STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	1	54

INDEX OF SHEETS

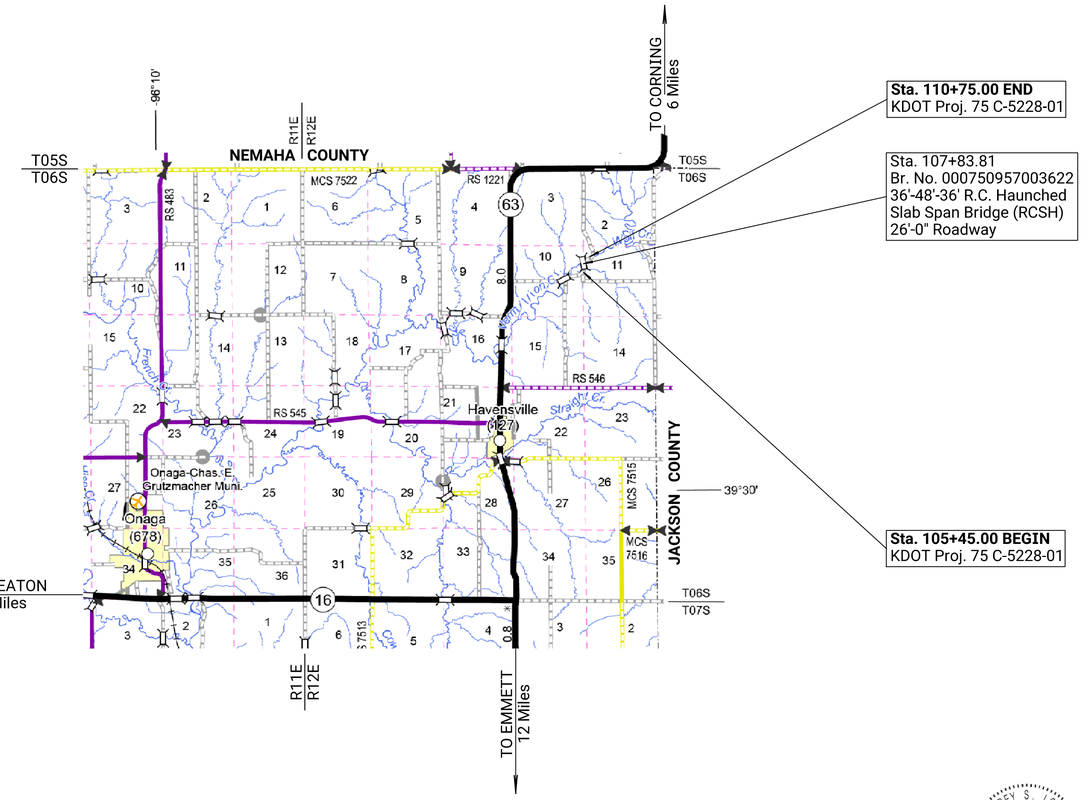
STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED
75 C–5228–01

FEDERAL AID PROJECT
POTTAWATOMIE COUNTY
(COUNTY NO. B2023–003 GRT15)

FEDERAL PROJ. NO. STP–C522(801)

GRADING
BRIDGE
SURFACING (AB–3)
SEEDING



N

1" = 1 Mile

DESIGN DESIGNATION

AADT(2023)	15
AADT(2045)	20
DHV	20%
D	60%
T	5%
V	15 mph
C of A	None
Clear Zone	4 Ft.

NOTE:
Road Closed for the duration of construction.
No "Official Detour" will be provided, signed or maintained by KDOT, the County or Contractor.

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	530.00 FT. (Includes Equations)
EXCEPTIONS	NONE

NET LENGTH OF PROJECT	530.00 FT.	0.100 MILES
NET LENGTH OF BRIDGES	122.66 FT.	0.023 MILES
NET LENGTH OF ROAD	407.34 FT.	0.077 MILES

JEFFREY S. LOILER LICENSED 18372 7-16-24 KANSAS PROFESSIONAL ENGINEER

RECOM. FOR APPROVAL DATE 7-16-2024

Matt A. Bergman

NATHAN A. BERGMAN, P.E., COUNTY ENGINEER

LOCAL PUBLIC OFFICIAL 2024

Approved: Jul 17, 2024
Date

By M. Dirks
State Transportation Engineer

By: Dawn McKenzie
Assistant Chief, Bureau of Local Projects

KANSAS DEPARTMENT OF TRANSPORTATION

Plotted by : es01906 17-JUL-2024 10:19
File : 75C522801rtl-01.dgn

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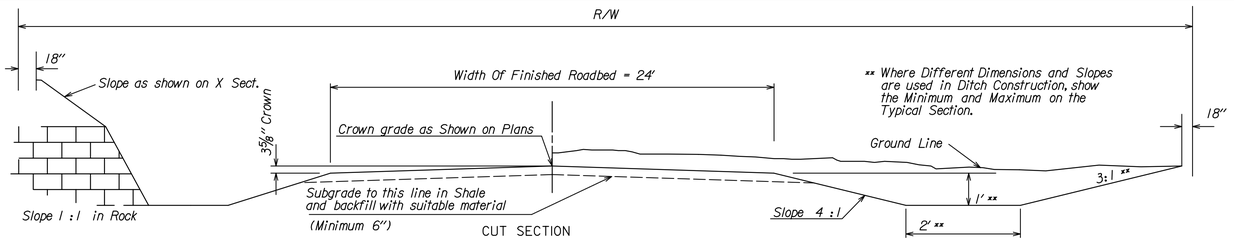
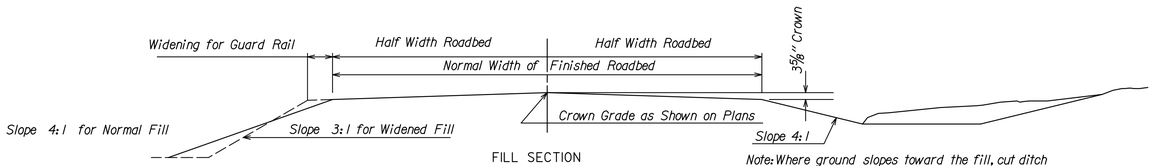
CADconform Certify This File

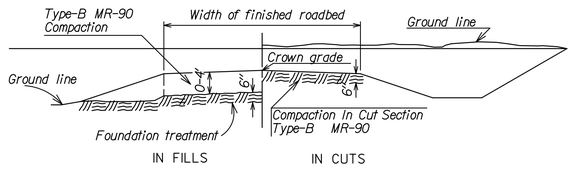
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	2	54



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

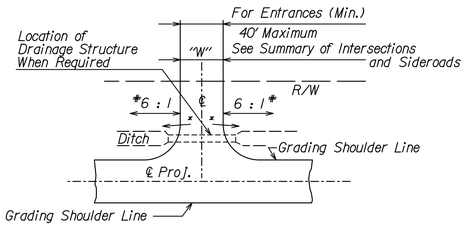


Shoulder Slopes at ends of Guard Rail should be no steeper than 3 : 1.
When fill exceeds 6' Shoulder Slopes may be steepened



ALL EMBANKMENT SHALL BE COMPACTED EXCEPT DITCHPLUGS AND WASTE BERMS.

FOUNDATION TREATMENT AND COMPACTION OF EARTHWORK



TYPICAL SIDE ROAD OR ENTRANCE DETAIL

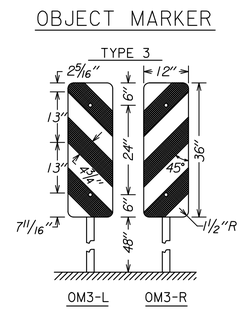
* On side roads and entrances which slope toward the roadway, construct a low point approx. 6" deep to divert surface drainage into the roadway ditch.

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

SUMMARY OF OBJECT MARKERS AND SIGNS

STATION TO STATION	SIDE	TYPE OF STRUCT.	TYPE OF SIGN	OBJECT MARKER TYPE	OBJECT MARKER NO.	REMARKS
107+17.00	Lt.	Brdg.		OM3-L	1	ø
107+27.00	Rt.	Brdg.		OM3-R	1	ø
108+41.00	Lt.	Brdg.		OM3-R	1	ø
108+51.00	Rt.	Brdg.		OM3-L	1	ø
ø As you face bridge end from approach						
*Back-to-Back [Sign(s) on Both Sides of Post]						

OBJECT MARKER



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

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

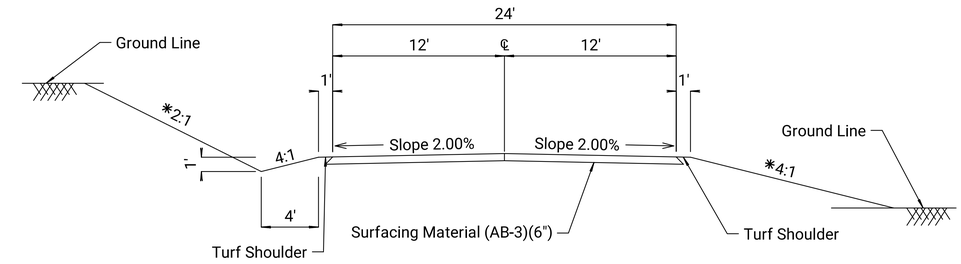
GENERAL NOTES

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

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

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

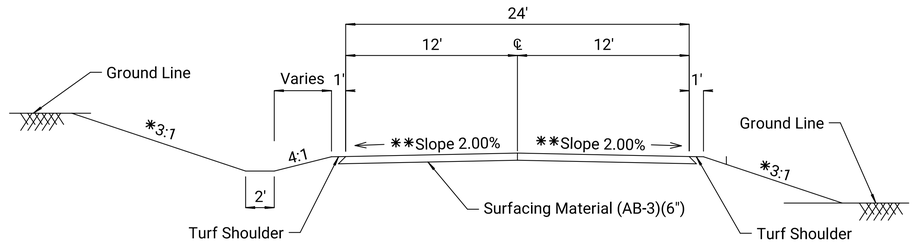
Refer to KDOT Standard Drawing No. BR 100 for excavation limits for constructing box culverts.



TYPICAL SECTION

Sta. 108+87.88 to 110+75.00

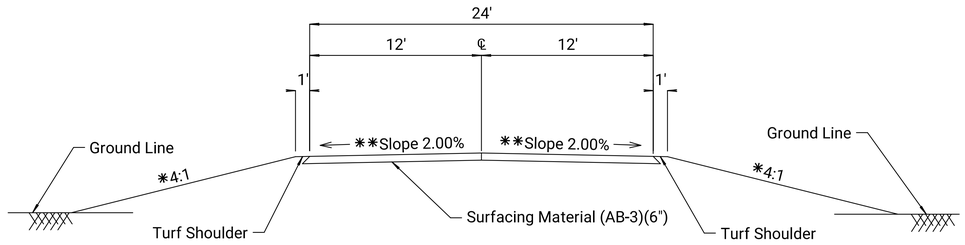
*Dimensions and slopes for standard ditches and fills. See plan and cross-secions for variations



TYPICAL SECTION

Sta. 108+45.14 to 108+87.88

**Transition cross-slope from 1.6% to 2% from 108+55 to 108+75



TYPICAL SECTION

Sta. 105+45.00 to Sta. 107+22.48

**Transition cross-slope from 2% to 1.6% from 107+00 to 107+20

KANSAS DEPARTMENT OF TRANSPORTATION

ARMSTRONG ROAD

TYPICAL SECTIONS

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : es01906 17-JUL-2024 09:52
File : 75C522801rts-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	3	54

GENERAL NOTE

THE GEOLOGICAL INFORMATION SHOWN ON THESE PLANS IS FROM STUDIES MADE IN THE FIELD AND REPRESENTS THE BEST INFORMATION AVAILABLE TO THE KANSAS DEPARTMENT OF TRANSPORTATION.

AT BORROW AREA LOCATIONS ADJACENT TO THE RIGHT OF WAY, UTILITY POLES MAY BE SET AT THE PERMANENT LOCATIONS PRIOR TO CONSTRUCTION AS APPROVED BY THE ENGINEER PROVIDED A MINIMUM VERTICAL CLEARANCE, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE, IS OBTAINED. THE CONTRACTOR WILL BE REQUIRED TO WORK AROUND THESE POLES TO COMPLETE THE WORK.

ALL BORROW TO BE OBTAINED FROM AREAS PROVIDED BY THE CONTRACTOR SHALL BE APPROVED BY THE ENGINEER, BOTH AS TO SUITABILITY OF MATERIAL AND SITE LOCATION. LOCATIONS WHICH, IN THE OPINION OF THE ENGINEER, CONTAIN UNSUITABLE MATERIAL OR WILL LEAVE AN UNSIGHTLY APPEARANCE ON THE PROJECT WILL NOT BE APPROVED.

EMBANKMENT QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT SHOWN IN THE EARTHWORK QUANTITIES ARE SUBSIDIARY TO OTHER EARTHWORK ITEMS. MATERIAL FOR THE EMBANKMENT IS INCLUDED IN THE EXCAVATION QUANTITIES.

EXCAVATION REQUIRED FOR PLACING SELECT SOIL IS INCLUDED IN THE COMMON EXCAVATION QUANTITIES.

EXCAVATION SHOWN TO BE WASTED SHALL BE WASTED ON SITES PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY, APPEARANCE, AND SITE LOCATION. LOCATIONS THAT, IN THE OPINION OF THE ENGINEER, WILL LEAVE AN UNSIGHTLY APPEARANCE WILL NOT BE APPROVED.

ALL TREES, HEDGE ROWS, SHELTER BELTS, AND WOODY SHRUBS NOT SHOWN TO BE REMOVED AND LOCATED BETWEEN THE CONSTRUCTION LIMITS AND THE RIGHT- OF- WAY LINE OR EASEMENT LINE SHALL BE SPARED UNLESS DIRECTED BY THE ENGINEER TO BE REMOVED. ALL TREES WITHIN THE APPROPRIATE CLEAR ZONE SHALL BE REMOVED.

THE INFORMATION SHOWN IN THESE PLANS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ACCESS TO ALL PROPERTIES DURING THE CONSTRUCTION OF THE PROJECT.

CONTRACTOR WILL REMOVE SILT AND VEGETATION FROM THE CHANNEL PROTECTION AT THE END OF CONSTRUCTION.

THE COUNTY SHALL SALVAGE THE EXISTING AGGREGATE ROAD SURFACING WITHIN THE PROJECT LIMITS PRIOR TO CONSTRUCTION.

THE COUNTY SHALL INSTALL 90 DEGREE TURN AND ADVISORY SPEED SIGNS AFTER CONSTRUCTION HAS BEEN COMPLETED.

THE STEEL FROM THE EXISTING BRIDGE SHALL BECOME THE ROPERTY OF THE CONTRACTOR. THE EXISTING GUARDRAIL TO BE STOCKPILED IN PROJ. R/W TO BE REMOVED BY COUNTY'S FORCES AND FUNDS. CONCRETE RUBBLE FROM THE EXISTING BRIDGE CAN BE USED AS RIP RAP.

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

P.O.T. ℄ Sta. 100+00.00
N 738,066.844 E 8,625,628.395
1. Not Set

H.C.P. #3
N 738,129.645 E 8,625,653.2945
1. Set ⅝" Rebar w/Alum cap "Bartlett & West HCP 3" 6" below surface
2. Corner post of white metal fence — 91.0' WSW
3. 60d nail in S face of 24" Elm tree — 62.6' NW
4. Mag nail & washer in W face of Power pole — 33.3' S
5. ℄ Armstrong Rd. — 17.5' W
6. ℄ McKee Rd. — 20.0' S

P.C. ℄ Sta. 100+10.00 = Section Line
N 738,076.884 E 8,625,628.414
1. Not Set

P.I. ℄ Sta. 100+77.44
N 738,144.283 E 8,625,628.547
1. Not Set

P.T. ℄ Sta. 101+44.46
N 738,210.456 E 8,625,641.553
1. Not Set

P.C. ℄ Sta. 103+00.51
N 738,363.572 E 8,625,671.645
1. Not Set

P.I. ℄ Sta. 103+70.35
N 738,432.108 E 8,625,685.115
1. Not Set

P.T. ℄ Sta. 104+39.77
N 738,501.955 E 8,625,685.253
1. Not Set

P.C. ℄ Sta. 108+47.010
N 738,909.192 E 8,625,686.056
1. Not Set

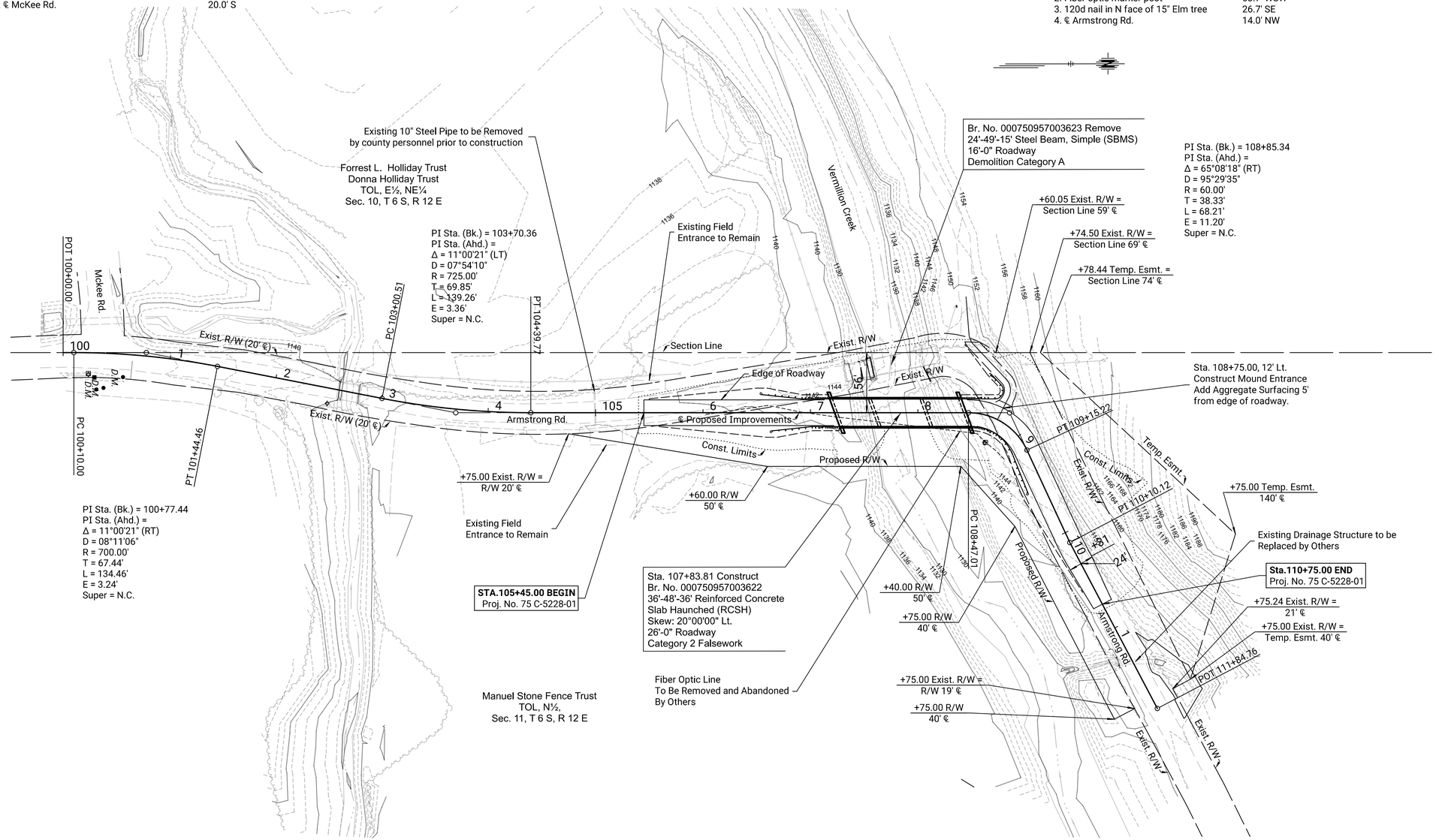
P.I. ℄ Sta. 108+85.34
N 738,947.518 E 8,625,686.132
1. Not Set

P.T. ℄ Sta. 109+15.22
N 738,963.562 E 8,625,720.938
1. Not Set

P.I. ℄ Sta. 110+10.12
N 739,003.288 E 8,625,807.116
1. Not Set

P.O.T. ℄ Sta. 111+84.76
N 739,084.412' E 8,625,961.779'
1. Not Set

H.C.P. #4
N 739,310.466 E 8,626,324.315
1. Set ⅝" Rebar w/Alum cap "Bartlett & West HCP 4" 6" below surface
2. Fiber optic marker post — 63.7' WSW
3. 120d nail in N face of 15" Elm tree — 26.7' SE
4. ℄ Armstrong Rd. — 14.0' NW



Project Survey Control

Horizontal Project Datum:
KRCS Zone 8 Manhattan
for project coordinates.

Vertical Datum:
North American NAVD88 (Geoid 18)

Utility Owner

JBN Telephone Co Inc
418 W 5th St.
Holton, KS 66436
(785) 866-2310

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

S¼ Cor. Sec. 10, T6S, R12E
N E
1. Set ⅝" x 24" rebar with Bartlett & West CLS 14 cap, 0.25' above the surface
2. 60d nail in the SW face of an 18" Locust tree — 5.94' NNW
3. 60d nail in the E face of ana 8" Elm tree — 2.23' SE
4. Center of a 3" pipe end post — 44.04' ENE
5. Edge of a crop field — 14.00' N

SE Cor. Sec. 10, T6S, R12E
N E
1. Set ⅝" x 24" rebar with Bartlett & West CLS 14 cap, 0.60' above the surface
2. S face of a 4" pipe brace post — 12.16' N
3. Mag nail in the S face of a gate post — 17.58' W
4. In line with the fence, West
5. In line with the fence, South

E¼ Cor. Sec. 3, T6S, R12E
N 737,464.266 E 8,625,624.056
1. Set ⅝" x 24" rebar with Bartlett & West CLS 14 cap, at the surface
2. 60d nail in the E face of a 10" Elm tree — 14.83' NW
3. 60d nail in the E face of an 8" Elm tree — 7.64' SW
4. 60d nail in the SW face of a 12" Elm tree — 21.18' ESE
5. In line with the road North and East

NE Cor. Sec. 10, T6S, R12E
N 740,120.592 E 8,625,621.762
1. Set ⅝" x 24" rebar with Bartlet & West CLS 14 cap, 0.25' above the surface
2. Mag nail in the N face of a gate post — 15.67' W
3. Mag nail in the S face of a corner post — 0.43' NE
4. Mag nail in the W face of a fence corner post — 41.39' N
5. In line with the fences North and South
6. Fence to the West — 1.00' S

B.M. #10 Top of Driven "T" Post (3" below surface)
N 738,711.056 E 8,625,649.268
36.4' Lt. of ℄ Sta. 106+48.81 Elev. = 1139.99

B.M. #15 Top of Driven "T" Post (3" below surface)
N 738,953.404 E 8,625,662.799
34.3' Lt. of ℄ Sta. 108+76.24 Elev. = 1147.69

KANSAS DEPARTMENT OF TRANSPORTATION

ARMSTRONG RD. PLAN

STA. 100+00 TO STA. 111+84.76

Sh. No. 3

Plotted by : es01906 17-JUL-2024 09:52
File : 75C522801-rpl-01.dgn

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STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	4	54

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

974 Cu. Yds. Common Excavation (VMF = 0.75)
689 Cu. Yds. Embankment (VMF = 0.75)
55 Cu. Yds. Common Excavation (To Be Wasted) (VMF = 0.75)

EWS = Sta. 107+22.48

EWS = Sta. 108+45.14

Profile Grade Proposed Improvement

H.H.W.
Elev. 1149.00

+3.42%

+3.42%

+1.57%

+0.98%

+0.45%

+0.33%

+0.98%

-4.45%

-4.45%

+1.94%

1144.50
+2.89 Lt.

1144.61
+3.00 Lt.

1145.10
+3.49 Lt.

150' VC
K=81.17

60' VC
SSD: 472.4'
K=24.60

120' VC
SSD: 258.8'
K=22.11

200' VC
K=31.31

Existing Ground Line

O.H.W
Elev. 1129.94

Exist. Streambed Profile

No Dt. Lt. +45 +23.21

No Dt. Rt. +45 +22.48

2 Sp. Dt. Lt. +40 +68

V Dt. Lt. +75

No Dt. Rt. +40 +75

PC 105+00.00 EL 1139.46
PI 105+75.00 EL 1140.64
PT 106+50.00 EL 1143.20
PC 106+55.00 EL 1143.37
PI 106+85.00 EL 1144.40
PT 107+15.00 EL 1144.66
PC 108+60.00 EL 1146.11
PI 109+20.00 EL 1146.76
PT 109+80.00 EL 1144.06
PI 110+80.00 EL 1139.58
PT 111+80.00 EL 1141.52

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801-rpr-01.dgn

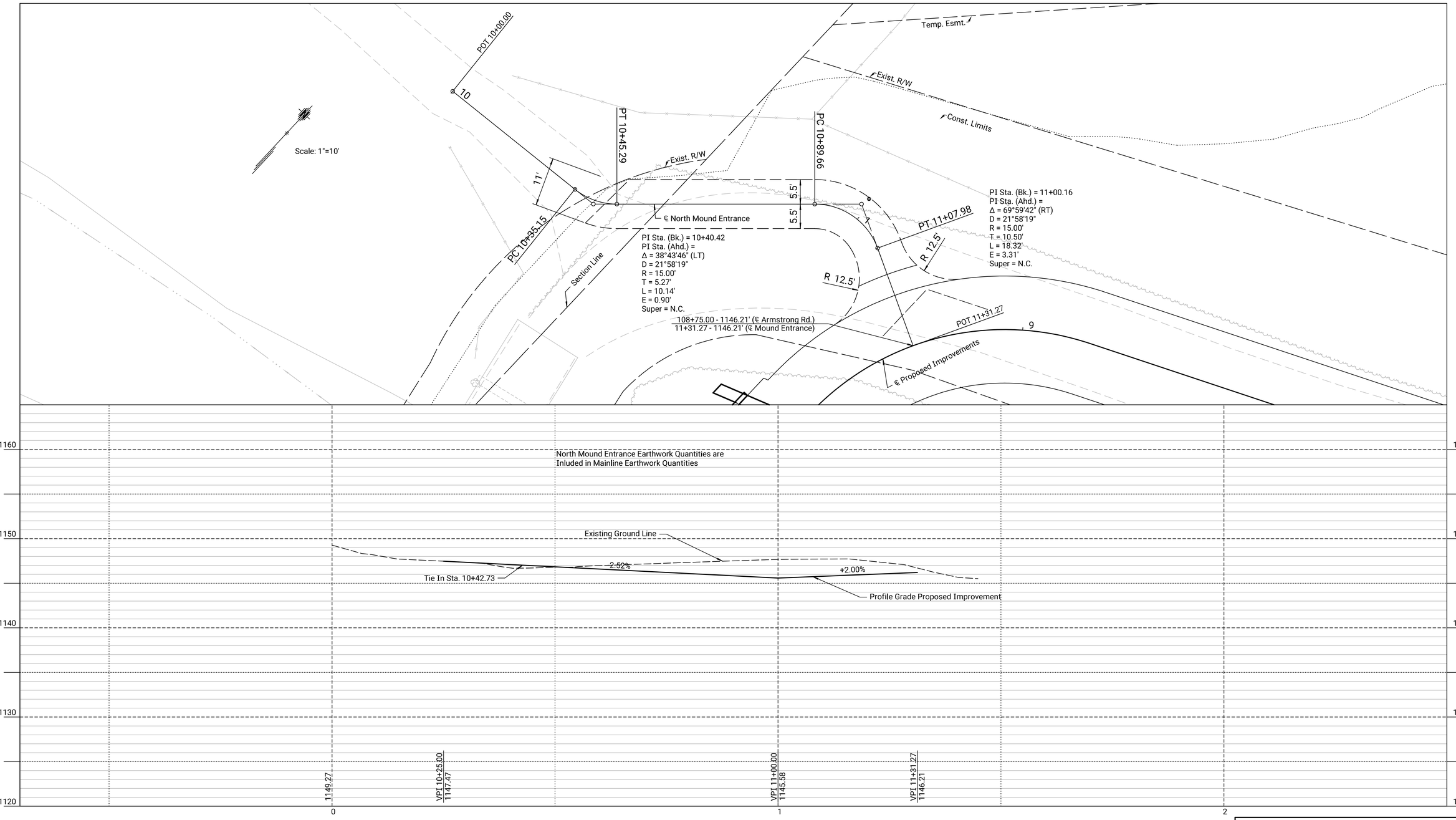
KANSAS DEPARTMENT OF TRANSPORTATION

ARMSTRONG RD. PROFILE

STA. 100+00 TO STA. 111+84.76

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	5	54

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



KANSAS DEPARTMENT OF TRANSPORTATION

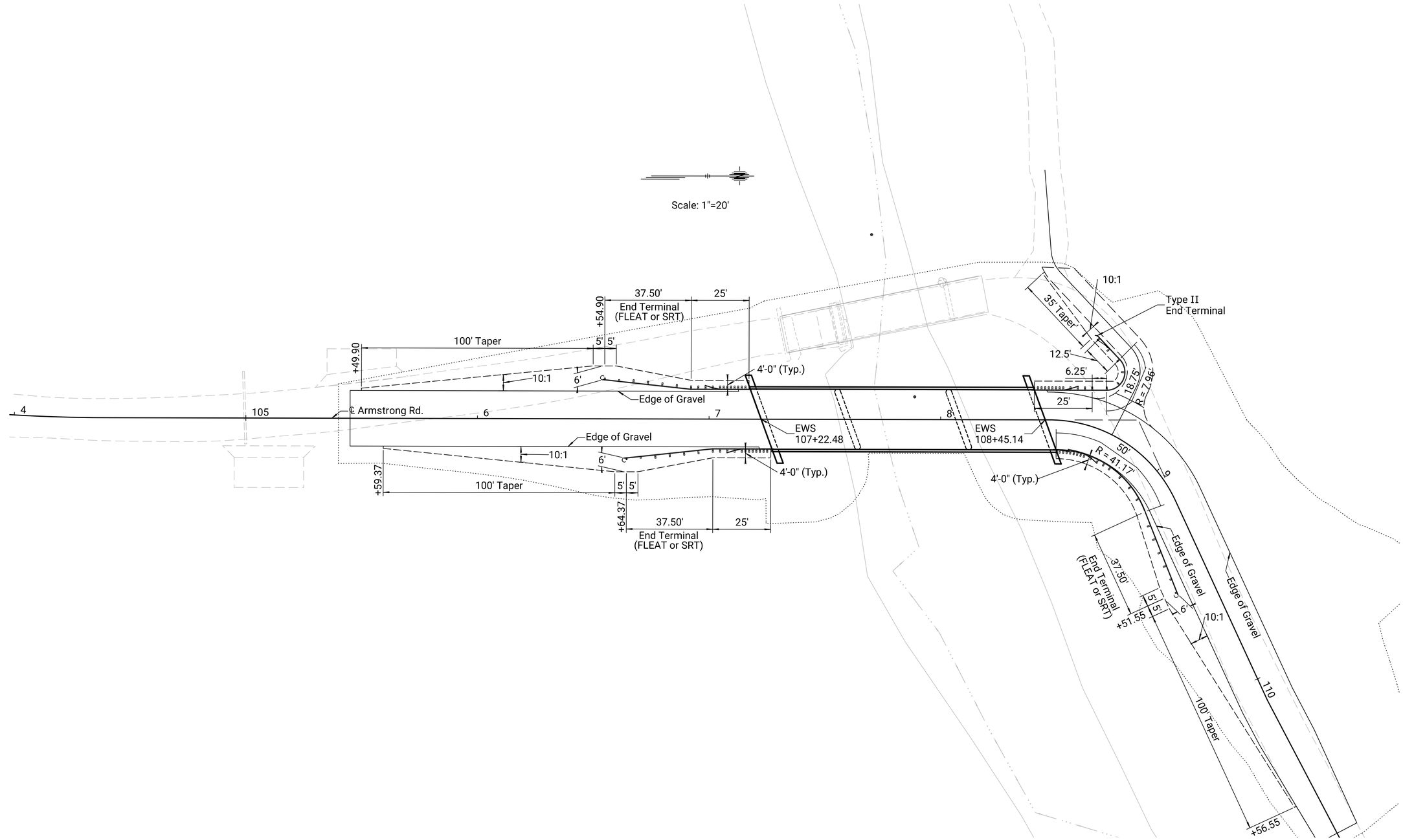
NORTH MOUND ENTRANCE

STA. 10+00 TO STA. 11+31.27

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801-rpp-02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	6	54

DATE	BY	REFERENCES NOTED REFERENCES CHECKED



KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL DETAILS

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801-Guardrail_ANNO.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	7	54

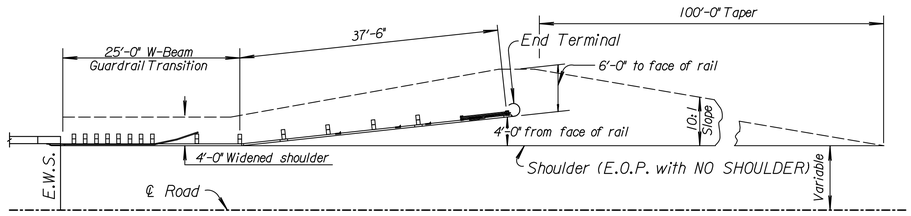
NOTE: Layouts 1, 2, 3, and 4 will be symmetric for any quadrant unless otherwise shown in the plans.

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

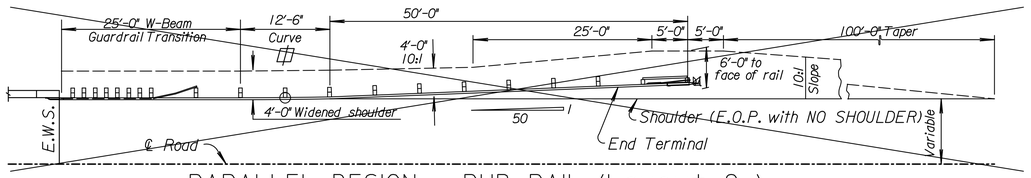
When using Thrie beam, attach Std. Drawings no. RD611 and RD608 or RD613.

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

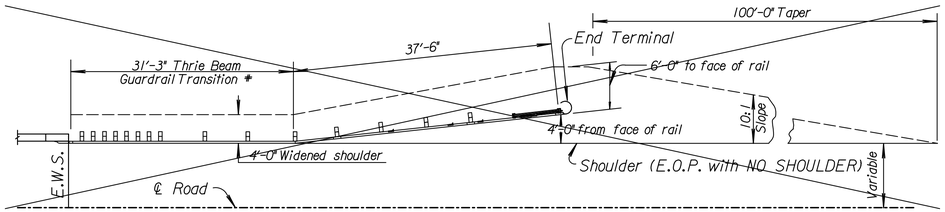
◫ Radius = 625.08'



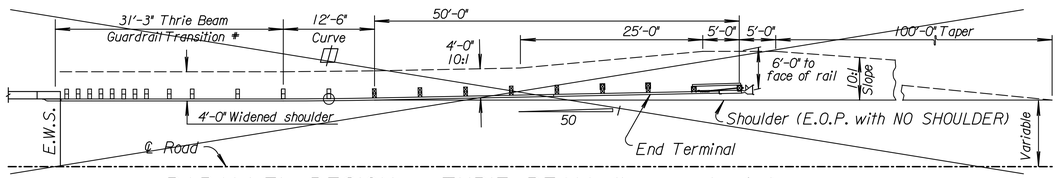
FLARED DESIGN - RUB RAIL (Layout 1)



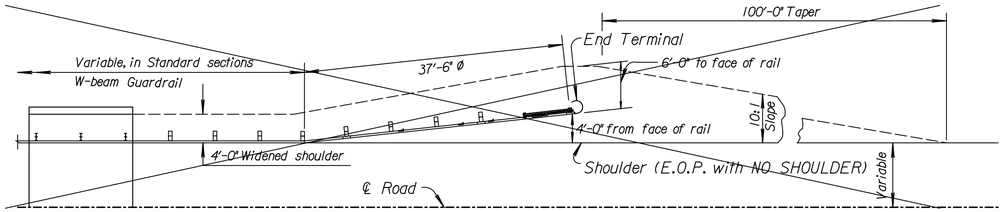
PARALLEL DESIGN - RUB RAIL (Layout 2)



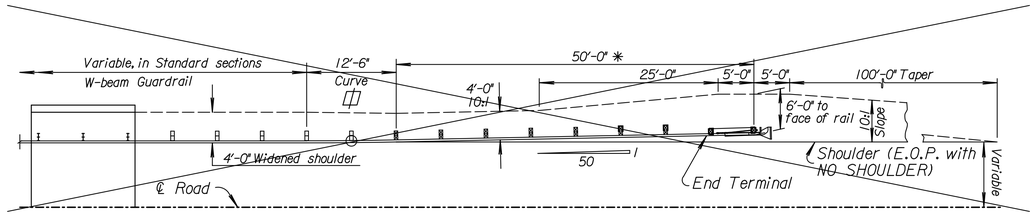
FLARED DESIGN - THRIE BEAM (Layout 3)



PARALLEL DESIGN - THRIE BEAM (Layout 4)



FLARED DESIGN (Layout 5)



PARALLEL DESIGN (Layout 6)

TYPICAL ALIGNMENT OF GUARDRAIL AT CULVERTS & BOX BRIDGES

ALLOWABLE END TERMINALS

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

SUMMARY OF STEEL PLATE GUARDRAIL

Location	Side	Layout No.	Layout Lin. Ft. *	Additional Standard Sections Lin. Ft.	Total Pay Length Lin. Ft.	Layout 1 or 3: Gd. Rail End Term. (SRT) Alt. #1 Each	Layout 1 or 3: Gd. Rail End Term. (FLEAT) Alt. #2 Each	Layout 2, 4, or 6: Gd. Rail End Term. (SKT) Each	Layout 5: Gd. Rail End Term. (SRT) Alt. #1 Each	Layout 5: Gd. Rail End Term. (FLEAT) Alt. #2 Each	Layout 5
NW Quad.	Lt.		62.5		62.5						Type II
SW Quad.	Lt.	I	25		25	SW Quad.	SW Quad.				
NE Quad.	Rt.	I	50		50	NE Quad.	NE Quad.				
SE Quad.	Rt.	I	25		25	SE Quad.	SE Quad.				
TOTAL LENGTH					162.5						

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

NO.	DATE	REVISIONS	BY	APP'D
12	02-21-19	Updated per Road Memo 18-02	WFL	MJS
11	10-30-17	Removed X-Lite	WFL	MJS
10	01-06-15	Added X-Lite, Removed ET-PLUS	TLS	RJS
9	11-9-05	Added length for Thrie Beam transition	REA	RJS

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL ALIGNMENT OF GUARDRAIL INSTALLATIONS

LP620

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

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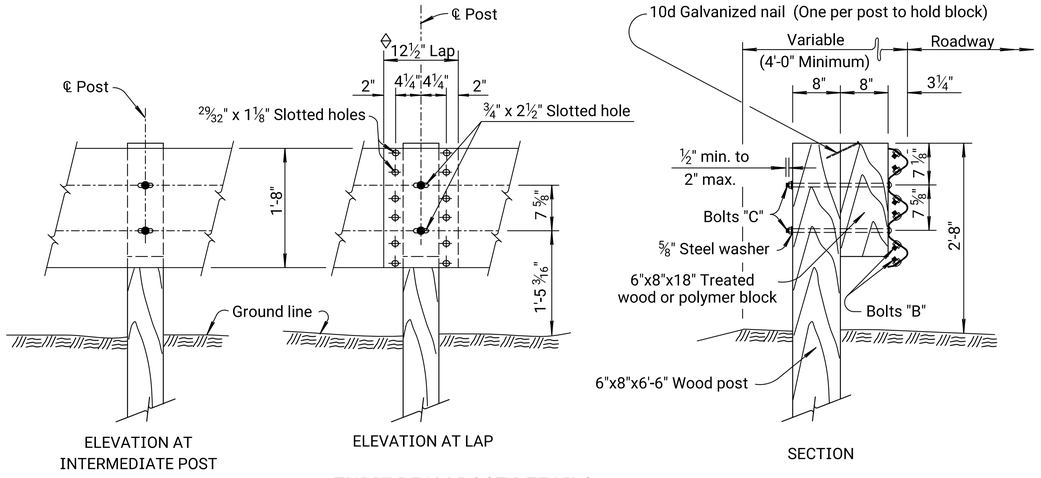
Sh. No. 7

Plotted by: es01906 17-JUL-2024 09:53
File : 75C522801rss620.dgn

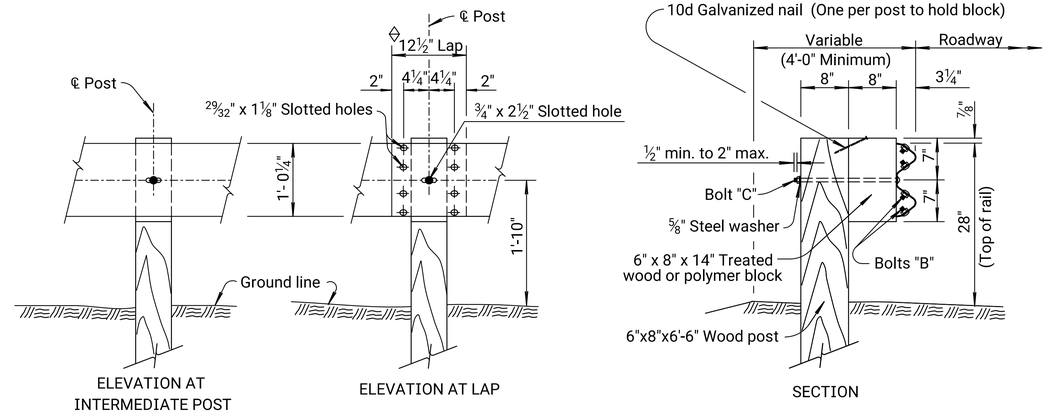
CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	8	54

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



THRIE BEAM POST DETAILS



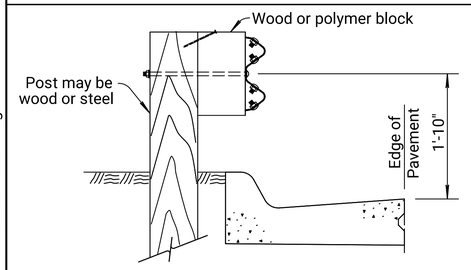
W-BEAM POST DETAILS

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

WOOD POSTS

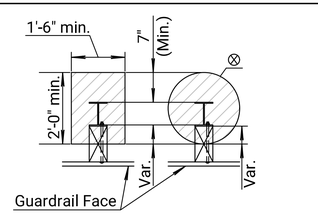
GENERAL NOTES (Wood Posts)

Give all wood posts and wood blocks a preservative treatment, see standard specifications. Thoroughly saturate all cuts, injuries and bolt holes on wood posts and blocks with preservative. Use only one type of preservative treatment on a project. Use S4S rectangular posts and wood blocks, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the the guardrail end terminals. Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations. Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6". Approved polymer blockouts may be substituted for wood blockouts. Only one type of blockout is permitted on each guardrail installation. This excludes the guardrail end terminals unless certified by the manufacturer. All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



DETAIL OF PLACEMENT AT CURB

Note: When face of guardrail is aligned with the face of a curb, measure the height of rail from the pavement surface at the curb/pavement joint as shown. Use a laydown type curb where the face of the guardrail is not located at the face of the curb.

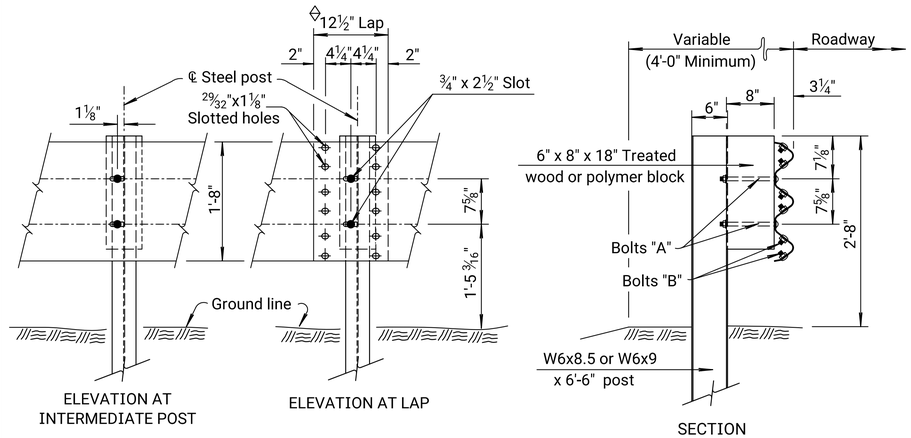


POSTS IN PAVEMENT PLAN
(ALTERNATE GEOMETRIES)
Applies to All Wood and All Steel Posts
(Steel Posts Shown)

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

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

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



THRIE BEAM POST DETAILS

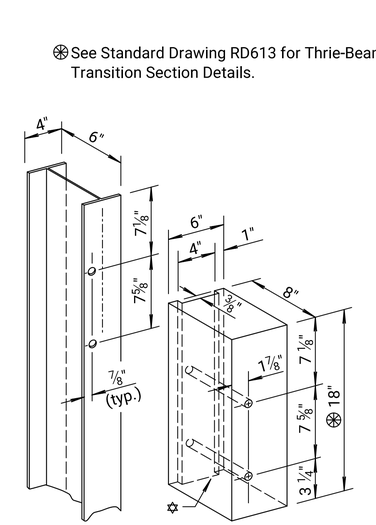
◊ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

W-BEAM POST DETAILS

STEEL POSTS

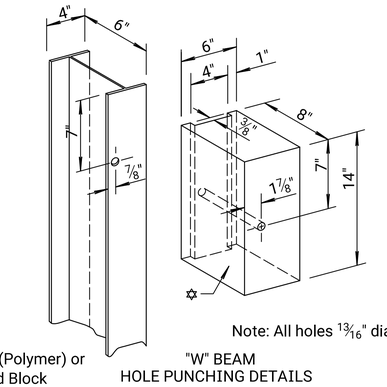
GENERAL NOTES (Steel Posts)

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



Note: All holes 13⁄16" dia.

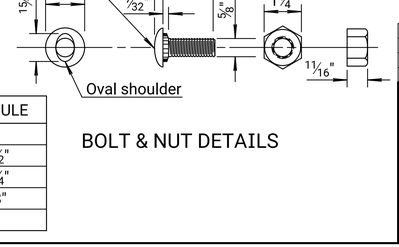
THRIE BEAM
HOLE PUNCHING DETAILS



Note: All holes 13⁄16" dia.

✡ Non-Metallic (Polymer) or Treated Wood Block

"W" BEAM
HOLE PUNCHING DETAILS



BOLT & NUT DETAILS

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST DETAILS

RD611

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

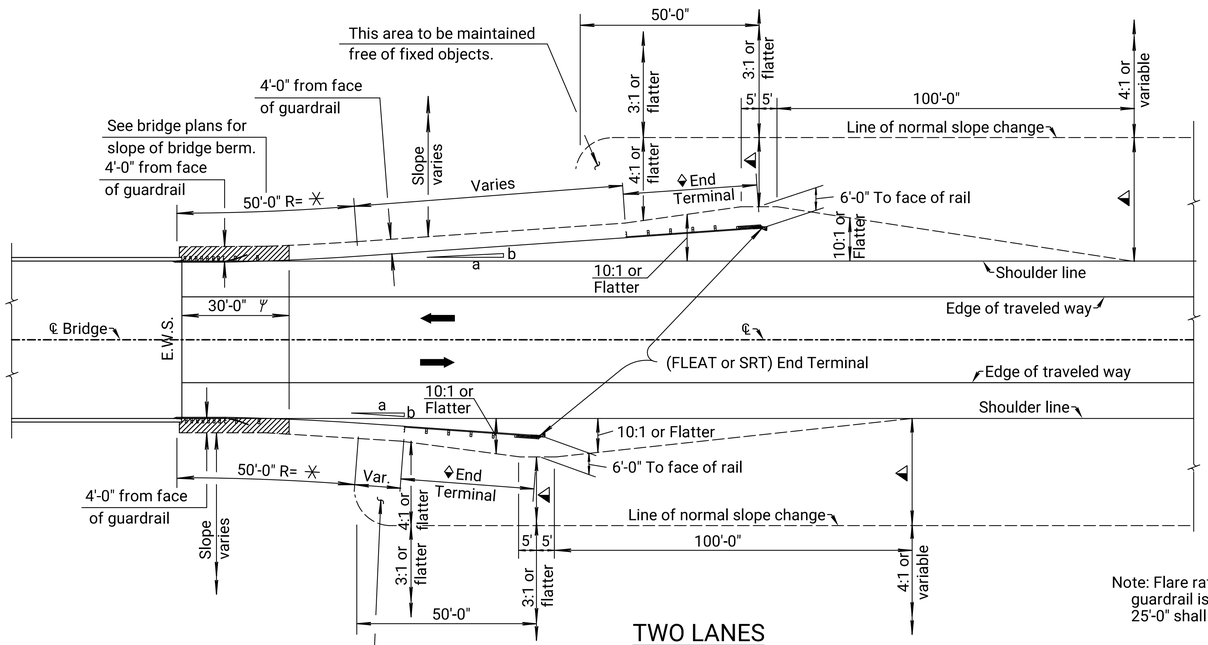
KDOT Graphics Certified 08-01-2022

Sh. No. 8

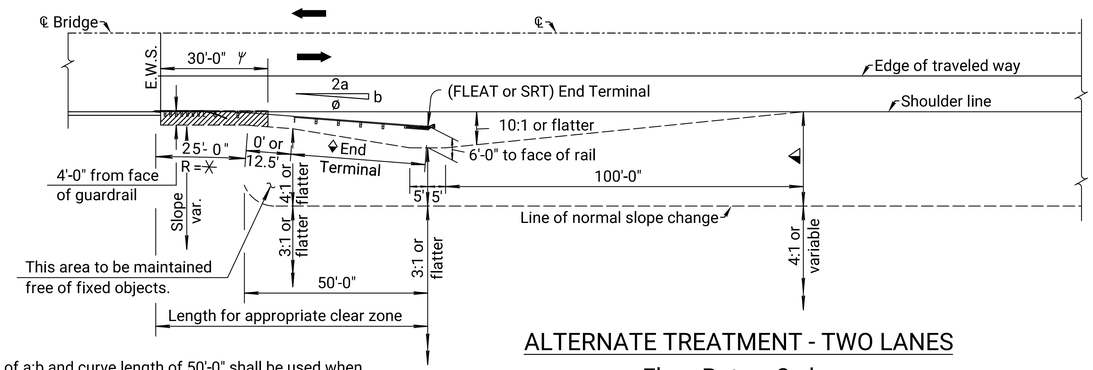
KDOT Graphics Certified

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801rss611.dgn

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



TWO LANES



ALTERNATE TREATMENT - TWO LANES

Flare Rate = 2a:b

(GUARDRAIL LENGTHS OF 62.5' AND 75')

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	9	54

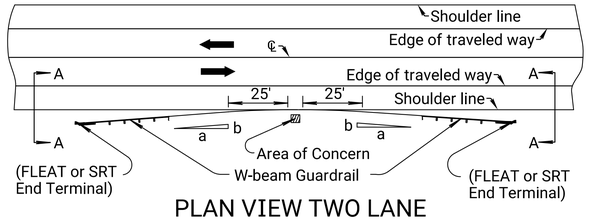
GENERAL NOTE

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

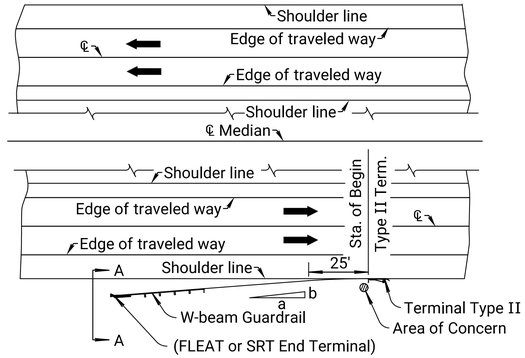
The ratio of a:b may be specified as zero for long runs of guardrail in high fill areas.

Widening, slopes & transition for Four Lane will be similar to that shown on two lane detail.

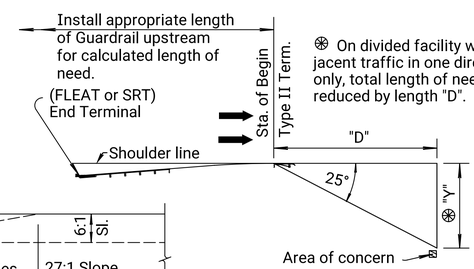
Note: Flare rate of a:b and curve length of 50'-0" shall be used when guardrail is beyond shy line, flare rate of 2a:b and curve length of 25'-0" shall be used when guardrail is located inside the shy line.



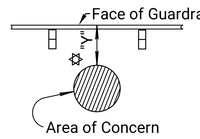
PLAN VIEW TWO LANE



PLAN VIEW FOUR LANE



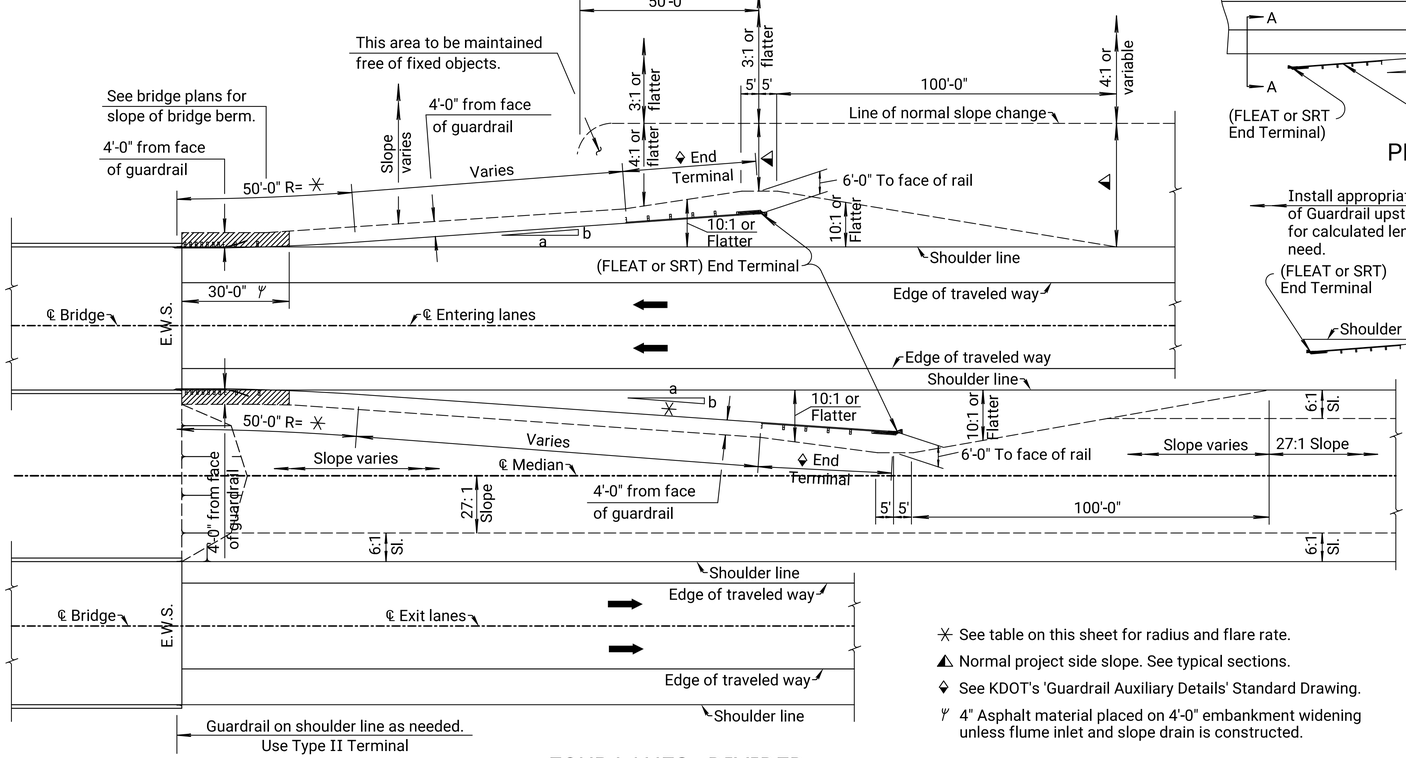
❀ On divided facility with adjacent traffic in one direction only, total length of need may reduced by length "D".



ENLARGEMENT - AREA OF CONCERN

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

DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE



FOUR LANES - DIVIDED

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

◭ Normal project side slope. See typical sections.

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD615A

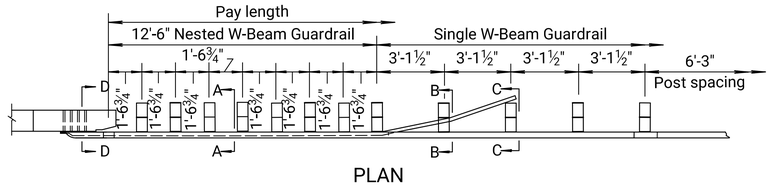
FHWA APPROVAL	06-19-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

CADconform Certify This File

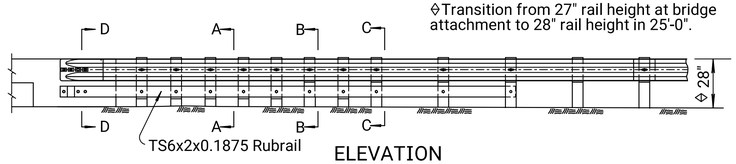
Sh. No. 9

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801rss615a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	10	54

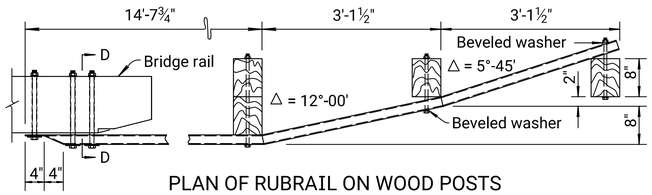


PLAN

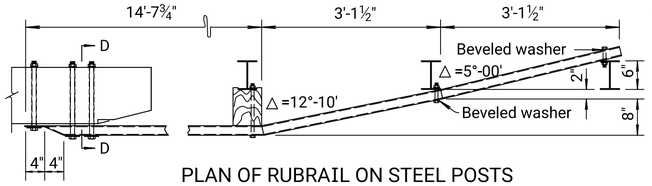


◊Transition from 27" rail height at bridge attachment to 28" rail height in 25'-0".

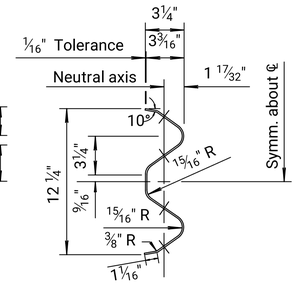
ELEVATION



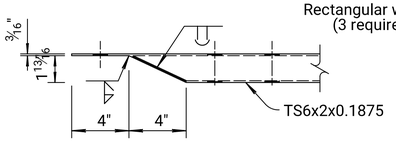
PLAN OF RUBRAIL ON WOOD POSTS

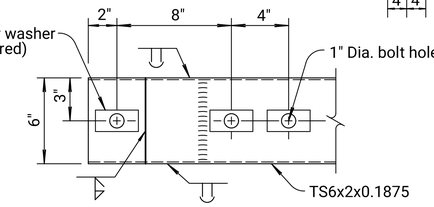


PLAN OF RUBRAIL ON STEEL POSTS

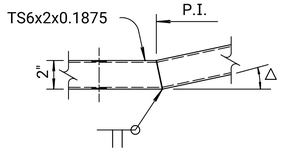


SECTION THRU TYPICAL W-BEAM RAIL ELEMENT

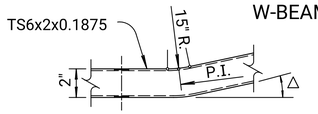




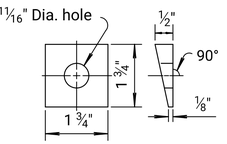
TYPICAL END RUB RAIL DETAILS



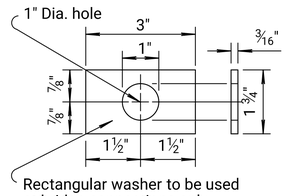
SHOP WELDED OPTION



SHOP BENT OPTION



BEVELED WASHER



Rectangular washer to be used at bridge connections only.

RECTANGULAR WASHER
(Other approved washer may be used.)

GENERAL NOTE

Include all material and work for this installation in the pay item "Steel Plate Guardrail" paid by the lineal foot.

Use 10 or 12 gauge steel guardrail elements unless otherwise called out, see standard specifications.

Bridge Rail Transition consists of one 12'-6" W-beam section nested in back of one 25'-0" section. Furnished remaining rail elements in either 12'-6" or 25'-0" sections.

Guardrail parts furnished under this specification shall be interchangeable with similar parts regardless of the source or manufacturer.

Shop fabricate tubular steel rubrail from ASTM A36 structural steel, form angles in rubrail by shop bending or welding. Rubrail is subsidiary to the bid item "Steel Plate Guardrail".

Galvanize rail elements, post fittings, bolts, nuts, washers and anchor bolts after fabrication in accordance with the standard specifications.

Shop or field drill holes in posts and/or tubular steel rubrail for attachment. When holes are field drilled touch up any damage to the galvanized coating with zinc based paint.

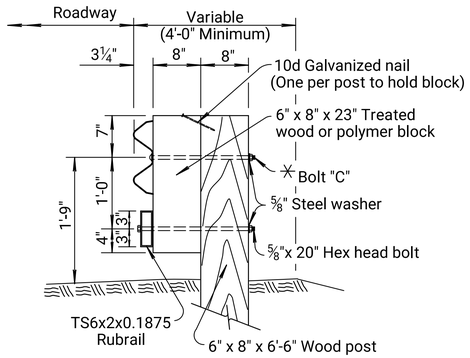
Shop bend rail when radius is less than 150'.

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

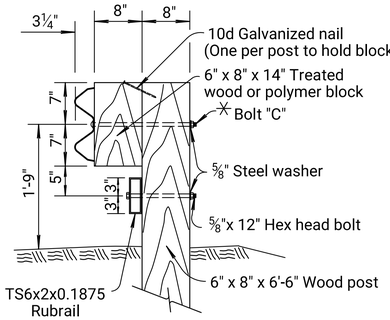
The Special End Shoe has the same section as guardrail and is subsidiary to guardrail.

Lap guardrail splices, including Special End Shoe, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

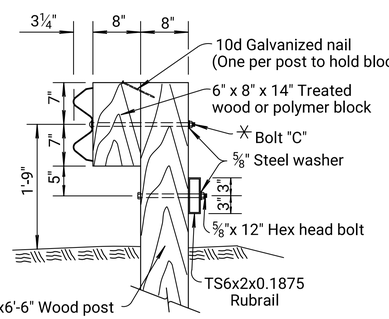
See Std. Drawing RD611 for additional details of posts not shown on this sheet.



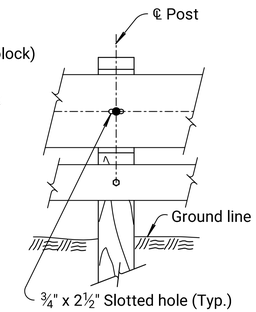
SECTION A-A



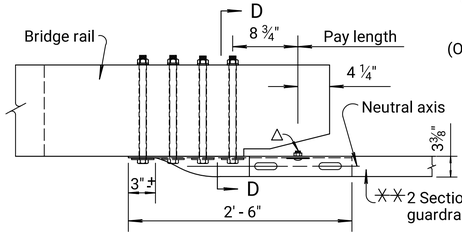
SECTION B-B



SECTION C-C

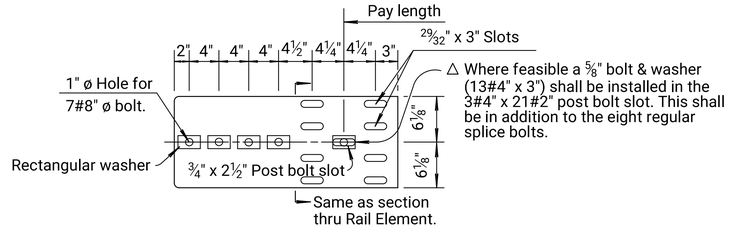


ELEVATION
WITH RUBRAIL



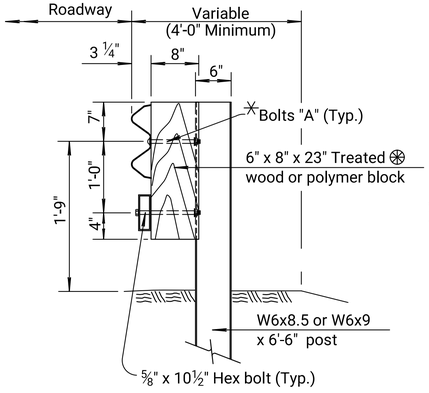
PLAN SPECIAL END SHOE

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

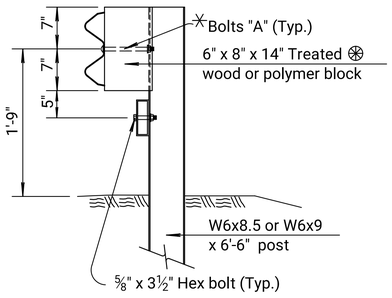


ELEVATION SPECIAL END SHOE

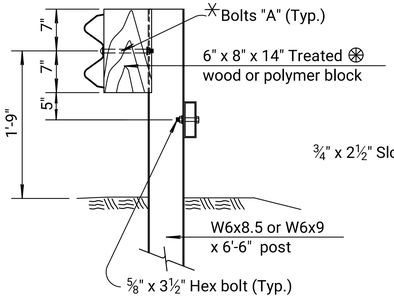
WOOD POSTS



SECTION A-A



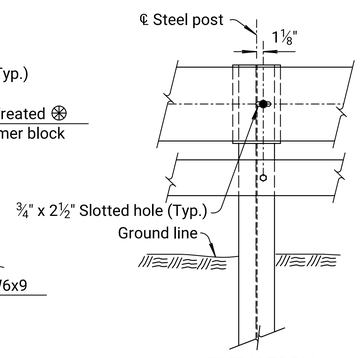
SECTION B-B



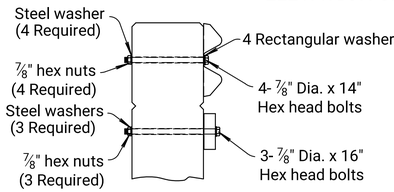
SECTION C-C

STEEL POSTS

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



ELEVATION
WITH RUBRAIL



SECTION D-D

NO.	DATE	REVISIONS	BY	APP'D
14	12-14-10	Revised notes 28' rail height	S.W.K.	J.O.B.
13	04-02-08	Removed Galvanized callout	S.W.K.	J.O.B.
12	02-06-07	Corrected spelling error	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION DETAILS

RD616

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

KDOT Graphics Certified 05-11-2022

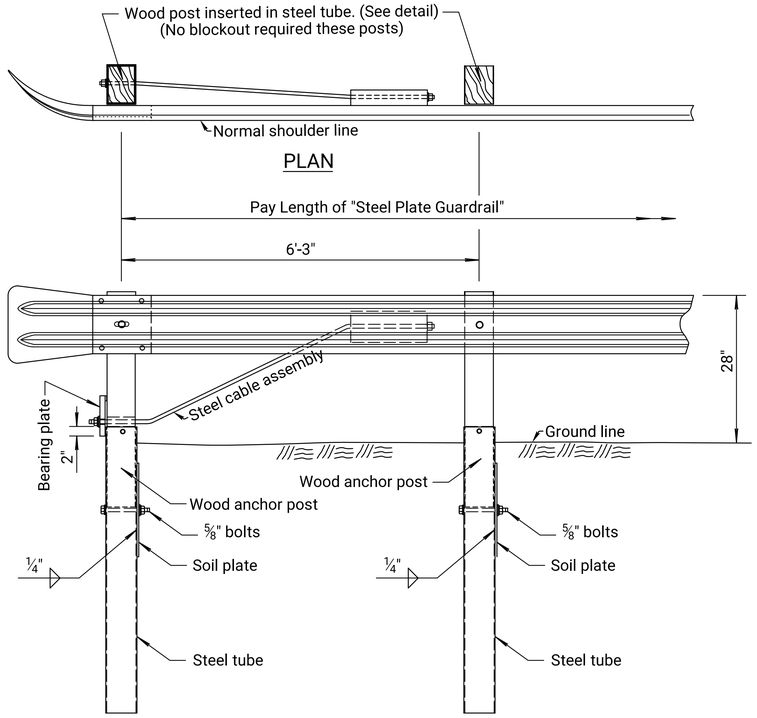
Sh. No. 10

KDOT Graphics Certified

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801rss616.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	11	54

Note to Designer: Use Guardrail End Terminal, Type II on the traffic departing end of barriers where end on impacts are not a consideration and at the end of entrance return.



DETAIL OF ANCHOR ASSEMBLY

GENERAL NOTE

Terminal end posts consist of a wood post inserted into a steel tube see details on this sheet.

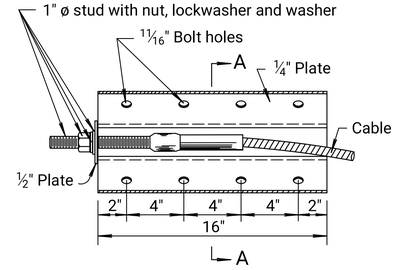
The steel soil tubes may be driven with an approved driving head. Set steel tube and soil plate before installing wood anchor post assembly. Do not drive steel soil tubes with wood post in the tube. Backfill and satisfactorily compact around steel soil tubes placed in drilled holes to prevent tube settlement.

Galvanize all steel parts after fabrication.

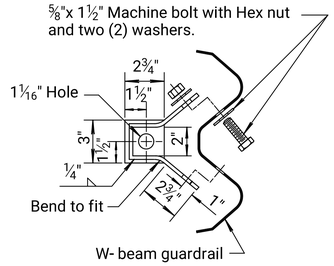
Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of the permanent traffic.

All work and materials required for the installation of Barrier Terminal Type II are considered subsidiary to the bid item "Steel Plate Guardrail".

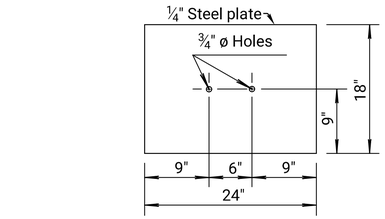
Include Type II end terminal in pay length of "Steel Plate Guardrail".



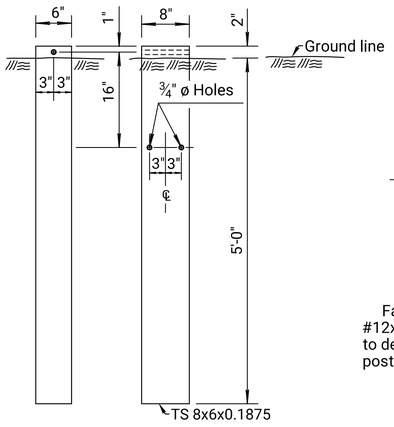
ANCHOR PLATE



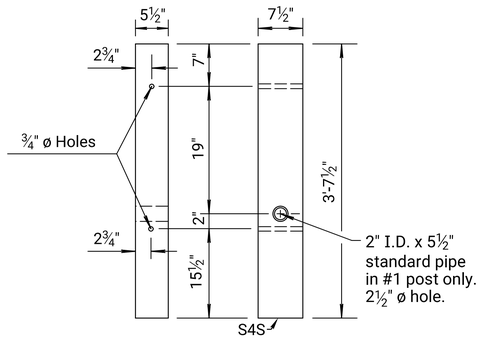
MODIFIED SECTION A-A



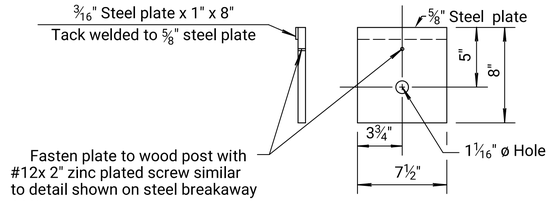
SOIL PLATE



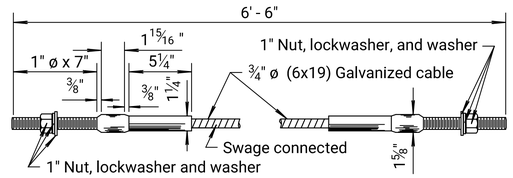
STEEL TUBE



BCT WOOD POST



BEARING PLATE



CABLE ASSEMBLY (1 each)

(40,000 lbs. min. breaking strength)
Tighten cable to taut tension.

NO.	DATE	REVISIONS	BY	APP'D
06	12-14-10	Rev. notes, details & 28" rail height	S.W.K.	J.O.B.
05	07-20-04	Changed Guard Fence to Guardrail	S.W.K.	J.O.B.
04	05-18-00	Added note for temporary traffic	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL END TERMINAL TYPE II

RD618

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

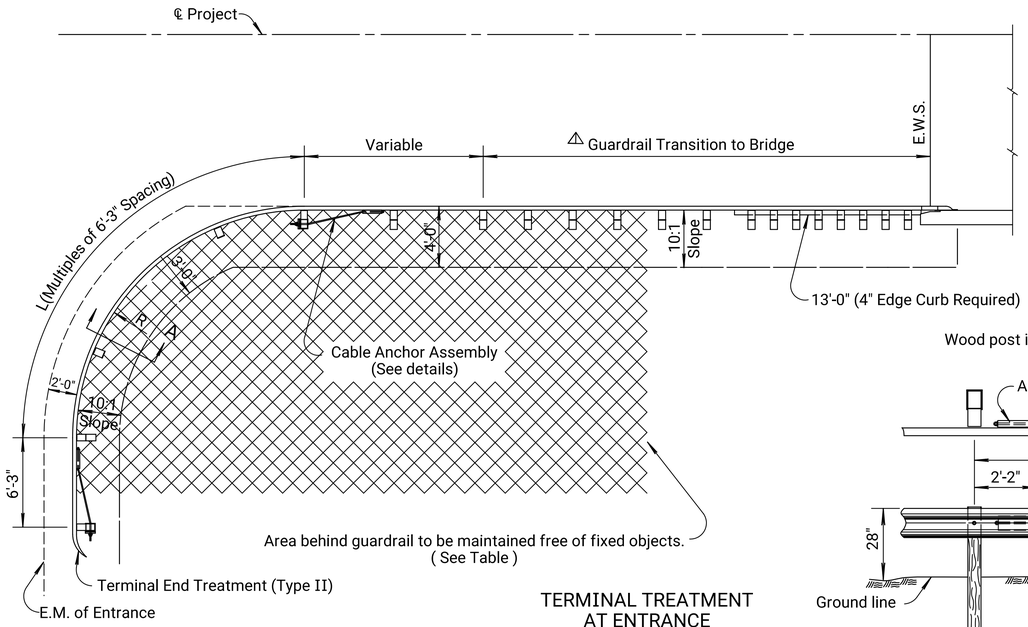
KDOT Graphics Certified 05-11-2022

Sh. No. 11

KDOT Graphics Certified

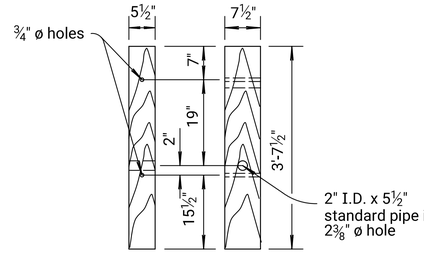
Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801rss618.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	12	54



TERMINAL TREATMENT AT ENTRANCE

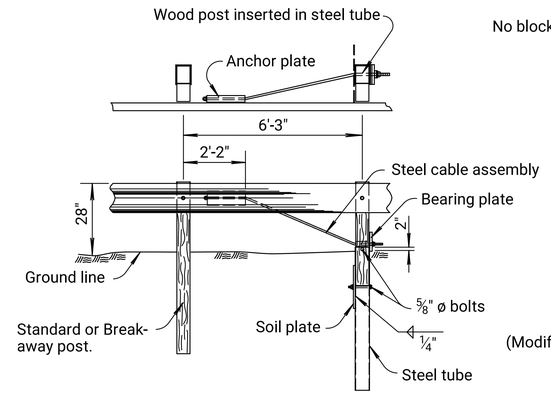
L	R	Required Area Free of Fixed Objects
12.50	7.96	25 X 15
18.75	11.94	25 X 15
25.00	15.92	30 X 15
31.25	19.89	30 X 15
37.50	23.87	40 X 20
43.75	27.85	40 X 20
50.00	31.83	40 X 20
56.25	35.81	50 X 20
62.50	39.79	50 X 20



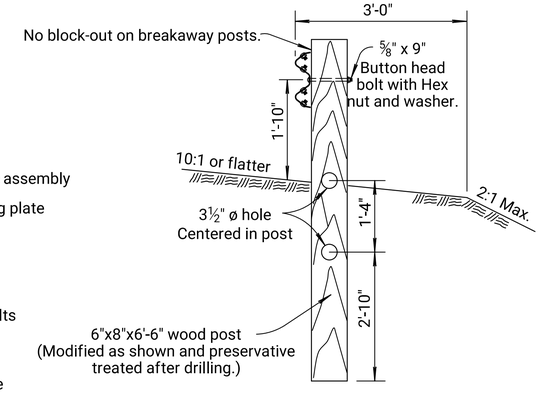
ANCHOR ASSEMBLY POST

General notes:
The curved rail element is 12 ga, and shop bent.
See Standard Drawing RD611 for notes applying to guardrail posts.
See Standard Drawing RD618 for details of Type II End Terminal.
Use wood Breakaway Posts through curved section of guardrail, all other posts may be either wood or steel with no mixing of types.
Set steel tube and soil plate in place prior to the installation of the wood anchor assembly post.
Use Type II Terminal at entrances or locations where end-on impacts with the terminal are not considered likely to occur.
Use a crashworthy end terminal at sideroad locations and appropriate length of guardrail to satisfy length of need requirements.

Type II Terminal General Notes:
Terminal end posts consist of a wood post inserted into a steel tube see details on this sheet.
The steel soil tubes may be driven with an approved driving head. Set steel tube and soil plate before installing wood anchor post assembly. Do not drive steel soil tubes with wood post in the tube. Backfill and satisfactorily compact around steel soil tubes placed in drilled holes to prevent tube settlement.
Galvanize all steel parts after fabrication.
Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of the permanent traffic.
All work and materials required for the installation of Barrier Terminal Type II are considered subsidiary to the bid item "Steel Plate Guardrail".
Include Type II end terminal in pay length of "Steel Plat Guardrail".

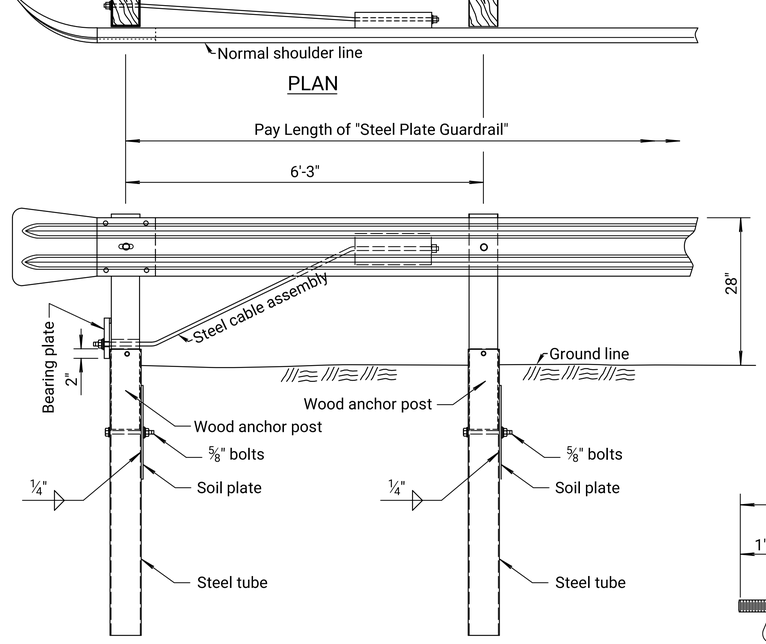


ANCHOR ASSEMBLY

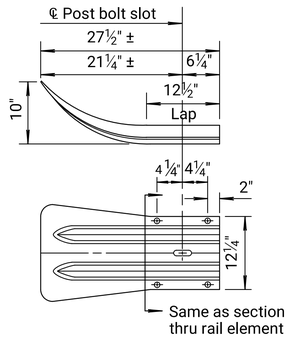


SECTION A-A

(Typical through curved portion of guardrail.)



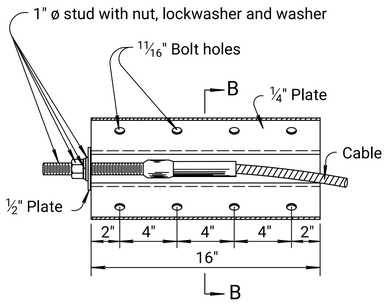
DETAIL OF TYPE II TERMINAL ANCHOR ASSEMBLY



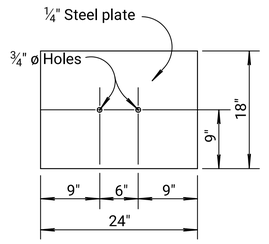
STANDARD END SECTION

(1 each)

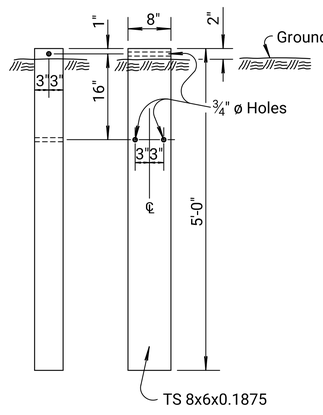
(Subsidiary to Steel Plate Guardrail)



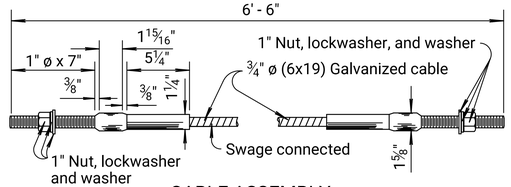
ANCHOR PLATE



SOIL PLATE

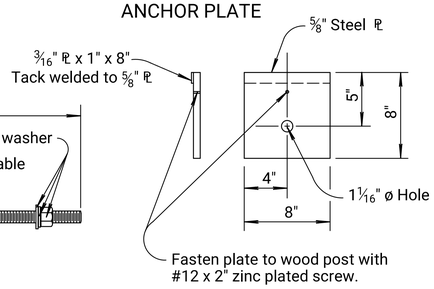


STEEL TUBE

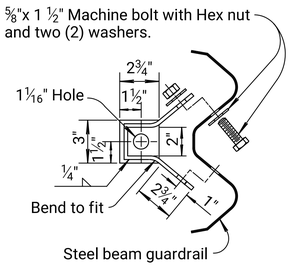


CABLE ASSEMBLY

(40,000 lbs. min. breaking strength)
Tighten cable to taut tension.



BEARING PLATE



MODIFIED SECTION B-B

NO.	DATE	REVISIONS	BY	APP'D
07	12-14-10	Rev. notes, details & 28" rail height	S.W.K.	J.O.B.
06	07-20-04	Rev. layout, notes, gd.fc. to guardrail	R.J.S.	J.O.B.
05	03-05-01	Add sideroad detail	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR GUARDRAIL INSTALLATION AT INTERSECTING ROADWAY

~~RD619~~

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

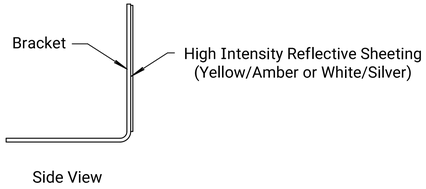
KDOT Graphics Certified 06-14-2022

Sh. No. 12

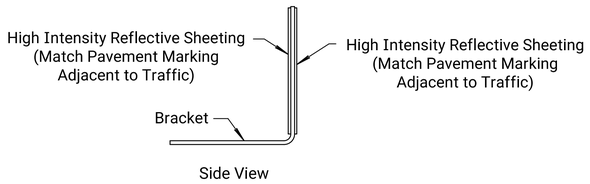
KDOT Graphics Certified

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801rss619.dgn

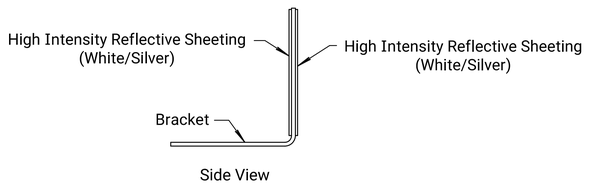
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	13	54



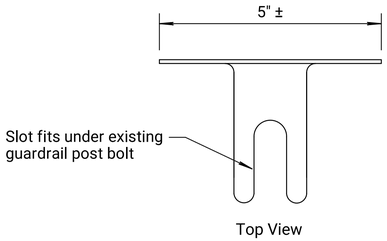
Flexible Marker
One-Way Traffic

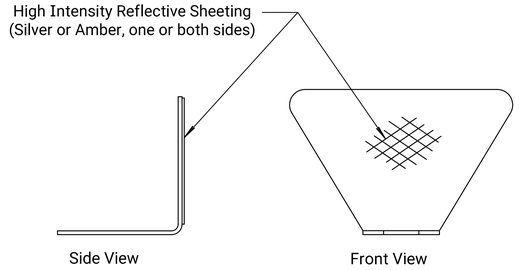


Flexible Marker
Median Locations



Flexible Marker
Two-Way Traffic





Flexible Guardrail Marker

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

GENERAL NOTES

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

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

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

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

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

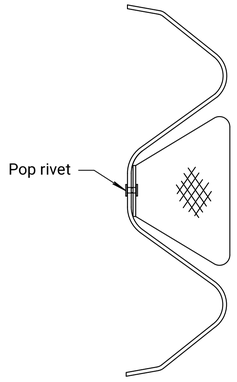
For guardrail located on one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located on the outside edge of one-way or divided roadways, use flexible markers with reflective sheeting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

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

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

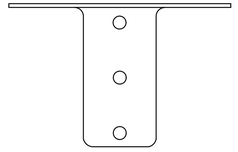
Work and materials required for installation of markers on guardrail, bridge rail, or concrete safety barrier are subsidiary to other bid items in the contract.

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

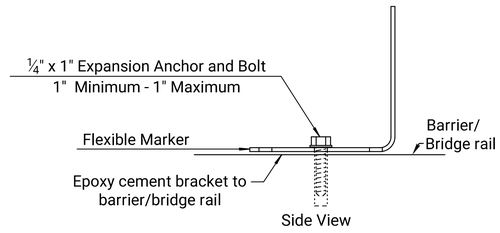


Typical Mounting on W-Beam

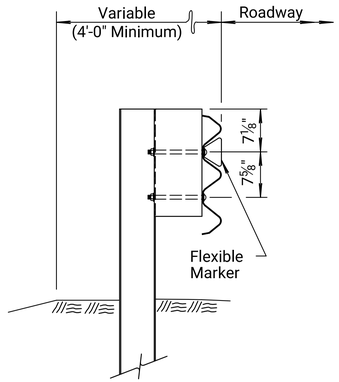
Pop rivet attachment to Guardrail when necessary.



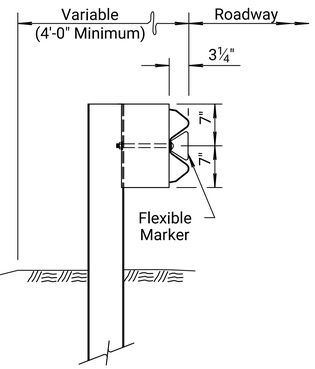
Barrier/Bridge Rail



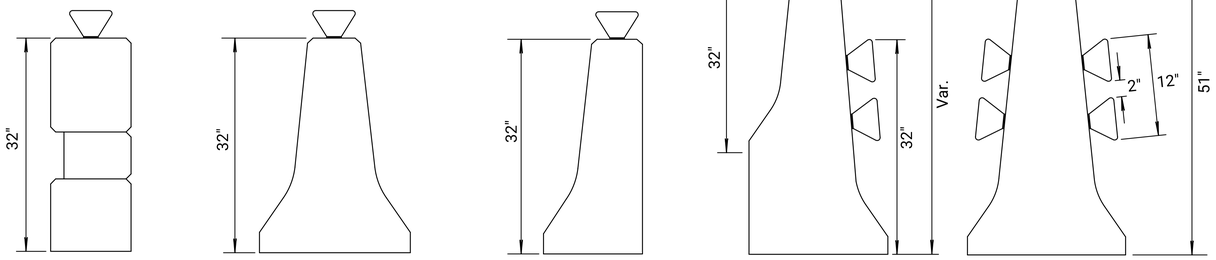
Method of Attaching Flexible
Marker to Barrier/Bridge Rail



THRIE-BEAM GUARDRAIL



W-BEAM GUARDRAIL



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

TYPICAL BARRIER/BRIDGE RAIL MOUNTING DETAILS

NO.	DATE	REVISIONS	BY	APP'D
9	9-11-17	Rev. Det. Markers, Rev. Gen. Note	A.L.R.	S.W.K.
8	11-15-10	Revised notes	S.W.K.	J.O.B.
7	12-21-08	AKT marker or approved equal	S.W.K.	J.O.B.
6	3-10-09	Add. Flexible rem. Button deline	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MARKER DETAILS FOR GUARDRAIL,
BARRIER, AND BRIDGE RAILS

RD610

FHWA APPROVAL	3-15-18	APP'D. Scott W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 03-16-2018

Sh. No. 13

KDOT Graphics Certified

Plotted by : es01906 17-JUL-2024 09:53
File : 75C522801rss610.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	14	54

SUMMARY OF QUANTITIES

Item / Location	Excavation Class I Cu. Yds.	Excavation Class II Cu. Yds.	Concrete (Grade 4.0) (AE) (SW) Cu. Yds.	Concrete (Grade 4.0) (AE) Cu. Yds.	Reinforcing Steel (Grade 60) (Epoxy Coated) Lbs.	Reinforcing Steel (Grade 60) Lbs.	Pre-Drilled Pile Holes Lin. Ft.	Cast Steel Pile Points Each	Piles Steel (HP12x53)* Lin. Ft.	Piles Steel (HP14x73)* Lin. Ft.	Contractor Furnished PDA Each	Bridge Backwall Prot. System Sq. Yds.	Slope Protection (Riprap Stone) Cu. Yds.	Geotextile Fabric Sq. Yds.
Abutment No. 1	15		**		**			4	192		1	22	231	124
Pier No. 1		51		47.7		2450	92	4		198	1			
Pier No. 2		58		47.7		2450	40	4		159	1			
Abutment No. 2	41		**		**		52	4	74		1	22	219	124
Substr. Total	56	109		95.4		4900	184	16	266	357	4	44	450	248
Superstr. Total			224.3		66,410									
Total	56	109	224.3	95.4	66,410	4900	184	16	266 †	357 †	4	44	450	248

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

† Summary of Piling
Abutment No. 1 — 3 @ 45', 1 Pile @ 57' for PDA
Pier No. 1 — 3 @ 47', 1 Pile @ 57' for PDA
Pier No. 2 — 3 @ 34', 1 Pile @ 57' for PDA
Abutment No. 2 — 3 @ 16', 1 Pile @ 26' for PDA

TRAFFIC DATA - (2023)	
AADT (2023)	15
AADT (2045)	20
DHV	20%
D	60/40
T	5%

* NOTE: Only steel pile HP12x53 shall be used at the abutments. Only steel pile HP14x73 shall be used at the piers.

INDEX TO BRIDGE DRAWINGS

GENERAL NOTES

EXISTING STRUCTURE: Plans of the existing structure do not exist and are not available for inspection.

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

BRIDGE EXCAVATION: Elevation 1131.44 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

BACKFILL COMPACTION: Compact backfill at the abutments.

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 80 tons for abutments and 262 tons for piers (Strength I divided by Phi).

At any location where problems are experienced, pile damage is suspected, or the Pile Driving Formula Load occurs significantly above the design pile tip elevation, the Owner's designated Engineer may request that the Pile Driving Analyzer (PDA) equipment be used.

PRE-DRILLING: All steel piles at Pier 1 and Pier 2 shall be pre-drilled 10 feet into the shale layer. All steel piles at Abutment 2 shall be pre-drilled 5 feet into the shale layer. The diameter of the pre-drilled holes is 2'-3". Piles shall be set and driven to the computed bearing value. After each pile at Pier 1 and Pier 2 has been driven, the pre-drilled hole shall be backfilled with Concrete (Grade 3.0) to the top of the shale layer. The remainder of each hole shall be backfilled with clean rounded 3/8" pea gravel. The Contractor shall keep alluvium from collapsing into the pre-drilled holes at Pier 1 and Pier 2 with temporary casing. After each pile at Abutment 2 has been driven, the pre-drilled hole shall be backfilled with clean rounded 3/8" pea gravel.

PILING: Drive all piling to penetrate the shale layer. 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	52 Tons
Pier No. 1	170 Tons
Pier No. 2	170 Tons
Abutment No. 2	52 Tons

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

PILING SPLICE LOCATION: Integral pile splice locations and weld testing criteria for Abutments 1 & 2 and Piers 1 & 2 will follow the "Standard Pile Details" sheet (BR110).

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

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

REMOVAL OF EXISTING STRUCTURE: Removal of existing structure is included in the bid item "Removal of Existing Structures", Lump Sum. The existing guardrail shall be removed by the Contractor and will become the property of Pottawatomie County. All other materials removed from the existing structure shall become the property of the Contractor.

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

SLOPE PROTECTION (Riprap Stone): Place Slope Protection (Riprap Stone) to the limits and thicknesses shown on the plans or as directed by the Engineer. Use (Light 200 Lb.) as described in Division 1114 placed to the limits shown on the plans.

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

The amount of suitable concrete rubble available for slope protection is approximate and is furnished only as an aid to the Contractor.

Concrete Rubble = 99 Cu. Yds.

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

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

Where non-coated bars come in contact with epoxy coated bars, they need not be coated.

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

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. Submit electronic plans conforming to Section 105 of the Standard Specification with details in compliance with KDOT Specifications to the Engineer for review.

FALSEWORK INSPECTION: This project has falsework plan requirements which are considered "Category 2" by KDOT specifications. If falsework deficiencies or variations from the approved and sealed plans are found, the falsework design Engineer of Record will provide written approval of the changes. If for the convenience of the Contractor the falsework becomes "Category 1" by the use of non-typical supports; then the inspection and review requirement of "Category 1" will be fully enforced, but at no cost to the State. "Category 2" falsework inspection is not paid for directly, but is subsidiary to other bid items.

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

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

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

CAUSEWAY: If the Contractor chooses to build a causeway for bridge construction purposes, the Contractor shall obtain any required U.S. Army Corps of Engineers Section 404 Permit, Kansas State Board of Agriculture Permit, Kansas Department of Health and Environment Section 401 Permit, Kansas Department of Wildlife Parks, and Tourism Permit, or any other permit required by law for causeway construction. Obtain the permit in a timely manner so as not to delay the completion of the project.

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

BRIDGE DECK FINISHING: Give the surface a suitable texture by transverse tining perpendicular to the center line of the bridge with a tining float having a single row of fins. Make the grooving approximately 3/16 inch in width at 3/4 inch centers, with a depth of approximately 1/8 inch. Finishing the deck with a rough burlap drag will not be required. Transverse tining will be considered subsidiary to bid item "Concrete (Grade 4.0)(AE)(SW)".

BRIDGE DECK CURING: The curing of the full-depth bridge deck shall be in compliance with Section 710 of the KDOT Specifications.

CONSTRUCTION LOADS: Limited traffic is permitted on the new full-depth 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.

SLAB ELEVATIONS: The Contractor shall record elevation readings on the "Slab Elevations" sheet in the table at locations designated by a "(2)" and submit the sheet to the Engineer.

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

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

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

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

DESIGN DATA

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

DESIGN LOADING:
HL-93

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

UNIT STRESSES:

Concrete (Grade 3.0)	f'c	=	3 ksi
Concrete (Grade 4.0)(AE)	f'c	=	4 ksi
Concrete (Grade 4.0)(AE)(SW)	f'c	=	4 ksi
Reinforcing Steel (Grade 60)	fy	=	60 ksi
Steel Piles	fy	=	50 ksi

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength	Service	Phi
Abutment 1 & 2	52	36	0.65
Piers 1 & 2	170	120	0.65

LFD & LRFR RATING FACTORS		
Truck / Rating Level	Inventory	Operating
HS-20 (36T)	1.61	2.69
Type HET (110T)		1.30
2002 LFD Rating. 17th Edition AASHTO		
HL-93 Loading	1.48	1.92
2018 Manual for Bridge Evaluation		

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000750957003622 Sta. 107+83.81

GENERAL NOTES AND QUANTITIES
ARMSTRONG ROAD OVER VERMILLION CREEK

Proj. No. 75 C-5228-01 Pottawatomie Co.

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

Std. Base File:
Plotted By: BGS01485 | Plot Location:
File: 16756.221_013_General Notes_Quantities_BR200.dgn
Plot Date: 17-JUL-2024 09:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	15	54

P.O.T. ℄ Sta. 100+00.00
N 738,066.844 E 8,625,628.395
1. Not Set

P.O.T. ℄ Sta. 111+84.76
N 739,084.412 E 8,625,961.779
1. Not Set

HISTORICAL HIGHWATER INFORMATION
Mr. Forest Holliday, resident of the area since 1963, stated that flooding had occured in 1984, 1993, 2003 and 2019 with water over the roadway for several hours before the water receded. The historical highwater elevation of 1149.0 occured in the summer of 1984.

Scale 1" = 50'

Br. No. 000750957003623 Remove
24'-49'-15' Steel Beam, Simple (SBMS)
16'-0" Roadway
Demolition Category A

Forrest L. Holliday Trust
Donna Holliday Trust
TOL, E½, NE¼
Sec. 10, T6S, R12E

PI Sta. (Bk.) = 103+70.36
PI Sta. (Ahd.) =
Δ = 11°00'21" (LT)
D = 07°54'10"
R = 725.00'
T = 69.85'
L = 139.26'
E = 3.36'
Super = N.C.

PI Sta. (Bk.) = 108+85.34
PI Sta. (Ahd.) =
Δ = 65°08'18" (RT)
D = 95°29'35"
R = 60.00'
T = 38.33'
L = 68.21'
E = 11.20'
Super = N.C.

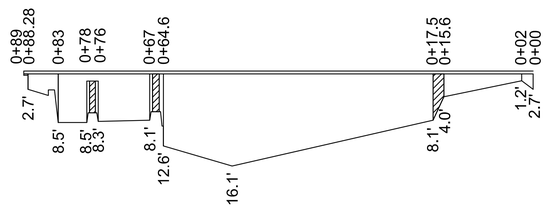
POT 100+00.00
McKee Road
PC 100+10.00
HCP #3
PT 101+44.46
PC 103+00.51
PT 104+39.77
Armstrong Road
Exist. Fence
Exist. Tree Line
Exist. Crop Line
BM #10
Exist. ℄ Armstrong Road
Exist. R/W
Underground Exist. Telephone Line (to be abandoned)
Exist. Crop Line
Exist. Tree Line
Proposed R/W
Proposed ℄ Armstrong Road = ℄ Project
+75.00 Exist. R/W= R/W 20' ℄
+60.00 R/W= 50' ℄
+60.05 Exist. R/W= Section Line 59' ℄
+74.50 Exist. R/W= Section Line 69' ℄
+78.44 Temp. Esmt.= Section Line 74' ℄
BM #15
Section Line
Exist. Tree Line
PT 109+15.22
Proposed ℄ Armstrong Road = ℄ Project
Temp. Esmt.
+75.00 Temp. Esmt.= 140' ℄
PC 108+47.01
Vermillion Creek
Proposed R/W
+40.00 R/W= 50' ℄
+75.00 R/W= 40' ℄
+75.24 Exist. R/W= 21' ℄
+75.00 Exist. R/W= Temp. Esmt. 40' ℄
POT 111+84.76
+75.00 Exist. R/W= R/W 19' ℄
+75.00 R/W= 40' ℄
Exist. R/W
Tributary to Vermillion Creek

PI Sta. (Bk.) = 100+77.44
PI Sta. (Ahd.) =
Δ = 11°00'21" (RT)
D = 08°11'06"
R = 700.00'
T = 67.44'
L = 134.46'
E = 3.24'
Super = N.C.

Manuel Stone Fence Trust
TOL, N¼,
Sec. 11, T6S, R12E

Sta. 107+83.81 Construct
Br. No. 000750957003622
36'-48'-36' Reinforced Concrete
Slab Haunched (RCSH)
Skew: 20°00'00" Lt.
26'-0" Roadway
Category 2 Falsework

Manuel Stone Fence Trust
TOL, N¼,
Sec. 11, T6S, R12E



EXISTING WATERWAY OPENING
Armstrong Road Bridge over Vermillion Creek
(Looking Downstream)
Total Waterway Opening = 911 sq. ft.
Top of Opening Elevation 1142.6

UTILITIES

Telephone: JBN Telephone Co., Inc.
418 W. 5th Street
Holton, KS 66436
(785) 866-2310
Dave Scharer

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000750957003622 Sta. 107+83.81

CONTOUR MAP
ARMSTRONG ROAD OVER VERMILLION CREEK
Proj. No. 75 C-5228-01 Pottawatomie Co.

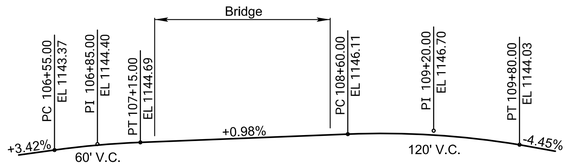
SHEET NO. OF	SCALE	APP'D					
DESIGNED	CJC	DETAILED	TAA	QUANTITIES	CJC	CADD	TAA
DESIGN CK.	CJC	DETAIL CK.	CJC	QUAN. CK.	CJC	CADD CK.	TAA

CADconform Certify This File

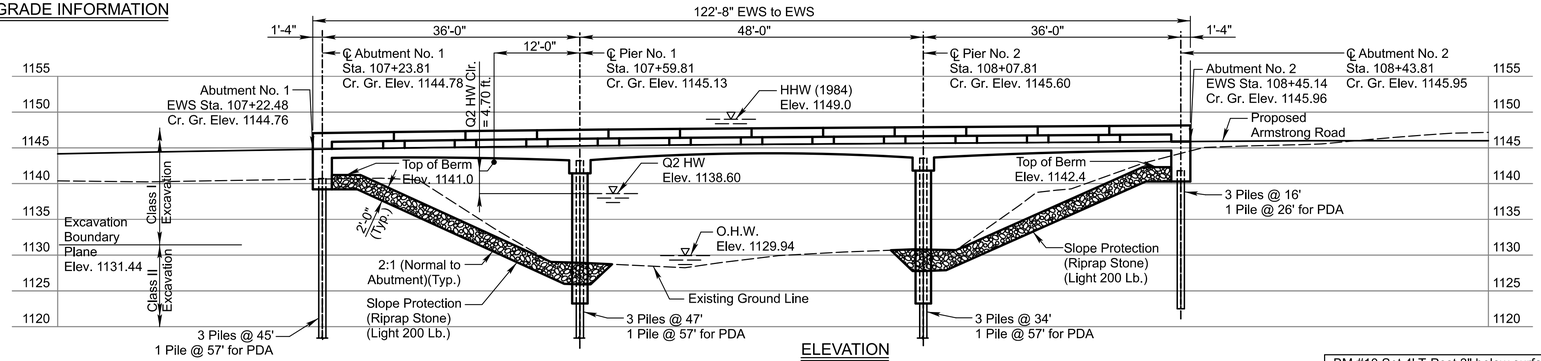
Sh. No. 15

Plotted By: BGS01485 | Plot Location:
File: 16756.221_014_Bridge_Contour Map.dgn
Plot Date: 17-JUL-2024 10:00

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	16	54



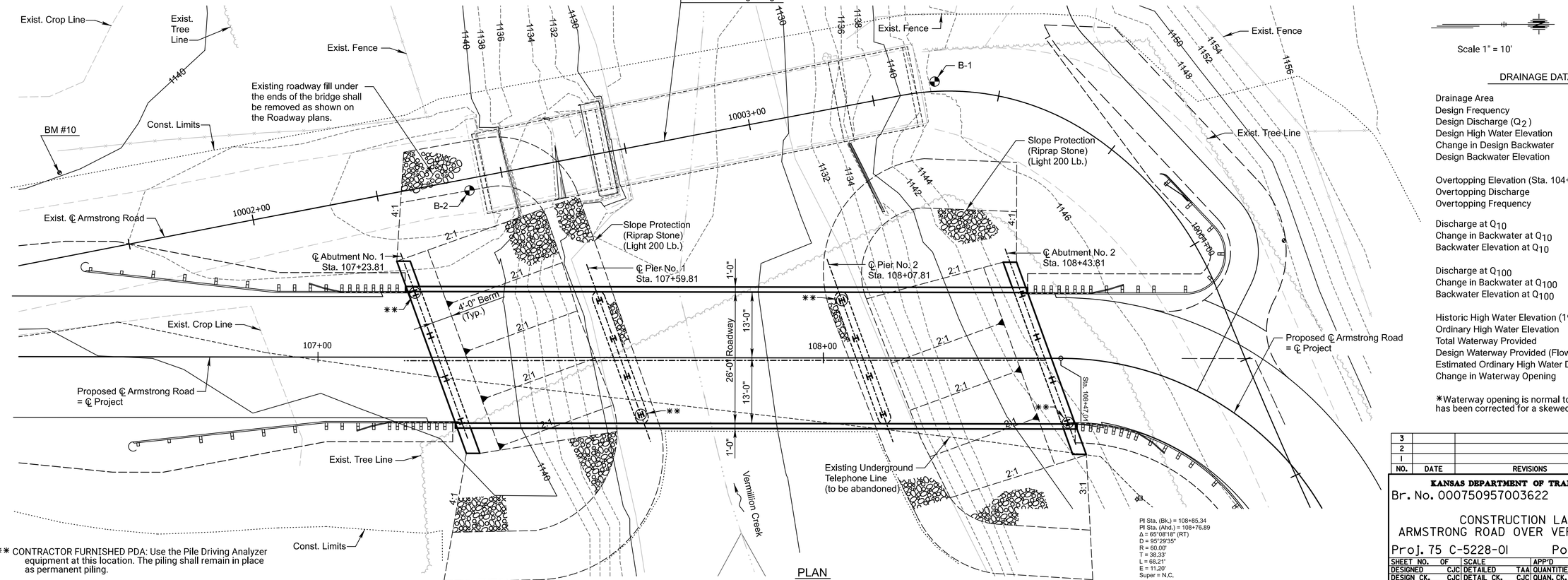
PROPOSED CROWN GRADE INFORMATION



ELEVATION

36'-48'-36' Reinforced Concrete
Haunched Slab Spans (RCSH)
Pile Bent Abutments and Piers
26'-0" Roadway, 20° Skew Lt.

BM #10 Set 4' T-Post 3" below surface West side of Armstrong Road 36.54' Lt. ℄ Armstrong Road Sta. 106+11.83 Elev. 1139.99
HCP #3 Set 5/8" Rebar with 2" Alum. Cap Stamped Bartlett & West HCP 1 East side of Armstrong Road 16.80' Rt. ℄ Armstrong Road Sta. 100+28.25 Elev. 1147.49



** CONTRACTOR FURNISHED PDA: Use the Pile Driving Analyzer equipment at this location. The piling shall remain in place as permanent piling.

PLAN

Scale 1" = 10'

DRAINAGE DATA

Drainage Area	39.70 sq. mi.
Design Frequency	2 yrs.
Design Discharge (Q_2)	2616 cfs
Design High Water Elevation	1138.60
Change in Design Backwater	-0.12 ft.
Design Backwater Elevation	1138.80 ft.
Overtopping Elevation (Sta. 104+00)	1138.62
Overtopping Discharge	2680 cfs
Overtopping Frequency	2+ yrs
Discharge at Q_{10}	8,804 cfs
Change in Backwater at Q_{10}	-0.05 ft.
Backwater Elevation at Q_{10}	1143.16
Discharge at Q_{100}	21,860 cfs
Change in Backwater at Q_{100}	-0.05 ft.
Backwater Elevation at Q_{100}	1146.89
Historic High Water Elevation (1984)	1149.00 ft.
Ordinary High Water Elevation	1129.94 ft.
Total Waterway Provided	1089 sq. ft.*
Design Waterway Provided (Flow Area)	626 sq. ft.*
Estimated Ordinary High Water Discharge	60 cfs
Change in Waterway Opening	+178 sq. ft.*

*Waterway opening is normal to stream flow and has been corrected for a skewed crossing.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000750957003622 Sta. 107+83.81

CONSTRUCTION LAYOUT
ARMSTRONG ROAD OVER VERMILLION CREEK

Proj. 75 C-5228-01 Pottawatomie Co.

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

CADconform Certify This File

Sh. No. 16

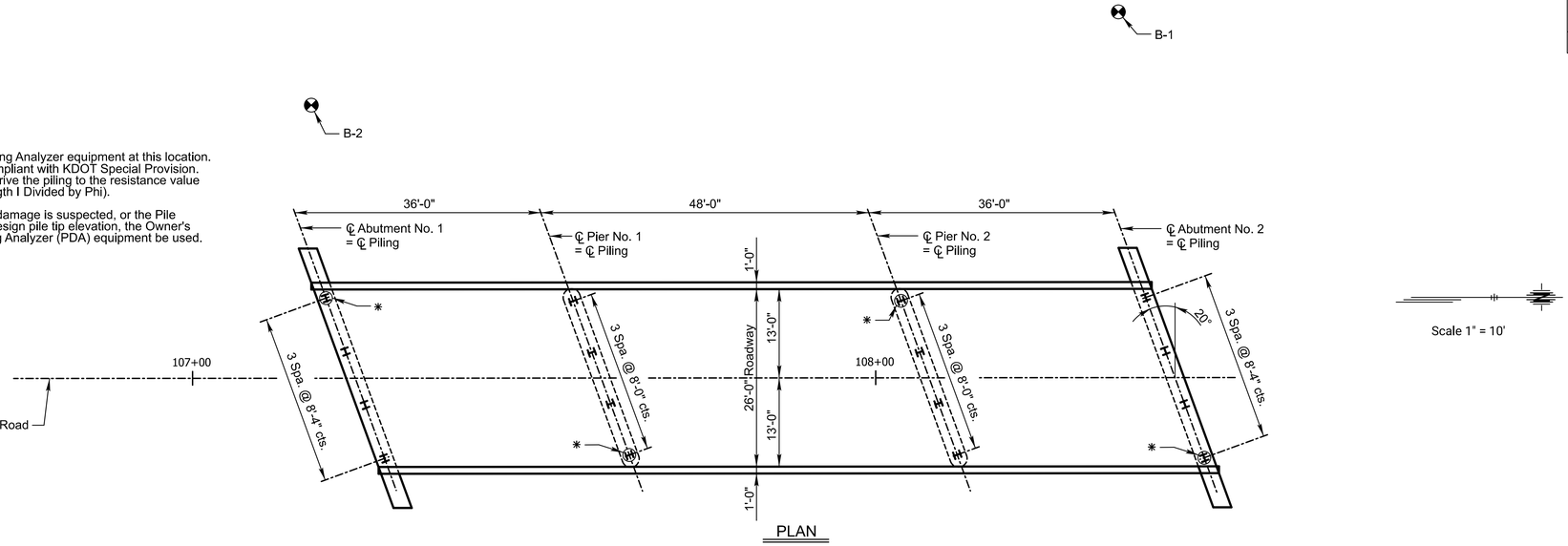
Plotted By: BGS0485 | Plot Location:
File: 16756.221_015_Bridge_Construction Layout.dgn
Plot Date: 17-JUL-2024 10:10

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	17	54

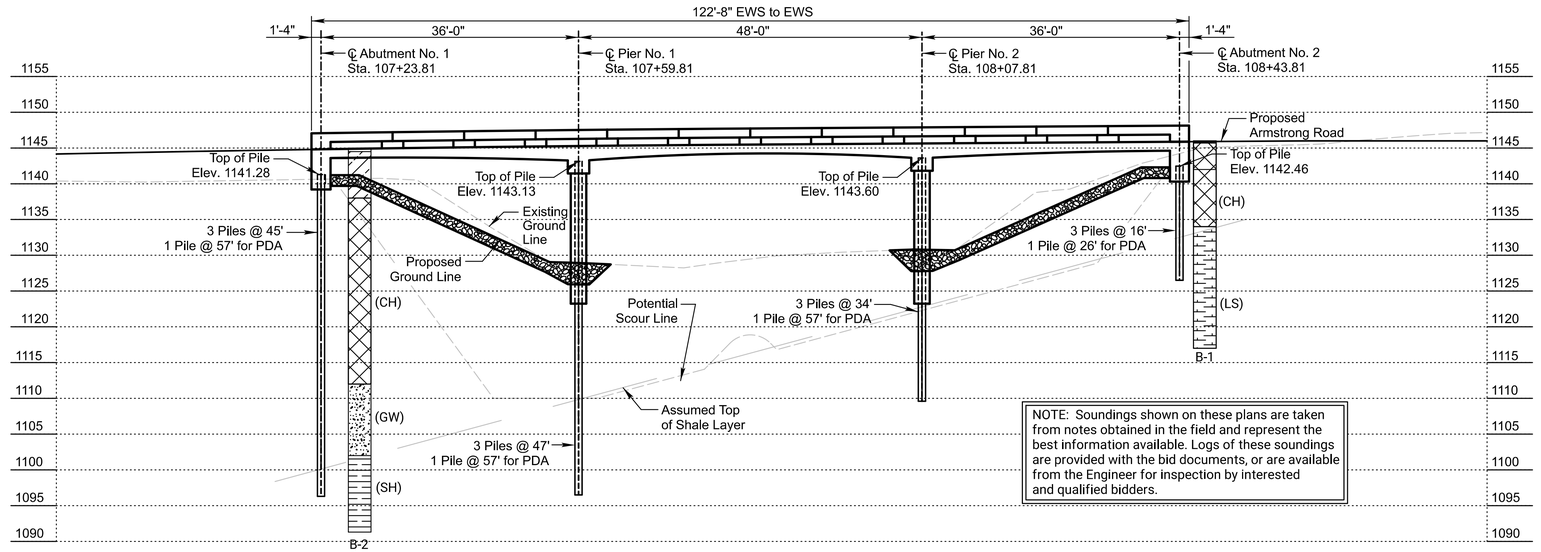
✱CONTRACTOR FURNISHED PDA: Use the Pile Driving Analyzer equipment at this location. Use Pile Driving Analyzer equipment and methods compliant with KDOT Special Provision. The piling shall remain in place as permanent piling. Drive the piling to the resistance value of 80 tons for abutments and 262 tons for piers (Strength I Divided by Phi).

At any location where problems are experienced, pile damage is suspected, or the Pile Driving Formula Load occurs significantly above the design pile tip elevation, the Owner's designated Engineer may requrest that the Pile Driving Analyzer (PDA) equipment be used.



PLAN

Scale 1" = 10'



PROFILE

STANDARD GEOLOGIC SYMBOLS

- Clay or Underclay
- Caliche
- Shale (SH)
- Limestone
- Mortar bed
- Fat Clay (CH)
- Silty Clayey Shale
- Sandstone
- Cherty Limestone
- Coal
- Lean Clay/ Fat Clay
- Limy Shale (LS)
- Shaly Sandstone
- Shaly Limestone
- Siltstone
- Sand
- Black or Fissile Shale
- Gypsum bed
- Sandy Limestone
- Chalk
- Gravel (GW)
- Sandy Shale
- Dolomite
- Weathered or Broken Limestone
- Wavy limestone
- Boulders
- Gypsiferous Shale
- Cross-bedded Sandstone
- Loess
- Chalky limestone

SOUNDINGS
- Core drill
- Power auger
- Hand tools
- Air hammer
- Cone (CPT) penetrometer
- Shelby tube

PRE-DRILLING: All steel piles at Pier 1 and Pier 2 shall be pre-drilled 10 feet into the shale layer. All steel piles at Abutment 2 shall be pre-drilled 5 feet into the shale layer. The diameter of the pre-drilled holes is 2'-3". Piles shall be set and driven to the computed bearing value shown.

After each pile at Pier 1 and Pier 2 has been driven, the pre-drilled hole shall be backfilled with Concrete (Grade 3.0) to the top of the shale layer. The remainder of each hole shall be backfilled with clean rounded 3/8" pea gravel. The Contractor shall keep alluvium from collapsing into the pre-drilled holes at Pier 1 and Pier 2 with temporary casing.

PRE-DRILLING: After each pile at Abutment 2 has been driven, the pre-drilled hole shall be backfilled with clean rounded 3/8" pea gravel.

PILING: Once sufficient resistance is achieved, driving should cease to avoid damage to the pile. Final pile tip elevations should be determined in the field based on the force calculations.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000750957003622 Sta. 107+83.81

ENGINEERING GEOLOGY
ARMSTRONG ROAD OVER VERMILLION CREEK

Proj. 75 C-5228-01 Pottawatomie Co

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

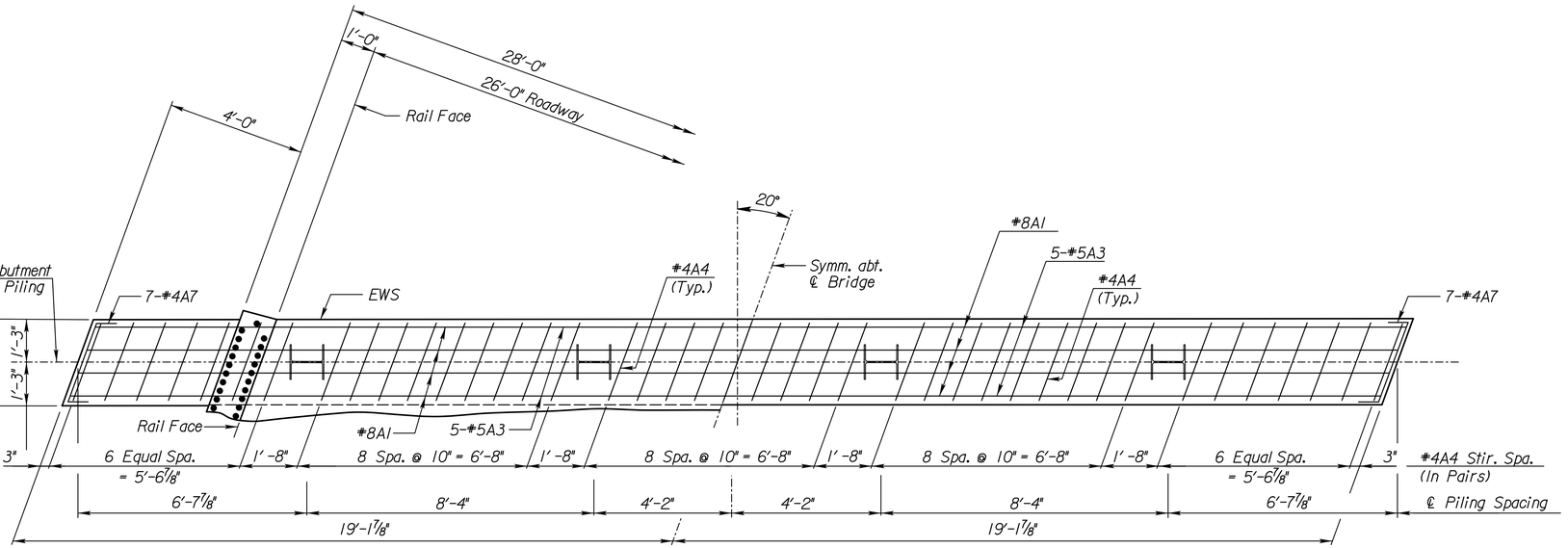
CADconform Certify This File

Sh. No. 17

Plotted By: BGS0485 Plot Location:
File: I6756.221_016_Engineering Geology.dgn
Plot Date: 17-JUL-2024 10:11

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	18	54

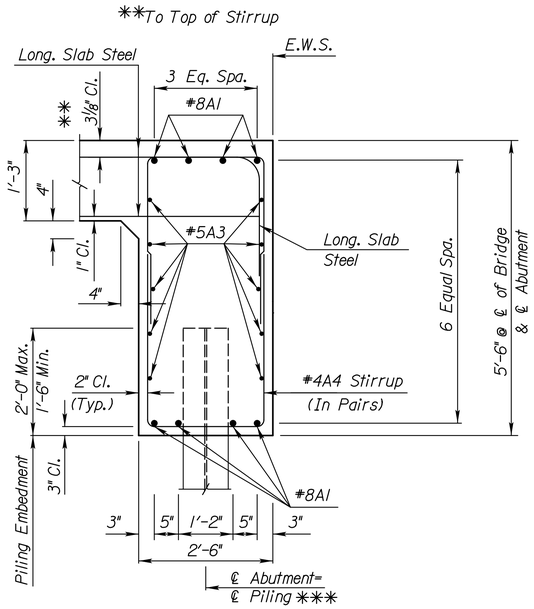
Irfdbr516.dgn	Plot 3
Roadway Width = 28'	Longest Span Length = 48'
Skew and Direction = 0	Total No. of Spans = 3
Loading = HL-93	Rolling Type = Corral



Reinforcing Steel In Top of Abutment

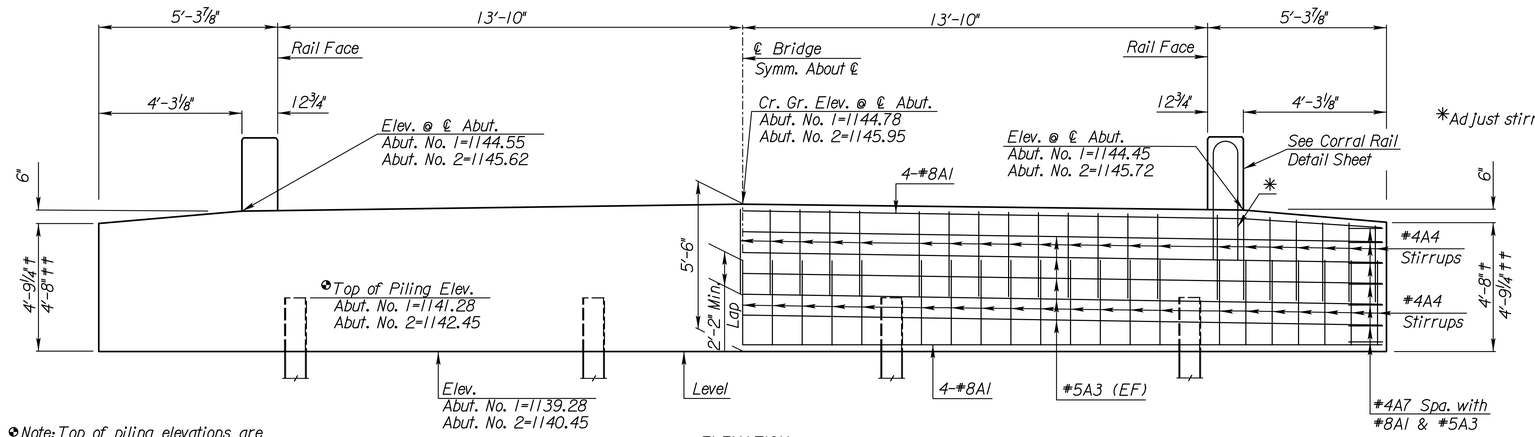
Reinforcing Steel In Bottom of Abutment

PLAN



TYPICAL SECTION

*** Only steel pile HP12x53 shall be used at Abutment No. 1 and Abutment No. 2.



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

ELEVATION

(Along ℄ Abutment)
(Looking South Abutment No. 1)
(Looking North Abutment No. 2)

* Adjust stirrup to avoid conflict with rail bars.

† Abutment No. 1
†† Abutment No. 2

Legend

EF = Each Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000750957003622 Sta. 107+83.81

ABUTMENT DETAILS
ARMSTRONG ROAD OVER VERMILLION CREEK

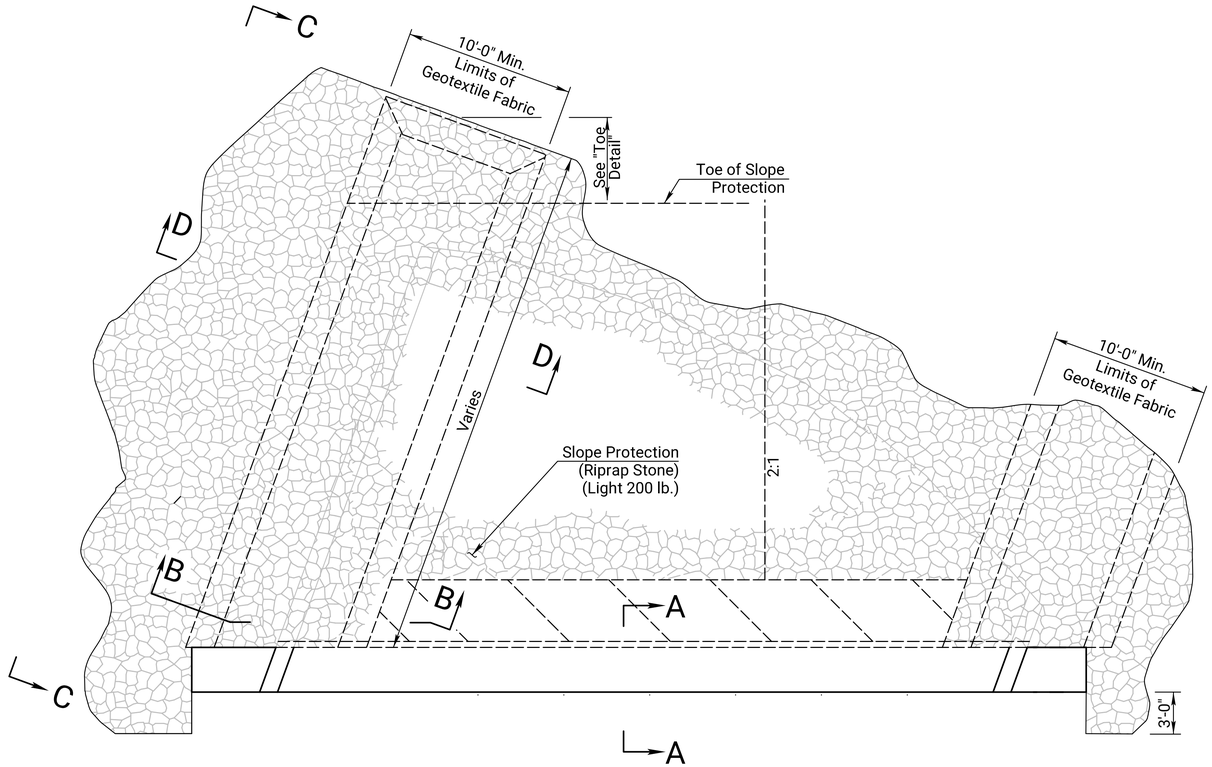
Proj. 75 C-5228-01 Pottawatomie Co.

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

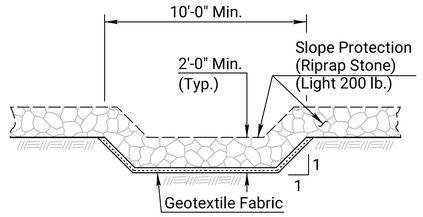
Sh. No. 18

Plotted By: BGS01485 Plot Location:
File: 16756.221.017_Abutment Details.dgn
Plot Date: 17-JUL-2024 10:12

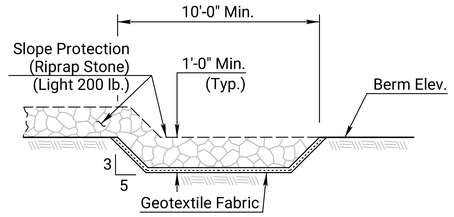
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	19	54



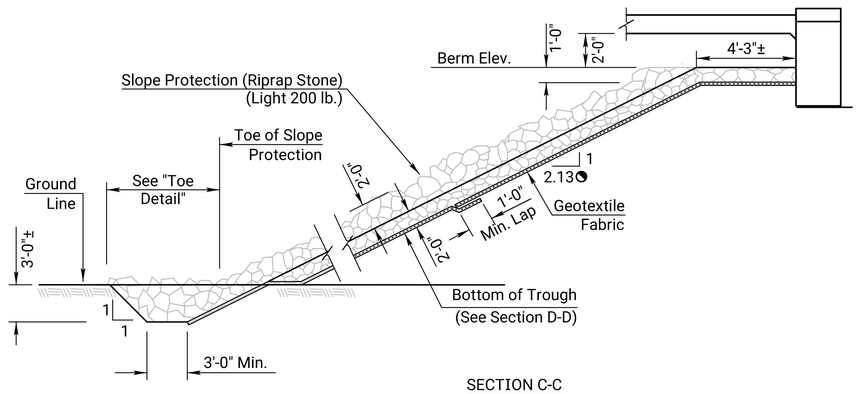
PLAN



SECTION D-D



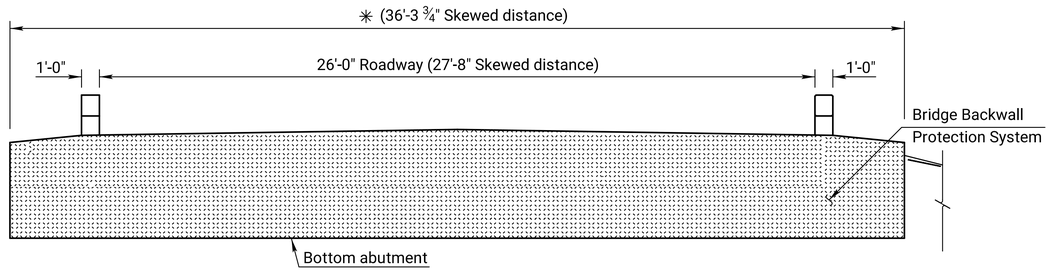
SECTION B-B



SECTION C-C

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

◔ Slope has accounted for the skewed crossing.

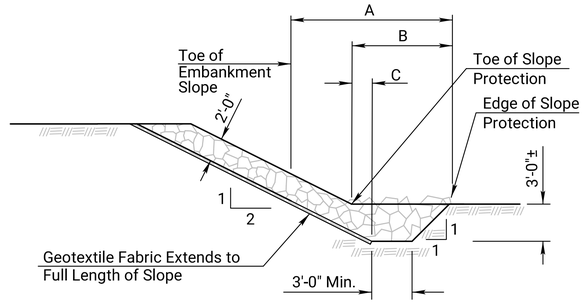


ELEVATION

GENERAL NOTES

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

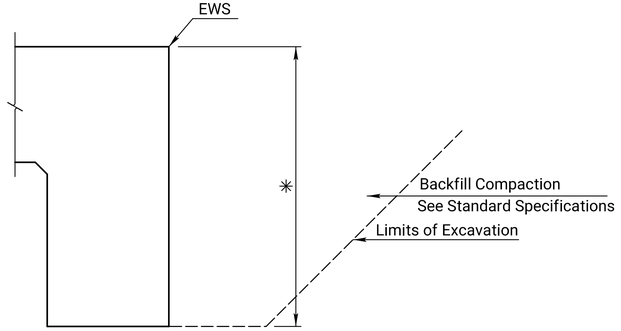
GEOTEXTILE FABRIC: Place a 10 foot wide mat of geotextile under the rock/rubble embankment on the berm and berm slopes and centered on the drip lines of the slab.



TOE DETAIL

Embankment slope varies from 2:1 (shown) to 4:1 (See Table)

Table of Toe Dimensions			
	2:1	3:1	4:1
A	12'-0"	15'-0"	18'-0"
B	7'-6"	8'-8"	9'-9"
C	1'-6"	2'-8"	3'-9"



SECTION A-A

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

SUMMARY OF QUANTITIES (2 Abutments)	
Bridge Backwall Protection System	44 Sq. Yds.
Geotextile Fabric	248 Sq. Yds.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000750957003622 Sta. 107+83.81

BRIDGE BERM AND SLOPE PROTECTION DETAILS
ARMSTRONG ROAD OVER VERMILLION CREEK

Proj. 75 C-5228-01 Pottawatomie Co.

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

KDOT Graphics Certified 09-02-2022 Sh. No. 19

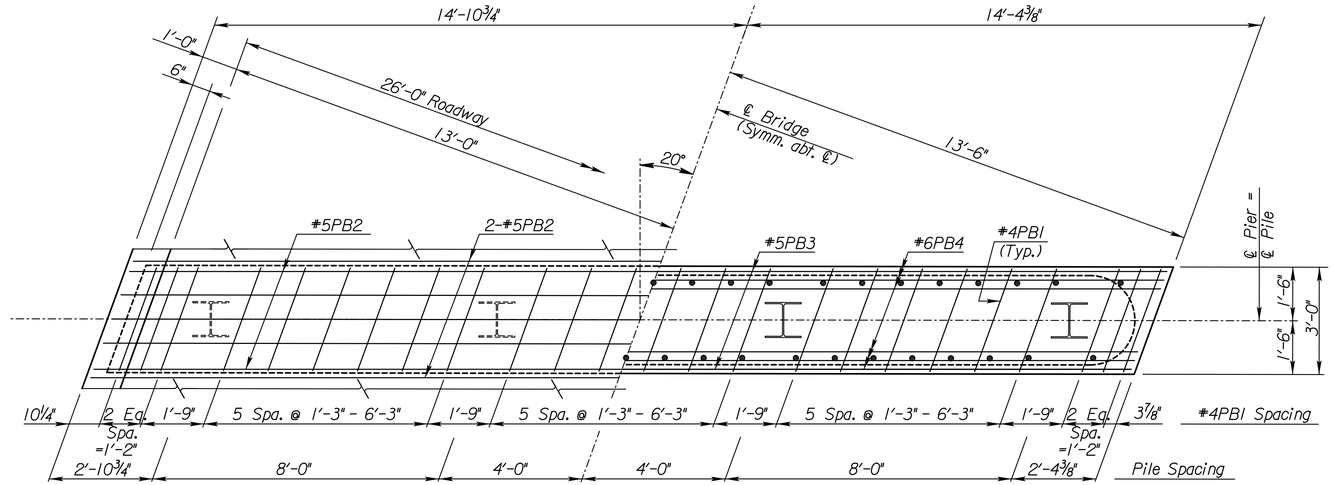
KDOT Graphics Certified

Plotted by : BGS01485 17-JUL-2024 10:13
File : 16756.221_018_Berm and Slope Protection_br104g.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	20	54

Plot 3
irfdbr516.dgn
Roadway Width = 28'
Skew and Direction = 0
Loading = HL-93
Longest Span Length = 48'
Total No. of Spans = 3
Rolling Type = Corral

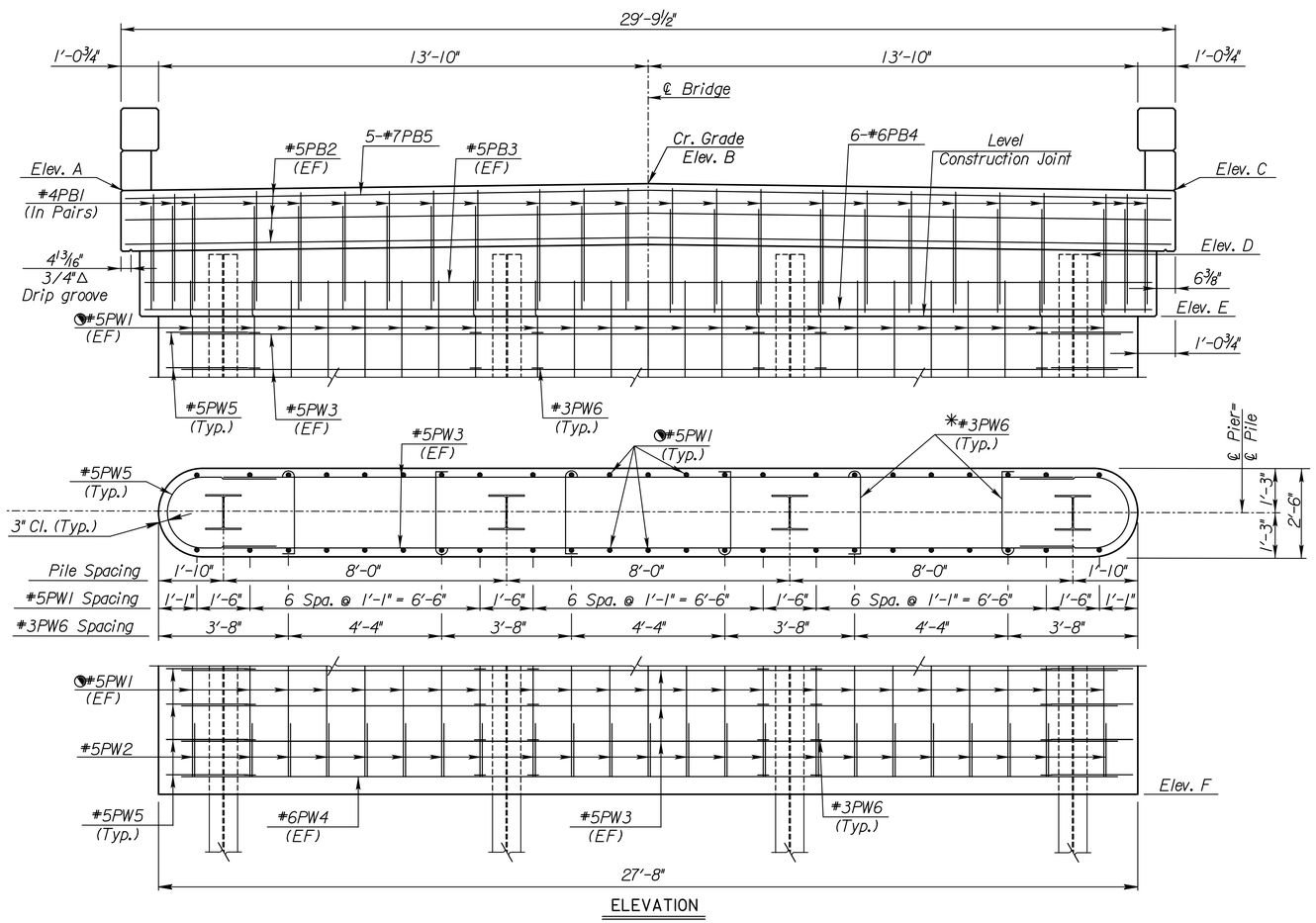
Plotted By: BGS01485
File: 16756.221_019_Pier Details.dgn
Plot Date: 17-JUL-2024 10:14
Plot Location:



Reinforcing in Top of Pier Beam

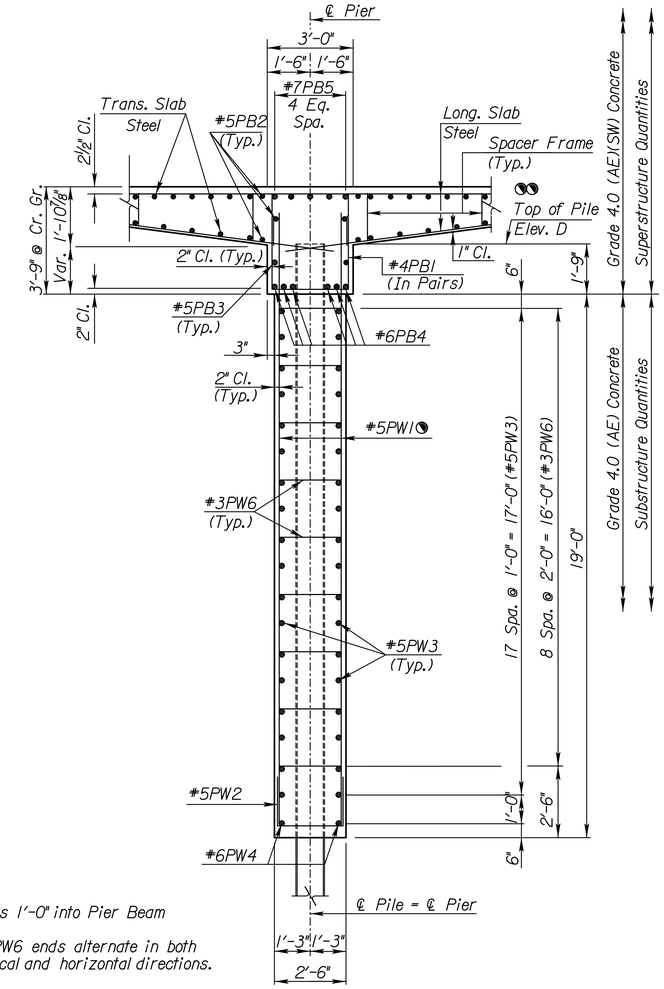
PLAN

Reinforcing in Bottom of Pier Beam



ELEVATION

Note: Top of Pile elevation is based on 1'-9" embedment into the Pier Beam.



#5PWI Extends 1'-0" into Pier Beam

* Note: The #3PW6 ends alternate in both the vertical and horizontal directions.

SECTION THRU PIER BEAM

LEGEND

EF = Each Face

ELEVATION TABLE		
	Pier #1	Pier #2
Elevation A	1144.85	1145.32
Elevation B	1145.13	1145.60
Elevation C	1144.95	1145.42
Elevation D	1143.13	1143.60
Elevation E	1141.38	1141.85
Elevation F	1122.38	1122.85

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

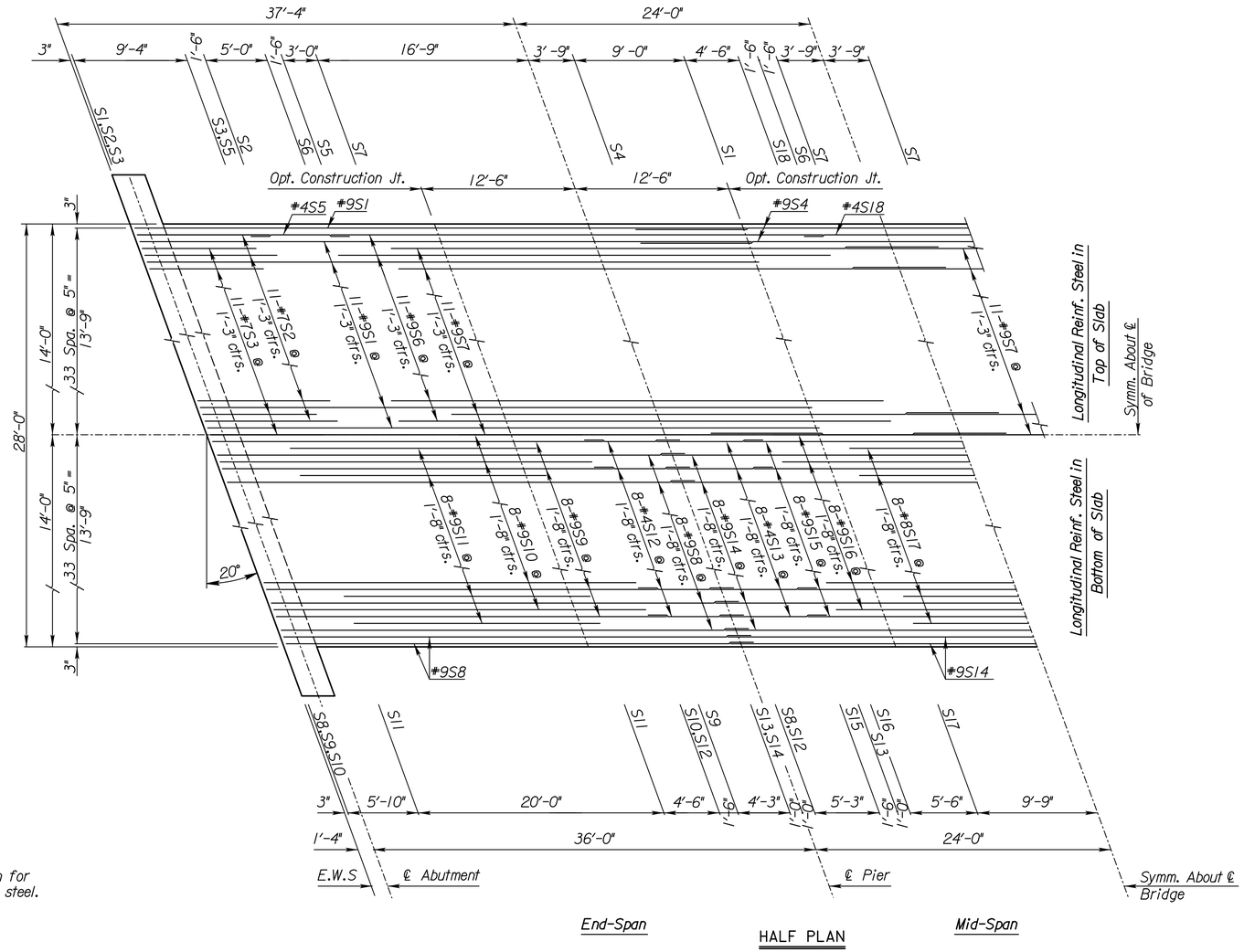
Br. No. 000750957003622 Sta. 107+83.81

PIER DETAILS
ARMSTRONG ROAD OVER VERMILLION CREEK

Proj. 75 C-5228-01 Pottawatomie Co.

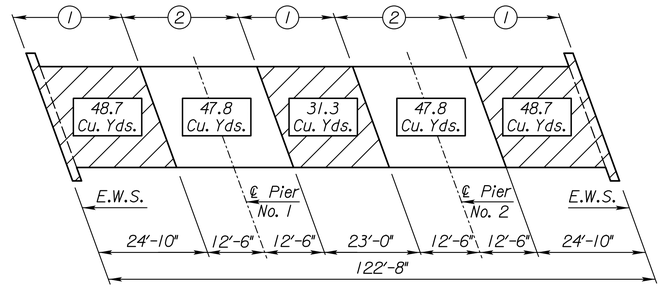
SHEET NO. OF	SCALE	APP'D	
DESIGNED CJC	DETAILED TAA	QUANTITIES CJC	CADD TAA
DESIGN CK. JEB	DETAIL CK. CJC	QUAN. CK. CJC	CADD CK. TAA

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	21	54



HALF PLAN

Note:
See longitudinal section for transverse reinforcing steel.



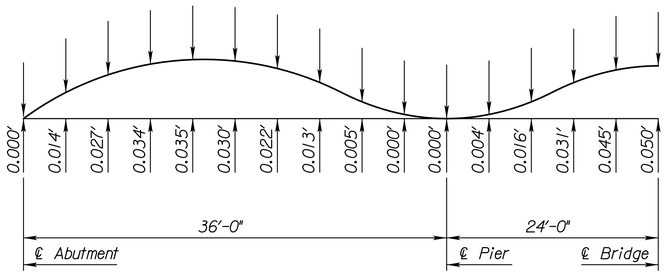
CONCRETE PLACING SEQUENCE DIAGRAM

CONCRETE PLACING SEQUENCE

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

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

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



DEAD LOAD CAMBER DIAGRAM AT TENTH POINTS

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

Note: Due to the 20° skew, the camber shown is 80% of that of a non-skewed bridge.

Note: 1.0 & 4.0 pts. are taken at ℄ of abutments
2.0 & 3.0 pts. are taken at ℄ of piers

Top of Form Elevation at 10th Points, (ft.)															
1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5
1144.78	1144.81	1144.85	1144.88	1144.92	1144.95	1144.99	1145.02	1145.06	1145.09	1145.13	1145.18	1145.22	1145.27	1145.32	1145.36
2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	
1145.41	1145.46	1145.50	1145.55	1145.60	1145.63	1145.67	1145.70	1145.74	1145.78	1145.81	1145.85	1145.88	1145.92	1145.95	

Note: Elevations are taken at Crown Grade. Note: The change in elevation from Crown Grade to the Edge of Slab is -0.224'.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000750957003622 Sta. 107+83.81

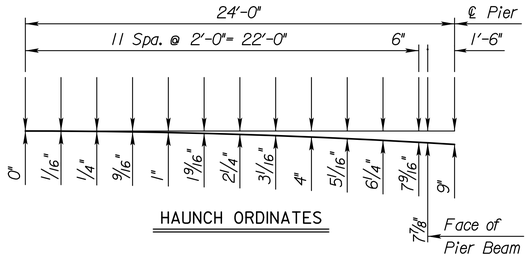
SUPERSTRUCTURE DETAILS
ARMSTRONG ROAD OVER VERMILLION CREEK
Proj. 75 C-5228-01 Pottawatomie Co.

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

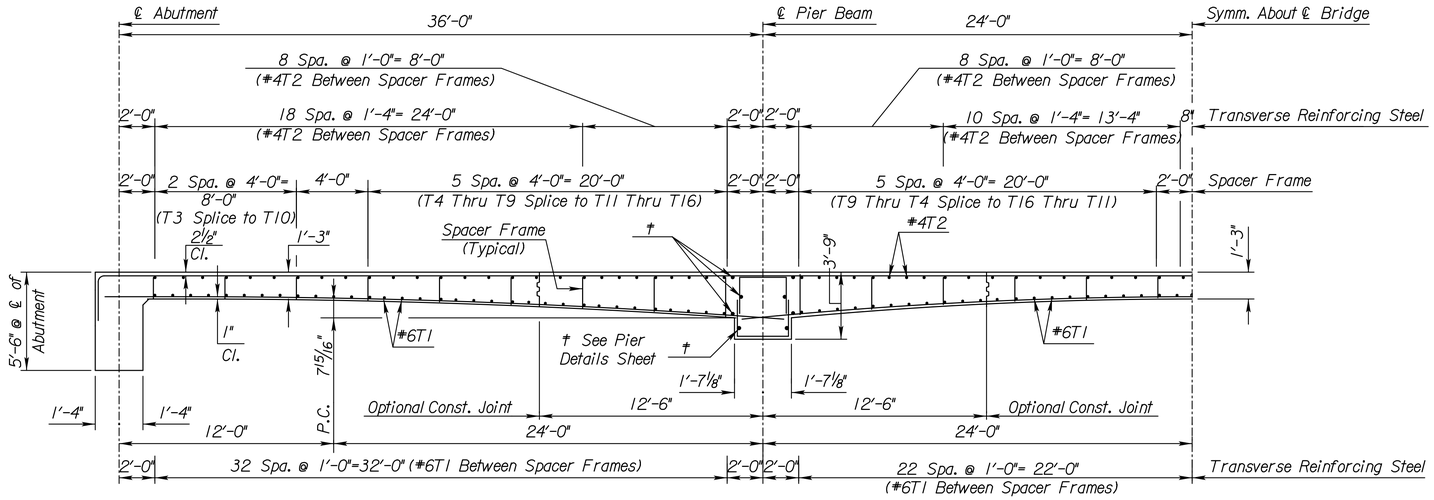
Sh. No. 21

Plotted By: BGS01485 Plot Location:
File: 16756.221.020_Superstructure Details_br516.dgn
Plot Date: 17-JUL-2024 10:15

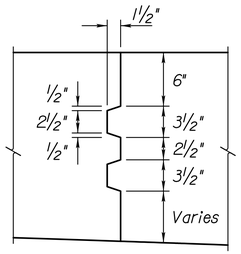
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	22	54



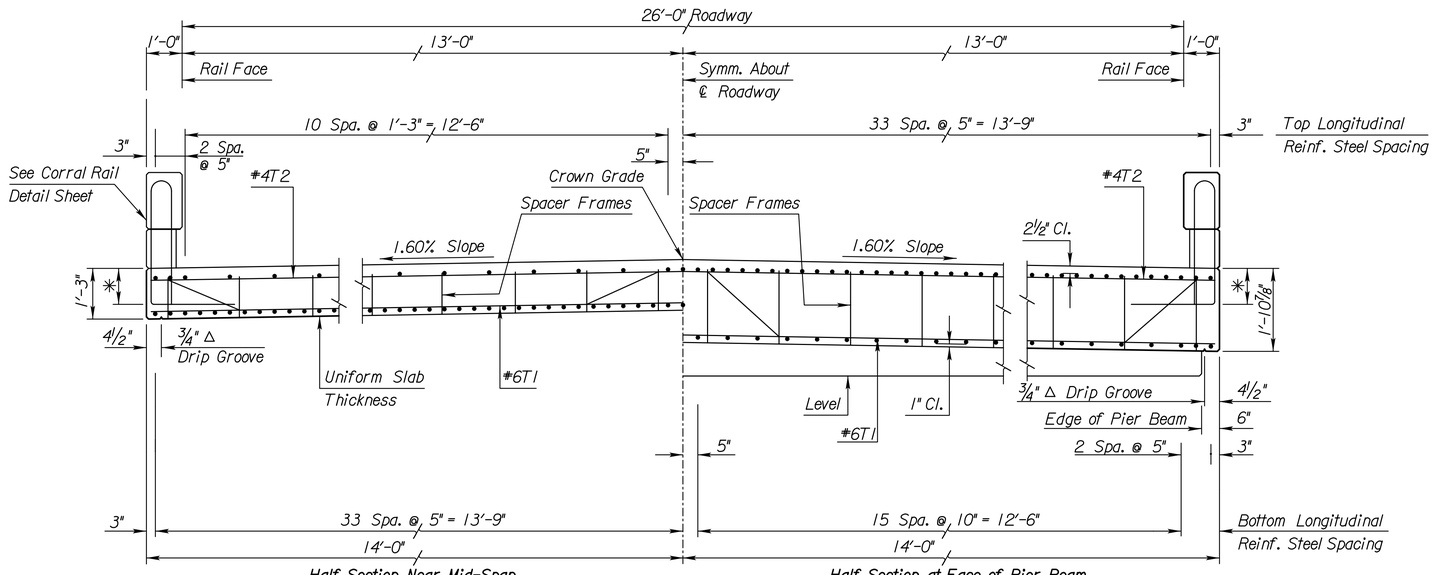
HAUNCH ORDINATES



HALF LONGITUDINAL SECTION ALONG ℄ BRIDGE



TRANSVERSE SLAB CONSTRUCTION JOINT
(Optional)



TYPICAL SECTION OF SLAB

* See Corral Rail Detail Sheet.

NO.	DATE	REVISIONS	BY	APP'D
4				
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000750957003622 Sta. 107+83.81

SUPERSTRUCTURE DETAILS
ARMSTRONG ROAD OVER VERMILLION CREEK

Proj. 75 C-5228-01 Pottawatomie Co.

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

Sh. No. 22

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

Plotted By: BGS0485
File: 16756.221.021_Superstructure Details_br5i6.dgn
Plot Date: 17-JUL-2024 10:16
Plot Location:

Irfdbr5i6.dgn

SLAB ELEVATIONS

				Formwork				Screed			Thickness			Deck Profile	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Survey	Station (1)(16)	† Location (13)	Transverse Location (13)	Estimated Falsework Crush (inch) (1)(4)	Target Elevation TOF (1)(6)	Actual Elevation TOF (2)	TOF Variance (QA/QC) (± inch) (2)(5)	Target Screed El. = TOC El. (1)(6)	Actual Bottom of Screed Elevation Prior to Pour (2)	Screed Variance (QA/QC) (± inch) (2)(7)	Plan Deck Thickness (inch) (1)	Measured Deck Thickness (2)(8)	Deck Thickness Variance (QA/QC) (± inch) (2)(9)	Plan TOC El. (1)	Actual TOC El. Optional Survey Date: (3)
A	107+18.71	℄ Brg. of Abut. #1	Left Fascia					1144.50						1144.50	
	107+23.81		Crown Gr.					1144.78						1144.78	
	107+28.91		Right Fascia					1144.60						1144.60	
B	107+20.04	Interior Face of Abut. #1	Left Fascia		1143.27						15			1144.52	
	107+25.14		Crown Gr.		1143.54						15			1144.79	
	107+30.24		Right Fascia		1143.37						15			1144.62	
C	107+33.11	4/10 Point from Abut. #1	Left Fascia	1/4	1143.44			1144.70			15 1/16			1144.64	
	107+38.21		Crown Gr.	1/4	1143.72			1144.97			15 1/16			1144.92	
	107+43.31		Right Fascia	1/4	1143.54			1144.80			15 1/16			1144.74	
D	107+53.12	Span #1 Face of Pier Beam	Left Fascia	1/4	1142.96						22 7/8			1144.84	
	107+58.21		Crown Gr.	1/4	1143.23						22 7/8			1145.11	
	107+63.31		Right Fascia	1/4	1143.06						22 7/8			1144.94	
E	107+54.71	℄ Brg. of Pier #1	Left Fascia					1144.86						1144.86	
	107+59.81		Crown Gr.					1145.13						1145.13	
	107+64.91		Right Fascia					1144.96						1144.96	
F	107+56.31	Span #2 Face of Pier Beam	Left Fascia	1/4	1142.99						22 7/8			1144.87	
	107+61.41		Crown Gr.	1/4	1143.26						22 7/8			1145.14	
	107+66.50		Right Fascia	1/4	1143.09						22 7/8			1144.97	
G	107+78.71	Midpoint of Span #2	Left Fascia	1/4	1143.91			1145.16			15			1145.09	
	107+83.81		Crown Gr.	1/4	1144.18			1145.43			15			1145.36	
	107+88.91		Right Fascia	1/4	1144.01			1145.26			15			1145.19	
H	108+01.12	Span #2 Face of Pier Beam	Left Fascia	1/4	1143.43						22 7/8			1145.31	
	108+06.21		Crown Gr.	1/4	1143.70						22 7/8			1145.58	
	108+11.31		Right Fascia	1/4	1143.53						22 7/8			1145.41	
I	108+02.71	℄ Brg. of Pier #2	Left Fascia					1145.33						1145.33	
	108+07.81		Crown Gr.					1145.60						1145.60	
	108+12.91		Right Fascia					1145.43						1145.43	
J	108+04.31	Span #3 Face of Pier Beam	Left Fascia	1/4	1143.46						22 7/8			1145.34	
	108+09.41		Crown Gr.	1/4	1143.73						22 7/8			1145.62	
	108+14.50		Right Fascia	1/4	1143.56						22 7/8			1145.44	
K	108+24.31	4/10 Point from Abut. #2	Left Fascia	1/4	1144.34			1145.59			15 1/16			1145.54	
	108+29.41		Crown Gr.	1/4	1144.61			1145.87			15 1/16			1145.81	
	108+34.51		Right Fascia	1/4	1144.44			1145.69			15 1/16			1145.64	
L	108+37.38	Interior Face of Abut. #2	Left Fascia		1144.42						15			1145.67	
	108+42.48		Crown Gr.		1144.69						15			1145.94	
	108+47.58		Right Fascia		1144.52						15			1145.77	
M	108+38.71	℄ Brg. of Abut. #2	Left Fascia					1145.68						1145.68	
	108+43.81		Crown Gr.					1145.95						1145.95	
	108+48.91		Right Fascia					1145.78						1145.78	

† Stationing shown increasing

NOTE: The Contractor will submit a completed copy of this table to the Engineer to be inserted into the As-Builts plan set.

* It is assumed that piling have been driven to design bearing and checked by ENR formula (QA/QC). No allowance for pile settlement is included in crush.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	23	54

Pour Dates (2)	
	Deck
	Left Rail (13)
	Right Rail (13)

Survey Data (1)(11)	
Bench Mark No.	Elevation
BM #10	1139.99
HCP #3	1147.49

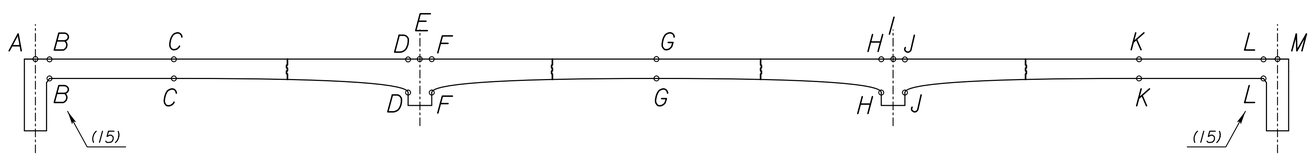
Crown Grade Profile (1)(12)	
107+15.00	VPT Station
1144.69	VPT Elevation
+0.98%	GI %
108+60.00	VPC Station
1146.11	VPC Elevation

Slab Thickness (1)		Span Data (1)	
15"	Uniform Depth (inch)	HL-93	Design Loading
7 7/8"	Haunch Depth @ Face of PB (inch)	36	Span #1 (ft)
		48	Span #2 (ft)
1/16"	Haunch Depth @ 0.4 Point (inch)	2 1/2	Clear Cover (inch)

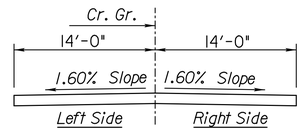
Roadway Data (1)(10)(13)	
28	Deck Width (ft) (14)
-1.60	% Slope Left (±)
-1.60	% Slope Right (±)
20°-00'-00" Left	Skew (dd:mm:ss)

Camber (1)(17)	
0.035	Span #1 0.4 Point (ft)
0.050	Span #2 Midspan (ft)

(1) By the Design Engineer
(2) By the Contractor
(3) By Request
*(4) Estimated crush for typical falsework. Revise estimate if/when more accurate information becomes available.
(5) (col 7 - col 6)x12
(6) Crush (Take Up) and camber must be included
(7) (col 10 - col 9)x12
(8) (col 10 - col 7)x12
(9) (col 13 - col 12)
(10) If transition falls on the bridge, then enter "Varies" for the % Slope
(11) From "Construction Layout" sheet
(12) If bridge is not between the VPT and VPC, enter Abutment #1 ℄ bearing elevation from the "Construction Layout" sheet. Represent a change in grade with GI only.
(13) Looking Up-Station
(14) Out-to-Out
(15) Ignore Fillet
(16) Non-skewed bridges only require ℄ stations.
(17) Ignore theoretical camber at face of pier beams.



ELEVATION OF SLAB



TYPICAL SECTION
(Looking Up-Station)

Legend
TOF = Top of Formwork
TOC = Top of Concete
QA = Quality Assurance
QC = Quality Control

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

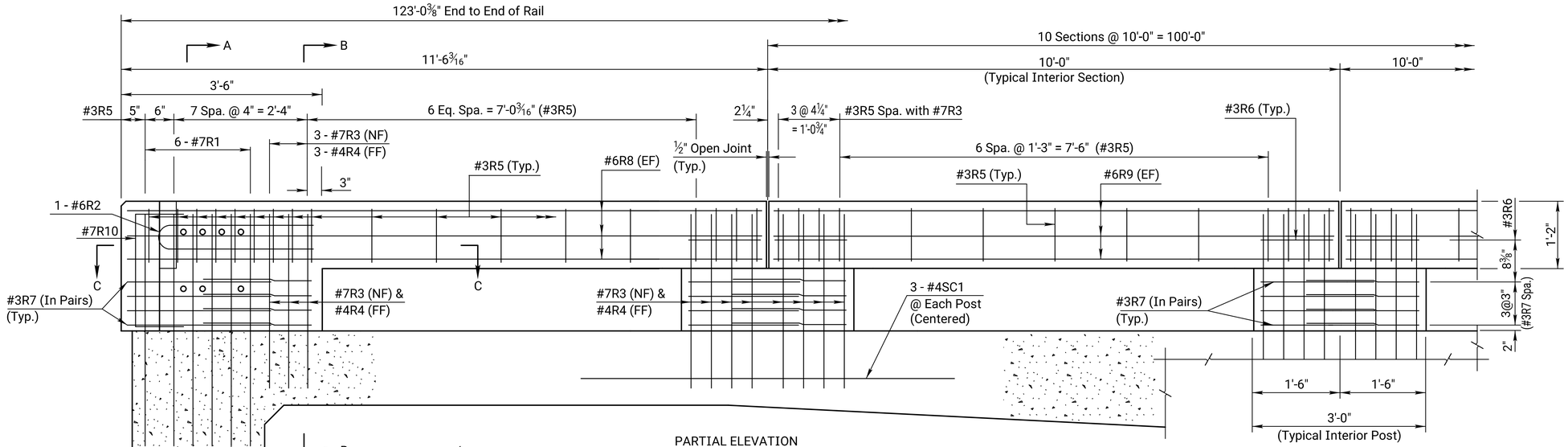
KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000750957003622 Sta. 107+83.81
SLAB ELEVATIONS
ARMSTRONG ROAD OVER VERMILLION CREEK
Proj. 75 C-5228-01 Pottawatomie Co.

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

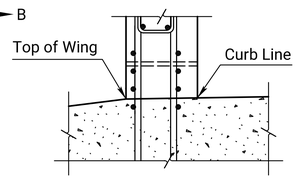
Sh. No. 23

Plotted By: BGS01485 Plot Location:
File: I6756.221.022_Slab Elevations_br201bussc.dgn
Plot Date: 17-JUL-2024 10:17

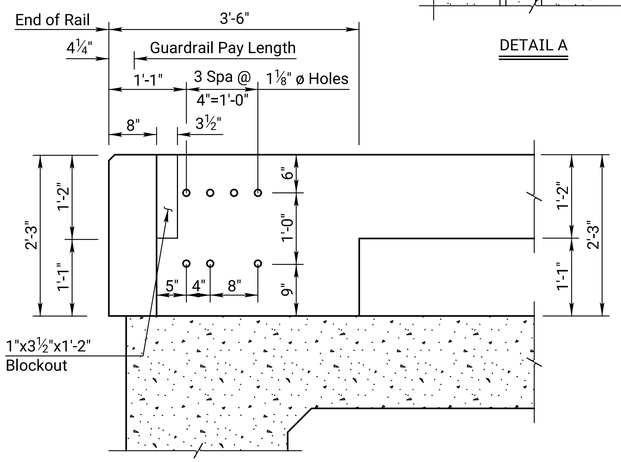
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	24	54



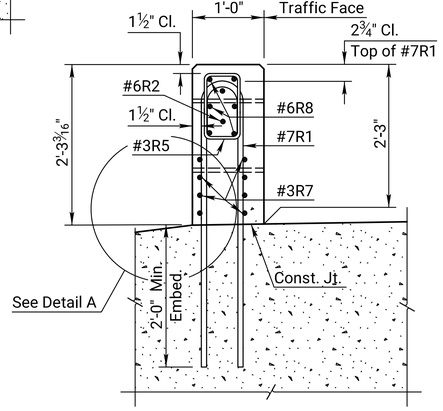
PARTIAL ELEVATION
(Along Traffic Face)



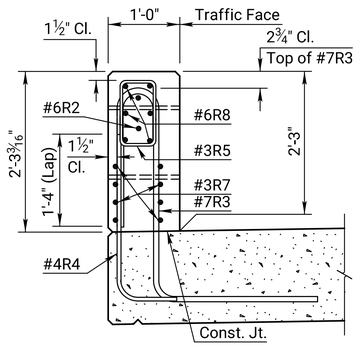
DETAIL A



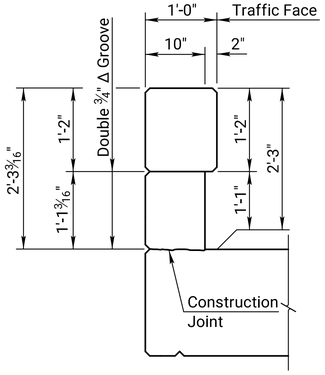
ELEVATION
(Dimensions at traffic face of rail.)



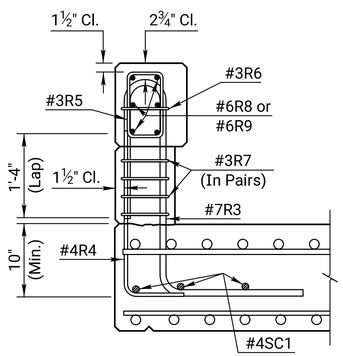
SECTION A-A



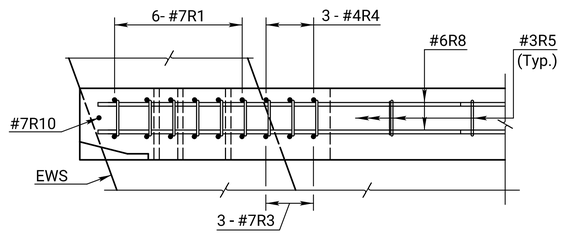
SECTION B-B



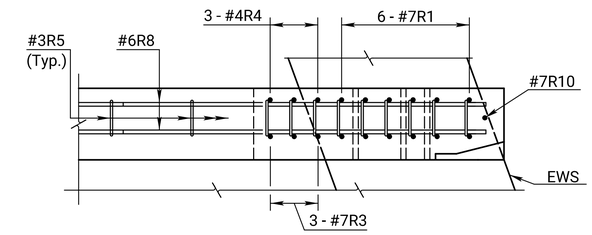
TYPICAL INTERIOR POST



SECTION THRU POST



At Abutment No. 1



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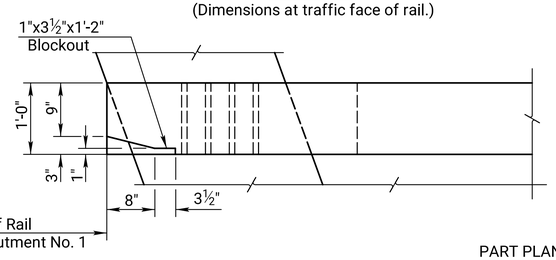
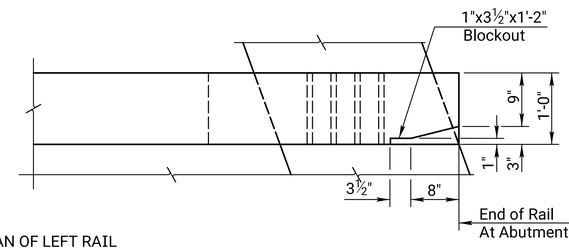
SECTION C-C





PART PLAN OF LEFT RAIL

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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 000750957003622 Sta. 107+83.81

27" KANSAS CORRAL RAIL
ARMSTRONG ROAD OVER VERMILLION CREEK

Proj. 75 C-5228-01 Pottawatomie Co.

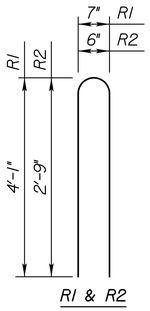
DESIGNED	CJC	DETAILED	TAA	QUANTITIES	CJC	CADD	TAA
DESIGN CK.	CJC	DETAIL CK.	CJC	QUAN.CK.	CJC	CADD CK.	TAA

KDOT Graphics Certified 10-21-2022 Sh. No. 24

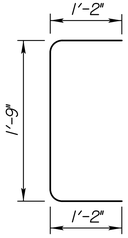
KDOT Graphics Certified

Plotted by : BGS01485 17-JUL-2024 10:17
File : 16756.221_023_27 Corral Rail_br183a.dgn

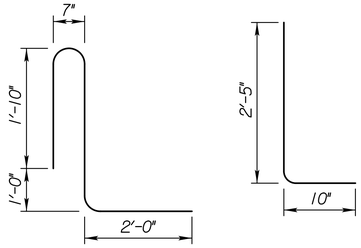
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	25	54



R1 & R2

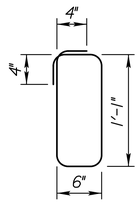


R10

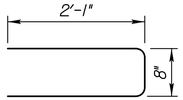


R3

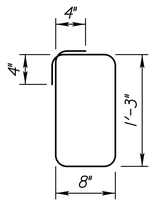
R4



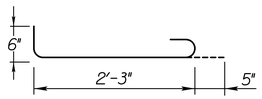
R5



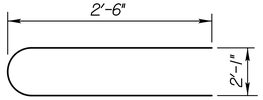
R7



R6



PW6



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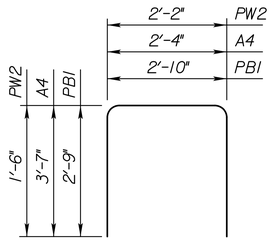
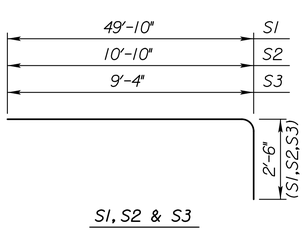
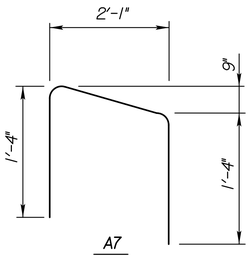


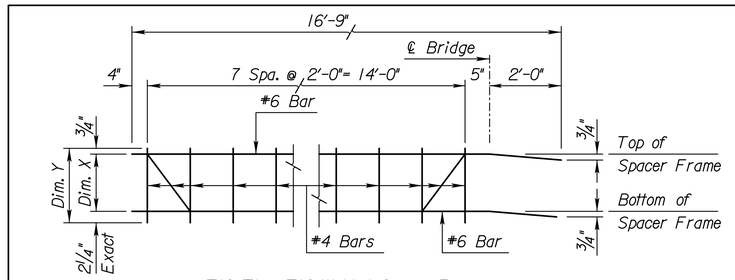
A4, PB1 & PW2



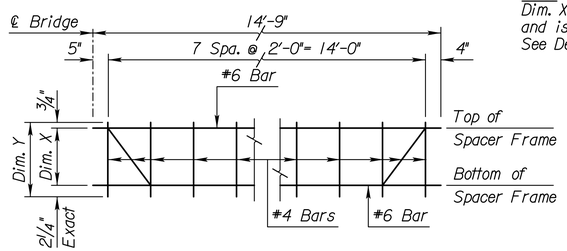
S1, S2 & S3



A7

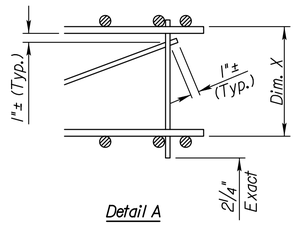


T10 Thru T16 Welded Spacer Frames



T3 Thru T9 Welded Spacer Frames

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



Detail A

⊗ SPACER FRAMES
(Epoxy Coated)

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

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

BILL OF REINFORCING STEEL
Non-Epoxy Coated - Grade 60

	Straight Bars				Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Substructure	PW4	#6	4	25'-6"	PW2	#5	46	5'-2"
					PW5	#5	76	6'-1"
	PW1	#5	92	20'-6"				
	PW3	#5	72	25'-6"	PW6	#3	108	3'-2"

BILL OF REINFORCING STEEL
Epoxy Coated - Grade 60

		Straight Bars				Bent Bars			
		Mark	Size	Number	Length	Mark	Size	Number	Length
Superstructure	Abutment - Deck - Rail	S4	#9	4	40'-6"	S1	#9	48	52'-4"
		S6	#9	44	40'-0"				
		S7	#9	42	44'-6"	R1	#7	24	8'-5"
		S8	#9	40	38'-1"	R3	#7	188	6'-11"
		S9	#9	32	31'-10"	R10	#7	4	4'-1"
		S10	#9	30	30'-4"	S2	#7	44	13'-4"
		S11	#9	32	20'-0"	S3	#7	42	11'-10"
		S14	#9	20	50'-0"				
		S15	#9	16	35'-6"	R2	#6	4	5'-10"
		S16	#9	15	30'-6"				
						A4	#4	164	9'-6"
		A1	#8	16	38'-0"	A7	#4	28	4'-10"
		S17	#8	16	19'-6"	R4	#4	188	3'-3"
		R8	#6	24	11'-2"	R5	#3	332	3'-6"
		R9	#6	120	9'-8"	R6	#3	44	4'-6"
		T1	#6	81	29'-8"	R7	#3	176	4'-10"
		A3	#5	20	38'-0"	T3-T16			⊗
		S5	#4	4	8'-0"				
		S12	#4	32	7'-9"				
		S13	#4	32	8'-9"				
		S18	#4	2	13'-6"				
		SC1	#4	66	6'-6"				
		T2	#4	62	29'-8"				
	Pier Beam	PB5	#7	10	29'-5"	PB1	#4	96	8'-4"
		PB4	#6	12	28'-4"				
		PB2	#5	12	29'-5"				
		PB3	#5	4	28'-4"				

⊗ See Bending Diagram

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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 000750957003622 Sta. 107+83.81
BILL OF REINFORCING STEEL
AND BENDING DIAGRAMS
ARMSTRONG ROAD OVER VERMILLION CREEK
Proj. 75 C-5228-01 Pottawatomie Co.

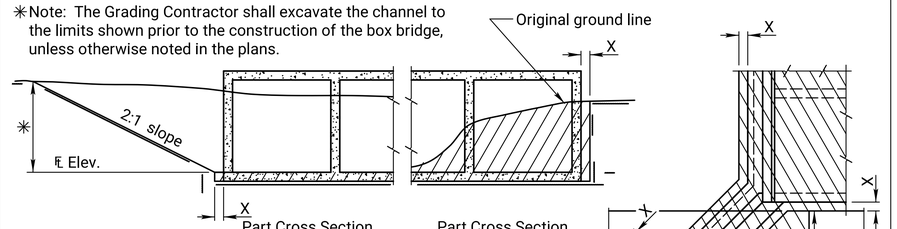
SHEET NO.	OF	SCALE		APP'D			
DESIGNED	CJC	DETAILED	TAA	QUANTITIES	CJC	CADD	TAA
DESIGN CK.	CJC	DETAIL CK.	CJC	QUAN. CK.	CJC	CADD CK.	TAA

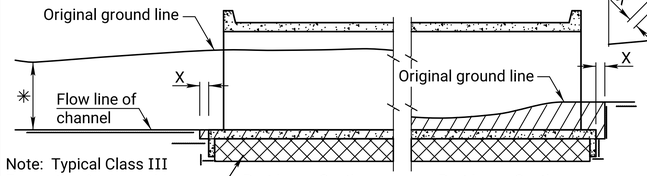
Sh. No. 25

Plotted By: BGS01485 Plot Location:
File: 16756.221_024_Reinforcing Steel_Bending Diagram_br516.dgn
Plot Date: 17-JUL-2024 10:18

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	26	54

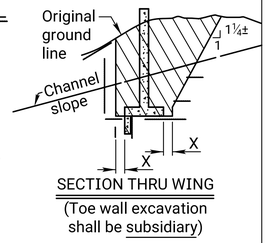
✳Note: The Grading Contractor shall excavate the channel to the limits shown prior to the construction of the box bridge, unless otherwise noted in the plans.





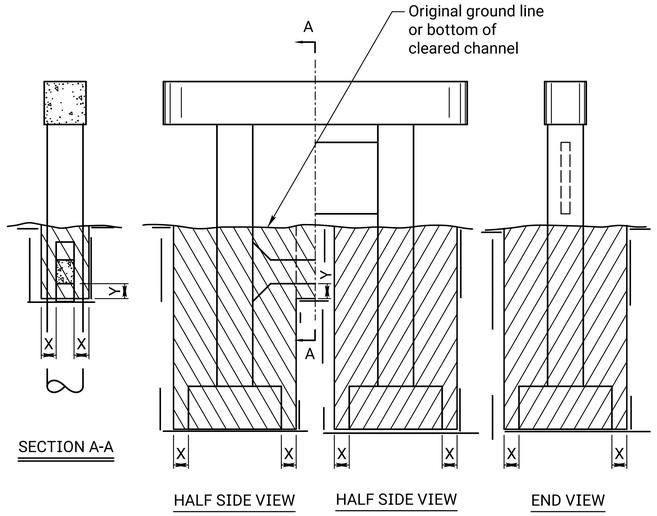
Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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



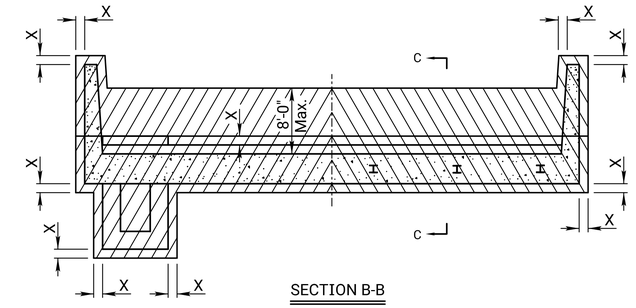
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

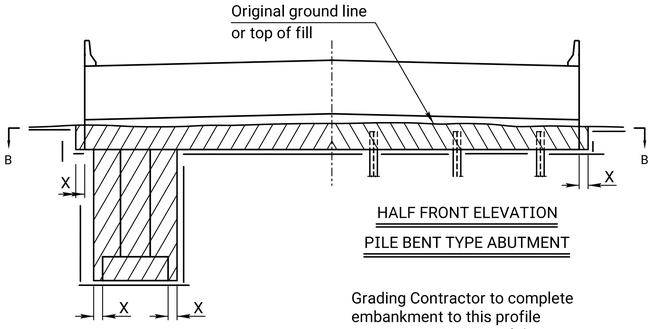
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.



EXCAVATION DETAILS FOR TYPICAL PIERS

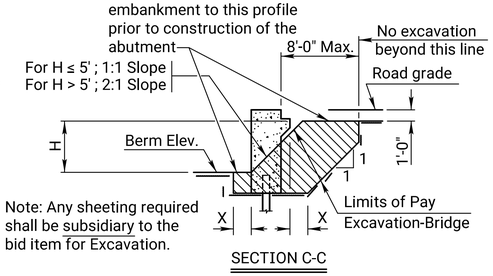
See detail when rock or shale (rock) is encountered. ❀





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

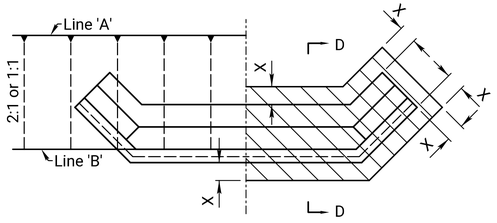
Grading Contractor to complete embankment to this profile prior to construction of the abutment

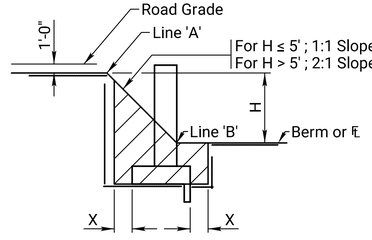


Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

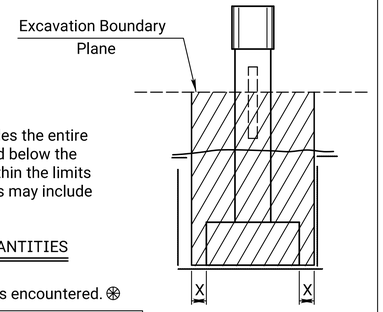
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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





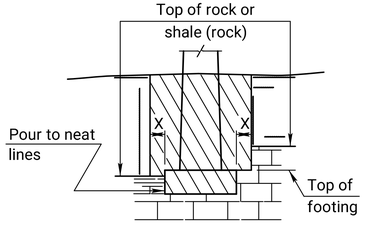
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



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

CLASS II EXCAVATION QUANTITIES

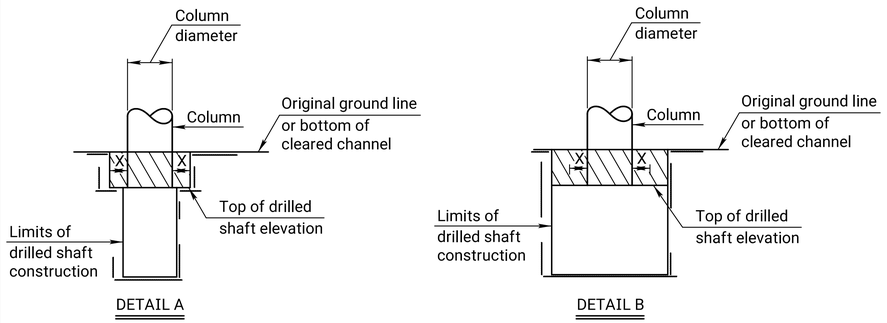
See detail when rock or shale (rock) is encountered. ❀



❀ EXCAVATION DETAIL FOR FOOTINGS IN ROCK OR SHALE (ROCK)

(Piers and Abutments)

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



DRILLED SHAFT DETAILS

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BR100B

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

KDOT Graphics Certified 06-20-2022 Sh. No. 26

KDOT Graphics Certified

Plotted by : BGS01485 17-JUL-2024 10:19
File : 16756.221_025_Bridge Excavation_br100b.dgn

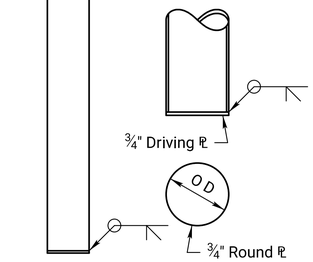
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	27	54

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

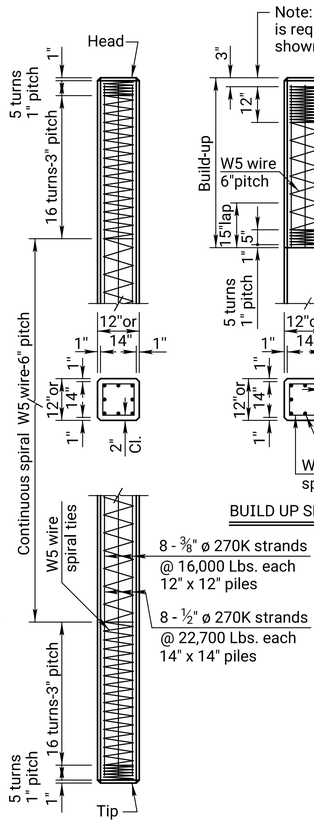
†† See the Geology Report or "Summary of Quanities" for Pipe Pile wall thickness

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

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

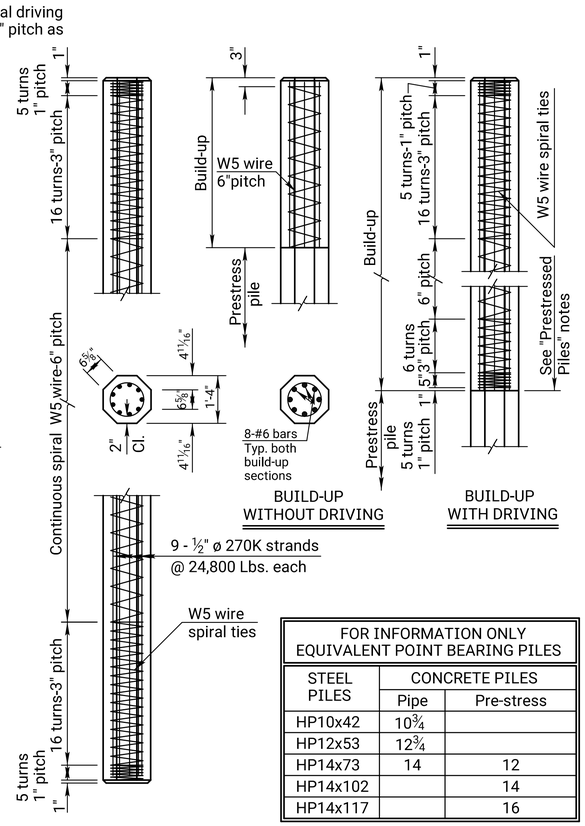


PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



12" OR 14"
PRESTRESSED
CONCRETE PILES

BUILD UP SECTION



16" PRESTRESSED
CONCRETE PILES

BUILD-UP
WITHOUT DRIVING

BUILD-UP
WITH DRIVING

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

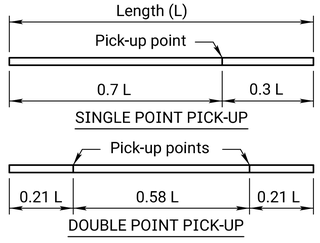
All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

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

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

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

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



PICK-UP POINTS FOR PRESTRESSED PILING

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

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

SHELL PILE POINT

CAST STEEL PILE POINT

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

Weld Symbology Definition

Use grinder to bevel edges of splice as shown in weld symbology and drawing. In addition to bevels, produce clean, bare, and shiny surfaces at and around the splice welding location.

Lay full penetration root weld from beveled side of splice.

Back gouge root weld from side opposite of root welding application making sure to remove all foreign materials, porous steel, and inclusions from root weld. Finish welding the non beveled side of the splice.

Finish welding beveled side of the splice while removing slag, foreign materials, porous steel, and inclusions in between welding passes, use of a grinder may be needed.

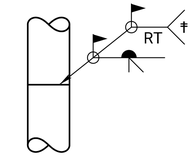
Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

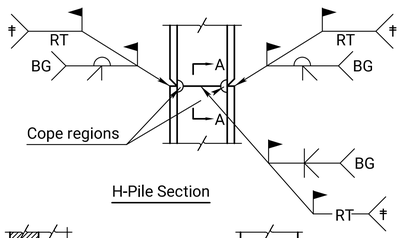
SPLICES: Splices for steel piles and shell piling shall be in accordance with details shown on this sheet and the Standard Specifications.

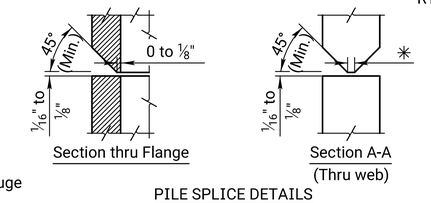
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

With the approval of the Engineer, one splice per bent may be allowed in the region described above without testing. If additional splices are anticipated, based on the geology, the Contractor prior to driving, will locate the splice so that the splice will not fall within the regions described above.

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







✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

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

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

BR110

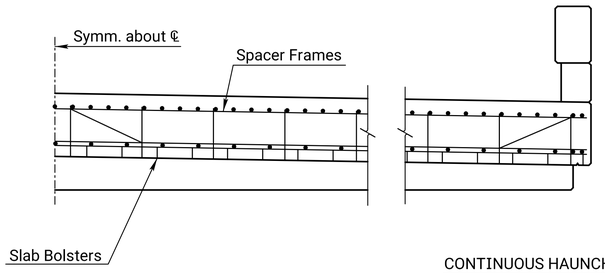
FHWA APPROVAL		10-04-12	APP'D.		Terry L. Fleck
DESIGNED	J.P.J.	DETAILED		QUANTITIES	TRACED R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.	TRACE CK.

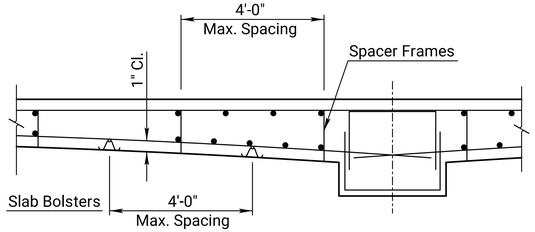
KDOT Graphics Certified 06-20-2022 Sh. No. 27

KDOT Graphics Certified

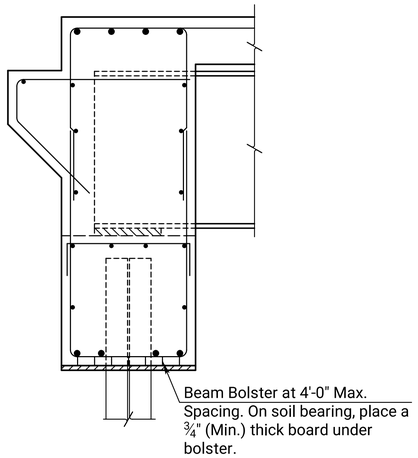
Plotted by : BGS01485 17-JUL-2024 10:20
File : 16756.221_026_Standard Pile Details_br110.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	28	54

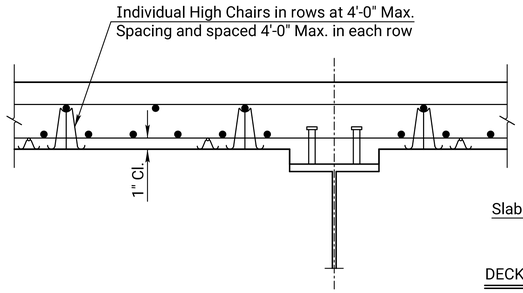


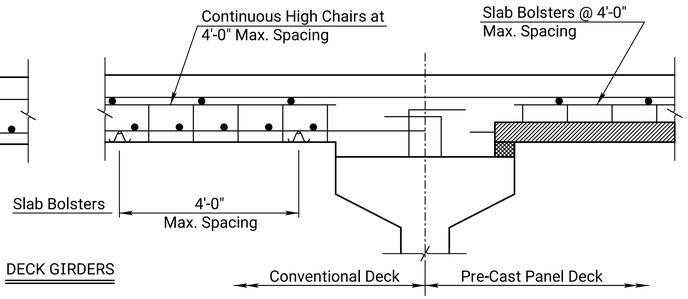


CONTINUOUS HAUNCHED SLAB

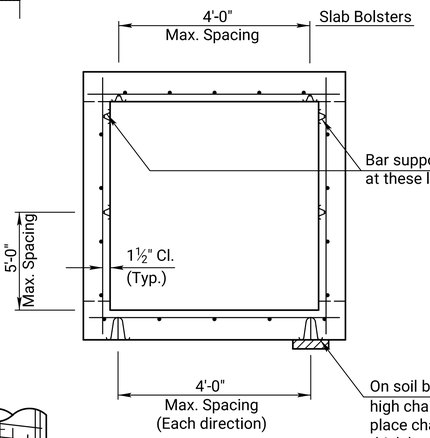


ABUTMENT

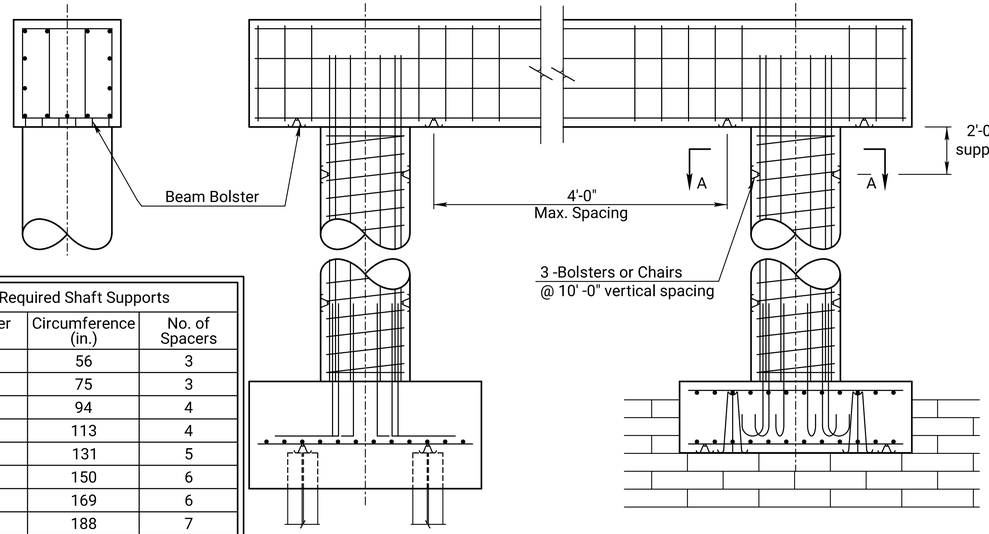




DECK GIRDERS

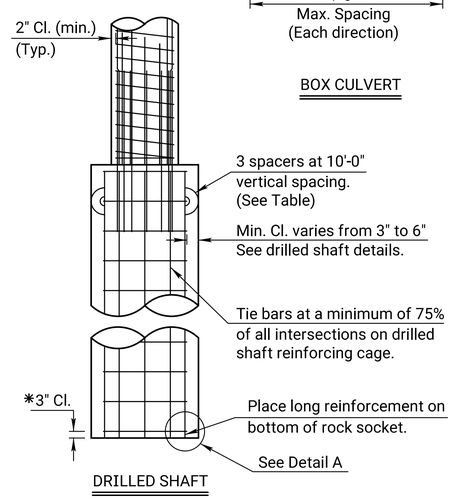


BOX CULVERT

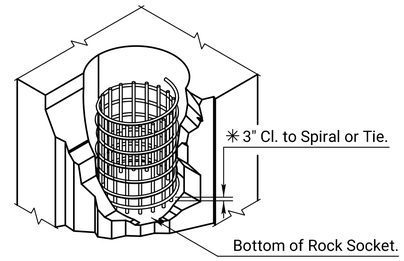


PIER

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

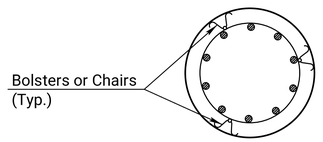


DRILLED SHAFT



DETAIL A

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



SECTION A-A

GENERAL NOTES

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

Use only the following types of bar supports:

1) Wire Bar Supports:

   a) Epoxy coated reinforcing: Class 1 Protection
   b) Non-epoxy coated reinforcing: Class 1, 2, or 3 Protection

2) Plastic Bar Supports

3) Supplementary bars

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

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

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

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

Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within ¼" of that indicated on the plans.

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
05	11-10-10	Column Bar Supports Required	J.P.J.	T.L.F.
04	12-01-05	Drilled Shaft Spiral Steel Placement	J.P.J.	K.F.H.
03	08-21-00	Added Pre-Cast Panel Detail	R.A.M.	K.F.H.

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BR120

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

KDOT Graphics Certified 06-20-2022 Sh. No. 28

KDOT Graphics Certified

Plotted by : BGS01485 17-JUL-2024 10:21
File : 16756.221_027_Supports and Spacers_br120.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	29	54

RECAPITULATION OF BRIDGE QUANTITIES

BRIDGE NUMBER	STATION	SEE SHEET NO.
Br. No. 000750957003622	107+83.81	14

GUARDRAIL, REMOVAL OF STEEL PLATE

STATION TO STATION**	SIDE	LNFT	REMARKS
107+33.96 to 108+20.12	Rt.	87.50	Right Side of Road
107+31.01 to 108+17.20	Lt.	87.50	Left Side of Road
TOTALS		175.00	

** Stations are for Location Only

REMOVAL OF EXISTING STRUCTURES
* (FOR INFORMATION ONLY)

STATION	SIDE	ITEM	DESCRIPTION
107+77.00	Lt.	Br. No. 000750957003623	Existing Bridge

* The listing shown may not be complete. Payment for structures or obstructions not listed but whose removal isrequired by the construction as determined by the Engineer, shall not be paid for directly but shall be included in the bid item "Removal of Existing Structures."

See General Notes for handling and storage of signs.

EARTHWORK

STATION to STATION	EXCAVATION					COMPACTION			NOT SUBGRADED THROUGH CUTS			⚹ EMBANKMENT (CU.YDS.)		⚠PLACE. SELECT SOIL CU.YDS.
	COMMON		ROCK		CONTR. FURN. CU.YDS.	TYPE B MR-90 CU.YDS.			COMM. CU.YDS.	TYPE AA CU.YDS.		INITIAL CONSOL.	SETTLE-MENT	
	CU.YDS.	VMF	CU.YDS.	VMF										
105+45 - 110+75	974	0.75				689								
TOTALS	▫▫974					689								

▫▫ Includes 55 cu. yds. to be wasted.
Includes 919 cu. yds. to be used as fill.
Material to be wasted shall become the property of the County.
The material will be wasted by the contractor on site, or loaded by the contractor into trucks provided by the county and hauled off.

⚹ Subsidiary (see General Note).

⚠ See General note.

RECAPITULATION OF ROAD QUANTITIES

ITEM	QUANTITY	UNIT
Contractor Construction Staking	L.S.	Lump Sum
Field Office & Laboratory (Type C)	1	Each
Curing Environment	1	Each
Mobilization	L.S.	Lump Sum
Mobilization (DBE)	L.S.	Lump Sum
Removal of Existing Structures	L.S.	Lump Sum
Foundation Stabilization (Set Price)	1	Cu. Yd.
Concrete for Seal Course (Set Price)	1	Cu. Yd.
Temporary Surfacing Material (Aggregate)(Set Price)	1	Cu. Yd.
Clearing & Grubbing	L.S.	Lump Sum
Common Excavation (Rural Small)	974	Cu. Yds.
Compaction of Earth (Type B) (MR-90)	689	Cu. Yds.
Water (Grading) (Set Price)	1	MGal
Guardrail Steel Plate	162.50	Lin. Ft.
Guardrail End Terminal (FLEAT) Alt. 1	3	Each
Guardrail End Terminal (SRT) Alt. 2	3	Each
Guardrail, Removal of Steel Plate	175	Lin. Ft.
Signing Object Marker (Type 3)	4	Each

For Object Marker Quantities, See Sh. No. 2
For Guardrail Quantities, See Sh. No. 7
For Surfacing Quantities, See Sh. No. 30
For Temporary Erosion and Pollution Conrol Quantities, See Sh. No. 31
For Erosion Control Quantities, See Sh. No. 32
For Seeding Quantities, See Sh. No. 42
For Traffic Control Quantities, See Sh. No. 49

NO.	DATE	REVISIONS	BY	APP'D
2	1-14-08	Rem. Drainage Structure summary	S.W.K.	J.O.B.
1	1-9-91	Detailed on CADD	R.J.S	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

RD050

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

KDOT Graphics Certified 03-13-2018

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Sh. No. 29

Plotted by: es01906 17-JUL-2024 09:53
File: 75C522801rss050.dgn

GENERAL NOTE:

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

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

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

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

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

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

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

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

Quantities for aggregate for shoulders, AS-1, are calculated on the basis of 150 lbs. per cu. ft. Quantities for stabilized base course, AB-3, are calculated on the basis of 1 56 lbs. per cu. ft. Weight/cu. ft. includes moisture allowed by specification.

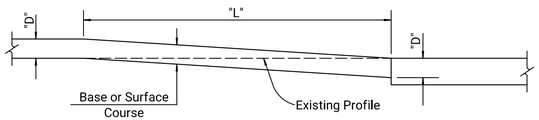
The base course shall be constructed to the plan thickness as shown.

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

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

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

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



TYPICAL PROFILE AT GRADE CONTROL POINTS

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

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

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

SUMMARY OF QUANTITIES							
ITEM	Mainline					TOTAL	UNIT
Surfacing Material (AB-3)	381					381	Tons

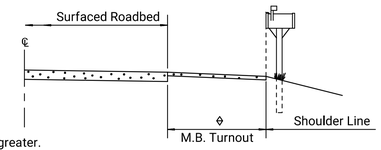
RATES OF APPLICATION				
RATE	UNIT	ITEM		
156	lbs/cu.ft.	Surfacing Material (AB-3)		

† Computed at the rate of

†† Computed at the rate of

RECAPITULATION OF QUANTITIES					
ITEM				TOTAL	UNIT
Surfacing Material (AB-3)				381	Tons

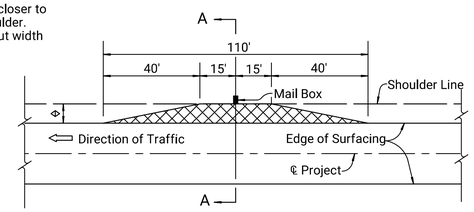
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	30	54



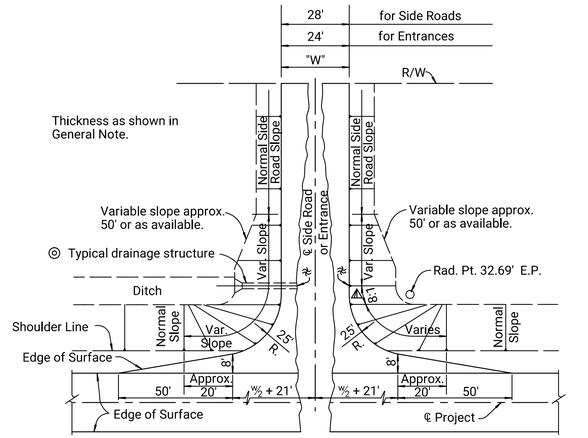
◊ Width shall be 8' or shoulder width, whichever is greater.

SECTION A-A

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



DETAIL FOR SURFACING OF MAIL BOX TURNOUTS



WITH DRAINAGE STRUCTURE — MOUND ENTRANCE OR SIDE ROAD

DETAIL FOR SURFACING OF SIDE ROADS & HOUSE ENTRANCES

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
12	1-10-07	Changed bituminous to asphalt	S.W.K.	J.O.B.
11	8-30-06	Changed tack type/rate	S.W.K.	J.O.B.
10	3-24-05	Revised compaction, tack type/rate	S.W.K.	J.O.B.
9	6-12-02	Added low point off shoulder.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES (Surfacing)

RD051

FHWA APPROVAL 9-06-06		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Hecht

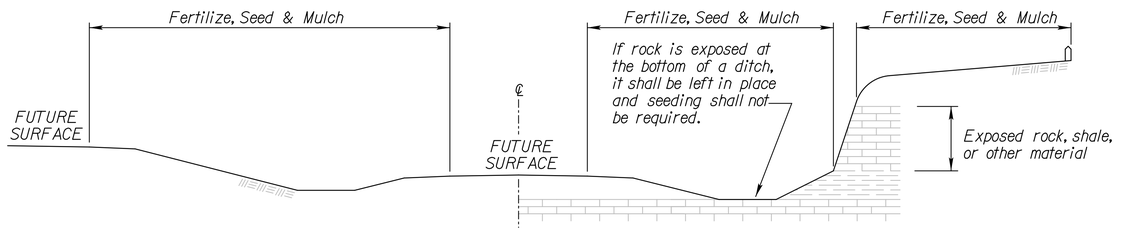
KDOT Graphics Certified 03-13-2018

Sh. No. 30

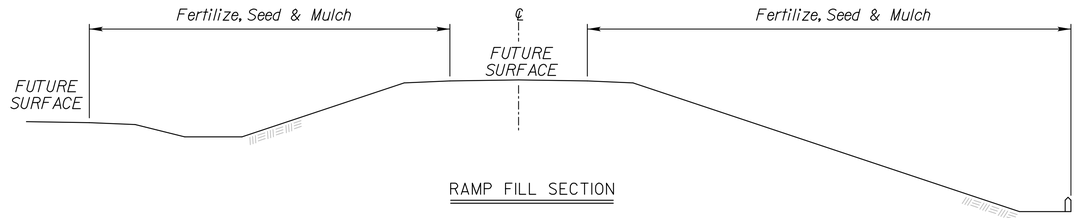
KDOT Graphics Certified

Plotted by: es01906 17-JUL-2024 09:53
File : 75C522801rss051.dgn

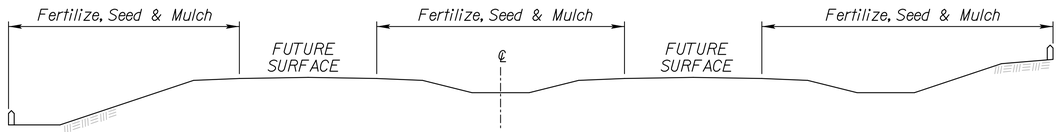
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	31	54



RAMP CUT SECTION



RAMP FILL SECTION



FILL SECTION CUT SECTION

TYPICAL SECTION - DUAL PAVEMENT

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.
Other vegetative mulches are acceptable only with the Engineer's concurrence.

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

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150	150	0.33	0.22	Temporary Fertilizer (16 - 20 - 0)	32.4	LB
20		0.33		Temporary Seed (Canada Wildrye)		LB
45		0.33		Temporary Seed (Grain Oats)		LB
45		0.33		Temporary Seed (Sterile Wheatgrass)		LB
	109.9		0.22	Soil Erosion Mix	24.2	LB
				Erosion Control (Class 1, Type C)	1059	SQ YD
				Erosion Control (Class 2, Type Y)		SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)		CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")	87	LF
				Biodegradable Log (12")	116	LF
				Biodegradable Log (20")		LF
				Filter Sock (12")	87	LF
				Geotextile (Erosion Control)		SQ YD
				Silt Fence		LF
				SWPPP Design †		LS
				SWPPP Inspection †		EACH
				Water Pollution Control Manager †		EACH
900 lbs / acre				Mulch Tacking Slurry		LB
2 tons / acre		0.33		Mulching		TON
				Water (Erosion Control) (Set Price)	1	MGAL

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

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

Regreen and Quick Guard are the approved sterile wheatgrass products.

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

***** List size of material.*

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

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

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
0.5	Blue Grama Grass Seed (Lovington)	0.11
4.5	Buffalograss Seed (Treated)	0.99
45	Perennial Ryegrass Seed	9.90
2.6	Prairie Junegrass Seed	0.57
6.3	Side Oats Grama Grass Seed (El Reno)	1.39
45	Tall Fescue (Endophyte Free)	9.90
6	Western Wheatgrass Seed (Barton)	1.32
109.9	Total (lb)	24.18

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

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

NO.	DATE	REVISIONS	BY	APP'D
3	08/03/20	Added Note	MRD	ML
2	12/01/17	Revised Standard	MRD	SHS
1	06/01/17	Revised Standard	MRD	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

FHWA APPROVAL		1/26/2018	APP'D	Scott H. Shields	
DESIGNED	MRD	DETAILED	MRD	QUANTITIES	CADD
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.	CADD CK.

KDOT Graphics Certified 12-09-2020

Sh. No. 31

KDOT Graphics Certified

Std. Base File:
Plotted By: es01906 Plot Location:
File: 75C52280\eee852a.dgn
Plot Date: 17-JUL-2024 09:54

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	32	54

EROSION CONTROL- CLASS I, TYPE C

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
108+50.66 TO 108+63.92	RT	13.26'	11.09'	11
108+64.07 TO 110+79.21	LT	215.14	43.00	1048
TOTAL EROSION CONTROL (CLASS I, TYPE C) =				1059

Std. Base File:	
Plotted By: es0l906	Plot Location:
File: 75C522801ees852eec.dgn	
Plot Date: 17-JUL-2024 03:54	

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

EROSION CONTROL
SEEDING-SODDING

LA852A-EC

FHWA APPROVAL		1/04/2006		APP'D		Scott H. Shields	
DESIGNED	MRM	DETAILED	MRM	QUANTITIES		CADD	MRM
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.		CADD CK.	SHS

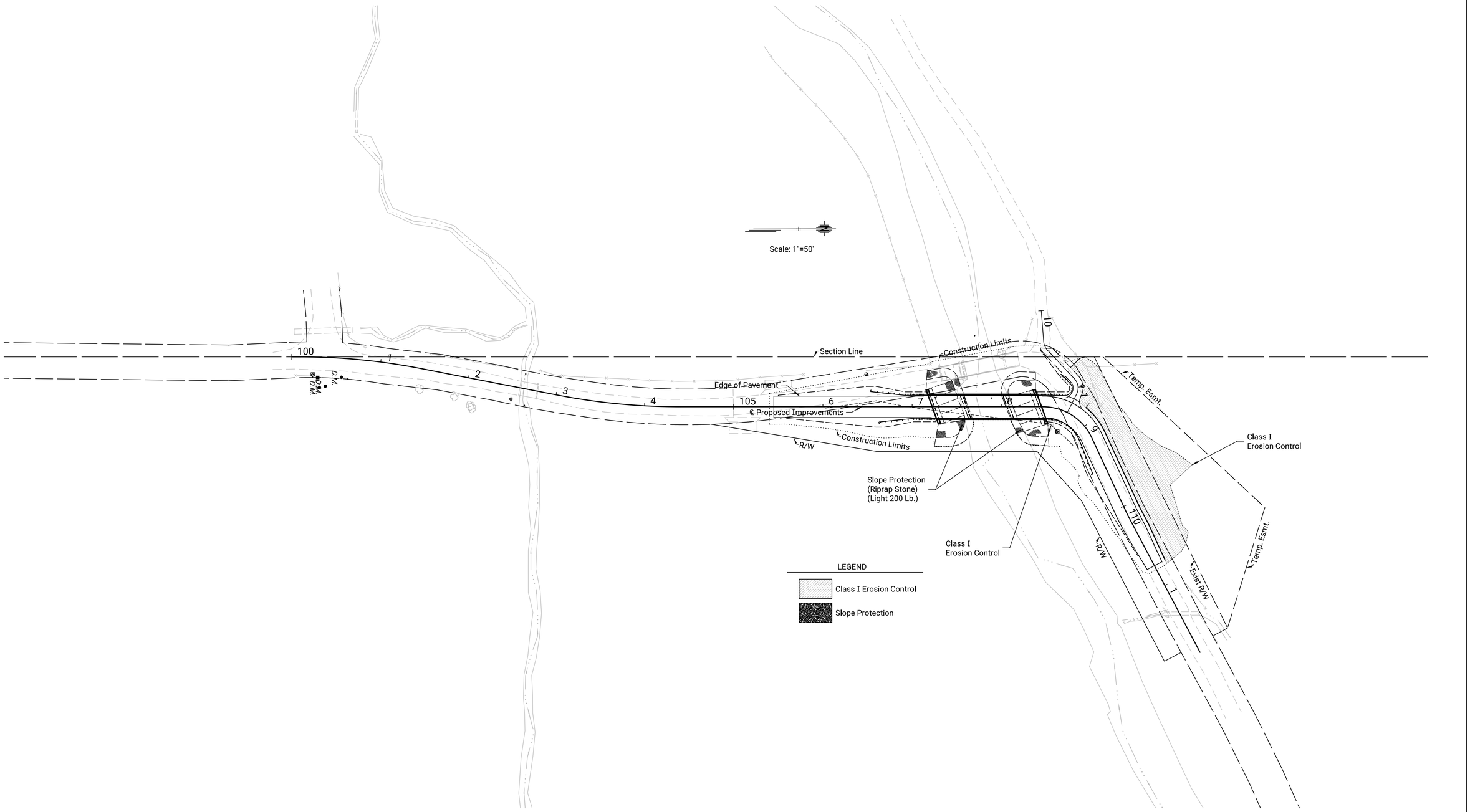
KDOT Graphics Certified 12-09-2020

KDOT Graphics Certified

Sh. No.

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	33	54

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



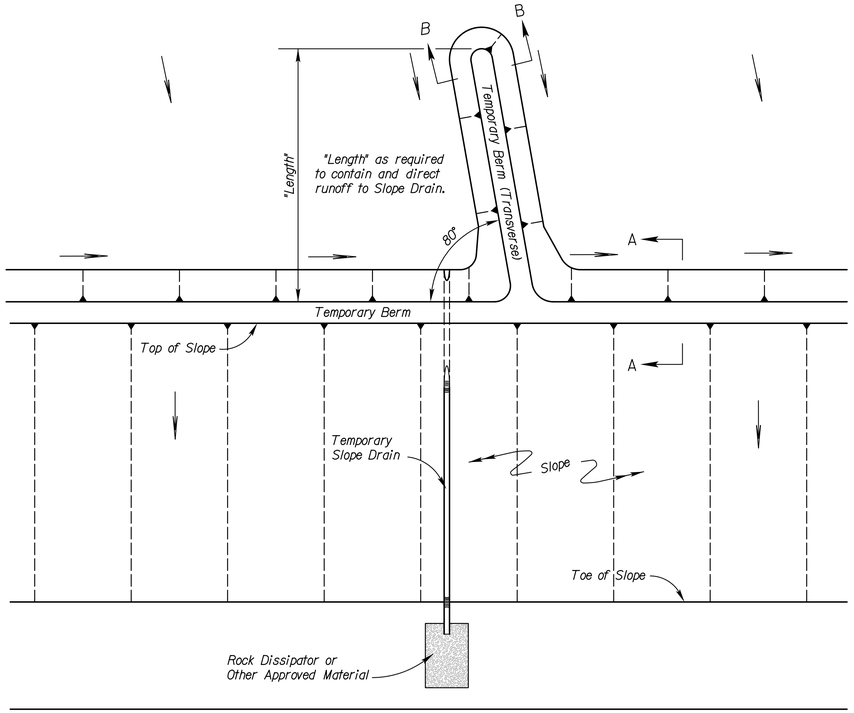
KANSAS DEPARTMENT OF TRANSPORTATION

PROPOSED FINAL

EROSION CONTROL

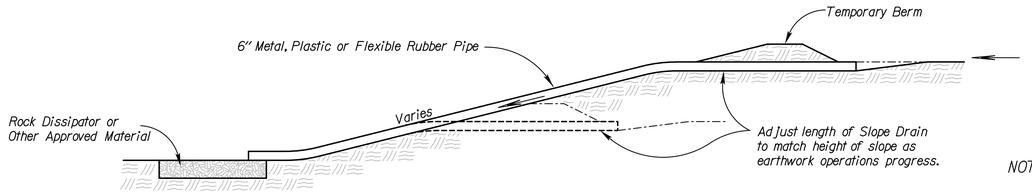
Plotted by : es01906 17-JUL-2024 09:54
File : 75C522801-ewp-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	34	54



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

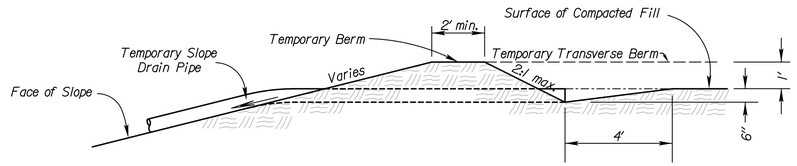
NOTES:

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

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

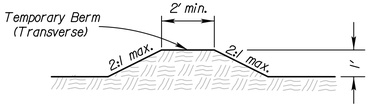
3) Pipe shall be secured in place as approved by Engineer.

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



SECTION A-A

NO SCALE

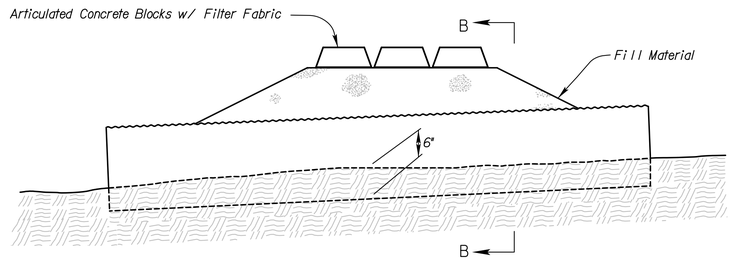


SECTION B-B

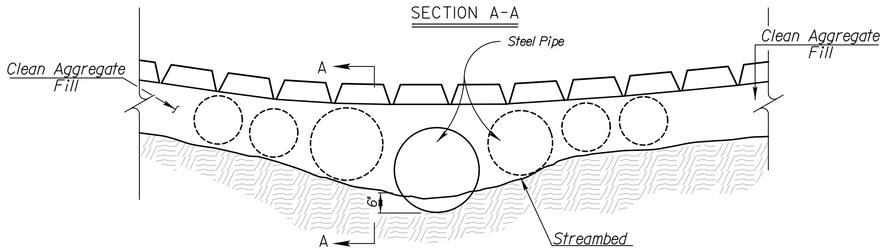
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

NO SCALE



SECTION A-A



SECTION B-B

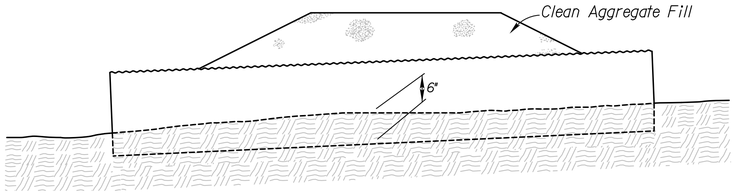
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

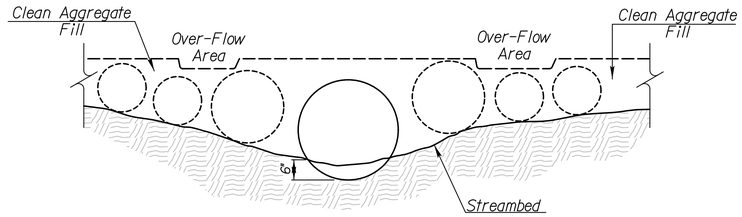
NO SCALE

Pipe size may vary

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

See KDOT Specifications for more information





SECTION B-B

TEMPORARY STREAM CROSSING (AGGREGATE)

NO SCALE

Pipe size may vary

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

See KDOT Specifications for more information

NO.	DATE	REVISIONS	BY	APP'D
3	6/11/13	Revised Standard	MRM	SHS
2	11/01/10	Revised Standard	MRM	SHS
1	10/15/10	Revised Standard	WCL	RDR

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

TEMPORARY SLOPE DRAIN

TEMPORARY STREAM CROSSING (AGGREGATE)

TEMP. STREAM CROSS. (ARTC. CONC. BLOCKS)

LA852B

FHWA APPROVAL	11/08/2010	APP'D	Scott H. Shields
DESIGNED MRM	DETAILED	QUANTITIES	CADD
DESIGN CK. SHS	DETAIL CK.	QUAN.CK.	CADD CK.

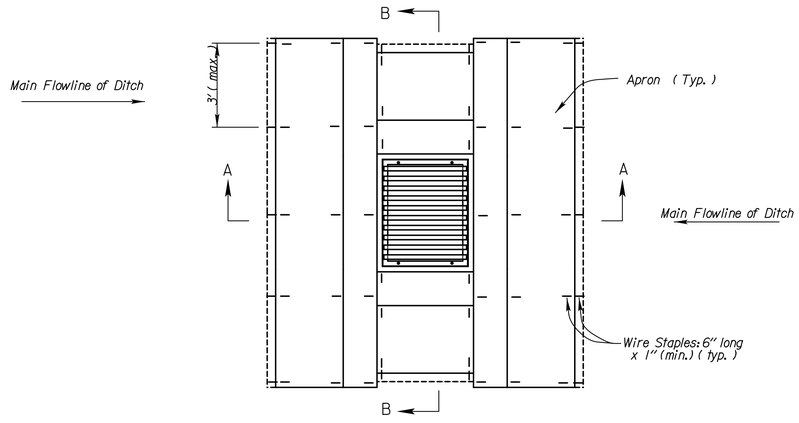
KDOT Graphics Certified 12-09-2020

Sh. No. 34

KDOT Graphics Certified

Std. Base File:
Plotted By: es01906 Plot Location:
File: 75C5228Olees852b.dgn
Plot Date: 17-JUL-2024 03:54

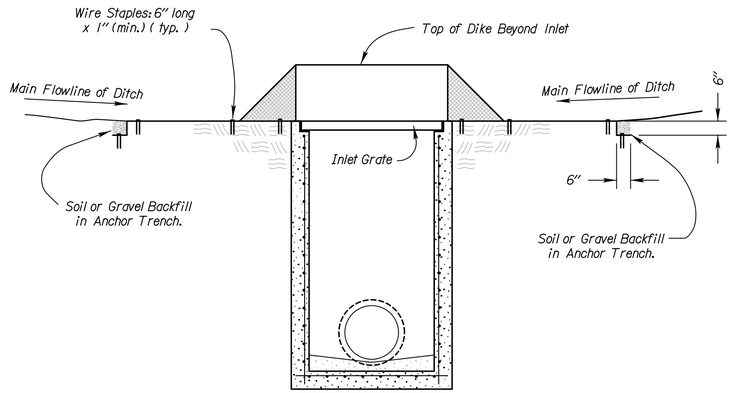
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	35	54



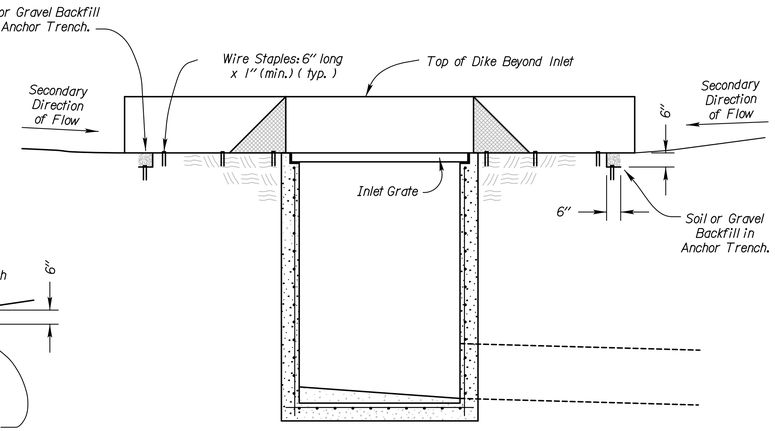
PLAN

TEMPORARY INLET SEDIMENT BARRIER
(TRIANGULAR SILT DIKE METHOD)

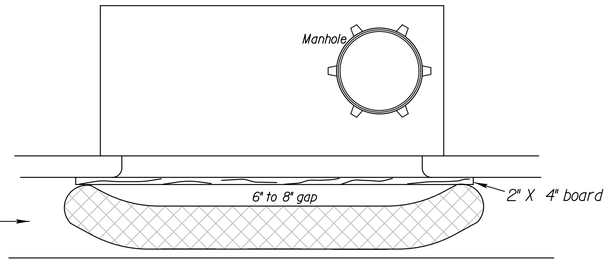
NO SCALE



SECTION A - A

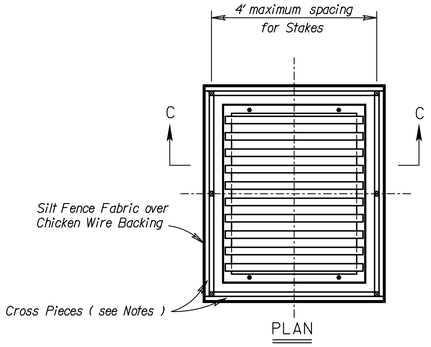


SECTION B - B

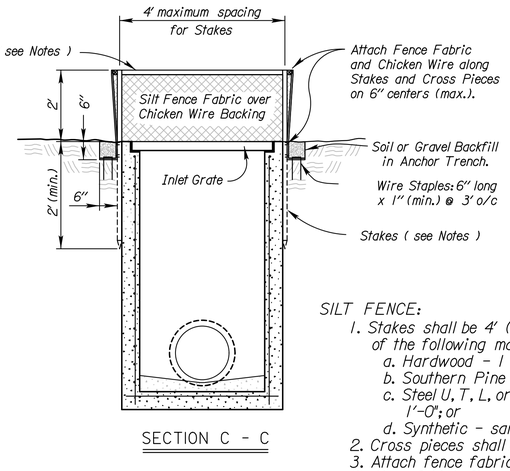


CURB INLET PROTECTION

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



SECTION C - C

TEMPORARY INLET SEDIMENT BARRIER
(SILT FENCE METHOD)

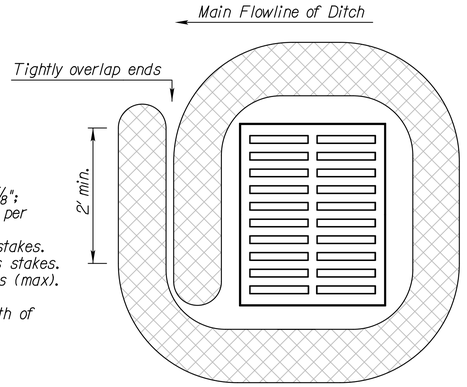
NO SCALE

SILT FENCE:

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

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

Rock = approximately 1" to 2" diameter



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

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

Stake every 4'

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	APP'D
3	9/26/19	Changed Direction of Main Flowline of Ditch Arrow	MRD	SHS
2	3/10/15	Revised Standard	RA	SHS
1	6/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

TEMP. INLET SEDIMENT BARRIER (SILT FENCE)
TEMP. INLET SEDIMENT BARRIER (T.S.D.)
CURB INLET PROTECTION
DROP INLET PROTECTION

LA852C

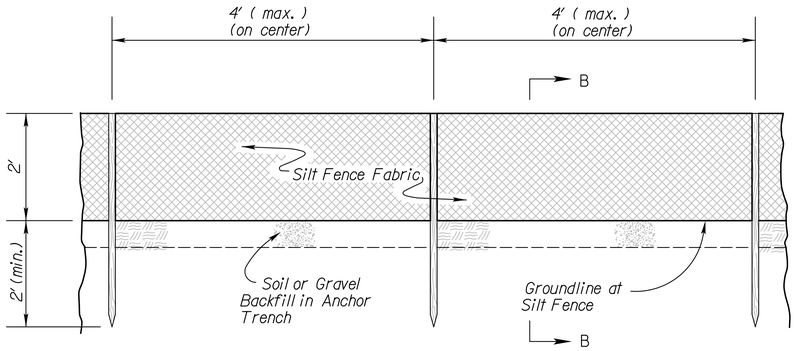
FHWA APPROVAL	3/10/2015	APP'D	Scott H. Shields
DESIGNED RA	DETAILED RA	QUANTITIES	CADD
DESIGN CK. SHS	DETAIL CK. SHS	QUAN.CK.	CADD CK.

CADD Graphics Certified File 12-09-2020

Sh. No. 35

Std. Base File:
Plotted By: es0906 | Plot Location:
File: 75C52280\ee852c.dgn
Plot Date: 17-JUL-2024 09:54

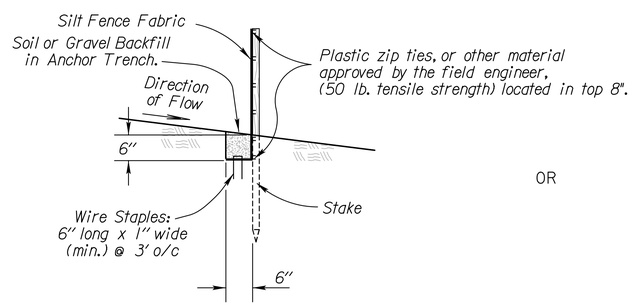
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-011	2024	36	54



TYPICAL ELEVATION

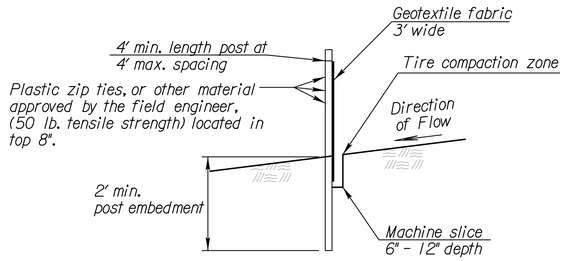
SILT FENCE BARRIER

NO SCALE

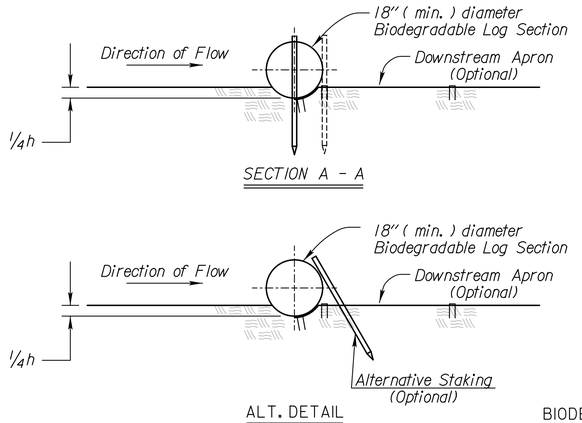


SECTION B-B

OR

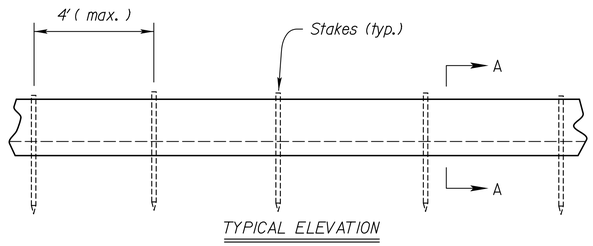


SECTION B-B



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

INSTALLATION NOTES

SILT FENCE:

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

BIODEGRADABLE LOG OR FILTER SOCK

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

Biodegradable Log or Filter Sock Slope Interruptions

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

Deviations should be approved by the Field Engineer.

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

GENERAL NOTES

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

NO.	DATE	REVISIONS	BY	APP'D
3	6/28/16	Revised Standard	RA	SHS
2	3/01/15	Revised Standard	RA	SHS
1	6/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE

LA852D

FHWA APPROVAL		9/14/2016	APP'D	Scott H. Shields	
DESIGNED	SHS	DETAILED RA	QUANTITIES	CADD	
DESIGN CK.	SHS	DETAIL CK.	QUAN.CK.	CADD CK.	

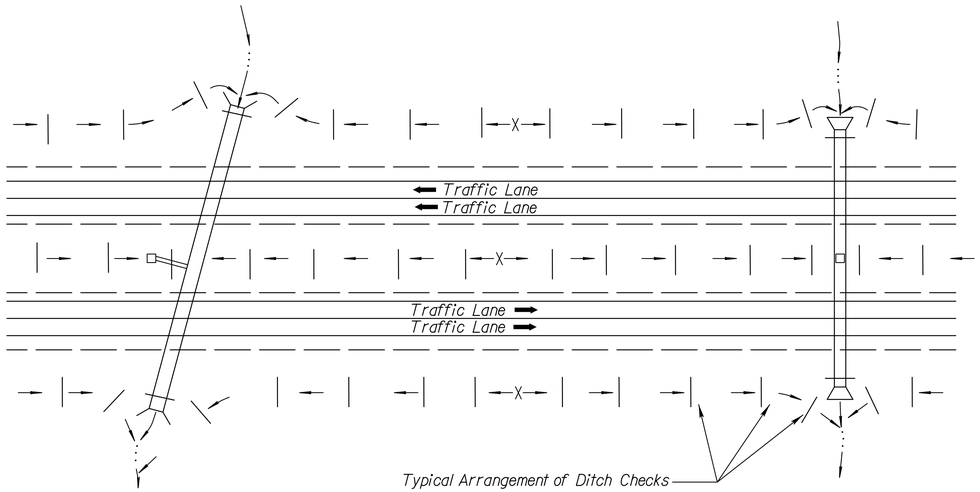
KDOT Graphics Certified 12-09-2020

Sh. No. 36

KDOT Graphics Certified

Std. Base File:
Plotted By: es01906
File: 75C52280\eed852d.dgn
Plot Date: 17-JUL-2024 09:54
Plot Location:

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	37	54



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.*

Std. Base File:	
Plotted By: es0l906	Plot Location:
File: 75C522801ees852e.dgn	
Plot Date: 17-JUL-2024 09:54	

NO.	DATE	REVISIONS	BY	APP'D
3	8/10/16	Revised Standard	RAA	SHS
2	6/28/16	Revised Standard	RAA	SHS
1	6/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

DITCH CHECKS

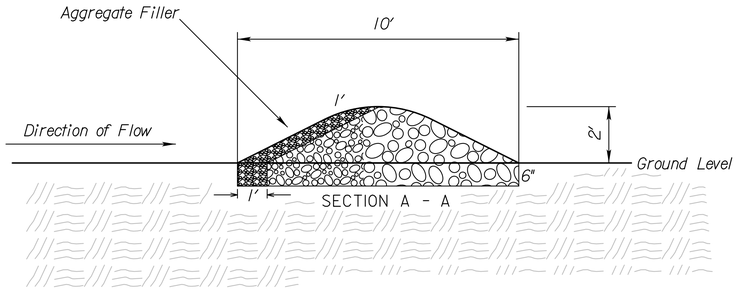
LA852E

FHWA APPROVAL	9/14/2016	APP'D	Scott H. Shields		
DESIGNED	SHS	DETAILED	RAA	QUANTITIES	CADD RAA
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.	CADD CK. SHS

KDOT Graphics Certified 12-09-2020

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	38	54



TYPICAL ELEVATION

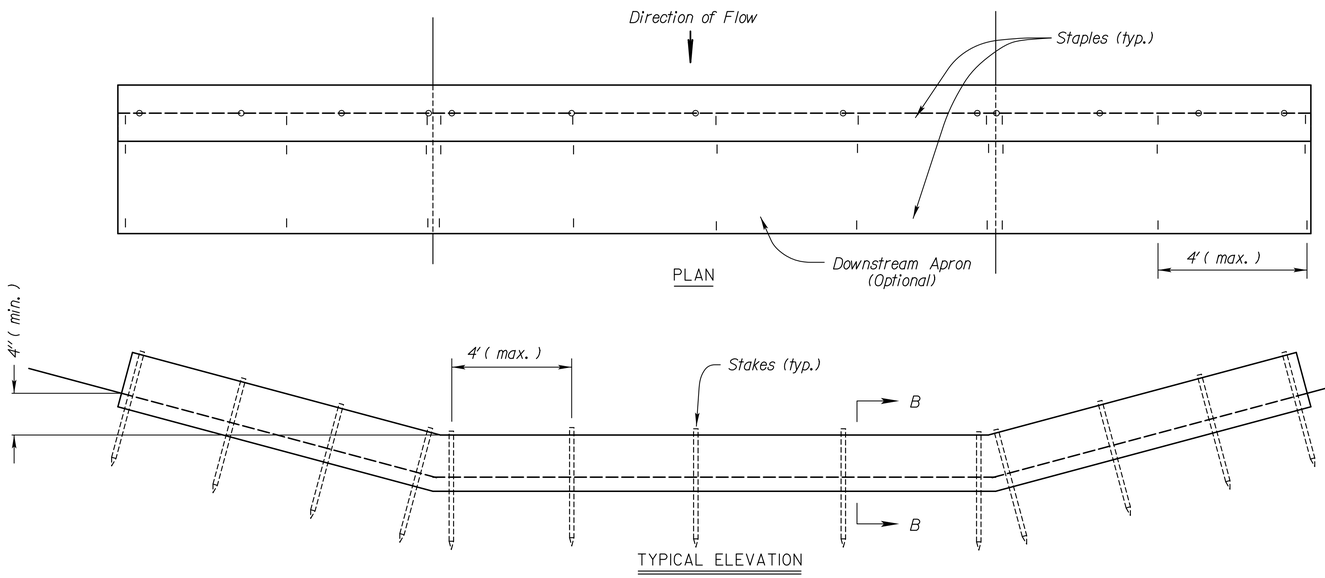
ROCK DITCH CHECK

NO SCALE

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

ROCK DITCH CHECK NOTES

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

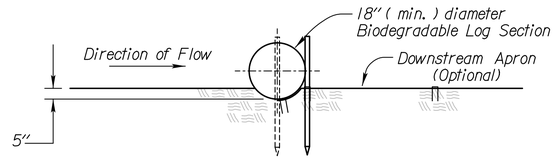


TYPICAL ELEVATION

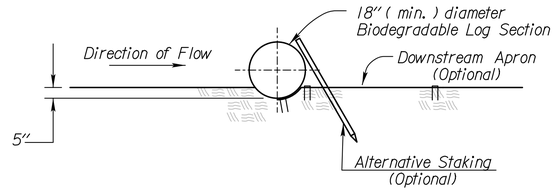
BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE



SECTION B - B



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG DITCH CHECK NOTES

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

NO.	DATE	REVISIONS	BY	APP'D
3	11/19/20	Revised Standard	MRD	ML
2	8/10/16	Revised Standard	RAA	SHS
1	10/21/15	Revised Standard	RAA	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852G

FHWA APPROVAL		11/19/2020	APP'D	Mervin Lare
DESIGNED	ML	DETAILED	DK	QUANTITIES	CADD	RAA
DESIGN CK.	ML	DETAIL CK.	ML	QUAN.CK.	CADD CK.	RAA

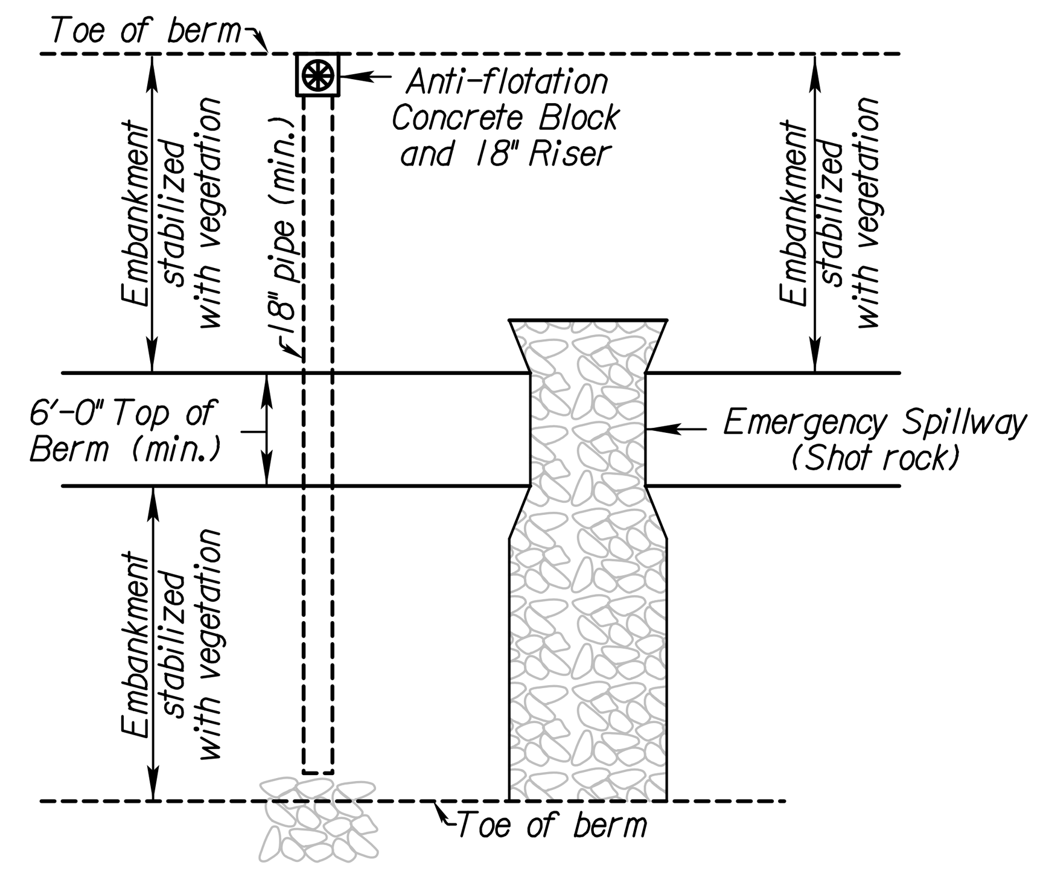
KDOT Graphics Certified 12-09-2020

Sh. No. 38

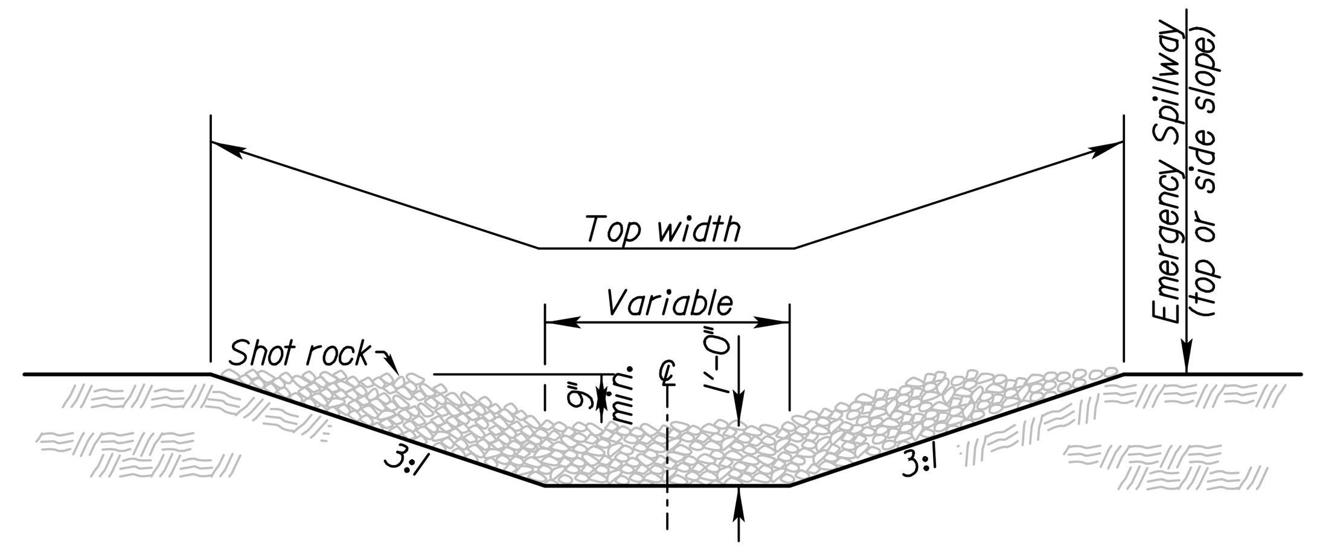
KDOT Graphics Certified

Std. Base File: la852g.dgn
Plotted By: es01906 Plot Location:
File: 75C522801ees852g.dgn
Plot Date: 17-JUL-2024 03:54

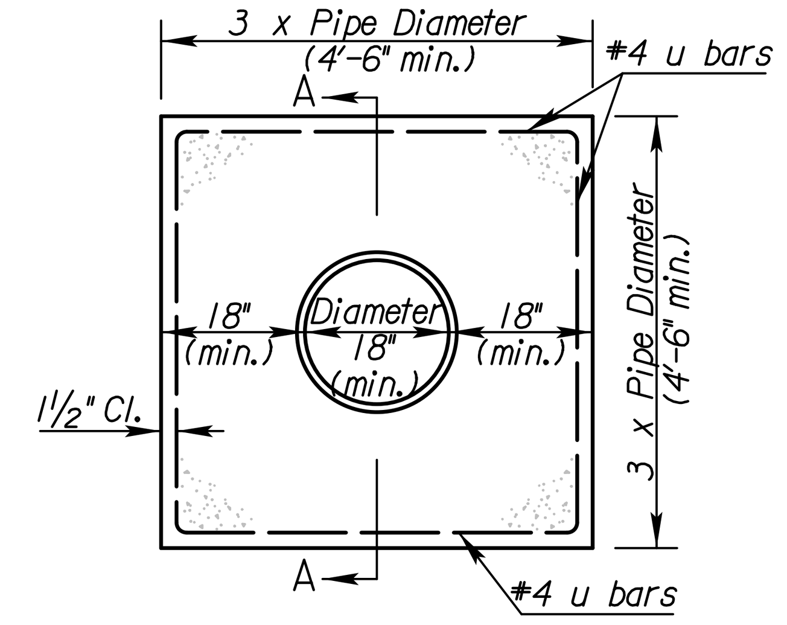
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	39	54



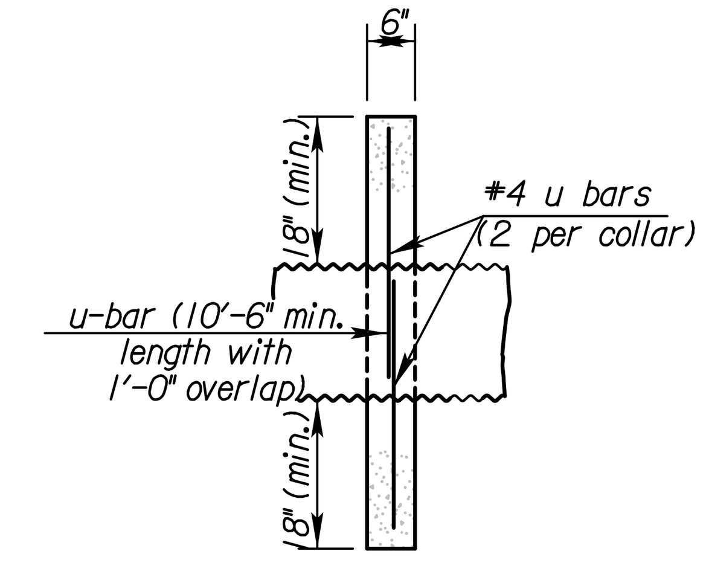
SEDIMENT STORAGE BASIN (PLAN)



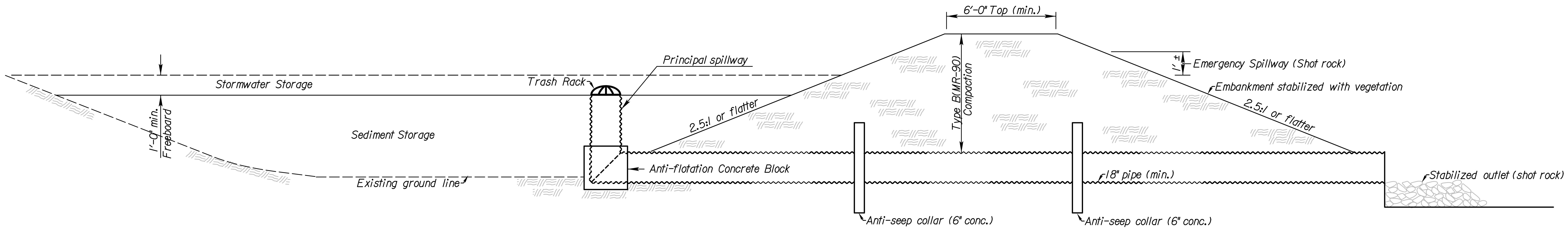
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



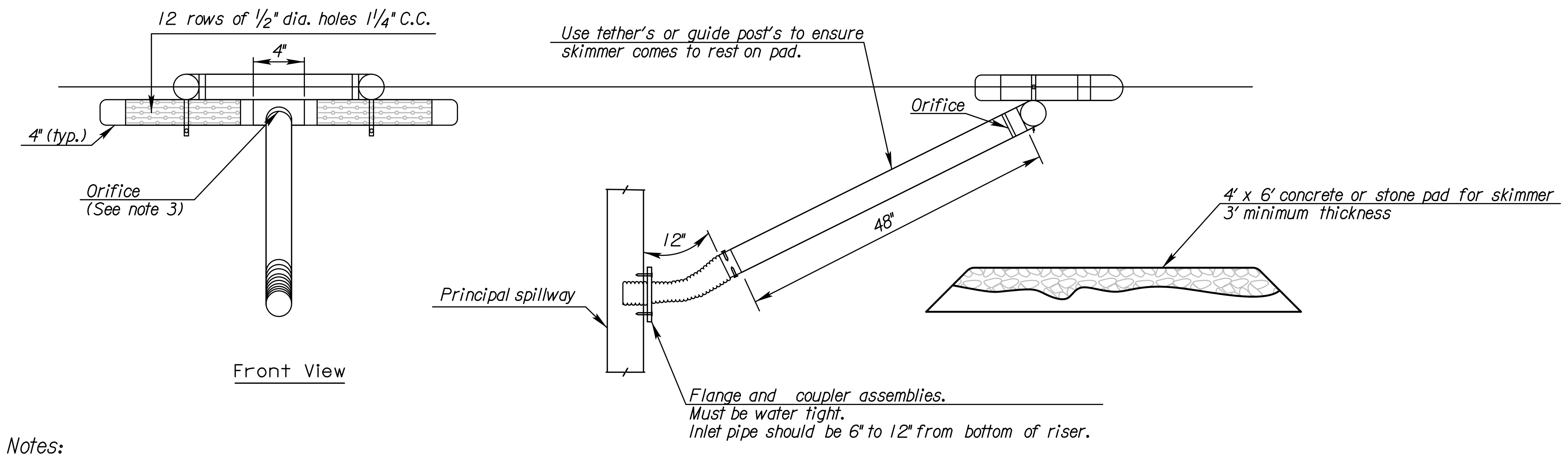
SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

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

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

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



Notes:

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

SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

NO.	DATE	REVISIONS	BY	APP'D
3				
2	9/3/13	Added Skimmer Dewatering Device	MRM	SHS
1	7/17/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

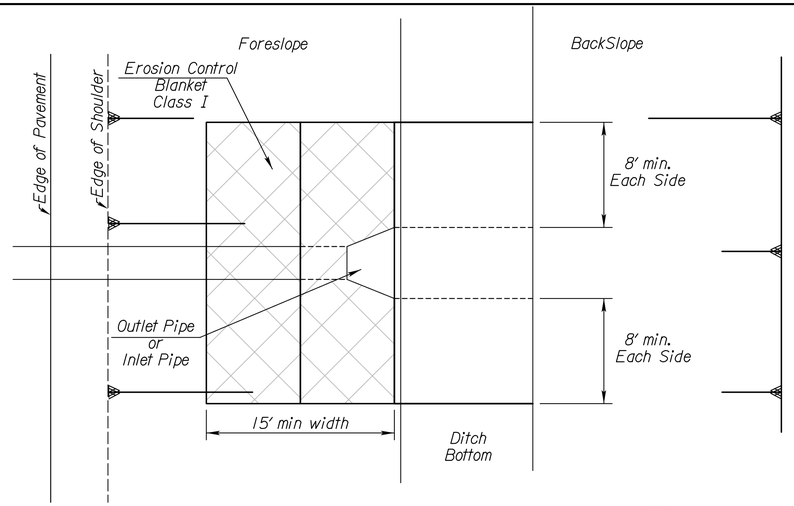
SEDIMENT STORAGE BASIN

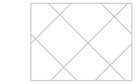
LA852H

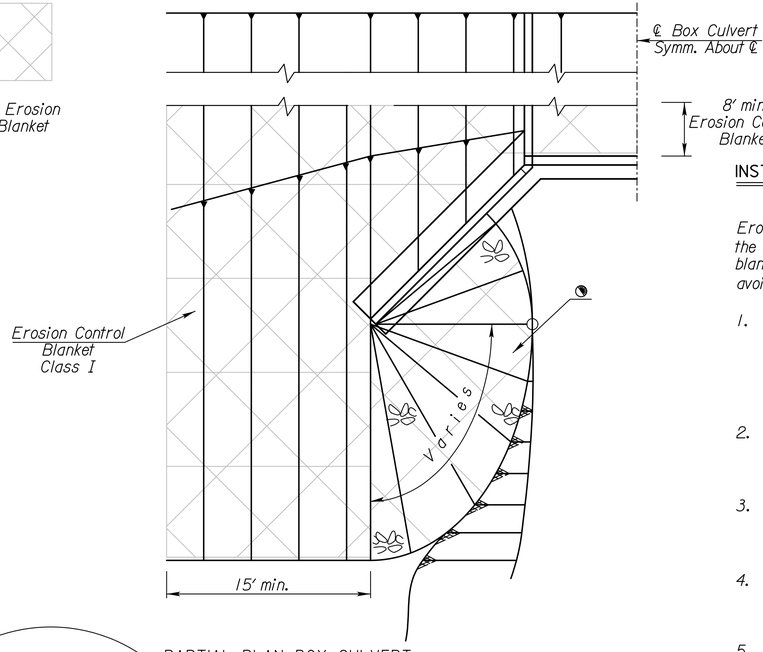
FHWA APPROVAL 09/24/2013	APP'D Scott H. Shields		
DESIGNED BB	DETAILED BB	QUANTITIES	CADD BB
DESIGN CK. SHS	DETAIL CK. SHS	QUAN.CK.	CADD CK. SHS

Std. Base File:
Plotted By: es01906
File: 75C52280leec852h.dgn
Plot Date: 17-JUL-2024 09:54
Plot Location:

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-011	2024	40	54




Limits of Erosion Control Blanket



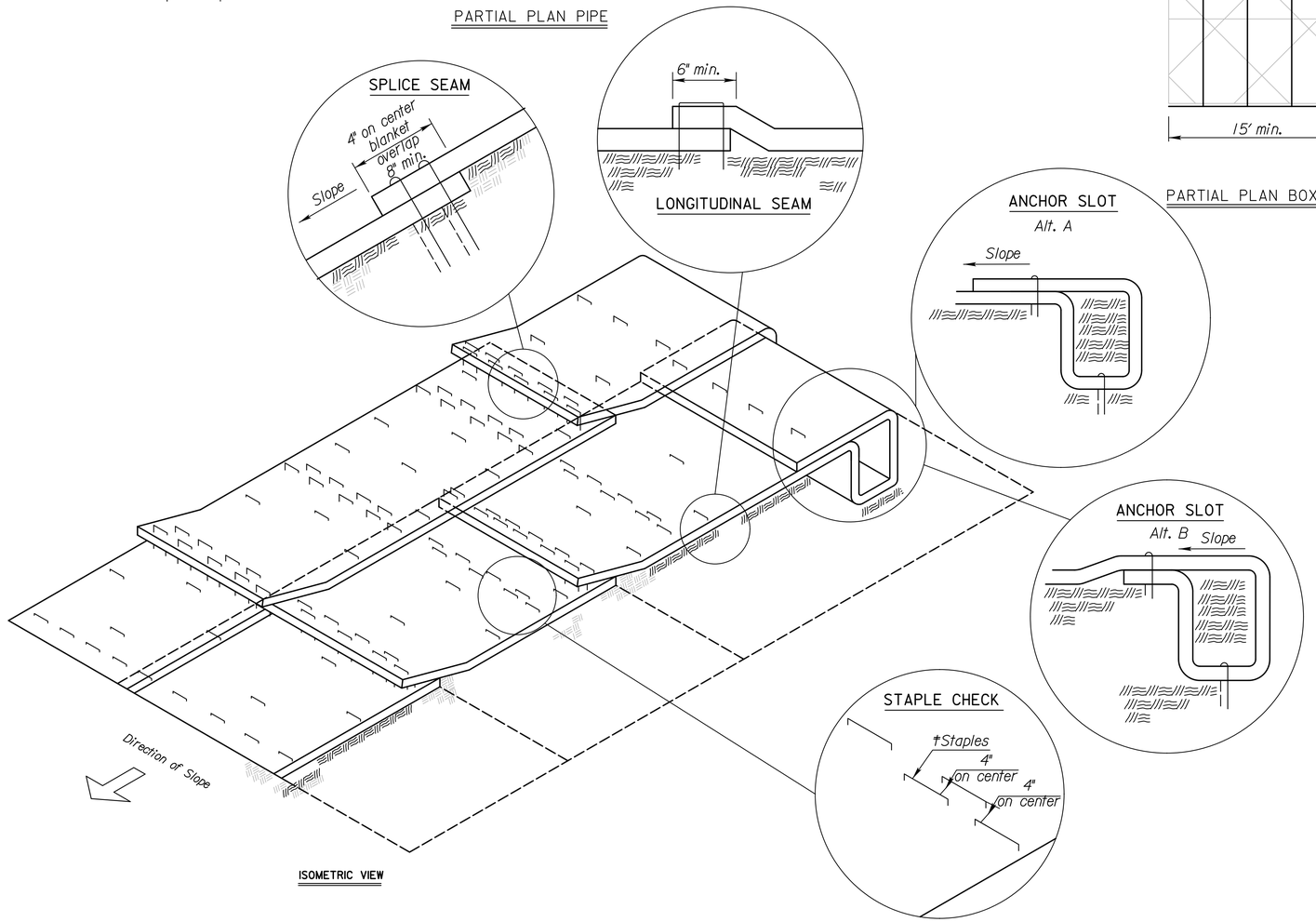
PARTIAL PLAN BOX CULVERT

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

INSTALLATION DETAILS FOR EROSION CONTROL CLASS I

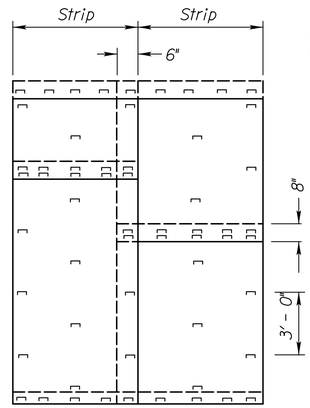
Erosion Control Blankets shall be laid loosely in the direction of the slope, beginning at the bottom of the slope. In order for blanket to be in contact with the soil, lay blanket loosely, avoiding stretching.

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



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.



PLAN VIEW - ANCHORING DIAGRAM

NO.	DATE	REVISIONS	BY	APP'D
4	3/01/15	Revised Standard	RAA	SHS
3	2/23/15	Revised Standard	RAA	SHS
2	9/15/14	Revised Standard	MRM	SHS
1	9/10/07	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS I
SLOPE PROTECTION

LA855

FHWA APPROVAL		3/10/2015	APP'D	Scott H. Shields	
DESIGNED	RAA	DETAILED	RAA	QUANTITIES	CADD RAA
DESIGN CK.		DETAIL CK.		QUAN.CK.	CADD CK. RAA

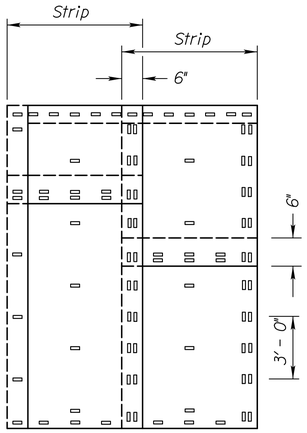
KDOT Graphics Certified 12-09-2020

Sh. No. 40

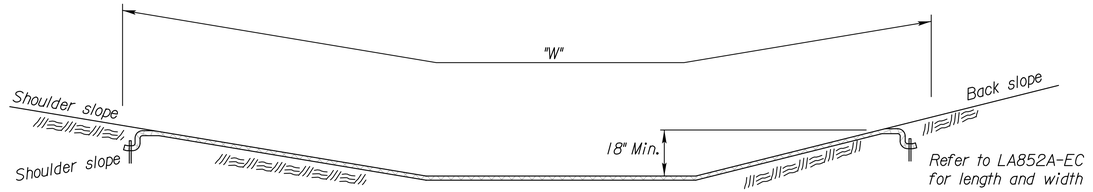
KDOT Graphics Certified

Std. Base File: la855.dgn
Plotted By: es01906 | Plot Location:
File: 75C5228011eec855.dgn
Plot Date: 17-JUL-2024 09:54

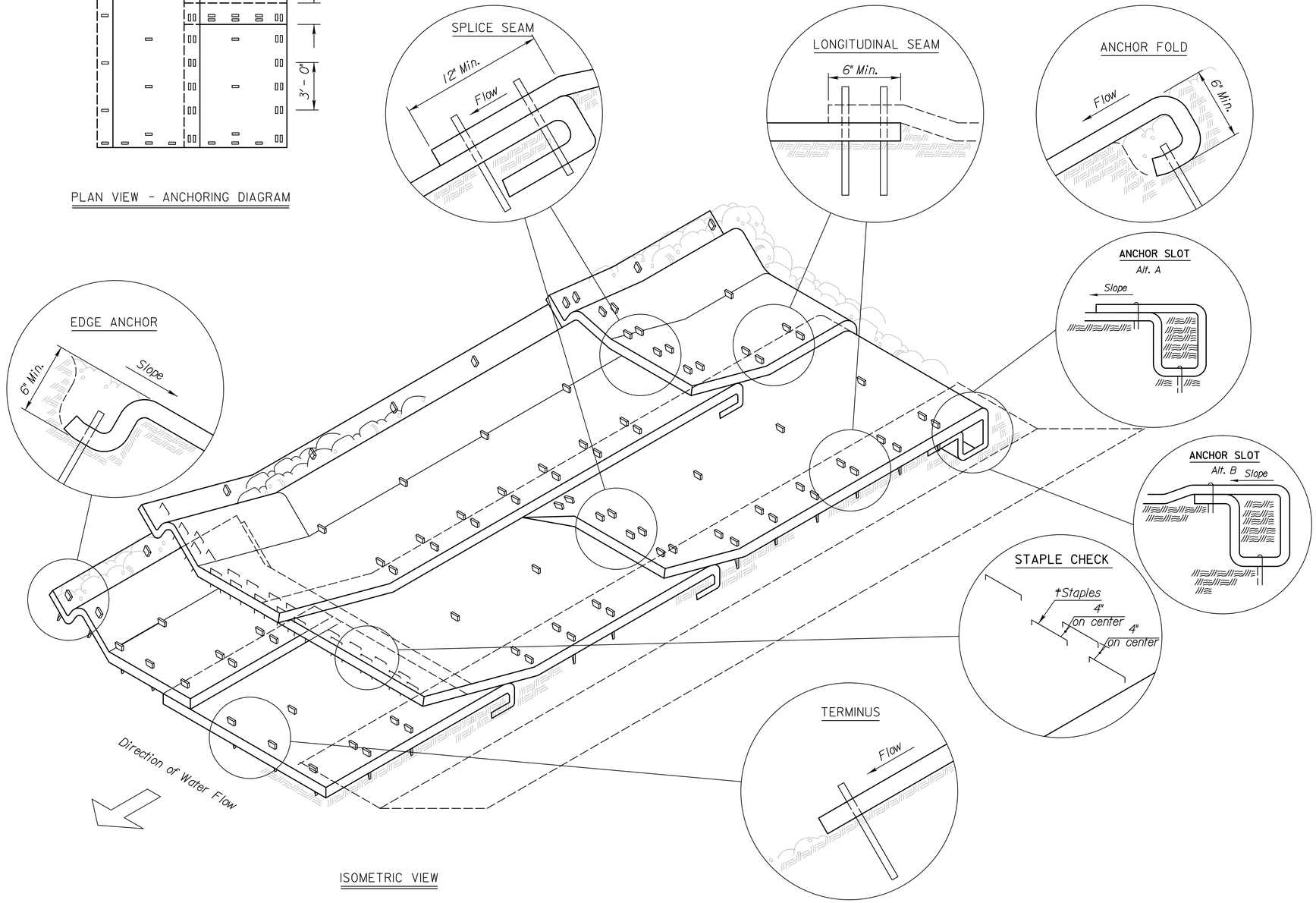
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	41	54



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, overlapend 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.*

4	9/25/15	Modified Staple Check	RAA	SHS
3	9/15/14	Revised Standard	RAA	SHS
2	3/01/13	Revised Standard	MRM	SHS
1	9/22/99	Revised Standard	WCL	RDR
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS 2
FLEXIBLE CHANNEL LINER

LA856

FHWA APPROVAL		11/02/2015	APP'D	Scott H. Shields	
DESIGNED	RAA	DETAILED	RAA	QUANTITIES	CADD RAA
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.	CADD CK.

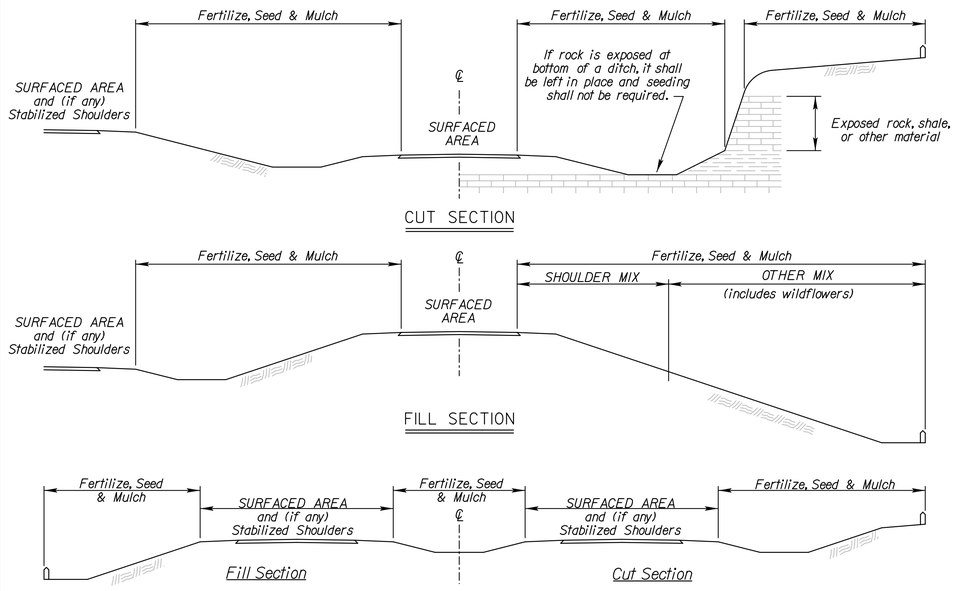
KDOT Graphics Certified 12-09-2020

KDOT Graphics Certified

Sh. No. 41

Std. Base File: la856.dgn
Plotted By: es01906 | Plot Location:
File: 75C52280/eec856.dgn
Plot Date: 17-JUL-2024 09:54

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-011	2024	42	54



TYPICAL SECTION - DUAL PAVEMENT

GRASS & WILDFLOWER SEEDING SEASONS

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

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

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

SODDING SEASONS

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

NATIVE WILDFLOWER MIX 1

PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	0.10
0.3	Common Milkweed	0.10
0.3	Black Eyed Susan	0.10
0.5	Blanket Flower	0.17
0.5	False Sunflower	0.17
0.5	Lance-Leaf Coreopsis	0.17
0.2	Maximillian Sunflower	0.07
0.1	New England Aster	0.03
0.2	Pinnate Prairie Coneflower	0.07
0.2	Plains Coreopsis	0.07
0.3	Purple Coneflower	0.10
0.3	Upright Prairie Coneflower	0.10
0.3	Dames Rocket	0.10
0.3	Lemon Mint	0.10
0.2	Pitcher Sage	0.07
0.2	Wild Bergamot	0.07
1.0	Illinois Bundleflower	0.33
0.2	Common Evening Primrose	0.07
0.1	Hoary Verbena	0.03
0.8	Purple Prairie Clover	0.26
0.3	Roundhead Lespedeza	0.10
3.0	Showy Partridge Pea	0.99
0.2	White Prairie Clover	0.07
10.3	Total (lb)	3.34

NATIVE WILDFLOWER MIX 2

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

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

OPTION: Broadcast Tall Drop Seed on the soil surface.

SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE SHLDR	P.L.S. RATE/ACRE OTHER			ACRES SHLDR	ACRES OTHER			BID ITEM	QUANTITY	UNIT
200				0.01				Fertilizer (13-13-13)		LB
	80				0.33			Fertilizer (15-30-15)		LB
	2				0.33			Seed (Big Bluestem Grass)(Kaw)		LB
0.5				0.01				Seed (Blue Grama Grass)(Lovington)		LB
4.5				0.01				Seed (Buffalograss)(Treated)		LB
	10				0.33			Seed (Canada Wildrye Grass)		LB
	2				0.33			Seed (Indiangrass)(Osage)		LB
	2				0.33			Seed (Little Bluestem Grass)(Aldous)		LB
45				0.01				Seed (Perennial Ryegrass)		LB
2.6				0.01				Seed (Prairie Junegrass)		LB
6.3	6.3			0.01	0.33			Seed (Side Oats Grama Grass)(El Reno)		LB
	10				0.33			Seed (Sterile Wheatgrass)(Regreen/Quick Guard)		LB
	0.7				0.33			Seed (Switchgrass)(Blackwell)		LB
	0.5				0.33			Seed (Tall Dropseed)		LB
45				0.01				Seed (Tall Fescue)(Endophyte Free)		LB
6	4			0.01	0.33			Seed (Western Wheatgrass)(Barton)		LB
	10.3				0.33			Seed (Native Wildflower Mix 1)		LB
								SEEDING	1	LS
								Mulching *		

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
2	11/25/20	Updated Seeding / Sodding Periods Charts	MRD	ML
1	08/03/20	Revised Standard	MRD	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING
SUMMARY OF SEEDING QUANTITIES

LA850

FHWA APPROVAL	05/06/2019	APP'D	Mervin Lare		
DESIGNED	MRD	DETAILED	MRD	QUANTITIES	CADD
DESIGN CK.		DETAIL CK.		QUAN.CK.	CADD CK.

KDOT Graphics Certified 05-05-2021

KDOT Graphics Certified

Sh. No. 42

Std. Base File:
Plotted By: es01906 | Plot Location:
File: 75C522801ees850.dgn
Plot Date: 17-JUL-2024 09:54

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

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

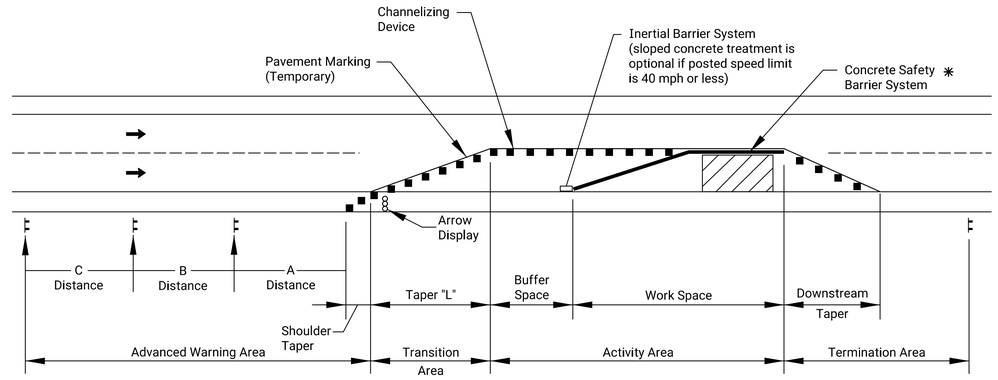
3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that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

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

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

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	43	54



TYPICAL WORK ZONE COMPONENTS

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

Minimum advance warning sign spacing (in feet):

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

✳ Posted speed prior to work starting

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

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

Taper Formulas:

L = WS for speeds of 45 MPH or more

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

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

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

Channelizer Placement:

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

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

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

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

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

Buffer Space

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

✳ Posted speed prior to work starting

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

TE700

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

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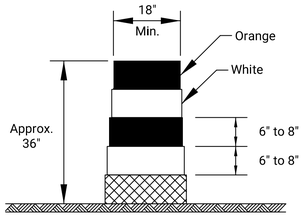
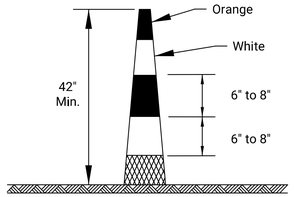
CADconform Certify This File

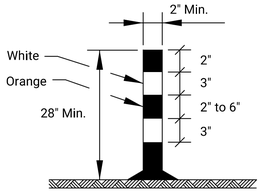
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	44	54



DRUM

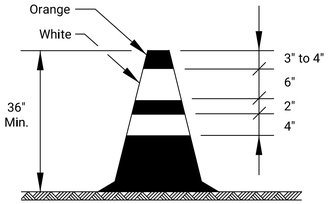


CONICAL
DELINEATOR

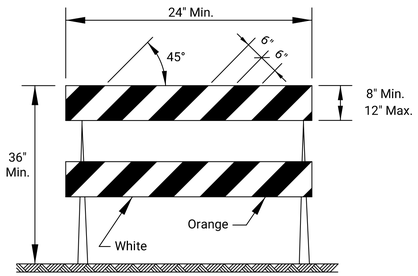


TUBULAR MARKER

Striping as shown for up to 42".

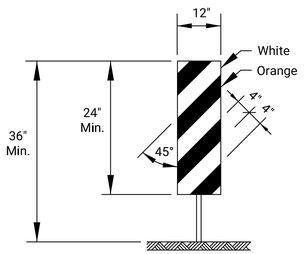


TRAFFIC CONE



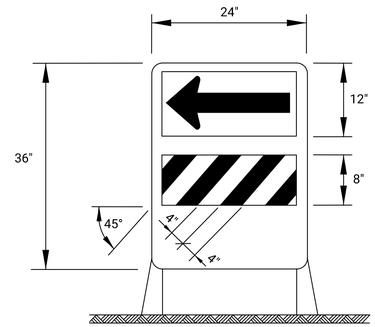
TYPE 2 BARRICADE

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



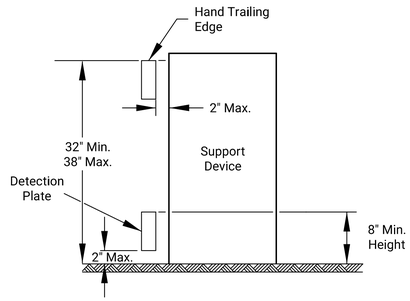
VERTICAL PANEL

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



DIRECTION INDICATOR BARRICADE

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



PEDESTRIAN CHANNELIZER

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CHANNELIZING DEVICES

TE702

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

CADconform Certify This File

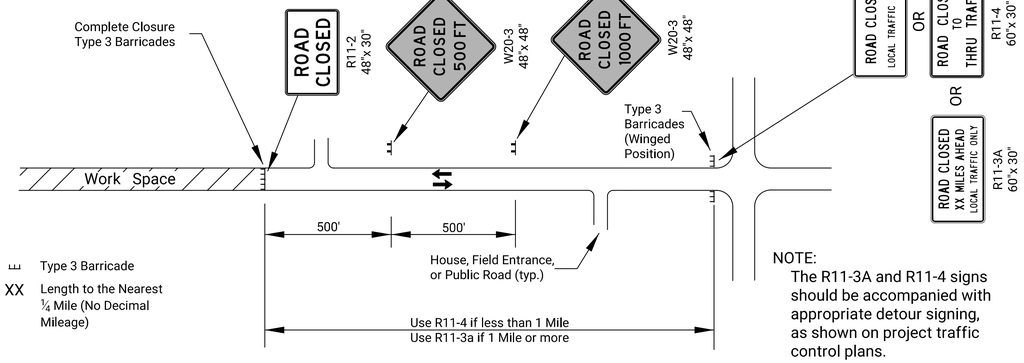
Sh. No. 44

Plotted by : es01906 17-JUL-2024 09:54
File : 75C522801css702.dgn

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	45	54

Note: Signs shown for one approach to work zone.



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

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

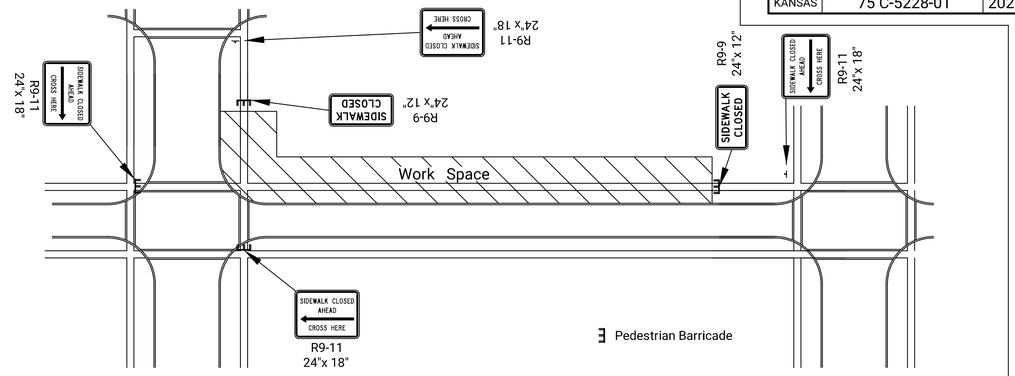


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE

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

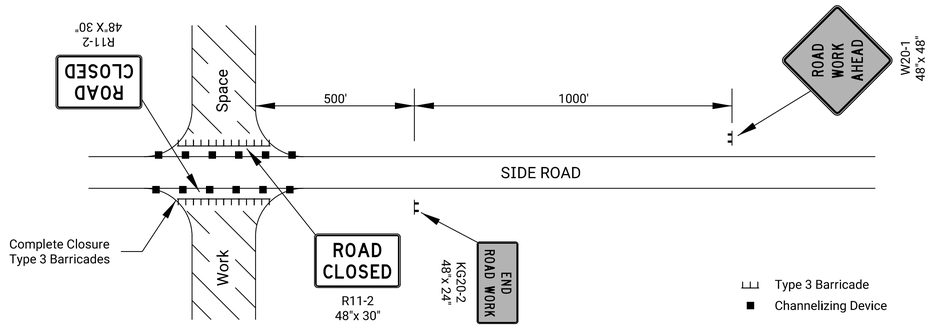


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

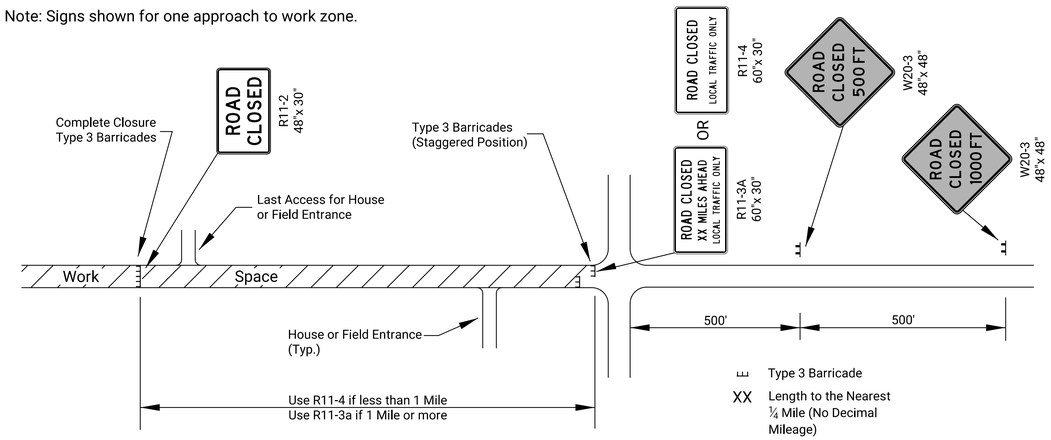
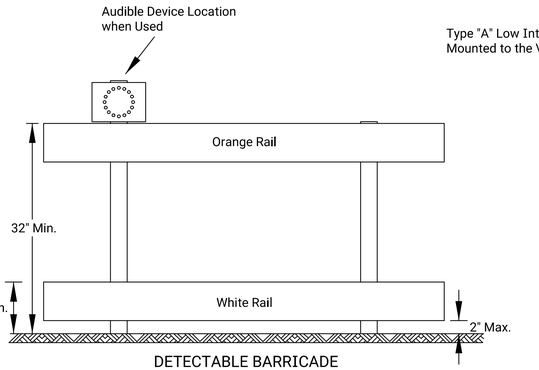
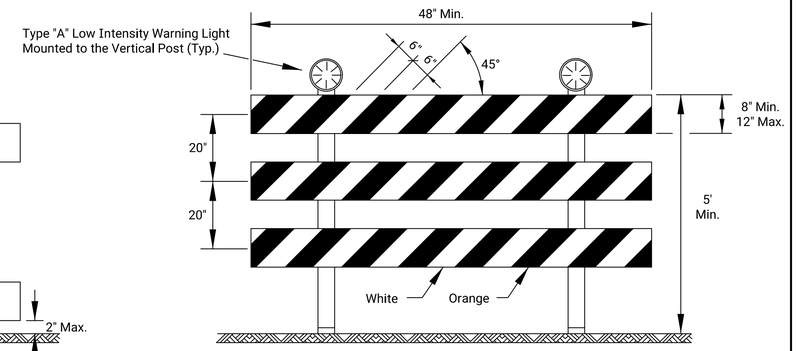


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS



DETECTABLE BARRICADE

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



TYPE 3 BARRICADE WITH LIGHTS

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

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

ROAD CLOSED GENERAL NOTES

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CLOSURES

TE704

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	46	54

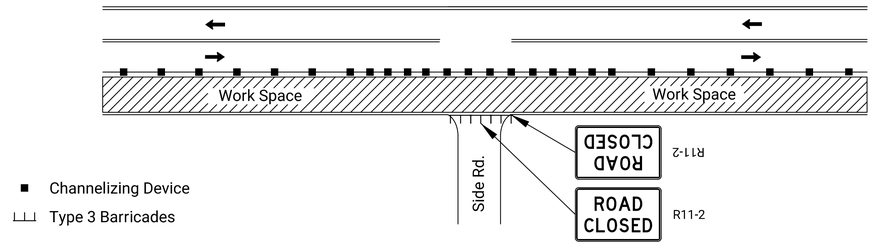


FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

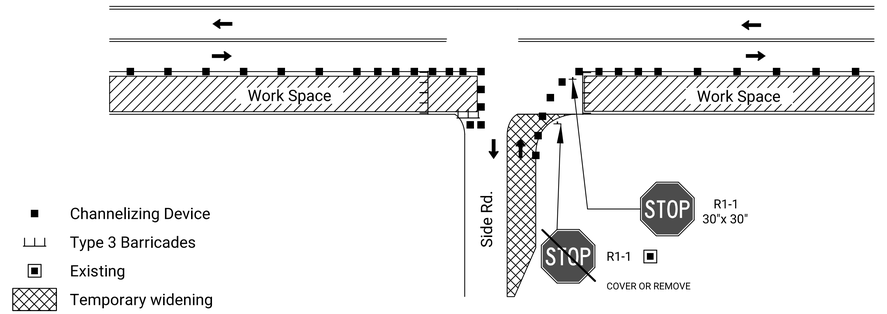


FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME: TWO WAY TRAFFIC REQUIRED

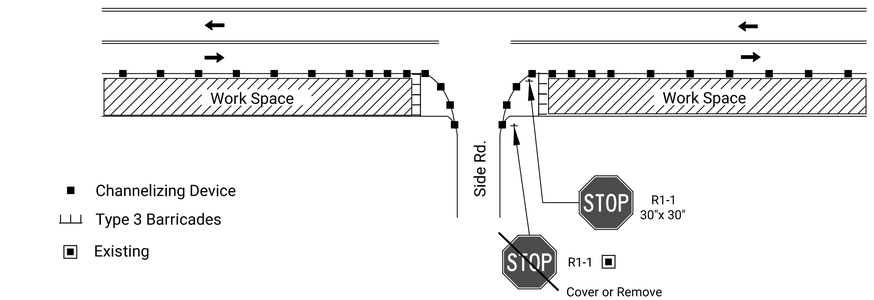


FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

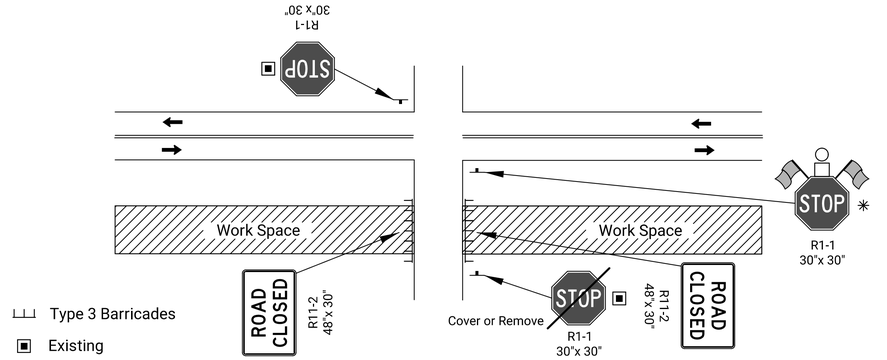


FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY

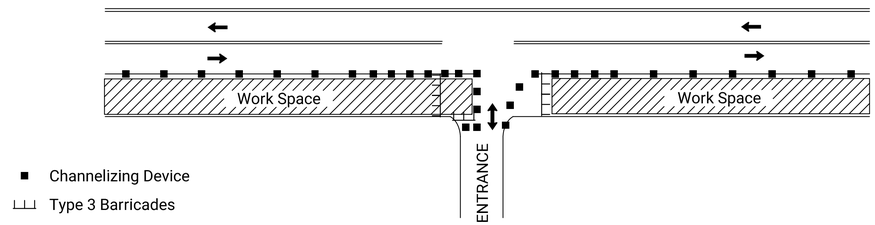


FIGURE 3: LOW VOLUME ENTRANCE CONTRUCTED HALF AT A TIME

Note: Consider large vehicles making right turns into and out of entrance and use figure 4 as needed

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL ACCESS THROUGH THE WORK AREA

TE705

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

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Sh. No. 46

Plotted by : es01906 17-JUL-2024 09:54
File : 75C522801css705.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	47	54

SIGN LAYOUT INFORMATION

KG20-2

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

KG20-5

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

KM4-20

Std. Size: 3" C, 24"x 6"
Expwy/Freeway: 6" C, 48"x 12"

W7-3a

Mileage to be Determined by the Engineer.

W8-15

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

W8-7

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

W8-15p

Std. Size Expwy/Freeway
30"x 24"

W8-17

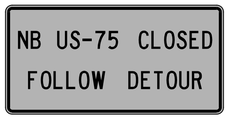
Std. Size Expwy/Freeway
48"x 48"

W8-11

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

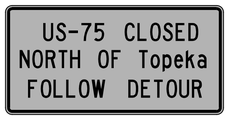
W8-17P
(Optional)

Std. Size Expwy/Freeway
30"x 24"



SP-01
(Special Sign)

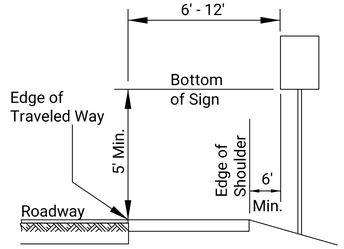
Std. Size: 6" C
Expwy/Freeway: 10" D



SP-02
(Special Sign)

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

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

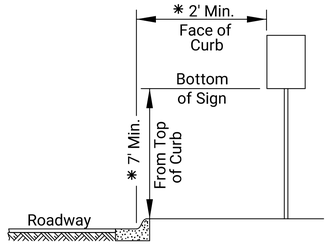


RURAL

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

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

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



URBAN

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

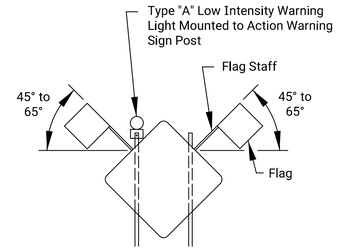
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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

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

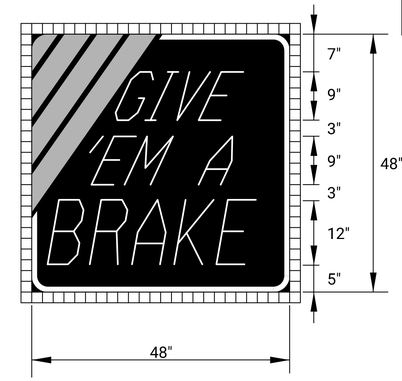
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

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



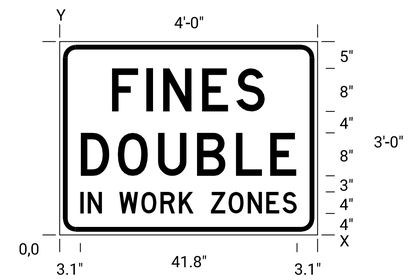
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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



KI-104a

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



KI-105a

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

Dimensions in inches — Spacings are to start of next letter

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

Notes:

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN INFORMATION

TE710

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

CADconform Certify This File

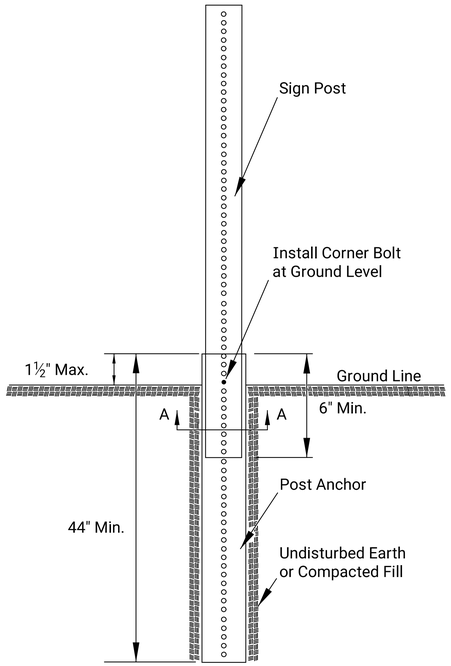
Sh. No. 47

CADconform Certify This File

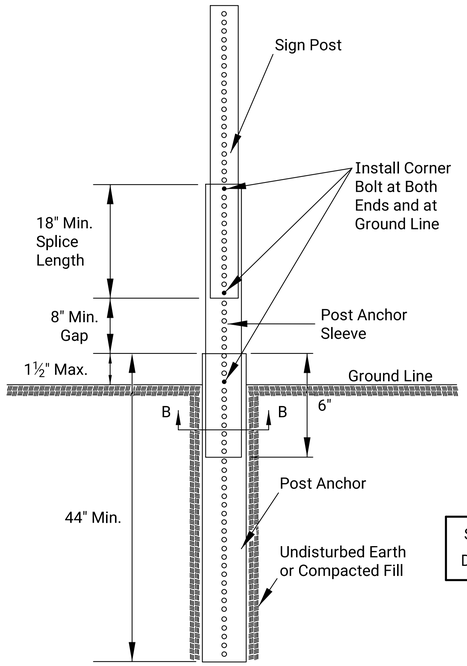
Plotted by : es01906 17-JUL-2024 09:55
File : 75C522801css710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	48	54

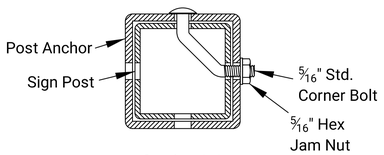
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



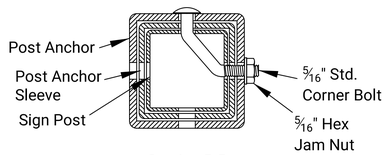
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

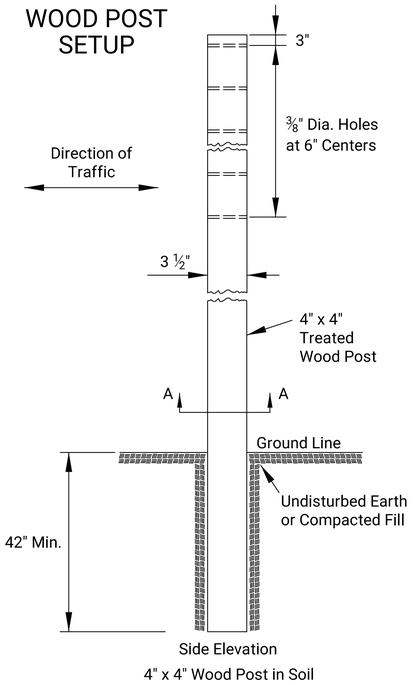


Section B-B

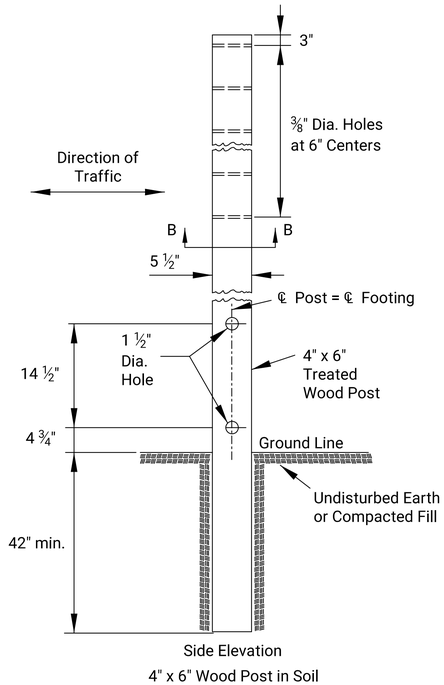
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

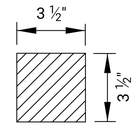
WOOD POST SETUP



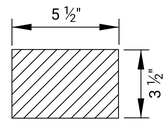
Side Elevation
4" x 4" Wood Post in Soil



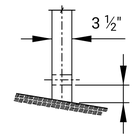
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



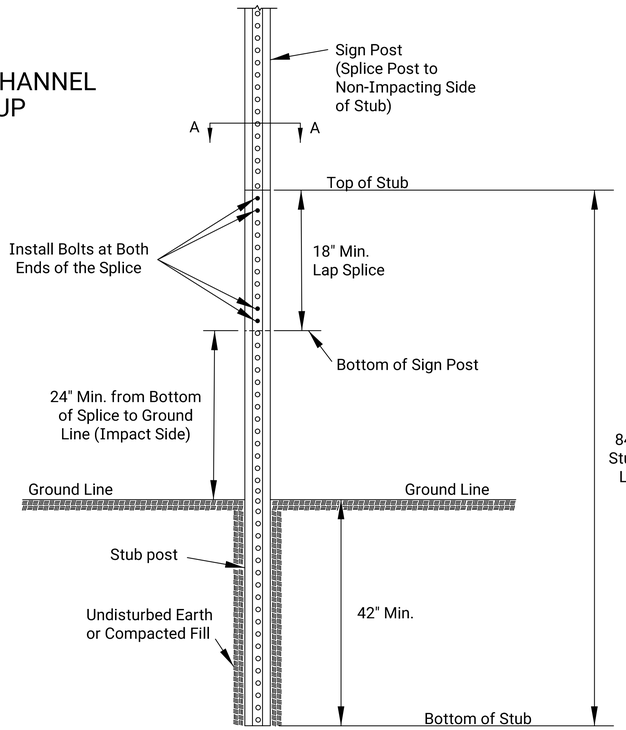
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

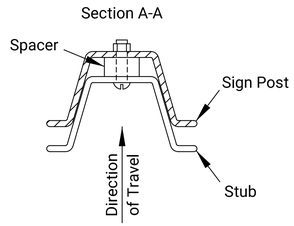
3 LB/F U-CHANNEL SETUP



Notes:

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

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



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

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

CADconform Certify This File

Sh. No. 48

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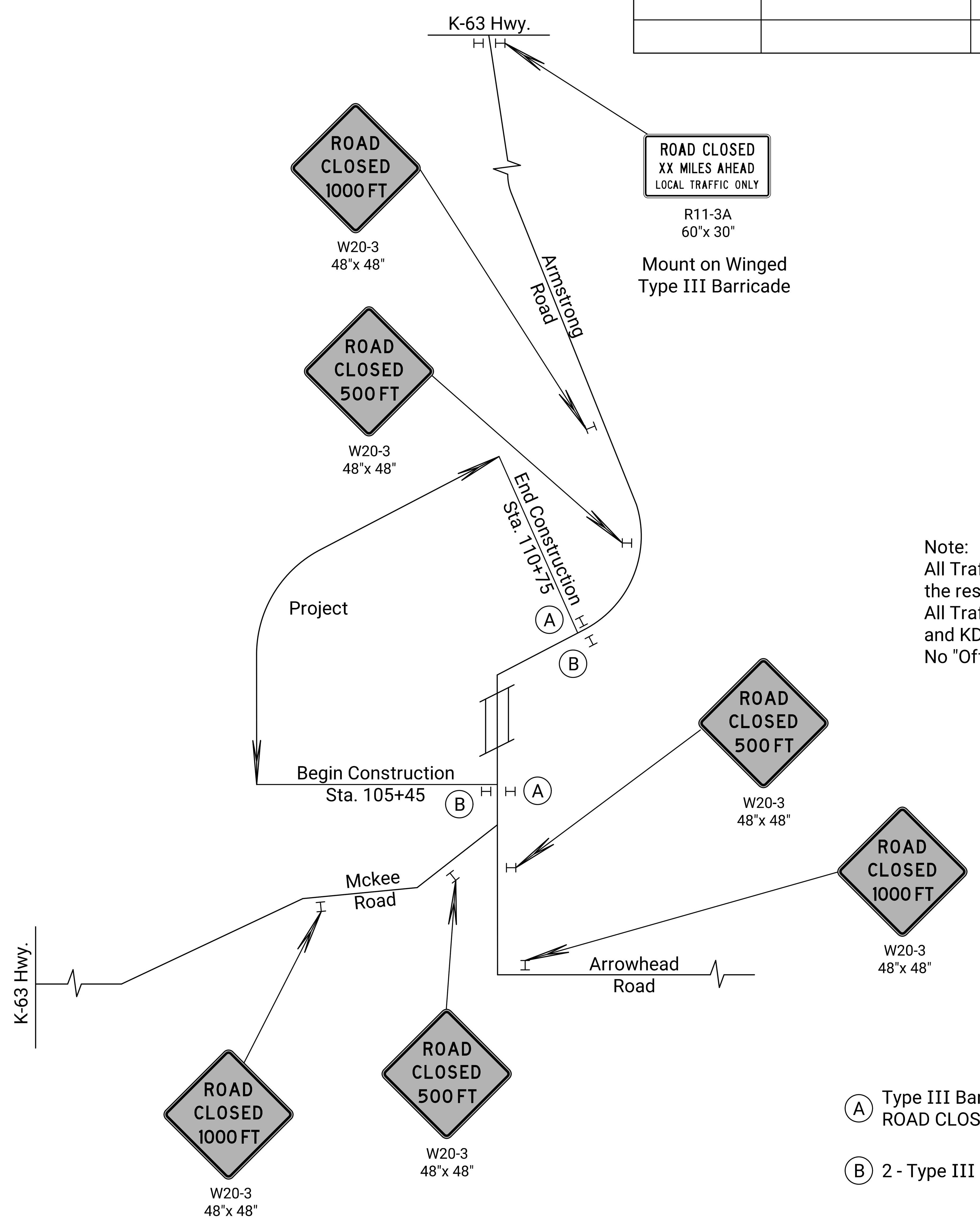
File : 75C522801css712.dgn

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

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



Not to Scale

Note:
All Traffic Control Signing shall be the responsibility of the Contractor
All Traffic Control shall follow the MUTCD and KDOT Standard Details.
No "Official Detour" will be provided.

(A) Type III Barricades (8') with ROAD CLOSED Signs (R11-2)

(B) 2 - Type III Barricades (8')

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

✳ Quantity most used on the project at any one time

Work Zone Signs ✳			
Sign No.	Size - Sq.Ft. 0-9.25	9.26-16.25	16.26 & Over
W20-7		2	
R11-2		2	
R11-3A		1	
W20-3		6	

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

Channelizing Devices ✳		
Fixed	Portable	Pedestrian

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

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

NO.	DATE	REVISIONS	BY	APP'D

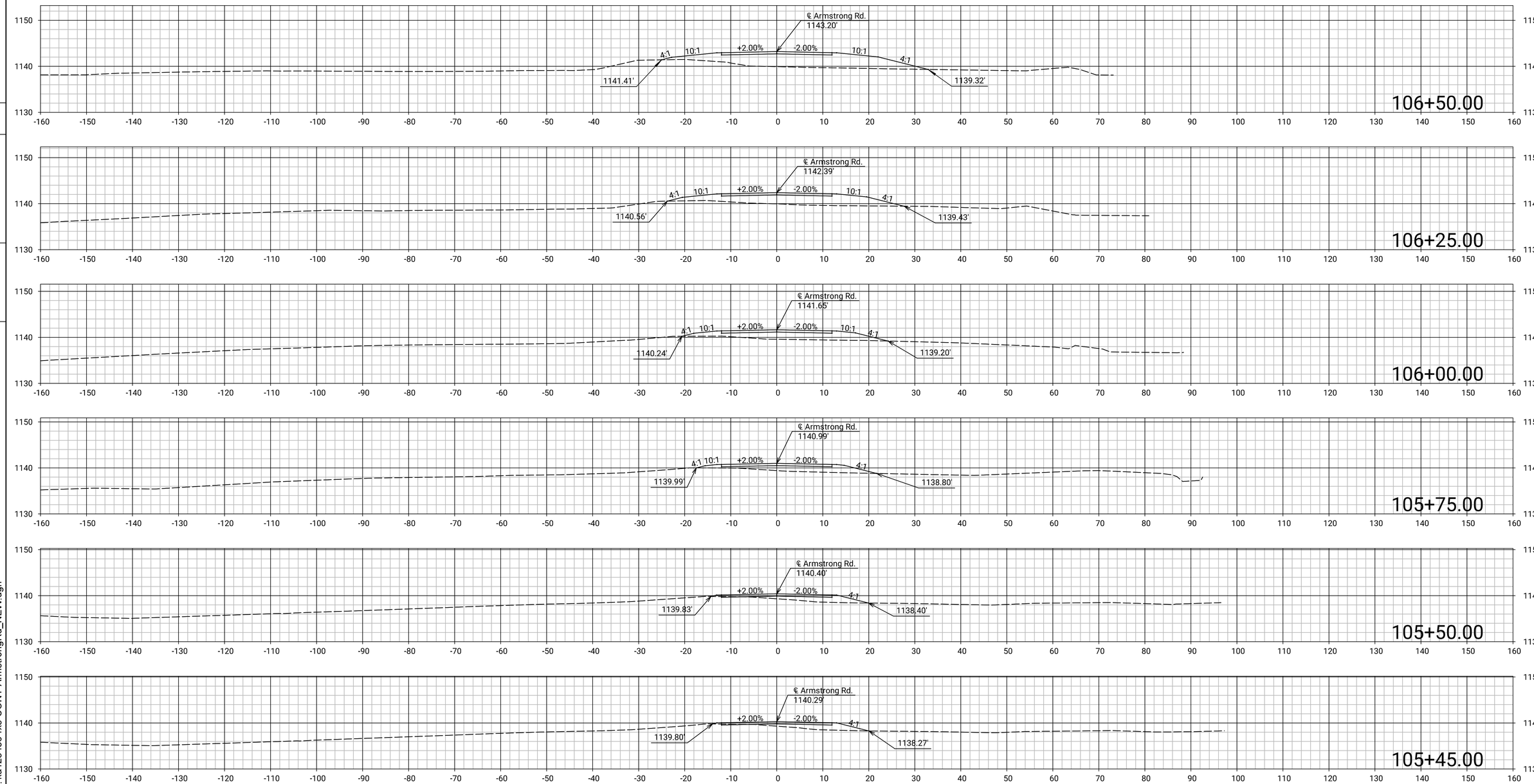
KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SUMMARY OF DEVICES
RECAPITULATION OF QUANTITIES

TE795

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	50	54

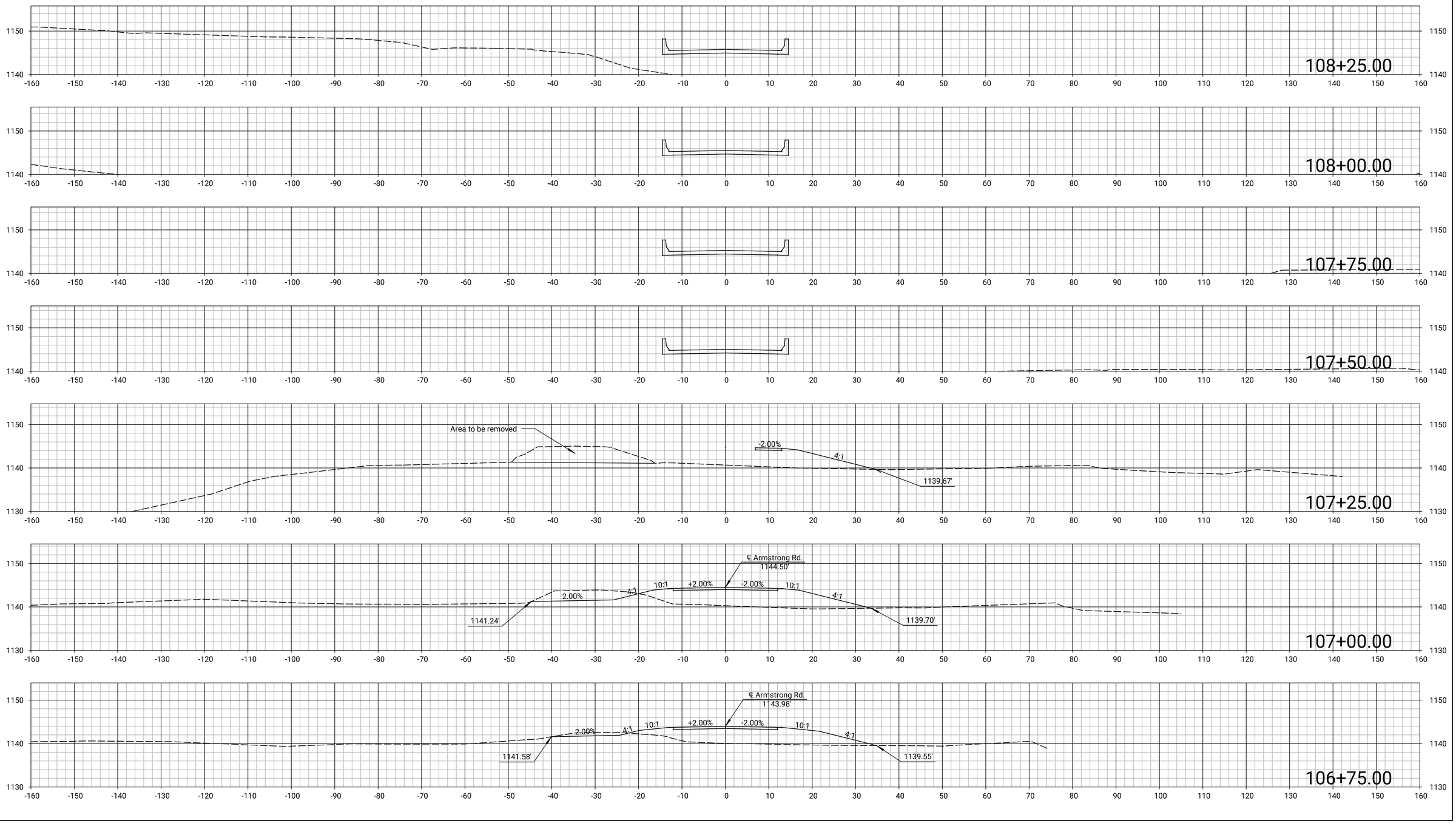


BY	DATE
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted by : es01906 17-JUL-2024 09:55
File : ka123456-rxs-CONT-ArmstrongRd_NEW.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	51	54

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED



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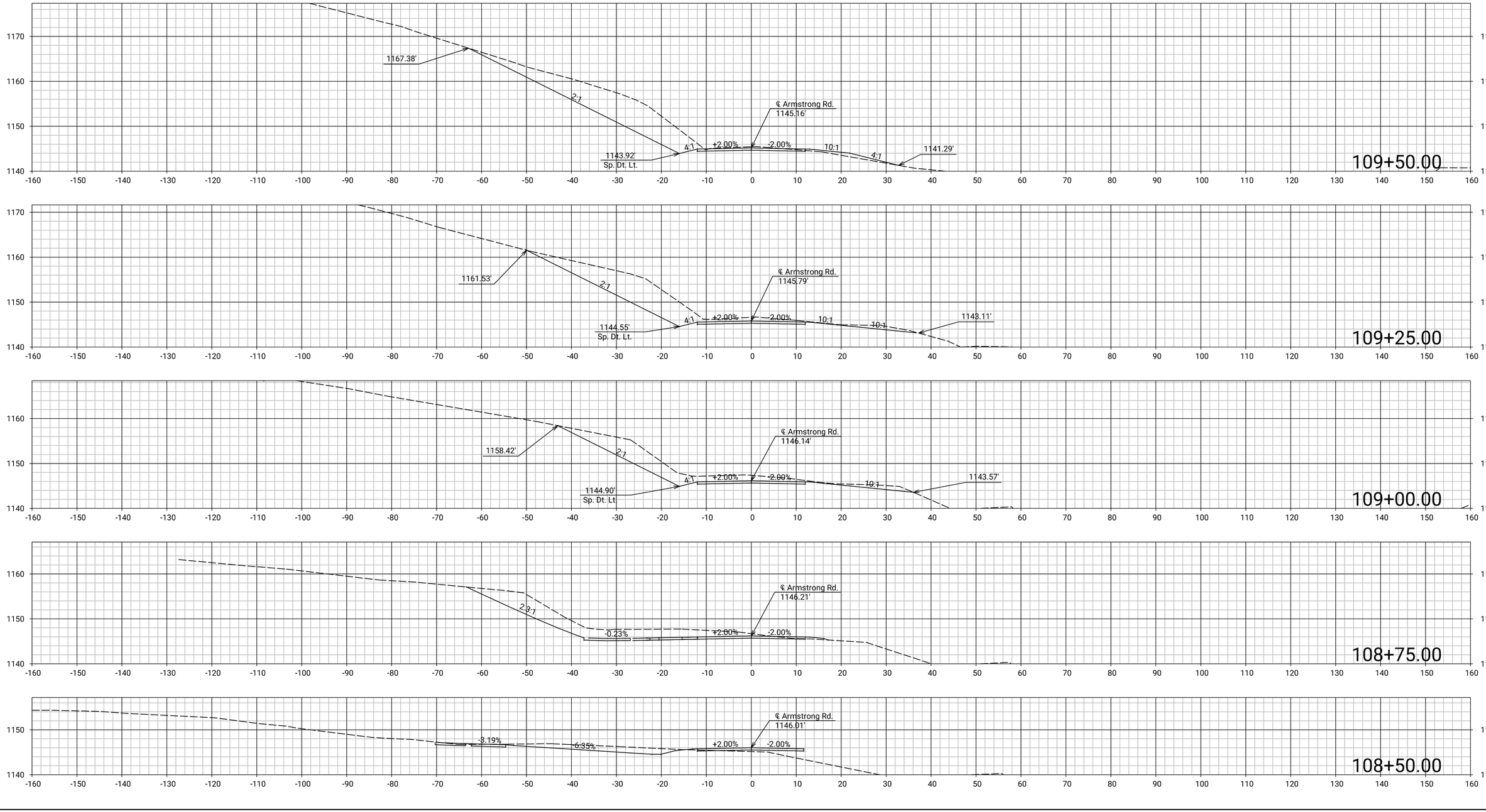
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	52	54

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



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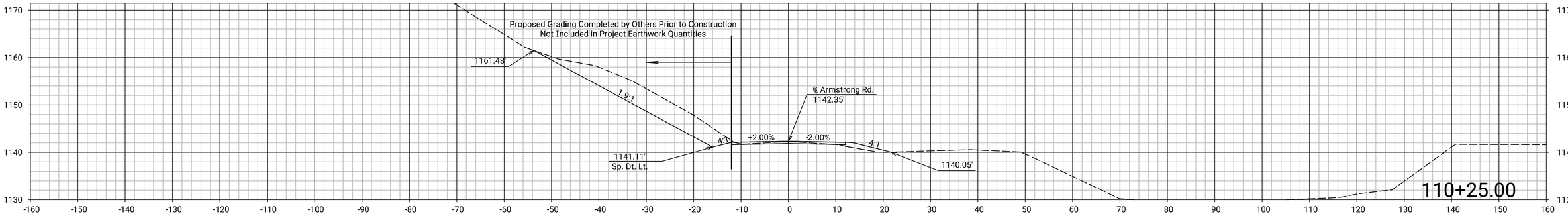
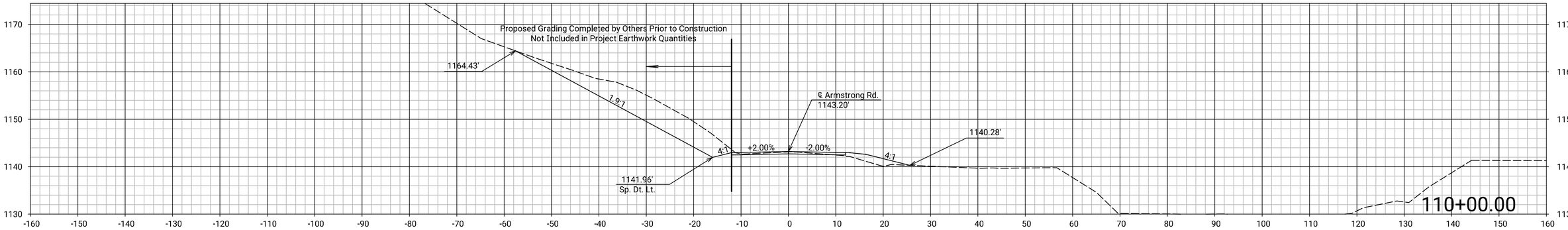
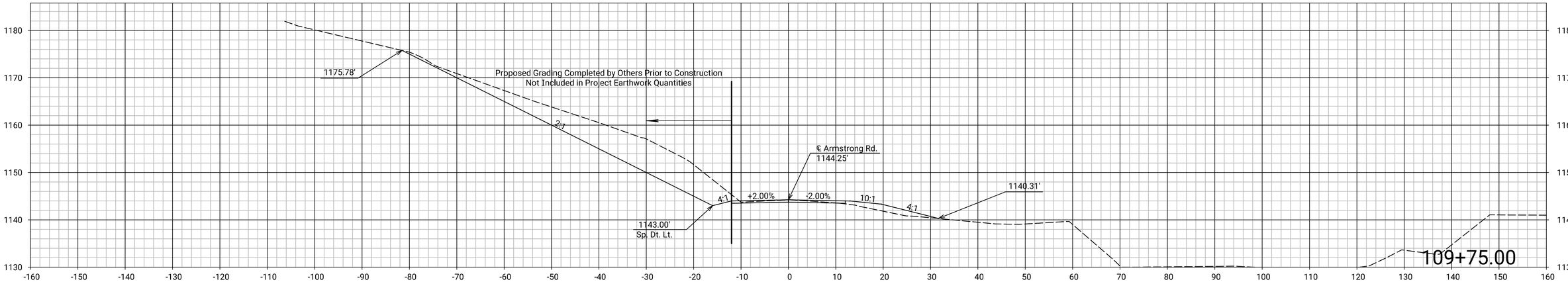
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	53	54

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED







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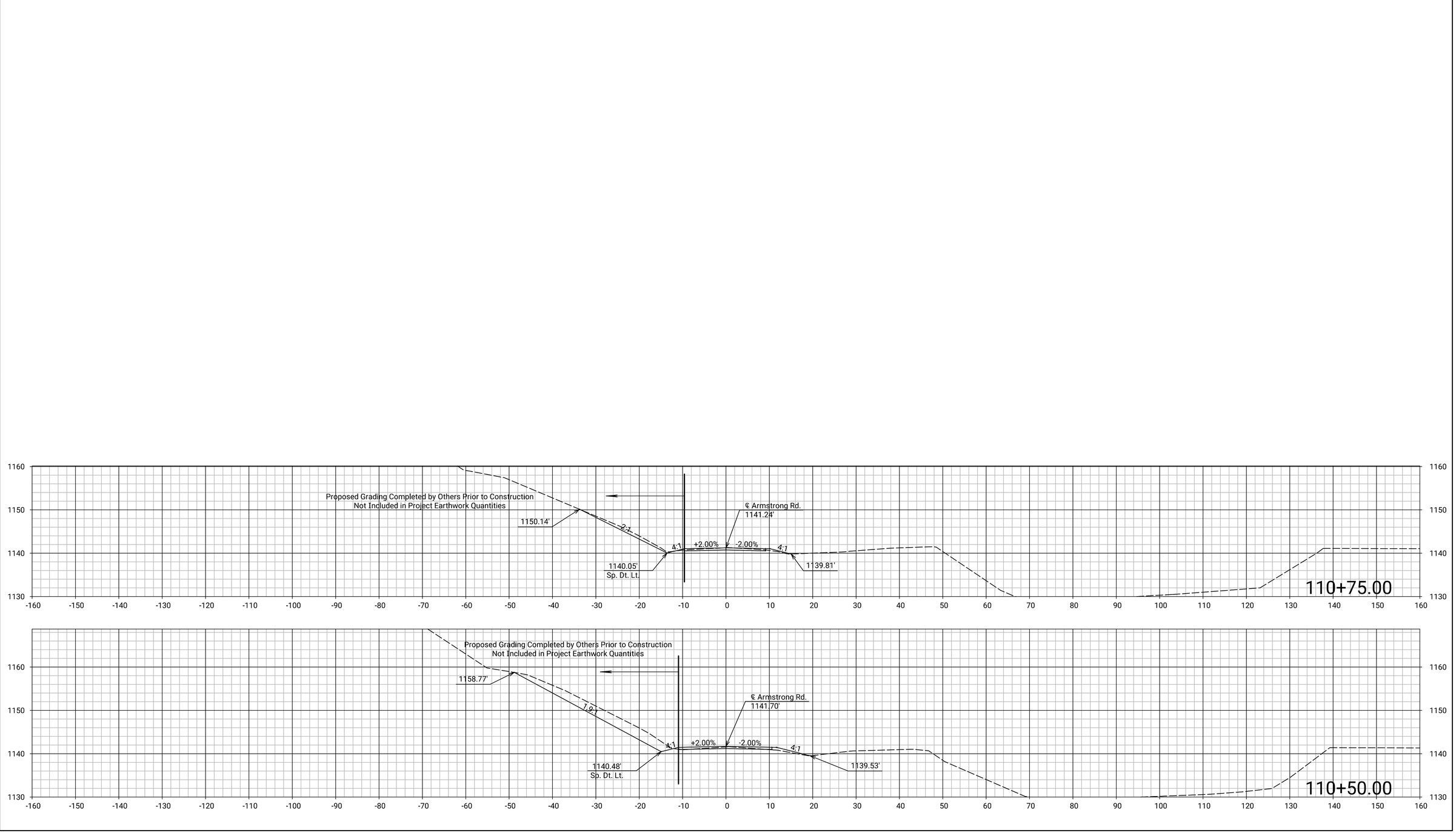
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	75 C-5228-01	2024	54	54

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



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