

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	1	47
F.A. NO. BRO-C528(501)				

INDEX OF SHEETS

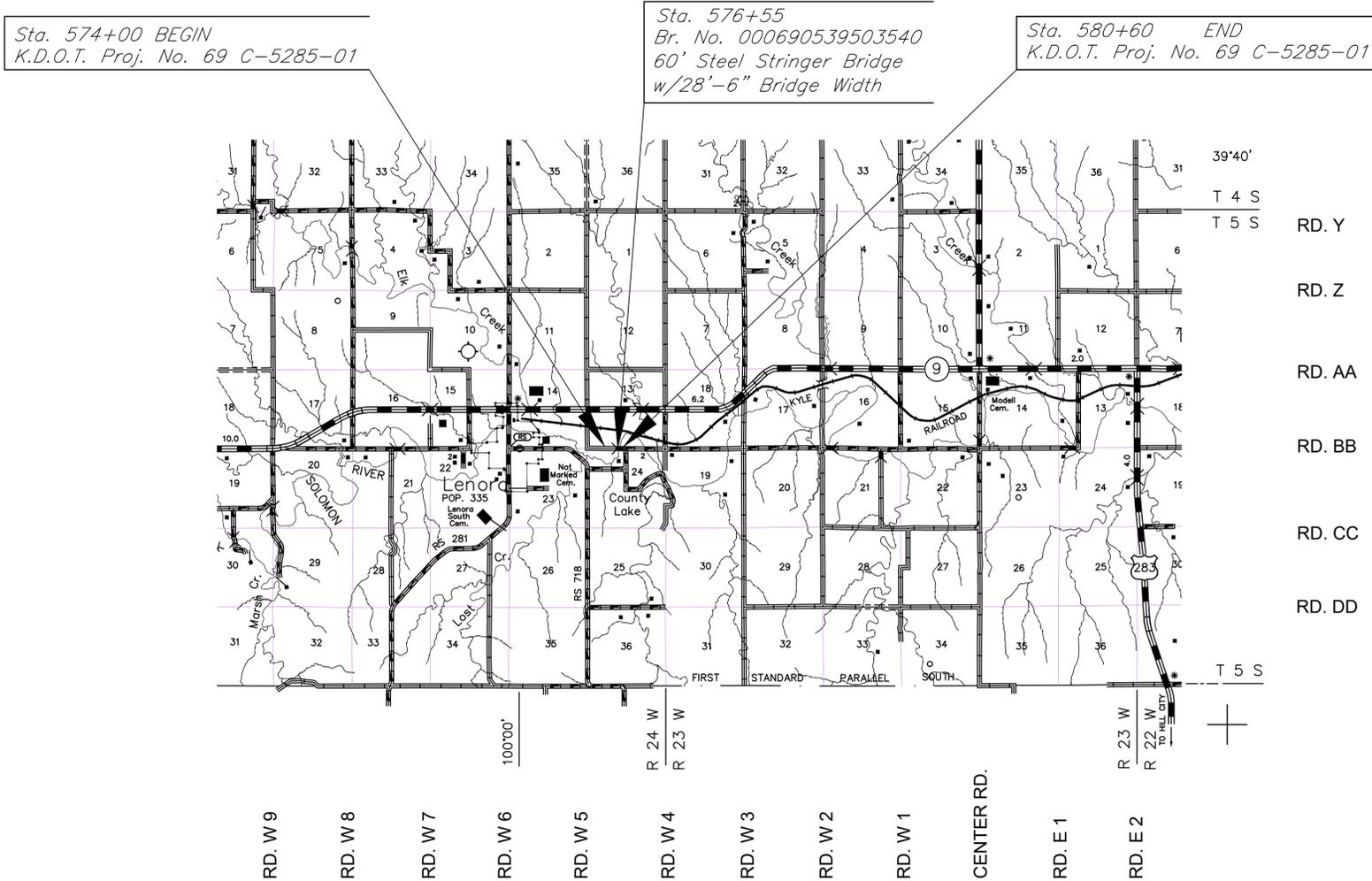
Sheet No.	
1	Title Sheet
2	Typical Grading Section
3	Plan Profile
4-5	End Sections
6	Contour Map
7	General Notes & Quantities
8	Construction Layout
9	Geology
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STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED

69 C-5285-01

FEDERAL AID PROJECT
NORTON COUNTY

GRADING
BRIDGE
SEEDING



DESIGN DESIGNATION

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

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	660.00	FT.
EXCEPTIONS	0.00	FT.
ADDITIONS	0.00	FT.
NET LENGTH OF PROJECT	660.00	FT. 0.125 MILES
NET LENGTH OF BRIDGES	60.00	FT. 0.011 MILES
NET LENGTH OF ROAD	600.00	FT. 0.114 MILES



PLANS PREPARED BY:
PENCO ENGINEERING, P.A.
 PLAINVILLE, KANSAS

RECOM. FOR APPROVAL-DATE

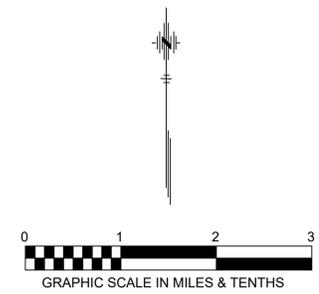
Terry J. Laughlin
 TERRY LAUGHLIN
 ROAD SUPERVISOR

Approved: Jul 15, 2025
 Date

Dr. M. Shil
 State Transportation Engineer

By: *Dawn Imphuska*
 Chief, Bureau of Local Projects

KANSAS DEPARTMENT OF TRANSPORTATION



UTILITIES

Power: Midwest Energy, Inc.
1330 Canterbury Drive
Hays, KS 67601
1-800-222-3121

Telephone: Nex-Tech/Rural Telephone Co.
Lenora, KS 67645
1-877-567-7872

NW Cor Sec 24, T5S, R24W
1. Found 1/2" rebar with aluminum KDOT cap
2. 60d nail & CLS42 washer set in the South face of a 14" Elm Tree
3. Base of Fiberglass witness post
4. Center of County Road to the North
5. Center of County Road to the East
N:769122.70, E:4349651.94

Ref. POT
0.5' Deep
1.5' NE
0.2' S
5.5' W
10.5' N

1. Office Set
2. Section Line
3. Sta. 573+00.00
4. No other ties available
N:769114.34, E:4351494.09

Ref. POT
17.00' S
1. Office Set
2. Section Line
3. Sta. 582+00.00
4. No other ties available
N:769101.97, E:4352394.01

Ref. POT
17.00' S
N 1/4 Cor Sec 24, T5S, R24W
1. Found 1/2" rebar with aluminum cap
2. Mag nail & CLS42 washer set in the North face of a power pole
3. 5/8" rebar with green plastic cap "PENCO CONTROL" (BM#4)
N:769137.86, E:4352207.53

Ref. POT
0.5' Deep
59.5' SW
83.8' NW

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	3	47

PROJECT SURVEY CONTROL

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

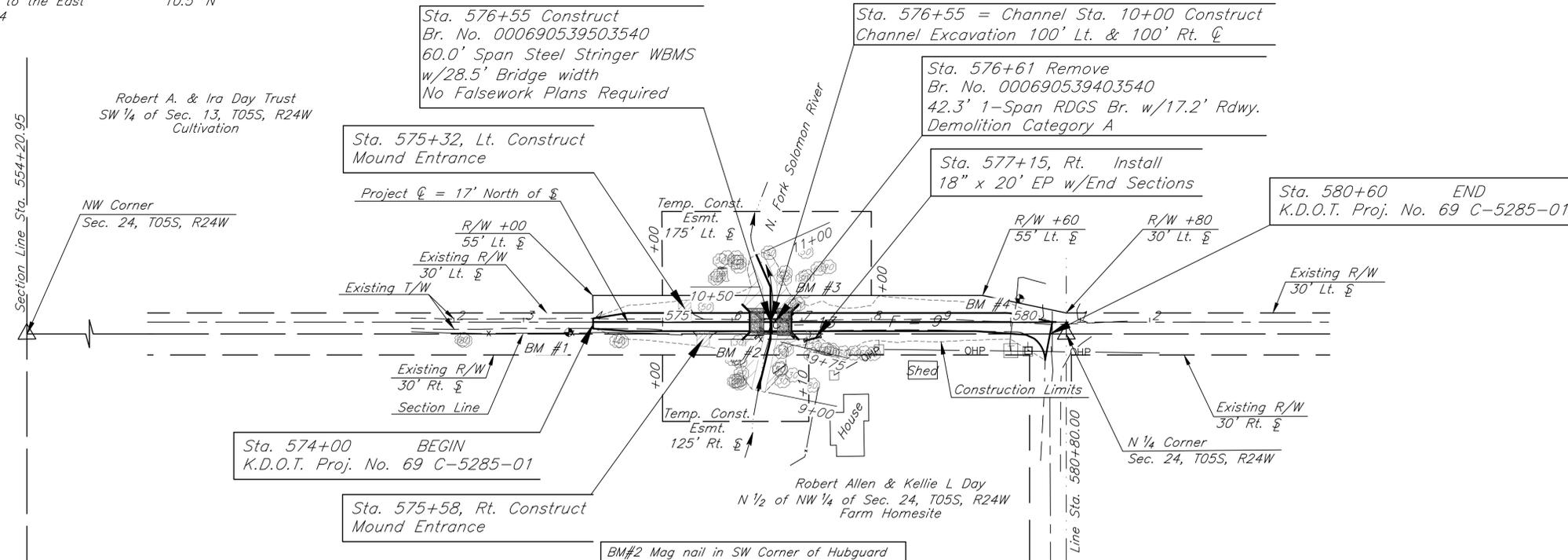
VERTICAL DATUM: North American Vertical Datum (NAVD) 1988

DATUM BENCHMARK: 5/8" Rebar w/Green plastic cap designated as BM #1 Sta. 573+65, 11' Rt. Project C, 1' North of fence post = 2230.56

The Contractor shall remove the existing 42.3' RDGS (Br. No. 000690539403540) with 17.2' rdwy. width. All materials shall be separated and stockpiled on site for County to remove with their own forces and funds.

The Contractor shall excavate the channel and complete the embankments and installation of slope improvement prior to construction of the Span Steel Stringer bridge.

Existing Bridge consists of: concrete deck, girder, abutments, rails, and wings.

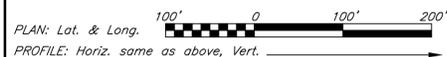


BM#1 5/8"x24" rebar with green plastic cap stamped "CONTROL PENCO" 1' North of fence post
Sta. 573+65.10, 11.1' Rt. Elev.=2230.56
N:769098.70 E:4351558.89

BM#2 Mag nail in SW Corner of Hubguard
Sta. 576+40.72, 9.0' Rt. Elev.=2235.87
N:769095.81 E:4351834.50

BM#3 Mag nail in Northeast Corner of hubguard
Sta. 576+80.63, 8.6' Lt. Elev.=2235.71
N:769112.66 E:4351874.72

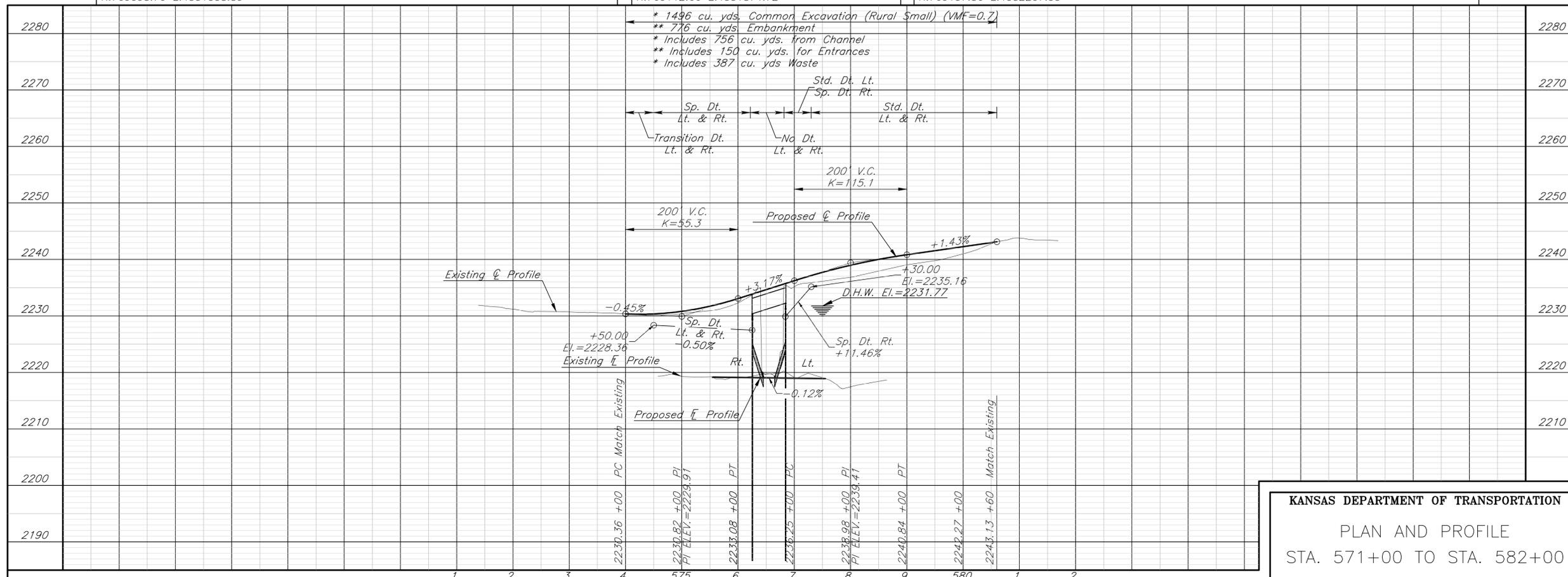
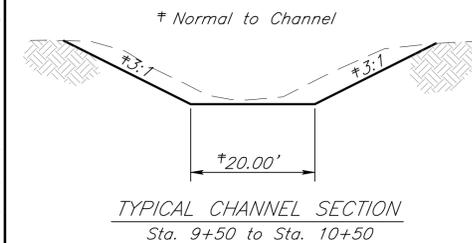
BM#4 5/8"x24" rebar with green plastic cap stamped "CONTROL PENCO" 1' South of broken fence post
Sta. 580+12.962, 39.8' Lt. Elev.=2244.02
N:769137.86 E:4352207.53



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.

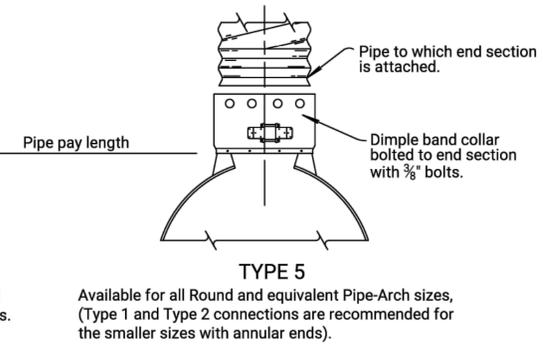
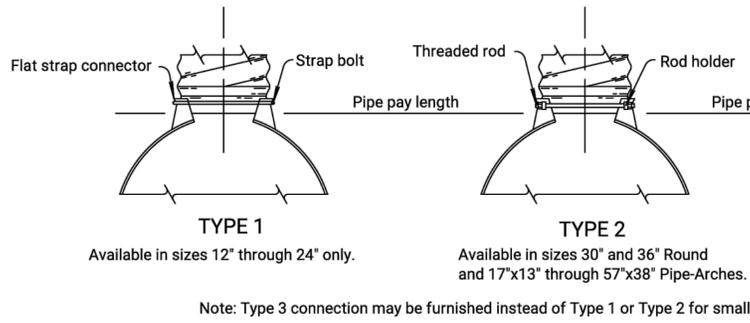
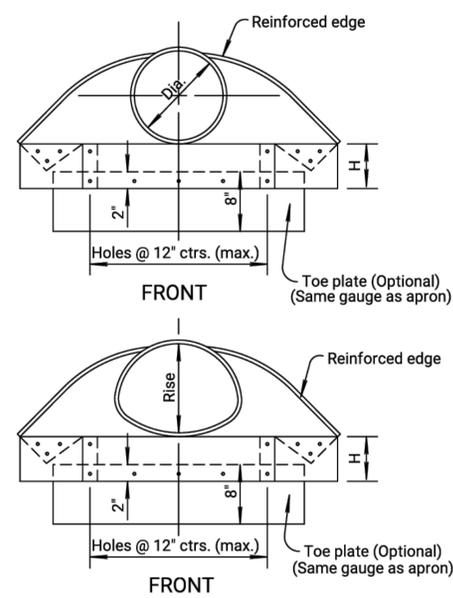
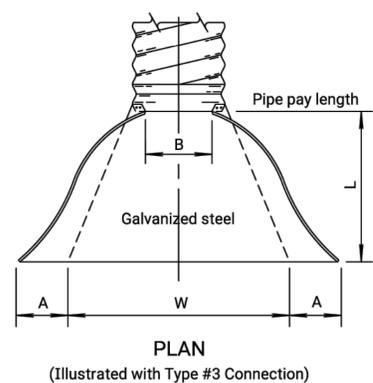


KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
STA. 571+00 TO STA. 582+00

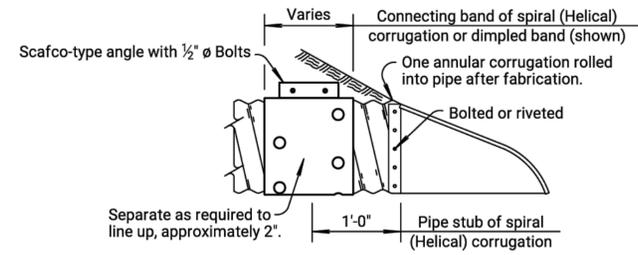
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	5	47

Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume I (Part C), Road Section, "Elements of Drainage & Culvert Design" for structural pipe design information which includes: corrugations, sizes, gauges, maximum/minimum fill heights and classes of pipe.



GENERAL NOTE for END SECTIONS
 End section material shall follow KDOT Pipe Policy for geographic location. Location shall govern use of CS (Galvanized), ACS (Aluminized) or CA (Aluminum) (Type I) End Section. Pipe material and End Section material shall be the same with no mixing of types per location.
 Toe plate extension, when specified, is an accessory and shall be the same gauge and metal as end section. Toe plate shall be punched to match holes in apron lip and attached with furnished 3/8" diameter nuts & bolts.
 W + 10" for 12" to 30" diameter pipes inclusive.
 W + 20" for 36" to 84" diameter pipes inclusive.
 W + 10" for pipe-arches with a rise of 13" to 29" inclusive.
 W + 20" for pipe-arches with a rise of 33" to 59" inclusive.
 Multiple panel end sections may contain dual gauges of like metal and shall have lap seams which are tightly joined with rivets or bolts. For 60" and larger diameter round pipe end sections and 77"x52" arch pipe end sections, the reinforced edges are supplemented with stiffener angles. The angles are attached with nuts and bolts. Angle reinforcement may be required under the center panel seams of 73"x55" and larger arch pipe end sections depending on manufacturer.
 Other approved designs may be used in lieu of type shown.
 Connection of end sections by welding will not be permitted.

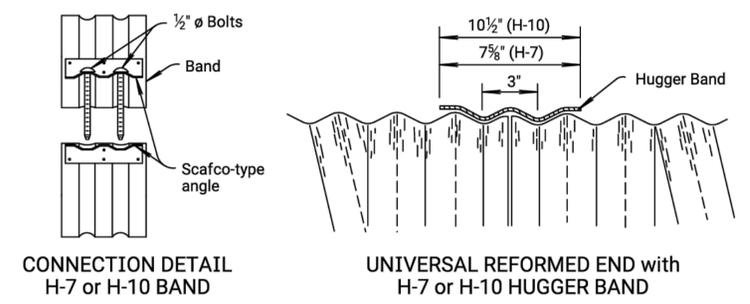


Thickness CSP/ACSP	Thickness CAP	Gauge
0.064"	0.060"	16 ga.
0.079"	0.075"	14 ga.
0.109"	0.105"	12 ga.
0.138"	0.135"	10 ga.
0.168"	0.164"	8 ga.

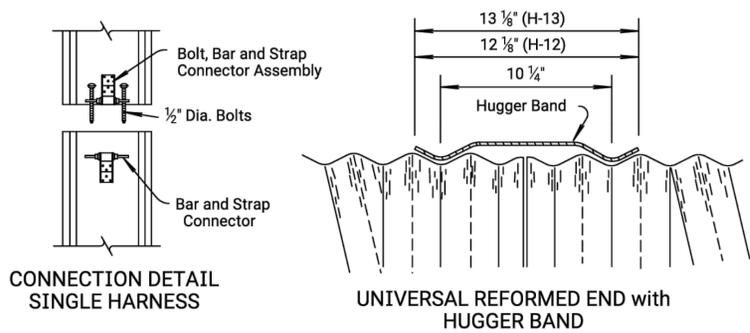
Pipe Dia. (In.)	CS, ACS or CA Gauge	Dimensions in Inches					Approx. Slope
		A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	
12"	16	5	7	6	21	22	2 1/2: 1
15"	16	6	8	6	26	28	2 1/2: 1
18"	16	7	10	6	31	34	2 1/2: 1
21"	16	8	12	6	36	40	2 1/2: 1
24"	16	9	13	6	41	46	2 1/2: 1
30"	14	11	16	8	51	55	2 1/2: 1
36"	14	13	19	9	60	70	2 1/2: 1
42"	12	15	25	10	69	82	2 1/2: 1
48"	12	17	29	12	78	88	2 1/2: 1
54"	12	17	33	12	84	100	2 1/2: 1
60"	12/10	17	36	12	87	112	2: 1
66"	12/10	17	39	12	87	118	2: 1
72"	12/10	17	44	12	87	120	2: 1
78"	12/10	17	48	12	87	130	1 1/2: 1
84"	12/10	17	52	12	87	136	1 1/2: 1
90"	12/10	17	58	12	87	142	1 1/2: 1
96"	12/10	17	58	12	87	144	1 1/2: 1

Bid Designation Sq. Ft.	Nom. W.W. Area Sq. Ft.	Pipe Arch Span & Rise	Dimensions in Inches 2 1/2" x 1 1/2" Corrugations					Dimensions in Inches 3" x 1" or 5" x 1" Corr.					Approx. Slope		
			CS, ACS or CA Gauge	A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	CS, ACS or CA Gauge	A (min.)	B (max.)	H (min.)		L (±2")	W (min.)
1.0	1.1	17" x 13"	16	5	9	6	20	28						2 1/2: 1	
1.5	1.6	21" x 15"	16	6	11	6	24	34						2 1/2: 1	
2.0	2.2	24" x 18"	16	7	12	6	28	40						2 1/2: 1	
2.5	2.9	28" x 20"	16	7	16	6	32	46						2 1/2: 1	
3.0 or 4.0	4.5	35" x 24"	14	9	16	6	39	58						2 1/2: 1	
5.0 or 6.0	6.5	42" x 29"	14	11	18	7	46	73						2 1/2: 1	
7.0 or 8.5	8.9	49" x 33"	12	12	21	9	53	82						2 1/2: 1	
10.0 or 11.0	11.7	53" x 41"							12	17	26	12	63	88	2: 1
10.0 or 11.0	11.6	57" x 38"	12	16	26	12	62	88							2: 1
12.5 or 14.0	15.6	60" x 46"							12	17	36	12	70	100	2: 1
12.5 or 14.0	14.7	64" x 43"	12	17	30	12	69	100							2: 1
16.5	19.3	66" x 51"							12/10	17	36	12	70	112	1 1/2: 1
16.5	18.1	71" x 47"	12/10	17	36	12	77	112							1 1/2: 1
21.0	23.2	73" x 55"							12/10	17	36	12	77	124	1 1/2: 1
21.0	21.9	77" x 52"	12/10	17	36	12	77	124							1 1/2: 1
25.0	27.4	81" x 59"							12/10	17	44	12	77	136	1 1/2: 1
25.0	26.0	83" x 57"	12/10	17	44	12	77	130							1 1/2: 1
32.0	32.1	87" x 63"							12/10	17	44	12	77	136	1 1/2: 1
36.0	37.0	95" x 67"							12/10	17	44	12	87	160	1 1/2: 1
42.0	42.4	103" x 71"							12/10	17	44	12	87	172	1 1/2: 1
47.0	48.0	112" x 75"							12/10	17	44	12	87	172	1 1/2: 1

(Information listed in these tables are nominal and may vary by manufacturer.)



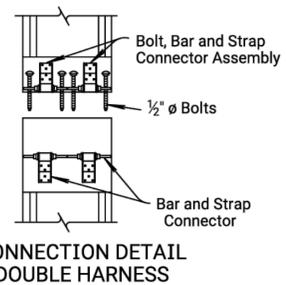
DETAILS FOR H-7 HUGGER BAND (12" thru 36") or H-10 HUGGER BAND (12" thru 120")



DETAILS FOR H-12 or H-13 HUGGER BAND

Pipe Dia. Inches	Minimum Gauge of Round Pipe				
	2 1/2" x 1 1/2" Corr. CSP or ACSP	3" x 1" Corr. CSP or ACSP	5" x 1" Corr. CSP or ACSP	2 1/2" x 1 1/2" Corr. CAP	3" x 1" Corr. CAP
12"	14			16	
15"	14			16	
18"	14			16	
21"	14			16	
24"	14			16	
30"	14			14	
36"	14			14	16
42"	14			12	16
48"	12	14	16	14	16
54"	12	14	16	14	16
60"	10	14	16	14	16
66"	10	14	16	14	16
72"	10	14	16	14	16
78"	8	14	14	14	14
84"	8	14	14	14	14
90"		14	14	14	14
96"		12	12	12	12
102"		12	12	12	12
108"		12	12	12	12
114"		12	12	12	12
120"		10	10	10	10

Bid Designation Sq. Ft.	Pipe Dimension Span & Rise	Sq. Ft.	Equiv. Round Pipe Diameter	Minimum Gauge of Arch Pipe				
				2 1/2" x 1 1/2" Corr. CSP or ACSP	3" x 1" Corr. CSP or ACSP	5" x 1" Corr. CSP or ACSP	2 1/2" x 1 1/2" Corr. CAP	3" x 1" Corr. CAP
1.0	17" x 13"	1.1	15"	14			16	
1.5	21" x 15"	1.6	18"	14			16	
2.0	24" x 18"	2.2	21"	14			16	
2.5	28" x 20"	2.9	24"	14			14	
3.0 or 4.0	35" x 24"	4.5	30"	14			14	
5.0 or 6.0	42" x 29"	6.5	36"	14			12	
7.0 or 8.5	49" x 33"	8.9	42"	14			12	
10.0 or 11.0	53" x 41"	11.7	48"		14			
10.0 or 11.0	57" x 38"	11.6	48"	12			10	
12.5 or 14.0	60" x 46"	15.6	54"		14			14
12.5 or 14.0	64" x 43"	14.7	54"	12			10	
16.5	66" x 51"	19.3	60"		14			14
16.5	71" x 47"	18.1	60"	10			8	
21.0	73" x 55"	23.2	66"		14			14
21.0	77" x 52"	21.9	66"	8				
25.0	81" x 59"	27.4	72"		14	12		12
25.0	83" x 57"	26.0	72"	8				
32.0	87" x 63"	32.1	78"		12	12		12
36.0	95" x 67"	37.0	84"		12	12		12
42.0	103" x 71"	42.4	90"		12	12		10
47.0	112" x 75"	48.0	96"		12	12		8
54.0	117" x 79"	54.2	102"		10	10		
60.0	128" x 83"	60.5	108"		10	10		
67.0	137" x 87"	67.4	114"		10	10		
74.0	142" x 91"	74.5	120"		8	8		



GENERAL NOTE for METAL PIPE
 Culvert "Type" listed may be CSP, ACSP, CAP, RCP, PVCP & PEP within guidelines of KDOT Pipe Policy for geographic location. More than one pipe "Type" may be acceptable for a design location with allowable types listed for each site.
 There shall be no payment for gain in pipe length due to fit of pipe at connecting band.
 When Hugger Bands are used, the H-7 Hugger Band may be used on circular pipes 36" diameter and smaller or pipe arches 42" x 29" and smaller. The H-10 Hugger Band may be used on 12" thru 120" pipe. The H-12 or H-13 Hugger Band are for pipe sizes larger than 36" diameter or 42" x 29" arch pipe.
 Pipe gauge listed in the tables on this sheet are minimum for E=750 p.s.i. soil. Pipe gauge will be determined for each site based on the Design Manual Volume I- Part C Fill Height Tables and shall be listed in the Pipe Culvert Summary. Gauges shown on this Standard Drawing are KDOT minimum and may not be industry minimum gauge.
 In geographic areas that allow CSP (24" or smaller arched or round pipe) for entrance and side road installation with less than 3,000 AADT, 16 gauge ACSP may be substituted for 14 gauge CSP.
 Aluminum or aluminized pipes or end sections shall be coated with an asphaltic paint when in contact with fresh concrete in accordance with the Standard Specifications.

NO.	DATE	REVISIONS	BY	APPD
04	09-10-09	Rev. Round and Arch tables, add. Alum.	S.W.K.	J.O.B.
03	01-20-09	Rev. Round and Arch tables, add. Alum.	S.W.K.	J.O.B.
02	04-18-08	Rev. layout, details, tables and notes	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

METAL END SECTION FOR ROUND & ARCH METAL CULVERTS (TYPE I) & PIPE GAUGE TABLES

RD660

FHWA APPROVAL	12-16-09	APPD.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

KDOT Graphics Certified 05-16-2022

Plotted by: KDOT\CADD\Support_ks.gov 18-JUN-2022 00:58
 File: rd660.dgn

KDOT Graphics Certified

NW Cor Sec 24, T5S, R24W

1. Found 1/2" rebar with aluminum KDOT cap
2. 60d nail & CLS42 washer set in the South face of a 14" Elm Tree
3. Base of Fiberglass witness post
4. Center of County Road to the North
5. Center of County Road to the East

Ref.

1. 0.5' Deep
2. 1.5' NE
3. 0.2' S
4. 5.5' W
5. 10.5' N

POT

1. Office Set
2. Section Line
3. Sta. 573+00.00
4. No other ties available

Ref.

17.00' S

POT

1. Office Set
2. Section Line
3. Sta. 582+00.00
4. No other ties available

Ref.

17.00' S

N 1/4 Cor Sec 24, T5S, R24W

1. Found 1/2" rebar with aluminum cap
2. Mag nail & CLS42 washer set in the North face of a power pole
3. 5/8" rebar with green plastic cap "PENCO CONTROL" (BM#4)

Ref.

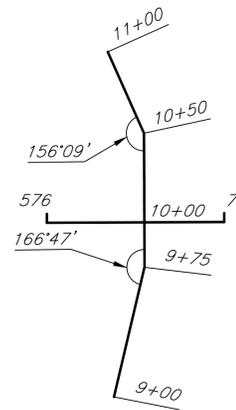
1. 0.5' Deep
2. 59.5' SW
3. 83.8' NW

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KANSAS	69 C-5285-01	2025	6	47

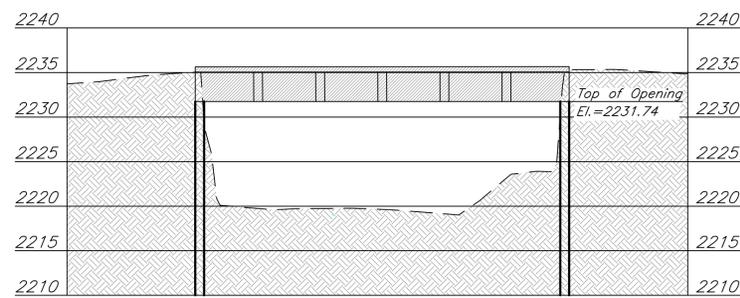
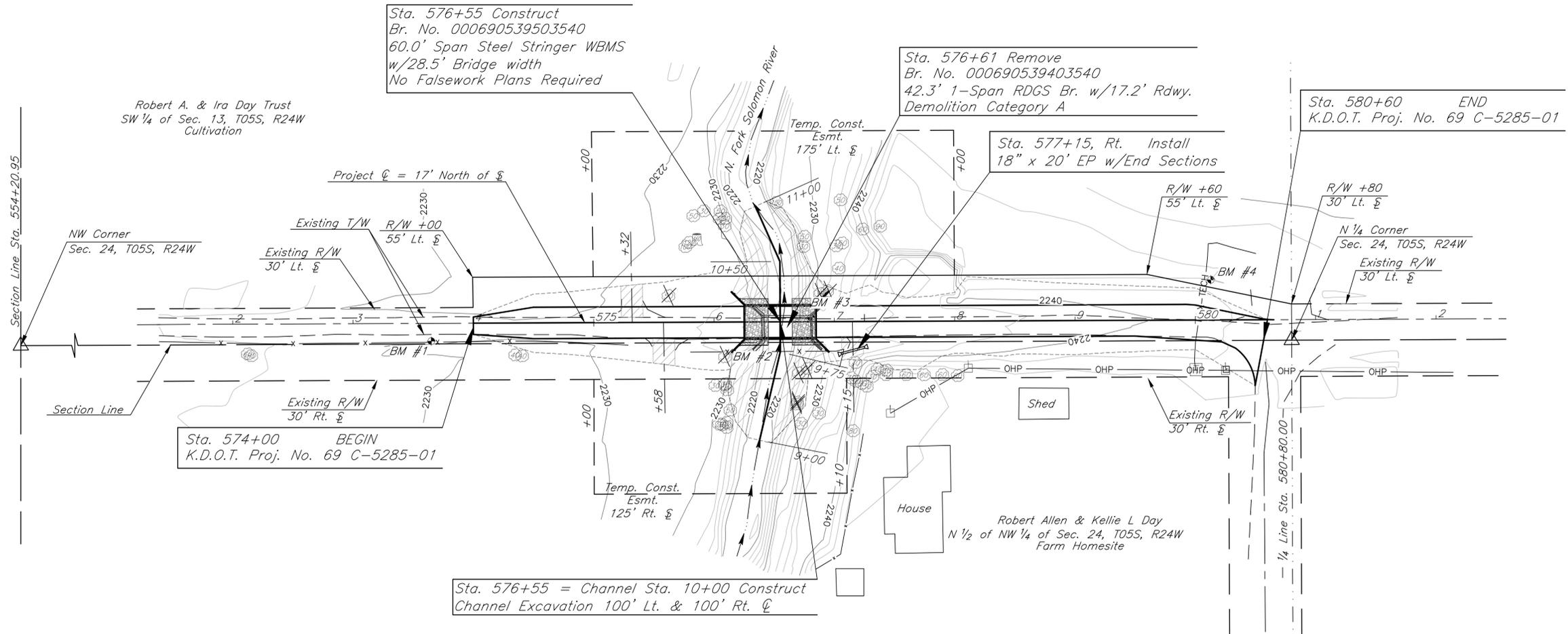
The Contractor shall remove the existing 42.3' RDGS (Br. No. 000690539403540) with 17.2' rdwy. width. All materials shall be separated and stockpiled on site for County to remove with their own forces and funds.

The Contractor shall excavate the channel and complete the embankments and installation of slope improvement prior to construction of the Span Steel Stringer bridge.

Existing Bridge consists of: concrete deck, girder, abutments, rails, and wings.



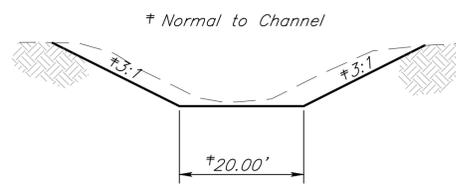
Channel Alignment
Channel Sta. = 10+00 =
C Sta. 576+55



SKETCH OF EXISTING STRUCTURE

Existing Waterway Opening = 444 sq. ft.
Sta. 576+61

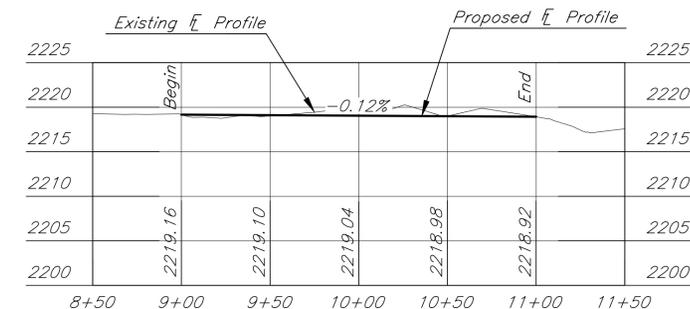
BM#1 5/8"x24" rebar with green plastic cap stamped "CONTROL PENCO" 1' North of fence post
Sta. 573+65.10, 11.1' Rt. Elev.=2230.56
N:769098.70 E:4351558.89



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

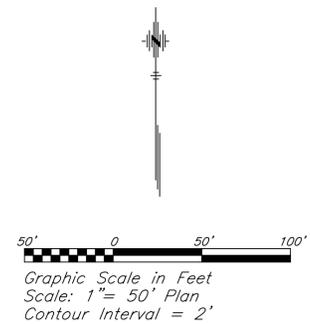
BM#2 Mag nail in SW Corner of Hubguard
Sta. 576+40.72, 9.0' Rt. Elev.=2235.87
N:769095.81 E:4351834.50

BM#3 Mag nail in Northeast Corner of hubguard
Sta. 576+80.63, 8.6' Lt. Elev.=2235.71
N:769112.66 E:4351874.72



CHANNEL PROFILE & GRADE

BM#4 5/8"x24" rebar with green plastic cap stamped "CONTROL PENCO" 1' South of broken fence post
Sta. 580+12.962, 39.8' Lt. Elev.=2244.02
N:769137.86 E:4352207.53



CONTOUR MAP

PENCO ENGINEERING, P.A.
PLAINVILLE, KANSAS

DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 69 C-5285-01
CHECKED BY: JUD	DATE: 2025

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	7	47

Summary of Piling	
Abutment No. 1	4 @ 50', 1 @ 60' for PDA
Abutment No. 2	5 @ 50'
Wings	8 @ 30'

LRFR RATING FACTORS		
Rating Level	Inventory	Operating
Truck		
HL-93 Loading	1.21	1.58
WRL		1.52
2011 Manual for Bridge Evaluation		

SUMMARY OF QUANTITIES										
Item	Excavation Class I	Concrete Grade (4.0) AE	Reinforcing Steel (Grade 60)	Structural Steel		Guardrail, Steel Plate	Slope Protection (Shot Rock)	Pile (Steel) HP10x42	Pile (Corrugated Metal Sheet)	Contractor Furnished PDA
				ASTM A709 Grade 36	ASTM A709 Grade 50W					
Location	CUYD	CUYD	LBS	LBS	LBS	LNFT	CUYD	LNFT	SQFT	EACH
Abutment No. 1	88			2,362	1,617		44	380	1,235	1
Abutment No. 2	88			2,362	1,617		44	370	1,235	
Superstructure		42.2	7,510		55,180	125				
Total	176	42.2	7,510	4,724	58,414	125	88	750	2,470	1

GENERAL NOTES

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

CONCRETE: Concrete Grade 4.0 (AE) shall be used throughout. Bevel all exposed edges with a 3/4" triangular molding unless otherwise noted.

QUANTITIES: Items not listed separately in the Summary of Quantities are subsidiary to other items of 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 2222.10 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.

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 fabric under the rock/rubble embankment on the berm and berm slopes.

PILING: Piling shall meet ASTM A572. Drive all piling, excluding wing 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	61 Tons
Abutment No. 2	61 Tons

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

STEEL SHEET PILING: Structural steel for sheet piling shall meet ASTM A570, Galvanized. Corner connections are subsidiary to bid item "Pile (Corrugated Metal Sheet)". Welded or mechanical piling splices are only allowed with the Engineer's approval. Variation in the sheet pile alignment may be allowed with the approval of the Engineer. Use only "tamping" compaction equipment within five feet of the sheet piling. (Painting of steel sheet piling is not required.) See KDOT Specifications.

SLAB CURING PERIOD: No traffic shall be permitted on the deck surface until the wet curing period is complete. Operations necessary to complete placement of the deck may be permitted for a minimum practical time as noted in the Standard Specifications.

CONSTRUCTION LOADS: Limited traffic is permitted on the new deck 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. Construction loads on the deck will be limited to loads approved by the Engineer.

REINFORCING: All dimensions in Bending Diagrams are out to out of bar. All other dimensions relative to reinforcing steel are to center of bar unless otherwise noted.

STRUCTURAL STEEL: Beams, stiffeners, and diaphragms shall meet the requirements for ASTM A709 Grade 50W.

BOLTS: All bolts, nuts, and hardened flat washers shall conform to the heavy hex structural requirements of ASTM A325, Type 3, and KDOT Specifications unless otherwise noted. Direct Tension Indicators (DTI's) are to comply with the requirements of the latest edition of ASTM F959. No allowance will be made for high strength bolts used for permanent or temporary connections. This work is subsidiary to the bid item, "Structural Steel". The number of bolts is shown for the convenience of the Contractor.

BOLTED CONNECTIONS: Girder Connections: Use 3/4" diameter heavy hex structural bolts for the member connections. Use 1 3/16" diameter bolt holes. Do not ream during field erection. Accurately align all connections by driving 1 3/16" diameter drift pins in all corners. See KDOT Specifications.

In lieu of using DTI's, the Contractor may at his option use the turn of the nut method for tightening bolts.

WELDING: Material and construction shall conform to KDOT Specifications. Welding requires approved procedures and welders.

GUARDRAIL, STEEL PLATE: Bridge guardrail (metal) shall be paid for by the linear foot from center of post to center of post. Payment shall be for all metal rail, materials, welding, labor and incidentals needed to complete the work.

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 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 89 Tons. 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.

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

PAINTING: Blast clean all surfaces of all weathering steel, including all contact surfaces of bolted connections, to meet SSPC-SP6 Specifications (latest Revision). Blast clean to meet SSPC-SP10 Specifications and prime coat the embedded portion of the girders, including the abutment diaphragms; the top flanges, including the shear studs; and the top of flange splice plates in accordance with KDOT Specifications.

NUT ROTATION FROM THE SNUG FIT CONDITION	
Bolt Length	Rotation
Up to and including 4 bolt diameters	1/3
Over 4 bolt diameters to 8 bolt diameters	1/2
Over 8 bolt diameters to 12 bolt diameters	2/3

Length from the underside of the bolt head to end of the bolt.

DESIGN DATA

DESIGN LOADING: HL-93 A.A.S.H.T.O. Specifications, 2020 Edition and latest interim. Specifications, Load, and Resistance Factor Design.

UNIT STRESSES: Concrete (Grade 4.0) (AE) f'c = 4.0 ksi
 Reinforcing Steel (Grade 60) fy = 60,000 psi
 Structural Steel ASTM A709 Gr. 36 fy = 36 ksi
 Structural Steel ASTM A709 Gr. 50W fy = 50 ksi
 Pile (Steel) ASTM A572 Gr. 50 fy = 50 ksi

LRFD PILE DESIGN LOAD:

Design Loading (Tons/Pile)	Strength I	Service	Phi	PDA Load
Abutment 1&2	61	38	0.65	94

GUARDRAIL, STEEL PLATE: Steel guardrail bridge rail as shown is only intended for use on low volume local roads and does not meet the AASHTO Specifications for KDOT requirements for a 10 kip load.

Construction Requirements

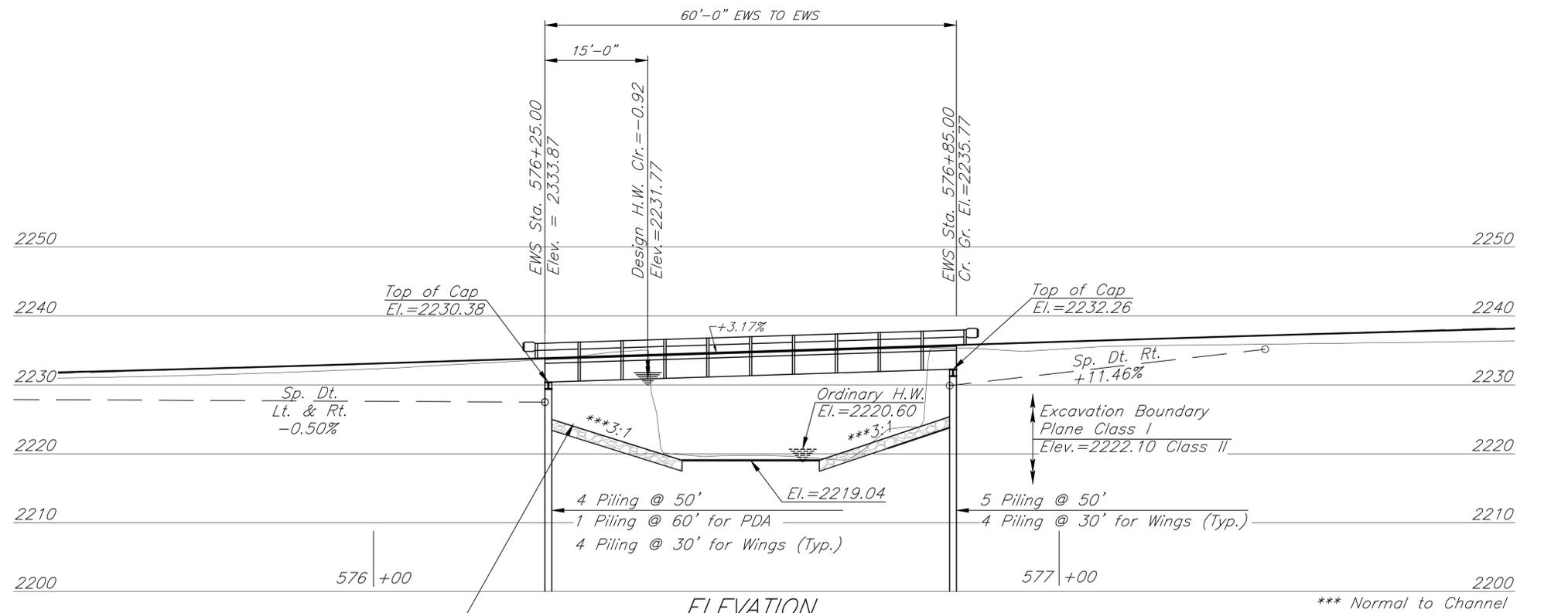
Contractor shall complete the following items:

- Deck may be struck off with a Razorback vibrating screed or equivalent.
- Abutment and wing sheet piling shall be 7 gauge, Galv.
- Install 125 ft. of Guardrail and Buffer End Terminals. Apply 18"x18" retroreflective sheeting to the buffer end terminal after installation. Buffer end terminals and associated work, are subsidiary to Guardrail, steel plate bid item.
- Abutments shall be backfilled and compacted (Type B MR-90) to tie-rod elevations prior to installation of tie-rods.
- Provide and Install Signing Object Marker (Type 3), w/2, 10'-0", 2lbs./ft., "U" channel galvanized posts. Object Markers shall be back-to-back on post at approach corners. Two object markers per post.
- Stay in place decking forms may be used. If stay in place forms are not used and the top flanges of the girders are embedded within concrete deck, apply a 3 mil primer coat of approved inorganic zinc primer to the tops of the top flanges.
- Shim gap between cap and piling.

See Specifications for other details.

NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION BR. NO. 000690539503540 STA. 576+55 SUMMARY OF QUANTITIES & GENERAL NOTES 60 FOOT SIMPLE STEEL BEAM (26 FOOT NOMINAL ROADWAY) PROJ. NO. 69 C-5285-01 NORTON CO. SHEET NO. OF SCALE APP'D DESIGNED OF DETAILED QUANTITIES CADD DESIGN CK. DETAIL CK. QUAN. CK. CADD CK.				

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	8	47

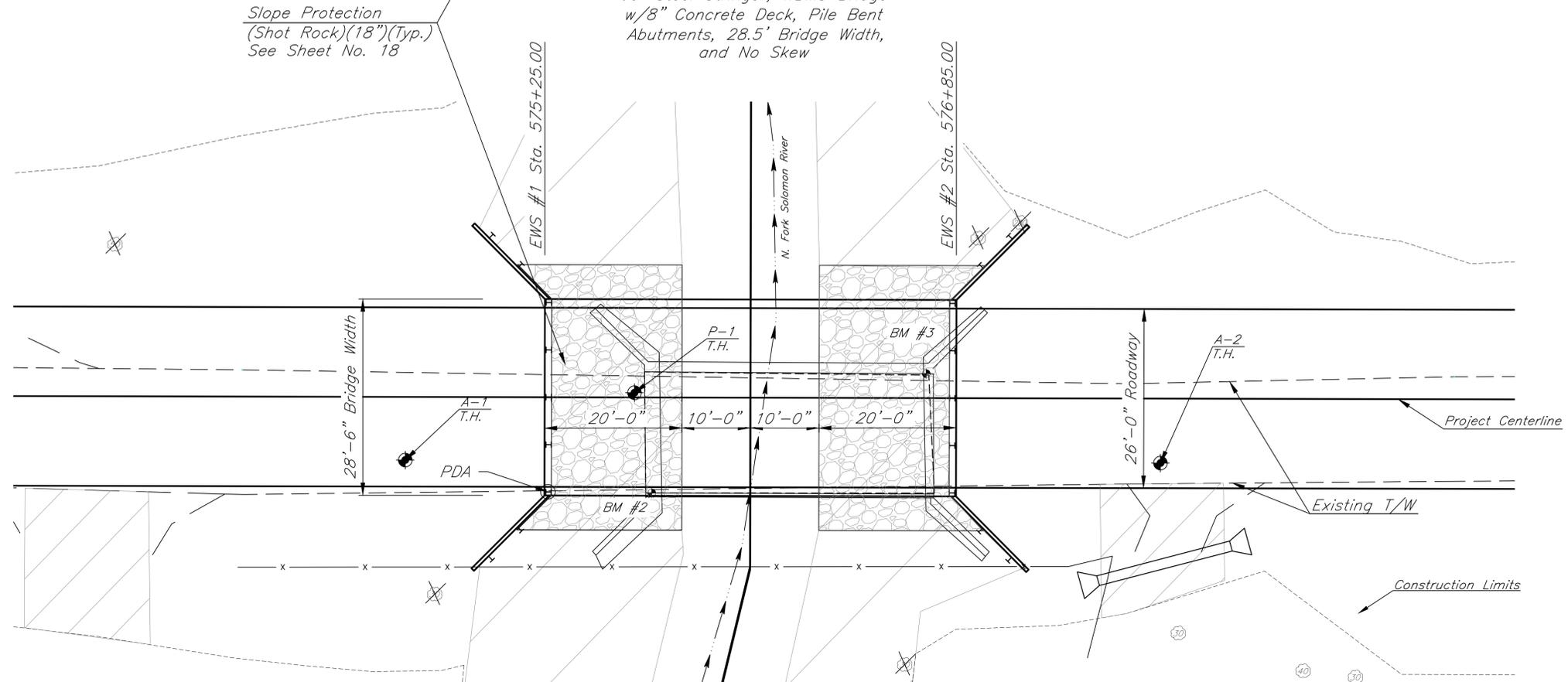


ELEVATION
 60' Steel Stringer, WBMS Bridge
 w/8" Concrete Deck, Pile Bent
 Abutments, 28.5' Bridge Width,
 and No Skew

*** Normal to Channel

DRAINAGE DATA

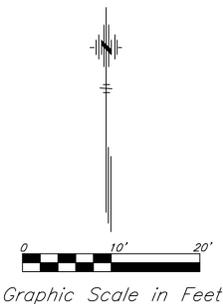
Drainage Area	462.0 Sq. Mi.
Design Frequency	10 Years
Design Discharge (Q ₁₀)	4159 cfs
Design High Water Elevation	2231.77 ft.
Design Backwater	-0.66 ft.
Design Backwater Elevation	2231.87 ft.
Overtopping Elevation (Sta. 574+25)	2230.31 ft.
Overtopping Discharge (Q ₁₀)	4159 cfs
Overtopping Frequency	10 Years
Discharge at Q ₁₀₀	13910 cfs
Backwater at Q ₁₀₀	-0.38 ft.
Backwater Elevation at Q ₁₀₀	2235.93 ft.
Historic High Water Elevation	Unknown ft.
Ordinary High Water Elevation	2220.60 ft.
Total Waterway Provided	612 Sq. Ft.
Design Waterway Provided	583 Sq. Ft.
Estimated O.H.W. Discharge	30 cfs



PLAN

BM#2 Mag nail in SW Corner of Hubguard
 Sta. 576+40.72, 9.0' Rt. Elev.=2235.87
 N:769095.81 E:4351834.50

BM#3 Mag nail in Northeast Corner of hubguard
 Sta. 576+80.63, 8.6' Lt. Elev.=2235.71
 N:769112.66 E:4351874.72



3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 000690539503540 Ⓞ Sta. 576+55

CONSTRUCTION LAYOUT

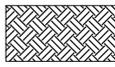
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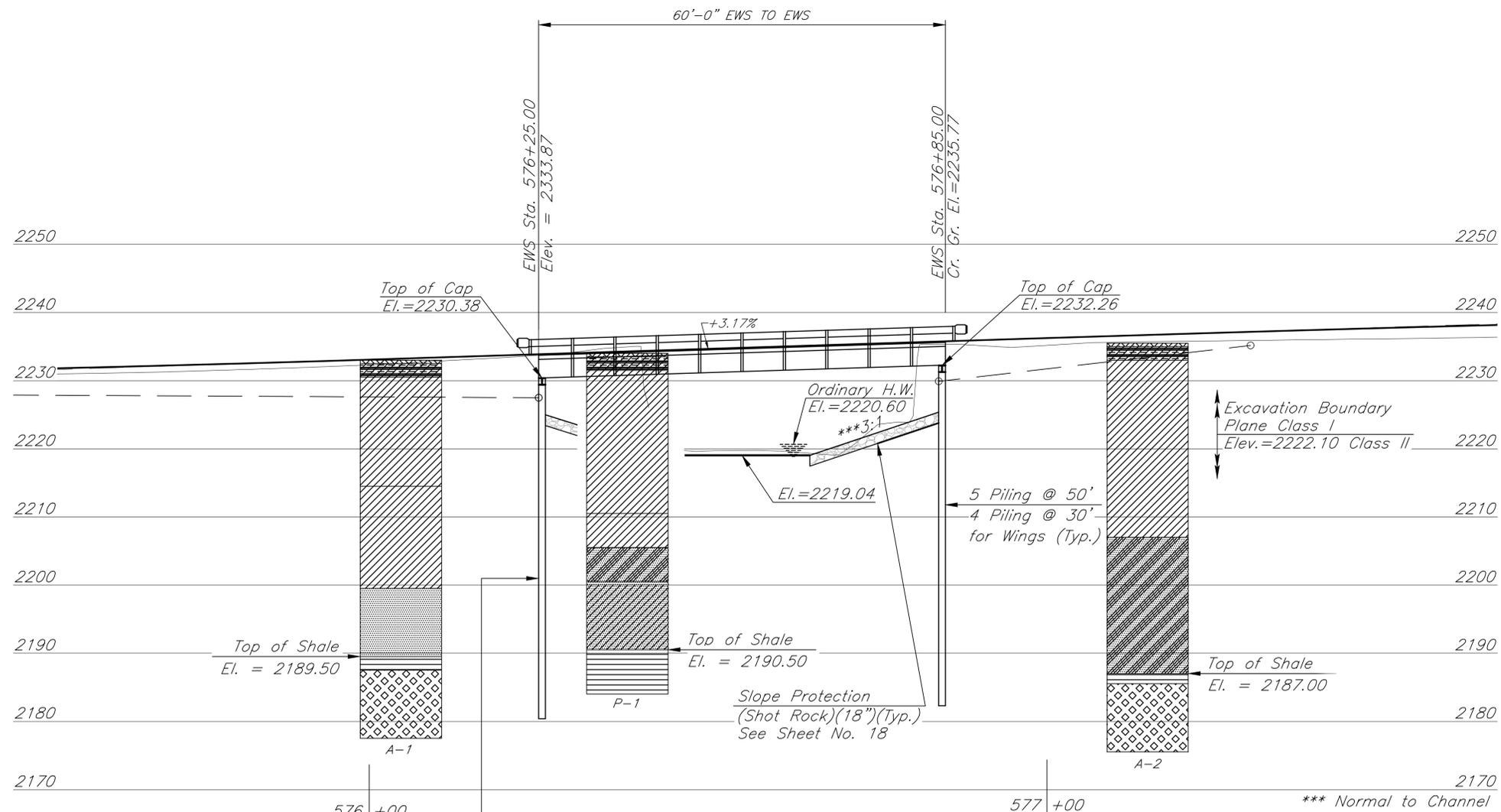
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DESIGNED		DETAILED	QUANTITIES
DESIGN CK.		DETAIL CK.	QUAN. CK.
			CADD CK.

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	9	47

STANDARD GEOLOGICAL SYMBOLS

- Topsoil 
- Poorly Graded Sand 
- Poorly Graded Sand with Clay 
- Sandy Lean Clay 
- Clayey Sand 
- Lean Clay 
- Shale 
- Sandstone 



4 Piling @ 50'
1 Piling @ 60' for PDA
4 Piling @ 30' for Wings (Typ.)

ELEVATION
60' Steel Stringer WBMS Bridge
w/8" Concrete Deck, Pile Bent
Abutments, 28.5' Bridge Width,
and No Skew

*** Normal to Channel

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BM#2 Mag nail in SW Corner of Hubguard
Sta. 576+40.72, 9.0' Rt. Elev.=2235.87
N:769095.81 E:4351834.50

BM#3 Mag nail in Northeast Corner of hubguard
Sta. 576+80.63, 8.6' Lt. Elev.=2235.71
N:769112.66 E:4351874.72

3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000690539503540 Ⓞ Sta. 576+55

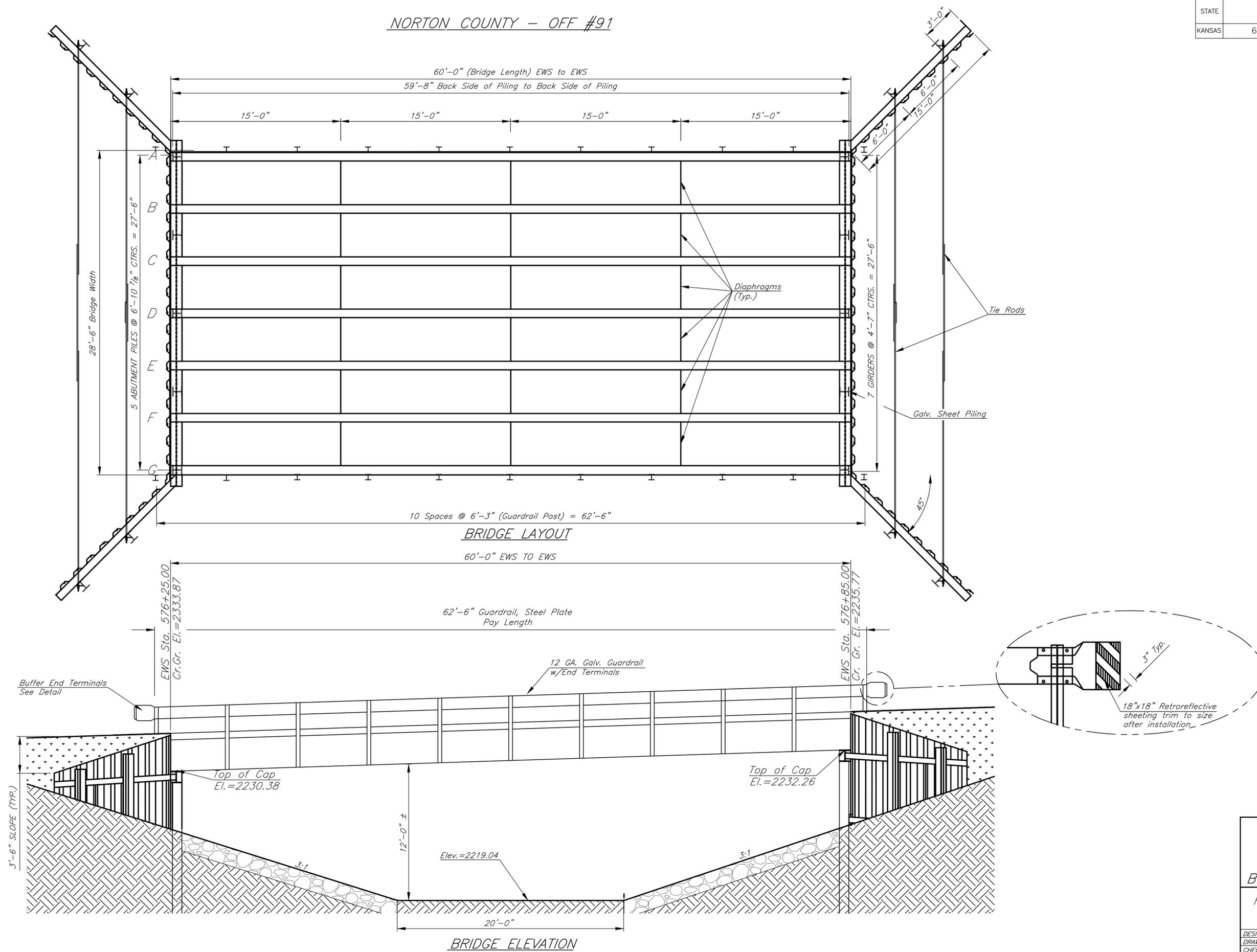
GEOLOGY

Proj. No. 69 C-5285-01 Norton Co.

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	10	47

NORTON COUNTY - OFF #91



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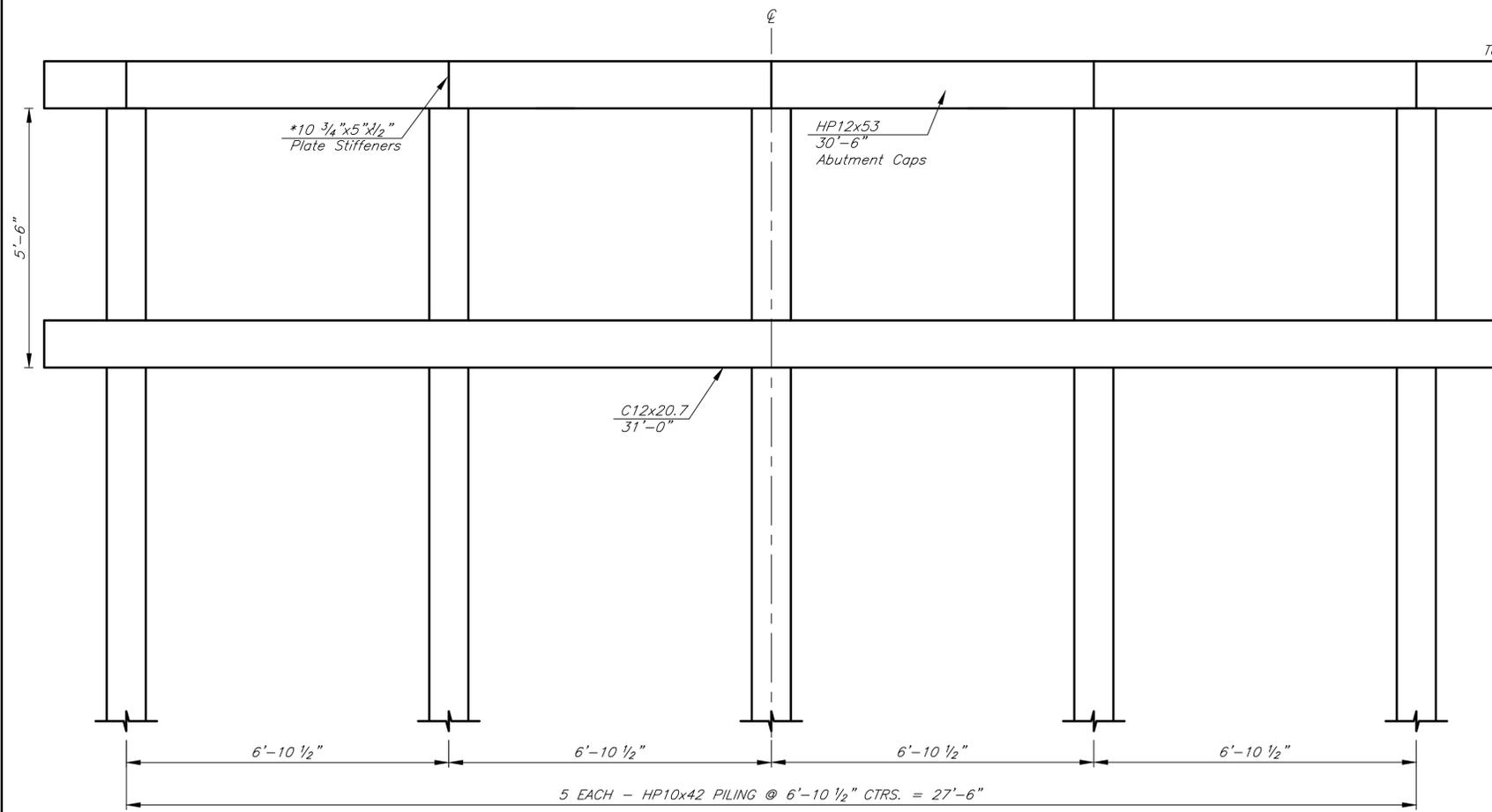
60'-0" X 28'-6"
 Single Span Bridge
 Concrete Deck
 Br. No. 000690539503540

PENCO ENGINEERING, P.A.
 PLAINVILLE, KANSAS

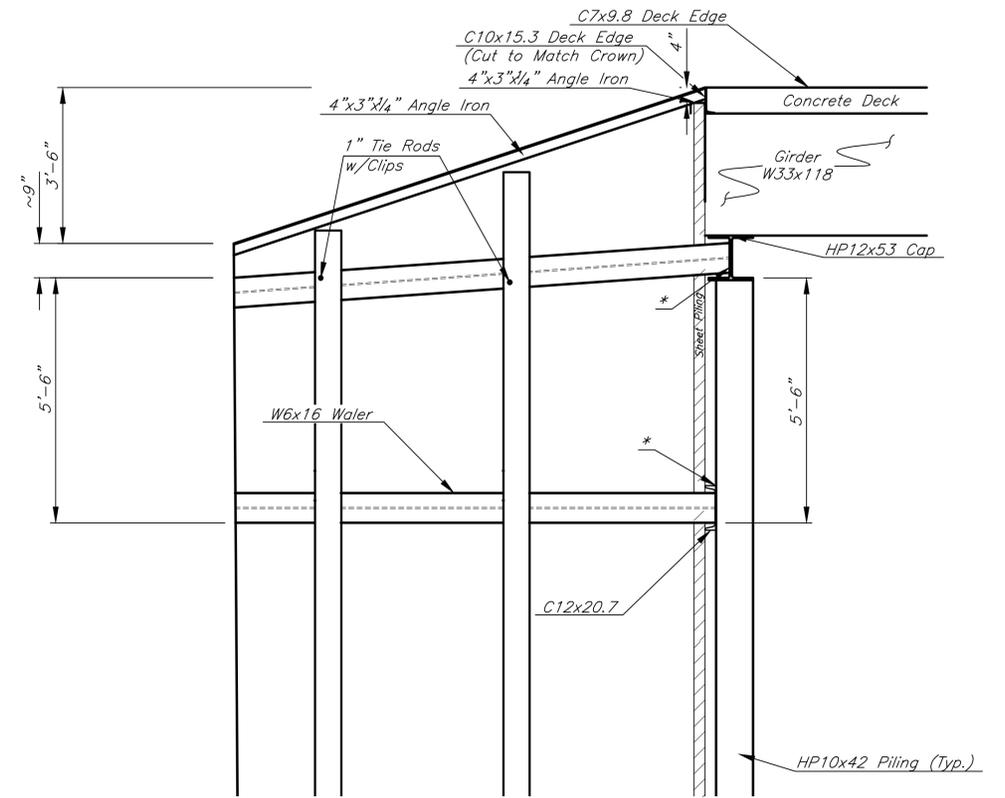
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DRAWN BY: AMN	PROJ. NO.: 69 C-5285-01
CHECKED BY: JJD	DATE: 2025

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	11	47

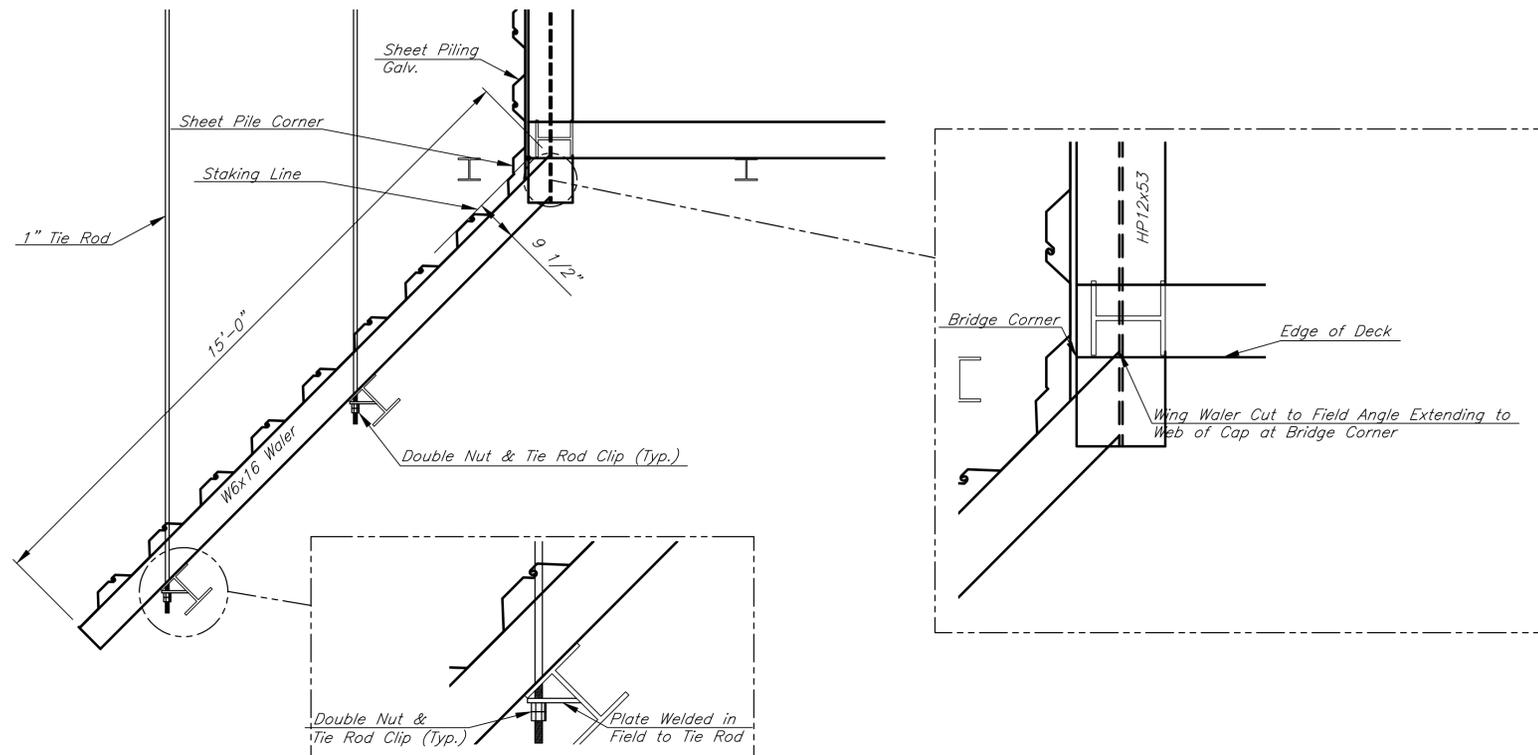
Top of Pile Cap Elev. - See Sheet No. 8



ELEVATION
(LOOKING FORWARD WITH STATIONING)



ABUTMENT SECTION



CORNER DETAIL

Note: Tie-Rod should be installed above waler on pile furthest from the bridge and below waler on pile closest to the bridge.

Abutment Details
Br. No. 000690539503540

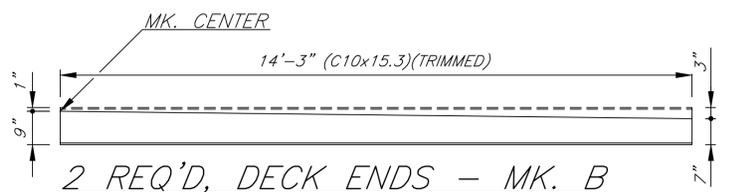
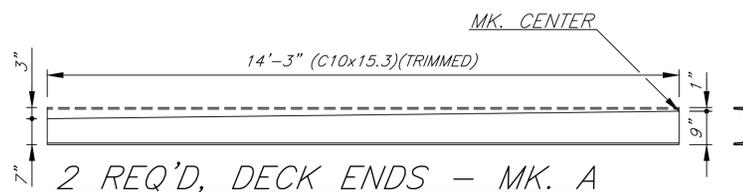
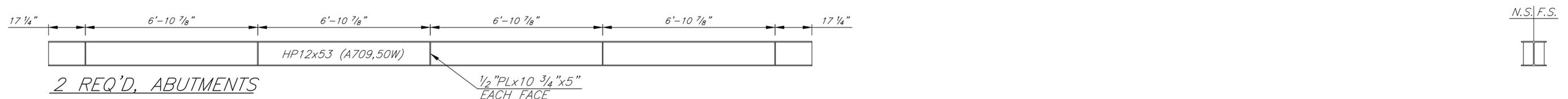
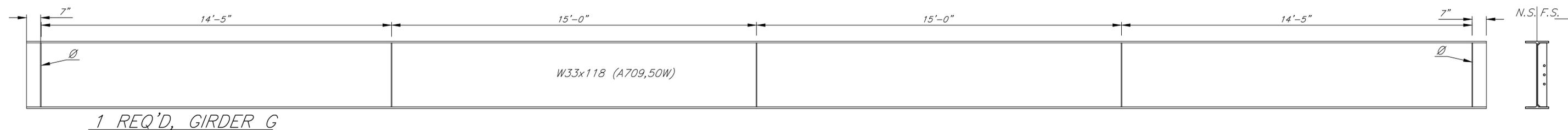
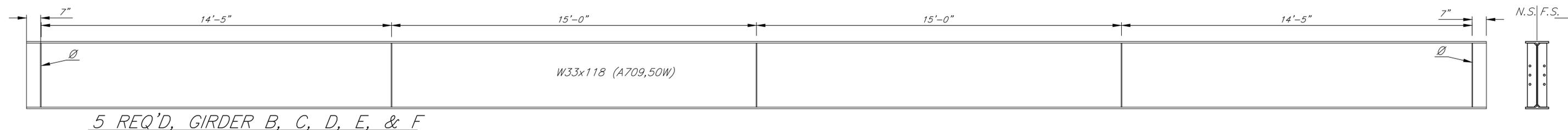
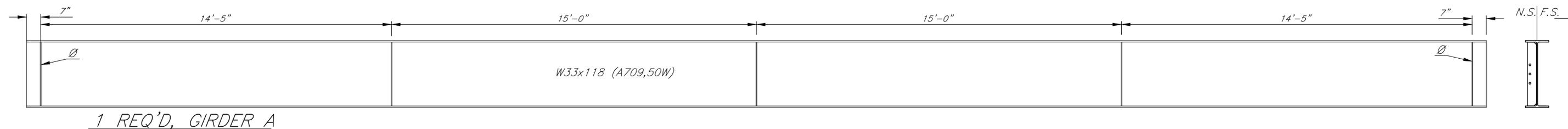
PENCO ENGINEERING, P.A.
PLAINVILLE, KANSAS

*Cut to Fit.

DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 69 C-5285-01
CHECKED BY: JJD	DATE: 2025

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	13	47



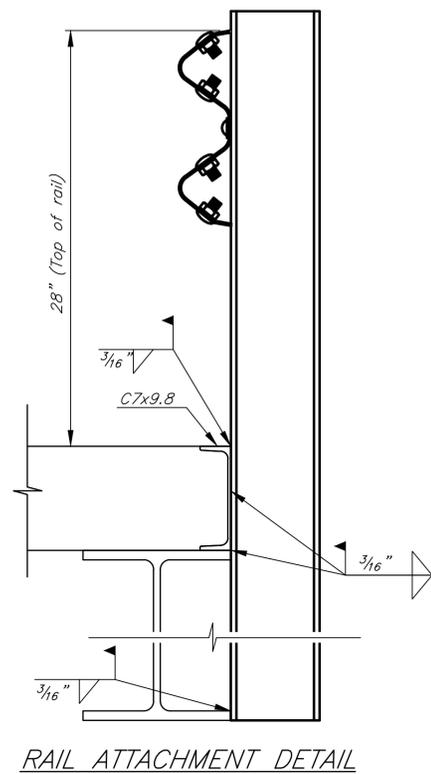
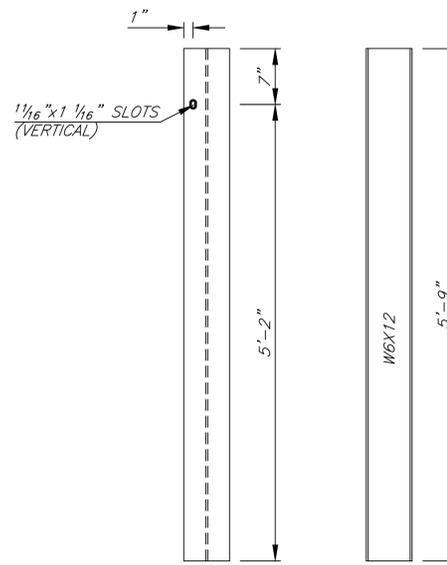
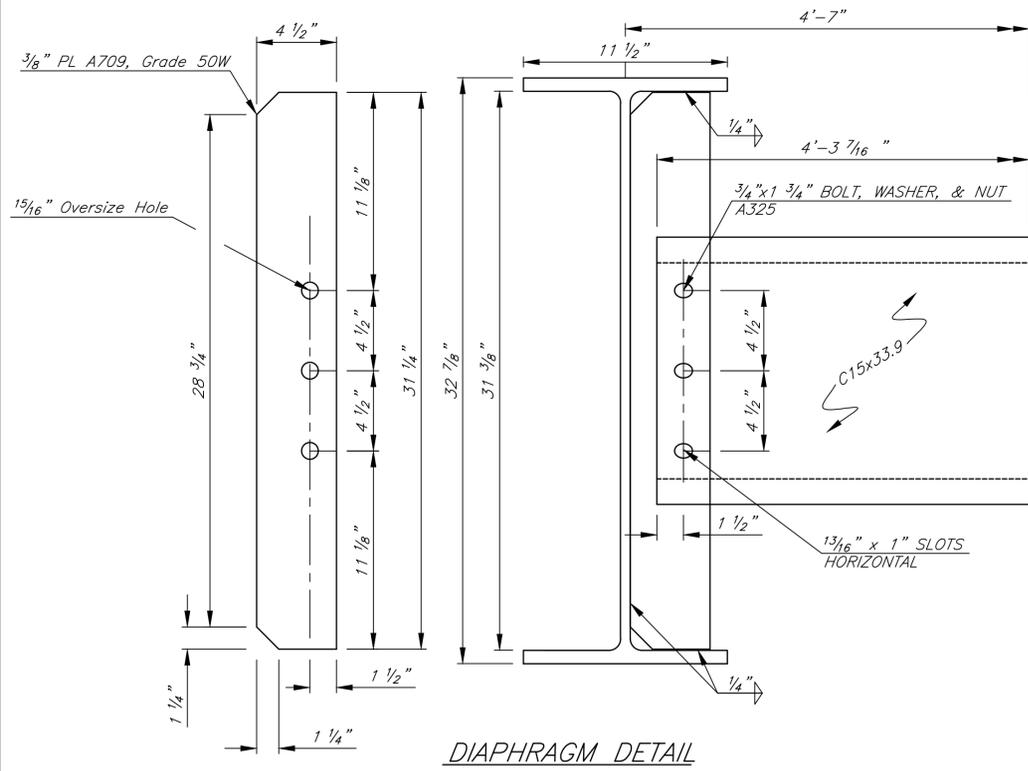
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Girder Details
Br. No. 000690539503540

PENCO ENGINEERING, P.A.
PLAINVILLE, KANSAS

DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 69 C-5285-01
CHECKED BY: JGD	DATE: 2025

∅ Note: Bearing stiffener only, holes not required, each surface.



18 REQ'D RAIL POST GALV.
4 @ 6'-6" Ends

MATERIAL LIST				
NO.	MATERIAL	LENGTH	DESCRIPTION	REMARKS
9	HP10x42	50'-0"	Abutment Piling	A572
1	HP10x42	60'-0"	Abutment Piling, PDA	A572
8	HP10x42	30'-0"	Wing Piling	A572
2	HP12x53	30'-6"	Abutment Caps	A709, Grade 50W
78	Sheet Pile	22'-0"	7 Gauge, Galv.	A570, Galv.
4	45° Sheet Pile Corners	22'-0"	7 Gauge, Galv.	A570, Galv.
2	C12x20.7	31'-0"	Abutment Waler	A709, Grade 36
20	1/2" PL x 5"	10 3/4"	Abutment Cap Stiffeners	A709, Grade 36
8	1" Tie Rod	20'-0"	Abut. Tie Rod	A709, Grade 36 (6" Thread One End, 16 Nuts)
2	1" Tie Rod	12'-0"	Abut. Tie Rod	A709, Grade 36
2	1" Tie Rod	5'-0"	Abut. Tie Rod	A709, Grade 36
8	1/2" PL x 5"	4"	Tie Rod Clips	A709, Grade 36
8	W6x16	16'-0"	Wing Waler	A709, Grade 36
7	W33x118	60'-0"	Girders	A709, Grade 50W, 1" Camber
18	C15x33.9	4'-3 7/16"	Diaphragms	A709, Grade 50W
36	3/8" PL x 4 1/2"	2'-7 1/4"	Diaphragm Stiffeners	A709, Grade 50W
28	3/8" PL x 4 1/2"	2'-7 1/4"	Stiffeners	A709, Grade 50W
108	3/4" Dia Bolts	1 3/4"	Diaphragms	A325 (With Nuts & Washers)
4	C7x9.8	30'-0"	Deck Edge	A709, Grade 50W
4	C10x15.3	14'-3"	Deck EWS	A709, Grade 50W (Cut to Match Crown)
4	L4x3x1/4"	31'-0"	Abut. Sheet Pile Cap	A709, Grade 36
152	#5 Rebar	28'-2"	Transverse Reinf.	Grade 60
49	#5 Rebar	59'-6"	Longitudinal Reinf.	Grade 60
192	3/4" slab bolsters	5'-0"		Spaced @ approximately 4'
4	W6x12	6'-6"	Rail Post (ends)	A709, Grade 36, Galv.
18	W6x12	5'-9"	Rail Post	A709, Grade 36, Galv.
4	12 Gauge W-Beam	25'-0"	Guardrail	Galv.
2	12 Gauge W-Beam	12'-6"	Guardrail	Galv.
4	Buffer End Terminals	4'-0"	End Terminals	Galv.
64	Nuts & Bolts	5/8" x 1 1/4"	W beam connections	Galv.

*Wing sheet piling may be tapered from 22'-0" to 18'-6" lengths.

Material List
Fabrication Details
Br. No. 000690539503540

PENCO ENGINEERING, P.A.
PLAINVILLE, KANSAS

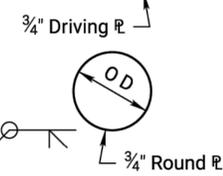
DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 69 C-5285-01
CHECKED BY: JJD	DATE: 2025

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

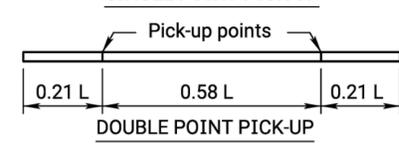
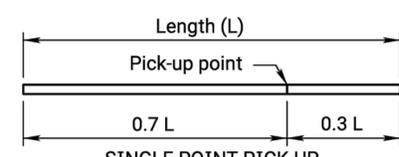
¶¶ See the Geology Report or "Summary of Quantities" for Pipe Pile wall thickness

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

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



PLAIN ROUND CAST-IN-PLACE CONCRETE PILES



PICK-UP POINTS FOR PRESTRESSED PILING

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

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

12" OR 14" PRESTRESSED CONCRETE PILES

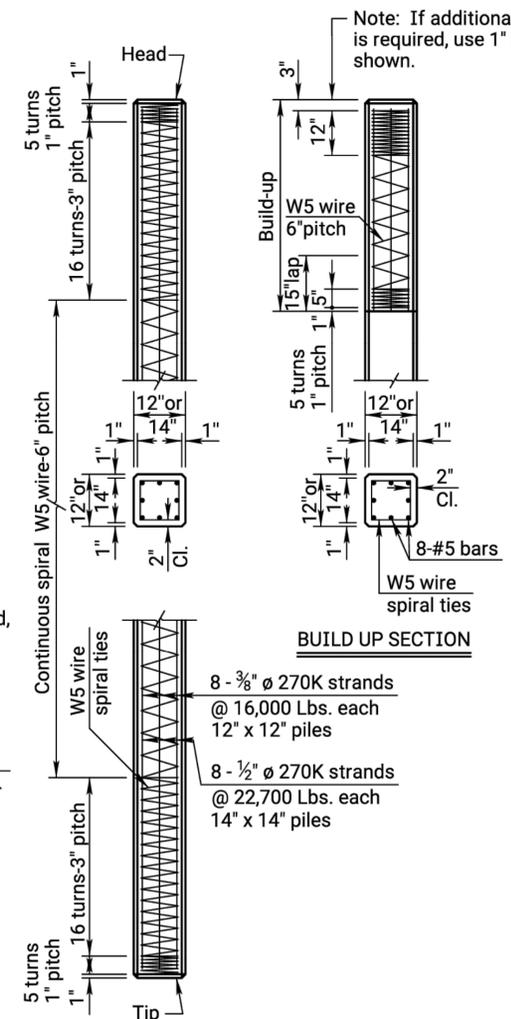


SHELL PILE POINT



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.



Note: If additional driving is required, use 1" pitch as shown.

BUILD UP SECTION

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

GENERAL NOTES

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

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

ALTERNATE METHODS: Method of attachment of a pile to build-up may be by any of the following methods:

1. Cut off at least 2'-0" of pile and expose a minimum of 2'-0" of strands.
2. Cast 8-#6, or 8-#5 bars (equally spaced) into pile head. All bars shall extend into pile head and project from pile head a minimum of 2'-0".
3. Drill 8 holes in pile head (equally spaced) for installation of 8 grouted dowel bars of same size and length as in 2.
4. Provide cored holes for bars as in 3.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PAIN: 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.

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

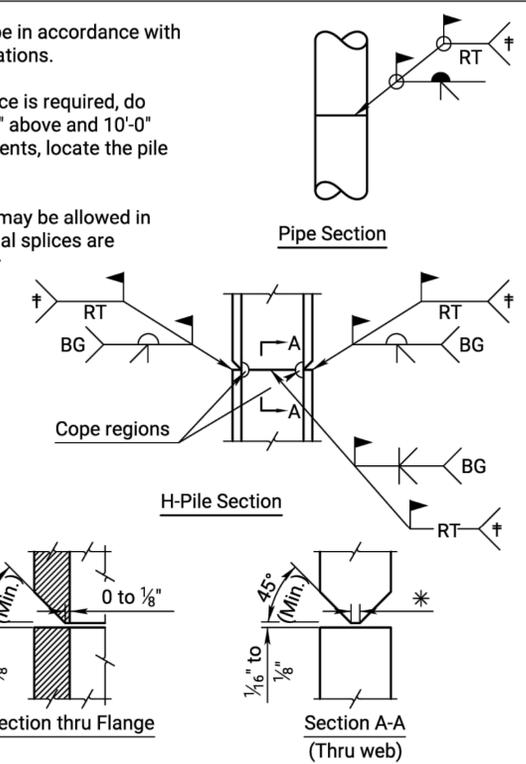
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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.

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

* Minimum as required by welding process.

BG = Backgouge



PILE SPLICE DETAILS

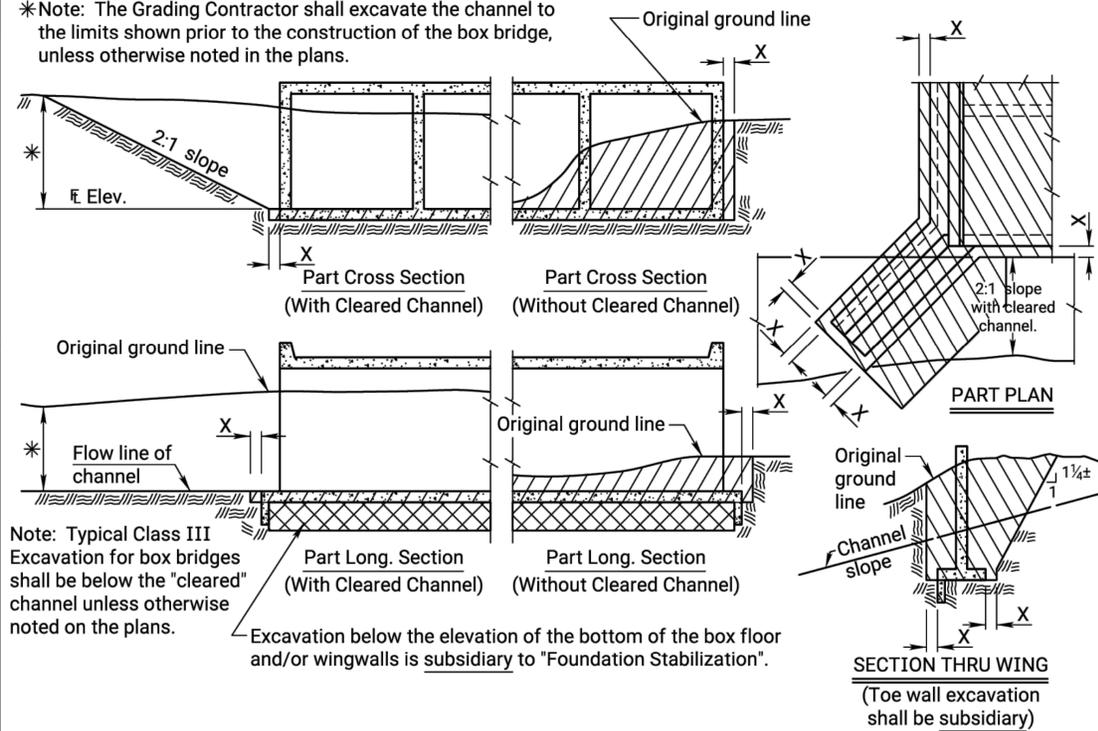
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	15	47

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

KANSAS DEPARTMENT OF TRANSPORTATION				
STANDARD PILE DETAILS				
BR110				
FHWA APPROVAL	10-04-12	APPD.	Terry L. Fleck	
DESIGNED	J.P.J.	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	16	47

* Note: The Grading Contractor shall excavate the channel to the limits shown prior to the construction of the box bridge, unless otherwise noted in the plans.

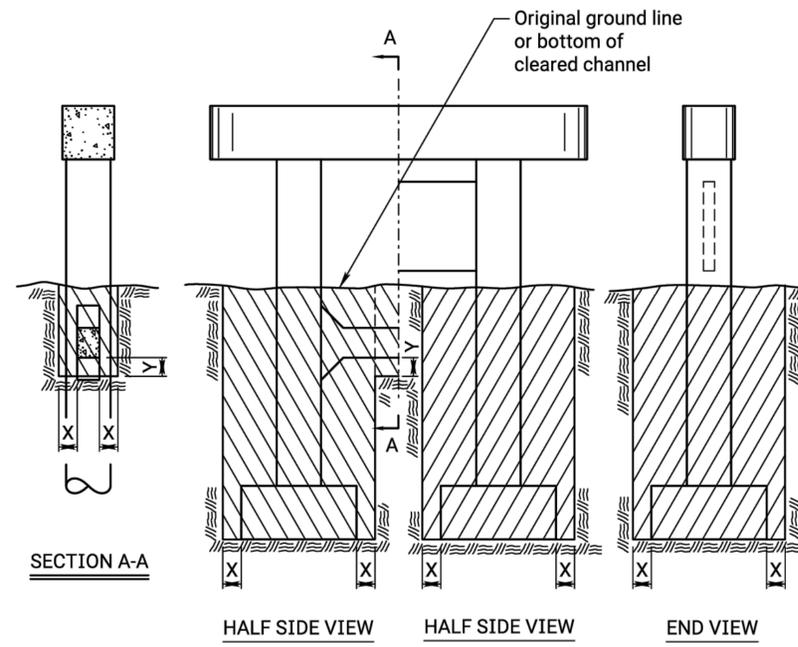


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

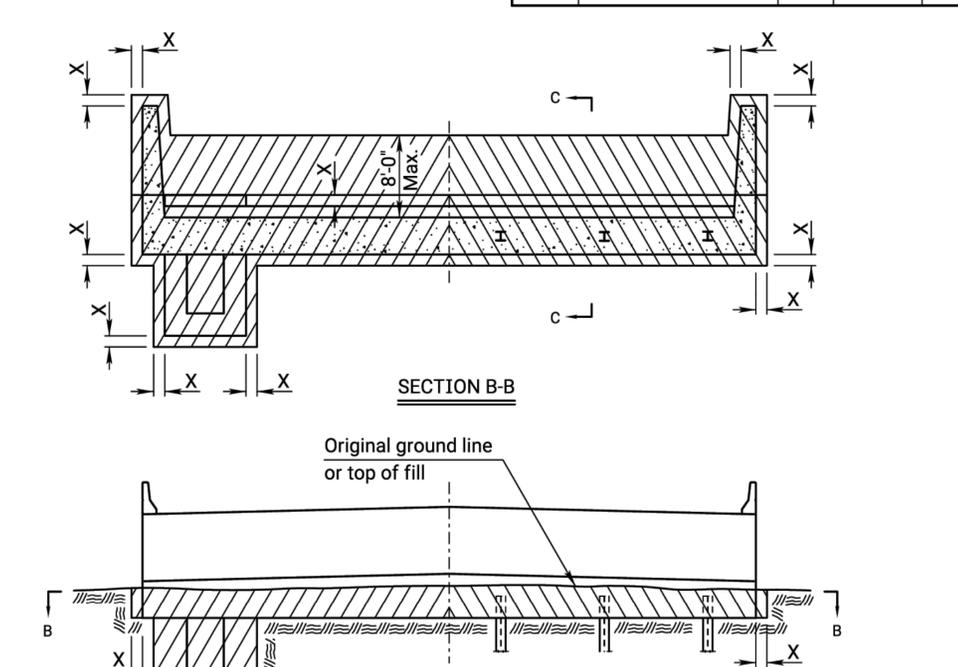
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

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



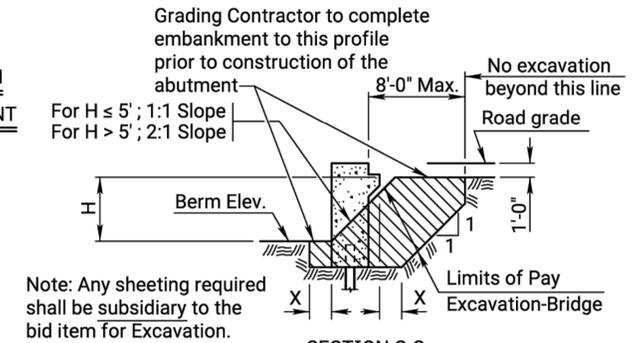
EXCAVATION DETAILS FOR TYPICAL PIERS

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



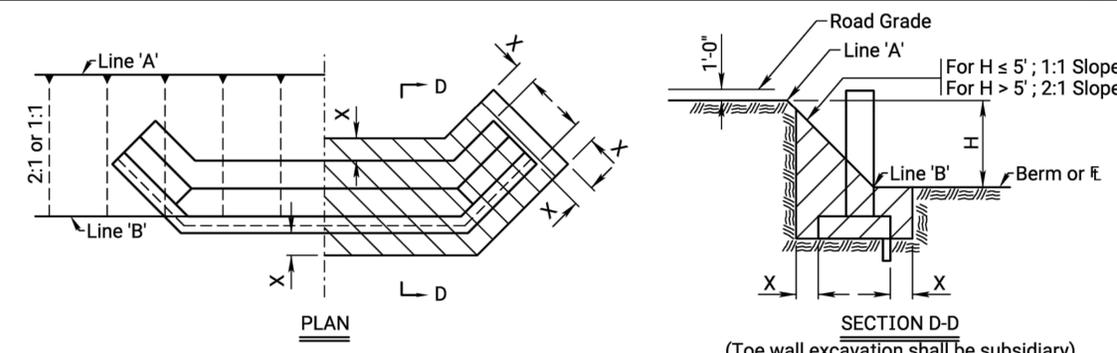
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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



EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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

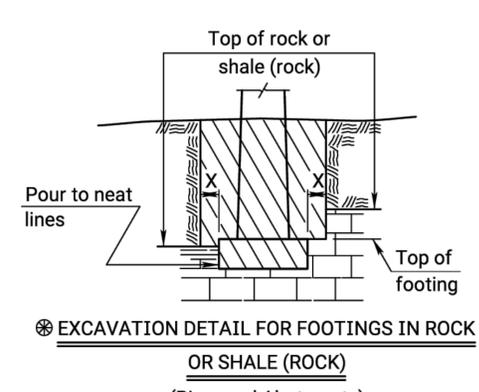
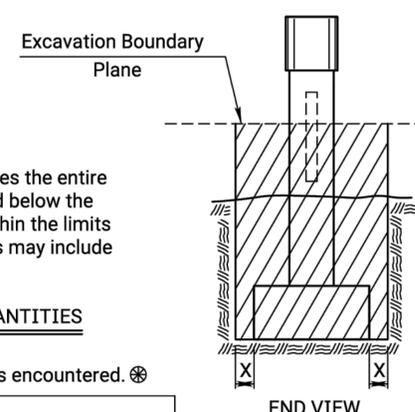


EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS

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

CLASS II EXCAVATION QUANTITIES

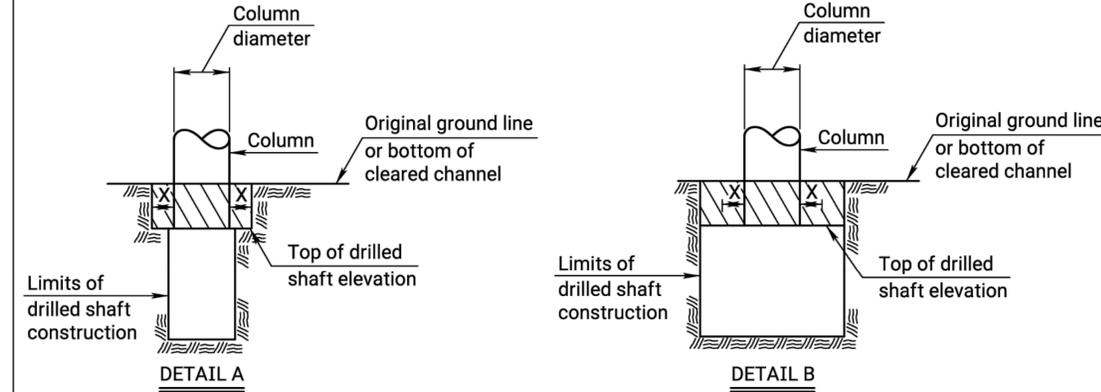
See detail when rock or shale (rock) is encountered. ☉



EXCAVATION DETAIL FOR FOOTINGS IN ROCK OR SHALE (ROCK)

(Piers and Abutments)

Note: Excavation below top of rock, hard shale or below top of footing, whichever is lower, shall be to neat lines of the concrete construction.



DRILLED SHAFT DETAILS

Note: Whenever the limits of the drilled shaft construction are greater than the Column Diameter + 2X, the limits of Class I, II or III Excavation shall be the limits of the drilled shaft construction. (See Detail B)

Note: All bridge excavation shall be computed on the basis of the cross-hatch areas and boundary lines indicated on this sheet and the Excavation Boundary Plane on the Construction Layout.

Sides of trenches in hard or compacted soil including embankments shall be shored, sheeted, braced or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of the shoring, the sides of the trench above the 5 foot level may be sloped to preclude collapse. The slope for average soils shall be 1:1. If the angle of repose of the soil is less, flatter slopes shall be required.

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

NO.	DATE	REVISIONS	BY	APPD
06	08-15-12	Embedment Excavation Subsidiary	J.P.J.	T.L.F.
05	05-15-12	Revised Wing Excavation	J.P.J.	T.L.F.
04	03-03-10	Revised Wing Excavation	J.P.J.	T.L.F.

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BR100B

DESIGNED	DETAIL	R.D.R.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	L.R.R.	QUAN. CK.	TRACE CK.

04-17-10 | APPD. Terry L. Fleck

KDOT Graphics Certified 06-20-2022

GENERAL NOTES

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

Use only the following types of bar supports:

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

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

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

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

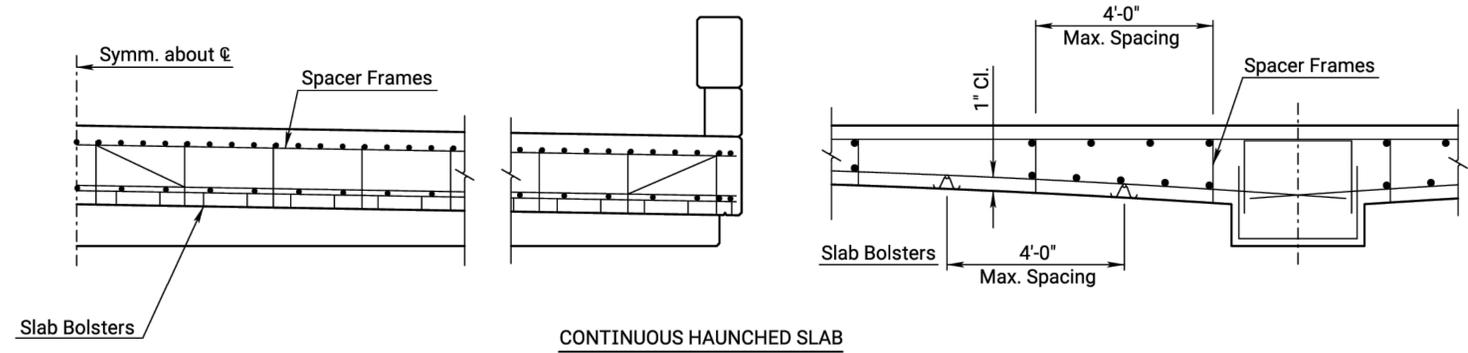
Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

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

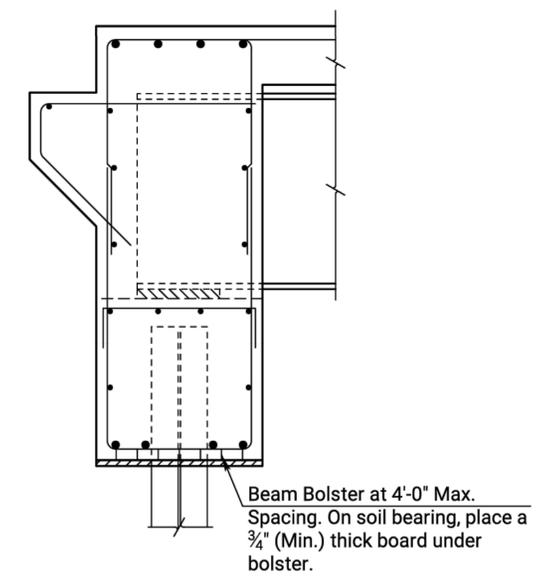
Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

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

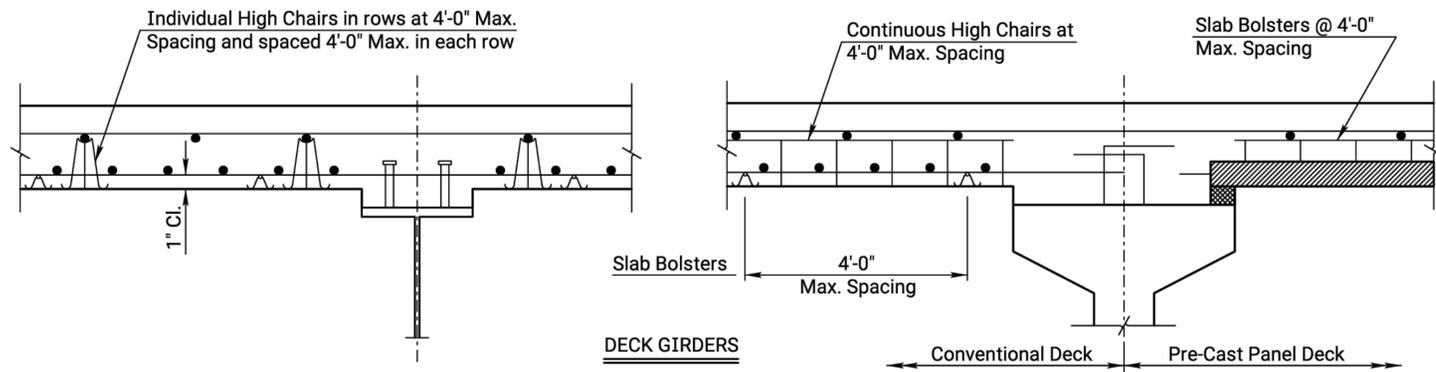
Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.



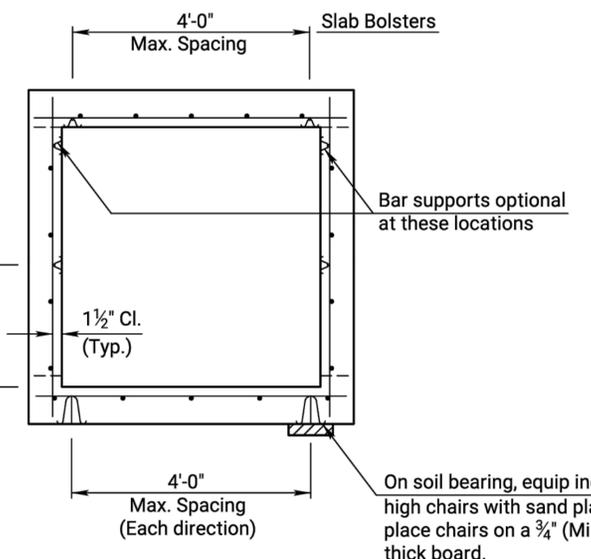
CONTINUOUS HAUNCHED SLAB



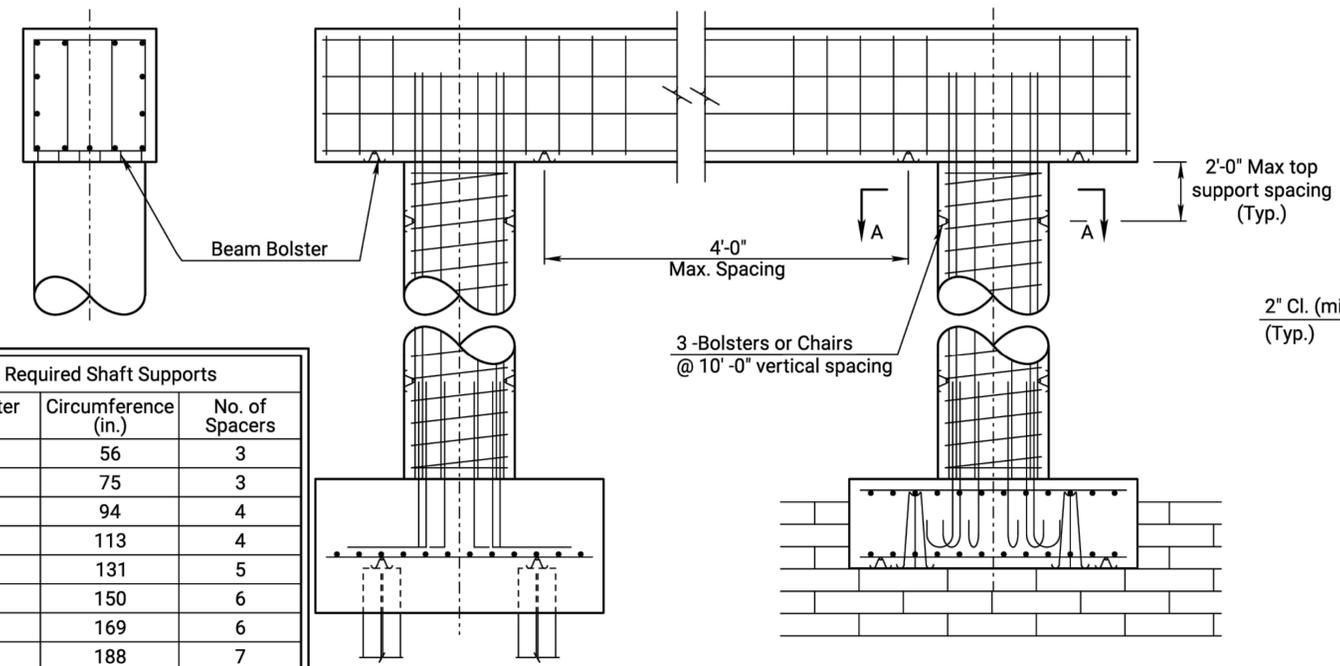
ABUTMENT



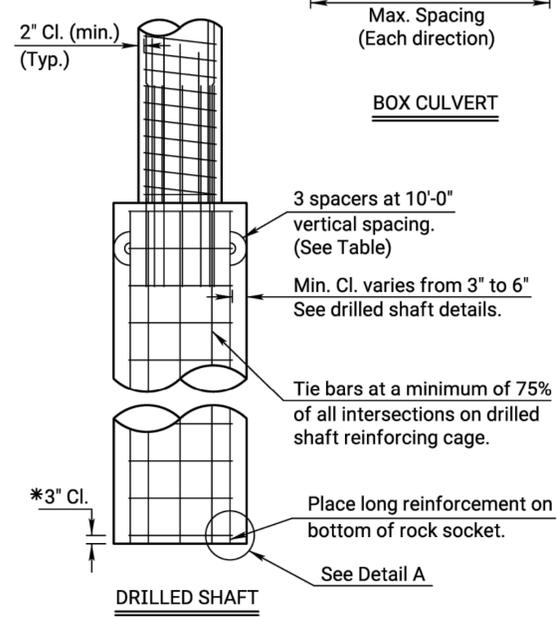
DECK GIRDERS



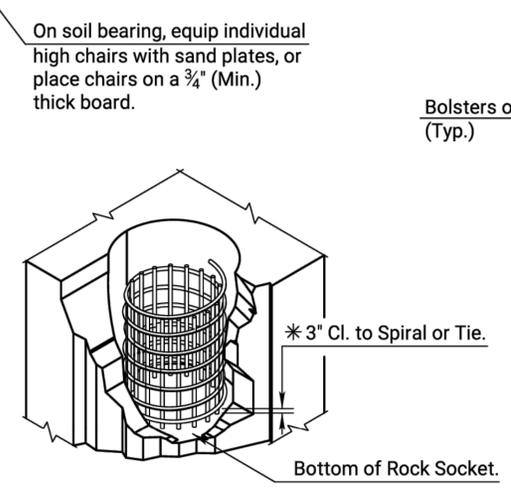
BOX CULVERT



PIER

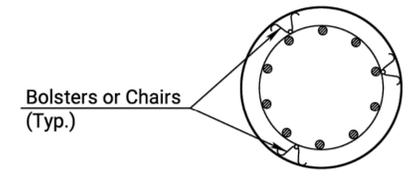


DRILLED SHAFT



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.



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

05	11-10-10	Column Bar Supports Required	J.P.J.	T.L.F.
04	12-01-05	Drilled Shaft Spiral Steel Placement	J.P.J.	K.F.H.
03	08-21-00	Added Pre-Cast Panel Detail	R.A.M.	K.F.H.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BR120

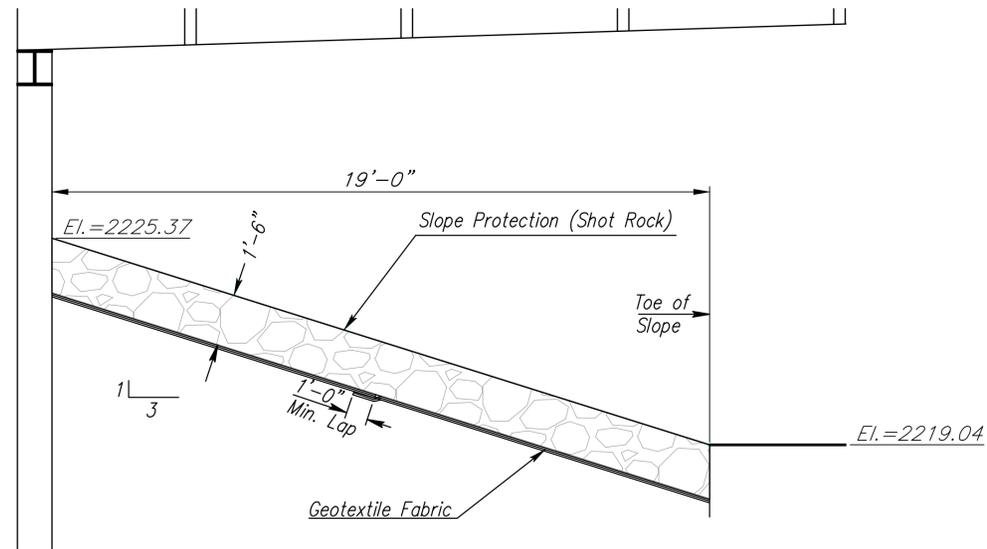
DESIGNED	R.A.M.	DETAILED	R.A.A.	QUANTITIES	TRACED	R.A.A.
DESIGN CK.	L.R.R.	DETAIL CK.	R.A.M.	QUAN. CK.	TRACE CK.	R.A.M.

Terry L. Fleck
APPD. 11-17-10

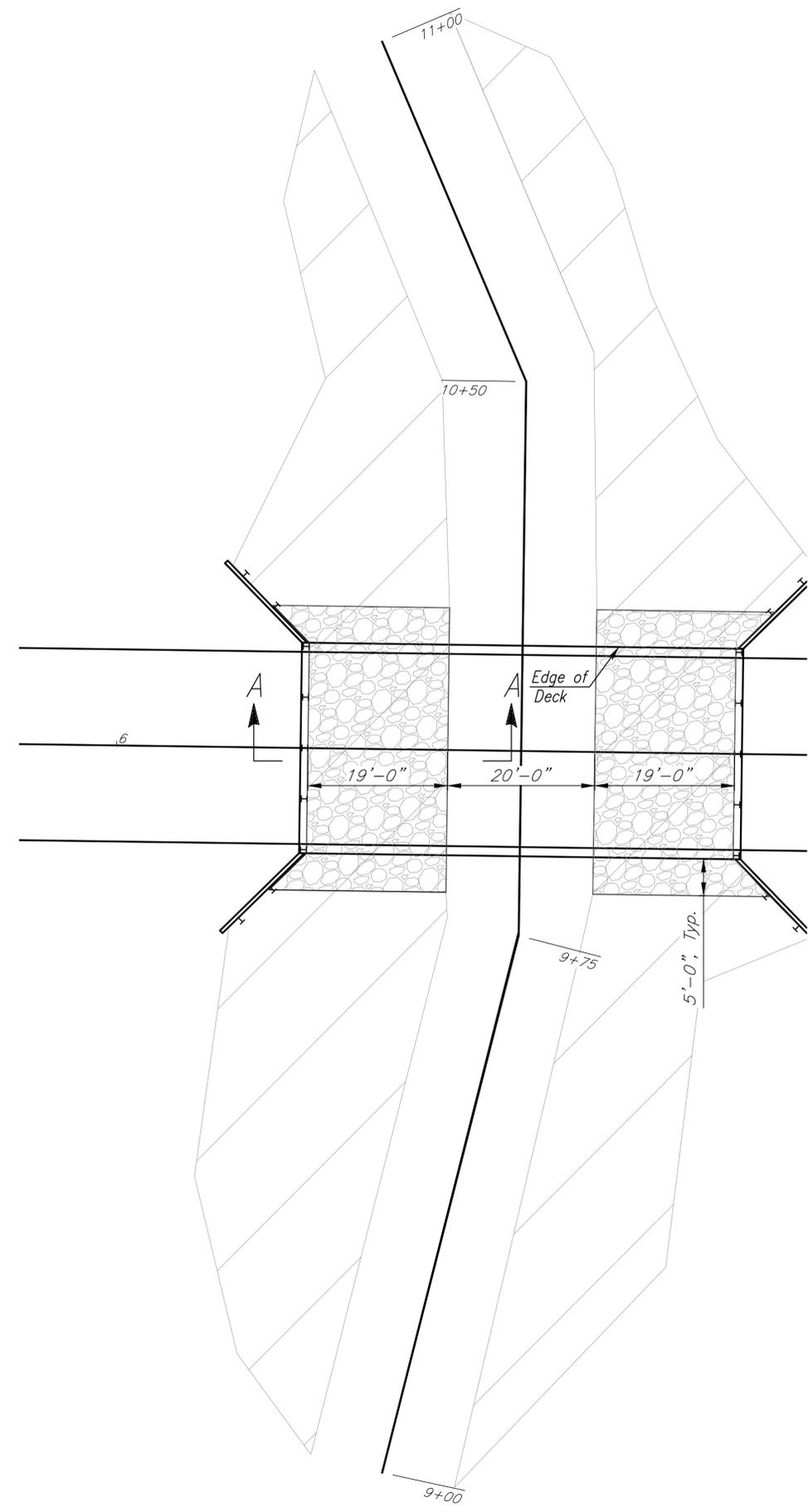
DOT Graphics Certified 06-20-2022

GENERAL NOTES

- Limits of slope protection are as shown and centered along centerline 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.
- The maximum size of the shot rock will be limited to a thickness of 18".



SECTION A-A



SLOPE PROTECTION (Shot Rock)			
Sta. to Sta.	Side	Cu. Yds.	
9+81	10+19	Rt.	44
9+81	10+19	Lt.	44
TOTAL			88

QUANTITIES		
	Slope Protection (Shot Rock) Cu. Yds.	Geotextile Fabric Sq. Yds. For Information Only
	88	169

NO.	DATE	REVISIONS	BY	APP'D

BRIDGE BERM AND SLOPE PROTECTION
FLARED WINGWALL ABUTMENT

DESIGNED	DETAILED	APP'D	CADD
DESIGN CK.	DETAIL CK.	QUAN. CK.	CADD CK.

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EARTHWORK				
Sta. to Sta.		Excavation yd ³		Compaction yd ³
		Rock	Common	Type B MR-90
574+00	580+60		740	600
9+00	11+00		756	26
Entrances				150
TOTAL				776

DRAINAGE STRUCTURES																
Station	Side	Size	Type	Conc. Cl. "A" yd ³	Reinf. Steel lb	*Entrance Pipe (feet)				*Cross Road Pipe (feet)				#End Sections (Each)		
						18"				18"				18"		
577+15	Rt.	18"	E.P.			20									2	
TOTAL						20									2	

RECAPITULATION OF ROAD QUANTITIES		
ITEMS	QUANTITY	UNITS
Field Office and Laboratory (Type C)	1	EACH
Mobilization	Lump Sum	LSUM
Mobilization (DBE)	Lump Sum	LSUM
Removal of Existing Structures	Lump Sum	LSUM
Curing Environment	Lump Sum	LSUM
Clearing and Grubbing	Lump Sum	LSUM
Common Excavation (Rural Small)	1496	CUYD
Compaction of Earthwork (Type B)(MR-90)	776	CUYD
Water (Grading)(Set Price)	1	MGAL
Entrance Pipe (18")	20	LNFT
End Section (18")	2	EACH
*Signing Object Marker (Type 3)(Double)	2	EACH
Temporary Surfacing Material (Aggregate)(Set Price)	1	CUYD

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

REMOVAL OF EXISTING STRUCTURES (For Information Only)		
Station	Side	Type
576+61	℄	Br. No. 000690539403540
		42.3' 1-Span RDGS Br.
		w/17.2' Rdwy.

REMOVAL OF LARGE TREES (For Information Only)	
Size(Circumference)	No.
200"	1
50"	3
30"	4

NOTE:

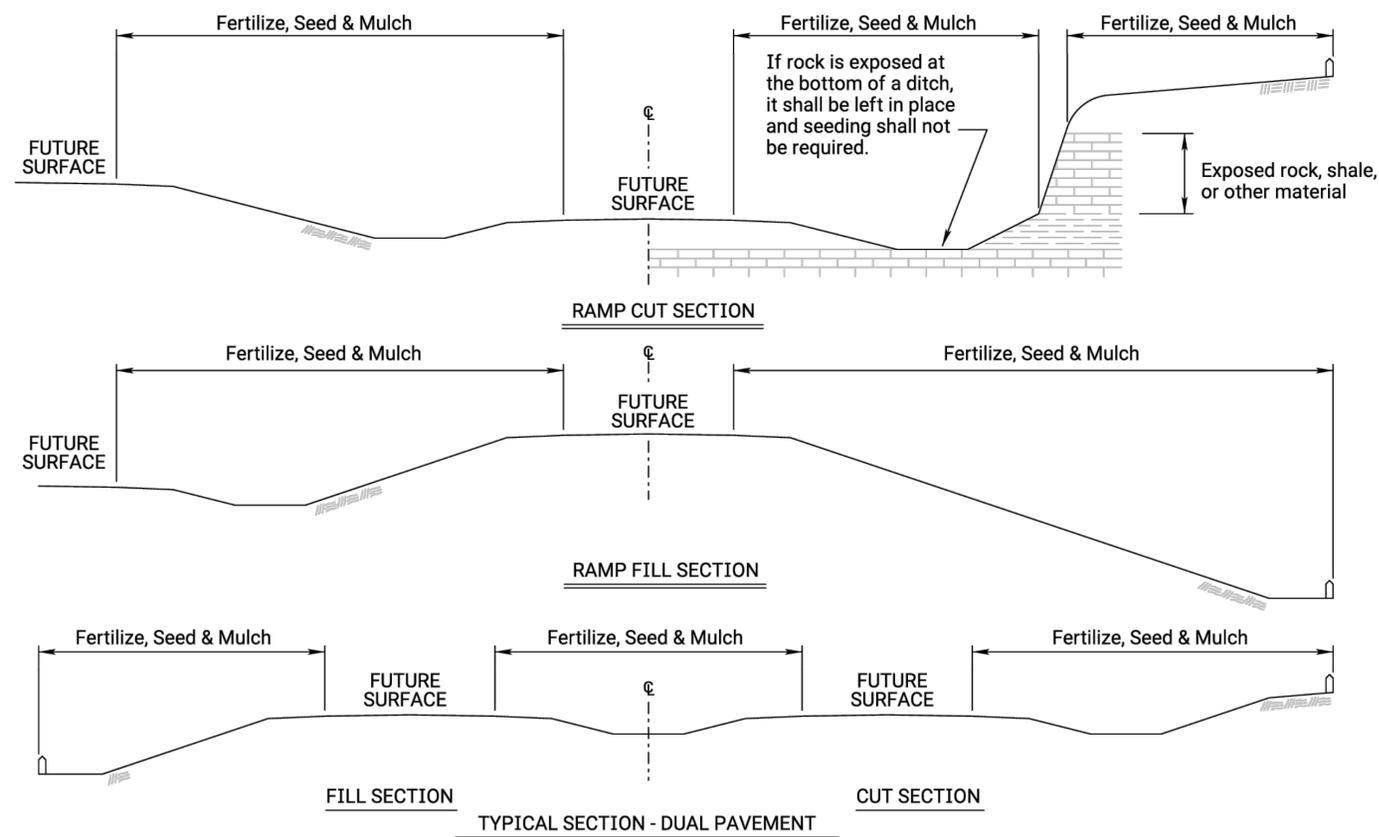
For Recapitulation of Bridge Quantities, See Sheet No. 7.
 For Temporary Erosion and Pollution Control Quantities, See Sheet No. 20.
 For Summary of Seeding Quantities, See Sheet No. 30.
 For Traffic Control Quantities, See Sheet No. 39.
 Construction Staking by County's Consultant.

*Includes 2, 10'-0", 2 lbs/ft, "U" channel galvanized posts, w/ OM-3R & OM-3L on each face.

PENCO ENGINEERING, P.A.

SUMMARY OF QUANTITIES

DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 69 C-5285-01
CHECKED BY: JJD	DATE: 2025



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	0.9	0.1	Temporary Fertilizer (16-20-0)	15.0	LB
20		0.9		Temporary Seed (Canada Wildrye)		LB
45		0.9		Temporary Seed (Grain Oats)		LB
45		0.9		Temporary Seed (Sterile Wheatgrass)		LB
	47.8		0.1	Soil Erosion Mix	4.8	LB
				Erosion Control (Class 1, Type C)	600	SQ YD
				Erosion Control (Class 2, Type E)	22	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")	200	LF
				Biodegradable Log (20")	80	LF
				Filter Sock (****)		LF
				Geotextile (Erosion Control)	500	SQ YD
				Silt Fence		LF
				SWPPP Design †		LS
				SWPPP Inspection †		EACH
				Water Pollution Control Manager †		EACH
900 lbs / acre		0.9		Mulch Tacking Slurry		LB
2 tons / acre		0.9		Mulching		TON
				Water (Erosion Control) (Set Price)	1	MGAL

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

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

Regreen and Quick Guard are the approved sterile wheatgrass products.

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

**** List size of material.

The amount of mulch and mulch tacking slurry in the bid quantities is estimated. (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)	0.10
24.5	Seed (Buffalo Grass)(Treated)	2.45
6.3	Seed (Side Oats Grama Grass)(El Reno)	0.63
10	Seed (Sterile Wheatgrass)(Regreen/Quickguard)	1.00
6.0	Seed (Western Wheatgrass)(Barton)	0.60
47.8	Total (lb)	4.78

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.

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

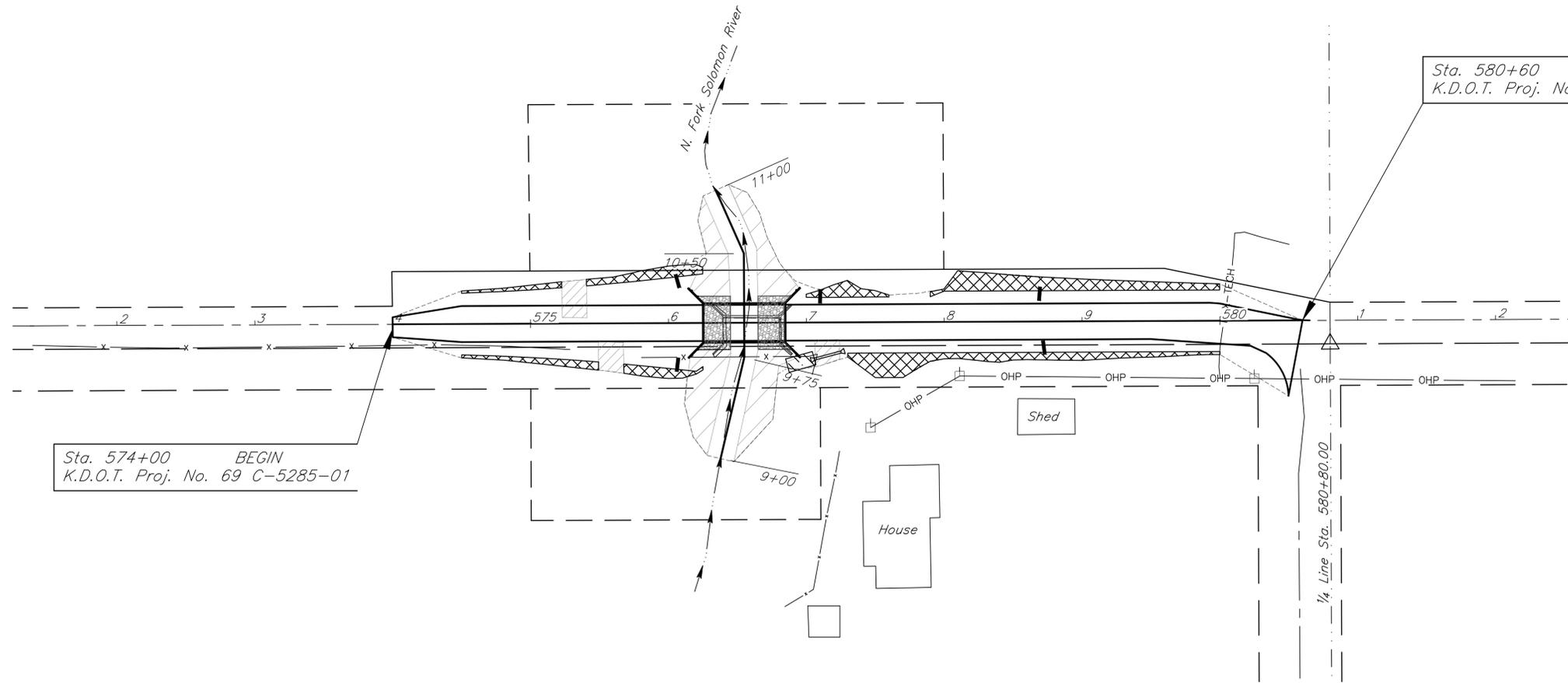
KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

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

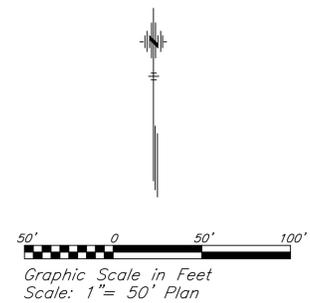
Scott H. Shields



EROSION CONTROL- CLASS 1, TYPE C				
STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
574+50 to 575+23	LT.	73'	VARIES	22.6
574+50 to 575+50	RT.	100'	VARIES	42.7
575+41 to 576+25	LT.	84'	VARIES	61.9
575+68 to 576+25	RT.	57'	VARIES	39.0
577+00 to 577+60	LT.	60'	VARIES	43.2
577+30 to 580+00	RT.	260'	VARIES	197.2
577+90 to 580+00	LT.	210'	VARIES	193.3
TOTAL EROSION CONTROL (CLASS 1, TYPE C) =				599.9

EROSION CONTROL- CLASS 2, TYPE E				
STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
576+86 to 577+06	RT.	20'	10'	22.2
TOTAL EROSION CONTROL (CLASS 2, TYPE E) =				22.2

-  EROSION CONTROL- CLASS 1, TYPE C
-  EROSION CONTROL- CLASS 2, TYPE E
-  BIODEGRADABLE LOG (20")
-  ENTRANCE
-  SLOPE PROTECTION (SHOT ROCK)
-  CHANNEL WORK 3:1



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

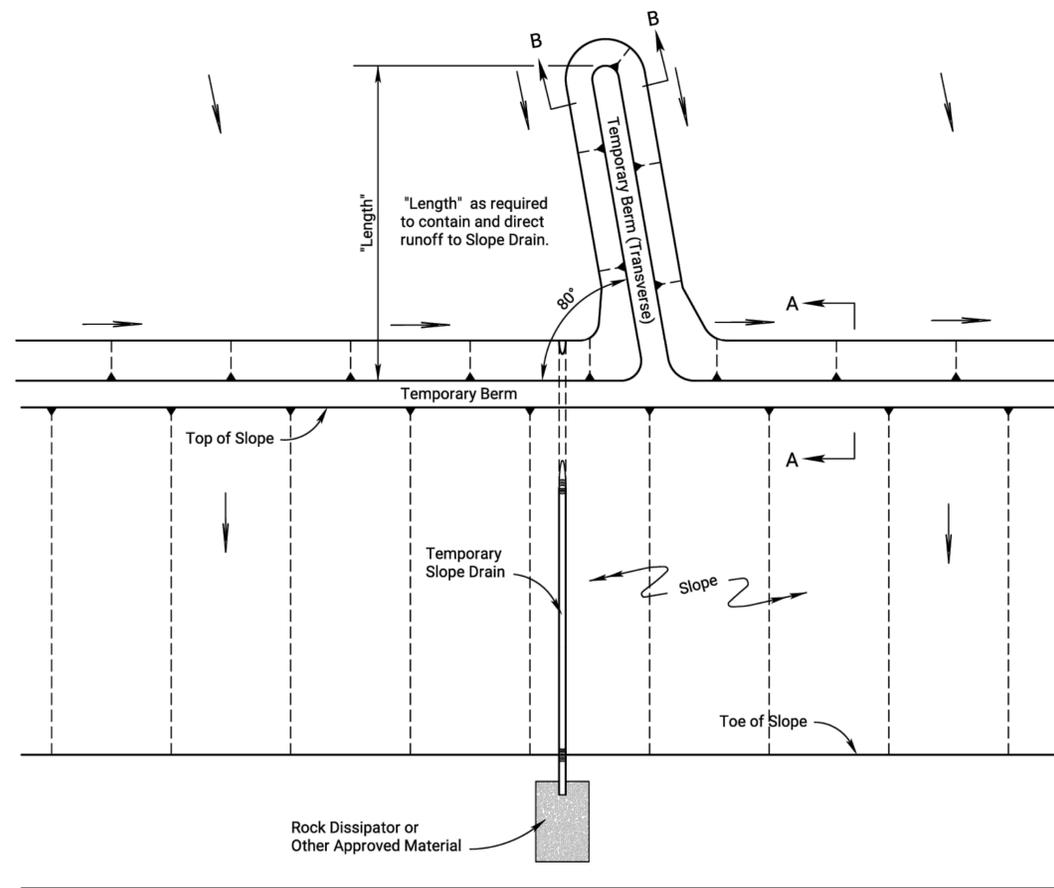
EROSION CONTROL SEEDING-SODDING

LA852A-EC

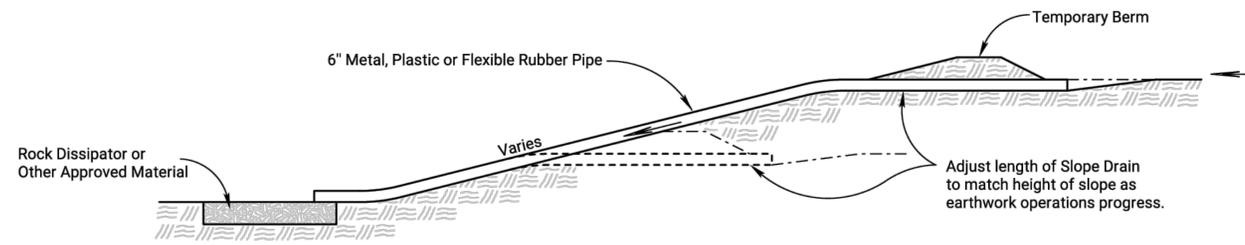
FHWA APPROVAL	01/04/2006	APP'D	Scott H. Shields
DESIGNED	MRM	DETAILED	MRM
DESIGN CK.	SHS	DETAIL CK.	SHS
QUANTITIES	MRM	TRACED	MRM
QUAN. CK.	SHS	TRACE CK.	SHS

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	22	47

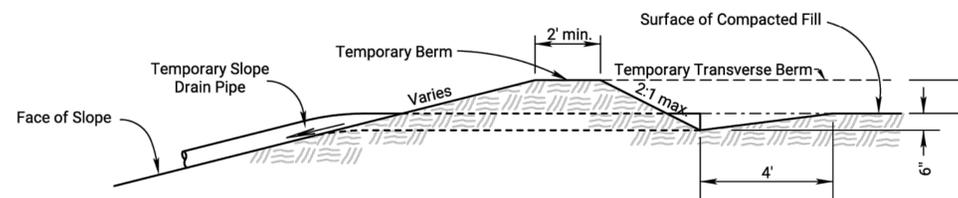


TYPICAL PLAN VIEW OF
TEMPORARY BERM AND
TEMPORARY SLOPE DRAIN
NO SCALE

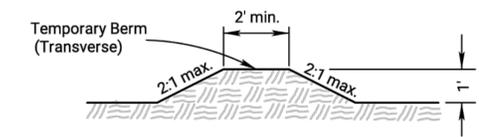


TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN
NO SCALE

- NOTES:
- 1) Temporary Slope Drain and Temporary Berm may be used on either project foreslopes or project backslopes.
 - 2) Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.
 - 3) Pipe shall be secured in place as approved by Engineer.
 - 4) Temporary Berms under 2,000 feet shall be bid by Set Price.

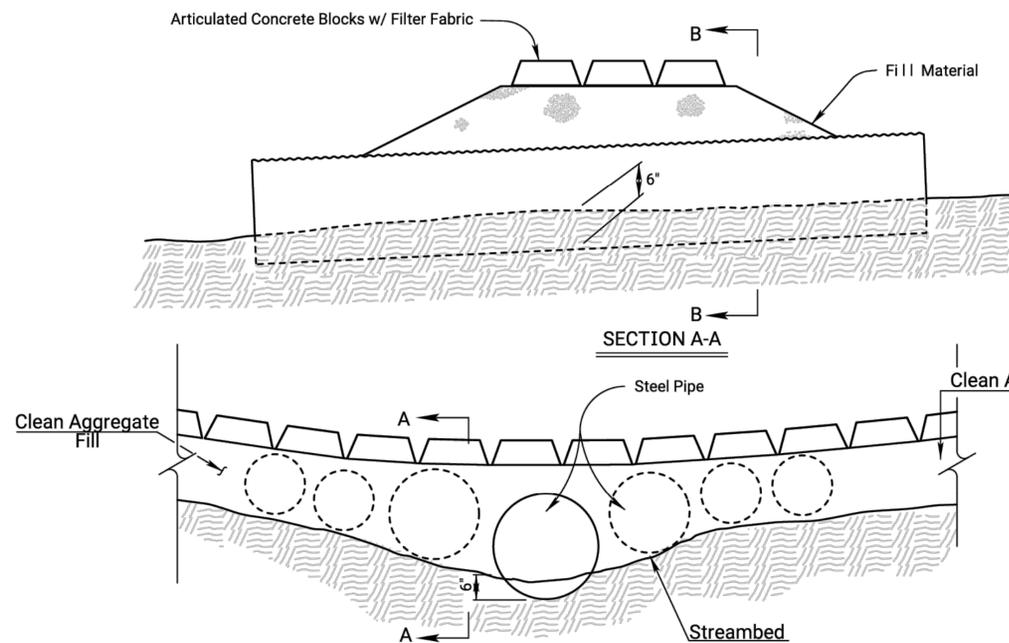


SECTION A-A
NO SCALE



SECTION B-B
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM
NO SCALE



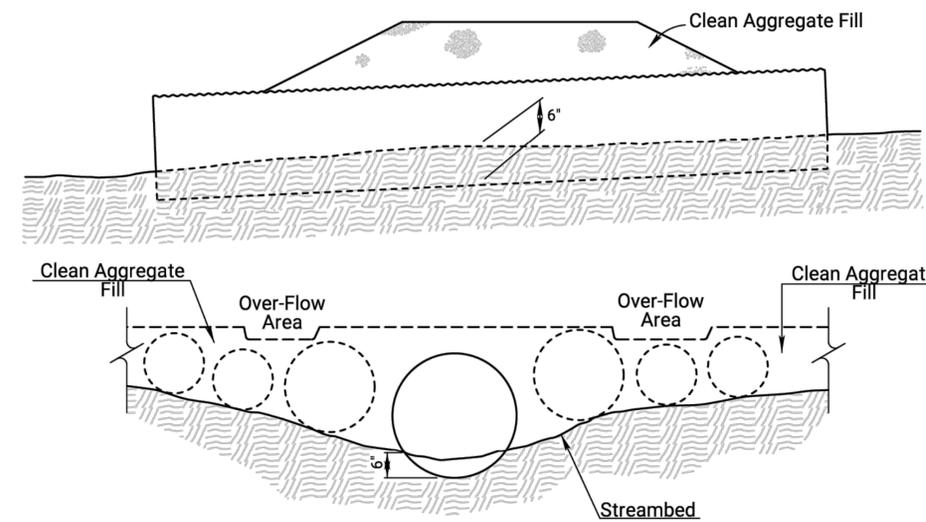
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)
NO SCALE

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.



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.

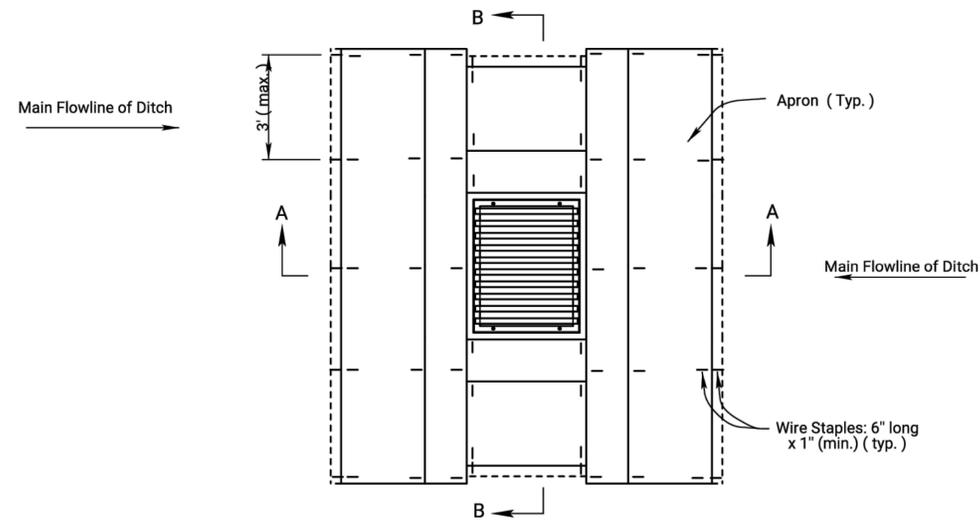
NO.	DATE	REVISIONS	BY	APPD
03	01-21-22	Temp Stream Crossing - Clean Aggregate Fill Note Added	M.R.D.	M.L.
02	08-24-21	Temp Stream Crossing - Clean Aggregate Fill Note Added	M.R.D.	M.L.
01	06-11-13	Revised Standard	M.R.M.	S.H.S.

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

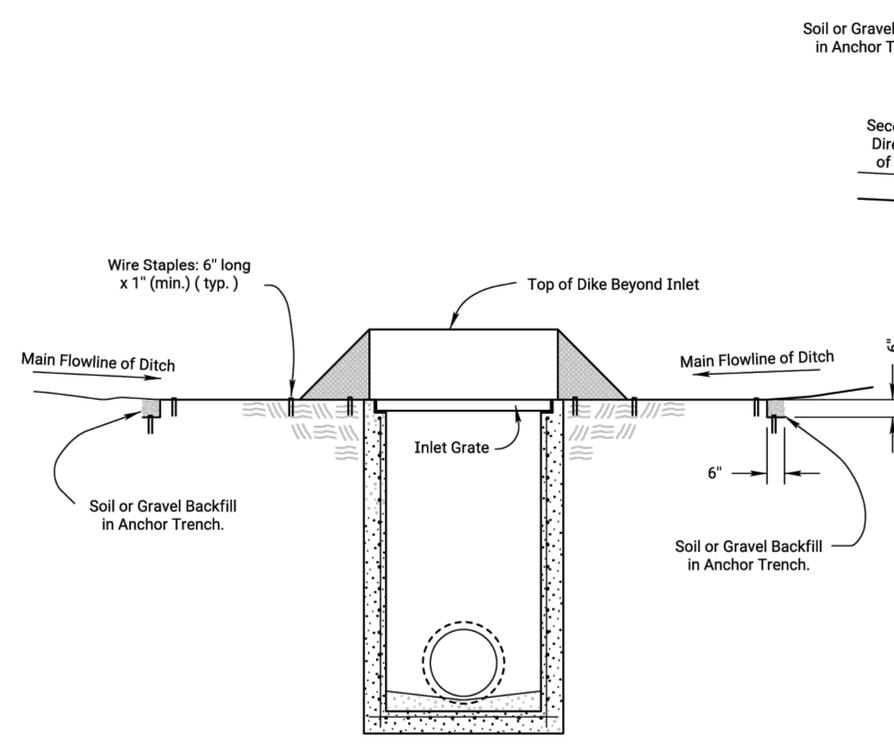
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

Mervin Lare

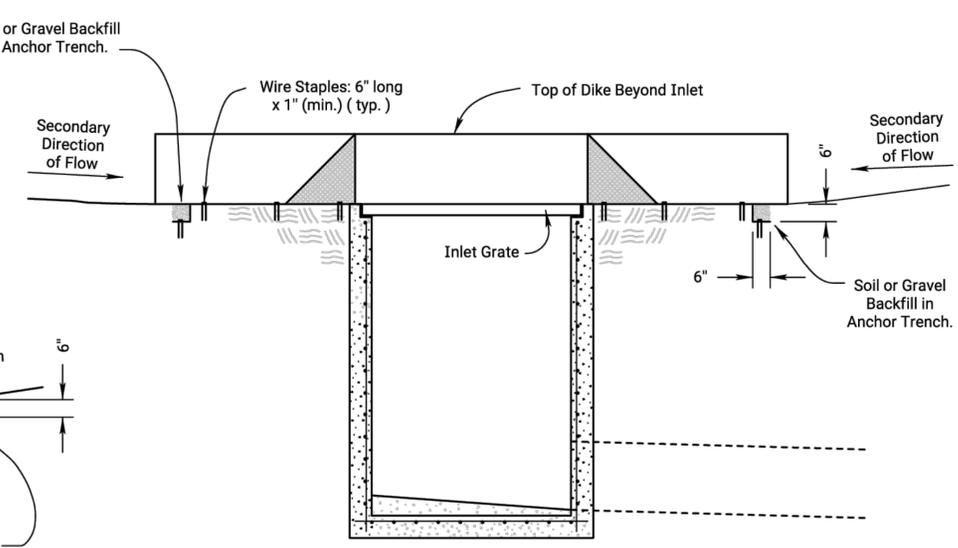
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	23	47



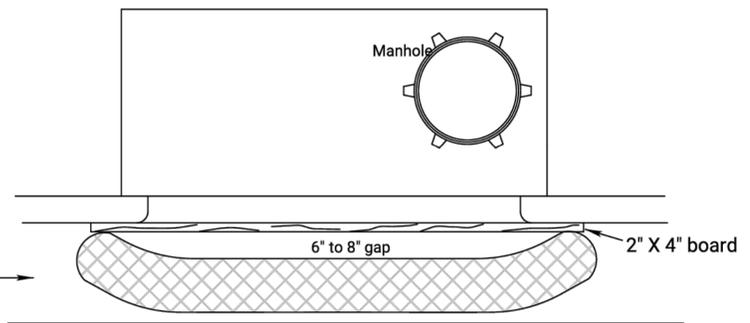
PLAN
TEMPORARY INLET SEDIMENT BARRIER
(TRIANGULAR SILT DIKE METHOD)
 NO SCALE



SECTION A - A

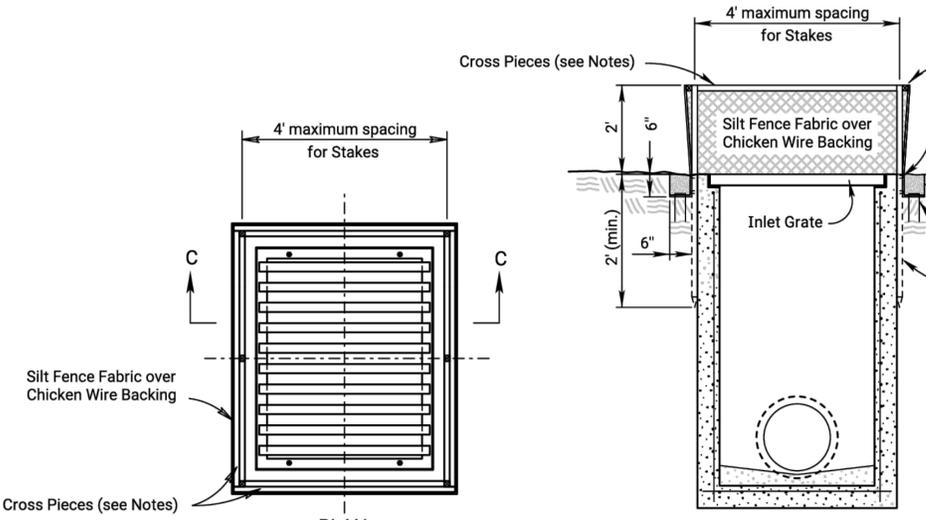


SECTION B - B



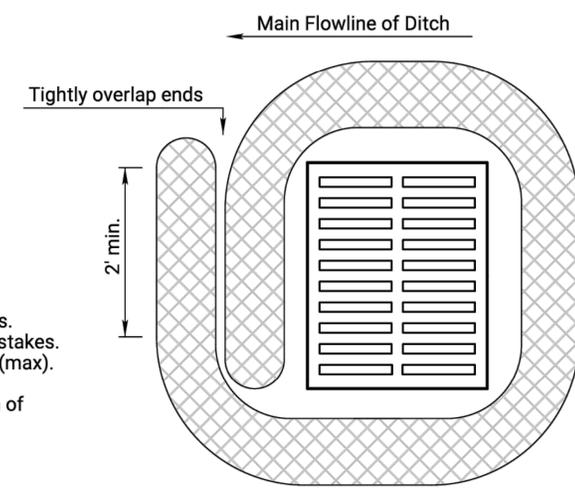
CURB INLET PROTECTION

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



PLAN
TEMPORARY INLET SEDIMENT BARRIER
(SILT 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.



DROP INLET USE
1'-6" TO 1'-8" DIAMETER LOG
BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

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

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

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

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

Scott H. Shields
 APPD

Plotted by: KDOT\CADD\Support_ks.gov 1-JUL-2022 00:11
 File: la852c.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	24	47

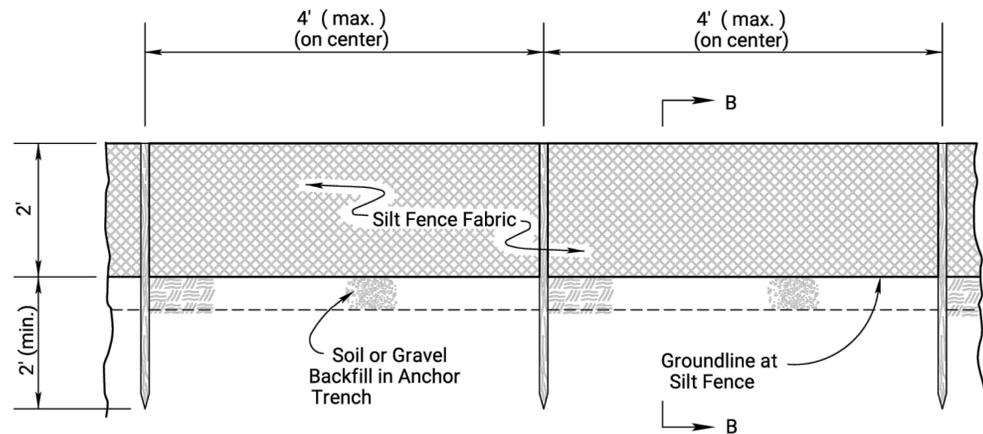
INSTALLATION NOTES

SILT FENCE:

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

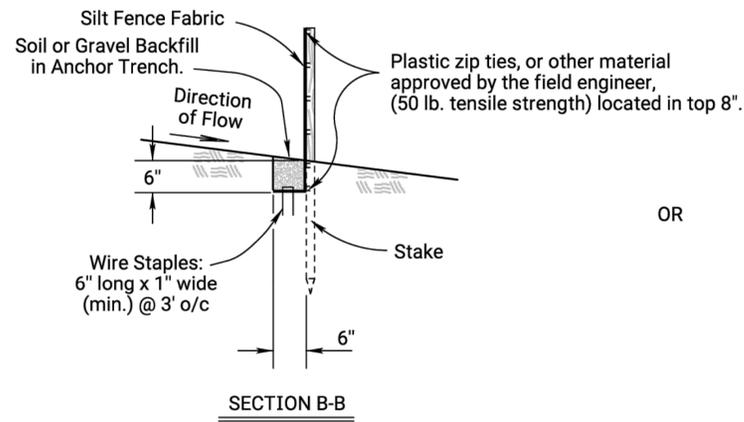
BIODEGRADABLE LOG OR FILTER SOCK

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



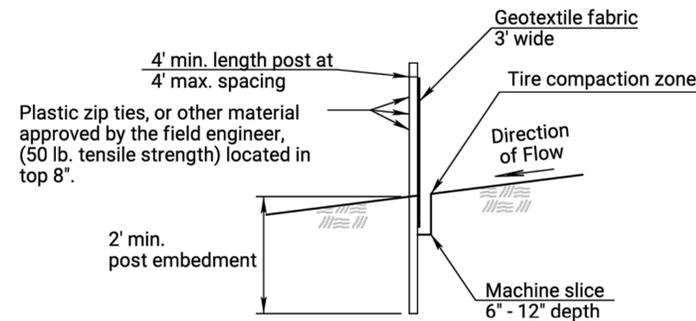
TYPICAL ELEVATION

**SILT FENCE BARRIER
NO SCALE**



SECTION B-B

OR



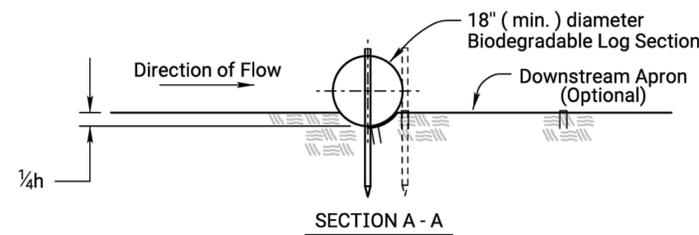
SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions

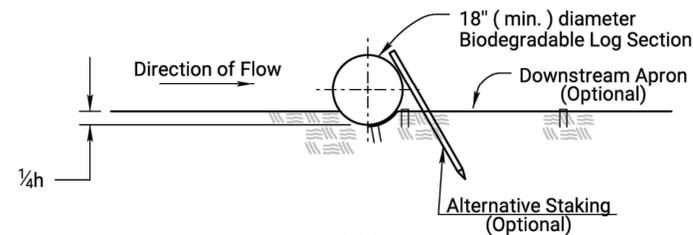
Slope Gradient	PRODUCT		
	9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
≤4H:1V	40	60	80
3H:1V	30	45	60

	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

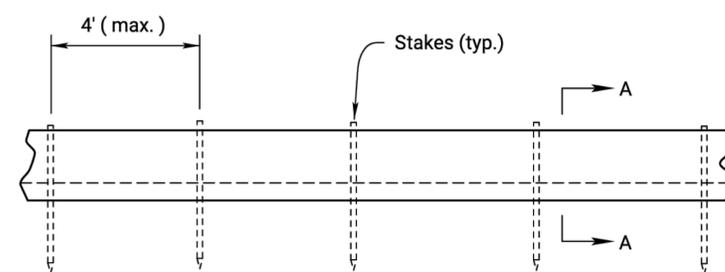
Deviations should be approved by the Field Engineer.



SECTION A - A



**ALT. DETAIL
OPTIONAL**



TYPICAL ELEVATION

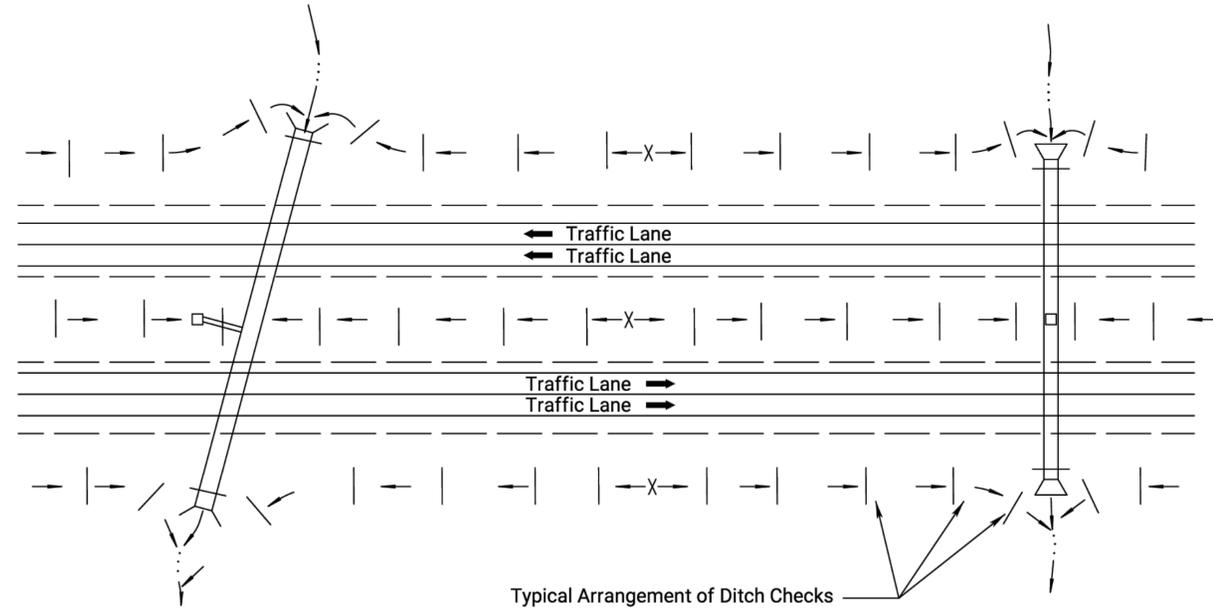
**BIODEGRADABLE LOG SLOPE INTERRUPTIONS
OR Filter Sock**

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.

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

KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE LA852D				
DESIGNED	S.H.S.	DETAILED	R.A.	APPD.
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN. CK.	TRACE CK.



TYPICAL DITCH CHECK LAYOUT PLAN
NO SCALE

20" BIOLOG CHECK SPACING	
DITCH @ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	125
2.0	60
3.0	40
4.0	30
5.0	25

NOTE: Use this spacing for all except Rock Ditch Checks.

18" FILTER SOCK CHECK SPACING	
DITCH @ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	110
2.0	55
3.0	35
4.0	25
5.0	20

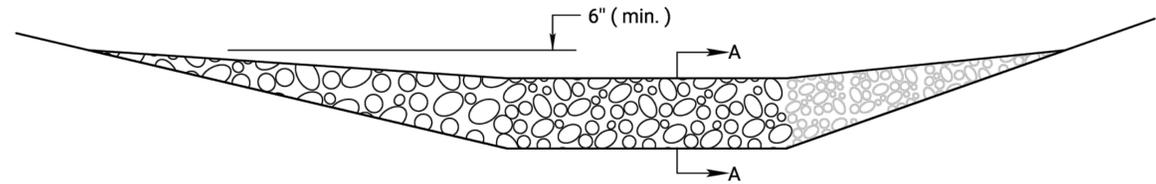
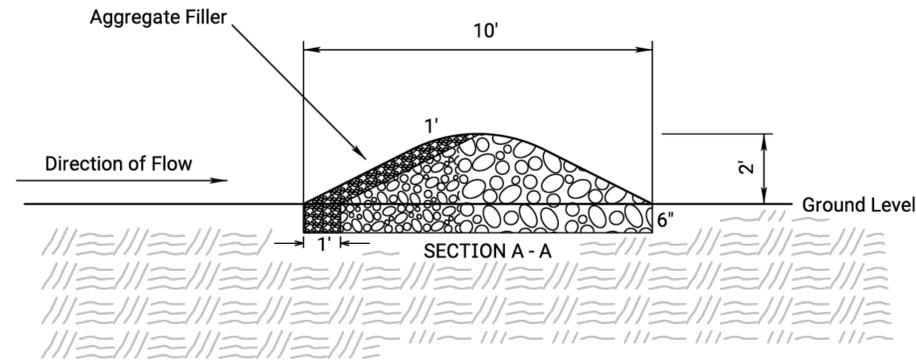
NOTE: Use this spacing for all except Rock Ditch Checks.

GENERAL NOTES

- 1) The choice of ditch check methods is at the option of the Contractor.
- 2) Use only rock checks in situations where the ditch slope is 6 percent or greater.
- 2) Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.

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

KANSAS DEPARTMENT OF TRANSPORTATION					
TEMPORARY EROSION AND POLLUTION CONTROL DITCH CHECKS					
LA852E					
DESIGNED	S.H.S.	DETAILD	R.A.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN. CK.	TRACE CK.
FHWA APPROVAL			09-14-16	APPD.	Scott H. Shields



TYPICAL ELEVATION

ROCK DITCH CHECK

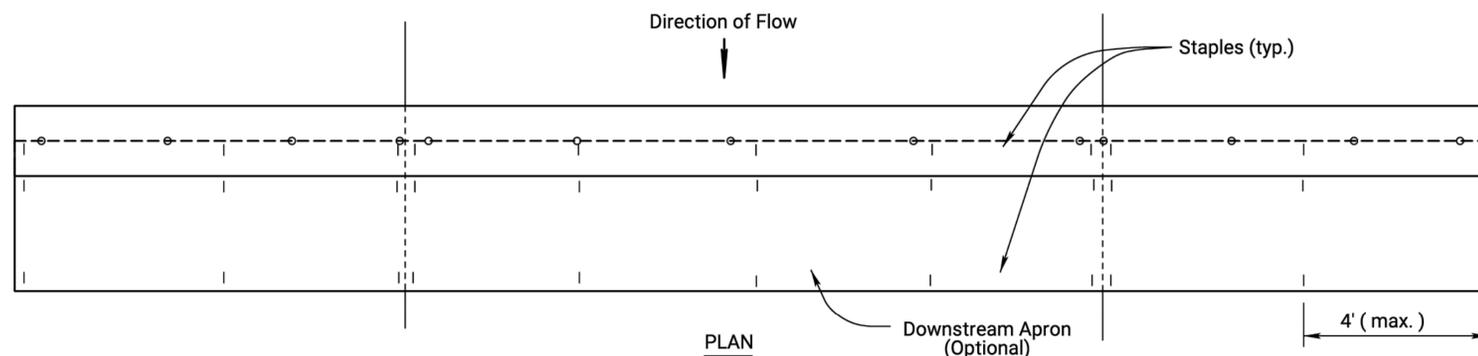
NO SCALE

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

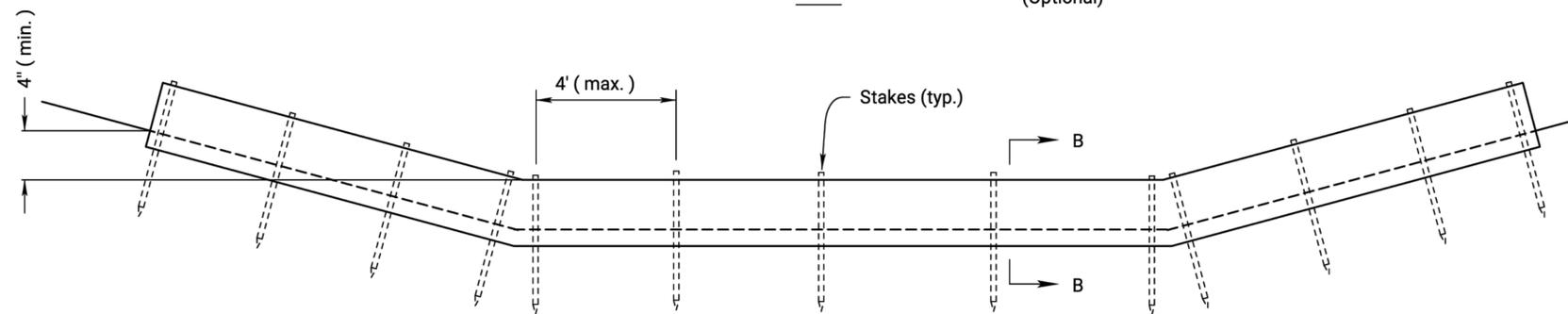
1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch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



PLAN

Downstream Apron (Optional)

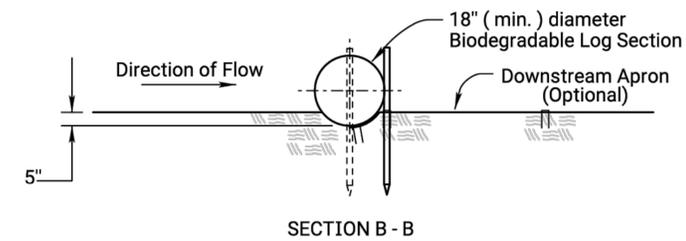
4' (max.)



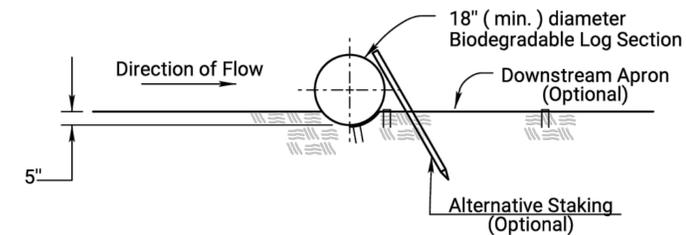
TYPICAL ELEVATION

BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check
NO SCALE



SECTION B - B



ALT. DETAIL OPTIONAL

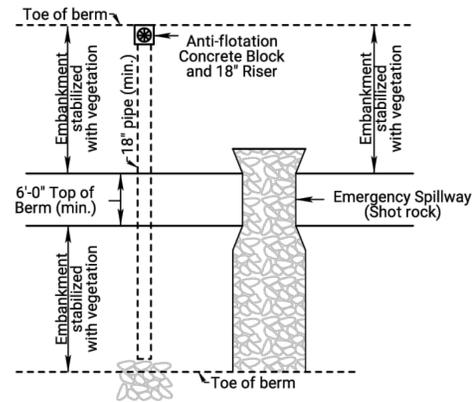
BIODEGRADABLE LOG DITCH CHECK NOTES

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

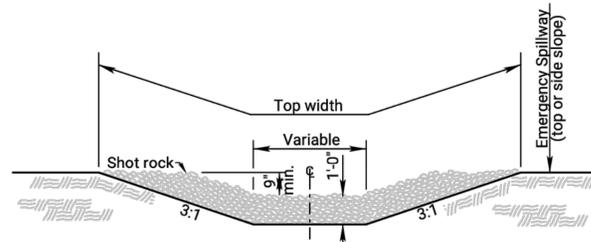
NO.	DATE	REVISIONS	BY	APPD
03	11-19-20	Revised Standard	M.R.D.	M.L.
02	08-10-16	Revised Standard	R.A.A.	S.H.S.
01	10-21-15	Revised Standard	R.A.A.	S.H.S.

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

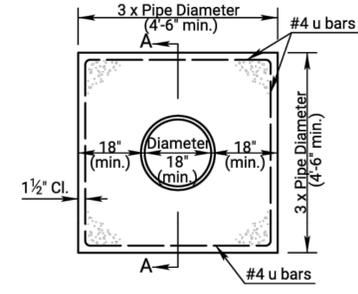
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	27	47



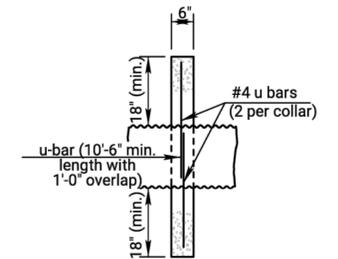
SEDIMENT STORAGE BASIN (PLAN)



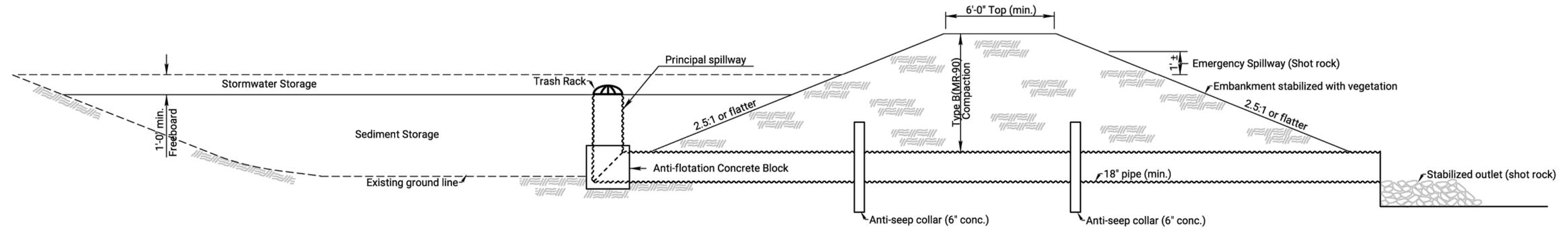
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



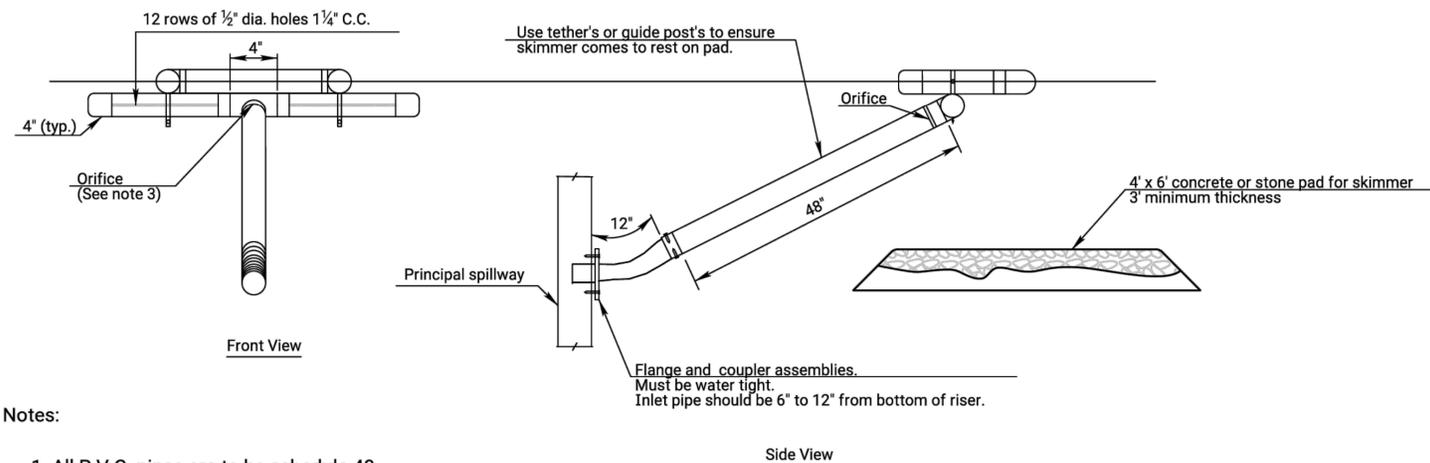
SECTION A-A



SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

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



Notes:

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

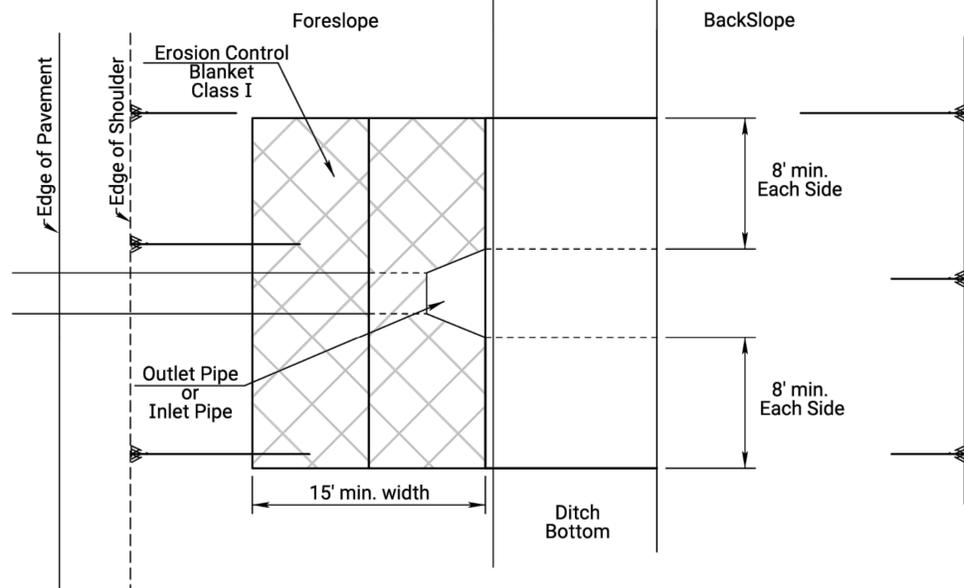
SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

02	09-03-13	Added Skimmer Dewatering Device	M.R.M.	S.H.S.
01	07-17-13	Revised Standard	M.R.M.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL SEDIMENT STORAGE BASIN				
LA852H				
DESIGNED	B.B.	DETAILED	B.B.	QUANTITIES
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN. CK.
TRACED	B.B.			
TRACE CK.	S.H.S.			

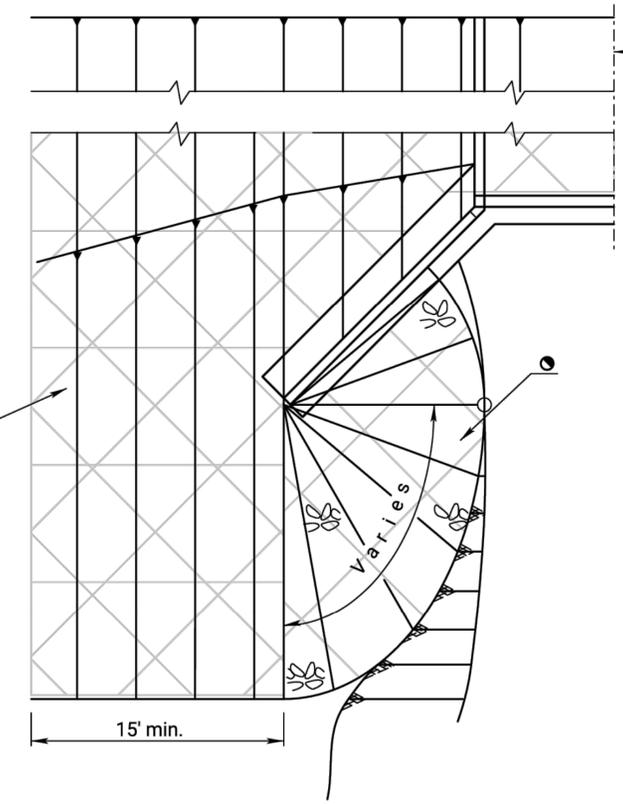
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	28	47



PARTIAL PLAN PIPE



Limits of Erosion Control Blanket

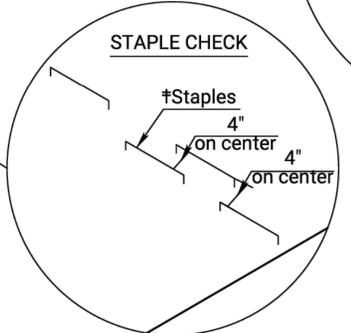
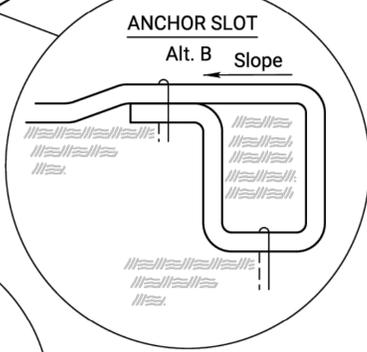
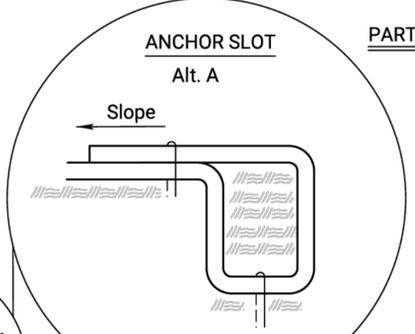
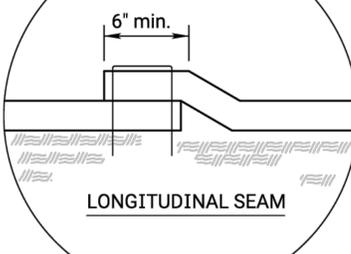
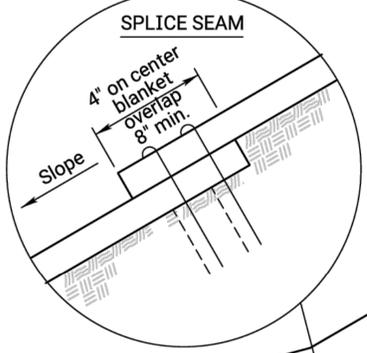


PARTIAL PLAN BOX CULVERT

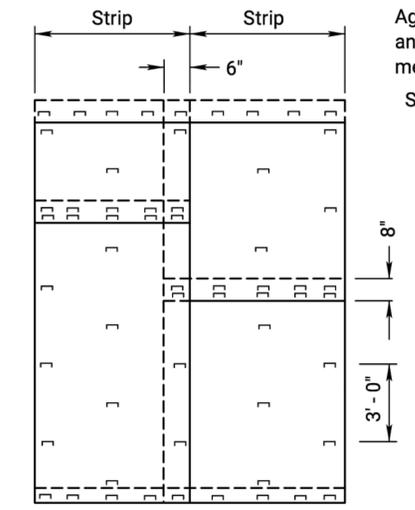
INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

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.

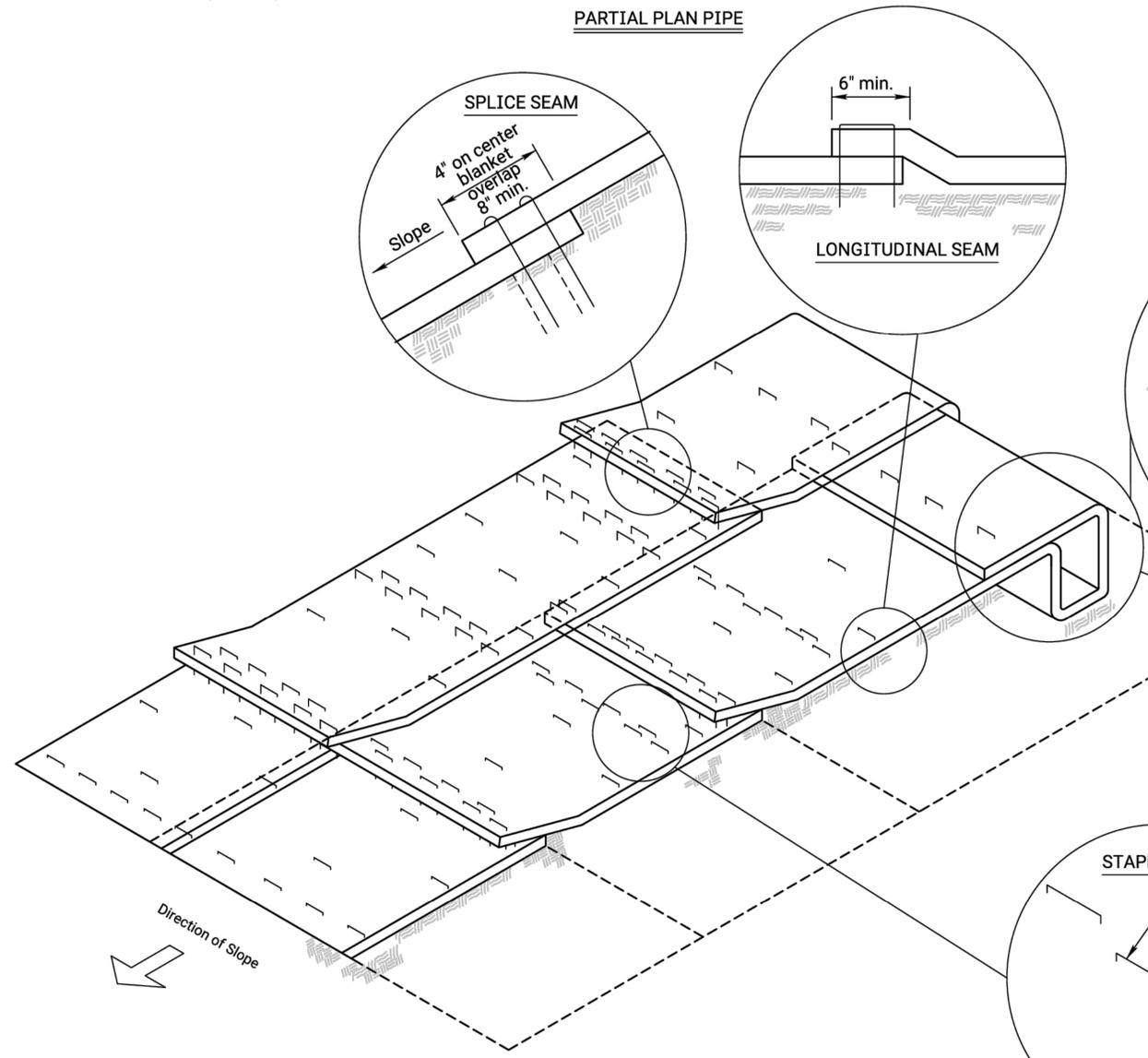


● Erosion Control Class I may be omitted if the area is immediately covered by permanent slope protection (where directed by the plans).



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.



ISOMETRIC VIEW

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

KANSAS DEPARTMENT OF TRANSPORTATION

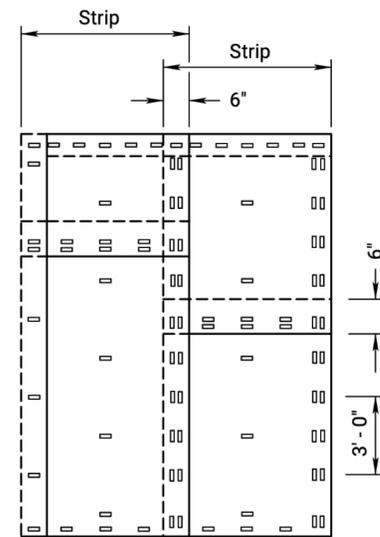
**INSTALLATION DETAIL
EROSION CONTROL CLASS 1
SLOPE PROTECTION**

LA855

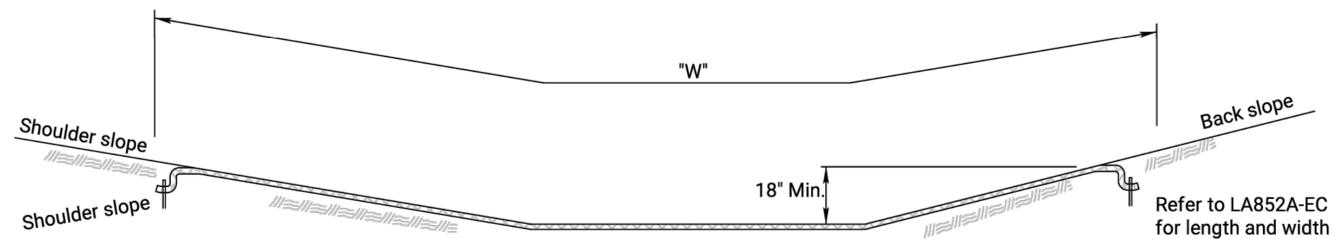
DESIGNED	R.A.A.	APPD.	Scott H. Shields
DETAIL CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

Plotted by : KDOT#CADD.Support_ks.gov 1-JUL-2022 00:21
File : la855.dgn

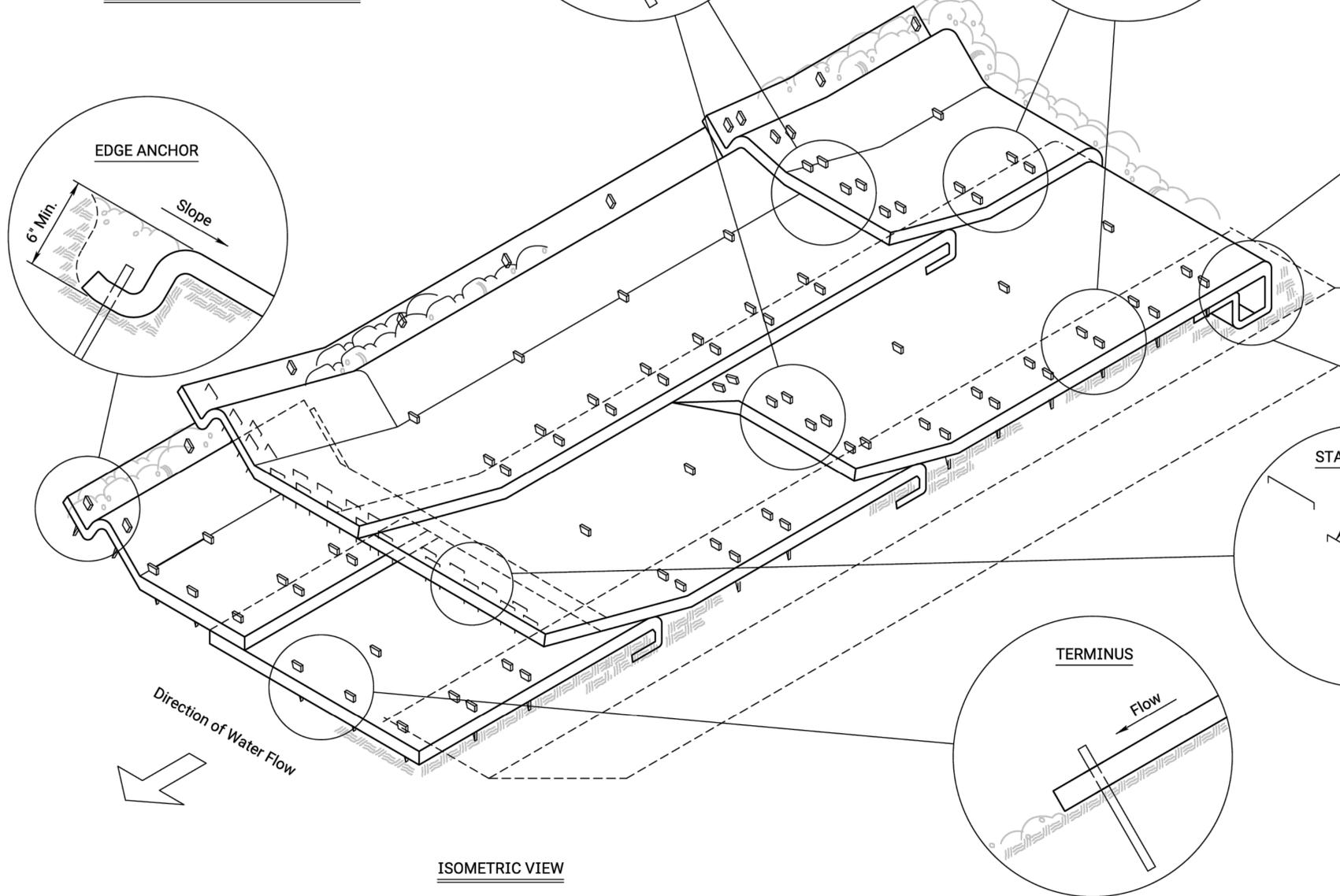
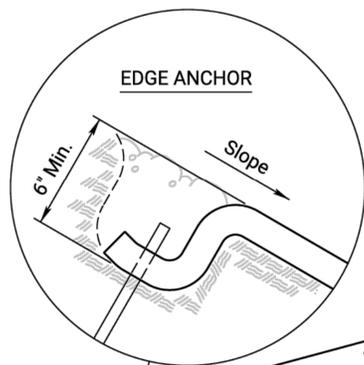
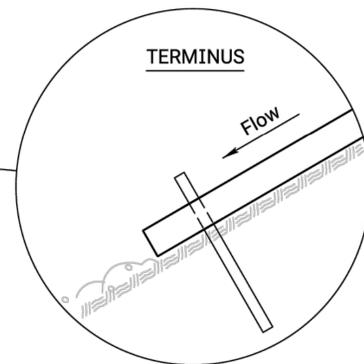
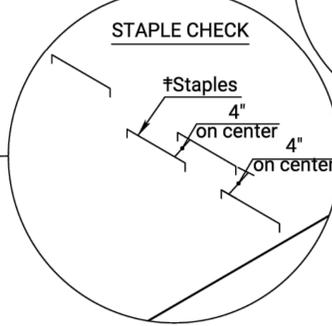
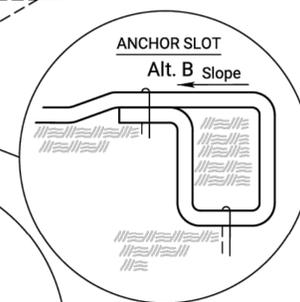
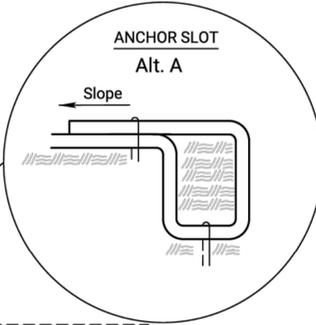
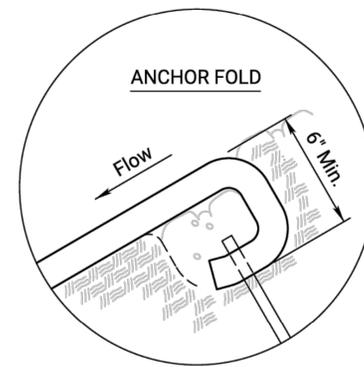
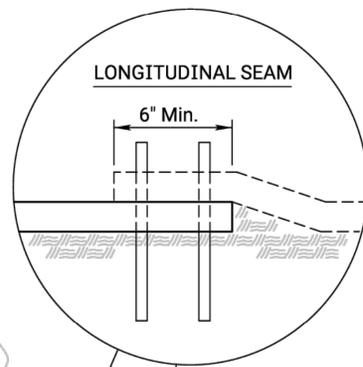
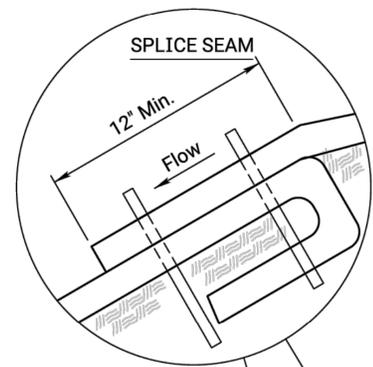
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	29	47



PLAN VIEW - ANCHORING DIAGRAM



CROSS SECTION (Ditch Lining)



ISOMETRIC VIEW

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

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

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

Plotted by : KDOT#CADD.Support_ks.gov 1-JUL-2022 00:22
File : la856.dgn

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

KANSAS DEPARTMENT OF TRANSPORTATION

**INSTALLATION DETAIL
EROSION CONTROL CLASS 2
FLEXIBLE CHANNEL LINER**

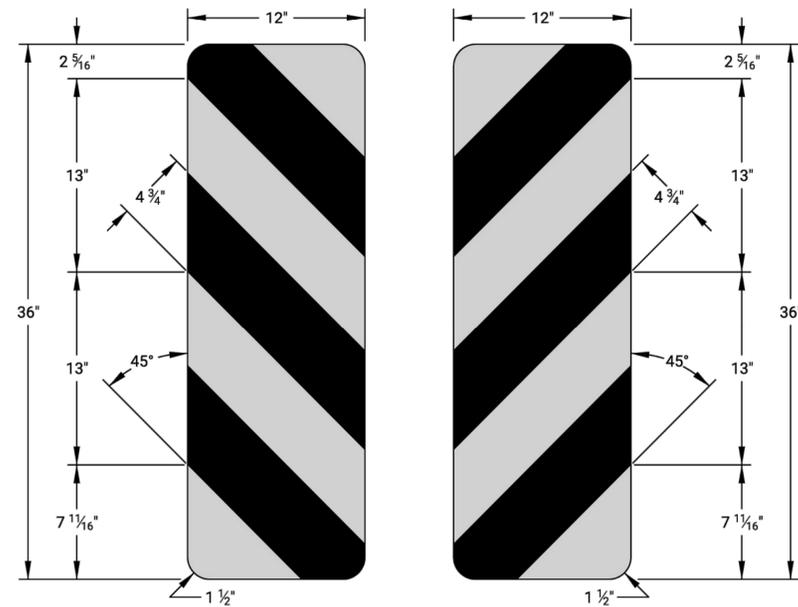
LA856

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

Scott H. Shields
KDOT Graphics Certified 06-20-2022

KDOT Graphics Certified

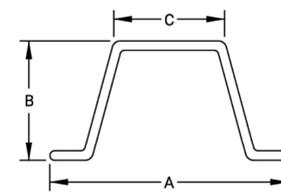
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	31	47



OM3-L

OM3-R

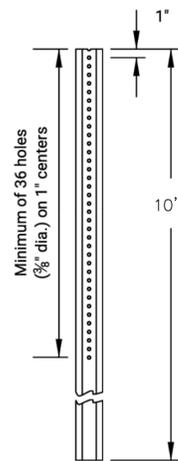
COLORS:
 Yellow Background (Reflective)
 Black Stripes (Non-reflective)



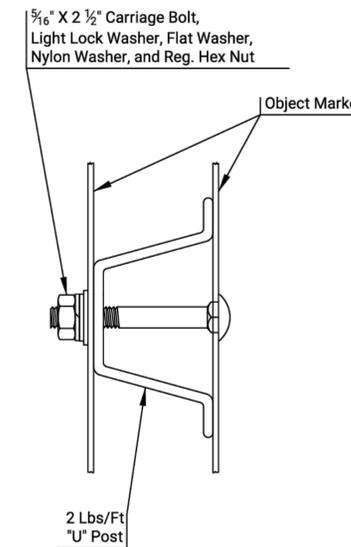
DIMENSIONS	
A	3 1/8"
B	1 17/32"
C	1 1/4"

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS



MOUNTING DETAILS

GENERAL NOTE:
 See flat sheet sign blank standard sheets for the 12" x 36" sign blank details.
 The object markers shall be covered with Type IV or better High Intensity yellow retroreflective sheeting.

TYPE 3 OBJECT MARKER

All dimensions are in inches unless otherwise noted.
 See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS	BY	APPD.
KANSAS DEPARTMENT OF TRANSPORTATION				
DESIGN DETAILS FOR TYPE 3 OBJECT MARKERS (BACK TO BACK)				
TE417		10-01-19		
FHWA APPROVAL	10-01-19	APPD.	Eric W. Nichol	
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN. CK.
		TRACED		
		TRACE CK.		

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	32	47

DETAILED SPECIFICATIONS FOR FLAT SHEET SIGNS AND OVERLAY PANELS

All new flat sheet sign blanks shall be of the fabrication and thickness shown on the flat sheet blank detail sheets, unless other details are shown in the plans.

Flat sheet blanks shall be used for signs that are less than or equal to 7'-0" in length and/or less than or equal to 4'-0" in height, unless other details are shown in the plans. Flat sheet blanks shall also be used for signs that are 4'-0" in length and less than or equal to 8'-0" in height, unless other details are shown in the plans.

The design details for signs (color, letter height, and letter series) shall be as shown in the FHWA Standard Highway Signs and Markings book (2004 edition and supplements), unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The school warning signs, the "SCHOOL" portion of the S5-1 sign, S4-3p plaque, and any supplemental plaques used with these warning signs shall have a fluorescent yellow-green background, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

DETAILED SPECIFICATIONS FOR REINFORCED PANEL SIGNS

All new reinforced sign panels shall be of the fabrication and thickness shown on the reinforced panel detail sheets. If extrusheet fabricated sign panels are used, they shall be of the length, width and in the position shown. If extrusheet fabricated panel dimensions are not shown, a line of legend should be placed entirely on one panel. If extruded fabricated sign panels are used, either 1'-0" or 6" panels shall be used. The 6" panels shall be used only at the top or bottom of signs.

Reinforced panels shall be used for signs that are greater than 7'-0" in length or greater than 4'-0" in height, unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

Letters and numbers on reinforced panel signs are modified Series "E" unless otherwise shown.

Spacing table dimensions are in inches.

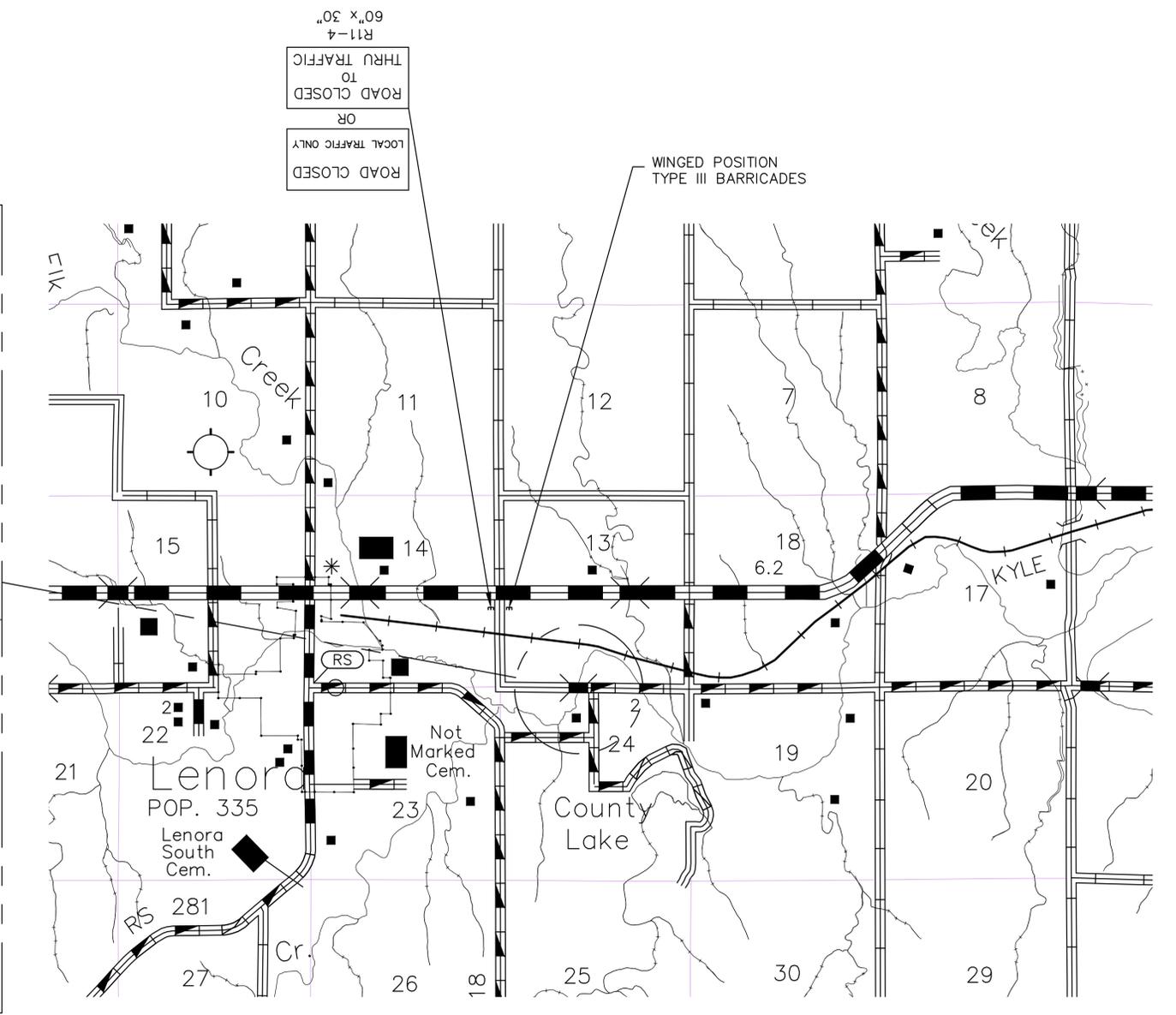
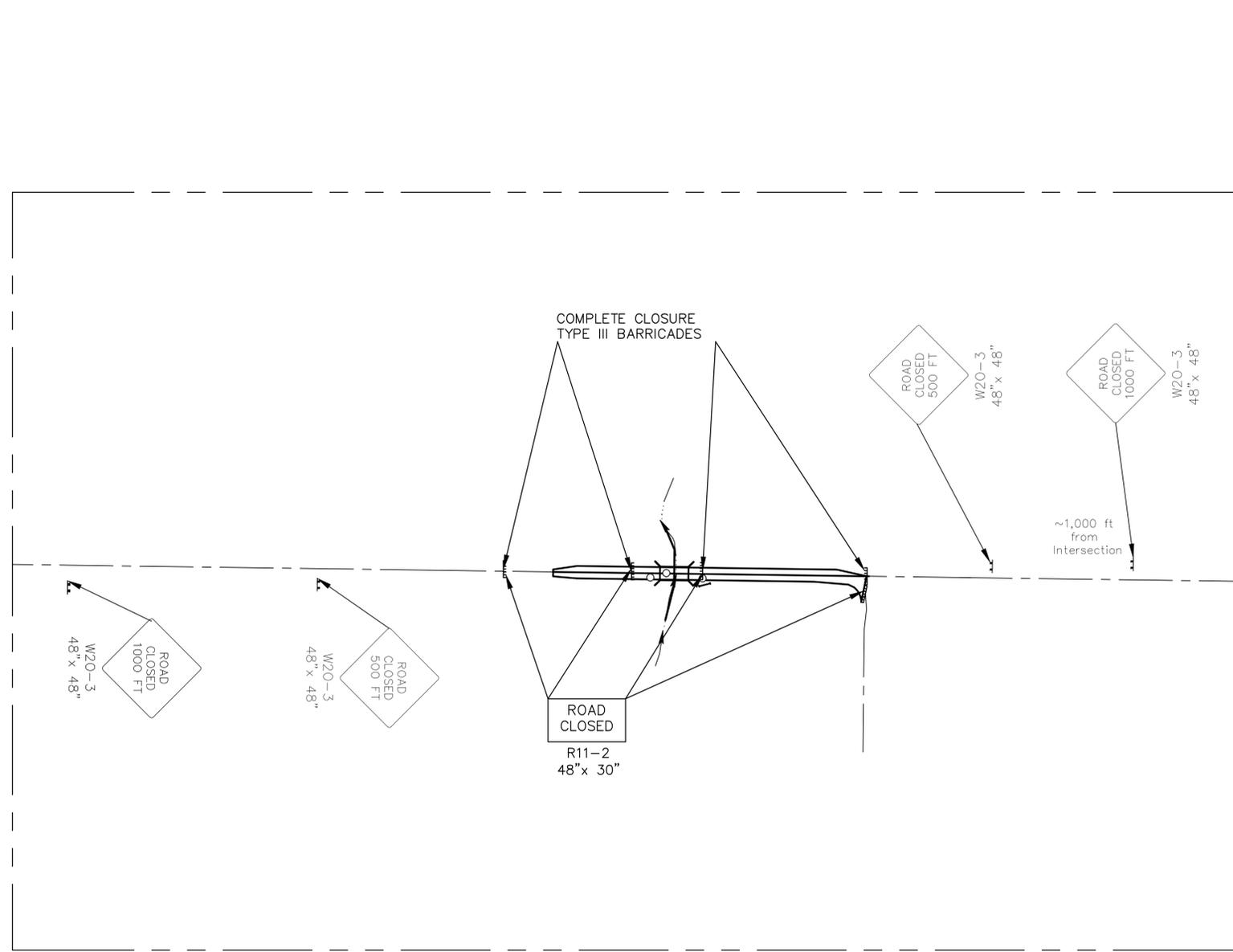
Plotted by : KDOT#CADD.Support_ks.gov 7-OCT-2022 22:01
File : te590.dgn

NO.	DATE	REVISIONS	BY	APPD
02	10-01-19	Changed notes	D.D.G.	E.W.N.
01	07-23-10	Changed Notes and Sheeting Type	D.D.G.	D.B.

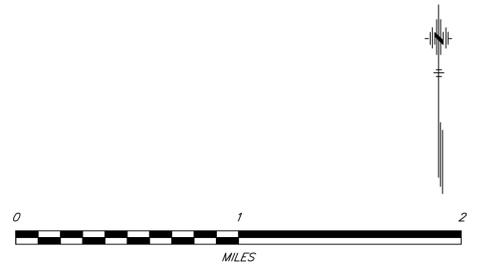
KANSAS DEPARTMENT OF TRANSPORTATION				
DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS				
TE590			07-01-03	
FHWA APPROVAL 10-01-19 APPD. Steven A. Buckley				
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.
			TRACED	
			TRACE CK.	

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	33	47



X:\loc2\kca1\K05285-Norton-077\91\ACAD\EC_5285_Design.dwg Traffic Control 4/29/2025 8:41 AM



TRAFFIC CONTROL PLAN

PENCO ENGINEERING, P.A.
PLAINVILLE, KANSAS

DESIGNED BY: JGD	SCALE: As Shown
DRAWN BY: AMN	PROJ. NO.: 69 C-5285-01
CHECKED BY: JJD	DATE: 2025

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	34	47

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.

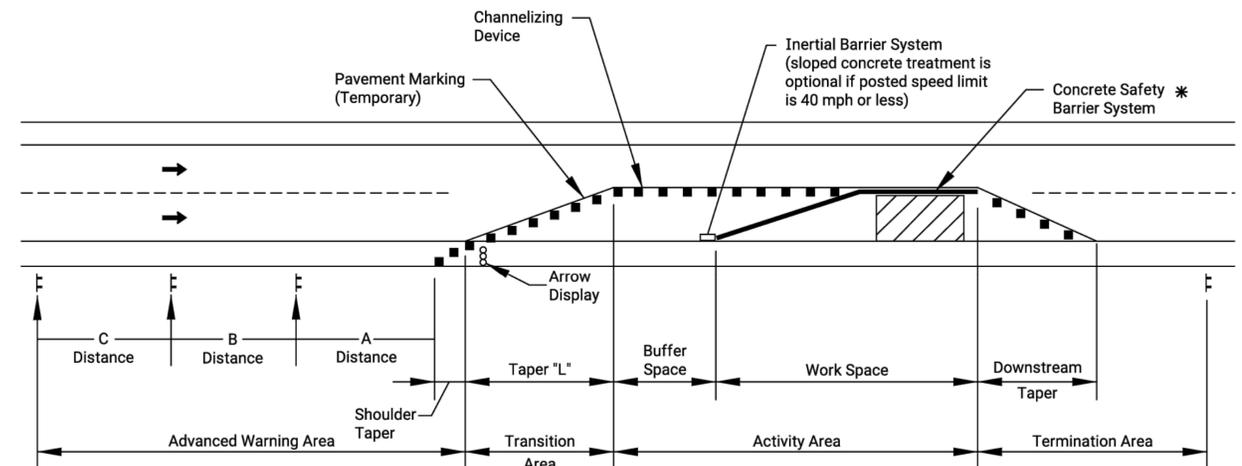
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

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:

- 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.
- 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.
- Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.
- Place directional indicator barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.
- Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.

Buffer Space

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

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

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

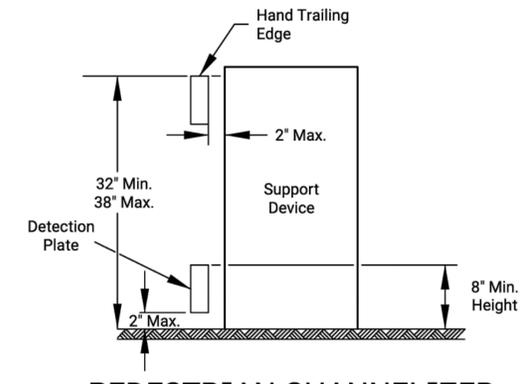
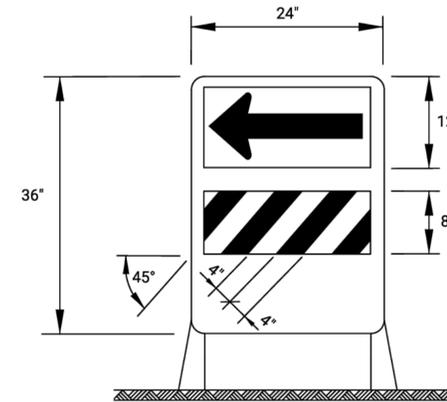
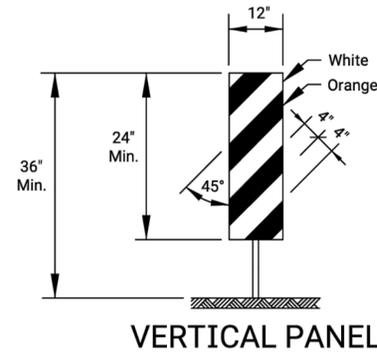
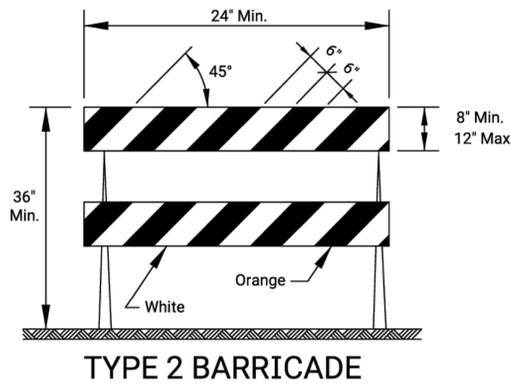
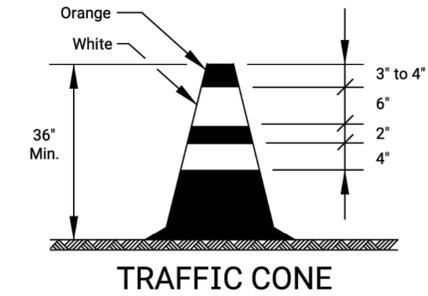
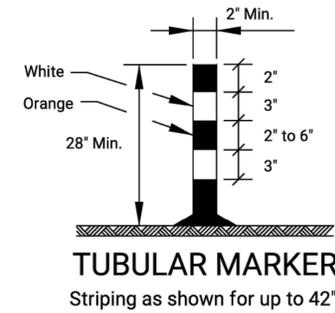
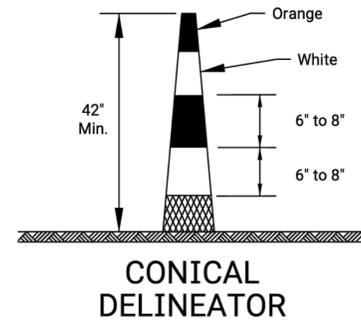
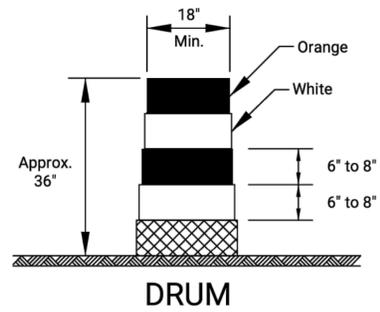
NO.	DATE	REVISIONS	BY	APPD
02	03-13-18	W8-15p usage changed to Shall	R.W.B.	E.K.G.
01	08-18-15	Channelizer spacing info	R.W.B.	K.E.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

TE700

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



TYPE 2 BARRICADE
For rails less than 36" long, 4" wide stripes may be used. All stripes shall slope downward to the traffic side for channelization.

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

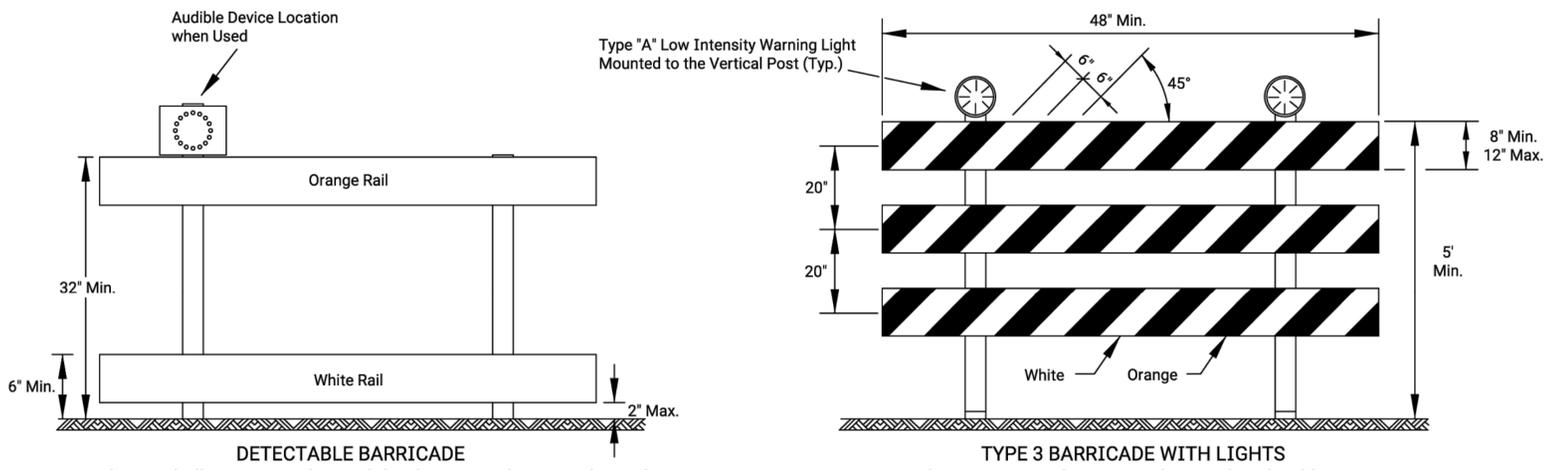
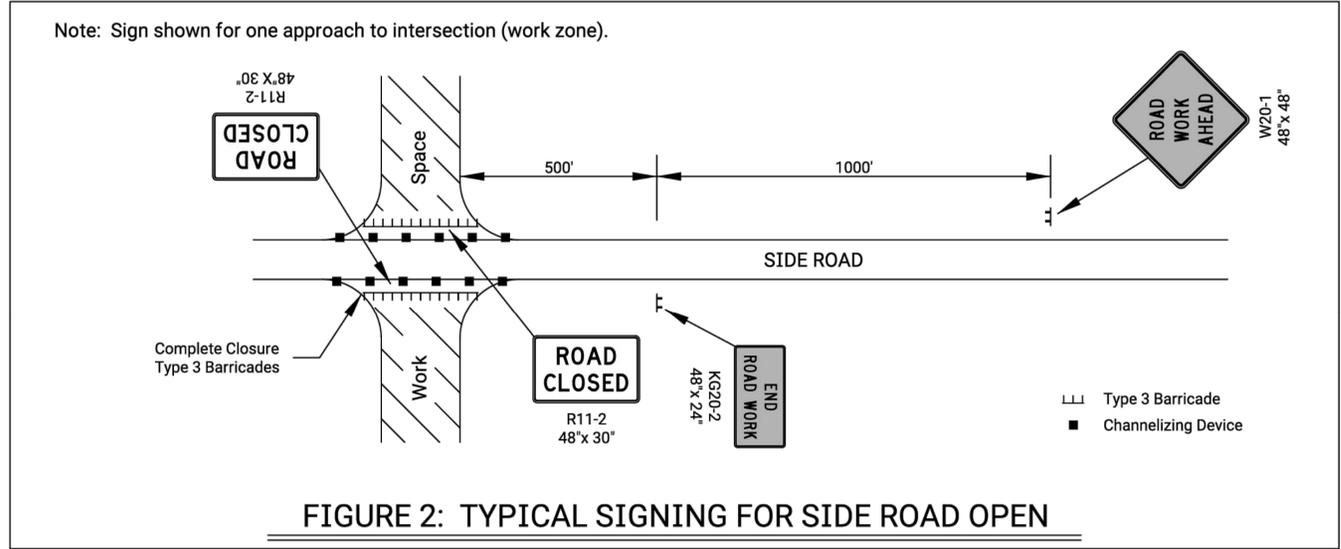
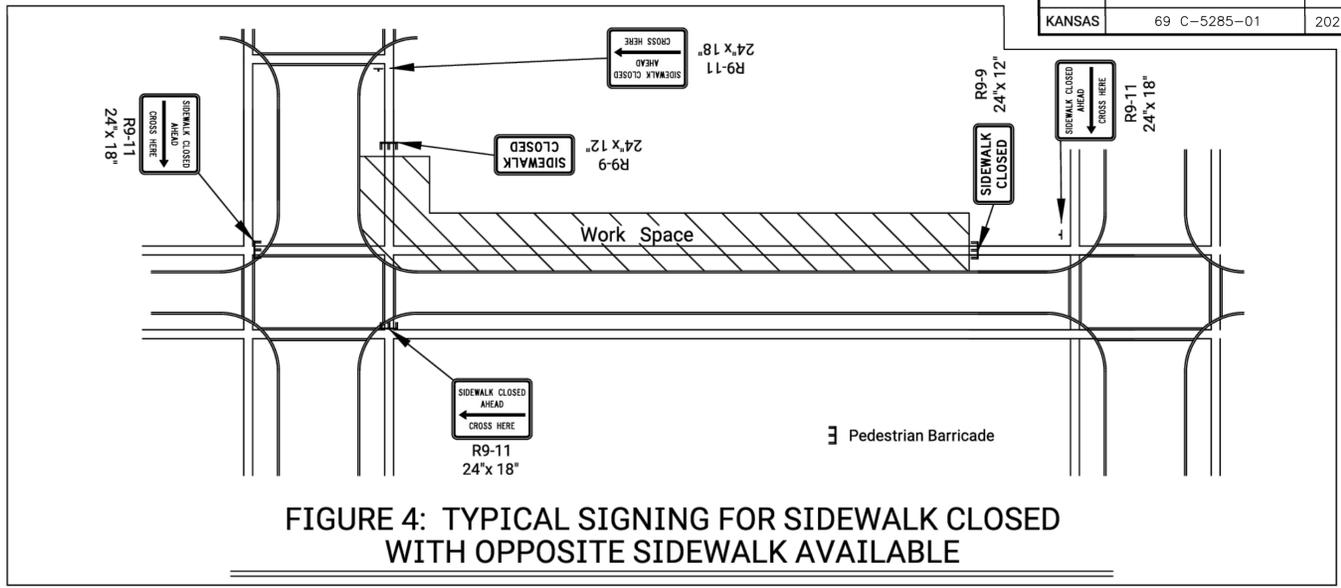
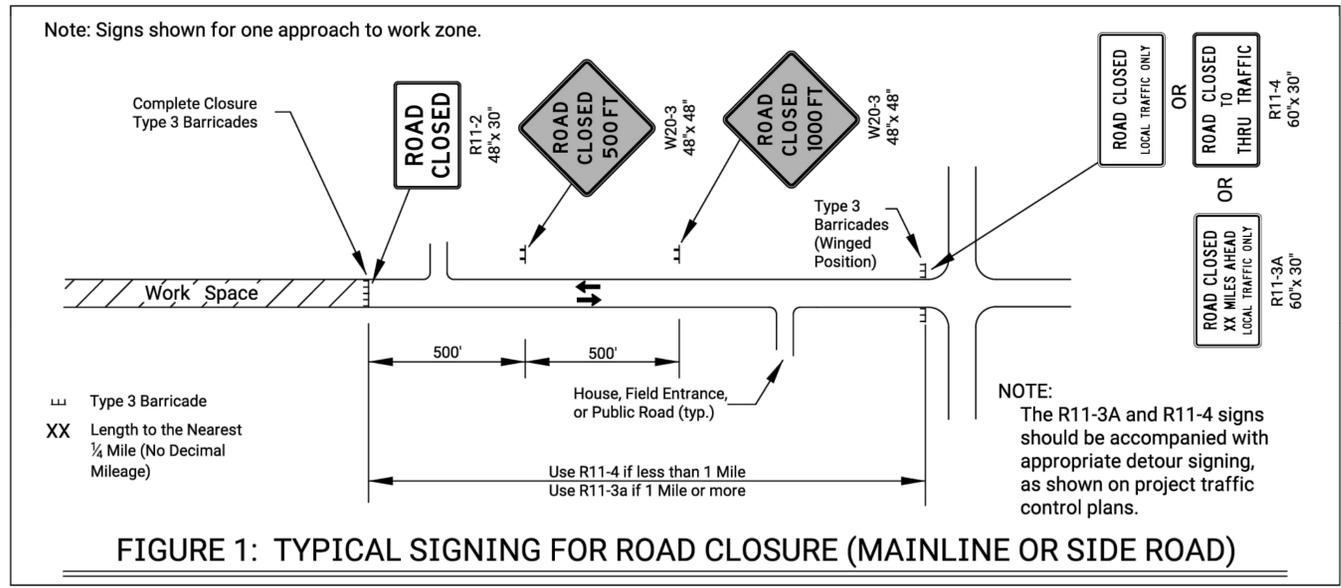
DIRECTION INDICATOR BARRICADE
The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.

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

Item	Location	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	
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.

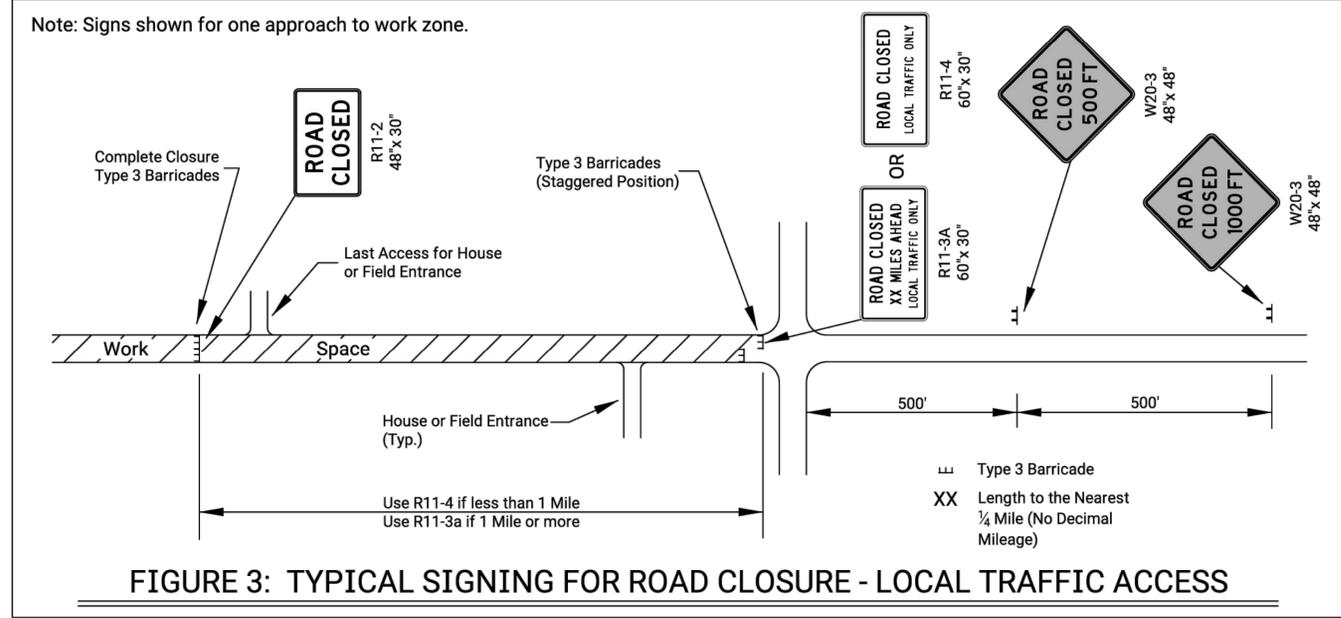
NO.	DATE	REVISIONS	BY	APPD.
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL CHANNELIZING DEVICES				
TE702				
FHWA APPROVAL		06-01-15		APPD. Kristina Ericksen
DESIGNED	L.E.R.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	TRACE CK.



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

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

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



ROAD CLOSED GENERAL NOTES

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

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

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

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

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

Plotted by: KDOT#CADD.Support_ks.gov 4-JUN-2022 00:02
File: te704.dgn

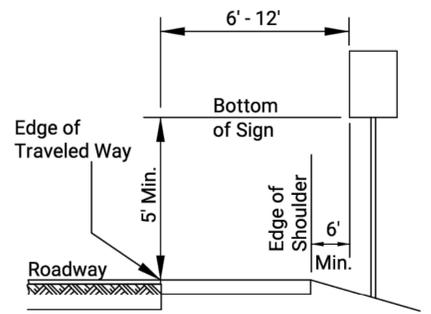
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL CLOSURES				
TE704				
FHWA APPROVAL	06-01-15	APPD.	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	
KDOT Graphics Certified 05-24-2022				

KDOT Graphics Certified

SIGN LAYOUT INFORMATION

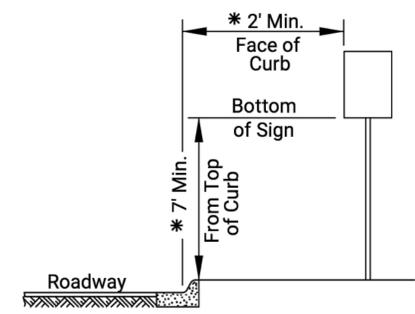
 END ROAD WORK KG20-2	Std. Size Expwy/Freeway 6" C 48"x 24"	 GROOVED PAVEMENT W8-15	Std. Size Expwy/Freeway 8" D 48"x 48"
 WAIT FOR PILOT CAR KG20-5	Std. Size Expwy/Freeway 6" C 48"x 24"	 LOOSE GRAVEL W8-7	Std. Size Expwy/Freeway 8" D 48"x 48"
 WORK ZONE KM4-20	Std. Size Expwy/Freeway 3" C 24"x 6"	 W8-15p	Std. Size Expwy/Freeway 30"x 24"
 NEXT X MILES W7-3a	Mileage to be Determined by the Engineer.		
 UNEVEN LANES W8-17	Std. Size Expwy/Freeway 48"x 48"	 UNEVEN LANES W8-11	Std. Size Expwy/Freeway 8" D 48"x 48"
 SHOULDER DROP-OFF W8-17P (Optional)	Std. Size Expwy/Freeway 30"x 24"		
 NB US-75 CLOSED FOLLOW DETOUR SP-01 (Special Sign)	Std. Size Expwy/Freeway 6" C 10" D		
 US-75 CLOSED NORTH OF TOPEKA FOLLOW DETOUR SP-02 (Special Sign)	Std. Size Expwy/Freeway Uppercase: 6" C Lowercase: 4.5" C	Std. Size Expwy/Freeway Uppercase: 10" D Lowercase: 8" D	

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



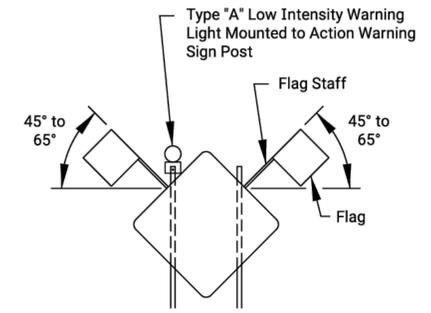
RURAL

- 1) Ground-mounted signs shall be mounted at a minimum height of 5' measured from the bottom of sign to the near edge of the pavement.
- 2) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.
- 3) The height of the secondary sign mounted below another sign may be 4' measured from the bottom of the sign to the near edge of the pavement. Signs shall not overlap each other.



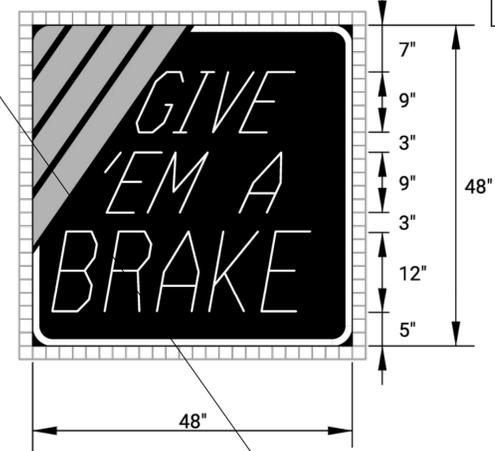
URBAN

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

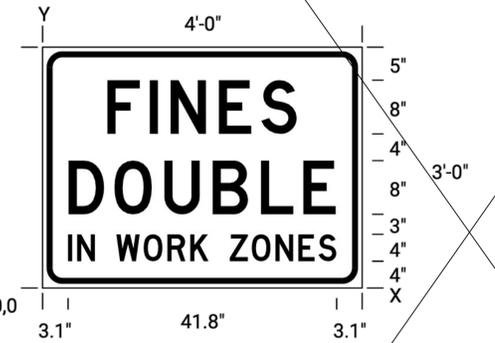


When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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



KI-104a



KI-105a

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

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

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

Notes:

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

NO.	DATE	REVISIONS	BY	APPD.

KANSAS DEPARTMENT OF TRANSPORTATION

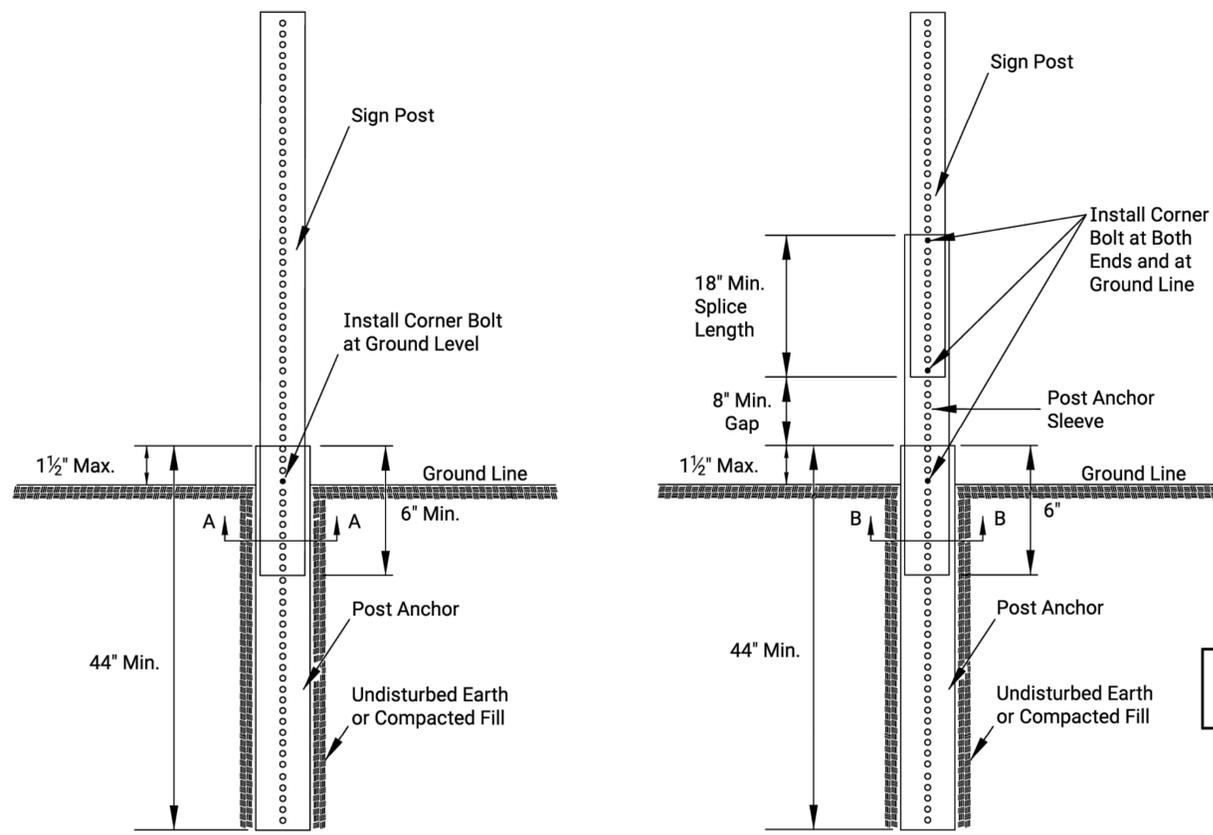
TRAFFIC CONTROL SIGN INFORMATION

TE710

DESIGNED	R.W.B.	06-01-15	APPD.	Kristina Erickson
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACED	TRACE CK.

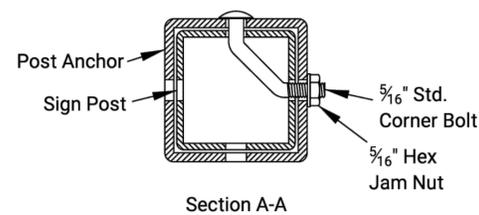
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	38	47

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

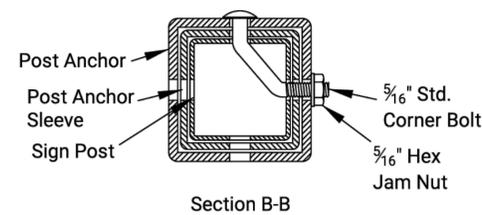


P.S.S.T. Detail

Telescoping P.S.S.T. Detail



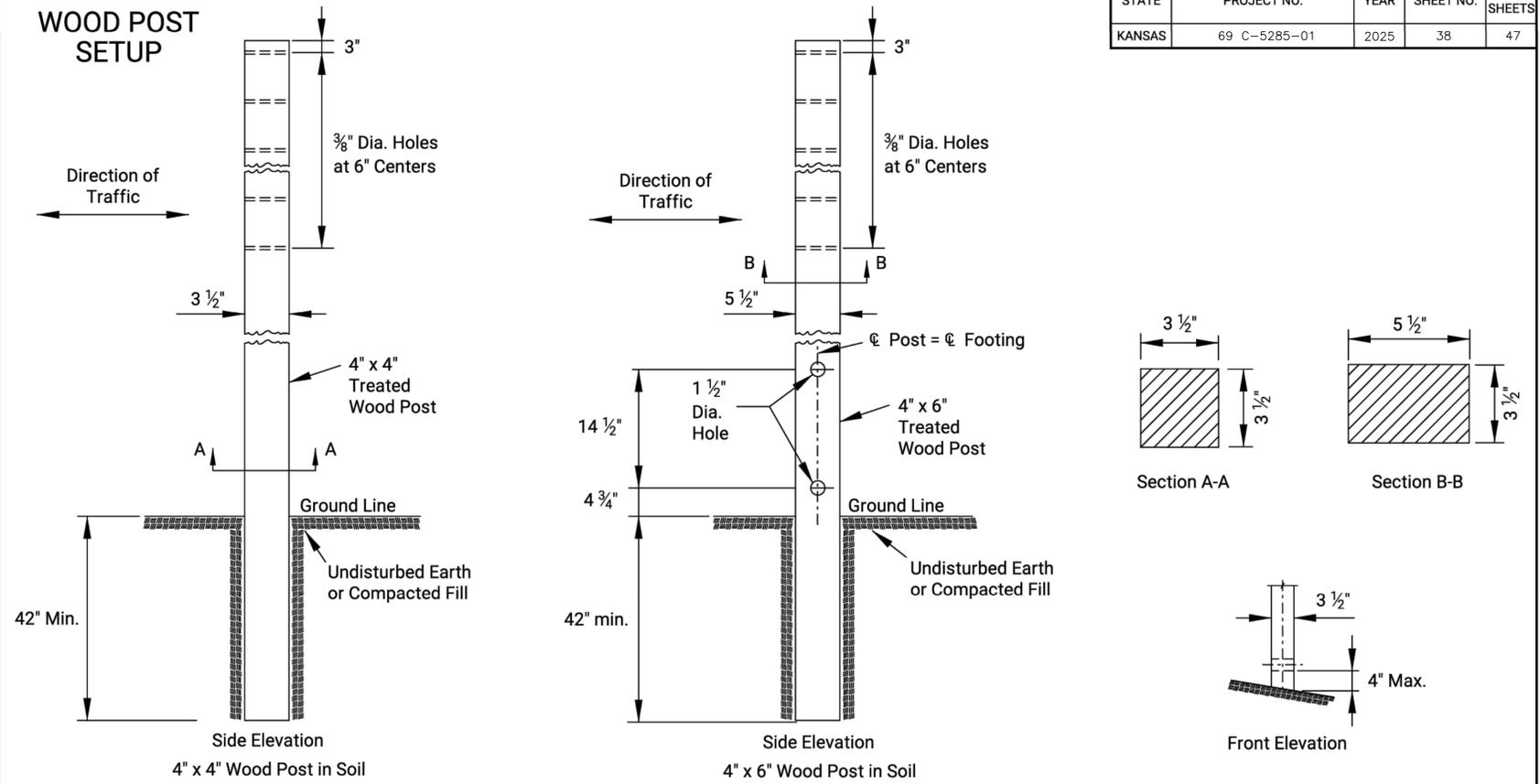
Section A-A



Section B-B

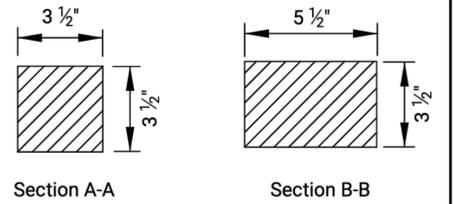
Details for 2", 2 1/4", or 2 1/2" sign posts
Place bolts in the same corner along each sign post.

WOOD POST SETUP



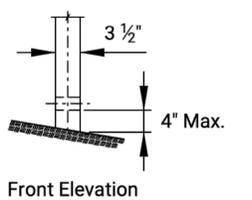
Side Elevation
4" x 4" Wood Post in Soil

Side Elevation
4" x 6" Wood Post in Soil



Section A-A

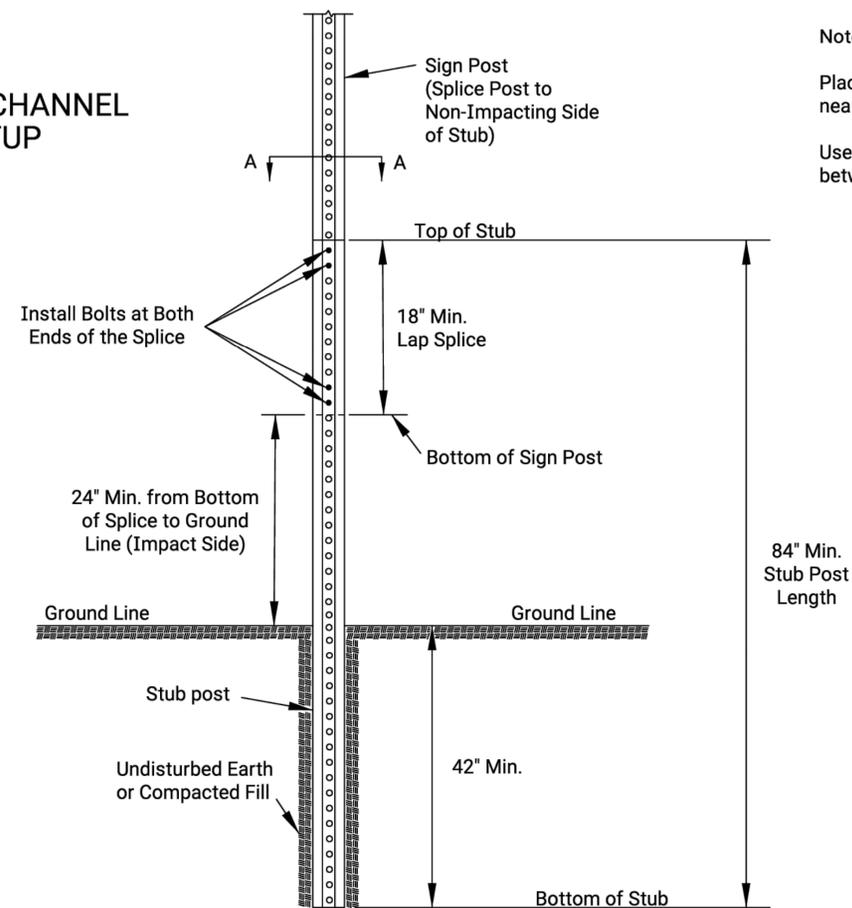
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

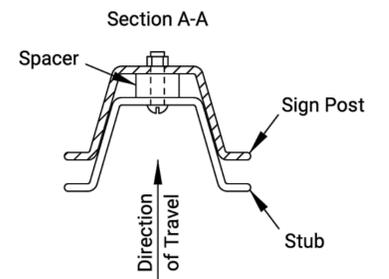
3 LB/F U-CHANNEL SETUP



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.

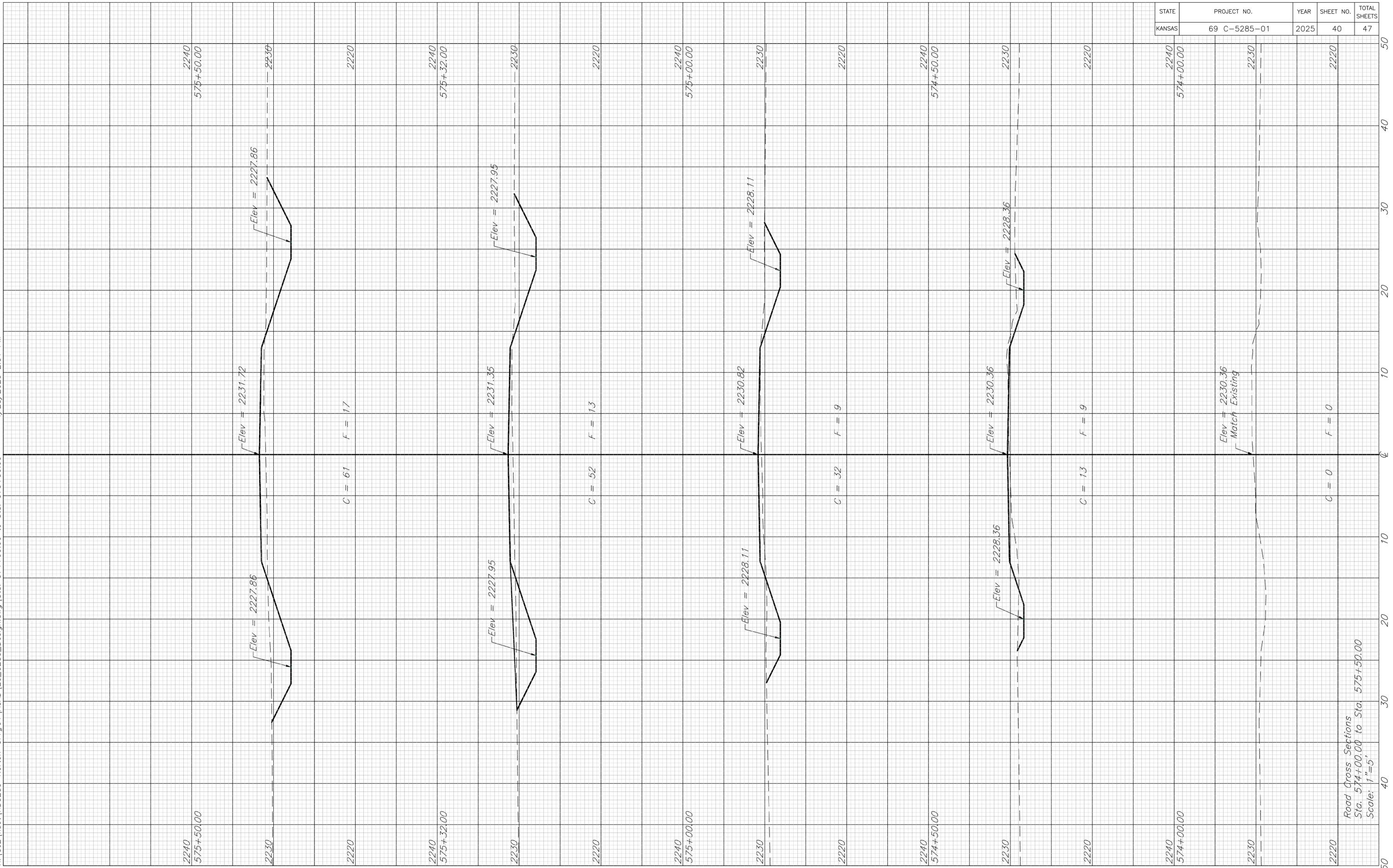


Section A-A

Spacer
Sign Post
Stub
Direction of Travel

NO.	DATE	REVISIONS	BY	APPD.
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL SIGN POSTS				
TE712				
FHWA APPROVAL	06-01-15	APPD.	Kristina Erickson	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	TRACE CK.
DOT Graphics Certified 05-24-2022				

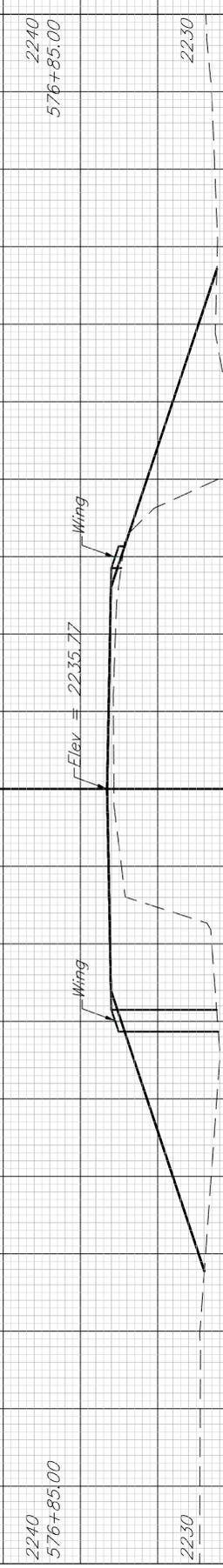
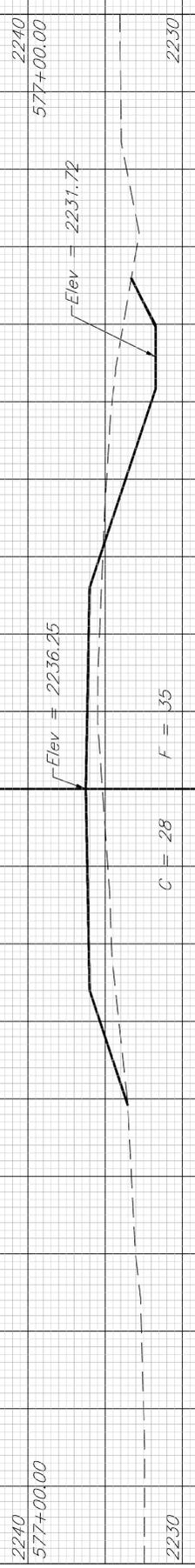
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	40	47



Road Cross Sections
Sta. 574+00.00 to Sta. 575+50.00
Scale: 1"=5'

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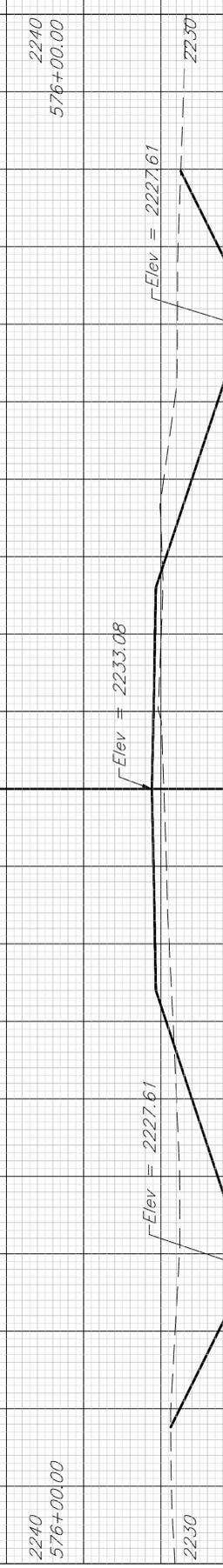
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	41	47



C = 0 F = 53 Ahead
C = 0 F = 0 Back



C = 0 F = 0 Ahead
C = 71 F = 12 Back



C = 112 F = 19



C = 68 F = 19

Road Cross Sections
Sta. 575+58.00 to Sta. 577+00.00
Scale: 1"=5'

40 30 20 10 0 10 20 30 40

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	42	47

2250
577+70.00

Match, 40 ft Rt.

2240

Elev = 2238.25

2230

C = 7 F = 45

2250
577+50.00

Match, 40 ft Rt.

2240

Elev = 2237.72

2230

C = 13 F = 41

2250
577+40.00

2240

Elev = 2237.44

2230

C = 9 F = 37

2250
577+30.00

2240

Elev = 2235.16

2230

C = 29 F = 36

2240
577+15.00

2230

Elev = 2236.83

Elev = 2233.44

2220

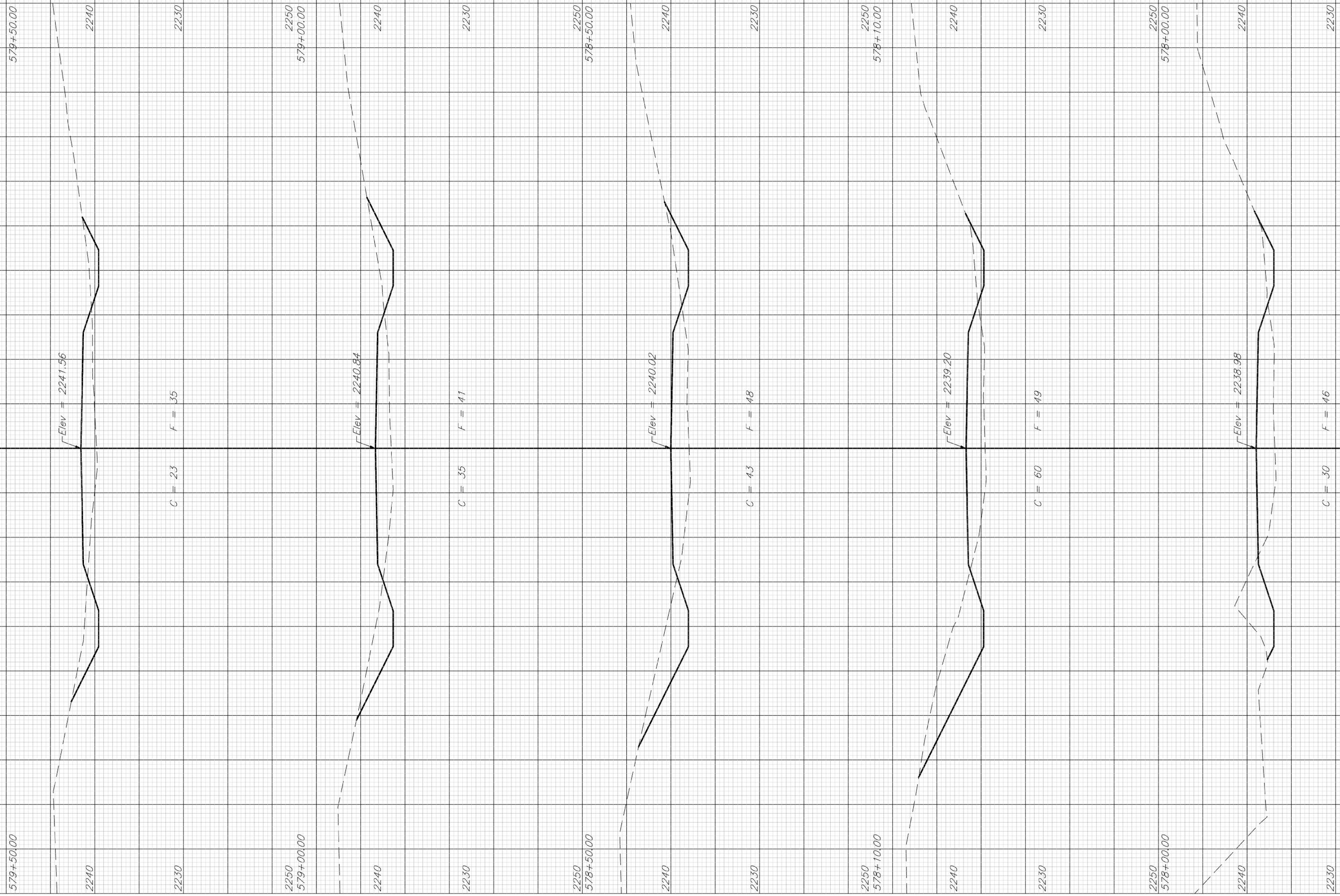
C = 31 F = 25

Road Cross Sections
Sta. 577+15.00 to Sta. 577+70.00
Scale: 1"=5'

50 40 30 20 10 0 10 20 30 40 50

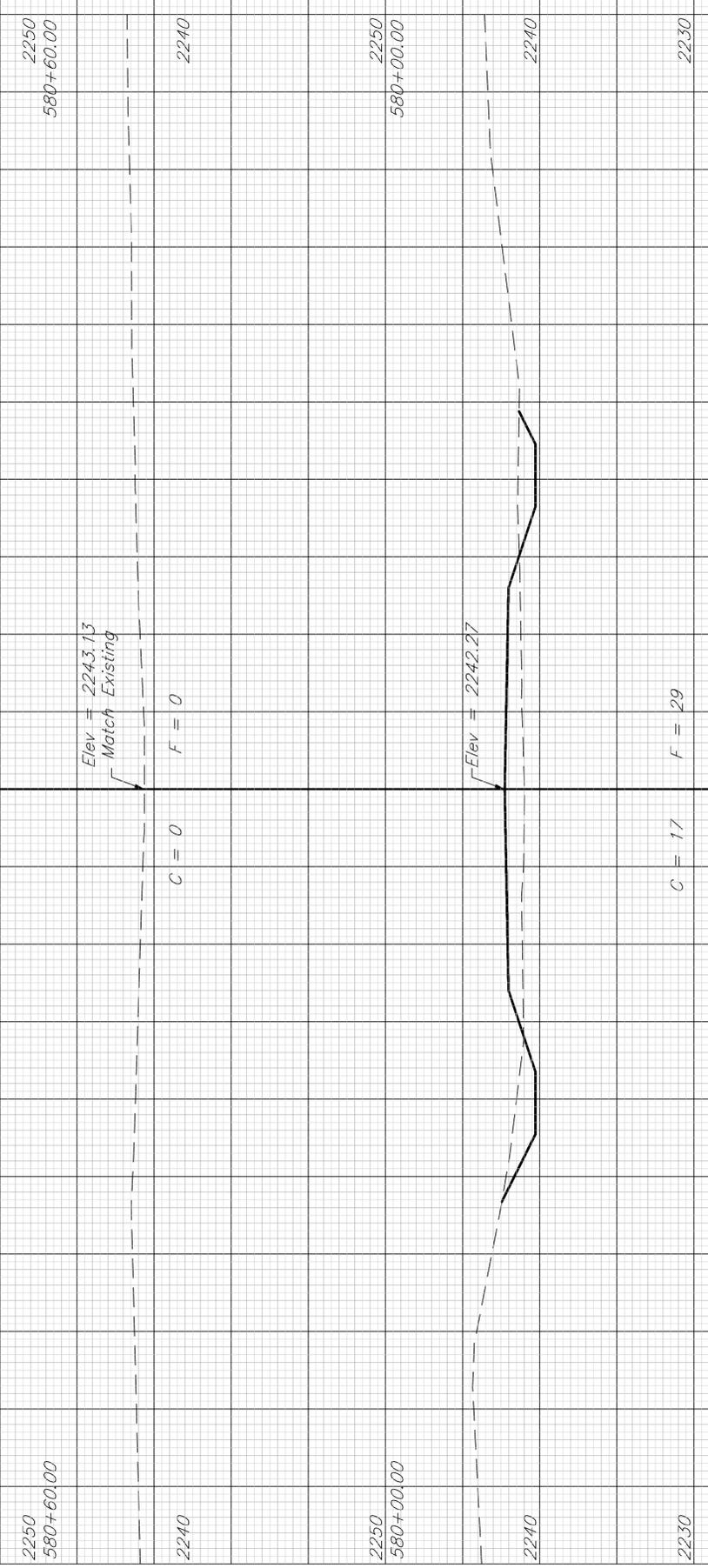
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	43	47



Road Cross Sections
Sta. 578+10.00 to Sta. 579+50.00
Scale: 1"=5'

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	44	47



Road Cross Sections
Sta. 580+00.00 to Sta. 580+60.00
Scale: 1"=5'

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	45	47

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2240
9+50.00

2240
9+50.00

2230

2230

2220

2220

2210

2210

2250

2250

2240
9+00.00

2240
9+00.00

2230

2230

2220

2220

2210

2210

Elev = 2219.10

C = 27 F = 6

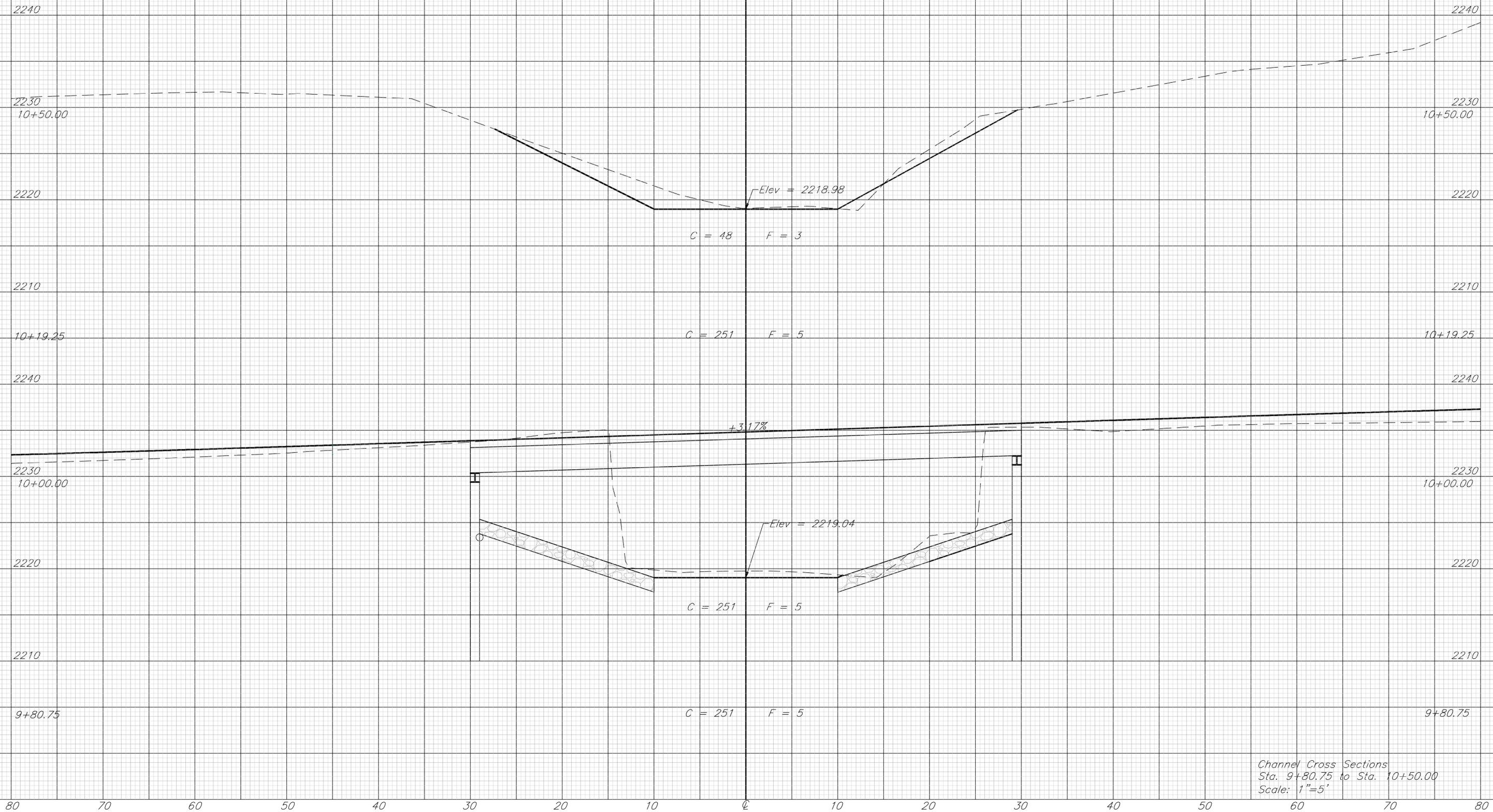
Elev = 2219.16
Match Existing

C = 0 F = 0

Channel Cross Sections
Sta. 9+00.00 to Sta 9+50.00
Scale: 1"=5'

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	46	47

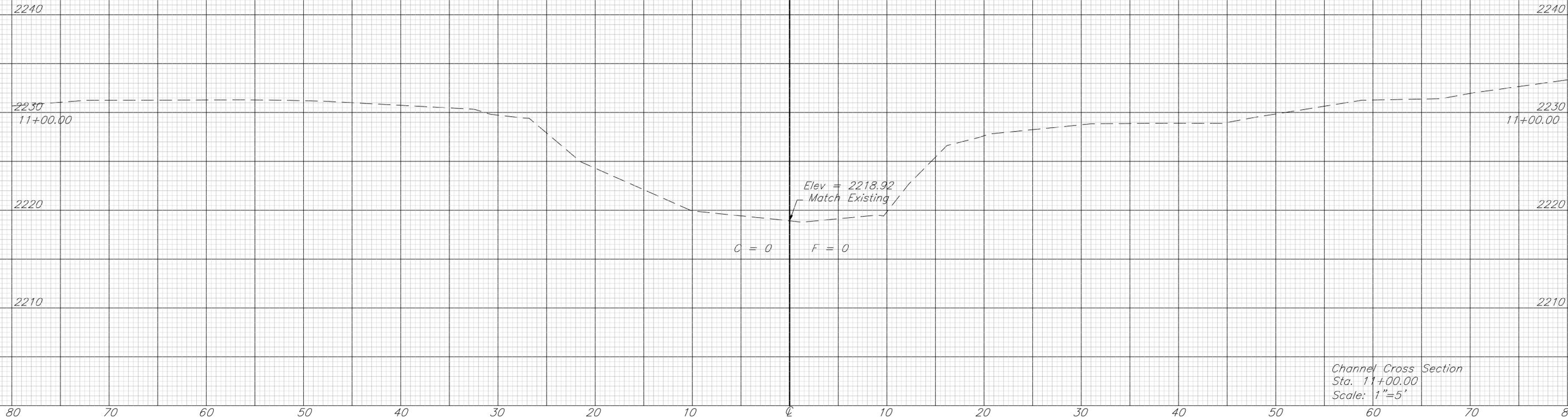
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Channel Cross Sections
 Sta. 9+80.75 to Sta. 10+50.00
 Scale: 1"=5'

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	69 C-5285-01	2025	47	47

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Channel Cross Section
Sta. 11+00.00
Scale: 1"=5'