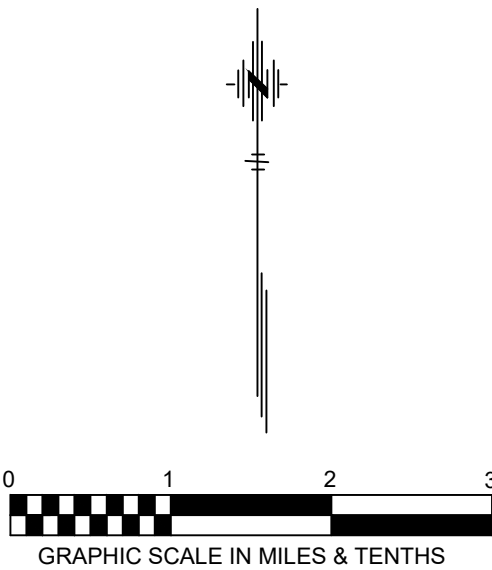


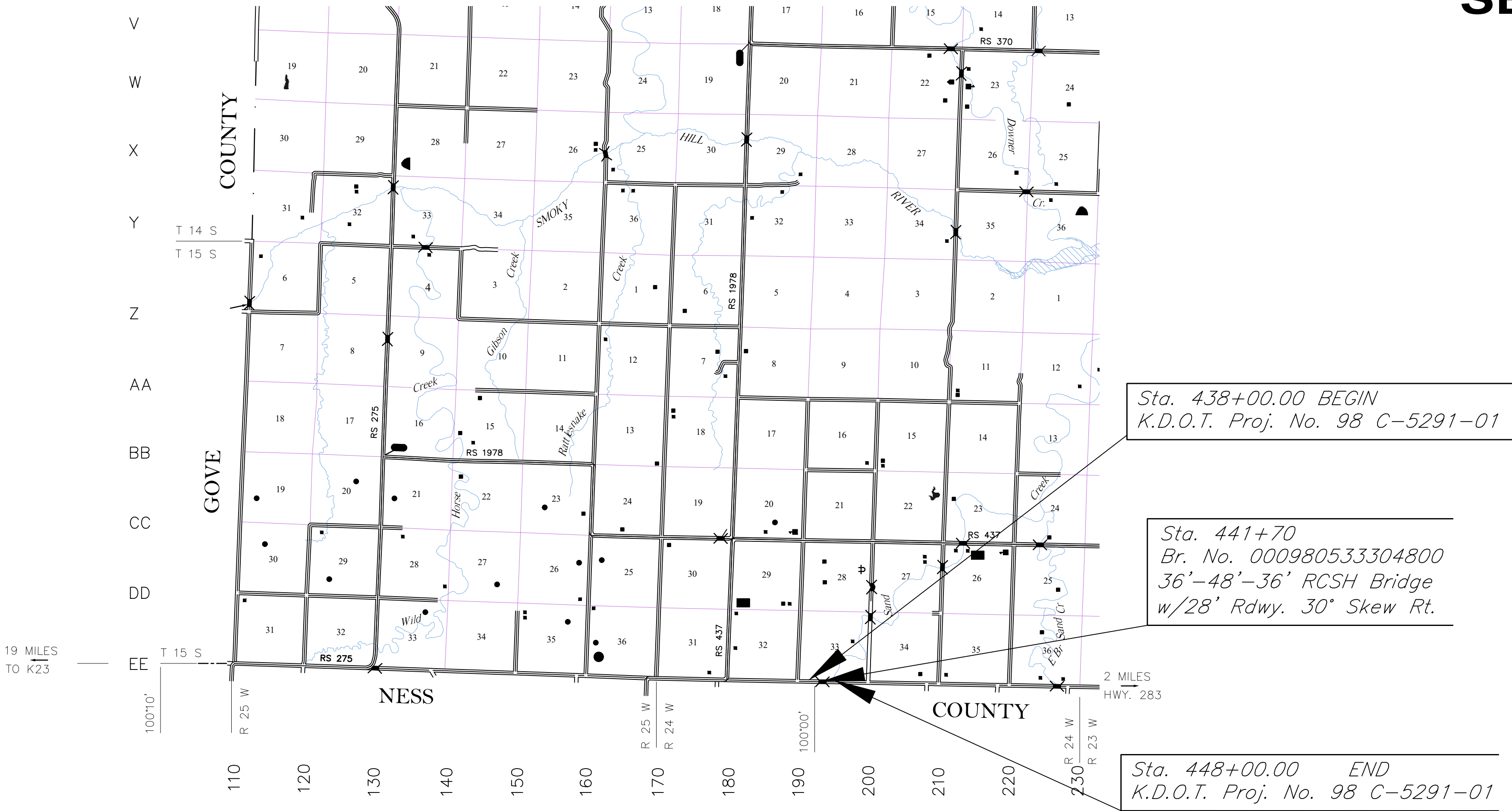
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	1	49
F.A. NO. STP-C529(101)				

GRADING
BRIDGE
SEEDING

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



STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED
98 C-5291-01
FEDERAL AID PROJECT
TREGO COUNTY



INDEX OF SHEETS

Sheet No.	
1	Title Sheet
2	Typical Grading Section
3	Plan Profile
4-8	Guardrail Details
9	Contour Map
10-18	Bridge Details
19	Slope Protection
20	Standard Pile Details
21	Bridge Excavation
22	Supports & Spacers for Reinforcing Steel
23	Summary of Quantities
24-33	Temporary Erosion Control and Pollution Control
34	Seeding
35-41	Traffic Control
42-49	Cross Sections

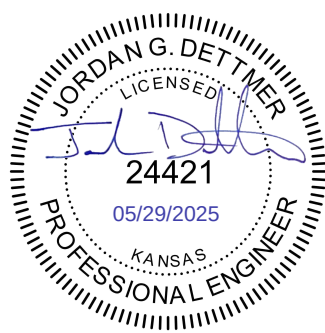
DESIGN DESIGNATION

AADT(2019)	20
AADT(2039)	40
DHV	
D	
T	
V	35 mph
C of A	None
Clear Zone	10 feet

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	_____

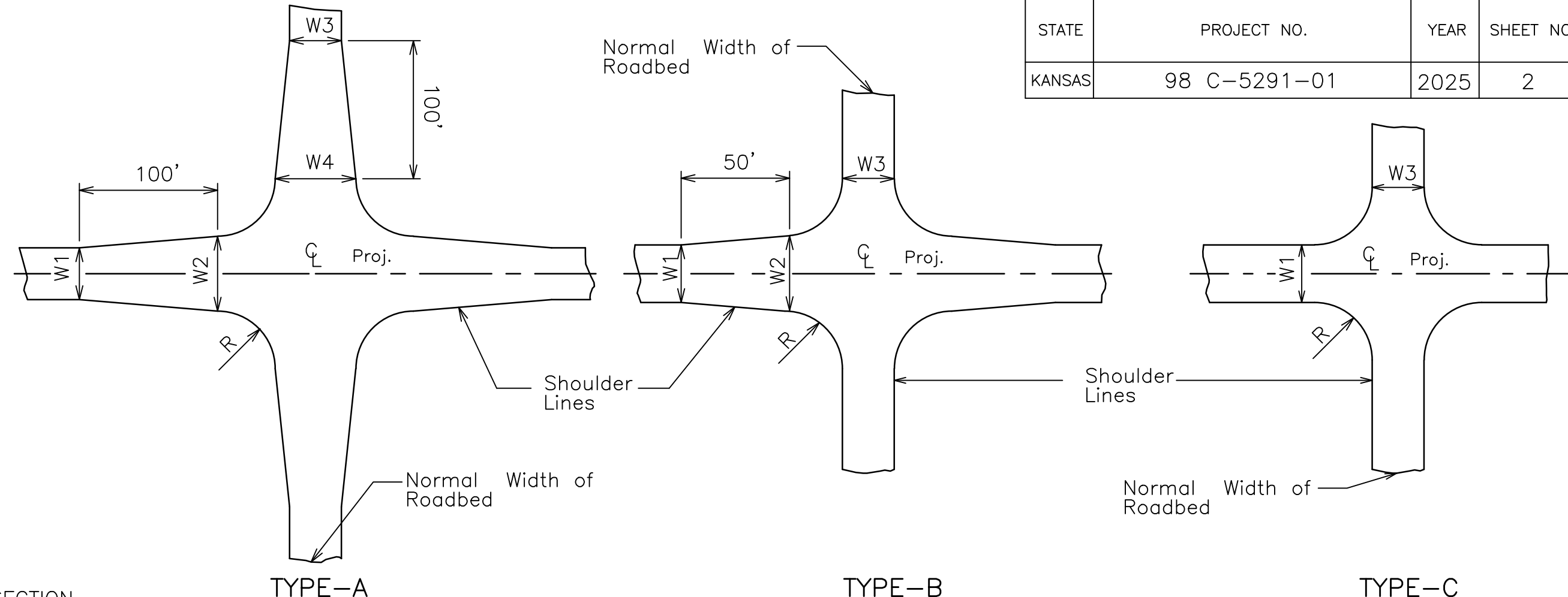
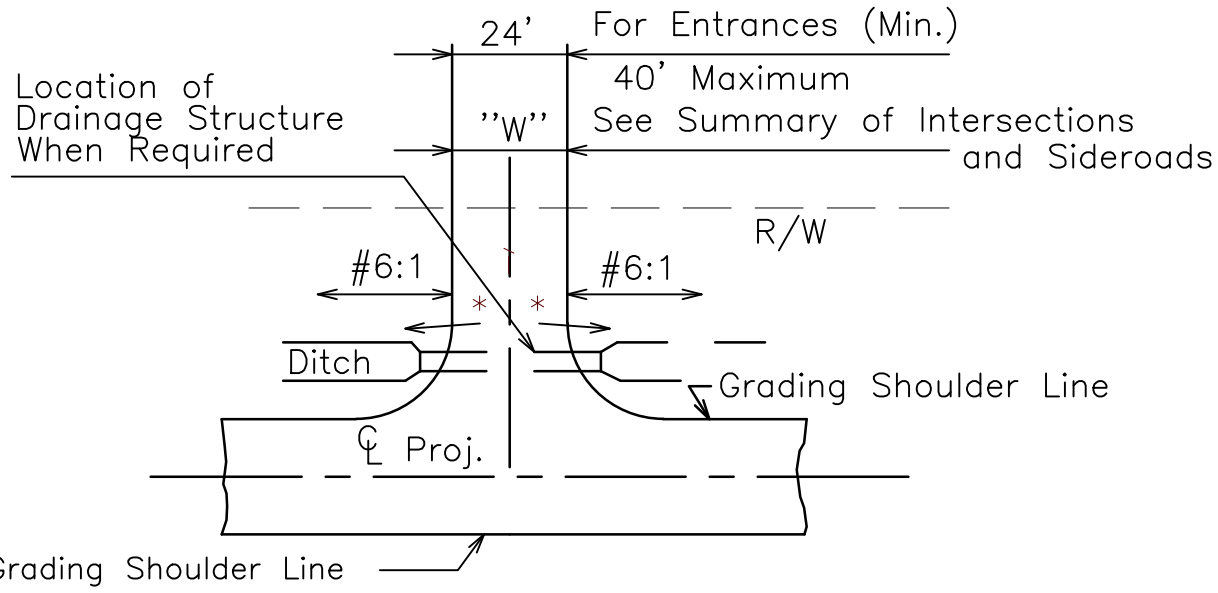
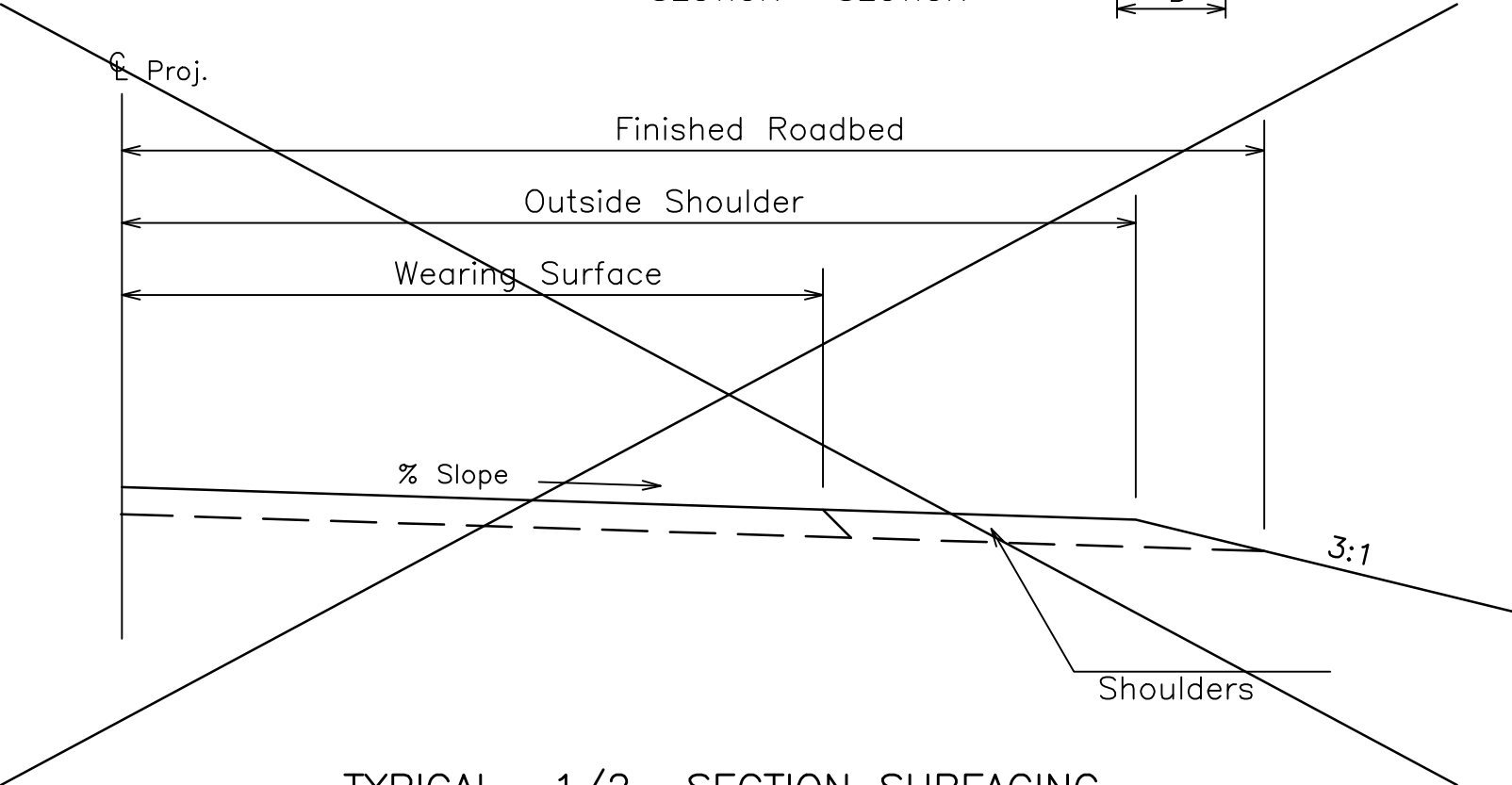
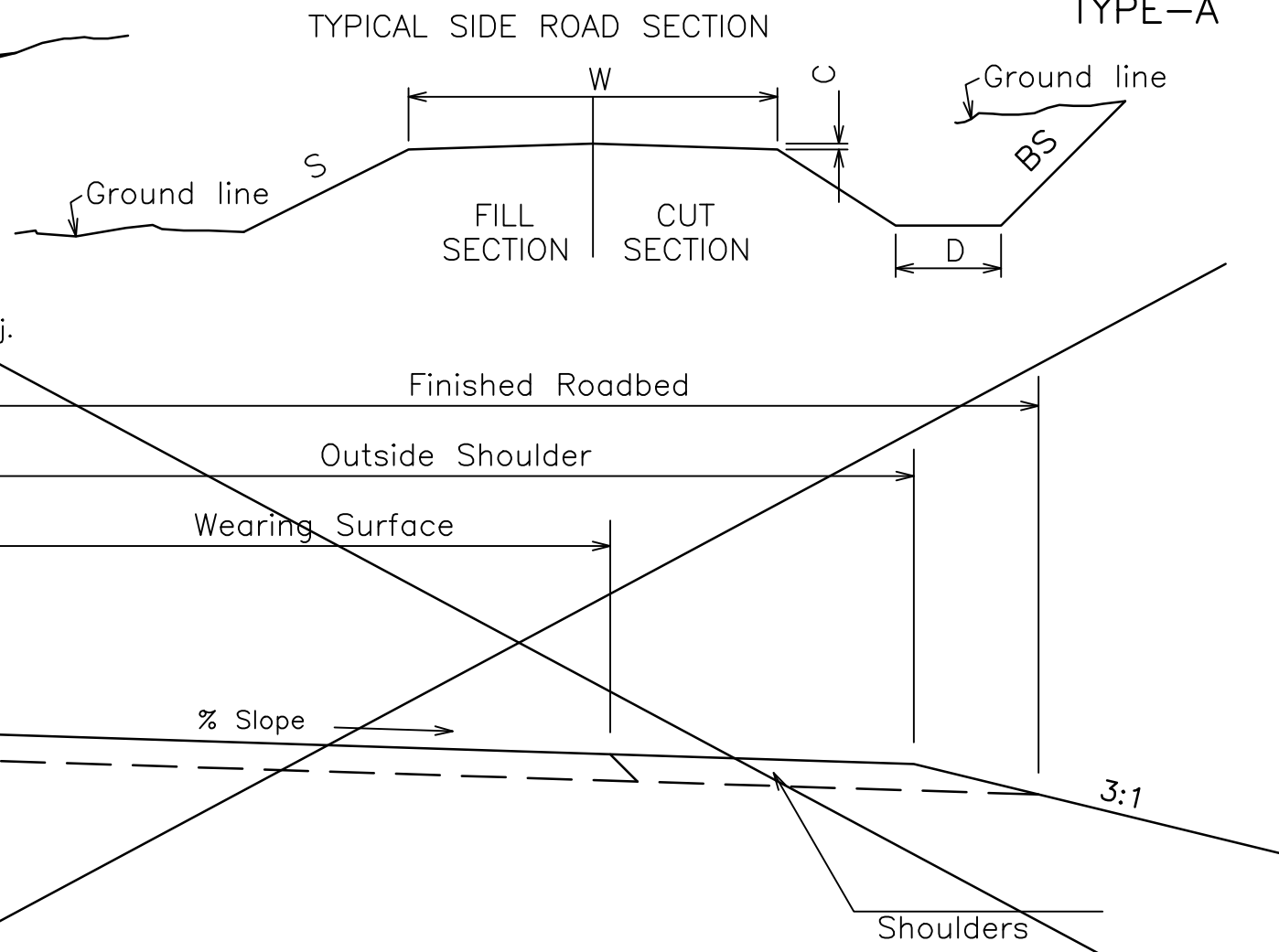
GROSS LENGTH OF PROJECT	1000.00	FT.	
EXCEPTIONS	0.00	FT.	
ADDITIONS	0.00	FT.	
NET LENGTH OF PROJECT	1000.00	FT.	0.189 MILES
NET LENGTH OF BRIDGES	122.89	FT.	0.023 MILES
NET LENGTH OF ROAD	877.11	FT.	0.166 MILES



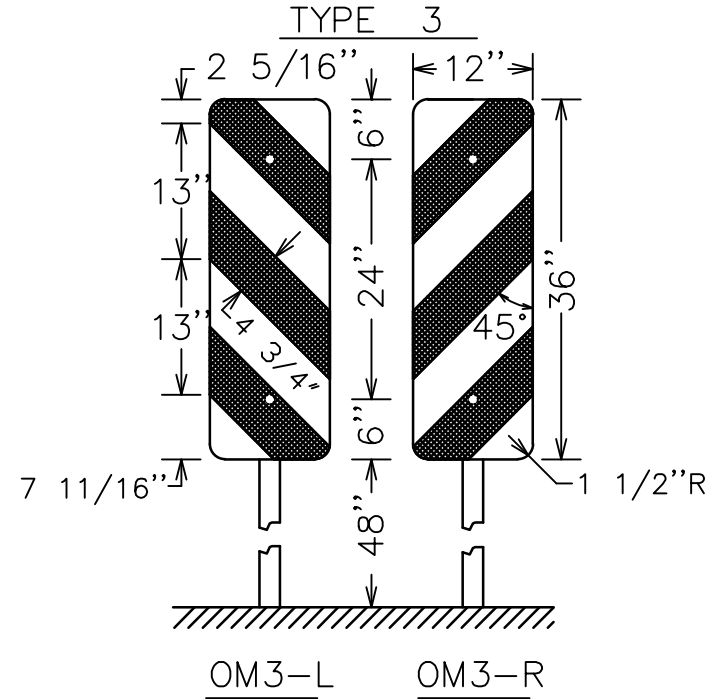
PLANS PREPARED BY: PENCO ENGINEERING, P.A. PLAINVILLE, KANSAS
RECOM. FOR APPROVAL-DATE <i>Melvin Rohr</i>
MELVIN ROHR PUBLIC WORKS DIRECTOR

Approved: Jun 03, 2025 Date
<i>D. M. Shil</i> State Transportation Engineer
By: <i>Dawn Mphurke</i> Chief, Bureau of Local Projects
KANSAS DEPARTMENT OF TRANSPORTATION

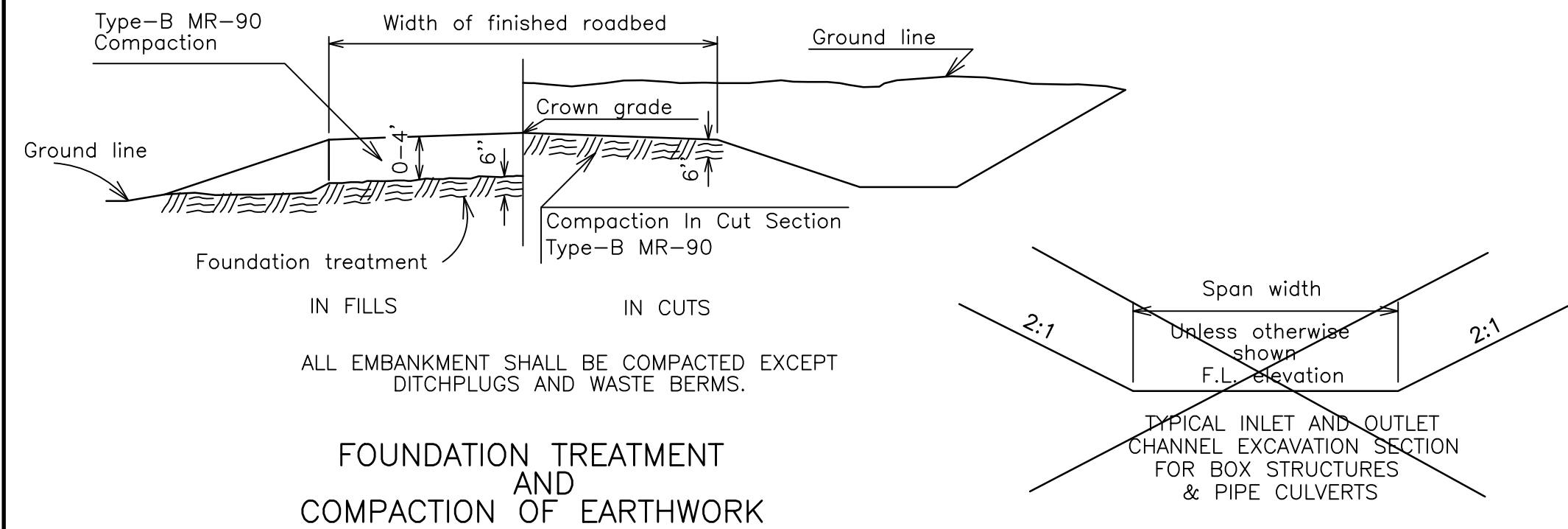
X:\ac2\kda\KDS291-Trego-Off\35\ACAD\Title.dwg | Title - Layout1 | 1/10/2025 3:18 PM

[illegible]

OBJECT MARKER



SUMMARY OF OBJECT MARKERS AND SIGNS						
STATION TO STATION	SIDE	TYPE OF STRUCT.	TYPE OF SIGN	OBJECT MARKER		REMARKS
				TYPE	NO.	
441+00	Rt.	Bridge	Obj. Marker	OM-3R	1	
441+17	Lt.	Bridge	Obj. Marker	OM-3L	1	
442+23	Rt.	Bridge	Obj. Marker	OM-3L	1	
442+40	Lt.	Bridge	Obj. Marker	OM-3R	1	
Total					4	
☞As you face bridge end from approach *Back-to-Back [Sign(s) on Both Sides of Post]						



GENERAL NOTES

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

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

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

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

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

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

Mount Object Markers on 11' galvanized flanged channel posts (2lbs./ft.) punched with $\frac{3}{8}$ " diameter holes on 1" centers for the top 4'.

Pay for Object Markers directly.

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

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
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL GRADING SECTION

LP907				
FHWA APPROVAL			APP'D	RJS
DESIGNED	DETAILED	DMK	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	RJS	QUAN.CK.	TRACE CK.

Power: Western Cooperative Electric
1-785-743-5561

PROJECT COORDINATE SYSTEM: KRCS
HORIZONTAL DATUM: NAD83(2011) Kansas Regional Coordinate
System Zone 4 Hays, using Geoid 18(Conus)

DATUM BENCHMARK: $\frac{5}{8}$ "x24" rebar w/green cap "CONTROL
PENCO" 1' South of fence post
Sta. 434+16.65, 26.4' Lt. Project C,
Elev. = 2416.70

NOTE: The Contractor shall remove the existing 69.9' SBMC (Br. No. 000980533404800) with 19.5' rdwy. width. Steel girders shall be stockpiled on County ROW for County to remove with their own forces and funds. All other materials shall become the property of the Contractor and be removed from the site.

The Contractor shall excavate the channel and complete the embankments prior to construction of the RCSH bridge.

Existing Bridge consists of: steel beams, concrete deck, pier, wings, and abutments.

The contractor shall construct the shoulder widening and install Steel Plate Guardrail (Galv.) and Guardrail End Terminal at each quadrant of the new RCSH Bridge, Sta. 441+70. See Sheet No. 4-8 for details.

SW Cor Sec 33, T15S, R24W
Found 22"x2.5" limestone w/1/2" rebar on West face

1. Mag nail in Top Fce Post
2. Mag nail in Top Fce Post
3. Mag nail in East face PP
4. 1/2" rebar on West face of Stone
5. Centerline of County Road EE
6. Inline with County Road 190 Ave

Sta. 422+40.00 3.00' Rt.
N:436176.99 E:4341299.90

<i>Ref.</i>	<i>POT</i>
<i>1.2' Deep</i>	<i>1. Office Set</i>
<i>54.9' NE</i>	<i>2. Section Line</i>
<i>59.5' ENE</i>	<i>3. Sta. 437+00.00</i>
<i>37.9' SE</i>	<i>4. No other ties available</i>
<i>0.6' W</i>	<i>N:436175.78, E:4342759.90</i>
<i>2' N</i>	

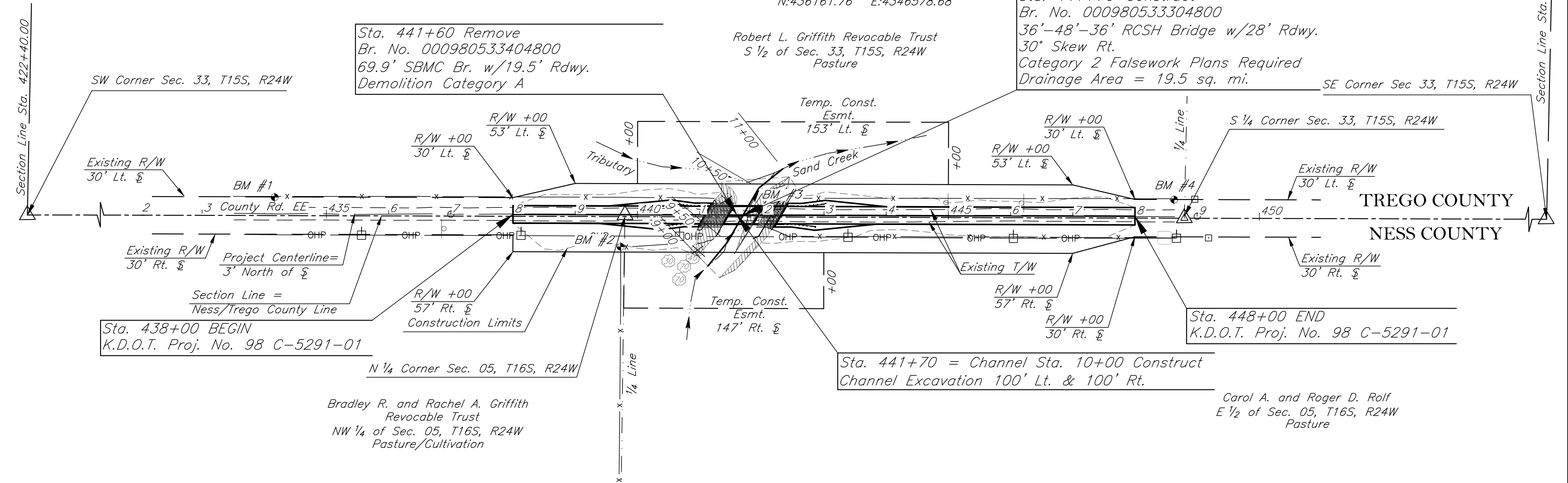
Ref. POT
3.0' S 1. Office Set
2. Section Line
3. Sta. 449+00.00
4. No other ties available
N:436172.32 E:4343959.90

Ref. SE Cor Sec 33, T15S, R24W
Found 9"x6"x4" limestone w/5/8" on West face
3.0' S
1. Mag nail & CLS42 wshr in top of fence post
2. Nail & wshr in top of fce post
3. Mag nail & CLS42 wshr in top of fce post
4. Mag nail & CLS42 wshr in top of fce post
5. rebar with pink plastic cap stamped "PENCO
6. Inline with County Road EE
7. Sta. 475+18.81 3.00' Rt.
N:436161.76 E:434657.68
Sta. 44

Ref.
1.0' Deep
57.2' NNE
37.3' SSW
46.1' NW
32.1' NNW
0.2' W

Sta. 441+70 Construct
Br. No. 000980533304800
36'-48'-36' RCSH Bridge w/28' Rdwy.
30° Skew Rt.
Category 2 Falsework Plans Required
Drainage Area = 19.5 sq. mi.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	3	49

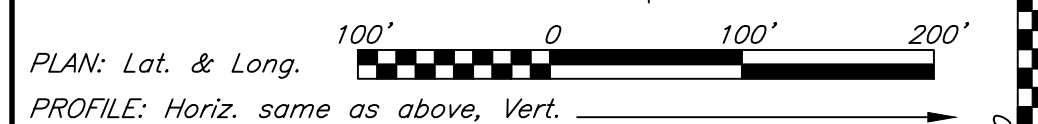


BM#1 5/8"x24" rebar w/green cap "CONTROL PENCO" 1' South of fence post
Sta. 434+16.65, 26.4' Lt. Elev. = 2416.70
N:436203.01 E:4342476.64

BM#2 5/8"x24" rebar w/green cap "CONTROL Penco" 1' North of fence corner
Sta. 439+73.15, 51.5' Rt. Elev. = 2393.72
N:436123.51 E:4343032.90

BM#3 Mag nail in top of wing concrete
Sta. 441+93.7, 9.3' Lt. Elev. = 2370.69
N:436183.65 E:4343255.66

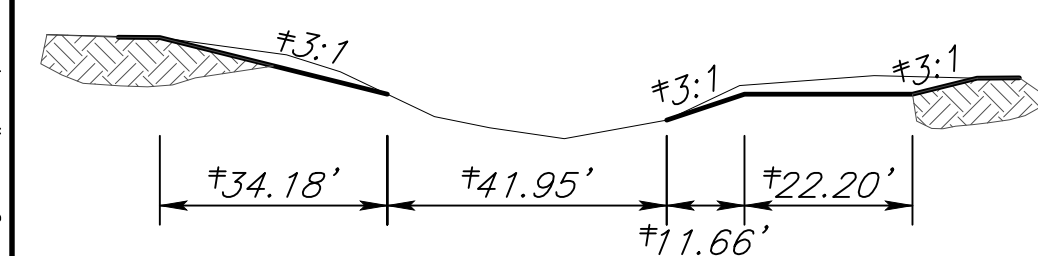
BM#4 5/8"x24" rebar w/ green cap "CONTROL PENCO" 1' South of fence post
Sta. 448+62.82, 26.7' Lt. Elev. = 2377.19
N:436199.08 E:4343922.79



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

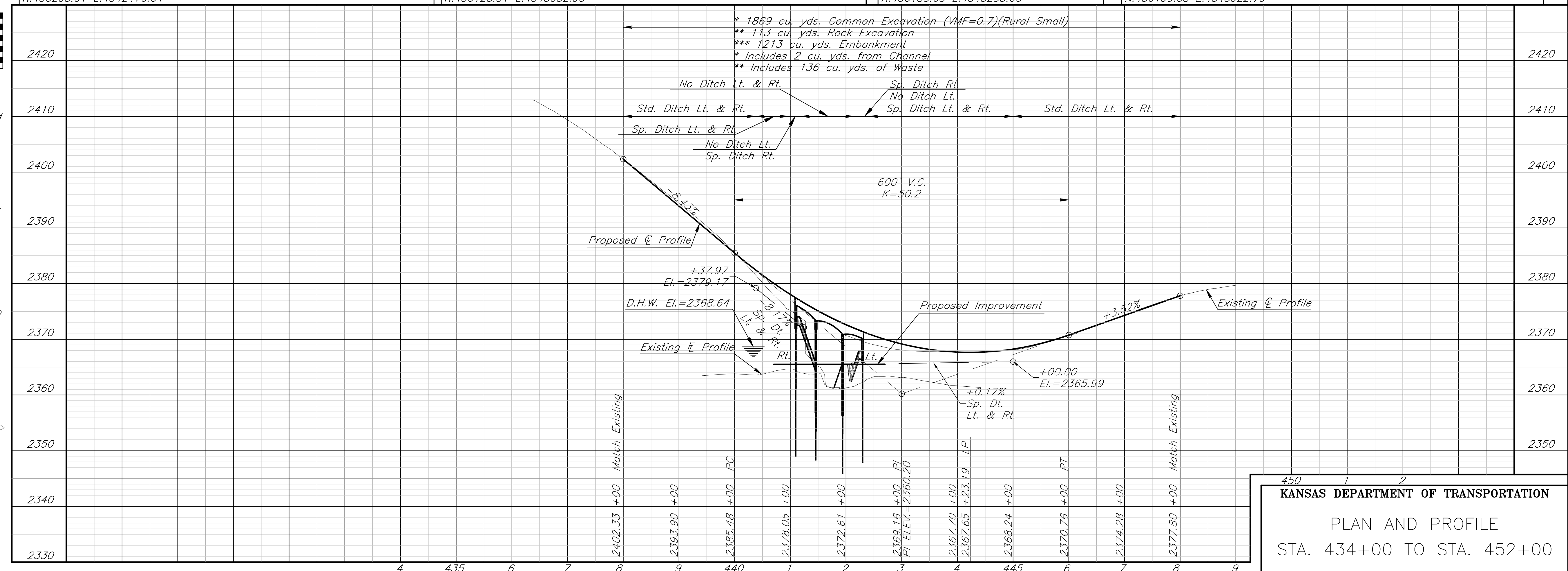
Any material buried or stockpiled beyond approved construction limits would require additional archeological investigations unless buried in a previously approved borrow location.

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



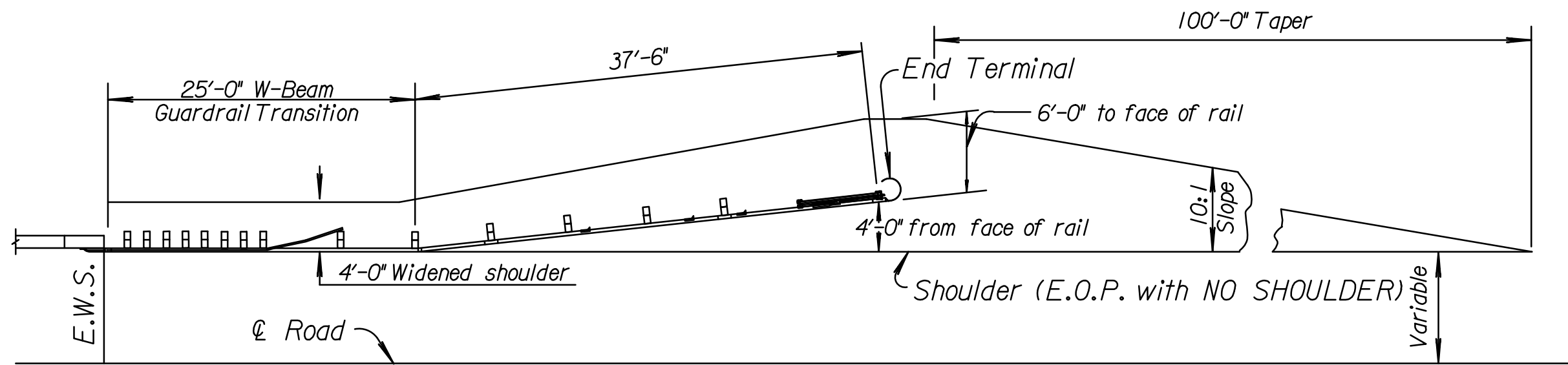
TYPICAL CHANNEL SECTION
Sta. 9+50 to Sta. 10+50

‡Normal to Channel

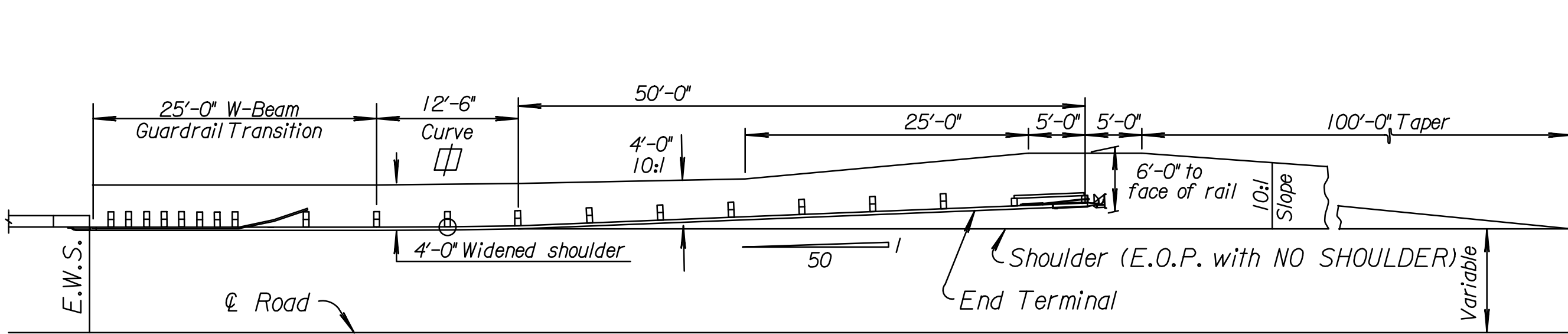


KANSAS DEPARTMENT OF TRANSPORTATION

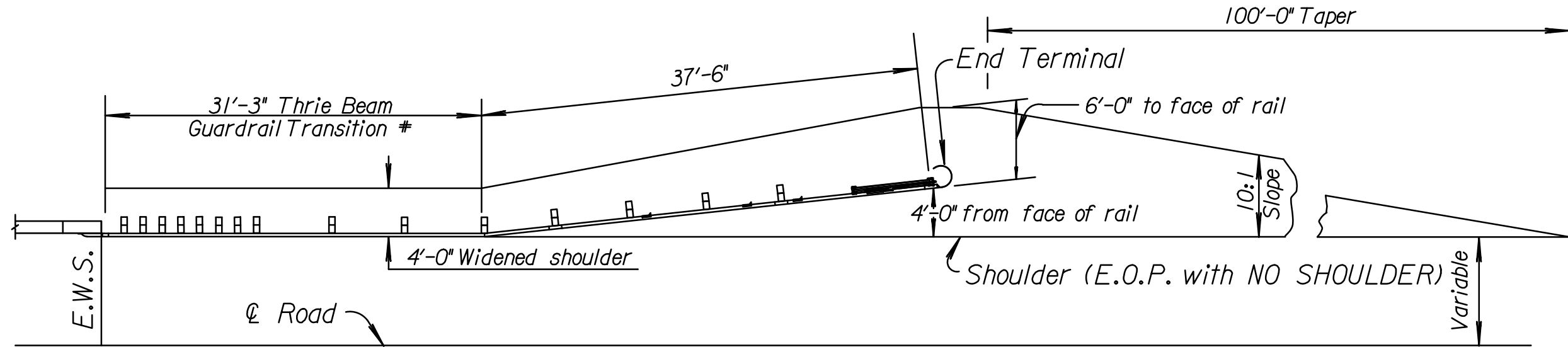
PLAN AND PROFILE
STA. 434+00 TO STA. 452+00



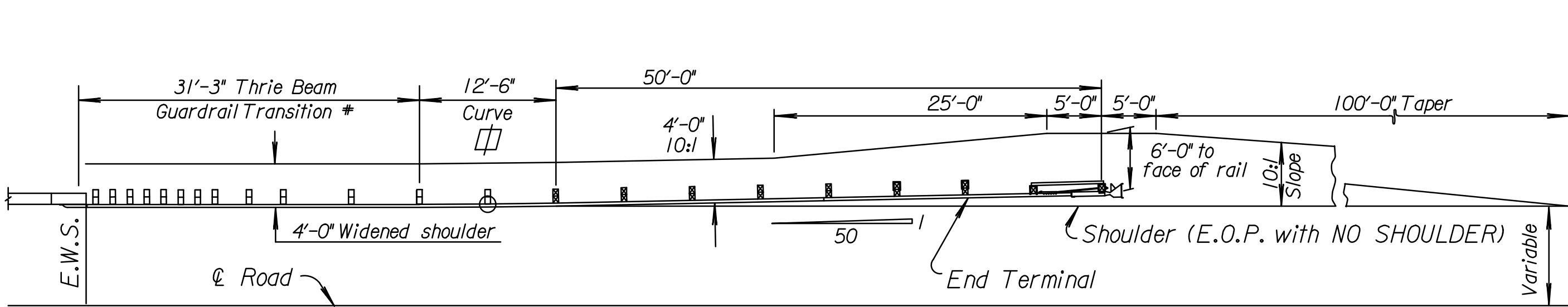
FLARED DESIGN - RUB RAIL (Layout 1)



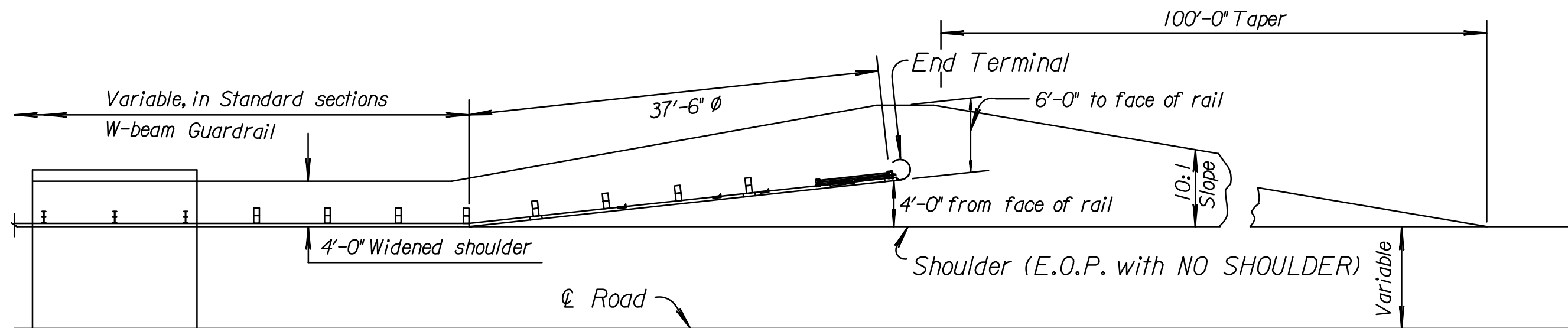
PARALLEL DESIGN - RUB RAIL (Layout 2)



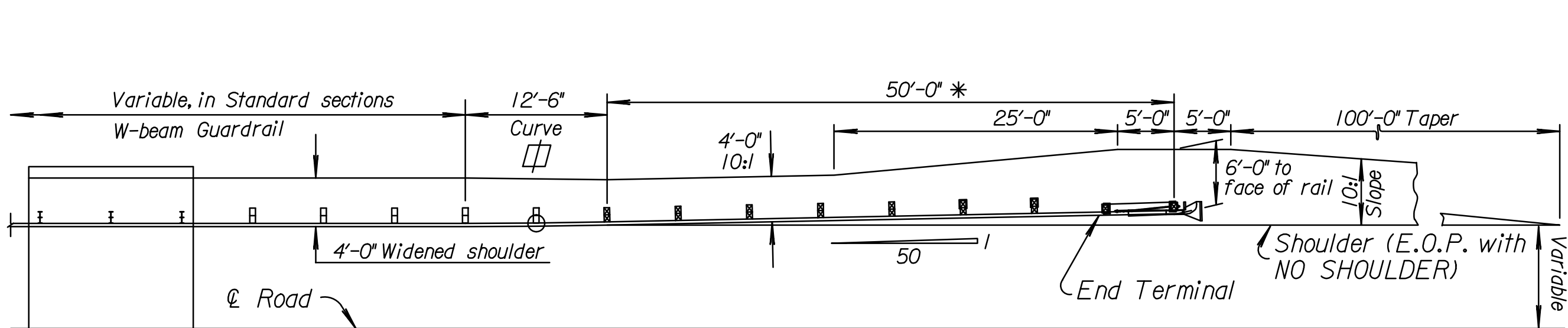
FLARED DESIGN - THRIE BEAM (Layout 3)



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						Required Standard Drawing
	I	2	3	4	5	6	
<i>SRT</i>	X		X		X		<i>RD606</i>
<i>FLEAT</i>	X		X		X		<i>RD606</i>
<i>SKT</i>		X		X		X	<i>RD606</i>

SUMMARY OF STEEL PLATE GUARDRAIL										
Location	Side	Layout		Additional Standard Sections Lin. Ft.	Total Pay Length Lin. Ft.	Layout 1 or 3		Layout 2, 4, or 6	Layout 5	
		No.	Lin. Ft.*			Gd. Rail End Term. (SRT) Alt. #1 Each	Gd. Rail End Term. (FLEAT) Alt. #2 Each	Gd. Rail. End Term. (SKT) Each	Gd. Rail End Term. (SRT) Alt. #1 Each	Gd. Rail End Term. (FLEAT) Alt. #2 Each
Sta. 440+37.97	Rt.	1	25		25	1	1			
to 441+00.47										
Sta. 440+54.72	Lt.	1	25		25	1	1			
to 441+17.22										
Sta. 442+22.78	Rt.	1	25		25	1	1			
to 442+85.28										
Sta. 442+39.52	Lt.	1	25		25	1	1			
to 443+02.02										
TOTAL LENGTH					100	4	4			

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	4	49

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).

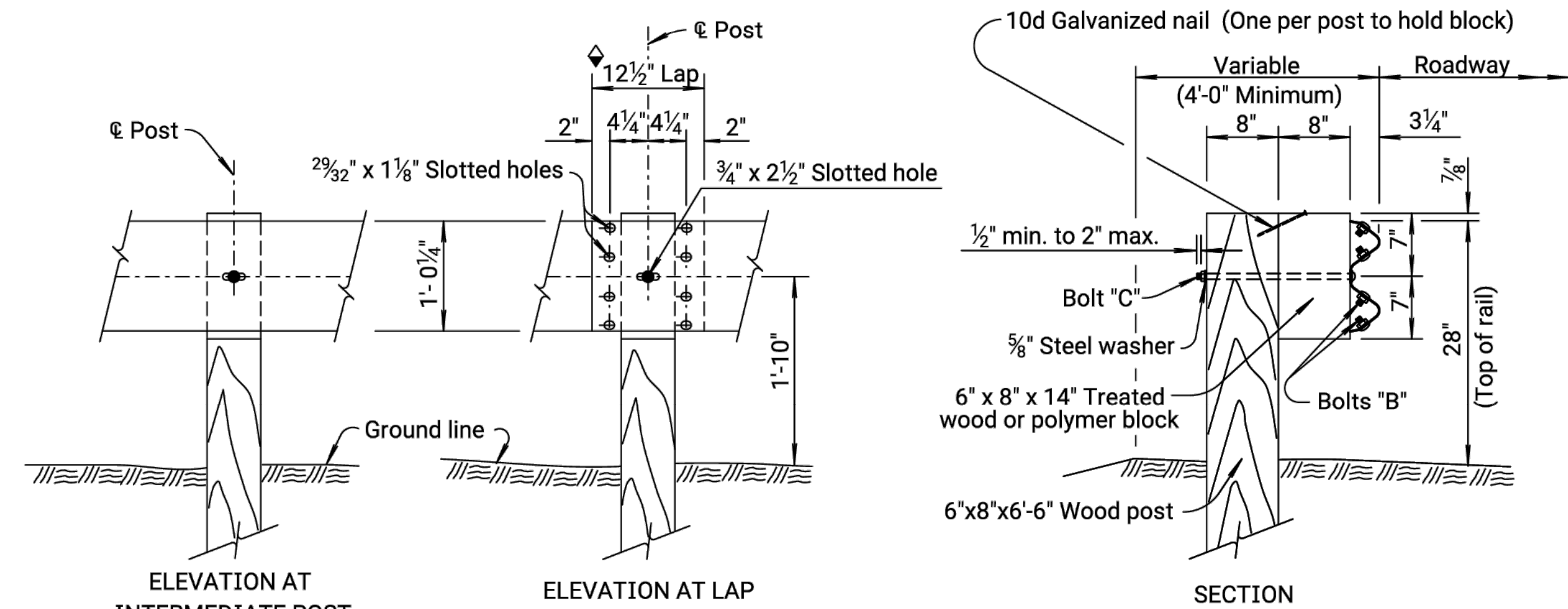
When using Thrie beam, attach Std. Drawings no. RD611 and RD608 or RD613.

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

Radius = 625.08'

12	02-21-19	Updated per Road Memo 18-02	WFL	MJS
11	10-30-17	Removed X-Lite	WFL	MJS
10	01-06-15	Added X-Lite, Removed ET-PLUS	TLS	RJS
9	11-9-05	Added length for Thrie Beam transition	REA	RJS
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
TYPICAL ALIGNMENT OF GUARDRAIL INSTALLATIONS				
LP620				
FHWA APPROVAL			APP'D.	
DESIGNED		DETAILED	TLS	QUANTITIES
DESIGN CK.		DETAIL CK.	RJS	QUAN. CK.
			TRACED	TRACE CK.

Plotted by : Kylee.Sims@ks.gov
File : rd611.dgn



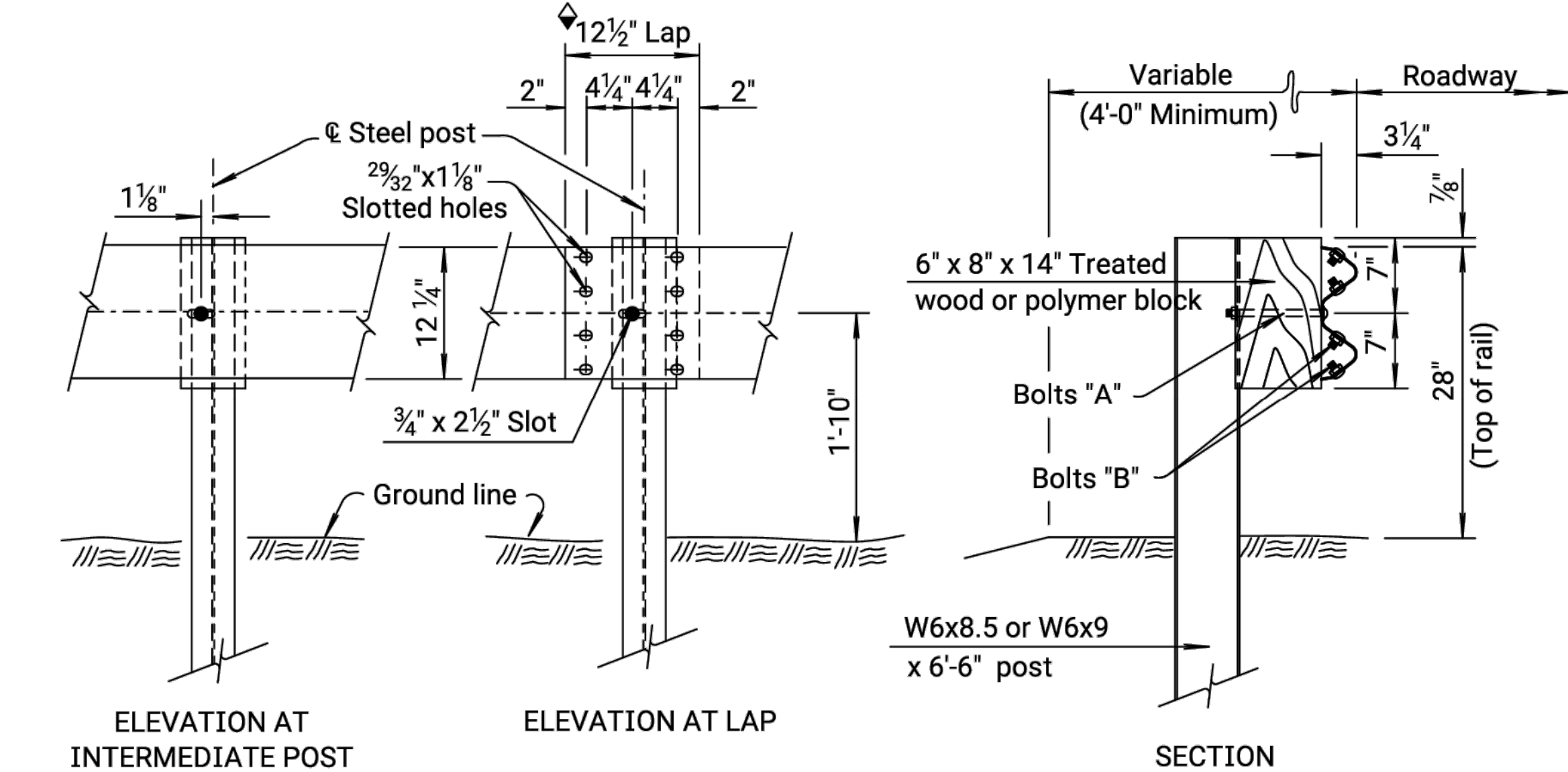
WOOD POSTS

Diagram illustrating a vertical post-and-rail fence section. The post is labeled "Post may be wood or steel". The rail is labeled "Wood or polymer block". The base of the post is shown embedded in a concrete foundation. The height of the post above the pavement edge is indicated as "1'-10\"".

Diagram illustrating the cross-section of a guardrail system. The diagram shows a vertical post (shaded area) and a horizontal rail (shaded area). The vertical post has a diameter of 1'-6" min. The horizontal rail has a height of 2'-0" min. The distance between the vertical post and the horizontal rail is 7" (Min.). The horizontal rail is supported by a base (shaded area) which is labeled "Guardrail Face". The base is shown with two cross-sections, one labeled "Var." (Variable).

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

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.



STEEL POSTS

Technical drawing of a bolt with the following dimensions and labels:

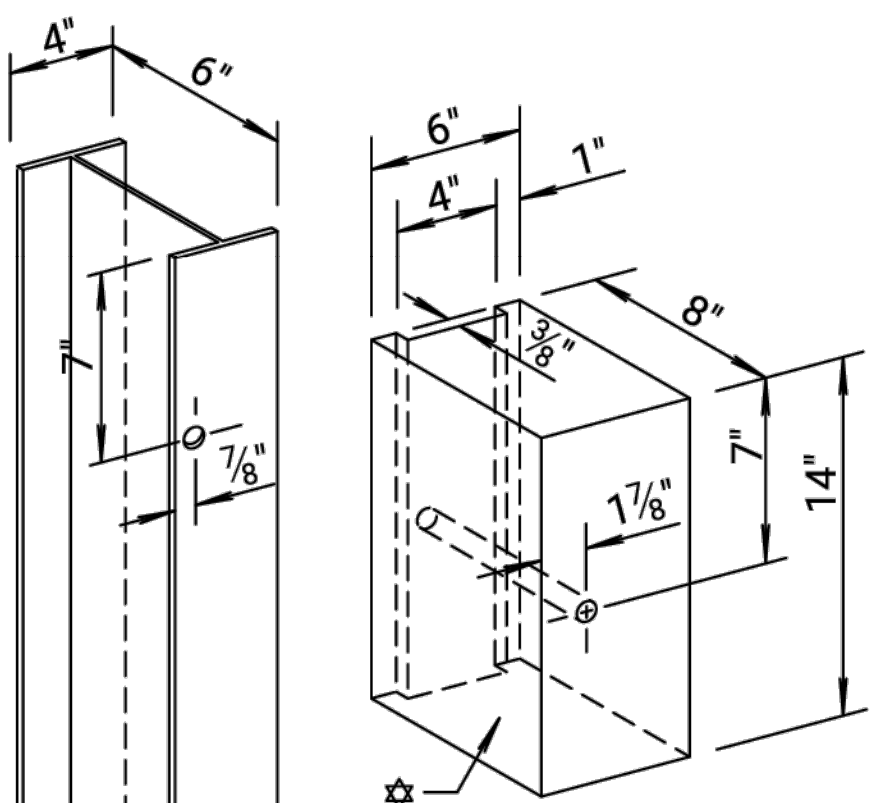
- Button head**: Label pointing to the hexagonal head.
- Oval shoulder**: Label pointing to the shoulder on the shank.
- Dimensions**:
 - Head width: $1\frac{5}{16}"$
 - Head height: $1\frac{15}{16}"$
 - Head thickness: $\frac{5}{16}"$
 - Head-to-shank transition: $\frac{7}{32}"$
 - Shank diameter: $\frac{5}{8}"$ dia.
 - Shank length: L
 - Hexagonal nut width: $1\frac{1}{4}"$
 - Hexagonal nut height: $1\frac{1}{16}"$

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.
NO.	DATE	REVISIONS	BY	APP'D

RD611			
FHWA APPROVAL		09-25-18	APP'D. Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	5	49

THRIE BEAM HOLE PUNCHING DETAILS

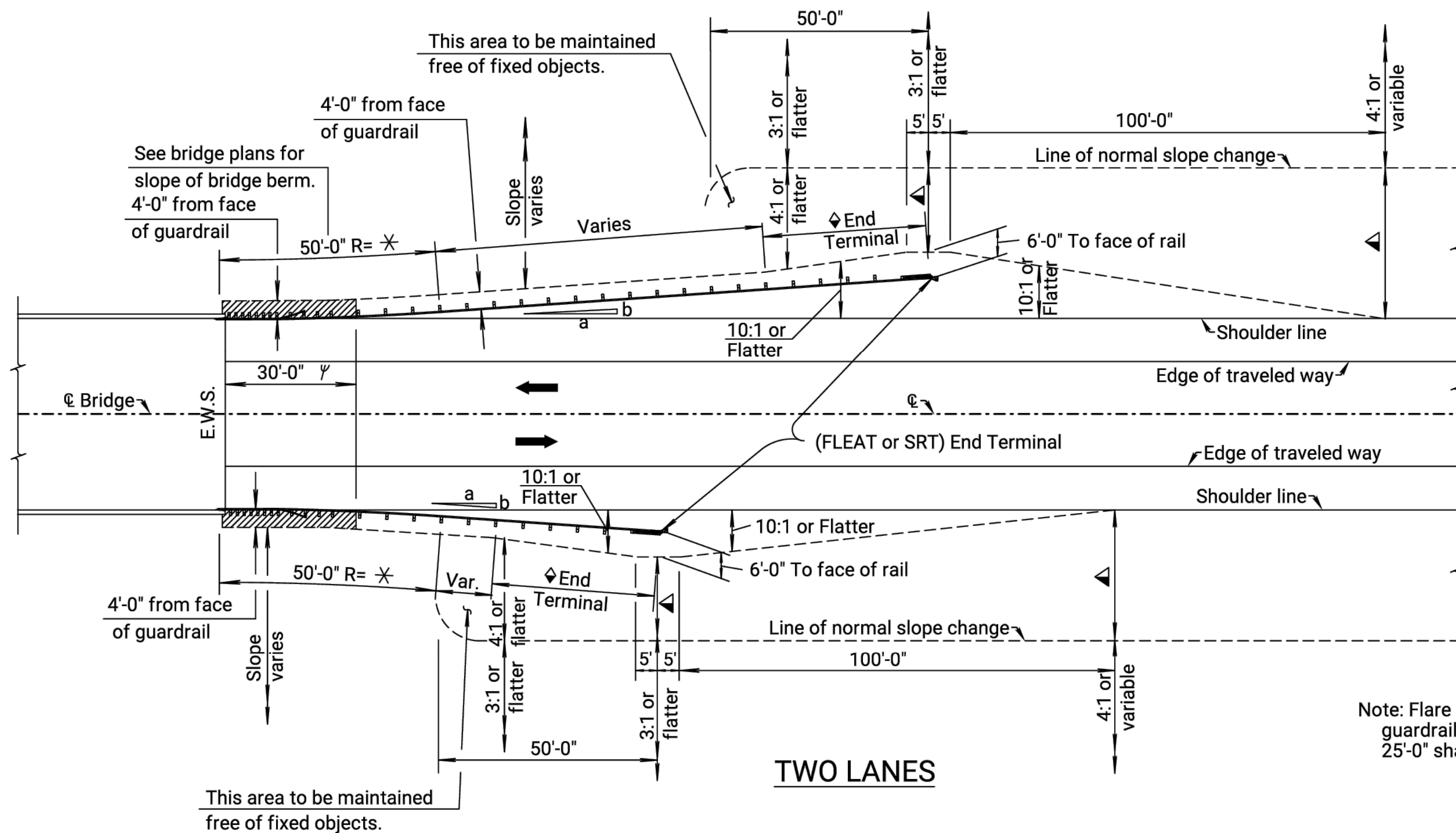


"W" BEAM HOLE PUNCHING DETAILS

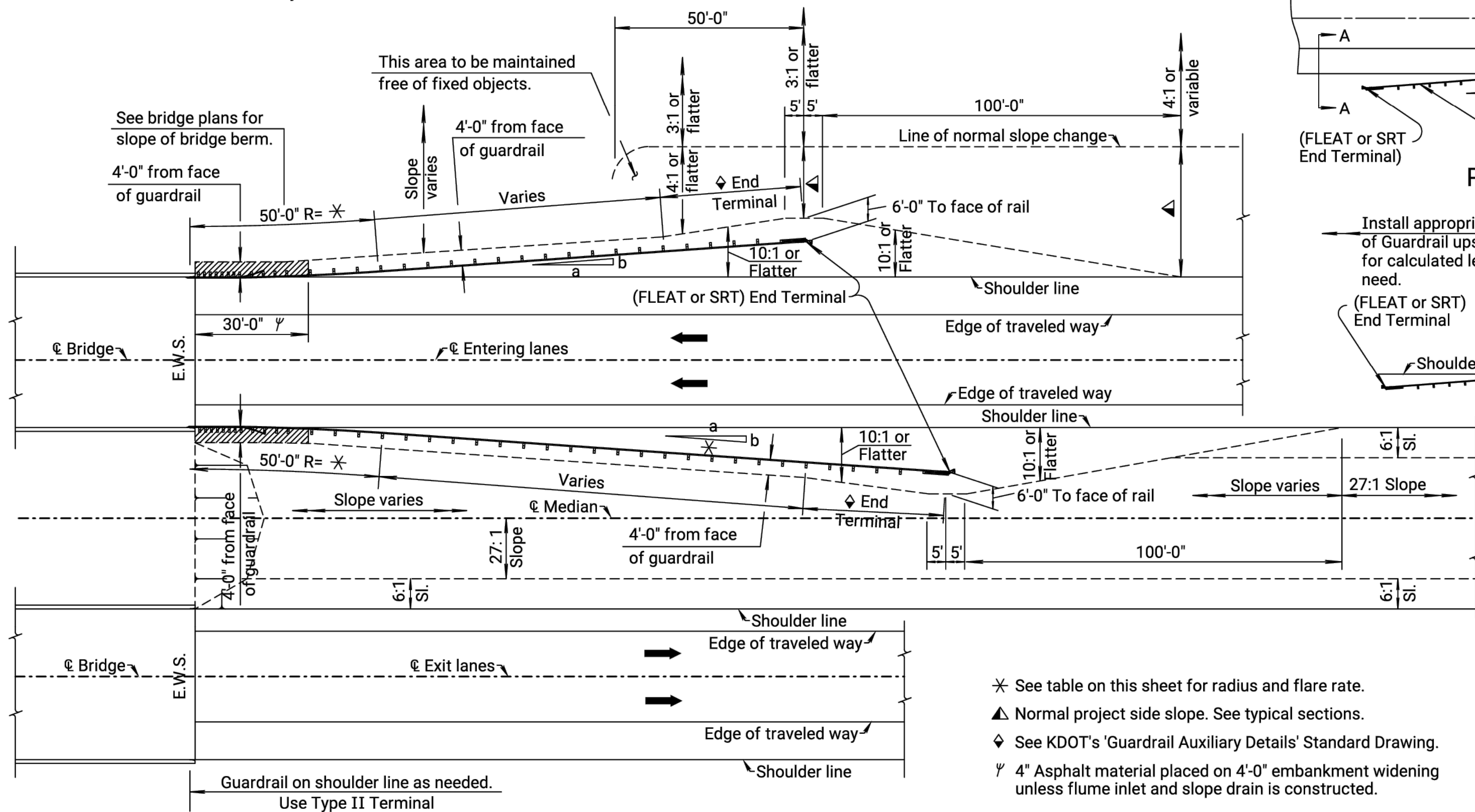
☆ Non-Metallic (Polymer) or Treated Wood Block

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

Plotted by : KDOT#CADD.Support_ks.gov 11-JUN-2022 00:59
File : rd615a.dgn



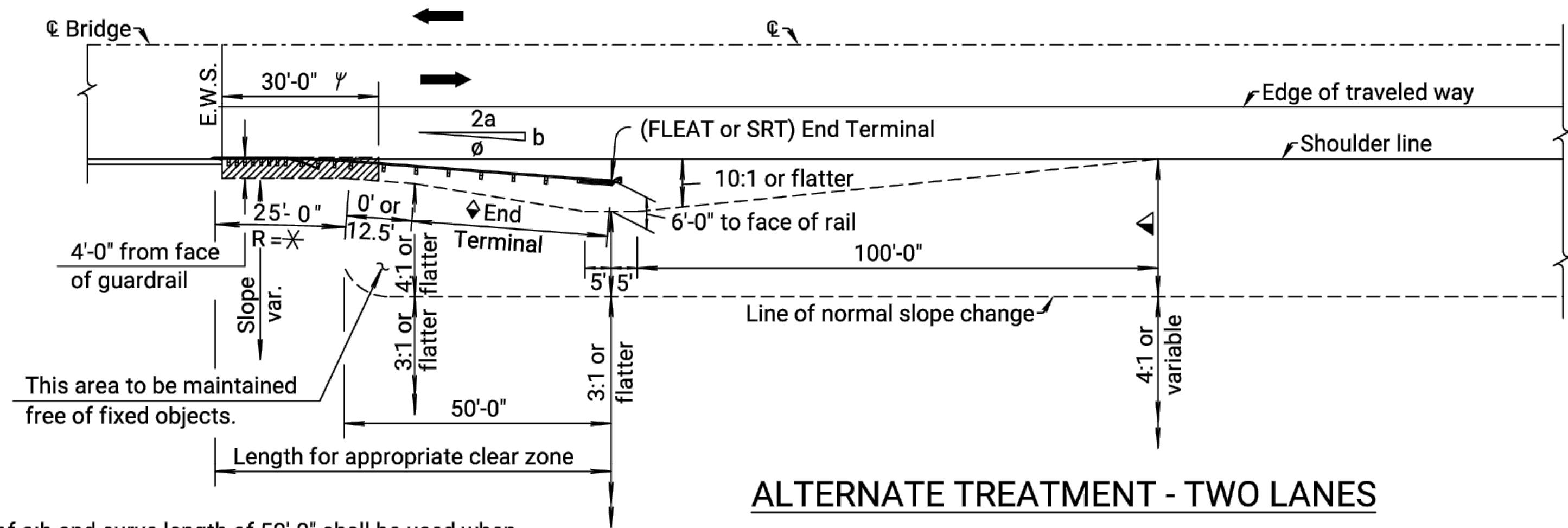
TWO LANES



FOUR LANES - DIVIDED

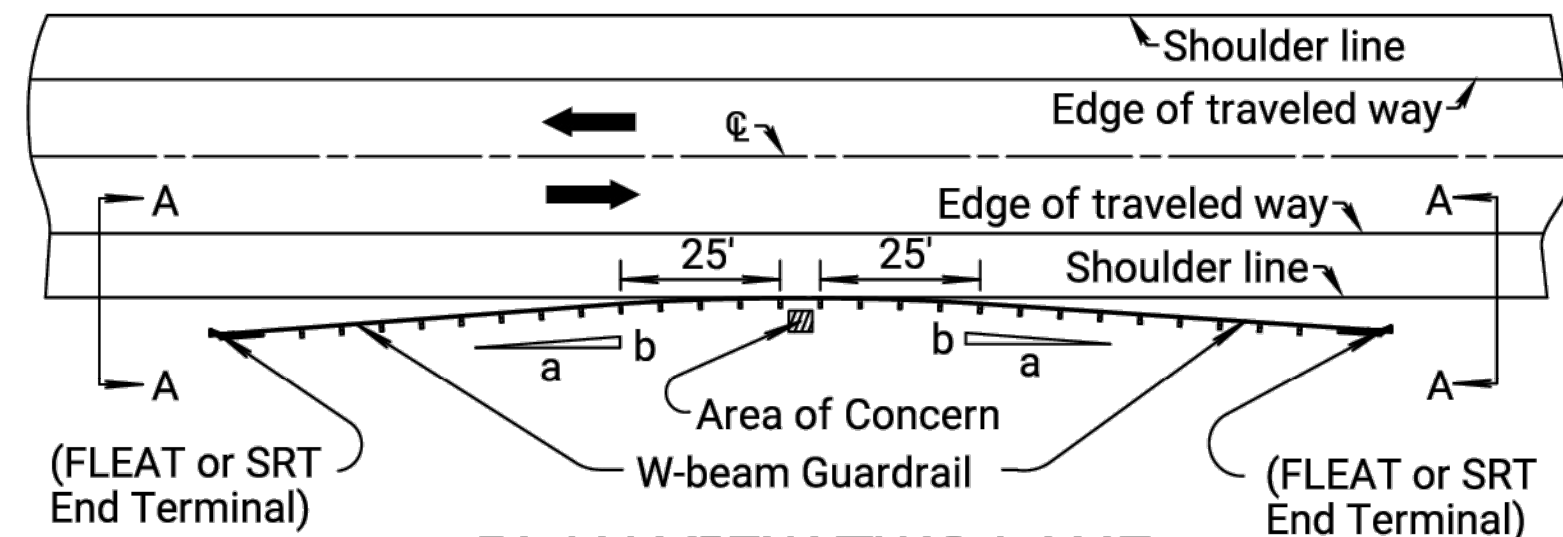
- ✱ See table on this sheet for radius and flare rate.
- ▲ Normal project side slope. See typical sections.
- ◆ See KDOT's 'Guardrail Auxiliary Details' Standard Drawing.
- ♣ 4" Asphalt material placed on 4'-0" embankment widening unless flume inlet and slope drain is constructed.

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

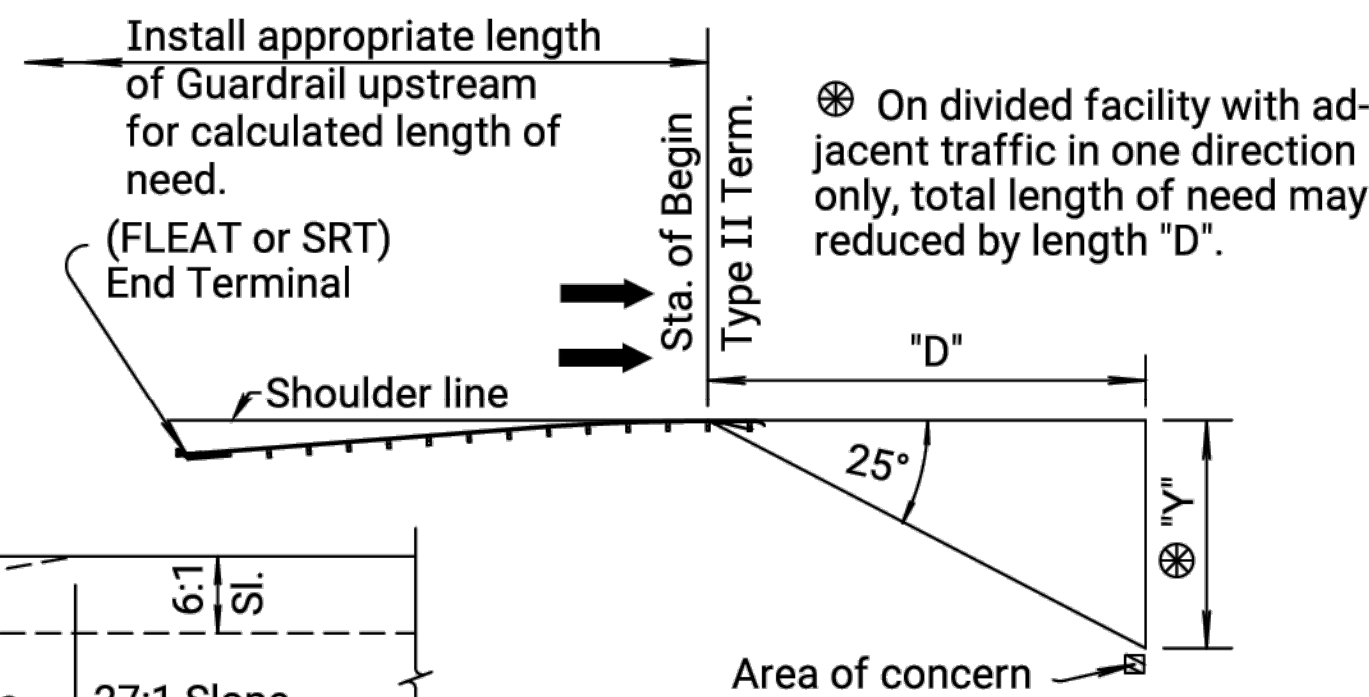


ALTERNATE TREATMENT - TWO LANES

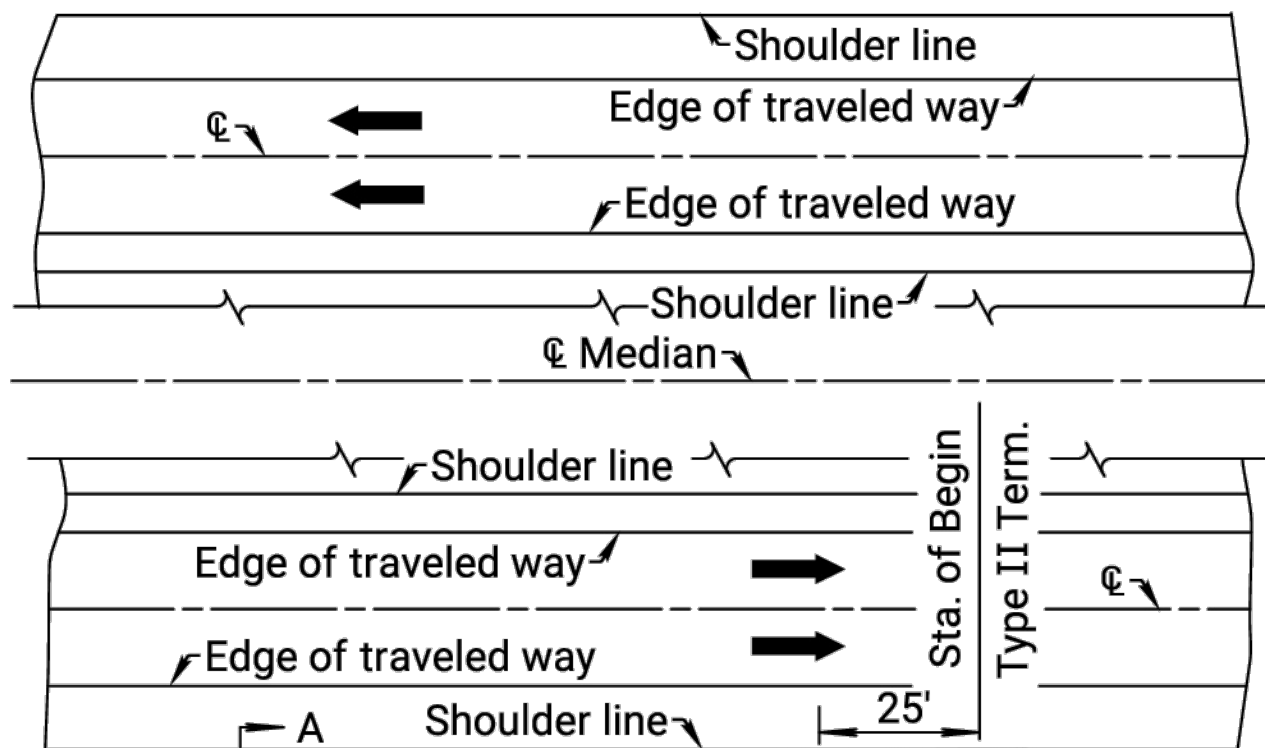
Flare Rate = 2a:b
(GUARDRAIL LENGTHS OF 62.5' AND 75')



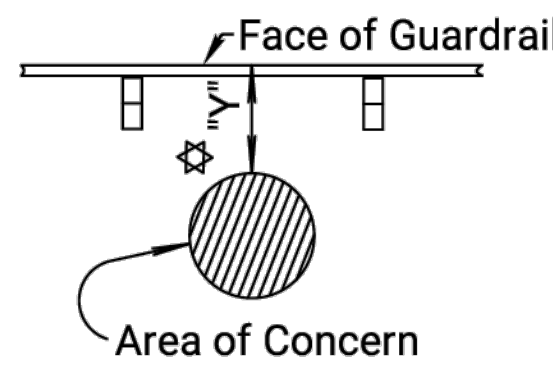
PLAN VIEW TWO LANE



DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE



PLAN VIEW FOUR LANE



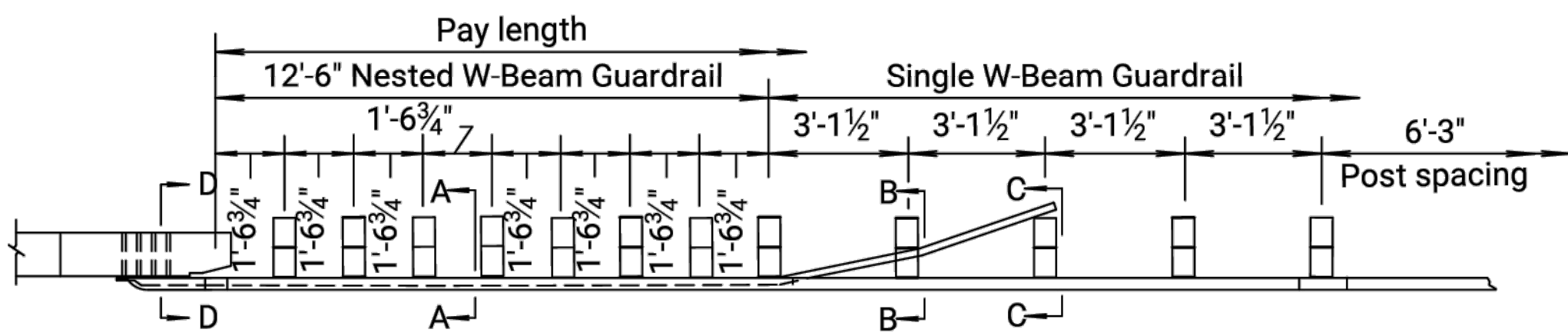
ENLARGEMENT - AREA OF CONCERN

NO.	DATE	REVISIONS	BY	APPD
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				
DESIGNED	QUANTITIES	TRACED	Scott W. King	
DETAIL CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

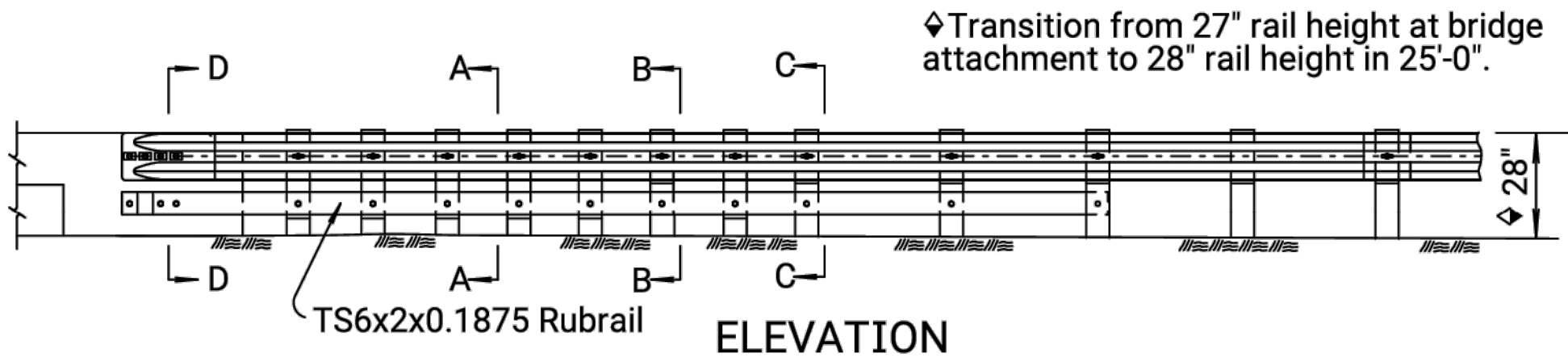
KDOT Graphics Certified 05-16-2022

KDOT Graphics Certified

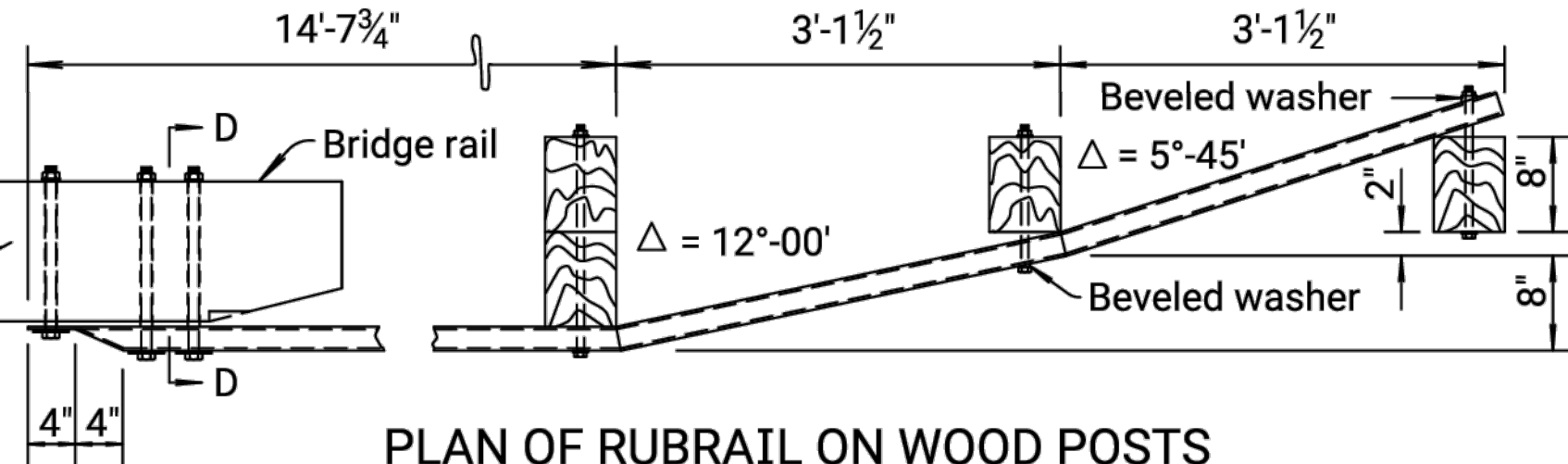
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	7	49



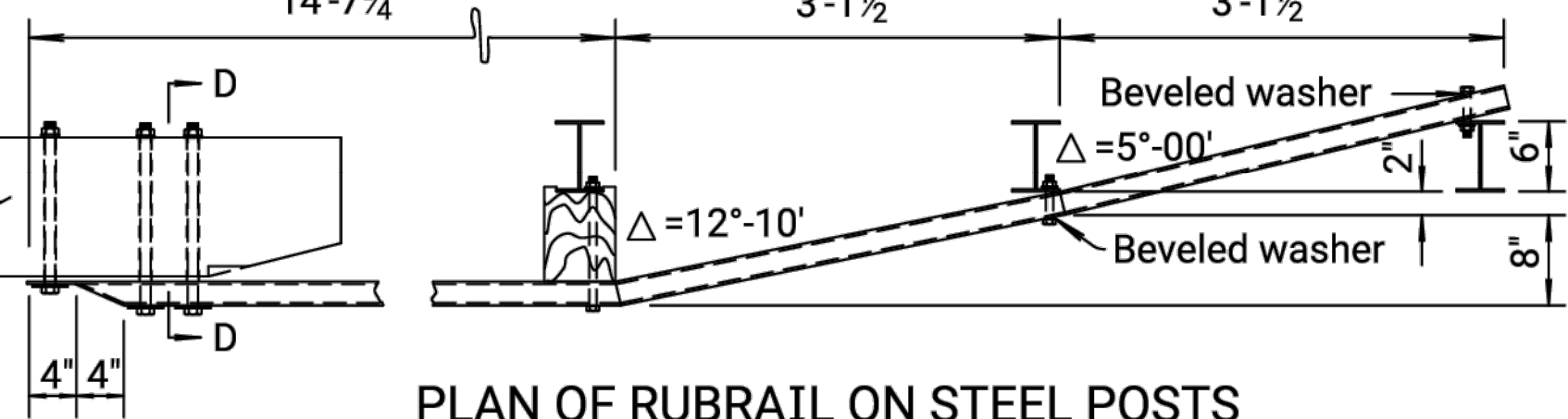
PLAN



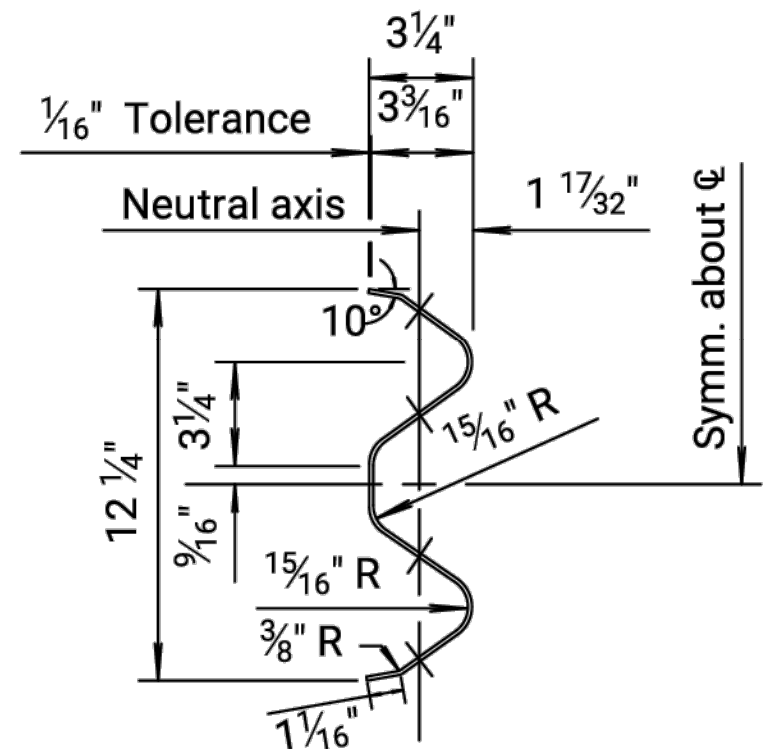
ELEVATION



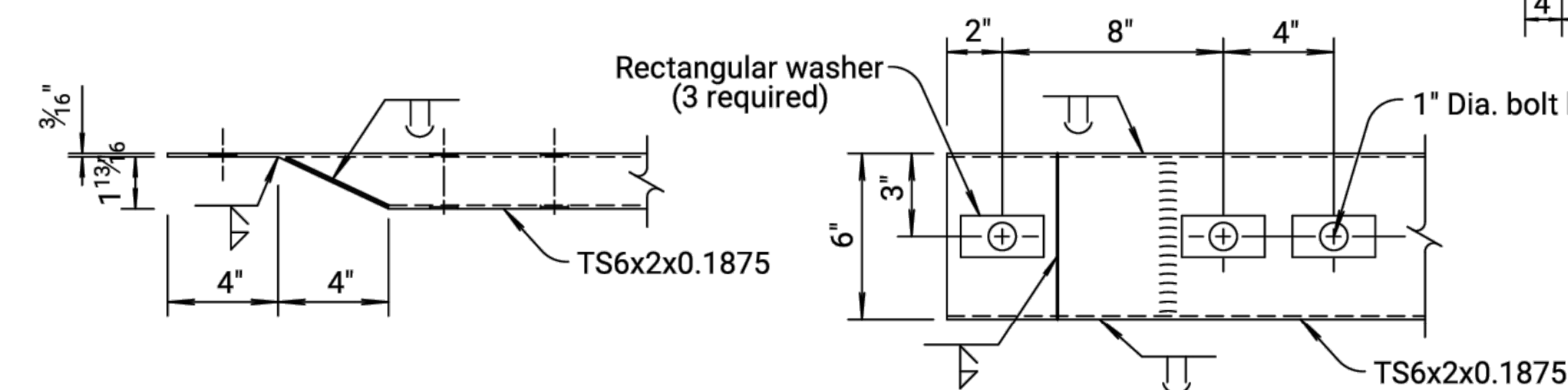
PLAN OF RUBRAIL ON WOOD POSTS



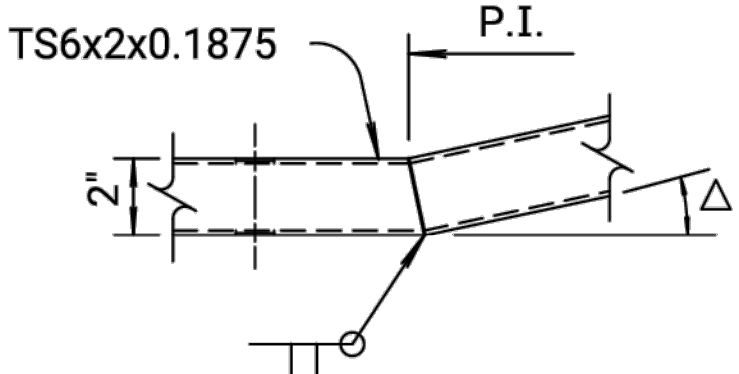
PLAN OF RUBRAIL ON STEEL POSTS



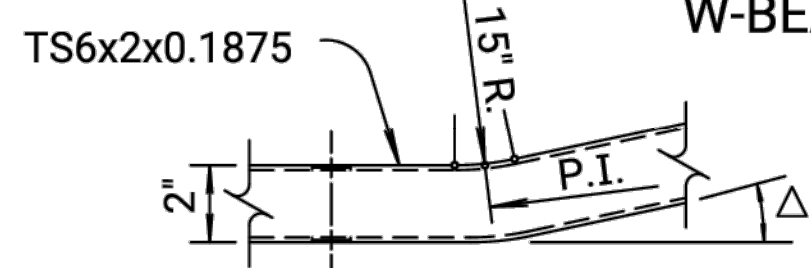
SECTION THRU TYPICAL W-BEAM RAIL ELEMENT



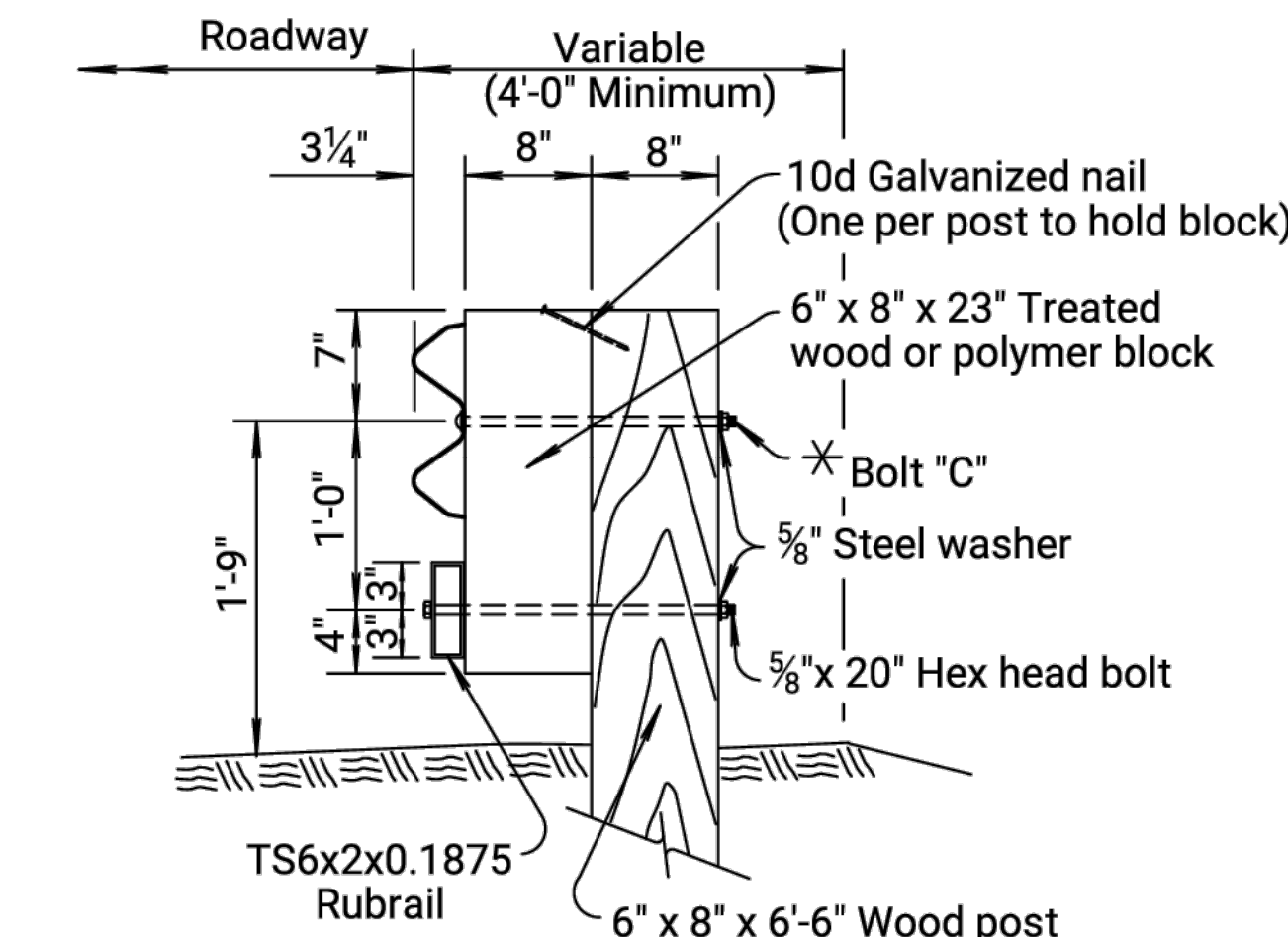
TYPICAL END RUB RAIL DETAILS



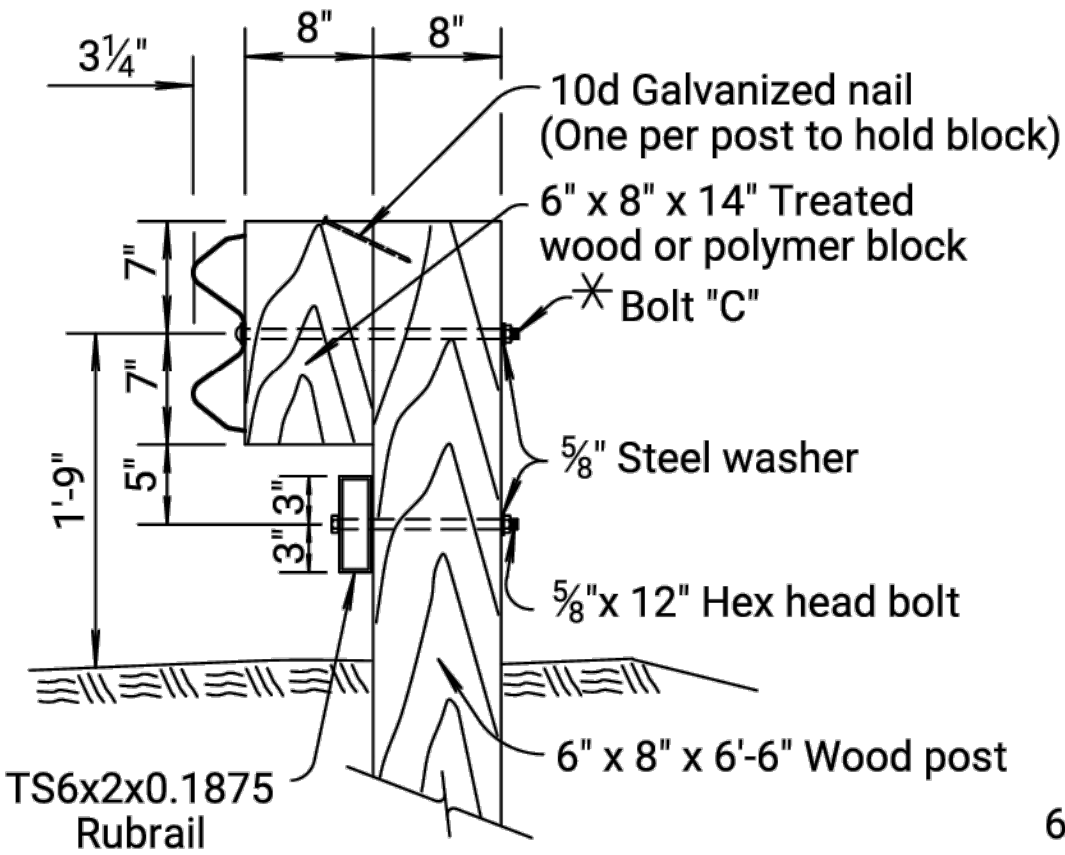
SHOP WELDED OPTION



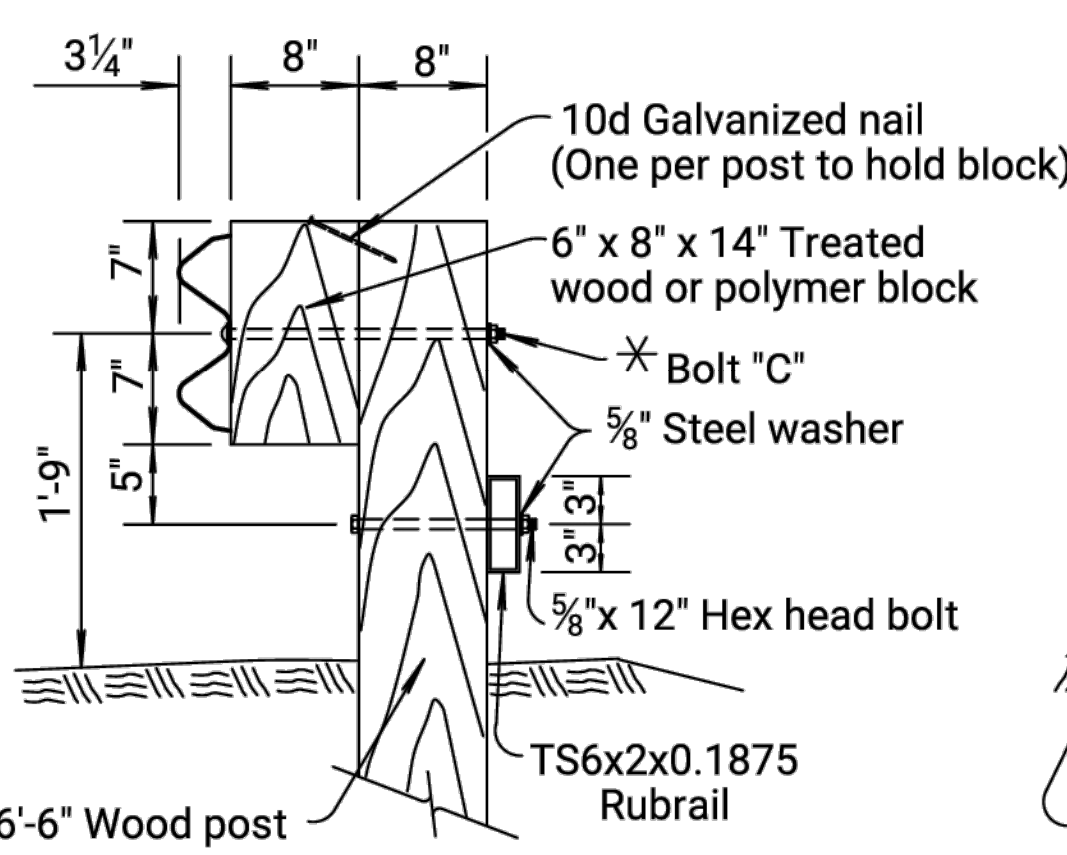
SHOP BENT OPTION



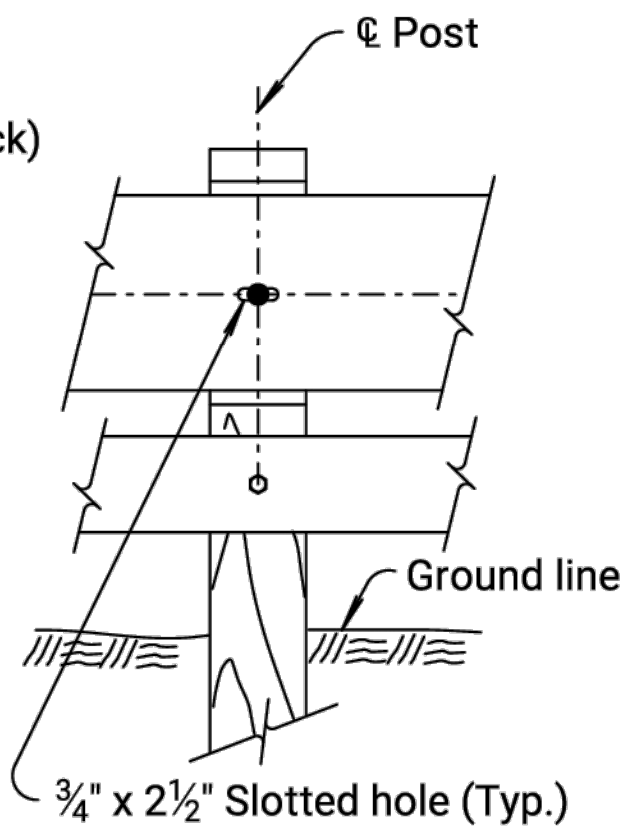
SECTION A-A



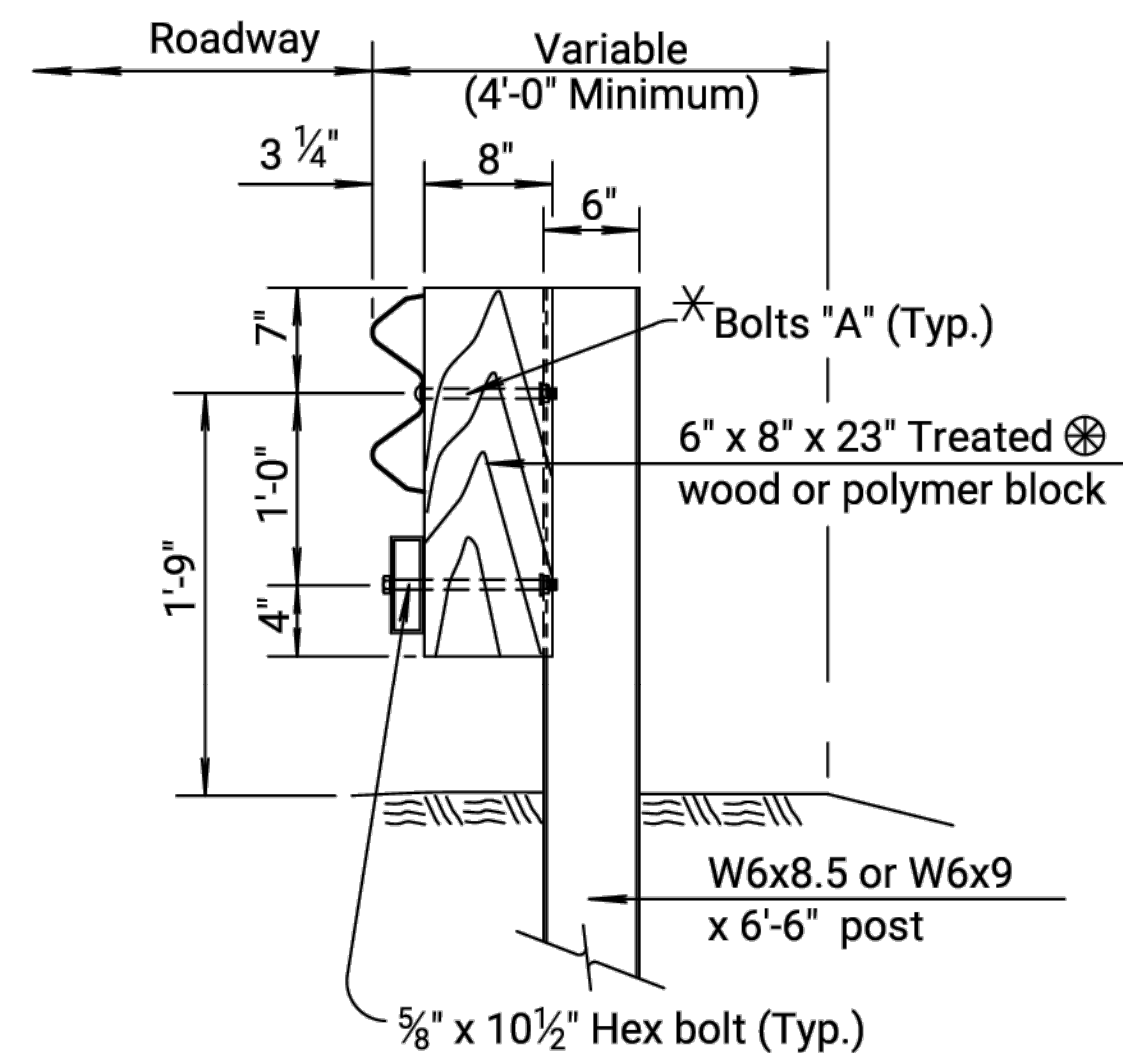
SECTION B-B



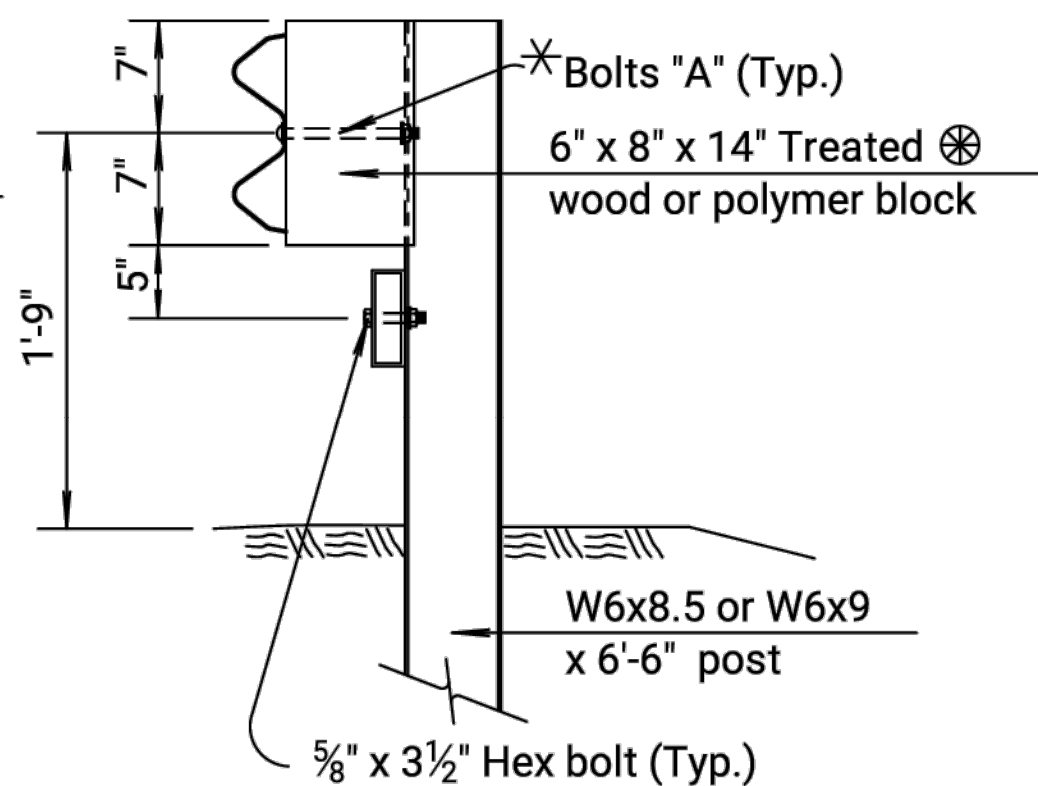
SECTION C-C



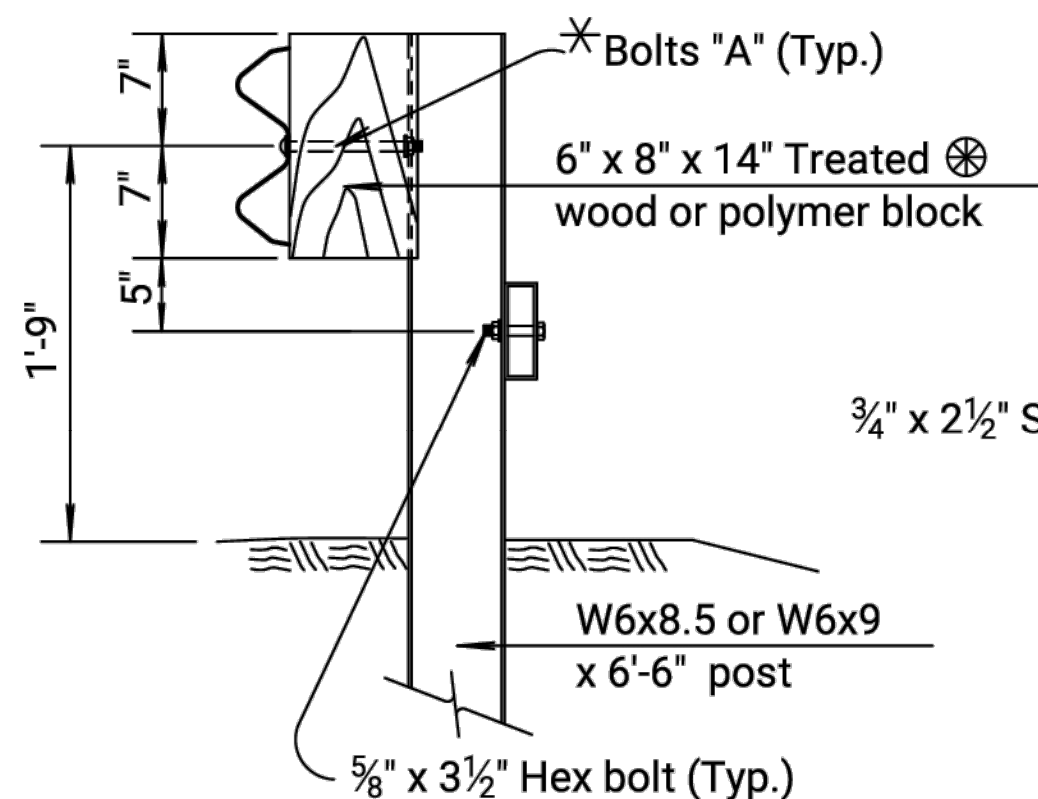
ELEVATION WITH RUBRAIL



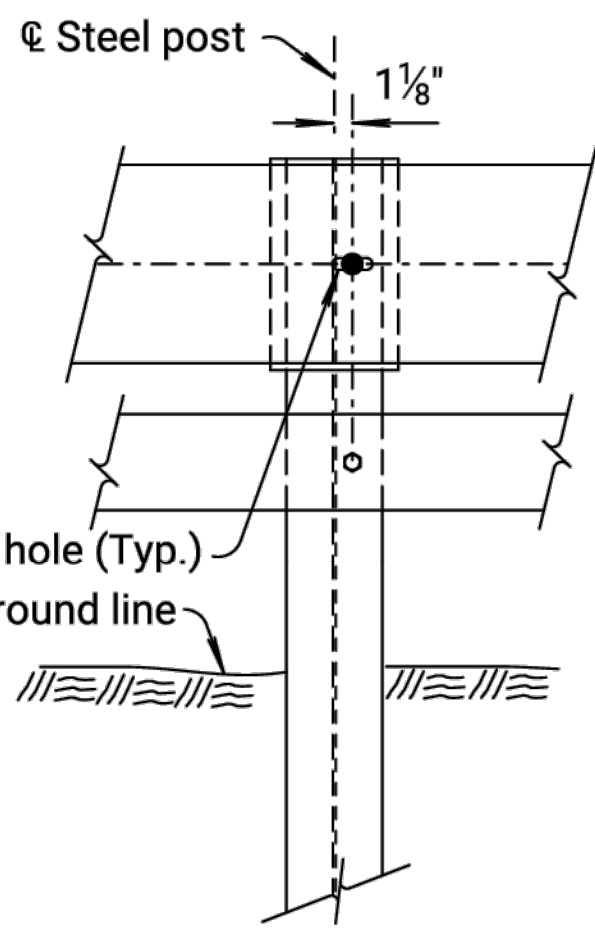
SECTION A-A



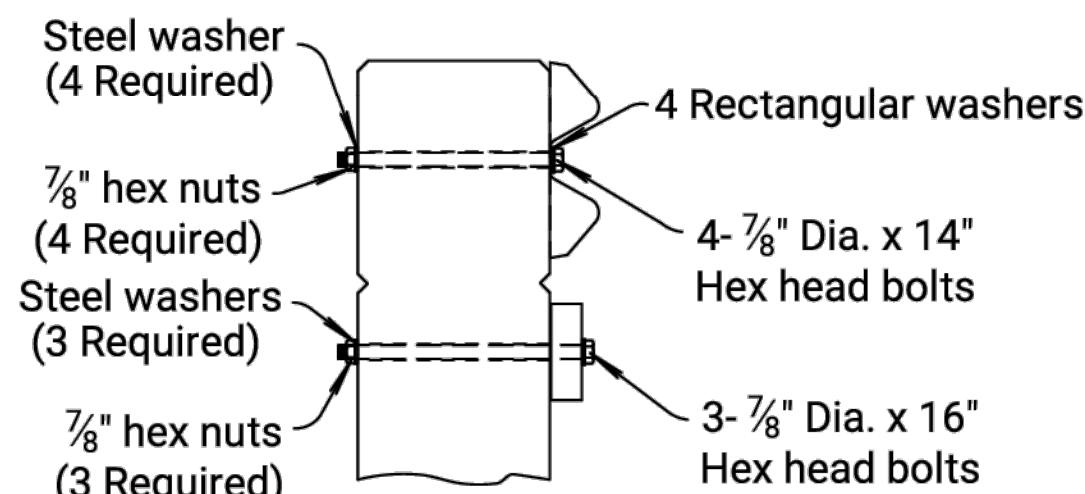
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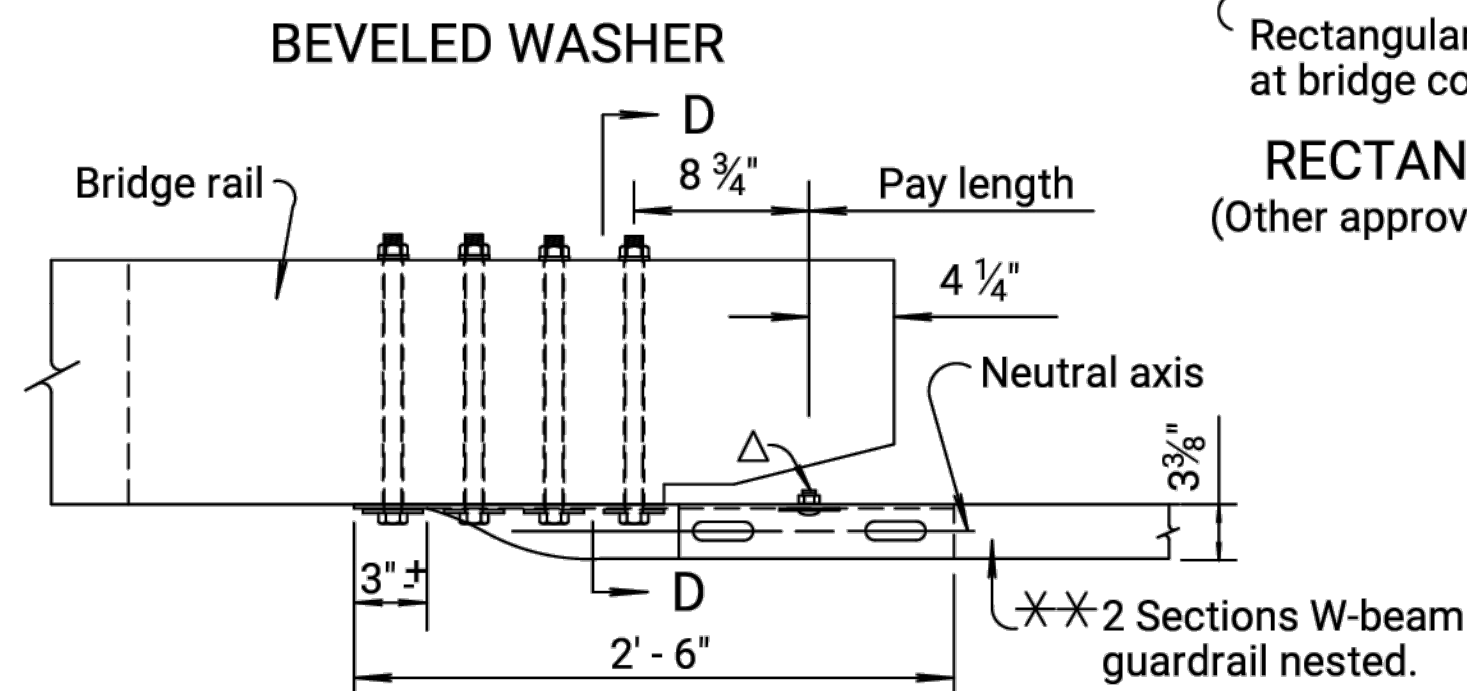
SECTION C-C



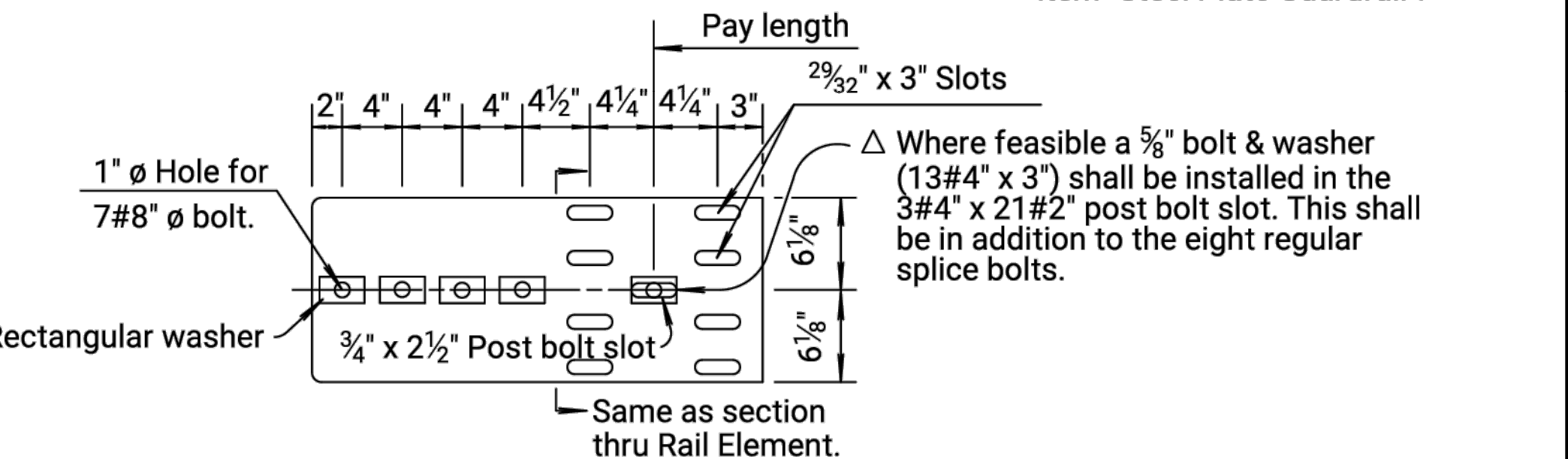
ELEVATION WITH RUBRAIL



SECTION D-D

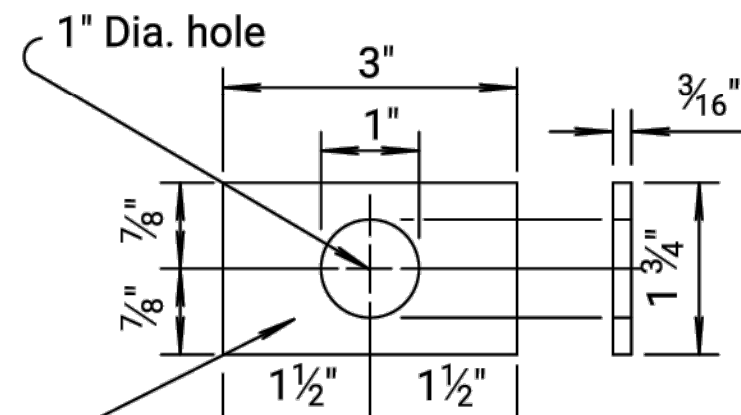


PLAN SPECIAL END SHOE



ELEVATION SPECIAL END SHOE

BEVELED WASHER



RECTANGULAR WASHER
(Other approved washer may be used.)

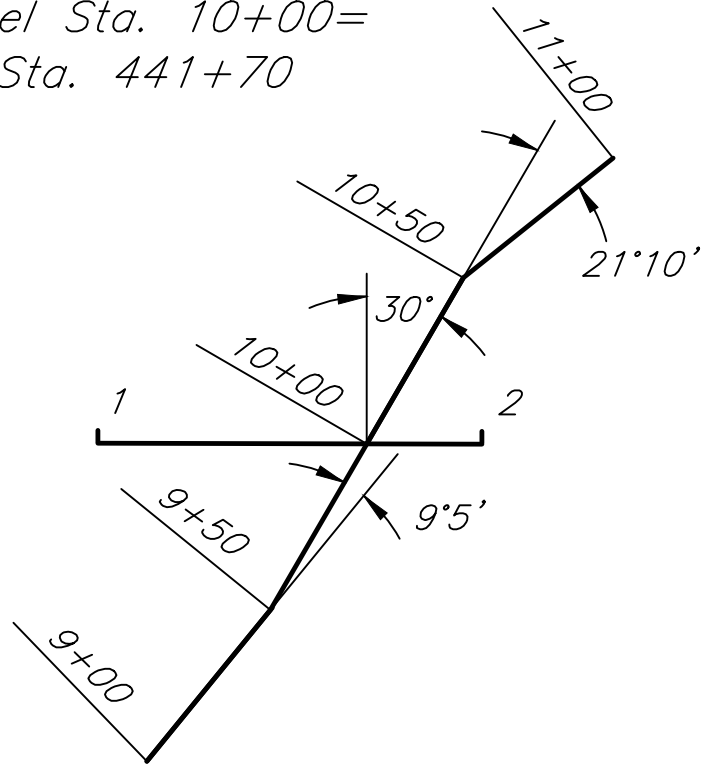
GENERAL NOTE
Include all material and work for this installation in the pay item "Steel Plate Guardrail" paid by the lineal foot.
Use 10 or 12 gauge steel guardrail elements unless otherwise called out, see standard specifications.
Bridge Rail Transition consists of one 12'-6" W-beam section nested in 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.

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

NO.	DATE	REVISIONS	BY	APPD
14	12-14-10	Revised notes 28" rail height	S.W.K.	J.O.B.
13	04-02-08	Removed Galvanized callout	S.W.K.	J.O.B.
12	02-06-07	Corrected spelling error	S.W.K.	J.O.B.
KANSAS DEPARTMENT OF TRANSPORTATION				
W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION DETAILS				
RD616				
FHWA APPROVAL		01-11-11	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED	J.O.B.
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	J.O.B.

Channel Alignment
Channel Sta. 10+00=
C Sta. 441+70



SW Cor Sec 33, T15S, R24W
Found 22"x2.5" limestone w/1/2" rebar on West face
1. Mag nail in Top Fce Post
2. Mag nail in Top Fce Post
3. Mag nail in East face PP
4. 1/2" rebar on West face of Stone
5. Centerline of County Road EE
6. Inline with County Road 190 Ave
7. Sta. 422+40.00 3.00' Rt.
N:436176.99 E:4341299.90

Ref. POT
1.2' Deep 1. Office Set
54.9' NE 2. Section Line
59.5' ENE 3. Sta. 437+00.00
37.9' SE 4. No other ties available
0.6' W N:436175.78, E:4342759.90
2'N

Ref. POT
3.0' S 1. Office Set
2. Section Line
3. Sta. 449+00.00
4. No other ties available
N:436172.32 E:4343959.90

Ref. SE Cor Sec 33, T15S, R24W
Found 9"x6"x4" limestone w/5/8" on West face
3.0' S 1. Mag nail & CLS42 wshr in top of fence post
2. Nail & wshr in top of fce post
3. Mag nail & CLS42 wshr in top of fce post
4. Mag nail & CLS42 wshr in top of fce post
5. rebar with pink plastic cap stamped "PENCO CLS-42"
6. Inline with County Road EE
7. Sta. 475+18.81 3.00' Rt.
N:436161.76 E:4346578.68

Ref. 1.0' Deep
57.2' NNE
37.3' SSW
46.1' NW
32.1' NNW
0.2' W

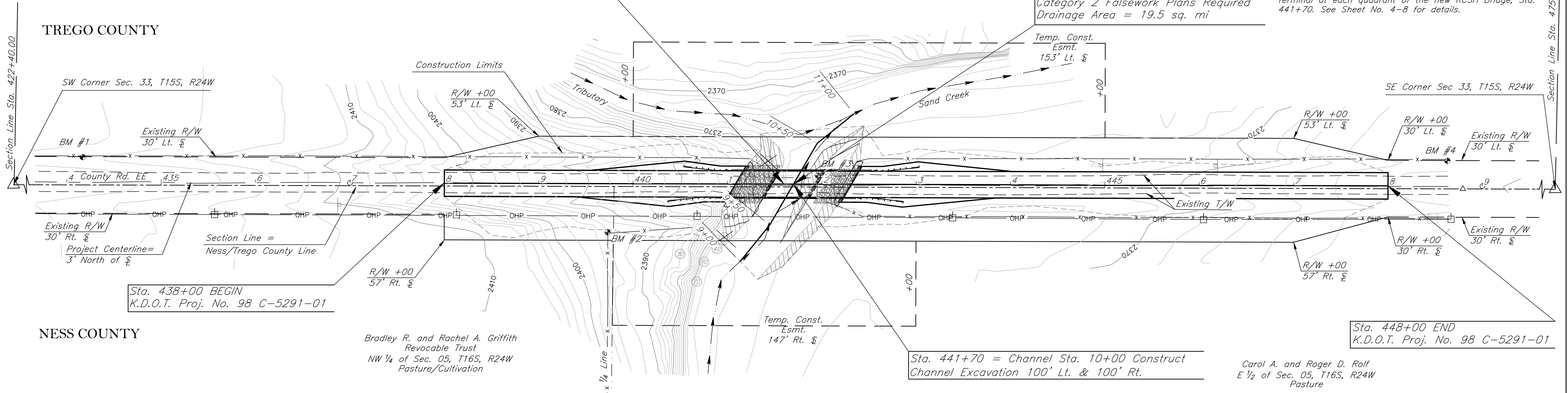
Note: The Contractor shall remove the existing 69.9' SBMC (Br. No. 000980533404800) with 19.5' rdwy. width. Steel girders shall be stockpiled on County ROW for County to remove with their own forces and funds. All other materials shall become the property of the Contractor and be removed from the site.

The Contractor shall excavate the channel and complete the embankments prior to construction of the RCSH bridge.

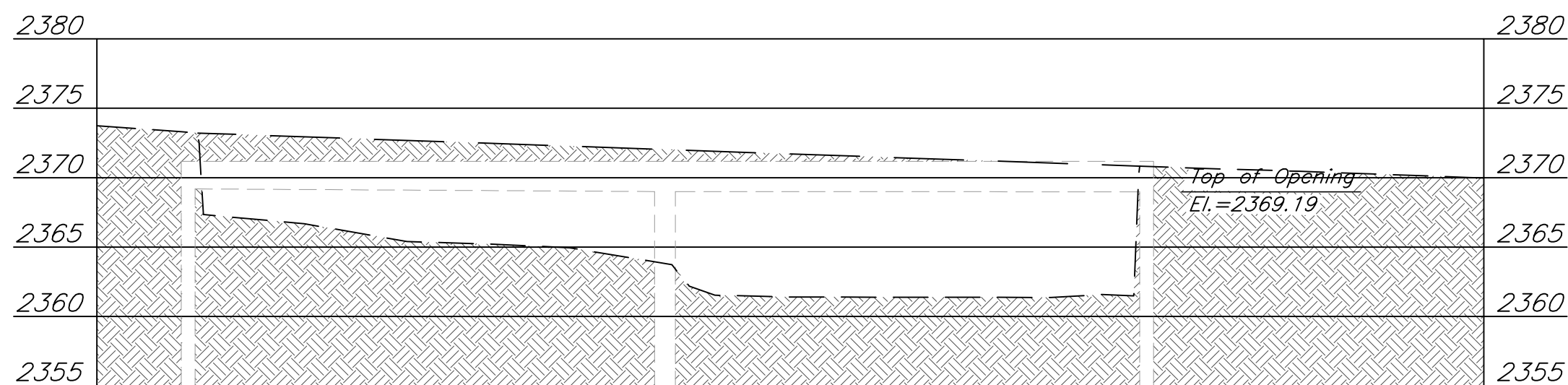
Existing Bridge consists of: steel beams, concrete deck, pier, wings, and abutments.

The contractor shall construct the shoulder widening and install Steel Plate Guardrail (Galv.) and Guardrail End Terminal at each quadrant of the new RCSH Bridge, Sta. 441+70. See Sheet No. 4-8 for details.

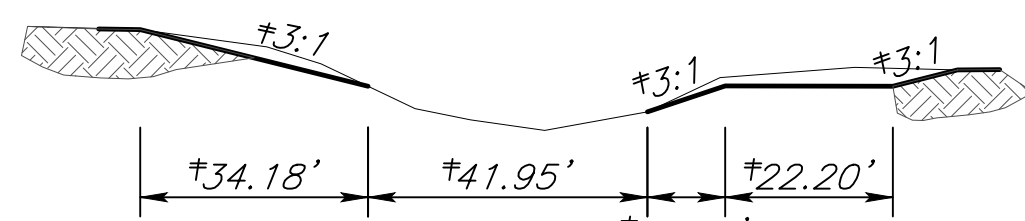
TREGO COUNTY



NESS COUNTY

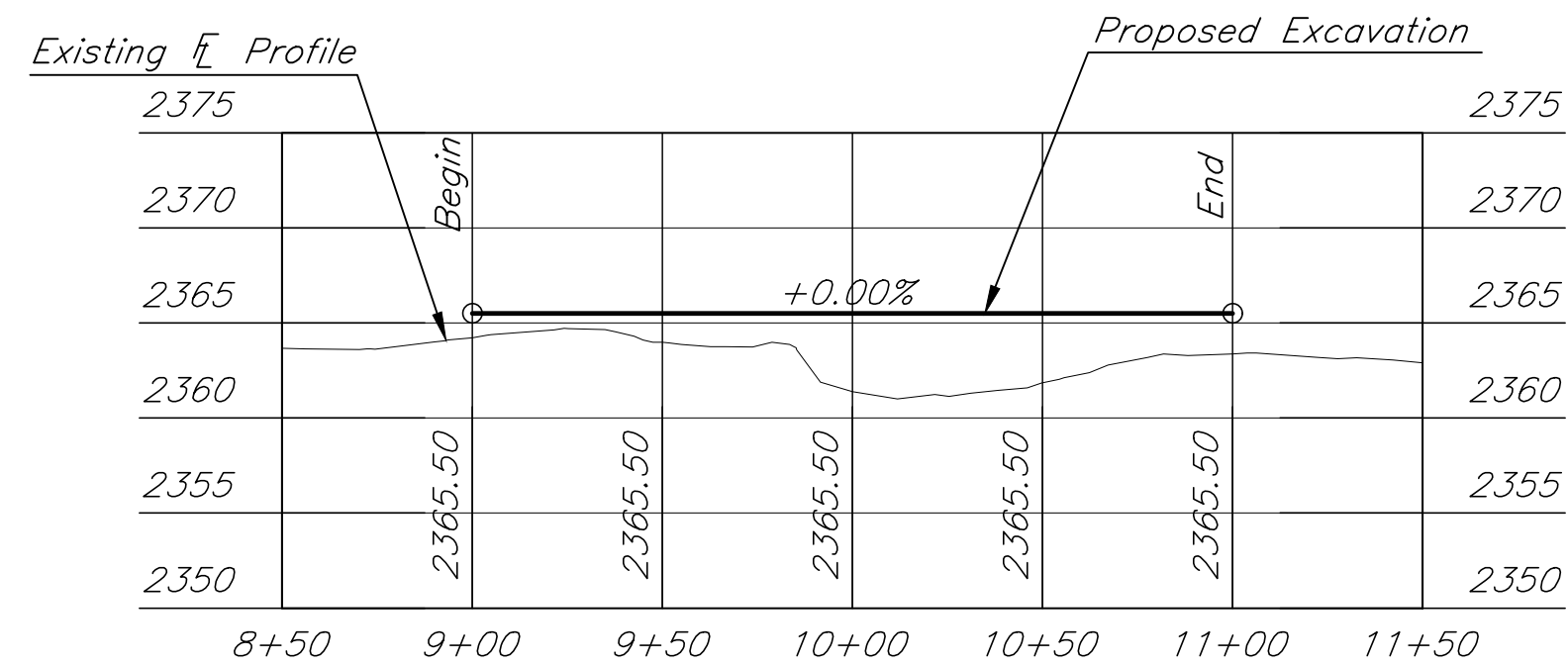


SKETCH OF EXISTING STRUCTURE
Existing Waterway Opening = 361 sq. ft.
Sta. 441+60

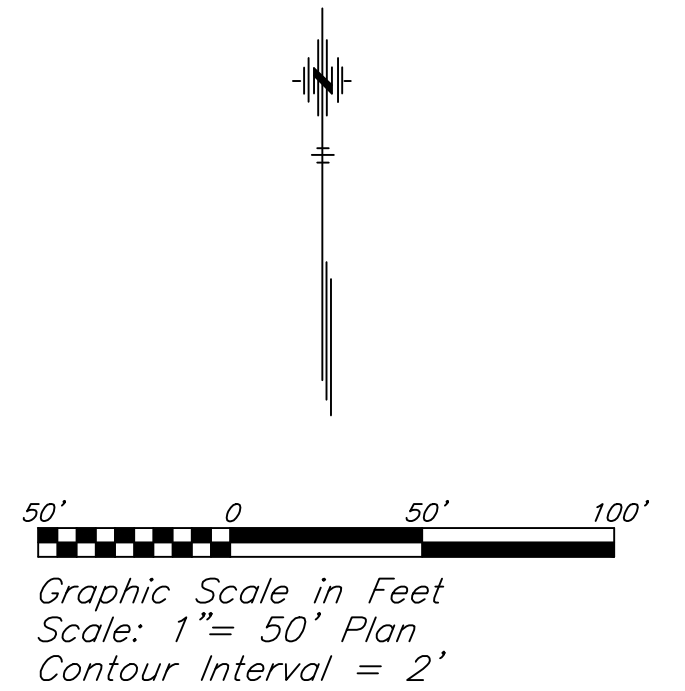


TYPICAL CHANNEL SECTION
Sta. 9+50 to Sta. 10+50

*Normal to Channel



CHANNEL PROFILE & GRADE



CONTOUR MAP

PENCO ENGINEERING, P.A.
PLAINVILLE, KANSAS

DESIGNED BY: JGD SCALE: As Shown
DRAWN BY: AMN PROJ. NO.: 98 C-5291-01
CHECKED BY: JUD DATE: 2025

BM#1 5/8"x24" rebar w/green cap "CONTROL PENCO" 1' South of fence post
Sta. 434+16.65, 26.4' Lt. Elev. = 2416.70
N:436203.01 E:4342476.64

BM#2 5/8"x24" rebar w/green cap "CONTROL PENCO" 1' North of fence corner
Sta. 439+73.15, 51.5' Rt. Elev. = 2393.72
N:436123.51 E:4343032.90

BM#3 Mag nail in top of wing concrete
Sta. 441+93.7, 9.3' Lt. Elev. = 2370.69
N:436183.65 E:4343255.66

BM#4 5/8"x24" rebar w/ green cap "CONTROL PENCO" 1' South of fence post
Sta. 448+62.82, 26.7' Lt. Elev. = 2377.19
N:436199.08 E:4343922.79

2/7/2025 12:19 PM

X:\ac2\kdot\KD5291-Trego-Off#35\ACAD\KD5291 TROFF35.dwg\KD5291 TROFF35.dwg -- Bridge Quantities

BRIDGE QUANTITIES									
Location	Excavation		Concrete (Grade 4.0) (Grade 4.0)		Reinf. Steel	Slope Protection	# Pile (Steel)	Predilled Pile Holes	Contractor Furnished
	Class I	Class II	(AE)	(AE)(SW)	(GR. 60)	(Shot Rock)	(HP10x42)		PDA
	CUYD	CUYD	CUYD	CUYD	LBS	CUYD	LNFT	LNFT	EACH
Abutment #1	57			**	**	78	105	44	1
Pier #1		64	33.2		1,333		150	20	
Pier #2		67	28.8		1,165		155	20	1
Abutment #2	57			**	**	67	80		
Total Substructure					2,498				
Total Superstructure				256.8	72,222				
TOTAL	114	131	62.0	256.8	74,720	145	490	84	2

**Quantities are included in the Superstructure Quantity. # NOTE: Only Steel HP 10 x 42 Piles shall be used on this project.

GENERAL NOTES

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

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

BRIDGE EXCAVATION: Elevation 2365.50 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

EMBANKMENTS: 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.

SLOPE PROTECTION (Shot Rock): Place Slope Protection (Shot Rock) to the limits and thicknesses shown on the plans or as directed by the Engineer. Place geotextile under the rock/rubble embankment on the berm and berm slopes.

PRE-DRILLING: All steel piles in abutment no. 1 shall be pre-drilled to elevation 2361.00, pier no. 1 piles shall be pre-drilled to elevation 2353.50, and those in pier no. 2 shall be pre-drilled to elevation 2353.00. Piles shall be set and driven to the computed bearing value shown. After driving, the holes shall be backfilled with Concrete (Grade 3.0) to the elevation shown. Concrete shall be pumped from the bottom up. The remaining annular space may be filled with local alluvial soil. Sand shall not be used as a backfill material within the casing.

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

Abutment No. 1	54 Tons
Pier No. 1	82 Tons
Pier No. 2	82 Tons
Abutment No. 2	54 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.

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" inch triangular molding, except as otherwise noted on the plans.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615, Grade 60. Spiral bars may meet the requirements of either ASTM A615 (Gr. 40 or 60) or A82, and are included in the bid item "Reinforcing Steel (Gr. 60)".

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. See the Bridge Design Manual, Section 5.1 "Review and Approval of Falsework Plans", for a listing of items to be included on the falsework plan. Submit three sets of details in compliance with KDOT Specifications to the Owner's designated Engineer for review and distribution.

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 Owner. "Category 2" falsework inspection is not paid for directly, but is subsidiary to other bid items.

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

CAMBER: Provide camber as shown on the Camber Diagram unless the Contractor uses either long span steel beam falsework (concrete dead load deflection greater than 1/4 inch) or timber falsework with greater than 12'-0" clear span. If either case exists, submit falsework plans that show the additional required camber.

Summary of Piling	
Abutment No. 1	3 @ 25, 1 @ 30' for PDA
Pier No. 1	6 @ 25'
Pier No. 2	5 @ 25', 1 @ 30' for PDA
Abutment No. 2	4 @ 20'

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

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

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

BACKFILL COMPACTION: Compact backfill at the abutments. Note: The Contractor shall place a header board at each EWS in accordance with Section 710.3.c.1 of the Specifications for Bridges With Tied Approaches. This work shall not be paid for directly, but shall be subsidiary to other items of the contract.

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 Owner's designated 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 JOINTS: The construction joints shown are optional with the Contractor, but if used, place 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 Owner's designated Engineer for review and distribution per KDOT Specifications. No Demolition work will begin without approved Demolition Plans. A Licensed Professional Engineer is not required.

REMOVAL OF EXISTING STRUCTURE: Removal of existing structure is included in the bid item, "Removal of Existing Structures", Lump Sum.

DECK FINISHING: Set the finishing machine parallel to the skew for striking off and screeding the concrete. Screeding normal to the centerline of the bridge will not be allowed.

BRIDGE DECK FINISHING: Give the surface a suitable texture by transverse grooving parallel to the skew of the bridge with a tining float having a single row of fins. Make the grooving approximately 3/16 inch in width at 3/4 inch centers, with a depth approximately 1/8 inch.

BRIDGE DECK CURING: Within 15 minutes, or as soon as the surface water disappears, apply 2 coats of Type 2 white liquid membrane forming compound at a minimum rate per coat of 1 gallon per 200 square feet of concrete surface. Place the second coat at right angles to the first coat. Protect the curing membrane against marring for a minimum of 7 days. The Engineer may limit work during this 7-day period.

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 83 for Abutments and 126 for Piers (Strength I 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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	10	49

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 25 psf for a future wearing surface.

UNIT STRESSES: Concrete (Grade 3.0)	f'c = 3 ksi
Concrete (Grade 4.0)	f'c = 4 ksi
Concrete (Grade 4.0)(AE)	f'c = 4 ksi
Concrete (Grade 4.0)(AE)(SW)	f'c = 4 ksi
Reinforcing Steel (Grade 60)	fy = 60 ksi

LRFD PILE DESIGN LOAD:

Design Loading (Tons/Pile)	Strength I	Service	Phi
Abutment 1&2	54	37	0.65
Piers 1&2	82	59	0.65

3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D

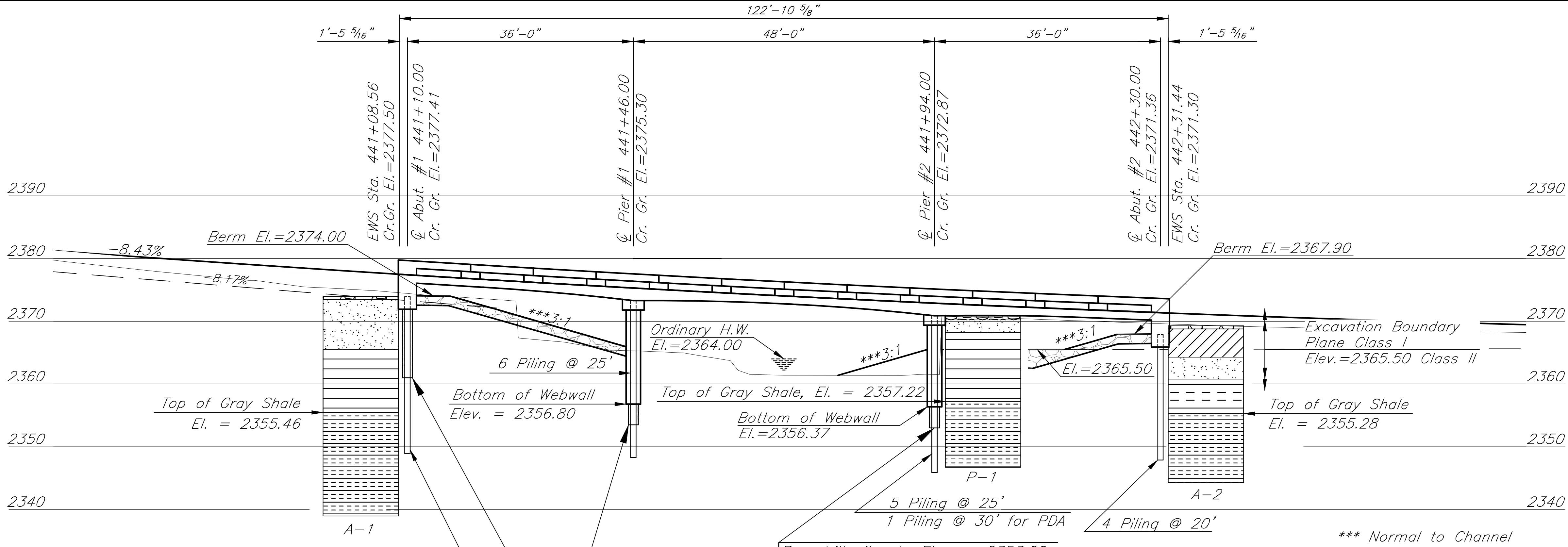
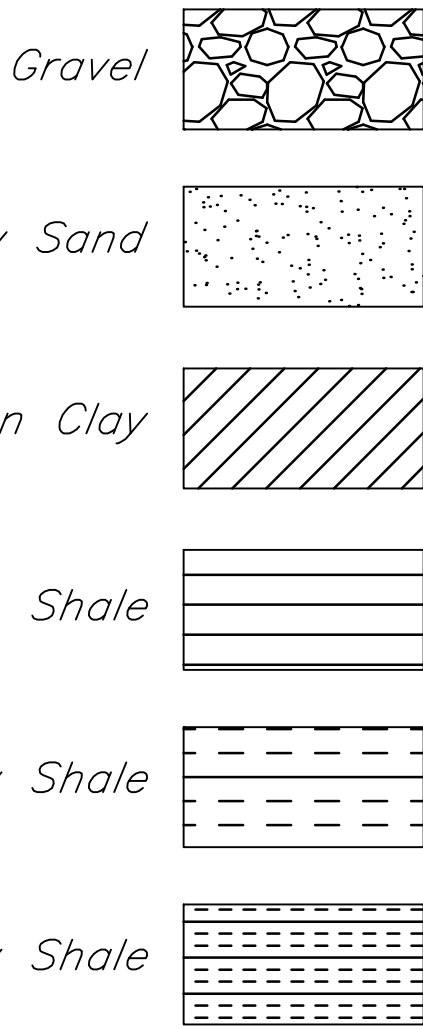
KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000980533304800 Sta. 441+70

GENERAL NOTES AND QUANTITIES

Proj. No. 98 C-5291-01		Trego Co.	
SHEET NO.	OF	SCALE	APP'D
DESIGNED	DRT	DETAILED	DRT
DESIGN CK.		DETAIL CK.	
QUAN. CK.		CADD CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	12	49

STANDARD GEOLOGICAL SYMBOLS



Pre-drill piles to Elev. = 2361.00
After setting and driving piles, pile
holes shall be backfilled per
"Pre-drilling" notes.

Pre-drill piles to Elev. = 2353.50
After setting and driving piles, pile
holes shall be backfilled per
"Pre-drilling" notes.

Pre-drill piles to Elev. = 2353.00
After setting and driving piles, pile
holes shall be backfilled per
"Pre-drilling" notes.

ELEVATION

36'-48'-36' R.C. Haunched Slab
Pile Bent Abutments, Pile Bent Piers
28' Rdwy. 30° Skew Rt.

PRE-DRILLING:
Piles shall be pre-drilled to the following elevations:

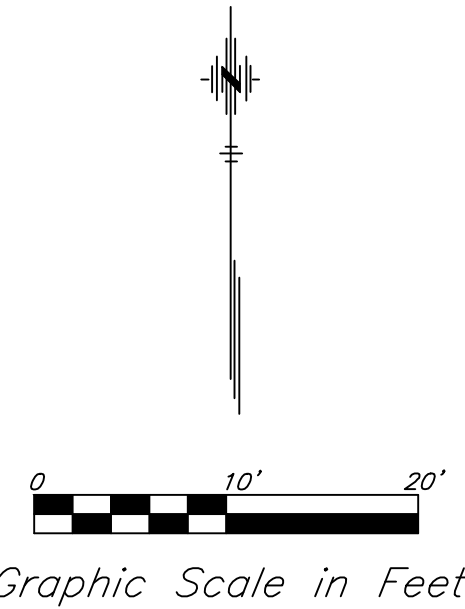
Abutment No. 1: 2361.00
Pier No. 1: 2353.50
Pier No. 2: 2353.00

Pre-drilled holes shall be cased to prevent collapse.

After setting and driving piles, pile holes shall be backfilled with Concrete
(Grade 3.0) to the following elevations:

Abutment No. 1: 2365.5
Piers No. 1 and No. 2: the top of bedrock, or the bottom of the
webwall, whichever is lower.

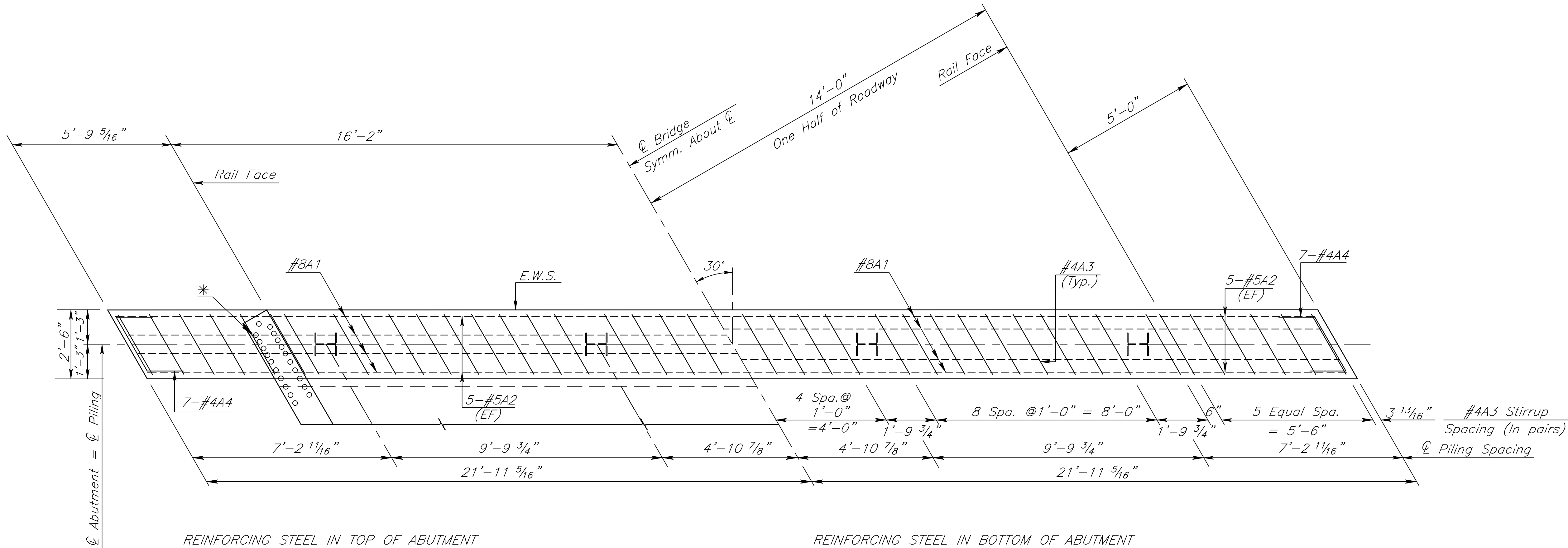
Concrete shall be pumped from the bottom up. The remaining space may
be filled with local alluvial soil. Sand shall not be used as a backfill
material within the casing.



3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 000980533304800 Sta. 441+70				
GEOLOGY				
Proj. No. 98 C-5291-01			Trego Co.	
SHEET NO.	OF	SCALE	APP'D	
DESIGNED		DETAILED	QUANTITIES	CADD
DESIGN CK.		DETAIL CK.	QUAN. CK.	CADD CK.

BM#3 Mag nail in top of wing concrete
Sta. 441+93.7, 9.3' Lt. Elev. = 2370.69
N:436183.65 E:4343255.66

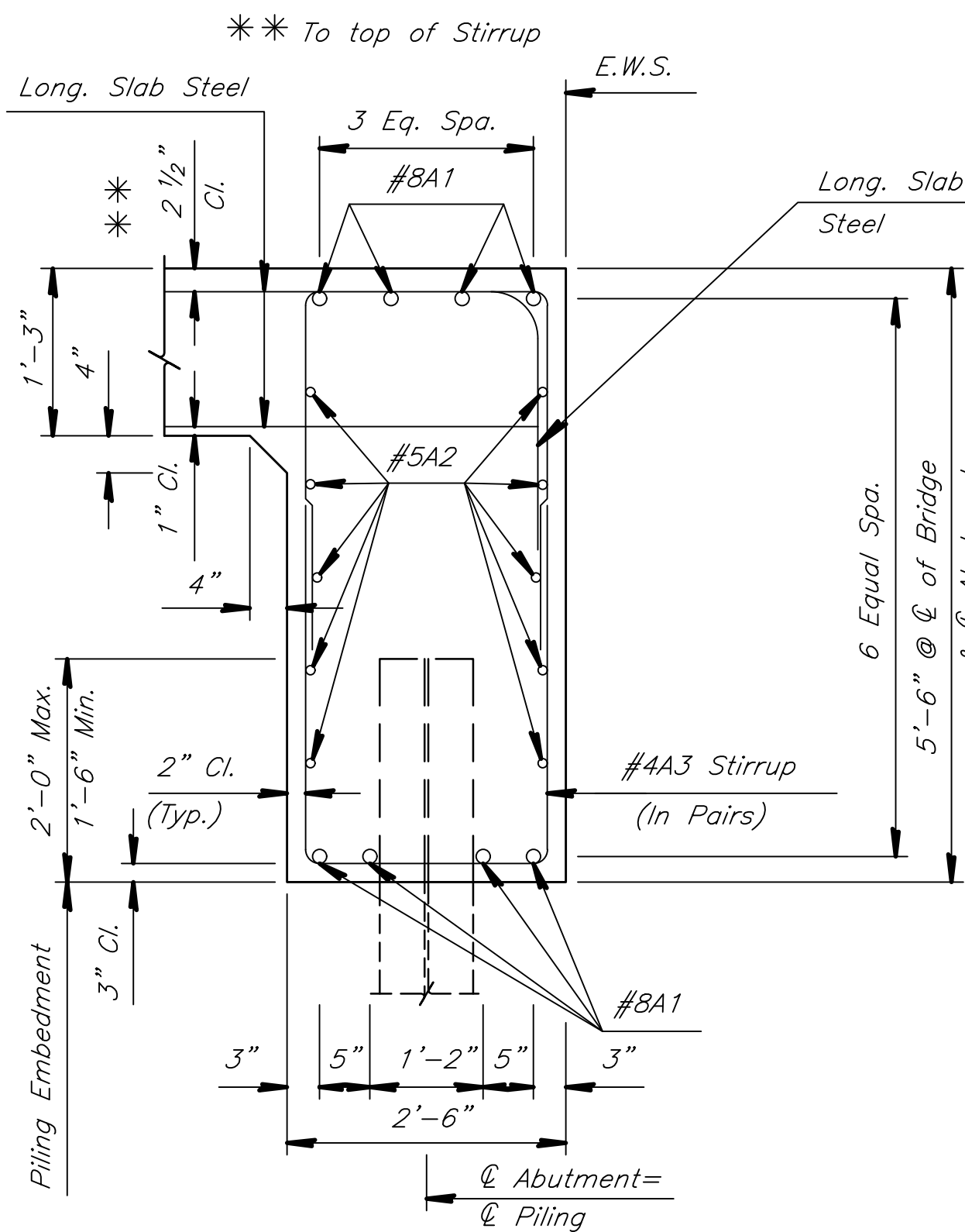
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	13	49



REINFORCING STEEL IN TOP OF ABUTMENT

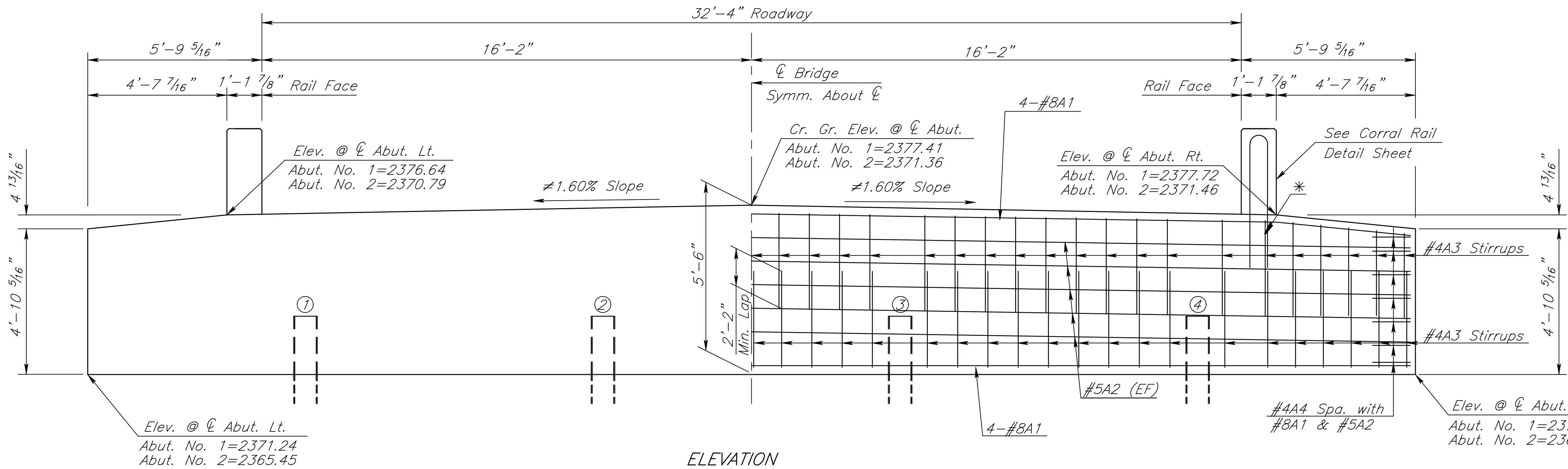
PLAN

REINFORCING STEEL IN BOTTOM OF ABUTMENT



TYPICAL SECTION

* Adjust stirrup to avoid conflict with rail bars.



ELEVATION

(Along CL Abutment)

ABUTMENT PILE LOADING

Design
Strength 1 54 Tons/Pile

LEGEND

EF = Each Face
≠ Perpendicular to CL Roadway

⊕ Top of Pile Elevation		
Pile No.	Abutment #1	Abutment #2
1	2373.46	2367.58
2	2373.76	2367.77
3	2374.07	2367.95
4	2374.38	2368.15

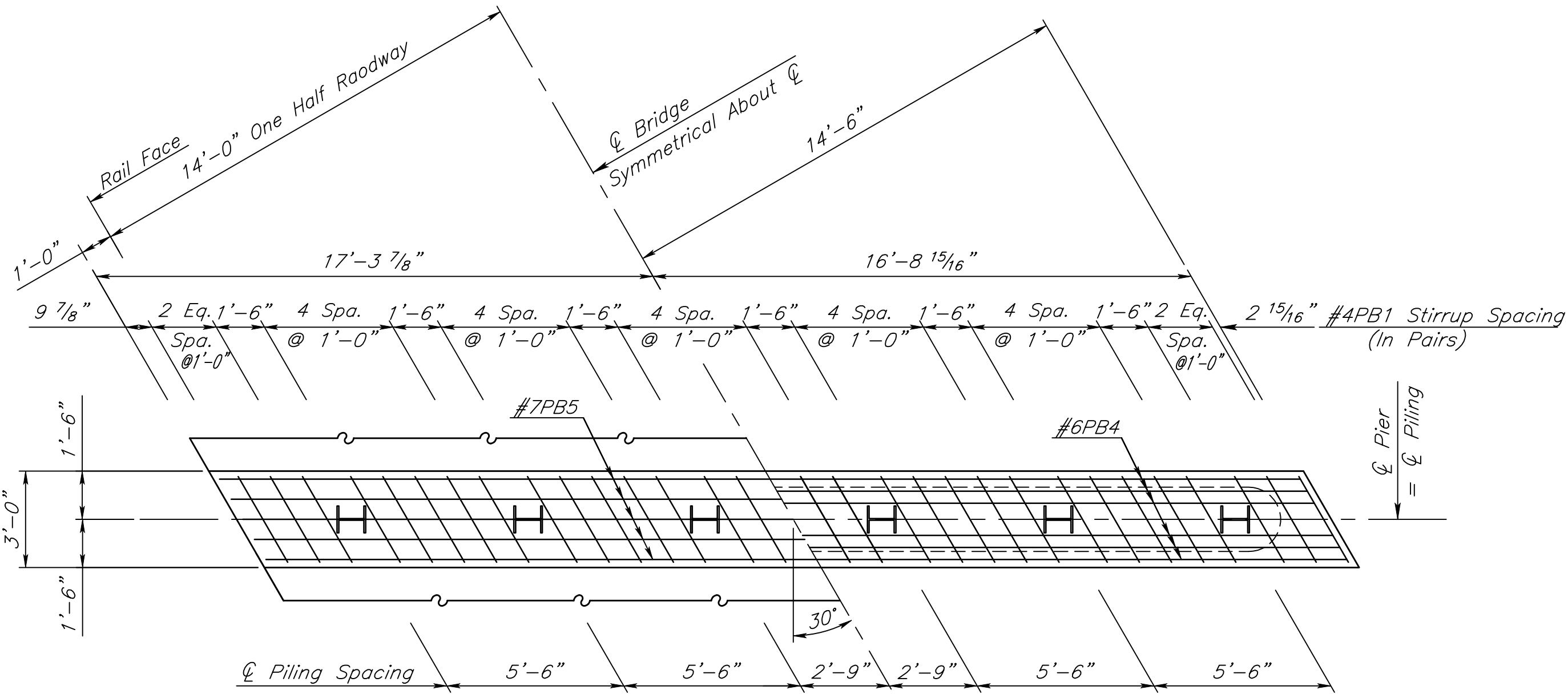
⊕ Note: Top of piling elevations are based on 2'-0" maximum embedment.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000980533304800 Sta. 441+70

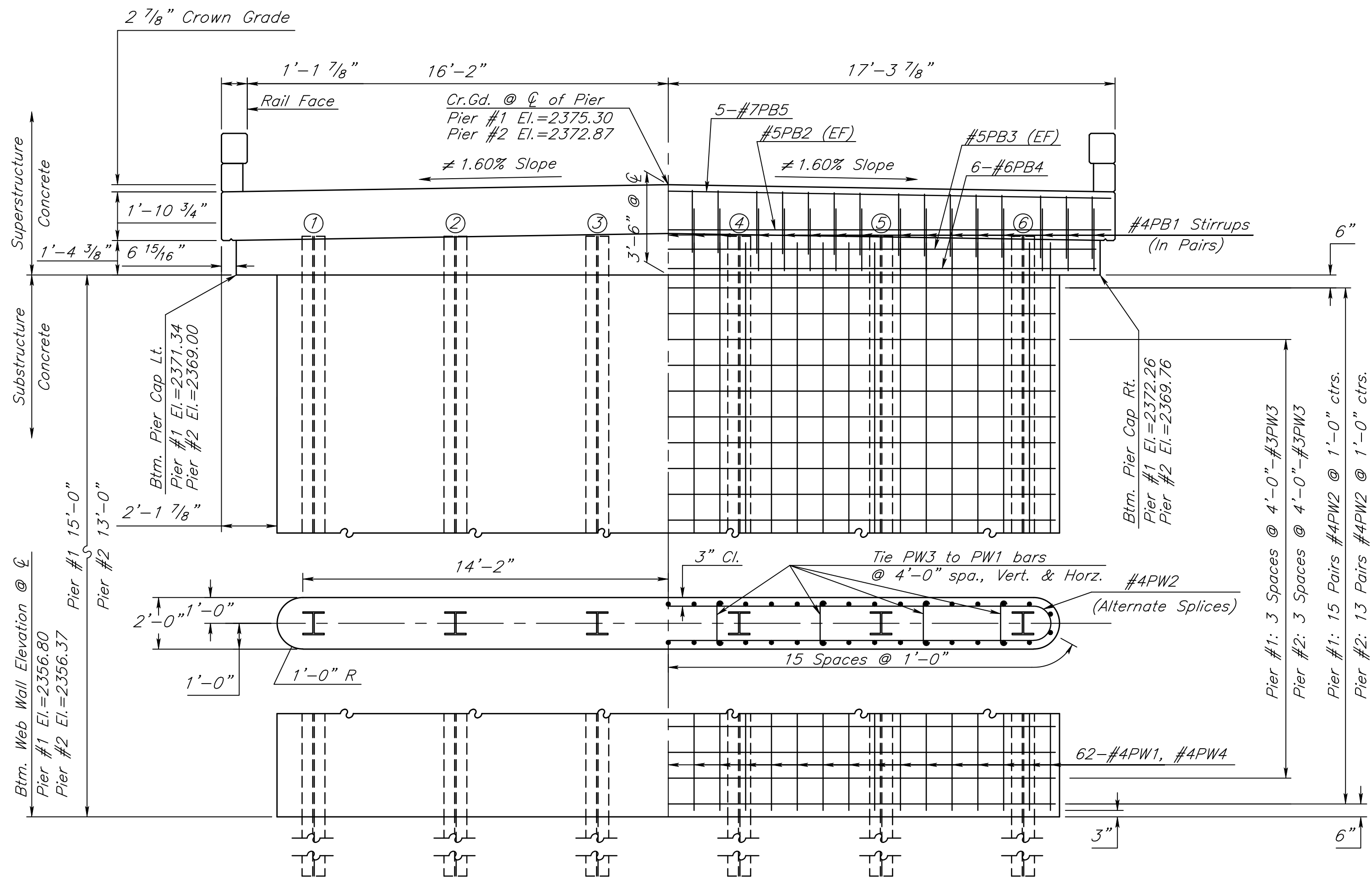
ABUTMENT DETAILS

Proj. No. 98 C-5291-01	Trego Co.
SHEET NO. OF SCALE APP'D	DESIGNED DRT DETAILED DRT QUANTITIES DRT CADD RCJ
DESIGN CK. DETAIL CK. QUAN. CK. CADD CK.	



HALF PLAN REINFORCING STEEL IN TOP OF CAP HALF PLAN REINFORCING STEEL IN BTM. OF CAP

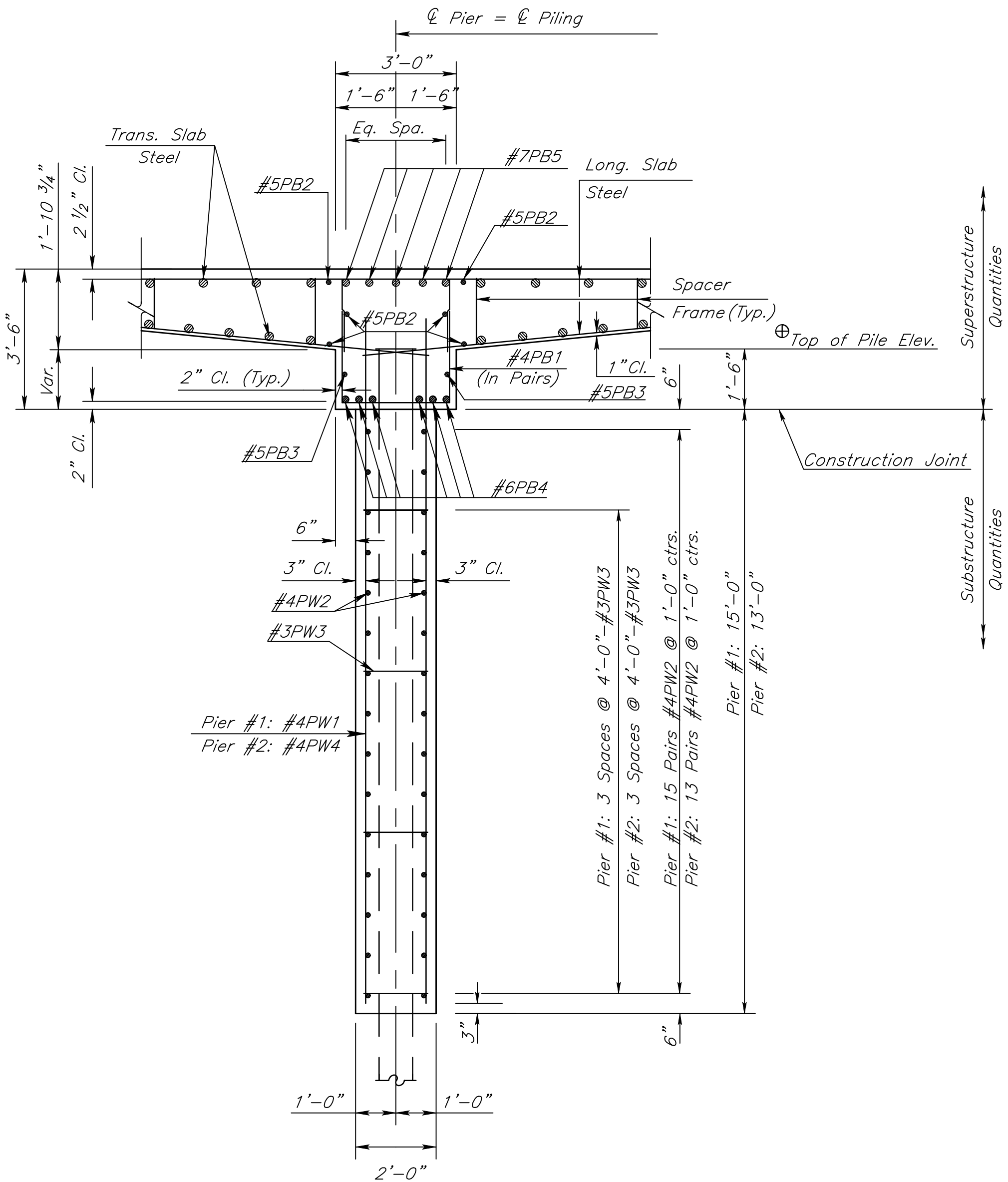
PLAN



HALF ELEVATION

HALF ELEVATION OF REINFORCING STEEL

ELEVATION



SECTION THRU PIER BEAM

PIER PILE LOADING

Design
Strength 1 82 Tons/Pile

LEGEND

EF = EACH FACE
≠ Perpendicular to CL of Roadway

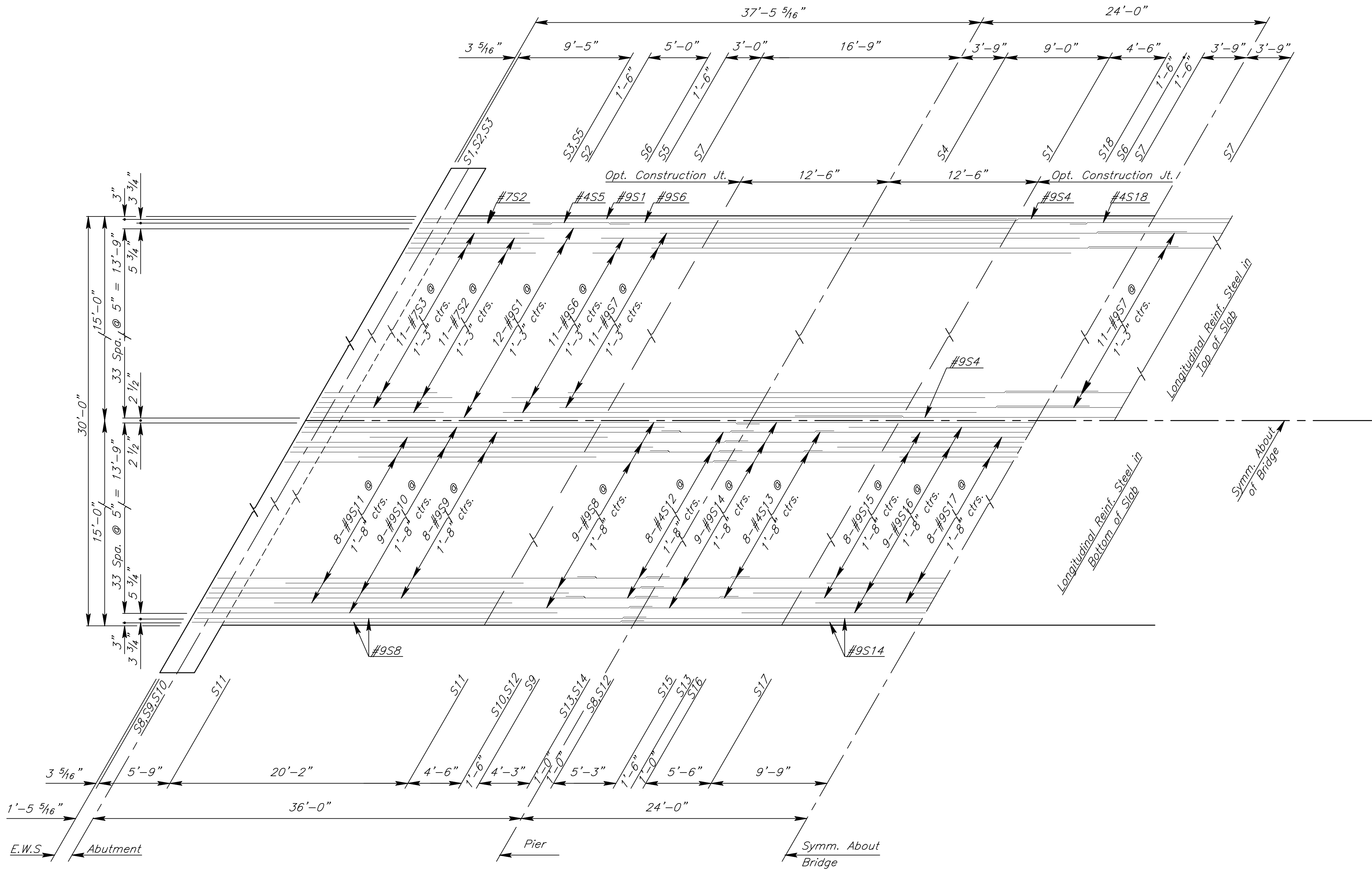
⊕ Top of Pile Elevation		
Pile No.	Pier #1	Pier #2
1	2372.92	2370.56
2	2373.07	2370.69
3	2373.22	2370.81
4	2373.37	2370.94
5	2373.52	2371.06
6	2373.68	2371.19

⊕ Note: Top of pile elevation is based on 1'-6" embedment into the pier beam.

3					
2					
1					
NO.	DATE	REVISIONS	BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION					
Br. No. 000980533304800 Sta. 441+70					
PIER DETAILS					
Proj. No. 98 C-5291-01 Trego Co.					
SHEET NO.	OF	SCALE	APP'D		
DESIGNED	DRT	DETAILED	DRT	QUANTITIES	DRT
DESIGN CK.	DETAIL CK.	QUAN. CK.	CADD	CADD	RCJ

X:\ac2\kdot\KD5291-Trego-Off#35\ACAD\KD5291 TROFF35.dwg -- Super Structure 1/10/2025 3:44 PM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	15	49

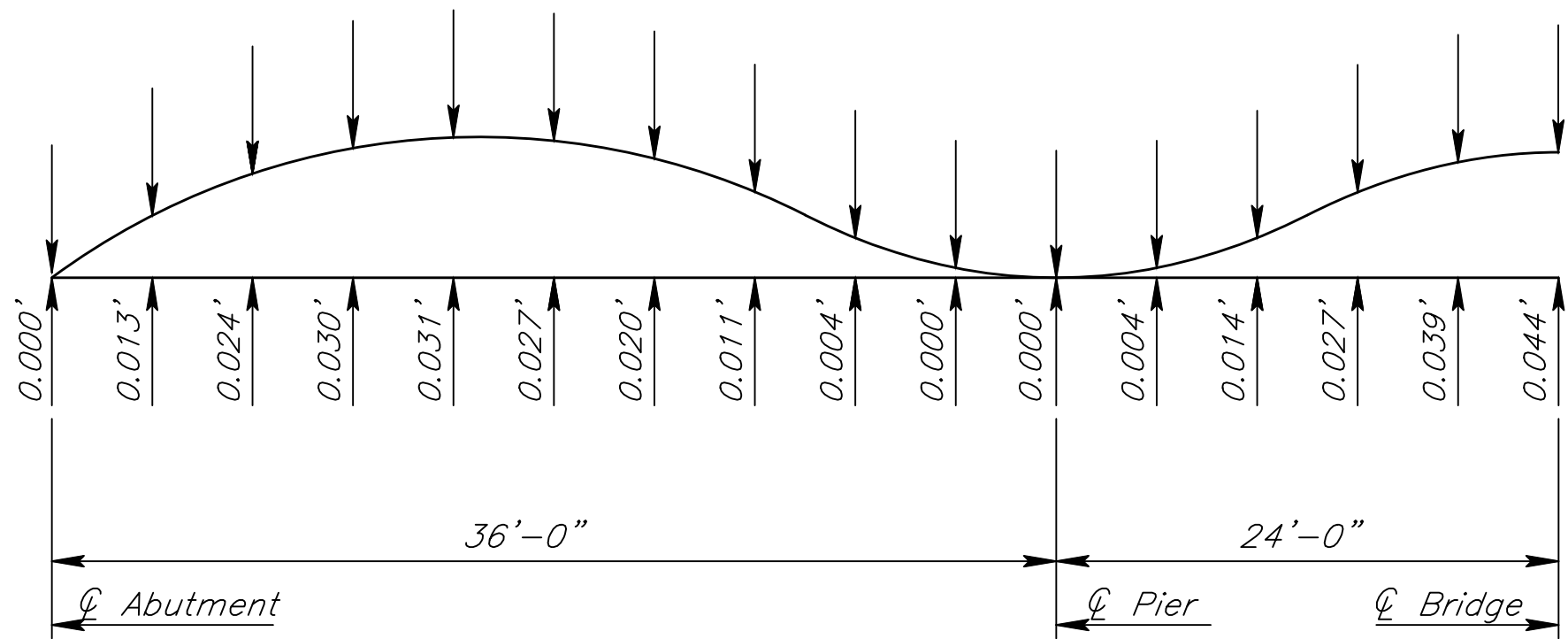


End-Span

Mid-Span

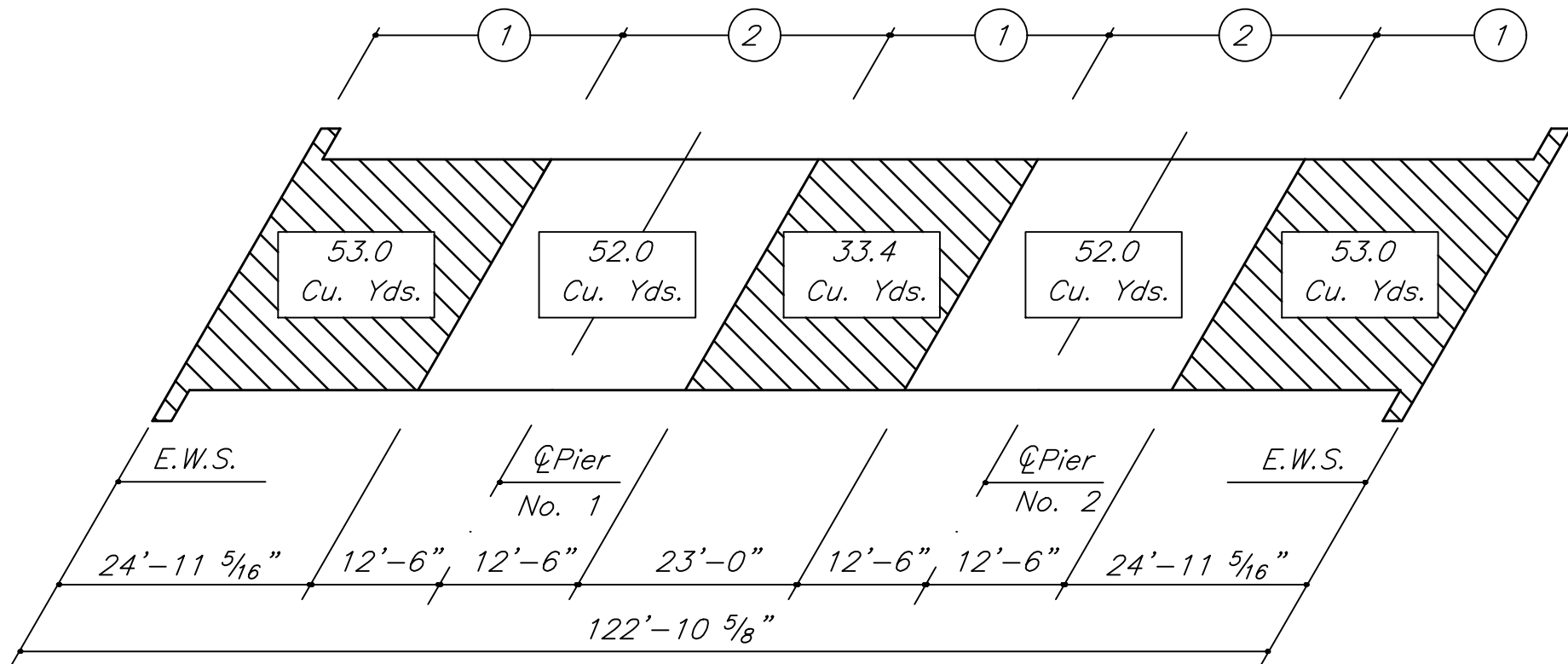
HALF PLAN

Note:
See longitudinal section for
transverse reinforcing steel.



DEAD LOAD CAMBER DIAGRAM AT TENTH POINTS

Long Term Deflections = Initial Deflections x 3.5
(Initial Deflections Based on $E_C = 3.644 \times 10^6$ p.s.i.)
Dead Load Camber reduced by 30% due to skew.



CONCRETE PLACING SEQUENCE DIAGRAM

CONCRETE PLACING SEQUENCE

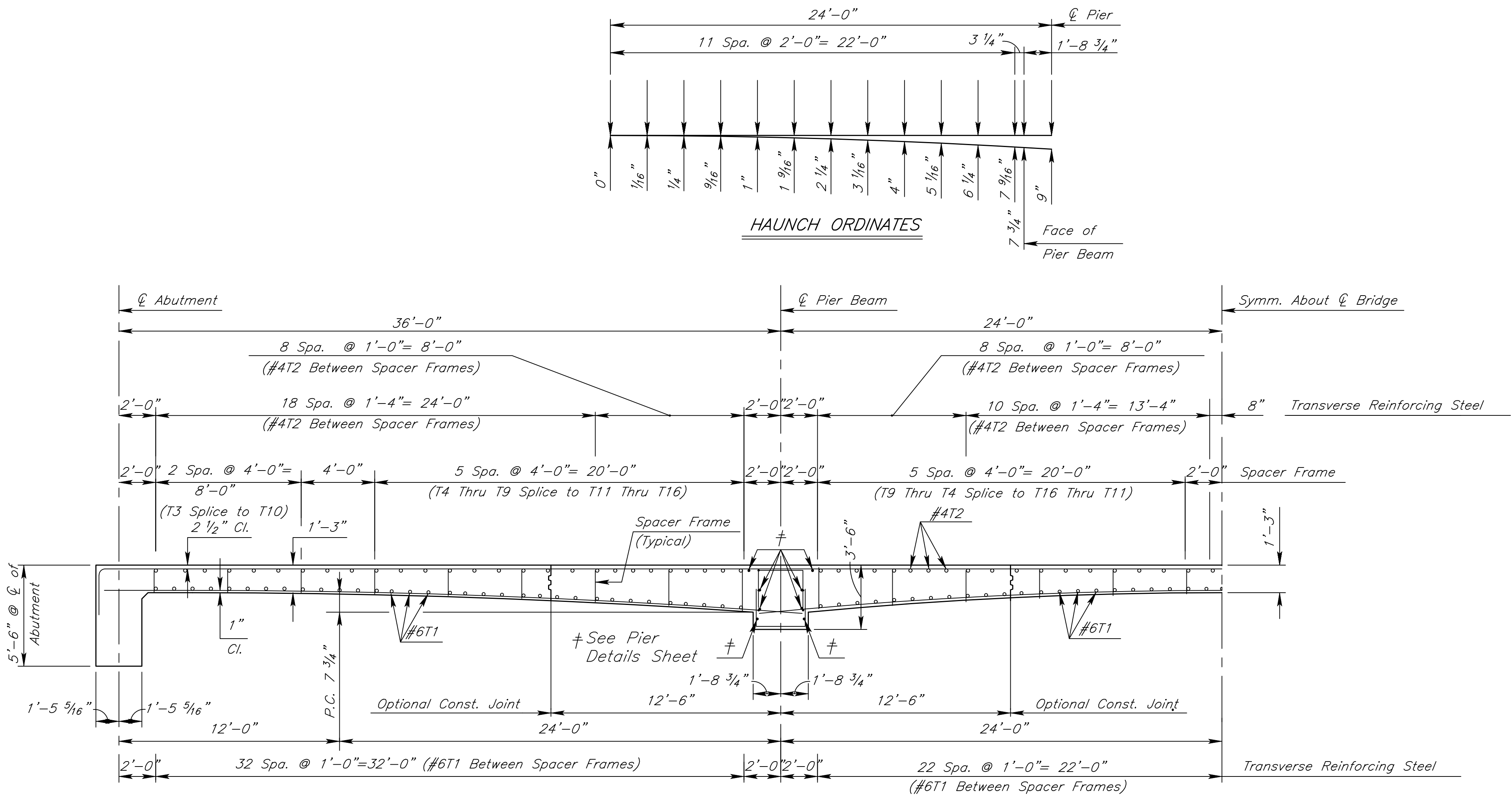
When long span steel beams having a concrete dead load deflection greater than 1/4" are used or when timber falsework with greater than 12'-0" clear span is used, follow the placing sequence shown. Segmental, combined or continuous pours are allowed, but stop a discontinuous pour at a construction joint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

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

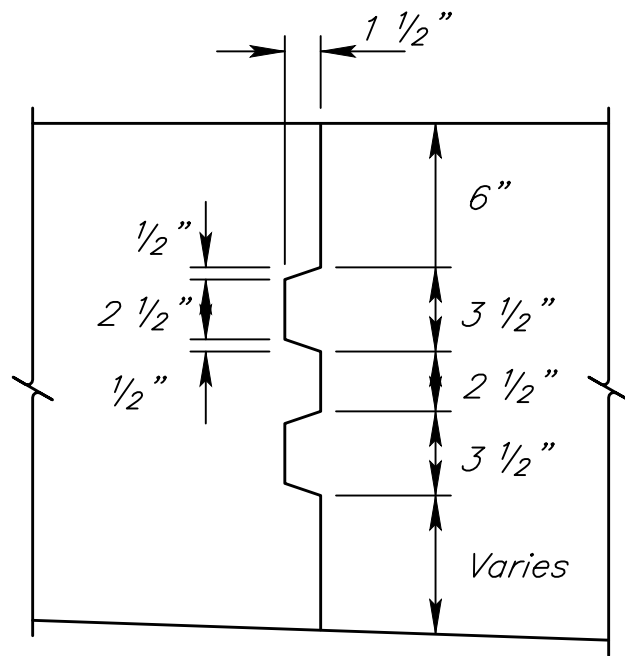
The Contractor may place the corral rail continuously from one end of the bridge to the other.

3					
2					
1					
NO.	DATE	REVISIONS	BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION					
Br. No. 000980533304800 Sta. 441+70					
SUPERSTRUCTURE DETAILS					
Proj. No. 98 C-5291-01 Trego Co.					
SHEET NO.	OF	SCALE	APP'D		
DESIGNED	DRT	DETAILED	DRT	QUANTITIES	DRT
DESIGN CK.	DETAIL CK.	QUAN. CK.	CADD	RCJ	

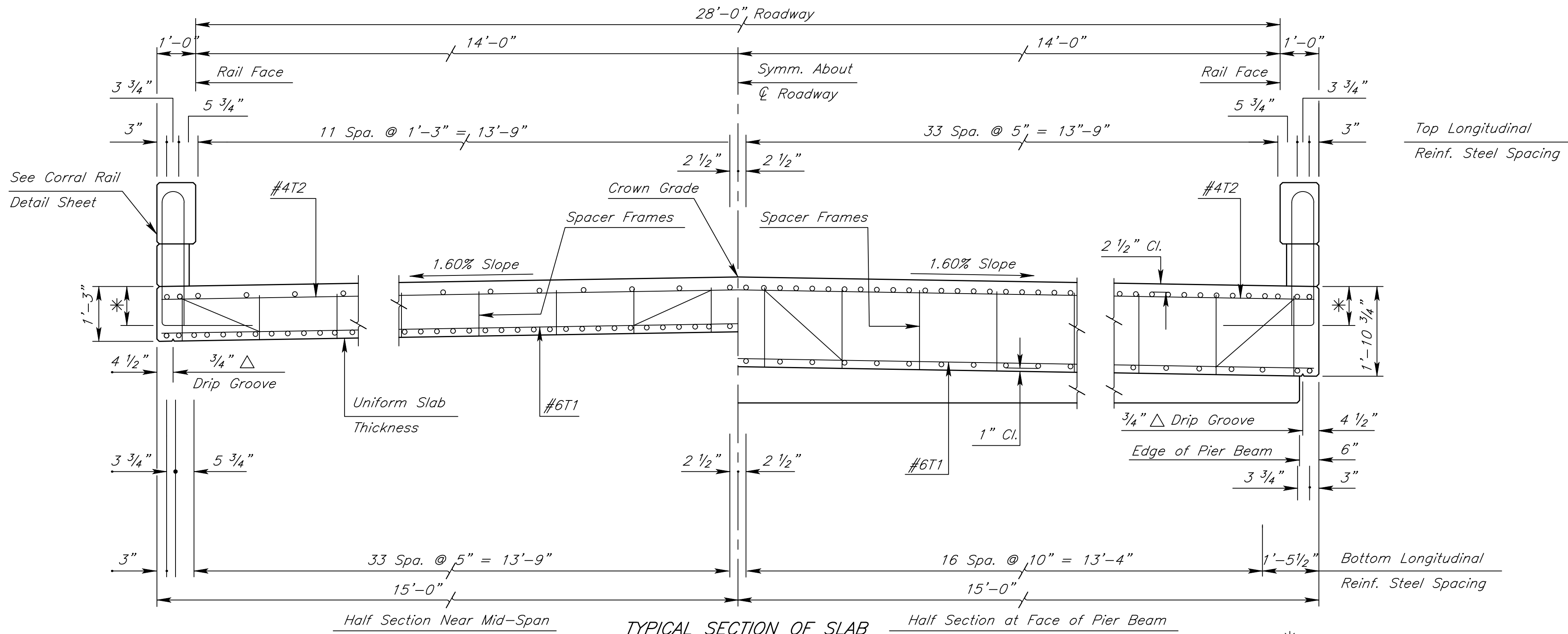
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	16	49



HALF LONGITUDINAL SECTION ALONG $\varnothing$ BRIDGE

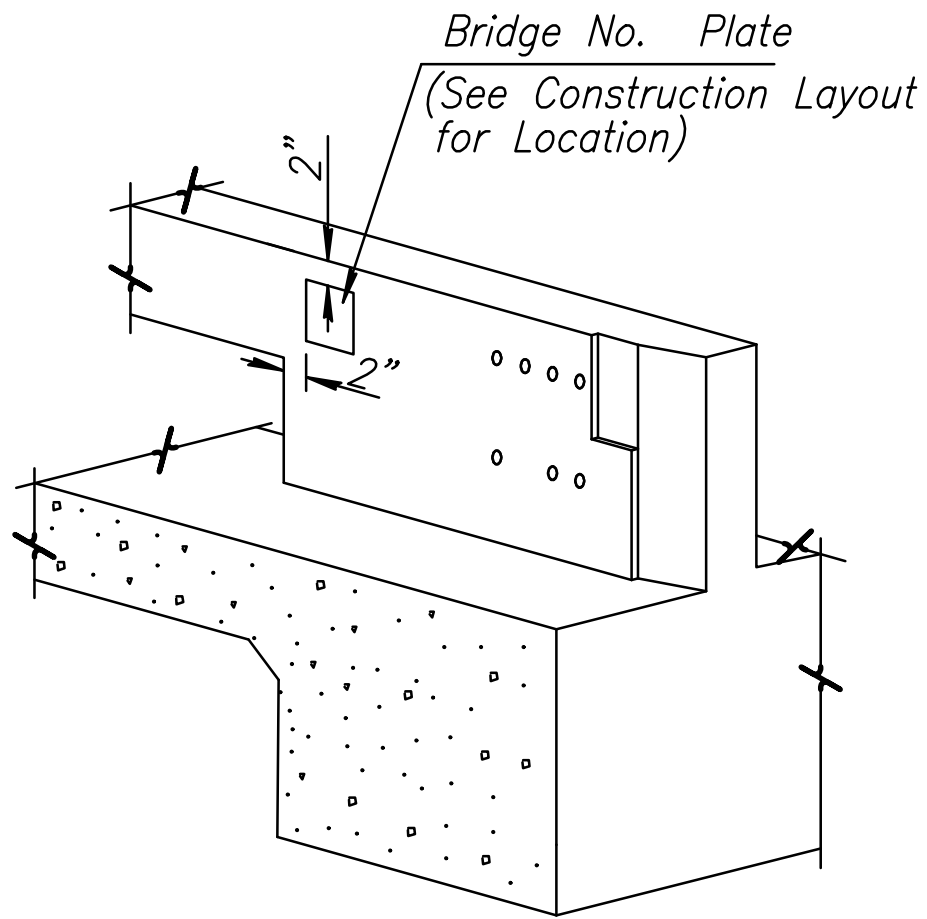
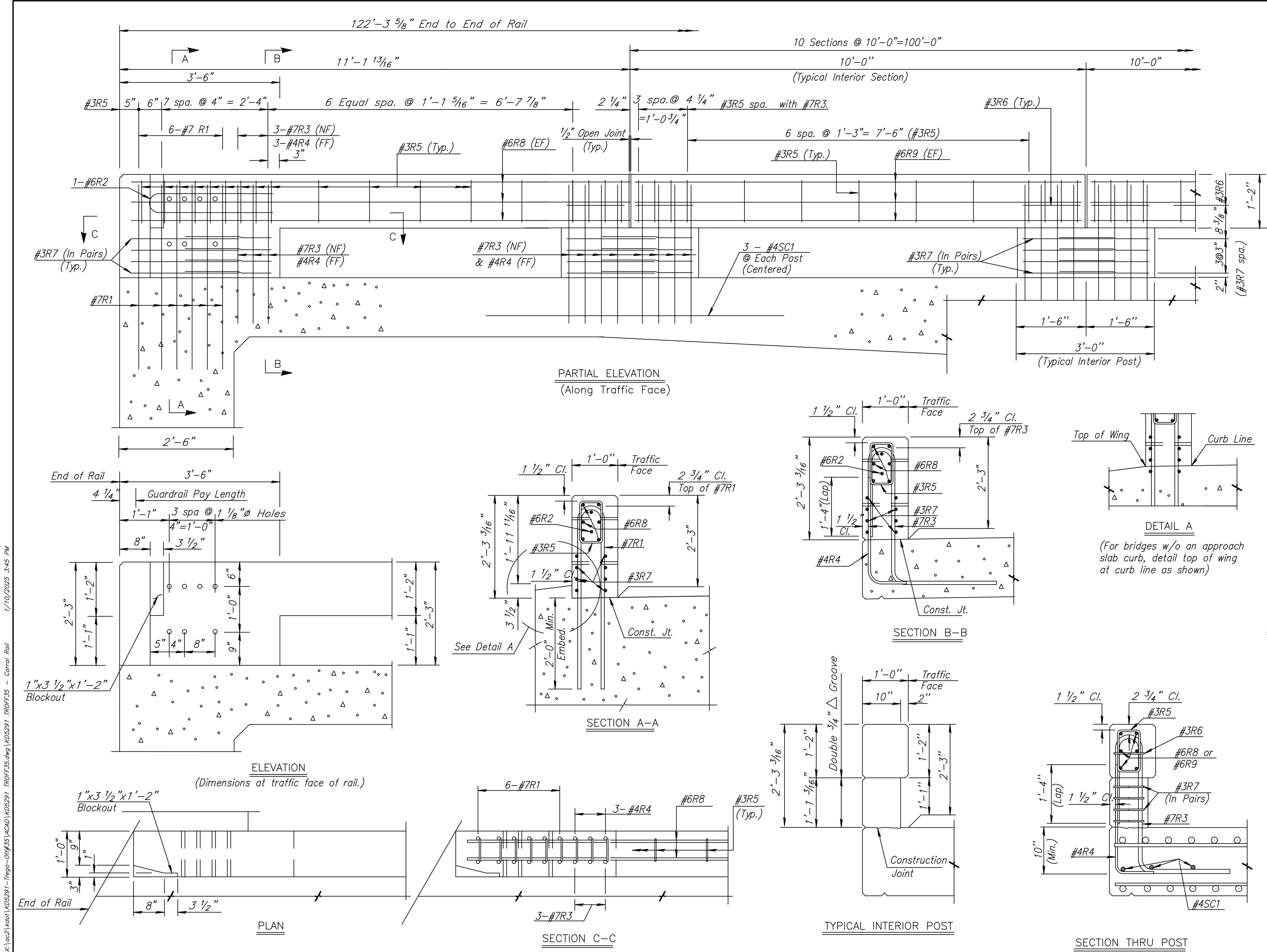


TRANSVERSE SLAB CONSTRUCTION JOINT (Optional)



3					
2					
1					
NO.	DATE	REVISIONS	BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION					
Br. No. 000980533304800 $\varnothing$ Sta. 441+70					
SUPERSTRUCTURE DETAILS					
Proj. No. 98 C-5291-01			Trego Co.		
SHEET NO.	OF	SCALE	APP'D		
DESIGNED	DRT	DETAILED	DRT	QUANTITIES	DRT
DESIGN CK.		DETAIL CK.		QUAN. CK.	CADD CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	17	49



BRIDGE NUMBER PLATE PLACEMENT DETAIL
(If Required)

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

3					
2					
1					
NO.	DATE	REVISIONS	BY	APP'D	
1					
KANSAS DEPARTMENT OF TRANSPORTATION Br. No. 000980533304800 @ Sta.441+70 27" KANSAS CORRAL RAIL (W-BEAM WITH RUBRAIL) R.C. HAUNCHED SLAB (Without Curb) Proj. No. 98 C-5291-01 Trego Co.					
SHEET NO.	OF	SCALE	APP'D		
DESIGNED		DETAILED	QUANTITIES	CADD	
DESIGN CK.		DETAIL CK.	QUAN. CK.	CADD CK.	

X:\ac2\kdot\K05291-Trego-011\35\ACAD\K05291 TROFF35.dwg K05291 TROFF35 - Slope Protection 1/10/2025 3:46 PM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	19	49

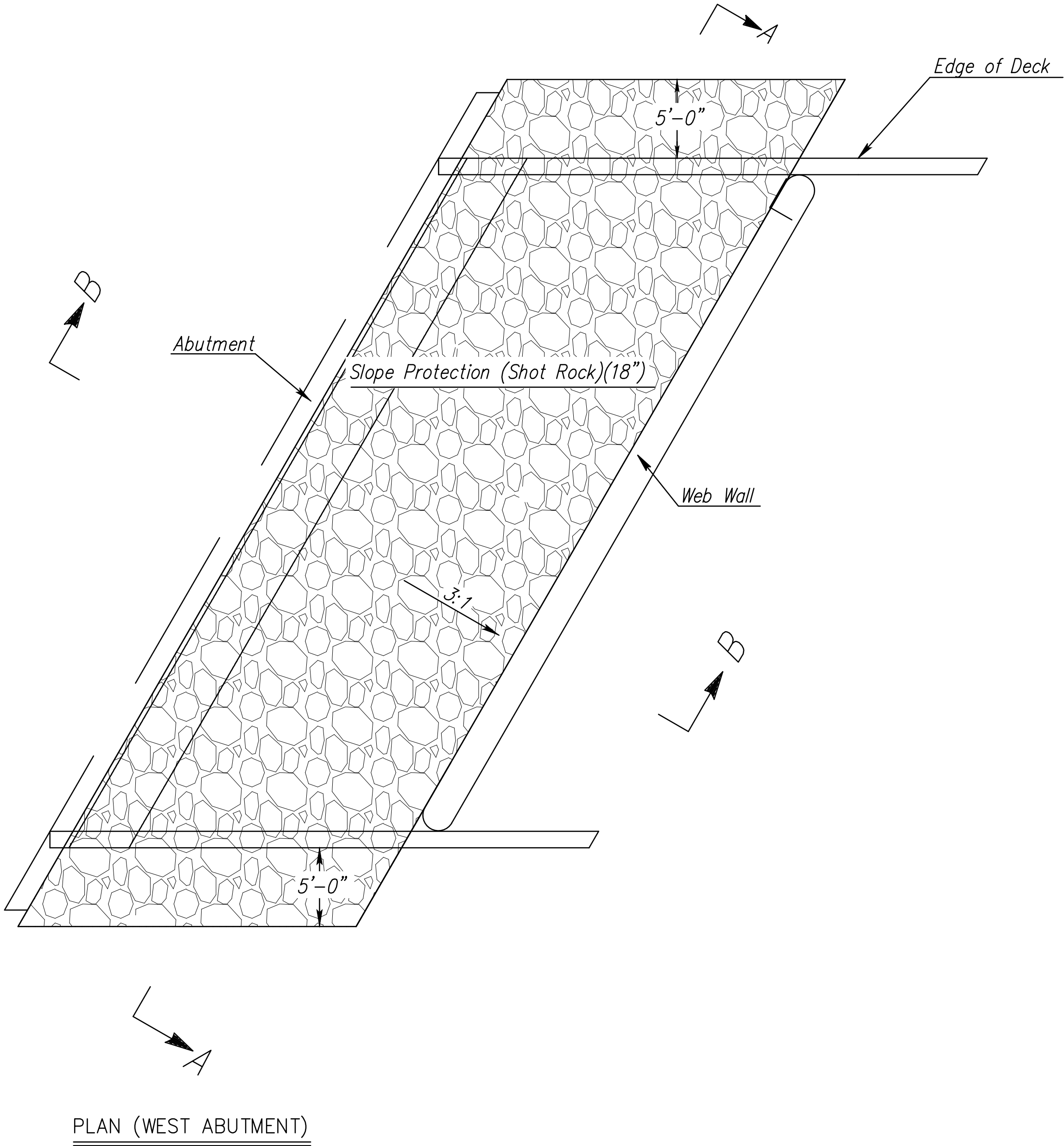
GENERAL NOTES

- Limits of slope protection are as shown and centered along drip line of the slab.
- Excavation and grading for placement of slope protection and all work and material to install geotextile fabric shall be subsidiary to slope protection.
- Slope protection shall be underlain with geotextile fabric. Fabric damaged or displaced during construction shall be replaced at no cost to KDOT. Fabric shall be installed and secured as recommended by the fabric manufacturer. One (1) copy of the fabric manufacturer's installation procedure shall be submitted to the Engineer. The installation procedure shall show details of the splices, overlaps, and pin layout. Minimum overlap of geotextile shall be 1 ft. Fabric shall be anchored along edges and splices at a maximum of 3 foot centers with staples or pins (w/washers). Interior area of fabric shall be pinned or stapled as recommended by the manufacturer but not more than 5 foot centers. Pins or staples shall be a minimum of 12 inches in length. Geotextile fabric shall meet the requirements of KDOT Specifications.
- The Contractor shall place the rock from the bottom to the top of the slope. Place the rock in a manner which produces a reasonably well graded mass of rock without segregation of the material sizes. Placement, measurement, and payment shall conform to KDOT Specifications for Slope Protection.

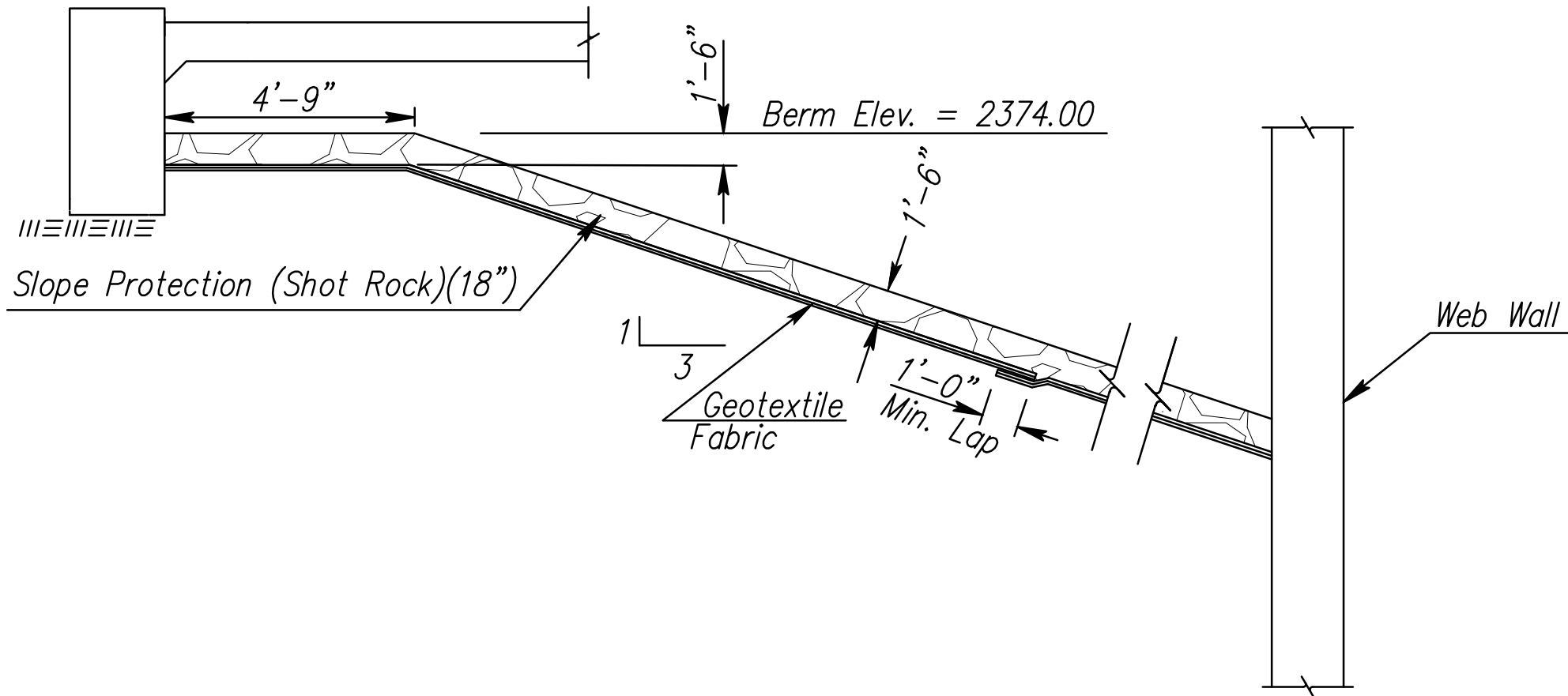
SLOPE PROTECTION (Shot Rock)(18")			
Sta. to Sta.		Side	Cu. Yds.
441+11	441+45	℄	78
442+03	442+29	℄	67
Total			145

QUANTITIES For Information Only		
		Geotextile Fabric Sq. Yds.
		270

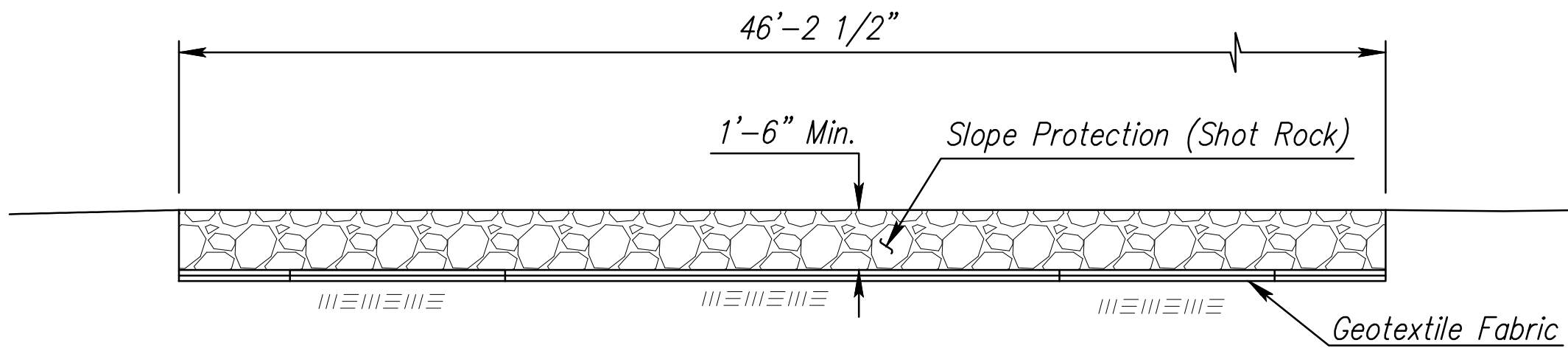
NO.	DATE	REVISIONS	BY	APP'D
BRIDGE BERM AND SLOPE PROTECTION STRAIGHT WINGWALL ABUTMENT				
FHWA APPROVAL		APP'D		
DESIGNED	DETAILED	QUANTITIES	CADD	
DESIGN CK.	DETAIL CK.	QUAN. CK.	CADD CK.	



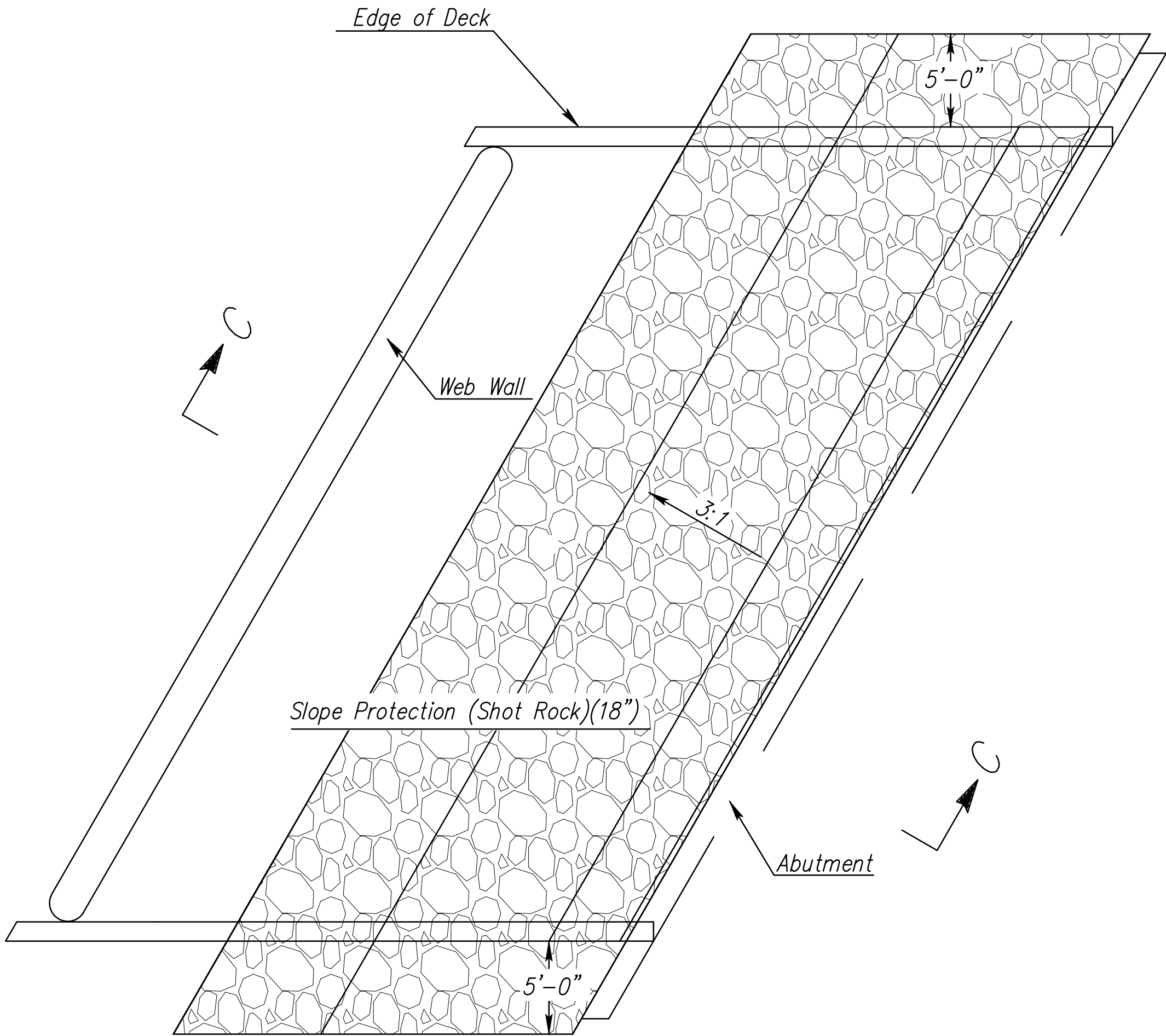
PLAN (WEST ABUTMENT)



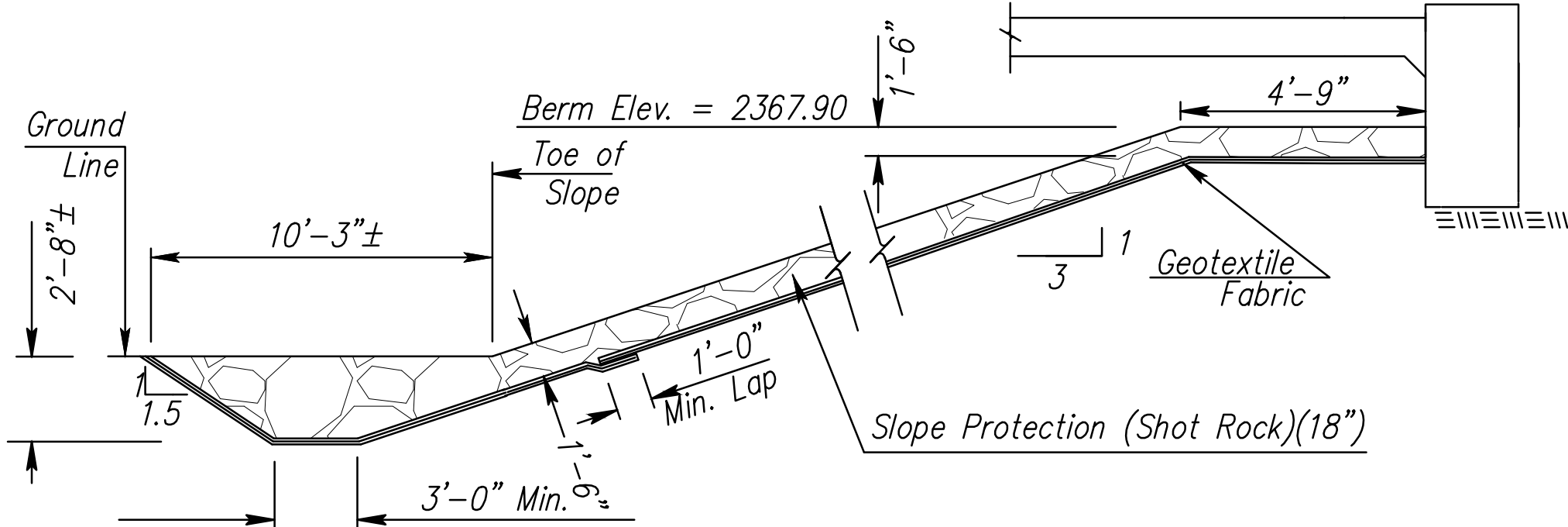
SECTION B-B
ABUT. #1



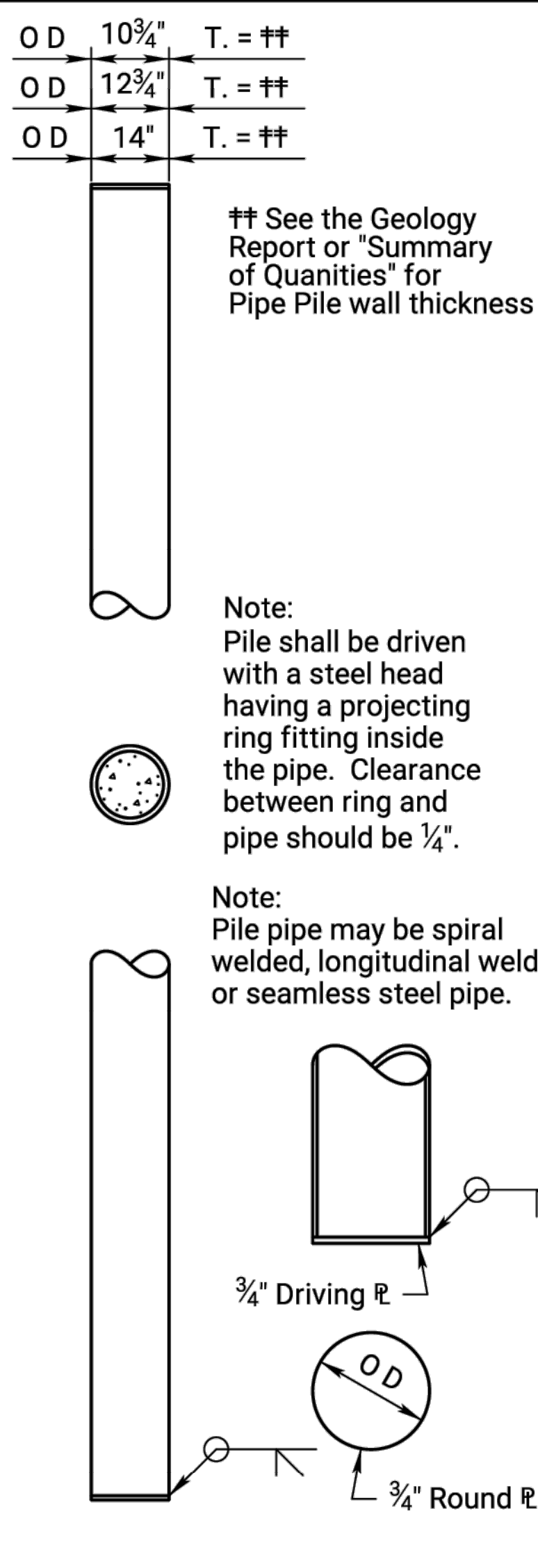
SECTION A-A



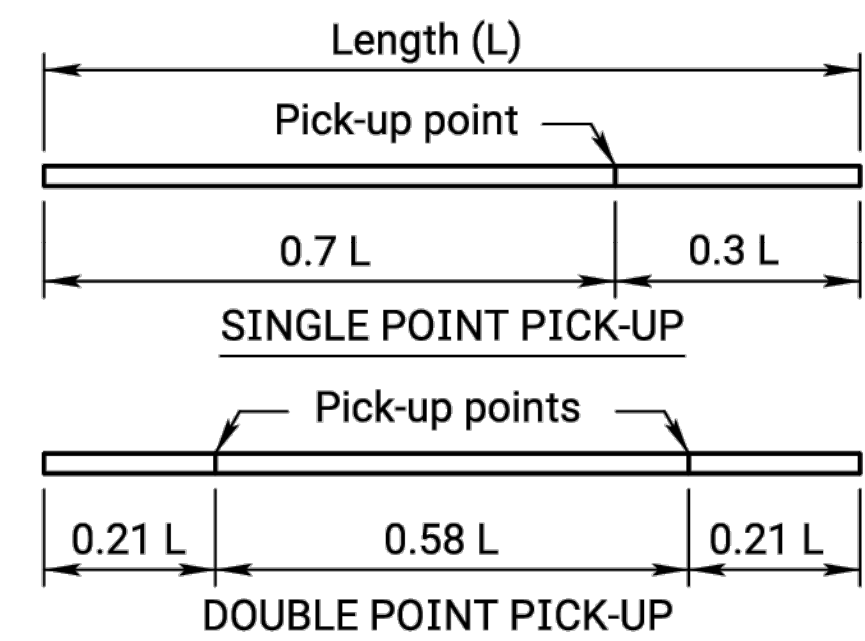
PLAN (EAST ABUTMENT)



SECTION C-C
ABUT. #2



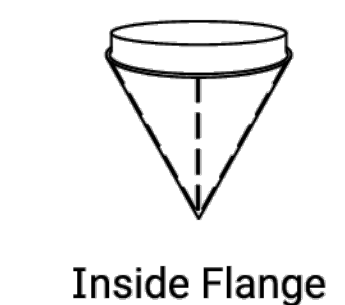
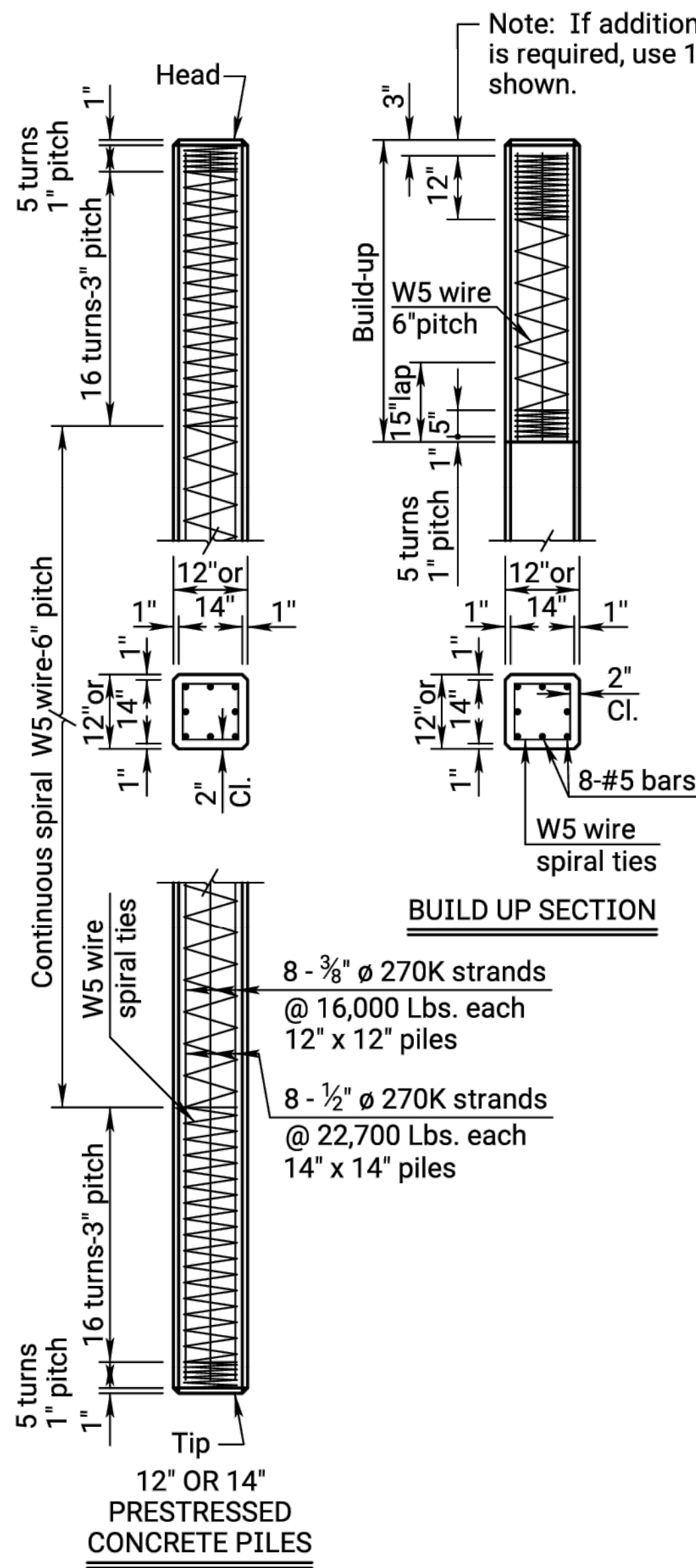
PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



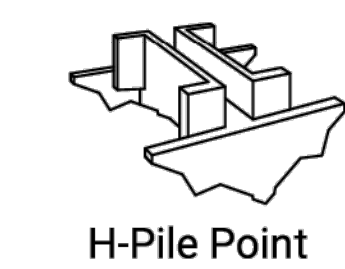
PICK-UP POINTS FOR PRESTRESSED PILING

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

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

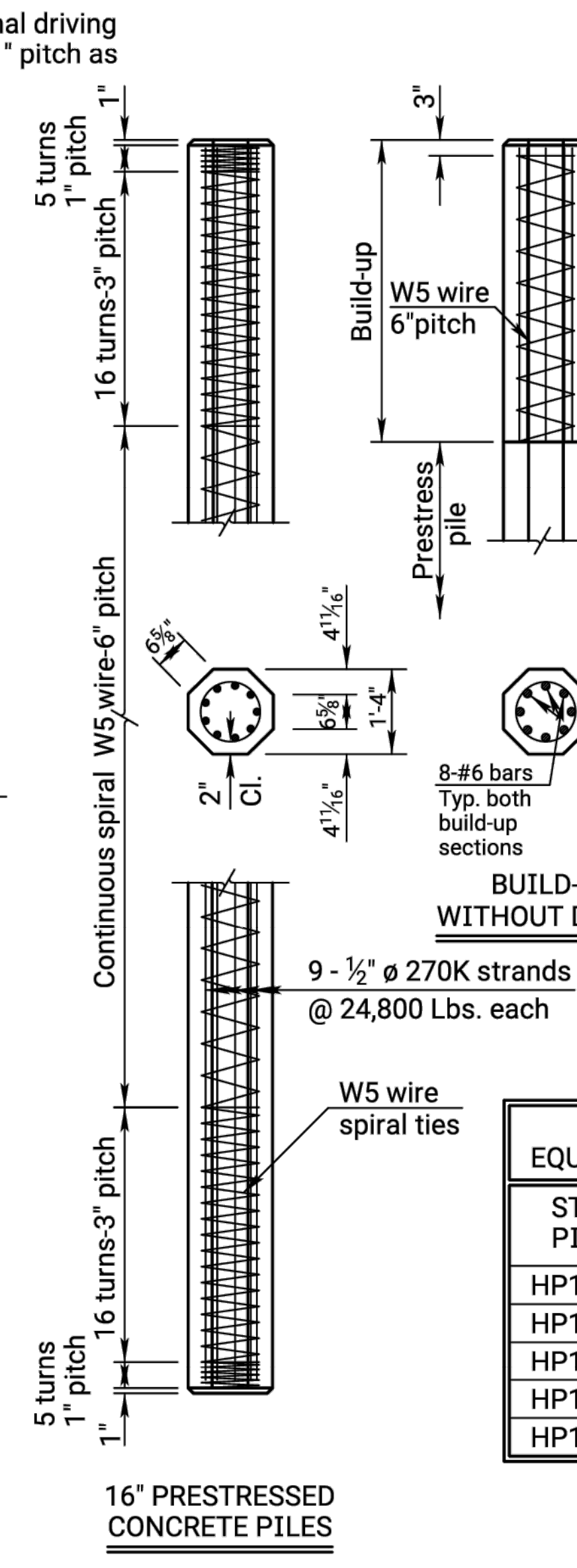
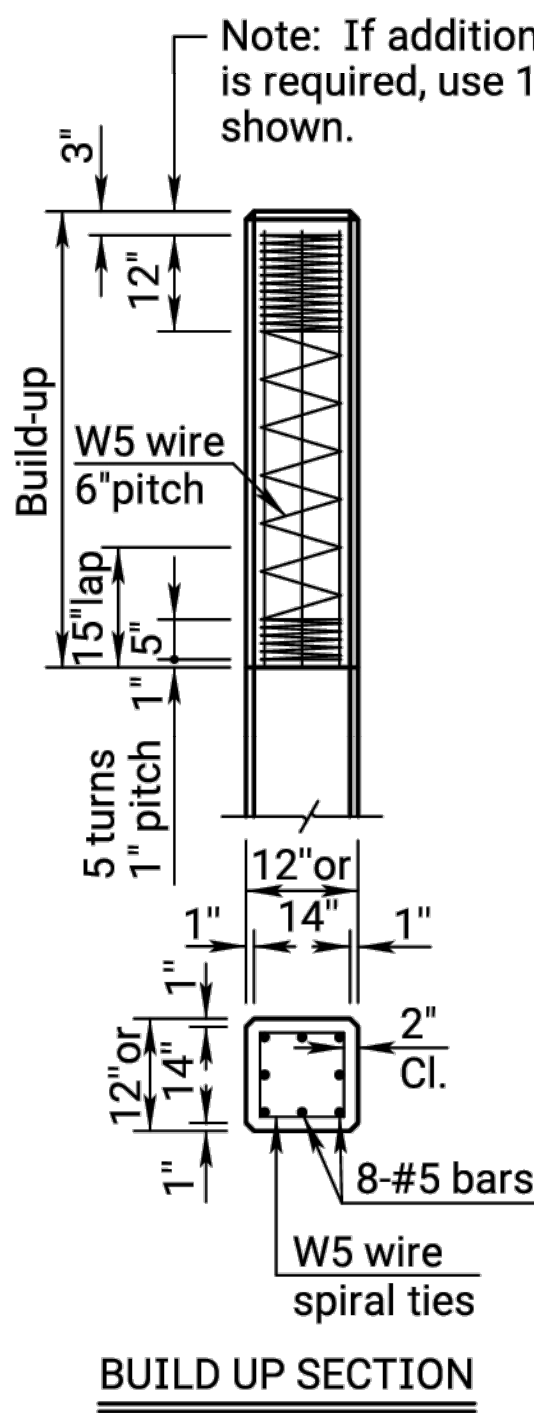


SHELL PILE POINT



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.



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

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

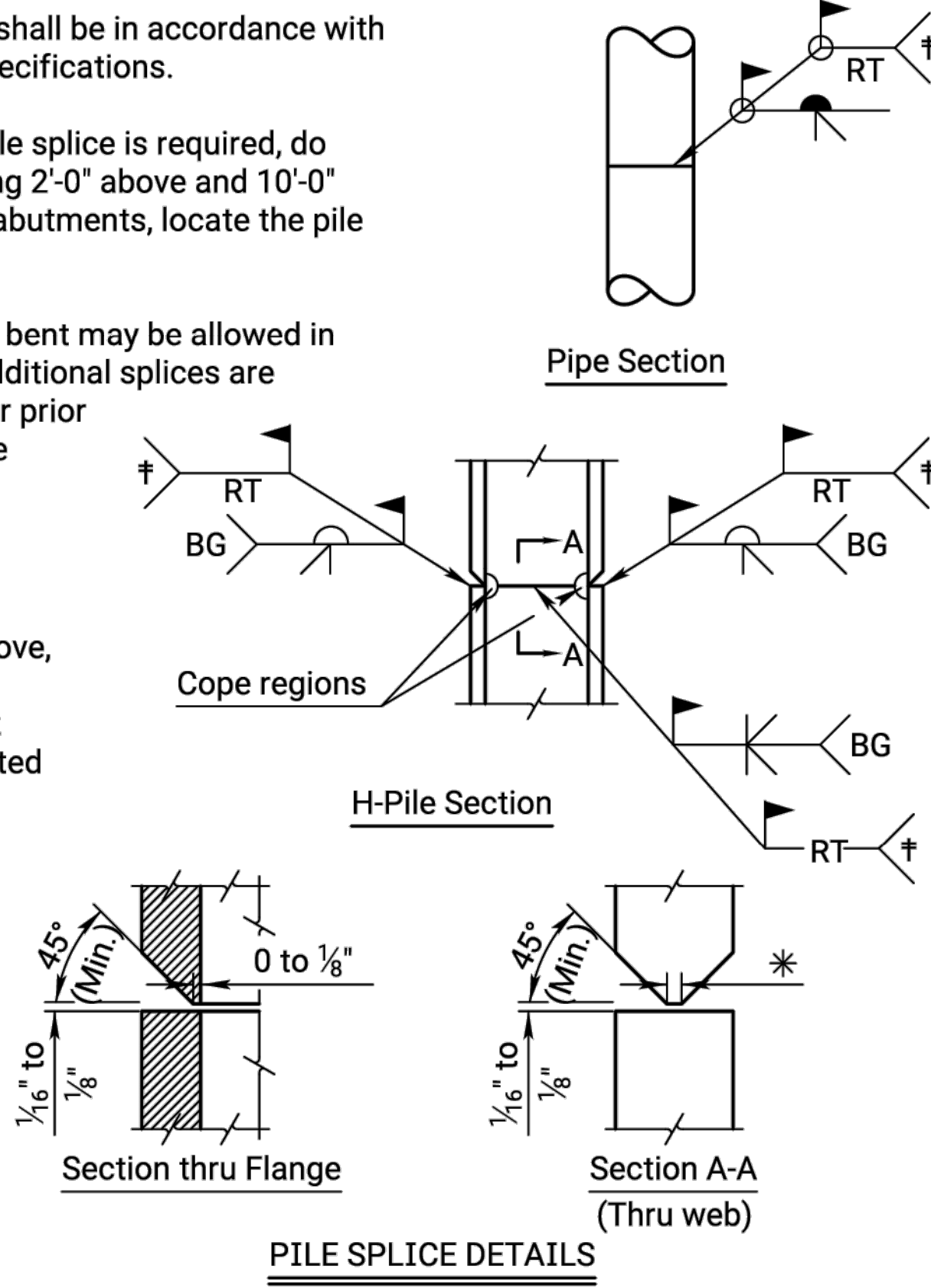
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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.

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

* Minimum as required by welding process.

BG = Backgouge



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.

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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.

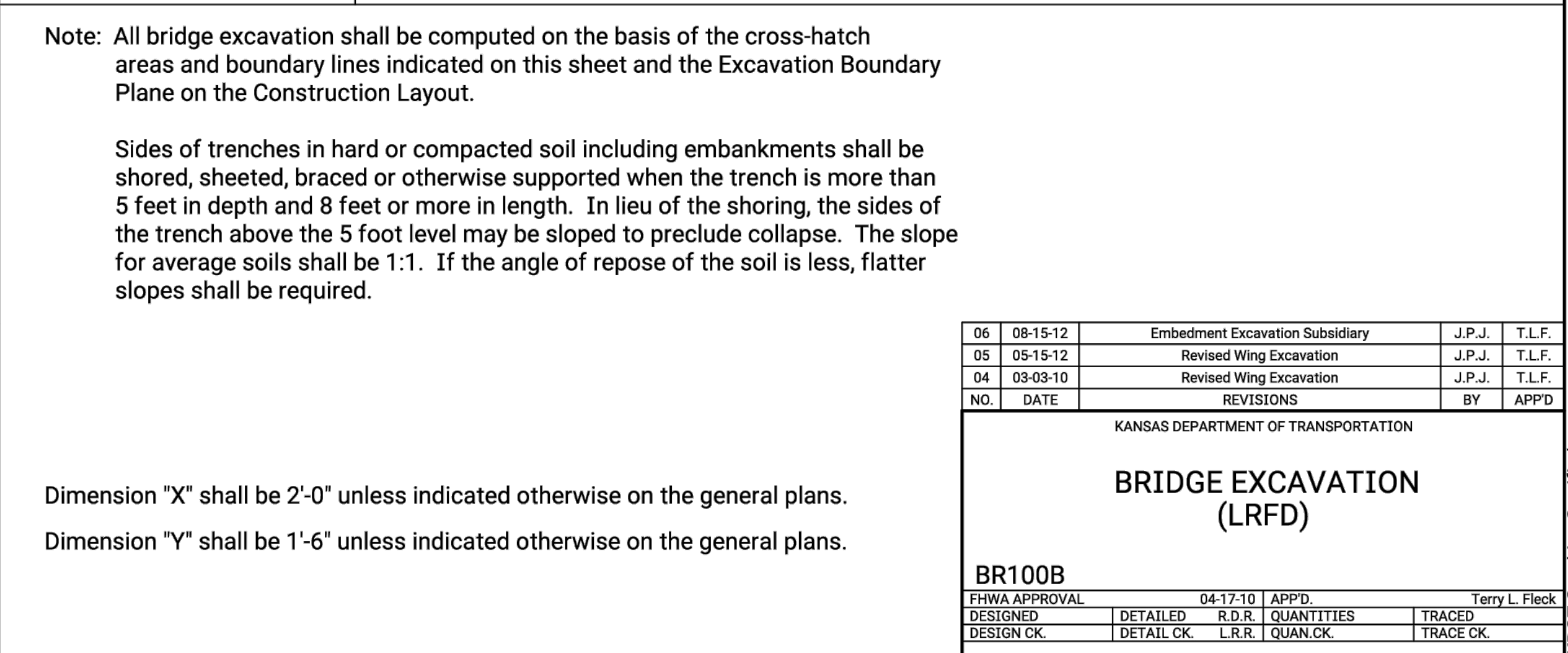
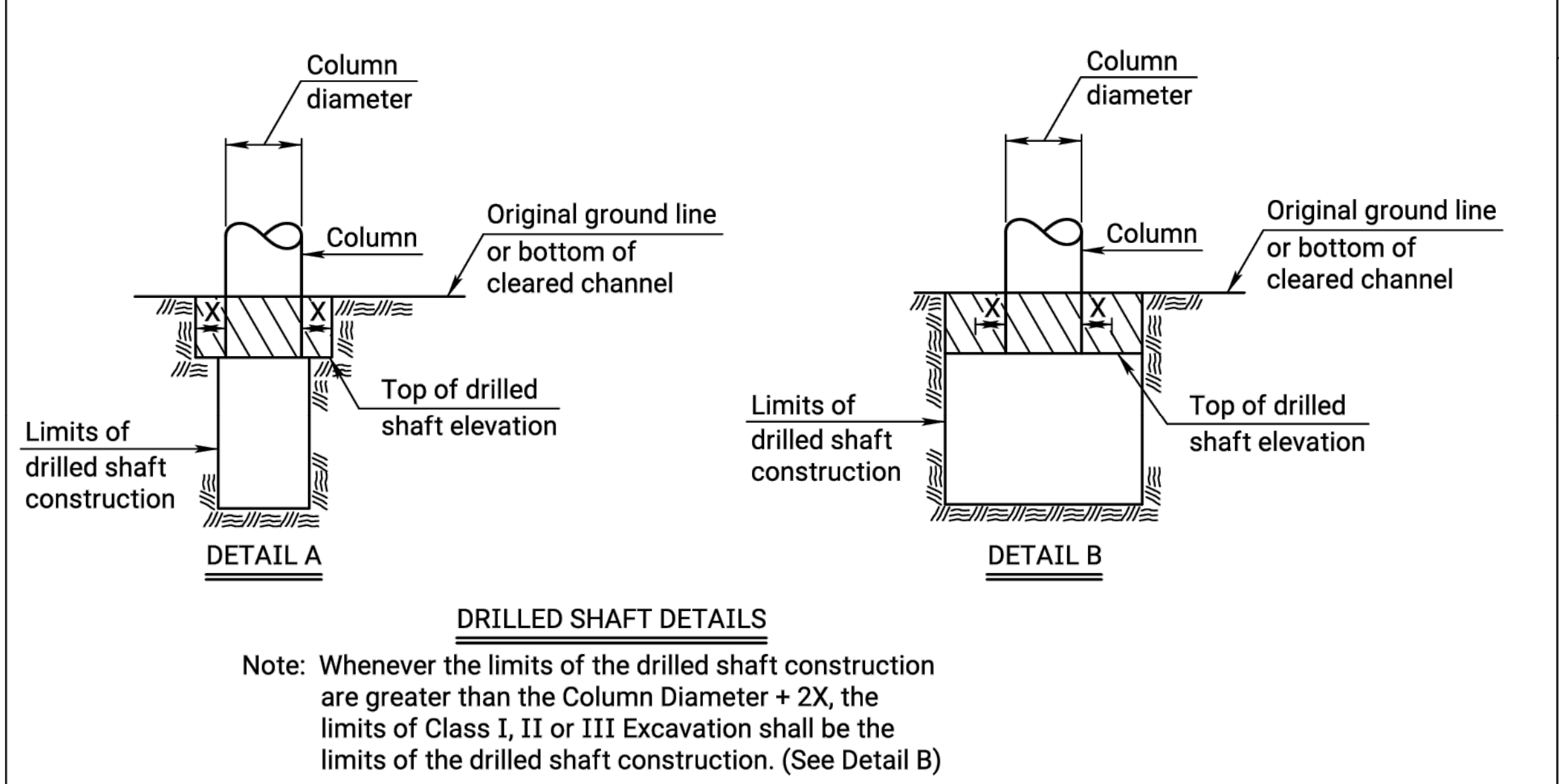
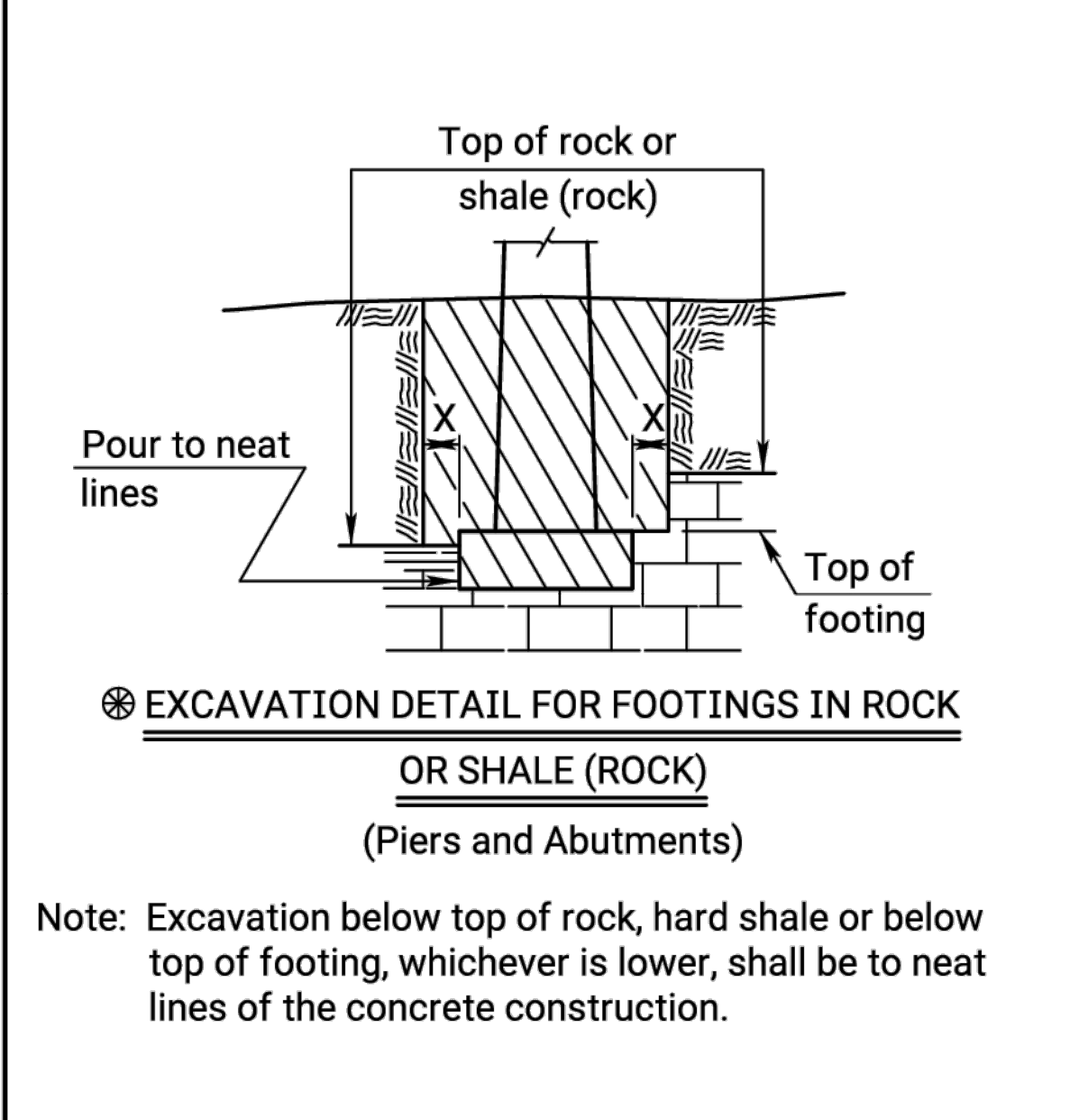
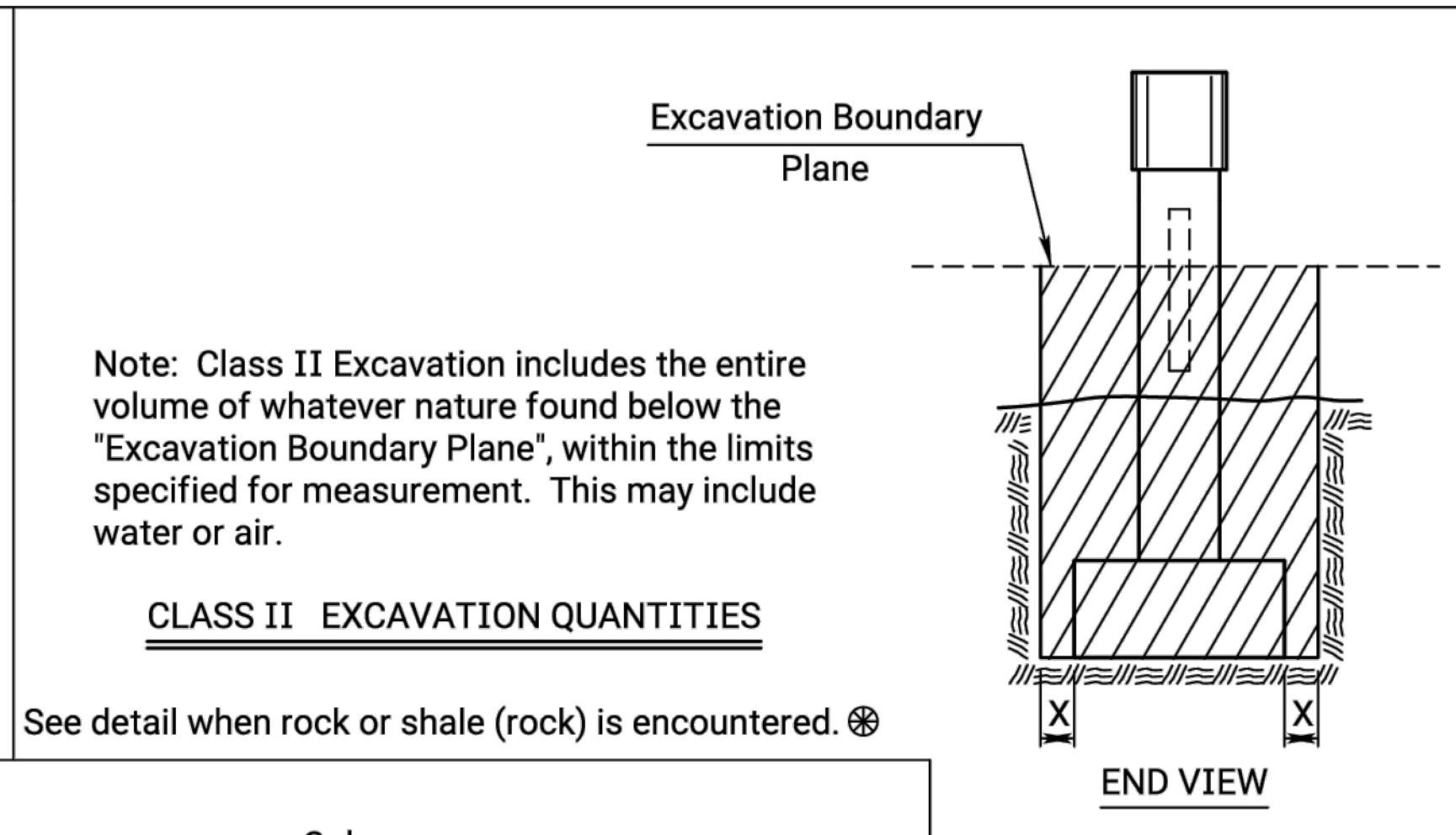
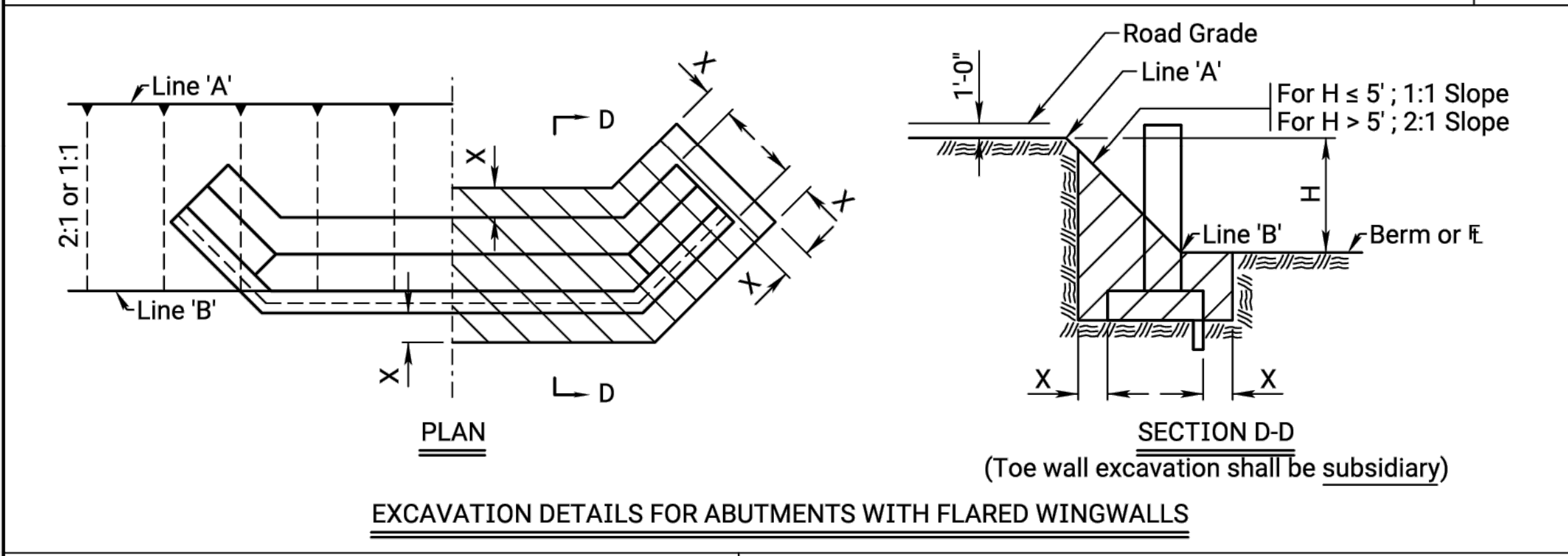
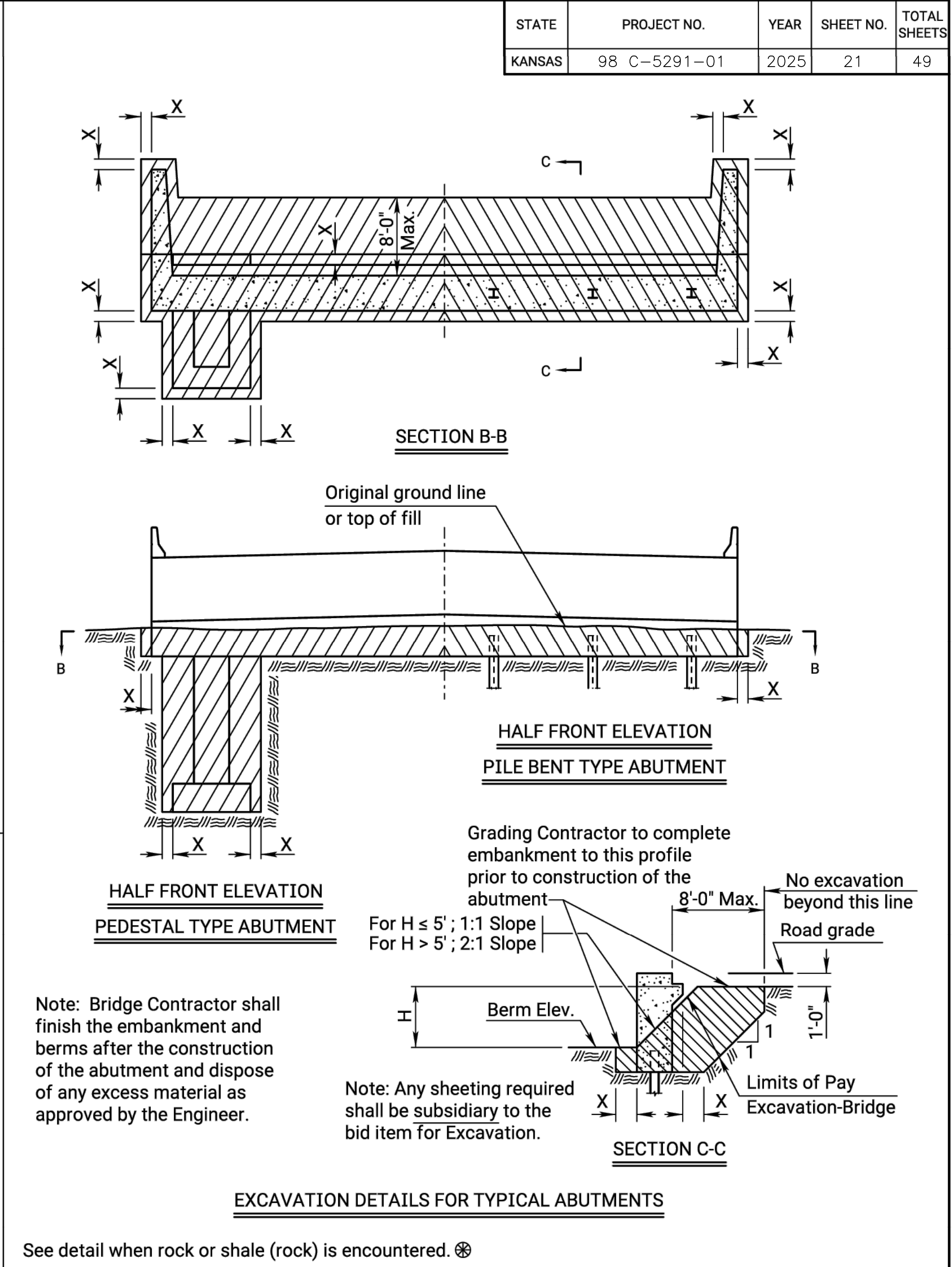
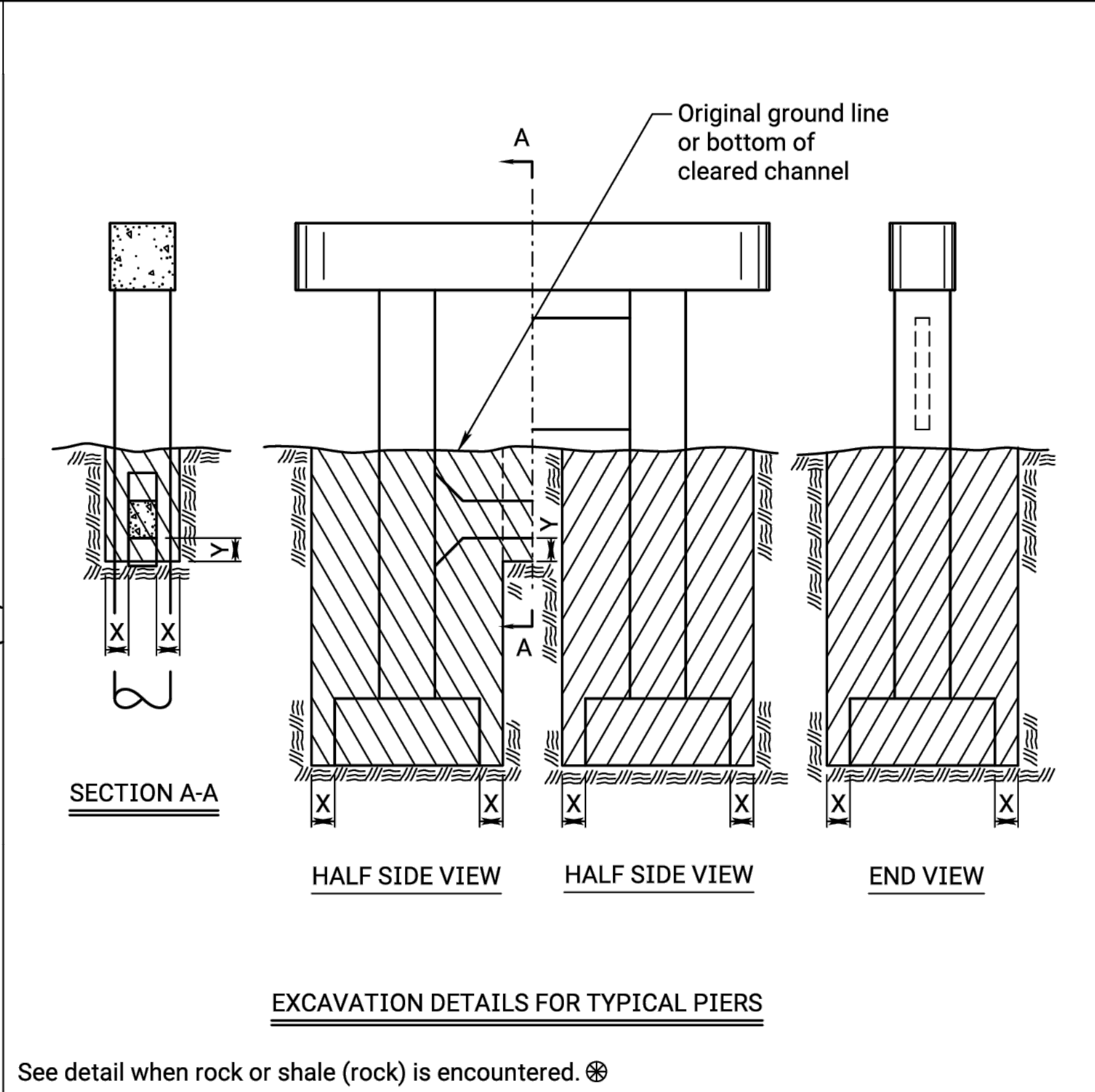
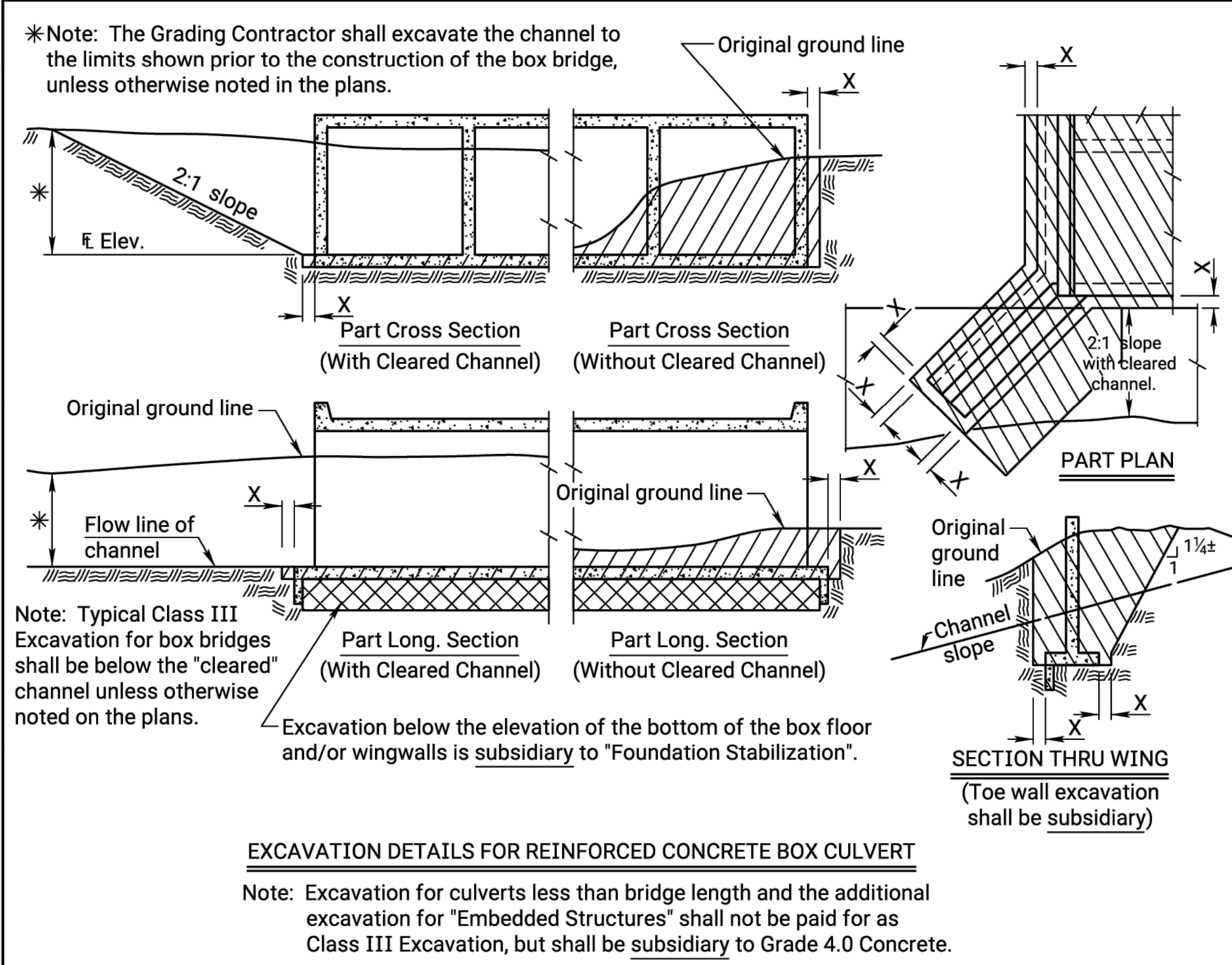
04	08-16-18	Add splice web section, clarify note	M.L.L.	J.P.J.
03	09-15-15	Clarify Notes	J.P.J.	C.E.R.
02	06-18-12	Clarify f'c, rod type, use and weld	J.P.J.	T.L.F.
NO.	DATE	REVISIONS	BY	APPD

STANDARD PILE DETAILS

BR110

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

Plotted by : KDOT#CADD.Support_ks.gov 25-JUN-2022 00:03
File : br100b.dgn



KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	22	49

GENERAL NOTES

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

Use only the following types of bar supports:

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

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

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

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

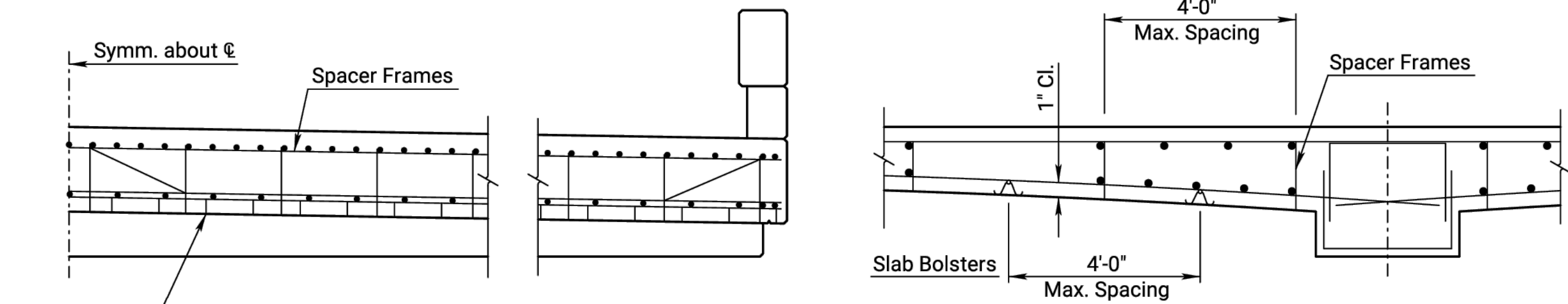
Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

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

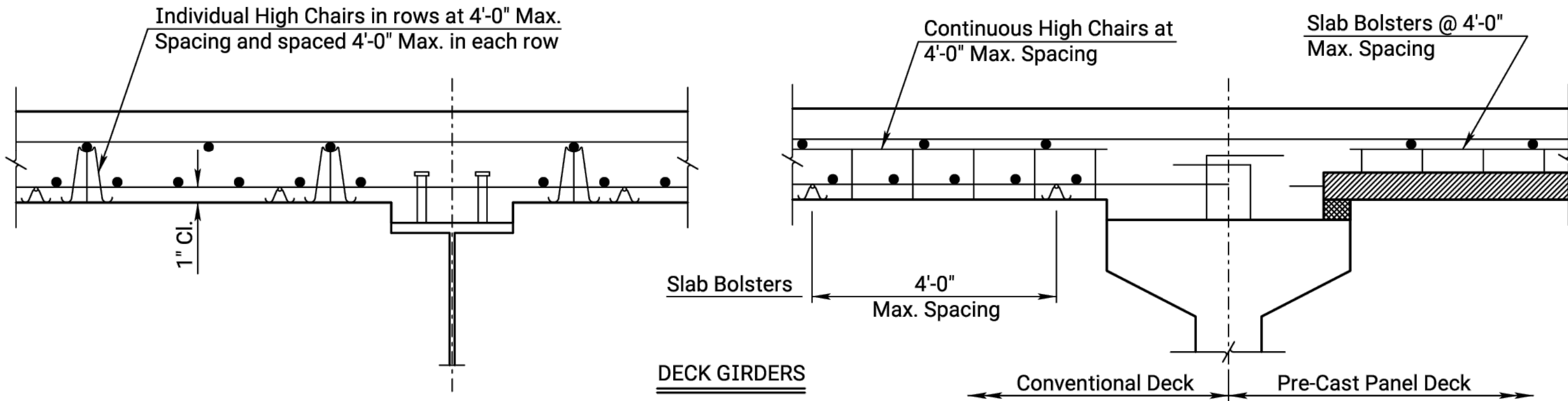
Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

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

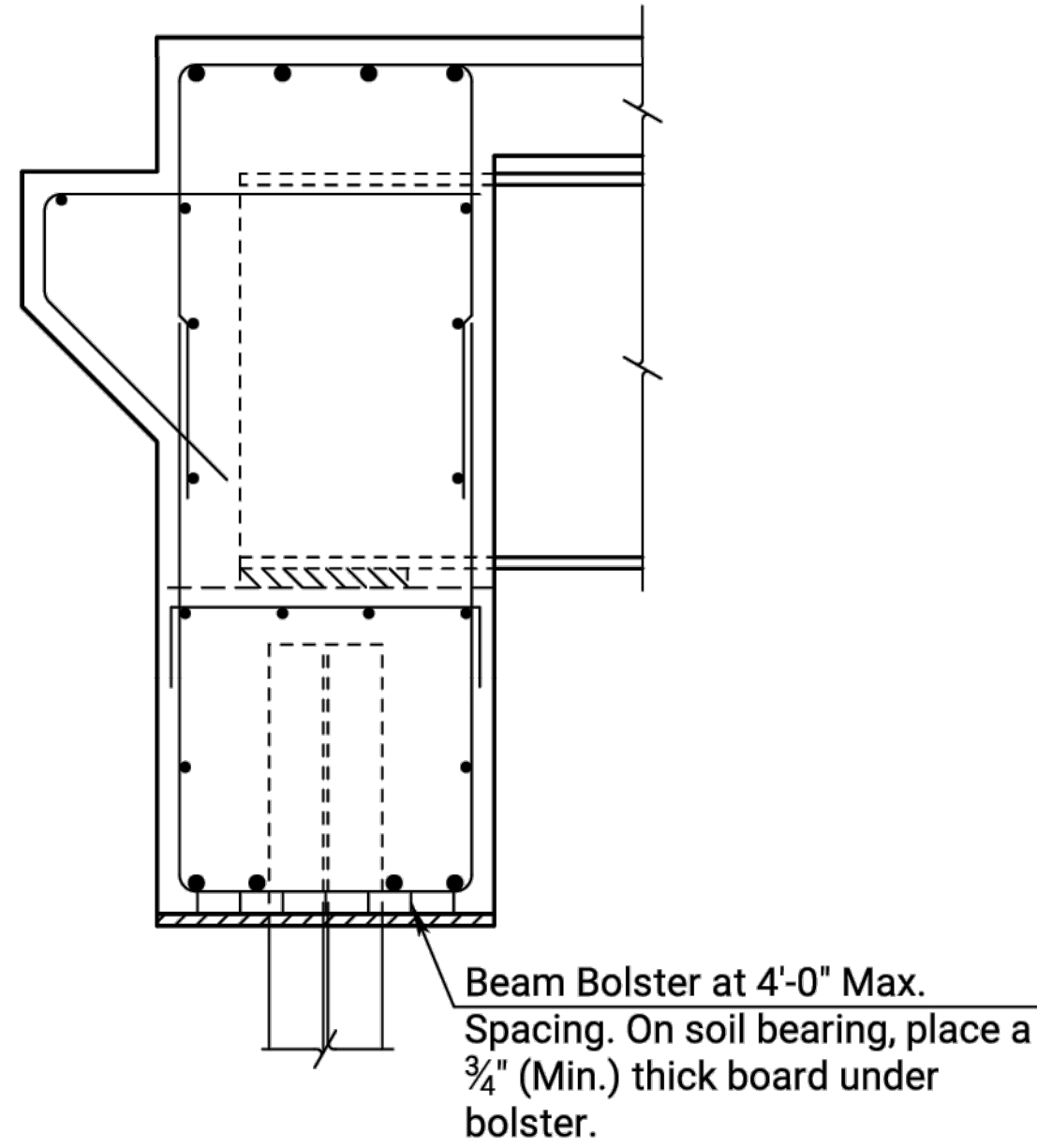
Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.



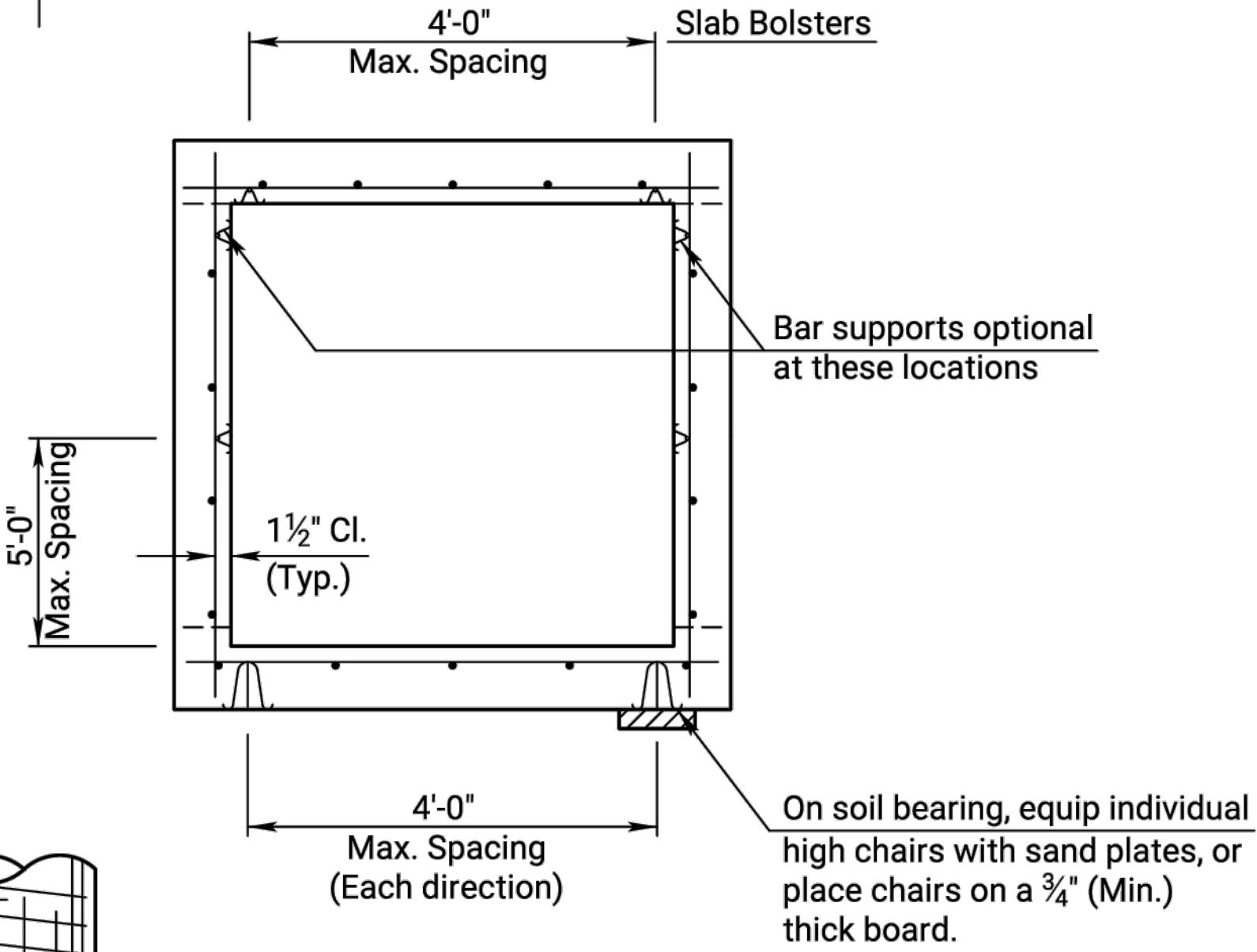
CONTINUOUS HAUNCHED SLAB



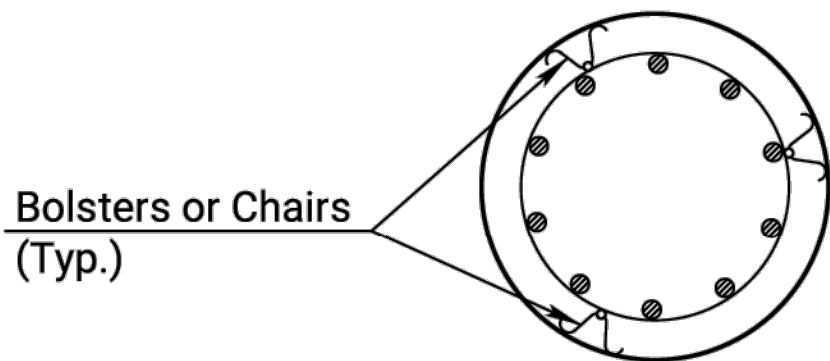
DECK GIRDERS



ABUTMENT

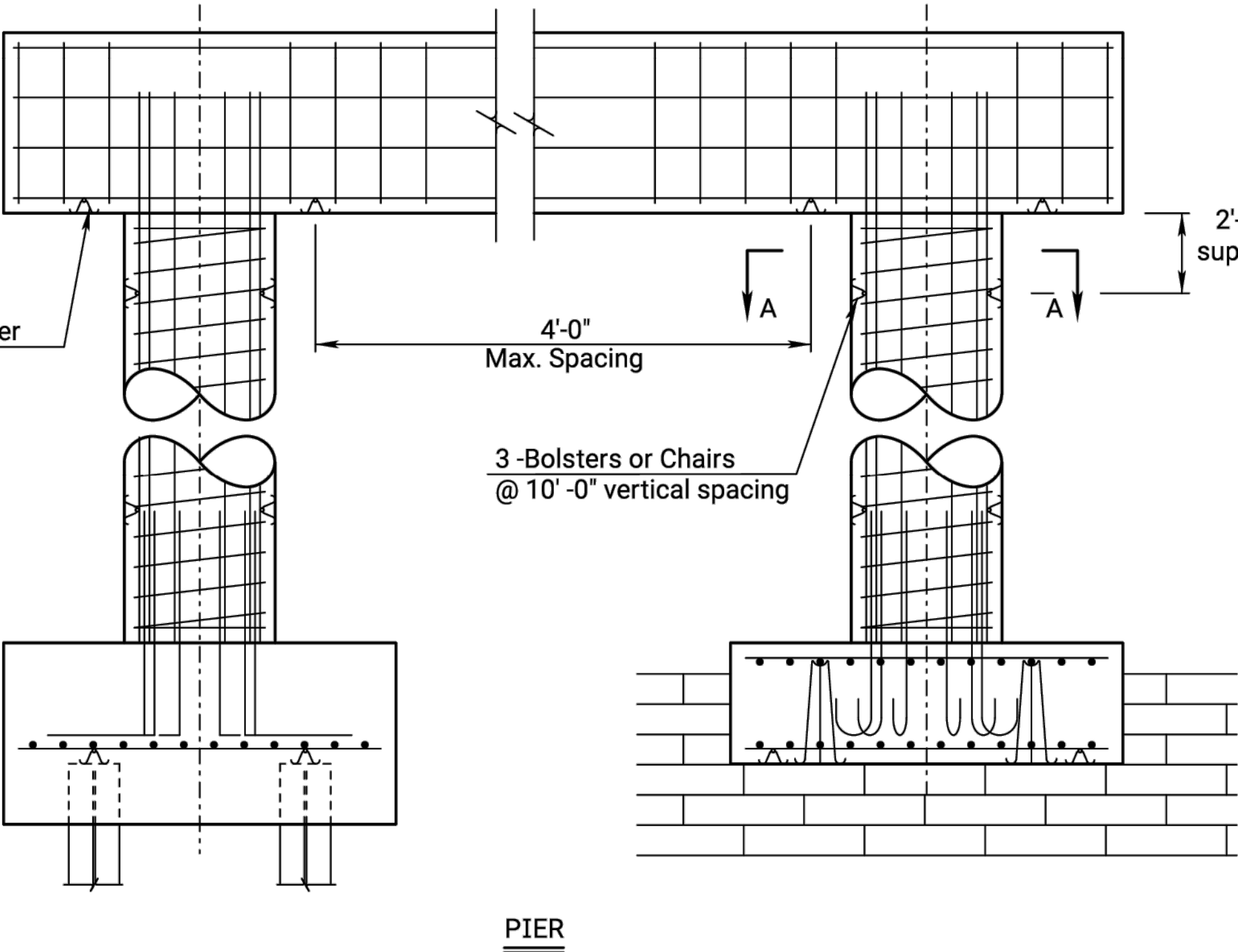


BOX CULVERT

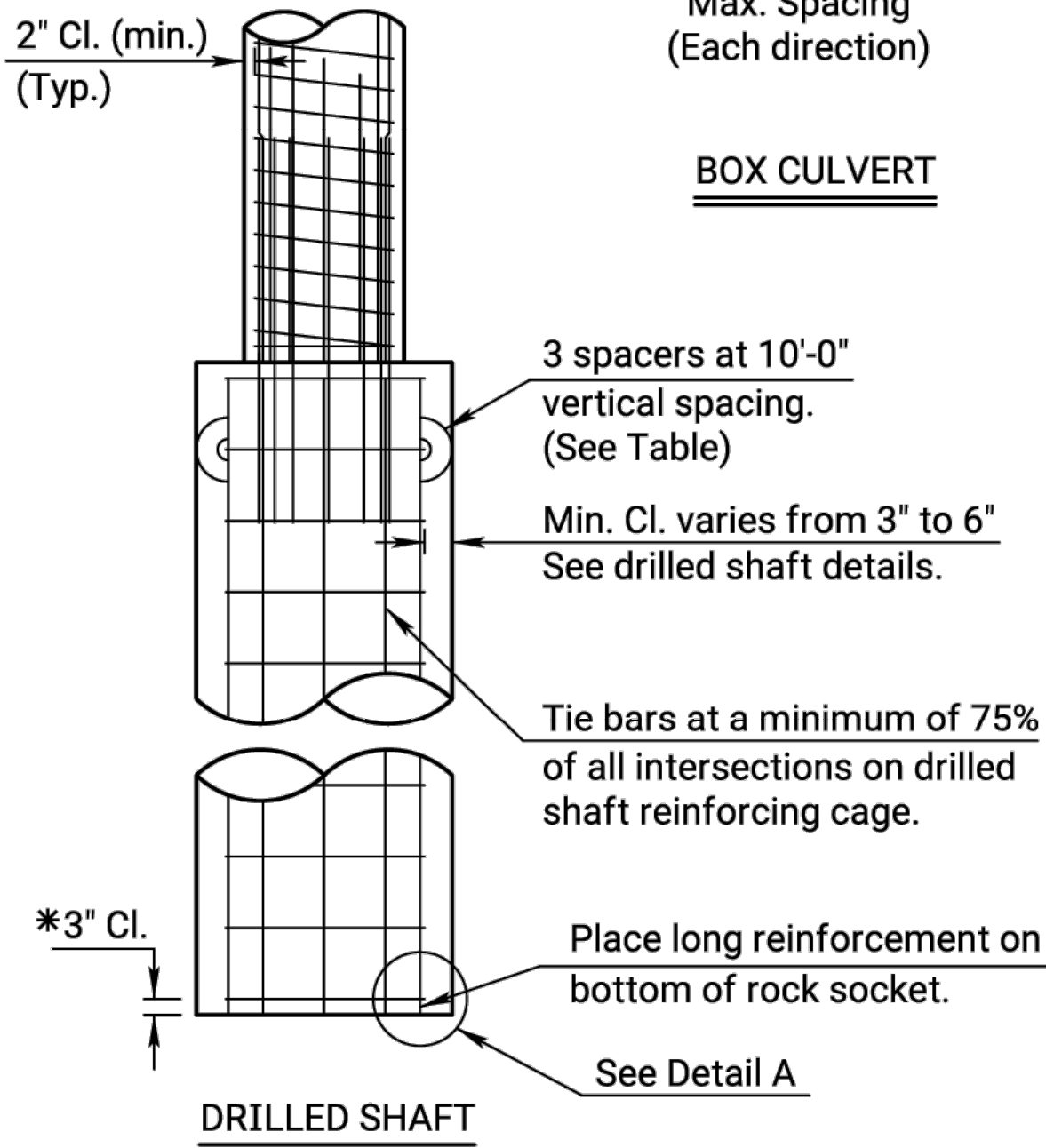


SECTION A-A

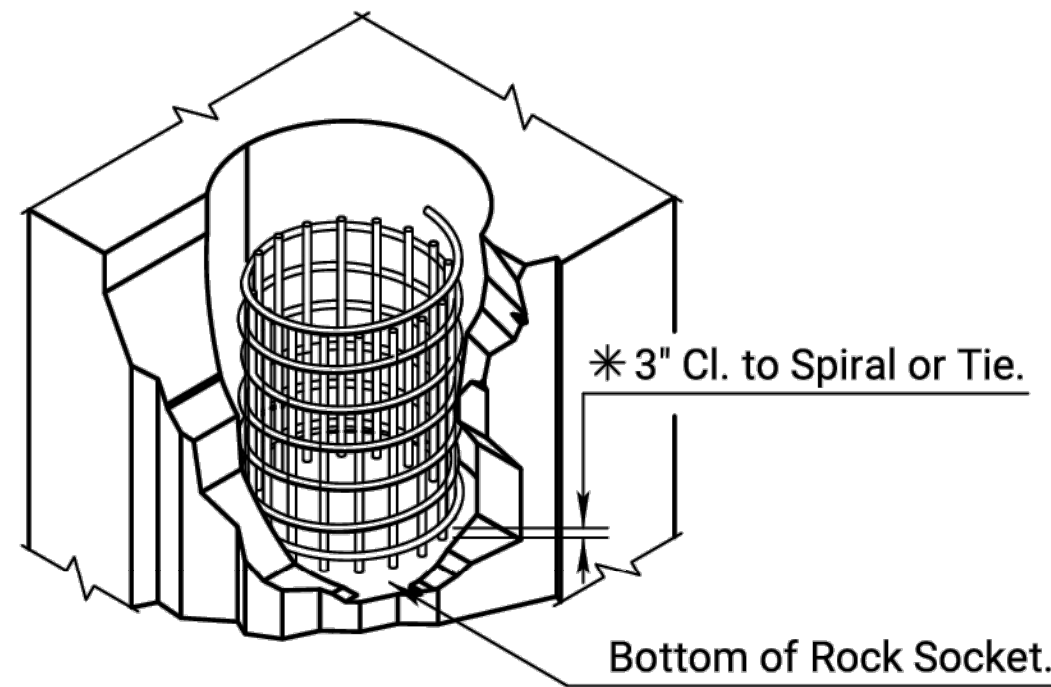
Required Shaft Supports		
Diameter (in.)	Circumference (in.)	No. of Spacers
18	56	3
24	75	3
30	94	4
36	113	4
42	131	5
48	150	6
54	169	6
60	188	7
66	207	7
72	226	8
78	244	9
84	263	9
90	282	10
96	301	11
102	320	11
108	339	12



PIER



DRILLED SHAFT



DETAIL A

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

NO.	DATE	REVISIONS	BY	APPD
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				
DESIGNED	R.A.M.	DETAILED	R.A.A.	QUANTITIES
DESIGN CK.	L.R.R.	DETAIL CK.	R.A.M.	QUAN. CK.
11-17-10				APPD.
Terry L. Fleck				TRACED
R.A.A.				TRACE CK.
R.A.M.				

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KANSAS	98 C-5291-01	2025	23	49

<i>GUARDRAIL; STEEL PLATE</i>		
<i>Sta. to Sta.</i>	<i>Side</i>	<i>LNFT</i>
<i>Sta. 440+37.97</i>		
<i>to 441+00.47</i>	<i>Rt.</i>	<i>25</i>
<i>Sta. 440+54.72</i>		
<i>to 441+17.22</i>	<i>Lt.</i>	<i>25</i>
<i>Sta. 442+22.78</i>		
<i>to 442+85.28</i>	<i>Rt.</i>	<i>25</i>
<i>Sta. 442+39.52</i>		
<i>to 443+02.02</i>	<i>Lt.</i>	<i>25</i>
<i>Total</i>		<i>100</i>

GUARDRAIL END TERMINAL			
<i>Sta. to Sta.</i>	<i>Side</i>	<i>(SRT) Alt. #1 Each</i>	<i>(FLEAT) Alt. #2 Each</i>
<i>Sta. 440+37.97</i>			
<i>to 441+00.47</i>	<i>Rt.</i>	<i>1</i>	<i>1</i>
<i>Sta. 440+54.72</i>			
<i>to 441+17.22</i>	<i>Lt.</i>	<i>1</i>	<i>1</i>
<i>Sta. 442+22.78</i>			
<i>to 442+85.28</i>	<i>Rt.</i>	<i>1</i>	<i>1</i>
<i>Sta. 442+39.52</i>			
<i>to 443+02.02</i>	<i>Lt.</i>	<i>1</i>	<i>1</i>
<i>Total</i>		<i>4</i>	<i>4</i>

[illegible][illegible][illegible][illegible]

* Type CSP, ACSP, CAP
 ≠ Type CS, ACS, or CA

ITEMS	QUANTITY	UNITS
Field Office and Laboratory (Type C)	1	EACH
Foundation Stabilization (Set Price)	1	CUYD
Mobilization	Lump Sum	LSUM
Mobilization (DBE)	Lump Sum	LSUM
Removal of Existing Structures	Lump Sum	LSUM
Concrete for Seal Course (Set Price)	1	CUYD
Curing Enviroment	Lump Sum	LSUM
Clearing and Grubbing	Lump Sum	LSUM
Rock Excavation	113	CUYD
Common Excavation (Rural Small)	1869	CUYD
Compaction of Earthwork (Type B)(MR-90)	1213	CUYD
Water (Grading)(Set Price)	1	MGAL
Guardrail; Steel Plate	100	LNFT
Guardrail End Terminal (SRT) Alt. #1	4	EACH
Guardrail End Terminal (FLEAT) Alt. #2	4	EACH
Signing Object Marker (Type 3)	4	EACH
Temporary Surfacing Material (Aggregate)(Set Price)	1	CUYD

NOTE:

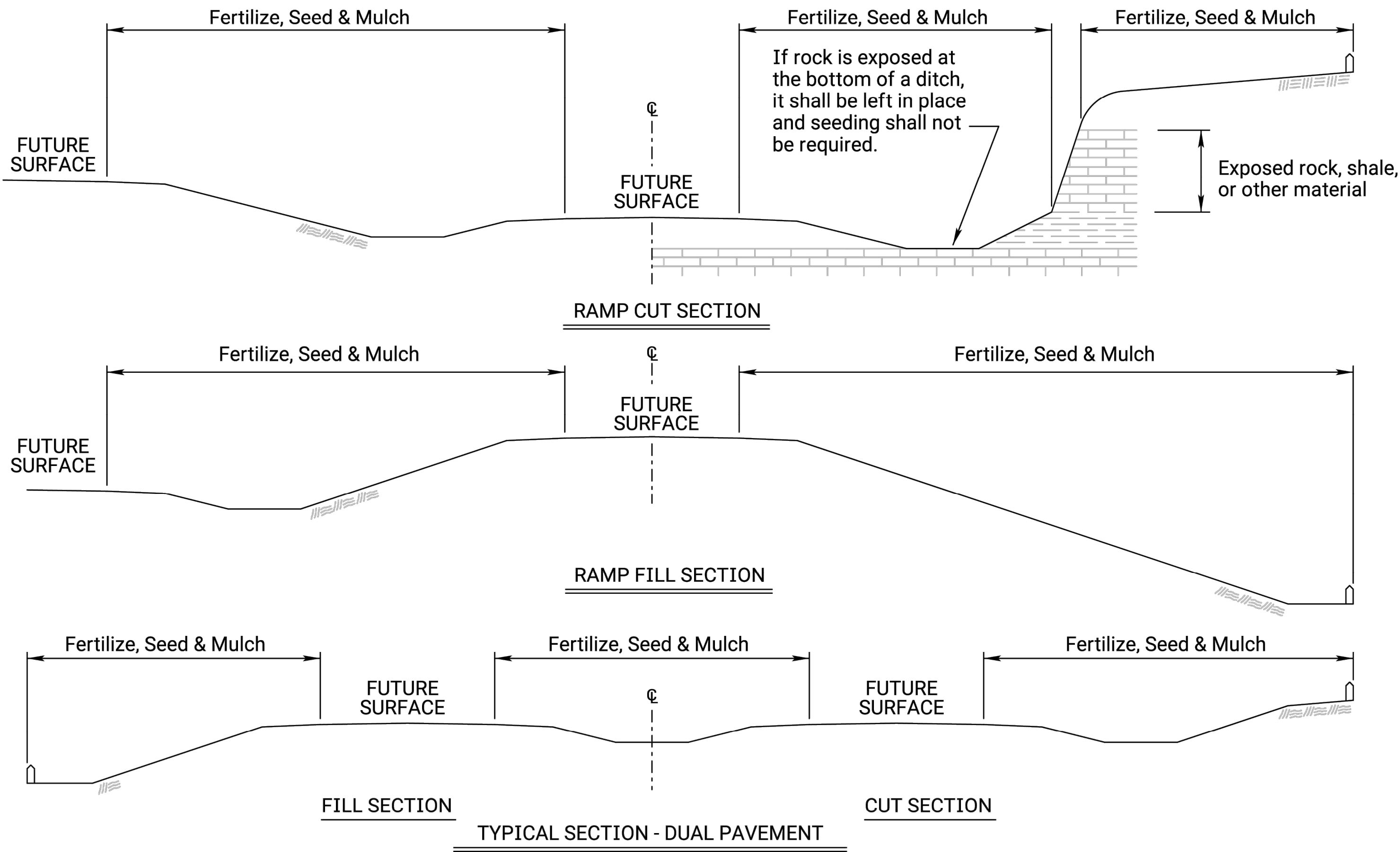
For Recapitulation of Bridge Quantities, See Sheet No. 10.
For Temporary Erosion and Pollution Control Quantities,
See Sheet No. 24.
For Summary of Seeding Quantities, See Sheet No. 34.
For Traffic Control Quantities, See Sheet No. 41.
Construction Staking by County's Consultant.

SUMMARY OF QUANTITIES

PENCO ENGINEERING, P.A. PLAINVILLE, KANSAS

DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 98 C-5291-01
CHECKED BY: JUD	DATE: 2025

Plotted by : KDOT#CADD.Support_ks.gov
File : la852a.dgn
1-JUL-2022 00:04



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

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

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

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

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

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

GENERAL NOTES

The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of undisturbed native sod or other desirable vegetation shall be fertilized (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:

1¼ - 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			
150	150	1.4	0.2	Temporary Fertilizer (16–20–0)	240.0	LB
20		1.4		Temporary Seed (Canada Wildrye)	28.0	LB
45		1.4		Temporary Seed (Grain Oats)	63.0	LB
45		1.4		Temporary Seed (Sterile Wheatgrass)	63.0	LB
	47.8		0.2	Soil Erosion Mix	9.6	LB
				Erosion Control (Class 1, Type C)	609	SQ YD
				Erosion Control (Class 2, Type E)	517	SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)	25	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")	400	LF
				Biodegradable Log (20")	80	LF
				Filter Sock (****)		LF
				Geotextile (Erosion Control)	500	SQ YD
				Silt Fence		LF
				SWPPP Design †	1	LS
				SWPPP Inspection †	23	EACH
				Water Pollution Control Manager †	23	EACH
900 lbs / acre		1.4		Mulch Tacking Slurry	1890	LB
2 tons / acre		1.4		Mulching	4.2	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. (mulch and slurry mulch estimated calculations are as follows: Mulch = Areas of Seeding x 1.5 x 2 Tons/acre; Mulch Tacking Slurry = Areas of Seeding x 1.5 x 900 lbs/acre)
The estimated quantity includes mulching associated with temporary and permanent seeding operations. The total mulch and mulch tacking slurry requirements 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)
1.0	Seed (Blue Grama Grass)(Lovington)	0.20
24.5	Seed (Buffalo Grass)(Treated)	4.90
6.3	Seed (Side Oats Grama Grass)(El Reno)	1.26
10	Seed (Sterile Wheatgrass)(Regreen/Quickguard)	2.00
6.0	Seed (Western Wheatgrass)(Barton)	1.20
47.8	Total (lb)	9.56

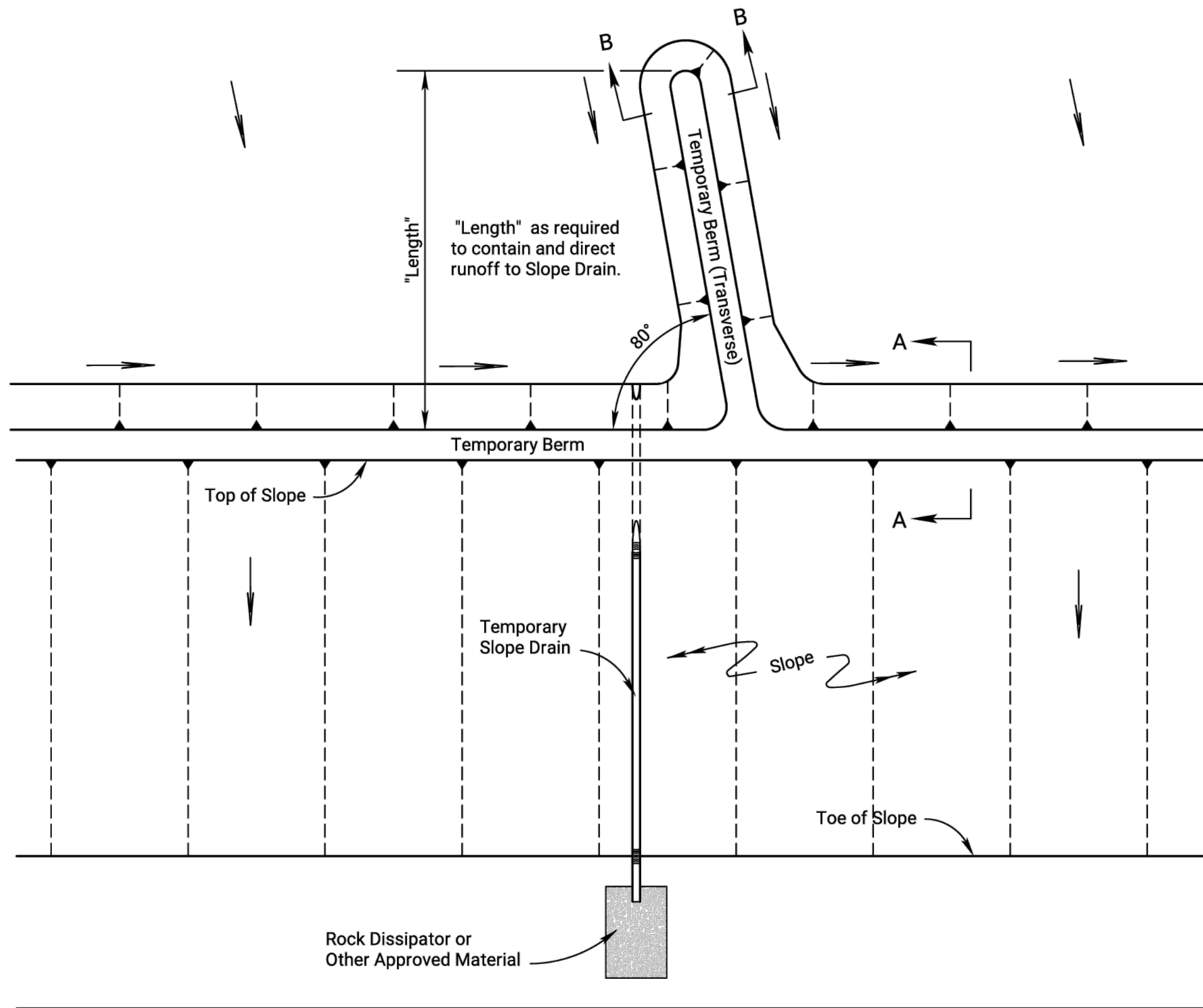
The Soil Erosion Mix is to be placed under the Class 1 and/or Class 2 erosion control material.

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

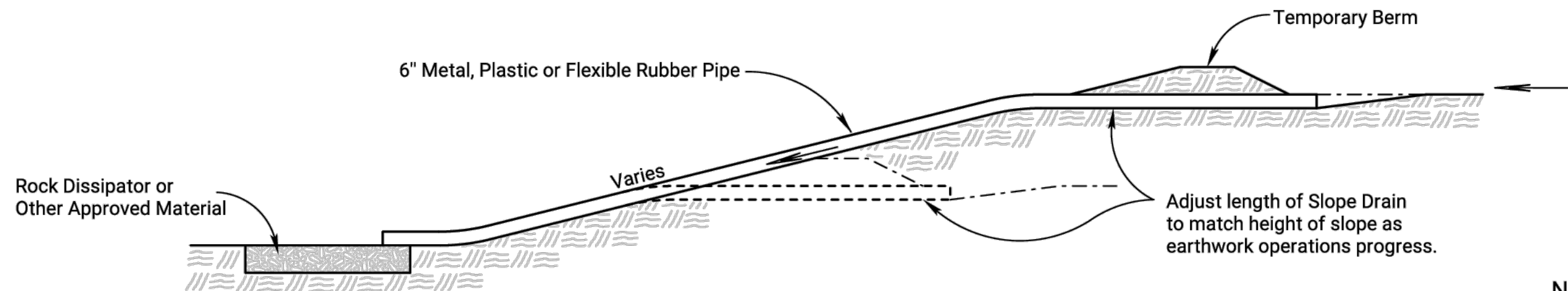
*Note: Fertilizer quantity for Soil Erosion Mix shown on Summary chart above.

03	08-03-20	Added Note	M.R.D.	M.L.
02	12-01-17	Revised Standard	M.R.D.	S.H.S.
01	06-01-17	Revised Standard	M.R.D.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL				
LA852A				
FHWA APPROVAL		01-26-18	APPD.	Scott H. Shields
DESIGNED	M.R.D.	DETAILED	M.R.D.	QUANTITIES
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.
		TRACED		TRACE CK.

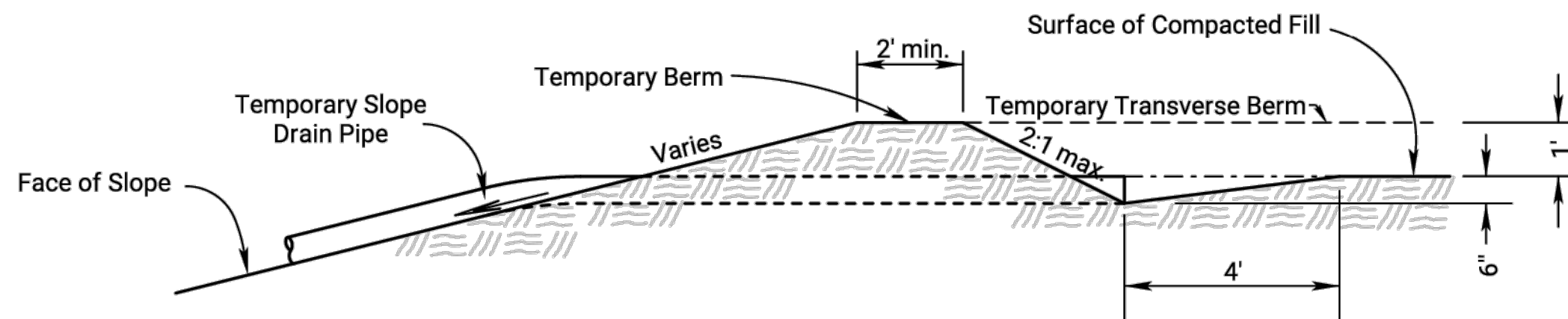
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	26	49



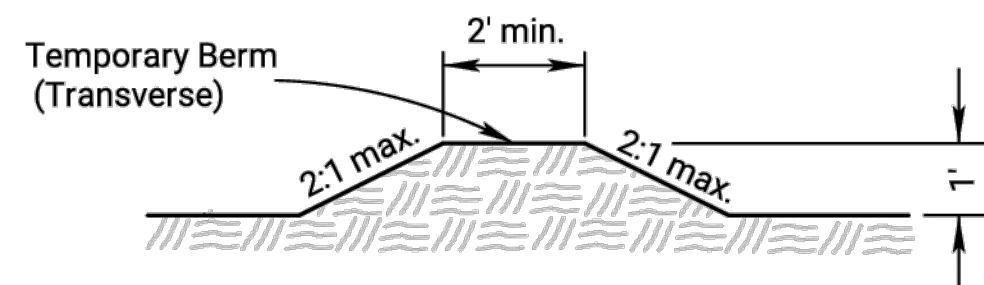
TYPICAL PLAN VIEW OF
TEMPORARY BERM AND
TEMPORARY SLOPE DRAIN
NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN
NO SCALE

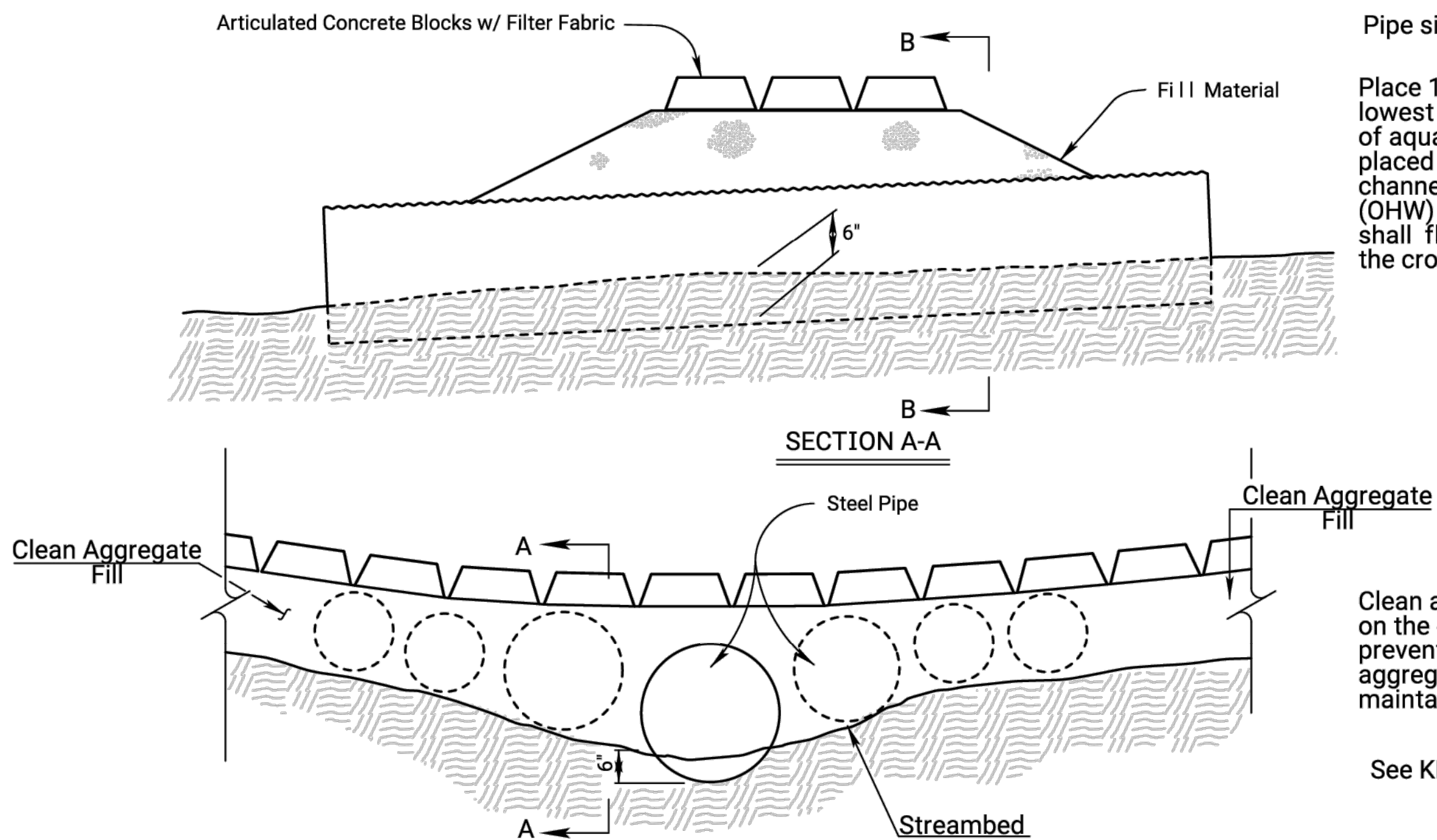


SECTION A-A
NO SCALE



SECTION B-B
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM
NO SCALE



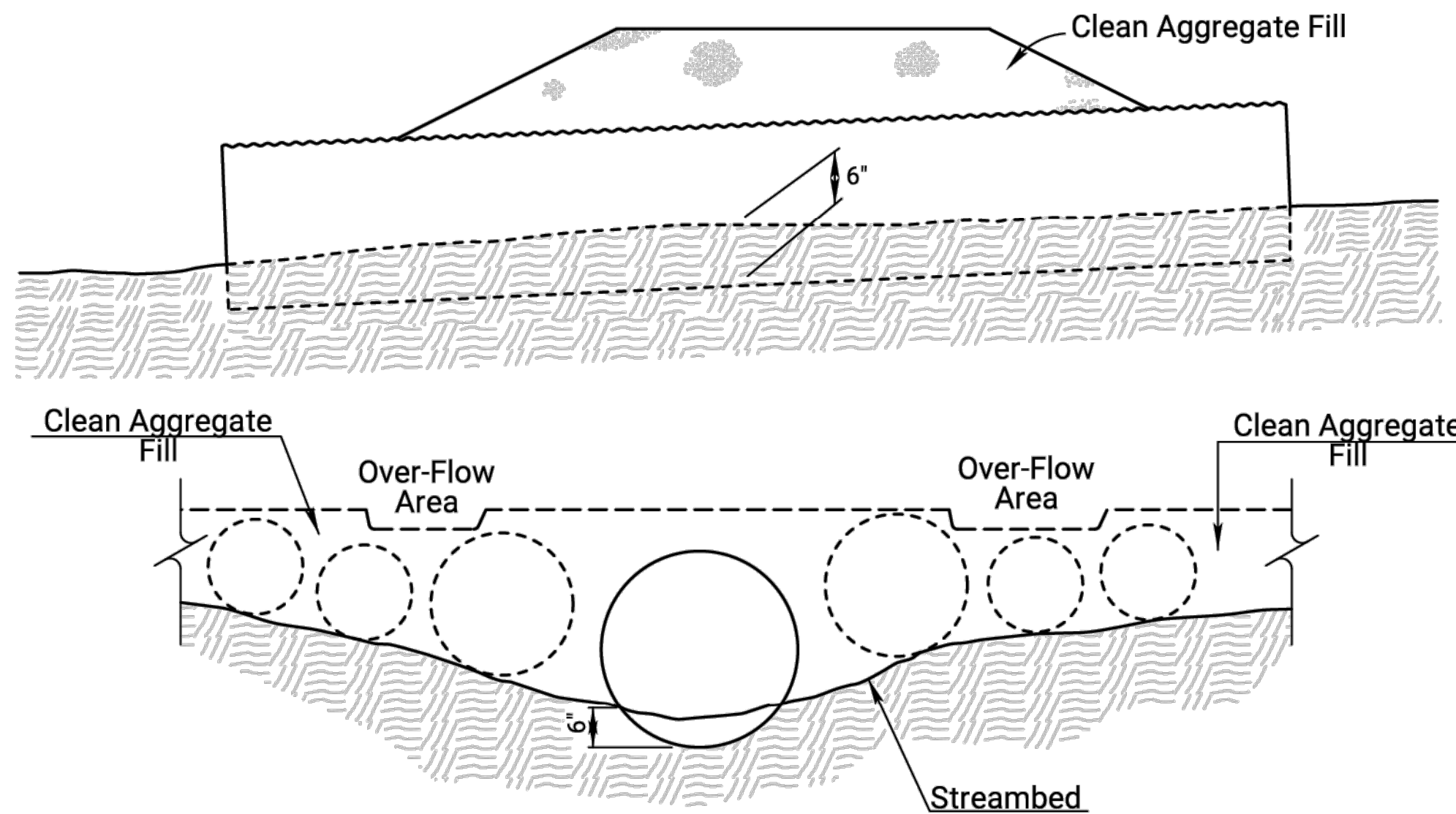
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)
NO SCALE

Pipe size may vary.

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

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

See KDOT Specifications for more information.



SECTION B-B
TEMPORARY STREAM CROSSING (AGGREGATE)
NO SCALE

Pipe size may vary.

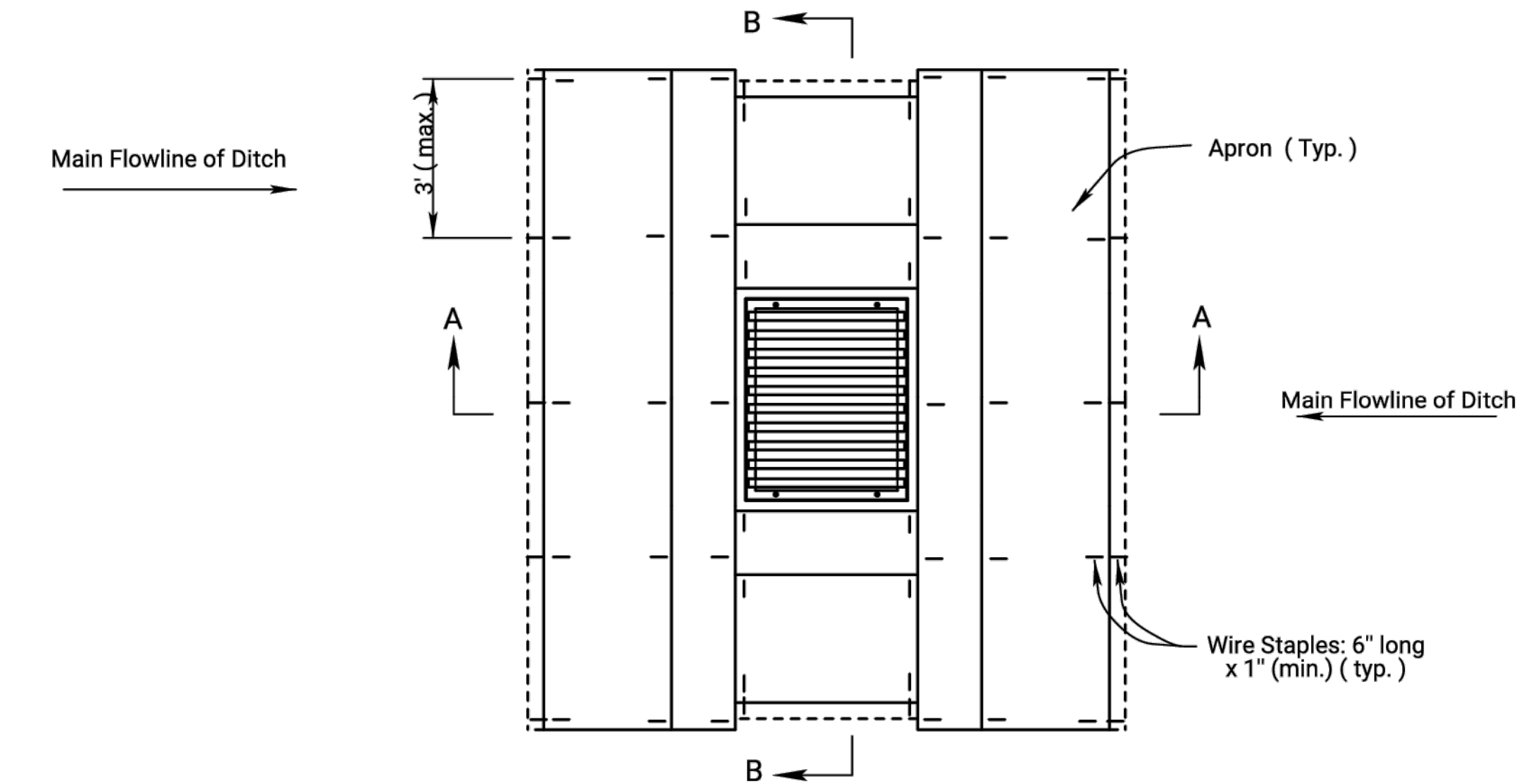
Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the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

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

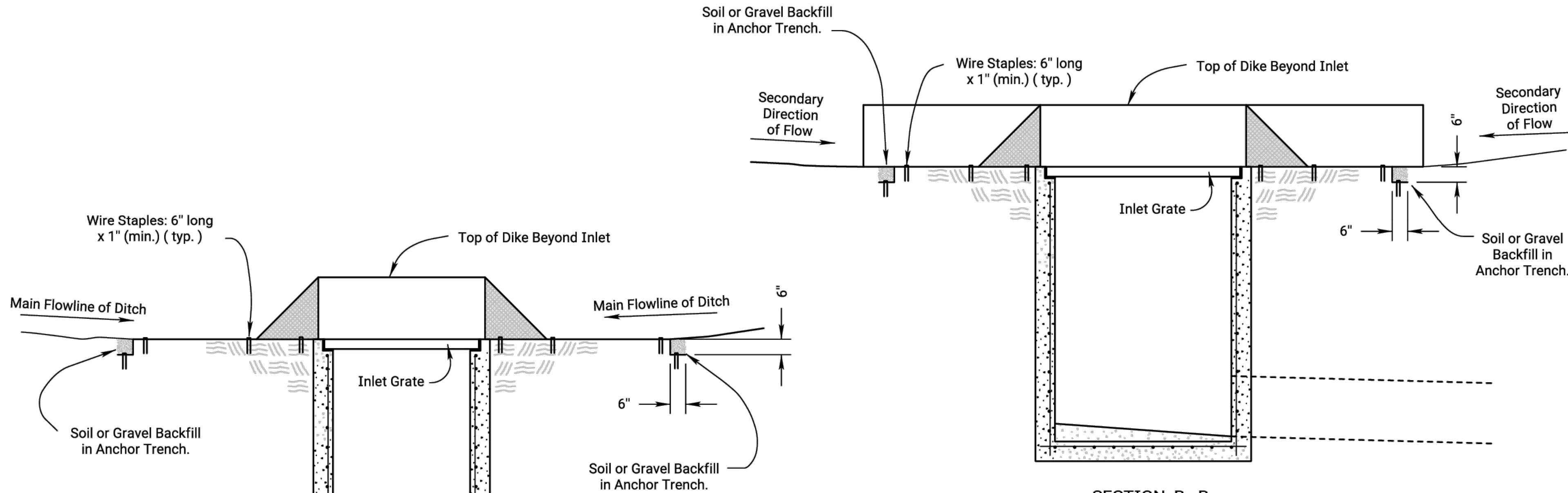
See KDOT Specifications for more information.

NO.	DATE	REVISIONS	BY	APPD
03	01-21-22	Temp Stream Crossing - Clean Aggregate Fill Note Added	M.R.D.	M.L.
02	08-24-21	Temp Stream Crossing - Clean Aggregate Fill Note Added	M.R.D.	M.L.
01	06-11-13	Revised Standard	M.R.M.	S.H.S.
KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL				
TEMPORARY SLOPE DRAIN, TEMPORARY STREAM CROSSING (AGGREGATE)				
LA852B				
FHWA APPROVAL		01-21-22	APPD.	Mervin Lere
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	27	49

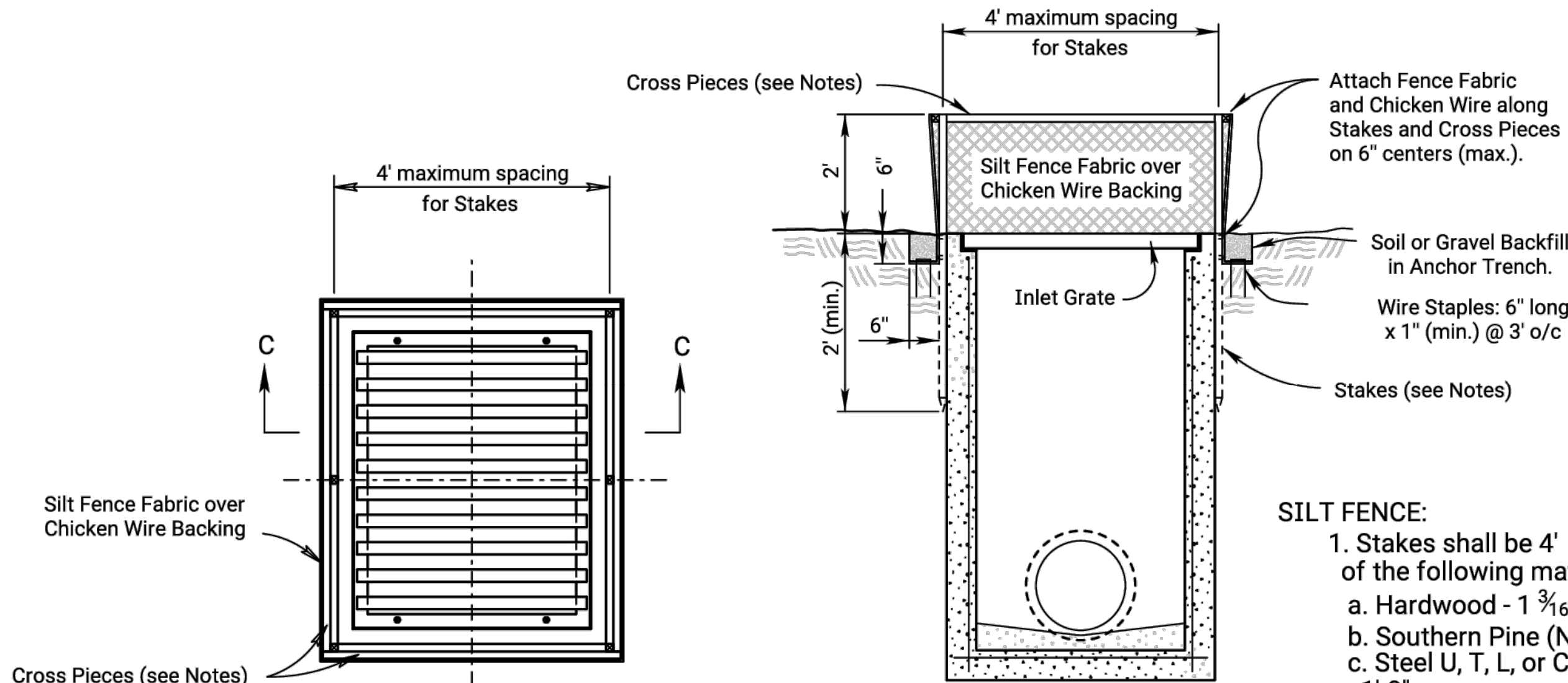


PLAN
TEMPORARY I NLET SEDI MENT BARRI ER
(TRI ANGULAR SI LT DI KE METHOD)
NO SCALE



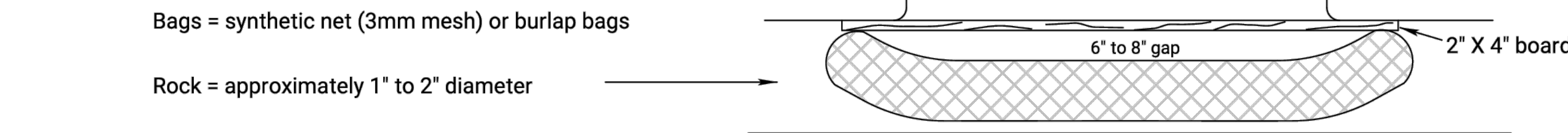
SECTION A - A

SECTION B - B



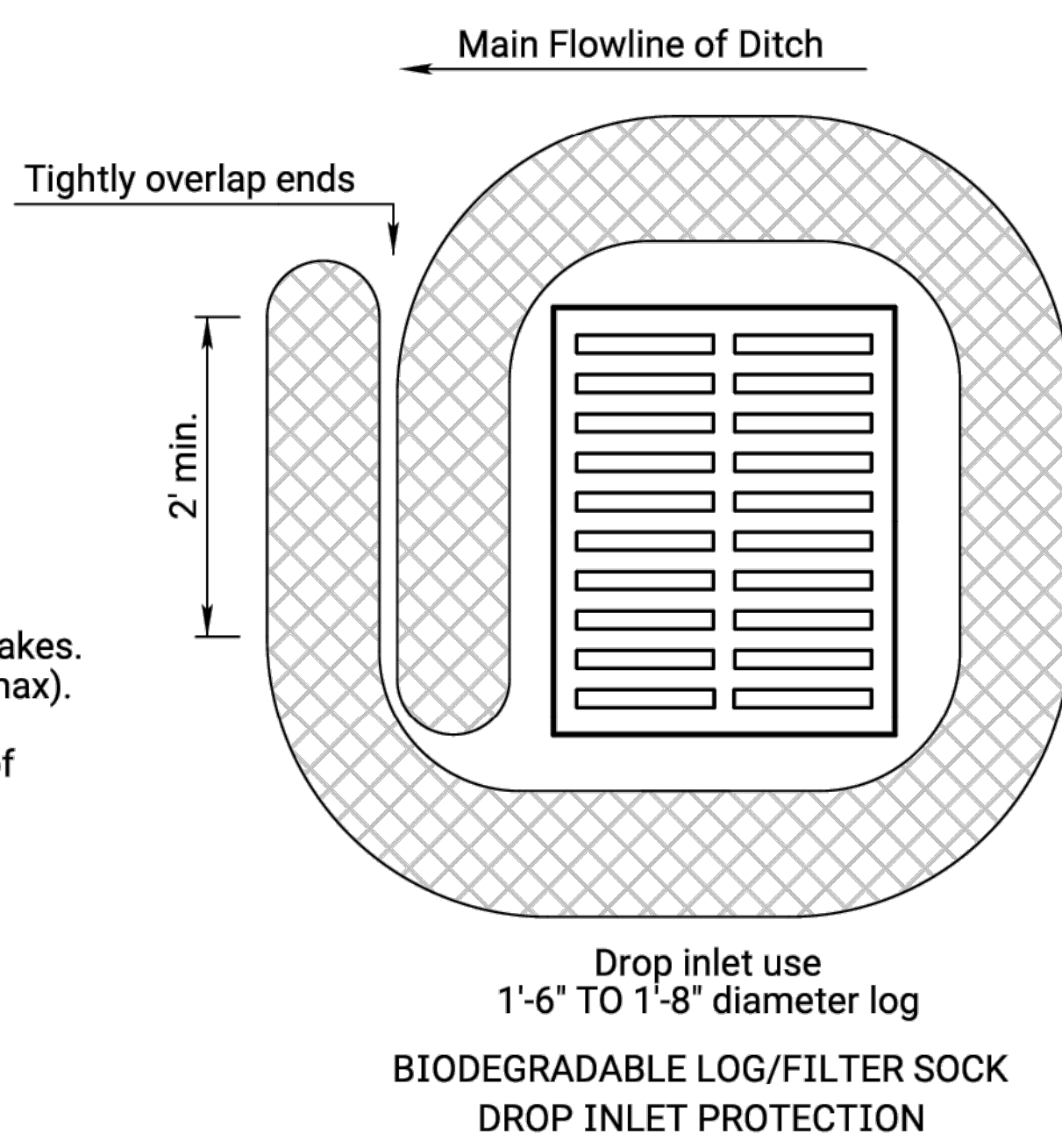
PLAN
TEMPORARY I NLET SEDI MENT BARRI ER
(SI LT FENCE METHOD)
NO SCALE

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



CURB INLET PROTECTION

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



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

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

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.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL, TEMPORARY INLET SEDIMENT BARRIER (SILT FENCE) TEMP. INLET SEDIMENT BARRIER (T.S.D.) LA852C

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

Scott H. Shields

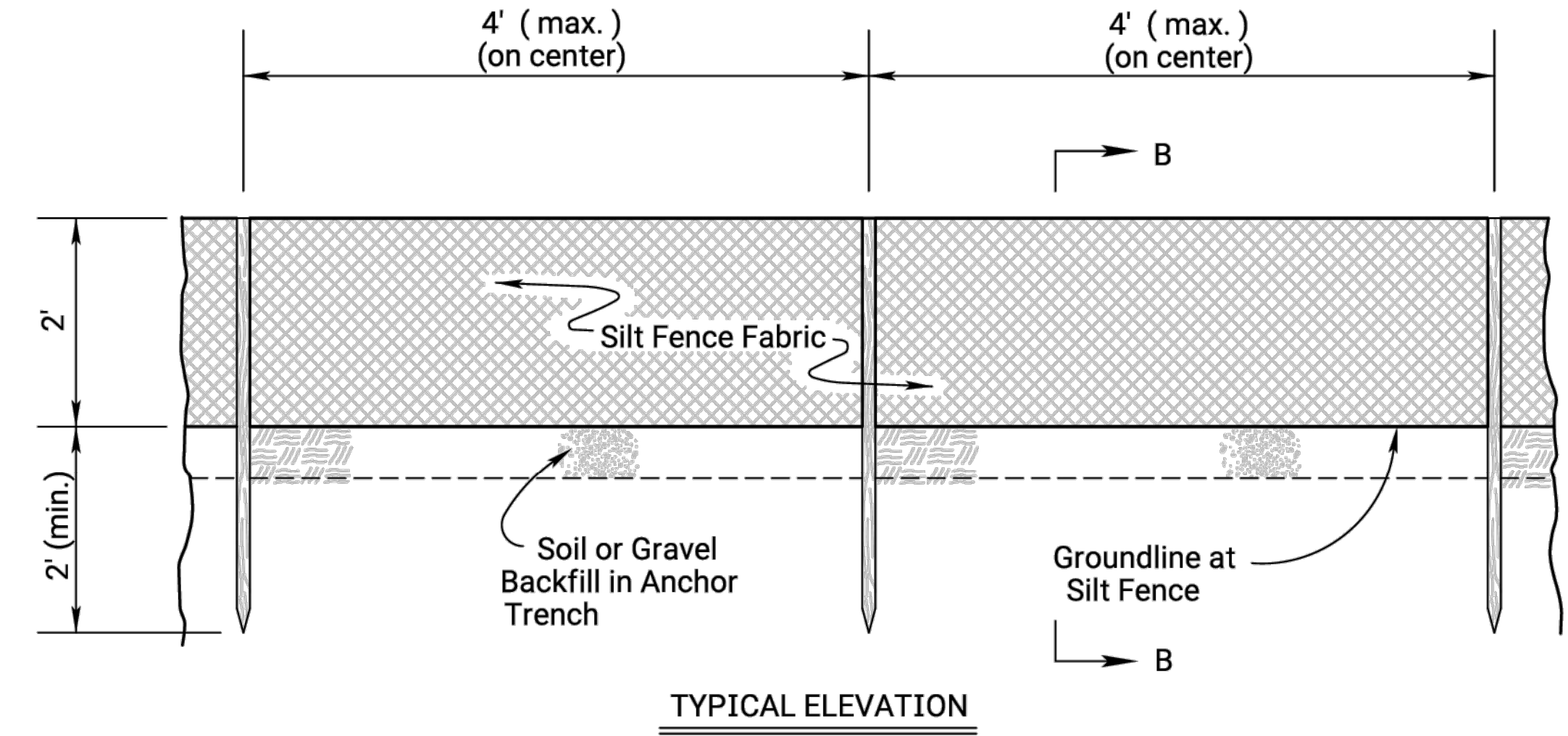
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	28	49

INSTALLATION NOTES

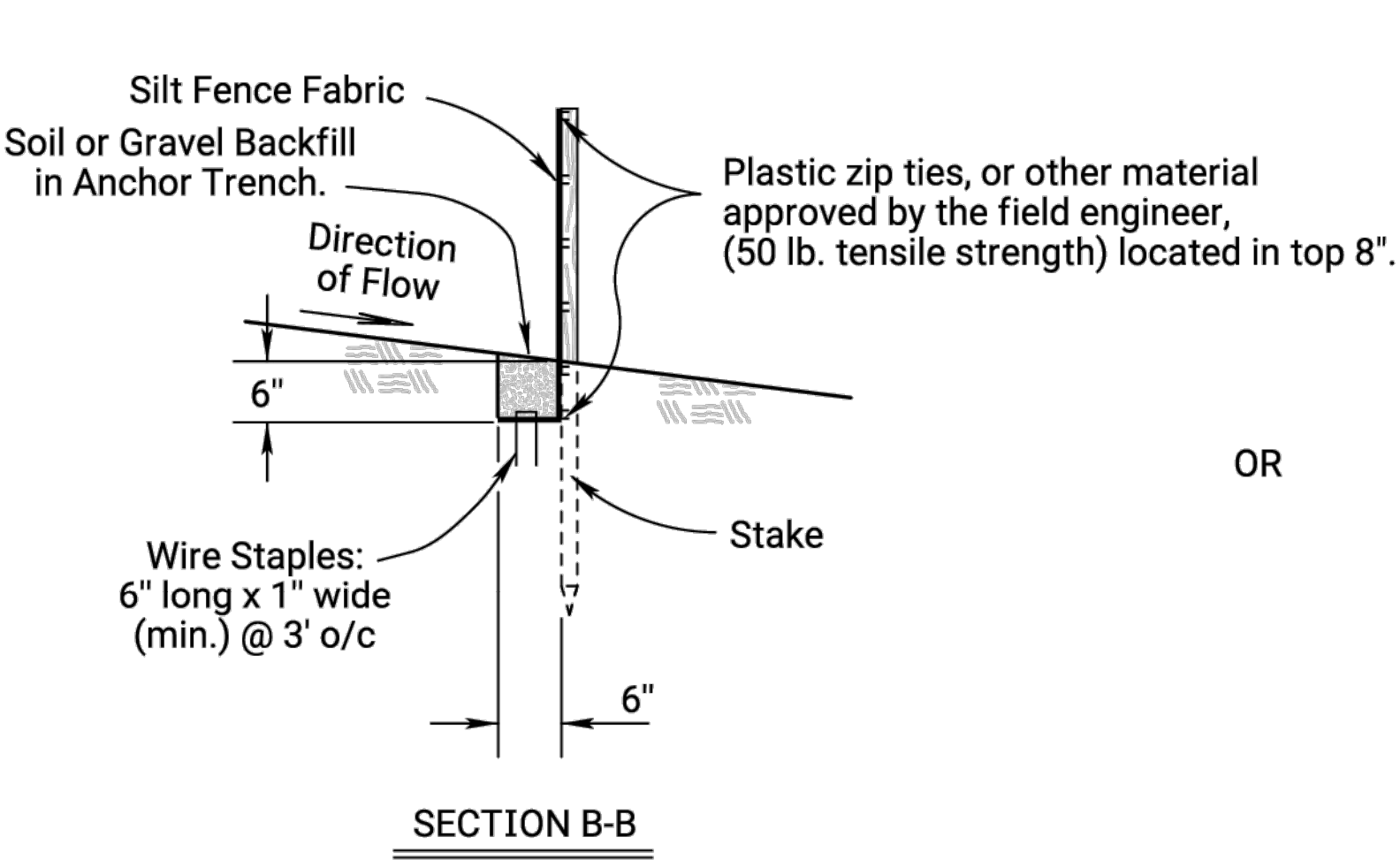
- SILT FENCE:
- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 3/16" x 1 3/16";
 - Southern Pine (No. 2) - 2 5/8" x 2 5/8";
 - Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
 - Synthetic - same strength as wood stakes.
 - Attach fence fabric with 3 zip ties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

BIODEGRADABLE LOG OR FILTER SOCK

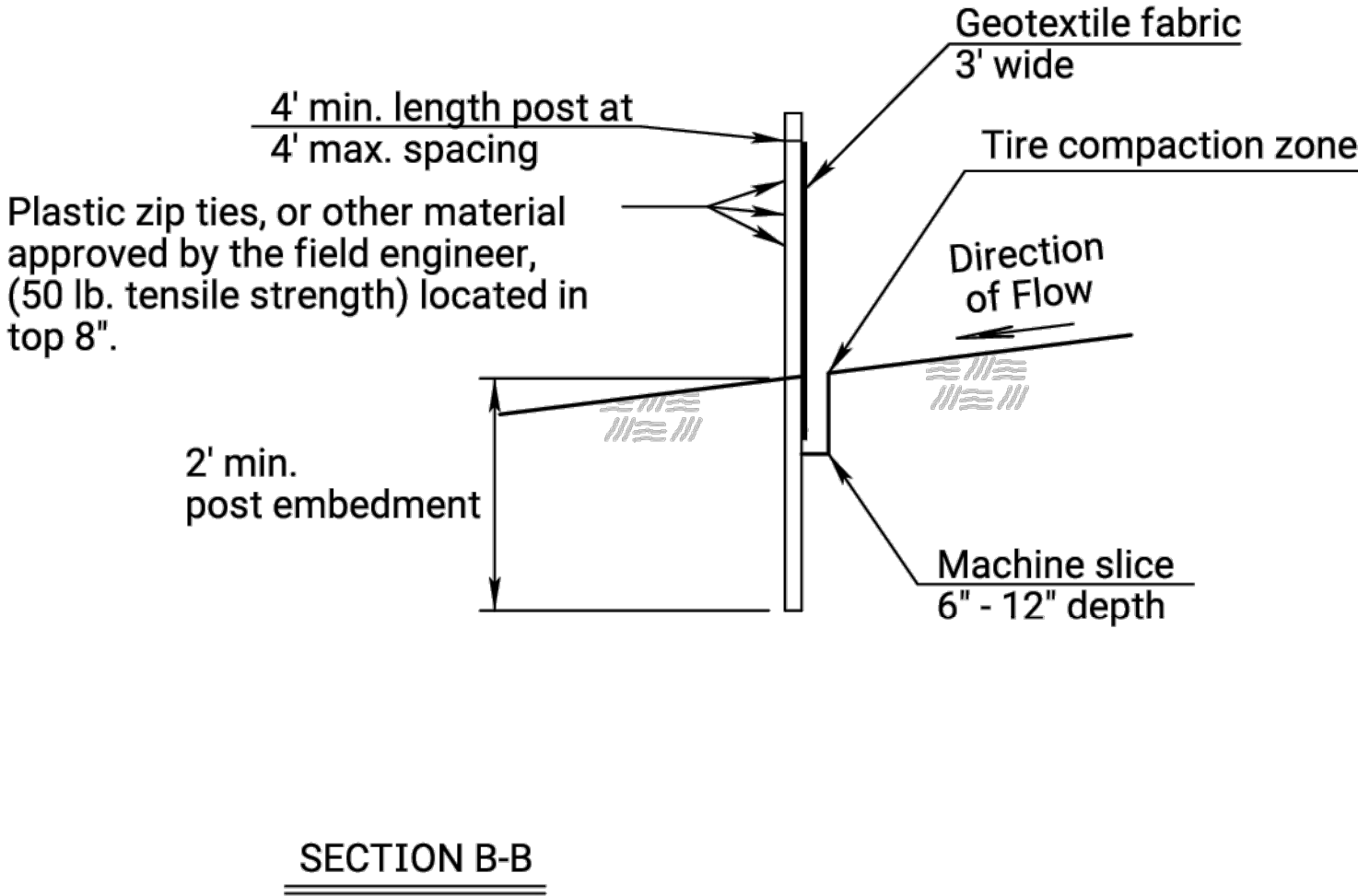
- Place biodegradable logs or filter sock tightly together minimum overlap of 18".
- Wood stakes shall be 2" x 2" (nom.).
- Refer to plan sheets to estimate length of biodegradable log and filter sock required.
- Each log or sock (except compost filter socks) should be keyed into the ground at a minimum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



SILT FENCE BARRIER
NO SCALE



OR



SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions

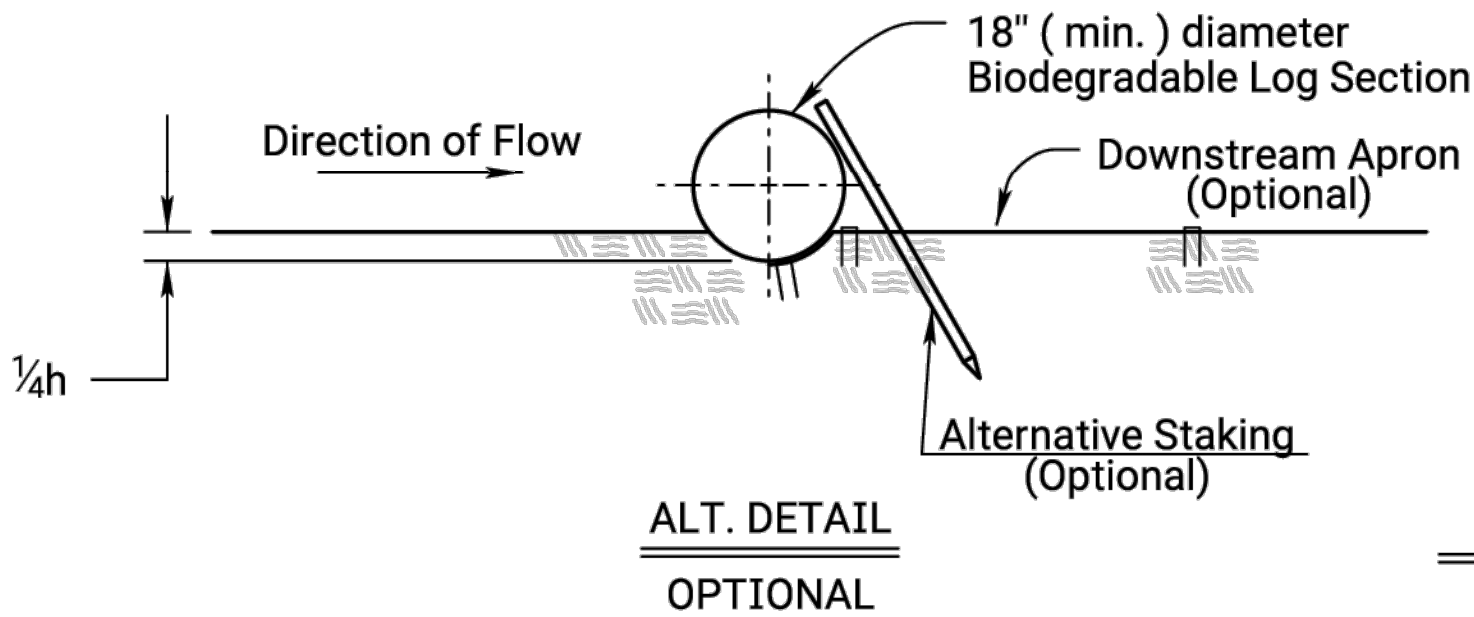
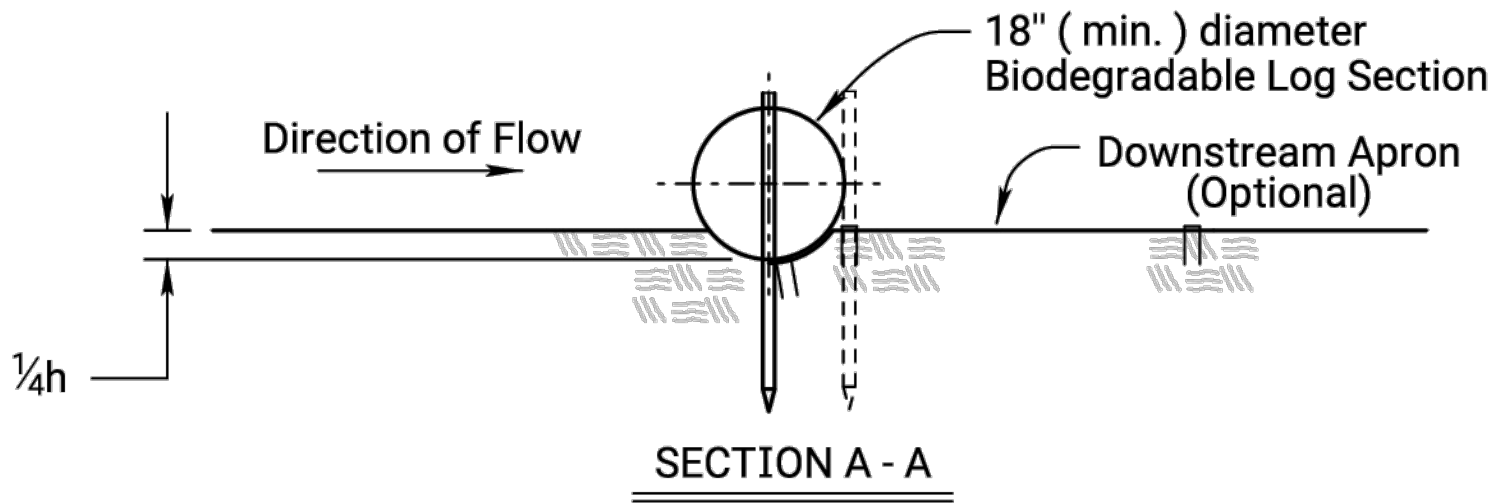
		PRODUCT		
		9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
Slope Gradient	≤4H:1V	40	60	80
	3H:1V	30	45	60

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

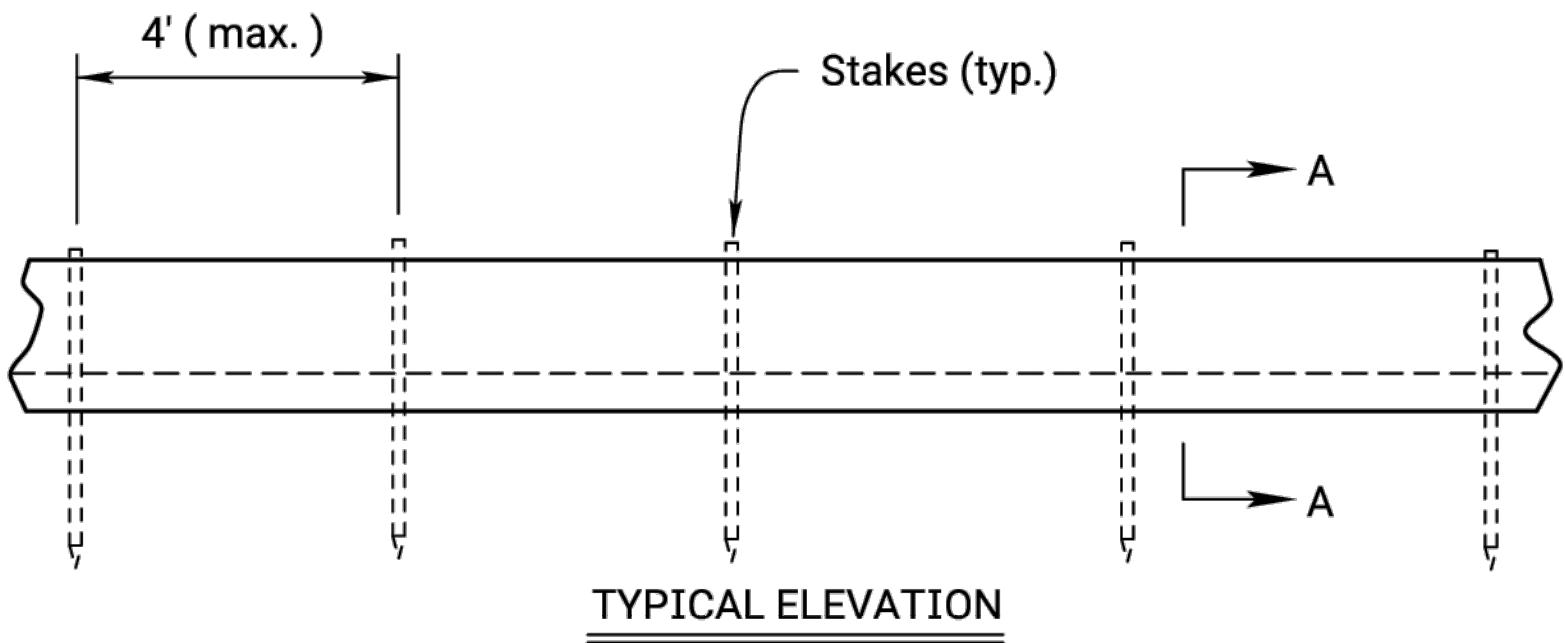
Deviations should be approved by the Field Engineer.

GENERAL NOTES

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



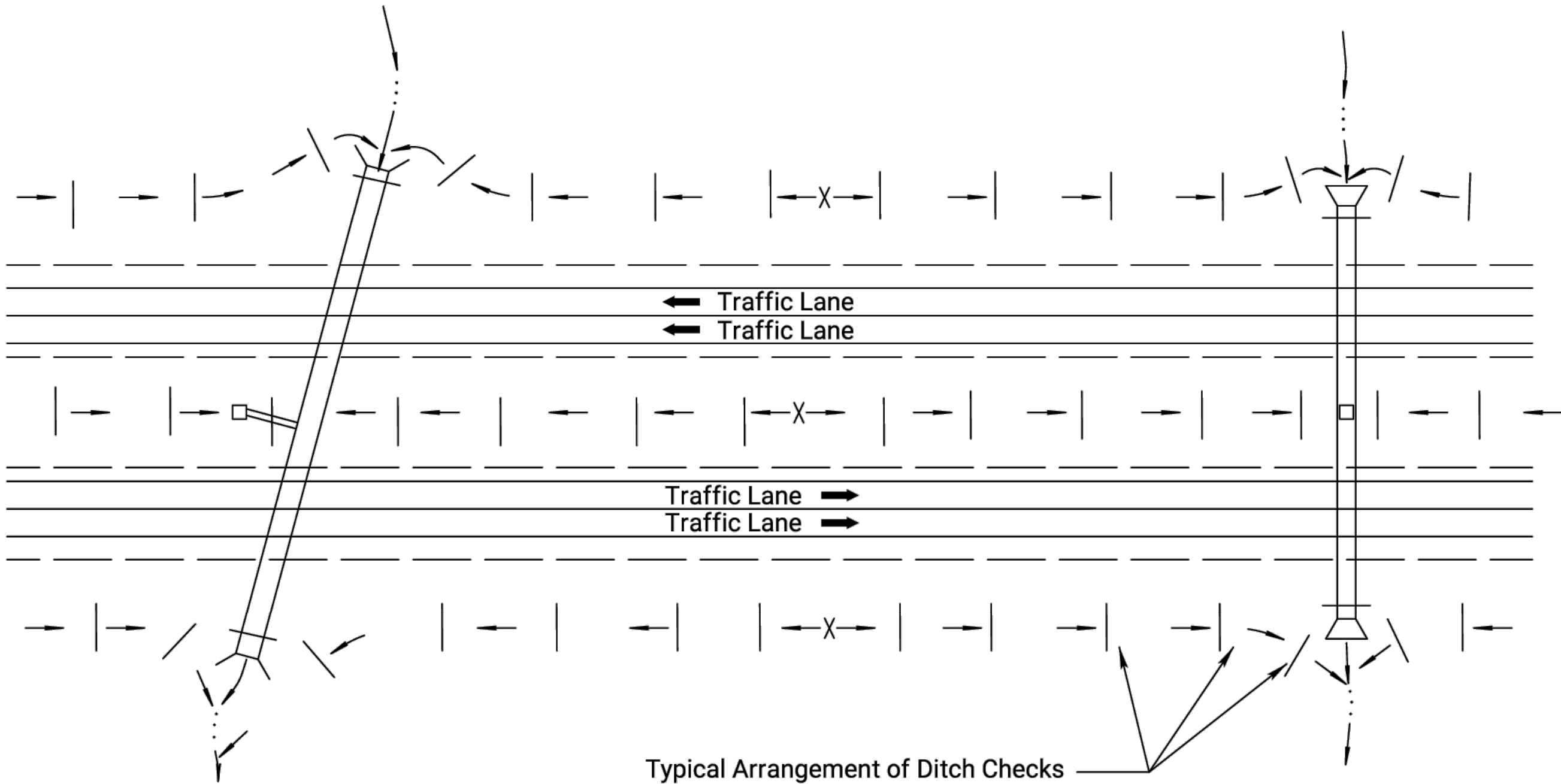
ALT. DETAIL
OPTIONAL



BIODEGRADABLE LOG SLOPE INTERRUPTIONS
OR Filter Sock

03	06-28-16	Revised Standard	R.A.	S.H.S.
02	03-01-15	Revised Standard	R.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE LA852D				
DESIGNED	S.H.S.	09-14-16	APPD.	Scott H. Shields
DETAIL	S.H.S.	09-14-16	QUANTITIES	TRACED
QUAN.	S.H.S.	09-14-16	QUAN.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	29	49



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.	

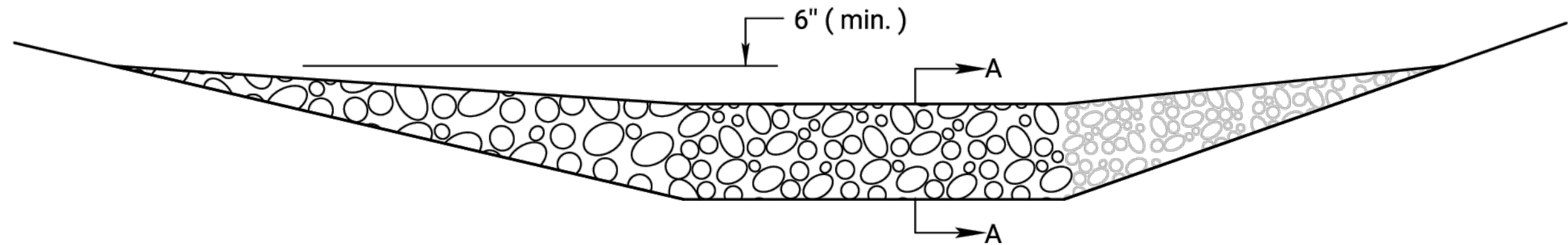
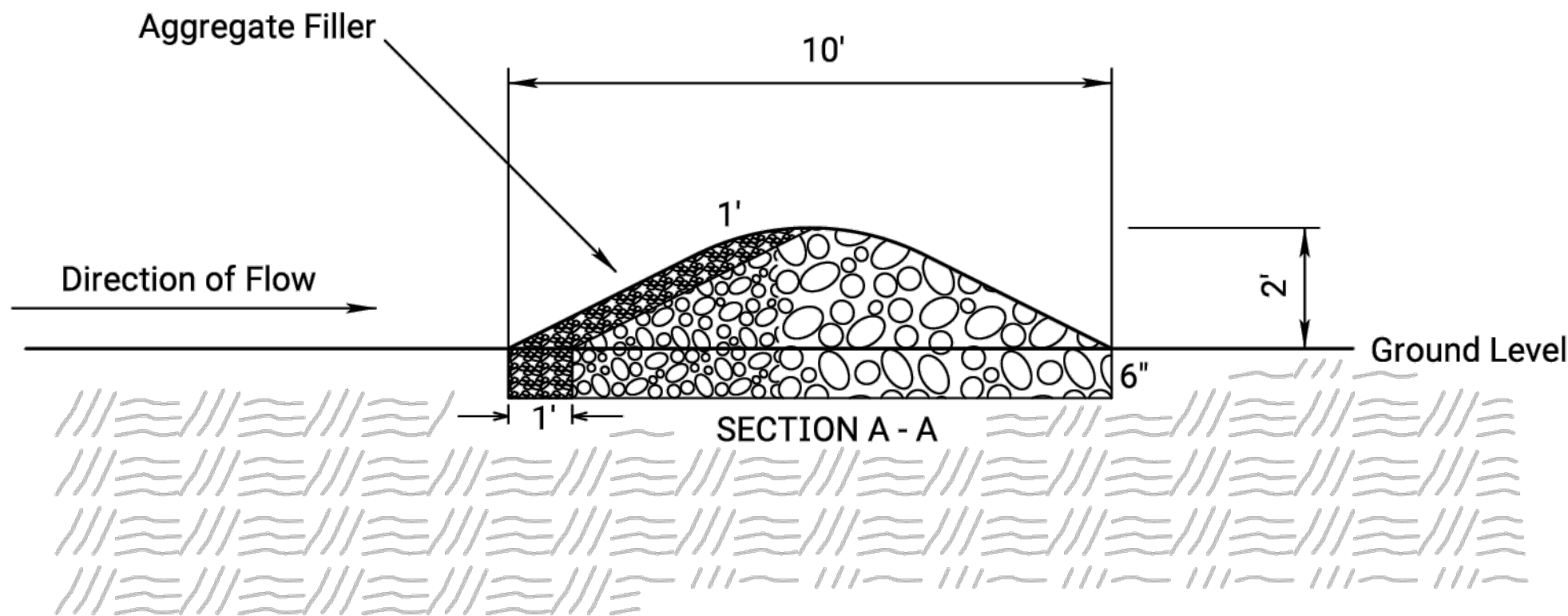
18" FILTER SOCK CHECK SPACING	
DITCH @ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	110
2.0	55
3.0	35
4.0	25
5.0	20
NOTE: Use this spacing for all except Rock Ditch Checks.	

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.

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.
NO.	DATE	REVISIONS			BY	APP'D
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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	30	49



TYPICAL ELEVATION

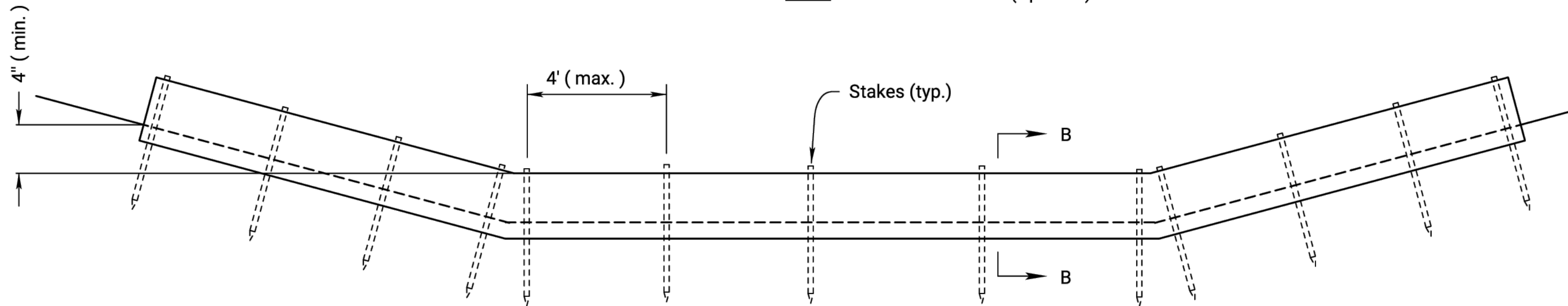
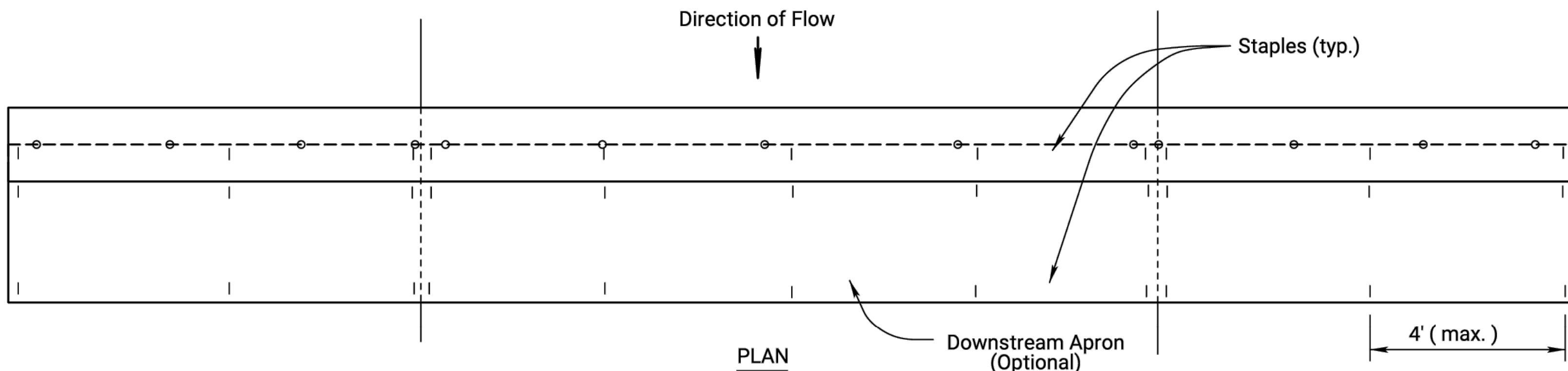
ROCK DITCH CHECK

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

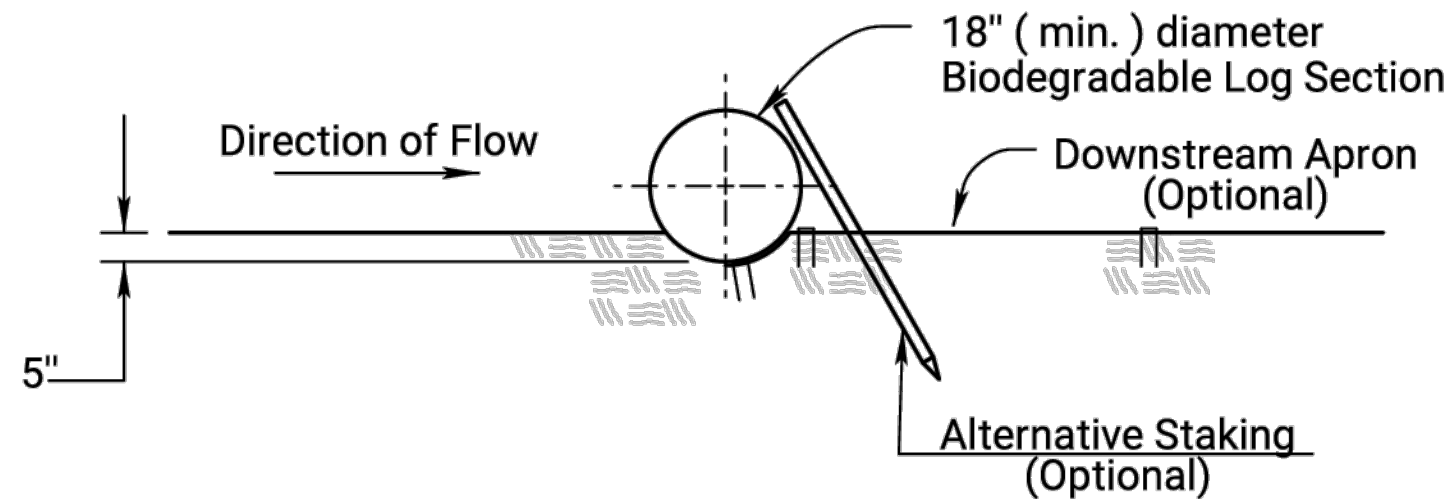
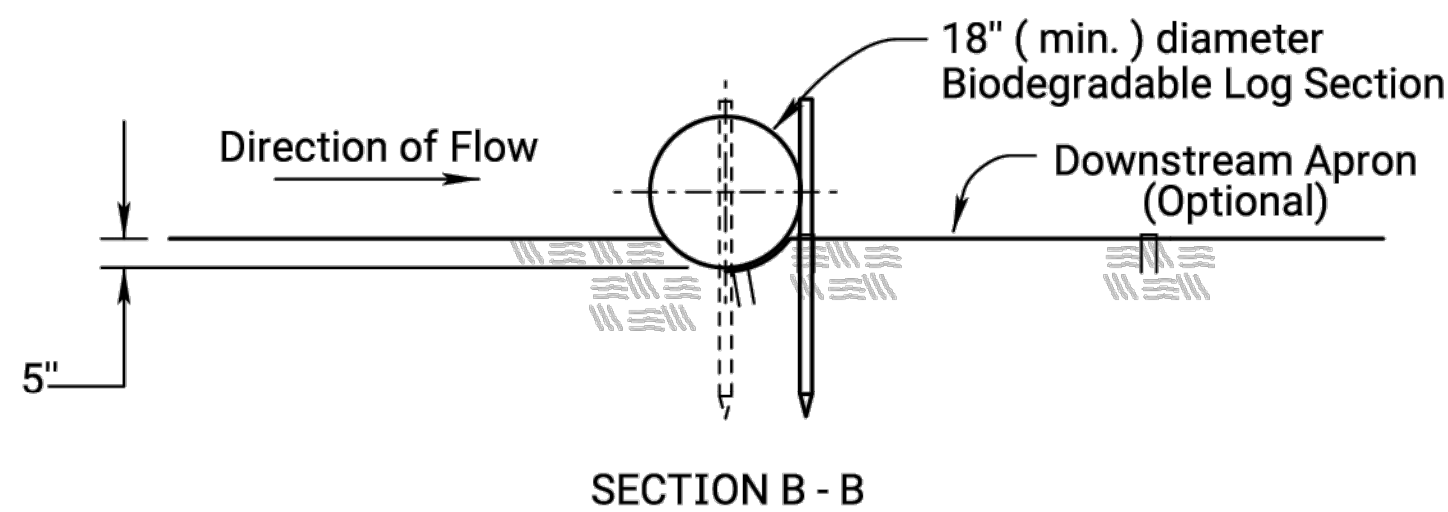
1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch 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



BIODEGRADABLE LOG DITCH CHECK NOTES

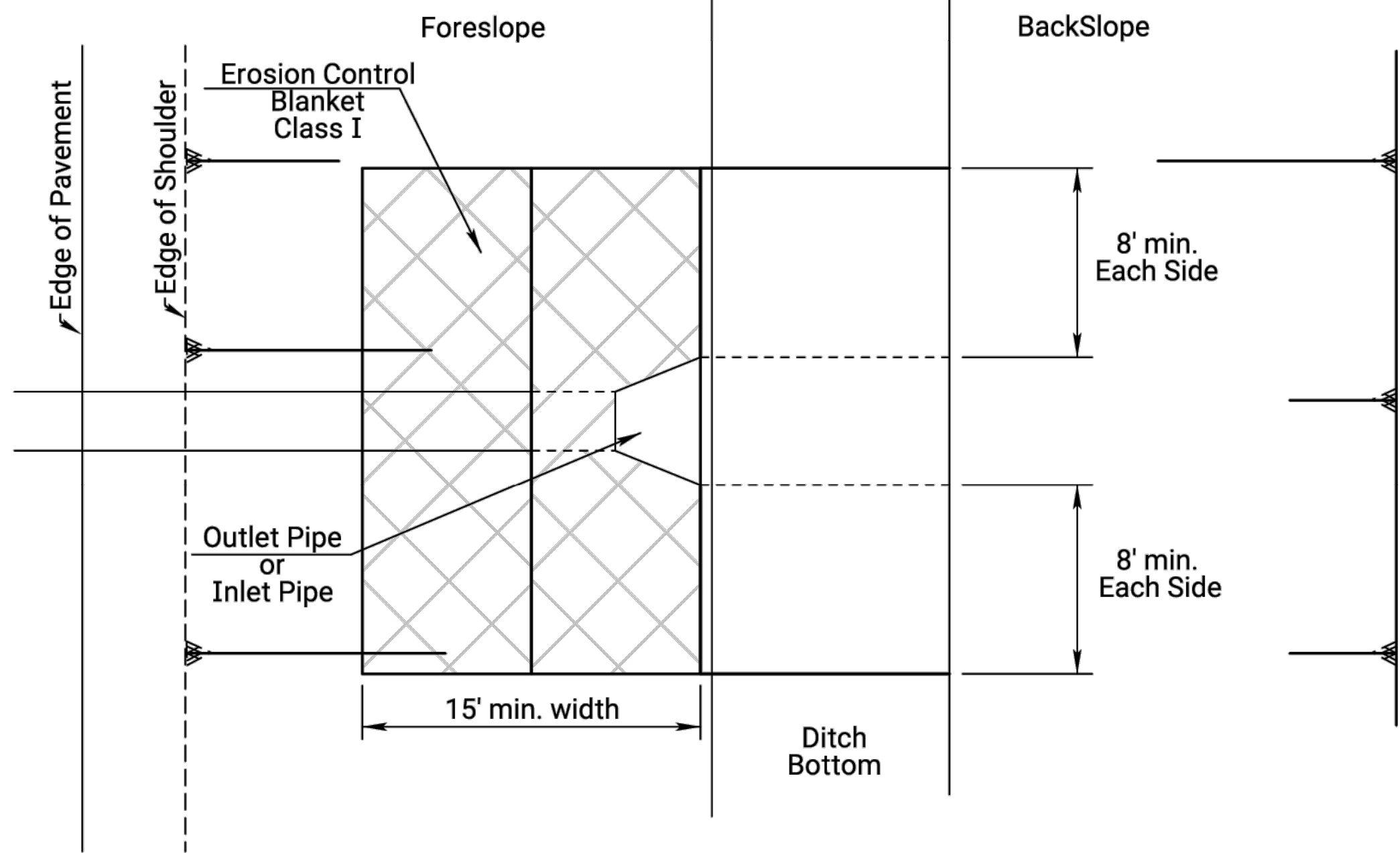
1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 18".
3. Stakes shall be wood or steel according to Section 2114 of the Standard Specifications. Length of stakes shall be a minimum of 2 x the diameter of the 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.

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

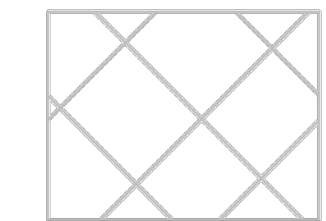
KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL				
ROCK DITCH CHECKS				
BIODEGRADABLE LOG DITCH CHECKS				
LA852G				
FHWA APPROVAL		11-19-20	APPD.	Mervin Lare
DESIGNED	M.L.	DETAILED	D.K.	QUANTITIES
DESIGN CK.	M.L.	DETAIL CK.	M.L.	QUAN. CK.
TRACED		R.A.A.		S.H.S.
TRACE CK.		R.A.A.		S.H.S.

KDOT Graphics Certified 06-20-2022

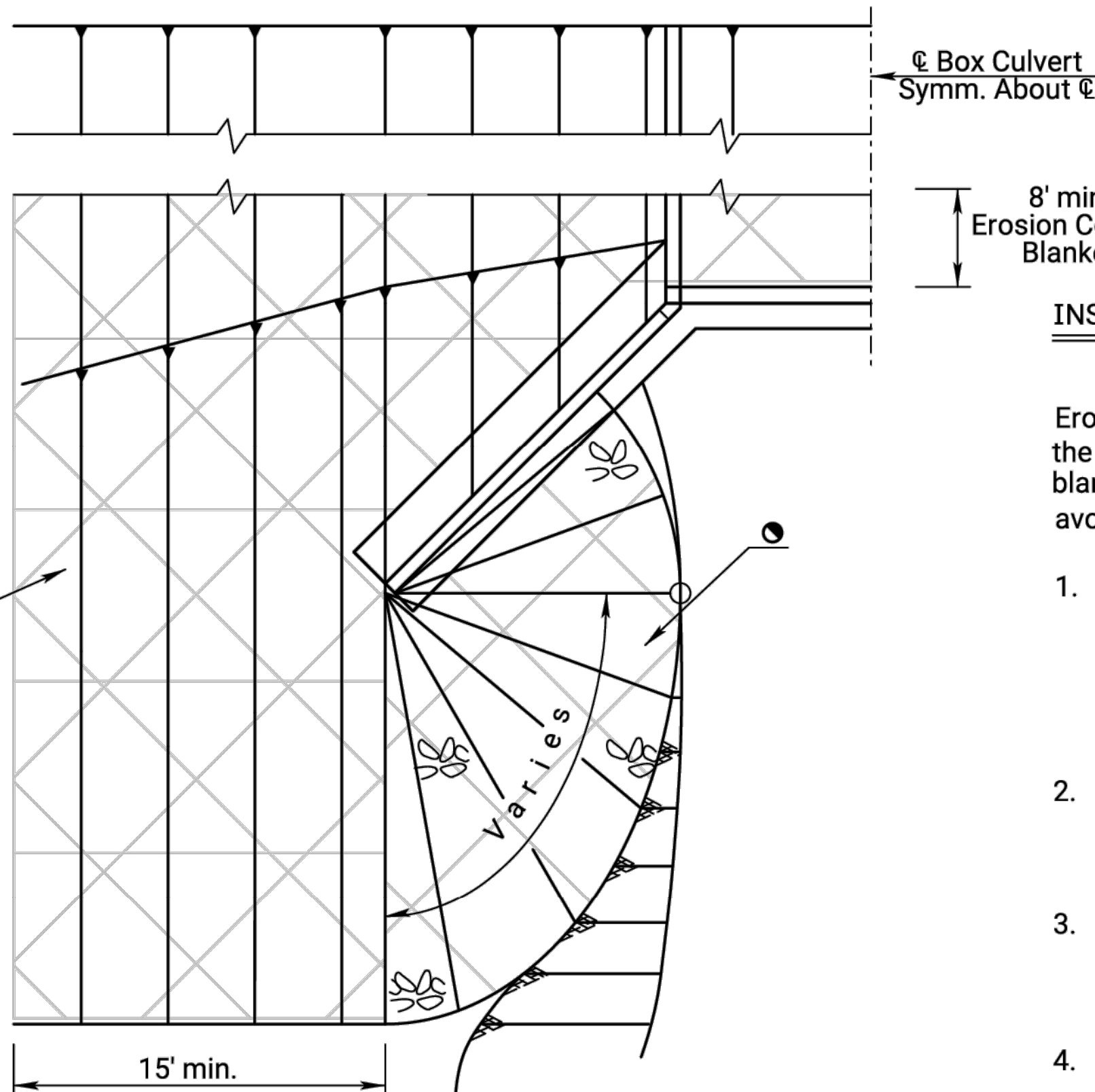
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	32	49



PARTIAL PLAN PIPE



Limits of Erosion Control Blanket



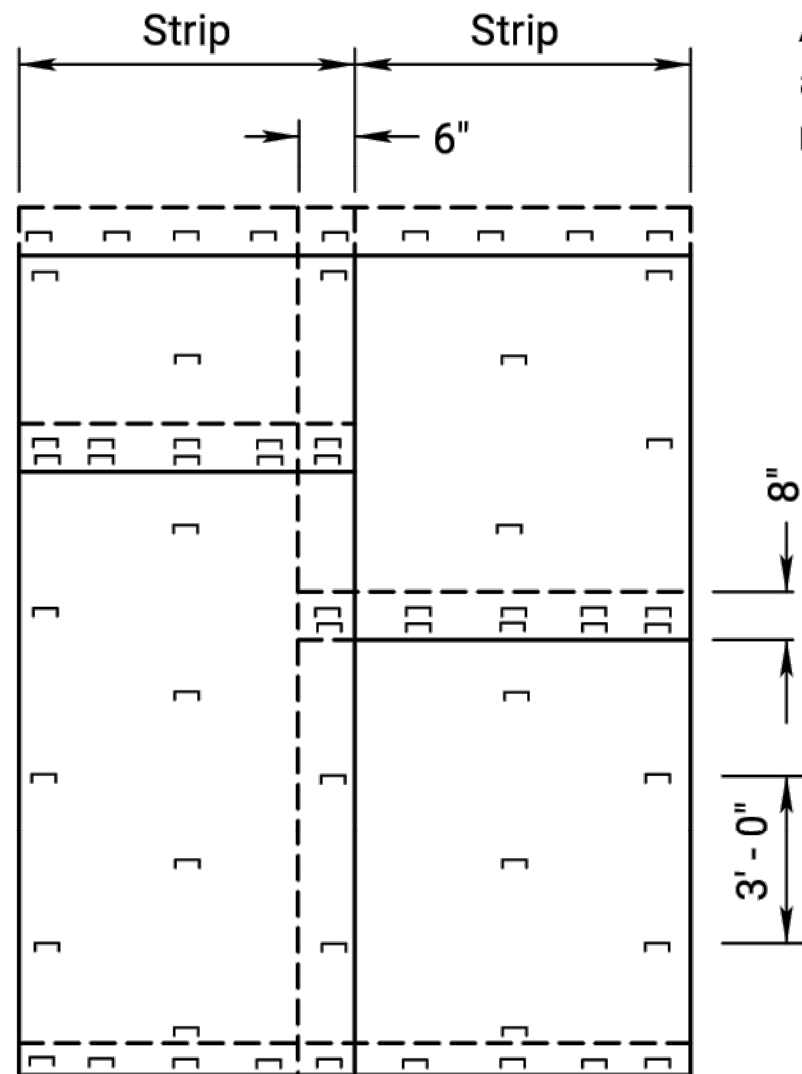
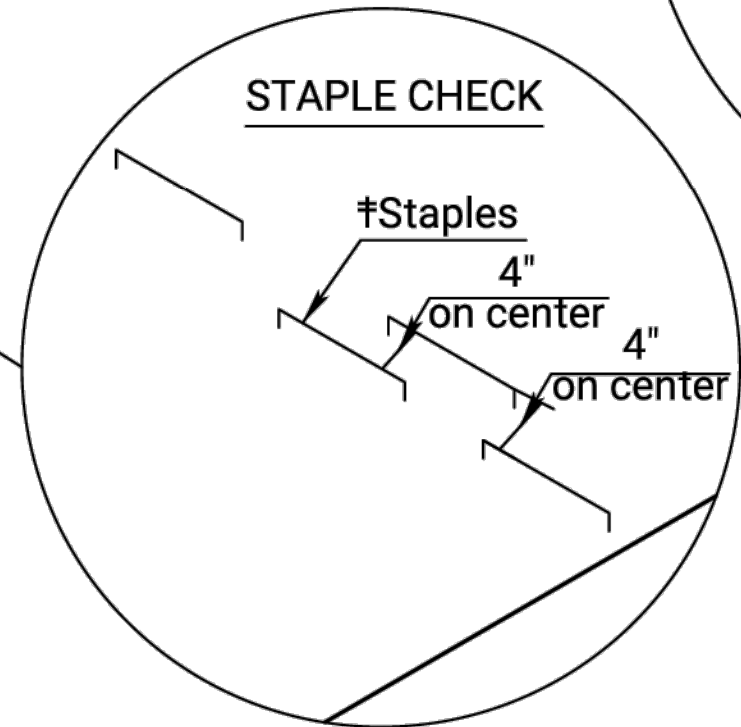
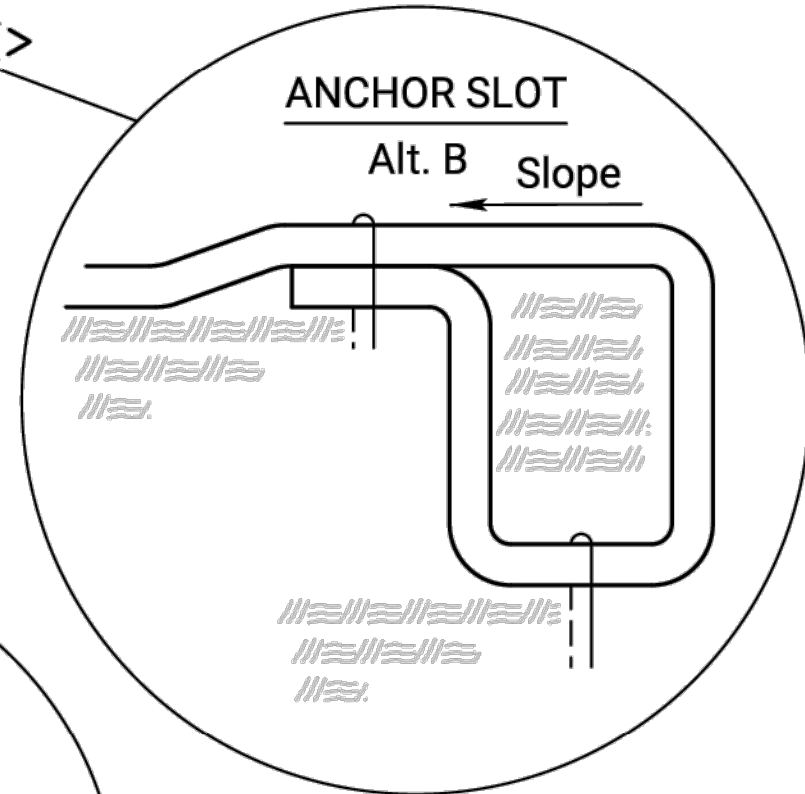
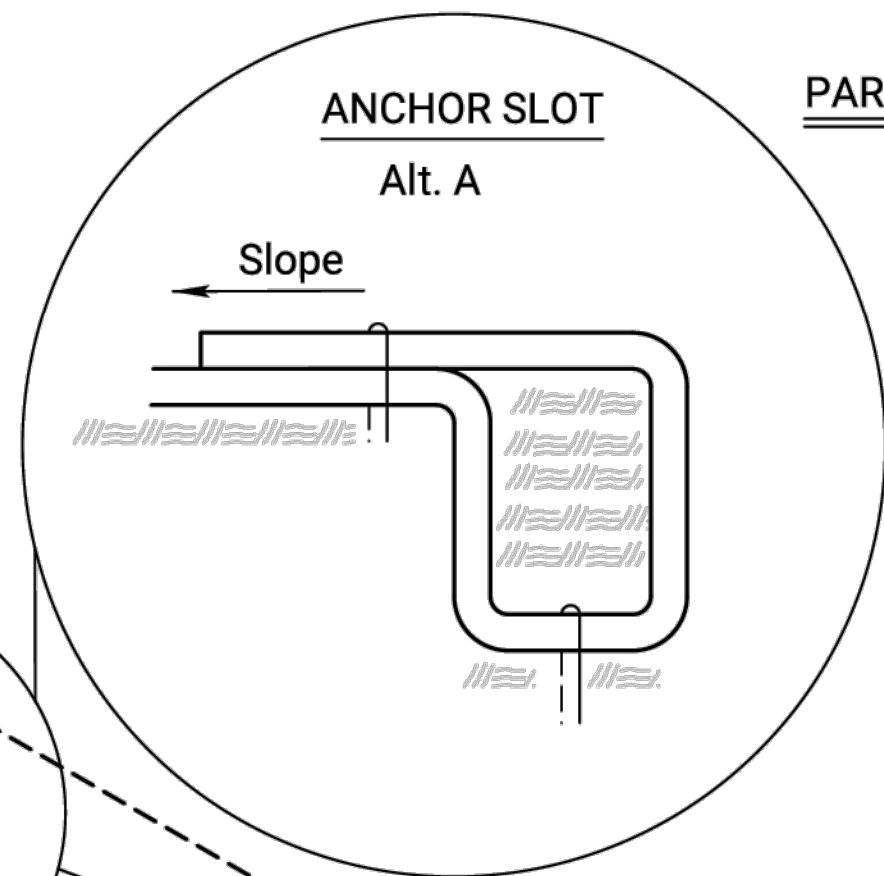
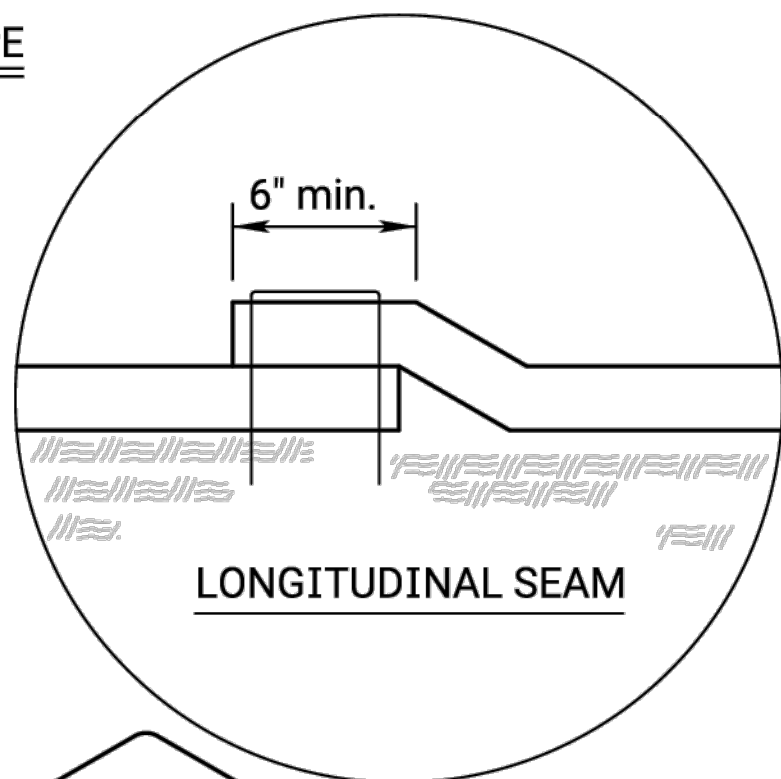
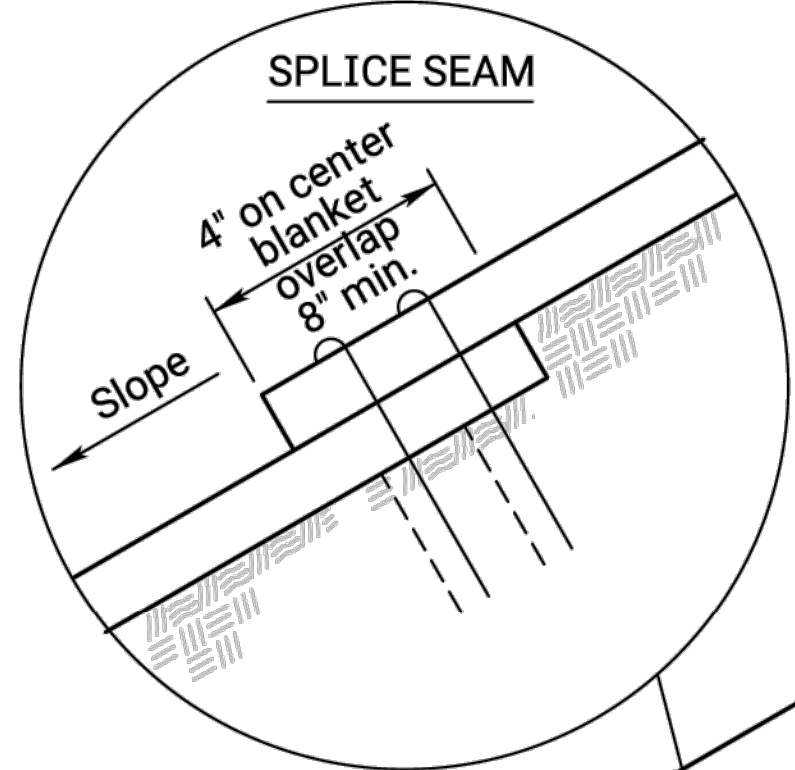
PARTIAL PLAN BOX CULVERT

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

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

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

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



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.

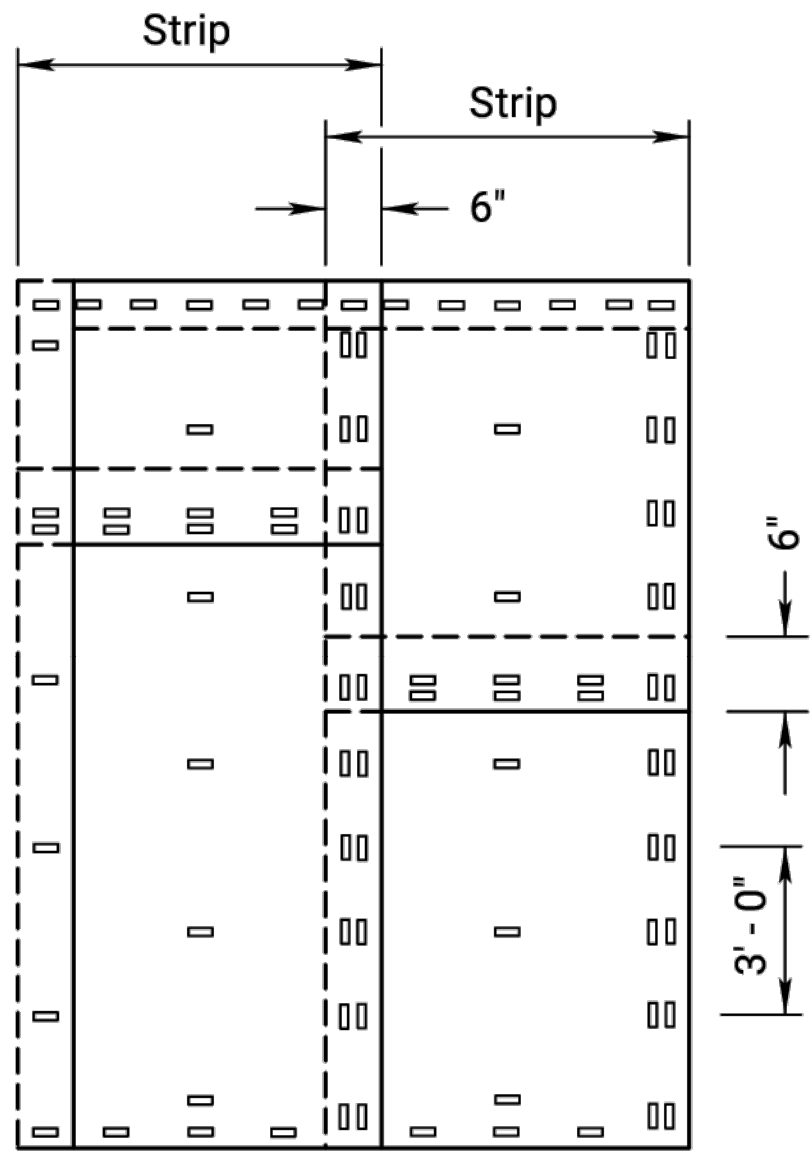
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03	02-23-15	Revised Standard	R.A.A.	S.H.S.
02	09-15-14	Revised Standard	M.R.M.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
INSTALLATION DETAIL EROSION CONTROL CLASS 1 SLOPE PROTECTION				
LA855				
FHWA APPROVAL 03-10-15 APPD. Scott H. Shields				
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	R.A.A.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	33	49

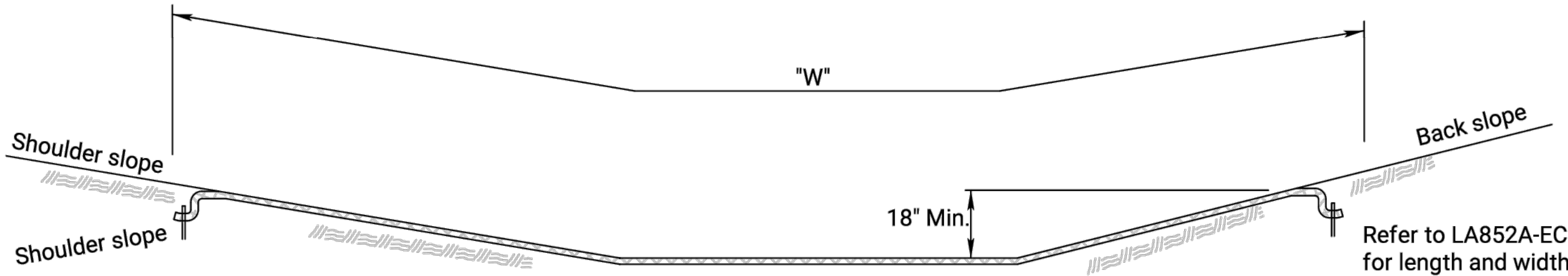
INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

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

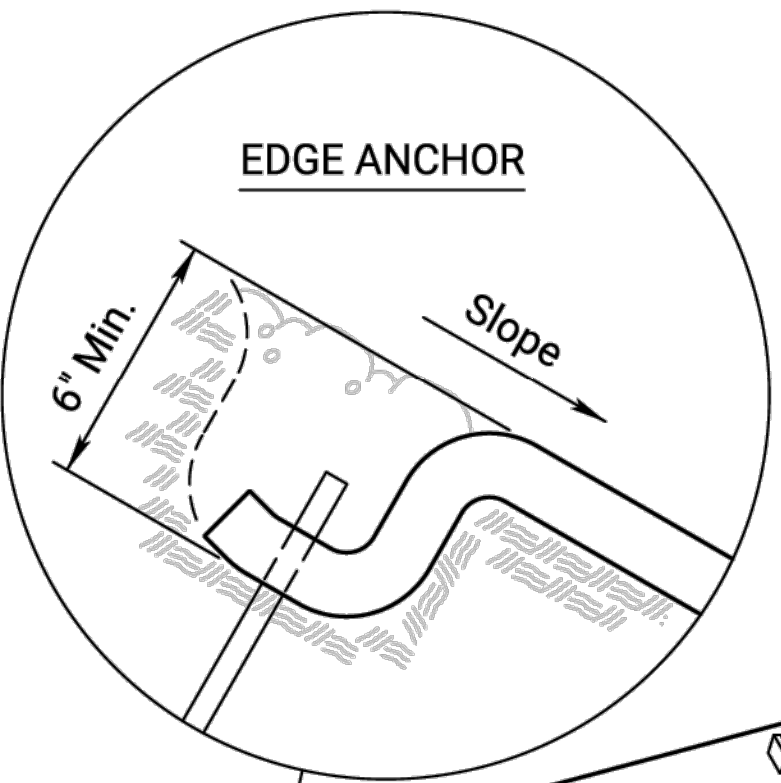
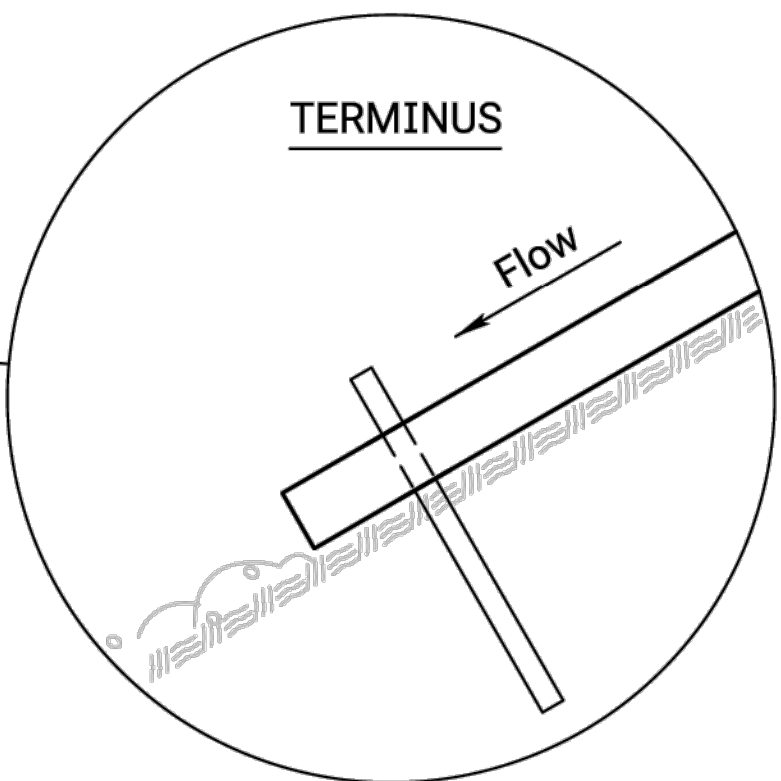
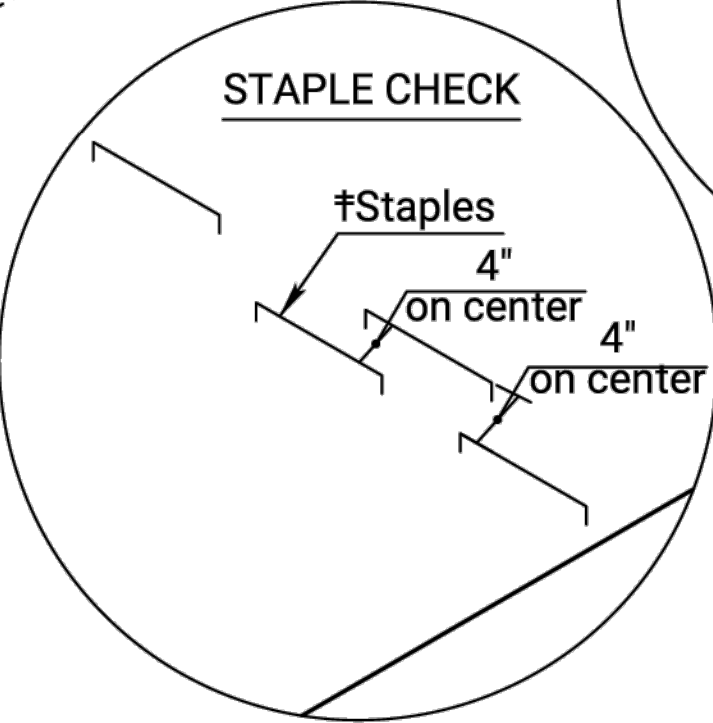
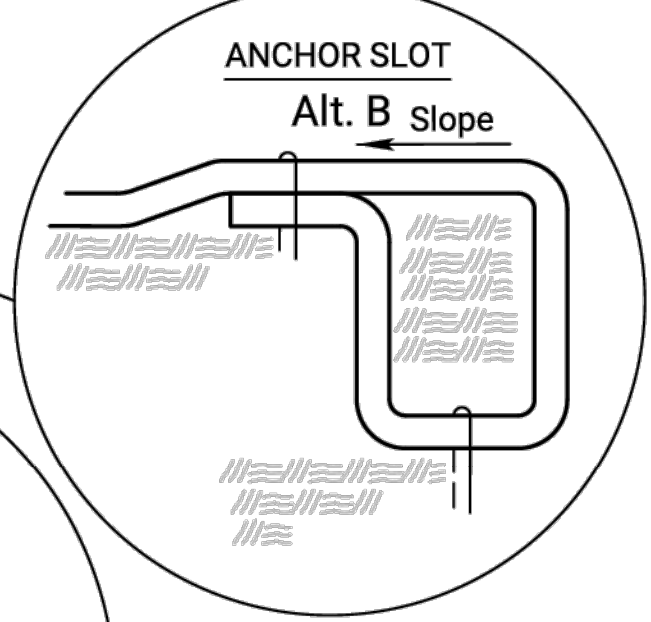
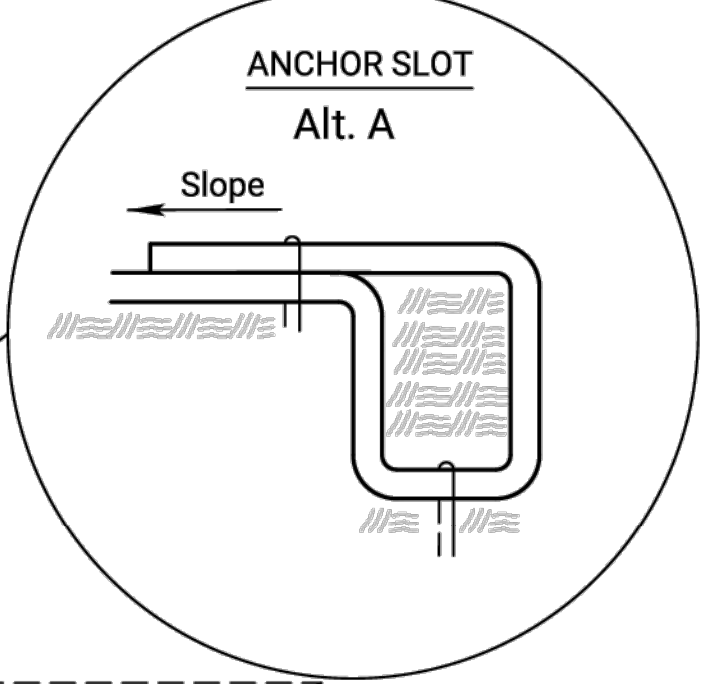
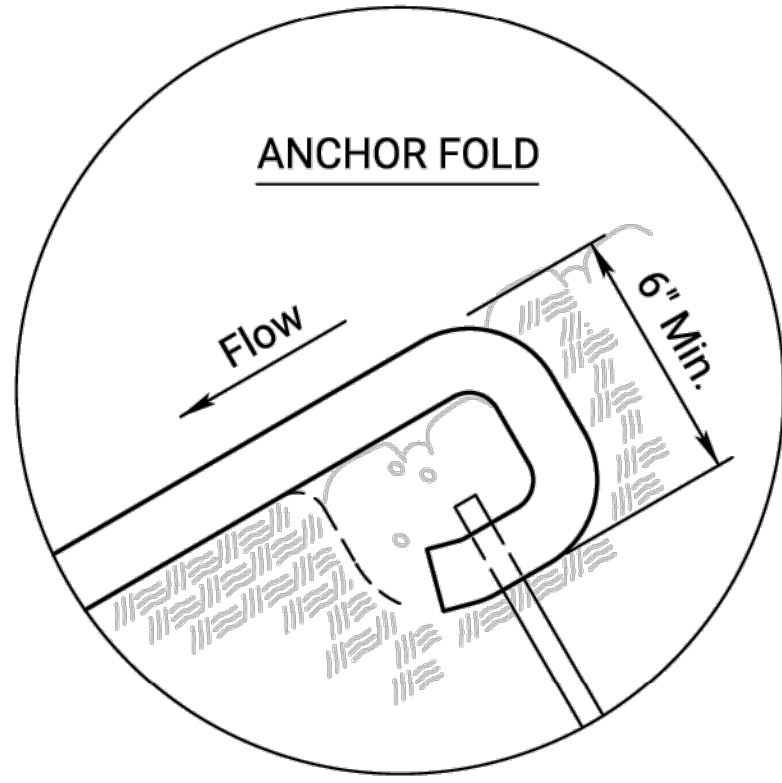
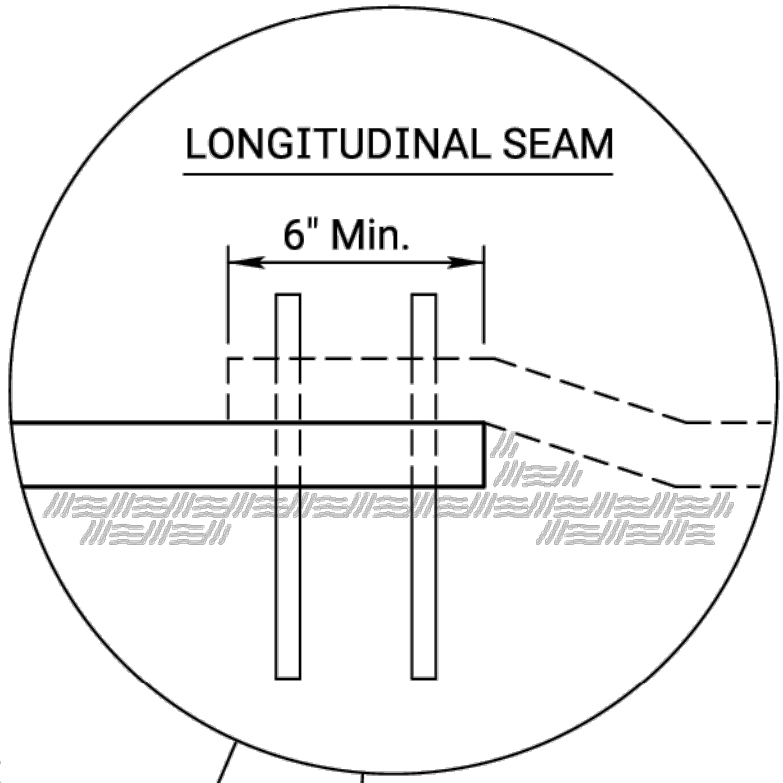
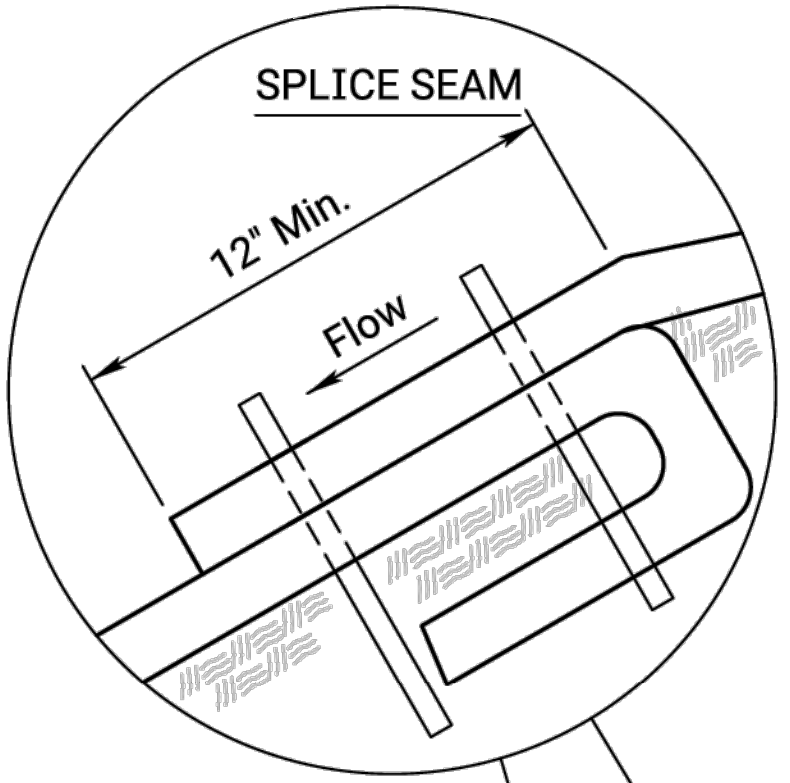
- ANCHOR FOLD: The top of the mat should be folded under, buried and secured with approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot, 6 inches wide x 6 inches deep; anchored in the bottom of the slot, backfilled, and the mat folded over the top as shown in detail.
- LONGITUDINAL SEAMS: The adjacent edges of the mat should overlap a minimum of 6 inches, with anchors catching the edges of both mats.
- SPLICE SEAM: When splices are necessary, overlap end a minimum of 12 inches in direction of water flow. Stagger splice seams.
- STAPLE CHECK: †Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.
- EDGE ANCHOR: Lay outside edge of mat into trench at top of side slope. Anchor at 3 foot intervals along trench.
- TERMINUS: The bottom edge of the mat shall be anchored in place with anchors spaced at 9 inch intervals along the terminating edge.
- TYPICAL ANCHORS: Anchor design shall be as recommended by the manufacturer.



PLAN VIEW - ANCHORING DIAGRAM



CROSS SECTION (Ditch Lining)

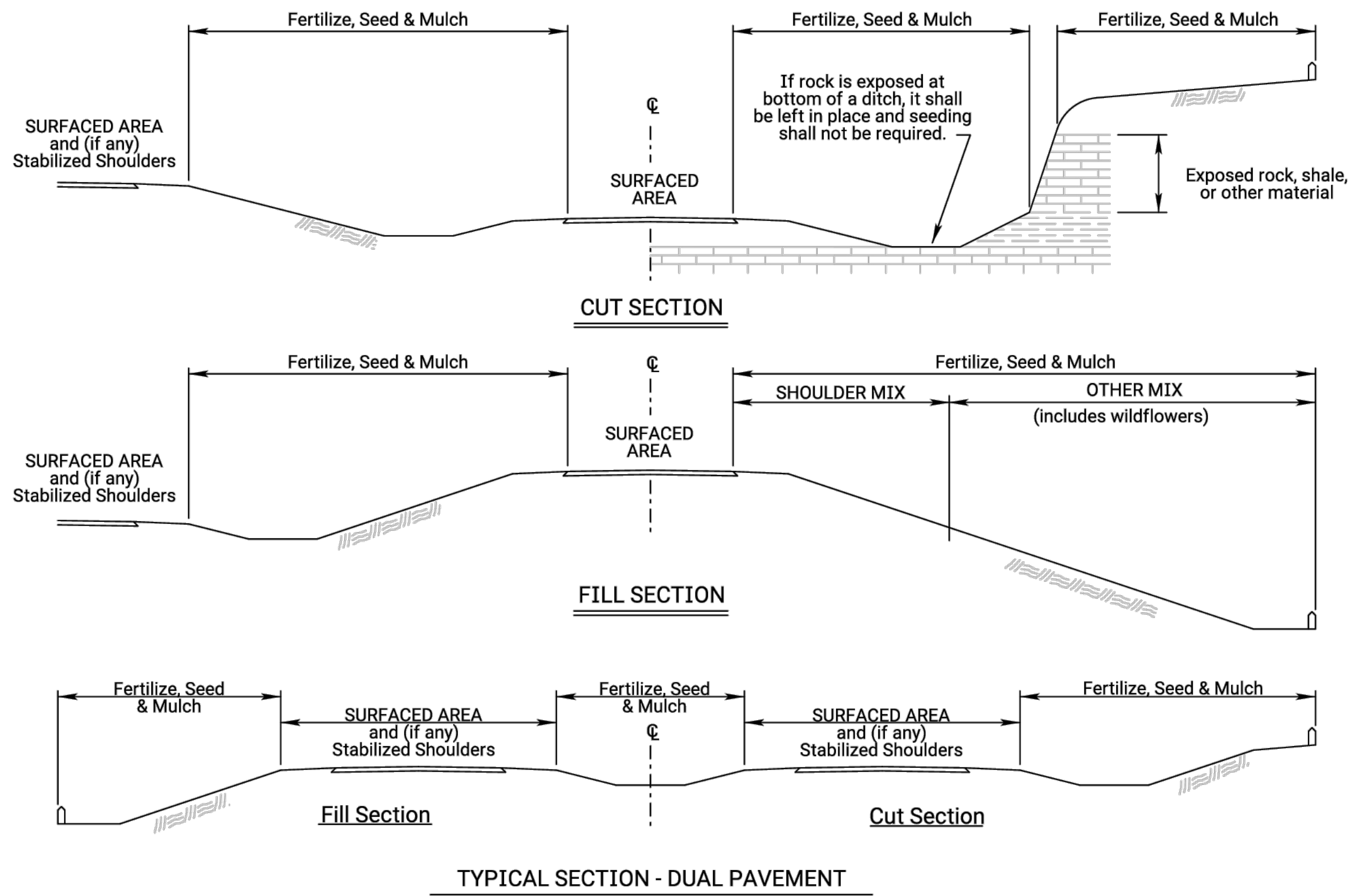


Direction of Water Flow

ISOMETRIC VIEW

04	09-25-15	Modified Staple Check	R.A.A.	S.H.S.
03	09-15-14	Revised Standard	R.A.A.	S.H.S.
02	03-01-13	Revised Standard	M.R.M.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
INSTALLATION DETAIL EROSION CONTROL CLASS 2 FLEXIBLE CHANNEL LINER				
LA856				
FHWA APPROVAL		11-02-15	APPD.	Scott H. Shields
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN. CK.
		TRACED		R.A.A.
		TRACE CK.		

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	34	49



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

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

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

GENERAL NOTES

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

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

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

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

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

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.

NATIVE WILDFLOWER MIX 1		
PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	
0.3	Common Milkweed	
0.3	Black Eyed Susan	
0.5	Blanket Flower	
0.5	False Sunflower	
0.5	Lance-Leaf Coreopsis	
0.2	Maximilian Sunflower	
0.1	New England Aster	
0.2	Pinnate Prairie Coneflower	
0.2	Plains Coreopsis	
0.3	Purple Coneflower	
0.3	Upright Prairie Coneflower	
0.3	Dames Rocket	
0.3	Lemon Mint	
0.2	Pitcher Sage	
0.2	Wild Bergamot	
1.0	Illinois Bundleflower	
0.2	Common Evening Primrose	
0.1	Hoary Verbena	
0.8	Purple Prairie Clover	
0.3	Roundhead Lespedeza	
3.0	Showy Partridge Pea	
0.2	White Prairie Clover	
10.3	Total (lb)	

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

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed $\frac{1}{8}$ " - $\frac{1}{4}$ ". Place the wildflower seed in a separate seed box and drill (cover) seed $\frac{1}{16}$ " maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

P.L.S. RATE/ACRE				ACRES				BID ITEM	QUANTITY	UNIT
SHLDR	OTHER			SHLDR	OTHER					
50				1.4				Fertilizer (16-20-0)	70.0	LBS
1				1.4				Seed (Blue Grama Grass Seed)(Lovington)	1.4	LBS
24.5				1.4				Seed (Buffalo Grass Seed)(Treated)	34.3	LBS
6.3				1.4				Seed (Side Oats Grama Grass Seed)(El Reno)	8.8	LBS
10				1.4				Seed (Sterile Wheatgrass)(Regreen/Quick Guard)	14.0	LBS
6				1.4				Seed (Western Wheatgrass Seed)(Barton)	8.4	LBS
								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.

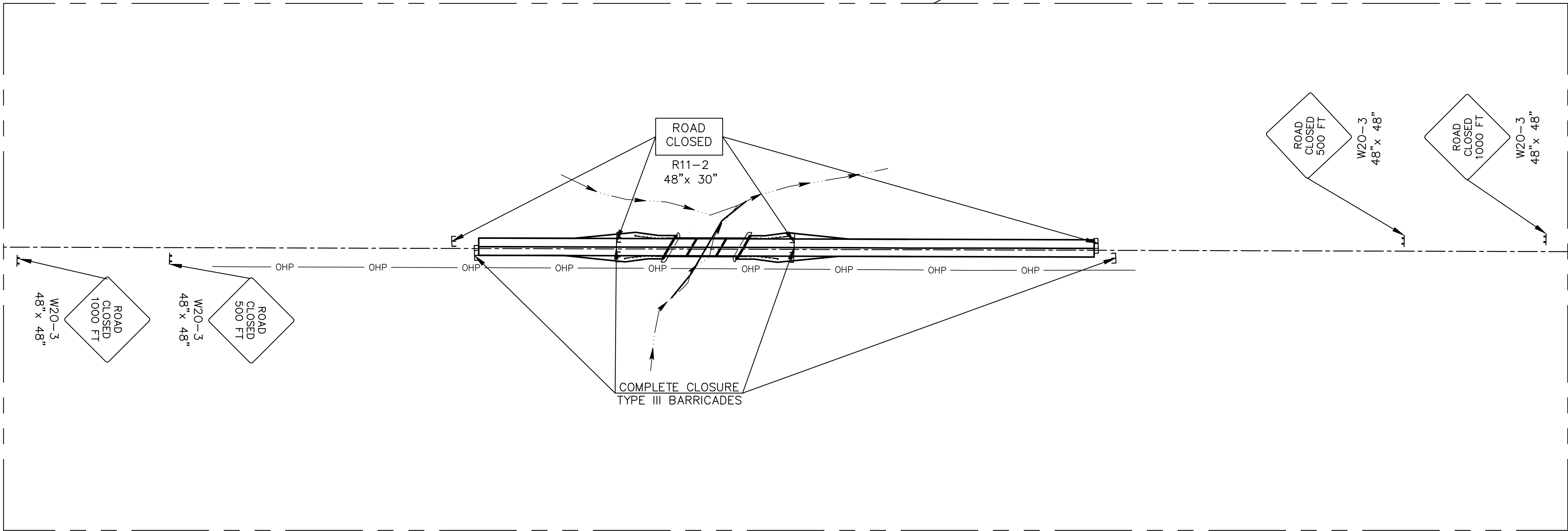
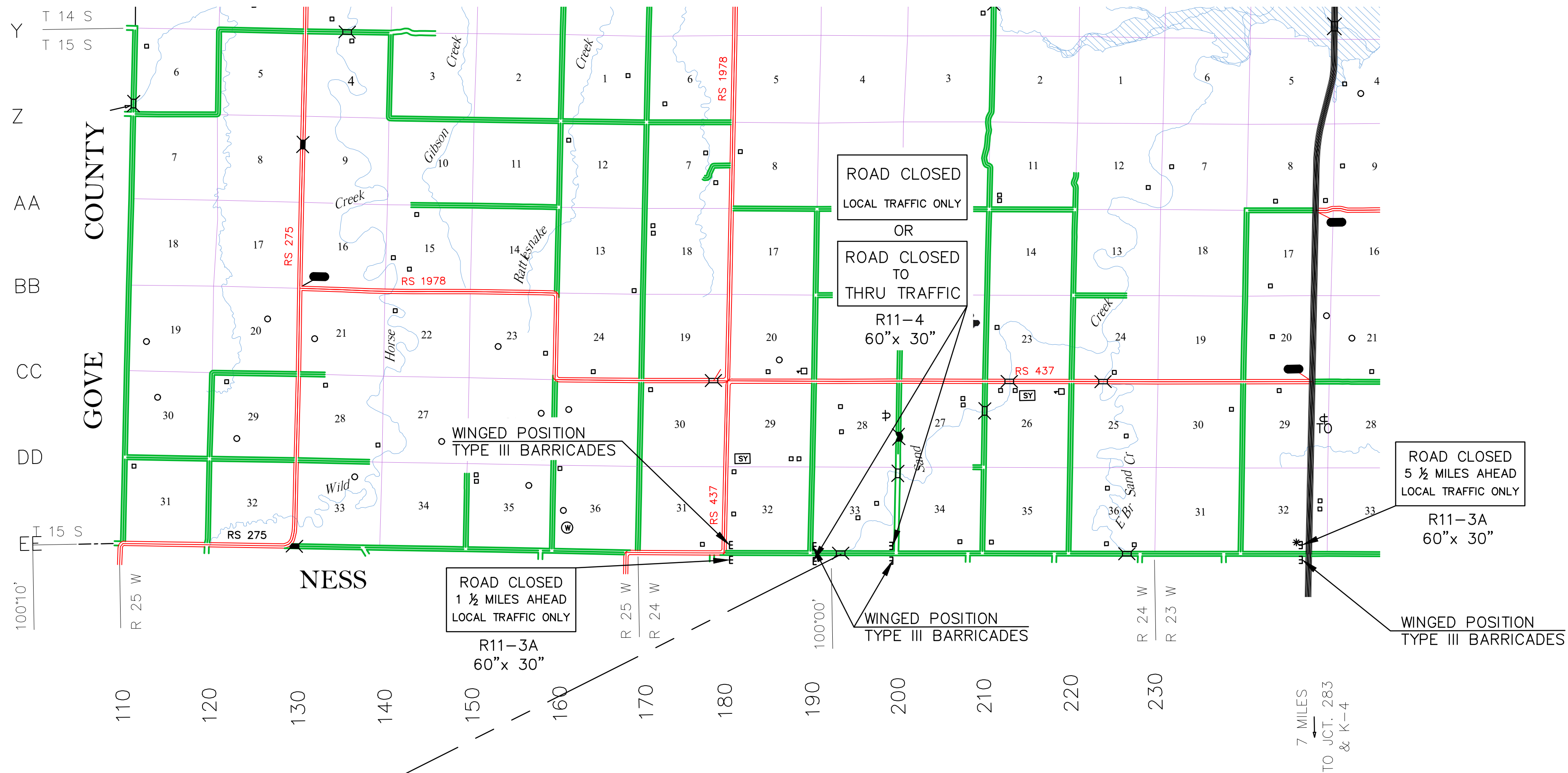
NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. All disturbed areas shall be seeded, fertilized and mulched at the listed rate per acre. The acres are estimated.

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.

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.
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION PERMANENT SEEDING SUMMARY OF SEEDING QUANTITIES LA850				
FHWA APPROVAL		05-06-19	APP'D.	Mervin Lare
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	35	49



TRAFFIC CONTROL PLAN

PENCO ENGINEERING, P.A.
PLAINVILLE, KANSAS

DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 98 C-5291-01
CHECKED BY: JGD	DATE: 2025

Plotted by : KDOT#CADD.Support_ks.gov
File : te700.dgn
4-JUN-2022 00:01

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

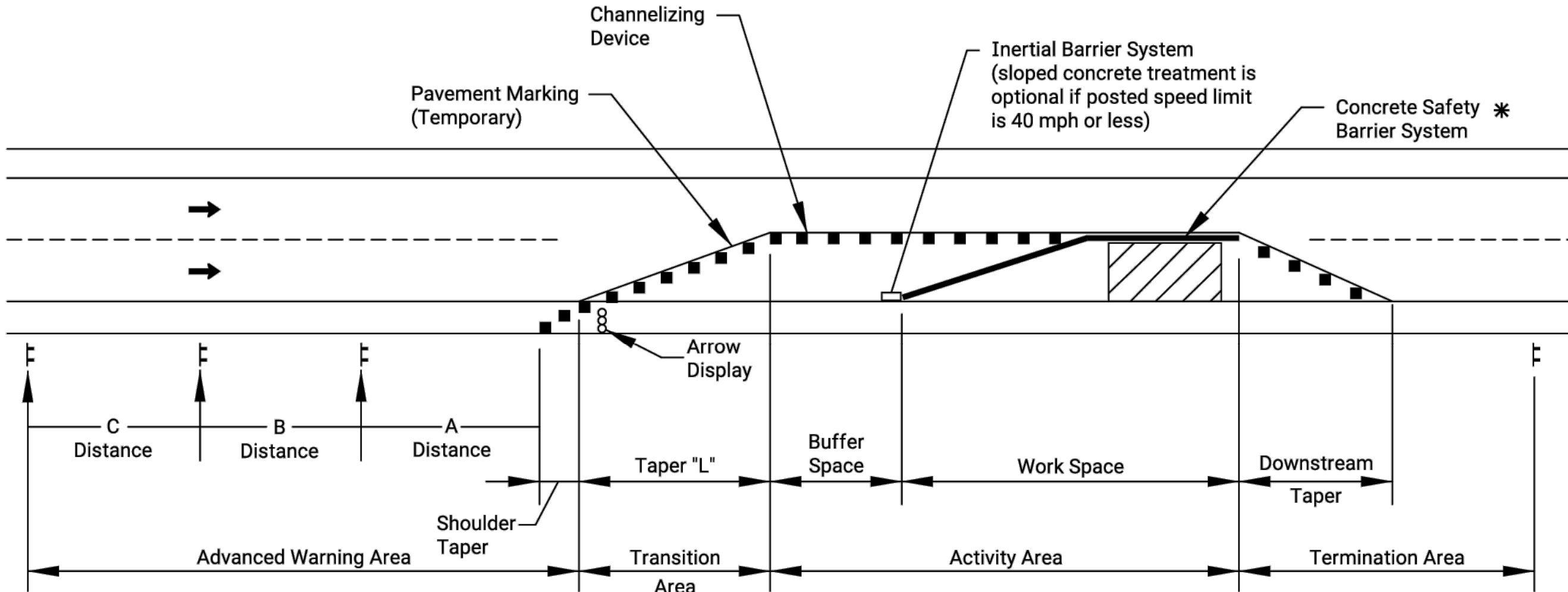
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

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

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

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

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



TYPICAL WORK ZONE COMPONENTS

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

Minimum advance warning sign spacing (in feet):

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

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

Taper Formulas:

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

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

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

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

Channelizer Placement:

- (1) The spacing between devices in transition area (taper) should not exceed a distance in feet equal to 1/2 the posted speed limit in mph prior to work starting.
- (2) The spacing between devices in the advanced warning area and the activity area should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.
- (3) Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.
- (4) Place directional indicator barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.
- (5) Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.

Buffer Space

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

✱ Posted speed prior to work starting

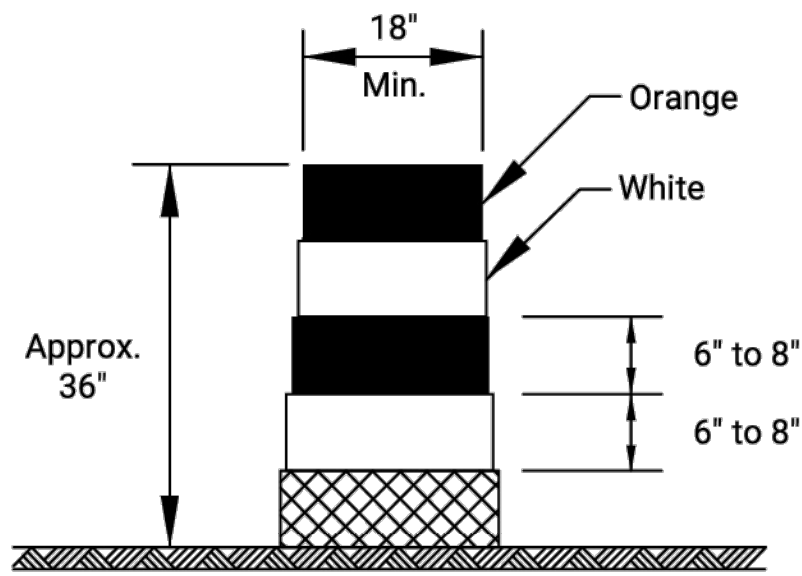
Neither work activity nor storage of equipment, vehicles, or material should occur in the buffer space. When a protection vehicle is placed in advance of the work space, only the space upstream of the vehicle constitutes the buffer space.

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

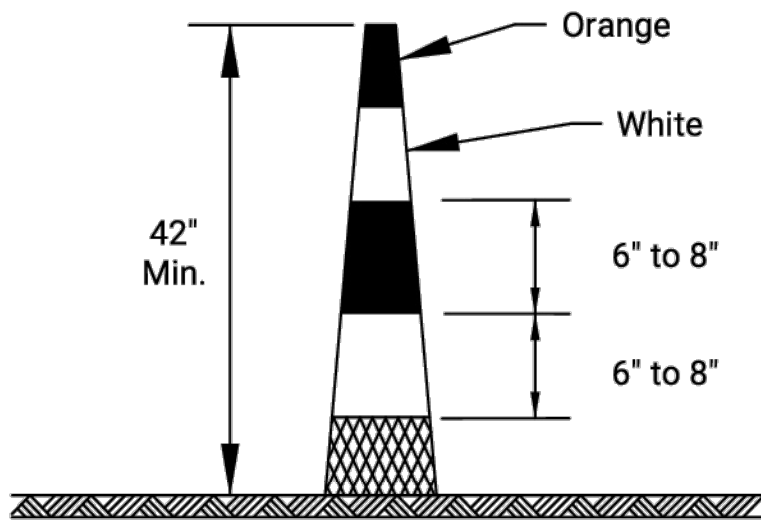
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	36	49

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.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL GENERAL NOTES				
TE700				
FHWA APPROVAL		03-13-18	APPD.	Eric Kocher
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACED	TRACE CK.

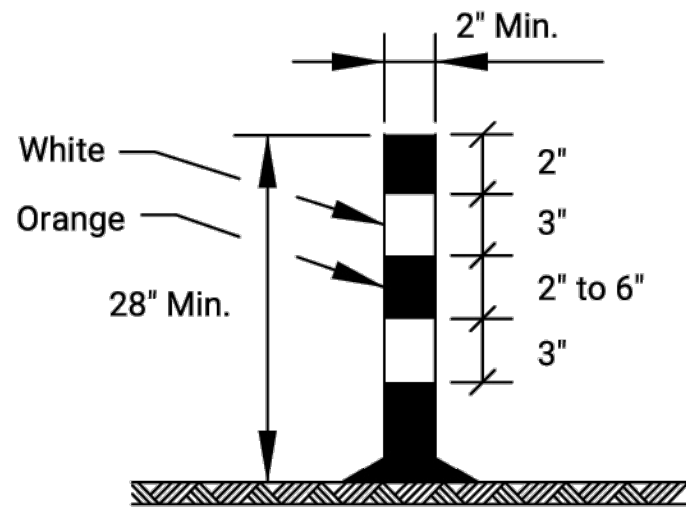
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	37	49



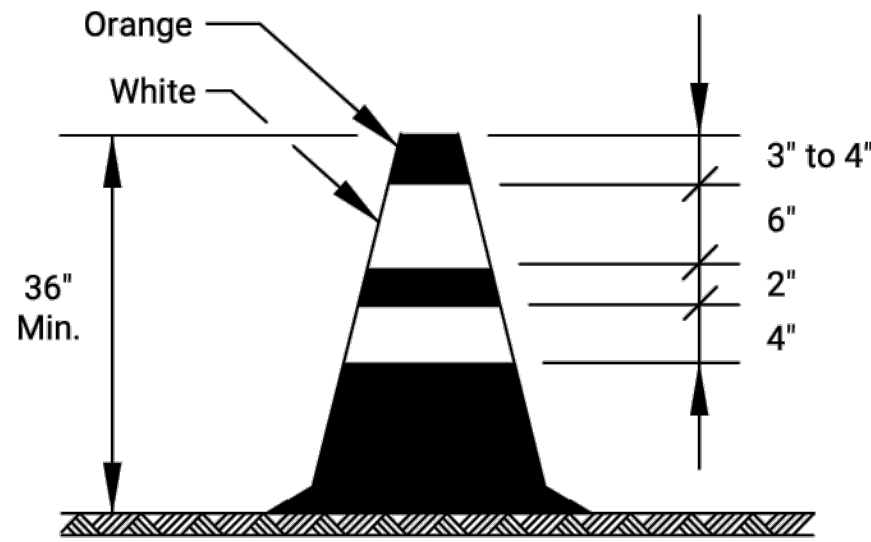
DRUM



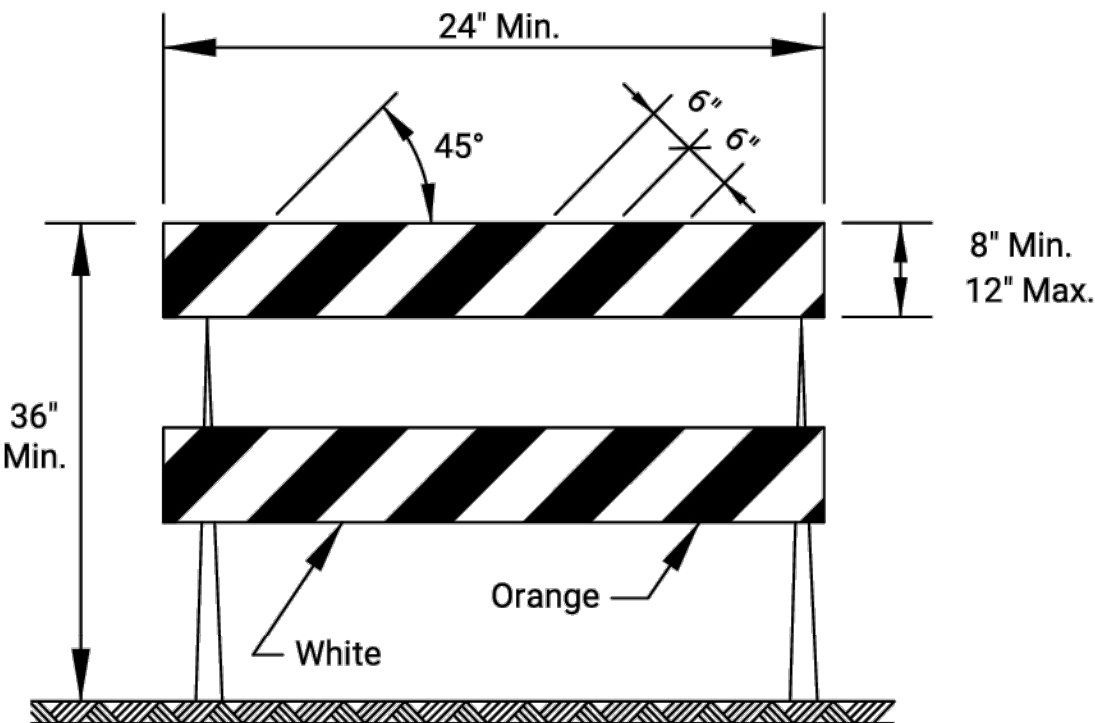
CONICAL
DELINEATOR



TUBULAR MARKER
Striping as shown for up to 42".

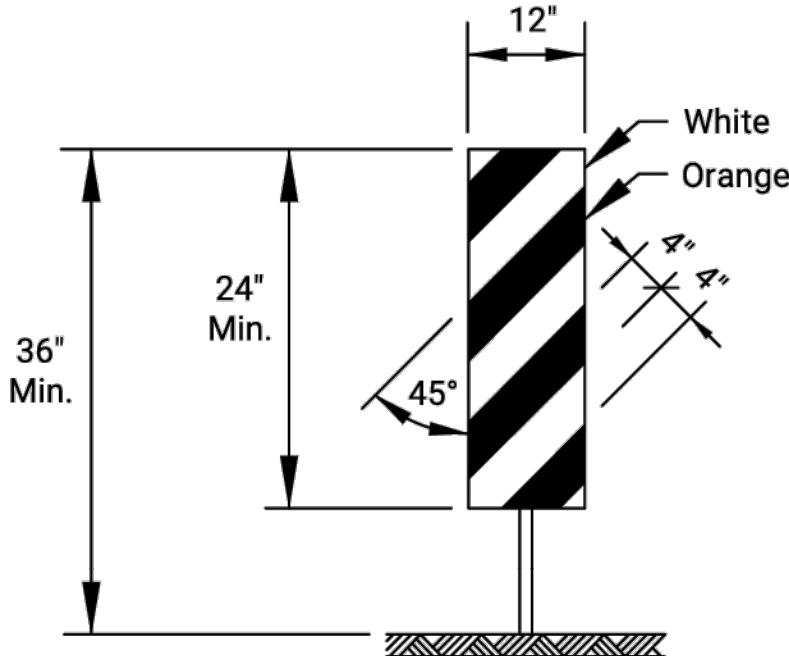


TRAFFIC CONE



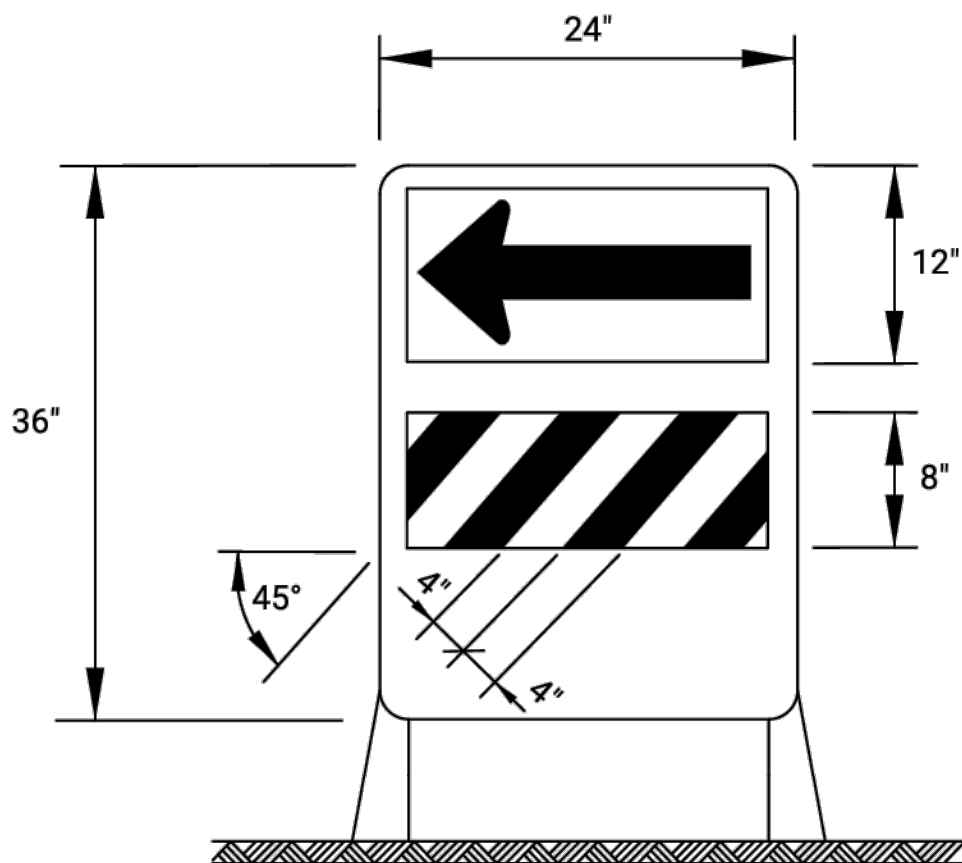
TYPE 2 BARRICADE

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



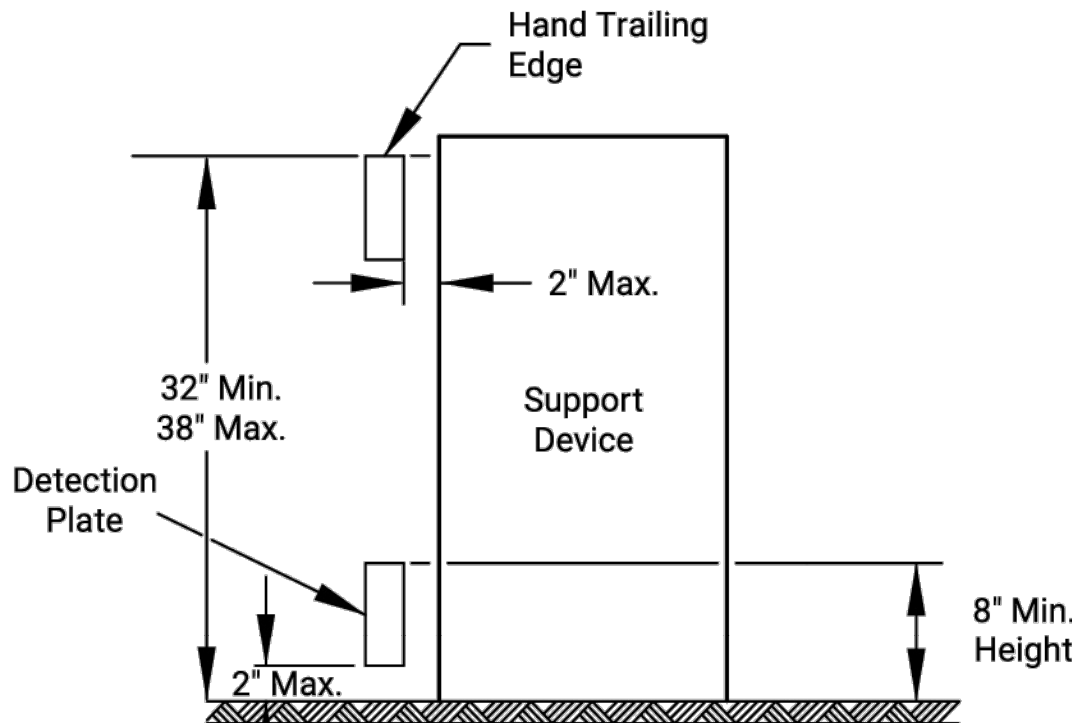
VERTICAL PANEL

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

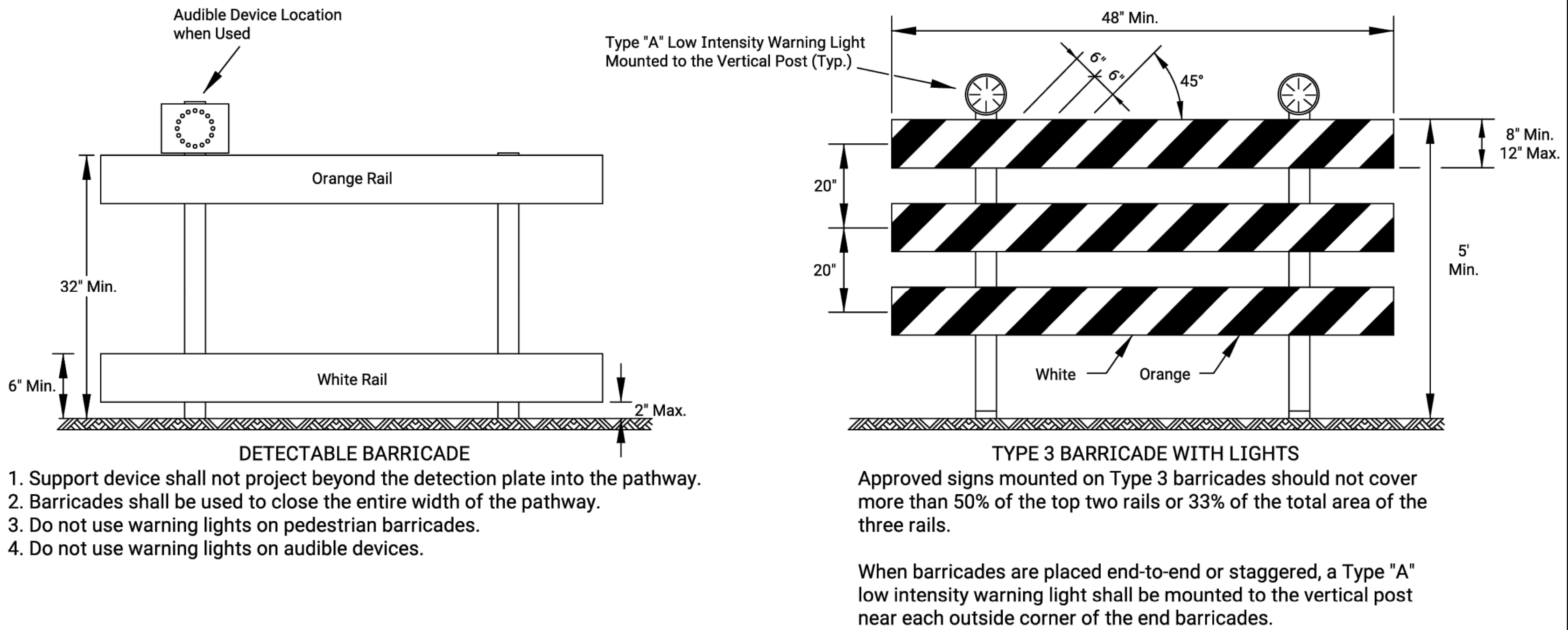
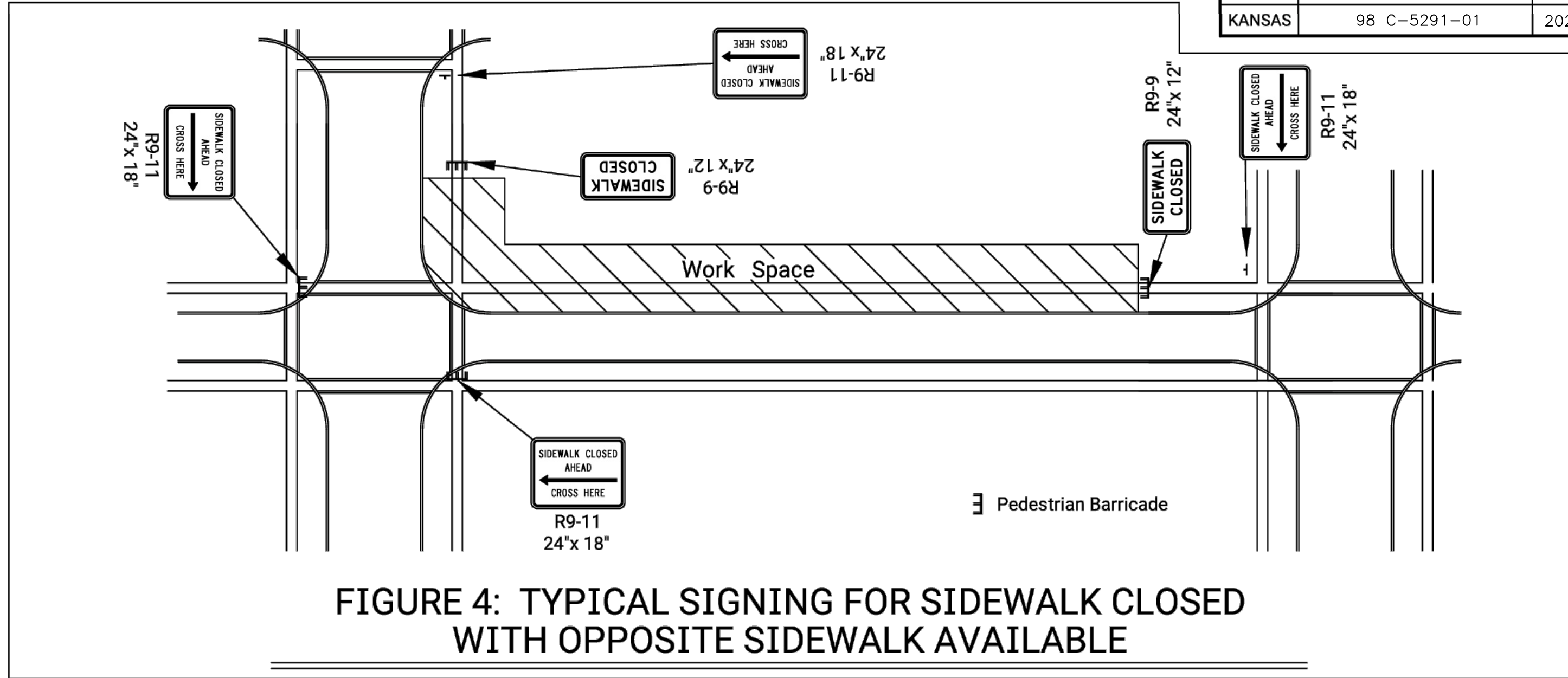
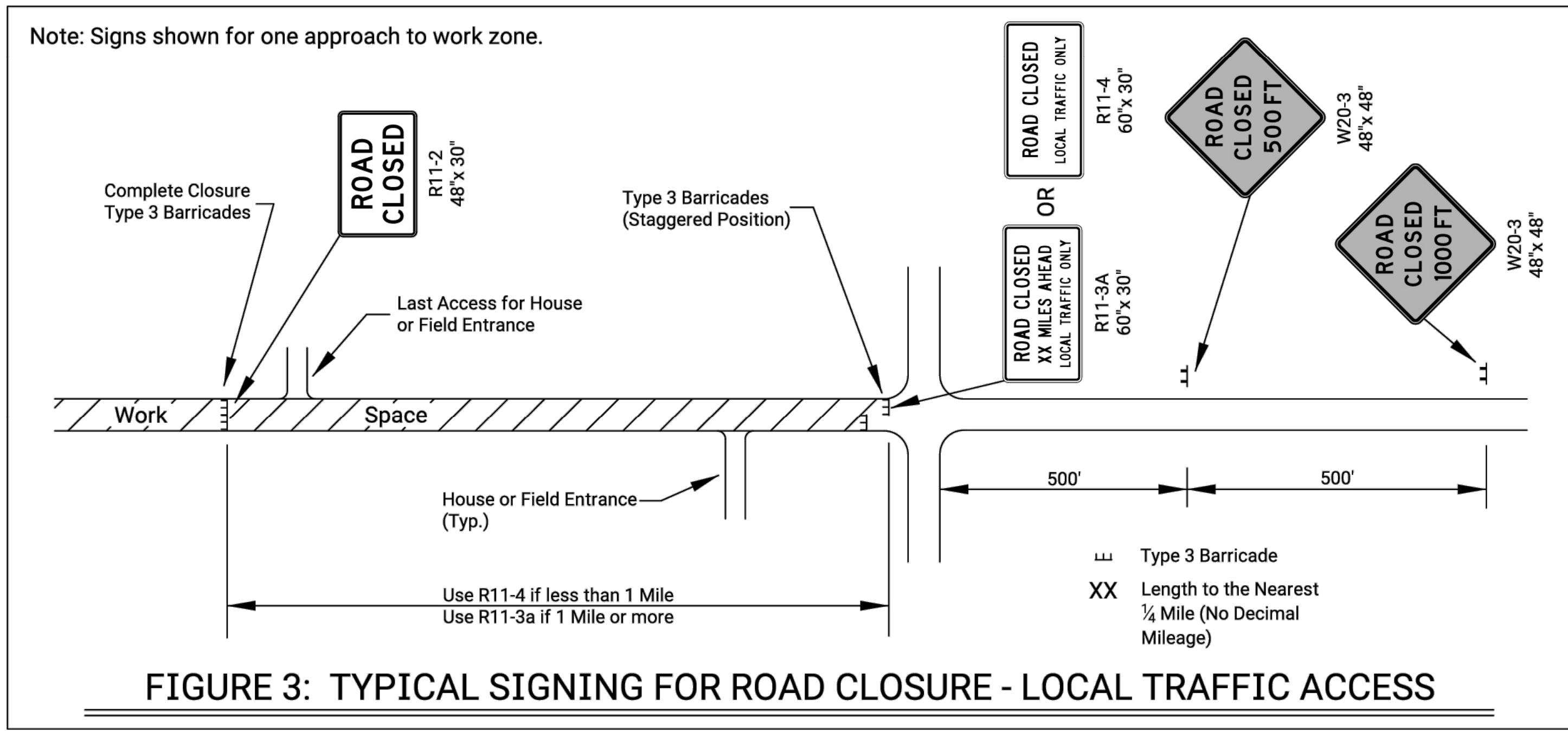
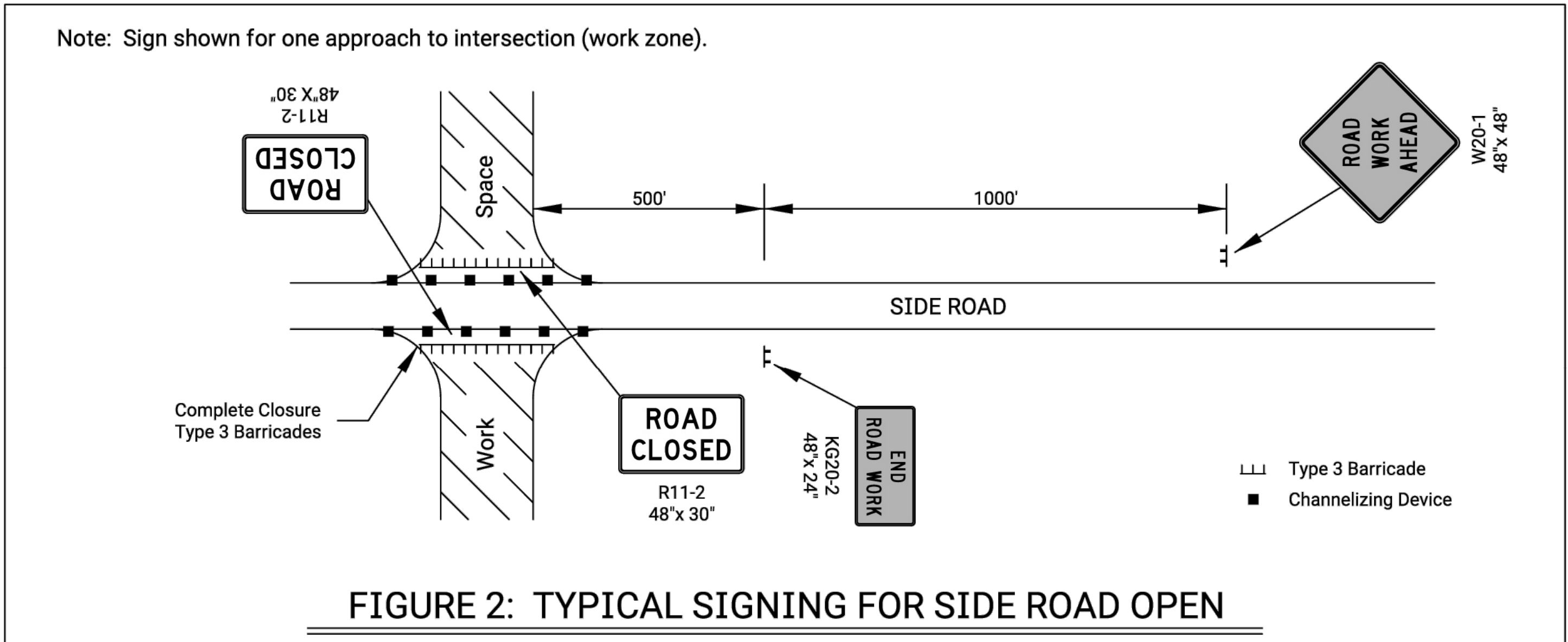
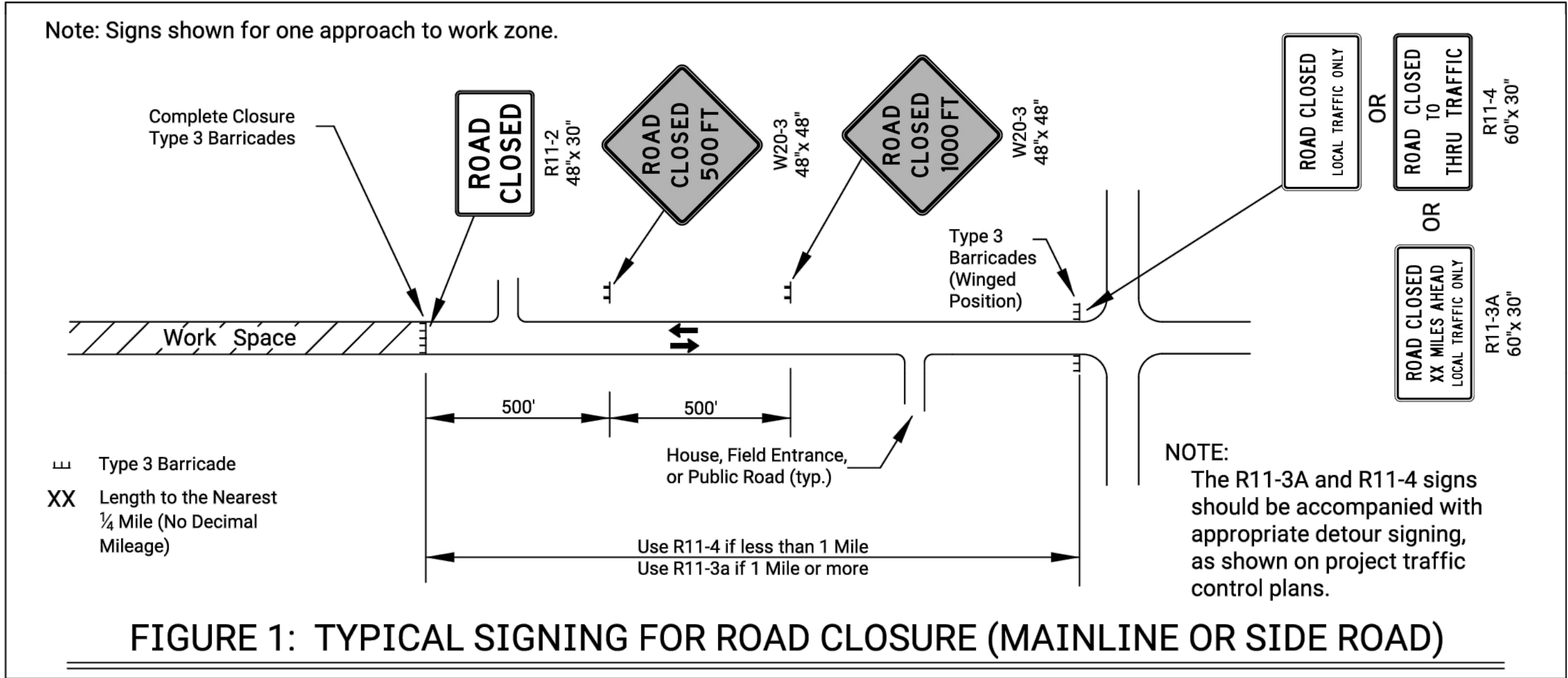
1. Support device shall not project beyond the detection plate into the pathway.
2. Hand trailing edges and detection plates are optional for continuous walls.
3. Interconnect pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
4. Alternate pathways 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.

Location		Cross-overs	Shoofly Divisions	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	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL CHANNELIZING DEVICES				
TE702				
FHWA APPROVAL 06-01-15 APPD. Kristina Ericksen				
DESIGNED	L.E.R.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	38	49



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.

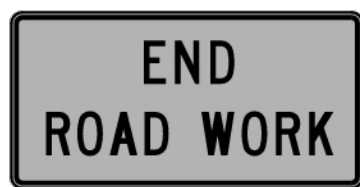
The R11-4 (ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is less than 1 mile.

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 APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL CLOSURES				
TE704				
FHWA APPROVAL		06-01-15	APPD.	Kristina Ericksen
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.

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"

WORK ZONE

KM4-20

Std. Size

3" C
24"x 6"

Expwy/Freeway

6" C
48"x 12"



W7-3a

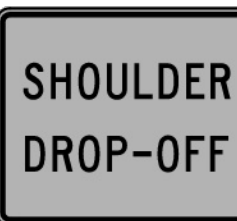
Mileage to be Determined
by the Engineer.



W8-17

Std. Size
Expwy/Freeway

48"x 48"



W8-17P
(Optional)

Std. Size
Expwy/Freeway

30"x 24"



W8-15

Std. Size
Expwy/Freeway

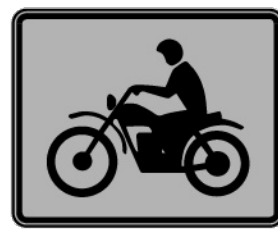
8" D
48"x 48"



W8-7

Std. Size
Expwy/Freeway

8" D
48"x 48"



W8-15p

Std. Size
Expwy/Freeway

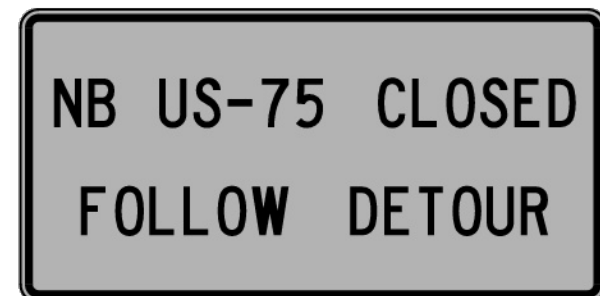
30"x 24"



W8-11

Std. Size
Expwy/Freeway

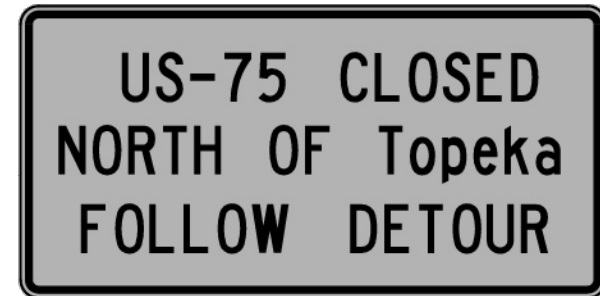
8" D
48"x 48"



SP-01
(Special Sign)

Std. Size
6" C

Expwy/Freeway
10" D



SP-02
(Special Sign)

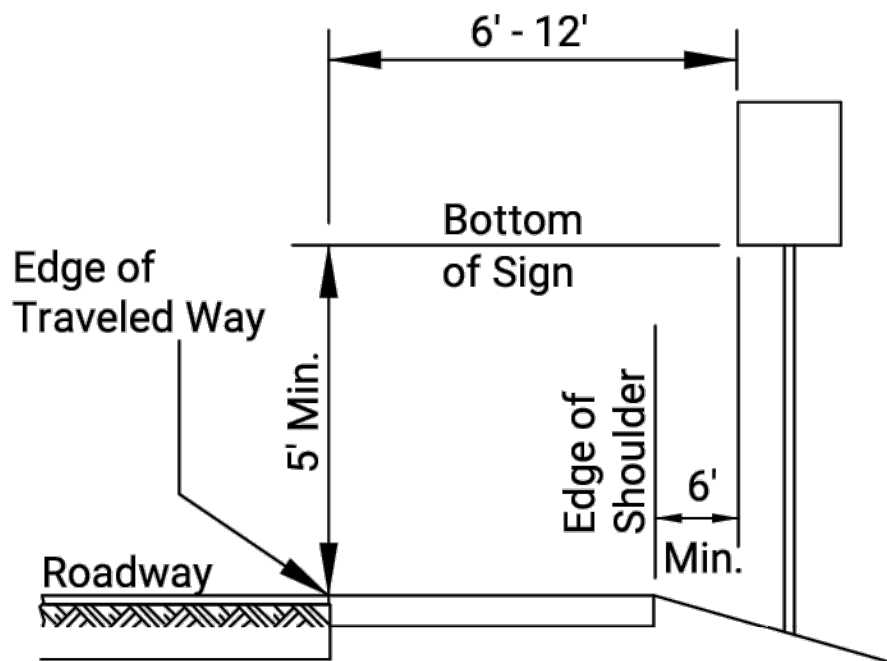
Std. Size

Uppercase: 6" C
Lowercase: 4.5" C

Expwy/Freeway

Uppercase: 10" D
Lowercase: 8" D

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

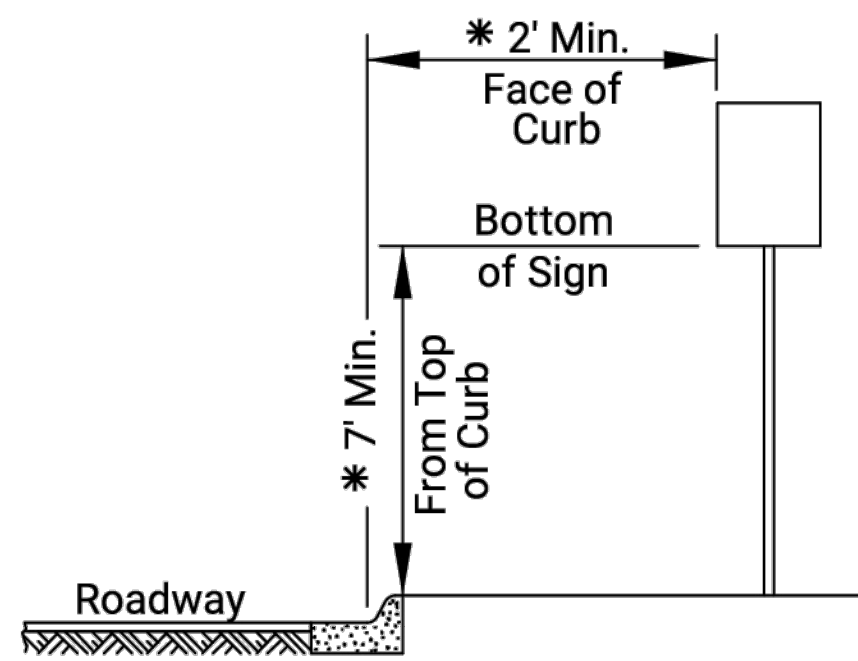


RURAL

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

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

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



URBAN

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

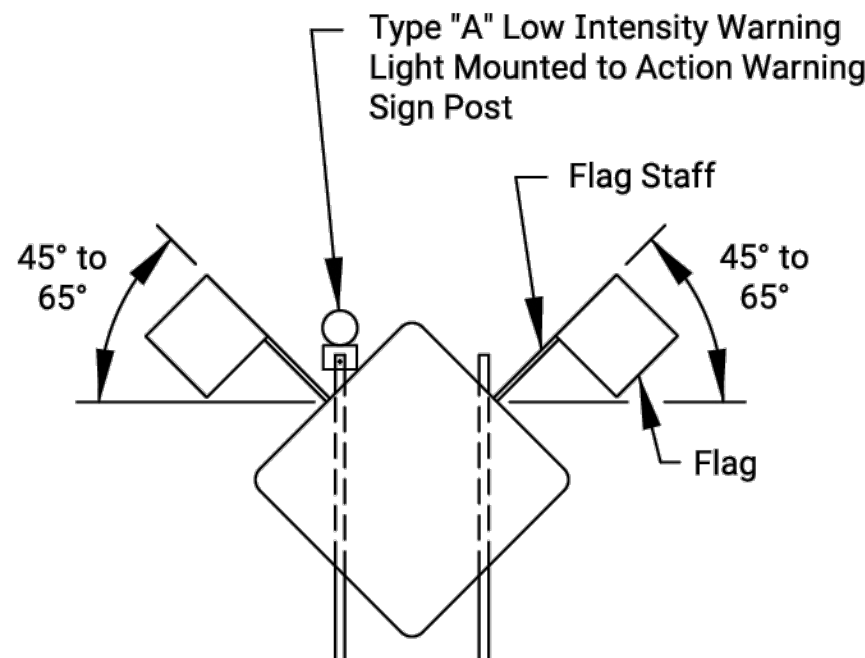
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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

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

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

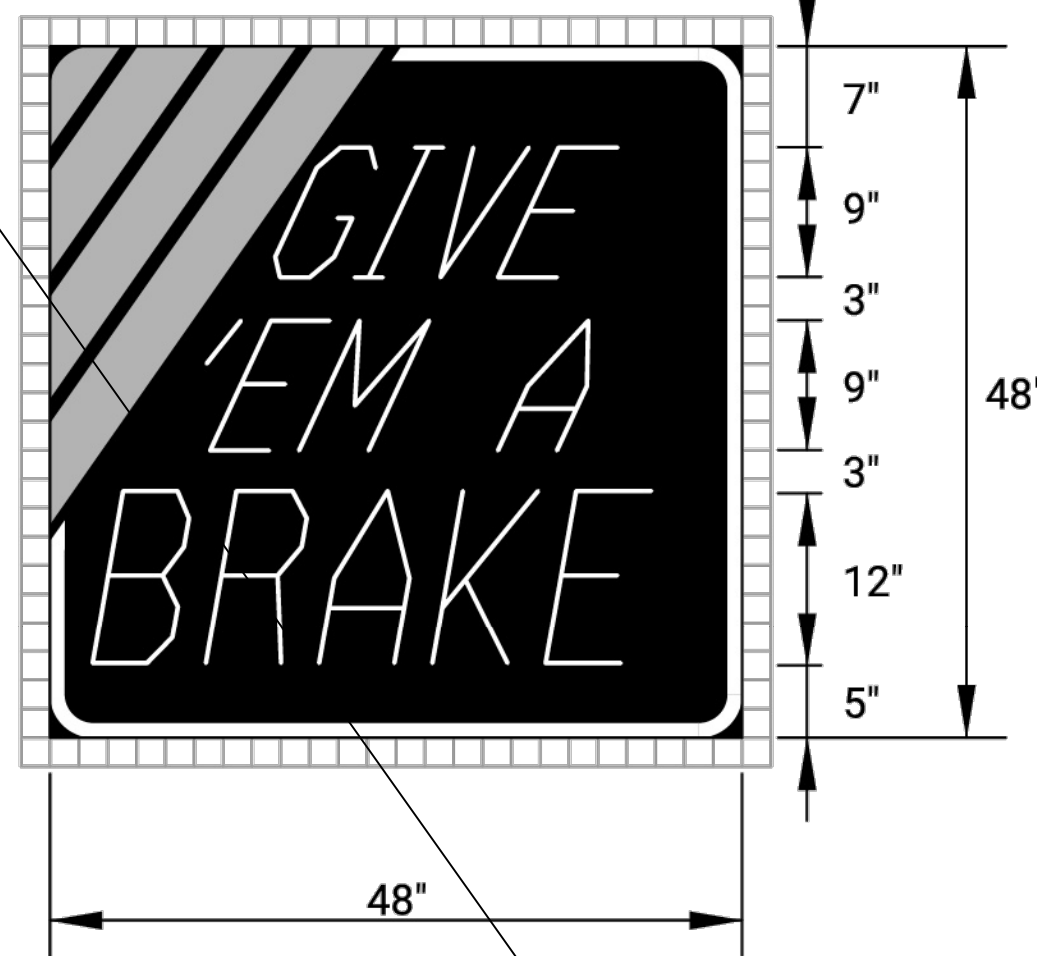
* 6) Pedestrian detour signing shall be a minimum of 2' measured from the top of the pedestrian pathway to the bottom of the sign and shall not protrude into the walkway nor shall it project beyond the back of curb.



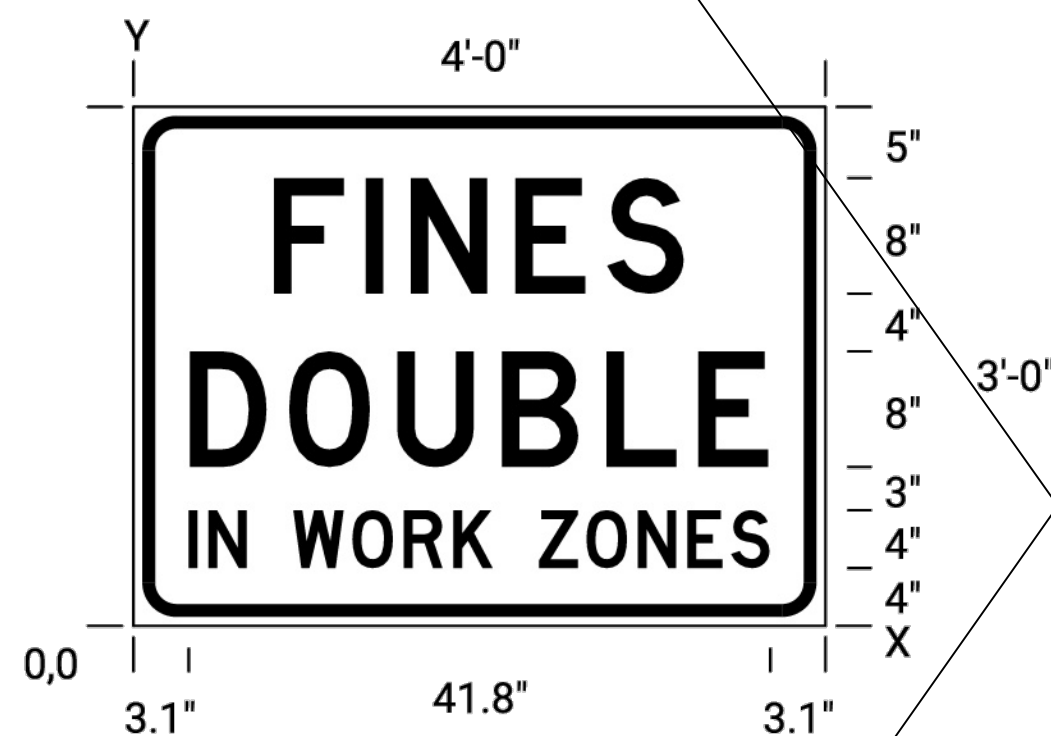
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

In the case of hitting rock when driving posts

1. Shift the sign location. Do not violate minimum sign spacing.
2. With the engineer's approval, use acceptable alternative sign stands.



KI-104a



KI-105a

Dimensions in inches

Spacings are to start of next letter

Y FONT	LETTER SPACINGS																HT LEN
23.0 D	9.7	6.4	3.2	7.3	6.4	5.4	9.7										8.0
11.0 D	3.9	6.9	7.5	7.3	6.4	4.9	3.9										8.0
4.0 D	3.1	1.6	2.7	3.2	4.3	3.8	3.6	2.8	3.2	3.4	3.8	3.6	3.2	2.7	3.1		4.0

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.

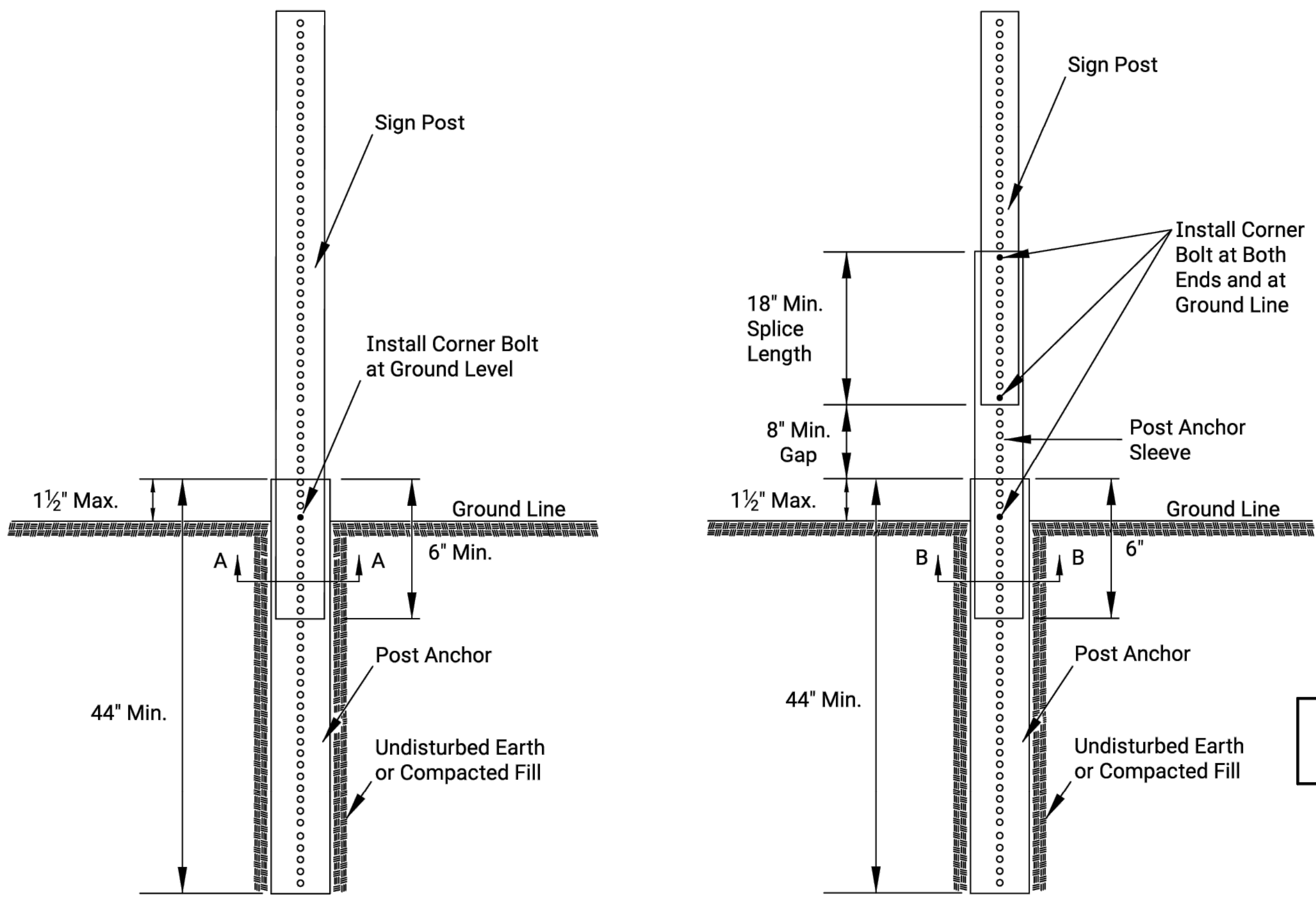
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	39	49

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

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

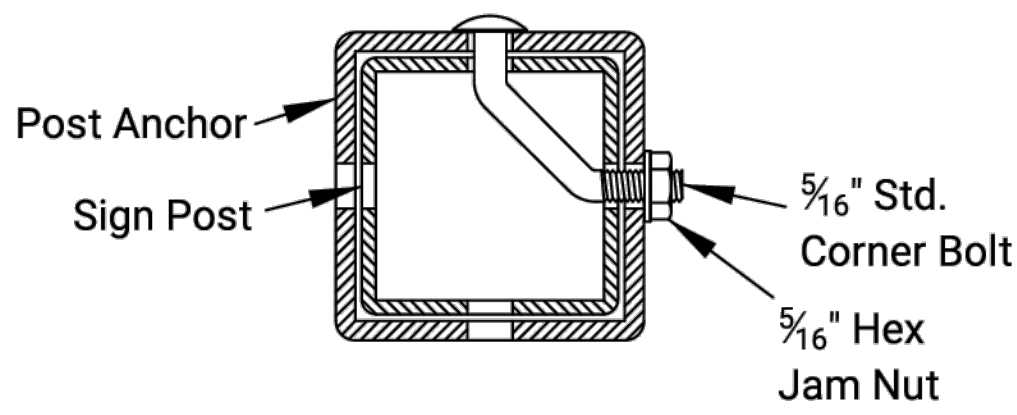
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL SIGN INFORMATION				
TE710				
FHWA APPROVAL 06-01-15 APPD. Kristina Erickson				
DESIGNED R.W.B.	DETAILED R.W.B.	QUANTITIES R.W.B.	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

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

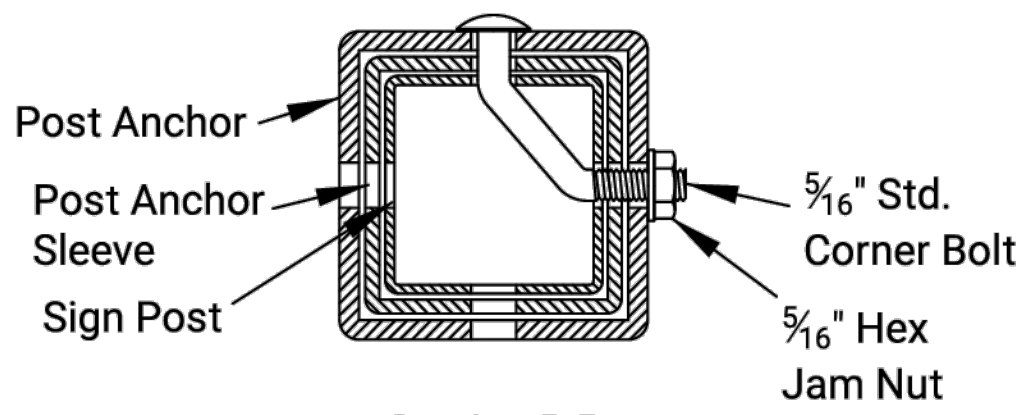


P.S.S.T. Detail

Telescoping P.S.S.T. Detail



Section A-A

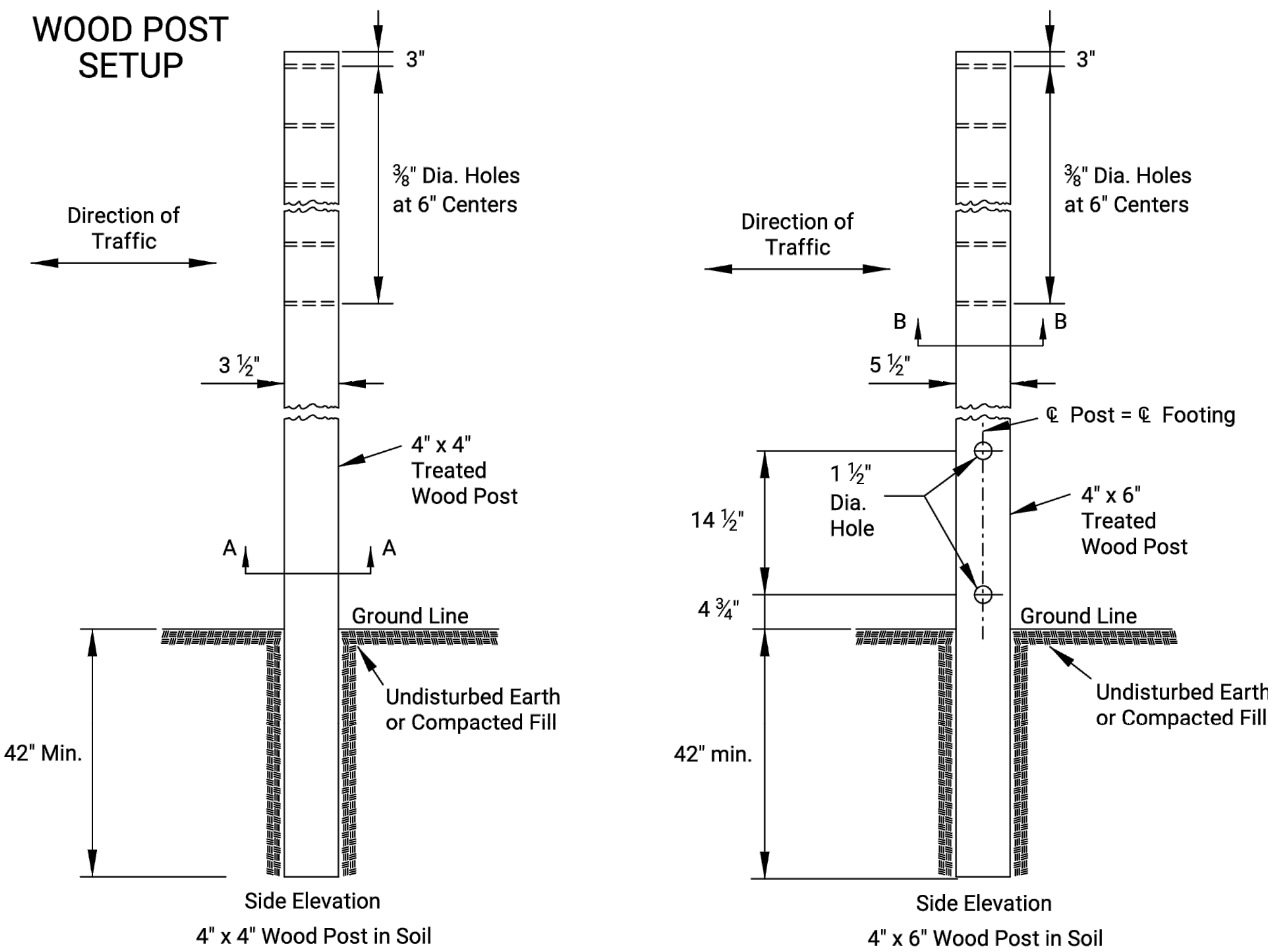


Section B-B

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

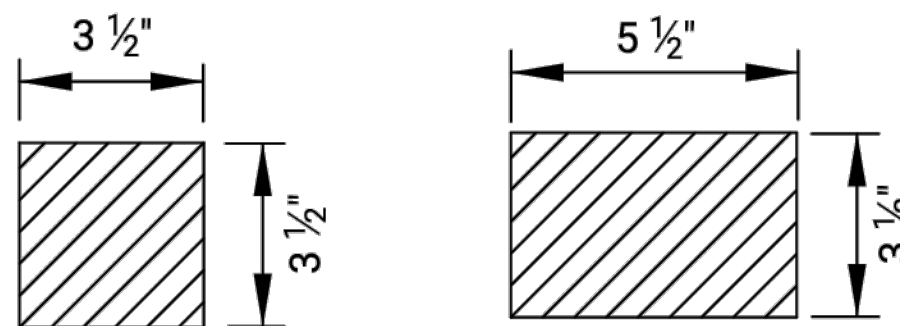
Place bolts in the same corner along each sign post.

WOOD POST SETUP



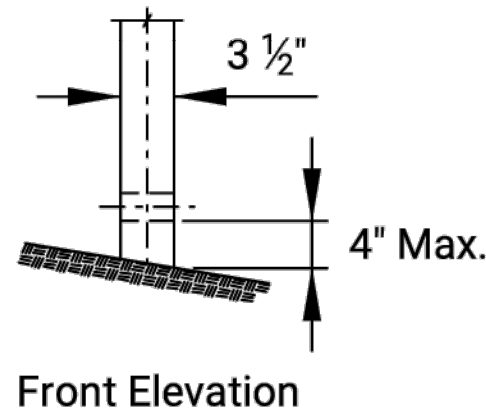
Side Elevation
4" x 4" Wood Post in Soil

Side Elevation
4" x 6" Wood Post in Soil



Section A-A

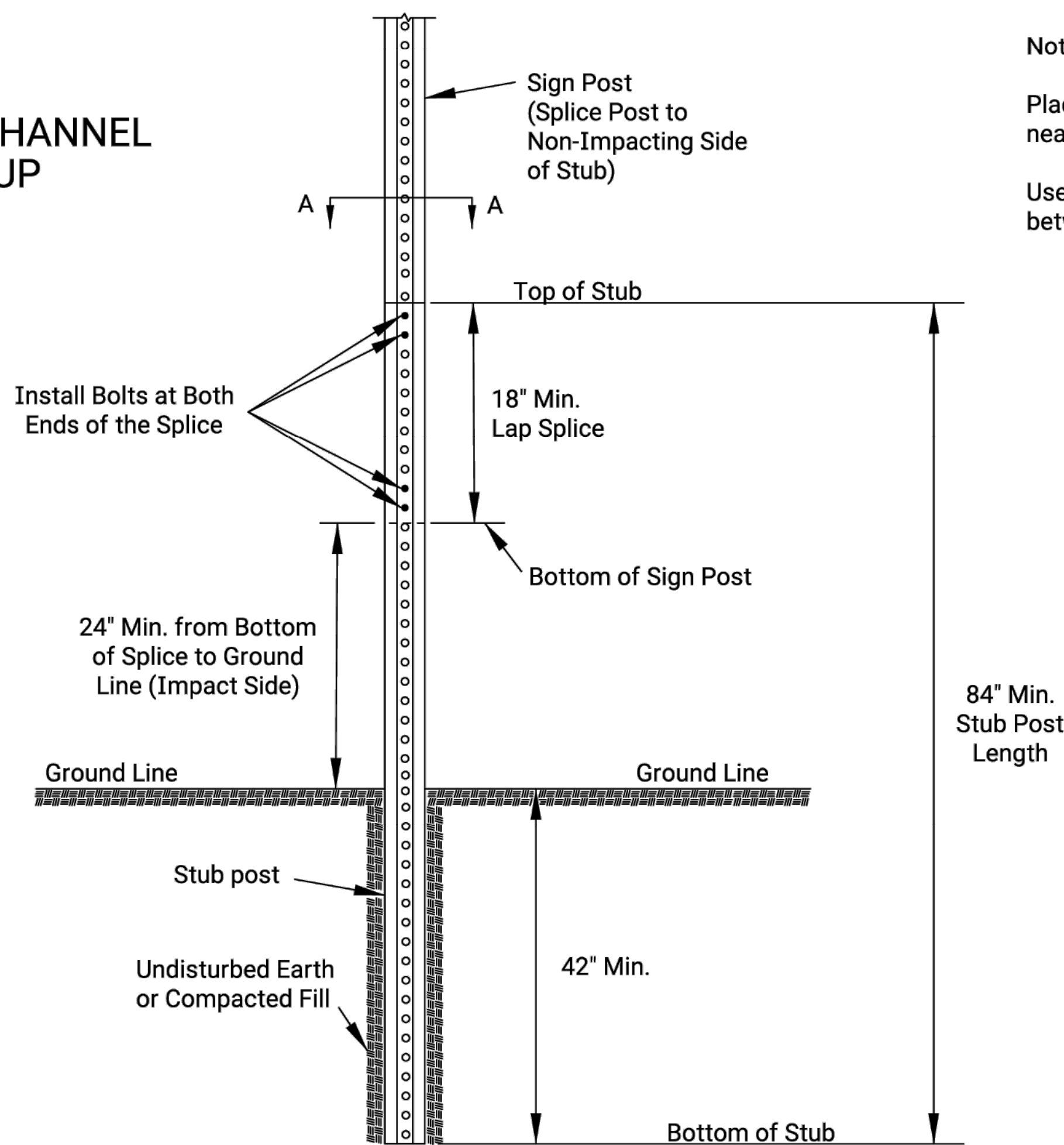
Section B-B



Front Elevation

See TE710 for Additional
Details and Requirements

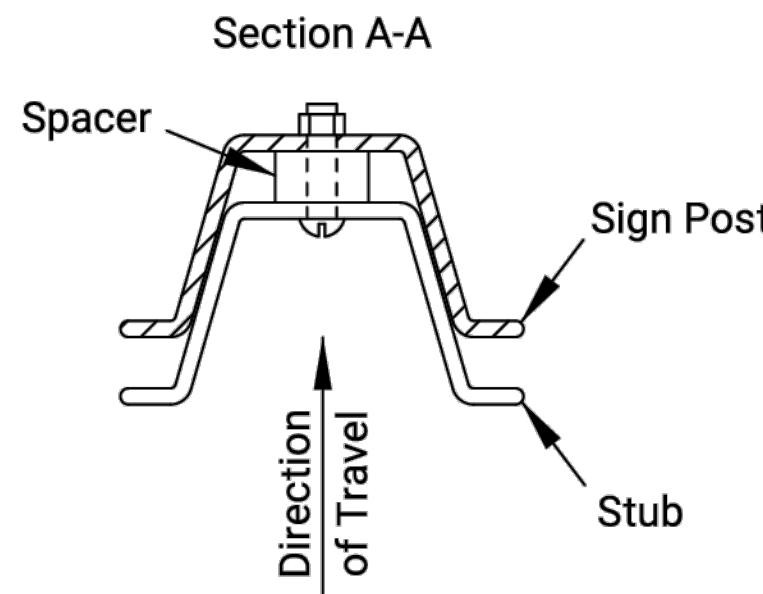
3 LB/F U-CHANNEL
SETUP



Notes:

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

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



0.	DATE			REVISIONS			BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION									
TRAFFIC CONTROL SIGN POSTS									
E712									
WA APPROVAL				06-01-15		APP'D.		Kristina Ericksen	
SIGNED		B.A.H.	DETAILED	R.W.B.	QUANTITIES		TRACED		
SIGN CK.		DETAIL CK.				QUAN. CK.		TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	41	49

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

[illegible]

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

* Quantity most used on the project at any one time

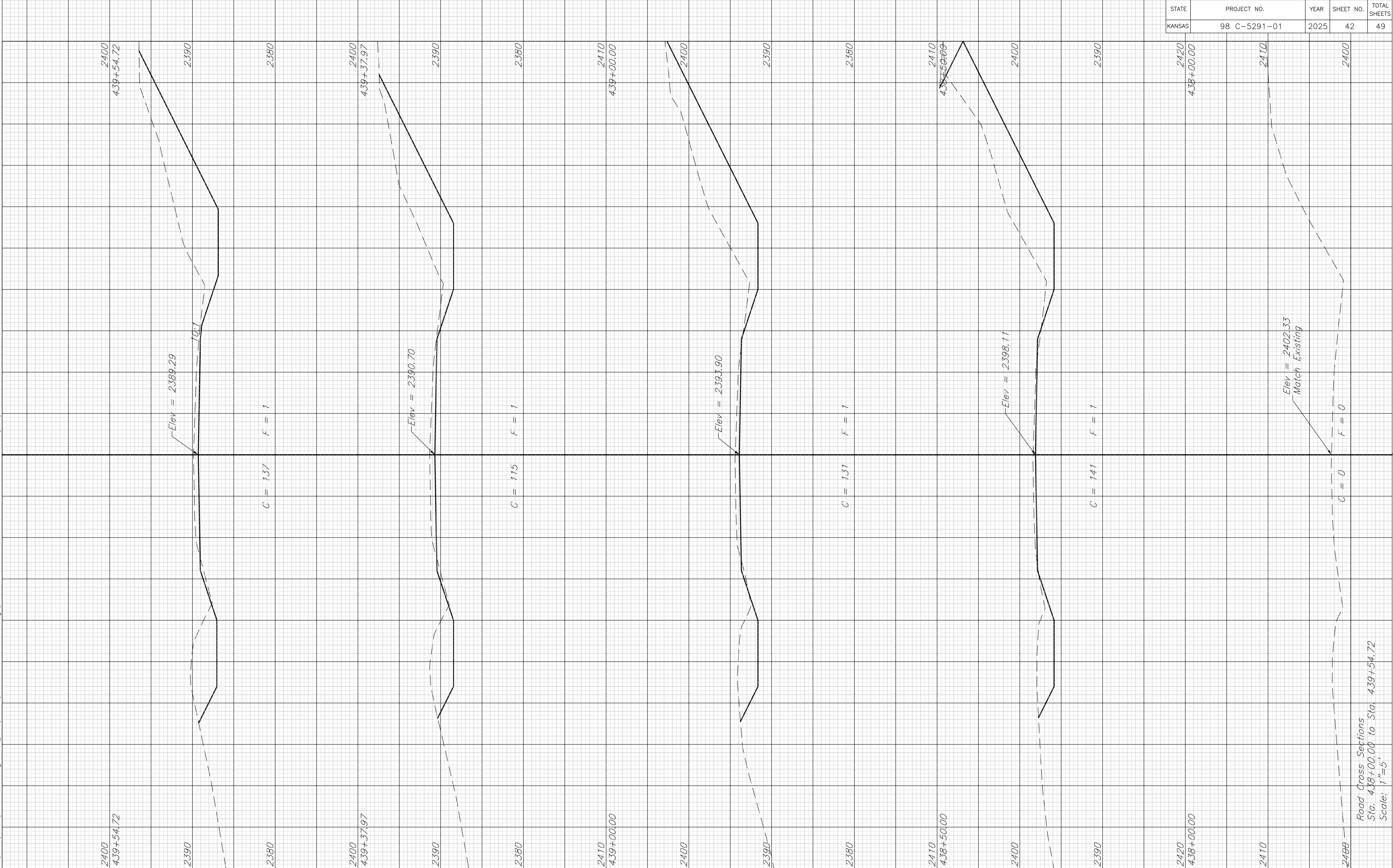
[illegible]

Barricades *		Channelizing Devices *		
Type 3 (4' to 12')	Pedestrian	Fixed	Portable	Pedestrian
20				

Lighted Devices *	
Work Zone Warning Light (Type "A" Low Intensity)	28
Work Zone Warning Light (Red Type "B" High Intensity)	
Arrow Display	
Portable Changeable Message Sign	

[illegible]

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.

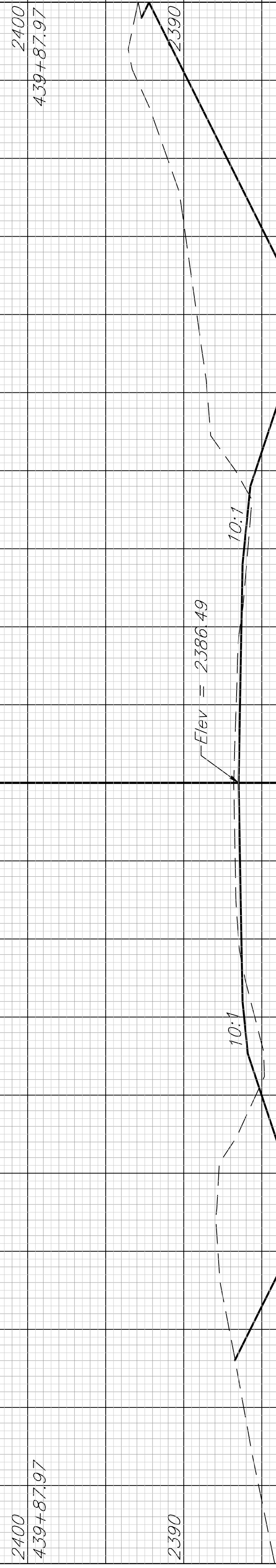
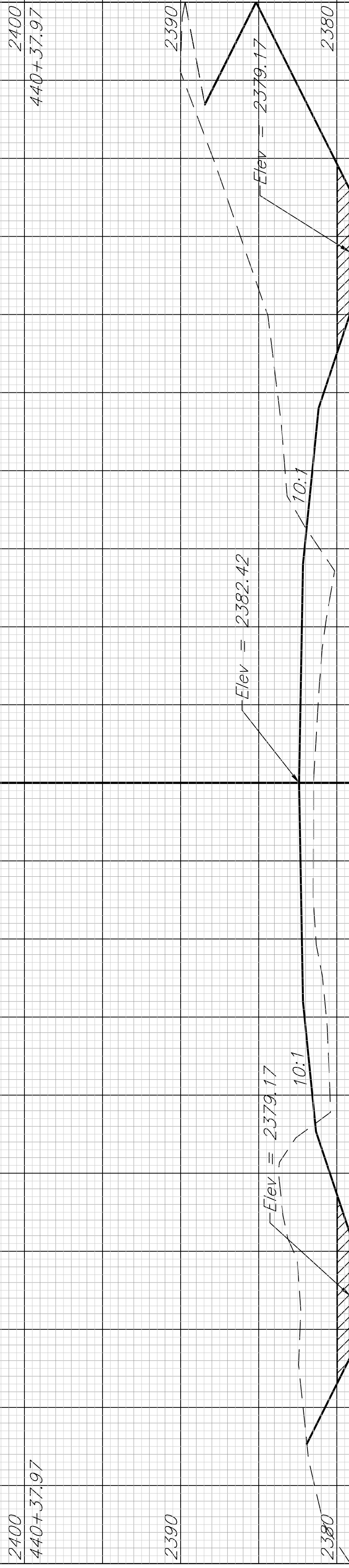
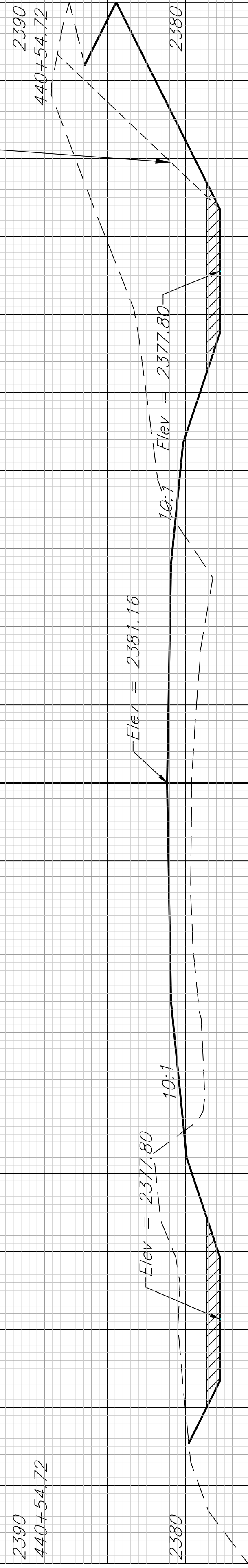


Road Cross Sections
Sta. 438+00.00 to Sta. 439+54.72
Scale: 1"=5'

X:\ac2\kdot\KD5291-Trego-Off#35\ACAD\KD5291 TROFF35.dwg Sta. 439+87.97 to Sta. 440+75.47 1/10/2025 3:57 PM

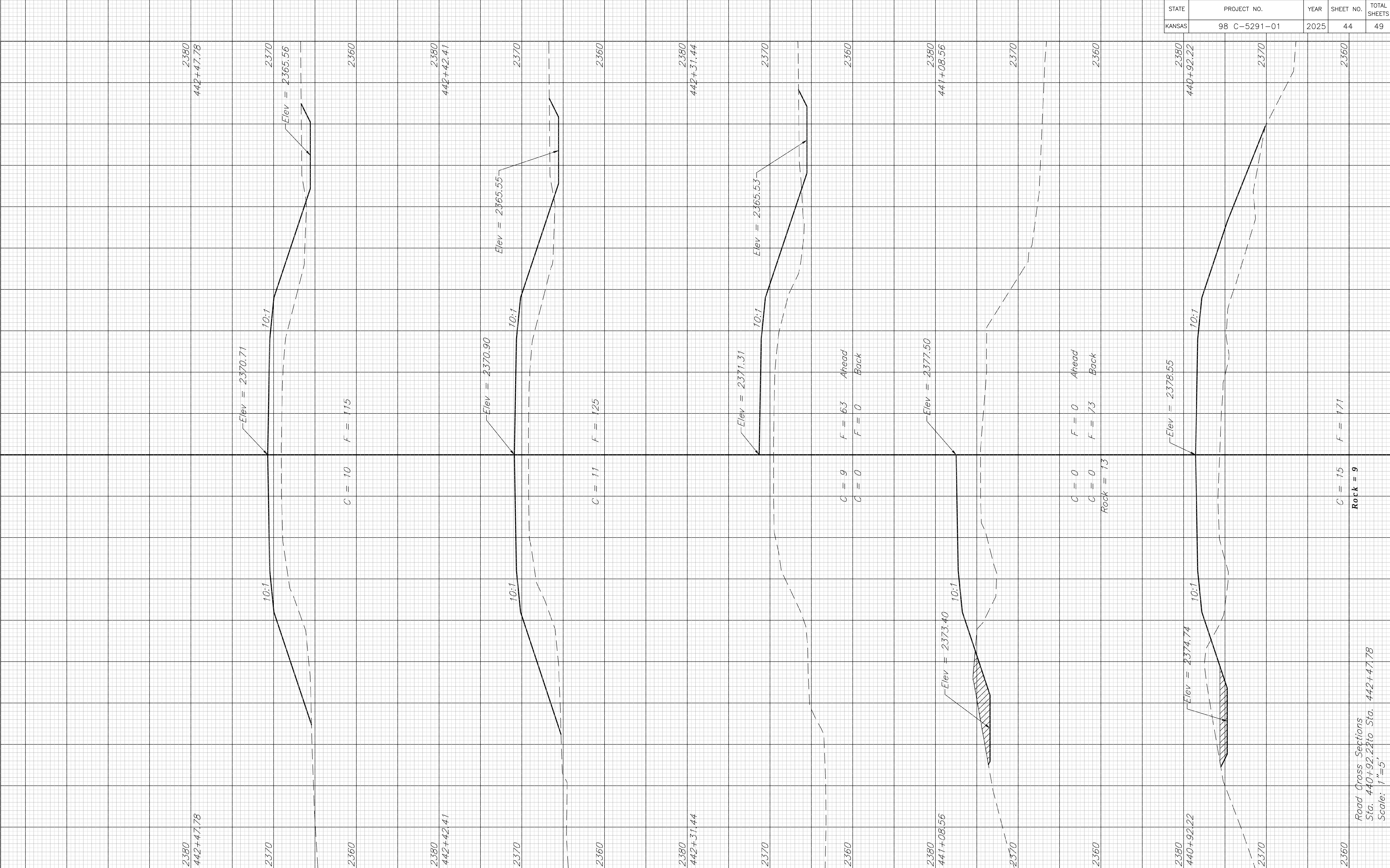


Note: When Rock is encountered 1:1 back slopes may be used, as detailed on pg. 2.



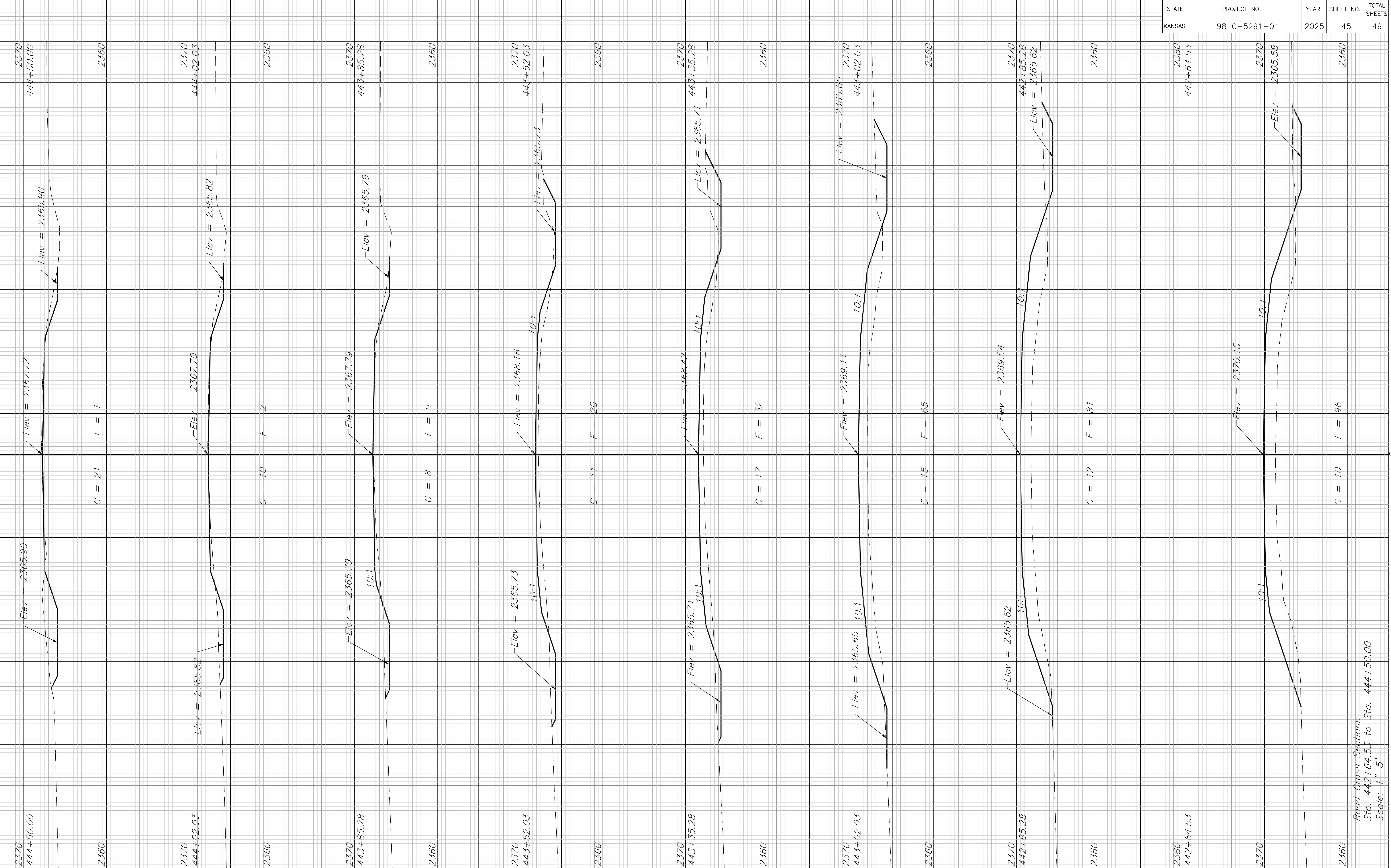
Road Cross Sections
Sta. 439+87.97 to Sta. 440+75.47
Scale: 1"=5'

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	43	49

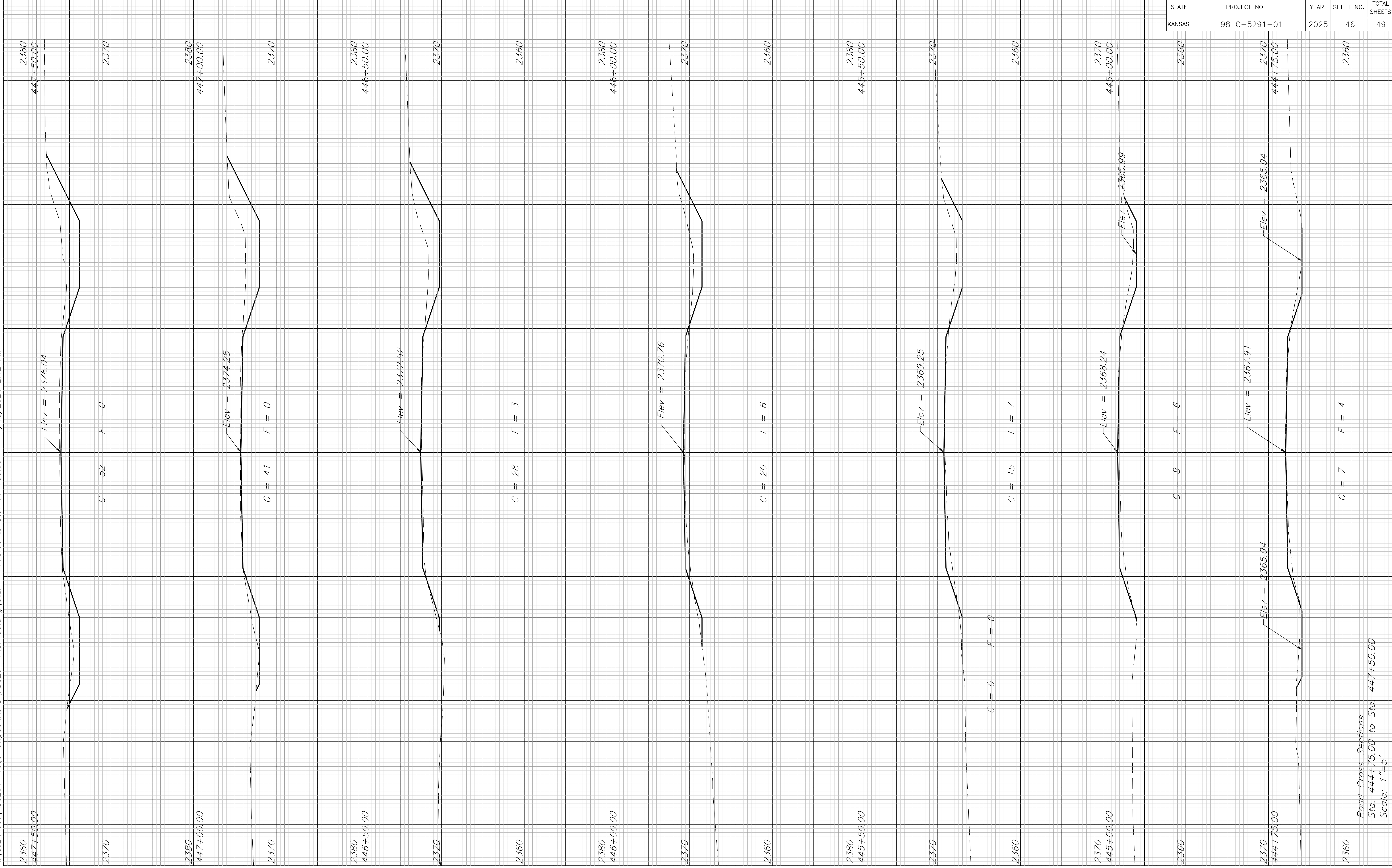


STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	44	49

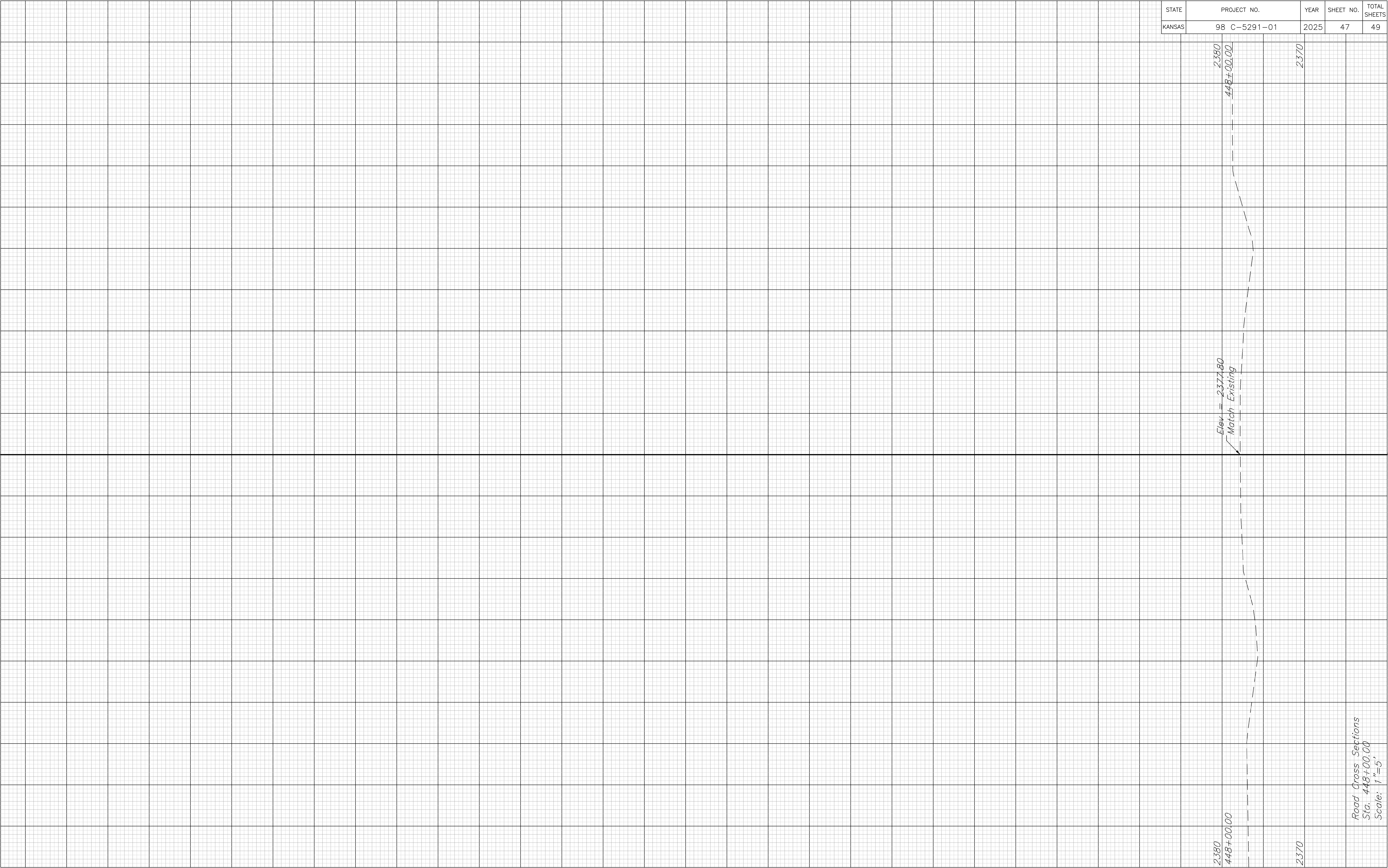
Road Cross Sections
Sta. 440+92.22 to Sta. 442+47.78
Scale: 1"=5'



X:\ac2\kdot\KD5291-Treco-Off#35\ACAD\KD5291 TROFF35.dwg | Sta. 444+75.00 to Sta. 447+50.00 11/13/2024 2:42 PM

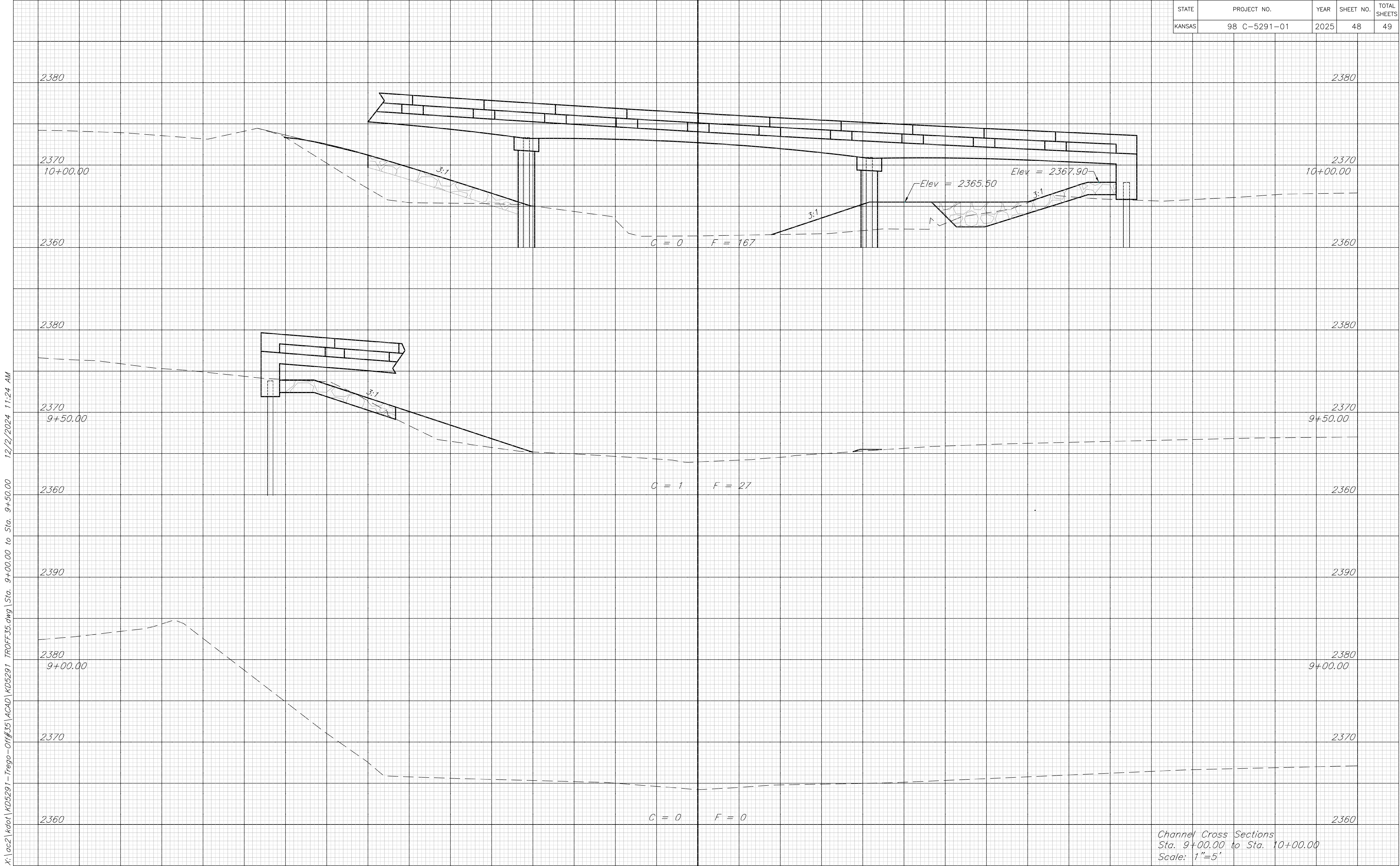


X:\ac2\kdot\K05291-Trego-Off#35\ACAD\K05291 TROFF35.dwg | Sta. 448+00.00 1/10/2025 3:58 PM



X:\ac2\kadot\KD5291-Trego-Off#35\ACAD\KD5291 TROFF35.dwg\Sta. 9+00.00 to Sta. 9+50.00 12/2/2024 11:24 AM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	48	49



X:\ac2\kdot\KD5291-Trego-Off#35\ACAD\KD5291 TROFF35.dwg\Sta. 10+00.00 to Sta. 10+50.00 12/2/2024 10:06 AM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	98 C-5291-01	2025	49	49

2380

2380

2370
11+00.00

2370
11+00.00

2360

C = 0

F = 0

2360

2380

2380

2370
10+50.00

2370
10+50.00

2360

C = 0

F = 60

2360

Elev = 2365.45

Elev = 2367.90

Channel Cross Sections
Sta. 10+50.00 to Sta. 11+00.00
Scale: 1"=5'