INDEX OF SHEETS

STATE OF KANSAS

PLAN AND PROFILE OF PROPOSED

93 C-5237-01

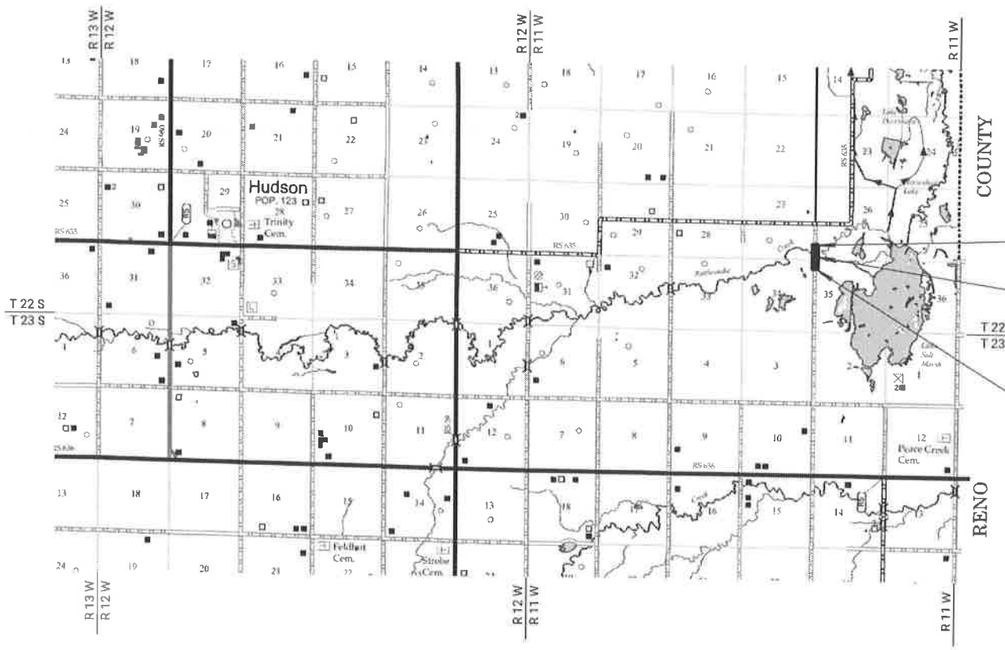
FEDERAL AID PROJECT

STAFFORD COUNTY

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	1	48

Federal Aid Project No. BRO-C523(701)

GRADING
BRIDGE
SEEDING



Sta. 54+00.00 END
KDOT Project 93 C-5237-01

Sta. 50+00.00 CONSTRUCT
Br. No. 000930693005621
36'-48'-36' R.C. Haunched
Slab Span Bridge (RCSH)
28'-0" Roadway.

Sta. 46+00.00 BEGIN
KDOT Project 93 C-5237-01

No Scale

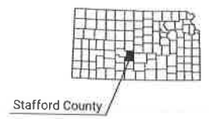
DESIGN DESIGNATION

AADT (2023)	15
AADT (2043)	20
DHV	
D	
T	10%
V	55 mph
C of A	
Clear Zone	

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	
GUARDRAIL		MARSH	
CONSTRUCTION LIMITS		HEDGE	
RIGHT OF WAY LINE		TREES	
TRAVELED WAY		PROFILE ELEVATION	1972.18
RAILROADS		STREAM or CREEK	

GROSS LENGTH OF PROJECT	800.00 FT. (Includes Equations)	
EXCEPTIONS		
NET LENGTH OF PROJECT	800.00 FT.	0.151 MILES
NET LENGTH OF BRIDGES	122.50 FT.	0.023 MILES
NET LENGTH OF ROAD	677.50 FT.	0.128 MILES



NOTE: This project will be closed to all traffic during construction.

RECOM. FOR APPROVAL-DATE
Philip Dasse 8-7-2024
LOCAL PUBLIC OFFICIAL

BRETT WILKINSON LICENSED 26714 8/8/2024 KANSAS PROFESSIONAL ENGINEER

KIRKHAM MICHAEL
217 N. Douglas, ELLSWORTH, KANSAS 67439
(785) 472-3163 FAX (785) 472-3817

Approved: Aug 20, 2024
Date

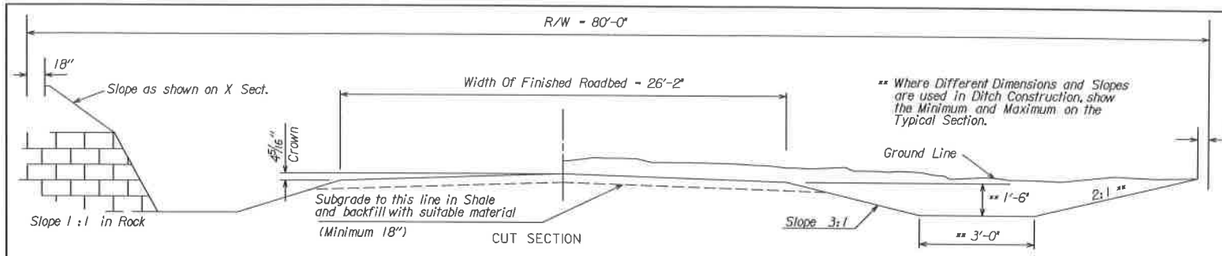
State Transportation Engineer

By:
Assistant Chief, Bureau of Local Projects

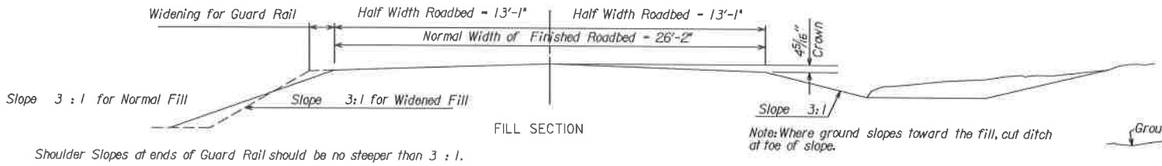
KANSAS DEPARTMENT OF TRANSPORTATION

Plotted by : bwilkinson 5-AUG-2024 15:02
File : 2301835_rtl_TitleSheet.dgn

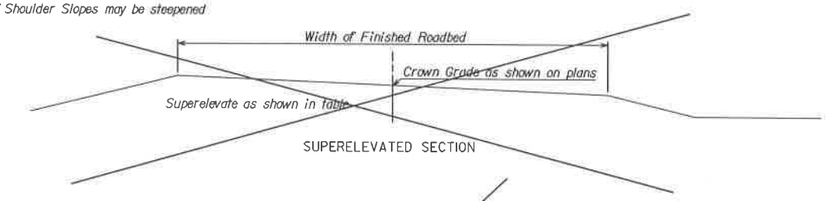
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	2	48

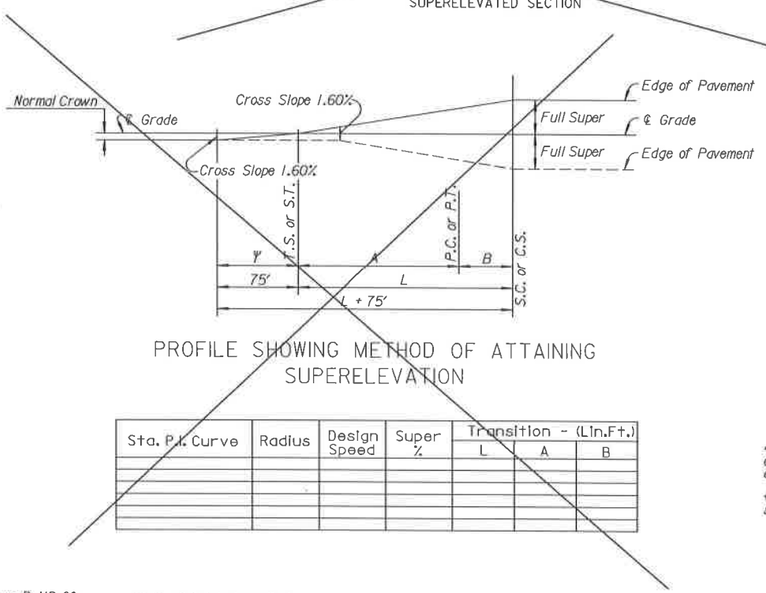


NOTE: For overbreakage in limestone, sandstone or shale see Special Provisions

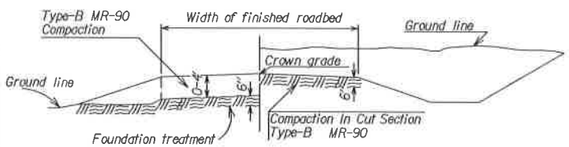


Shoulder Slopes at ends of Guard Rail should be no steeper than 3 : 1.
When fill exceeds 6' Shoulder Slopes may be steepened



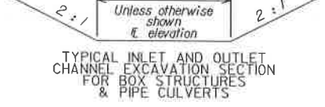


Sta. P.I. Curve	Radius	Design Speed	Super %	Transition - (Lin.Ft.) L	A	B

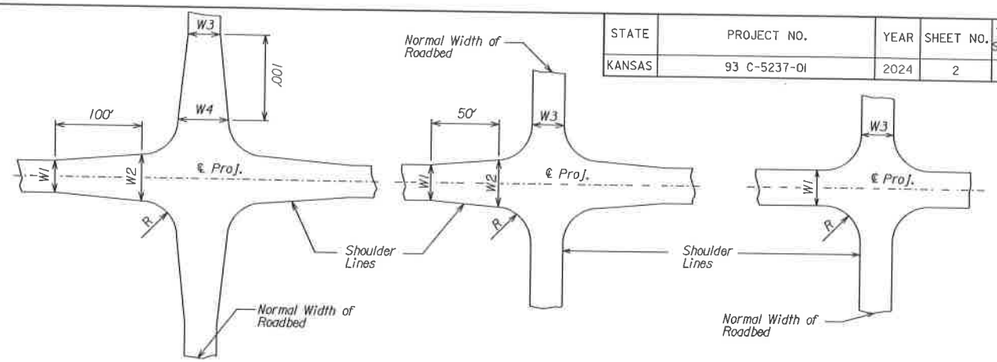


ALL EMBANKMENT SHALL BE COMPACTED EXCEPT DITCHPLUGS AND WASTE BERMS.

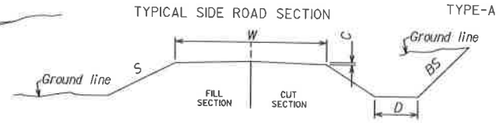
FOUNDATION TREATMENT AND COMPACTION OF EARTHWORK

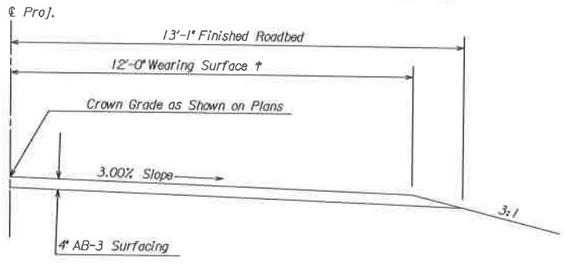


TYPICAL INLET AND OUTLET CHANNEL EXCAVATION SECTION FOR BOX STRUCTURES & PIPE CULVERTS



TYPICAL INTERSECTION DETAILS

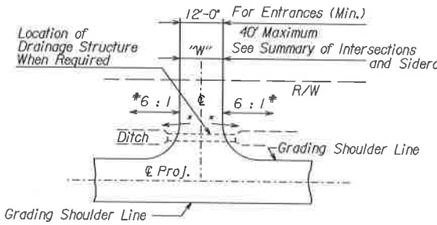




TYPICAL ½ SECTION SURFACING

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

† Roadway Width	
Sta. to Sta.	Width
46+00 to 47+50	Match Existing (22')
47+50 to 48+50	22' to 28'
48+50 to 51+25	28'
51+25 to 52+00	28' to 24'
52+00 to 53+50	24'
53+50 to 54+00	24' to Existing

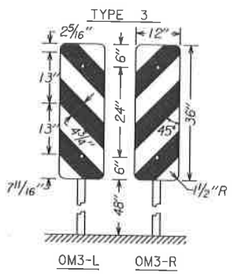


TYPICAL SIDE ROAD OR ENTRANCE DETAIL

* 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	SIDE	TYPE OF STRUCT.	TYPE OF SIGN	OBJECT MARKER TYPE	OBJECT MARKER NO.	REMARKS
49+38.00	Lt.	Bridge		OM3-L	1	ø
49+38.00	Rt.	Bridge		OM3-R	1	ø
50+62.00	Lt.	Bridge		OM3-R	1	ø
50+62.00	Rt.	Bridge		OM3-L	1	ø
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.

See TE416 for object marker post information.

NO.	DATE	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.

CADconform Certify This File

Sh. No. 2

Plotted by : bwilkinson 5-AUG-2024 14:32
File : 2301835_rts_TypicalSection.dgn

UTILITIES		
Gas	TC Energy	785-479-2524
Power	Ark Valley Electric	620-728-5550

CP #1 Sta. 45+03.19, 27.53' Lt.
N = 491,259.456 E = 16,511,661.150
1. Set 5/8" Rebar Flush
2. App. ℄ of N-S Rd. 27.5' E
3. N-S Running Fc. Line 3.0' W
4. S. End of Ex. Bridge 440.1 N

P.O.T. Sta. 43+00.00
N = 491056.331 E = 16511689.188
1. Not Set

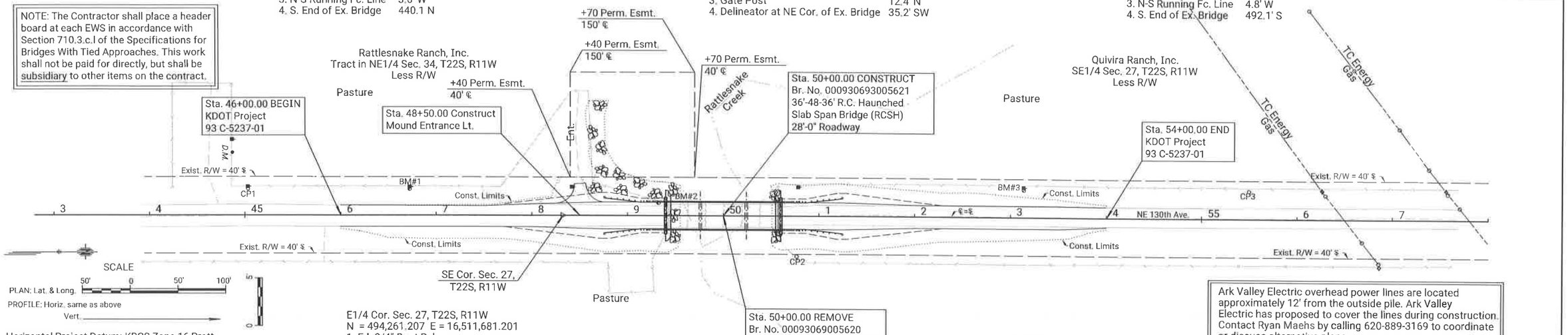
CP #2 Sta. 50+76.65, 42.31' Rt.
N = 491,833.088 E = 16,511,729.560
1. Set 5/8" Rebar Flush
2. App. ℄ of N-S Rd. 43.2' W
3. Gate Post 12.4' N
4. Delineator at NE Cor. of Ex. Bridge 35.2' SW

P.O.T. Sta. 57+00.00
N = 492456.327 E = 16511685.699
1. Not Set

CP #3 Sta. 55+49.76, 28.85' Lt.
N = 492,306.011 E = 16,511,657.220
1. Set 5/8" Rebar Flush
2. App. ℄ of N-S Rd. 28.8' E
3. N-S Running Fc. Line 4.8' W
4. S. End of Ex. Bridge 492.1' S

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	3	48

NOTE: The Contractor shall place a header board at each EWS in accordance with Section 710.3.c.l of the Specifications for Bridges With Tied Approaches. This work shall not be paid for directly, but shall be subsidiary to other items on the contract.



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

Horizontal Project Datum: KRCS Zone 16 Pratt for Project Coordinates.

Vertical Datum: North American Vertical Datum NAVD88 (Geiod 18)

E1/4 Cor. Sec. 27, T22S, R11W
N = 494,261.207 E = 16,511,681.201
1. Fd. 3/4" Bent Rebar
2. In App. ℄ of road to the S.
3. In App. ℄ of E-W Rd.
3. Top of Utility Ped. 45.9' SW
4. Spk./Wshr. in S. Face PP 45.0' NW
5. Wood Cor. Fc. Post 32.1' NNW

United States of America
Sec. 35, T22S, R11W
Less R/W

United States of America
Sec. 26, T22S, R11W
Less R/W

SE Cor. Sec. 27, T22S, R11W
N = 491,588.424 E = 16,511,687.862
1. Fd. 3/4" Bend Rebar
2. In App. ℄ of N-S Rd.
3. N-S Running Fc. Line 49.1' E
4. Wood Cor. Fc. Post 46.4' NW
5. Set Spk./Wshr. in S. Face PP 30.9' WNW

DATUM BENCHMARK

BASE 1 is the datum benchmark. Two OPUS solutions were obtained at BASE 1. BASE 1 is a 5/8" rebar located 1517 feet south of the intersection of S. Sterling Rd. and NE 130th Ave. in Stafford Co. and 37.3 feet east of the centerline of NE 130th Ave. BASE 1 Elev. = 1793.33 feet

BASE 1 WGS 84 Coordinates: Latitude = 38°06'11.25749" N
Longitude = 98°30'33.35915" W.
Ellipsoid Height = 1704.94 feet

The Contractor shall remove the existing 6-18.8' timber beam bridge (22' roadway). Br. No. 000930693005620. All items of the existing structure shall become property of the Contractor and shall be removed from the site.

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

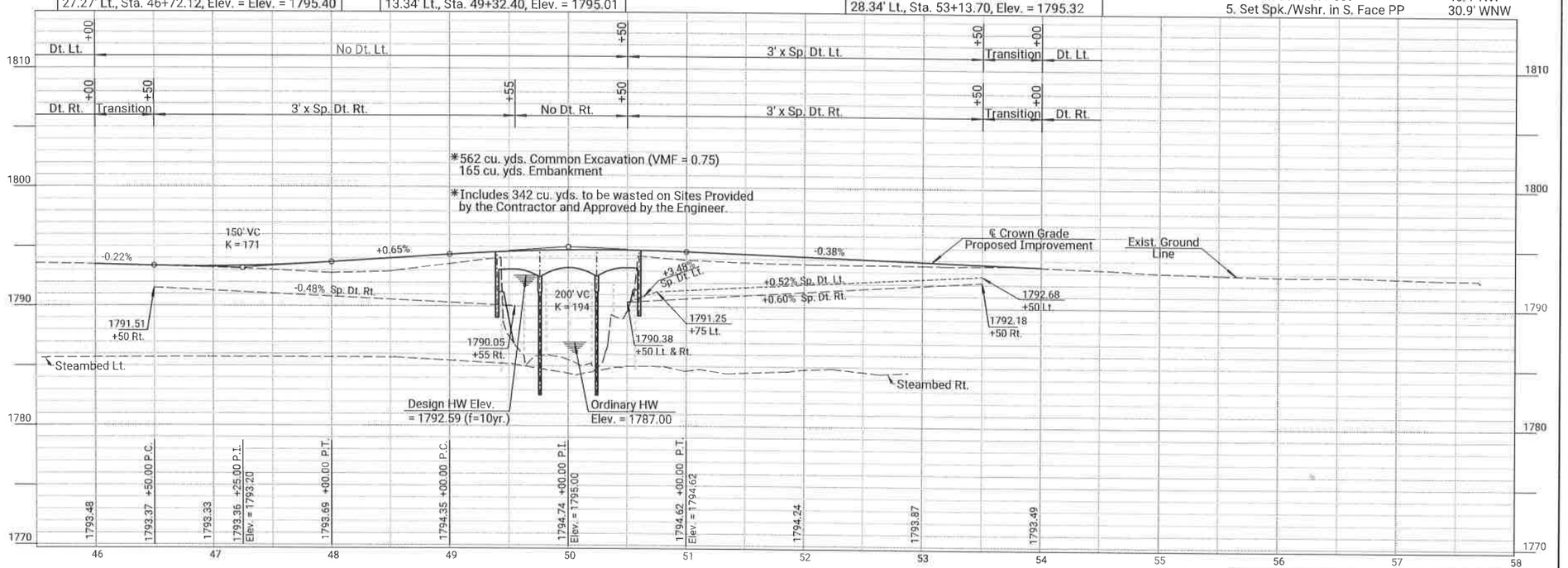
All fencing within Construction Limits will be removed prior to the beginning of project.

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

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

Excavation shown to be wasted shall be wasted on sites provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance, and site location. Locations that in the opinion of the Engineer will leave an unsightly appearance will not be approved.

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



KANSAS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

STA. 46+00.00 TO STA. 54+00.00

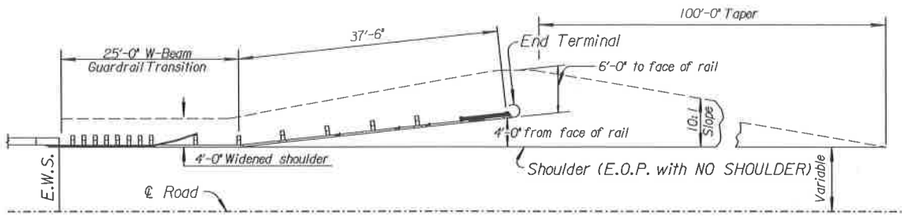
Sh. No. 3

BY	DATE

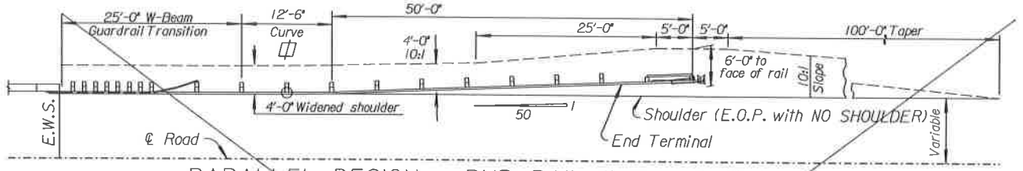
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : bwilkinson 5-AUG-2024 14:32
File : 2301835_PlanProfile.dgn

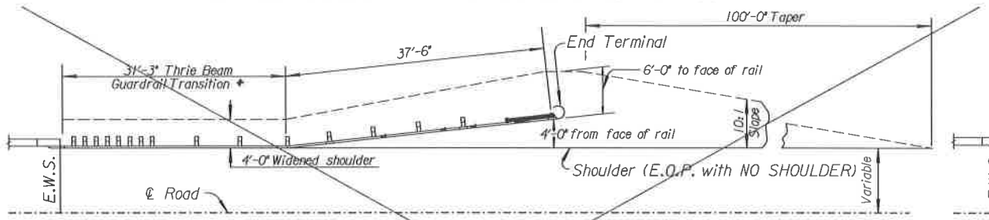
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	4	48



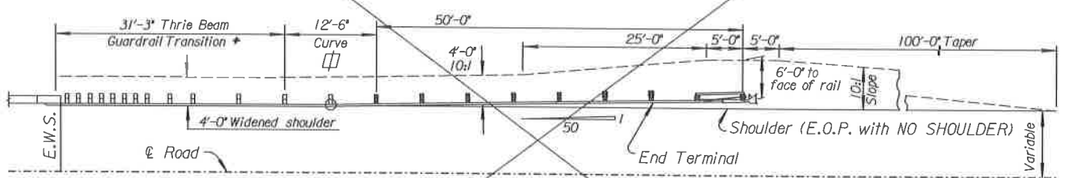
FLARED DESIGN - RUB RAIL (Layout 1)



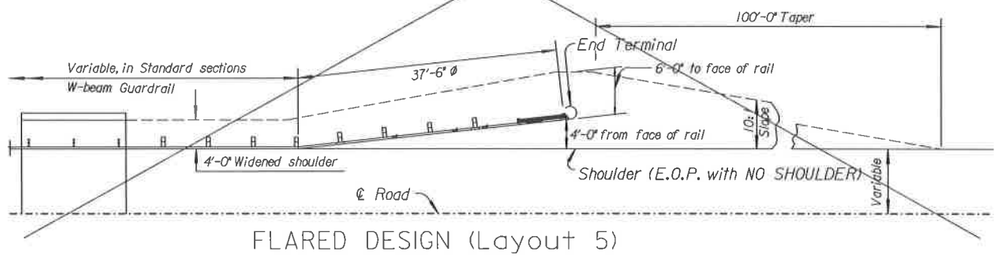
PARALLEL DESIGN - RUB RAIL (Layout 2)



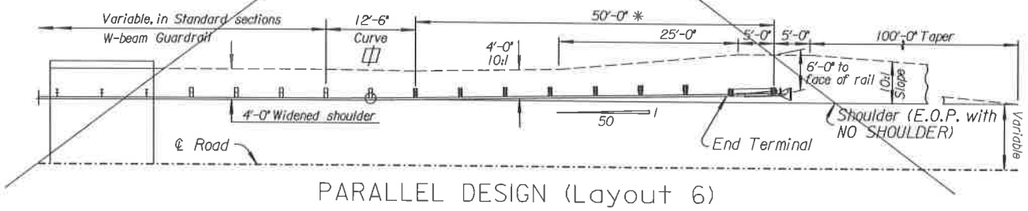
FLARED DESIGN - THRIE BEAM (Layout 3)



PARALLEL DESIGN - THRIE BEAM (Layout 4)



FLARED DESIGN (Layout 5)



PARALLEL DESIGN (Layout 6)

TYPICAL ALIGNMENT OF GUARDRAIL AT CULVERTS & BOX BRIDGES

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'

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 (Quadrant)	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	
Southwest	Lt.	1	25'-0"		25'-0"	1	1				
Southeast	Rt.	1	25'-0"		25'-0"	1	1				
Northwest	Lt.	1	25'-0"		25'-0"	1	1				
Northeast	Rt.	1	25'-0"		25'-0"	1	1				
TOTAL LENGTH					100'-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.

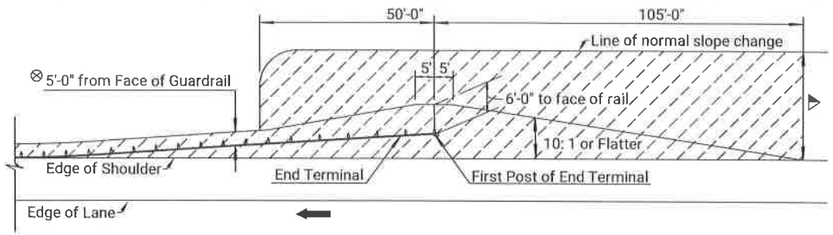
Sh. No. 4

Plotted by: bwilkinson 5-AUG-2024 14:32
File: 2301835_rgr-01_lp620.dgn

'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.



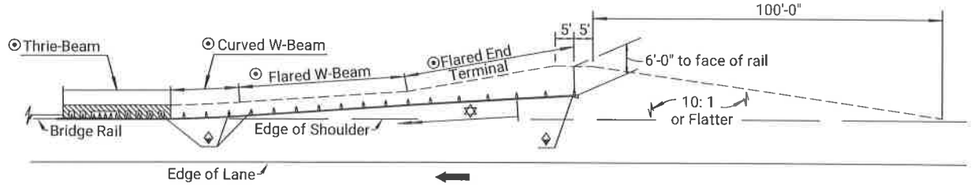
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet 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

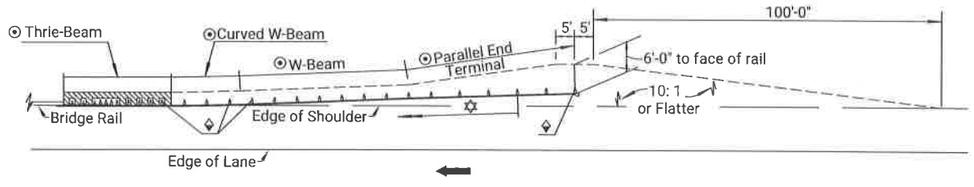
FLARED GUARDRAIL DETAIL

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	93 C-5237-01	2024	5	48

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.

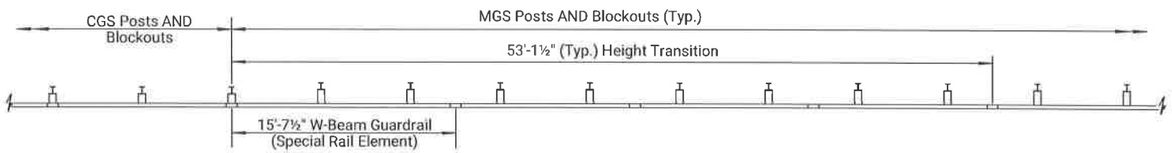
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even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

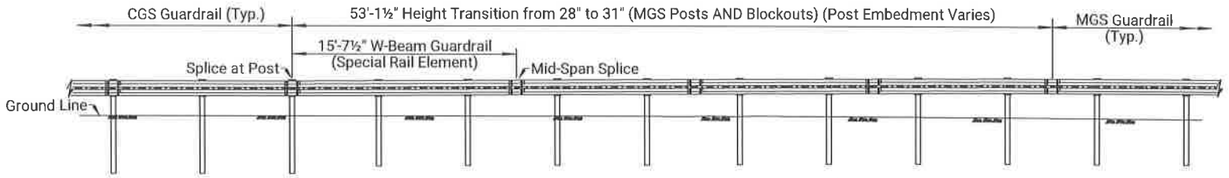
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered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

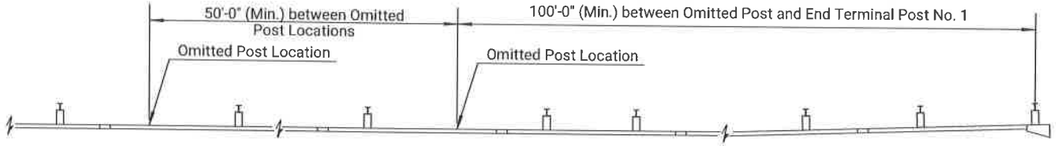
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



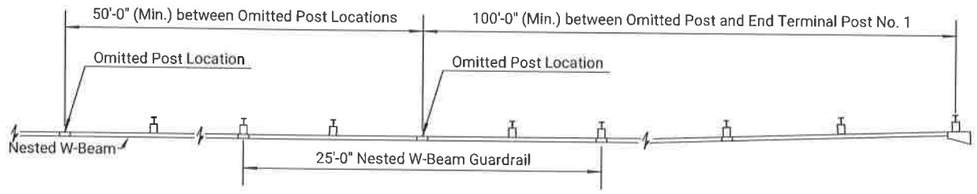
CGS TO MGS TRANSITION DETAILS (PLAN)



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

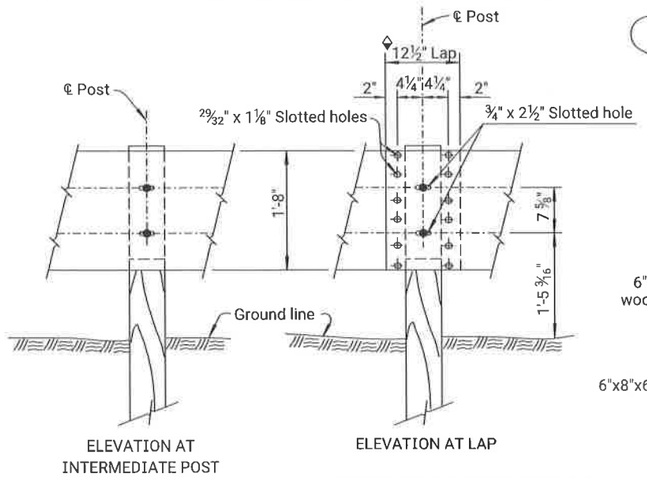
GUARDRAIL AUXILIARY DETAILS

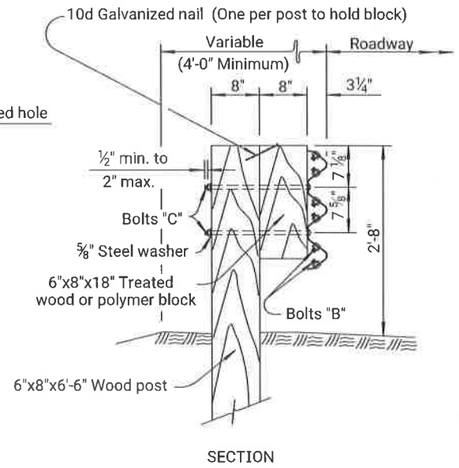
RD606

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

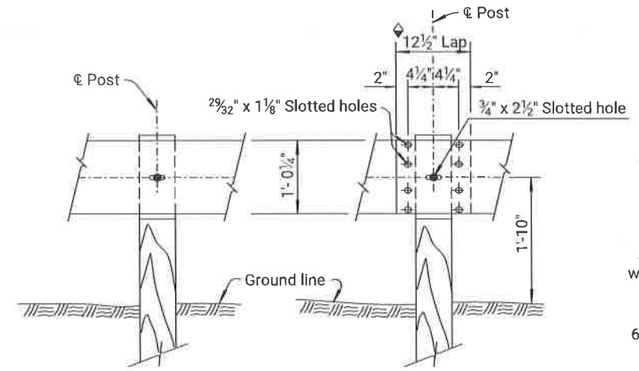
Sh. No. 5

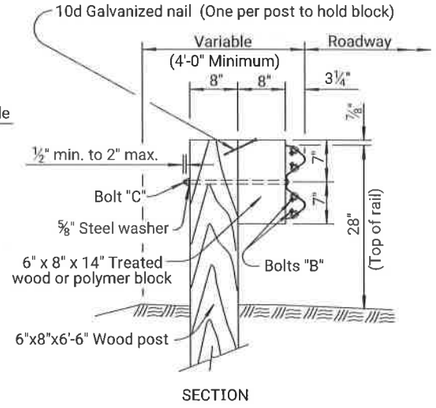
Plotted by : bwilkinson 5-AUG-2024 14:33
File : 2301835_rgr-02_rd606.dgn





THRIE BEAM POST DETAILS





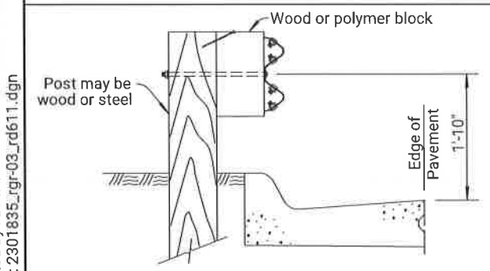
W-BEAM POST DETAILS

♦ 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

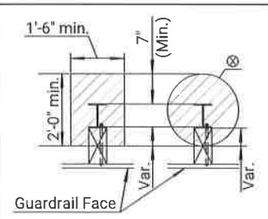
GENERAL NOTES (Wood Posts)

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.

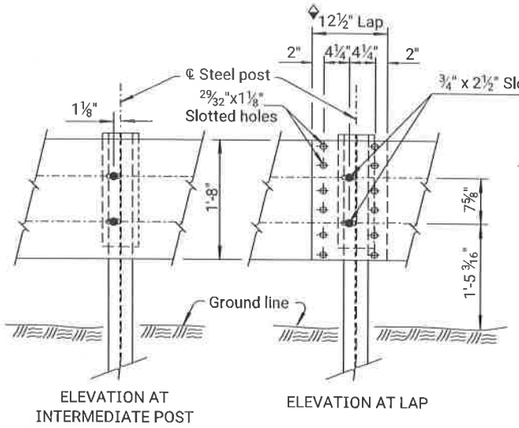


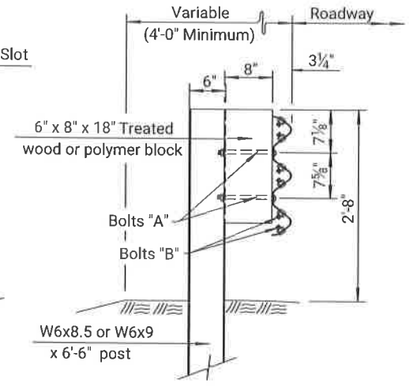
POSTS IN PAVEMENT PLAN
(ALTERNATE GEOMETRIES)
Applies to All Wood and All Steel Posts
(Steel Posts Shown)

☐ 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.





♦ 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.

THRIE BEAM POST DETAILS

W-BEAM POST DETAILS

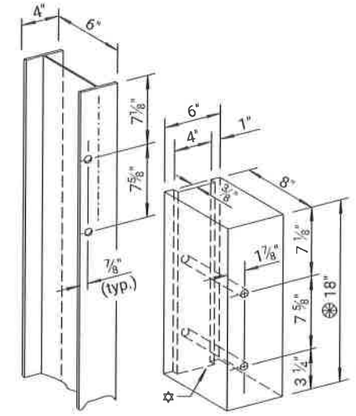
STEEL POSTS

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.

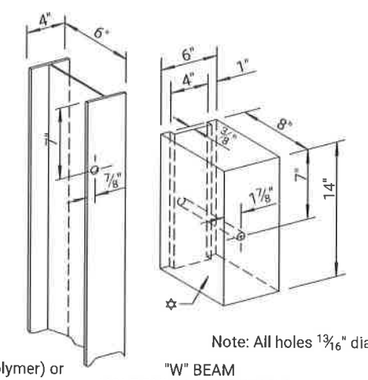
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	6	48

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



Note: All holes 13/16" dia.

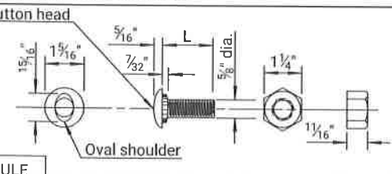
THRIE BEAM
HOLE PUNCHING DETAILS



Note: All holes 13/16" dia.

"W" BEAM
HOLE PUNCHING DETAILS

✡ Non-Metallic (Polymer) or Treated Wood Block



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.

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 Sh. No. 6

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	7	48

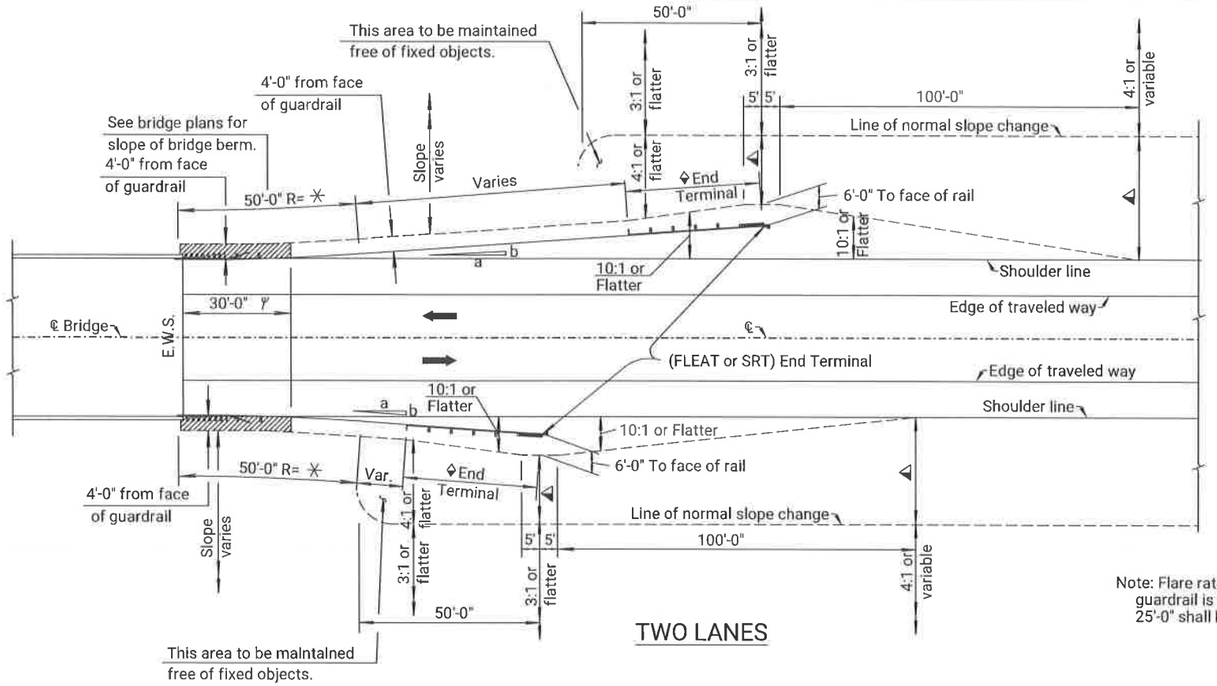
DESIGN PARAMETERS				
Design Speed (mph)	Flare Rate (a:b)	Radius (R)	Flare Rate (2a:b)	Radius (R)
70	15:1	375.55'	30:1	375.14'
60	14:1	350.59'	26:1	325.16'
55	12:1	300.69'	24:1	300.17'
50	11:1	275.76'	21:1	262.70'
45	10:1	250.83'	18:1	225.23'
40	8:1	201.04'	16:1	200.26'

GENERAL NOTE

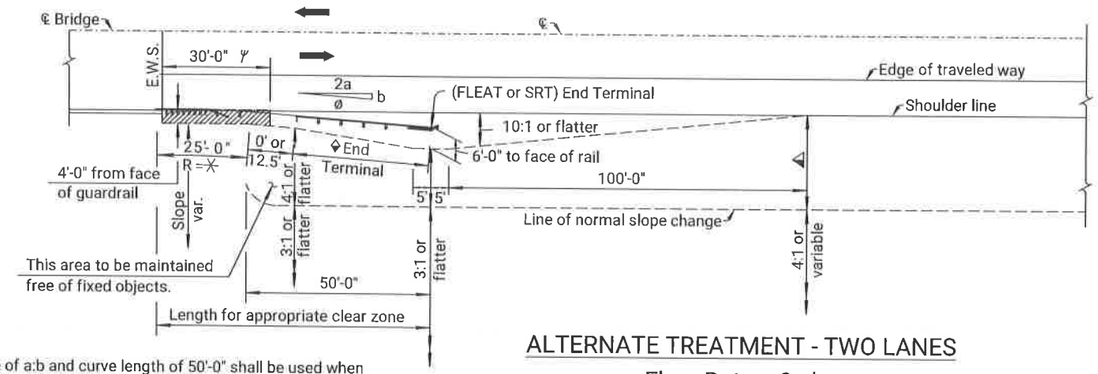
For guardrail and rubrail sections, details, and general notes see KDOT's 'W-Beam with Rubrail Bridge Approach Transition Details' Standard Drawings. For post details see KDOT's 'Guardrai Post Details' Standard Drawings

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.



TWO LANES

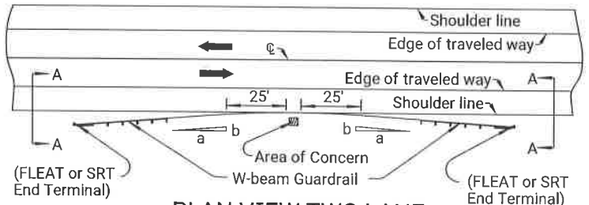


ALTERNATE TREATMENT - TWO LANES

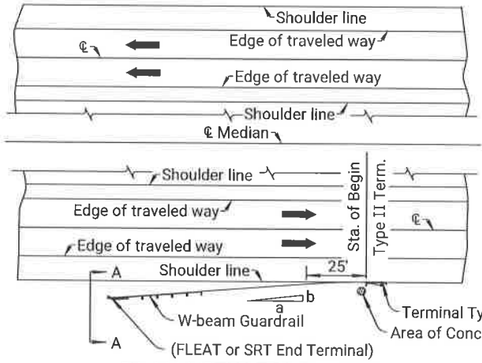
Flare Rate = 2a:b

(GUARDRAIL LENGTHS OF 62.5' AND 75')

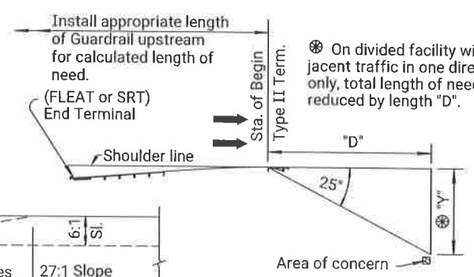
Note: Flare rate of a:b and curve length of 50'-0" shall be used when guardrail is beyond shy line, flare rate of 2a:b and curve length of 25'-0" shall be used when guardrail is located inside the shy line.



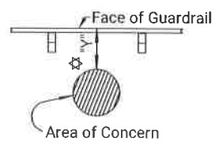
PLAN VIEW TWO LANE



PLAN VIEW FOUR LANE



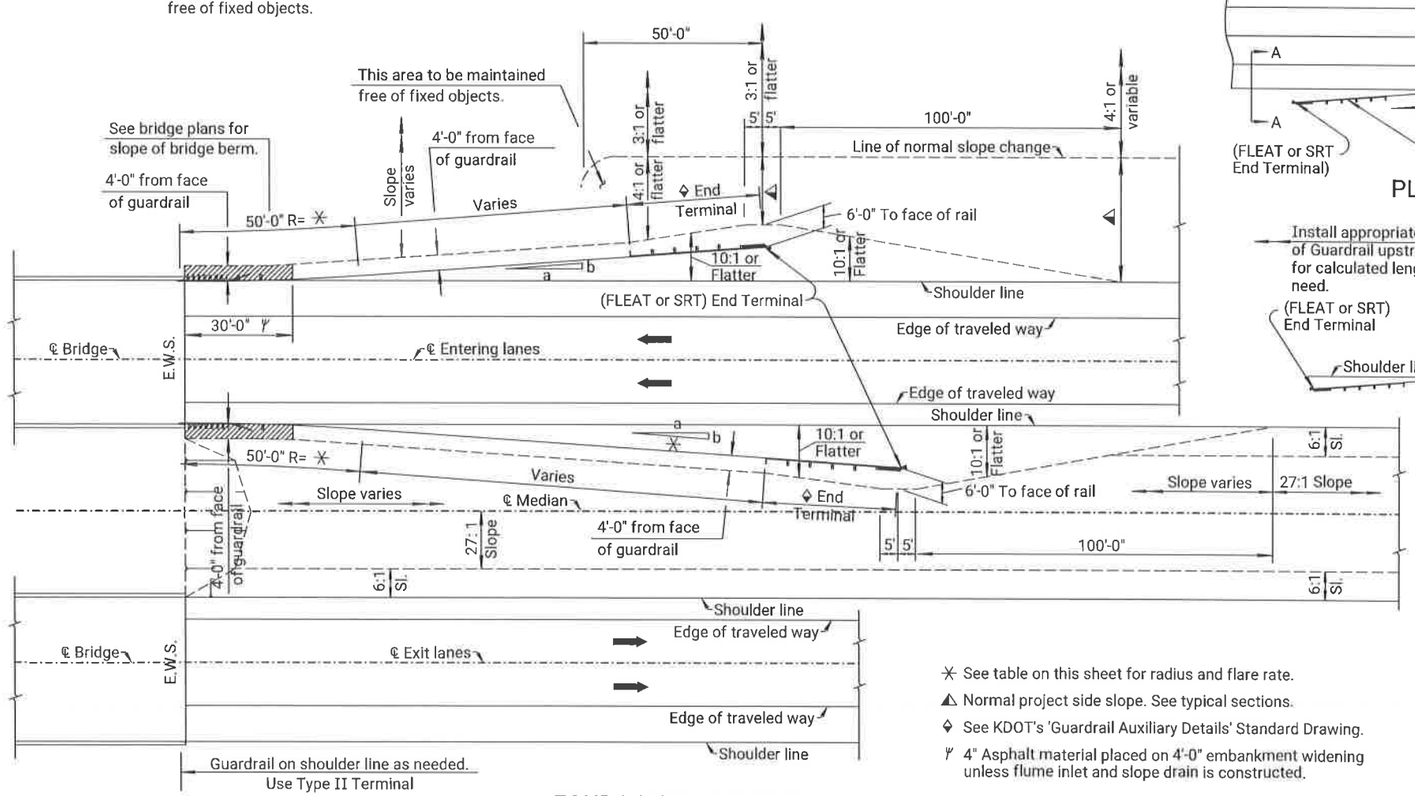
❀ On divided facility with adjacent traffic in one direction only, total length of need may reduced by length "D".



ENLARGEMENT - AREA OF CONCERN

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

DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE



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.

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

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

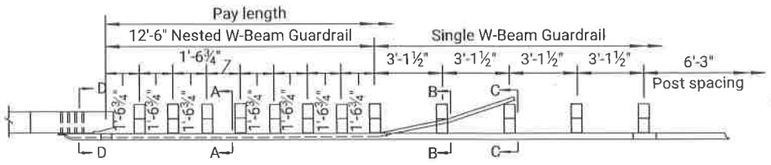
FHWA APPROVAL	06-19-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-16-2022 Sh. No. 7

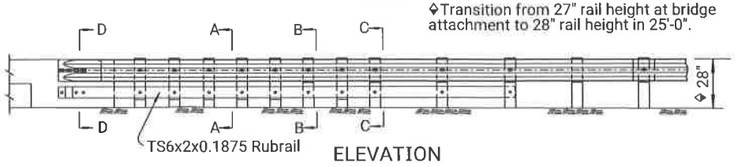
Notes to Designer: Guardrail length of need shall be determined in accordance with the AASHTO Roadside Design Guide using L_1= 25' for flare rate of a:b and L_1=12.5' for flare rate of 2a:b for a typical installation as shown on this sheet.
This sheet shall be used when the flared guardrail design for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

Plotted by : bwilkinson 5-AUG-2024 14:33
File : 2301835_rgr-04_rd615a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	8	48

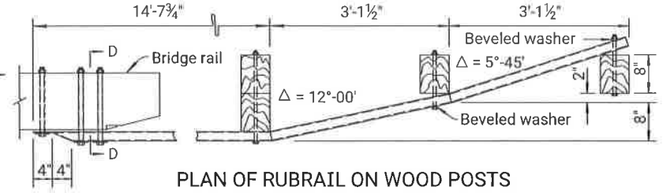


PLAN

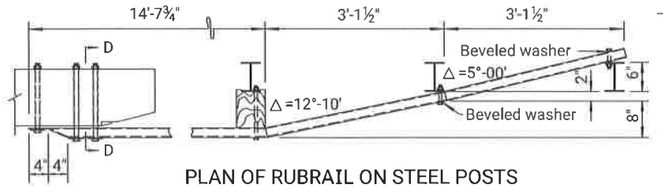


◆Transition from 27" rail height at bridge attachment to 28" rail height in 25'-0".

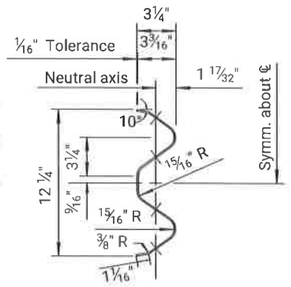
ELEVATION



PLAN OF RUBRAIL ON WOOD POSTS



PLAN OF RUBRAIL ON STEEL POSTS



SECTION THRU TYPICAL W-BEAM RAIL ELEMENT

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.

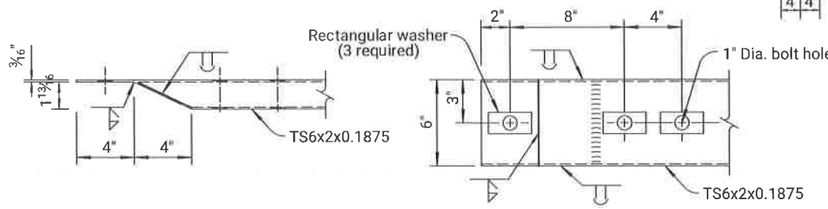
Shop bend rail when radius is less than 150'.

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

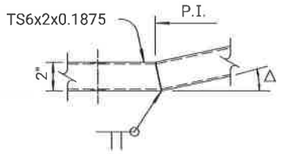
The Special End Shoe has the same section as guardrail and is subsidiary to guardrail.

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.

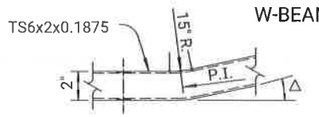
See Std. Drawing RD611 for additional details of posts not shown on this sheet.



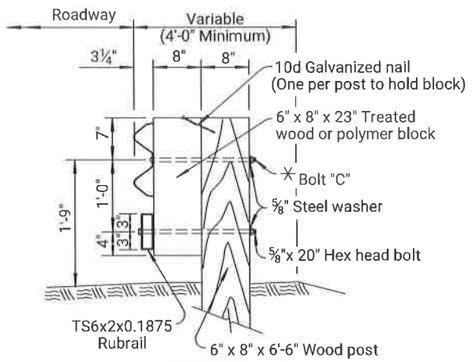
TYPICAL END RUB RAIL DETAILS



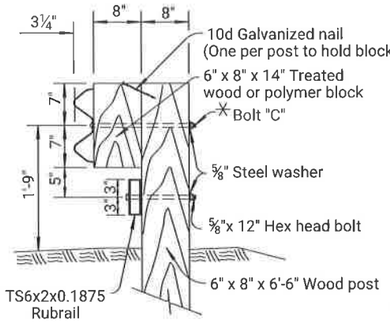
SHOP WELDED OPTION



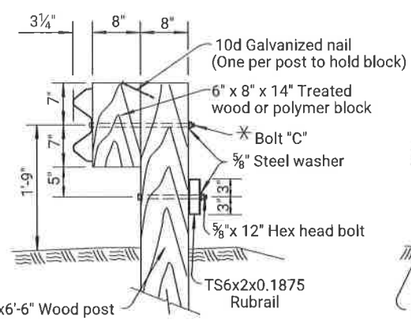
SHOP BENT OPTION



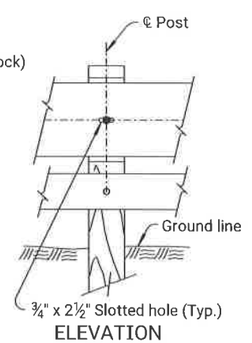
SECTION A-A



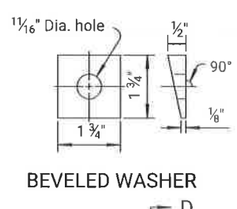
SECTION B-B



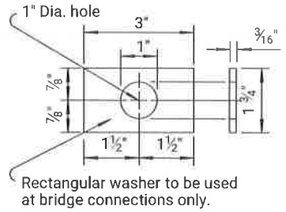
SECTION C-C



ELEVATION
WITH RUBRAIL

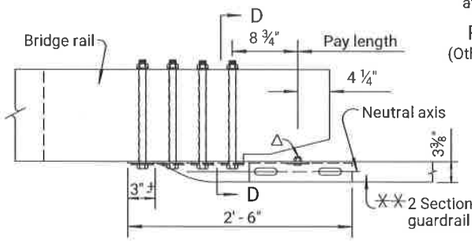


BEVELED WASHER



Rectangular washer to be used at bridge connections only.

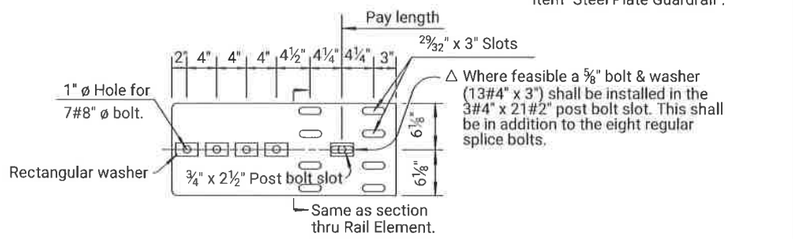
RECTANGULAR WASHER
(Other approved washer may be used.)



PLAN SPECIAL END SHOE

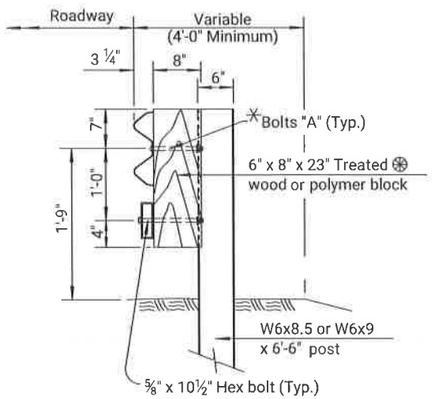
** 2 Sections W-beam guardrail nested.

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

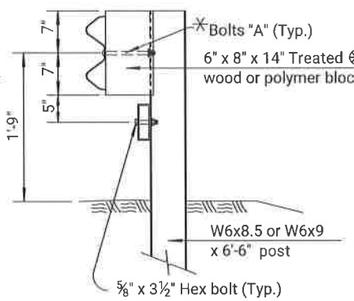


ELEVATION SPECIAL END SHOE

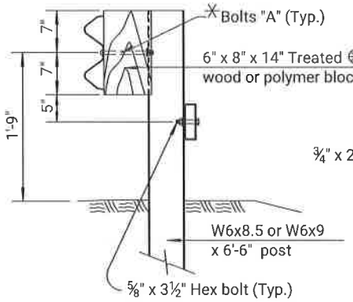
WOOD POSTS



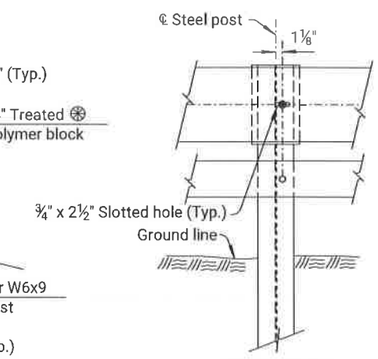
SECTION A-A



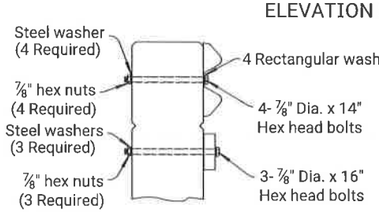
SECTION B-B



SECTION C-C



ELEVATION
WITH RUBRAIL



SECTION D-D

STEEL POSTS

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

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

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 Sh. No. 8

Plotted by : bwilkinson 5-AUG-2024 14:33
File : 2301835_rgr-05_rd616.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	9	48

SUMMARY OF QUANTITIES

Item / Location	Excavation Class I Cu. Yds.	Excavation Class II Cu. Yds.	Concrete (Grade 4.0) (AE) (SW) Cu. Yds.	Concrete (Grade 4.0) (AE) Cu. Yds.	Reinforcing Steel	Reinforcing Steel (Grade 60) Lbs.	* Piles Steel HP12x53 Lin. Ft.	Contractor Furnished PDA EACH	Slope Protection (Riprap Stone) Cu. Yds.
Abutment No. 1	50		**			**	254	1	338
Pier No. 1		45		21.8		840	588		
Pier No. 2		45		21.8		840	570	1	
Abutment No. 2	50		**			**	240		38
Substr. Total	100	90		43.6		1,680	1,652	2	
Superstr. Total			249.8			70,720			
Total	100	90	249.8	43.6		72,400	1,652 †	2	376

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

† Summary of Piling
Abutment No. 1 — 3 @ 61' & 1 @ 71' for use with the PDA
Pier No. 1 — 7 @ 84'
Pier No. 2 — 6 @ 80' & 1 @ 90' for use with the PDA
Abutment No. 2 — 4 @ 60'

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

INDEX TO BRIDGE DRAWINGS

GENERAL NOTES

EMBANKMENT: Complete the embankment at the abutments as shown on the Bridge Excavation sheet prior to driving the abutment piling or commencing with the abutment footing excavation.

BRIDGE EXCAVATION: Elevation 1788.50 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.

BACKFILL COMPACTION: Compact backfill at the abutments.

PILING: Drive all piling to a minimum elevation of 1,731.0 ft at Abut. 1, 1,709.5 ft at Pier 1, 1,713.0 ft at Pier 2, & 1,732.0 ft at Abut. 2. Driving shall stop when in the opinion of the Engineer additional driving may damage the piling. Drive all piling to the Pile Driving Formula Load of:

Abutment No. 1	63 Tons
Pier No. 1	85 Tons
Pier No. 2	85 Tons
Abutment No. 2	63 Tons

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

CONTRACTOR FURNISHED PDA: Use the Pile Driving Analyzer equipment at the locations shown on the Construction Layout. Use Pile Driving Analyzer equipment and methods compliant with KDOT Special Provisions. The piling shall remain in place as permanent piling. Drive the piling to the resistance value of 98 tons at the Abutments and 131 tons at the Piers (Strength I divided by Phi).

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

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

SLOPE PROTECTION (Riprap Stone): Place Slope Protection (Riprap Stone) to the limits and thickness shown on the plans or as directed by the Engineer. Use Riprap Stone Classified as Light 200 Pounds.

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

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

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

CAMBER: Provide camber as shown on the Camber Diagram unless the Contractor uses either long span steel beam falsework (concrete dead load deflection greater than ¼") or timber falsework with greater than 12'-0" clear span. If either case exists, submit falsework plans that show the additional required camber.

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. Submit electronic plans conforming to Section 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 State. "Category 2" falsework inspection is not paid for directly, but is subsidiary to other bid items.

FALSEWORK: Leave the falsework in place for the entire unit until 15 days after the last concrete pour for the unit or longer as directed by the Engineer.

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

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

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

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

QUANTITIES: Items not listed separately in the Summary of Quantities are subsidiary to other items in the proposal.

DIMENSIONS: All dimensions shown on the design plans are horizontal dimensions unless otherwise noted. Make necessary allowances for roadway grade and cross slope.

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

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

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

DESIGN DATA

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

DESIGN LOADING:
HL-93

Design Dead Load includes an allowance of 25 psf for a future wearing surface.

UNIT STRESSES:

Concrete (Grade 4.0)(AE)	f'c =	4 ksi
Concrete (Grade 4.0)(AE)(SW)	f'c =	4 ksi
Reinforcing Steel (Grade 60)	fy =	60 ksi
Steel Piles	fy =	50 ksi

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength	Service	Phi
Abutments 1 & 2:	63	42	0.65
Piers 1 & 2:	85	59	0.65

No.	DATE	REVISIONS	BY	APP'D
6	10/19/15	Added Asbestos NOT822I Option	JPJ	CER
5	2/4/15	Modified Per 2015 Specification	JPJ	CER
4	4/7/14	Current Release	JPJ	CER
3	2/12/14	Added Benchmark	JPJ	CER
2	08/2/12	ADDED NOT3135 & NOT3145	JPJ	TLF
1	04/29/10	ADDED RATING TABLES	JPJ	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000930693005621 Sta. 50+00.00

GENERAL NOTES AND QUANTITIES

Proj. No. 93 C-5237-01 Stafford County

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

Std. Base File:
Plotted By: bwilkinson | Plot Location:
File: 230I835_bbr-01_General Notes and Quantities.dgn
Plot Date: 5-AUG-2024 14:33

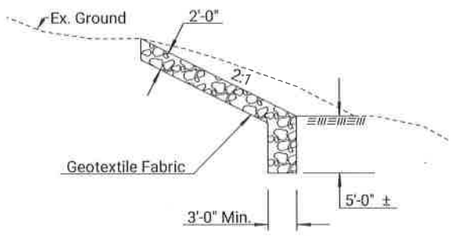
UTILITIES		
Gas	TC Energy	785-479-2524
Power	Ark Valley Electric	620-728-5550

CP #1 Sta. 45+03.19, 27.53' Lt.
N = 491,259.456 E = 16,511,661.150
1. Set 5/8" Rebar Flush
2. App. ℄ of N-S Rd. 27.5' E
3. N-S Running Fc. Line 3.0' W
4. S. End of Ex. Bridge 440.1 N

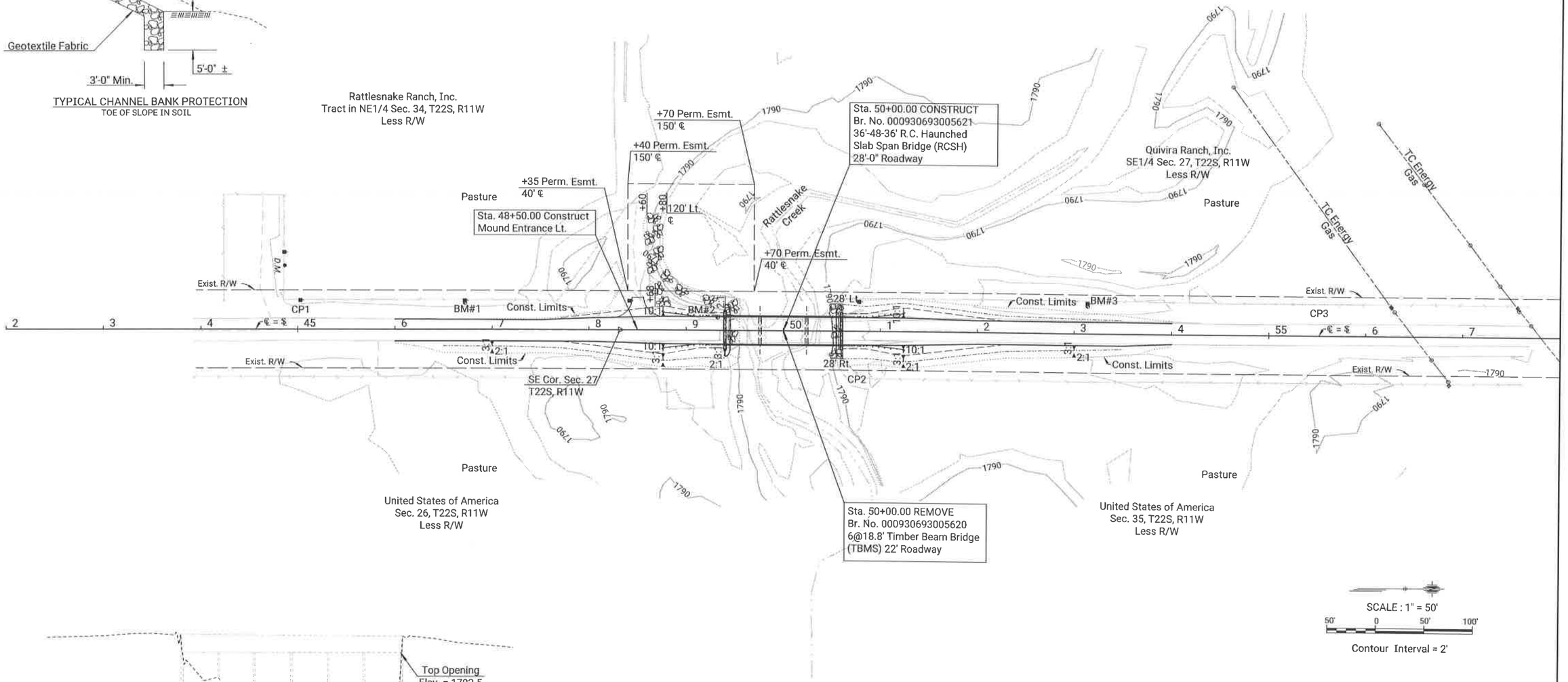
CP #2 Sta. 50+76.65, 42.31' Rt.
N = 491,833.088 E = 16,511,729.560
1. Set 5/8" Rebar Flush
2. App. ℄ of N-S Rd. 43.2' W
3. Gate Post 12.4' N
4. Delineator at NE Cor. of Ex. Bridge 35.2' SW

CP #3 Sta, 55+49.76, 28.85' Lt.
N = 492,306.011 E = 16,511,657.220
1. Set 5/8" Rebar Flush
2. App. ℄ of N-S Rd. 28.8' E
3. N-S Running Fc. Line 4.8' W
4. S. End of Ex. Bridge 492.1' S

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	10	48



TYPICAL CHANNEL BANK PROTECTION
TOE OF SLOPE IN SOIL



EXISTING WATERWAY OPENING SKETCH
Existing Effective Waterway Opening = 644 sq. ft.

SCALE : 1" = 50'
50' 0 50' 100'
Contour Interval = 2'

BM #1 Top of Driven "T" Post 1' E. of PP
27.27' Lt., Sta. 46+72.12, Elev. = 1795.40

BM #2" Top of Driven "T" Post 1' E. of PP
13.34' Lt., Sta. 49+32.40, Elev. = 1795.01

BM #3" Top of Driven 5/8" Rebar 1' E of PP
28.34' Lt., Sta. 53+13.70, Elev. = 1795.32

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000930693005621 Sta. 50+00.00

CONTOUR MAP

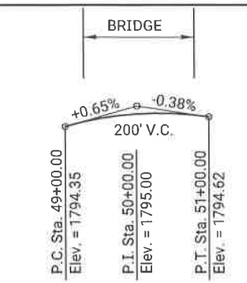
Proj. No. 93 C-5237-01 Stafford County

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

Sh. No. 10

Plotted by : bwilkinson 5-AUG-2024 14:34
File : 2301835_bbr-02_ContourMap.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	11	48



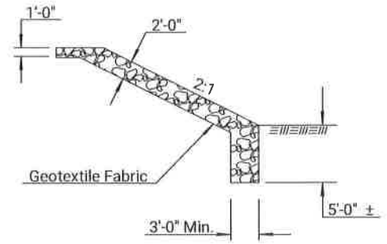
VERTICAL CURVE DATA

ELEVATION
36'-48'-36' R.C. Haunched
Slab Span Bridge (RCHS)
28'-0" Roadway

DRAINAGE DATA:

Drainage Area	1,160	Sq. Mi.
Design Frequency	10	Yr.
Design Discharge @ (Q_{10})	2,950	cfs
Design Velocity @ (Q_{10})	3.4	fps
Design High Water Elevation	1792.59	Ft.
Overtopping Elevation (Sta. 46+75.00)	1792.3	Ft.
Overtopping Discharge	2,950	cfs
Overtopping Frequency	10	Yr.
Discharge @ (Q_{100})	13,900	cfs
Backwater @ (Q_{100})	0.1	Ft.
Backwater Elevation @ (Q_{100})	1794.11	Ft.
Historic Highwater Elevation	NA	
Ordinary Highwater Elevation	1787.00	Ft.
Total Waterway Provided	709	Sq. Ft.
Design Waterway Provided	625	Sq. Ft.
Estimated Ordinary Highwater Discharge	75	cfs

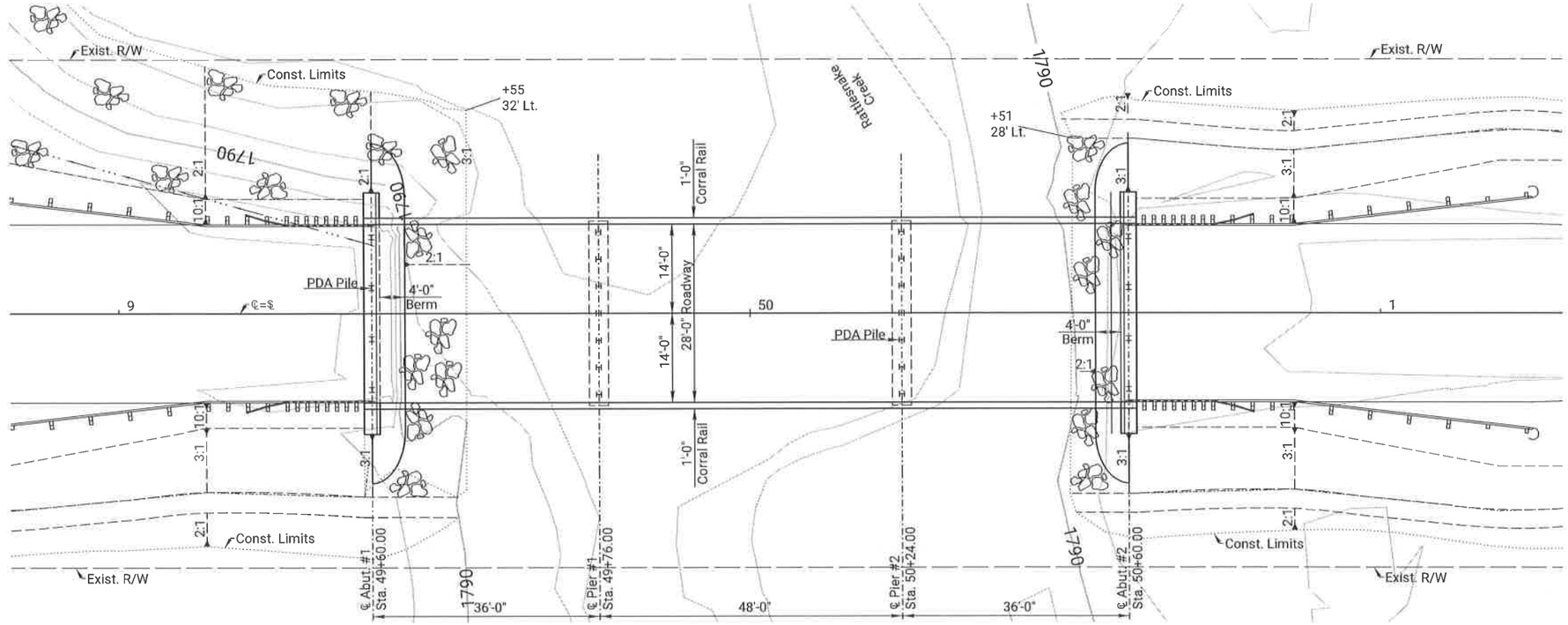
Total Velocity	Existing	Proposed
@ Q2	1.3 ft/s	1.3 ft/s
@ Qdes	3.2 ft/s	3.4 ft/s
@ Q100	2.0 ft/s	2.0 ft/s



TYPICAL SLOPE PROTECTION
TOE OF SLOPE IN SOIL

Place a mat of geotextile under all rock embankment on the berm and berm slopes. All equipment, material and labor necessary to install the geotextile mat shall be subsidiary to "Slope Protection (Riprap Stone)."

NOTE: The Contractor shall place a header board at each EWS in accordance with Section 710.3.c.l of the Specifications for Bridges With Tied Approaches. This work shall not be paid for directly, but shall be subsidiary to other items in the contract.



PLAN

BM #2" Top of Driven "T" Post 1' E. of PP
13.34' Lt., Sta. 49+32.40, Elev. = 1795.01

BM #3" Top of Driven 5/8" Rebar 1' E of PP
28.34' Lt., Sta. 53+13.70, Elev. = 1795.32

SCALE : 1" = 10'-0"

10' 0 10' 20'

Contour Interval = 2'

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000930693005621 Sta. 50+00.00

CONSTRUCTION LAYOUT

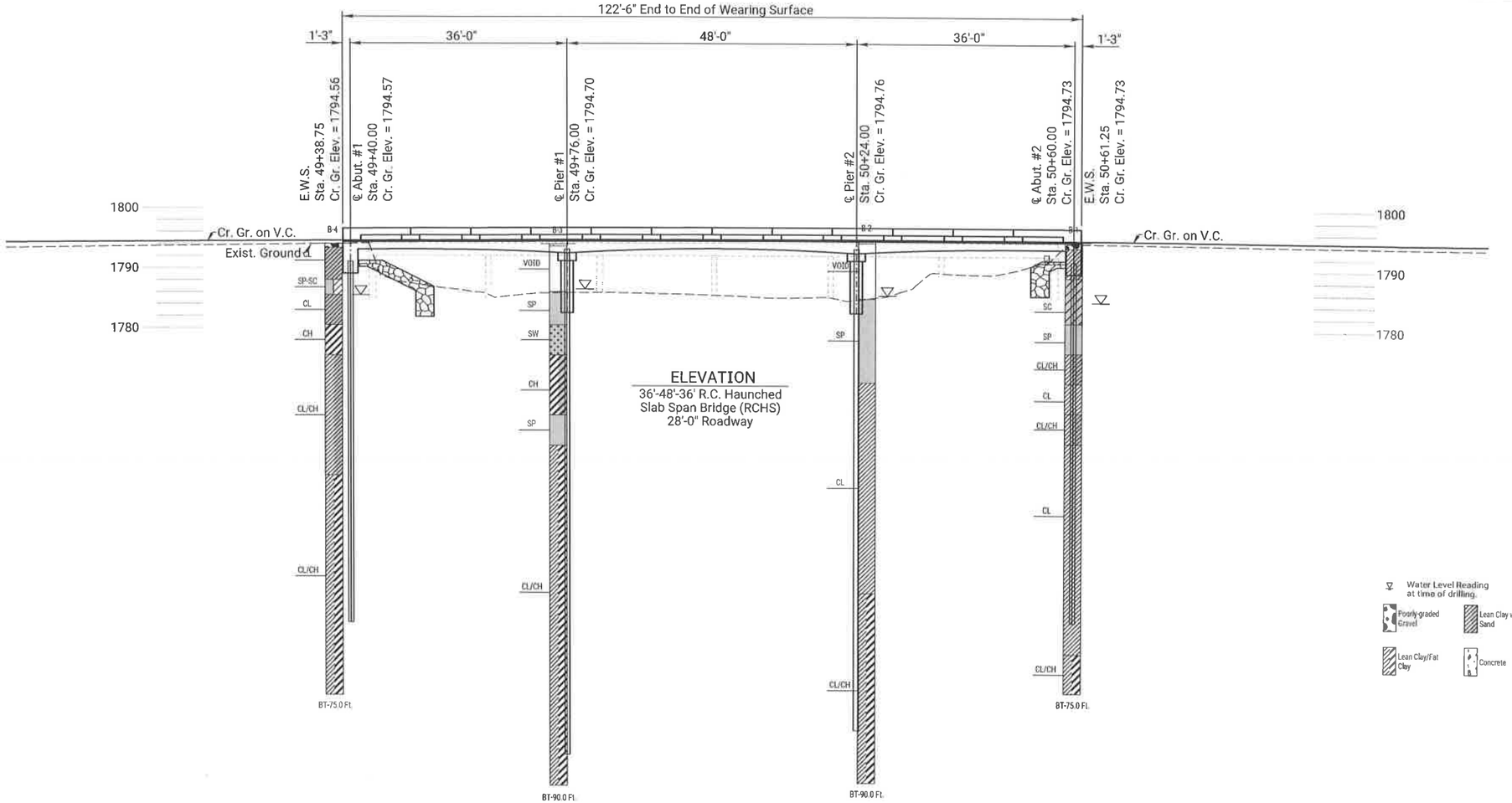
Proj. No. 93 C-5237-01 Stafford County

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

Sh. No. 11

Plotted by : bwilkinson 5-AUG-2024 14:34
File : 2301835_bbr-03ConstructionLayout.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	12	48



ELEVATION

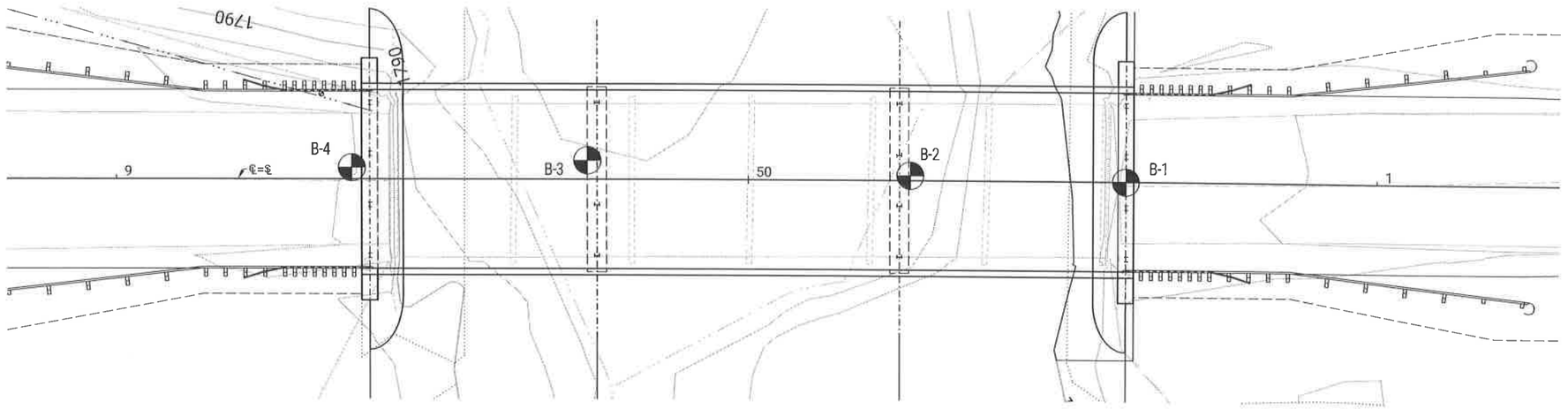
36'-48'-36' R.C. Haunched
Slab Span Bridge (RCHS)
28'-0" Roadway

Water Level Reading at time of drilling.

Moisture Content

Poorly-graded Gravel | Lean Clay with Sand | Clayey Sand | Poorly-graded Sand | Lean Clay

Lean Clay/Fat Clay | Concrete | Well-graded Sand | Fat Clay with Sand | Sandy Lean Clay



PLAN

SCALE : 1" = 10'-0"

10' 0 10' 20'

Contour Interval = 2'

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000930693005621 Sta. 50+00.00

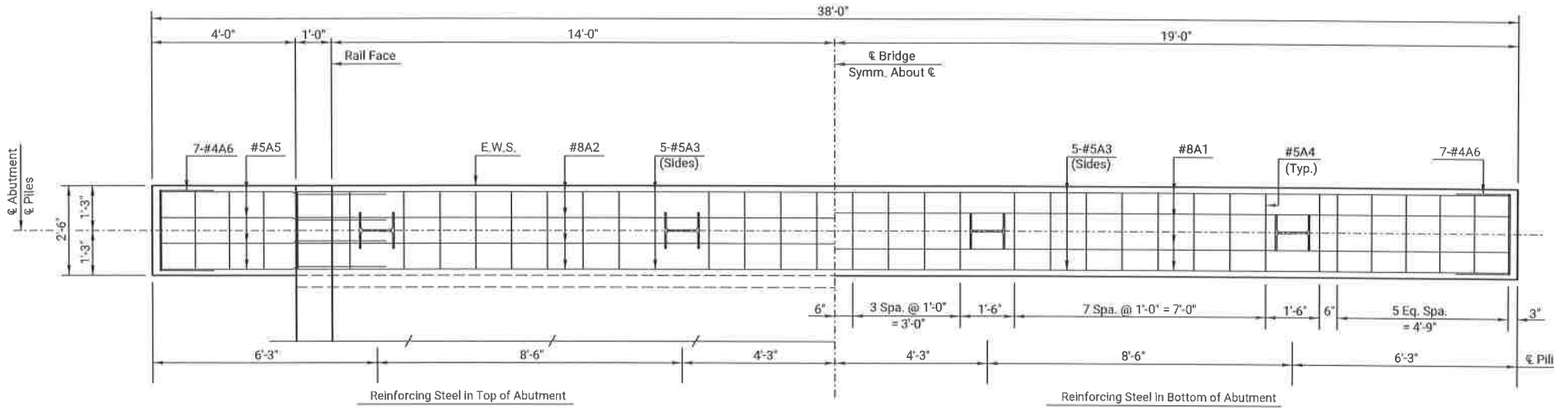
GEOLOGY SHEET

Proj. No. 93 C-5237-01 Stafford County

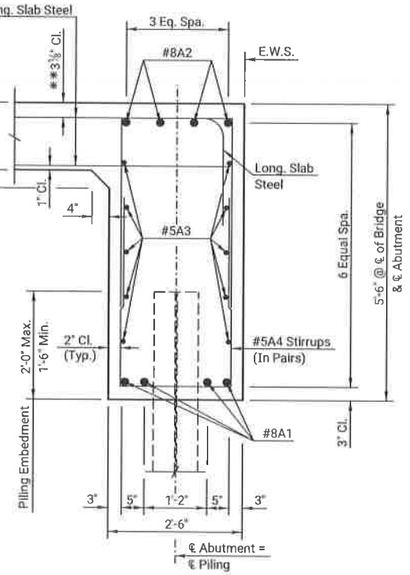
DESIGNED	DETAILED	QUANTITIES	CADD
DESIGN CK.	DETAIL CK.	QUAN CK.	CADD CK

Plotted by : bwilkinson 5-AUG-2024 14:34
File : 2301835_Geology.dgn

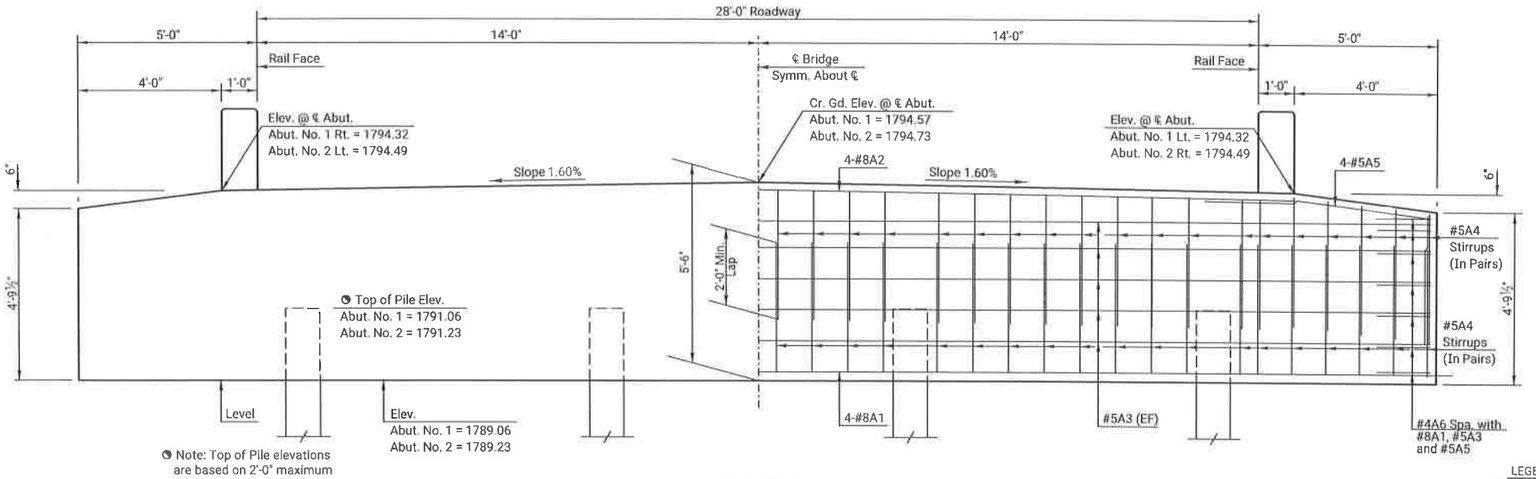
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	13	48



PLAN
Scale: ½" = 1'-0"



TYPICAL SECTION
Scale: ¾" = 1'-0"



Note: Top of Pile elevations are based on 2'-0" maximum embedment.

ELEVATION
Scale: ½" = 1'-0"
Along ℄ Abutment

LEGEND
EF = Each Face

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

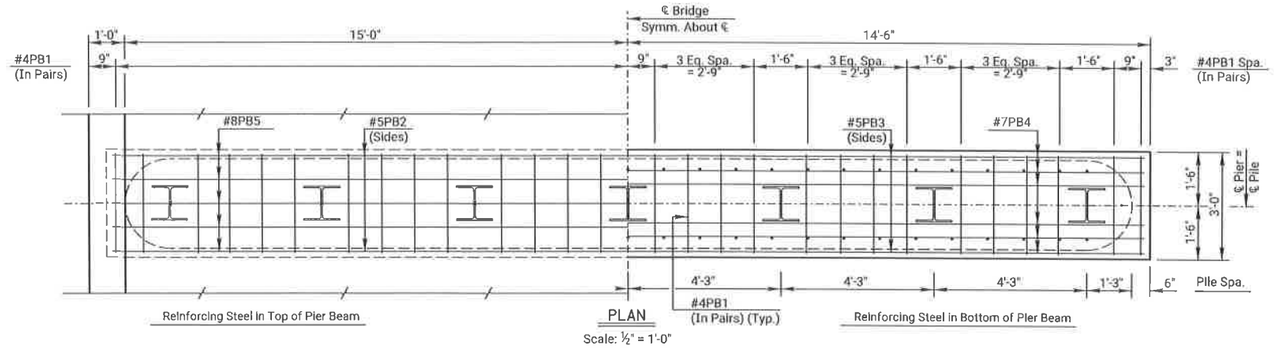
Br. No. 0009306930562I Sta. 50+00.00

ABUTMENT DETAILS

Proj. No. 93 C-5237-01 Stafford County

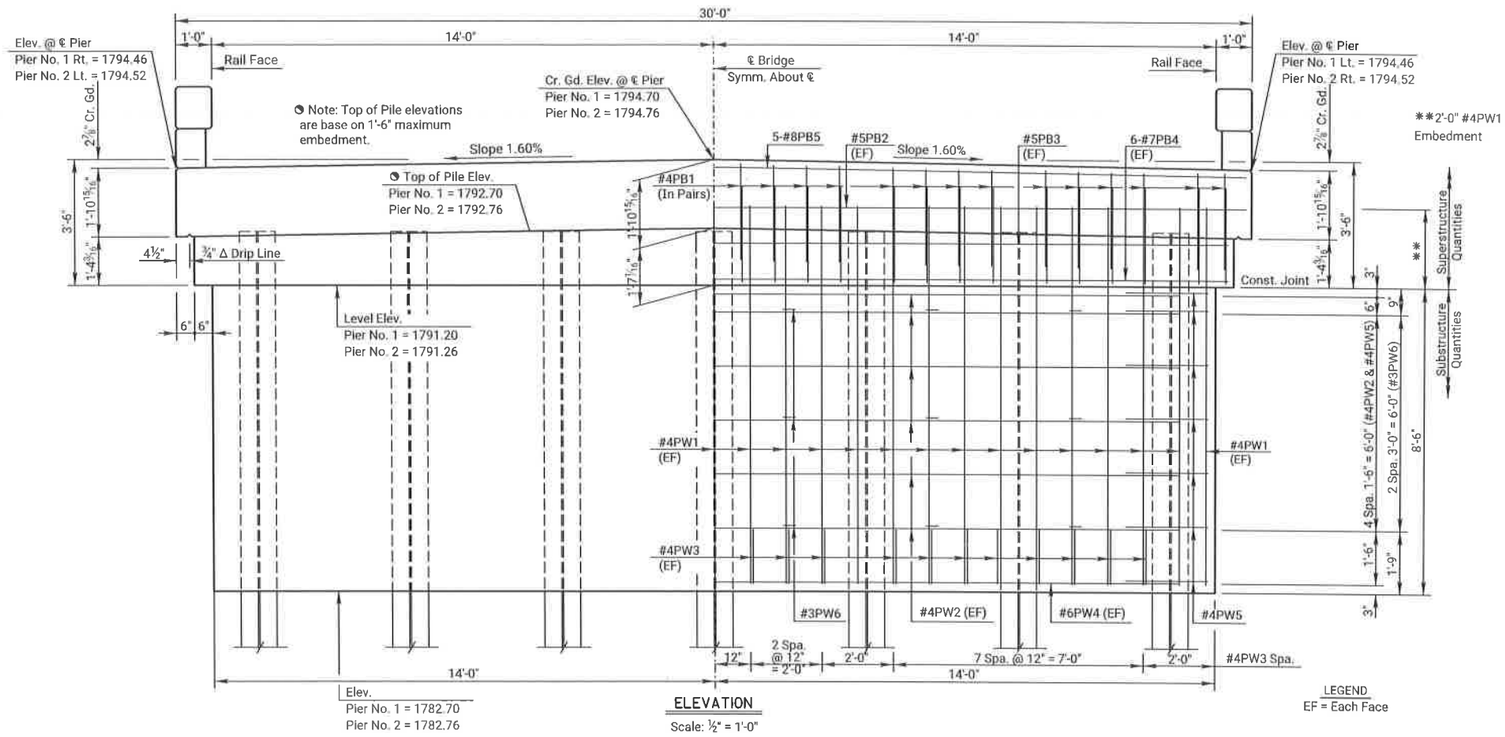
SHEET NO.		SCALE	½"=1'-0"	APP'D	
DESIGNED	BCW	DETAILED	william	QUANTITIES	william
DESIGN CK.	JJM	DETAIL CK.	BCW	QUAN. CK.	BCW
CADD	william	CADD CK.	BCW		

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	14	48



PLAN

Scale: ½" = 1'-0"

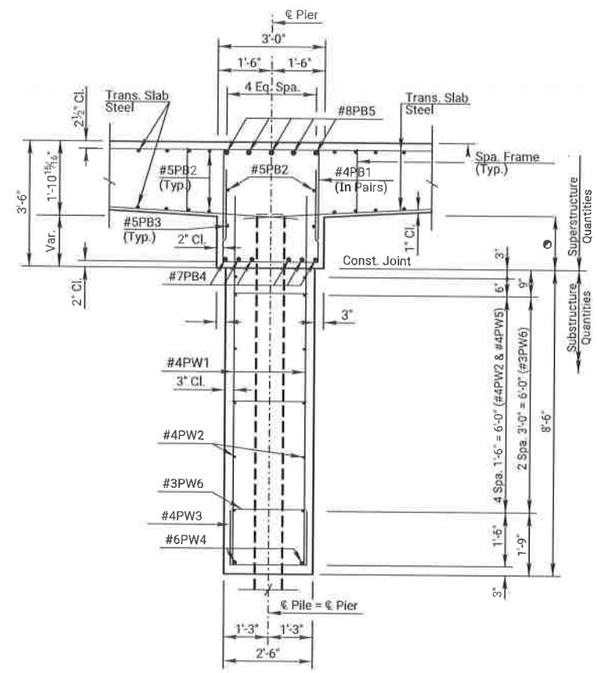


ELEVATION

Scale: ½" = 1'-0"

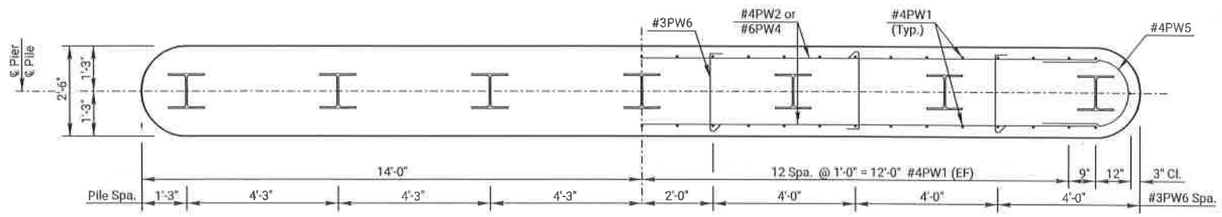
LEGEND
EF = Each Face

◔ Note:Top of Pile elevation is based on 1'-6" embedment into the Pier Beam.



SECTION THRU PIER

Scale: ½" = 1'-0"



SECTION THRU PIER WALL

Scale: ½" = 1'-0"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 0009306930562I Sta. 50+00.00

PIER DETAILS

Proj. No. 93 C-5237-01 Stafford County

SHEET NO.		SCALE	½"=1'-0"	APP'D	
DESIGNED	BCW	DETAILED	william	QUANTITIES	william
DESIGN CK.	JJM	DETAIL CK.	BCW	QUAN. CK.	BCW
CADD	william	CADD CK.	BCW		

CADconform Certify This File

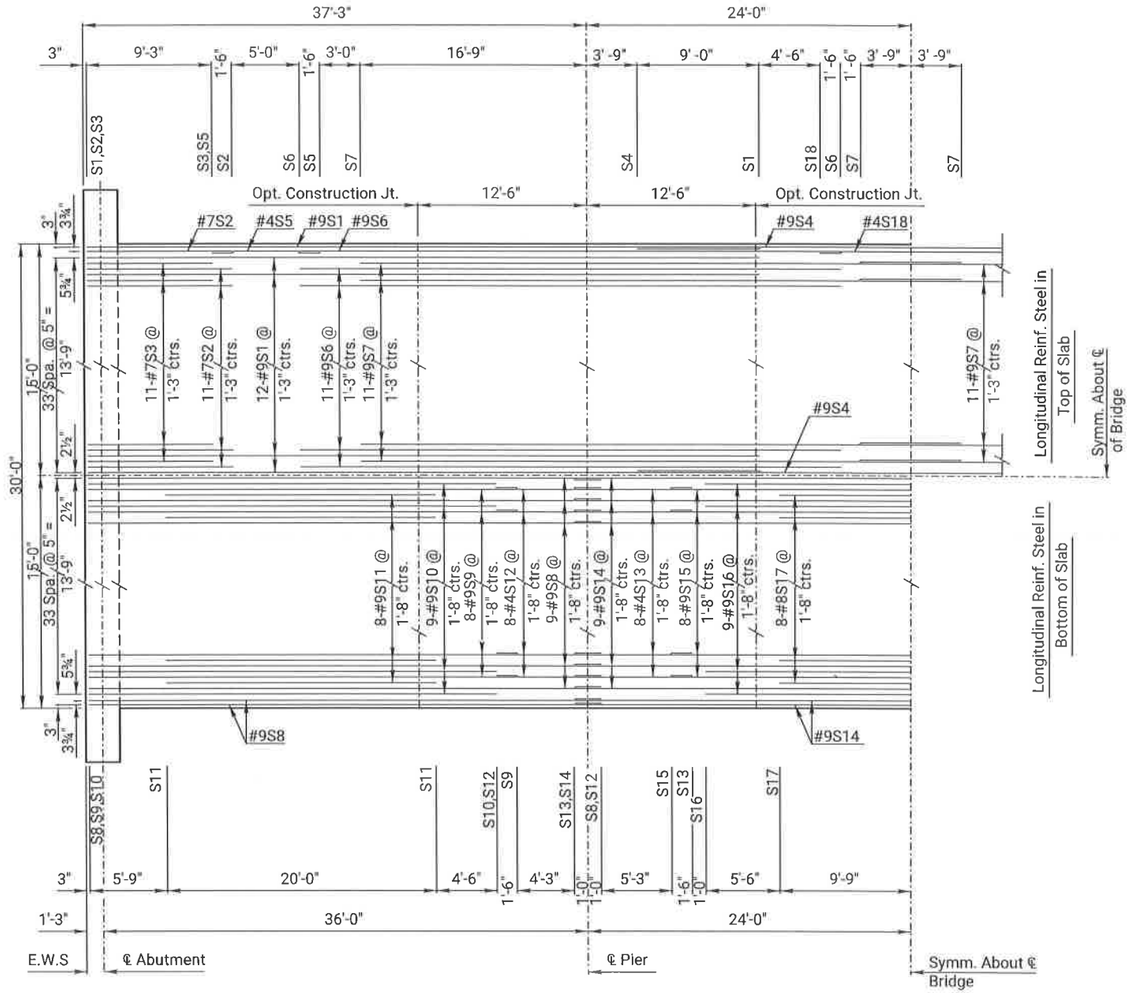
Sh. No. 14

Plot 2	
Info\br516.dgn	
Roadway Width = 28'	Longest Span Length = 48'
Skew and Direction = 0	Total No. of Spans = 3
Loading = HL-93	Railing Type = Corral

		2½"		3"	
		Inv.	Oper.	Inv.	Oper.
Truck	HS-20	1.58	2.64	1.65	2.76
LFD	HET	1.36	1.36	1.38	1.38
	LRFR HL-93	1.32	1.72	1.37	1.78

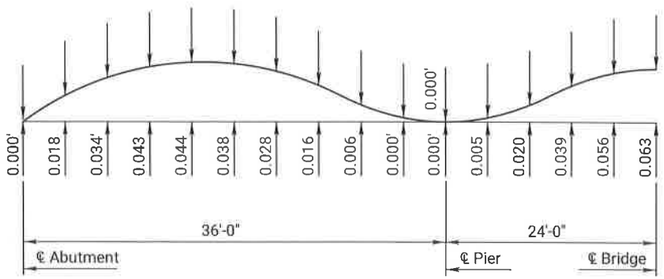
Note to designer: Do not remove this information

Plotted By: bwilkinson	Plot Location:
File: 230\835_bbr-07_Superstructure Details.dgn	
Plot Date: 5-AUG-2024 14:35	



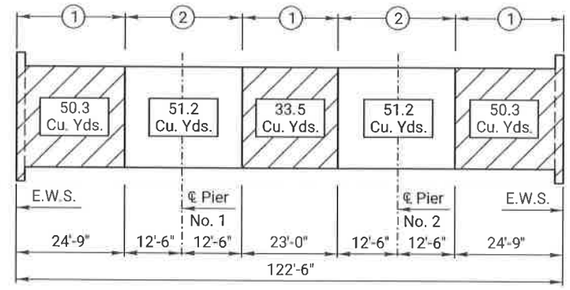
HALF PLAN

Note:
See longitudinal section for transverse reinforcing steel.



DEAD LOAD CAMBER DIAGRAM AT TENTH POINTS

Long Term Deflections = Initial Deflections x 3.5
(Initial Deflections Based on $E_c = 3.644 \times 10^6$ p.s.i.)
(camber values in feet)



CONCRETE PLACING SEQUENCE DIAGRAM

CONCRETE PLACING SEQUENCE

When long span steel beams having a concrete dead load deflection greater than ¼" are used or when timber falsework with greater than 12'-0" clear span is used, follow the placing sequence shown. Segmental, combined or continuous pours are allowed, but stop a discontinuous pour at a construction joint short of a pier.

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

The Contractor may place the corral rail continuously from one end of the bridge to the other.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	15	48

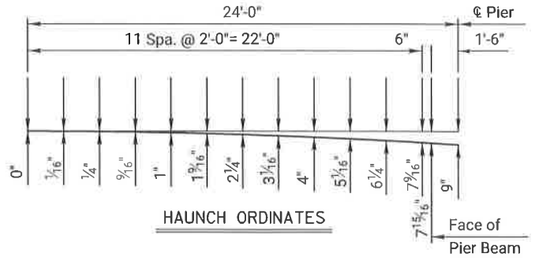
NO.	DATE	REVISIONS	BY	APP'D
4	03/12/12	ADDED TOF Elevation Table	JPJ	TLF
3	02/08/11	ADDED QUANTITIES	JPJ	TLF
2	02/05/09	update LFD RF & Camber	DRT	KFH
1	02/11/08	Chg'd Neg. Mo. Steel		

KANSAS DEPARTMENT OF TRANSPORTATION

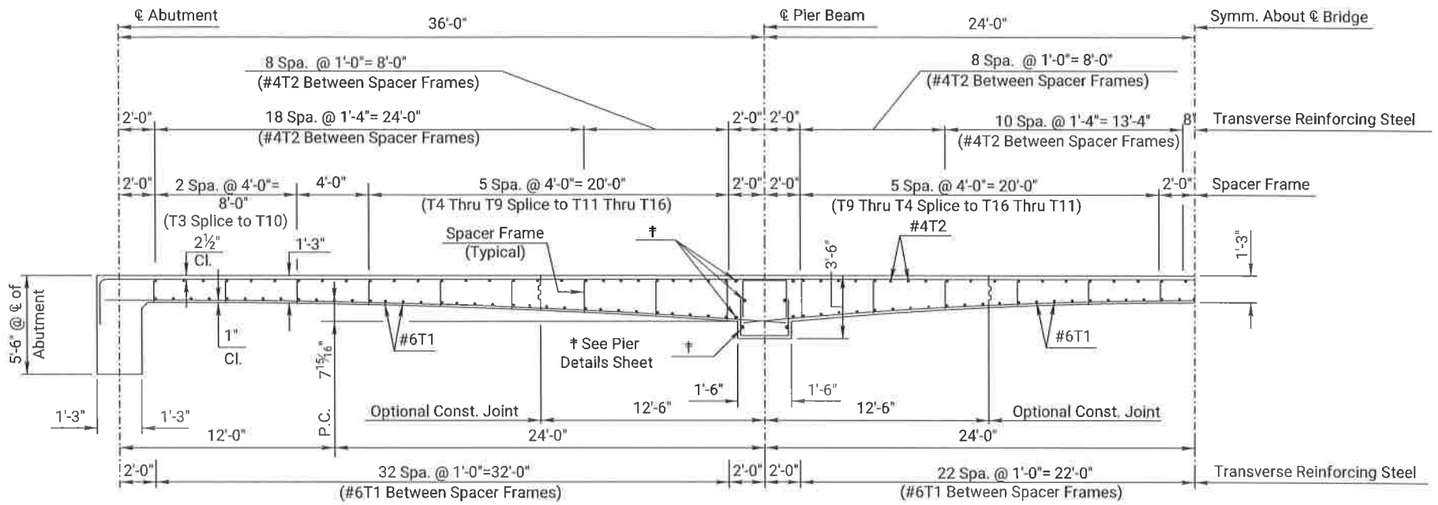
SUPERSTRUCTURE DETAILS

SHEET NO. OF	SCALE	APP'D	
DESIGNED BCW	DETAILED DRT	QUANTITIES William	CADD RCJ
DESIGN CK. JJM	DETAIL CK. BCW	QUAN. CK.	CADD CK.

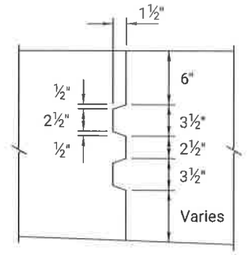
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	16	48



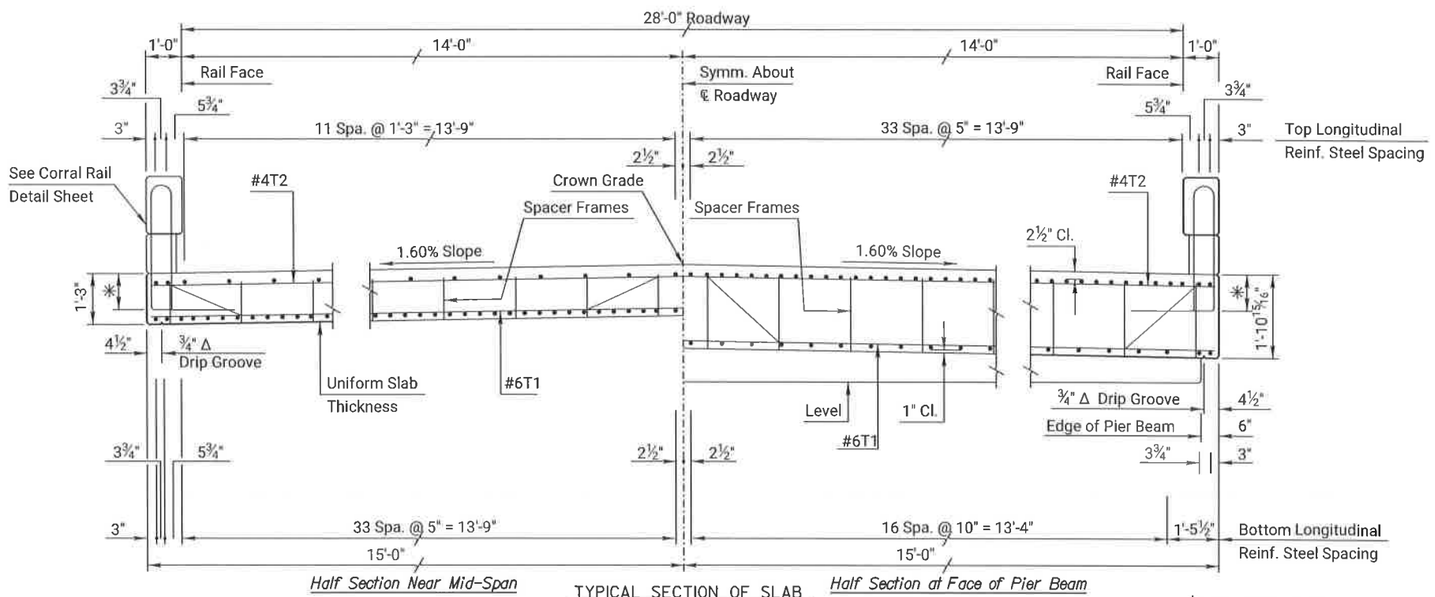
HAUNCH ORDINATES



HALF LONGITUDINAL SECTION ALONG ℄ BRIDGE



TRANSVERSE SLAB CONSTRUCTION JOINT (Optional)



TYPICAL SECTION OF SLAB

* See Corral Rail Detail Sheet.

NO.	DATE	REVISIONS	BY	APP'D
4				
3				
2				
1	02/18/08	Chg'd Neg. Mo. Steel		

KANSAS DEPARTMENT OF TRANSPORTATION

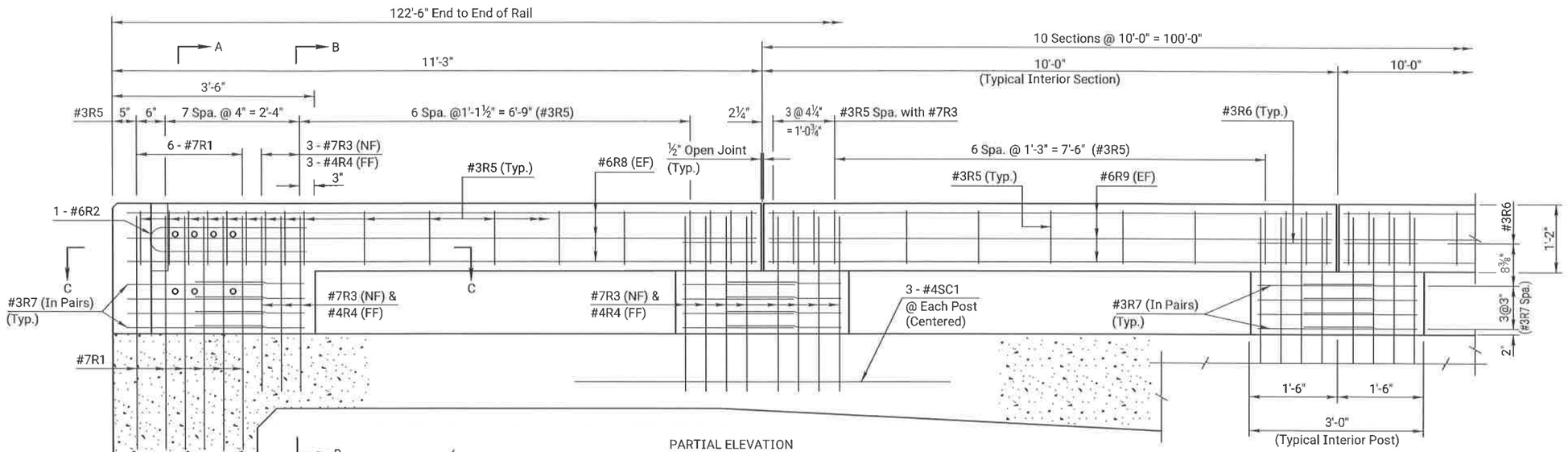
SLAB TYPICAL SECTION

SHEET NO.	OF	SCALE		APP'D			
DESIGNED	BCW	DETAILED	DRT	QUANTITIES williain		CADD	RCL
DESIGN CK.	JJM	DETAIL CK.	BCW	QUAN. CK.		CADD CK.	

Plotted By: bwilkinson | Plot Location:
File: 230I835_bbr-08_Slab Typical Section.dgn
Plot Date: 5-AUG-2024 14:35

Irfd\br5I6.dgn	Plot 3
Roadway Width = 28'	Longest Span Length = 48'
Skew and Direction = 0	Total No. of Spans = 3
Loading = HL-93	Railing Type = Corral

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	17	48



LEGEND

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

NO.	DATE	REVISIONS	BY	APP'D
03				
02	12-03-21	Changed Bridge Number Plate detail	M.L.L.	M.A.H.
01	06-30-05	Current Release		

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000930693005621 Sta. 50+00.00

27" KANSAS CORRAL RAIL
(W-BEAM WITH RUBRAIL)
R.C. HAUNCHED SLAB (Without Curb)

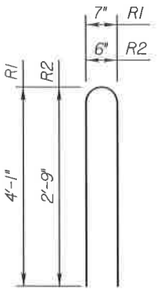
Proj. No. 93 C-5237-01 Stafford County

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

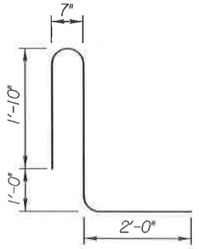
KDOT Graphics Certified 09-22-2023 Sh. No. 17

Plotted by : bwilkinson 5-AUG-2024 14:35
File : 2301835_bbr-09_br183a.dgn

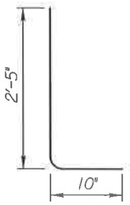
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2021	18	48



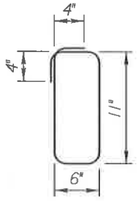
R1 & R2



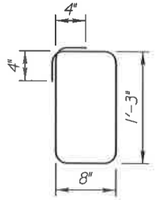
R3



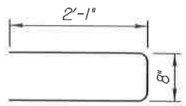
R4



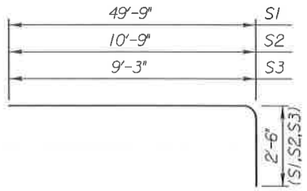
R5



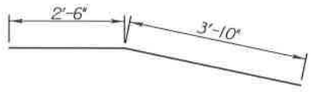
R6



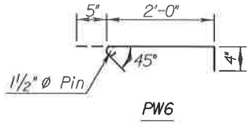
R7



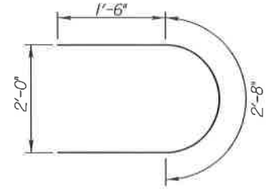
S1, S2 & S3



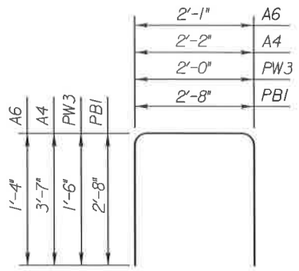
A5



PW6



PW5



A4, A6, PW3 & PBI

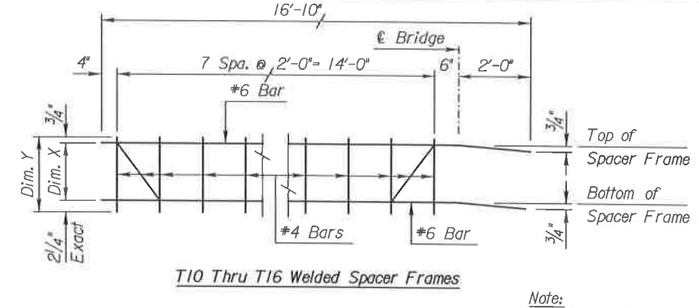
BILL OF REINFORCING STEEL
Non-Epoxy Coated - Grade 60

	Straight Bars				⊗ Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Substructure	PW4	6	4	26'-0"	PW3	4	44	5'-0"
					PW5	4	28	5'-8"
	PW1	4	116	10'-6"				
	PW2	4	24	26'-0"	PW6	3	36	2'-9"

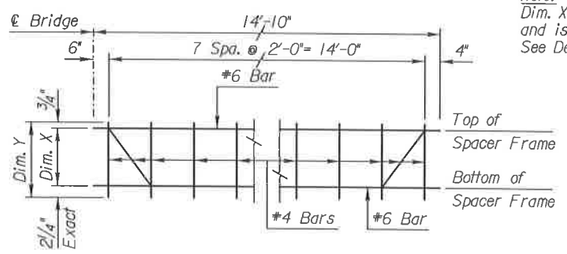
BILL OF REINFORCING STEEL
Non-Epoxy Coated - Grade 60

	Straight Bars				⊗ Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Superstructure	S10	9	36	30'-3"	S1	9	52	52'-3"
	S11	9	32	20'-0"				
	S14	9	22	50'-0"	R1	7	24	8'-6"
	S15	9	16	35'-6"	R3	7	188	7'-0"
	S16	9	18	30'-6"	S2	7	48	13'-3"
	S4	9	4	40'-6"	S3	7	44	11'-9"
	S6	9	48	40'-0"				
	S7	9	44	44'-6"	R2	6	4	5'-10"
	S8	9	44	38'-0"				
	S9	9	32	31'-9"	A4	5	152	9'-4"
					A5	5	16	6'-4"
	A1	8	8	37'-8"				
	A2	8	8	30'-0"	A6	4	28	4'-9"
	PB5	8	10	29'-8"	PB1	4	112	8'-0"
	S17	8	16	19'-6"	R4	4	188	3'-3"
	PB4	7	12	28'-8"	R5	3	332	3'-6"
					R6	3	44	4'-6"
	R8	6	24	10'-11"	R7	3	208	4'-10"
	R9	6	120	9'-8"				
	T1	6	81	29'-8"	T3-T16			⊗
	A3	5	20	37'-8"				
	PB2	5	12	29'-8"				
	PB3	5	4	28'-8"				
	S12	4	32	7'-9"				
	S13	4	32	8'-9"				
	S18	4	2	13'-6"				
	S5	4	4	8'-0"				
	SC1	4	66	6'-6"				
	T2	4	62	29'-8"				

⊗ See Bending Diagram



T10 Thru T16 Welded Spacer Frames



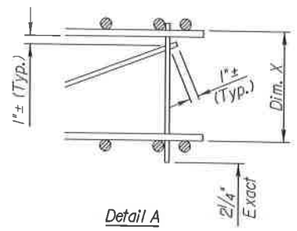
T3 Thru T9 Welded Spacer Frames

⊗ SPACER FRAMES
(Non-Epoxy Coated)

Mark	No. Ea.	Dim. X	Dim. Y
T3, T10	6	9"	1'-0"
T4, T11	4	9 1/16"	1'-0 1/16"
T5, T12	4	9 9/16"	1'-0 9/16"
T6, T13	4	10 9/16"	1'-1 9/16"
T7, T14	4	1'-0 1/16"	1'-3 1/16"
T8, T15	4	1'-2 1/16"	1'-5 1/16"
T9, T16	4	1'-4 9/16"	1'-7 9/16"

Weight of spacer frames included in the weight of reinforcing steel.

Note:
Dim. X is out to out and is an exact dim. See Detail A.



Detail A

BENDING DIAGRAMS
(All dimensions are out to out of bars)

NO.	DATE	REVISIONS	BY	APP'D
4				
3				
2	7/30/09	corrected Qty. on note to Designer	DRT	KFH
1	02/11/08	Chg'd Neg. Mo. Steel		

KANSAS DEPARTMENT OF TRANSPORTATION

BILL OF REINFORCING STEEL
AND
BENDING DIAGRAMS

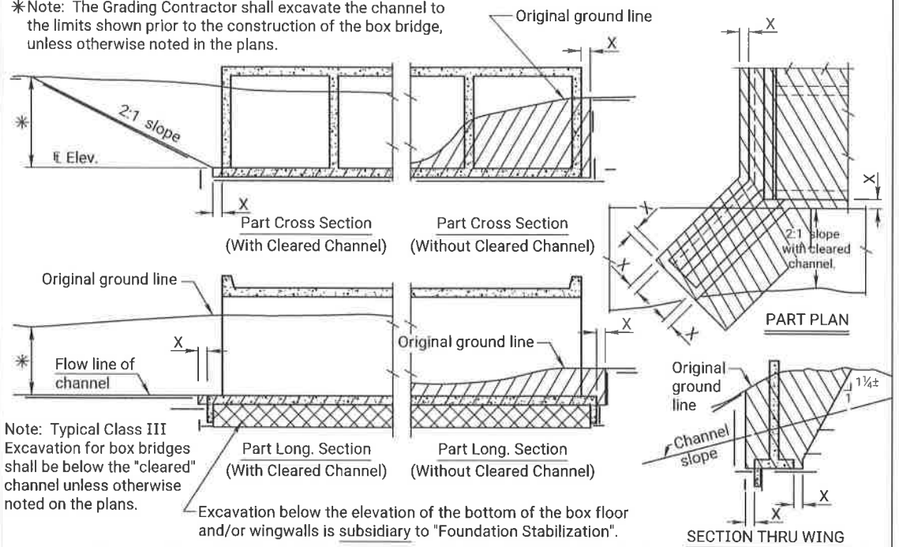
SHEET NO. OF		SCALE		APP'D	
DESIGNED	DRT	DETAILED	DRT	QUANTITIES	CADD RCJ
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.	CADD CK.

Plot Date: 5-AUG-2024 14:35
File: 230835_bbr-10_Bill of Reinforcing and Bending Diagrams.dgn
Plotted By: bwilkinson | Plot Location:

Irf0r0-5f6.dgn | Plot 4
Roadway Width = 28' | Longest Span Length = 48'
Skew and Direction = 0 | Total No. of Spans = 3
Loading = HL-93 | Rolling Type = Carrol

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	19	48

✳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.

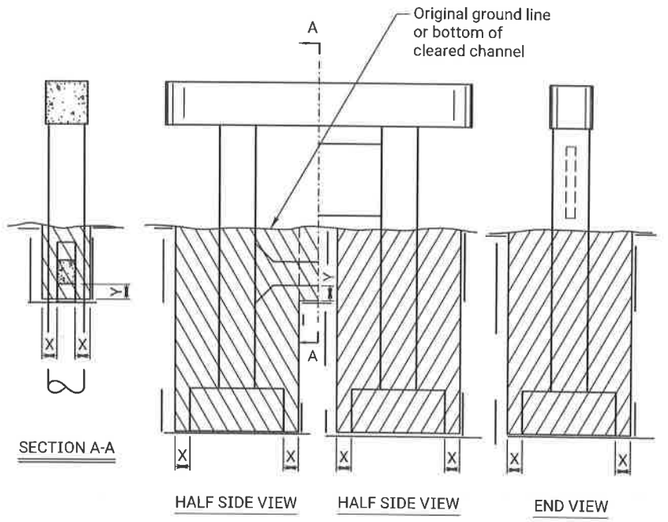


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

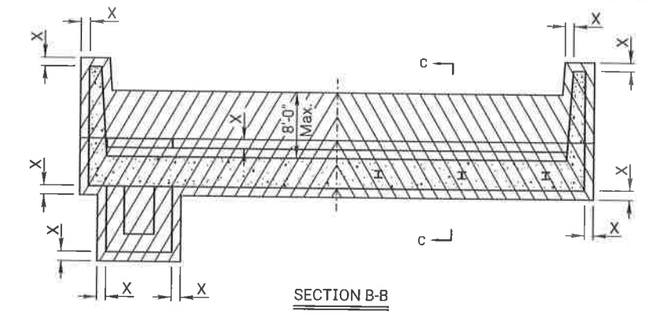
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

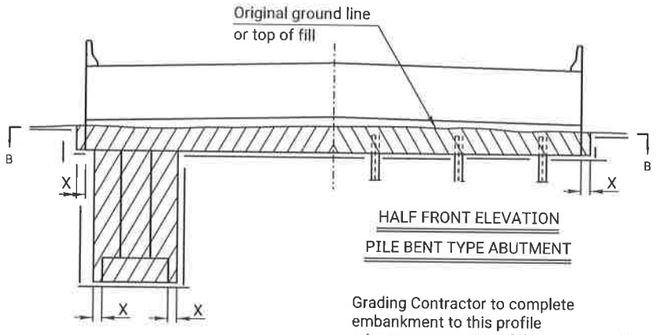
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.



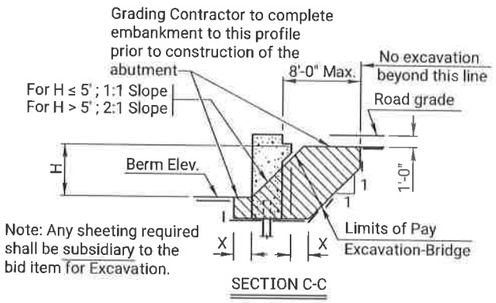
EXCAVATION DETAILS FOR TYPICAL PIERS

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





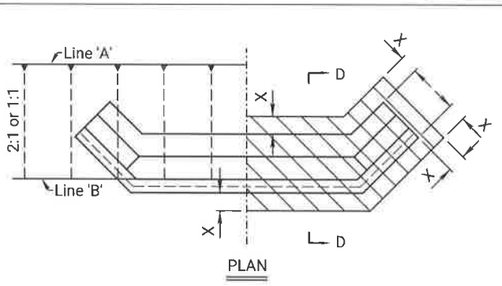
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

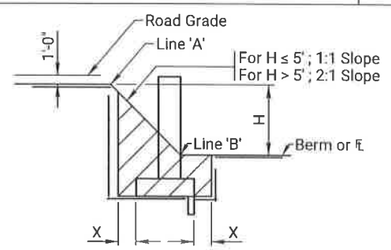


Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

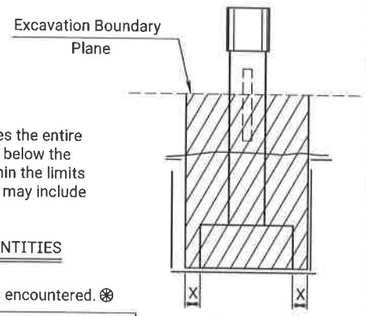
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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





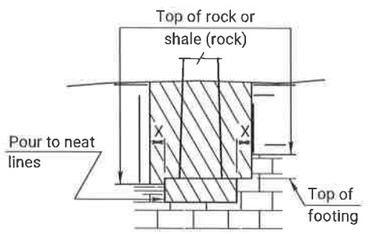
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



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

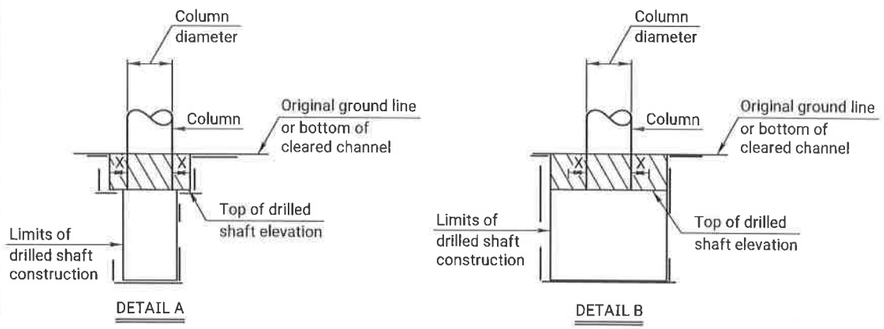
See detail when rock or shale (rock) is encountered. ❀



❀ 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.	

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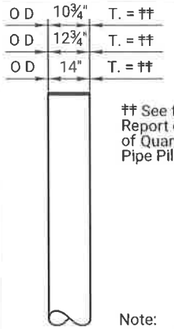
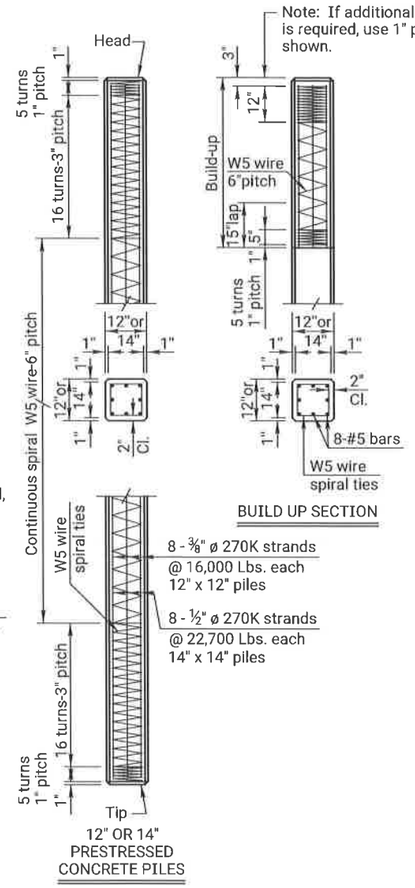
Plotted by : bwilkinson 5-AUG-2024 14:36
File : 2301835_bss-11_br100b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	20	48

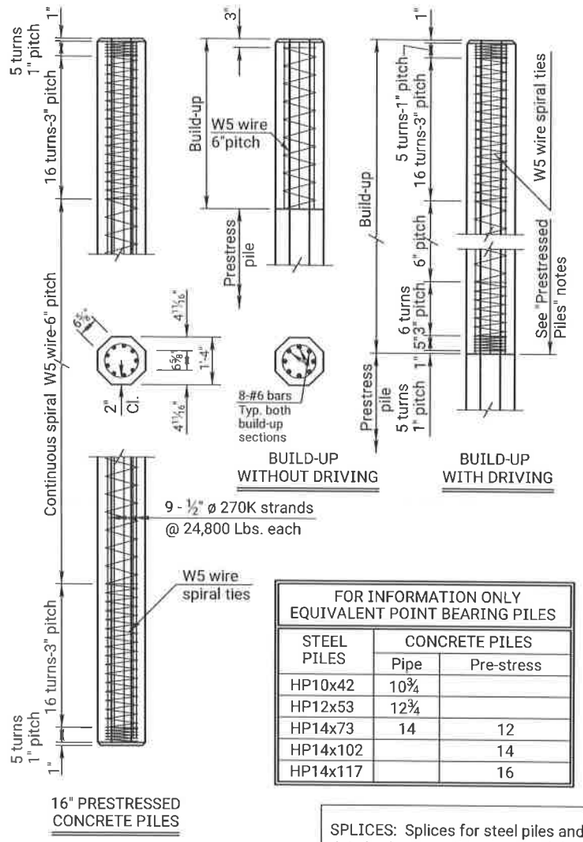


PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



BUILD UP SECTION

12" OR 14"
PRESTRESSED
CONCRETE PILES



16" PRESTRESSED
CONCRETE PILES

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.

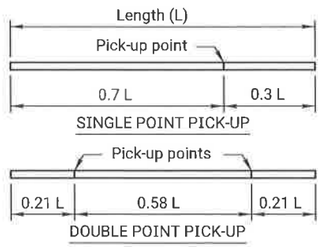
All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

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.



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.

SHELL PILE POINT

CAST STEEL PILE POINT

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

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.

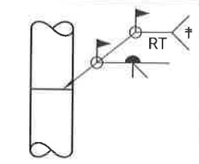
Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

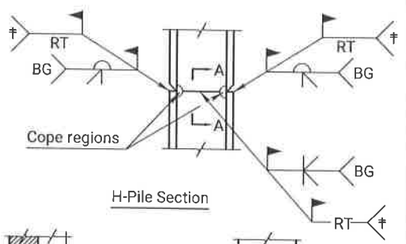
SPLICES: Splices for steel piles and shell piling shall be in accordance with details shown on this sheet and the Standard Specifications.

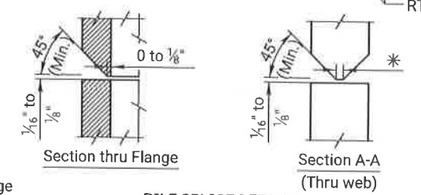
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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".







✳ 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.

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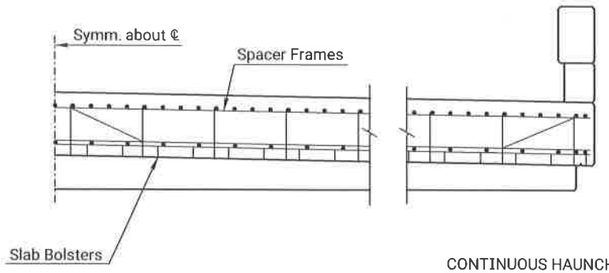
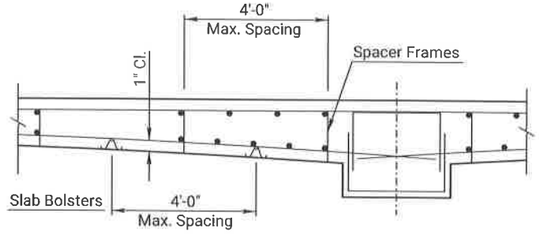
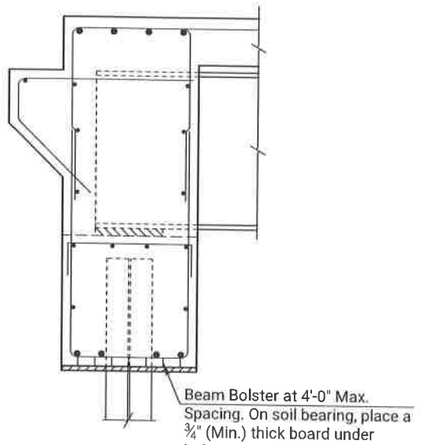
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	93 C-5237-01	2024	21	48

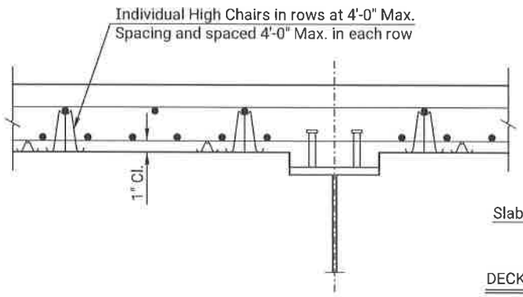


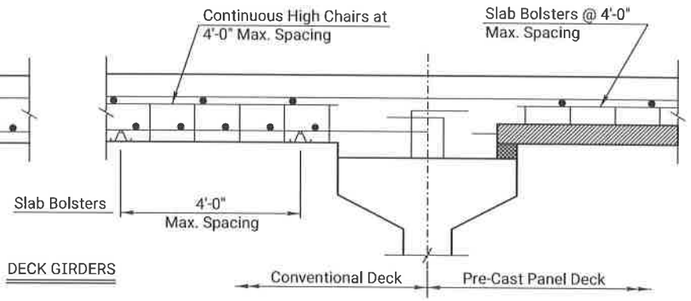


CONTINUOUS HAUNCHED SLAB

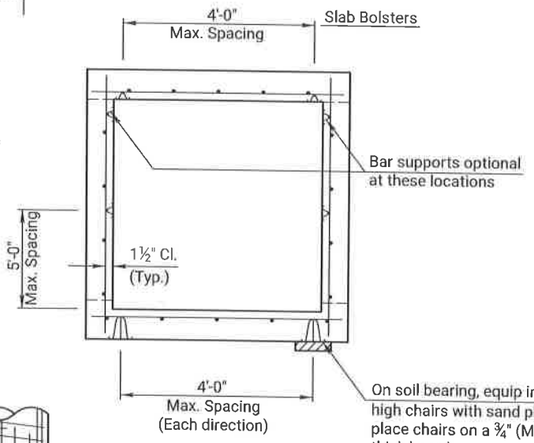


ABUTMENT

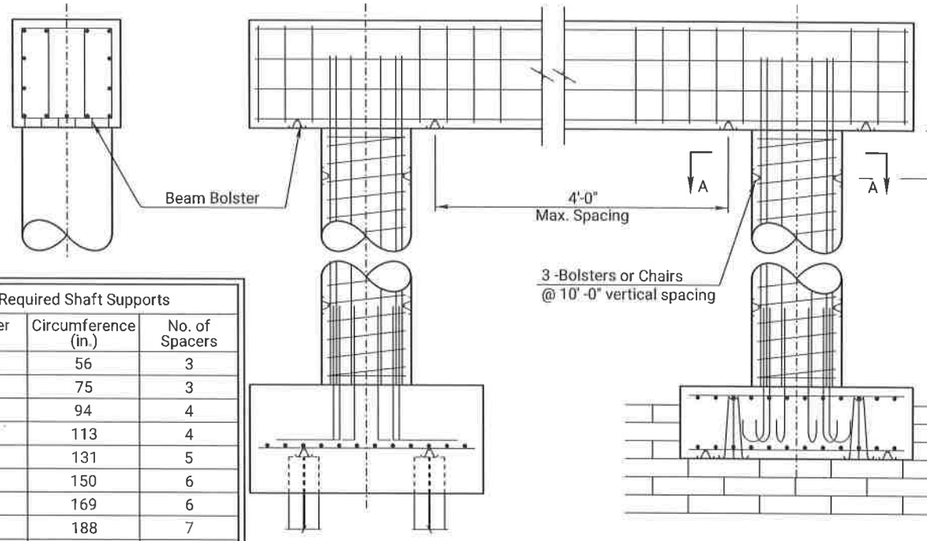




DECK GIRDERS

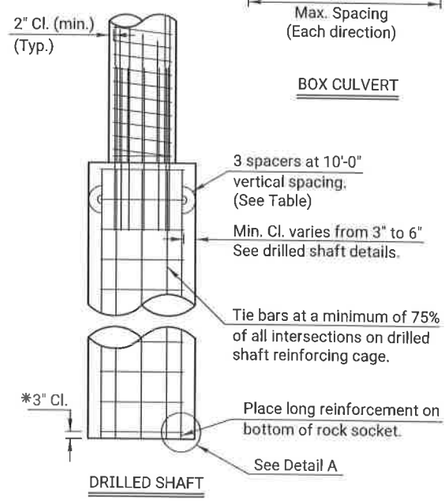


BOX CULVERT

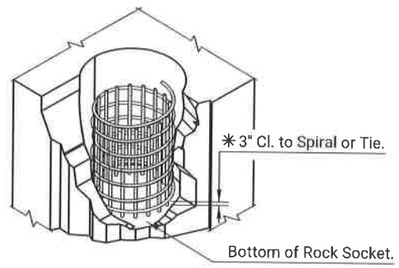


PIER

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

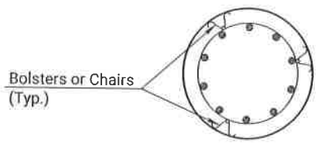


DRILLED SHAFT



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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