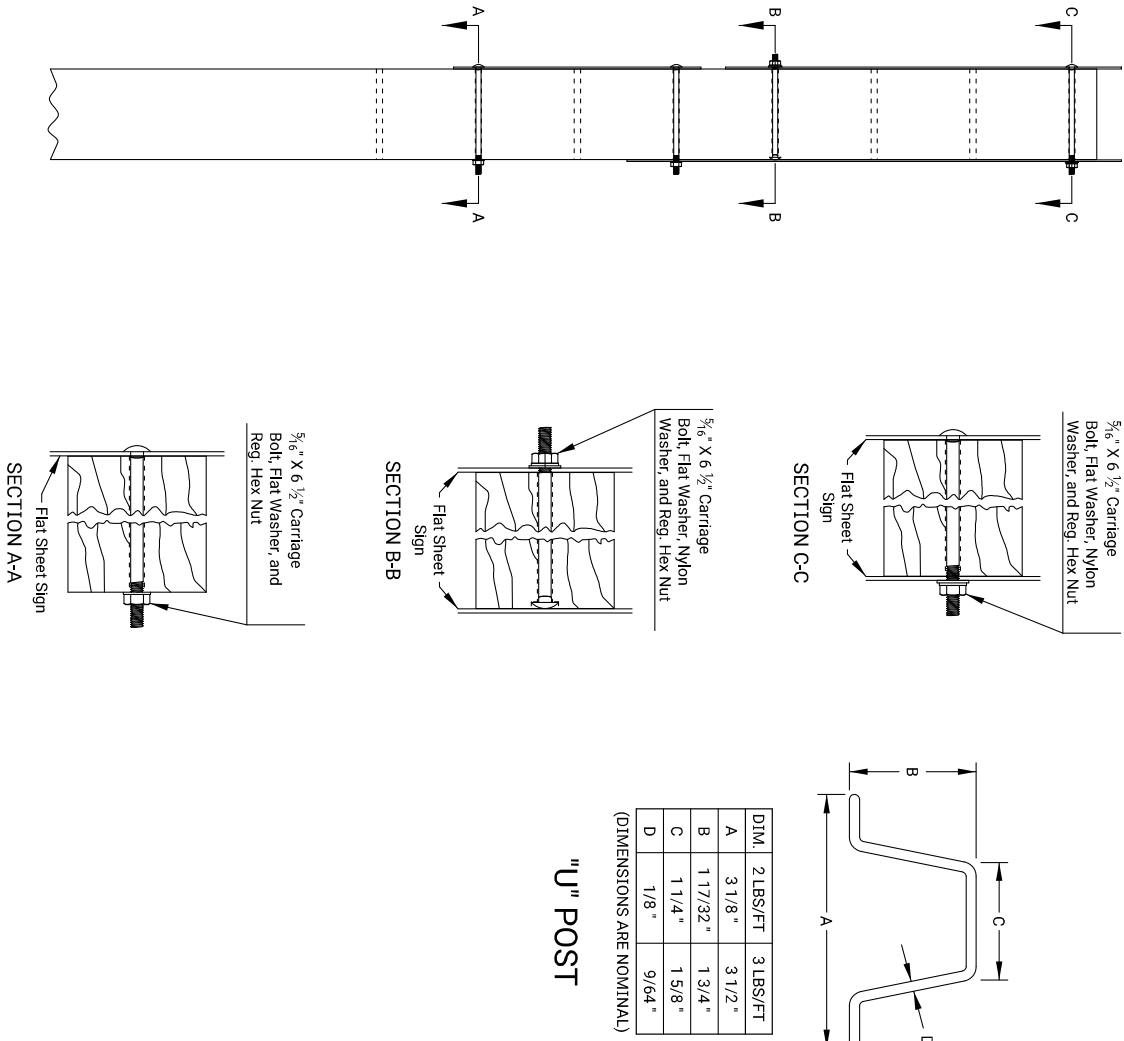
Any additional mounting holes, either through the sign or post, shall be drilled by the contractor. All holes drilled in the post shall be treated with a preservative. All holes drilled in the sign shall be free of any defects and the sheeting around the hole shall not be damaged.

A nylon washer shall be placed against the sheeting when a nut is to be tightened against the sign face.

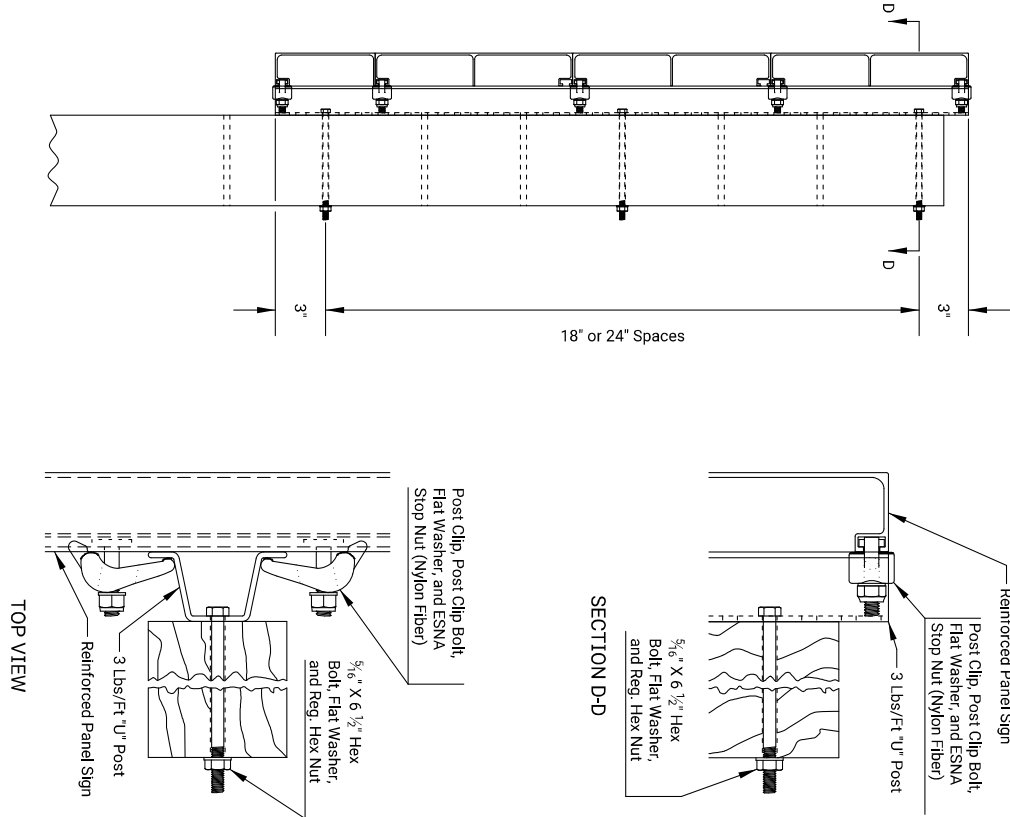
The 3 lb/ft steel "U" post used for reinforced panel sign installations is to be included in the bid item SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN).

When the 2 lb/ft steel "U" post is used for the route marker assemblies attachment, it shall be subsidiary to the bid item SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN).

The aluminum post clip bolt may have a rectangular head if the smaller dimension is equal to the square head dimension.



TYPICAL MOUNTING OF FLAT SHEET SIGNS



TYPICAL MOUNTING OF REINFORCED PANEL SIGNS

All dimensions are in inches

NO.	DATE	REVISIONS	D.D.G.	E.W.N.
01	10-01-19	Revised drawings and notes		

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR MOUNTING SIGNS ON WOOD POST

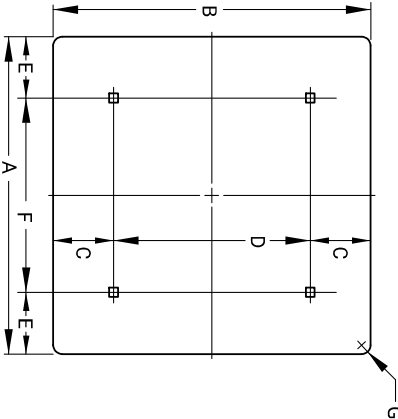
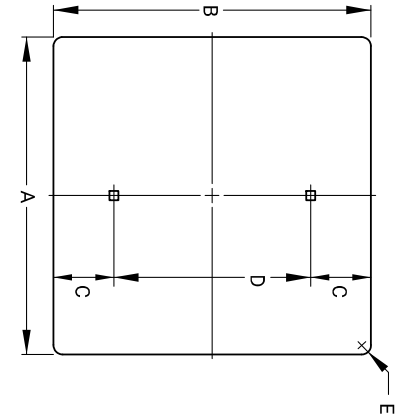
FLAT SHEET AND REINFORCED PANEL

TE481

07-01-03

DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED
DESIGNED	S.A.B.	DETAIL	C.K.	D.D.G.	QUAN
DESIGNED	C.K.	DETAIL	C.K.	D.D.G.	QUAN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	42	75



SIGN SIZE	A	B	C	D	E	T	AREA
3 X 8	3	8	1	6	$\frac{3}{8}$	0.040	0.17
6 X 12	6	12	3	6	$\frac{3}{8}$	0.063	0.50
12 X 6	12	6	$1\frac{1}{2}$	3	$\frac{3}{4}$	0.063	0.50
12 X 9	12	9	$1\frac{1}{2}$	6	$1\frac{1}{2}$	0.063	0.75
12 X 18	12	18	3	12	$1\frac{1}{2}$	0.063	1.50
12 X 24	12	24	3	18	$1\frac{1}{2}$	0.080	2.00
12 X 36	12	36	6	24	$1\frac{1}{2}$	0.080	3.00
12 X 48	12	48	6	36	$1\frac{1}{2}$	0.080	4.00
18 X 6	18	6	$1\frac{1}{2}$	3	$1\frac{1}{2}$	0.063	0.75
18 X 18	18	18	3	12	$1\frac{1}{2}$	0.063	2.25
18 X 30	18	24	3	24	$1\frac{1}{2}$	0.080	3.75
18 X 36	18	24	6	24	$1\frac{1}{2}$	0.080	4.50
18 X 42	18	24	6	30	$1\frac{1}{2}$	0.080	5.25
18 X 48	18	24	6	36	$1\frac{1}{2}$	0.080	6.00
21 X 15	21	15	$1\frac{1}{2}$	12	$1\frac{1}{2}$	0.080	2.19
24 X 6	24	6	$1\frac{1}{2}$	3	$1\frac{1}{2}$	0.080	1.00
24 X 12	24	12	3	6	$1\frac{1}{2}$	0.080	2.00
24 X 18	24	18	3	12	$1\frac{1}{2}$	0.080	3.00
24 X 24	24	24	3	18	$1\frac{1}{2}$	0.080	4.00
24 X 30	24	30	3	24	$1\frac{1}{2}$	0.080	5.00
24 X 36	24	36	6	24	$1\frac{1}{2}$	0.080	6.00
30 X 12	30	12	3	6	$1\frac{7}{8}$	0.080	2.50
30 X 15	30	15	$1\frac{1}{2}$	12	$1\frac{7}{8}$	0.080	3.13
30 X 18	30	18	3	12	$1\frac{7}{8}$	0.080	3.75
30 X 21	30	21	$1\frac{1}{2}$	18	$1\frac{1}{2}$	0.080	4.38
30 X 24	30	24	3	18	$1\frac{7}{8}$	0.080	5.00
30 X 30	30	30	3	24	$1\frac{7}{8}$	0.080	6.25
30 X 36	30	36	6	24	$1\frac{7}{8}$	0.080	7.50
36 X 12	36	12	3	6	$1\frac{1}{2}$	0.080	3.00
36 X 18	36	18	3	12	$1\frac{1}{2}$	0.080	4.50
36 X 24	36	24	3	18	$1\frac{1}{2}$	0.080	6.00
36 X 30	36	30	3	24	$2\frac{1}{4}$	0.080	7.50
36 X 36	36	36	6	24	$2\frac{1}{4}$	0.080	9.00
45 X 36	45	36	3	30	$2\frac{1}{4}$	0.100	11.25

SIGN SIZE	A	B	C	D	E	F	G	T	AREA
36 X 12	36	12	3	6	3	30	$1\frac{1}{2}$	0.080	3.00
36 X 30	36	30	3	24	3	30	$2\frac{1}{4}$	0.080	7.50
36 X 48	36	48	9	30	6	24	0	0.100	12.00
36 X 60	36	60	12	36	6	24	0	0.100	15.00
36 X 72	36	72	6	60	6	24	0	0.100	18.00
42 X 12	48	12	3	6	6	30	$1\frac{1}{2}$	0.080	3.50
42 X 18	48	18	3	12	6	30	$1\frac{1}{2}$	0.080	5.25
42 X 24	48	24	6	12	6	30	$1\frac{7}{8}$	0.080	7.00
42 X 36	48	36	6	24	6	30	0	0.100	10.50
48 X 12	48	12	3	6	9	30	$1\frac{1}{2}$	0.080	4.00
48 X 18	48	18	3	12	9	30	$1\frac{1}{2}$	0.080	6.00
48 X 24	48	24	6	12	9	30	$1\frac{7}{8}$	0.080	8.00
48 X 30	48	30	6	18	9	30	0	0.100	10.00
48 X 36	48	36	6	24	9	30	0	0.100	12.00
48 X 42	48	42	6	30	9	30	0	0.100	14.00
48 X 48	48	48	9	30	9	30	0	0.100	16.00
48 X 60	48	60	12	36	9	30	0	0.100	20.00
48 X 72	48	72	6	60	9	30	0	0.100	24.00
48 X 96	48	96	12	72	9	30	0	0.100	32.00
60 X 12	60	12	3	6	12	36	0	0.100	5.00

SIGN SIZE	A	B	C	D	E	F	G	T	AREA
60 X 18	60	18	3	12	12	36	0	0.100	7.50
60 X 24	60	24	6	12	12	36	0	0.100	10.00
60 X 30	60	30	6	18	12	36	0	0.100	12.50
60 X 36	60	36	6	24	12	36	0	0.100	15.00
60 X 42	60	42	6	30	12	36	0	0.100	17.50
60 X 48	60	48	9	30	12	36	0	0.100	20.00
72 X 12	72	12	3	6	15	42	0	0.100	6.00
72 X 18	72	18	3	12	15	42	0	0.100	9.00
72 X 24	72	24	6	12	15	42	0	0.100	12.00
72 X 30	72	30	6	18	15	36	0	0.100	15.00
72 X 36	72	36	6	24	15	42	0	0.100	18.00
72 X 42	72	42	6	30	15	42	0	0.100	21.00
72 X 48	72	48	9	30	15	42	0	0.100	24.00
84 X 12	84	18	3	6	18	48	0	0.100	7.00
84 X 18	84	18	3	12	18	48	0	0.100	10.50
84 X 24	84	24	6	12	18	48	0	0.100	14.00
84 X 30	84	30	6	18	18	48	0	0.100	17.50
84 X 36	84	36	6	24	18	48	0	0.100	21.00
84 X 42	84	42	6	30	18	48	0	0.100	24.50
84 X 48	84	48	9	30	18	48	0	0.100	28.00

NOTE:
All holes are $\frac{3}{8}$ " square, unless otherwise noted.

The dimension "T" is the thickness of the aluminum blank.

All dimensions are in inches.

- 1 Holes shall be $\frac{5}{16}$ " diameter.
- 2 Dimension "D" requires a center hole.
- 3 Additional hole 12" below top hole.

KANSAS DEPARTMENT OF TRANSPORTATION				SIGN & BUCKLEY	
01	10-01-19	Updated sign blank details and dimensions	D.D.G.	E.W.N.	DESIGNED
NO.	DATE	REVISIONS	BY	APPD.	TRACED
TE506				07-01-03	
DESIGNED: D.D.G. DETAIL: E.W.N.				DESIGNED: D.D.G. DETAIL: E.W.N.	
DESIGNED: S.A.B. DETAIL: C.K.				DESIGNED: S.A.B. DETAIL: C.K.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	43	75

DETAILED SPECIFICATIONS FOR FLAT SHEET SIGNS AND OVERLAY PANELS

All new flat sheet sign blanks shall be of the fabrication and thickness shown on the flat sheet blank detail sheets, unless other details are shown in the plans.

Flat sheet blanks shall be used for signs that are less than or equal to 7'-0" in length and/or less than or equal to 4'-0" in height, unless other details are shown in the plans. Flat sheet blanks shall also be used for signs that are 4'-0" in length and less than or equal to 8'-0" in height, unless other details are shown in the plans.

The design details for signs (color, letter height, and letter series) shall be as shown in the FHWA Standard Highway Signs and Markings book (2004 edition and supplements), unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The school warning signs, the "SCHOOL" portion of the S5-1 sign, S4-3p plaque, and any supplemental plaques used with these warning signs shall have a fluorescent yellow-green background, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

DETAILED SPECIFICATIONS FOR REINFORCED PANEL SIGNS

All new reinforced sign panels shall be of the fabrication and thickness shown on the reinforced panel detail sheets. If extrusheet fabricated sign panels are used, they shall be of the length, width, and in the position shown. If extrusheet fabricated panel dimensions are not shown, a line of legend should be placed entirely on one panel. If extruded fabricated sign panels are used, either 1'-0" or 6" panels shall be used. The 6" panels shall be used only at the top or bottom of signs.

Reinforced panels shall be used for signs that are greater than 7'-0" in length or greater than 4'-0" in height, unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

Letters and numbers on reinforced panel signs are modified Series "E" unless otherwise shown.

Spacing table dimensions are in inches.

KANSAS DEPARTMENT OF TRANSPORTATION				
NO.	DATE	REVISIONS	D.D.G.	E.W.N.
02	10-01-19	Changed notes		
01	07-23-10	Changed Notes and Sheeting Type	D.D.G.	D.B.

DETAILS SPECIFICATIONS
FOR REINFORCED SIGN PANELS
AND FLAT SHEET SIGNS

DESIGNED	SA.B.	DETAIL CK.	D.D.G.	QUAN CK.	TRACE CK.
TE590					
FINAL APPROVAL	10-01-19	APPRO.			
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES	STATION A. Buckler
DESIGN CK.	SA.B.	DETAIL CK.	D.D.G.	QUAN CK.	TRACE CK.

07-01-03

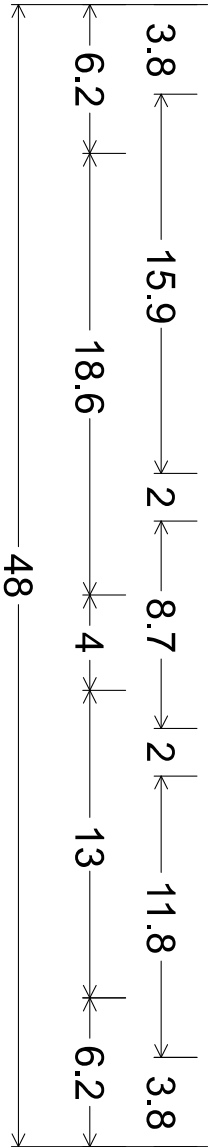
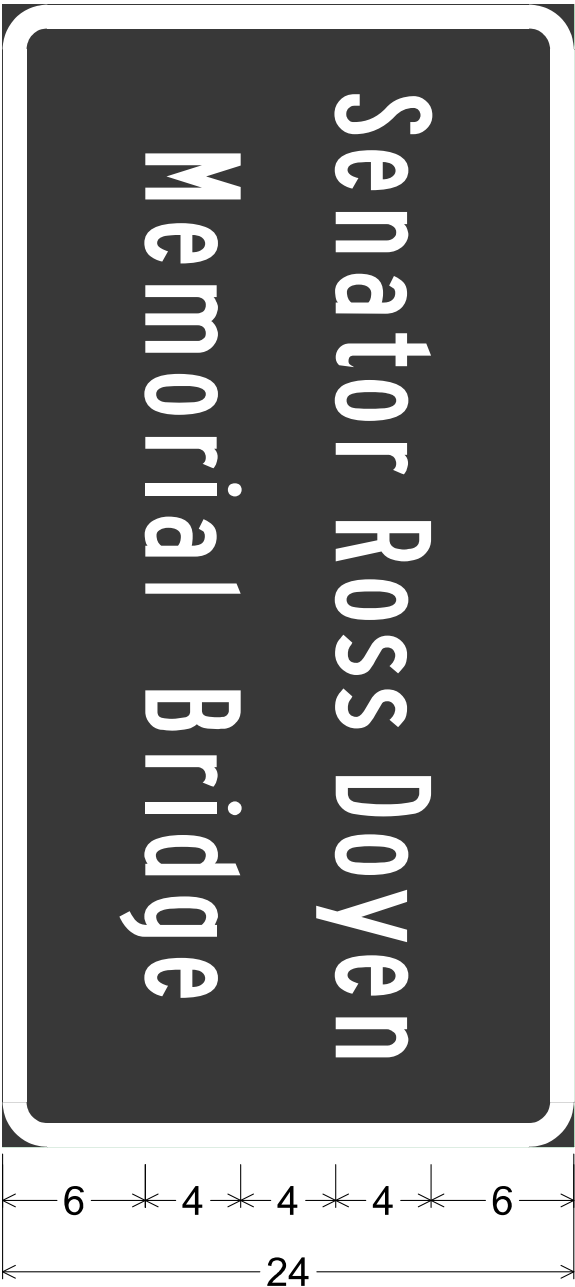
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	44	75

GENERAL NOTES

- The "Edge of Travel Way" is the edge line or the edge of driving lane.
- The outer edge of the mainline sign shall be a minimum of 10' from the right of way line. The outer edge of the ramp sign shall not extend beyond the right of way line.
- A minimum lateral clearance of 6' from pavement edge where lateral offsets are limited may be used.
- When signs are behind guardrail, the near edge fo the sign shall not extend beyond the back side of the guardrail and the nearest sign post shall be a minimum of 5' from the face of the guardrail. Shoulder mounted signs shall not be located between 100' in advance of and 50' beyond the nose of the guardrail.
- Signs may be moved laterally or longitudinally if it will improve visibility of the sign or other signs or if it will protect the sign more.

All sign material, sheeting, fabrication, fasteners, wood posts, and installation must meet the requirements of the latest edition of the KDOT specifications for road & bridges construction.

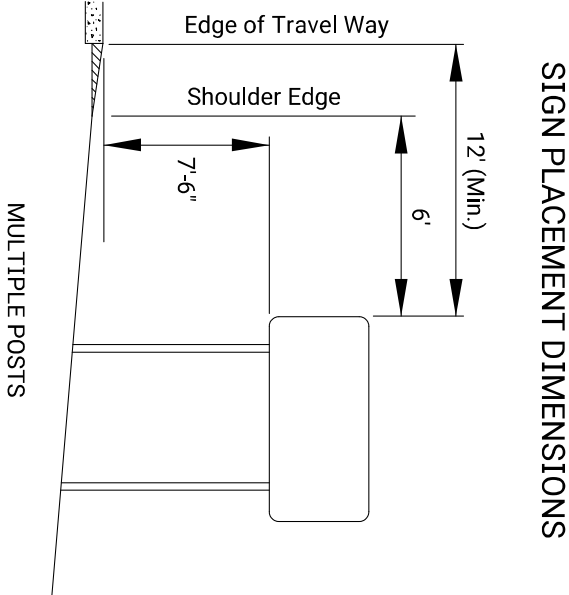
All sign material, sheeting, fabrication, fasteners, wood posts, and installation will not be paid for directly, but shall be subsidiary to the bid item "Sign (Special)" and bid as each.



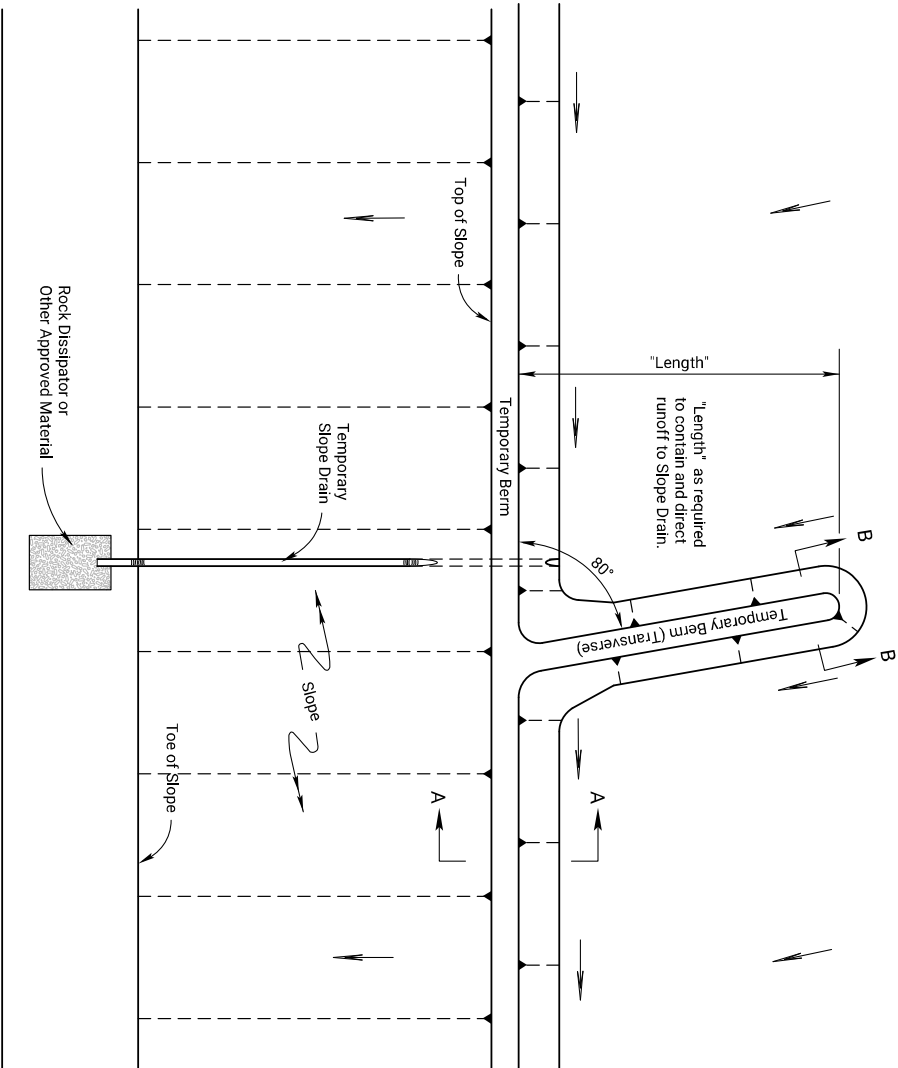
KI-3
1.9" Radius, 1.0" Border, White on Green;
"Senator", B; "Ross", B; "Doyen", B;
"Memorial Bridge", B;

Table of distances between letter and object lefts

S	e	n	a	t	o	r		R	o	s	s		D	o	y	e	n	
3.8	2.3	2.6	2.6	2.5	2.0	2.6	3.3	2.0	2.4	2.4	2.2	3.7	2.0	2.5	2.3	2.8	2.6	3.8
M	e	m	o	r	i	a			B	r	i	d						
6.2	3.0	2.6	3.7	2.7	1.9	1.4	2.8	4.5	4.0	2.7	2.0	1.4	2.6	2.6	1.7	6.2		

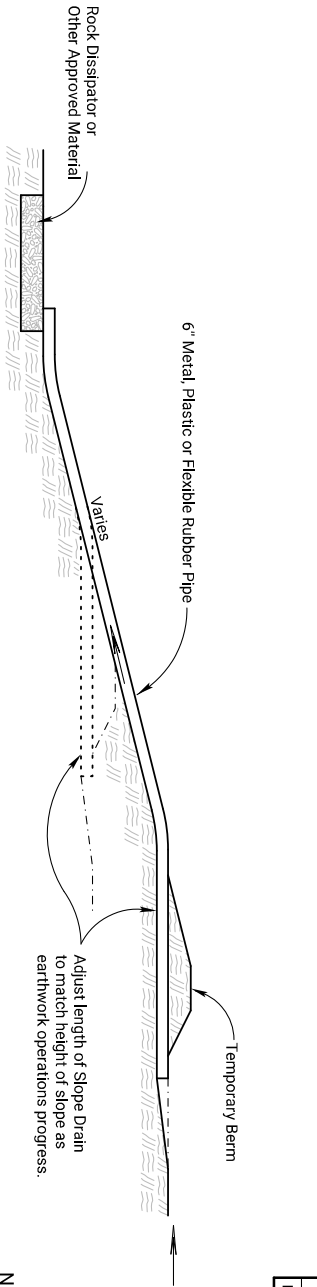


STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	48	75



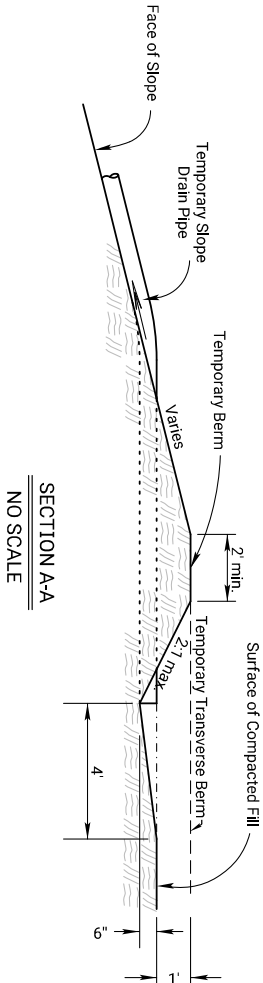
TYPICAL PLAN VIEW OF
TEMPORARY BERM AND
TEMPORARY SLOPE DRAIN

NO SCALE



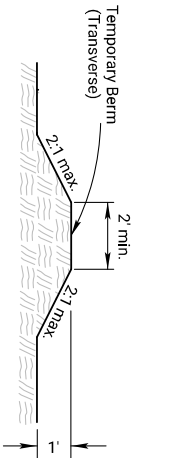
TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE



SECTION A-A

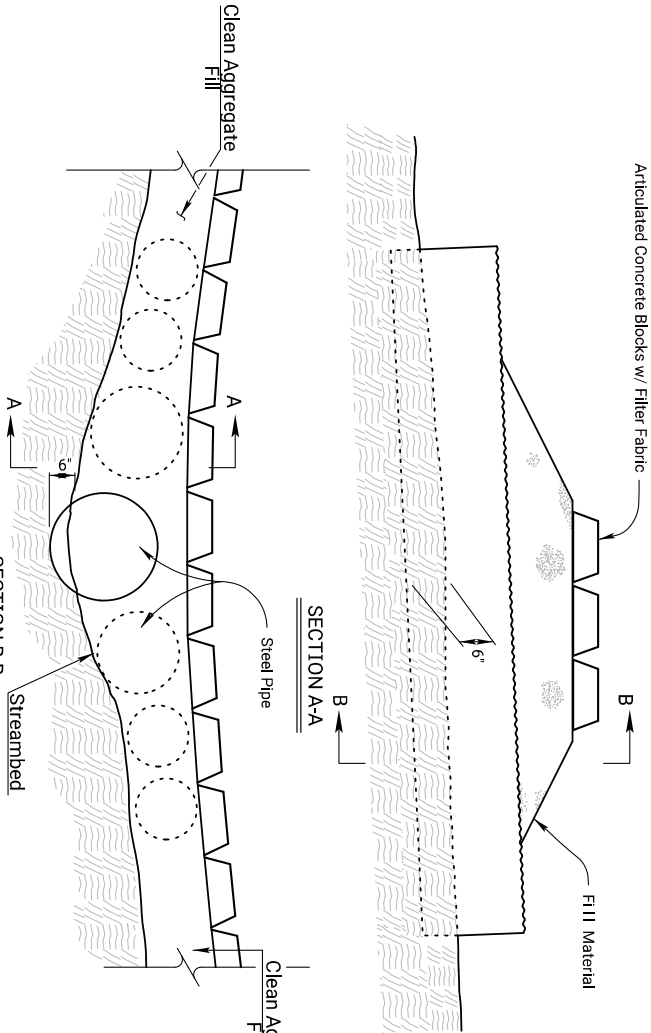
NO SCALE



SECTION B-B

NO SCALE

- NOTES:
- 1) Temporary Slope Drain and Temporary Berm may be used on either project foreslopes or project backslopes.
 - 2) Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.
 - 3) Pipe shall be secured in place as approved by Engineer.
 - 4) Temporary Berms under 2,000 feet shall be bid by Set Price.



TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

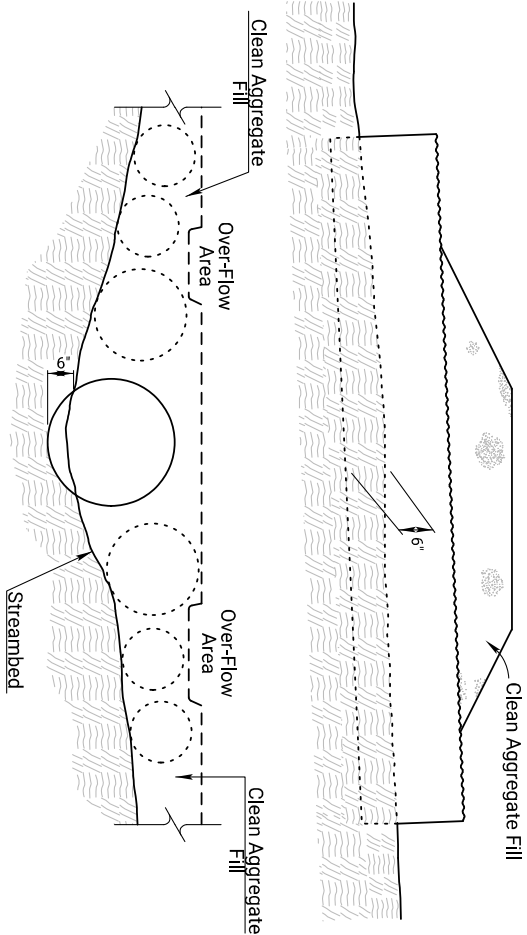
NO SCALE

Pipe size may vary.

Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the pipes without overtopping the crossing.

Clean aggregate fill will extend a minimum of 50' on the entrance and exit side of the crossing to prevent tracking. The aggregate shall be clean aggregate and a minimum of 6" thick and will be maintained through the use of the crossing.

See KDOT Specifications for more information.



TEMPORARY STREAM CROSSING (AGGREGATE)

NO SCALE

Pipe size may vary.

Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the pipes without overtopping the crossing.

Clean aggregate fill will extend a minimum of 50' on the entrance and exit side of the crossing to prevent tracking. The aggregate shall be clean aggregate and a minimum of 6" thick and will be maintained through the use of the crossing.

See KDOT Specifications for more information.

KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION CONTROL				
TEMPORARY SLOPE DRAIN, TEMPORARY				
STREAM CROSSING (AGGREGATE)				
LA852B				
DESIGNED	DETAIL	APPROD	TRACED	MECH/LINE
CK	CK	CK	CK	CK

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	50	75

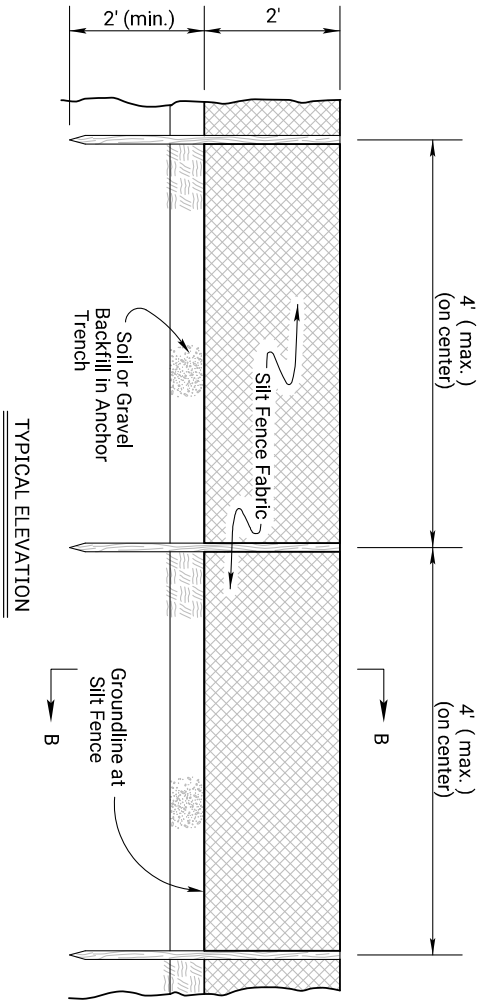
INSTALLATION NOTES

SILT FENCE:

- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 3/4" x 1 3/4",
 - Southern Pine (No. 2) - 2 5/8" x 2 5/8",
 - Steel U, T, L, or C Section - .95 lbs. per 1'-0", or
 - Synthetic - same strength as wood stakes.
- Attach fence fabric with 3 zip ties within the top 8" of the fence
- Alternate attachment methods may be approved by the Engineer on a performance basis.
- Use of high flow material is acceptable
- Refer to plan sheets to estimate the length of silt fence required.

BIODEGRADABLE LOG OR FILTER SOCK

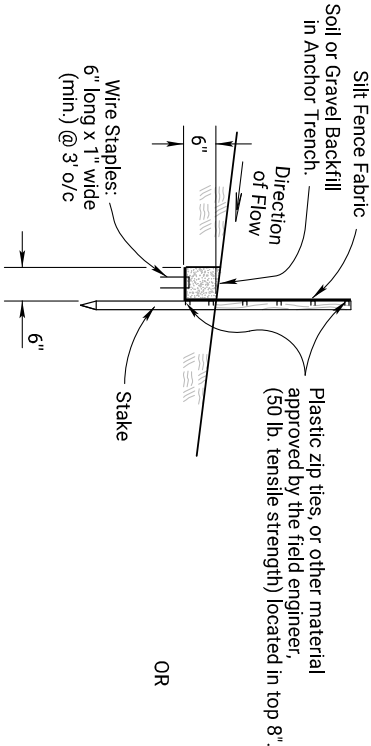
- Place biodegradable logs or filter sock tightly together minimum overlap of 18".
- Wood stakes shall be 2" x 2" (nom.).
- Refer to plan sheets to estimate length of biodegradable log and filter sock required.
- Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.
- Length of stakes should be 2 times the height of the log at a minimum with minimum ground embedment equal to the height of the log / sock.



TYPICAL ELEVATION

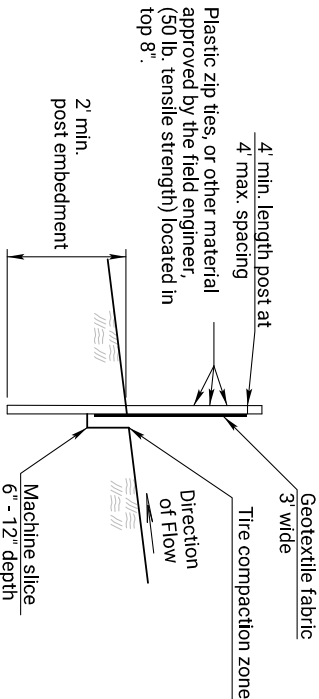
SILT FENCE BARRIER

NO SCALE



SECTION B-B

OR



SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions			
Slope Gradient	PRODUCT		
	9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
≤4H:1V	40	60	80
3H:1V	30	45	60

Deviations should be approved by the Field Engineer.

BIODEGRADABLE LOG MATERIAL		
	LOW FLOW	HIGH FLOW
9"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber
12"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber
18"-20"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber

GENERAL NOTES

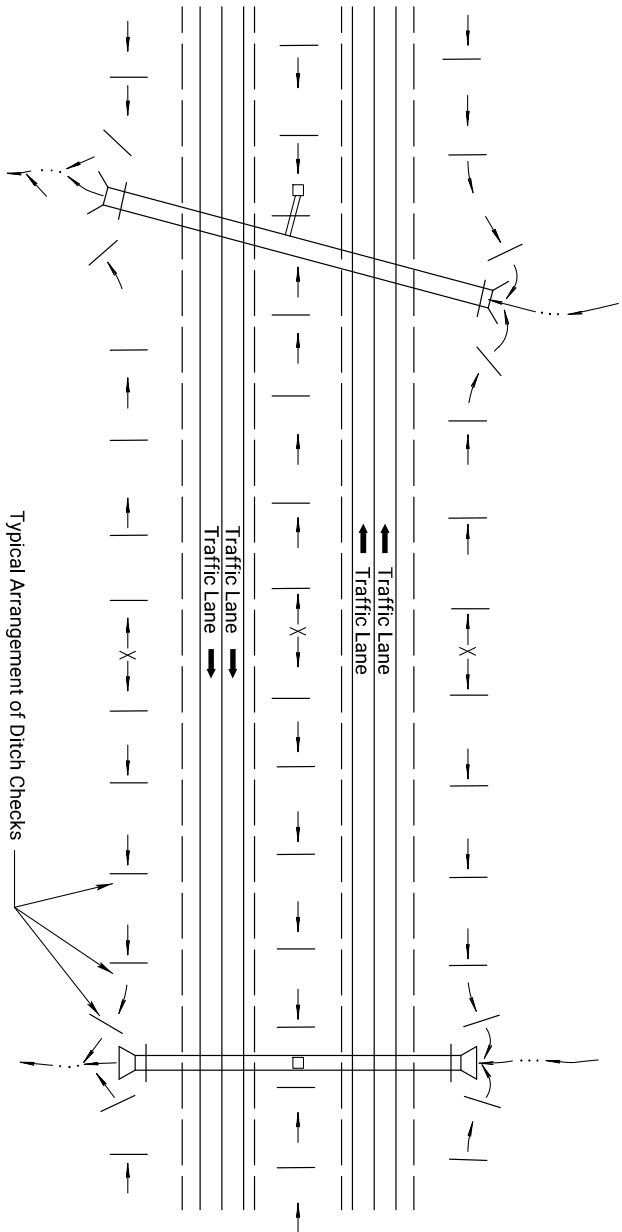
- Slope interruptions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
- The maximum length of the slope interruptions shall not exceed 250 feet, and the barrier ends need to be staggered.
- Interruptions damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor at no additional cost to KDOT.
- Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

03	06-28-16	Revised Standard	R.A.	S.H.S.
02	03-01-15	Revised Standard	R.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD.

KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION AND
POLLUTION CONTROL
SLOPE INTERRUPTIONS
BIODEGRADABLE LOG / SILT FENCE
LA852D

FINAL APPROVAL	09-14-16	APPROD.	Scott H. Shanks
DESIGNED	S.H.S. DETAILED	R.A.	QUANTITIES
DESIGN/CHECK	S.H.S. DETAIL/CHECK	TRACE/CHECK	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	51	75



TYPICAL DITCH CHECK LAYOUT PLAN
NO SCALE

GENERAL NOTES

- 1) The choice of ditch check methods is at the option of the Contractor.
- 2) Use only rock checks in situations where the ditch slope is 6 percent or greater.
- 2) Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.

20" BIOLOG CHECK SPACING	
DITCH & SLOPE (%)	SPACING INTERVAL (FEET)
1.0	125
2.0	60
3.0	40
4.0	30
5.0	25

NOTE: Use this spacing for all except Rock Ditch Checks.

18" FILTER SOCK CHECK SPACING	
DITCH & SLOPE (%)	SPACING INTERVAL (FEET)
1.0	110
2.0	55
3.0	35
4.0	25
5.0	20

NOTE: Use this spacing for all except Rock Ditch Checks.

03	06-10-16	Revised Standard	R.A.A.	S.H.S.
02	06-28-16	Revised Standard	R.A.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

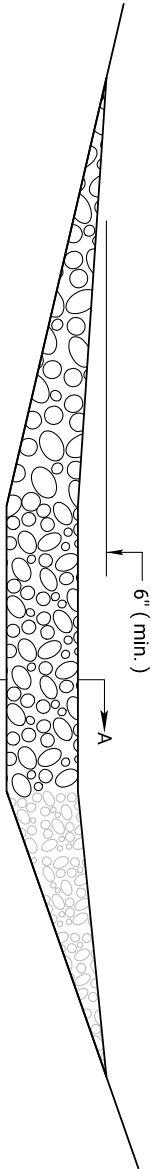
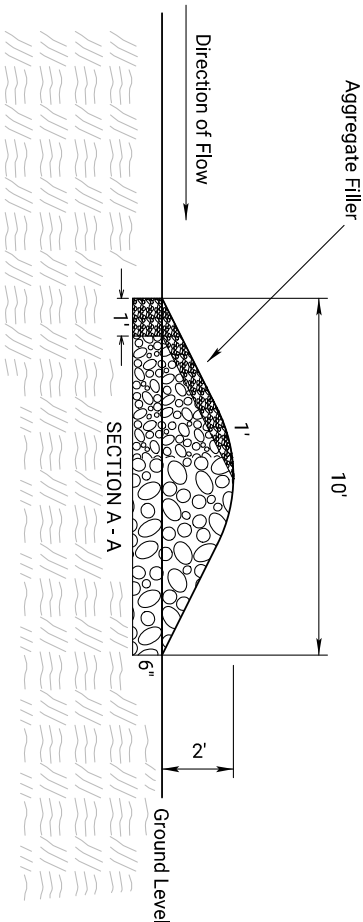
TEMPORARY EROSION AND
POLLUTION CONTROL
DITCH CHECKS

LA852E		09-14-16	APPRO.	SEATH SHARPE
DESIGNED	S.H.S.	DESIGNED	R.A.A.	QUANTITIES
DESIGNED	S.H.S.	DETAIL CK.	S.H.S.	QUAN CK.
DESIGNED	S.H.S.	DETAIL CK.	S.H.S.	QUAN CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015-C-5215-01	2025	53	75

ROCK DITCH CHECK NOTES

1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch shall be excavated to the dimensions of the Rock Ditch Check and to a minimum depth of 6" (150mm). After placement of the rock, backfill and compact any over-excavated soil to ditch grade. This work shall be subsidiary to the bid item Temporary Ditch Check (Rock).
5. Aggregate excavated on site may be used as an alternate to the 6" rock, if approved by the Engineer.
6. The Engineer may approve the use of larger aggregates for the downstream portion of the check when conditions warrant their use.
7. When the use of larger rock is approved, D50-6" rock will be placed between the larger aggregate and the aggregate filler.
8. Aggregate filler will be placed on the upstream face of the ditch check. Aggregate filler will comply with Filter Course Type I, Division 1114.



TEMPORARY ROCK DITCH CHECK SPACING	
DITCH % SLOPE	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29

NOTE: Use this spacing for Rock Ditch Checks only.

NO SCALE

ROCK DITCH CHECK

BIODEGRADABLE LOG DITCH CHECK NOTES

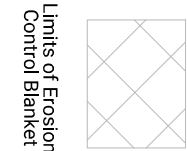
1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 18".
3. Stakes shall be wood or steel according to Section 211.4 of the Standard Specifications. Length of stakes shall be a minimum of 2 x the diameter of the log.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when required.
5. A downstream apron is required when directed by the Engineer. Apron material will be paid at the contract unit price.
6. Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.

03	11-19-20	Revised Standard	M.R.D.	M.L.
02	08-10-16	Revised Standard	R.A.A.	S.H.S.
01	10-21-15	Revised Standard	R.A.A.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD.

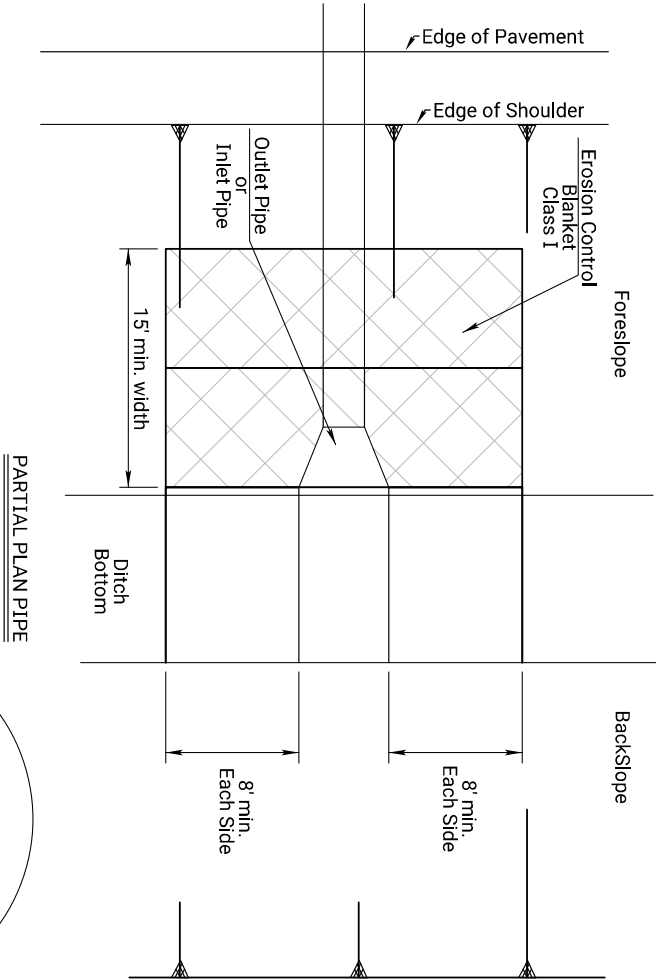
KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION CONTROL
POLLUTION CONTROL
ROCK DITCH CHECKS
BIODEGRADABLE LOG DITCH CHECKS
LA852G

FINAL APPROVAL	11-19-20	APPROVED	MENTALINE
DESIGNED	M.L.	DETAILED	D.K.
DESIGNED	M.L.	DETAIL CK.	QUAN CK.
DESIGNED	M.L.	DETAIL CK.	TRACE CK.
DESIGNED	M.L.	DETAIL CK.	R.A.A.

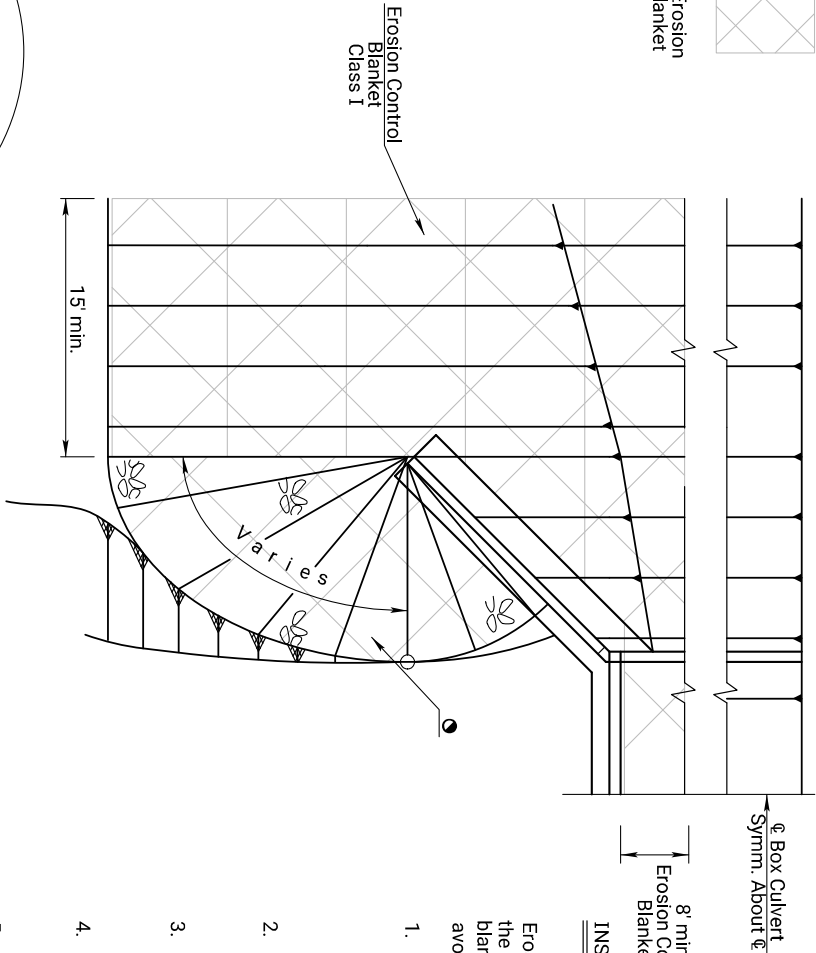
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015-C-5215-01	2025	55	75



Limits of Erosion Control Blanket



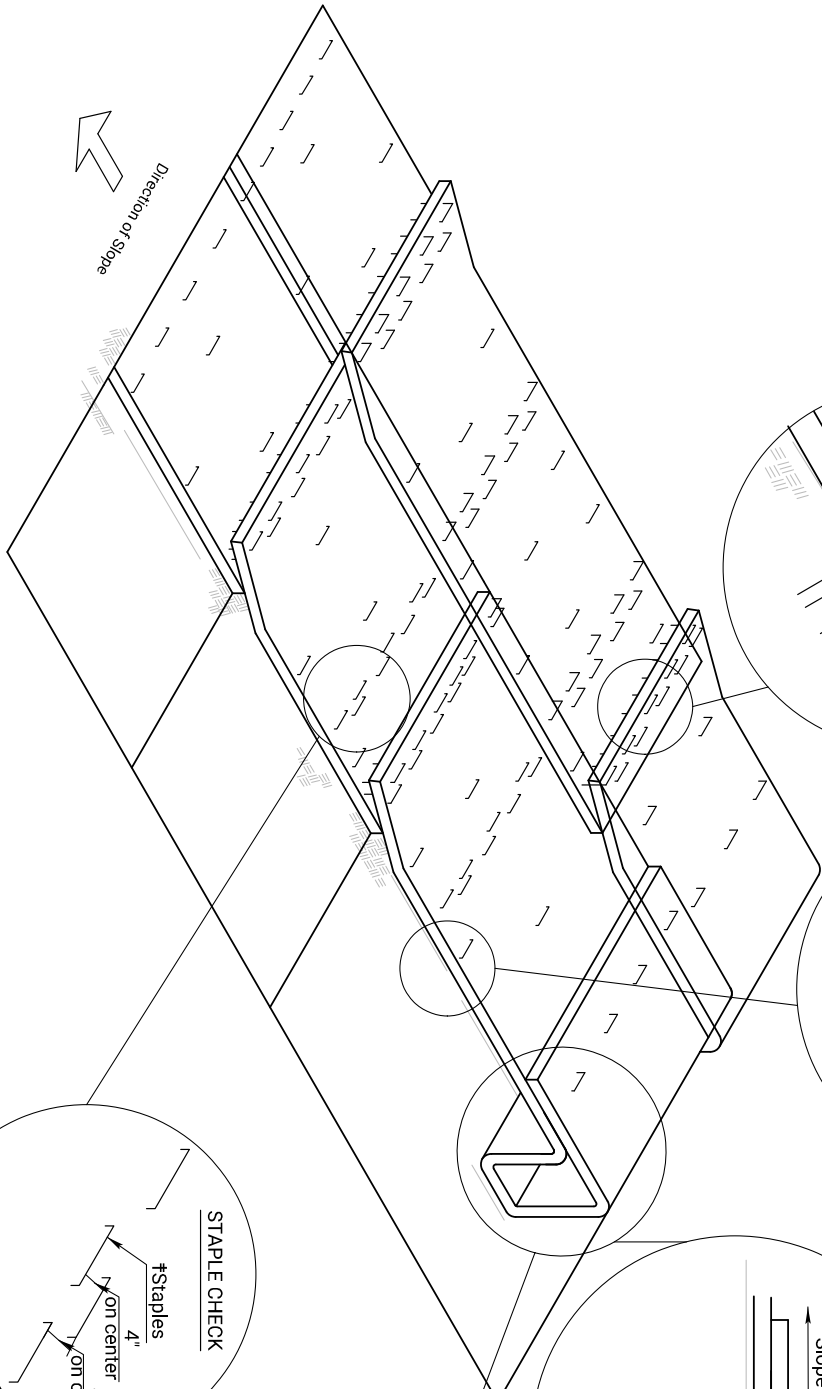
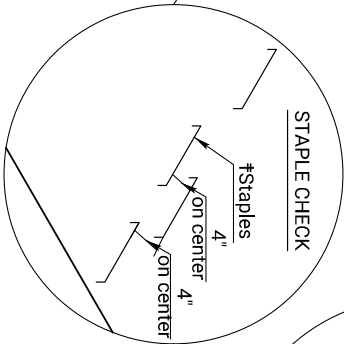
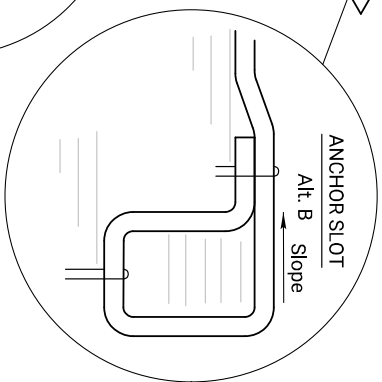
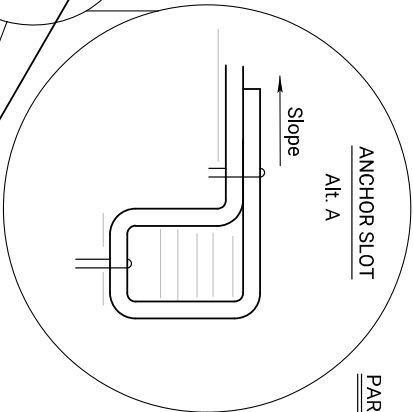
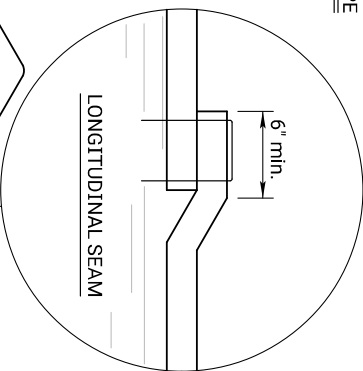
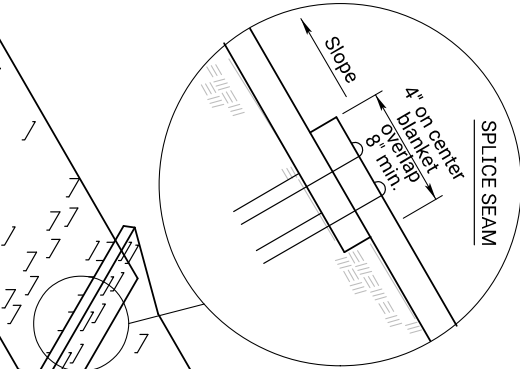
PARTIAL PLAN PIPE



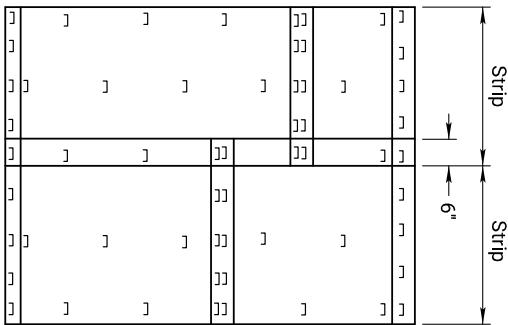
PARTIAL PLAN BOX CULVERT

● Erosion Control Class I may be omitted if the area is immediately covered by permanent slope protection (where directed by the plans).

1. ANCHOR SLOTS: The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
2. LONGITUDINAL SEAMS: The edges of the blanket should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.
3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 8 inches in direction of water flow. Stagger splice seams.
4. TERMINAL FOLD: The bottom edge of the blanket shall be turned under a minimum of 4 inches, then anchored in place with anchors 9 inches apart.
5. TYPICAL ANCHORS: Anchor design shall be as recommended by the manufacturer.
6. STAPLE CHECK: #Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.



ISOMETRIC VIEW



PLAN VIEW - ANCHORING DIAGRAM

NOTE:
Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.
Single post ring and shank staple is acceptable.

NO.	DATE	REVISIONS	BY	APPD.
04	03-01-15	Revised Standard	R.A.A.	S.H.S.
03	02-23-15	Revised Standard	R.A.A.	S.H.S.
02	09-15-14	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

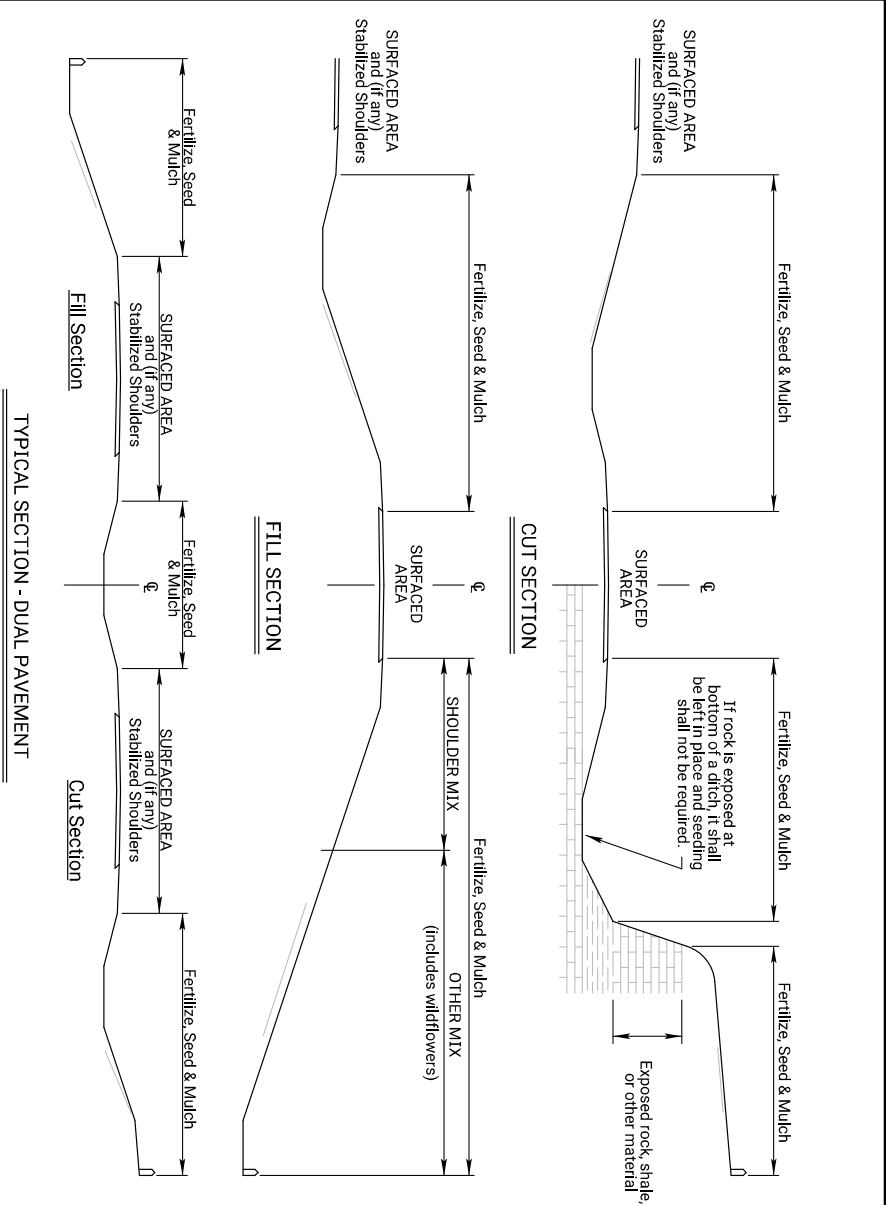
INSTALLATION DETAIL EROSION CONTROL CLASS 1 SLOPE PROTECTION

LA855

DESIGNED	RAA	DETAILED	RAA	QUANTITIES	TRACED	SHS
DESIGNED	RAA	DETAIL CK	QUAN CK	TRACE CK	RAA	

KDOT Graphics Certified 06-20-2022

KDOT Graphics Certified



GRASS & WILDFLOWER SEEDING SEASONS	
COOL SEASON GRASSES	WARM SEASON GRASSES & WILDFLOWERS
February 15 thru April 20 August 15 thru September 30	November 15 thru June 1
SPECIES	SPECIES
Bluegrasses	Bermuda Grass
Brome Grasses	Big Bluestem
Canada Wildrye	Blue Grama
Fescues	Buffalo Grass
Prairie Junegrass	Indiangrass
Ryegrasses	Little Bluestem
Sterile Wheatgrass	Sand Bluestem
Tall Dropseed	Sand Dropseed
Western Wheatgrass	Sand Lovegrass
	Side Oats Grama
	Switchgrass
	Wildflower Mixes
When the area to be seeded is 1 acre or more, if Cool Season grasses are mixed with Warm Season grasses, seed the area during the Warm Season.	
When the area to be seeded is less than 1 acre, seed the area any time of the year.	

SODDING SEASONS	
COOL SEASON GRASSES	WARM SEASON GRASSES
March 1 thru April 15 September 1 thru November 15	May 15 thru September 1
SPECIES	SPECIES
Bluegrass Sod	Buffalo Grass Sod
Fescue Sod	

If the soil is workable, the Engineer may allow placement of sod between November 15 and March 1. If sod is placed during this time, maintain the sod until 20 days after the beginning of the spring sodding season.

NATIVE WILDFLOWER MIX 2		
PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	
0.3	Black Eyed Susan	
0.5	Black Sampson Coneflower	
1.0	Blanket Flower	
0.2	Maxmillian Sunflower	
0.2	Plains Coreopsis	
0.2	Upright Prairie Coneflower	
0.2	Western Yarrow	
0.3	Lemon Mint	
0.4	Pitcher Sage	
1.5	Illinois Bundelflower	
0.2	Common Evening Primrose	
1.0	Blue Wild Indigo	
0.4	Leadplant	
0.4	Purple Prairie Clover	
0.3	White Prairie Clover	
7.4	Total (lb)	

NATIVE WILDFLOWER MIX 1		
P.L.S RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	0.26
0.3	Common Milkweed	0.26
0.3	Black Eyed Susan	0.26
0.5	Blanket Flower	0.43
0.5	False Sunflower	0.43
0.5	Lance-Leaf Coreopsis	0.43
0.2	Maximilian Sunflower	0.17
0.1	New England Aster	0.09
0.2	Pinnate Prairie Coneflower	0.17
0.2	Plains Coreopsis	0.17
0.3	Purple Coneflower	0.26
0.3	Upright Prairie Coneflower	0.26
0.3	Dames Rocket	0.26
0.3	Lemon Mfrit	0.26
0.2	Pitcher Sage	0.17
0.2	Wild Bergamot	0.17
1.0	Illinois Bundelflower	0.85
0.2	Common Evening Primrose	0.17
0.1	Hoary Verbena	0.09
0.8	Purple Prairie Clover	0.68
0.3	Roundhead Lespedeza	0.26
3.0	Snowy Partridge Pea	2.6
0.2	White Prairie Clover	0.17
10.3	Total (lb)	8.9

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	56	75

GENERAL NOTES

The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of undisturbed native sod or other desirable vegetation shall be fertilized (limed when required), seeded and mulched. Soil preparation shall conform to the Standard Specifications except as noted below.

All borrow areas shown on the plans are to be fertilized, seeded, and mulched. However, operation in borrow areas where crops are growing may be omitted when requested by the owner.

If temporary cover has provided stable slopes with no erosion, seed the permanent grasses into the existing cover. If there has been erosion that requires repair prior to seeding, then it may be necessary to regrade the area, resulting in bare ground.

FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P₂O₅, K₂O listed in Summary of Seeding Quantities will be acceptable.

MULCHING: Mulch shall be spread uniformly over all disturbed areas and punched in the soil, unless otherwise noted on the plans. The rate of application per acre, thickness in place, for the mulching material is generally as follows:

$1\frac{3}{4}$ - $2\frac{1}{4}$ Tons per Acre = $1\frac{1}{2}$ " loose depth spread uniformly over acre.

Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

Other vegetative mulches are acceptable only with the Engineer's concurrence.

The above rate is a guide. It will be at the discretion of the Engineer to determine what rate is sufficient for adequate protection of newly seeded areas.

SODDING SEASONS

COOL SEASON GRASSES	WARM SEASON GRASSES
March 1 thru April 15	May 15 thru September 1
September 1 thru November 15	
SPECIES	SPECIES
Bluegrass Sod	Buffalo Grass Sod
Rescue Sod	

If the soil is workable, the Engineer may allow placement of sod between November 15 and March 1. If sod is placed during this time, maintain the sod until 20 days after the beginning of the spring sodding season.

SUMMARY OF SEEDING QUANTITIES

P.L.S.		ACRES		BID ITEM	QUANTITY	UNIT
RATE/ACRE						
SHLDR	OTHER	SHLDR	OTHER			
	80		0.85	Fertilizer (16-20-0)		Lbs
	2		0.85	Seed (Big Bluestem Grass) (Kaw)		Lbs
	10		0.85	Seed (Canada Wild-Rye)		Lbs
	2		0.85	Seed (Indiangrass) (Osage)		Lbs
	6.3		0.85	Seed (Little Bluestem Grass) (Aldous)		Lbs
	10		0.85	Seed (Side Oats Grama) (El Reno)		Lbs
	1		0.85	Seed (Stentle Wheatgrass)		Lbs
	0.5		0.85	Seed (Switchgrass) (Blackwell)		Lbs
	4		0.85	Seed (Tall Drop)		Lbs
				Seed (Western Wheatgrass) (Barton)		Lbs
				Seeding	Lump Sum	LS
				Mulching *		

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed $\frac{3}{8}$ " - $\frac{1}{4}$ ". Place the wildflower seed in a separate seed box and drill (cover) seed $\frac{3}{8}$ " maximum. Place the Tall Drop Seed in a separate seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface

02	11-25-20	Updated Seeding / Seeding Periods Charts	M.R.D.	M.L.
01	06-03-20	Revised Standard	M.R.D.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD.

KANSAS DEPARTMENT OF TRANSPORTATION

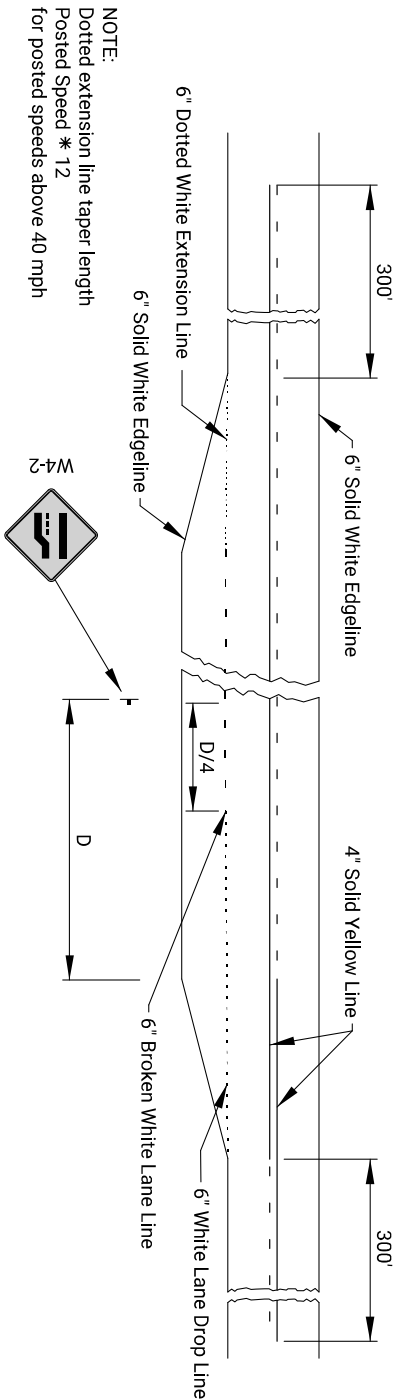
PERMANENT SEEDING SUMMARY OF SEEDING QUANTITIES

LA850

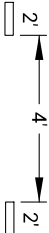
ESTM. APPROVAL DESIGNED	DETAILED	APPD. QUANTITIES	TRACED	Memor. (date)
DESIGN CK	DETAIL CK	QUANT CK	TRACE CK	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	57	75

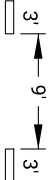
NOTE:
All pavement markings shall be broken at cross roads.
For highway junctions the no passing zone will extend 1000' from intersection.



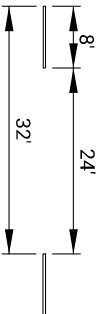
TYPICAL MARKING FOR AUXILIARY PASSING LANE



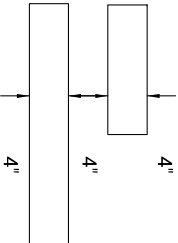
TYPICAL SPACING FOR DOTTED EXTENSION LINES, UNLESS OTHERWISE NOTED ON PLANS.



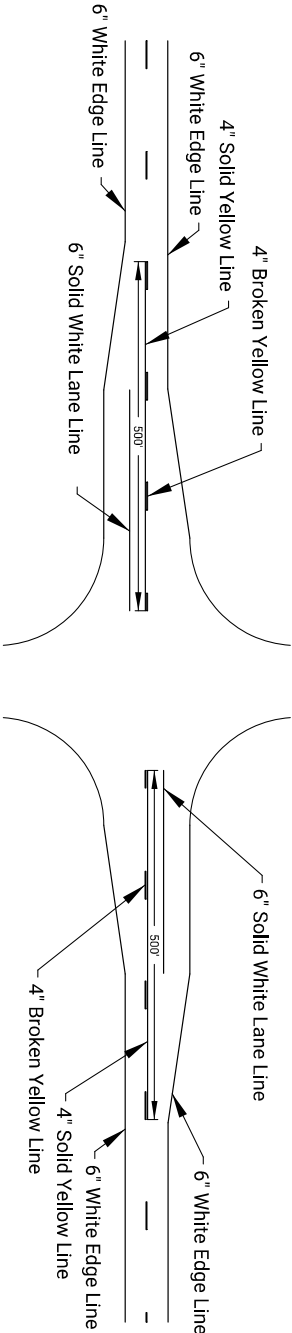
TYPICAL SPACING FOR LANE DROP, UNLESS OTHERWISE NOTED ON PLANS.



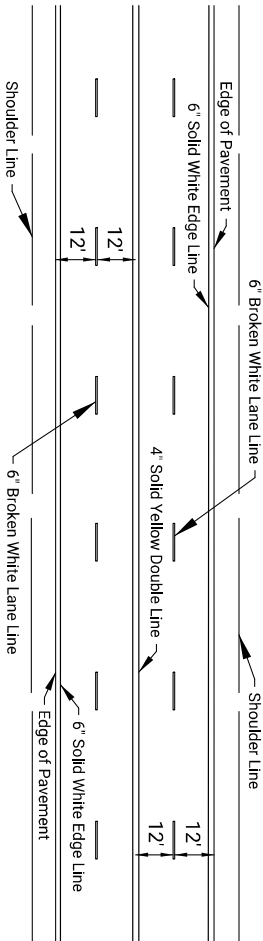
TYPICAL SPACING FOR BROKEN LINES, UNLESS OTHERWISE NOTED ON PLANS



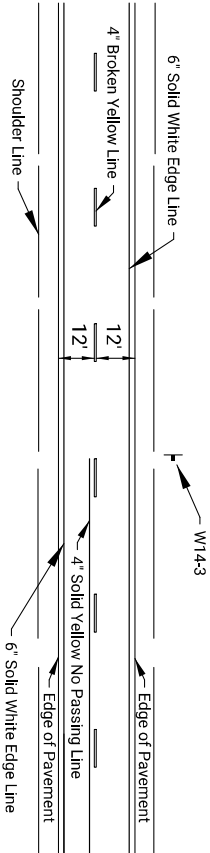
TYPICAL SPACING FOR NO PASSING LINES, UNLESS OTHERWISE NOTED ON PLANS



TYPICAL ROAD JUNCTION MARKINGS WITH BYPASS LANES



TYPICAL MARKINGS FOR FOUR LANE ROADWAY



TYPICAL TWO LANE MARKINGS

NOTE:
Longitudinal pavement marking lines shall be offset a minimum of 2" from longitudinal pavement joints.
On non I, US, and K routes, 4" edge lines may be installed. 6" edge lines are not required on non I, US, and K routes.

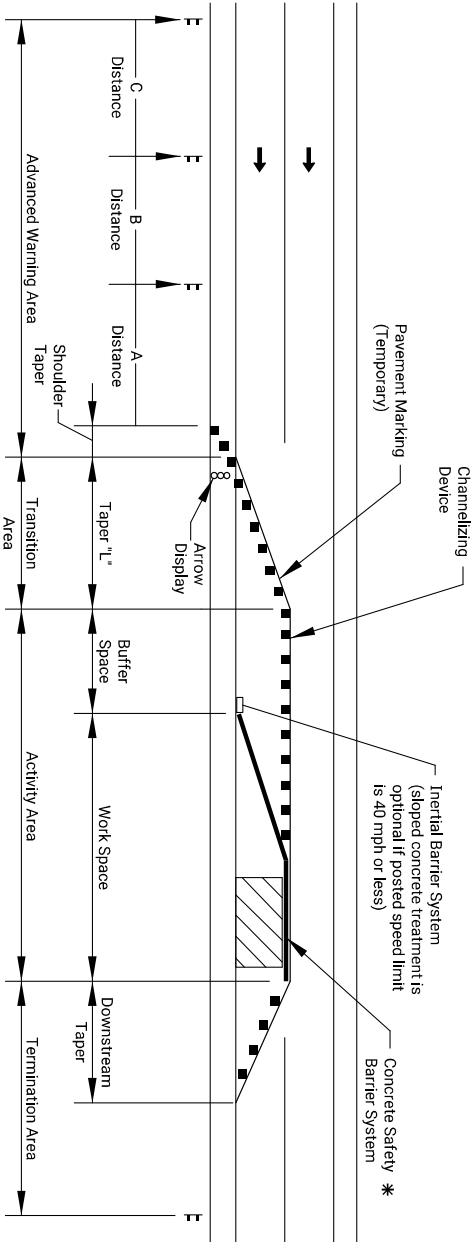
NO.	DATE	REVISIONS	BY	APP'D
03	05/25/12	Added Dotted Extension and Lane Drop Lines	B.A.H.	B.D.G.
02	06/20/05	Removed Aux. Passing Lane Dotted Ext. Line	J.F.F.	B.D.G.
01	07/26/05	New FHWA Approval Date	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL PAVEMENT MARKING DETAILS FOR UNDIVIDED ROADWAYS

TE308	05/25/12	APPROVED	Brian D. Gower
DESIGNED	J.F.F.	DETAILED	TRACED
DESIGNED	B.D.G.	DETAIL	CK
DESIGNED	B.D.G.	QUANT	CK
DESIGNED	B.D.G.	TRACE	CK

- (1) Design Speed: Those items delegated to temporary traffic control should be designed and installed using the posted/legal speed of the roadway prior to work starting.
- (2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.
- (3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.
- (4) When existing pedestrian facilities are disrupted, closed, or relocated, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
- (5) When the driving surface open to traffic is milled or is a temporary surface made of loose material, or when directed by the engineer a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed a "C" distance after the W20-1 (Road Work Ahead) sign. A W8-15p motorcycle plaque shall be used to supplement the W8-15 or W8-7 signs. All signs shall be displayed as long as the condition is present.
- (6) Alternative temporary rumble strip options may be available. Please contact the Temporary Traffic Control Unit for more information at 785-296-1179 or 785-296-1183.



TYPICAL WORK ZONE COMPONENTS

* When concrete barrier system is used, portable channelizing devices are not needed along the tangent barrier section.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015-C-5215-01	2025	59	75

Minimum advance warning sign spacing (in feet):

SPEED (MPH) *	A	B	C
URBAN (40 MPH OR LOWER)	100	100	100
URBAN (45 MPH OR HIGHER)	350	350	350
RURAL (35 MPH OR LOWER)	500	500	500
RURAL (60 MPH OR HIGHER)	750	750	750
EXPRESSWAY/FREEWAY	1000	1500	2640

Taper Formulas:

$L = WS$ for speeds of 45 MPH or more

$L = WS/60$ for speeds of 40 MPH or less

Where: L = Minimum length of taper in feet

S = Numerical value of posted speed

W = Width in offset feet

Shifting Taper= $1/2 L$

Shoulder Taper=1/3 L

Channelizer Placement:

(1) The spacing between devices in transition area (taper) should not exceed a distance in feet equal to $1/2$ the posted speed limit in mph prior to work starting.

(2) The spacing between devices in the advanced warning area and the activity area should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.

(3) Channelizing devices shall be placed for optimum visibility normally at right angles to the traffic flow.

(4) Place directional indicator barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.

(5) Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.

SPEED (MPH) *	20	25	30	35	40	45	50	55	60	65	70	75
LENGTH (ft)	115	155	200	250	305	360	425	495	570	645	730	820

Buffer Space

* Posted speed prior to work starting

Neither work activity nor storage of equipment, vehicles, or material should occur in the buffer space. When a protection vehicle is placed in advance of the work space, only the space upstream of the vehicle constitutes the buffer space.

If temporary concrete safety barrier system is used to separate approaching traffic from the work space, the barrier system shall be considered part of the activity area. A full lane width should be available throughout the length of the buffer space. See typical work zone components above.

02	03-13-18	W8-15p usage changed to Shal	R.W.B.	E.K.G.
01	08-18-15		R.W.B.	K.E.
NO.	DATE	REVISIONS	BY	APPD

TRAFFIC CONTROL
GENERAL NOTES

TE700

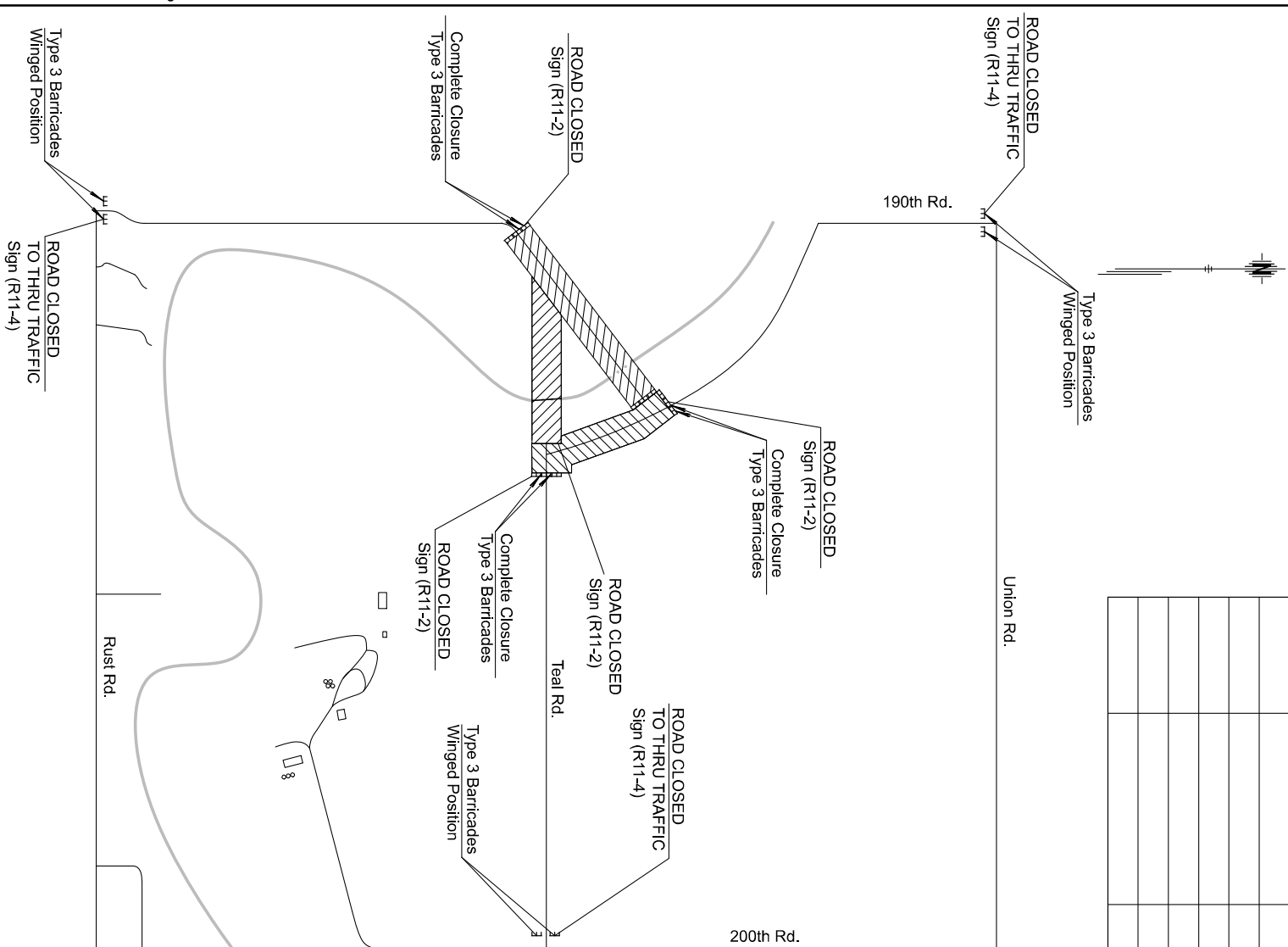
KDOT Graphics Certified 07-18-2022

Sh. No. 59

SUMMARY OF TRAFFIC CONTROL DEVICES (FOR INFORMATION ONLY)

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

All traffic control devices shall be placed in accordance with the applicable KDOT Traffic Control Standards. The Contractor shall provide all signs and other traffic control devices for proper traffic control of all construction activities. Quantities listed are estimates only. Contractor operations may require additional signs and traffic control devices, this will be Subsidiary to the bid item "Traffic Control".

[illegible]

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

* Quantity most used on the project at any one time

[illegible]

Barricades *		Channelizing Devices *		
Type 3 (4' to 12')	Pedestrian	Fixed	Portable	Pedestrian
15				

Lighted Devices *	
Work Zone Warning Light (Type "A" Low Intensity)	12
Work Zone Warning Light (Red Type "B" High Intensity)	
Arrow Display	
Portable Changeable Message Sign	

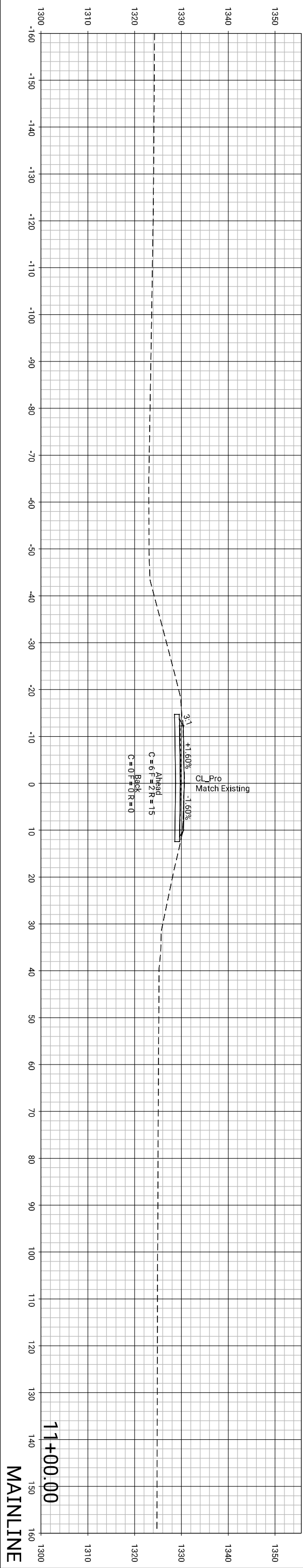
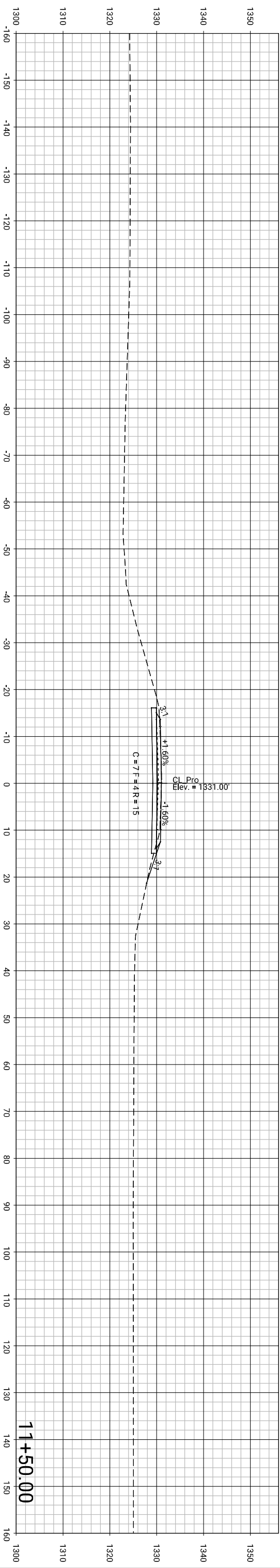
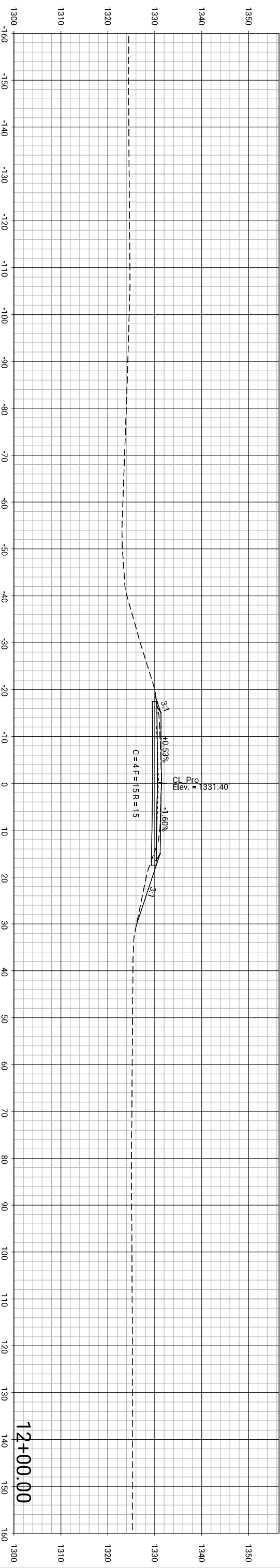
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NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION					
TRAFFIC CONTROL					
SUMMARY OF DEVICES					
RECAPITULATION OF QUANTITIES					
TE795					
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGNED	CK	DETAIL CK	QUAN CK	QUAN CK	TRACE CK
		06-01-15	APPD.		Kristina Erickson

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	62	75

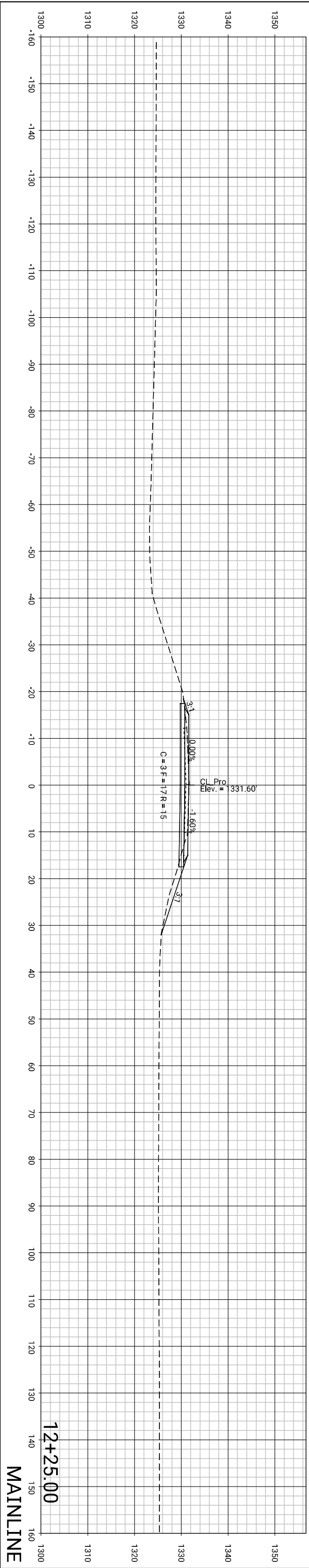
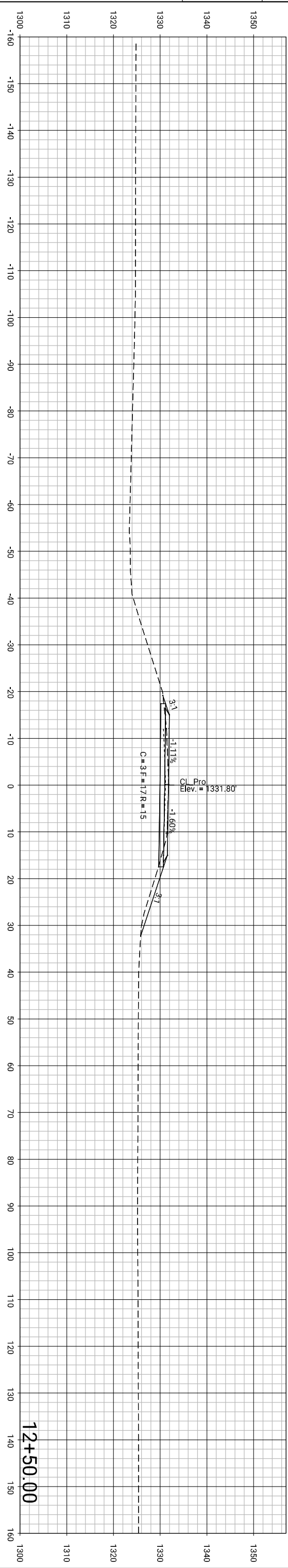
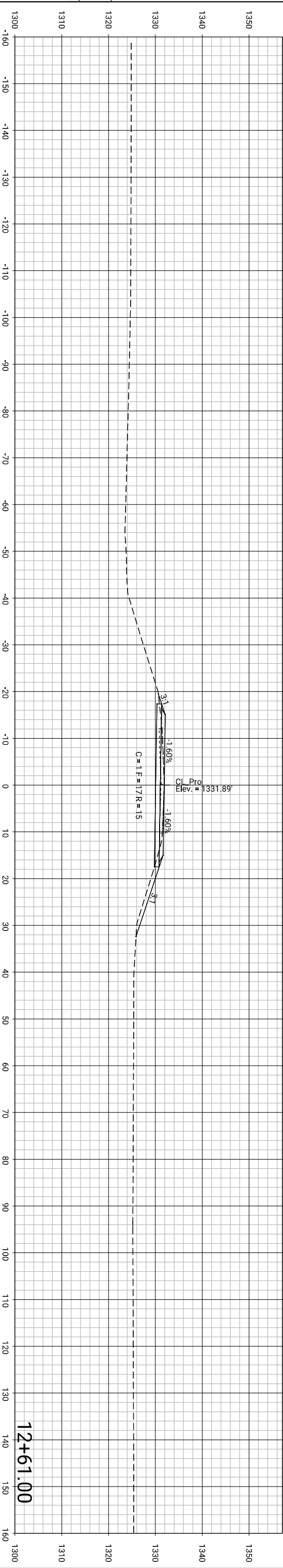
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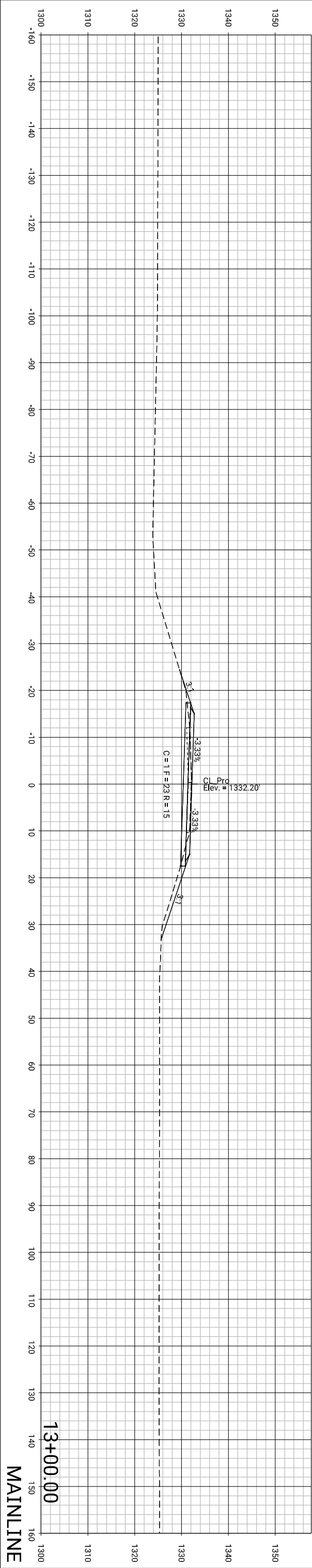
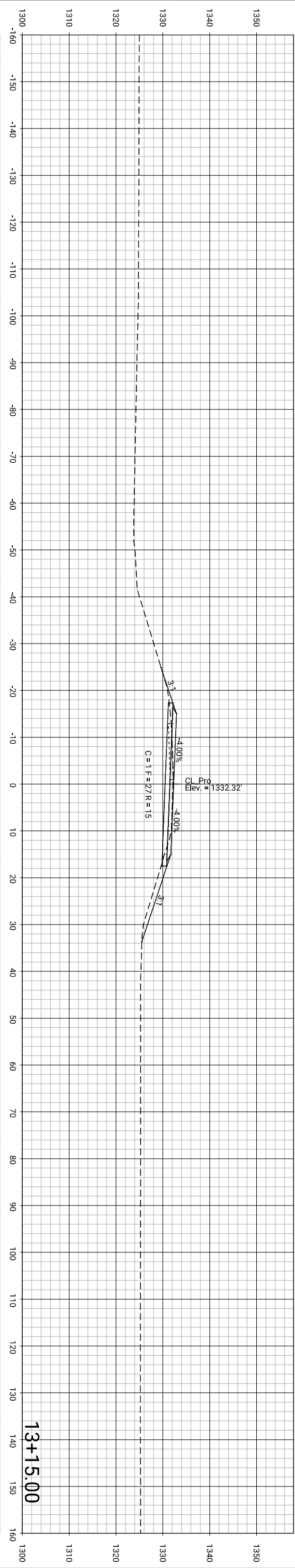
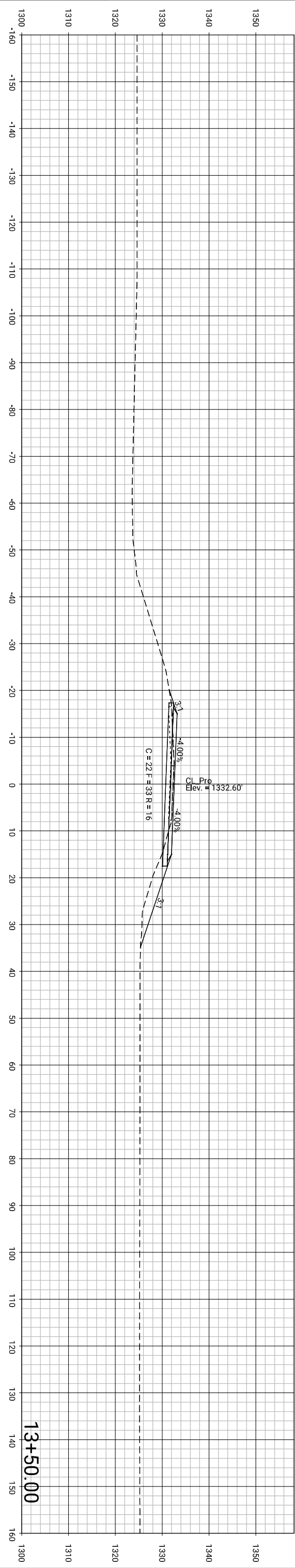
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	63	75

DATE	BY	REFERENCES NOTED
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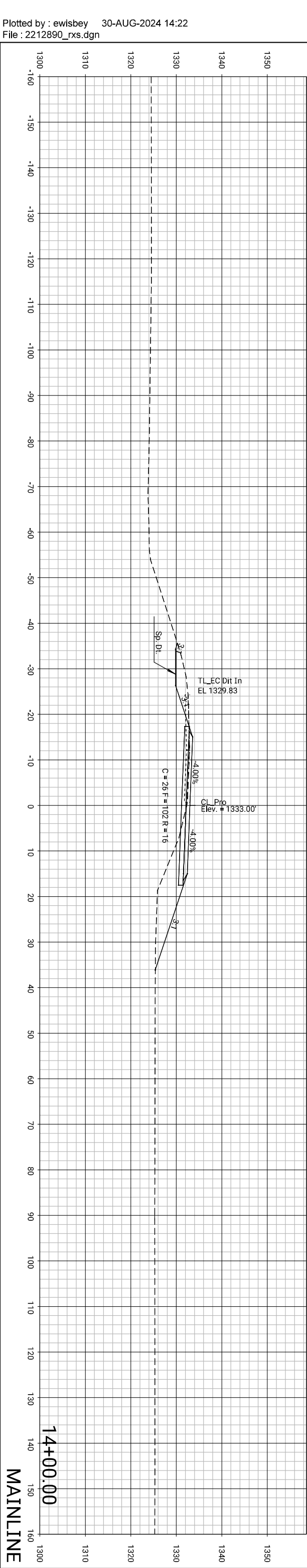
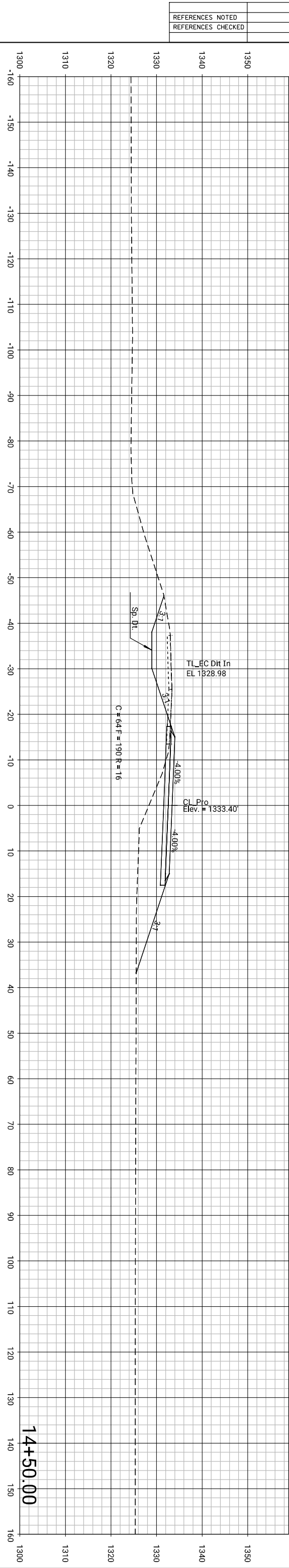
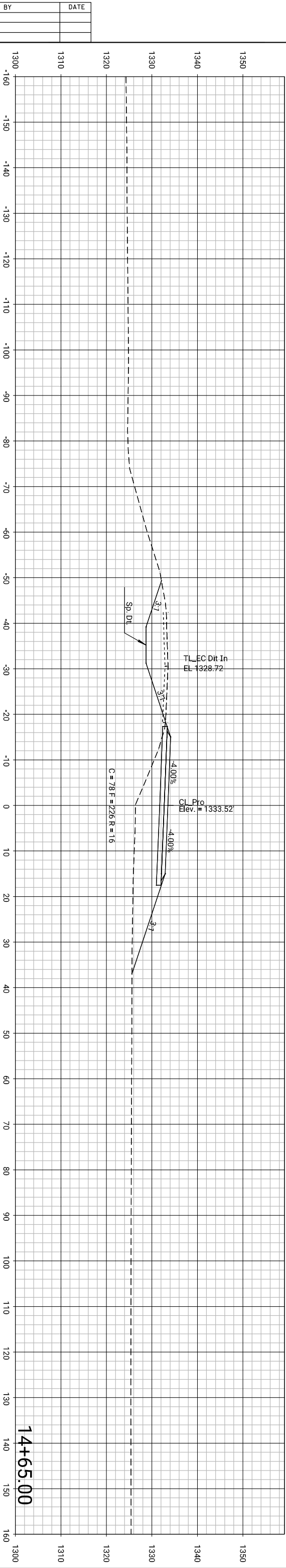
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	64	75



DATE	BY	REFERENCES NOTED
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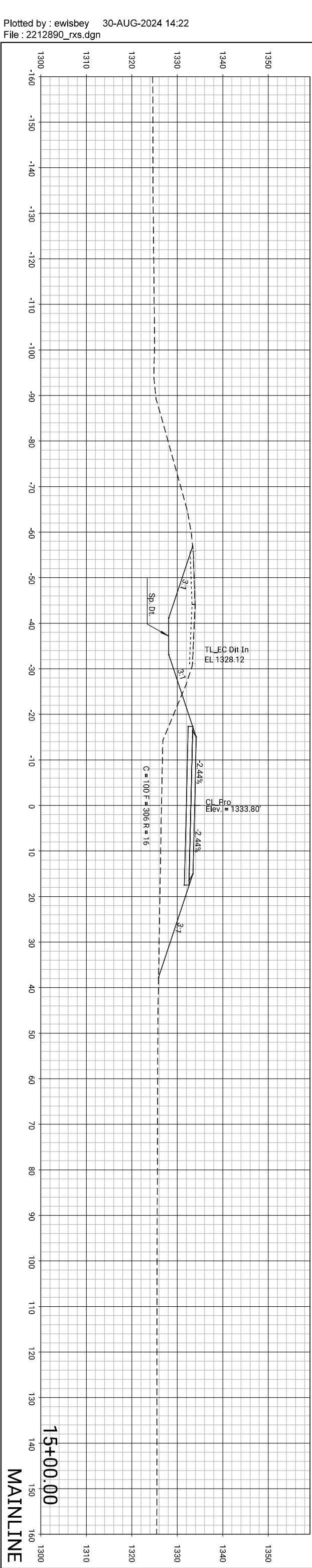
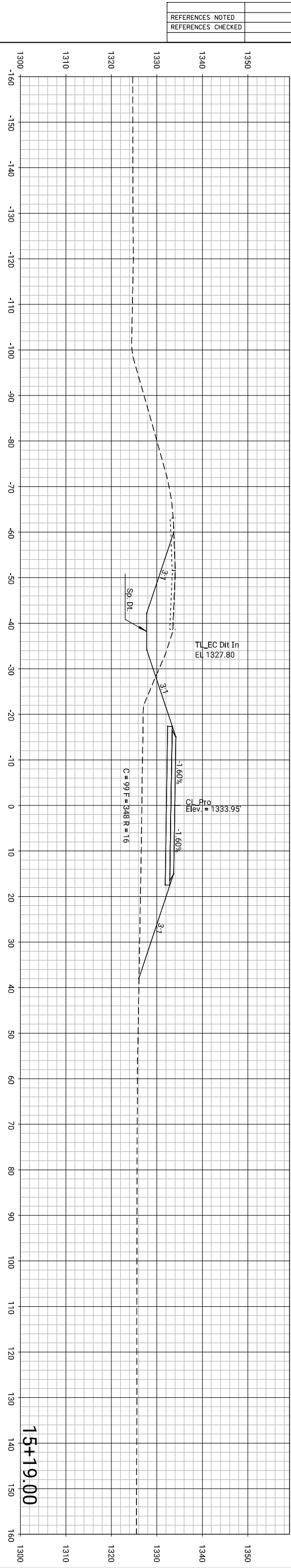
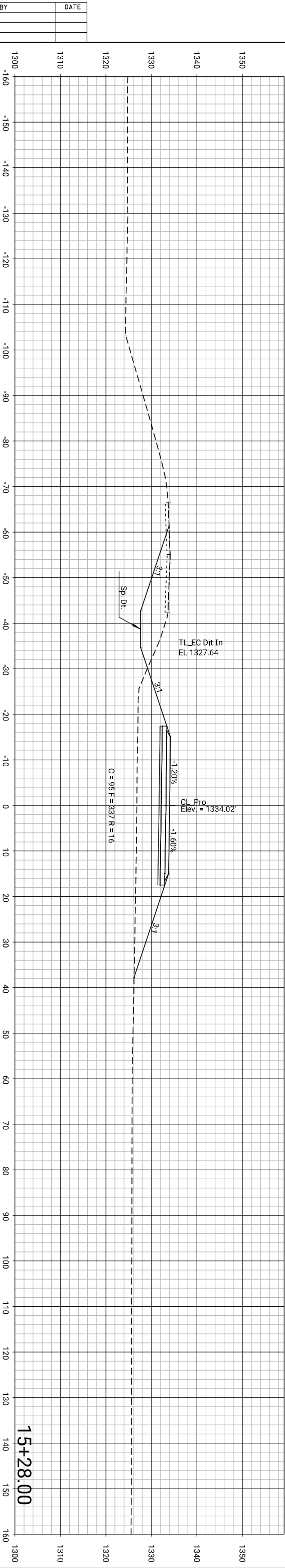
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	65	75



DATE	BY
REFERENCES NOTED	
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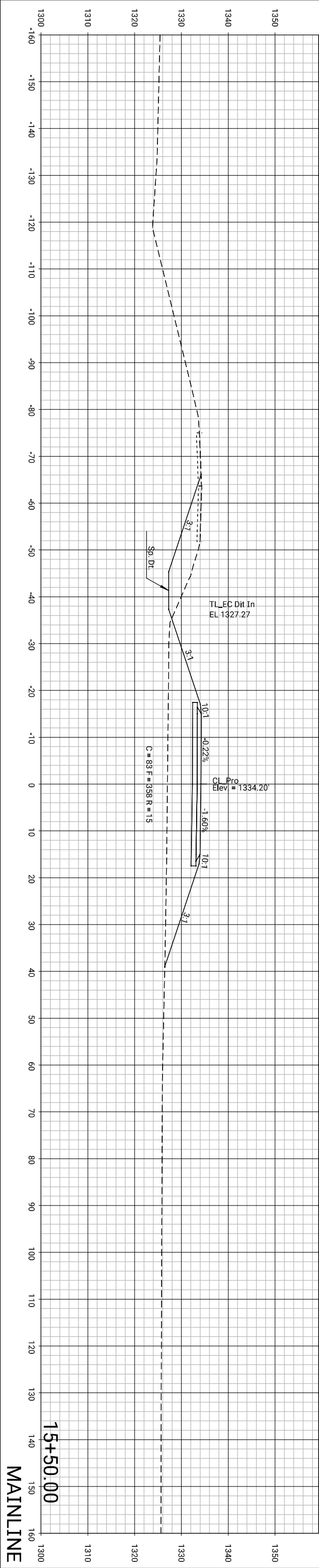
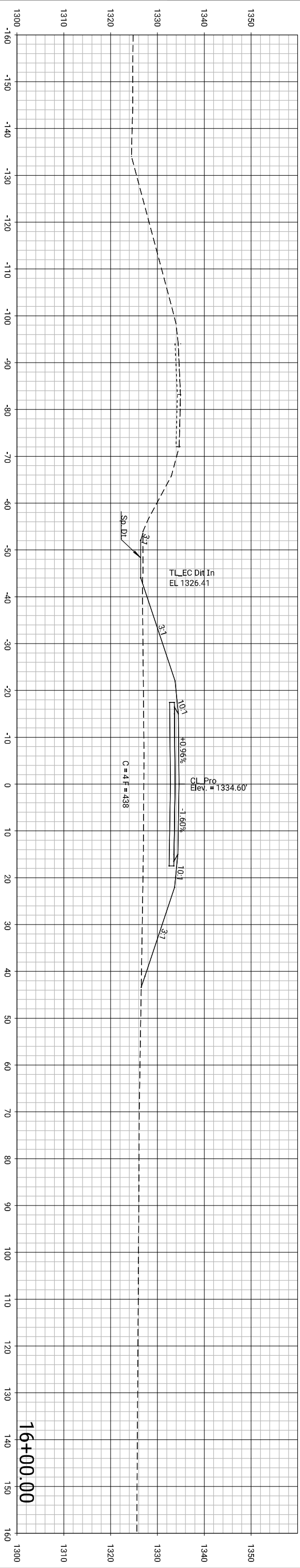
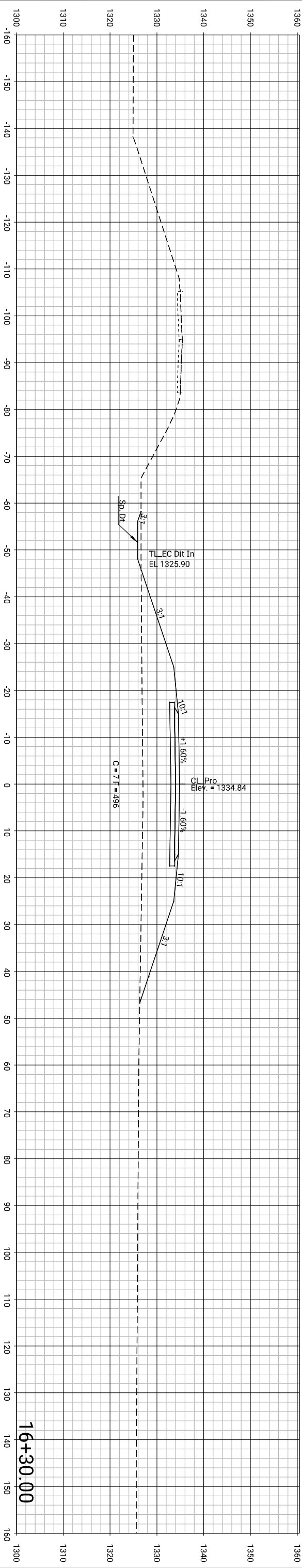
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	66	75



DATE	BY
REFERENCES NOTED	
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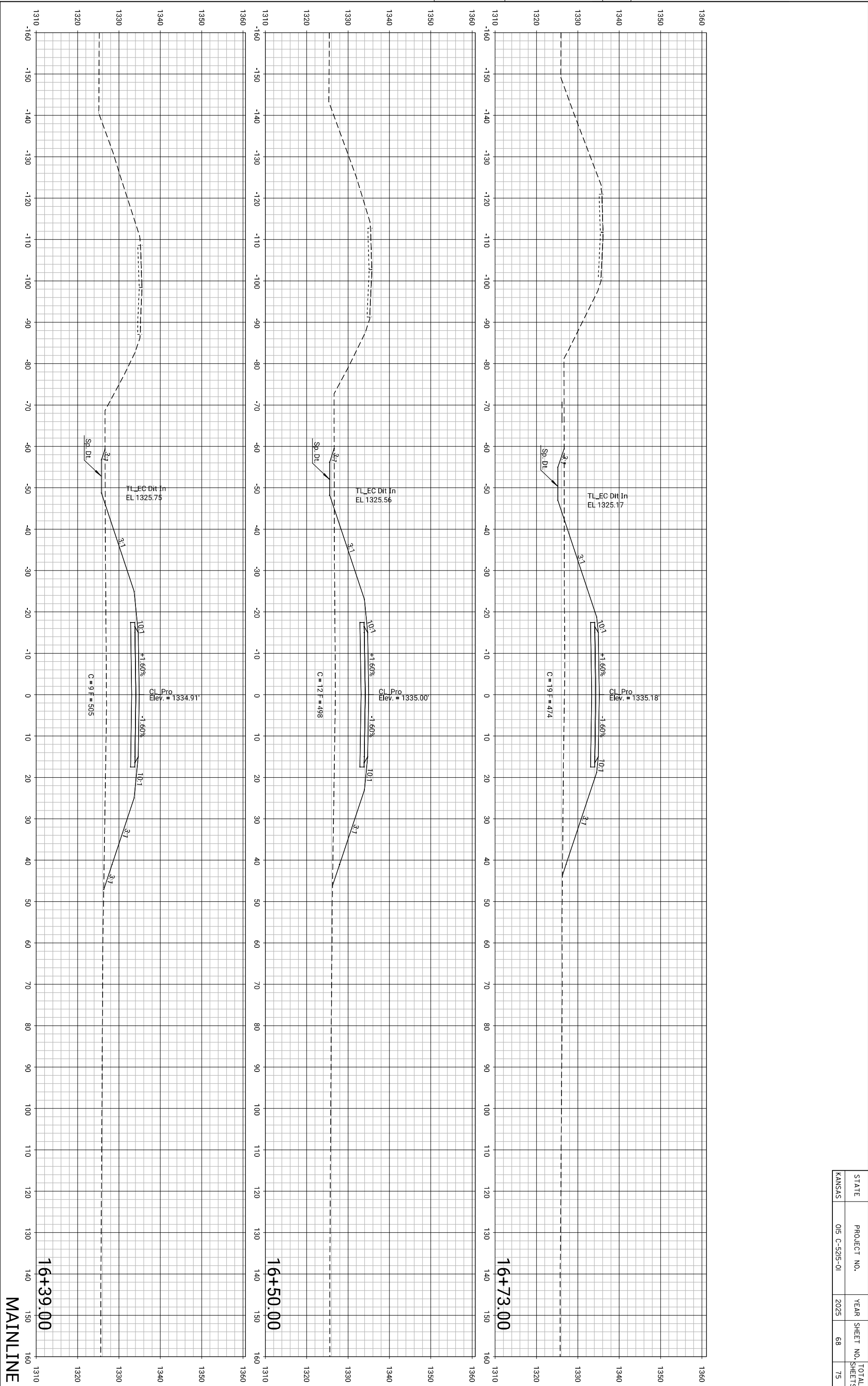
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	67	75



DATE	BY
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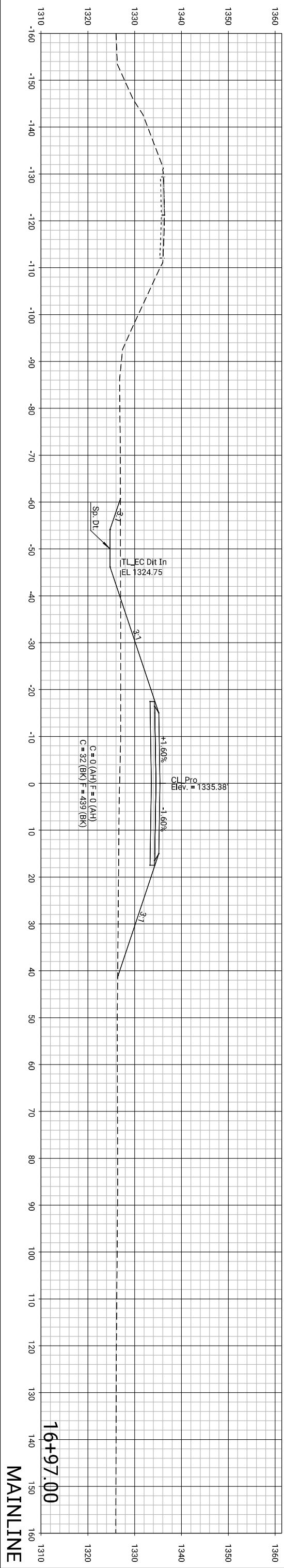
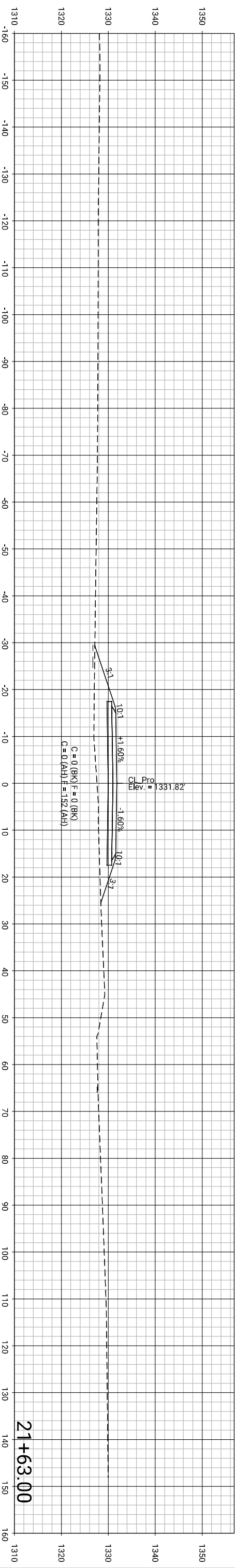
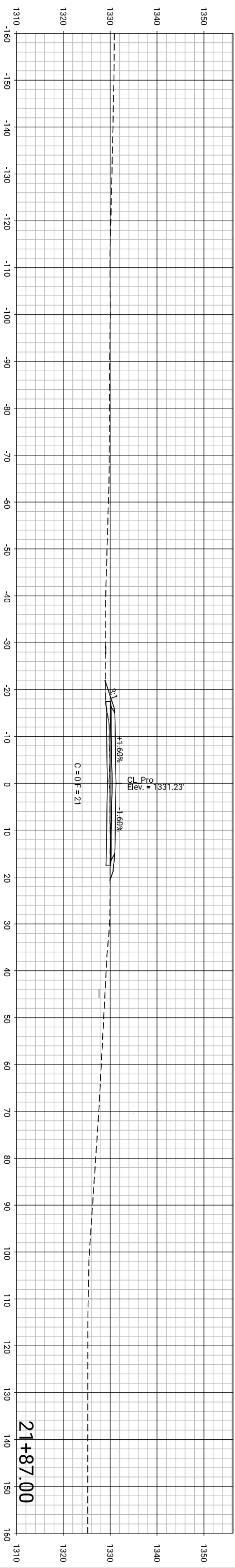
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	68	75

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	69	75

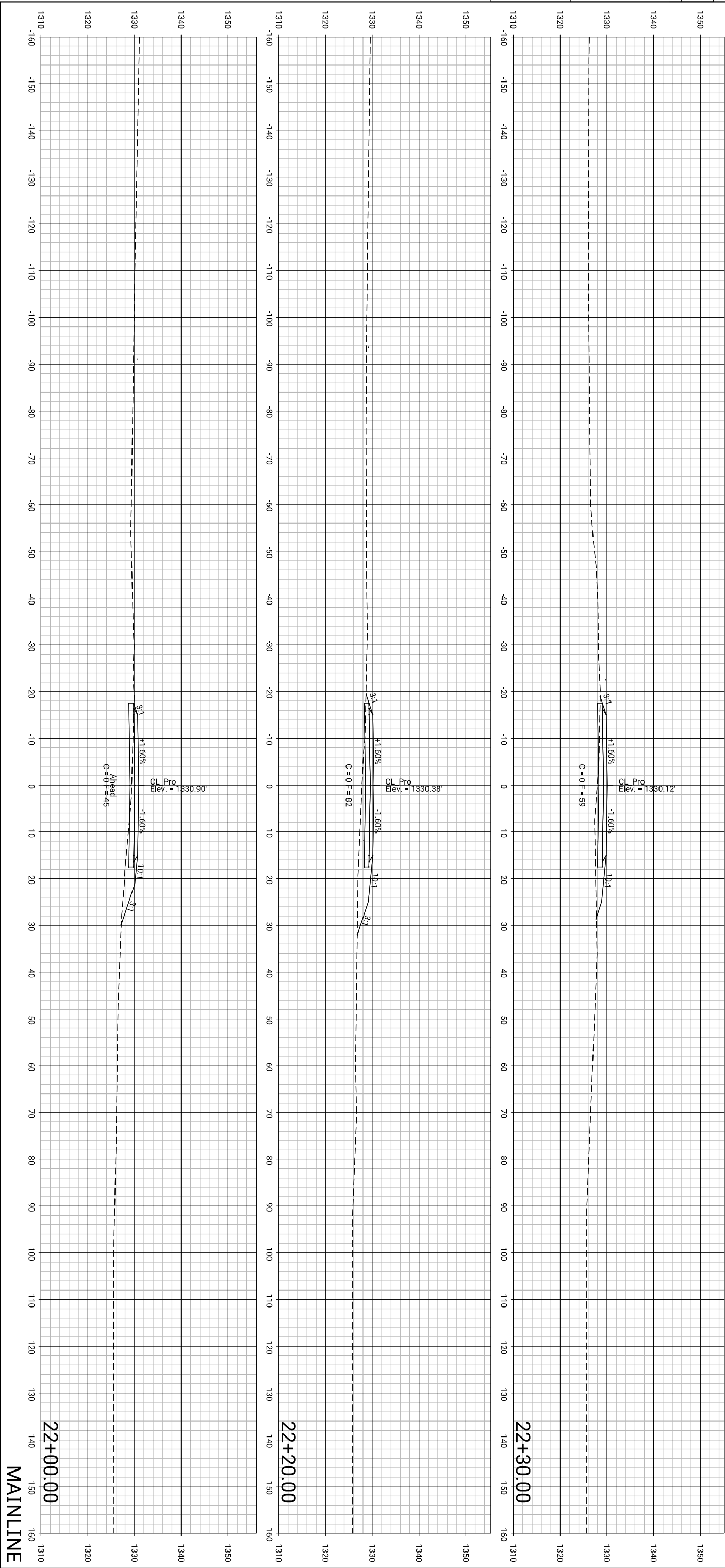
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	70	75

DATE	BY	REFERENCES NOTED
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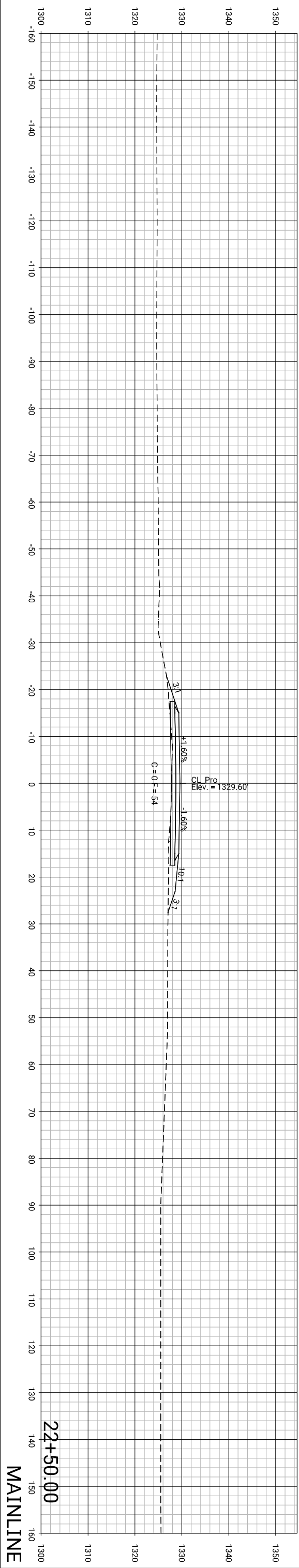
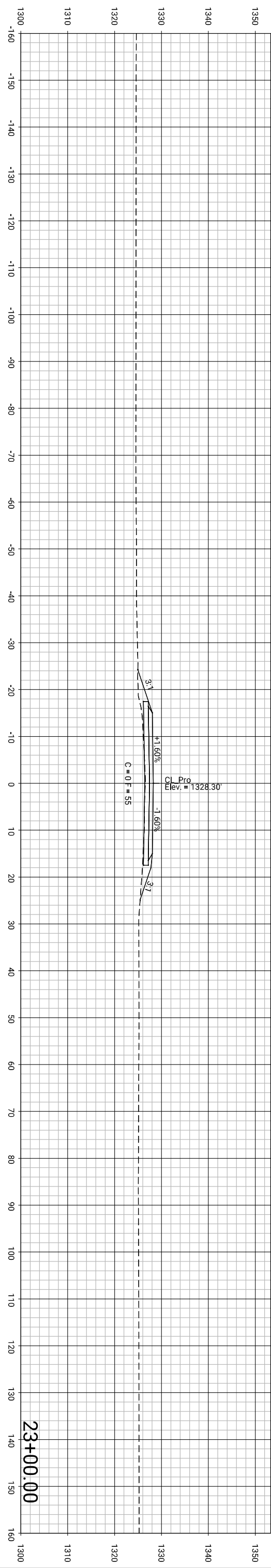
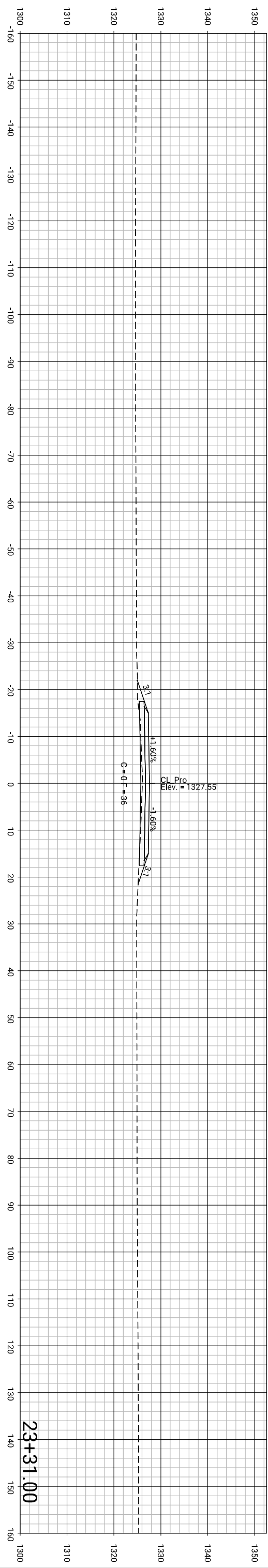


STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	71	75

DATE	BY

REFERENCES NOTED
REFERENCES CHECKED

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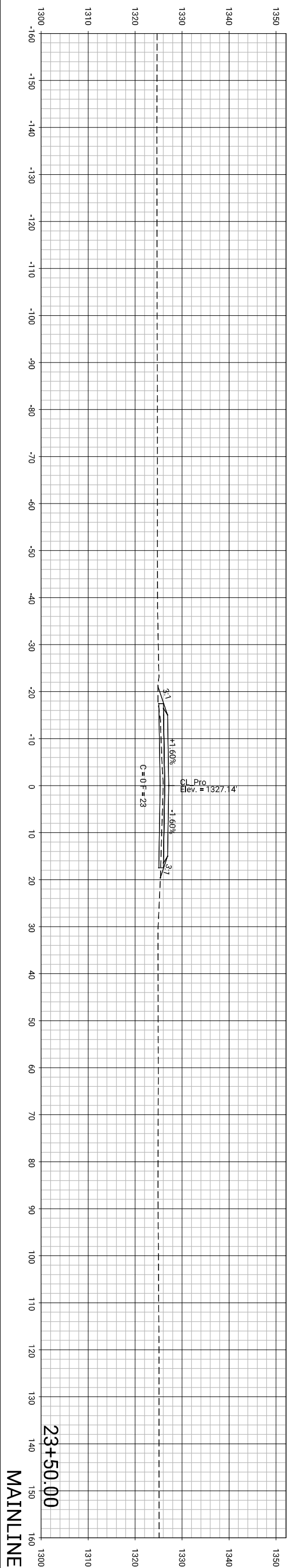
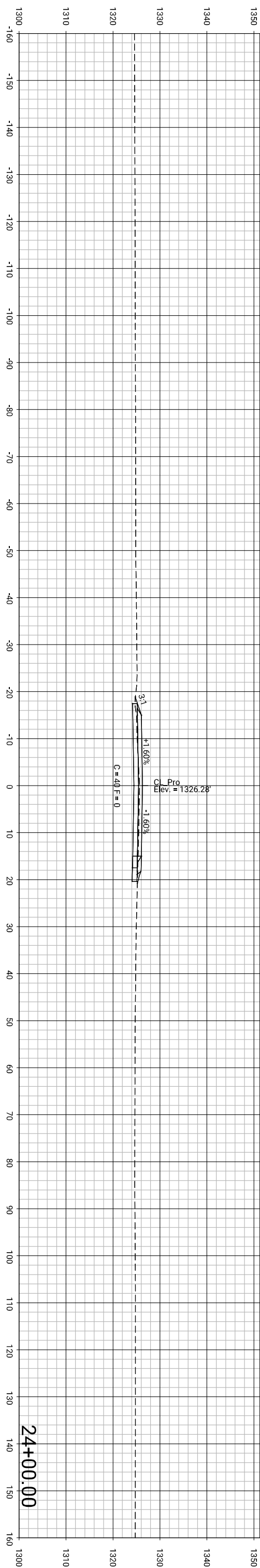
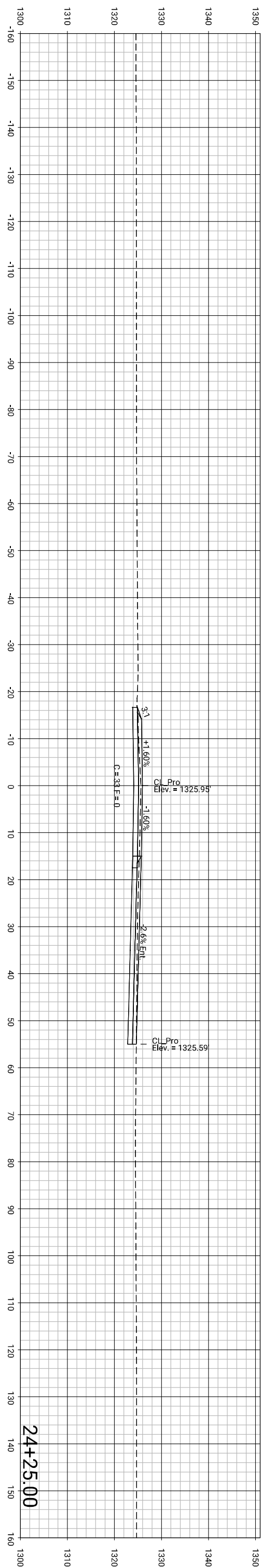


MAINLINE

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	72	75

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

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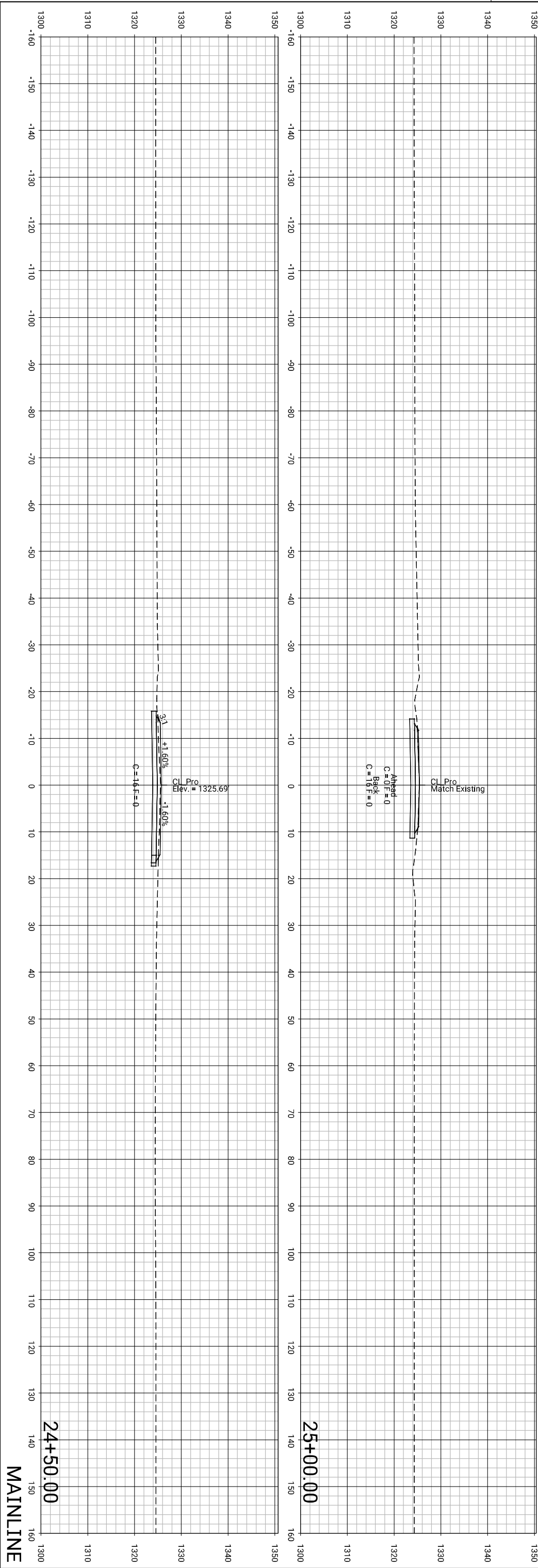


MAINLINE

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL
KANSAS	015 C-5215-01	2025	73	75

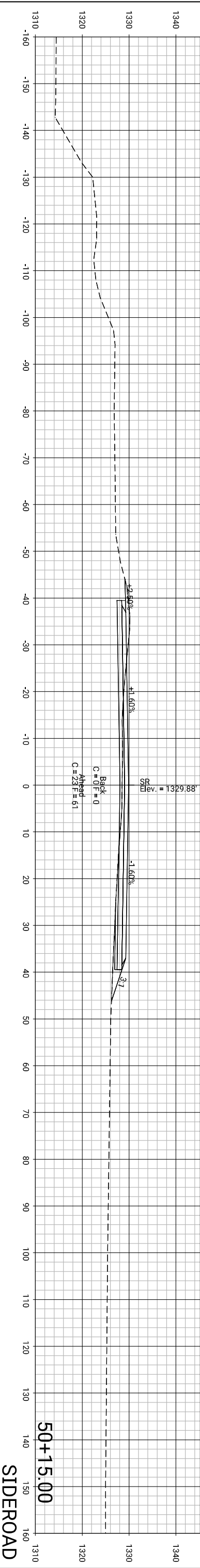
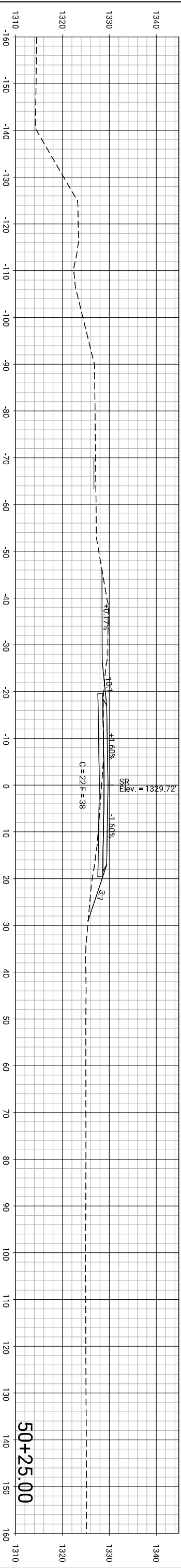
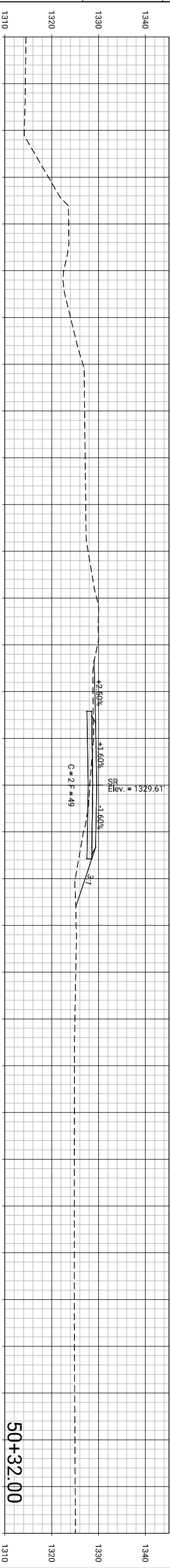
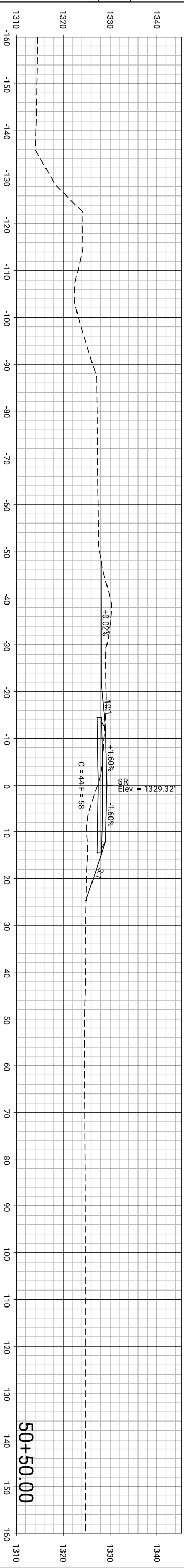
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REFERENCES NOTED		
REFERENCES CHECKED		

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	74	75

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED



SIDEROAD

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	015 C-5215-01	2025	75	75

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : ewisbey 30-AUG-2024 14:23
File : 2212890_sideroad rxs.dgn

