STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	1	53

INDEX OF SHEETS

STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED

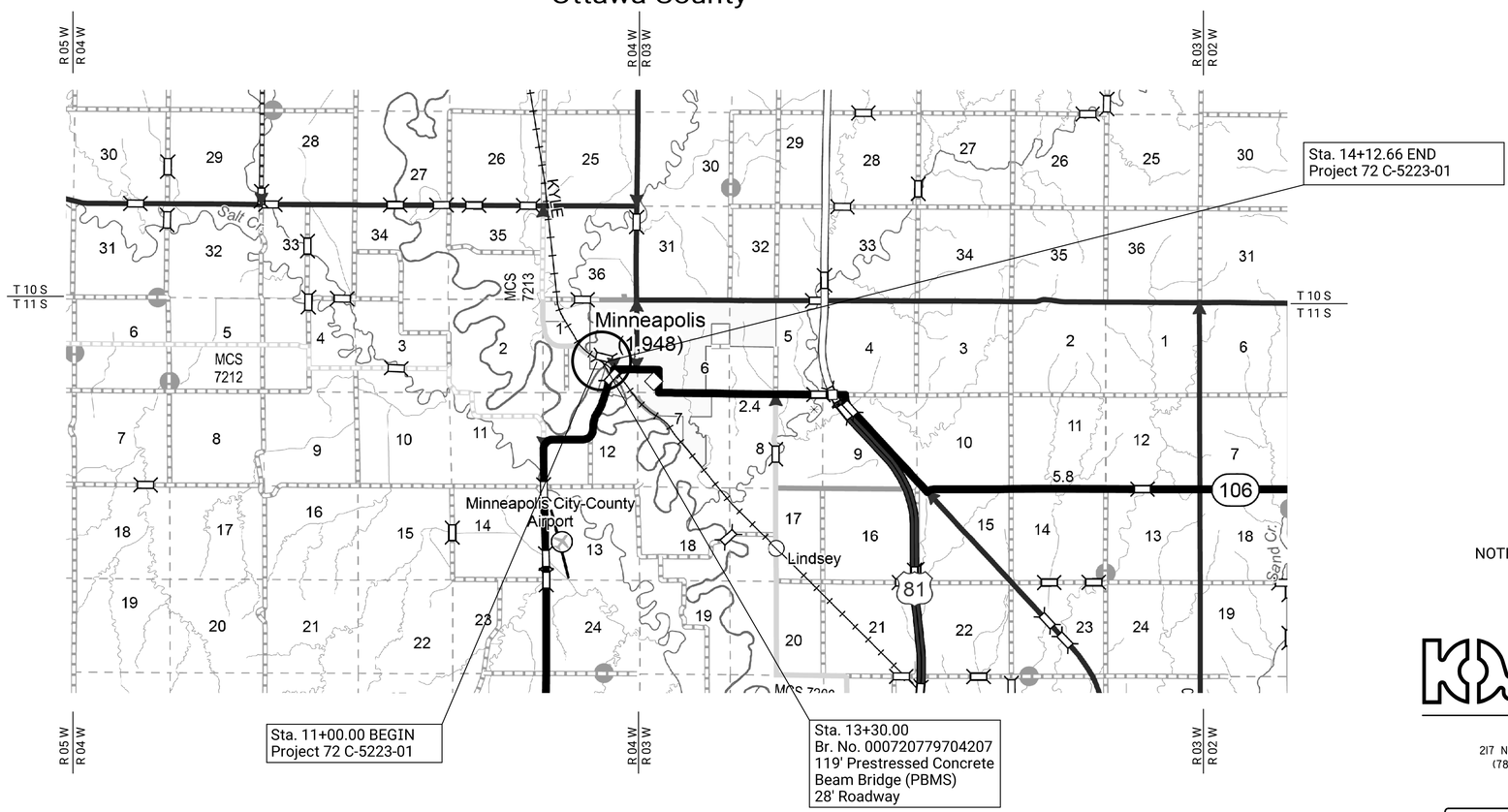
072 C-5223-01

FEDERAL AID PROJECT

Ottawa County

Federal Aid Proj. No. STP-C522(301)

GRADING
SURFACING (ASPHALT)
BRIDGE
SEEDING



No Scale

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

DESIGN DESIGNATION

AADT (2023)	400
AADT (2043)	400
DHV	
D	
T	
V	40 MPH
C of A	
Clear Zone	12 FT.

CONVENTIONAL SIGNS

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

GROSS LENGTH OF PROJECT	312.66 FT.	
EXCEPTIONS	NONE	
ADDITIONS	NONE	
NET LENGTH OF PROJECT	312.66 FT.	0.059 MILES
NET LENGTH OF BRIDGES	122.00 FT.	0.023 MILES
NET LENGTH OF ROAD	190.66 FT.	0.036 MILES

Ottawa County

KEY TO COUNTIES

RECOM. FOR APPROVAL-DATE 9-5-24

LOCAL PUBLIC OFFICIAL

JOSHUA M. BECKMAN
LICENSED
Joshua M. Beckman
21671
09/11/2024
KANSAS
PROFESSIONAL ENGINEER

KIRKHAM MICHAEL

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

Approved: Sep 12, 2024
Date

State Transportation Engineer

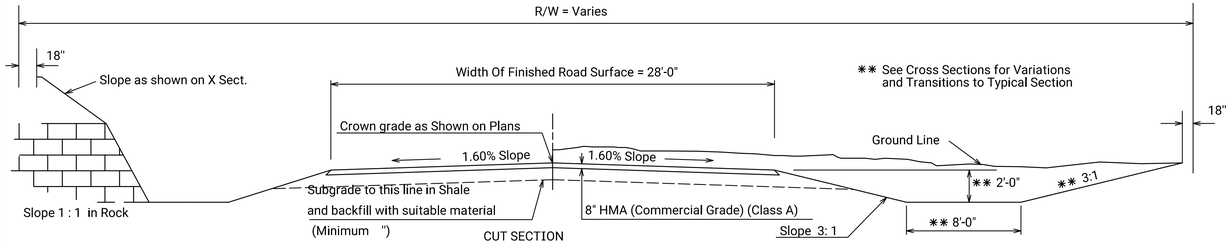
By:

Interim Chief, Bureau of Local Projects

KANSAS DEPARTMENT OF TRANSPORTATION

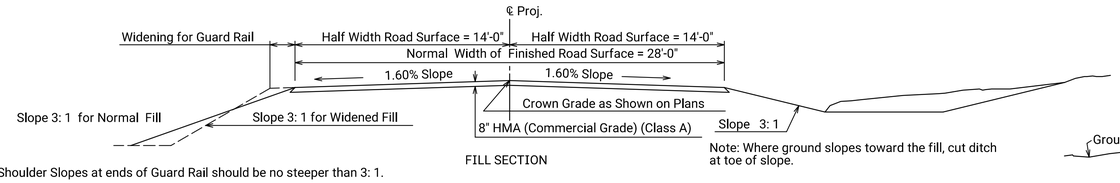
Plotted by : jbeckman 11-SEP-2024 15:35
File : 2301830rtl-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	2	53



CUT SECTION

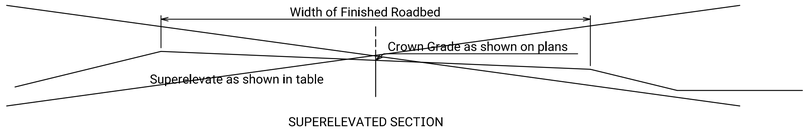
NOTE: For overbreakage in limestone, sandstone or shale see Special Provisions



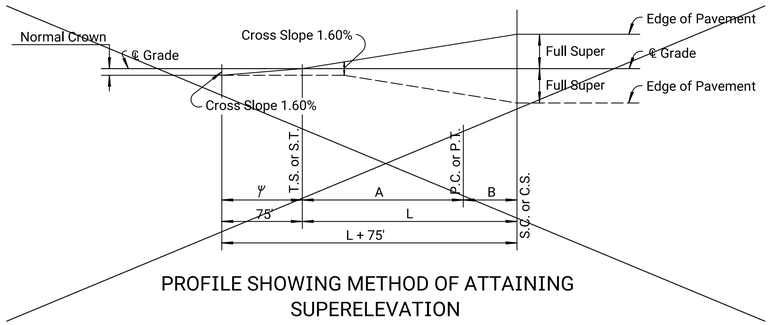
FILL SECTION

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

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

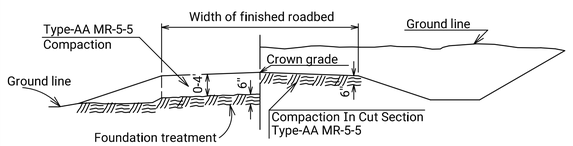


SUPERELEVATED SECTION



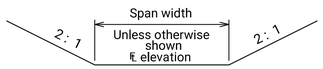
PROFILE SHOWING METHOD OF ATTAINING SUPERELEVATION

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

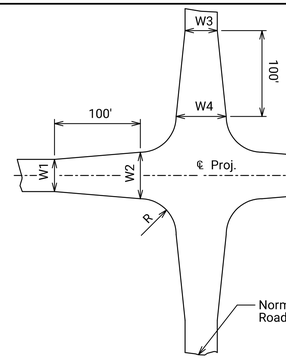


ALL EMBANKMENT SHALL BE COMPACTED EXCEPT DITCHPLUGS AND WASTE BERMS.

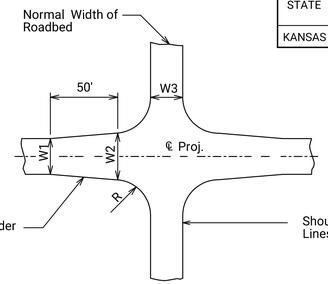
FOUNDATION TREATMENT AND COMPACTION OF EARTHWORK



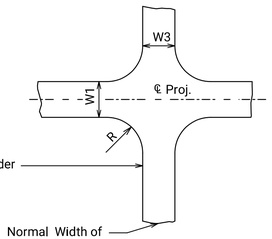
TYPICAL INLET AND OUTLET CHANNEL EXCAVATION SECTION FOR BOX STRUCTURES & PIPE CULVERTS



TYPE-A

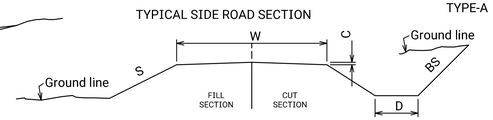


TYPE-B

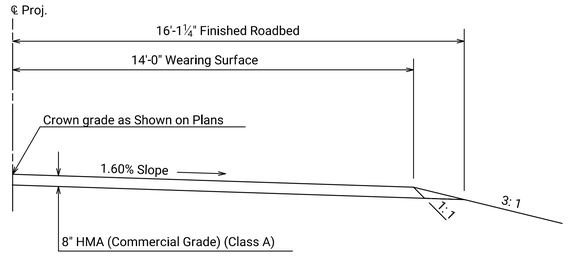


TYPE-C

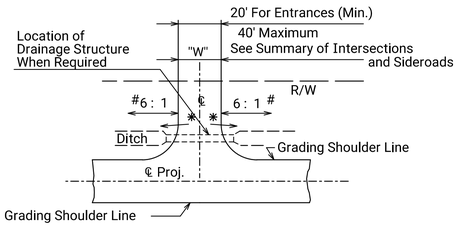
TYPICAL INTERSECTION DETAILS



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



TYPICAL ½ SECTION SURFACING

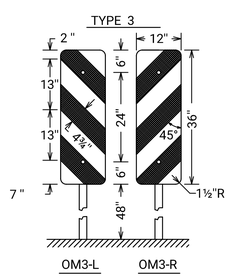


TYPICAL SIDE ROAD OR ENTRANCE DETAIL

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

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

OBJECT MARKER



SUMMARY OF OBJECT MARKERS AND SIGNS						
STATION TO STATION	SIDE	TYPE OF STRUCT.	TYPE OF SIGN	OBJECT MARKER TYPE	OBJECT MARKER NO.	REMARKS
Sta. 12+68.50	Lt.	Brdg.		OM-3L	1	ø
Sta. 12+68.50	Rt.	Brdg.		OM-3R	1	ø
Sta. 14+06.50	Rt.	Brdg.		OM-3L	1	ø
Sta. 14+06.50	Lt.	Brdg.		OM-3R	1	ø
TOTAL					4	
øAs you face bridge end from approach						
✳Back-to-Back [Sign(s) on Both Sides of Post]						

GENERAL NOTES

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

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

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

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

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

Install Object Markers Type OM3-(R)(L) at each corner of all span bridges and when indicated on the plans at box structures. Install with the inside edge of the marker in line with the inside clearance line of the structure.

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

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL GRADING SECTION

~~LP907~~

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

Plotted by : jbeckman 11-SEP-2024 15:36
File : lp907.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	3	53

UTILITIES

Telephone	ATTD	800-778-9140
Sanitary Sewer	City of Minneapolis	785-392-2176
Underground Electric	City of Minneapolis	785-392-2176

Center Cor. Sec. 1, T11S, R4W
N = 592,093.69 E = 7,391,616.57
1. Fd. 1/2" Rebar/Cap
2. Cropline to the N. 29.6' N
3. Set Spk./Wshr. in 20" tree 44.1' NNW
4. Set Spk./Wshr. in 15" tree 44.7' NNE

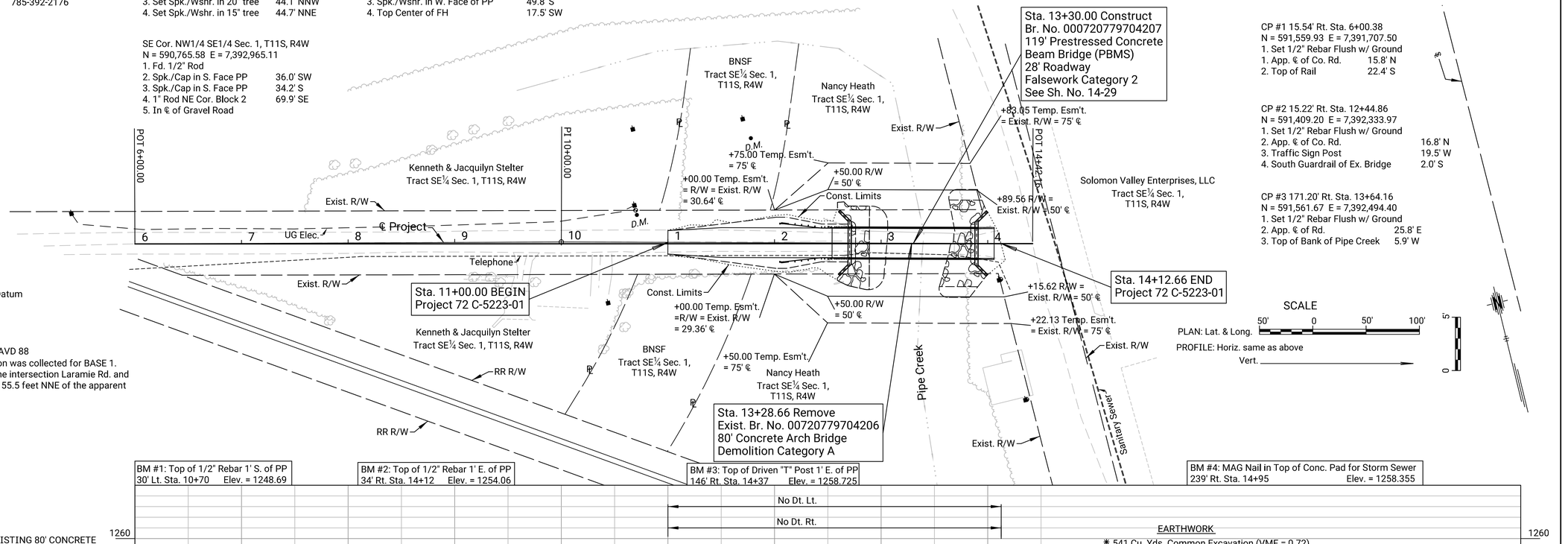
SE Cor. SW1/4 NE1/4 Sec. 1, T11S, R4W
N = 592,093.79 E = 7,392,947.34
1. Fd. "+" Cut in Sidewalk
2. 1/2" Rebar/Cap in Conc. Joint 1.3' S
3. Spk./Wshr. in W. Face of PP 49.8' S
4. Top Center of FH 17.5' SW

POT Sta. 6+00.00
N = 591,575.13 E = 7,391,710.73
1. Not Set

PI Sta. 10+00.00
N = 591,482.55 E = 7,392,099.863
1. Not Set

POT Sta. 14+42.16
N = 591,376.78 E = 7,392,529.19
1. Not Set

SE Cor. NW1/4 SE1/4 Sec. 1, T11S, R4W
N = 590,765.58 E = 7,392,965.11
1. Fd. 1/2" Rod
2. Spk./Cap in S. Face PP 36.0' SW
3. Spk./Cap in S. Face PP 34.2' S
4. 1" Rod NE Cor. Block 2 69.9' SE
5. In ℄ of Gravel Road



Horizontal Project Datum: KRCS Zone 7 Salina for project Coordinates.

Vertical Project Datum: North American Vertical Datum NAVD 88 (Geoid 18)

DATUM BENCH MARK NAVD 88

BASE 1 is the datum bench mark. An OPUS solution was collected for BASE 1.
BASE 1 is a 5/8" rebar located 418 feet WNW of the intersection Laramie Rd. and Pipe Street near the West end of Minneapolis and 55.5 feet NNE of the apparent centerline of Laramie Rd. in Ottawa Co., Kansas.
BASE 1 Elev. = 1,251.49 feet

BASE 1 WGS 84 Coordinates:
Latitude = 39°07'25.00014" N
Longitude = 97°42'48.59986" W
Ellipsoid Height = 1161.996 feet

BM #1: Top of 1/2" Rebar 1' S. of PP
30' Lt. Sta. 10+70 Elev. = 1248.69

BM #2: Top of 1/2" Rebar 1' E. of PP
34' Rt. Sta. 14+12 Elev. = 1254.06

BM #3: Top of Driven "T" Post 1' E. of PP
146' Rt. Sta. 14+37 Elev. = 1258.725

BM #4: MAG Nail in Top of Conc. Pad for Storm Sewer
239' Rt. Sta. 14+95 Elev. = 1258.355

GENERAL NOTES

THE CONTRACTOR SHALL REMOVE THE EXISTING 80' CONCRETE ARCH BRIDGE WITH 18' ROADWAY. BR. #00720779704206. THE CONTRACTOR SHALL SALVAGE A 5' SECTION OF THE EXISTING BRIDGE RAIL FOR DISPLAY IN THE LOCAL MUSEUM. THE RAIL SECTION SHALL BE REMOVED BY NEATLY SAW CUTTING THE TOP RAIL AND BOTTOM CURB. CARE SHALL BE TAKEN WHEN REMOVING THE RAIL SECTION TO KEEP THE RAIL INTACT AND IN GOOD CONDITION. THE RAIL SECTION SHALL BE STOCKPILED IN THE RIGHT OF WAY FOR REMOVAL BY OTTAWA COUNTY. ALL OTHER REMOVAL AND WASTE ITEMS SHALL BECOME THE 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.

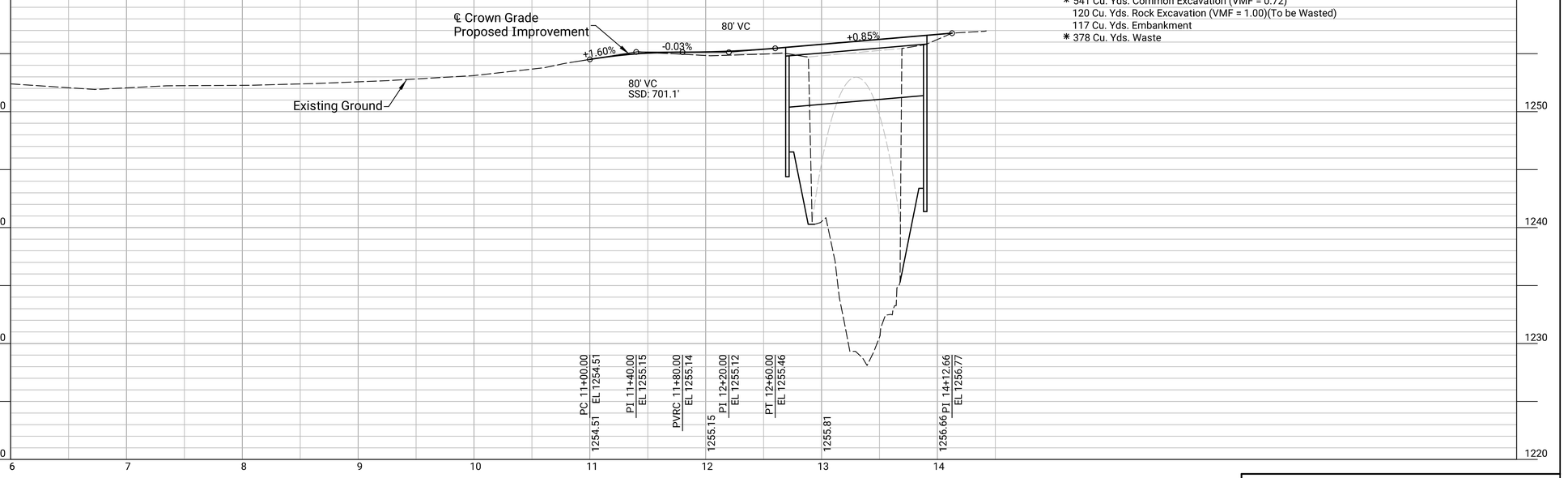
THE CONTRACTOR SHALL COMPLETE THE EMBANKMENT AS SHOWN ON THE BRIDGE EXCAVATION SHEET PRIOR TO THE DRIVING OF THE ABUTMENT PILING.

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.

THE CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL UTILITIES. THE INFORMATION SHOWN IN THESE PLANS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE.

ALL SAW CUTS SHALL BE FULL DEPTH AND ARE SUBSIDIARY TO OTHER ITEMS OF THE CONTRACT.



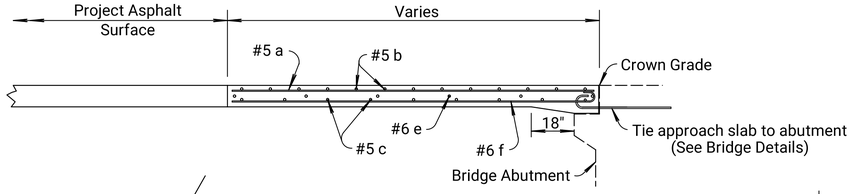
EARTHWORK
✳ 541 Cu. Yds. Common Excavation (VMF = 0.72)
120 Cu. Yds. Rock Excavation (VMF = 1.00)(To be Wasted)
117 Cu. Yds. Embankment
✳ 378 Cu. Yds. Waste

KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
STA. 6+00 TO STA. 14+50

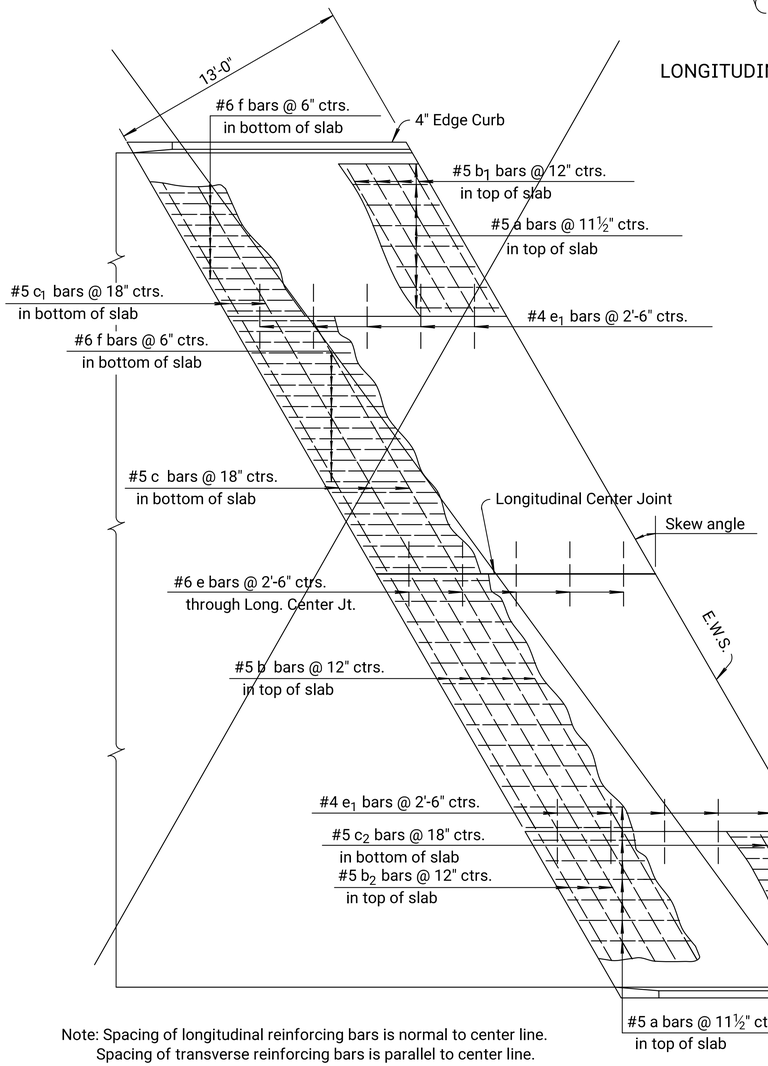
DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

Plotted by : jbeckman 11-SEP-2024 15:36
File : 2301830rpp-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	4	53



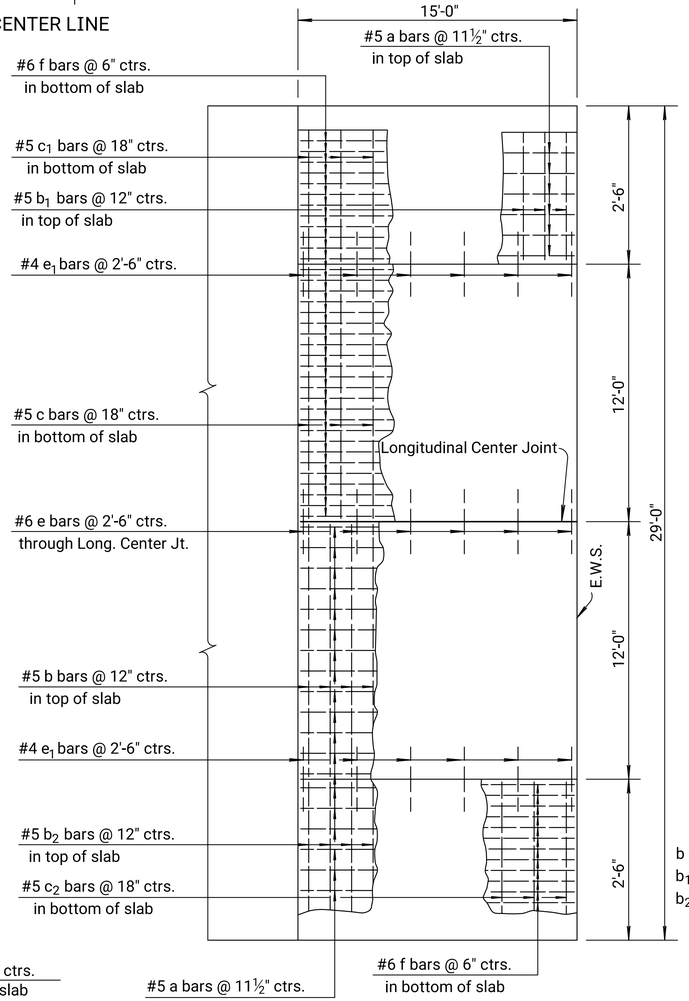
LONGITUDINAL SECTION ON CENTER LINE



Note: Spacing of longitudinal reinforcing bars is normal to center line.
Spacing of transverse reinforcing bars is parallel to center line.

PLAN FOR SKEWED APPROACH (SKEW ≥ 5 °)
(No Scale)

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



PLAN FOR NORMAL APPROACH
(No Scale)

GENERAL NOTE

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

All work and materials required for installation of joint material shall be subsidiary to this bid item.

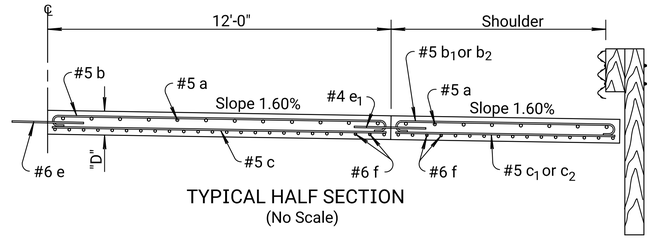
At the Contractor's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.

All reinforcing steel shall be epoxy coated.

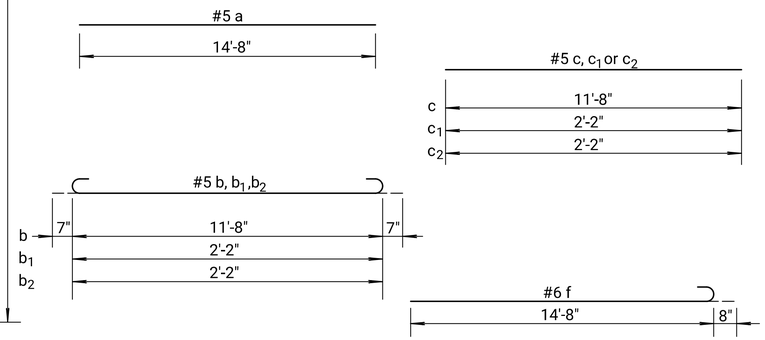
See Standard Drawing RD711 for details of joints and edge curb.

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

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



TYPICAL HALF SECTION
(No Scale)



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

BENDING DIAGRAMS

BILL OF MATERIALS

BAR SCHEDULE

NORMAL APPROACH

Bar	a	b	b_1	b_2	c	c_1	c_2	e	e_1	f
No.	32	30	15	15	20	10	10	6	12	58
Size	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6
Length	14'-8"	12'-10"	3'-4"	3'-4"	11'-8"	2'-2"	2'-2"	3'-0"	3'-0"	15'-4"

Reinforcing Steel (Grade 60) (Epoxy Coated) 2670 lbs.

Concrete Pavement (10" Unif.)(AE) 48.3 Sq. Yds.

__° SKEW

a	b	b_1	b_2	c	c_1	c_2	e	e_1	f
#5	#5	#5	#5	#5	#5	#5	#6	#4	#6
							3'-0"	3'-0"	

Reinforcing Steel (Grade 60) (Epoxy Coated) lbs.

Concrete Pavement (__" Unif.)(AE) Sq. Yds.

__° SKEW

a	b	b_1	b_2	c	c_1	c_2	e	e_1	f
#5	#5	#5	#5	#5	#5	#5	#6	#4	#6
							3'-0"	3'-0"	

Reinforcing Steel (Grade 60) (Epoxy Coated) lbs.

Concrete Pavement (__" Unif.)(AE) Sq. Yds.

Note: Quantities listed for one approach slab only. Two required per bridge. Reinforcing steel and joint lengths shown for information only.

NO.	DATE	REVISIONS	BY	APP'D
09	09-09-09	Revised Reinforcing Steel listing	S.W.K.	J.O.B.
08	05-14-09	Revised General Note	S.W.K.	J.O.B.
07	10-30-08	Added guardrail post detail at curb	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE WEST APPROACH PAVEMENT ADJACENT TO ASPHALT SURFACE

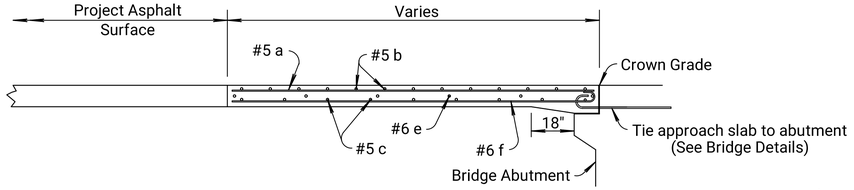
~~RD715~~

FHWA APPROVAL	06-09-09	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

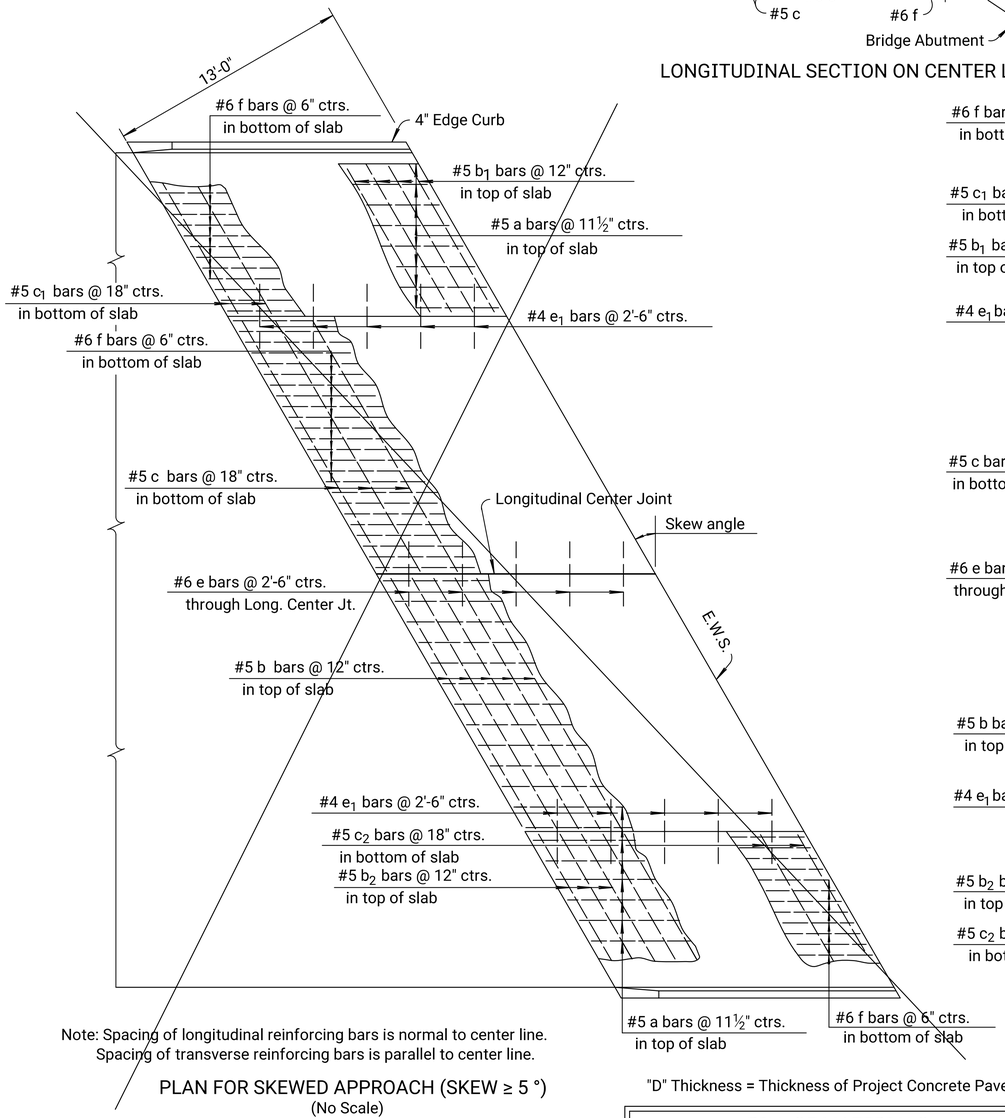
Note to Designer: The designer shall be responsible for designating pavement thickness and computing reinforcing steel and concrete quantities and dimensions necessary to complete this sheet.

Plotted by: jbeckman 11-SEP-2024 15:37
File : rd715-2.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	5	53

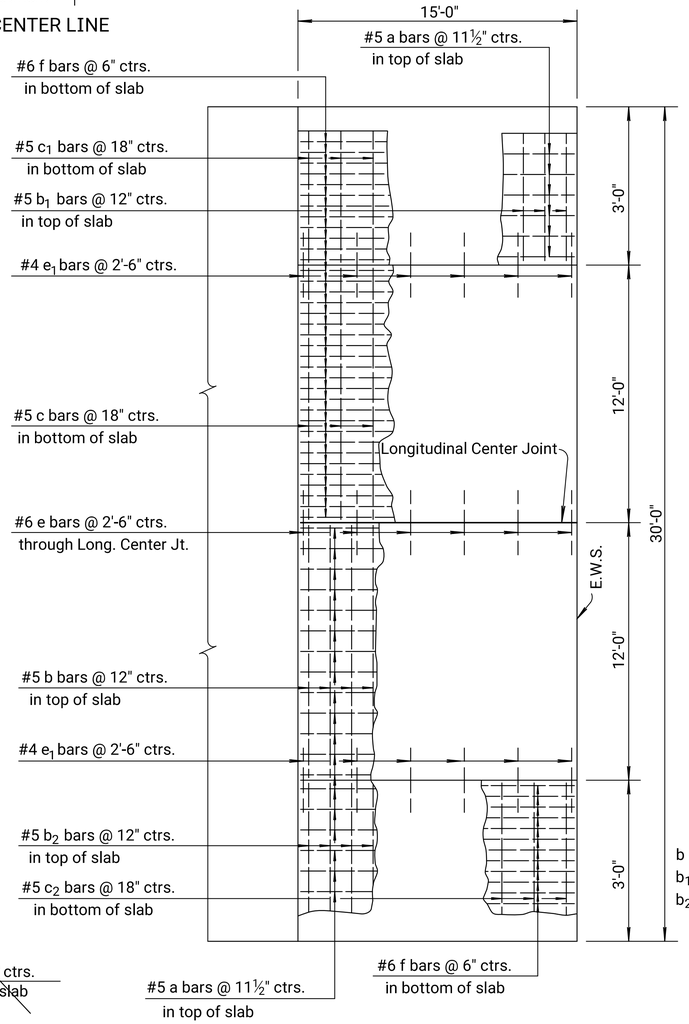


LONGITUDINAL SECTION ON CENTER LINE



Note: Spacing of longitudinal reinforcing bars is normal to center line.
Spacing of transverse reinforcing bars is parallel to center line.

PLAN FOR SKEWED APPROACH (SKEW ≥ 5 °)
(No Scale)



PLAN FOR NORMAL APPROACH
(No Scale)

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

GENERAL NOTE

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

All work and materials required for installation of joint material shall be subsidiary to this bid item.

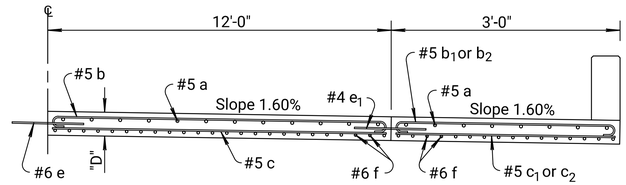
At the Contractor's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.

All reinforcing steel shall be epoxy coated.

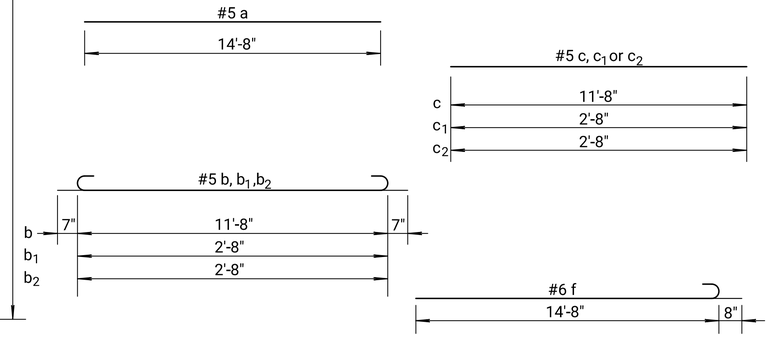
See Standard Drawing RD711 for details of joints and edge curb.

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

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



TYPICAL HALF SECTION
(No Scale)



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

BENDING DIAGRAMS

BILL OF MATERIALS

BAR SCHEDULE

NORMAL APPROACH

Bar	a	b	b_1	b_2	c	c_1	c_2	e	e_1	f	
No.	32	30	15	15	20	10	10	6	12	60	
Size	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	
Length	14'-8"	12'-10"	3'-10"	3'-10"	11'-8"	2'-8"	2'-8"	3'-0"	3'-0"	15'-4"	
Reinforcing Steel (Grade 60) (Epoxy Coated)											2690 lbs.
Concrete Pavement (10" Unif.)(AE)											50 Sq. Yds.

~~__° SKEW~~

a	b	b_1	b_2	c	c_1	c_2	e	e_1	f	
#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	
							3'-0"	3'-0"		
Reinforcing Steel (Grade 60) (Epoxy Coated)										lbs.
Concrete Pavement (__" Unif.)(AE)										Sq. Yds.

~~__° SKEW~~

a	b	b_1	b_2	c	c_1	c_2	e	e_1	f	
#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	
							3'-0"	3'-0"		
Reinforcing Steel (Grade 60) (Epoxy Coated)										lbs.
Concrete Pavement (__" Unif.)(AE)										Sq. Yds.

Note: Quantities listed for one approach slab only. Two required per bridge. Reinforcing steel and joint lengths shown for information only.

NO.	DATE	REVISIONS	BY	APP'D
09	09-09-09	Revised Reinforcing Steel listing	S.W.K.	J.O.B.
08	05-14-09	Revised General Note	S.W.K.	J.O.B.
07	10-30-08	Added guardrail post detail at curb	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE EAST APPROACH PAVEMENT ADJACENT TO ASPHALT SURFACE

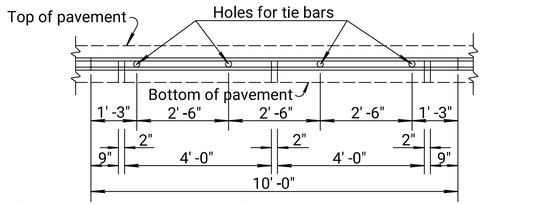
~~RD715~~

FHWA APPROVAL	06-09-09	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

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

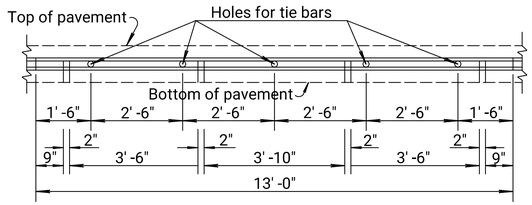
Plotted by: jbeckman 11-SEP-2024 15:37
File : rd715.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	6	53



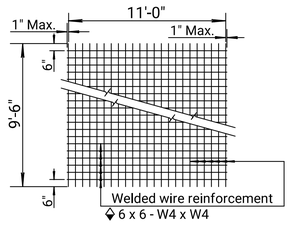
To be used only against forms. Shall not extend through contraction joints.

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



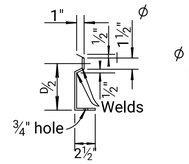
To be used only against forms. Shall not extend through contraction joints.

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



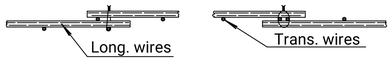
TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

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



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

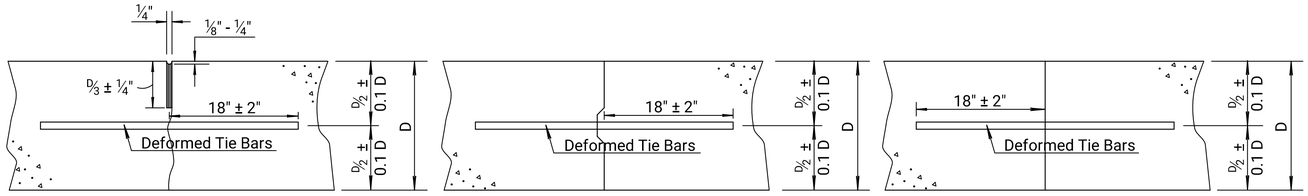
SECTION OF RECESSED
FORM LEG



DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

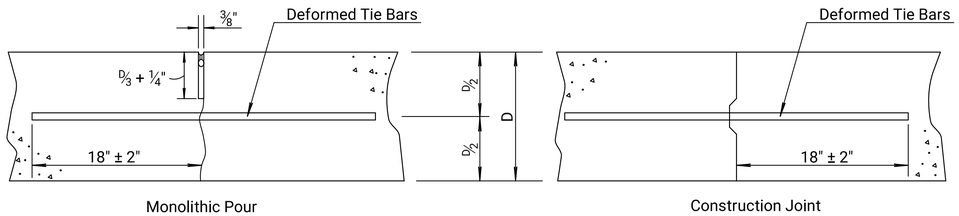
The lap shall extend beyond the first transverse or bag wire of each sheet.

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



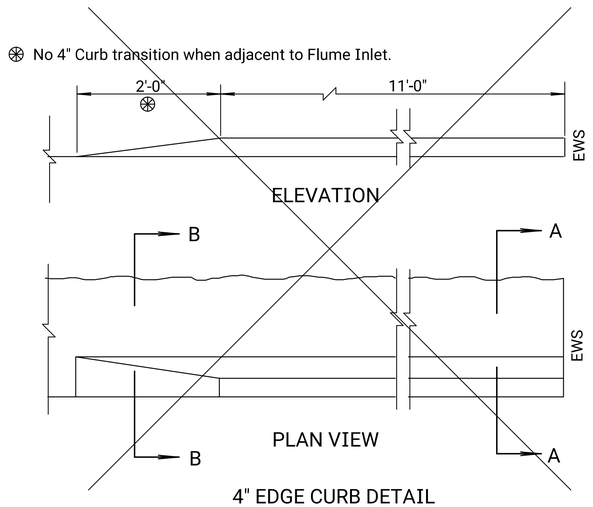
LONGITUDINAL JOINTS

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

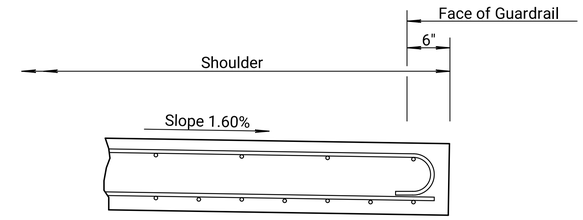


TRANSVERSE JOINTS

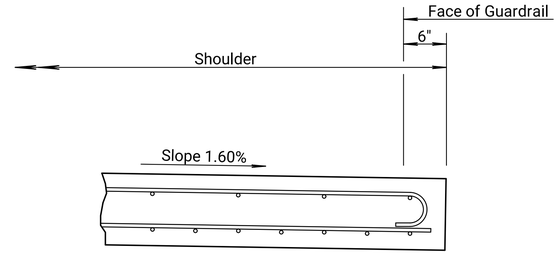
Note: A construction joint is required when the concrete placement has been interrupted for a substantial length of time or at the end of a day's placement.



4" EDGE CURB DETAIL



SECTION A-A



SECTION B-B

GENERAL NOTES

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

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

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
13	05-17-13	Revised Note, Longitudinal Joints	S.W.K.	J.O.B.
12	05-14-09	Pres. Relief Jt. to RD712/tie bar lab.	S.W.K.	J.O.B.
11	10-23-08	Revised Sec. A-A and Sec. B-B	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS
FOR CONCRETE
BRIDGE APPROACH PAVEMENT

~~RD711~~

FHWA APPROVAL		10-23-13	APP'D. James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 6

Plotted by : jbeckman 11-SEP-2024 15:37
File : rd711.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	7	53

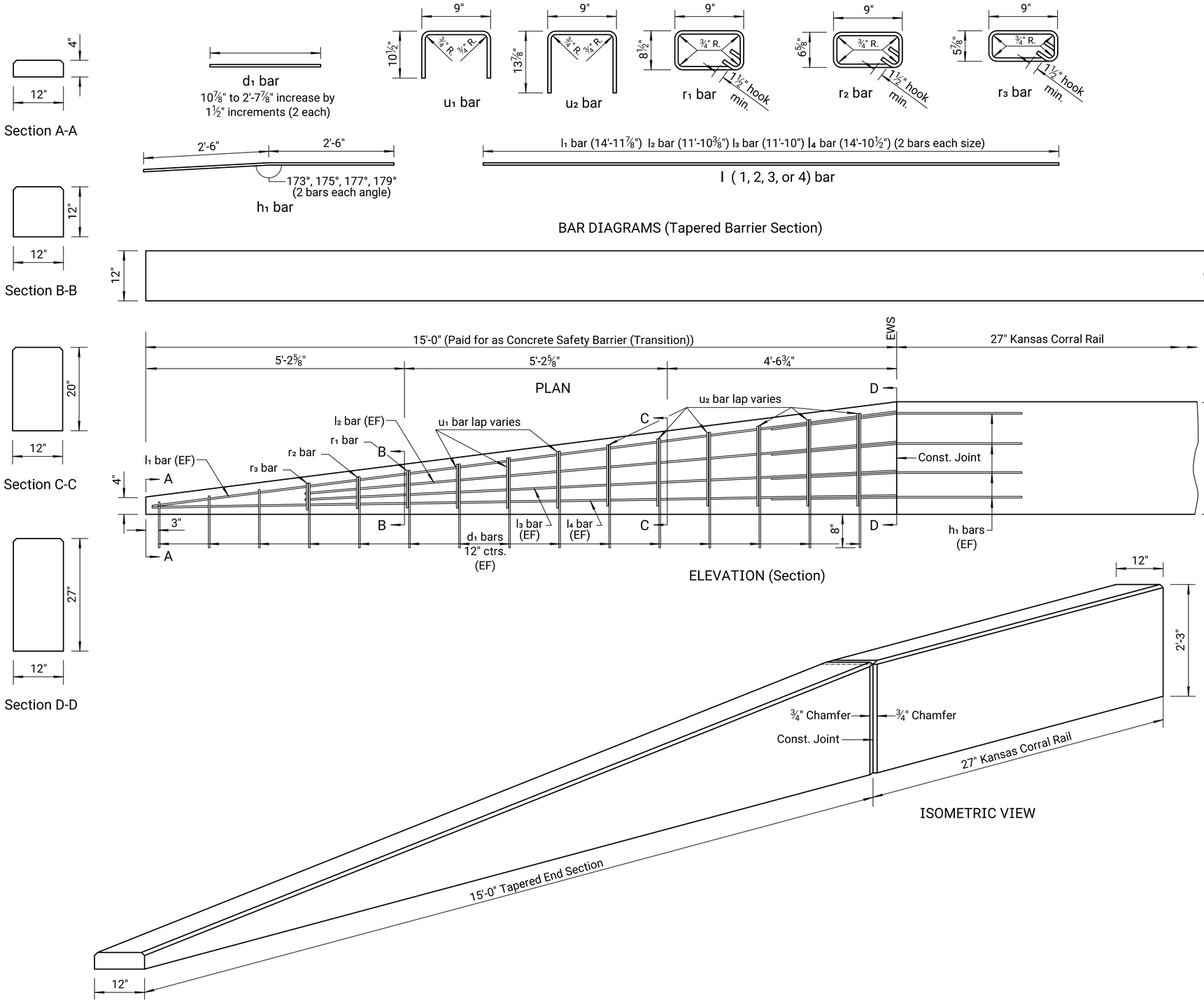
GENERAL NOTES:

Low Profile Barrier should be installed on 45 MPH or less (TL-2) roadways.

Use ASTM A615, Grade 60 reinforcing bars and Grade 4.5 (AE) Concrete for casting. All reinforcing shall be #3 bars with a minimum clear distance to reinforcment of 1½".

Use a ¾" Chamfer on all top edges.

All work and materials to construct Tapered End Section will be bid as Concrete Safety Barrier (Transition), measured along barrier centerline and paid for by the linear foot.



TAPER BARRIER SECTION

Bar	Bar Size	Shape	No. of Bars	Length ft.	Weight lbs.
d_1	#3	—	30	Increments	20.3
l_1	#3	—	2	14'-11⅞"	11.3
l_2	#3	—	2	11'-10⅜"	8.9
l_3	#3	—	2	11'-10"	8.9
l_4	#3	—	2	14'-10½"	11.2
r_1	#3	▭	1	3'-2"	1.2
r_2	#3	▭	1	2'-10"	1.1
r_3	#3	▭	1	2'-8¾"	1.0
u_1	#3	⊓	6	2'-6"	5.6
u_2	#3	⊓	12	3'-0¾"	13.8
h_1	#3	—	8	5'-0"	15.0
Conc. Gr. 4.5 (AE)					0.7 Cu. Yd.
Reinf. Steel (Grade 60)(Epoxy Coated)					98 Lbs.

15'-0" Tapered Barrier Section (for information only)

Note: Quantities listed for one tapered barrier section only. Two required.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT CONC. SAFETY BARRIER (LOW PROFILE) TAPERED END SECT.

~~RD625B~~

FHWA APPROVAL	04-07-10	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Plotted by : jbeckman 11-SEP-2024 15:37
File : rd625b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	8	53

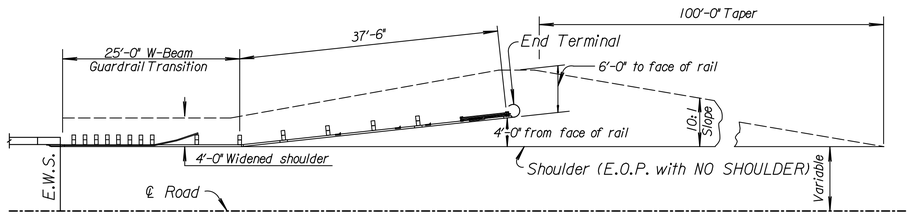
NOTE: Layouts 1, 2, 3, and 4 will be symmetric for any quadrant unless otherwise shown in the plans.

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

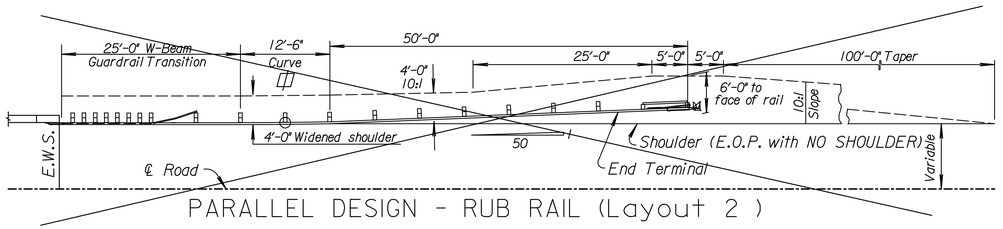
When using Thrie beam, attach Std. Drawings no. RD611 and RD608 or RD613.

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

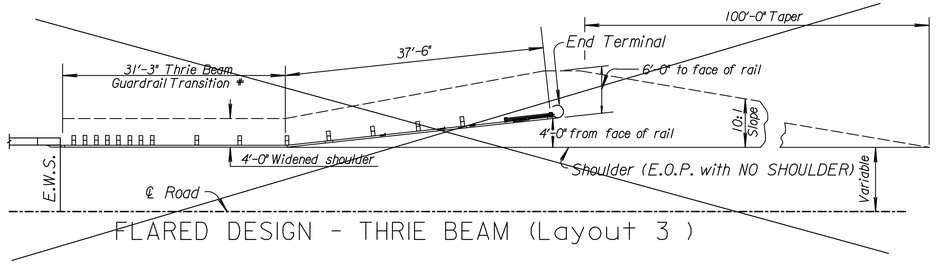
◫ Radius = 625.08'



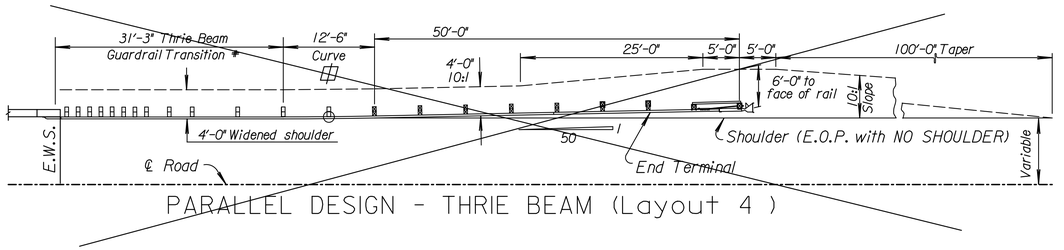
FLARED DESIGN - RUB RAIL (Layout 1)



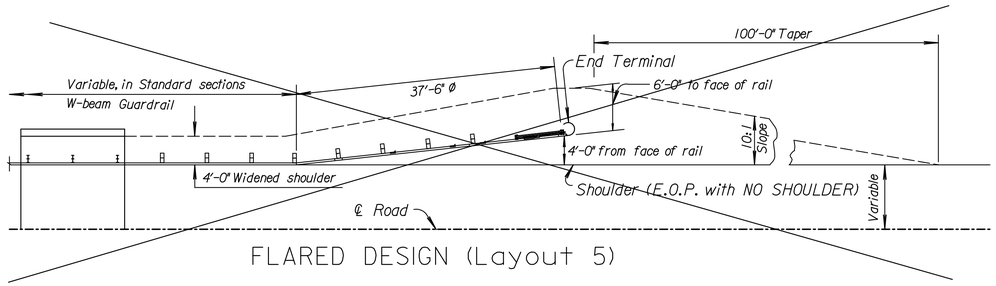
PARALLEL DESIGN - RUB RAIL (Layout 2)



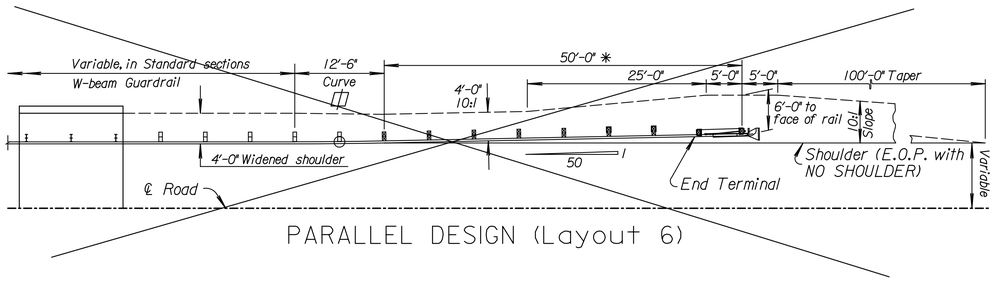
FLARED DESIGN - THRIE BEAM (Layout 3)



PARALLEL DESIGN - THRIE BEAM (Layout 4)



FLARED DESIGN (Layout 5)



PARALLEL DESIGN (Layout 6)

TYPICAL ALIGNMENT OF GUARDRAIL AT CULVERTS & BOX BRIDGES

ALLOWABLE END TERMINALS

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

SUMMARY OF STEEL PLATE GUARDRAIL

Location	Side	Layout No.	Layout Lin. Ft. *	Additional Standard Sections Lin. Ft.	Total Pay Length Lin. Ft.	Layout 1 or 3 Gd. Rail End Term. (SRT) Alt. #1 Each	Layout 1 or 3 Gd. Rail End Term. (FLEAT) Alt. #2 Each	Layout 2, 4, or 6 Gd. Rail End Term. (SKT) Each	Layout 5 Gd. Rail End Term. (SRT) Alt. #1 Each	Layout 5 Gd. Rail End Term. (FLEAT) Alt. #2 Each	
NW Quad.	Lt.	1	25		25	1	1				
SW Quad.	Rt.	1	25		25	1	1				
TOTAL LENGTH					50	2	2				

*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~~

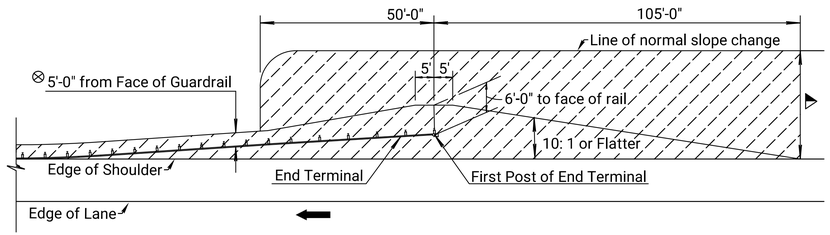
FHWA APPROVAL		APP'D.	MJS
DESIGNED	DETAILED TLS	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK. RJS	QUAN.CK.	TRACE CK.

Plotted by : jbeckman 11-SEP-2024 15:38
File : lp620.dgn

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

GUARDRAIL CLEAR AREA

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



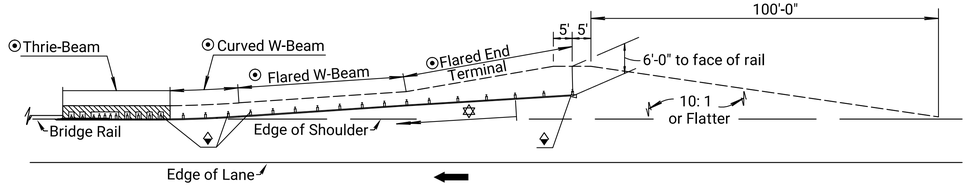
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet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

Normal Project Side Slope.

Deflection Distance for Normal Post Spacing

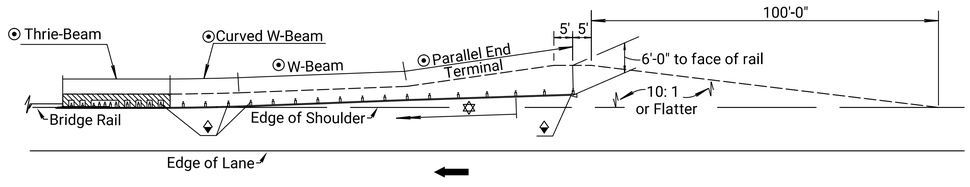
FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS
(MGS Shown)



PARALLEL GUARDRAIL DETAIL

Applies to CGS AND MGS
(MGS Shown)



See Guardrail Layout Sheets for Details

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

Length of Need (Begins at Post 3)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	9	53

GENERAL NOTES

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

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

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

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

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

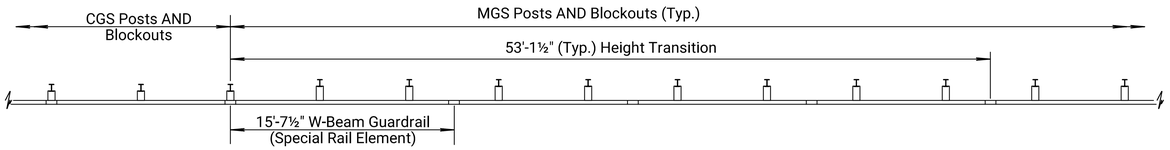
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even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

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

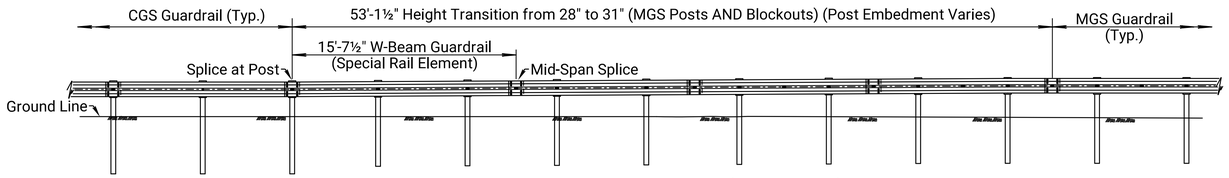
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered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

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

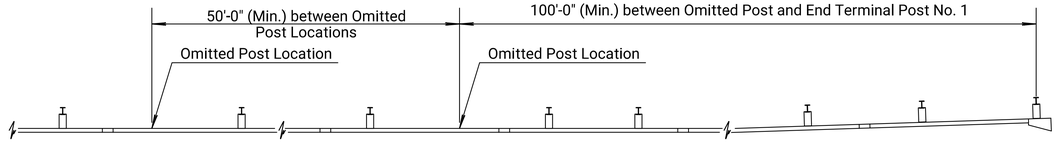
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



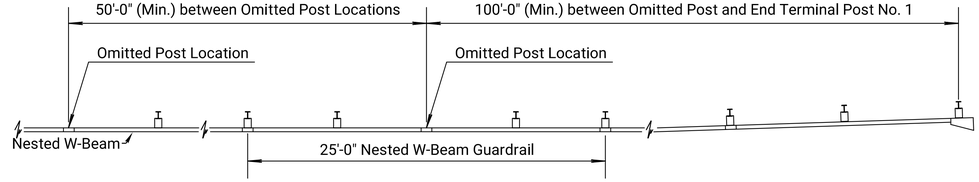
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) END TERMINALS

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

CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL AUXILIARY DETAILS

RD606

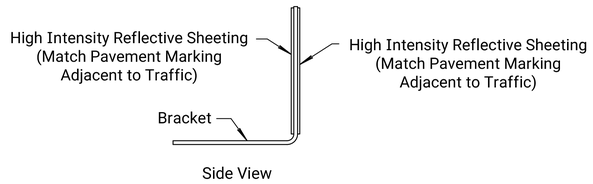
FHWA APPROVAL	09-25-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 9

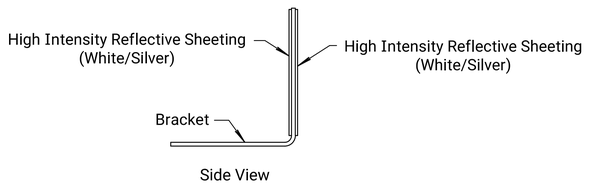
Plotted by : jbeckman 11-SEP-2024 15:38
File : rd606.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	10	53

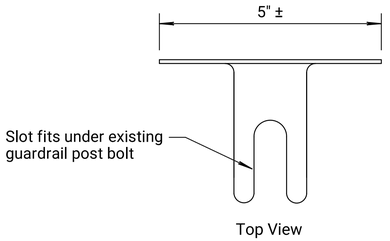
Flexible Marker
One-Way Traffic

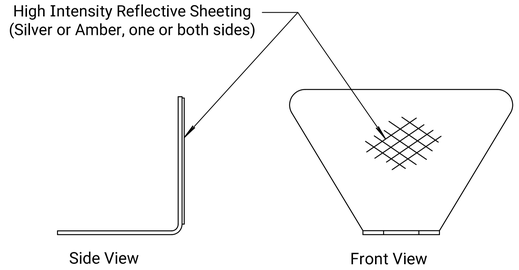


Flexible Marker
Median Locations



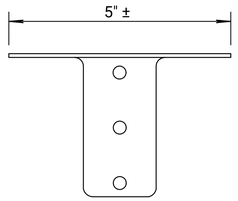
Flexible Marker
Two-Way Traffic



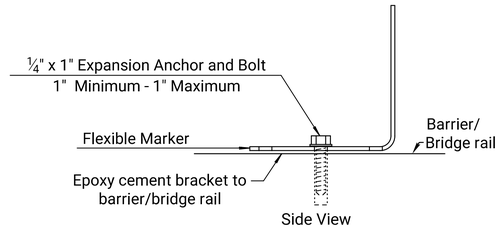


Flexible Guardrail Marker

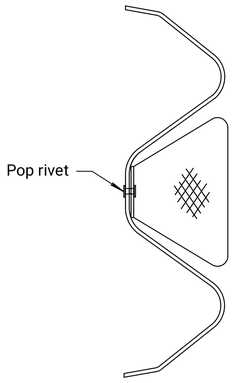
(High Impact Polycarbonate approx. .085" thick, 5¼" x 3")



Barrier/Bridge Rail

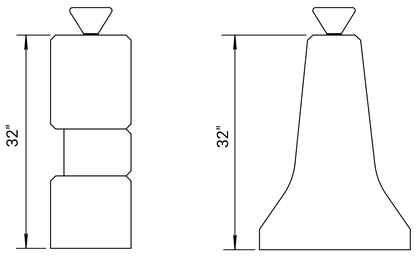


Method of Attaching Flexible
Marker to Barrier/Bridge Rail



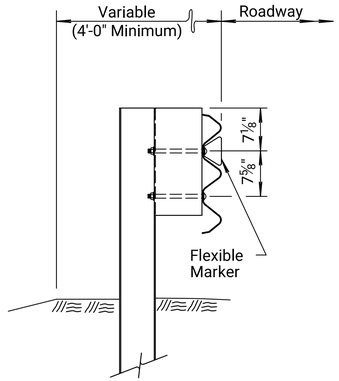
Typical Mounting on W-Beam

Pop rivet attachment to Guardrail when necessary.

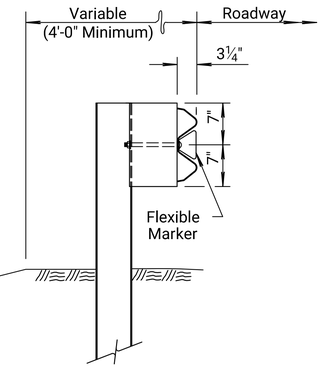


CORRAL RAIL | TYPE I CSB | TYPE II CSB or F-SHAPED BRIDGE RAIL | TYPE III CSB | TYPE IV CSB

TYPICAL BARRIER/BRIDGE RAIL MOUNTING DETAILS



THRIE-BEAM GUARDRAIL



W-BEAM GUARDRAIL

GENERAL NOTES

Install flexible markers on a post behind the guardrail bolt head on the traffic side of guardrail installations at a spacing not to exceed 25'. No marker is installed between the head and post #5 when the guardrail is terminated with a crashworthy end terminal.

Install flexible markers on the top of bridge rails at a spacing not to exceed 50', except for long bridges (greater than 200' long), where spacing may be increased to 100'.

Install flexible markers on the top of concrete safety barrier at a spacing not to exceed 100', except for barrier along a horizontal curve or along ramps and ramp tapers, where spacing is not to exceed 50'.

Where the height of the bridge rail or concrete barrier is greater than 32", mount the flexible markers on the side of the barrier at a height of 32" as shown on this sheet.

For guardrail, bridge rail, or concrete safety barrier located on two-way roadways, use flexible markers with white/silver high intensity reflective sheeting on both sides.

For guardrail located on one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located on the outside edge of one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located in the median, use flexible markers with reflective sheeting installed on both sides of the bracket. Match the color of the marker (yellow/amber or white/silver) to the color of the pavement marking adjacent to the traffic lane.

Use High Impact Polycarbonate Flexible Guardrail Marker with High Intensity Reflective Sheeting or an approved equivalent, see Standard Specifications.

Use zinc or cadmium plated fasteners that comply with Standard Specifications.

Work and materials required for installation of markers on guardrail, bridge rail, or concrete safety barrier are subsidiary to other bid items in the contract.

Install flexible markers for the final (permanent) traffic configuration.

NO.	DATE	REVISIONS	BY	APP'D
09	09-11-17	Rev. Det. Markers, Rev. Gen. Note	A.L.R.	S.W.K.
08	11-15-10	Revised notes	S.W.K.	J.O.B.
07	12-21-08	AKT marker or approved equal	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MARKER DETAILS FOR GUARDRAIL, BARRIER, AND BRIDGE RAILS

RD610

FHWA APPROVAL	03-15-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

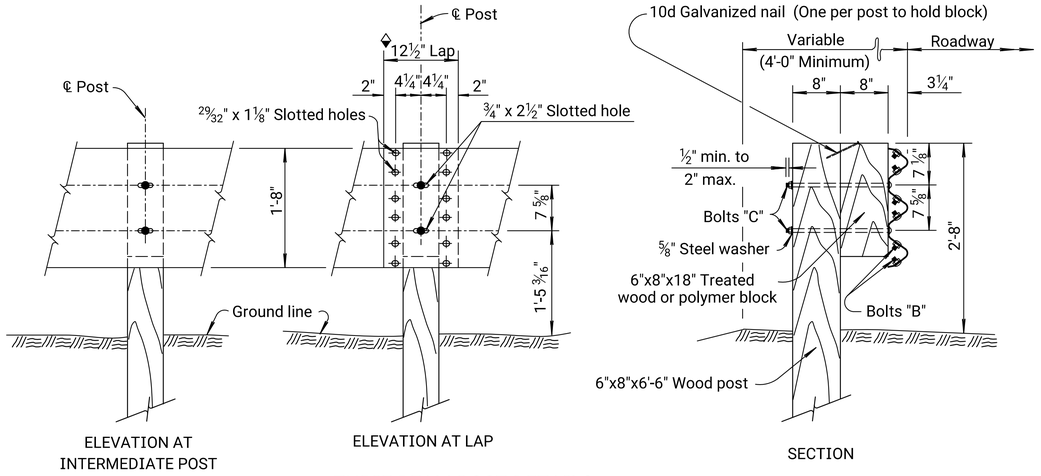
KDOT Graphics Certified 05-11-2022 Sh. No. 10

KDOT Graphics Certified

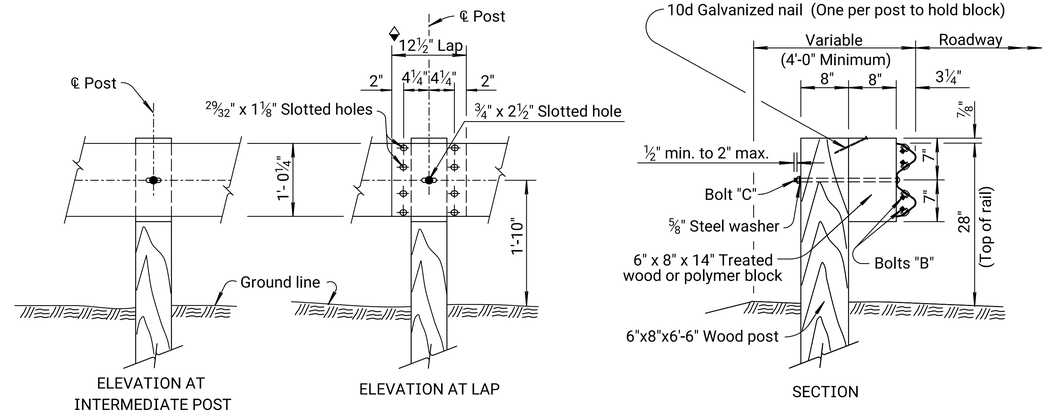
Plotted by : jbeckman 11-SEP-2024 15:38
File : rd610.dgn

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	11	53

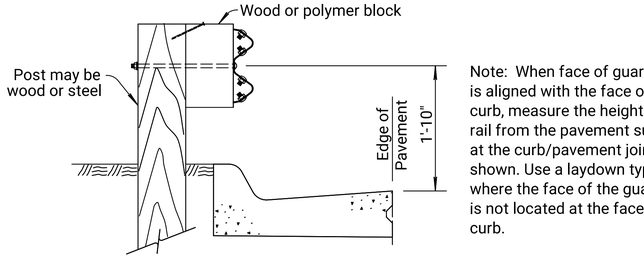


THRIE BEAM POST DETAILS



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.



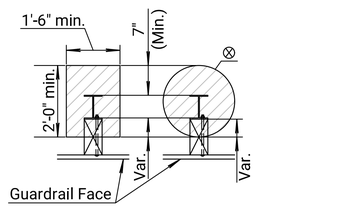
DETAIL OF PLACEMENT AT CURB

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.

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.

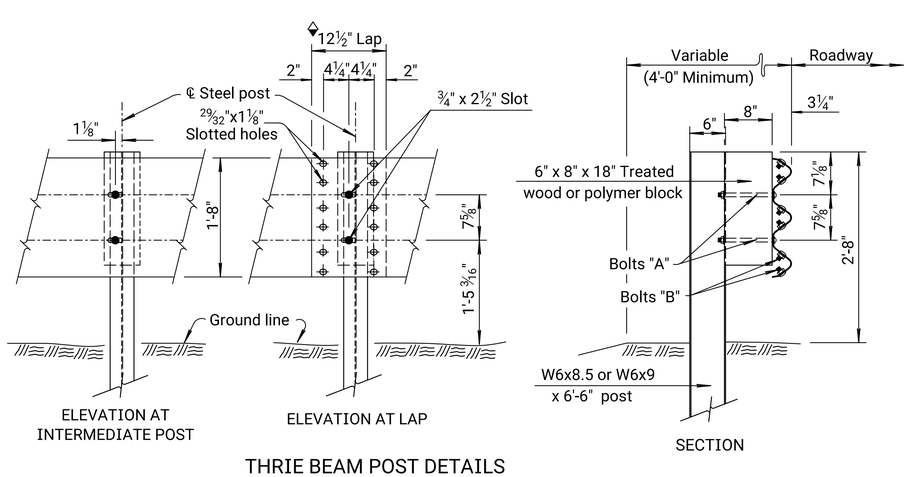


POSTS IN PAVEMENT PLAN
(ALTERNATE GEOMETRIES)
Applies to All Wood and All Steel Posts
(Steel Posts Shown)

▨ Slurry Grout (Low Strength). See KDOT's Standard Specifications

⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

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



THRIE BEAM POST DETAILS

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

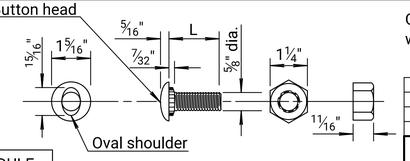
W-BEAM POST DETAILS

STEEL POSTS

GENERAL NOTES (Steel Posts)

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

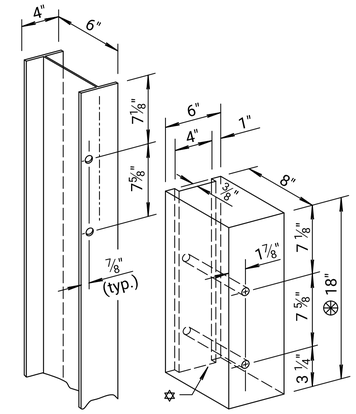
BOLT SIZE SCHEDULE	
Bolt	L
A	8 ½"
B	1 ¼"
C	18"



BOLT & NUT DETAILS

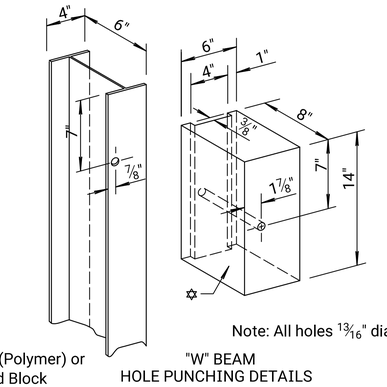
Galvanize all bolts, nuts, and washers in accordance with the KDOT's Standard Specifications.

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



Note: All holes 13/16" dia.

THRIE BEAM
HOLE PUNCHING DETAILS



Note: All holes 13/16" dia.

✡ Non-Metallic (Polymer) or Treated Wood Block

"W" BEAM
HOLE PUNCHING DETAILS

NO.	DATE	REVISIONS	BY	APP'D
13	09-05-18	Added Det., Post In Pavement	A.L.R.	T.T.R.
12	12-14-10	Revised notes, 28" w-be	S.W.K.	J.O.B.
11	06-30-04	Remove steel blockout and notes	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST DETAILS

RD611

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

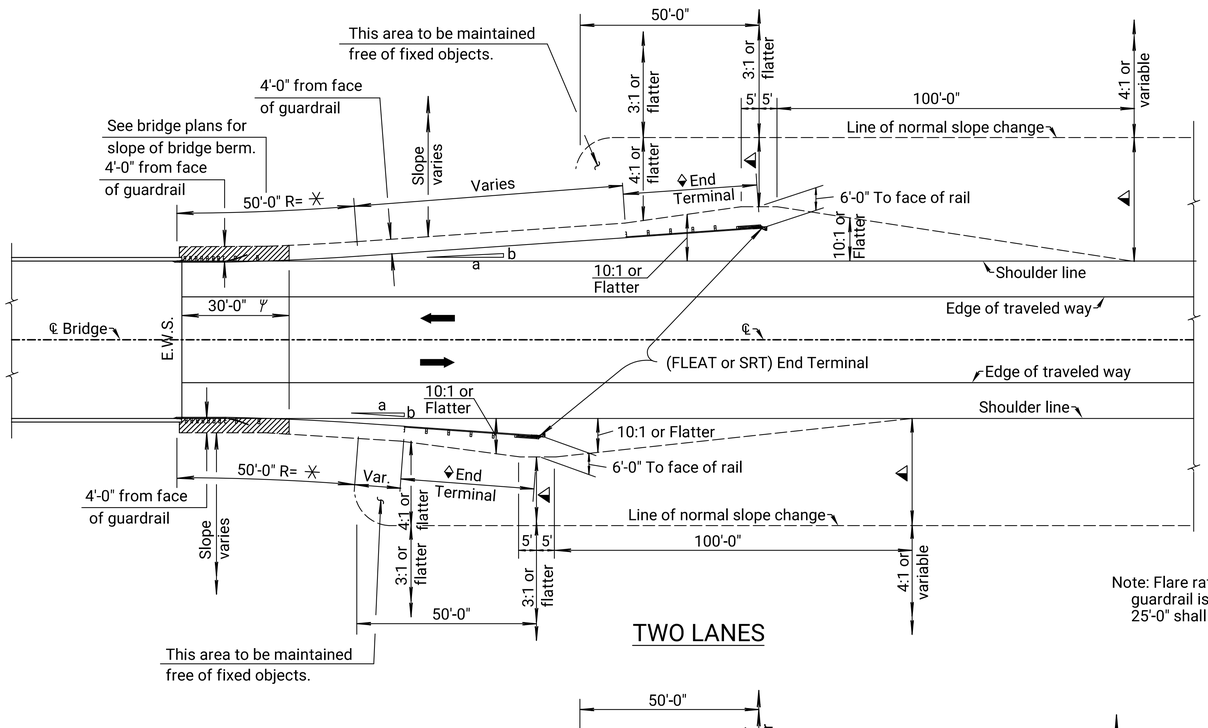
KDOT Graphics Certified 08-01-2022 Sh. No. 11

KDOT Graphics Certified

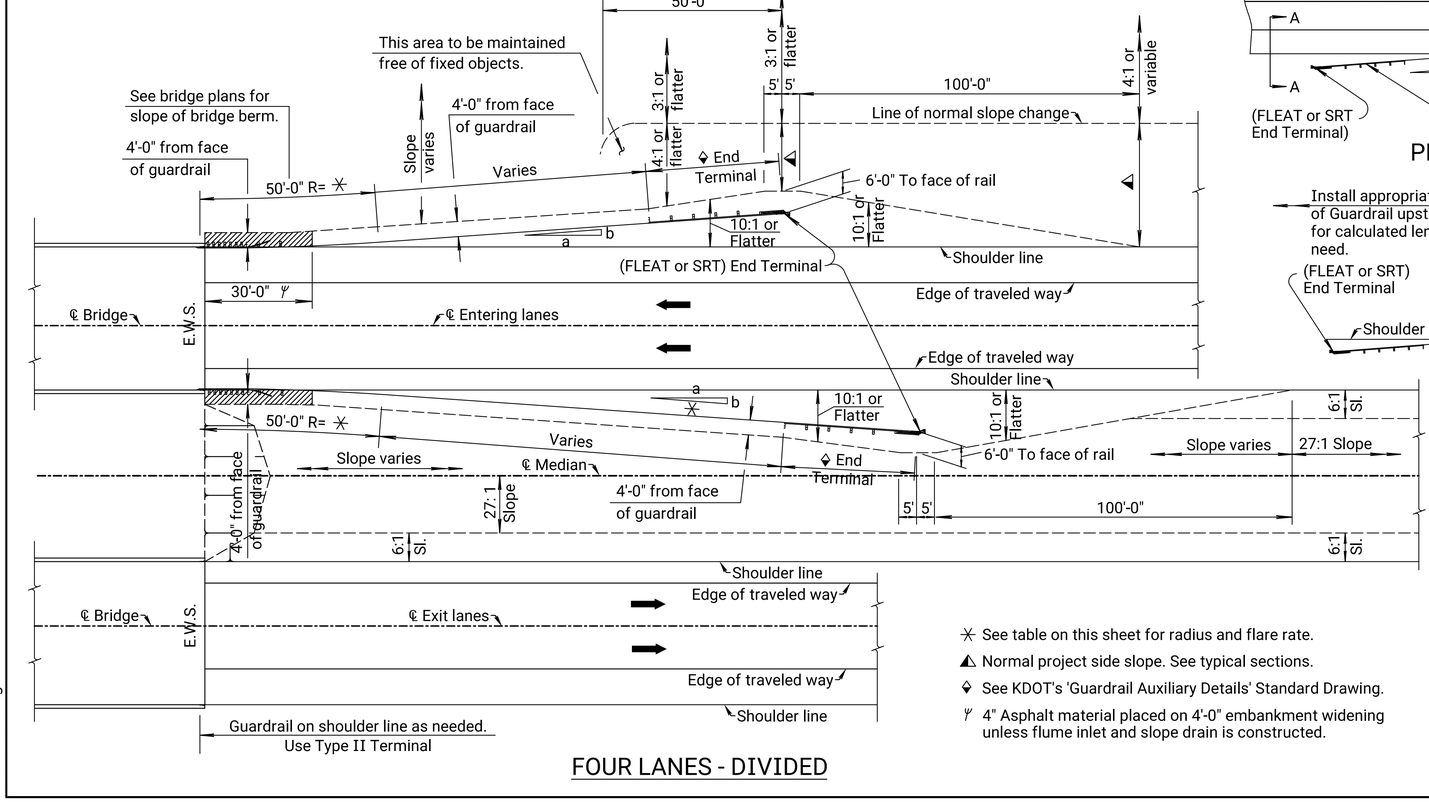
Plotted by : jbeckman 11-SEP-2024 15:38
File : rd611.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	12	53

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



TWO LANES



FOUR LANES - DIVIDED

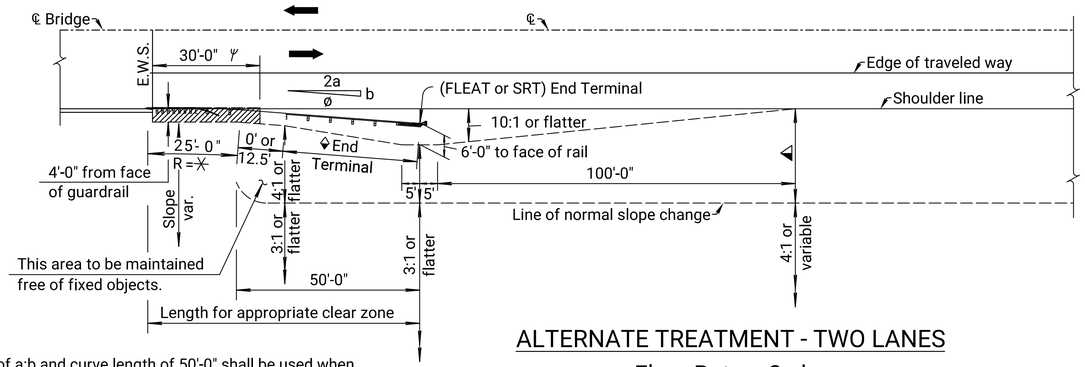
DESIGN PARAMETERS				
Design Speed (mph)	Flare Rate (a:b)	Radius (R)	Flare Rate (2a:b)	Radius (R)
70	15:1	375.55'	30:1	375.14'
60	14:1	350.59'	26:1	325.16'
55	12:1	300.69'	24:1	300.17'
50	11:1	275.76'	21:1	262.70'
45	10:1	250.83'	18:1	225.23'
40	8:1	201.04'	16:1	200.26'

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.

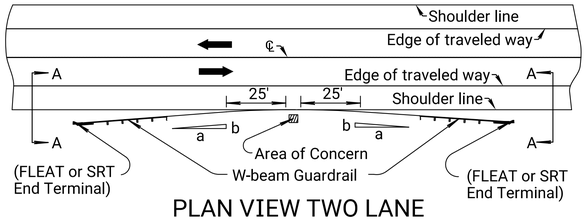


Note: Flare rate of a:b and curve length of 50'-0" shall be used when guardrail is beyond shy line, flare rate of 2a:b and curve length of 25'-0" shall be used when guardrail is located inside the shy line.

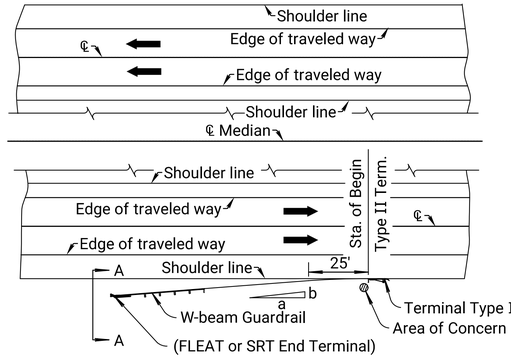
ALTERNATE TREATMENT - TWO LANES

Flare Rate = 2a:b

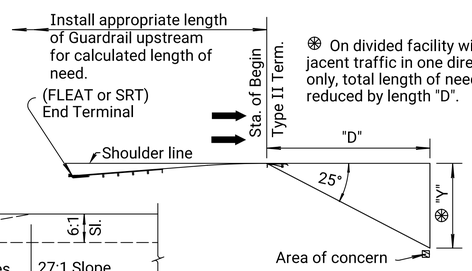
(GUARDRAIL LENGTHS OF 62.5' AND 75')



PLAN VIEW TWO LANE

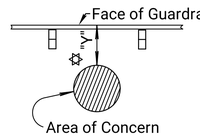


PLAN VIEW FOUR LANE



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

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



ENLARGEMENT - AREA OF CONCERN

DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE

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

◭ Normal project side slope. See typical sections.

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

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

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

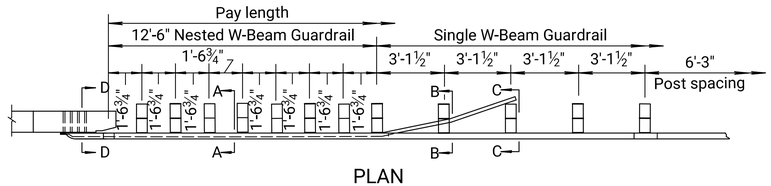
FHWA APPROVAL	06-19-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-16-2022 Sh. No. 12

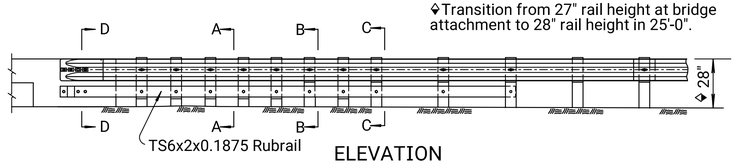
KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:38
File : rd615a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	13	53

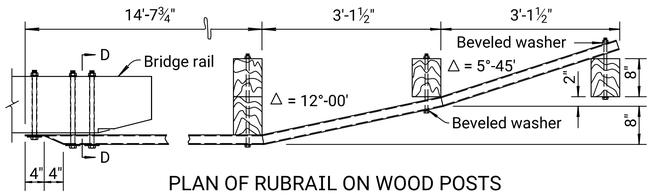


PLAN

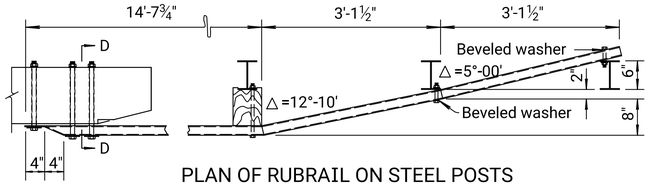


ELEVATION

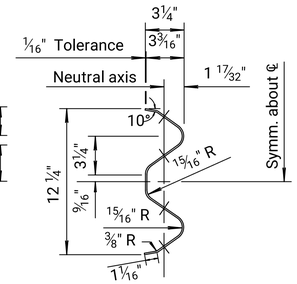
◆Transition from 27" rail height at bridge attachment to 28" rail height in 25'-0".



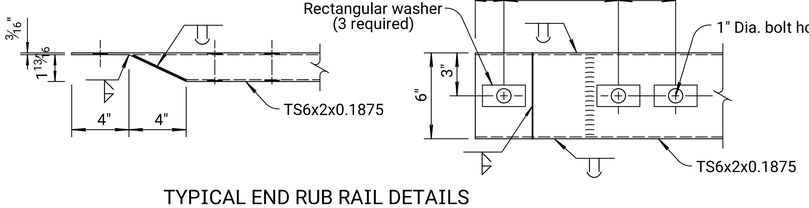
PLAN OF RUBRAIL ON WOOD POSTS



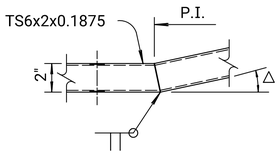
PLAN OF RUBRAIL ON STEEL POSTS



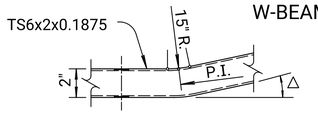
SECTION THRU TYPICAL W-BEAM RAIL ELEMENT



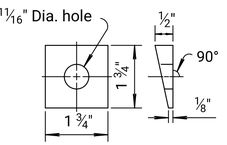
TYPICAL END RUB RAIL DETAILS



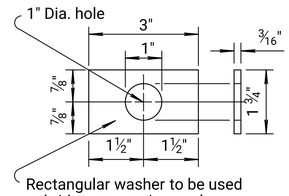
SHOP WELDED OPTION



SHOP BENT OPTION

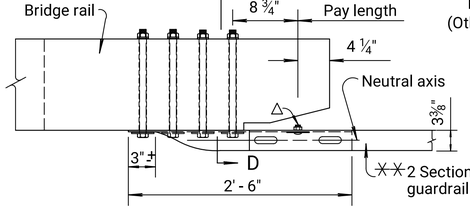


BEVELED WASHER



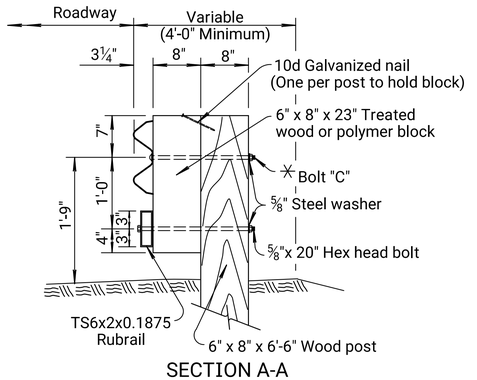
Rectangular washer to be used at bridge connections only.

RECTANGULAR WASHER
(Other approved washer may be used.)

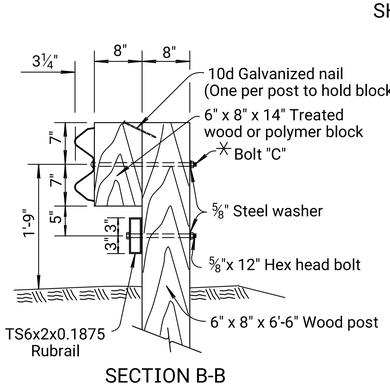


PLAN SPECIAL END SHOE

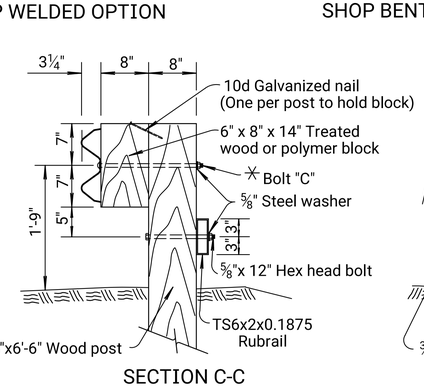
†† One section of the two shall be considered as subsidiary to the bid item "Steel Plate Guardrail".



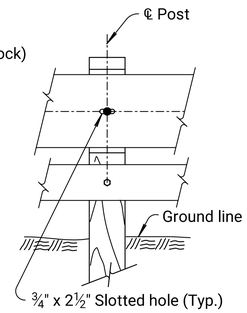
SECTION A-A



SECTION B-B

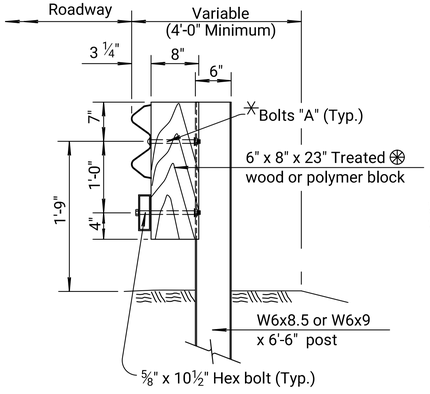


SECTION C-C

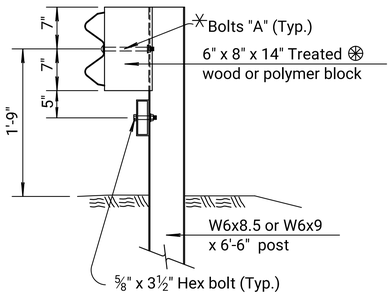


ELEVATION WITH RUBRAIL

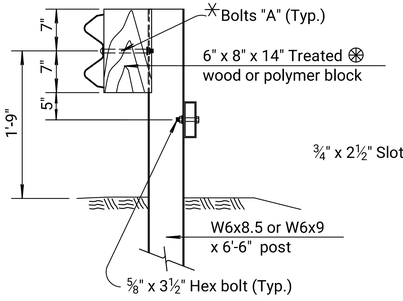
WOOD POSTS



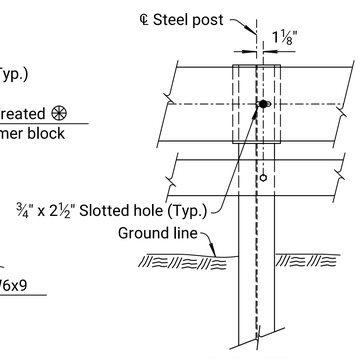
SECTION A-A



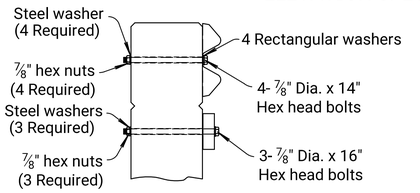
SECTION B-B



SECTION C-C



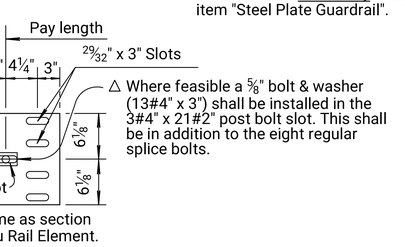
ELEVATION WITH RUBRAIL



SECTION D-D

STEEL POSTS

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



ELEVATION SPECIAL END SHOE

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. 13

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:38
File : rd616.dgn

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.

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	14	53

SUMMARY OF QUANTITIES

Item / Location	Excavation Class I Cu. Yds.	Excavation Class II Cu. Yds.	Concrete (Grade 4.0) (AE) Cu. Yds.	Concrete (Grade 4.0) (AE) (SW) Cu. Yds.	Reinforcing Steel (Grade 60) Epoxy Steel Lbs.	Reinforcing Steel (Grade 60) Lbs.	Prestressed Concrete Beams (NU53) Lin. Ft.	* Piles (Steel) (HP 12x53) Lin. Ft.	Pre-Drilled Pile Holes Lin. Ft.	Cast Steel Pile Points Each	Contractor Furnished PDA Each	Bridge Backwall Prot. Sys. Sq. Yds.	Abutment Strip Drain Sq. Yds.	Slope Protection (Riprap Stone) Cu. Yds.
Abutment No. 1	200	-	32.8	**	**	5,320		724		14	1	24.9	21.9	161
Abutment No. 2	309	-	65.4	**	**	7,300		346	182	14	1	24.9	21.9	219
Substr. Total	509	-	98.2			12,620		1070	182	28	2			380
Superstr. Total				194.2	35,215		480					49.8	43.8	
Total	509	-	98.2	194.2	35,215	12,620	480	1070 †	182 ◔	28	2	50	44	380

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

† Summary of Piling
Abutment No. 1: 13 @ 51' & 1 @ 61' for use with the PDA
Abutment No. 2: 13 @ 24' & 1 @ 34' for use with the PDA

◔ Summary of Pre-Drilled Pile Holes
Abutment No. 2: 14 @ 13'

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

INDEX TO BRIDGE DRAWINGS

GENERAL NOTES

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

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 1234.00 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

BACKFILL COMPACTION: Compact backfill at the abutments.

PILING: Drive all piling to penetrate or bear upon the Sandstone. 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	99 Tons
Abutment No. 2	108 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.

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

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 Provision. The piling shall remain in place as permanent piling. Drive the piling to the resistance value of 152 Tons at Abutment 1 and 166 Tons at Abutment 2 (Strength 1 divided by Phi). 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 Owner's designated Engineer may request that the Pile Driving Analyzer (PDA) equipment be used.

BEARING ELASTOMERIC (Method A): Bearing devices at Abutments No. 1 and No. 2 shall be fabricated with an elastomer satisfying:
- Shear Modulus of 150 psi @ 73F, tested and reported per AASHTO M-251, Section 8.8.4
- Shore A Durometer Hardness of 60
- Low Temperature Grade 3 requirements
- Type A certification for elastomeric bearing device acceptance is required
- Include design method and all material properties on shop details.

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

REMOVAL OF EXISTING STRUCTURE: Removal of the existing structure is included in the bid item, "Removal of Existing Structures", Lump Sum. The Contractor shall salvage a 5' section of the existing bridge rail for display in the local museum. The rail section shall be removed by neatly saw cutting the top rail and bottom curb. Care shall be taken when removing the rail section to keep the rail intact and in good condition. The rail section shall be stockpiled in the right of way for removal by Ottawa County. All other materials removed from the existing structure shall become the property of the Contractor. Remove this material from the site.

PRE-DRILLING: All piles in Abutment 2 shall be pre-drilled to the elevation shown on the Construction Layout. Following drilling and cleanout of the pre-drill hole, piles shall be set directly on the suitable bedrock materials. After driving, at least the bottom 10' of annular space around the pile tip shall be backfilled with non-shrinking grout that can develop a minimum unconfined compressive strength of 4,000 psi at 28 days. Tremie placement of the grout will likely be necessary to properly fill the annular space around the pile. The pile shall be backfilled with bentonite or a bentonite/soil mixture above the grout-filled socket. All drilling, augering, grout for filling pre-drilled holes, labor, tools, equipment and incidentals necessary to complete the work shall be included in the bid item "Pre-Drilled Pile Holes" paid by the linear foot.

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0)(AE)(SW). Substructure concrete is bid as Concrete (Grade 4.0)(AE). The Contractor may use Concrete (Grade 4.0) in the footings. Bevel all exposed edges of all concrete with a 3/4" triangular molding, except as otherwise noted on the plans. Construction joints are optional with the Contractor, but if used, place only at locations shown, or at locations approved by the Engineer.

CONCRETE PLACING: Place and hand vibrate all concrete for the abutments above the construction joint to the bottom of the deck just prior to the normal paving train operations. Do this work in a manner to avoid a cold joint in the abutments.

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.

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 PLANS AND SHOP DRAWINGS: Use the U.S. Customary system of units on falsework plans and shop drawing details.

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

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

BRIDGE BACKWALL PROTECTION SYSTEM: See the General Notes on the "Abutment Strip Drain" sheet.

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

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 Table 710-1 and 710-2 for additional information.

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.

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.

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

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

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

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

PLACING SEQUENCE: Segmental, combined or continuous pours are allowed, but stop a discontinuous pour at a construction joint.

SLOPE PROTECTION (RIPRAP STONE): Place Slope Protection (Riprap Stone) to the limits and thicknesses shown on the plans or as directed by the Engineer. Use Riprap Stone classified as Light 200 Lb. as described in the Specifications. Place a 10 ft. wide mat of geotextile under the riprap on the berm slopes and centered under the drip lines of the slab. The geotextile shall not be paid for directly, but shall be considered Subsidiary to the bid item "Slope Protection (Riprap Stone)".

DESIGN DATA

DESIGN SPECIFICATIONS:
AASHTO Specifications, 2020 Edition and latest Interim Specifications. Load and Resistance Factor Design.

DESIGN LOADING:
HL-93
Design Dead Load includes an allowance of 15 psf for a future wearing surface.

UNIT STRESSES:

Concrete (Gr. 4.0)	f'c	=	4 ksi
Concrete (Gr. 4.0)(AE)	f'c	=	4 ksi
Concrete (Gr. 4.0)(AE)(SW)	f'c	=	4 ksi
Prestressed Beam Concrete	f'c	=	8 ksi
Reinforcing Steel (Gr. 60)	fy	=	60 ksi
Prestressing Strand (Gr. 270)	fy	=	243 ksi
Steel Piles	fy	=	50 ksi

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength 1	Service 1	Phi
Abutments No 1:	99	71	0.65
Abutments No 2:	108	77	0.65

NO.	DATE	REVISIONS	BY	APP'D
5	08/2/12	ADDED NOT3135 & NOT3145	JPJ	TLF
4	04/29/10	ADDED RATING TABLES	JPJ	KFH
3	04/08/10	Updated to LRFD as Default	JPJ	KFH
2	03/02/09	Added notes 1003,1005 and 9301	JPJ	KFH
1	09/08/08	Traffic Data	JPJ	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

GENERAL NOTES AND QUANTITIES
OTTAWA COUNTY OS BR 7-13.6

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

Std. Base File: br18g.dgn
Plotted By: jbeckman | Plot Location:
File: L7-13.6General Notes and Quantities.dgn
Plot Date: 11-SEP-2024 15:39

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	15	53

UTILITIES

Telephone	ATTD	800-778-9140
Sanitary Sewer	City of Minneapolis	785-392-2176
Underground Electric	City of Minneapolis	785-392-2176

CP #1 15.54' Rt. Sta. 6+00.38
N = 591,559.93 E = 7,391,707.50
1. Set 1/2" Rebar Flush w/ Ground
1. App. ℄ of Co. Rd. 15.8' N
2. Top of Rail 22.4' S

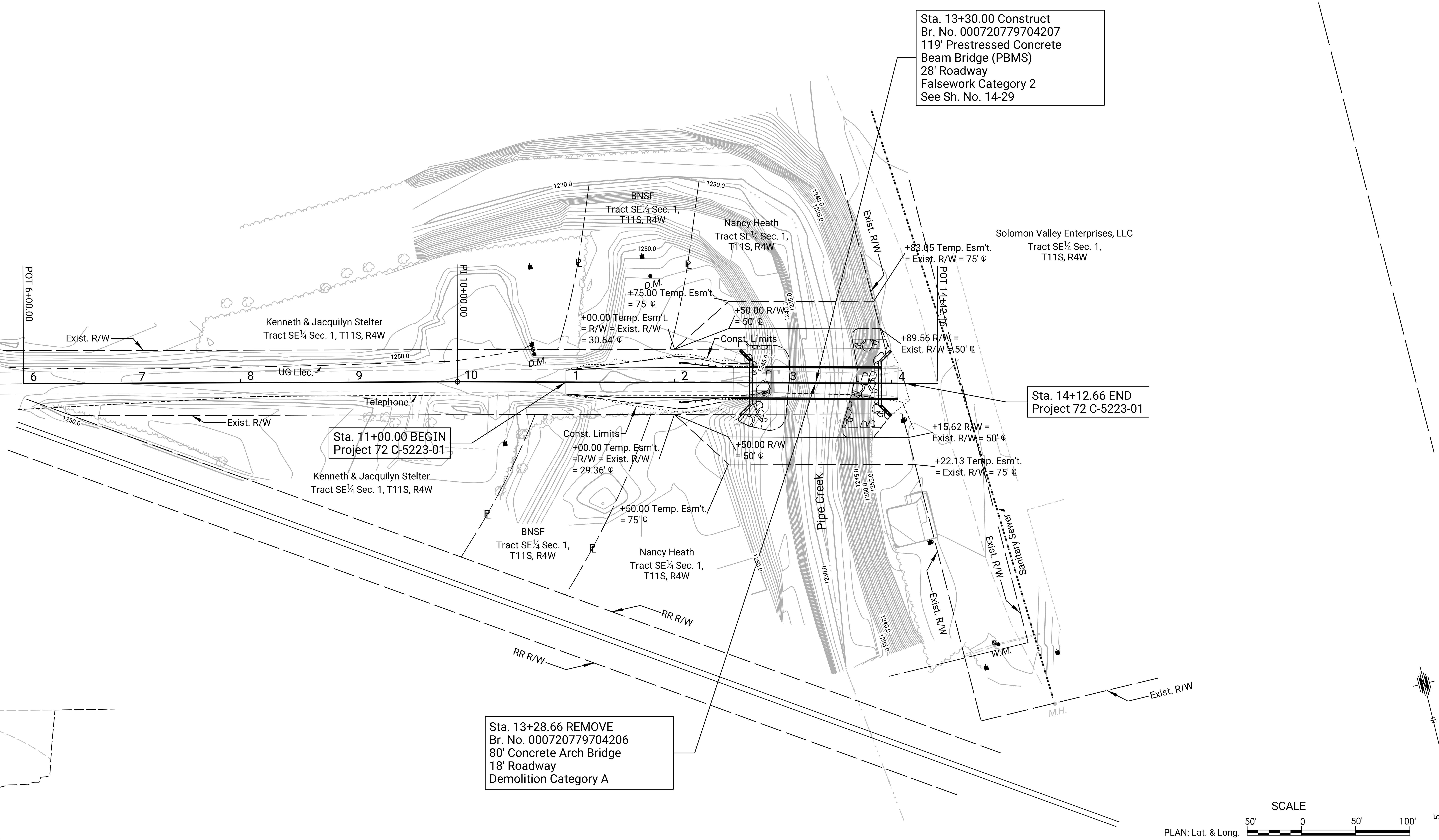
CP #2 15.22' Rt. Sta. 12+44.86
N = 591,409.20 E = 7,392,333.97
1. Set 1/2" Rebar Flush w/ Ground
2. App. ℄ of Co. Rd. 16.8' N
3. Traffic Sign Post 19.5' W
4. South Guardrail of Ex. Bridge 2.0' S

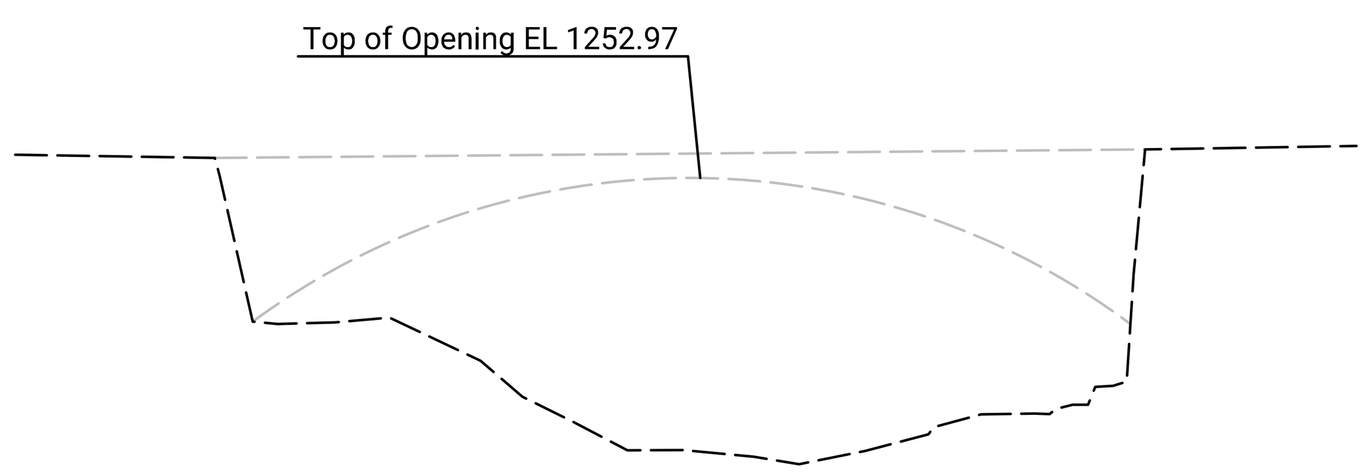
CP #3 171.20' Rt. Sta. 13+64.16
N = 591,561.67 E = 7,392,494.40
1. Set 1/2" Rebar Flush w/ Ground
2. App. ℄ of Rd. 25.8' E
3. Top of Bank of Pipe Creek 5.9' W

POT Sta. 6+00.00
N = 591,575.13 E = 7,391,710.73
1. Not Set

PI Sta. 10+00.00
N = 591,482.55 E = 7,392,099.863
1. Not Set

POT Sta. 14+42.16
N = 591,376.78 E = 7,392,529.19
1. Not Set





EXISTING WATERWAY OPENING

Existing Waterway opening = 1,185 sq. ft.

SCALE
PLAN: Lat. & Long. 50' 0 50' 100'
PROFILE: Horiz. same as above
Vert. 0 5'

Plotted by : jbeckman 11-SEP-2024 15:39
File : ka000000bbr133000-01.dgn

BM #1: Top of 1/2" Rebar 1' S. of PP
30' Lt. Sta. 10+70 Elev. = 1248.69

BM #2: Top of 1/2" Rebar 1' E. of PP
34' Rt. Sta. 14+12 Elev. = 1254.06

BM #3: Top of Driven "T" Post 1' E. of PP
146' Rt. Sta. 14+37 Elev. = 1258.725

BM #4: MAG Nail in Top of Conc. Pad for Storm Sewer
239' Rt. Sta. 14+95 Elev. = 1258.355

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

KANSAS DEPARTMENT OF TRANSPORTATION

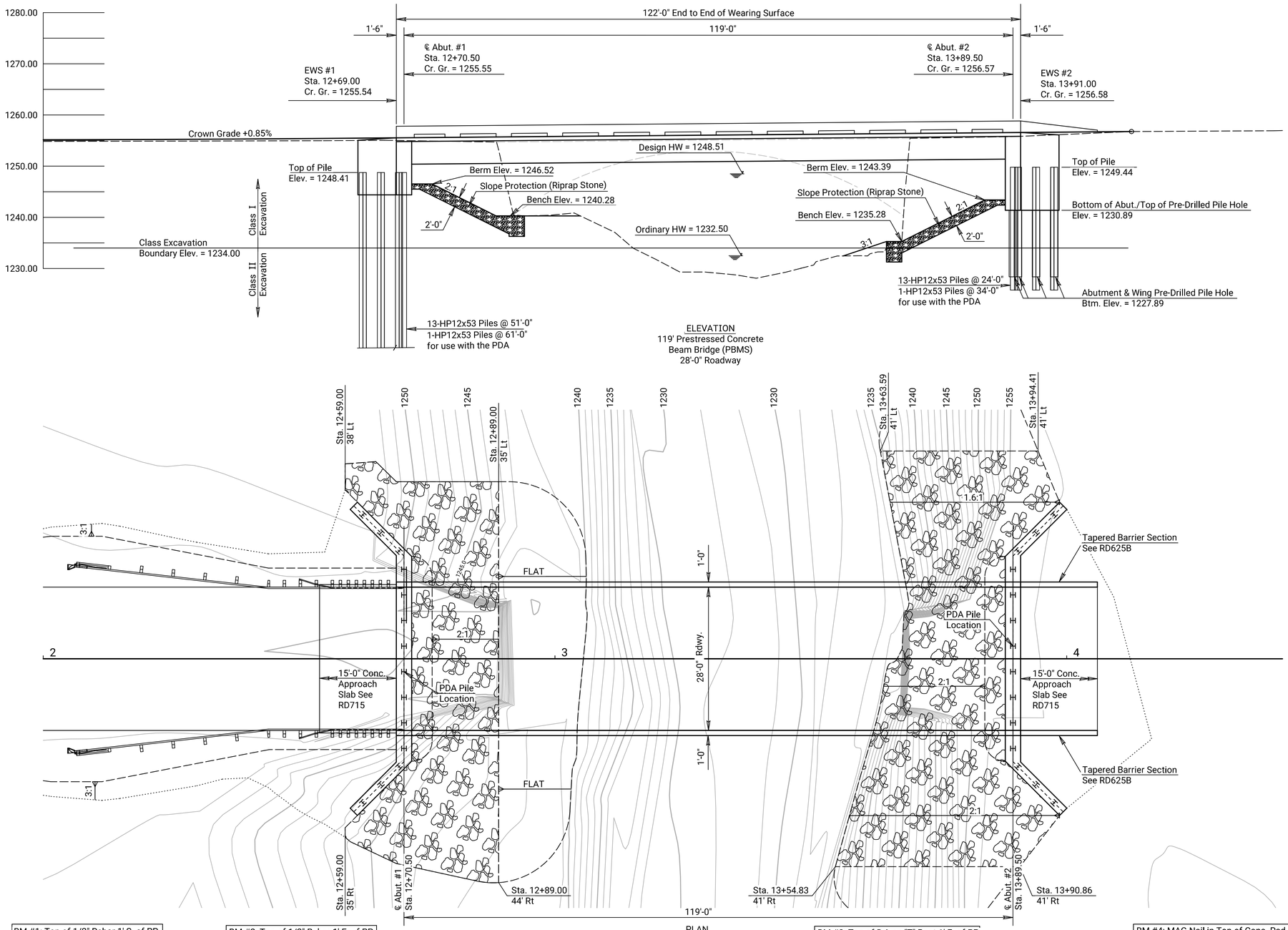
CONTOUR MAP

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	16	53

DRAINAGE DATA

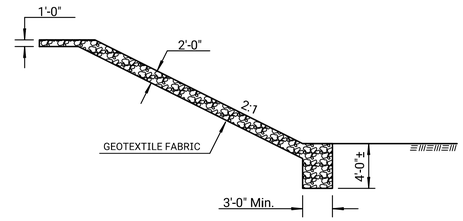
Drainage Area	148	Sq. Mi.
Design Frequency	50	Yr.
Design Discharge @ (Q50)	14,300	cfs
Design High Water Elevation	1248.51	Ft.
Overtopping Elevation (Sta. 6+75)	1251.91	Ft.
Overtopping Discharge	17800	cfs
Overtopping Frequency	100	Yr.
Historic Highwater Elevation	Unknown	
Estimated Ordinary Highwater Discharge	175	cfs
Ordinary Highwater Elevation	1232.50	Ft.
Change in Waterway Opening	507	Sq. Ft.

Scale 1" = 10'



ELEVATION
119' Prestressed Concrete
Beam Bridge (PBMS)
28'-0" Roadway

PLAN



TYPICAL SLOPE PROTECTION

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

BM #1: Top of 1/2" Rebar 1' S. of PP
30' Lt. Sta. 10+70 Elev. = 1248.69

BM #2: Top of 1/2" Rebar 1' E. of PP
34' Rt. Sta. 14+12 Elev. = 1254.06

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146' Rt. Sta. 14+37 Elev. = 1258.725

BM #4: MAG Nail in Top of Conc. Pad for Storm Sewer
239' Rt. Sta. 14+95 Elev. = 1258.355

NO.	DATE	REVISIONS	BY	APP'D

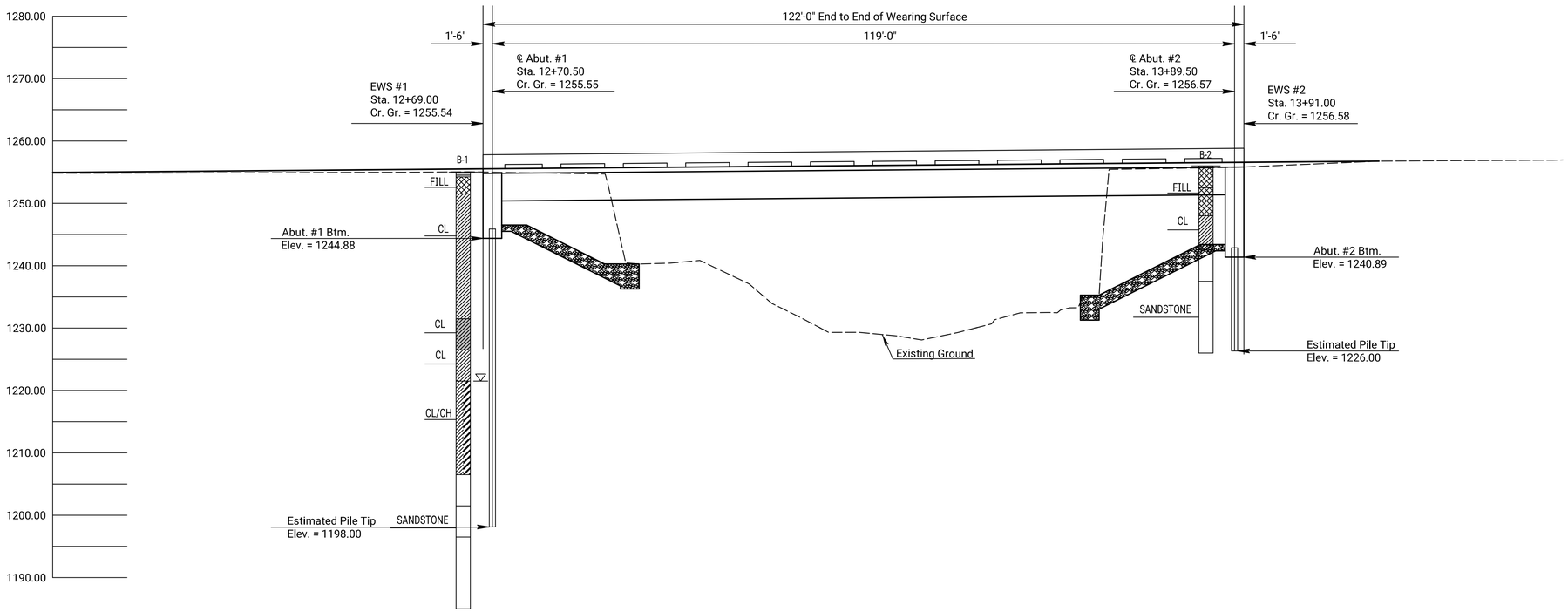
KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION LAYOUT

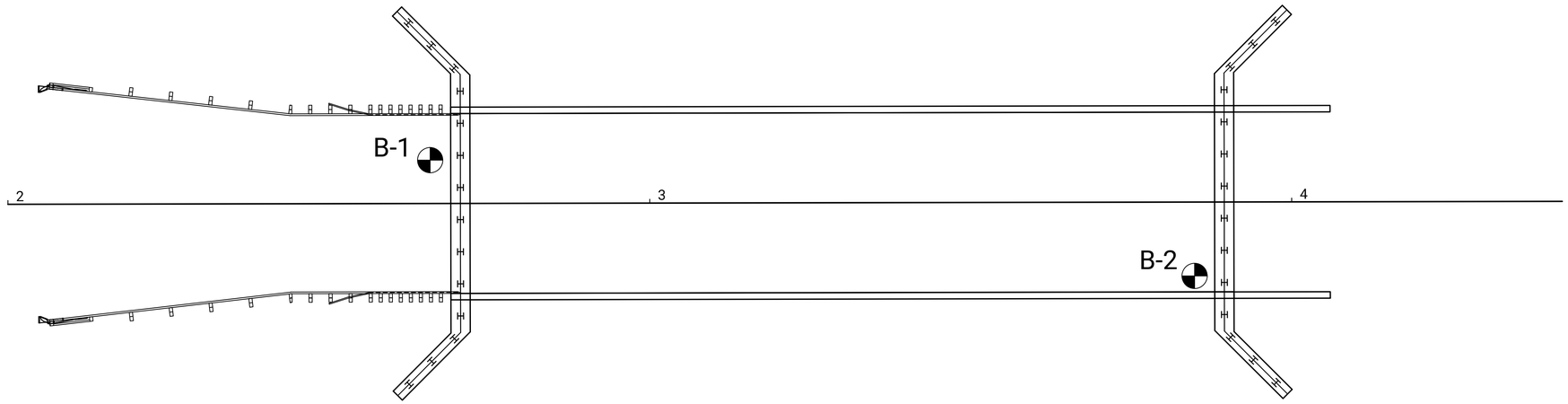
DESIGNED	DETAILED	QUANTITIES	CADD
DESIGN CK.	DETAIL CK.	QUAN.CK.	CADD CK.

Plotted by: jbeckman 11-SEP-2024 15:39
File : ka000000bbr133000-02-02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	17	53



Scale 1" = 10'



Water Level Observations

- Water Level Reading at time of drilling.
- Water Level Reading after drilling.

Material Legend

- Asphalt
- Concrete
- Fill
- Lean Clay
- Sandy Lean Clay
- Lean Clay/Fat Clay
- Sandstone
- Topsoil

NO.	DATE	REVISIONS	BY	APP'D

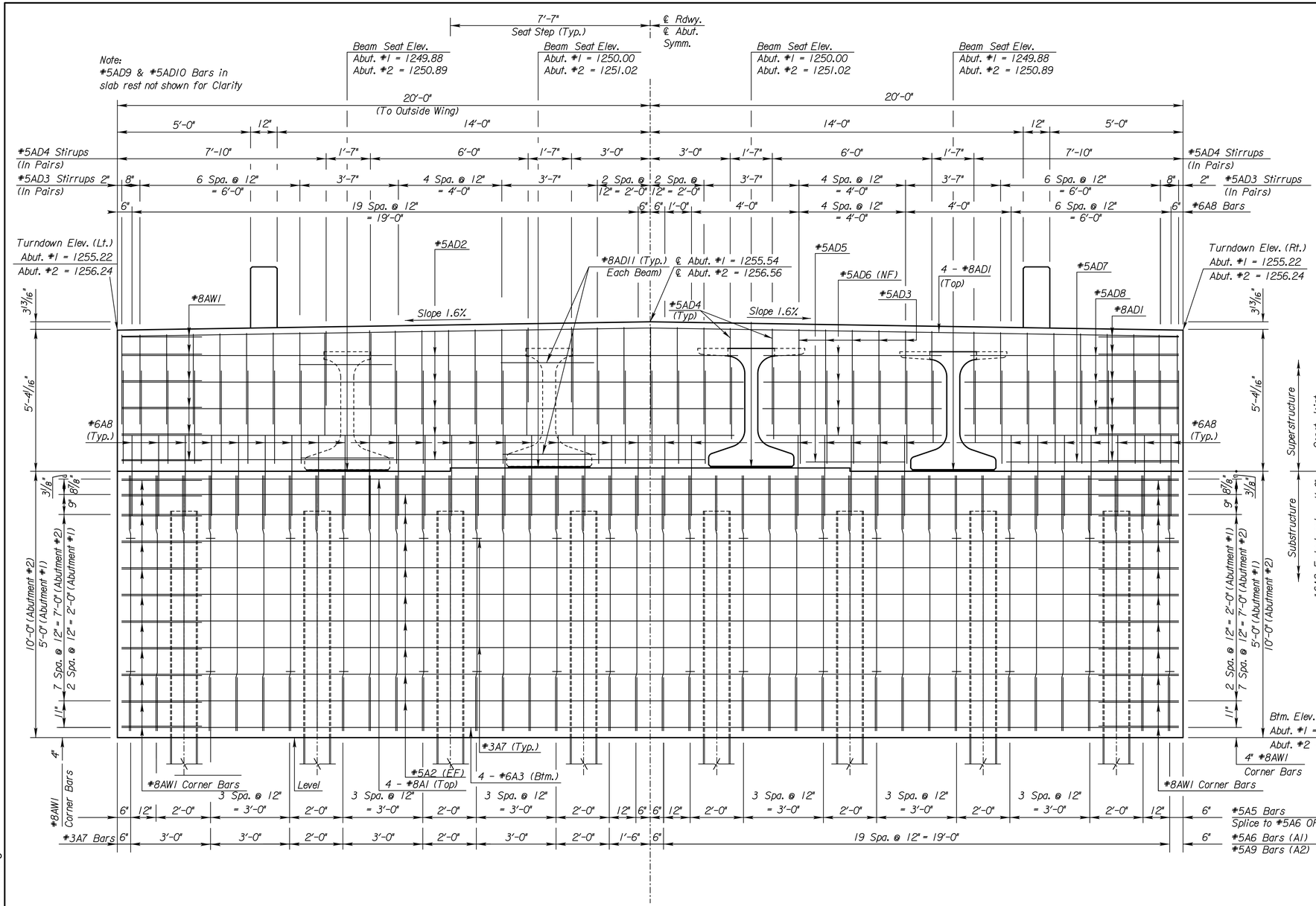
KANSAS DEPARTMENT OF TRANSPORTATION

GEOLOGY SHEET

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

Plotted by : jbeckman 11-SEP-2024 15:39
File :ka000000br133000-03.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	18	53



REINFORCING STEEL NEAR EWS FACE

ELEVATION

LOOKING UPSTATION
(Abutment #2 Shown; Abutment #1 Similar)
Wing Not Shown for Clarity

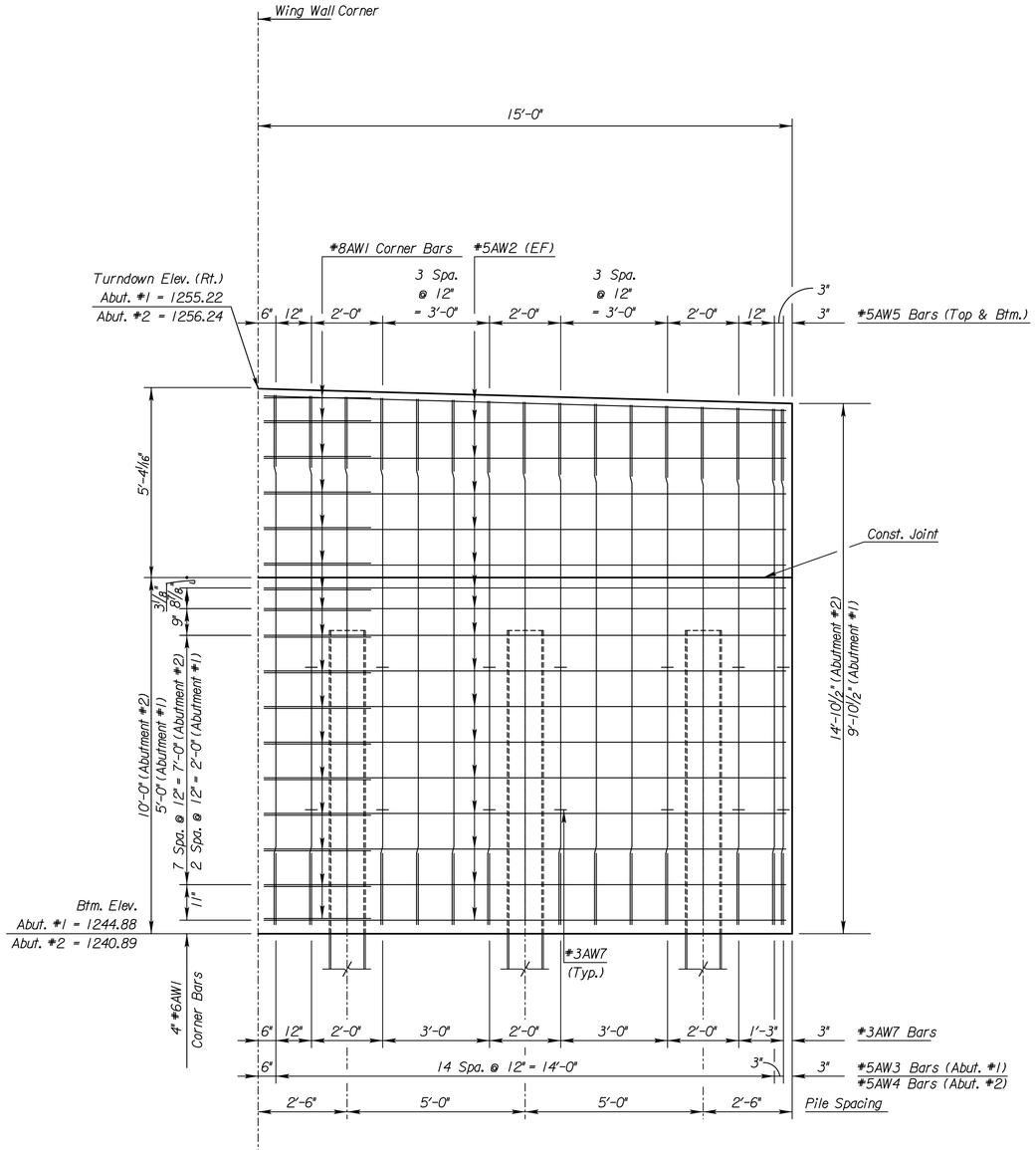
REINFORCING STEEL NEAR INTERIOR FACE

TYPICAL ABUTMENT SECTION

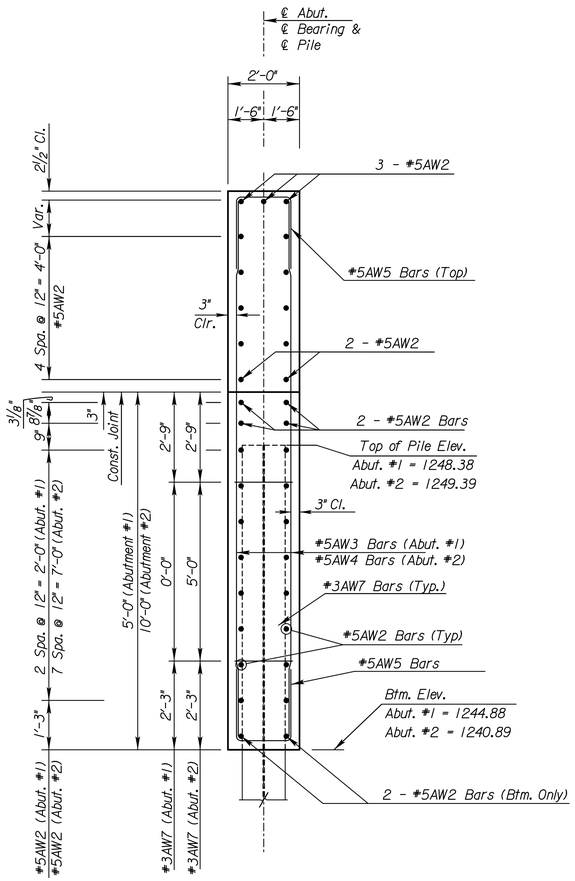
ABUTMENT BEAM AND DIAPHRAGM ELEVATION DETAILS

Plotted by : jbeckman 11-SEP-2024 15:40
File : Abut Beam and Diaphragm Elevation Details.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	19	53



ELEVATION

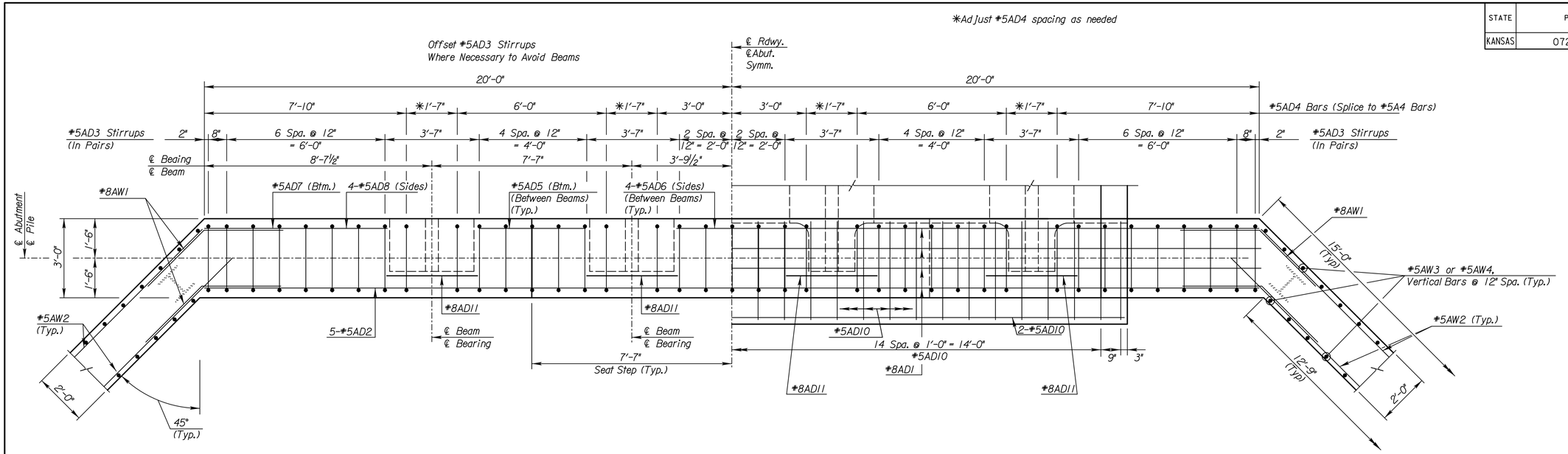


TYPICAL WING SECTION

ABUTMENT WING
ELEVATION DETAILS

Plotted by : jbeckman 11-SEP-2024 15:40
File : AbutWingElevation Details.dgn

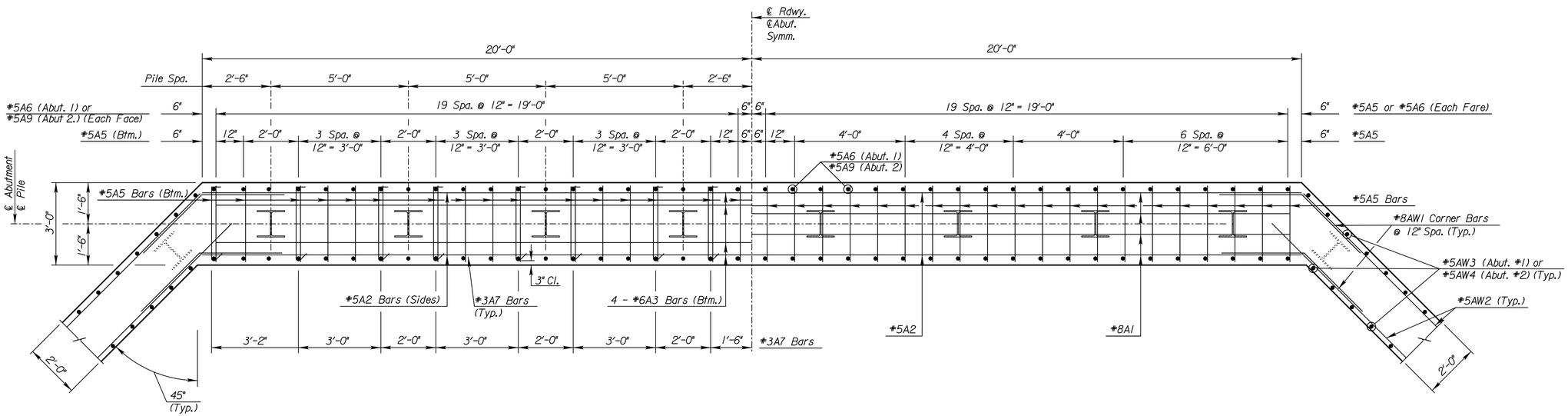
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	20	53



HALF PLAN REINFORCING STEEL IN BOTTOM
ABUTMENT DIAPHRAGM

HALF PLAN REINFORCING STEEL IN TOP
ABUTMENT DIAPHRAGM

PLAN ABUTMENT DIAPHRAGM
(Typical)



HALF PLAN REINFORCING STEEL IN BOTTOM
ABUTMENT BEAM

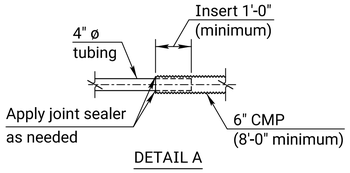
HALF PLAN REINFORCING STEEL IN TOP
ABUTMENT BEAM

PLAN ABUTMENT BEAM
(Typical)

ABUTMENT BEAM AND DIAPHRAGM PLAN DETAILS

Plotted by : jbeckman 11-SEP-2024 15:40
File : Abut Beam and Diaphragm Plan Details.dgn

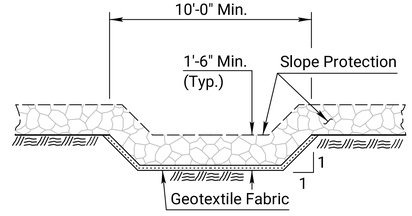
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	21	53



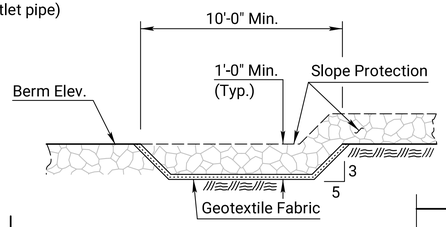
DETAIL A

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

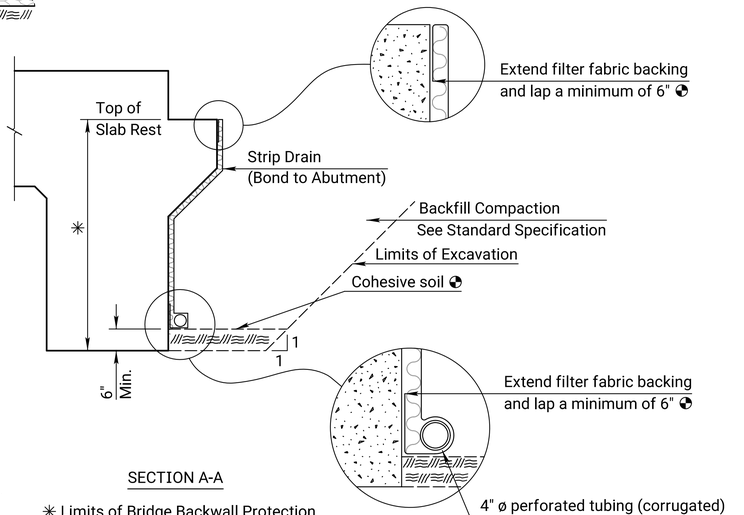
PLAN



SECTION D-D



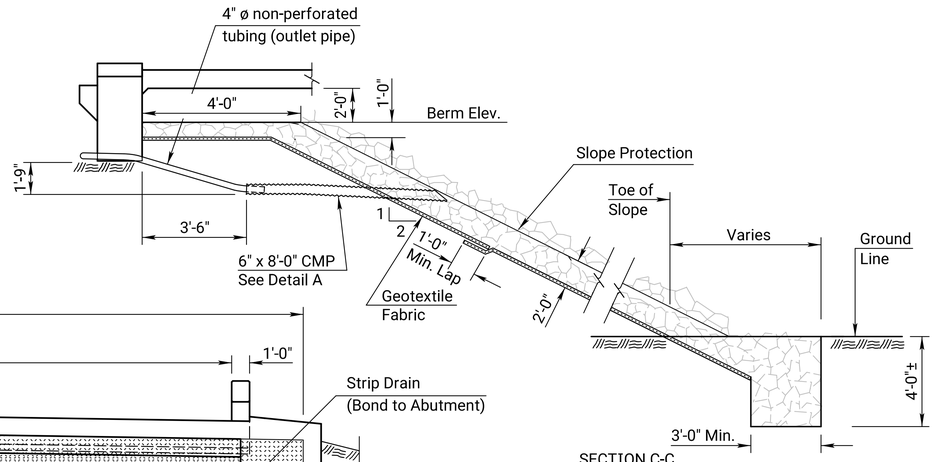
SECTION B-B



SECTION A-A

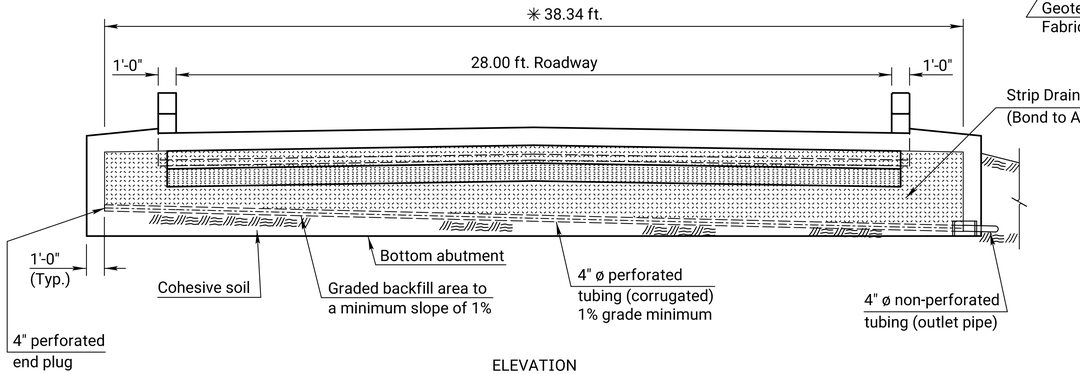
✳ Limits of Bridge Backwall Protection System (by Bridge Contractor)

◔ Subsidiary to the Abutment Strip Drain



SECTION C-C

Note: The toe shall extend the entire width of the Slope Protection.



ELEVATION

SUMMARY OF QUANTITIES (2 Abutments)	
Abutment Strip Drain	44 Sq. Yds.
Bridge Backwall Protection System	50 Sq. Yds.
Items subsidiary to Strip Drain	
4" ø Perforated Pipe	76 Lin. Ft.
4" ø Outlet Pipe	20 Lin. Ft.
6" ø CMP	16 Lin. Ft.
Items subsidiary to Slope Protection	
Geotextile Fabric	112 Sq. Yds.

GENERAL NOTES

ABUTMENT STRIP DRAIN: The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation sheet, grade the bottom of the backfill area, place the strip drain, and place the perforated pipe, the outlet pipe, the CMP, and the backfill.

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

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

Compact the abutment backfill. See the KDOT Specifications.

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

Fit the CMP end section with a ¼" galvanized mesh screen to prevent the entrance of rodents. Seal the joint between the outlet pipe and the end section with a joint sealer.

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

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

NO.	DATE	REVISIONS	BY	APP'D
06	09-01-22	Added Cohesive Soils note	M.L.L.	M.A.H.
05	04-07-14	Current Release	J.P.J.	C.E.R.
04	02-12-14	Added Benchmark	J.P.J.	C.E.R.

KANSAS DEPARTMENT OF TRANSPORTATION

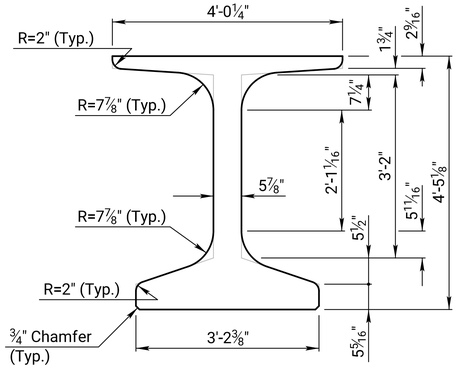
ABUTMENT STRIP DRAIN
(Stream, Drip-Line)

DESIGNED	DETAILED	L.R.R.	QUANTITIES	CADD	B.A.F.
DESIGN CK.	DETAIL CK.		QUAN.CK.	CADD CK.	

Sh. No. 21

Plotted by : jbeckman 11-SEP-2024 15:40
File : 2301830-br104c_Abutment Strip Drain with Slope Protection.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	22	53



TYPE NU53

Area	752.9 in.²
IcG	302,486 in.⁴
Y Bot	23.95 in.
Vol./Surf. Area	3.08 in.
Wt./Ft.	784 lbs

TYPICAL BEAM SECTION

(Dimensions and properties are converted from metric fabrication forms.)

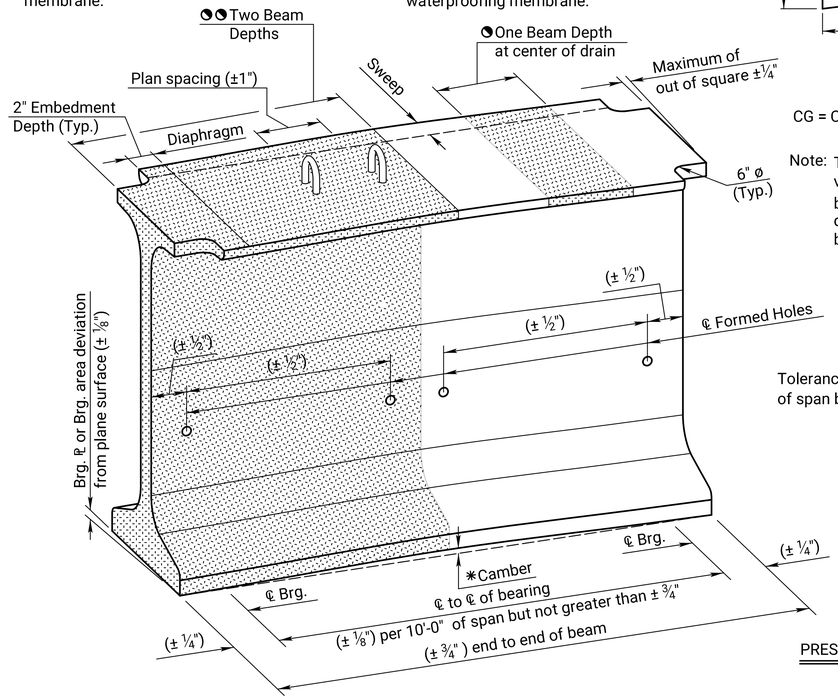
✳ Prior to shipping, the camber shall be no greater than the design camber +½". The design camber is equal to the 50 day camber shown in the plans.

◔◔ At expansion joint locations coat beam with approved epoxy substructure waterproofing membrane.

◔◔ Two Beam Depths

◔ At bridge deck drain locations coat beam with approved epoxy substructure waterproofing membrane.

◔ One Beam Depth at center of drain

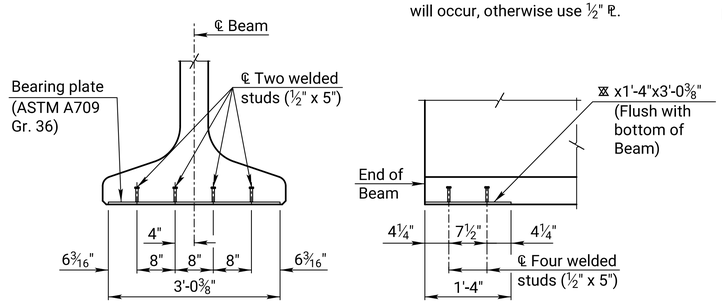


PRESTRESSED BEAM FABRICATION TOLERANCES

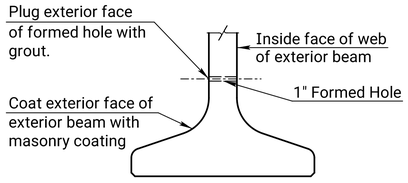
Note: Tolerance for camber is 1" maximum variation in camber between adjacent beams; and ±⅛" per 10'-0" of span deviation from the specified camber but not greater than ±1" deviation.

Tolerance for sweep is ⅛" per 10'-0" of span but not greater than 1".

⧓ Use ¾" ℙ when field welding will occur, otherwise use ½" ℙ.

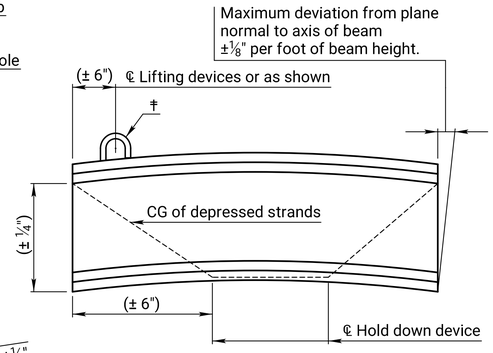


BEARING PLATE DETAILS



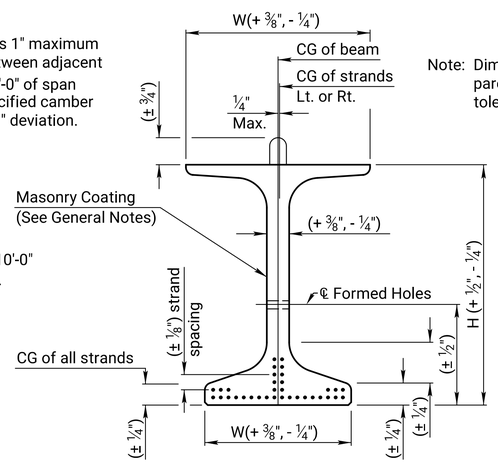
DETAIL OF FORMED HOLE(S)

(See Beam Detail sheet for locations)



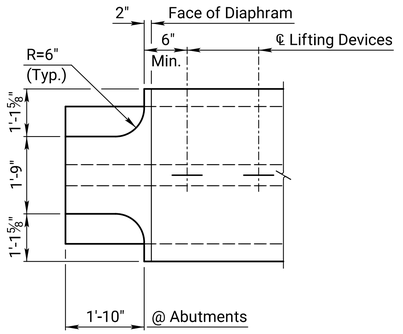
ELEVATION

CG = Center of Gravity

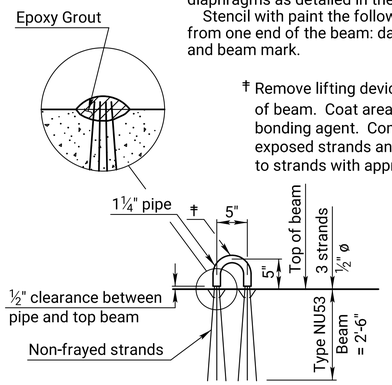


TYPICAL SECTION

Note: Dimensions shown in parentheses are tolerances only.



TOP FLANGE BLOCKOUT DETAIL



LIFTING DEVICE

(Two required at each end)

(Fabricator to verify)

‡ Remove lifting device within ½" from top of beam. Coat area with approved epoxy bonding agent. Completely cover remaining exposed strands and fill depressions adjacent to strands with approved epoxy grout.

Note: Stud welding will be in accordance with the latest edition of AWS D1.1.

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

The exposed surface of the bearing plates shall be galvanized.

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

GENERAL NOTES

Fabricate the precast prestressed beams in accordance with the KDOT Specifications. Submit shop drawings in accordance with the KDOT Specifications.

Use air entrained concrete. The KDOT Materials Section shall approve the mix design. Unless otherwise shown on the plans, f'c = 8,000 psi and f'c at release = 7,500 psi.

Use reinforcing steel conforming to the requirements of ASTM A615, Grade 60. The reinforcing steel shown shall be uncoated unless otherwise indicated. Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Use 0.60" nominal diameter (unless otherwise indicated), uncoated, seven-wire, low relaxation prestressing tendons conforming to the requirements of ASTM A416, Grade 270.

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

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

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

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

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

The beams shall reasonably conform to the lines and dimensions shown on the design plans and be within the tolerances specified in the latest edition of Prestressed Concrete Institute's, "Manual for Quality Control for Plants and Production of Structural Precast Concrete Products", except as modified by this sheet or the KDOT Specifications.

Apply an initial force of 1,000 to 3,000 pounds to each strand to take up any slack in the cables. Unless otherwise noted on the plans, apply a force of 43,900 pounds to each strand. Stress harped strands to a magnitude such that they are tensioned to 43,900 pounds after they are in position.

The center portion of the girder top flange shall be rough finished by scarlfying the surface transversely with a wire brush or stiff broom and no laitance shall remain on the surface. The outside 9" on each side of the top flange shall be steel troweled to a smooth finish and a bond breaker shall be applied to this region only. Bond breaker shall be 30# roofing felt. Secure roofing felt to the top flange with an adhesive approved by the Engineer.

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

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

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

Stencil with paint the following information on the webs approximately 5'-0" from one end of the beam: date of concrete placement, date of strand release, and beam mark.

NO.	DATE	REVISIONS	BY	APP'D
01	09-11-18	Current Release	M.L.L.	J.P.J.

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PRESTRESSED CONCRETE BEAM DETAILS NU53

BR342

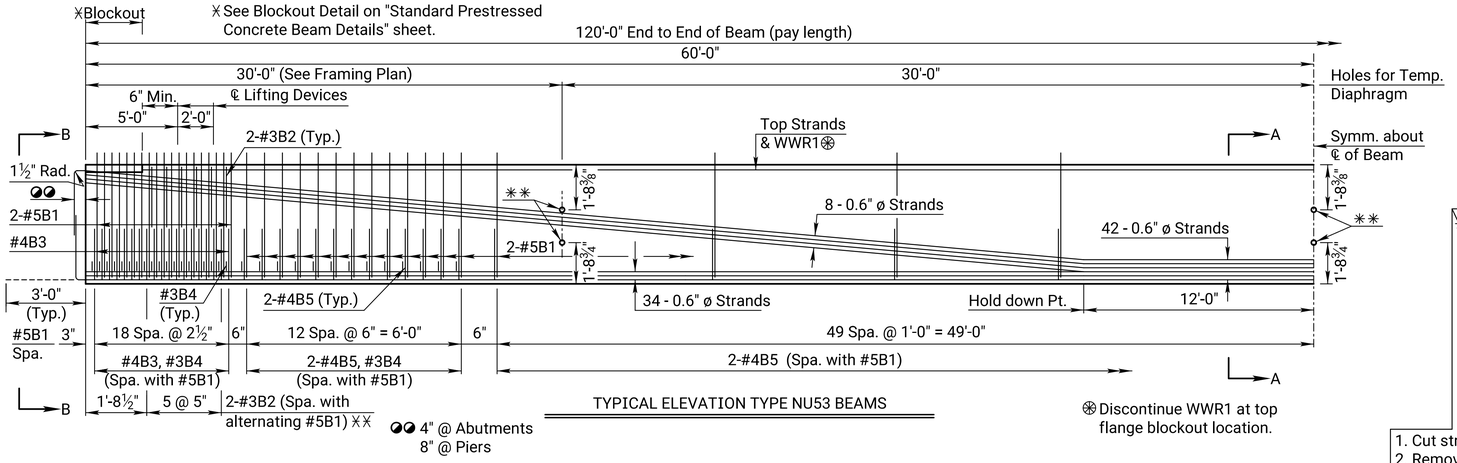
FHWA APPROVAL		09-11-18	APP'D.	John P. Jones	
DESIGNED	DETAILED	M.L.L.	QUANTITIES	TRACED	M.L.L.
DESIGN CK.	DETAIL CK.	S.G.B.	QUAN.CK.	TRACE CK.	S.G.B.

KDOT Graphics Certified 04-25-2022 Sh. No. 22

KDOT Graphics Certified

Plotted by: jbeckman 11-SEP-2024 15:40
File : br342.dgn

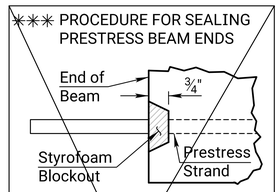
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	23	53



TYPICAL ELEVATION TYPE NU53 BEAMS

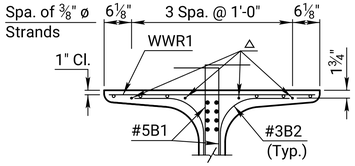
◒◒ 4" @ Abutments
8" @ Piers

⊛ Discontinue WWR1 at top flange blockout location.



1. Cut strands 9" from the end of the beam.
2. Remove Styrofoam blockout.
3. Cut strands 1/2" deep in blockout with angle grinder.
4. Clean affected area.
5. Fill blockout area with approved epoxy grout.
6. After the grout has cured, according to the manufacturer's recommendation, grind entire face of beam to provide a smooth surface.
7. After waiting 28 days, clean the entire surface of beam end and apply an approved (epoxy-epoxy) Substructure Waterproofing Membrane.

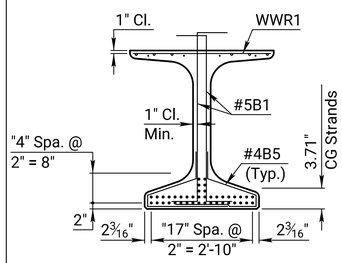
✳✳✳ Only for exposed Prestress Beam ends with all strands removed at expansion joints.



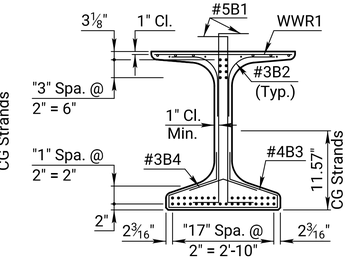
†† TOP FLANGE DETAIL

△ ⅜" Dia. reinforcement support strands (required). Tension to 2.0 kips/strand and place symmetrical about ℄ beam. May be moved laterally in pairs to maintain symmetry.

†† Check flange for Overhang Bracket loads where applicable.



SECTION A-A



SECTION B-B

TYPICAL ELEVATION TYPE NU53 BEAMS SPANS 1

† WELDED WIRE REINFORCEMENT EQUIVALENT STEEL As						
Size	3"	6"	9"	12"	15"	18"
#3	0.440	0.220	0.147	0.110	0.088	0.073
#4	0.800	0.400	0.267	0.200	0.160	0.133
#5	1.234	0.617	0.411	0.308	0.247	0.206
#6	1.761	0.880	0.587	0.440	0.352	0.293

† If Welded Wire Reinforcement (WWR) is used in-lieu of reinforcing steel bars shown on this sheet, the spacing of wires for the WWR shall be equal to or less than the vertical bars shown in the typical beam section above. The equivalent As for the WWR shall be equal to or greater than typical beam section above.

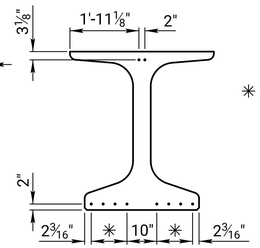
⁜⁜ Spacing of #3B2 bar @ Abutment End.

NOTE: Extend 10 strands 3'-0" beyond the end of the beam. Strands not shown shall be cut flush with the end of the beam. See "Strand Extension Details."

NOTE: During transportation and construction only, support beams on bearing points a maximum of 5 feet from the beam end. The Fabricator shall show the proposed support locations on the shop drawings.

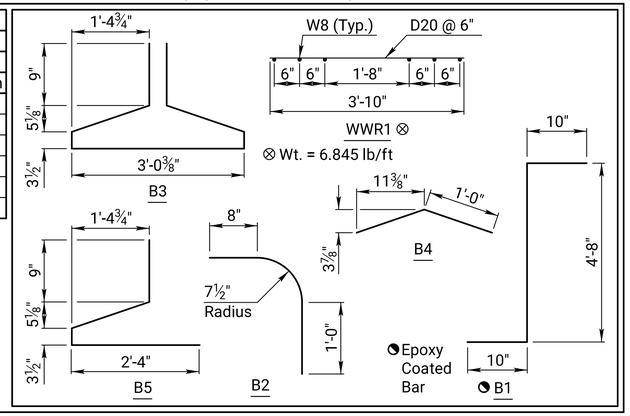
NOTE: The hold down force at the harp points for 8 strands at 3.1 kips per strand = 25.08 kips total.

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



STRAND EXTENSION DETAIL
(120'-0" span beams)

BILL OF REINFORCING STEEL							
120'-0" Beam (1 Listed-4 Reqd.)							
Straight bars				Bent bars			
Mark	No.	Size	Length	Mark	No.	Size	Length
				B2	12	#3	2'-8"
				B4	64	#3	2'-0"
				B3	38	#4	7'-8"
				B5	250	#4	4'-8"
				◔ B1	326	#5	



BILL OF MATERIAL		
Item	Unit	Quantity
Prestressed Concrete Beams (NU53) End Spans (120'-0")	Lin.Ft.	480
The following quantities are given for information only and shall not be paid for directly but shall be made subsidiary to the bid item "Prestressed Concrete Beams"		
Beam concrete (f'c= 8000 PSI)	Cu.Yds.	23.24
Approx. Wt. per 120'-0" beam	Tons	94.1
0.6" ø Prestressing strand (270 KSI low relaxation fy= 243 KSI)	Lin.Ft.	18,672
Epoxy reinforcing steel (fy=60,000 PSI)	Lbs.	8,610
Reinforcing steel (fy=60,000 PSI)	Lbs.	4,140
Welded Wire Reinforcement (fy=70,000 PSI)	Lbs.	3,290
Elastomeric Brg. pads (¾"x8"x3'-0")	Each	8
1" Formed Holes	Each	24
Lifting devices	Each	8
Bearing plates (✡x 1'-4" x 3'-0⅜")	Each	8
Substructure Waterproofing Membrane	Sq. Yds.	
0.375" ø Reinforcement Support Strands	Sq. Yds.	2016

✡ Use ¾" ℞ when field welding will occur, otherwise use ½" ℞.

NO.	DATE	REVISIONS	BY	APP'D
04	01-27-22	Temporary Diaphragm table update	M.L.L.	M.A.H.
03	03-14-19	Corrected shear bar	M.L.L.	J.P.J.
02	11-15-18	Add WWR to Bill of Material & Wt/ft	M.L.L.	J.P.J.

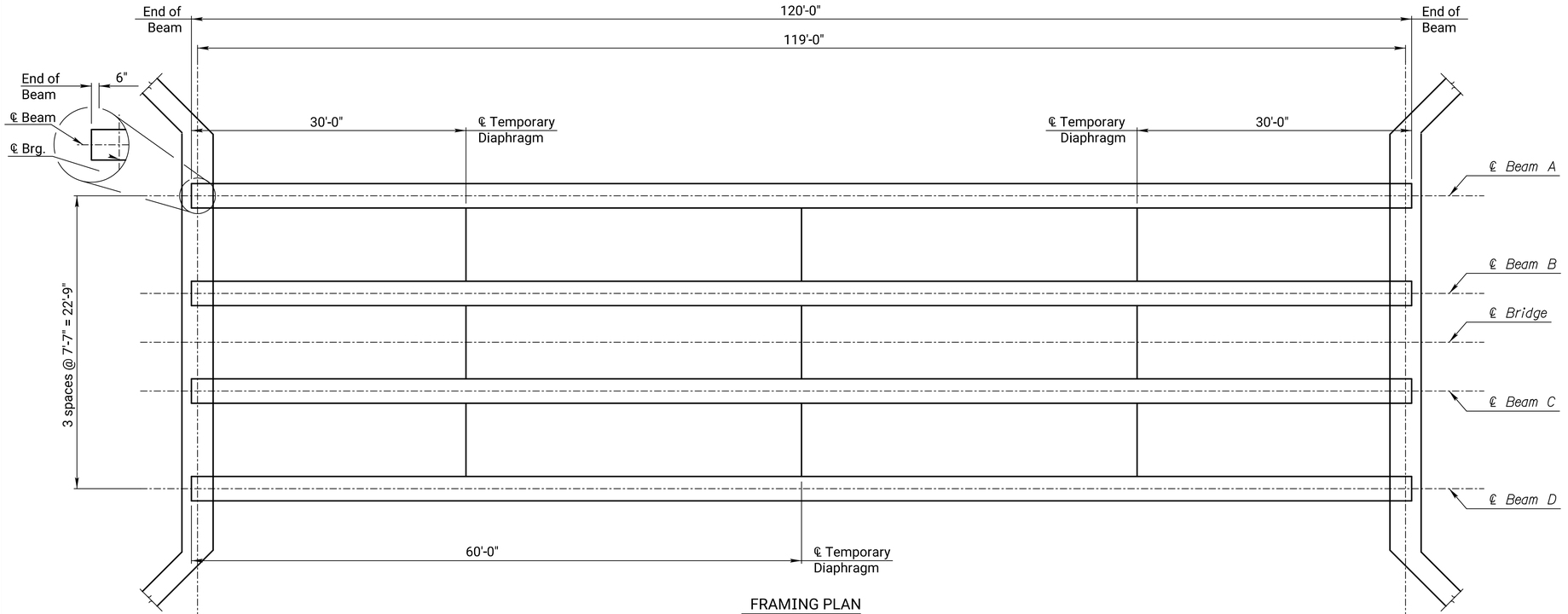
KANSAS DEPARTMENT OF TRANSPORTATION

NU53 BEAM DETAILS

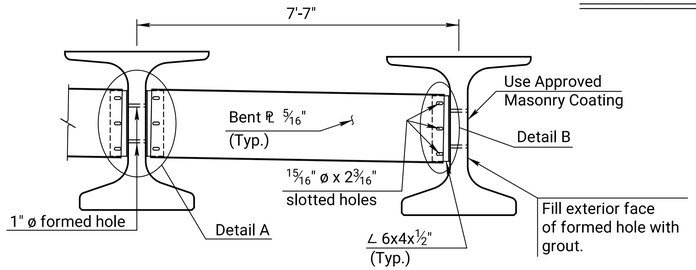
DESIGNED	DETAILED	M.L.L.	QUANTITIES	CADD	M.L.L.
DESIGN CK.	DETAIL CK.	S.G.B.	QUAN.CK.	CADD CK.	S.G.B.

Plotted by : jbeckman 11-SEP-2024 15:41
File : br352.dgn

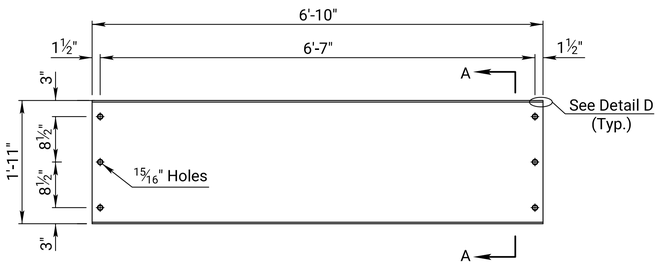
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	24	53



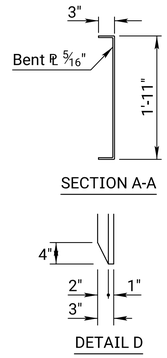
FRAMING PLAN

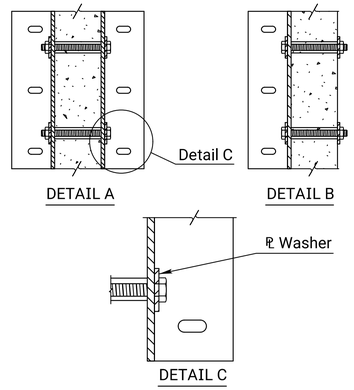


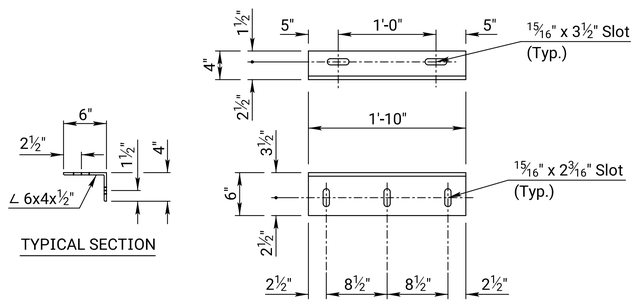
ELEVATION OF TEMPORARY DIAPHRAGMS
(NU53)



TEMPORARY DIAPHRAGM
(or equivalent)







1'-10" CONNECTION ANGLE
(18 each Req'd.)
(Weight = 29.7 Lb. each)

TYPICAL SECTION

CONNECTION ANGLE DETAILS
(or equivalent)

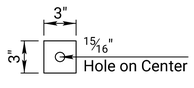
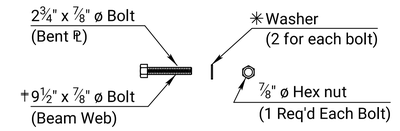


PLATE WASHER



✳ Plate washers required for slotted holes.
† Verify per beam type.

FASTENER DETAILS

TEMPORARY DIAPHRAGMS: Use ASTM A709 Gr. 36 steel for all angles and bent plates for temporary diaphragms. All bolts, nuts, and washers for fasteners shall conform to the heavy hex structural requirements of ASTM F3125 Gr. A325, Type 1. Galvanize the angles, bolts, nuts, and washers in accordance with the KDOT Specifications. Use hardened steel washers over any oversized holes. Use 5/16" plate washers over any slotted holes along with hardened washers under the turned elements. Use the turn-of-the-nut tightening method. DTI's are not required. Install the temporary diaphragms, as shown in the details, prior to placing any superstructure concrete. Leave the temporary diaphragms in place until the concrete diaphragms and deck have cured. Remove the angles from the beams and fill the holes in the prestressed beams with an approved epoxy grout. The bent plate diaphragms, angles, nuts, bolts, and washers shall remain the property of the Contractor. Submit shop drawings of the temporary diaphragms to the KDOT Bridge Section for review and approval. The material, equipment, and labor necessary for the installation of the temporary diaphragms, including filling the bolt holes, shall not be paid for directly, but shall be subsidiary to the bid item "Prestressed Concrete Beams."

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

NO.	DATE	REVISIONS	BY	APP'D
04	01-27-22	Temporary Diaphragm table update	M.L.L.	M.A.H.
03	02-05-19	Galvanizing clarification	M.L.L.	J.P.J.
02	08-16-18	Update Temporary Diaphragm note	M.L.L.	J.P.J.

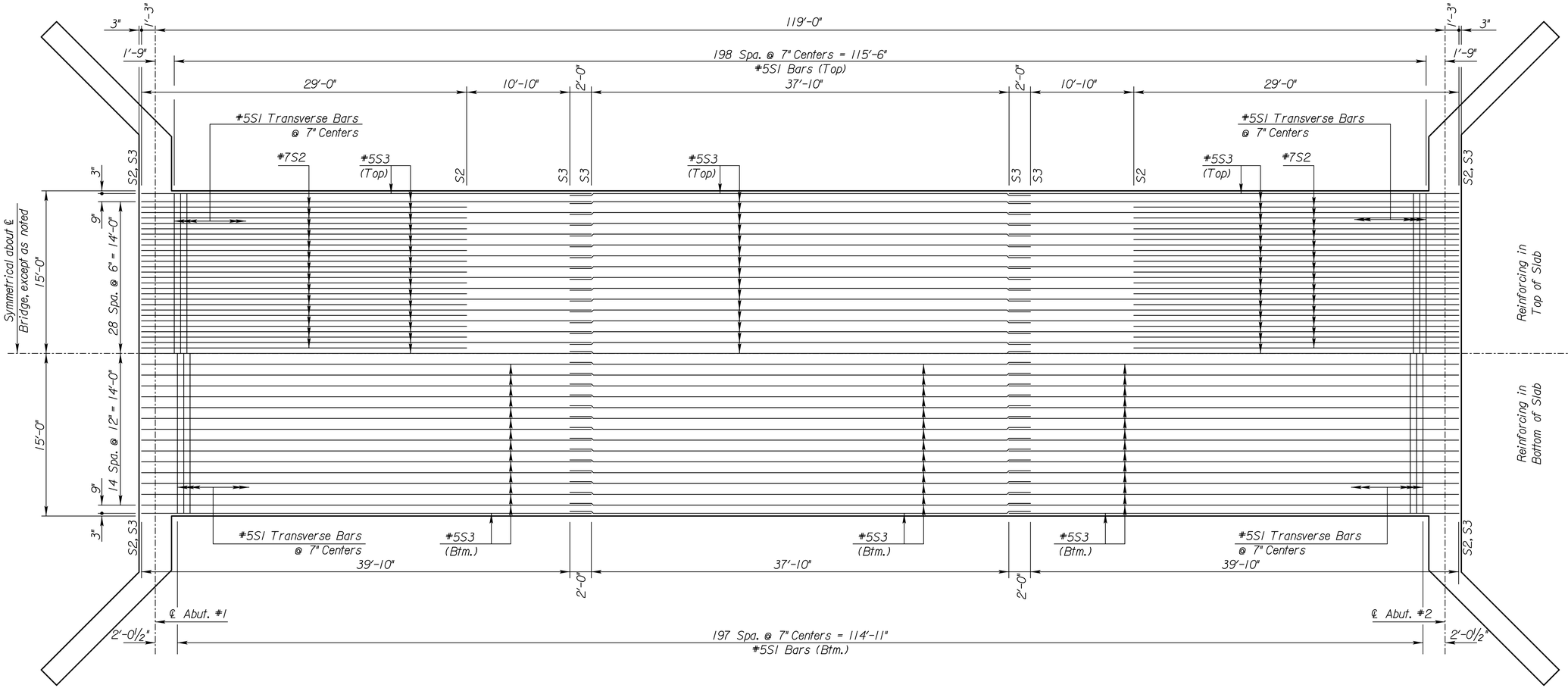
KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY DIAPHRAGM DETAILS

DESIGNED		DETAILED	J.P.J.	QUANTITIES		CADD	R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.		CADD CK.	

Plotted by : jbeckman 11-SEP-2024 15:41
File : br305.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	25	53



KANSAS DEPARTMENT OF TRANSPORTATION

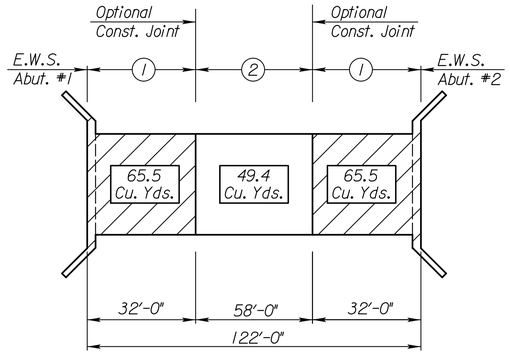
DECK PLAN
OTTAWA CO. BRIDGE L.7-13.6
(Br. No. 000720779704207)

Plotted by : jbeckman 11-SEP-2024 15:41
File : L7-13.6 Slab Details.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	26	53

CAMBER:
Construct the finished deck to plan grade by varying the depth of the fillet over the beam to provide for prestress camber, concrete dead load deflection and, if necessary, vertical curvature. After the prestressed beams are erected, measure the camber in the field by taking a profile of each beam. Correct any variation between the actual camber and concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the beam so that the finshed floor is constructed to the theoretical grade. The minimum depth of the slab over the beam shall be 9½ inches. Prior to shipping, the camber shall be no greater than the design camber +½". The design camber is equal to the 50 day camber shown in the plans.

The theoretical amount of the concrete required for fillets is 11.8 C.Y.
This amount of concrete is included in the Summary of Quantities.
Any additonal concrete required to construct the fillets will be subsidiary.

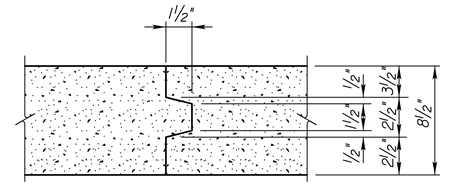


CONCRETE PLACING SEQUENCE DIAGRAM

CONCRETE PLACING SEQUENCE

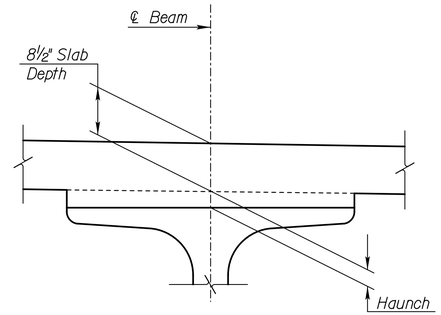
Segmental, combined or continuous pours are allowed, but stop a discontinuous pour at a construction joint.

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



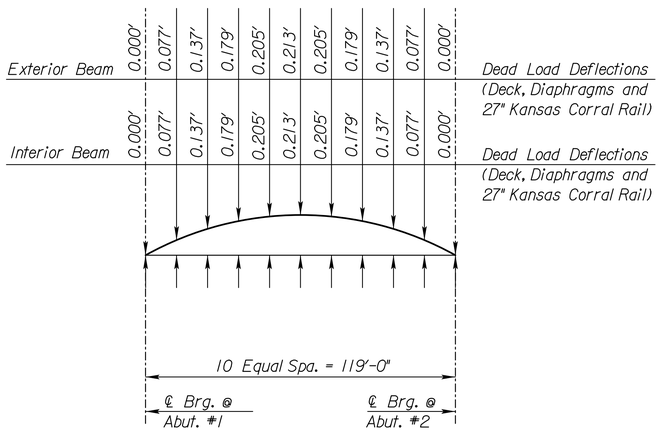
TRANSVERSE CONSTRUCTION JOINT

No Scale



CONCRETE HAUNCH DETAIL

No Scale



BEAM CAMBER AND DEAD LOAD ORDINATES

Beam Camber at Release:
Span 1 - 0.232'

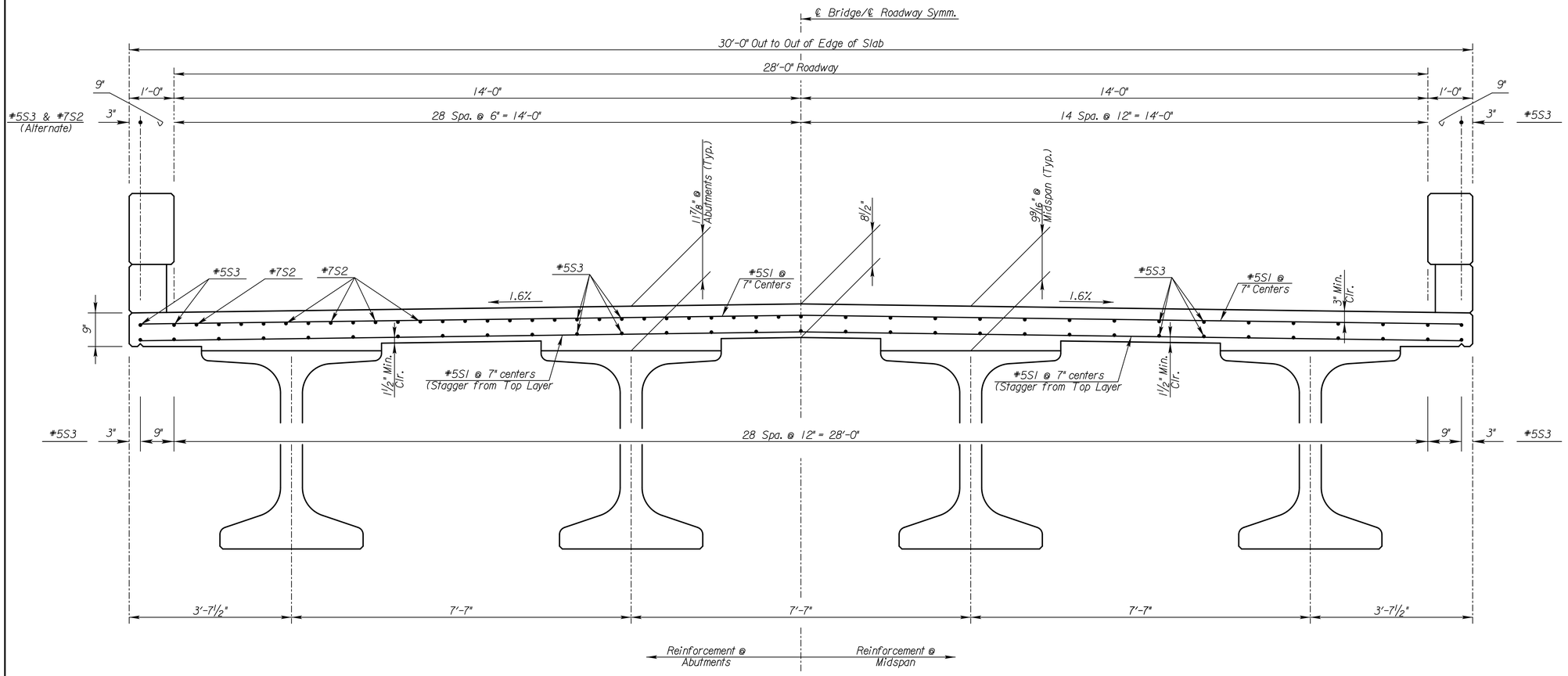
Beam Camber at 50 Days:
Span 1 - 0.407'

BEAM HAUNCH DEPTHS AT SUPPORTS				
	Beam A	Beam B	Beam C	Beam D
Abut. #1	0.281'	0.281'	0.281'	0.281'
Abut. #2	0.281'	0.281'	0.281'	0.281'

SLAB DETAILS

Plotted by : jbeckman 11-SEP-2024 15:41
File : Slab Details 2.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	27	53

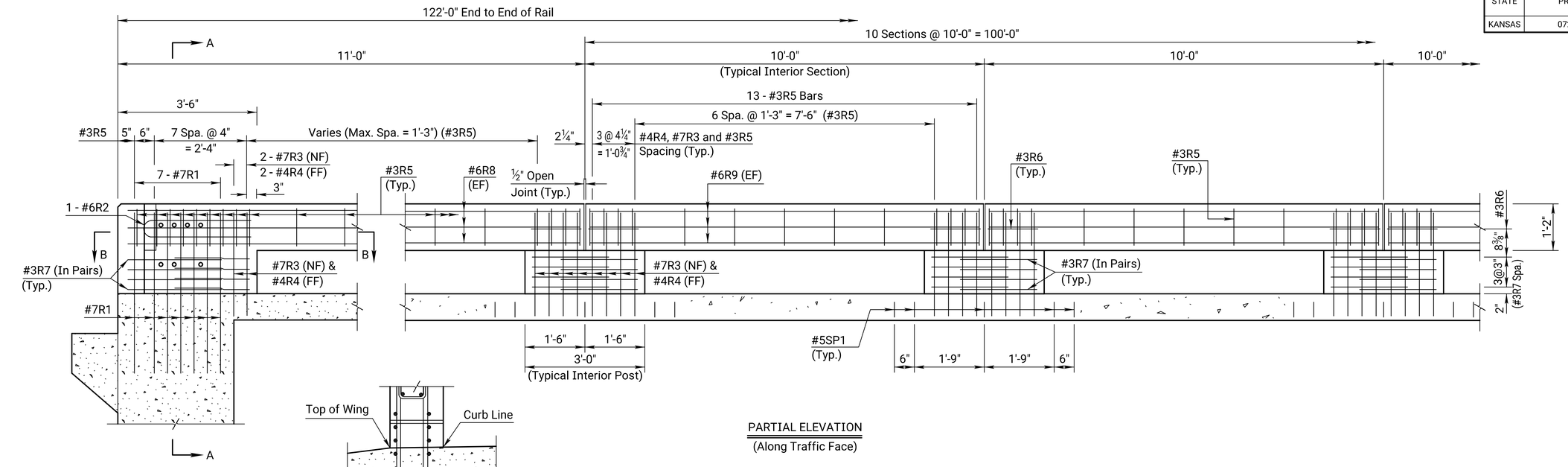


TYPICAL SLAB SECTION

Plotted by : jbeckman 11-SEP-2024 15:41
File : L7-13.6 Slab Typ Sections.dgn

KANSAS DEPARTMENT OF TRANSPORTATION
TYPICAL SECTION
OTTAWA CO. BRIDGE L.7-13.6
(Br. No. 000720779704207)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	28	53

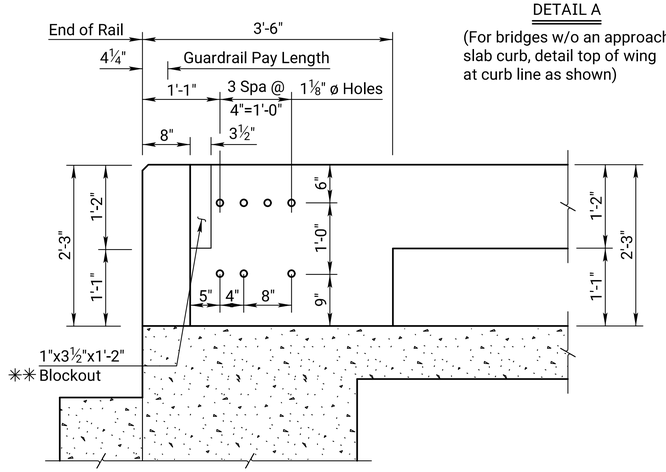


PARTIAL ELEVATION
(Along Traffic Face)

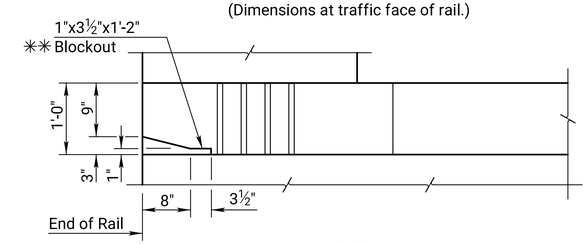
✳✳ Blockout only to be constructed on NW and SW quandrants.

DETAIL A

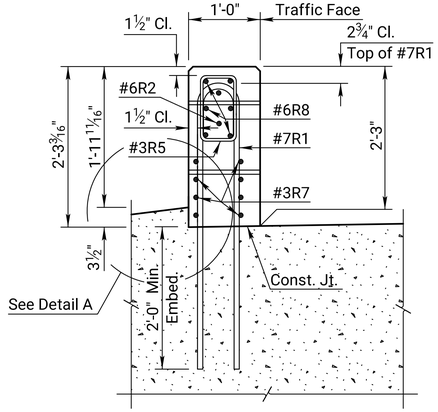
(For bridges w/o an approach slab curb, detail top of wing at curb line as shown)



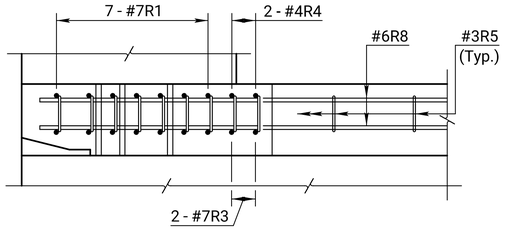
ELEVATION
(Dimensions at traffic face of rail.)



PLAN

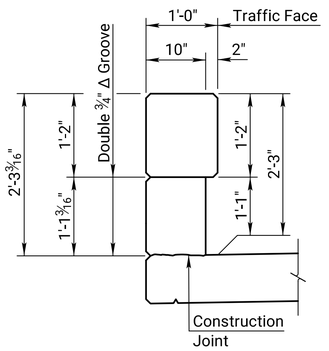


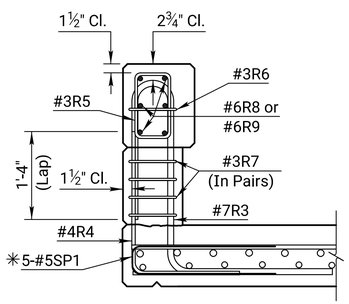
SECTION A-A



SECTION B-B

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





TYPICAL INTERIOR POST SECTIONS

LEGEND

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

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

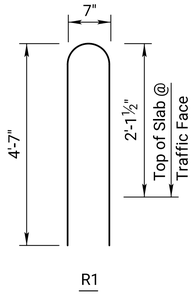
KANSAS DEPARTMENT OF TRANSPORTATION

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

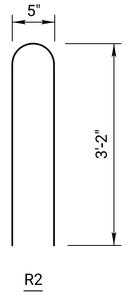
DESIGNED	DETAILED	QUANTITIES	CADD
DESIGN CK.	DETAIL CK.	QUAN.CK.	CADD CK.

Plotted by : jbeckman 11-SEP-2024 15:42
File : br183c.dgn

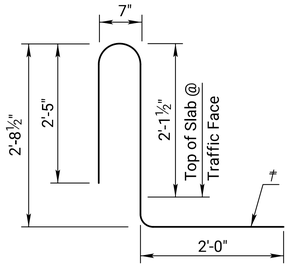
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	29	53



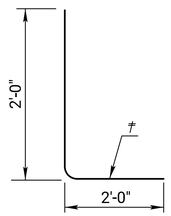
R1



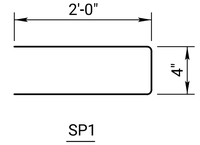
R2



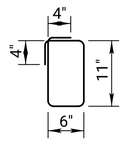
R3



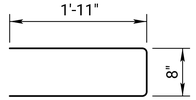
R4
(Lap 1'-4" with R3)



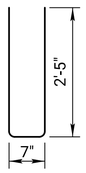
SP1



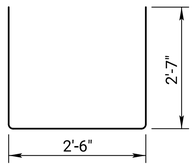
R5



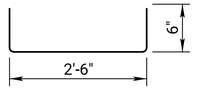
R6



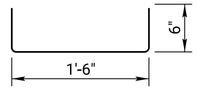
R7



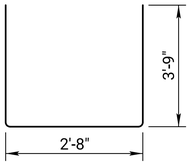
A5



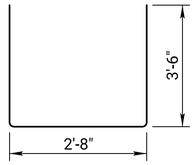
A7



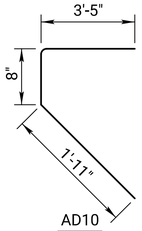
AW7



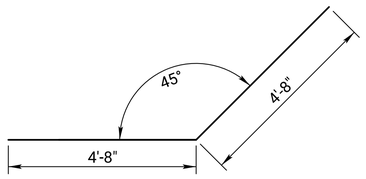
AD3



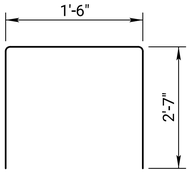
AD4



AD10



AW1



AW5

BENDING DIAGRAMS

(All dimensions are out to out of bars.)

✳ Bend this leg to match the slope of the roadway.

SUPERSTRUCTURE
BILL OF REINFORCING STEEL
Epoxy Coated (Gr. 60)

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
8AD1	8	8	39'-8"	R1	7	28	9'-6"
8AD11	8	16	4'-0"	R3	7	184	7'-8"
				R4	7	184	4'-0"
7S2	7	56	29'-0"	R6	7	44	4'-6"
R8	6	24	10'-8"	R2	6	4	6'-6"
5AD2	5	10	39'-8"	5AD10	5	62	6'-0"
5AD5	5	6	4'-3"	5AD3	5	124	10'-2"
5AD6	5	24	6'-11"	5AD4	5	32	9'-10"
5AD7	5	4	5'-10"	SP1	5	110	4'-4"
5AD8	5	16	8'-1"				
5AD9	5	4	29'-8"	R5	3	328	3'-6"
5S1	5	397	29'-8"	R7	3	208	5'-5"
5S3	5	186	41'-10"				
R9	3	120	9'-8"				

SUBSTRUCTURE
BILL OF REINFORCING STEEL
(Gr. 60)

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
8A1	8	8	39'-8"	8AW1	8	116	9'-4"
6A3	6	8	39'-8"	5A5	5	144	7'-8"
6A8	6	140	4'-0"	5AW5	5	112	7'-8"
5A2	5	26	39'-8"	3A7	3	48	3'-6"
5A6	5	80	4'-6"	3AW7	3	42	2'-6"
5A9	5	80	9'-6"				
5AW2	5	116	14'-8"				
5AW3	5	60	9'-7"				
5AW4	5	60	14'-7"				

✳ See Bending Diagrams

NO.	DATE	REVISIONS	BY	APP'D
03				
02				
01	04-12-93	Current Release		

KANSAS DEPARTMENT OF TRANSPORTATION

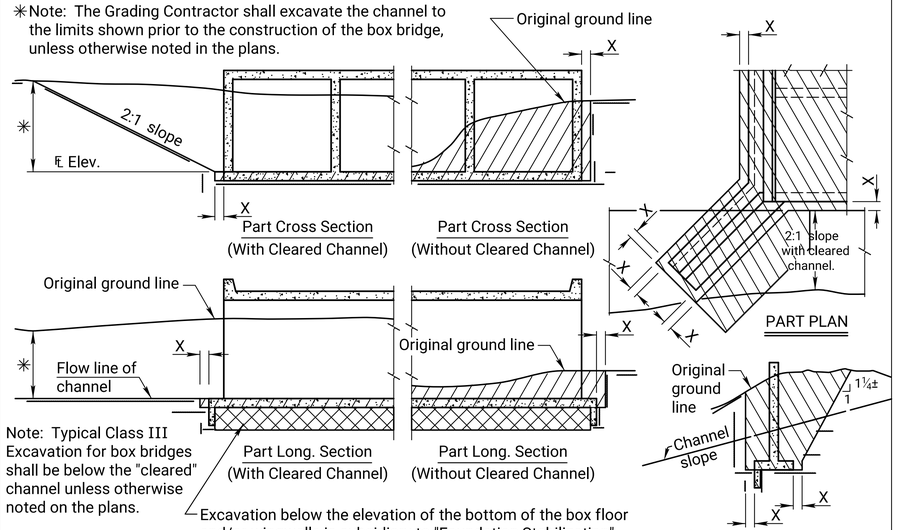
BILL OF REINFORCING STEEL AND
BENDING DIAGRAMS FOR
27" KANSAS CORRAL RAIL

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

Plotted by: jbeckman 11-SEP-2024 15:42
File : br181g.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	30	53

✳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.

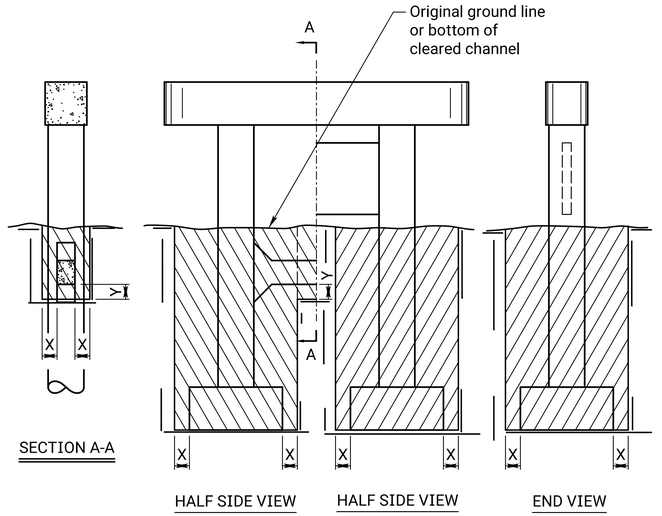


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

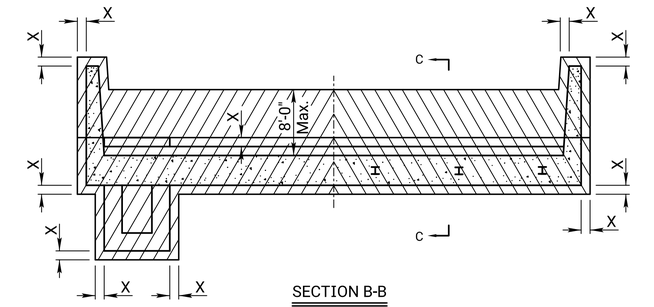
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

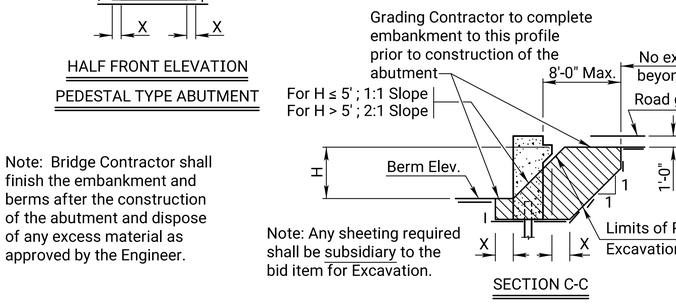
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.



EXCAVATION DETAILS FOR TYPICAL PIERS

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



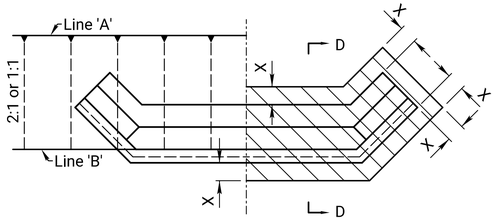


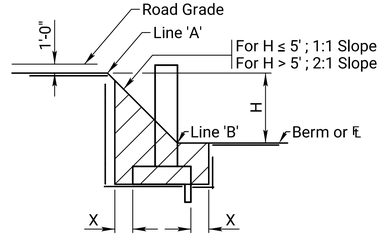
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

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

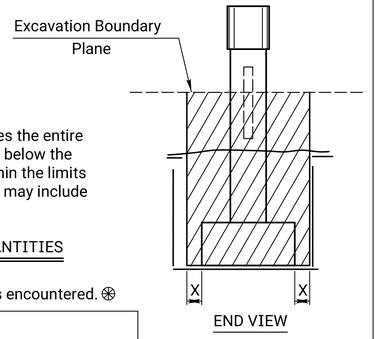
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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

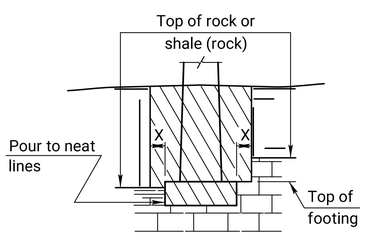
See detail when rock or shale (rock) is encountered. ❀

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.

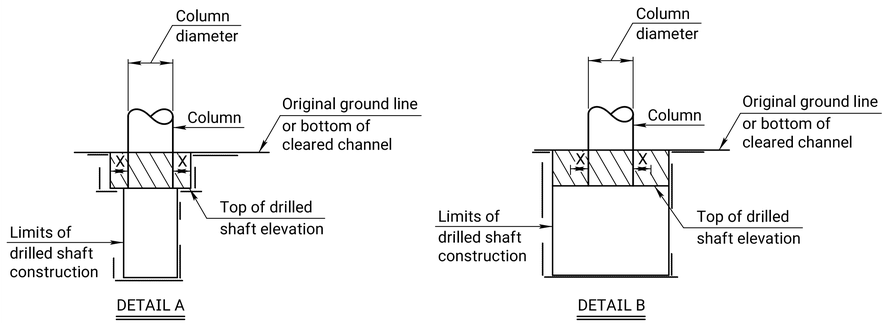
Sides of trenches in hard or compacted soil including embankments shall be shored, sheeted, braced or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of the shoring, the sides of the trench above the 5 foot level may be sloped to preclude collapse. 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.



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)

NO.	DATE	REVISIONS	BY	APP'D
06	08-15-12	Embedment Excavation Subsidiary	J.P.J.	T.L.F.
05	05-15-12	Revised Wing Excavation	J.P.J.	T.L.F.
04	03-03-10	Revised Wing Excavation	J.P.J.	T.L.F.

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BR100B

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

KDOT Graphics Certified 06-20-2022 Sh. No. 30

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:42
File : br100b.dgn

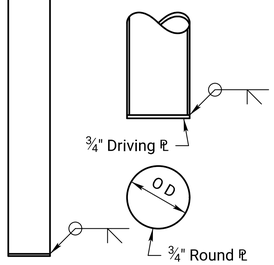
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	31	53

O D 10¾" T. = ††
O D 12¾" T. = ††
O D 14" T. = ††

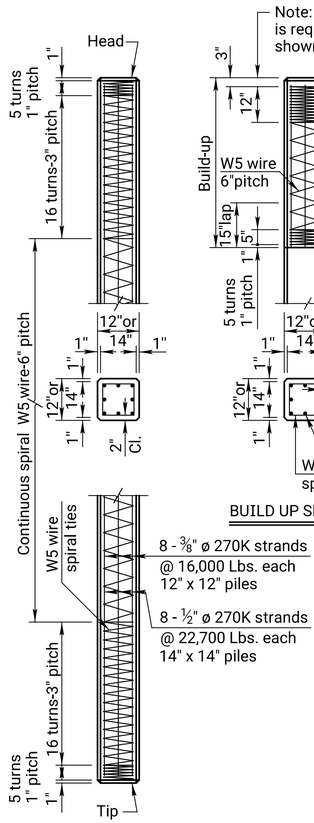
†† See the Geology Report or "Summary of Quanities" for Pipe Pile wall thickness

Note:
Pile shall be driven with a steel head having a projecting ring fitting inside the pipe. Clearance between ring and pipe should be ¼".

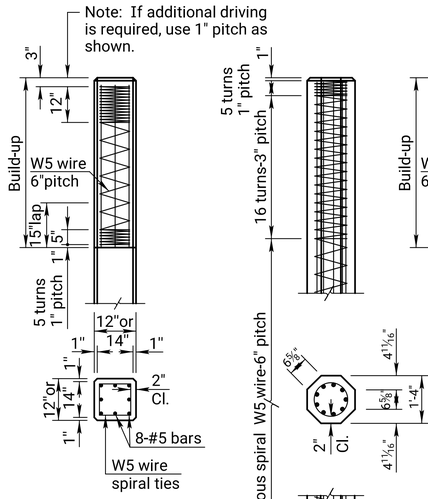
Note:
Pile pipe may be spiral welded, longitudinal welded, or seamless steel pipe.



PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



12" OR 14"
PRESTRESSED
CONCRETE PILES



BUILD UP SECTION

16" PRESTRESSED
CONCRETE PILES

BUILD-UP
WITHOUT DRIVING

BUILD-UP
WITH DRIVING

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

GENERAL NOTES

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

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

ALTERNATE METHODS: Method of attachment of a pile to build-up may be by any of the following methods:
1. Cut off at least 2'-0" of pile and expose a minimum of 2'-0" of strands.
2. Cast 8-#6, or 8-#5 bars (equally spaced) into pile head. All bars shall extend into pile head and project from pile head a minimum of 2'-0".
3. Drill 8 holes in pile head (equally spaced) for installation of 8 grouted dowel bars of same size and length as in 2.
4. Provide cored holes for bars as in 3.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

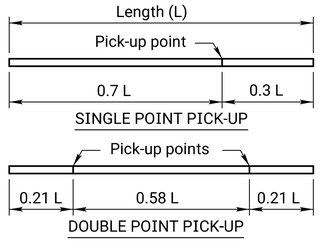
All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

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

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

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

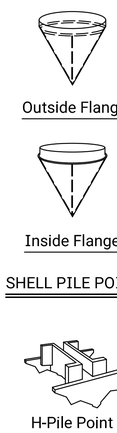
MILL TEST REPORTS: Steel piles test reports and steel shell test reports shall comply with the Standard Specifications.



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.

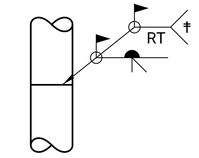
Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

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

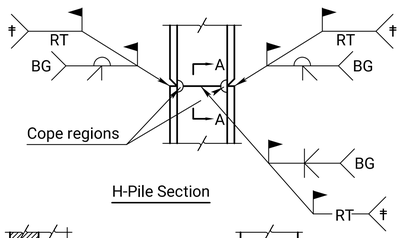
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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.

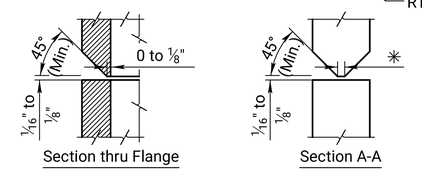
† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Contractor will test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested will have written confirmation of results. Report these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



Pipe Section



H-Pile Section



✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

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

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

BR110

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

KDOT Graphics Certified 06-20-2022 Sh. No. 31

KDOT Graphics Certified

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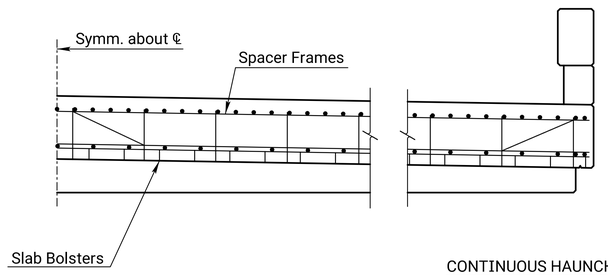
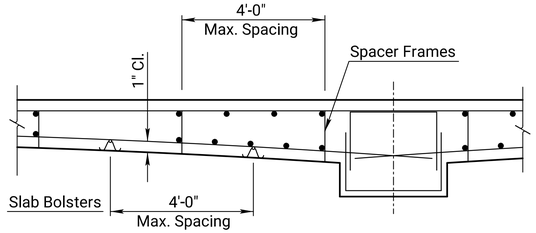
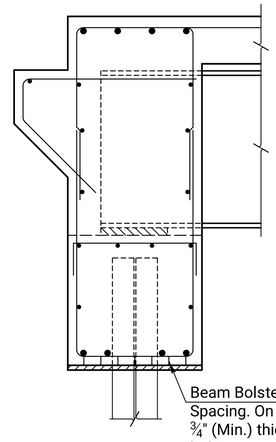
File : br110.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	32	53



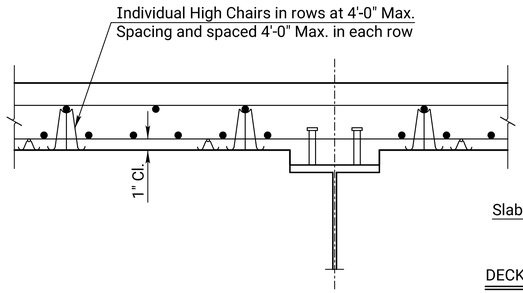


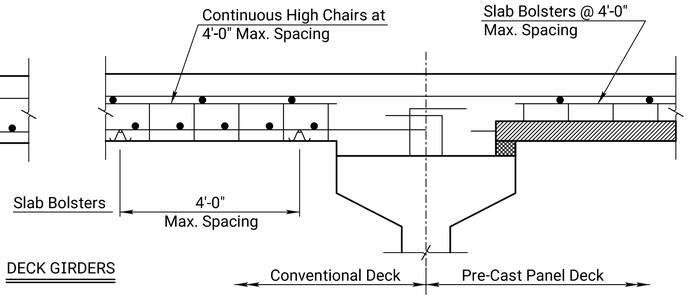
CONTINUOUS HAUNCHED SLAB



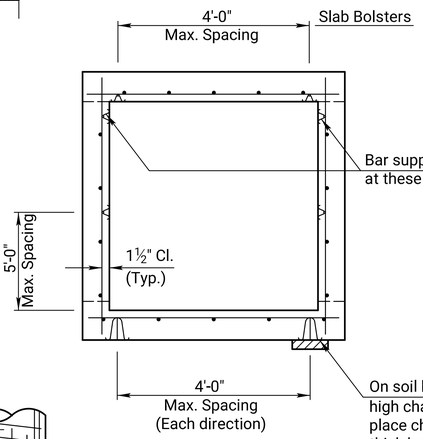
Beam Bolster at 4'-0" Max. Spacing. On soil bearing, place a ¾" (Min.) thick board under bolster.

ABUTMENT

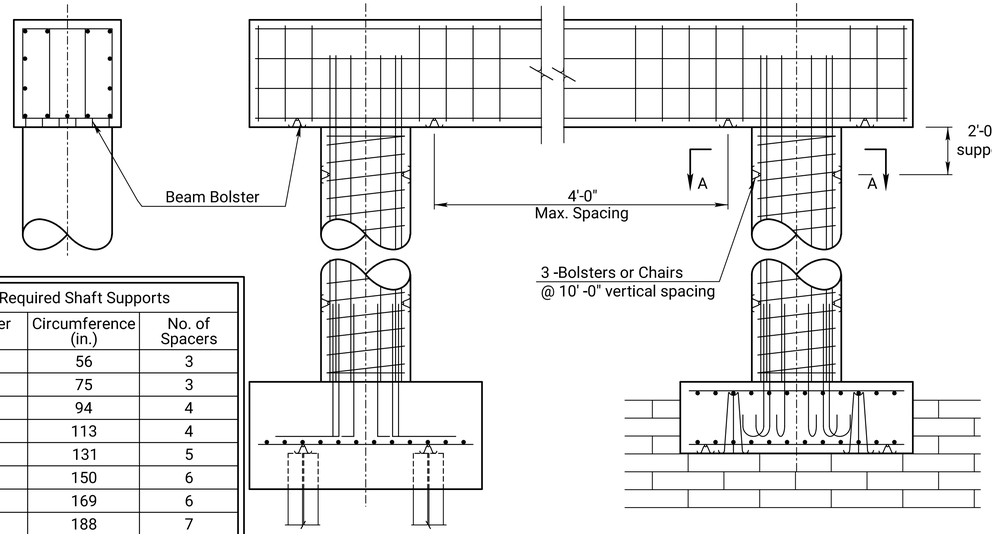




DECK GIRDERS

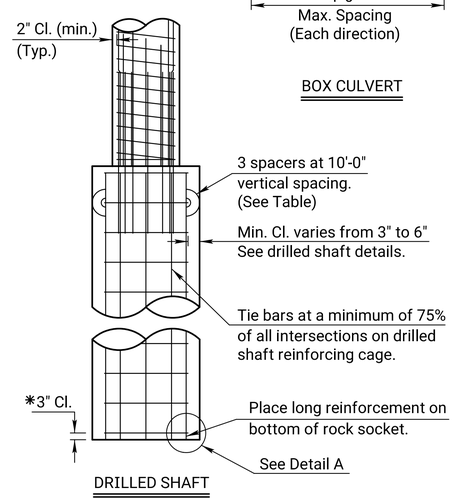


BOX CULVERT

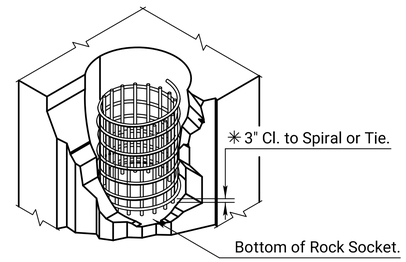


PIER

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

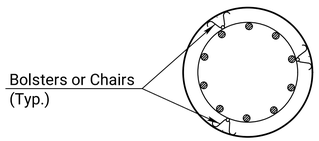


DRILLED SHAFT



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.

KDOT Graphics Certified 06-20-2022 Sh. No. 32

KDOT Graphics Certified

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	33	53

RECAPITULATION OF BRIDGE QUANTITIES

BRIDGE NUMBER	STATION	SEE SHEET NO.
000720779704207	13+30.00	14

EARTHWORK

STATION to STATION	EXCAVATION					COMPACTION			NOT SUBGRADED THROUGH CUTS			EMBANKMENT (CU.YDS.)		PLACE. SELECT SOIL CU.YDS.
	COMMON		ROCK		CONTR. FURN. CU.YDS.	TYPE AA MR- CU.YDS.	TYPE B MR-90 CU.YDS.		COMM. CU.YDS.	TYPE AA CU.YDS.		INITIAL CONSOL.	SETTLE- MENT	
	CU.YDS.	VMF	CU.YDS.	VMF										
11+00.00 to 14+12.66	541	0.72	120	1.00			117							
TOTALS	541		120				117							

Note: Existing asphalt pavement thickness assumed to be 3".
All existing asphalt is considered common excavation and shall be wasted.

RECAPITULATION OF ROAD QUANTITIES

ITEM	QUANTITY	UNIT
Contractor Construction Staking	Lump Sum	L.S.
Field Office & Laboratory (Type C)	1	Each
Foundation Stabilization (Set Price)	1	Cu. Yds.
Mobilization	Lump Sum	L.S.
Mobilization (DBE)	Lump Sum	L.S.
Removal of Existing Structures	Lump Sum	L.S.
Concrete for Seal Course (Set Price)	1	Cu. Yds.
Clearing & Grubbing	Lump Sum	L.S.
Common Excavation	541	Cu. Yds.
Rock Excavation	120	Cu. Yds.
Compaction of Earthwork (Type B) (MR-90)	117	Cu. Yds.
Water (Grading) (Set Price)	1	M. Gal.
Curing Environment	Lump Sum	L.S.
Concrete Pavement (10" Uniform) (AE) (Br App)	98	Sq. Yds.
Concrete Safety Barrier (Transition)	30	Lin. Ft.
Guardrail, Steel Plate	50	Lin. Ft.
Guardrail End Terminal (SRT) Alt. #1	2	Each
Guardrail End Terminal (FLEAT) Alt. #2	2	Each
Temporary Surfacing Material (Aggregate) (Set Price)	1	Cu. Yds.
Signing Object Marker (Type 3)	4	Each

** REMOVAL OF EXISTING STRUCTURES

STATION	LOCATION	DESCRIPTION
13+28.66	℄	80' Concrete Arch Bridge w/ 18'-0" Roadway

** FOR INFORMATION ONLY

Concrete Pavement (10" Uniform)(AE)(Br App)

STATION to STATION	Side	Sq. Yds.
12+54.00 to 12+69.00	℄	48.3
13+91.00 to 14+06.00	℄	50.0
Total		98

Concrete Safety Barrier (Transition)

STATION to STATION	Side	Lin. Ft.
13+91.00 to 14+06.00	Lt.	15.0
13+91.00 to 14+06.00	Rt.	15.0
Total		30

For Summary of Signing Object Markers, See Sheet No. 2
For Summary of Guardrail See Sheet No. 8
For Summary of Surfacing Quantities See Sheet No. 34
For Temp. Erosion & Pollution Control Quantities See Sheet No. 35
For Seeding Quantities See Sheet No. 44
For Traffic Control Plan & Quantities See Sheet No. 50

NO.	DATE	REVISIONS	BY	APP'D
02	01-14-08	Rem. Drainage Structure summary	S.W.K.	J.O.B.
01	01-09-91	Detailed on CADD	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

RD050

FHWA APPROVAL	05-28-08	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

Plotted by : jbeckman 11-SEP-2024 15:43
File : rd050.dgn

GENERAL NOTE:

On surfacing projects, the 6" of Compaction Type AA, shown for the center portion on the roadbed, is for the purpose of restoring the original Compaction Type AA which may have been lost since grading operations. The exact locations of this Compaction Type AA, which will be required, is to be determined by the Engineer at the time of construction. This work shall be paid under the bid item "Compaction of Earthwork (Type AA)(MR-)".

Over all structures, unless otherwise directed by the Engineer, where the top of the hubguard is level with or above the finished shoulder grade, the earth cover over the structure slab shall be removed and backfilled with _____ material as directed by the Engineer. The removal of this material will be subsidiary.

The _____ material used to backfill over the structure shall be paid for at the prices shown in the contract.

The earth shoulders shall be compacted full depth (Type -MR) except, when ordered by the Engineer, the top 3" shall be left uncompacted for seeding.

All side roads and house entrances shall be surfaced with _____ to the R/W line as indicated on the detail. All side roads and house entrances with existing asphalt surface shall be surfaced with _____ at least to the R/W line or to the end of construction, as directed by the Engineer. Each mailbox turnout (ON PROJECTS WHERE STABILIZED SHOULDERS ARE NOT SPECIFIED) shall be surfaced with _____ to the limits shown on the detail.

Surfacing material (SA-_____) shall be used for surfacing house entrances and side roads (_____C.Y./SQ. YD.) beyond the limits of the asphalt surface to the limits of construction as determined by the Engineer.

The thickness of side road and entrance surfacing may be increased to the same thickness as the stabilized shoulder within the approximate limits of the shoulder.

On projects which specify both asphalt base and surface course materials, side roads, house entrances and mailbox turnouts may be surfaced with both materials at the contractors option, with the approval of the Engineer.

Quantities for aggregate for shoulders, AS-1, are calculated on the basis of 150 lbs. per cu. ft. Quantities for stabilized base course, AB-3, are calculated on the basis of 156 lbs. per cu. ft. Weight/cu. ft. includes moisture allowed by specification.

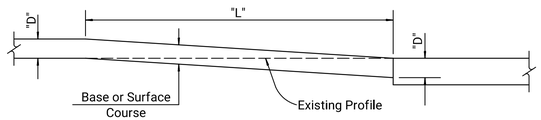
The base course shall be constructed to the plan thickness as shown.

Thicknesses indicated for all construction which is paid for on a weight or volume basis are approximate and may vary to correct for unevenness in the foundations or for other normal unevenness encountered in placement operations.

A tack coat of SS-1HP shall be provided between each lift of all base courses and surface courses and under the first lift of base or surface courses when they are placed on an existing asphalt, brick, or concrete surface, when so ordered by the Engineer and at the rate designated by him. Quantities are included for these tacks calculated at the rate of 0.06 gal. /sq. yd.

Asphalt Material quantities are calculated on the basis of 8.328 lbs. per gal.

Shoulder rumble strips will not be constructed as part of this project.



TYPICAL PROFILE AT GRADE CONTROL POINTS

The Contractor shall cut the subgrade in accordance with this profile at all grade control points, i.e.; existing pavements, grade bridges and R.R. crossings, also at changes in thickness of base or surface courses. Corresponding dimensions of "D" and "L" shall be as given in the table below.

The work of cutting the subgrade and disposing of excess excavated material shall be subsidiary to other items in the contract.

TABLE OF DIMENSIONS											
D	L	D	L	D	L	D	L	D	L	D	L
1"	25'	3"	75'	5"	125'	7"	175'	9"	225'	11"	275'
2"	50'	4"	100'	6"	150'	8"	200'	10"	250'	12"	300'

SUMMARY OF QUANTITIES					
ITEM	STA. 11+00.00 TO 12+54.00	STA. 14+06.00 TO 14+12.66		TOTAL	UNIT
HMA-Commercial Grade (Class A)	206.1			206.1	TONS
Surfacing Material (AB-1)		4.9		4.9	TONS

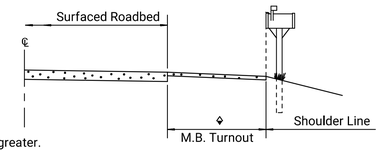
Surfacing material thickness is 4".

RATES OF APPLICATION				
RATE	UNIT	ITEM		
145 †	Lbs/Cu Ft	HMA - Commercial Grade (Class A)		
156	Lbs/Cu Ft	Surfacing Material (AB-1)		

† Total Mix Wt. of Aggregate and Asphalt

RECAPITULATION OF QUANTITIES					
ITEM				TOTAL	UNIT
HMA Commercial Grade (Class A)				206	Tons
Surfacing Material (AB-1)				5	Tons

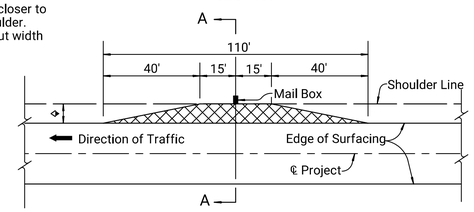
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	34	53



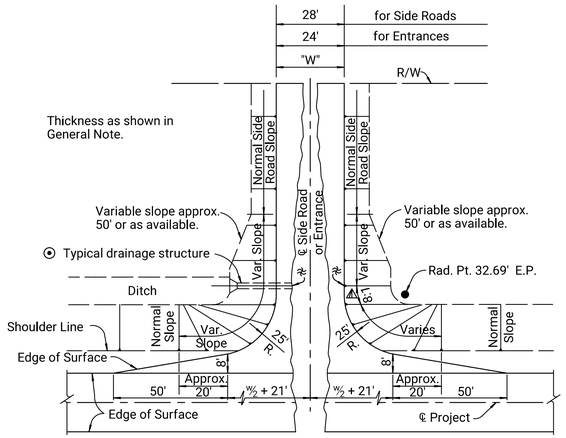
◆ Width shall be 8' or shoulder width, whichever is greater.

SECTION A-A

Note: The face of Mail Box should be no closer to the roadway than the edge of the shoulder. Align with edge of turnout when turnout width is greater than shoulder width.



DETAIL FOR SURFACING OF MAIL BOX TURNOUTS



WITH DRAINAGE STRUCTURE MOUND ENTRANCE OR SIDE ROAD

DETAIL FOR SURFACING OF SIDE ROADS & HOUSE ENTRANCES

⚠ 8:1 Slope at the appropriate clear zone shall apply to all mound entrances and mound side roads to 10' fill height. Normal Slope (but not steeper than 6:1) for over 10' fill height.

⊙ Normal Slope (but not steeper than 6:1) at approximate ℄ Structure or appropriate clear zone width.

✻ On side roads and entrances which slope toward the highway, a low point approx. 6" deep shall be constructed to divert surface drainage into the highway ditch, unless otherwise shown on the plans.

NO.	DATE	REVISIONS	BY	APP'D
12	01-10-07	Changed bituminous to asphalt	S.W.K.	J.O.B.
11	08-30-06	Changed tack type/rate	S.W.K.	J.O.B.
10	03-24-05	Revised compaction, tack type/rate	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

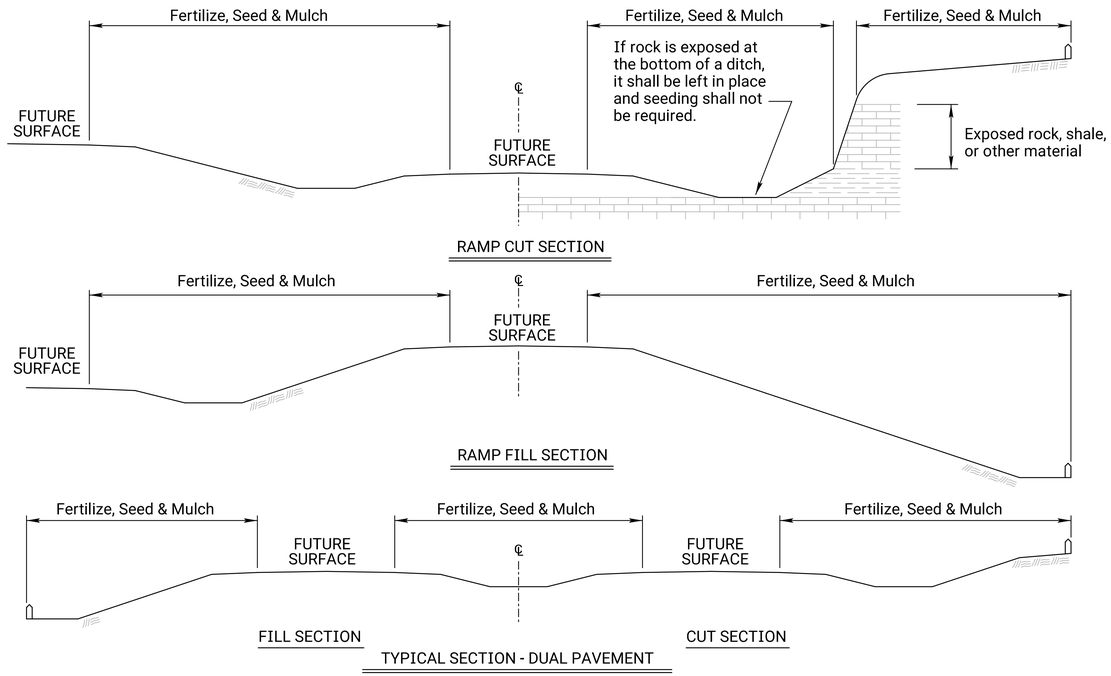
SUMMARY OF QUANTITIES (Surfacing)

~~RD051~~

FHWA APPROVAL	09-06-06	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Plotted by: jbeckman 11-SEP-2024 15:43
File : rd051.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	35	53



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

* - N = Nitrogen Rate of Application
** - P_2O_5 = Phosphorous Rate of Application
*** - K_2O = Potassium Rate of Application

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

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

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

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

GENERAL NOTES

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

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

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

1¾ - 2¼ Tons per Acre = 1½" loose depth spread uniformly over acre.

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

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

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

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
	200		0.09	Temporary Fertilizer (13 - 13 - 13)	18	LB
				Temporary Seed (Canada Wildrye)		LB
				Temporary Seed (Grain Oats)		LB
				Temporary Seed (Sterile Wheatgrass)		LB
	109.9		0.09	Soil Erosion Mix	10.1	LB
				Erosion Control (Class 1, Type C)	446	SQ YD
				Erosion Control (Class 2, Type Y)		SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)		CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")		LF
				Biodegradable Log (12")		LF
				Biodegradable Log (20")	57	LF
				Filter Sock (18")	43	LF
				Geotextile (Erosion Control)	500	SQ YD
				Silt Fence	43	LF
				SWPPP Design †		LS
				SWPPP Inspection †		EACH
				Water Pollution Control Manager †		EACH
900 lbs / acre				Mulch Tacking Slurry		LB
2 tons / acre				Mulching		TON
				Water (Erosion Control) (Set Price)	1	MGAL

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

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

Regreen and Quick Guard are the approved sterile wheatgrass products.

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

**** List size of material.

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

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

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
0.5	SEED (BLUE GRAMA GRASS) (LOVINGTON)	0.05
4.5	SEED (BUFFALO GRASS) (TREATED)	0.41
45	SEED (RYEGRASS) (PERENNIAL)	4.15
2.6	SEED (PRAIRIE JUNE GRASS)	0.24
6.3	SEED (SIDE OATS GRAMA) (EL RENO)	0.58
45	SEED (FESCUE) (TALL) (ENDOPHYTE-FREE)	4.15
6	SEED (WESTERN WHEATGRASS) (BARTON)	0.55
109.9	Total (lb)	10.13

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

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

Note: Fertilizer for Soil Erosion Mix is included and shown on the Summary of Seeding/Erosion Control chart above.

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	36	53

EROSION CONTROL- CLASS 1, TYPE C

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
11+00.00 to 12+59.00	Lt.	159.0	7.1	125.6
11+00.00 to 12+59.00	Rt.	159.0	8.7	154.3
12+89.00 to 13+05.60	Lt. & Rt.	16.6	68.7	126.7
13+91.00 to 14+07.60	Lt.	16.6	8.5	15.7
13+91.00 to 14+16.60	Rt.	25.6	8.2	23.3
TOTAL EROSION CONTROL (CLASS 1, TYPE C) =				445.6

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

EROSION CONTROL SEEDING-SODDING

LA852A-EC

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

Sh. No. 36

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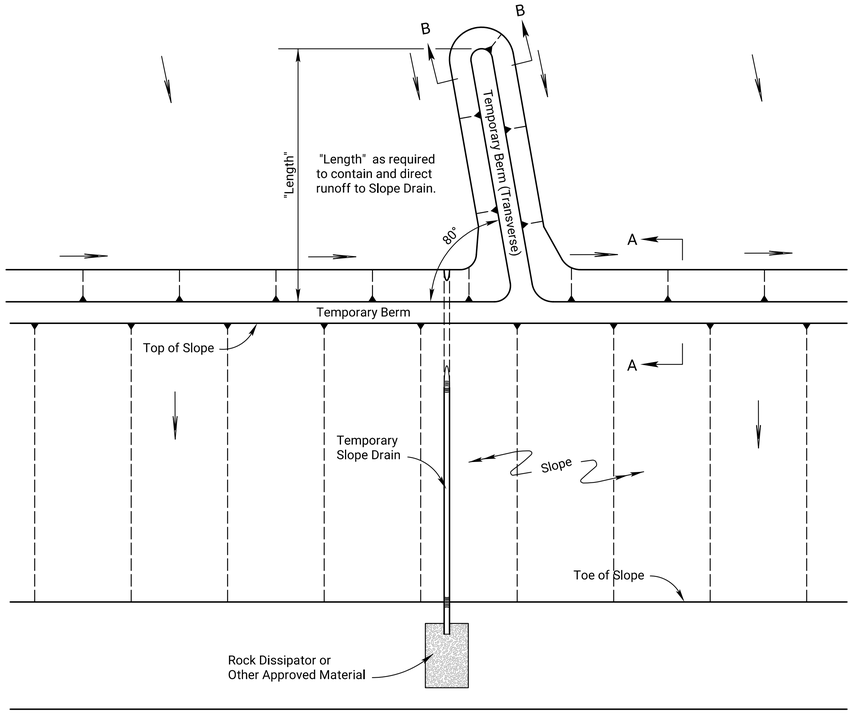
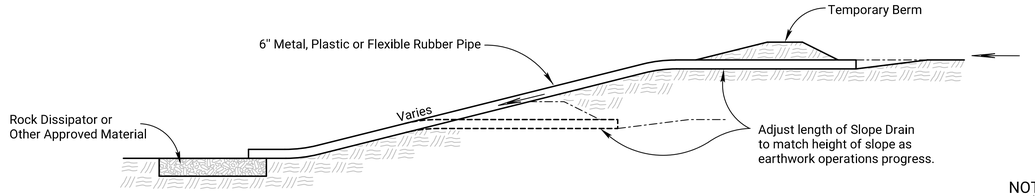
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	37	53



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

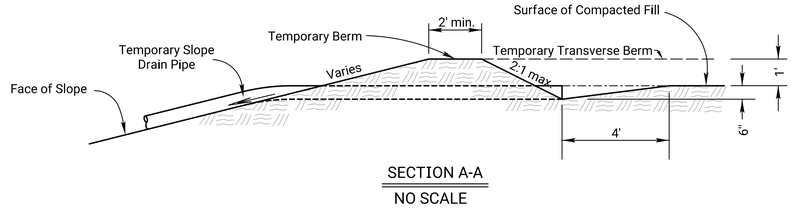
NOTES:

1) Temporary Slope Drain and Temporary Berm may be used on either project foreslopes or project backslopes.

2) Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.

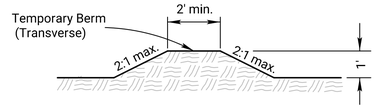
3) Pipe shall be secured in place as approved by Engineer.

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



SECTION A-A

NO SCALE

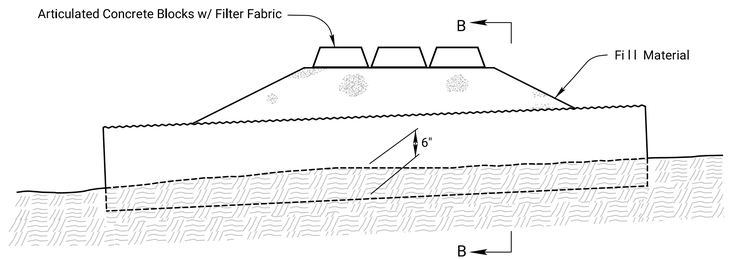


SECTION B-B

NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

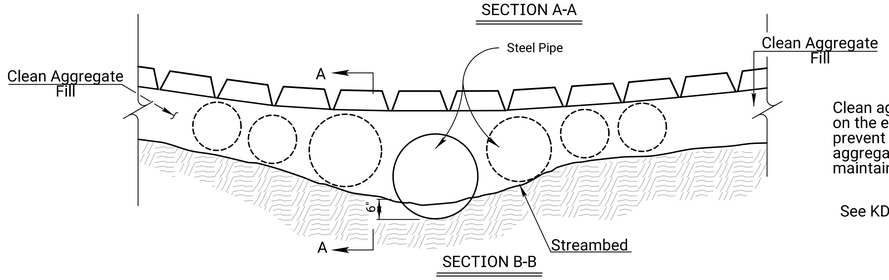
NO SCALE



SECTION A-A

Pipe size may vary.

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



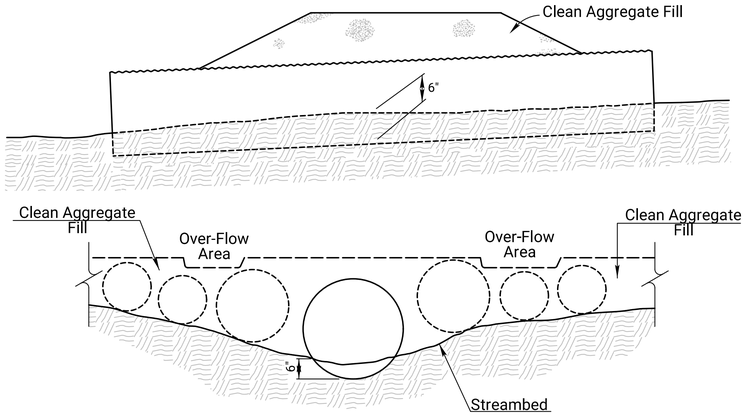
SECTION B-B

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

See KDOT Specifications for more information.

TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

NO SCALE



SECTION B-B

Pipe size may vary.

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

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

See KDOT Specifications for more information.

TEMPORARY STREAM CROSSING (AGGREGATE)

NO SCALE

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL TEMPORARY SLOPE DRAIN, TEMPORARY STREAM CROSSING (AGGREGATE)

LA852B

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

KDOT Graphics Certified 06-17-2022 Sh. No. 37

KDOT Graphics Certified

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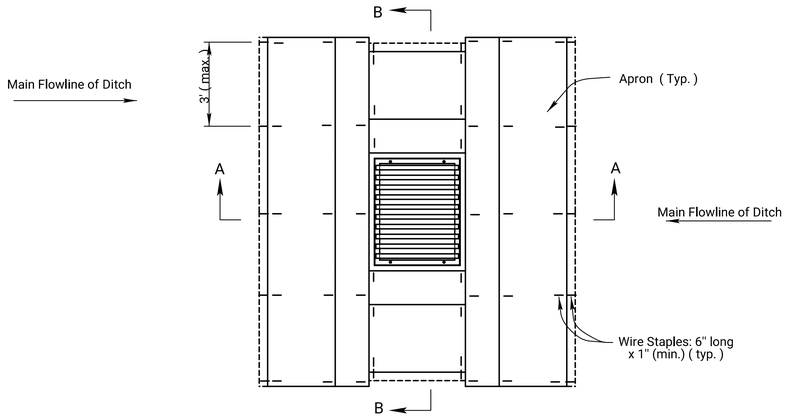
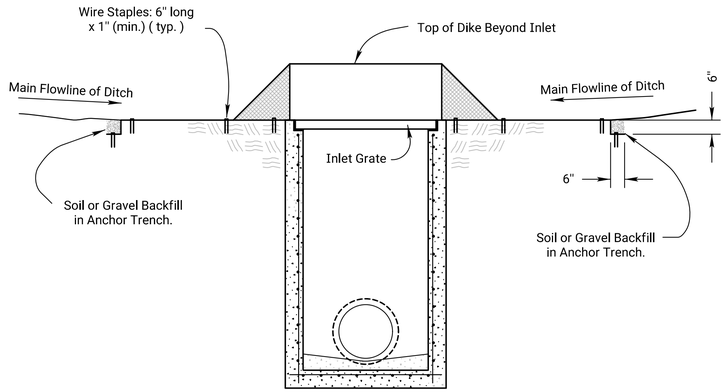
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	38	53



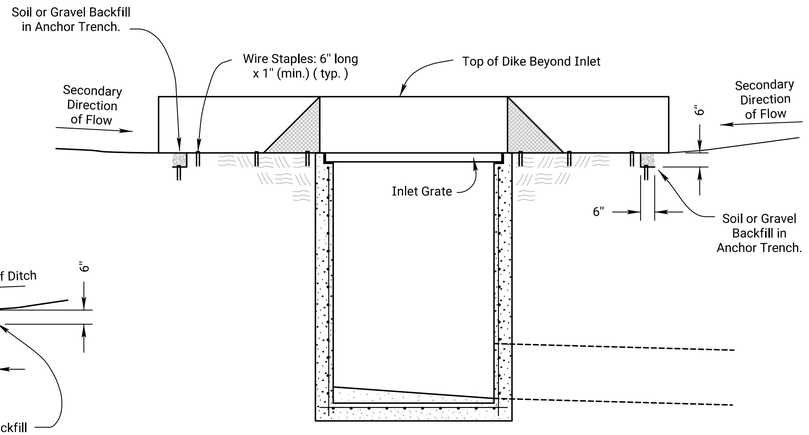
PLAN

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

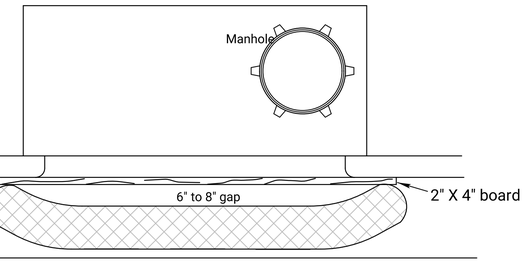
NO SCALE



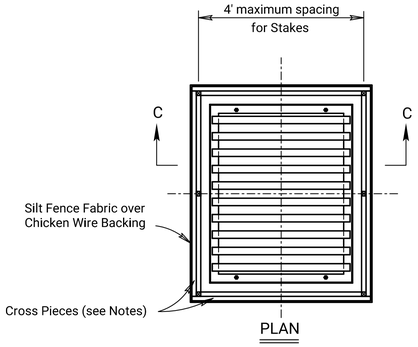
SECTION A - A



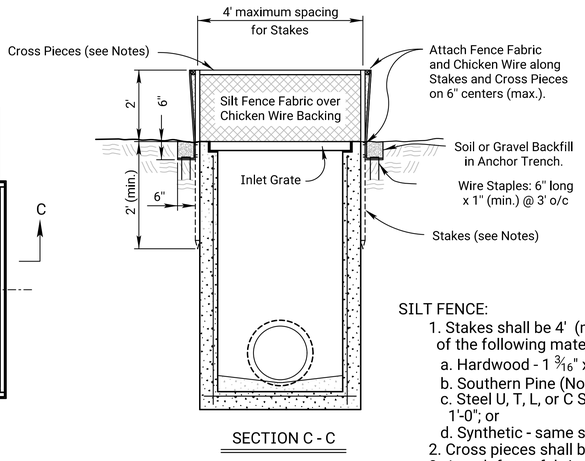
SECTION B - B



CURB INLET PROTECTION



PLAN



SECTION C - C

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

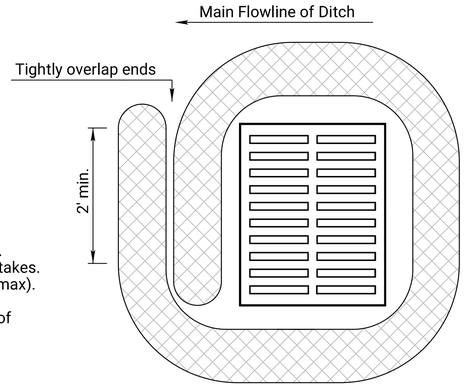
NO SCALE

SILT FENCE:

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

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

Rock = approximately 1" to 2" diameter



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

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

Stake every 4'

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

Material Requirements
Use 100% shredded mulch or other non-compost biodegradable material as fill for logs.
No compost or fines.
No hay or straw.
Do not use material which prohibits water infiltration.
Log Mesh: Use mesh with ¼" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL, TEMPORARY INLET SEDIMENT BARRIER (SILT FENCE) TEMP. INLET SEDIMENT BARRIER (T.S.D.)

LA852C

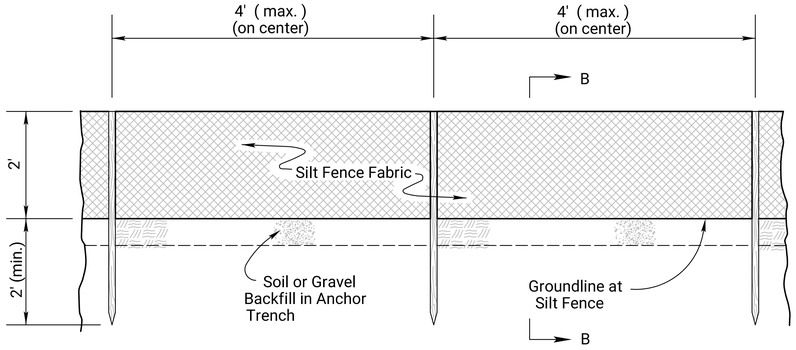
FHWA APPROVAL			03-10-15	APP'D.	Scott H. Shields
DESIGNED	R.A.	DETAILED	R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-14-2022 Sh. No. 38

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:43
File : la852c.dgn

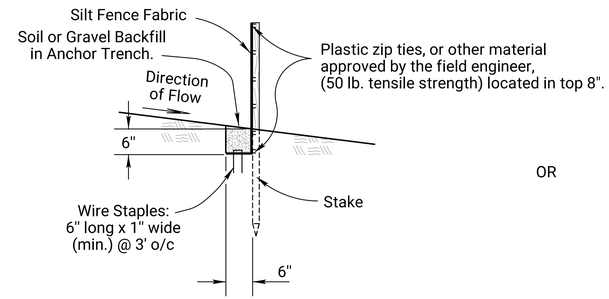
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	39	53



TYPICAL ELEVATION

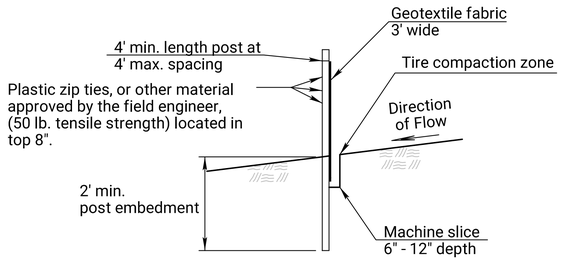
SILT FENCE BARRIER

NO SCALE

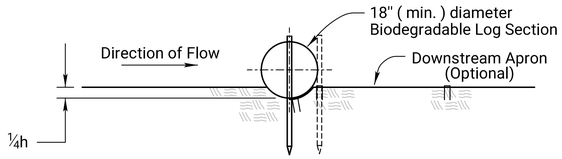


SECTION B-B

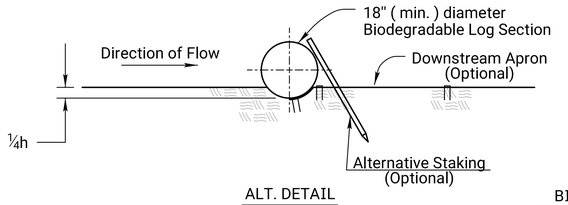
OR



SECTION B-B

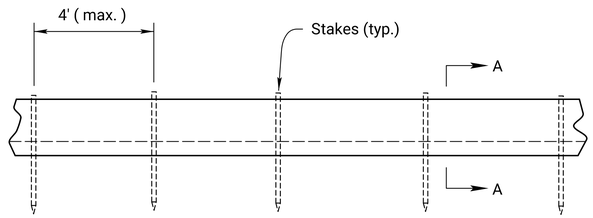


SECTION A - A



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

INSTALLATION NOTES

SILT FENCE:

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

BIODEGRADABLE LOG OR FILTER SOCK

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

Biodegradable Log or Filter Sock Slope Interruptions

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

Deviations should be approved by the Field Engineer.

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

GENERAL NOTES

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852D

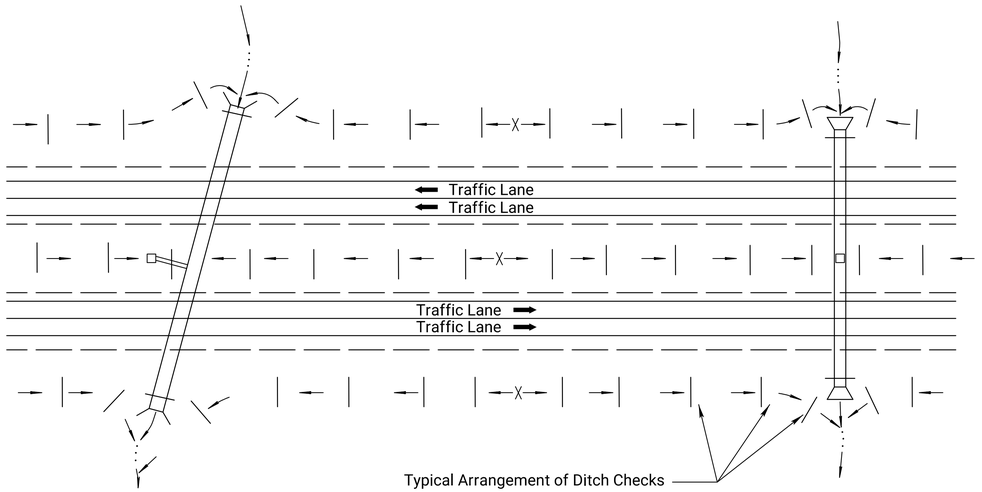
FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields	
DESIGNED	S.H.S.	DETAILED R.A.	QUANTITIES	TRACED	
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 06-18-2022 Sh. No. 39

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:44
File : la852d.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	40	53



TYPICAL DITCH CHECK LAYOUT PLAN

NO SCALE

20" BIOLOG CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	125
2.0	60
3.0	40
4.0	30
5.0	25
NOTE: Use this spacing for all except Rock Ditch Checks.	

18" FILTER SOCK CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	110
2.0	55
3.0	35
4.0	25
5.0	20
NOTE: Use this spacing for all except Rock Ditch Checks.	

GENERAL NOTES

1) The choice of ditch check methods is at the option of the Contractor.

2) Use only rock checks in situations where the ditch slope is 6 percent or greater.

2) Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL DITCH CHECKS

LA852E

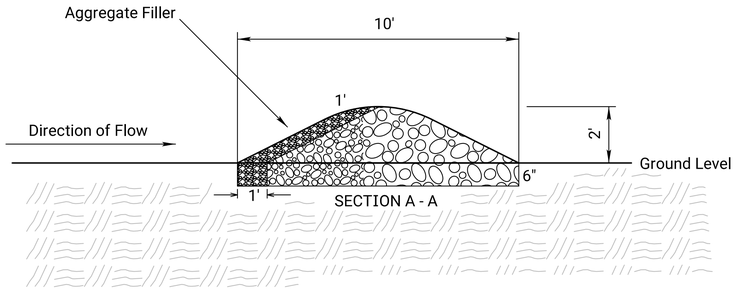
FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields			
DESIGNED	S.H.S.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

KDOT Graphics Certified 06-18-2022 Sh. No. 40

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:44
File : la852e.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	41	53



TYPICAL ELEVATION

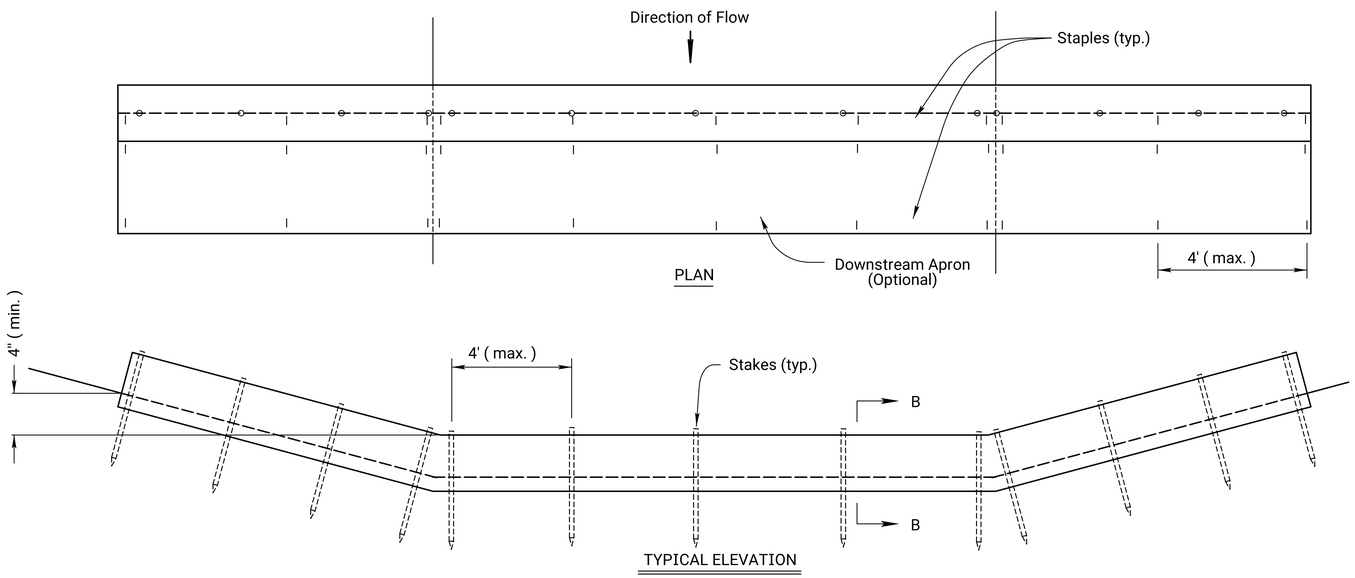
ROCK DITCH CHECK

NO SCALE

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

ROCK DITCH CHECK NOTES

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

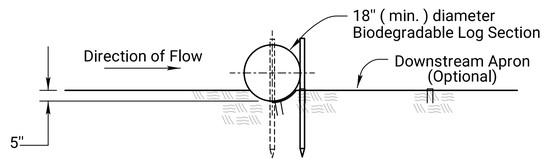


TYPICAL ELEVATION

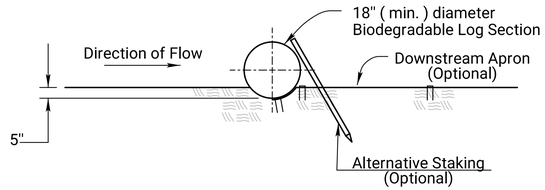
BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE



SECTION B - B



ALT. DETAIL OPTIONAL

BIODEGRADABLE LOG DITCH CHECK NOTES

1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 18".
3. Stakes shall be wood or steel according to Section 2114 of the Standard Specifications. Length of stakes shall be a minimum of 2 x the diameter of the log.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when required.
5. A downstream apron is required when directed by the Engineer. Apron material will be paid at the contract unit price.
6. Each log or sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852G

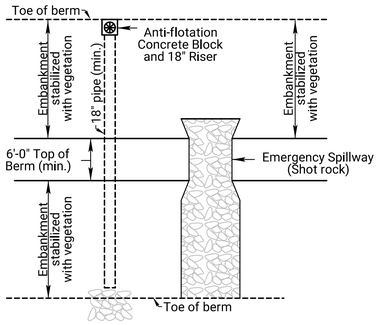
FHWA APPROVAL			11-19-20	APP'D.		Mervin Lare	
DESIGNED	M.L.	DETAILED	D.K.	QUANTITIES	TRACED	R.A.A.	
DESIGN CK.	M.L.	DETAIL CK.	M.L.	QUAN.CK.	TRACE CK.	R.A.A.	

KDOT Graphics Certified 07-14-2022 Sh. No. 41

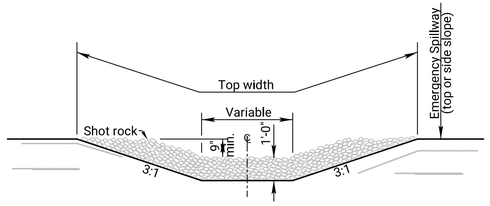
KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:44
File : la852g.dgn

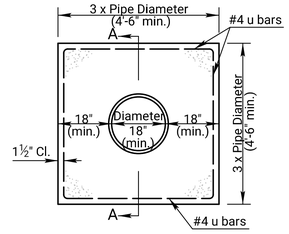
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	42	53



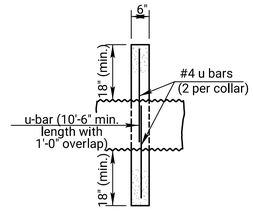
SEDIMENT STORAGE BASIN (PLAN)



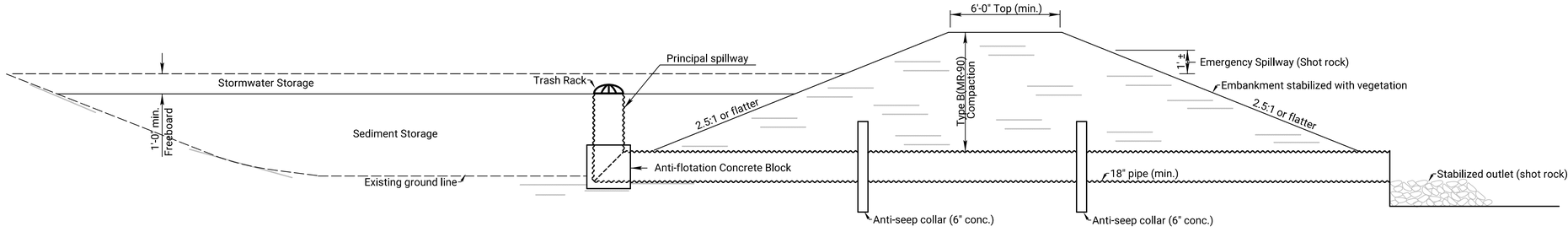
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



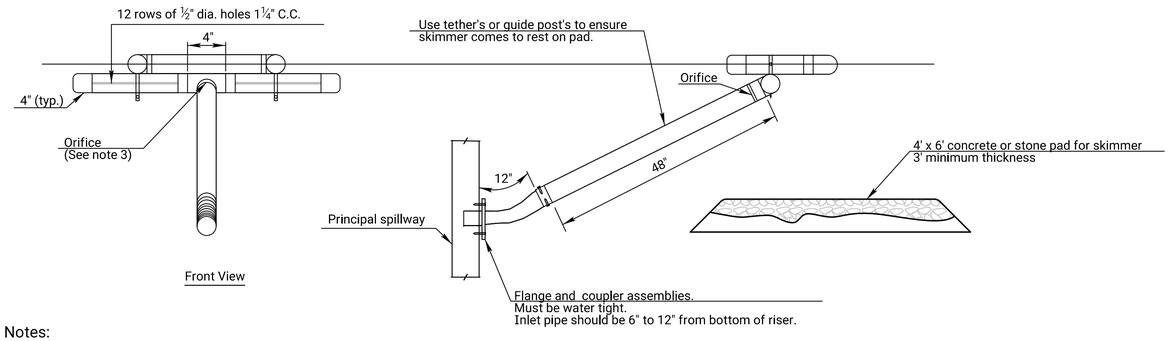
SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

1) Temporary Sediment Basins shall be constructed at locations as directed by the Engineer or as approved in the SWPPP Schedule. All work and materials necessary, including but not limited to, the fill material, compaction, drainage pipes, aggregates and all other incidentals necessary to construct the basin, shall be paid as "Temporary Sediment Basin".

2) Lengths and top dimensions shall be determined in the field by the Engineer.

3) Skimmer dewatering device required and must be used reguardless the size of the drainage area.



Notes:

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

SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL SEDIMENT STORAGE BASIN

LA852H

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

KDOT Graphics Certified 06-20-2022 Sh. No. 42

KDOT Graphics Certified

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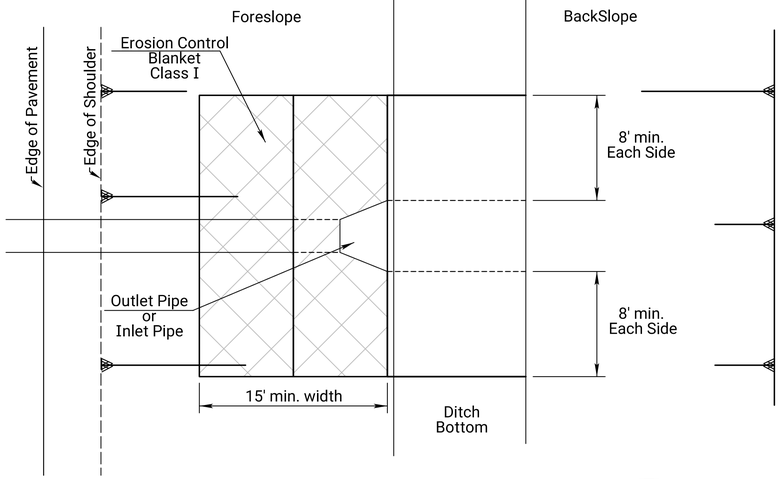
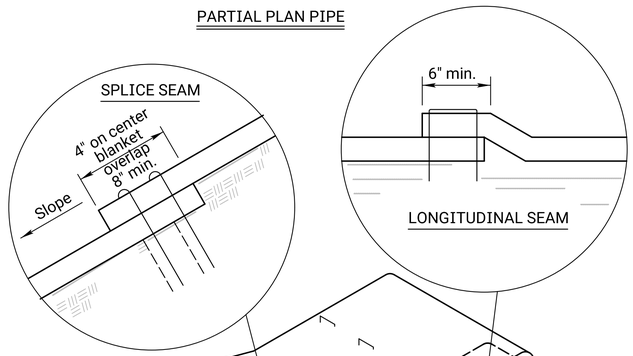
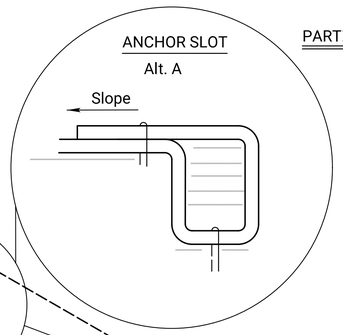
File : la852h.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	43	53

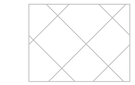


PARTIAL PLAN PIPE

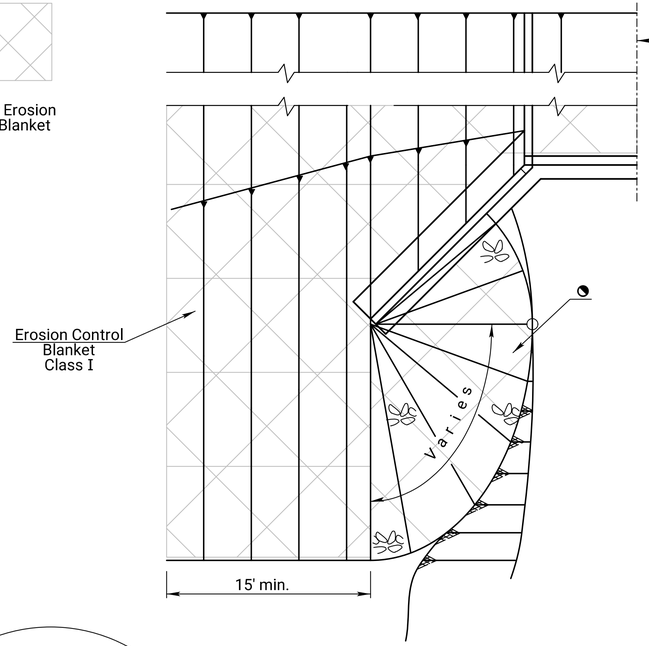




ISOMETRIC VIEW



Limits of Erosion Control Blanket



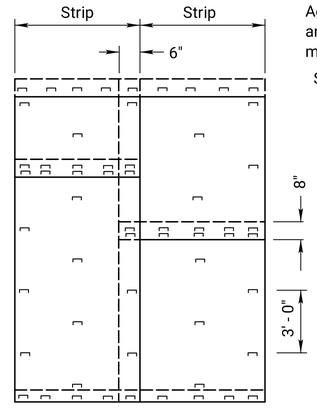
PARTIAL PLAN BOX CULVERT

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

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

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

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



PLAN VIEW - ANCHORING DIAGRAM

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

Single post ring and shank staple is acceptable.

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

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL EROSION CONTROL CLASS 1 SLOPE PROTECTION

LA855

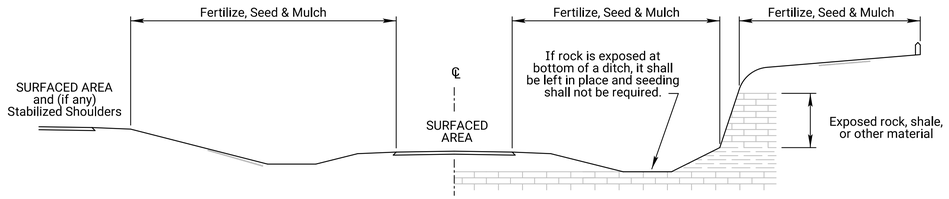
FHWA APPROVAL			03-10-15	APP'D.	Scott H. Shields		
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.		TRACE CK.	R.A.A.

KDOT Graphics Certified 06-20-2022 Sh. No. 43

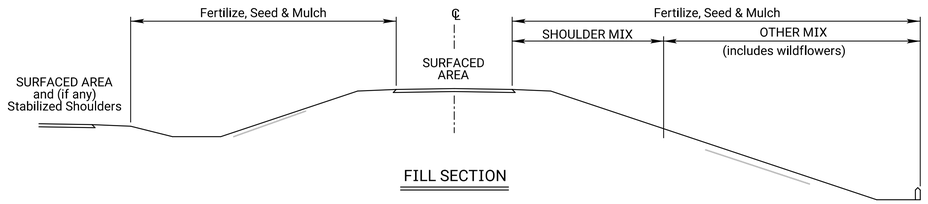
Plotted by : jbeckman 11-SEP-2024 15:44
File : la855.dgn

KDOT Graphics Certified

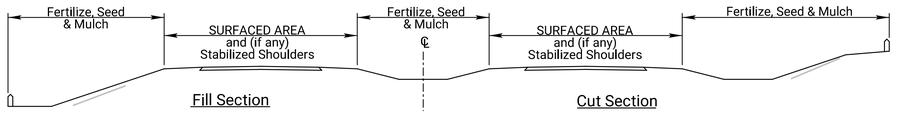
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	44	53



CUT SECTION



FILL SECTION



TYPICAL SECTION - DUAL PAVEMENT

GRASS & WILDFLOWER SEEDING SEASONS

COOL SEASON GRASSES	WARM SEASON GRASSES & WILDFLOWERS
February 15 thru April 20 August 15 thru September 30	November 15 thru June 1
SPECIES	SPECIES
Bluegrasses	Bermuda Grass
Brome Grasses	Big Bluestem
Canada Wildrye	Blue Grama
Fescues	Buffalo Grass
Prairie Junegrass	Indiangrass
Ryegrasses	Little Bluestem
Sterile Wheatgrass	Sand Bluestem
Tall Dropseed	Sand Dropseed
Western Wheatgrass	Sand Lovegrass
	Side Oats Grama
	Switchgrass
	Wildflower Mixes

When the area to be seeded is 1 acre or more, if Cool Season grasses are mixed with Warm Season grasses, seed the area during the Warm Season.

When the area to be seeded is less than 1 acre, seed the area any time of the year.

SODDING SEASONS

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

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

GENERAL NOTES

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

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

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

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

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

1¾ - 2¼ Tons per Acre = 1½" loose depth spread uniformly over acre.

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

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

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

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

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

NATIVE WILDFLOWER MIX 1

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

NATIVE WILDFLOWER MIX 2

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

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed ⅛" -¼". Place the wildflower seed in a separate seed box and drill (cover) seed 1/16" maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

SUMMARY OF SEEDING QUANTITIES

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

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING SUMMARY OF SEEDING QUANTITIES

LA850

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

Plotted by : jbeckman 11-SEP-2024 15:45
File : la850.dgn

1) Design Speed: Those items delegated to temporary traffic control should be designed and installed using the posted/legal speed of the roadway prior to work starting.

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

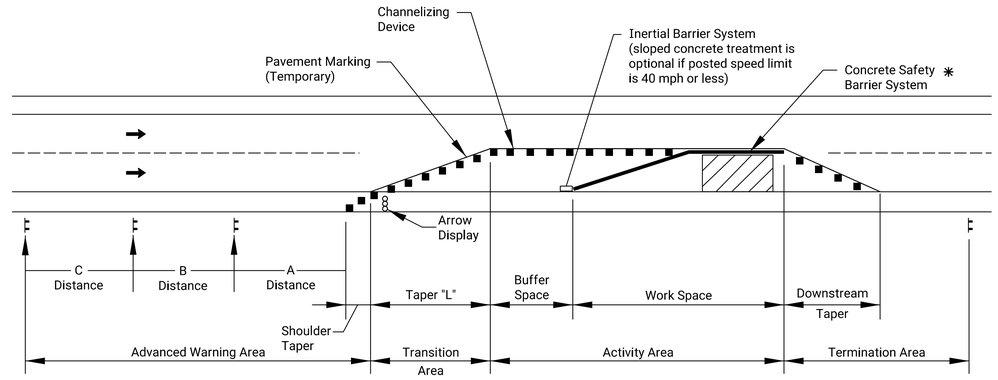
3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

4) When existing pedestrian facilities are disrupted, closed, or relocated, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

5) When the driving surface open to traffic is milled or is a temporary surface made of loose material, or when directed by the engineer a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed a "C" distance after the W20-1 (Road Work Ahead) sign. A W8-15p motorcycle plaque shall be used to supplement the W8-15 or W8-7 signs. All signs shall be displayed as long as the condition is present.

6) Alternative temporary rumble strip options may be available. Please contact the Temporary Traffic Control Unit for more information at 785-296-1179 or 785-296-1183.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	45	53



TYPICAL WORK ZONE COMPONENTS

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

Minimum advance warning sign spacing (in feet):

SPEED (MPH) ✳	*A*	*B*	*C*
URBAN (40 MPH OR LOWER)	*100*	*100*	*100*
URBAN (45 MPH OR HIGHER)	*350*	*350*	*350*
RURAL (55 MPH OR LOWER)	*500*	*500*	*500*
RURAL (60 MPH OR HIGHER)	*750*	*750*	*750*
EXPRESSWAY/FREEWAY	*1000*	*1500*	*2640*

✳ Posted speed prior to work starting

The minimum spacing between signs shall be no less than 100', unless directed by the engineer.

The spacing between any signs may be increased beyond the minimum values in the table above as approved by the engineer in order to maximize visibility.

Taper Formulas:

L = WS for speeds of 45 MPH or more

$L = WS^2/60$ for speeds of 40 MPH or less

Where: L = Minimum length of taper in feet
S = Numericial value of posted speed prior to work starting in MPH
W = Width in offset feet

Shifting Taper=1/2 L
Shoulder Taper=1/3 L

Channelizer Placement:

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

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

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

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

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

Buffer Space

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

✳ Posted speed prior to work starting

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

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

NO.	DATE	REVISIONS	BY	APP'D
02	03-13-18	W8-15p usage changed to Shall	R.W.B.	E.K.G.
01	08-18-15	Channelizer spacing info	R.W.B.	K.E.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

TE700

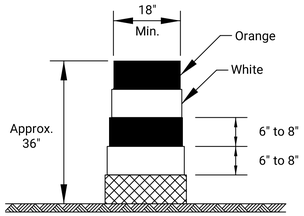
FHWA APPROVAL			03-13-18	APP'D.		Eric Kocher	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES		TRACED	
DESIGN CK.		DETAIL CK.		QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 07-18-2022 Sh. No. 45

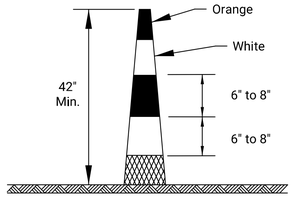
KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:45
File : te700.dgn

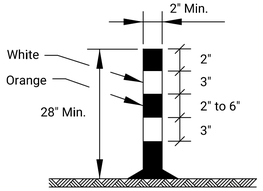
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	46	53



DRUM

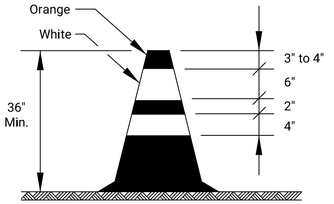


CONICAL
DELINEATOR

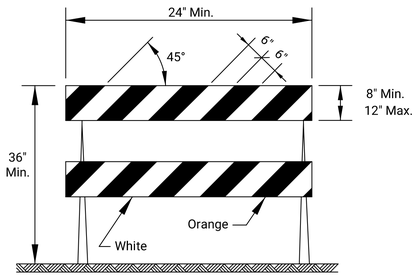


TUBULAR MARKER

Striping as shown for up to 42".

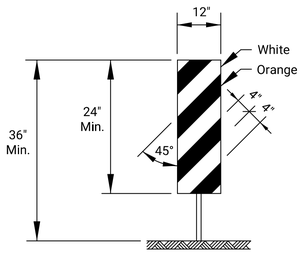


TRAFFIC CONE



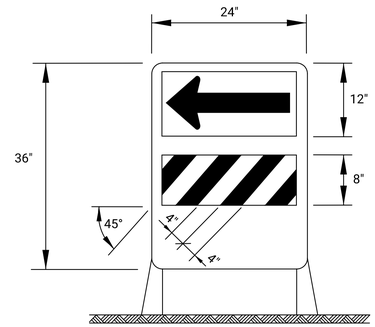
TYPE 2 BARRICADE

For rails less than 36" long, 4" wide stripes may be used. All stripes shall slope downward to the traffic side for channelization.



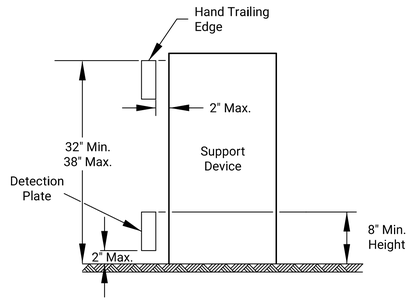
VERTICAL PANEL

The stripes shall slope downward to the traffic side for channelization.



DIRECTION INDICATOR BARRICADE

The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.



PEDESTRIAN CHANNELIZER

1. Support device shall not project beyond the detection plate into the pathway.
2. Hand trailing edges and detection plates are optional for continuous walls.
3. Interconnect pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
4. Alternate pathways shall be firm, stable, and slip resistant.
5. Treat height differentials > 1/2" in the surfaces of alternate paths with a firm, stable, and slip resistant temporary ramp having a slope of 12:1 or flatter and having a width equal to the alternate path.
6. Use alternating orange/white on interconnected devices.

Item	Location	Cross-overs	Shoofly Diversions	Tangents	Tapers	Ramps	Head to Head	Object Identifier	Lead-in Devices	Gores
Portable										
	Drums	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Conical Delineators	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Vertical Panels	(2)	(2)	(2)	(2)	(2)	(1,2)	Yes	(2)	(2)
	Direction Indicator Barricade	No	No	No	Yes	No	No	No	No	No
	Type 2 Barricade	(2)	(2)	(2)	(2)	No	No	Yes	No	No
	Traffic Cones	No	No	(4)	(4)	(4)	No	(4)	(4)	(4)
Fixed										
	Tubular Markers	(3)	(3)	(3)	No	(3)	Yes	No	Yes	Yes
	Vertical Panels	(3)	(3)	(3)	(3)	(3)	(3)	Yes	(2,3)	(2)

(1) Not allowed on centerline delineation along freeways or expressways.
(2) The stripes shall slope downward to the traffic side for channelization.
(3) May be used upon the approval of the engineer.
(4) Daytime operations only.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CHANNELIZING DEVICES

TE702

FHWA APPROVAL		06-01-15	APP'D.	Kristina Ericksen	
DESIGNED	L.E.R.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN.CK.	TRACE CK.

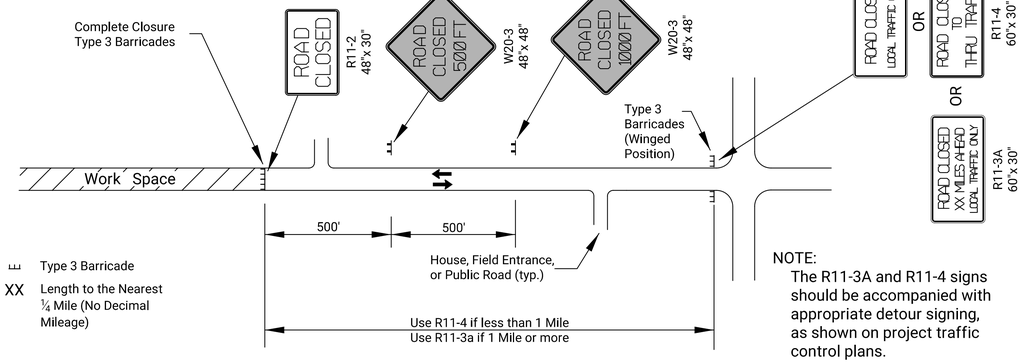
KDOT Graphics Certified 07-18-2022 Sh. No. 46

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:45
File : te702.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	47	53

Note: Signs shown for one approach to work zone.



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

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

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

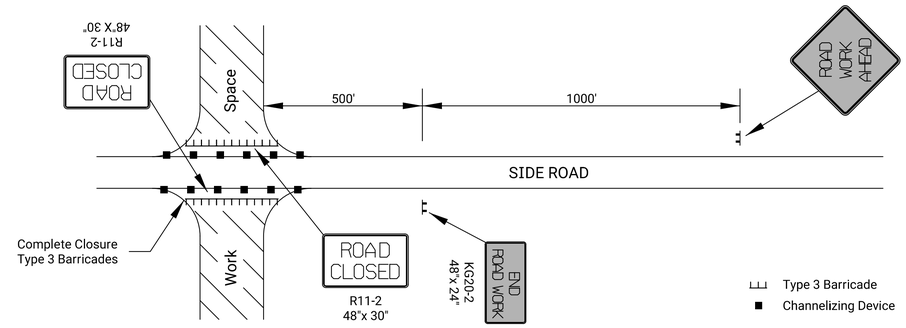


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

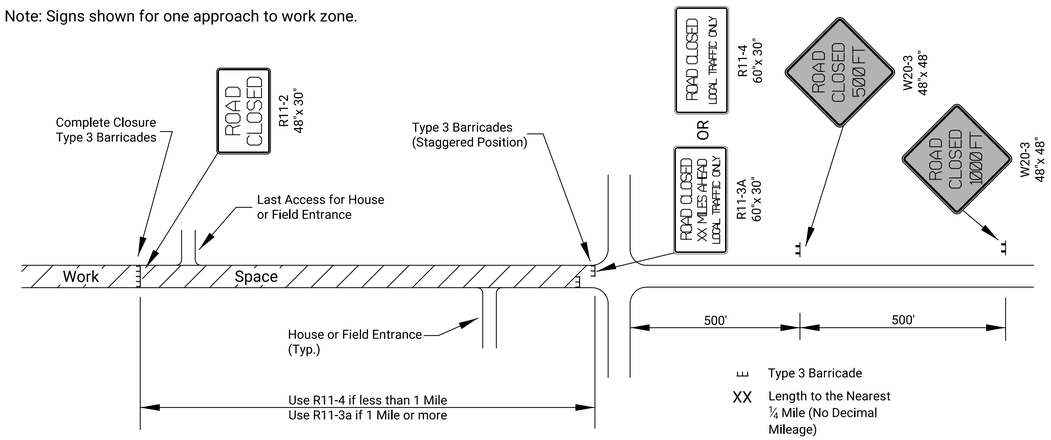


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

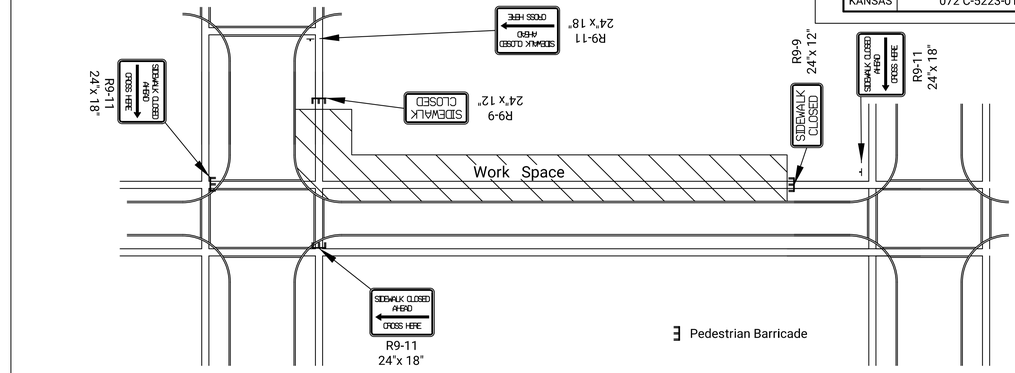
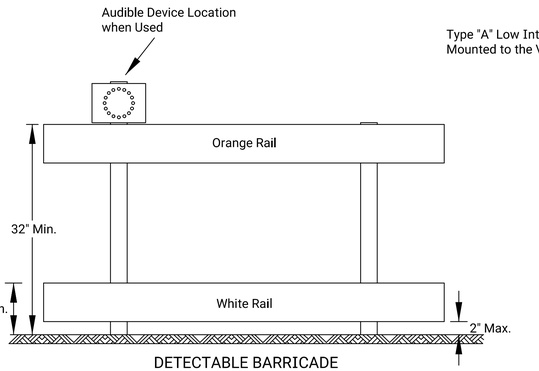
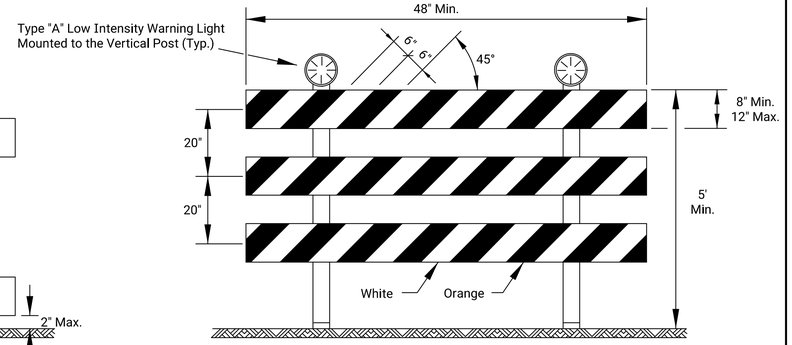


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE



DETECTABLE BARRICADE

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



TYPE 3 BARRICADE WITH LIGHTS

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

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

ROAD CLOSED GENERAL NOTES

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CLOSURES

TE704

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

KDOT Graphics Certified 07-18-2022 Sh. No. 47

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:45
File : te704.dgn

SIGN LAYOUT INFORMATION

KG20-2

Std. Size Expwy/Freeway
6" C
48"x 24"

KG20-5

Std. Size Expwy/Freeway
6" C
48"x 24"

KM4-20

Std. Size
3" C
24"x 6"

Expwy/Freeway
6" C
48"x 12"

W7-3a

Mileage to be Determined by the Engineer.

W8-15

Std. Size Expwy/Freeway
8" D
48"x 48"

W8-7

Std. Size Expwy/Freeway
8" D
48"x 48"

W8-15p

Std. Size Expwy/Freeway
30"x 24"

W8-17

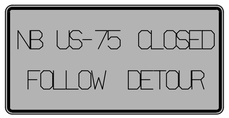
Std. Size Expwy/Freeway
48"x 48"

W8-11

Std. Size Expwy/Freeway
8" D
48"x 48"

W8-17P
(Optional)

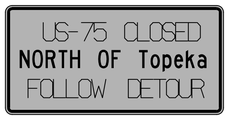
Std. Size Expwy/Freeway
30"x 24"



SP-01
(Special Sign)

Std. Size
6" C

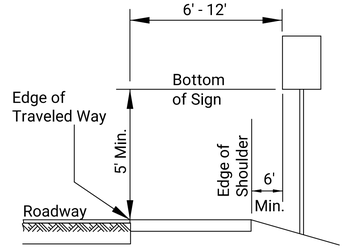
Expwy/Freeway
10" D



SP-02
(Special Sign)

Std. Size		Expwy/Freeway	
Uppercase:	6" C	Uppercase:	10" D
Lowercase:	4.5" C	Lowercase:	8" D

All city names and street names on special signs and destination signs must have upper and lower case letters.

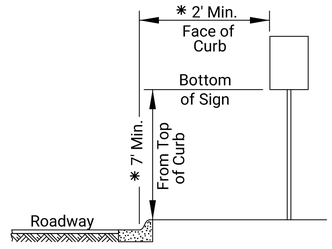


RURAL

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

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

3) The height of the secondary sign mounted below another sign may be 4' measured from the bottom of the sign to the near edge of the pavement. Signs shall not overlap each other.



URBAN

1) Signs shall be mounted at a minimum height of 7' measured from the bottom of sign to the near edge of the pavement.

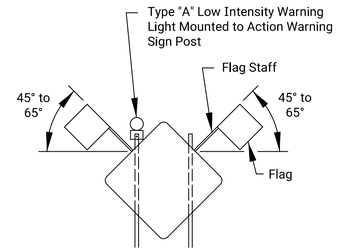
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

3) Signs mounted lower than 7' should not project more than 4" into pedestrian facilities.

4) The height from of the secondary sign mounted below another sign may be 6' measured from the bottom of sign to the near edge of the pavement. Signs shall not overlap each other.

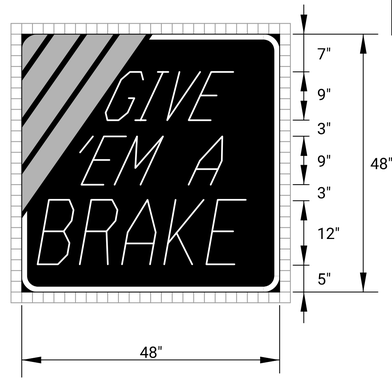
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

✱ 6) Pedestrian detour signing shall be a minimum of 2' measured from the top of the pedestrian pathway to the bottom of the sign and shall not protrude into the walkway nor shall it project beyond the back of curb.



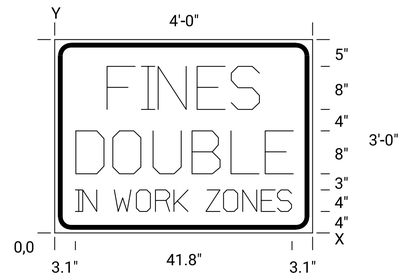
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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



KI-104a

Sign Number	GIVE EM A BRAKE
Width x Height	4'-0" x 4'-0"
Border Width	1.0"
Corner Radius	4.0"
Stripe Width	3.0"
Mounting	Ground
Background	Type: Non-Reflective
	Color: Black
Legend/Border	Type: Reflective
	Color: White
Legend Font	Dutch 801 Roman SWC 25 Degree Slant
Stripes	Type: Reflective
	Color: Orange



KI-105a

Sign Number	FINES DOUBLE
Width x Height	4'-0" x 3'-0"
Border Width	0.9"
Corner Radius	3.0"
Mounting	Ground
Background	Type: Reflective
	Color: White
Legend/Border	Type: Non-Reflective
	Color: Black

Dimensions in inches — Spacings are to start of next letter

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

Notes:

Typically, there are two sets of informational signs installed per project: one for each direction of traffic.

Install signs a minimum of 500' in advance of the road work ahead sign. The engineer may designate a more appropriate location if conditions dictate.

The informational signs are not to interfere with the traffic control signs for the project.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	48	53

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN INFORMATION

TE710

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

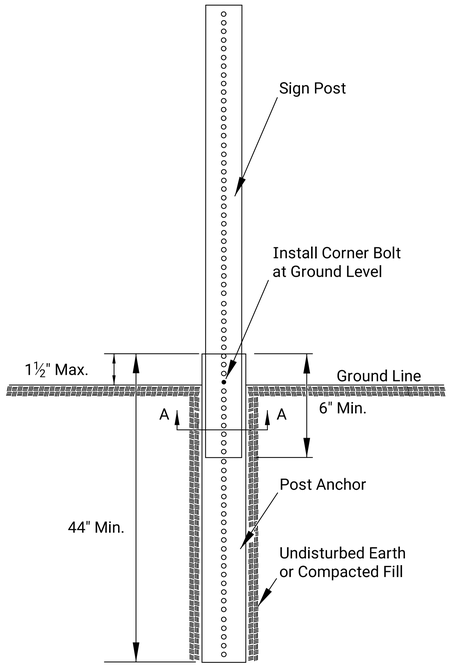
KDOT Graphics Certified 12-16-2022 Sh. No. 48

KDOT Graphics Certified

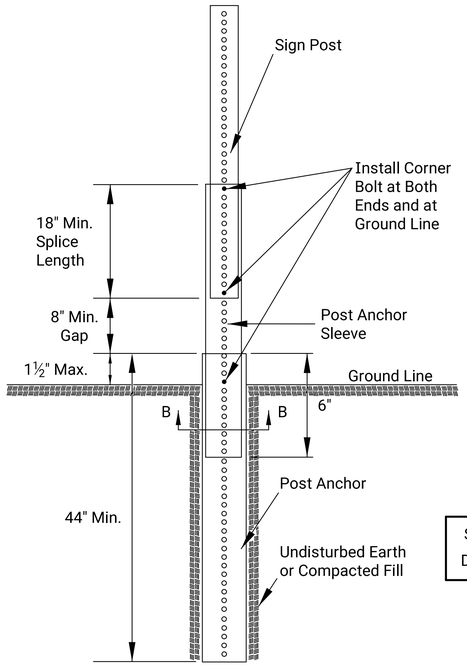
Plotted by: jbeckman 11-SEP-2024 15:45
File : te710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	49	53

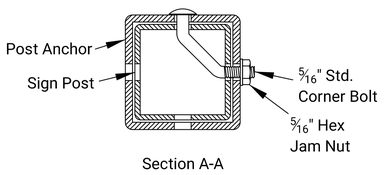
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



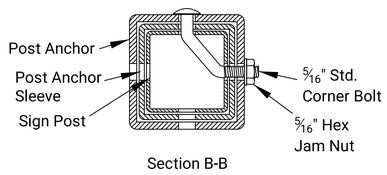
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

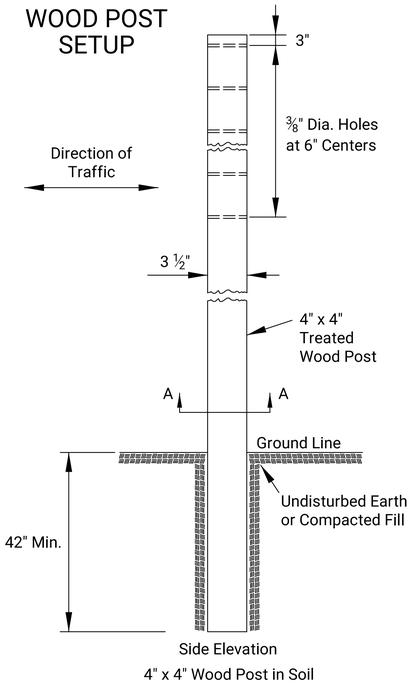


Section B-B

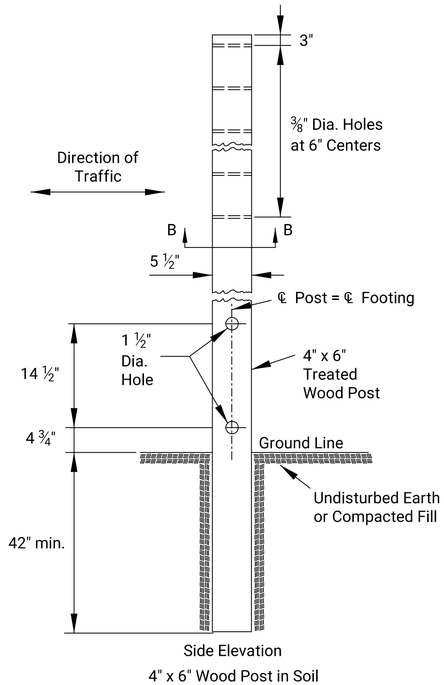
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

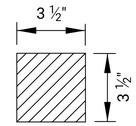
WOOD POST SETUP



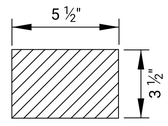
Side Elevation
4" x 4" Wood Post in Soil



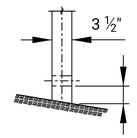
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



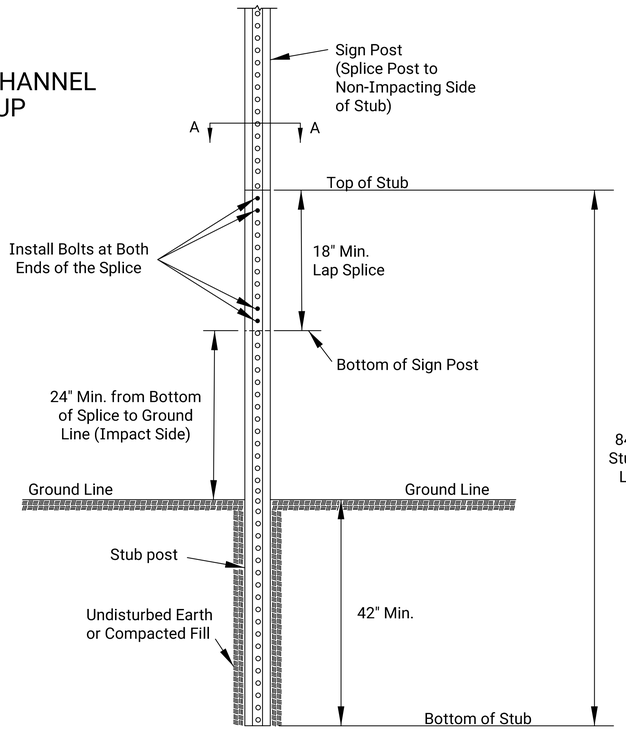
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

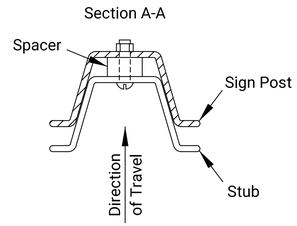
3 LB/F U-CHANNEL SETUP



Notes:

Place two bolts at both ends of the splice through the holes nearest the ends of the splice.

Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

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

KDOT Graphics Certified 07-18-2022 Sh. No. 49

KDOT Graphics Certified

Plotted by : jbeckman 11-SEP-2024 15:46
File : te712.dgn

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

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

SUMMARY OF TRAFFIC CONTROL DEVICES ~~(EACH PER DAY)~~

✳ Quantity most used on the project at any one time

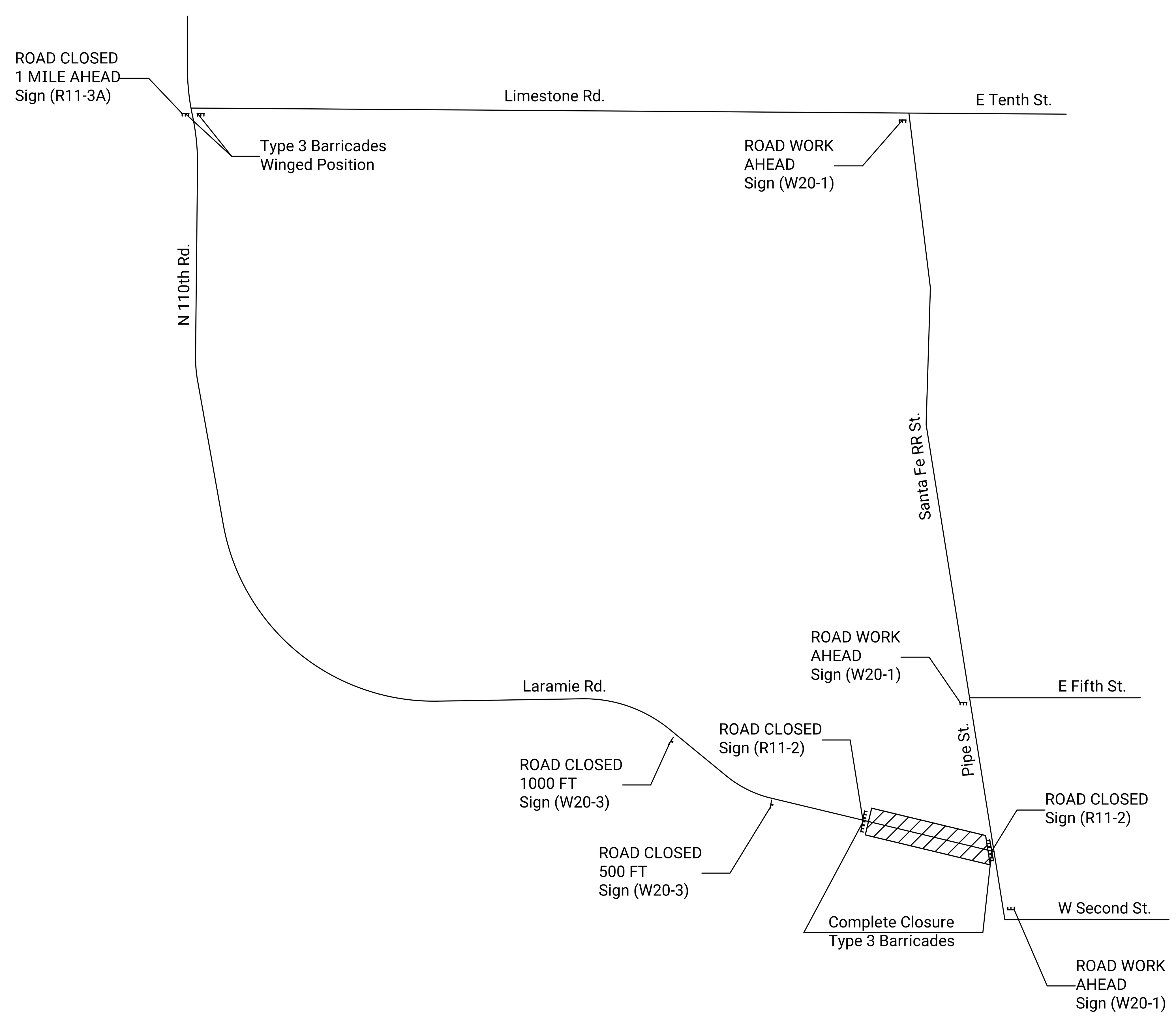
Work Zone Signs ✳			
Sign No.	Size - Sq.Ft.		
	0-9.25	9.26-16.25	16.26 & Over
W20-7		2	
R11-3A		1	
R11-2		2	
W20-1		3	
W20-3		2	

Barricades ✳	
Type 3 (4' to 12')	Pedestrian
8	

Channelizing Devices ✳		
Fixed	Portable	Pedestrian

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	6
Work Zone Warning Light (Red Type "B" High Intensity)	
Arrow Display	
Portable Changeable Message Sign	

Recapitulation of Quantities		
Item	Quantity	Unit
Work Zone Signs (0 to 9.25 Sq.Ft.)		Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)		Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')		Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)		Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)		Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)		Each Per Day
Arrow Display		Each Per Day
Portable Changeable Message Sign		Each Per Day
Pavement Marking (Temporary)		
4" Solid (Type I)		Sta./Line
4" Solid (Type II)		Sta./Line
4" Broken (8.0') (Type I)		Sta./Line
4" Broken (8.0') (Type II)		Sta./Line
4" Broken (3.0') (Type I)		Sta./Line
4" Broken (3.0') (Type II)		Sta./Line
4" Dotted Extension (Type I)		Sta./Line
4" Dotted Extension (Type II)		Sta./Line
Solid (Line Masking Tape)		Sta./Line
Broken (Line Masking Tape)		Sta./Line
Symbol (Type I)		Each
Symbol (Type II)		Each
Flexible Raised Pavement Marker (4" Broken (8.0'))		Sta./Line
Flexible Raised Pavement Marker (4" Broken (3.0'))		Sta./Line
Pavement Marking Removal		Lin. Ft.
Work Zone Sign (Special) (16.25 Sq. Ft. & Less)		Each
Work Zone Sign (Special) (16.26 Sq. Ft. & More)		Each
Rigid Raised Pavement Marker (Type I)		Each
Rigid Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)		Lump Sum
Traffic Control (Initial Set Up)		Lump Sum
Traffic Control	Lump Sum	Lump Sum
Flagger (Set Price)	1	Hour



NO.	DATE	REVISIONS	BY	APP'D

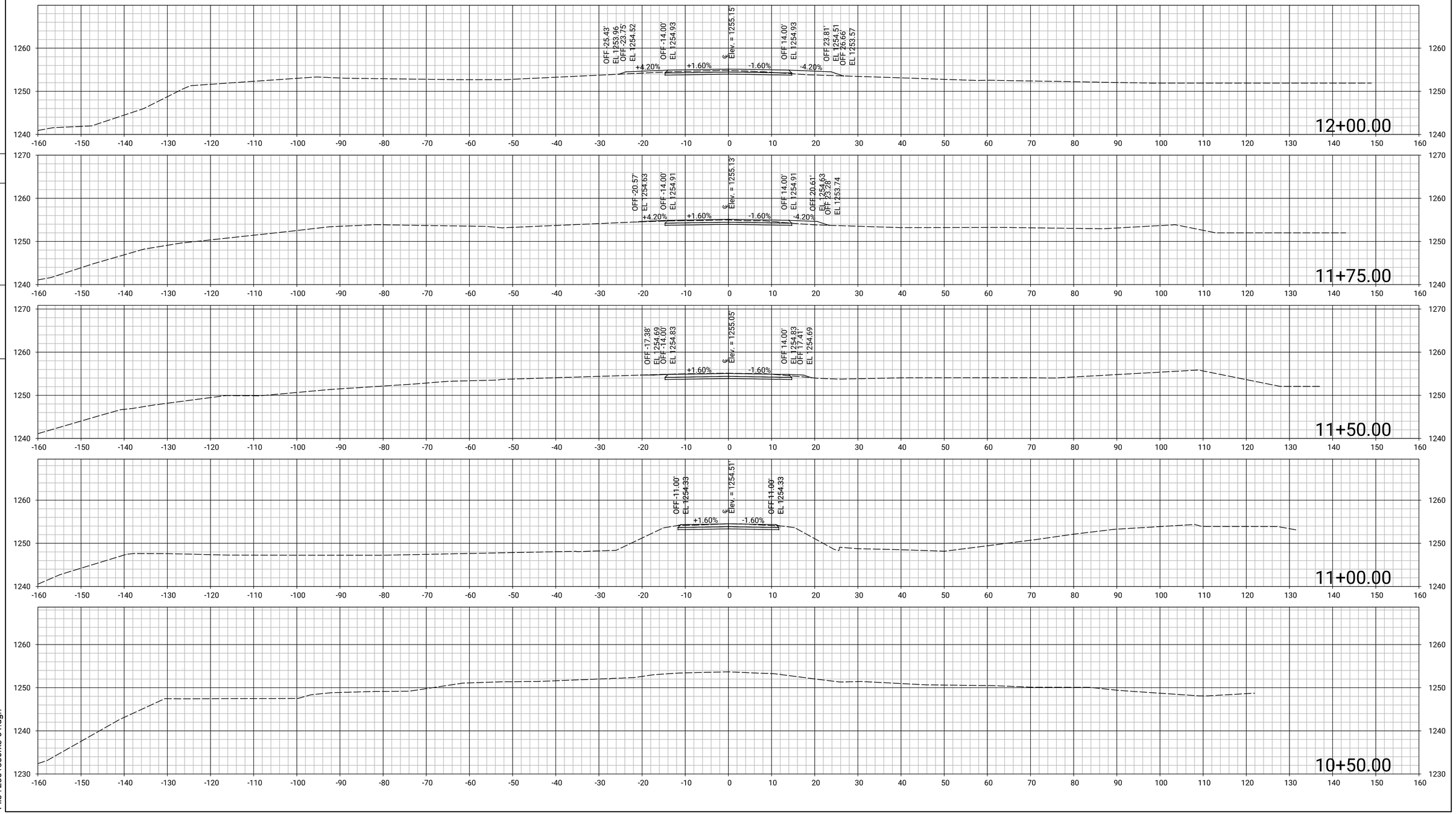
KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SUMMARY OF DEVICES RECAPITULATION OF QUANTITIES

TE795

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	51	53

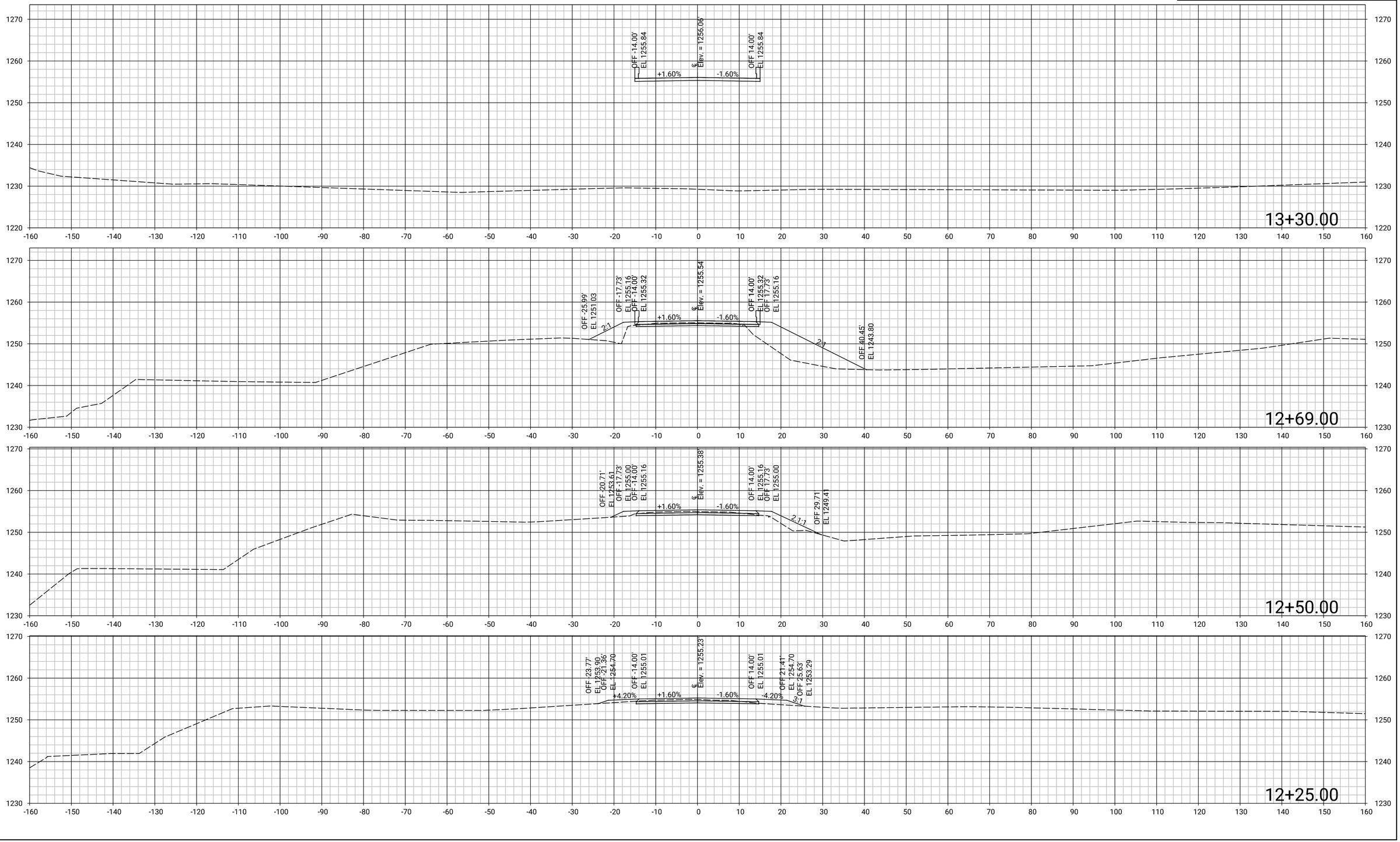


DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : jbeckman 11-SEP-2024 15:46
File : 2301830rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	52	53

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



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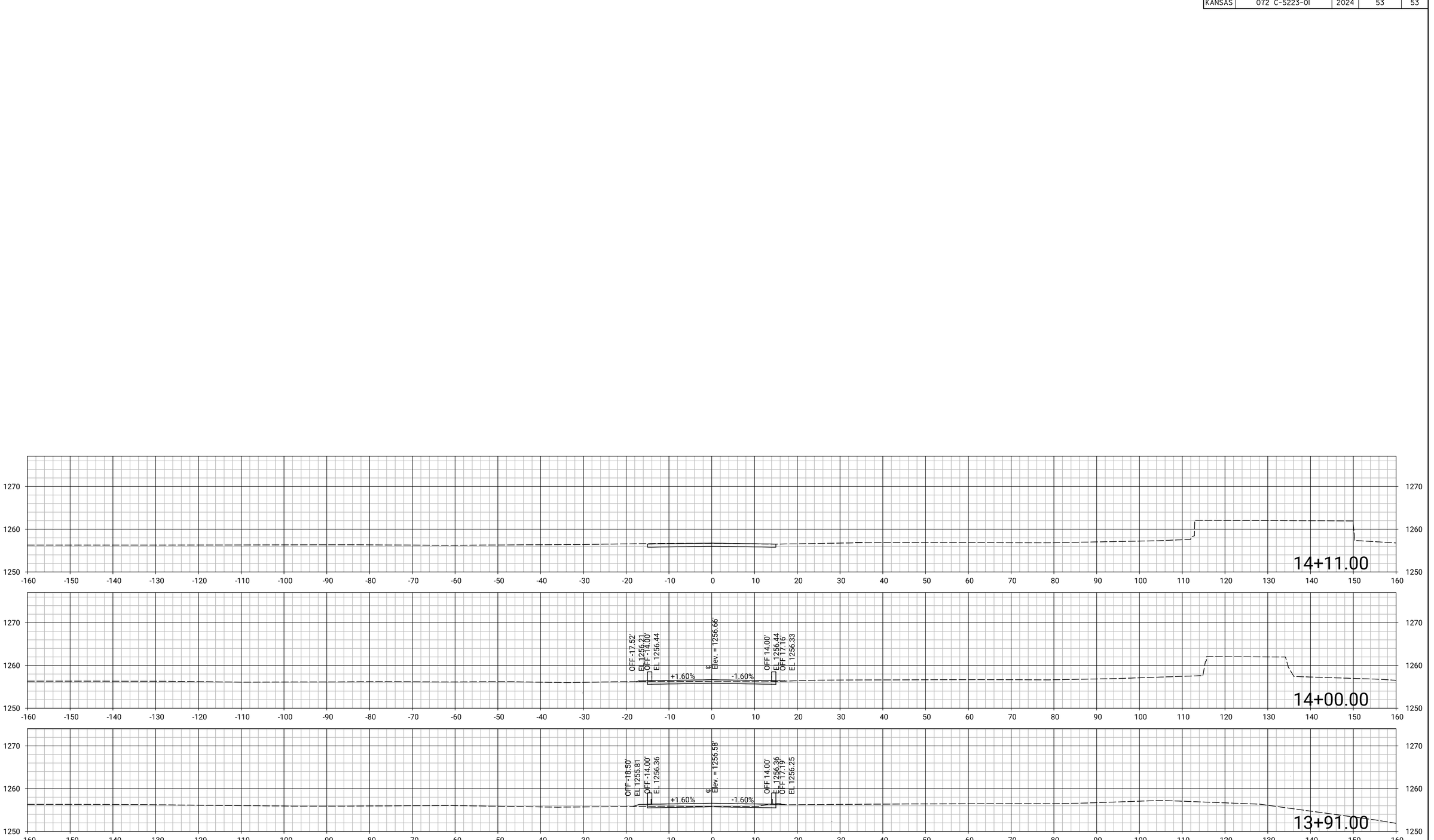
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	072 C-5223-01	2024	53	53

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



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