

STATE	PROJECT NUMBER	Year	Sheet No.	Total Sheets
KANSAS	37 C-5213-01	2024	1	51

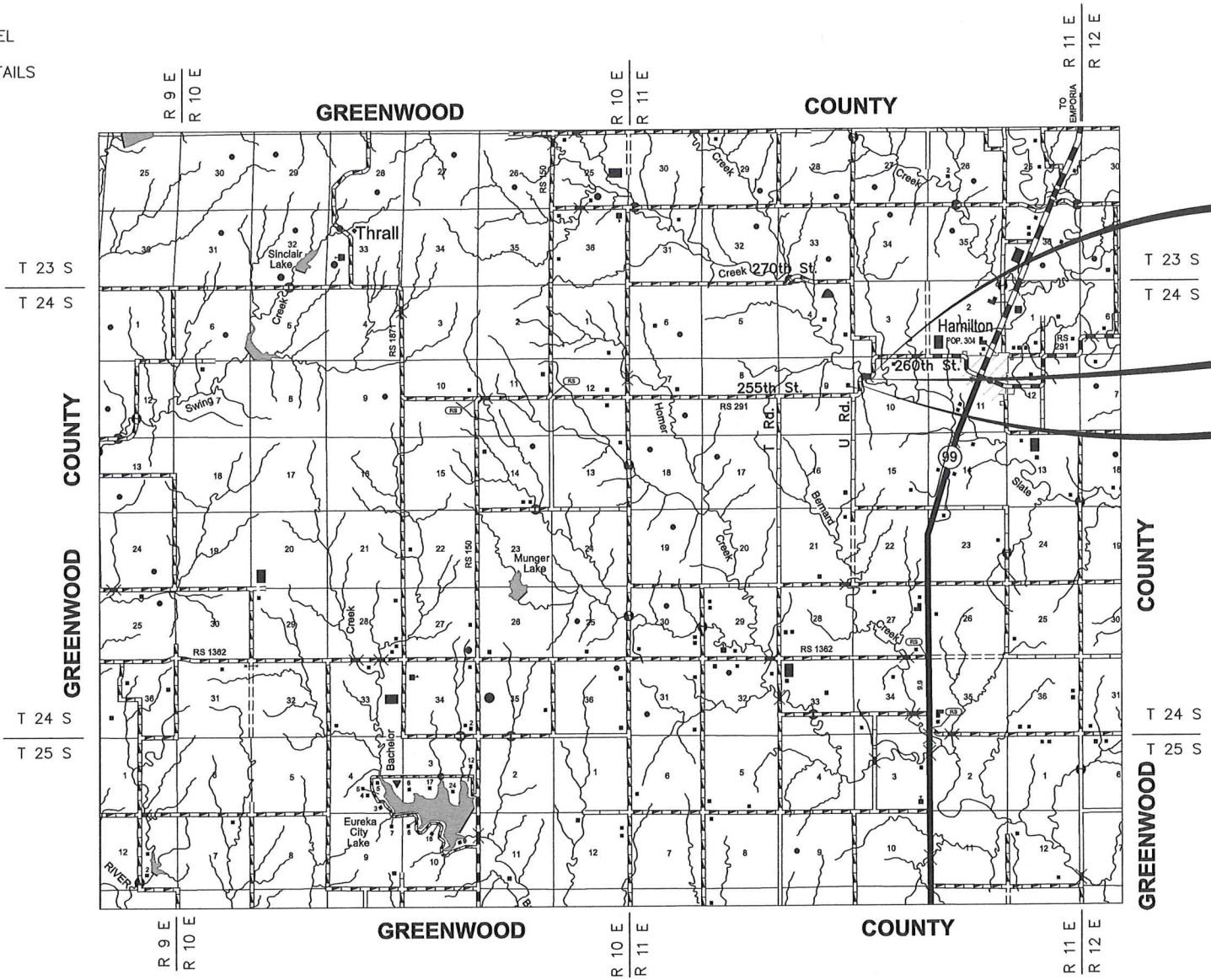
STATE OF KANSAS

PLAN AND PROFILE OF PROPOSED
37 C-5213-01

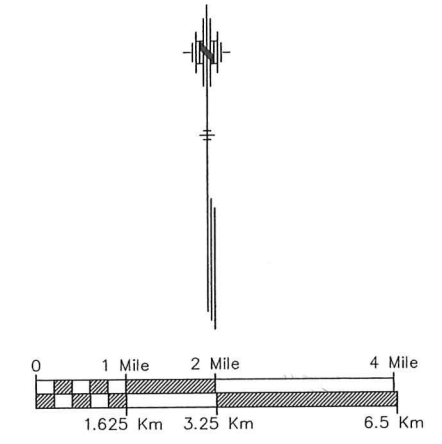
GREENWOOD COUNTY

INDEX OF SHEETS

- 1TITLE SHEET
- 2TYPICAL GRADING SECTION
- 3PLAN & PROFILE SHEET
- 4-8.....GUARDRAIL DETAILS
- 9SUMMARY OF BRIDGE QUANTITIES/NOTES
- 10.....CONTOUR MAP
- 11.....CONSTRUCTION LAYOUT
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- 19.....BRIDGE EXCAVATION
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- 32.....SUMMARY OF SEEDING QUANTITIES
- 33-39.....PERMANENT SIGNING DETAILS & QUANTITIES
- 40-45.....TRAFFIC CONTROL PLAN AND DETAILS
- 46-51.....CROSS SECTIONS



GRADING
BRIDGE
SURFACING (AB-3)
SEEDING
SIGNING



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DESIGN DESIGNATION

AADT	50 (2022)
AADT	60 (2042)
DHV	
D	
T	
V	30 mph
C of A	
Clear Zone	10'

CONVENTIONAL SIGNS

COUNTY LINE	-----	CENTER LINE OF PROJECT	-----	50	1
CITY LIMITS	-----	TERRACE	-----		
STATE or NATIONAL LINE	-----	CULVERTS	-----		
TOWNSHIP, SECTION or GRANT LINE	-----	DROP INLET & STORM SEWER	-----		
PROPERTY LINE	-----	ACCESS CONTROL	-----		
HIGHWAY FENCE	-----	POWER POLE	-----		
EXISTING FENCE	-----	TELEPHONE POLE	-----		
GUARD FENCE	-----	MARSH	-----		
CONSTRUCTION LIMITS	-----	HEDGE	-----		
RIGHT OF WAY LINE	-----	TREES	-----		
TRAVELED WAY	-----	PROFILE ELEVATION	-----	1172.18	+50
RAILROADS	-----	STREAM or CREEK	-----		

GROSS LENGTH OF PROJECT	750.00	FT. = 0.142 MILE
EXCEPTIONS		FT. = MILE
NET LENGTH OF PROJECT	750.00	FT. = 0.142 MILE
NET LENGTH OF BRIDGES	132.50	FT. = 0.025 MILE
NET LENGTH OF ROAD	617.50	FT. = 0.117 MILE

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

FINAL PLANS
Cook, Flatt & Strobel
ENGINEERS, P.A.
DATE: February 2024

PLANS PREPARED BY:

CFS ENGINEERS

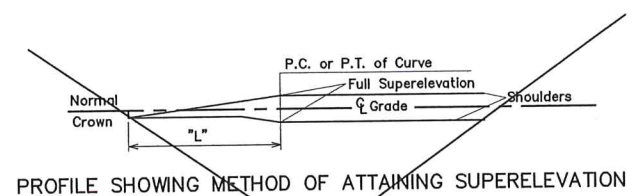
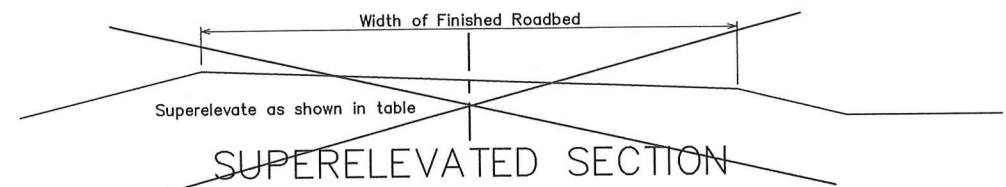
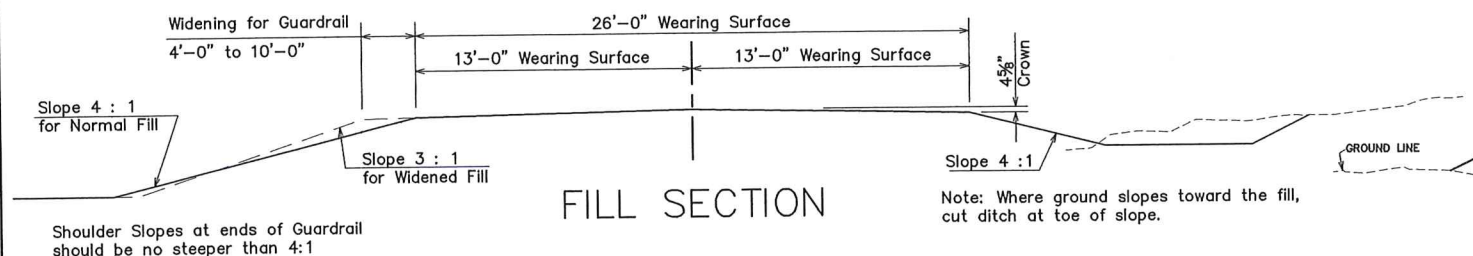
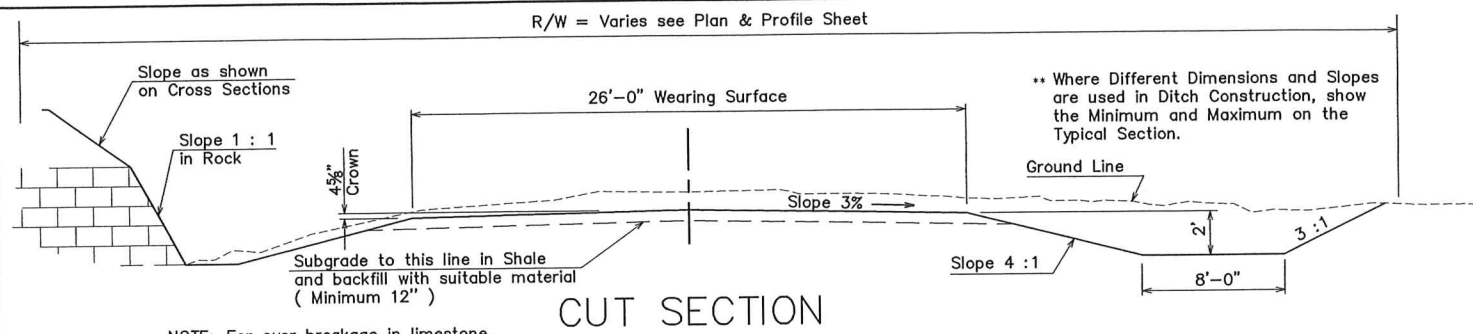
BRIDGE: GENE E. PETERSEN, LICENSED 17259

GRADING: KENNETH BLAIR, LICENSED 10469

RECOM. FOR APPROVAL-DATE

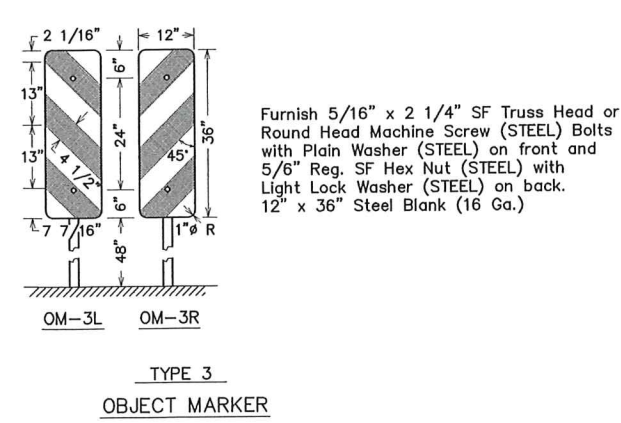
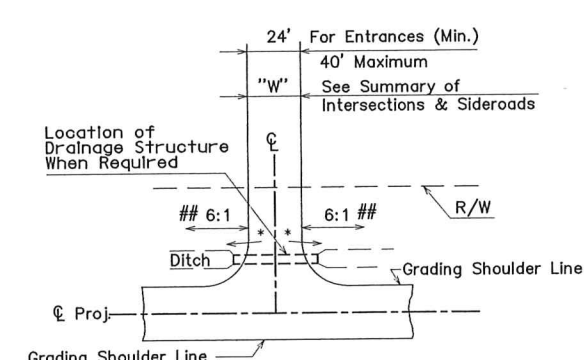
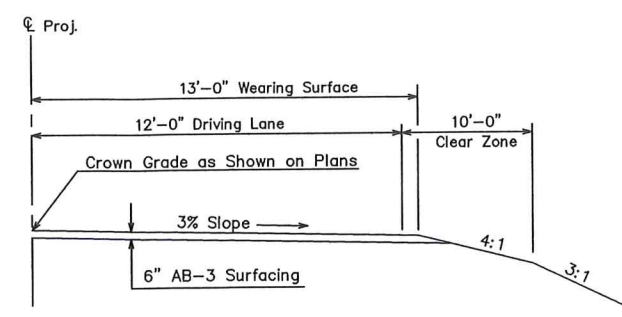
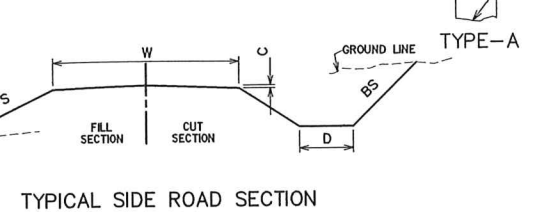
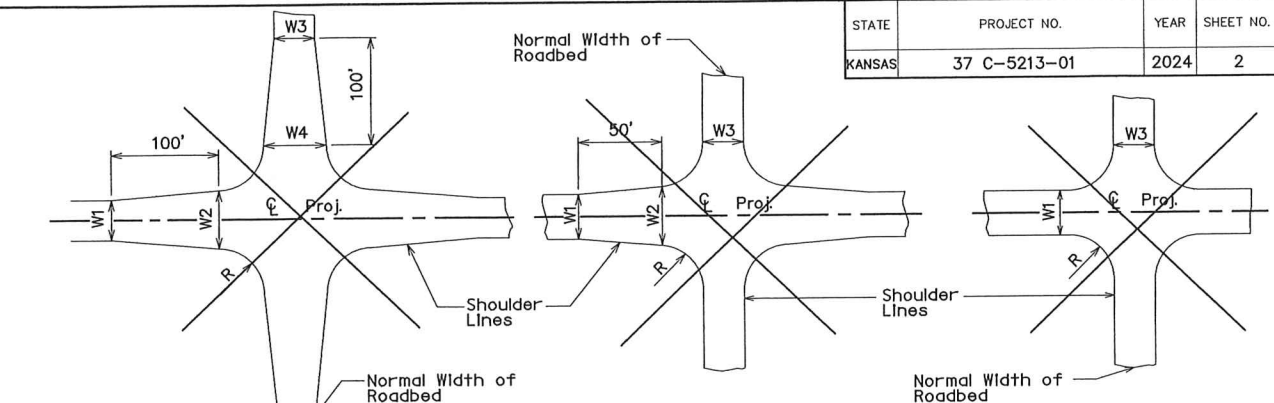
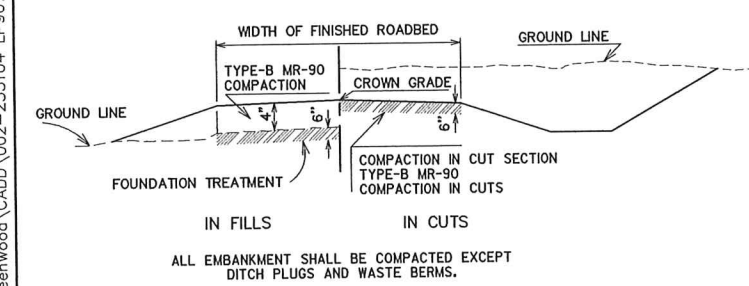
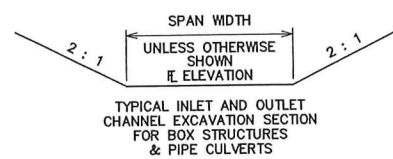
Road Supervisor _____ 2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	2	51



SUPERELEVATION DATA

Station P.I. of Curve	Degree Curve	Design Speed	Super Per Ft.	Transition Length Ln. Ft.	
				P.C.	P.T.
-	-	-	-	-	-
-	-	-	-	-	-



SUMMARY OF INTERSECTIONS AND SIDEROADS												
STATION	SIDE OR QUADRANT	TYPE	W	W1	W2	W3	W4	R	C	S	D	BS

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SUMMARY OF OBJECT MARKERS AND SIGNS						
STATION TO STATION	SIDE	TYPE OF STRUCT.	TYPE OF SIGN	OBJECT MARKER		REMARKS
				TYPE	NO.	
STATION 258+00 O.R.	Lt.	SP. BR.		OM-3L	2	ϕ @ Lt. Br. Quads
	Rt.	SP. BR.		OM-3R	2	ϕ @ Rt. Br. Quads
TOTAL					4	

ϕ As you face bridge end from approach
* Back-to-Back [Sign(s) on Both Sides of Post]

* On side roads and entrances which slope toward the roadway, construct a low point approx. 6" deep to divert surface drainage into the roadway ditch.

On ditch plugs and side roads or entrances without drainage structures use 8 : 1 slopes where feasible.

GENERAL NOTES

All signs shown on the plans, and other signs furnished and installed by the County with their own forces and funds will be installed in conformance with the Manual of Uniform Traffic Control Devices (latest edition).

County to furnish all easements and additional right of way (unless otherwise noted).

Owners will move and adjust public and private utility facilities as necessary to fit the new construction unless noted otherwise on the plans or in the proposal.

Consider stations shown for all drainage structures as approximate only. The Project Engineer will be responsible to place all structures in locations that fit the natural drainage and meet the grade requirements.

Cut channels at all box structures (except where otherwise noted) to flowline elevations and to a width of 2' outside of each outside wall and with slopes 2 : 1 prior to installation or construction of box structure. Excavation and embankment required for this work are included in the earthwork quantities.

Install Object Markers Type OM-3(R)(L) at all span bridges and when indicated on the plans at box structures. Install with the inside edge of the marker in line with the inside clearance line of the structure. Install an object marker retroreflectORIZED on one side on both left and right sides of each end of a structure.

Mount object markers on 11' galvanized flanged channel posts (2 lbs./ft.) punched with 3/8" diameter holes on 1" centers for the top 4'.

Pay for Object Markers directly.

All items of fastening accessories will be zinc or cadmium plated. The machine screws, nuts, and washers will comply with the current Standard Specifications for State Road and Bridge Construction. All sign blanks will have rounded corners.

6	11-9-04	Changed "Culvert" to "Structure"	DMK	RJS
5	12-1-03	Rev. Delin.'s/Add. Typ. Sect./Changed DMK	DMK	RJS
4	5-14-03	Rev. Contractor note in Gen. Notes	DMK	RJS
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL GRADING SECTION

LP907

FHWA APPROVAL	12-06-04	APP'D	RJS
DESIGNED	DMK	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	RJS	QUAN.CK.
			TRACE CK.

J:\Hisp\Greenwood\CADD\002-235104_LP907.dwg 2/01/2024 - 3:07pm Hpham

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	3	51

Ref. W 1/4, NW 1/4 Sec. 10= Sta. 250+00
 Fnd. 4" "x" chisled in 4'-6" E-Wx 2' N-S Stone
 N 448,171.24 E 19,433,804.06

- In line w/ Fc. to N.
- To N-S Barb wire Fc. 8.0' N.
- Top 4" Stl. Fc. Post 23.0' WNW
- Spk. & Wshr. W. Face 40" Tree 27.72' SW
- Spk. & Wshr. E. Face 30" Tree 24.80' NNE
- Spk. & Wshr. W. Face 70" Tree 34.42' NE
- Set 1/2" Rebar w/ CLS80 Cap 0.27' S.

Ref. P.O.T. @ Sta. 253+92.01, 0.0' Rt.
 Set 5/8" Rebar @ P.O.T.
 N 448,169.86 E 19,434,196.07

- To 4" Grav. Rd. to E. 5.0' S.
- Spk. & Wshr. N. Fc. 50" Tree 27.2' NW
- Spk. & Wshr. E. Fc. 20" Tree 43.7' NE

Ref. P.O.T. @ Sta. 262+23.40
 Set 5/8" Rebar @ P.O.T.
 N 448,166.95 E 19,435,027.45

- In 4" Grav. Rd. to W.
- Spk. & Wshr. N. Fc. Aband. Pow. Pole 21.0' SSW
- "T" Post (B.M. #3/TCP#100) 67.3' SW

Ref. Ctr. Cor. NW 1/4 Sec. 10= Sta. 263+23.40
 Set 5/8" Rebar W/ Alum. Cap Stamped CLS 80
 N 448,166.60 E 19,435,127.45

- In line w/ Grav. Rd. to N.
- In line w/ Grav. Rd. to W.
- To E-W Fc. 20.0' S.
- Spk. & Wshr. E. Face 40" Tree 36.46' NE
- Spk. & Wshr. N. Face Pow. Pole 26.06' WNW

NW 1/4 Sec. 10, T 24 S, R 11 E

Short, Larry C. Rev. Trust
 Bk. 236, Pg. 215

Short Family Irrevocable Trust
 Bk. 230, Pg. 597

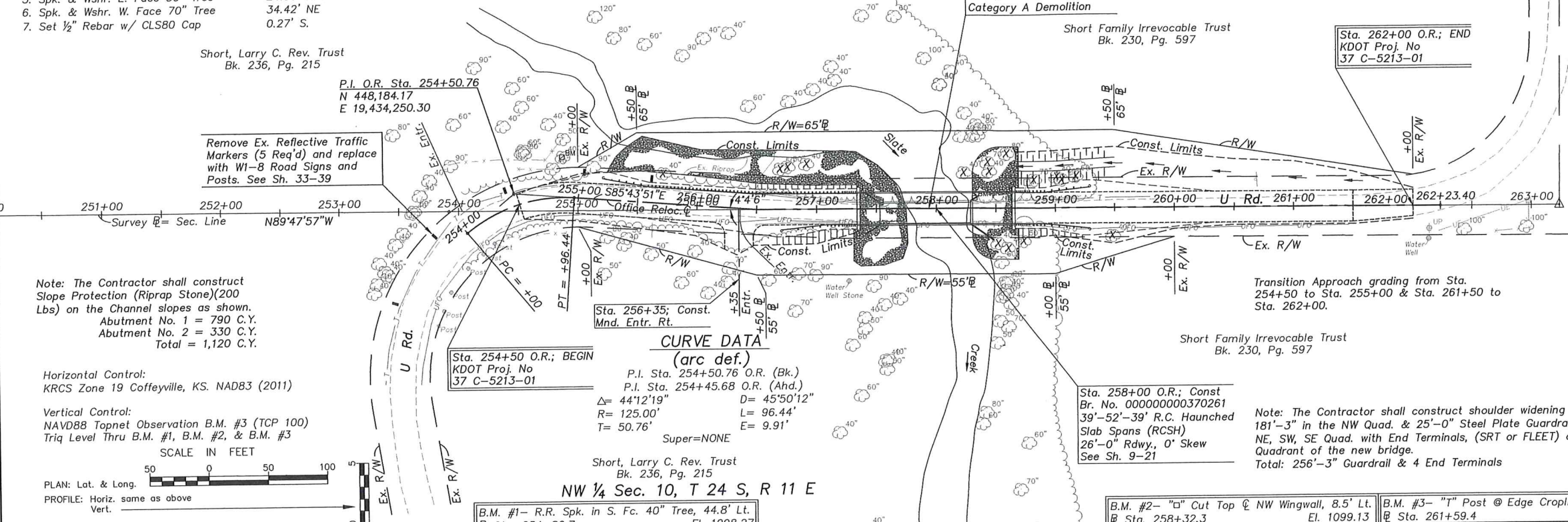
Sta. 262+00 O.R.; END
 KDOT Proj. No
 37 C-5213-01

FOR INFORMATION ONLY -
 Large trees & stumps to be grubbed this project:
 9-40", 3-50", 1-60", 2-70"
 1-80"
 Total = 16

LIST OF UTILITIES

Utility	Location	Owner-Address
Telephone	Lt.	ATT Distribution (800)778-9140
Fiber Optic	Rt.	Mediacom (800)778-9140

Note: The Contractor shall remove the existing structure (2 span Concrete Beam Bridge (27' & 45') on concrete vertical abutments and concrete pier with 17.0' roadway concrete deck).
 The Contractor shall excavate the channel improvements in the vicinity of the new bridge prior to its construction.
 The existing structure shall become the property of the Contractor and shall be disposed of at a site selected by the Contractor and in a manner approved by the Engineer.



DATE	BY	REVISION

DATE	BY	REVISION

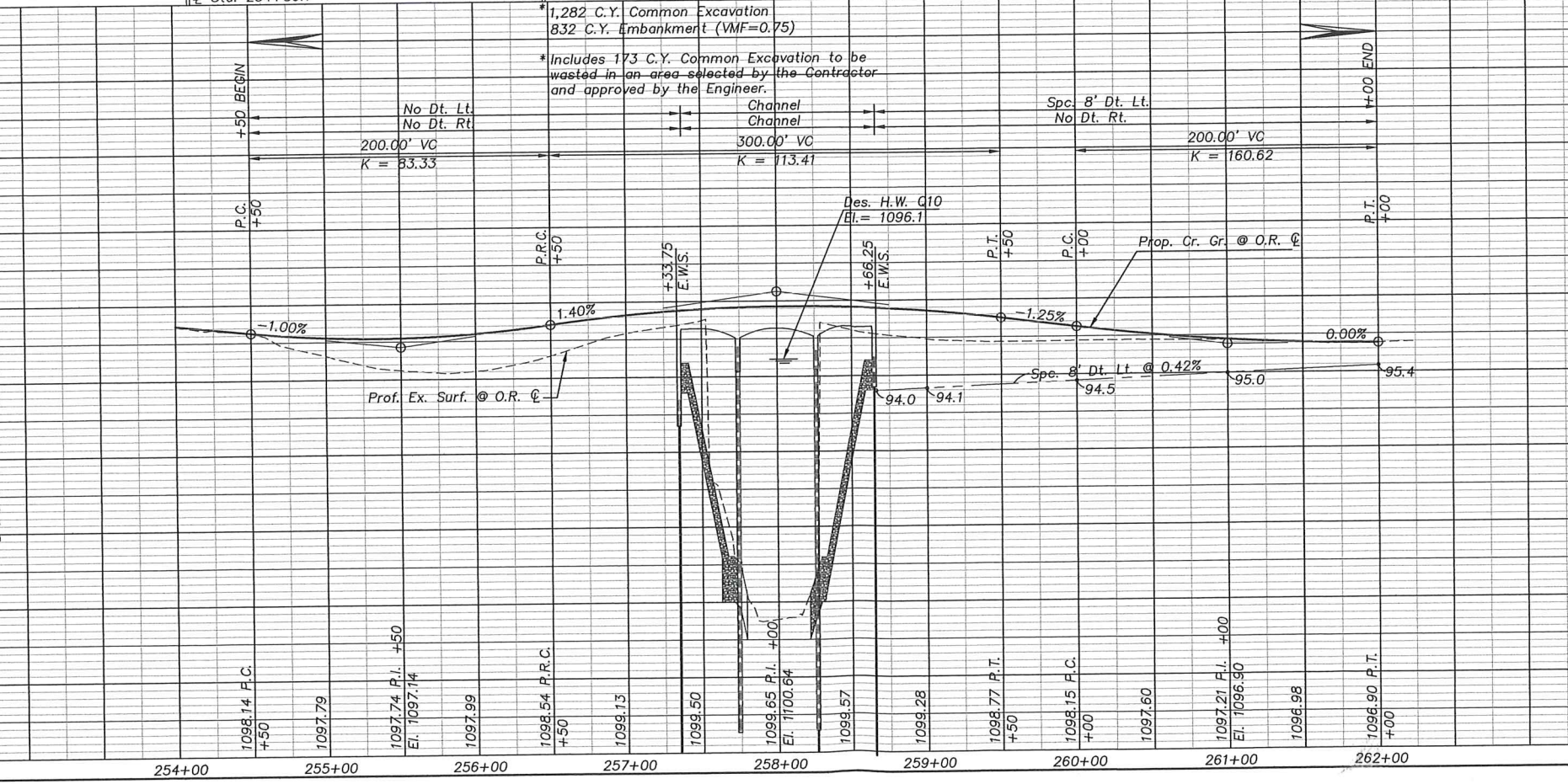
Note: All disposal sites must be approved by the Kansas Department of Health & Environment. Materials either stockpiled or disposed of in a Flood Plain shall require a Kansas State Board of Agriculture permit. Any materials dumped in waters of the United States or U.S. Wetlands is subject to U.S. Corps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

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

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

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

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



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KANSAS DEPARTMENT OF TRANSPORTATION
 PLAN & PROFILE
 STA. 254+50 to STA. 262+00



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KANSAS	37 C-5213-01	2024	4	51

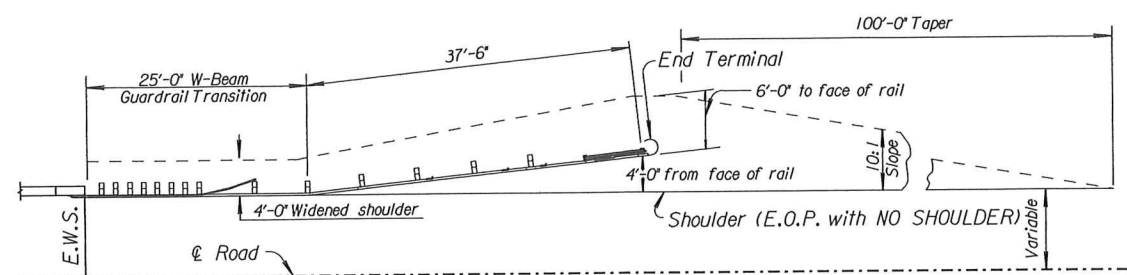
NOTE: Layouts 1, 2, 3, and 4 will be symmetric for any quadrant unless otherwise shown in the plans.

When using Rubrail, attach Std. Drawings No. RD611, RD616 and RD615 (parallel) or RD615A (flared).

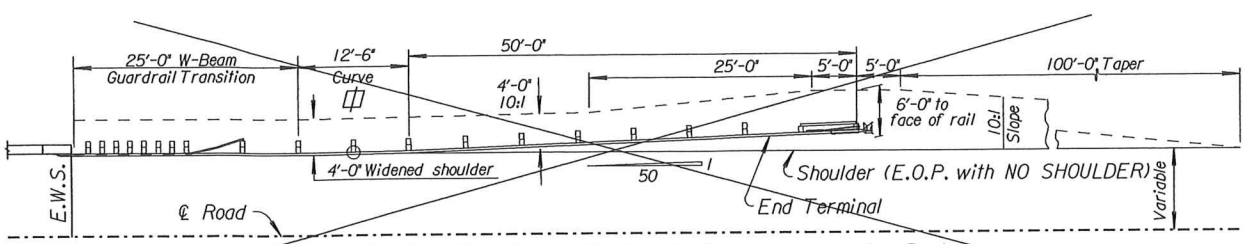
When using Thrie beam, attach Std. Drawings no. RD611 and RD608 or RD613.

Attach Std. Drawing No. RD617 (parallel) or RD 617A (flared) for post over box less than full depth.

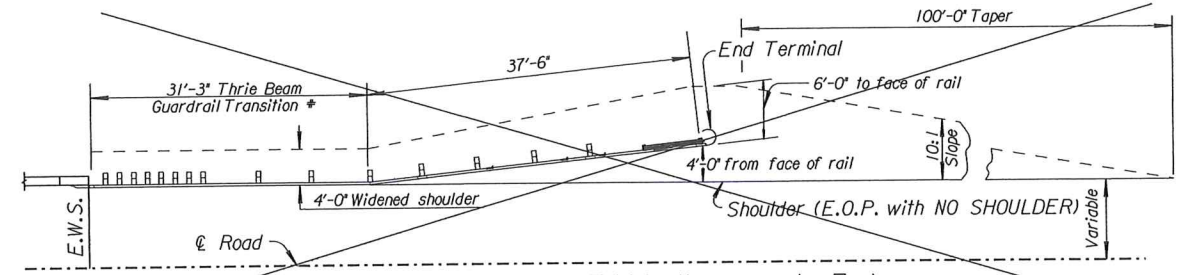
□ Radius = 625.08'



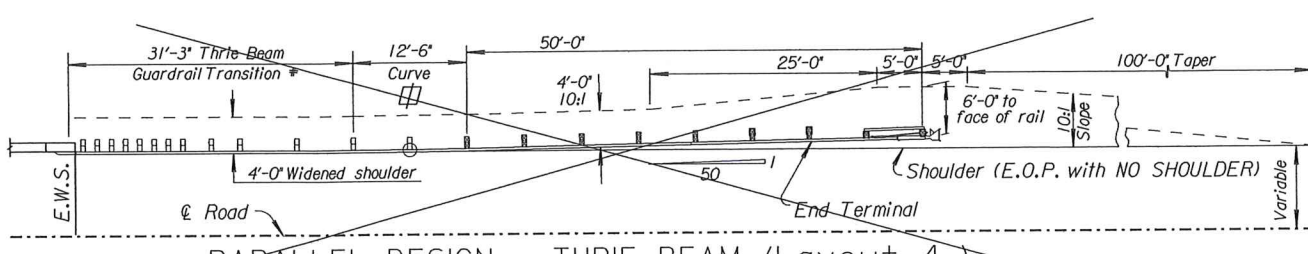
FLARED DESIGN - RUB RAIL (Layout 1)



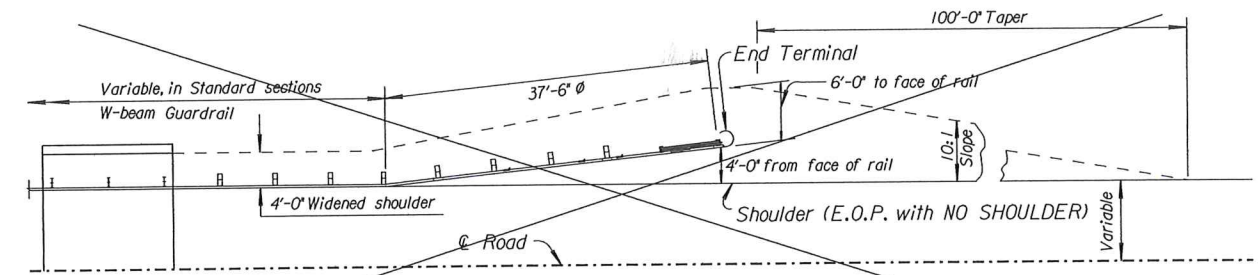
PARALLEL DESIGN - RUB RAIL (Layout 2)



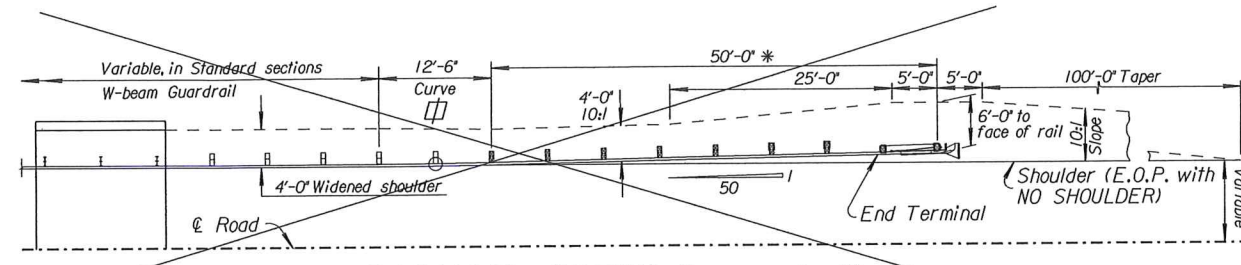
FLARED DESIGN - THRIE BEAM (Layout 3)



PARALLEL DESIGN - THRIE BEAM (Layout 4)



FLARED DESIGN (Layout 5)



PARALLEL DESIGN (Layout 6)

TYPICAL ALIGNMENT OF GUARDRAIL AT CULVERTS & BOX BRIDGES

TYPE	ALLOWABLE END TERMINALS						Required Standard Drawing
	Layout						
	1	2	3	4	5	6	
SRT	X		X		X		RD606
FLEAT	X		X		X		RD606
SKT		X		X		X	RD606

SUMMARY OF STEEL PLATE GUARDRAIL									
Location	Side	Layout	Additional Standard Sections Lin. Ft.	Total Pay Length Lin. Ft.	Layout 1 or 3		Layout 2, 4, or 6	Layout 5	
					Gd. Rail End Term. (SRT) Alt. #1 Each	Gd. Rail End Term. (FLEAT) Alt. #2 Each	Gd. Rail. End Term. (SKT) Each	Gd. Rail. End Term. (SRT) Alt. #1 Each	Gd. Rail. End Term. (FLEAT) Alt. #2 Each
Sta. 258+00									
NW Quadrant	Lt.	1	181'-3"	181'-3"	1	1			
NE Quadrant	Lt.	1	25'-0"	25'-0"	1	1			
SW Quadrant	Rt.	1	25'-0"	25'-0"	1	1			
SE Quadrant	Rt.	1	25'-0"	25'-0"	1	1			
TOTAL LENGTH				256'-3"	4	4			

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

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12	02-21-19	Updated per Road Memo 18-02	WFL	MJS
11	10-30-17	Removed X-Lite	WFL	MJS
10	01-06-15	Added X-Lite, Removed ET-PLUS	TLS	RJS
9	11-9-05	Added length for Thrie Beam transition	REA	RJS
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
TYPICAL ALIGNMENT OF GUARDRAIL INSTALLATIONS
LP620

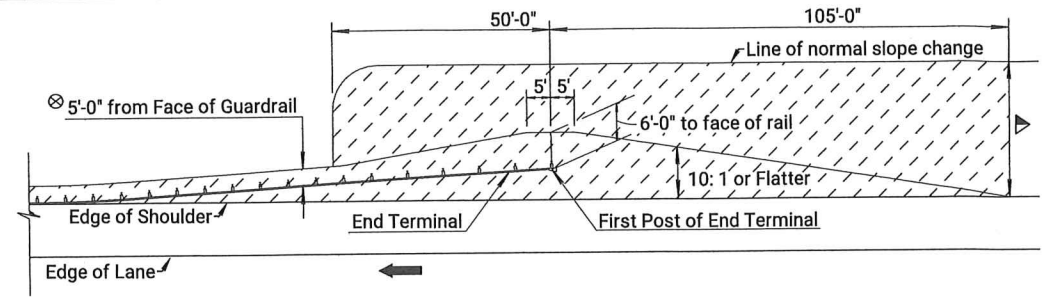
DESIGNED	APP'D.	MJS
DESIGN CK.	DETAIL CK.	QUAN. CK.
	TRACED	TRACE CK.

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

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GUARDRAIL CLEAR AREA

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

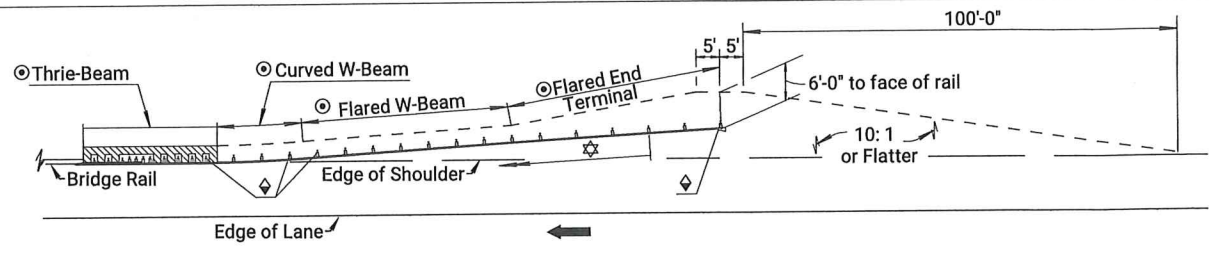


Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet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

▲ Normal Project Side Slope.
 ⊗ Deflection Distance for Normal Post Spacing

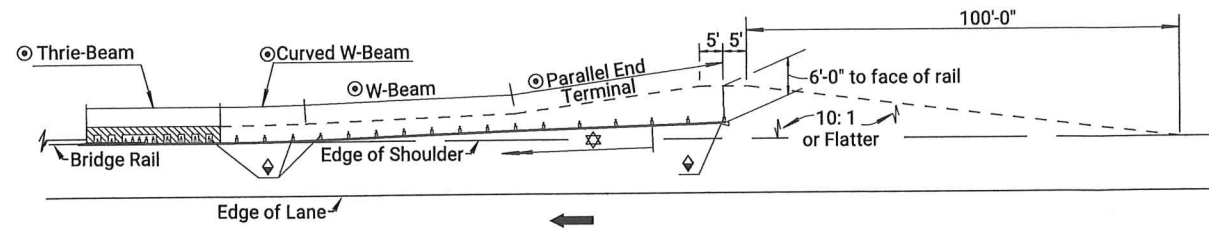
FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



PARALLEL 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)

GENERAL NOTES

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

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

Use approved polymer (preferred) or wood blockouts provided by the Manufacturer. The guardrail end terminal 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 thrie-beam portion of the installation see the details shown on KDOT's 'Guardrail Post Details' and 'Guardrail Thrie-Beam Transition Details' Standard Drawings.

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

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

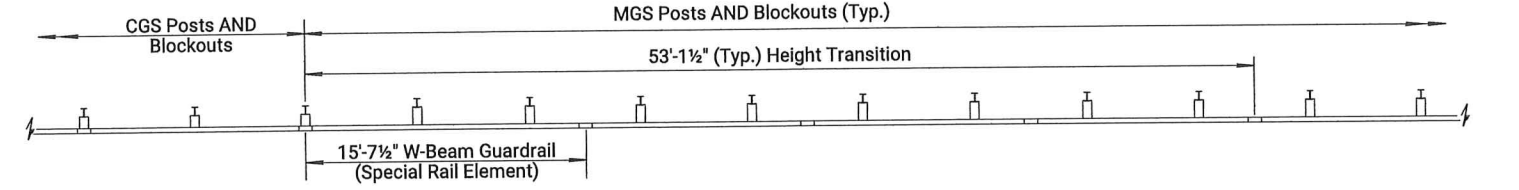
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even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

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

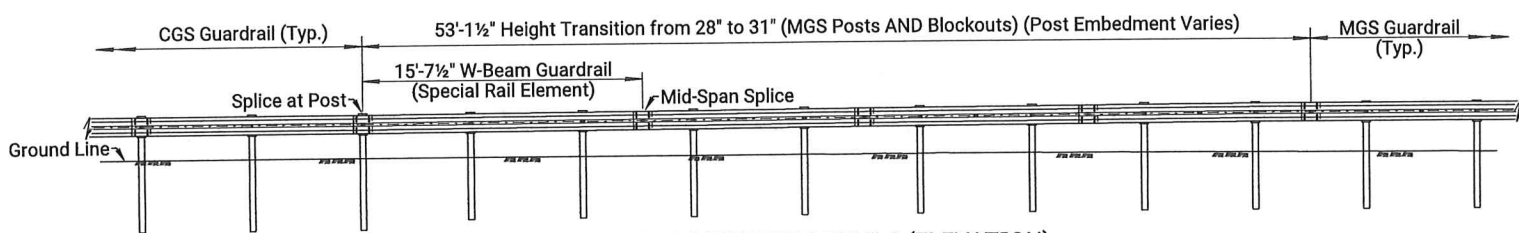
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered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

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

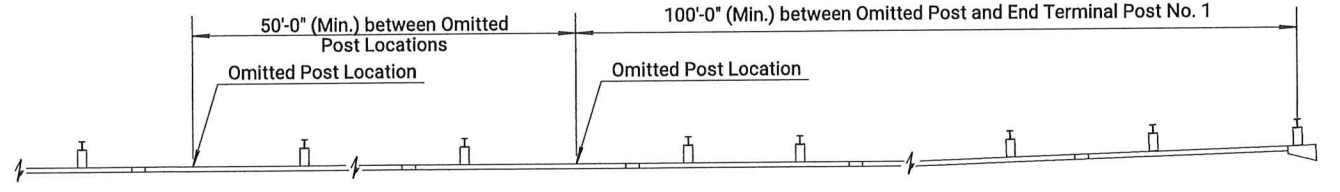
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



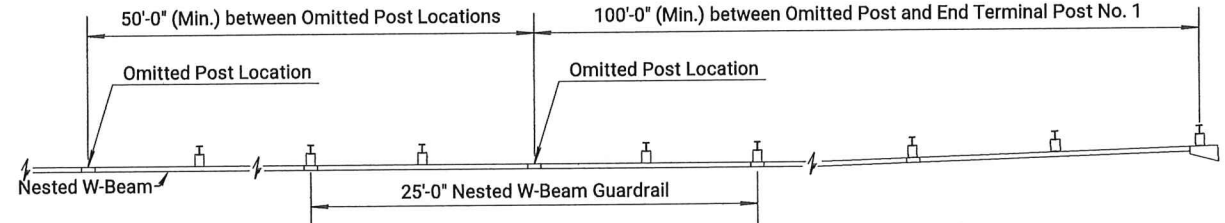
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

WATER RESOURCES RECEIVED

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL AUXILIARY DETAILS

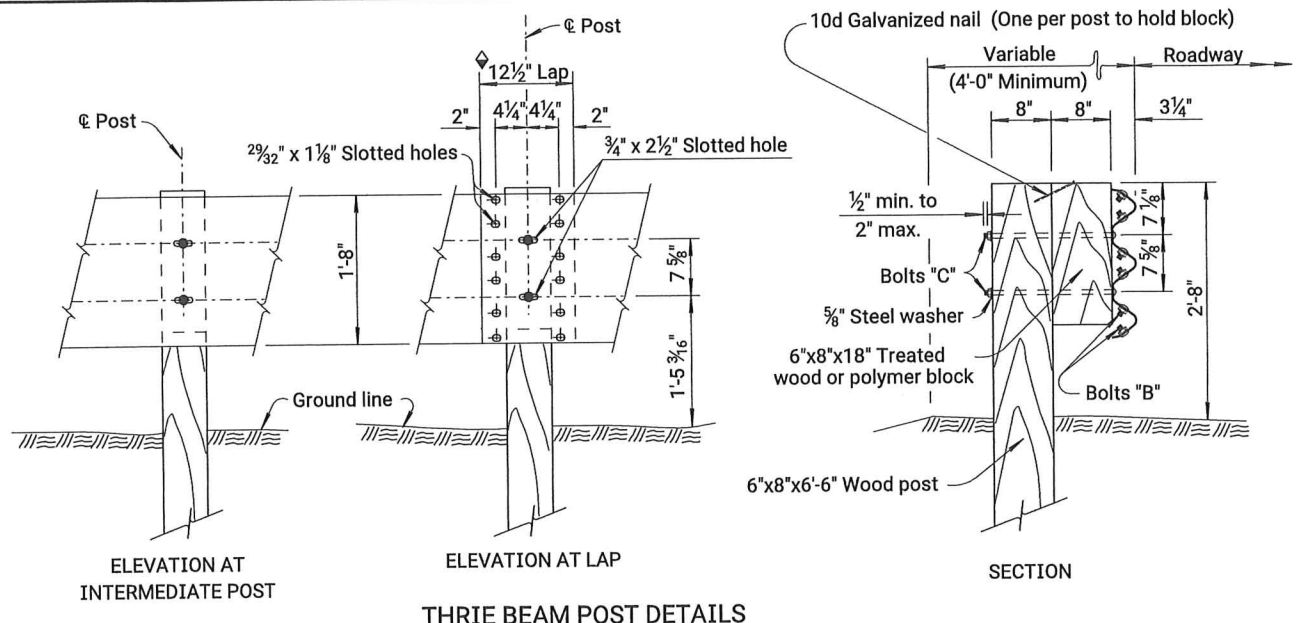
RD606

FWHA APPROVAL 09-25-18 APPD. Scott W. King

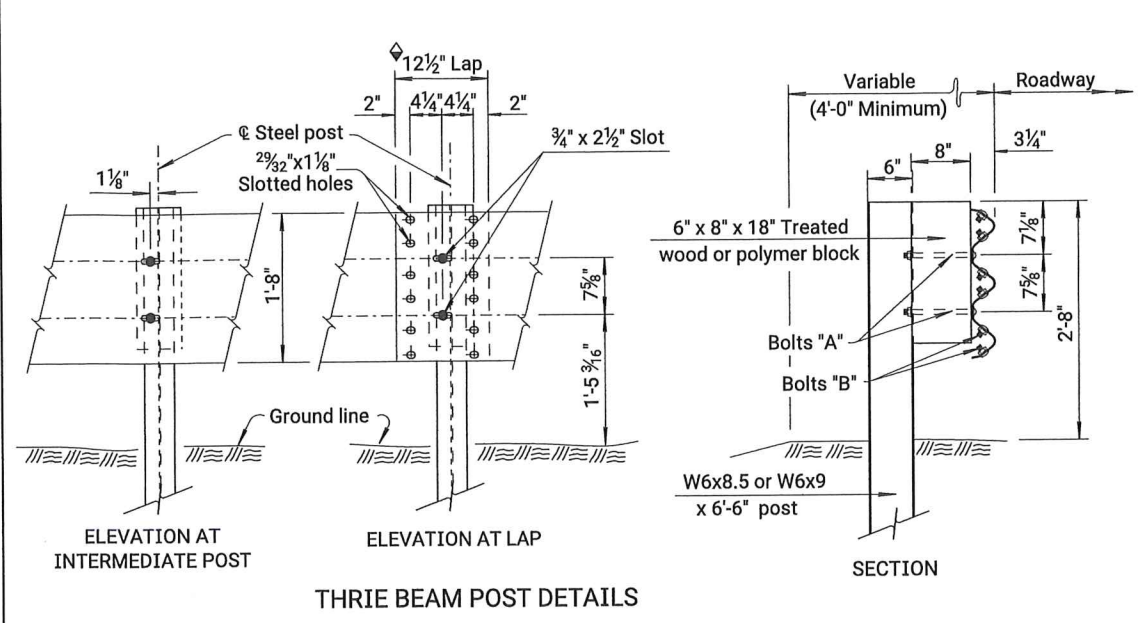
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	6	51

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.

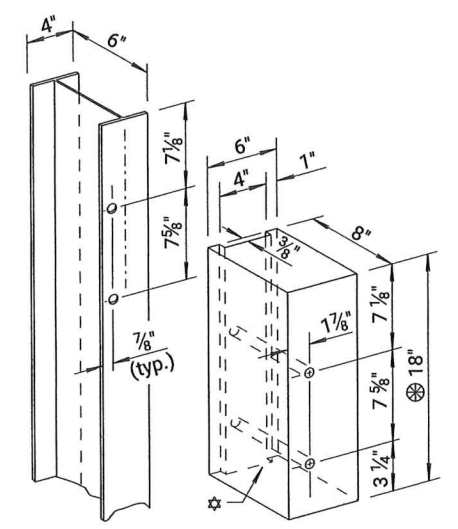


THRIE BEAM POST DETAILS

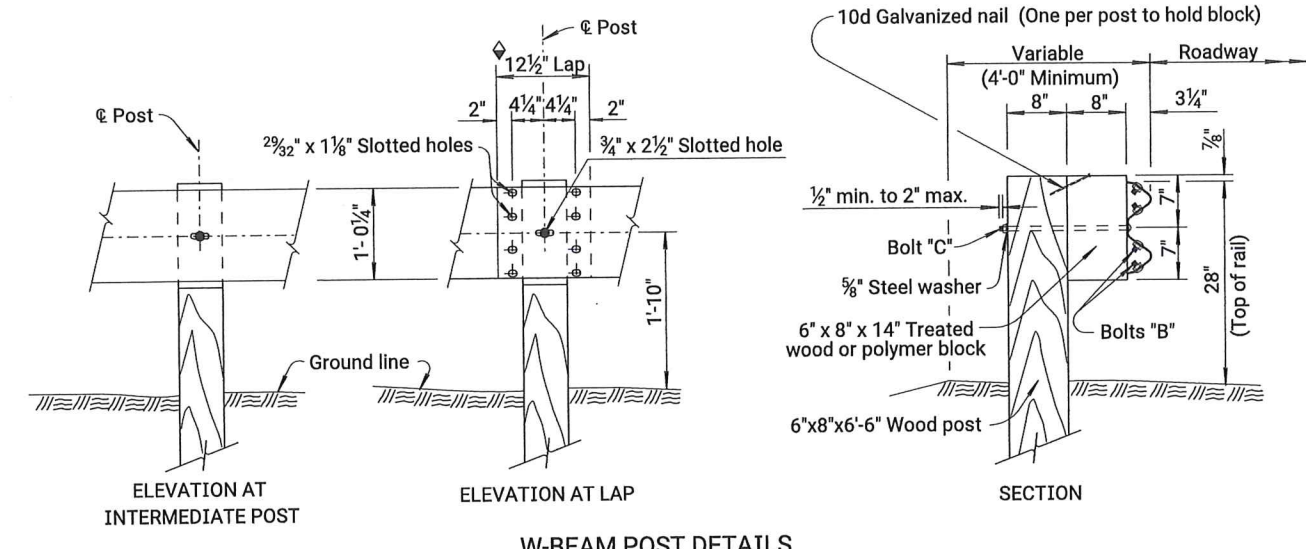


THRIE BEAM POST DETAILS

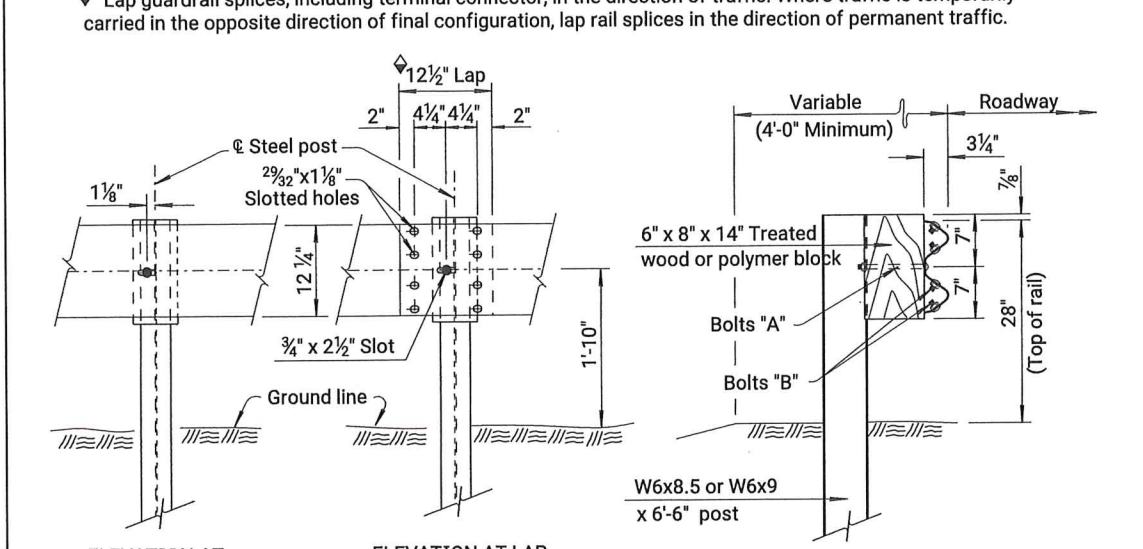
See Standard Drawing RD613 for Thrie-Beam Transition Section Details.



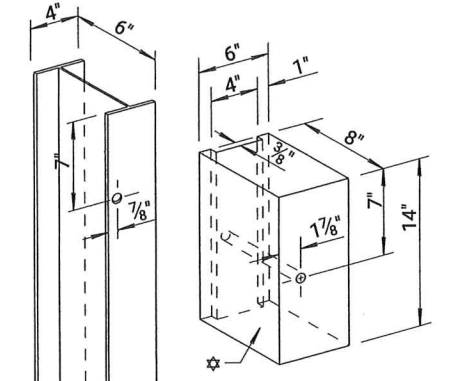
THRIE BEAM HOLE PUNCHING DETAILS



W-BEAM POST DETAILS



W-BEAM POST DETAILS



"W" BEAM HOLE PUNCHING 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.

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

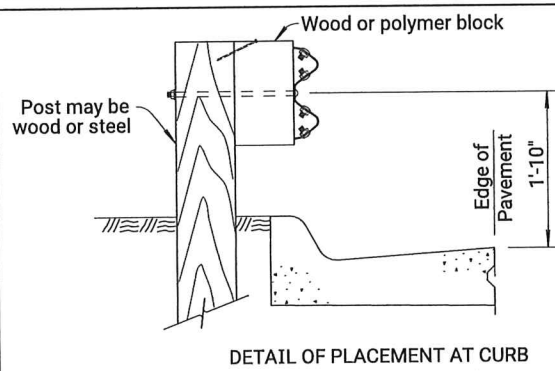
GENERAL NOTES (Wood Posts)

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.

STEEL POSTS

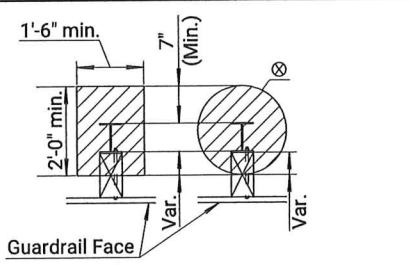
GENERAL NOTES (Steel Posts)

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 end terminals. Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations. Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6" except as allowed on Standard Drawing RD617. All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



DETAIL OF PLACEMENT AT CURB

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

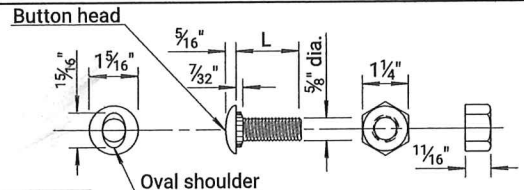


POSTS IN PAVEMENT PLAN (ALTERNATE GEOMETRIES) Applies to All Wood and All Steel Posts (Steel Posts Shown)

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

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

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



BOLT & NUT DETAILS
WATER RESOURCES RECEIVED
FEB 22 2024

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" w-be	S.W.K.	J.O.B.
11	06-30-04	Remove steel blockout and notes	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST DETAILS

RD611

FIWA APPROVAL 09-25-18 APP'D Scott W. King

DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

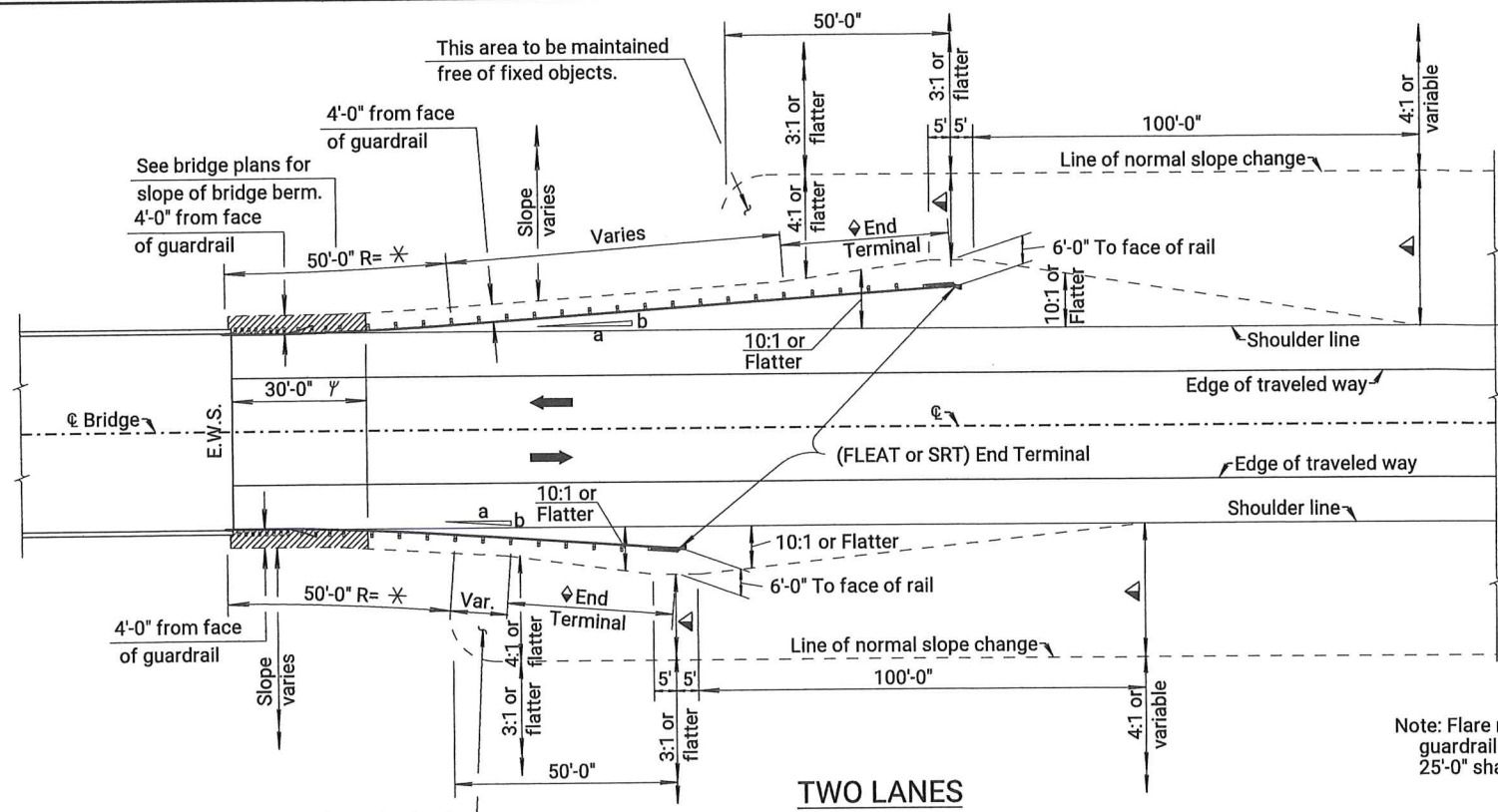
KDOT Graphics Certified 08-01-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	7	51

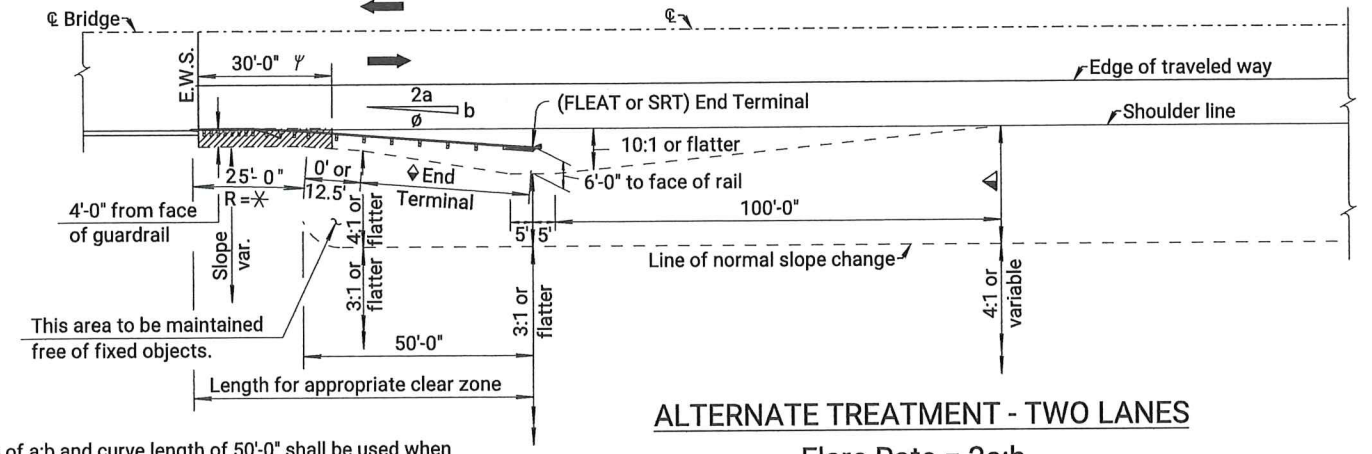
DESIGN PARAMETERS				
Design Speed (mph)	Flare Rate (a:b)	Radius (R)	Flare Rate (2a:b)	Radius (R)
70	15:1	375.55'	30:1	375.14'
60	14:1	350.59'	26:1	325.16'
55	12:1	300.69'	24:1	300.17'
50	11:1	275.76'	21:1	262.70'
45	10:1	250.83'	18:1	225.23'
40	8:1	201.04'	16:1	200.26'

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.

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

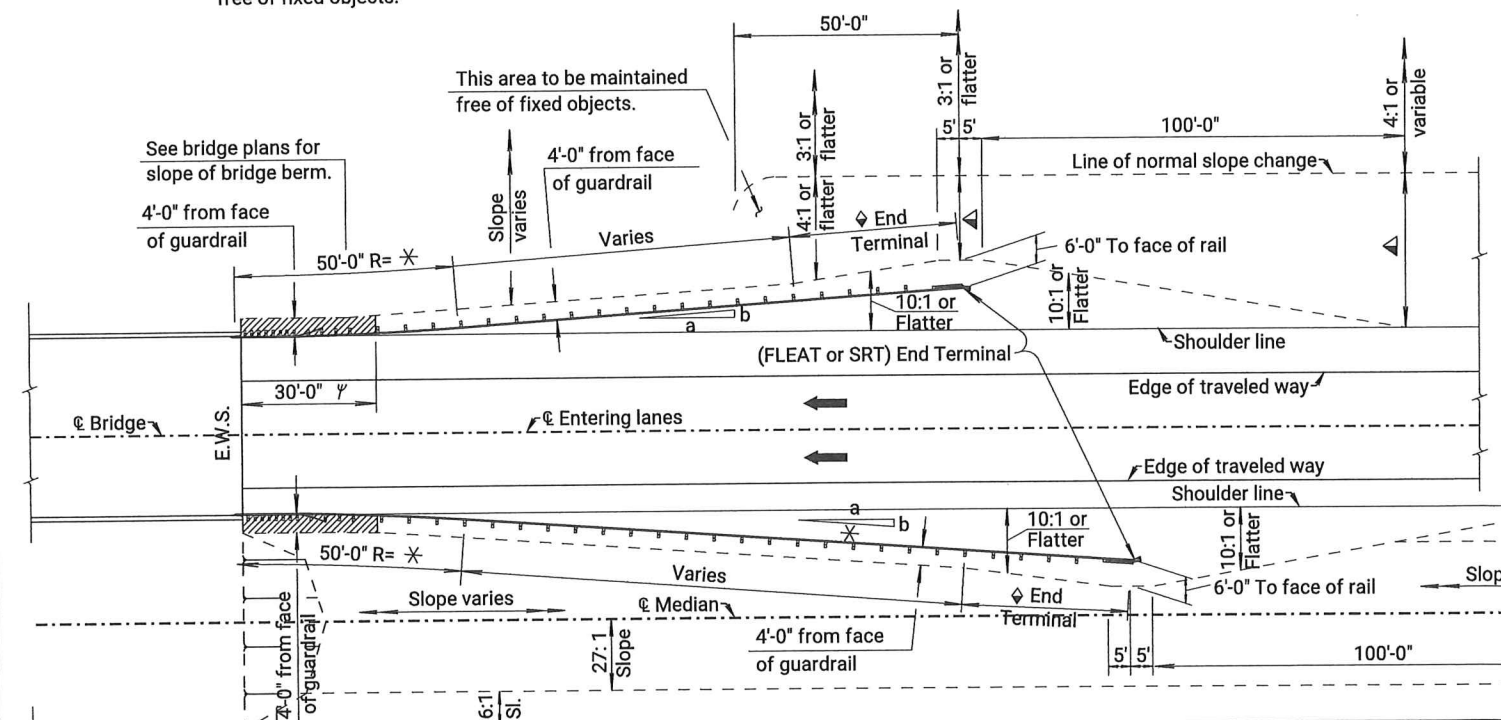


TWO LANES

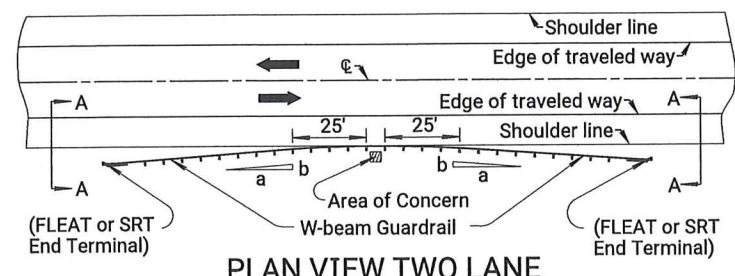


ALTERNATE TREATMENT - TWO LANES

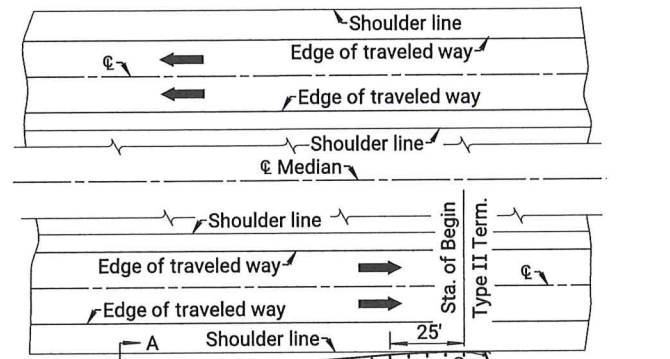
Flare Rate = 2a:b
 (GUARDRAIL LENGTHS OF 62.5' AND 75')



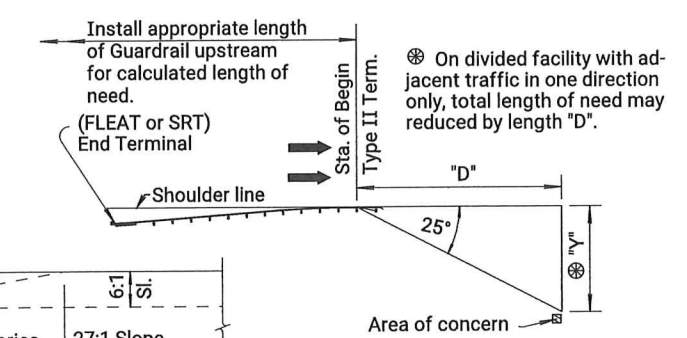
FOUR LANES - DIVIDED



PLAN VIEW TWO LANE

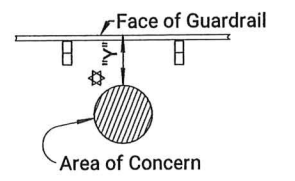


PLAN VIEW FOUR LANE



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

DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE



ENLARGEMENT - AREA OF CONCERN

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

WATER RESOURCES RECEIVED
FEB 22 2024

KS DEPT OF AGRICULTURE

NO.	DATE	REVISIONS	BY	APPD.
08	06-05-18	Removed Flare-beyond-the-Flare	ALR.	T.T.R.
07	05-15-17	Removed XLITE	ALR.	S.W.K.
06	07-02-09	Added roadside obstacle details	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

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

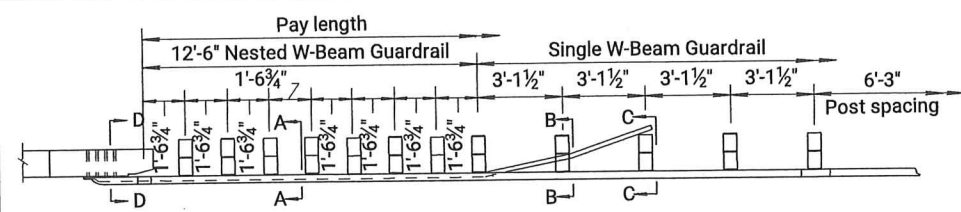
RD615A

DESIGNED	APPD.	QUANTITIES	TRACED
DETAIL CK.	06-19-18	QUAN. CK.	TRACE CK.

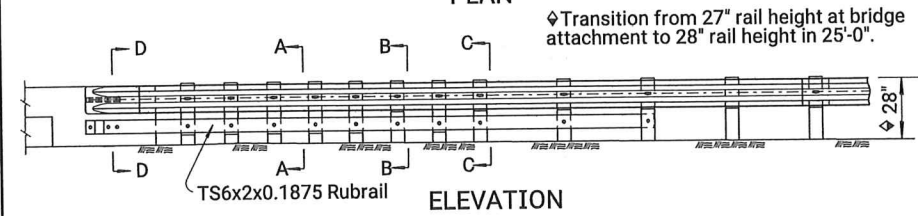
Scott W. King

KDOT Graphics Certified 05-16-2022

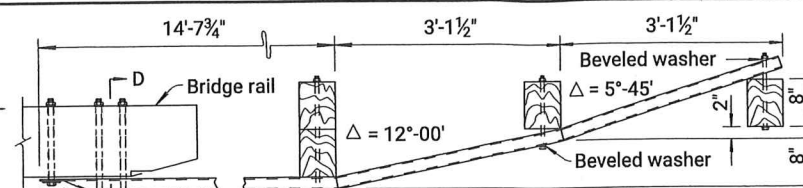
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	8	51



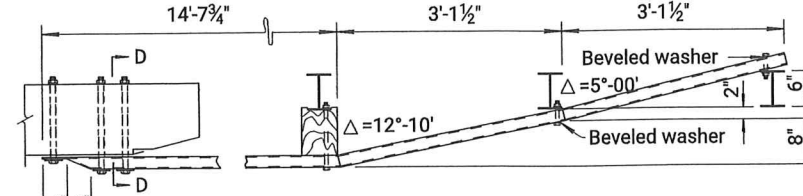
PLAN



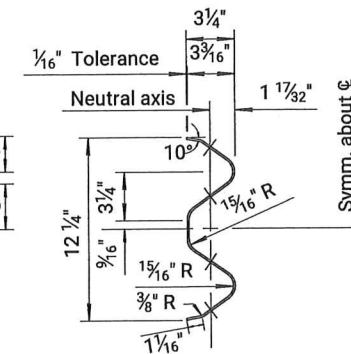
ELEVATION



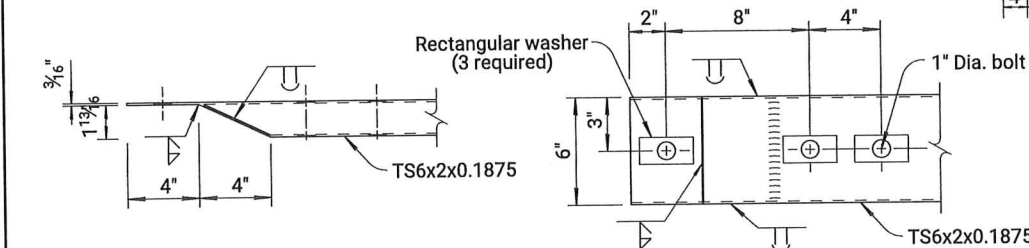
PLAN OF RUBRAIL ON WOOD POSTS



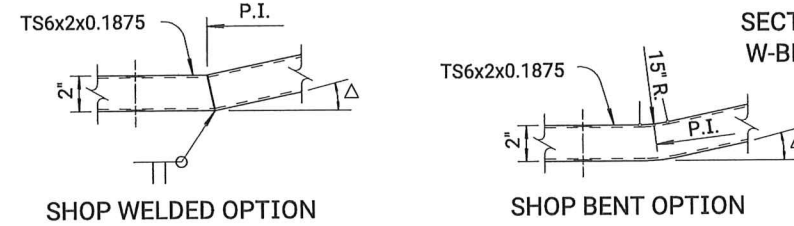
PLAN OF RUBRAIL ON STEEL POSTS



SECTION THRU TYPICAL W-BEAM RAIL ELEMENT

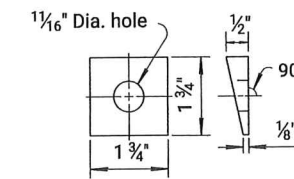


TYPICAL END RUB RAIL DETAILS

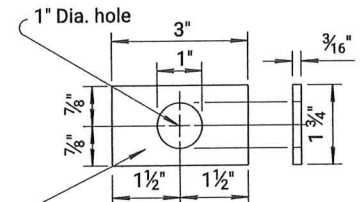


SHOP WELDED OPTION

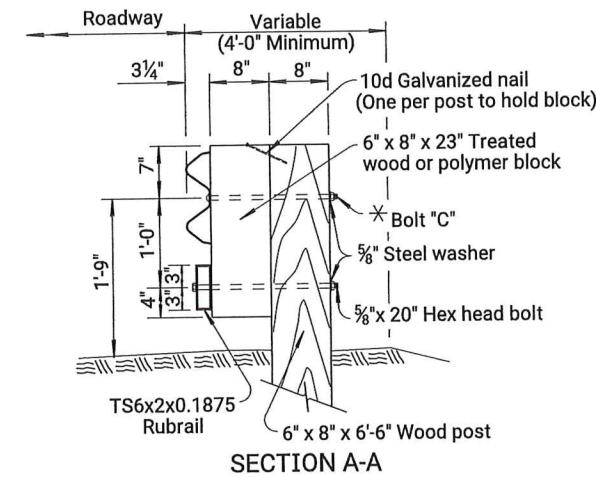
SHOP BENT OPTION



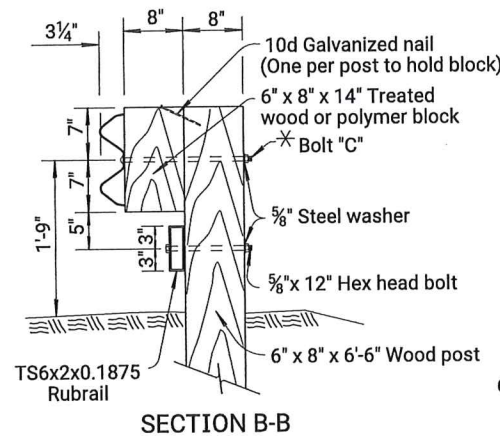
BEVELED WASHER



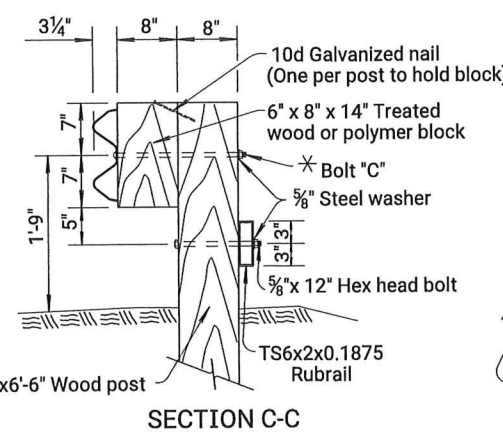
RECTANGULAR WASHER (Other approved washer may be used.)



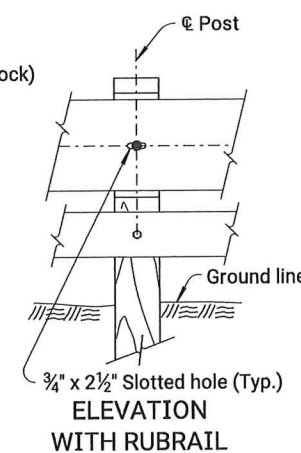
SECTION A-A



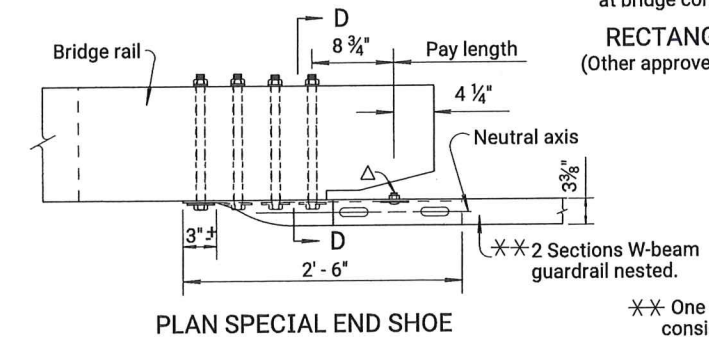
SECTION B-B



SECTION C-C

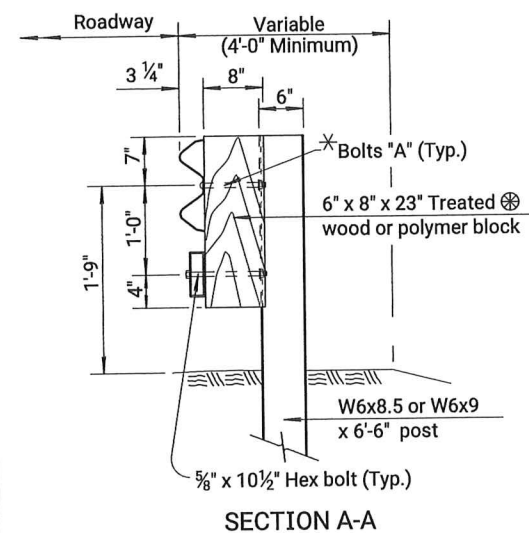


ELEVATION WITH RUBRAIL

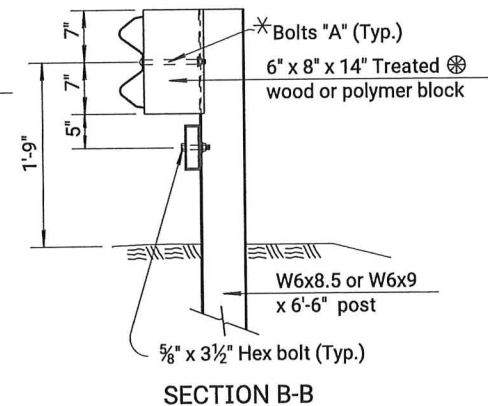


PLAN SPECIAL END SHOE

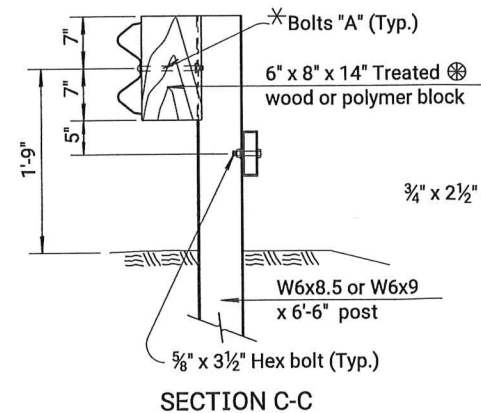
* One section of the two shall be considered as subsidiary to the bid item "Steel Plate Guardrail".



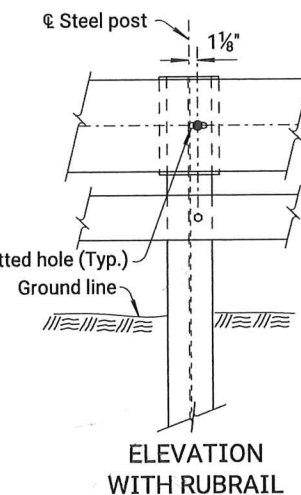
SECTION A-A



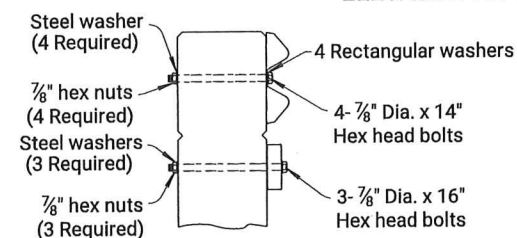
SECTION B-B



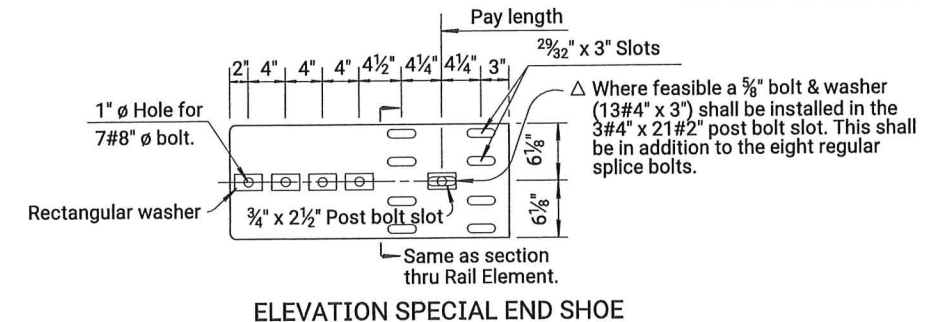
SECTION C-C



ELEVATION WITH RUBRAIL



SECTION D-D



ELEVATION SPECIAL END SHOE

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

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

GENERAL NOTE

Include all material and work for this installation in the pay item "Steel Plate Guardrail" paid by the lineal foot.

Use 10 or 12 gauge steel guardrail elements unless otherwise called out, see standard specifications.

Bridge Rail Transition consists of one 12'-6" W-beam section nested in back of one 25'-0" section. Furnished remaining rail elements in either 12'-6" or 25'-0" sections.

Guardrail parts furnished under this specification shall be interchangeable with similar parts regardless of the source or manufacturer.

Shop fabricate tubular steel rubrail from ASTM A36 structural steel, form angles in rubrail by shop bending or welding. Rubrail is subsidiary to the bid item "Steel Plate Guardrail".

Galvanize rail elements, post fittings, bolts, nuts, washers and anchor bolts after fabrication in accordance with the standard specifications.

Shop or field drill holes in posts and/or tubular steel rubrail for attachment. When holes are field drilled touch up any damage to the galvanized coating with zinc based paint.

Shop bend rail when radius is less than 150'.

Fabricate Special End Shoe from 10 gauge steel in accordance with standard specifications.

The Special End Shoe has the same section as guardrail and is subsidiary to guardrail. Lap guardrail splices, including Special End Shoe, 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.

See Std. Drawing RD611 for additional details of posts not shown on this sheet.

NO.	DATE	REVISIONS	BY	APPD
14	12-14-10	Revised notes 28" rail height	S.W.K.	J.O.B.
13	04-02-08	Removed Galvanized callout	S.W.K.	J.O.B.
12	02-06-07	Corrected spelling error	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION				
W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION DETAILS				
RD616				
DESIGNED	01-11-11	APPD.	James O. Brewer	
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED	
		QUAN. CK.	TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	9	51

Items	SUMMARY OF BRIDGE QUANTITIES								
	Excavation		Concrete		Reinforcing Steel		Piles (Steel)	Cast Steel	Slope Protection
	Class I	Class II	(Grade 4.0) (AE)	(Grade 4.0) (AE)(SA)	(Grade 60)	(Grade 60) Epoxy Coated	(HP10X42)	Pile Points	(Riprap stone)
Location	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Lbs.	Lbs.	Lin. Ft.	Each	Cu. Yds.
Abutment No. 1	43						88	4	790
Pier No. 1		108	21.6		3,640				
Pier No. 2		107	21.6		3,640				
Abutment No. 2	43						100	4	330
Total Substructure	86	215	43.2		7,280		188	8	1,120
Total Superstructure				258.4		75,480			
Grand Total	86	215	43.2	258.4	7,280	75,480	* 188	8	1,120

* Includes: 4 @ 22', 4 @ 25'

Note: Only Steel Piles HP10X42 shall be used on this structure.

INDEX TO BRIDGE DRAWINGS	
Sheet No.	Drawing Title
9	General Notes & Quantities
10	Contour Map
11	Construction Layout
12	Abutment Details
13-14	Pier Details
15-16	Superstructure Details
17	Corral Rail Details
18	Bill of Reinforcing

GENERAL BRIDGE NOTES

CHANNEL IMPROVEMENT AND EXCAVATION: THE CONTRACTOR SHALL EXCAVATE THE CHANNEL AND COMPLETE THE EMBANKMENTS IN THE VICINITY OF THE NEW BRIDGE, PRIOR TO THE DRIVING OF THE PILES.

BRIDGE EXCAVATION: ELEVATION 1087.50 SHALL DESIGNATE THE EXCAVATION BOUNDARY PLANE OF CLASS I AND CLASS II EXCAVATION; CLASS I ABOVE THE PLANE, CLASS II BELOW THE PLANE. SEE BRIDGE EXCAVATION SHEET FOR THE LIMITS OF PAY EXCAVATION.

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

PILING: DRIVE ALL PILING TO PENETRATE OR BEAR UPON THE SHALE OR SANDSTONE FORMATION. CAST STEEL PILE POINTS SHALL BE USED ON ALL PILES. DRIVING SHALL STOP WHEN IN THE OPINION OF THE ENGINEER ADDITIONAL DRIVING MAY DAMAGE THE PILING. DRIVE ALL PILING TO THE PILE DRIVING FORMULA LOAD OF:

ABUTMENT NO. 1 48.4 TONS
ABUTMENT NO. 2 48.4 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 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.

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

BACKFILL COMPACTION: COMPACT BACKFILL AT THE ABUTMENTS.

SPREAD FOOTING EXCAVATION: WHEN ROCK OR SHALE IS ENCOUNTERED, ALL EXCAVATION BELOW THE TOP OF THIS MATERIAL OR THE TOP OF THE FOOTING, WHICHEVER IS LOWER, SHALL BE TO NEAT LINES. NO SIDE FORMING IS PERMITTED BELOW THE TOP OF THE ROCK, SHALE OR THE TOP OF THE FOOTING, WHICHEVER IS LOWER. CUT SPREAD FOOTINGS IN ROCK TO NEAT LINES WITH HAND EQUIPMENT ONLY. NO MACHINE EXCAVATION SHALL BE ALLOWED BELOW THE TOP OF THE FOOTING.

IF THE BOTTOM OF THE SPREAD FOOTING IS IN SHALE, MINIMIZE THE TIME THE SHALE IS EXPOSED TO THE ELEMENTS. SEE KDOT SPECIFICATIONS.

DRILL AT LEAST ONE 1 1/2" - 2" DIAMETER EXPLORATORY BORING IN EACH FOOTING LOCATION TO PENETRATE THE BEDROCK A MINIMUM OF 5 FEET BELOW THE BASE OF THE FOOTING. DRILL THE BORINGS IN THE PRESENCE OF THE ENGINEER. IF A CAVITY OR OTHERWISE INCOMPETENT ZONE IS DETECTED IN THE BEDROCK BELOW THE FOOTING, CONTACT THE GEOLOGIST. SEE KDOT SPECIFICATIONS. THE WORK REQUIRED FOR INVESTIGATION IS SUBSIDIARY TO THE EXCAVATION. PAYMENT FOR LOWERING OR MODIFYING THE FOUNDATION WILL BE IN ACCORDANCE WITH KDOT SPECIFICATIONS.

COLUMN CONSTRUCTION: CURE THE COLUMN FOOTINGS 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.

PIER BACKFILL: THE BACKFILL OF PIERS SHALL BE PLACED IN SUCH A MANNER AS TO PREVENT MOVEMENT OF THE WEBWALLS. SEE NOTE ON PIER DETAIL SHEET.

PIER BEAM CONSTRUCTION: CURE THE COLUMNS/WEBWALL AS REQUIRED BY THE KDOT SPECIFICATIONS BEFORE BEGINNING THE PIER BEAM CONSTRUCTION (PLACING RESTEEL OR FORMWORK). DO NOT DRILL OR GROUT BOLTS OR OTHER DEVICES INTO THE COLUMNS/WEBWALL USED FOR FALSEWORK SUPPORT UNLESS APPROVED BY THE ENGINEER. CURE THE COLUMNS/WEBWALL AS REQUIRED BY THE THE KDOT SPECIFICATIONS BEFORE BEGINNING TO PLACE THE SUPERSTRUCTURE CONCRETE.

CONCRETE: SUPERSTRUCTURE CONCRETE IS BID AS CONCRETE (GRADE 4.0) (AE)(SA) SUBSTRUCTURE CONCRETE IS BID AS CONCRETE (GRADE 4.0)(AE). BEVEL ALL EXPOSED EDGES OF ALL CONCRETE WITH A 3/4" 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.

REINFORCING STEEL: ALL REINFORCING STEEL DIMENSIONS ARE TO THE CENTERLINE OF BARS UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL, EXCEPT THE SPIRAL BARS, SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60. SPIRAL BARS MAY MEET THE REQUIREMENTS OF EITHER ASTM A615 (GR. 40 OR 60) OR AASHTO M 32, AND ARE INCLUDED IN THE BID ITEM "REINFORCING STEEL (GR. 60)". WHERE NON-COATED BARS COME IN CONTACT WITH EPOXY COATED BARS, THEY NEED NOT BE COATED.

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

FALSEWORK: FALSEWORK SHALL BE LEFT IN PLACE FOR THE ENTIRE UNIT UNTIL 15 DAYS AFTER THE LAST CONCRETE POUR FOR THE UNIT OR LONGER AS DIRECTED BY THE ENGINEER.

FALSEWORK PLANS: A LICENSED PROFESSIONAL ENGINEER SHALL DESIGN THE FALSEWORK DETAILS. DETAILS SHALL BEAR THE SEAL OF A LICENSED PROFESSIONAL ENGINEER. SUBMIT ELECTRONIC PLANS CONFORMING TO SECTION 16 OF THE BRIDGE DESIGN MANUAL WITH DETAILS IN COMPLIANCE WITH KDOT SPECIFICATIONS TO THE FIELD ENGINEER FOR REVIEW.

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

CORRAL RAIL: BUILD THE CORRAL AFTER THE FALSEWORK IS STRUCK.

CAMBER: CAMBER SHALL BE PROVIDED AS SHOWN IN THE CAMBER DIAGRAM UNLESS THE CONTRACTOR USES LONG SPAN STEEL BEAM FALSEWORK (CONCRETE DEAD LOAD DEFLECTION GREATER THAN 1/4") OR TIMBER FALSEWORK WITH GREATER THAN 12'-0" CLEAR SPAN, IN WHICH CASE THE CONTRACTOR SHALL SUBMIT FALSEWORK PLANS WHICH SHOW THE ADDITIONAL REQUIRED CAMBER.

CONCRETE PLACING SEQUENCE: THE SEQUENCE OF PLACING CONCRETE IN THE SLAB SHALL BE AS SHOWN ON THE PLANS, OR THE CONTRACTOR SHALL SUBMIT AN ALTERNATE PLACING SEQUENCE FOR REVIEW. THE ALTERNATE PLACING SEQUENCE SHALL BE GIVEN TO THE ENGINEER AT THE PRECONSTRUCTION CONFERENCE. THE ALTERNATE PLACING SEQUENCE SHALL INCLUDE THE PROPOSED RATE OF CONCRETE PLACEMENT IN CUBIC YARDS PER HOUR, THE PLANT CAPACITY, PLACEMENT DIRECTION, CONSTRUCTION JOINT LOCATION, A DESCRIPTION OF THE EQUIPMENT BEING USED IN PLACING THE CONCRETE, PROPOSED ADMIXTURES, AND THE QUANTITY OF CONCRETE IN EACH PLACING SEGMENT. ANY ADDITIONAL COST FOR THE CONTRACTOR'S ALTERNATE PLAN OF PLACING CONCRETE, INCLUDING ADMIXTURES, SHALL BE AT THE CONTRACTOR'S EXPENSE AND SHALL BE CONSIDERED SUBSIDIARY TO THE BID ITEM "CONCRETE (GRADE 4.0) (AE) (SA)". APPROVAL OF THE CONTRACTOR'S ALTERNATE SEQUENCE IS REQUIRED PRIOR TO PLACEMENT OF CONCRETE IN THE DECK.

CONSTRUCTION LOADS: LIMITED TRAFFIC IS PERMITTED ON THE NEW SUBDECK, 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 TABLE 710-2 FOR ADDITIONAL INFORMATION.

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

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

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

SLOPE PROTECTION: PLACE SLOPE PROTECTION (RIPRAP STONE) (LIGHT 200 lbs.) TO THE LIMITS AND THICKNESSES SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

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

CURING ENVIRONMENT: SEE KDOT'S LATEST SPECIAL PROVISION.

EMBANKMENT: THE CONTRACTOR SHALL CONSTRUCT THE EMBANKMENT IN THE VICINITY OF THE NEW BRIDGE PRIOR TO THE DRIVING OF THE PILES.

LRFR RATING FACTORS			
Design Load	Rating Level	Inventory	Operating
HL-93 Loading		1.357	1.759
NRL		1.421	1.842

2020 Manual for Bridge Evaluation

LFD RATING FACTORS			
Truck	Rating Level	Inventory	Operating
HS-20 (36T)		1.556	2.598
Type HET (110T)			1.242

2002 LFD Rating, 17th Edition AASHTO

DESIGN DATA

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS NINTH EDITION 2020.

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


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

UNIT STRESSES: CONCRETE (GRADE 4.0) (AE) (SA) f'c = 4,000 psi
CONCRETE (GRADE 4.0) (AE) f'c = 4,000 psi
CONCRETE (GRADE 4.0) f'c = 4,000 psi
REINFORCING STEEL (GRADE 60) fy = 60,000 psi

LRFD DESIGN PILE LOAD:			
DESIGN LOADING (TONS PER PILE)	STRENGTH I	SERVICE I	PHI
ABUTMENT NO. 1	48.4	32.9	0.45
ABUTMENT NO. 2	48.4	32.9	0.45

LRFD DESIGN FOOTING PRESSURES:			
DESIGN LOADING (TONS PER SQ FT)	STRENGTH I	SERVICE I	PHI
PIER NO. 1	6.9	5.6	0.45
PIER NO. 2	6.9	5.6	0.45

WATER RESOURCES RECEIVED
FEB 22 2024
KS DEPT OF AGRICULTURE

KANSAS DEPARTMENT OF TRANSPORTATION		
GENERAL NOTES & QUANTITIES		
BRIDGE OVER SLATE CREEK		
DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES		SHEET 9 OF

STA. 258+00 O.R. GREENWOOD COUNTY

G:\Shared drives\235104\CADD\235104 - General Notes & Qty.dwg 2/12/2024 - 8:55am jfrazier

Ref. W 1/8, NW 1/4 Sec. 10= @ Sta. 250+00
 Fnd. 4" "x" chisled in 4'-6" E-Wx 2' N-S Stone

- In line w/ Fc. to N. 8.0' N.
- To N-S Barb wire Fc. 23.0' WNW
- Top @ 4" Stl. Fc. Post 27.72' SW
- Spk. & Wshr. W. Face 40" Tree 24.80' NNE
- Spk. & Wshr. E. Face 30" Tree 34.42' NE
- Spk. & Wshr. W. Face 70" Tree 0.27' S.
- Set 1/2" Rebar w/ CLS80 Cap

Ref. P.O.T. @ @ Sta. 253+92.01, 0.0' Rt.
 Set 5/8" Rebar @ P.O.T.

- To @ Grav. Rd. to E. 5.0' S.
- Spk. & Wshr. N. Fc. 50" Tree 27.2' NW
- Spk. & Wshr. E. Fc. 20" Tree 43.7' NE

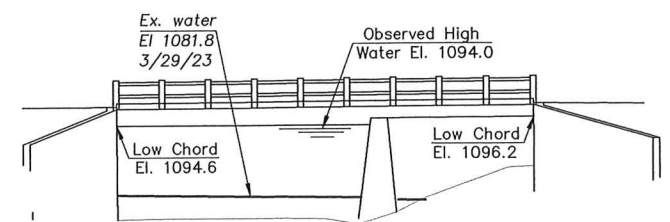
Ref. P.O.T. @ @ Sta. 262+23.40
 Set 5/8" Rebar @ P.O.T.

- In @ Grav. Rd. to W. 21.0' SSW
- Spk. & Wshr. N. Fc. Aband. Pow. Pole 67.3' SW
- "T" Post (B.M. #3/TCP#100)

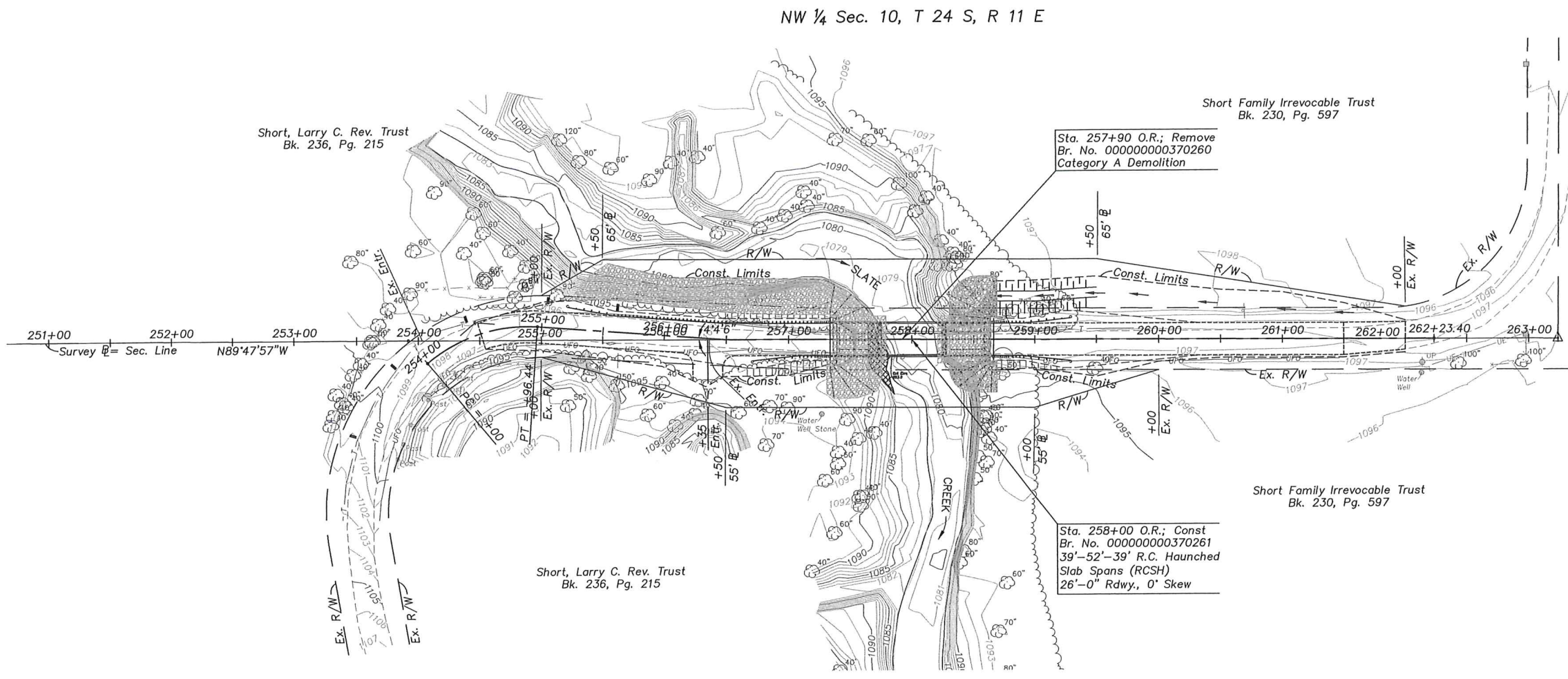
Ref. Ctr. Cor. NW 1/4 Sec. 10= @ Sta. 263+23.40
 Set 5/8" Rebar w/ Alum. Cap Stamped CLS 80

- In line w/ Grav. Rd. to N. 20.0' S.
- To E-W Fc. 36.46' NE
- Spk. & Wshr. E. Face 40" Tree 26.06' WNW
- Spk. & Wshr. N. Face Pow. Pole

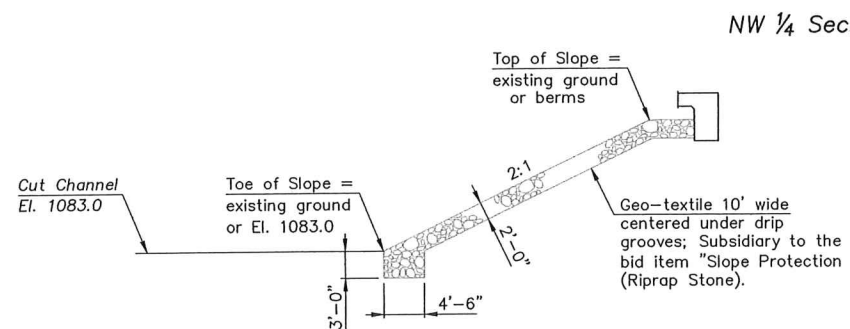
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	10	51



(Not to scale)
SKETCH OF EXISTING STRUCTURE
 2 span Concrete Beam Bridge (27' & 45') on vertical concrete abutments and concrete pier with 17.0' roadway concrete deck. Bridge no. 00000000370260.



Scale: 1" = 50'
 Contour Interval = 1'



TYPICAL SECTION CHANNEL IMPROVEMENT
 (SHOWING SLOPE PROTECTION)

Note: The Contractor shall construct Slope Protection (Riprap Stone) (200 lb) on the berm and channel slopes as shown.

Abutment No. 1 = 790 Cu. Yds.
 Abutment No. 2 = 330 Cu. Yds.
 Total = 1,120 Cu. Yds.

Note: The Contractor shall remove the existing structure (2 span Concrete Beam Bridge (27' & 45') on concrete vertical abutments and concrete pier with 17.0' roadway concrete deck). The Contractor shall excavate the channel improvements in the vicinity of the new bridge, prior to its construction.

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

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PROJECT NO. 37 C-5213-01		SCALE	
BRIDGE NO. 261		DESIGNED GEP	
CONTOUR MAP		DETAILED EWM	
BRIDGE OVER SLATE CREEK		DATE	
STA. 258+00 O.R.	GREENWOOD COUNTY	QUANTITIES	SHEET OF



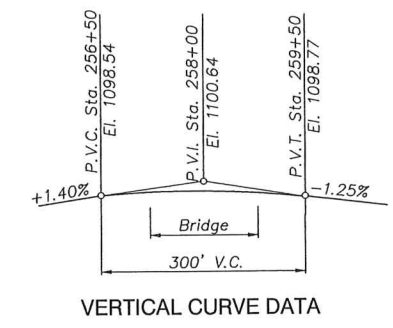
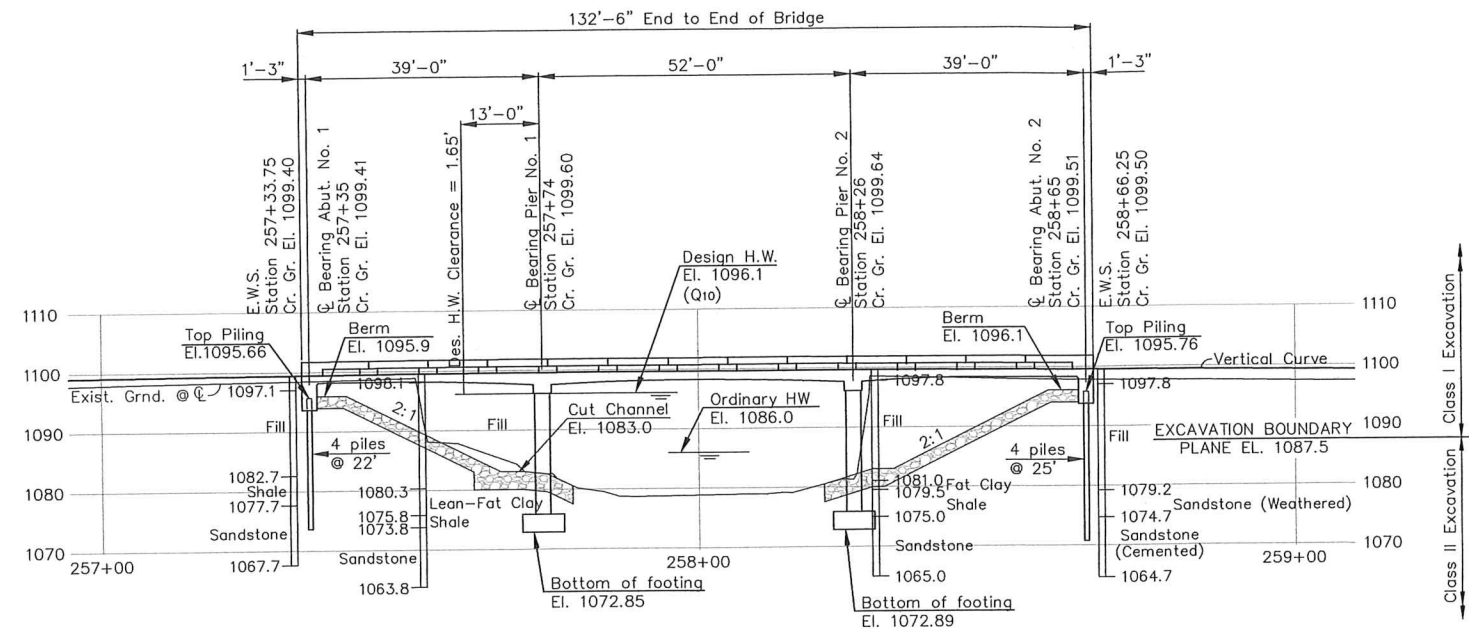
B.M. #1- R.R. Spk. in S. Fc. 40" Tree, 44.8' Lt.
 @ Sta. 254+86.7 El. 1098.27

B.M. #2- "a" Cut Top @ NW Wingwall, 8.5' Lt.
 @ Sta. 258+32.3 El. 1099.13

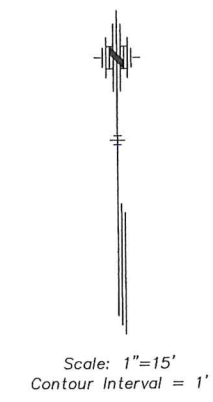
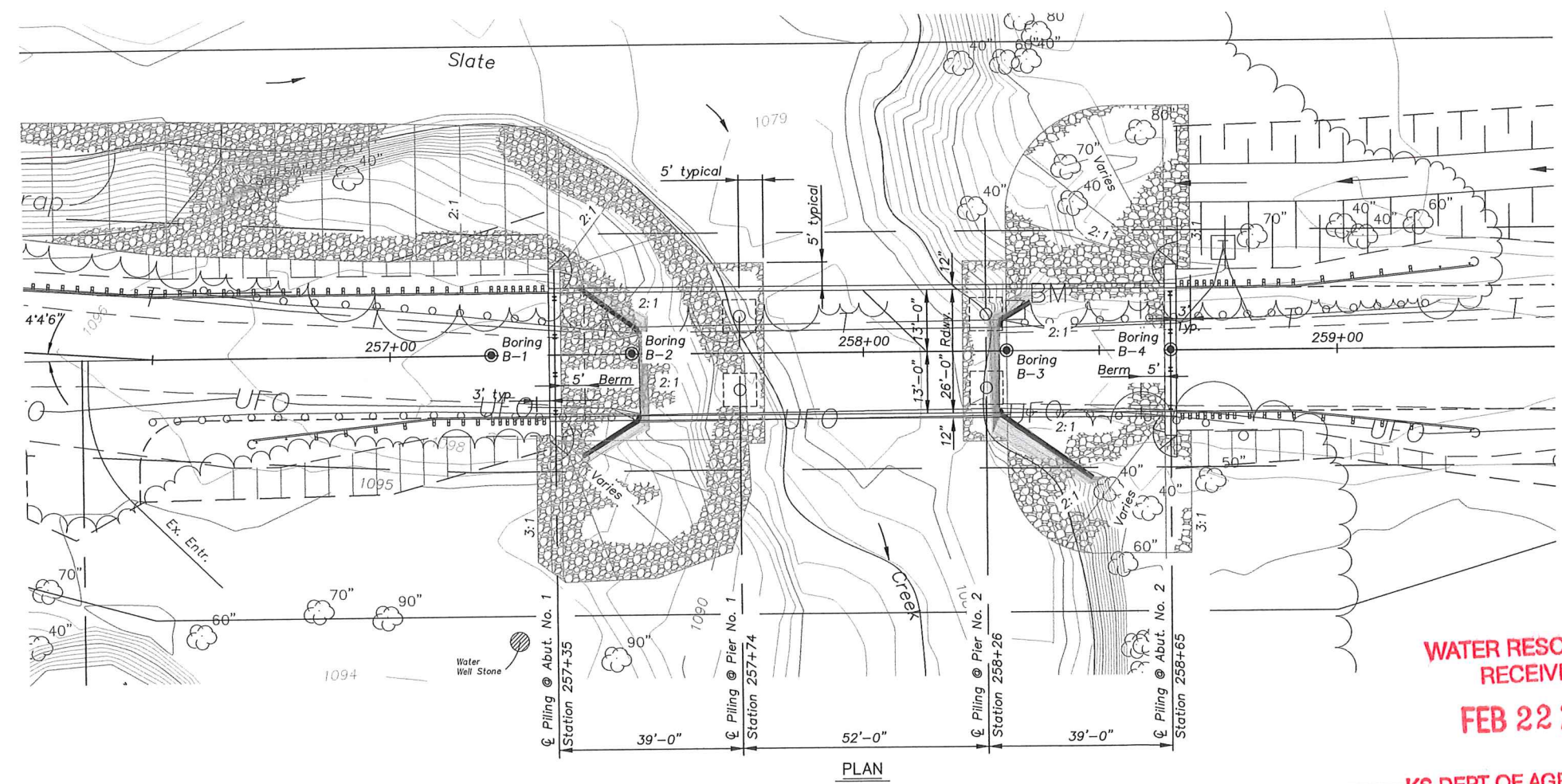
B.M. #3- "T" Post @ Edge Cropline, 20.6' Rt.
 @ Sta. 261+59.4 El. 1097.16

G:\Shared drives\235104\CADD\235104 - Contour Map.dwg 2/12/2024 - 8:22am jfrazier

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	11	51



ELEVATION
 39'-52'-39' Cont. R.C. Haunched Slab Spans
 Pile Bent Abutments & Pedestal Piers
 26'-0" Roadway



DRAINAGE DATA

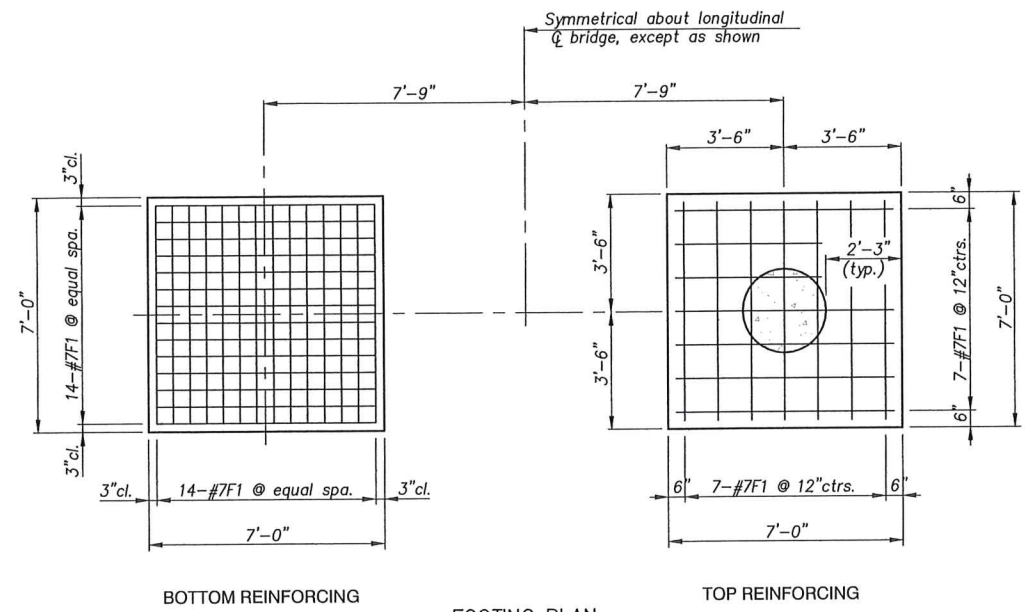
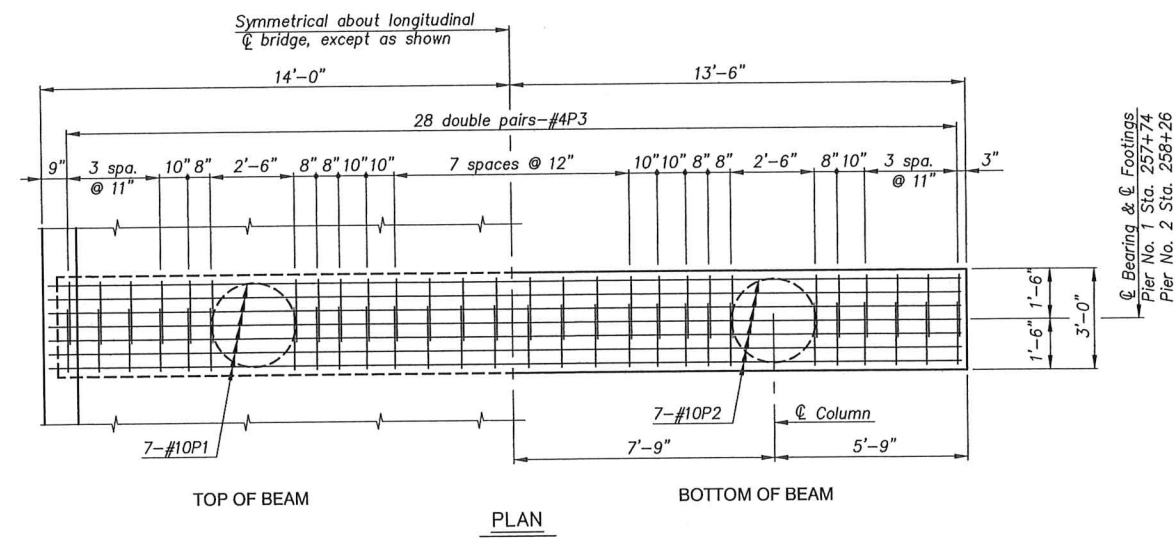
Drainage Area	25.5 Sq. Mi.
Design Frequency	10 Yr.
Design Discharge (Q10)	6,906 cfs
Design High Water Elevation	1096.1 Ft.
Change in Design Backwater	-0.37 Ft.
Design Backwater Elevation	1096.1 Ft.
Velocity at Q10	4.9 fps
Overtopping Elev. (Sta. 262+00)	1096.9 Ft.
Overtopping Discharge	7300 cfs
Overtopping Frequency	10.1 Yr.
Discharge at Q100	16,165 cfs
Change in Backwater at Q100	0.0 Ft.
Backwater Elevation at Q100	1099.4 Ft.
Historic Highwater Elevation	1094.0 Ft.
Ordinary Highwater Elevation	1086.0 Ft.
Total Waterway Provided	1554 Sq. Ft.
Design Waterway Provided	1300 Sq. Ft.
Estimated Ordinary Highwater Discharge	2000 cfs

WATER RESOURCES RECEIVED
FEB 22 2024
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BRIDGE NO. 37 C-5213-01		CFS ENGINEERS
CONSTRUCTION LAYOUT		
BRIDGE OVER SLATE CREEK		DESIGNED GEP SCALE
STA. 258+00 O.R.		GREENWOOD COUNTY
QUANTITIES	DATE	SHEET
		OF

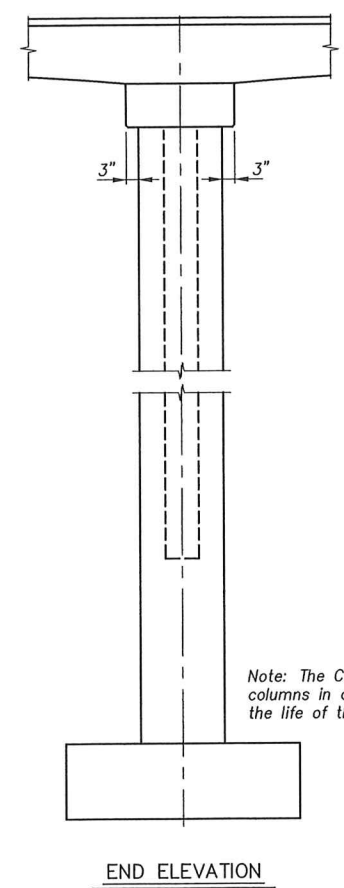
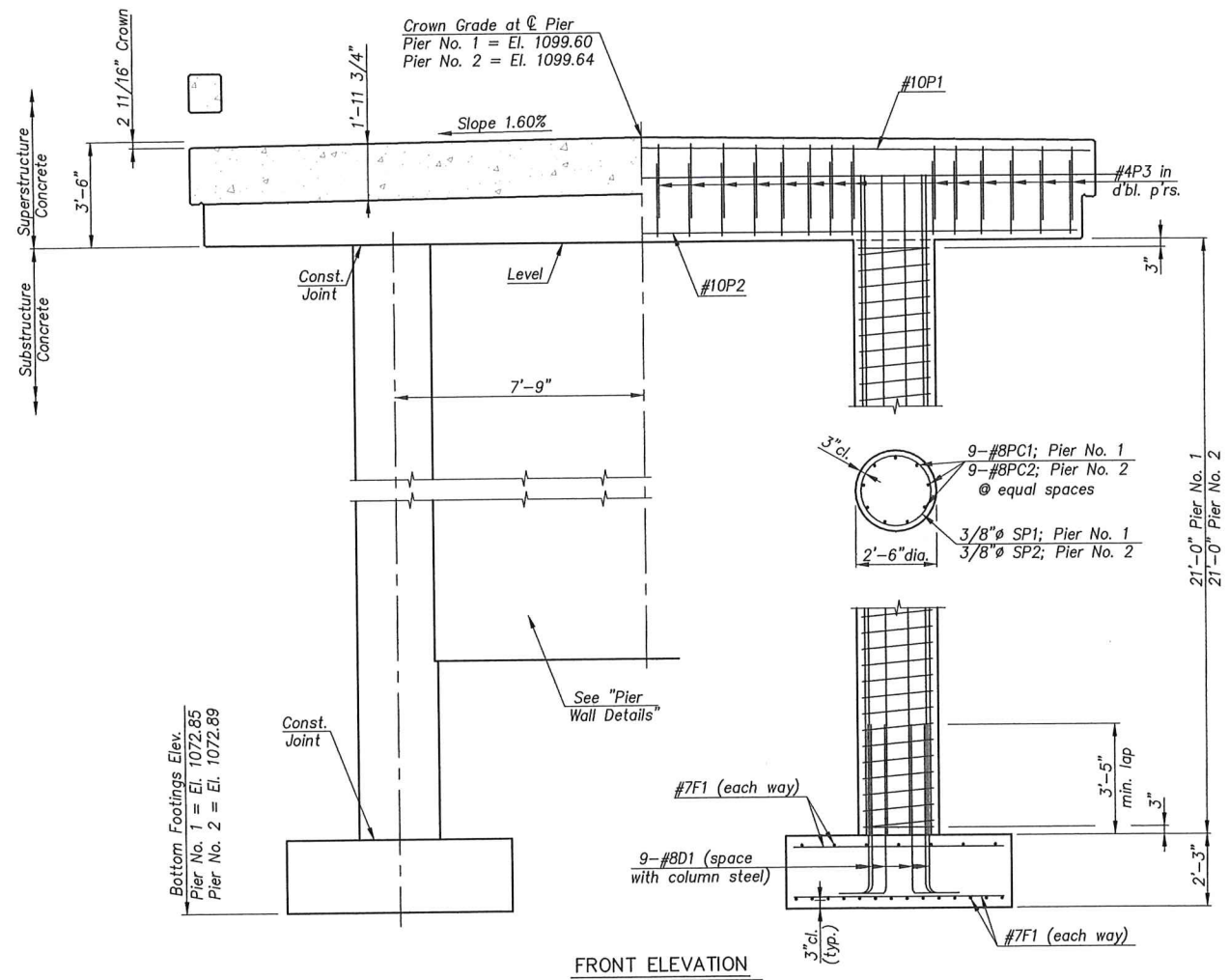
G:\Shared drives\235104\CADD\235104 - Construction Layout.dwg 2/12/2024 - 8:44am Jfrazier

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	13	51

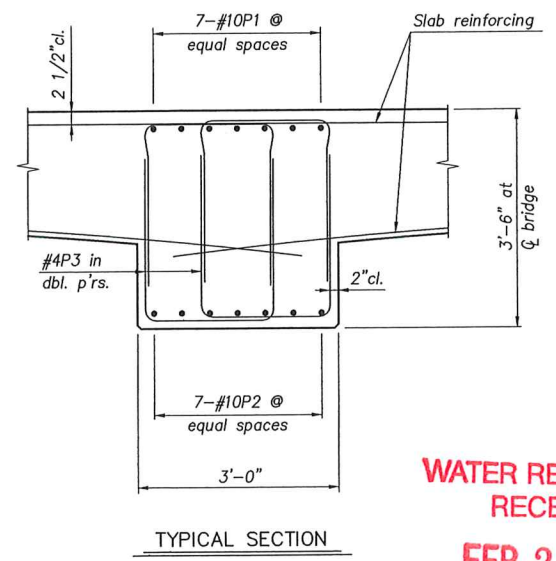


DESIGN FOOTING PRESSURE
6.9 Tons per sq. ft.
Strength Load I

ALLOWABLE FOOTING PRESSURE
12.5 Tons per sq. ft.



Note: The Contractor shall maintain the columns in a vertical position throughout the life of the contract.



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KANSAS DEPARTMENT OF TRANSPORTATION

PIER DETAILS

BRIDGE OVER SLATE CREEK

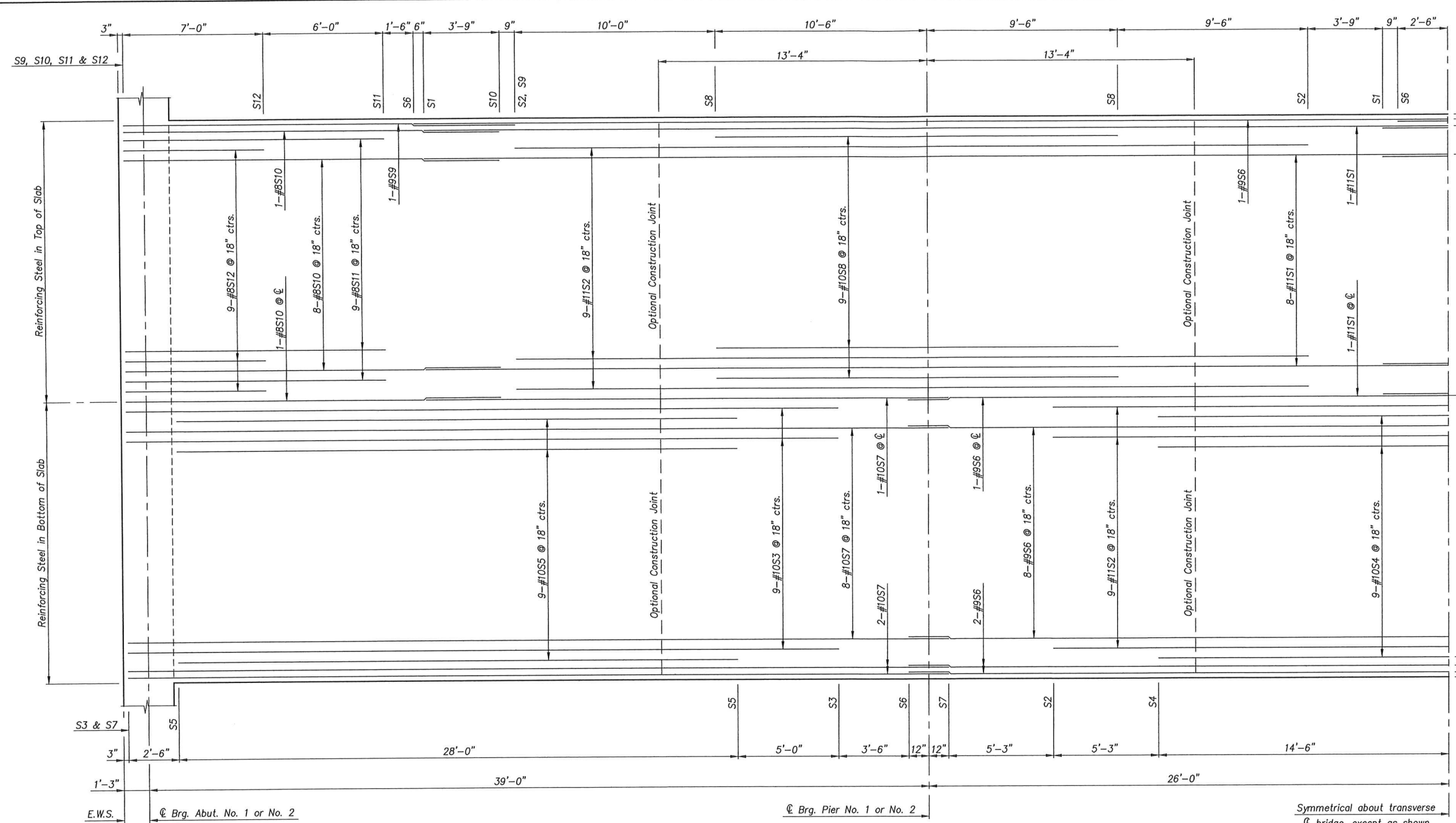
STA. 258+00 O.R. GREENWOOD COUNTY

CFS ENGINEERS

DESIGNED	GEP	SCALE
DATE	JPF	DATE
QUANTITIES		SHEET OF

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	15	51



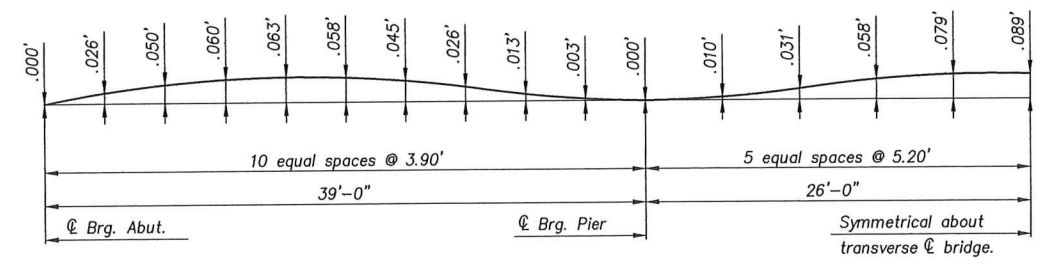
WATER RESOURCES RECEIVED
FEB 22 2024
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HALF PLAN OF REINFORCING STEEL IN SLAB

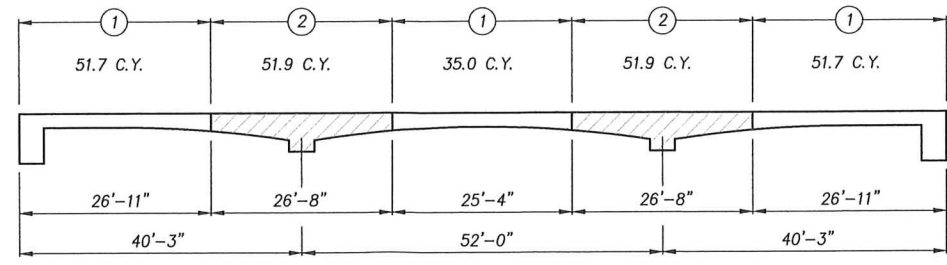
When long span steel beams having a concrete dead load deflection greater than 1/4" are used or when timber falsework with greater than 12'-0" clear span is used, the placing sequence shown shall be followed. Segmental, combined or continuous pours are allowed, but any discontinuous pour must stop short of a construction joint short of a pier.

When timber falsework with 12'-0" or less clear span is used, the Contractor, subject to the approval of the Engineer, may use a continuous pour or may discontinue the pour at any construction joint shown.

The corral rail may be placed continuously from one end of the bridge to the other.



NOTE: Long Term Deflection = Initial Deflection X 3.5
 Initial Deflection based on $E_c = 3.644 \times 10^6$ psi.

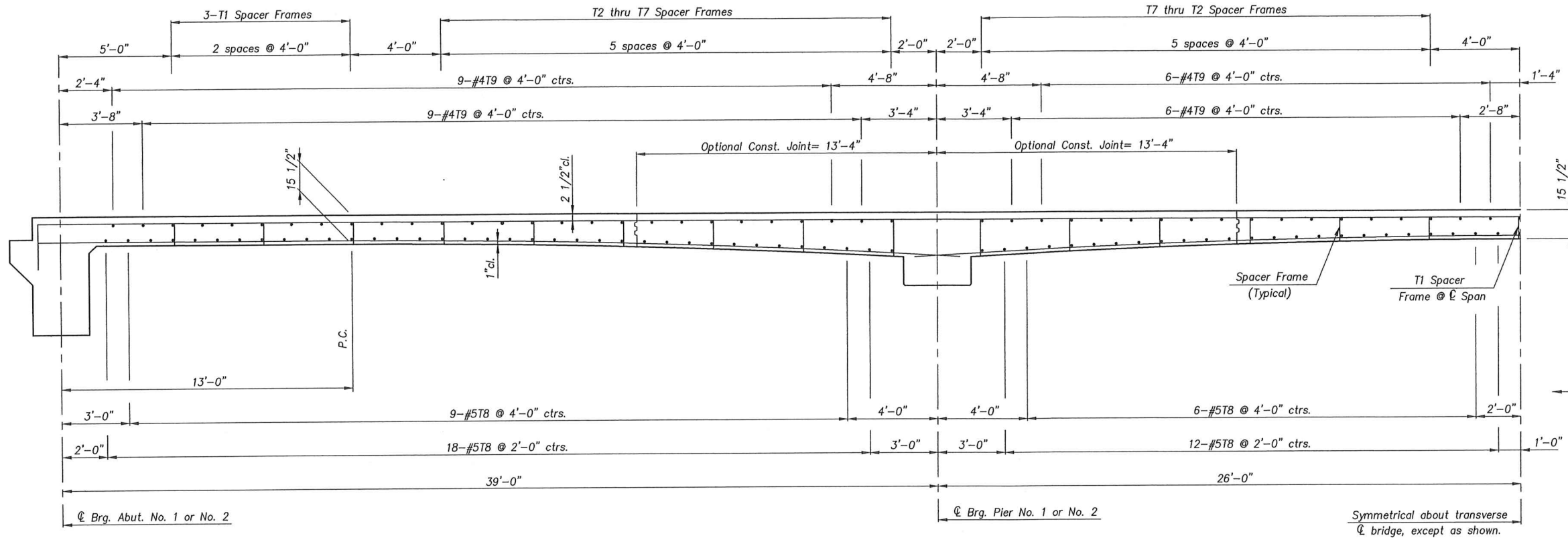


NOTE: The quantities shown here do not include the substructure or rail.

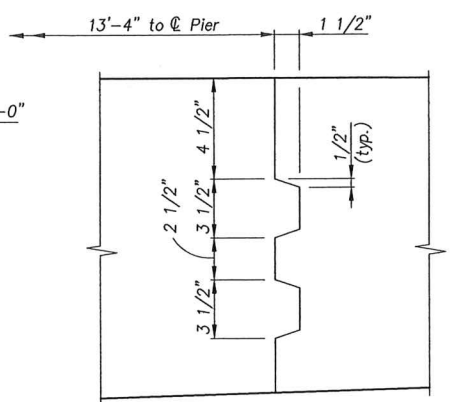
KANSAS DEPARTMENT OF TRANSPORTATION		CFS ENGINEERS
SUPERSTRUCTURE PLAN		
BRIDGE OVER SLATE CREEK		DESIGNED GEP SCALE
STA. 258+00 O.R. GREENWOOD COUNTY		DETAILED JPF DATE
		QUANTITIES SHEET OF

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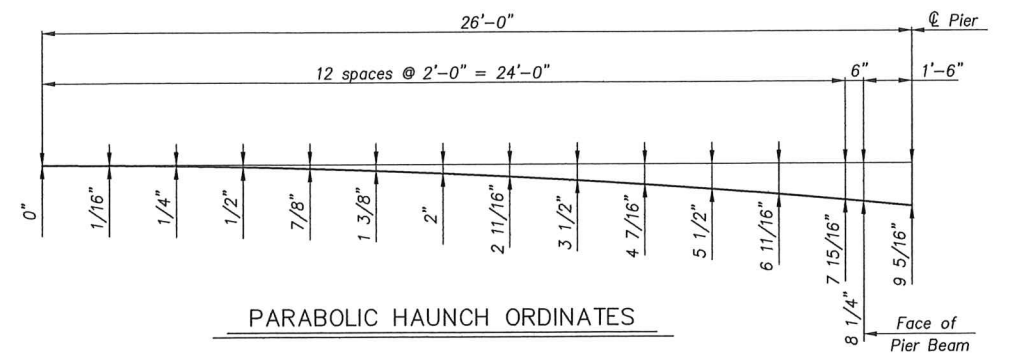
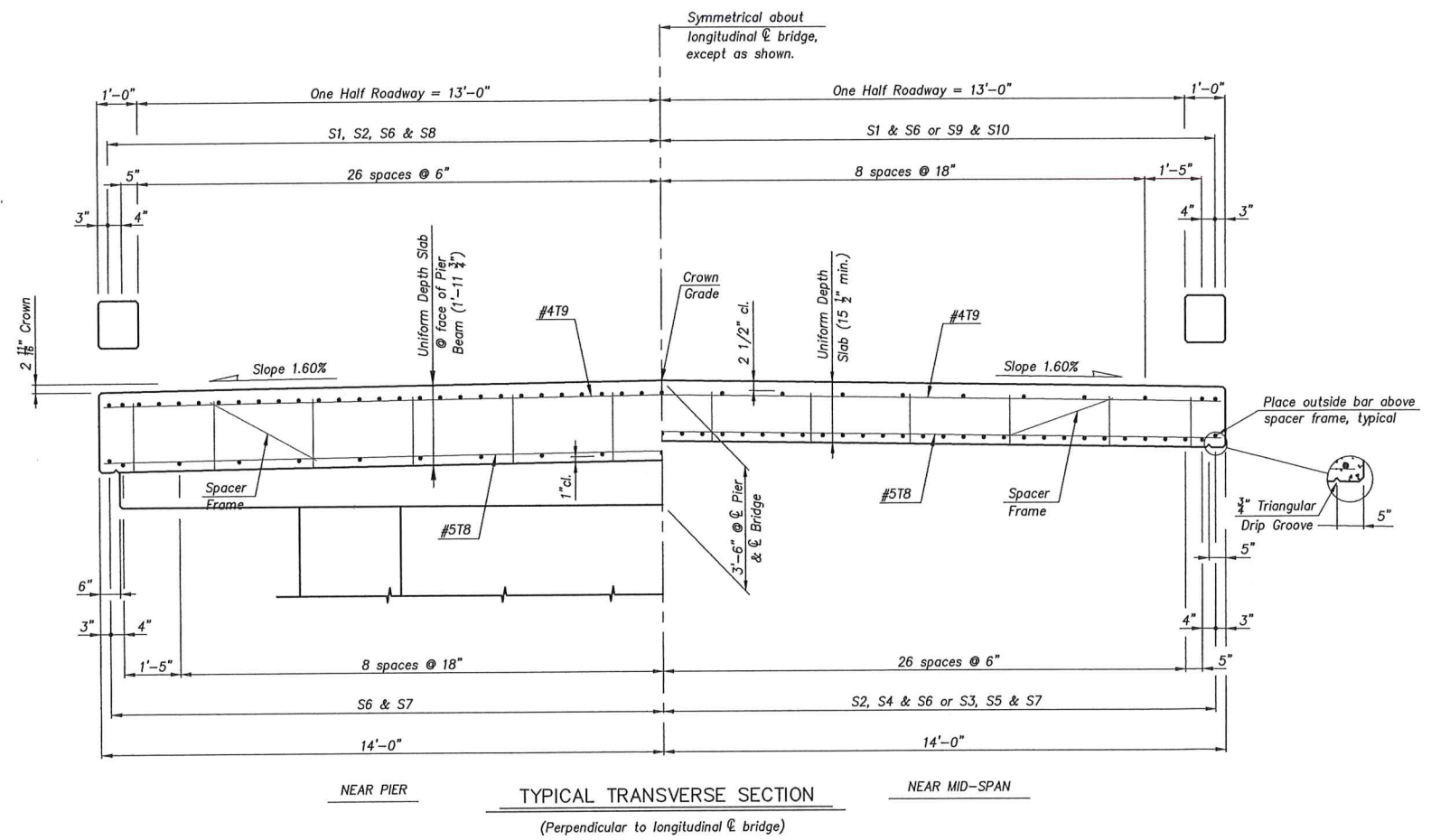
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	16	51



HALF LONGITUDINAL SECTION ALONG CROWN GRADE



OPTIONAL TRANSVERSE CONSTRUCTION JOINT



PARABOLIC HAUNCH ORDINATES

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KANSAS DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE SECTION

BRIDGE OVER SLATE CREEK

STA. 258+00 O.R. GREENWOOD COUNTY

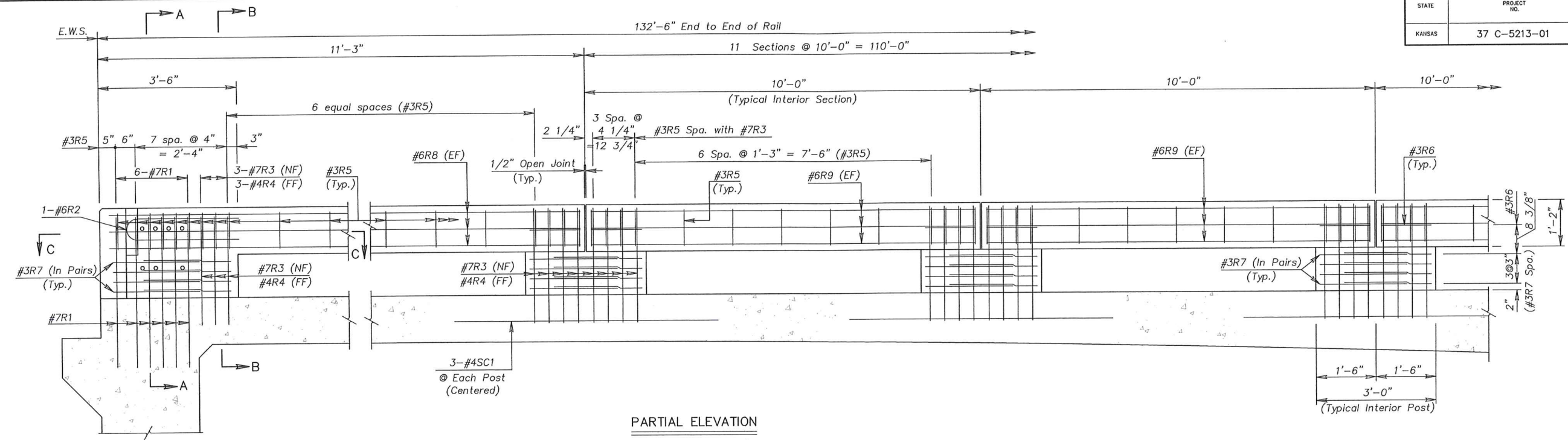
DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES		SHEET OF



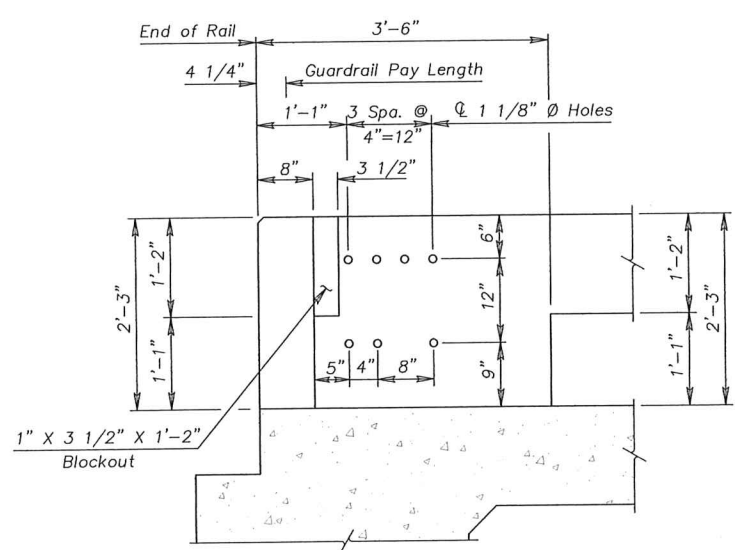
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	17	51

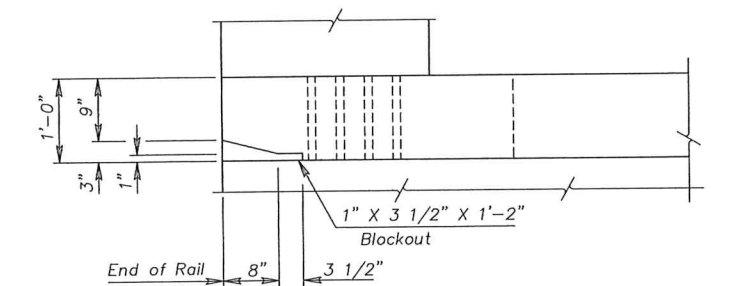
LEGEND
 NF = Near Face
 FF = Far Face
 EF = Each Face



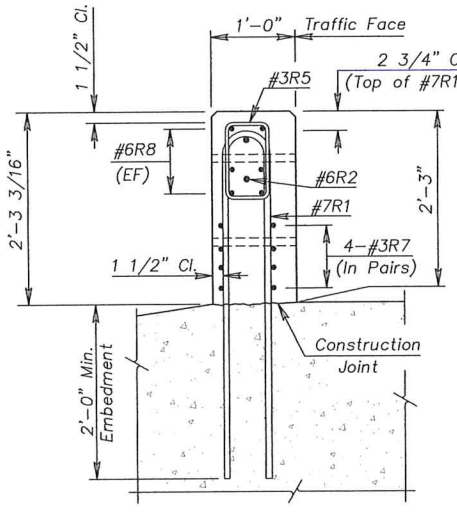
PARTIAL ELEVATION
(Along Traffic Face)



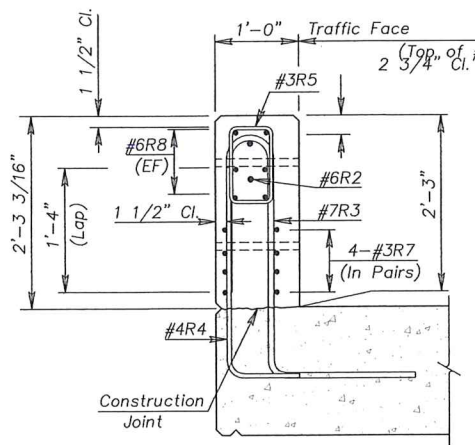
ELEVATION
(Dimensions at traffic face of rail)



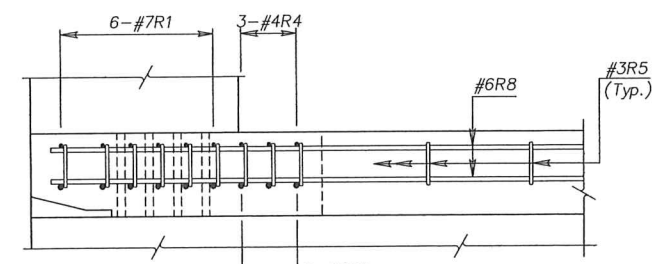
PLAN



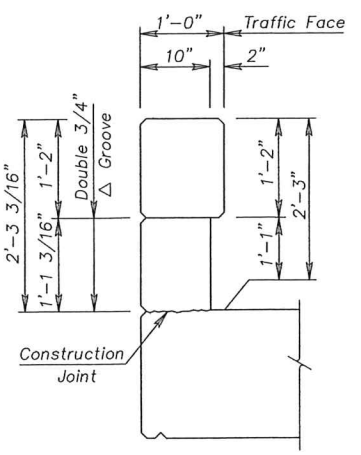
SECTION A-A



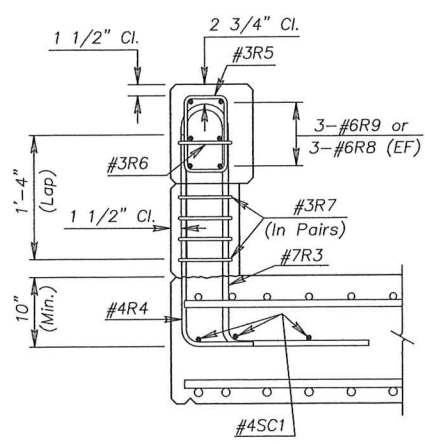
SECTION B-B



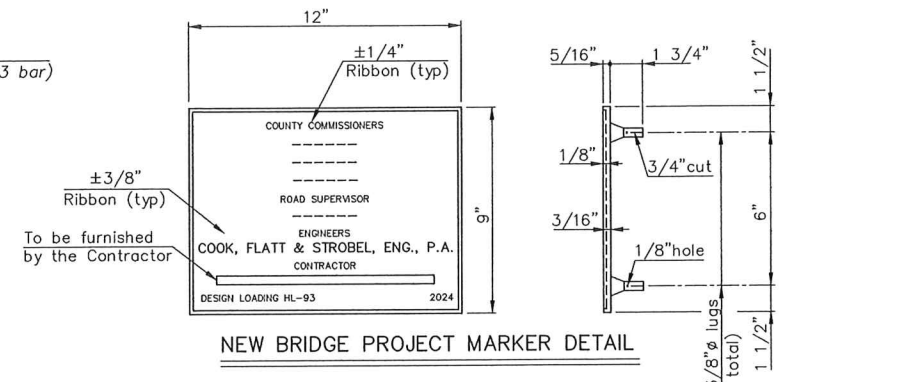
SECTION C-C



TYPICAL INTERIOR POST



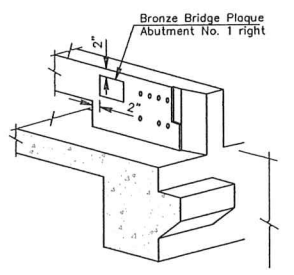
SECTION THRU POST



NEW BRIDGE PROJECT MARKER DETAIL

One bronze plaque shall be furnished and installed, by the Contractor, on the end post right at Abutment No. 1 as shown or as directed by the Engineer.

The Contractor shall furnish a "rendering" for proof reading and approval. Subsidiary to other items.



NEW BRIDGE PROJECT MARKER PLACEMENT DETAIL

A new bronze bridge plaque shall be placed on Abutment No. 1 right. (Subsidiary to other items)

3				
2				
1	6-30-05	Current Release		
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
GUIDELINES FOR THE				
27" KANSAS CORRAL RAIL				
(W-BEAM WITH RUBRAIL)				
R.C. HAUNCHED SLAB (Without Curb)				
BR183A				
FHWA APPROVAL	11-3-94	APP'D	Kenneth F. Hurst	
DESIGNED CEH 6/92	MRV	QUANTITIES	CADD	MRV
DESIGN CK. DRT	DETAIL CK.	DRT	QUAN. CK.	CADD CK. DRT

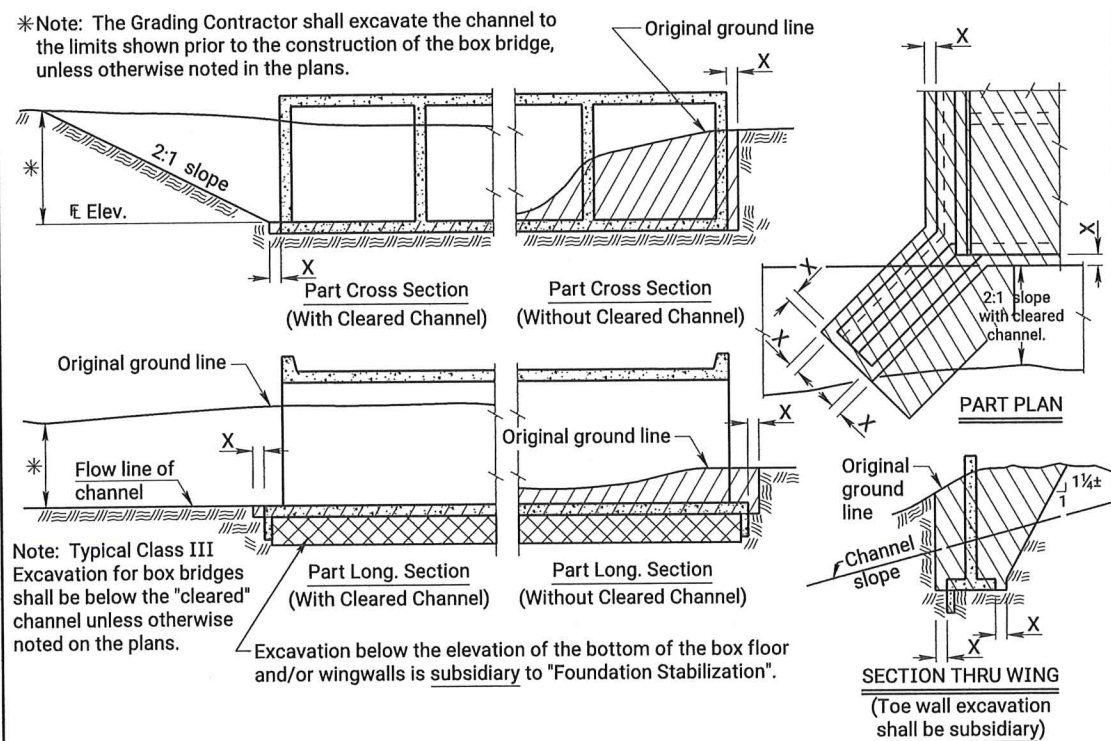
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KS DEPT OF AGRICULTURE

C:\Shared drives\235104\CADD\235104 - RAIL.DWG PLOT 1:1

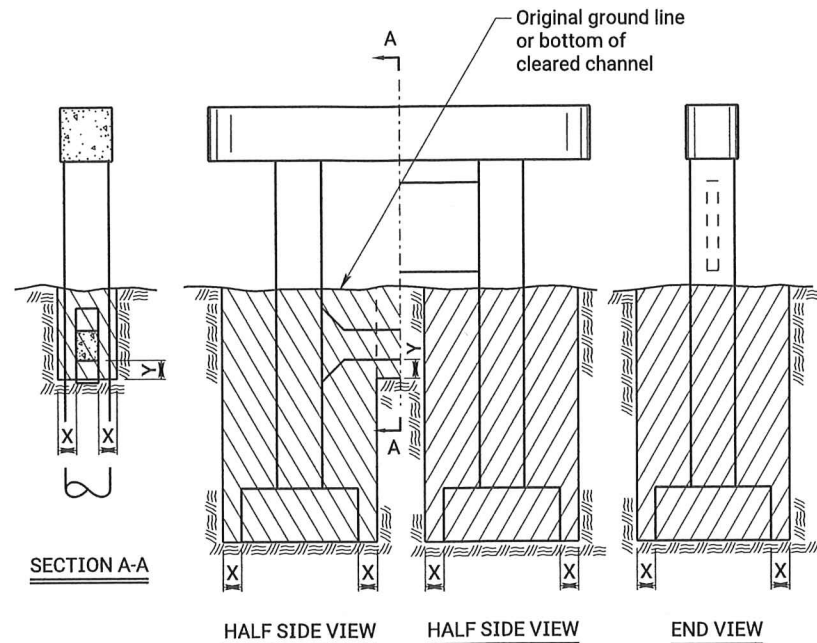
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	19	51

*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.



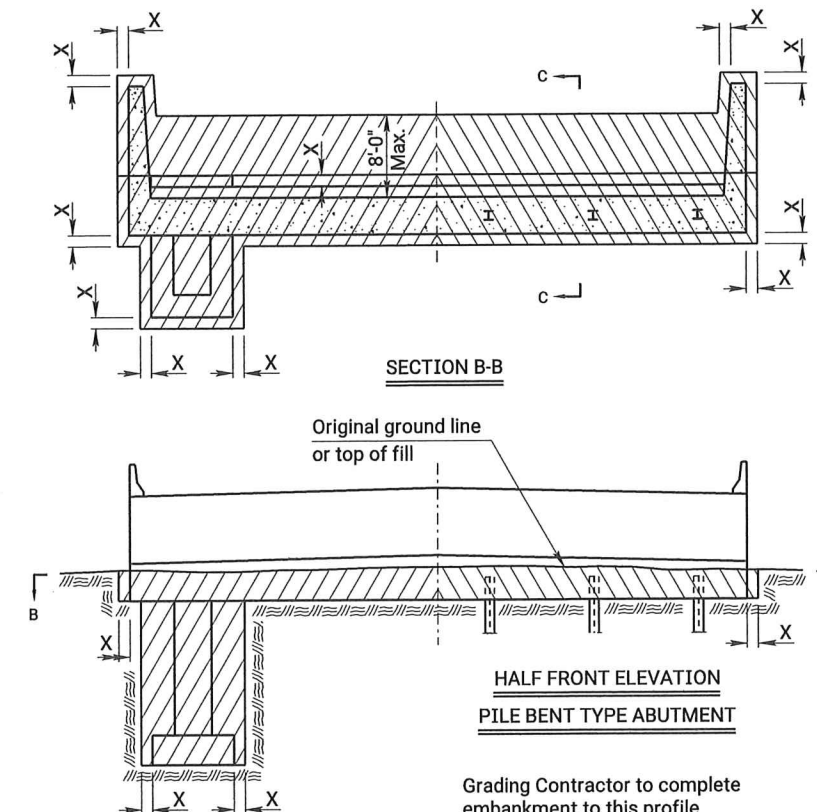
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

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.



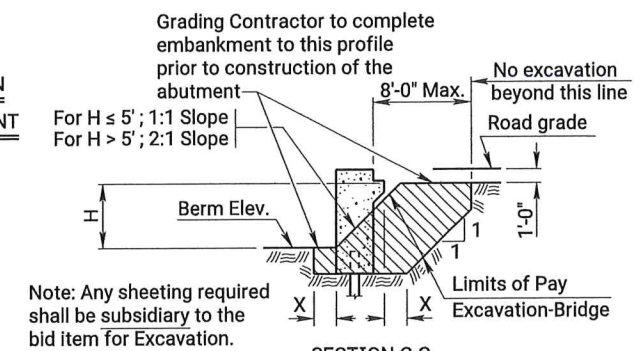
EXCAVATION DETAILS FOR TYPICAL PIERS

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

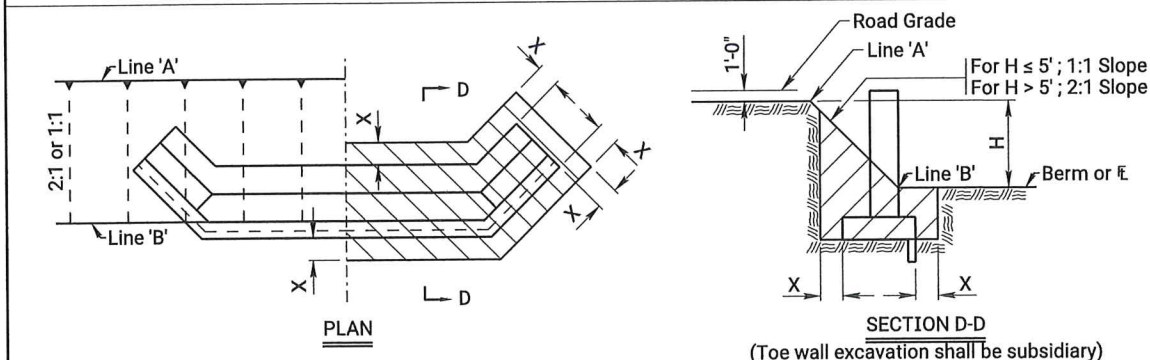


EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.



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

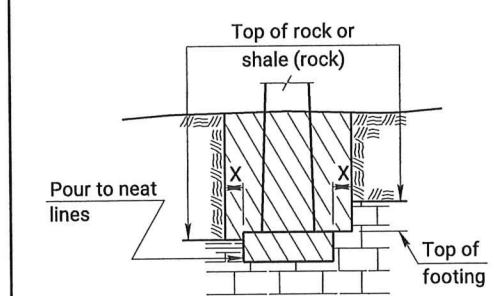
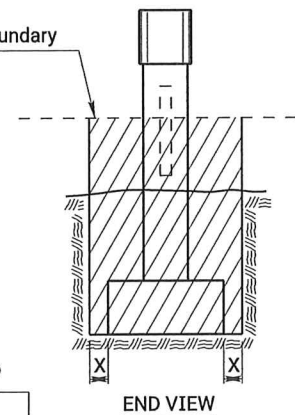


EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS

Note: Class II Excavation includes the entire volume of whatever nature found below the "Excavation Boundary Plane", within the limits specified for measurement. This may include water or air.

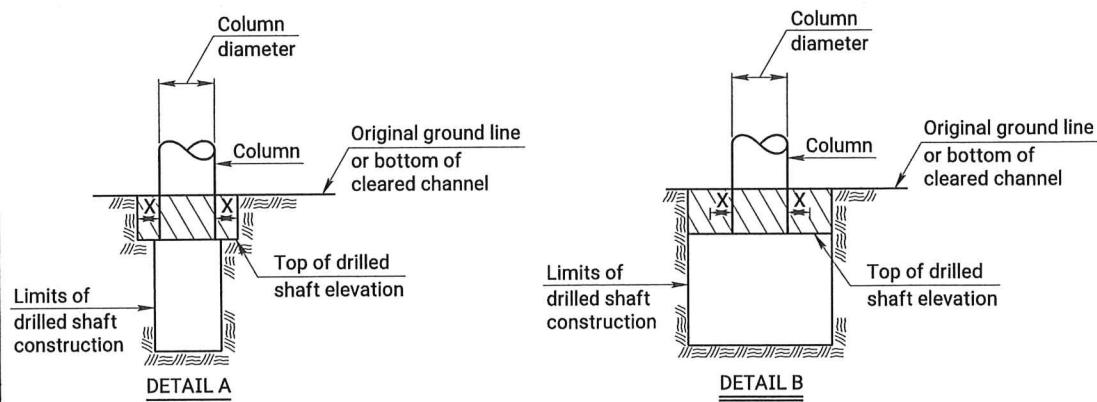
CLASS II EXCAVATION QUANTITIES

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



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.

Dimension "X" shall be 2'-0" unless indicated otherwise on the general plans.
Dimension "Y" shall be 1'-6" unless indicated otherwise on the general plans.

WATER RESOURCES RECEIVED
FEB 22 2024
KS DEPT OF AGRICULTURE

06	08-15-12	Embedment Excavation Subsidiary	J.P.J.	T.L.F.
05	05-15-12	Revised Wing Excavation	J.P.J.	T.L.F.
04	03-03-10	Revised Wing Excavation	J.P.J.	T.L.F.
REVISIONS				
NO.	DATE	BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION				
BRIDGE EXCAVATION (LRFD)				
BR100B				
DESIGNED	04-17-10	APP'D.	Terry L. Fleck	
DETAIL CK.	L.R.R.	QUAN. CK.	TRACE CK.	
KDOT Graphics Certified 06-20-2022				

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	20	51

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.

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.

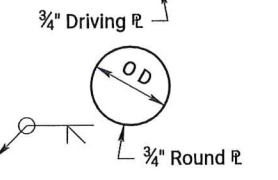
MILL TEST REPORTS: Steel piles test reports and steel shell test reports shall comply with the Standard Specifications.

OD	10 3/4"	T. = ††
OD	12 3/4"	T. = ††
OD	14"	T. = ††

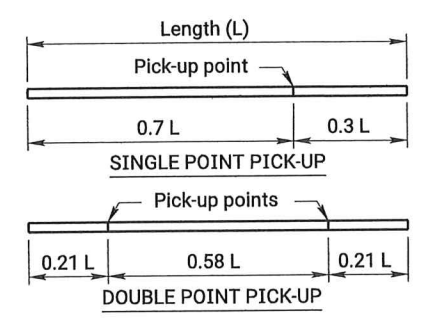
†† See the Geology Report or "Summary of Quantities" for Pipe Pile wall thickness

Note: Pile shall be driven with a steel head having a projecting ring fitting inside the pipe. Clearance between ring and pipe should be 1/4".

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



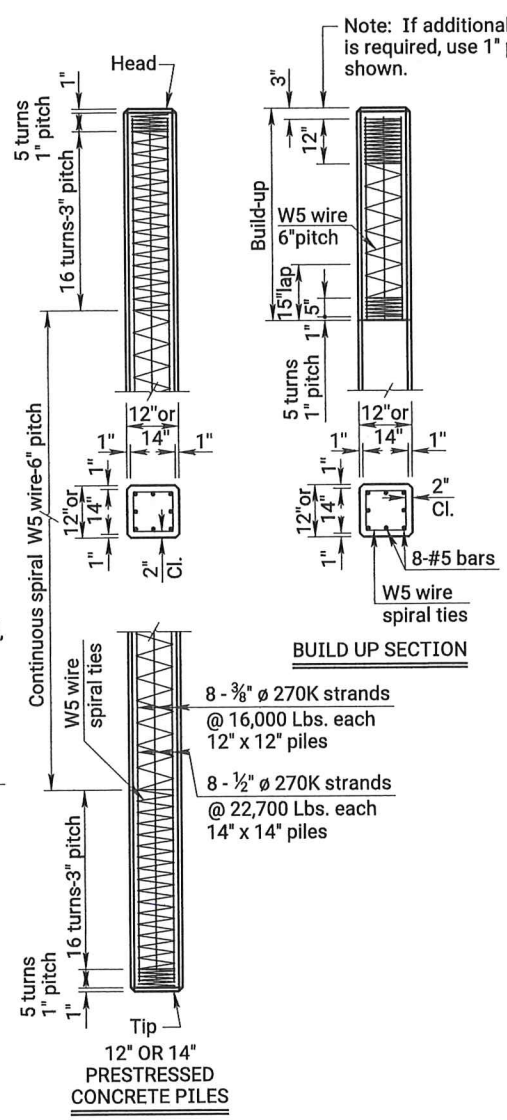
PLAIN ROUND CAST-IN-PLACE CONCRETE PILES



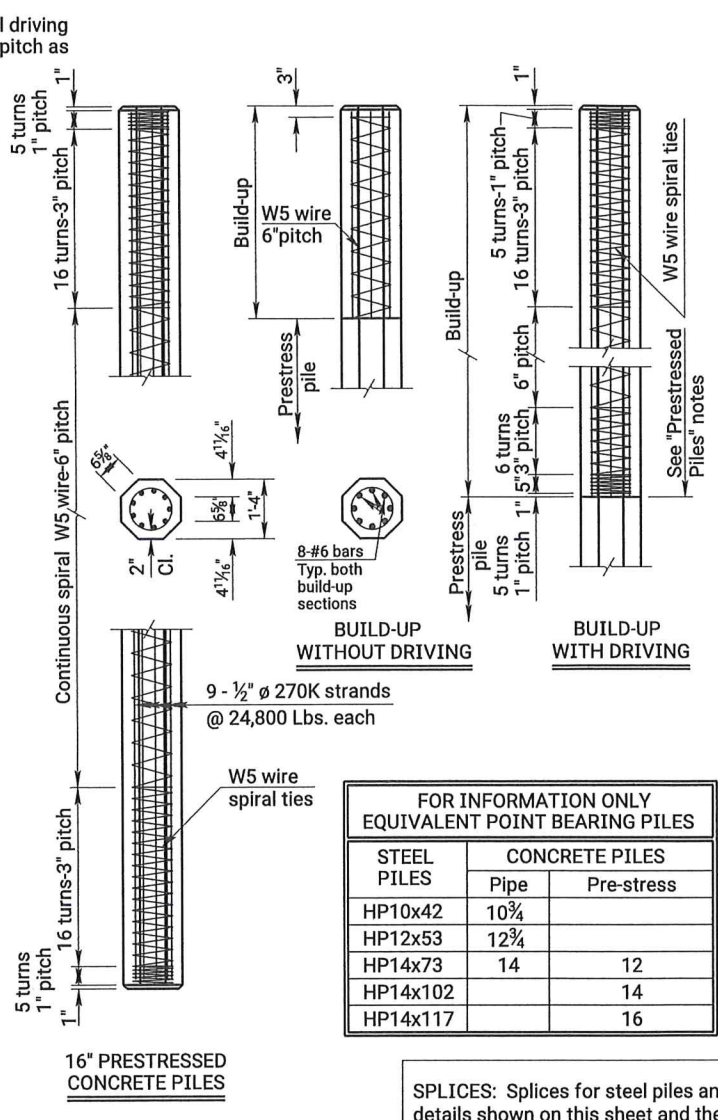
PICK-UP POINTS FOR PRESTRESSED PILING

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.



BUILD UP SECTION



FOR INFORMATION ONLY EQUIVALENT POINT BEARING PILES		
STEEL PILES	CONCRETE PILES	
	Pipe	Pre-stress
HP10x42	10 3/4"	
HP12x53	12 3/4"	
HP14x73	14	12
HP14x102		14
HP14x117		16

Weld Symbology Definition

Use grinder to bevel edges of splice as shown in weld symbology and drawing. In addition to bevels, produce clean, bare, and shiny surfaces at and around the splice welding location.

Lay full penetration root weld from beveled side of splice.

Back gouge root weld from side opposite of root welding application making sure to remove all foreign materials, porous steel, and inclusions from root weld. Finish welding the non beveled side of the splice.

Finish welding beveled side of the splice while removing slag, foreign materials, porous steel, and inclusions in between welding passes, use of a grinder may be needed.

Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.



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.

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

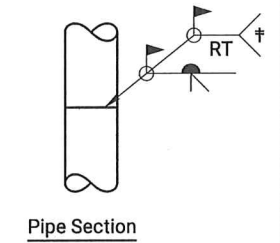
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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.

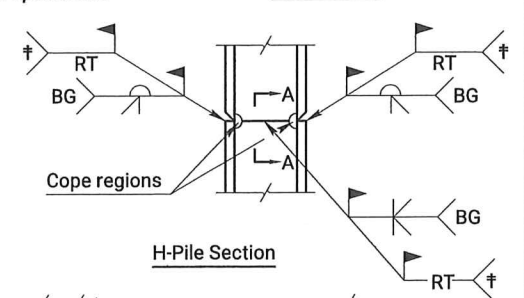
† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Contractor will test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested will have written confirmation of results. Report these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

* Minimum as required by welding process.

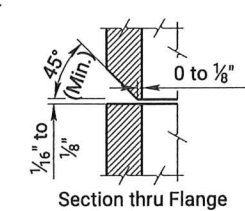
BG = Backgouge



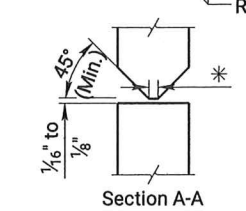
Pipe Section



H-Pile Section



Section thru Flange



Section A-A (Thru web)

PILE SPLICE DETAILS

WATER RESOURCES RECEIVED FEB 22 2024 KS DEPT OF AGRICULTURE

04	08-16-18	Add splice web section, clarify note	M.L.L.	J.P.J.
03	09-15-15	Clarify Notes	J.P.J.	C.E.R.
02	06-18-12	Clarify f'c, rod type, use and weld	J.P.J.	T.L.F.
NO.	DATE	REVISIONS	BY	APPD

STANDARD PILE DETAILS

BR110	DESIGNED	J.P.J.	QUANTITIES	TRACED	R.A.A.
FWA APPROVAL	10-04-12	APPD.	Terry L. Fleck		
DESIGN CK.	DETAIL CK.	QUAN CK.	TRACE CK.		

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	21	51

GENERAL NOTES

Reference is made to the latest edition of the CRSI "Manual of Standard Practice" for recommended industry practices concerning reinforcing steel.

Use only the following types of bar supports:

- 1) Wire Bar Supports:
 - a) Epoxy coated reinforcing: Class 1 Protection
 - b) Non-epoxy coated reinforcing: Class 1, 2, or 3 Protection
- 2) Plastic Bar Supports
- 3) Supplementary bars

When securing epoxy coated reinforcement, use tie wires or metal clips that are epoxy or plastic coated.

Do not weld reinforcing steel to bar supports or to other reinforcing steel. Shop weld spacer frames for haunched slabs.

Tie bars at all intersections around the perimeter of each mat and at not less than 2'-0" centers or at every intersection, whichever is greater.

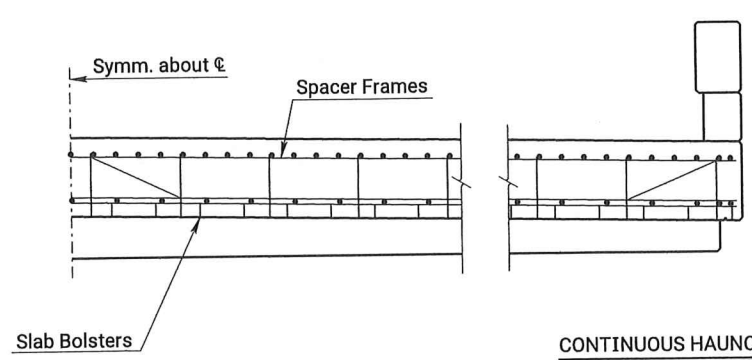
Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within 1/4" of that indicated on the plans.

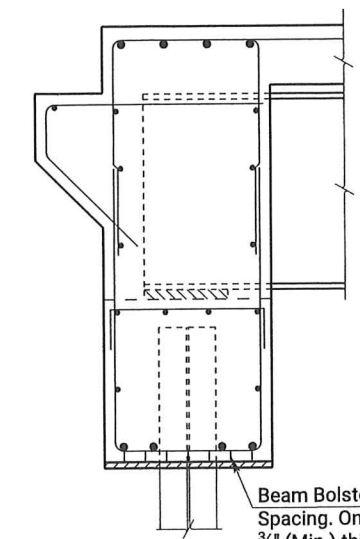
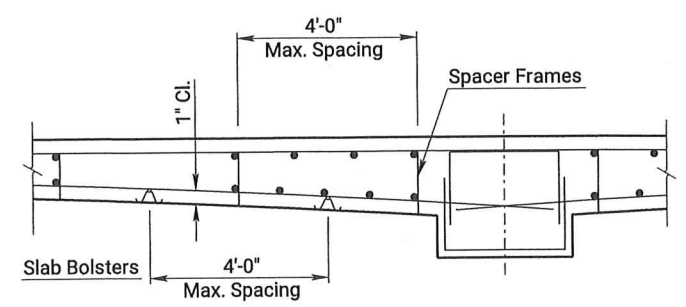
Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

Construct any platforms, required for the support of workers and/or equipment during concrete placement, directly on the forms and not on the reinforcing steel.

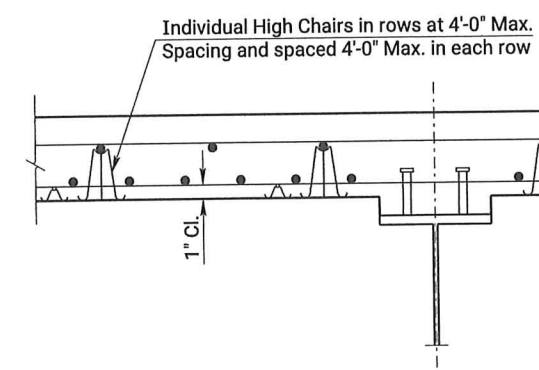
Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.



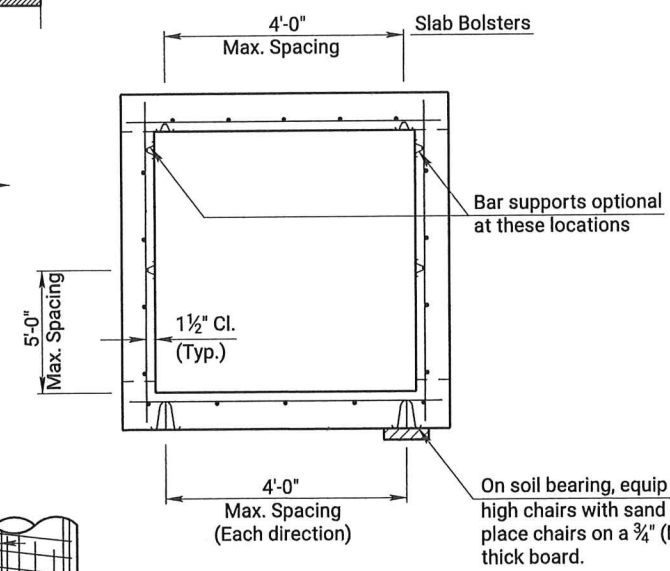
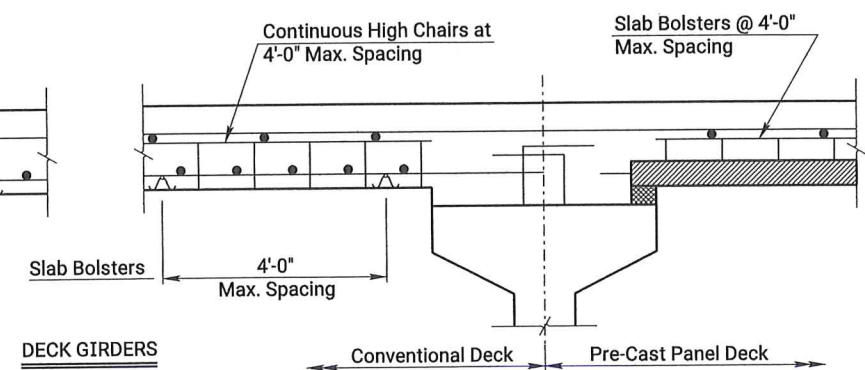
CONTINUOUS HAUNCHED SLAB



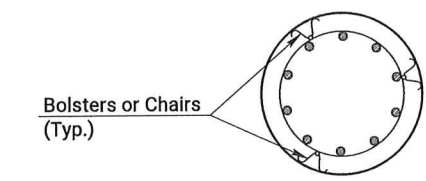
ABUTMENT



DECK GIRDERS

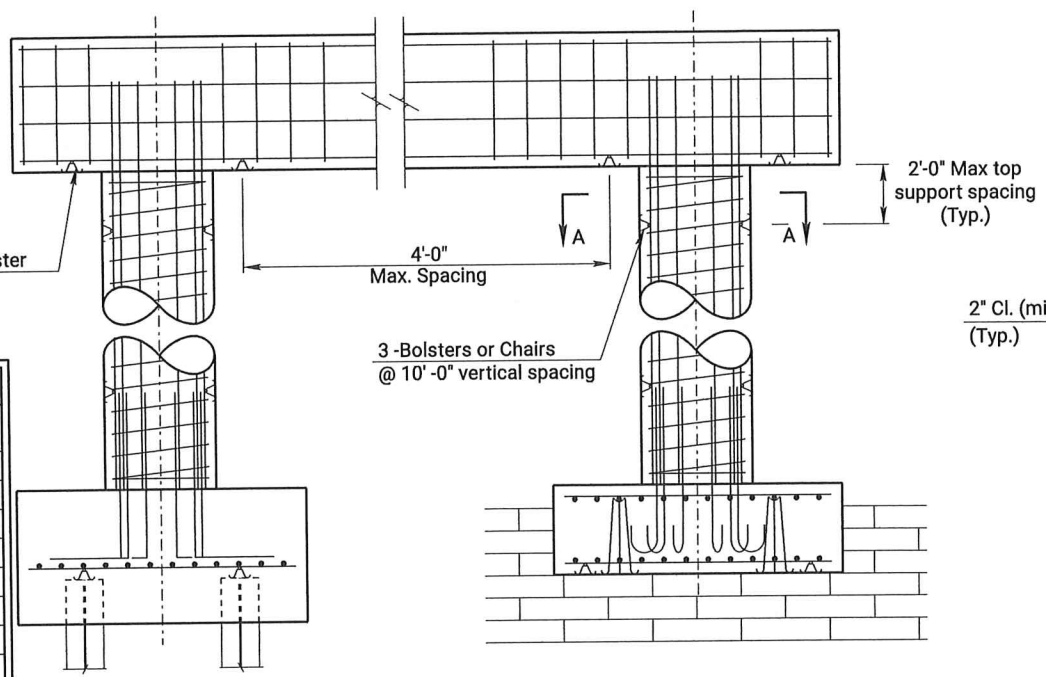


BOX CULVERT

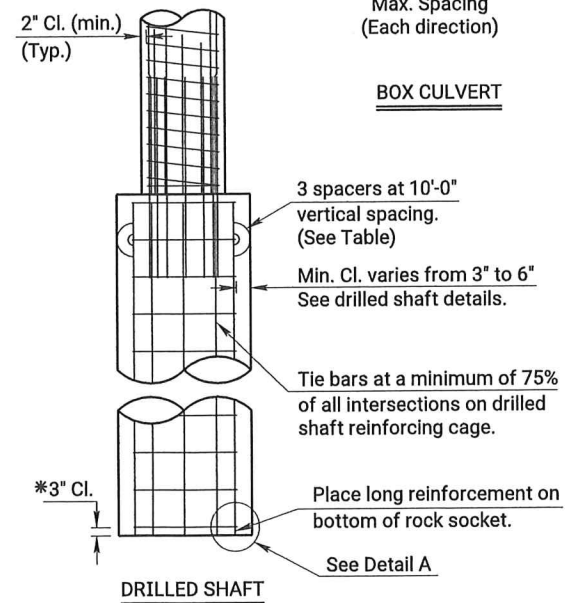


SECTION A-A

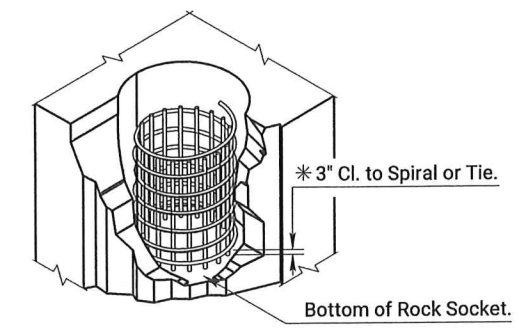
Required Shaft Supports		
Diameter (in.)	Circumference (in.)	No. of Spacers
18	56	3
24	75	3
30	94	4
36	113	4
42	131	5
48	150	6
54	169	6
60	188	7
66	207	7
72	226	8
78	244	9
84	263	9
90	282	10
96	301	11
102	320	11
108	339	12



PIER



DRILLED SHAFT



DETAIL A

* Note: Longitudinal reinforcing steel is placed on the bottom of the rock socket. Maintain 3" clearance from the bottom of rock socket to the first spiral or tie bar.

WATER RESOURCES RECEIVED FEB 22 2024 KS DEPT OF AGRICULTURE

05	11-10-10	Column Bar Supports Required	J.P.J.	T.L.F.
04	12-01-05	Drilled Shaft Spiral Steel Placement	J.P.J.	K.F.H.
03	08-21-00	Added Pre-Cast Panel Detail	R.A.M.	K.F.H.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BR120

DESIGNED	R.A.M.	DETAILED	R.A.M.	QUANTITIES	TRACED	R.A.A.
DESIGN CK.	L.R.R.	DETAIL CK.	R.A.M.	QUAN. CK.	TRACE CK.	R.A.M.

FDHW APPROVAL 11-17-10 APP'D Terry L. Fleck

DOT Graphics Certified 06-20-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	22	51

EARTHWORK				
Sta. to Sta.	Rock	Excavation Cu. Yds.		Compaction Cu. Yds. (Type B)(MR-90) Embankment
		Cont. Furnished VMF=0.75	Common VMF=0.75	
254+50	262+00		1,282	832
TOTAL			1,282	832

DRAINAGE STRUCTURES									
Station	Side	Size	Type	Conc. Gr. 3.6 Cu. Yds.	Reinf. Steel Lbs.				
TOTAL									

RECAPITULATION OF BRIDGE QUANTITIES		
BRIDGE NUMBER	STATION	SEE SHEET NO.
00000000370261	258+00 O.R.	9

RECAPITULATION OF ROAD QUANTITIES		
	Lump Sum	L. S.
Clearing & Grubbing		L. S.
Removal of Existing Structure		L. S.
Common Excavation	1,282	Cu. Yd.
Compaction of Earthwork (Type B)(MR-90)	832	Cu. Yd.
Water (Grading)(Set Price)	1	M. Gal.
Mobilization		L. S.
Field Office & Laboratory (Type C)	1	Each
Signing Object Markers (Type 3)	4	Each
Guardrail, Steel Plate	256.25	Lin. Ft.
Guardrail, End Terminal (SRT) Alt. No. 1	4	Each
Guardrail, End Terminal (FLEAT) Alt. No. 2	4	Each
Temporary Surfacing Material (Aggregate)	200	Cu. Yd.
Surfacing Material (AB-3)(6")	681	Ton
Foundation Stabilization (Set Price)	1	Cu. Yd.
Concrete for Seal Course (Set Price)	1	Cu. Yd.
Curing Environment		L. S.
Contractor Construction Staking		L. S.

REMOVAL OF EXISTING STRUCTURE	
Station	Unit
257+90	Remove existing 72' long concrete Beam Bridge on concrete abutments and pier, 8" conc. deck, hubguard and railing. 17' Roadway.
(For Information Only)	

Side	Quant.	Unit
Sheet No. 3	16	Each
(For Information Only)		
TOTAL	16	Each

LARGE TREES TO BE GRUBBED		
Side	Quant.	Unit
Sheet No. 3	16	Each
(For Information Only)		
TOTAL	16	Each

SURFACING MATERIAL (AB-3)(6")		
Station to Station	Quant.	Unit
Sta. 254+50 to Sta. 257+33.75	313	Ton
Sta. 258+66.25 to Sta. 262+00	368	Ton
TOTAL	681	Ton

GUARDRAIL END TERMINAL (SRT) ALTERNATE NO. 1			
Station	Side	Quant.	Unit
Sta. 258+00 O.R.			
NW Quad.	Lt.	1	Each
NE Quad.	Lt.	1	Each
SW Quad.	Rt.	1	Each
SE Quad.	Rt.	1	Each
TOTAL		4	Each

GUARDRAIL END TERMINAL (FLEAT) ALTERNATE NO. 2			
Station	Side	Quant.	Unit
Sta. 258+00 O.R.			
NW Quad.	Lt.	1	Each
NE Quad.	Lt.	1	Each
SW Quad.	Rt.	1	Each
SE Quad.	Rt.	1	Each
TOTAL		4	Each

STEEL PLATE GUARDRAIL (GALV.)			
Station	Side	Quant.	Unit
Sta. 258+00 O.R.			
NW Quad.	Lt.	181.25	Ft.
NE Quad.	Lt.	25	Ft.
SW Quad.	Rt.	25	Ft.
SE Quad.	Rt.	25	Ft.
TOTAL		256.25	Ft.

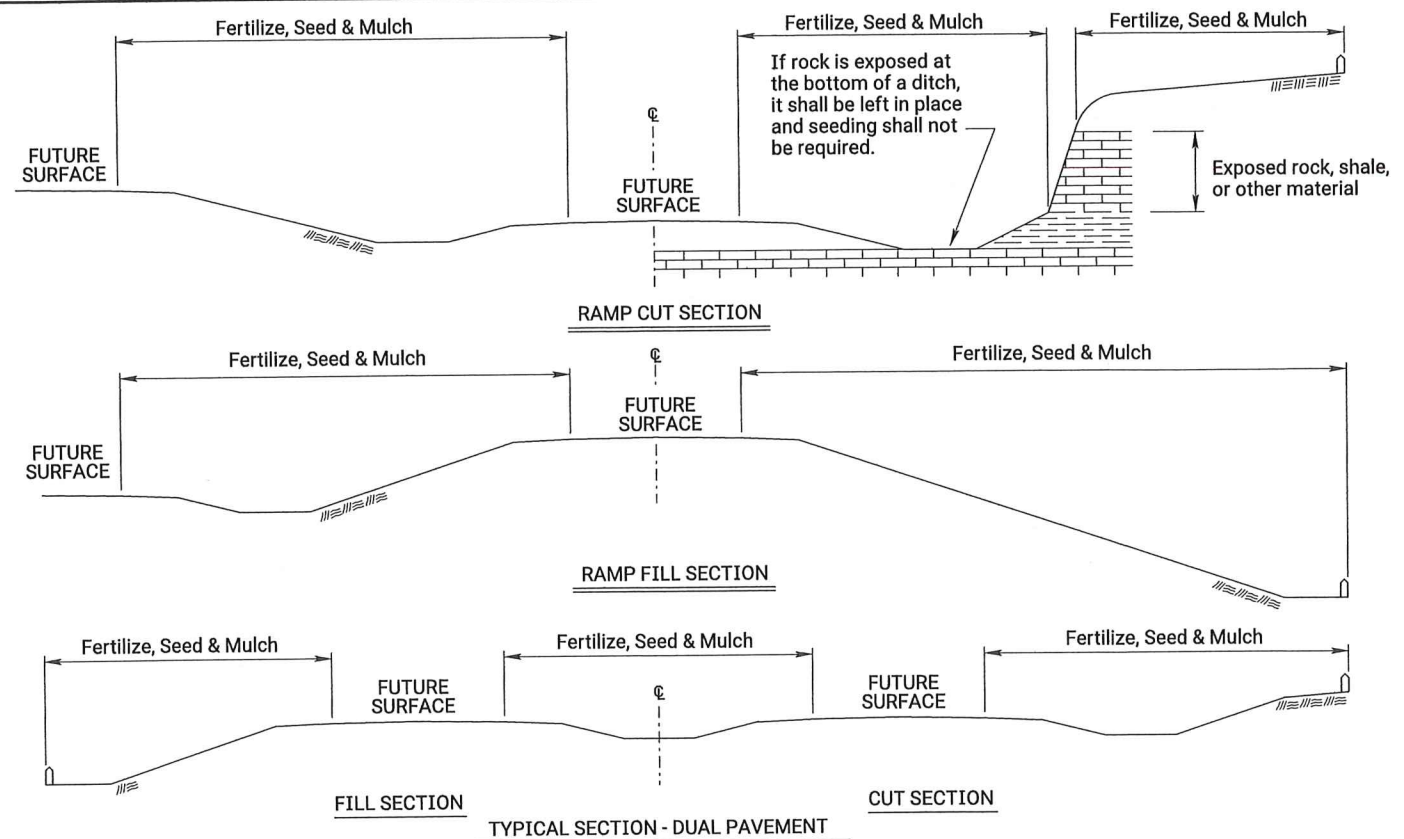
See Sh. No. 9 for Bridge Quantities.
 See Sh. No. 23 for Temporary Erosion & Pollution Control Quantities.
 See Sh. No. 32 for Seeding Details & Quantities.
 See Sh. No. 39 for Permanent Signing Quantities.
 See Sh. No. 45 for Traffic Control Plan & Quantities.

WATER RESOURCES RECEIVED
 FEB 22 2024
 KS DEPT OF AGRICULTURE

2	1-14-08	Rem. Drainage Structure summary	S.W.K.	J.O.B.
1	1-9-91	Detailed on CADD	R.J.S	J.O.B.
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
SUMMARY OF QUANTITIES				
RD050				
DESIGNED	5-28-08	APP'D. James O. Brewer		
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED	B.N.B.
		QUAN.CK.	TRACE CK.	S.W.K.

J:\Hisp\Greenwood\CADD\022-RD050.dwg Layout1 2/16/2024 - 8:12am Imartin

KDOT Graphics Certified



SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES						
P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150		0.65		Temporary Fertilizer (15 - 30 - 15)	97.5	LB
				Temporary Seed (Canada Wildrye)		LB
				Temporary Seed (Grain Oats)		LB
				Temporary Seed (Sterile Wheatgrass)		LB
	169.9		0.65	Soil Erosion Mix	110.4	LB
				Erosion Control (Class 1, Type C)	3,161	SQ YD
				Erosion Control (Class 2, Type Y)		SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)		CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")	300	LF
				Biodegradable Log (12")	300	LF
				Biodegradable Log (20")	600	LF
				Filter Sock (****)		LF
				Geotextile (Erosion Control)		SQ YD
				Silt Fence	650	LF
				SWPPP Design †		LS
				SWPPP Inspection †		EACH
				Water Pollution Control Manager †		EACH
	900 lbs / acre			Mulch Tacking Slurry		LB
	2 tons / acre			Mulching		TON
				Water (Erosion Control) (Set Price)	1	MGAL

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

- * - N = Nitrogen Rate of Application
- ** - P₂O₅ = Phosphorous Rate of Application
- *** - K₂O = Potassium Rate of Application

The Contractor will be required to finish areas of excavation, borrow and embankment in accordance with the specifications. Areas that require installation or construction of temporary water pollution control items will be finished in reasonable close conformity to the alignment, grade and cross section shown on the plans or as established by the Engineer.

CLT = Construction Limit Tract. This area is defined by the entire disturbed area of the project that requires seeding and erosion control measures to be placed. Any impervious areas (i.e. pavement, gravel, riprap, etc.) shall not be included in this measurement.

Slope = Defined by the area of the project that requires Class 1 erosion control material to be placed. This area shall be seeded using the Soil Erosion Mix prior to placement of the material. Drilling seed is preferred, however, broadcasting is acceptable if drilling is not possible.

Channel = Defined by the area of the project that requires Class 2 erosion control material to be placed. This area shall be seeded using the Soil Erosion Mix prior to placement of the material. Drilling seed is preferred, however, broadcasting is acceptable if drilling is not possible.

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 (timed when required), seeded, and mulched. Soil preparation shall conform to the Standard Specifications.

Temporary seeding shall be done during any time of the year that the soil can be cultivated. After the temporary seeding has been completed on the entire project, permanent seeding shall be done during the normal seeding season.

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 materials is generally as follows:

1 1/4 - 2 1/4 Tons per Acre = 1 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.

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. See Permanent Seeding Summary of Seeding Quantities sheet LA850 for further details.

Geotextile (Erosion Control) shall be removed prior to placement of permanent slope protection.

Regreen and Quick Guard are the approved sterile wheatgrass products.

† If the total disturbed area of the project, not just the seeding area, is 1 acre or more, then these bid items must be included.

**** List size of material.

The amount of mulch and mulch tacking slurry in the bid quantities is estimated. (Acres of Seeding X 1.5 X 2 Tons/Acre). The estimated quantity includes mulching associated with both temporary and permanent seeding operations. The total mulch and mulch tacking slurry required shall be determined in the field. The bid item for mulching and mulch tacking slurry shall be paid for according to the Standard Specifications.

Quantities for all erosion control items are estimated to give full flexibility for compliance with the NPDES permit. Final quantities will be determined in the field.

SOIL EROSION MIX		
PLS RATE	NAME	QTY (lb)
0.5	Blue Grama Grass Seed (Lovington)	0.3
4.5	Buffalograss Seed (Treated)	2.9
45	Perennial Ryegrass	29.2
2.6	Prairie Junegrass	1.7
6.3	Side Oats Grama Grass Seed (ElReno)	4.1
45	TallFescue (Endophyte Free)	29.3
6	Western Wheatgrass Seed (Barton)	3.9
20	Canada Wildrye	13.0
20	Grain Oats	13.0
20	Sterile Wheatgrass	13.0
169.9	Total (lb)	110.4

The Soil Erosion Mix is to be placed under the Class 1 and/or Class 2 erosion control material.

The Soil Erosion Mix consists of the Shoulder Area of the Permanent Seed Mix used on the project.

WATER RESOURCES RECEIVED

FEB 22 2024

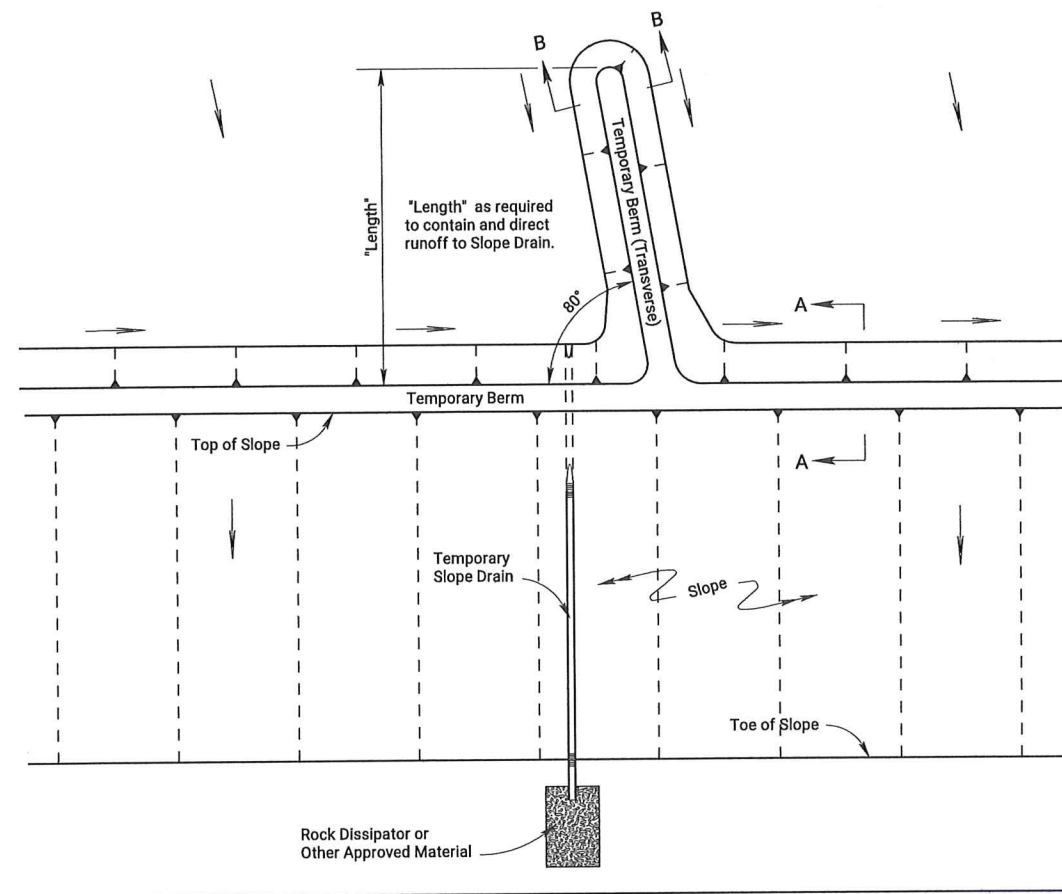
KS DEPT OF AGRICULTURE

03	08-03-20	Added Note	M.R.D.	M.L.
02	12-01-17	Revised Standard	M.R.D.	S.H.S.
01	06-01-17	Revised Standard	M.R.D.	S.H.S.
NO.	DATE	REVISIONS	BY	APP'D

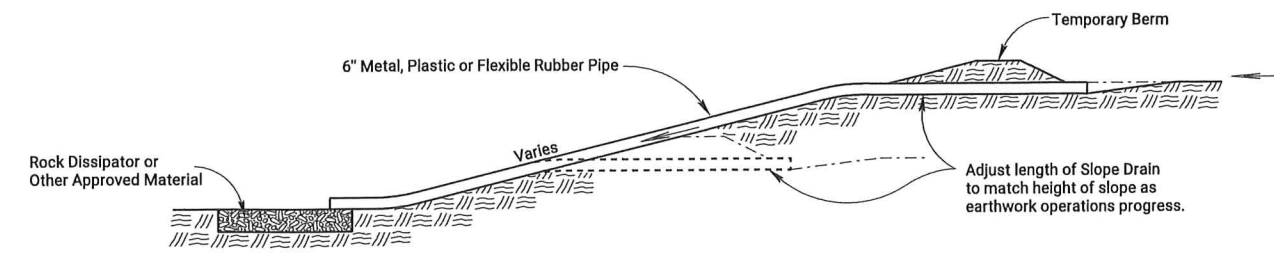
TEMPORARY EROSION AND POLLUTION CONTROL

KANSAS DEPARTMENT OF TRANSPORTATION			
LA852A			
DESIGNED	M.R.D.	01-26-18	APP'D. Scott H. Shields
DESIGN CK	S.H.S.	DETAIL CK	S.H.S.
QUAN. CK	S.H.S.	QUAN. CK	TRACE CK

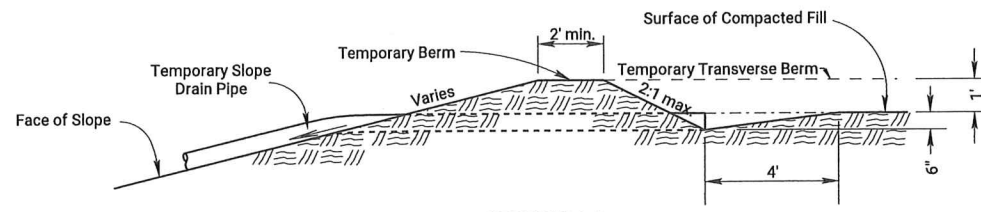
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	25	51



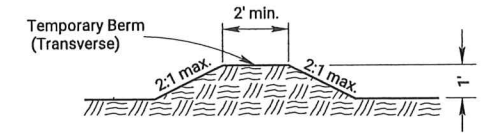
TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN
NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN
NO SCALE



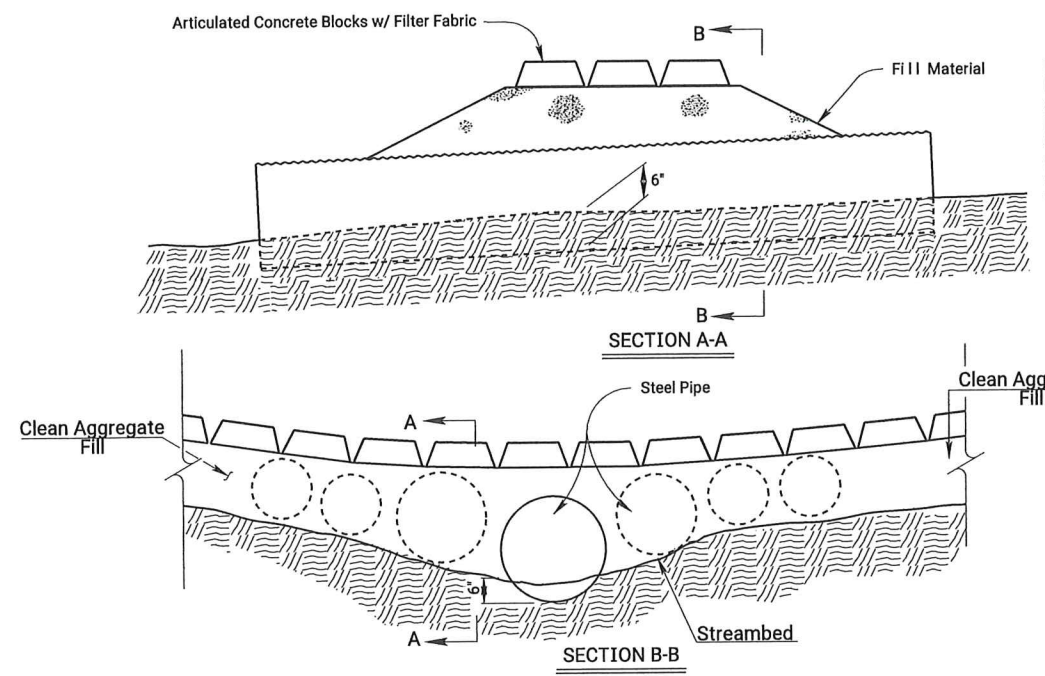
SECTION A-A
NO SCALE



SECTION B-B
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM
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.



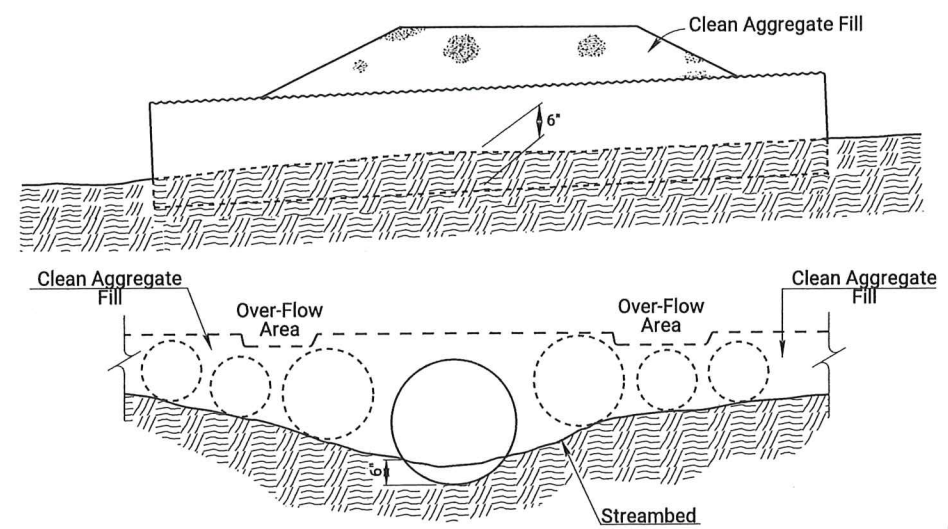
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)
NO SCALE

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.



SECTION B-B
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.

WATER RESOURCES RECEIVED
FEB 22 2024

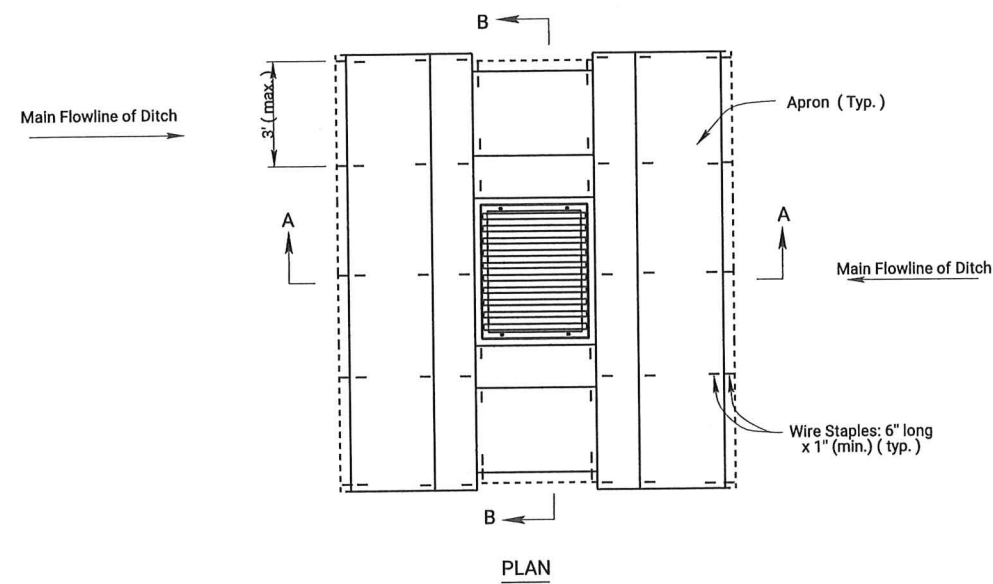
KS DEPT OF AGRICULTURE

NO.	DATE	REVISIONS	BY	APPD
03	01-21-22	Temp Stream Crossing - Clean Aggregate Fill Note Added	M.R.D.	M.L.
02	08-24-21	Temp Stream Crossing - Clean Aggregate Fill Note Added	M.R.D.	M.L.
01	06-11-13	Revised Standard	M.R.M.	S.H.S.

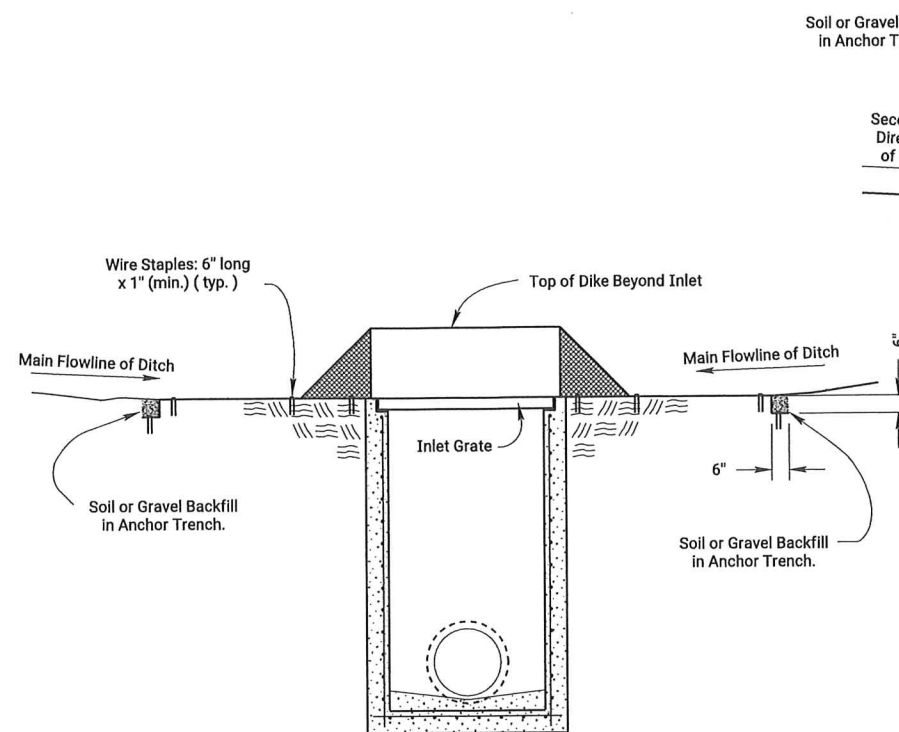
KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION AND POLLUTION CONTROL
TEMPORARY SLOPE DRAIN, TEMPORARY STREAM CROSSING (AGGREGATE)
 LA852B

DESIGNED	01-21-22	APPD.	Mervin Lare
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED
		QUAN. CK.	TRACED CK.

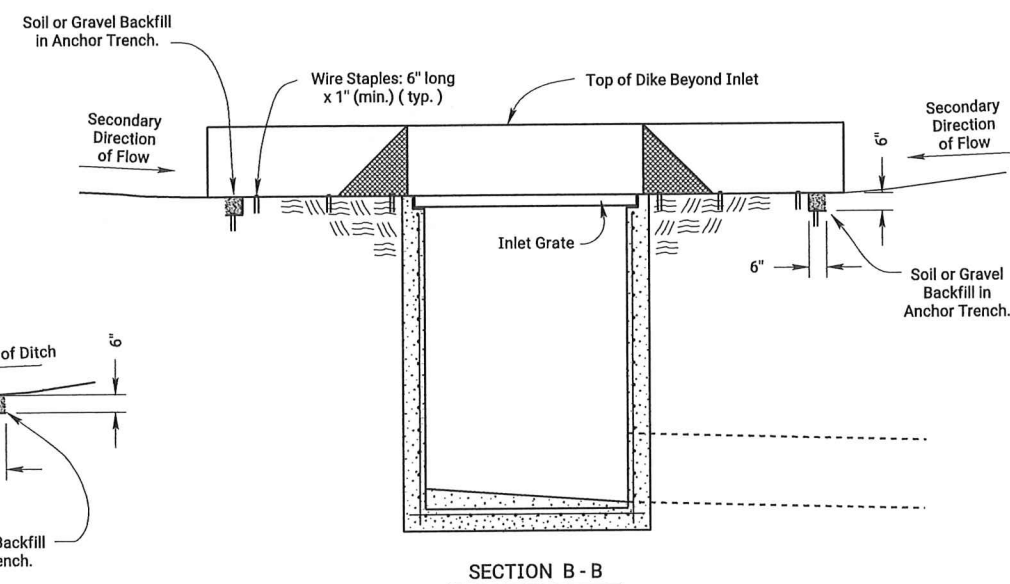
KDOT Graphics Certified 06-17-2022



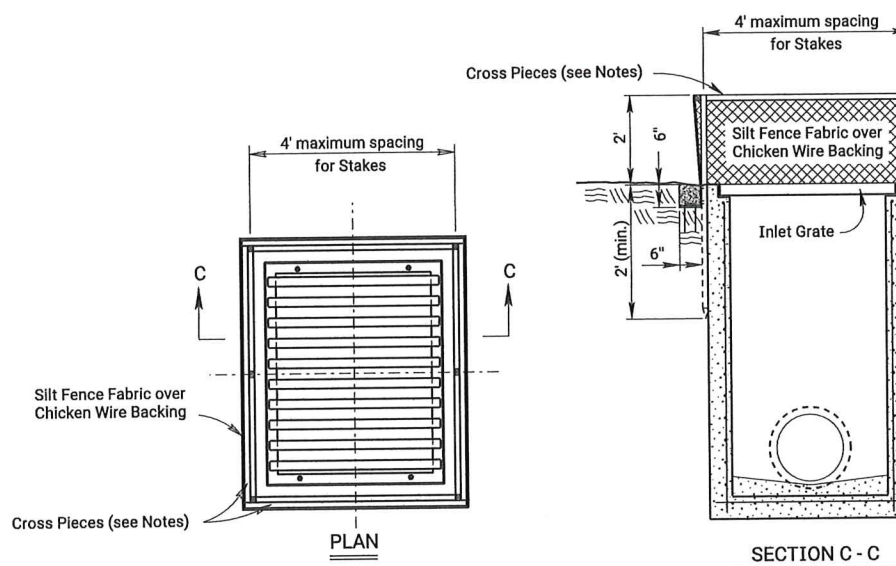
PLAN
TEMPORARY INLET SEDIMENT BARRIER
(TRIANGULAR SILT DIKE METHOD)
 NO SCALE



SECTION A - A



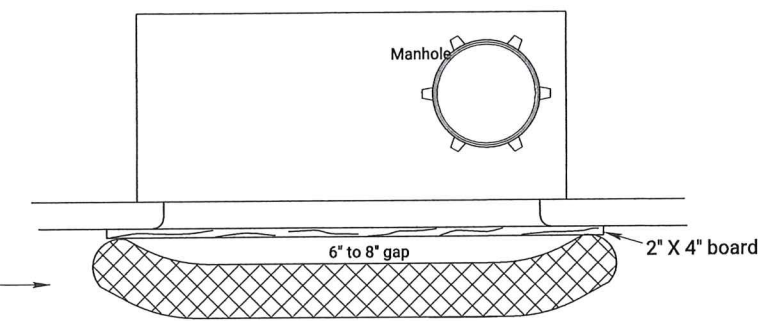
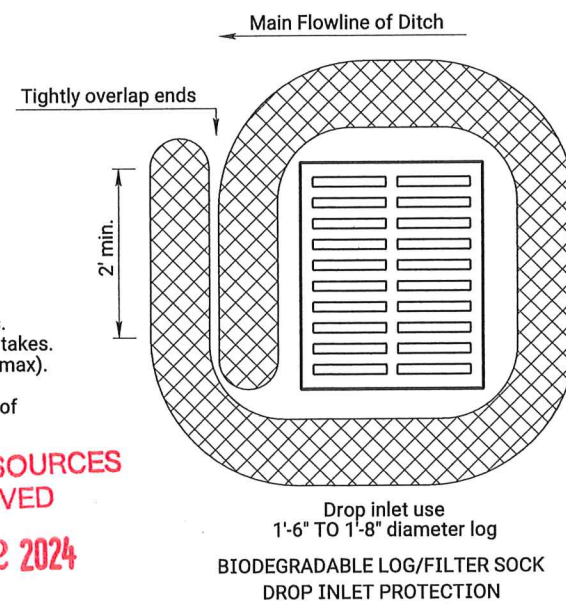
SECTION B - B



PLAN
TEMPORARY INLET SEDIMENT BARRIER
(SILT FENCE METHOD)
 NO SCALE

- SILT FENCE:**
- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 3/16" x 1 3/16";
 - 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.
 - Cross pieces shall be of same material as stakes.
 - Attach fence fabric securely on 6" centers (max).
 - Use of high flow material is acceptable.
 - Refer to plan sheets to estimate the length of silt fence required.

Bags = synthetic net (3mm mesh) or burlap bags
 Rock = approximately 1" to 2" diameter



CURB INLET PROTECTION

- If multiple gravel bags are required, place them in such a way that no gaps are evident.
- Height of bags (8" minimum diameter) must not be above top of curb.
- Alternative products may be used other than gravel bags such as the "Gutter Buddy". Products must be approved by the Engineer.
- Curb inlet protection will be measured and paid for as Filter Sock.

Note: 25% of log shall be keyed into ground during installation.
 Stake every 4'

Material Requirements	
Use 100% shredded mulch or other non-compost biodegradable material as fill for logs.	
No compost or fines.	
No hay or straw.	
Do not use material which prohibits water infiltration.	
Log Mesh: Use mesh with 1/4" openings or larger. Mesh must allow water infiltration but also hold fill material in place.	

NO.	DATE	REVISIONS	BY	APPD
03	09-26-19	Changed Direction of Main Flowline of Ditch Arrow	M.R.D.	S.H.S.
02	03-10-15	Revised Standard	R.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION			
TEMPORARY EROSION AND POLLUTION CONTROL, TEMPORARY INLET SEDIMENT BARRIER (SILT FENCE) TEMP. INLET SEDIMENT BARRIER (T.S.D.) LA852C			
DESIGNED	R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.
APP'D.	03-10-15	QUAN. CK.	SCOTT H. SHIELDS

WATER RESOURCES RECEIVED
FEB 22 2024
KS DEPT OF AGRICULTURE

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	27	51

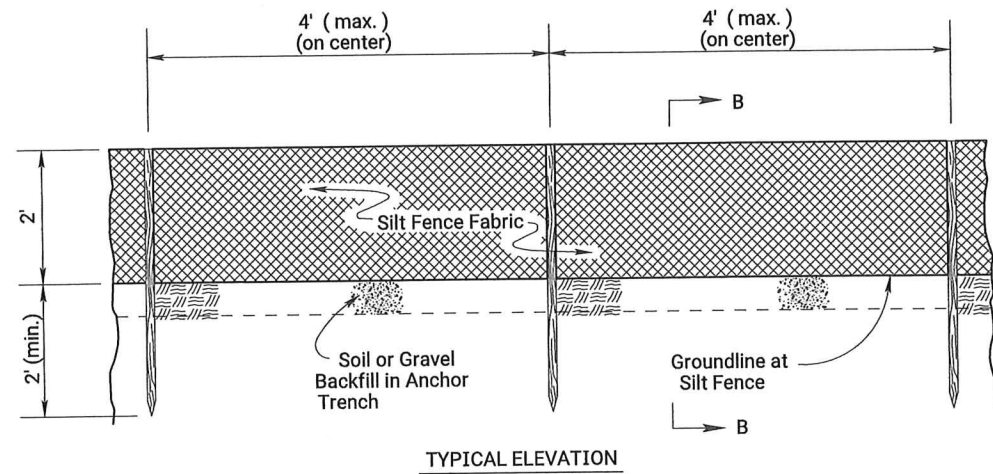
INSTALLATION NOTES

SILT FENCE:

- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 3/16" x 1 3/16";
 - 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.

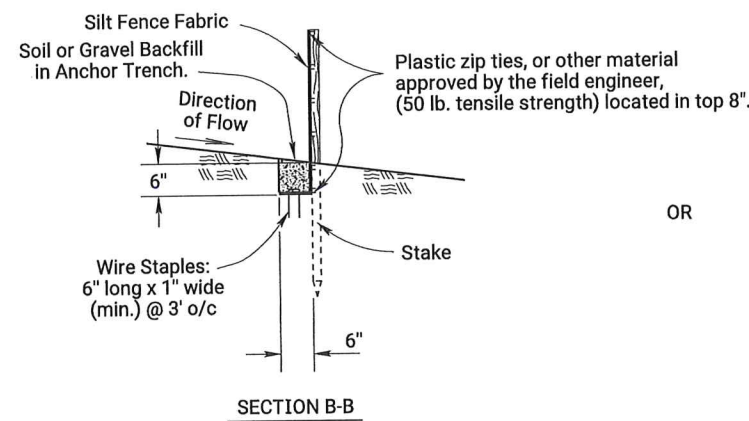
BIODEGRADABLE LOG OR FILTER SOCK

- 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.

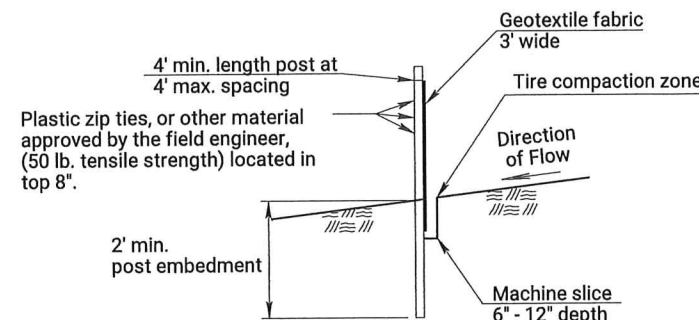


TYPICAL ELEVATION

SILT FENCE BARRIER
NO SCALE



SECTION B-B



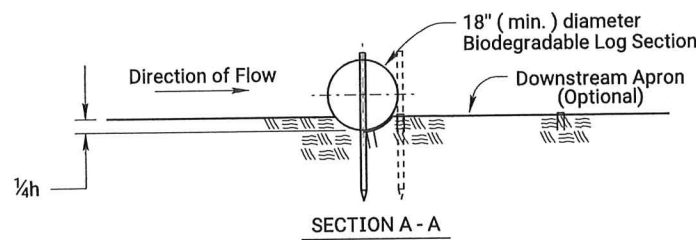
SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions

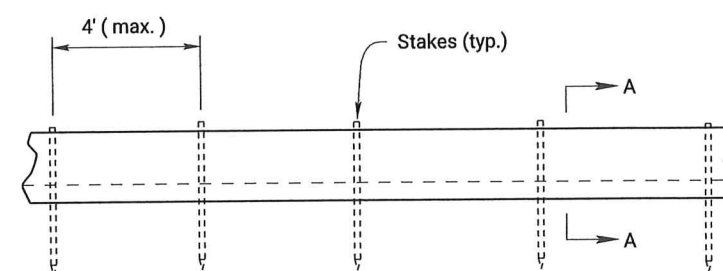
Slope Gradient	PRODUCT		
	9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
≤4H:1V	40	60	80
3H:1V	30	45	60

Deviations should be approved by the Field Engineer.

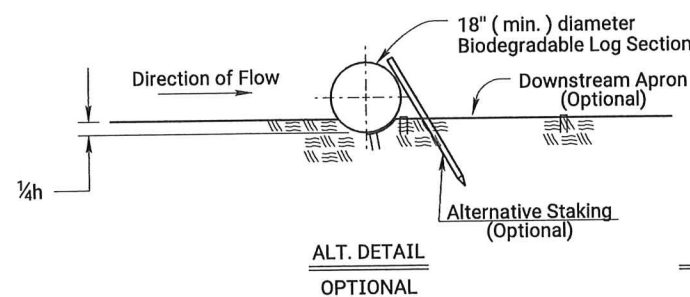
BIODEGRADABLE LOG MATERIAL		
	LOW FLOW	HIGH FLOW
9"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber
12"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber
18"-20"	Straw/Compost	Excelsior / Wood Chips / Coconut Fiber



SECTION A - A



TYPICAL ELEVATION



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG SLOPE INTERRUPTIONS
OR Filter Sock

GENERAL NOTES

- Slope interruptions shall be placed along contour lines, with a short section turned up grade 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.

**WATER RESOURCES
RECEIVED**

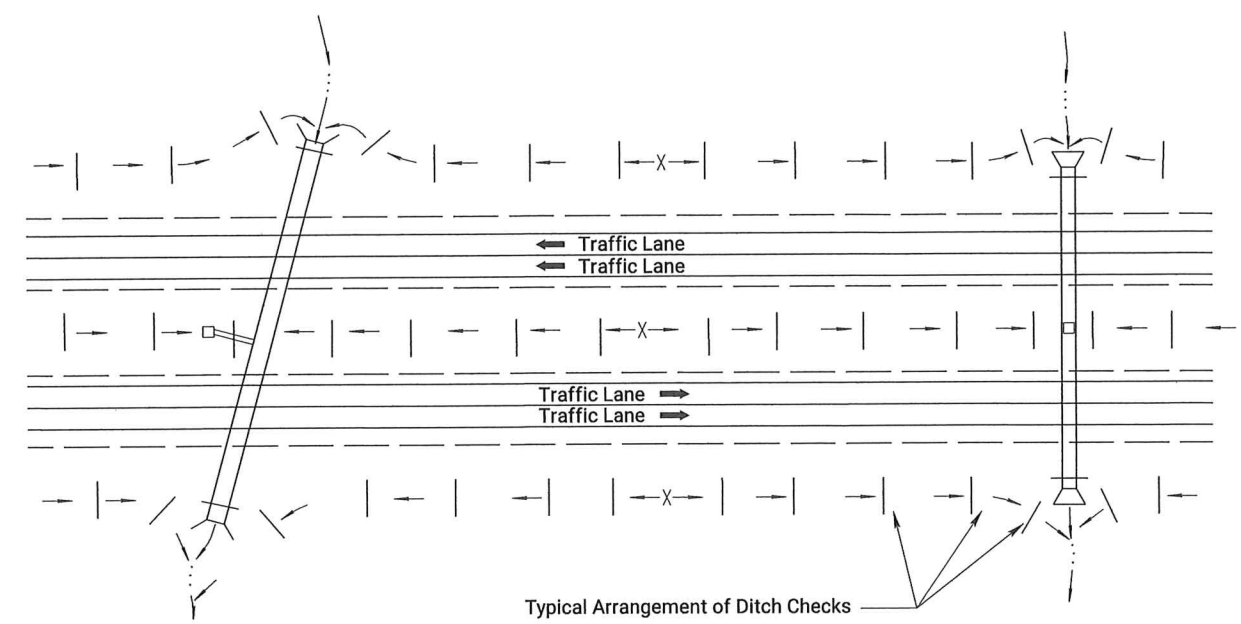
FEB 22 2024

KS DEPT OF AGRICULTURE

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

DESIGNED	S.H.S.	DETAILED	R.A.	APPD.	Scott H. Shields
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN. CK.	TRACED	TRACE CK.



TYPICAL DITCH CHECK LAYOUT PLAN
NO SCALE

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.

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.

WATER RESOURCES RECEIVED
FEB 22 2024
KS DEPT OF AGRICULTURE

03	08-10-16	Revised Standard	RAA	S.H.S.
02	06-28-16	Revised Standard	RAA	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 DITCH CHECKS

LA852E

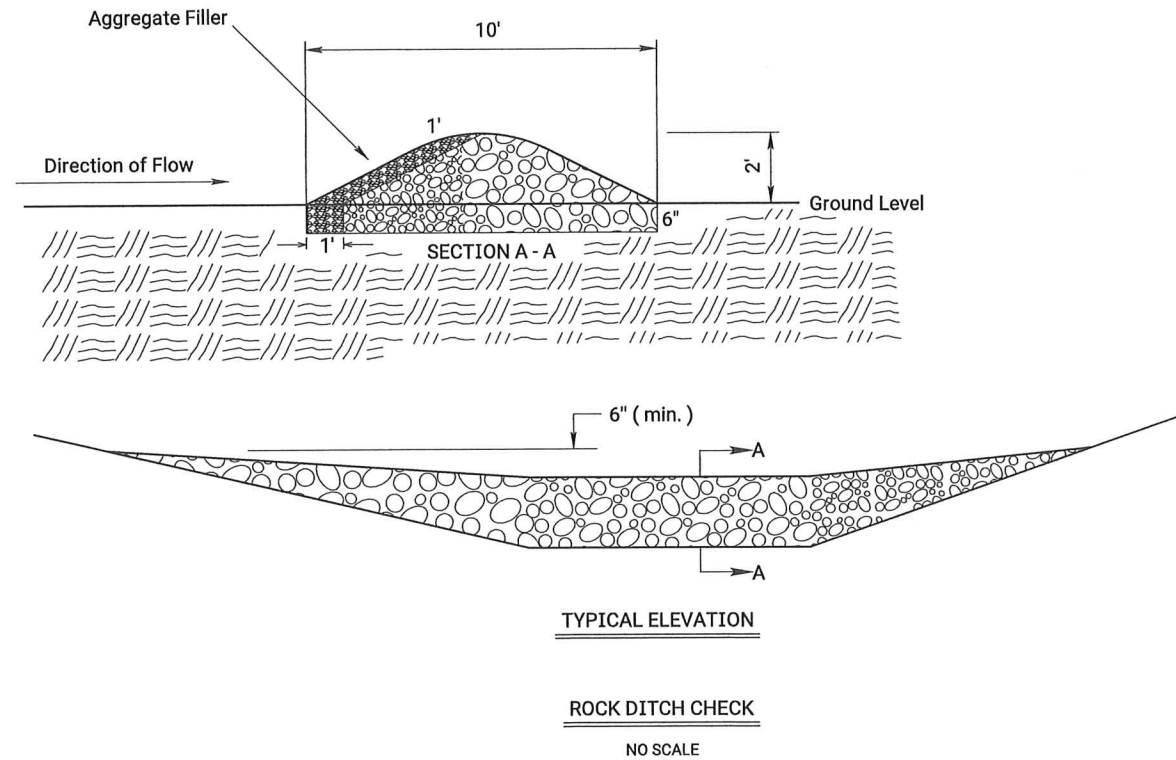
DESIGNED	S.H.S.	TRACED	R.A.A.
DESIGN CK	S.H.S.	DETAIL CK	S.H.S.
QUANTITIES	R.A.A.	QUAN CK	S.H.S.
TRACED	R.A.A.	TRACE CK	S.H.S.

Scott H. Shields
09-14-16 | APPD.

KDOT Graphics Certified 06-18-2022

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	29	51

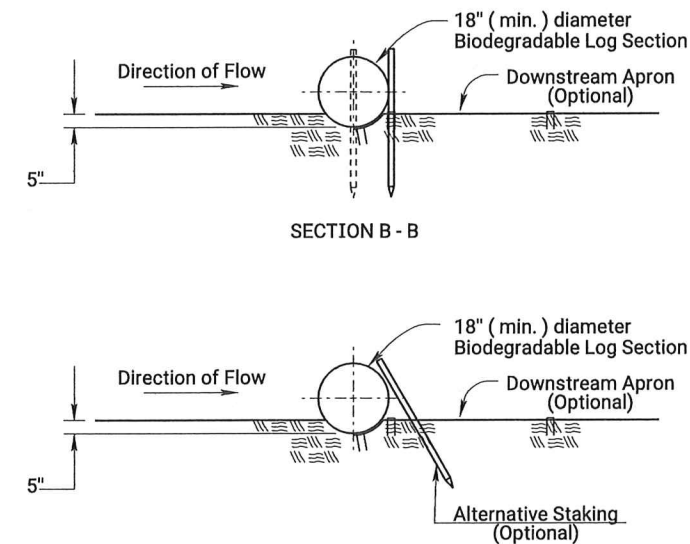
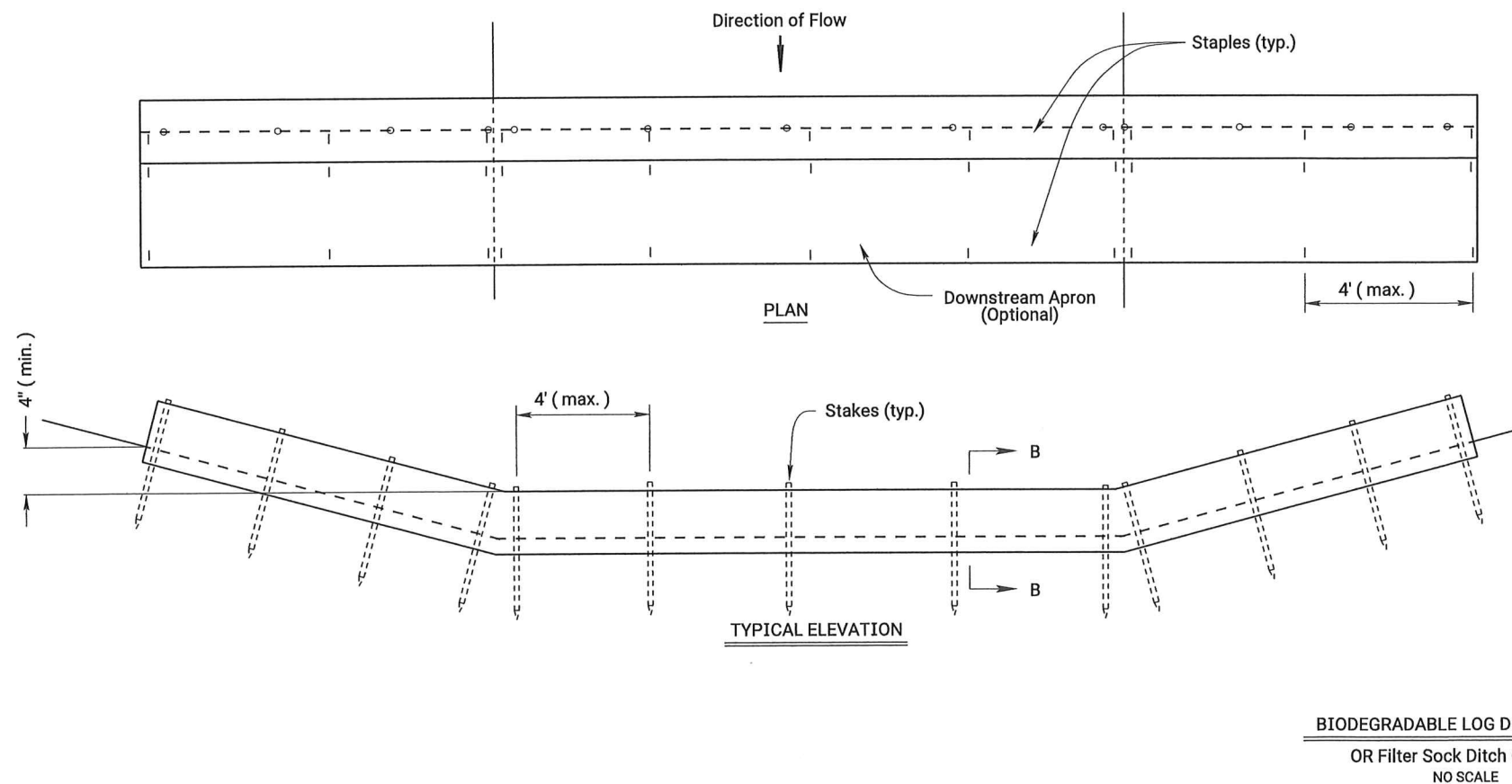


DITCH @ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29

NOTE: Use this spacing for Rock Ditch Checks only.

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.



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 2114 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.

ALT. DETAIL
OPTIONAL

**WATER RESOURCES
RECEIVED
FEB 22 2024**

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	APP'D

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

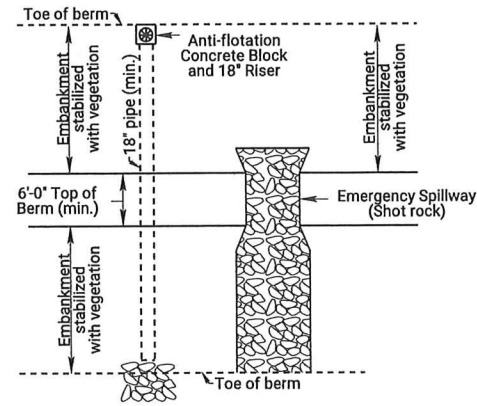
FHWA APPROVAL	11-19-20	APP'D.	Mervin Lare
DESIGNED	M.L.	DETAILED	D.K.
DESIGN CK.	M.L.	DETAIL CK.	M.L.
		QUANTITIES	TRACED
		QUAN. CK.	R.A.A.
			TRACE CK.
			R.A.A.

KS DEPT OF AGRICULTURE

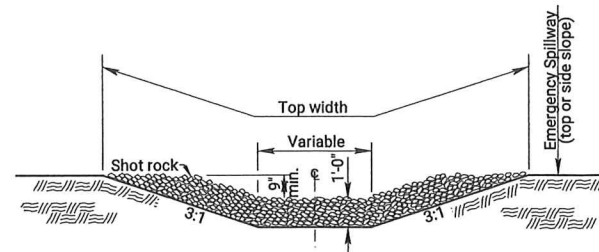
KDOT Graphics Certified 07-14-2022

KDOT Graphics Certified

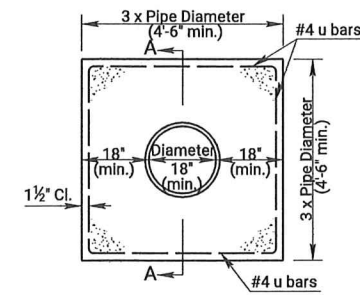
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	30	51



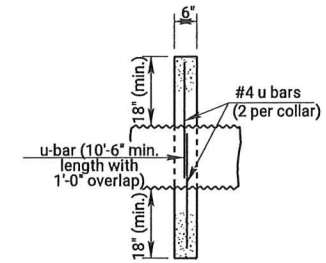
SEDIMENT STORAGE BASIN (PLAN)



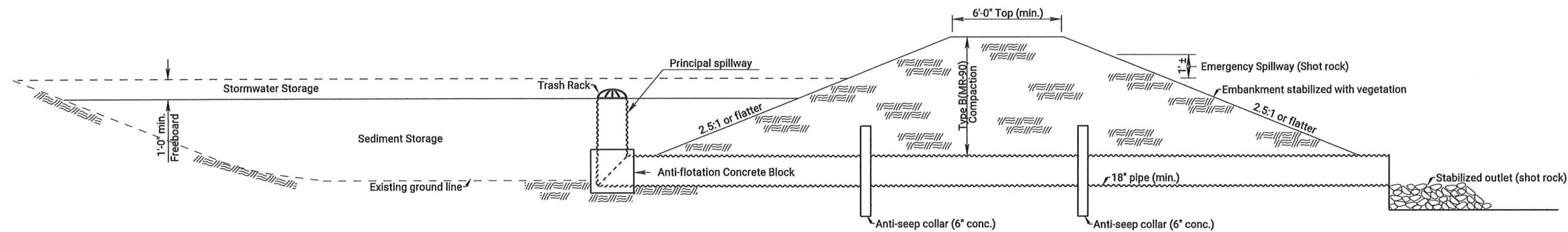
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



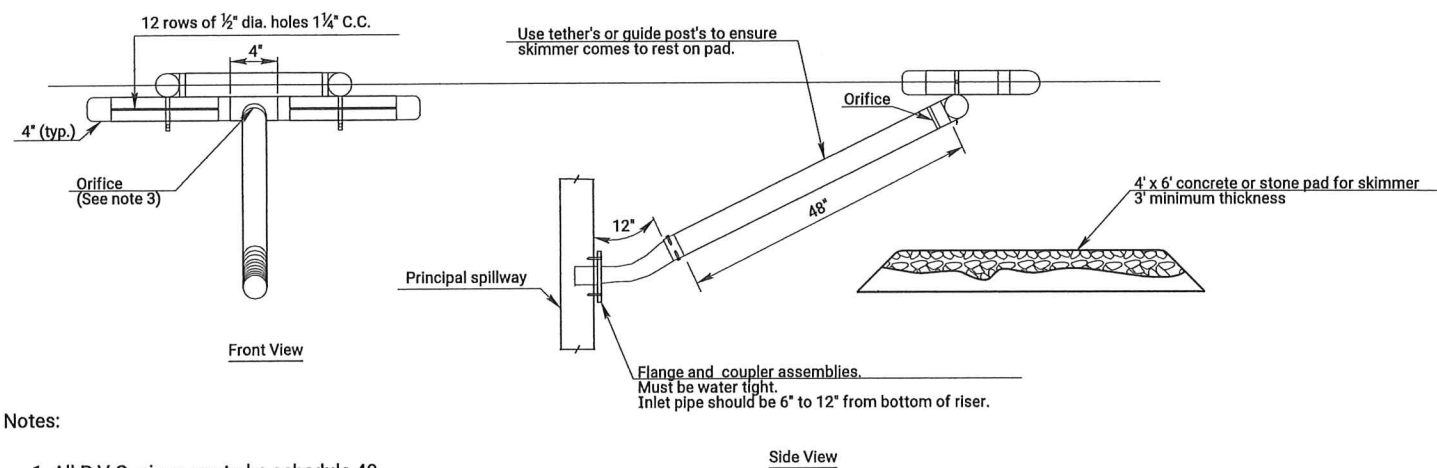
SECTION A-A



SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

- 1) Temporary Sediment Basins shall be constructed at locations as directed by the Engineer or as approved in the SWPPP Schedule. All work and materials necessary, including but not limited to, the fill material, compaction, drainage pipes, aggregates and all other incidentals necessary to construct the basin, shall be paid as "Temporary Sediment Basin".
- 2) Lengths and top dimensions shall be determined in the field by the Engineer.
- 3) Skimmer dewatering device required and must be used regardless the size of the drainage area.



SKIMMER DEWATERING DEVICE

Notes:

1. All P.V.C. pipes are to be schedule 40.
2. HDPE flexible drain pipes is to be attached to the pond outlet structure with water-tight connections.
3. The orifice shall be sized of to provide drawdown time to 2 to 5 days and approved by the engineer.
4. Other skimmer designs maybe used that dewateres from the surface at a controlled rate. The design must be approved by the engineer.

SEDIMENT STORAGE BASIN LOCATIONS		
STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

WATER RESOURCES
RECEIVED
FEB 22 2024

KS DEPT OF AGRICULTURE

NO.	DATE	REVISIONS	BY	APPD
02	09-03-13	Added Skimmer Dewatering Device	M.R.M.	S.H.S.
01	07-17-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL
SEDIMENT STORAGE BASIN

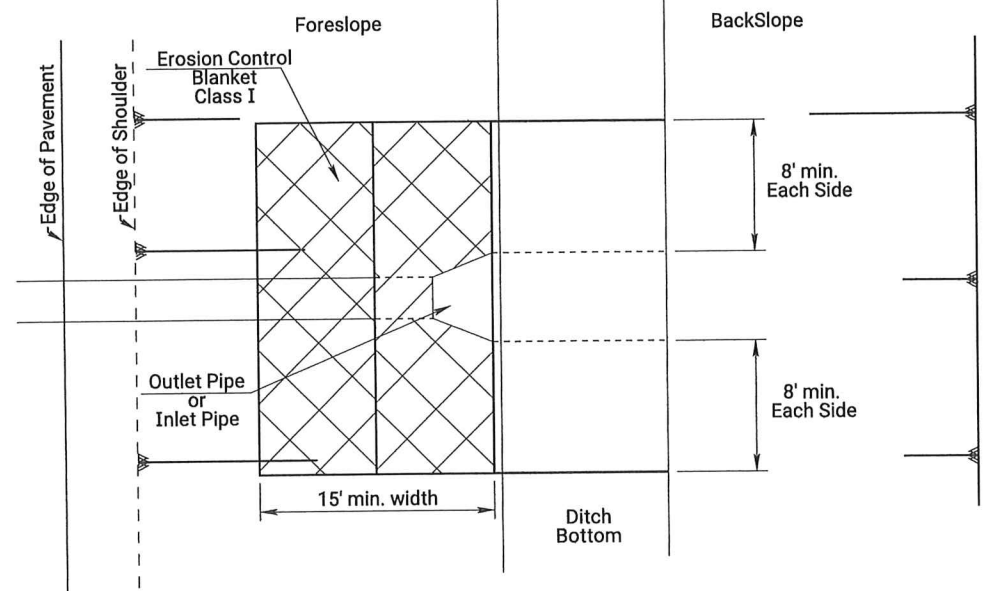
LA852H

DESIGNED	B.B.	DETAILED	B.B.	QUANTITIES	TRACED	B.B.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN. CK.	TRACE CK.	S.H.S.

FDOT Graphics Certified 06-20-2022

FDOT Graphics Certified

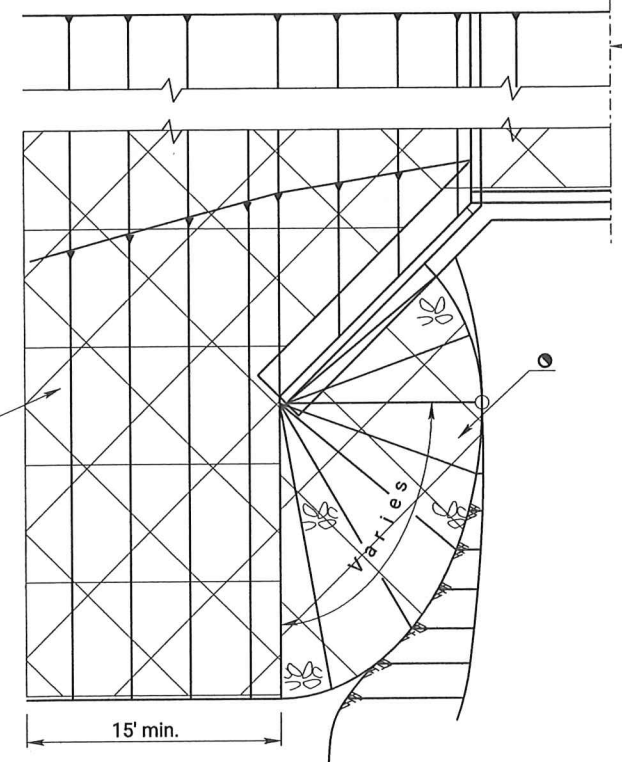
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	31	51



PARTIAL PLAN PIPE



Limits of Erosion Control Blanket

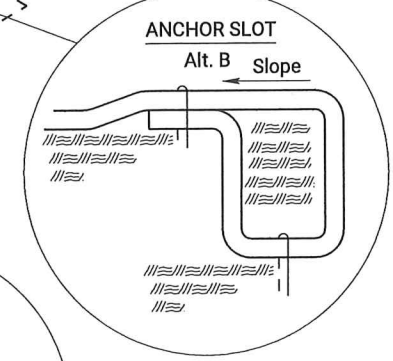
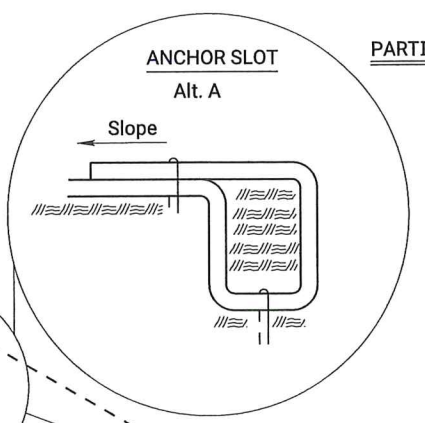
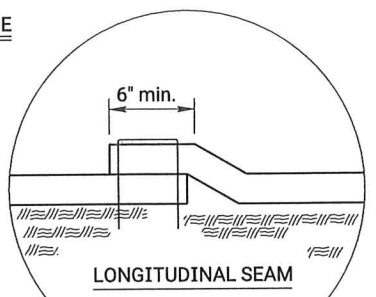
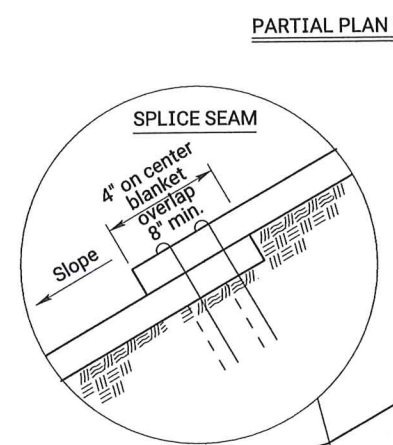


PARTIAL PLAN BOX CULVERT

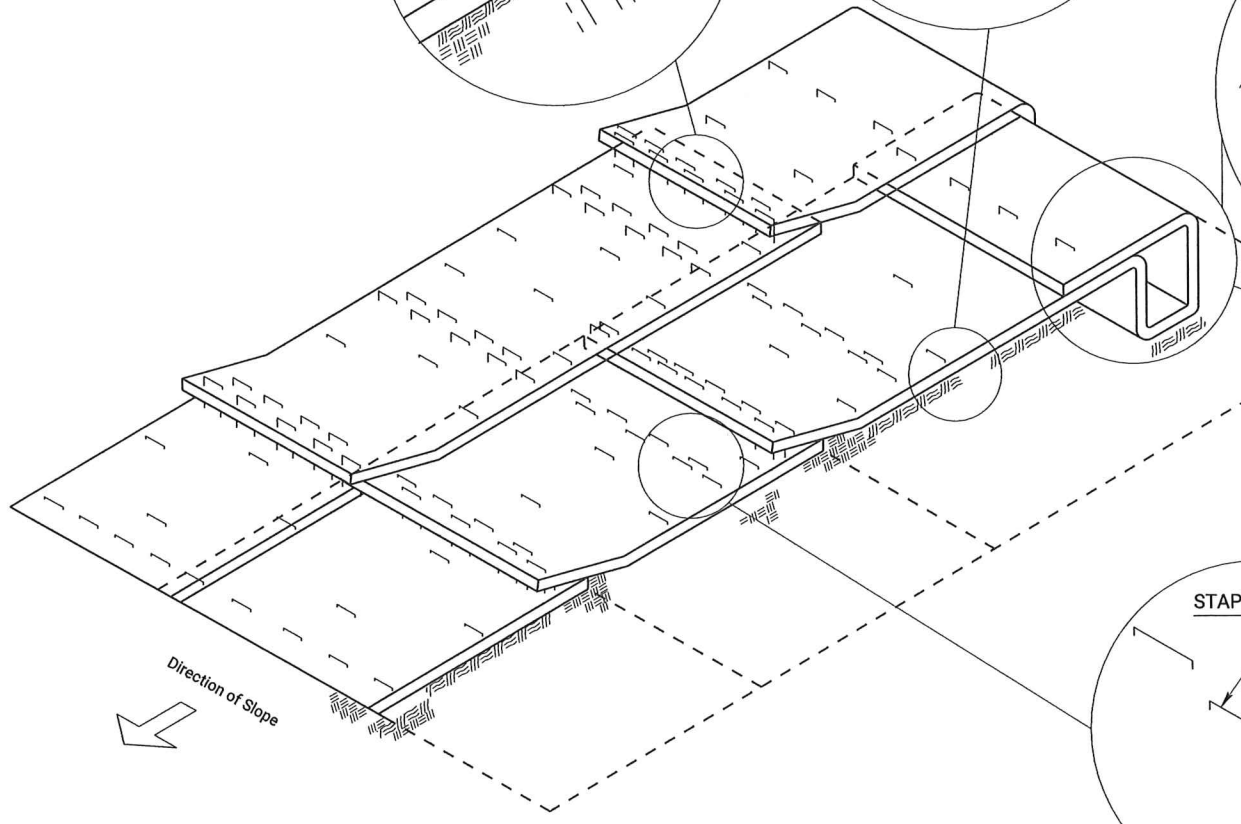
INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

Erosion Control Blankets shall be laid loosely in the direction of the slope, beginning at the bottom of the slope. In order for blanket to be in contact with the soil, lay blanket loosely, avoiding stretching.

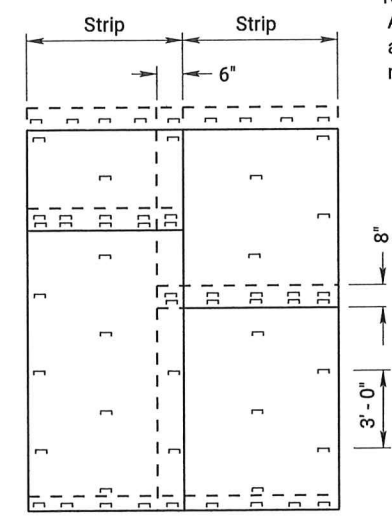
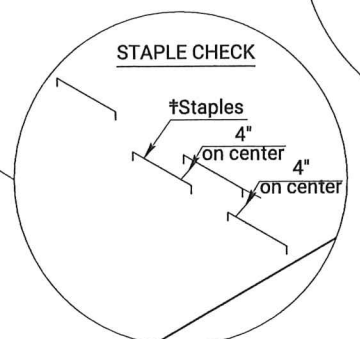
- ANCHOR SLOTS:** The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
- LONGITUDINAL SEAMS:**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



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



ISOMETRIC VIEW



PLAN VIEW - ANCHORING DIAGRAM

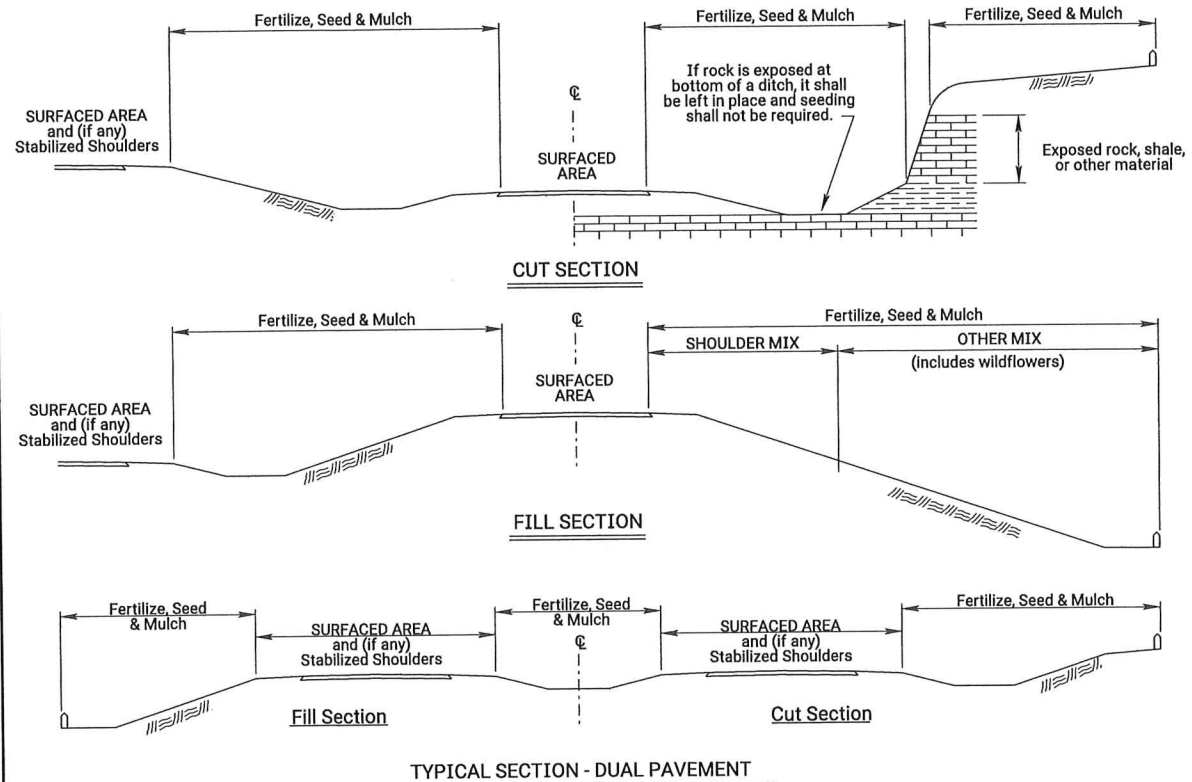
NOTE: Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards. Single post ring and shank staple is acceptable.

**WATER RESOURCES RECEIVED
FEB 22 2024
KS DEPT OF AGRICULTURE**

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	R.A.A.	03-10-15	APPD.	Scott H. Shields
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED	R.A.A.
		QUAN.CK.	TRACE CK.	R.A.A.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	32	51



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.

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:

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

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.

When seeding is less than 1 acre, temporary and permanent seeding shall be combined and seeded at the same time.

There is no seasonal restriction when seeding projects less than one acre.

For Information Only

NATIVE WILDFLOWER MIX 1

PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	
0.3	Common Milkweed	
0.3	Black Eyed Susan	
0.5	Blanket Flower	
0.5	False Sunflower	
0.5	Lance-Leaf Coreopsis	
0.2	Maximilian Sunflower	
0.1	New England Aster	
0.2	Pinnate Prairie Coneflower	
0.2	Plains Coreopsis	
0.3	Purple Coneflower	
0.3	Upright Prairie Coneflower	
0.3	Dames Rocket	
0.3	Lemon Mint	
0.2	Pitcher Sage	
0.2	Wild Bergamot	
1.0	Illinois Bundleflower	
0.2	Common Evening Primrose	
0.1	Hoary Verbena	
0.8	Purple Prairie Clover	
0.3	Roundhead Lespedeza	
3.0	Showy Partridge Pea	
0.2	White Prairie Clover	
10.3	Total (lb)	

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	Maximilian 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 Bundleflower	
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)	

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 $\frac{1}{8}'' - \frac{1}{4}''$. Place the wildflower seed in a separate seed box and drill (cover) seed $\frac{1}{16}''$ maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

**WATER RESOURCES RECEIVED
FEB 22 2024**

SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE		ACRES		BID ITEM	QUANTITY	UNIT
SHLDR	OTHER	SHLDR	OTHER			
				See LA852A for Soil Erosion Mix to be used as the Permanent Seeding.		
				Mulching *		

SHLDR = Seeded with the Shoulder Mix. Typically 15 feet for 2-lane roads and 30 feet for 4-lane roads. Includes outside roadsides, turfed portions of shoulders, and turfed portion of the median.

OTHER = Seeded with the "Other" Mix. Designated as all other turf areas, except the Shoulder. Usually includes a Native Wildflower Mix.

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. All disturbed areas shall be seeded, fertilized and mulched at the listed rate per acre. The acres are estimated.

Refer to the Standard Specifications, Division 900, Section 904 'Seeding', and Section 907 'Sodding', for the seeding and sodding seasons.

* See LA852A for mulching quantity. The quantity of mulch is estimated (Acres of Seeding X 1.5 X 2 Tons/Acre). The total mulch required shall be determined in the field. The bid item for mulching shall be paid for according to the Standard Specifications.

NO.	DATE	REVISIONS	BY	APPD
02	11-25-20	Updated Seeding / Sodding Periods Charts	M.R.D.	M.L.
01	08-03-20	Revised Standard	M.R.D.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING SUMMARY OF SEEDING QUANTITIES

LA850

DESIGNED	05-06-19	APPD.	Mervin Lare
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	33	51

GENERAL NOTES

In order to expedite the completion of the project for traffic service, the signing and delineator work shall be sequenced with any other contract work such that the phases of construction may proceed and be completed at the same time.

New signs erected on the project which are in conflict with existing signing are to be completely covered until the existing signs are removed or the new signing is applicable. The existing signs that are being replaced, removed, or do not follow the current MUTCD signing standards are to be removed when the project is completed or as determined by the Engineer.

The Contractor shall exercise caution at all times when installing sign supports in and around areas where utilities exist, either underground or overhead, and will be held responsible for any damage incurred to the system. The installation of sign supports shall include the excavation, drilling, or driving the support footing and the erection of the sign support. The contractor shall exercise caution when working around any existing signs that are to remain and will be held responsible for any damage to the signs, supports, or footings. The Contractor shall exercise care when working around shrubbery while removing or installing signs or sign supports.

An existing sign post installation shall be plumb and the compaction of the backfill soil shall comply with the specifications after the removal and resetting of a sign, the removal and replacement of a sign, or the installation of a new sign.

The Contractor shall provide mounting bolts that are of a length that does not extend more than a nominal 1 inch beyond the sign post. The Contractor shall not make any field modifications to the mounting bolt prior to or after the sign is installed.

Specific service (LOGO) signs that are to be removed shall have the business logo plaques removed and transported to location determined by KDOT, at which time the plaques become the property of KDOT. The Contractor will be assessed a replacement cost for any damage to a business logo plaque prior to the plaque becoming the property of KDOT.

The materials and fabrication for signing and delineation work shall conform to the Standard Specifications for State Road and Bridge Construction (2015 edition) and Special Provisions.

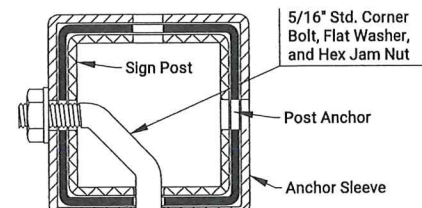
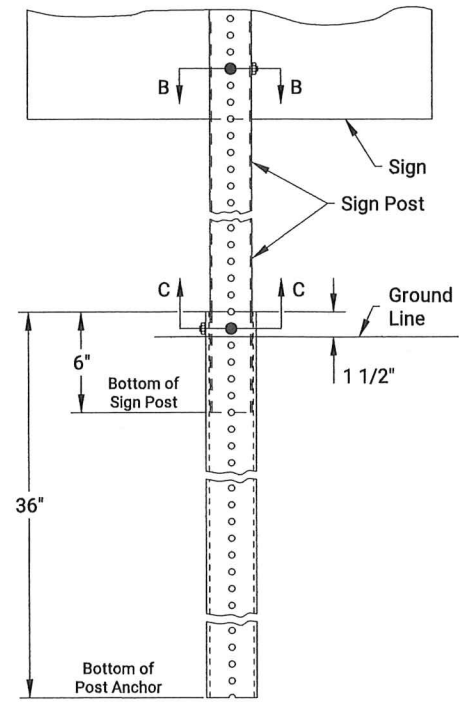
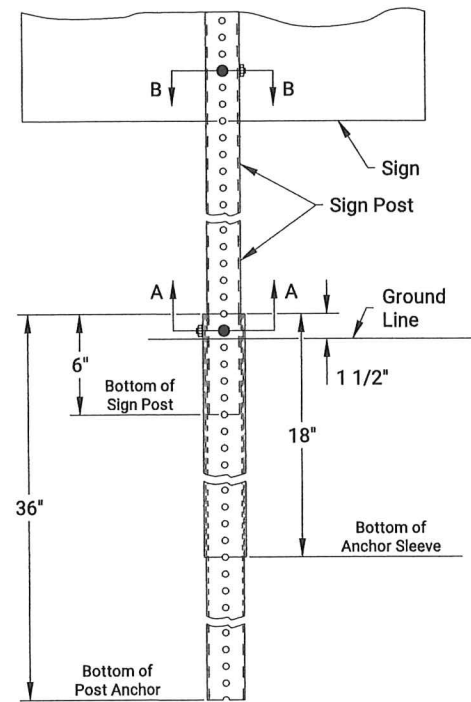
INDEX OF SHEETS

SIGNING INDEX AND GENERAL NOTES
 DETAILS FOR PERFORATED SQUARE STEEL POST (PSST) AND STEEL "U" POSTS
 SIGN BLANK DETAILS FOR FLAT SHEET SIGNS
 DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS
 SIGNS, POSTS & FOOTINGS QUANTITIES SHEET
 SUMMARY SHEET (INSTALLATIONS & REMOVALS)
 QUANTITIES SHEET (DELINEATORS & OBJECT MARKERS)

**WATER RESOURCES
 RECEIVED
 FEB 22 2024
 KS DEPT OF AGRICULTURE**

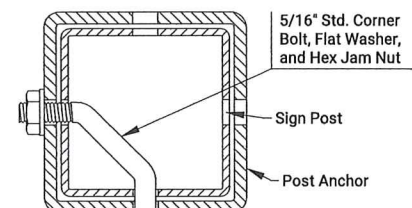
NO.	DATE	REVISIONS	BY	APPD
02	10-01-19	Changed symbol, notes, & index	D.D.G.	E.W.N.
01	07-23-10	Changed General Notes and Spec Book Date	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION				
SIGNING INDEX AND GENERAL NOTES				
FE402		10-01-19		07-01-03
FHWA APPROVAL		APPD.		Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.
				TRACE CK.



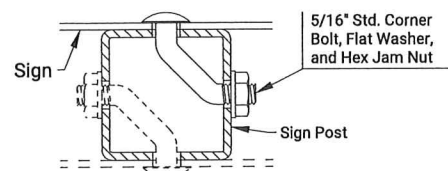
SECTION A-A

1 3/4", 2", OR 2 1/4" PSST SIGN POST



SECTION C-C

2 1/2" PSST SIGN POST



SECTION B-B

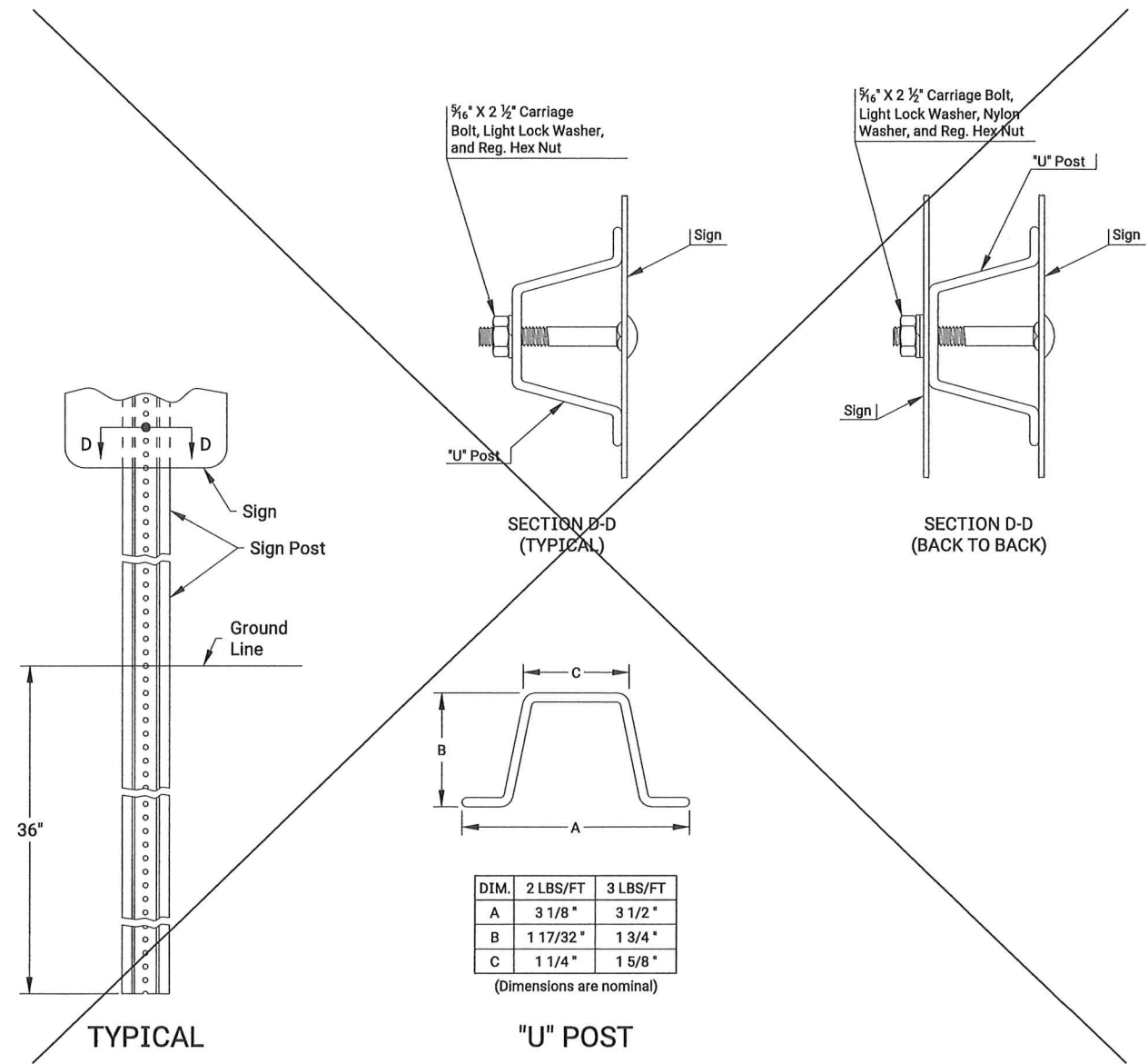
MATERIALS TABLE FOR SIGN POST AND FOOTING		
SIGN POST 12 GA. OR 14 GA.	FOOTING	
	POST ANCHOR	ANCHOR SLEEVE
1 3/4" X 1 3/4"	2" X 2" X 12 GA.	2 1/4" X 2 1/4" X 12 GA.
2" X 2"	2 1/4" X 2 1/4" X 12 GA.	2 1/2" X 2 1/2" X 12 GA.
2 1/4" X 2 1/4"	2 1/2" X 2 1/2" X 12 GA.	3" X 3" X 7 GA.
2 1/2" X 2 1/2"	3" X 3" X 7 GA.	Not Required

NOTE: 14 ga. posts must meet a certified minimum yield strength of 60,000 p.s.i.

INSTALLATION PROCEDURES

1. Plumb and drive post anchor into the ground 18", if anchor sleeve is required, or to the specified height above the ground line.
2. Install anchor sleeve (if required) on the post anchor and align the first holes above the ground line. Plumb and drive post anchor with anchor sleeve into the ground to the specified height above the ground line.
3. Install sign post into the post anchor.

PERFORATED SQUARE STEEL TUBE POST (PSST)



TYPICAL

"U" POST

STEEL "U" POST

DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8"	3 1/2"
B	1 17/32"	1 3/4"
C	1 1/4"	1 5/8"

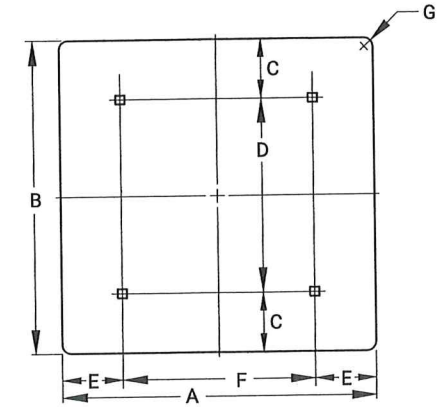
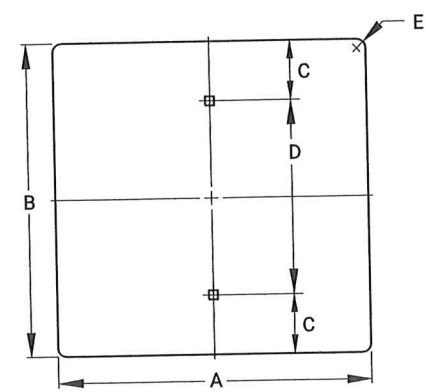
(Dimensions are nominal)

WATER RESOURCES
RECEIVED

FEB 22 2024

KS DEPT OF AGRICULTURE

NO.	DATE	REVISIONS	BY	APPD.
KANSAS DEPARTMENT OF TRANSPORTATION				
DETAILS FOR PERFORATED SQUARE STEEL TUBE POSTS (PSST) AND STEEL "U" POSTS				
FHWA APPROVAL		10-01-19	APPD.	Eric W. Nichol
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN. CK.
				TRACED
				TRACE CK.



SIGN SIZE	A	B	C	D	E	T	AREA
3 X 8	3	8	1	6	3/8	0.040	0.17
6 X 12	6	12	3	6	3/8	0.063	0.50
12 X 6	12	6	1 1/2	3	3/4	0.063	0.50
12 X 9	12	9	1 1/2	6	1 1/2	0.063	0.75
12 X 18	12	18	3	12	1 1/2	0.063	1.50
12 X 24	12	24	3	18	1 1/2	0.080	2.00
12 X 36	12	36	6	24	1 1/2	0.080	3.00
12 X 48	12	48	6	36	1 1/2	0.080	4.00
18 X 6	18	6	1 1/2	3	1 1/2	0.063	0.75
18 X 18	18	18	3	12	1 1/2	0.063	2.25
18 X 30	18	24	3	24	1 1/2	0.080	3.75
18 X 36	18	24	6	24	1 1/2	0.080	4.50
18 X 42	18	24	6	30	1 1/2	0.080	5.25
18 X 48	18	24	6	36	1 1/2	0.080	6.00
21 X 15	21	15	1 1/2	12	1 1/2	0.080	2.19
24 X 6	24	6	1 1/2	3	1 1/2	0.080	1.00
24 X 12	24	12	3	6	1 1/2	0.080	2.00
24 X 18	24	18	3	12	1 1/2	0.080	3.00
24 X 24	24	24	3	18	1 1/2	0.080	4.00
24 X 30	24	30	3	24	1 1/2	0.080	5.00
24 X 36	24	36	6	24	1 1/2	0.080	6.00
30 X 12	30	12	3	6	1 7/8	0.080	2.50
30 X 15	30	15	1 1/2	12	1 7/8	0.080	3.13
30 X 18	30	18	3	12	1 7/8	0.080	3.75
30 X 21	30	21	1 1/2	18	1 1/2	0.080	4.38
30 X 24	30	24	3	18	1 7/8	0.080	5.00
30 X 30	30	30	3	24	1 7/8	0.080	6.25
30 X 36	30	36	6	24	1 7/8	0.080	7.50
36 X 12	36	12	3	6	1 1/2	0.080	3.00
36 X 18	36	18	3	12	1 1/2	0.080	4.50
36 X 24	36	24	3	18	1 1/2	0.080	6.00
36 X 30	36	30	3	24	2 1/4	0.080	7.50
36 X 36	36	36	6	24	2 1/4	0.080	9.00
45 X 36	45	36	3	30	2 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 1/2	0.080	3.00
36 X 30	36	30	3	24	3	30	2 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 1/2	0.080	3.50
42 X 18	48	18	3	12	6	30	1 1/2	0.080	5.25
42 X 24	48	24	6	12	6	30	1 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 1/2	0.080	4.00
48 X 18	48	18	3	12	9	30	1 1/2	0.080	6.00
48 X 24	48	24	6	12	9	30	1 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 3/8" square, unless otherwise noted.

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

- ① Holes shall be 5/16" diameter.
- ② Dimension "D" requires a center hole.
- ③ Additional hole 12" below top hole.

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All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APPD.
01	10-01-19	Updated sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

**SIGN BLANK DETAILS FOR
FLAT SHEET SIGNS**

TE506 07-01-03
DESIGNED: D.D.G. | DETAILED: A.A.D. | QUANTITIES: TRACED | APPD: Steven A. Buckley
DESIGN CK: S.A.B. | DETAIL CK: D.D.G. | QUAN. CK: TRACE CK.

KDOT Graphics Certified 05-26-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	36	51

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 extruded fabricated sign panels are used, they shall be of the length, width and in the position shown. If extruded 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.

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KANSAS DEPARTMENT OF TRANSPORTATION					
DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS					
NO.	DATE	REVISIONS		BY	APP'D
02	10-01-19	Changed notes		D.D.G.	E.W.N.
01	07-23-10	Changed Notes and Sheeting Type		D.D.G.	D.B.
KANSAS DEPARTMENT OF TRANSPORTATION					
DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS					
FE590				07-01-03	
FHWA APPROVAL					
DESIGNED	D.D.G.	DETAILED	K.D.S.	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	37 C-5213-01	2024	37	51

QUANTITIES SHEET

SIGNS, POSTS, & FOOTINGS TO BE INSTALLED ON PROJECT

PLAN SHEET NUMBER	PLAN STATION NUMBER	CENTERLINE LOCATION / INSTALL POSITION	SIGN DESIGNATION	SIGN SIZE	SIGN LAYOUT SHEET NUMBER	TYPE OF SIGN FABRICATION			4" X 6" POSTS			U-POSTS		GALVANIZED STEEL BEAM POSTS					PERFORATED SQUARE STEEL TUBE (PSST) POSTS						CONCRETE FOOTINGS					SIGN STRUCTURE TYPE						MOUNT ABOVE GUIDE SIGN DESIGNATION		
						FLAT SHEET	REINFORCED PANEL	OVERLAY	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING	312.25 ALUMINUM BEAM	2 LB PER FT	3 LB PER FT	W10x12			1 3/4"		2"		2 1/4"		2 1/2"		WOOD POST	STEEL BEAM POST			OVERHEAD	CANTILEVER	BUTTERFLY	BRIDGE MOUNT ATTACHMENT	MAST ARM	SINGLE TAPERED TUBE		VERTICAL SUPPORT MOUNT	
															A36	A572 (ALT)	A36	A572 (ALT)	A36	A572 (ALT)	POST	FOOTING	BRACKET	POST	FOOTING		BRACKET	POST	FOOTING									POST
						2	2	2	2	2	2	2																										
3	253+25	Lt.	W1-8	18" x 24"		2																																
3	253+85	Lt.	W1-8	18" x 24"		2																																
3	254+45	Lt.	W1-8	18" x 24"		2																																
3	255+05	Lt.	W1-8	18" x 24"		2																																
3	255+65	Lt.	W1-8	18" x 24"		2																																

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CENTERLINE LOCATION
L or LL - Left of Centerline
R or RR - Right of Centerline
C - On the Centerline

INSTALL POSITION
S - Shoulder Mount
O - Offset Mount
G - Gore Mount
M - Median Mount
OH - Overhead Mount

NOTE: See standard plan sheet TE590 for detailed specifications.

02	10-01-19	Added Tapered Tube. Removed Couplers.	D.D.G.	E.W.N.
01	07-23-10	Added Coupler and Coupler/Footing Quantity	D.D.G.	D.B.
NO.	DATE	REVISIONS	BY	APPD

FHWA APPROVAL				10-01-19	APPD.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.S.	QUANTITIES	TRACED	D.B.	TE430
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN CK.	TRACE CK.		

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	38	51

SUMMARY OF QUANTITIES

SIGNS		
TYPE	NUMBER	SQUARE FEET
FLAT SHEET	10	30
REINFORCED PANEL		
OVERLAY		

DELINEATORS				
TYPE	FLEXIBLE DELINEATOR		RIGID DELINEATOR	
	TYPE I ANCHOR	TYPE III ANCHOR	"U" POST	BRACKET MOUNT
TYPE 'A' WHITE				
TYPE 'A' YELLOW				
TYPE 'B' WHITE				
TYPE 'B' YELLOW				
TYPE 'A' WHITE (BACK TO BACK)				
TYPE 'A' YELLOW (BACK TO BACK)				

OBJECT MARKERS		
TYPE	NUMBER	
TYPE 2 ("U" POST)		
TYPE 3 ("U" POST)		
INFORMATION ONLY	OM3-L	
	OM3-R	
	OM3-C	
TYPE 3 ("U" POST) (BACK TO BACK)		

POSTS AND ALUMINUM BEAMS																			
	4" x 6" POST			312.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)						
	WOOD		STEEL		2 LBS/FT	3 LBS/FT	W6x9		W10x12		W10x22		1-3/4"	2"	2-1/4"	2-1/2"			
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING				A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)							
NUMBER																			
FEET																			32.5

POST FOOTINGS AND BRACKETS																			
	CONCRETE FOOTING (DIA.)					PERFORATED SQUARE STEEL													
	WOOD	A36 STEEL		A572 STEEL (ALT)		TUBE FOOTING				BRACKET									
		18"	24"	30"	24"	30"	1-3/4"	2"	2-1/4"	2-1/2"	1-3/4"	2"							
NUMBER								5											
FEET																			

NUMBER & LENGTHS OF POSTS & ALUMINUM BEAMS (INFORMATION ONLY)																			
LENGTH OF POST OR BEAM	4" x 6" POST			312.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)						
	WOOD		STEEL		2 LBS/FT	3 LBS/FT	W6x9		W10x12		W10x22		1-3/4"	2"	2-1/4"	2-1/2"			
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING				A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)							
2.1' - 4'																			
4.1' - 6'																			
6.1' - 8'																			
8.1' - 10'																			
10.1' - 12'																			
12.1' - 14'																			
14.1' - 16'																			
16.1' - 18'																			
18.1' - 20'																			
20.1' - 22'																			
22.1' - 24'																			
24.1' - 26'																			
26.1' - 28'																			
28.1' - 30'																			
30.1' - 32'																			

BASE PLATES AND STUB POSTS						
	W6x9		W10x12		W10x22	
	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)
BREAKAWAY BASES						
BASE PLATE (TOP)						
STUB POST WITH BASE PLATE						
NON-BREAKAWAY BASES						
BASE PLATE						

REMOVALS	
TYPE	NUMBER
SIGNS	
POSTS	5
FOOTINGS	
SIGN STRUCTURES	

SIGN STRUCTURES				
TYPE	NEW	MODIFIED	REMOVE AND RESET	RESET
OVERHEAD STRUCTURE				
CANTILEVER STRUCTURE				
BUTTERFLY STRUCTURE				
BRIDGE MOUNT ATTACHMENT				
MAST ARM SIGN SUPPORT				
SINGLE TAPERED TUBE SIGN SUPPORT				

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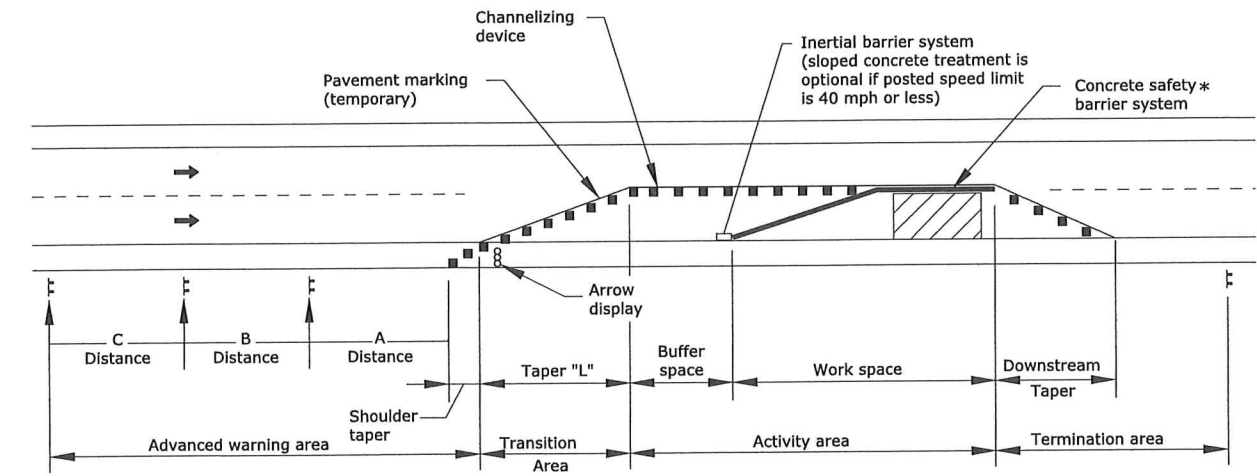
02	10-01-19	Revised Tables	D.D.G.	E.W.N.
01	07-23-10	Revised Tables	D.D.G.	D.B.
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
SUMMARY OF QUANTITIES FOR INSTALLATIONS AND REMOVALS				
TE439			07-01-03	
FHWA APPROVAL		10-01-19	APP'D. Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.
TRACED		TRACE CK.		

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	40	51

- 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, is a temporary surface made of loose material, or when directed by the engineer use the W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) a "C" distance after the W20-1 (Road Work Ahead) on mainline approaches. Signs may be used with the W8-15p motorcycle plaque as directed by the engineer. Display signs in advance of the condition 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 785-296-0355 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.

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 (55 MPH OR LOWER)	500	500	500
RURAL (60 MPH OR HIGHER)	750	750	750
EXPRESSWAY/FREEWAY	1000	1500	2640

* Posted speed prior to work starting
 The minimum spacing between signs shall be no less than 100', unless directed by the engineer.
 The spacing between any signs may be increased beyond the minimum values in the table above as approved by the engineer in order to maximize visibility.

Taper Formulas:

$L = WS$ for speeds of 45 MPH or more
 $L = WS^2/60$ for speeds of 40 MPH or less
 Where: L = Minimum length of taper in feet
 S = Numerical value of posted speed prior to work starting in MPH
 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.

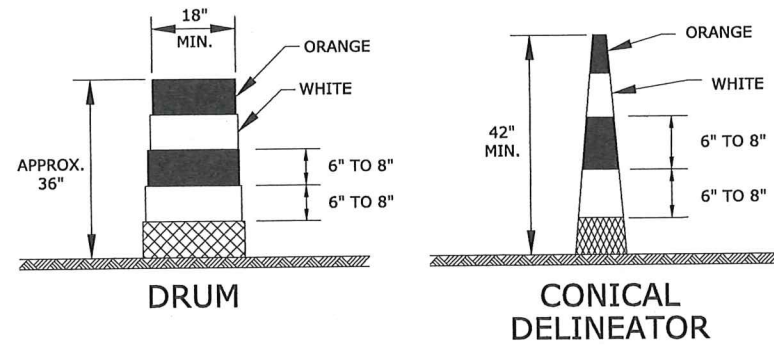
Buffer Space

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

* 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.

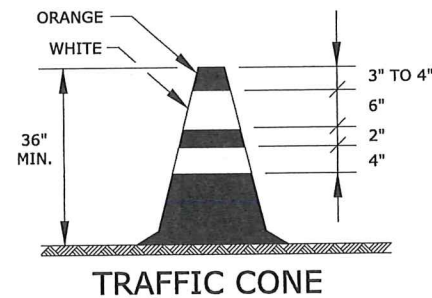
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3					
2					
1	08/18/15	Channelizer spacing info	R.W.B.	K.E.	
NO.	DATE	REVISIONS	BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION					
TRAFFIC CONTROL GENERAL NOTES					
TE700					
FHWA APPROVAL	08/18/15	APP'D	Kristina Erickson		
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.	QUAN. CK.		TRACE CK.

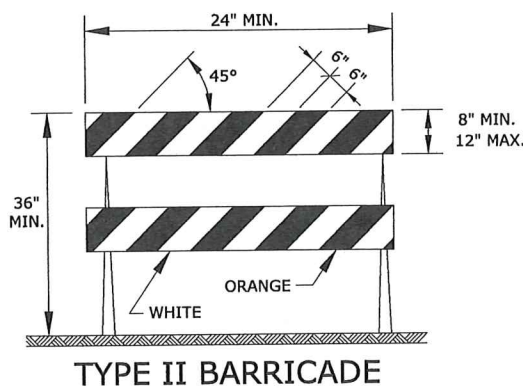


DRUMS AND CONICAL DELINEATORS SHALL HAVE AT LEAST TWO ORANGE AND TWO WHITE 6" TO 8" WIDE RETROREFLECTIVE STRIPES. ADDITIONAL STRIPES MAY BE NON-RETROREFLECTIVE. IF THERE ARE NON-RETROREFLECTIVE SPACES BETWEEN ADJACENT STRIPES, THEY SHALL BE NO MORE THAN 3" WIDE.

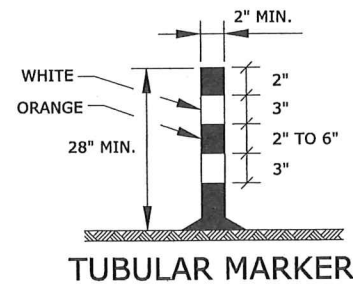
ALL RETROREFLECTIVE STRIPES ON DRUMS SHALL BE ASTM TYPE III SHEETING. THE WHITE STRIPES ON CONICAL DELINEATORS SHALL BE ASTM TYPE III SHEETING. ORANGE STRIPES ON ALL CONICAL DELINEATORS SHALL BE FLUORESCENT ORANGE ASTM TYPE IV SHEETING.



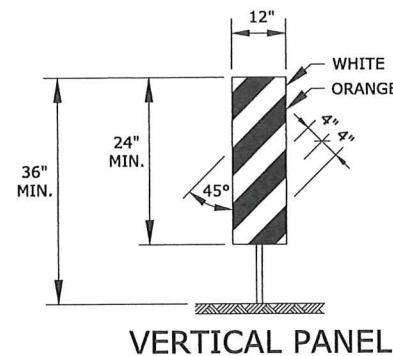
TRAFFIC CONES MAY BE USED AS CHANNELIZING DEVICES FOR DAYTIME OPERATIONS ONLY. THEY WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE SUBSIDIARY TO OTHER TRAFFIC CONTROL BID ITEMS. THE ENGINEER MAY REQUIRE THAT TRAFFIC CONES BE SUPPLEMENTED BY OTHER TRAFFIC CONTROL DEVICES IN CERTAIN SITUATIONS.



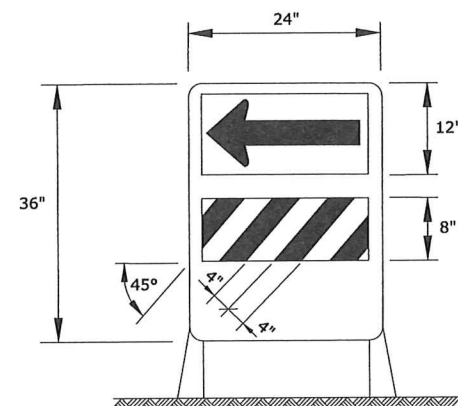
FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED. THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL BE ASTM TYPE III SHEETING. THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



THE TWO WHITE RETROREFLECTIVE STRIPES SHALL BE ASTM TYPE III SHEETING. STRIPING AS SHOWN FOR UP TO 42".



THE ENTIRE AREA OF VERTICAL PANELS, BOTH FRONT AND BACK, SHALL HAVE ASTM TYPE III SHEETING. THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



DIRECTION INDICATOR BARRICADE

THE ARROW PANEL SHALL BE BLACK ON FLUORESCENT ORANGE ASTM TYPE IV SHEETING. THE STRIPES SHALL BE ORANGE AND WHITE ASTM TYPE III SHEETING SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS.

THE DIRECTION INDICATOR BARRICADE SHALL BE USED IN SERIES TO DIRECT THE MOTORIST INTO THE INTENDED LANE OF TRAVEL.

THE ARROW PANEL SHOULD NOT BE VISIBLE TO OPPOSING TRAFFIC.

TAPER FORMULAS:

$$L = WS \text{ FOR SPEEDS OF 45 MPH OR MORE}$$

$$L = WS^2/60 \text{ FOR SPEEDS OF 40 MPH OR LESS}$$

WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
S = NUMERICAL VALUE OF POSTED SPEED PRIOR TO WORK STARTING IN MPH
W = WIDTH OF OFFSET IN FEET

CHANNELIZER PLACEMENT:

(A) 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.

(B) 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.

(C) CHANNELIZING DEVICES SHALL BE PLACED FOR OPTIMUM VISIBILITY, NORMALLY AT RIGHT ANGLES TO THE TRAFFIC FLOW.

(D) CHANNELIZING DEVICES PLACED ALONG SHOULDER EDGES OR IN DROPOFFS SHALL HAVE A MINIMUM OF 24" FROM THE TOP OF THE CHANNELIZING DEVICE TO THE TOP OF THE PAVEMENT.

ITEM	LOCATION	CHANNELIZING DEVICES								
		CROSS-OVERS	SHOOFLY DIVERSIONS	TANGENTS	TAPERS	RAMPS	HEAD TO HEAD	OBJECT IDENTIFIER	LEAD IN DEVICES	GORES
PORTABLE	DRUMS	YES	YES	YES	YES	YES	(1)	YES	YES	YES
	CONICAL DELINEATORS	YES	YES	YES	YES	YES	(1)	YES	YES	YES
	VERTICAL PANELS	(2)	(2)	(2)	(2)	(2)	(1,2)	YES	(2)	(2)
	DIRECTION INDICATOR BARRICADE	NO	NO	NO	YES	NO	NO	NO	NO	NO
	TYPE II BARRICADE	(2)	(2)	(2)	(2)	NO	NO	YES	NO	NO
FIXED	TUBULAR MARKERS	(3)	(3)	(3)	NO	(3)	YES	NO	YES	YES
	VERTICAL PANELS	(3)	(3)	(3)	(3)	(3)	(3)	YES	(2,3)	(2)

- (1) NOT ALLOWED ON CENTERLINE DELINEATION ALONG FREEWAYS OR EXPRESSWAYS.
- (2) THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.
- (3) MAY BE USED UPON THE APPROVAL OF THE ENGINEER.

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3	10/16/12	Added Lead In Devices into Matrix Table	J.A.M.	K.P.
2	10/4/11	Added Dimension To Tubular Marker Detail	J.A.M.	K.P.
1	4/20/09	Channelizer Placement & Traffic Cone Detail	J.A.M.	A.A.A.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION			
CHANNELIZING DEVICES			
TE702			
FHWA APPROVAL	10/16/12	APP'D	Kristina Pyle
DESIGNED	L.E.R.	DETALD	B.A.H.
DESIGN CK.	DETAL CK.	QUAN. CK.	TRACE CK.
KD0T Graphics Certified 10-23-2012			

Note: Signs shown for one approach to work zone.

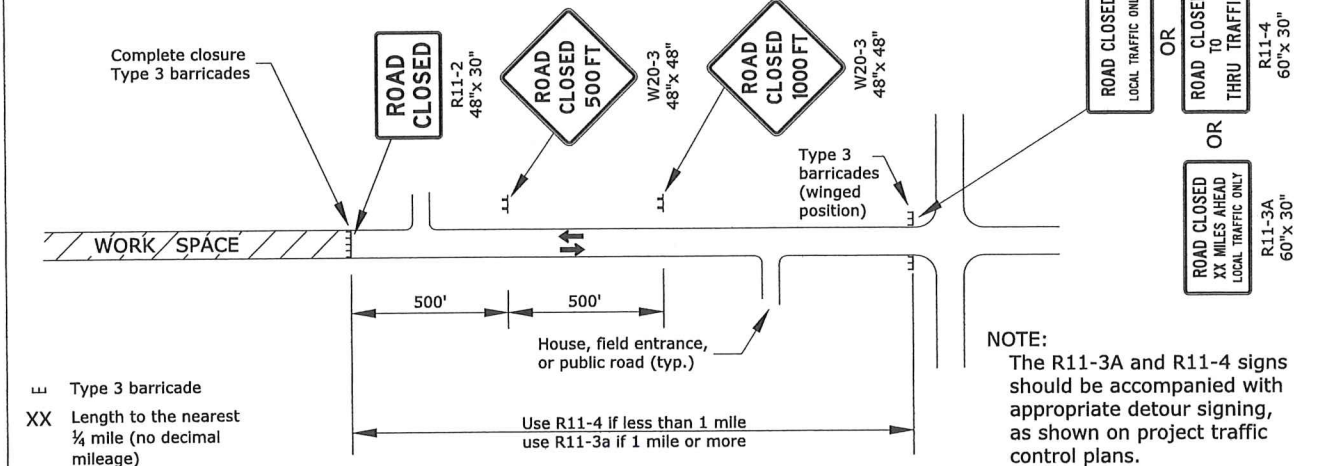


FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE (MAINLINE OR SIDE ROAD)

Note: Sign shown for one approach to intersection (work zone).

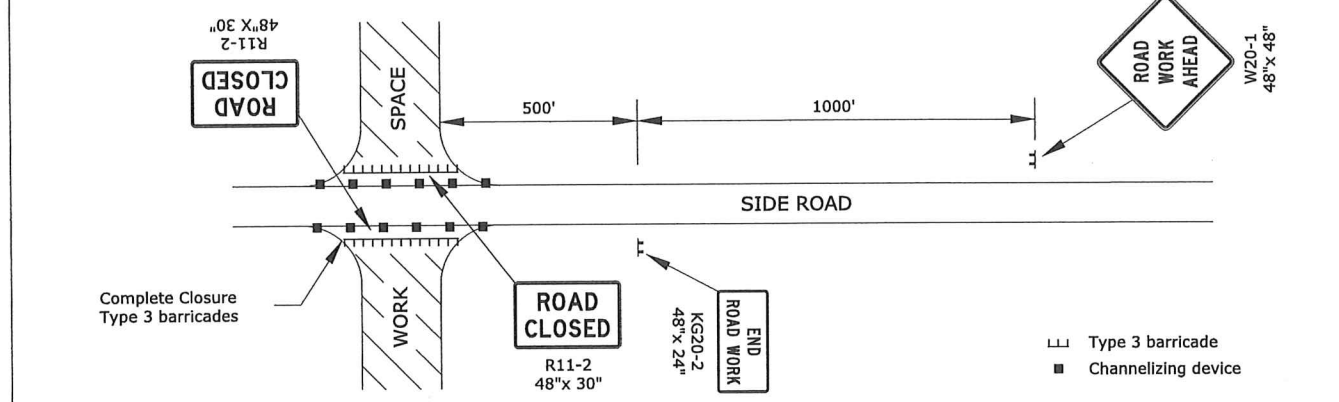


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

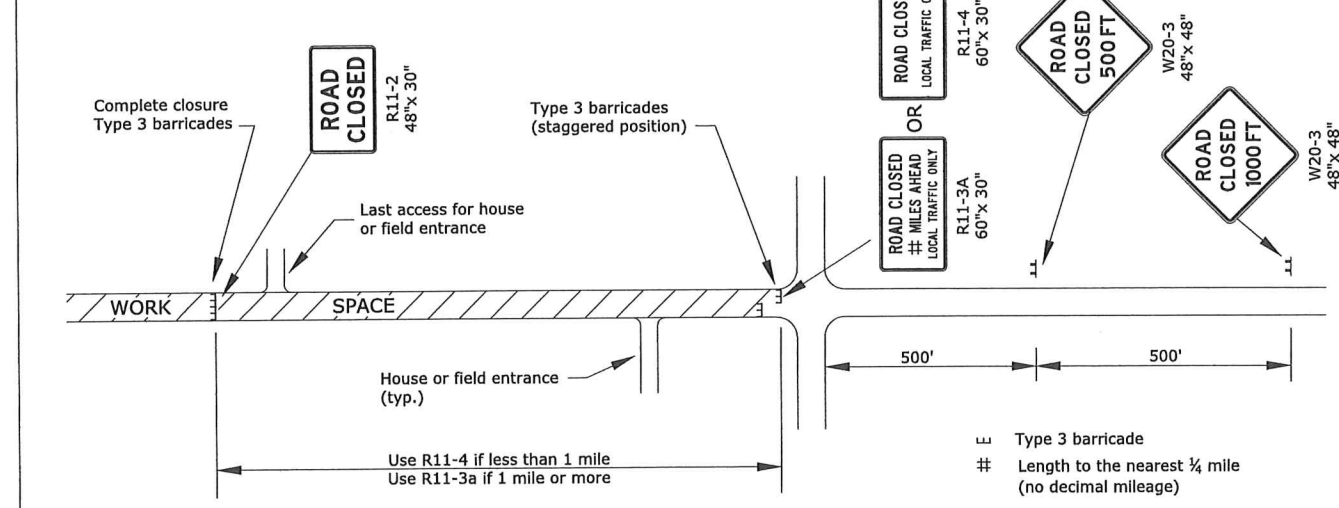


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

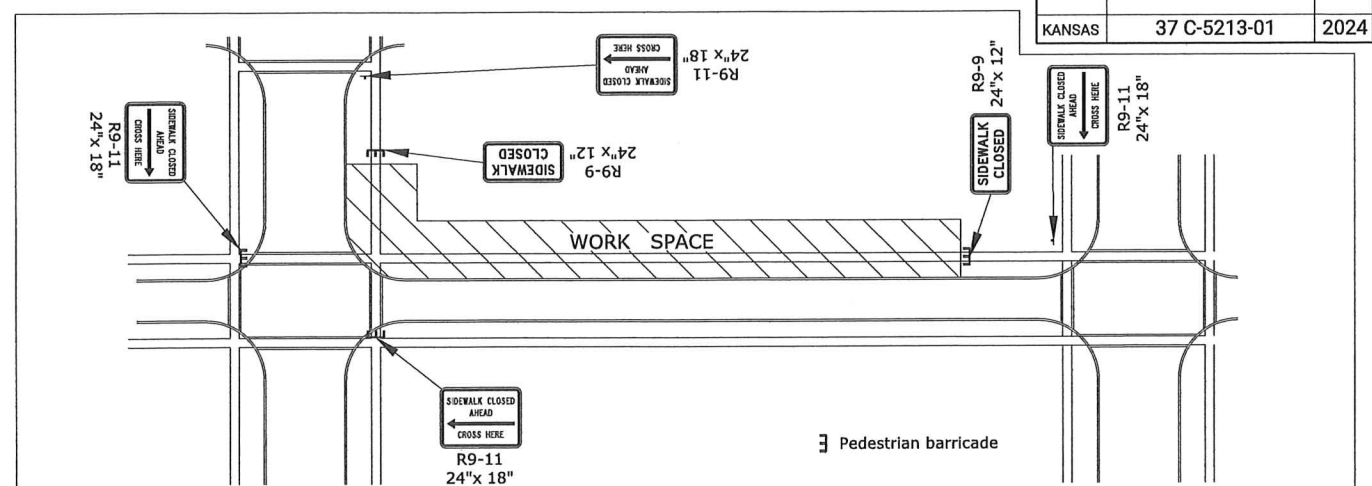
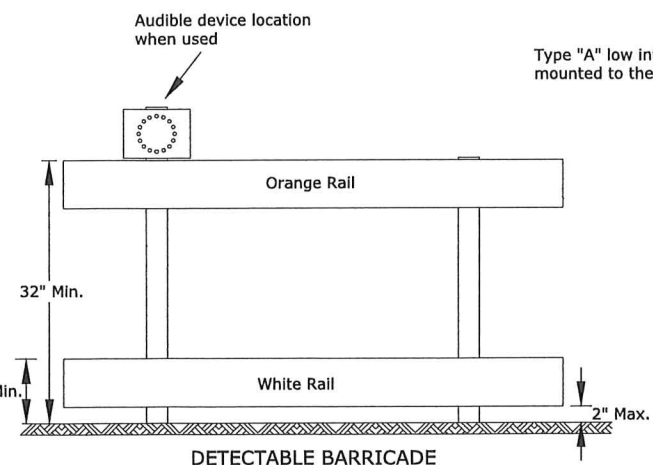
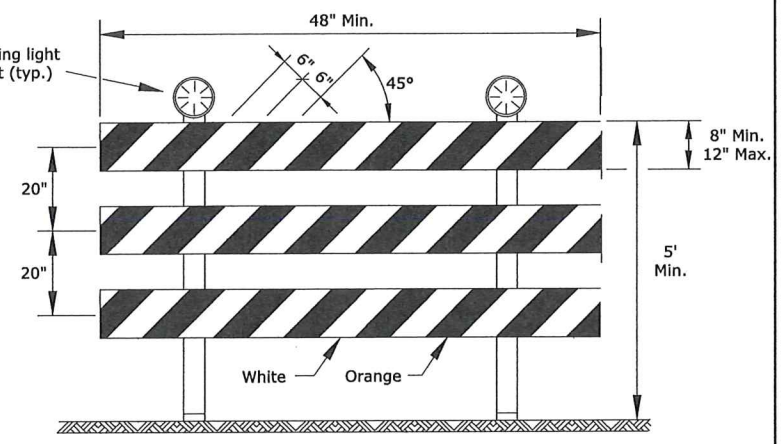


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE



- DETECTABLE BARRICADE**
1. Support device shall not project beyond the detection plate into the pathway.
 2. Barricades shall be used to close the entire width of the pathway.
 3. Do not use warning lights on pedestrian barricades.
 4. Do not use warning lights on audible devices.



TYPE 3 BARRICADE WITH LIGHTS

Approved signs mounted on Type 3 barricades should not cover more than 50% of the top two rails or 33% of the total area of the three rails.

When barricades are placed end-to-end or staggered, a Type "A" low intensity warning light shall be mounted to the vertical post near each outside corner of the end barricades.

ROAD CLOSED GENERAL NOTES

As shown in Figure 1, at the point where thru traffic must detour and local traffic can proceed to the location where the roadway is completely closed, the R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) or R11-4 (ROAD CLOSED LOCAL TRAFFIC ONLY or ROAD CLOSED TO THRU TRAFFIC) sign shall be used with Type 3 barricades (winged position), placed on the shoulders of roadway.

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be longitudinally staggered to maintain the appearance of a closed roadway. A second line of end-to-end Type 3 barricades shall be placed just beyond the last access point in the work zone, to completely close the roadway.

The R11-4 (ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is less than 1 mile.

The R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is 1 mile or greater.

The words "BRIDGE OUT" (or BRIDGE CLOSED) may be substituted for the words "ROAD CLOSED" on the R11-3a or R11-4 sign where applicable.

WATER RESOURCES
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FEB 22 2024
KS DEPT OF AGRICULTURE

3					
2					
1					
NO.	DATE	REVISIONS	BY	APP'D	

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
CLOSURES

TE704

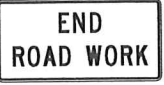



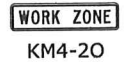





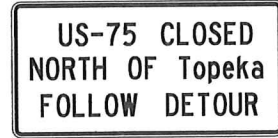
DESIGNED	BAJL	DATE	06/01/15	APP'D	Kristina Eriksson
DESIGN CK.		DETAIL CK.		QUANTITIES	TRACED
				QUANT. CK.	TRACE CK.

Sh. No. XXX

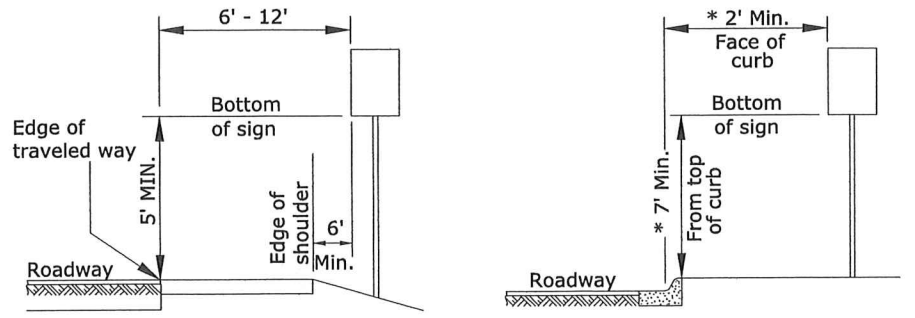
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	43	51

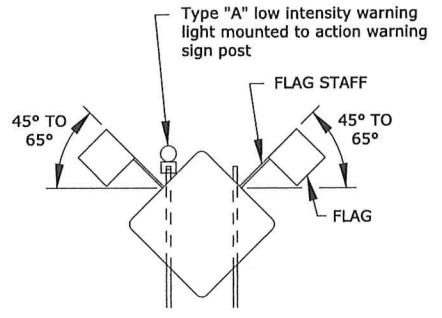
SIGN LAYOUT INFORMATION

 END ROAD WORK KG20-2	STD. SIZE EXPWY/FREEWAY 6" C 48"x 24"	 GROOVED PAVEMENT W8-15	STD. SIZE EXPWY/FREEWAY 8" D 48"x 48"
 WAIT FOR PILOT CAR KG20-5	STD. SIZE EXPWY/FREEWAY 6" C 48"x 24"	 LOOSE GRAVEL W8-7	STD. SIZE EXPWY/FREEWAY 8" D 48"x 48"
 WORK ZONE KM4-20	STD. SIZE EXPWY/FREEWAY 3" C 24"x 6"	 MOTORCYCLE W8-15p	STD. SIZE EXPWY/FREEWAY 8" D 48"x 12"
 NEXT X MILES W7-3a	Mileage to be determined by the engineer.	 UNEVEN LANES W8-11	STD. SIZE EXPWY/FREEWAY 8" D 48"x 48"
 SHOULDER DROP-OFF W8-17P (OPTIONAL)	STD. SIZE EXPWY/FREEWAY 30"x 24"	 NB US-75 CLOSED FOLLOW DETOUR SP-01 (SPECIAL SIGN)	STD. SIZE EXPWY/FREEWAY 6" C 10" D
 US-75 CLOSED NORTH OF TOPEKA FOLLOW DETOUR SP-02 (SPECIAL SIGN)	STD. SIZE EXPWY/FREEWAY UPPERCASE: 6" C LOWERCASE: 4.5" C	STD. SIZE EXPWY/FREEWAY UPPERCASE: 10" D LOWERCASE: 8" D	

ALL CITY NAMES AND STREET NAMES ON SPECIAL SIGNS AND DESTINATION SIGNS MUST HAVE UPPER AND LOWER CASE LETTERS.

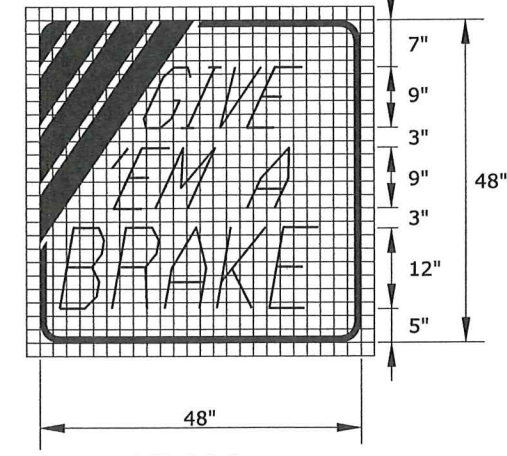


- Rural**
- 1) Ground-mounted signs shall be mounted at a minimum height of 5' measured from the bottom of sign to the near edge of the pavement.
 - 2) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.
 - 3) The height of the secondary sign mounted below another sign may be 4' measured from the bottom of the sign to the near edge of the pavement. Signs shall not overlap each other.
- Urban**
- 1) Signs shall be mounted at a minimum height of 7' measured from the bottom of sign to the near edge of the pavement.
 - 2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.
 - 3) Signs mounted lower than 7' should not project more than 4" into pedestrian facilities.
 - 4) The height from of the secondary sign mounted below another sign may be 6' measured from the bottom of sign to the near edge of the pavement. Signs shall not overlap each other.
 - 5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.
 - * 6) Pedestrian detour signing shall be a minimum of 2' measured from the top of the pedestrian pathway to the bottom of the sign and shall not protrude into the walkway nor shall it project beyond the back of curb.

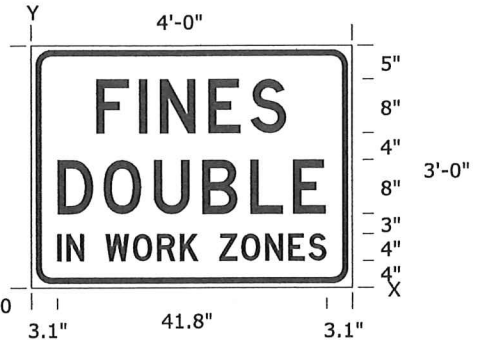


When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

- In the case of hitting rock when driving posts
1. Shift the sign location. Do not violate minimum sign spacing.
 2. With the engineer's approval, use acceptable alternative sign stands.



KI-104a



KI-105a

SIGN NUMBER	GIVE EM A BRAKE
WIDTH x HEIGHT	4'-0" x 4'-0"
BORDER WIDTH	1.0"
CORNER RADIUS	4.0"
STRIPE WIDTH	3.0"
MOUNTING	GROUND
BACKGROUND	TYPE: NON-REFLECTIVE COLOR: BLACK
LEGEND/BORDER	TYPE: REFLECTIVE COLOR: WHITE
LEGEND FONT	DUTCH 801 ROMAN SWC 25 DEGREE SLANT
STRIPES	TYPE: REFLECTIVE COLOR: ORANGE

SIGN NUMBER	FINES DOUBLE
WIDTH x HEIGHT	4'-0" x 3'-0"
BORDER WIDTH	0.9"
CORNER RADIUS	3.0"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE COLOR: WHITE
LEGEND/BORDER	TYPE: NON-REFLECTIVE COLOR: BLACK

DIMENSIONS IN INCHES SPACINGS ARE TO START OF NEXT LETTER

Y FONT	LETTER SPACINGS													HT LEN		
23.0	F	I	N	E	S									8.0		
D	9.7	6.4	3.2	7.3	6.4	5.4	9.7							28.6		
11.0	D	O	U	B	L	E								8.0		
D	3.9	6.9	7.5	7.3	7.3	6.4	4.9	3.9						40.3		
4.0	I	N	W	O	R	K	Z	O	N	E	S			4.0		
D	3.1	1.6	2.7	3.2	4.3	3.8	3.6	2.8	3.2	3.4	3.8	3.6	3.2	2.7	3.1	41.8

Notes:
 Typically, there are two sets of informational signs installed per project: one for each direction of traffic.
 Install signs a minimum of 500' in advance of the road work ahead sign. The engineer may designate a more appropriate location if conditions dictate.
 The informational signs are not to interfere with the traffic control signs for the project.

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NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN INFORMATION

TE710

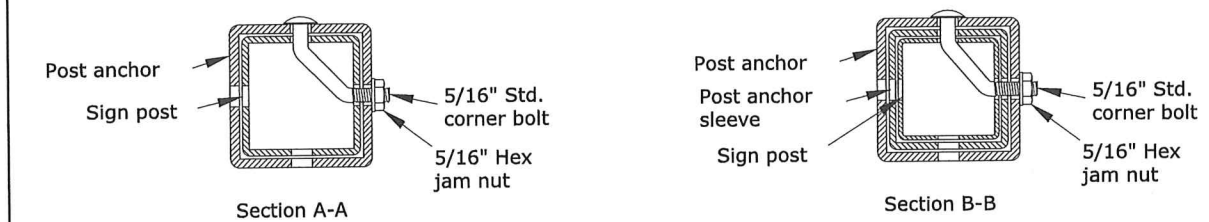
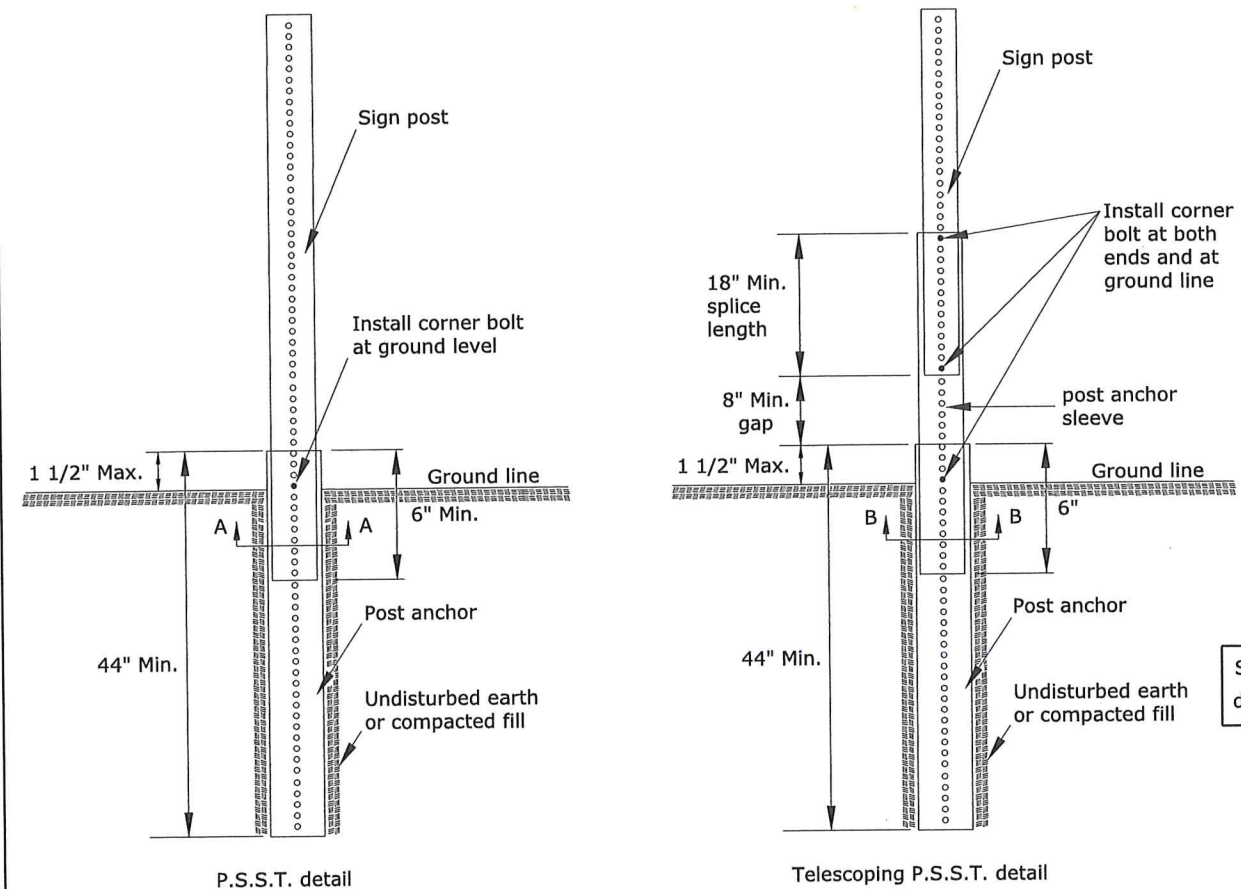
DESIGNED	R.W.B./DETALD	06/01/15	APP'D	Kristina Pyto
DESIGN CK.	DETALD	QUANT. CK.	TRACE	CK.

Sh. No. XXX

KDOT Graphics Certified

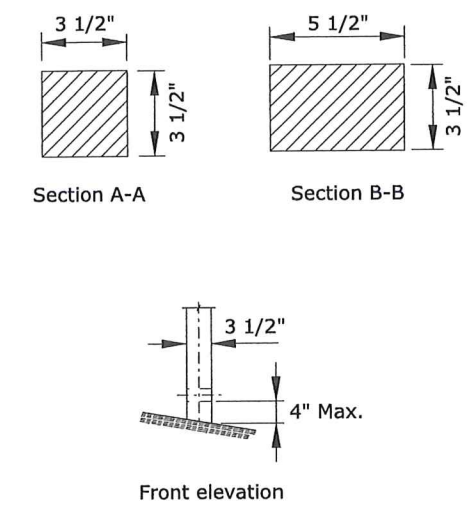
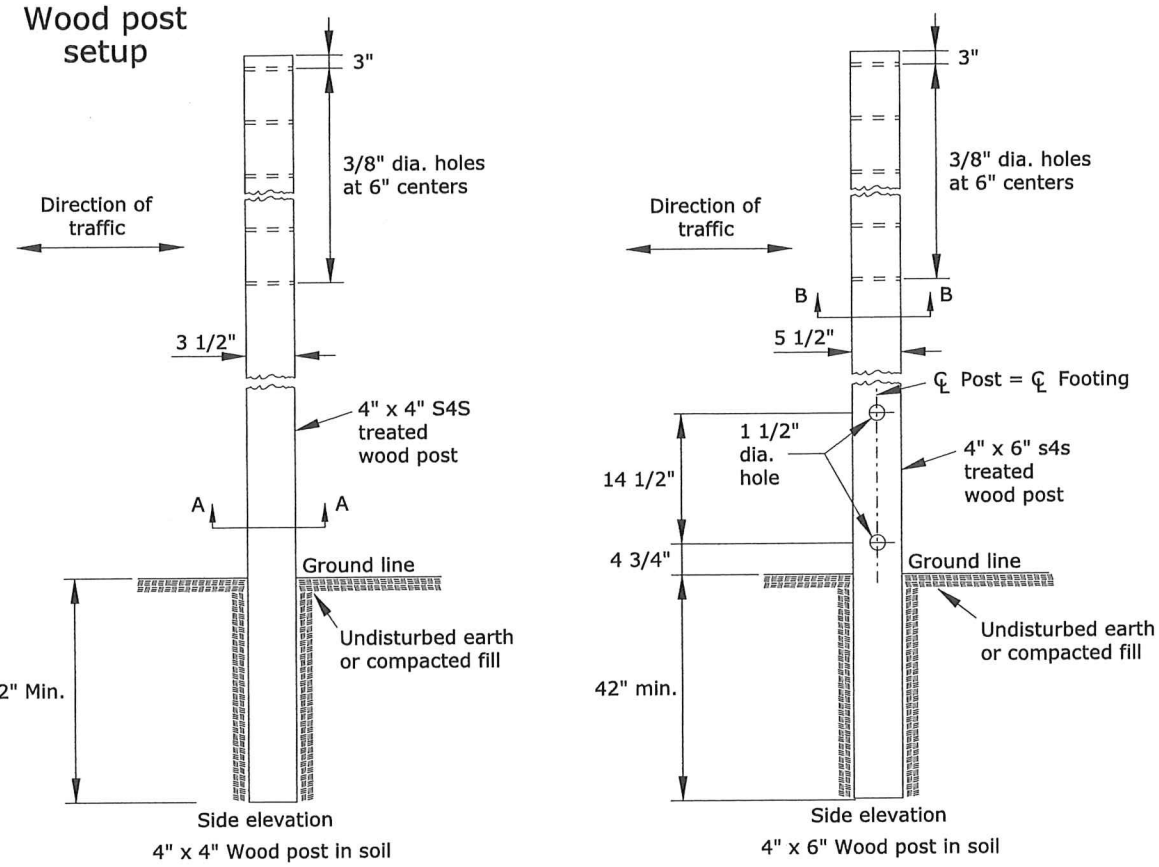
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	44	51

Perforated square steel tube (P.S.S.T.) post setup



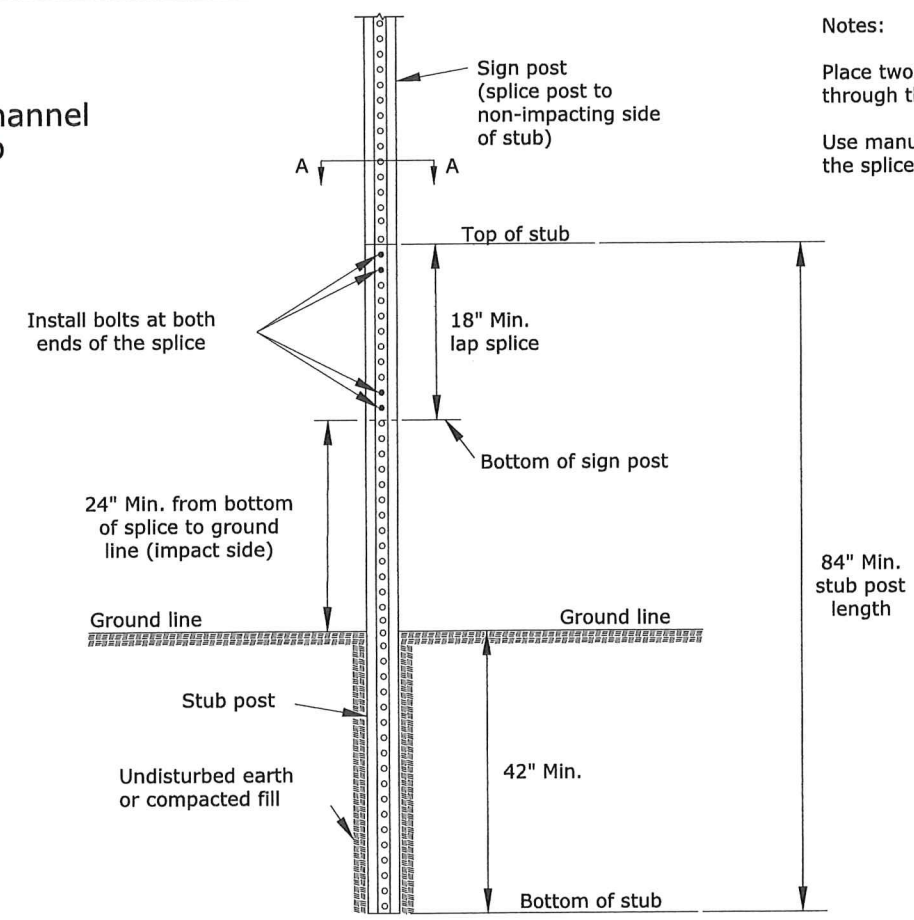
Details for 2", 2 1/4", or 2 1/2" sign posts
Place bolts in the same corner along each sign post.

Wood post setup

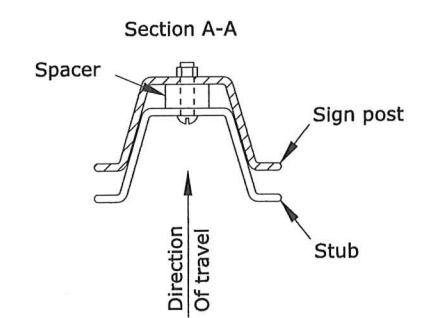


See TE710 for additional details and requirements

3 lb/f U-Channel setup



Notes:
Place two bolts at both ends of the splice through the holes nearest the ends of the splice.
Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.



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NO.	DATE	REVISIONS	BY	APP'D	

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SIGN POSTS

TE712

DESIGNED	B.A.H. DETAILED	06/01/15	APP'D	Kristina Pyle
DESIGN CK.	DETAL CK.	QUAN. CK.	TRACE CK.	

Sh. No. XXX

KDOT Graphics Certified

Summary Of Traffic Control Devices

Work Zone Sign (Special)		
Sign No.	16.25 Sq.Ft. & Less	16.26 Sq.Ft. & Over

Note: Road shall be closed to thru traffic during construction. Contractor shall provide access to property along project at all times.

NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL THE WORK ZONE SIGNING ON THIS PROJECT.

Summary Of Traffic Control Devices

*** SUMMARY OF TRAFFIC CONTROL DEVICES -FOR INFORMATION ONLY-**

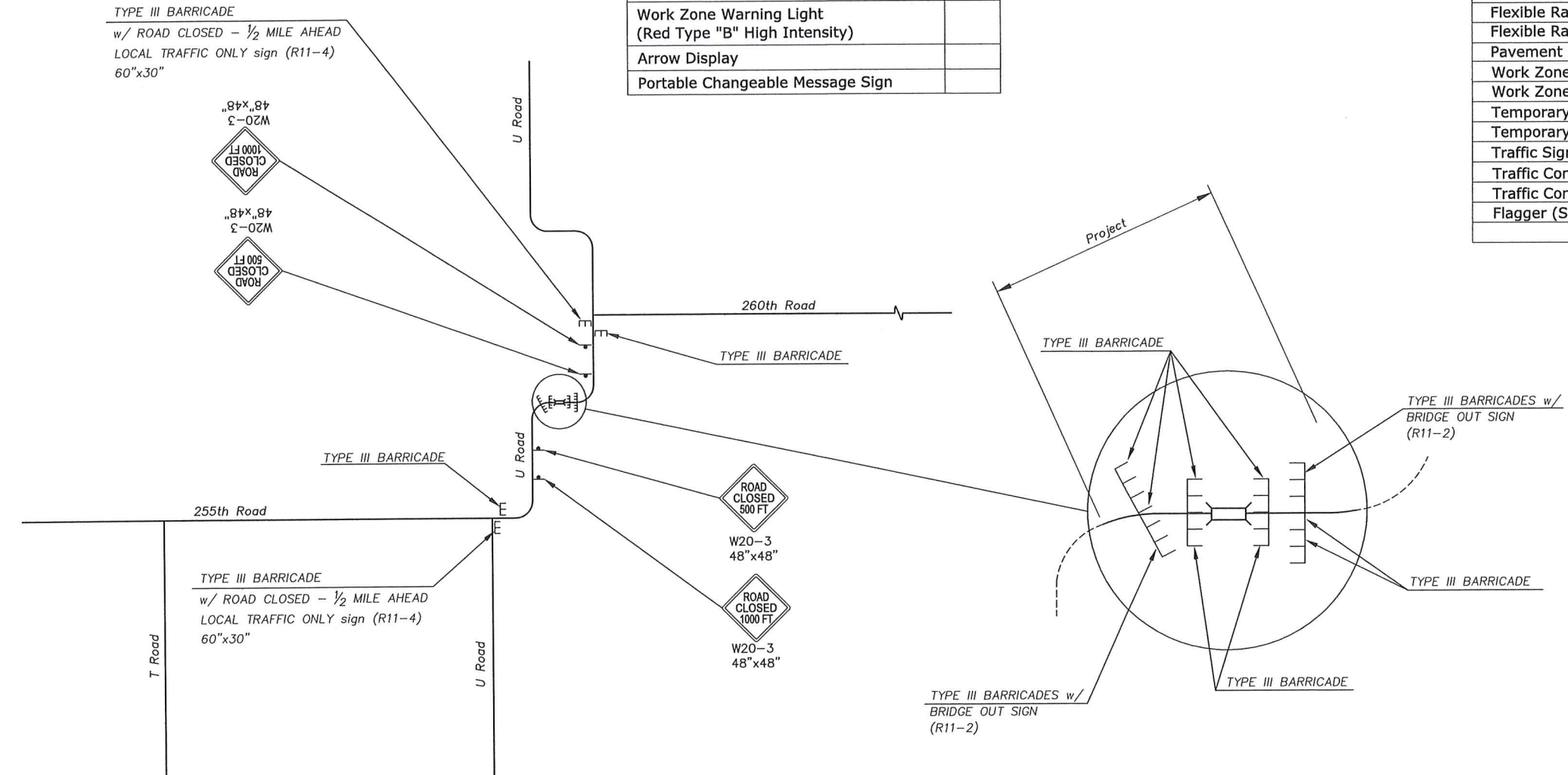
All traffic control devices shall be placed in accordance with the applicable KDOT Traffic Control Standards. The contractor shall provide all signs and other traffic control devices for proper traffic control of all construction activities. Quantities listed are estimate only. Contractor operations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

Work Zone Signs *			
Sign No.	Size - Sq.Ft.		
	0-9.25	9.26-16.25	16.26 & Over
R11-2		2	
R11-4		2	
W20-3		4	

Barricades *		Channelizing Devices *		
Type 3 (4' To 12')	Pedestrian	Fixed	Portable	Pedestrian
14				

Lighted Devices *	
Work Zone Warning Light (Type "A" Low Intensity)	16
Work Zone Warning Light (Red Type "B" High Intensity)	
Arrow Display	
Portable Changeable Message Sign	

Recapitulation Of Quantities		
Item	Quantity	Unit
Work Zone Signs (0 To 9.25 Sq.Ft.)		Each Per Day
Work Zone Signs (9.26 To 16.25 Sq.Ft.)		Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' To 12')		Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)		Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)		Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)		Each Per Day
Arrow Display		Each Per Day
Portable Changeable Message Sign		Each Per Day
Pavement Marking (Temporary)		
4" Solid (Type I)		Sta./Line
4" Solid (Type II)		Sta./Line
4" Broken (8.0') (Type I)		Sta./Line
4" Broken (8.0') (Type II)		Sta./Line
4" Broken (3.0') (Type I)		Sta./Line
4" Broken (3.0') (Type II)		Sta./Line
4" Dotted Extension (Type I)		Sta./Line
4" Dotted Extension (Type II)		Sta./Line
Solid (Line Masking Tape)		Sta./Line
Broken (Line Masking Tape)		Sta./Line
Symbol (Type I)		Each
Symbol (Type II)		Each
Flexible Raised Pavement Marker (4" Broken (8.0'))		Sta./Line
Flexible Raised Pavement Marker (4" Broken (3.0'))		Sta./Line
Pavement Marking Removal		Lin. Ft.
Work Zone Sign (Special) (16.25 Sq. Ft. & Less)		Each
Work Zone Sign (Special) (16.26 Sq. Ft. & More)		Each
Temporary Raised Pavement Marker (Type I)		Each
Temporary Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)		Lump Sum
Traffic Control (Initial Set Up)		Lump Sum
Traffic Control	Lump Sum	Lump Sum
Flagger (Set Price)		Hour



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NO.	DATE	REVISIONS	BY	APP'D
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2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SUMMARY OF DEVICES
RECAPITULATION OF QUANTITIES

DESIGNED	B.A.J.	DETAILED	R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.		QUAN. CK.		TRACE CK.

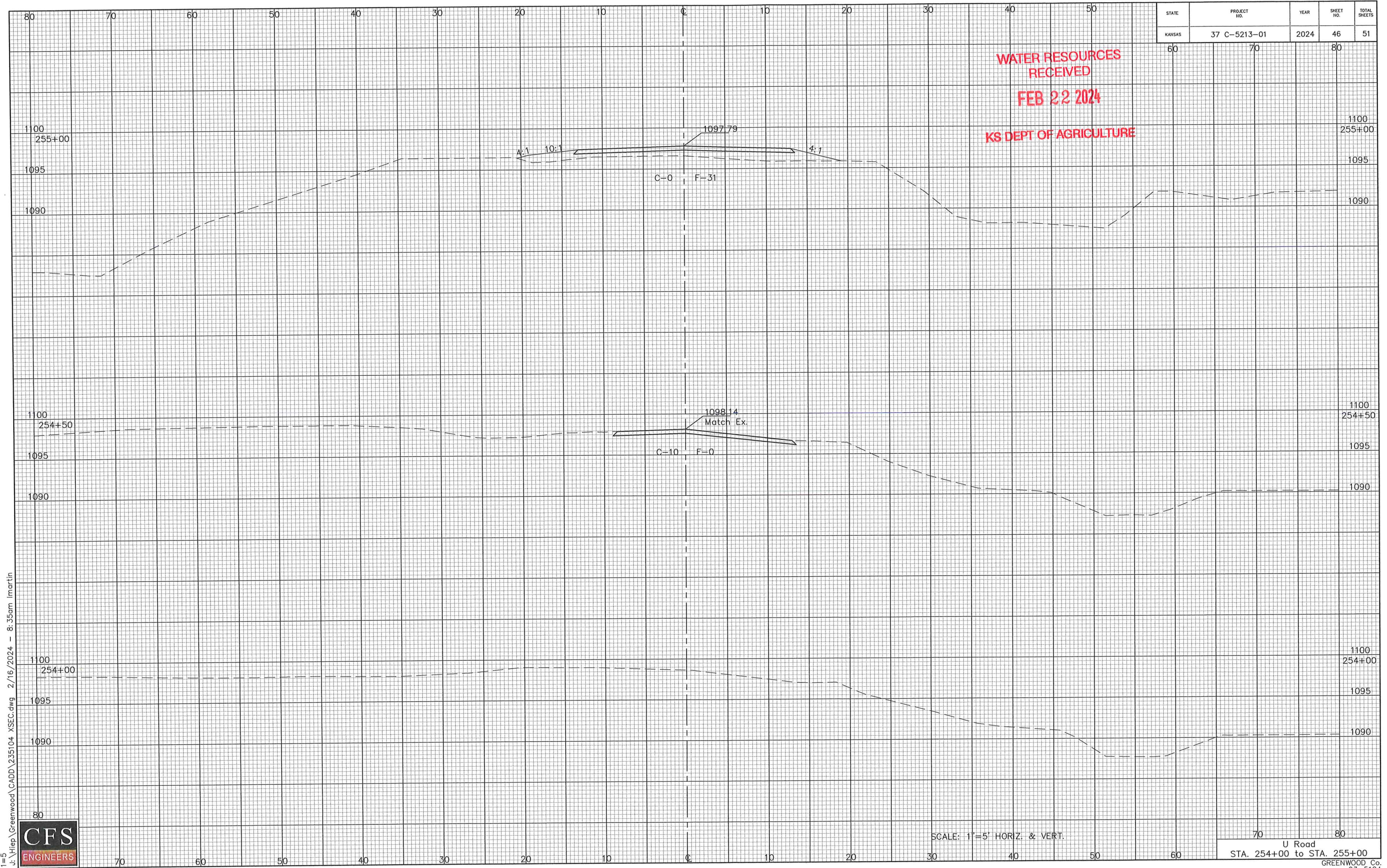
FHWA APPROVAL 06/06/15 APP'D Kristina Erickson
 KDOT Graphics Certified 06-23-2015

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KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	46	51

WATER RESOURCES
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1=5 J:\Hiep\Greenwood\CADD\235104 XSEC.dwg 2/16/2024 - 8.35am Jmartin

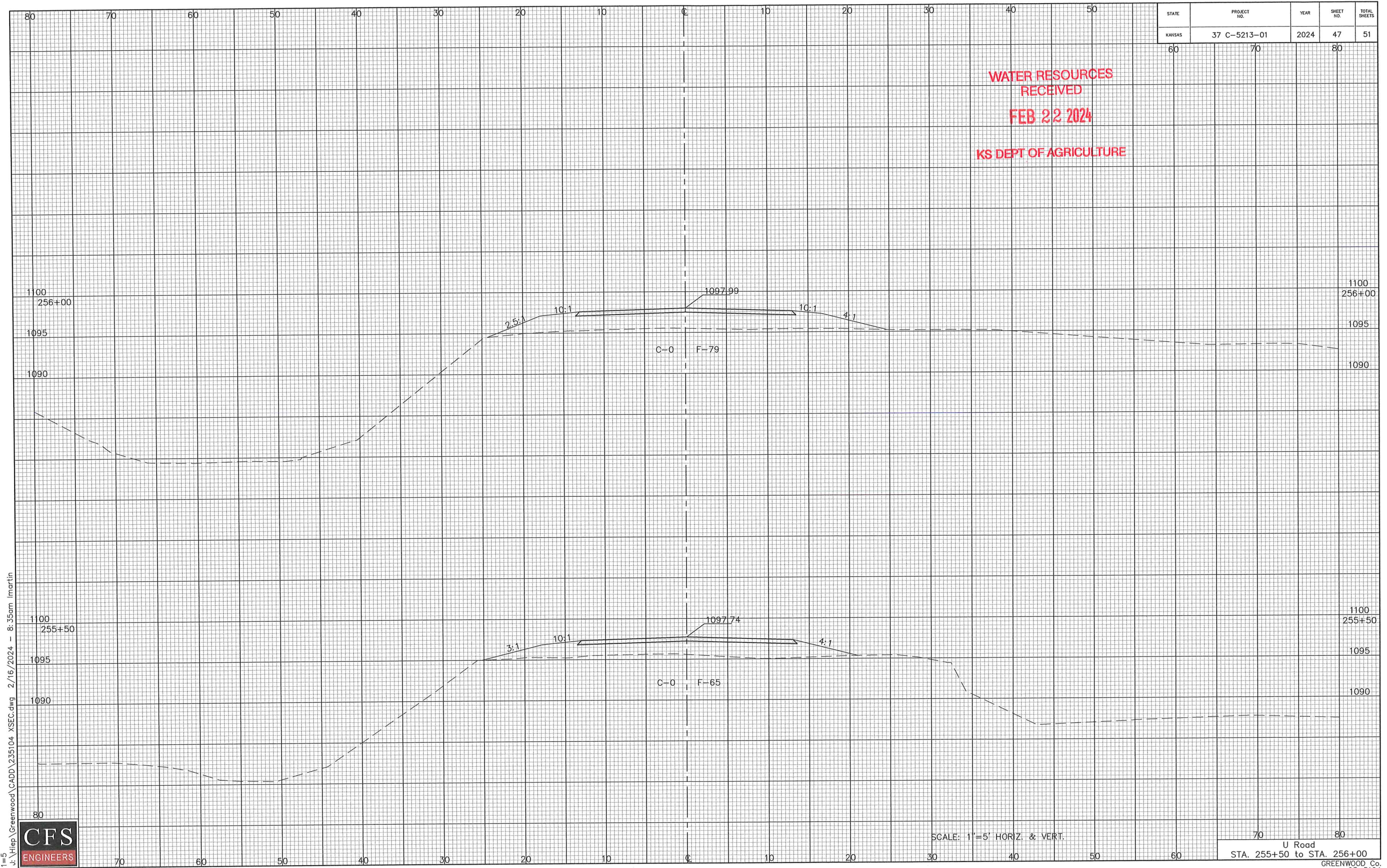


SCALE: 1"=5' HORIZ. & VERT.

70 80
U Road
STA. 254+00 to STA. 255+00
GREENWOOD Co.
23-5104

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	47	51

WATER RESOURCES
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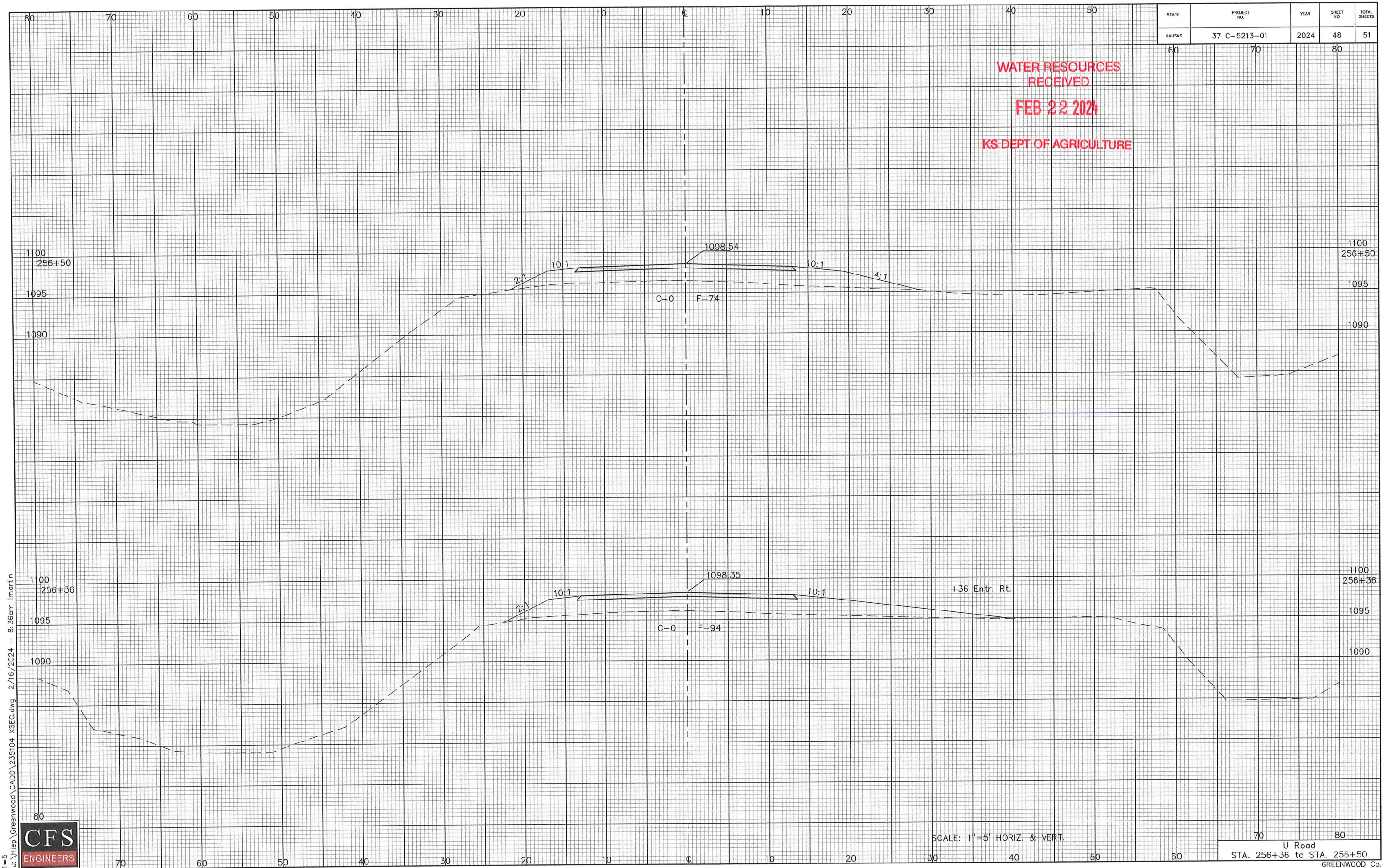


SCALE: 1"=5' HORIZ. & VERT.

U Road
STA. 255+50 to STA. 256+00
GREENWOOD Co.
23-5104

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	48	51

WATER RESOURCES
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1=5
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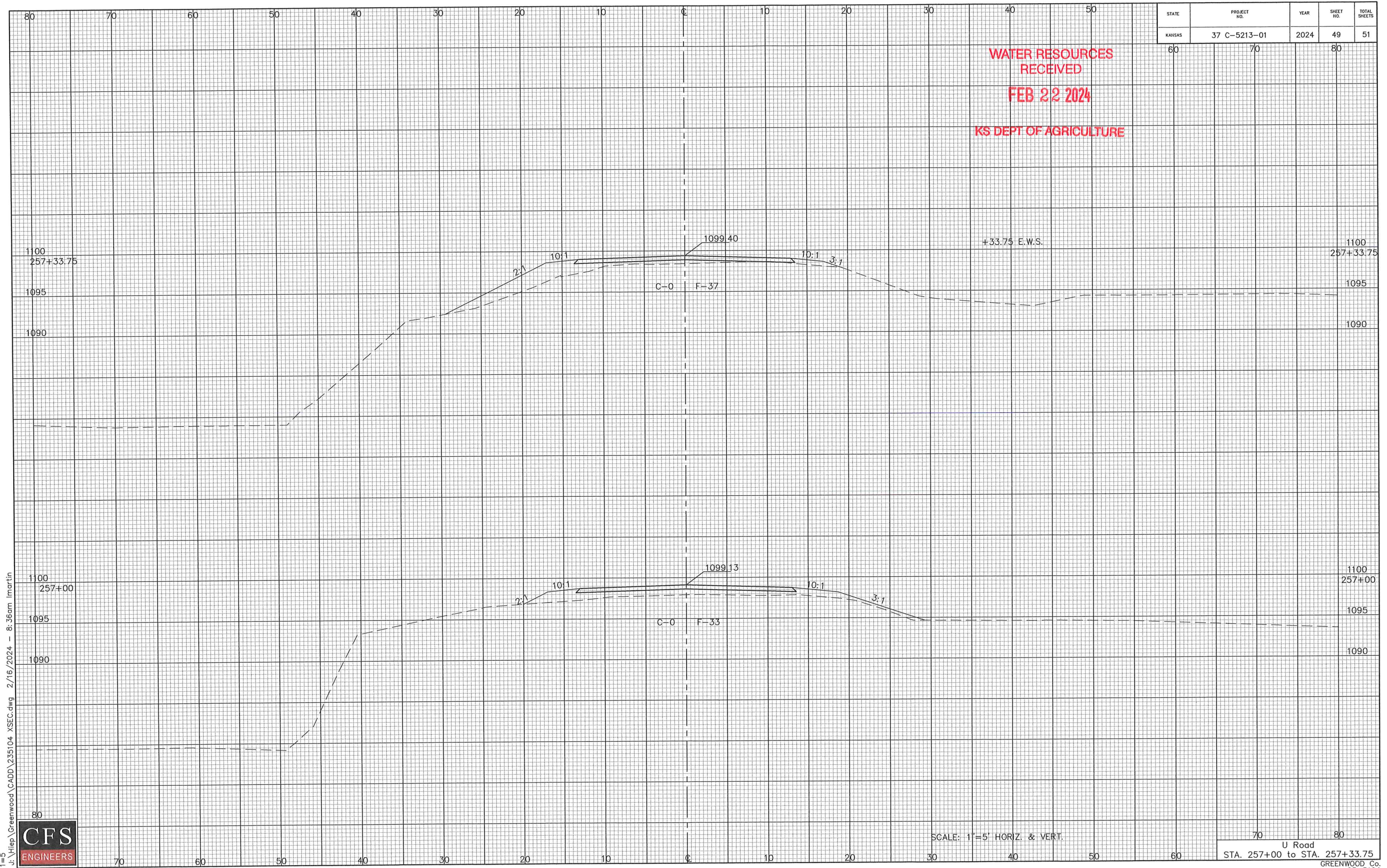


SCALE: 1"=5' HORIZ. & VERT.

U Road
STA. 256+36 to STA. 256+50
GREENWOOD Co.
23-5104

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	49	51

WATER RESOURCES
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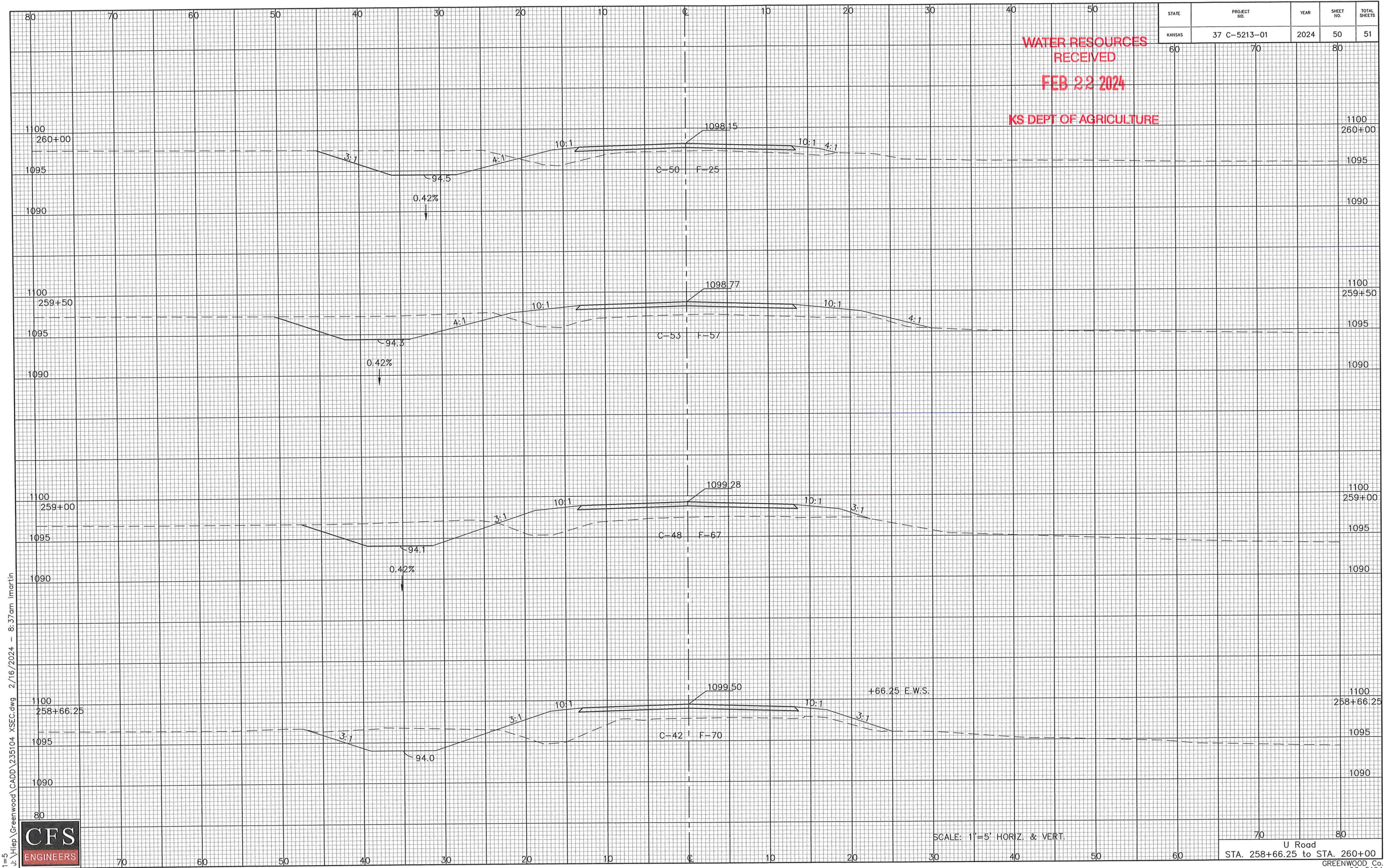


SCALE: 1"=5' HORIZ. & VERT.

U Road
STA. 257+00 to STA. 257+33.75
GREENWOOD Co.
23-5104

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	50	51

WATER RESOURCES
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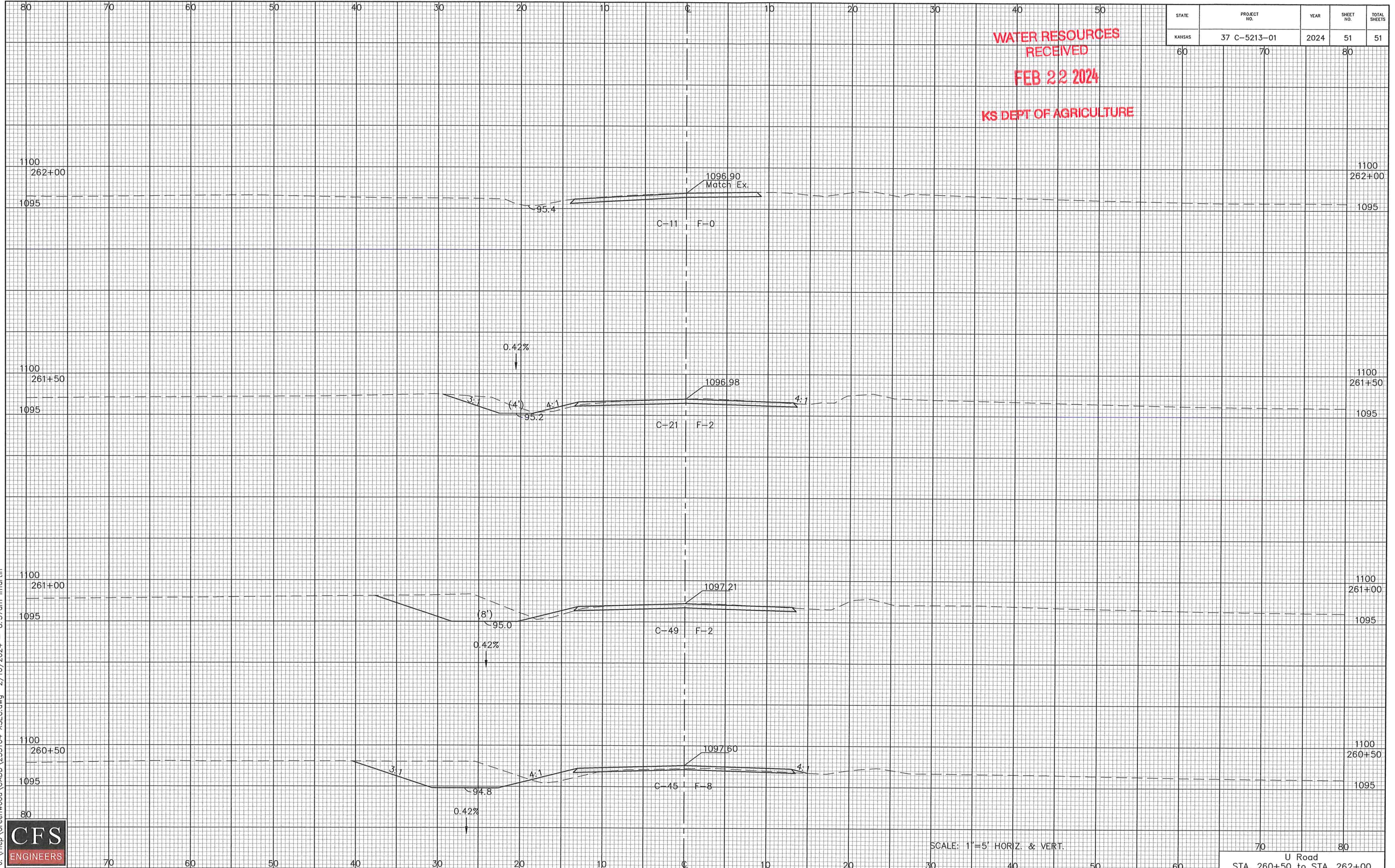


SCALE: 1"=5' HORIZ. & VERT.

70 80
U Road
STA. 258+66.25 to STA. 260+00
GREENWOOD Co.
23-5104

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	37 C-5213-01	2024	51	51

WATER RESOURCES
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FEB 22 2024
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SCALE: 1"=5' HORIZ. & VERT.

U Road
STA. 260+50 to STA. 262+00