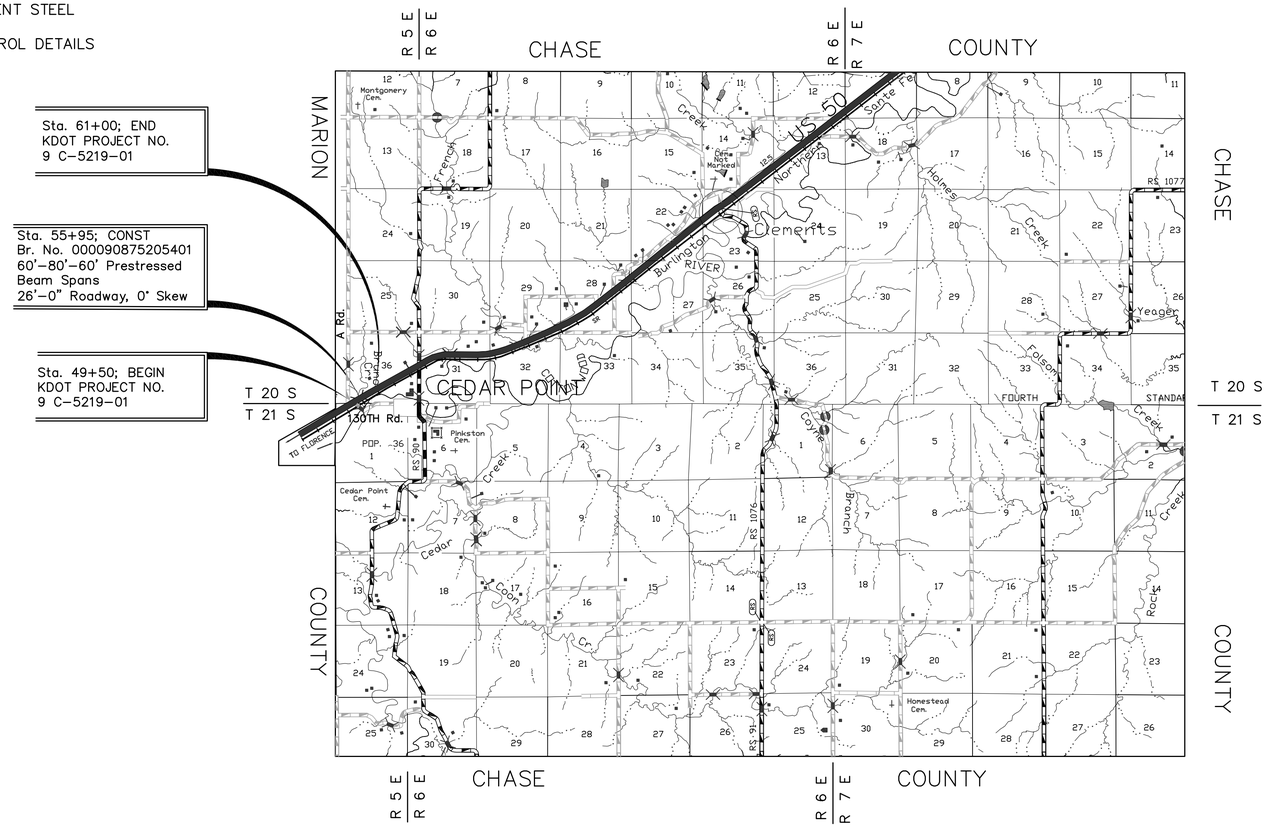
STATE	PROJECT NUMBER	Year	Sheet No.	Total Sheets
KANSAS	9 C-5219-01	2024	1	56
Fed. Proj. No. STP-C521(901)				
Co. Br. No. 19-A.2				

INDEX OF SHEETS

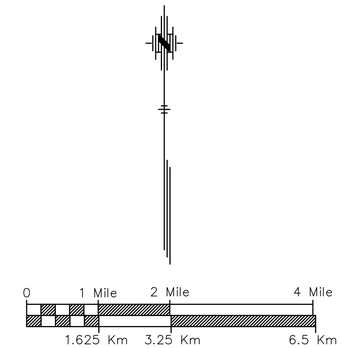
STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED
9 C-5219-01

FEDERAL AID PROJECT

CHASE COUNTY



GRADING
BRIDGE
SURFACING (AB-3)
SEEDING



DESIGN DESIGNATION

AADT	150 (2023)
AADT	180 (2043)
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	1,150.00	FT. = 0.218	MILE
EXCEPTIONS		FT. =	MILE
NET LENGTH OF PROJECT	1,150.00	FT. = 0.218	MILE
NET LENGTH OF BRIDGES	203.0	FT. = 0.038	MILE
NET LENGTH OF ROAD	947.0	FT. = 0.180	MILE

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

RECOM. FOR APPROVAL-DATE

6-24-2024

Road Supervisor 2024

PLANS PREPARED BY:

CFS ENGINEERS

BRIDGE

GENE E. PETERS LICENSED 17259 KANSAS PROFESSIONAL ENGINEER 6/24/24

GRADING

KENNETH BLAIR LICENSED 10469 KANSAS PROFESSIONAL ENGINEER 6/24/24

Approved: Sep 11, 2024
Date

State Transportation Engineer

By:

Interim Chief, Bureau of Local Projects

KANSAS DEPARTMENT OF TRANSPORTATION

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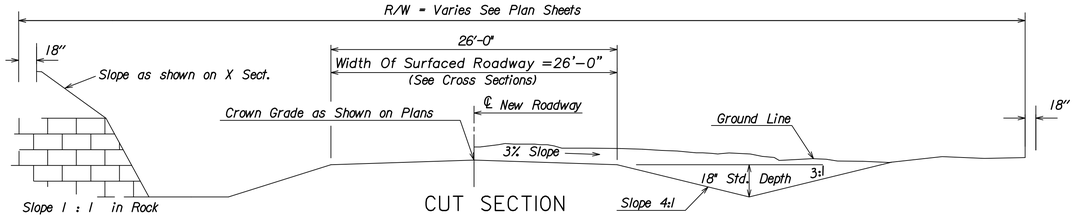
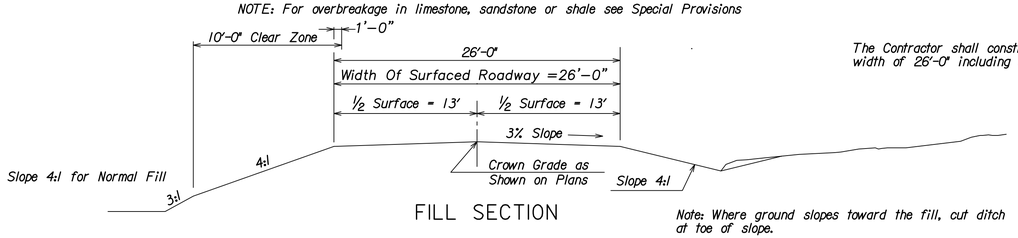
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	2	56



CUT SECTION

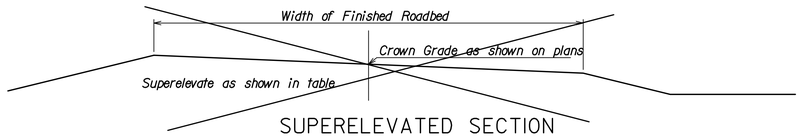
NOTE: For overbreakage in limestone, sandstone or shale see Special Provisions



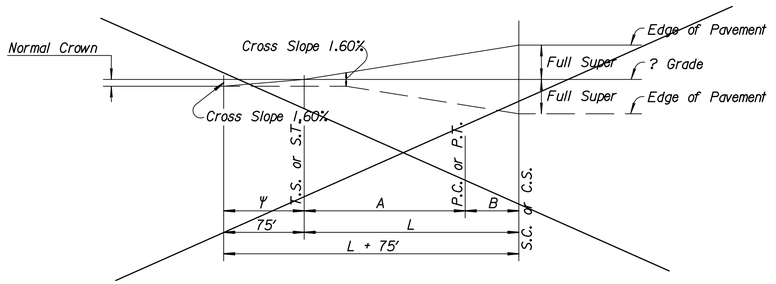
FILL SECTION

The Contractor shall construct a final roadway width of 26'-0" including shoulders.

Note: Where ground slopes toward the fill, cut ditch at toe of slope.

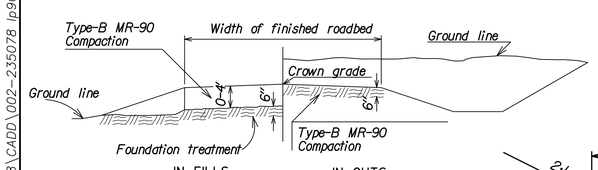


SUPERELEVATED SECTION



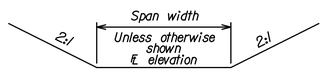
PROFILE SHOWING METHOD OF ATTAINING SUPERELEVATION

Sta. P.I. Curve	Radius	Design Speed	Super %	Transition - (Lin.Ft.)		
				L	A	B

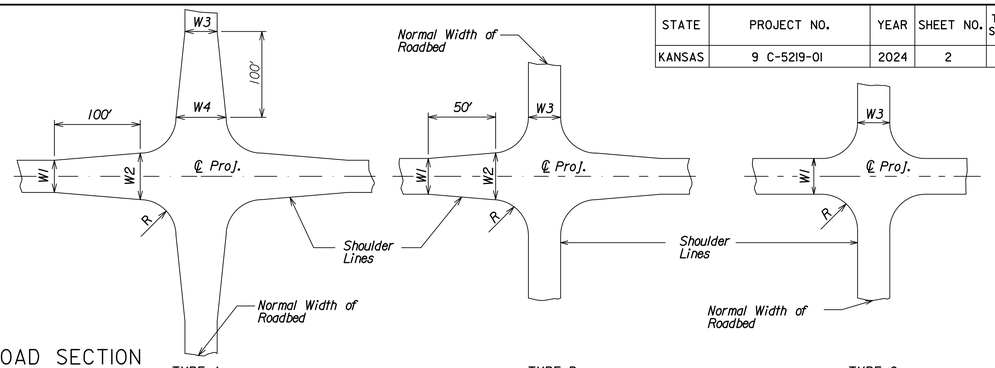


ALL EMBANKMENT SHALL BE COMPACTED EXCEPT DITCHPLUGS AND WASTE BERMS.

FOUNDATION TREATMENT AND COMPACTION OF EARTHWORK

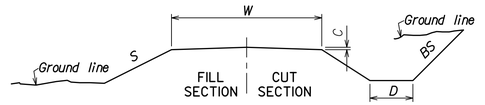


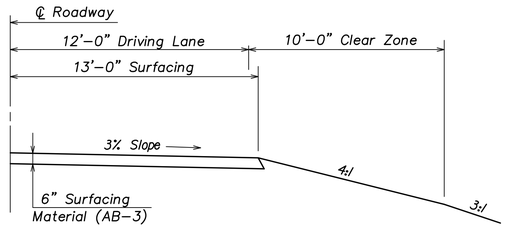
TYPICAL INLET AND OUTLET CHANNEL EXCAVATION SECTION FOR BOX STRUCTURES & PIPE CULVERTS



TYPICAL SIDE ROAD SECTION

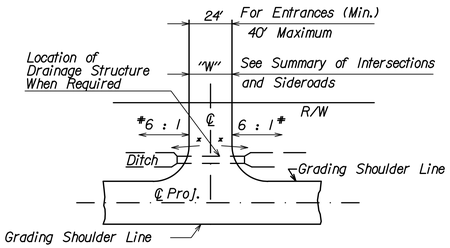
TYPICAL INTERSECTION DETAILS





TYPICAL 1/2 SECTION SURFACING

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

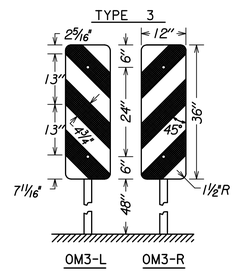


TYPICAL SIDE ROAD OR ENTRANCE DETAIL

* 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.

OBJECT MARKER



SUMMARY OF OBJECT MARKERS AND SIGNS						
STATION TO STATION	SIDE	TYPE OF STRUCT.	TYPE OF SIGN	OBJECT MARKER		REMARKS
				TYPE	NO.	
Sta. 55+95	Lt.	Sp. Br.		OM-3L	2	Ø @ Lt. Br. Quads.
Sta. 55+95	Rt.	Sp. Br.		OM-3R	2	Ø @ Rt. Br. Quads.
TOTAL					4	
Ø As you face bridge end from approach						
* Back-to-Back [Sign(s) on Both Sides of Post]						

GENERAL NOTES

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

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

Public and private utility facilities will be adjusted by others as needed to fit the new construction unless noted otherwise on the plans or in the proposal.

Refer to KDOT Standard Drawing No. BR 100 for excavation limits for constructing box culverts.

All Sign, Fastener, and Post materials must meet the requirements of the latest edition of the KDOT Standard Specifications for State Road and Bridge Construction.

Install Object Markers Type OM3-(R)(L) at each corner of 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.

NO.		REVISIONS	BY	APP'D
7	01-08-15	Revised superelevation diagram, updated misc. notes.	TLS	RJS
6	11-9-04	Changed "Culvert" to "Structure"	DMK	RJS
5	12-1-03	Rem. Delin.'s/Add Typ. Sect./Changed OM notes	DMK	RJS
4	5-14-03	Rev. Contractor note in Gen. Notes	DMK	RJS

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL GRADING SECTION

~~LP907~~

FHWA APPROVAL			APP'D.	RJS
DESIGNED	DETAILED	TLS	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	RJS	QUAN.CK.	TRACE CK.

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	3	56

Ref. P.O.T. @ ℄ Sta. 50+00
Set ⅝" Rebar @ P.O.T.
N 213,158.83 E 9,403,575.00

1.	To ℄ E–W Grav. Rd.	
2.	Top ℄ 36" "T" Post	12.0' SW
3.	Top ℄ R.R. on End	63.05' NNW
4.	To E. Rail R.R. Track	114.0' NW

Ref. P.O.T. @ ℄ Sta. 53+69.84
Set ⅝" Rebar @ P.O.T.
N 212,923.47 E 9,403,860.29

1.	In ℄ E–W Grav. Rd.	
2.	To W. EWS Br.	149.0' SE
3.	Spk. & Wshr. in W. Fc. Tree	55.72' NE
4.	Spk. & Wshr. in W. Fc. Tree	42.80' ENE

Ref. P.I. @ ℄ Sta. 57+39.06 ∠ Lt. 68°40'39"
Set ⅝" Rebar @ P.I.
N 212,688.51 E 9,404,145.10

1.	In ℄ Rd. to W.	
2.	Spk. & Wshr. Top E. End Gd. Fc.	6.40' SE
3.	To SE Cor. Br.	79.2' WNW
4.	To NE Cor. Br.	79.2' NW

Ref. P.I. @ ℄ Sta. 59+14.64 ∠ 1°19'31"
Set ⅝" Rebar @ P.I.
N 212,774.05 E 9,404,298.43

1.	In ℄ E–W Grav. Rd.	
2.	Spk. & Wshr. S. Fc. Tree	22.10' SW
3.	℄ Base Wood Post	62.4' SSE
4.	℄ Base Wood Post	89.2' NNE

Ref. P.I. @ ℄ Sta. 62+74.62
Set ⅝" Rebar @ P.I.
N 212,956.65 E 9,404,608.66

1.	In ℄ Grav. Rd.	
2.	To NW Cor. Street N. of Project	15.7' WSW
3.	To NE Cor. Street N. of Project	16.6' SSW
4.	Spk. & Wshr. S. Fc. Tree	28.6' W

Sta. 100+00
N 213,999.21
E 9,403,959.00

Sta. 100+62.31 P.I.
N 212,999.21
E 9,403,959.00

Sta. 101+85.96 P.I.
N 212,912.60
E 9,404,053.19

Sta. 102+26.99 P.I.
N 212,912.60
E 9,404,096.58

BRUNO CREEK ALIGNMENT

Sec. 36, T 20 S, R 5 E

— FOR INFORMATION ONLY —
Large trees & stumps to be grubbed this project:
3–40", 4–50", 7–60", 1–70", 2–80", 1–90"
Total = 18

CURVE DATA
(arc def.)
N 212,967.91 E 9,403,806.41
P.I. Sta. 53+00.07 O.R. (Bk.)
P.I. Sta. 52+99.88 O.R. (Ahd.)
Δ= 09°30'57" D= 11°27'33"
R= 500.00' L= 83.04'
T= 41.62' E= 1.73'

CURVE DATA
(arc def.)
N 212,722.51 E 9,404,210.87
P.I. Sta. 57+72.96 O.R. (Bk.)
P.I. Sta. 57+58.23 O.R. (Ahd.)
Δ= 61°43'41" D= 45°50'12"
R= 125.00' L= 134.67'
T= 74.70' E= 20.62'

Sta. 61+45.18 O.R.
N 212,918.80
E 9,404,544.35

Sta. 61+00 O.R.; END KDOT Proj. No. 9 C–5219–01

Sta. 60+62 O.R.; Const. Mnd. Entr. Rt.

Sta. 49+50 O.R.; BEGIN KDOT Proj. No. 9 C–5219–01

Sta. 49+00 O.R.
N. 213,229.13
E 9,403,503.39

Sta. 55+00 O.R., 29' Rt.; Install 3–Steel bollards See Detail this sheet

Sta. 55+95 O.R.; Const. Br. No. 000090875205401 60'–80'–60' Prestressed Beam Spans 26'–0" Rdwy., 0° Skew See Sh. 10–28

Sta. 56+58 O.R., 52' Rt. Install; 3–Steel bollards See Detail this sheet

Sta. 55+90 ℄; Existing Struct. To Remain In Place

Webe Family Farms, LLC

Jerry L. Siebert Rev. Trust
Millcine K. Siebert Rev. Trust

River Watch Ranch, LLC

Sec. 1, T 21 S, R 5 E

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

Any material buried or stockpiled beyond approved 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 for clearance from the Kansas Historical Society & the Kansas Department of Wildlife & Parks prior to any excavation.

It shall be the responsibility of the Contractor to restore, seed and/or 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).

Note: Transition Approach Grading Sta. 49+50 to Sta. 50+50 & 60+00 to Sta. 61+00

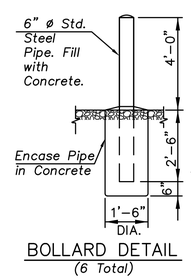
Note: Sta. 55+95 O.R. the Contractor shall construct slope protection (Riprap Stone)(¼ Ton) on the channel slopes as shown 3'–0" thick.
Upstream End= 1,600 Cu. Yds.
Downstream End= 640 Cu. Yds.
Total= 2,240 Cu. Yds.

Note: The Contractor shall construct shoulder widening and install 75'–0" NW Quad, 25'–0" SW Quad., 150'–0" SE Quad., 121'–0" NE Quad. Steel Plate Guardrail with End Terminals, (SRT or FLEET) at each quadrant of the new bridge. Total 371'–0" Guardrail and 4 End Terminals

Note: The Contractor shall leave the existing structure in place (Br. No. 000090875305401)(142' Steel Truss on Rock Conc. Vertical Abutments, with a concrete deck, 17.4' Rdwy.) Excavate the channel improvements in the vicinity of the new structure, prior to its construction.

LIST OF UTILITIES

Utility	Location	Owner–Address
Telephone	Left	--



BOLLARD DETAIL
(6 Total)

Notes:
Install Bollards @ 4'–0" O.C. & 3'–0" from edge of Ex. Br.
Paint Bollards Safety Yellow.
Use Grade 4.0 Concrete

Horizontal Control:
US State Plane 1983, KRCS (Zone 09 Emporia), NAD83 BY GPS Network Observation

Vertical Control:
NAVD88 By GPS Network Observation P.O.T. ℄ Sta. 50+00, (⅝" Rebar) Differental Leveling Thru Project Control/Benchmarks

SCALE IN FEET
50 0 50 100
PLAN: Lat. & Long.
PROFILE: Horiz. same as above Vert.

B.M. #1– Top 36" "T" Post, 12.0' Rt. ℄ Sta. 50+00 El. 1247.96	B.M. #2– "□" Cut Top ℄ NW Br. Rtwl., 10.0' Lt ℄ Sta. 55+16 El. 1252.67	B.M. #3–¼" Square steel Rod in Tree, 19.5' Rt. ℄ Sta. 57+48 El. 1254.91	B.M. #4–Top 36" "T" Post, 1' E., 20.6' Lt. ℄ Sta. 61+71 El. 1251.10

CFS ENGINEERS

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN
130th ROAD
STA. 49+50 to STA. 61+00

BY	DATE
INITIALS	
INITIALS	

REFERENCE NOTED
REFERENCE CHECKED

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Drawn by:
Plotted:
File: DWG_FILE_NAME
SCALE SCALE

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	4	56

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN & PROFILE
130th Road
STA. 49+50 to STA. 61+00

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	5	56

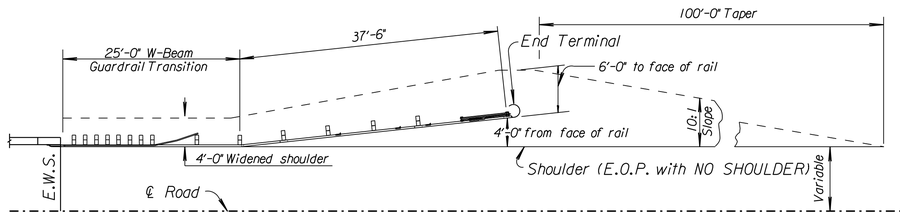
NOTE: Layouts 1, 2, 3, and 4 will be symmetric for any quadrant unless otherwise shown in the plans.

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

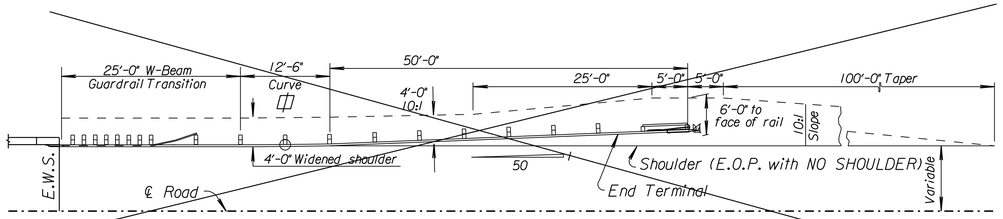
When using Thrie beam, attach Std. Drawings no. RD611 and RD608 or RD613.

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

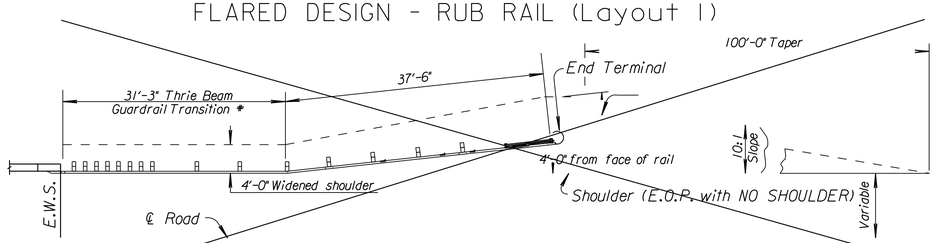
◫ Radius = 625.08'

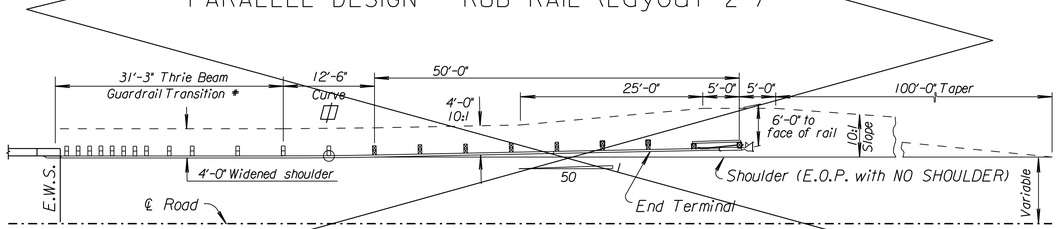


FLARED DESIGN - RUB RAIL (Layout 1)

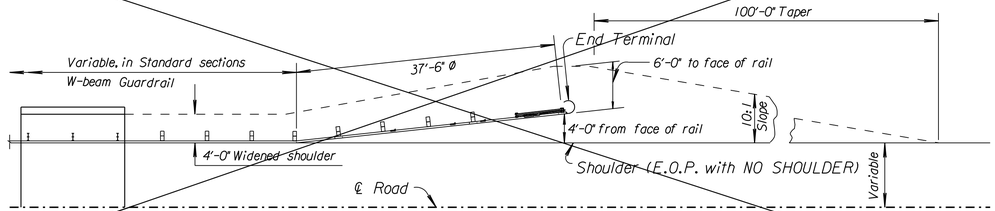


PARALLEL DESIGN - RUB RAIL (Layout 2)

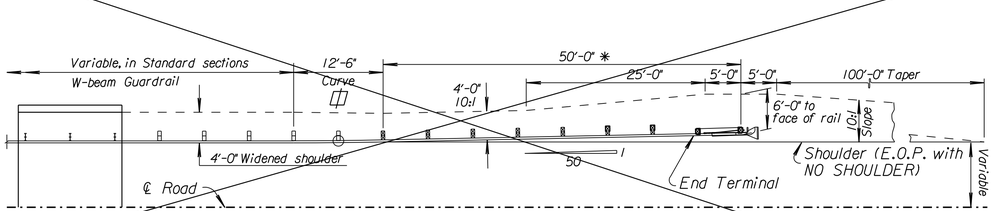




PARALLEL DESIGN - THRIE BEAM (Layout 4)



FLARED DESIGN (Layout 5)



PARALLEL DESIGN (Layout 6)

TYPICAL ALIGNMENT OF GUARDRAIL AT CULVERTS & BOX BRIDGES

ALLOWABLE END TERMINALS

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

SUMMARY OF STEEL PLATE GUARDRAIL

Location	Side	Layout No.	Layout Lin. Ft. *	Additional Standard Sections Lin. Ft.	Total Pay Length Lin. Ft.	Layout 1 or 3 Gd. Rail End Term. (SRT) Alt. #1 Each	Layout 1 or 3 Gd. Rail End Term. (FLEAT) Alt. #2 Each	Layout 2, 4, or 6 Gd. Rail End Term. (SKT) Each	Layout 5 Gd. Rail End Term. (SRT) Alt. #1 Each	Layout 5 Gd. Rail End Term. (FLEAT) Alt. #2 Each	
55+95											
SW Quad.	Rt.	1	25'-0"		25'-0"	1	1				
SE Quad.	Rt.	1	150'-0"		150'-0"	1	1				
NW Quad.	Lt.	1	75'-0"		75'-0"	1	1				
NE Quad.	Lt.	1	121'-0"		121'-0"	1	1				
TOTAL LENGTH					371'-0"	4	4				

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

NO.	DATE	REVISIONS	BY	APP'D
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

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL ALIGNMENT OF GUARDRAIL INSTALLATIONS

~~LP620~~

FHWA APPROVAL		APP'D.	MJS
DESIGNED	DETAILED TLS	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK. RJS	QUAN.CK.	TRACE CK.

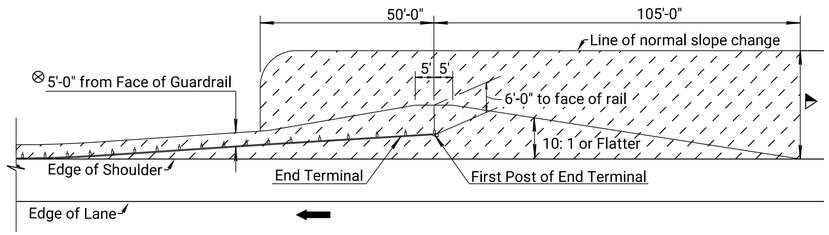
CADconform Certify This File

CADconform Certify This File

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

GUARDRAIL CLEAR AREA

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



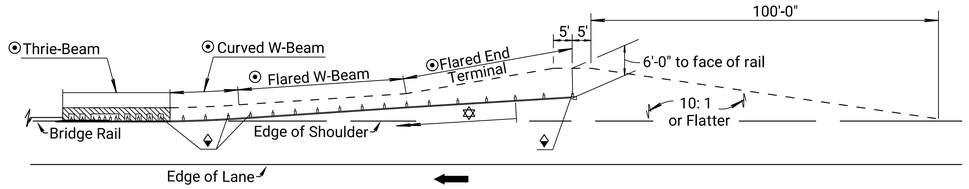
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet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

Normal Project Side Slope.

Deflection Distance for Normal Post Spacing

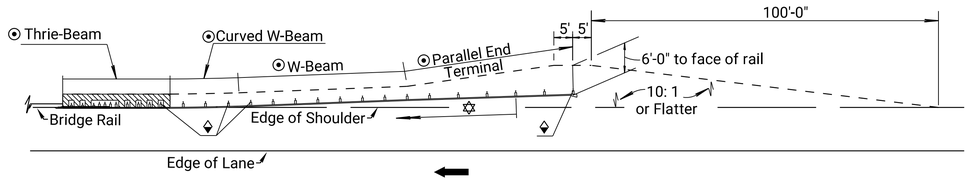
FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



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)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	6	56

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.

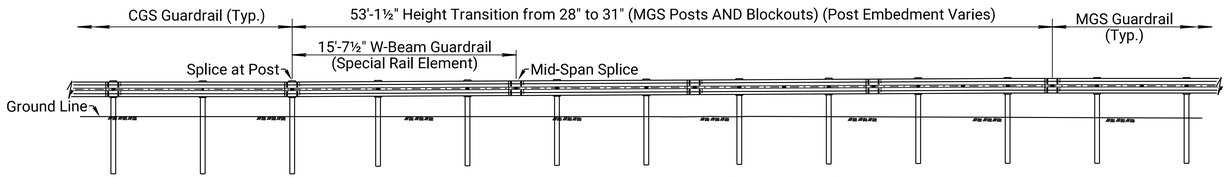
The minimum length of w-beam guardrail required between the thrie-beam transition and the guardrail end terminal is 12'-6" for all installations; unless otherwise stated in the Manufacturer's Installation Manual.

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.

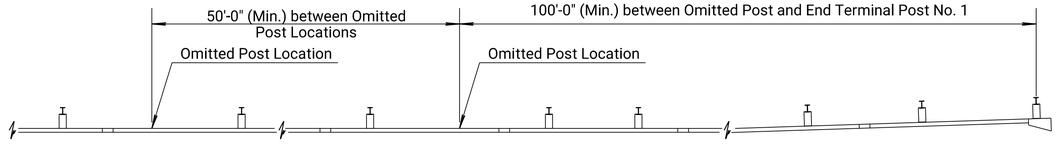
All work and materials required for w-beam and thrie-bean guardrail installations are paid for under the appropriate bid items for either CGS or MGS guardrail depending on the type of installation.

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

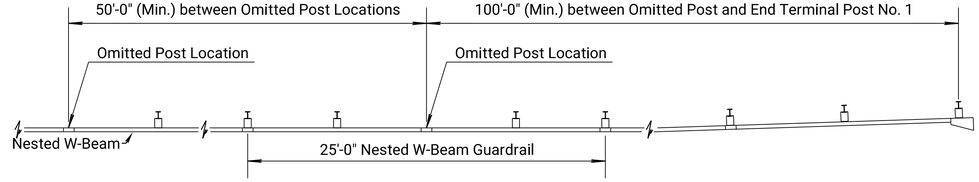
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) END TERMINALS

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

CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS

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

NO.	DATE	REVISIONS	BY	APP'D
02	09-05-18	ADD. OMITTED POST AND TRANS. DETAILS	A.L.R.	T.T.R.
01	06-05-18	INITIAL RELEASE	A.L.R.	T.T.R.

KANSAS DEPARTMENT OF TRANSPORTATION

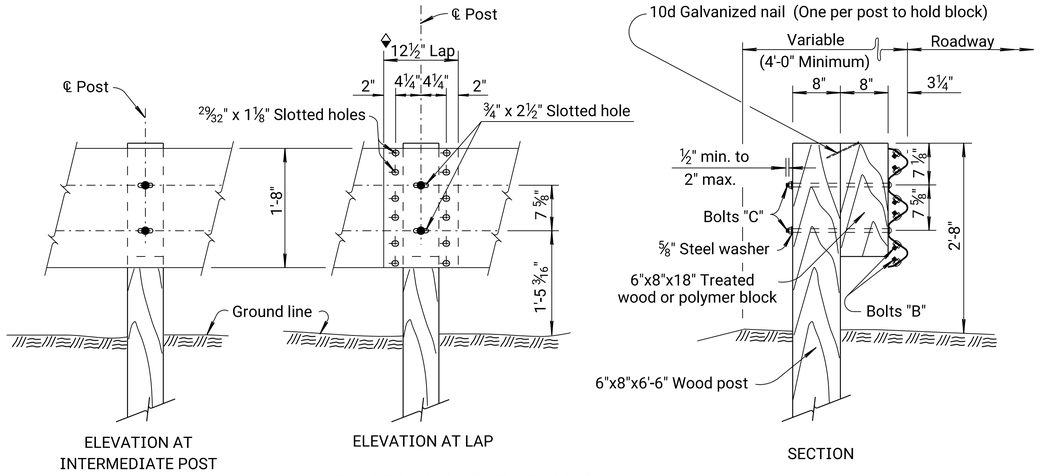
GUARDRAIL AUXILIARY DETAILS

RD606

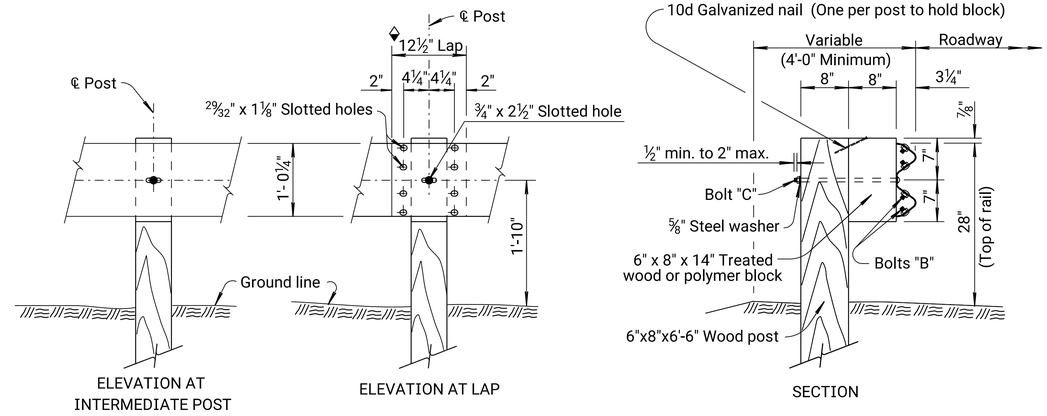
FHWA APPROVAL	09-25-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	7	56



THRIE BEAM POST DETAILS



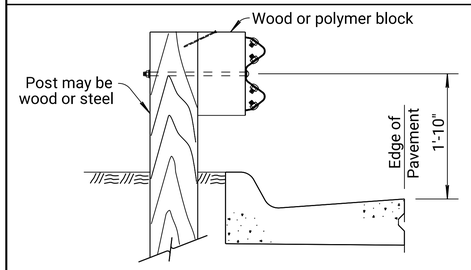
W-BEAM POST DETAILS

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

WOOD POSTS

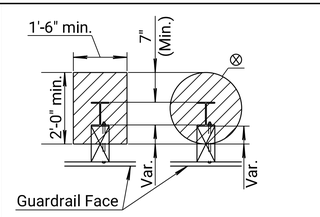
GENERAL NOTES (Wood Posts)

Give all wood posts and wood blocks a preservative treatment, see standard specifications. Thoroughly saturate all cuts, injuries and bolt holes on wood posts and blocks with preservative. Use only one type of preservative treatment on a project. Use S4S rectangular posts and wood blocks, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the 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.



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.

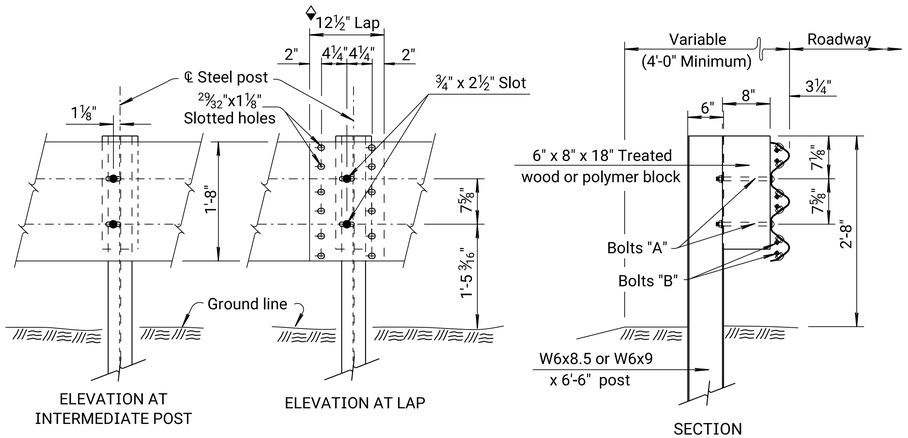


POSTS IN PAVEMENT PLAN
(ALTERNATE GEOMETRIES)
Applies to All Wood and All Steel Posts
(Steel Posts Shown)

▨ 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.



THRIE BEAM POST DETAILS

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

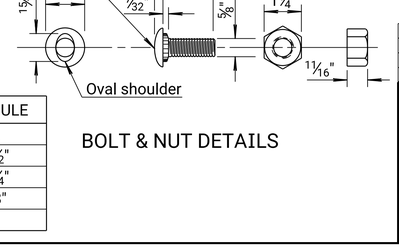
W-BEAM POST DETAILS

STEEL POSTS

GENERAL NOTES (Steel Posts)

Use grade of steel for steel posts that meets the requirements of the standard specifications. Hot dip galvanize the posts after fabrication, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the guardrail end terminals. For wood/polymer blockout requriements 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.

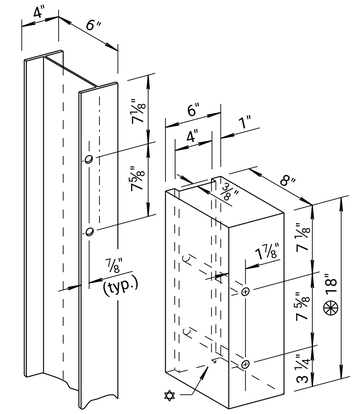
BOLT SIZE SCHEDULE	
Bolt	L
A	8 ½"
B	1 ¼"
C	18"



BOLT & NUT DETAILS

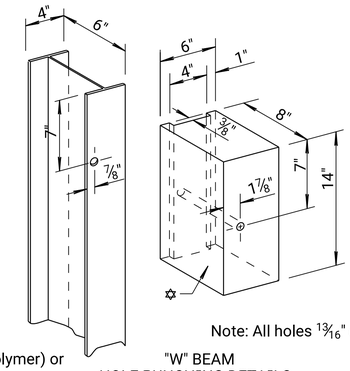
Galvanize all bolts, nuts, and washers in accordance with the KDOT's Standard Specifications.

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



Note: All holes 13/16" dia.

THRIE BEAM
HOLE PUNCHING DETAILS



Note: All holes 13/16" dia.

✡ Non-Metallic (Polymer) or Treated Wood Block

"W" BEAM
HOLE PUNCHING DETAILS

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

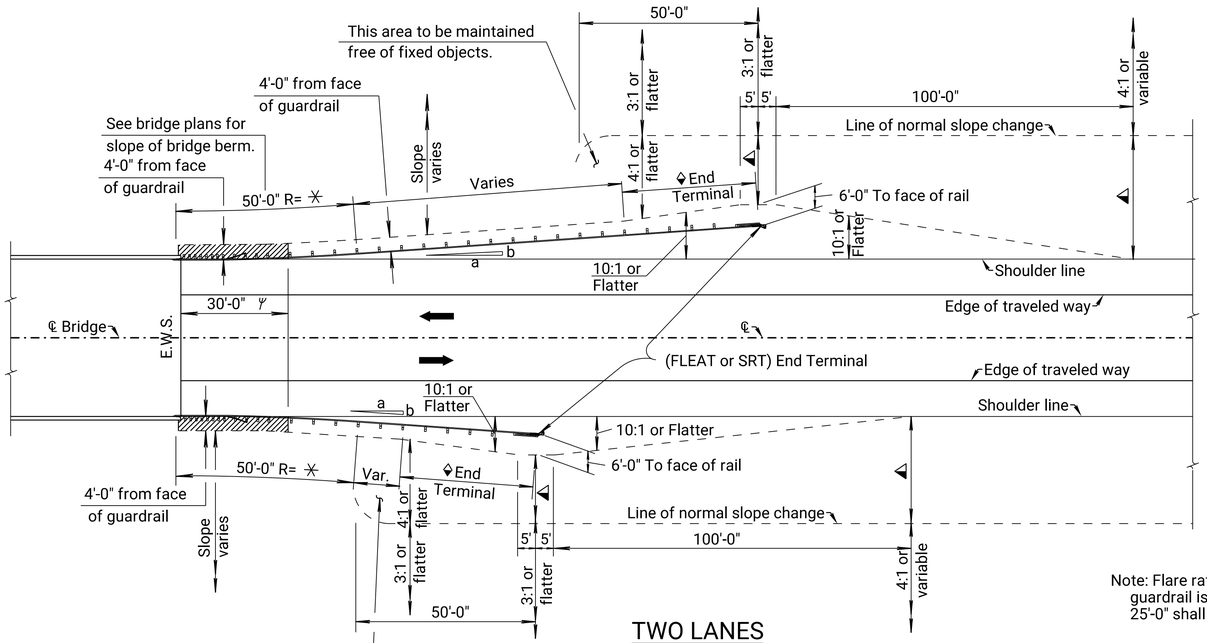
RD611

FHWA APPROVAL	09-25-18	APP'D.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

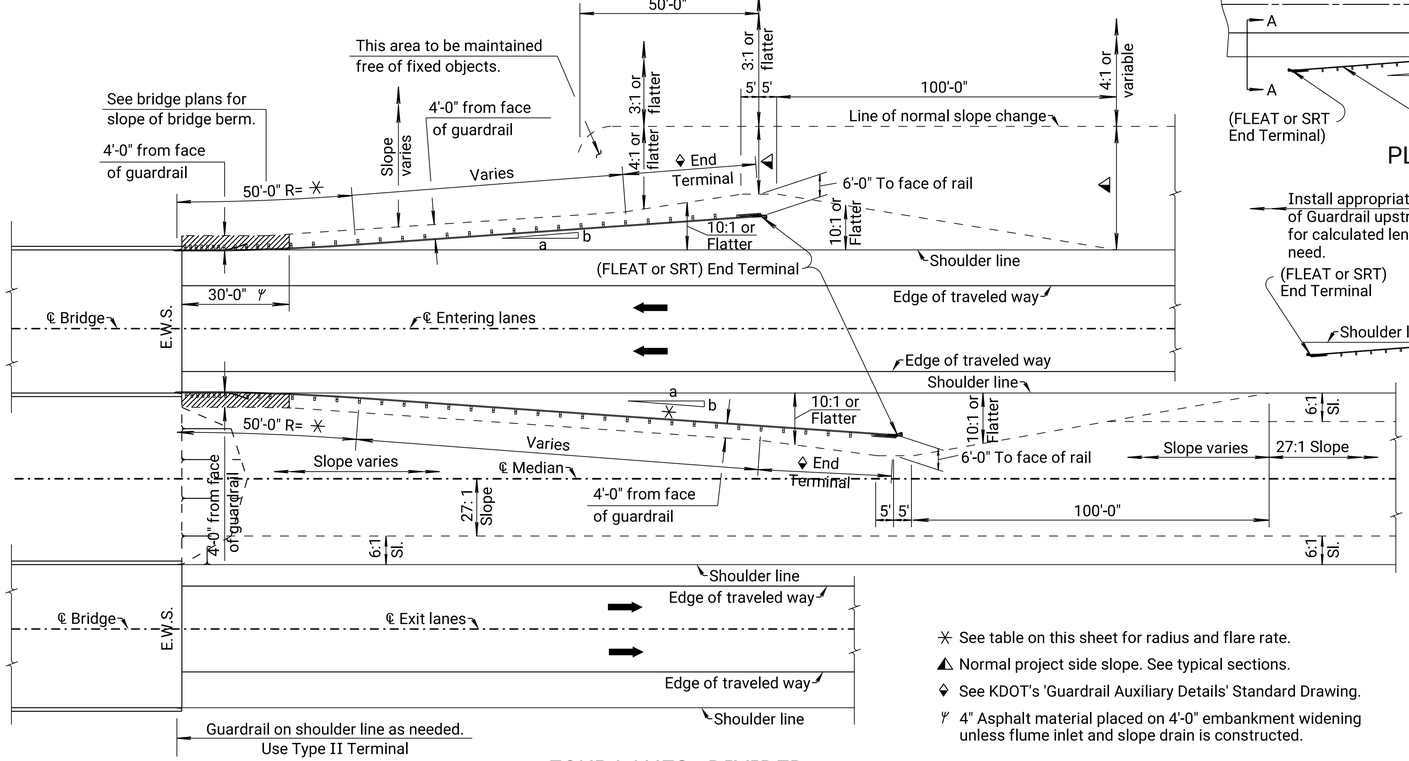
KDOT Graphics Certified 08-01-2022

KDOT Graphics Certified

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



TWO LANES



FOUR LANES - DIVIDED

✳ See table on this sheet for radius and flare rate.

◭ Normal project side slope. See typical sections.

⧫ See KDOT's 'Guardrail Auxiliary Details' Standard Drawing.

ᛉ 4" Asphalt material placed on 4'-0" embankment widening unless flume inlet and slope drain is constructed.

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

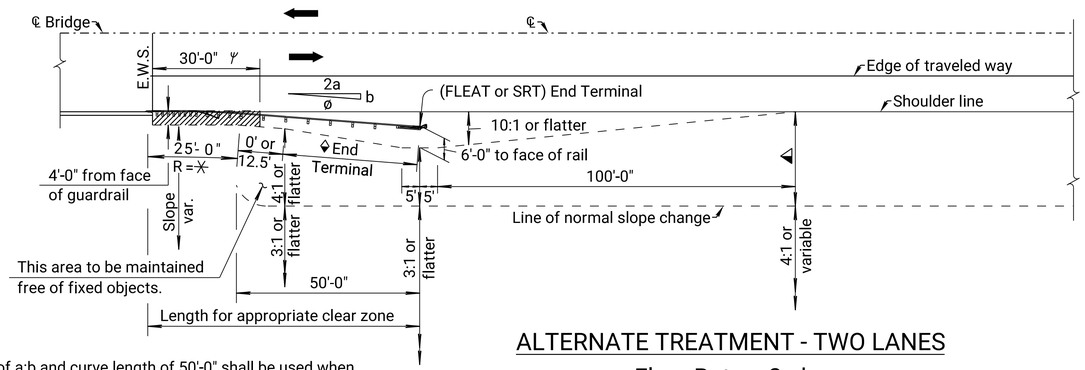
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	8	56

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 'Guardrai 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.

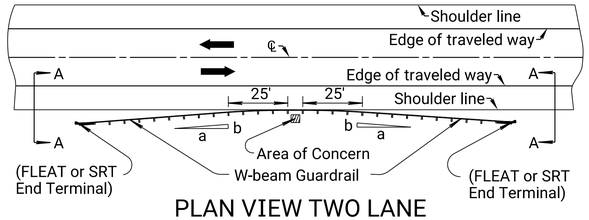


ALTERNATE TREATMENT - TWO LANES

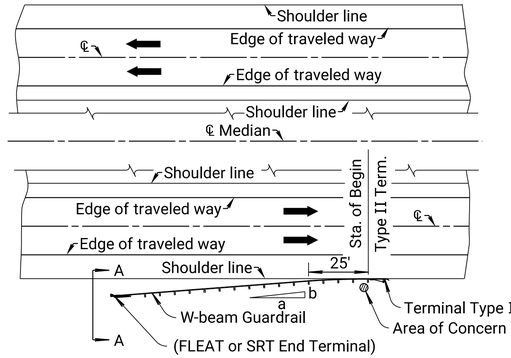
Flare Rate = 2a:b

(GUARDRAIL LENGTHS OF 62.5' AND 75')

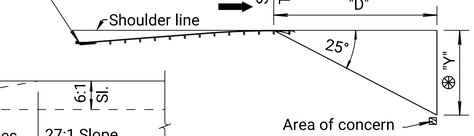
Note: Flare rate of a:b and curve length of 50'-0" shall be used when guardrail is beyond shy line, flare rate of 2a:b and curve length of 25'-0" shall be used when guardrail is located inside the shy line.



PLAN VIEW TWO LANE

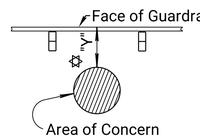


PLAN VIEW FOUR LANE



✳ On divided facility with adjacent traffic in one direction only, total length of need may reduced by length "D".

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



ENLARGEMENT - AREA OF CONCERN

DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE

NO.	DATE	REVISIONS	BY	APP'D
08	06-05-18	Removed Flare-beyond-the-Flare	A.L.R.	T.T.R.
07	05-15-17	Removed X-LITE	A.L.R.	S.W.K.
06	07-02-09	Added roadside obstacle details	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

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

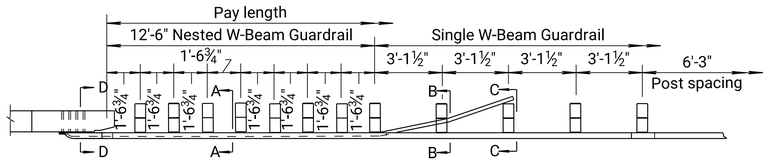
RD615A

FHWA APPROVAL	06-19-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

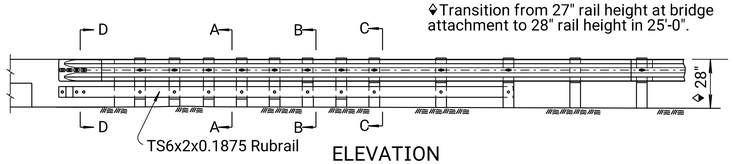
KDOT Graphics Certified 05-16-2022

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	9	56

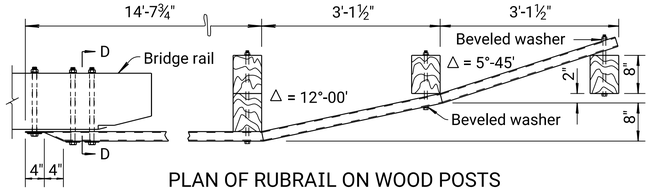


PLAN

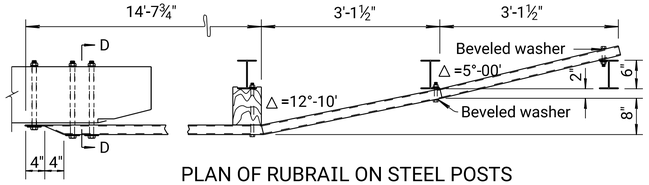


◆Transition from 27" rail height at bridge attachment to 28" rail height in 25'-0".

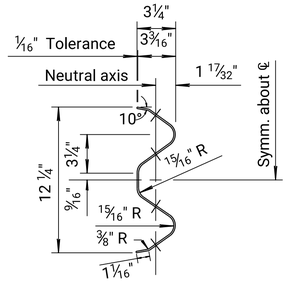
ELEVATION



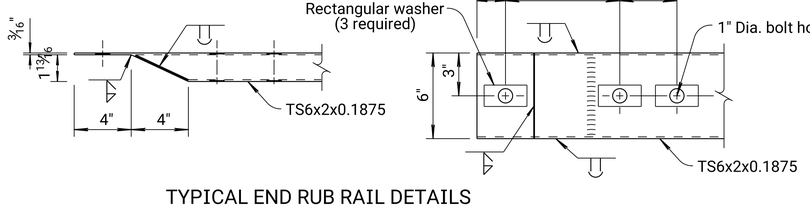
PLAN OF RUBRAIL ON WOOD POSTS



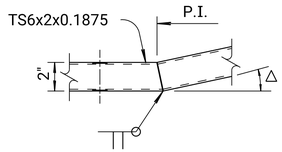
PLAN OF RUBRAIL ON STEEL POSTS



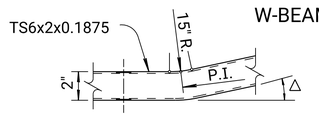
SECTION THRU TYPICAL W-BEAM RAIL ELEMENT



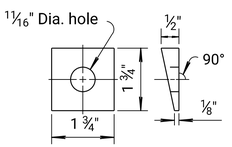
TYPICAL END RUB RAIL DETAILS



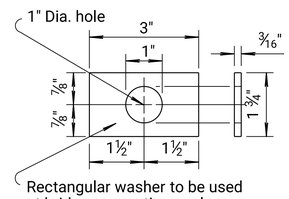
SHOP WELDED OPTION



SHOP BENT OPTION

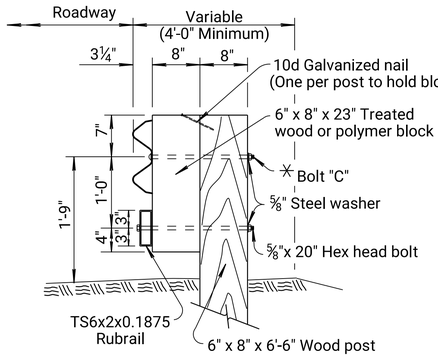


BEVELED WASHER

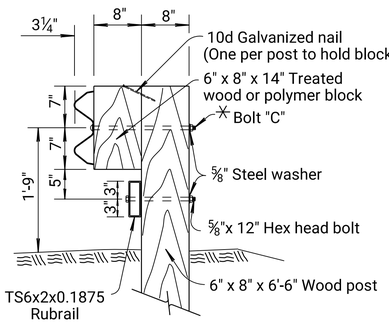


Rectangular washer to be used at bridge connections only.

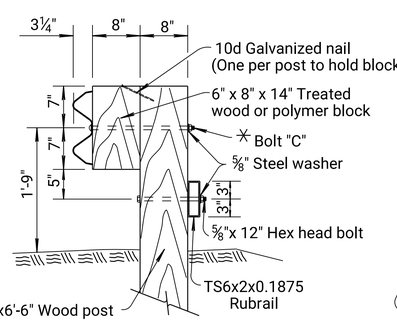
RECTANGULAR WASHER
(Other approved washer may be used.)



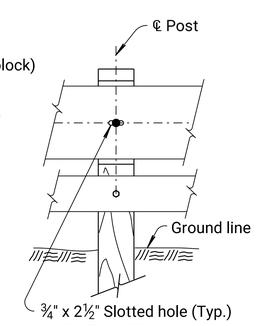
SECTION A-A



SECTION B-B

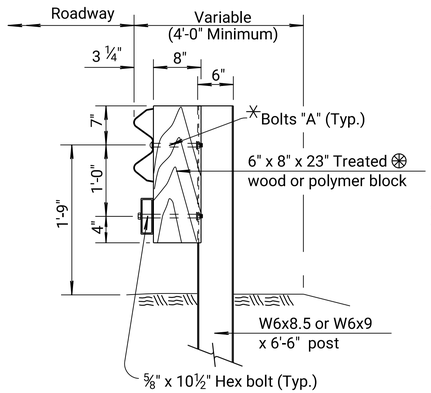


SECTION C-C

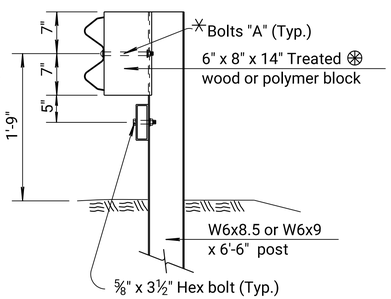


ELEVATION
WITH RUBRAIL

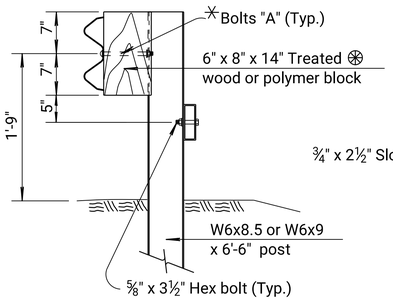
WOOD POSTS



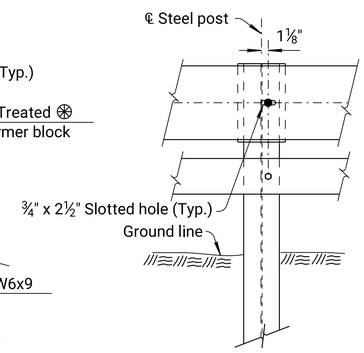
SECTION A-A



SECTION B-B



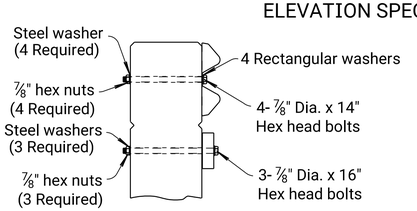
SECTION C-C



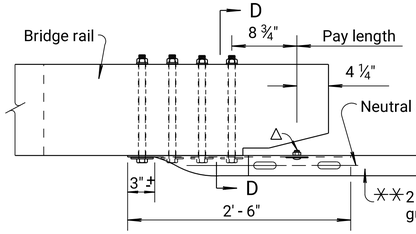
ELEVATION
WITH RUBRAIL

STEEL POSTS

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

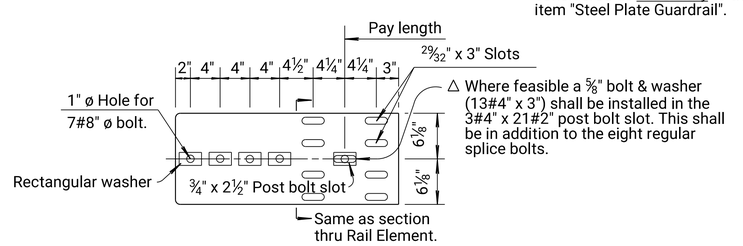


SECTION D-D



PLAN SPECIAL END SHOE

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



ELEVATION SPECIAL END SHOE

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	APP'D
14	12-14-10	Revised notes 28' rail height	S.W.K.	J.O.B.
13	04-02-08	Removed Galvanized callout	S.W.K.	J.O.B.
12	02-06-07	Corrected spelling error	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION DETAILS

RD616

FHWA APPROVAL	01-11-11	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-11-2022

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	10	56

SUMMARY OF BRIDGE QUANTITIES

Items / Location	Excavation Class I Cu. Yds.	Excavation Class II Cu. Yds.	Concrete Grade 4.0 (AE) Cu. Yds.	Concrete Grade 4.0 (AE)(SA) Cu. Yds.	Reinforcing Steel (Grade 60) Lbs.	Reinforcing Steel (Grade 60) (Epoxy Coated) Lbs.	Prestressed Concrete Beams (K4+3) Lin. Ft.	Piles (Steel) (HP10X42) Lin. Ft.	Slope Protection (Riprap Stone) Cu. Yd.	Cast Steel Pile Points Each	Drilled Shafts (60")(Cased) Lin. Ft.	Core Hole (Investigative) Lin. Ft.	Sonic Test (Drilled Shaft) (Each)(Set) Each	Bridge Project Marker (Non Participate) Each
Abutment No. 1	60		17.3		1,970			235	1,600	5				
Pier No. 1		54	30.5		5,330						74	75		
Pier No. 2		54	30.5		5,330						74	75		
Abutment No. 2	60		17.3		1,970			235	640	5				
Total Substructure	120	108	95.6		14,600			470	2,240	10	148	150	1	1
Total Superstructure				243.8		54,830	796							
Grand Total	120	108	95.6	243.8	14,600	54,830	796	* 470	2,240	10	148	150	1	1

* Includes: 10 @ 47'

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

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 1234.50 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

DRILLED SHAFTS: See notes on "DRILLED SHAFT DETAILS."

CORE HOLE (INVESTIGATIVE): See KDOT Specifications

SONIC TESTING: Equip all drilled shafts with piping to allow sonic testing to be done. Install pipes at locations shown on the plans. The Engineer has the option to require sonic, non-destructive, integrity testing at locations he designates (E.G. Wet Pours). Sonic testing shall be paid for at the unit price set for "Sonic Test" (Drilled Shaft) (Set Price). If the sonic testing indicates defective concrete in the shaft, the Engineer shall measure the first sonic test for payment, and the Contractor is responsible for subsequent sonic testing of that shaft. Report test results directly to the Engineer. No work shall be done above the top of drilled shaft without the approval of the Engineer.

SOUNDINGS: The soundings shown on these plans are taken from notes obtained in the field and represent the best information available to Chase County.

PILING: Drive all piling to penetrate or bear upon the limestone formation. Driving shall stop when in the opinion of the Engineer additional driving may damage the piling. Drive all piling to the Pile Driving Formula Load of:

Abutment No. 1 68.1 Tons
Abutment No. 2 68.1 Tons

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

PILING SPLICE LOCATION: Integral pile splice locations and weld testing criteria for both abutments will follow the "Standard Pile Details" Sheet (BR110).

BACKFILL COMPACTION: Backfill compaction shall be required at abutments.

COLUMN CONSTRUCTION: Cure the drilled shaft 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 BEAM CONSTRUCTION: Cure the columns as required by the KDOT Specifications before beginning the pier beam construction (placing resteel or formwork). Do not drill and grout bolts or other devices into the columns used for falsework support unless shown on the plans. Cure the columns as required by the KDOT Specifications before placing pier beam concrete. Do not remove falsework used to support the pier beam until the pier beam concrete has cured as required by the KDOT Specifications. Do not set girders or beams on the pier beam until after the falsework is removed or the pier beam concrete has 0.75f'c strength as tested.

PRESTRESSED BEAM CONCRETE: Use air entrained concrete with select coarse aggregate as specified in the Special Provisions. The release strength and 28 day strength requirements shall be as noted on the plans. Submit mix designs to the Engineer for approval.

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0) (AE)(SA). Substructure concrete is bid as Concrete (Grade 4.0) (AE). If desired, the Contractor may use Concrete (Grade 4.0) in the drilled shafts and in the abutments below the construction joint. Bevel all exposed edges of all concrete with a 3/4" triangular molding, except where otherwise noted on the plans. Construction joints are optional for 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 dimensions shown in the bending diagrams are out to out of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615, Grade 60. Spiral bars may meet the requirements of either ASTM A615 (Gr. 40 or 60) or A82, and are included in the bid item "Reinforcing Steel (Gr. 60)".

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. See the Bridge Design Manual, Section 16.1 "Review and Approval of Falsework Plans", for a listing of items to be included on the falsework plan. Submit electronic plans conforming to Section 105 of the Standard Specification 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 of "Category 1" will be fully enforced, but at no cost to the County. "Category 2" falsework inspection is not paid for directly, but is subsidiary to other bid items.

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

BRIDGE SEATS: Finish the bridge seats under the bearing pads to a smooth finish. Finish the remaining area to a rough finish.

ERECTION ELEVATION CHECKS: After the abutment and pier concrete has cured and before setting any prestressed beams, present verification to the Engineer that the elevations at the bearings match plan elevation (± 1/4").

CAMBER: For girder camber requirements, see "MISCELLANEOUS DETAILS" sheet.

DECK FORMS: Steel or prestressed concrete stay-in-place forms shall not be allowed.

DECK FINISHING: Set the finishing machine normal to the centerline of the structure for striking off and screeding the concrete.

CONSTRUCTION LOADS: Limited traffic is permitted on the new sub-deck, one-course deck or any concrete overlay during the curing period, KEEP ANY EXPOSED DECK WET DURING THE CURING PERIOD. See KDOT Specifications Section 710 Tables 710-1 & 710-2 for additional information.

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

SLOPE PROTECTION: Place Slope Protection (Riprap Stone) (1/4 ton) to the limits and thicknesses shown on the plans or as directed by the Engineer.

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

REMOVAL OF EXISTING STRUCTURE: The existing bridge is to remain in place.

INDEX TO BRIDGE DRAWINGS

LRFR RATING FACTORS

Design Load / Rating Level	Inventory	Operating
HL-93 Loading	1.225	1.588
NRL		1.809

2020 Manual for Bridge Evaluation

LFD RATING FACTORS

Truck / Rating Level	Inventory	Operating
HS-20 (36T)	1.399	2.336
Type HET (110T)		1.105

2002 LFD Rating, 17th Edition AASHTO

DESIGN DATA

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

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

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

UNIT STRESSES:

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
PRESTRESSED BEAM CONCRETE	f'c =	6,000 psi
REINFORCING STEEL (GRADE 60)	fy =	60,000 psi
PRESTRESSED STRANDS: UNCOATED 1/2" 7 WIRE, LOW RELAXATION STRANDS	f's =	270,000 psi

LRFD DESIGN PILE LOAD:

DESIGN LOADING (TONS PER PILE)	STRENGTH I	SERVICE I	
ABUTMENT NO. 1	68.1	49.2	PHI 0.45
ABUTMENT NO. 2	68.1	49.2	0.45

LRFD DESIGN DRILLED SHAFT LOADS:

DESIGN LOADING (TONS PER SHAFT)	STRENGTH I	PHI
PIER NO. 1	439.0	0.45
PIER NO. 2	439.0	0.45

MAXIMUM NET ALLOWABLE BEARING PRESSURE = 30 TONS PER SQUARE FOOT

PROJECT NO. 9 C-5219-01

GENERAL NOTES & QUANTITIES

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

J:\2023Proj\235078\CADD\235078 General Notes & Quantities.dwg 9/10/2024 - 7:46am lmartin

Ref. P.O.T. @ ℄ Sta. 50+00		Ref. P.O.T. @ ℄ Sta. 53+69.84		Ref. P.I. @ ℄ Sta. 57+39.06 ∠ Lt. 68°40'39"		Ref. P.I. @ ℄ Sta. 59+14.64 ∠ 1°19'31"		Ref. P.I. @ ℄ Sta. 62+74.62	
Set ⅝" Rebar @ P.O.T.		Set ⅝" Rebar @ P.O.T.		Set ⅝" Rebar @ P.I.		Set ⅝" Rebar @ P.I.		Set ⅝" Rebar @ P.I.	
1. To ℄ E–W Grav. Rd.		1. In ℄ E–W Grav. Rd.		1. In ℄ Rd. to W.		1. In ℄ E–W Grav. Rd.		1. In ℄ Grav. Rd.	
2. Top ℄ 36" "T" Post	12.0' SW	2. To W. EWS Br.	149.0' SE	2. Spk. & Wshr. Top E. End Gd. Fc.	6.40' SE	2. Spk. & Wshr. S. Fc. Tree	22.10' SW	2. To NW Cor. Street N. of Project	15.7' WSW
3. Top ℄ R.R. on End	63.05' NNW	3. Spk. & Wshr. in W. Fc. Tree	55.72' NE	3. To SE Cor. Br.	79.2' WNW	3. ℄ Base Wood Post	62.4' SSE	3. To NE Cor. Street N. of Project	16.6' SSW
4. To E. Rail R.R. Track	114.0' NW	4. Spk. & Wshr. in W. Fc. Tree	42.80' ENE	4. To NE Cor. Br.	79.2' NW	4. ℄ Base Wood Post	89.2' NNE	4. Spk. & Wshr. S. Fc. Tree	28.6' W

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C–5219–01	2024	11	56

Sec. 36, T 20 S, R 5 E

Sec. 1, T 21 S, R 5 E

Webe Family Farms, LLC

Jerry L. Siebert Rev. Trust
Millcine K. Siebert Rev. Trust

River Watch Ranch, LLC

Cottonwood River

Sec. Line

See cross sections for Channel Improvement, Sheets 49–50

Survey Baseline= Project Centerline

Office Relocated ℄

Const. Limits

130th Rd.

N49°14'14"W

Ex. R/W

R/W

R/W= 35' ℄

R/W= 180' ℄

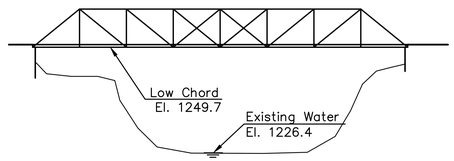
Sta. 49+50; BEGIN KDOT Proj. No. 9 C–5219–01

Sta. 55+95 O.R.; Const. Br. No. 000090875205401 60'–80'–60' Prestressed Beam Spans 26'–0" Rdwy., 0° Skew Erection Category A

Sta. 61+00; END KDOT Proj. No. 9 C–5219–01

Water Well

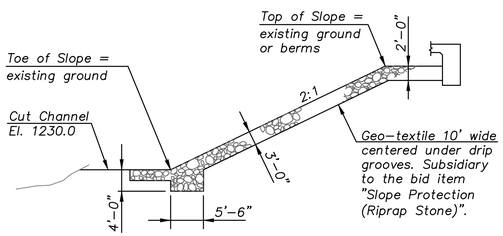
24" CMP



(Not to scale)

SKETCH OF EXISTING STRUCTURE

142' Steel truss on rock and concrete vertical abutments.
17.4' roadway, concrete deck.
Existing Waterway= 3,083 ft²
Bridge No. 000090875305401



TYPICAL SECTION CHANNEL IMPROVEMENT

Note: The Contractor shall Construct Slope Protection (Riprap Stone)(1/4 ton) on the berm and channel slopes as shown.
Abutment No. 1 = 1,600 Cu. Yds.
Abutment No. 2 = 640 Cu. Yds.
Total = 2,240 Cu. Yds.

SCALE IN FEET
50 0 50 100

PLAN: Lat. & Long.
PROFILE: Horiz. same as above Vert.

Scale: 1"=50'
Contour Interval = 2'

Note: The Contractor shall leave the existing structure in place (Br. No. 000090875305401)(142' Steel Truss on Rock Conc. Vertical Abutments, with a concrete deck, 17.4' Rdwy.) Excavate the channel improvements in the vicinity of the new structure, prior to its construction.

B.M. #1– Top 36" "T" Post, 12.0' Rt.	B.M. #2– " " Cut Top ℄ NW Br. Rtwl., 10.0' Lt	B.M. #3–¼" Square steel Rod in Tree, 19.5' Rt.	B.M. #4–Top 36" "T" Post, 1' E., 20.6' Lt.
℄ Sta. 50+00 El. 1247.96	℄ Sta. 55+16 El. 1252.67	℄ Sta. 57+48 El. 1254.91	℄ Sta. 61+71 El. 1251.10

PROJECT NO. 9 C–5219–01

CONTOUR MAP

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED		SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

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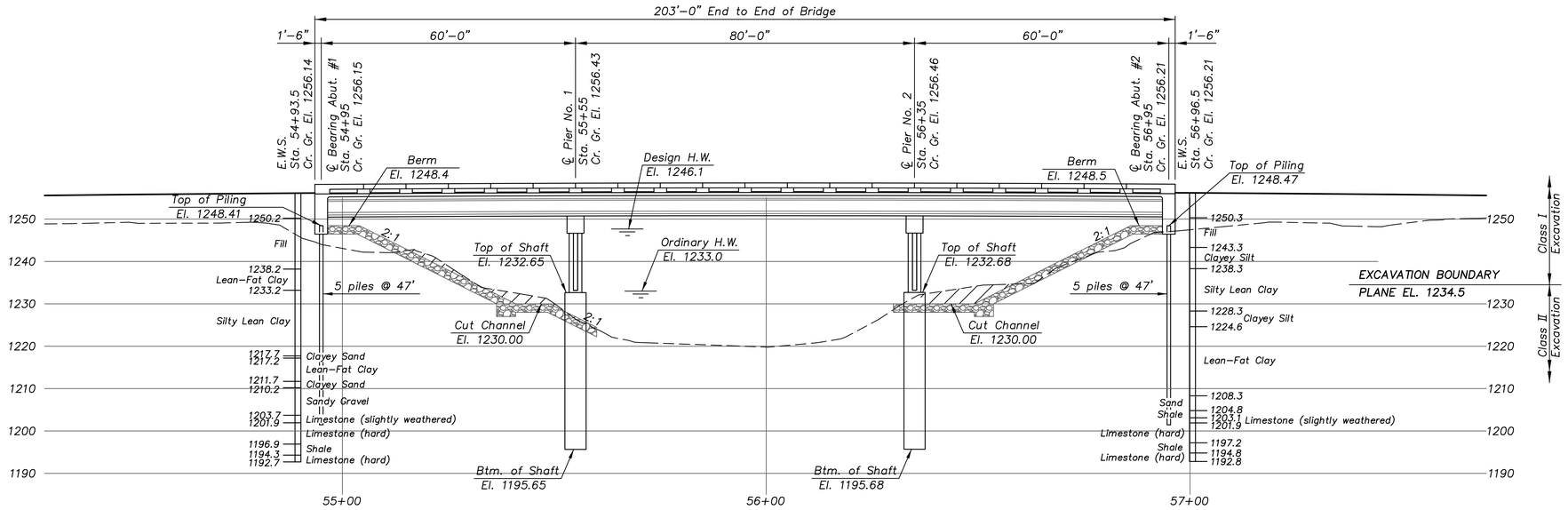
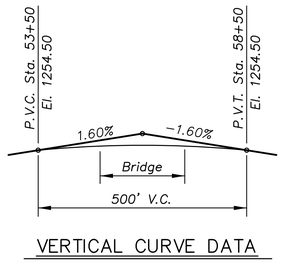
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	12	56

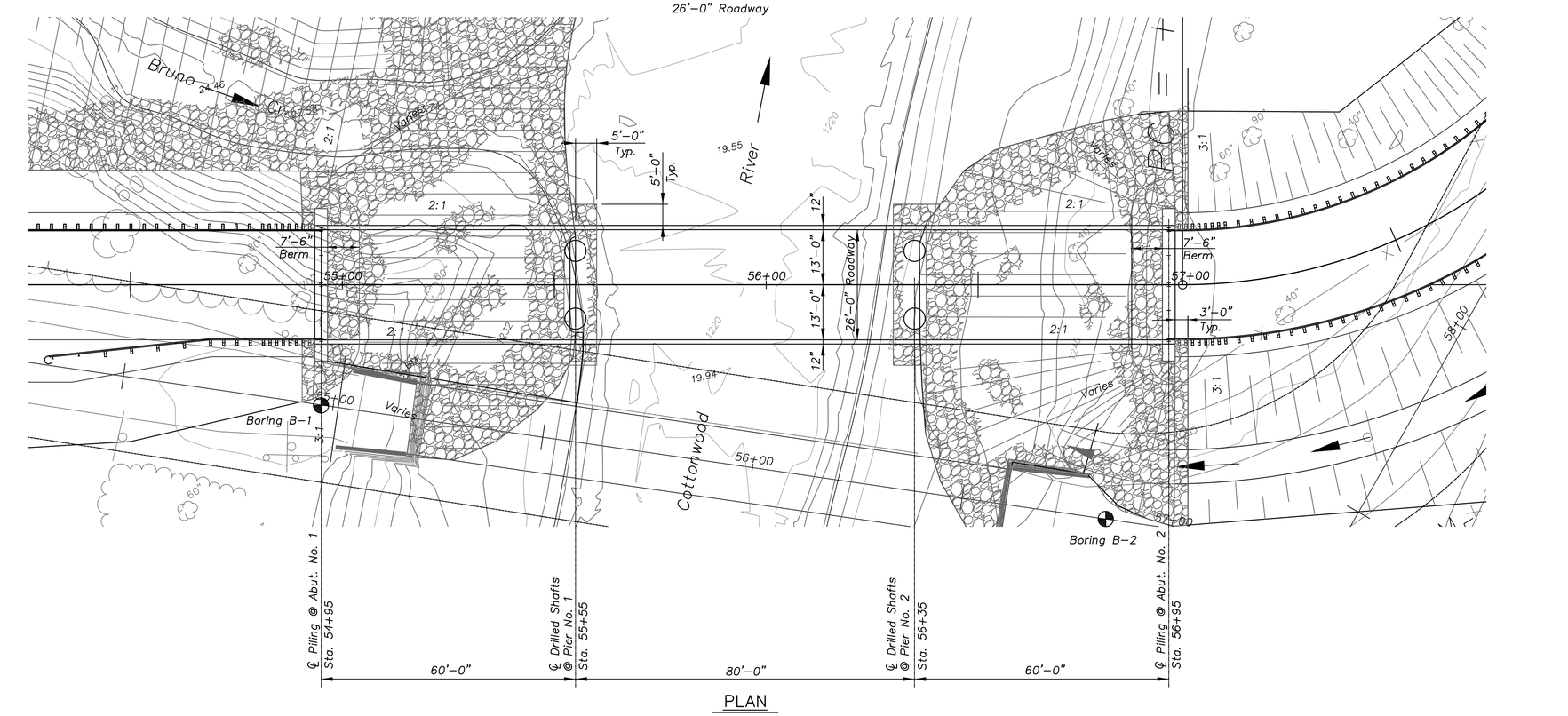


ELEVATION

60'-80'-60' Prestressed Beam Spans (K4+3)
Pile Bent Abutments, Column Bent Piers on Drilled Shafts
26'-0" Roadway



VERTICAL CURVE DATA



PLAN

Scale: 1"=15'
Contour Interval = 1'

DRAINAGE DATA

Drainage Area	773.6	Sq. Mi.
Design Frequency	10	Yr.
Design Discharge (Q10)	22,900	cfs
Design High Water Elevation	1246.1	Ft.
Change in Design Backwater	0.3	Ft.
Design Backwater Elevation	1246.1	Ft.
Velocity at Q10	8.0	fps
Overtopping Elev. (Sta. 49+50)	1249.2	Ft.
Overtopping Discharge	32,160	cfs
Overtopping Frequency	21.0	Yr.
Discharge at Q100	51,800	cfs
Change in Backwater at Q100	0.7	Ft.
Backwater Elevation at Q100	1256.2	Ft.
Historic Highwater Elevation (1998)	1261.0	Ft.
Ordinary Highwater Elevation	1233.0	Ft.
Total Waterway Provided	3,227	Sq. Ft.
Design Waterway Provided	3,156	Sq. Ft.
Estimated Ordinary Highwater Discharge	5,000	cfs

PROJECT NO. 9 C-5219-01

CONSTRUCTION LAYOUT

BRIDGE OVER COTTONWOOD RIVER

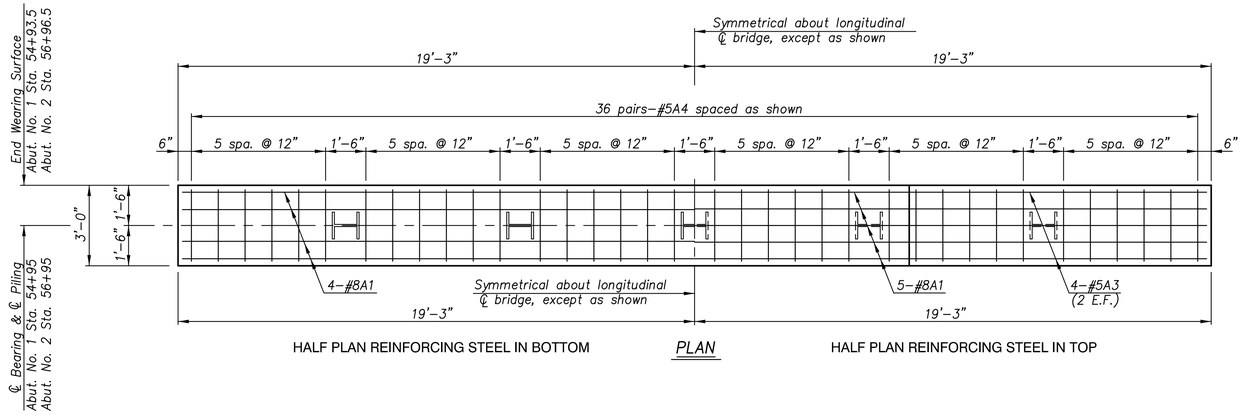
STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED	SCALE
DETAILED JPF	DATE
QUANTITIES	SHEET OF

J:\2023Proj\235078\CADD\235078 - Construction Layout.dwg 6/02/2024 - 11:26am hpham1

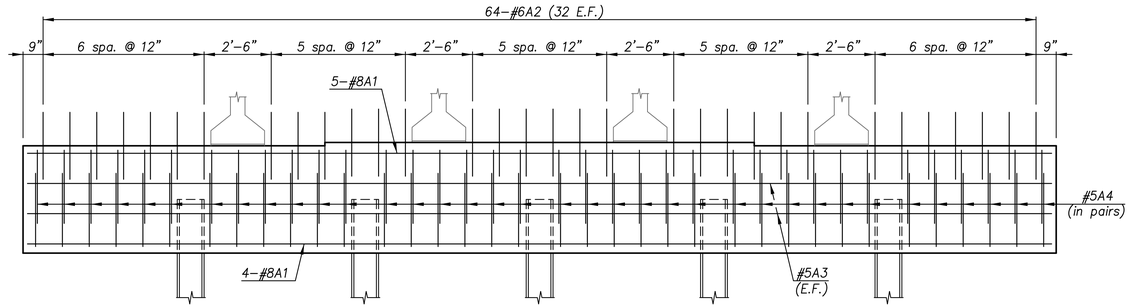
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	13	56



HALF PLAN REINFORCING STEEL IN BOTTOM

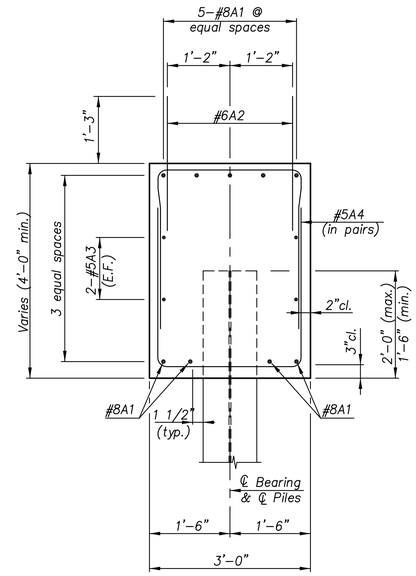
PLAN

HALF PLAN REINFORCING STEEL IN TOP



ELEVATION REINFORCING STEEL

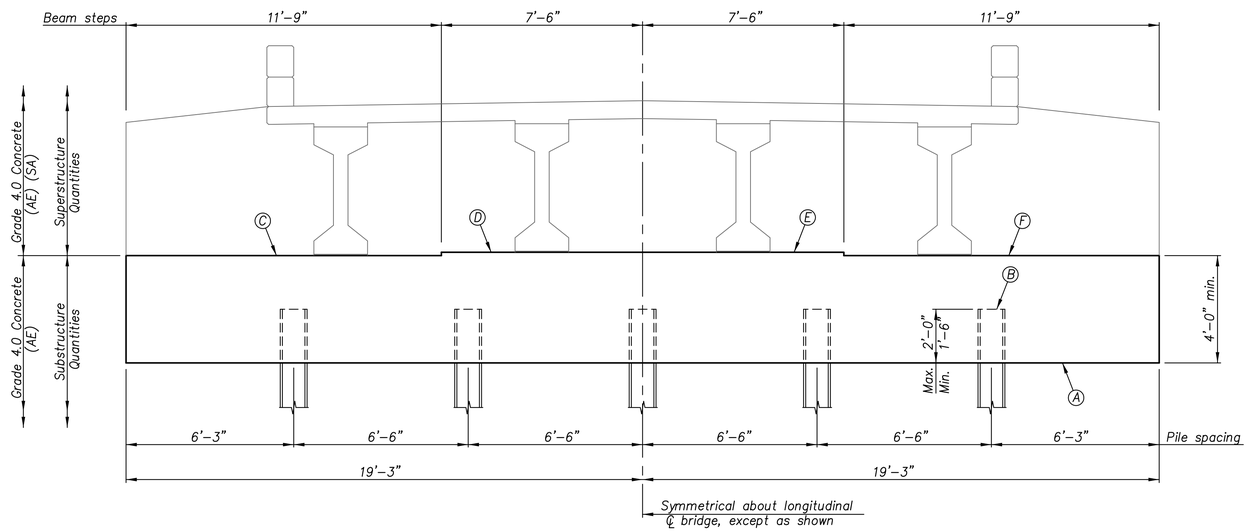
Note: E.F. Indicates each face
N.F. Indicates near face
F.F. Indicates far face



TYPICAL SECTION

DESIGN PILE LOAD
49.2 Tons per pile
Service Load I

68.1 Tons per pile
Strength Load I



ELEVATION
(Looking ahead station)

Note: Top of piling elevations shown are based on max. pile embedment.

TABLE OF ELEVATIONS		
Location	Elevation	
	Abut. No. 1	Abut. No. 2
A	1246.41	1246.47
B	1248.41	1248.47
C	1250.41	1250.47
D	1250.53	1250.59
E	1250.53	1250.59
F	1250.41	1250.47

PROJECT NO. 9 C-5219-01

ABUTMENT BEAM DETAILS

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

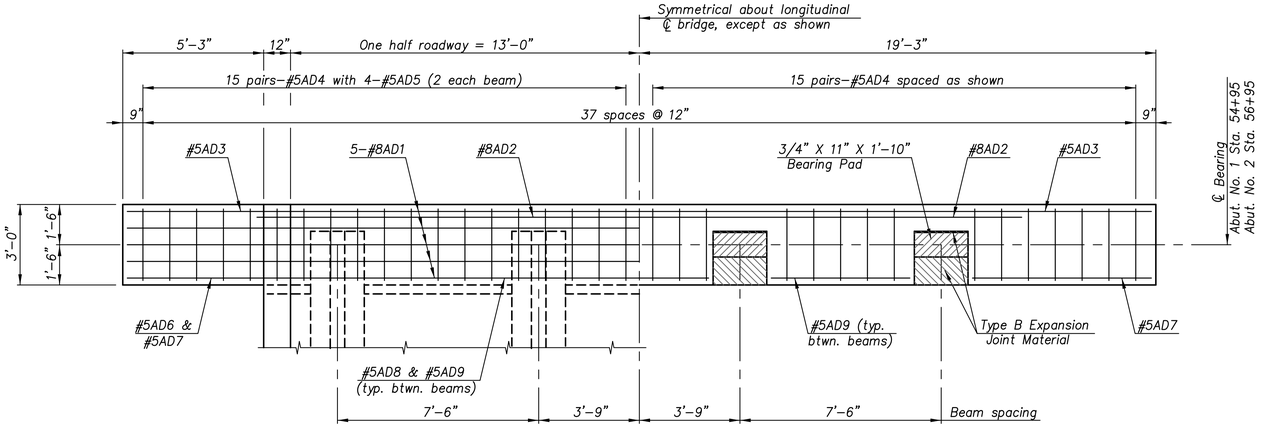
CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

C:\Users\hpham.CFSE.000\Desktop\my 235078 - Abutment Details.dwg 6/03/2024 - 10:30am hpham

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

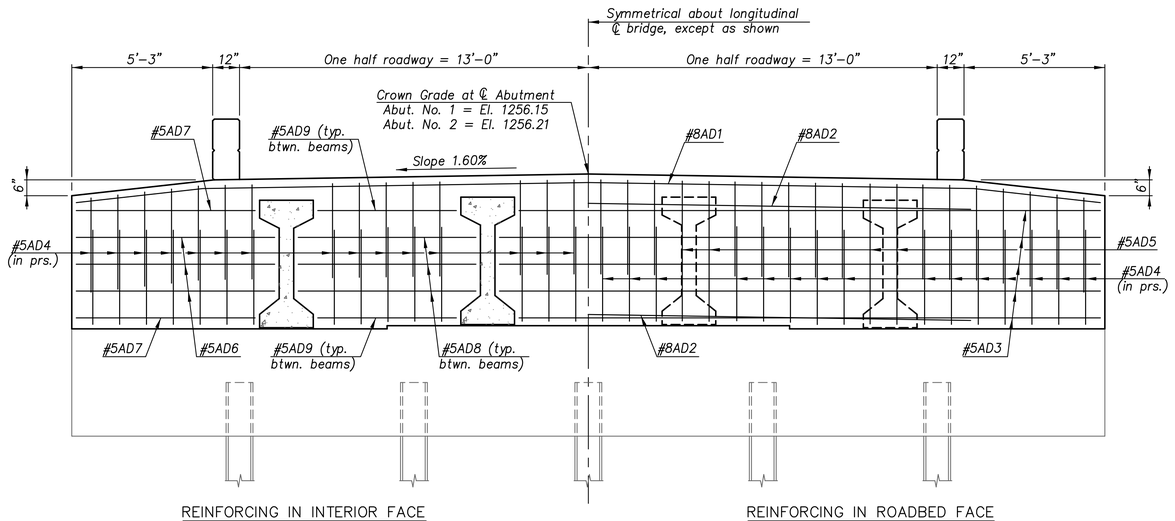
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	14	56



HALF PLAN REINFORCING STEEL IN TOP

HALF PLAN REINFORCING STEEL IN BOTTOM

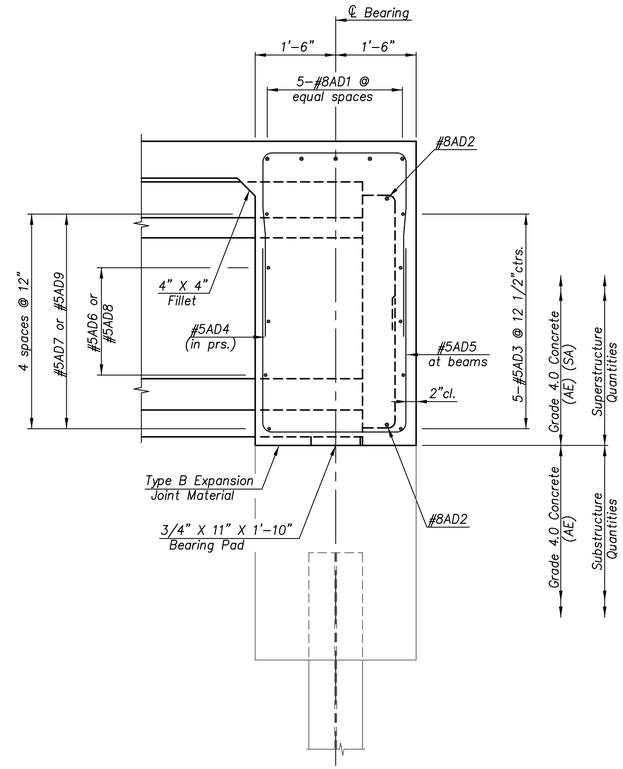
PLAN



REINFORCING IN INTERIOR FACE

REINFORCING IN ROADBED FACE

ELEVATION



TYPICAL SECTION

PROJECT NO. 9 C-5219-01

ABUTMENT DIAPHRAGM DETAILS

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

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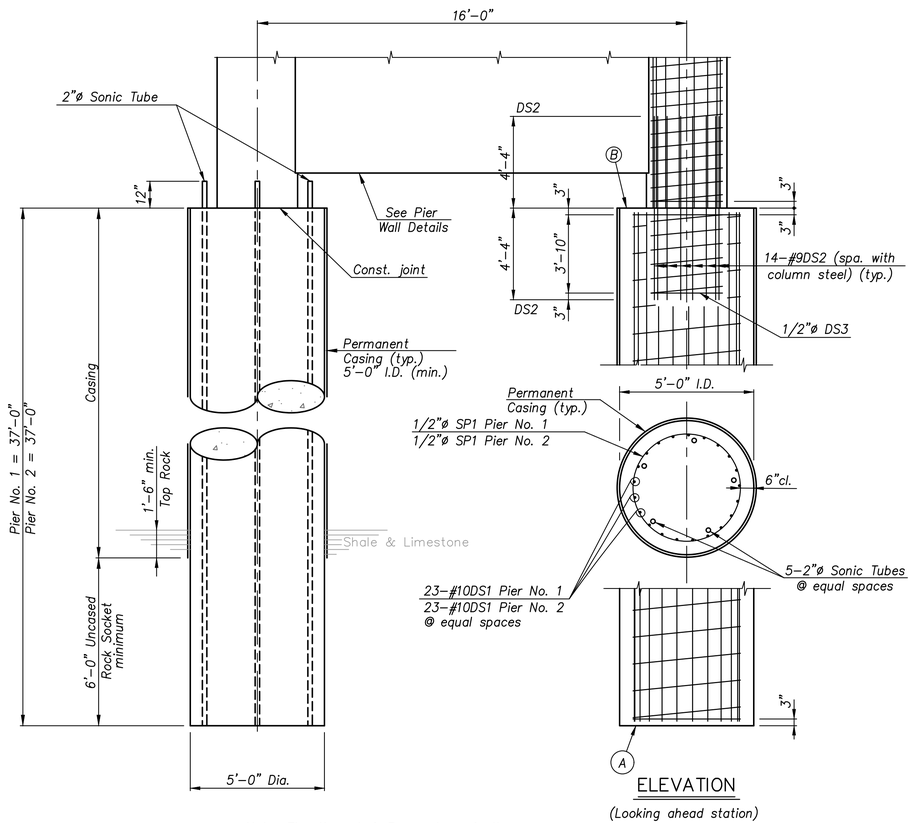
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	15	56



ELEVATION

(Looking ahead station)

Note: Elevations A & B are shown in the "Table of Elevations and Dimensions" on the Pier Details.

Construct the drilled shafts using the cased method. A permanent casing is required. All excavation, concrete, reinforcing steel, pipes for sonic testing, casings, labor and incidentals necessary to complete the shaft as shown on the details and as directed by KDOT Specifications shall be included in the bid item "Drilled Shafts (60") (Cased)". Use Grade 4.0 Concrete in the drilled shaft. In no case shall the bottom of the drilled shaft be placed higher than the elevation shown unless otherwise directed by the Engineer.

FOUNDATION ROCK INVESTIGATION: Drill at least one 1 ½ – 2 inch diameter hole at each drilled shaft location to penetrate the bedrock a minimum of 4 feet below the base of the shaft. If a cavity or otherwise incompetent zone is detected in the bedrock below the shaft, revise the shaft to ensure a competent shaft. Drill the test holes in the presence of the Engineer. The work required for investigation shall be subsidiary to the excavation. Payment for lowering or repairing the shafts will be in accordance with KDOT Specifications.

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

If the permanent casing is to be corrugated metal pipe (CMP) then it will be galvanized.

The construction and investigation of the drilled shafts shall as a minimum include:

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

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

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

Flocculate the finished shaft prior to placing the reinforcement. Use a commercially available flocculent agent per the manufacturer's recommendations.

Video inspection is required prior to concrete placement. The Contractor shall review video of the bottom and sides of the drilled shafts in the presence of the Engineer prior to concrete placement.

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

The quality of the finished shaft is the Contractor's responsibility. If additional testing or any repairs are required, they will be at no cost to the County.

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

DRILLED SHAFT QUANTITIES

(For information only)

	Reinforcing Steel	Concrete
Pier No. 1	8,950 Lbs.	53.8 Cu. Yds.
Pier No. 2	8,950 Lbs.	53.8 Cu. Yds.

PROJECT NO. 9 C-5219-01

DRILLED SHAFT DETAILS

BRIDGE OVER COTTONWOOD RIVER

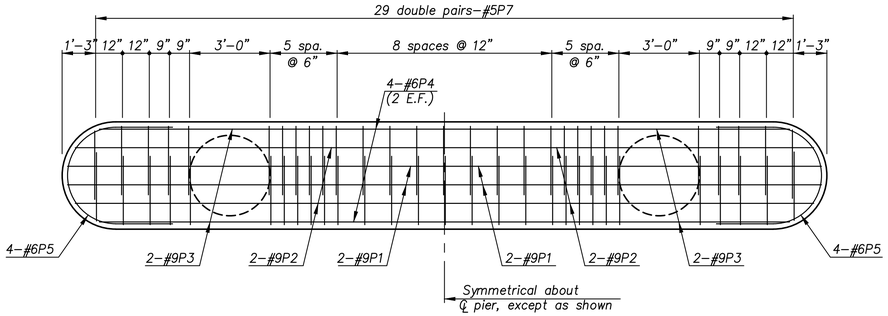
STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

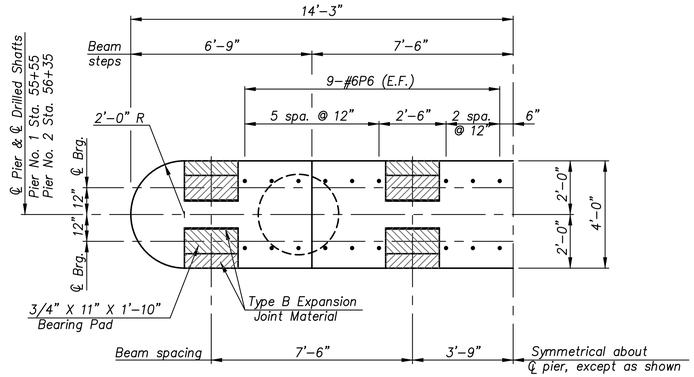
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	16	56

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

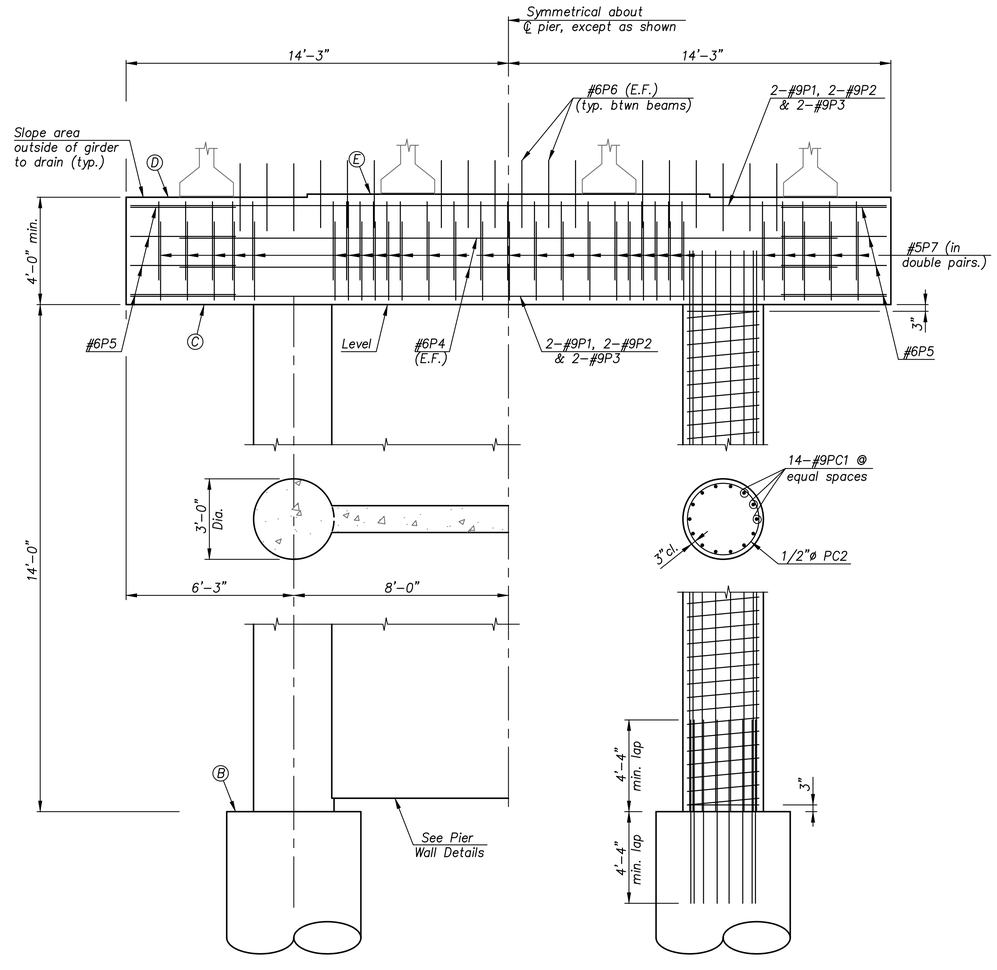


HALF PLAN REINFORCING STEEL IN BOTTOM HALF PLAN REINFORCING STEEL IN TOP

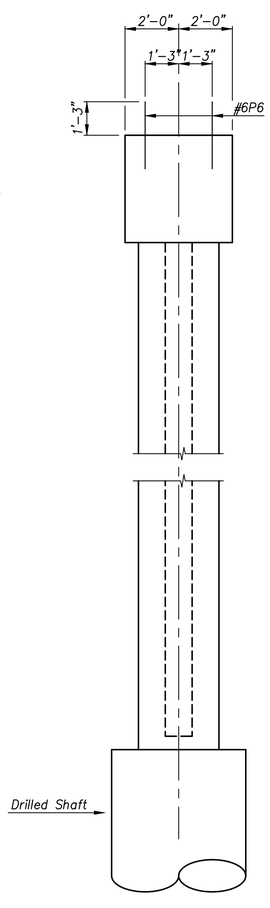
PLAN



HALF PLAN CAP LAYOUT



ELEVATION

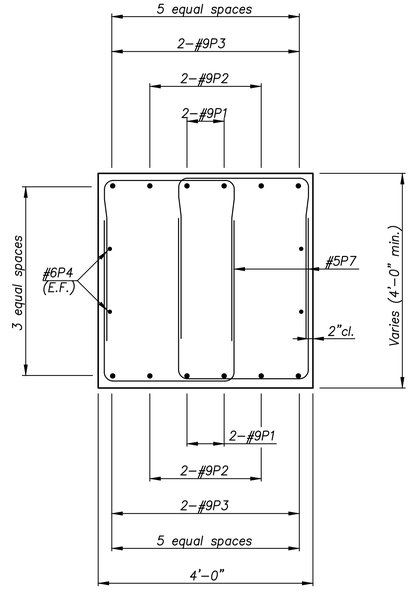


END ELEVATION

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

TABLE OF ELEVATIONS

Location	Elevation Pier No. 1	Elevation Pier No. 2
A	1195.65	1195.68
B	1232.65	1232.68
C	1246.65	1246.68
D	1250.65	1250.68
E	1250.77	1250.80



TYPICAL SECTION

PROJECT NO. 9 C-5219-01

PIER DETAILS

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

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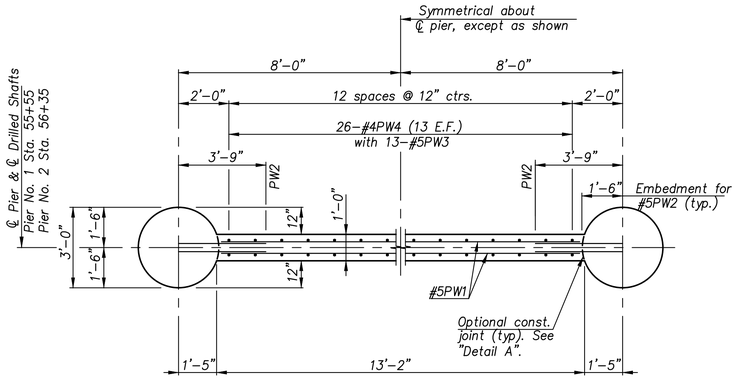
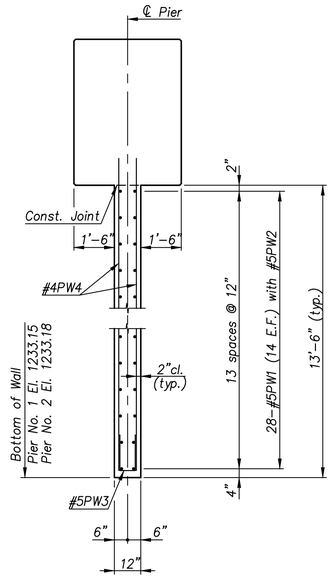
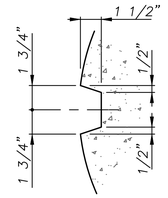
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	17	56



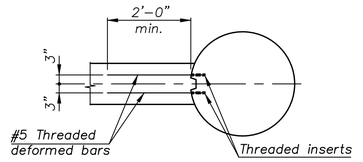
PLAN OF PIER WALL



SECTION THRU WALL



DETAIL OF KEY



DETAIL A

NOTE: EITHER CAST THE COLUMNS AND PIER WEB MONOLITHICALLY OR CAST THE COLUMNS SEPARATELY USING A KEYED JOINT AS SHOWN IN DETAIL A. IF COLUMNS ARE CAST SEPARATELY, USE THREADED DEFORMED BARS IN LIEU OF THE #5PW2 DOWEL BARS. BAR DIAMETER AND EMBEDMENT LENGTH INTO THE WEB WALL SHALL BE AS DESIGNATED. THE INSERTS SHALL DEVELOP THE FULL YIELD STRENGTH OF THE BARS. NO CHANGE IN COMPENSATION IS ALLOWED WITH THE USE OF INSERTS. COIL INSERTS ARE NOT ALLOWED.

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PROJECT NO. 9 C-5219-01

PIER WALL DETAILS

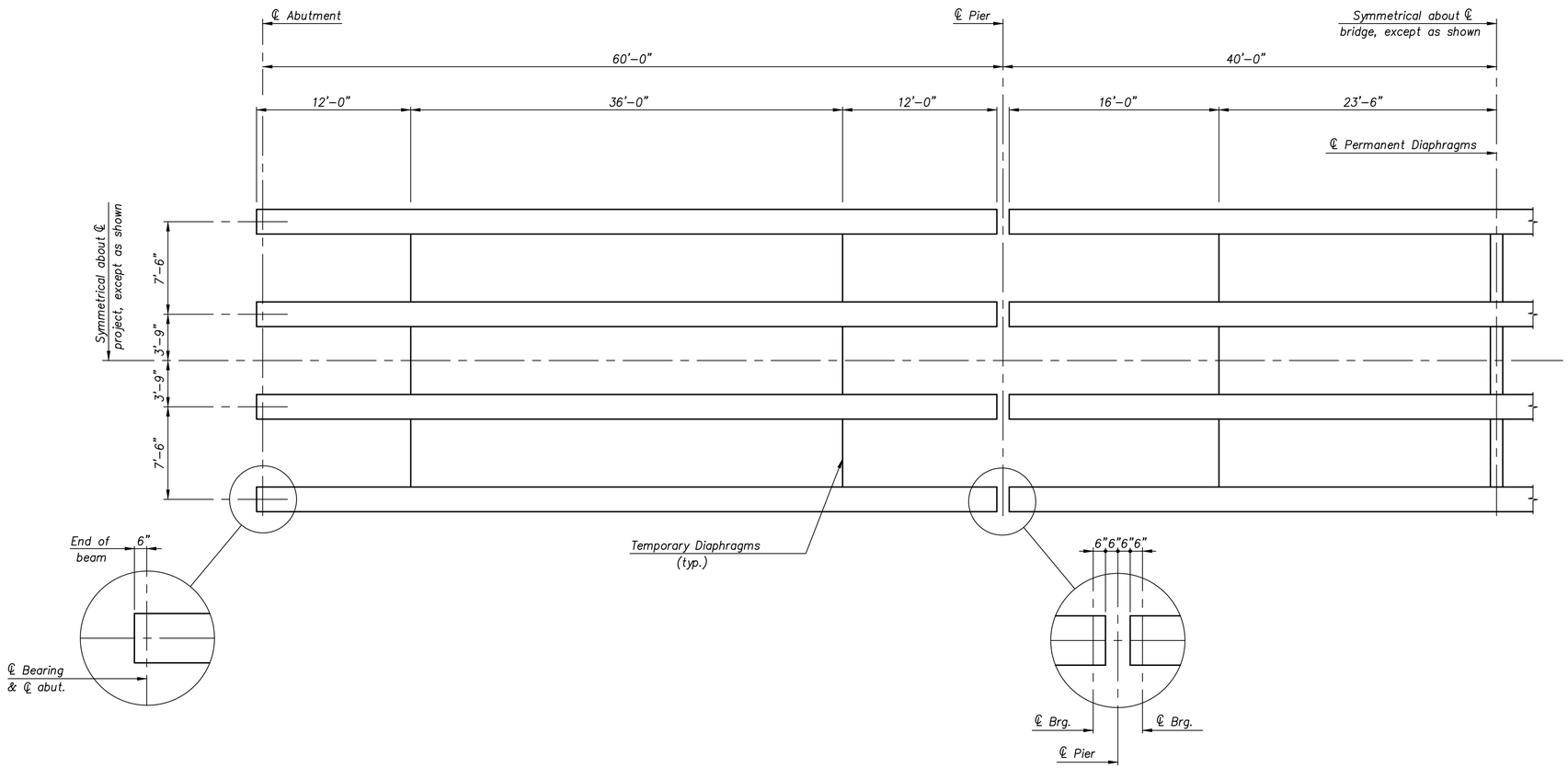
BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

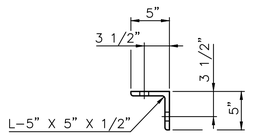
CFS ENGINEERS

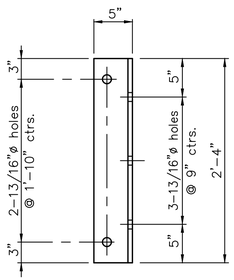
DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	18	56

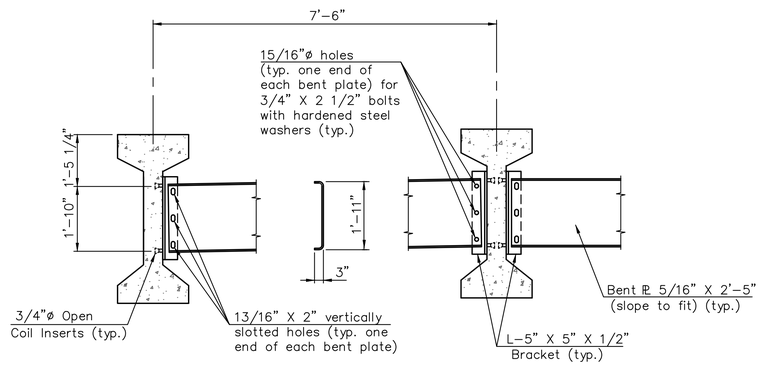


HALF FRAMING PLAN





BRACKET DETAIL



PART ELEVATION TEMPORARY DIAPHRAGMS

NOTES

Use galvanized ASTM A709 Grade 36 steel for all angles and bent plates for temporary diaphragms. All bolts, nuts and washers for fasteners shall conform to the heavy hex structural requirements of ASTM A325, Type I. Use hardened steel washers over any oversized holes. Use 5/16" plate washers over any slotted holes along with hardened washers under the turned elements. Use the turn-of-the-nut tightening method. DTI's are not required. Install the temporary diaphragms, as shown in the details, prior to placing any superstructure concrete. Leave the temporary diaphragms in place until the concrete diaphragms and deck have cured. Remove the angles from the beams and fill the holes in the prestressed beams with an approved epoxy grout. The bent plate diaphragms, angles, nuts and washers shall remain the property of the Contractor. Submit shop drawings of the temporary diaphragms according to subsection 105.10 of the Standard Specifications to the Engineer for review and distribution. The material, equipment and labor necessary for the installation of the temporary diaphragms, including filling the bolt holes, shall not be paid for directly, but shall be subsidiary to the bid item "Prestressed Concrete Beams".

PROJECT NO. 9 C-5219-01

FRAMING PLAN

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

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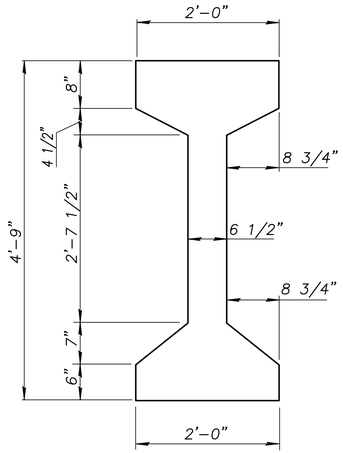
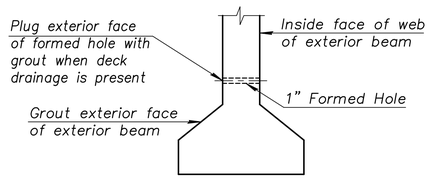
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	19	56



TYPE K4+3

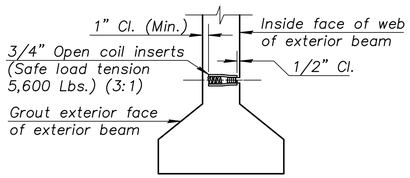
Area	716	In.²
IcG	292,462	In.⁴
Y Bot	28.89	In.
Vol./Surf. Area	3.97	In.
Wt./Ft.	745	Lbs.

TYPICAL BEAM SECTION



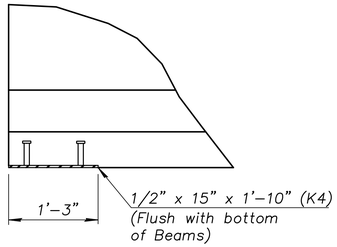
DETAIL OF FORMED HOLES

(See Beam Detail and Framing Plan sheets for locations)

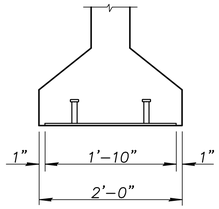


DETAIL OF COIL INSERTS

(At permanent diaphragms. See Beam Detail and Framing Plan sheets for locations)



ELEVATION



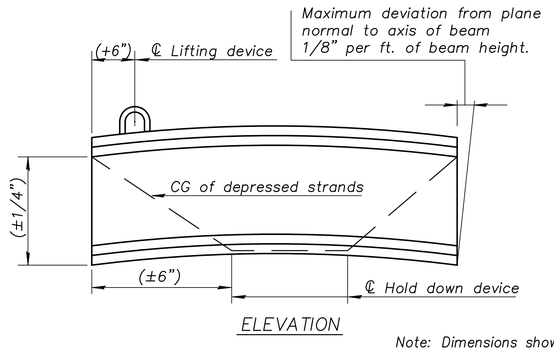
END VIEW
(K4 Beam)

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

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

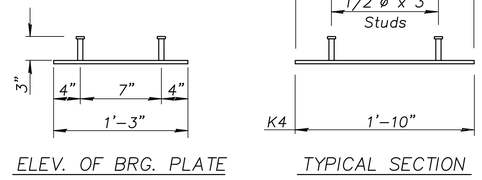
The exposed surface of the bearing plates shall be galvanized.

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



ELEVATION

Note: Dimensions shown in parentheses are tolerances only.



ELEV. OF BRG. PLATE

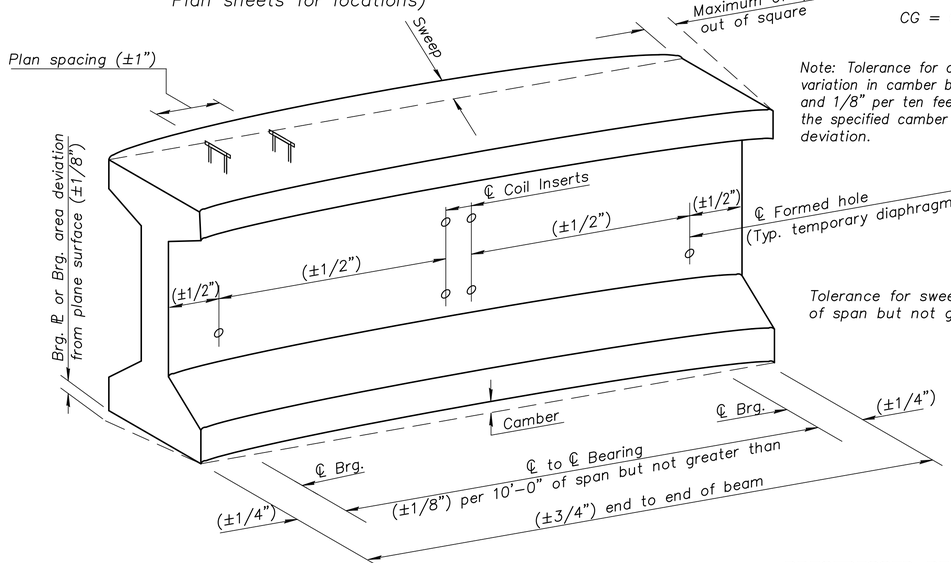
TYPICAL SECTION

BEARING PLATE DETAILS

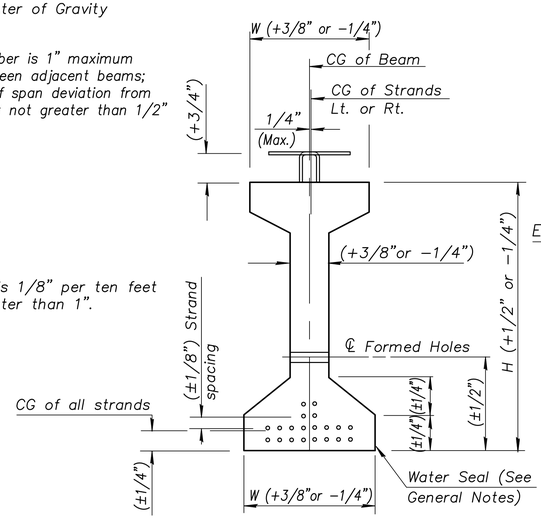
CG = Center of Gravity

Note: Tolerance for camber is 1" maximum variation in camber between adjacent beams; and 1/8" per ten feet of span deviation from the specified camber but not greater than 1/2" deviation.

Tolerance for sweep is 1/8" per ten feet of span but not greater than 1".

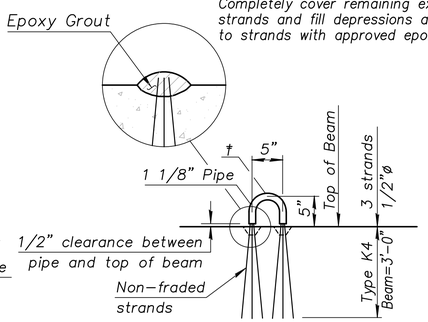


PRESTRESSED BEAM FABRICATION TOLERANCES



TYPICAL SECTION

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



LIFTING DEVICE

GENERAL NOTES

Fabricate the precast prestressed beams in accordance with the KDOT Specifications. Submit shop drawings in accordance with the KDOT Specifications except nine sets are required.

Use air entrained concrete. The KDOT Materials Section shall approve the mix design. Unless otherwise shown on the plans, f'c = 6,000 psi and f'c at release = 4,500 psi.

Use reinforcing steel conforming to the requirements of ASTM A615, Grade 60. All reinforcing shall be epoxy-coated.

Use 1/2" nominal diameter, uncoated, seven-wire, low relaxation prestressing tendons conforming to the requirements of ASTM A416, Grade 270.

Use bolts having an ultimate strength 50% in excess of the manufacturer's safe load. All items (except the tendons) cast-in or inserted in prestressed beams shall be epoxy coated or galvanized Show formed holes on shop drawings. All bolts, nuts and washers shall be subsidiary to the bid item, "Prestressed Concrete Beams".

Show on the shop drawings any hardware, holes or other appurtenances that are required to be incorporated into the girder to construct the girder or for any temporary works needed to construct the bridge (e.g. safety railing pockets).

After beams are in the final position, remove lifting devices. See "Lifting Device" detail below. Removal of the lifting devices, coating and grouting shall be subsidiary to the bid item: "Prestressed Concrete Beams".

Use elastomeric bearing pads conforming to the KDOT Specifications. Bearing pads and Type B expansion joint material shall be subsidiary to the bid item, "Prestressed Concrete Beams".

The beam lengths shown on the design plans are net lengths measured horizontally along the beam centerline. The beam manufacturer shall make necessary allowances for grade, and for shortening due to elastic shortening, creep and shrinkage.

The beams shall reasonably conform to the lines and dimensions shown on the design plans and be within the tolerances specified in the latest publication of AASHTO, "Tentative Standards for Prestressed Piles, Slab, I-Beams and Box Bridges and an Interim Manual for Inspection of Such Construction", except as modified by this sheet or the KDOT Specifications.

Bevel all exposed edges of beams except the tops and ends with a 3/4" triangular molding or round the edges to a 3/4" radius. Round the angle of intersection between the web and the flanges.

Apply an initial force of 1,000 to 3,000 pounds to each strand to take up any slack in the cables. Unless otherwise noted on the plans, apply a force of 31,000 pounds to each strand. Stress harped strands to a magnitude such that they are tensioned to 31,000 pounds after they are in position.

Strike off level and apply a wire brush or stiff broom finish to the tops of the beams. Apply the finish transverse to the length of the beam. (Note: When using precast panels for deck construction, the outside 5" on each side of the top flange shall be finished smooth with a steel trowel.) At approximately the time of initial set, brush the top of the beam transversely with a coarse wire brush to remove all laitance.

Fill trapped air holes and surface voids on the exterior face of the exterior beams with an approved concrete masonry coating. This work shall conform to KDOT Specifications. This work shall be subsidiary to the bid item, "Prestressed Concrete Beams".

Detention strands in a sequence which minimizes lateral eccentricity. Show the method and sequence of strand release on the shop drawings. Use extreme care when lifting, handling, storing and transporting beams. Use the lifting system shown or an alternate system approved by the Engineer. Keep the beam in an upright position at all times. Support the beam on bearing points positioned directly below the designated lifting points or designated bearing points.

Do not place the bridge slab before the beams are 28 days old. Pour diaphragms as detailed in the bridge plans.

Stencil with paint the following information on the webs approximately 5 feet from one end of the beam: date of concrete placement, date of strand release, and beam mark.

NO.	DATE	REVISIONS	BY	APP'D
5	2-21-12	Change Bearing Plate Thickness	JPJ	TLF
4	9-22-10	Prepare for WWF option	JPJ	TLF
3	7-22-08	Revision for Formed Holes Only	JPJ	KFH
2	2-28-07	Separated Beam Sections	JPJ	KFH
1	1-31-06	General Note Changes & Grouting	JPJ	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PRESTRESSED CONCRETE BEAM DETAILS

9 C-5219-01 CHASE COUNTY

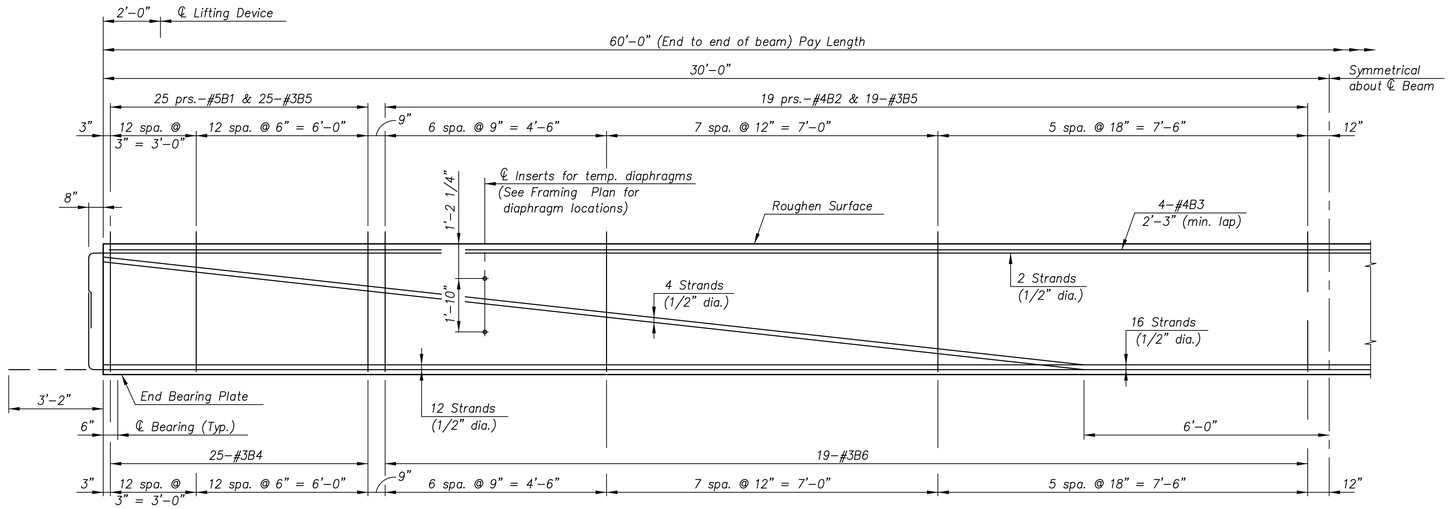
FHWA APPROVAL			10-11-10	APP'D	
DESIGNED	GEP	DETAILED	JPF	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN.CK.	TRACE CK.

J:\2023Proj\235078\CADD\235078 Standard Prestressed Concrete Beam Details.dwg 5/29/2024 - 7:37pm hphan1

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	20	56

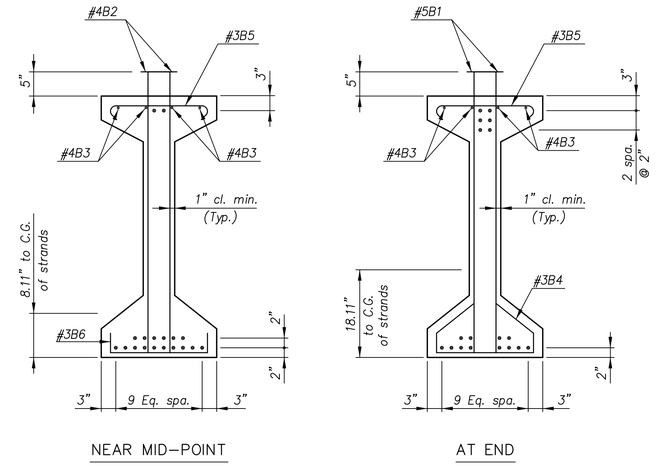
E.F. INDICATES EACH FACE.
N.F. INDICATES NEAR FACE.
F.F. INDICATES FAR FACE.

NOTE: DURING TRANSPORTATION ONLY, BEAMS MAY BE SUPPORTED ON BEARING POINTS A MAXIMUM OF 6'-0" FROM THE BEAM ENDS. THE FABRICATOR SHALL SHOW THE PROPOSED SUPPORT LOCATION ON THE SHOP DRAWINGS. SEE GENERAL NOTES ON "TYPICAL PRESTRESSED CONCRETE BEAMS" SHEET.



PART BEAM ELEVATION TYPE K4+3

NOTE: FORCE PER STRAND (VERTICAL UPLIFT) = 4.79 kips
TOTAL UPLIFT FOR 4 STRANDS = 19.14 kips



• Denotes strand location.

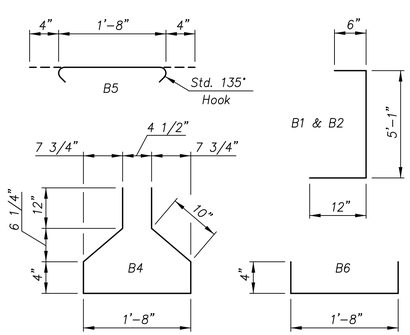
BEAM SECTIONS SHOWING REINFORCEMENT

BILL OF REINFORCING STEEL

1 Listed – 8 Required

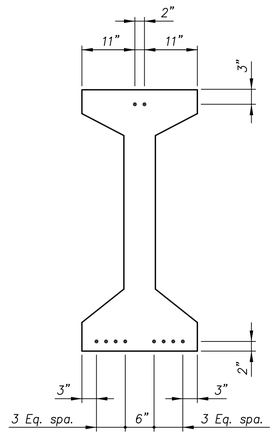
STRAIGHT BARS				BENT BARS			
MARK	SIZE	NO.	LENGTH	MARK	SIZE	NO.	LENGTH
B3	#4	8	31'-1"	B1	#5	100	6'-7"
				B2	#4	76	6'-7"
				B4	#3	50	6'-0"
				B5	#3	88	2'-4"
				B6	#3	38	2'-4"

Note: All dimensions are out to out of bars.



BILL OF MATERIAL

ITEM	UNIT	QUANTITY
60'-0" Prestressed Concrete Beams (K4+3)	Lin. Ft.	480.00
The following quantities are given for information only and shall not be paid for directly but shall be considered subsidiary to the bid item "Prestressed Concrete Beams".		
Beam Concrete (f'c = 6,000 psi), (per beam)	Cu. Yds.	11.1
Approximate weight of beam	Lbs.	44,750
1/2" nominal diameter Prestressed Strands (270 ksi low relaxation), (per beam)	Lin. Ft.	1,146
Reinforcing Steel Grade 60 (fy = 60,000 psi) (per beam)(epoxy coated)	Lbs.	1,411
Elastomeric Bearing Pads (3/4" x 11" x 1'-10")	Each	16
Bearing Plates (1/2" x 15" x 1'-10")	Each	16
Lifting Devices	Each	16
¾" Open Coil Inserts	Each	48
¾" dia. x 1'-6" Threaded Coil Rods	Each	48



STRAND EXTENSION DETAIL

EXTEND 10 STRANDS BEYOND THE ENDS OF THE BEAMS AS SHOWN. STRANDS NOT SHOWN SHALL BE CUT FLUSH WITH THE ENDS OF THE BEAMS.

PROJECT NO. 9 C-5219-01

60'-0" BEAM DETAILS (K4+3)(18 STRANDS)

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

CFS ENGINEERS

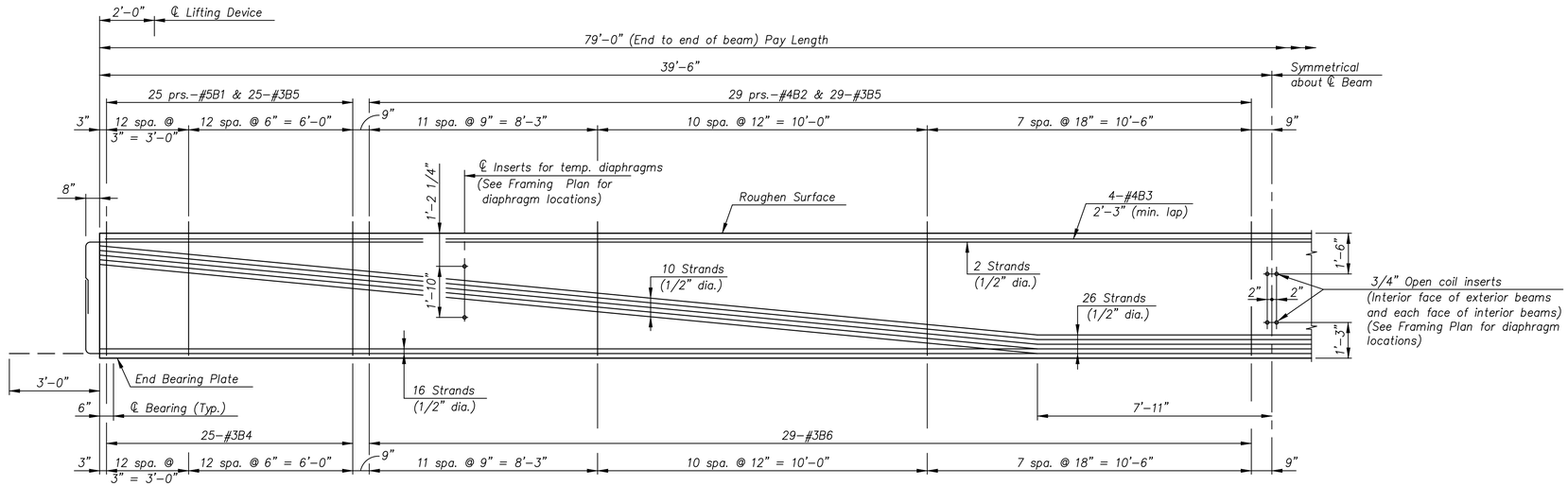
DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

J:\2023Proj\235078\CADD\235078 - Beam.dwg 6/03/2024 - 12:07pm hpham1

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	21	56

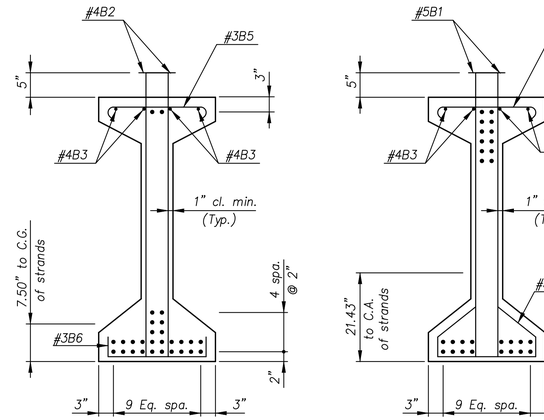
E.G.. INDICATES EACH FACE.
N.F. INDICATES NEAR FACE.
F.F. INDICATES FAR FACE.

NOTE: DURING TRANSPORTATION ONLY, BEAMS MAY BE SUPPORTED ON BEARING POINTS A MAXIMUM OF 7'-11" FROM THE BEAM ENDS. THE FABRICATOR SHALL SHOW THE PROPOSED SUPPORT LOCATION ON THE SHOP DRAWINGS. SEE GENERAL NOTES ON "TYPICAL PRESTRESSED CONCRETE BEAMS" SHEET.



PART BEAM ELEVATION TYPE K4+3

NOTE: FORCE PER STRAND (VERTICAL UPLIFT) = 3.17 kips
TOTAL UPLIFT FOR 10 STRANDS = 31.73 kips



NEAR MID-POINT AT END

• Denotes strand location.

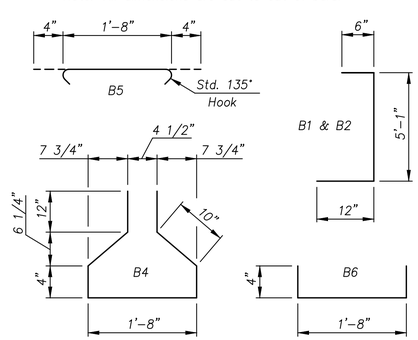
BEAM SECTIONS SHOWING REINFORCEMENT

BILL OF REINFORCING STEEL

1 Listed – 4 Required

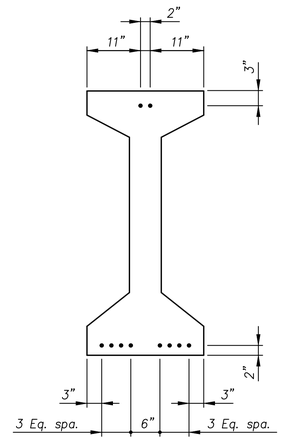
STRAIGHT BARS				BENT BARS			
MARK	SIZE	NO.	LENGTH	MARK	SIZE	NO.	LENGTH
B3	#4	8	40'-7"	B1	#5	100	6'-7"
				B2	#4	116	6'-7"
				B4	#3	50	6'-0"
				B5	#3	108	2'-4"
				B6	#3	58	2'-4"

Note: All dimensions are out to out of bars.



BILL OF MATERIAL

ITEM	UNIT	QUANTITY
79'-0" Prestressed Concrete Beams (K4+3)	Lin. Ft.	316.00
The following quantities are given for information only and shall not be paid for directly but shall be considered subsidiary to the bid item "Prestressed Concrete Beams".		
Beam Concrete (f'c = 6,000 psi), (per beam)	Cu. Yds.	14.6
Approximate weight of beam	Lbs.	58,921
1/2" nominal diameter Prestressed Strands (270 ksi low relaxation), (per beam)	Lin. Ft.	2,280
Reinforcing Steel Grade 60 (fy = 60,000 psi) (per beam)(epoxy coated)	Lbs.	1,672
Elastomeric Bearing Pads (3/4" x 11" x 1'-10")	Each	8
Bearing Plates (1/2" x 15" x 1'-10")	Each	8
3/4" Open Coil Inserts	Each	24
3/4" dia. x 1'-6" Threaded Coil Rods	Each	24
Lifting Devices	Each	8



STRAND EXTENSION DETAIL

EXTEND 10 STRANDS BEYOND THE ENDS OF THE BEAMS AS SHOWN. STRANDS NOT SHOWN SHALL BE CUT FLUSH WITH THE ENDS OF THE BEAMS.

PROJECT NO. 9 C-5219-01

79'-0" BEAM DETAILS (K4+3)(28 STRANDS)

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

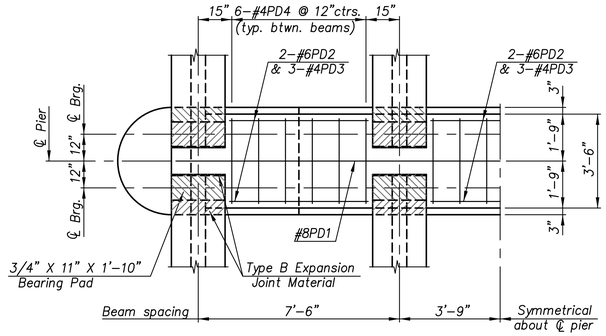
CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

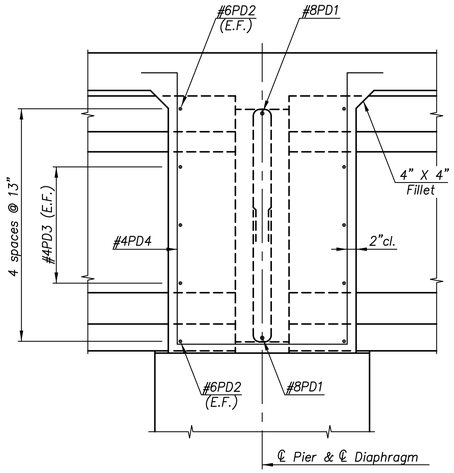
J:\2023Pro\235078\CADD\235078 - Beam.dwg 6/25/2024 - 2:12pm lmartin

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	22	56

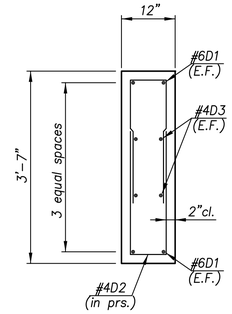
Note: E.F. Indicates each face
N.F. Indicates near face
F.F. Indicates far face



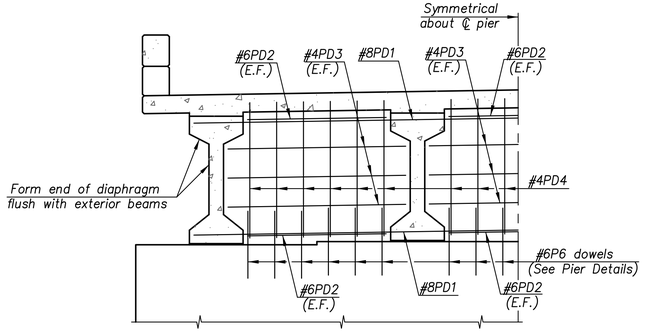
HALF PLAN PIER DIAPHRAGM



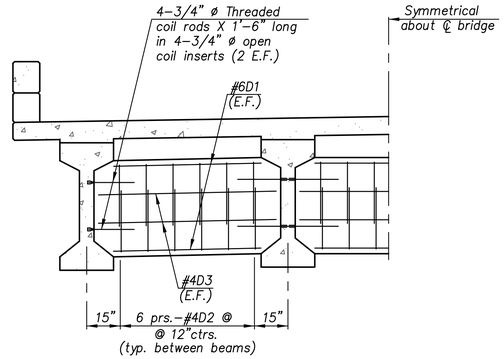
TYPICAL SECTION
PIER DIAPHAGM



TYPICAL SECTION
INTERMEDIATE PERMANENT DIAPHRAGM



HALF ELEVATION PIER DIAPHRAGM



HALF ELEVATION PERMANENT DIAPHRAGM

Note: Cure intermediate diaphragms a minimum of seven days before placing slab.

PROJECT NO. 9 C-5219-01

DIAPHRAGM DETAILS

BRIDGE OVER COTTONWOOD RIVER

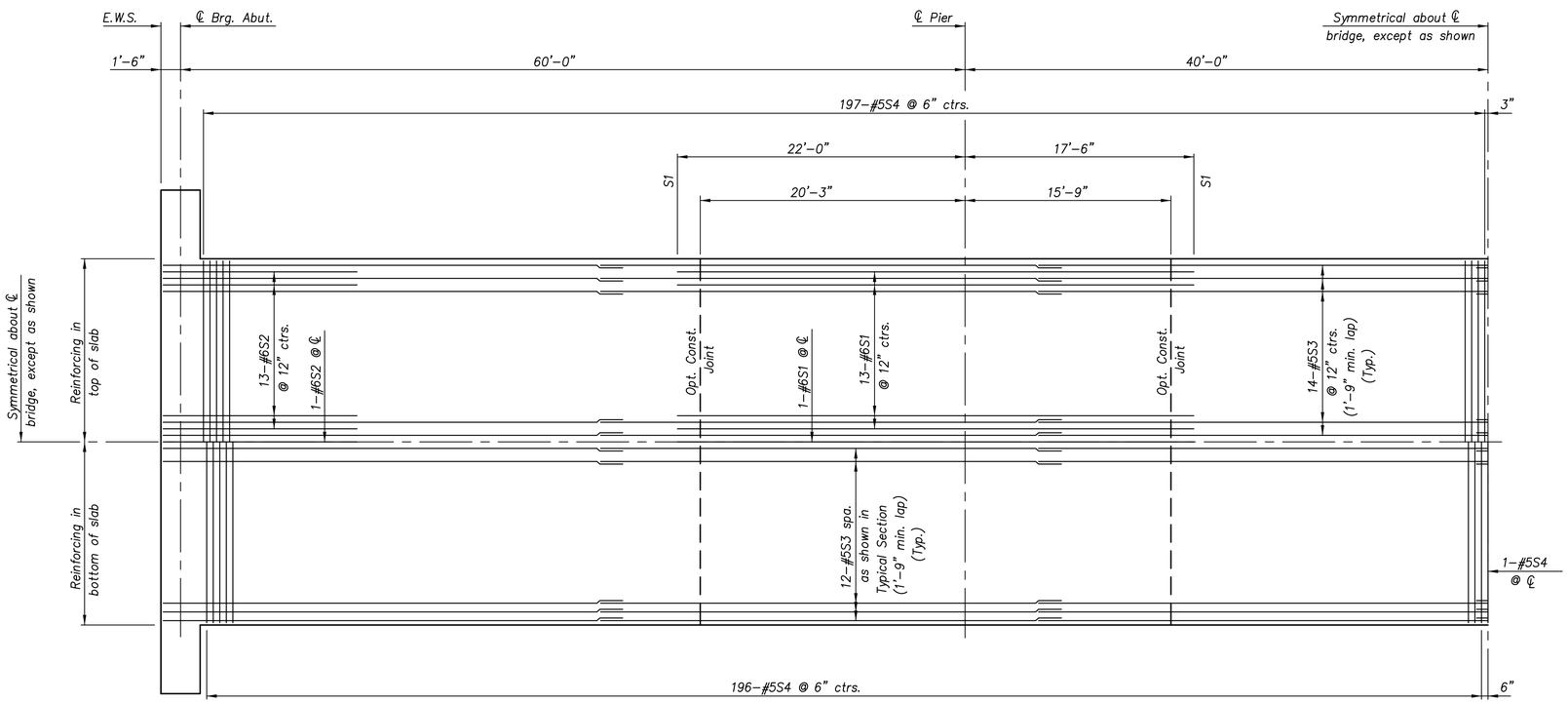
STA. 55+95 CHASE COUNTY

CFS ENGINEERS

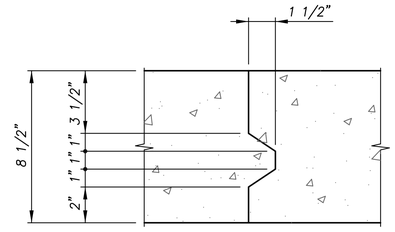
DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

J:\2023Proj\235078\CADD\235078 - Diaphragm.dwg 6/03/2024 - 12:15pm hpham1

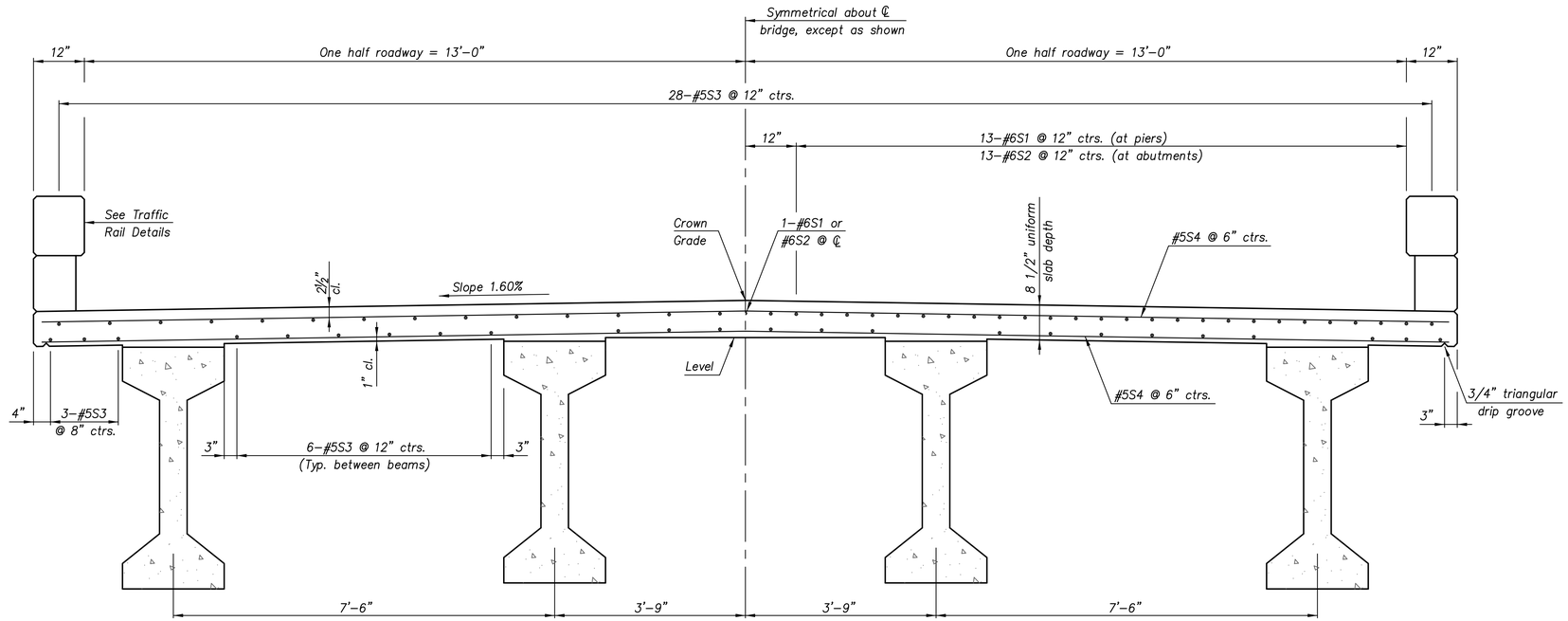
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	23	56



HALF PLAN



OPTIONAL CONSTRUCTION JOINT



TYPICAL SECTION

PROJECT NO. 9 C-5219-01

SLAB DETAILS

BRIDGE OVER COTTONWOOD RIVER

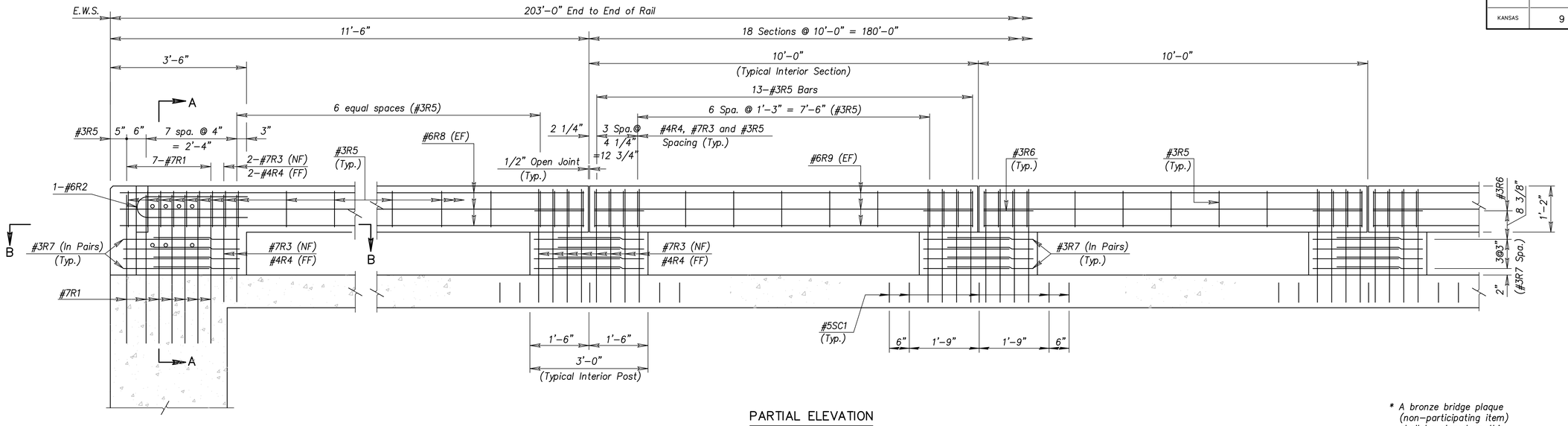
STA. 55+95 CHASE COUNTY

CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

J:\2023Proj\235078\CADD\235078 - Slab Details.dwg 6/03/2024 - 12:19pm hpham1

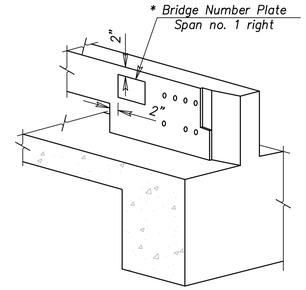
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	24	56



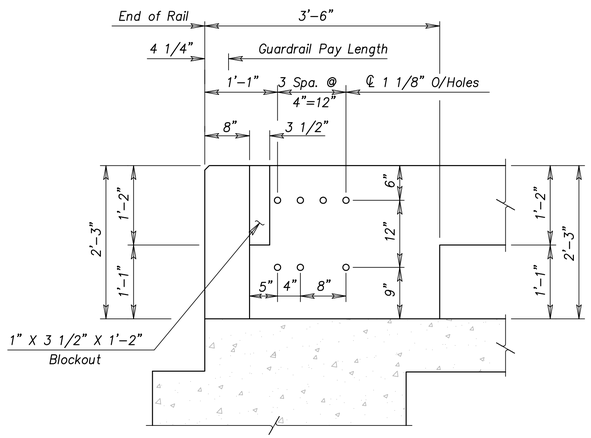
PARTIAL ELEVATION

(Along Traffic Face)

* A bronze bridge plaque (non-participating item) shall be placed on this structure.

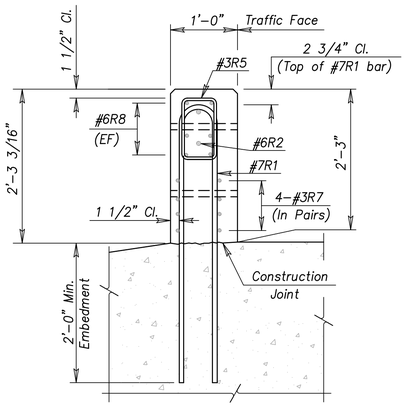


BRIDGE PLAQUE PLACEMENT DETAIL

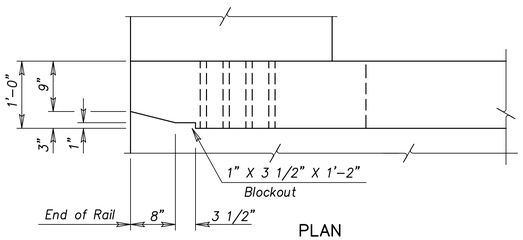


ELEVATION

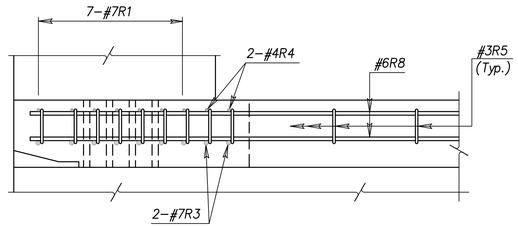
(Dimensions at traffic face of rail)



SECTION A-A

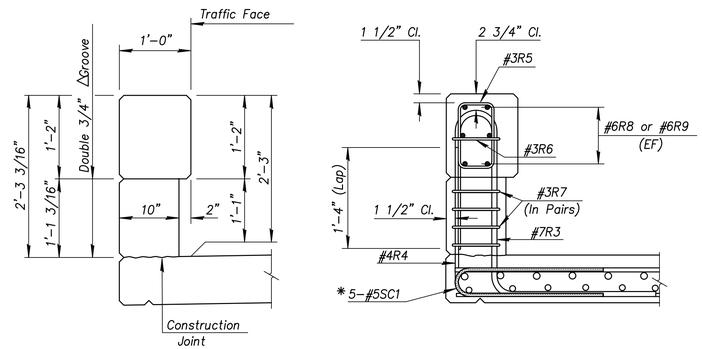


PLAN



SECTION B-B

* The hook may be canted to provide clearance and/or fit between reinforcing.



TYPICAL INTERIOR POST SECTIONS

LEGEND

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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	6-30-05	Current Release		

KANSAS DEPARTMENT OF TRANSPORTATION

27" KANSAS CORRAL RAIL (W-BEAM WITH RUBRAIL) (Without Curb)

~~BR183C~~

FHWA APPROVAL			APP'D	Kenneth F. Hurst	
DESIGNED CEH 6/92	DETAILED	MRV	QUANTITIES	CADD	MRV
DESIGN CK. DRT	DETAIL CK.	DRT	QUAN. CK.	CADD CK.	DRT

J:\2023Proj\235078\CADD\235078 - Rail.dwg 5/29/2024 - 7:43pm hpham1

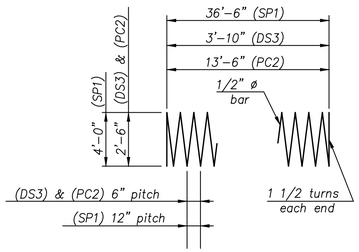
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	25	56

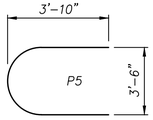
BILL OF REINFORCING STEEL

	STRAIGHT BARS				BENT BARS			
	Mark	Size	No.	Length	Mark	Size	No.	Length
SUBSTRUCTURE (UNCOATED)	P1	#9	8	28'-1"	P5	#6	16	9'-8"
	P2	#9	8	27'-6"				
	P3	#9	8	25'-0"	A4	#5	144	8'-8"
	PC1	#9	56	16'-0"	P7	#5	232	8'-4"
					PW3	#5	26	3'-6"
	A1	#8	18	38'-2"				
					PC2	1/2"ø	4	–
	A2	#6	128	2'-6"				
	P4	#6	8	24'-6"				
	P6	#6	72	2'-6"				
	A3	#5	8	38'-2"				
	PW1	#5	56	12'-11"				
	PW2	#5	132	3'-9"				
	PW4	#4	52	14'-3"				
SUPERSTRUCTURE (EPOXY COATED)								
	AD2	#8	4	28'-6"	AD1	#8	10	38'-2"
	PD1	#8	4	24'-2"				
					R1	#7	28	8'-5"
	D1	#6	12	5'-6"	R3	#7	312	6'-9"
	PD2	#6	24	5'-2"	R2	#6	4	5'-10"
	R8	#6	24	11'-2"	S2	#6	54	17'-0"
	R9	#6	216	9'-8"				
	S1	#6	54	39'-6"	AD4	#5	120	9'-5"
					AD5	#5	16	7'-7"
	AD3	#5	10	38'-2"	SC1	#5	190	4'-2"
	AD6	#5	12	7'-5"				
	AD7	#5	8	6'-8"	D2	#4	36	5'-4"
	AD8	#5	18	6'-7"	PD4	#4	36	14'-4"
	AD9	#5	12	5'-2"	R4	#4	312	4'-0"
	S3	#5	312	35'-3"				
	S4	#5	787	27'-8"	R5	#3	540	3'-6"
					R6	#3	76	4'-6"
	D3	#4	12	6'-7"	R7	#3	336	4'-10"
	PD3	#4	36	6'-7"				

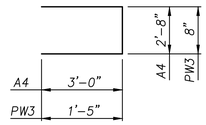
BENDING DIAGRAMS

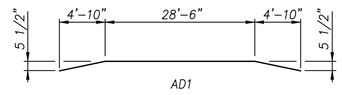
All dimensions are out to out of bars.

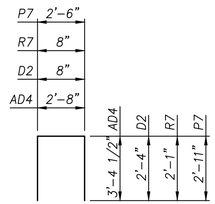


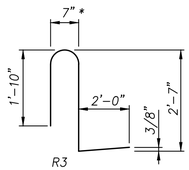


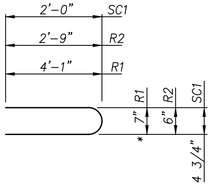
Weight of spirals are included in the weight of reinforcing and includes the weight of 4–7/8" spacer channels @ 3/4 lbs. per ft. (each) per spiral. The spiral bars shall meet the requirements of either ASTM A–615 (Gr. 40 or Gr. 60) or A–82. Minimum section of spacer channels = .008 cu. in.

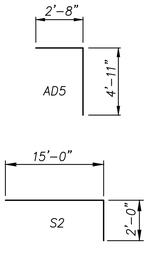


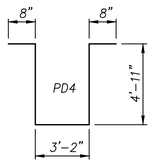


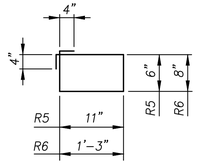


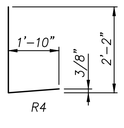




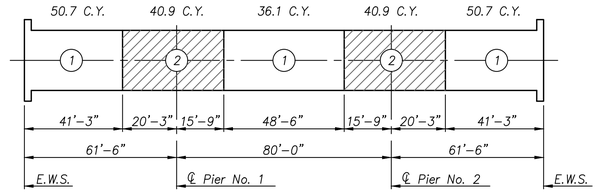








Note: Quantities shown here do not include substructure, rail or permanent diaphragms at center of spans.



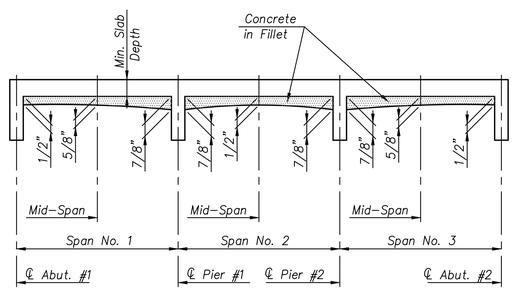
CONCRETE PLACING SEQUENCE

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

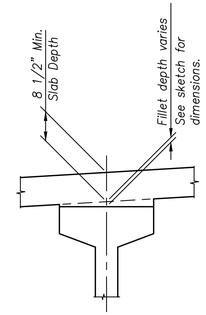
PLACE AND HAND VIBRATE ALL CONCRETE FOR THE PIER DIAPHRAGMS AND THE ABUTMENT ABOVE THE BRIDGE SEATS TO THE BOTTOM OF DECK ELEVATION JUST PRIOR TO THE NORMAL PAVING TRAIN OPERATIONS. DO THIS WORK IN A MANNER TO AVOID COLD JOINTS IN EITHER THE ABUTMENTS OR IN THE DIAPHRAGMS.

SEGMENTAL, COMBINED OR CONTINUOUS POURS ARE ALLOWED BY AN APPROVED ALTERNATE PLACING SEQUENCE. ANY DISCONTINUOUS POUR MUST STOP AT A CONSTRUCTION JOINT SHORT OF A PIER.

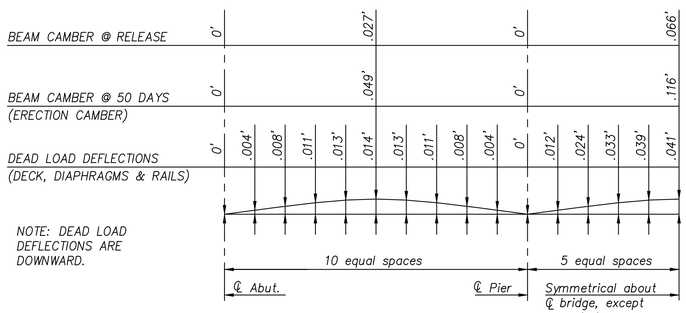
THE CONTRACTOR MAY PLACE THE CORRAL RAIL CONTINUOUSLY FROM ONE END OF THE BRIDGE TO THE OTHER.



SKETCH OF CONCRETE IN FILLETS



FILLET DETAIL



BEAM CAMBER & DEAD LOAD DEFLECTIONS

Ordinates are in feet
Ei = 3.64 x 10 6 psi
Ef = 4.07 x 10 6 psi

CAMBER NOTES

CONSTRUCT THE FINISHED DECK TO PLAN GRADE BY VARYING THE DEPTH OF THE FILLET OVER THE BEAM TO PROVIDE FOR PRESTRESS CAMBER, CONCRETE DEAD LOAD DEFLECTION AND, IF NECESSARY, VERTICAL CURVATURE. AFTER THE PRESTRESSED BEAMS ARE ERECTED MEASURE THE CAMBER IN THE FIELD BY TAKING A PROFILE OF EACH BEAM. CORRECT ANY VARIATION BETWEEN THE ACTUAL CAMBER AND CONCRETE DEAD LOAD DEFLECTION SHOWN IN THE PLANS BY VARYING THE DEPTH OF THE CONCRETE FILLETS OVER THE BEAM SO THAT THE FINISHED SLAB IS CONSTRUCTED TO THEORETICAL GRADE. THE MINIMUM DEPTH OF THE SLAB OVER THE BEAM SHALL BE 8 1/2".

APPROXIMATELY 3.3 CUBIC YARDS OF CONCRETE IS THEORETICALLY REQUIRED FOR FILLETS AND IS INCLUDED IN THE SUPERSTRUCTURE QUANTITIES. ANY ADDITIONAL CONCRETE REQUIRED WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE BID ITEM "CONCRETE (GRADE 4.0)(AE)(SA)".

BILL OF REINFORCING STEEL
DRILLED SHIFTS – FOR INFORMATION ONLY

	STRAIGHT BARS				BENT BARS			
	Mark	Size	No.	Length	Mark	Size	No.	Length
SUBSTRUCTURE (UNCOATED)	DS1	#10	92	36'-6"	DS3	1/2"ø	4	–
	DS2	#9	56	8'-8"	SP1	1/2"ø	4	–

PROJECT NO. 9 C-5219-01

MISCELLANEOUS DETAILS

BRIDGE OVER COTTONWOOD RIVER

STA. 55+95 CHASE COUNTY

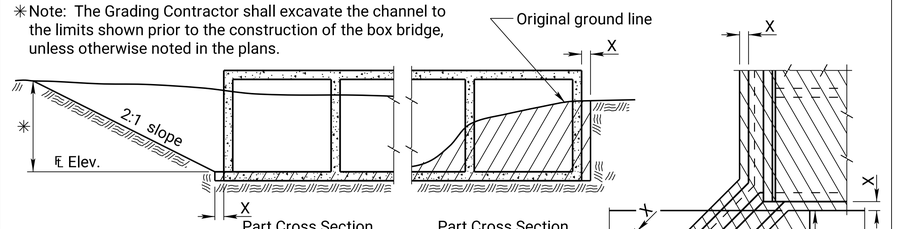
CFS ENGINEERS

DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

J:\2023Proj\235078\CADD\235078 – Miscellaneous Details.dwg 6/25/2024 – 2:14pm lmartin

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	26	56

✳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.

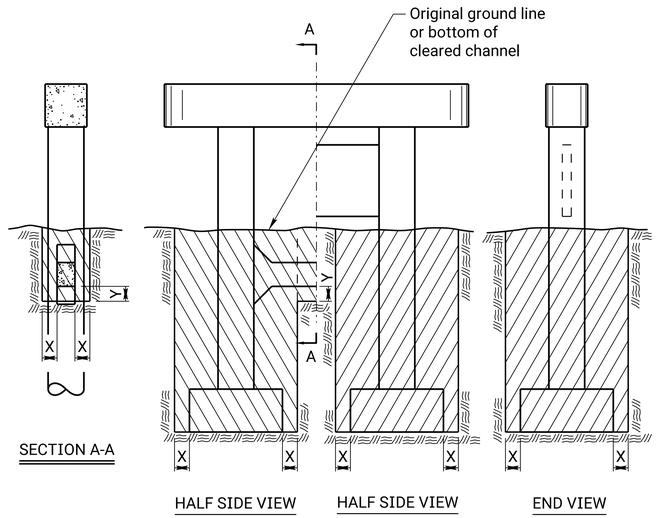


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

Excavation below the elevation of the bottom of the box floor and/or wingwalls is subsidiary to "Foundation Stabilization".

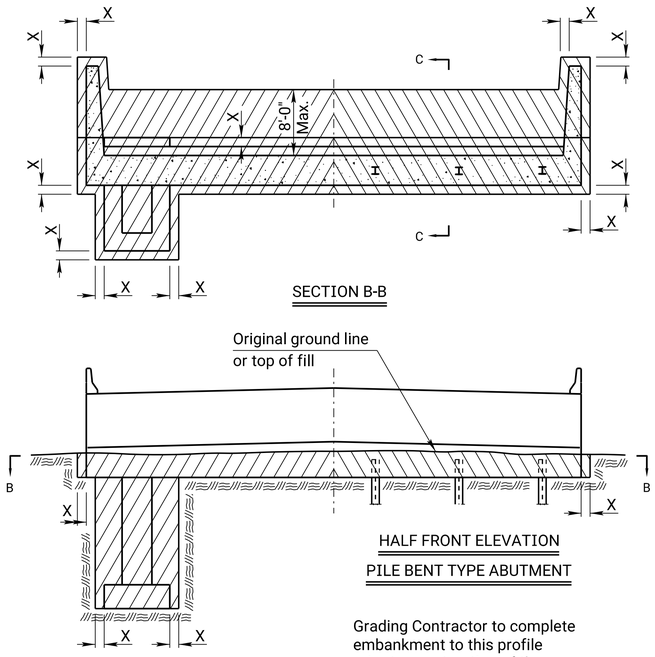
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

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.



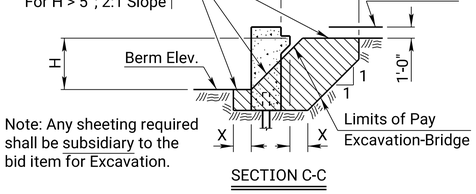
EXCAVATION DETAILS FOR TYPICAL PIERS

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



Grading Contractor to complete embankment to this profile prior to construction of the abutment

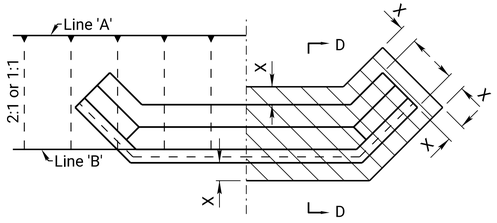
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

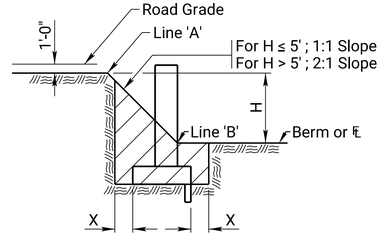


Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

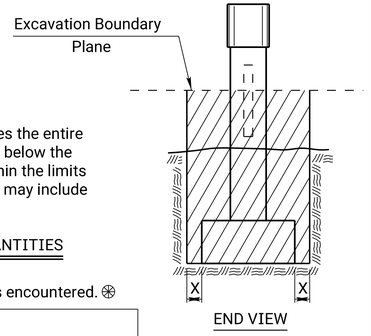
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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





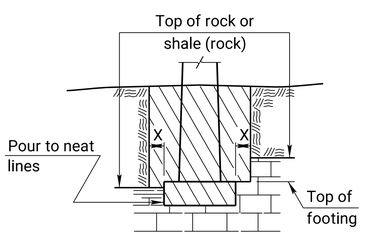
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



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

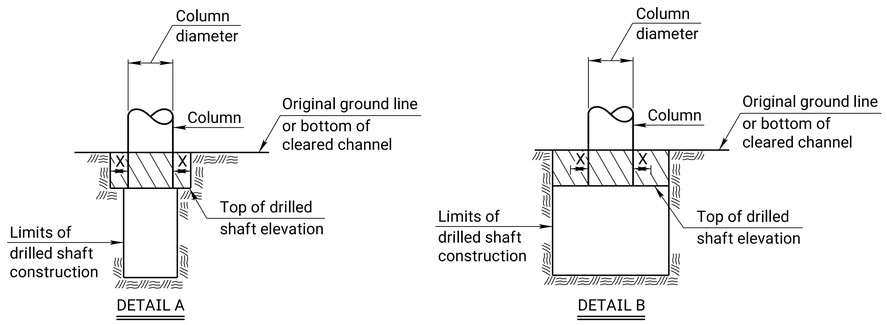
See detail when rock or shale (rock) is encountered. ⊛



⊛ 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.

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

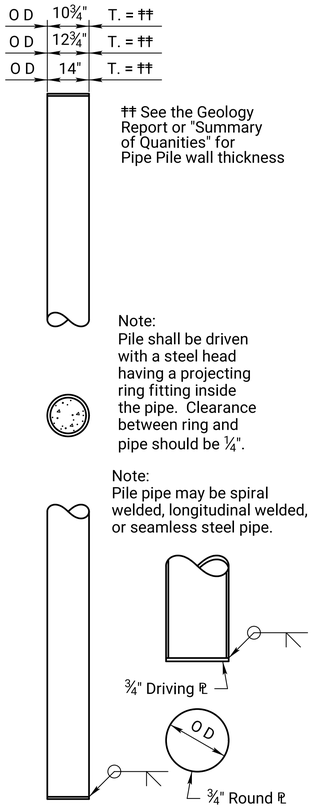
BRIDGE EXCAVATION (LRFD)

BR100B

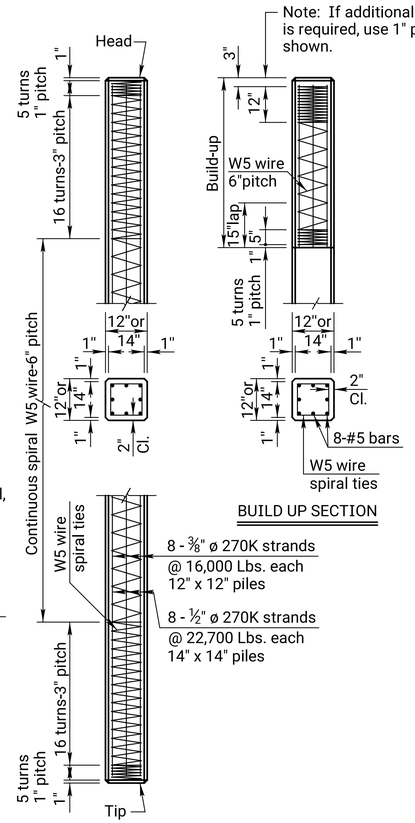
FHWA APPROVAL		04-17-10	APP'D.	Terry L. Fleck
DESIGNED	DETAILED	R.D.R.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	L.R.R.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-20-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	27	56

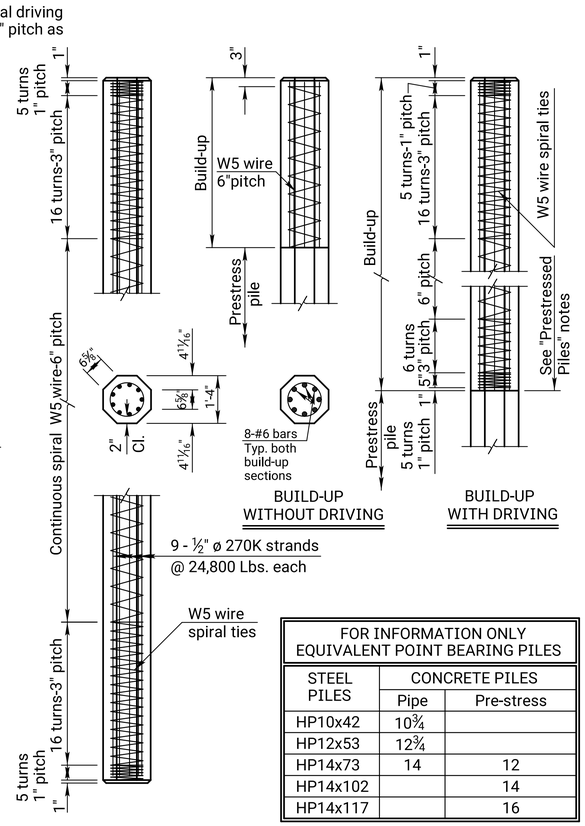


PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



12" OR 14"
PRESTRESSED
CONCRETE PILES

BUILD UP SECTION



16" PRESTRESSED
CONCRETE PILES

BUILD-UP
WITHOUT DRIVING

BUILD-UP
WITH DRIVING

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

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.

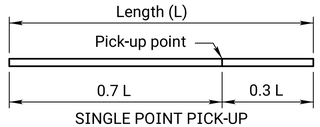
All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

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.



SINGLE POINT PICK-UP

DOUBLE POINT PICK-UP

PICK-UP POINTS FOR PRESTRESSED PILING

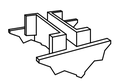
Max. length - 55' single point pick-up
Max. length - 80' double point pick-up

Note: Piles shall be marked at Pick-up points to indicate proper points for attaching handling lines.

Outside Flange

Inside Flange

SHELL PILE POINT



H-Pile Point

CAST STEEL PILE POINT

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

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.

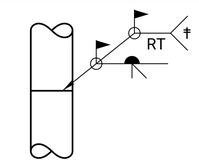
Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

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

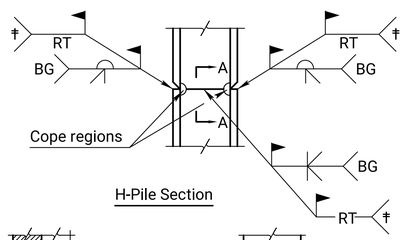
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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.

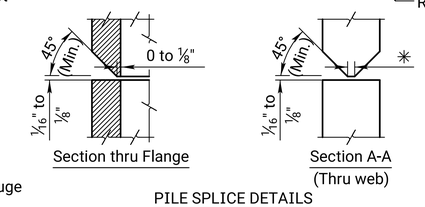
† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Contractor will test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested will have written confirmation of results. Report these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



Pipe Section



H-Pile Section



✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

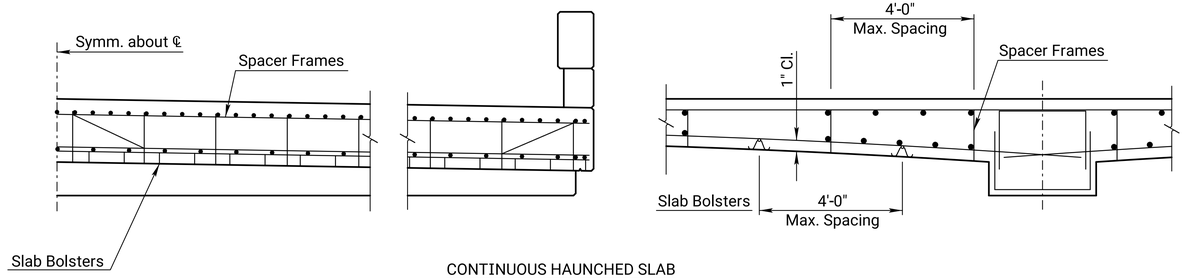
BR110

FHWA APPROVAL		10-04-12	APP'D.	Terry L. Fleck
DESIGNED	J.P.J.	DETAILED	QUANTITIES	TRACED R.A.A.
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.

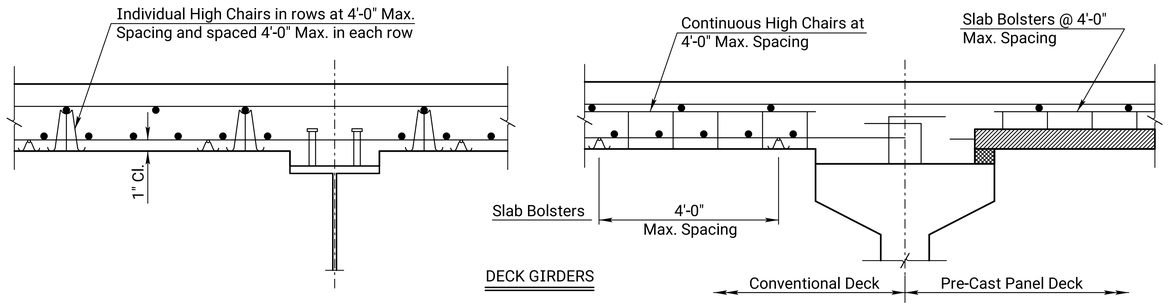
KDOT Graphics Certified 06-20-2022

KDOT Graphics Certified

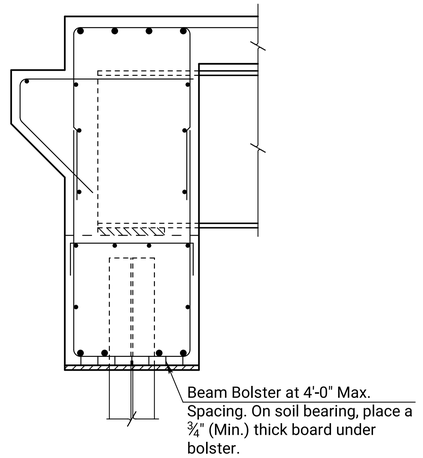
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	28	56



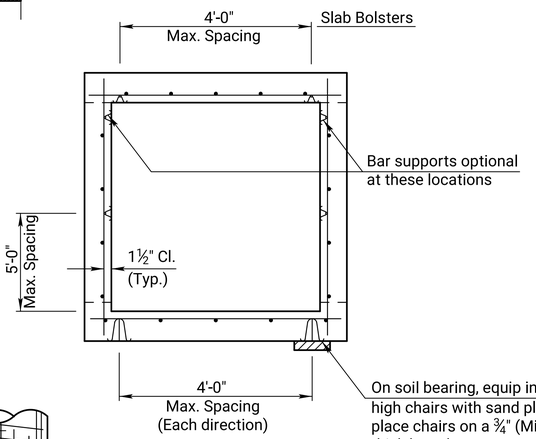
CONTINUOUS HAUNCHED SLAB



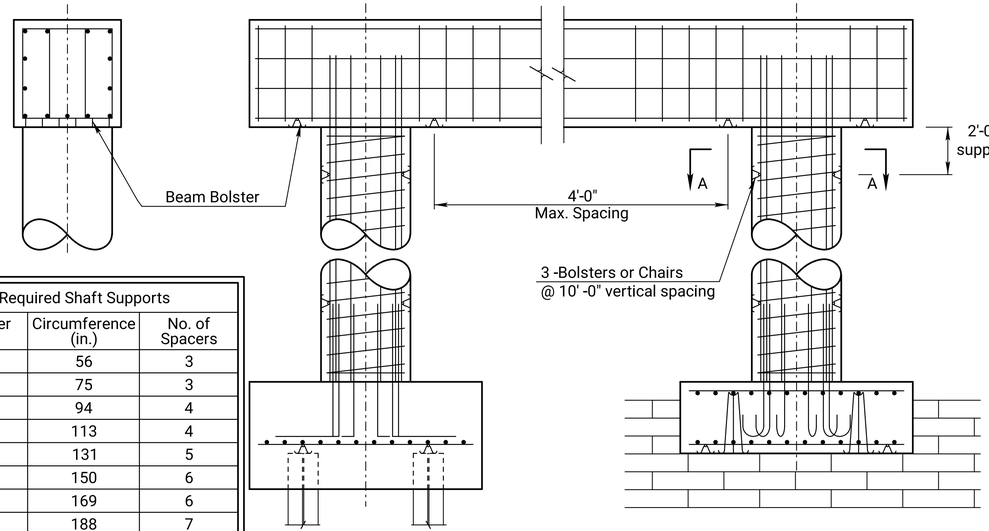
DECK GIRDERS



ABUTMENT

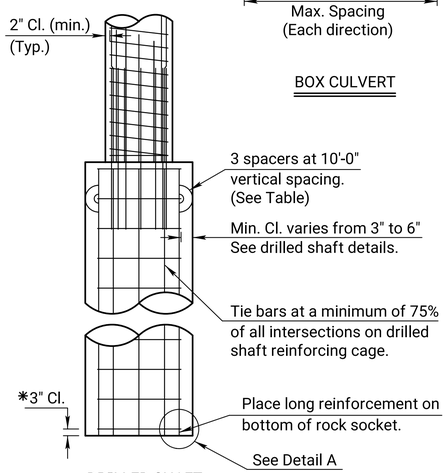


BOX CULVERT

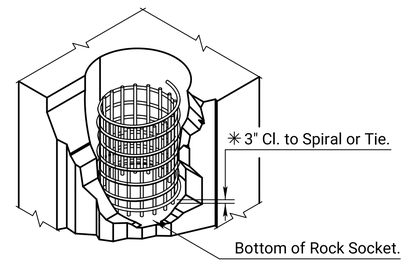


PIER

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

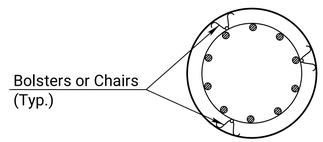


DRILLED SHAFT



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.



SECTION A-A

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 ¼" 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.

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BR120

FHWA APPROVAL		11-17-10	APP'D.		Terry L. Fleck
DESIGNED	R.A.M.	DETAILED	R.A.A.	QUANTITIES	TRACED R.A.A.
DESIGN CK.	L.R.R.	DETAIL CK.	R.A.M.	QUAN.CK.	TRACE CK. R.A.M.

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2025	29	56

EARTHWORK

Sta. to Sta.		Rock	Excavation Cu. Yds. Cont. Furnished VMF=0.75	Excavation Cu. Yds. Common VMF=0.75	Compaction Cu. Yds. (Type B)(MR-90) Embankment
49+50	61+00	535	2,491	5,611	6,077
TOTAL		535	2,491	5,611	6,077

REMOVAL OF EXISTING STRUCTURE

Station	Unit
	None

(For Information Only)

BOLLARDS

Station	Side	Quant.	Unit
55+00 O.R.	Rt.	3	Each
56+58 O.R.	Rt.	3	Each
TOTAL		6	Each

LARGE TREES TO BE GRUBBED

Side	Quant.	Unit
Sheet No. 3	18	Each
TOTAL	18	Each

(For Information Only)

SURFACING MATERIAL (AB-3)(6")

Station	Quant.	Unit
Sta. 49+50 to Sta. 54+93.5	551	Tons
Sta. 56+96.5 to Sta. 61+00	409	Tons
TOTAL (Rate = 156 Lbs. Per. Cu. Ft.)	960	Tons

GUARDRAIL END TERMINAL (SRT) ALTERNATE NO. 1

Station	Side	Quant.	Unit
Sta. 55+95			
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. 55+95			
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. 55+95			
NW Quad.	Lt.	75'-0"	Lin. Ft.
NE Quad.	Lt.	121'-0"	Lin. Ft.
SW Quad.	Rt.	25'-0"	Lin. Ft.
SE Quad.	Rt.	150'-0"	Lin. Ft.
TOTAL		371'-0"	Lin. Ft.

RECAPITULATION OF BRIDGE QUANTITIES

BRIDGE NUMBER	STATION	SEE SHEET NO.
000191067806280	91+00	5

RECAPITULATION OF ROAD QUANTITIES

Clearing & Grubbing	Lump Sum	L.S.
Common Excavation (Rural Small)	5,611	Cu. Yd.
Common Excavation (Contr. Furnished)	2,491	Cu. Yd.
Rock Excavation	535	Cu. Yd.
Compaction of Earthwork (Type B)(MR-90)	6,077	Cu. Yd.
Water (Grading)(Set Price)	1	M. Gal.
Mobilization	Lump Sum	L. S.
Mobilization (DBE)	Lump Sum	L. S.
Guardrail, Steel Plate	371	Lin. Ft.
Guardrail, End Terminals (SRT) Alt. #1	4	Each
Guardrail, End Terminals (FLEAT) Alt. #2	4	Each
Field Office & Laboratory (Type C)	1	Each
Surfacing Material (AB-3)	960	Tons
Temporary Surfacing Material (Aggregate)(Set Price)	1	Cu. Yd.
Signing Object Markers (Type 3)	4	Each
Bollard (Permanent)	6	Each
Curing Environment	Lump Sum	L. S.
Contractor Construction Staking	Lump Sum	L. S.
Foundation Stabilization (Set Price)	1	Cu. Yd.
Concrete for Seal Course (Set Price)	1	Cu. Yd.

See Sh. No. 10 for Bridge Quantities.
See Sh. No. 30 for Temporary Erosion & Pollution Control Quantities.
See Sh. No. 40 for Seeding Details & Quantities.
See Sh. No. 46 for Traffic Control Plan & Quantities.

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

~~RD050~~

FHWA APPROVAL	5-28-08	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

KDOT Graphics Certified

KDOT Graphics Certified 02-18-2011

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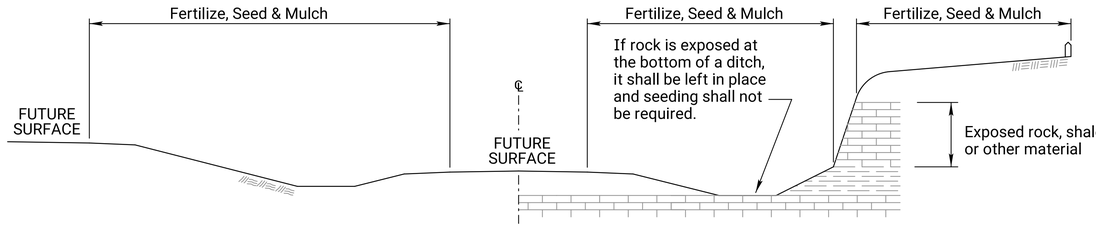
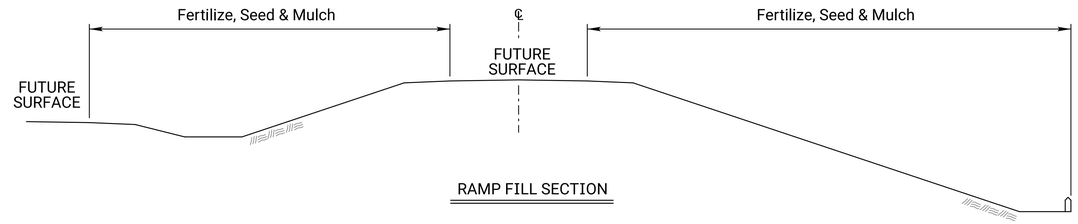
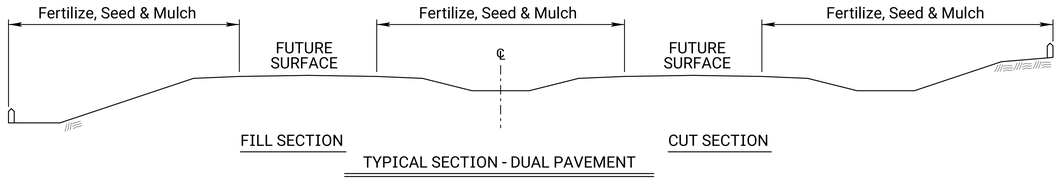


RAMP CUT SECTION



RAMP FILL SECTION



TYPICAL SECTION - DUAL PAVEMENT

FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P_2O_5, K_2O listed in Summary of Quantities will be acceptable.

- ✱ - N = Nitrogen Rate of Application
- ✱✱ - P_2O_5 = Phosphorous Rate of Application
- ✱✱✱ - K_2O = 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 (limed 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:

1¾ - 2¼ Tons per Acre = 1½" 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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	30	56

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
	200		0.94	Temporary Fertilizer (13 - 13 - 13)	188.0	LB
				Temporary Seed (Canada Wildrye)		LB
				Temporary Seed (Grain Oats)		LB
				Temporary Seed (Sterile Wheatgrass)		LB
	109.9		0.94	Soil Erosion Mix	103.2	LB
				Erosion Control (Class 1, Type C)	3,934	SQ YD
				Erosion Control (Class 2, Type E)	604	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")	350	LF
				Biodegradable Log (12")	350	LF
				Biodegradable Log (20")	700	LF
				Filter Sock (✱✱✱✱)		LF
				Geotextile (Erosion Control)		SQ YD
				Silt Fence	1,150	LF
				SWPPP Design †	Lump Sum	LS
				SWPPP Inspection †	31	EACH
				Water Pollution Control Manager †	31	EACH
900 lbs / acre				Mulch Tacking Slurry		LB
2 tons / acre				Mulching		TON
				Water (Erosion Control) (Set Price)	1	MGAL

Total Area Disturbed = 1.88 Acres

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)	0.5
4.5	Buffalograss Seed (Treated)	4.2
45	Perennial Ryegrass	42.3
2.6	Prairie Junegrass	2.4
6.3	Side Oats GramaGrass Seed (El Reno)	5.9
45	Tall Fescue (Endophyte Free)	42.3
6	Western Wheatgrass Seed (Barton)	5.6
	Total (lb)	103.2

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.

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

FHWA APPROVAL		01-26-18	APP'D.	Scott H. Shields	
DESIGNED	M.R.D.	DETAILED	M.R.D.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	31	56

EROSION CONTROL- CLASS 1, TYPE C

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
49+50 to 54+93	Lt.	543	Varies	825
49+50 to 54+93	Rt.	543	Varies	968
56+96 to 61+00	Lt.	404	Varies	526
56+96 to 61+00	Rt.	404	Varies	780
100+25 to 102+26	Channel	201	Varies	832
TOTAL EROSION CONTROL (CLASS 1, TYPE C) =				3,934

EROSION CONTROL- CLASS 2, TYPE E

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
56+97 to 61+00	Rt.	403	Varies	604
TOTAL EROSION CONTROL (CLASS 2, TYPE E) =				604

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

EROSION CONTROL SEEDING-SODDING

LA852A-EC

FHWA APPROVAL				APP'D.	Scott H. Shields		
DESIGNED	M.R.M.	DETAILED	M.R.M.	QUANTITIES		TRACED	M.R.M.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

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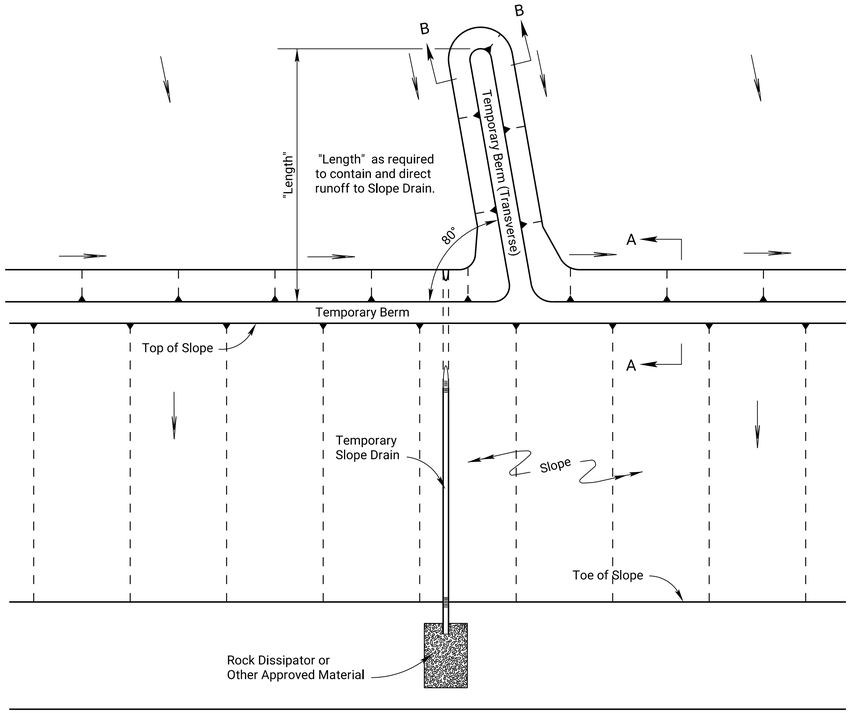
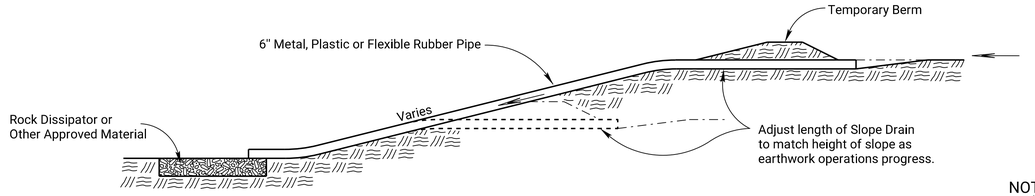
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	32	56



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

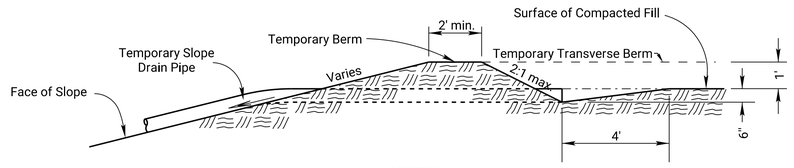
NOTES:

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.

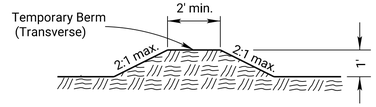
3) Pipe shall be secured in place as approved by Engineer.

4) Temporary Berms under 2,000 feet shall be bid by Set Price.



SECTION A-A

NO SCALE

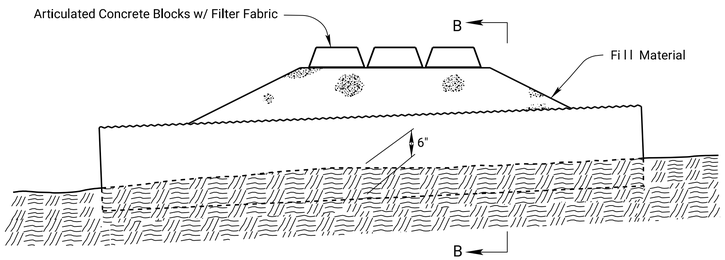


SECTION B-B

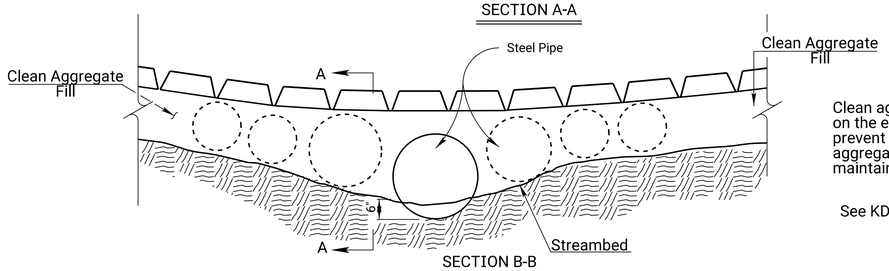
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

NO SCALE



SECTION A-A



SECTION B-B

TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

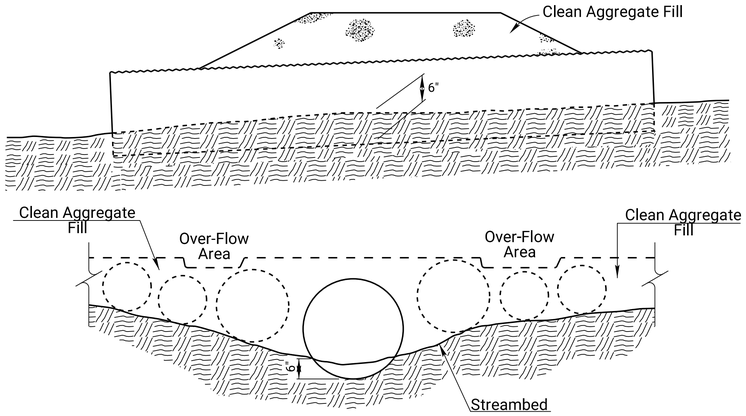
NO SCALE

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.

NO.	DATE	REVISIONS	BY	APP'D
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

FHWA APPROVAL		01-21-22	APP'D.	Mervin Lare
DESIGNED	DETAILED		QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK.

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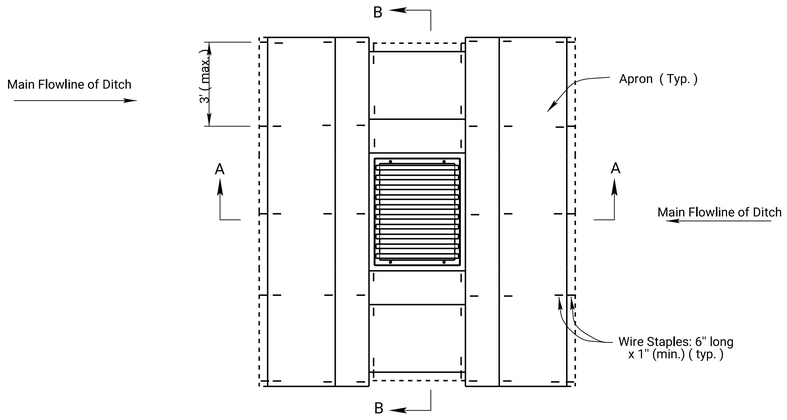
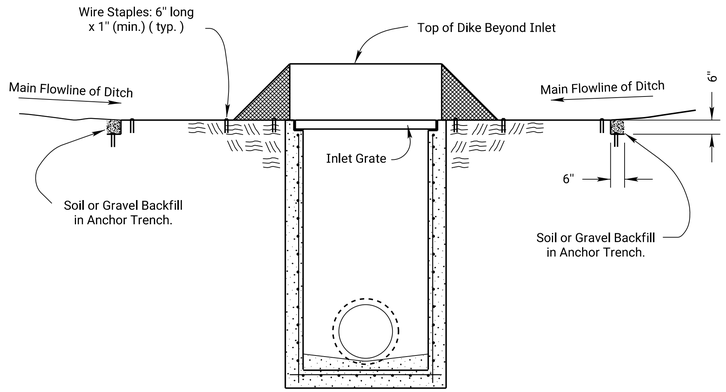
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	33	56



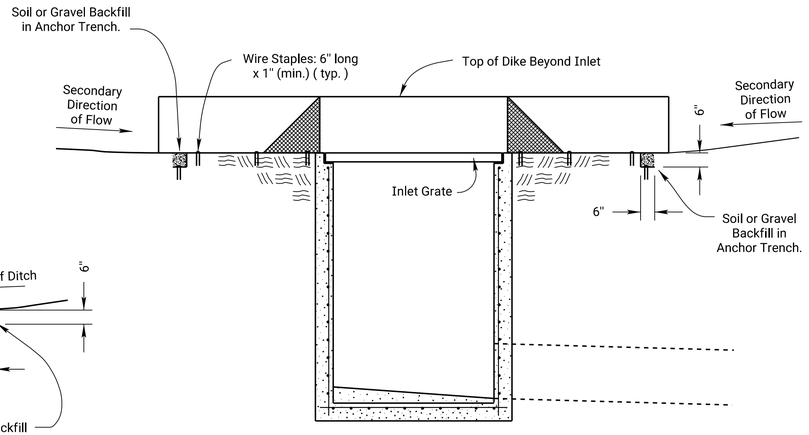
PLAN

TEMPORARY I NLET SEDI MENT BARRI ER
(TRI ANGULAR SI LT DI KE METHOD)

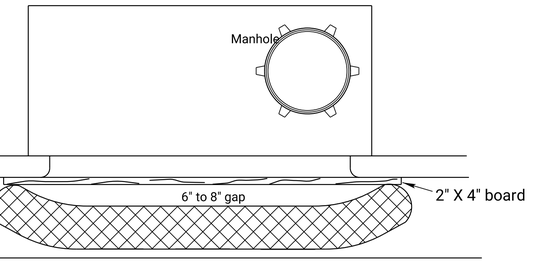
NO SCALE



SECTION A - A



SECTION B - B

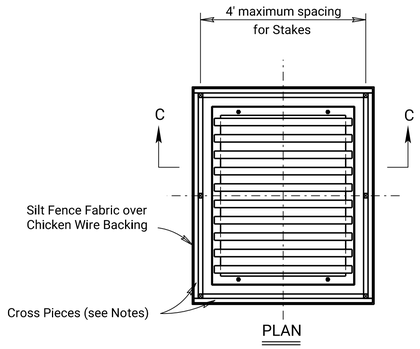


Bags = synthetic net (3mm mesh) or burlap bags

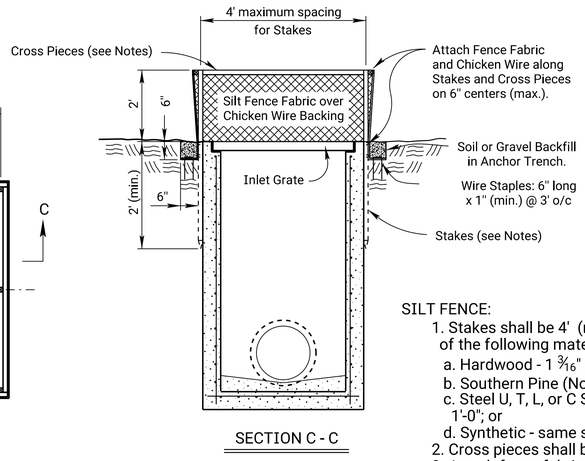
Rock = approximately 1" to 2" diameter

CURB INLET PROTECTION

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



PLAN



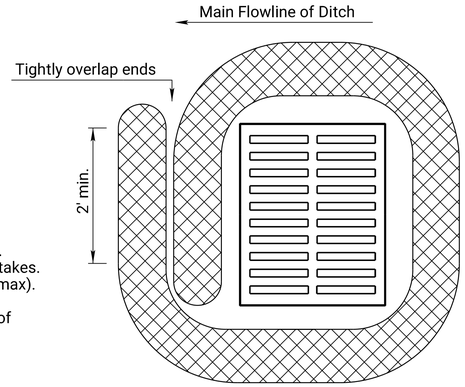
SECTION C - C

SILT FENCE:

1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 3/16" x 1 3/16";
   b. Southern Pine (No. 2) - 2 5/8" x 2 5/8";
   c. Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Cross pieces shall be of same material as stakes.
3. Attach fence fabric securely on 6" centers (max).
4. Use of high flow material is acceptable.
5. Refer to plan sheets to estimate the length of silt fence required.

TEMPORARY I NLET SEDI MENT BARRI ER
(SI LT FENCE METHOD)

NO SCALE



Note: 25% of log shall be keyed into ground during installation.

Stake every 4'

Drop inlet use
1'-6" TO 1'-8" diameter log

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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 ¼" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

NO.	DATE	REVISIONS	BY	APP'D
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.)

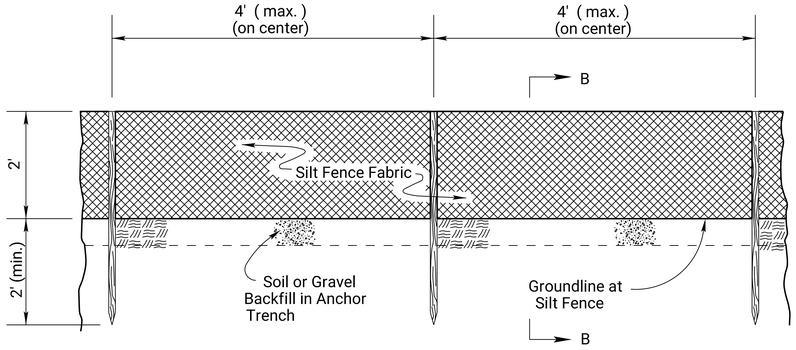
LA852C

FHWA APPROVAL			03-10-15	APP'D.		Scott H. Shields	
DESIGNED	R.A.	DETAILED	R.A.	QUANTITIES		TRACED	
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 07-14-2022

KDOT Graphics Certified

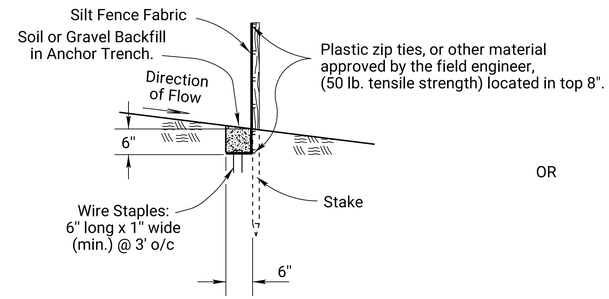
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	34	56



TYPICAL ELEVATION

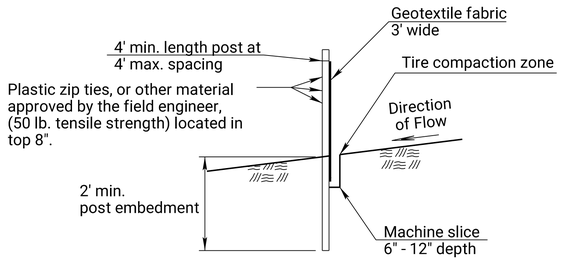
SILT FENCE BARRIER

NO SCALE



SECTION B-B

OR



SECTION B-B

INSTALLATION NOTES

SILT FENCE:

1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 3/16" x 1 3/16";
   b. Southern Pine (No. 2) - 2 5/8" x 2 5/8";
   c. Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Attach fence fabric with 3 zip ties within the top 8" of the fence
   Alternate attachment methods may be approved by the Engineer on aperformance basis.
3. Use of high flow material is acceptable.
4. Refer to plan sheets to estimate the length of silt fence required.

BIODEGRADABLE LOG OR FILTER SOCK

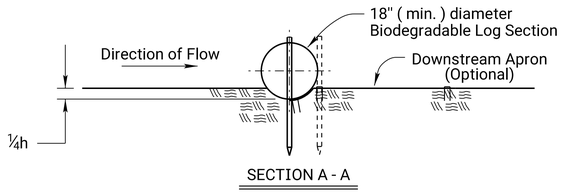
1. Place biodegradable logs or filter sock tightly together minimum overlap of 18".
2. Wood stakes shall be 2" x 2" (nom.).
3. Refer to plan sheets to estimate length of biodegradable log and filter sock required.
4. Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.
5. 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.

Biodegradable Log or Filter Sock Slope Interruptions

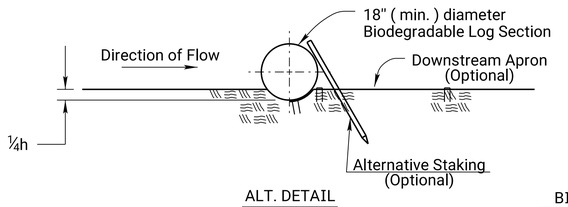
Slope Gradient	PRODUCT: 9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
≤4H:1V	40	60	80
3H:1V	30	45	60

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

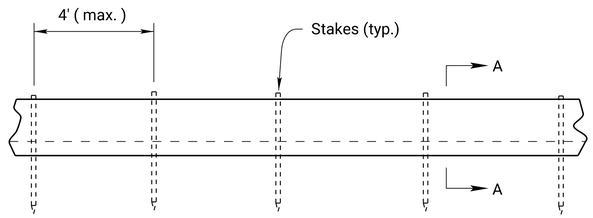


SECTION A - A



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

GENERAL NOTES

1) Slope interruptions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
2) The maximum length of the slope interruptions shall not exceed 250 feet, and the barrier ends need to be staggered.
3) 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.
4) 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.

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE

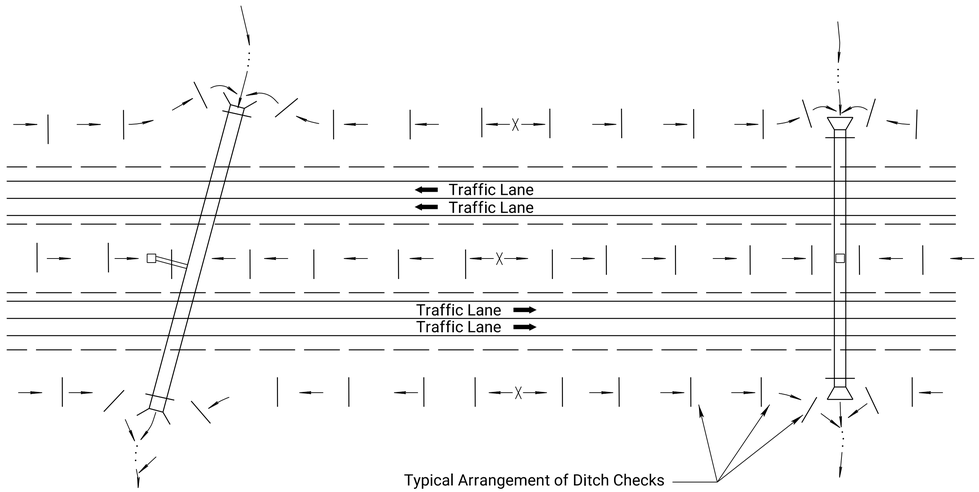
LA852D

FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields
DESIGNED	S.H.S.	DETAILED R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-18-2022

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	35	56



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.

NO.	DATE	REVISIONS	BY	APP'D
03	08-10-16	Revised Standard	R.A.A.	S.H.S.
02	06-28-16	Revised Standard	R.A.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

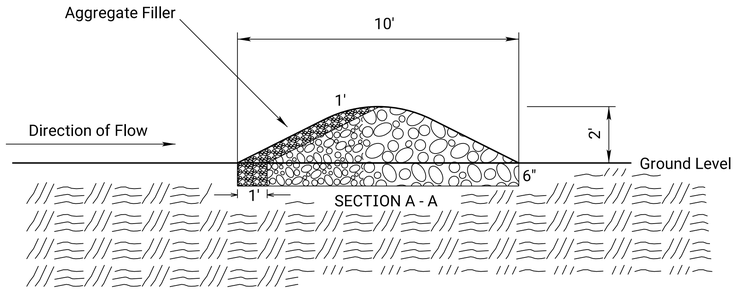
TEMPORARY EROSION AND POLLUTION CONTROL DITCH CHECKS

LA852E

FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields			
DESIGNED	S.H.S.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

KDOT Graphics Certified 06-18-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	36	56



TYPICAL ELEVATION

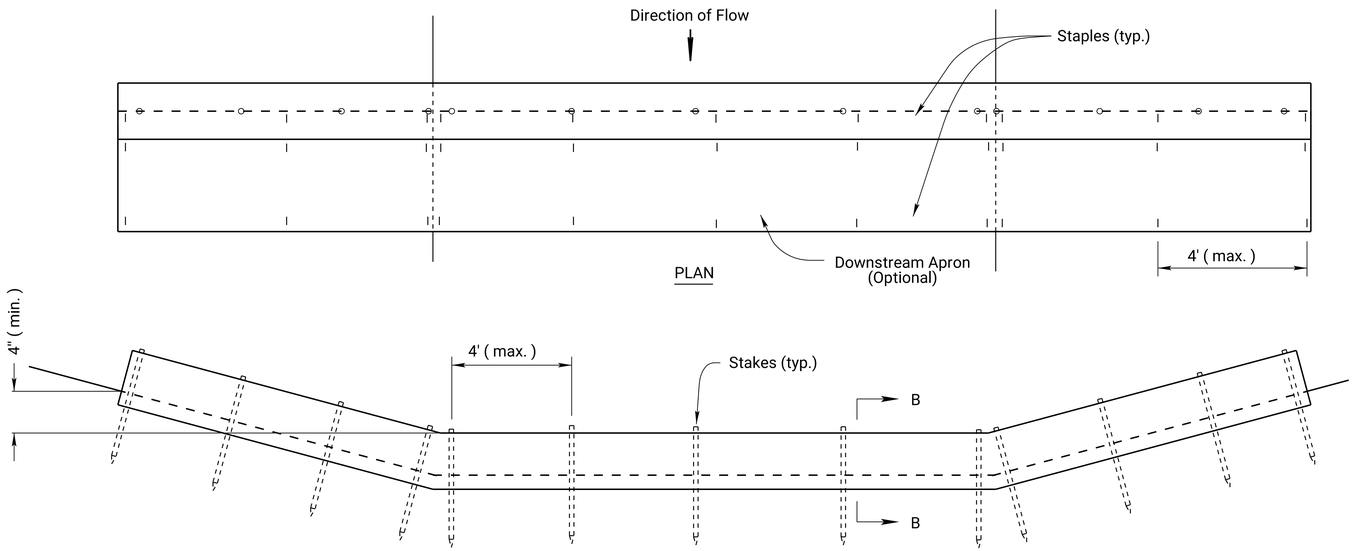
ROCK DITCH CHECK

NO SCALE

TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
NOTE: Use this spacing for Rock Ditch Checks only.	

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.

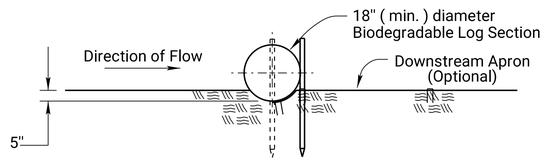


TYPICAL ELEVATION

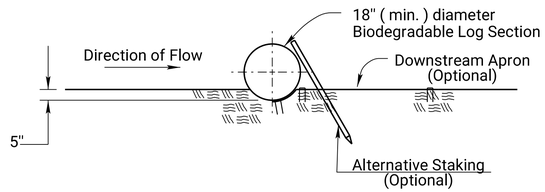
BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE



SECTION B - B



ALT. DETAIL OPTIONAL

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.

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

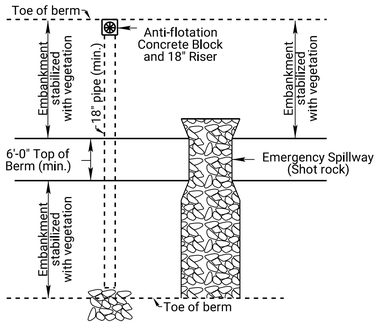
TEMPORARY EROSION AND POLLUTION CONTROL ROCK DITCH CHECKS BIODEGRADABLE LOG DITCH CHECKS

LA852G

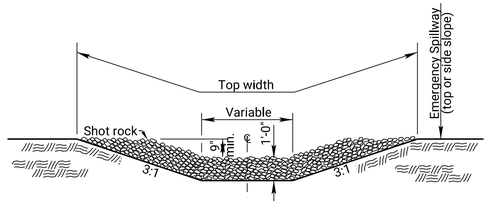
FHWA APPROVAL			11-19-20	APP'D.			Mervin Lare
DESIGNED	M.L.	DETAILED	D.K.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	M.L.	DETAIL CK.	M.L.	QUAN.CK.		TRACE CK.	R.A.A.

KDOT Graphics Certified 07-14-2022

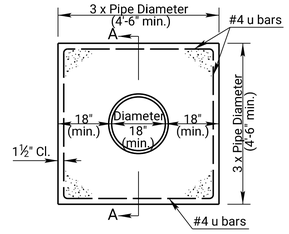
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	37	56



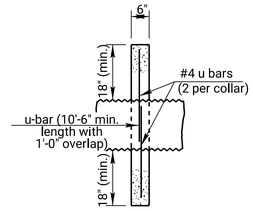
SEDIMENT STORAGE BASIN (PLAN)



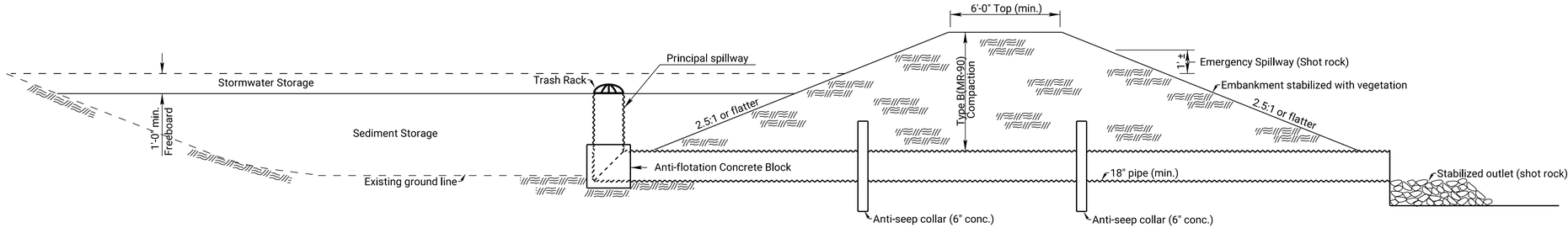
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



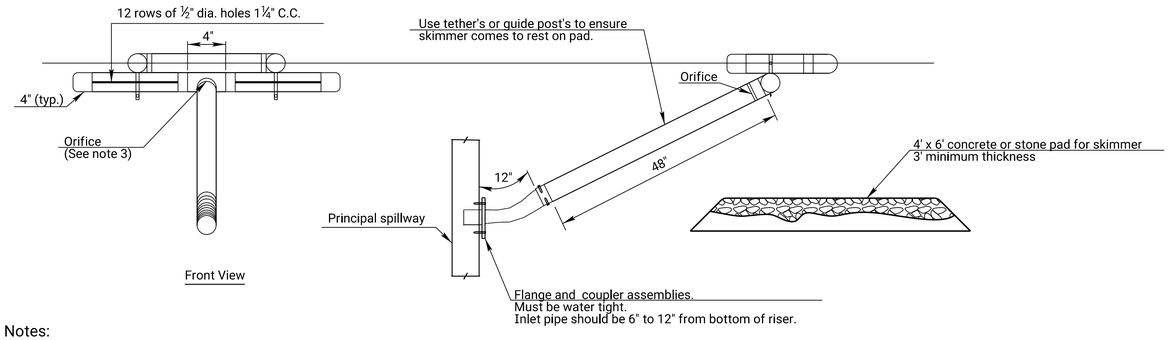
SEDIMENT STORAGE BASIN (ELEVATION)

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 reguardless the size of the drainage area.



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 dewaters from the surface at a controlled rate. The design must be approved by the engineer.

SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

NO.	DATE	REVISIONS	BY	APP'D
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

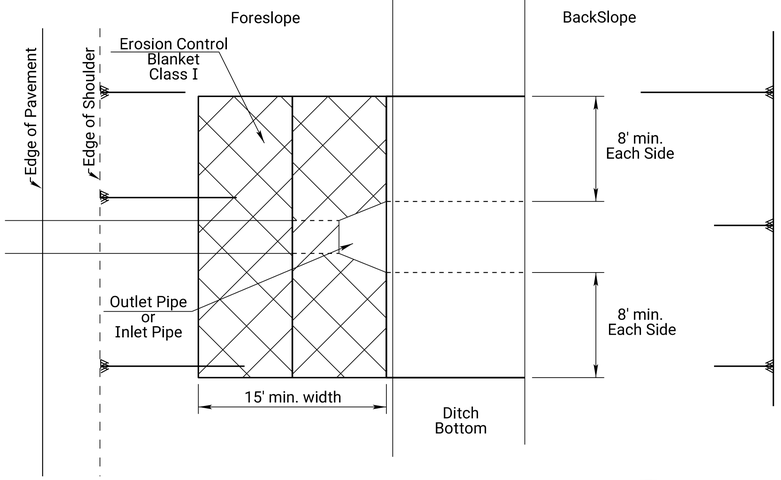
TEMPORARY EROSION AND POLLUTION CONTROL SEDIMENT STORAGE BASIN

LA852H

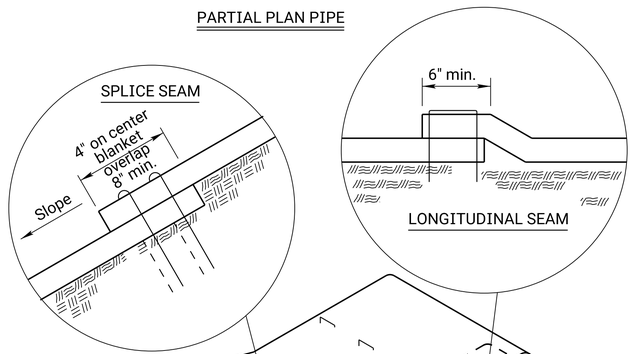
FHWA APPROVAL			09-24-13	APP'D.			
DESIGNED	B.B.	DETAILED	B.B.	QUANTITIES		TRACED	B.B.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

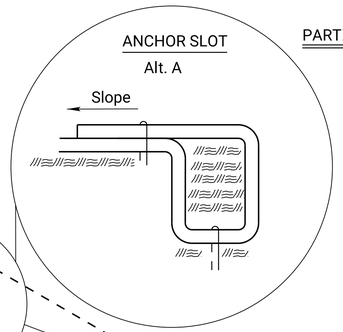
KDOT Graphics Certified 06-20-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	38	56

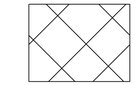


PARTIAL PLAN PIPE

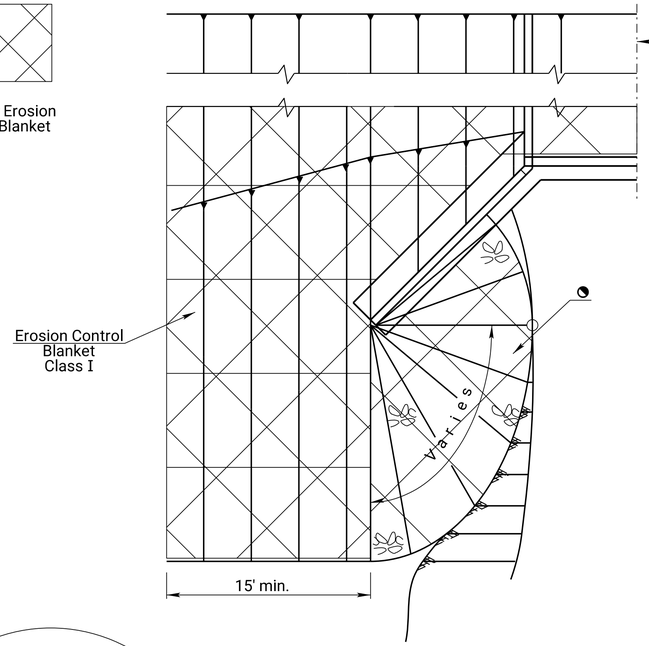




ISOMETRIC VIEW



Limits of Erosion Control Blanket



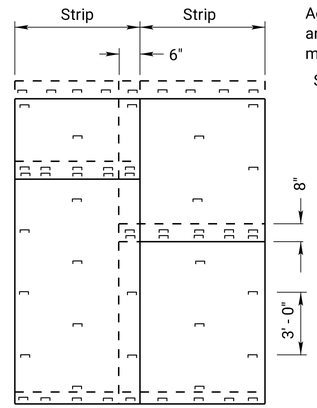
PARTIAL PLAN BOX CULVERT

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

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.

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



PLAN VIEW - ANCHORING DIAGRAM

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

Single post ring and shank staple is acceptable.

NO.	DATE	REVISIONS	BY	APP'D
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

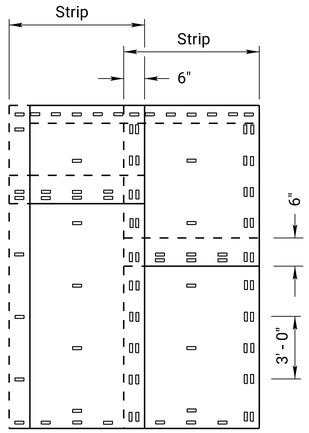
LA855

FHWA APPROVAL			03-10-15	APP'D.		Scott H. Shields	
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.		TRACE CK.	R.A.A.

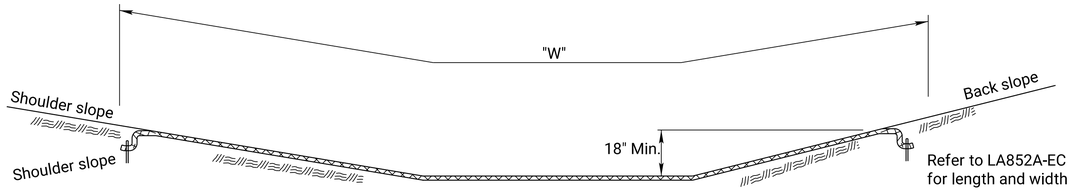
KDOT Graphics Certified 06-20-2022

KDOT Graphics Certified

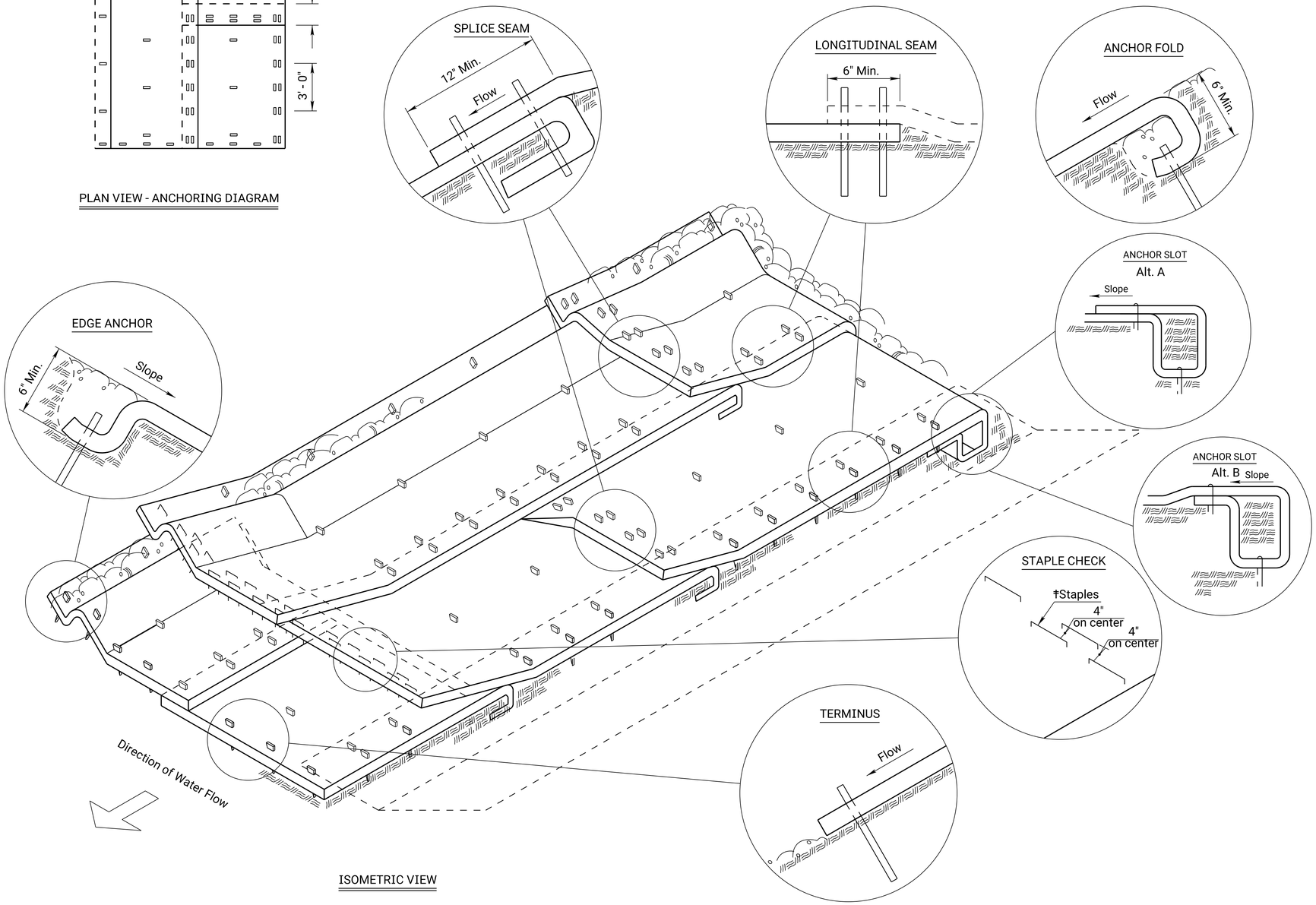
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	39	56



PLAN VIEW - ANCHORING DIAGRAM



CROSS SECTION (Ditch Lining)



ISOMETRIC VIEW

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

Erosion Control Mats shall be laid loosely in the direction of the flow, with the first course at the centerline of channel, where applicable. In order for the mat to be in contact with the soil, lay the mat loosely, avoiding stretching.

1. ANCHOR FOLD: The top of the mat should be folded under, buried and secured with approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot, 6 inches wide x 6 inches deep; anchored in the bottom of the slot, backfilled, and the mat folded over the top as shown in detail.

2. LONGITUDINAL SEAMS: The adjacent edges of the mat should overlap a minimum of 6 inches, with anchors catching the edges of both mats.

3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 12 inches in direction of water flow. Stagger splice seams.

4. STAPLE CHECK: †Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.

5. EDGE ANCHOR: Lay outside edge of mat into trench at top of side slope. Anchor at 3 foot intervals along trench.

6. TERMINUS: The bottom edge of the mat shall be anchored in place with anchors spaced at 9 inch intervals along the terminating edge.

7. TYPICAL ANCHORS: Anchor design shall be as recommended by the manufacturer.

NO.	DATE	REVISIONS	BY	APP'D
04	09-25-15	Modified Staple Check	R.A.A.	S.H.S.
03	09-15-14	Revised Standard	R.A.A.	S.H.S.
02	03-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS 2
FLEXIBLE CHANNEL LINER

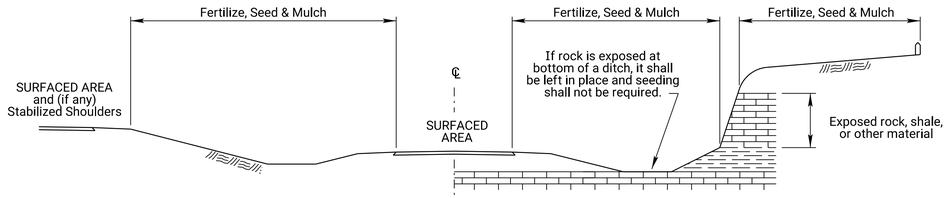
LA856

FHWA APPROVAL			11-02-15	APP'D.	Scott H. Shields		
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	

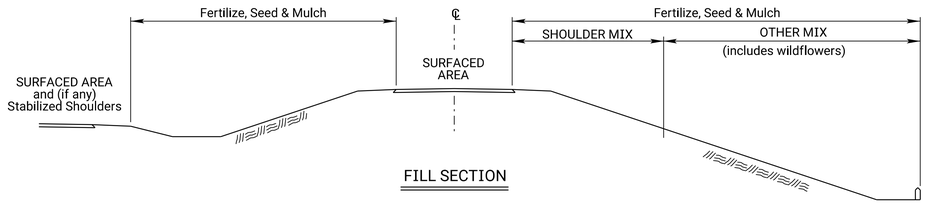
KDOT Graphics Certified 06-20-2022

KDOT Graphics Certified

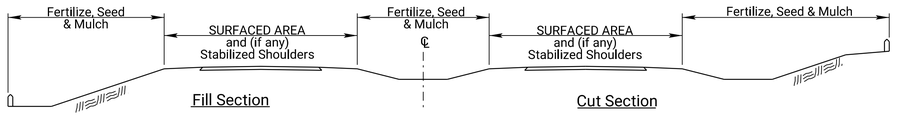
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	40	56



CUT SECTION



FILL SECTION



TYPICAL SECTION - DUAL PAVEMENT

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, P_2O_5 , K_2O 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:

1¾ - 2¼ Tons per Acre = 1½" 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.

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 ⅛" -¼". 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.

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	APP'D
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

FHWA APPROVAL	05-06-19	APP'D.	Mervin Lare
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	41	56

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.

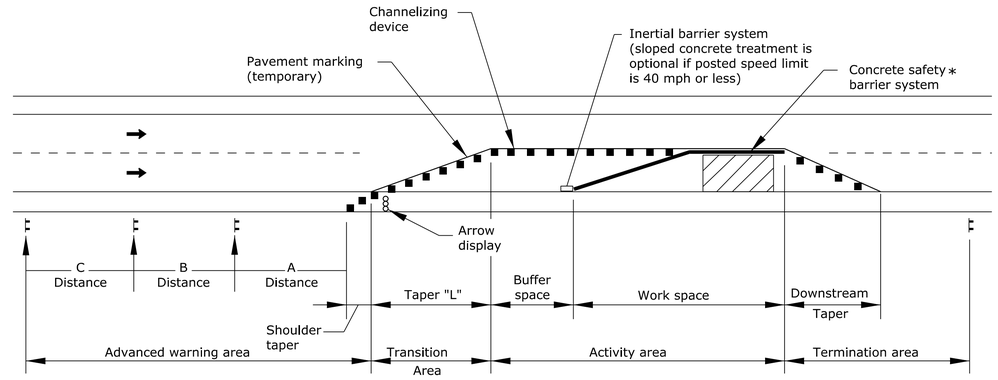
2) Minimum lane width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

3) Consideration should be made to seperate 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 accessiblity 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 =Numericial 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 seperate 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.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	08/18/15	Channerlizer spacing info	R.W.B.	K.E.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
GENERAL NOTES

TE700

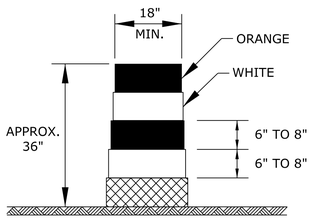
FHWA APPROVAL	08/18/15	APP'D	Kristina Ericksen
DESIGNED B.A.H.	DETAILED R.W.B	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

KDOT Graphics Certified 08-18-2015

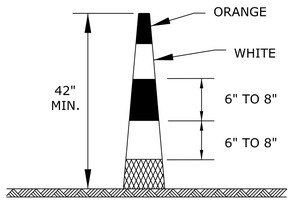
KDOT Graphics Certified

Sh. No. XXX

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	42	56



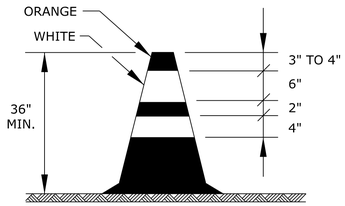
DRUM



CONICAL DELINEATOR

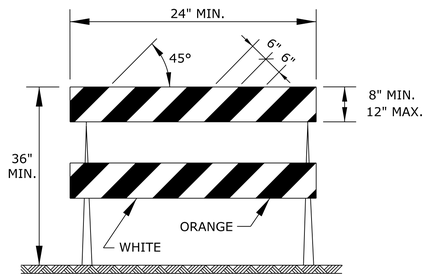
DRUMS AND CONICAL DELINEATORS SHALL HAVE AT LEAST TWO ORANGE AND TWO WHITE 6" TO 8" WIDE RETROREFLECTIVE STRIPES. ADDITIONAL STRIPES MAY BE NON-RETROREFLECTIVE. IF THERE ARE NON-RETROREFLECTIVE SPACES BETWEEN ADJACENT STRIPES, THEY SHALL BE NO MORE THAN 3" WIDE.

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 CONE

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.

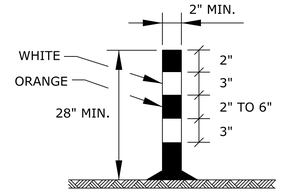


TYPE II BARRICADE

FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED.

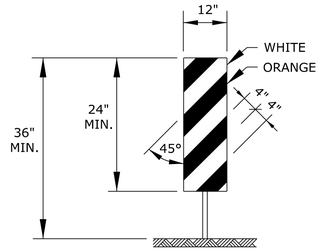
THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL BE ASTM TYPE III SHEETING.

THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



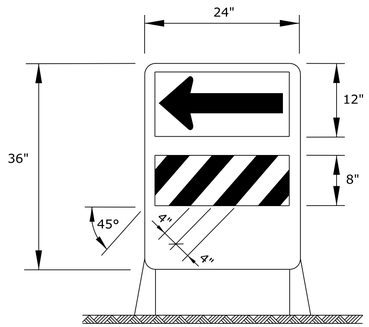
TUBULAR MARKER

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



VERTICAL PANEL

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 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 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		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.

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

CHANNELIZING DEVICES

TE702

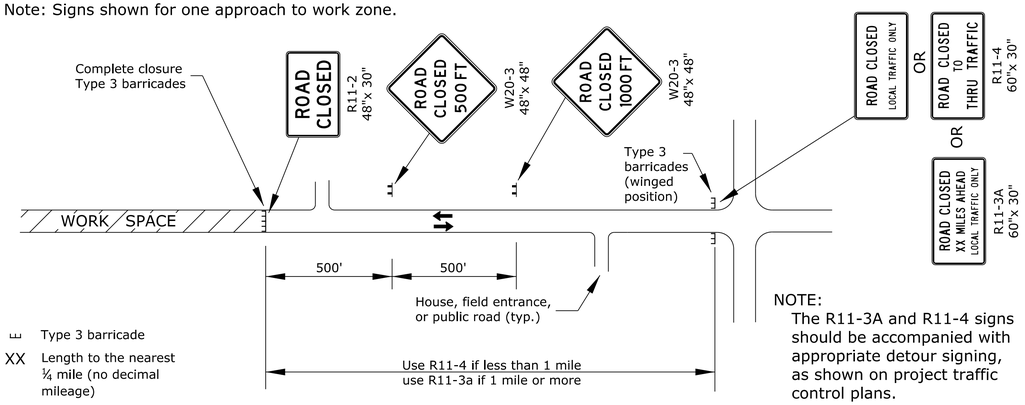
FHWA APPROVAL		10/16/12	APP'D	Kristina Pyle	
DESIGNED	L.E.R.	DETAILED	B.A.H.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

KDOT Graphics Certified 10-23-2012

Sh. No. XXX

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	43	56

Note: Signs shown for one approach to work zone.



NOTE:
The R11-3A and R11-4 signs should be accompanied with appropriate detour signing, as shown on project traffic control plans.

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

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

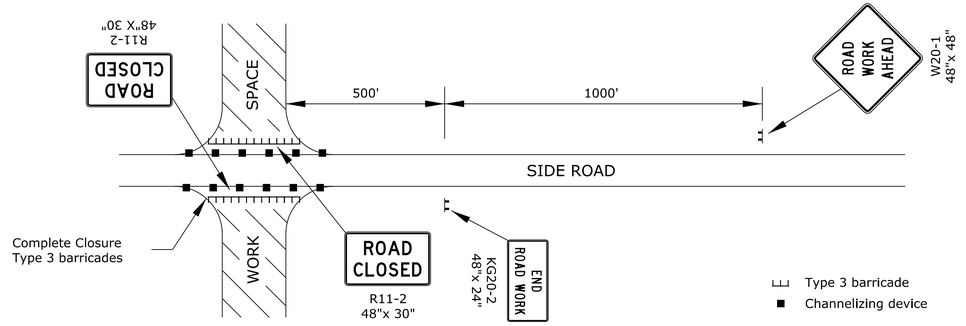


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

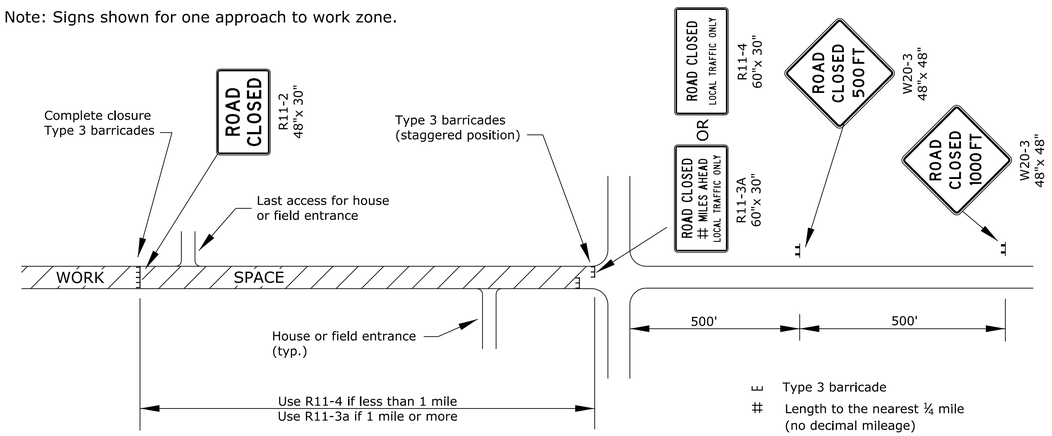


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

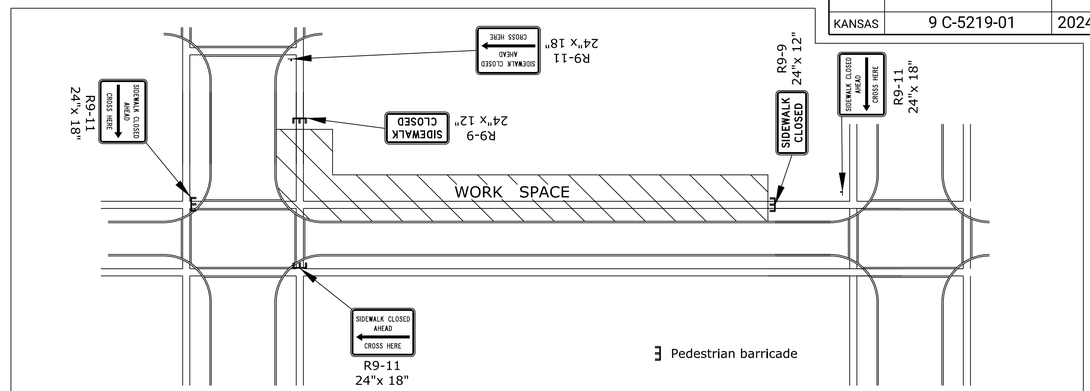
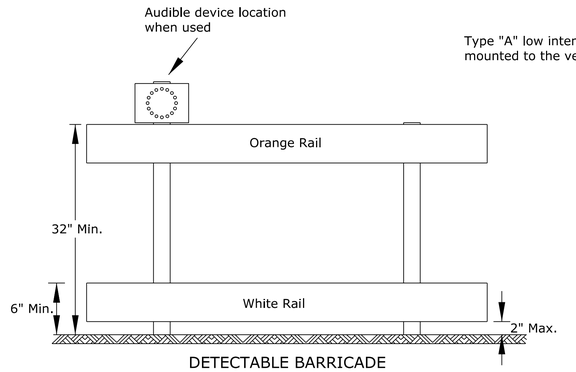
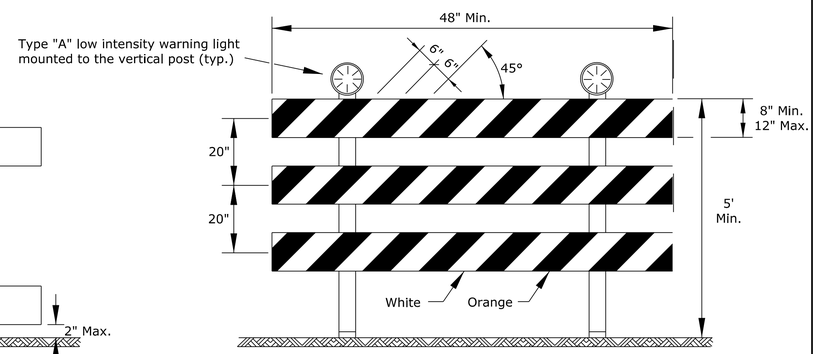


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE



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.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CLOSURES

TE704

FHWA APPROVAL			06/01/15	APP'D	Kristina Ericksen		
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES		TRACED	
DESIGN CK.		DETAIL CK.		QUAN. CK.		TRACE CK.	

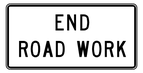
KDOT Graphics Certified 06-01-2015

KDOT Graphics Certified

Sh. No. XXX

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	44	56

SIGN LAYOUT INFORMATION



KG20-2

STD. SIZE EXPWY/FREEWAY
6" C
48"x 24"

KG20-5

STD. SIZE EXPWY/FREEWAY
6" C
48"x 24"

KM4-2O

STD. SIZE 3" C 24"x 6"
EXPWY/FREEWAY 6" C 48"x 12"

W7-3a

Mileage to be determined by the engineer.

W8-15

STD. SIZE EXPWY/FREEWAY
8" D
48"x 48"

W8-7

STD. SIZE EXPWY/FREEWAY
8" D
48"x 48"

W8-15p

STD. SIZE EXPWY/FREEWAY
30"x 24"

W8-17

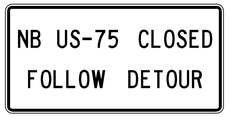
STD. SIZE EXPWY/FREEWAY
48"x 48"

W8-11

STD. SIZE EXPWY/FREEWAY
8" D
48"x 48"

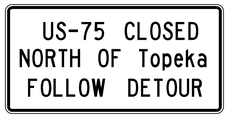
W8-17P
(OPTIONAL)

STD. SIZE EXPWY/FREEWAY
30"x 24"



SP-01
(SPECIAL SIGN)

STD. SIZE 6" C
EXPWY/FREEWAY 10" D

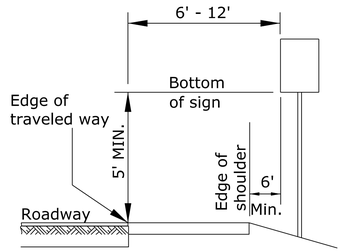


SP-02
(SPECIAL SIGN)

STD. SIZE
UPPERCASE: 6" C
LOWERCASE: 4.5" C

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.

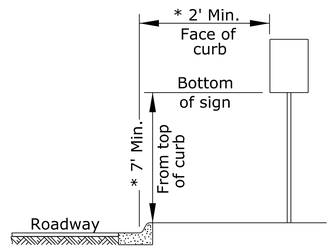


Rural

1) Ground-mounted signs shall be mounted at a minimum height of 5' measured from the bottom of the 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.

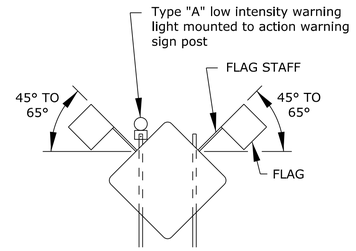
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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.

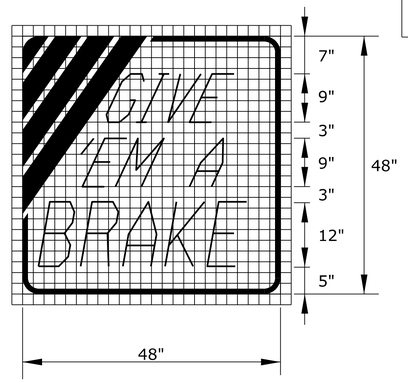
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

* 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.



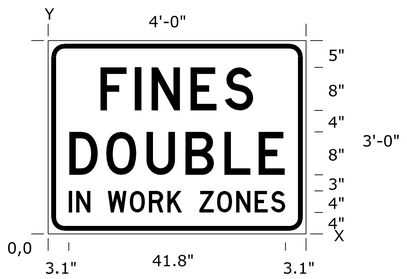
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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

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



KI-105a

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 D		F	I	N	E	S									8.0
	9.7	6.4	3.2	7.3	6.4	5.4	9.7								28.6
11.0 D		D	O	U	B	L	E								8.0
	3.9	6.9	7.5	7.3	7.3	6.4	4.9	3.9							40.3
4.0 D		I	N		W	O	R	K		Z	O	N	E	S	4.0
	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.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SIGN INFORMATION

TE710

FHWA APPROVAL		06/01/15	APP'D	Kristina Pyle	
DESIGNED	R.W.B.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

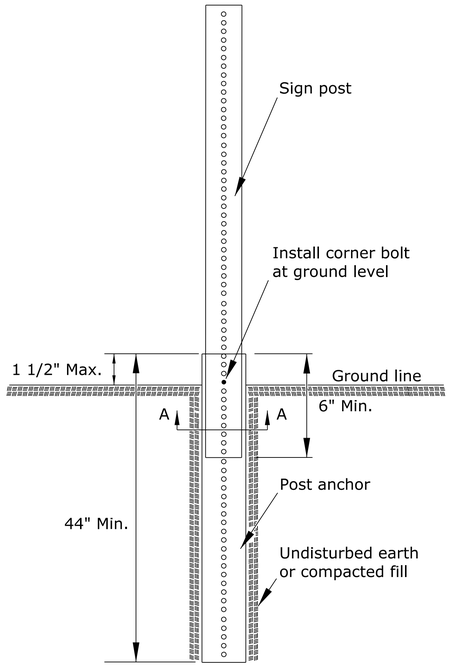
KDOT Graphics Certified 06-01-2015

KDOT Graphics Certified

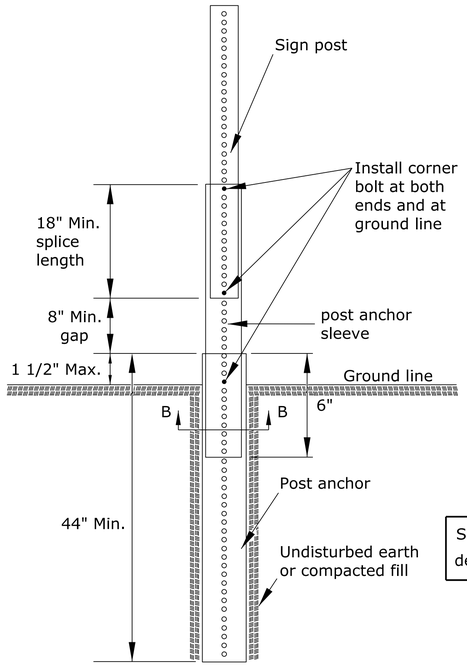
Sh. No. XXX

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	45	56

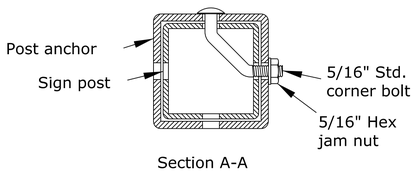
Perforated square steel tube (P.S.S.T.) post setup



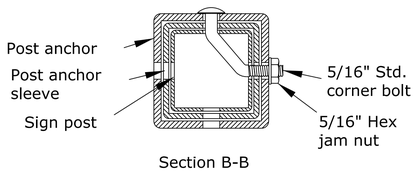
P.S.S.T. detail



Telescoping P.S.S.T. detail



Section A-A

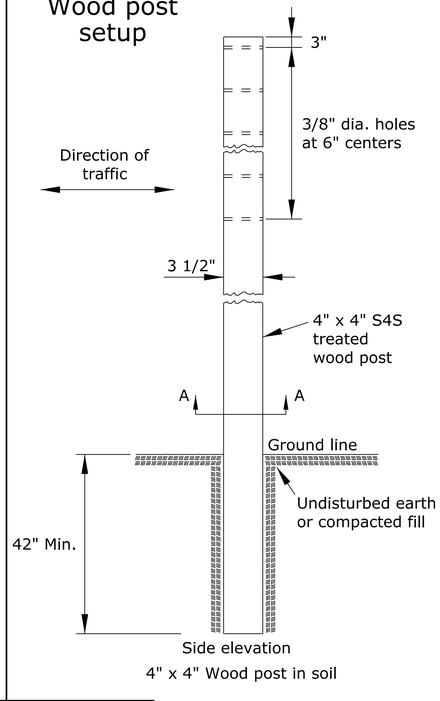


Section B-B

Details for 2", 2 1/4", or 2 1/2" sign posts

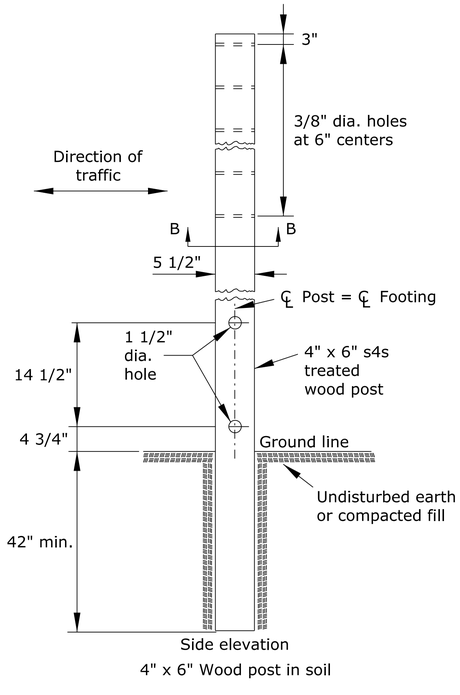
Place bolts in the same corner along each sign post.

Wood post setup



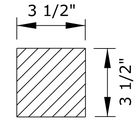
Side elevation

4" x 4" Wood post in soil

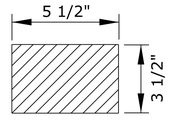


Side elevation

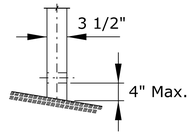
4" x 6" Wood post in soil



Section A-A



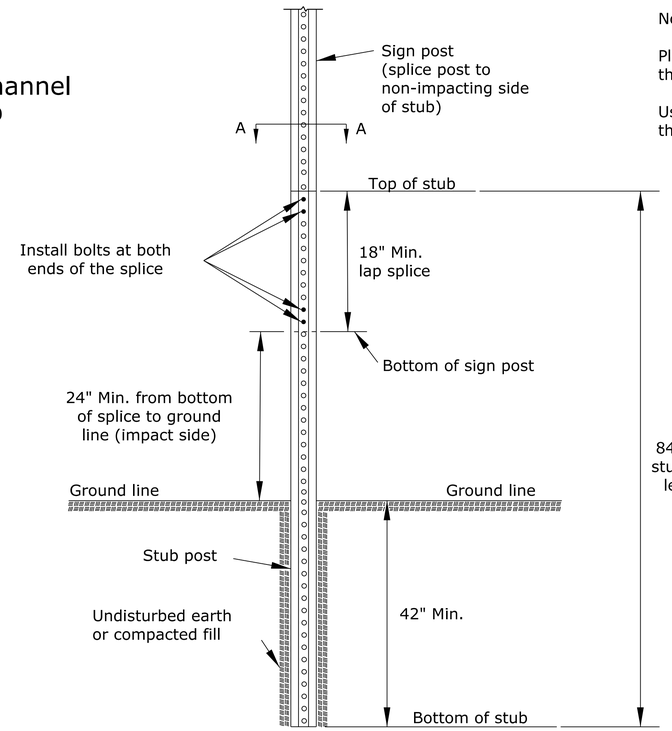
Section B-B



Front elevation

See TE710 for additional details and requirements

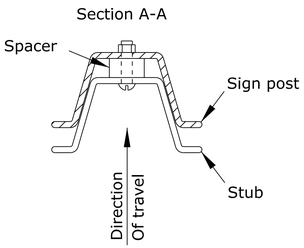
3 lb/f U-Channel setup



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.



NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

FHWA APPROVAL		06/01/15	APP'D	Kristina Pyle	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

KDOT Graphics Certified 06-01-2015

KDOT Graphics Certified

Sh. No. XXX

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	46	56

Summary Of Traffic Control Devices

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		2	

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

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	

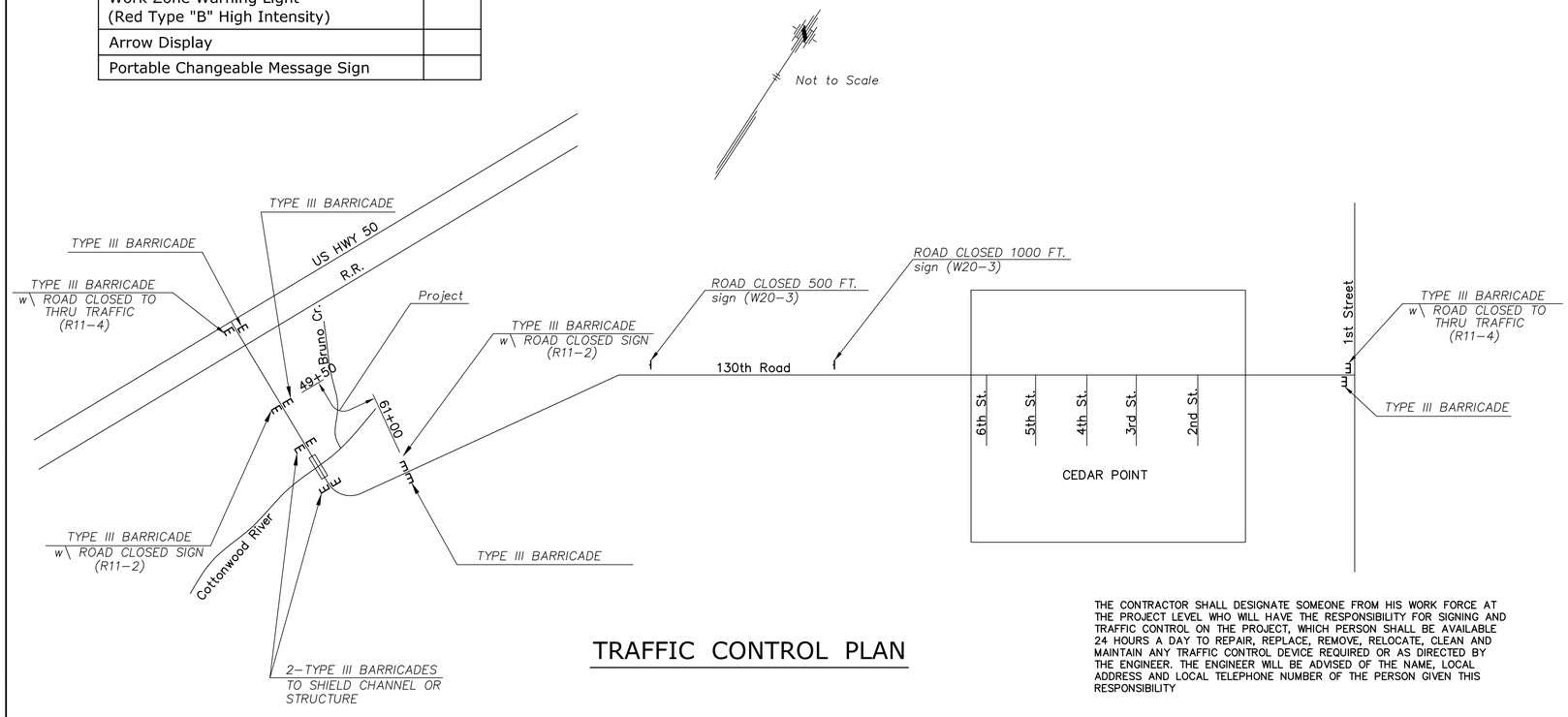
Summary Of Traffic Control Devices

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.

✳ All traffic control devices shall be 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 additional signs and traffic control devices, this will be subsidiary to the bid item traffic control.



TRAFFIC CONTROL PLAN

THE CONTRACTOR SHALL DESIGNATE SOMEONE FROM HIS WORK FORCE AT THE PROJECT LEVEL WHO WILL HAVE THE RESPONSIBILITY FOR SIGNING AND TRAFFIC CONTROL ON THE PROJECT, WHICH PERSON SHALL BE AVAILABLE 24 HOURS A DAY TO REPAIR, REPLACE, REMOVE, RELOCATE, CLEAN AND MAINTAIN ANY TRAFFIC CONTROL DEVICE REQUIRED OR AS DIRECTED BY THE ENGINEER. THE ENGINEER WILL BE ADVISED OF THE NAME, LOCAL ADDRESS AND LOCAL TELEPHONE NUMBER OF THE PERSON GIVEN THIS RESPONSIBILITY

Recapitulation Of Quantities		
Item	Quantity	Unit
Work Zone Signs (O 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)		
Traffic Control	Lump Sum	Lump Sum
Flagger (Set Price)	1	Hour

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SUMMARY OF DEVICES
RECAPITULATION OF QUANTITIES

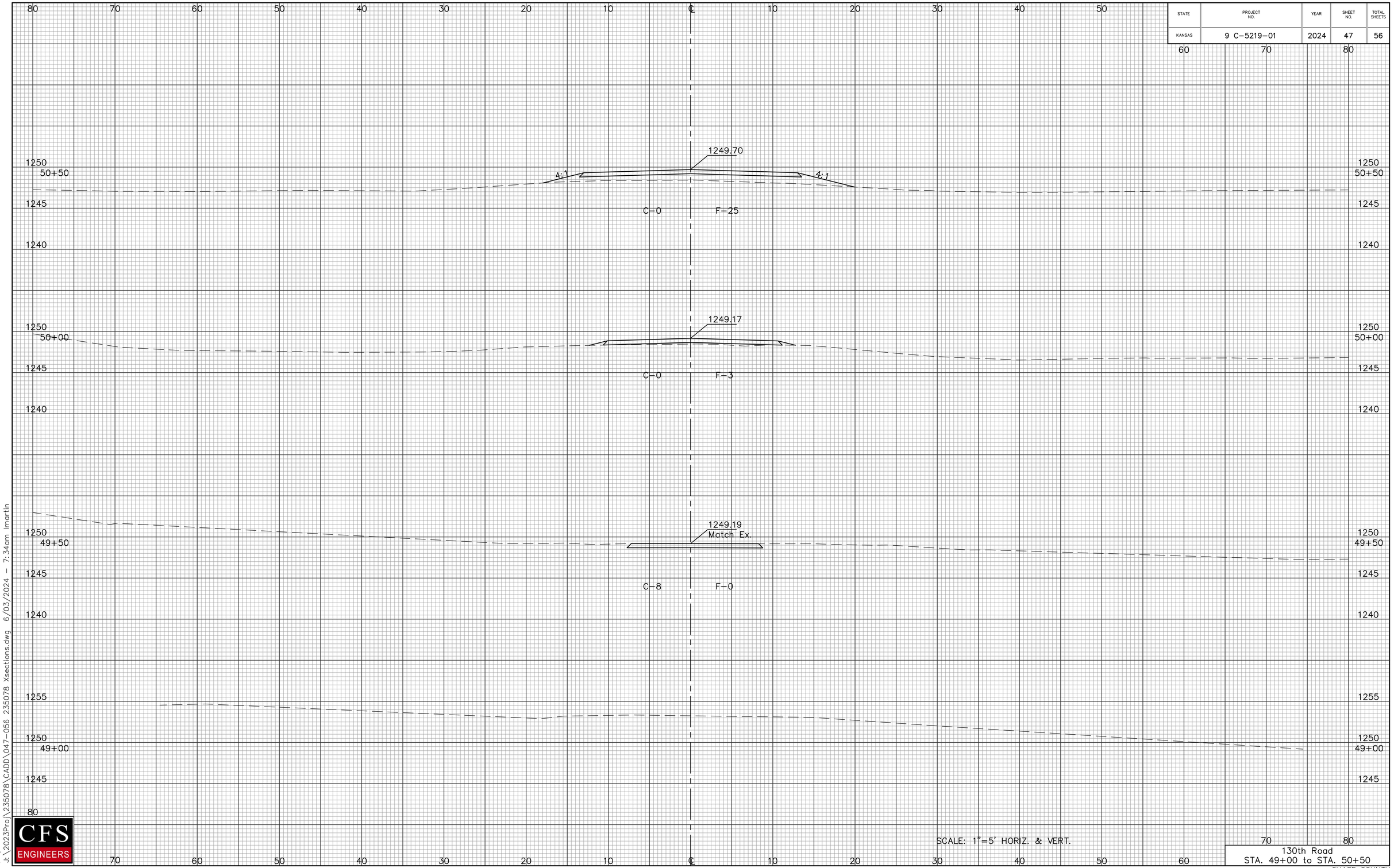
TE795

FHWA APPROVAL		06/01/15	APP'D	Kristina Ericksen
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN. CK.	TRACE CK.

KDOT Graphics Certified 06-23-2015

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	47	56



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

130th Road
STA. 49+00 to STA. 50+50

CFS ENGINEERS

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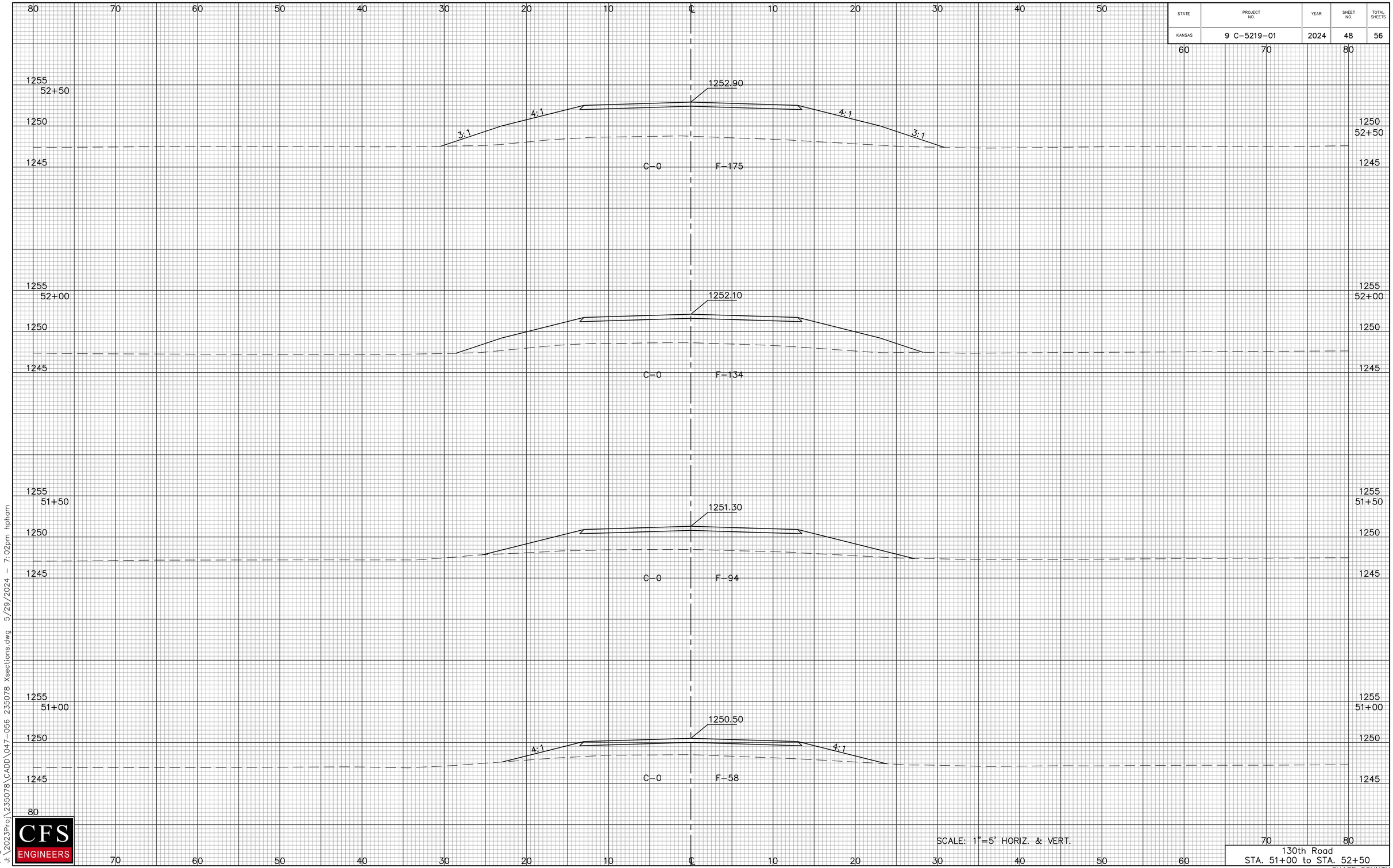
CHASE COUNTY
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	48	56



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

130th Road
STA. 51+00 to STA. 52+50

CFS ENGINEERS

1=5
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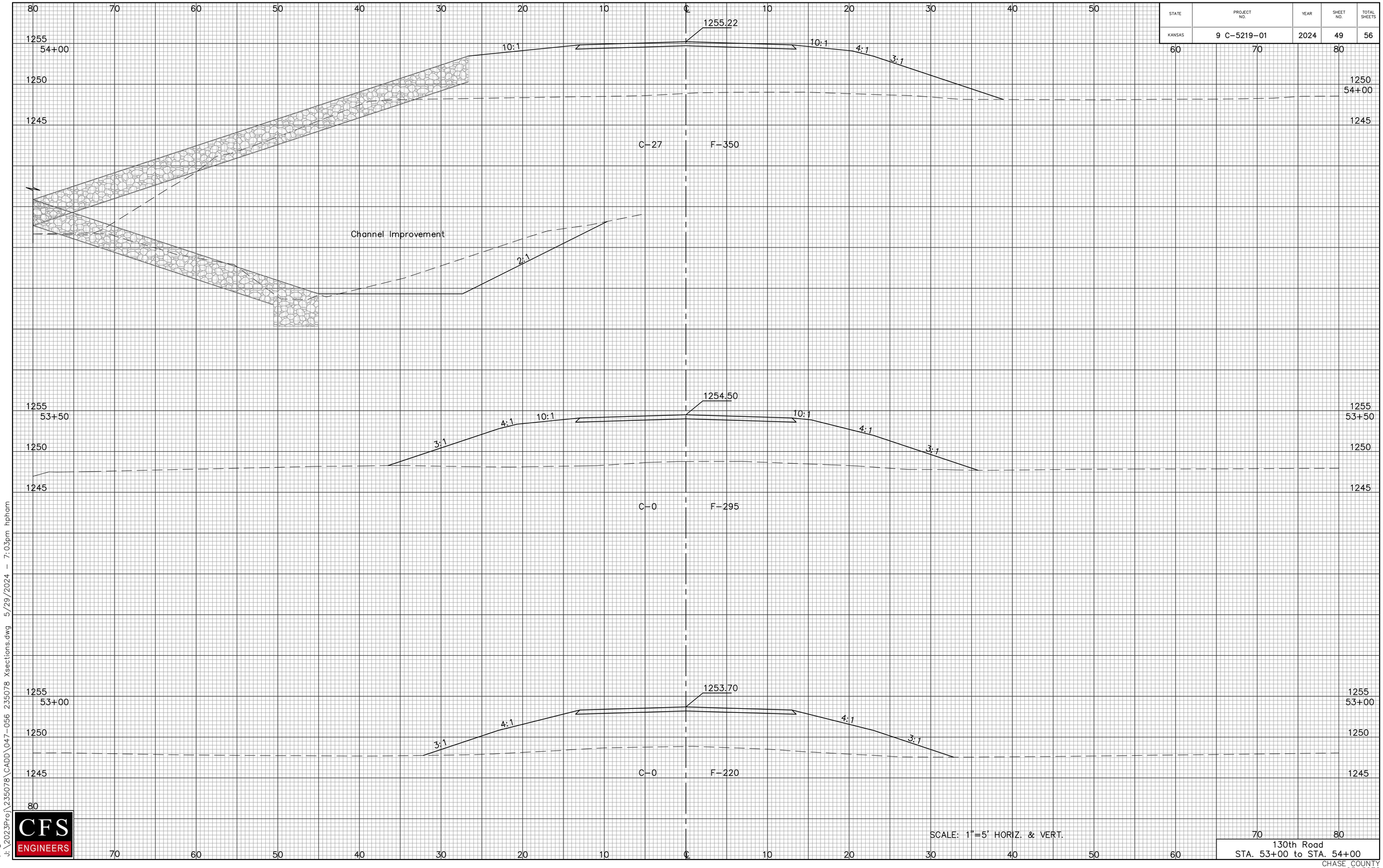
CHASE COUNTY
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	49	56



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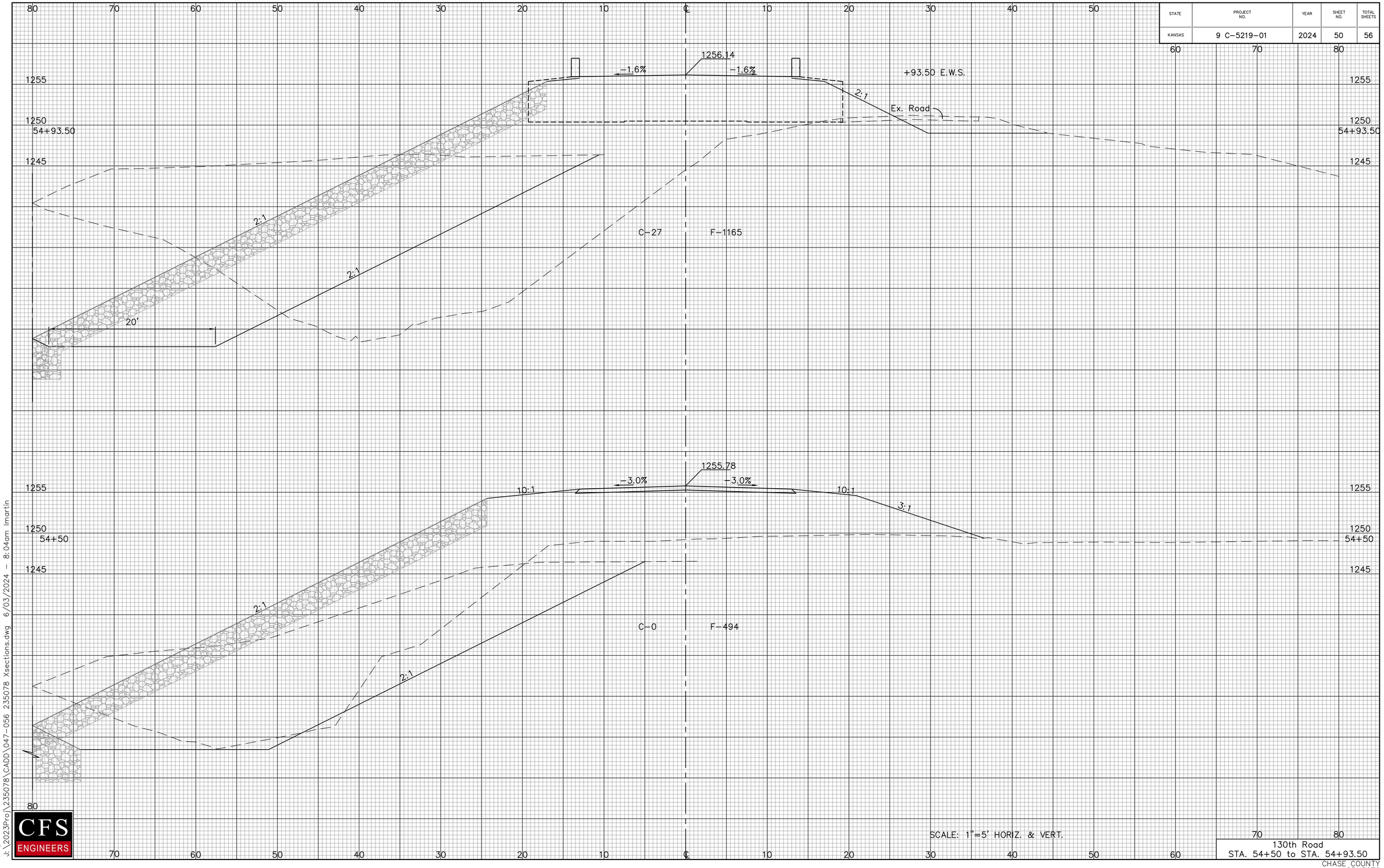
CFS ENGINEERS

CHASE COUNTY
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	50	56



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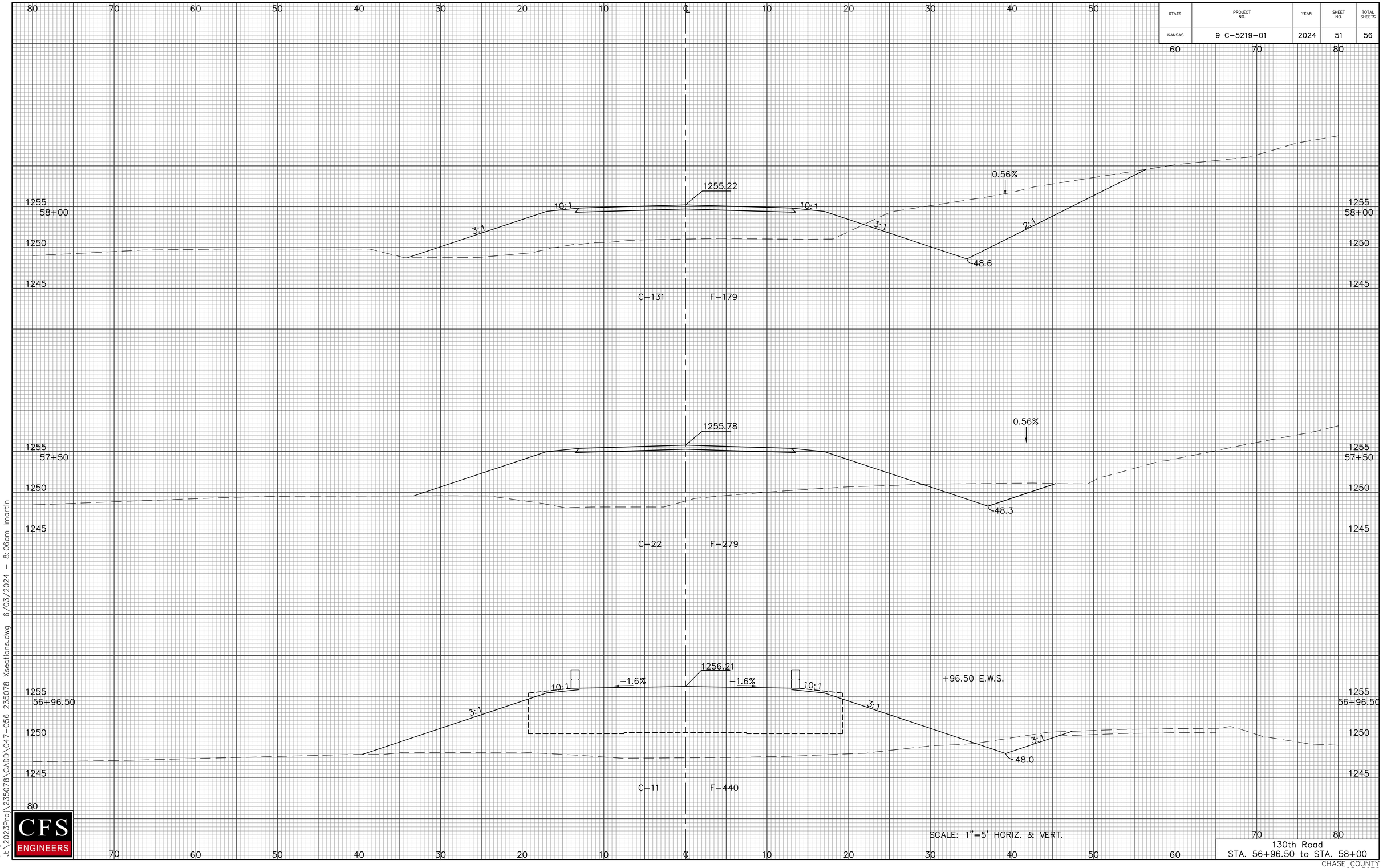
1=5

CFS ENGINEERS

CHASE COUNTY
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	51	56



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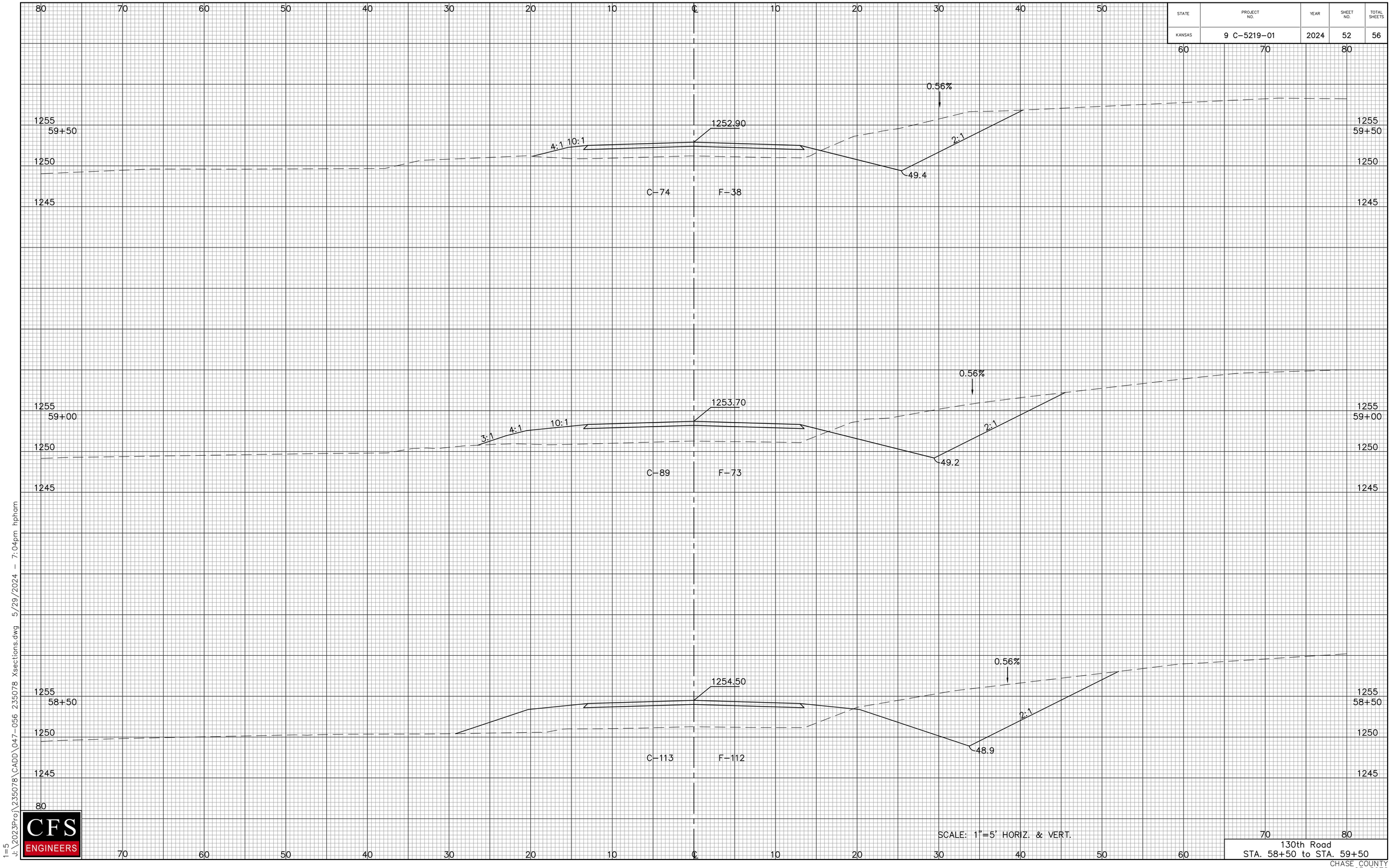
1=5

CFS ENGINEERS

CHASE COUNTY
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	52	56



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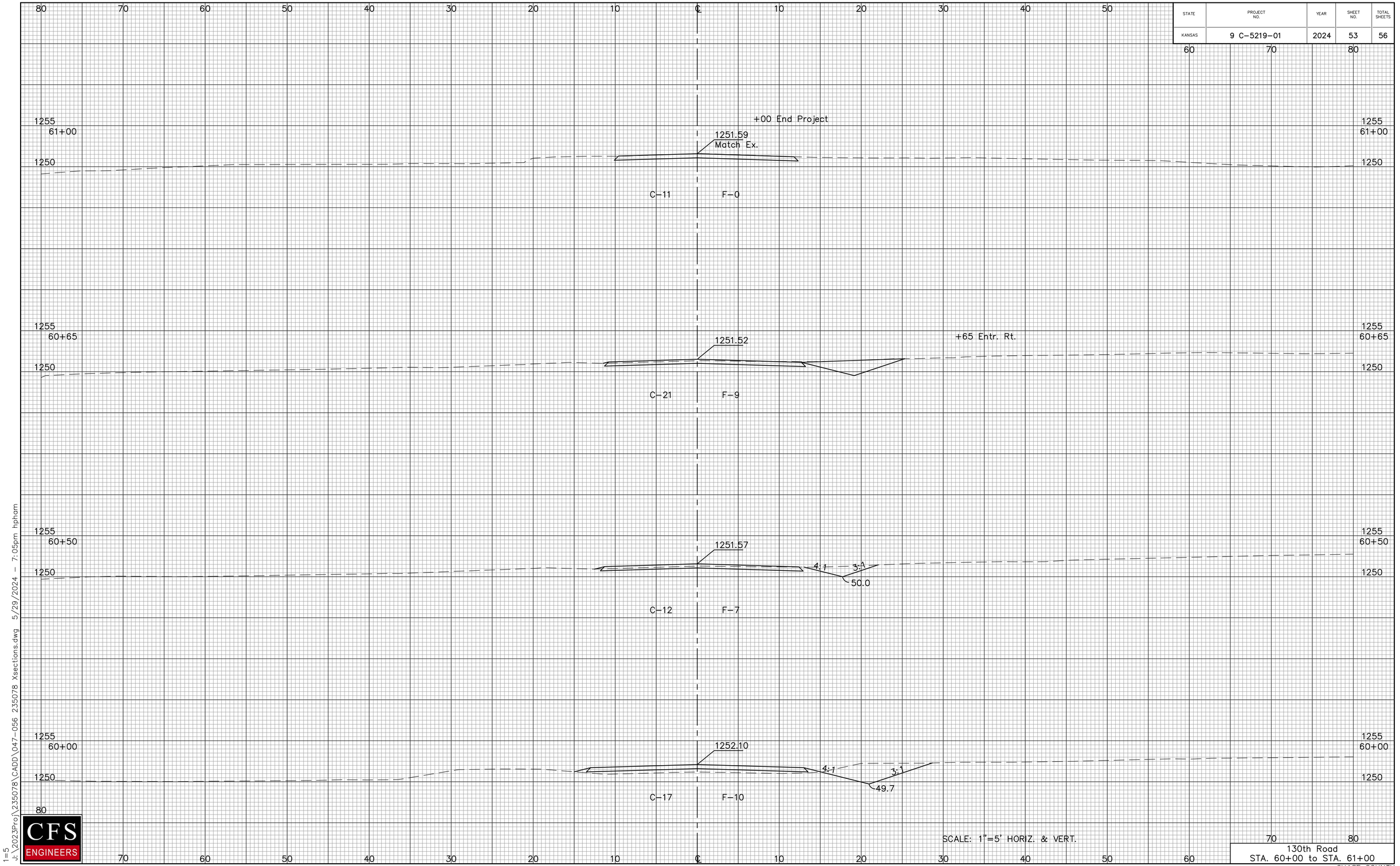
CFS ENGINEERS

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

130th Road
STA. 58+50 to STA. 59+50

CHASE COUNTY
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	53	56



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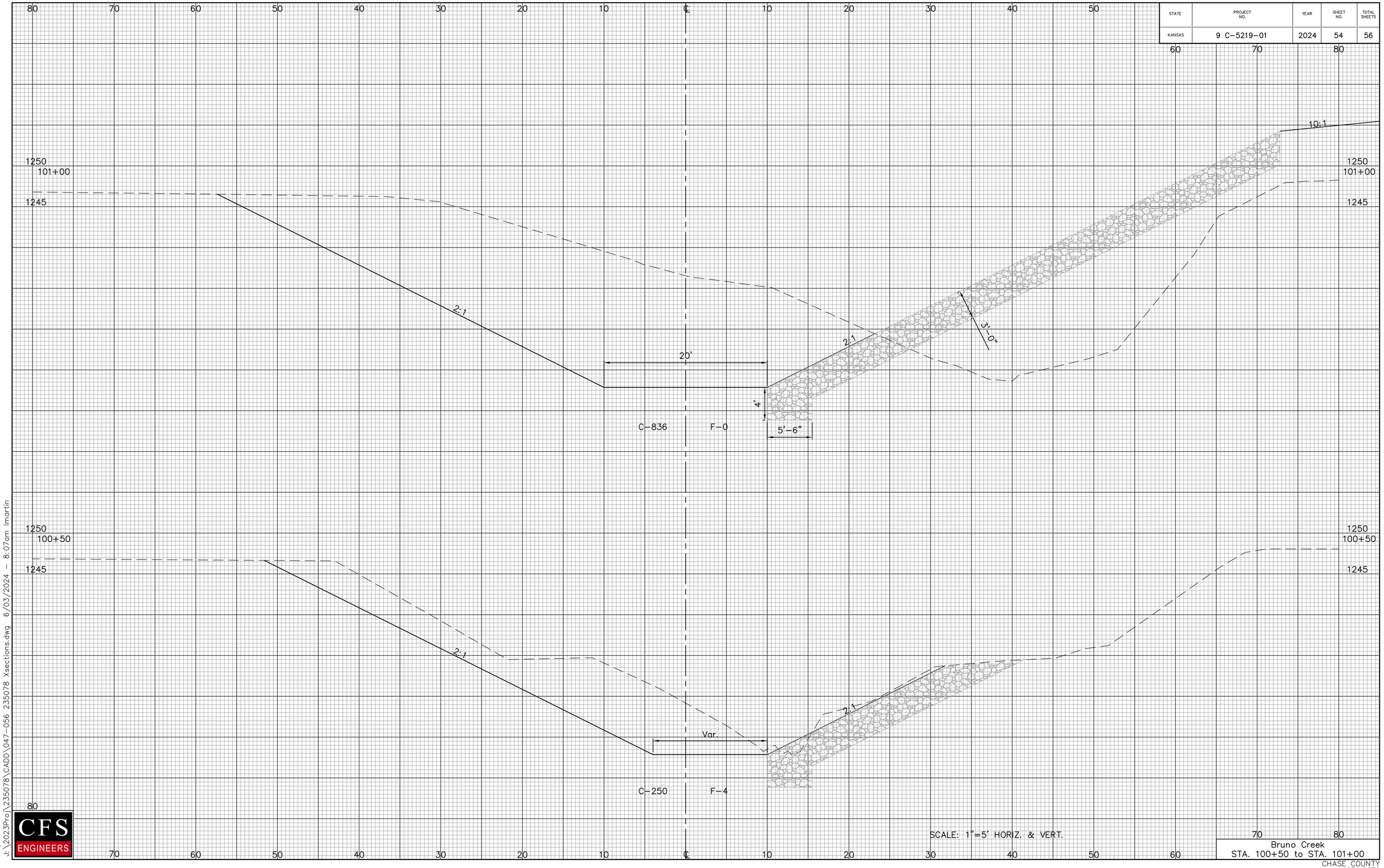
CFS ENGINEERS

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

130th Road
STA. 60+00 to STA. 61+00

CHASE COUNTY
23-5078

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	54	56



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

Bruno Creek
STA. 100+50 to STA. 101+00

CHASE COUNTY
23-5078

CFS ENGINEERS

1=5
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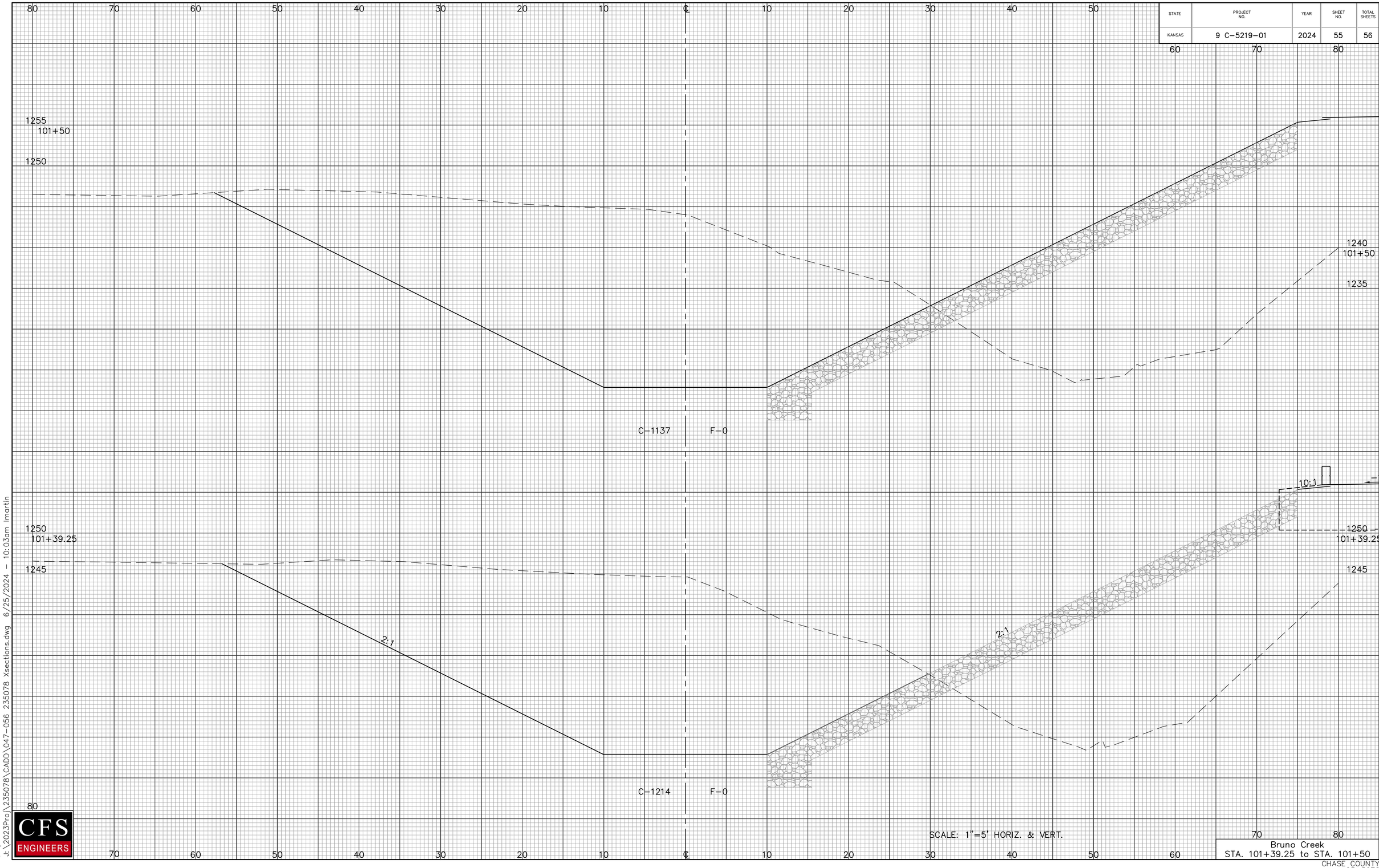
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	55	56



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

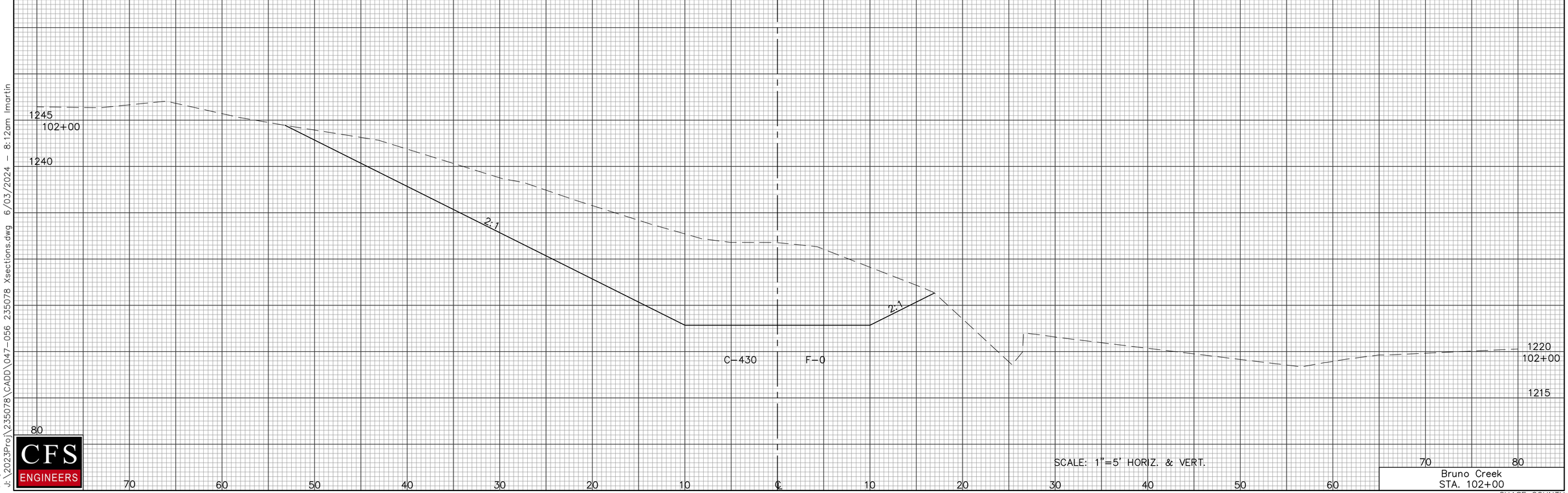
Bruno Creek
STA. 101+39.25 to STA. 101+50

CHASE COUNTY
23-5078

CFS ENGINEERS

1=5
J:\2023Pro\235078\CADD\047-056 235078 Xsections.dwg 6/25/2024 - 10:03am lmartin

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	9 C-5219-01	2024	56	56



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1=5

CFS ENGINEERS

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

Bruno Creek
STA. 102+00

CHASE COUNTY
23-5078