STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	01	135

STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

KDOT PROJECT NUMBER 99-99 KA-5728-01
FEDERAL PROJECT NUMBER BRF-A572(801)

PLAN AND PROFILE OF PROPOSED

STATE HIGHWAY

FEDERAL AID PROJECT

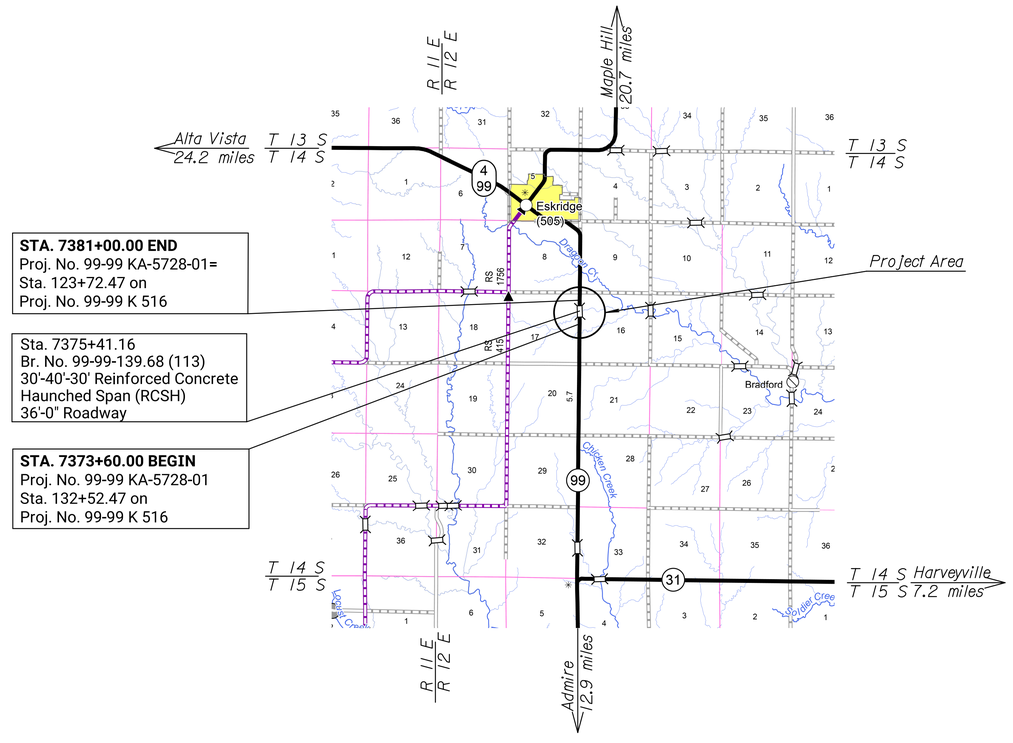
WABAUNSEE COUNTY

K-99

GRADING AND SURFACING (ASPHALT)
BRIDGE
SEEDING
SIGNING

INDEX OF SHEETS

1	TITLE SHEET
2	SIGNATURE SEAL SHEET
3-4	TYPICAL SECTIONS
5	FOUNDATION TREATMENT & COMPACTION DETAIL
6	SALVAGED TOPSOIL
7	GENERAL NOTE
8	PLAN-PROFILE (MAINLINE)
9	PLAN-PROFILE (SHOOFLY DETOUR)
10	RIGHT OF WAY MONUMENT ENSTALLATION DETAIL
11-12	PAVEMENT DETAILS
13	SLOPE DRAIN
14-22	GUARDRAIL
23-26	END SECTIONS
27	PIPE CULVERT SUMMARY
28	DRAINAGE DATA SHEET
29-31.001	CULVERT
32-44	BRIDGE NO. 99-99-139.68 (113)
45-55	DETOUR BRIDGE
56	BRIDGE EXCAVATION
57	STANDARD PILE DETAILS
58	SUPPORTS AND SPACERS FOR REINFORCING STEEL
59-61	CHANNEL REALIGNMENT
62-63	SUMMARY OF QUNATITIES
64	PROJECT SURFACING
65-75	TEMPORARY EROSION AND POLLUTION CONTROL
76	SEEDING
77-84	SIGNING
85	CONSTRUCTION SEQUENCING
86-95	TRAFFIC CONTROL
96-129	CROSS SECTIONS (K-99)
130-135	CROSS SECTIONS (CHANNEL REALIGNMENT)



STA. 7381+00.00 END
Proj. No. 99-99 KA-5728-01=
Sta. 123+72.47 on
Proj. No. 99-99 K 516

Sta. 7375+41.16
Br. No. 99-99-139.68 (113)
30'-40'-30' Reinforced Concrete
Haunched Span (RCSH)
36'-0" Roadway

STA. 7373+60.00 BEGIN
Proj. No. 99-99 KA-5728-01
Sta. 132+52.47 on
Proj. No. 99-99 K 516

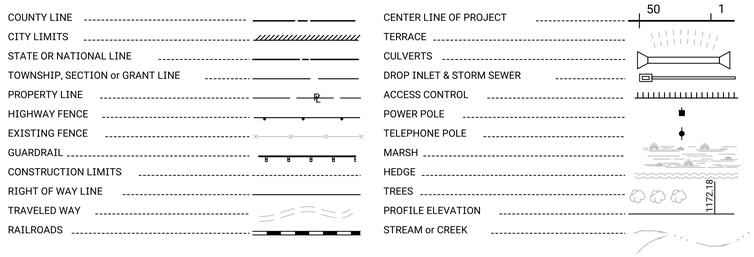
SCALE: 1" = 1 MILE

NOTE: Traffic to be carried around construction on shoofly detour.

DESIGN DESIGNATION

AADT (2024) = 750
AADT (2044) = 850
DHV = 11%
D = 65%
T = 14%
V = 65 mph
C of A = None
Clear Zone = 26 ft.

CONVENTIONAL SIGNS



GROSS LENGTH OF PROJECT	740.00	FT. (Includes Equations)		
EXCEPTIONS	0.00 FT.			
NET LENGTH OF PROJECT	740.00	FT.	0.140	MILES
NET LENGTH OF BRIDGES	102.50	FT.	0.019	MILES
NET LENGTH OF ROAD	637.50	FT.	0.121	MILES

Approved _____
Date

State Transportation Engineer

By:

Chief, Bureau of Road Design

KANSAS DEPARTMENT OF TRANSPORTATION

		DATE
SURVEY	J. Bowen	2020
CADD TECHNICIAN	M. R. Remboldt / D. Kahle	10/2023
DESIGNERS	A. Zuno-KDOT(Road) / K. Moore+HDR (Bridge)	10/2023
SQUAD	S. Bass (Road) / B. Rognlie (Bridge)	10/2023

Plotted by: August.Zuno 16-JAN-2024 12:43
File: ka572801rti-01.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	02	135

SARA MARIE PETERS LICENSED 23455 KANSAS PROFESSIONAL ENGINEER Jan 11, 2024 Name: Sara Peters Co. Name: KDOT - Traffic Plan Section: Permanent Signing	KARLA SUE WATERS LICENSED 13347 KANSAS PROFESSIONAL ENGINEER Jan 11, 2024 Name: Karla Waters Co. Name: Schwab Eaton Plan Section: Traffic	THADDEUS KOSMICKI LICENSED 19669 KANSAS PROFESSIONAL ENGINEER Jan 11, 2024 Name: Thaddeus Kosmicki Co. Name: HDR Engineering Plan Section: Bridge	ERIC J. DOVE LICENSED 19738 KANSAS PROFESSIONAL ENGINEER Jan 11, 2024 Name: Eric Dove Co. Name: HDR Engineering Plan Section: Channel Re-alignment				

NO.	DATE	REVISIONS	BY	APP'D
01	01-24-18	Initial Release	A.L.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

Signature Seal Sheet

RD048

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

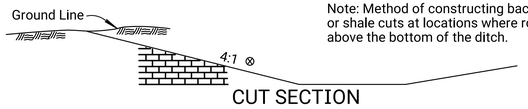
KDOT Graphics Certified 04-18-2022 Sh. No. 02

KDOT Graphics Certified

Plotted by : August.Zuno 1-NOV-2023 16:08
File : rss048.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	03	135

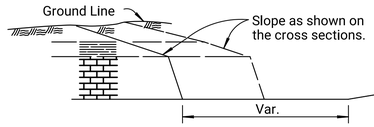
Guide to designer: Use this sheet when subgrading in rock or shale is not required.
See Soils and Geology Reports for additional plan notes.

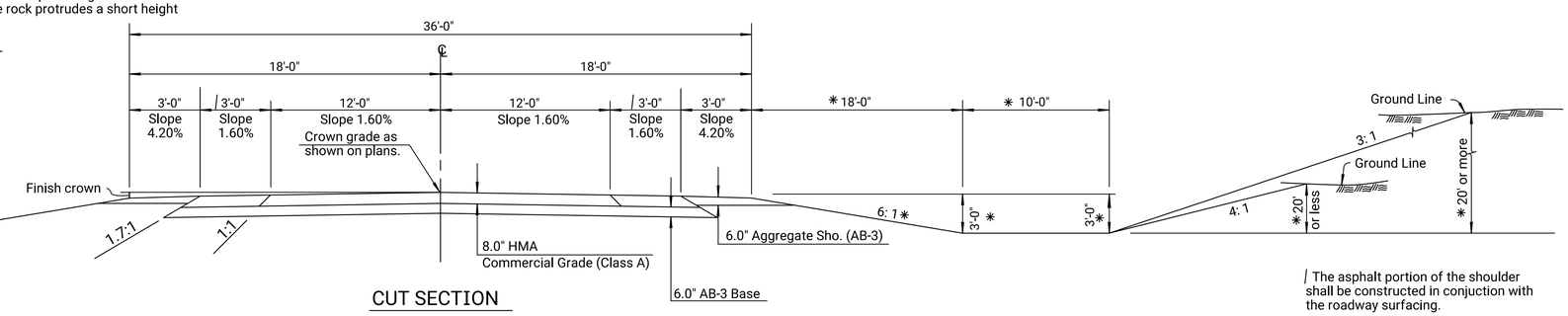


CUT SECTION

Note: Method of constructing backslope through shallow rock or shale cuts at locations where rock protrudes a short height above the bottom of the ditch.

⊗ Slope to be 3: 1 when depth of cut is 20' or more.





CUT SECTION
K-99

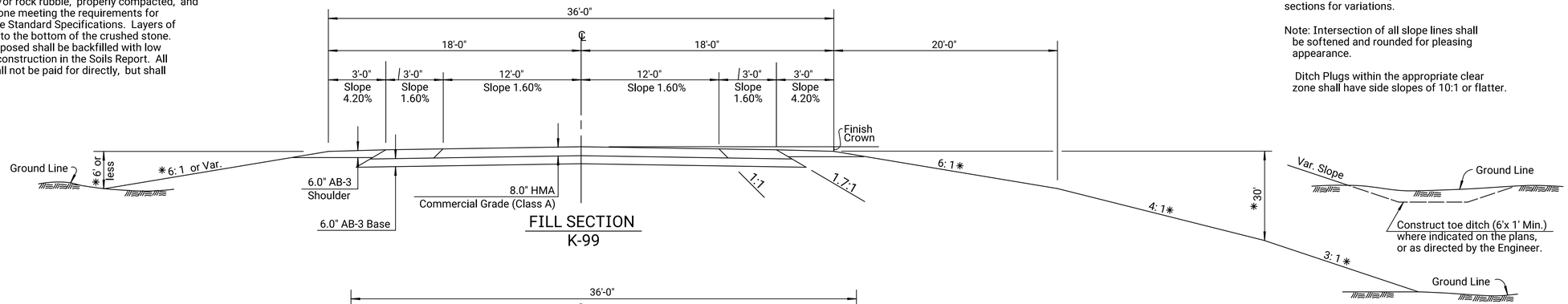
| The asphalt portion of the shoulder shall be constructed in conjuction with the roadway surfacing.

✳ Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

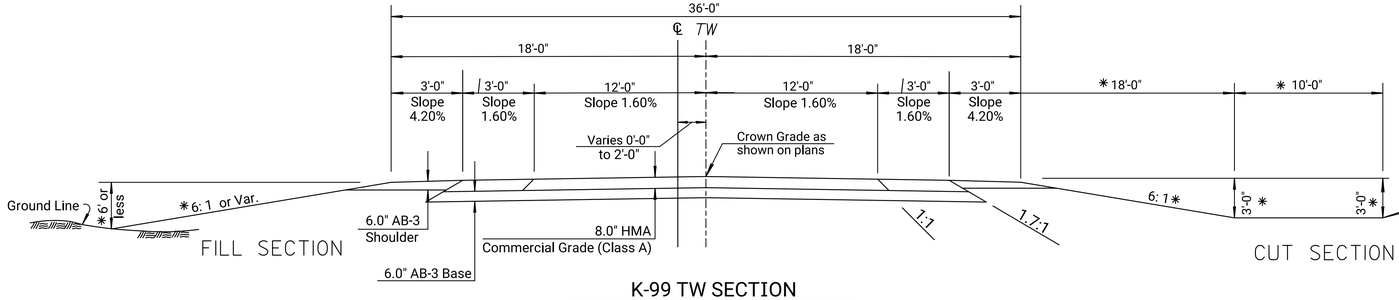
Note: Intersection of all slope lines shall be softened and rounded for pleasing appearance.

Ditch Plugs within the appropriate clear zone shall have side slopes of 10:1 or flatter.

✳✳ Overbreakage in limestone or sandstone rock shall be brought to within 8" of the subgrade line with crushed stone, shot rock, and/or rock rubble, properly compacted, and then brought to the subgrade line with crushed stone meeting the requirements for "Crushed Stone for Backfill" in accordance with the Standard Specifications. Layers of earth or shale will not be permitted for backfill up to the bottom of the crushed stone. Overbreakage in shale or in rock where shale is exposed shall be backfilled with low permeability soils listed as useable for subgrade construction in the Soils Report. All materials, equipment, and labor for this work shall not be paid for directly, but shall be subsidiary to other items of the contract.

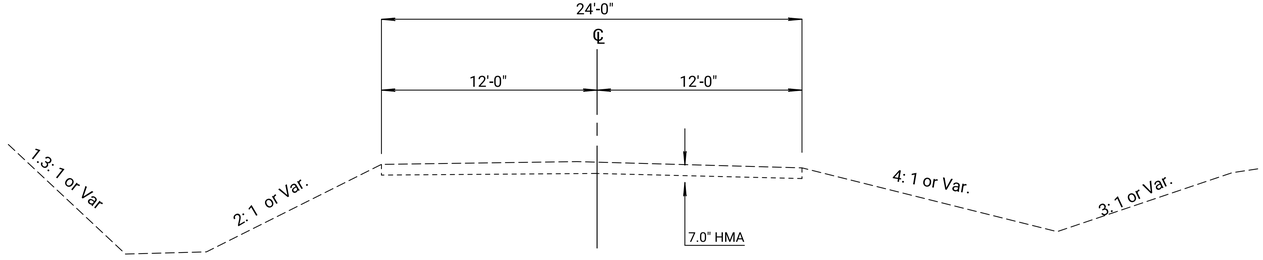


FILL SECTION
K-99

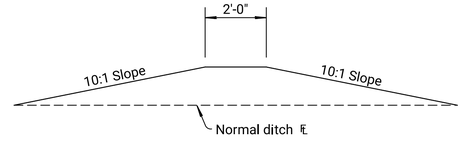


FILL SECTION CUT SECTION

K-99 TW SECTION
STA.7372+20 to STA. 7373+60



EXISTING TYPICAL SECTION
FOR INFORMATION ONLY



SKETCH OF DITCH PLUG

NO.	DATE	REVISIONS	BY	APP'D
21	1-25-13	Removed Slope, Pvmt. Edge	S.W.K.	J.O.B.
20	5-20-09	8:1/6:1 over 10' fill mound ent./sd.rd.	S.W.K.	J.O.B.
19	11-10-04	Changed slope labels to percent	S.W.K.	J.O.B.
18	5-10-00	Rev. Ditch Plug Slope 10:1	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION
GRADING & SURFACING

~~RD600~~

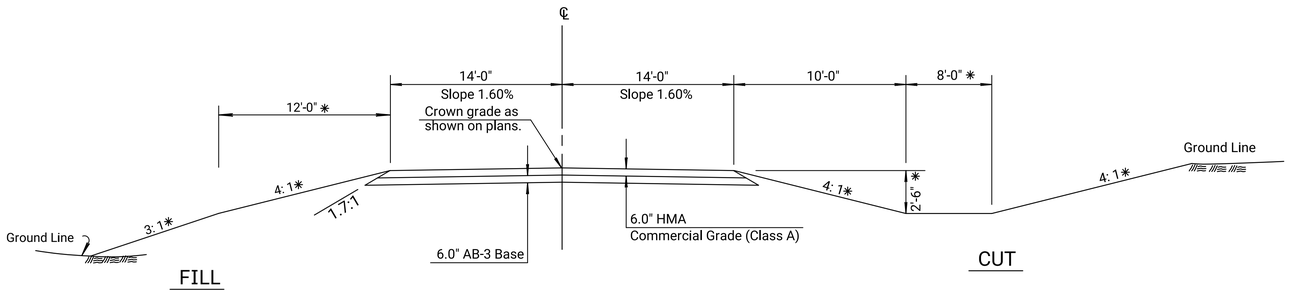
FHWA APPROVAL	5-21-2013	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. W.L.H.

KDOT Graphics Certified 01-04-2024 Sh. No. 03

KDOT Graphics Certified

Plotted by : August.Zuno 04-JAN-2024 13:03
File : KA5728801rts-02z.dgn

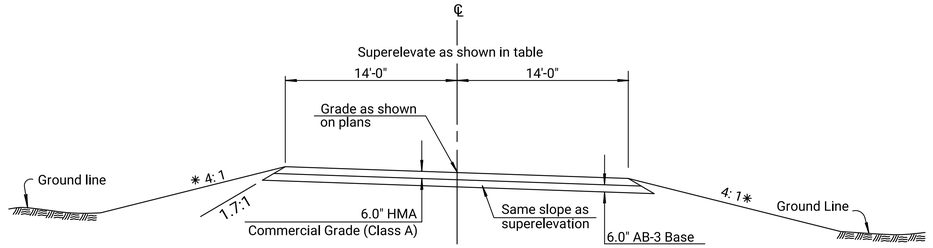
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	04	135



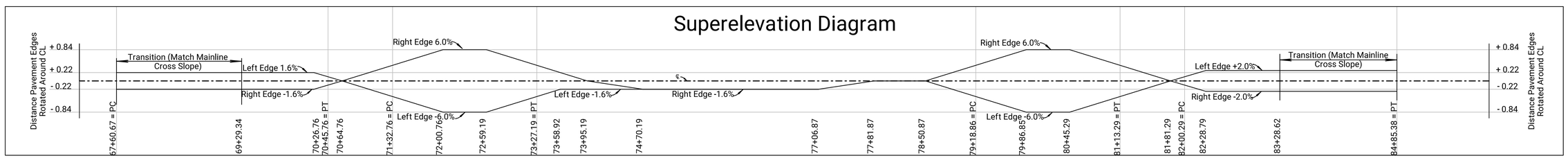
SHOOFLY DETOUR

✳Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

Note: Intersection of all slope lines shall be softened and rounded for pleasing appearace.



SUPERELEVATED SECTION



Sta. P.I. Curve	Radius	Super %	Transition - (Lin.Ft.)		
			L	A	B
Sta. 69+07.21	500'	R.C.			
Sta. 72+32.70	341'	6	For Superelevation transition, see diagram above.		
Sta. 80+18.80	341'	6			
Sta. 83+46.83	500'	R.C.			

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION SHOOFLY DETOUR

~~RD600~~

FHWA APPROVAL	5-21-2013	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. W.L.H.

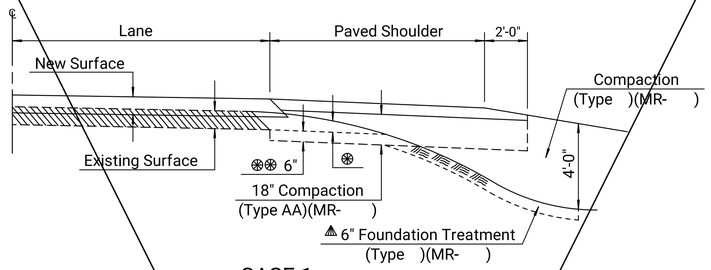
KDOT Graphics Certified 01-04-2024 Sh. No. 04

KDOT Graphics Certified

Plotted by : August.Zuno 04-JAN-2024 11:26
File : KA572801rts-02.dgn

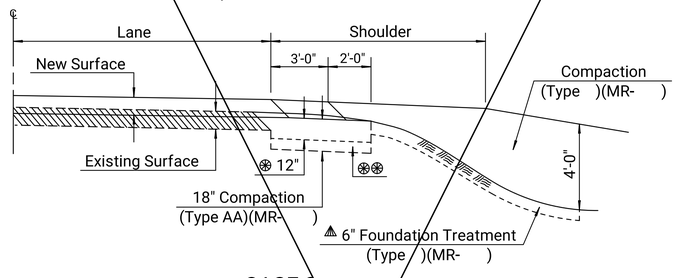
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	05	135

REHABILITATION



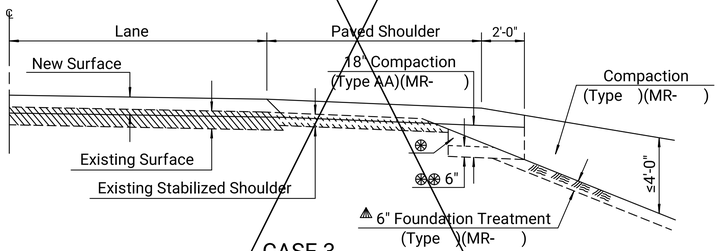
CASE 1

Overlay with Paved Shoulder



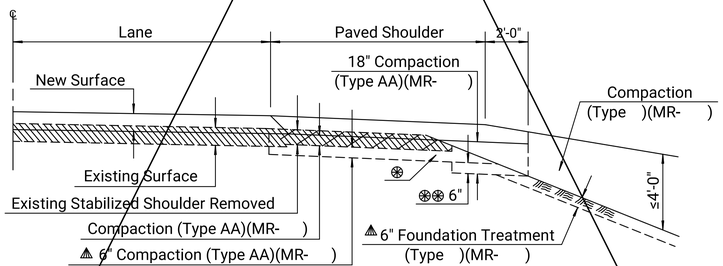
CASE 2

Overlay with Composite Shoulder



CASE 3

Overlay with Existing Paved Shoulder



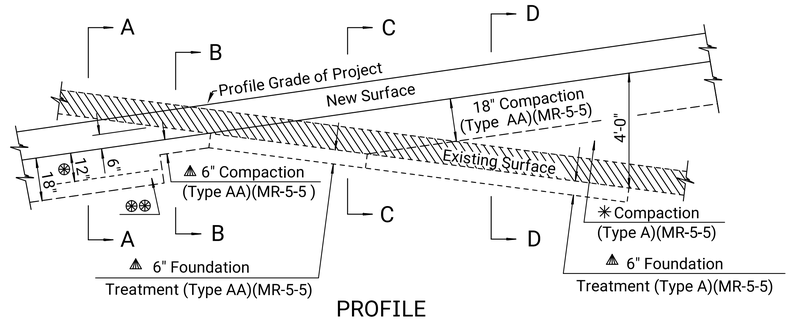
CASE 4

Overlay with Shoulder Replacement

⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.

Note: These are 4 general cases. Specific compaction requirements are determined on a project-by-project basis.

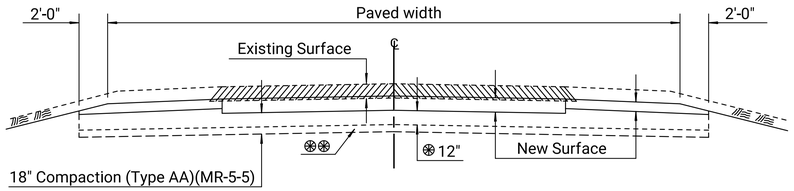
RECONSTRUCTION



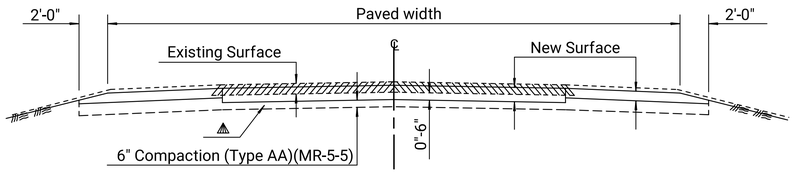
PROFILE

⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.

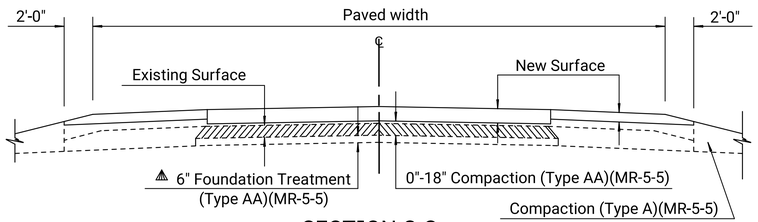
✳The compaction requirements for all embankment fill placed between Station 456+44 to 463+37 shall meet Type AA compaction standards, with MR 5-5 moisture control.



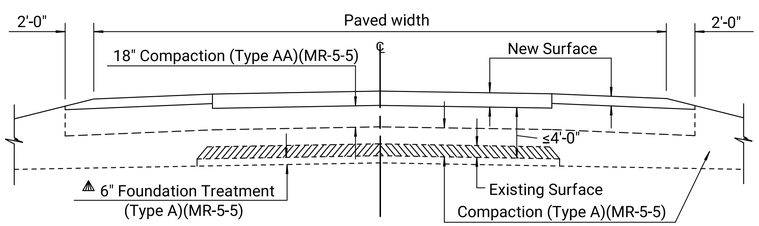
SECTION A-A



SECTION B-B

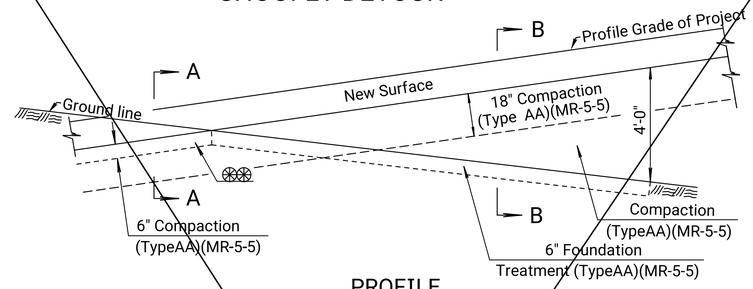


SECTION C-C



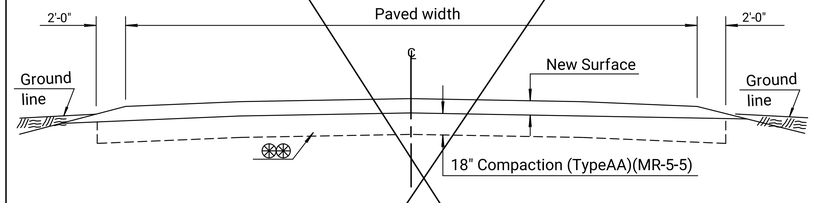
SECTION D-D

SHOOFLY DETOUR

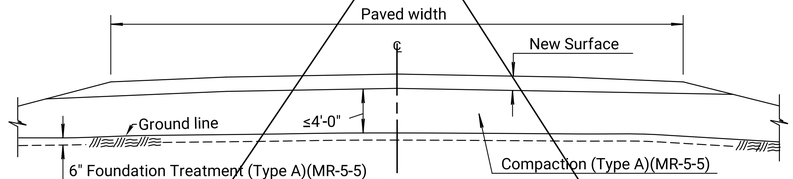


PROFILE

⊛⊛ The lower 6" of Compaction is subsidiary.



SECTION A-A



SECTION B-B

General Note

~~For materials designated to be subgraded, compaction~~ of soils, including ~~shales, designated~~ for backfill ~~refer to Standard Drawing RD605A for details~~

Unless otherwise noted on the Plans, compact all embankment, including side roads and entrances.

All compaction under the shoofly will be (Type A) (MR-5-5)

NO.	DATE	REVISIONS	BY	APP'D
5	10-17-1 1	Revised General Note	S.W.K.	J.O.B.
4	1-05-1 0	Added additional subsidiary comp.	S.W.K.	J.O.B.
3	2-16-05	Redrawn, Rev. Recon. Sec. C-C & D-D	S.W.K.	J.O.B.
2	5-29-98	Revised Reconstruction Section B-B	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FOUNDATION TREATMENT & COMPACTION OF EARTHWORK

~~RD605~~

FHWA APPROVAL 12-5-1 1		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 01-04-2024 Sh. No. 05

KDOT Graphics Certified

Plotted by : August.Zuno 04-JAN-2024 11:37
File : ka572801rts-03.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	06	135

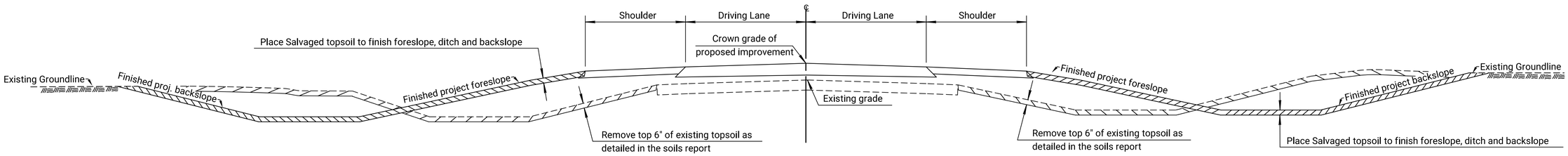
Note to Designer: Acceptable Topsoil locations on a project will be detailed in the Soils Report. The locations will be used in conjunction with the plans to measure a horizontal area in Sq. Yds of "Salvaged Topsoil" within the R/W limits.

GENERAL NOTE

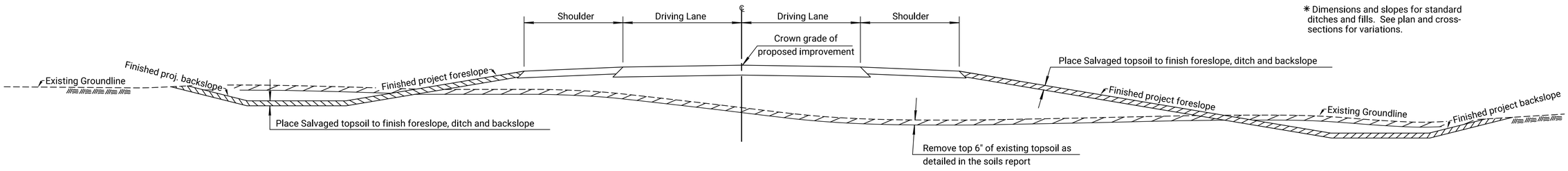
Adjust the cut and fill sections to accommodate the placement of the salvaged topsoil such that after placement the cross section will be at the final grade as shown on the plans.

Salvaging, Stockpiling and Placing Topsoil bid as "Salvaged Topsoil" in Square Yards. See KDOT Standard Specifications for details.

Soften and round the intersection of all slope lines for pleasing appearance.



RECONSTRUCTION/REHABILITATION OF EXISTING ROADWAY
(Removal and Placement of Salvaged Topsoil)



✳ Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

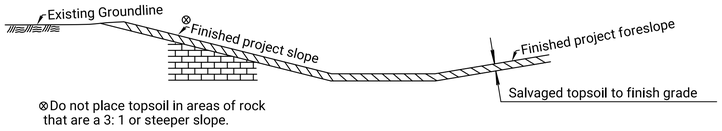
LEGEND

Topsoil to be Salvaged

Placement of Salvaged Topsoil

NEW ROADWAY ALIGNMENT
(Removal and Placement of Salvaged Topsoil)

Note: Method of showing backslope thru shallow rock or shale cuts at locations where rock protrudes a short height above the bottom of the ditch.



⊗Do not place topsoil in areas of rock that are a 3: 1 or steeper slope.

CUT SECTION

NO.	DATE	REVISIONS	BY	APP'D
01	12-16-09	Initial Release	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SALVAGED TOPSOIL

RD599A

FHWA APPROVAL		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 05-10-2022 Sh. No. 06

KDOT Graphics Certified

Plotted by: August.Zuno 1-NOV-2023 16:09
File : rss599a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA5728-01	2023	07	135

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.

SOIL FOR EMBANKMENT: ALL SOIL USED IN THE TOP 18 INCHES OF THE EMBANKMENT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: $10 \le PI \le 35$ AND $20 \le LL \le 55$. SOILS WHICH CONTAIN SUBSTANTIAL ORGANIC MATERIAL, SUCH AS THOSE CLASSIFIED AS OL OR OH ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487) SHOULD NOT BE USED TO CONSTRUCT THE EMBANKMENT OR SUBGRADE, THE ORGANIC MATERIAL MAY BE USED AS SELECT SOIL TO CAP THE SIDESLOPES OF THE EMBANKMENT.

A GROSS VMF OF 0.78 WAS USED TO COMPUTE EARTHWORK QUANTITIES FOR THIS PROJECT. THIS FACTOR INCLUDES QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT.

ALL 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.

ALL BORROW/WASTE LOCATIONS SHALL BE SUBMITTED FOR CLEARANCE FROM THE KANSAS HISTORICAL SOCIETY AND THE KANSAS DEPARTMENT OF WILDLIFE AND PARKS PRIOR TO ANY EXCAVATION OR WASTING OF MATERIAL. THE CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ANY PERMITS AND OTHER CLEARANCES THAT ARE REQUIRED.

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.

CHANNELS SHALL BE CUT AT BOX CULVERTS (UNLESS OTHERWISE NOTED) TO FLOW LINE ELEVATIONS AND TO A WIDTH OF ONE FOOT OUTSIDE OF EACH OUTSIDE WALL AND WITH SLOPES 2 TO 1 PRIOR TO CONSTRUCTION OF THE CULVERT.

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.

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.

INFORMATION SHOWN IN THE PLANS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGES THERETO. ALL KDOT OWNED UTILITIES ARE TO BE LOCATED BY THE CONTRACTOR.

ALL SAW CUTS SHALL BE FULL DEPTH OR AS APPROVED BY THE ENGINEER AND SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO OTHER BID ITEMS IN THE CONTRACT.

CONTRACTOR TO MAINTAIN ACCESS TO PROPERTY OWNERS AT ALL TIMES AS DIRECTED BY THE ENGINEER.

ADDITIONAL SECTION CORNER REFERENCES AND TIES ARE AVAILABLE UPON REQUEST.

IF THE EXISTING FENCE IS DISTURBED, INCLUDING AT THE DRAINAGE STRUCTURE CONNECTION, IT SHALL BE REPLACED OR RESET AS DETERMINED BY THE ENGINEER. UNLESS OTHERWISE NOTED IN THE PLANS, THIS WORK SHALL BE SUBSIDIARY TO OTHER ITEMS IN THE CONTRACT.

THE ROCA SHALE FORMATION FOUND IN THE PROJECT AREA, WILL BE CLASSIFIED AS NON-DURABLE SHALE. THE NON-DURABLE SHALES SHALL BE MANIPULATED WITH EQUIPMENT AS DIRECTED IN THE STANDARD SPECIFICATIONS.

THE TEMPORARY GUARDRAIL(INCLUDING ALL HARDWARE AND ACCESSORIES) SHALL BECOME THE PORPERTY OF KDOT. THIS TEMPORARY GUARDRAIL SHALL BE STOCKPILED WITHIN THE RIGHT-OF-WAY FOR REMOVAL BY KDOT FORCES.

THE EXITSTING K-99 PAVEMENT, PIPE, AND GUARDRAIL TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM THE SITE.

THE TEMPORARY SHOOFLY PAVEMENT SHALL BE MILLED FULL DEPTH AND WILL BECOME THE PROPERTY OF KDOT. THE MILLINGS SHALL BE HAULED BY THE CONTRACTOR TO THE KDOT SUBAREA OFFICE IN ESKRIDGE, LOCATED 1.3 MILES NORTH OF THE PROJECT. TRANSPORTING OF THIS MATERIAL SHALL BE BID AS "TRANSPORTING SALVAGEABLE MATERIAL." TRANSPORTING THIS MATERIAL WILL BE A FEDERALLY NON-PARTICIPATING BID ITEM.

1,000 CUBIC YARDS OF OF EXCESS SOIL MATERIAL FROM THE REMOVAL OF THE SHOOFLY DETOUR SHALL BECOME THE PROPERTY OF KDOT. THIS MATERIAL SHALL BE HAULED BY THE CONTRACTOR TO THE KDOT SUBAREA OFFICE IN ESKRIDGE, LOCATED 1.3 MILES NORTH OF THE PROJECT. TRANSPORTING THIS MATERIAL WILL BE PAID FOR AS "TRANSPORTING SALVAGEABLE MATERIAL." TRANSPORTING THIS MATERIAL WILL BE A FEDERALLY NON-PARTICIPATING BID ITEM. THE REMAINING EXCESS SOIL SHALL BECOME PROPERTY OF THE THE CONTRACTOR AND REMOVED FROM THE SITE.

CONCRETE BLOCKS FROM THE EXISTING BOX STRUCTURE WING EXTENSIONS WILL BECOME THE PROPERTY OF KDOT AND STOCKPILED WITHIN THE PROJECT RIGHT-OF-WAY AS DIRECTED BY THE ENGINEER. ITEMS WILL BE TRANSPORTED BY KDOT FORCES TOTHE KDOT SUBAREA OFFICE IN ESKRIDGE, LOCATED 1.3 MILES NORTH OF THE PROJECT. THE CONTRACTOR WILL COORDINATE WITH KDOT SUBAREA OFFICE IN ESKRIDGE TO LOAD THE BLOCKS ONTO KDOT TRAILER TO BE HAULED AWAY BY KDOT FORCES.

NO.	DATE	REVISIONS	BY	APP'D
01	06-06-23	Initial Release	A.L.R.	D.D.T.

KANSAS DEPARTMENT OF TRANSPORTATION

General Note Sheet

RD040

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

KDOT Graphics Certified 01-04-2024

Sh. No. 07

KDOT Graphics Certified

Plotted by : August.Zuno 4-JAN-2024 13:49
File : rss040.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	08	135

P.I. Sta. 7339+07.78 = SW Cor. Sec. 16, T14S, R12E =
P.I. Sta. 165+66.00 on Proj. 99-99 K 516 Dated 1928
N 476,313.797 E 8,615,481.392
1. Found ⅝" rebar (0.3' deep)
2.Found nail & wshr. NE side of pow. pole 35.3' NW
3. Conc. nail & KDOT wshr. W side utility mrkr. po. 52.2' NE
4. Conc. nail & KDOT wshr. E side of pow. pole 81.0' SSW

P.I Sta. 7365+78.29 = W ¼ Cor. Sec. 16, T14S, R12E =
Sta. 138+97.60 on Proj. 99-99 K 516 (Dated 1928)
△= 0° 23' 23" Lt. (No curve)
N 478,984.271 E 8,615,467.769
1. Set ½" x 24" rebar w/ orange KDOT cap
2. ℄ Top telephone pedestal 26.5' E
3. Line of N/S fence line 30.5' W
4. In line of fence line to E

P.O.T. Sta. 7369+30.87 = Sta. 135+41.60 on
Proj. 99-99 K 516 (Dated 1928)
N 479,336.827 E 8,615,463.572
1. Set ½" x 12" rebar (0.3' deep)
2. Conc. nail & KDOT wshr. W face gate po. 28.7' W
3. Spk. & KDOT wshr. top metal "T" po. 32.5' E
4. Field entrance to west 11.5' S

P.O.T. Sta. 7385+97.44
N 481,003.279 E 8,615,443.733
1. Set ½" x 12" rebar (0.3' deep)
2. ℄ Top N end CMP 49.9' SSE
3. Conc. & KDOT wshr. E face of pow. pole 58.3' SW
4. TW field entrance to E 52.0' S
Traverse Point #103
N 480,957.627 E 8,615,472.885
1. Set ½" x 12" rebar w/ orange KDOT cap (Flush)
2. 28.61' Rt. of ℄ Sta. 7385+51.44

P.I. Sta. 7392+27.09 = NW Cor. Sec. 16, T14S, R12E =
Sta. 112 +41.40 on Proj. 99-99 K 516 (Dated 1928)
N 481,632.885 E 8,615,436.237
1. Found ⅝" rebar (0.3' deep)
2. Found nail & wshr. NW side cor. fc. po. 54.5' SSW
3. Found nail & wshr. top cor. fc. po. 47.7' NW
4. ℄ Top steel cor. fc. po. 44.7' NE

Scale 1"=100'

PROJECT SURVEY CONTROL

HORIZONTAL CONTROL

Horizontal Datum is NAD83(2011) KRCS Zone 8 Manhattan for project coordinates.

VERTICAL CONTROL

North American Vertical Datum = NAVD88 (GEOID 18)

"Base" is a GPS observation was used for the Datum on this project. The GPS observation was checked using Base "1".

A double set of level runs were run through the BASE and all the benchmarks and traverse points for control on this project.

Datum Bench Mark: "BASE"
NAVD88 (Computed using GEOID18) Elev. = 1336.247

Traverse Point #100
N 479,749.363 E 8,615,430.569
1. Set ½" x 12" rebar w/ orange KDOT cap (Flush)
2. 28.09' Lt. of ℄ Sta. 7373+43.77
Traverse Point #101
N 480,008.622 E 8,615,481.127
1. Set ½" x 12" rebar w/ orange KDOT cap
2. 25.55' Rt. of ℄ Sta. 7376+02.41
Traverse Point #102
N 480,512.314 E 8,615,416.302
1. Set ½" x 12" rebar w/ orange KDOT cap (Flush)
2. 33.27' Lt. of ℄ Sta. 7381+06.84

Ctr. Cor. Sec. 16, T14S, R12E
N 478,989.725 E 8,618,110.834
1. Found ½" x 12" (in rock) w/ KDOT alum. capped rebar (0.1' above ground)
2. Cor. is 2643.07' Rt. (East) of ℄ Sta. 7365+78.29 SE ∠= 89° 49' 33"
3. Set conc. nail and KDOT wshr. W side fc. cor. po. 0.8' E
4. Set conc. nail and KDOT wshr. top fc. brace po.

W ¼ Cor. Sec. 16, T14S, R12E
N 478,984.271 E 8,615,467.769
1. Set ½" x 24" KDOT plastic capped rebar (0.3' deep)
2. Cor. is on ℄ Sta. 7365+78.29
3. To the center of the top of telephone pedestal 26.5' E
4. To the line of a North-South fence 30.5' W

Ctr. Cor. Sec. 17, T14S, R12E
N 478,942.533 E 8,612,817.273
1. Set ½" x 12" (in rock) w/ KDOT alum. capped rebar (0.3' above ground)
2. Cor. is 2650.82' Lt. (West) of ℄ Sta. 7365+78.29 SW∠= 89° 23' 24"
3. Set conc. nail and KDOT wshr. W side 30" cedar 1.5' N
4. To line of newer fence North 5.0' W

N ¼ Cor. Sec. 17, T14S, R12E
N 481,593.554 E 8,612,810.003
1. Set ½" x 24" KDOT alum. capped rebar (0.3' deep)
2. Cor. is 2626.53' Lt. (West) of ℄ Sta. 7392+27.09 SW∠= 89° 49' 27"
3. Set conc. nail and KDOT wshr. in side fc. cor. po. 19.7' N
4. Set conc. nail and KDOT wshr. in side fc. gate po. 28.7' NE

NW Cor. Sec. 16, T14S, R12E
N 481,632.885 E 8,615,436.237
1. Found ⅝" rebar (0.3' deep)
2. Cor. is on ℄ Sta. 7392+27.09
3. Found nail and wshr. in top fc. cor. po. 47.7' NW
4. To the center of the top steel fc. cor. po. 44.7' NE

N ¼ Cor. Sec. 16, T14S, R12E
N 481,648.799 E 8,618,080.040
1. Found ⅝" capped rebar LS 786 (0.8' deep)
2. Cor. is 2643.85' Rt. (East) of ℄ Sta. 7392+27.09 SE∠= 89° 39' 46"
3. Found spike and wshr. in top fc. cor. po. 20.4' S
4. Set nail and KDOT wshr. top strand steel fc. po. 25.9' NNE

Sta. 7369+17
Exist. Field Ent. Lt.
To Remain

Sta. 7375+41.16 Const.
Bridge No. 99-99-139.68 (113)
30'-40'-30' Reinforced Concrete Slab Haunched Span (RCSH)
36'-0" Roadway
See Sh. No. 32-44

Sta. 7376+05.41 Const.
Slope Drain (Stone) Lt.
See Sh. No. 13, 63

Sta. 7377+97.47 Remove
Br. No. 99-99-139.73 (072)
41'-6" Steel Beam Simple Span (SBMS)
29.1' Roadway

Sta. 7378+42 Eradicate
Exist. Ent. Lt. &
Remove Exist. 15" x 36.40' CMP

Sta. 7380+70 Install
1.5¤' x 46' EP (RCPHE, CAMAC, ACSMAC) Lt.
w/ End Sections
Remove 15" x 19.80' CMP
See Sh. No. 23, 25-27, 63

Sta. 7384+11.04 Extend
6'x4'x31.75' RCB
12' w/ Apron Rt.
See Sh. No. 29-31, 62

Sta. 7384+11.00 Const.
Slope Protection (Riprap Stone) (200 lb) Rt.
See Sh. No. 63

Sta. 7385+20.00 End Construction

Sta. 7367+50.00 Begin Construction

Sta. 7369+17 Const.
Mound Ent. Rt.

STA. 7373+60.00 BEGIN
Proj. No. 99-99 KA-5728-01
Sta. 132+52.47 on
Proj. No. 99-99 K 516

Sta. 7376+05.41 Const.
Slope Drain (Stone) Rt.
See Sh. No. 13, 63

Sta 7376+29 Eradicate
Exist. Ent. Rt. &
Remove Exist. 18"x21.60' CMP

STA. 7381+00.00 END
Proj. No. 99-99 KA-5728-01=
Sta. 123+72.47 on
Proj. No. 99-99 K 516

Gary D. Kemble
S½, NE¼
Sec. 17, T14S, R12E

Diane K. Turnbull
S½, NW¼
Sec. 16, T14S, R12E

Gary D. Kemble
NE¼, NE¼
Sec. 17, T14S, R12E

Diane K. Turnbull
NW¼, NW¼
Sec. 16, T14S, R12E

BM # 10 Set "T" shaped fc. po. S side of rock @ gate po.
22.29' Lt . ℄ Sta. 7369+06.99 Elev. 1350.28

BM # 11 Set mag. nail & KDOT wshr. top SE abut. of bridge
16.75' Rt. ℄ Sta. 7377+78.17 Elev. 1302.52

BM # 12 Set mag. nail & KDOT wshr. top E hdwl. RCB
15.22' Rt. ℄ Sta. 7384+11.38 Elev. 1306.98

BM # 13 Set RR spike in E face of pow. pole
34.18' Lt. ℄ Sta. 7387+80.38 Elev. 1317.29

UTILITY OWNERS

Gas Line
City of Eskridge

Telephone Cable
Century Link
Kenny (Integrity Locate)
913-305-6679

Power
Evergy
818 S Kansas Ave
Topeka, KS 66612
Scott Schlageck
785-575-6014

SCALE
PLAN: Lat. & Long. 100' 0 100' 200'
PROFILE: Horiz. same as above
Vert. 10' 0

Phase II Earthwork.
¤ 14,272 cu. yds. Common Excavation (VMF=0.78)
3,173 cu yds. Common Excavation (To Be Wasted) (VMF=0.78)
451 cu yds. Rock Excavation (Existing Pavement-To Be Wasted) (VMF=1.00)
108 cu yds. Rock Excavation (Non-Durable Shale-To Be Wasted) (VMF=1.10)
* 8,658 cu yds. Embankment

¤ Includes 23 Cu Yds of Com. Exc. from Ent 7380+70 Lt. (VMF=0.78)

* Includes 12 Cu Yds of Emb. from Ent 7380+70 Lt.

Sta. 7384+11.04
Cr. Gr. = 1308.40
℄Rt. = 1301.13
Exist. ℄Lt. = 1301.44
Exist. ℄Rt. = 1301.23

DATE	10/2020	03/2022
BY	D. Kahle	A. Zuno
REFERENCES NOTED		
REFERENCES CHECKED		

KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
STA. 7367+00 TO STA. 7388+00

KDOT Graphics Certified 01-16-2024 Sh. No. 08

KDOT Graphics Certified

Plotted by : August.Zuno 18-JAN-2024 08:43
File : ka572801rpp-01az.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	09	135

P.O.T. Shoofly Sta 65+35.96
N 478,984.271 E 8,615,467.769
1. = ℄ Sta. 7365+78.29
2. Not Set

P.C. Shoofly Sta 67+60.67
N 479,205.967 E 8,615,465.130
1. = ℄ Sta. 7368+00
2. Not Set

P.I. Shoofly Sta 69+07.21
N 479,352.491 E 8,615,463.385
1. = ℄ Sta. 7369+46.54
2. Not Set

P.T. Shoofly Sta 70+45.76
N 479,476.778 E 8,615,541.008
1. 79.10' Rt. ℄ Sta. 7370+69.89
2. Not Set

P.C. Shoofly Sta 71+32.76
N 479,550.569 E 8,615,587.0933
1. 126.06' Rt. ℄ Sta. 7371+43.12
2. Not Set

P.I. Shoofly Sta 72+32.70
N 479,635.333 E 8,615,640.032
1. 180' Rt. ℄ Sta. 7372+27.25
2. Not Set

P.T. Shoofly Sta 73+27.19
N 479,735.236 E 8,615,638.842
1. 180' Rt. ℄ Sta. 7373+27.19
2. Not Set

P.C. Shoofly Sta 79+18.86
N 480,326.894 E 8,615,631.798
1. 180' Rt. ℄ Sta. 7379+18.86
2. Not Set

P.I. Shoofly Sta 80+18.80
N 480,426.825 E 8,615,630.608
1. 180' Rt. ℄ Sta. 7380+18.80
2. Not Set

P.T. Shoofly Sta 81+13.29
N 480,510.304 E 8,615,575.665
1. 126.06' Rt. ℄ Sta. 7381+02.90
2. Not Set

P.C. Shoofly Sta 82+00.29
N 480,582.977 E 8,615,527.836
1. 79.09' Rt. ℄ Sta. 7381+76.18
2. Not Set

P.I. Shoofly Sta 83+46.83
N 480,705.381 E 8,615,447.276
1. = ℄ Sta. 7382+99.52
2. Not Set

P.T. Shoofly Sta 84+85.38
N 480,851.905 E 8,615,445.531
1. = ℄ Sta. 7384+46.06
2. Not Set

P.O.T. Shoofly Sta 87+39.57
N 481,106.076 E 8,615,442.505
1. = ℄ Sta. 7387+00.24
2. Not Set

Scale 1"=100'

UTILITY OWNERS

Gas Line
City of Eskridge

Telephone Cable
Century Link

Power
Evergy

Shoofly Detour Curve Data
P.I. Sta. 69+07.21 (Bk) =
Sta. 78+99.22 (Ahd)
△ = 32° 40' 7"
D = 11° 27' 33"
R = 500.00'
T = 146.54'
L = 285.09'
E = 21.03'
Super = R.C.

Shoofly Detour Curve Data
P.I. Sta. 72+32.70 (Bk) =
Sta. 72+27.25 (Ahd)
△ = 32° 40' 7"
D = 16° 48' 8"
R = 341.00'
T = 99.94'
L = 194.43
E = 14.34'
Super = 6%

Shoofly Detour Sta. 78+16.37 Const.
1 Span @ 68'
Temporary Shoofly Detour Bridge,
Pile Bent Abutments
1 @ 68'
28'-0" Roadway
See Sh. No. 45-55

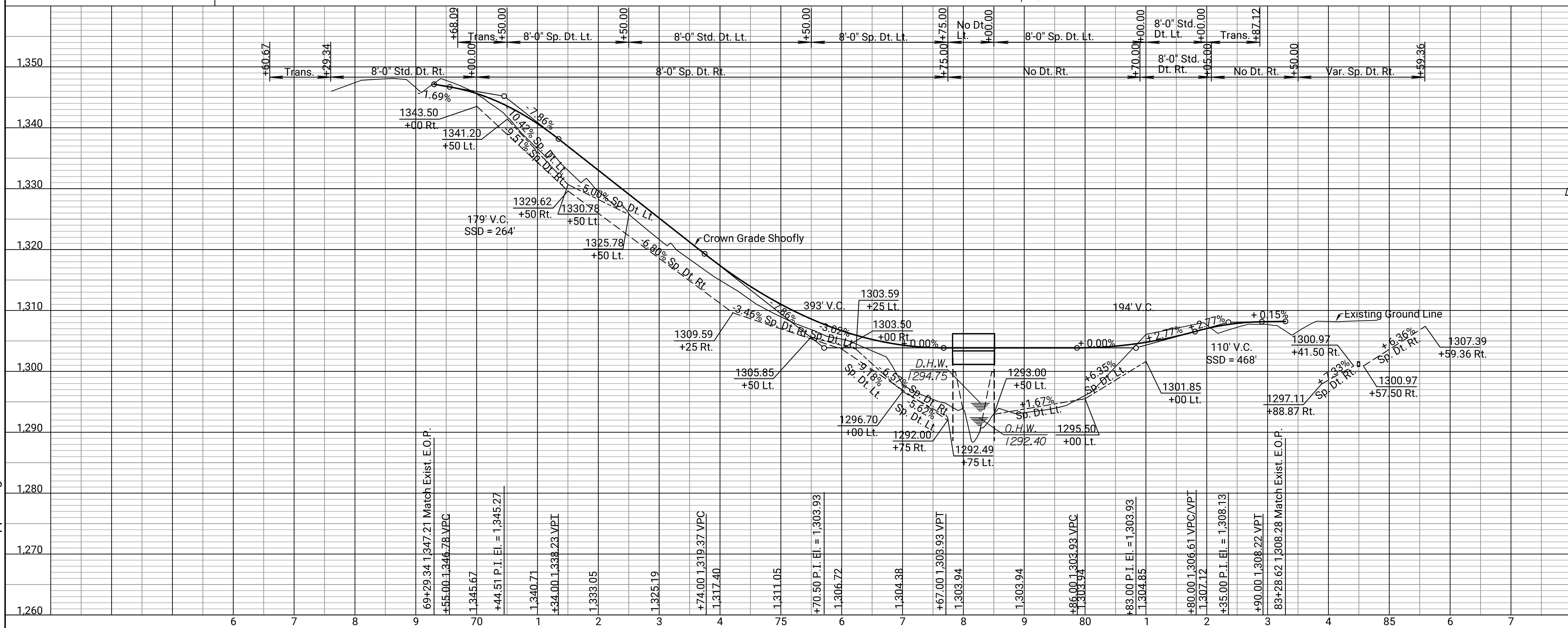
Shoofly Detour Curve Data
P.I. Sta. 80+18.80 (Bk) =
Sta. 80+13.35 (Ahd)
△ = 32° 40' 7"
D = 16° 48' 8"
R = 341.00'
T = 99.94'
L = 194.43
E = 14.34'
Super = 6%

Sta. 81+50.00 Install
Temp. 18" x 32' EP (RCP, ACSP, CAP) Lt.
Temp. Access To Remain
Open During Const.
See Sh. No. 23-24, 63

Shoofly Detour Curve Data
P.I. Sta. 83+46.83 (Bk) =
Sta. 83+38.84 (Ahd)
△ = 32° 40' 7"
D = 11° 27' 33"
R = 500.00'
T = 146.54'
L = 285.09'
E = 21.03'
Super = R.C.

BY	DATE
A. Zuno	2023
D. Kahle	2023

REFERENCES NOTED
REFERENCES CHECKED



Phase I Earthwork:
Ø 4,117 cu. yds. Common Excavation (VMF=0.78)
7,803 cu. yds. Common Excavation (Contractor Furnished) (VMF=0.78)
35 cu. yds. Rock Excavation (Non-Durable Shale-To Be Wasted) (VMF=1.10)
✳ 9,297 cu. yds. Embankment

Ø Includes 154 cu yds of Com. Exc. from Temp. Ent. 81+50 Lt. (VMF=0.78)

✳ Include 6 cu yds of Emb. from Ent 81+50 Lt.

Phase III Earthwork:
⊕ ‡ 9,748 cu. yds. Common Excavation (VMF=0.78)
4,612 cu. yds. Common Excavation (To Be Wasted) (VMF=0.78)
18 cu. yds. Rock Excavation (Non-Durable Shale-To Be Wasted) (VMF=1.10)
⁎ 3,991 cu. yds. Embankment

‡ Includes 1,000 cu. yds. of Excess Soil to be Salvaged and Transported. See Sh. No. 7 (General Note)

⊕ Includes 5 Cu Yds of Com. Exc. from Ent 7369+17 Rt. (VMF=0.78)

⁎ Includes 27 Cu Yds of Emb. from Ent 7369+17 Rt.

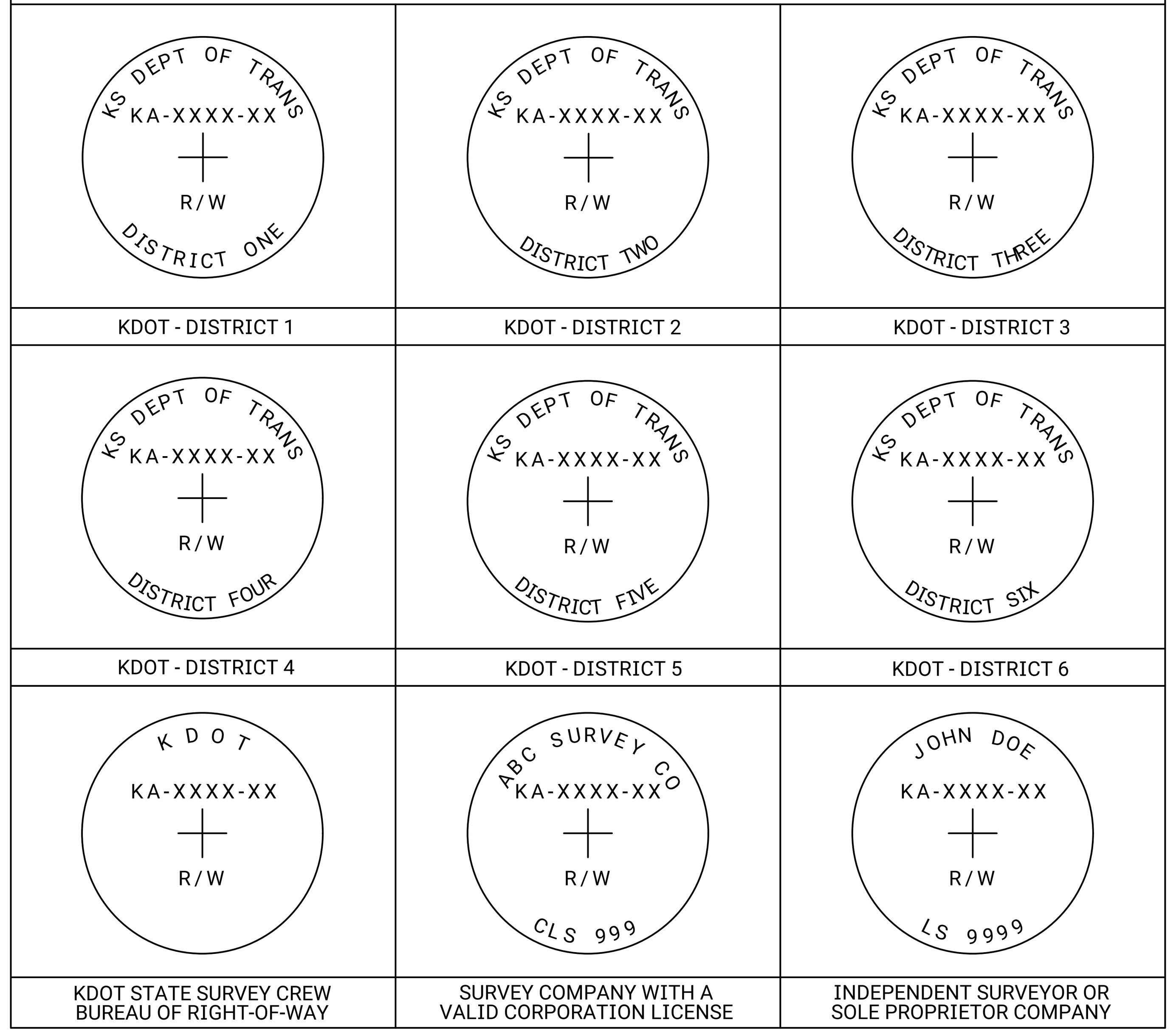
KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
SHOOFLY DETOUR
STA. 66+00 TO STA. 88+00

Plotted by : August.Zuno 18-JAN-2024 08:59
File : ka572801rpp-02.dgn

KDOT Graphics Certified 01-16-2024

EXHIBIT

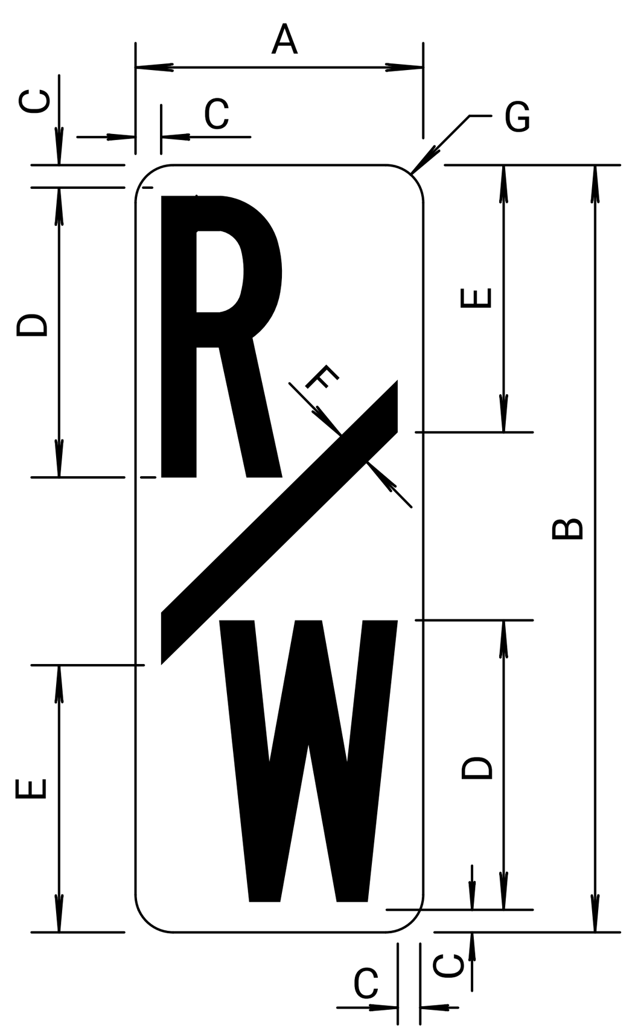
2" DIA. PRE-STAMPED ALUMINUM CAPS



NOTES:

KA-XXXX-XX is the KDOT Project number
All stampings, forgings, and impressions shall be in accordance with the standard specifications and as shown on this drawing.

KI-107

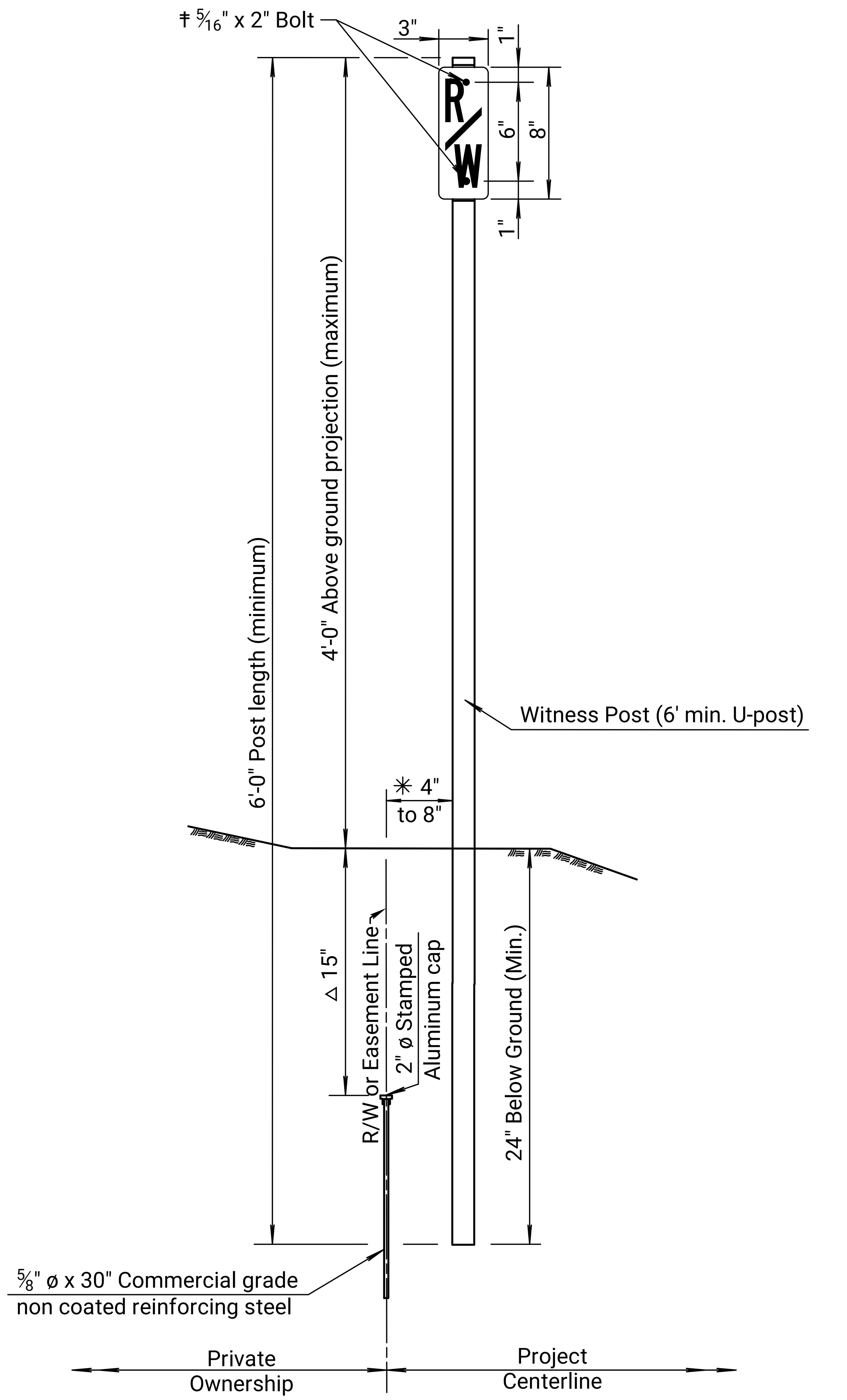


COLORS:

BACKGROUND - WHITE (REFLECTIVE)
LEGEND - BLACK (NON-REFLECTIVE)
LEGEND SERIES - 'B'

A	B	C	D	E	F	G
3"	8"	¼"	3"	2¾"	⅜"	⅜"

R/W SIGN DETAIL



PLAN VIEW

NOTES

✳ 4" (Min.) to 8" (Max.) from rebar to witness post. (USE CAUTION, DO NOT DISTURB THE REBAR WHEN SETTING A POST). The witness post shall be set radial or perpendicular to the project centerline from the rebar. The "open face" of the U-post shall face the project centerline with the sign attached to the "open face". This exhibit is a side view, except for the sign, which is shown as turned for the purpose of illustrating content only. (See Sign Detail).

† Drill or punch holes. Attach 2 flat washers, 1 lock washer, and 1 nut per bolt.

△ Or as directed by the Engineer.

GENERAL NOTE

The post shall be U-shaped (6' minimum length) and factory painted the color of persian red (KDOT Orange) by an electronically powder-coated oven-baked process.

All installations shall have proper identification cap for the party installing it (See Exhibit). Monument(s) shall be set in accordance with the standard specifications and as shown on this drawing.

Removal and disposal of existing concrete R/W markers shall not be paid for directly but shall be Subsidiary to other items of the contract.

In an urban area, the witness post may be omitted as directed by the Engineer.

The R/W survey monuments shall be paid for under the bid item "Right-of-Way Survey Monuments (Each)" and be included in the plan quantities. ✡The table shown on this sheet is intended for additional monuments set in the field and will be filled out by the contracted survey company.

Mount R/W survey monument signs facing the road.

✡ Additional R/W Survey Monuments set by Contractor			
Station	Offset (Lt./Rt.)	Northing	Easting

✡ Additional R/W Survey Monuments set by Contractor			
Station	Offset (Lt./Rt.)	Northing	Easting

NO.	DATE	REVISIONS	BY	APP'D
04	01-06-16	Revised Notes	T.T.R.	S.W.K.
03	05-24-13	Revised General Note	S.W.K.	J.O.B.
02	02-07-07	Removed dual cap note	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

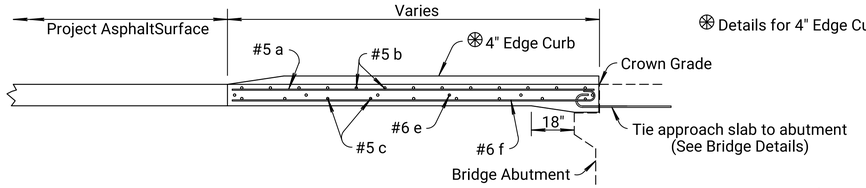
R/W SURVEY MONUMENT INSTALLATION DETAIL SHEET

RD995

FHWA APPROVAL 03-16-16		APP'D. Scott W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

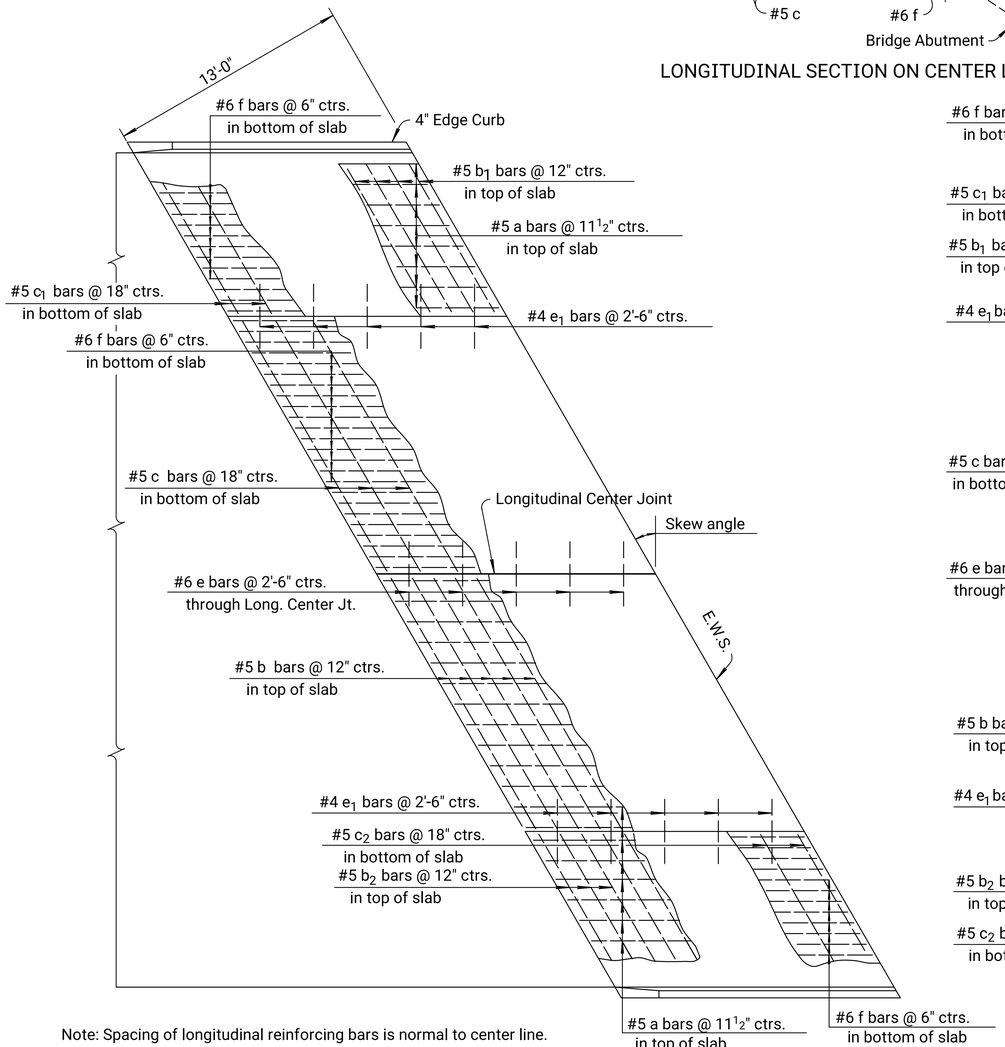
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	11	135



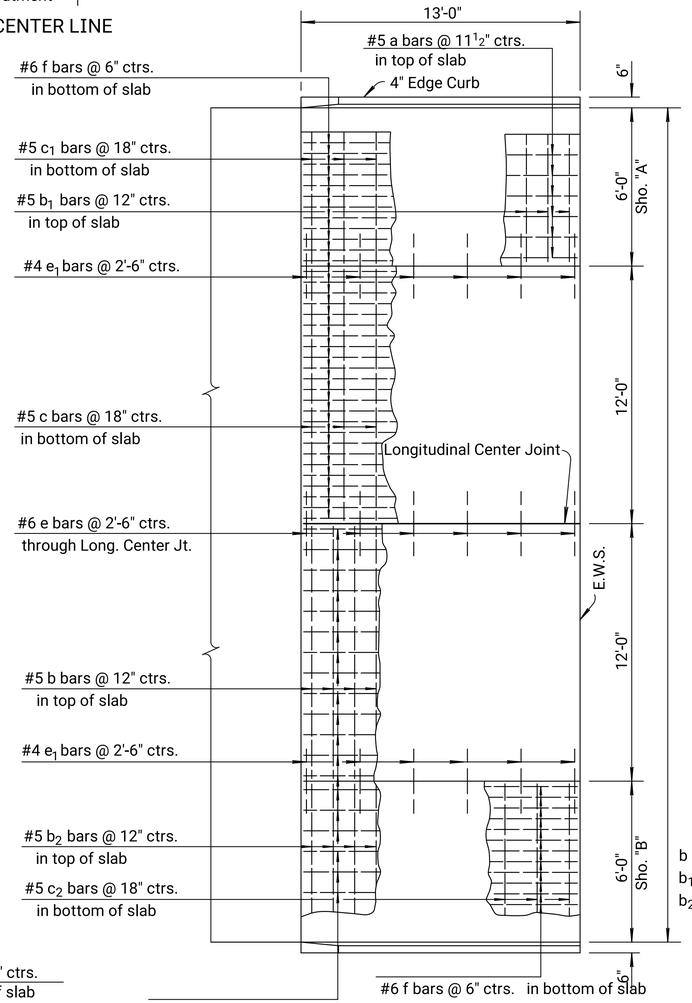
⊛ Details for 4" Edge Curb, See Standard Drawing RD711.

LONGITUDINAL SECTION ON CENTER LINE



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

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



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

PLAN FOR NORMAL APPROACH
(No Scale)

GENERAL NOTE

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

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

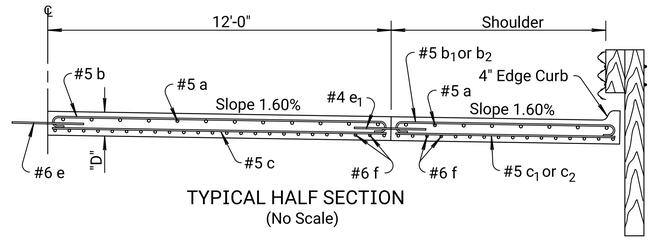
At the Contractor's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.

All reinforcing steel shall be epoxy coated.

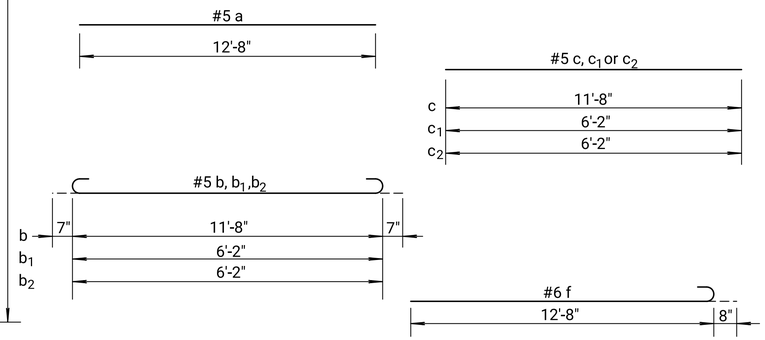
See Standard Drawing RD711 for details of joints and edge curb.

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

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



TYPICAL HALF SECTION
(No Scale)



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

BENDING DIAGRAMS

BILL OF MATERIALS

BAR SCHEDULE

NORMAL APPROACH

Bar	a	b	b_1	b_2	c	c_1	c_2	e	e_1	f	
No.	40	26	13	13	18	9	9	6	12	74	
Size	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	
Length	12'-8"	12'-10"	7'-4"	7'-4"	11'-8"	6'-2"	6'-2"	3'-0"	3'-0"	13'-4"	
Reinforcing Steel (Grade 60) (Epoxy Coated)											2,950 lbs.
Concrete Pavement (10" Unif.)(AE)											53.44 Sq. Yds.

~~__° SKEW~~

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

~~__° SKEW~~

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE APPROACH PAVEMENT ADJACENT TO ASPHALT SURFACE

~~RD715~~

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

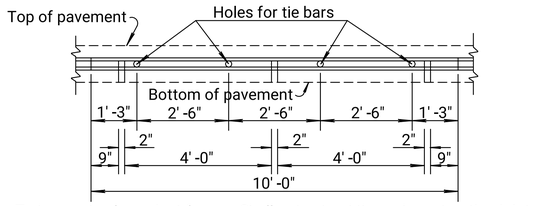
KDOT Graphics Certified 01-04-2024

Sh. No. 11

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

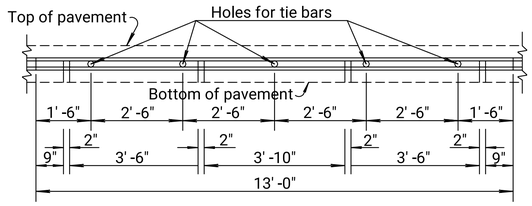
Plotted by : August.Zuno 4-JAN-2024 15:29
File : rss715.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	12	135



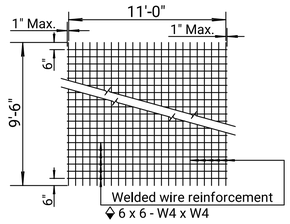
To be used only against forms. Shall not extend through contraction joints.

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



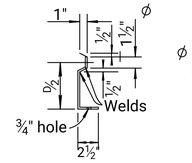
To be used only against forms. Shall not extend through contraction joints.

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



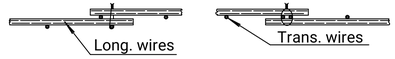
TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

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



SECTION OF RECESSED
FORM LEG

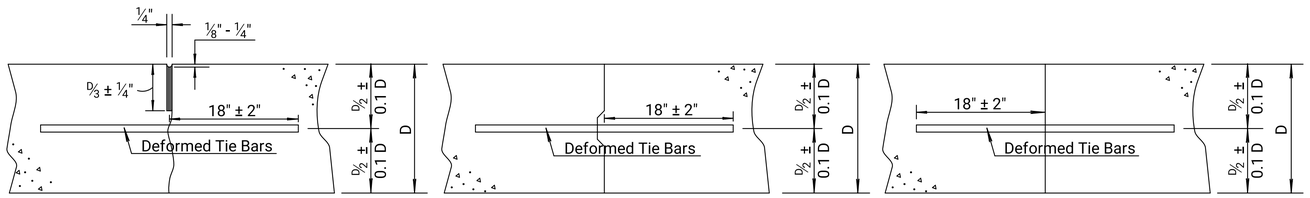
ϕ Snap-in leg or other approved designs may be used in lieu of welded leg.



DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

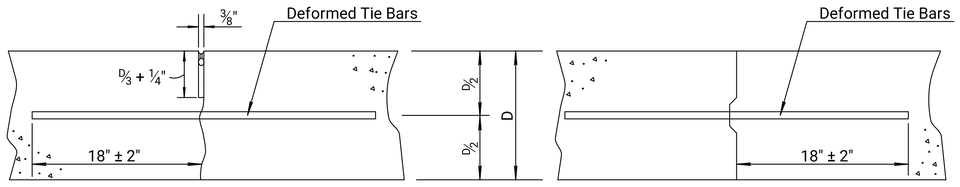
The lap shall extend beyond the first transverse or bag wire of each sheet.

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



LONGITUDINAL JOINTS

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



TRANSVERSE JOINTS

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

GENERAL NOTES

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

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

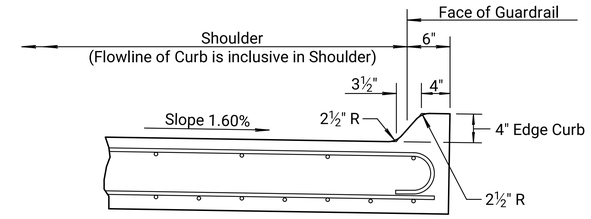
At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.

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

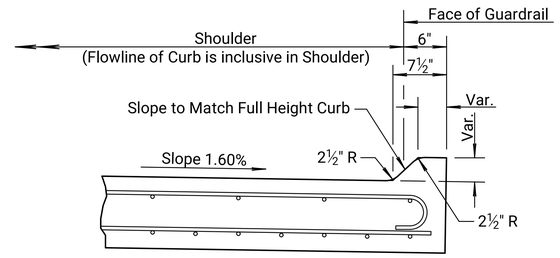
The 4 inch edge curb shall be constructed integral with the approach slab shoulder.

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

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

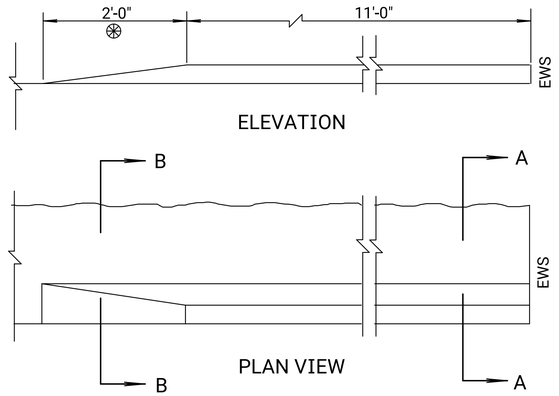


SECTION A-A



SECTION B-B

⊛ No 4" Curb transition when adjacent to Flume Inlet.



4" EDGE CURB DETAIL

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

KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS FOR CONCRETE BRIDGE APPROACH PAVEMENT

RD711

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

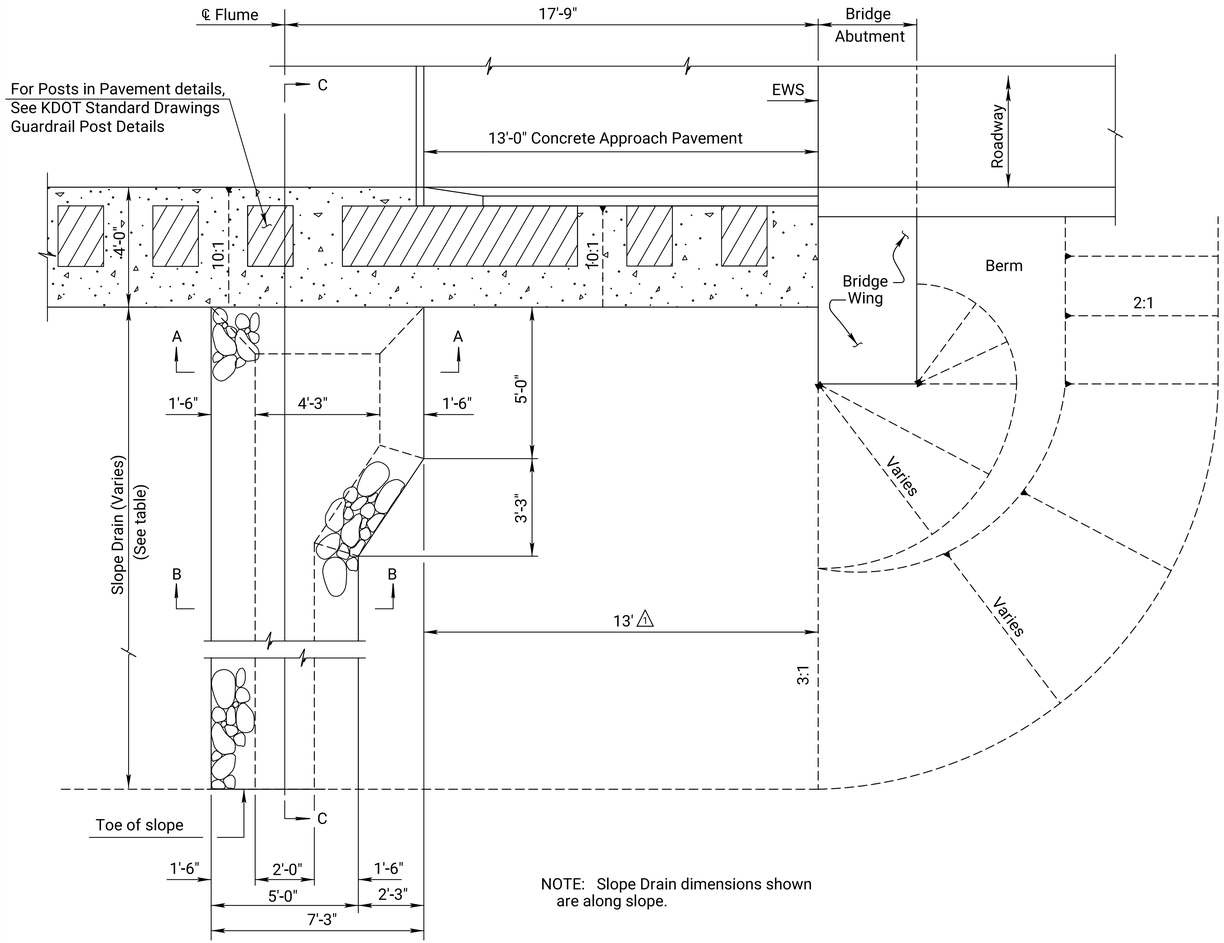
KDOT Graphics Certified 07-18-2022 Sh. No. 12

KDOT Graphics Certified

Plotted by : August.Zuno@ks.gov 4-JAN-2024 20:12
File : rss711.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	13	135

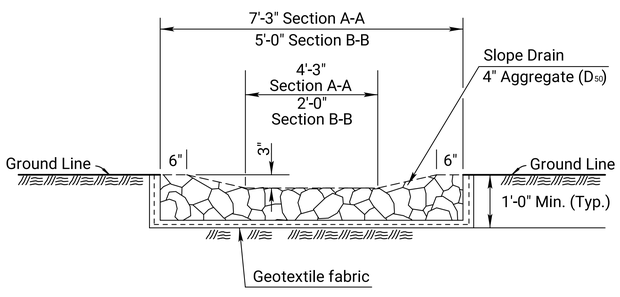
Note to Designer: Use of a stone flume and stone slope drain is intended for small localized drainage (approximately 0.5 cfs.) Width of Slope Drain (Stone) at Section A-A could be widened to accomodate existing conditions. Larger flows should utilize a Concrete Flume and Slope Drain (Concrete/Stone), See KDOT Standard Drawing Flume Inlet and Slope Drain (Concrete/Stone). Depiction is of a Normal Bridge Approach with MGS Thrie Beam. Other abutment types or stiffened guardrail attachments to the bridge rail would need evaluation by the Designer.



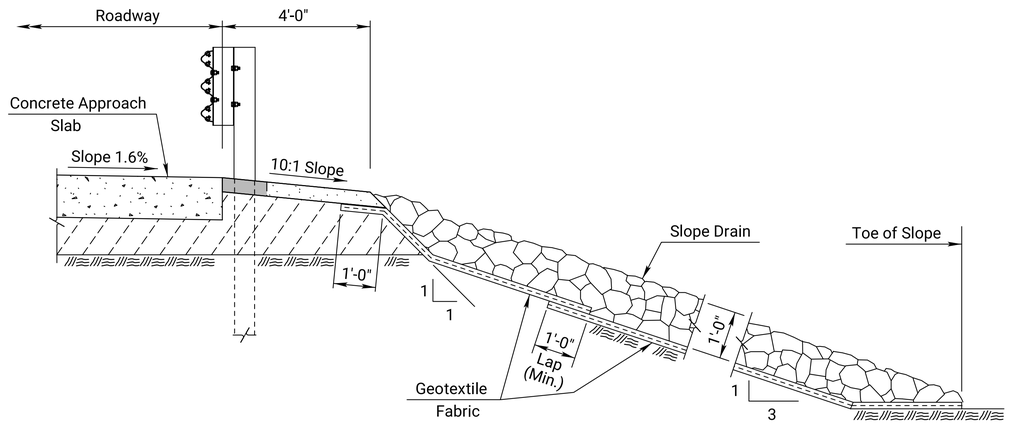
Slurry Grout (Low Strength)
See KDOT's Standard Specifications

Pavement (Concrete or Asphalt)

NOTE: Slope Drain dimensions shown are along slope.



SECTION A-A, SECTION B-B



SECTION C-C

GENERAL NOTES

1. Limits of "Slope Drain (Stone)" are as shown on this sheet. Limits may be adjusted as needed at the direction of the Engineer to match ground elevations found at the site.
2. Gradation and aggregate for the "Slope Drain (Stone)" shall meet the requirements of stone for Aggregate Ditch Lining and have a D_{50} of 4" unless otherwise noted on the Plans.
3. Excavation and grading for placement of Slope Drain and all work and material to install geotextile fabric shall be subsidiary to "Slope Drain (Stone)".
4. Slope Drain shall be underlain with geotextile fabric. Fabric damaged or displaced during construction shall be replaced at no cost to KDOT. Fabric shall be installed and secured as recommended by the fabric manufacturer. One (1) copy of the fabric manufacturer's installation procedure shall be submitted to the Engineer. The installation procedure shall show details of the splices, overlaps, and pin layout. Minimum overlap of geotextile shall be 1'-0". Fabric shall be anchored along edges and splices at a maximum of 3'-0" centers with staples or pins (with washers). Interior area of fabric shall be pinned or stapled as recommended by the manufacturer but not more than 5'-0" centers. Pins or staples shall be a minimum of 1'-0" in length of embedment. Geotextile fabric shall meet the requirements of KDOT Specifications.
5. The Contractor shall place the rock from the bottom to the top of the slope, as shown. Place the rock in a manner which produces a reasonably well graded mass of rock without segregation of the material sizes. Placement, measurement, and payment shall conform to KDOT Specifications for "Slope Drain (Stone)".

For Information Only:
Slope Drain (Stone) 4" Aggregate (D_{50})
Section A-A
0.23 cu. yds. 4" Aggregate (D_{50}) per lin. ft.
1.03 sq. yds. Geotextile Fabric per lin. ft.
Section B-B
0.15 cu. yds. 4" Aggregate (D_{50}) per lin. ft.
0.80 sq. yds. Geotextile Fabric per lin. ft.

SUMMARY OF QUANTITIES

Item	Abut. No. 1	Abut. No. 2
Slope Drain (Stone)	0 L.F.	76 L.F.
Items subsidiary to Slope Drain (Stone)		
Geotextile Fabric	0 S.Y.	46 S.Y.

NO.	DATE	REVISIONS	BY	APP'D
3	10/4/07	Bid Item Update	JPJ	KFH
2	8/30/07	Changed to Slope Drain	JPJ	KFH
1	02/14/03	Current Release	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

SLOPE DRAIN (STONE)

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

KDOT Graphics Certified 01-18-2024

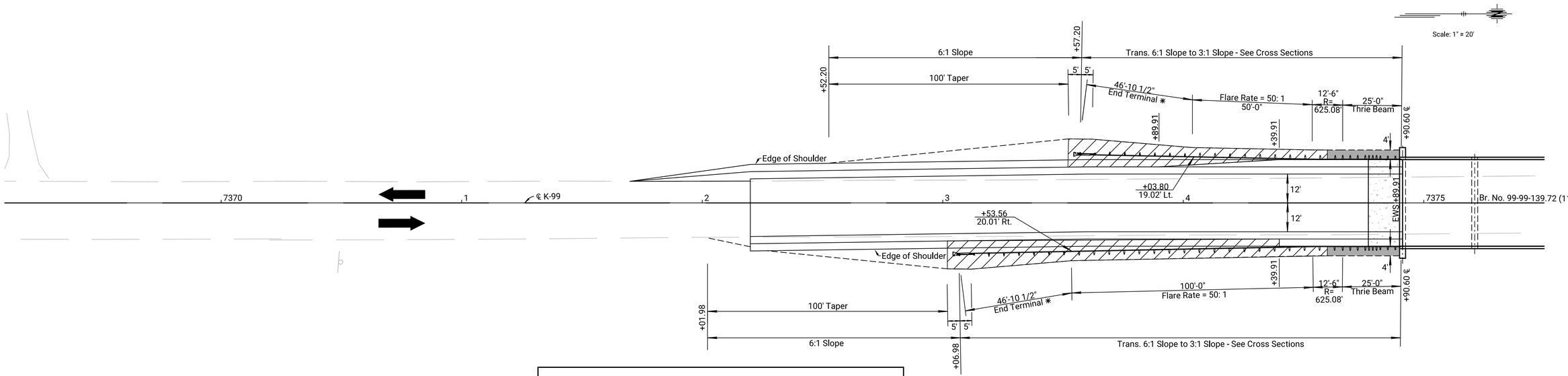
Sh. No. 13

KDOT Graphics Certified

Std. Base File: br103.dgn	Plot Location:Road
Plotted By: August.Zuno	
File:ka5728rss-103-01.dgn	
Plot Date: 18-JAN-2024 09:14	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	14	135

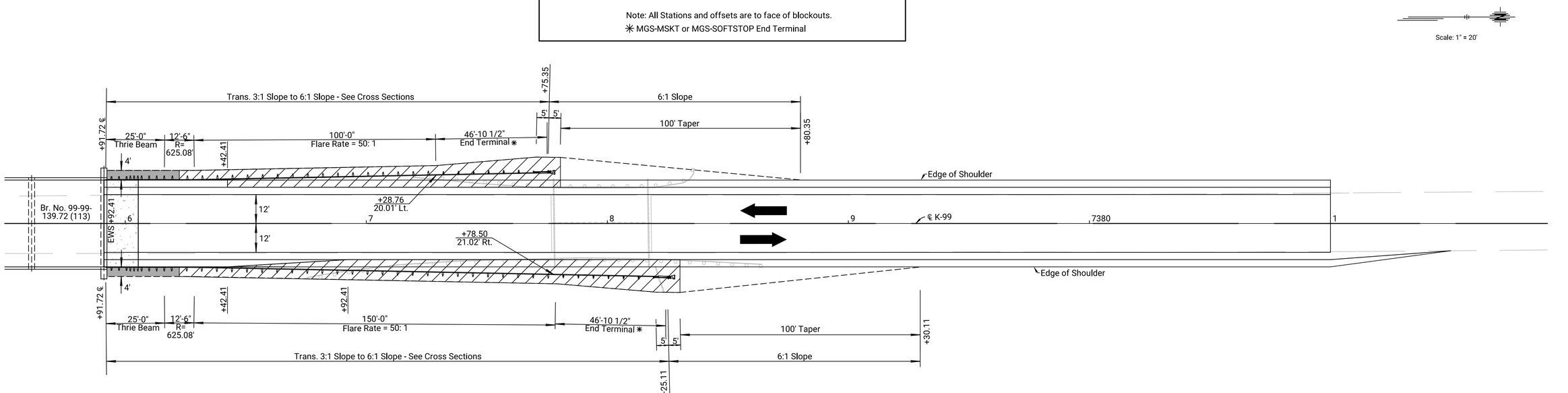
DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



LEGEND

- 4" Asphalt Widening HMA Comm. Grade (Class A)
- 10" Concrete Approach Slab
- AB-3 Shoulder and Guardrail Pad

Note: All Stations and offsets are to face of blockouts.
✳ MGS-MSKT or MGS-SOFTSTOP End Terminal



KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL LAYOUT

K 99 BR. NO. 99-99-139.72 (113)

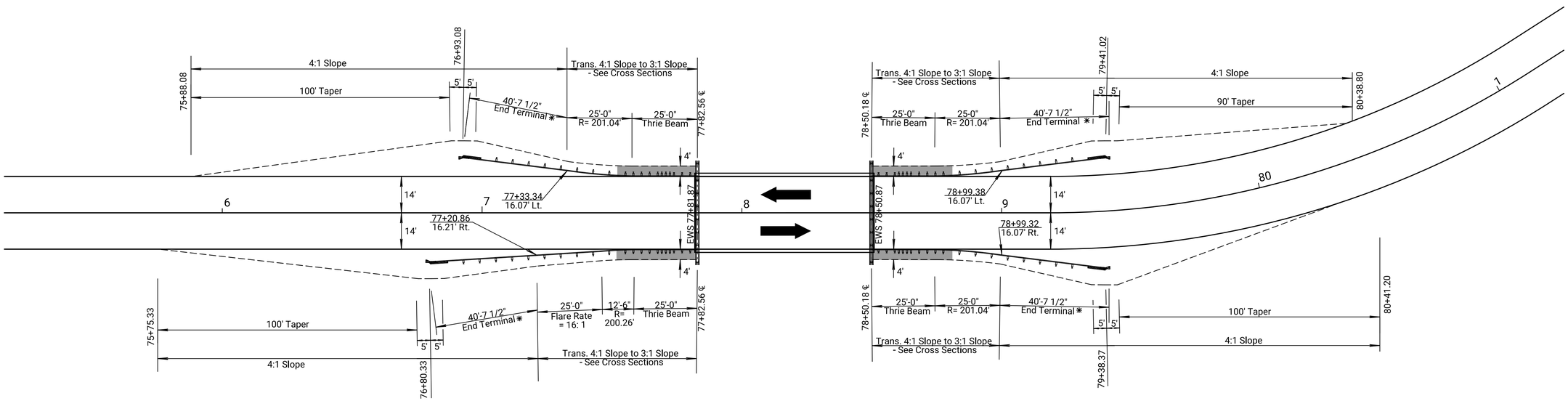
KDOT Graphics Certified 01-04-2024 Sh. No. 14

KDOT Graphics Certified

Plotted by : August.Zuno 04-JAN-2024 13:59
File : ka572801rgr-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	15	135

Scale: 1" = 20'



LEGEND

4" Asphalt Widening HMA Comm. Grade (Class A)

Note: All Stations and offsets are to face of blockouts.

✳ MGS-FLEAT or MGS-SRT End Terminal

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

KANSAS DEPARTMENT OF TRANSPORTATION

SHOOFLY GUARDRAIL
DETAIL SHEET

Plotted by : August.Zuno 04-JAN-2024 14:02
File : ka572801rgr-02.dgn

KDOT Graphics Certified 01-04-2024

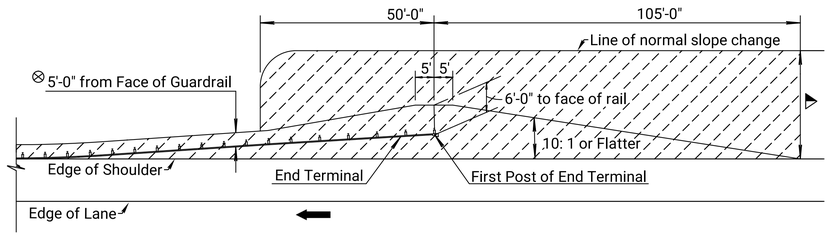
Sh. No. 15

KDOT Graphics Certified

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

GUARDRAIL CLEAR AREA

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



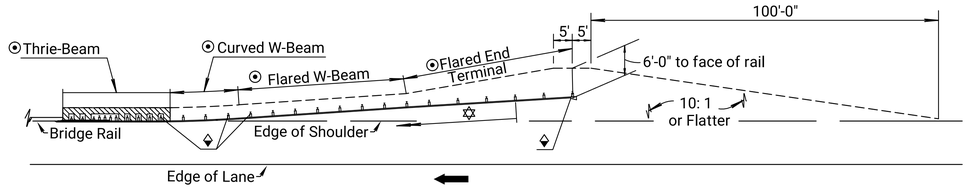
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet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

Normal Project Side Slope.

Deflection Distance for Normal Post Spacing

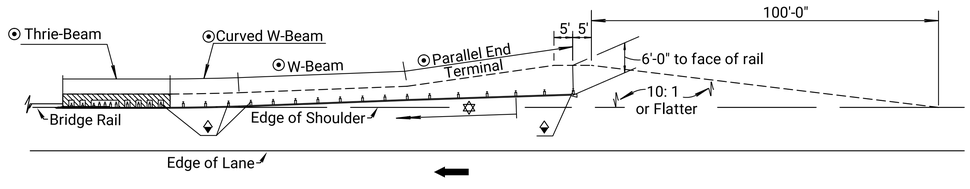
FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



PARALLEL GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



See Guardrail Layout Sheets for Details

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

Length of Need (Begins at Post 3)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	16	135

GENERAL NOTES

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

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

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

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

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

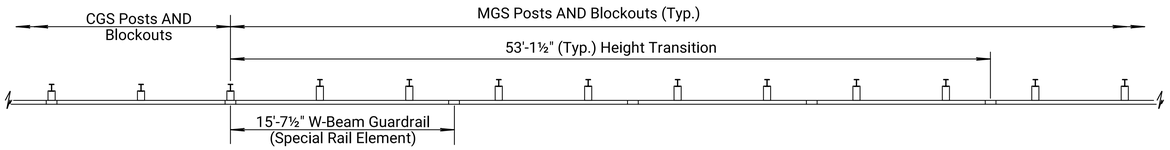
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even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

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

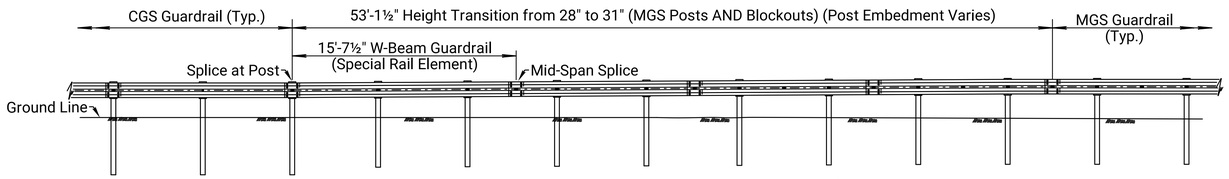
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered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

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

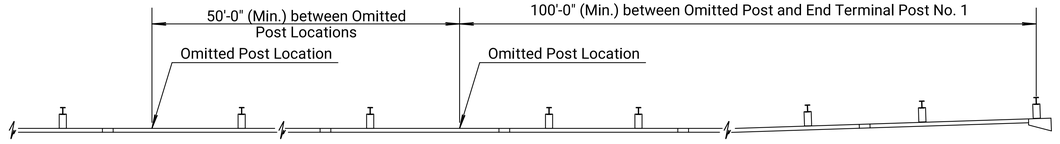
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



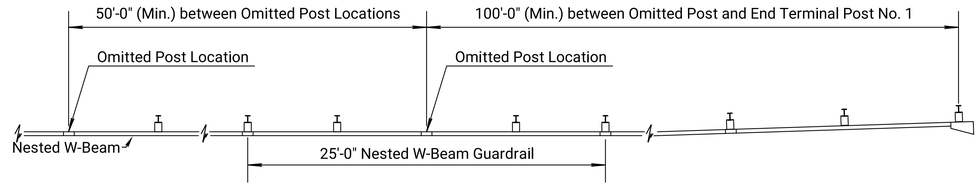
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) END TERMINALS

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

CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL AUXILIARY DETAILS

RD606

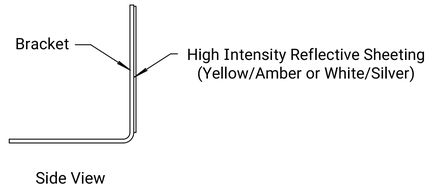
FHWA APPROVAL	09-25-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified

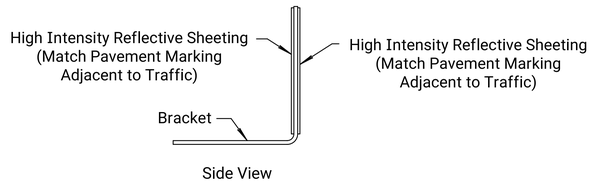
KDOT Graphics Certified 01-05-2024 Sh. No. 16

Plotted by : August.Zuno 5-JAN-2024 07:37
File : rss606.dgn

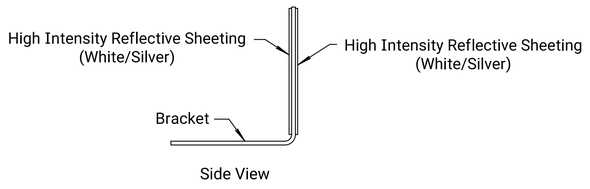
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	17	135



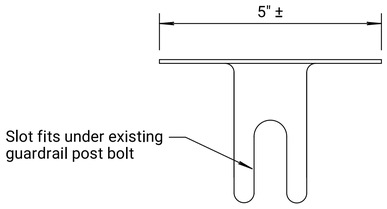
Flexible Marker
One-Way Traffic

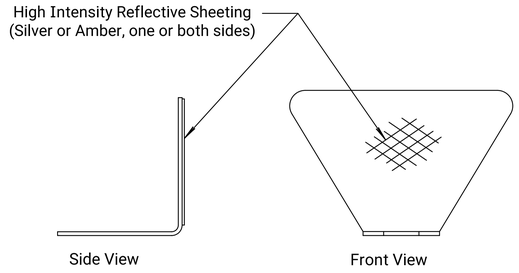


Flexible Marker
Median Locations



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.

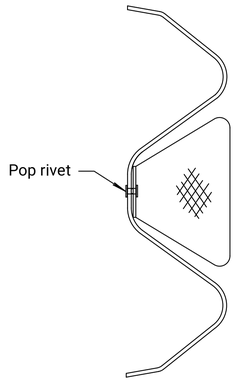
For guardrail located on one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located on the outside edge of one-way or divided roadways, use flexible markers with reflective sheeting 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.

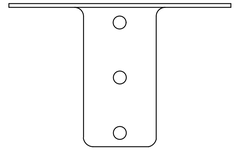
Work and materials required for installation of markers on guardrail, bridge rail, or concrete safety barrier are subsidiary to other bid items in the contract.

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



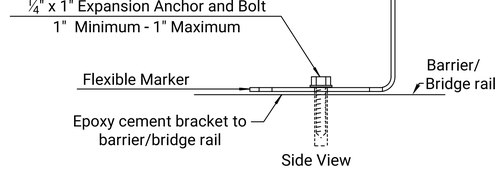
Typical Mounting on W-Beam

Pop rivet attachment to Guardrail when necessary.

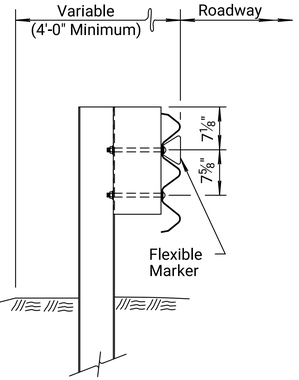


Top View

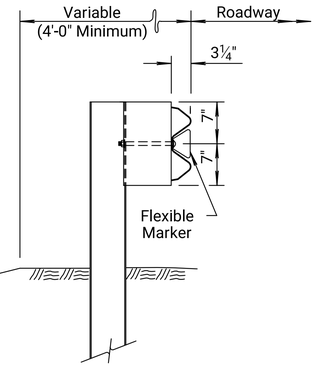
Barrier/Bridge Rail



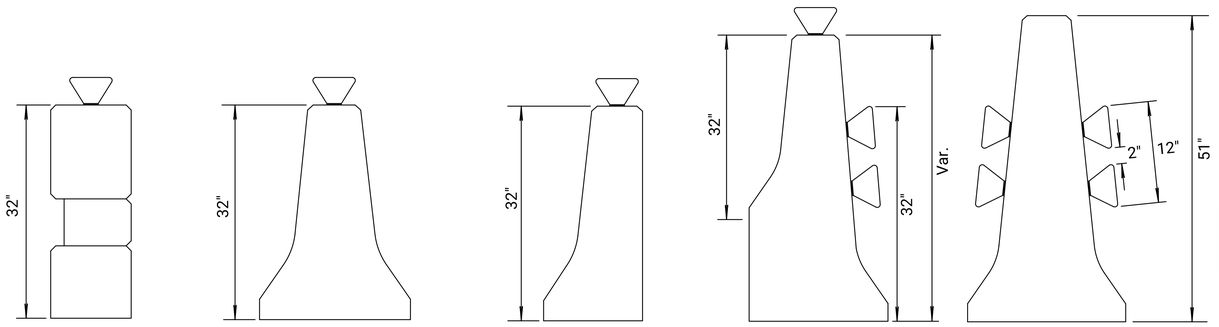
Method of Attaching Flexible
Marker to Barrier/Bridge Rail



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
09	09-11-17	Rev. Det. Markers, Rev. Gen. Note	A.L.R.	S.W.K.
08	11-15-10	Revised notes	S.W.K.	J.O.B.
07	12-21-08	AKT marker or approved equal	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MARKER DETAILS FOR GUARDRAIL, BARRIER, AND BRIDGE RAILS

RD610

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

KDOT Graphics Certified 05-11-2022 Sh. No. 17

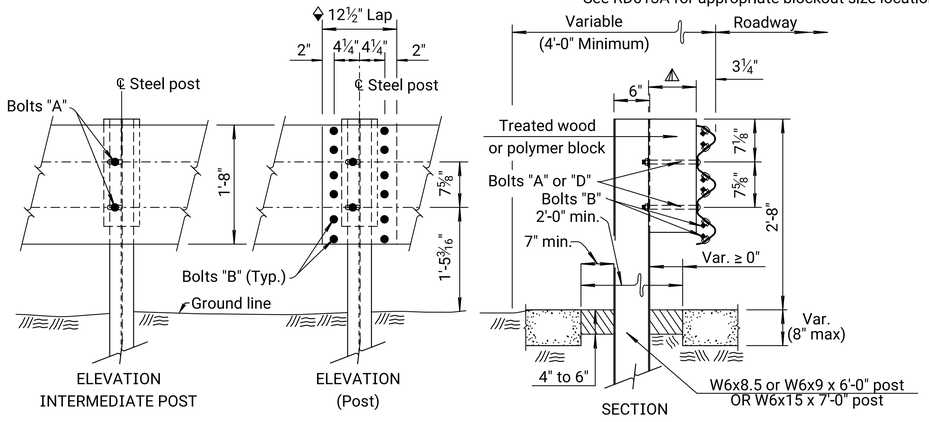
KDOT Graphics Certified

Plotted by : August.Zuno@ks.gov 4-JAN-2024 20:13
File : rss610.dgn

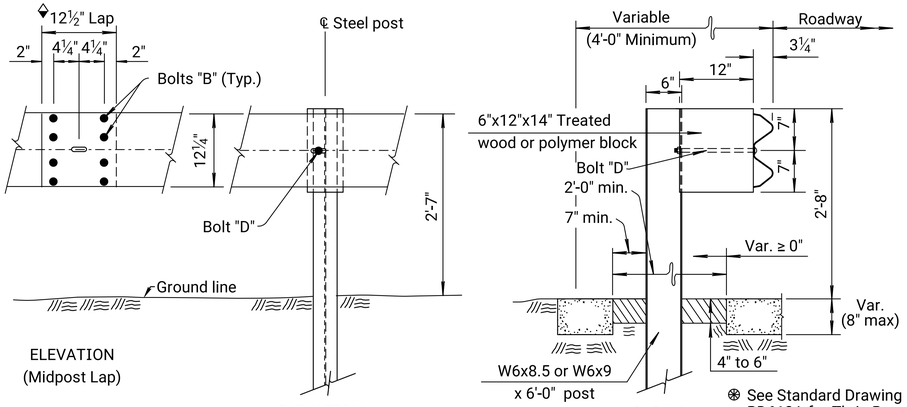
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	18	135

♦ 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.

⚠ See RD613A for appropriate blockout size location.



THRIE BEAM POST DETAILS/POSTS IN PAVEMENT

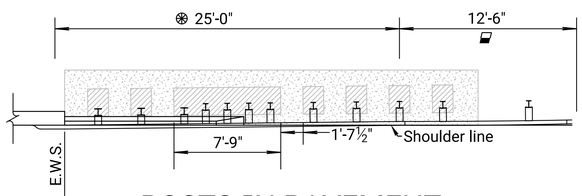


⊛ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.

✡ Non-Metallic (Polymer) or Treated Wood Block

See Guardrail Layout Sheets for Details.

W-BEAM (MGS) POST DETAILS/POSTS IN PAVEMENT



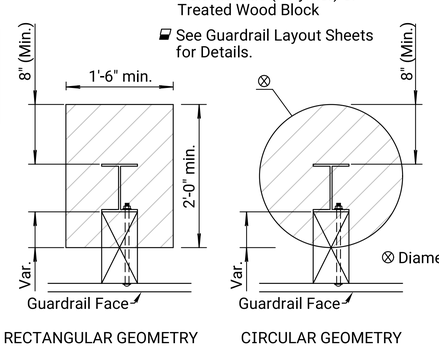
POSTS IN PAVEMENT

(Not to Scale)

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

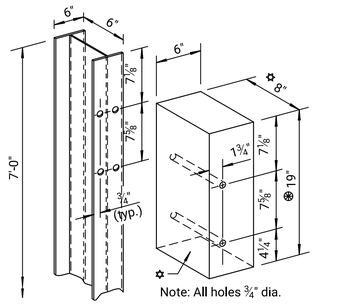
☐ Pavement (Concrete or Asphalt)

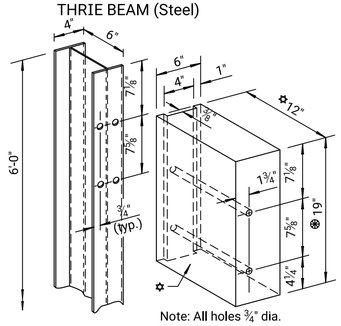
Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's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

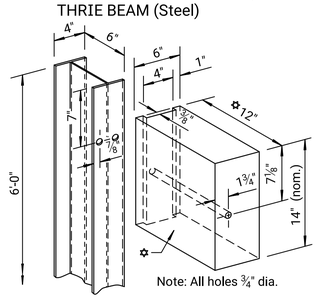


⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

PLAN
(ALTERNATE GEOMETRIES)







GENERAL NOTES (Steel Posts)

Use grade of steel for steel posts that meet the requirements of the standard specifications.

Hot dip galvanize the posts after fabrication, see standard specifications.

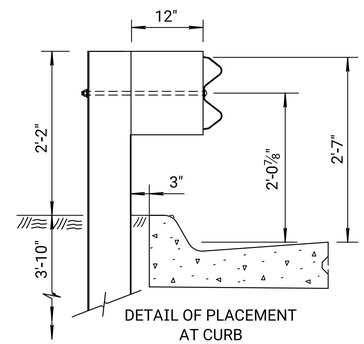
Wood blockouts may be used through the 25'-0" thrie-beam section with wood or polymer blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation. For wood/polymer blockout requirements see standard specifications.

Use S4S rectangular blockouts for Thrie-Beam/W-Beam installation.

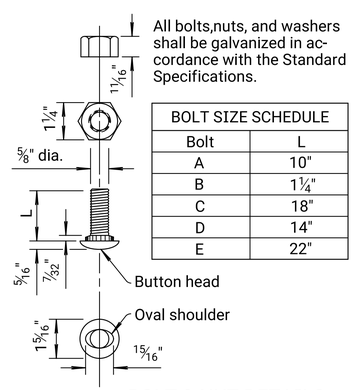
Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations.

Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered that prevents installation of a full length post.

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.



Note: Measure height of rail from the pavement surface at the curb/pavement joint as shown. A special design is needed when guardrail is not located as detailed. A Type II (laydown) curb & gutter is preferred when guardrail is adjacent to curb.



All bolts,nuts, and washers shall be galvanized in accordance with the Standard Specifications.

BOLT SIZE SCHEDULE	
Bolt	L
A	10"
B	1¼"
C	18"
D	14"
E	22"

BOLT & NUT DETAILS

NO.	DATE	REVISIONS	BY	APP'D
05	09-24-15	Separated Steel/Wood Post Details	S.W.K.	S.W.K.
04	11-08-12	Revised Detail, Posts in Pavement	S.W.K.	J.O.B.
03	08-01-12	Revised Note to Designer	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (STEEL) (MGS) DETAILS

RD611A

FHWA APPROVAL		01-29-16	APP'D.	Scott W. King
DESIGNED	DETAILED		QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK.

KDOT Graphics Certified 01-05-2024 Sh. No. 18

KDOT Graphics Certified

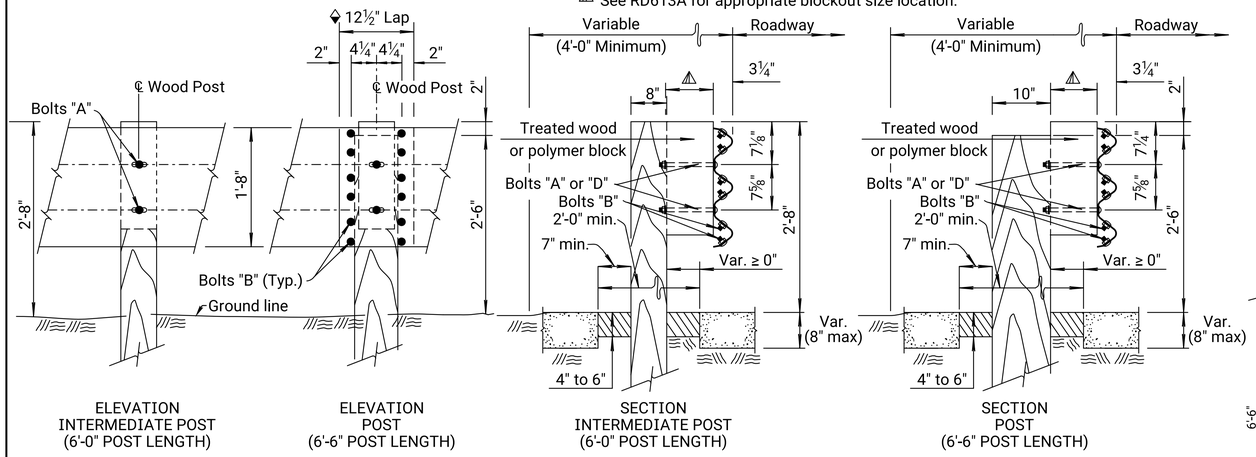
Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

Plotted by : August.Zuno 5-JAN-2024 07:44
File : rss611a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	19	135

◈ 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.

⚠ See RD613A for appropriate blockout size location.



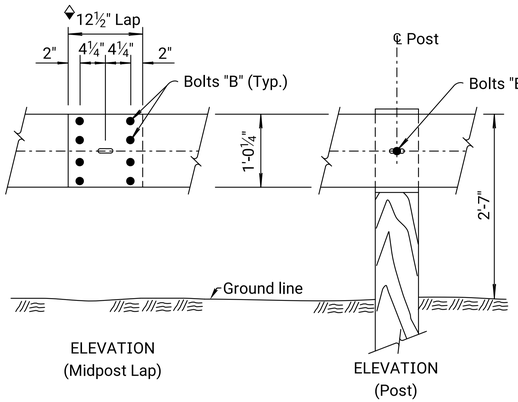
ELEVATION
INTERMEDIATE POST
(6'-0" POST LENGTH)

ELEVATION
POST
(6'-6" POST LENGTH)

SECTION
INTERMEDIATE POST
(6'-0" POST LENGTH)

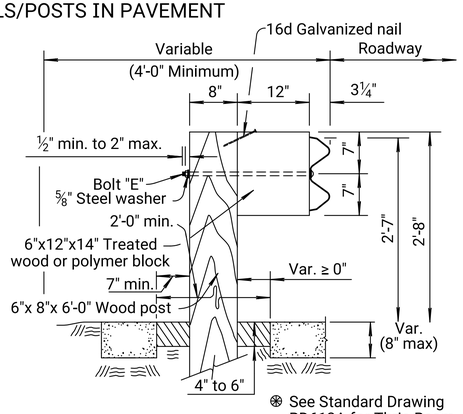
SECTION
POST
(6'-6" POST LENGTH)

THRIE BEAM POST DETAILS/POSTS IN PAVEMENT



ELEVATION
(Midpost Lap)

ELEVATION
(Post)



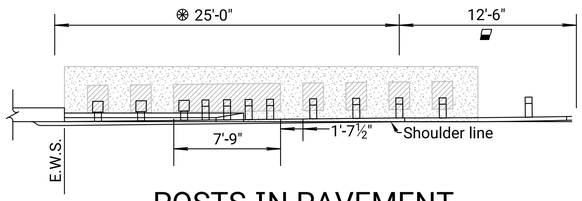
SECTION

⊛ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.

✡ Non-Metallic (Polymer) or Treated Wood Block

◪ See Guardrail Layout Sheets for Details.

W-BEAM (MGS) POST DETAILS/POSTS IN PAVEMENT



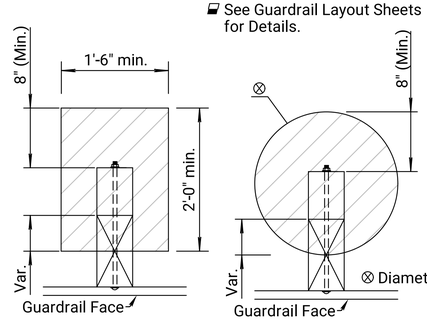
POSTS IN PAVEMENT

(Not to Scale)

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

☐ Pavement (Concrete or Asphalt)

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.

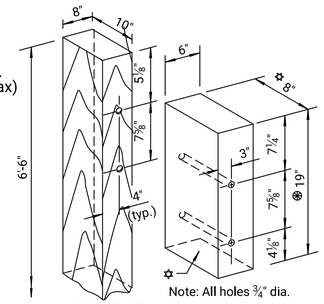


RECTANGULAR GEOMETRY

CIRCULAR GEOMETRY

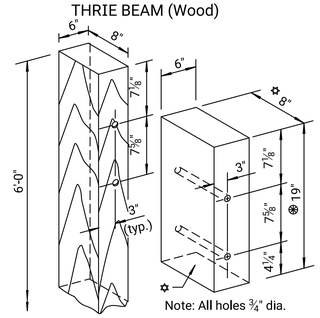
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

PLAN
(ALTERNATE GEOMETRIES)



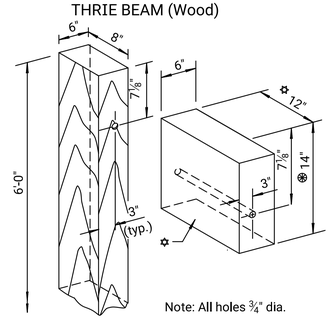
Note: All holes ¾" dia.

THRIE BEAM (Wood)



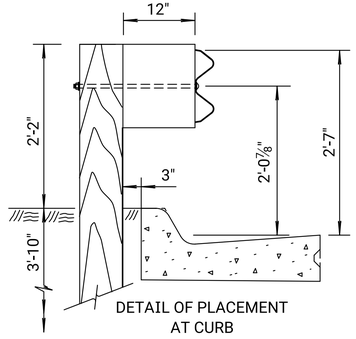
Note: All holes ¾" dia.

THRIE BEAM (Wood)



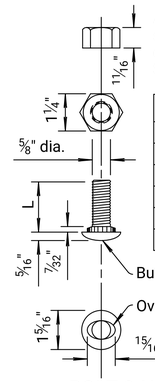
Note: All holes ¾" dia.

"W" BEAM (Wood)



DETAIL OF PLACEMENT
AT CURB

Note: Measure height of rail from the pavement surface at the curb/pavement joint as shown. A special design is needed when guardrail is not located as detailed. A Type II (laydown) curb & gutter is preferred when guardrail is adjacent to curb.



All bolts,nuts, and washers shall be galvanized in accordance with the Standard Specifications.

BOLT SIZE SCHEDULE	
Bolt	L
A	10"
B	1¼"
C	18"
D	14"
E	22"

BOLT & NUT DETAILS

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.

Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations.

Wood blockouts may be used through the 25'-0" thrie-beam section with wood or polymer blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation. For wood/polymer blockout requirements see standard specifications.

Use S4S rectangular posts/blockouts for Thrie Beam/W-Beam installation. See standard specifications for additional information.

Contractor must notify Engineer at the earliest time when a non-removable man-made object (footing, pipe, etc.) is encountered and prevents installation of a full length post.

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.

NO.	DATE	REVISIONS	BY	APP'D
04	09-24-15	Initial Release	T.T.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (WOOD) (MGS) DETAILS

RD611B

FHWA APPROVAL	01-29-16	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-11-2022 Sh. No. 19

KDOT Graphics Certified

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.

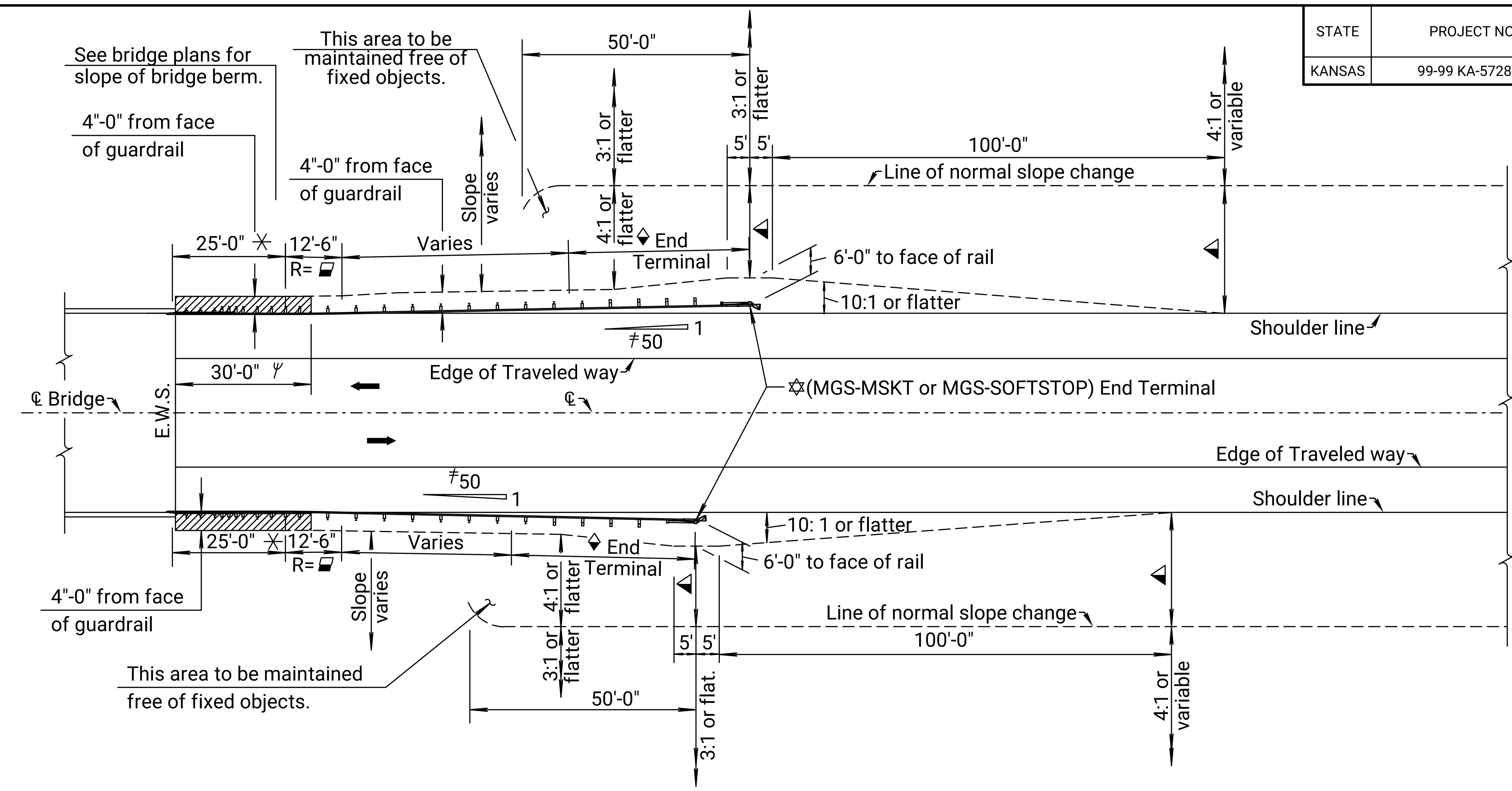
Plotted by : August.Zuno@ks.gov 4-JAN-2024 20:13
File : rss611b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	20	135

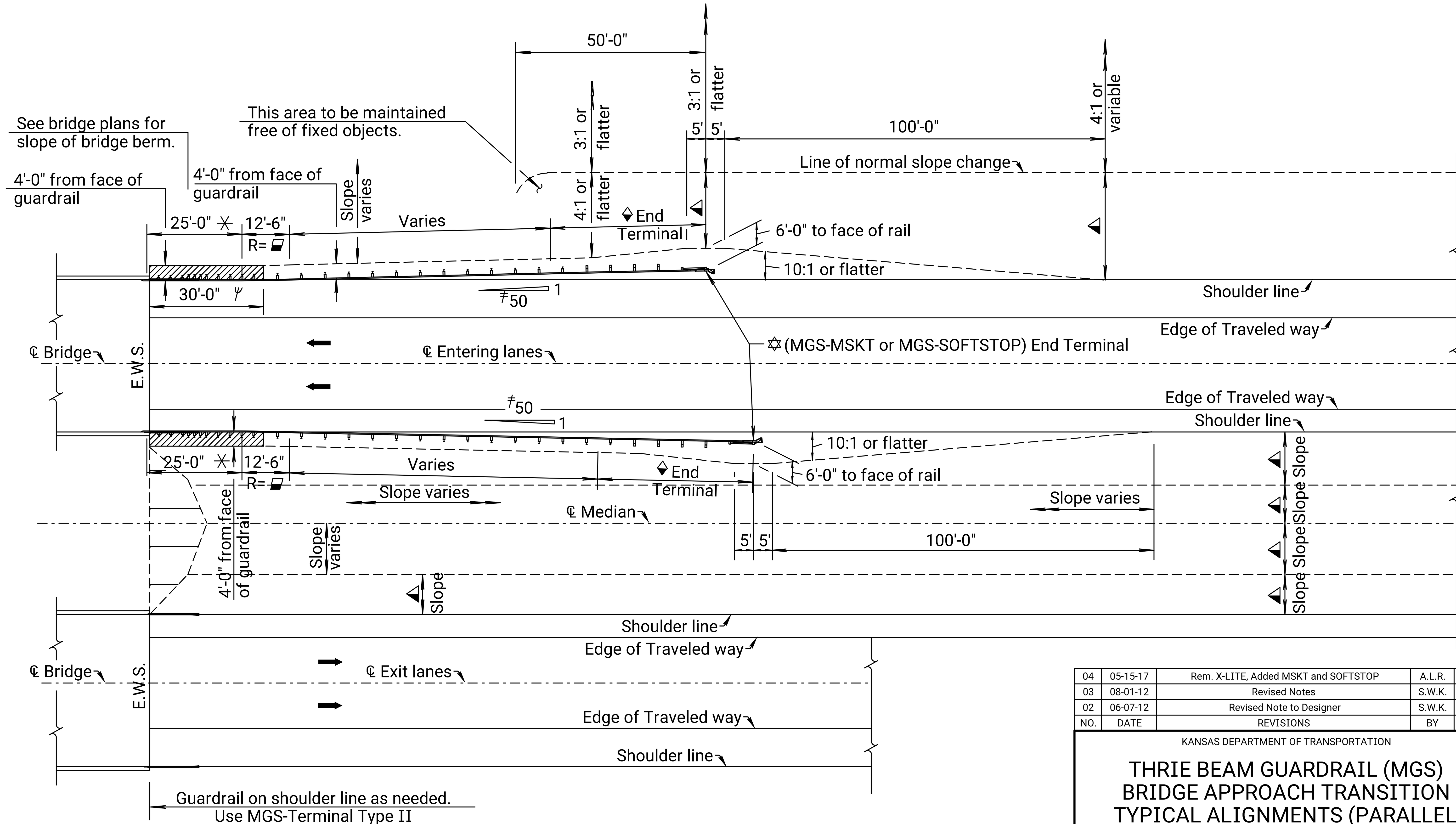
Notes to Designer: Determine the guardrail length of need using either KDOT's Length of Need Equation or a graphic design approach with an L_1 distance measured from the edge of the area of concern to the P.I. of the curved guardrail section. Combine material for asphalt widening in the plan quantities.

"Parallel" installations are flared at a rate of 50:1. "Zero Flare" installations follow the edge of shoulder.

- ⚹ Thrie Beam Transition. See Std. Drawing RD613A for details and general note.
- ▰ Radius= 625.08'
- ◭ Normal project side slope. See typical sections.
- ⬘ See KDOT's 'Guardrail Auxiliary Details' Standard Drawing.
- ψ 4" Asphalt material placed on 4'-0" embankment widening unless flume inlet and slope drain is constructed. See RD611A for "Post in Pavement" details.
- ≠ Terminate zero flare rate installations with a parallel guardrail end terminal. Typically parallel end terminals are flared at 50:1 over the length of the end terminal, but may be flared up to 26:1 or flatter.
- ✡ The minimum length of w-beam guardrail required between the thrie-beam transition and the guardrail end terminal is 12'-6" for all installations.



THRIE BEAM TRANSITION - TWO LANES



THRIE BEAM TRANSITION - FOUR LANES (DIVIDED)

NO.	DATE	REVISIONS	BY	APP'D
04	05-15-17	Rem. X-LITE, Added MSKT and SOFTSTOP	A.L.R.	S.W.K.
03	08-01-12	Revised Notes	S.W.K.	J.O.B.
02	06-07-12	Revised Note to Designer	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

THRIE BEAM GUARDRAIL (MGS) BRIDGE APPROACH TRANSITION TYPICAL ALIGNMENTS (PARALLEL)

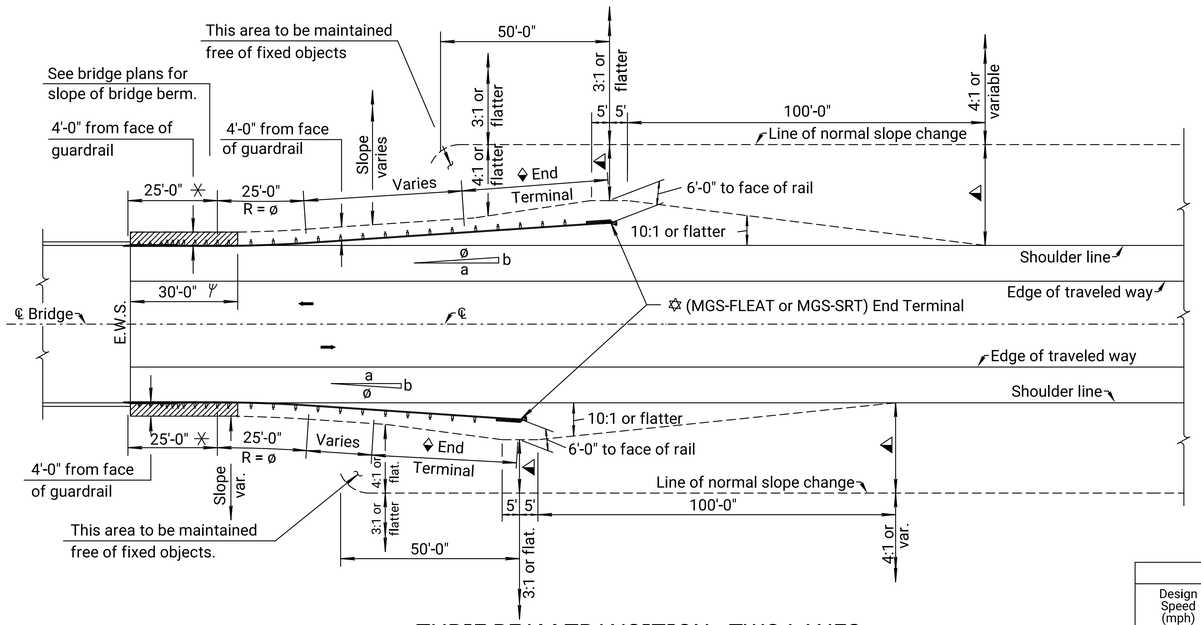
RD612B

FHWA APPROVAL		10-12-17	APP'D.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified

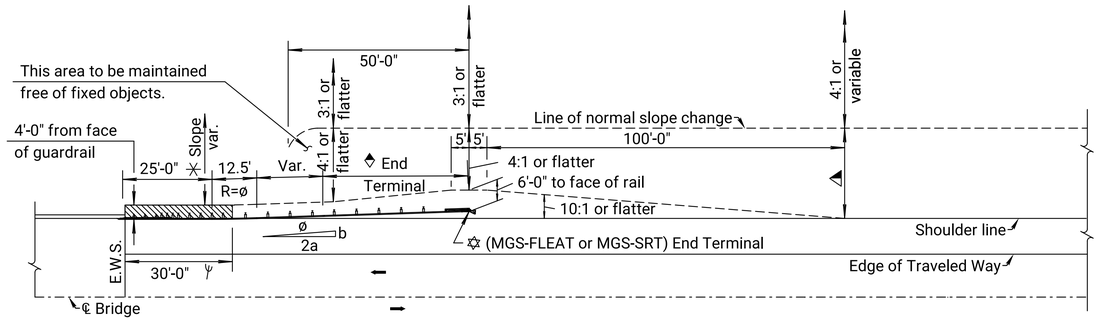
Plotted by : August.Zuno@ks.gov 4-JAN-2024 20:13
File : rss612b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	21	135



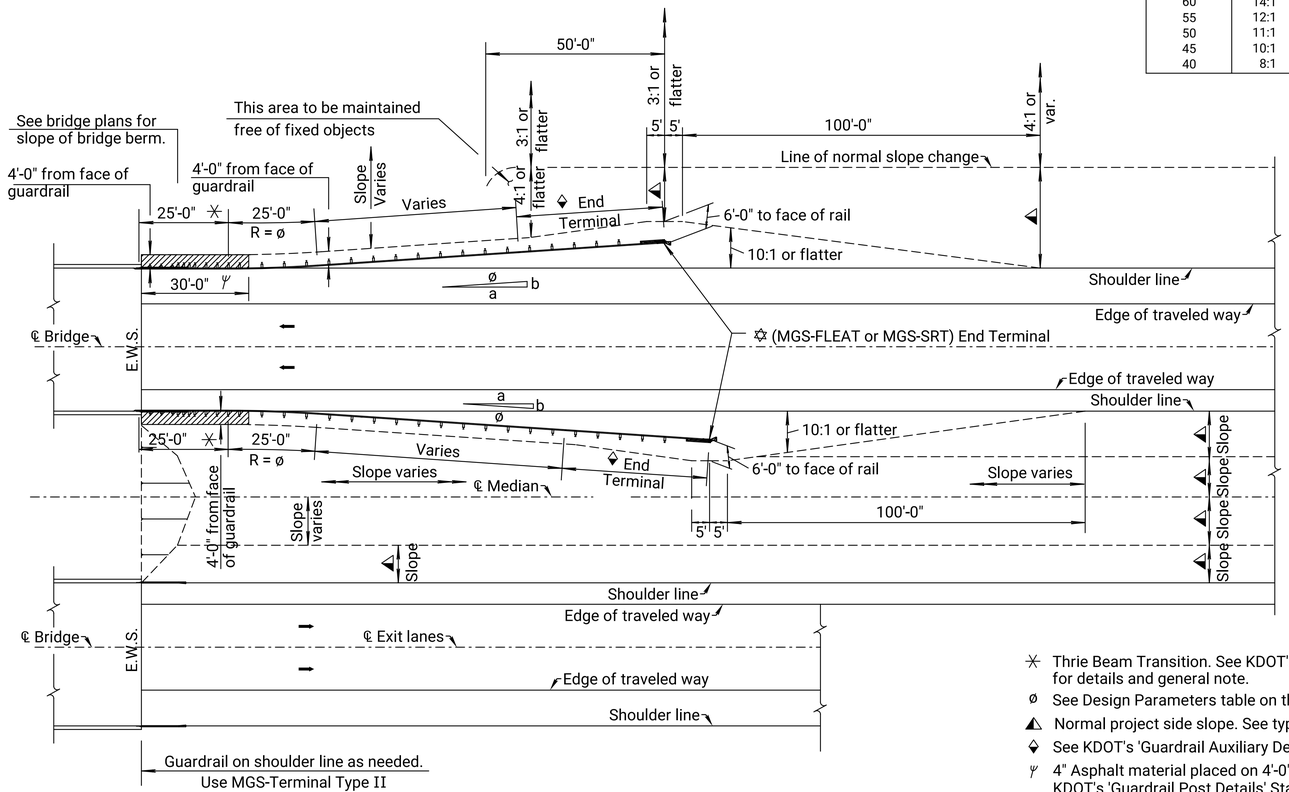
THRIE BEAM TRANSITION - TWO LANES

Note: Use flare rate of a:b and curve length of 25'-0" when guardrail is beyond shyline. Use flare rate of 2a:b and curve length of 12'-6" when guardrail is located inside the shy line.



ALTERNATE TREATMENT - TWO LANES (Flare Rate = 2a:b)

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'



THRIE BEAM TRANSITION - FOUR LANES (DIVIDED)

- ✳ Thrie Beam Transition. See KDOT's 'Thrie Beam Guardrail Transition Details' Standard Drawings for details and general note.
- ø See Design Parameters table on this sheet for radius, length of curve and flare rate information.
- ◭ Normal project side slope. See typical sections.
- ⧫ See KDOT's 'Guardrail Auxiliary Details' Standard Drawing.
- ℣ 4" Asphalt material placed on 4'-0" embankment widening unless flume inlet and slope drain is constructed. See KDOT's 'Guardrail Post Details' Standard Drawings for "Post in Pavement" details.
- ✡ The minimum length of w-beam guardrail required between the guardrail end terminal and any transition section, including the thrie-beam transition, is 12'-6".

NO.	DATE	REVISIONS	BY	APP'D
04	06-05-18	Removed Flare-beyong-the-Flare	A.L.R.	T.T.R.
03	05-15-17	Removed X-LITE	A.L.R.	S.W.K.
02	06-07-12	Revised Note to Designer	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

THRIE BEAM GUARDRAIL (MGS) BRIDGE APPROACH TRANSITION TYPICAL ALIGNMENTS (FLARED)

RD612C

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

KDOT Graphics Certified 08-21-2022 Sh. No. 21

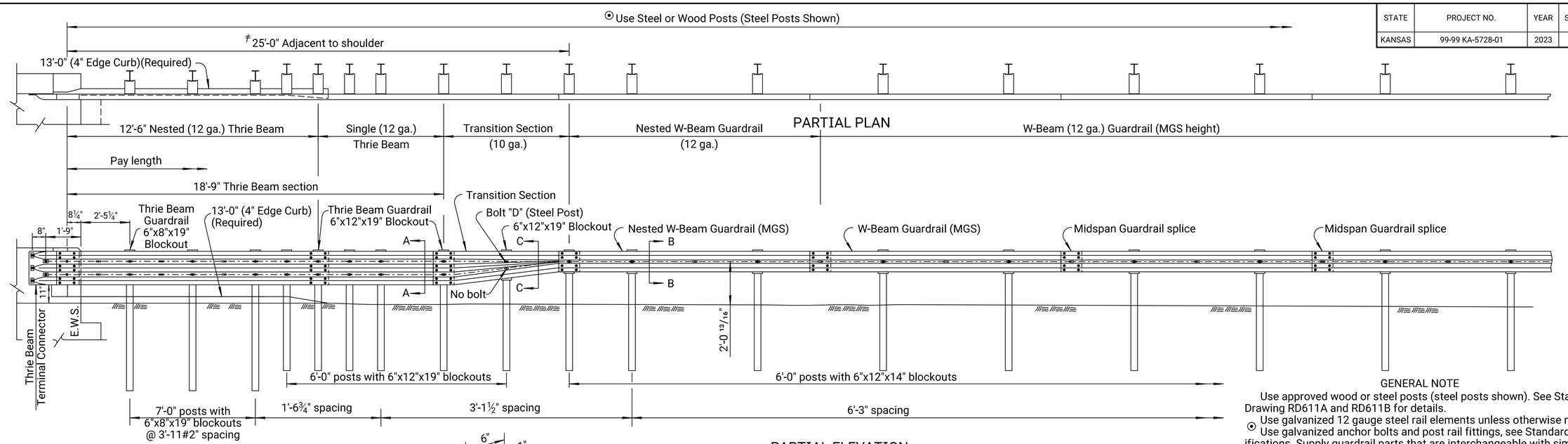
KDOT Graphics Certified

Notes to Designer: Determine guardrail length of need using either KDOT's Length of Need Equation or a graphic design approach with an L_1 distance measured from the edge of the area of concern to the P.I. of the curved guardrail section. Combine materials for asphalt widening in the plan quantities.

Optional: If approach side is within the shyline, use a flare rate of 2a:b for all quadrants.

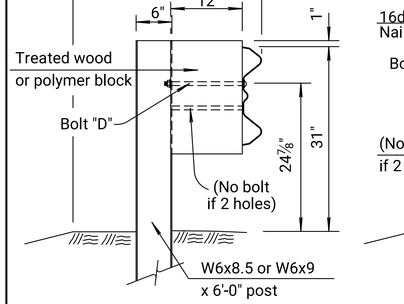
Plotted by : August.Zuno@ks.gov 04-JAN-2024 20:14
File : rd612c.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	22	135

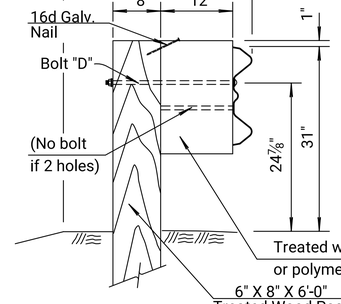


PARTIAL PLAN

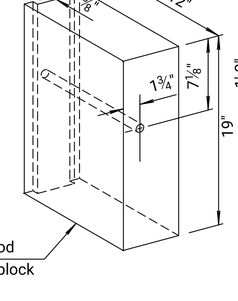
PARTIAL ELEVATION



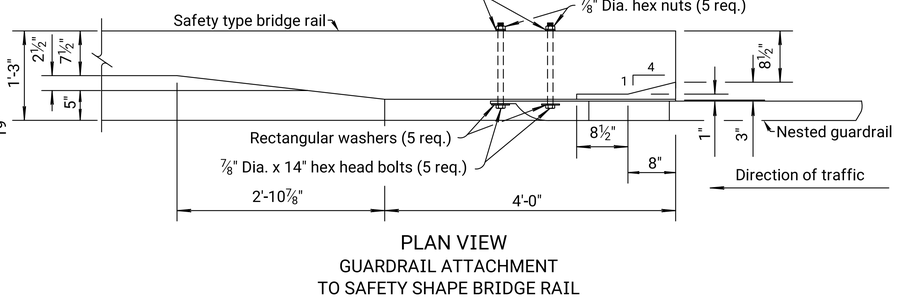
⊙ SECTION C-C (STEEL POST)



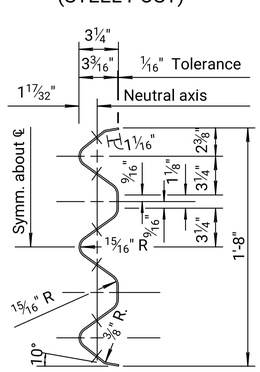
⊙ SECTION C-C (WOOD POST)



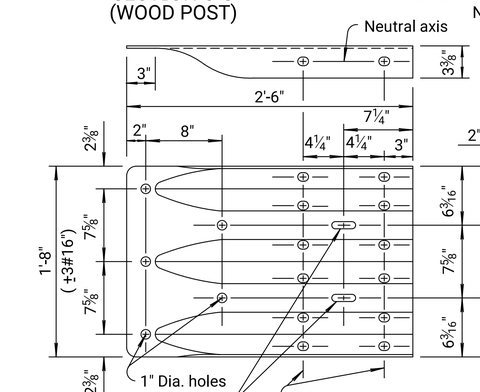
SECTION C-C (BLOCKOUTS)
Note: All holes ¾" dia.



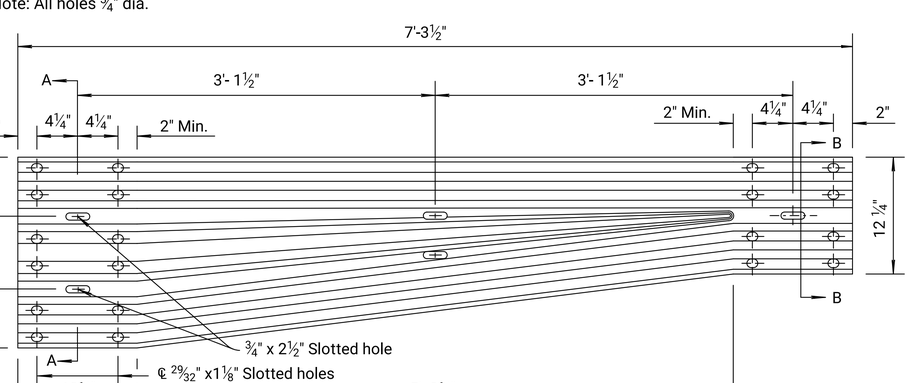
PLAN VIEW
GUARDRAIL ATTACHMENT
TO SAFETY SHAPE BRIDGE RAIL



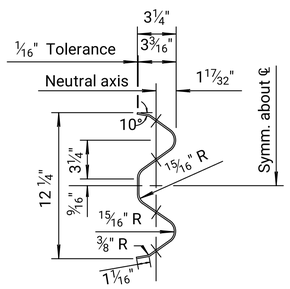
SECTION A-A
THRU RAIL ELEMENT
TYPICAL THRIE BEAM



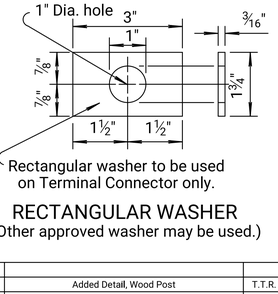
TERMINAL CONNECTOR
⊛ Optional 29/32" x 1¾" Slotted holes Rotated 50° (Typical) (12 req'd.)



ELEVATION
ASYMMETRICAL TRANSITION SECTION
(From Thrie Beam to W-Beam rail)



SECTION B-B
THRU RAIL ELEMENT
TYPICAL W-BEAM



Rectangular washer to be used on Terminal Connector only.

RECTANGULAR WASHER
(Other approved washer may be used.)

GENERAL NOTE

Use approved wood or steel posts (steel posts shown). See Standard Drawing RD611A and RD611B for details.

⊙ Use galvanized 12 gauge steel rail elements unless otherwise noted.

Use galvanized anchor bolts and post rail fittings, see Standard Specifications. Supply guardrail parts that are interchangeable with similar parts regardless of source or manufacturer.

Wood blockouts may be used through the 25'-0" thrie-beam section with wood or composite blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation.

Fabricate Terminal Connector from 10 gauge steel, see Standard Specification. The connector has the same section as thrie beam guardrail. Terminal connector is Subsidiary to the bid item "Guardrail, Steel Plate (MGS)".

Shop bend curve rails when radius is less than 150'.

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.

Bridge to guardrail transition consists of 1- 18'-9" thrie-beam with 1- 12'-6" thrie-beam section nested in back of 18'-9" section (See Layout), 1- Thrie beam to W-beam Asymmetrical transition section, use associated hardware with post sizes and location shown. For the remainder of installation use (MGS) W-beam guardrail with only one post type used within (MGS) guardrail run.

All material and work required for this construction is Subsidiary to the bid item "Guardrail, Steel Plate (MGS)".

NO.	DATE	REVISIONS	BY	APP'D
02	02-10-16	Added Detail, Wood Post	T.T.R.	S.W.K.
01	01-25-12	Revised Details, Thrie-Beam	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS OF THRIE BEAM to (MGS) GUARDRAIL TRANSITION

RD613A

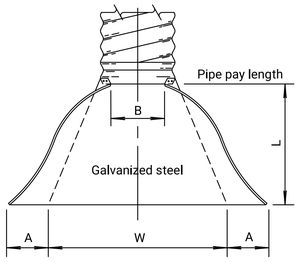
FHWA APPROVAL	04-21-16	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 11-18-2022 Sh. No. 22

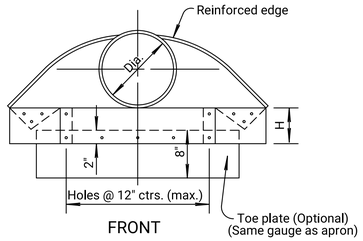
KDOT Graphics Certified

Plotted by : August.Zuno@ks.gov 4-JAN-2024 20:13
File : rss613a.dgn

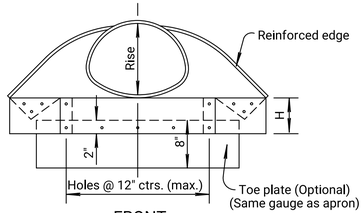
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	23	135



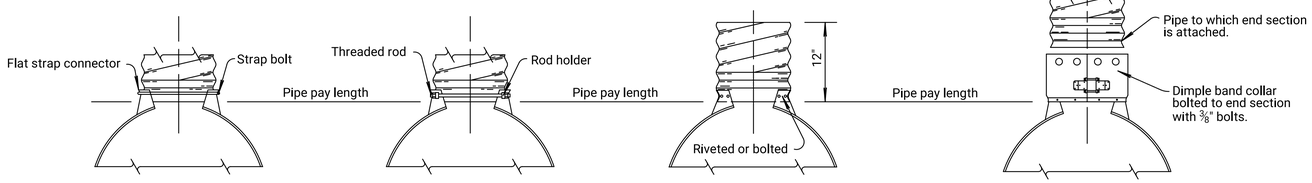
PLAN
(Illustrated with Type #3 Connection)



FRONT



FRONT



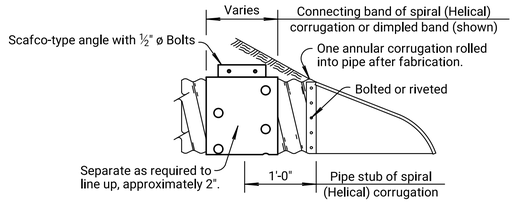
TYPE 1
Available in sizes 12" through 24" only.

TYPE 2
Available in sizes 30" and 36" Round and 17"x13" through 57"x38" Pipe-Arches.

TYPE 3
Available in sizes 42" through 96" Round and 60"x46" through 81"x59" Pipe-Arches.

TYPE 5
Available for all Round and equivalent Pipe-Arch sizes, (Type 1 and Type 2 connections are recommended for the smaller sizes with annular ends).

Note: Type 3 connection may be furnished instead of Type 1 or Type 2 for smaller round or arch pipe.



SPIRAL (HELICAL) CORRUGATION

For all sizes of round and arch culvert pipes having Spiral (Helical) corrugations, the end sections and connecting bands shall be as shown above.

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

Pipe Dia. (In.)	CS, ACS or CA Gauge	Dimensions in Inches A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	Approx. Slope
12"	16	5	7	6	21	22	2½: 1
15"	16	6	8	6	26	28	2½: 1
18"	16	7	10	6	31	34	2½: 1
21"	16	8	12	6	36	40	2½: 1
24"	16	9	13	6	41	46	2½: 1
30"	14	11	16	8	51	55	2½: 1
36"	14	13	19	9	60	70	2½: 1
42"	12	15	25	10	69	82	2½: 1
48"	12	17	29	12	78	88	2¼: 1
54"	12	17	33	12	84	100	2¼: 1
60"	12/10	17	36	12	87	112	2: 1
66"	12/10	17	39	12	87	118	2: 1
72"	12/10	17	44	12	87	120	2: 1
78"	12/10	17	48	12	87	130	1½: 1
84"	12/10	17	52	12	87	136	1½: 1
90"	12/10	17	58	12	87	142	1½: 1
96"	12/10	17	58	12	87	144	1½: 1

Bid Designation Sq. Ft.	Nom. W.W. Area Sq. Ft.	Pipe Arch Span & Rise	Dimensions in Inches 2⅔" x ½" Corrugations CS, ACS or CA Gauge	A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	Dimensions in Inches 3" x 1" or 5" x 1" Corr. CS, ACS or CA Gauge	A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	Approx. Slope
1.0	1.1	17" x 13"	16	5	9	6	20	28							2½: 1
1.5	1.6	21" x 15"	16	6	11	6	24	34							2½: 1
2.0	2.2	24" x 18"	16	7	12	6	28	40							2½: 1
2.5	2.9	28" x 20"	16	7	16	6	32	46							2½: 1
3.0 or 4.0	4.5	35" x 24"	14	9	16	6	39	58							2½: 1
5.0 or 6.0	6.5	42" x 29"	14	11	18	7	46	73							2½: 1
7.0 or 8.5	8.9	49" x 33"	12	12	21	9	53	82							2½: 1
10.0 or 11.0	11.7	53" x 41"							12	17	26	12	63	88	2: 1
10.0 or 11.0	11.6	57" x 38"	12	16	26	12	62	88							2: 1
12.5 or 14.0	15.6	60" x 46"							12	17	36	12	70	100	2: 1
12.5 or 14.0	14.7	64" x 43"	12	17	30	12	69	100							2: 1
16.5	19.3	66" x 51"							12/10	17	36	12	70	112	1½: 1
16.5	18.1	71" x 47"	12/10	17	36	12	77	112							1½: 1
21.0	23.2	73" x 55"							12/10	17	36	12	77	124	1½: 1
21.0	21.9	77" x 52"	12/10	17	36	12	77	124							1½: 1
25.0	27.4	81" x 59"							12/10	17	44	12	77	136	1½: 1
25.0	26.0	83" x 57"	12/10	17	44	12	77	130							1½: 1
32.0	32.1	87" x 63"							12/10	17	44	12	77	136	1½: 1
36.0	37.0	95" x 67"							12/10	17	44	12	87	160	1½: 1
42.0	42.4	103" x 71"							12/10	17	44	12	87	172	1½: 1
47.0	48.0	112" x 75"							12/10	17	44	12	87	172	1½: 1

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

GENERAL NOTE for END SECTIONS

End section material shall follow KDOT Pipe Policy for geographic location. Location shall govern use of CS (Galvanized), ACS (Aluminized) or CA (Aluminum) (Type I) End Section. Pipe material and End Section material shall be the same with no mixing of types per location.

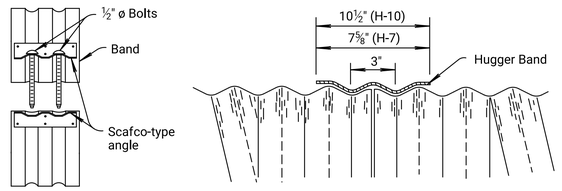
Toe plate extension, when specified, is an accessory and shall be the same gauge and metal as end section. Toe plate shall be punched to match holes in apron lip and attached with furnished 3#8" diameter nuts & bolts.

W + 10" for 12" to 30" diameter pipes inclusive.
W + 20" for 36" to 84" diameter pipes inclusive.
W + 10" for pipe-arches with a rise of 13" to 29" inclusive.
W + 20" for pipe-arches with a rise of 33" to 59" inclusive.

Multiple panel end sections may contain dual gauges of like metal and shall have lap seams which are tightly joined with rivets or bolts. For 60" and larger diameter round pipe end sections and 77"x52" arch pipe end sections, the reinforced edges are supplemented with stiffener angles. The angles are attached with nuts and bolts. Angle reinforcement may be required uder the center panel seams of 73"x55" and larger arch pipe end sections depending on manufacturer.

Other approved designs may be used in lieu of type shown.

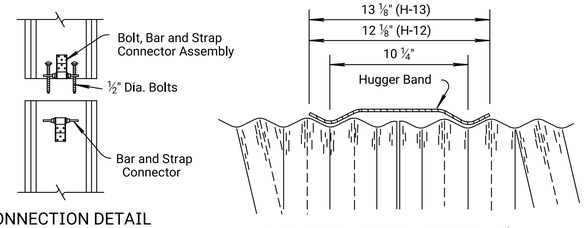
Connection of end sections by welding will not be permitted.



CONNECTION DETAIL
H-7 or H-10 BAND

UNIVERSAL REFORMED END with
H-7 or H-10 HUGGER BAND

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

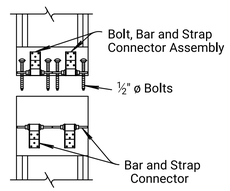


CONNECTION DETAIL
SINGLE HARNESS

UNIVERSAL REFORMED END with
HUGGER BAND

DETAILS FOR H-12 or H-13 HUGGER BAND

Pipe Dia. Inches	Minimum Gauge of Round Pipe 2⅔" x ½" Corr. CSP or ACSP	3" x 1" Corr. CSP or ACSP	5" x 1" Corr. CSP or ACSP	2⅔"x ½" Corr. CAP	3" x 1" Corr. CAP
12"	14			16	
15"	14			16	
18"	14			16	
21"	14			16	
24"	14			16	
30"	14			14	
36"	14			14	16
42"	14			12	16
48"	12	14	16	14	16	12	16
54"	12	14	16	14	16	12	16
60"	10	14	16	14	16	10	16
66"	10	14	16	14	16	8	16
72"	10	14	16	14	16	8	16
78"	8	14	14	14	14		14
84"	8	14	14	14	14		12
90"		14	14	14	14		12
96"		12	12	12	12		12
102"		12	12	12	12		10
108"		12	12	12	12		10
114"		12	12	12	12		8
120"		10	10	10	10		8



CONNECTION DETAIL
DOUBLE HARNESS

Bid Designation Sq. Ft.	Pipe Dimension Span & Rise	Sq. Ft.	Equiv. Round Pipe Diameter	Minimum Gauge of Arch Pipe 2⅔"x ½" Corr. CSP or ACSP	3" x 1" Corr. CSP or ACSP	5" x 1" Corr. CSP or ACSP	2⅔"x ½" Corr. CAP	3" x 1" Corr. CAP
1.0	17" x 13"	1.1	15"	14			16	
1.5	21" x 15"	1.6	18"	14			16	
2.0	24" x 18"	2.2	21"	14			16	
2.5	28" x 20"	2.9	24"	14			14	
3.0 or 4.0	35" x 24"	4.5	30"	14			14	
5.0 or 6.0	42" x 29"	6.5	36"	14			12	
7.0 or 8.5	49" x 33"	8.9	42"	14			12	
10.0 or 11.0	53" x 41"	11.7	48"		14			
10.0 or 11.0	57" x 38"	11.6	48"	12			10	
12.5 or 14.0	60" x 46"	15.6	54"		14			14
12.5 or 14.0	64" x 43"	14.7	54"	12			10	
16.5	66" x 51"	19.3	60"		14			14
16.5	71" x 47"	18.1	60"	10			8	
21.0	73" x 55"	23.2	66"		14			14
21.0	77" x 52"	21.9	66"	8				
25.0	81" x 59"	27.4	72"		14	12		12
25.0	83" x 57"	26.0	72"	8				
32.0	87" x 63"	32.1	78"		12	12		12
36.0	95" x 67"	37.0	84"		12	12		12
42.0	103" x 71"	42.4	90"		12	12		10
47.0	112" x 75"	48.0	96"		12	12		8
54.0	117" x 79"	54.2	102"		10	10		
60.0	128" x 83"	60.5	108"		10	10		
67.0	137" x 87"	67.4	114"		10	10		
74.0	142" x 91"	74.5	120"		8	8		

GENERAL NOTE for METAL PIPE

Culvert "Type" listed may be CSP, ACSP, CAP, RCP, PVCP & PEP within guidelines of KDOT Pipe Policy for geographic location. More than one pipe "Type" may be acceptable for a design location with allowable types listed for each site.

There shall be no payment for gain in pipe length due to fit of pipe at connecting band.

When Hugger Bands are used, the H-7 Hugger Band may be used on circular pipes 36" diameter and smaller or pipe arches 42"x 29" and smaller. The H-10 Hugger Band may be used on 12" thru 120" pipe. The H-12 or H-13 Hugger Band are for pipe sizes larger than 36" diameter or 42"x29" arch pipe.

⊛ Pipe gauge listed in the tables on this sheet are minimum for E'=750 p.s.i. soil. Pipe gauge will be determined for each site based on the Design Manual Volume I- Part C Fill Height Tables and shall shall be listed in the Pipe Culvert Summary. Gauges shown on this Standard Drawing are KDOT minimum and may not be industry minimum gauge.

In geographic areas that allow CSP (24" or smaller arched or round pipe) for entrance and side road installation with less than 3,000 AADT, 16 gauge ACSP may be substituted for 14 gauge CSP.

Aluminum or aluminized pipes or end sections shall be coated with an asphaltic paint when in contact with fresh concrete in accordance with the Standard Specifications.

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD660

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

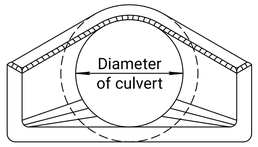
KDOT Graphics Certified 05-16-2022 Sh. No. 23

KDOT Graphics Certified

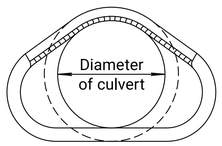
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume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

Plotted by: August.Zuno@ks.gov 4-JAN-2024 20:14
File : rss660.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	24	135

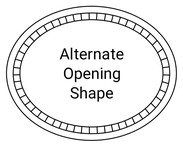


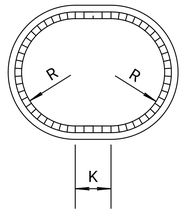
END ELEVATION (TYPE I)



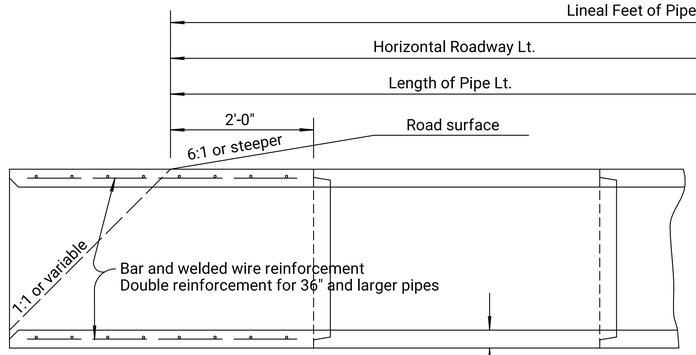
SECTION A-A

Showing rounding of inside edge of end section.



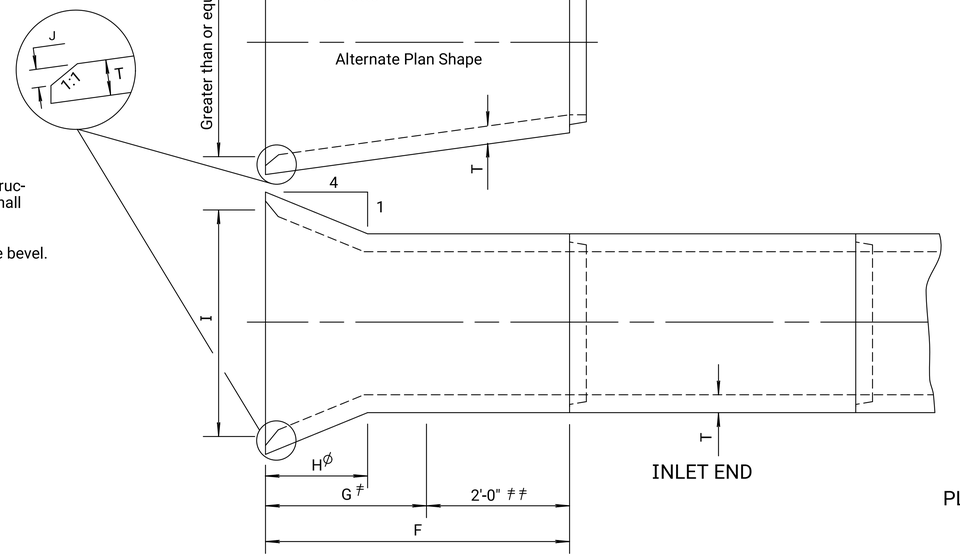


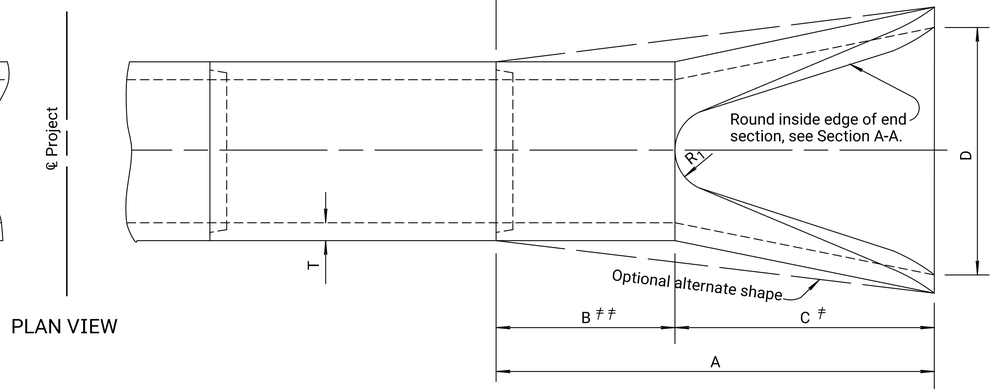
END ELEVATION
(TYPE III)



ELEVATION SECTION

Note: There shall be no payment for gain in length due to joint fit tolerance.





PLAN VIEW

∅ Transition to round pipe.
≠ Paid for as separate item of End Section, except when structures shall bid as alternates. In that case End Sections shall be subsidiary to bid item. "Drainage Structure No. ".
≠≠ Included in pay length of pipe.
⚹ Minimum waterway area is calculated at the inside of the bevel.

END SECTION (TYPE I) NOMINAL DIMENSIONS

Diam.	A	B≠≠	C≠	D	E	R_I	Slope	T
12"	6'-0 ⅞"	4'-0 ⅞"	2'-0"	2'-0"	4"	9	3:1	2"
15"	6'-1"	3'-10"	2'-3"	2'-6"	6"	11	3:1	2 ¼"
18"	6'-1"	3'-10"	2'-3"	3'-0"	9"	12	3:1	2 ½"
24"	6'-1 ½"	2'-6"	3'-7 ½"	4'-0"	9 ½"	14	3:1	3"
30"	6'-1 ¾"	1'-7 ¾"	4'-6"	5'-0"	1'-0"	15	3:1	3 ½"
36"	8'-1 ¾"	2'-10¾"	5'-3"	6'-0"	1'-3"	20	3:1	4"
42"	8'-2"	2'-11"	5'-3"	6'-6"	1'-9"	22	3:1	4 ½"
48"	8'-2"	2'-2"	6'-0"	7'-0"	2'-0"	22	3:1	5"
54"	8'-2 ¼"	2'-9 ¼"	5'-5"	7'-6"	2'-3"	24	2.4:1	5 ½"
60"	8'-3"	3'-3"	5'-0"	8'-0"	2'-11"	24	21	6"
72"	8'-3"	1'-9"	6'-6"	9'-0"	3'-0"	24	1.86:1	7"
84"	9'-3 ½"	1'-9"	7'-6 ½"	10-0"	3'-0"	24	1.6:1	8"

SIDE TAPERED INLET SECTION (TYPE III)-NOMINAL DIMENSIONS

Diam.	Min. W.W.⚹ Area Sq. Ft.	F	G	H	I	J	K	R	T
24"	4.5	4'-3"	2'-3"	1'-5 ⅛"	2'-8"	1 ½"	8"	1'-0"	3"
30"	7.0	4'-9 ½"	2'-9 ½"	1'-9 ½"	3'-4"	2"	10"	1'-3"	3 ½"
36"	10.1	5'-4"	3'-4"	2'-1 ½"	4'-0"	2"	1'-0"	1'-6"	4"
42"	13.7	5'-10 ½"	3'-10 ½"	2'-5 ⅞"	4'-8"	2 ½"	1'-2"	1'-9"	4 ½"
48"	17.9	6'-5"	4'-5"	2'-10 ⅛"	5'-4"	3"	1'-4"	2'-0"	5"
54"	22.7	6'-11 ½"	4'-11 ½"	3'-2 ½"	6'-0"	3 ½"	1'-6"	2'-3"	5 ½"
60"	28.0	7'-6"	5'-6"	3'-6 ⅞"	6'-8"	4"	1'-8"	2'-6"	6"
72"	40.3	8'-7"	6'-7"	4'-3 ⅝"	8'-0"	5"	2'-0"	3'-0"	7"
84"	54.8	9'-8"	7'-8"	5'-0 ⅜"	9'-4"	6"	2'-4"	3'-6"	8"

Dimensions for alternate shapes shall be equal to or greater than those shown in the table, unless otherwise shown.

NO.	DATE	REVISIONS	BY	APP'D
02	04-18-08	Added ref. to KDOT Pipe Policy	S.W.K.	J.O.B.
01	04-05-05	Revised reinforcement callout	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE END SECTIONS FOR CONCRETE PIPES TYPE I & SIDE TAPERED INLET SECTION (TYPE III)

RD662

FHWA APPROVAL	06-27-08	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

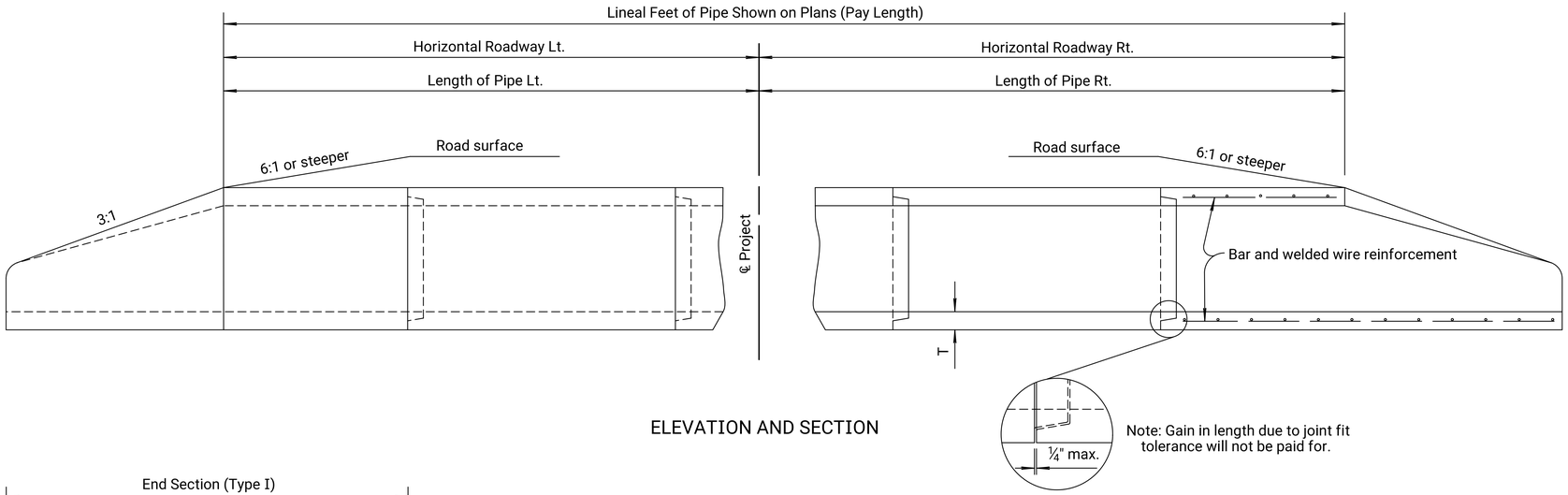
KDOT Graphics Certified 05-16-2022 Sh. No. 24

KDOT Graphics Certified

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

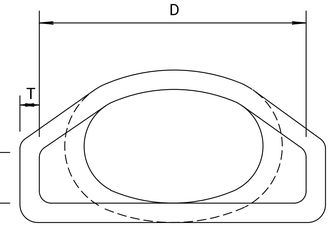
Plotted by : August.Zuno@ks.gov 4-JAN-2024 20:15
File : rss662.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	25	135

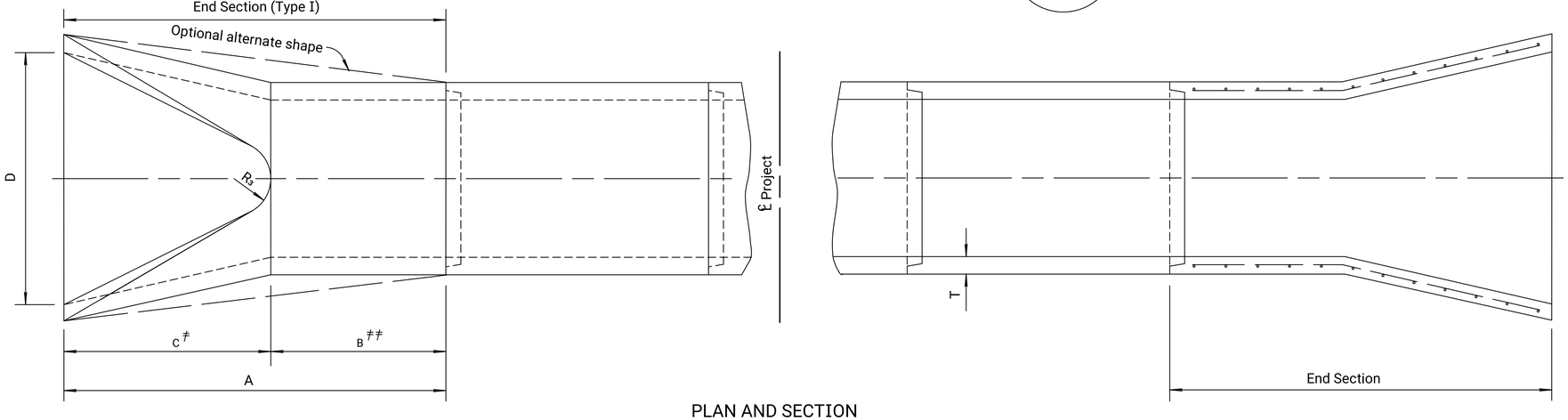


ELEVATION AND SECTION

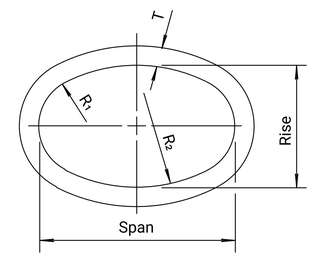
Note: Gain in length due to joint fit tolerance will not be paid for.



FLARED END SECTION ELEVATION



PLAN AND SECTION



END ELEVATION

END SECTION (TYPE I) NOMINAL DIMENSIONS													
Bid Designation Sq. Ft.	Equiv. Dia. (in.)	Min. W.W. Area Sq. Ft.	Span	Rise	Overall Length A	Barrel Length B ≠≠	C ≠	D	E	R_1	R_2	R_3	T
1.0 or 1.5	18"	1.8	23"	14"	6'-0"	3'-9"	2'-3"	3'-0"	8"	6"	20"	6"	2¾"
2.0, 2.5 or 3.0	24"	3.3	30"	19"	6'-0"	2'-9"	3'-3"	4'-0"	8½"	8¼"	26¼"	7"	3¼"
4.0	27"	4.1	34"	22"	6'-0"	2'-2"	3'-10"	4'-6"	9"	9¼"	29 17/32"	8"	3½"
5.0	30"	5.1	38"	24"	6'-0"	1'-6"	4'-6"	5'-0"	9½"	10¼"	32¾"	9"	3¾"
6.0	33"	6.3	42"	27"	6'-0"	1'-3"	4'-9"	5'-6"	10⅜"	11 7/16"	36 3/16"	10½"	3¾"
7.0	36"	7.4	45"	29"	8'-0"	3'-0"	5'-0"	6'-0"	11¼"	12¼"	39¼"	12"	4½"
8.5	39"	8.8	49"	32"	8'-0"	3'-0"	5'-0"	6'-3"	12"	13 3/16"	42 21/32"	12½"	4¾"
10.0	42"	10.2	53"	34"	8'-0"	3'-0"	5'-0"	6'-6"	15¾"	14¾"	46"	13"	5"
11.0 or 12.5	48"	12.9	60"	38"	8'-0"	3'-0"	5'-0"	7'-0"	21"	16½"	51¾"	14"	5½"
14.0 or 16.5	54"	16.6	68"	43"	8'-0"	3'-0"	5'-0"	7'-6"	25½"	18 21/32"	58 13/32"	16"	6"

≠ Paid for as separate item of "End Sections".

≠≠ Included in pay length of pipe.

Design of end section shall conform to standard reinforced concrete horizontal elliptical pipe. Slight variations in the dimensions specified will be allowed.

Note: Reinforced concrete pipe extensions are based on the surveyed end of pipe. Replacement of any additional pipe length required due to the removal of the existing end section will not be paid for directly, but will be subsidiary to the bid item "Removal of Existing Structures".

NO.	DATE	REVISIONS	BY	APP'D
04	05-17-13	Added Note, Pipe Extenstions Subsidiary	S.W.K.	J.O.B.
03	04-18-08	Added ref. to KDOT Pipe Policy	S.W.K.	J.O.B.
02	04-06-05	Revised reinforcement callout	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE END SECTION FOR REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE TYPE I

RD663

FHWA APPROVAL	09-04-14	APP'D.	Jame O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-16-2022 Sh. No. 25

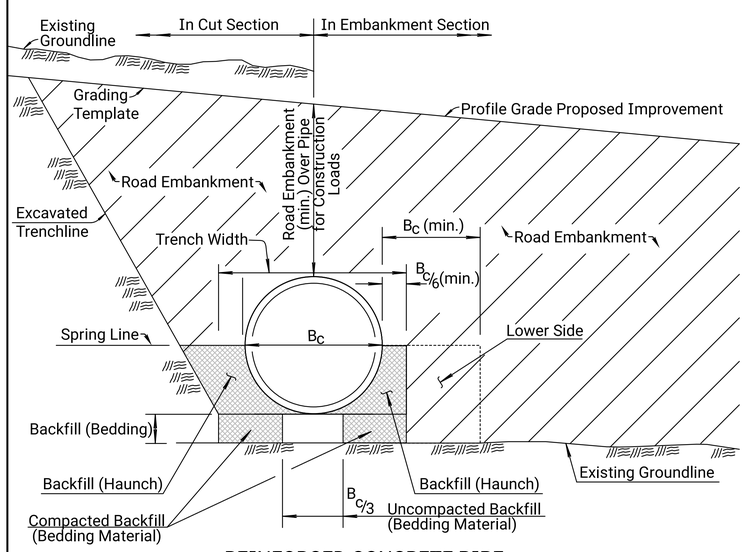
KDOT Graphics Certified

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

Plotted by : August.Zuno@ks.gov 04-JAN-2024 20:15
File : rd663.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	26	135

REINFORCED CONCRETE PIPE



Backfill (Bedding) Thickness: When over soil, use $B_C/_{24"}$ (min. of 4" & max of 24") of PB-2 or PB-3.
When over rock, excavate $B_C/_{12"}$ (min. of 6") below the bottom of the pipe and replace with PB-3.

Backfill Material: See KDOT's Standard Specifications, Aggregates for Backfill in Division 1100.

Compacted Backfill Material: Use Type B compaction in the haunch areas shown above. Use Type A compaction Backfill (Bedding), unless otherwise specified in the Contract Documents.

Road Embankment: For compaction See KDOT Road Standard Drawing, Foundation Treatment & Compaction of Earthwork.

Trench Width: The minimum required trench width is the greater of:
$1.33 \times B_C$ or $B_C + 24"$

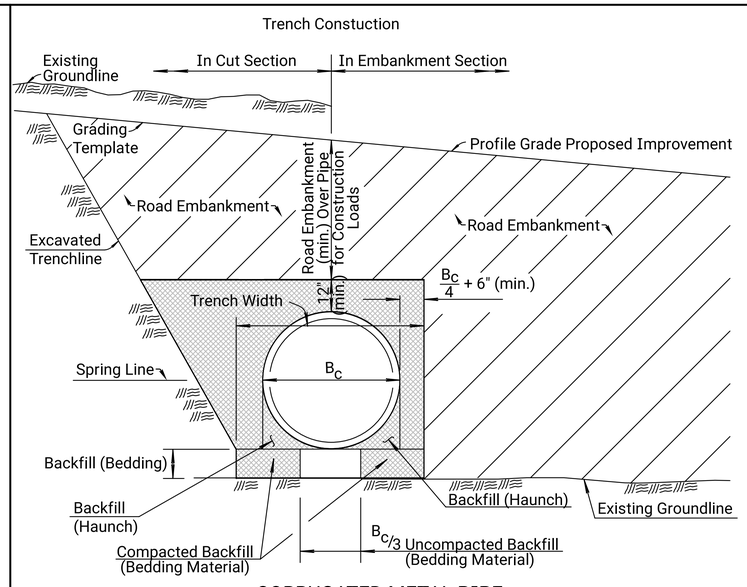
B_C: Outside Pipe Diameter

Minimum Road Embankment for Construction Loads				
Pipe Dia. (Inside Diameter)	Axle Load (Tons)			
	<25	25-37.5	37.5-55	55-75
≤ 15"	2'-0"	3'-0"	4'-6"	6'-0"
18"	2'-0"	3'-0"	4'-0"	6'-0"
21" - 24"	1'-6"	2'-6"	4'-0"	6'-0"
27"	1'-6"	2'-6"	4'-0"	5'-6"
30"	1'-0"	2'-6"	4'-0"	5'-6"
33"	1'-0"	2'-0"	4'-0"	5'-6"
36"	1'-0"	1'-6"	4'-0"	5'-6"
42"	1'-0"	1'-6"	3'-6"	5'-6"
48" - 54"	1'-0"	1'-6"	2'-6"	5'-6"
60" - 66"	1'-0"	2'-0"	2'-6"	5'-6"

Minimum Road Embankment for Construction Loads				
Pipe Dia. (Inside Diameter)	Axle Load (Tons)			
	<25	25-37.5	37.5-55	55-75
72"	1'-0"	2'-0"	3'-6"	4'-0"
66" - 84"	1'-0"	2'-0"	3'-0"	4'-0"
90"	1'-0"	2'-0"	3'-6"	4'-6"
96"	1'-0"	2'-6"	3'-6"	4'-6"
102"	0'-6"	2'-6"	3'-6"	5'-0"
108"	0'-6"	2'-0"	3'-6"	5'-0"
114"	0'-6"	2'-0"	4'-0"	5'-0"
120" - 132"	0'-6"	2'-0"	4'-0"	5'-6"
144"	1'-0"	2'-6"	4'-6"	5'-6"

Minimum Road Embankment height should be no less than the value in the provided table or the manufacturer's specification.

CORRUGATED METAL PIPE



Backfill (Bedding) Thickness: When over soil, use ½ in./ft. of fill over pipe (min. of 4" & max. of 24") of PB-2 or PB-3.
When over rock, excavate 6" below the bottom of the pipe and replace with PB-2 or PB-3.

Backfill Material: See KDOT's Standard Specifications, Aggregates for Backfill in Division 1100.

Compacted Backfill Material: See KDOT's Standard Specifications and Pipe Manufacturer's Installation Guidelines.

Compaction: Use Type B compaction in the haunch areas shown above. Use Type A compaction Backfill (Bedding), unless otherwise specified in the Contract Documents.

Road Embankment: For compaction See KDOT Road Standard Drawing, Foundation Treatment & Compaction of Earthwork

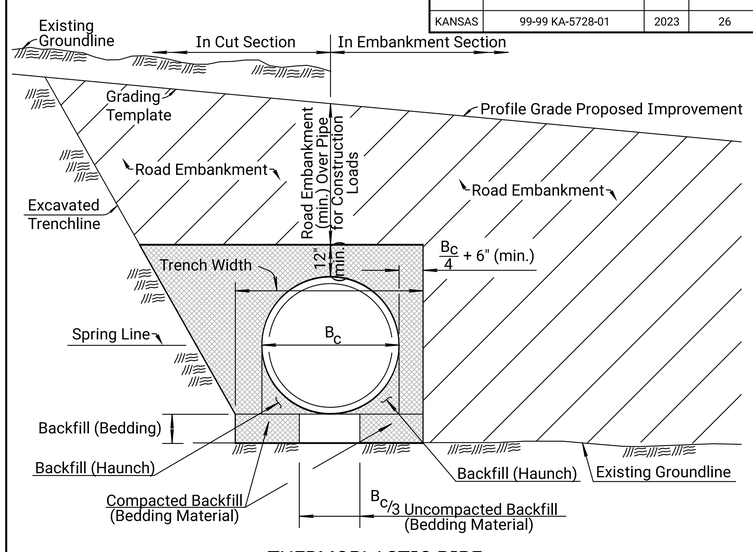
Trench Width: The minimum required trench width is the greater of:
$1.50 \times B_C + 12"$ or $B_C + 16"$

B_C: Outside Pipe Diameter

Corrugated Metal pipe: Minimum Road Embankment for Construction Loads				
Pipe Dia. (Inside Diameter)	Axle Load (Tons)			
	<25	25-37.5	37.5-55	55-75
< 42"	2'-0"	2'-6"	3'-0"	3'-0"
48" - 72"	3'-0"	3'-0"	3'-6"	4'-0"
78" - 120"	3'-0"	3'-6"	4'-0"	4'-0"
126" - 144"	3'-6"	4'-0"	4'-4"	4'-4"

Minimum Road Embankment height should be no less than the value in the provided table or the manufacturer's specification.

THERMOPLASTIC PIPE



Backfill (Bedding) Thickness: When over soil, use ½ in./ft. of fill over pipe (min. of 4" & max. of 24") of PB-2 or PB-3.
When over rock, excavate 6" below the bottom of the pipe and replace with PB-2 or PB-3.

Backfill Material: See KDOT's Standard Specifications, Aggregates for Backfill in Division 1100.

Compacted Backfill Material: Use Type B compaction.

Compaction: Hand-held or walk behind compaction equipment is permitted when compacting fill directly above the pipe only when the fill over the pipe is greater than or equal to 12". The use of ride-on compaction equipment is permitted for compacting fill directly above the pipe only when the fill over the pipe is greater than or equal to 36". A prime goal of pipe installation is to manipulate and compact embedment material under the pipe haunches, to achieve full contact of the material with the pipe bottom and fill voids under the pipe.

Road Embankment: For compaction See KDOT Road Standard Drawing, Foundation Treatment & Compaction of Earthwork.

Trench Width: The minimum required trench width is $1.50 \times B_C + 12"$
The maximum trench width is $1.575 \times B_C + 12\frac{1}{2}"$

B_C: Outside Pipe Diameter

Thermoplastic Pipe: Minimum Road Embankment for Construction Loads				
Pipe Dia. (Inside Diameter)	Axle Load (Tons)			
	<25	25-37.5	37.5-55	55-75
< 36"	2'-0"	2'-6"	3'-0"	3'-0"
42" - 48"	3'-0"	3'-0"	3'-6"	4'-0"
54" - 60"	3'-0"	3'-0"	3'-6"	4'-0"

Minimum Road Embankment height should be no less than the value in the provided table or the manufacturer's specification.

GENERAL NOTES

Do not drop, drag or otherwise handle pipe sections in a manner which may cause damage. Inspect the line and grade before and during placement of compacted backfill and uncompacted backfill materials.

For trench installations place pipe in the center of the excavated trench.

When installing pipe, place the uncompacted backfill and compacted backfill material in the bedding area to grade, install pipe to grade, place and compact the haunch area up to the spring line of the pipe and complete the backfill as specified in KDOT's Standard Specifications unless otherwise noted in the contract documents.

B_C for horizontal elliptical pipe, vertical elliptical pipe, arch pipe, and non bridge-sized concrete box structures will be measured along the horizontal axis; similar to the dimension shown for circular pipe on this sheet.

The spring line is a line along the side of the culvert where the tangent to the culvert wall is vertical. It occurs at the widest point in the culvert.

Material used for the roadway embankment may be used in lieu of compacted backfill material as approved by the Engineer.

The backfill load transmitted to the pipe is directly dependent on the trench width. Where maximum trench widths are not indicated in any of the contract documents, trench widths should be as a narrow as possible with side clearance adequate enough to ensure proper compaction of backfill material at the sides of the pipe. The trench width formulas provided can be used as a general guide.

NO.	DATE	REVISIONS	BY	APP'D
01	05-09-22	Initial Release	A.L.R.	T.T.R.

KANSAS DEPARTMENT OF TRANSPORTATION

PIPE INSTALLATION DETAILS

RD658

FHWA APPROVAL	06-08-22	APP'D.	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-10-2022 Sh. No. 26

KDOT Graphics Certified

Plotted by : August.Zuno@ks.gov 4-JAN-2024 20:16
File : rss658.dgn

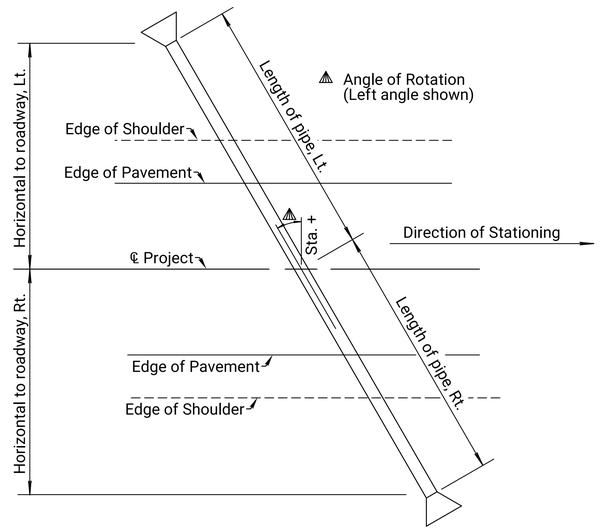
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	27	135

PIPE CULVERT SUMMARY

Station	Type	Size or Bid Designation Sq. Ft.	Crown Grade Elev.	Flow Line Lt.	Flow Line Rt.	Floor Elev. Lt.	Floor Elev. Rt.	Horizontal Roadway Lt.	Horizontal Roadway Rt.	Degree of Rotation	Length of Pipe Lt.	Length of Pipe Rt.	Lin. Ft. of Pipe	Height of Fill (max.) Ft.	Concrete Pipe AASHTO Class No.	Pipe Gauge ◔ Steel	Pipe Gauge ◔ Alum.	Pipe Corrugations ◔ Steel	Pipe Corrugations ◔ Alum.	Remarks
Mainline																				
7380+70	E.P.	1.5□'	1306.87	1303.80	1303.94			24	22		24	22	46	1.0	III					
Shoofly																				
81+50	E.P.	18"	1305.82	1302.81	1303.52			17	15		17	15	32	1.1						Temporary

◔ Unless otherwise noted, minimum pipe gauge & corrugations to be as shown in RD660. See Summary of Quantities for End Section information.

✳ Only include floor elevations for embedded pipes. See RD668 for details. For structures not embedded, the floor elevations may be omitted.



PLAN
(Showing Rotation about ℄)

Type	ALLOWABLE LOCATION ⚠				
	Mainline	Side Road	Entrance	Storm Sewer Under ML	Storm Sewer Not Under ML
✡PVCP					
▱ PEP					
▱ PPP					
≈ SRPE					
CSP					
ACSP			X		
CAP			X		
RCP			X		

✡ When inside diameter of pipe is 36" or less.

⚠ Unless otherwise specified in the plans. Some pipe types may not be allowed at a location if the fill height exceeds the maximum allowable or is less than the minimum allowable cover.

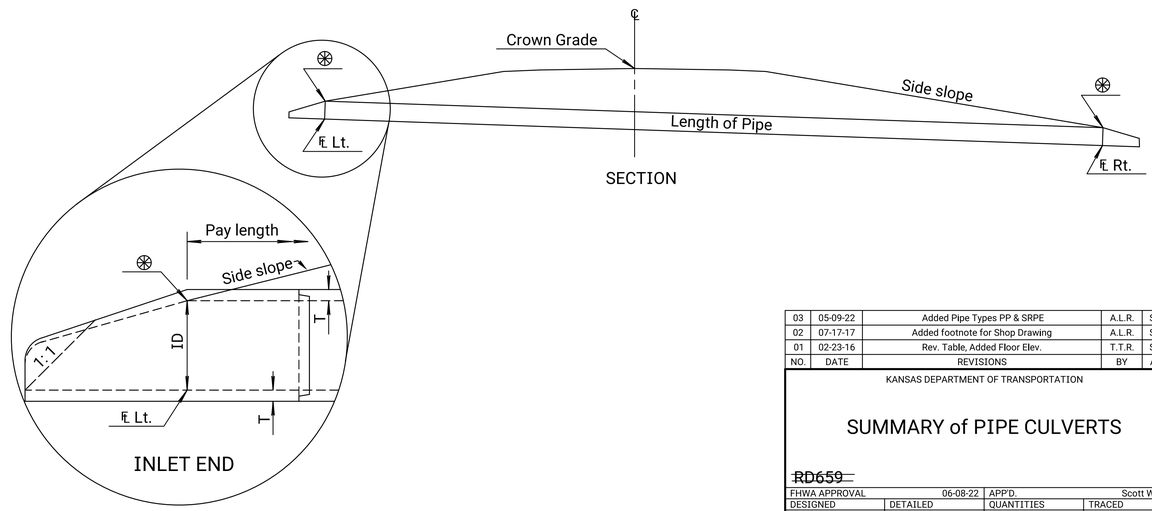
▱ When inside diameter of pipe is 60" or less.

≈ For inside diameter: ≥ 30"

Type	ALLOWABLE END SECTIONS			
	◆ CS	◆ ACS	CA	RC
PVCP				
PEP				
PPP				
SRPE				
RCP				X
ACSP CAP CSP	Provide End Sections of the same material and coating type as the pipe.			

◆ Type IV End Sections are only made of CS or ACS.

⊛ Design side slope to intersect inside diameter of pipe outside of Clear Zone.



NO.	DATE	REVISIONS	BY	APP'D
03	05-09-22	Added Pipe Types PP & SRPE	A.L.R.	S.W.K.
02	07-17-17	Added footnote for Shop Drawing	A.L.R.	S.W.K.
01	02-23-16	Rev. Table, Added Floor Elev.	T.T.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY of PIPE CULVERTS

~~RD659~~

FHWA APPROVAL	06-08-22	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 01-04-2024 Sh. No. 27

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

Plotted by: August.Zuno 5-JAN-2024 08:40
File : rss659.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	28	135

SITE DATA							HYDROLOGY				HYDRAULICS	
DRAINAGE STRUCTURE NUMBER	LOCATION STATION	DRAINAGE AREA NUMBER	DRAINAGE AREA ACREAGE	RECURRENCE INTERVAL YEARS	A. H. W. ELEVATION FEET	REMARKS	METHOD	DATA	Q_{cfs}	REMARKS	H. W. ELEVATION FEET	REMARKS
	7384+11.04		90	25	1306.90	Existing 6.0' x 4.0' x 31.75' RCB	Rational	Tc=5 min. C=0.51 I25=10.16	467.2		1307.76	0.86' above AHW - District Records Show No Overtopping on Mainline

NO.	DATE	REVISIONS	BY	APP'D
02	10-08-90	Detailed on CADD, no change	R.J.S.	J.O.B.
01	05-29-80	Assigned standard number	W.L.H.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DRAINAGE DATA SHEET

RD653

FHWA APPROVAL	01-17-91	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. R.J.S.

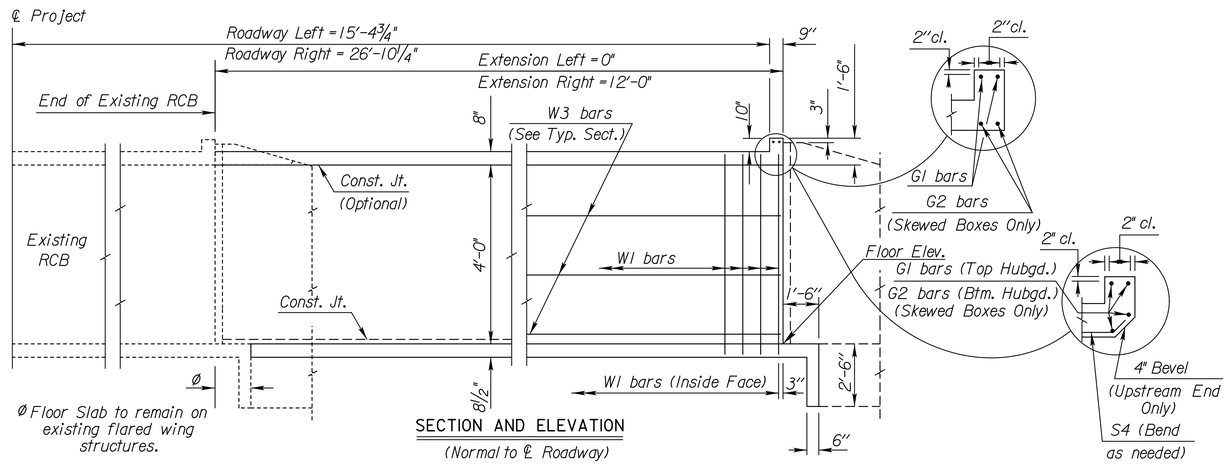
KDOT Graphics Certified 01-04-2024 Sh. No. 28

KDOT Graphics Certified

Plotted by : August.Zuno 05-JAN-2024 08:48
File : rd653.dgn

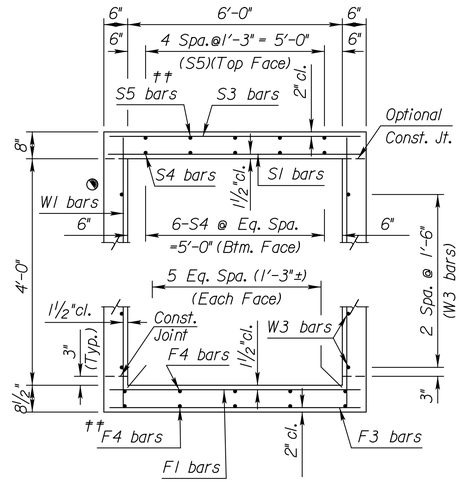
SYSTEM PART	VERSION/ID
CADD V8A	12/6/2000
DATABASE	5/4/2020
RCB PROGRAM	7.122
KBOX MODEL ID	1351
CELL LIBRARY	2/8/2022

06

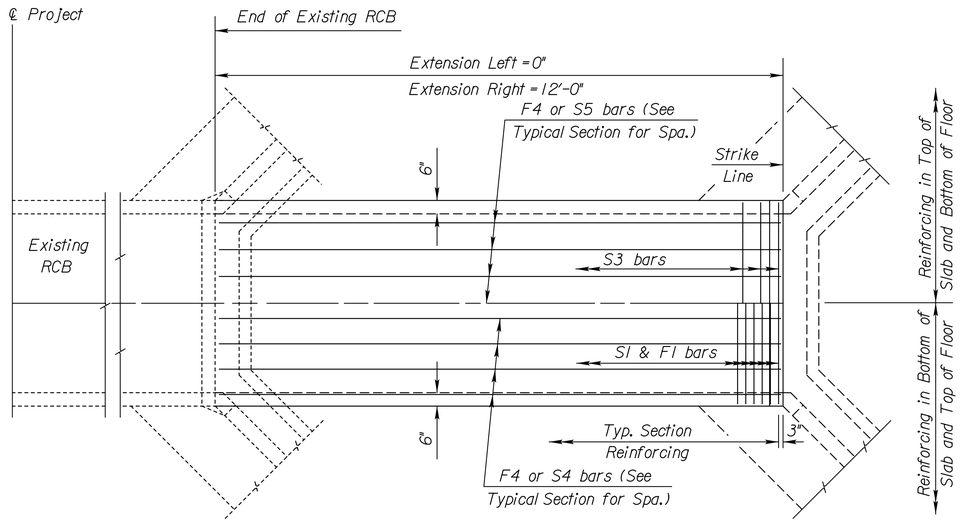


SECTION AND ELEVATION

(Normal to ℄ Roadway)



TYPICAL SECTION



PLAN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	29	135

◔ See RCB Auxiliary Details for Optional Splice.

Note:
S3 bars omitted unless grade box or slab thickness is greater than or equal to 12".

Note:
F3 bars omitted unless floor thickness is greater than or equal to 12.".

†† Omit S5 bars when S3 bars are omitted and omit the bottom layer of F4 bars when F3 bars are omitted.

See Standard No. RD 080 for additional details.

Note:
Use only cast-in-place construction at this location.

GENERAL NOTES

DESIGN SPECIFICATION: AASHTO LRFD Spec., 2007 Ed., 2009 Int.
DESIGN LOADING: HL93
UNIT STRESSES: Grade 4.0 Concrete f'c = 4,000 p.s.i.
Reinforcing Steel fy = 60,000 p.s.i.

FILL HEIGHT: Unless otherwise noted, the Design Fill Height is measured from the riding surface at the culvert and includes the surfacing.

CONCRETE: Use concrete conforming to Grade 4.0 Concrete. Bevel all exposed edges with a ¾" triangular molding. Where Grade 4.0(AE) is specified, place this concrete in the top slab above the Construction Joint.

REINFORCING: Use reinforcing steel conforming to ASTM A615, Grade 60. All dimensions relative to reinforcing steel are to the centerline of the bar unless otherwise noted.

EXCAVATION: Excavation for culverts less than bridge length shall not be paid for directly but shall be subsidiary to Grade 4.0 Concrete. Excavation for RCB bridges shall be paid for as Class III Excavation.

SEAL COURSE: The Engineer may require a seal course. The seal course shall be unreinforced Concrete(Commercial Grade) with a minimum depth of 3 inches or as determined by the Engineer. Concrete for the seal course shall be paid for at the unit price set for Concrete for Seal Course.

FOUNDATION STABILIZATION: The Foundation Stabilization quantity has been calculated to the limits shown on the "RCB Auxiliary Details" sheet. The depth may be increased by the Engineer. The Contractor may underrun Foundation Stabilization under the barrel if founded on firm material and with the Engineer's approval. Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.

QUANTITIES: The quantities shown in the Culvert Summary include apron and/or soil saver quantities when they are required by the plans. Payment for additional quantities that result from including a seal course and/or a floating apron, as a change in the original plans, shall be made at the unit price bid for the various items involved.

GRANULAR BACKFILL (WINGWALLS):
See the "Auxiliary Details" sheet.

STRIKE LINE: Construct the wingwalls and that portion of the RCB outside the Strike Line level. Construct the wingwall footings with the culvert floor. See the wingwall detail sheets.

BRIDGE BACKWALL PROTECTION SYSTEM: For structures with this bid item in the Summary of Quantities. See the "Auxiliary Details" sheet.

⧗ For design purposes ONLY. Do NOT use for Construction

CULVERT SUMMARY

◔ includes any welded wire fabric

	Floor Elev.	Crown Gr. Elev.	⧗Design Fill Ht.	Skew	Wings	Scour Apron	Soil Saver	Concrete Barrel (Cu.Yds.)	Concrete Wings (Cu.Yds.)	Concrete Total (Cu.Yds.)	Reinf. Steel (Gr. 60) Barrel (Lbs.)	◔Wings (Lbs.)	Total (Lbs.)	LRFR RATING FACTORS HL-93 Loading Inventory	Operating
Ext.Lt.	1301.44	1308.40	2	0	None	Yes	No	0.00	0.00	0.00	0	0	0	1.16	1.50
Ext.Rt.	1301.13				Flared			6.22	6.38	12.60	748	677	1425		

△ Epoxy Coated Bars

BAR SCHEDULE

	△F1 Size	Spa.	No.	Length		△F3 Size	Spa.	No.	Length	△F4 Size	No.	Length	△S1 Size	Spa.	No.	Length		△S3 Size	Spa.	No.	Length	△S4 Size	No.	Length	△S5 Size	No.	Length
Ext.Lt.	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ext.Rt.	6	7"	23	6'-8"		N/A	N/A	N/A	N/A	4	6	11'-8"	6	7"	23	6'-8"		N/A	N/A	N/A	6'-8"	5	6	11'-8"	4	N/A	11'-8"

	△K1 Size	Spa.	No.	Length	△K2 Size	Spa.	No.	Length	△W1 Size	Spa.	No.	Length	△ Size	Spa.	No.	Length	△W3 Size	No.	Length	△ Size	Spa.	No.	Length	△G1 Size	No.	Length	△G2 Size	No.	Length	Size	Spa.	No.	Length
Ext.Lt.	N/A	N/A	N/A		N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Ext.Rt.	N/A	N/A	N/A		N/A	N/A	N/A		4	9"	32	5'-0"	N/A	N/A	N/A	N/A	4	6	11'-8"	N/A	N/A	N/A	N/A	5	2	6'-8"	N/A	N/A	N/A				

Minimum Splice Lengths	
#4	1'-5"
#5	1'-9"

SUMMARY OF QUANTITIES

Concrete (Grade 4.0)	10.4 C.Y.
Concrete (Grade 4.0)(AE)	2.2 C.Y.
Bridge Backwall Protection System	11 S.Y.
Reinforcing Steel (Gr. 60)	680 Lbs.
Reinforcing Steel (Gr. 60)(Epoxy Coated)	750 Lbs.
Class III Excavation	C.Y.
Foundation Stabilization	6 C.Y.
Concrete for Seal Course (Set)	1 C.Y.
Granular Backfill (Wingwalls)	12 C.Y.

NO.	DATE	REVISIONS	BY	APP'D
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Sta. 7384+11.04

SINGLE 6 ft x 4 ft RCB
12.0 ft EXT. RT.

BR 1.6.4 P Wabaunsee Co.

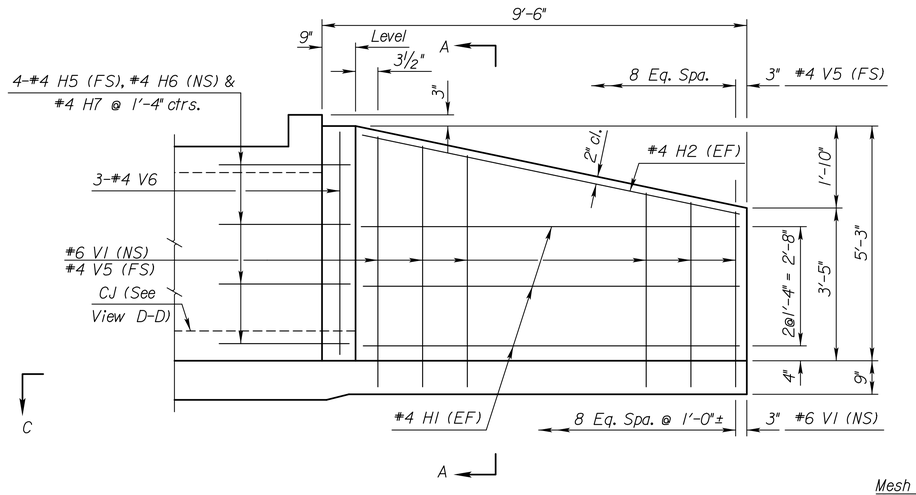
FHWA APPROVAL	10-20-10	APP'D	Terry L. Fleck
DESIGNED	DETAILED	QUANTITIES	CADD
DESIGN CK.	DETAIL CK.	QUAN. CK.	CADD CK.

KDOT Graphics Certified

KDOT Graphics Certified 01-04-2024 Sh. No. 29

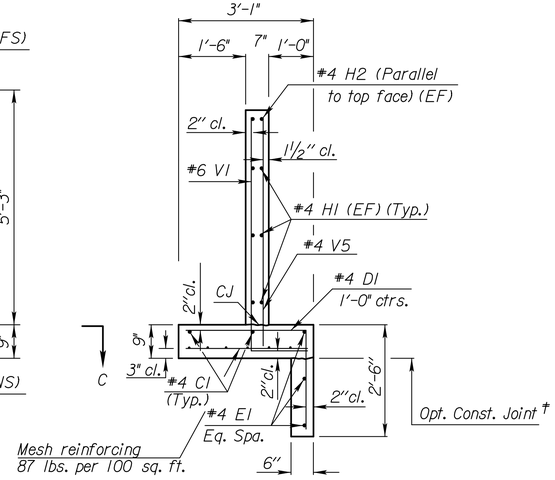
Plotted By: August.Zuno Plot Location: Road
File: KA-5728-01 RCB(BoxIA2.dgn
Plot Date: 5-JAN-2024 10:20

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	30	135



ELEVATION OF WINGWALL

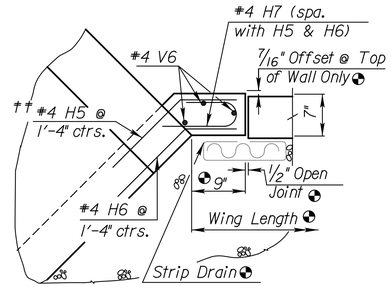
(Backface Shown)



SECTION A-A

See "RCB Aux. Details" sheet for additional requirements.

Typical both wings



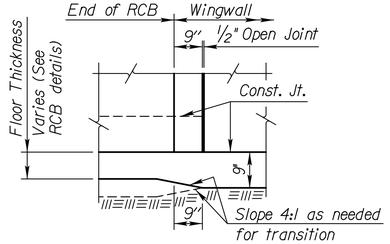
WINGWALL JOINT DETAIL

(Plan View)

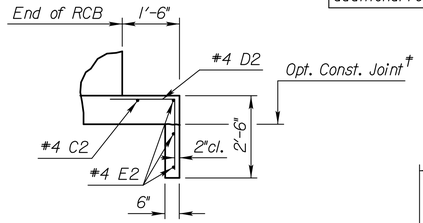
† NOTE: Const. Jt. may be used at Contractor's option when approved by the Engineer. D1 bars or mesh may be spliced thus: ⌐¬ Minimum overlap shall be 1'-3". No increase in quantities or cost shall be allowed when Contractor elects this option.

GENERAL NOTES

DESIGN SPECIFICATION: AASHTO LRFD Spec., 2007 Ed., 2009 Int.
DESIGN LOADING: HL93
UNIT STRESSES: Grade 4.0 Concrete; f'c = 4,000 p.s.i.
Reinforcing Steel; fy = 60,000 p.s.i.
CONCRETE: Grade 4.0 Concrete shall be used throughout. Bevel all exposed edges with a ¾" triangular moulding.
REINFORCING: All reinforcing shall conform to ASTM A615, Grade 60. Welded Wire Reinforcement shall conform to ASTM A185. All dimensions relative to reinforcing steel shall be to centerline of bar unless otherwise noted. Welded Wire Reinforcement shall be classified as pounds of reinforcing and included in the total quantity for the bid item Reinforcing Steel (Gr. 60).
QUANTITIES: Wingwall Quantities include all quantities outside the neat lines of the box, excluding the hubguard.
APRON: A 5" concrete slab shall be constructed between the downstream wings in locations subject to scour only when specified on the plans or by the Engineer.
BACKFILL MATERIAL: Use Granular Backfill material meeting the requirements of SB-1, SB-2, SCA-1, SCA-2.
Backfill all wings to limits shown on the "RCB Auxiliary Sheet".
FILTER FABRIC: Separate in-situ material from granular backfill with approved filter fabric complying with Section 1710.
Filter Fabric is subsidiary to "Granular Backfill".
FOUNDATION STABILIZATION: Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.

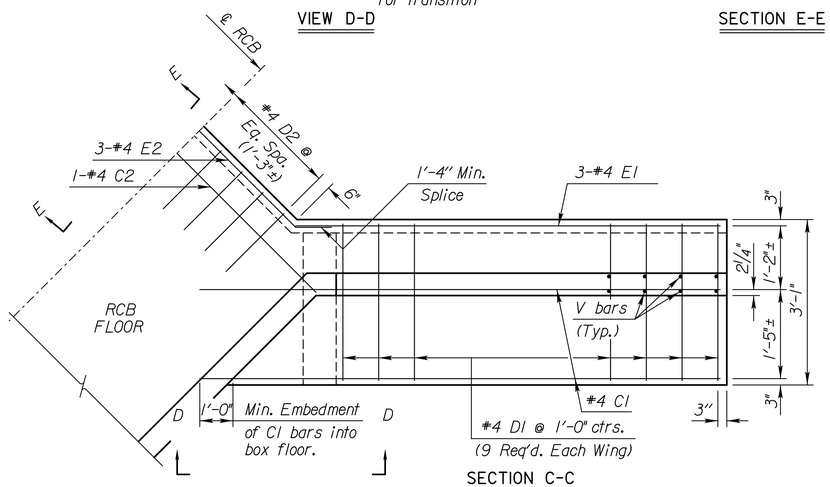


VIEW D-D

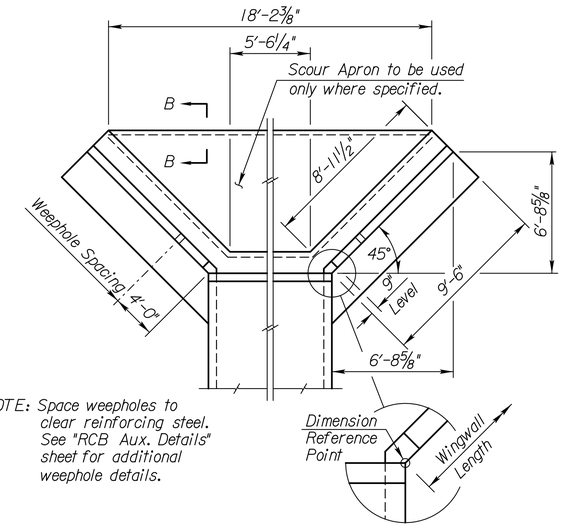


SECTION E-E

NOTE:
EF = Each Face
NS = Near Side
FS = Far Side
CJ = Const. Joint



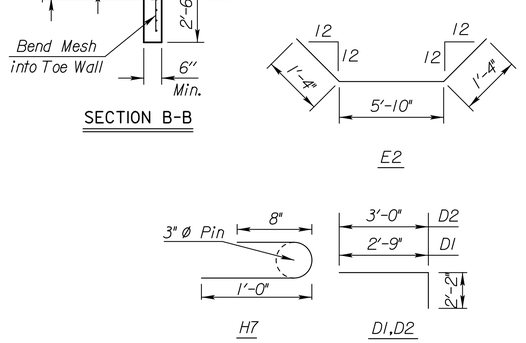
SECTION C-C



NOTE: Space weepholes to clear reinforcing steel. See "RCB Aux. Details" sheet for additional weephole details.

WING DIMENSIONS FOR NORMAL BOX

(3½:1 Embankment Slope)



BENDING DIAGRAM

(All dimensions are out to out of bars.)

†† Bend in Field

NOTE: Reinforcing Bar List is for both wings at one end of box only.

✳ See Bending Diagram

		#4C1	#4D1	#4E1	#4C2	#4D2	#4E2	#6V1	#4H1	#4H2	#4H5	#4H6	#4H7	#4V5	#4V6
0° Skew	No.	4	18✳	6	1	5 ✳	3 ✳	18	12	4	8 ✳	8✳	8✳	18	6
	Length	11'-7"	4'-11"	8'-9"	6'-8"	5'-2"	8'-6"	✳	8'-4"	8'-6"	1'-10"	2'-1"	1'-9"	✳	5'-0"

Quantities listed below are included in the Summary of Quantities shown on the RCB details.

WINGWALL QUANTITIES (One End Only)				
	Foundation Stabilization		Concrete (Gr. 4.0)	
Wingwalls	1.80	(C.Y.)	4.54	(C.Y.)
Apron	1.23	(C.Y.)	1.84	(C.Y.)
Soil Saver	0.00	(C.Y.)	0.00	(C.Y.)
Reinforcing Steel (Gr. 60)			521	Lbs.
Welded Wire Fabric (Wings)			51	Lbs.
Welded Wire Fabric (Apron)			105	Lbs.
Granular Backfill (Wingwalls)			12.00	C.Y.
Filter Fabric (subsidiary)			18.00	S.Y.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Sta. 7384+11.04

FLARED WINGWALLS
4 ft Rise (0*SKEW)

BR 10.00.04 Wabaunsee Co.

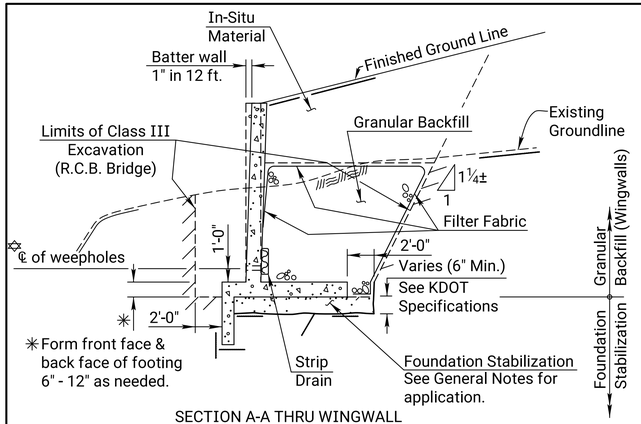
FHWA APPROVAL		10-20-10	APP'D	Terry L. Fleck
DESIGNED	DETAILED		QUANTITIES	CADD
DESIGN CK.	DETAIL CK.		QUAN. CK.	CADD CK.

KDOT Graphics Certified 01-04-2024 Sh. No. 30

KDOT Graphics Certified

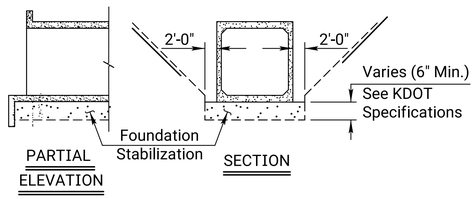
Plotted By: August Zuno Plot Location: Road
File: KA-5728-01 RCBWingJAZ.dgn
Plot Date: 8-JAN-2024 08:18

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	31	135



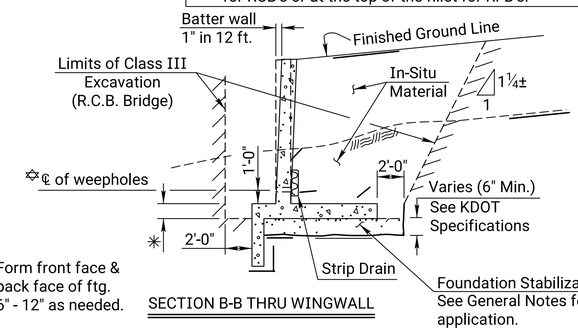
SECTION A-A THRU WINGWALL

Granular Backfill And Foundation Stabilization

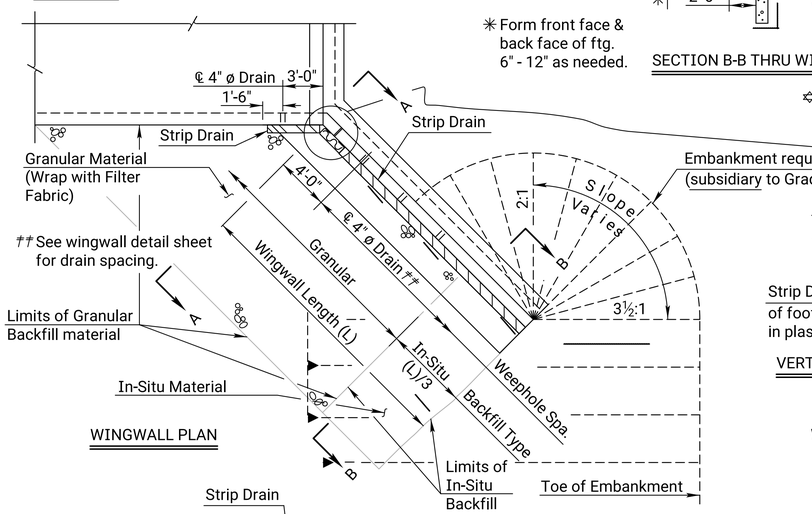


PARTIAL ELEVATION

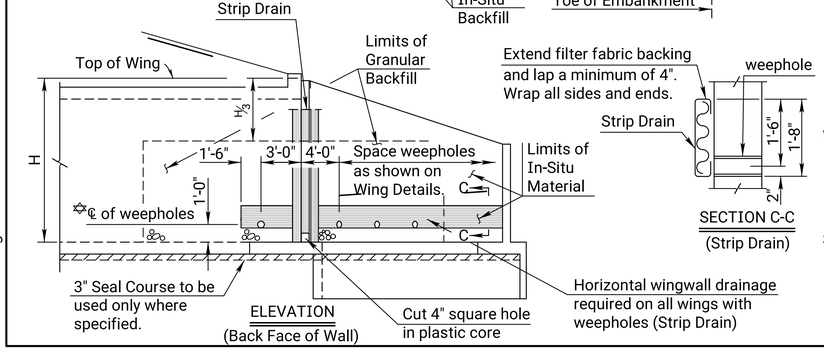
SECTION



SECTION B-B THRU WINGWALL

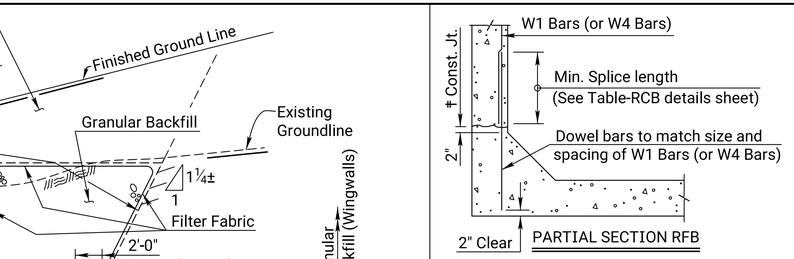


WINGWALL PLAN



ELEVATION

(Back Face of Wall)



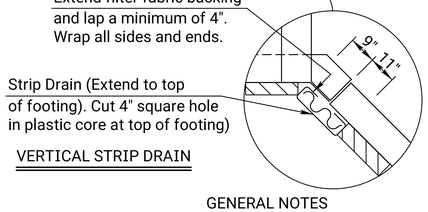
OPTIONAL BAR DETAIL

The Contractor shall have the option of using Dowel Bars to match vertical wall bars as shown, however no allowance will be made for additional steel required for bar laps.

† OPTIONAL COLD JOINT

The Contractor has the option of placing the Lower Horizontal Construction Joint at the top of the slab for RCB's or at the top of the fillet for RFB's.

✳ Weep holes will be adjusted up by the amount of embeddment shown on BR025A if the structure is embedded.



VERTICAL STRIP DRAIN

SECTION C-C

(Strip Drain)

GENERAL NOTES

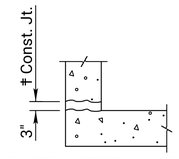
Wingwall Drainage:

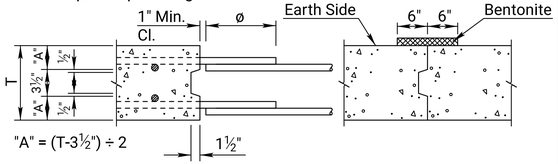
1. All wingwalls with weepholes shall have horizontal and vertical wingwall drainage as shown. Strip drains will be used. See KDOT Specifications for "Abutment Strip Drains" for strip drain requirements.
2. Construction and materials for wingwall drainage, including weepholes, and strip drain shall be subsidiary to the bid item, "Grade 4.0 Concrete". Weepholes may be a formed opening or corrugated polyethylene tubing.

Wingwall Foundation Stabilization:
The Foundation Stabilization quantity has been calculated to the limits shown in the Section Thru Wingwall. The depth may be increased by the Engineer. Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.

Seal Course:
Seal Course consisting of 3" min. of Commercial Grade Concrete shall be constructed to the limits directed by the Engineer. No reinforcing in the floor of the slab or wall footing shall be placed until the Seal Course has gained sufficient strength to permit working upon it without injury.

ø Longitudinal bars shall extend through the joint to provide a minimum lap equal to the required splice length. See RCB Details sheet for required splice length.

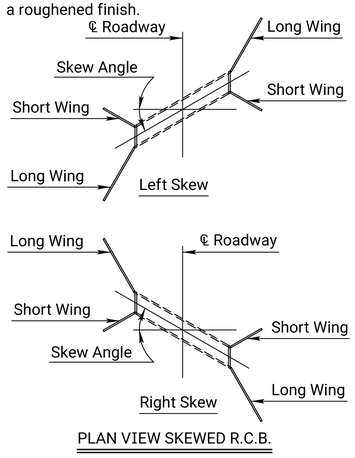




VERTICAL CONSTRUCTION JOINTS

NOTE: Vertical construction joints shall be perpendicular to the longitudinal axis of the RCB and shall be placed at any location as needed for construction and as approved by the Engineer.

NOTE: Horizontal construction joints shall be a roughened finish.



PLAN VIEW SKEWED R.C.B.

NOTE: Barrel Construction Joints located in a median with less than 5 ft. of fill or at locations specified by the Engineer, shall be protected by a bentonite based system as shown. Place the bentonite on the exterior walls and top slab. See requirements for bentonite in the KDOT Specifications for "Bridge Backwall Protection System". Material and installation of the bentonite system shall be subsidiary to the bid item "Grade 4.0 Concrete".

GENERAL NOTES

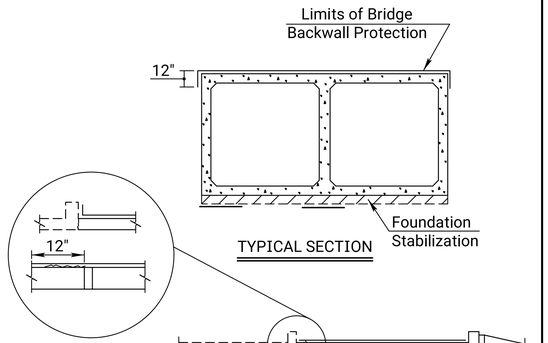
Foundation Stabilization:
The depth of Foundation Stabilization may be increased by the Engineer. The Contractor may underrun Foundation Stabilization under the barrel if founded on firm material and with the Engineer's approval. Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.

Granular Backfill (Wingwalls):

1. Granular Backfill shall be used to backfill behind wingwalls to the limits shown in the WINGWALL PLAN and Elevation detail. Granular Backfill construction may be used separately or combined with Foundation Stabilization as directed by the Engineer.
2. Measurement for the bid item, "Granular Backfill (Wingwalls)", shall be measured in Cubic Yards to the theoretical limits as shown.
3. Material for Granular Backfill (Wingwalls) shall conform to the requirements of SB-1, SB-2, SCA-1 or SCA-2.
4. Consolidate Granular Backfill using hand equipment only. Avoid over consolidation.
5. Use filter fabric complying with Section 1710. Use only within the limits of Granular Backfill to separate from the In-Situ Material. Filter Fabric is subsidiary to "Granular Backfill".

In-Situ Backfill (Wingwalls):

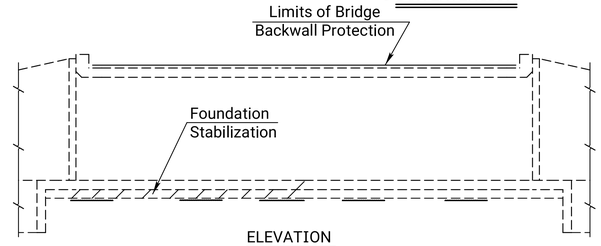
1. Use any material found within the project limits except Highly Plastic Clay(s) or organic material. The material is subsidiary to "Granular Backfill".
2. Use Type "B" Compaction.
3. Use only hand or walk behind equipment for Compaction.



TYPICAL SECTION

⊗ BOX EXTENSION

⊗ See "Typical Culvert Extension" RD080 for additional information.



ELEVATION

(New Construction)

GENERAL NOTES

Bridge Backwall Protection System:

1. For all structures with less than or equal to 2'-0" of fill, apply a "Bridge Backwall Protection System" from Section 1700 to the limits shown. Do not place hot mix asphalt directly on this material.
2. Use a "non-coal tar" material from KDOT's approved list.
3. Protect this material from damage during backfilling. Repair at no additional cost.
4. When the Plans show hot mix asphalt placed directly on the slab, substitute "Pavement Water Proofing" material from Section 800, this material shall be subsidiary. Wait 28 days after top slab is completed before applying this material.

NO.	DATE	REVISIONS	BY	APP'D
07	02-06-18	Filter Fabric Clarification	M.L.L.	J.P.J.
06	06-07-17	Filter Fabric Modification	J.P.J.	J.P.J.
05	10-11-13	Granular Backfill Limits	J.P.J.	L.R.R.

KANSAS DEPARTMENT OF TRANSPORTATION

RCB AUXILIARY DETAILS (LRFD)

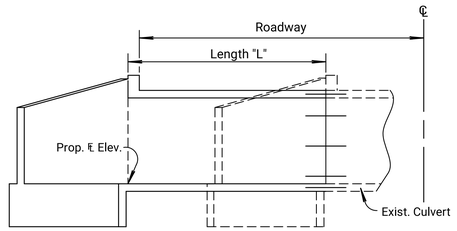
BR020B

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

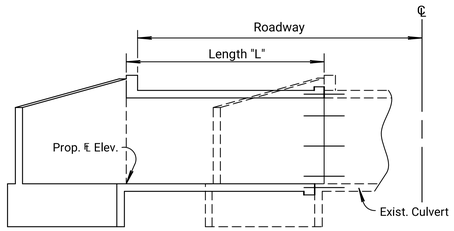
KDOT Graphics Certified 01-04-2024 Sh. No. 31

KDOT Graphics Certified

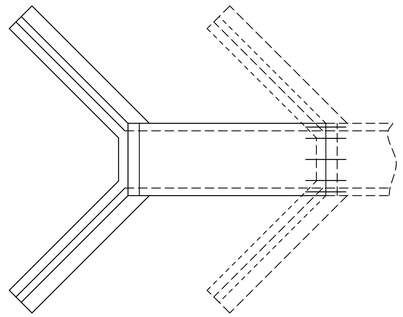
Plotted by: August.Zuno 8-JAN-2024 08:33
File: br020b.dgn



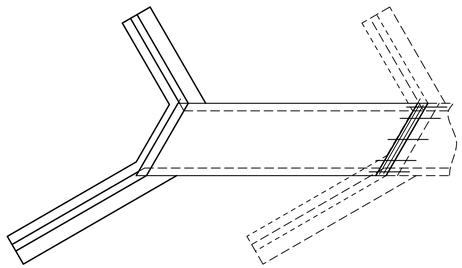
TYPICAL SECTION
(Flared Wings)



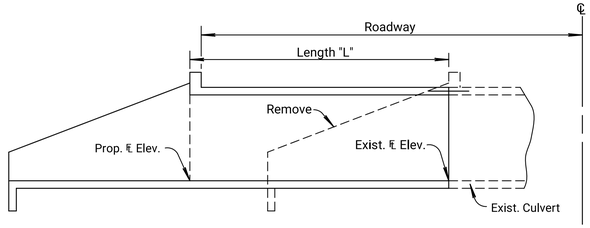
TYPICAL SECTION
(Skewed Structure)



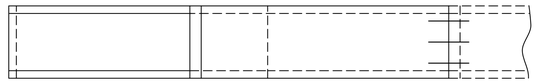
TYPICAL PLAN
(Flared Wings)



TYPICAL PLAN
(Skewed Structure)



TYPICAL SECTION
(Straight Wings)



TYPICAL PLAN
(Straight Wings)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	31.001	135

GENERAL NOTE

Dimensions of existing structures shall be checked in the field prior to starting the new construction. Interior walls of multiple box extensions need not be the same thickness as the existing walls.

All existing concrete surfaces adjacent to new concrete shall be thoroughly cleaned by brushing, and soaked with water immediately prior to placing the new concrete.

All work and material necessary for installing the dowel bars shall be subsidiary to the bid item "Reinforcing Steel".

Grouting of bars shall meet the Standard Specifications of the Kansas Department of Transportation. Locate dowel bars near the center of walls and slabs.

For non-skewed boxes "s_1" and "f_1" bars shall be placed at ½ normal spacing for the first 18".

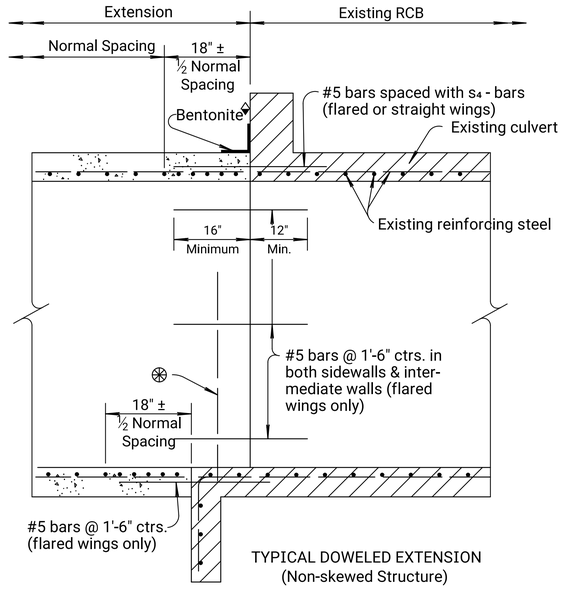
Straight Wing Extensions

Remove existing wings and wing aprons. Remove top of hubguard if necessary to clear new construction. A minimum of 24" length of the existing wing and floor steel shall be left intact and shall be cleaned and straightened to bond into the new concrete. Dowels (#5 deformed bars) shall be inserted across the top of box as shown in sketch. Butt extensions against existing culvert. This work shall be subsidiary to the bid item "Grade 4.0 Concrete".

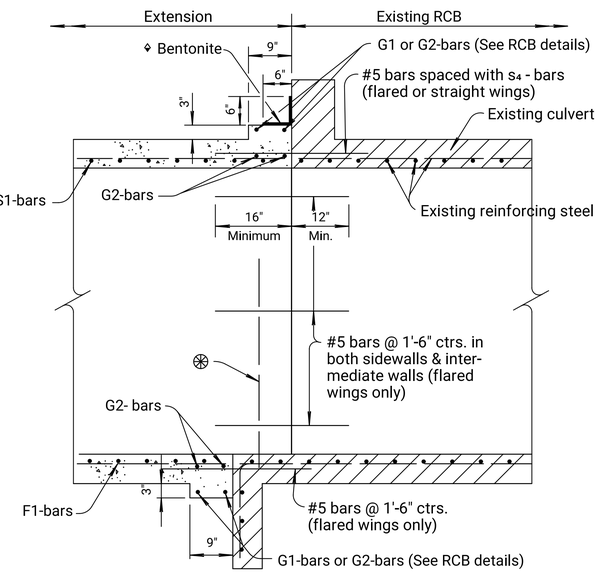
Flared Wing Extensions

Remove top of hubguard, if necessary, to clear new construction. Dowels (#5 deformed bars) shall be inserted in top, bottom, sides and intermediate walls, as shown in sketch. Butt extensions against existing culvert.

If the existing wingwall has an open vertical joint that interferes with the installation of the dowels, remove part of the wingwall to clear construction. This work shall be subsidiary to the bid item "Grade 4.0 Concrete".



TYPICAL DOWELED EXTENSION
(Non-skewed Structure)



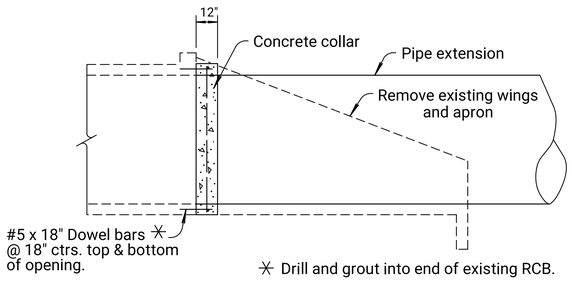
TYPICAL DOWELED EXTENSION
(Skewed Structure)

◆ NOTE: The joint between the RCB extension and the existing structure shall be protected by a bentonite based system as shown when the following conditions exist:

1. Fill depth over the joint is 2 feet or less.
2. Lateral location of the joint is 20 feet or less from edge of pavement.
3. RCB span is equal to or greater than 8 feet.

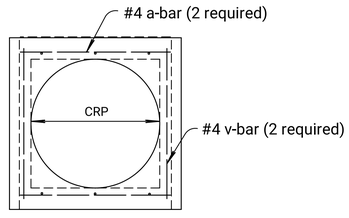
The bentonite shall be placed on the exterior walls and top slab and shall conform with the requirements of the Special Provision for "Bridge Backwall Protection System". All materials and labor required for this work shall be Subsidiary to the bid item "Grade 4.0 Concrete".

⊛ If the existing footings are left in place, dowel any vertical reinforcing steel located in the new walls into the existing footing. For rigid frame boxes, this may require additional #5 dowel bars to splice to the exterior vertical bars in the wall.

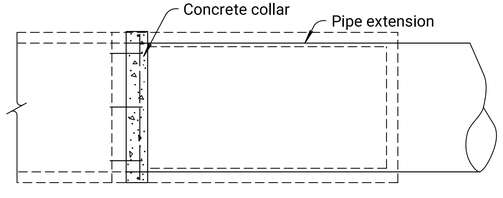


✳ Drill and grout into end of existing RCB.

SIDE VIEW



END VIEW



TOP VIEW

CONSTRUCTION OF COLLAR

NOTE: All Labor, Equipment, Materials, and Incidentals necessary to complete the concrete collar shall not be paid for directly but shall be considered Subsidiary to the individual pipe bid item.

Station	Size Exist. R.C.B.	Size C.R.P. Extension	Ext. Length		End Section	
			Lt.	Rt.	Lt.	Rt.

Quantities on this sheet are included in Summary of Quantities, Sh. No. 62

Station	Size Exist. R.C.B.	Roadway		Length "L"		Conc. (Grade 4.0) Cu. Yds.	Conc. (Grade 4.0) (AE) Cu. Yds.	Reinf. Steel (Gr. 60) Lbs.	Reinf. Steel (Gr. 60) (Epoxy Coated) Lbs.	Foundation Stabilization Cu. Yds.	Remarks
		Lt.	Rt.	Lt.	Rt.						
7384+11.04	6' x 4'	15'-4⅜"	26'-10¼"	0'-0"	12'-0"	10.4	2.2	680	750	6	
TOTAL						10.4	2.2	680	750	6	

NO.	DATE	REVISIONS	BY	APP'D
08	05-04-05	Class to Grade Conc., notes & details	S.W.K.	J.O.B.
07	04-18-01	Revised General Note	R.J.S.	J.O.B.
06	12-05-00	Rev. General Note flared wing ext.	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL CULVERT EXTENSIONS

RD080

FHWA APPROVAL		06-10-05	APP'D.	James O. Brewer
DESIGNED	DETAILED		QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK.

KDOT Graphics Certified 01-18-2024

Sh. No. 31.001

KDOT Graphics Certified

Plotted by : August.Zuno 18-JAN-2024 10:15
File : rd080.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	32	135

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.	*Piles (Steel) (HP12x53) Lin. Ft.	Drilled Shaft (48") (Cased) Lin. Ft.	Sonic Test (Drilled Shaft) (Set Price) Each	Core Hole (Investigative) Lin. Ft.	Bridge Backwall Prot. System Sq. Yds.	Abutment Strip Drain Sq. Yds.	Slope Protection (Riprap Stone) Cu. Yds.	Bridge Deck Grooving Sq. Yds.
Abutment No. 1	59	-	**	-	**	-	155	-	-	-	23	20	449	-
Pier No. 1	11	-	**	7.5	-	1510	-	64	-	55	-	-	-	-
Pier No. 2	8	3	**	7.4	-	1490	-	60	-	52	-	-	-	-
Abutment No. 2	59	-	**	-	**	-	130	-	-	-	23	20	453	-
Substr. Total	137	3	-	14.9	-	3000	285	124	-	107	46	40	902	-
Superstr. Total	-	-	282.4	-	68430	-	-	-	-	-	-	-	-	364
Total	137	3	282.4	14.9	68430	3000	† 285	124	1	107	46	40	902	364

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

† Summary of Piling
Abutment No. 1 5 @ 31 ft.
Abutment No. 2 5 @ 26 ft.

* NOTE: Only steel pile HP 12x53 shall be used on this project

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

EXISTING STRUCTURE: Plans of the existing structure are on file and available for inspection by qualified bidders at the: State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison St., Topeka, KS.

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 1295.50 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

BACKFILL COMPACTION: Compact backfill at the abutments.

PILING: Piles shall be driven to penetrate the Long Creek Limestone Member. 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
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.

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

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

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

BROKEN CONCRETE: Waste the broken concrete from the existing bridge on sites provided by the Contractor and approved by the Engineer.

GEOTECHNICAL REPORT: The geotechnical report and geotechnical report addendum (Dated May 2023) and the geotechnical information shown on the plans is the best information available. The report is available for inspection by qualified bidders at the State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison, Topeka, KS.

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

GENERAL NOTES

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 1100 placed to the limits shown in the plans.

DRIP LINE PROTECTION: Place a 10 foot wide mat of geotextile under the rock embankment on the berm and berm slopes and centered on the drip lines of the slab.

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

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615, Grade 60. Spiral bars may meet the requirements of either ASTM A615 (GR. 40 or 60) or AASHTO M32, and are included in the bid item "Reinforcing Steel (Gr. 60)".

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

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

COLUMN CONSTRUCTION: Cure the drilled shaft footing as required by the KDOT Specifications before beginning the column construction (placing resteel or formwork). Do not place cast in place shear bolts, coil inserts or other devices used as falsework support in the column without the approval of the Engineer. Do not remove the column formwork without the approval of the Engineer. Curing shall continue after the formwork is removed as required by the KDOT specifications.

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

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.

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 that show the additional required camber.

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

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

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

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.

INDEX TO BRIDGE DRAWINGS

Sheet No.	Drawing
32	General Notes and Quantities
33	General Notes
34	Contour Map
35	Construction Layout
36	Engineering Geology
37	Abutment Details
38	Abutment Strip Drain
39	Pier Details
40	Superstructure Details (1 of 2)
41	Superstructure Details (2 of 2)
42	Slab Elevations
43	32" Kansas Corral Rail (Without Curb)
44	Bill of Reinforcing Steel and Bending Diagrams
45	Detour Bridge Plans
	Standard
56	Bridge Excavation (LRFD)
57	Standard Pile Details
58	Supports and Spacers for Reinforcing Steel

DESIGN DATA

DESIGN SPECIFICATIONS:
Superstructure (Reinforced Concrete Haunch Slab Design):
AASHTO Specifications, 2007 Edition and latest Interim Specifications. Load and Resistance Factor Design.

Substructure:
AASHTO Specifications, 2020 (9th) Edition and latest Interim Specifications. Load and Resistance Factor Design.

DESIGN LOADING:
HL-93

Design Dead Load includes an allowance of 15 psf for a future wearing surface.

UNIT STRESSES:

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

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength I	Service I	Phi
Abutment No. 1	52	36	0.60
Abutment No. 2	52	36	0.60

LRFD DESIGN DRILLED SHAFT LOAD:

Design Loading (Tons/Shaft)	Strength I	Service I	End Bearing Phi	Side Friction Phi
Pier No. 1	270	210	0.5	0.5
Pier No. 2	270	210	0.5	0.5

TRAFFIC DATA	
AADT (2024)	750
AADT (2044)	850
DHV	11%
D	65:35
T	14%

LFD & LRFR RATING FACTORS

Truck / Rating Level	Inventory	Operating
HS-20 (36T)	1.93	3.23
Type HET (110T)	X	1.31
2002 LFD Rating, 17th Edition AASHTO		
HL-93 Loading	1.70	2.20
2020 Manual for Bridge Evaluation		

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 99-99-139.68 (113) Sta. 7375+41.16

GENERAL NOTES AND QUANTITIES
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified 01-08-2024

Plotted By: JHOVERSO | Plot Location:
File: c:\pwworking\central01\d3377674\k5728001\bbri13-01.dgn
Plot Date: 01-08-24

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	33	135

GENERAL NOTES

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

PIER BEAM CONSTRUCTION: Cure the columns as required by the KDOT Specifications before beginning the pier beam construction (placing resteel or formwork). Do not drill and grout bolts or other devices into the columns for falsework support unless approved by the Engineer. Cure the columns as required by the KDOT Specifications before beginning to place the superstructure concrete.

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

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

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

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

DRILLED SHAFTS: Construct the drilled shafts using the cased method. A permanent casing is required. All excavation, concrete, reinforcing steel, pipes for Sonic Testing, casings, labor, and incidentals necessary to complete the shaft as shown on the details and as directed by KDOT Specifications shall be included in the bid item "Drilled Shafts (48")(Cased)". Use Grade 4.0 Concrete in the drilled shaft. In no case shall the bottom of the drilled shaft be placed higher than the elevation shown unless otherwise directed by the KDOT Geologist.

Drill an Investigative Core Hole at the location(s) shown on the plans. See KDOT Specifications.

If the location of the top of the shaft is such that the casing cannot be overtopped to remove concrete impurities, provide extra casing length to over-pour the concrete in the shaft and chip back to the plan elevation of the top of the shaft.

If the permanent casing is to be corrugated metal pipe (CMP) then it will be galvanized.

SONIC TESTING: Equip all drilled shafts with piping to allow sonic testing to be done. Install pipes at locations shown on the plans. All wet pours will be tested. Also, the Engineer has the option to require sonic, non-destructive, integrity testing at any location of concern. Sonic testing shall be paid for at the unit price set for "Sonic Test" (Drilled Shaft) (Set Price). If the sonic testing indicates defective concrete in the shaft, the Engineer will measure the first sonic test for payment, and the Contractor is responsible for subsequent sonic testing of that shaft. Report test results directly to KDOT's Chief Geologist. No work will be done above the top of drilled shaft without the approval of the Chief Geologist.

INVESTIGATIVE CORE HOLES: Please contact the Topeka Regional Geology Office when the schedule for the investigative core holes have been established so that a member of the staff may be on site when the work is being performed.

BRIDGE DECK GROOVING: After the bridge deck has cured, transversely groove the deck in accordance with KDOT Specifications. For phased construction groove each completed phase before opening to traffic. Align the grooves from each adjacent phase across the bridge deck without jogs or discontinuities. For skewed bridges all grooving will be perpendicular to the centerline of the bridge.

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

ASBESTOS INFORMATION: Samples of this structure were tested to determine the amount of Asbestos Containing Materials (ACM) present in the components. The results are listed below:

Concrete (Abutment, Deck)	0%
Date of Report	01/18/2022

For any result above greater than 1%, abatement shall be performed according to KDOT Specifications. Results less than 1% require no abatement.

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 Department 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.

Plotted By: JHOVERSO | Plot Location:
File: c:\pwworking\central01\d3377674\kda57280\bbrl13-02.dgn
Plot Date: 01-08-24

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 99-99-139.68 (113) Sta. 7375+41.16

GENERAL NOTES
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified 01-05-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	34	135

P.I. Sta. 7339+07.78 = SW Cor. Sec. 16, T14S, R12E=
P.I. Sta. 165+66.60 on Proj. 99-99 K 516 Date 1928
N 476,313.797 E 8,615,481.392
1. Found 5/8" rebar (0.3' deep)
2. Found nail & wshr. NE side of pow. pole 35.3' NW
3. Conc. nail & KDOT wshr. W side utility mrkr. po. 52.2' NE
4. Conc. nail & KDOT wshr. E side of pow pole 81.0' SSW
5. In TW of K-99 Hwy.

P.I. Sta. 7365+78.29 = W1/4 Cor. Sec. 16, T14S, R12E=
Sta. 138+97.60 on Proj. 99-99 K 516 (Date 1928)
Δ=0°23'23" Lt. (No curve)
N 478,984.271 E 8,615,467.769
1. Set 1/2" x 24" rebar w/ orange KDOT cap
2. ℄ Top telephone pedestal 26.5' E
3. Line of N/S fence line 30.5' W
4. In line of fence line to E
5. In TW of K-99 Hwy.

P.O.T. Sta. 7369+30.87=Sta. 135+41.60 on
Proj. 99-99 K 516 (Date 1928)
N 479,336.827 E 8,615,463.572
1. Set 1/2" x 12" rebar (0.3' deep)
2. Conc. nail & KDOT wshr. W face gate po. 28.7' W
3. Spk. & KDOT wshr. top metal "T" po. 32.5' E
4. Field entrance to west 11.5' S
5. TW of K-99 Highway 3.0' E

P.O.T. Sta. 7385+97.44
N 481,003.279 E 8,615,443.733
1. Set 1/2" x 12" rebar (0.3' deep)
2. ℄Top N end CMP 49.9' SSE
3. Conc. & KDOT wshr. E face of pow. pole 58.3' SW
4. TW field entrance to E 52.0' S
5. TW of K-99 Highway 1.0' W

P.I. Sta. 7392+27.09=NW Cor. Sec. 16, T14S, R12E =
Sta. 112+41.40 on Proj. 99-99 K 516 (Date 1928)
N 481,632.885 E 8,615,436.237
1. Found 5/8" rebar (0.3' deep)
2. Found nail & wshr. NW side cor. fc. po. 54.5' SSW
3. Found nail & wshr. top cor. fc. po. 44.7' NW
4. ℄ Top steel cor. fc. po 44.7' NE
5. TW of K-99 Highway 4.0' E

W 1/4 Cor. Sec. 16, T14S, R12E
N 478,984.271 E 8,615,467.769
1. Set 1/2" x 24" KDOT plastic capped rebar (0.3' deep)
2. Cor. is on ℄ Sta. 7365+78.29
3. To the center of the top of telephone pedestal 26.5' E
4. To the line of a North-South Fence 30.5' W
5. In line with fence to E
6. In the traveled way of K-99 Highway

Ctr. Cor. Sec. 16, T14S, R12E
N 478,989.725 E 8,618,110.834
1. found 1/2" x 12" (in rock) w/ KDOT alum. capped rebar (0.1' above ground)
2. Cor. is 2643.07' Rt. (East) of ℄ Sta. 7365+78.29 SE ∡=89°46'33"
3. Set conc. nail and KDOT wshr. W side fc. cor. po. 0.8' E
4. Set conc. nail and KDOT wshr. top fc. brace po.
5. Set cor. on W side fc cor. po.
6. In line with fences North-South and East

Ctr. Cor. Sec. 17, T14S, R12E
N 478,942.533 E 8,612,817.273
1. Set 1/2" x 12" (in rock) w/ KDOT alum. capped rebar (0.3' above ground)
2. Cor. is 2650.82' Lt. (West) of ℄ Sta. 7365+78.29 SW ∡=89°23'24"
3. Set conc. nail and KDOT wshr. W side 30" cedar 1.5' N
4. To line of newer fence North 5.0' W
5. In line with fences North-West
6. At Northwest side fence corner post

NW Cor. Sec. 17, T14S, R12E
N 481,632.885 E 8,615,436.237
1. Found 5/8" rebar (0.3' deep)
2. Cor. is on ℄ Sta. 7392+27.09
3. Found nail and wshr. in top fc. cor. po. 47.7' NW
4. To the center of the top steel fc. cor. po. 44.7 NE
5. To the traveled way of K-99 Highway 4.0' E
6. In traveled way of East-West road

Shoofly Detour Curve Data	Shoofly Detour Curve Data	Shoofly Detour Curve Data	Shoofly Detour Curve Data
P.I. Sta. 69+07.21	P.I. Sta. 72+32.70	P.I. Sta. 80+18.80	P.I. Sta. 83+46.83
Δ = 32°40'7"	Δ = 32°40'7"	Δ = 32°40'7"	Δ = 32°40'7"
D = 11°27'33"	D = 16°48'08"	D = 16°48'08"	D = 11°27'33"
R = 500.00'	R = 341.00'	R = 341.00'	R = 500.00'
T = 146.54'	T = 99.94'	T = 99.94'	T = 146.54'
L = 285.09'	L = 194.43'	L = 194.43'	L = 285.09'
E = 21.03'	E = 14.34'	E = 14.34'	E = 21.03'
Super = R.C.	Super = 6%	Super = 6%	Super = R.C.

N 1/4 Cor. Sec. 17, T14S, R12E
N 481,649.799 E 8,618,080.040
1. Found 5/8" capped rebar LS (0.8' deep)
2. Cor. is 2643.85' Rt. (East) of ℄ Sta. 7392+27.09 SE∡=89°39'46"
3. Found spike and wshr. in top fc. cor. po. 20.4' S
4. Set nail and KDOT wshr. in top strand steel fc. p. 25.9' NNE
5. To the traveled way of East-West road 3.0' S
6. In line with fence to South

N 1/4 Cor. Sec. 17, T14S, R12E
N 481,593.554 E 8,612,810.003
1. Set 1/2" x 24" KDOT alum. capped rebar (0.3' deep)
2. Cor. is 2626.53' Lt. (West) of ℄ Sta. 7392+27.09 SE∡=89°49'27"
3. Set conc. nail and KDOT wshr. in side fc. cor. po. 19.7' N
4. Set conc. nail and KDOT wshr. in sie fc. gate po. 28.7' NE
5. To the traveled way of East-West road
6. In line with fence to North

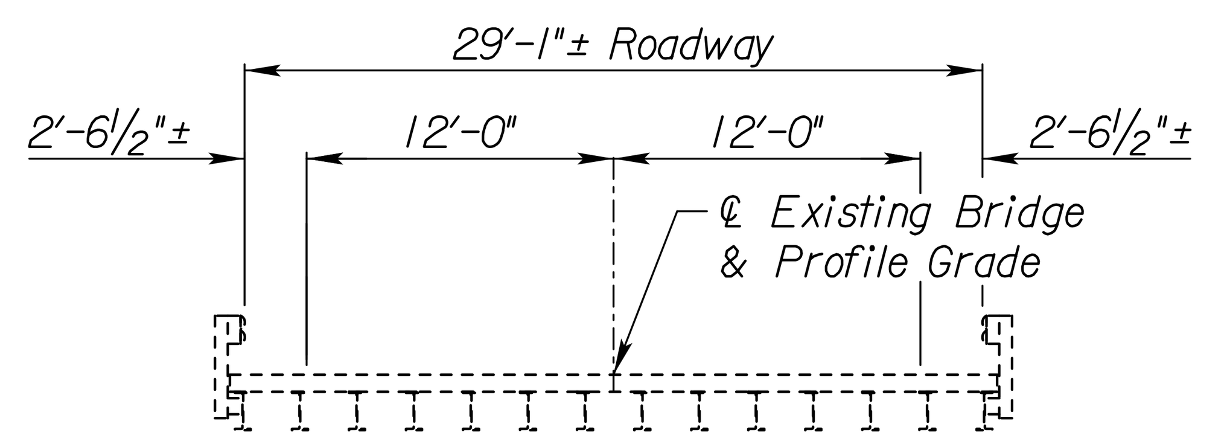
SCALE
50' 0 50' 100'
PLAN: Lat. & Long.

Utility Owners

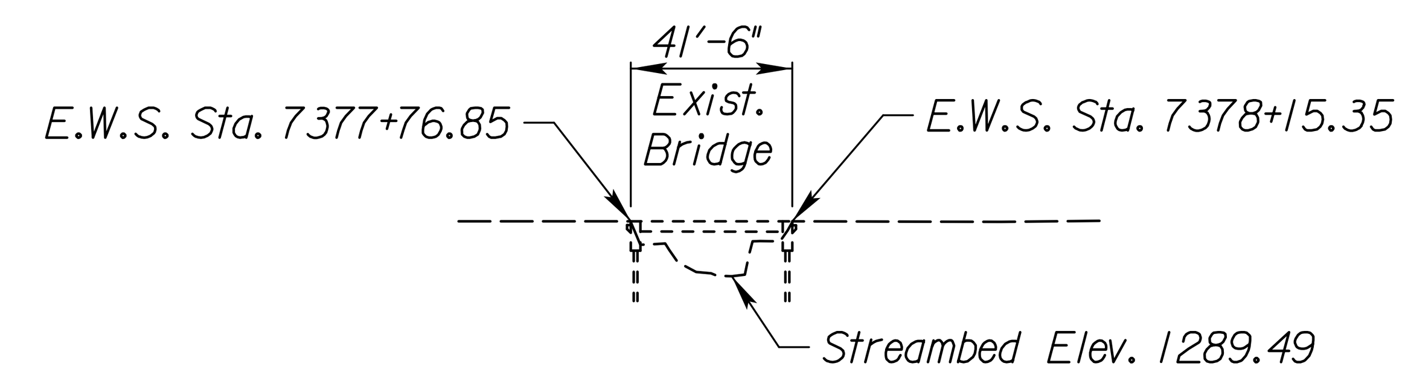
Evergy
818 So. Kansas Ave
Topeka, KS 66612
Scott Schlageck
785-575-6014

Telephone Cable
Century Link
Kenny (Integrity Locate)
913-305-6679

Gas Line
City of Eskridge
785-449-2621



EXISTING TYPICAL SECTION



EXISTING BRIDGE WATERWAY OPENING
Looking Upstream
Total Waterway Opening = 293 S.F.
Historic High Water Elev. 1301.00 (Unknown)
Overtopping Elevation (Sta. 7378+73) Elev. 1303.63

HISTORIC HIGHWATER

Land owner, Gary Kemble, has not seen overtopping of the K-99 bridge over Dragoon Creek Drainage that they have knowledge of the site. Date of highest level observed in unknown. HHW Elev. 1301.00

Note:
All information is for K-99 unless otherwise noted.

Vertical Datum: NAVD 88 (Geoid 18)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

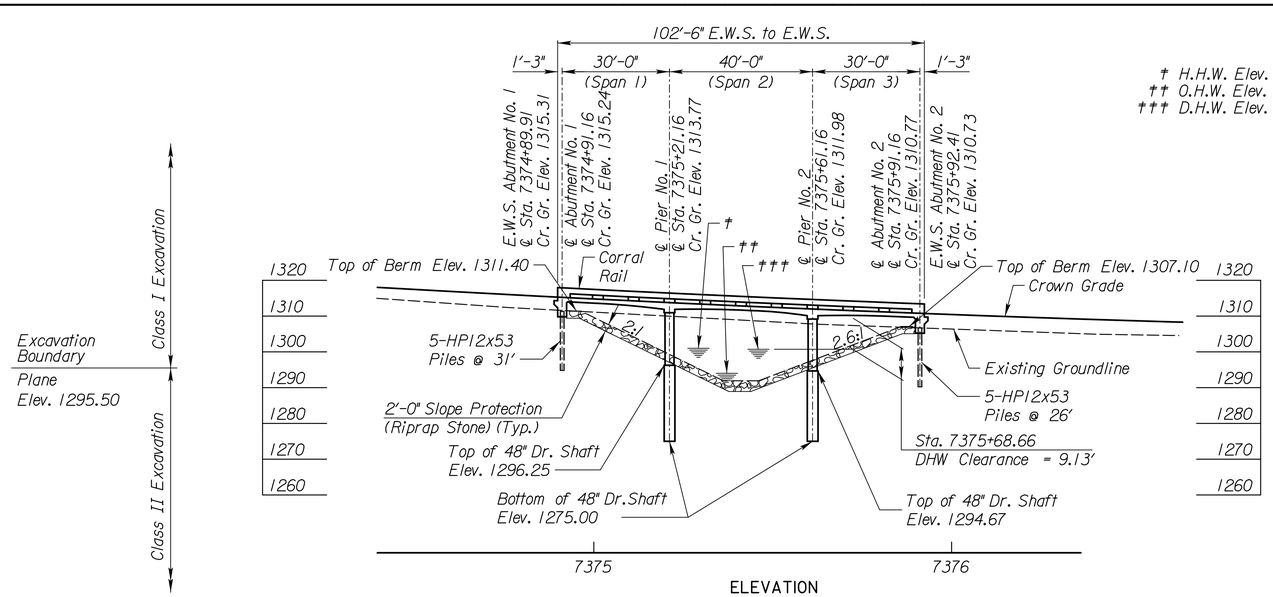
KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 99-99-139.68 (113) Sta. 7375+41.16
CONTOUR MAP
K-99 OVER DRAGOON CREEK DRAINAGE
Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified

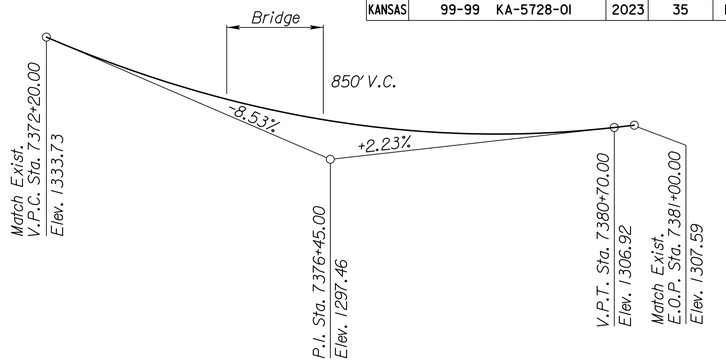
Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d337767\ka572801bbr113-03.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	35	135



ELEVATION

30' - 40' - 30'
Reinforced Concrete Slab, Continuous and Parabolic Haunched (RCSH)
Pile Bent Abutments, Column Bent Piers
36'-0" Roadway

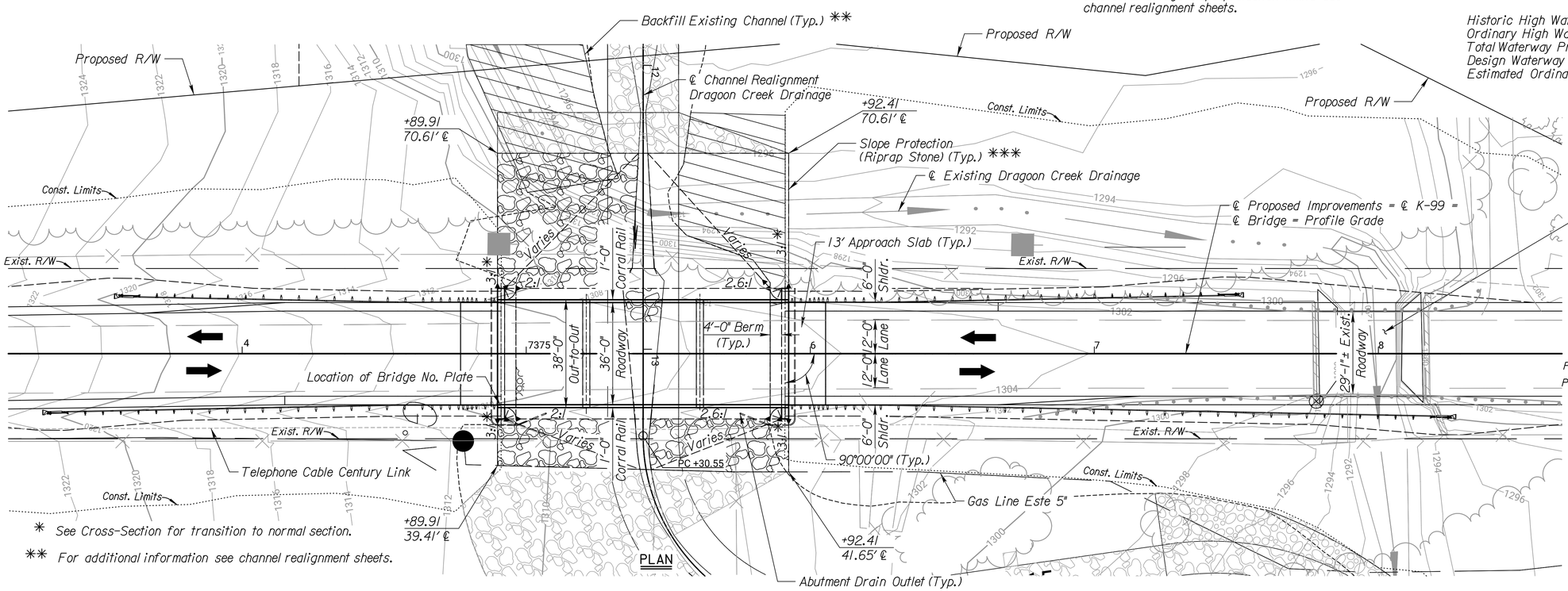


PROFILE K99

DRAINAGE DATA

Drainage Area	1.2	Sq. Mi.
Design Frequency	50	Years
Design Discharge (Q_{des})	2,090	cfs
Design High Water Elevation	1300.72	Ft.
Change in Design Backwater	-1.41	Ft.
Design Backwater Elevation	1301.91	Ft.
Overtopping Elevation (Sta. 7379+00)	1304.97	Ft.
Overtopping Discharge	4,700	cfs
Overtopping Frequency	>500	Years
Discharge at Q100	2,550	cfs
Change in Backwater at Q100	-1.10	Ft.
Backwater Elevation at Q100	1302.89	Ft.
Historic High Water Elevation	1301.00	Ft.
Ordinary High Water Elevation	1294.00	Ft.
Total Waterway Provided	1,010	Sq. Ft.
Design Waterway Provided	230	Sq. Ft.
Estimated Ordinary High Water Discharge -	250	cfs

*** Slope protection limits shown are for bridge slope protection only. For additional information outside of bridge slope protection limits see channel realignment sheets.



PLAN

* See Cross-Section for transition to normal section.

** For additional information see channel realignment sheets.

BM#10 Set "T" shaped fc. po. S side of rock @ gate po. 22.29' Lt. ℄ Sta. 7369+06.99 Elev. 1350.28

BM#11 Set mag. nail & KDOT wshr. top SE abut. of bridge 16.75' Rt. ℄ Sta. 7377+78.17 Elev. 1302.52

BM#12 Set mag. nail & KDOT wshr. top E hdwl. RCB 15.22' Rt. ℄ Sta. 7384+11.38 Elev. 1306.98

BM#13 Set RR spike in E face of pow. pole 34.18' Lt. ℄ Sta. 7387+80.38 Elev. 1317.29

Vertical Datum: NAVD 88 (Geoid 18)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 99-99-139.68 (113) Sta. 7375+41.16

CONSTRUCTION LAYOUT
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

SHEET NO.	OF	SCALE		APP'D	
DESIGNED	ASF	DETAILED	JAH	QUANTITIES	ASF
DESIGN CK.	TK	DETAIL CK.	TK	QUAN. CK.	TK

CADD	JAH
CADD CK.	TK

KDOT Graphics Certified 01-05-2024

Sheet No. 35

KDOT Graphics Certified

Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d3376714\k5728001\bbri13-04.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	36	135

PILING: Piles shall be driven to penetrate the Long Creek Limestone Member. 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
Abutment No. 2 52 Tons

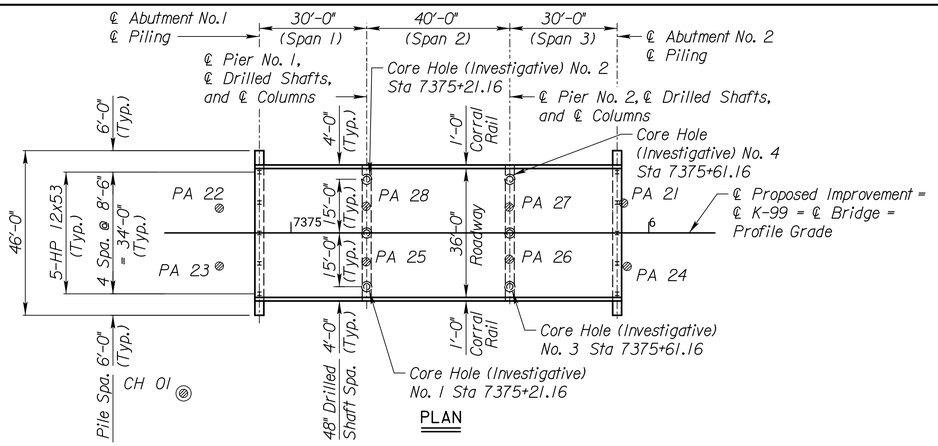
As a minimum drive each pile to the load and penetration, but in no case shall the pile be driven to more than 110% of Pile Driving Formula Driving Load. At any location where problems are experienced, pile damage is suspected, or the Pile Driving Formula Load occurs significantly above the design pile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

DRILLED SHAFTS: Construct the drilled shafts using the cased method. A permanent casing is required. All excavation, concrete, reinforcing steel, pipes for Sonic Testing, casings, labor, and incidentals necessary to complete the shaft as shown on the details and as directed by KDOT Specifications shall be included in the bid item "Drilled Shafts (48")(Cased)". Use Grade 4.0 Concrete in the drilled shaft. In no case shall the bottom of the drilled shaft be placed higher than the elevation shown unless otherwise directed by the KDOT Geologist.

Drill an Investigative Core Hole at the location(s) shown on the plans. See KDOT Specifications.

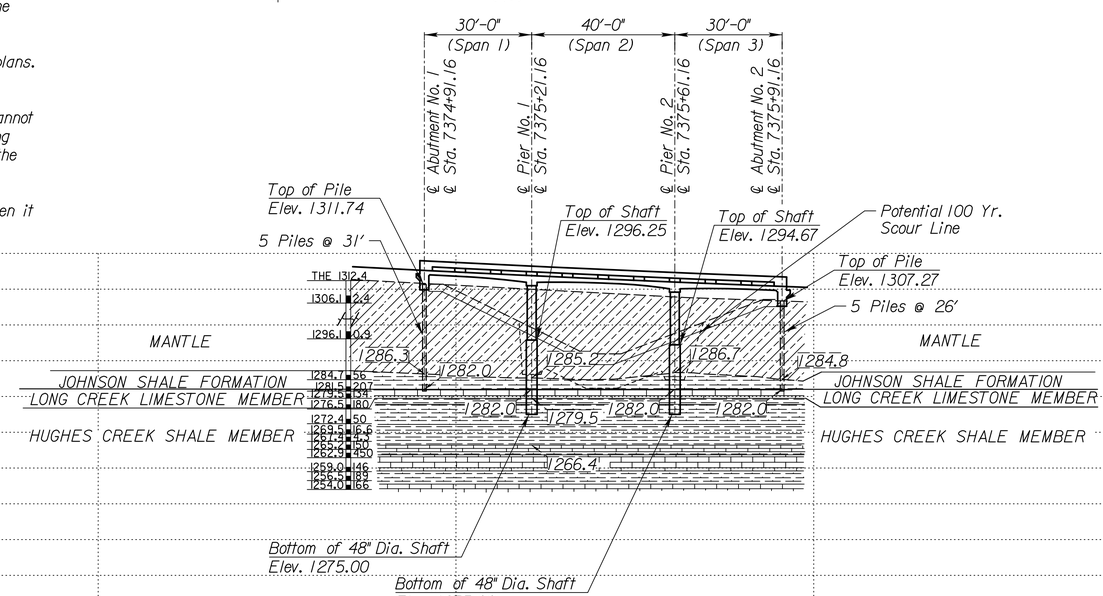
If the location of the top of the shaft is such that the casing cannot be overtopped to remove concrete impurities, provide extra casing length to over-pour the concrete in the shaft and chip back to the plan elevation of the top of the shaft.

If the permanent casing is to be corrugated metal pipe (CMP) then it will be galvanized.



Investigative Core Holes:
Please contact the Topeka Regional Geology Office when the schedule for the investigative core holes have been established so that a member of the staff may be on site when the work is being performed.

All piles shall be Gr. 50 Steel HP12x53.



STANDARD GEOLOGIC SYMBOLS

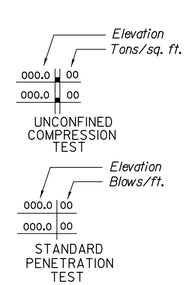
- Clay or Underclay
- Caliche
- Weathered Shale
- Limestone
- Mortarbed
- Silty Clay
- Silty or Clayey Shale
- Sandstone
- Cherty Limestone
- Coal
- Silt
- Limy Shale
- Shaly Sandstone
- Shaly Limestone
- Siltstone
- Sand
- Black or Fissile Shale
- Gypsum bed
- Sandy Limestone
- Chalk
- Gravel
- Sandy Shale
- Dolomite
- Bentonite
- Wavy limestone
- Boulders
- Gypsiferous Shale
- Cross-bedded Sandstone
- Loess
- Chalky limestone

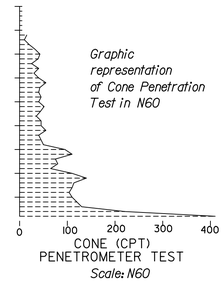
SOUNDINGS

- Core drill
- Power auger
- Hand tools
- Cone (CPT) penetrometer
- Shelby tube
- Water level 02/2023

GEOLOGIC PROFILE

- 000.0 Elevation interpolated or from adjacent soundings
- 000.0 Actual sounding elevation





NOTE: Soundings shown on these plans are taken from notes obtained in the field and represent the best information available. Logs of these soundings are provided with the bid documents, or are available from the Kansas Department of Transportation in Topeka for inspection by interested and qualified bidders.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 99-99-139.68 (113) Sta. 7375+41.16

ENGINEERING GEOLOGY
K-99 OVER DRAGOON CREEK DRAINAGE
Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

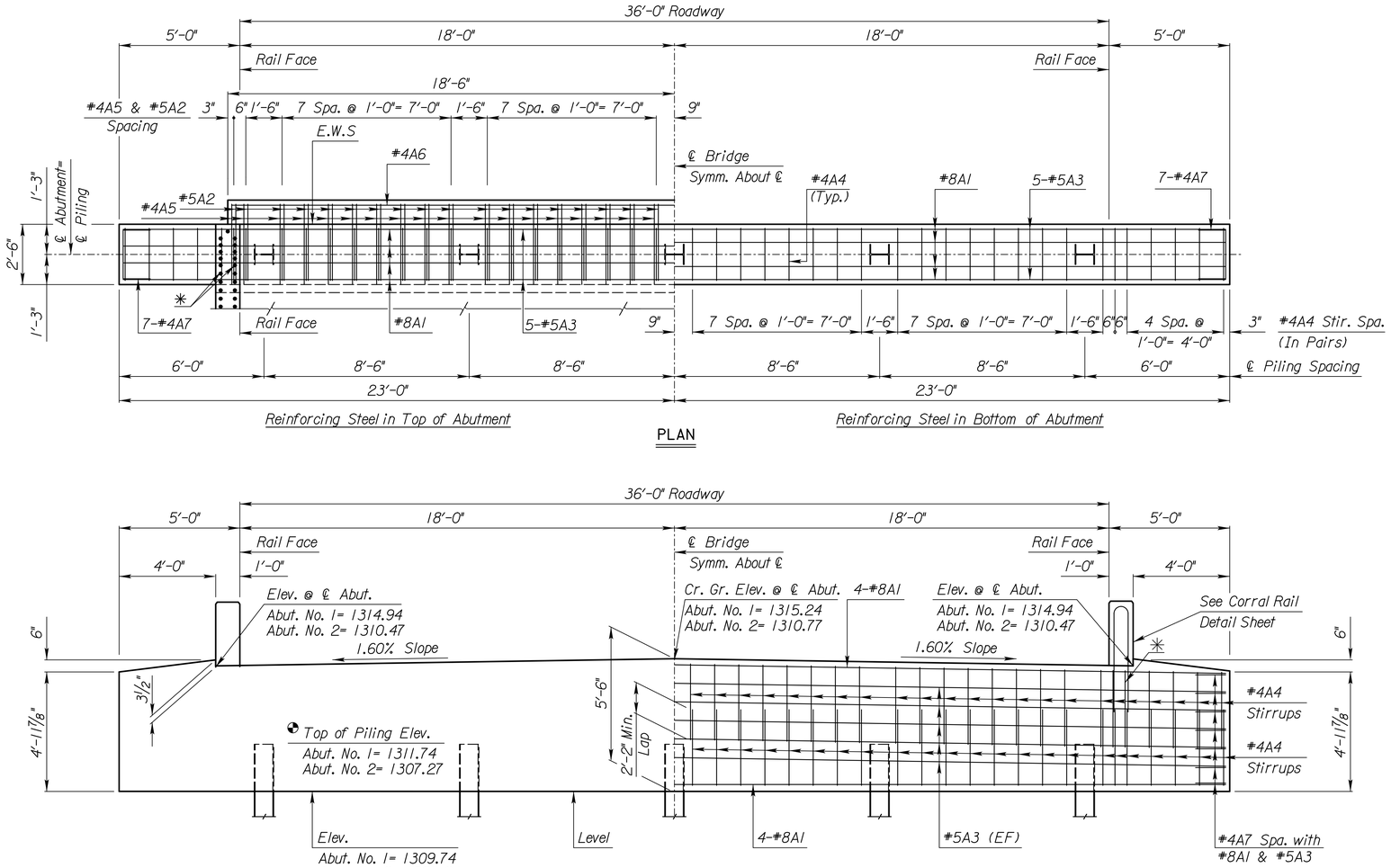
KDOT Graphics Certified 01-05-2024

Sheet No. 36

Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d337767\Kb5728001\bbr113-05.dgn
Plot Date: 01-08-24

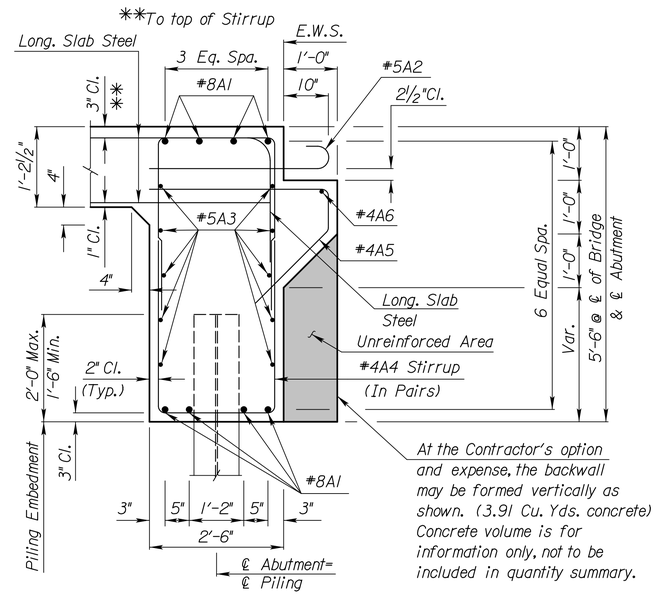
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	37	135

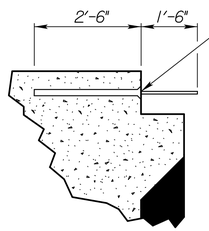


PLAN

ELEVATION
(Along ℄ Abutment)



TYPICAL SECTION



Reinforcing Steel
Mechanical Splice.
See KDOT Specifications.

APPROACH SLAB TIE BAR OPTION

The Contractor has the option (at no additional cost to the State) of substituting a mechanically spliced reinforcing bar of the same size for any or all of the cast-in-place approach slab tie bars.

*Ad just stirrup to avoid conflict with rail bars.

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

Legend
EF= Each Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 99-99-139.68 (113) Sta. 7375+41.16

ABUTMENT DETAILS
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified 01-05-2024

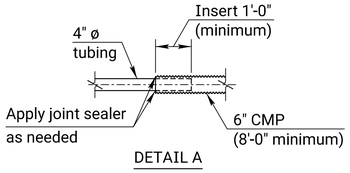
Sheet No. 37

KDOT Graphics Certified

Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d3377674\kd5728001\bbr113-06.dgn
Plot Date: 01-08-24

lslab-lrfd\br502.dgn
LRFD
Roadway Width = 36'-0"
Skew and Direction = 0
Number of Piles = 5

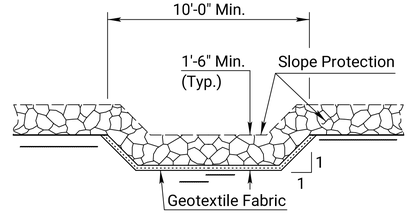
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	38	135



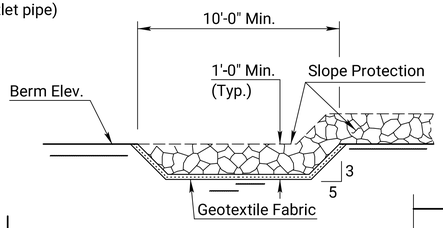
DETAIL A

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

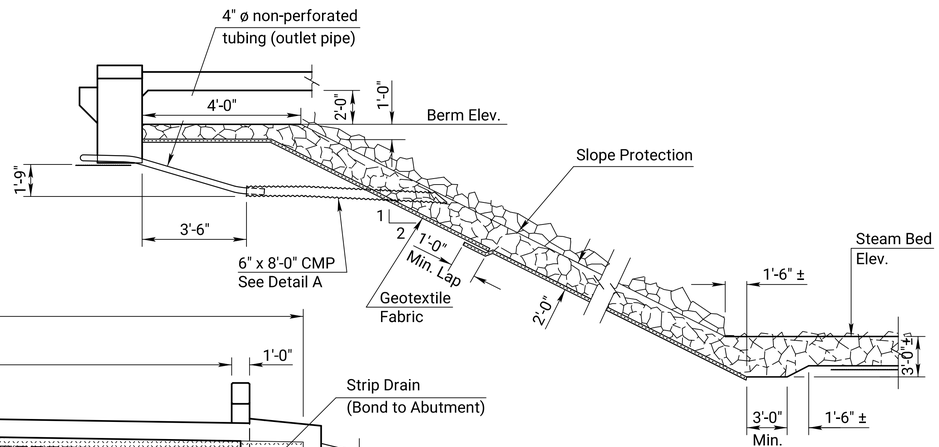
PLAN



SECTION D-D

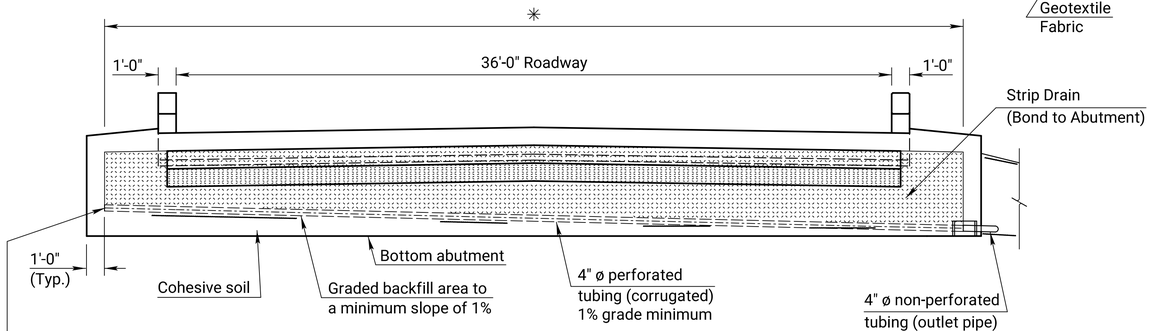


SECTION B-B

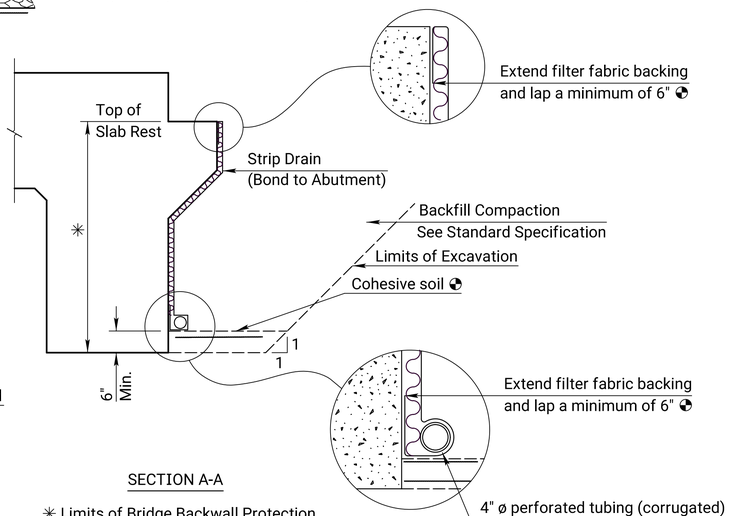


SECTION C-C

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



ELEVATION



SECTION A-A

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

◔ Subsidiary to the Abutment Strip Drain

GENERAL NOTES

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

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

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

Compact the abutment backfill. See the KDOT Specifications.

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

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

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

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

SUMMARY OF QUANTITIES (2 Abutments)	
Abutment Strip Drain	40 Sq. Yds.
Bridge Backwall Protection System	46 Sq. Yds.
Items subsidiary to Strip Drain	
4" ø Perforated Pipe	88 Lin. Ft.
4" ø Outlet Pipe	20 Lin. Ft.
6" ø CMP	16 Lin. Ft.
Items subsidiary to Slope Protection	
Geotextile Fabric	213 Sq. Yds.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 99-99-139.68 (113) Sta. 7375+41.16

ABUTMENT STRIP DRAIN
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

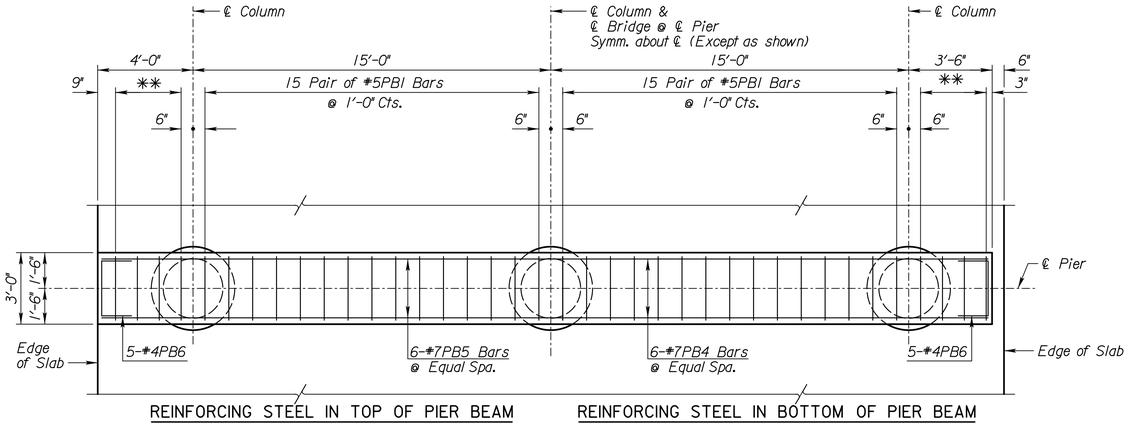
KDOT Graphics Certified 01-08-2024

Sheet No. 38

KDOT Graphics Certified

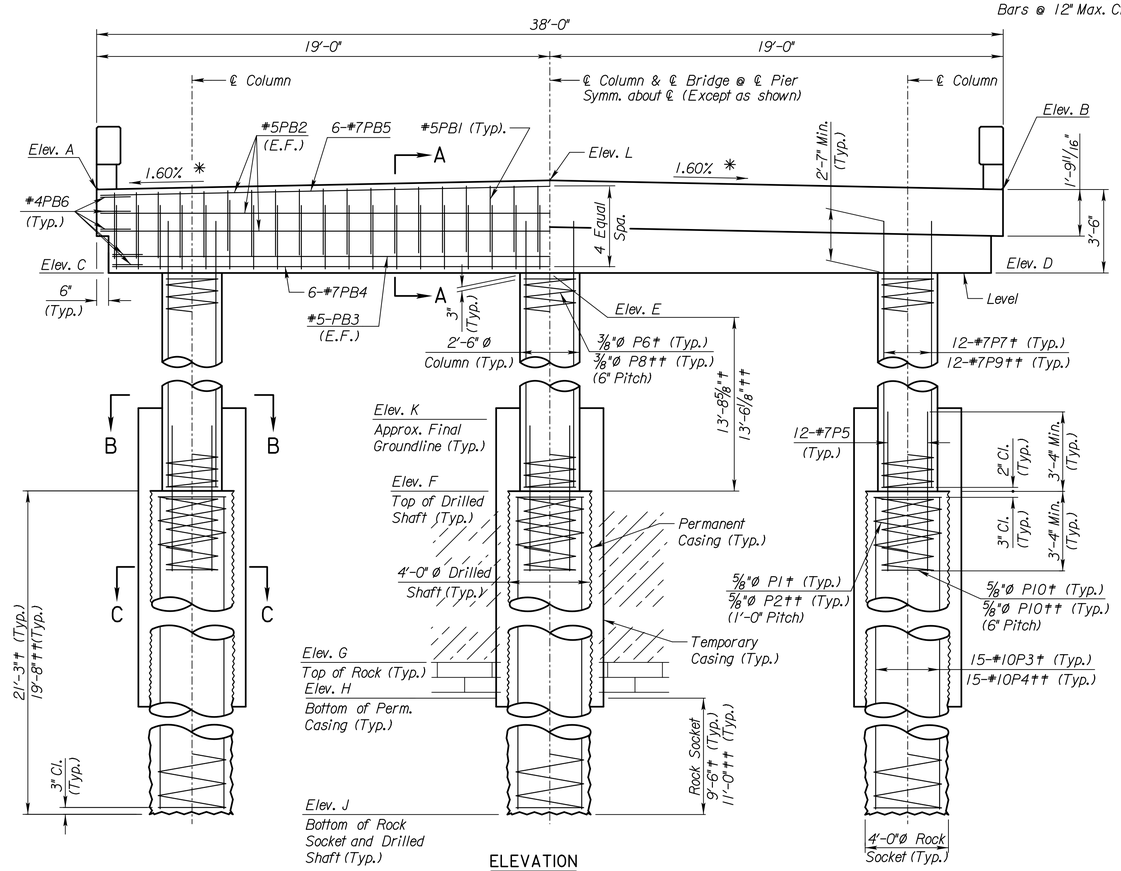
Plotted By: JHOVERSO Plot Location:
File: c:\pwworking\central01\d3377674\ka5728801\bbr113-07.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	39	135

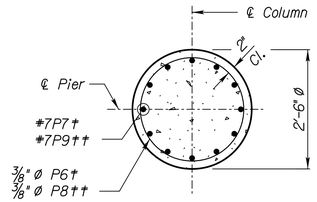


PLAN

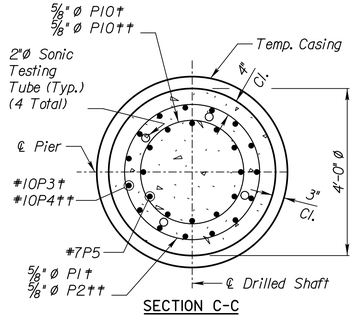
** 3 Pair of #5PBI Bars @ 12" Max. Ctrs.



ELEVATION

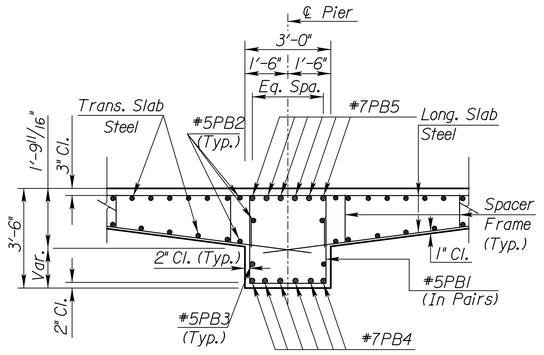


SECTION B-B



SECTION C-C

(Permanent Casing not shown for clarity)



SECTION A-A

* - Perpendicular to ℄ Bridge.

† - Pier No. 1.

†† - Pier No. 2.

E.F. = Each Face.

Note:
For type of Sonic Testing Tubes, see KDOT Specifications and the Special Provisions. Sonic Testing Tubes shall be spaced equally and extended 1'-0" above top of shaft.

TABLE OF ELEVATIONS AT ℄ PIER		
Location	Pier No. 1	Pier No. 2
A	1313.47	1311.68
B	1313.47	1311.68
C	1309.97	1308.18
D	1309.97	1308.18
E	1309.97	1308.18
F	1296.25	1294.67
G	1285.20	1286.70
H	1284.50	1286.00
J	1275.00	1275.00
K	1299.27	1297.64
L	1313.77	1311.98

Notes:
Pier Beam Reinforcement shall be epoxy coated and is included in the Superstructure Quantities.

Column Reinforcement shall be non-coated and is included in the Substructure Quantities.

Concrete and reinforcement in the drilled shaft shall not be paid for directly, but shall be included in the bid item "Drilled Shaft (48") (Cased)".

Reinforcing Steel in the drilled shaft shall be non-coated.

Construct the drilled shafts using the cased method. A Permanent casing is required.

DRILLED SHAFT SUMMARY		
Design Loads		
Pier No.	Maximum Drilled Shaft Load: Tons	Factored Resistance (Rr)
1	270	331
2	270	331

Drilled Shaft Note:
Maximum Drilled Shaft Load is based on Strength I Loads-no Impact.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 99-99-139.68 (113) Sta. 7375+41.16

PIER DETAILS
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

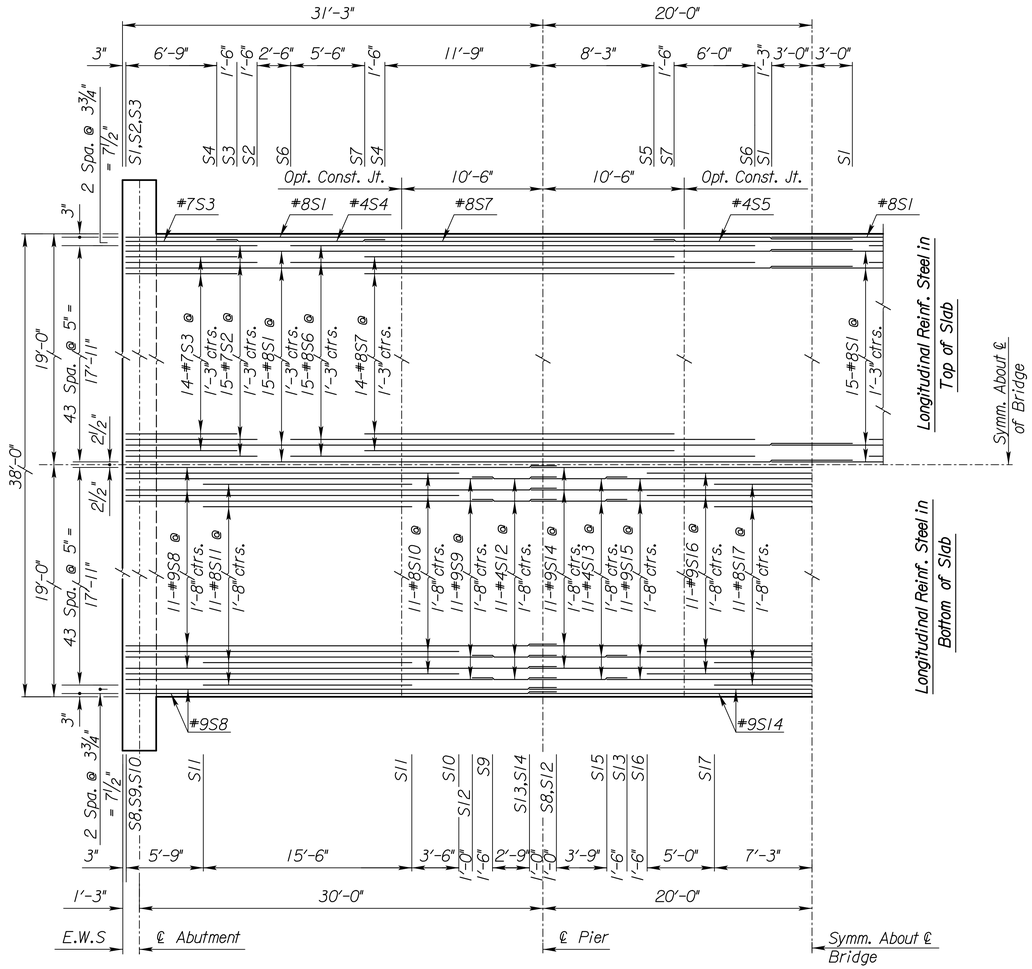
KDOT Graphics Certified 01-05-2024

Sheet No. 39

KDOT Graphics Certified

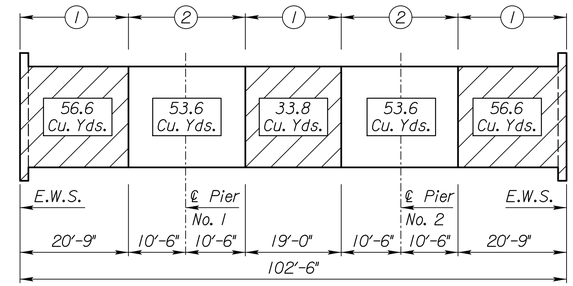
Plotted By: JHOVERSO | Plot Location:
File: c:\pwworking\central01\d3377674\ka5728801\bbr113-08.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	40	135



HALF PLAN

Note:
See longitudinal section for transverse reinforcing steel.



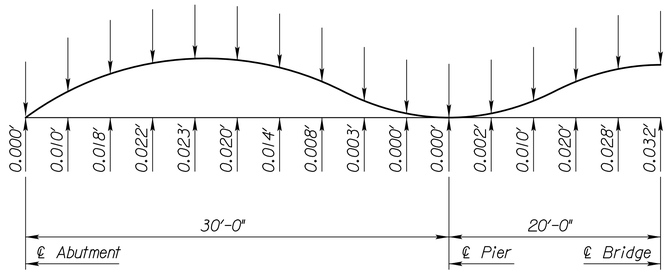
CONCRETE PLACING SEQUENCE DIAGRAM

CONCRETE PLACING SEQUENCE

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

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

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



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: 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
1314.06	1313.91	1313.77	1313.62	1313.47	1313.28	1313.06	1312.81	1312.53	1312.22	1311.88	1311.95	1311.97	1311.93	1311.84	1311.69
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	
1311.49	1311.22	1310.90	1310.54	1310.10	1310.16	1310.20	1310.21	1310.20	1310.15	1310.07	1309.96	1309.84	1309.71	1309.59	

Note: Elevations are taken at Crown Grade. Note: The change in elevation from Crown Grade to the Edge of Slab is -0.304'

-shtno

LFD & LRFR RATING FACTOR			
		Cir.	3"
	Truck	Inv.	Oper.
LFD	HS-20	1.93	3.23
	MET		1.31
LRFR	HL-93	1.70	2.20

Note to designer: Do not remove this information

Irfr0br51.3.dgn	Plot 2
Roadway Width = 36'	Longest Span Length = 40'
Skew and Direction = 0	Total No. of Spans = 3
Loading = HL-93	Railing Type = Corral

Plotted By: JHOVERSO
File: c:\pwworking\central01\d337767\Ka5728001\bbri13-09.dgn
Plot Date: 01-08-24
Plot Location:

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 99-99-139.68 (113) Sta. 7375+41.16

SUPERSTRUCTURE DETAILS (1 OF 2)
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

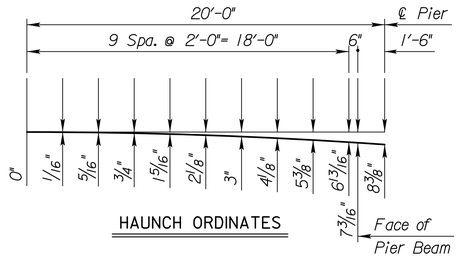
SHEET NO.	OF	SCALE		APP'D			
DESIGNED	ASF	DETAILED	JAH	QUANTITIES	ASF	CADD	JAH
DESIGN CK.	TK	DETAIL CK.	TK	QUAN. CK.	TK	CADD CK.	TK

KDOT Graphics Certified 01-05-2024

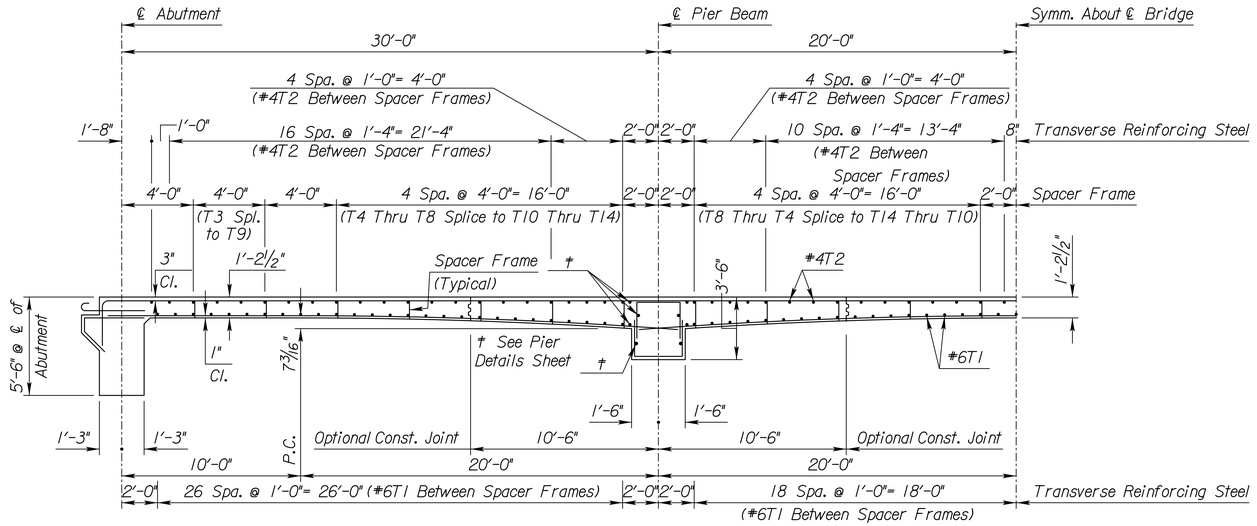
KDOT Graphics Certified

Sheet No. 40

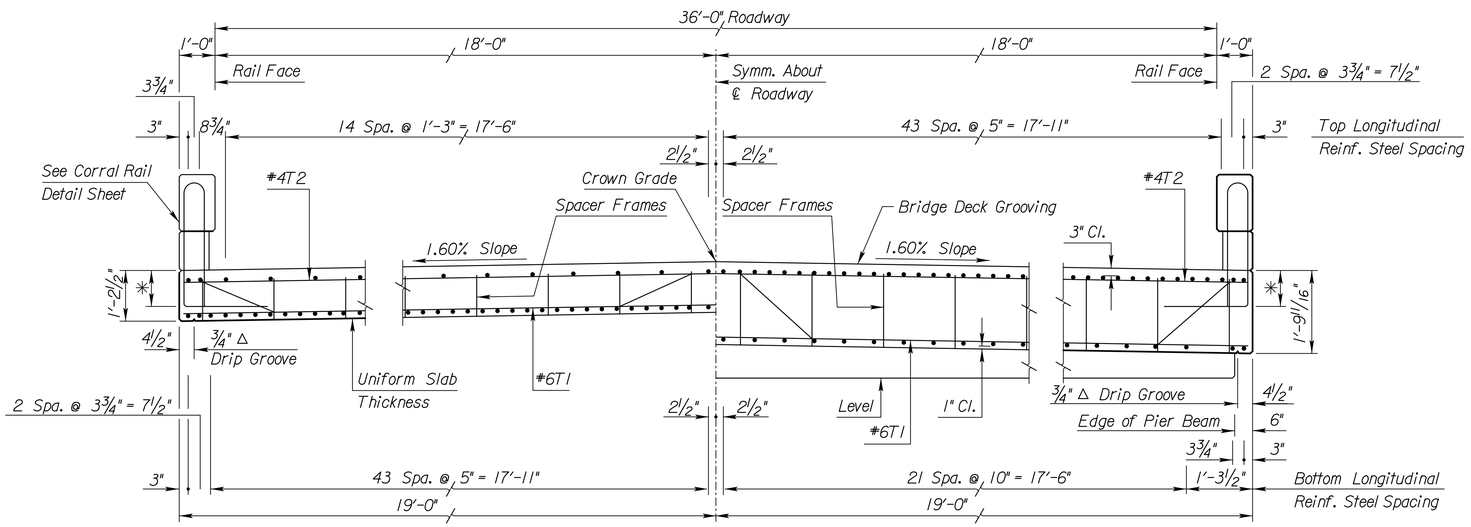
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	41	135



HAUNCH ORDINATES



HALF LONGITUDINAL SECTION ALONG ℄ BRIDGE

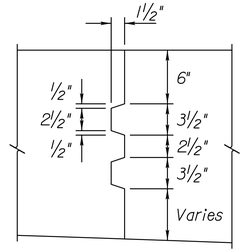


Half Section Near Mid-Span

TYPICAL SECTION OF SLAB

Half Section at Face of Pier Beam

* See Corral Rail Detail Sheet.



TRANSVERSE SLAB CONSTRUCTION JOINT (Optional)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 99-99-139.68 (113) Sta. 7375+41.16

SUPERSTRUCTURE DETAILS (2 OF 2)
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified 01-05-2024

Sheet No. 41

KDOT Graphics Certified

Plot 3
Longest Span Length = 40'
Total No. of Spans = 3
Rolling Type = Corral

Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d3377674\ka5728801bbr113-10.dgn
Plot Date: 01-08-24

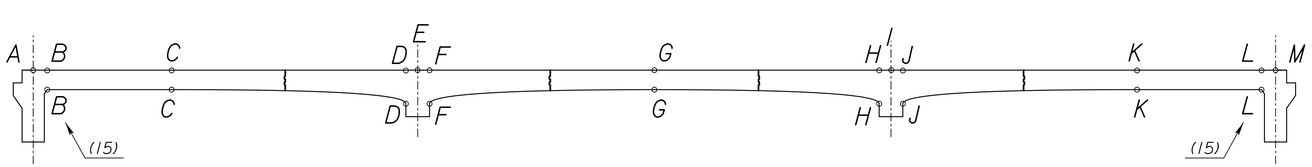
SLAB ELEVATIONS

				Formwork				Screed			Thickness			Deck Profile	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Survey	Station	† Location	Transverse Location	Estimated Falsework Crush	Target Elevation TOF	Actual Elevation TOF	TOF Variance (QA/QC)	Target Screed El. - TOC El.	Actual Bottom of Screed Elevation Prior to Pour	Screed Variance (QA/QC)	Plan Deck Thickness	Measured Deck Thickness	Deck Thickness Variance (QA/QC)	Plan TOC El.	Actual TOC El. Optional Survey
	(1)(16)	(13)	(13)	(inch) (1)(4)	(1)(6)	(2)	(± inch) (2)(5)	(1)(6)	(2)	(± inch) (2)(7)	(inch) (1)	(inch) (2)(8)	(± inch) (2)(9)	(1)	Date: (3)
A	7374+91.16	℄ Brg. of Abut. #1	Left Fascia					1314.94						1314.94	
			Crown Gr.					1315.24						1315.24	
			Right Fascia					1314.94						1314.94	
B	7374+92.41	Interior Face of Abut. #1	Left Fascia		1313.67						14½"			1314.88	
			Crown Gr.		1313.97						14½"			1315.18	
			Right Fascia		1313.67						14½"			1314.88	
C	7375+03.16	4/10 Point from Abut. #1	Left Fascia	¼	1313.16			1314.38			14 9/16"			1314.34	
			Crown Gr.	¼	1313.47			1314.68			14 9/16"			1314.64	
			Right Fascia	¼	1313.16			1314.38			14 9/16"			1314.34	
D	7375+19.66	Span #1 Face of Pier Beam	Left Fascia	¼	1311.75						21 11/16"			1313.54	
			Crown Gr.	¼	1312.05						21 11/16"			1313.84	
			Right Fascia	¼	1311.75						21 11/16"			1313.54	
E	7375+21.16	℄ Brg. of Pier #1	Left Fascia					1313.47						1313.47	
			Crown Gr.					1313.77						1313.77	
			Right Fascia					1313.47						1313.47	
F	7375+22.66	Span #2 Face of Pier Beam	Left Fascia	¼	1311.61						21 11/16"			1313.39	
			Crown Gr.	¼	1311.91						21 11/16"			1313.70	
			Right Fascia	¼	1311.61						21 11/16"			1313.39	
G	7375+41.16	Midpoint of Span #2	Left Fascia	¼	1311.39			1312.60			14½"			1312.55	
			Crown Gr.	¼	1311.69			1312.90			14½"			1312.85	
			Right Fascia	¼	1311.39			1312.60			14½"			1312.55	
H	7375+59.66	Span #2 Face of Pier Beam	Left Fascia	¼	1309.95						21 11/16"			1311.74	
			Crown Gr.	¼	1310.26						21 11/16"			1312.05	
			Right Fascia	¼	1309.95						21 11/16"			1311.74	
I	7375+61.16	℄ Brg. of Pier #2	Left Fascia					1311.68						1311.68	
			Crown Gr.					1311.98						1311.98	
			Right Fascia					1311.68						1311.68	
J	7375+62.66	Span #3 Face of Pier Beam	Left Fascia	¼	1309.83						21 11/16"			1311.61	
			Crown Gr.	¼	1310.13						21 11/16"			1311.92	
			Right Fascia	¼	1309.83						21 11/16"			1311.61	
K	7375+79.16	4/10 Point from Abut. #2	Left Fascia	¼	1309.77			1310.98			14 9/16"			1310.94	
			Crown Gr.	¼	1310.07			1311.29			14 9/16"			1311.24	
			Right Fascia	¼	1309.77			1310.98			14 9/16"			1310.94	
L	7375+89.91	Interior Face of Abut. #2	Left Fascia		1309.31						14½"			1310.52	
			Crown Gr.		1309.61						14½"			1310.82	
			Right Fascia		1309.31						14½"			1310.52	
M	7375+91.16	℄ Brg. of Abut. #2	Left Fascia					1310.47						1310.47	
			Crown Gr.					1310.77						1310.77	
			Right Fascia					1310.47						1310.47	

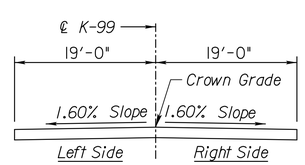
† Stationing shown increasing

NOTE: The Contractor will submit a completed copy of this table to the Field 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.



ELEVATION OF SLAB



TYPICAL SECTION
(Looking Up-Station)

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	42	135

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

Survey Data (1)(11)	
Bench Mark No.	Elevation
10	1350.28
11	1302.52
12	1306.98
13	1317.29

Crown Grade Profile(1)(12)	
7376+45.00	VPI Station
1297.46	VPI Elevation
-8.53	G1 %
2.23	G2 %
850.00	L in Stations

Slab Thickness (1)		Span Data (1)	
14½	Uniform Depth (inch)	HL-93	Design Loading
7 3/16	Haunch Depth @ Face of PB (inch)	30	Span #1 (ft)
		40	Span #2 (ft)
1/16	Haunch Depth @ 0.4 Point (inch)	3	Clear Cover (inch)

Roadway Data (1)(10)(13)	
38	Deck Width (ft) (14)
-1.6	% Slope Left (±)
-1.6	% Slope Right (±)
00:00:00	Skew (dd:mm:ss)

Camber (1)(17)	
0.023	Span #1 0.4 Point (ft)
0.031	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 on the vertical curve, enter Abutment #1 ℄ bearing elevation from the "Construction Layout" sheet. Represent a change in grade with G1 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.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 99-99-139.68 (113) Sta. 7375+41.16

SLAB ELEVATIONS
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

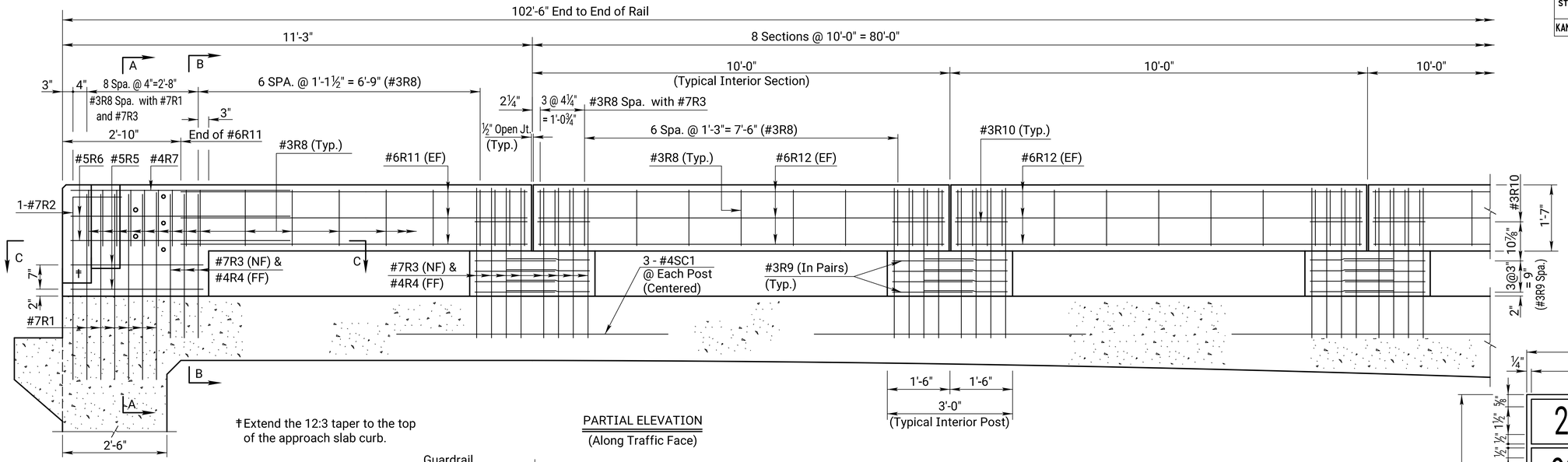
KDOT Graphics Certified 01-05-2024

Sheet No. 42

KDOT Graphics Certified

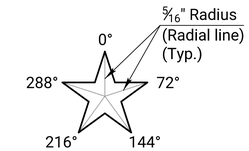
Plotted By: JHOVERSO | Plot Location:
File: c:\pwworking\central01\d3377674\ka5728001\bbri13-11.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	43	135

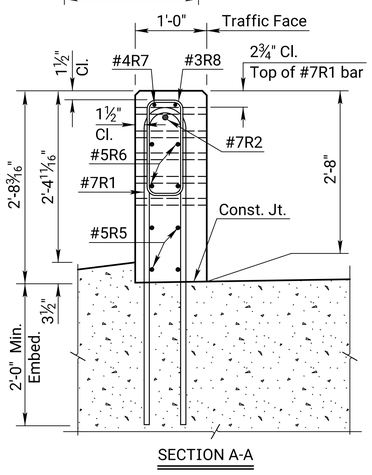


PARTIAL ELEVATION
(Along Traffic Face)

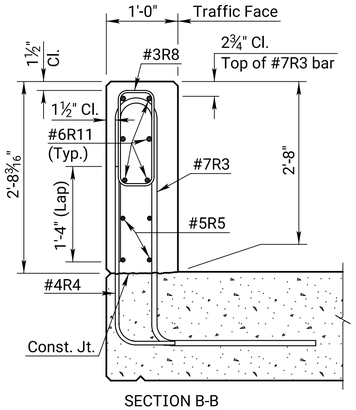
LEGEND
NF = Near Face
FF = Far Face
EF = Each Face



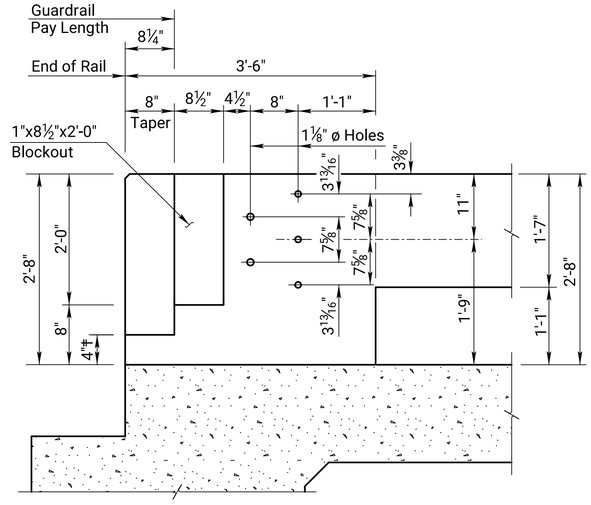
STAR GEOMETRY



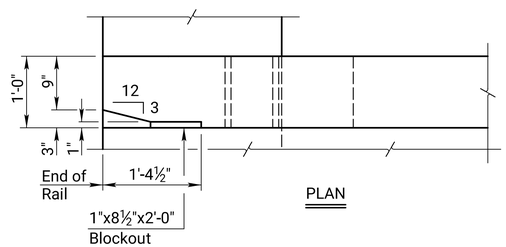
SECTION A-A



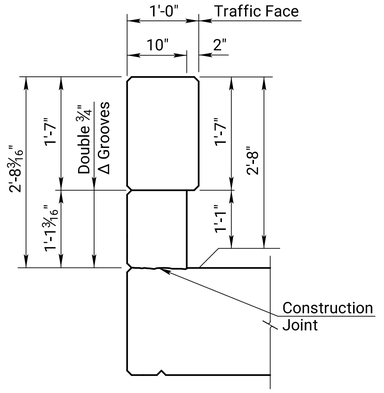
SECTION B-B



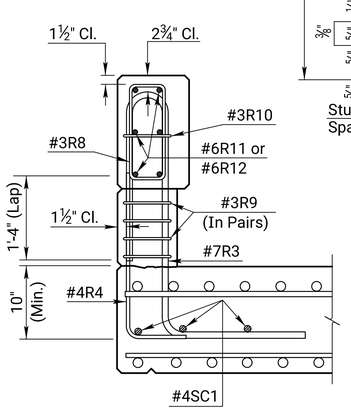
ELEVATION
(Dimensions at traffic face of rail.)



PLAN

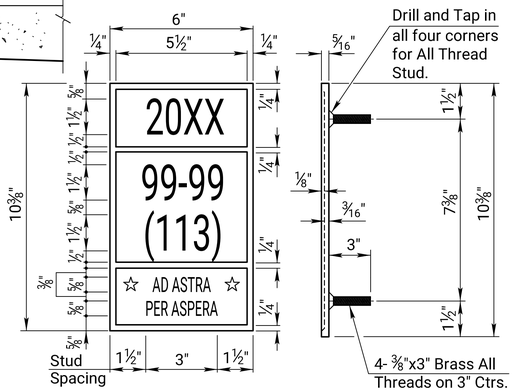


TYPICAL INTERIOR POST



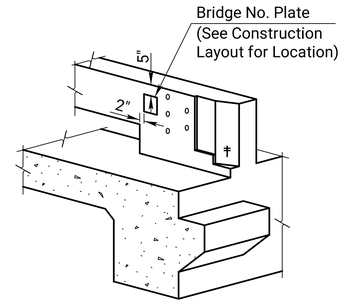
SECTION THRU POST

SECTION C-C



XX Year Bridge is Completed.

BRIDGE NUMBER PLATE
(1 Required)
(See Construction Layout for Location)



BRIDGE NUMBER PLATE PLACEMENT DETAIL

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 99-99-139.68 (113) Sta. 7375+41.16

32' KANSAS CORRAL RAIL (WITHOUT CURB)
K-99 OVER DRAGOON CREEK DRAINAGE

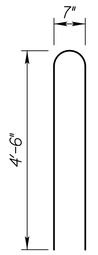
Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

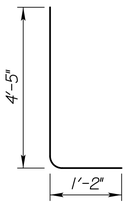
Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d3377674\ka572801\bbr113-12.dgn
Plot Date: 01-08-24

KDOT Graphics Certified

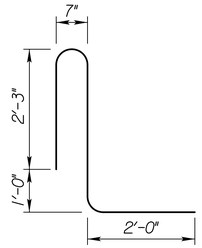
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	44	135



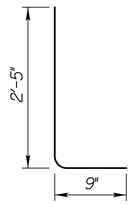
R1



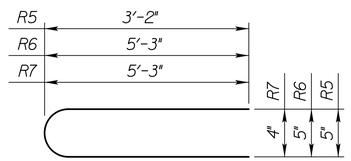
R2



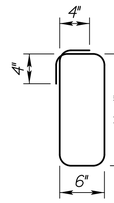
R3



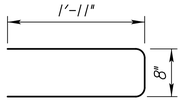
R4



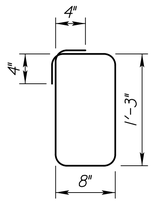
R5, R6 & R7



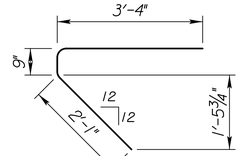
R8



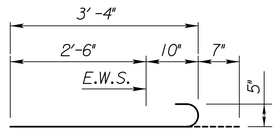
R9



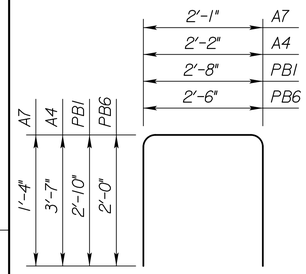
R10



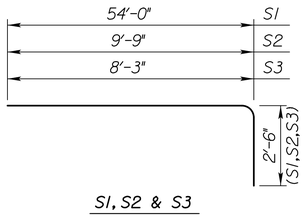
A5



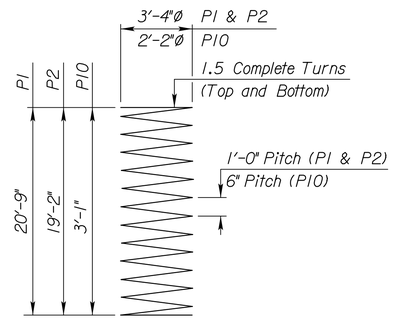
A2



A4, A7, PB1 & PB6

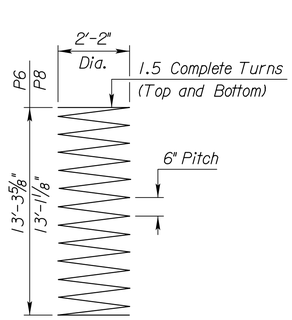


S1, S2 & S3



P1, P2 & P10

(5/8" Ø smooth or deformed bar)



P6 & P8

(3/8" Ø smooth or deformed bar)

Spiral reinforcing shall meet the requirements of ASTM A615 Grade (60 or 40) or ASTM A82.

Spiral Spacer Bars:

1) Are included in the weight of reinforcing steel.
2) Minimum section modulus = 0.008 in^3
3) 4 required per spiral.

Spiral reinforcing shall meet the requirements of ASTM A615 Grade (60 or 40) or ASTM A82.

Spiral Spacer Bars:

1) Are included in the weight of reinforcing steel.
2) Minimum section modulus = 0.008 in^3
3) 4 required per spiral.

BILL OF REINFORCING STEEL
Non-Epoxy Coated - Grade 60

	Straight Bars				Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Substructure	P3	#10	45	20'-9"	P1	5/8"Ø	3	⊗
	P4	#10	45	19'-2"	P2	5/8"Ø	3	⊗
					P10	5/8"Ø	6	⊗
	P5	#7	72	6'-8"				
	P7	#7	36	16'-2"	P6	3/8"Ø	3	⊗
	P9	#7	36	16'-0"	P8	3/8"Ø	3	⊗

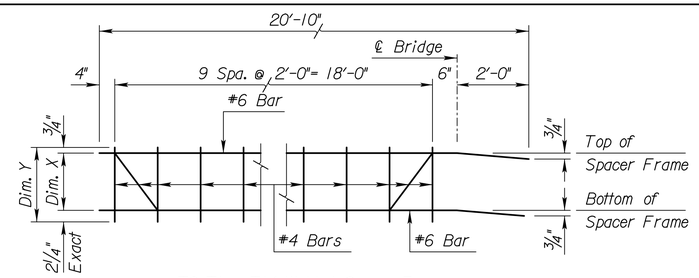
⊗ See Bending Diagram

Note: P1, P2, P3, P4, P5 and P10 bars are all considered part of the drilled shafts

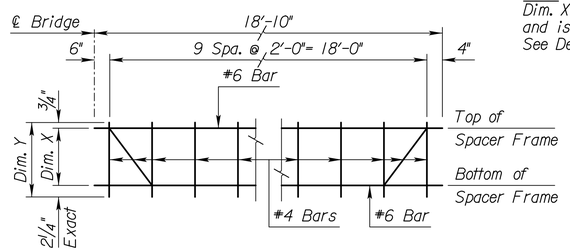
BILL OF REINFORCING STEEL
Epoxy Coated - Grade 60

	Straight Bars				Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Superstructure - Abutment - Deck - Rail	S8	#9	52	32'-0"	S1	#8	64	56'-6"
	S9	#9	44	27'-3"				
	S14	#9	26	42'-0"	R1	#7	24	9'-3"
	S15	#9	22	30'-6"	R2	#7	4	5'-7"
	S16	#9	22	24'-6"	R3	#7	156	7'-9"
					S2	#7	60	12'-3"
	A1	#8	16	45'-8"	S3	#7	60	10'-9"
	S6	#8	60	34'-6"				
	S7	#8	60	23'-0"	A2	#5	72	3'-11"
	S10	#8	44	24'-9"	R5	#5	8	6'-6"
	S11	#8	44	15'-6"	R6	#5	8	10'-8"
	S17	#8	22	14'-6"				
					A4	#4	184	9'-4"
	R11	#6	24	8'-3"	A5	#4	72	6'-2"
	R12	#6	96	9'-8"	A7	#4	28	4'-9"
	T1	#6	67	37'-8"	R4	#4	156	3'-2"
					R7	#4	4	10'-8"
	A3	#5	20	45'-8"				
					R8	#3	280	4'-4"
	A6	#4	2	36'-8"	R9	#3	144	4'-6"
	S4	#4	4	12'-6"	R10	#3	36	4'-6"
	S5	#4	2	23'-6"				
	S12	#4	44	6'-3"	T3-T14			⊗
	S13	#4	44	7'-3"				
	T2	#4	50	37'-8"				
	SC1	#4	54	6'-6"				
Pier Beam	PB4	#7	12	36'-8"	PB1	#5	144	8'-4"
	PB5	#7	12	37'-8"				
					PB6	#4	20	6'-6"
	PB2	#5	12	37'-8"				
	PB3	#5	4	36'-8"				

⊗ See Bending Diagram



T9 Thru T14 Welded Spacer Frames



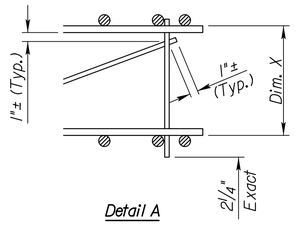
T3 Thru T8 Welded Spacer Frames

⊗ SPACER FRAMES
(Epoxy Coated)

Mark	No. Ea.	Dim. X	Dim. Y
T3, T9	4	8 1/8"	11 1/8"
T4, T10	4	8 3/16"	11 3/16"
T5, T11	4	8 1/8"	11 1/8"
T6, T12	4	10 1/4"	1'-1 1/4"
T7, T13	4	1'-0 1/4"	1'-3 1/4"
T8, T14	4	1'-2 15/16"	1'-5 15/16"

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

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



Detail A

BENDING DIAGRAMS

(All dimensions are out to out of bars.)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 99-99-139.68 (113) Sta. 7375+41.16

BILL OF REINFORCING STEEL
AND BENDING DIAGRAMS
K-99 OVER DRAGOON CREEK DRAINAGE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified 01-08-2024

Sheet No. 44

KDOT Graphics Certified

Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d3377674\ka5728001\bbr113.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	45	135

GENERAL NOTES

ERECTION AND REMOVAL OF ROLLED BEAM DETOUR BRIDGE: The Lump Sum bid item, "Erection and Removal of Rolled Beam Detour Bridge", shall consist of loading and unloading, transportation, erection, maintenance, repair of damaged galvanized coating, and dismantling all detour bridges used on this project. It shall also include inventories, detour bridge site preparation, labor, tools, equipment and all incidentals necessary to complete the work.

Seventy-five (75) percent of the Lump Sum bid price shall be paid when the erection of the structure has been completed. The remaining twenty-five (25) percent shall be paid when the structure has been dismantled and all parts to be returned have been properly inventoried and stockpiled at the storage site listed on the Plans.

REFIT ROLLED BEAM DETOUR BRIDGE: This shall be subsidiary to "Erection and Removal of Rolled Beam Detour Bridge" and consists of Contractor furnished bridge items as listed in Column No. 4 of the Inventory Sheet. These items consist of steel piles, pre-drilled pile holes and replacement items which represent damaged or missing bridge parts from existing spans. The replacement parts are preliminary, being based upon an estimate of the stockpiled items to be supplied by KDOT.

FURNISH ROLLED BEAM DETOUR BRIDGE: The Lump Sum bid item, "Furnish Rolled Beam Detour Bridge", shall consist of the Contractor furnished bridge items as listed in Column No. 5 of the Inventory Sheet. These items will furnish one or more complete bridge spans.

SITE PREPARATION: The Contractor shall complete the channel excavation, if any, and the embankment at the detour bridge prior to driving piling or any substructure construction. Site preparation includes any excavation, backfill or compaction of backfill required. Upon removal of the detour bridge, any fill placed in the channel by the Contractor shall be removed and the stream channel shall be reshaped to its natural lines as directed by the Engineer.

BACKFILL COMPACTION: Backfill compaction shall be required at the abutments, as directed by the Engineer.

GALVANIZING: All structural steel furnished by the Contractor shall be hot-dipped galvanized after fabrication in accordance with ASTM A-123 Specifications. Any warpage caused by the galvanizing process shall be straightened.

The 7/8" diameter beam flange to rocker plate (Drill and Tap) bolts and the 17" barrier unit bolts along with their nuts and washers shall be hot-dipped galvanized in accordance with ASTM A153, Class C, Specifications.

Bridge floor panels shall be galvanized after the panels have been fabricated in accordance with plan details.

WELDING: Material and construction shall conform to the Kansas Department of Transportation Specifications. The shop drawings shall show the prequalified welds to be used in the fabrication.

TIMBER: The Contractor shall furnish the untreated timber. It shall remain the property of the Contractor after the completion of the project.

DECK PANELS: It is recommended that only one panel type be used per span.

GEOTECHNICAL REPORT: The geotechnical report addendum (Dated May 2023) and the geotechnical information shown on the plans is the best information available. The report is available for inspection by qualified bidders at the State Bridge office, KDOT, Eisenhower State Office Building, 700 SW Harrison, Topeka, KS.

CONNECTIONS: All structural steel and barrier unit field connections shall be made with ASTM A-325 high strength bolts, heavy hex nuts and hardened washers under the turned elements. The timber shall be connected to the abutment backwalls with lag screws and ASTM A307 button head bolts.

All bolts shall be tightened, at a minimum, to a snug tight fit. Snug tight is defined as a tightness attained by a few impacts of an impact wrench or the full effect of a man using an ordinary spud wrench. See the Maintenance Note. The high strength bolts used in the N-Connection of the bridge deck panels to the beams shall be tightened to KDOT specification by the turn-of-the-nut method. The N-Connection is a friction connection which requires a high clamping force.

Only the 7/8" diameter beam flange to rocker plate (drill and tap) bolts and the 17" barrier unit bolts along with their nuts and washers shall be retained by KDOT. These are listed as Item No. 23 and 24 on the Inventory Sheet. The Rocker Plates shall remain attached to the beam flanges after the bridge is disassembled.

All bolts, nuts, washers and lag screws (Items No. 25 through 33) not mentioned in the Galvanizing Note may or may not be galvanized. They shall become the property of the Contractor upon completion of the job and shall be removed from the construction site.

PILE BENTS: The Contractor shall construct the pile bents as detailed. Bracing is required if 10 foot or more of piling is exposed above ground. The bracing shall meet the minimum requirements as detailed. The Contractor shall provide the Engineer with details for approval of his proposed method of bracing. The piling and bracing shall remain the property of the Contractor. Piling shall be removed to a minimum depth of 1 foot below finished ground line or as specified in the plans. The C15 channels, bearings and bearing plates shall remain the property of KDOT.

PILING: Due to shallow bedrock at this location, it is recommended that H-Piles be set within pre-drilled holes. Pre-drilling will encounter the Johnson Shale Formation, the Long Creek Limestone Member, and the Hughes Creek Shale Member. Temporary casing should be used to ensure that the pre-drilled hole remains stable after being drilled. H-pile should be placed in the hole and driven to bearing after pre-drilling. Once sufficient bearing has been achieved, the annular space around the pile should be backfilled with concrete up to the top of bedrock. From the top of bedrock the annular space should be backfilled with sand or other loose material to within 2 to 3 feet of the surface according to Standard Specification 704.4c.

Where possible, these piling shall be driven to the minimum computed bearing value of 55 Tons.

In using the pile driving formula of the KDOT Specifications, the Engineer shall not allow the Contractor to drive the pile MORE THAN 82.5 TONS.

If additional piling is required due to a change in pile tip elevation, this piling shall be provided by the Contractor without change in compensation.

PILE AND BERM ELEVATIONS: See Substructure Details sheet for top of pile and berm elevations.

Containers used to store parts at the Storage site must have holes drilled or punched in the bottom of these containers to provide free and total drainage. Steel parts must not be stored in containers that will hold water.

TRANSPORTATION: The Contractor shall transport to the site all parts and materials required to construct the detour bridge. All parts supplied by KDOT may be picked up from the following Receiving Site(s):

KDOT Mixing Strip at the US-50/K-177 Intersection (NE Quadrant), approximately 3 miles south of Project No. 177-9 KA-4430-01 Br 9(076)

Upon completion of the project, the Contractor shall transport the parts supplied by the Contractor and by KDOT to the following Storage Site:

KDOT Mixing Strip to the east of the intersection of K-31 and K-99 on the north side of K-31, south of Project No. 99-99 KA-5728-01.

Where they shall remain the property of KDOT. Exceptions are as noted in the Post Construction Inventory Listing.

Transportation shall include the loading and unloading of these parts and materials.

MAINTENANCE: The Contractor shall be responsible for normal maintenance and periodic inspection to insure tightness of the connections and the safe operation and structural integrity of the detour bridge for the duration of the project.

The Contractor may elect to use specialty nuts instead of the standard heavy hex nut for the grid decking to girder connection. This connection, with standard heavy hex nut, tends to loosen under traffic and requires periodic maintenance. Periodic inspection is required regardless of nut type used.

INTERCHANGEABILITY: Similar parts are designed to be interchangeable throughout the structure.

REPAIR OF GALVANIZED COATING: Areas of damage to the galvanized coating on structural steel or floor panels shall be painted with a zinc rich paint as directed by the Engineer.

CONCRETE: Concrete (4.0)(AE) shall be used in the Barrier Curb.

REINFORCING STEEL: Epoxy coated reinforcing steel, Grade 60, shall be used in the barrier curbs. Epoxy coating shall be in accordance with Kansas Specifications.

STRUCTURAL STEEL: The rolled beams shall meet AASHTO M270 (Grade 36) Specifications. All other structural steel shall meet ASTM A709 (Grade 36) Specifications. The rolled beams shall conform to the supplemental impact properties for Temperature Zone Designation 2.

SLOPE STABILITY: The site is to be monitored after substantial rain events for scour affecting the piling at the abutments. Contractor shall review the temporary bridge throughout it's service life for evidence of any bank degradation.

INDEX TO DETOUR BRIDGE DRAWINGS	
Sheet No.	Drawing
45	General Notes
46	Inventory
47	Construction Layout
48	Engineering Geology
49	Optional Abutment Details
50	Substructure Details
51	Bearing Device Details
52	Framing Plan and Diaphram Details
53	K-Connection of Deck Panels
54	N-Connection of Deck Panels
55	Safety Barrier Curb

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 1100 placed to the limits shown in the plans. Slope protection shall be removed prior to final channel grading, but Contractor may choose to re-use the rock in channel placements. For quantity of rock excavation for removal see Recapitulation of Road Quantities.

SUMMARY OF QUANTITIES	
Item	Quantity
Erection and Removal of Rolled Beam Detour Bridge	Lump Sum
Slope Protection (Riprap Stone)	273 Cu. Yd.

NO.	DATE	REVISIONS	BY	APP'D
4	6-21-99	Numerous Revisions	GFK	GMC
3	12-9-98	Numerous Revisions		DRT/GMC
2	6-16-97	Numerous Revisions		DRT/GMC
1	10-1-96	K and N Panels		DRT/GMC

KANSAS DEPARTMENT OF TRANSPORTATION

Detour Sta. 78+16.37

GENERAL NOTES
(DETOUR BRIDGE)
WITH H-PILE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified 01-08-2024

Sheet No. 45

KDOT Graphics Certified

Std. Base File: k:\bridge\standards\us\br415a.dgn
Plotted By: JHOVERSO Plot Location:
File: c:\pwworking\central01\d337767.4\ka572801\bbr113-br415a.dgn
Plot Date: 01-08-24

* The "Total Required" and "Preliminary Inventory" is based upon Abutment Backwall Option "B".

Recorded By: _____.
Completion Date of Post-Construction Inventory _____.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	46	135

DETOUR BRIDGE INVENTORY SHEET

				DESIGN ENGINEER				CONSTRUCTION ENGINEER					
Col.#	1		2	3A	3B	4	5	6		7	8	9	10
				PRELIMINARY INVENTORY *				PRECONSTRUCTION INVENTORY			POSTCONSTRUCTION INVENTORY		
						CONTRACTOR FURNISHED		Supplied by KDOT from Stockpile					
Line Item Number	Item Description	Units	* Total Req'd.	Supplied by KDOT	Supplied by KDOT	Refit Rolled Beam Detour Bridge	Furnish Rolled Beam Detour Bridge	3A	3B	Replacements by Contractor (Col. 3A+3B minus Col. 6)	Returned to KDOT yard	Lost or damaged by Contractor	Damaged due to use and taken out of service
1	Predrilled Pile Holes	Lin. Ft.	367										
2	Support Bracing (Substructure) (1)	——	——			As required							
3	Steel Pile (HP 10x42) (Substructure)	Lin. Ft.	*										
4	Abutment Cap C15x40 @ 40'-0" (2 per Abutment)	Each	4										
5	Pier Cap C15x40 @ 29'-0" (2 per Pier)	Each	——										
6	Brg. Plate (PL 2x20x3'-9") w/4 - 1 1/4" Ø Anchor Studs (6 per support)	Each	12										
7	Rocker Plate (PL 2x6x2'-3") (12 per span) (8)	Each	12										
8	Timber 3"x12" (120' per Abutment, Option 'A')	Lin. Ft.	-			-							
9	Timber 3"x12" (x5' Option 'A'; x7' Option 'B') (40 timber per Abut.)	Each	80			80							
10	Timber 2x10x3'-0" (Nominal Size) (8 per Abutment, Option 'A') (2)	Each	-			-							
11	Timber 4"x6"x7'-5" (4 per Abutment)	Each	8			8							
12	Timber 4"x4"x4'-9 7/8" (10 per Abutment)	Each	20			20							
13	Timber 3" Spacer (40' per Abutment, Option 'A')	Lin. Ft.	-			-							
14	Timber 7 1/2" Spacer (80' per Abutment, Option 'B')	Lin. Ft.	160			160							
15	Safety Barrier Curb, Precast (Interior Units) (4)	Each	14										
16	Safety Barrier Curb, Precast (End Units) (4)(5)	Each	4										
17	Anchor Plate (PL 1/2 x6x1'-4") (2 per Safety Barrier Unit)	Each	18										
18	Steel Grid Deck Panels (9 per span) (6)	Each	9										
18a	"K" Panels (6)	Each											
18b	"N" Panels (6)	Each											
19	"N" - Connector Plate (648 per N-Span)	Each	648										
20	Steel Spacer Plate (PL 1 1/2 x4x0'-9 3/4") (4 per abutment) (3)	Each	8										
21	Steel Girders (W30x173) (6 per span)	Each	6										
22	Bent Plate Diaphragm BP (PL 5/16 x27x4'-9 3/8") (20 per span)	Each	20										
23	Bolts 7/8"Ø x2 1/4" (Beam ℄ to Rocker ℄ (Drill & Tap) (48 per span) (8)	Each	48										
24	Bolts 3/4"Ø x17" (4 per Barrier Unit)	Each	72										
25	Bolts 3/4"Ø x1 3/4" (Diaphragm to Intermediate Stiffener) (120 per span)	Each	120										
26	Bolts 3/4"Ø x2 1/4" (Diaphragm to Brg. Stiffener) (120 per span)	Each	120										
27	Bolts 3/4"Ø x2 1/4" (C15x40 to piling) (120 per Pier;160 per Abut.)	Each	320										
28	Bolts 3/4"Ø x3 1/2" (Floor panels to beams) (648 per span) (4) (7)	Each	648										
29	Bolts 3/4"Ø x4" (bevel washer req'd.) (12 per Bearing plate)	Each	144										
30	Lag Screws 1/2"Ø x5" (4 per 3"x12" Timber)	Each	320			320							
31	Button Head Bolts 3/4"Ø x3 1/2" (Fasten 2x10 to Piling) (Option 'A' Only)	Each	-			-							
32	Button Head Bolts 3/4"Ø x6" (4"x6" & 4"x4" to stiffener) (36 per Abutment)	Each	72			72							
33	Button Head Bolts 3/4"Ø x9" (4"x6" to wingwall piling) (8 per Abutment)	Each	16			16							
34													
35													
36													
37													
38													

(1) 3/4" diameter bolts for bracing to piling connection as required. See Detail "B" of "Substructure Details" Sheet.

(2) May be substituted for 1 1/2" steel spacer in Option 'B'.

(3) A nominal 2x10 timber may be substituted.

(4) Extras are to be supplied and stored at the site for immediate replacement of parts damage or lost during the life of the detour bridge.

(5) Safety Barrier Unit, Precast (End Units): Select from the KDOT stockpile only those safety barrier end units to which thrie-beam guardrail can be attached. Select a minimum of 2 left-handed and 2 right-handed end units.

(6) Steel Grid Deck Panels: All "N" type deck panels Are identified by the painted RED end of a bearing bar. All "K" type deck panels do not have painted identification marks.

(7) "K" Panels require 2 washers
"N" Panels require 1 washer

(8) Do not remove from rolled beams.

* 2 @ 31' Abut. No. 1
6 @ 28' Abut. No. 1
2 @ 31' Abut. No. 2
6 @ 28' Abut. No. 2

Containers used to store parts at the Storage site must have holes drilled or punched in the bottom of these containers to provide free and total drainage. Steel parts must not be stored in containers that will hold water.

GENERAL NOTES

Pre-Construction Inventory: The Engineer and the Contractor shall inventory the parts which are to be supplied by KDOT and which are stockpiled at the receiving site(s) listed in the Storage Site Locations note. This inventory shall be recorded by the Engineer and verified by the Contractor. If there is a discrepancy between the actual number of parts stockpiled (Column 6) and the number listed in Column 3A and 3B, or if there are parts damaged beyond further use, the Contractor shall replace the missing and/or damaged parts (Column 7) and be reimbursed in accordance with KDOT Specifications, "Extra Work". The parts supplied by KDOT (column 6) and the replacement parts furnished by the Contractor (column 7) shall equal the total supplied in columns 3A and 3B.

Post-Construction Inventory: The parts to be returned to the KDOT storage site and to remain the property of KDOT shall be the sum of the total parts furnished by the Contractor and those supplied by KDOT. Exceptions are as noted by diagonal hatching in the Inventory Listing. The parts lost or damaged by the Contractor shall be replaced and transported to the storage site at the expense of the Contractor. This inventory shall be recorded by the Engineer and verified by the Contractor at the storage site at the time of delivery.

The Engineer shall send a copy of the Pre-Construction and Post-Construction Inventories to:
Kevin Endsley
13th Floor
KDOT Bureau of Design
Eisenhower State office Building
700 SW Harrison St.
Topeka, KS. 66603-35745

Storage Site Locations: All parts supplied by KDOT may be picked up from the following Receiving Site(s).

(3A) KDOT Mixing Strip at the US-50/K-177 Intersection (NE Quadrant), approximately 3 miles south of Project No. 177-9 KA-4430-01 Br 9(076)

(3B) _____

Upon completion of the project, all parts to be returned shall be stockpiled at the following Storage Site:

KDOT Mixing Strip to the east of the intersection of K-31 and K-99 on the north side of K-31, south of Project No. 99-99 KA-5728-01

NO.	DATE	REVISIONS	BY	APP'D
7	07-09-10	Current Bid Item	JPJ	GMC
6	9-7-00	Stockpile 3A, 3B	GFK	DRT/GMC
5	6-21-99	Numerous Revisions	GFK	GMC
4	12-9-98	Numerous Revisions		DRT/GMC
3	8-25-97	Timber Quantities		DRT/GMC
2	6-16-97	Numerous Revisions		DRT/GMC
1	10-1-96	Removed K-Connector Note		DRT/GMC

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta. 78+16.37
INVENTORY
(DETOUR BRIDGE)
WITH H-PILE
Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

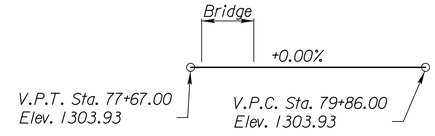
KDOT Graphics Certified

KDOT Graphics Certified 01-08-2024

Sheet No. 46

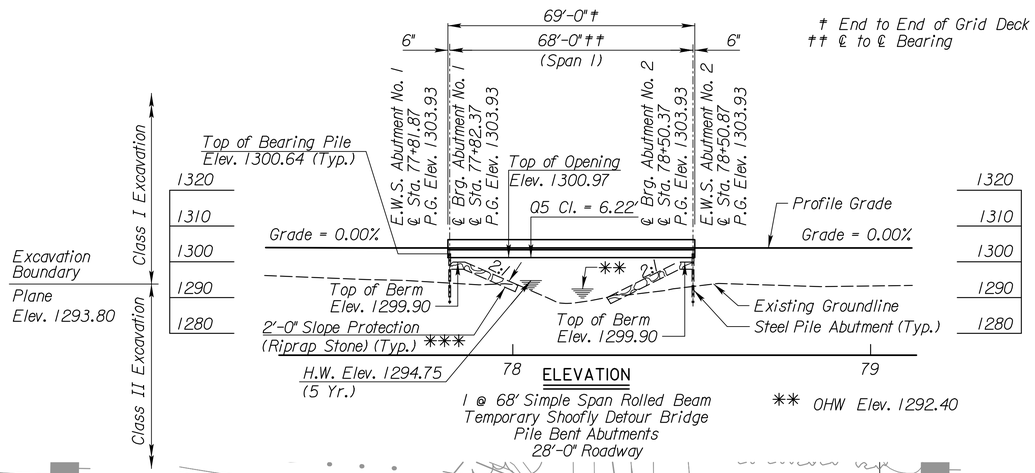
Std. Base File: k:\bridge\standards\us\br415b.dgn
Plotted By: JH0\ERSO Plot Location:
File: c:\pwworking\central01\d337767\k5728001\br113-br415b.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	47	135



PROFILE K99 SHOOFLY DETOUR

† End to End of Grid Deck and Barrier
†† ℄ to ℄ Bearing

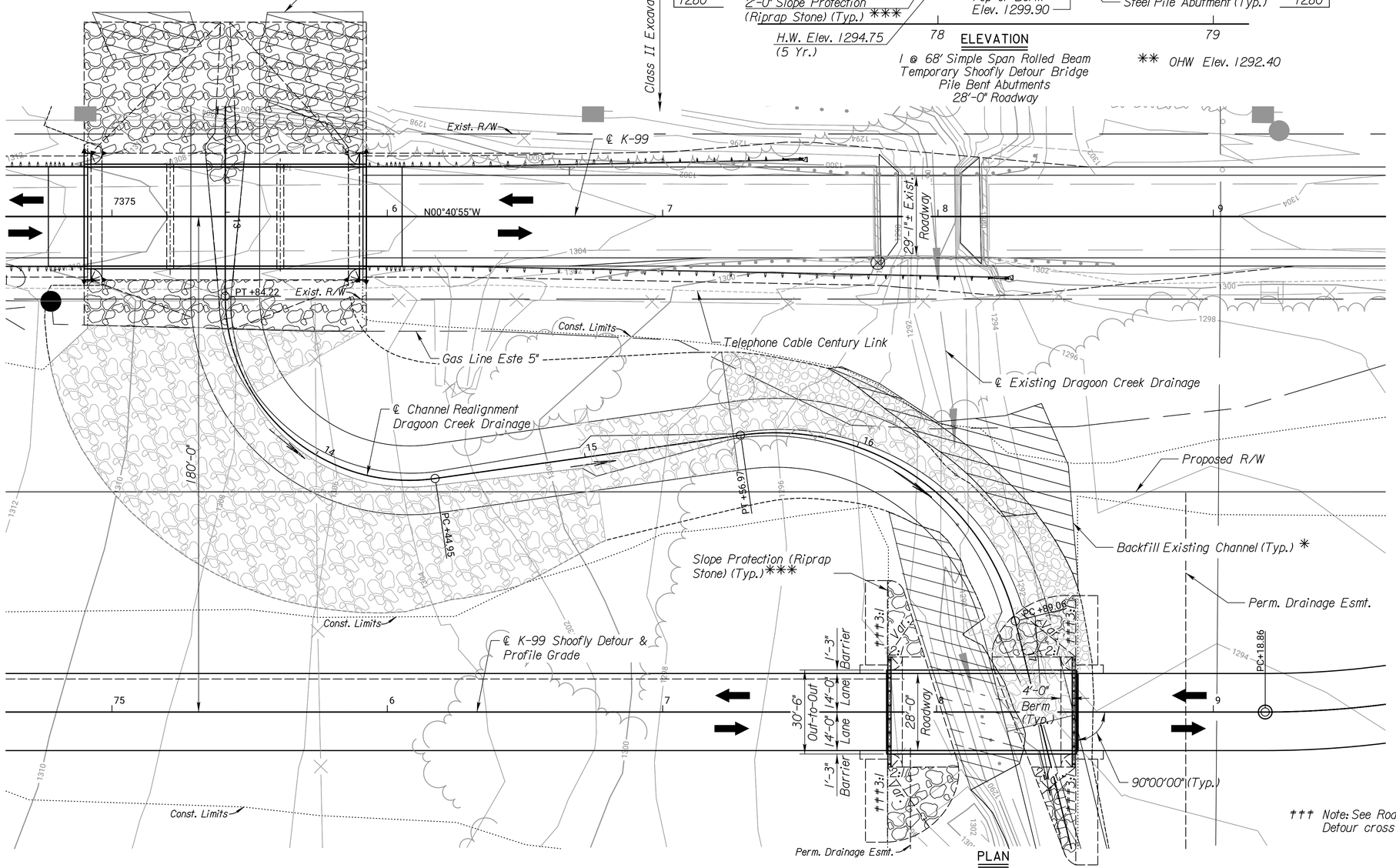


ELEVATION

1 @ 68' Simple Span Rolled Beam
Temporary Shoofly Detour Bridge
Pile Bent Abutments
28'-0" Roadway

** OHW Elev. 1292.40

*** For additional information on slope protection and removal of slope protection see sheet "General Notes (Detour Bridge)".



PLAN

††† Note: See Road Plans for Detour cross sections.

SHOOFLY DRAINAGE DATA

Drainage Area	1.2	Sq. Mi.
Design Frequency	5	Years
Design Discharge (Q_{des})	780	cfs
Design High Water Elevation	1294.75	Ft.
Change in Design Backwater	0.48	Ft.
Design Backwater Elevation	1295.01	Ft.
Overtopping Elevation (Sta. 77+67)	1303.93	Ft.
Overtopping Discharge	5,700	cfs
Overtopping Frequency	>500	Years
Historic High Water Elevation (Exist. Bridge)	1301.00	Ft.
Ordinary High Water Elevation	1292.40	Ft.
Total Waterway Provided	473	Sq. Ft.
Design Waterway Provided	124	Sq. Ft.
Estimated Ordinary High Water Discharge	250	cfs

* For additional informaiton see channel improvement sheets.

SCALE
20' 0 20' 40'
PLAN: Lat. & Long.
PROFILE: Horiz. same as above
Vert.
0 20'

BM#10 Set "T" shaped fc. po. S side of rock @ gate po. 22.29' Lt. ℄ Sta. 7369+06.99 Elev. 1350.28

BM#11 Set mag. nail & KDOT wshr. top SE abut. of bridge 16.75' Rt. ℄ Sta. 7377+78.17 Elev. 1302.52

BM#12 Set mag. nail & KDOT wshr. top E hdwl. RCB 15.22' Rt. ℄ Sta. 7384+11.38 Elev. 1306.98

BM#13 Set RR spike in E face of pow. pole 34.18' Lt. ℄ Sta. 7387+80.38 Elev. 1317.29

Vertical Datum: NAVD 88 (Geoid 18)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta. 78+16.37

CONSTRUCTION LAYOUT (DETOUR BRIDGE)
WITH H-PILE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

SHEET NO.	OF	SCALE		APP'D	
DESIGNED	ASF	DETAILED	JAH	QUANTITIES	ASF
DESIGN CK.	TK	DETAIL CK.	TK	QUAN. CK.	TK

CADD	JAH
CADD CK.	TK

KDOT Graphics Certified 01-08-2024

Sheet No. 47

KDOT Graphics Certified

Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d3376674\ka5728001\bbrl13-24.dgn
Plot Date: 01-08-24

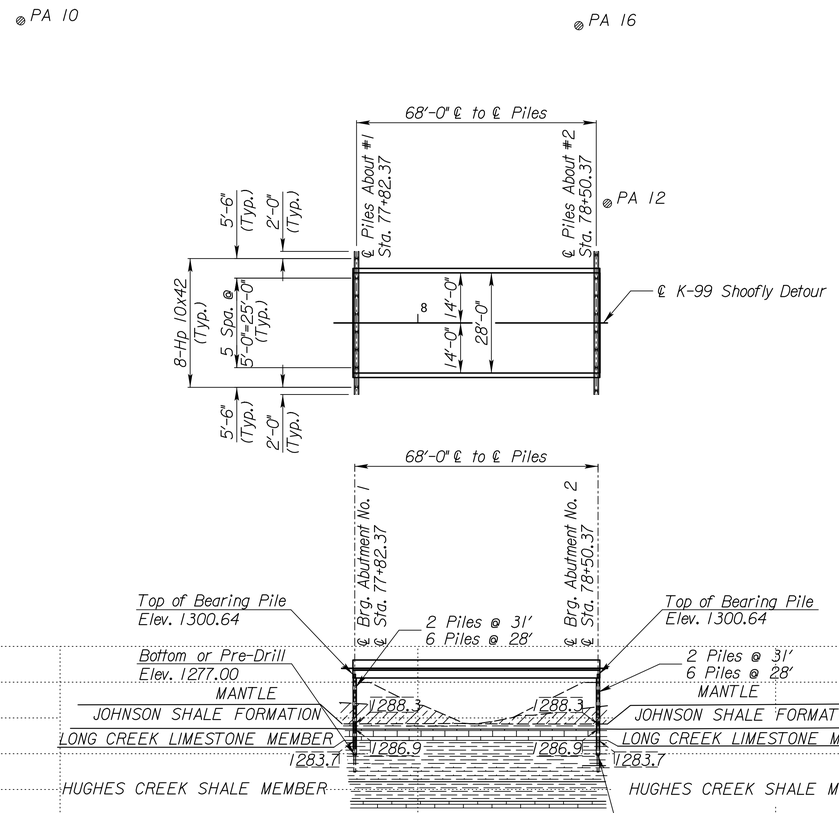
STATE	PROJECT NO.		YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99	KA-5728-01	2023	48	135

PILING: Due to shallow bedrock at this location, it is recommended that H-Piles be set within pre-drilled holes. Pre-drilling will encounter the Johnson Shale Formation, the Long Creek Limestone member, and the Hughes Creek Shale Member. Temporary casing should be used to ensure that the pre-drilled hole remains stable after being drilled. H-pile should be placed in the hole and driven to bearing after pre-drilled. Once sufficient bearing has been achieved, the annular space around the pile should be backfilled with concrete up to the top of bedrock. From the top of bedrock the annular space should be backfilled with sand or other loose material to within 2 to 3 feet of the surface according to standard Specification 704.4c.

Where possible, these piling shall be driven to the minimum computed bearing value of 55 Tons.

In using the Pile driving formula of the KDOT Specifications, the Engineer shall not allow the Contractor to drive the pile MORE THAN 82.5 TONS.

If additional piling is required due to change in pile tip elevation, this piling shall be provided by the Contractor without change in compensation.



All piles shall be Gr. 50 Steel HP 10x42.

1310 1290 1270 1250 1230 1210 1190

75 76 77 78 79 80

STANDARD GEOLOGIC SYMBOLS

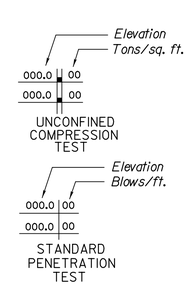
Clay or Underclay
Silty Clay
Silt
Sand
Gravel
Boulders
Caliche
Silty or Clayey Shale
Limy Shale
Black or Fissile Shale
Sandy Shale
Gypsiferous Shale
Weathered Shale
Sandstone
Shaly Sandstone
Gypsum bed
Dolomite
Cross-bedded Sandstone
Limestone
Cherty Limestone
Shaly Limestone
Sandy Limestone
Bentonite
Loess
Mortarbed
Coal
Siltstone
Chalk
Wavy limestone
Chalky limestone

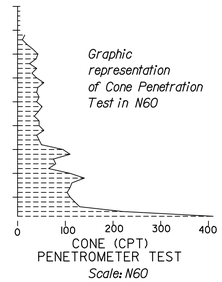
SOUNDINGS

Core drill
Power auger
Hand tools
Cone (CPT) penetrometer
Shelby tube
Water level

GEOLOGIC PROFILE

000.0 Elevation interpolated or from adjacent soundings
000.0 Actual sounding elevation





NOTE: Soundings shown on these plans are taken from notes obtained in the field and represent the best information available. Logs of these soundings are provided with the bid documents, or are available from the Kansas Department of Transportation in Topeka for inspection by interested and qualified bidders.

SCALE: 1"= 20' Horiz. 1"= 20' Vert.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Detour Sta. 78+16.37

ENGINEERING GEOLOGY
(DETOUR BRIDGE)
WITH H-PILE

Proj. 99-99 KA-5728-01 Wabaunsee Co.

SHEET NO. OF	SCALE	APP'D
DESIGNED	DETAILED	GEOLOGY DRAWN BY:
DESIGN CK.	DETAIL CK.	GEOLOGY LOCATION:

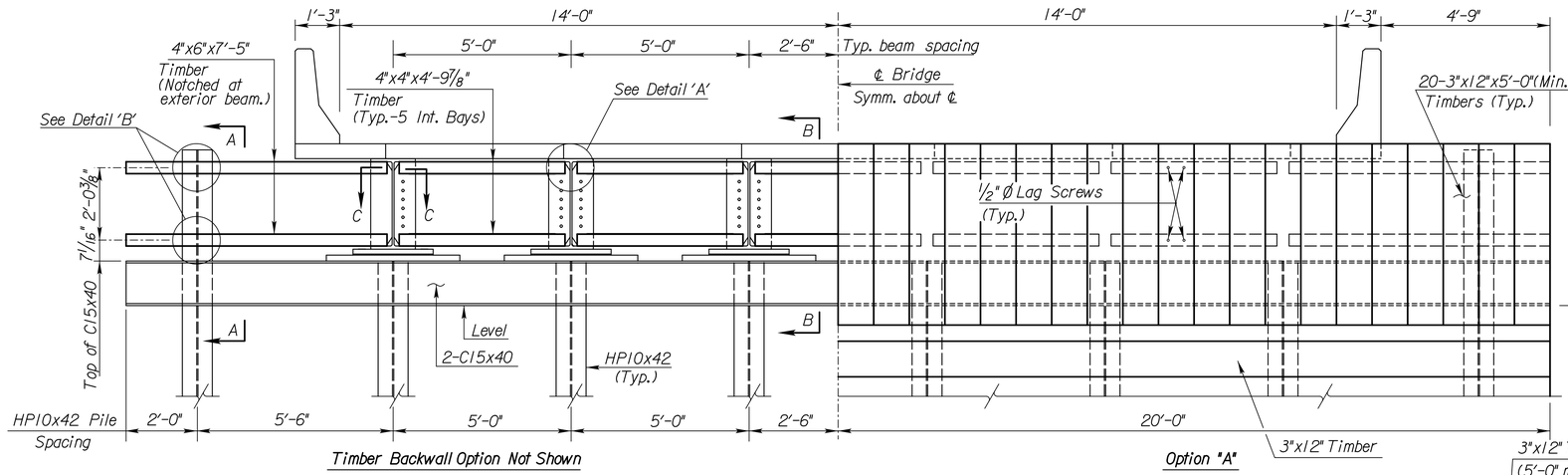
KDOT Graphics Certified 01-08-2024

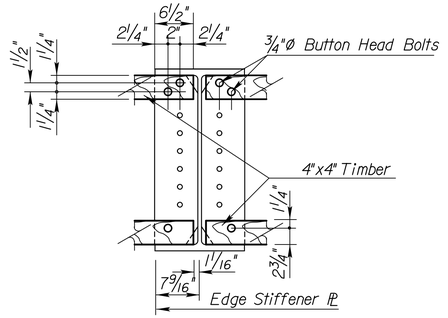
Sheet No. 48

KDOT Graphics Certified

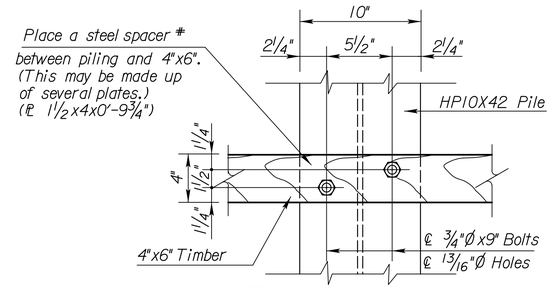
Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d337767.4\ka5728001\bbr113-24a.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	49	135

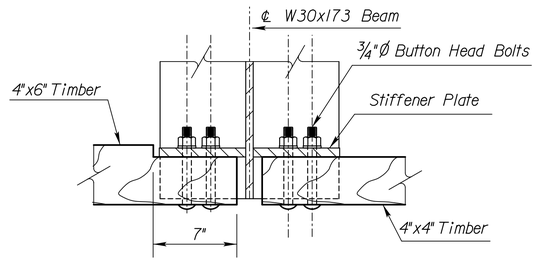




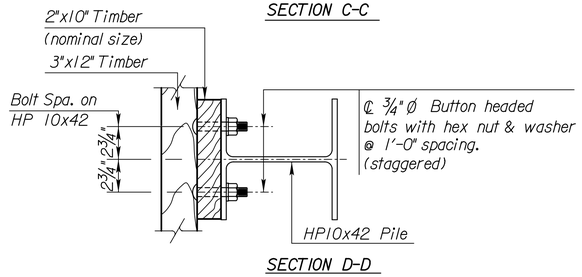
DETAIL "A"



DETAIL "B"

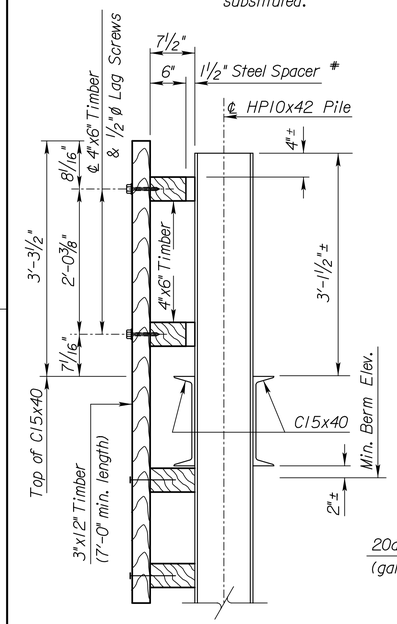


SECTION C-C

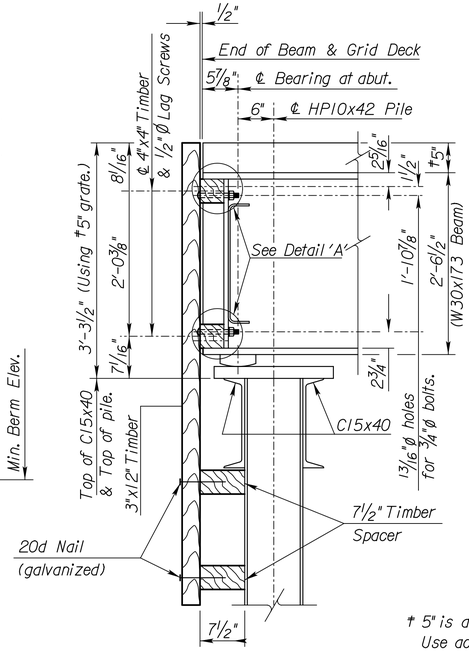


SECTION D-D

\# A nominal 2x10 may be substituted.

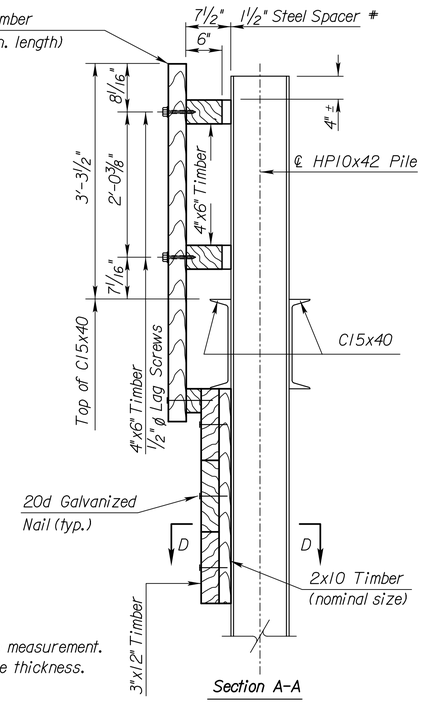


Section A-A

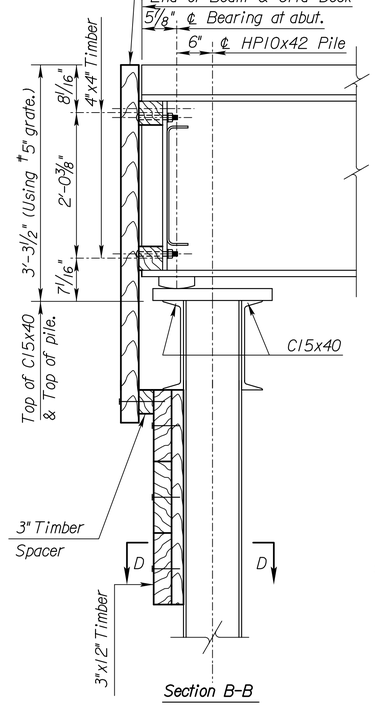


Section B-B

OPTION "B"



Section A-A



Section B-B

OPTION "A"

* ⁺5" is an approximate measurement. Use actual deck grate thickness.

GENERAL NOTES

① All timber splices shall be made at points of support.

② Lag screws require prebored holes of the proper diameter. The lead hole diameter for the shank should equal that of the shank. The diameter of the lead hole for the threads should vary with the density of the wood.

③ There shall be a minimum of 4- ½"Øx5" lag screws used to fasten each 3"x12" timber to the 4" timbers. There shall be a minimum of 1- ½"Øx5" lag screw at each point of support for the horizontal 3"x12" timbers. The 3" timber spacer may be nailed in place with 20d nails.

④ Extend the 3"x12" timbers (option "A" or "B") approximately 2'-6" below the berm elevation.

⑤ The Contractor may submit an alternate backwall design to the Engineer for review. Construction of this backwall shall not begin prior to approval from the Engineer.

NO.	DATE	REVISIONS	BY	APP'D
3				
2	6-21-99	Numerous Revisions	GFK	GMC
1	6-16-97	Change Treated Timber to Timber		DRT/GMC

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta. 78+16.37

OPTIONAL ABUTMENT DETAILS
(DETOUR BRIDGE)
WITH H-PILE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

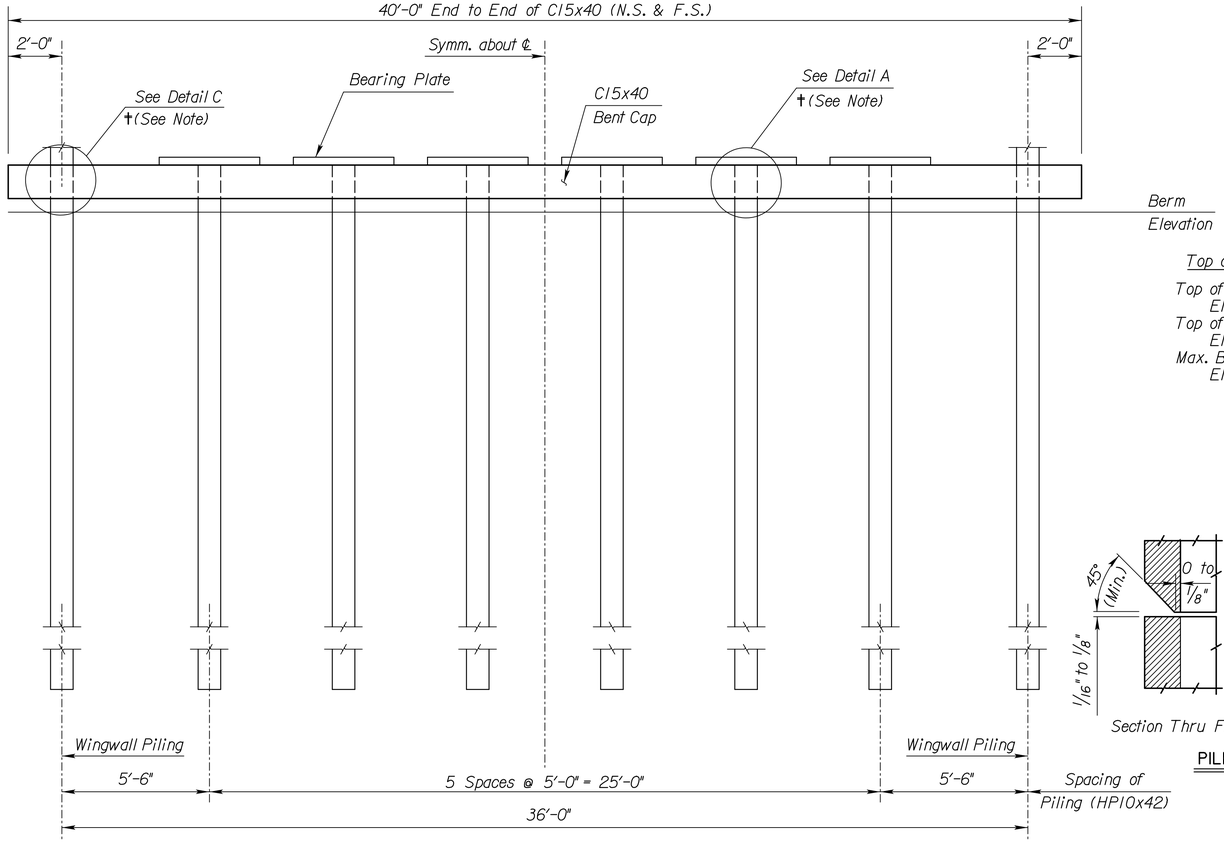
KDOT Graphics Certified 01-08-2024

Sheet No. 49

KDOT Graphics Certified

Std. Base File: k:\bridge\standards\us\br415c.dgn
Plotted By: JHOVERSO | Plot Location:
File: c:\pwworking\central01\d3377674\kd5728001\bbr113-br415c.dgn
Plot Date: 01-08-24

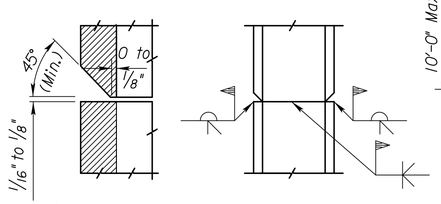
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	50	135



ABUTMENT SUPPORT

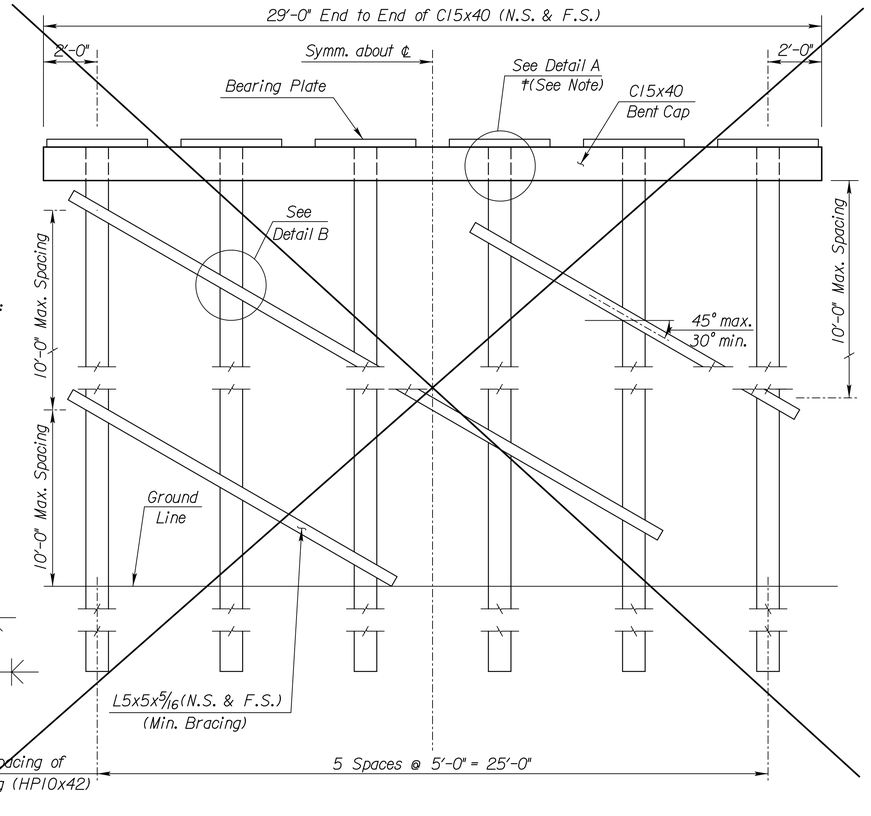
Top of Pile and Berm Elevations:

Top of Abut. Wingwall Pile:
Elev. = Cr. Gr. Elev. - 0.17 Ft.
Top of Bearing Pile (Pier and Abut.):
Elev. = Cr. Gr. Elev. - 3.29 Ft.
Max. Berm Elev.:
Elev. = Cr. Gr. Elev. - 3.96 Ft.

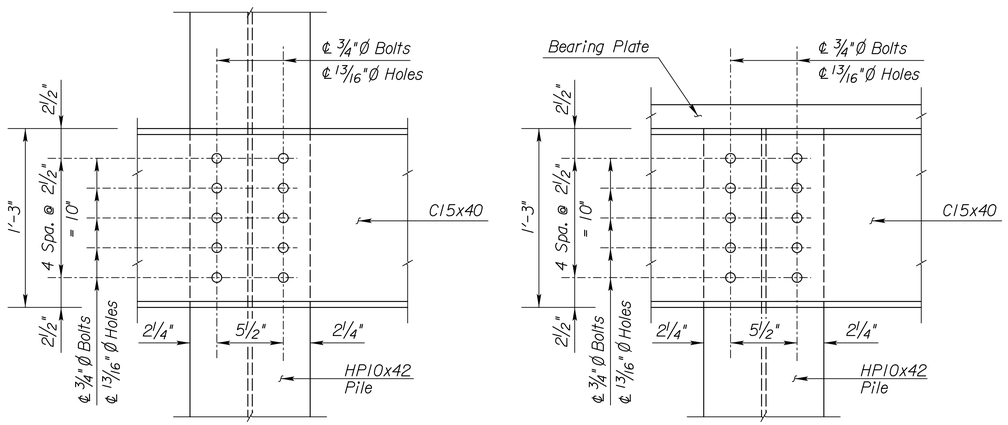


Section Thru Flange

PILE SPLICE DETAILS



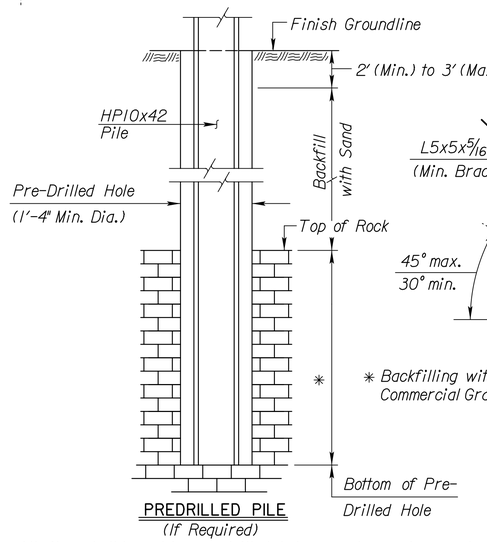
PIER SUPPORT



DETAIL C

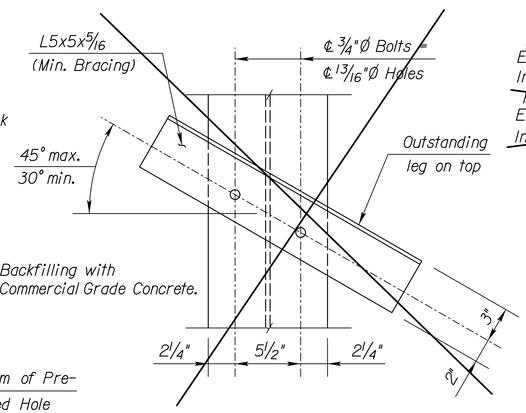
† NOTE: The 13/16" diameter bolt hole pattern in the C15x40 channels at the Piling Connections will be used as a template to field drill bolt holes through the HP10x42 flanges.

DETAIL A



PREDRILLED PILE
(If Required)

All piles shall be set in pre-drilled holes as shown above and when required on the Construction Layout or Geology sheets. Temporary casing should be used to ensure the pre-drilled hole remains stable after being drilled.



DETAIL B

DESIGN PILE LOAD:

Abutment Loading		Design Load (Tons per Piling)	Allowable Load
Exterior - Group I	(100%) -	25.3	55.8
Interior - Group I	(100%) -	24.6	55.8
Pier Loading			
Exterior - Group I	(100%) -	38.3	55.8
Interior - Group I	(100%) -	32.9	55.8

NO.	DATE	REVISIONS	BY	APP'D
3				
2	6-21-99	Numerous Revisions	GFK	GMC
1	8-18-97	Add Detail "C" & Revised Note		DRT/GMC

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta. 78+16.37

SUBSTRUCTURE DETAILS
(DETOUR BRIDGE)
WITH H-PILE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

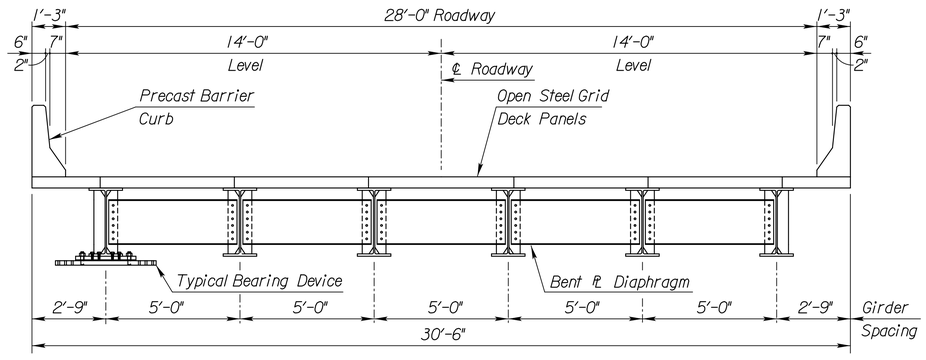
KDOT Graphics Certified 01-08-2024

Sheet No. 50

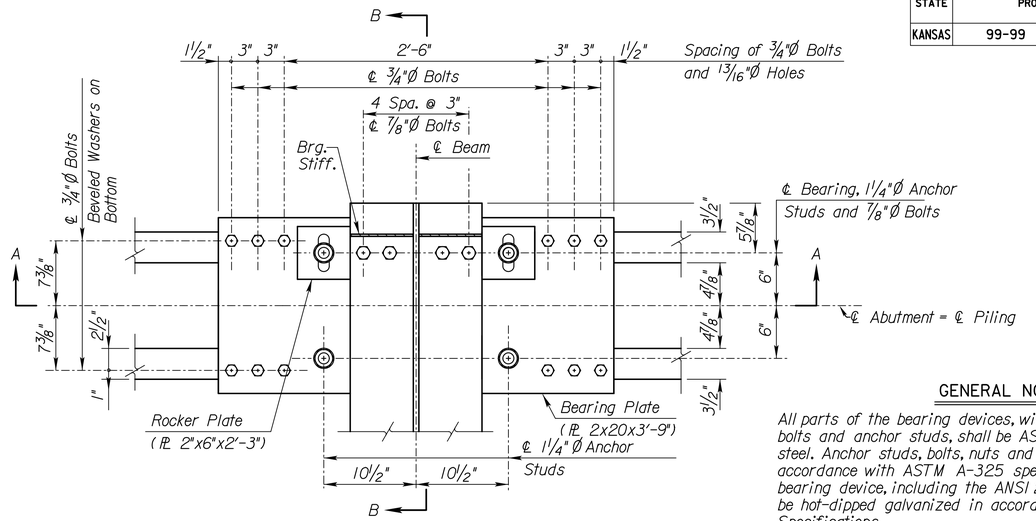
KDOT Graphics Certified

Std. Base File: k:\bridge\standards\us\br415d.dgn
Plotted By: JH0\VERSO | Plot Location:
File: c:\pwworking\central0\d337767.4\ka572801\bbrl13-br415d.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	51	135



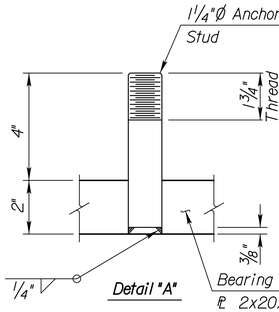
TYPICAL STRUCTURE SECTION



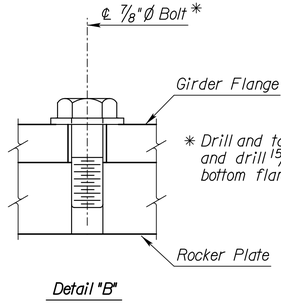
PLAN OF BEARING DEVICE AT ABUTMENT

GENERAL NOTES

All parts of the bearing devices, with the exception of the bolts and anchor studs, shall be ASTM A709 (GR.36) structural steel. Anchor studs, bolts, nuts and washers shall be in accordance with ASTM A-325 specifications. All parts of the bearing device, including the ANSI 250 finish surfaces, shall be hot-dipped galvanized in accordance with ASTM A-123 Specifications.

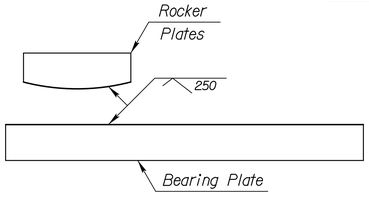


Detail "A"

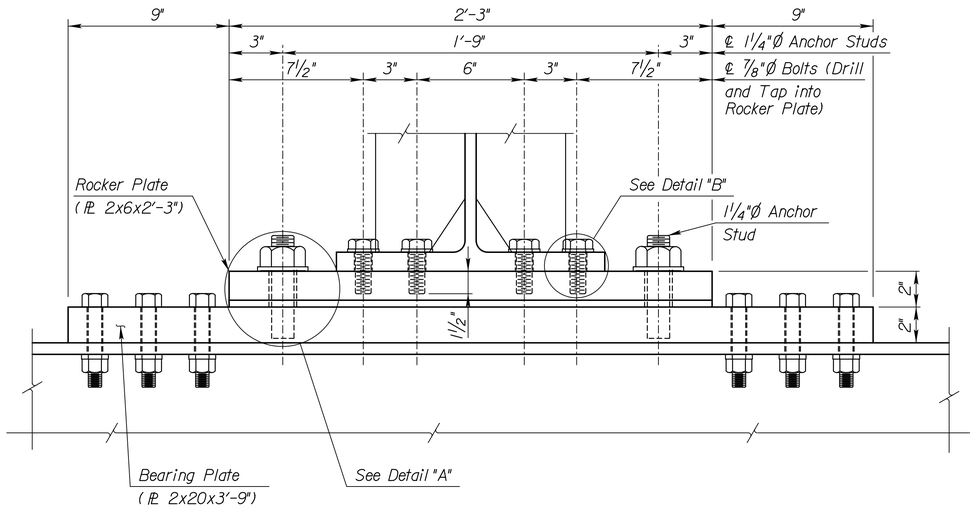


Detail "B"

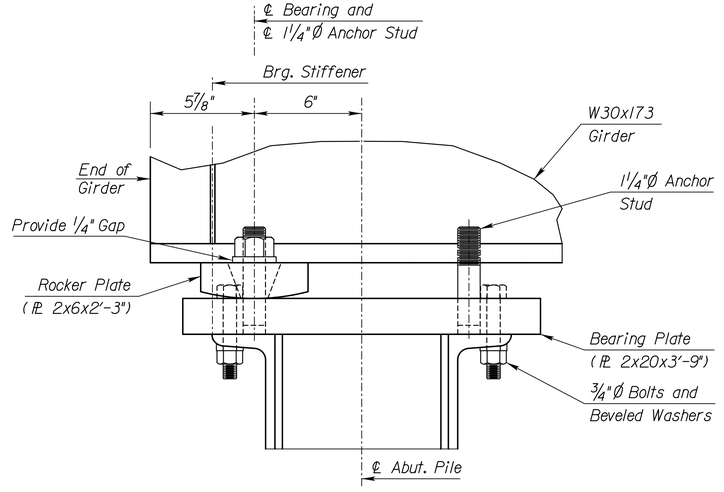
Bearing Plate
(℞ 2x20x3'-9")



TYPICAL FINISH DETAIL



Section A-A



SECTION B-B

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	6-21-99	Numerous Revisions	GFK	GMC

KANSAS DEPARTMENT OF TRANSPORTATION

Detour Sta. 78+16.37

BEARING DEVICE DETAILS
(DETOUR BRIDGE)
WITH H-PILE

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

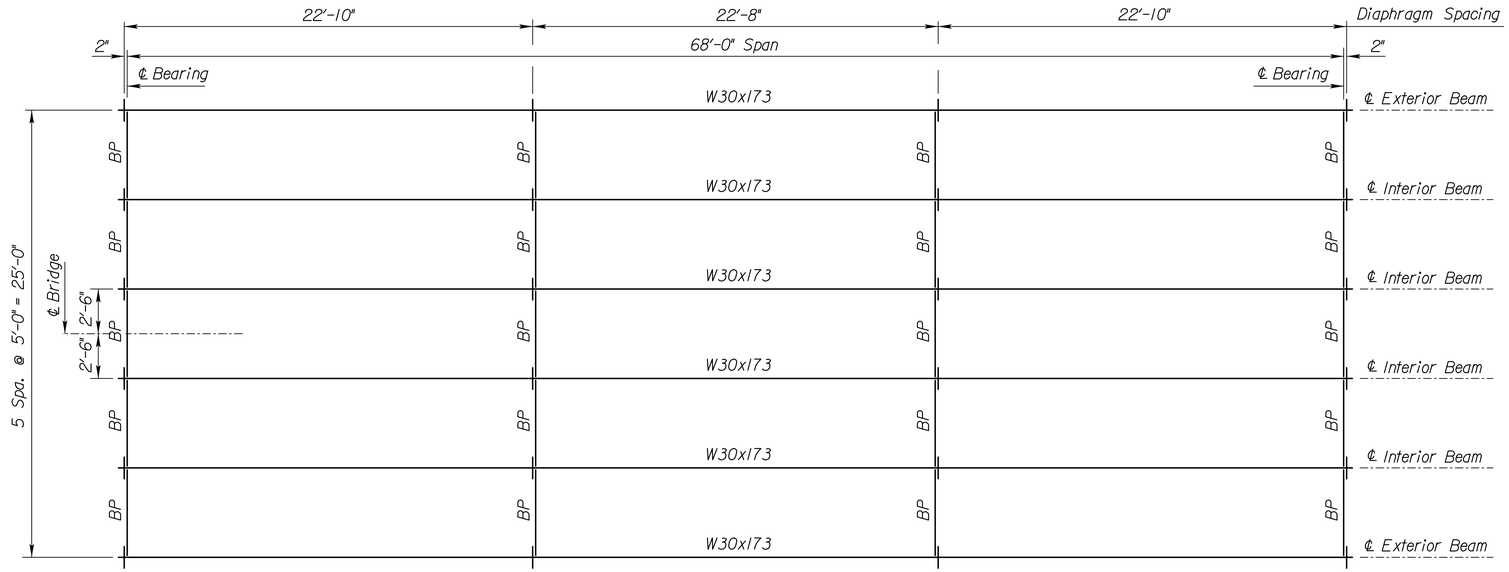
KDOT Graphics Certified 01-08-2024

Sheet No. 51

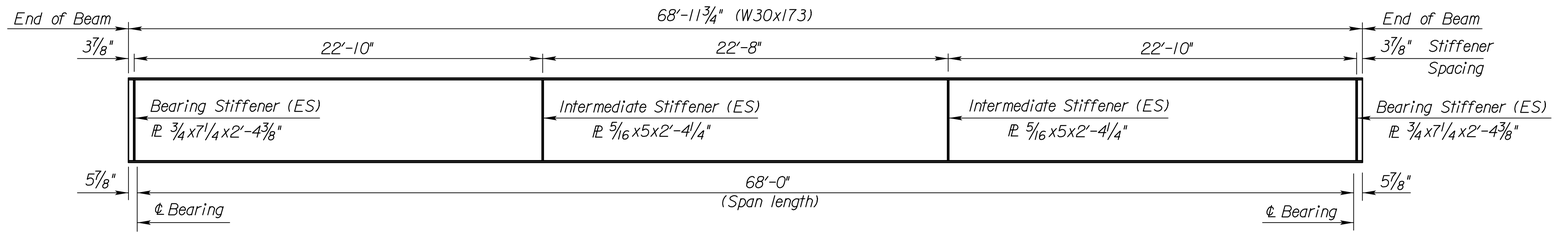
KDOT Graphics Certified

Std. Base File: k:\bridge\standards\us\br415e.dgn
Plotted By: JHOVERSO Plot Location:
File: c:\pwworking\central01\d337767.4\ke572801\bbr113-br415e.dgn
Plot Date: 01-08-24

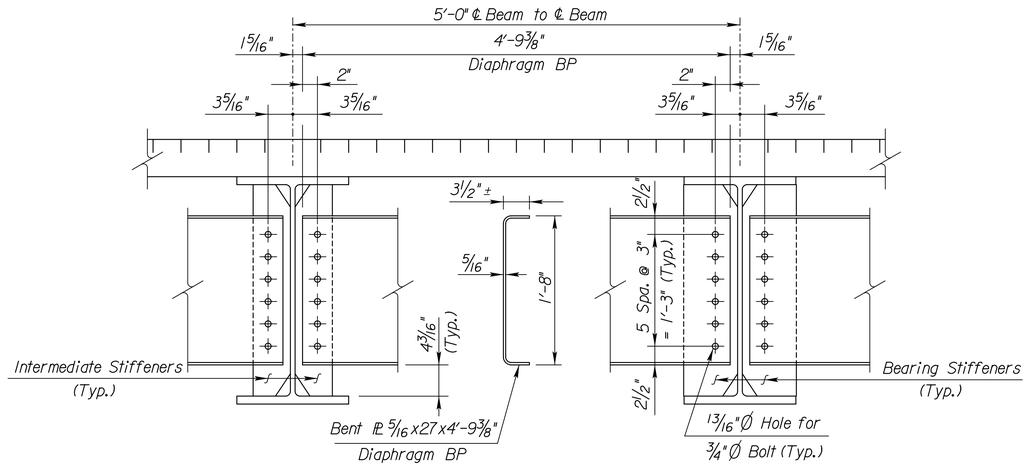
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	52	135



FRAMING PLAN

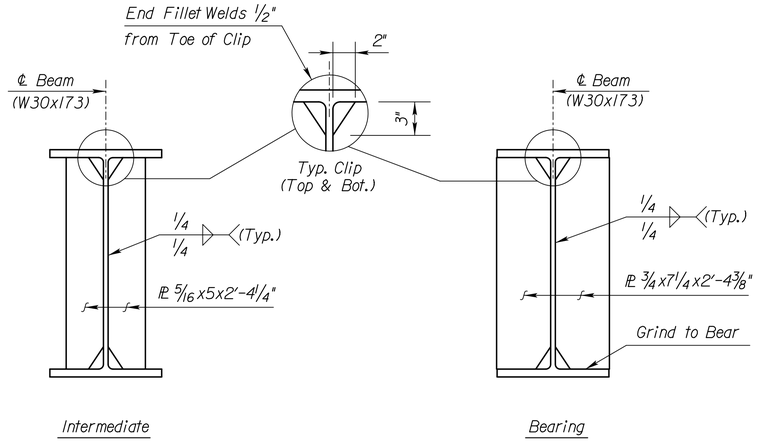


TYPICAL ELEVATION OF BEAM
(W30x173)



BENT PLATE DIAPHRAGM BP DETAILS

NOTE: See "Abutment Details" sheet for details required to fasten 4"x4" and 4"x6" timbers to the abutment stiffeners. The bolt holes required in each abutment stiffener shall be drilled in the shop.



STIFFENER DETAILS

GENERAL NOTES

1) Any natural camber in the rolled beams shall be placed upward for fabrication.

2) All stiffeners shall be placed perpendicular to the bottom flange. Magnetic particle inspection shall be required at the bearing stiffeners.

BILL OF MATERIAL-STRUCTURAL STEEL
(One span Only)

No.	Item	Weight - Lbs.
6	W30x173 @ 68'-11 3/4"	71,600
24	PL 3/4x7 1/4x2'-4 3/8"	1,020
24	PL 5/16x5x2'-4 1/4"	290
20	Bent PL 5/16x27x4'-9 3/8"	2,740
12	Bearing Plates w/Anchor Studs	6,140
12	Rocker Plates	980

LEGEND

(ES) Each Side

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	6-21-99	Numerous Revisions	GFK	GMC

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta. 78+16.37

FRAMING PLAN AND DIAPHRAGM DETAILS (DETOUR BRIDGE)

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

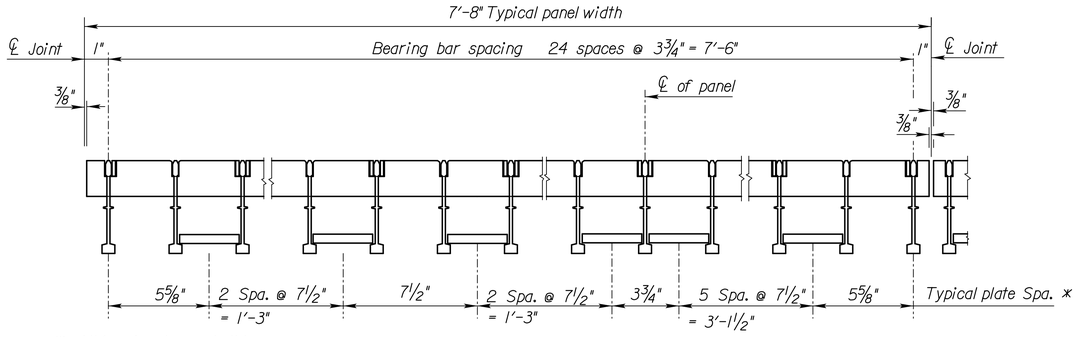
KDOT Graphics Certified 01-08-2024

Sheet No. 52

KDOT Graphics Certified

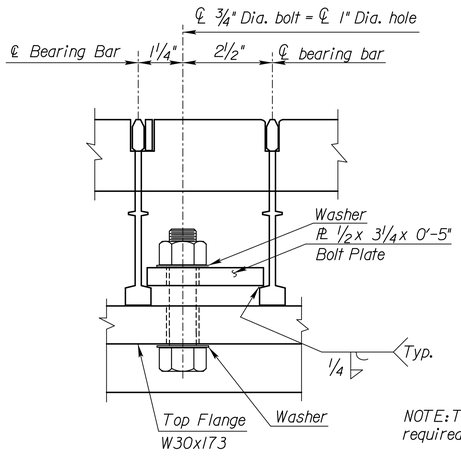
Std. Base File: k:\bridge\standards\us\br414a.dgn
Plotted By: JHOVERSO Plot Location:
File: c:\pwworking\central01\d337767\Ka5728001\bbr113-br414a.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	53	135

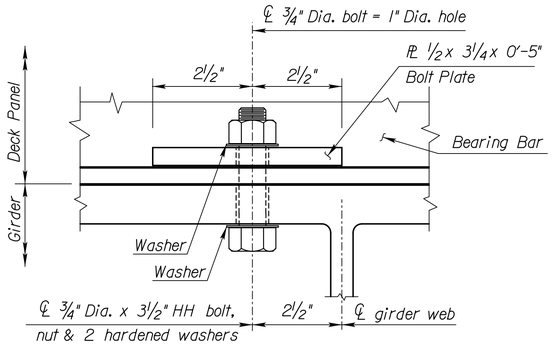


* All bearing bars shall be supported on one side or both sides by ½" Bolt Pℓ's.

SECTION C-C
(Deck Panel Only)

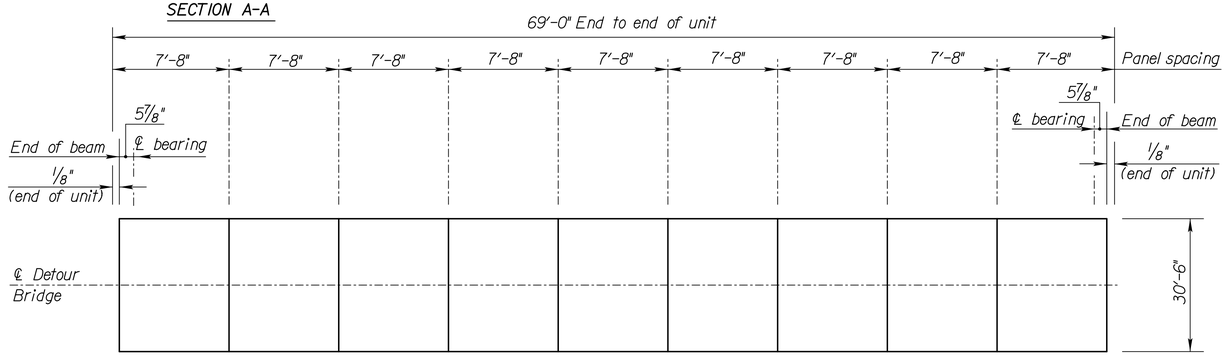


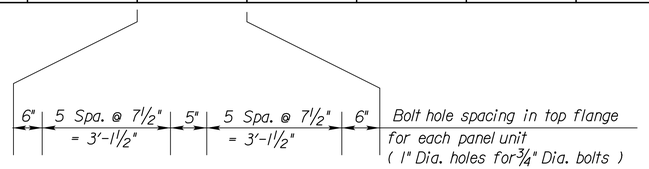
NOTE: Two hardened washers required per bolt.



SECTION B-B

SECTION A-A





PANEL LAYOUT
Showing bolt placement in top flange

GENERAL NOTES FOR FABRICATION

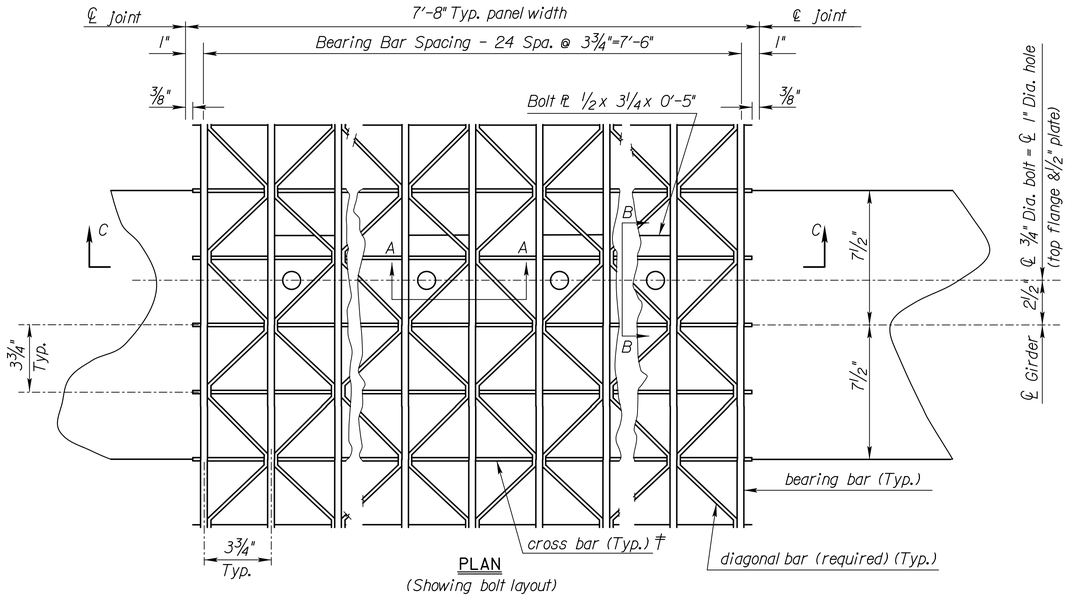
PANELS: Panels shall be 30'-6" in length with no splices parallel to traffic. If the centerline of a transverse joint is more than 1" from a bearing bar, end trim bars are required. The steel grid floor system shall consist of bars or beams perpendicular to traffic (bearing bars) and bars parallel to traffic (cross bars). Diagonal bars are required in all sections of the grid for stability. The system shall be designed to meet the current criteria of AASHTO Specifications for highway bridges. Live load shall be HS20-44. Dead weight of the curb is 240 lbs. per lin. ft.

After fabrication, the panels shall be hot-dipped galvanized in accordance with ASTM A-123 Specifications.

Details of the system and design calculations shall be submitted to the Engineer for review and approval. Details shown in the plans, representing the steel grid deck, are not meant to imply any given manufactured bridge floor system.

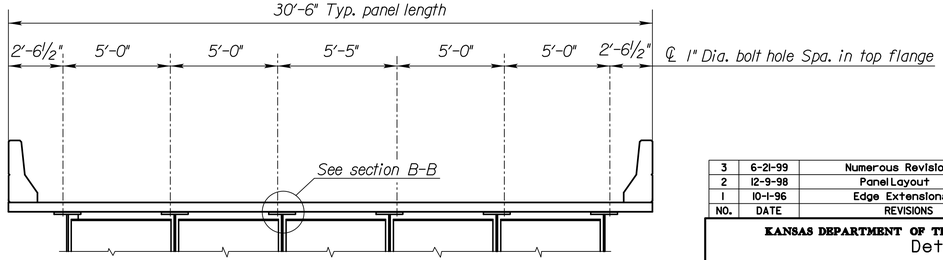
GENERAL NOTES FOR CONSTRUCTION

Panels are to be installed at right angles to the centerline of roadway.



PLAN
(Showing bolt layout)

† Cross bars of grid to match edges of flange as shown.



SECTION
(Showing bolt placement for attaching Deck Panels to Girders)

NO.	DATE	REVISIONS	BY	APP'D
3	6-21-99	Numerous Revisions	GFK	GMC
2	12-9-98	Panel Layout		DRT/GMC
1	10-1-96	Edge Extensions		

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta.78+16.37

K-CONNECTION OF DECK PANELS (DETOUR BRIDGE)

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

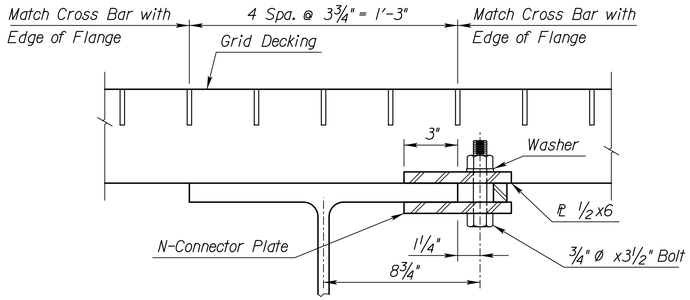
KDOT Graphics Certified 01-08-2024

Sheet No. 53

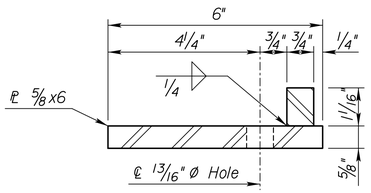
KDOT Graphics Certified

Std. Base File: k:\bridge\standards\us\br414b.dgn
Plotted By: JHOWERSO Plot Location:
File: c:\pwworkingcentral01\d337767.4\ka5728801\bbrl13-br414b.dgn
Plot Date: 01-08-24

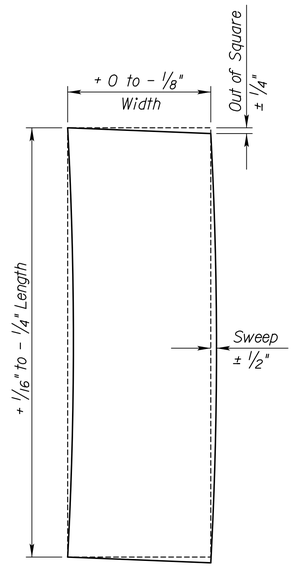
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	54	135



SECTION B-B



N-CONNECTOR PLATE



FLOOR PANEL TOLERANCES

GENERAL NOTES FOR FABRICATION

PANELS: Panels shall be 30'-6" in length with no splices parallel to traffic. If the centerline of a transverse joint is more than 1" from a bearing bar, end trim bars are required. The steel grid floor system shall consist of bars or beams perpendicular to traffic (bearing bars) and bars parallel to traffic (cross bars). Diagonal bars are required in all sections of the grid for stability. The system shall be designed to meet the current criteria of AASHTO Specifications for highway bridges. Live load shall be HS20-44. Dead weight of the curb is 240 lbs. per lin. ft.

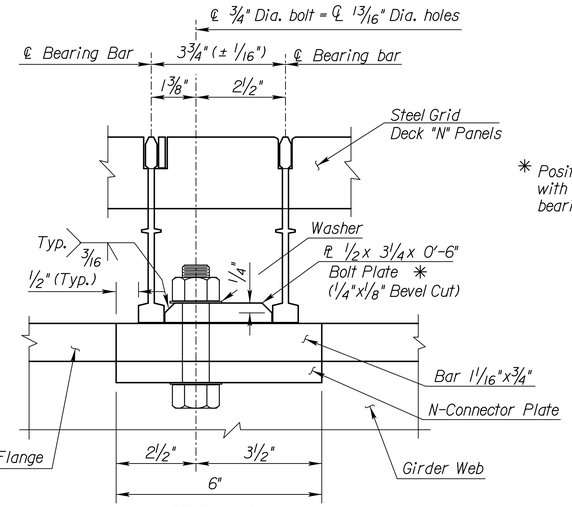
After fabrication, the panels shall be hot-dipped galvanized in accordance with ASTM A-123 Specifications.

Details of the system and design calculations shall be submitted to the Engineer for review and approval. Details shown in the plans, representing the steel grid deck, are not meant to imply any given manufactured bridge floor system.

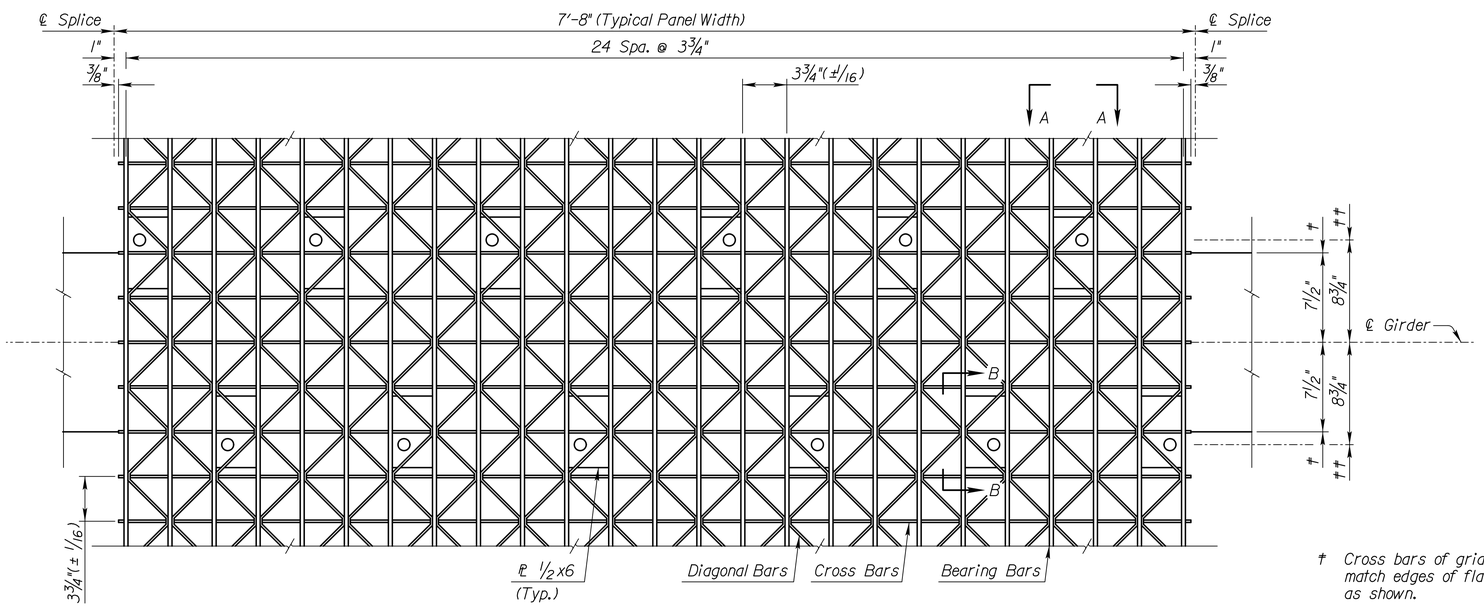
The steel grid floor N-Panels shall be fabricated with both K-Connection and N-Connection bolt plates.

GENERAL NOTES FOR CONSTRUCTION

PANELS: Panels are to be installed at right angles to the centerline of the roadway.



SECTION A-A



PLAN VIEW OF PANEL WIDTH WITH TYPICAL BOLTING PATTERN

† Cross bars of grid to match edges of flange as shown.

†† ℄ ¾" dia. bolt = ℄ 13/16" dia. bolt hole in ℄ ½x6.

NO.	DATE	REVISIONS	BY	APP'D
3				
2	6-21-99	Numerous Revisions	GFK	GMC
1	10-1-96	K & N Connection Bolt Plates		

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta.78+16.37

N-CONNECTION OF DECK PANELS (DETOUR BRIDGE)

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

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

KDOT Graphics Certified 01-08-2024

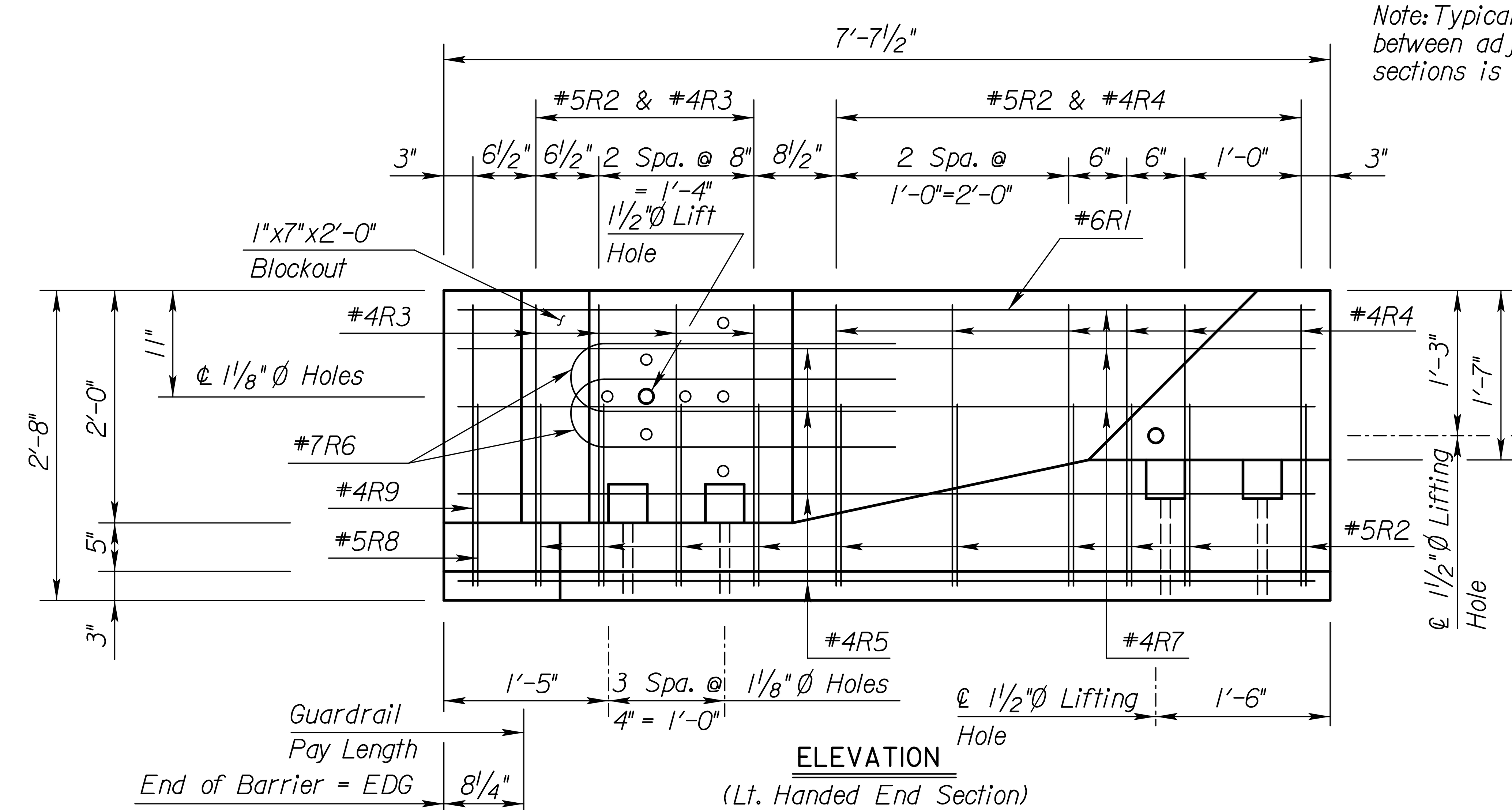
Sheet No. 54

KDOT Graphics Certified

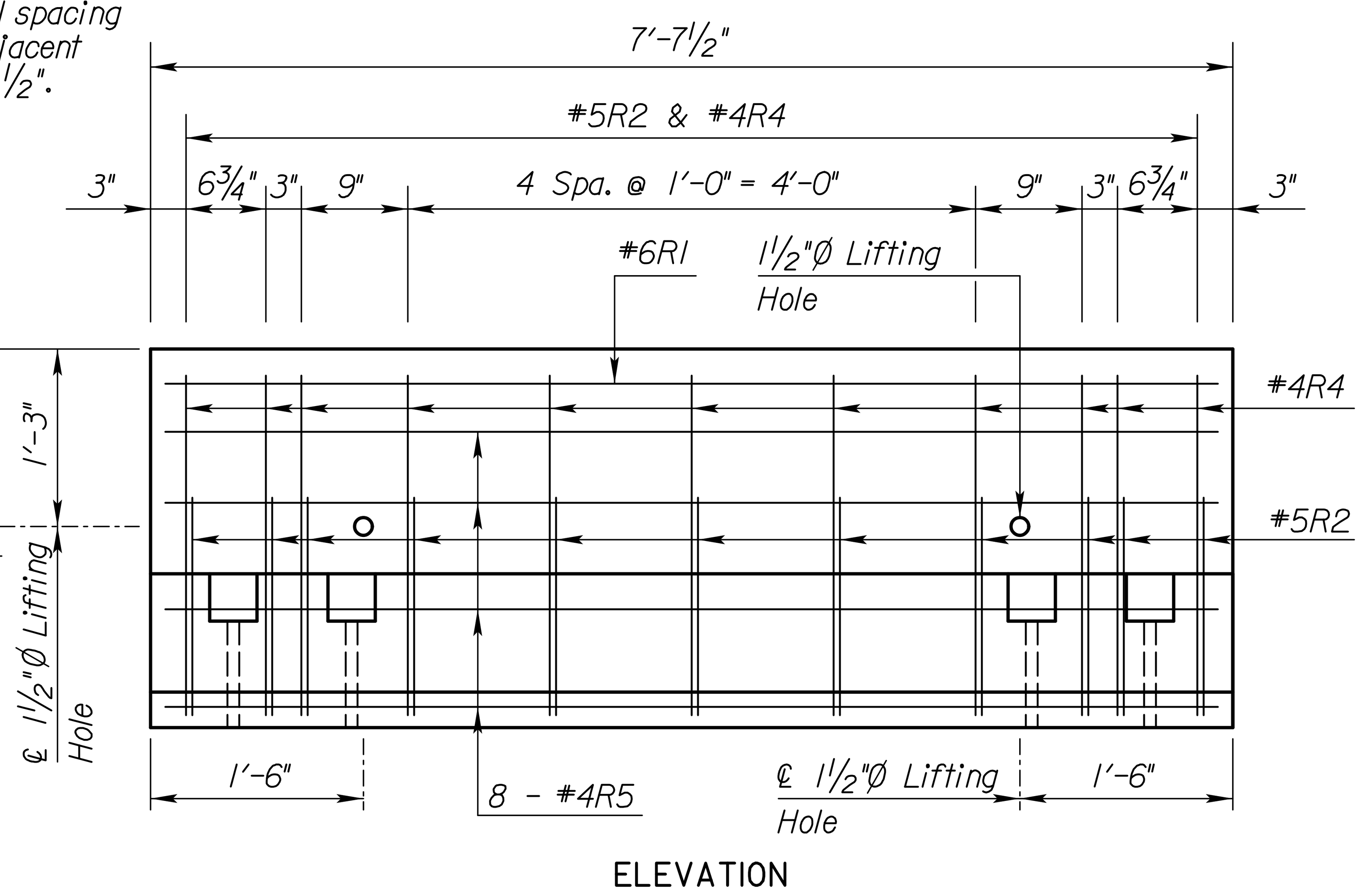
Std. Base File: k:\bridge\standards\us\br414c.dgn
Plotted By: JHOWERSO Plot Location:
File: c:\pwworking\central01\d337767.4\ka5728801\bbrl13-br414c.dgn
Plot Date: 01-08-24

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	55	135

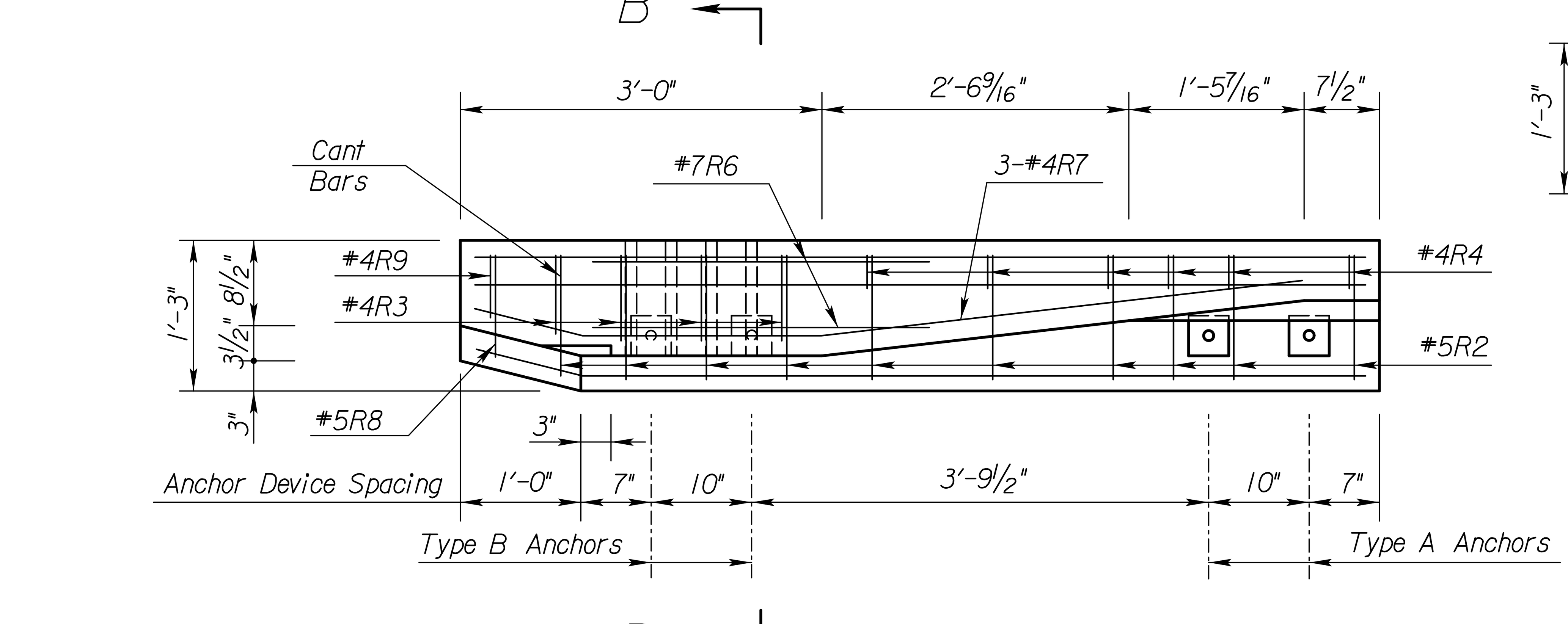
Note: Typical spacing between adjacent sections is 1/2".



ELEVATION
(Lt. Handed End Section)

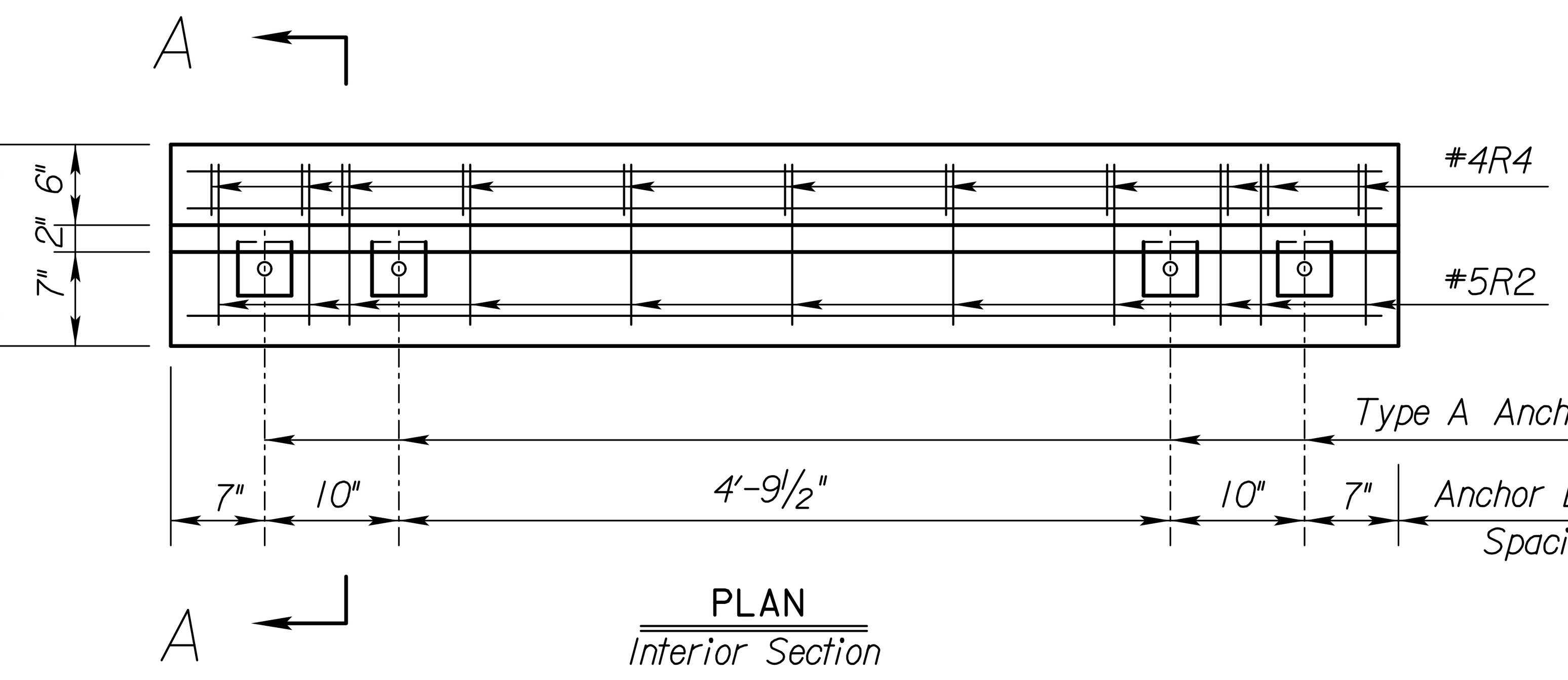


ELEVATION
Interior Section



PLAN
(Lt. Handed End Section)

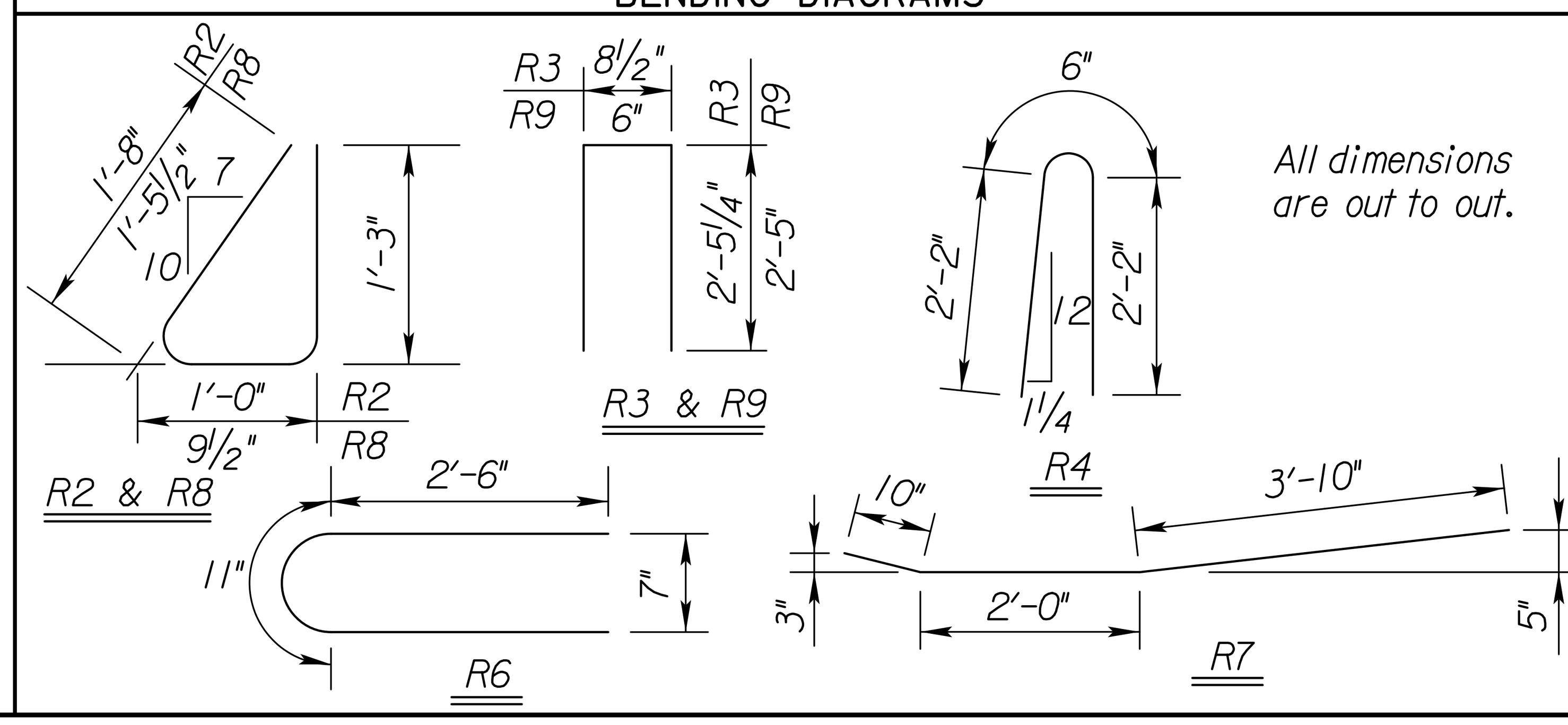
NOTE: Diagonal bars may be removed from the grid if they interfere with Type A or Type B Anchors during placement of barrier curbs during construction of detour bridge.

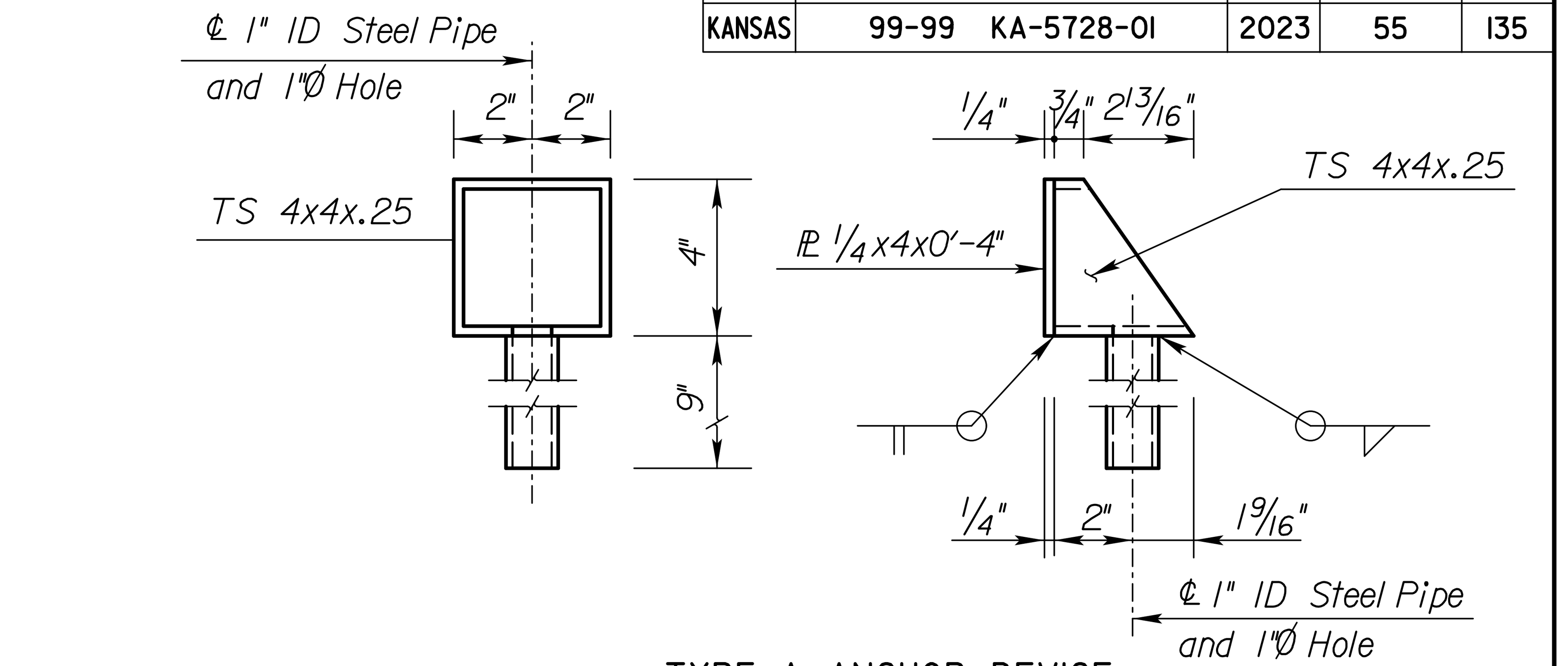


PLAN
Interior Section

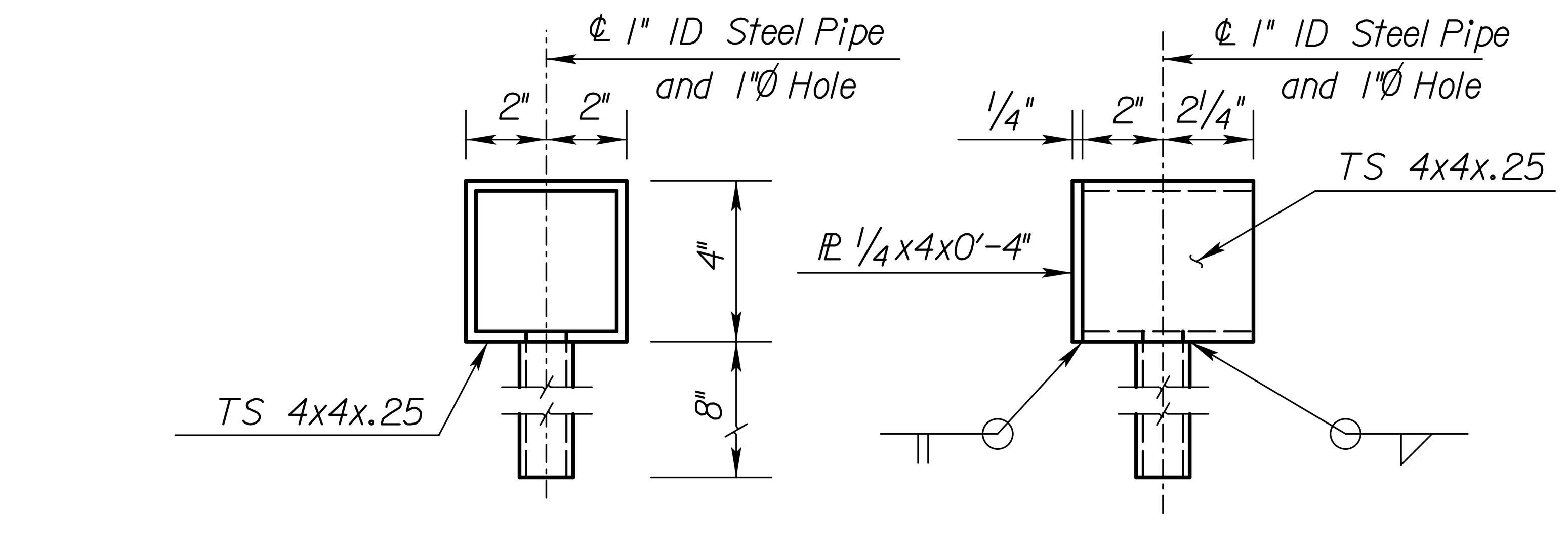
BILL OF REINFORCING							
END SECTION				INTERIOR SECTION			
Mark	Number	Size	Length	Mark	Number	Size	Length
R6	2	#7	5'-11"	R1	1	#6	7'-5"
R1	1	#6	7'-5"	R2	11	#5	3'-11"
R2	10	#5	3'-11"	R4	11	#4	4'-10"
R8	1	#5	3'-6"	R5	8	#4	7'-5"
R3	4	#4	5'-7"				
R4	6	#4	4'-10"				
R5	8	#4	7'-5"				
R7	3	#4	6'-8"				
R9	1	#4	5'-4"				

BENDING DIAGRAMS

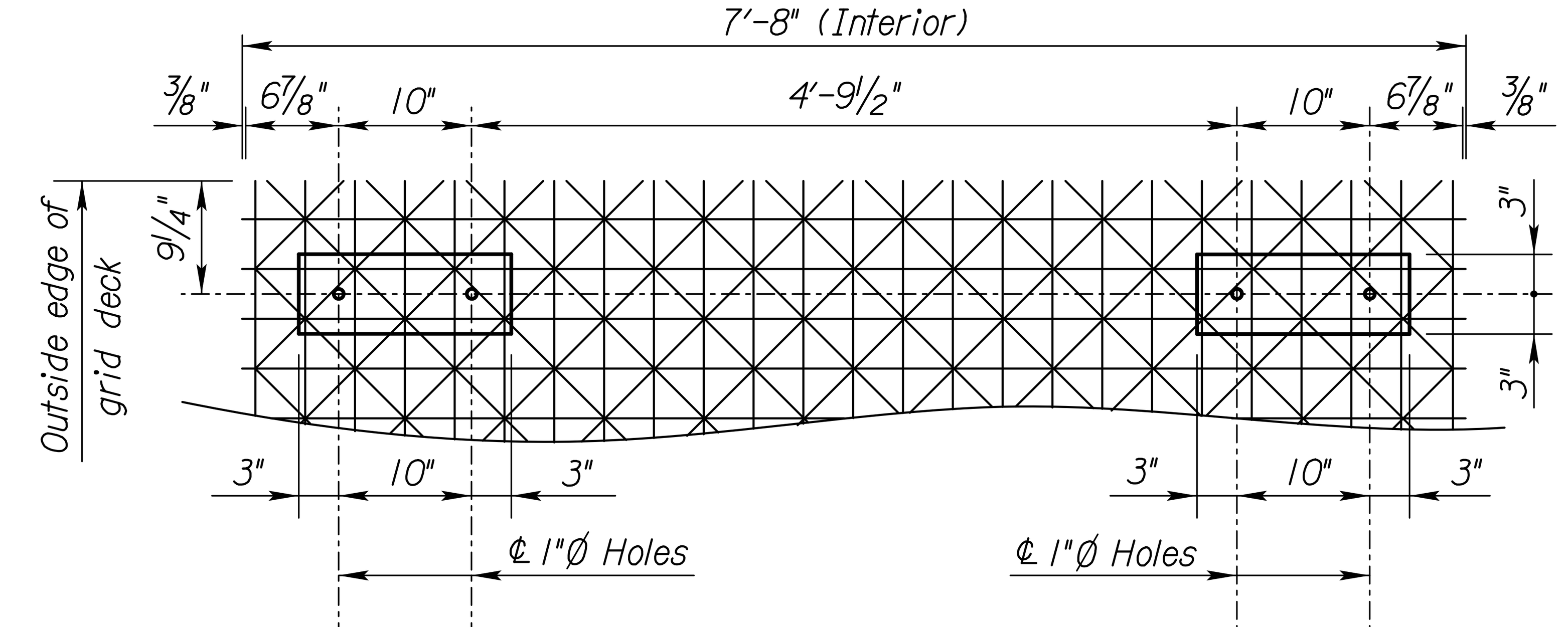




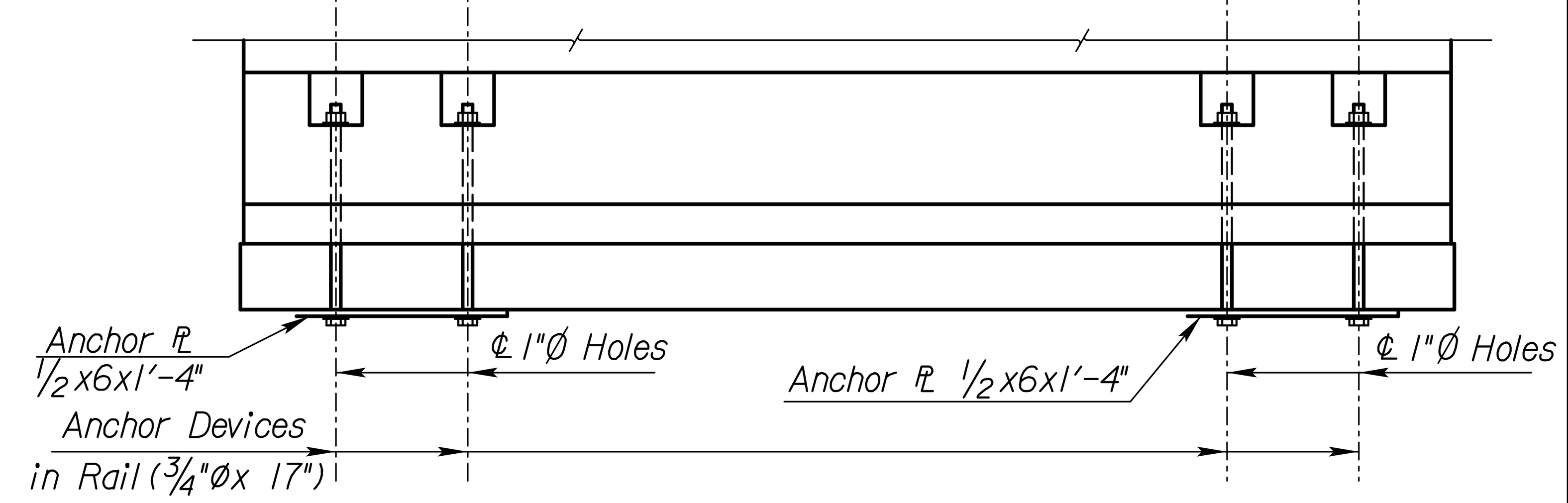
TYPE A ANCHOR DEVICE



TYPE B ANCHOR DEVICE

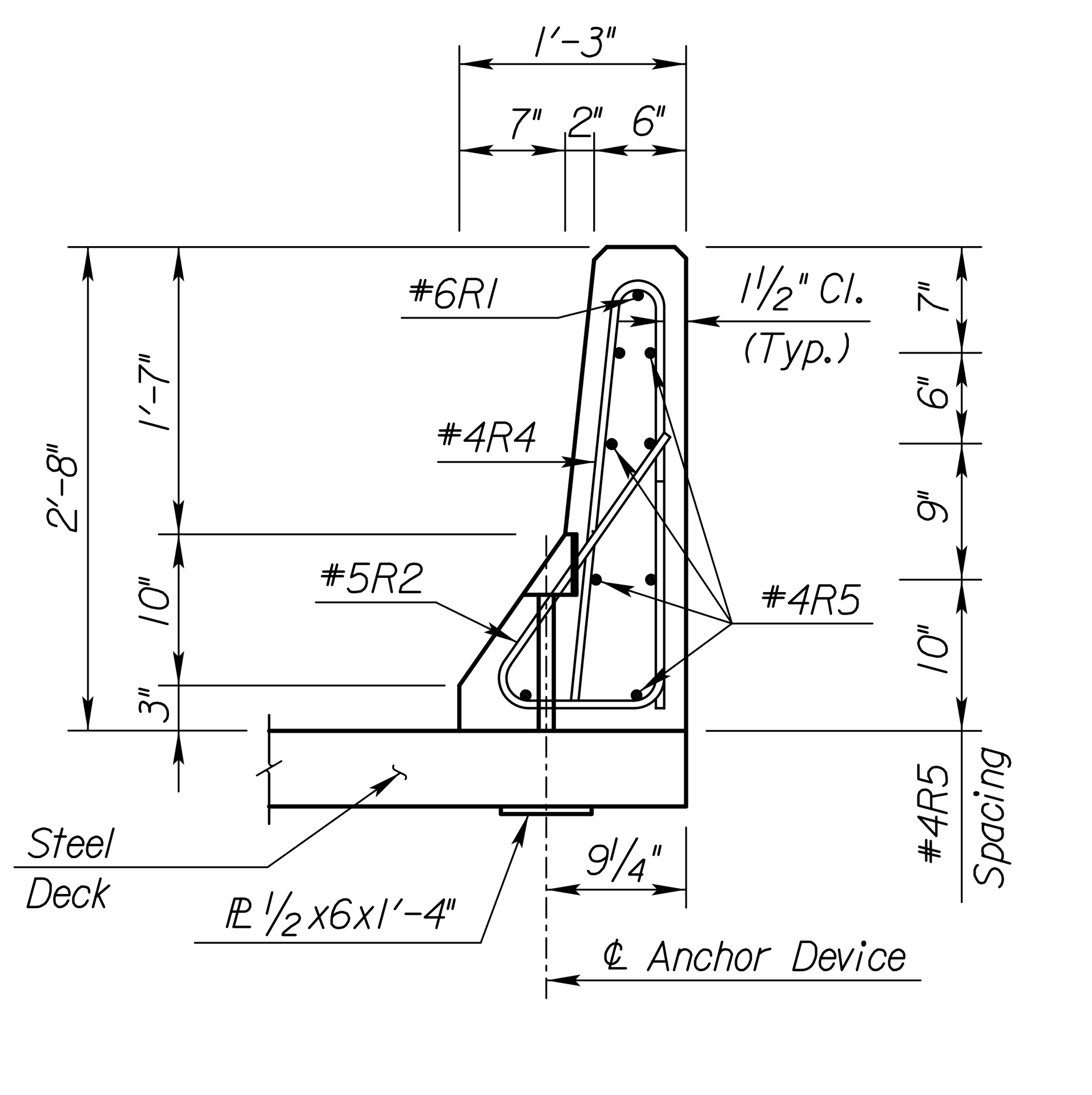


PLAN

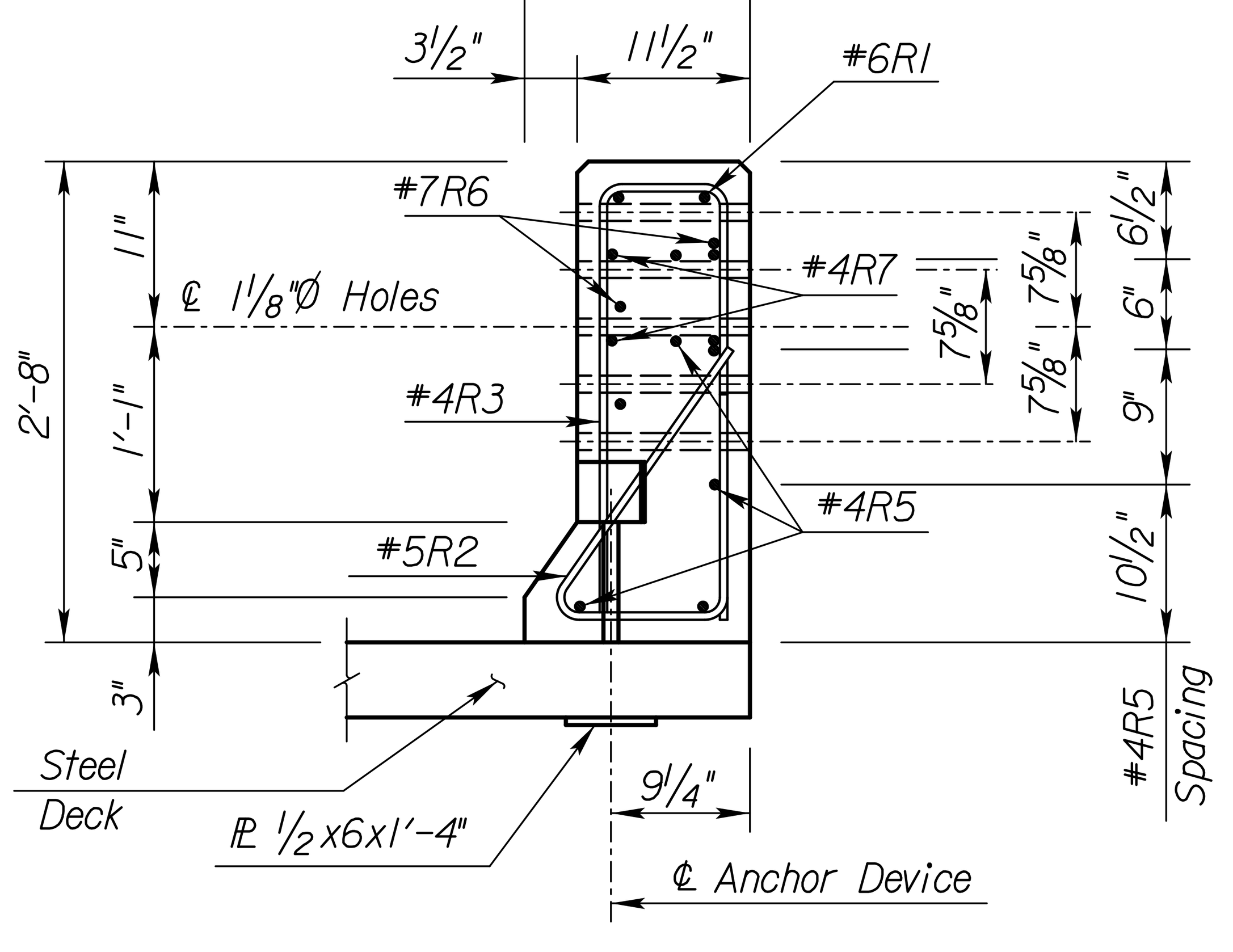


ELEVATION

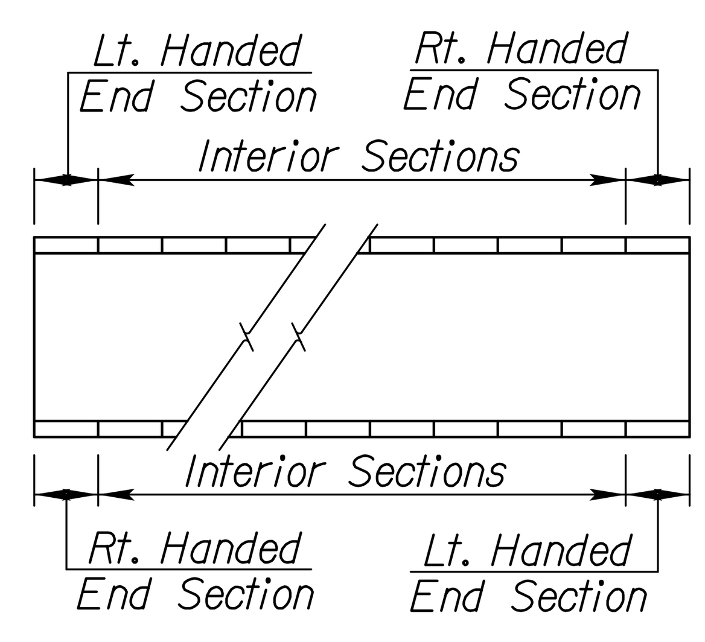
ANCHOR SYSTEM



SECTION A-A



SECTION B-B



BARRIER LAYOUT

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	07-14-04	Numerous Revisions	GFK	GMC

KANSAS DEPARTMENT OF TRANSPORTATION
Detour Sta. 78+16.37

SAFETY BARRIER CURB
(DETOUR BRIDGE)

Proj. No. 99-99 KA-5728-01 Wabaunsee Co.

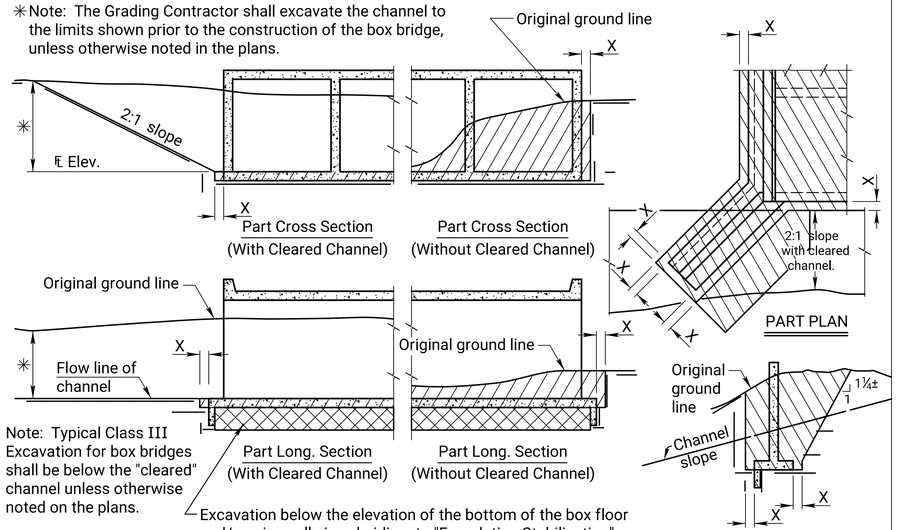
SHEET NO. OF	SCALE	APP'D	
DESIGNED	DETAILED	QUANTITIES	CADD
DESIGN CK.	DETAIL CK.	QUAN. CK.	CADD CK.

Std. Base File: k:\bridge\standards\us\br14d.dgn
Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d337767\ka57280lbbr113-br14d.dgn
Plot Date: 01-08-24

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	56	135

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

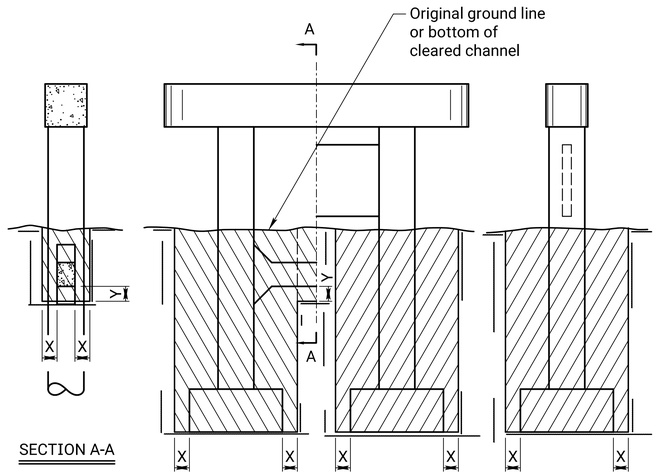


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

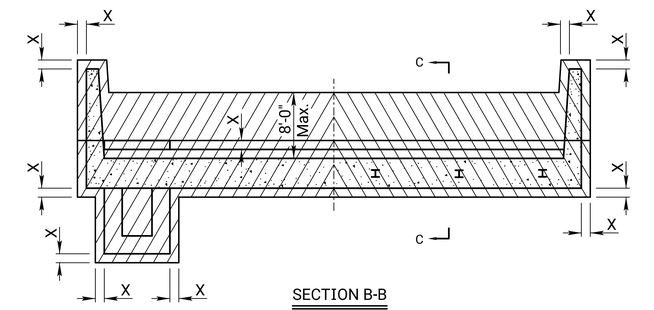
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

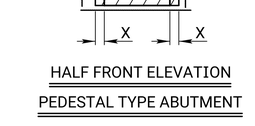
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.



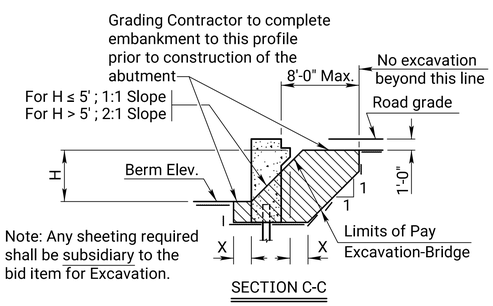
EXCAVATION DETAILS FOR TYPICAL PIERS

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





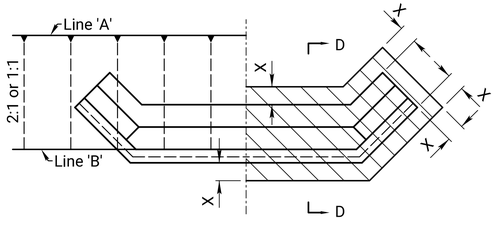
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

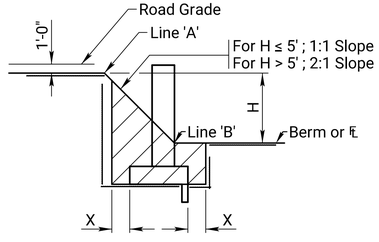


Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

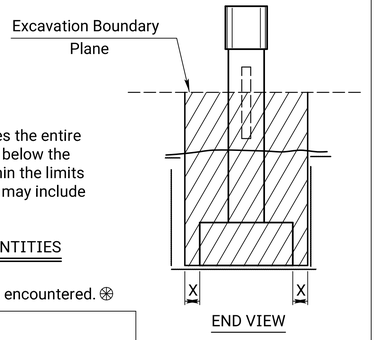
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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





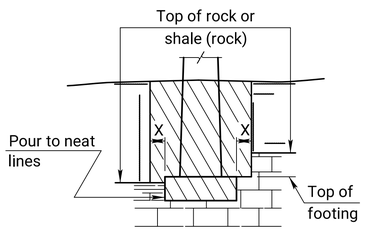
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



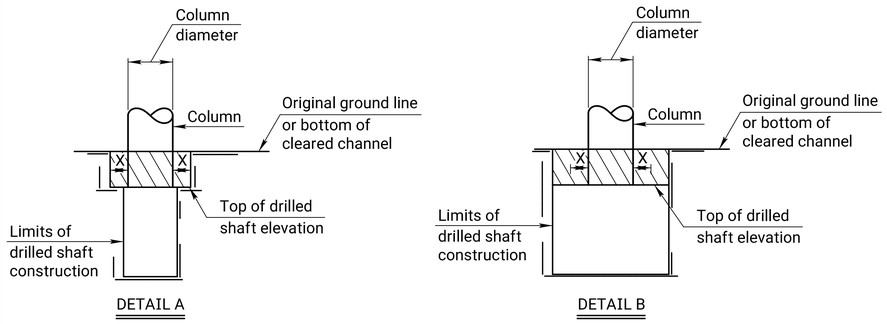
Note: Class II Excavation includes the entire volume of whatever nature found below the "Excavation Boundary Plane", within the limits specified for measurement. This may include water or air.

CLASS II EXCAVATION QUANTITIES

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



Note: 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 07-27-2023 Sh. No. 56

KDOT Graphics Certified

Drawn By : JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d337674\ka572801bss113-24.dgn

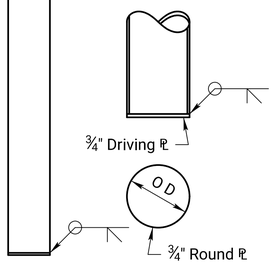
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	57	135

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

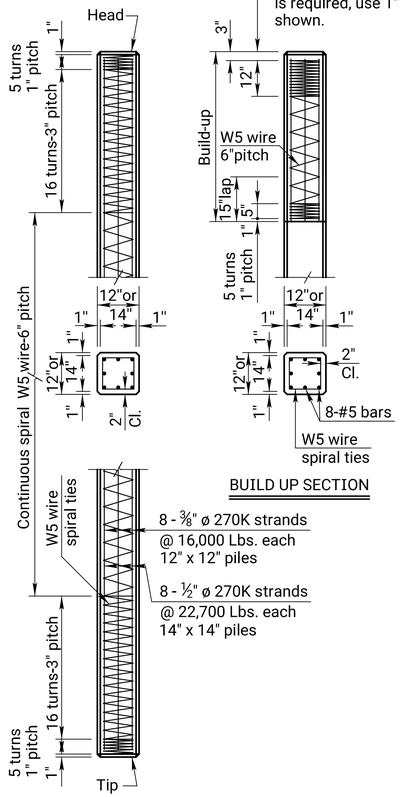
†† See the Geology Report or "Summary of Quanities" for Pipe Pile wall thickness

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.

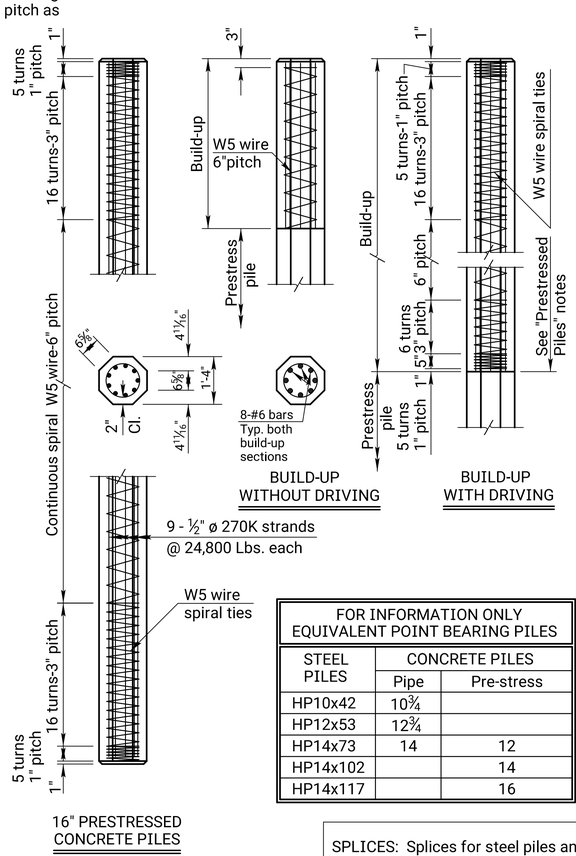


PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



12" OR 14"
PRESTRESSED
CONCRETE PILES

BUILD UP SECTION

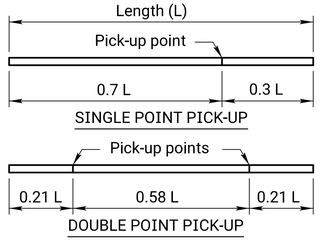


BUILD-UP
WITHOUT DRIVING

BUILD-UP
WITH DRIVING

16" PRESTRESSED
CONCRETE PILES

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



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.

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.

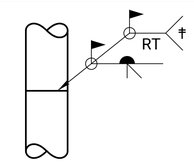
MILL TEST REPORTS: Steel piles test reports and steel shell test reports shall comply with the Standard Specifications.

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

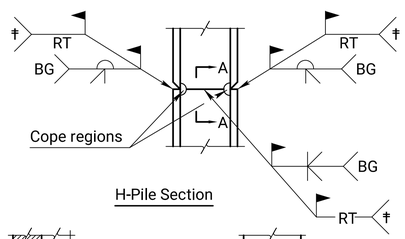
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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

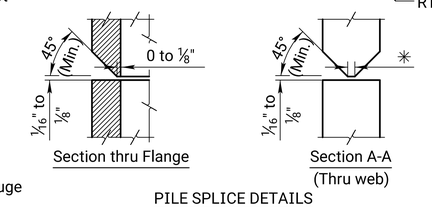
† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Contractor will test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested will have written confirmation of results. Report these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



Pipe Section



H-Pile Section



✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

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

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

BR110

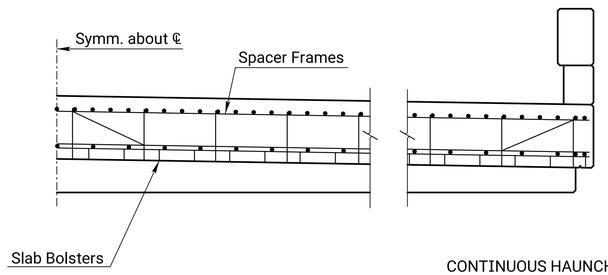
FHWA APPROVAL		10-04-12	APP'D.	Terry L. Fleck
DESIGNED	J.P.J.	DETAILED	QUANTITIES	TRACED R.A.A.
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.

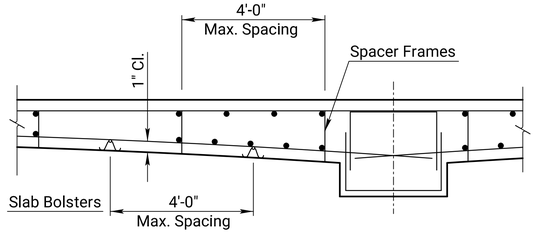
KDOT Graphics Certified 07-27-2023 Sh. No. 57

KDOT Graphics Certified

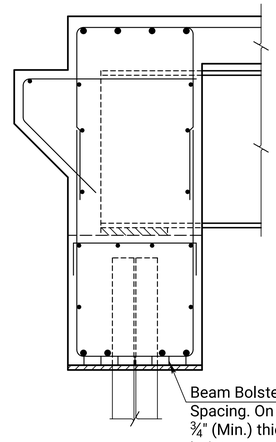
Drawn By : JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d3377674\ka572801bss113-25.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	58	135

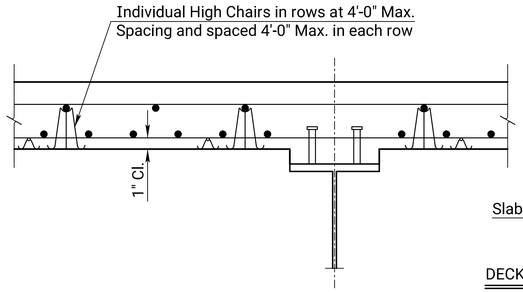


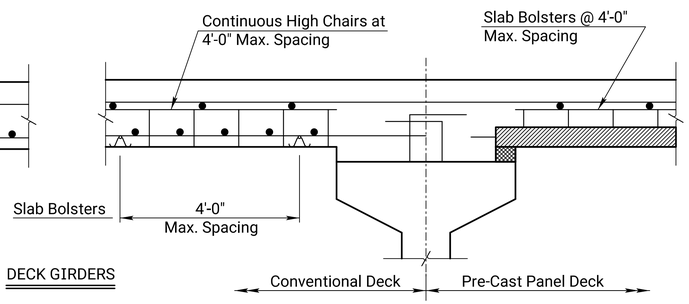


CONTINUOUS HAUNCHED SLAB



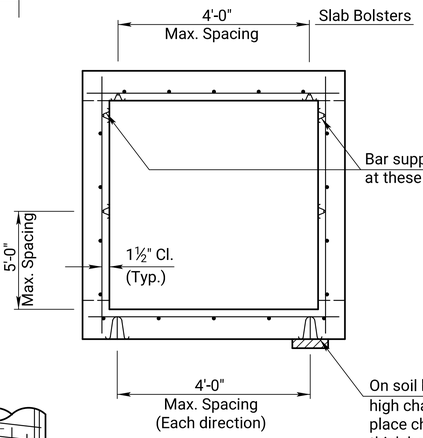
Beam Bolster at 4'-0" Max. Spacing. On soil bearing, place a ¾" (Min.) thick board under bolster.





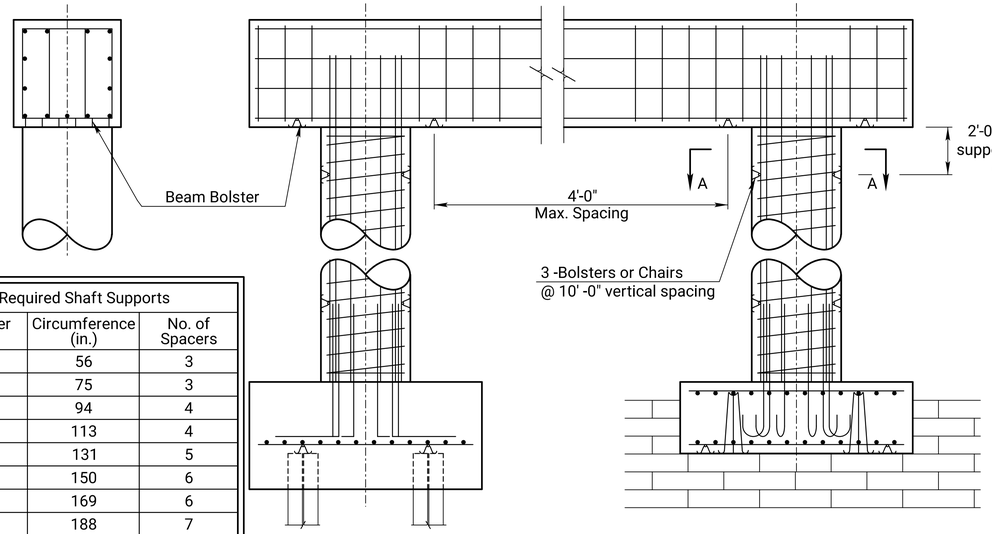
DECK GIRDERS

ABUTMENT



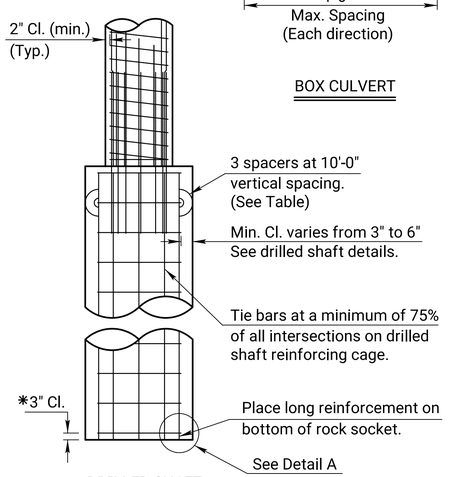
On soil bearing, equip individual high chairs with sand plates, or place chairs on a ¾" (Min.) thick board.

BOX CULVERT

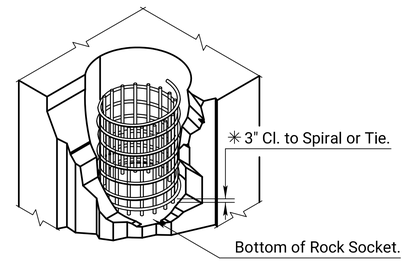


PIER

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

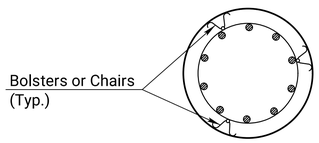


DRILLED SHAFT



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 07-27-2023 Sh. No. 58

KDOT Graphics Certified

Drawn By : JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d3377674\ka572801bbr113-26.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	59	135

P.I. Sta. 7339+07.78 = SW Cor. Sec. 16, T14S, R12E=
P.I. Sta. 165+66.60 on Proj. 99-99 K 516 Date 1928
N 476,313.797 E 8,615,481.392
1. Found ⅝" rebar (0.3' deep)
2. Found nail & wshr. NE side of pow. pole — 35.3' NW
3. Conc. nail & KDOT wshr. W side utility mrkr. po. — 52.2' NE
4. Conc. nail & KDOT wshr. E side of pow pole — 81.0' SSW
5. In TW of K-99 Hwy.

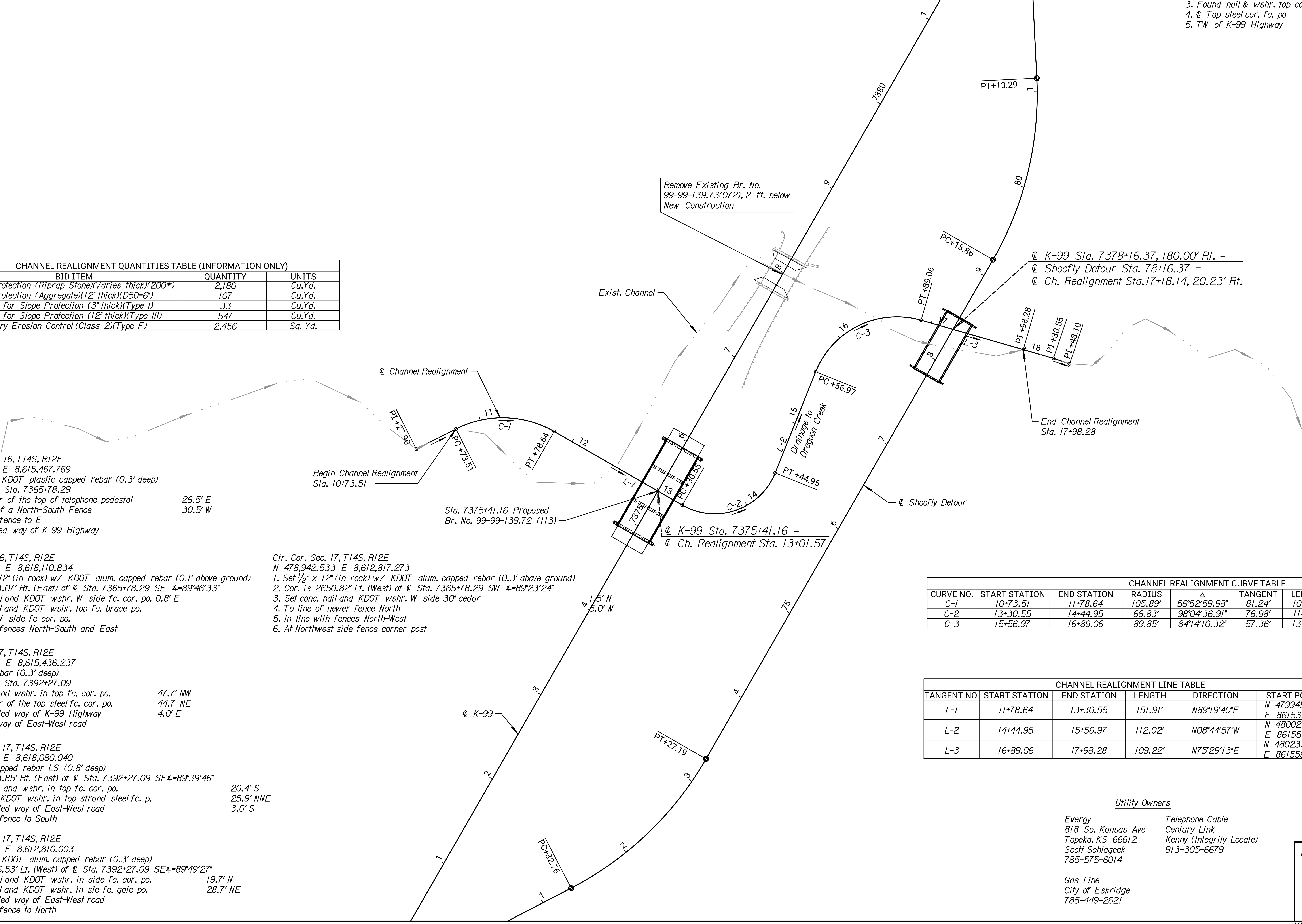
P.I. Sta. 7365+78.29 = W¼ Cor. Sec. 16, T14S, R12E=
Sta. 138+97.60 on Proj. 99-99 K 516 (Date 1928)
Δ=0°23'23" Lt. (No curve)
N 478,984.271 E 8,615,467.769
1. Set ½" x 24" rebar w/ orange KDOT cap
2. ℄ Top telephone pedestal — 26.5' E
3. Line of N/S fence line — 30.5' W
4. In line of fence line to E
5. In TW of K-99 Hwy.

P.O.T. Sta. 10+73.51
N 479896.45 E 8615245.27

P.O.T. Sta. 17+98.28
N 480235.77 E 8615599.81

P.I. Sta. 7392+27.09=NW Cor. Sec. 16, T14S, R12E =
Sta. 112+41.40 on Proj. 99-99 K 516 (Date 1928)
N 481,632.885 E 8,615,436.237
1. Found ⅝" rebar (0.3' deep)
2. Found nail & wshr. NW side cor. fc. po. — 54.5' SSW
3. Found nail & wshr. top cor. fc. po. — 44.7' NW
4. ℄ Top steel cor. fc. po — 44.7' NE
5. TW of K-99 Highway — 4.0' E

CHANNEL REALIGNMENT QUANTITIES TABLE (INFORMATION ONLY)		
BID ITEM	QUANTITY	UNITS
Slope Protection (Riprap Stone)(Varies thick)(200#)	2,180	Cu.Yd.
Slope Protection (Aggregate)(12" thick)(D50=6")	107	Cu.Yd.
Bedding for Slope Protection (3" thick)(Type I)	33	Cu.Yd.
Bedding for Slope Protection (12" thick)(Type III)	547	Cu.Yd.
Temporary Erosion Control (Class 2)(Type F)	2,456	Sq.Yd.



W ¼ Cor. Sec. 16, T14S, R12E
N 478,984.271 E 8,615,467.769
1. Set ½" x 24" KDOT plastic capped rebar (0.3' deep)
2. Cor. is on ℄ Sta. 7365+78.29
3. To the center of the top of telephone pedestal — 26.5' E
4. To the line of a North-South Fence — 30.5' W
5. In line with fence to E
6. In the traveled way of K-99 Highway

Ctr. Cor. Sec. 16, T14S, R12E
N 478,989.725 E 8,618,110.834
1. found ½" x 12" (in rock) w/ KDOT alum. capped rebar (0.1' above ground)
2. Cor. is 2643.07' Rt. (East) of ℄ Sta. 7365+78.29 SE ∡=89°46'33"
3. Set conc. nail and KDOT wshr. W side fc. cor. po. 0.8' E
4. Set conc. nail and KDOT wshr. top fc. brace po.
5. Set cor. on W side fc cor. po.
6. In line with fences North-South and East

Ctr. Cor. Sec. 17, T14S, R12E
N 478,942.533 E 8,612,817.273
1. Set ½" x 12" (in rock) w/ KDOT alum. capped rebar (0.3' above ground)
2. Cor. is 2650.82' Lt. (West) of ℄ Sta. 7365+78.29 SW ∡=89°23'24"
3. Set conc. nail and KDOT wshr. W side 30" cedar
4. To line of newer fence North
5. In line with fences North-West
6. At Northwest side fence corner post

NW Cor. Sec. 17, T14S, R12E
N 481,632.885 E 8,615,436.237
1. Found ⅝" rebar (0.3' deep)
2. Cor. is on ℄ Sta. 7392+27.09
3. Found nail and wshr. in top fc. cor. po. — 47.7' NW
4. To the center of the top steel fc. cor. po. — 44.7 NE
5. To the traveled way of K-99 Highway — 4.0' E
6. In traveled way of East-West road

N ¼ Cor. Sec. 17, T14S, R12E
N 481,648.799 E 8,618,080.040
1. Found ⅝" capped rebar LS (0.8' deep)
2. Cor. is 2643.85' Rt. (East) of ℄ Sta. 7392+27.09 SE∡=89°39'46"
3. Found spike and wshr. in top fc. cor. po. — 20.4' S
4. Set nail and KDOT wshr. in top strand steel fc. p. — 25.9' NNE
5. To the traveled way of East-West road — 3.0' S
6. In line with fence to South

N ¼ Cor. Sec. 17, T14S, R12E
N 481,593.554 E 8,612,810.003
1. Set ½" x 24" KDOT alum. capped rebar (0.3' deep)
2. Cor. is 2626.53' Lt. (West) of ℄ Sta. 7392+27.09 SE∡=89°49'27"
3. Set conc. nail and KDOT wshr. in side fc. cor. po. — 19.7' N
4. Set conc. nail and KDOT wshr. in sie fc. gate po. — 28.7' NE
5. To the traveled way of East-West road
6. In line with fence to North

CHANNEL REALIGNMENT CURVE TABLE								
CURVE NO.	START STATION	END STATION	RADIUS	Δ	TANGENT	LENGTH	CHORD DIRECTION	CHORD LENGTH
C-1	10+73.51	11+78.64	105.89'	56°52'59.98"	81.24'	105.13'	N60°53'09.86"E	100.86'
C-2	13+30.55	14+44.95	66.83'	98°04'36.91"	76.98'	114.40'	N40°17'21.39"E	100.93'
C-3	15+56.97	16+89.06	89.85'	84°14'10.32"	57.36'	132.09'	N33°22'08.09"E	120.51'

CHANNEL REALIGNMENT LINE TABLE					
TANGENT NO.	START STATION	END STATION	LENGTH	DIRECTION	START POINT
L-1	11+78.64	13+30.55	151.91'	N89°19'40"E	N 479945.64 E 8615333.39
L-2	14+44.95	15+56.97	112.02'	N08°44'57"W	N 480024.41 E 8615550.56
L-3	16+89.06	17+98.28	109.22'	N75°29'13"E	N 480235.77 E 8615599.81

Utility Owners

Evergy
818 So. Kansas Ave
Topeka, KS 66612
Scott Schlageck
785-575-6014

Gas Line
City of Eskridge
785-449-2621

Telephone Cable
Century Link
Kenny (Integrity Locate)
913-305-6679

SCALE
PLAN: Lat. & Long. 50' 0 50' 100'

Plotted By: JHOVERSO
Plot Location:
File: c:\pwworking\central01\d2696672\ka5728011rpl-01.dgn
Plot Date: 01-08-24

KANSAS DEPARTMENT OF TRANSPORTATION
GEOMETRY
CHANNEL REALIGNMENT
STA. 10+73.51 TO STA. 17+98.28

KDOT Graphics Certified 01-08-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	60	135

For alignment and section corner reference, see Geometry Channel Realignment Sheet.

Channel realignment grading is to be done by the grading contractor in phases:

Phase I – (Connect to existing channel between K-99 and Shoofly Detour while Shoofly Detour is in use).
Phase II – (Complete remaining Channel Realignment during eradication of Shoofly Detour).

SLOPE PROTECTION QUANTITIES		
BID ITEM	QUANTITY	UNIT
SLOPE PROTECTION (RIPRAP STONE)(Varies thick)(200#)	2,180	Cu. Yd.
SLOPE PROTECTION (Aggregate) (12" thick)(D50 = 6")	107	Cu. Yd.
BEDDING FOR SLOPE PROTECTION (3" thick)(Type I)	33	Cu. Yd.
BEDDING FOR SLOPE PROTECTION (12" thick)(Type III)	547	Cu. Yd.

BY	DATE
D. Minner	8/26/21
E. Dove	8/24/23

REFERENCES NOTED
REFERENCES CHECKED

CHANNEL REALIGNMENT CURVE C-1 DATA
P.I. Sta. 11+30.87 Bk. = 10+73.51 Ahd.
N 479944.96 E 8615276.04
Δ=56° 53′00″ L=105.13′
R=105.89′ E=14.54′
T=81.24′

CHANNEL REALIGNMENT CURVE C-2 DATA
P.I. Sta. 14+07.54 Bk. = 13+30.56 Ahd.
N 479948.32 E 8615562.27
Δ=98° 04′37″ L=114.40′
R=66.83′ E=35.11′
T=76.98′

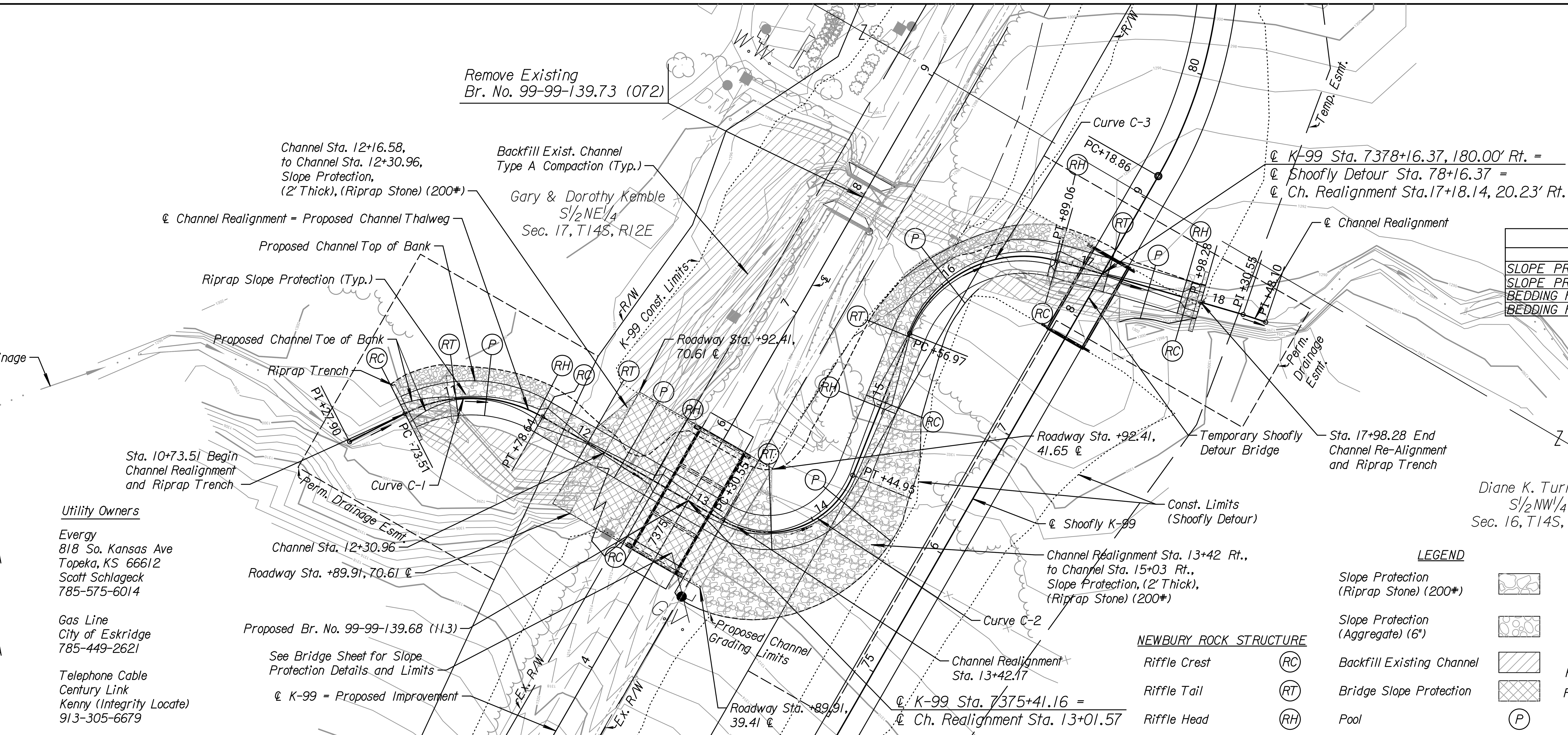
CHANNEL REALIGNMENT CURVE C-3 DATA
P.I. Sta. 16+38.20 Bk. = 15+56.96 Ahd.
N 480215.41 E 8615521.17
Δ=84° 14′10″ L=132.09′
R=89.85′ E=31.28′
T=57.36′

Utility Owners

Evergy
818 So. Kansas Ave
Topeka, KS 66612
Scott Schlageck
785-575-6014

Gas Line
City of Eskridge
785-449-2621

Telephone Cable
Century Link
Kenny (Integrity Locate)
913-305-6679

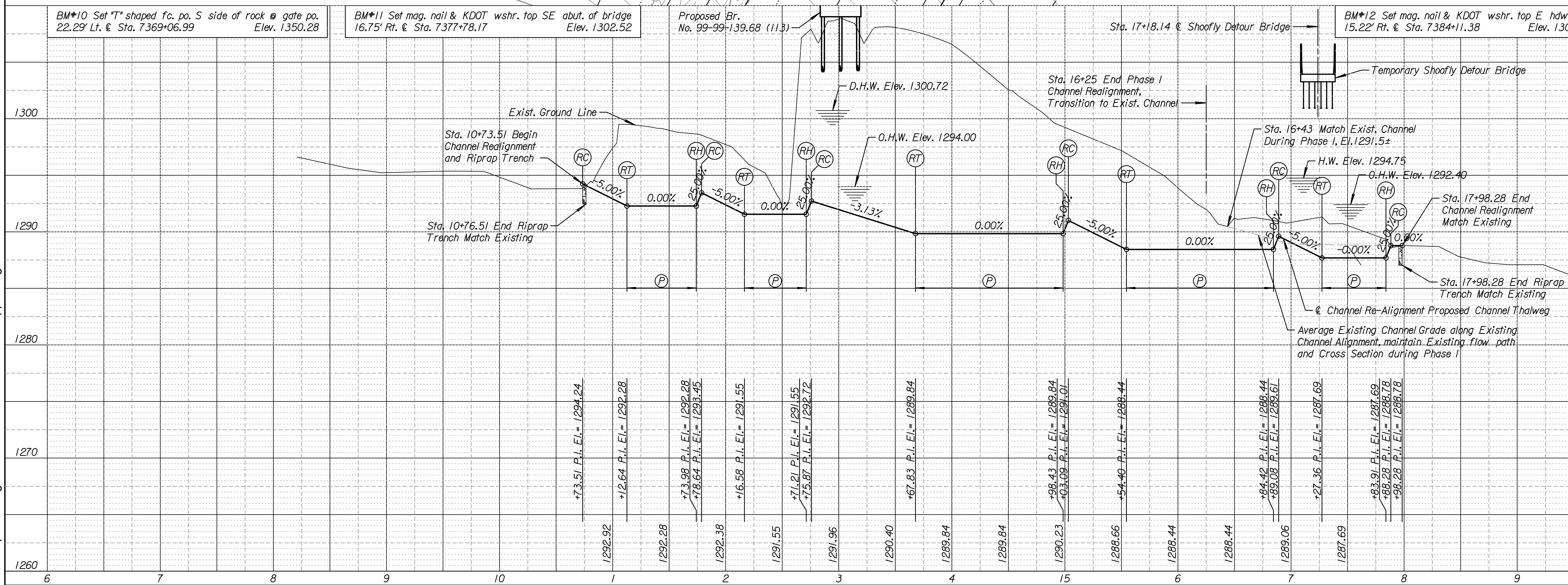


LEGEND

NEWBURY ROCK STRUCTURE
- Riffle Crest (RC)
- Riffle Tail (RT)
- Riffle Head (RH)

- Slope Protection (Riprap Stone) (200#)
- Slope Protection (Aggregate) (6″)
- Backfill Existing Channel
- Bridge Slope Protection
- Pool (P)

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



Vertical Datum: NAVD 88 (Geoid 18)

KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
CHANNEL REALIGNMENT
STA. 10+73.51 TO STA. 17+98.28

KDOT Graphics Certified 01-08-2024

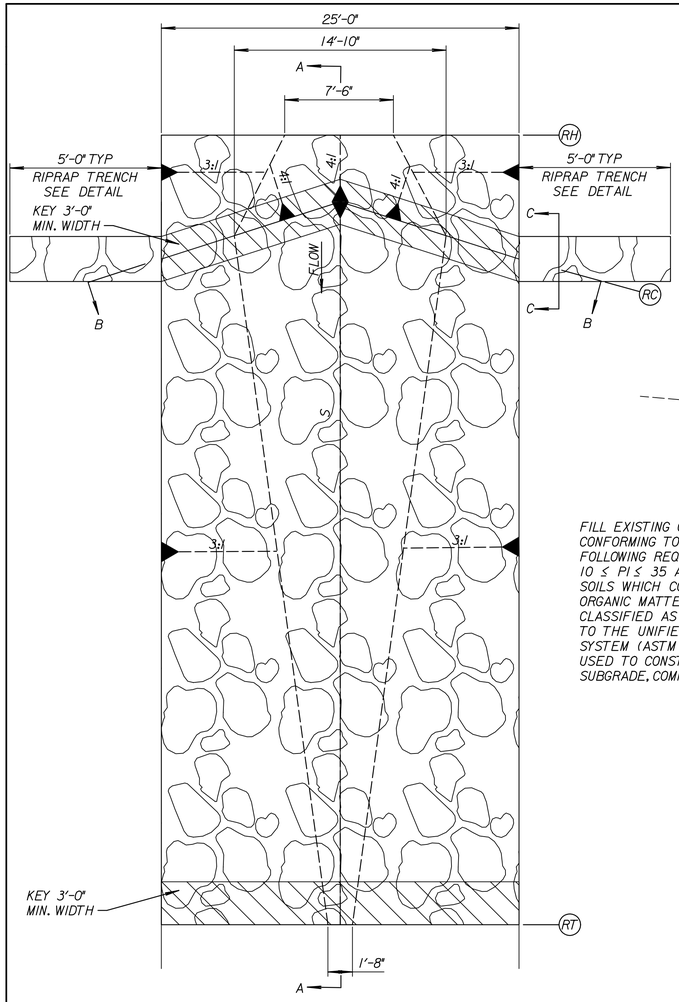
Drawn By : JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d2696672\ka572801rpp-01.dgn

KDOT Graphics Certified

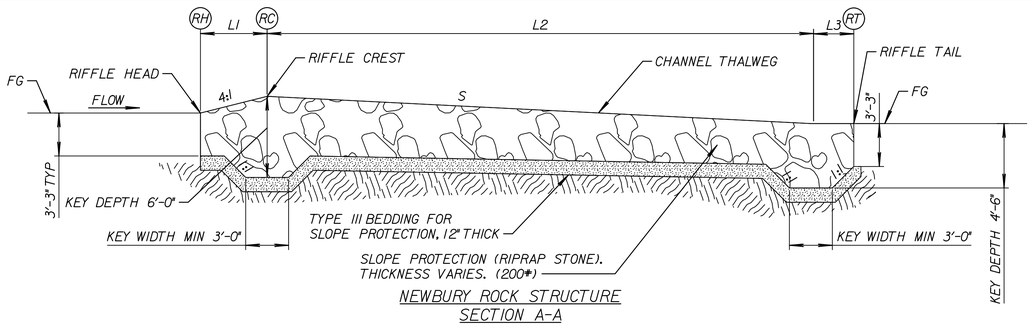
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	61	135

NEWBURY STRUCTURE LOCATIONS AND DIMENSION
(Measured Along Channel Realignment ℄)

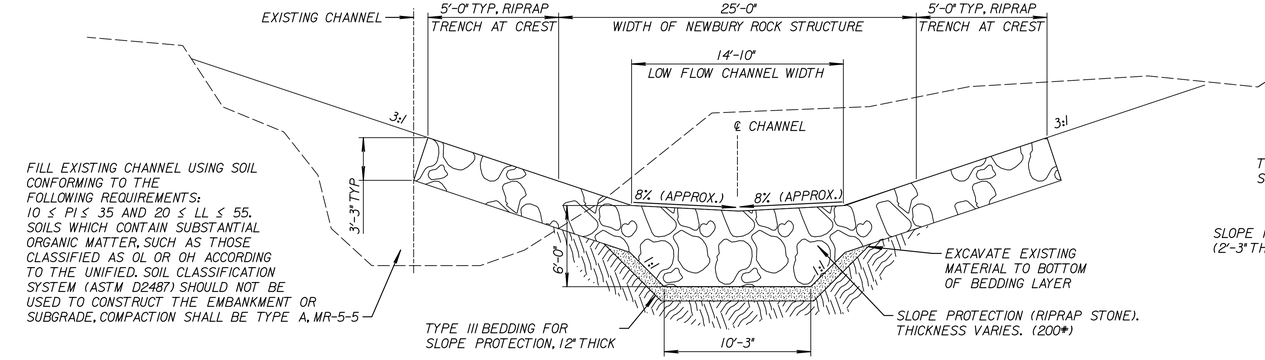
RIFFLE CREST STATION	S	L1	L2	L3
16+89.08	5%	4'-8"	37'-11"	2'-10"
15+03.09	5%	4'-8"	51'-3"	2'-10"
12+75.89	3.13%	4'-6"	92'-0"	2'-10"
11+78.64	5%	4'-8"	37'-11"	2'-10"
10+73.51	5%	4'-8"	39'-2"	2'-10"



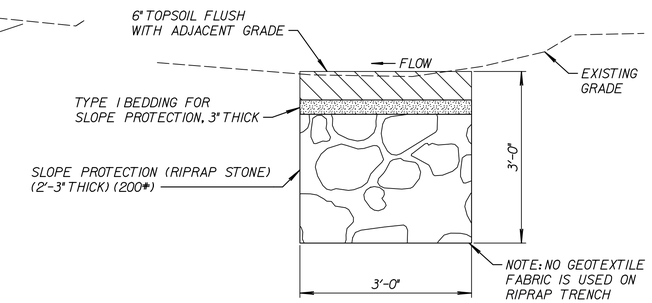
NEWBURY ROCK STRUCTURE
PLAN
NOT TO SCALE



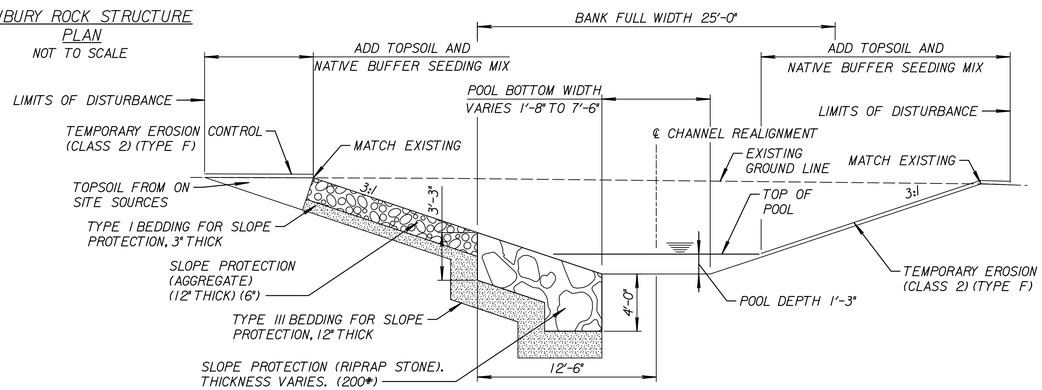
NEWBURY ROCK STRUCTURE
SECTION A-A
NOT TO SCALE



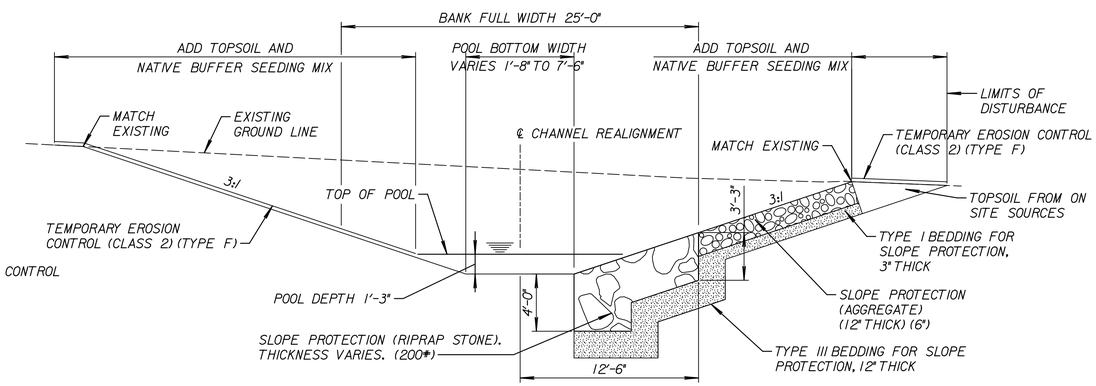
NEWBURY ROCK STRUCTURE
SECTION B-B
STA. 10+73.51 TO STA. 10+97.89
STA. 11+73.98 TO STA. 12+16.58
STA. 12+71.21 TO STA. 13+67.83
STA. 14+98.43 TO STA. 15+54.40
STA. 16+84.42 TO STA. 17+27.36
STA. 17+83.91 TO STA. 17+98.28
NOT TO SCALE



RIPRAP TRENCH
DETAIL
SECTION C-C
NOT TO SCALE



LEFT POOL RIPRAP SLOPE PROTECTION
STA. 10+97.89 TO STA. 11+73.98
STA. 15+54.40 TO STA. 16+84.42
NOT TO SCALE



RIGHT POOL RIPRAP SLOPE PROTECTION
STA. 13+67.83 TO STA. 14+98.43
NOT TO SCALE

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

CHANNEL REALIGNMENT

Drawn By : JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d2696672\ka572801rds-01.dgn

KDOT Graphics Certified 01-08-2024

KDOT Graphics Certified

Sh. No. 61

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	62	135

DRAINAGE STRUCTURES

STATION	SIDE	SIZE	TYPE	Gr. 4.0 CONC. (Cu.Yds.)	Gr. 4.0 (AE) CONC. (Cu.Yds.)	BRIDGE BACKWALL PROT. SYSTEM (Sq. Yds.)	REINF. STEEL (GRADE 60 LBS.)	REINF. STEEL (GRADE60) (EPOXY COATED LBS.)	FOUND. STAB. (Cu. Yds.)	GRAN. BACKFILL Wingwalls (Cu. Yds.)	ENTRANCE PIPES RCPHE, CAMAC, ACSMAC 1.5□'				ENTRANCE PIPES RCP, ACSP, CAP 18"	24"	30"	36"	42"	48"	END SECTIONS ◔ RCHE, CAMA, ACSMA 1.5□'						TYPE I LT.	TYPE I RT.	TYPE III LT.	TYPE III RT.	TYPE IV LT.	TYPE IV RT.	TYPE IV Slope	REMARKS
Mainline																																	
7380+70	Lt.	1.5□'	EP (RCPHE, CAMAC, ACSMAC)								46																1	1					
7384+11.04	Rt.	6' x 4'	RCB	10.4	2.2	11	680	750	6	12																							Ext. 12' Rt.
Shoofly																																	
81+50	Lt.	18"	EP (RCP, ACSP, CAP)												32																		Temporary
TOTAL				10.4	2.2	11	680	750	6	12	46				32									2									

Note:

◔ - See Pipe Culvert Summary Sheet for allowable End Section types.

NO.	DATE	REVISIONS	BY	APP'D
01	05-28-08	Initial Release	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

~~RD049~~

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

KDOT Graphics Certified 01-18-2024 Sh. No. 62

KDOT Graphics Certified

Plotted by : August.Zuno 18-JAN-2024 10:48
File : rss049.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	63	135

GUARDRAIL, STEEL PLATE (MGS)

STATION	STATION	SIDE	STEEL PLATE GUARD RAIL (MGS) (ft)	END TERM. MGS-MSKT Alt. 1 (each)	END TERM. MGS-SOFTSTOP Alt. 2 (each)	END TERM. MGS-SRT Alt. 1 (each)	END TERM. MGS-FLEAT Alt. 2 (each)
7373+06.98	7374+90.60	Rt.	137.50	1	1		
7373+57.20	7374+90.60	Lt.	87.50	1	1		
7375+91.72	7378+25.11	Rt.	187.50	1	1		
7375+91.72	7377+75.35	Lt.	137.50	1	1		
Shoofly Detour							
76+80.33	77+82.56	Rt.	62.50			1	1
76+93.08	77+82.56	Lt.	50.00			1	1
78+50.18	79+38.37	Rt.	50.00			1	1
78+50.18	79+41.02	Lt.	50.00			1	1
TOTALS			762.50	4	4	4	4

SALVAGED TOPSOIL

STATION TO STATION	SIDE	SQ. YDS.
7371+40 to 7381+90	Lt.	4,691.3
7367+50 to 7385+20	Rt.	15,735.9
TOTAL		20,427.2

RECAPITULATION OF BRIDGE QUANTITIES

BRIDGE NUMBER	STATION	SEE SHEET NO.
99-99-139.68 (113)	7375+41.16	32
Detour Bridge	78+16.37	45

TEMPORARY FENCING

STATION	STATION	SIDE	BARBED WIRE (ft)	COMMENTS
7366+05	7383+00	Rt.	1,898.3	
7374+20	7376+00	Lt.	494.2	
TOTAL			2,392.5	

SLOPE PROTECTION (RIPRAP STONE) (200 LB)

LOCATION	STATION	SIDE	LENGTH FT.	DEPTH IN.	WIDTH FT.	VOLUME CU YDS
K-99	7384+00 7384+20	Rt.	10	18	25	375
TOTAL						375

RECAPITULATION OF ROAD QUANTITIES

	ITEM	QUANTITY	UNIT
	CONTRACTOR CONSTRUCTION STAKING	Lump Sum	LSUM
	FIELD OFFICE AND LABORATORY (TYPE A)	1	EACH
	FOUNDATION STABILIZATION (SET PRICE)	1	CUYD
	FOUNDATION STABILIZATION	6	CUYD
	MOBILIZATION	Lump Sum	LSUM
	MOBILIZATION (DBE)	Lump Sum	LSUM
	REMOVAL OF EXISTING STRUCTURE	Lump Sum	LSUM
##	MAINTENANCE AND RESTORATION OF HAUL ROAD (SET PRICE)	Lump Sum	LSUM
	CONCRETE FOR SEAL COURSE (SET PRICE)	1	CUYD
##	TRANSPORTING SALVAGABLE MATERIAL	1,000	CUYD
	CLEARING AND GRUBBING	Lump Sum	LSUM
	COMMON EXCAVATION (RURAL SMALL)	29,184	CUYD
	COMMON EXCAVATION (CONTRACTOR FURNISHED)	7,803	CUYD
	ROCK EXCAVATION	688	CUYD
	ROCK EXCAVATION (NON-DURABALE SHALE)	161	CUYD
	COMPACTION OF EARTHWORK (TYPE A) (MR-5-5)	15,756	CUYD
	COMPACTION OF EARTHWORK (TYPE AA) (MR-5-5)	3,246	CUYD
	WATER (GRADING) (SET PRICE)	1	MGAL
	SALVAGED TOPSOIL	20,427	SQYD
	END SECTION (1.5 SQ.FT.)	2	EACH
	ENTRANCE PIPE (1.5 SQ.FT.)	46	LNFT
	ENTRANCE PIPE (18")	32	LNFT
	CONCRETE (GRADE 4.0) (RCB)	10.4	CUYD
	CONCRETE (GRADE 4.0) (AE) (RCB)	2.2	CUYD
	BRIDGE BACKWALL PROTECTION SYSTEM	11	SQYD
	REINFORCING STEEL (GRADE 60)	680	LBS
	REINFORCING STEEL (GRADE 60)(EPOXY COATED)	750	LBS
	GRANULAR BACKFILL (WINGWALLS)	12	CUYD
	GUARDRAIL, STEEL PLATE (MGS)	762.50	LNFT
	GUARDRAIL, END TERMINAL (MGS-SRT) Alt #1	4	EACH
	GUARDRAIL, END TERMINAL (MGS-FLEAT) Alt #2	4	EACH
	GUARDRAIL, END TERMINAL (MGS-MSKT) Alt #1	4	EACH
	GUARDRAIL, END TERMINAL (MGS-SOFTSTOP) Alt #2	4	EACH
	GUARDRAIL, REMOVAL OF STEEL PLATE	375.00	LNFT
	SLOPE PROTECTION (AGGREGATE)	107	CUYD
	SLOPE PROTECTION (RIPRAP STONE)	2,555	CUYD
	BEDDING FOR SLOPE PROTECTION	580	CUYD
	SLOPE DRAIN (STONE)	76	LNFT
	TEMPORARY SURFACING MATERIAL (AGGREGATE) (SET PRICE)	1	CUYD
	MAILBOX INSTALLATION (SET PRICE)	1	EACH
	MOWING	0.3	PMPS
	RIGHT-OF-WAY SURVEY MONUMENT	11	EACH
	CONCRETE PAVEMENT (10" UNIFORM) (AE) (BR APP)	107	CUYD
	FENCE (BARBED WIRE) (TEMPORARY)	2,393	LNFT
	CURING ENVIRONMENT	Lump Sum	LSUM

TRANSPORTING SALVAGEABLE MATERIAL ≠

ITEM	STATION TO STATION		CU YDS	REMARKS
COMMON EXCAVATION	66+10.67	85+59.36	1,000	
TOTAL			1,000	

≠Federally Non-Participating - See General Note Sh. No. 7

CONCRETE PAVEMENT (10" UNIFORM) (AE) (BR. APPROACH)

STATION	STATION	Sq. Yard	REMARKS
7374+78.16	7374+91.16	53.40	South Bridge Approach
7375+91.16	7376+04.16	53.40	North Bridge Approach
TOTAL		106.80	

SLOPE DRAIN (STONE)

LOCATION	STATION	SIDE	LIN. FT.
K-99	7376+05.41	Rt.	22
K-99	7376+05.41		54
TOTAL			76

MOWING

LOCATION	STATION	PMPS
K-99	7367+50 to 7385+20	0.3

REMOVAL OF EXISTING STRUCTURES ⚹ (FOR INFORMATION ONLY)

STATION	SIDE	DESCRIPTION
7376+75.26 to 7378+64.03	Rt.	(189') K-99 Guardrail
7377+19.47 to 7378+36.37	Lt.	(120') K-99 Guardrail
7377+97.47	℄	Br. No. 99-99-139.73 (072)
7376+29	Rt.	18" x 21.60' CMP
7378+72	Lt.	15" x 36.40' CMP
7380+70	Lt.	15" X 19.80 CMP

⚹The listing shown may not be complete. Payments for structures or obstruction not listed but whose removal is required by the construction, as determined by the Engineer, should not be paid for directly, but should be included in the bid item "Removal of Existing Structures."

EARTHWORK

LOCATION	STATION to STATION	EXCAVATION COMMON CU.YDS.	COMMON VMF	ROCK CU.YDS.	ROCK VMF	NON-DURABLE SHALE CU.YDS.	NON-DURABLE SHALE VMF	ØCONTR. FURN. CU.YDS.	COMPACTION TYPE AA MR-5-5 CU.YDS.	COMPACTION TYPE A MR-5-5 CU.YDS.	NOT SUBGRADED THROUGH CUTS COMM. CU.YDS.	NOT SUBGRADED THROUGH CUTS TYPE AA CU.YDS.	⚹ EMBANKMENT (CU.YDS.) INITIAL CONSOL.	⚹ EMBANKMENT (CU.YDS.) SETTLE-MENT	◭PLACE. SELECT SOIL CU.YDS.
Phase I	66+10.67 to 85+59.36	4,117	0.78			35	1.10	7,803	1,535	7,762	695	695			
Phase II	7367+50 to 7385+20	14,272	0.78	451	1.00	108	1.10		664	7,994	352	352			
Phase III	66+10.67 to 85+59.36	9,748	0.78	≈ 237		18	1.10								
	TOTALS	28,137		688		161		7,803	2,199	15,756	1,047	1,047			

◫ Existing Pavement and Non-Durable Shale to be wasted.
Ø Assumed VMF for Contractor furnished excavation is 0.80
≈ Includes shoofly detour bridge rock riprap removal
⚹ Subsidiary (see General Note).
◭ See General note.

GUARDRAIL, REMOVAL OF STEEL PLATE

STATION	SIDE	LENGTH (LIN. FT.)	DESCRIPTION
76+80.33 to 77+82.56	Rt.	103.13	Shoofly Guardrail
76+93.08 to 77+82.56	Lt.	90.63	Shoofly Guardrail
78+50.18 to 79+38.37	Rt.	90.63	Shoofly Guardrail
78+50.18 to 79+41.02	Lt.	90.63	Shoofly Guardrail
TOTAL		375.02	

For Channel Realignment Quantities, See Sh. No. 60
For Surfacing Quantities, See Sh. No. 64
For Temporary Project Pollution Control Quantities, See Sh. No. 65
For Seeding Quantities, See Sh. No. 76
For Signing Quantities, See Sh. No. 82
For Traffic Control Quantities, See Sh. No. 95

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

~~RD050~~

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

KDOT Graphics Certified 01-18-2024

Sh. No. 63

Plotted by : August.Zuno 18-JAN-2024 11:41
File : rss050.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	64	135

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- 5-5)".

~~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 8" HMA-Commercial Grade (Class A) to the R/W line as indicated on the detail. All ~~side roads and~~ house entrances with existing asphalt surface shall be surfaced with 8" HMA-Commercial-Grade (Class A)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 8" HMA Commercial Grade (Class A) to the limits shown on the detail.

6" Surfacing material (AB-3) shall be used for surfacing house entrances ~~and side roads~~ (0.17 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, AB-3, 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.

SUMMARY OF QUANTITIES

ITEM	Ø MAINLINE	SHOOFLY	ENTRANCE	## GUARDRAIL		TOTAL	UNIT
⌀ HMA Commercial Grade (Class A)	1,237.9	1,566.4	125.8	23.2		2,953.3	Ton
Aggregate Base (AB-3) (6")	2,845.7	4,878.8	289.2			8,013.7	Sq. Yd.
⚹ Surfacing Material (AB-3)			106.9	137.7		244.6	Ton
Aggregate Shoulder (AB-3) (6")	489.4					489.4	Sq. Yd.
Millings		1,566.4				1,566.4	Ton

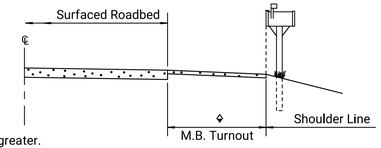
Quantities are based on the following rates:
- ⌀ Computed at the rate of 145 lbs per cu. ft.
- ⚹ Computed at the rate of 156 lbs per cu. ft.
- ## Computed at the rate of 4" thickness for guardrail widening pads
- Ø Includes 20.3 Tons & 489.5 Sq Yds. for mailbox turnout.

MILLINGS		
LOCATION	STATION	TON
SHOOFLY	66+10.67 to 85+59.36	1,566.4

TRANSPORTING SALVAGEABLE MATERIAL ≠

ITEM	STATION TO STATION		TON	REMARKS
MILLINGS	66+10.67	85+59.36	1,566.4	
TOTAL			1,566.4	

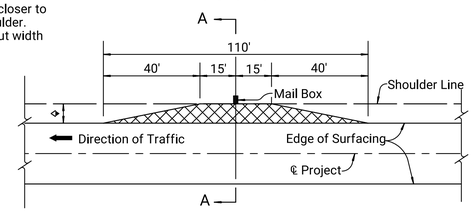
≠ Federally Non-Participating - See General Note Sh. No. 7



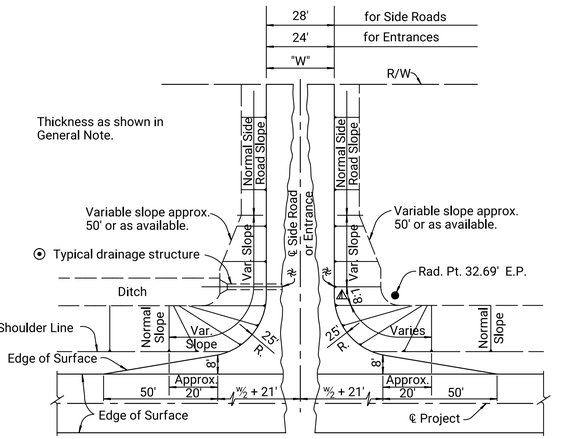
♦ Width shall be 8' or shoulder width, whichever is greater.

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.

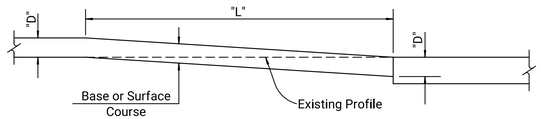


DETAIL FOR SURFACING OF MAIL BOX TURNOUTS



WITH DRAINAGE STRUCTURE — MOUND ENTRANCE OR SIDE ROAD

DETAIL FOR SURFACING OF SIDE ROADS & HOUSE ENTRANCES



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'	

RATES OF APPLICATION

RATE	UNIT	ITEM		

† Computed at the rate of

†† Computed at the rate of

RECAPITULATION OF QUANTITIES

ITEM				TOTAL	UNIT
HMA Commercial Grade (Class A)				2,953	Ton
Aggregate Base (AB-3) (6")				8,014	Sq. Yd.
Surfacing Material (AB-3)				245	Ton
Aggregate Shoulder (AB-3) (6")				489	Sq. Yd.
Millings				1,566	Ton
Water (Aggregate Base) (Set Price)				1	MGal
Water (Aggregate Shoulder) (Set Price)				1	MGal
≠ Transporting Salvageable Material (0-2.5MI)				1,566	Ton
Field Office and Laboratory (Type A)				1	Each

≠ Federally Non-Participating

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES (Surfacing)

~~RD051~~

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

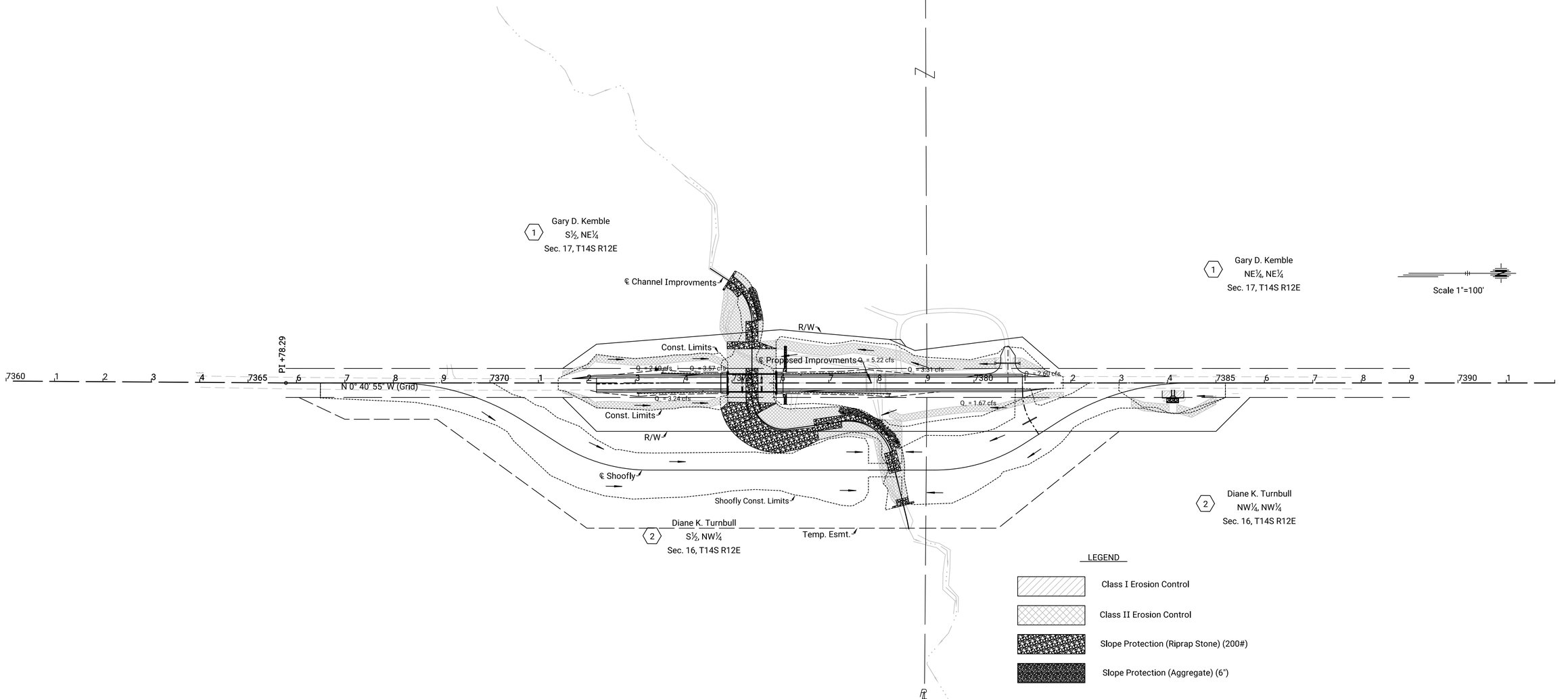
KDOT Graphics Certified 01-18-2024 Sh. No. 64

KDOT Graphics Certified

Plotted by: August.Zuno 18-JAN-2024 10:59
File : rss051.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	65	135

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED
6/2023	C. McCain		



KANSAS DEPARTMENT OF TRANSPORTATION

PROPOSED FINAL EROSION CONTROL PLAN STA. 7370+00 TO STA. 7388+00

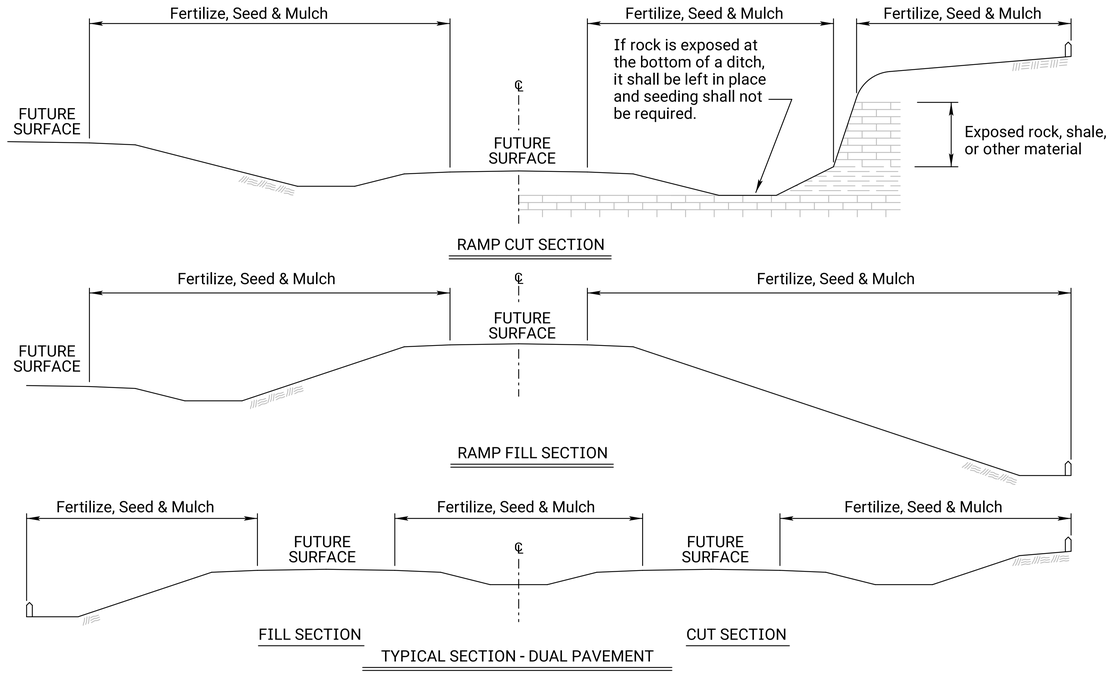
KDOT Graphics Certified 01-04-2024

Sh. No. 65

KDOT Graphics Certified

Plotted by : August.Zuno 08-JAN-2024 09:31
File : ka572801rec-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	66	135



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		5.71		Temporary Fertilizer (15 - 30 - 15)	856.5	LB
20		3.81		Temporary Seed (Canada Wildrye)	76.2	LB
45		3.81		Temporary Seed (Grain Oats)	171.5	LB
45		3.81		Temporary Seed (Sterile Wheatgrass)	171.5	LB
	169.9		1.9	Soil Erosion Mix	322.8	LB
				Erosion Control (Class 1, Type C)	139	SQ YD
				Erosion Control (Class 2, Type E)	6510	SQ YD
				Erosion Control (Class 2, Type F)	2456	SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)	965.6	CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")		LF
				Biodegradable Log (12")		LF
				Biodegradable Log (20")	590	LF
				Filter Sock (18")	530	LF
				Geotextile (Erosion Control)		SQ YD
				Silt Fence	180	LF
				SWPPP Design †	Lump Sum	LS
				SWPPP Inspection †	55	EACH
				Water Pollution Control Manager †	55	EACH
900 lbs / acre		3.81		Mulch Tacking Slurry	3429	LB
2 tons / acre		3.81		Mulching	11.4	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)
20	Canada Wildrye	38.0
20	Grain Oats	38.0
20	Sterile Wheatgrass	38.0
0.5	Blue Grama (Lovington)	1.0
4.5	Buffalograss (Treated)	8.6
45	Perennial Ryegrass	85.5
2.6	Prairie Junegrass	4.9
6.3	Side Oats Grama (El Reno)	12.0
45	Tall Fescue (Endophyte Free)	85.5
6	Western Wheat (Barton)	11.4
169.9	Total (lb)	322.8

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

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
03	08-03-20	Added Note	M.R.D.	M.L.
02	12-01-17	Revised Standard	M.R.D.	S.H.S.
01	06-01-17	Revised Standard	M.R.D.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

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

KDOT Graphics Certified 07-10-2023 Sh. No. 66

KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:07
File : la852a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	67	135

Class 1, Type C

Type	SIDE	SLOPE H:V	ALIGN-MENT	STATION TO STATION		LENGTH (FT)	AVG. WIDTH SLOPE (FT)	EROSION CONTROL CLASS I (SQUARE YARDS)	
								TYPE C	TYPE D
C	LT	4:1	K-99	7380+46.00	7380+55.00	9.00	40.00	40	
C	LT	4:1	K-99	7380+85.00	7380+92.00	7.00	20.00	16	
C	RT	4:1	K-99	7383+85.00	7384+35.00	50.00	15.00	83	
						TOTAL (ALL SHEETS)		139	0

Class 2, Type E and F

Type	SIDE	ALIGN-MENT	STATION TO STATION		LENGTH (FT)	AVG. WIDTH (FT)	EROSION CONTROL CLASS II (SQUARE YARDS)			
							TYPE E	TYPE F	TYPE G	TYPE H
E	LT	K-99	7371+50.00	7372+20.00	70.00	10.00	78			
E	RT	K-99	7371+50.00	7372+20.00	70.00	10.00	78			
E	LT	K-99	7372+20.00	7374+90.00	270.00	14.00	420			
E	RT	K-99	7372+20.00	7374+90.00	270.00	14.00	420			
E	LT	K-99	7375+90.00	7380+46.00	456.00	20.00	1013			
E	RT	K-99	7378+25.00	7381+00.00	275.00	14.00	428			
E	LT	K-99	7380+92.00	7381+50.00	58.00	14.00	90			
E	RT	K-99	7381+00.00	7381+85.00	85.00	14.00	132			
E	RT	K-99	7383+25.00	7384+03.00	78.00	18.00	156			
E	RT	K-99	7384+19.00	7385+00.00	81.00	18.00	162			
E	RT	Shoofly	67+00.00	77+80.00	1080.00	12.00	1440			
E	LT	Shoofly	70+00.00	77+75.00	775.00	12.00	1033			
E	LT	Shoofly	78+50.00	83+00.00	450.00	12.00	600			
E	RT	Shoofly	79+70.00	82+05.00	235.00	12.00	313			
E	RT	Shoofly	83+50.00	84+60.00	110.00	12.00	147			
F	LT	Channel	10+73.50	11+12.64	39.14	15.01		65		
F	LT	Channel	11+78.64	12+75.87	97.23	25.42		275		
F	RT	Channel	10+73.50	12+30.83	157.33	37.80		661		
F	LT	Channel	13+67.83	15+54.40	186.57	28.26		586		
F	RT	Channel	14+98.43	17+98.28	299.85	18.09		603		
F	LT	Channel	16+04.42	17+98.28	193.86	12.33		266		
						TOTAL (ALL SHEETS)	6510	2456	0	0

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

EROSION CONTROL SEEDING-SODDING

LA852A-EC

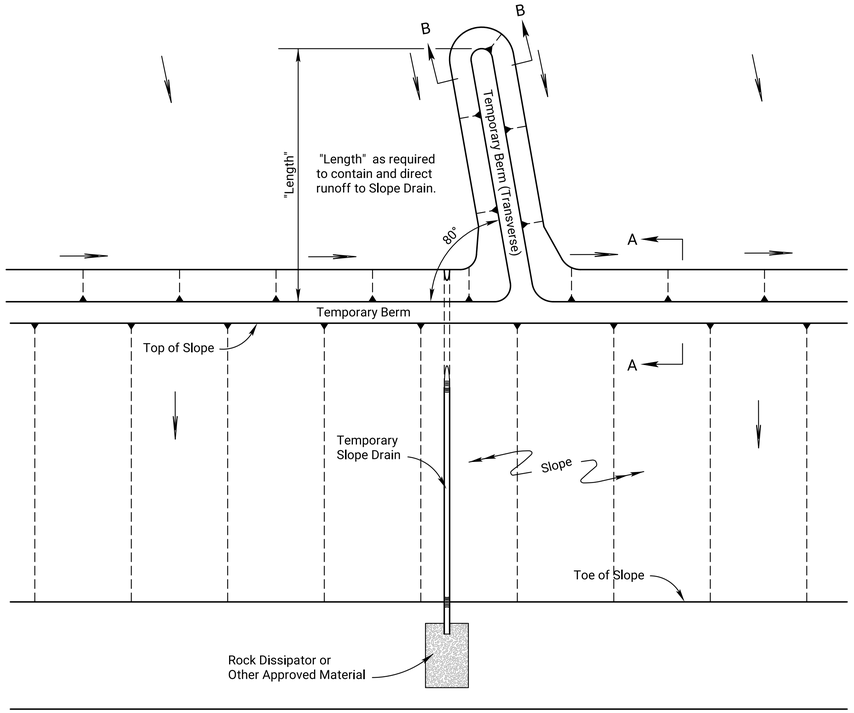
FHWA APPROVAL			APP'D.	Scott H. Shields	
DESIGNED	M.R.M.	DETAILED	M.R.M.	QUANTITIES	TRACED M.R.M.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK. S.H.S.

KDOT Graphics Certified 07-10-2023 Sh. No. 67

KDOT Graphics Certified

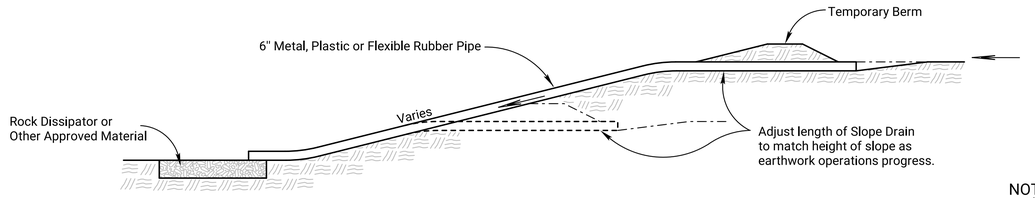
Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:07
File : LA852A-EC.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	68	135



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

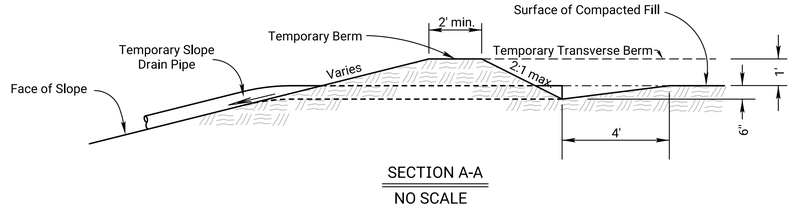
NOTES:

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

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

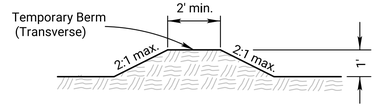
3) Pipe shall be secured in place as approved by Engineer.

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



SECTION A-A

NO SCALE

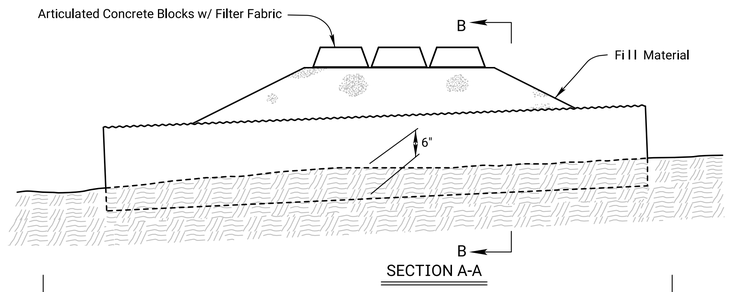


SECTION B-B

NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

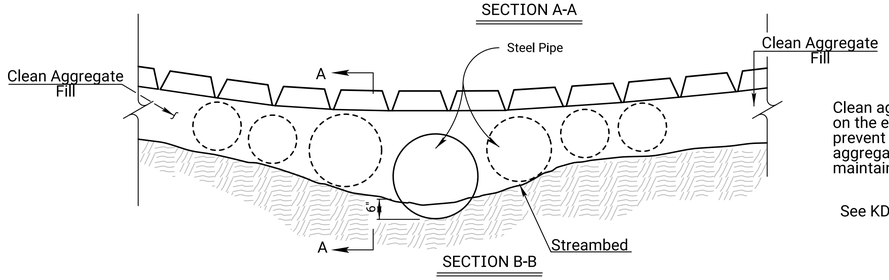
NO SCALE



SECTION A-A

Pipe size may vary.

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



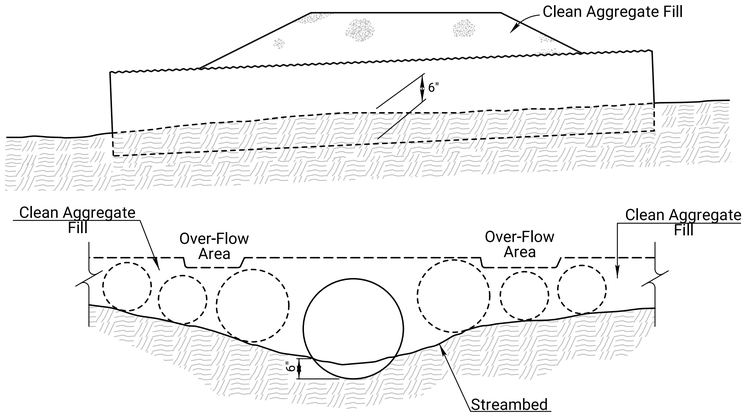
SECTION B-B

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

See KDOT Specifications for more information.

TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

NO SCALE



SECTION B-B

Pipe size may vary.

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

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

See KDOT Specifications for more information.

TEMPORARY STREAM CROSSING (AGGREGATE)

NO SCALE

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852B

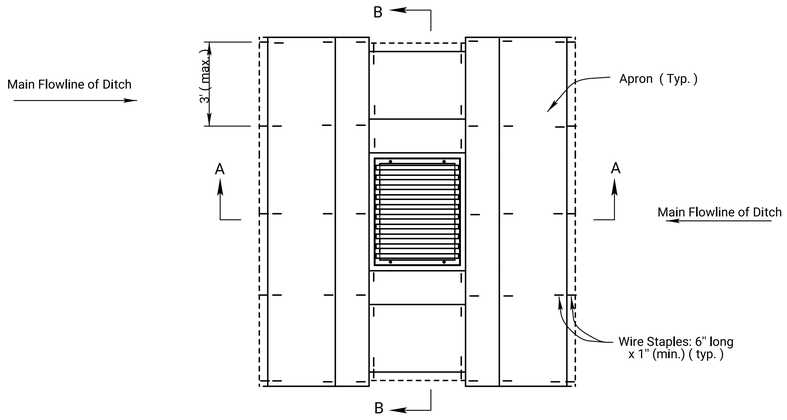
FHWA APPROVAL		01-21-22	APP'D.	Mervin Lare
DESIGNED	DETAILED		QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-17-2022 Sh. No. 68

KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:07
File : LA852B.dgn

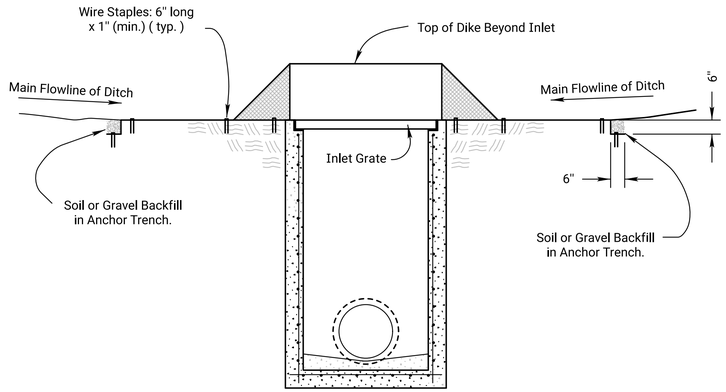
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	69	135



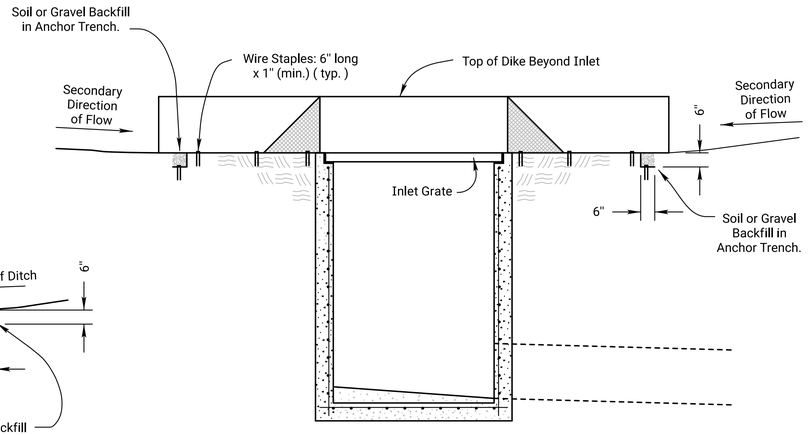
PLAN

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

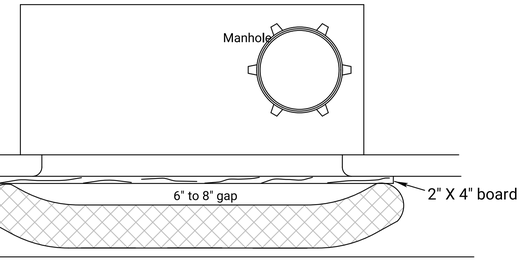
NO SCALE

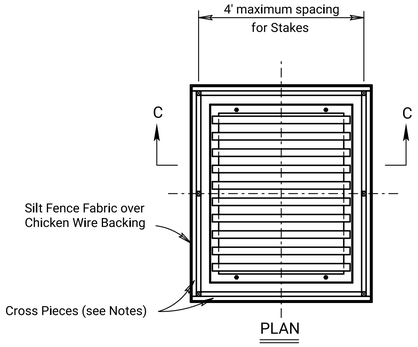


SECTION A - A

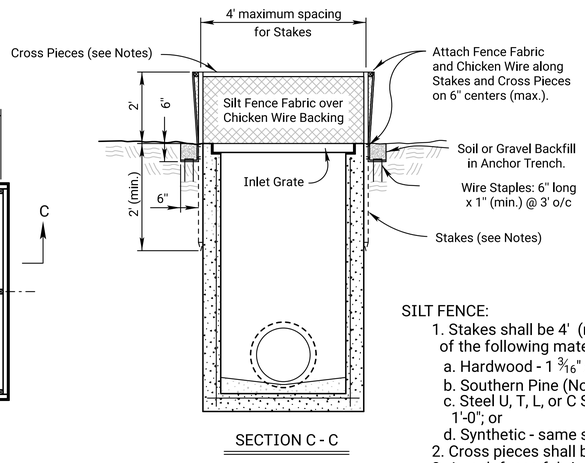


SECTION B - B





PLAN



SECTION C - C

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

NO SCALE

SILT FENCE:

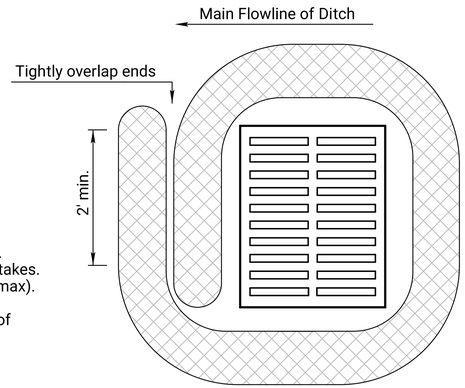
1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 3/16" x 1 3/16",
   b. Southern Pine (No. 2) - 2 5/8" x 2 5/8";
   c. Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Cross pieces shall be of same material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

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

Rock = approximately 1" to 2" diameter

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.



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 ¼" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852C

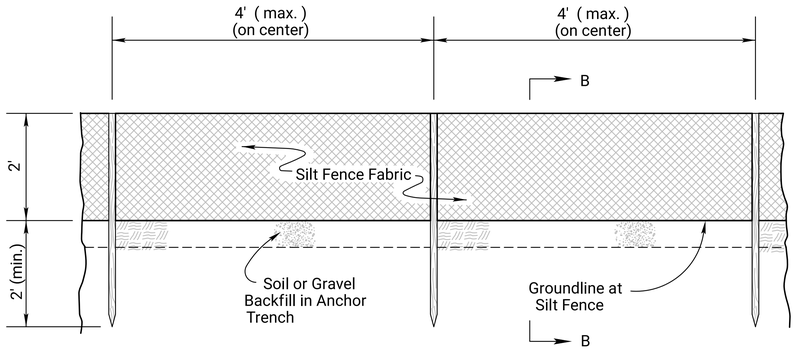
FHWA APPROVAL			03-10-15	APP'D.	Scott H. Shields	
DESIGNED	R.A.	DETAILED	R.A.	QUANTITIES	TRACED	
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 07-14-2022 Sh. No. 69

KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:07
File : LA852C.dgn

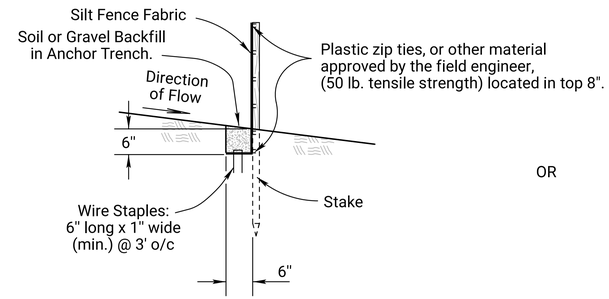
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	70	135



TYPICAL ELEVATION

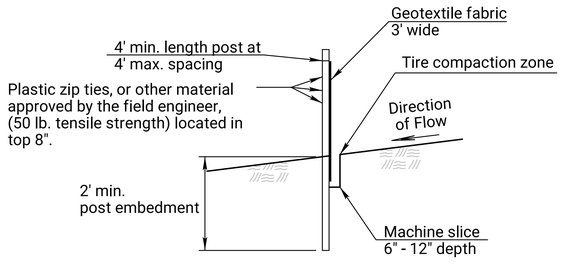
SILT FENCE BARRIER

NO SCALE

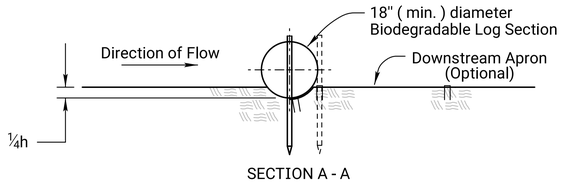


SECTION B-B

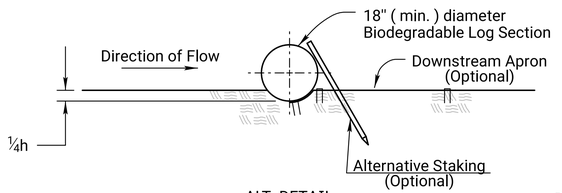
OR



SECTION B-B

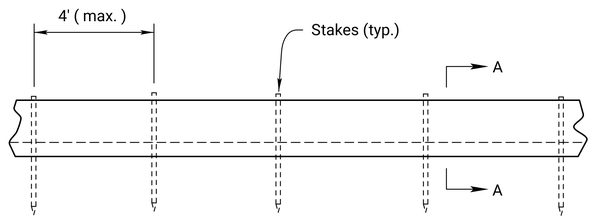


SECTION A - A



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

INSTALLATION NOTES

SILT FENCE:

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

BIODEGRADABLE LOG OR FILTER SOCK

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

Biodegradable Log or Filter Sock Slope Interruptions

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

Deviations should be approved by the Field Engineer.

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

GENERAL NOTES

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852D

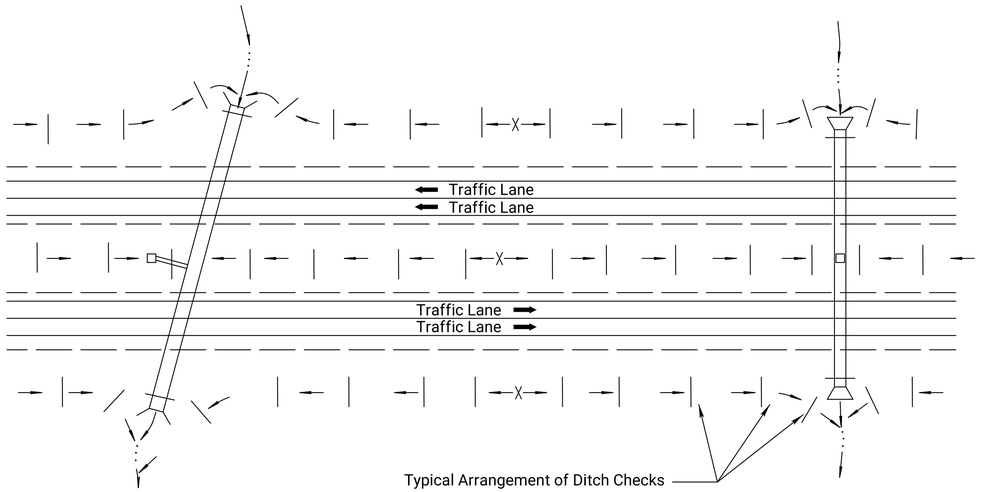
FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields	
DESIGNED	S.H.S.	DETAILED R.A.	QUANTITIES	TRACED	
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 06-18-2022 Sh. No. 70

KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:08
File : la852d.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	71	135



TYPICAL DITCH CHECK LAYOUT PLAN

NO SCALE

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

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

GENERAL NOTES

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL DITCH CHECKS

LA852E

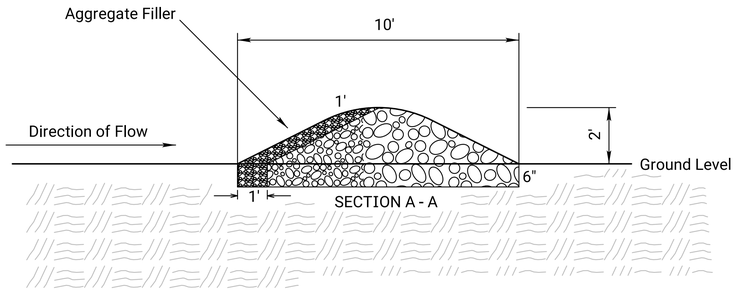
FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields			
DESIGNED	S.H.S.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

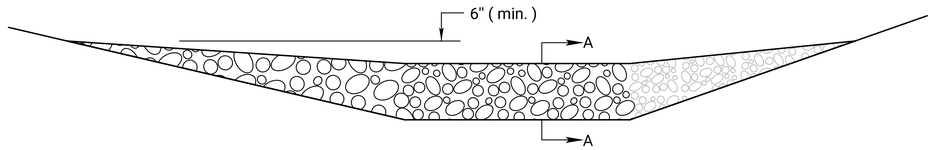
KDOT Graphics Certified 06-18-2022

KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:08
File : la852e.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	72	135





TYPICAL ELEVATION

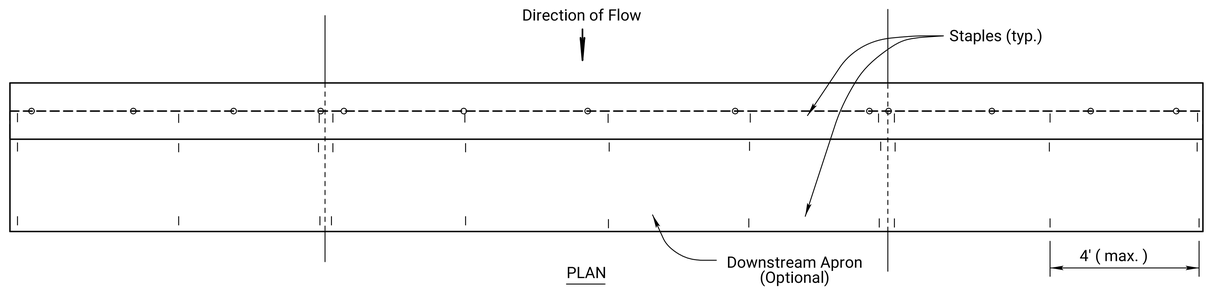
ROCK DITCH CHECK

NO SCALE

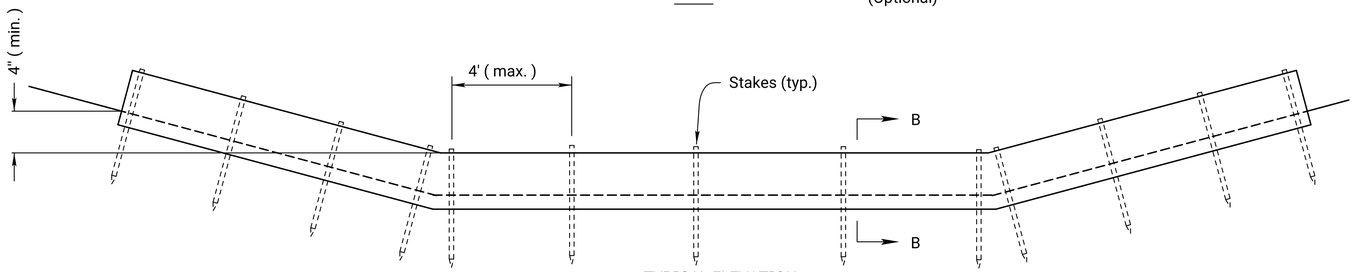
TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
NOTE: Use this spacing for Rock Ditch Checks only.	

ROCK DITCH CHECK NOTES

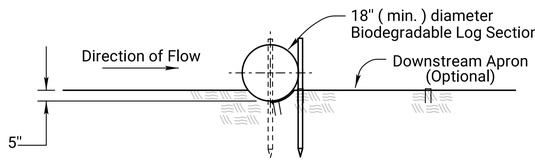
1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch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



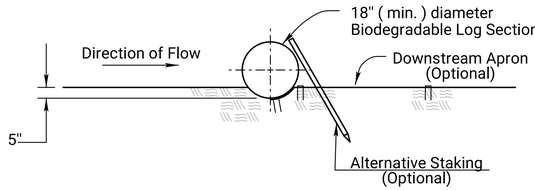
PLAN



TYPICAL ELEVATION



SECTION B - B



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE

BIODEGRADABLE LOG DITCH CHECK NOTES

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852G

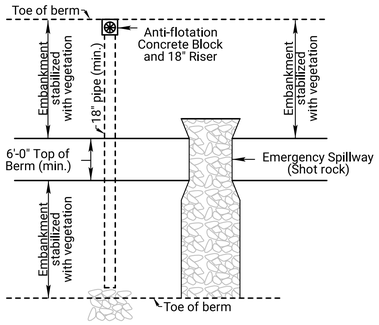
FHWA APPROVAL			11-19-20	APP'D.		Mervin Lare	
DESIGNED	M.L.	DETAILED	D.K.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	M.L.	DETAIL CK.	M.L.	QUAN.CK.		TRACE CK.	R.A.A.

KDOT Graphics Certified 07-14-2022 Sh. No. 72

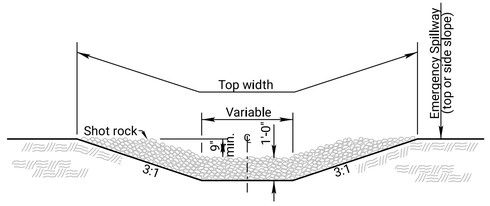
KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:08
File : LA852G.dgn

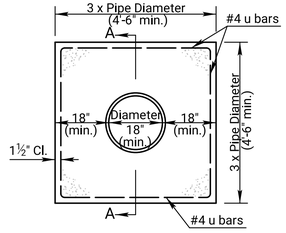
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	73	135



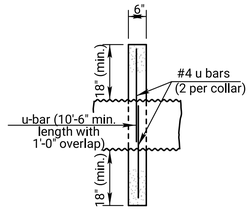
SEDIMENT STORAGE BASIN (PLAN)



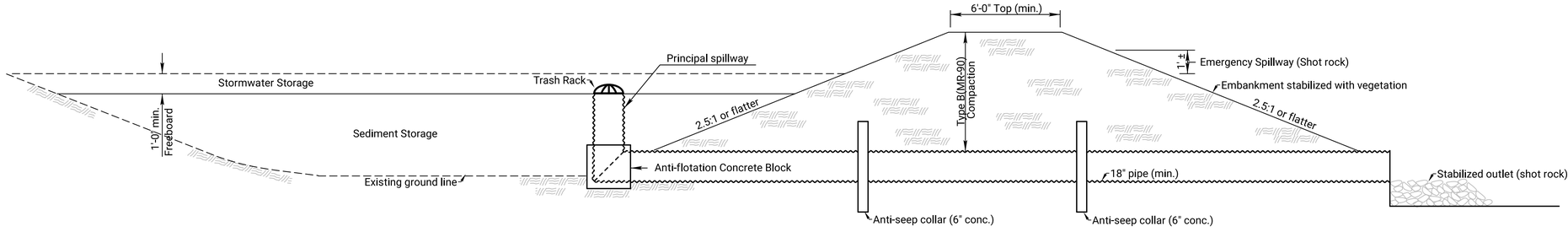
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



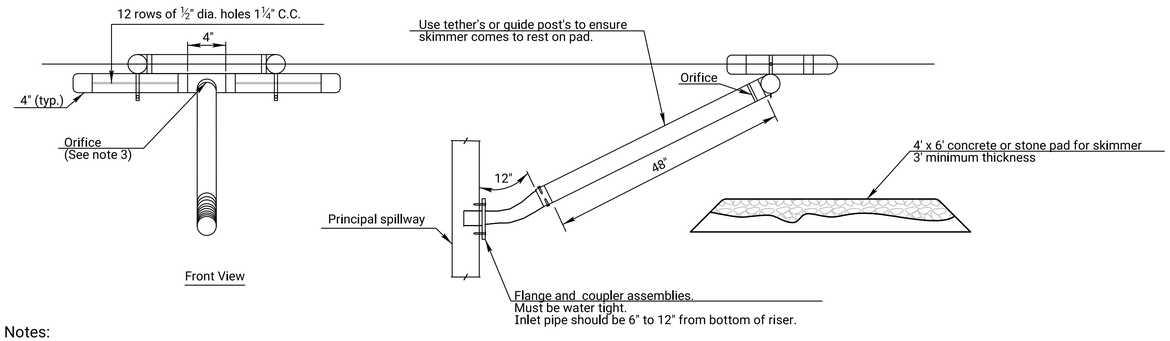
SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

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

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

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



Notes:

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

SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL SEDIMENT STORAGE BASIN

LA852H

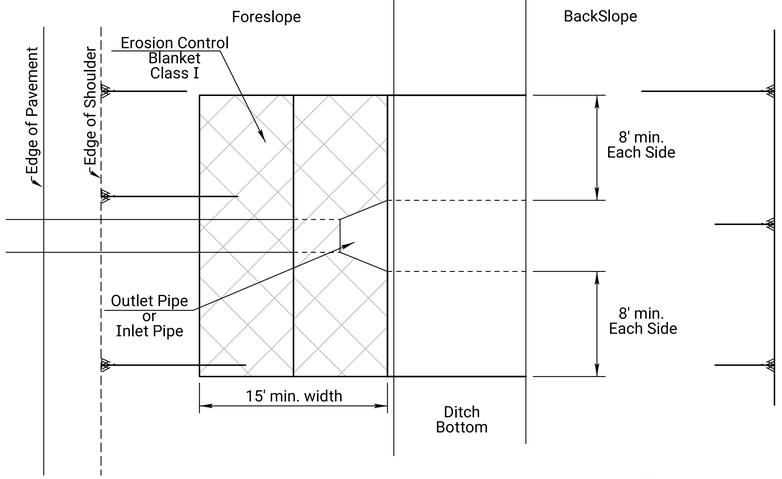
FHWA APPROVAL			09-24-13	APP'D.			
DESIGNED	B.B.	DETAILED	B.B.	QUANTITIES		TRACED	B.B.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

KDOT Graphics Certified 06-20-2022 Sh. No. 73

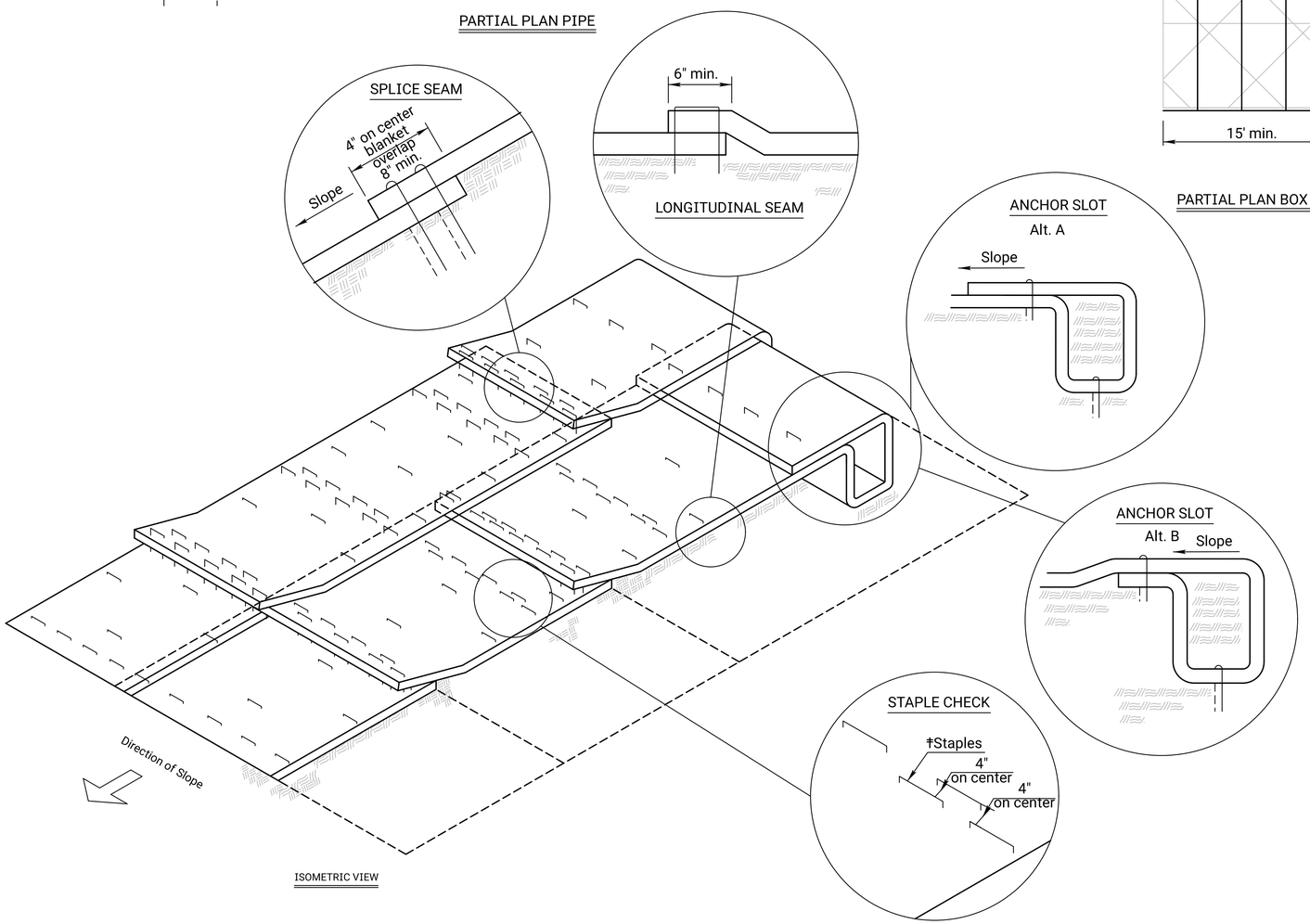
KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:07
File : LA852H.dgn

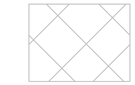
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	74	135



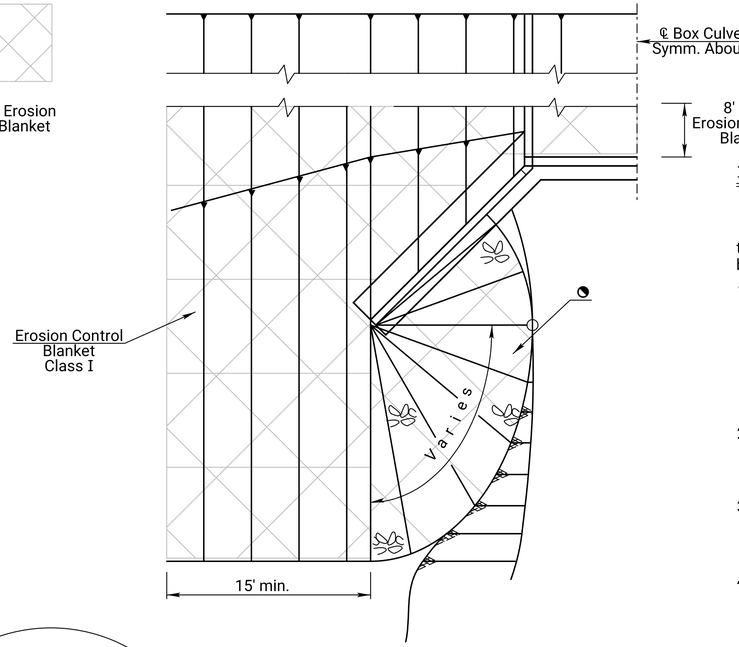
PARTIAL PLAN PIPE



ISOMETRIC VIEW



Limits of Erosion Control Blanket



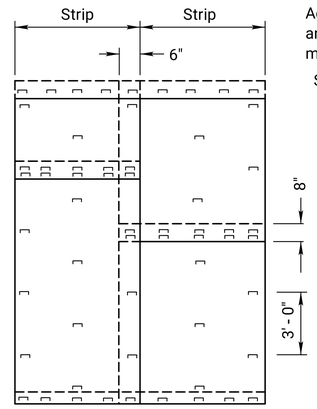
PARTIAL PLAN BOX CULVERT

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

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

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

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



PLAN VIEW - ANCHORING DIAGRAM

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

Single post ring and shank staple is acceptable.

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

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL EROSION CONTROL CLASS 1 SLOPE PROTECTION

LA855

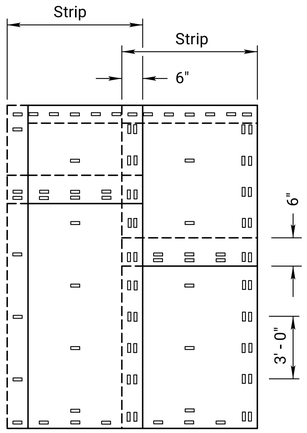
FHWA APPROVAL			03-10-15	APP'D.		Scott H. Shields	
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.		TRACE CK.	R.A.A.

KDOT Graphics Certified 06-20-2022 Sh. No. 74

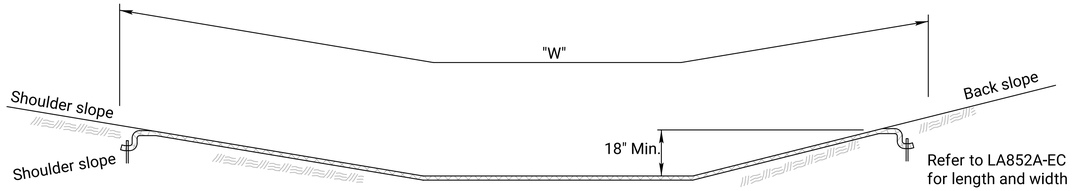
KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:08
File : LA855.dgn

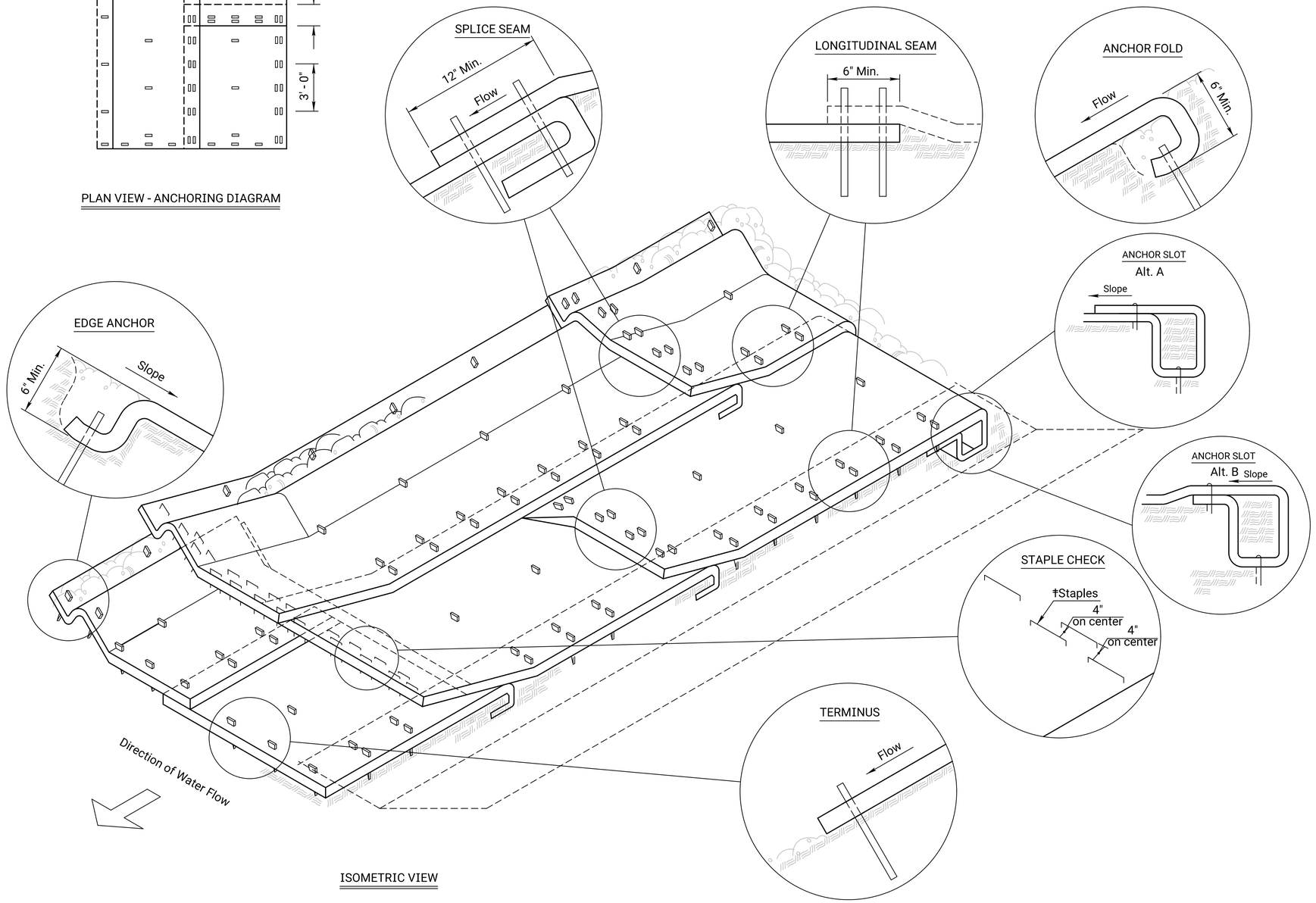
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	75	135



PLAN VIEW - ANCHORING DIAGRAM



CROSS SECTION (Ditch Lining)



ISOMETRIC VIEW

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

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

1. ANCHOR FOLD: The top of the mat should be folded under, buried and secured with approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot, 6 inches wide x 6 inches deep; anchored in the bottom of the slot, backfilled, and the mat folded over the top as shown in detail.

2. LONGITUDINAL SEAMS: The adjacent edges of the mat should overlap a minimum of 6 inches, with anchors catching the edges of both mats.

3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 12 inches in direction of water flow. Stagger splice seams.

4. STAPLE CHECK: ‡Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.

5. EDGE ANCHOR: Lay outside edge of mat into trench at top of side slope. Anchor at 3 foot intervals along trench.

6. TERMINUS: The bottom edge of the mat shall be anchored in place with anchors spaced at 9 inch intervals along the terminating edge.

7. TYPICAL ANCHORS: Anchor design shall be as recommended by the manufacturer.

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

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS 2
FLEXIBLE CHANNEL LINER

LA856

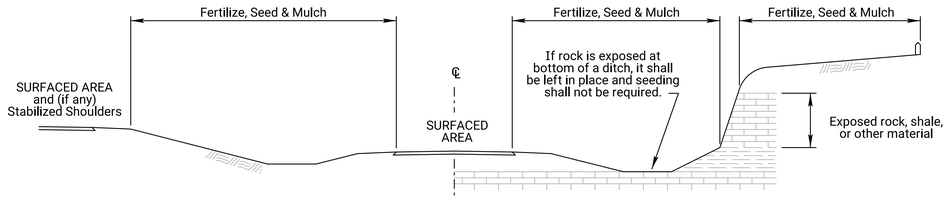
FHWA APPROVAL			11-02-15	APP'D.	Scott H. Shields		
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 06-20-2022 Sh. No. 75

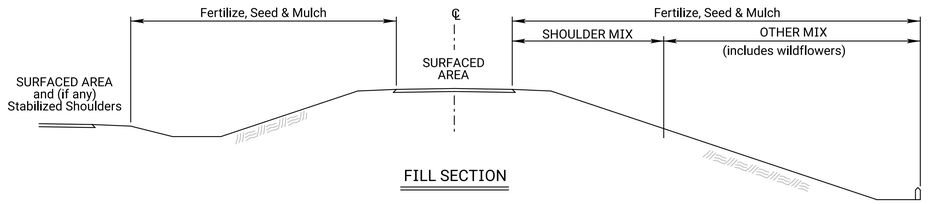
KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:08
File : la856.dgn

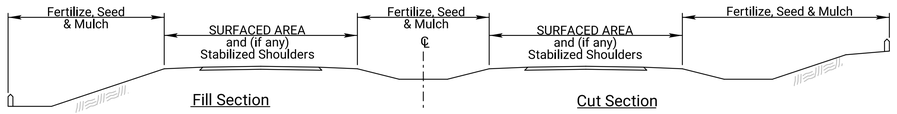
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	76	135



CUT SECTION



FILL SECTION



TYPICAL SECTION - DUAL PAVEMENT

GRASS & WILDFLOWER SEEDING SEASONS

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

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

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

SODDING SEASONS

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

NATIVE WILDFLOWER MIX 1

PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	1.14
0.3	Common Milkweed	1.14
0.3	Black Eyed Susan	1.14
0.5	Blanket Flower	1.91
0.5	False Sunflower	1.91
0.5	Lance-Leaf Coreopsis	1.91
0.2	Maximilian Sunflower	0.76
0.1	New England Aster	0.38
0.2	Pinnate Prairie Coneflower	0.76
0.2	Plains Coreopsis	0.76
0.3	Purple Coneflower	1.14
0.3	Upright Prairie Coneflower	1.14
0.3	Dames Rocket	1.14
0.3	Lemon Mint	1.14
0.2	Pitcher Sage	0.76
0.2	Wild Bergamot	0.76
1.0	Illinois Bundleflower	3.81
0.2	Common Evening Primrose	0.76
0.1	Hoary Verbena	0.38
0.8	Purple Prairie Clover	3.05
0.3	Roundhead Lespedeza	1.14
3.0	Showy Partridge Pea	11.43
0.2	White Prairie Clover	0.76
10.3	Total (lb)	39.2

NATIVE WILDFLOWER MIX 2

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

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

OPTION: Broadcast Tall Drop Seed on the soil surface.

SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE SHLDR	P.L.S. RATE/ACRE OTHER	ACRES SHLDR	ACRES OTHER	BID ITEM	QUANTITY	UNIT
	80		3.81	Fertilizer (15 - 30 - 15)	304.8	Lbs
	2		3.81	Seed (Big Bluestem (Kaw))	7.6	Lbs
	10		3.81	Seed (Canada Wildrye)	38.1	Lbs
	2		3.81	Seed (Indiangrass (Osage))	7.6	Lbs
	2		3.81	Seed (Little Bluestem (Aldous))	7.6	Lbs
	6.3		3.81	Seed (Side Oats Grama (El Reno))	24	Lbs
	10		3.81	Seed (Sterile Wheatgrass)	38.1	Lbs
	0.7		3.81	Seed (Switchgrass (Blackwell))	2.7	Lbs
	0.5		3.81	Seed (Tall Dropseed)	1.9	Lbs
	4		3.81	Seed (Western Wheat (Barton))	15.2	Lbs
	10.3		3.81	Seed (Native Wildflower Mix 1)	39.2	Lbs
				Mulching ✳		

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING
SUMMARY OF SEEDING QUANTITIES

LA850

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

KDOT Graphics Certified 07-10-2023 Sh. No. 76

KDOT Graphics Certified

Plotted by : Melissa.Davidson@ks.gov 10-JUL-2023 18:07
File : LA850.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	77	135

SYMBOL KEY

- REMOVE SIGN
- REMOVE POST
- REMOVE FOOTING
- REMOVE SIGN & POST
- REMOVE POST & FOOTING
- REMOVE SIGN, POST, & FOOTING
- MOUNT ON WOOD POST IN CONCRETE FOOTING
- MOUNT ON WOOD POST IN SOIL
- MOUNT ON STEEL BEAM BREAKAWAY POST
- MOUNT ON STEEL U-POST
- MOUNT ON PSST POST
- MOUNT ON EXISTING POST
- MOUNT ON VERTICAL SUPPORT
- SHOULDER MOUNTED INSTALLATION
- OFFSET MOUNTED INSTALLATION
- EXISTING SIGN
- EXISTING SIGN TO BE OVERLAID
- SIGN IS NOT PART OF PROJECT
- TYPE 'A' DELINEATOR (RIGID)
- TYPE 'A' DELINEATOR (RIGID) (BK-BK)
- TYPE 'B' DELINEATOR (RIGID)
- TYPE 'A' DELINEATOR (FLEXIBLE)
- TYPE 'A' DELINEATOR (FLEXIBLE) (BK-BK)
- TYPE 'B' DELINEATOR (FLEXIBLE)
- TYPE 2 OBJECT MARKER
- TYPE 3 OBJECT MARKER
- TYPE 3 OBJECT MARKER (BK-BK)

GENERAL NOTES

In order to expedite the completion of the project for traffic service, the signing and delineator work shall be sequenced with any other contract work such that the phases of construction may proceed and be completed at the same time.

New signs erected on the project which are in conflict with existing signing are to be completely covered until the existing signs are removed or the new signing is applicable. The existing signs that are being replaced, removed, or do not follow the current MUTCD signing standards are to be removed when the project is completed or as determined by the Engineer.

The Contractor shall exercise caution at all times when installing sign supports in and around areas where utilities exist, either underground or overhead, and will be held responsible for any damage incurred to the system. The installation of sign supports shall include the excavation, drilling, or driving the support footing and the erection of the sign support. The contractor shall exercise caution when working around any existing signs that are to remain and will be held responsible for any damage to the signs, supports, or footings. The Contractor shall exercise care when working around shrubbery while removing or installing signs or sign supports.

An existing sign post installation shall be plumb and the compaction of the backfill soil shall comply with the specifications after the removal and resetting of a sign, the removal and replacement of a sign, or the installation of a new sign.

The Contractor shall provide mounting bolts that are of a length that does not extend more than a nominal 1 inch beyond the sign post. The Contractor shall not make any field modifications to the mounting bolt prior to or after the sign is installed.

Specific service (LOGO) signs that are to be removed shall have the business logo plaques removed and transported to location determined by KDOT, at which time the plaques become the property of KDOT. The Contractor will be assessed a replacement cost for any damage to a business logo plaque prior to the plaque becoming the property of KDOT.

The materials and fabrication for signing and delineation work shall conform to the Standard Specifications for State Road and Bridge Construction (2015 edition) and Special Provisions.

INDEX OF SHEETS

77 SIGNING INDEX, SYMBOLS, & GENERAL NOTES
POST SPACING & SIGN ANGLE DETAILS
HEIGHT & LATERAL DISTANCE FOR ERECTION
POSITIONING, DESIGN, & MOUNTING OF DELINEATORS
78-79 POSITIONING, DESIGN, & MOUNTING FOR OBJECT MARKERS (TYPE 2 & 3)
POSITIONING FOR CHEVRON (W1-8) SIGNS
PLAN SHEETS (INSTALLATIONS)
PLAN SHEETS (REMOVALS)
QUANTITIES SHEETS (INSTALLATIONS)
80 QUANTITIES SHEET (DELINEATORS & OBJECT MARKERS)
81 SUMMARY SHEET (INSTALLATIONS & REMOVALS)
SUMMARY SHEET (REMOVAL & RESET)
82 RECAPITULATION SHEET
STANDARD STRUCTURAL SIGN SUPPORTS (WOOD & STEEL POSTS)
MOUNTING OF SIGNS ON WOOD POSTS
MOUNTING OF FLAT SHEET SIGNS ON STEEL I-BEAM POSTS
MOUNTING OF REINFORCED PANEL SIGNS ON I-BEAM POSTS
83 DETAILS FOR FLAT SHEET SIGN BLANKS
DETAILS FOR PROCESSED SIGNS
DETAILS FOR REINFORCED PANELS
DETAILS FOR GUIDE SIGN LEGEND
DETAILS FOR GUIDE SIGNS
84 DETAILED SIGN SPECIFICATIONS

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Changed symbol, notes, & index	D.D.G.	E.W.N.
01	07-23-10	Changed General Notes and Spec Book Date	D.D.G.	D.B.

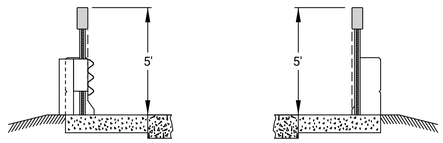
KANSAS DEPARTMENT OF TRANSPORTATION

SIGNING SYMBOL KEY GENERAL NOTES AND INDEX

TE402 07-01-03

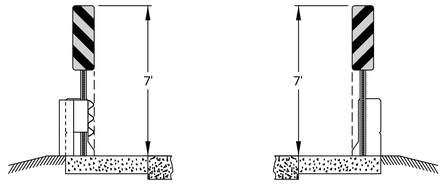
FHWA APPROVAL			10-01-19	APP'D.		Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.		TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	78	135



WITH GUARDRAIL WITHOUT GUARDRAIL

SHOULDER WIDTH 6 FEET OR GREATER (TYPE 2 OBJECT MARKER)

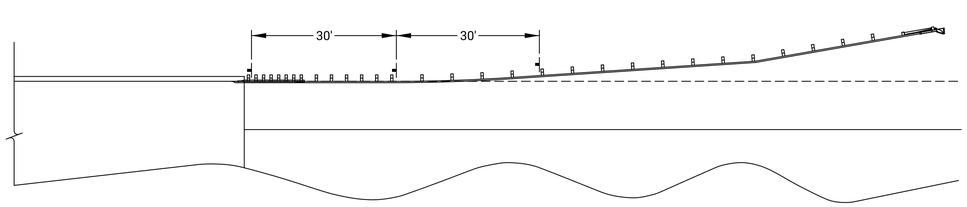


WITH GUARDRAIL WITHOUT GUARDRAIL

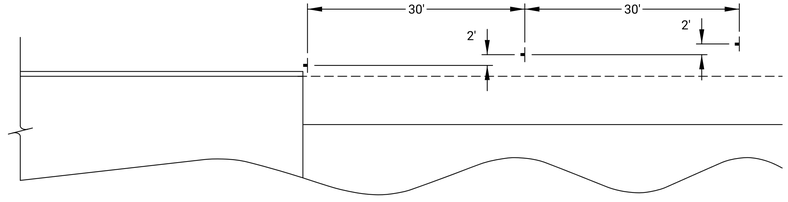
SHOULDER WIDTH LESS THAN 6 FEET (TYPE 3 OBJECT MARKER)

NOTE:
The longitudinal location of the object markers from the structure end shall be a maximum spacing of 42".

END OF STRUCTURE

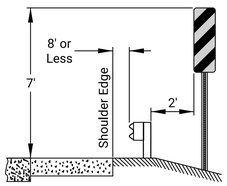


LONGITUDINAL PLACEMENT

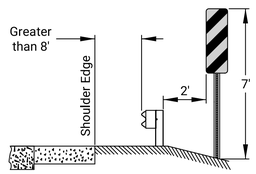


LONGITUDINAL PLACEMENT

NOTE:
The lateral offset is measured from the centerline of the object markers.

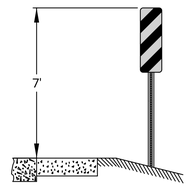


GUARDRAIL 8' OR LESS FROM SHOULDER EDGE



GUARDRAIL GREATER THAN 8' FROM SHOULDER EDGE

STRUCTURE APPROACH GUARDRAIL WITHOUT MARKERS



STRUCTURE APPROACH WITHOUT GUARDRAIL

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR OBJECT MARKERS (TYPE 2 & 3) FOR STRUCTURES WITH PARAPETS

TE415 10-01-19

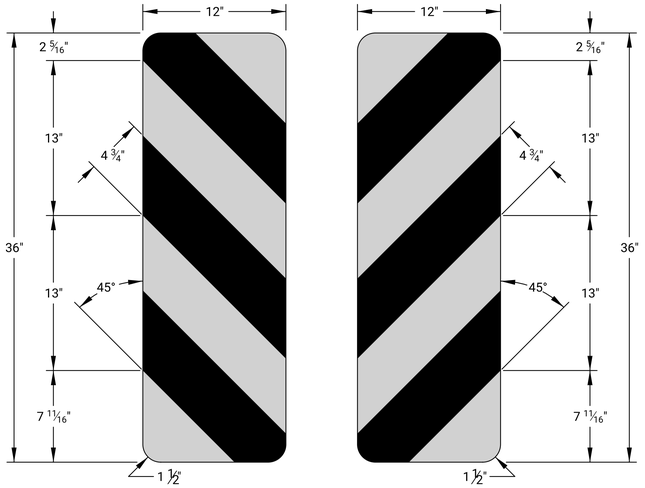
FHWA APPROVAL		10-01-19	APP'D.	Eric W. Nichol			
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES	TRACED		
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.	TRACE CK.		

KDOT Graphics Certified 05-25-2022 Sh. No. 78

KDOT Graphics Certified

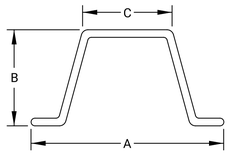
Plotted by : xkwaters 5-JAN-2024 12:32
File : ka572801pss415-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	79	135



OM3-L

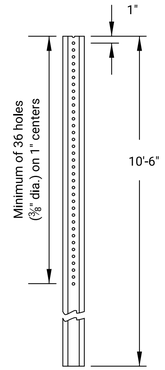
OM3-R



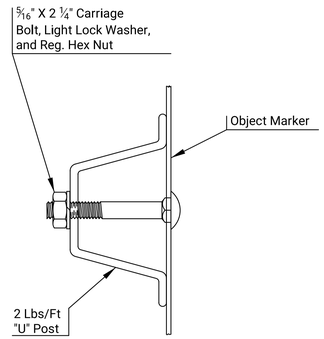
DIMENSIONS	
A	3 1/8
B	1 17/32
C	1 1/4

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS



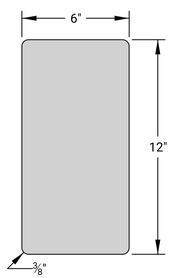
MOUNTING DETAILS

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

TYPE 3 OBJECT MARKER

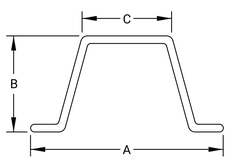
GENERAL NOTE:
See flat sheet sign blank standard sheets for the 6" x 12" and 12" x 36" sign blank details.

The object markers shall be covered with Type XI High Intensity yellow retroreflective sheeting.



OM2

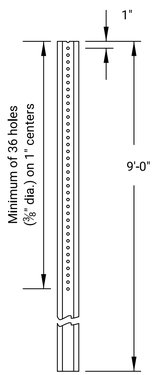
COLOR:
Yellow Background (Reflective)



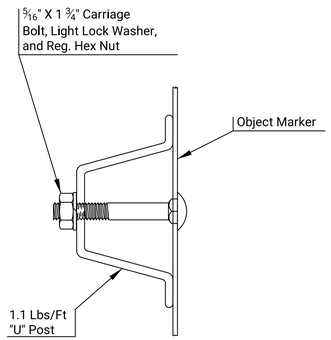
DIMENSIONS	
A	2 1/16
B	7/8
C	13/16

(Dimensions are nominal)

DELINEATOR POST
(1.1 lb/ft "U" Post)



PUNCHING DETAILS



MOUNTING DETAILS

TYPE 2 OBJECT MARKER

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR OBJECT MARKERS TYPE 2 AND TYPE 3

TE416 10-01-19

FHWA APPROVAL			10-01-19	APP'D.	Eric W. Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.		TRACE CK.	

Sh. No. 79

Plotted by : xkwaters 5-JAN-2024 12:33
File : ka572801pss416-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	80	135

QUANTITIES SHEET

DELINEATORS AND OBJECT MARKERS

			RIGID DELINEATORS												FLEXIBLE DELINEATORS												OBJECT MARKERS				
			TYPE 'A'								TYPE 'B'				TYPE 'A'								TYPE 'B'				TYPE 2	TYPE 3			
			WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW		WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW						
BEGINNING STATION	ENDING STATION	LOCATION DESCRIPTION	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	'U' POST	LEFT 'U' POST	RIGHT 'U' POST	CENTER 'U' POST	BACK TO BACK 'U' POST
7374+00	7377+00	K-99 Mainline																										2	2		

NO.	DATE	REVISIONS	BY	APP'D
01	10-09-21	Added delineator & object marker types	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

QUANTITIES SHEET
DELINEATORS & OBJECT MARKERS

TE436 07-01-03

FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

Sh. No. 80

Plotted by : xkwaters 5-JAN-2024 12:33
File : ka572801pss436-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	81	135

SUMMARY OF QUANTITIES

SIGNS

TYPE	NUMBER	SQUARE FEET
FLAT SHEET		
REINFORCED PANEL		
OVERLAY		

DELINEATORS

TYPE	FLEXIBLE DELINEATOR		RIGID DELINEATOR	
	TYPE I ANCHOR	TYPE III ANCHOR	"U" POST	BRACKET MOUNT
TYPE 'A' WHITE				
TYPE 'A' YELLOW				
TYPE 'B' WHITE				
TYPE 'B' YELLOW				
TYPE 'A' WHITE (BACK TO BACK)				
TYPE 'A' YELLOW (BACK TO BACK)				

OBJECT MARKERS

TYPE		NUMBER
TYPE 2 ("U" POST)		
TYPE 3 ("U" POST)		4
INFORMATION ONLY	OM3-L	2
	OM3-R	2
	OM3-C	
TYPE 3 ("U" POST) (BACK TO BACK)		

POSTS AND ALUMINUM BEAMS

	4" x 6" POST			3I2.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
NUMBER																
FEET																

POST FOOTINGS AND BRACKETS

	CONCRETE FOOTING (DIA.)					PERFORATED SQUARE STEEL					
						TUBE FOOTING				BRACKET	
	WOOD	A36 STEEL		A572 STEEL (ALT)							
	18"	24"	30"	24"	30"	1-3/4"	2"	2-1/4"	2-1/2"	1-3/4"	2"
NUMBER											
FEET											

BASE PLATES AND STUB POSTS

	W6x9		W10x12		W10x22	
BREAKAWAY BASES	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)
BASE PLATE (TOP)						
STUB POST WITH BASE PLATE						
NON-BREAKAWAY BASES						
BASE PLATE						

REMOVALS

TYPE	NUMBER
SIGNS	
POSTS	
FOOTINGS	
SIGN STRUCTURES	

NUMBER & LENGTHS OF POSTS & ALUMINUM BEAMS (INFORMATION ONLY)

LENGTH OF POST OR BEAM	4" x 6" POST			3I2.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
2.1' - 4'																
4.1' - 6'																
6.1' - 8'																
8.1' - 10'																
10.1' - 12'																
12.1' - 14'																
14.1' - 16'																
16.1' - 18'																
18.1' - 20'																
20.1' - 22'																
22.1' - 24'																
24.1' - 26'																
26.1' - 28'																
28.1' - 30'																
30.1' - 32'																

SIGN STRUCTURES

TYPE	NEW	MODIFIED	REMOVE AND RESET	RESET
OVERHEAD STRUCTURE				
CANTILEVER STRUCTURE				
BUTTERFLY STRUCTURE				
BRIDGE MOUNT ATTACHMENT				
MAST ARM SIGN SUPPORT				
SINGLE TAPERED TUBE SIGN SUPPORT				

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Revised Tables	D.D.G.	E.W.N.
01	07-23-10	Revised Tables	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES FOR INSTALLATIONS AND REMOVALS

TE439 07-01-03

FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

RECAPITULATION OF SIGNING & DELINEATION BID ITEMS

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	82	135

BID ITEMS	APPROXIMATE QUANTITIES		UNITS
SIGN (FLAT SHEET) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN (REINFORCED PANEL) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN (OVERLAY) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)			LINEAR FOOT
SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)			LINEAR FOOT
SIGN POST (2 LB/FT "U" STEEL)			LINEAR FOOT
SIGN POST (3 LB/FT "U" STEEL)			LINEAR FOOT
SIGN POST (1-3/4" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2-1/4" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2-1/2" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (4" X 6" STRUCTURAL STEEL)			LINEAR FOOT
SIGN POST (3 I 2.25 ALUMINUM)			LINEAR FOOT
	A36	A572(ALT)	
SIGN POST (W6X9 STEEL BEAM)			LINEAR FOOT
SIGN POST (W10X12 STEEL BEAM)			LINEAR FOOT
SIGN POST (W10X22 STEEL BEAM)			LINEAR FOOT
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W6X9)			EACH
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W10X12)			EACH
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W10X22)			EACH
SIGN POST BREAKAWAY BASE PLATE (W6X9)			EACH
SIGN POST BREAKAWAY BASE PLATE (W10X12)			EACH
SIGN POST BREAKAWAY BASE PLATE (W10X22)			EACH
SIGN POST FOOTING (24" Dia. CONCRETE)(STEEL BEAM POST)			LINEAR FOOT
SIGN POST FOOTING (30" Dia. CONCRETE)(STEEL BEAM POST)			LINEAR FOOT
SIGN POST FOOTING (18" Dia. CONCRETE)(WOOD POST)			LINEAR FOOT
SIGN POST FOOTING (1-3/4" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2-1/4" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2-1/2" PERFORATED SQUARE STEEL TUBE)			EACH
SIGNING OBJECT MARKER (TYPE 2)			EACH
SIGNING OBJECT MARKER (TYPE 3)	4		EACH
SIGNING DELINEATOR (TYPE A)(WHITE RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE A)(WHITE FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(WHITE FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW FLEXIBLE)(TYPE 3 ANCHOR)			EACH

BID ITEMS	APPROXIMATE QUANTITIES	UNITS

Note:
The contract bid for steel beam posts, stub posts, base plates, and footings will be based on A36 Grade steel quantities. When furnishing the A572 Grade alternate steel, the payment will be based on the equivalent A36 steel unit prices in the contract.

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Removed PSST coupler and changed the tables	D.D.G.	E.W.N.
01	07-23-10	Changed Bid Items as per Spec Book (2007)	D.D.G.	D.B.

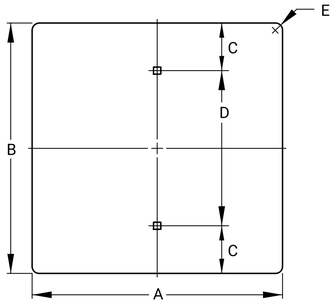
KANSAS DEPARTMENT OF TRANSPORTATION

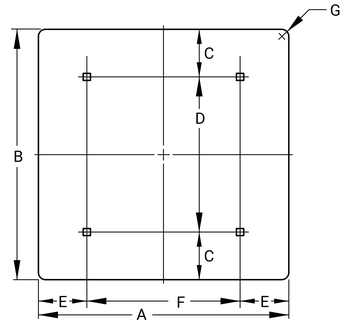
RECAPITULATION OF SIGNING & DELINEATION BID ITEMS

TE450 07-01-03

FHWA APPROVAL 10-01-19 APP'D. Steven A. Buckley
DESIGNED D.D.G. DETAILED K.D.S. QUANTITIES TRACED
DESIGN CK. S.A.B. DETAIL CK. D.D.G. QUAN.CK. TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	83	135





	SIGN SIZE	A	B	C	D	E	T	AREA
(1)	3 X 8	3	8	1	6	3/8	0.040	0.17
(1)	6 X 12	6	12	3	6	3/8	0.063	0.50
	12 X 6	12	6	1 1/2	3	3/4	0.063	0.50
	12 X 9	12	9	1 1/2	6	1 1/2	0.063	0.75
	12 X 18	12	18	3	12	1 1/2	0.063	1.50
	12 X 24	12	24	3	18	1 1/2	0.080	2.00
	12 X 36	12	36	6	24	1 1/2	0.080	3.00
	12 X 48	12	48	6	36	1 1/2	0.080	4.00
	18 X 6	18	6	1 1/2	3	1 1/2	0.063	0.75
	18 X 18	18	18	3	12	1 1/2	0.063	2.25
	18 X 30	18	24	3	24	1 1/2	0.080	3.75
	18 X 36	18	24	6	24	1 1/2	0.080	4.50
	18 X 42	18	24	6	30	1 1/2	0.080	5.25
	18 X 48	18	24	6	36	1 1/2	0.080	6.00
	21 X 15	21	15	1 1/2	12	1 1/2	0.080	2.19
	24 X 6	24	6	1 1/2	3	1 1/2	0.080	1.00
	24 X 12	24	12	3	6	1 1/2	0.080	2.00
	24 X 18	24	18	3	12	1 1/2	0.080	3.00
	24 X 24	24	24	3	18	1 1/2	0.080	4.00
	24 X 30	24	30	3	24	1 1/2	0.080	5.00
	24 X 36	24	36	6	24	1 1/2	0.080	6.00
	30 X 12	30	12	3	6	1 7/8	0.080	2.50
	30 X 15	30	15	1 1/2	12	1 7/8	0.080	3.13
	30 X 18	30	18	3	12	1 7/8	0.080	3.75
	30 X 21	30	21	1 1/2	18	1 1/2	0.080	4.38
	30 X 24	30	24	3	18	1 7/8	0.080	5.00
	30 X 30	30	30	3	24	1 7/8	0.080	6.25
	30 X 36	30	36	6	24	1 7/8	0.080	7.50
	36 X 12	36	12	3	6	1 1/2	0.080	3.00
	36 X 18	36	18	3	12	1 1/2	0.080	4.50
	36 X 24	36	24	3	18	1 1/2	0.080	6.00
	36 X 30	36	30	3	24	2 1/4	0.080	7.50
	36 X 36	36	36	6	24	2 1/4	0.080	9.00
(3)	45 X 36	45	36	3	30	2 1/4	0.100	11.25

	SIGN SIZE	A	B	C	D	E	F	G	T	AREA
	36 X 12	36	12	3	6	3	30	1 1/2	0.080	3.00
	36 X 30	36	30	3	24	3	30	2 1/4	0.080	7.50
	36 X 48	36	48	9	30	6	24	0	0.100	12.00
	36 X 60	36	60	12	36	6	24	0	0.100	15.00
(2)	36 X 72	36	72	6	60	6	24	0	0.100	18.00
	42 X 12	48	12	3	6	6	30	1 1/2	0.080	3.50
	42 X 18	48	18	3	12	6	30	1 1/2	0.080	5.25
	42 X 24	48	24	6	12	6	30	1 7/8	0.080	7.00
	42 X 36	48	36	6	24	6	30	0	0.100	10.50
	48 X 12	48	12	3	6	9	30	1 1/2	0.080	4.00
	48 X 18	48	18	3	12	9	30	1 1/2	0.080	6.00
	48 X 24	48	24	6	12	9	30	1 7/8	0.080	8.00
	48 X 30	48	30	6	18	9	30	0	0.100	10.00
	48 X 36	48	36	6	24	9	30	0	0.100	12.00
	48 X 42	48	42	6	30	9	30	0	0.100	14.00
	48 X 48	48	48	9	30	9	30	0	0.100	16.00
	48 X 60	48	60	12	36	9	30	0	0.100	20.00
(2)	48 X 72	48	72	6	60	9	30	0	0.100	24.00
(2)	48 X 96	48	96	12	72	9	30	0	0.100	32.00
	60 X 12	60	12	3	6	12	36	0	0.100	5.00

SIGN SIZE	A	B	C	D	E	F	G	T	AREA
60 X 18	60	18	3	12	12	36	0	0.100	7.50
60 X 24	60	24	6	12	12	36	0	0.100	10.00
60 X 30	60	30	6	18	12	36	0	0.100	12.50
60 X 36	60	36	6	24	12	36	0	0.100	15.00
60 X 42	60	42	6	30	12	36	0	0.100	17.50
60 X 48	60	48	9	30	12	36	0	0.100	20.00
72 X 12	72	12	3	6	15	42	0	0.100	6.00
72 X 18	72	18	3	12	15	42	0	0.100	9.00
72 X 24	72	24	6	12	15	42	0	0.100	12.00
72 X 30	72	30	6	18	15	36	0	0.100	15.00
72 X 36	72	36	6	24	15	42	0	0.100	18.00
72 X 42	72	42	6	30	15	42	0	0.100	21.00
72 X 48	72	48	9	30	15	42	0	0.100	24.00
84 X 12	84	18	3	6	18	48	0	0.100	7.00
84 X 18	84	18	3	12	18	48	0	0.100	10.50
84 X 24	84	24	6	12	18	48	0	0.100	14.00
84 X 30	84	30	6	18	18	48	0	0.100	17.50
84 X 36	84	36	6	24	18	48	0	0.100	21.00
84 X 42	84	42	6	30	18	48	0	0.100	24.50
84 X 48	84	48	9	30	18	48	0	0.100	28.00

NOTE:
All holes are 3/8" square, unless otherwise noted.

The dimension "T" is the thickness of the aluminum blank.

(1) Holes shall be 5/16" diameter.

(2) Dimension "D" requires a center hole.

(3) Additional hole 12" below top hole.

All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Updated sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR FLAT SHEET SIGNS

TE506 07-01-03

FHWA APPROVAL			10-01-19	APP'D.	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.		TRACE CK.	

Plotted by : xkwaters 5-JAN-2024 12:33
File : ka572801pss506-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	84	135

DETAILED SPECIFICATIONS FOR FLAT SHEET SIGNS AND OVERLAY PANELS

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

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

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

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

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

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

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

DETAILED SPECIFICATIONS FOR REINFORCED PANEL SIGNS

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

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

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

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

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

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

Spacing table dimensions are in inches.

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

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS

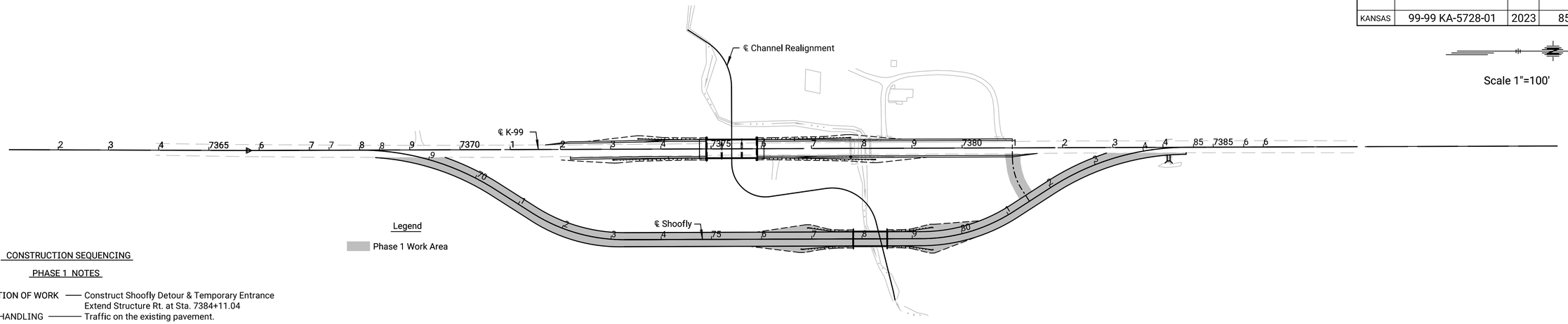
TE590 07-01-03

FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED K.D.S.	QUANTITIES	TRACED	
DESIGN CK.	S.A.B.	DETAIL CK. D.D.G.	QUAN.CK.	TRACE CK.	

Sh. No. 84

Plotted by : xkwaters 5-JAN-2024 12:33
File : ka572801pss590-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	85	135



Scale 1"=100'

Legend

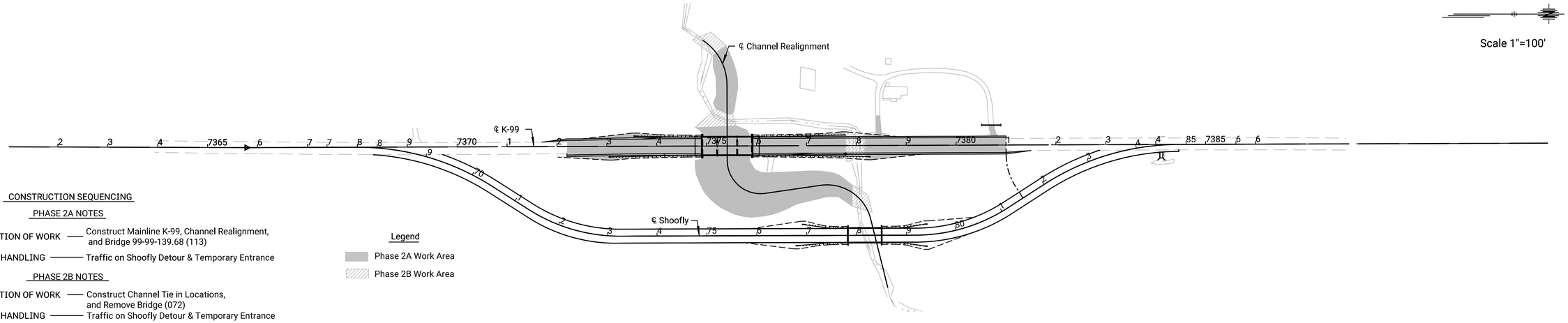
Phase 1 Work Area

CONSTRUCTION SEQUENCING

PHASE 1 NOTES

DESCRIPTION OF WORK —— Construct Shoofly Detour & Temporary Entrance
Extend Structure Rt. at Sta. 7384+11.04

TRAFFIC HANDLING ——— Traffic on the existing pavement.



Scale 1"=100'

Legend

Phase 2A Work Area

Phase 2B Work Area

CONSTRUCTION SEQUENCING

PHASE 2A NOTES

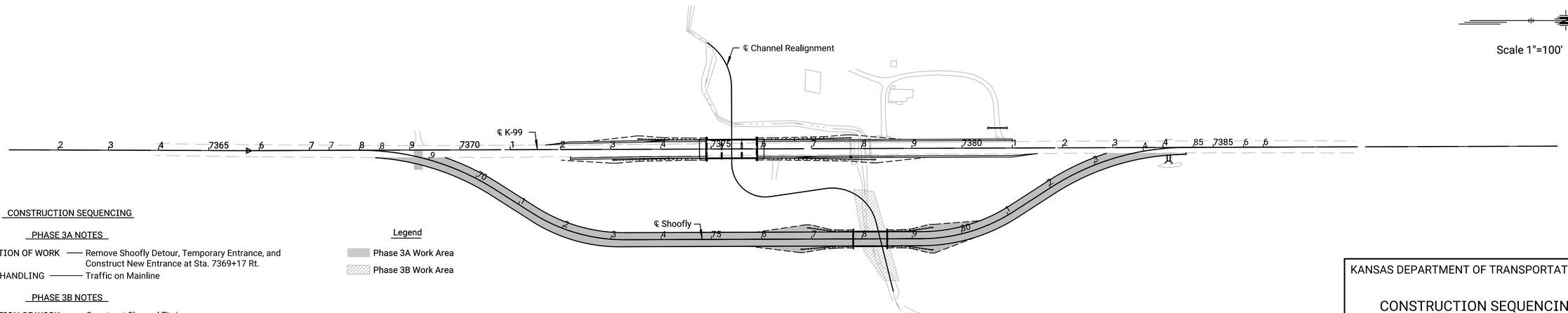
DESCRIPTION OF WORK —— Construct Mainline K-99, Channel Realignment, and Bridge 99-99-139.68 (113)

TRAFFIC HANDLING ——— Traffic on Shoofly Detour & Temporary Entrance

PHASE 2B NOTES

DESCRIPTION OF WORK —— Construct Channel Tie in Locations, and Remove Bridge (072)

TRAFFIC HANDLING ——— Traffic on Shoofly Detour & Temporary Entrance



Scale 1"=100'

Legend

Phase 3A Work Area

Phase 3B Work Area

CONSTRUCTION SEQUENCING

PHASE 3A NOTES

DESCRIPTION OF WORK —— Remove Shoofly Detour, Temporary Entrance, and Construct New Entrance at Sta. 7369+17 Rt.

TRAFFIC HANDLING ——— Traffic on Mainline

PHASE 3B NOTES

DESCRIPTION OF WORK —— Construct Channel Tie in.

TRAFFIC HANDLING ——— Traffic on Mainline

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

KDOT Graphics Certified 01-04-2024 *Sh. No.* 85

KDOT Graphics Certified

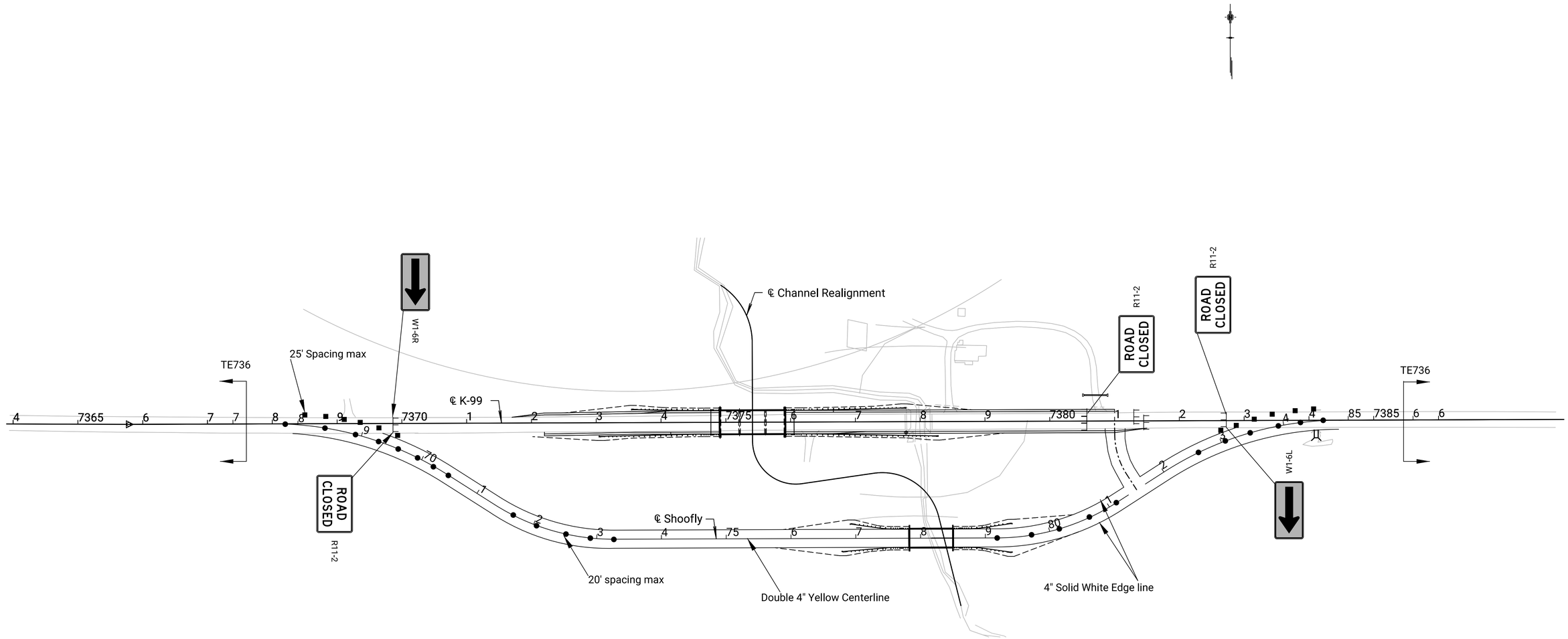
DATE | BY

REFERENCES NOTED
REFERENCES CHECKED

Plotted by : August.Zuno 05-JAN-2024 14:31
File : ka572801rcs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	86	135

Notes: Any signs not shown, refer to TE736



NOT TO SCALE

- ● Bi-Directional Temp. Raise Pavemement Markers (Type I)
- ⊔⊔ Type III Barricades
- ■ Channelizing Device

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control
Phase II
Shoofly

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

Sh. No. 86

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:01
File : cpl-01.dgn

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

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

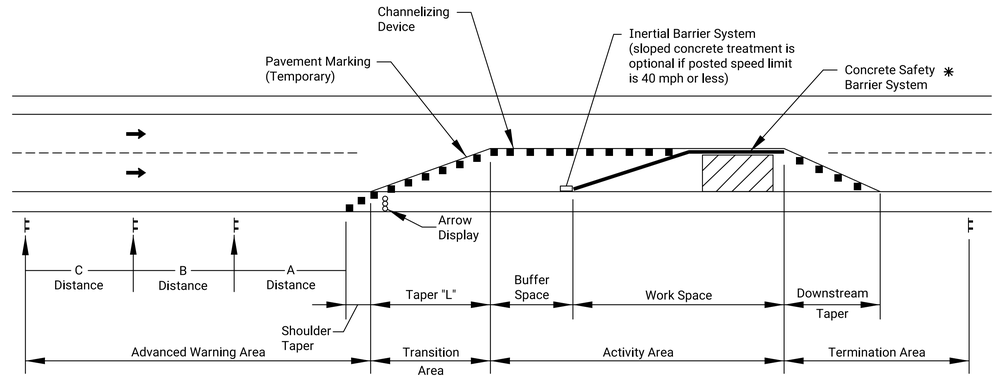
3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that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

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

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

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	87	135



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

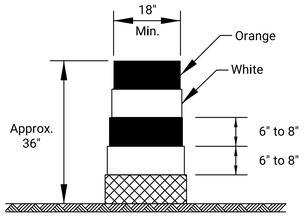
FHWA APPROVAL		APP'D.	Eric Kocher
DESIGNED B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-18-2022 Sh. No. 87

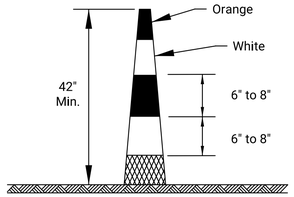
KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:01
File : TE700.dgn

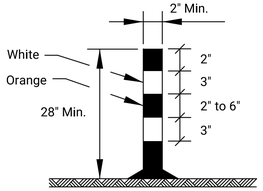
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	88	135



DRUM

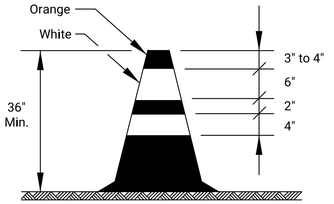


CONICAL
DELINEATOR

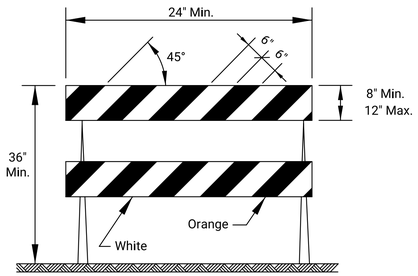


TUBULAR MARKER

Striping as shown for up to 42".

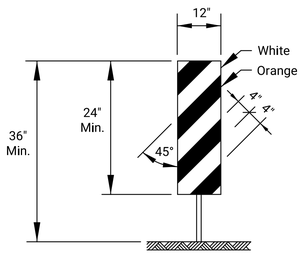


TRAFFIC CONE



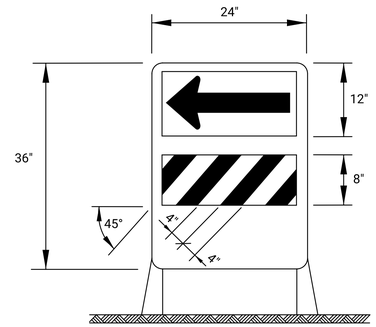
TYPE 2 BARRICADE

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



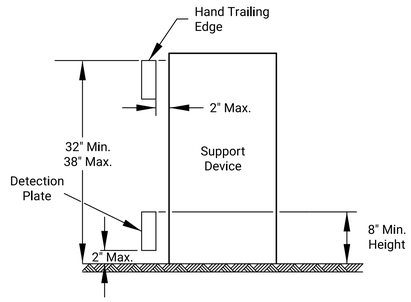
VERTICAL PANEL

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



DIRECTION INDICATOR BARRICADE

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



PEDESTRIAN CHANNELIZER

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CHANNELIZING DEVICES

TE702

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

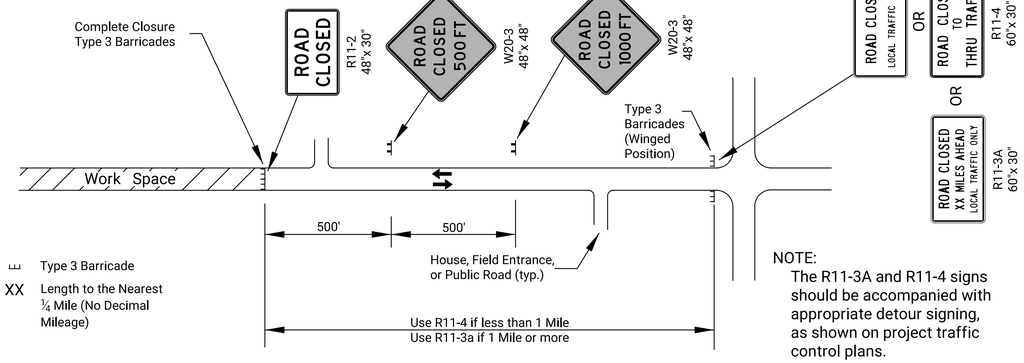
KDOT Graphics Certified 07-18-2022 Sh. No. 88

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:01
File : TE702.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	89	135

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)

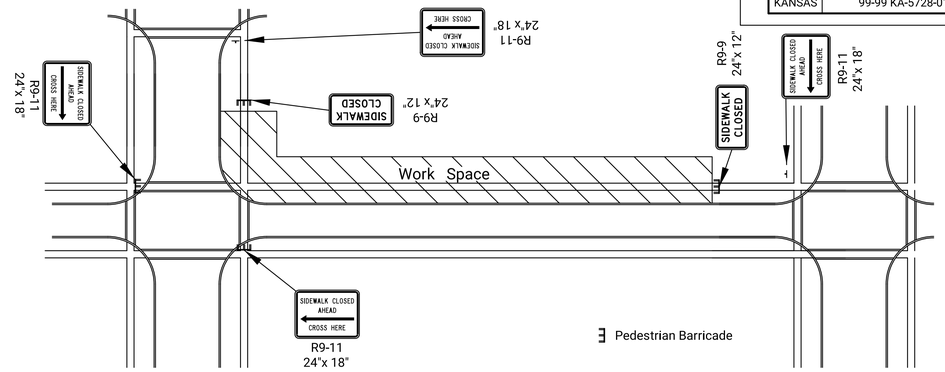


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE

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

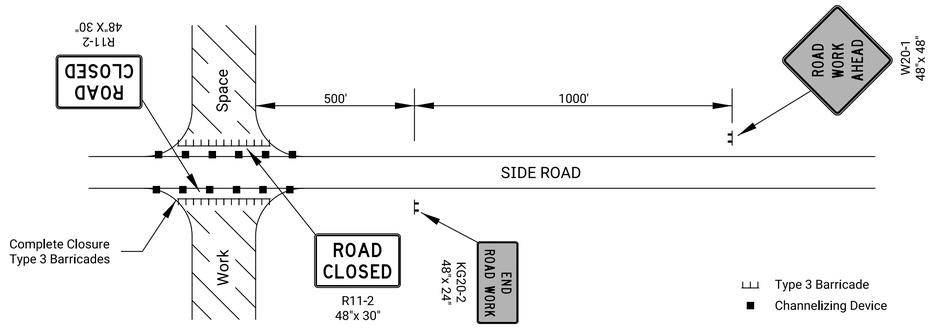


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

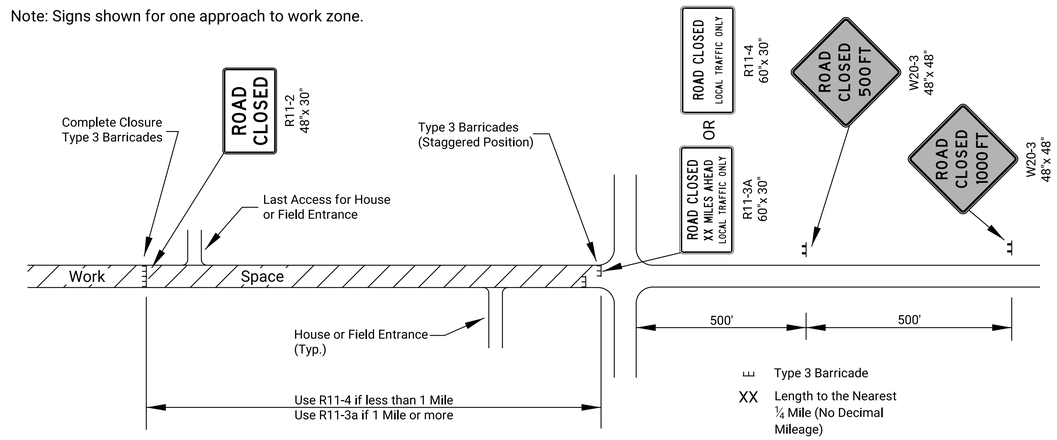
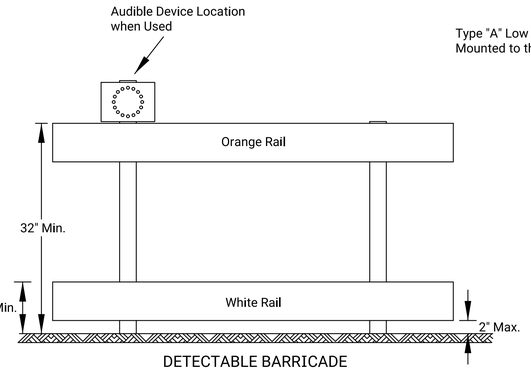
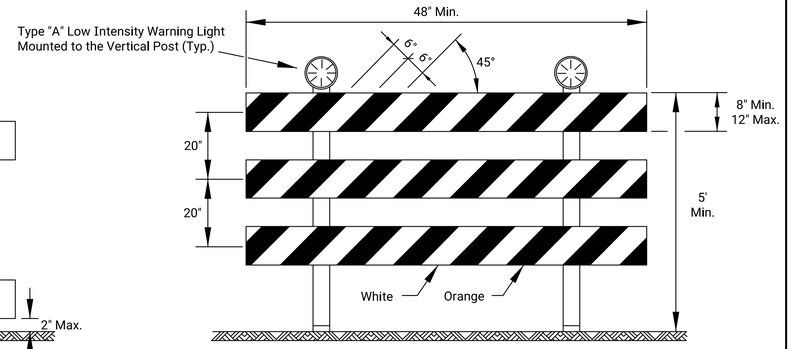


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS



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.	

KDOT Graphics Certified 07-18-2022 Sh. No. 89

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:01
File : TE704.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	90	135

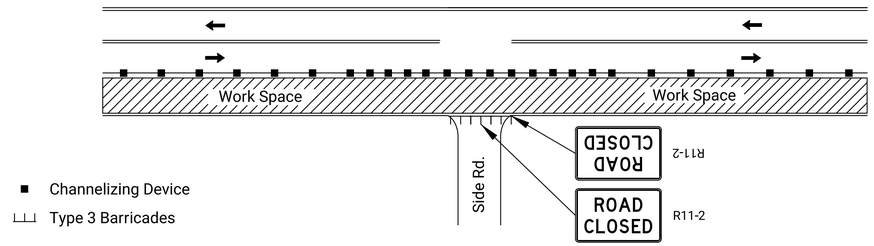


FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

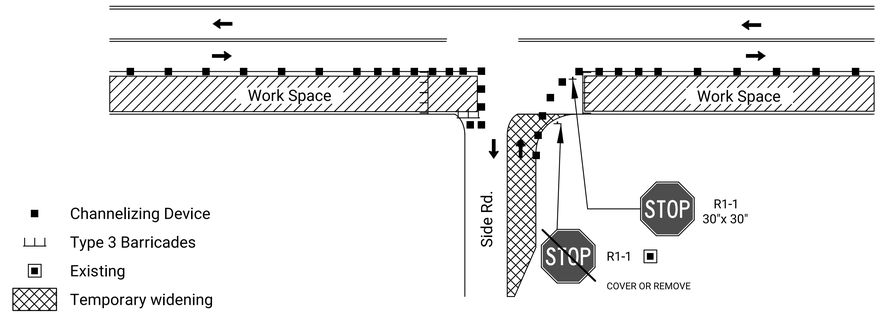


FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME: TWO WAY TRAFFIC REQUIRED

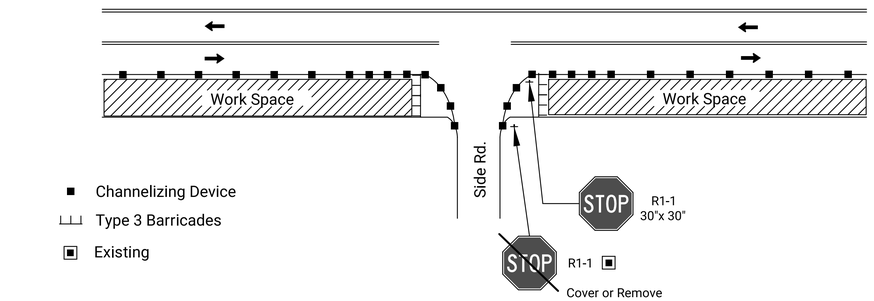


FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

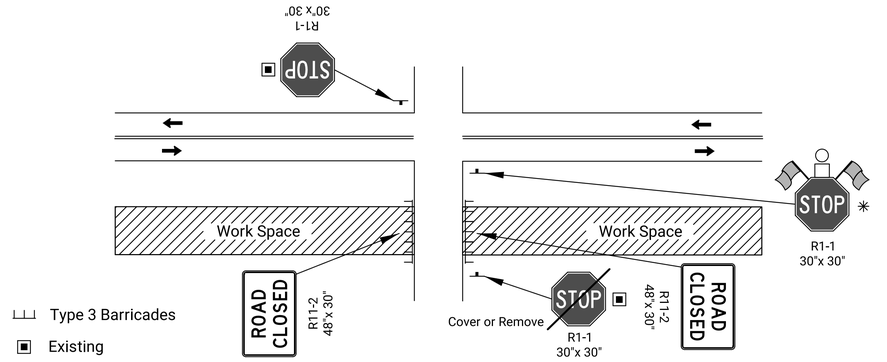


FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY

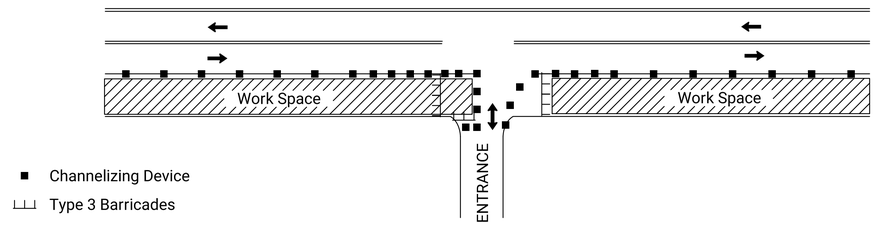


FIGURE 3: LOW VOLUME ENTRANCE CONTRUCTED HALF AT A TIME

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.	

KDOT Graphics Certified 07-18-2022 Sh. No. 90

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:01
File : TE705.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	91	135

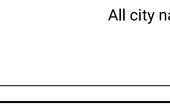
SIGN LAYOUT INFORMATION

END ROAD WORK
KG20-2
Std. Size Expwy/Freeway
6" C
48"x 24"

WAIT FOR PILOT CAR
KG20-5
Std. Size Expwy/Freeway
6" C
48"x 24"

WORK ZONE
KM4-20
Std. Size: 3" C, 24"x 6"
Expwy/Freeway: 6" C, 48"x 12"

NEXT X MILES
W7-3a
Mileage to be Determined by the Engineer.


W8-17
Std. Size Expwy/Freeway
48"x 48"

SHOULDER DROP-OFF
W8-17P (Optional)
Std. Size Expwy/Freeway
30"x 24"

GROOVED PAVEMENT
W8-15
Std. Size Expwy/Freeway
8" D
48"x 48"

LOOSE GRAVEL
W8-7
Std. Size Expwy/Freeway
8" D
48"x 48"


W8-15p
Std. Size Expwy/Freeway
30"x 24"

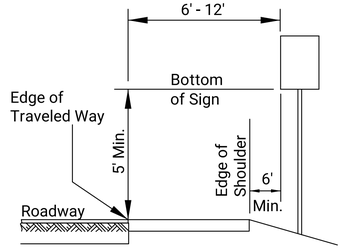
UNEVEN LANES
W8-11
Std. Size Expwy/Freeway
8" D
48"x 48"

NB US-75 CLOSED
FOLLOW DETOUR
SP-01 (Special Sign)
Std. Size: 6" C
Expwy/Freeway: 10" D

US-75 CLOSED
NORTH OF Topeka
FOLLOW DETOUR
SP-02 (Special Sign)

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

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

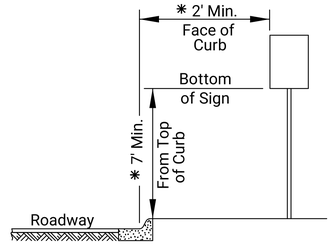


RURAL

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.

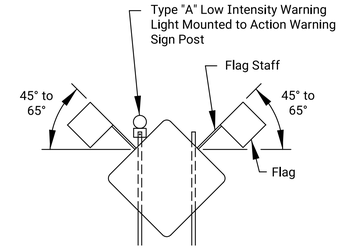
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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.

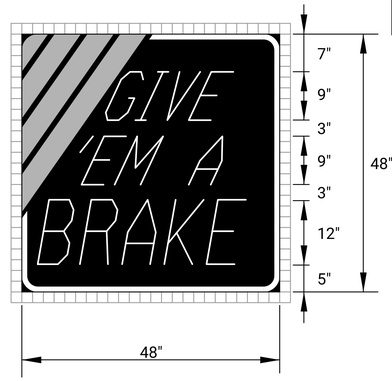
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

* 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.



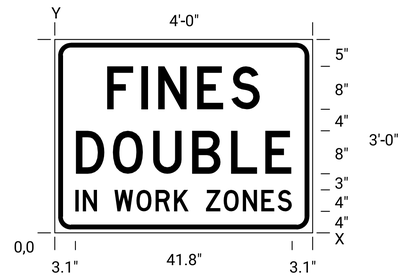
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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.	

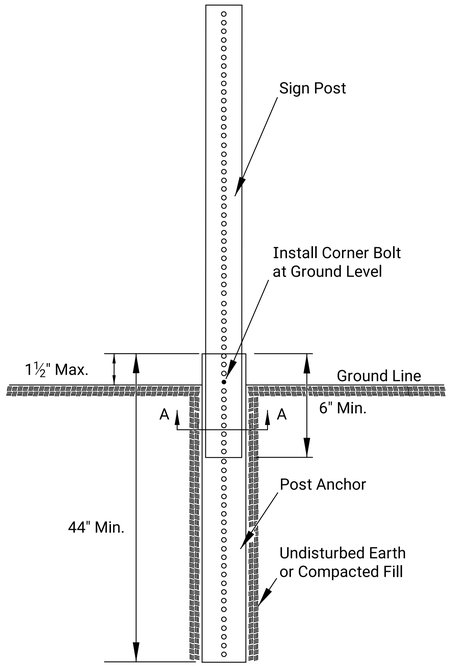
KDOT Graphics Certified 12-16-2022 Sh. No. 91

KDOT Graphics Certified

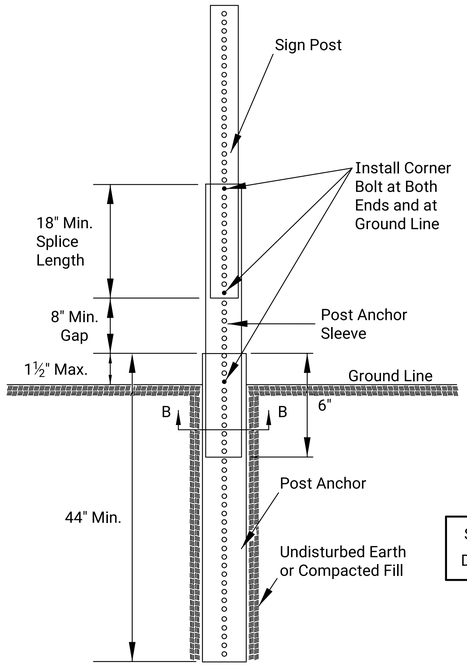
Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:01
File : TE710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	92	135

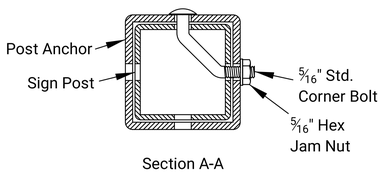
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



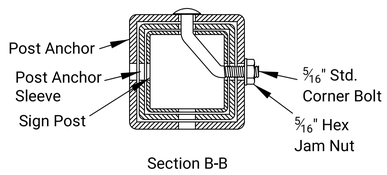
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

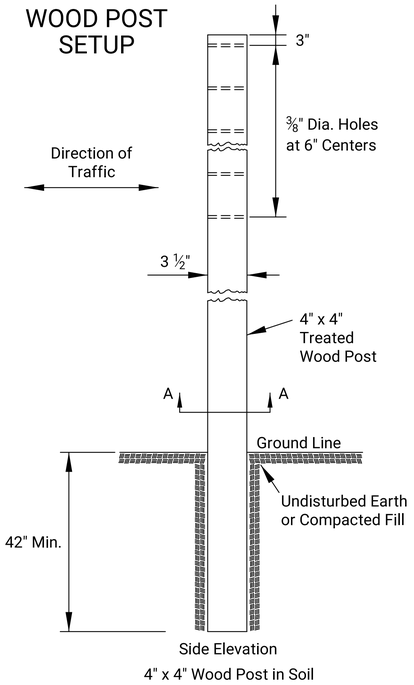


Section B-B

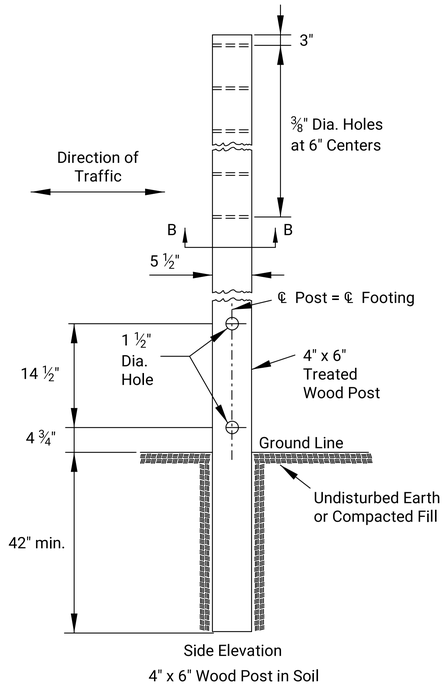
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

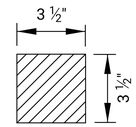
WOOD POST SETUP



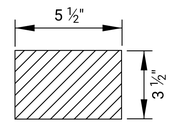
Side Elevation
4" x 4" Wood Post in Soil



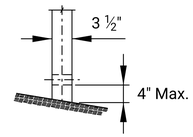
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



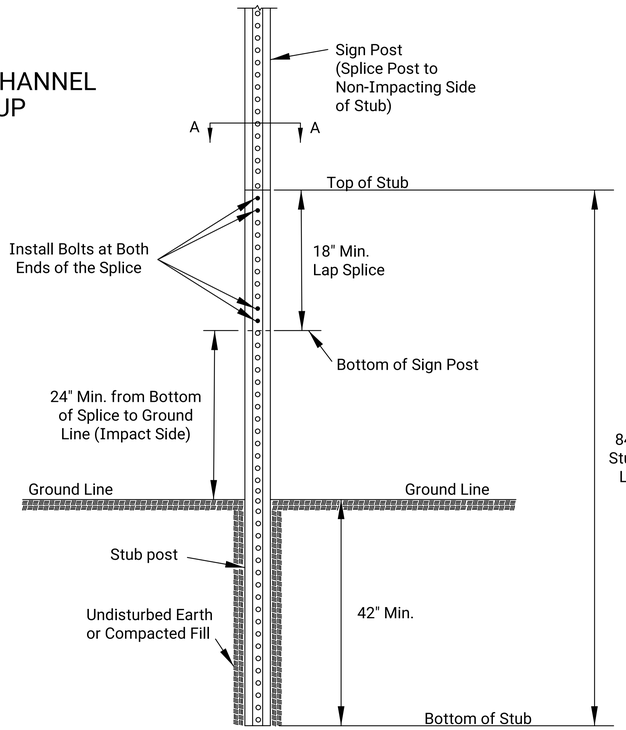
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

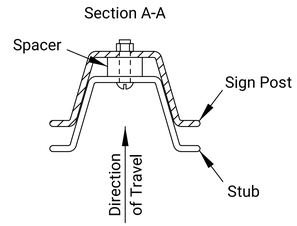
3 LB/F U-CHANNEL SETUP



Notes:

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

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



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

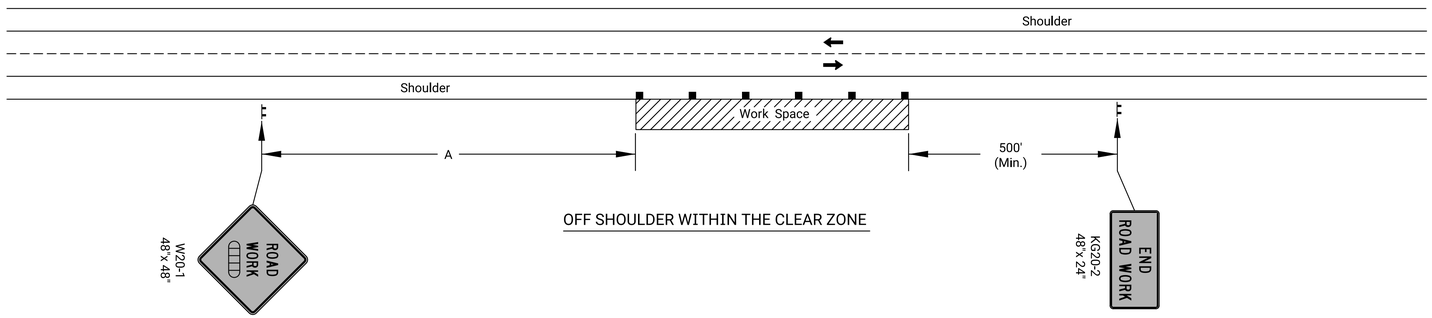
FHWA APPROVAL		06-01-15	APP'D.	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 07-18-2022 Sh. No. 92

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:02
File : TE712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	93	135

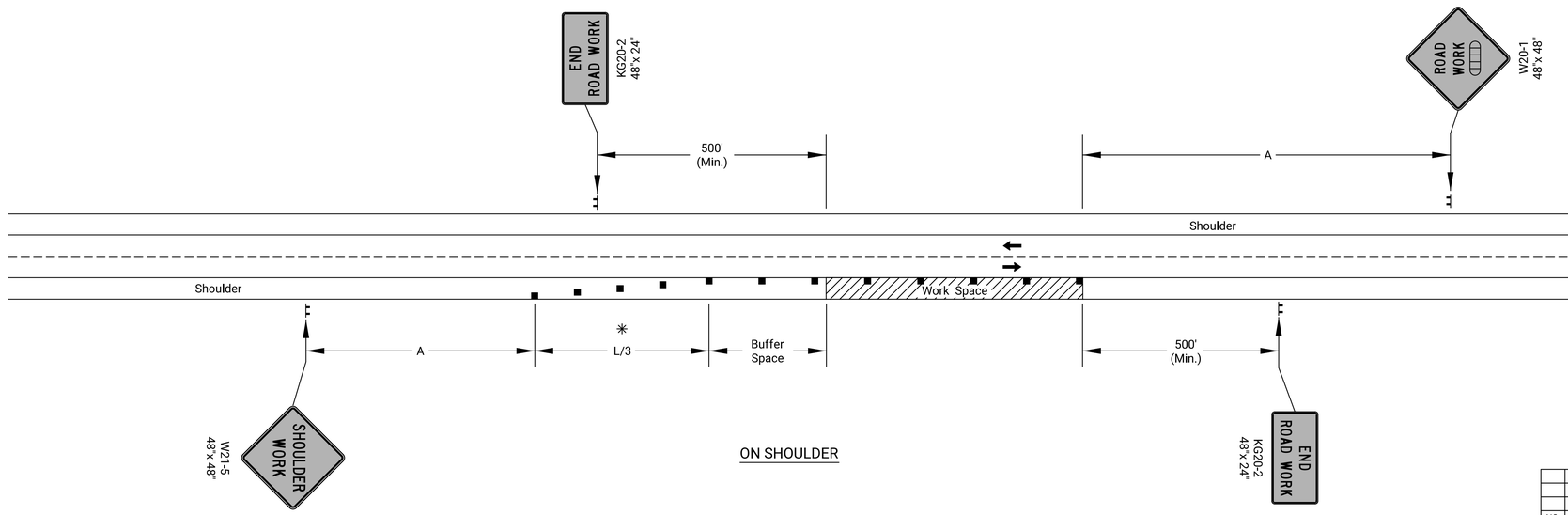


OFF SHOULDER WITHIN THE CLEAR ZONE

Notes:

No traffic control is required if the Work Space is located outside of the clear zone.

For operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with high-intensity rotating, flashing, oscillating, or strobe lights is used.



ON SHOULDER

✳ Omit taper if paved shoulder is less than 8' wide.

■ Channelizing Device

Ahead, 1500 ft, or 1 Mile

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SHOULDER WORK UNDIVIDED ROADWAY

TE720

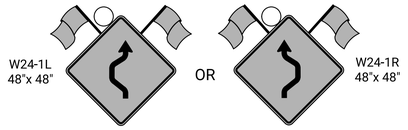
FHWA APPROVAL			06-01-15	APP'D.		Kristina Ericksen	
DESIGNED	L.E.R.	DETAILED	R.W.B.	QUANTITIES		TRACED	
DESIGN CK.		DETAIL CK.		QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 07-18-2022 Sh. No. 93

KDOT Graphics Certified

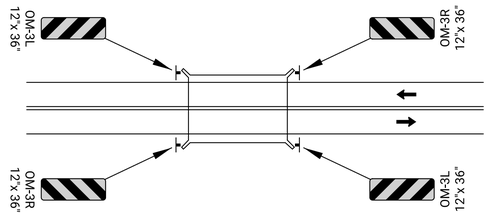
Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:02
File : TE720.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	94	135



One W24-1 should be used per approach where the tangent distance between two reverse curves is less than 600 ft. If used, use in place of the first W1-4 and eliminate the second.

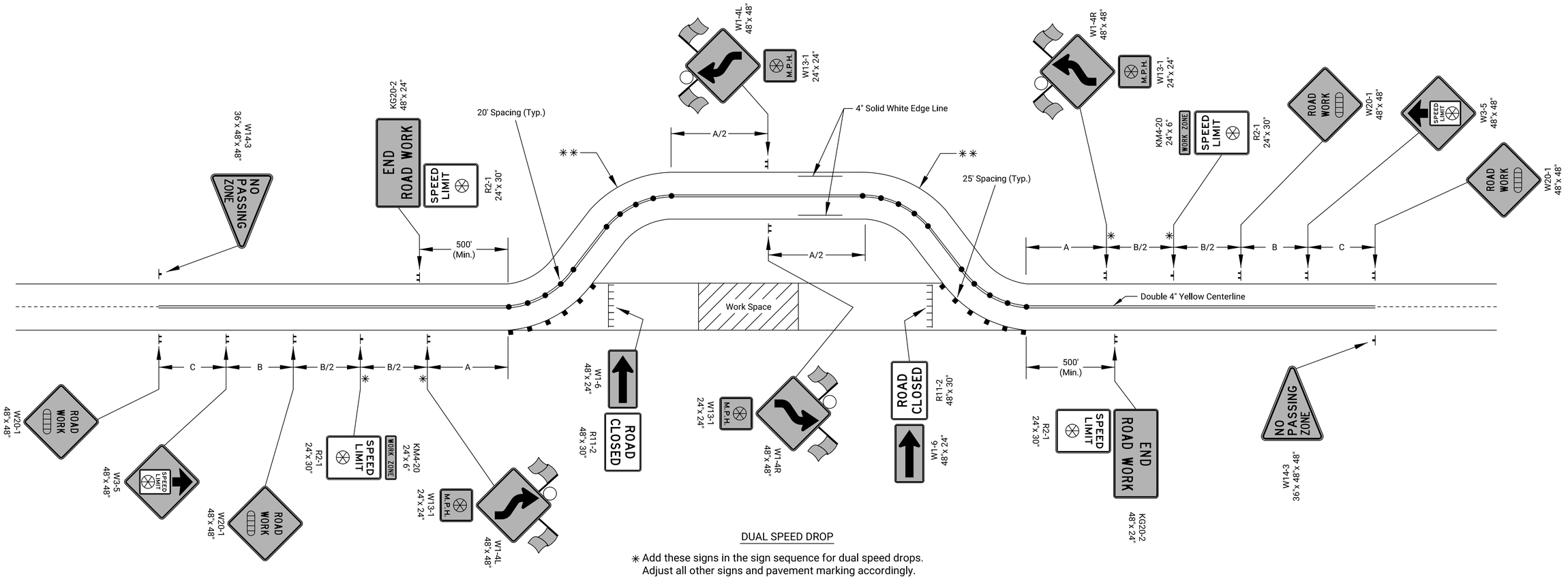
TYPICAL TEMPORARY STRUCTURE END TREATMENT ON SHOOFLY



The entire area of object marker shall have ASTM Type III sheeting. The stripes shall slope downward to the traffic side for channelizing.

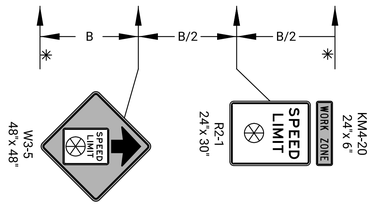
✳✳ Black on orange 24" x 30" chevron signs (W1-8) shall be mounted back to back on the outside edge of shoofly curves with a radius of 1000' or less at the spacing shown below. A minimum of 3 chevrons should be installed per curve.

Suggested Chevron Spacing	
Curve Radius	Max. Spacing
1000' - 800'	100'
800' - 450'	80'
Less than 450'	60'



DUAL SPEED DROP

✳ Add these signs in the sign sequence for dual speed drops. Adjust all other signs and pavement marking accordingly.



- ■ Channelizing Device
- ⊔⊔ Type 3 Barricades
- ● Bi-Directional Temp. Raised Pavement Marker (Type I)
- ⬭ Ahead, 1500 ft, or 1 mile
- ⊗ Speed to be determined by the Engineer
- ○ Type "A" Low Intensity Warning Light

NO.	DATE	REVISIONS	BY	APP'D
01	03-13-18	W24-1 usage changed to Should	R.W.B.	E.G.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SHOOFLY DIVERSION

TE736

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

KDOT Graphics Certified 07-18-2022 Sh. No. 94

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:01
File : TE736.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	95	135

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

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

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

✳ Quantity most used on the project at any one time

Work Zone Signs ✳			
Sign No.	Size - Sq.Ft.		
	0-9.25	9.26-16.25	16.26 & Over
W20-7		2	
W20-1		2	
W3-5	4		
R2-1	6		
W1-4		4	
W1-6		2	
W13-1	4		
R11-2		3	
KM4-20	4		
KG20-2	2		
W14-3		2	
OM-3	4		
R11-4		1	
W3-4		2	
W20-7		2	
W20-4		2	
KI-104a		2	
KI-105a		2	

Barricades ✳	
Type 3 (4' to 12')	Pedestrian
15	

Channelizing Devices ✳		
Fixed	Portable	Pedestrian
	52	

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	12
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.)	8880	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)	8880	Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')	5550	Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)	19240	Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)	4440	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)	96	Sta./Line
4" Solid (Type II)	60	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	6000	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)	48	Each
Rigid Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)		Lump Sum
Traffic Control (Initial Set Up)	Lump Sum	Lump Sum
Traffic Control		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

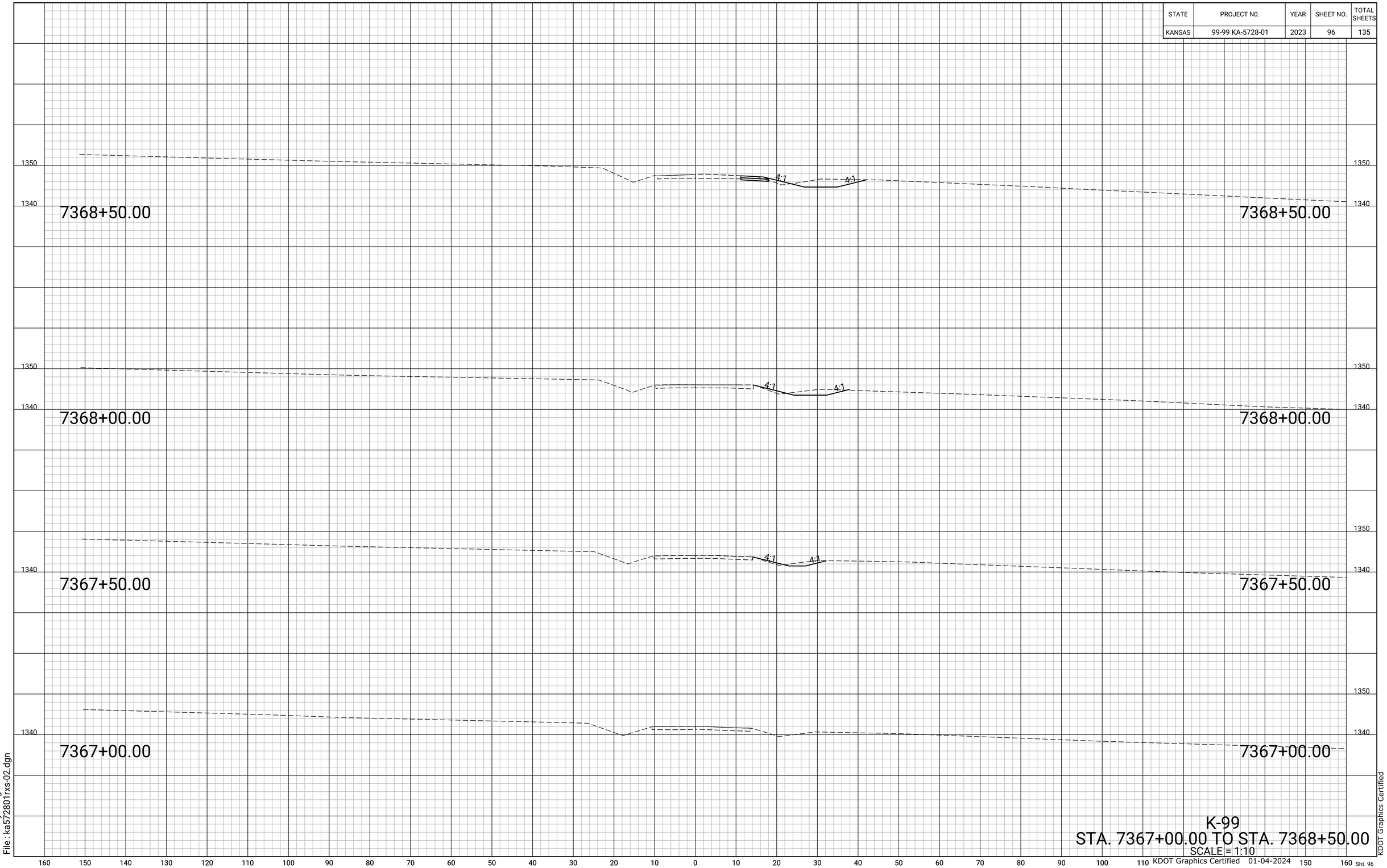
TE795

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.

Plotted by : Robert.Bartron@ks.gov 4-JAN-2024 18:02
File : TE795.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	96	135



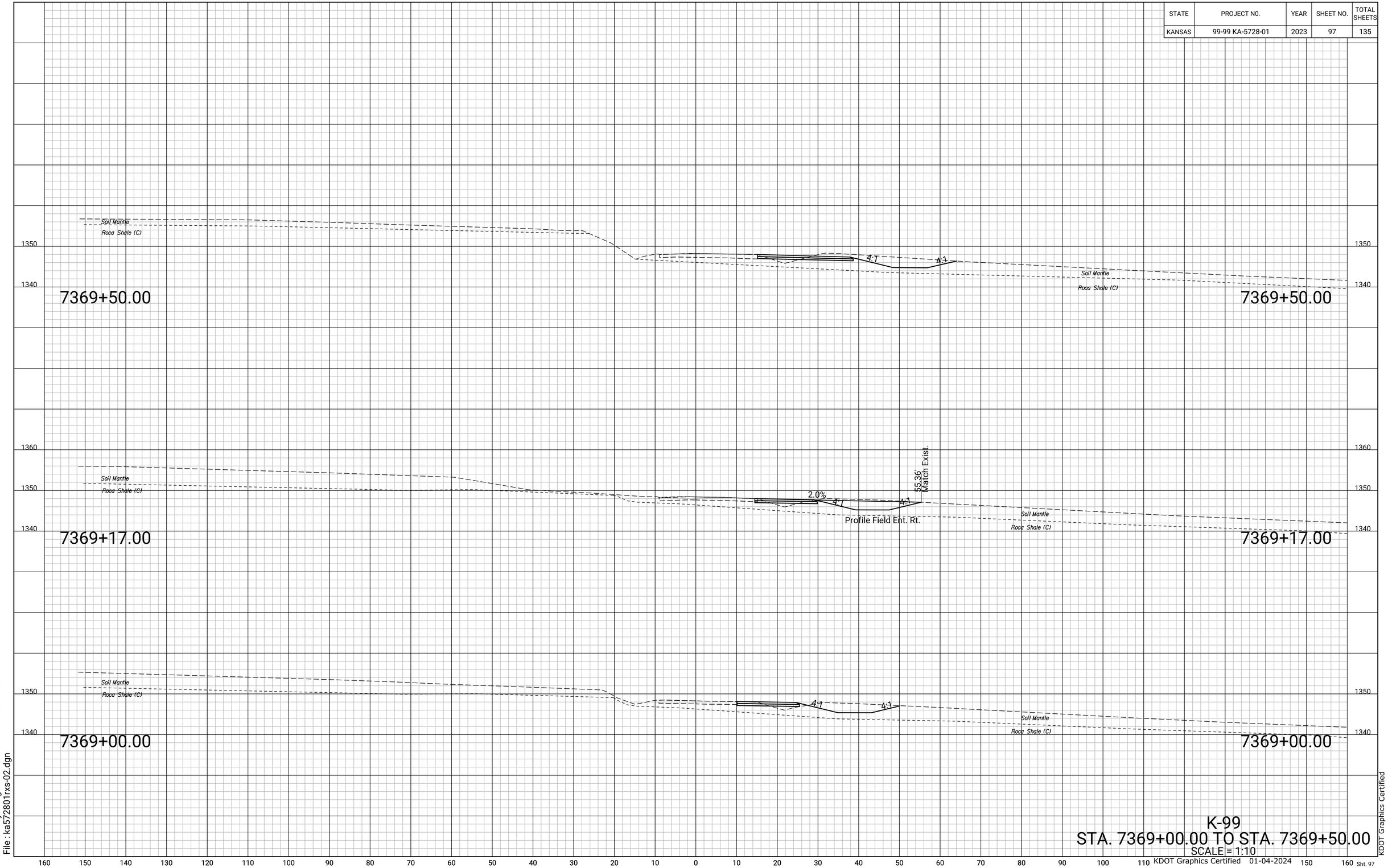
K-99
STA. 7367+00.00 TO STA. 7368+50.00
SCALE = 1:10

Plotted by : August.Zuno 8-JAN-2024 16:34
File : ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	97	135



K-99
STA. 7369+00.00 TO STA. 7369+50.00
SCALE = 1:10

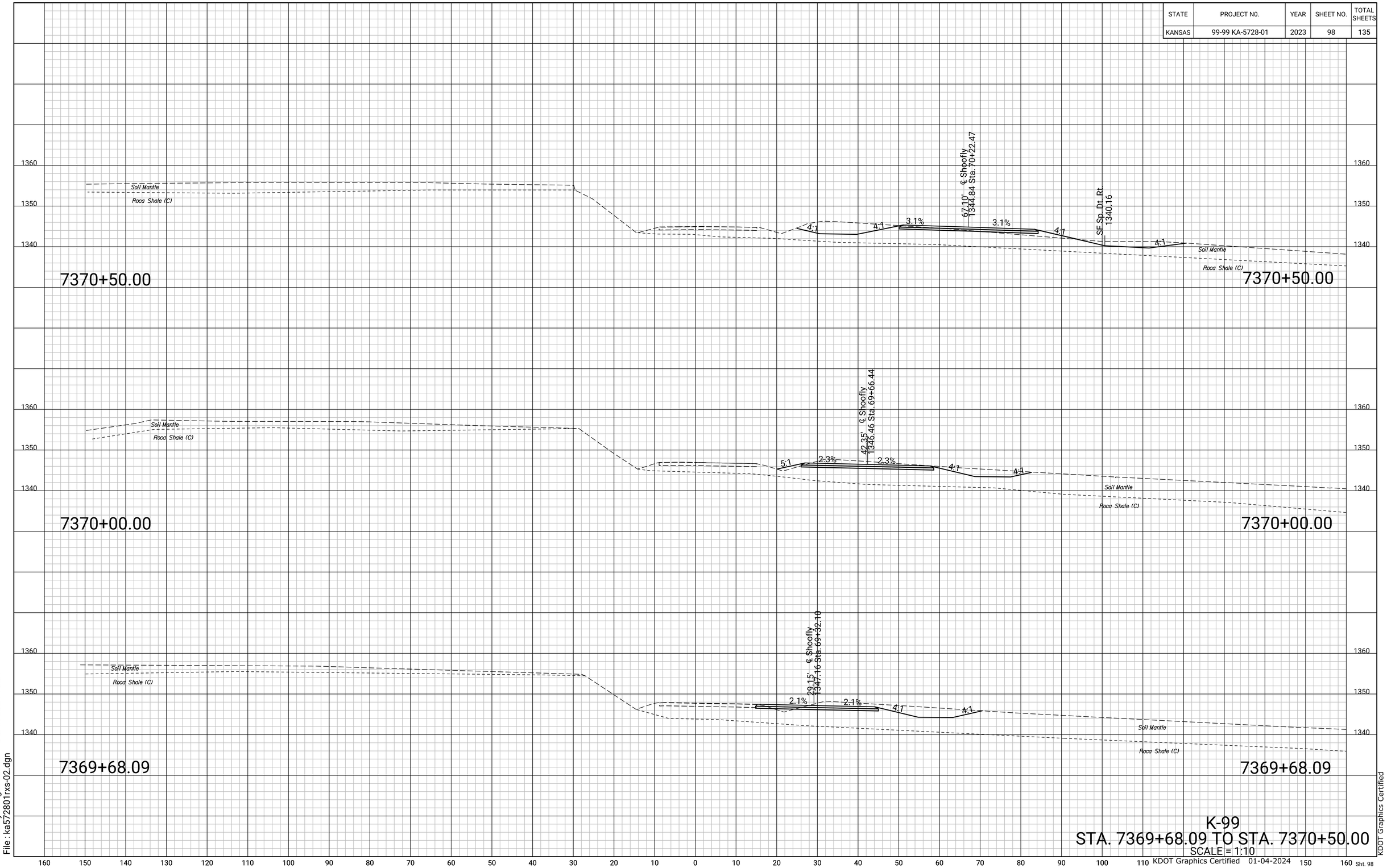
KDOT Graphics Certified 01-04-2024

Sht. 97

Plotted by : August.Zuno 8-JAN-2024 16:34
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	98	135



K-99
STA. 7369+68.09 TO STA. 7370+50.00
SCALE = 1:10

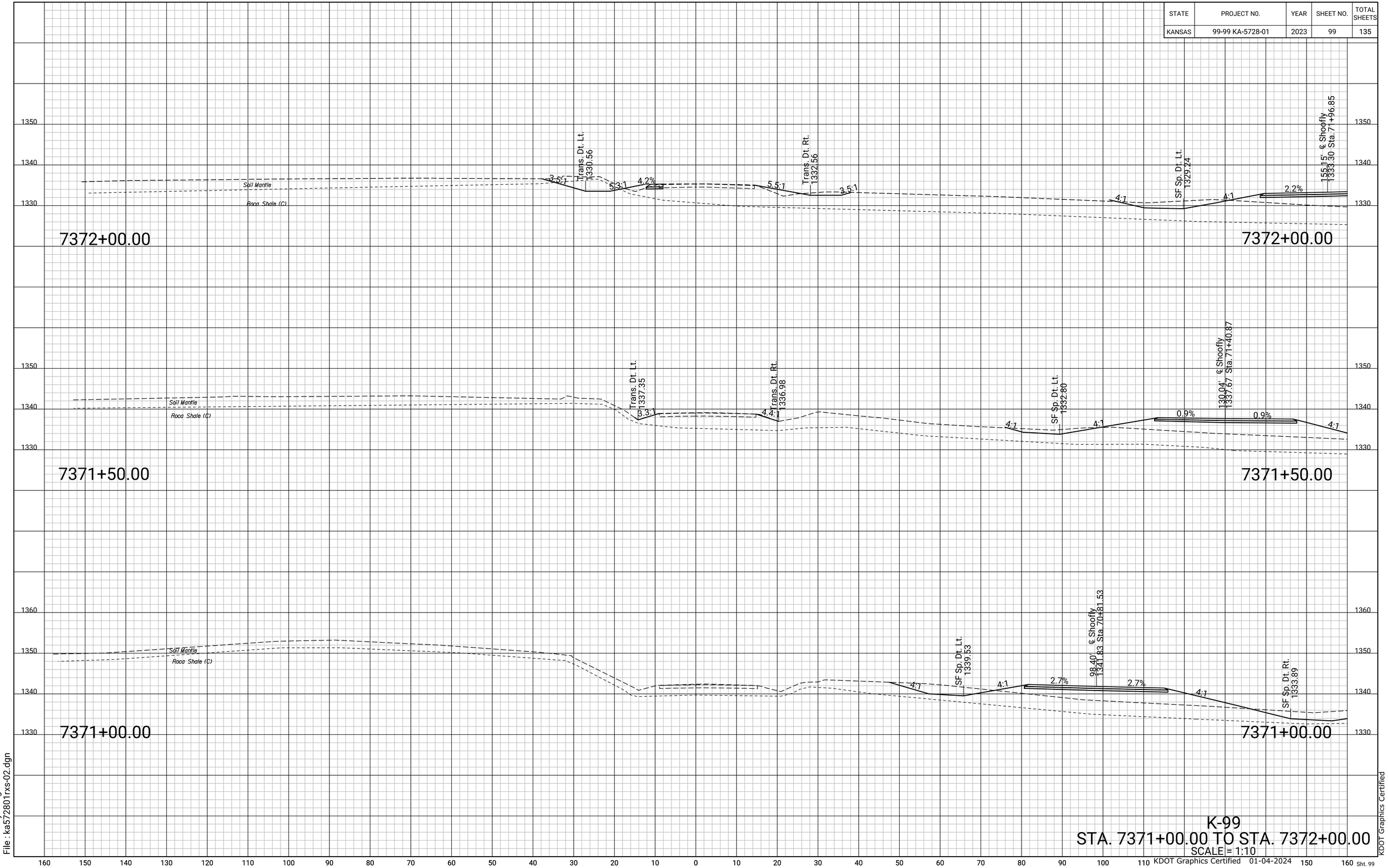
Plotted by: August.Zuno 8-JAN-2024 16:34
File: ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

Sht. 98

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	99	135



K-99
STA. 7371+00.00 TO STA. 7372+00.00
SCALE = 1:10

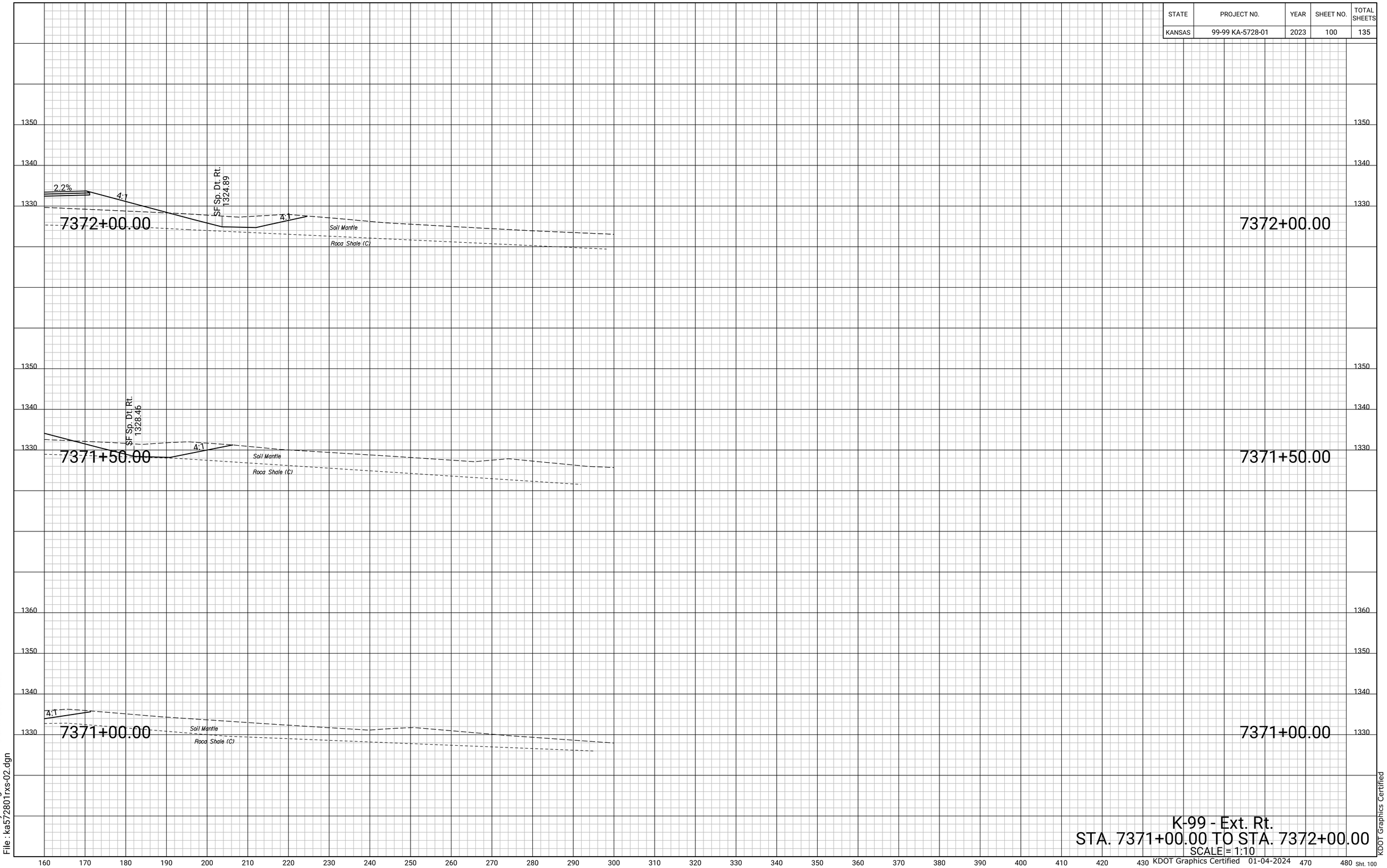
KDOT Graphics Certified 01-04-2024

Sht. 99

Plotted by : August.Zuno 8-JAN-2024 16:34
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	100	135



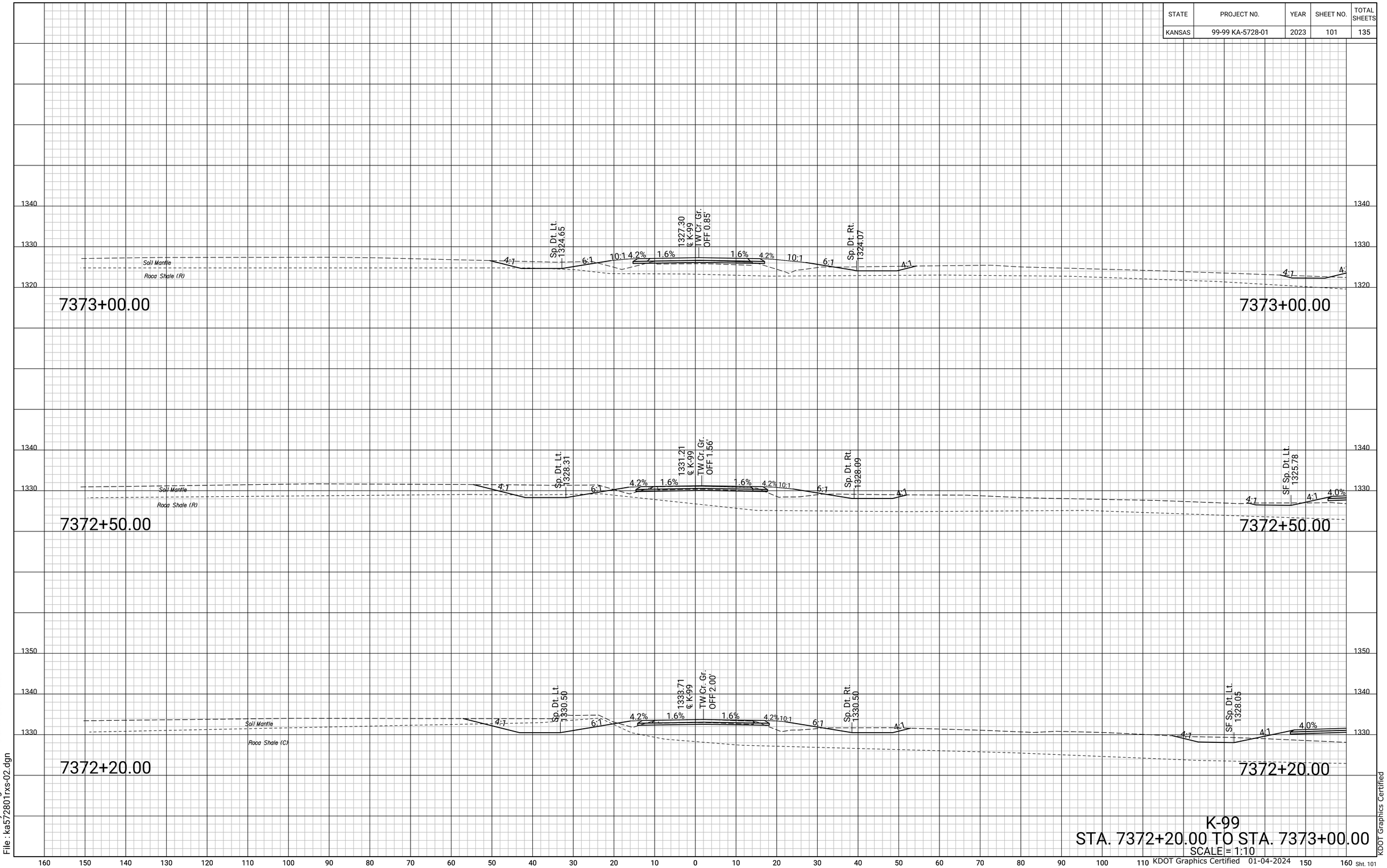
Plotted by : August.Zuno 8-JAN-2024 16:32
File : ka572801rxs-02.dgn

K-99 - Ext. Rt.
STA. 7371+00.00 TO STA. 7372+00.00
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	101	135

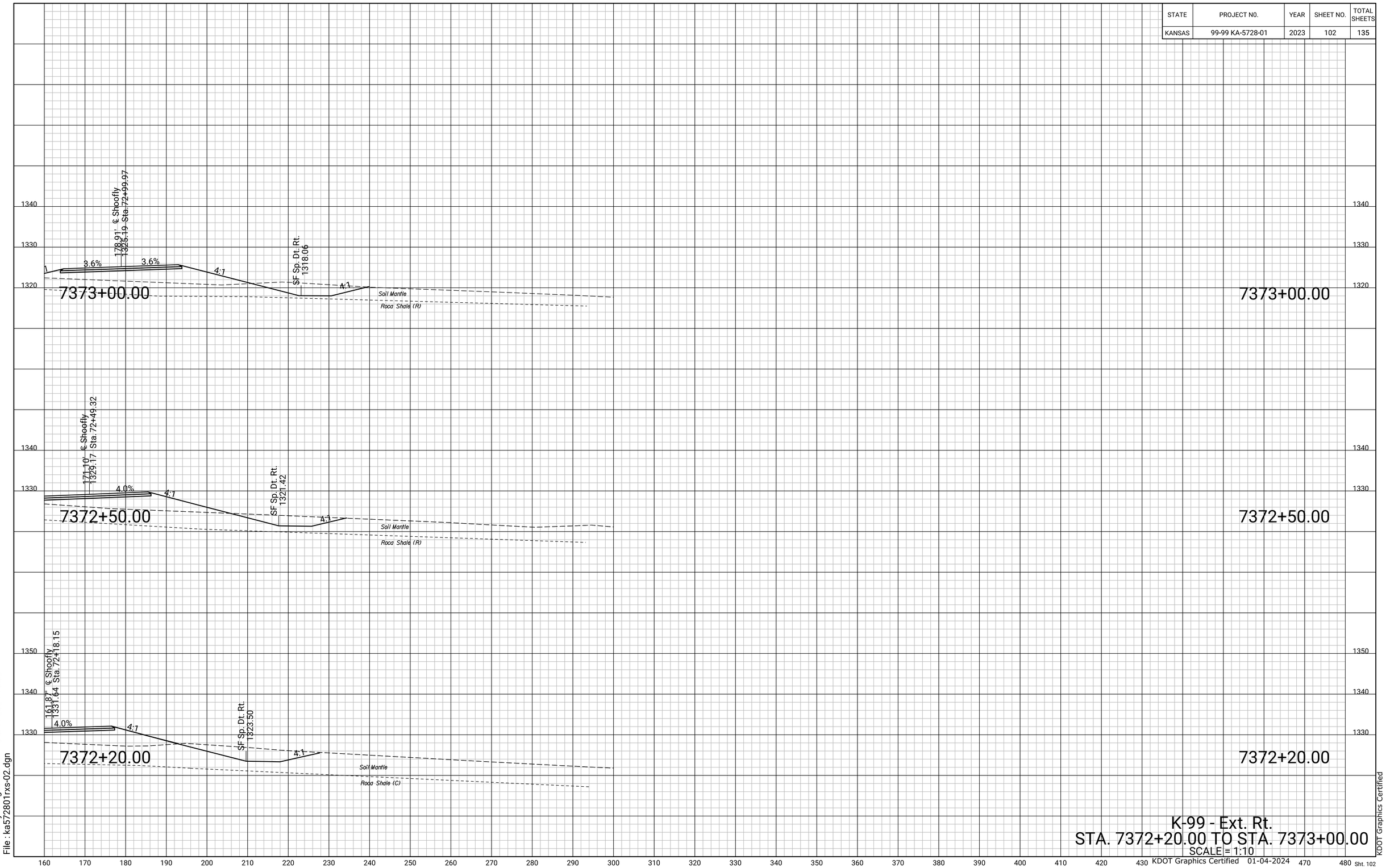


K-99
STA. 7372+20.00 TO STA. 7373+00.00
SCALE = 1:10

Plotted by : August.Zuno 8-JAN-2024 16:35
File : ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	102	135



Plotted by: August.Zuno 8-JAN-2024 16:32
File: ka572801rxs-02.dgn

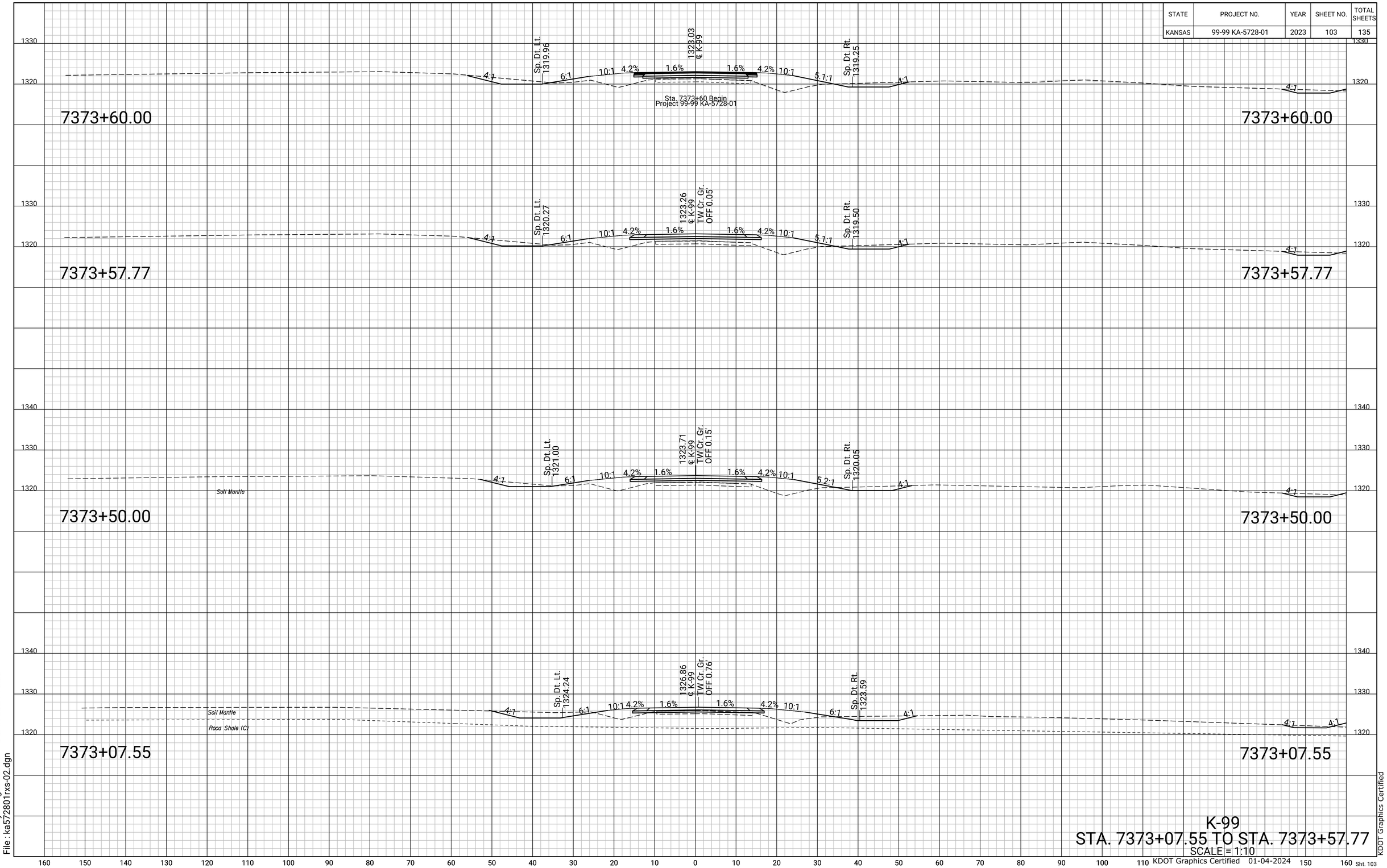
K-99 - Ext. Rt.
STA. 7372+20.00 TO STA. 7373+00.00
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

Sht. 102

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	103	135



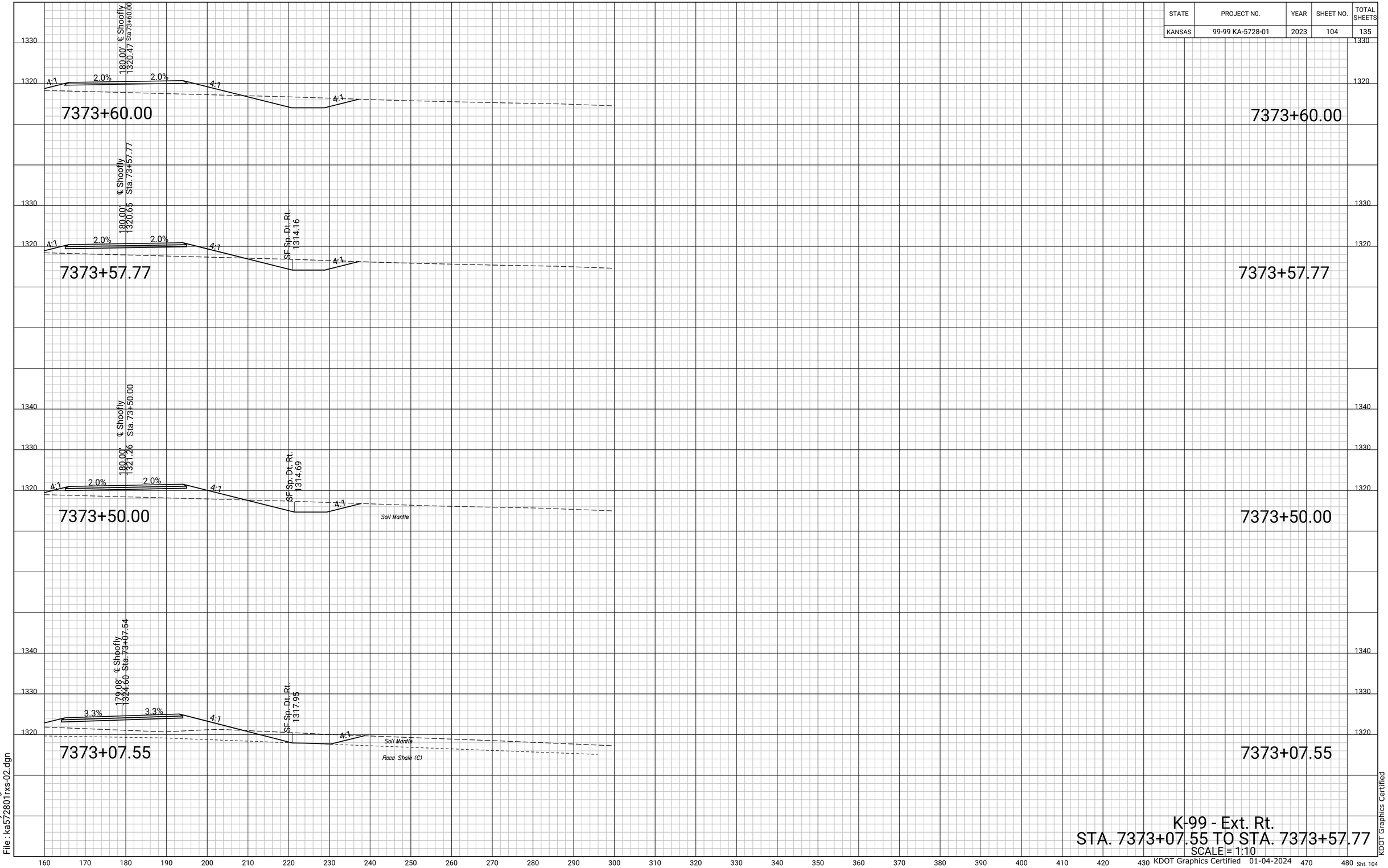
Plotted by : August.Zuno 8-JAN-2024 16:35
File : ka572801rxs-02.dgn

K-99
STA. 7373+07.55 TO STA. 7373+57.77
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	104	135



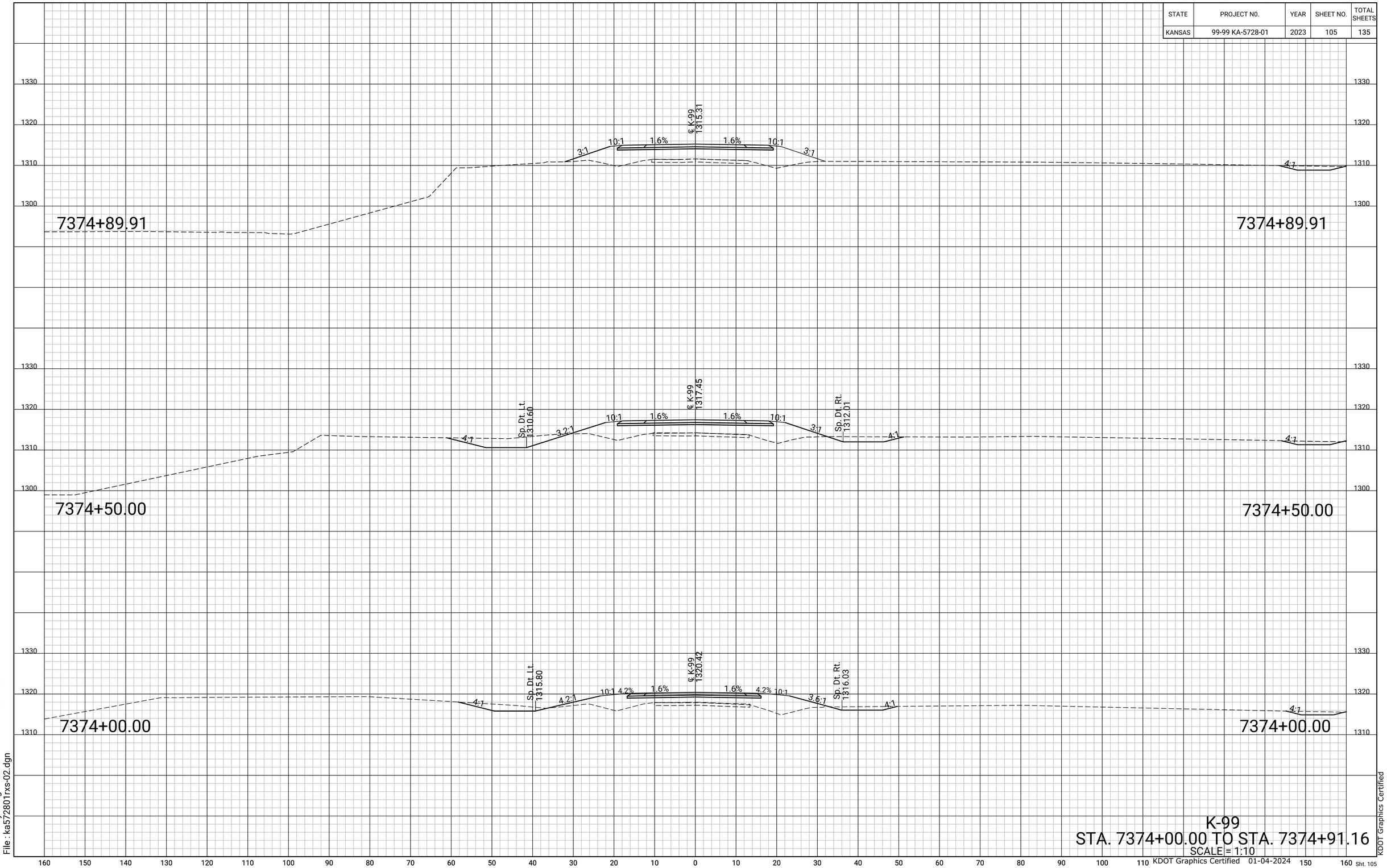
Plotted by : August.Zuno 8-JAN-2024 16:32
File : ka572801rxs-02.dgn

K-99 - Ext. Rt.
STA. 7373+07.55 TO STA. 7373+57.77
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	105	135



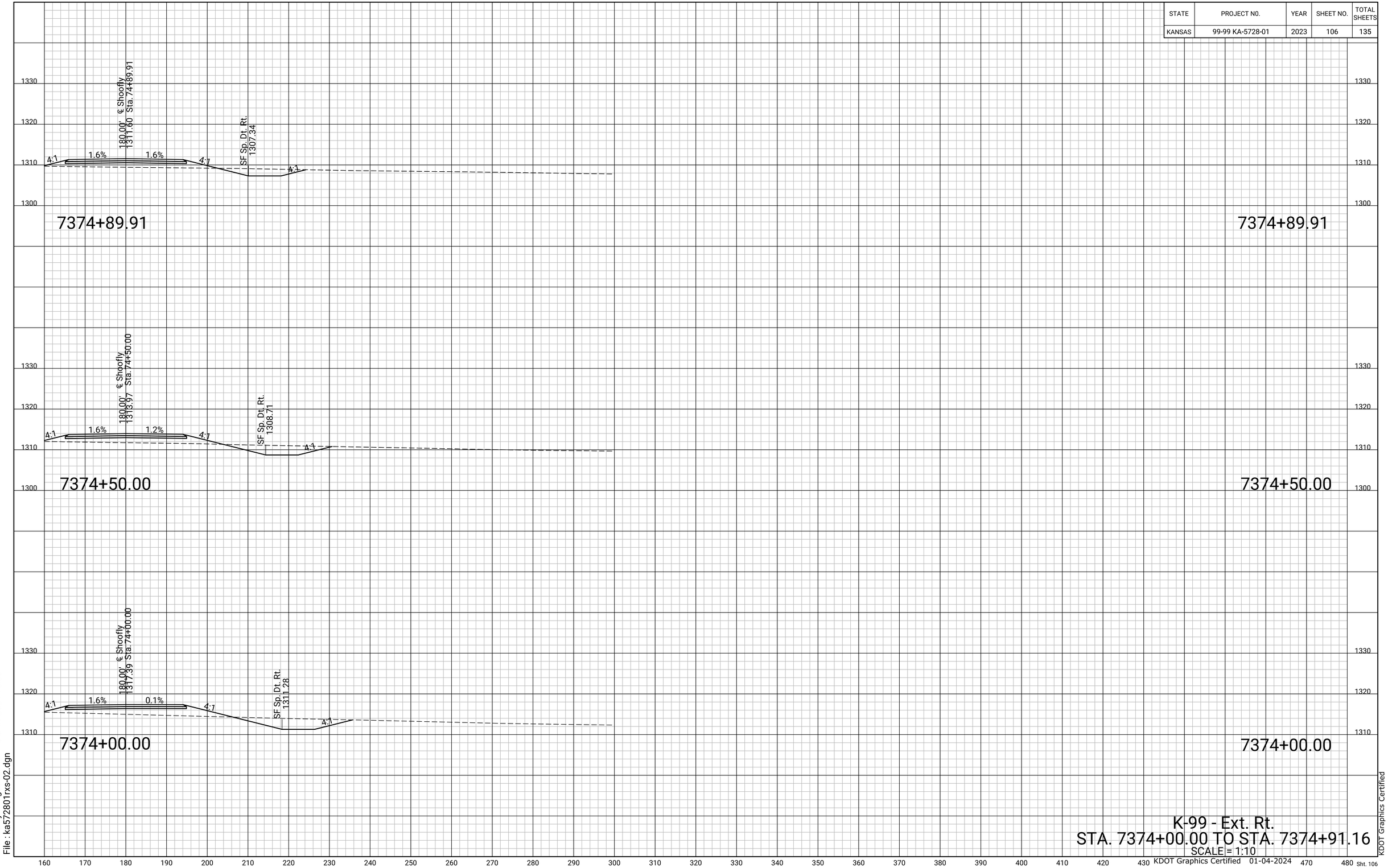
K-99
STA. 7374+00.00 TO STA. 7374+91.16
SCALE = 1:10

Plotted by: August.Zuno 8-JAN-2024 16:35
File: ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	106	135



K-99 - Ext. Rt.
STA. 7374+00.00 TO STA. 7374+91.16
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

Sht. 106

Plotted by : August.Zuno 8-JAN-2024 16:33
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	107	135

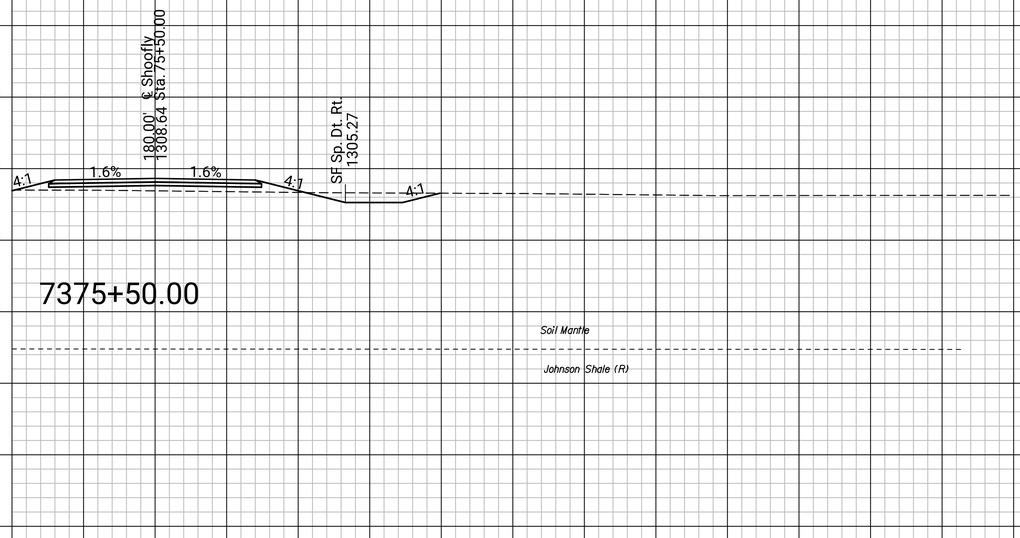
K-99
STA. 7375+00.00 TO STA. 7375+50.00
SCALE = 1:10

Plotted by : August.Zuno 8-JAN-2024 16:35
File : ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	108	135



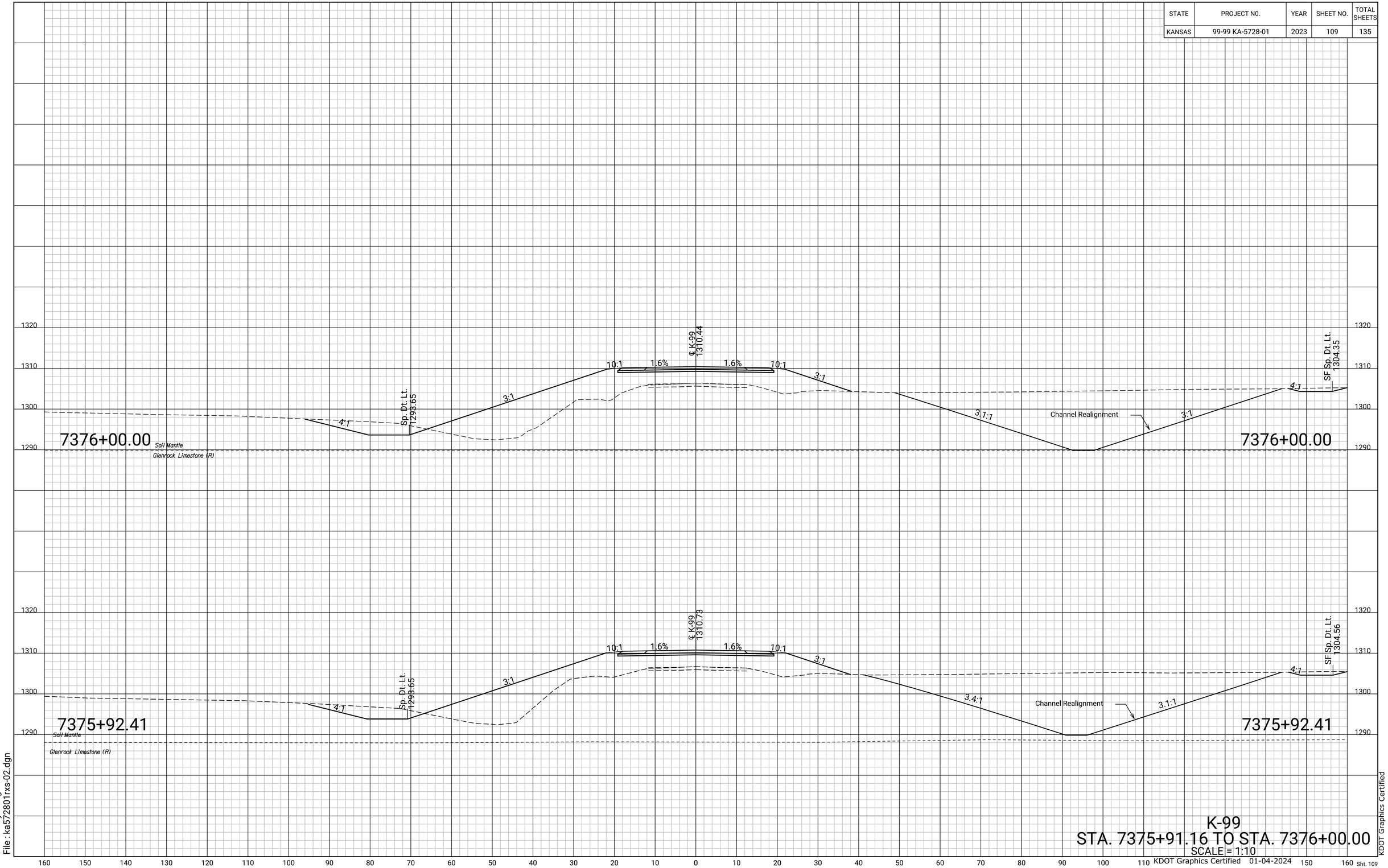
7375+50.00
7375+00.00

K-99 - Ext. Rt.
STA. 7375+00.00 TO STA. 7375+50.00
SCALE = 1:10

Plotted by : August.Zuno 8-JAN-2024 16:33
File : ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	109	135



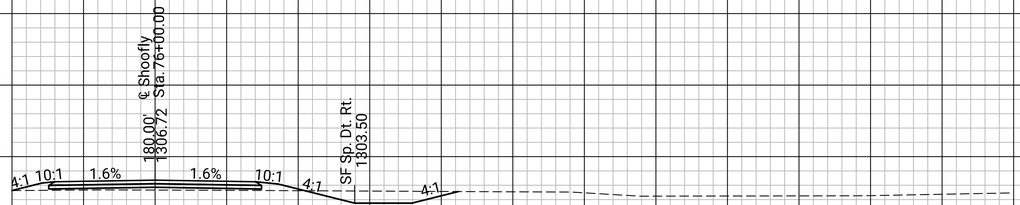
K-99
STA. 7375+91.16 TO STA. 7376+00.00
SCALE = 1:10

Plotted by: August.Zuno 8-JAN-2024 16:35
File : ka572801rxs-02.dgn

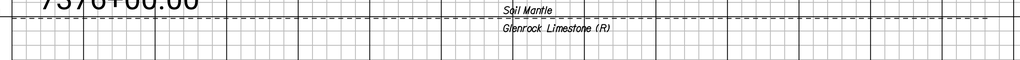
KDOT Graphics Certified 01-04-2024

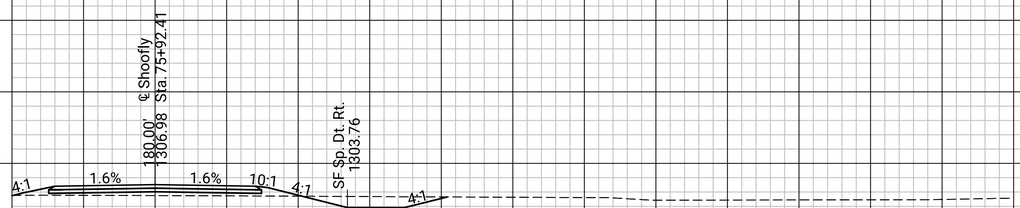
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	110	135

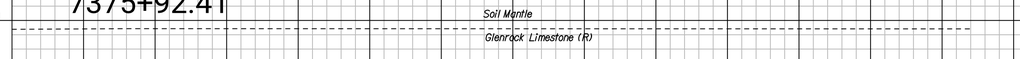


7376+00.00





7375+92.41



7376+00.00

7375+92.41

K-99 - Ext. Rt.
STA. 7375+91.16 TO STA. 7376+00.00
SCALE = 1:10

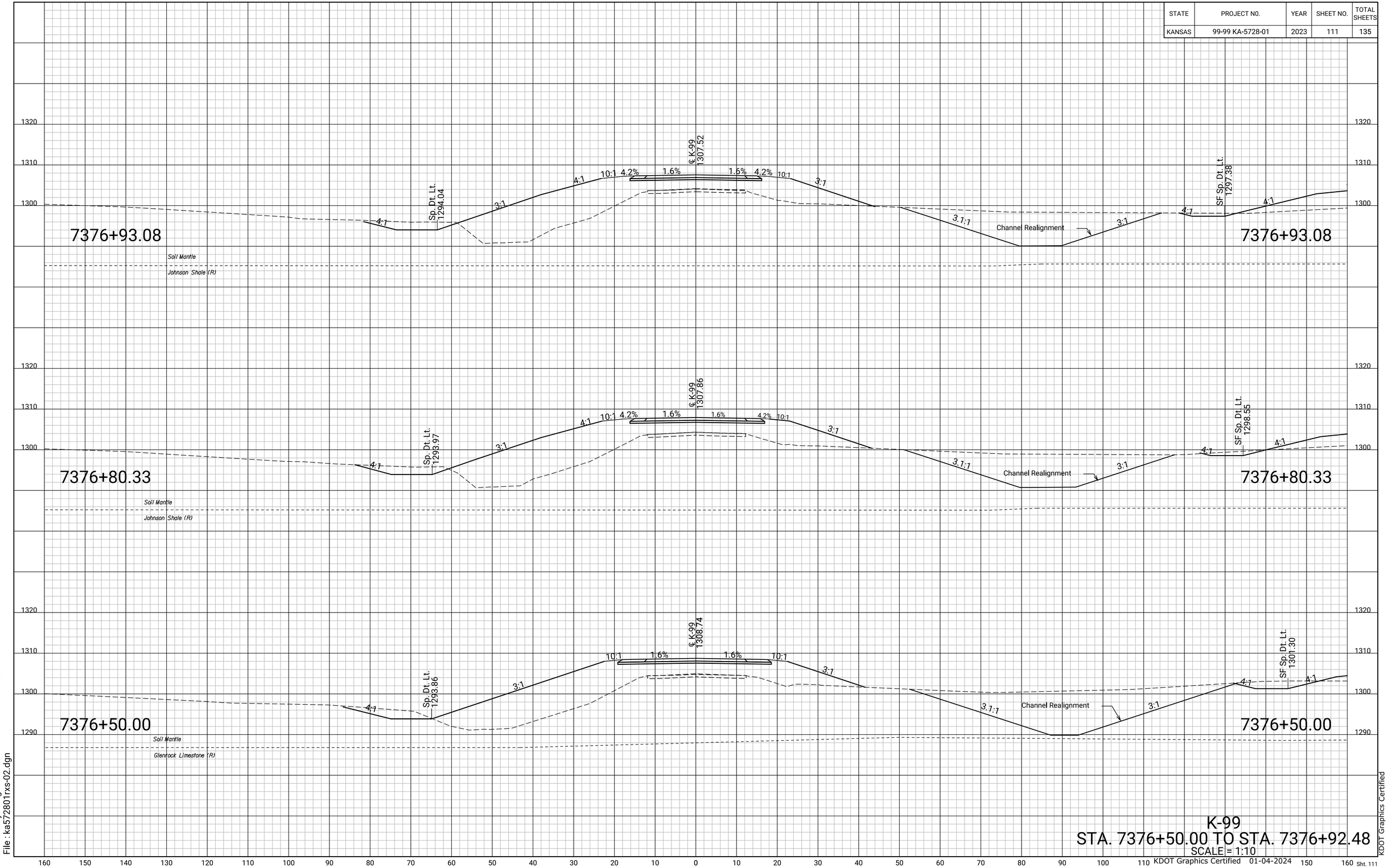
KDOT Graphics Certified 01-04-2024

Sht. 110

Plotted by : August.Zuno 8-JAN-2024 16:33
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	111	135



K-99
STA. 7376+50.00 TO STA. 7376+92.48
SCALE = 1:10

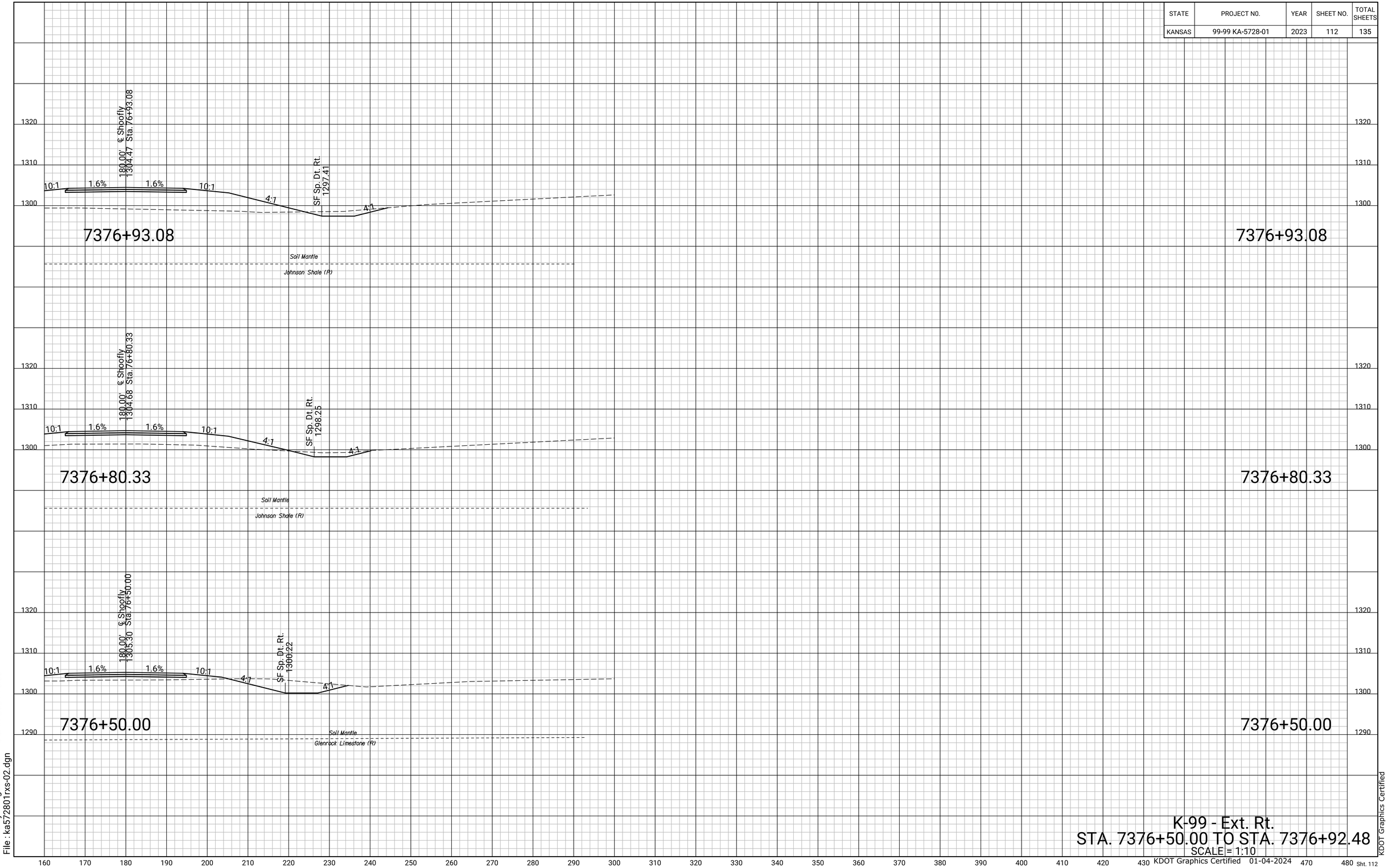
Plotted by : August.Zuno 8-JAN-2024 16:35
File : ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

Sht. 111

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	112	135



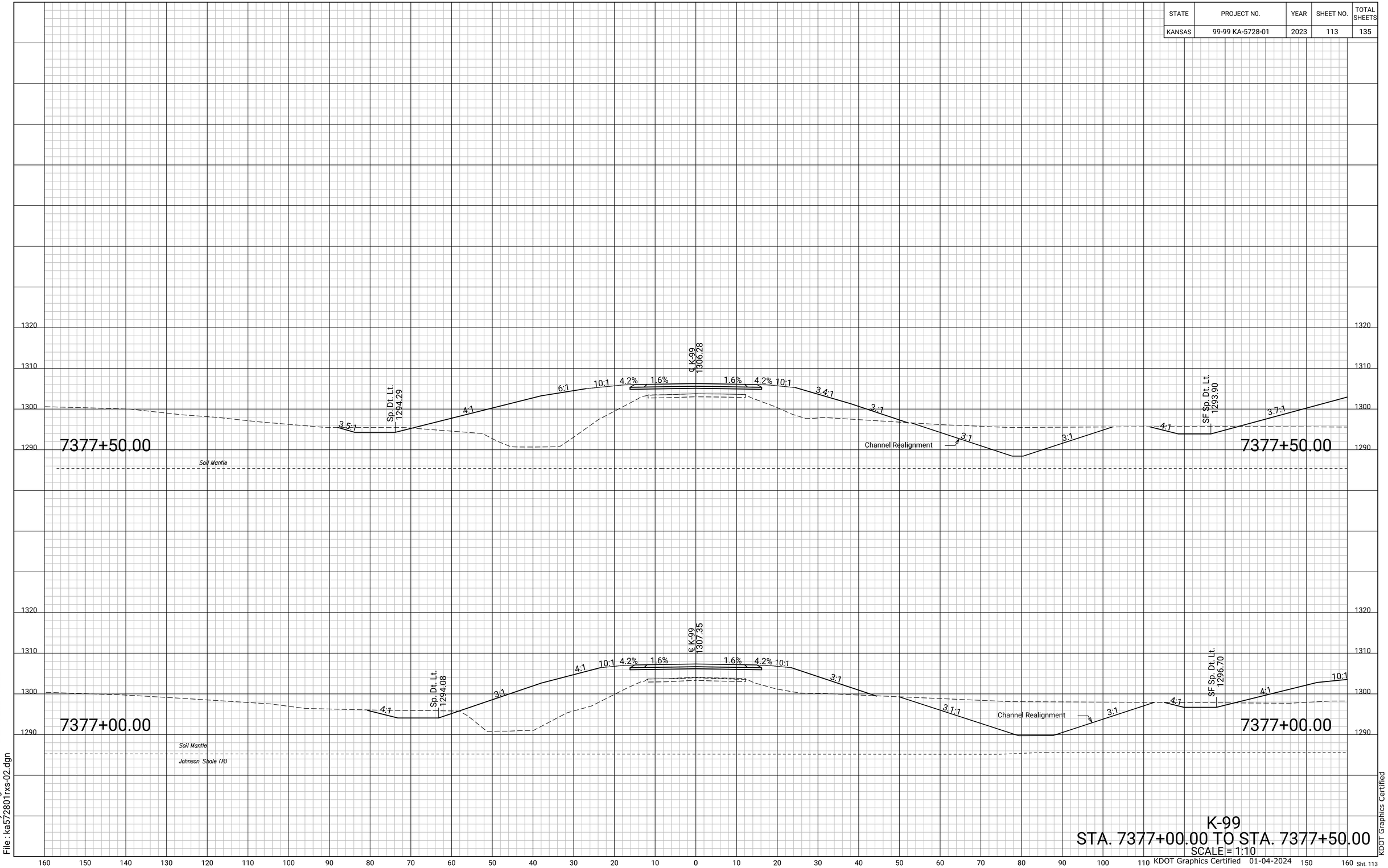
Plotted by : August.Zuno 8-JAN-2024 16:33
File : ka572801rxs-02.dgn

K-99 - Ext. Rt.
STA. 7376+50.00 TO STA. 7376+92.48
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	113	135



K-99
STA. 7377+00.00 TO STA. 7377+50.00
SCALE = 1:10

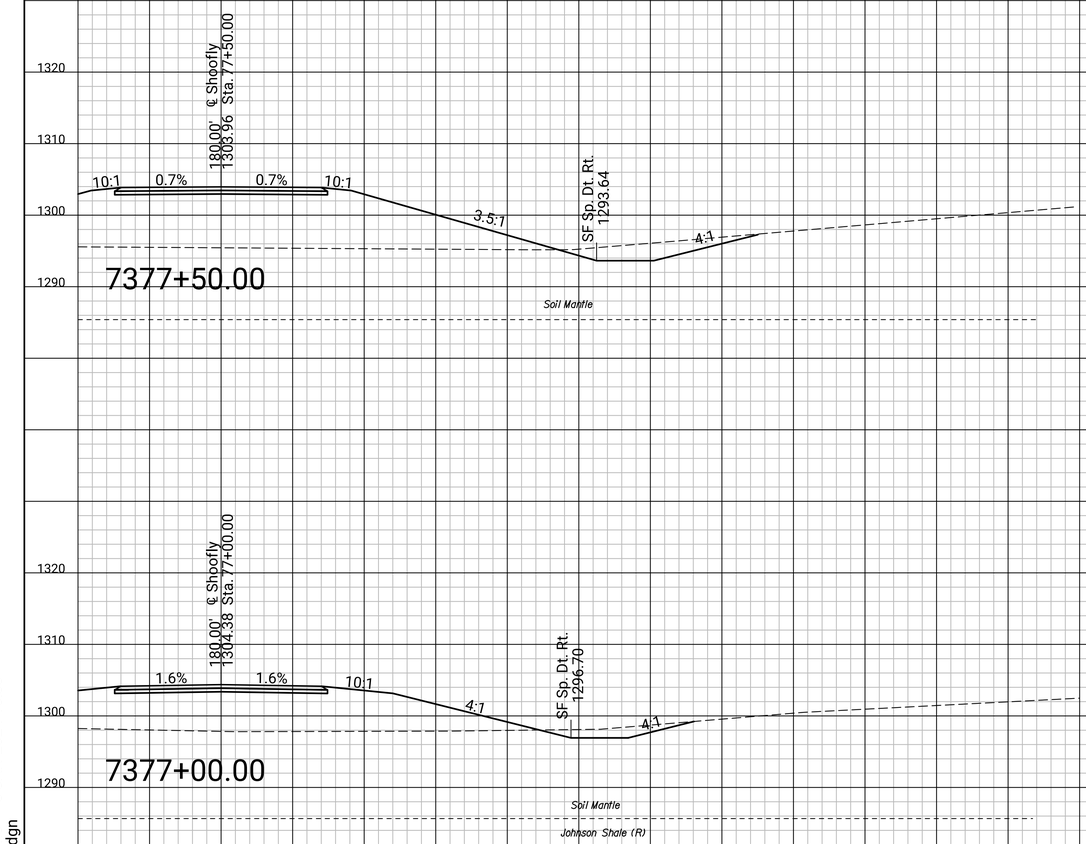
KDOT Graphics Certified 01-04-2024

Sht. 113

Plotted by : August.Zuno 8-JAN-2024 16:35
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	114	135



7377+50.00
7377+00.00

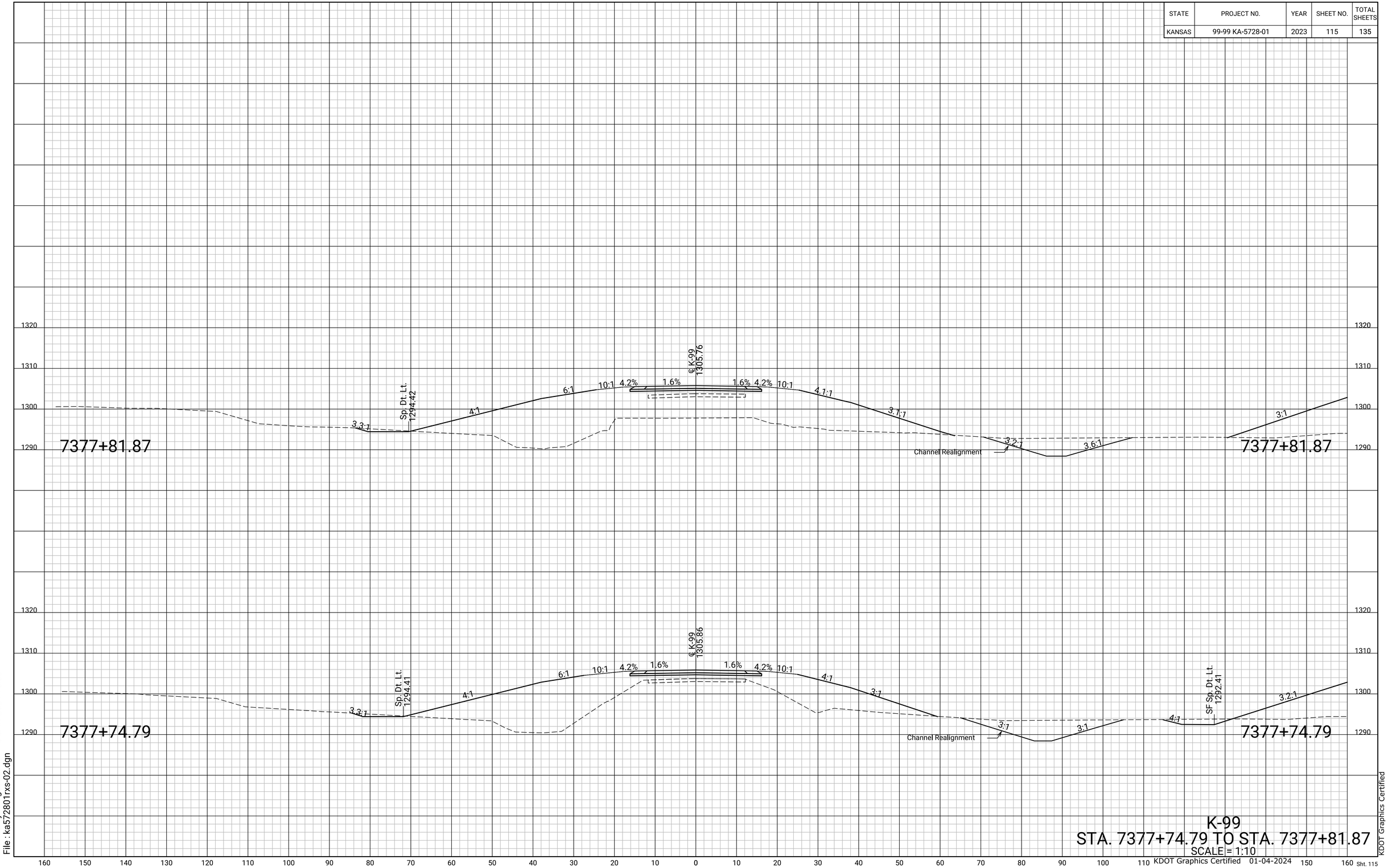
Plotted by : August.Zuno 8-JAN-2024 16:33
File : ka572801rxs-02.dgn

K-99 - Ext. Rt.
STA. 7377+00.00 TO STA. 7377+50.00
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	115	135



K-99
STA. 7377+74.79 TO STA. 7377+81.87
SCALE = 1:10

Plotted by : August.Zuno 8-JAN-2024 16:36
File : ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	116	135

K-99 - Ext. Rt.
STA. 7377+74.79 TO STA. 7377+81.87
SCALE = 1:10

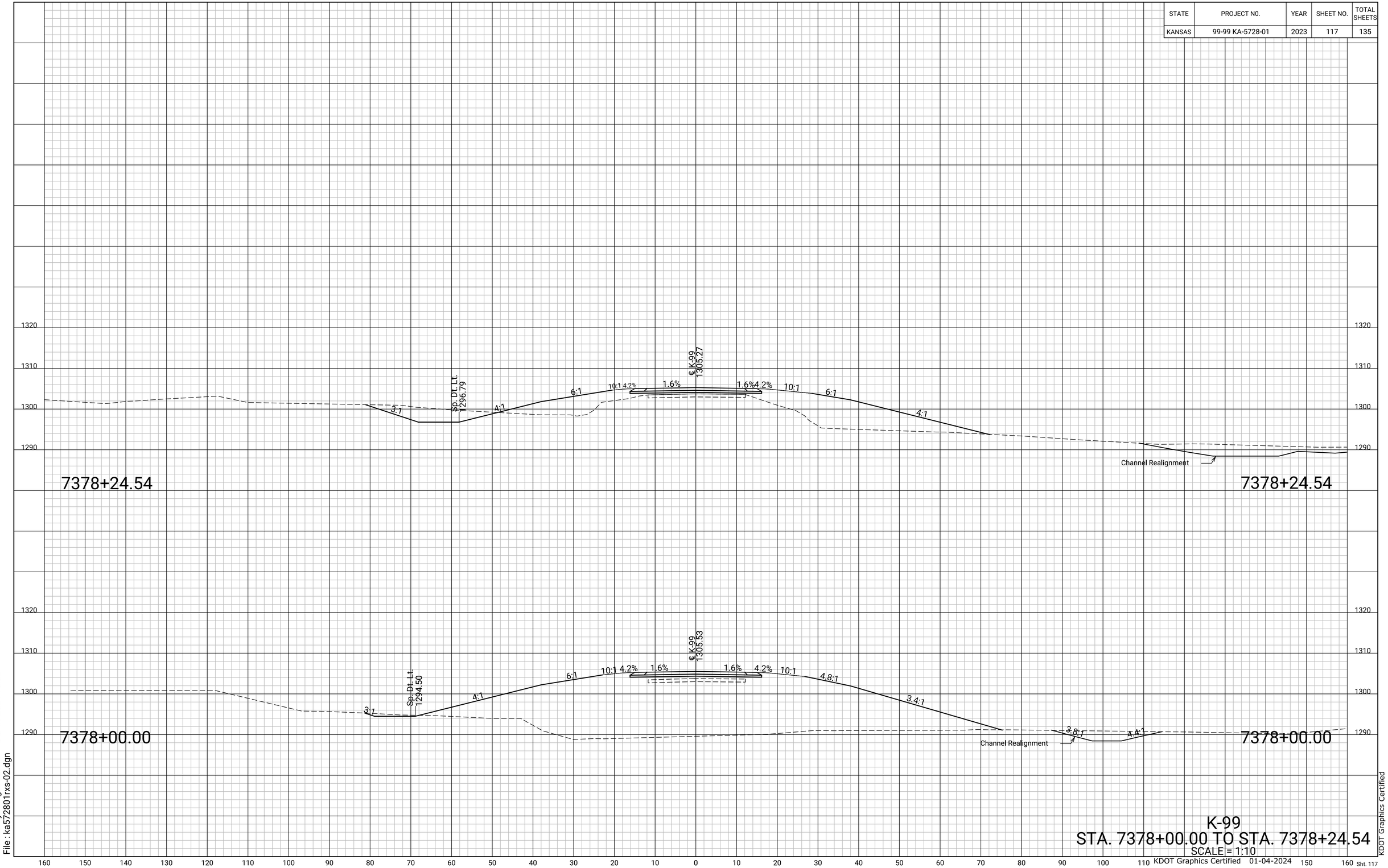
KDOT Graphics Certified 01-04-2024

Sht. 116

Plotted by : August.Zuno 8-JAN-2024 16:33
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	117	135



K-99
STA. 7378+00.00 TO STA. 7378+24.54
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

Sht. 117

Plotted by : August.Zuno 8-JAN-2024 16:36
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	118	135

K-99 - Ext. Rt.
STA. 7378+00.00 TO STA. 7378+24.54
SCALE = 1:10

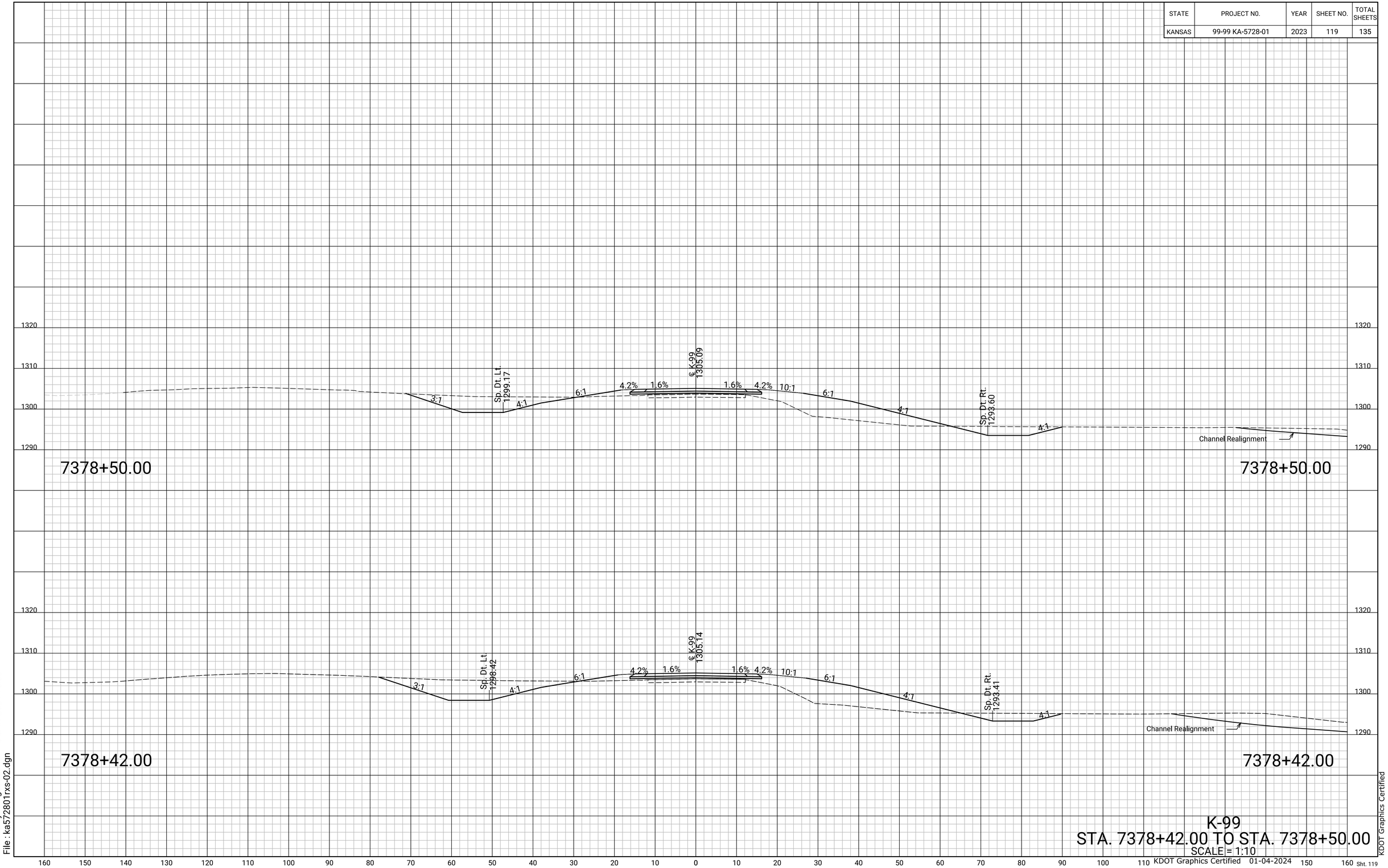
KDOT Graphics Certified 01-04-2024

Sht. 118

Plotted by : August.Zuno 8-JAN-2024 16:33
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	119	135



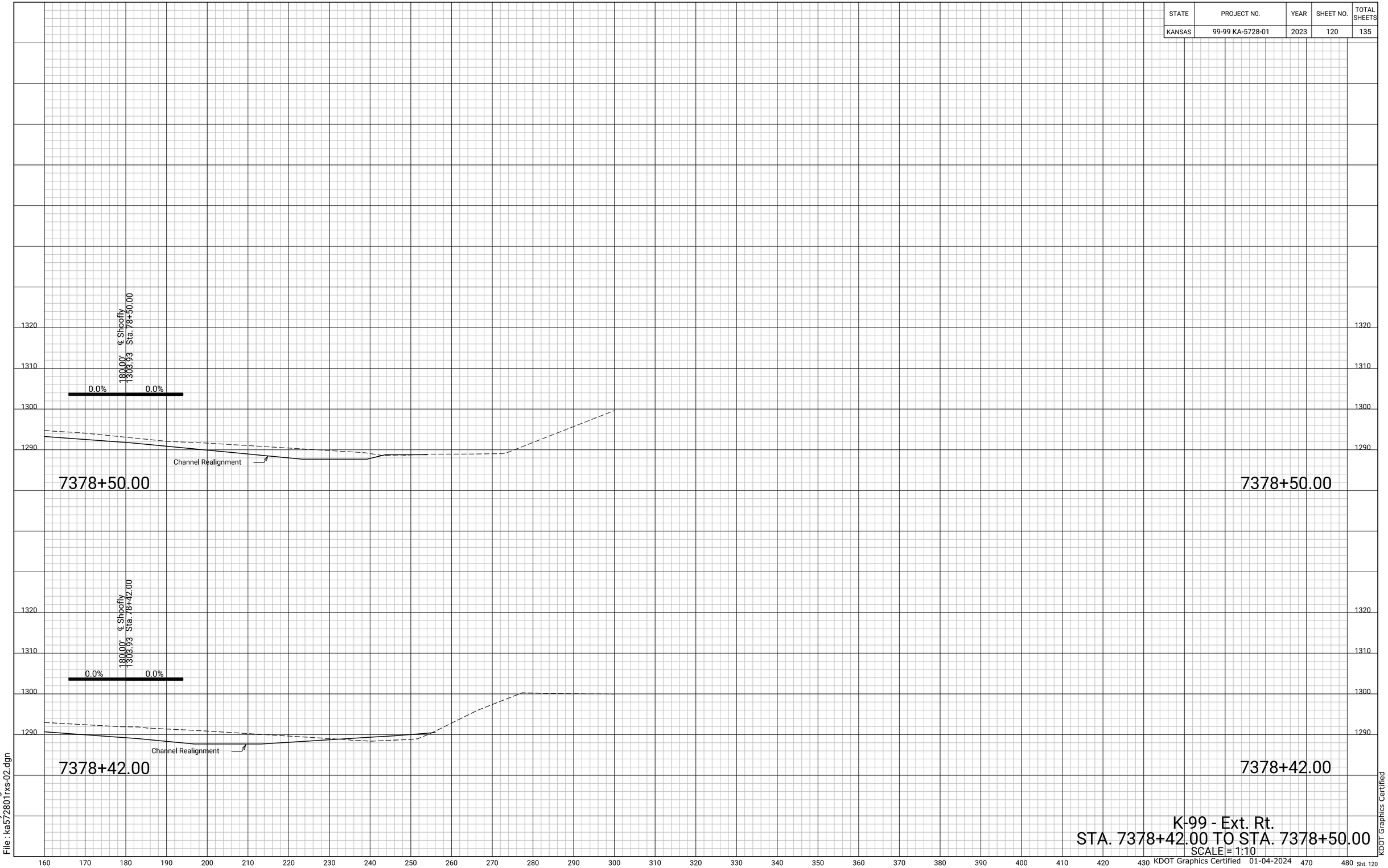
K-99
STA. 7378+42.00 TO STA. 7378+50.00
SCALE = 1:10

Plotted by: August.Zuno 8-JAN-2024 16:36
File: ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	120	135



Plotted by : August.Zuno 8-JAN-2024 16:34
File : ka572801rxs-02.dgn

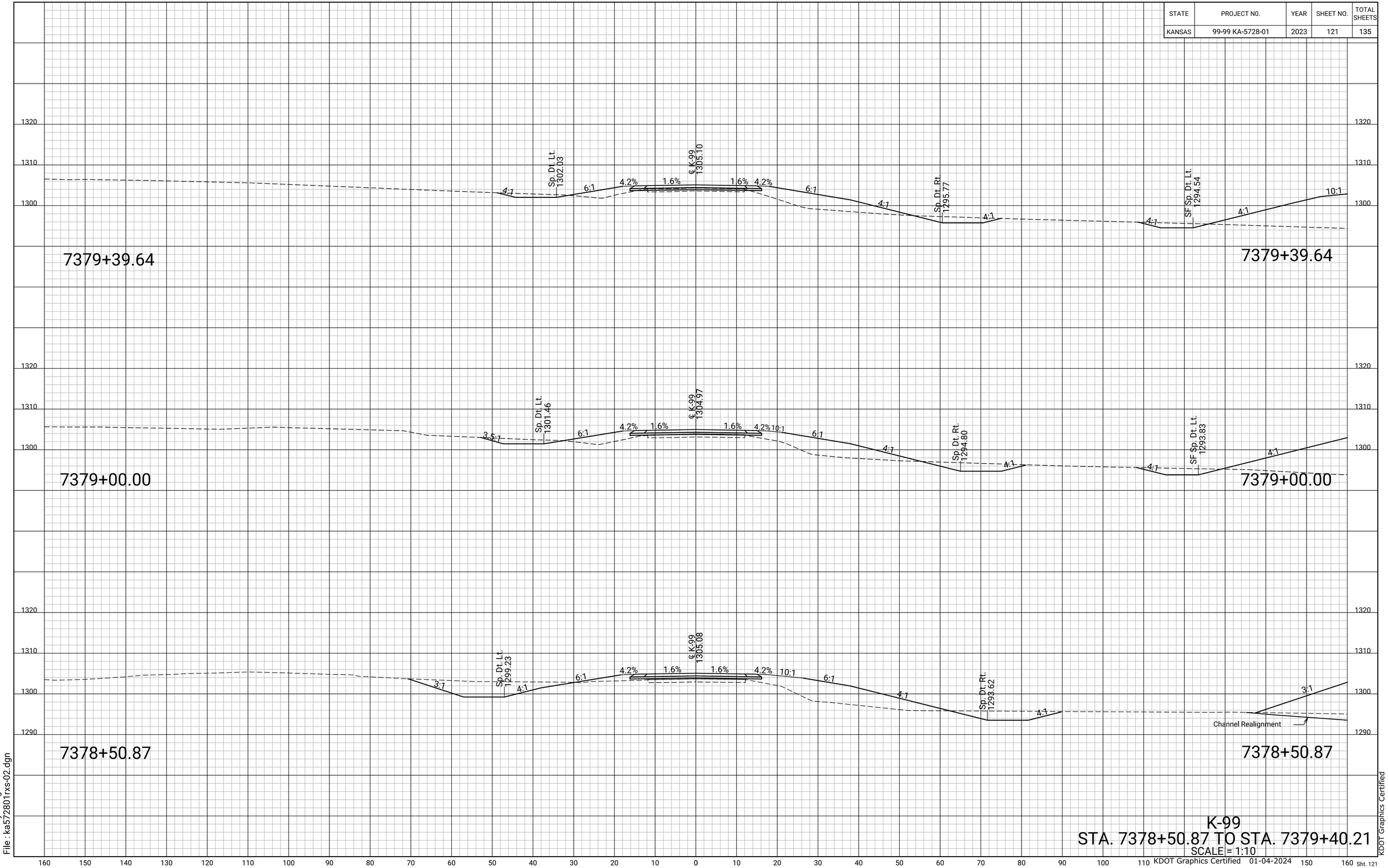
K-99 - Ext. Rt.
STA. 7378+42.00 TO STA. 7378+50.00
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

Sht. 120

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	121	135



K-99
STA. 7378+50.87 TO STA. 7379+40.21
SCALE = 1:10

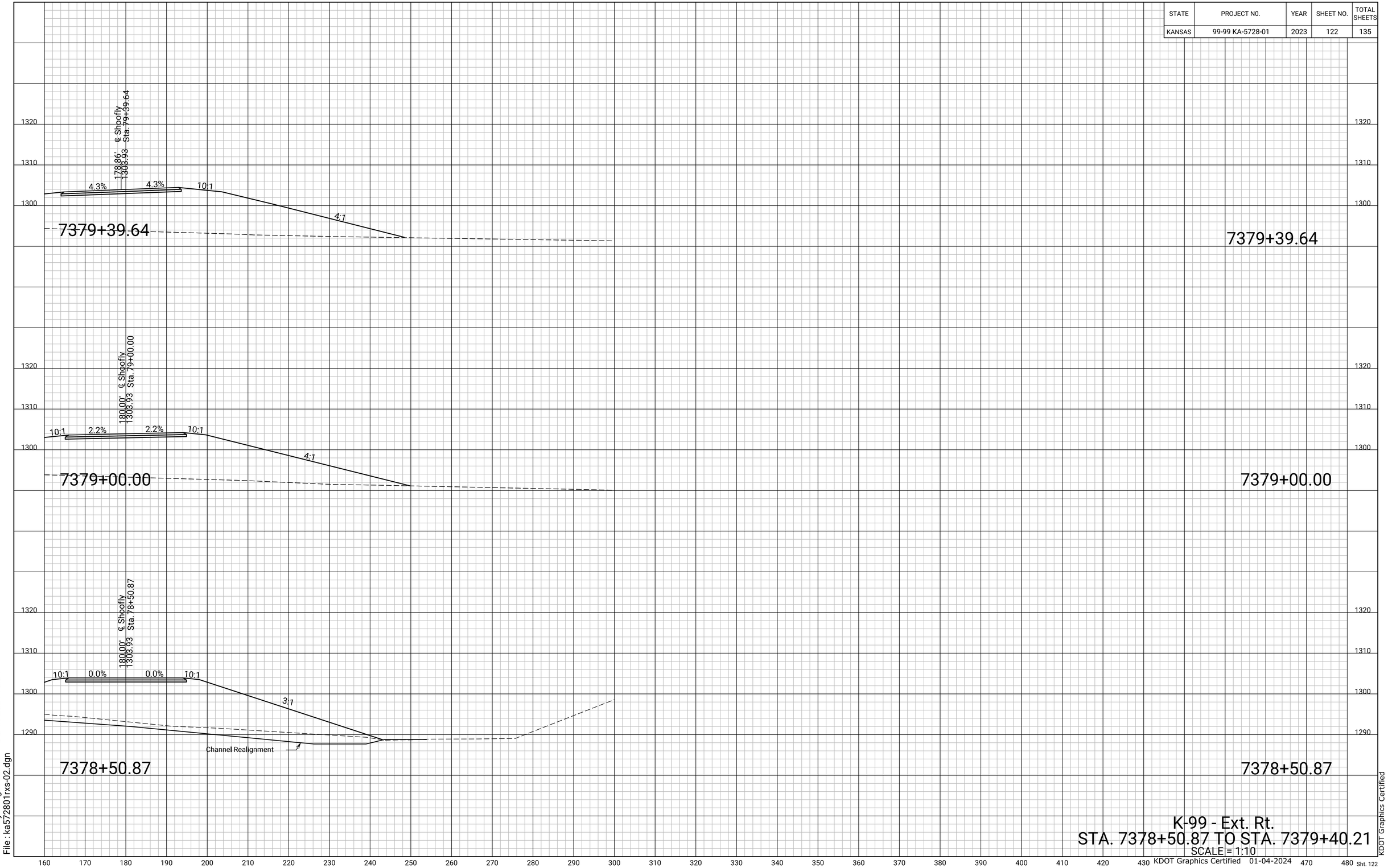
KDOT Graphics Certified 01-04-2024

Sht. 121

KDOT Graphics Certified

Plotted by : August.Zuno 8-JAN-2024 16:36
File : ka572801rxs-02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	122	135

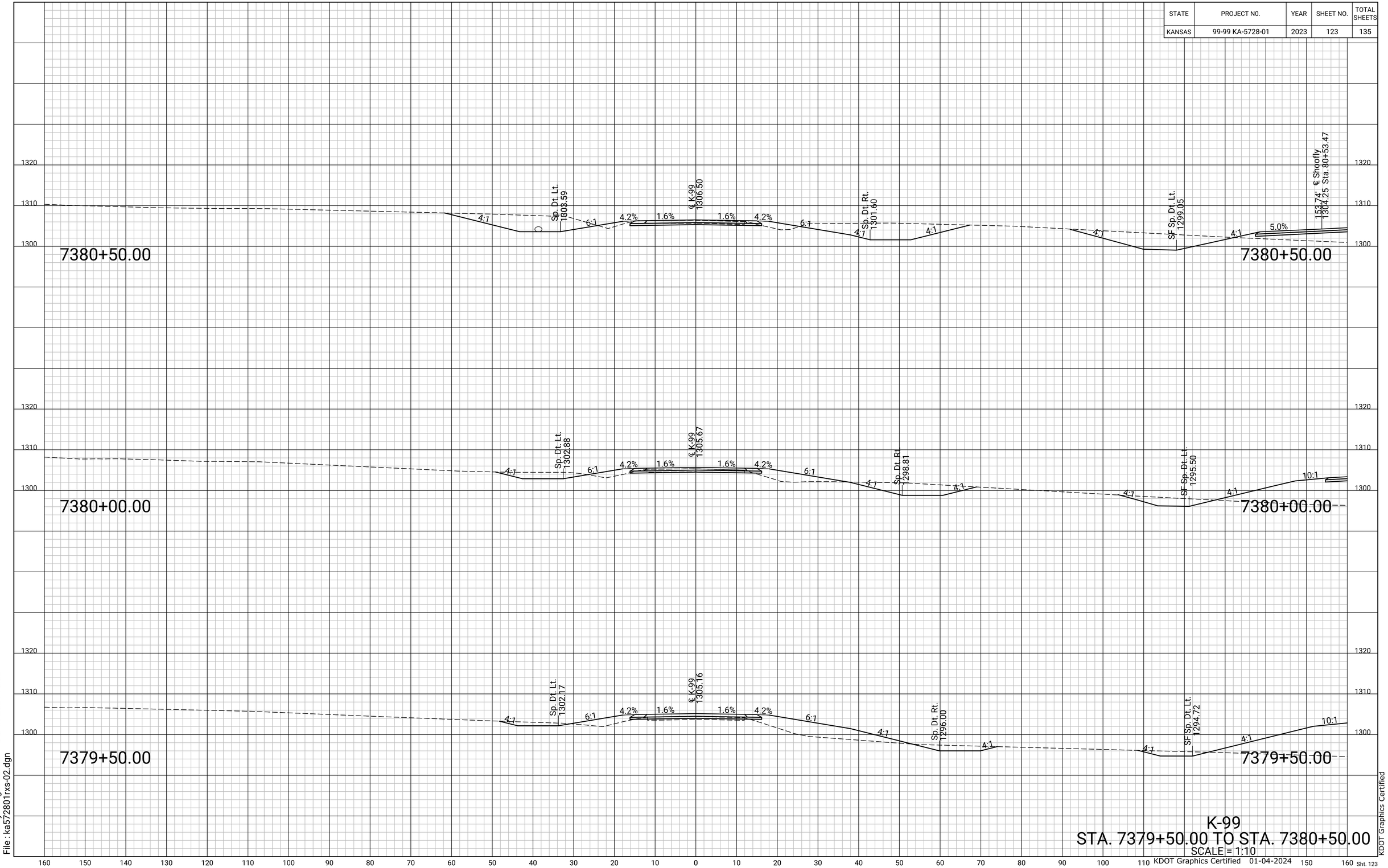


8-JAN-2024 16:34
Plotted by : August.Zuno
File : ka572801rxs-02.dgn

K-99 - Ext. Rt.
STA. 7378+50.87 TO STA. 7379+40.21
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	123	135



K-99
STA. 7379+50.00 TO STA. 7380+50.00
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

Sht. 123

Plotted by : August.Zuno 8-JAN-2024 16:36
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	124	135

K-99 - Ext. Rt.
STA. 7379+50.00 TO STA. 7380+50.00
SCALE = 1:10

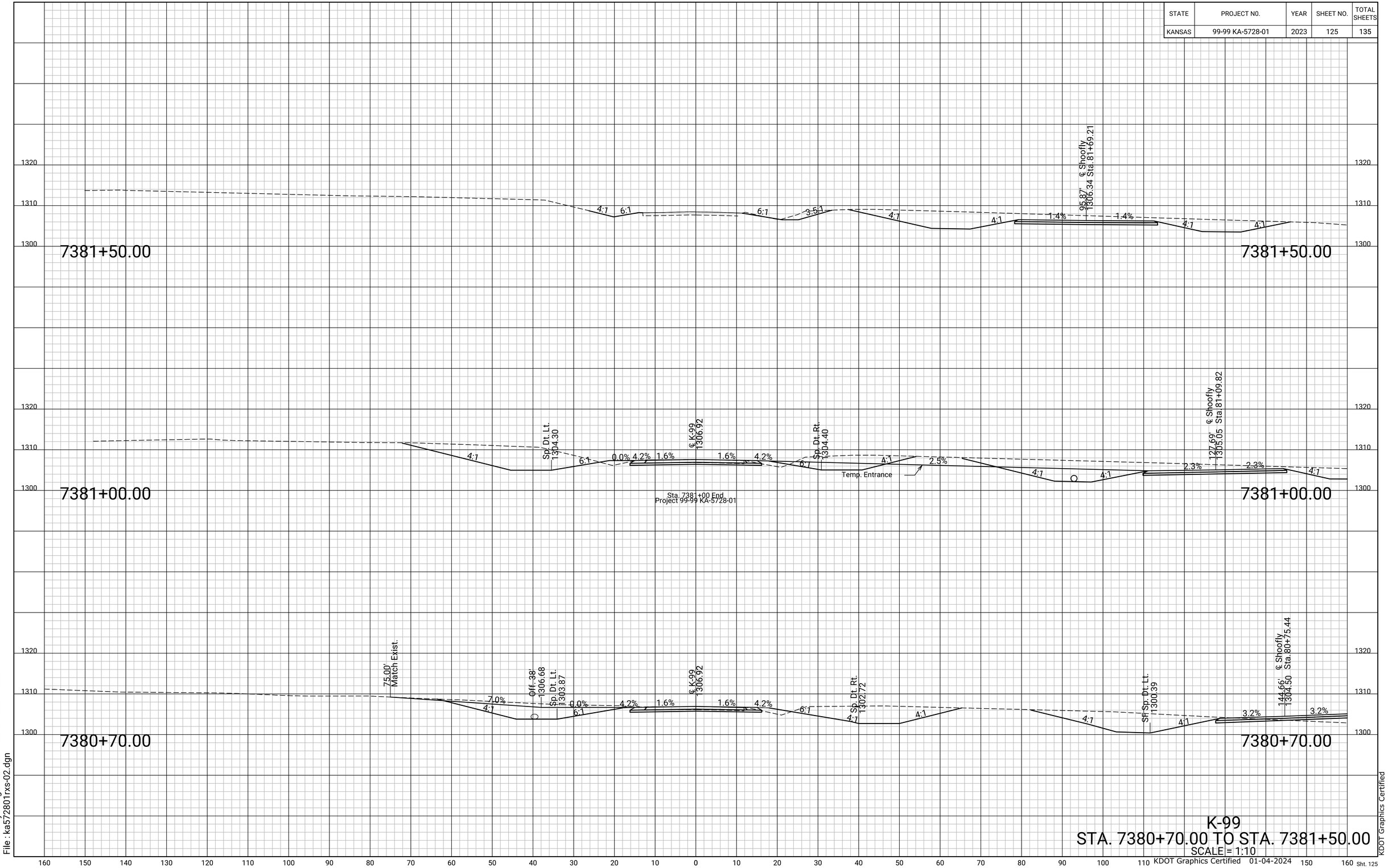
Plotted by: August.Zuno 8-JAN-2024 16:34
File: ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

Sht. 124

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	125	135



K-99
STA. 7380+70.00 TO STA. 7381+50.00
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

Sht. 125

Plotted by : August.Zuno 8-JAN-2024 16:36
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	126	135

K-99 - Ext. Rt.
STA. 7380+70.00 TO STA. 7381+50.00
SCALE = 1:10

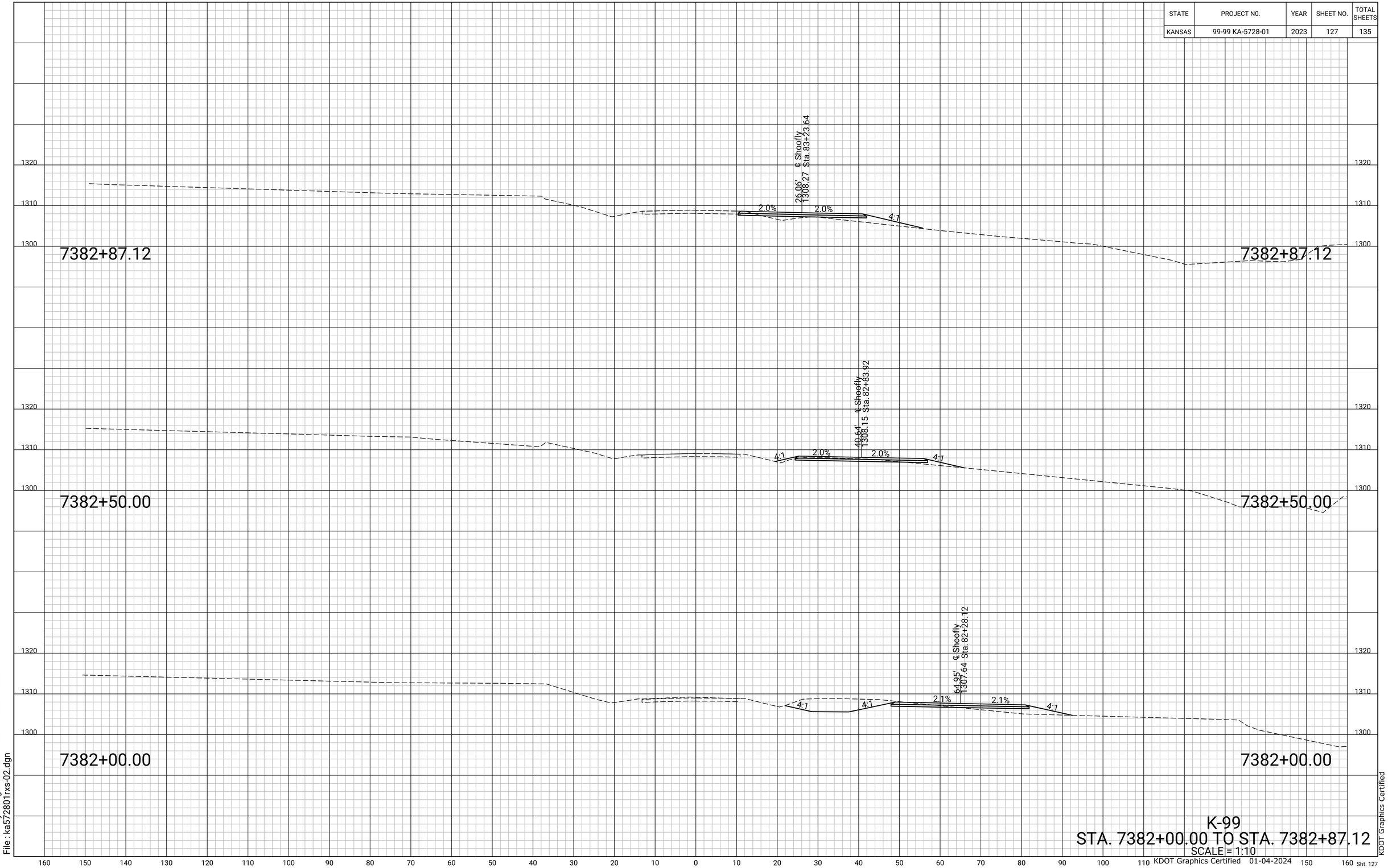
KDOT Graphics Certified 01-04-2024

Sht. 126

KDOT Graphics Certified

Plotted by : August.Zuno 8-JAN-2024 16:34
File : ka572801rxs-02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	127	135



K-99
STA. 7382+00.00 TO STA. 7382+87.12
SCALE = 1:10

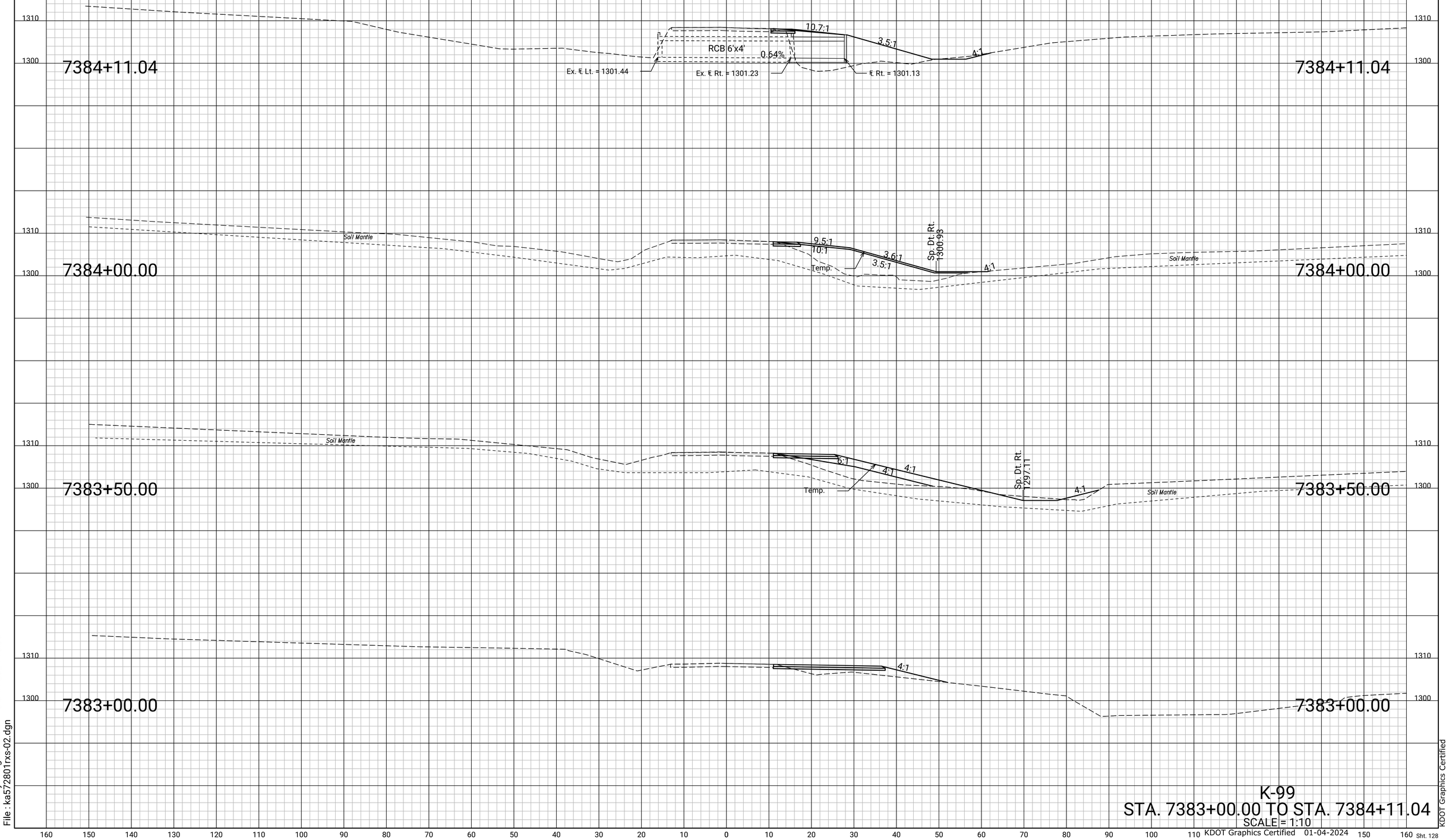
KDOT Graphics Certified 01-04-2024

Sht. 127

Plotted by : August.Zuno 8-JAN-2024 16:36
File : ka572801rxs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	128	135



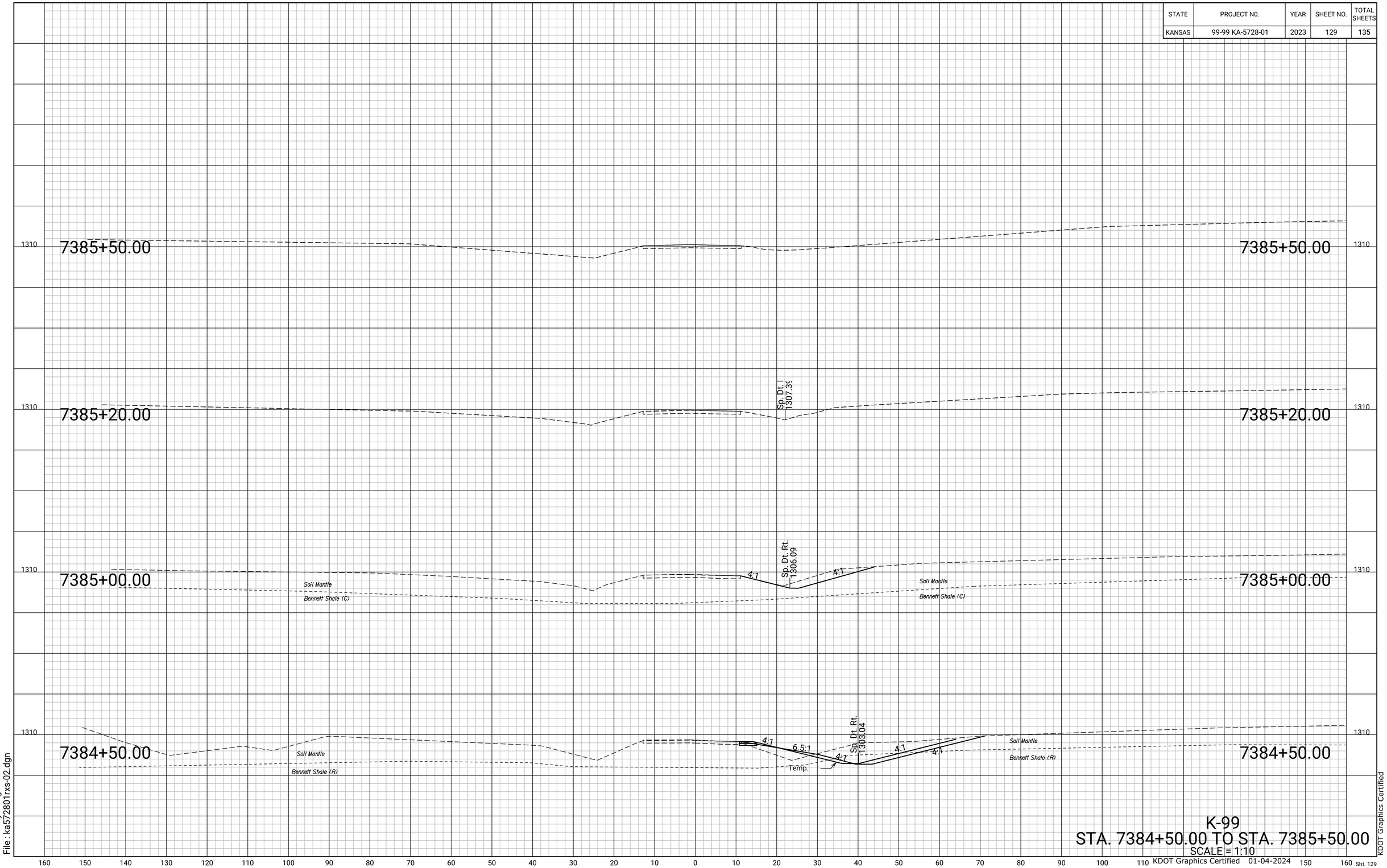
Plotted by : August.Zuno 8-JAN-2024 16:36
File : ka572801rxs-02.dgn

K-99
STA. 7383+00.00 TO STA. 7384+11.04
SCALE = 1:10

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	129	135



K-99
STA. 7384+50.00 TO STA. 7385+50.00
SCALE = 1:10

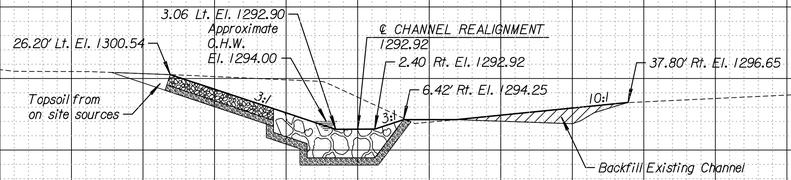
Plotted by : August.Zuno 8-JAN-2024 16:37
File : ka572801rxs-02.dgn

KDOT Graphics Certified 01-04-2024

KDOT Graphics Certified

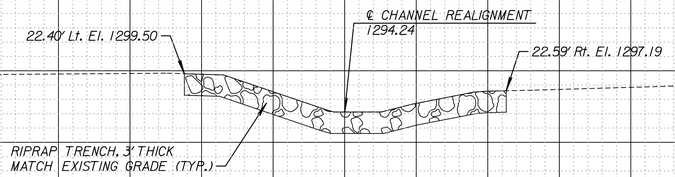
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	130	135

11+00.00



11+00.00

10+73.58



10+73.58

10+50.00

10+50.00

CHANNEL REALIGNMENT

STA. 10+50.00 TO STA. 11+00.00

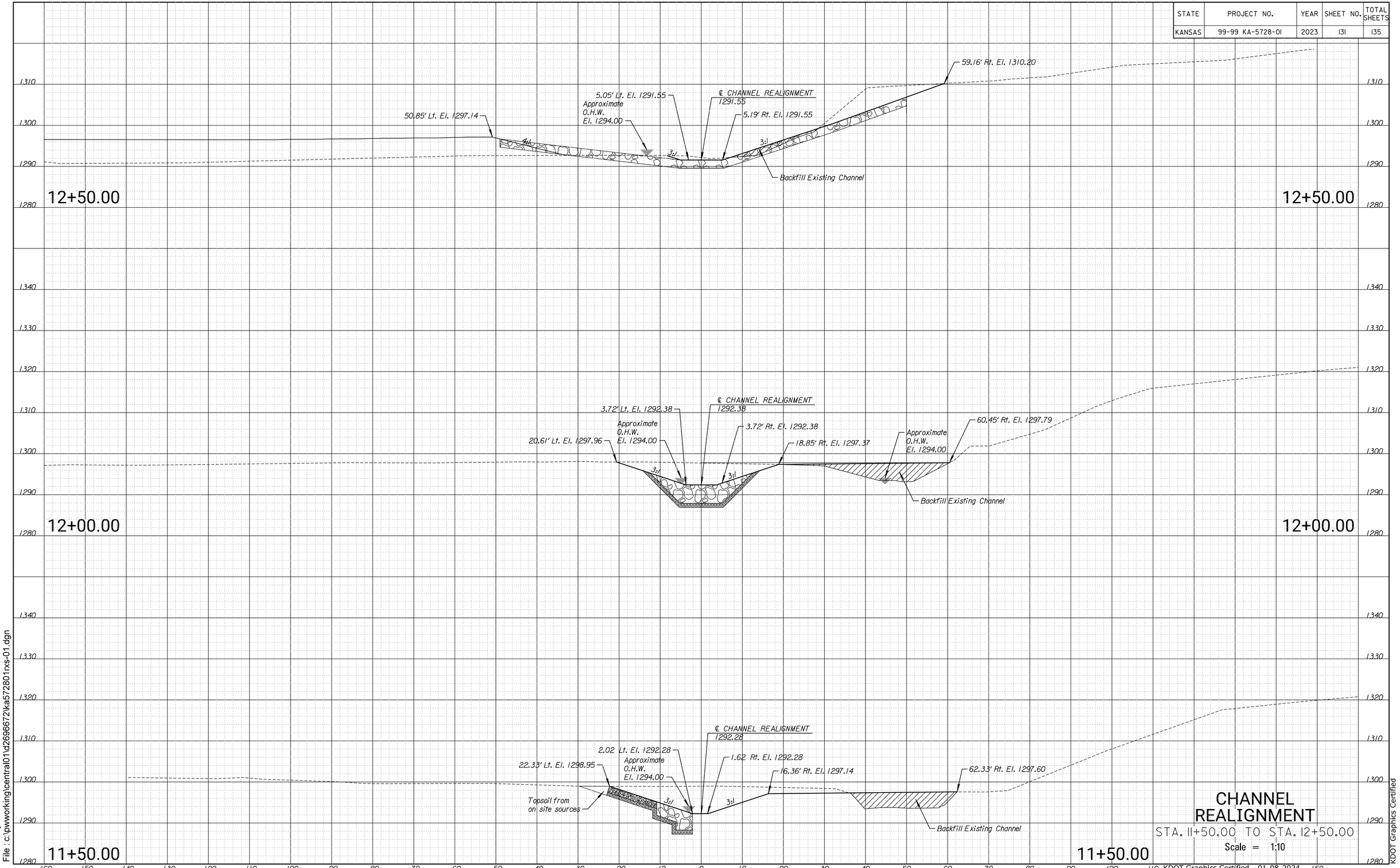
Scale = 1:10

Drawn By: JHOVERSO Plotted: 01-08-24
File: c:\pwworking\central01\d2696672\ka5728001rxs-01.dgn

KDOT Graphics Certified 01-08-2024

Sh. No. 130

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	131	135



CHANNEL REALIGNMENT

STA. 11+50.00 TO STA. 12+50.00

Scale = 1:10

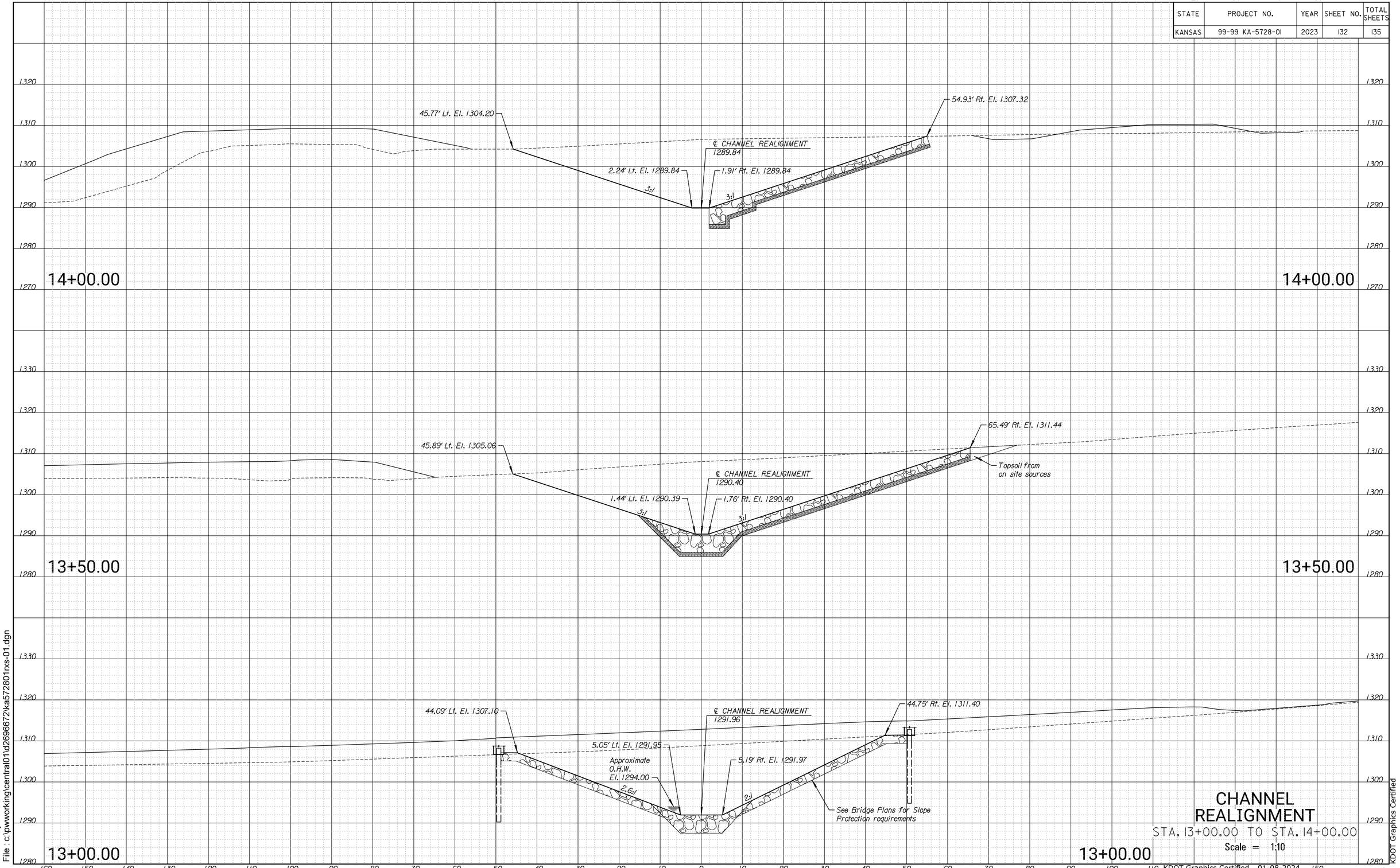
KDOT Graphics Certified 01-08-2024

Sh. No. 131

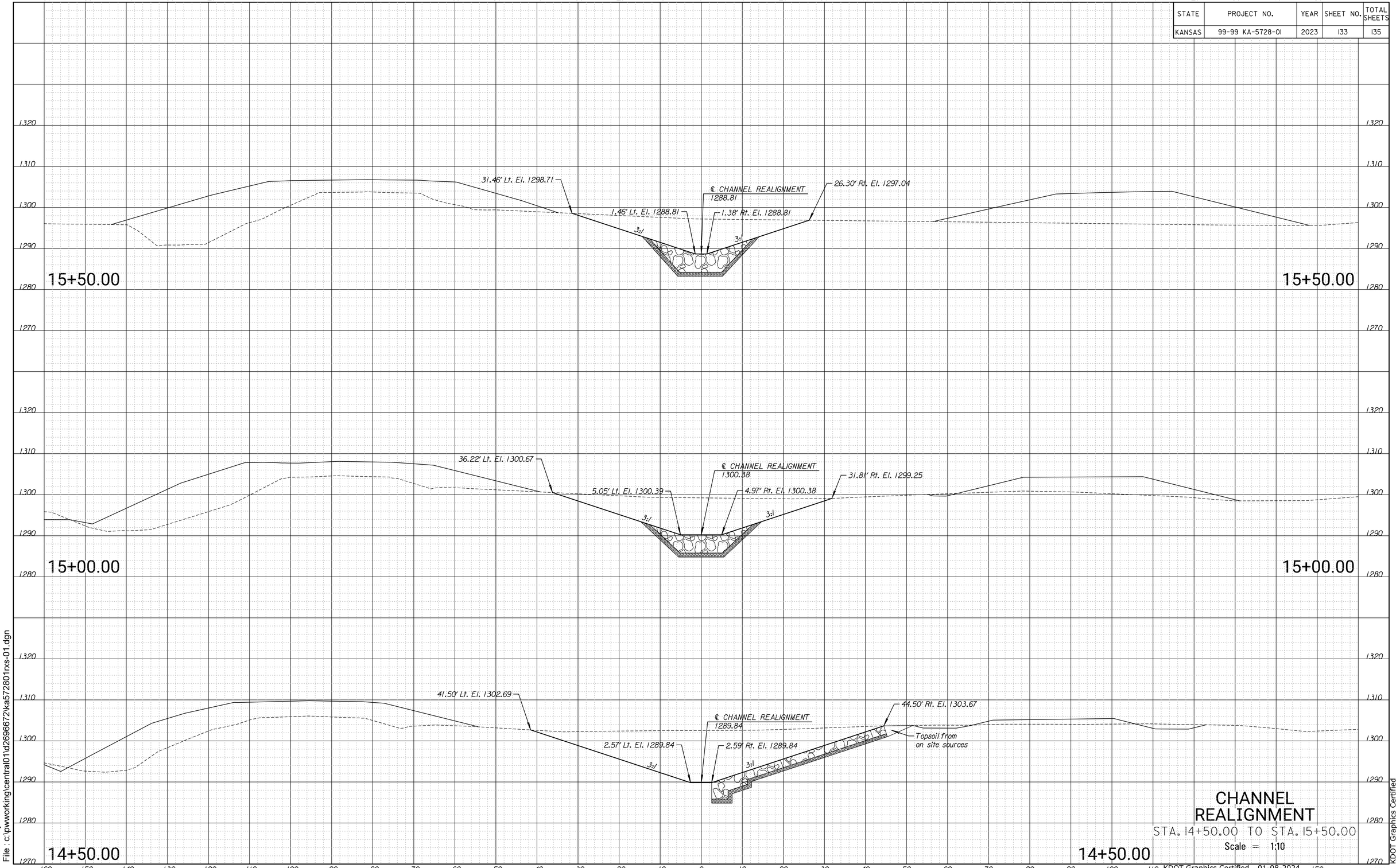
Drawn By: . JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d2696672\ka5728001rxs-01.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	132	135



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	133	135



CHANNEL REALIGNMENT

STA. 14+50.00 TO STA. 15+50.00

Scale = 1:10

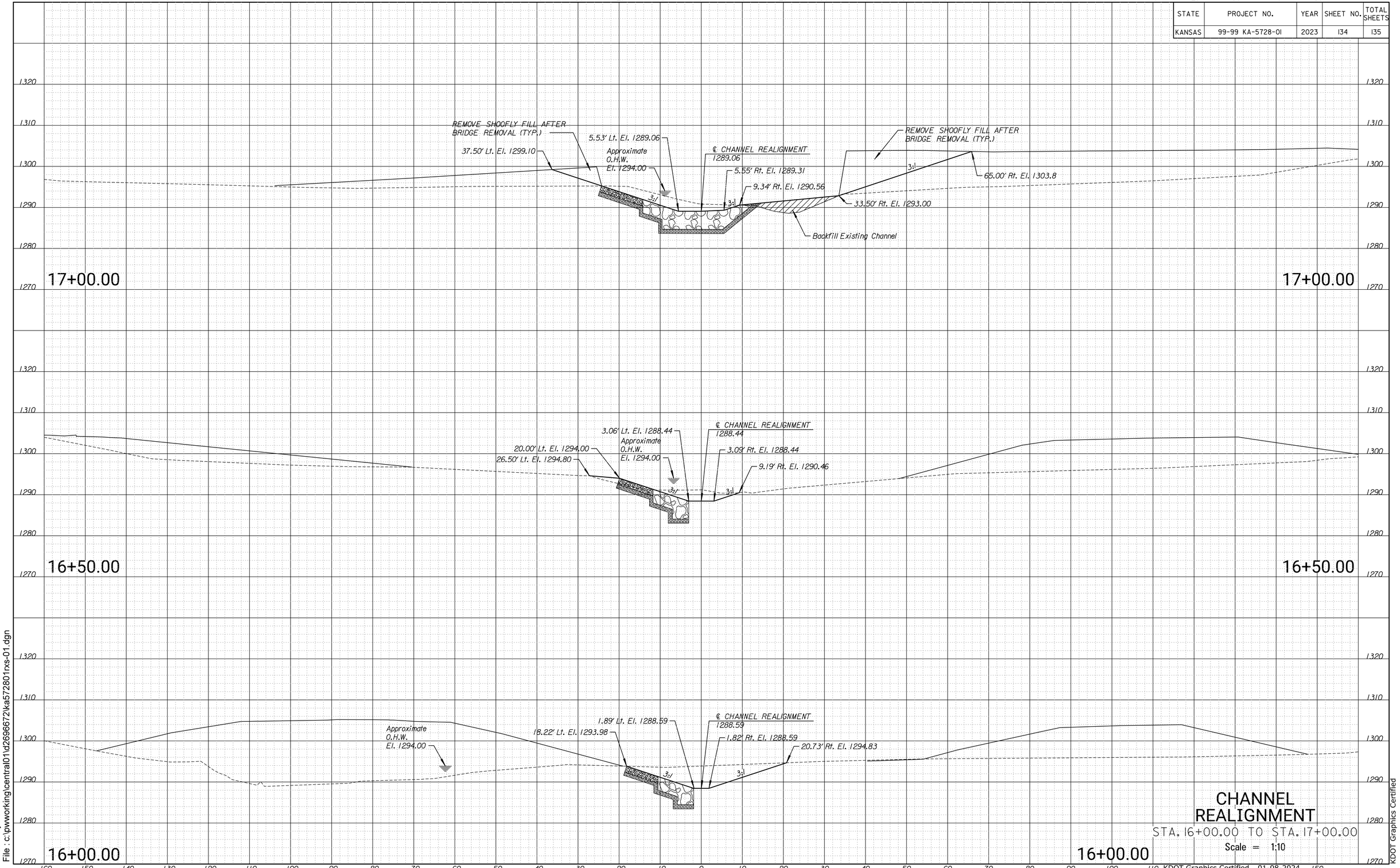
Drawn By: . JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d2696672\ka5728001rxs-01.dgn

KDOT Graphics Certified 01-08-2024

Sh. No. 133

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	134	135



CHANNEL REALIGNMENT

STA. 16+00.00 TO STA. 17+00.00

Scale = 1:10

KDOT Graphics Certified 01-08-2024

Sh. No. 134

KDOT Graphics Certified

Drawn By: . JHOVERSO Plotted: 01-08-24

File: c:\pwworking\central01\d2696672\ka5728801rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	99-99 KA-5728-01	2023	135	135

18+00.00

18+00.00

RIPRAP TRENCH, 3' THICK
MATCH EXISTING GRADE (TYP.)

℄ CHANNEL REALIGNMENT
1288.78

11.00' Rt. El. 1289.06

40.50' Rt. El. 1299.00

22.44 Lt. El. 1290.59

22.46' Rt. El. 1293.84

17+98.28

17+98.28

REMOVE SHOOFLY FILL AFTER
BRIDGE REMOVAL (TYP.)

6.00' Lt. El. 1287.69

57.00' Lt. El. 1304.10

Approximate
O.H.W.
El. 1294.00

℄ CHANNEL REALIGNMENT
1287.69

25.50' Rt. El. 1294.20

6.00' Rt. El. 1287.69

3:1

3:1

Backfill Existing Channel

17+50.00

17+50.00

CHANNEL REALIGNMENT

STA. 17+50.00 TO STA. 18+00.00

Scale = 1:10

KDOT Graphics Certified 01-08-2024

Sh. No. 135

KDOT Graphics Certified

Drawn By: . JHOVERSO Plotted : 01-08-24
File : c:\pwworking\central01\d2696672\ka572801rxs-01.dgn