July 17, 2024

MEMORANDUM TO: Jason Van Nice, P.E., Chief
Bureau of Construction & Materials

We are handing you Final Plans for the project noted below for the August 2024 letting.

Ryan Bowman/ Peter Tobaben
Design Squad

63-66 KA-5729-01 ACSTP-A572(901)	Nemaha	0.682 miles
Project Number	County	Length

REMARKS:

Grading and Surfacing (Asphalt), Bridge, Signing, and Seeding

Bridge #023 (Turkey Creek) on K-63 in Nemaha County located 7.64 miles North of West Junction US-36/K-63.

APPROVED:

For: CHIEF, BUREAU OF ROAD DESIGN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	1	141

STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

PROJ. NO. 63-66 KA-5729-01
FED. AID PROJ. NO. ACSTP-A572(901)

PLAN AND PROFILE OF PROPOSED

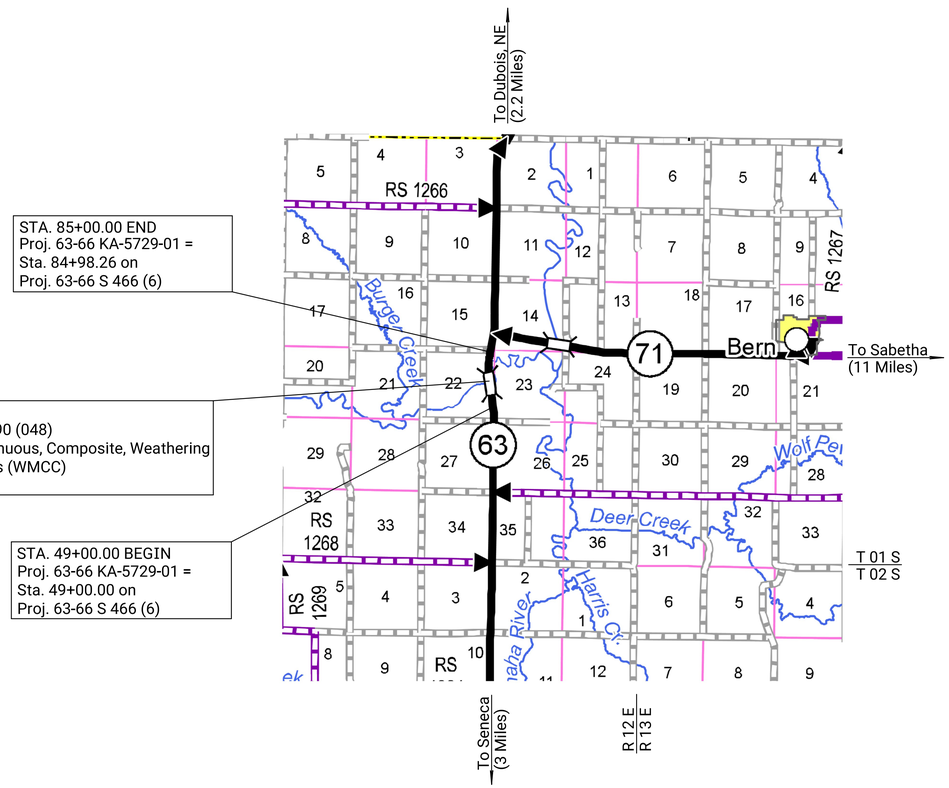
STATE HIGHWAY

FEDERAL AID PROJECT
NEMAHA COUNTY
K-63

GRADING AND SURFACING (ASPHALT)
BRIDGE
SIGNING
SEEDING

INDEX OF SHEETS

SCALE: 1" = 1 Mile



NOTE:
TRAFFIC TO BE CARRIED THROUGH STAGED CONSTRUCTION. SEE SH. NO. 102-104 FOR CONSTRUCTION SEQUENCE DETAILS

DESIGN DESIGNATION

AADT (2024)	= 1,250 vpd
AADT (2044)	= 1,550 vpd
DHV	= 11 %
D	= 60 %
T	= 22.5 %
V	= 60 mph
C of A	= None
Clear Zone	= 30'

CONVENTIONAL SIGNS

COUNTY LINE
CITY LIMITS
STATE OR NATIONAL LINE
TOWNSHIP, SECTION or GRANT LINE
PROPERTY LINE
HIGHWAY FENCE
EXISTING FENCE
GUARDRAIL
CONSTRUCTION LIMITS
RIGHT OF WAY LINE
TRAVELED WAY
RAILROADS
CENTER LINE OF PROJECT (50 | 1)
TERRACE
CULVERTS
DROP INLET & STORM SEWER
ACCESS CONTROL
POWER POLE
TELEPHONE POLE
MARSH
HEDGE
TREES
PROFILE ELEVATION (1172.18)
STREAM or CREEK

GROSS LENGTH OF PROJECT	3,600 FT. (Includes Equations)	
NET LENGTH OF PROJECT	3,600 FT.	0.682 MILES
NET LENGTH OF BRIDGES	263 FT.	0.050 MILES
NET LENGTH OF ROAD	3,337 FT.	0.632 MILES

Approved: Jul 17, 2024
Date

State Transportation Engineer

By:
Chief, Bureau of Road Design

KANSAS DEPARTMENT OF TRANSPORTATION

	BY	DATE
SURVEY	J. Bowen	2021
CADD TECHNICIAN	B. Andrews	2024
DESIGNERS	B. Andrews (Road) / C. Bettis (Bridge)	2024
SQUAD	R. Bowman (Road) / P. Tobaben (Bridge)	2024

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:29
File : KA572901rti-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	2	141

RYAN JAMES BOWMAN LICENSED 29109 KANSAS PROFESSIONAL ENGINEER Jul 15, 2024 Name: Ryan Bowman Co. Name: KDOT Sheet Range: 1-32, 67-80, 102-104,119-141	PETER TOBABEN LICENSED 28019 KANSAS PROFESSIONAL ENGINEER Jul 15, 2024 Name: Peter Tobaben Co. Name: KDOT - Bridge Design Sheet Range: 33-66	NATHAN T. JEFFRIES LICENSED 25390 KANSAS PROFESSIONAL ENGINEER Jul 16, 2024 Name: Nathan Jeffries, PE Co. Name: KDOT - Permanent Signing Sheet Range: 81-101	AMANDA JEANNE ANDERSON LICENSED 18853 KANSAS PROFESSIONAL ENGINEER July 17, 2024 Name: Amanda Jeanne Anderson, PE, PTOE Co. Name: Garver - Temporary Traffic Control Sheet Range: 105 - 118				

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.

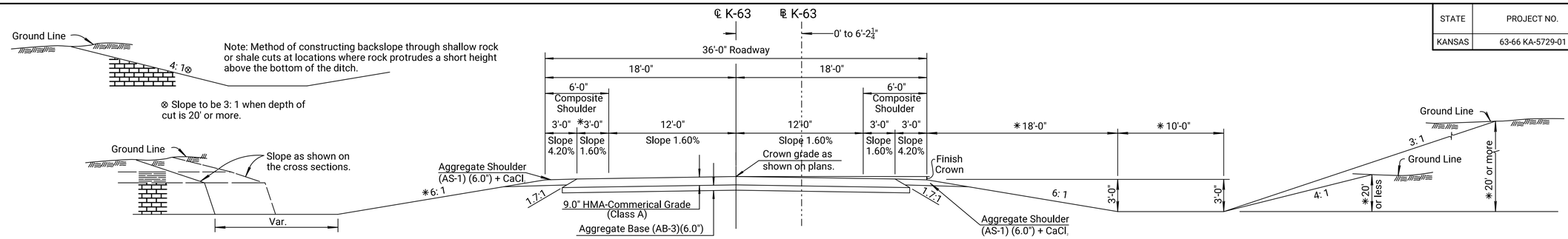
KDOT Graphics Certified 04-18-2022 Sh. No. 2

KDOT Graphics Certified

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:32
File : KA572901rss048-01.dgn

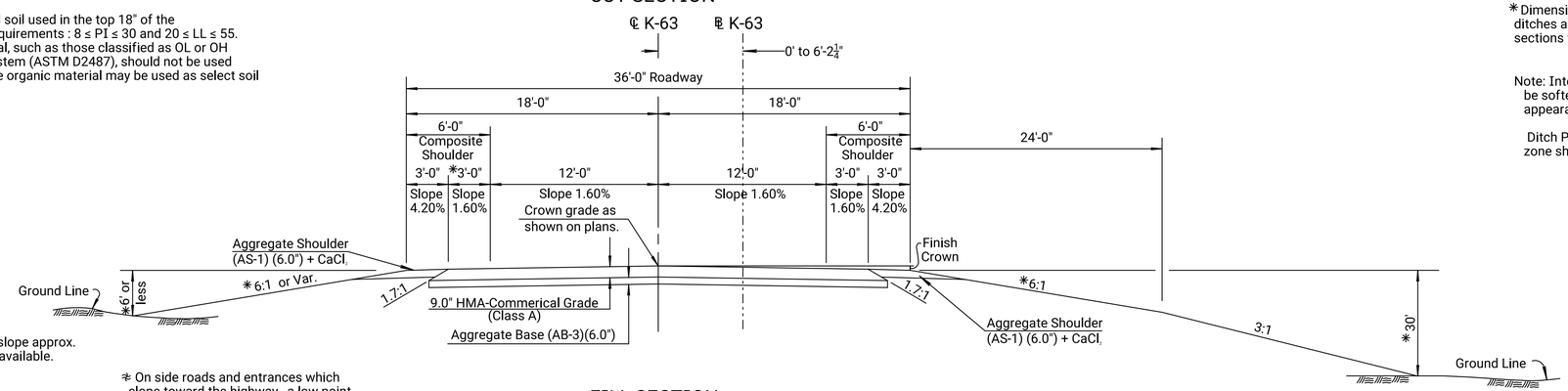
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	3	141

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

SOIL FOR EMBANKMENT CONSTRUCTION: All soil used in the top 18" of the embankment shall conform to the following requirements : 8 ≤ PI ≤ 30 and 20 ≤ LL ≤ 55. Soils which contain substantial organic material, such as those classified as OL or OH according to the Unified Soil Classificiation 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.

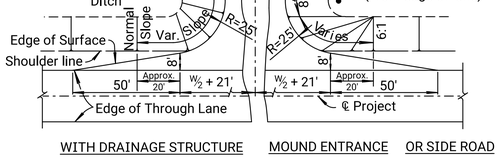


FILL SECTION

*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.

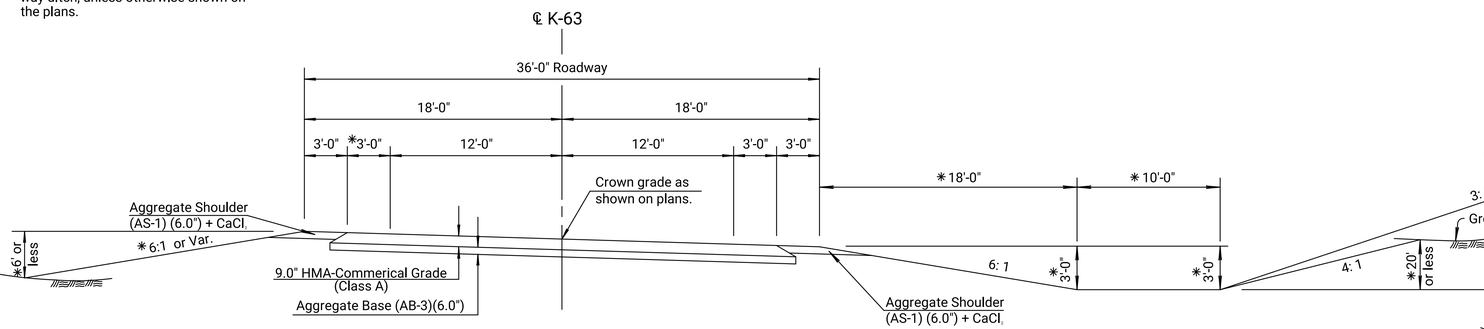


FLARE OF SHOULDERS
AT ENTRANCES AND SIDE ROADS

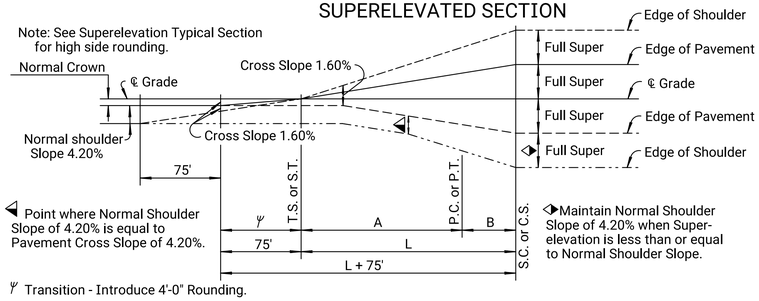
✡ Normal Slope (but not steeper than 6: 1) at approximate ℄ Structure or appropriate clear zone width.

△ 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) over 10' fill height.

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

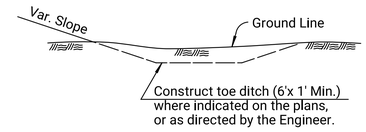


SUPERELEVATED SECTION



Ψ Transition - Introduce 4'-0" Rounding.

PROFILE SHOWING METHOD OF ATTAINING SUPERELEVATION



Sta. P.I. Curve	Radius	Design Speed	Super %	Transition - (Lin.Ft.) L	A	B
℄ K-63 Sta. 75+15.35 (Bk.)	5,500.00'	60	3.0	See Superelevation Diagram Sh. No. 16		

NO.	DATE	REVISIONS	BY	APP'D
21	01-25-13	Removed Slope, Pvmt. Edge	S.W.K.	J.O.B.
20	05-20-09	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.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION GRADING & SURFACING

~~RD600~~

FHWA APPROVAL	05-21-13	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. W.L.H.

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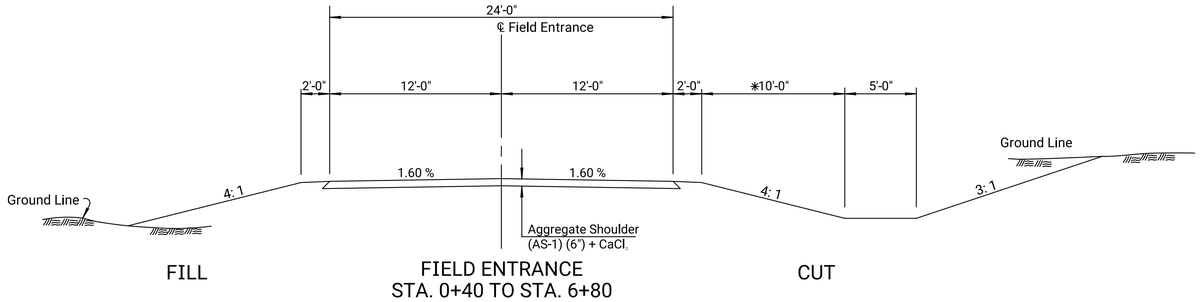
Sh. No. 3

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:32
File : KA572901rts-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	4	141

Guide to designer: Use this sheet when subgrading in rock or shale is required.
See Soils and Geology Reports for additional plan notes.



FILL

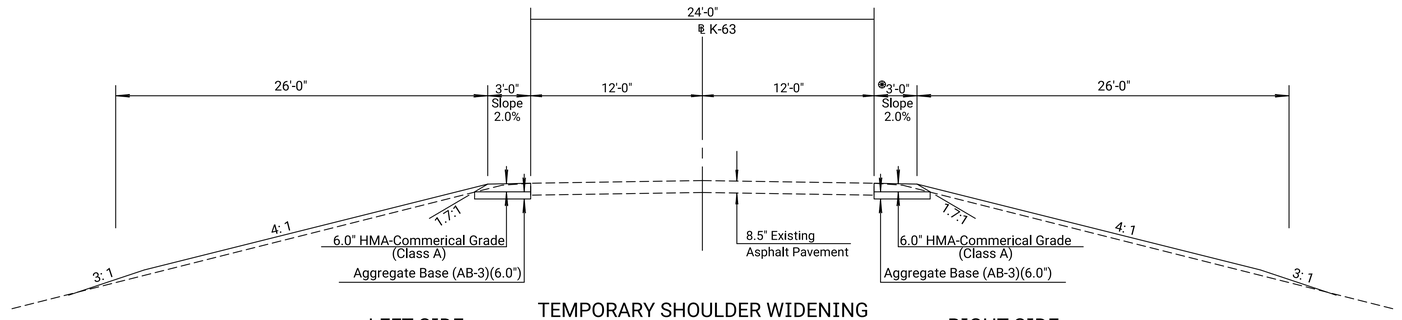
FIELD ENTRANCE
STA. 0+40 TO STA. 6+80

CUT

✳ 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.

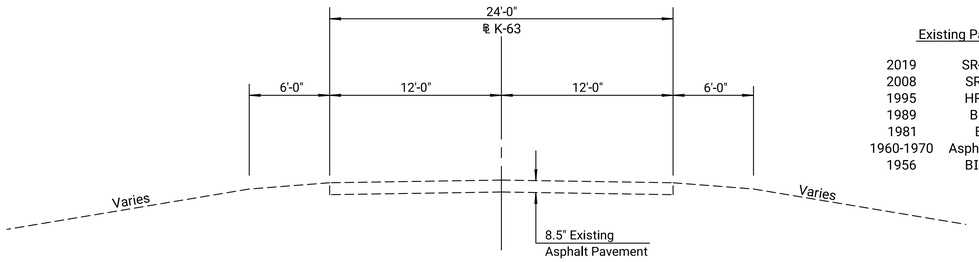


TEMPORARY SHOULDER WIDENING

LEFT SIDE
STA. 46+00 TO STA. 49+00
STA. 84+98.44 TO STA. 88+00

RIGHT SIDE
STA. 47+00 TO STA. 60+00
STA. 65+00 TO STA. 87+00

✱ Varies from 3'-0" to 5'-0"
See Sh. No. 102



EXISTING SECTION

Existing Pavement History

2019	SR-12.5A	1.5"x24'
2008	SRECYL	1.0"x24'
1995	HRECYL	2.0"x24'
1989	BM-2B	0.5"x24'
1981	BM-1	1.5"x26'
1960-1970	Asphalt Seals	1.0"x26'
1956	BITCOV	1.0"x26'

NO.	DATE	REVISIONS	BY	APP'D
26	11-10-04	Changed slope labels to percent	S.W.K.	J.O.B.
25	05-10-00	Rev. Ditch Plug Slope 10:1	R.J.S.	J.O.B.
24	02-13-98	Rev. sd.rd.& ent. det. & fill foreslope	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS FIELD ENTRANCE & TEMPORARY WIDENING

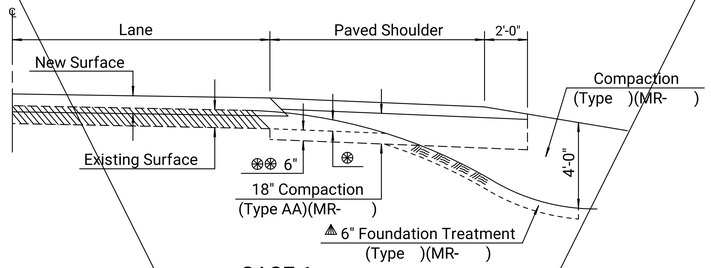
~~RD602~~

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

CADconform Certify This File

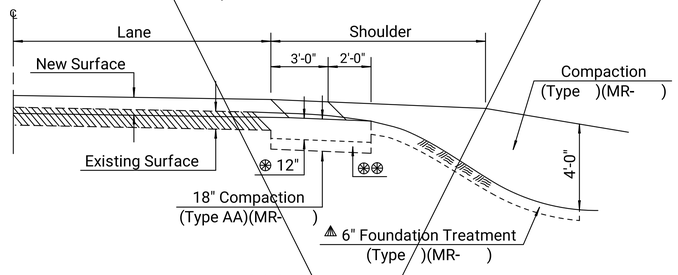
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	5	141

REHABILITATION



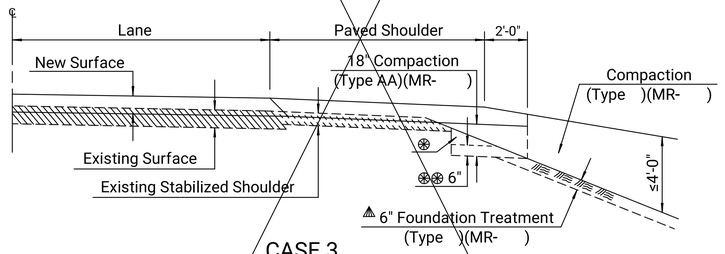
CASE 1

Overlay with Paved Shoulder



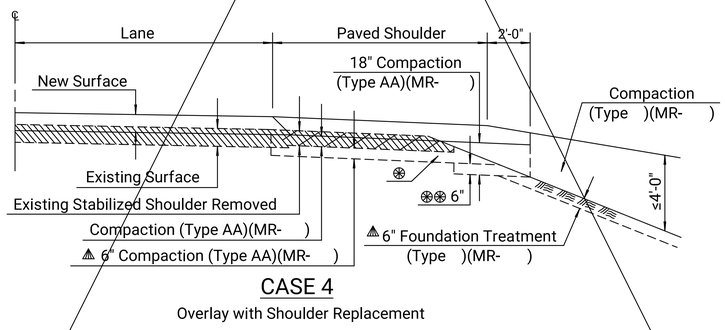
CASE 2

Overlay with Composite Shoulder



CASE 3

Overlay with Existing Paved Shoulder



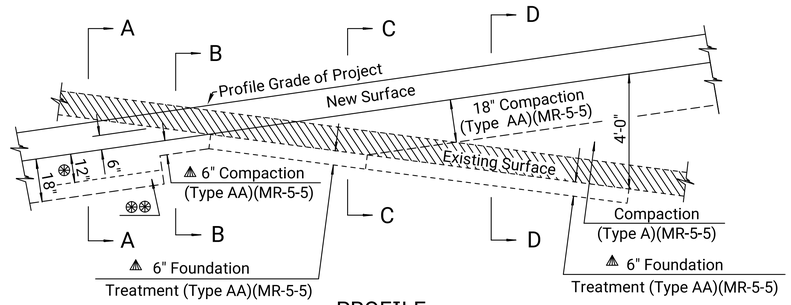
CASE 4

Overlay with Shoulder Replacement

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

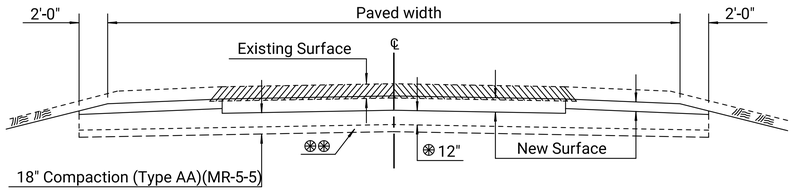
Note: These are 4 general cases. Specific compaction requirements are determined on a project-by-project basis.

RECONSTRUCTION

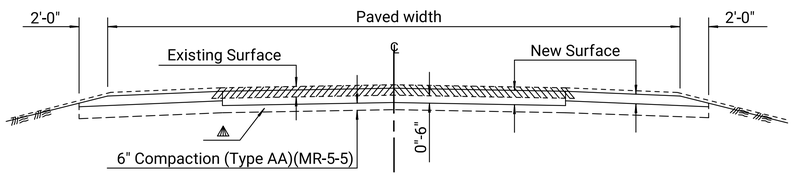


PROFILE

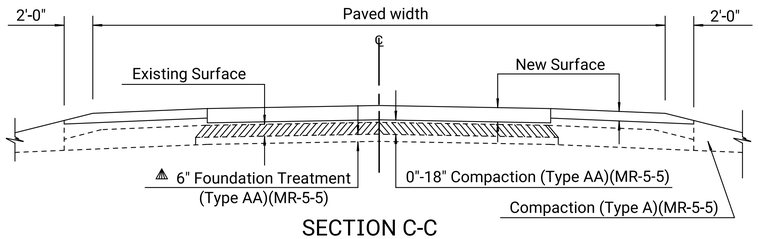
⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



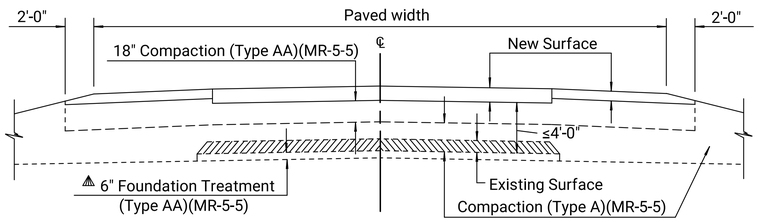
SECTION A-A



SECTION B-B

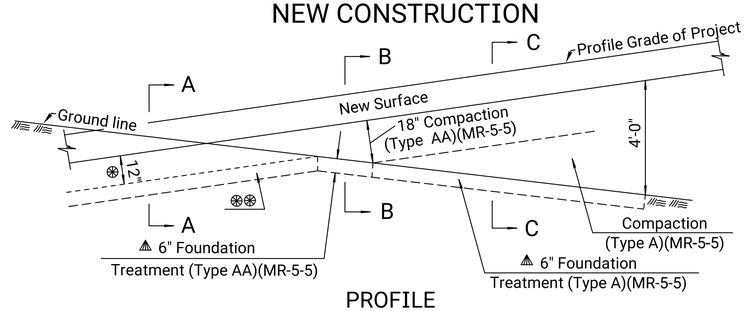


SECTION C-C



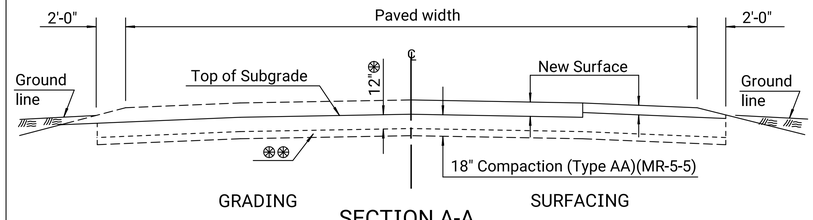
SECTION D-D

NEW CONSTRUCTION

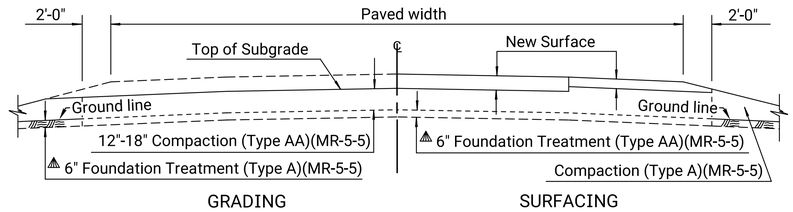


PROFILE

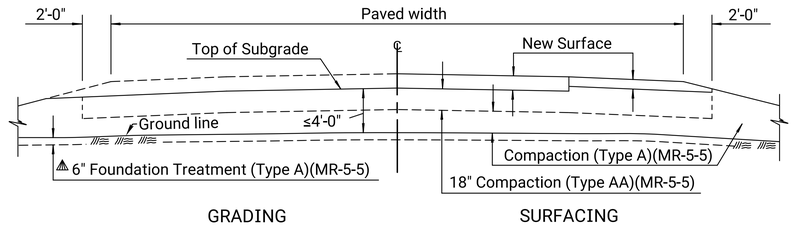
⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



SECTION A-A



SECTION B-B



SECTION C-C

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.

NO.	DATE	REVISIONS	BY	APP'D
05	10-17-11	Revised General Note	S.W.K.	J.O.B.
04	01-05-10	Added additional subsidiary comp.	S.W.K.	J.O.B.
03	02-16-05	Redrawn, Rev. Recon. Sec. C-C & D-D	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FOUNDATION TREATMENT & COMPACTION OF EARTHWORK

~~RD605~~

FHWA APPROVAL	12-05-11	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

CADconform Certify This File

Sh. No. 5

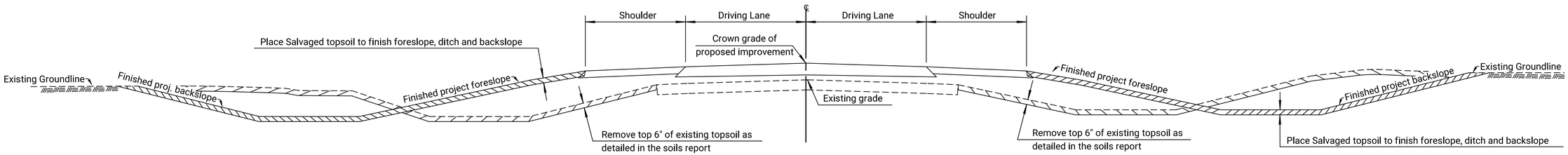
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	6	141

GENERAL NOTE

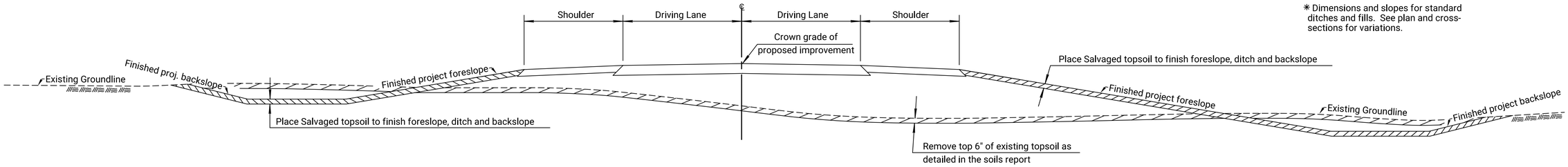
Adjust the cut and fill sections to accommodate the placement of the salvaged topsoil such that after placement the cross section will be at the final grade as shown on the plans.

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.

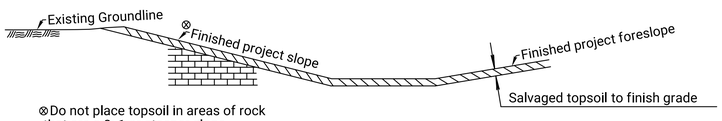
LEGEND

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. 6

KDOT Graphics Certified

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.

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:30
File : KA572901rss599a-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	7	141

GENERAL NOTE

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

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

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

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.

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.

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

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

WHERE EASEMENTS ARE SHOWN ON RAILROAD RIGHT OF WAY, THE CONTRACTOR SHALL BE REQUIRED TO WORK AROUND AND NOT DISTURB THE RAILROAD COMMUNICATION OR SIGNAL POLES OR LINES.

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 UNSIGHTLY APPEARANCE WILL NOT BE APPROVED.

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

ALL SAWCUTS 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 ON THE CONTRACT.

A GROSS VMF 0F 0.82 WAS USED TO COMPUTE EARTHWORK QUANTITIES FOR THIS PROJECT. THIS FACTOR INCLUDES QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT.

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

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

SOIL FOR EMBANKMENT CONSTRUCTION: ALL SOIL USED IN THE TOP 18" INCHES OF THE EMBANKMENT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: $8 \le PI \le 30$ 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.

KDOT WILL RETAIN ALL MILLED MATERIAL FROM THE EXISTING AND TEMPORARY PAVEMENT. MILLINGS SHALL BE HAULED BY THE CONTRACTOR TO THE KDOT MIXING STRIP LOCATED ON K-63 APPROXIMATELY 1.6 MILES NORTH OF SENECA AS DIRECTED BY THE ENGINEER. TRANSPORTING OF THIS MATERIAL SHALL BE PAID FOR UNDER THE BID ITEM "TRANSPORTING SALVAGEABLE MATERIAL". TRANSPORTING THIS MATERIAL WILL BE FEDERALLY NON-PARTICIPATING.

KDOT WILL RETAIN ALL EXISTING GUARDRAIL AND SHALL BE LEFT ON SITE TO BE PICKED UP BY KDOT FORCES.

UTILITY OWNERS

T1 ATT (Fiber Optic Line)
(800) 778-9140

E1 Evergy (Overhead Power Lines)
(800) 778-9140

W1 Nemaha Co. RWD#3 (Water Line)
(785) 336-3522

F1 Blue Valley (Fiber Cable)
(785) 799-3311

KANSAS DEPARTMENT OF TRANSPORTATION

GENERAL NOTES &
UTILITY OWNERS

CADconform Certify This File

Sh. No. 7

CADconform Certify This File

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File : KA572901rgn-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	8	141

℄ PT Sta. 44+24.23
N 813,956.465 E 10,415,206.201
1. Found ½" rebar 0.3' deep
2. Spike & KDOT wshr. Top metal FCPO 2.2' NW
3. Conc. nail & KDOT wshr. N face power pole 68.6' WNW
4. TW of K-63 highway

℄ POT Sta. 57+00.00
N 815,220.447 E 10,415,033.154
1. Set ½" rebar 0.3' deep
2. 1/2" rebar w/KDOT cap (TP 100) 31.0' SW
3. Mag nail & KDOT wshr. S face power pole 83.5' NW
4. TW of K-63 highway 0.3' E

℄ PC Sta. 66+51.38
N 816,163.030 E 10,414,904.109
1. Found ½" rebar
2. Conc. nail & KDOT wshr. N face power pole 148.7' W
3. ℄ top N end CMP 173.8' SW
4. TW K-63 highway 0.3' E

℄ POC Sta. 75+00.00
N 817,009.250 E 10,414,851.572
1. Set ½" rebar 0.3' deep
2. Conc. nail & KDOT wshr. N face power pole 133.3' SW
3. ℄ top N end CMP 185.7' SSE
4. TW of K-63 highway 0.3' W

℄ PI Sta. (Bk.) = 75+34.89
℄ PI Sta. (Ahd.) = 75+21.08
Δ 17°31'55" (RT)
N 817,038.380 E 10,414,784.268
1. Found ½" rebar 0.3' deep
2. Conc. nail & KDOT wshr. N face power pole 118.0' SSW
3. Conc. nail & KDOT wshr. S face power pole 93.0' NNW
4. TW of K-63 highway 73.4' ESE

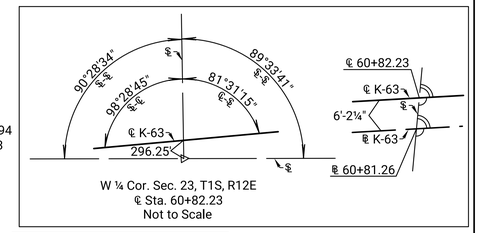
Traverse Point #100
N 815,193.178 E 10,415,018.175
1. Set ½" rebar w/ KDOT cap, flush
2. 18.54' Lt. of ℄ Sta. 56+75.01

Traverse Point #101
N 815,616.682 E 10,414,960.438
1. Set ½" rebar w/ KDOT cap, flush
2. 18.30' Lt. of ℄ Sta. 61+02.44

Traverse Point #102
N 815,917.806 E 10,414,955.584
1. Set ½" rebar w/ KDOT cap, flush
2. 17.74' Rt. of ℄ Sta. 64+01.44

Traverse Point #103
N 816,339.888 E 10,414,863.508
1. Set ½" rebar w/ KDOT cap, flush
2. 19.08' Lt. of ℄ Sta. 68+31.54

Traverse Point #104
N 817,491.122 E 10,414,856.283
1. Set ½" rebar w/ KDOT cap, flush
2. 21.32' Lt. of ℄ Sta. 79+80.67



℄ POT Sta. 47+00.00
N 814,229.689 E 10,415,168.795
1. = ℄ Sta. 47+00.00
2. Nothing Set

℄ PC Sta. 54+58.28
N 814,980.964 E 10,415,065.941
1. = ℄ Sta. 54+58.28
2. Nothing Set

℄ PI Sta. (Bk.) = 55+91.66
℄ PI Sta. (Ahd.) = 55+91.66
Δ = 01°19'45" (LT)
N 815,113.116 E 10,415,047.848
1. = ℄ Sta. 55+91.66
2. Nothing Set

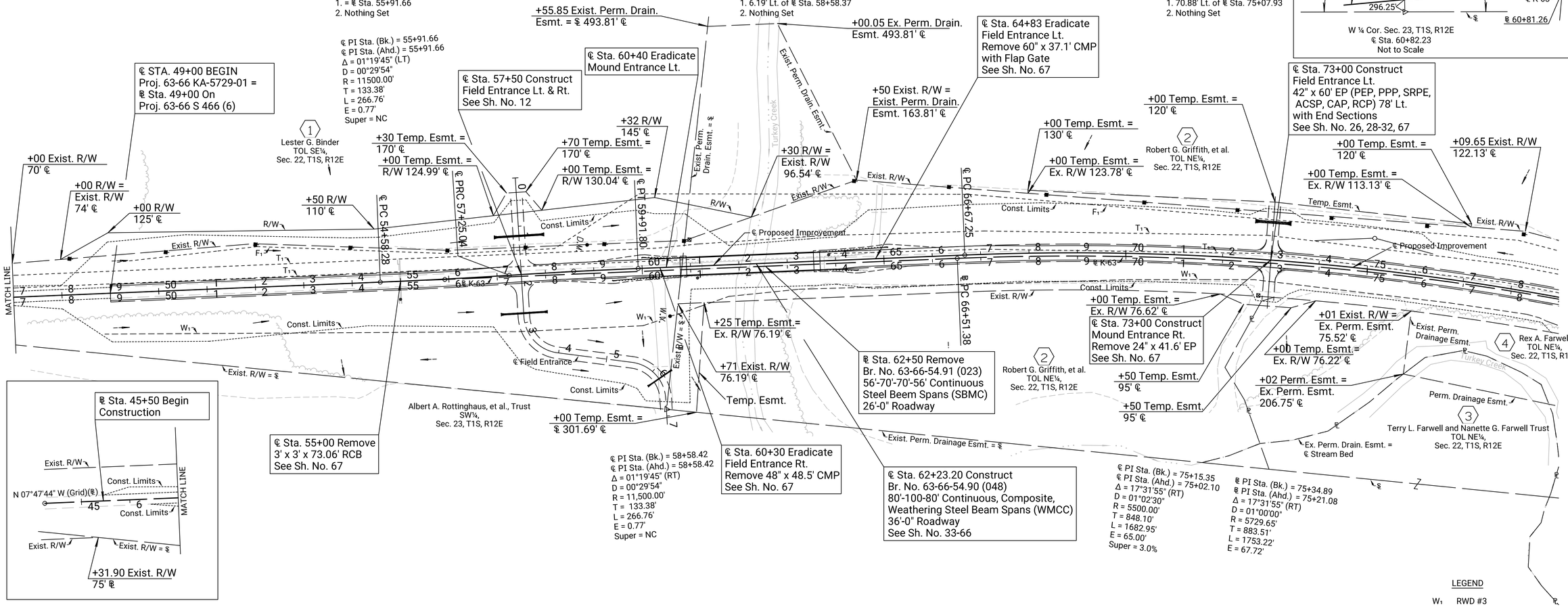
℄ PRC Sta. 57+25.04
N 815,244.813 E 10,415,026.696
1. 3.09' Lt. of ℄ Sta. 57+25.02
2. Nothing Set

℄ PI Sta. (Bk.) = 58+58.42
℄ PI Sta. (Ahd.) = 58+58.42
Δ 01°19'45" (RT)
N 815,376.510 E 10,415,005.543
1. 6.19' Lt. of ℄ Sta. 58+58.37
2. Nothing Set

℄ PT Sta. 59+91.80
N 815,508.662 E 10,414,987.451
1. 6.19' Lt. of ℄ Sta. 59+91.75
2. Nothing Set

℄ PC Sta. 66+67.25
N 816,177.871 E 10,414,895.832
1. 6.19' Lt. of ℄ Sta. 66+67.18
2. Nothing Set

℄ PI Sta. (Bk.) = 75+15.35
℄ PI Sta. (Ahd.) = 75+02.10
Δ 17°31'55" (RT)
N 817,018.136 E 10,414,780.794
1. 70.88' Lt. of ℄ Sta. 75+07.93
2. Nothing Set



LEGEND

W₁	RWD #3
F₁	Blue Valley
T₁	AT&T
E₁	Evergy

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

PROJECT SURVEY CONTROL

HORIZONTAL PROJECT DATUM
NAD83 (2011) KRCS Zone 13 Atchison

VERTICAL DATUM
North American Vertical Datum NAVD88 (Geoid 12A)

S ¼ Cor. Sec. 22, T1S, R12E
N 812,987.906 E 10,412,622.220
1. Found ½" bar with cap marked "LS1314", 0.5' deep
2. 2,344.20' Lt of ℄ Tan. Sta. 87+30.72 NW∠= 98°-57'-07"
3. Spk. & wshr. top of fence post 26.5' SE
4. Spk. & wshr. top of cor. post 23.4' SSW
5. TW of 208th road 3.0' N

SW Cor. Sec. 23, T1S, R12E
N 812,958.014 E 10,415,261.868
1. Found ½" rebar with KDOT cap, 0.3' deep
2. 5.0' Rt of ℄ Tan. Sta. 34+23.42 NW∠= 90°-03'-20"
3. SW cor. W hub guard RCB 78.5' NW
4. Center of conc. R/W marker post 93.4' SW
5. TW of K-63 highway 4.4' W

Center Cor. Sec. 22, T1S, R12E
N 815,626.190 E 10,412,633.544
1. Found ½" bar with cap marked "APT LS1314", 0.3' deep
2. 2,348.06' Lt of ℄ Tan. Sta. 60+81.26 NW∠= 81°-31'-15"
3. Spk. & wshr. top of cor. post 5.2' NE
4. Spk. & wshr. top of brace post 4.5' NW
5. Fence to W 3.0' N

W ¼ Cor. Sec. 23, T1S, R12E
N 815,594.726 E 10,415,271.408
1. Found 3" x 12" limestone with ½" square bar on N side, 0.5' deep
2. 289.99' Rt of ℄ Tan. Sta. 60+81.26 NW∠= 81°-31'-15"
3. R/W T post at ground 15.4' S
4. Center S end CMP 92.2' SW
5. TW of K-63 highway 290.5' W

N ¼ Cor. Sec. 22, T1S, R12E
N 818,262.686 E 10,412,644.860
1. Found ½" bar with cap marked "APT LS1314", 0.1' deep
2. Spk. & wshr. top of S brace post 29.0' NNW
3. Top of water valve extending 2.5' above grade 69.1' NW
4. Top of water hydrent 80.0' WNW
5. In TW of 216th road

B.M. #11 Rivet top E hdwl. RCP
37.2' Rt. of ℄ Sta. 54+98.5 Elev. = 1,038.56'

B.M. #12 Square cut S end E hubguard of bridge
18.3' Rt. of ℄ Sta. 61+13.5 Elev. = 1,046.50'

B.M. #13 Square cut NW cor. W hubguard of bridge
18.3' Lt. of ℄ Sta. 63+86.3 Elev. = 1,046.54'

B.M. #14 RR spike E face of power pole
104.4' Lt. of ℄ Sta. 72+24.8 Elev. = 1,036.85'

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

STA. 44+24.23 TO STA. 79+00

BY	DATE
B. Andrews	6/2022
R. Bowman	6/2022
REFERENCES NOTED	
REFERENCES CHECKED	

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File : KA572901ref-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	9	141

Phase 1 Earthwork Balance (Temporary Widening) (Sta. 46+00 to Sta. 88+00)

Phase 2 Earthwork Balance (Sta. 49+00 Lt. to Sta. 85+00 Lt.)

Phase 3 Earthwork Balance (Sta. 49+00 Rt. to Sta. 85+00 Rt.)

Phase 1:
547 Cu. Yds. Common Excavation (V.M.F.= 0.82)
1,149 Cu. Yds. Common Excavation (Contractor Furnished)(V.M.F.= 0.82)
1,391 Cu. Yds. Embankment

Phase 2:
10,391 Cu. Yds. Common Excavation (V.M.F.= 0.82)
13,325 Cu. Yds. Common Excavation (Contractor Furnished)(V.M.F.= 0.82)
19,448 Cu. Yds. Embankment

Includes:
737 Cu. Yds. from Field Entrance Lt.

Phase 3:
12,239 Cu. Yds. Common Excavation (V.M.F.= 0.82)
2,829 Cu. Yds. Common Excavation (Contractor Furnished)(V.M.F.= 0.82)
12,355 Cu. Yds. Embankment

Includes
1,850 Cu. Yds. from Field Entrance Rt.
707 Cu. Yds. from Field Entrance Rt.
2,097 Cu. Yds. from Ditch Realignment
500 Cu. Yds. from Ditch Realignment

800' VC
K= 143

℄ Crown Grade Improvement

EWS 60+91.80
EL 1052.13

EWS 63+54.80
EL 1052.64

+0.65%

-0.25%

-4.92%

+0.65%

1051.50
+00 Lt.

1050.00
+00 Rt.

-5.10% Sp Dit Rt

-1.64% Sp Dit Lt

1039.27
+60 Lt.

1039.85
+00 Rt.

800' VC
SSD: 1603.3'
K= 889

HHW El.=1,047.60

DHW El.=1,044.81

Existing Ground Line

-0.65% Sp Dit Rt

-0.67% Sp Dit Lt

OHW El.=1,032.00

+1.80% Sp Dit Lt

+0.26% Sp Dit Lt

+0.16% Sp Dit Lt

1033.00
+50 Rt.

1032.00
+50 Lt.

1034.00
+75 Lt.

1034.45
+00 Lt.

1035.90
+50 Lt.

1036.80
+00 Lt.

Sta. 54+98.11
Remove Existing 3' x 3' x 73.06' RCB
Cr. Gr. = 1049.66
Ex. ℄ Lt. = 1039.21
Ex. ℄ Rt. = 1039.37

Exist. Streambed Profile

Prop. Bridge

10' x Sp. Ditch Lt.

10' x Sp. Ditch Rt.

Exist. Ditch Lt.

No Ditch Rt.

10' x Sp. Ditch Lt.

Ex. Ditch Lt.

PC. 49+00.00
EL 1067.19 Match Existing

PI. 53+00.00
EL 1047.51

PT. 57+00.00
EL 1050.11

PC. 58+00.00
EL 1050.76

PI. 62+00.00
EL 1053.36

PT. 66+00.00
EL 1052.37

1067.19 1062.62 1058.74 1055.56 1053.08 1051.29 1050.20 1049.81 1050.11 1050.76 1051.35 1051.84 1052.20 1052.46 1052.61 1052.64 1052.56 1052.37 1052.13 1051.88 1051.63 1051.38 1051.14 1050.89 1050.64 1050.40 1050.15 1049.90 1049.66 1049.41

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 19:04
File : KA5729001ref-01.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 47+00 TO STA. 79+00

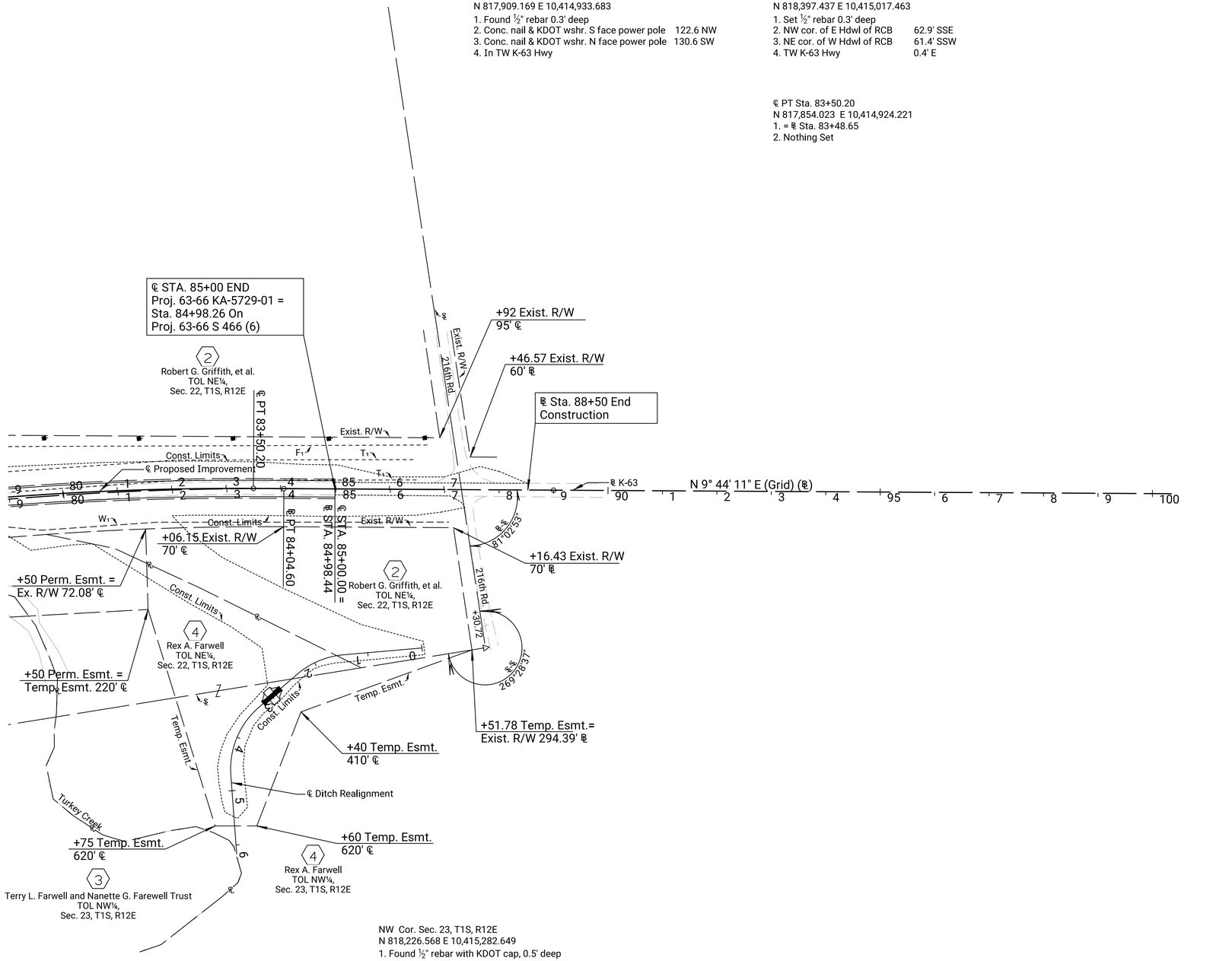
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	10	141

DATE	BY	
6/2022	B. Andrews	REFERENCES NOTED
6/2022	R. Bowman	REFERENCES CHECKED

℄ PT Sta. 84+04.60
N 817,909.169 E 10,414,933.683
1. Found ½" rebar 0.3' deep
2. Conc. nail & KDOT wshr. S face power pole 122.6 NW
3. Conc. nail & KDOT wshr. N face power pole 130.6 SW
4. In TW K-63 Hwy

℄ POT Sta. 89+00.00
N 818,397.437 E 10,415,017.463
1. Set ½" rebar 0.3' deep
2. NW cor. of E Hdwl of RCB 62.9' SSE
3. NE cor. of W Hdwl of RCB 61.4' SSW
4. TW K-63 Hwy 0.4' E

℄ PT Sta. 83+50.20
N 817,854.023 E 10,414,924.221
1. = ℄ Sta. 83+48.65
2. Nothing Set



NW Cor. Sec. 23, T1S, R12E
N 818,226.568 E 10,415,282.649
1. Found ½" rebar with KDOT cap, 0.5' deep
2. 293.84' Rt of ℄ Tan. Sta. 87+30.72 NW∠= 98°-57'-07"
3. Center S end CMP 37.8' W
4. Center N end CMP 50.5' WNW
5. TW of K-63 highway 293.8' W

LEGEND

W_1	RWD #3
F_1	Blue Valley
T_1	AT&T
E_1	Evergy

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

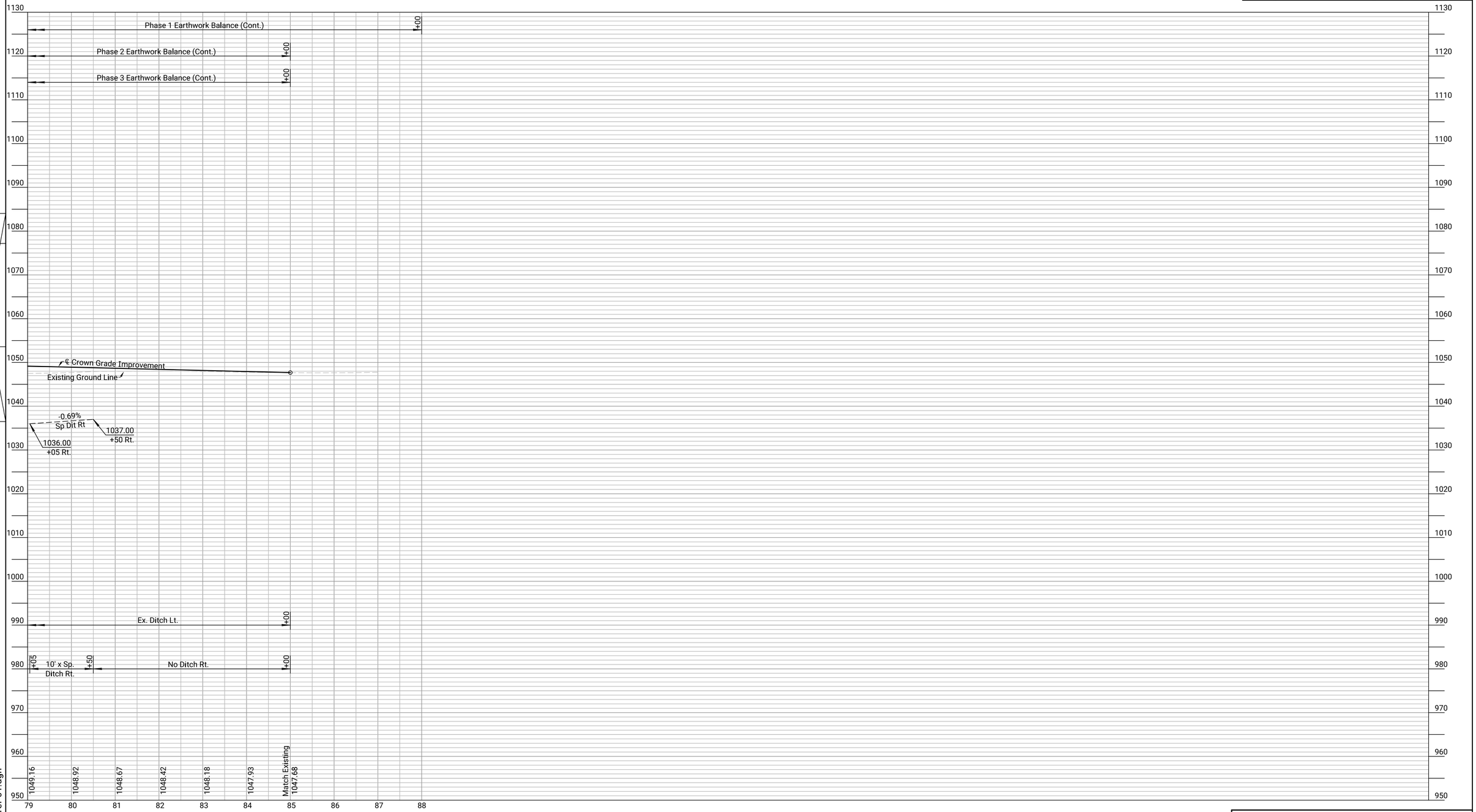
KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

STA. 79+00 TO STA. 87+00

Plotted by : Brogan.Andrews@ks.gov 15-JUL-2024 17:45
File : KA572901ref-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	11	141



DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

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File : KA572901ref-01.dgn

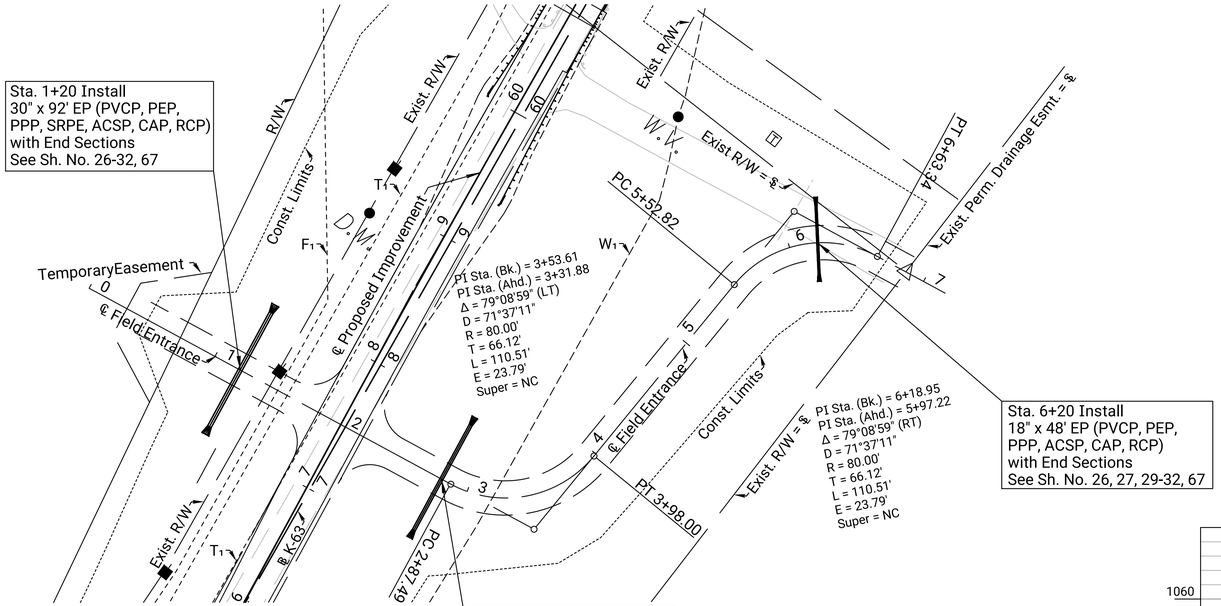
KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 79+00 TO STA. 88+00

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	12	141

DATE	BY	
6/2022	B. Andrews	REFERENCES NOTED
6/2022	J. Austin	REFERENCES CHECKED



LEGEND

W_1	RWD #3
F_1	Blue Valley
T_1	AT&T
E_1	Evergy

SCALE

50' 0 50' 100'

PLAN: Lat. & Long.

PROFILE: Horiz. same as above

Vert. 5' 0

℄ Field Entrance POT Sta. 0+00.00
N 815,238.17 E 10,414,825.23
1. 200' Lt. of ℄ K-63 Sta. 57+50
2. Nothing Set

℄ Field Entrance PC Sta. 2+87.49
N 815,283.15 E 10,415,109.18
1. 87.49' Rt. of ℄ K-63 Sta. 57+50
2. Nothing Set

℄ Field Entrance PI Sta. (Bk.) = 3+53.61
℄ Field Entrance PI Sta. (Ahd.) = 3+31.88
N 815,293.49 E 10,415,174.485
1. 153.60' Rt. of ℄ K-63 Sta. 57+50
2. Nothing Set

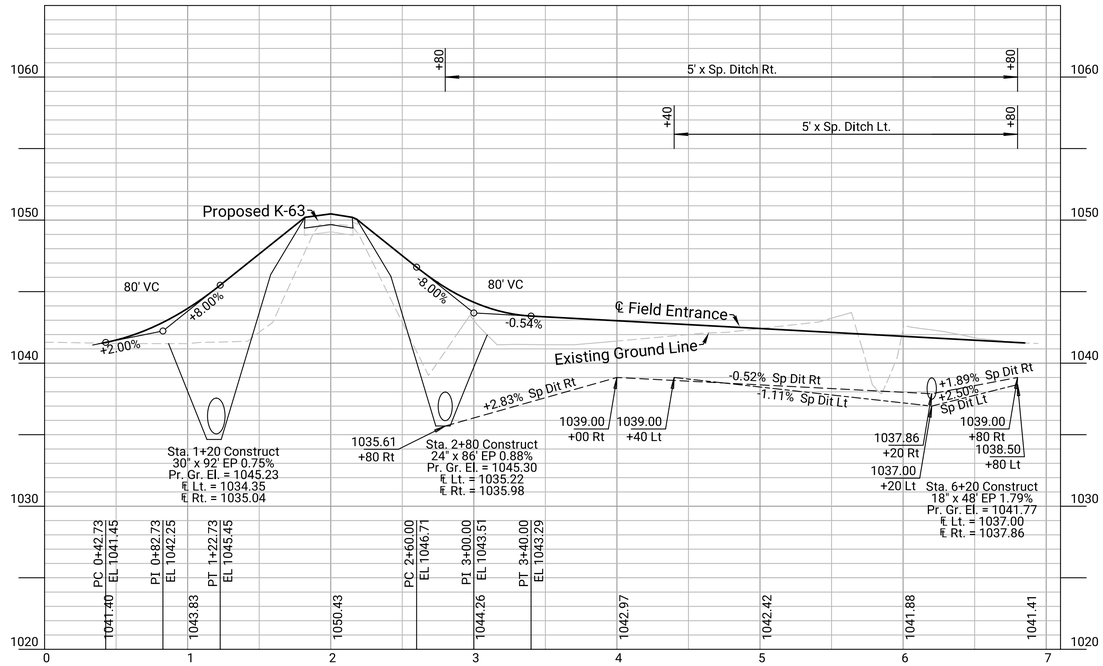
℄ Field Entrance PT Sta. 3+98.00
N 815,359.58 E 10,415,176.62
1. 165.87' Rt. of ℄ K-63 Sta. 58+15.89
2. Nothing Set

℄ Field Entrance PC Sta. 5+52.82
N 815,514.32 E 10,415,181.62
1. 193.12' Rt. of ℄ K-63 Sta. 59+70.71
2. Nothing Set

℄ Field Entrance PI Sta. (Bk.) = 6+18.95
℄ Field Entrance PI Sta. (Ahd.) = 5+97.22
N 815,580.41 E 10,415,183.75
1. 204.22' Rt. of ℄ K-63 Sta. 60+36.25
2. Nothing Set

℄ Field Entrance PC Sta. 6+63.34
N 815,590.75 E 10,415,249.06
1. 270.33'' Rt. of ℄ K-63 Sta. 60+37.65
2. Nothing Set

℄ Field Entrance POT Sta. 7+17.22
N 815,599.18 E 10,415,302.27
1. 324.19' Rt. of ℄ K-63 Sta. 60+38.78
2. Nothing Set



KANSAS DEPARTMENT OF TRANSPORTATION

FIELD ENTRANCE

PLAN AND PROFILE

Sh. No. 12

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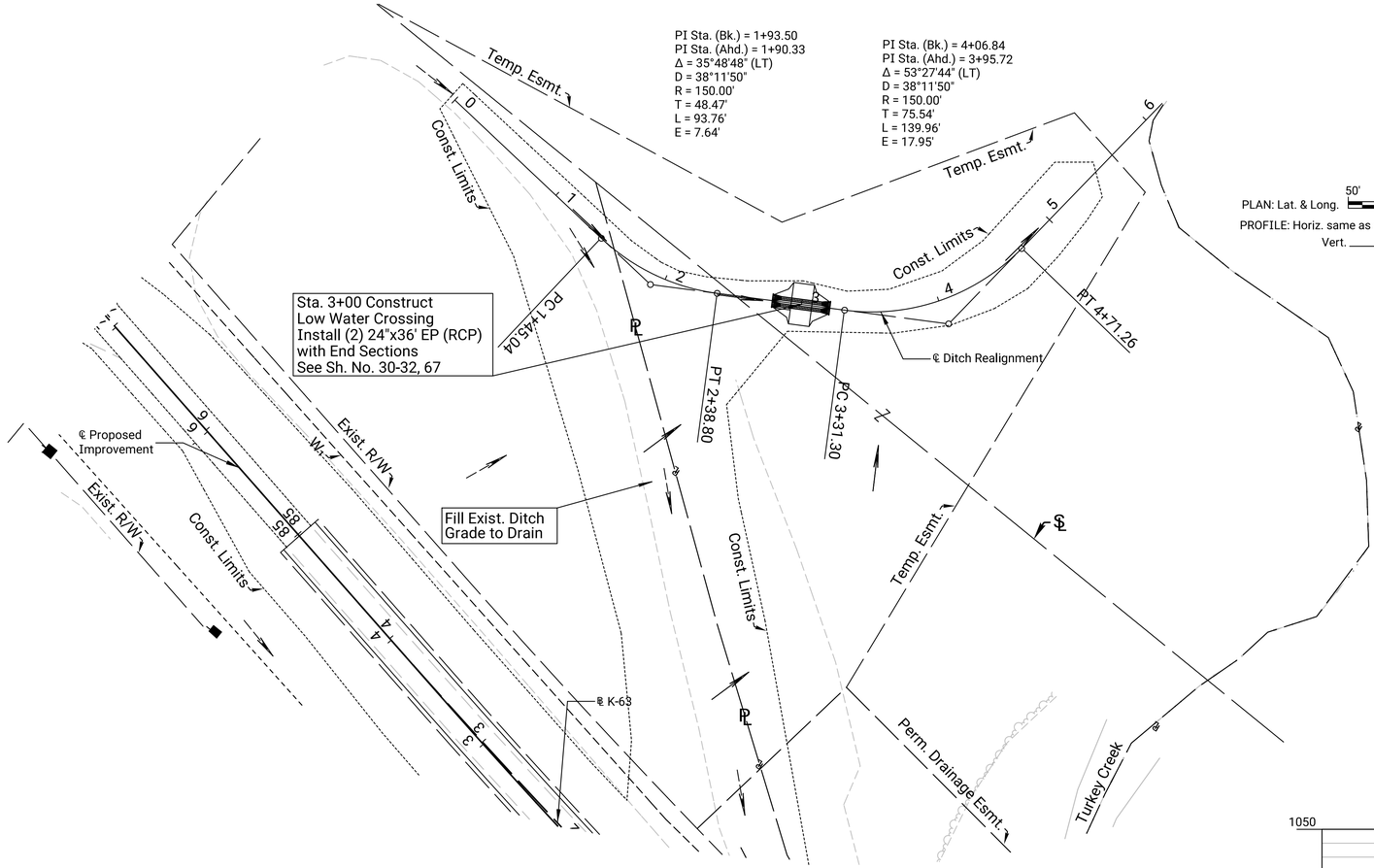
File : KA572901ref-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	13	141

DATE	BY	
4/2023	B. Andrews	REFERENCES NOTED
11/2023	R. Bowman	REFERENCES CHECKED



SCALE

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

PROFILE: Horiz. same as above

Vert. 0 5

Ditch Realignment POT Sta. 0+00.00
N 818,160.916 E 10,414,976.879
1. 291.36' Rt. of ℄ K-63 Sta. 86+61.58
2. Nothing Set

Ditch Realignment PI Sta. (Bk.) = 1+93.50
Ditch Realignment PI Sta. (Ahd.) = 1+90.33
N 817,971.015 E 10,414,944.295
1. 309.24' Rt. of ℄ K-63 Sta. 84+68.90
2. Nothing Set

Ditch Realignment PC Sta. 3+31.30
N 817,866.336 E 10,414,926.333
1. 401.94' Rt. of ℄ K-63 Sta. 83+62.69
2. Nothing Set

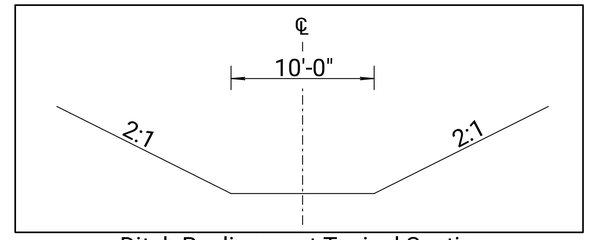
Ditch Realignment PT Sta. 4+71.26
N 817,812.146 E 10,414,917.201
1. 526.77' Rt. of ℄ K-63 Sta. 83+07.74
2. Nothing Set

Ditch Realignment PC Sta. 1+45.04
N 818,018.580 E 10,414,952.456
1. 304.76' Rt. of ℄ K-63 Sta. 85+17.16
2. Nothing Set

Ditch Realignment PT Sta. 2+38.80
N 817,935.025 E 10,414,938.119
1. 341.11' Rt. of ℄ K-63 Sta. 84+32.39
2. Nothing Set

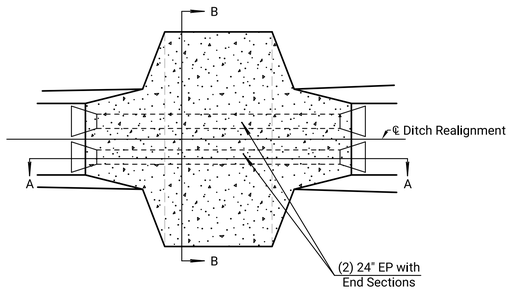
Ditch Realignment PI Sta. (Bk.) = 4+06.84
Ditch Realignment PI Sta. (Ahd.) = 3+95.72
N 817,806.290 E 10,414,916.246
1. 451.42' Rt. of ℄ K-63 Sta. 83+01.81
2. Nothing Set

Ditch Realignment POT Sta. 6+16.60
N 817,823.923 E 10,414,919.142
1. 671.72' Rt. of ℄ K-63 Sta. 83+19.67
2. = ℄ Turkey Creek
3. Nothing Set

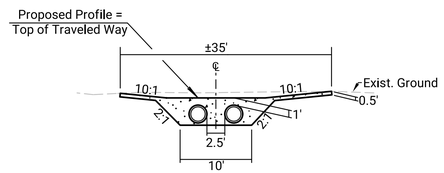


Ditch Realignment Typical Section
Not to Scale

PLAN VIEW

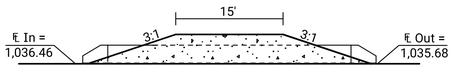


SECTION B-B



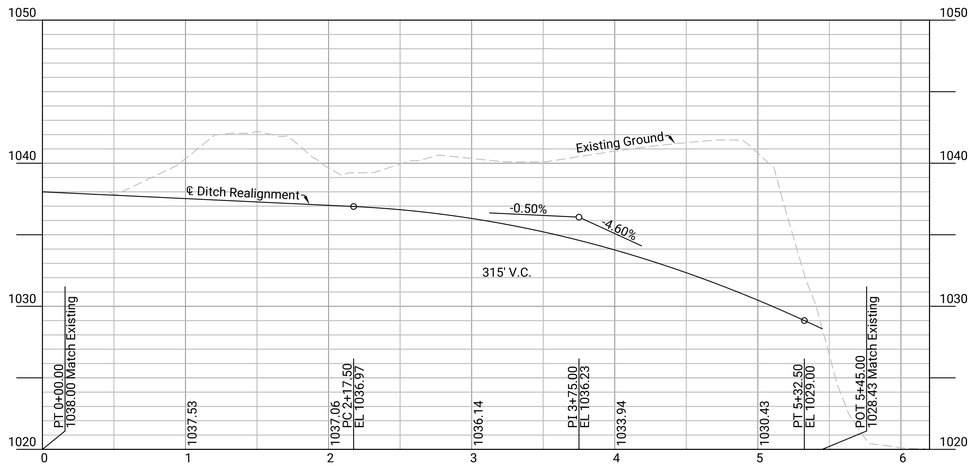
LEGEND

Concrete (Commercial Grade)



SECTION A-A

CONCRETE (COMMERCIAL GRADE)			
LOCATION	STA. TO STA.	CU. YD.	REMARKS
℄ Ditch Realignment	2+82 to 3+18	47.4	Low Water Crossing



KANSAS DEPARTMENT OF TRANSPORTATION

DITCH REALIGNMENT

PLAN AND PROFILE

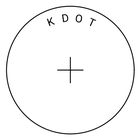
Sh. No. 13

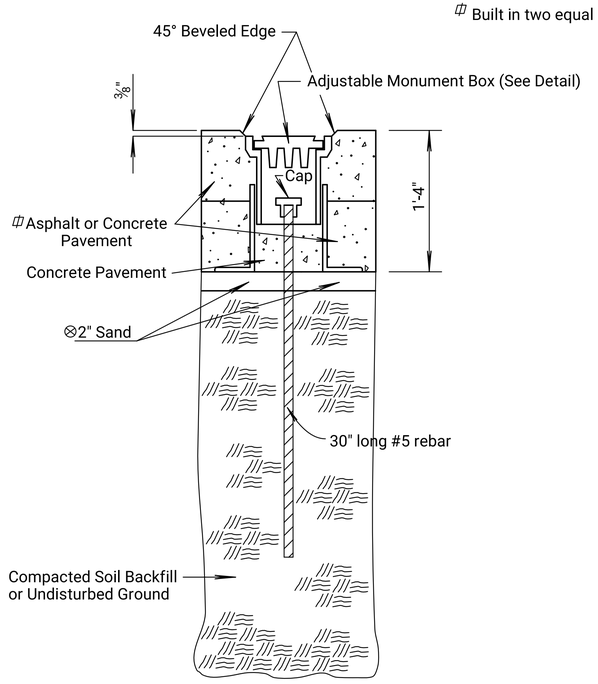
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:28
File : KA572901rco-05.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	14	141

EXHIBIT

2" DIA. PRE-STAMPED ALUMINUM CAPS

		
KDOT - DISTRICT 1	KDOT - DISTRICT 2	KDOT - DISTRICT 3
		
KDOT - DISTRICT 4	KDOT - DISTRICT 5	KDOT - DISTRICT 6
		
KDOT STATE SURVEY CREW BUREAU OF RIGHT OF WAY	SURVEY COMPANY WITH A VALID CORPORATION LICENSE	INDEPENDENT SURVEYOR OR SOLE PROPRIETOR COMPANY

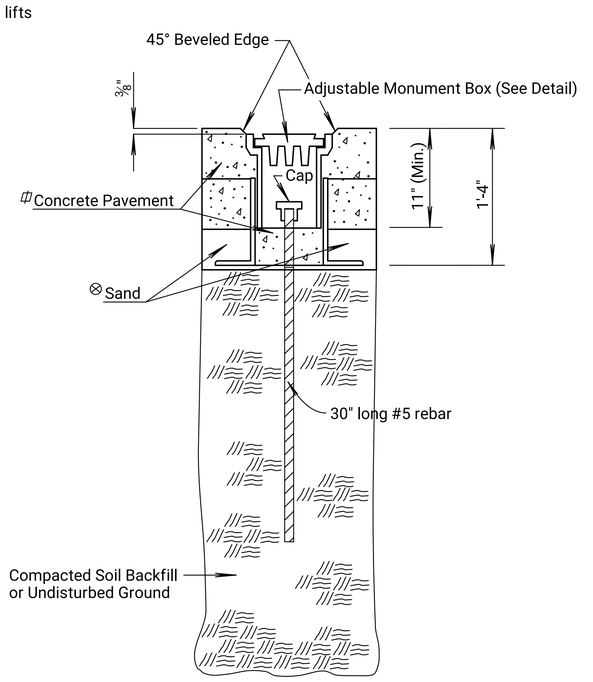


TYPE A-1

(Standard Land Corner Monument Box)

⊗ Hand tamp sand to achieve Type B compaction.

⧈ Built in two equal lifts



TYPE A-2

(Standard Land Corner Monument Box)

GENERAL NOTES

Use the proper identification cap for the party installing the monument, as shown on the exhibit.

Make all stampings, forgings, and impressions legible. The stampings, forgings, and impressions will properly identify the location of the monument within the Public Land Survey System (PLSS).

A "System of Marking" is available in the current "Manual of SURVEYING INSTRUCTION", which is published by the United States Department of the Interior, Bureau of Land Management.

Reset all PLSS corners in accordance with KDOT's Standard Specifications.

In addition to monumentation of the PLSS corner, the Engineer may direct or select specific locations for offset monumentation, as shown.

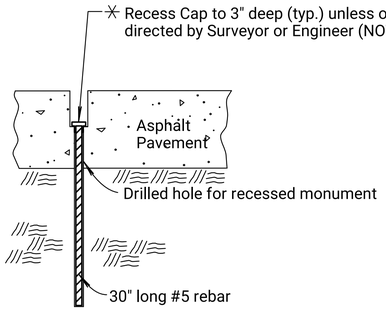
Use Type A-1 or Type A-2 monuments as directed by the Surveyor or the Engineer.

Type A monumentation may be used on a project as specified in the plans or as directed by the Engineer. Typically, Type A monuments are used on high traffic volume roadways, in urban areas, or as required by local governmental codes. Otherwise, use Types B-D monumentation. Avoid installing monument boxes in vehicle wheelpaths where practicable.

All work and materials required to install the Type A-1 and Type A-2 monument boxes will be paid under the bid item "Monument Box (Each)" and will be included in the plan quantities. All work and materials required to install Types B-D monumentation will be subsidiary to the bid item "Contractor Construction Staking (Lump Sum)". See KDOT's Standard Specifications for details.

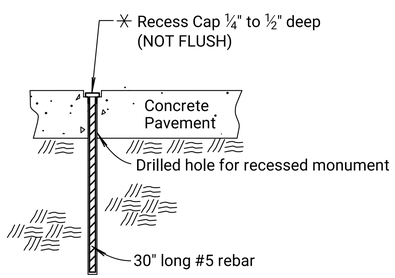
ADJUSTABLE MONUMENT BOX DETAIL

(Neenah R-1968 Type 36-B or approved equivalent)



Type B

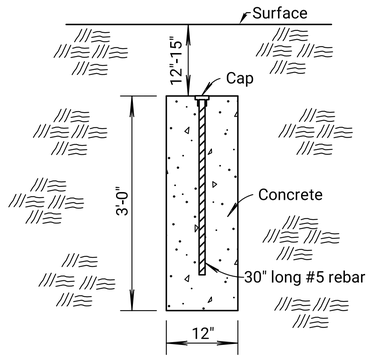
(Recessed Bar)



Type C

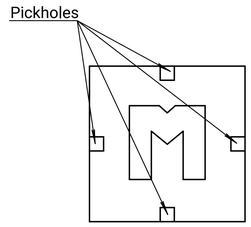
(Drilled Hole)

✳ No Surface Monuments Allowed in Pavement



Type D

(Shoulder/Ditch Subsurface Monument)



MONUMENT BOX LID (PLAN VIEW)

Not to Scale

NO.	DATE	REVISIONS	BY	APP'D
04	08-24-18	Rev. Det. Mon. Box AND Rev. Gen. Note	A.L.R.	T.T.R.
03	01-15-16	Add. Det., Retrofit & Rev. Gen. Note	T.T.R.	S.W.K.
02	10-17-13	Revised Detail, Recessed Bar	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SECTION CORNER MONUMENTATION DETAIL SHEET

RD990

FHWA APPROVAL		08-07-19	APP'D.	Scott W. King
DESIGNED	DETAILED		QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-18-2022 Sh. No. 14

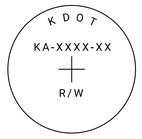
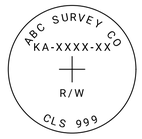
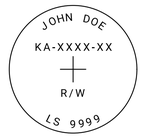
KDOT Graphics Certified

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:27
File : KA572901rss990-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	15	141

EXHIBIT

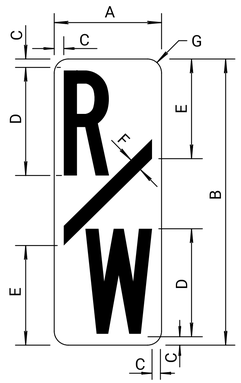
2" DIA. PRE-STAMPED ALUMINUM CAPS

		
KDOT - DISTRICT 1	KDOT - DISTRICT 2	KDOT - DISTRICT 3
		
KDOT - DISTRICT 4	KDOT - DISTRICT 5	KDOT - DISTRICT 6
		
KDOT STATE SURVEY CREW BUREAU OF RIGHT-OF-WAY	SURVEY COMPANY WITH A VALID CORPORATION LICENSE	INDEPENDENT SURVEYOR OR SOLE PROPRIETOR COMPANY

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

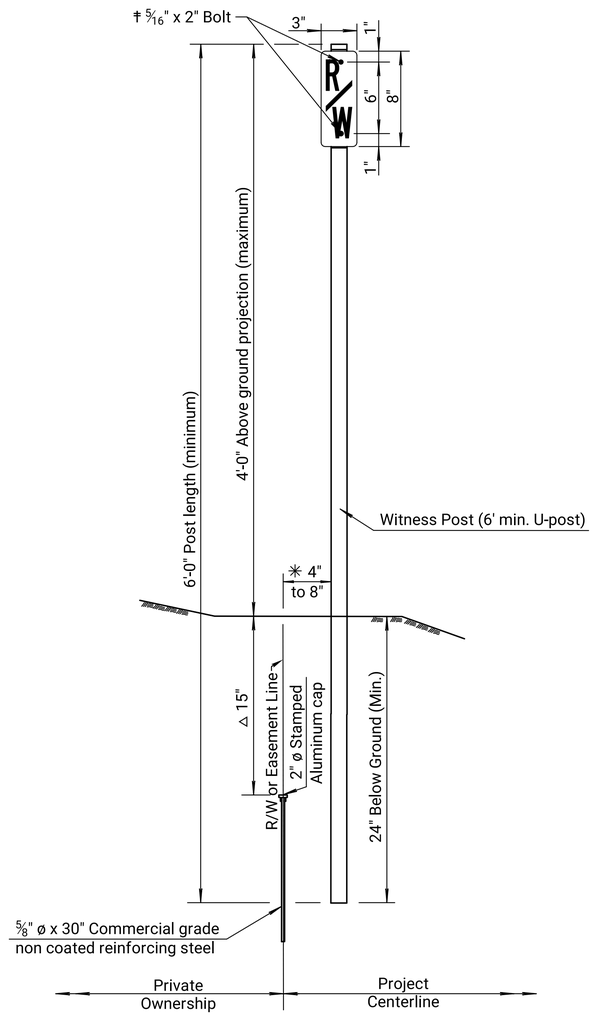


COLORS:

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

A	B	C	D	E	F	G
3"	8"	1/4"	3"	2 3/4"	3/8"	3/8"

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

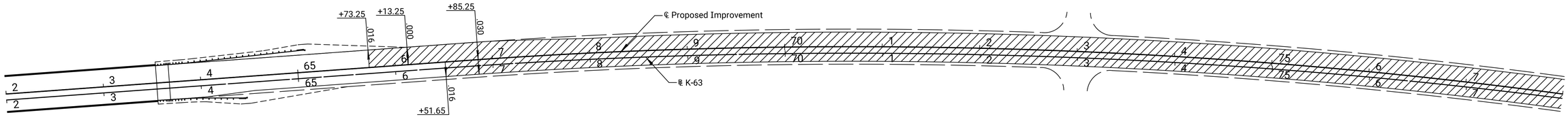
RD995

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

Sh. No. 15

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:29
File : KA572901rss995-01.dgn

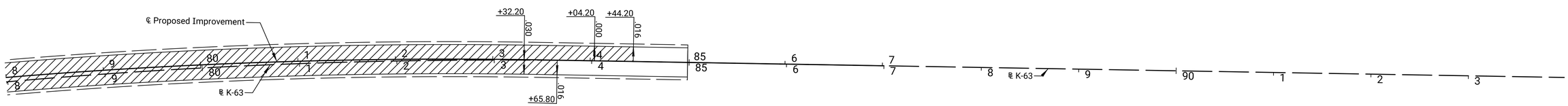
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	16	141



SCALE
PLAN: Lat. & Long. 100' 0 100' 200'

LEGEND

SUPERELEVATION TRANSITIOIN FT/FT



SCALE
PLAN: Lat. & Long. 100' 0 100' 200'

KANSAS DEPARTMENT OF TRANSPORTATION

SUPERELEVATION

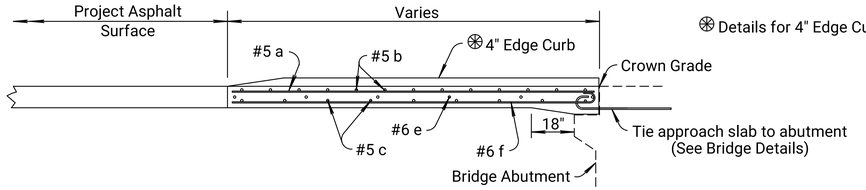
DETAIL

Sh. No. 16

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

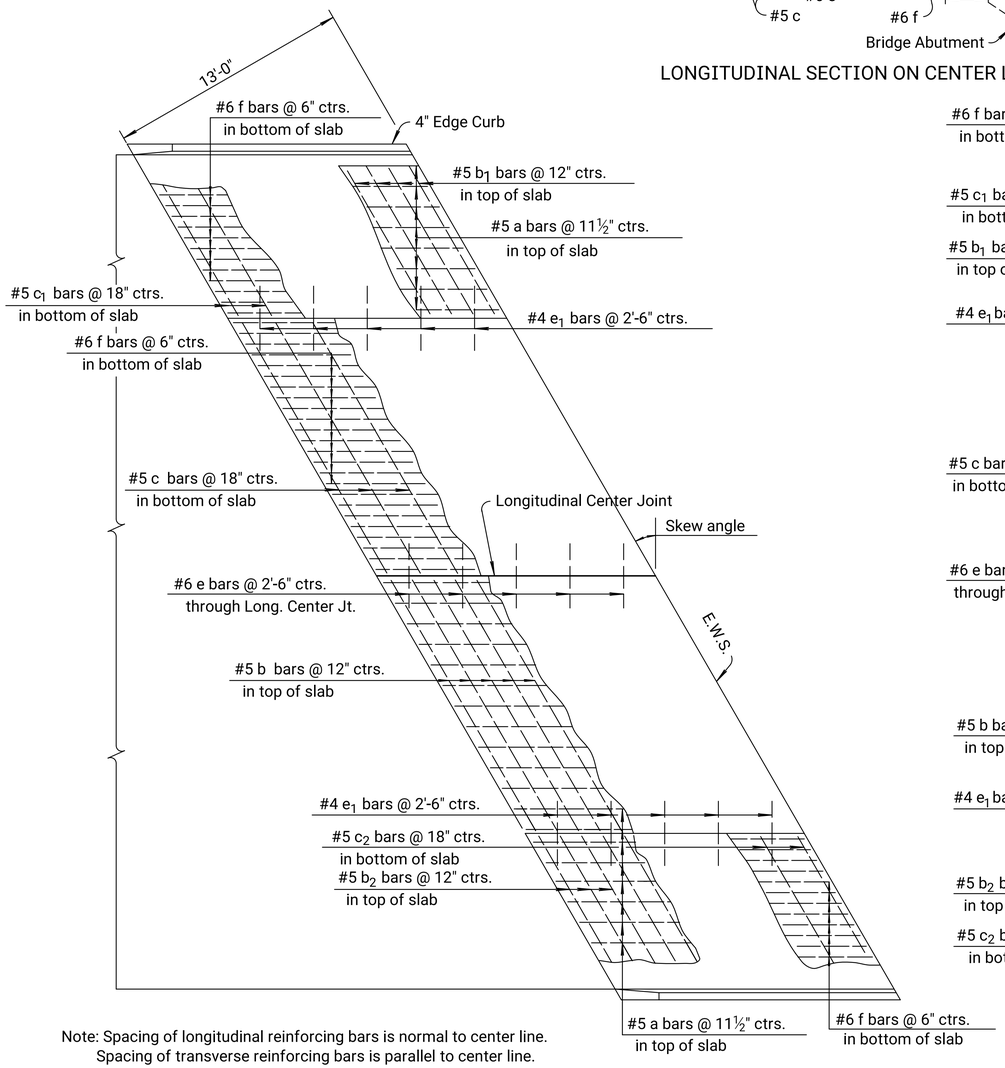
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:29
File : KA572901ref-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	17	141



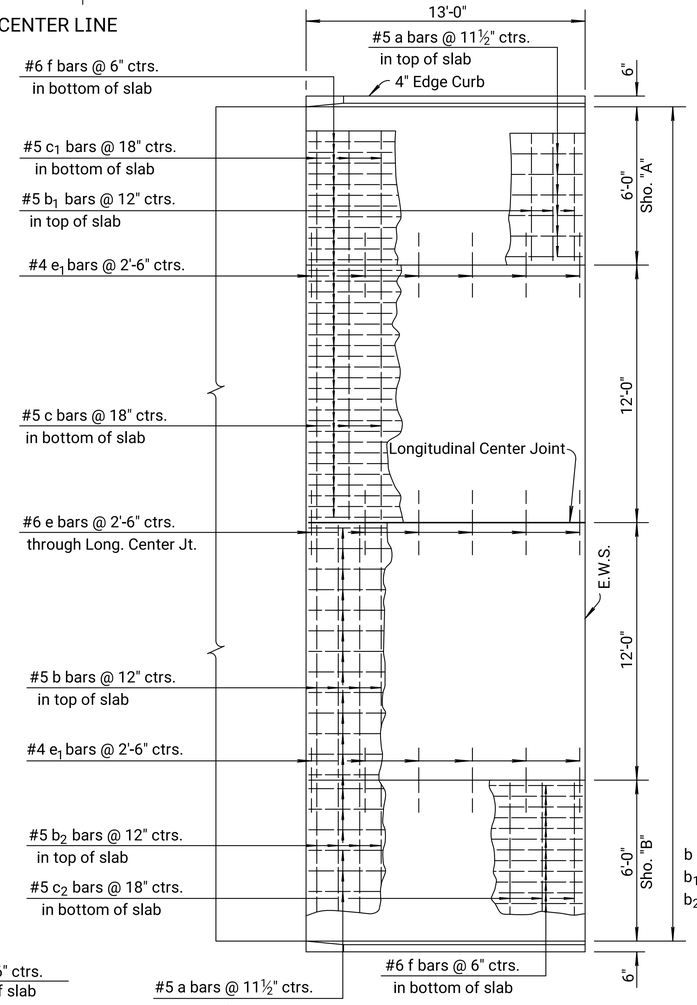
⊛ Details for 4" Edge Curb, See Standard Drawing RD711.

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.

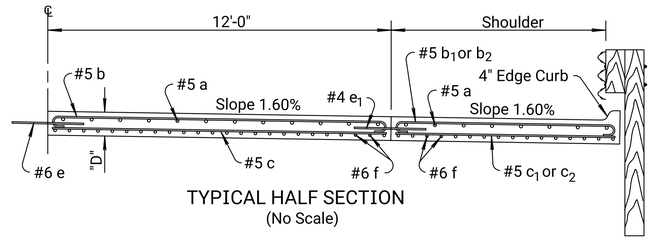
At the Contractor's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.

All reinforcing steel shall be epoxy coated.

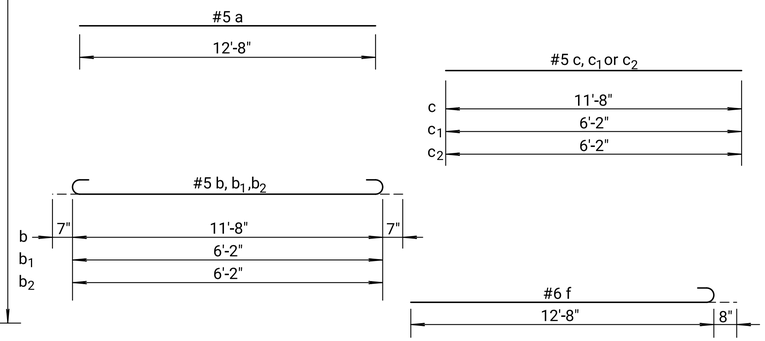
See Standard Drawing RD711 for details of joints and edge curb.

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~~

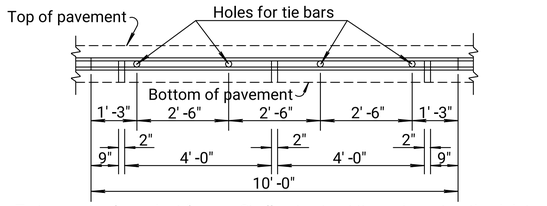
FHWA APPROVAL	06-09-09	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 17

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.

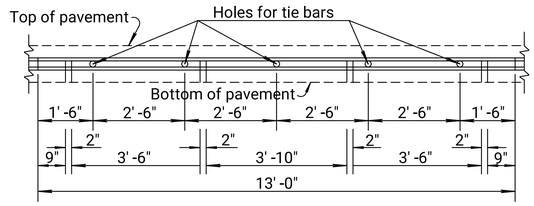
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:32
File : KA572901rss715-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	18	141



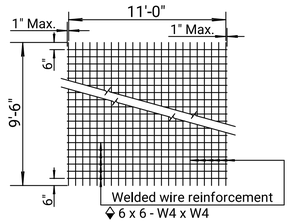
To be used only against forms. Shall not extend through contraction joints.

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



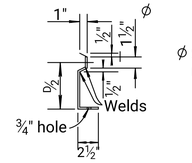
To be used only against forms. Shall not extend through contraction joints.

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



TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

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



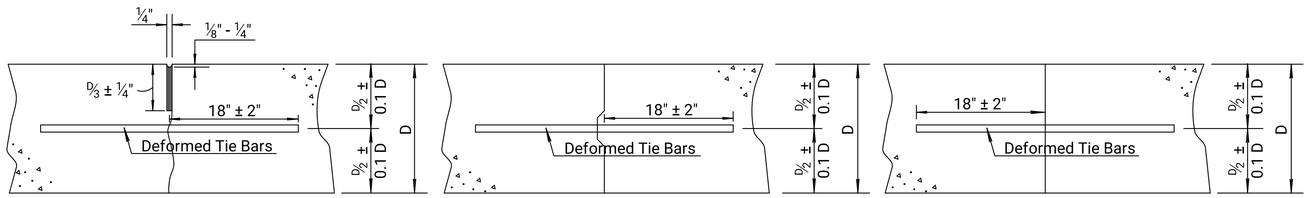
ϕ Snap-in leg or other approved designs may be used in lieu of welded leg.

SECTION OF RECESSED
FORM LEG

DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

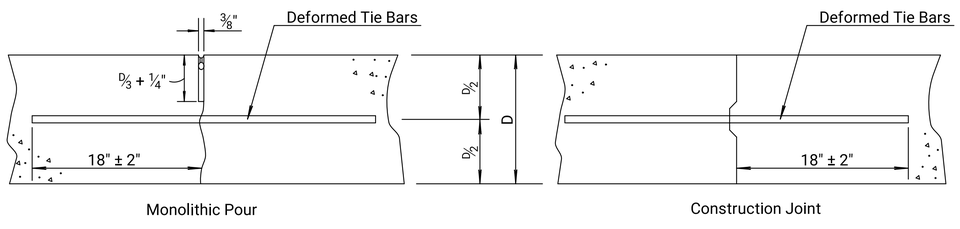
The lap shall extend beyond the first transverse or bag wire of each sheet.

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



LONGITUDINAL JOINTS

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



TRANSVERSE JOINTS

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

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.

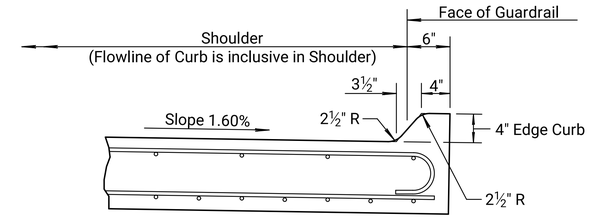
At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.

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

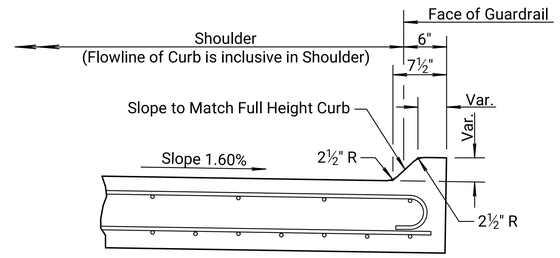
The 4 inch edge curb shall be constructed integral with the approach slab shoulder.

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.

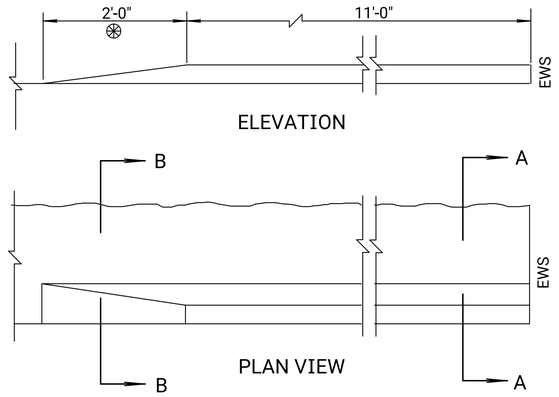


SECTION A-A



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. 18

KDOT Graphics Certified

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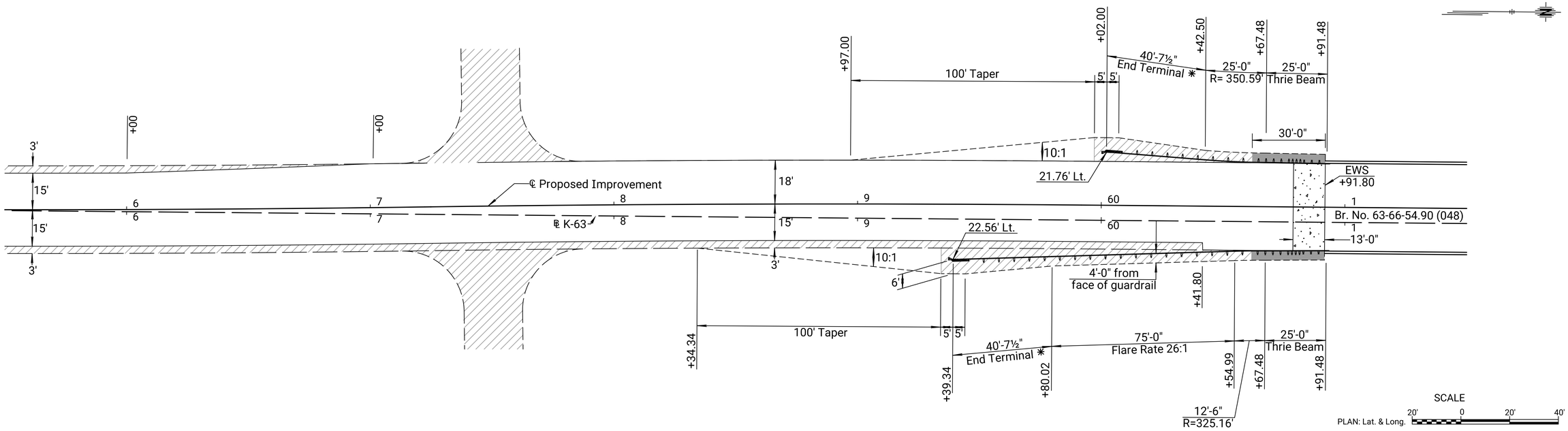
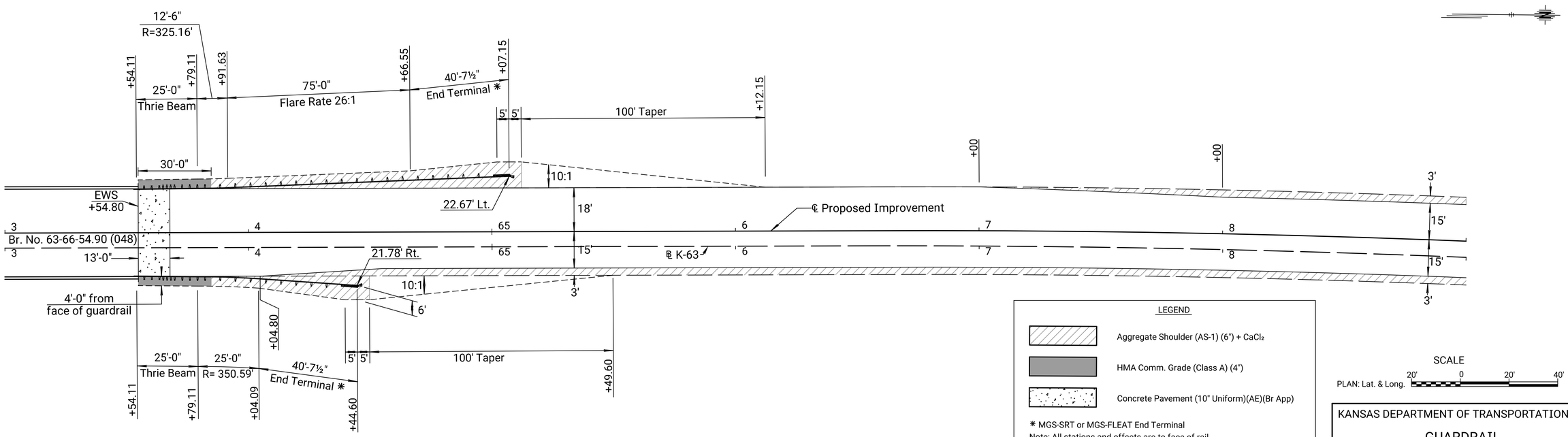
File : KA572901rss711-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	19	141

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED
12/22	B. Andrews		





KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL

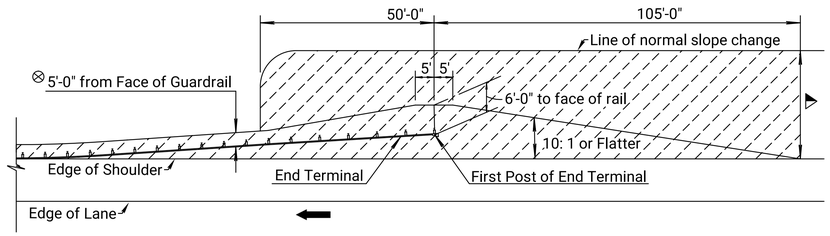
LAYOUT

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:29
File : KA572901ref-01.dgn

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

GUARDRAIL CLEAR AREA

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



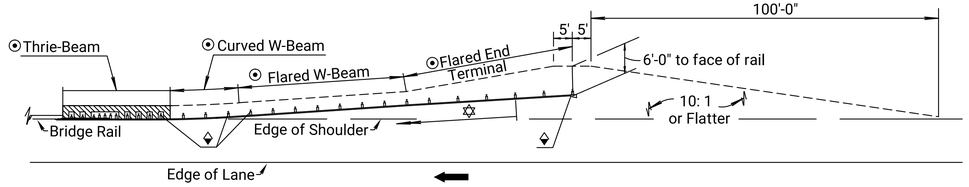
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet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

Normal Project Side Slope.

Deflection Distance for Normal Post Spacing

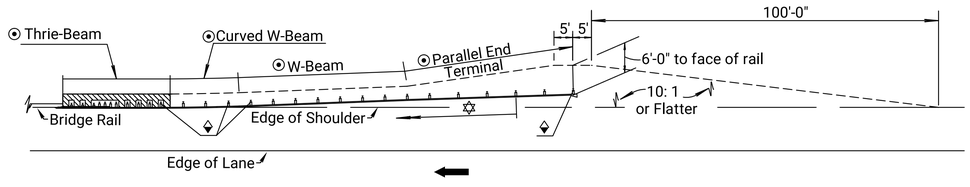
FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS
(MGS Shown)



PARALLEL GUARDRAIL DETAIL

Applies to CGS AND MGS
(MGS Shown)



See Guardrail Layout Sheets for Details

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

Length of Need (Begins at Post 3)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	20	141

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.

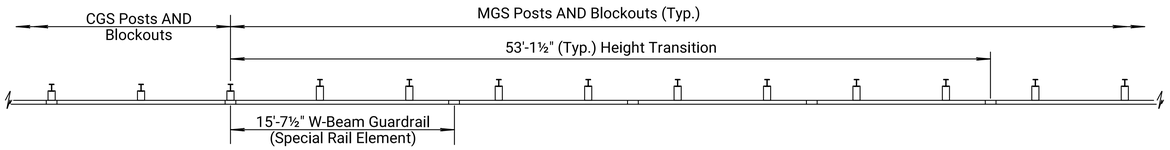
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even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

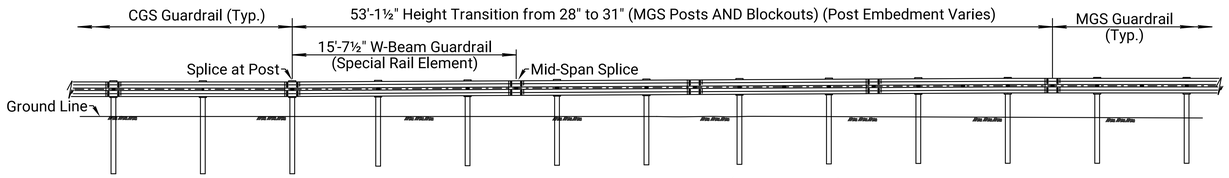
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered 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.

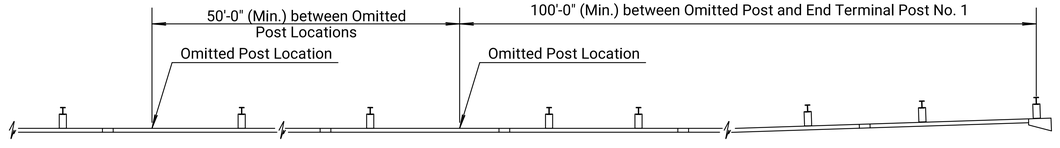
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



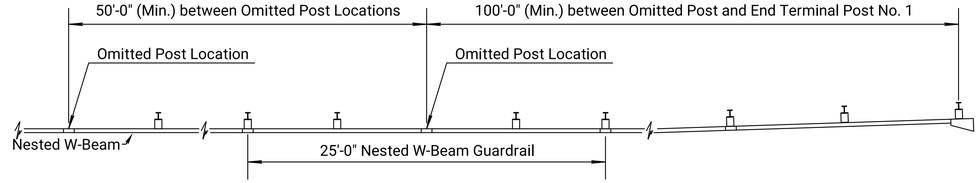
CGS TO MGS TRANSITION DETAILS (PLAN)



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 04-25-2022 Sh. No. 20

KDOT Graphics Certified

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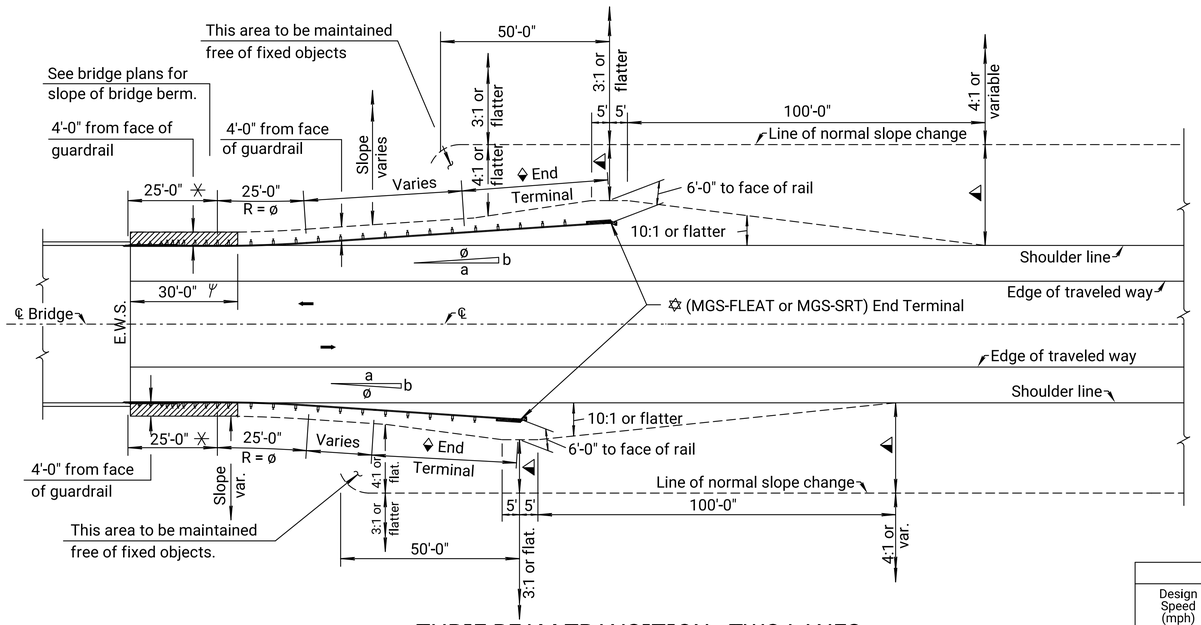
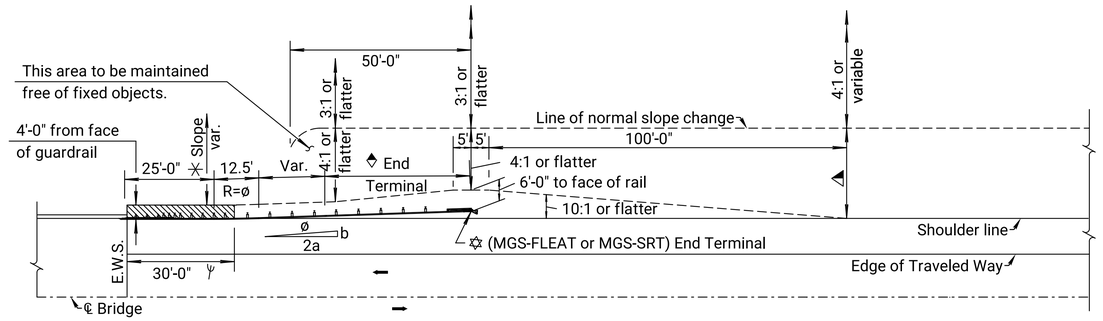
File : KA572901rss606-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	21	141



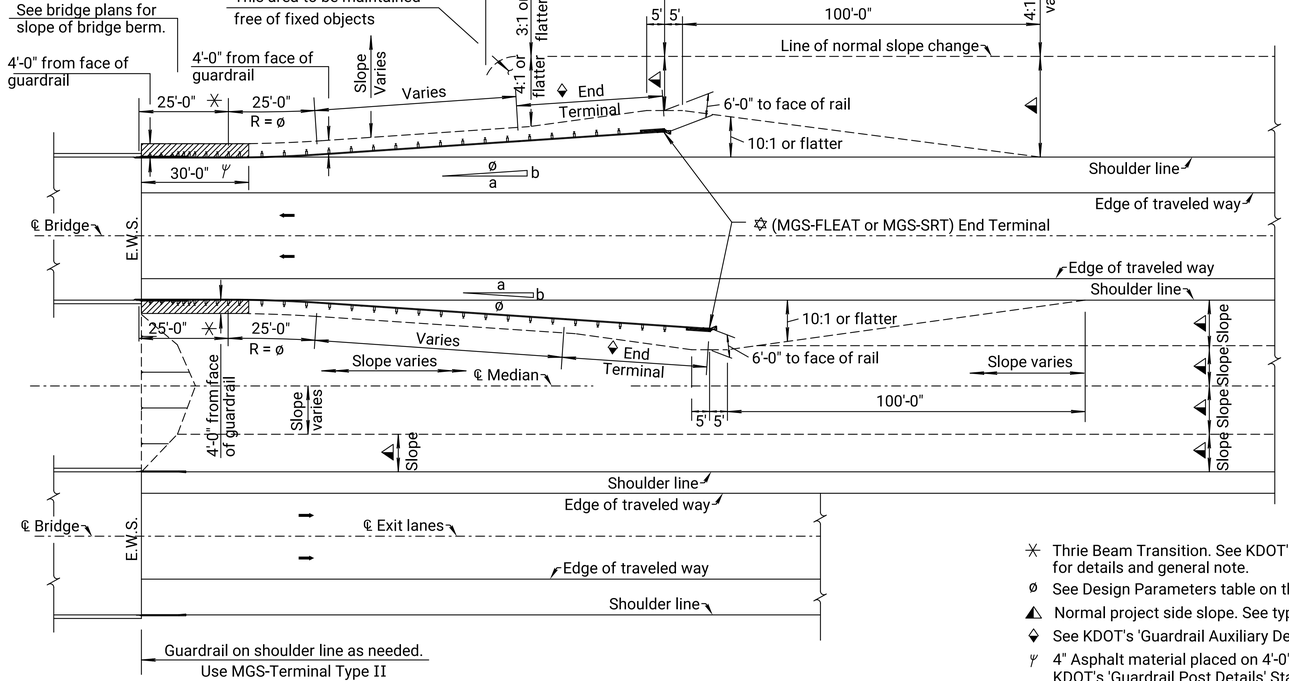
THRIE BEAM TRANSITION - TWO LANES

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".

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 : Brogan.Andrews@ks.gov 16-APR-2024 17:32
File : KA5729O1rss612c-01.dgn

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

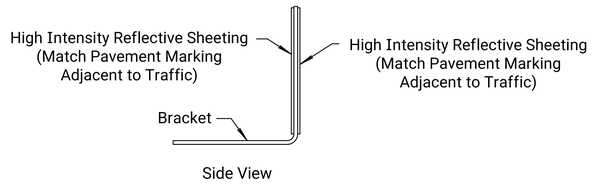
FHWA APPROVAL	06-19-18	APP'D.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified

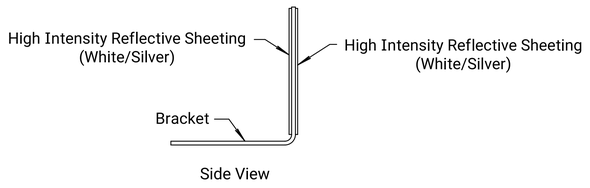
KDOT Graphics Certified 08-21-2022 Sh. No. 21

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	22	141

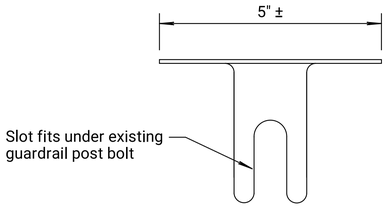
Flexible Marker
One-Way Traffic

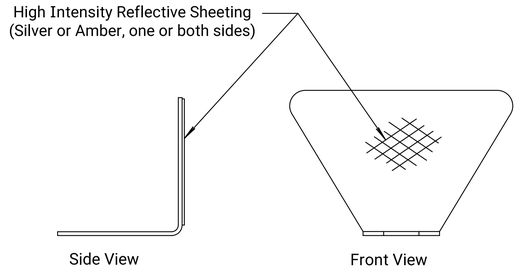


Flexible Marker
Median Locations



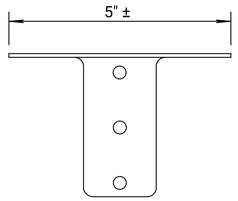
Flexible Marker
Two-Way Traffic



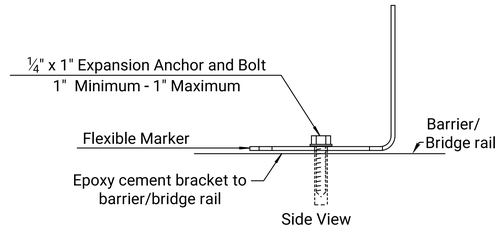


Flexible Guardrail Marker

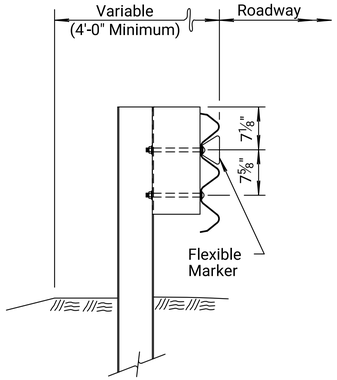
(High Impact Polycarbonate approx. .085" thick, 5¼" x 3")



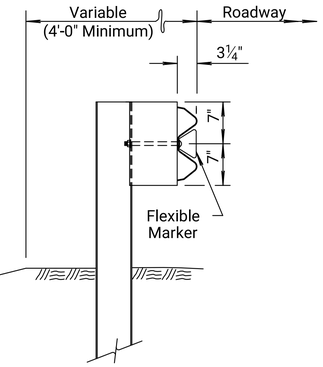
Barrier/Bridge Rail



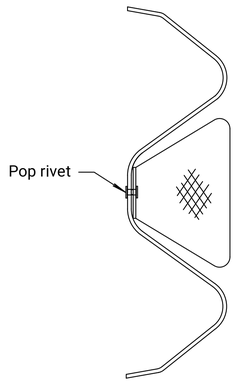
Method of Attaching Flexible
Marker to Barrier/Bridge Rail



THRIE-BEAM GUARDRAIL

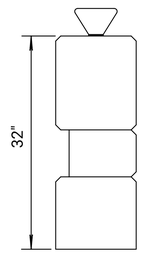


W-BEAM GUARDRAIL

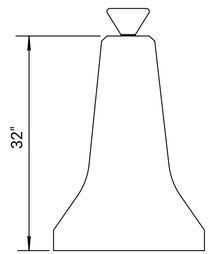


Typical Mounting on W-Beam

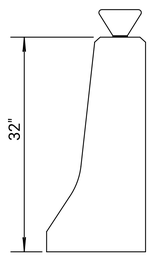
Pop rivet attachment to Guardrail when necessary.



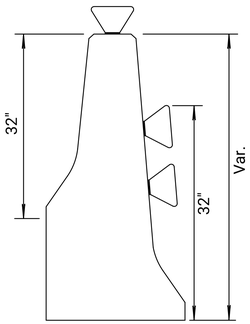
CORRAL RAIL



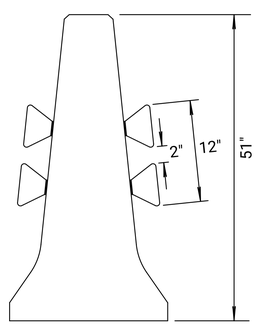
TYPE I CSB



TYPE II CSB or
F-SHAPED BRIDGE RAIL



TYPE III CSB



TYPE IV CSB

TYPICAL BARRIER/BRIDGE RAIL MOUNTING DETAILS

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

MARKER DETAILS FOR GUARDRAIL, BARRIER, AND BRIDGE RAILS

RD610

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

KDOT Graphics Certified 05-11-2022 Sh. No. 22

KDOT Graphics Certified

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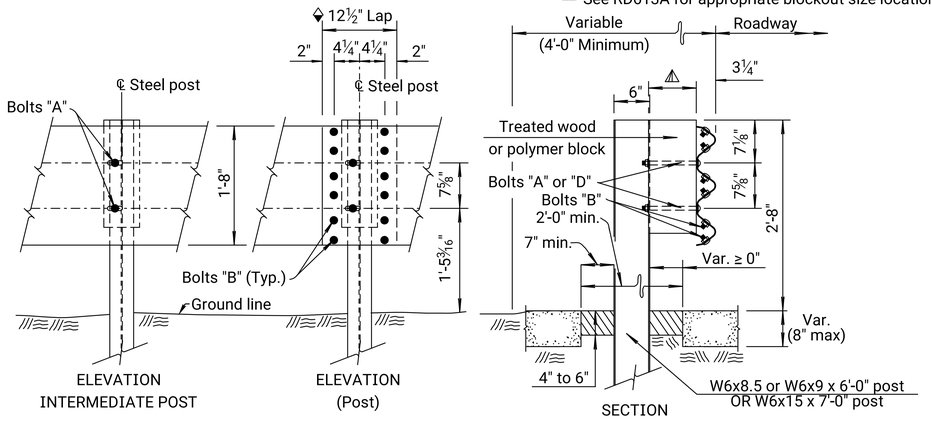
File : KA572901rss610-01.dgn

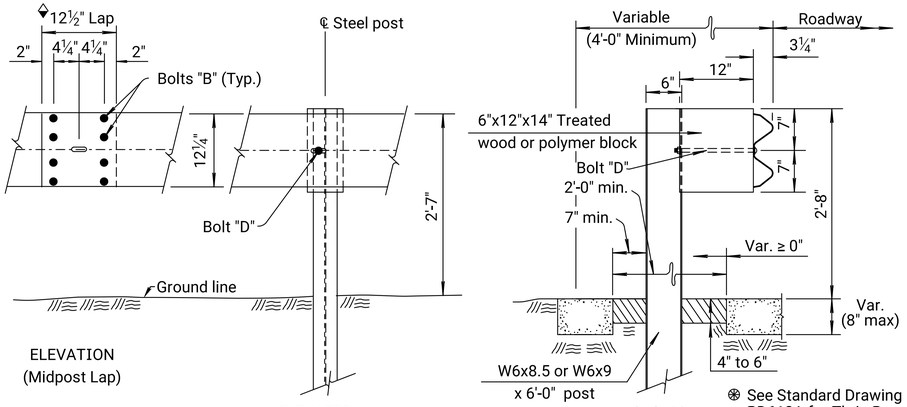
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	23	141

♦ 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

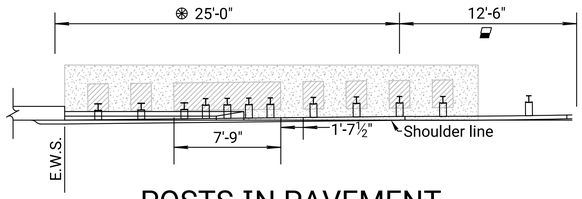


⊛ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.

✡ Non-Metallic (Polymer) or Treated Wood Block

See Guardrail Layout Sheets for Details.

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



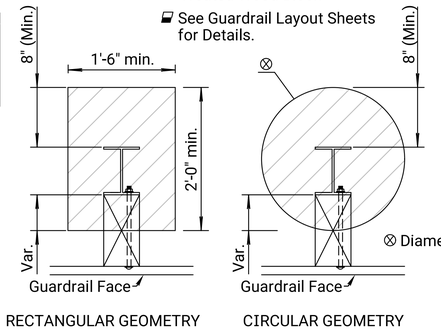
POSTS IN PAVEMENT

(Not to Scale)

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

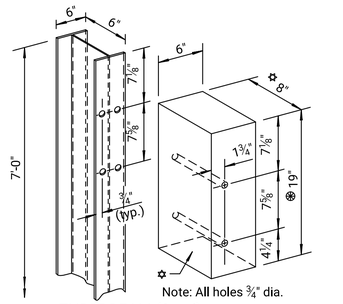
☐ Pavement (Concrete or Asphalt)

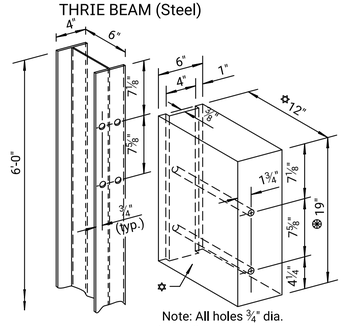
Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's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

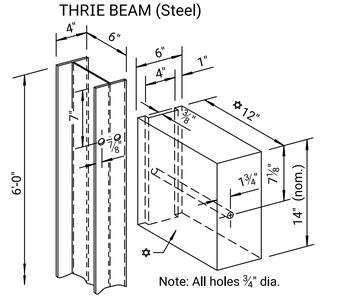


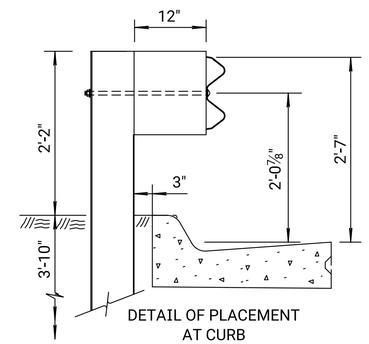
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

PLAN
(ALTERNATE GEOMETRIES)









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.

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.

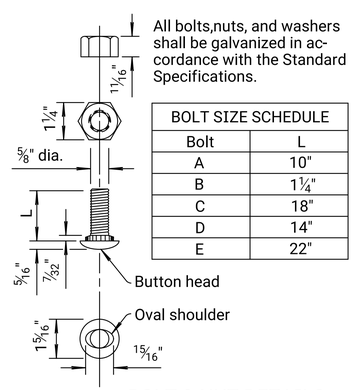
Wood blockouts may be used through the 25'-0" thrie-beam section with wood or polymer blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation. For wood/polymer blockout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



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 05-11-2022 Sh. No. 23

KDOT Graphics Certified

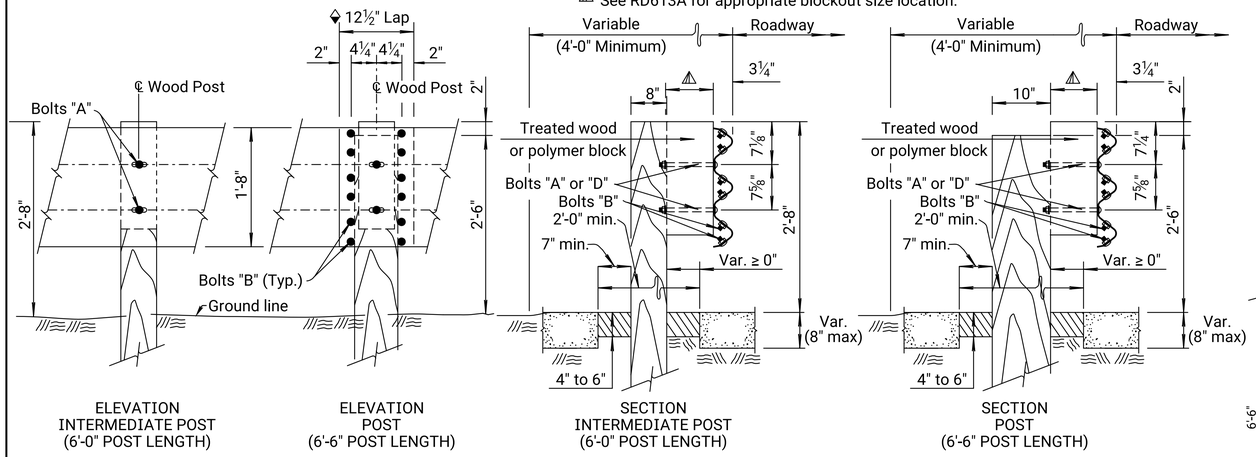
Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:31
File : KA572901rss611a-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	24	141

◆ 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.



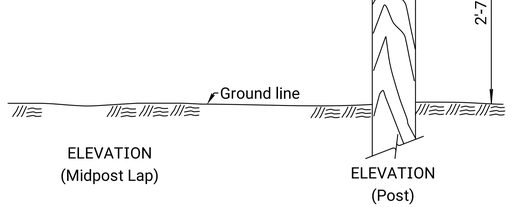
ELEVATION
INTERMEDIATE POST
(6'-0" POST LENGTH)

ELEVATION
POST
(6'-6" POST LENGTH)

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

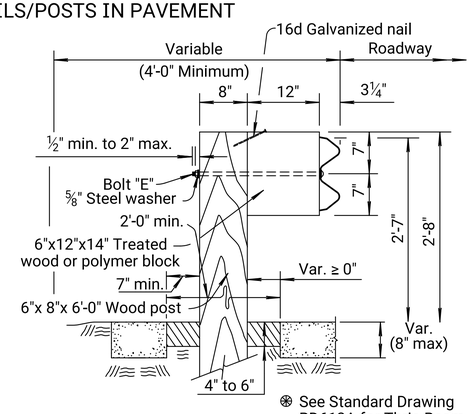
SECTION
POST
(6'-6" POST LENGTH)

THRIE BEAM POST DETAILS/POSTS IN PAVEMENT



ELEVATION
(Midpost Lap)

ELEVATION
(Post)



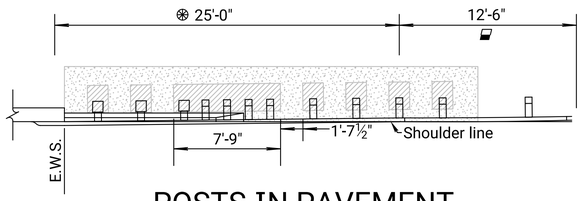
SECTION

⊛ 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



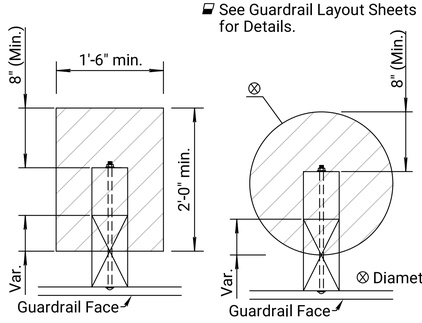
POSTS IN PAVEMENT

(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.

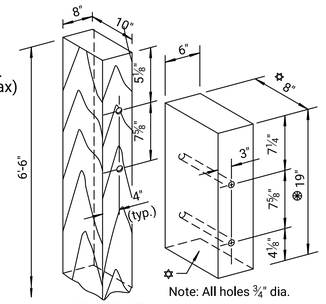


RECTANGULAR GEOMETRY

CIRCULAR GEOMETRY

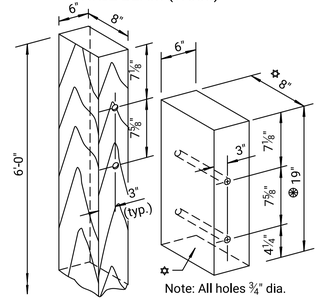
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

PLAN
(ALTERNATE GEOMETRIES)



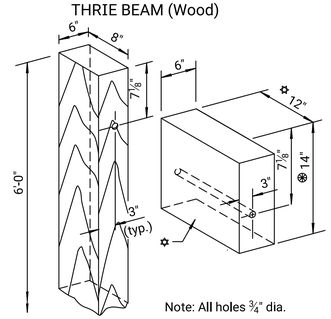
Note: All holes ¾" dia.

THRIE BEAM (Wood)



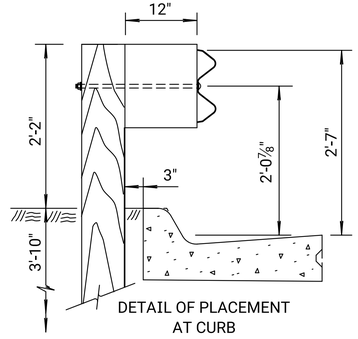
Note: All holes ¾" dia.

THRIE BEAM (Wood)



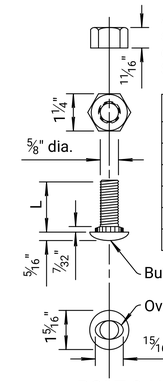
Note: All holes ¾" dia.

"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.

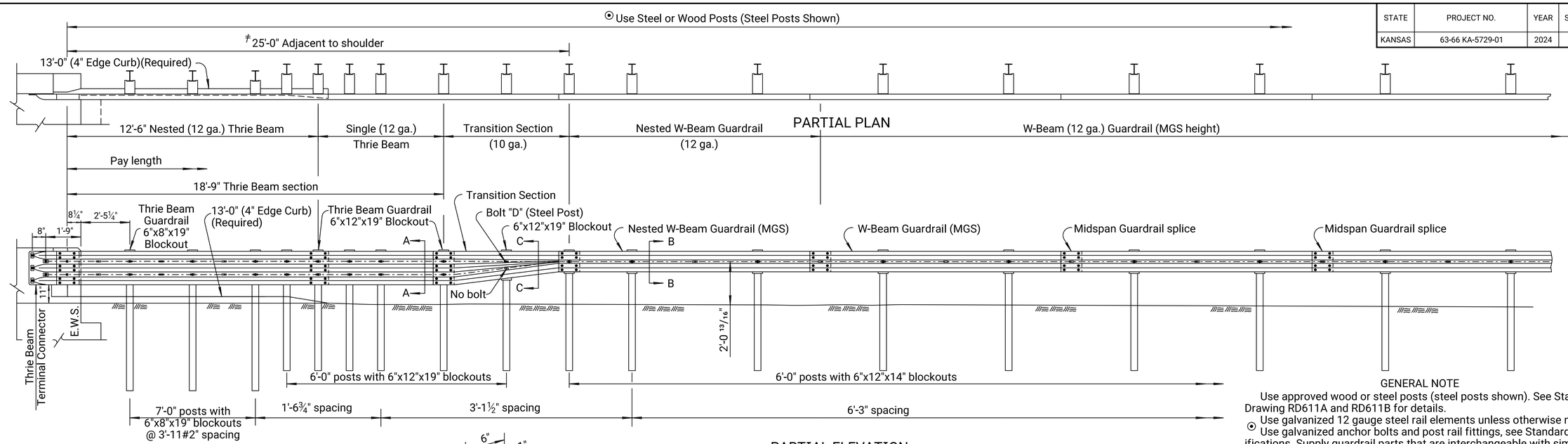
KDOT Graphics Certified 05-11-2022 Sh. No. 24

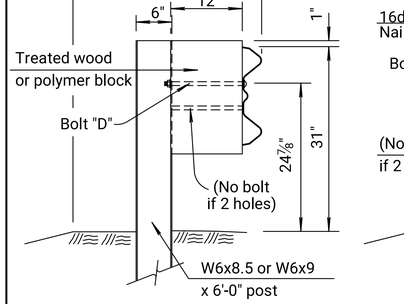
KDOT Graphics Certified

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.

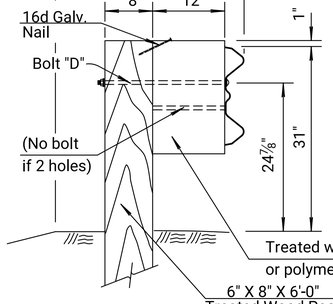
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:32
File : KA572901rss611b-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	25	141

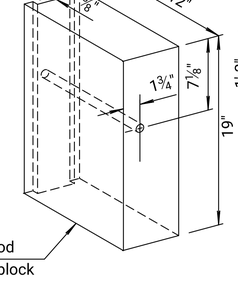




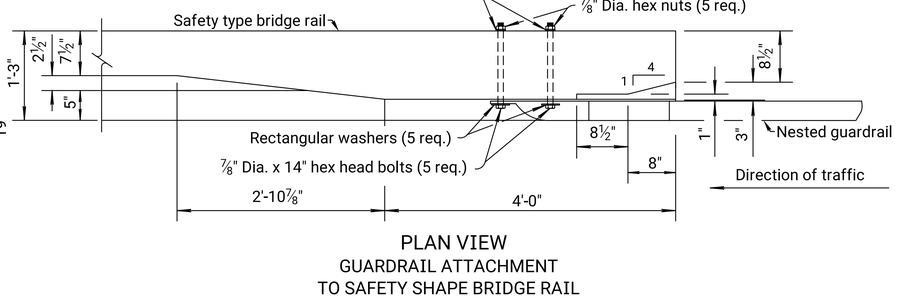
⊙ SECTION C-C (STEEL POST)



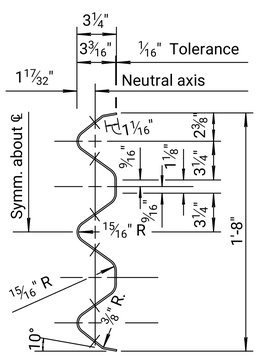
⊙ SECTION C-C (WOOD POST)



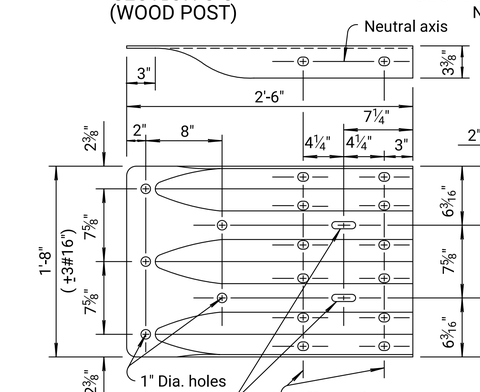
SECTION C-C (BLOCKOUTS)
Note: All holes ¾" dia.



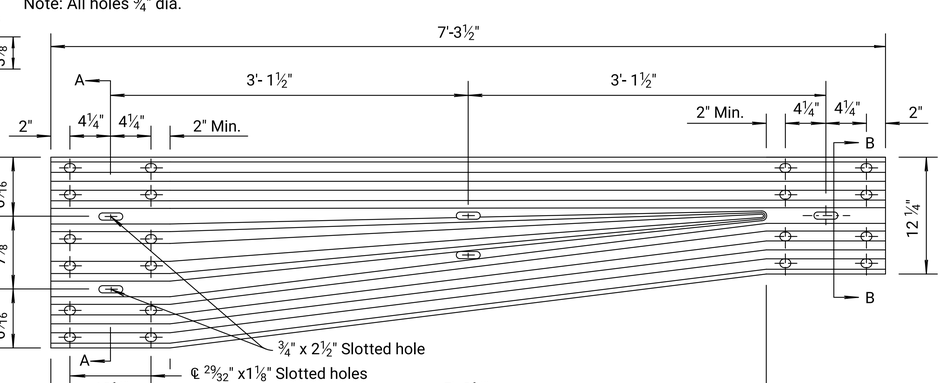
PLAN VIEW
GUARDRAIL ATTACHMENT
TO SAFETY SHAPE BRIDGE RAIL



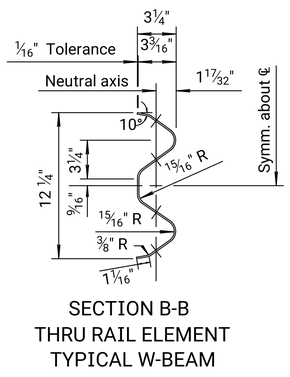
SECTION A-A
THRU RAIL ELEMENT
TYPICAL THRIE BEAM



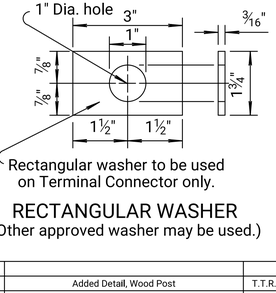
TERMINAL CONNECTOR
⊛ Optional 29/32" x 1¾" Slotted holes Rotated 50° (Typical) (12 req'd.)



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

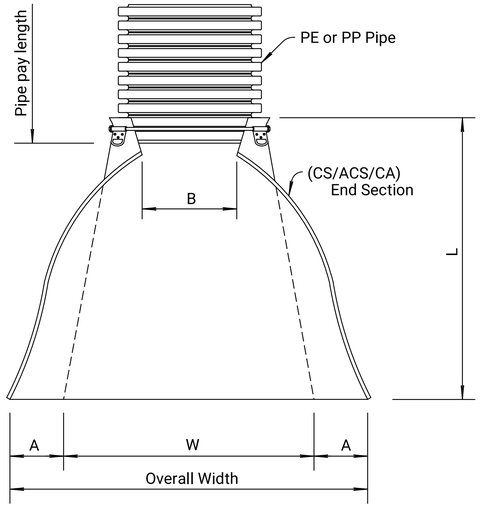
FHWA APPROVAL	04-21-16	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 11-18-2022 Sh. No. 25

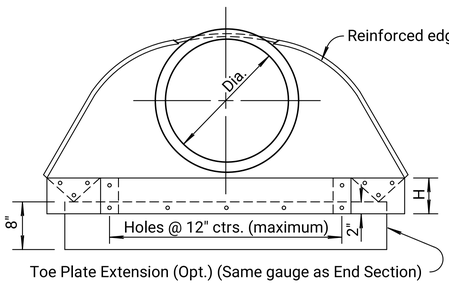
KDOT Graphics Certified

Plotted by: Brogan.Andrews@ks.gov 16-APR-2024 17:30
File : KA572901rss613a-01.dgn

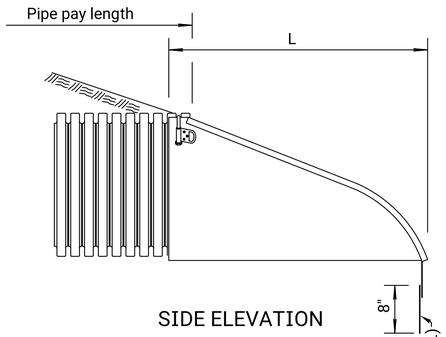
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	26	141



PLAN
(Illustrated with Type 2 Connector)

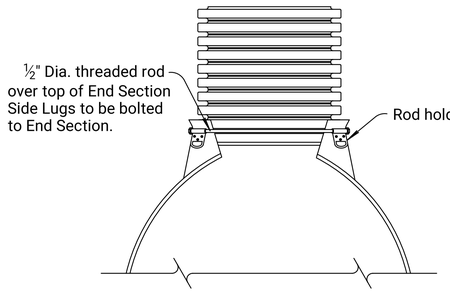


FRONT ELEVATION

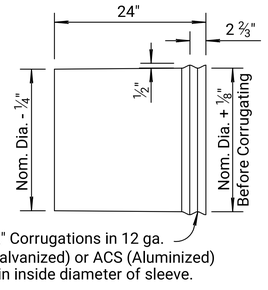


SIDE ELEVATION

⊛ Toe plate extensions where specified, to be punched to match holes in apron lip and bolted with ⅜" dia. bolts. The length of toe plate to be as follows:
W + 10" for 12" to 30" diameter pipe inclusive.
W + 20" for 36" to 60" diameter pipe inclusive.

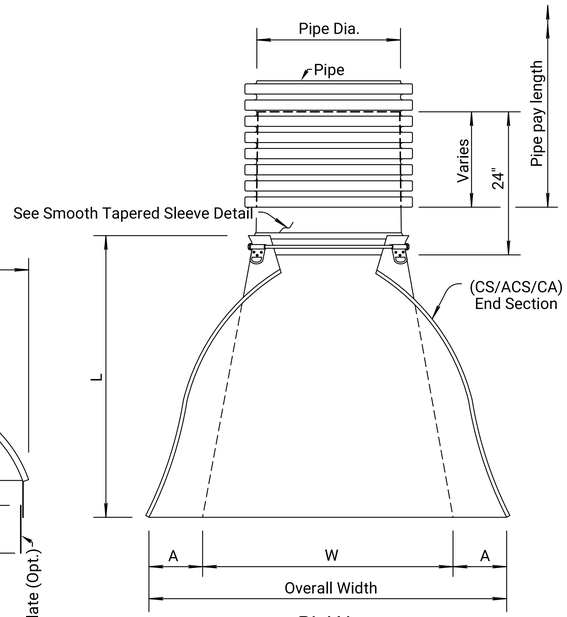


TYPE 2 CONNECTOR
(12" & Larger)

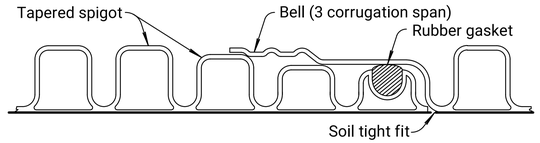


Form ½" x 2 ⅔" Corrugations in 12 ga. smooth CS (Galvanized) or ACS (Aluminized) metal, maintain inside diameter of sleeve.

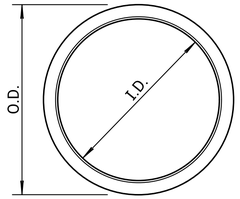
SMOOTH TAPERED SLEEVE DETAIL
(Required)



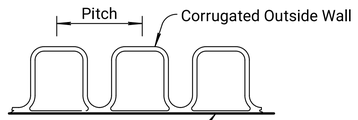
PLAN
TAPERED SLEEVE FOR ATTACHING
METAL END SECTION TO PE OR PP PIPE
(Illustrated with Type 2 Connector)



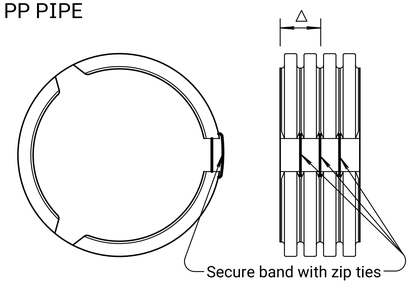
PE or PP PIPE BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT



DETAILS OF CORRUGATED
PE or PP PIPE

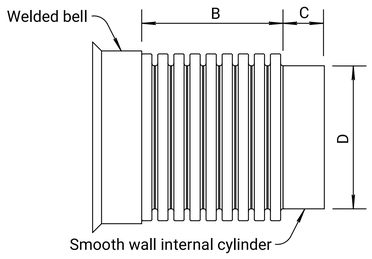


TYPICAL SECTION
CORRUGATED PE or PP PIPE



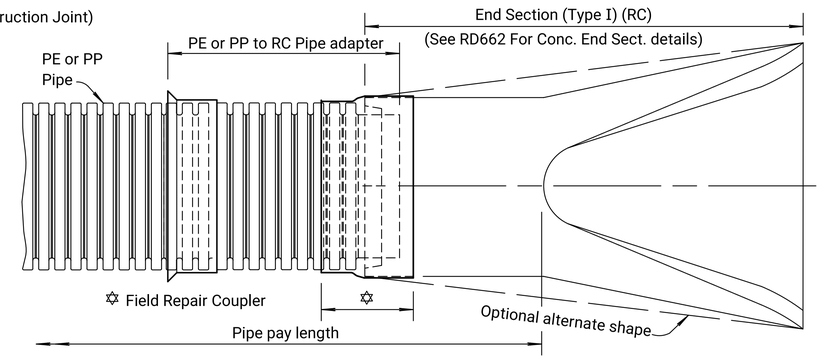
△ Two Full Corrugations (Minimum Overlap)

PE or PP PIPE SPLIT BAND COUPLER
SOIL TIGHT JOINT
This band is used for (Field Splice Construction Joint)



PE or PP to RC PIPE ADAPTER

PE or PP TO RC PIPE ADAPTER			
Pipe Dia. (In.)	B	C	D
18"	18¼"	6"	18"
24"	25"	6"	24"
30"	32 13/16"	6"	30"
36"	36¾"	6"	36"
42"	36"	6"	41¼"
48"	36¾"	6"	41¼"
60"	36"	6"	59"



PE or PP to RC PIPE ADAPTER to CONCRETE END SECTION
(This installation is for Acidic Soil Conditions)

GENERAL NOTES

The culvert type shall meet the KDOT Pipe Policy & Standard Specifications.

The size of pipe designated on the plan shall be the nominal inside diameter of a two wall corrugated PE pipe (Type S) or PP pipe (Type S).

PE or PP pipe couplings shall be designed to cover at least two full corrugations on each side of a joint.

No additional payment shall be made for any gain in length due to the fit of the pipe at connections.

All corrugated PE or PP pipe, end sections, couplings, and fittings shall conform with the Standard Specifications.

See Standard Specifications for PE or PP Pipe bedding and backfill.

Multiple panel end sections shall have lap seams which are to be tightly joined by bolts & nuts. Corner plate and toe plate to be same gauge and material as end section. When required optional toe plate extension shall be overall width less 6" x 8" high.

Attachment to PE or PP pipe 12" diameter and up shall be made with Type 2 Connector.

All work and materials required for construction and installation of end section shall be included in the bid item "End Section".

(CS/ACS/CA) END SECTION FOR PE or PP PIPE							
Pipe Dia. (In.)	Min. Gauge Ends	Dimensions in Inches					Slope
		A (min.)	B (max.)	H (min.)	L (+/-2")	W (min.)	
12"	16	6	7	6	21	24	2½:1
15"	16	7	8	6	26	30	2½:1
18"	16	8	10	6	31	36	2½:1
21"	16	9	12	6	36	42	2½:1
24"	16	10	13	6	41	48	2½:1
30"	14	12	16	8	51	60	2½:1
36"	14	14	19	9	60	72	2½:1
42"	12	16	25	11	69	84	2½:1
48"	12	18	29	12	78	90	2¼:1
54"	12	18	33	12	84	102	2¼:1
60"	12/10	18	36	12	87	114	2:1

NO.	DATE	REVISIONS	BY	APP'D
03	5-9-22	Added Polypropylene pipe (PP) type	A.L.R.	S.W.K.
02	07-17-17	Changed tapered slv. requirement	A.L.R.	S.W.K.
01	02-08-08	Added ref. to KDOT pipe policy	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

METAL/CONCRETE END SECTION (TYPE I) for PE or PP PIPE

RD667

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

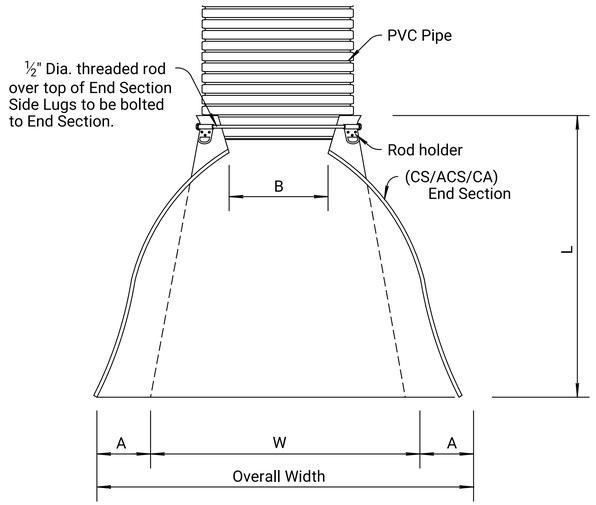
KDOT Graphics Certified 06-22-2022 Sh. No. 26

KDOT Graphics Certified

Note to Designer:
KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, PPP, SRPEP, 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.

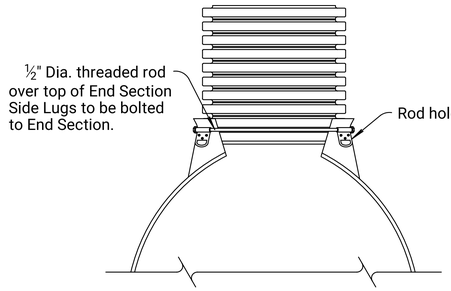
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:33
File : KA572901rss667-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	27	141



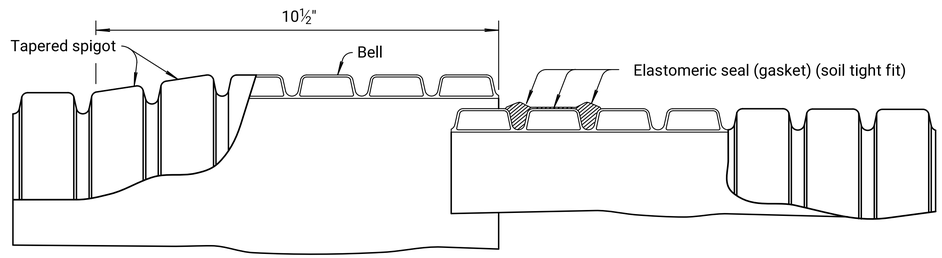
PLAN

(Illustrated with Type 2 Connector on 12" or larger)

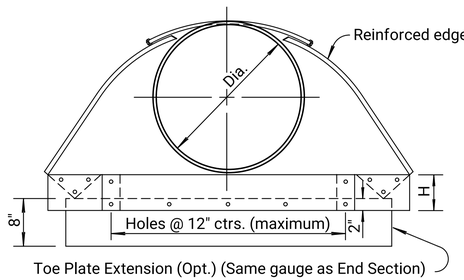


TYPE 2 CONNECTOR

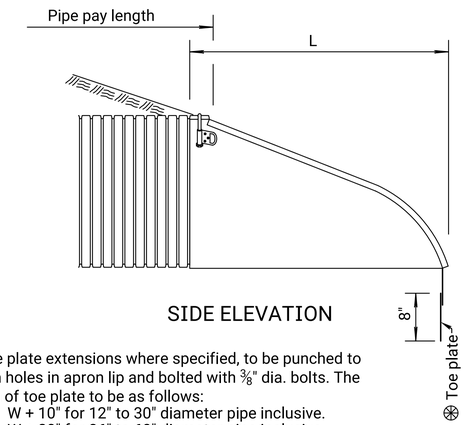
(12" & Larger)



PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT



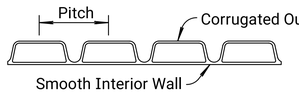
FRONT ELEVATION



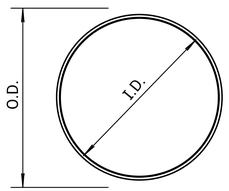
SIDE ELEVATION

⊛ Toe plate extensions where specified, to be punched to match holes in apron lip and bolted with ⅜" dia. bolts. The length of toe plate to be as follows:

W + 10" for 12" to 30" diameter pipe inclusive.
W + 20" for 36" to 60" diameter pipe inclusive.



TYPICAL SECTION
CORRUGATED PVC PIPE



DETAILS OF
CORRUGATED PVC PIPE

GENERAL NOTES

The culvert type shall meet the KDOT Pipe Policy & Standard Specifications.

The size of pipe designated on the plan shall be the nominal inside diameter of a two wall corrugated PVC pipe.

PVC pipe shall be joined with an integral bell gasket joint and Flexible Elastomeric Seals. PVC Pipe is available in lengths of 2.5' to 20'. PVC pipe can be field cut to length, cut through a corrugation valley using a hand or power saw. Gaskets are shipped loose and fitted on spigot/cut pipe end following Manufacturer's installation instructions.

No additional payment shall be made for any gain in length due to the fit of the pipe at connections.

All corrugated PVC pipe, end sections and fittings shall conform with the Standard Specifications.

See Standard Specifications for PVC Pipe bedding and backfill.

Multiple panel end sections shall have lap seams which are to be tightly joined by bolts & nuts. Corner plate and toe plate to be same gauge and material as end section. When required optional toe plate extension shall be overall width less 6" x 8" high.

The End Section attachment to PVC pipe shall be made with a Type 2 Connector for 12" or greater pipe size.

All work and materials required for construction and installation of end section shall be included in the bid item "End Section".

(CS/ACS/CA) END SECTION FOR PVC PIPE

Pipe Dia. (In.)	Min. Gauge Ends	Dimensions in Inches					Slope
		A 1" Tol.	B (max.)	H (min.)	L (+/- 2")	W (min.)	
12"	16	6	7	6	21	24	2½: 1
15"	16	7	8	6	26	30	2½: 1
18"	16	8	10	6	31	36	2½: 1
21"	16	9	12	6	36	42	2½: 1
24"	16	10	13	6	41	48	2½: 1
30"	14	12	16	8	51	60	2½: 1
36"	14	14	19	9	60	72	2½: 1

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 : Brogan.Andrews@ks.gov 16-APR-2024 17:38
File : KA5729O1rss667b-01.dgn

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

KANSAS DEPARTMENT OF TRANSPORTATION

METAL END SECTION (TYPE I) for PVC PIPE

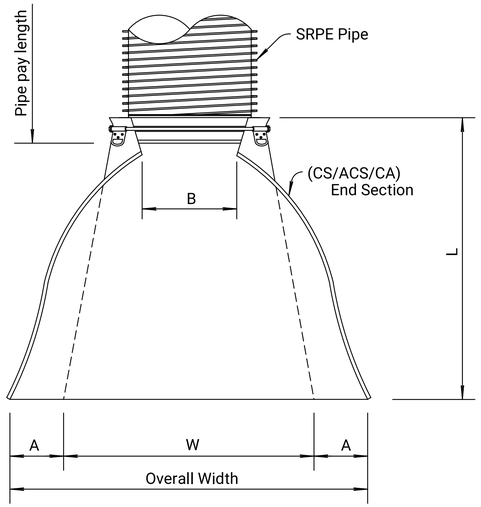
RD667B

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

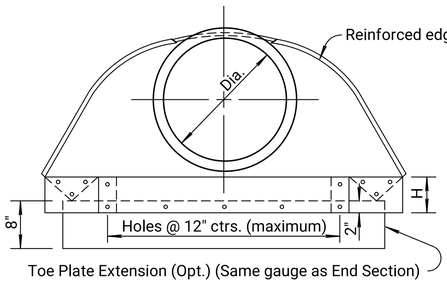
KDOT Graphics Certified 05-16-2022 Sh. No. 27

KDOT Graphics Certified

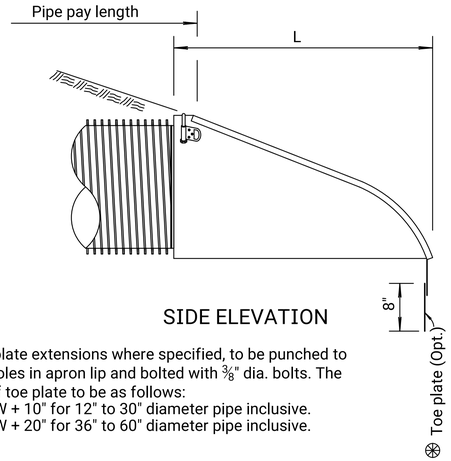
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	28	141



PLAN
(Illustrated with Type 2 Connector)

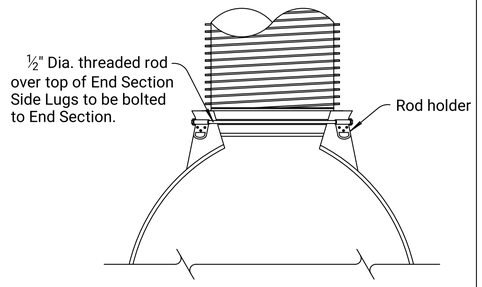


FRONT ELEVATION

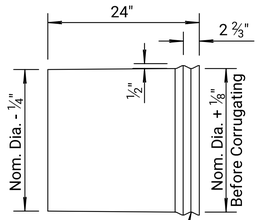


SIDE ELEVATION

⊛ Toe plate extensions where specified, to be punched to match holes in apron lip and bolted with ⅜" dia. bolts. The length of toe plate to be as follows:
W + 10" for 12" to 30" diameter pipe inclusive.
W + 20" for 36" to 60" diameter pipe inclusive.

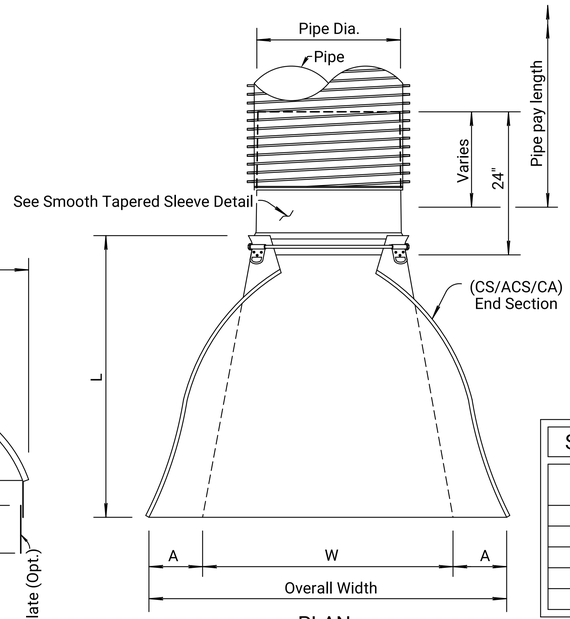


TYPE 2 CONNECTOR
(30" & Larger)

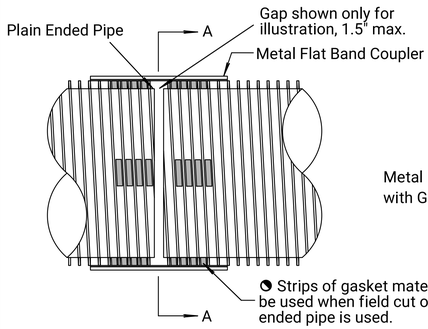


Form ½" x 2 ⅔" Corrugations in 12 ga. smooth CS (Galvanized) or ACS (Aluminized) metal, maintain inside diameter of sleeve.

SMOOTH TAPERED SLEEVE DETAIL
(Required)

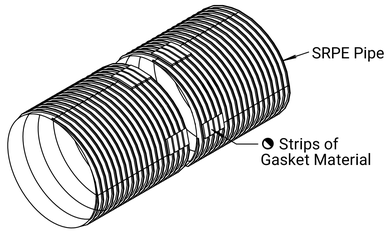


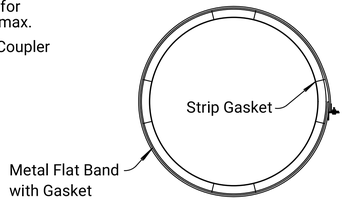
PLAN
TAPERED SLEEVE FOR ATTACHING
METAL END SECTION TO SRPE PIPE
(Illustrated with Type 2 Connector)



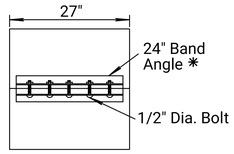
SIDE ELEVATION

◔ Different pipe diameters require a different number of gasket strips. See Manufacturers Guide for quantities.

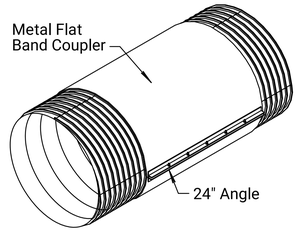




SECTION A-A



FLAT BAND COUPLER
✱ Alternate option: Double bar bolt & strap



SRPE FLAT BAND COUPLER - SOIL TIGHT JOINT (Used for Field Splice Construction Joints)

GENERAL NOTES

The culvert type shall meet the KDOT Pipe Policy & Standard Specifications.

The size of pipe designated on the plan shall be the nominal inside diameter of an SRPE pipe.

No additional payment shall be made for any gain in length due to the fit of the pipe at connections.

All SRPE pipe, end sections, couplings, and fittings shall conform with the Standard Specifications.

See Standard Specifications for SRPE Pipe bedding and backfill.

Multiple panel end sections shall have lap seams which are to be tightly joined by bolts & nuts. Corner plate and toe plate to be same gauge and material as end section. When required optional toe plate extension shall be overall width less 6" x 8" high.

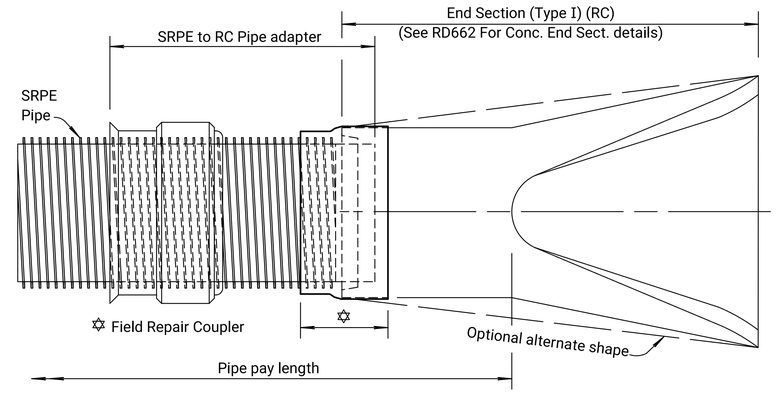
Attachment to SRPE pipe 30" diameter and up shall be made with Type 2 Connector.

All work and materials required for construction and installation of end section shall be included in the bid item "End Section".

(CS/ACS/CA) END SECTION FOR SRPE PIPE

Pipe Dia. (In.)	Min. Gauge Ends	Dimensions in Inches A (min.)	B (max.)	H (min.)	L (+/-2")	W (min.)	Slope
30"	14	12	16	8	51	60	2½:1
36"	14	14	19	9	60	72	2½:1
42"	12	16	25	11	69	84	2½:1
48"	12	18	29	12	78	90	2¼:1
54"	12	18	33	12	84	102	2¼:1
60"	12/10	18	36	12	87	114	2:1

Pipe diameters up to 120" are acceptable for use. End sections are available only up to 96" pipe diameter.

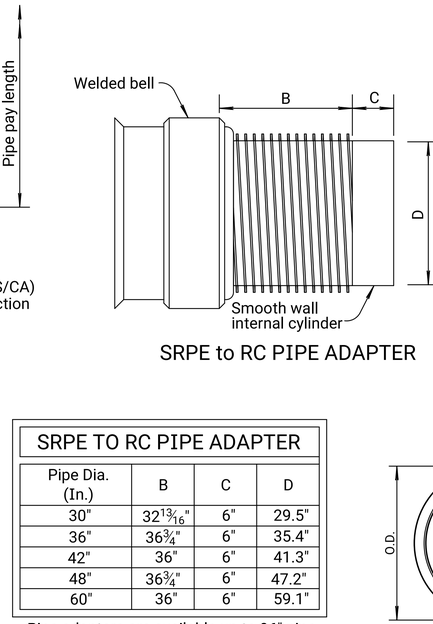


(This installation is for Acidic Soil Conditions)

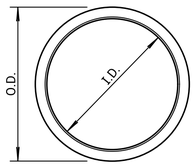
SRPE TO RC PIPE ADAPTER

Pipe Dia. (In.)	B	C	D
30"	32 13/16"	6"	29.5"
36"	36¾"	6"	35.4"
42"	36"	6"	41.3"
48"	36¾"	6"	47.2"
60"	36"	6"	59.1"

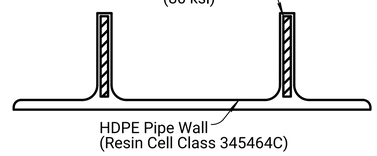
Pipe adapters are available up to 96" pipe diameter.



SRPE to RC PIPE ADAPTER



DETAILS OF
SRPE PIPE



TYPICAL SECTION SRPE PIPE

NO.	DATE	REVISIONS	BY	APP'D
01	05-09-22	Initial Release	A.L.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

METAL/CONCRETE END SECTION (TYPE I) FOR SRPE PIPE

RD667D

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

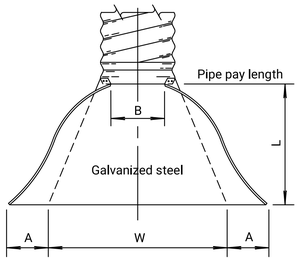
KDOT Graphics Certified 07-17-2022 Sh. No. 28

KDOT Graphics Certified

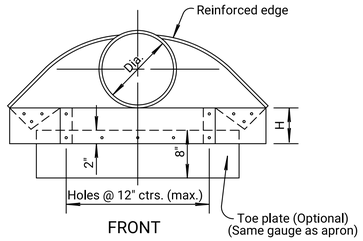
Note to Designer:
KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, PPP, SRPEP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design 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 : Brogan.Andrews@ks.gov 16-APR-2024 17:35
File : KA572901rss667d-01.dgn

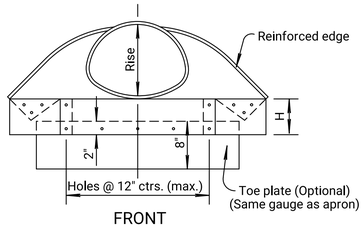
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	29	141



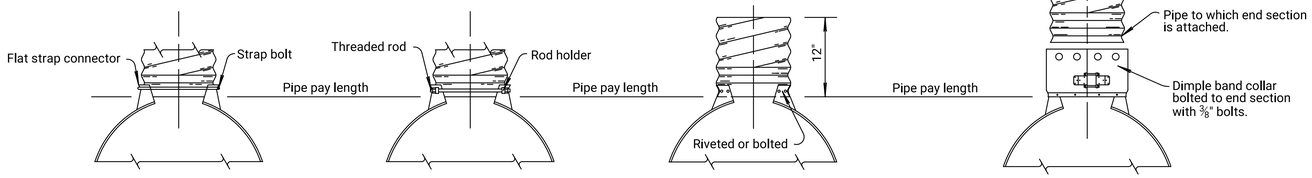
PLAN
(Illustrated with Type #3 Connection)



FRONT



FRONT



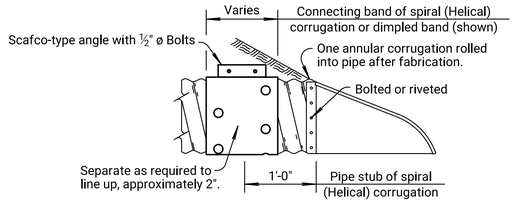
TYPE 1
Available in sizes 12" through 24" only.

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.

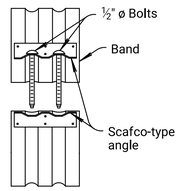
Toe plate extension, when specified, is an accessory and shall be the same gauge and metal as end section. Toe plate shall be punched to match holes in apron lip and attached with furnished 3#8" diameter nuts & bolts.

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.

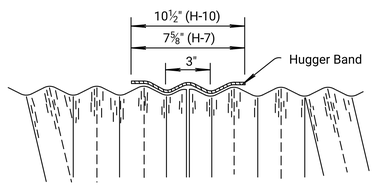
Multiple panel end sections may contain dual gauges of like metal and shall have lap seams which are tightly joined with rivets or bolts. For 60" and larger diameter round pipe end sections and 77"x52" arch pipe end sections, the reinforced edges are supplemented with stiffener angles. The angles are 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.

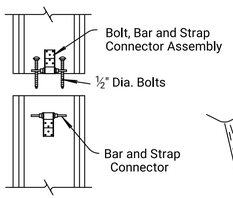


CONNECTION DETAIL
H-7 or H-10 BAND

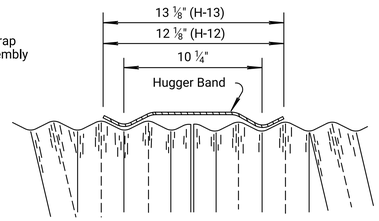


UNIVERSAL REFORMED END with
H-7 or H-10 HUGGER BAND

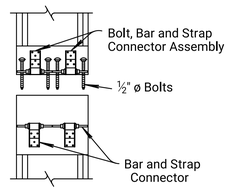
DETAILS FOR H-7 HUGGER BAND (12" thru 36")
or H-10 HUGGER BAND (12" thru 120")



CONNECTION DETAIL
SINGLE HARNESS



UNIVERSAL REFORMED END with
HUGGER BAND



CONNECTION DETAIL
DOUBLE HARNESS

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

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. 29

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.

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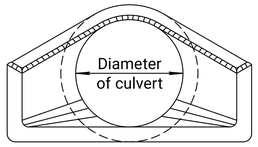
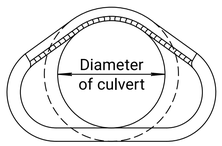
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	30	141

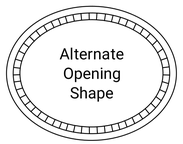


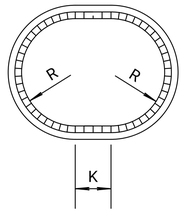
END ELEVATION (TYPE I)



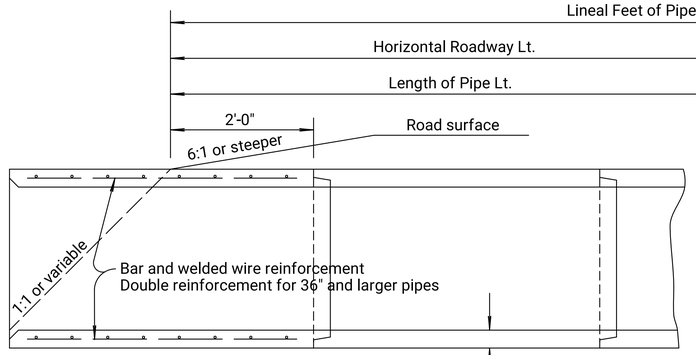
SECTION A-A

Showing rounding of inside edge of end section.

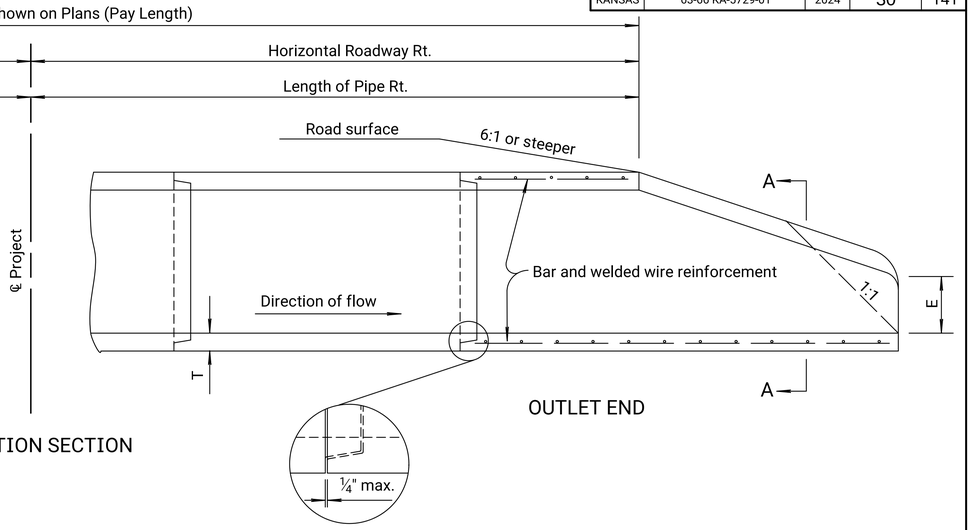




END ELEVATION
(TYPE III)



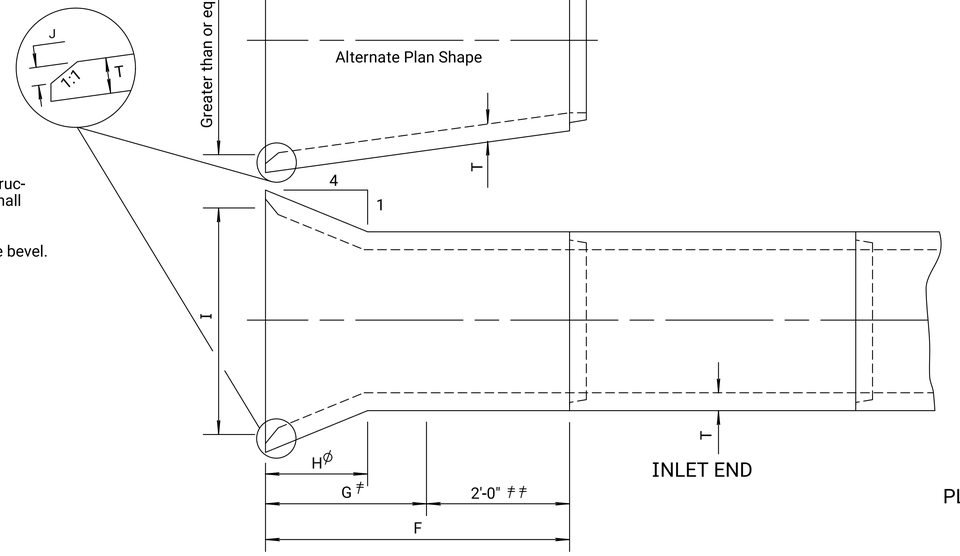
INLET END



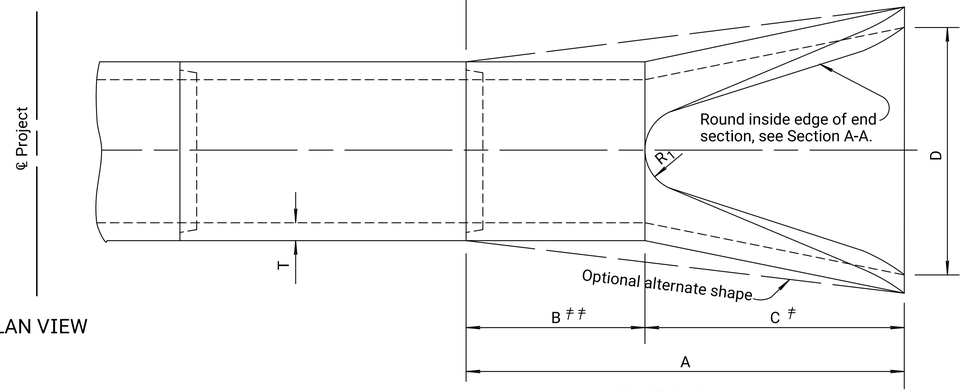
OUTLET END

ELEVATION SECTION

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



INLET END



PLAN VIEW

OUTLET END

∅ 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. 30

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.

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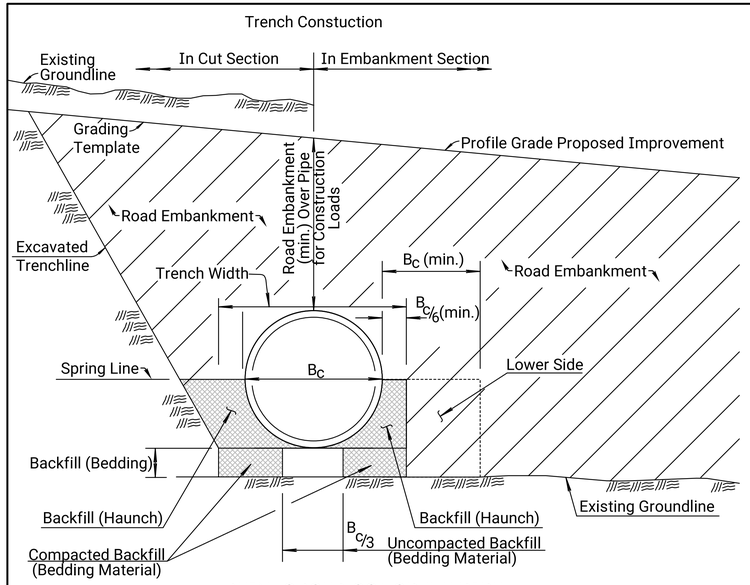
KANSAS	63-66 KA-5729-01	2024	31	141



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.

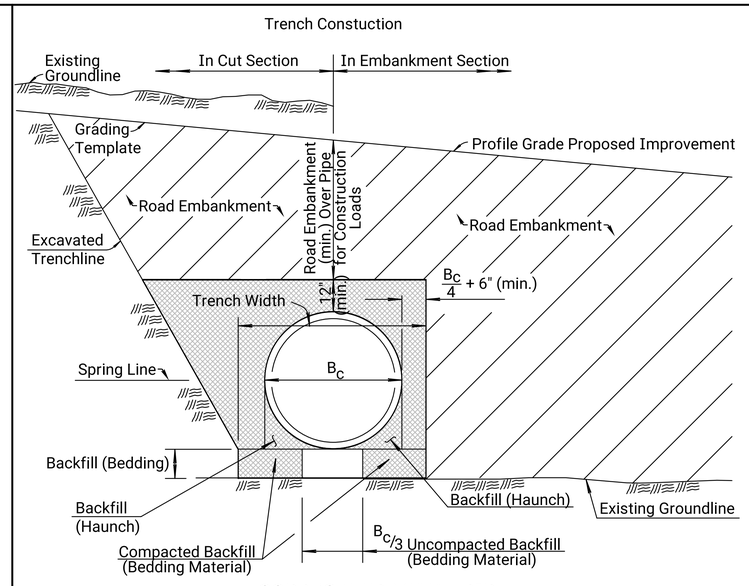
Trench Width: The minimum required trench width is the greater of:
$1.33 \times B_C$ or $B_C + 24"$

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.

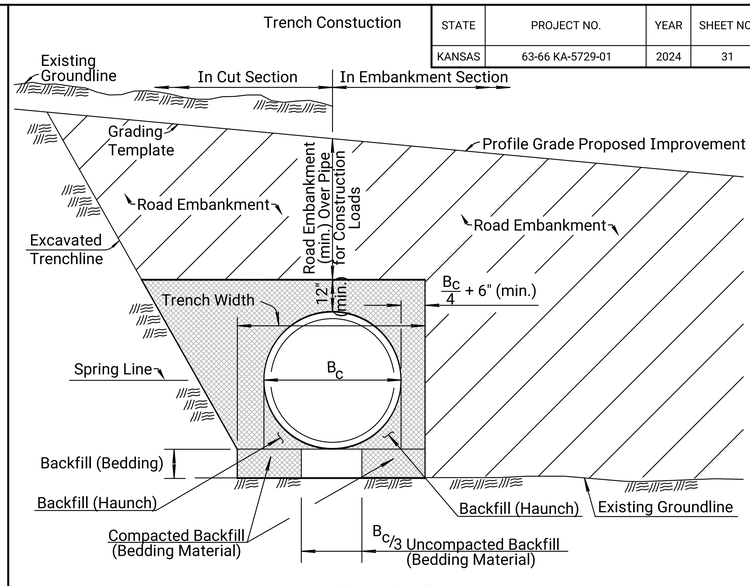
Road Embankment: For compaction See KDOT Road Standard Drawing, Foundation Treatment & Compaction of Earthwork

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. 31

KDOT Graphics Certified

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:40
File : KA572901rss658-01.dgn

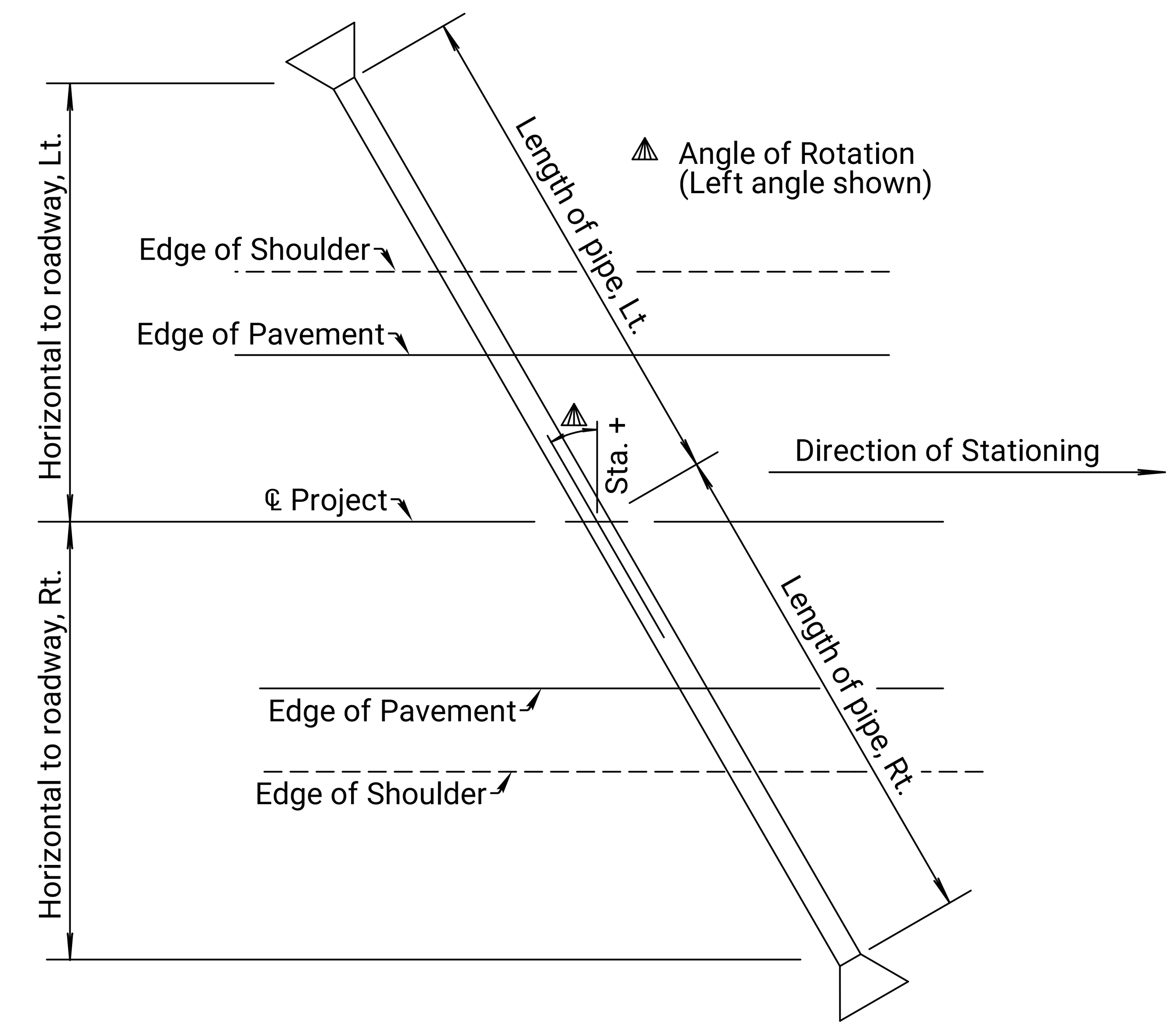
Note to Designer:
KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, PPP SRPE, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design 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.

PIPE CULVERT SUMMARY

Station	Type	Size or Bid Designation Sq. Ft.	Crown Grade Elev.	Flow Line		✻Floor Elev.		Horizontal Roadway		Degree of Rotation	Length of Pipe		Lin. Ft. of Pipe	Height of Fill (max.) Ft.	Concrete Pipe AASHTO Class No.	Pipe Gauge ◔		Pipe Corrugations ◔		Remarks
				Lt.	Rt.	Lt.	Rt.	Lt.	Rt.		Lt.	Rt.				Steel	Alum.	Steel	Alum.	
									See Sh. No. 67											

◔ 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 ℄)

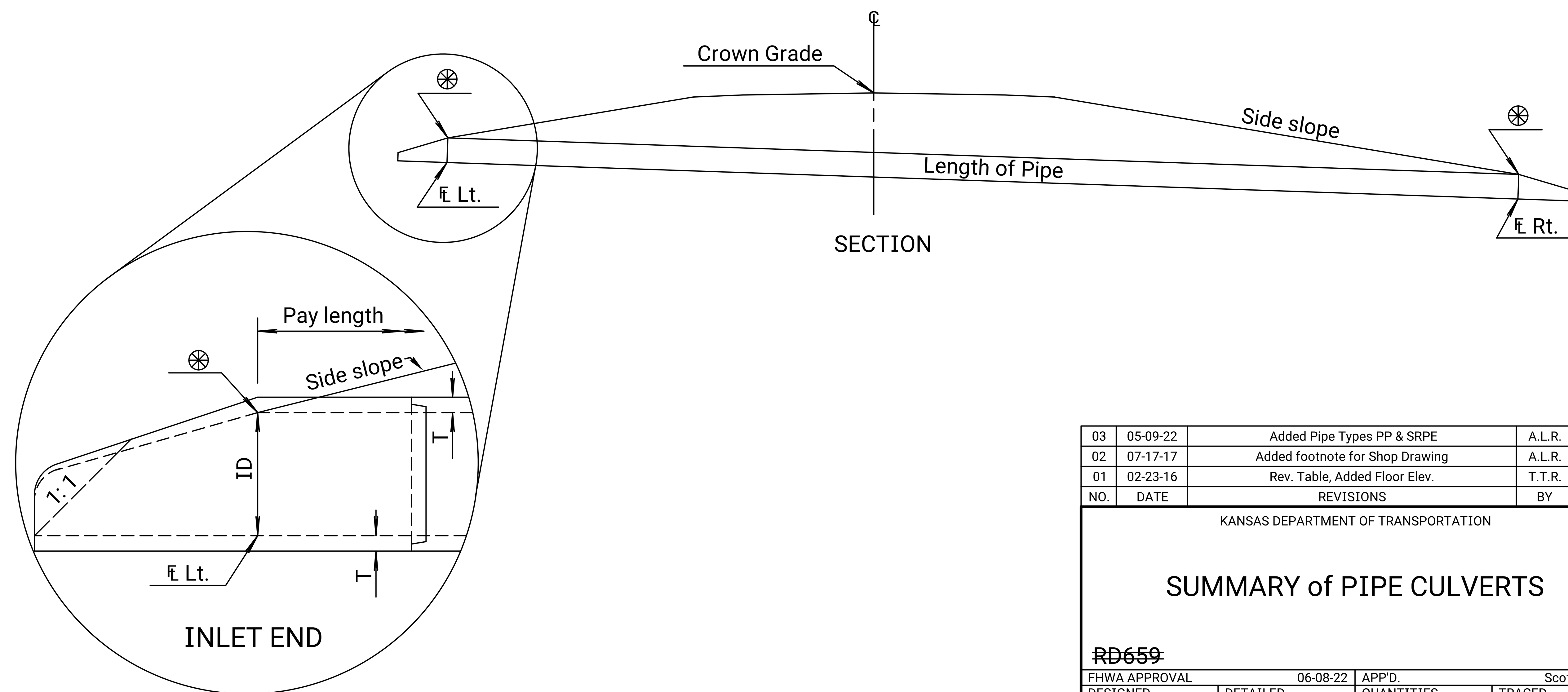
⊛ Design side slope to intersect inside diameter of pipe outside of Clear Zone.

Type		ALLOWABLE LOCATION ⚠			
	Mainline	Side Road	Entrance	Storm Sewer Under ML	Storm Sewer Not Under ML
✡PVCP	X	X	X	X	X
▱ PEP	X	X	X	X	X
▱ PPP	X	X	X	X	X
≈ SRPE	X	X	X	X	X
CSP					X
ACSP		X	X		X
CAP	X	X	X	X	X
RCP	X	X	X	X	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	X	X	X	Ψ
PEP	X	X	X	X
PPP	X	X	X	X
SRPE	X	X	X	X
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.
Ψ Submit Shop Drawing of connection for review



SECTION

INLET END

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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	33	141

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 Epoxy Coated Grade 60 Lbs.	Reinforcing Steel Grade 60 Lbs.	Structural Steel M270 (Gr. 50WT3) Lbs.	Structural Steel A709 (Gr. 50W) Lbs.	Structural Steel A709 (Gr. 50) Lbs.	Bearings (Steel Reinf.) (Elast.) Each	Welded Stud Shear Connectors Each	Bridge Deck Grooving Sq. Yds.
Abutment No. 1	139.3		**	25.8	**							
Pier No. 1	2.3			30.7		5,015				6		
Pier No. 2		1.1		39.7		6,293				6		
Abutment No. 2			**	25.8	**							
Substr. Total	141.6	1.1		122.0		11,310				12		
Superstr. Total			365.5		102,670		256,028	23,415	1,827		3,708	935
Total	142	1	365.5	122.0	102,670	11,310	256,028	23,415	1,827	12	3,708	935

SUMMARY OF QUANTITIES

Item / Location	Drilled Shaft (48") (Cased) Lin. Ft.	Sonic Test (Drilled Shaft) (Set Price) Each	Core Holes (Investigative) Lin. Ft.	Piles (Steel) (HP12x53) Lin. Ft.	Cast Steel Pile Points Each	Bridge Backwall Prot. System Sq. Yds.	Abutment Aggregate Drain Cu. Yds.	Slope Protection (Riprap Stone) ◔ Cu. Yds.	Temp. Shoring L.S.
Abutment No. 1				448	8	49	63	252	
Pier No. 1	180		180						
Pier No. 2	161		161						
Abutment No. 2				368	8	49	63	369	
Substr. Total	341	1	341	816	16	98	126	621	
Superstr. Total									
Total	341	1	341	† 816	16	98	126	621	L.S.

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

† Summary of Piling
Abutment No. 1 — 4 @ 56' (Phase II); 4 @ 56' (Phase III)
Abutment No. 2 — 4 @ 46' (Phase II); 4 @ 46' (Phase III)

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

◔ Gradation shall meet the requirements of 200 Lb. Class.

LRFR RATING FACTORS		
Design Load / Rating Level	Inventory	Operating
HL-93 Loading	1.259	1.704
2021 Manual for Bridge Evaluation		

LFD RATING FACTORS		
Truck / Rating Level	Inventory	Operating
HS-20 (36T)	1.481	2.473
Type HET (110T)		1.209
2002 LFD Rating, 17th Edition AASHTO		

TRAFFIC DATA	
AADT (2024)	1,250
AADT (2044)	1,550
DHV	11%
D	60%
T	22.5%

Index of Bridge Drawings

Sheet No.	Drawing
33-34	General Notes and Quantities
35	Contour Map
36	Construction Layout
37	Engineering Geology
38-39	Construction Phasing
40-42	Abutment Details
43	Abutment Drainage Details
44	Drilled Shaft Details
45-47	Pier Details
48	Framing Plan
49	Beam Details
50	Bolted Field Splice Details
51	Steel Erection, Fit Up, and Bolting Procedures
52	Diaphragm Details
53	Abutment Frame Details
54	Bearing Device Details
55	Superstructure Details
56-59	Slab Details
60-61	Corral Rail Details
62-63	Bill of Reinforcing Steel and Bending Diagrams
Standards	
64	Bridge Excavation
65	Standard Pile Details
66	Supports and Spacers for Reinforcing Steel

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

GENERAL NOTES

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

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 1033.50 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.

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

PILING: Drive all piling to penetrate or bear within the Curzon Limestone Member at Abutment 1, and the Du Bois Limestone Member at Abutment 2. 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 68.5 Tons
Abutment No. 2 68.5 Tons

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

PILING: The limestone bedrock is variable across Abutment 1 and Abutment 2. Please monitor the pile installation carefully to prevent overdriving and pile damage.

PAINT SYSTEM ON EXISTING STRUCTURE: The structural steel has a paint history of:
1) Original paint system: Unknown — Date: 1956
2) Repaint system: Red Lead/Aluminum — Date: 1988
3) TCLP value is Unknown
4) Tons of Steel: 79.4
5) Paint Area: Unknown

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 0%
Date of Report 11-09-2021

For any result above greater than 1%, abatement shall be performed according to KDOT Specifications. Results less than 1% requireno abatement.

GEOTECHNICAL REPORT: The geotechnical report (Dated May 2022) includes soil parameters for retaining wall (sheet pile) design. The report recommends a traffic surcharge of 250 lb/ft^2. 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.

BACKFILL COMPACTION: Compact backfill at the abutments.

REMOVAL OF EXISTING STRUCTURES: 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 with the exception of the two existing bridge number plates, which shall be salvaged by the Contractor and remain the property of the State.

TOUCH-UP: Prepare and paint all bolts, nuts, studs, and other small areas of damaged paint (1 square yard or less) requiring touch-up, with an approved organic zinc primer.

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

Top Flanges: (Studs applied in the shop) Apply a 3 mil primer coat of an approved inorganic zinc primer to the tops of the top flanges and to the studs.

(Studs applied in the field) Shop Work - Blast clean the tops of the top flanges to SSPC-SP10 Specifications (latest Revision).

Field Work - Blast clean the tops of the top flanges to SSPC-SP6 Specifications (latest Revision) before the studs are applied. After the studs are applied, blast clean the tops of the top flanges and the studs to SSPC-SP6 Specifications and paint with an approved organic zinc primer to a minimum dry film thickness of 3 mils.

PAINTING: The shop and field coats applied to Structural Steel shall conform to an inorganic zinc primer with a waterborne acrylic finish coat. The finish coat will be Kansas (Brown), this color will match Federal Standard #(20045).

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

ABUTMENT AGGREGATE DRAIN: See the General Notes on the "Abutment Aggregate Drain" sheet.

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.

DESIGN DATA

DESIGN SPECIFICATIONS:
AASHTO Specifications, 9th Edition.
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 ksi
Concrete (Grade 4.0)(AE)	f'c =	4 ksi
Concrete (Grade 4.0)(AE)(SW)	f'c =	4 ksi
Reinforcing Steel (Grade 60)	fy =	60 ksi
Structural Steel (M270 Gr. 50WT3)	fy =	50 ksi
Structural Steel (A709 Gr. 50W)	Fy =	50 ksi
Structural Steel (A709 Gr. 50)	Fy =	50 ksi
Steel Pile (Grade 50)	Fy =	50 ksi

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength I	Service I	Phi
Abutment No. 1 & 2	68.5	46.7	0.60

LRFD DESIGN DRILLED SHAFT LOAD:

Design Loading (Tons/Shaft)	Strength I	Service I	Phi
All Piers	305.9	211.3	0.50

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30
GENERAL NOTES AND QUANTITIES
K-63 over Turkey Creek
Proj. 63-66 KA-5729-01 Nemaha Co.

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

KDOT Graphics Certified 07-15-2024

Sheet No. 33

KDOT Graphics Certified

Plotted: Jake.P.Pannenstiel@ks.gov Plot Location: Bridge
File: ks57290\br00048-01.dgn
Plot Date: 15-JUL-2024 15:55

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	34	141

GENERAL NOTES

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of the 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 (Grade 60)".

STRUCTURAL STEEL: The rolled beams, flange splice plates, and web splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. All other structural steel shall meet ASTM 709 Gr. 50W, unless noted otherwise. Shop and Field Splices shall be made only where shown on the Contract Plans as a "splice" or as an "optional splice." Elimination of any "splice" may be requested.

SHOP DETAILS: Reference blocking diagrams on the shop details to a level line running the entire length of the girder.

WELDING: Material, Fabrication and Construction shall conform to KDOT Specifications. On the shop drawings, show a code or symbol at the tail of the weld symbol, which refers to an approved prequalified weld procedure.

WELDED STUD SHEAR CONNECTORS: Weld Shear Stud Connectors with automatically timed stud welding equipment connected to a suitable power source. All stud welding shall conform to KDOT Specifications.

ERECTION: Bring each line of girders to the correct line, grade (or relative grade) and camber, and secure in place prior to connection of the girder field splices.

ERECTION PLANS: This is a Category B Structure. Submit detailed Erection Plans to the State Bridge Office (or Bureau of Local Projects) at least 4 weeks before beginning the erection process. Portions of the submitted details shall bear the seal of a licensed Professional Engineer. Identify, on the Erection Plans, the Erection Supervisor required by KDOT Specifications. No structural erection work will begin without approved erection plans.

ERECTION ELEVATION CHECKS: After the abutment and pier beams have been erected and before setting any structural steel, present verification to the Engineer that the elevations at the bearings match plan elevation (±1/4"). Present verification to the Engineer that the elevations at all field splice locations match the elevations (±1/2") in the plans before any connection is fully tightened. (For steel girders that are blocked on the ground, fully tighten the bolted connections prior to erection.)

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

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.

BOLTED CONNECTIONS: Girder Connections: Use 7/8" diameter heavy hex structural bolts for the main member connections. Use 15/16" diameter bolt holes. Do not ream during field erection. Accurately align all connections by driving 15/16" diameter drift pins in all corners and in 1/4 of the remaining holes in each plate. See KDOT Specifications.

Secondary Member Connections: Use 3/4" diameter heavy hex structural bolts for the secondary member connections. Use 13/16" diameter bolt holes. Oversized and/or slotted holes, as specified in the KDOT Specifications, may be used in only one of the two members connected and must be shown in the approved shop drawings. Oversized and/or slotted holes may require additional standard hardened washers or plate washers. Report to the Engineer prior to any required field reaming that will remove more than 1/4" of material from one ply of the connected parts.

Use Direct Tension Indicators (DTIs) on all high strength bolts. Place the DTI under the bolt head and turn the nut to tighten. This method is preferred whenever possible. Face the protrusions on the DTI to the underside of the bolt head. Place a hardened flat washer under the nut. See KDOT Specifications.

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

FABRICATION OF FIELD SPLICES: Prepare joints for the field splices in accordance with KDOT Specifications. Use Type "B" shop laydown.

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

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

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0)(AE)(SW). Substructure concrete is bid as Concrete (Grade 4.0)(AE). If desired, the Contractor may use Concrete (Grade 4.0) in the footings and in the abutments below the construction joint. Bevel all exposed edges of all concrete with a 3/4" triangular molding, except where noted on the plans.

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

PREFORMED ANCHOR BOLT HOLES: Preform 3 inch diameter holes using only corrugated polyethylene tubing (Type C) at the locations shown. When temperatures are expected to go below freezing, seal the preformed holes or fill them with a propylene glycol-based antifreeze to prevent expansion damage. The holes will be free of water, antifreeze or other foreign materials at the time of grouting the anchor bolts. The polyethylene tubing may remain in-place. Trim the tubing flush with the top of the concrete. This work shall be subsidiary to Concrete Grade 4.0 (AE).

FILLETS: Construct the finished deck to plan grade by varying the depth of the fillet over the beam to provide for beam profile, concrete dead load deflection and, if necessary, vertical curvature. After the beams are completely erected and the falsework bents are removed, profile each beam. Correct any variation between the actual profile and the concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the beams so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the beam shall be 10 1/2".

The theoretical amount of concrete required for the fillets is 7.9 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

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.

TEMPORARY SHORING: The bid item "Temporary Shoring" includes all labor and material necessary to furnish shoring at the location shown on the plans for the temporary bracing of the embankment during excavation. Maintain the temporary shoring until the Engineer authorizes its removal. The temporary shoring plans are to be designed and sealed by a registered Professional Engineer. Submit design calculations and shoring plans to the Field Engineer for review 6 weeks before work is scheduled to begin. Work shall not begin until the Engineer grants approval.

CAUSEWAY: If the Contractor chooses to build a causeway for bridge construction purposes, the Contractor shall obtain any required U.S. Army Corps of Engineers, Section 404 permit, Kansas State Board of Agriculture-Division of Water Resources Permit, Kansas Department of Health and Environment Section 401 Permit, Kansas Department of Wildlife and Parks Endangered Species 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.

DEMOLITION PLANS: This is a Category B Demolition. Submit detailed Demolition Plans to the Field Engineer at least 2 weeks before the demolition meeting. Identify, on the plans, the Demolition Supervisor meeting the requirements of the KDOT Specifications. No Demolition work will begin without approved Demolition Plans. A Licensed Professional Engineer is not required.

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

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, Topeka, KS.

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

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

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 200 Lb. Gradation as described in Division 1100.

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

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.

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 used for falsework support unless shown on the plans. Cure the columns as required by the KDOT Specifications before placing pier beam concrete. Do not remove falsework used to support the pier beam until the pier beam concrete has cured as required by the KDOT Specifications. Do not set girders or beams on the pier beam until after the falsework is removed or the pier beam concrete has 0.75f'c strength as tested.

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\br0048-03.dgn
Plot Date: 15-JUL-2024 15:59

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30
GENERAL NOTES
K-63 over Turkey Creek
Proj. 63-66 KA-5729-01 Nemaha Co.

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

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KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	35	141

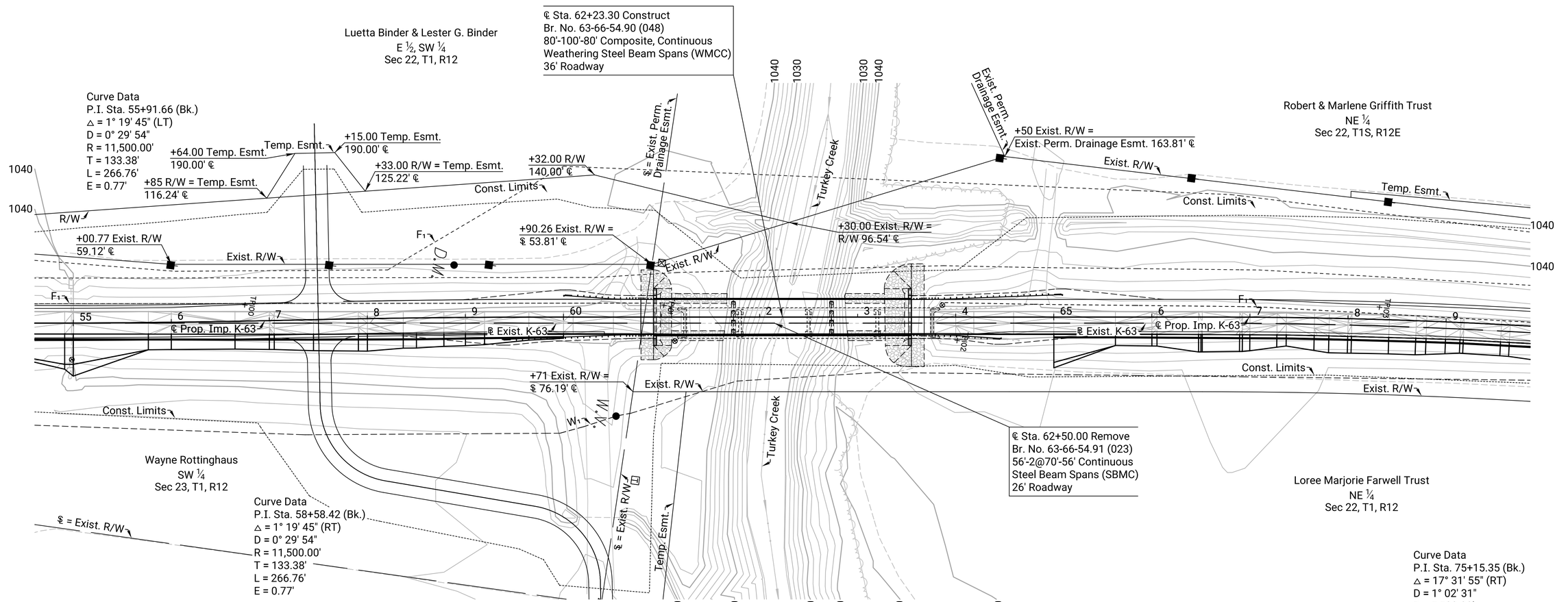
P.O.T. ℄ Sta. 57+00.00
N 815,220.459 E 10,415,033.158
1. Set ½" rebar 0.3' deep
2. ½" rebar w/KDOT cap (TP 100) 31.0' SW
3. Mag nail & KDOT wshr. S face power pole 83.5' NW
4. TW of K-63 highway 0.3' E

P.C. ℄ Sta. 66+51.38
N 816,163.030 E 10,414,904.108
1. Found ½" rebar
2. Conc. nail & KDOT wshr. N face power pole 148.7' W
3. ℄ top N end CMP 173.8' SW
4. TW K-63 highway 0.3' E

Transverse Point #101
N 815,616.68 E 10,414,960.44
1. Set ½" rebar w/ KDOT cap, flush
2. Nail & KDOT wshr. top guardrail post 17.6' SSE
3. SW cor. W hubguard bridge 11.0' N
4. TW K-63 highway 18.5' E

Transverse Point #102
N 815,917.80 E 10,414,955.58
1. Set ½" rebar w/ KDOT cap, flush
2. Nail & KDOT wshr. top guardrail post 25.8' NNW
3. NE cor. E hubguard bridge 15.0' S
4. TW K-63 highway 18.0' E

Scale 1" = 50'



UTILITY OWNERS

F1...ATT, (Fiber Optic Line)
(800) 778-9140

W1...Nemaha Co. RWD#3, (Water Line)
(785) 336-3522

S ¼ Cor. Sec. 22, T1S, R12E
N 812,987.906 E 10,412,622.220
1. Found ½" bar with cap marked "LS1314", 0.5' deep
2. 2,344.20' Lt of ℄ Tan. Sta. 87+30.72 NW∠= 98°-57'-07"
3. Spk. & wshr. top of fence post 26.5' SE
4. Spk. & wshr. top of cor. post 23.4' SSW
5. TW of 208th road 3.0' N

N ¼ Cor. Sec. 22, T1S, R12E
N 818,262.686 E 10,412,644.860
1. Found ½" bar with cap marked "LS1314", 0.1' deep
2. Spk. & wshr. top of S brace post 29.0' NNW
3. Top of water valve extending 2.5' above grade 69.1' NW
4. Top of water hydrent 80.0' WNW
5. TW of 216th road

SW Cor. Sec. 23, T1S, R12E
N 812,958.014 E 10,415,261.868
1. Found ½" rebar with KDOT cap, 0.3' deep
2. 5.0' Rt of ℄ Tan. Sta. 34+23.42 NW∠= 90°-03'-20"
3. SW cor. W hub guard RCB 78.5' NW
4. Center of conc. R/W marker post 93.4' SW
5. TW of K-63 highway 4.4' W

HISTORIC HIGH WATER INFORMATION

William Holthaus, a KDOT employee with 22 years of knowledge of the project site, says water has not overtopped the roadway, but has been witnessed at pavement edge down stream of the bridge, north of the project near 216th road. Elev. = 1047.60

Sea Level Datum NAVD88

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

CONTOUR MAP
K-63 over Turkey Creek

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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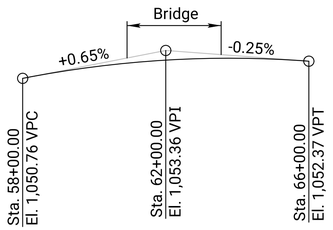
Sh. No. 35

Plotted by : Jake.Pfannenstiel@ks.gov 15-JUL-2024 15:57
File : ka572901bbr0048-04.dgn

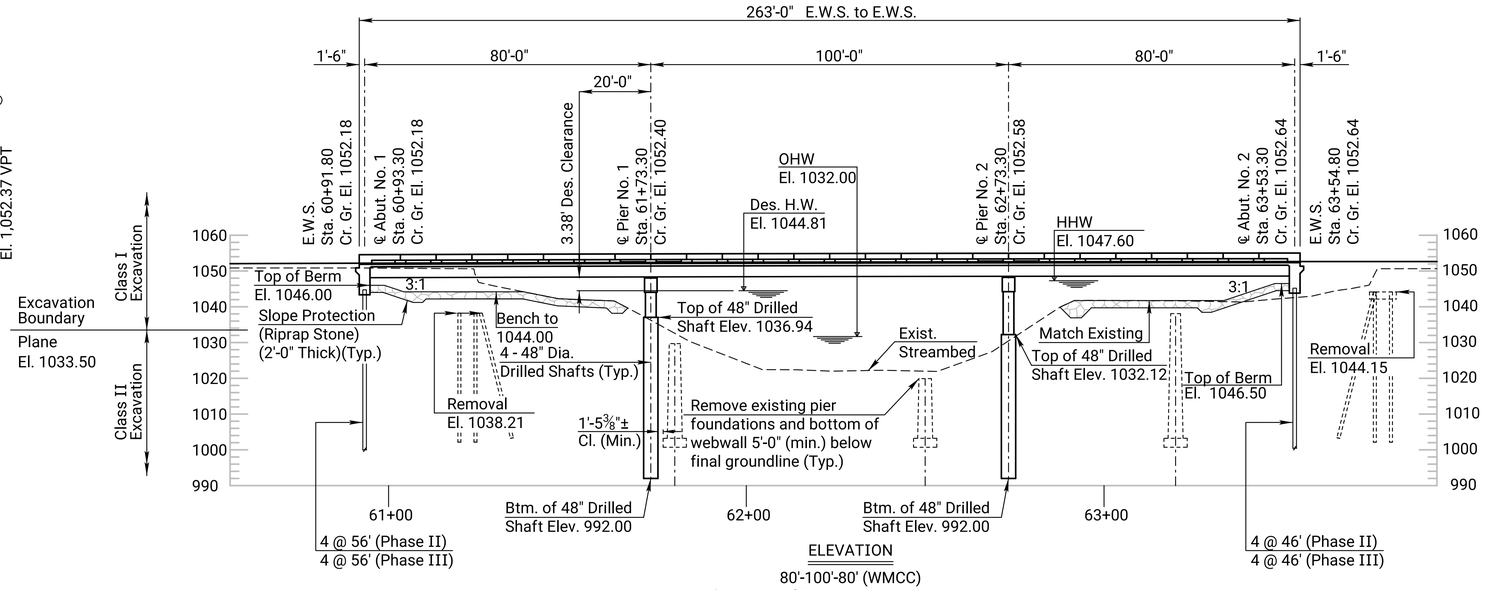
CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	36	141



PROPOSED PROFILE GRADE

800' Vertical Curve



ELEVATION

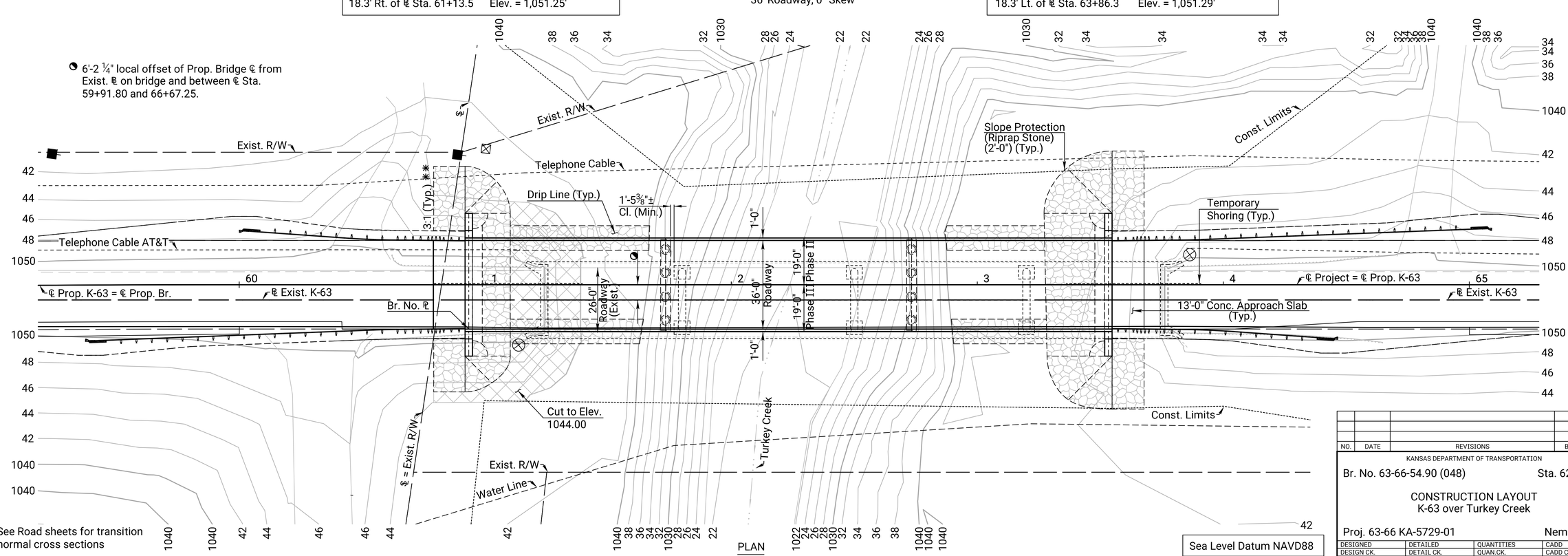
80'-100'-80' (WMCC)
Weathering Steel Beam, Composite & Continuous
Pile Bent Abutments, and Column Bent Piers on Drilled Shafts,
36' Roadway, 0° Skew

DRAINAGE DATA

Drainage Area	288.0	sq. mi.
Design Frequency	50	yrs
Design Discharge (Q50)	24,200	cfs
Design High Water Elevation	1044.81	
Change In Design Backwater	-0.66	ft.
Design Backwater Elevation	1045.31	ft.
Overtopping Elevation (Sta. 55+30)	1049.26	
Overtopping Discharge	65,000	cfs
Overtopping Frequency	>100	yrs
Discharge at Q100	29,600	cfs
Change in Backwater at Q100	- 1.19	ft.
Backwater Elevation at Q100	1045.70	
Historic High Water Elevation	1047.60	
Ordinary High Water Elevation	1032.00	
Total Waterway Provided	3,963	sq. ft.
Design Waterway Provided	3,159	sq. ft.
Estimated Ordinary High Water Discharge	1,853	cfs
Change in Waterway Opening	+ 936	sq. ft.

B.M. #12 Square cut S end E hubguard of bridge
18.3' Rt. of ℄ Sta. 61+13.5 Elev. = 1,051.25'

B.M. #13 Square cut NW cor. W hubguard of bridge
18.3' Lt. of ℄ Sta. 63+86.3 Elev. = 1,051.29'



Scale: 1" = 20 ft.

**See Road sheets for transition to normal cross sections

PLAN

Sea Level Datum NAVD88

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

CONSTRUCTION LAYOUT
K-63 over Turkey Creek

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sh. No. 36

Plotted by: Jake.Pfannenstiel@ks.gov 15-JUL-2024 15:57
File : ka572901bbr0048-06.dgn

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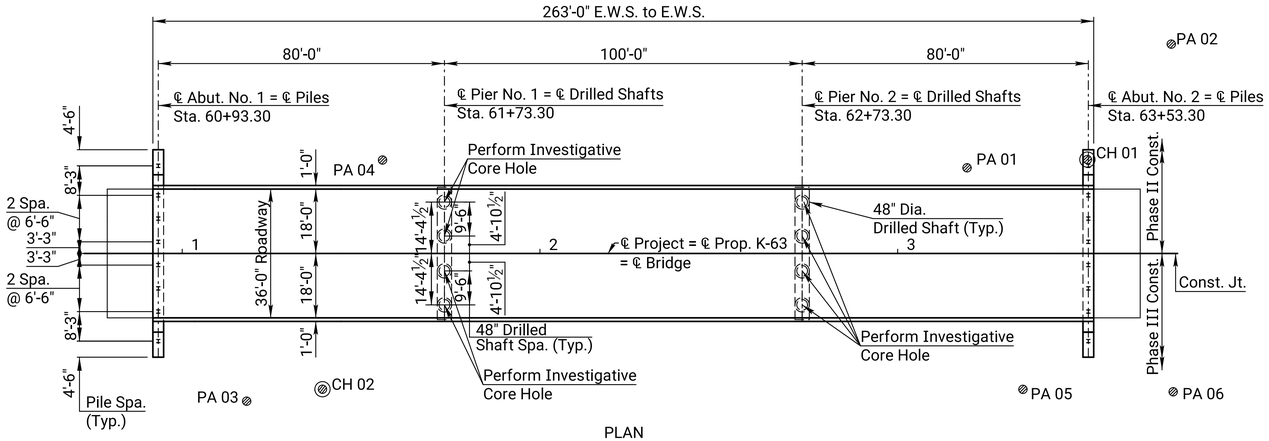
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	37	141

Investigative Core Hole Note: 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.

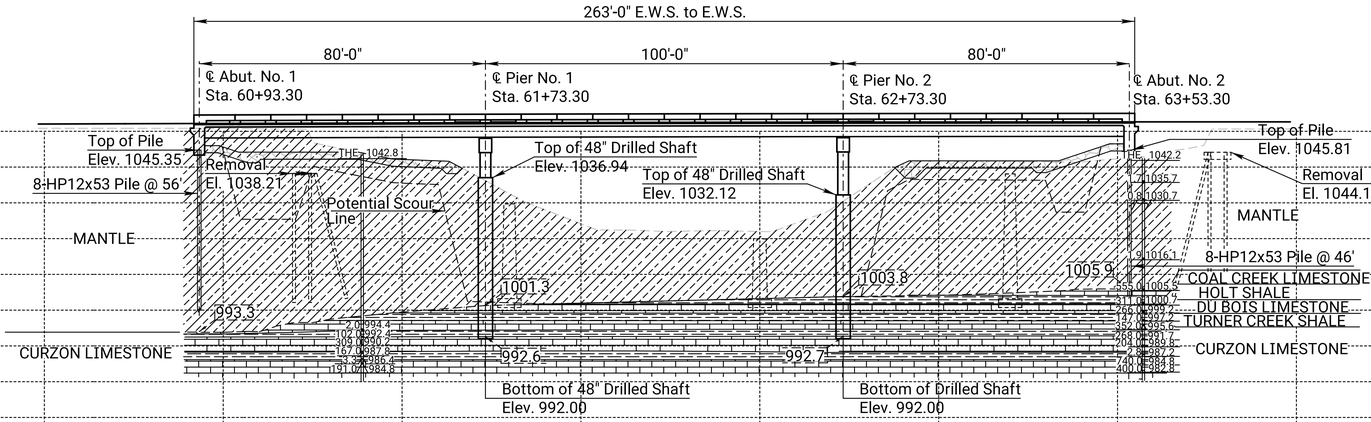
Investigative core holes should be drilled within the footing of each proposed drilled shaft location. The investigative core holes should be performed in accordance with Standard Specification 703.3b.

Piling: The limestone bedrock is variable across Abutment 1 and Abutment 2. Please monitor the pile installation carefully to prevent overdriving and pile damage

All piles shall be steel Gr. 50 HP12x53 with cast steel pile points attached.



PLAN



STANDARD GEOLOGIC SYMBOLS

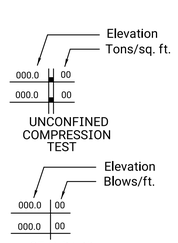
- Clay or Underclay
- Silty Clay
- Silt
- Sand
- Gravel
- Boulders
- Caliche
- Silty Clayey Shale
- Limy Shale
- Black or Fissile Shale
- Sandy Shale
- Gypsiferous Shale
- Weathered Shale
- Sandstone
- Shaly Sandstone
- Gypsum bed
- Dolomite
- Cross-bedded Sandstone
- Limestone
- Cherty Limestone
- Shaly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

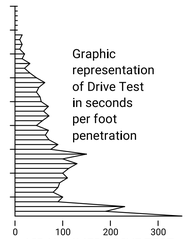
SOUNDINGS

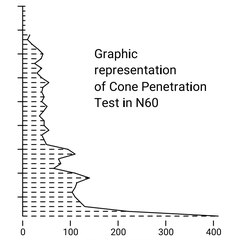
- Core drill
- Power auger
- Hand tools
- Air hammer
- Cone (CPT) penetrometer
- Shelby tube
- Water level 09/2022

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

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

ENGINEERING GEOLOGY
K-63 over Turkey Creek

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sh. No. 37

Scale: 1"-20'

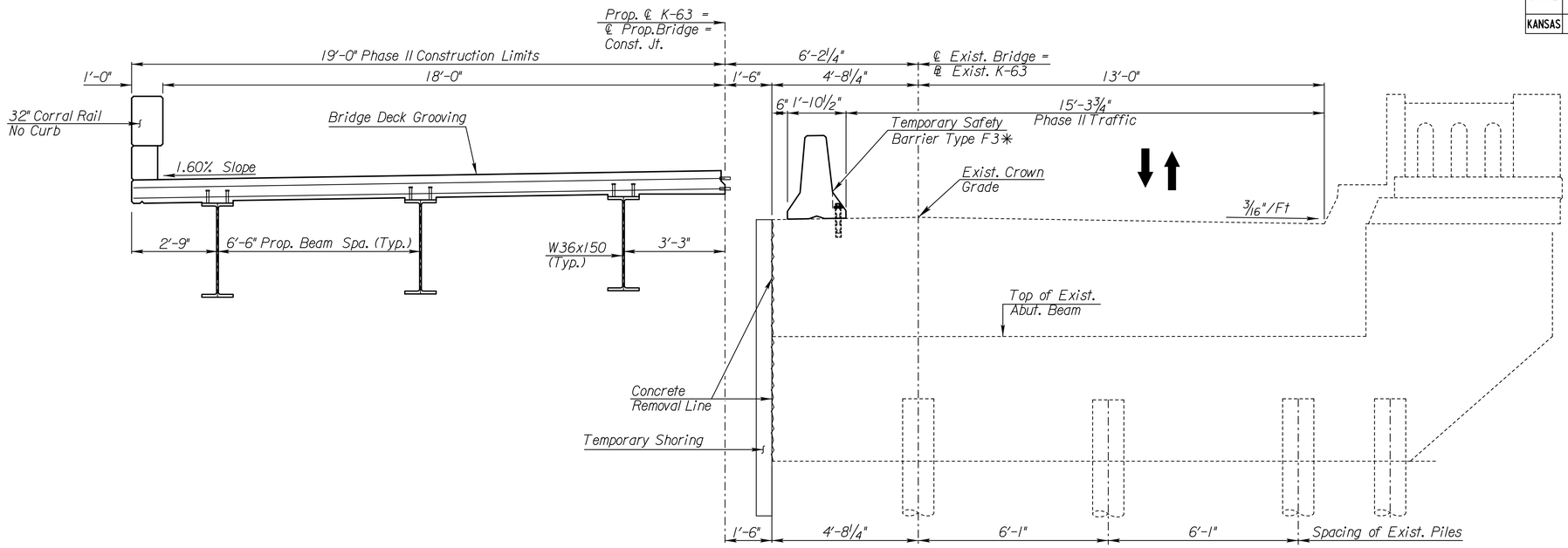
1050 1030 1010 990 970 950 930

59 60 61 62 63 64

Plotted by: Jake.Pfannenstiel@ks.gov 15-JUL-2024 15:58
File : ka572901bbr0048-08.dgn

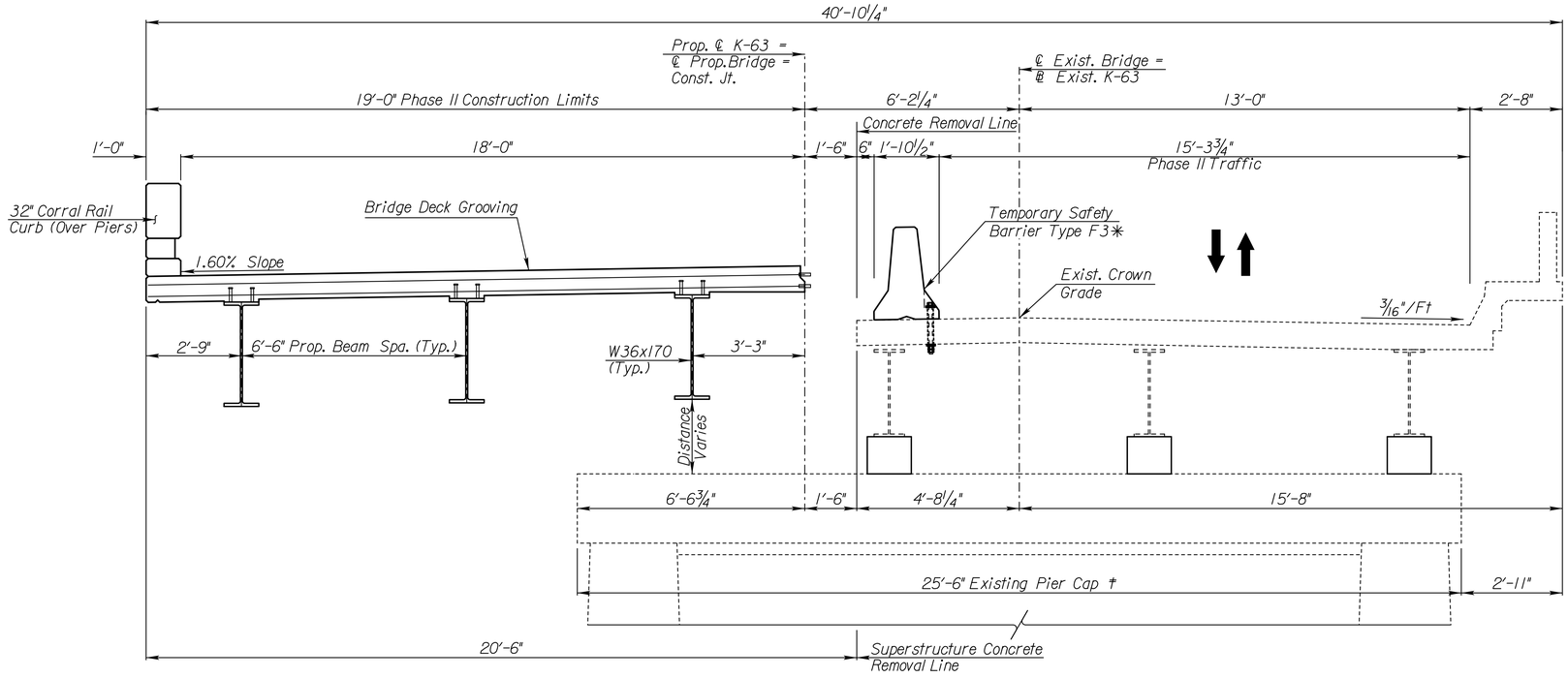
CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	38	141



TYPICAL SECTION AT EXISTING ABUTMENTS DURING PHASE II

(Abut. No. 1 Shown, Looking Upstation, Abut. No. 2 similar)



TYPICAL SECTION NEAR EXIST. PIER DURING PHASE II

(Looking Upstation)

* *See RD622B for anchorage requirements*

† *Demolish exist. pier during Phase III construction. See "Construction Layout" sheet for removal limit details*

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

PHASING DETAILS SHEET I
K-63 over Turkey Creek

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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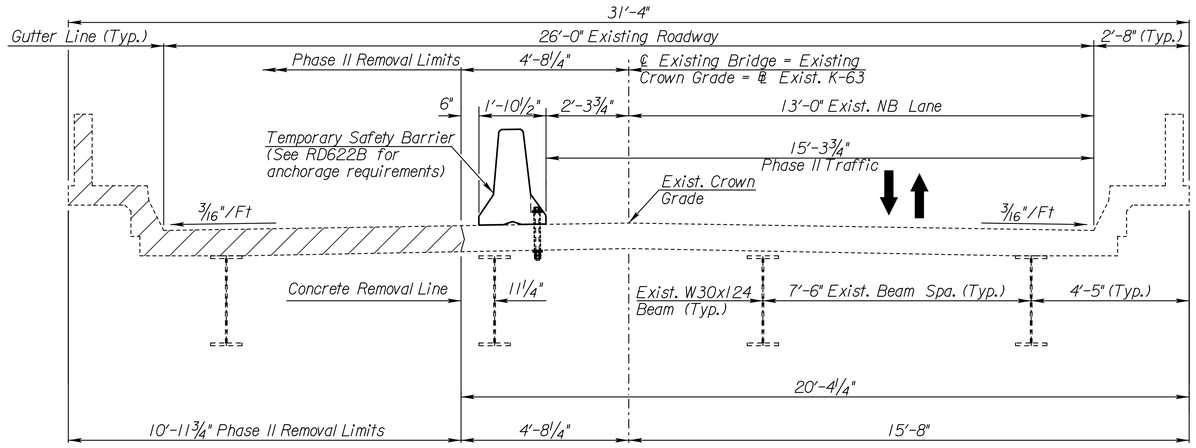
Sheet No. 38

KDOT Graphics Certified

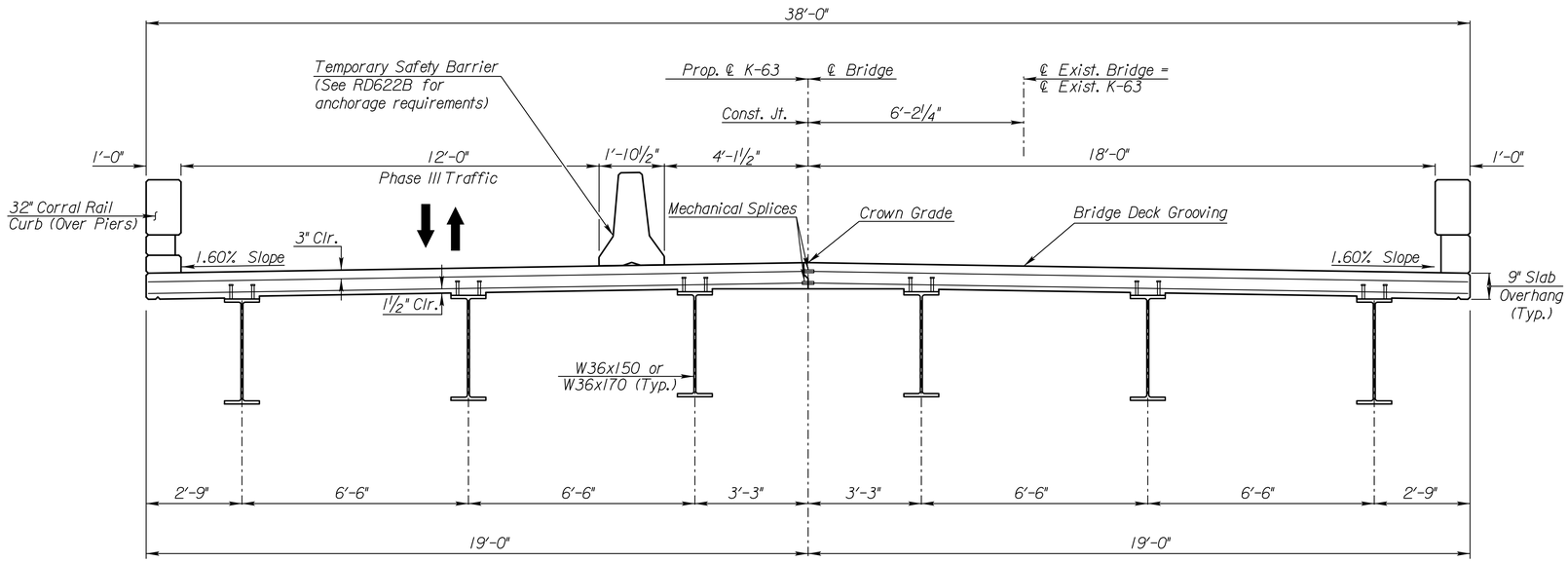
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks572301bbr00048-13.dgn
Plot Date: 15-JUL-2024 15:55

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	39	141



EXIST. BRIDGE TYPICAL SECTION DURING PHASE II

(Looking Upstation)



PROP. BRIDGE TYPICAL SECTION DURING PHASE III

(Looking Upstation)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

PHASING DETAILS SHEET 2
K-63 over Turkey Creek

Proj. 63-66 KA-5729-01 Nemaha Co.

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

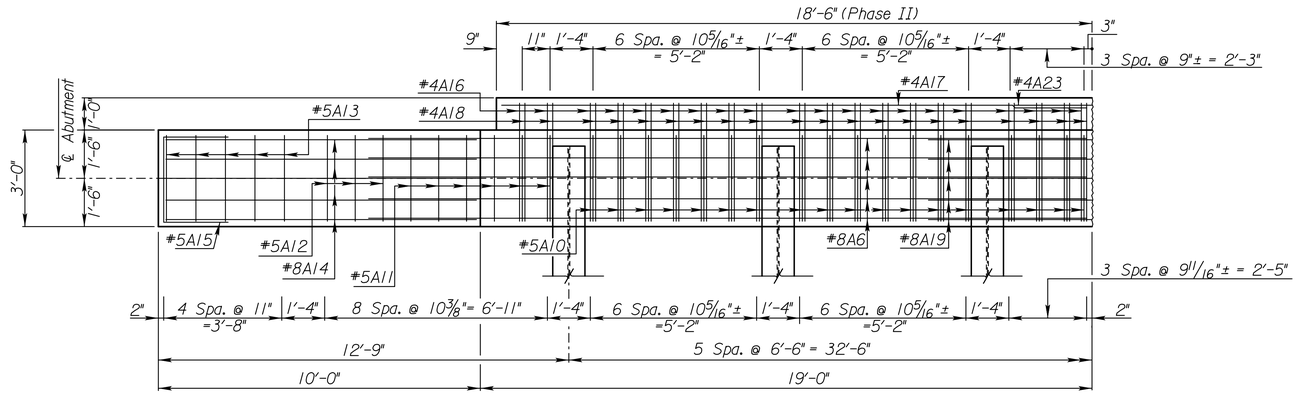
KDOT Graphics Certified 03-15-2024

Sheet No. 39

KDOT Graphics Certified

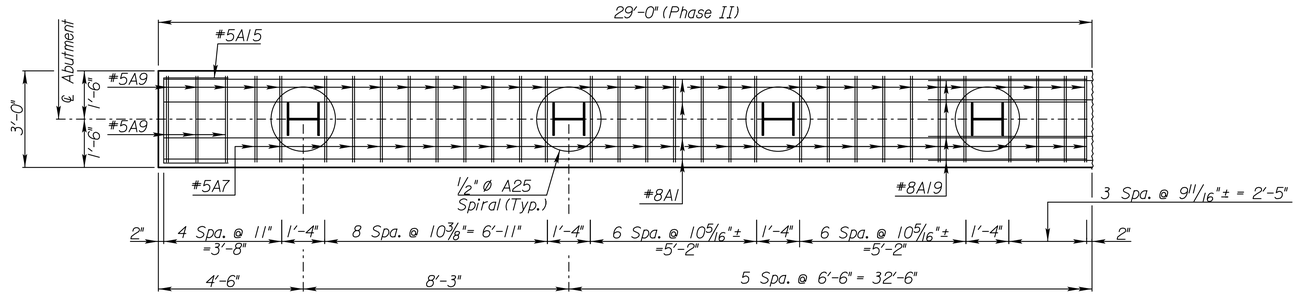
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\br0048-15.dgn
Plot Date: 15-JUL-2024 15:55

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	40	141

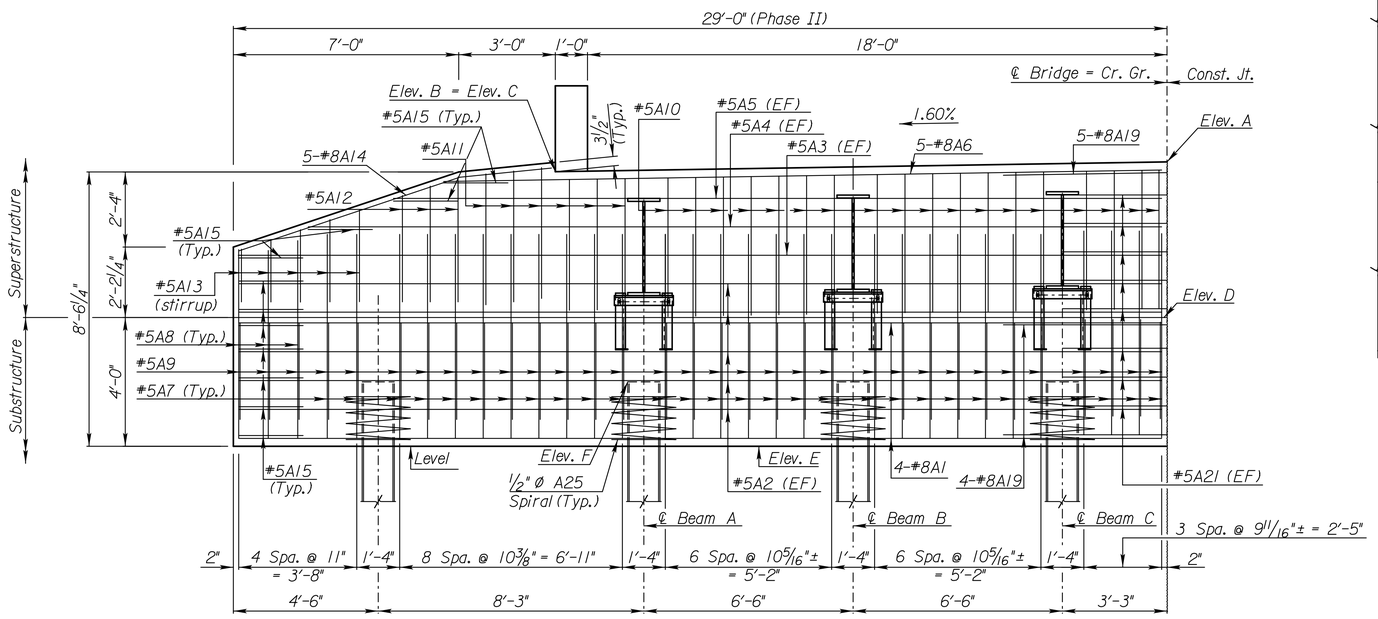


TOP PLAN

(Abutment #2 Shown, Abutment #1 Similar)



BOTTOM PLAN

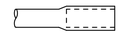


ABUTMENT ELEVATION

(Looking Upstation @ ℄ Abutment #2, Abutment #1 Similar)

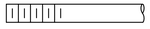
NOTE: Abutment bars are to be spliced from Phase II to Phase III utilizing mechanically spliced rebar. See the "Splice/Coupler Reinforcing Detail" below.

Mechanical splice bars not shown in Plan and Elevation views for clarity.



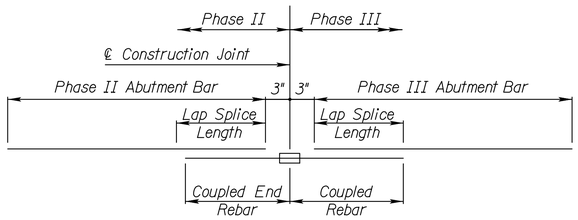
Coupled End Rebar

(Place in Phase II Const.)



Coupled Rebar

(Place in Phase III Const.)



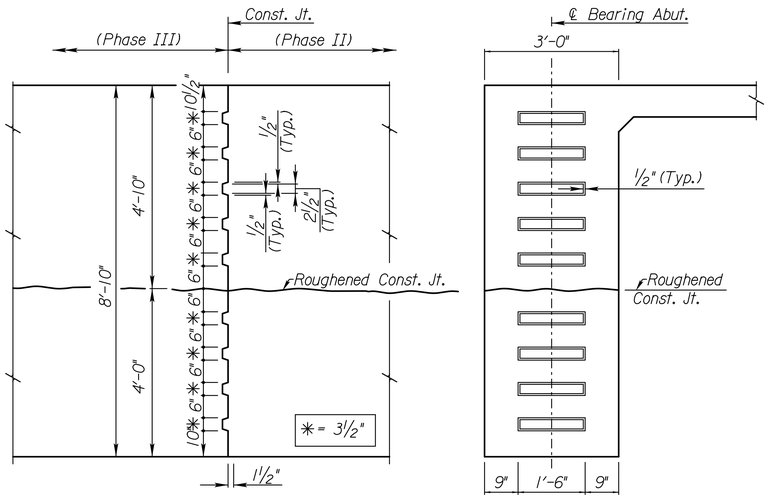
SPLICE/COUPLER REINFORCING DETAIL

Note: See the "AUXILIARY ABUTMENT DETAILS" sheet for "Table of Abutment Reinforcing Splices".

ELEVATIONS		
	Abut. #1	Abut. #2
Elev. A	1052.18	1052.64
Elev. B	1051.88	1052.34
Elev. C	1051.88	1052.34
Elev. D	1047.35	1047.81
Elev. E	1043.35	1043.81
Elev. F	1045.35	1045.81

NOTE: Elevations are located along the Abutment ℄.

BRIDGE BEARING SEAT ELEVATION		
	Abut. #1	Abut. #2
Beam A	1048.06	1048.51
Beam B	1048.16	1048.62
Beam C	1048.27	1048.72



ELEVATION CONSTRUCTION JOINT

Legend

EF= Each Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

ABUTMENT DETAILS I
(Phase II Construction)

Proj. 63-66 KA-5729-01 Nemaha Co.

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

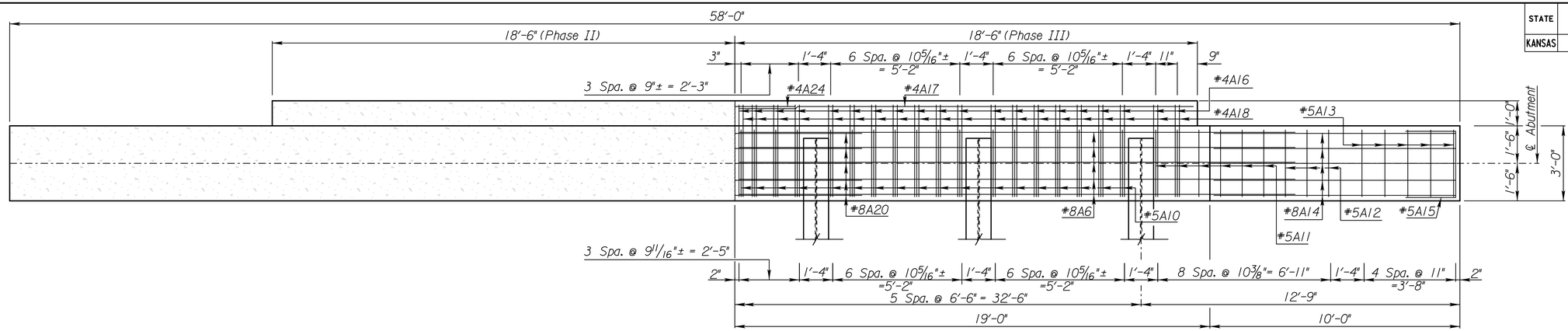
KDOT Graphics Certified 03-15-2024

Sheet No. 40

KDOT Graphics Certified

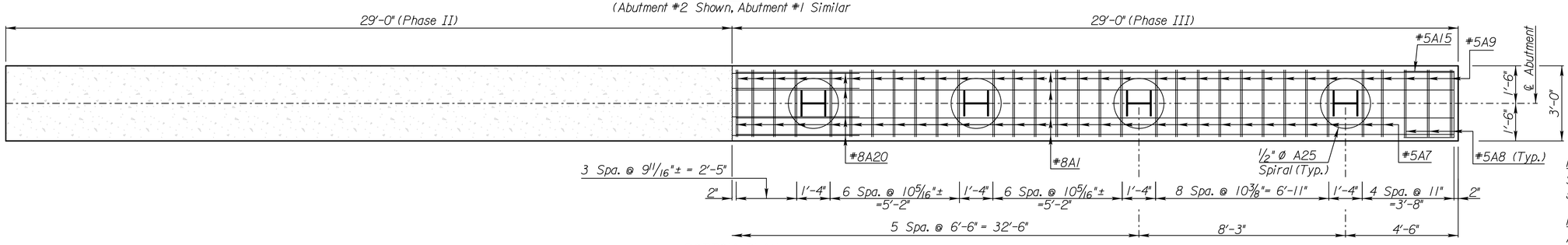
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290tbr00048-17.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	41	141

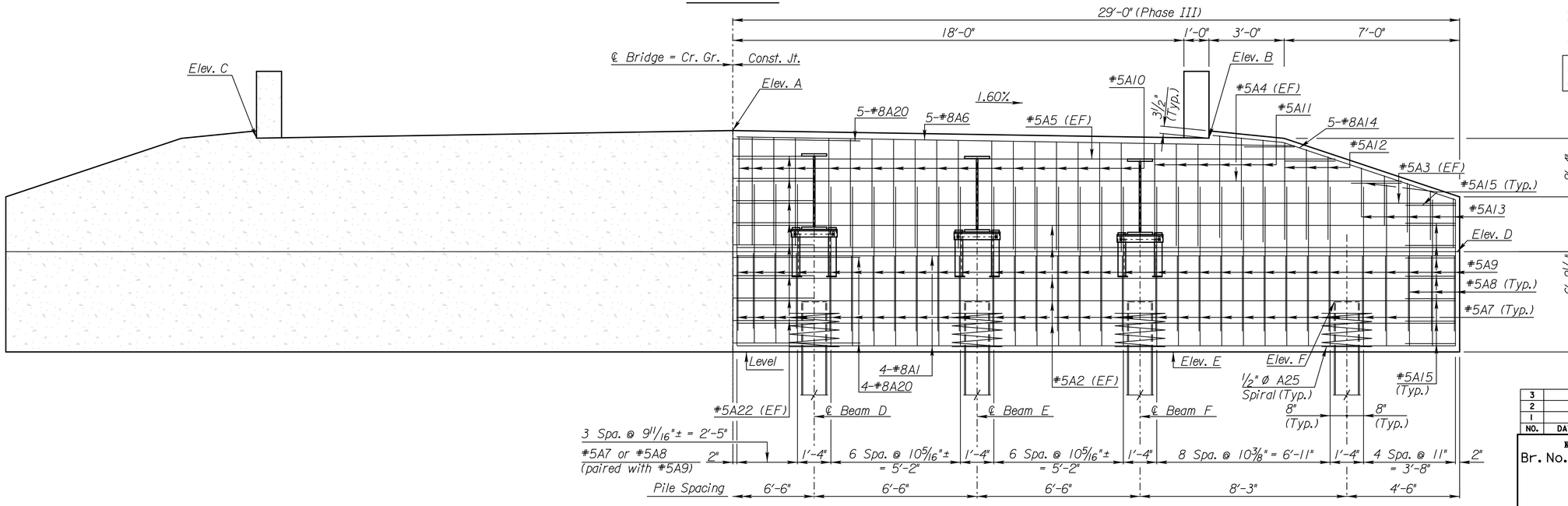


TOP PLAN

(Abutment #2 Shown, Abutment #1 Similar)



BOTTOM PLAN



ABUTMENT ELEVATION

(Looking Upstation @ ℄ Abutment #2, Abutment #1 Similar)

ELEVATIONS		
	Abut. #1	Abut. #2
Elev. A	1052.18	1052.64
Elev. B	1051.88	1052.34
Elev. C	1051.88	1052.34
Elev. D	1047.35	1047.81
Elev. E	1043.35	1043.81
Elev. F	1045.35	1045.81

NOTE: Elevations are located along the Abutment ℄.

BRIDGE BEARING SEAT ELEVATION		
	Abut. #1	Abut. #2
Beam D	1048.27	1048.72
Beam E	1048.16	1048.62
Beam F	1048.06	1048.51

NOTE:
See the "AUXILIARY ABUTMENT DETAILS" sheet for Abutment sections.

NOTE:
Abutment bars are to be spliced from Phase II to Phase III utilizing mechanically spliced rebar. See the "ABUTMENT DETAILS 1" sheet for bar splice details.

Mechanical splice bars are not shown in Plan and Elevation views for clarity.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

ABUTMENT DETAILS 2
(Phase III Construction)

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sheet No. 41

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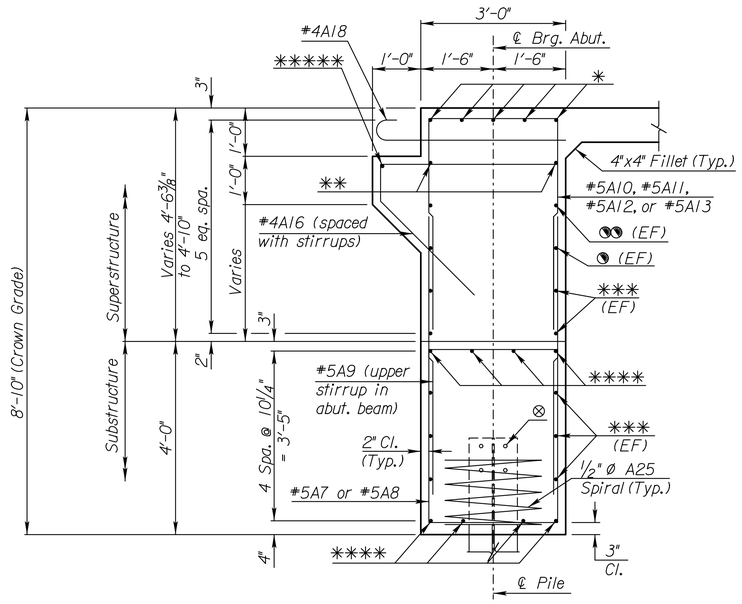
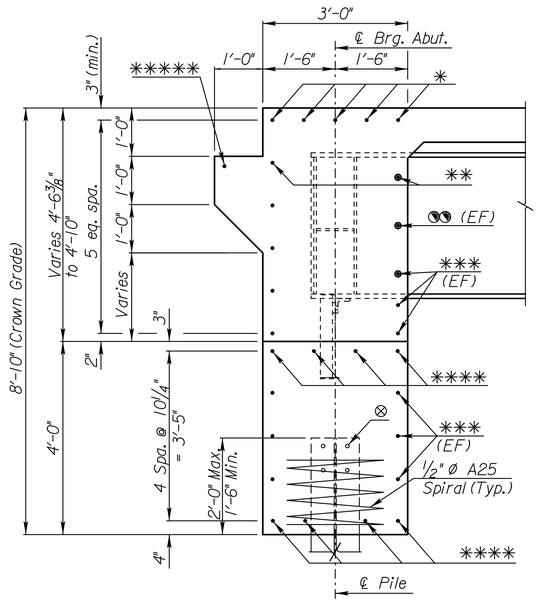
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\bbr00048-19.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	42	141



TYPICAL SECTION BETWEEN GIRDER



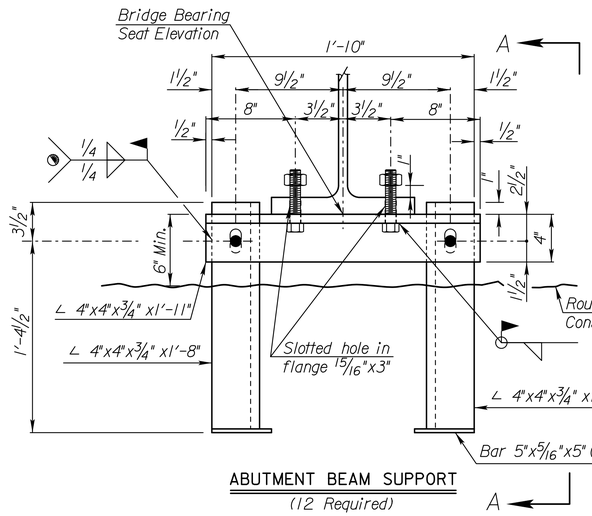
TYPICAL SECTION AT GIRDER

Symbol	Phase II	Phase II Splice	Phase III	Phase III Splice
◔	#5A3	#5A21	#5A3	#5A22
◔◔	#5A4	#5A21	#5A4	#5A22
*	#8A6	#8A19	#8A6	#8A20
**	#5A5	#5A21	#5A5	#5A22
***	#5A2	#5A21	#5A2	#5A22
****	#8A1	#8A19	#8A1	#8A20
*****	#4A17	#4A23	#4A17	#4A24

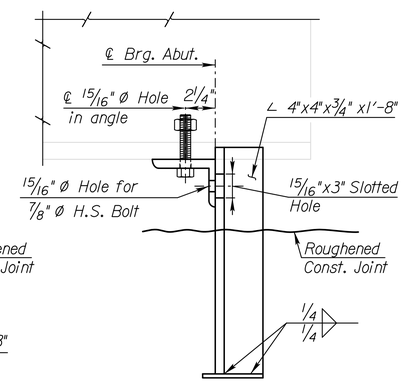
BRIDGE BEARING SEAT ELEVATION		
	Abut. #1	Abut. #2
Beam A	1048.06	1048.51
Beam B	1048.16	1048.62
Beam C	1048.27	1048.72
Beam D	1048.27	1048.72
Beam E	1048.16	1048.62
Beam F	1048.06	1048.51

⊗ Note: Stud weld 8 - 7/8" Ø Welded Stud Shear Connectors to each Pile. See Detail.

Note: Longitudinal Deck Reinforcing Steel not shown for clarity.



ABUTMENT BEAM SUPPORT
(12 Required)

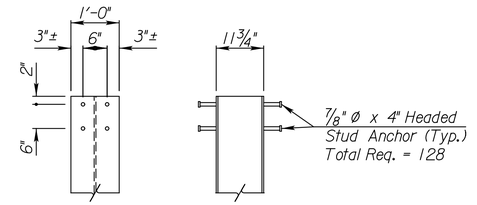


SECTION A-A

H.S. BOLT DIMENSIONS

(1 Beam Support)

Girders	2 - 7/8" x 4 1/2"
Support Legs	2 - 7/8" x 2 1/2"



PILE ANCHOR SPACING DETAIL

Note: Headed Stud Anchors to be subsidiary to the bid item "Piles (Steel) (HP12x53)".

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength I	Service I	Phi
Abutment	68.5	46.7	0.60

Legend

EF= Each Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

ABUTMENT AUXILIARY DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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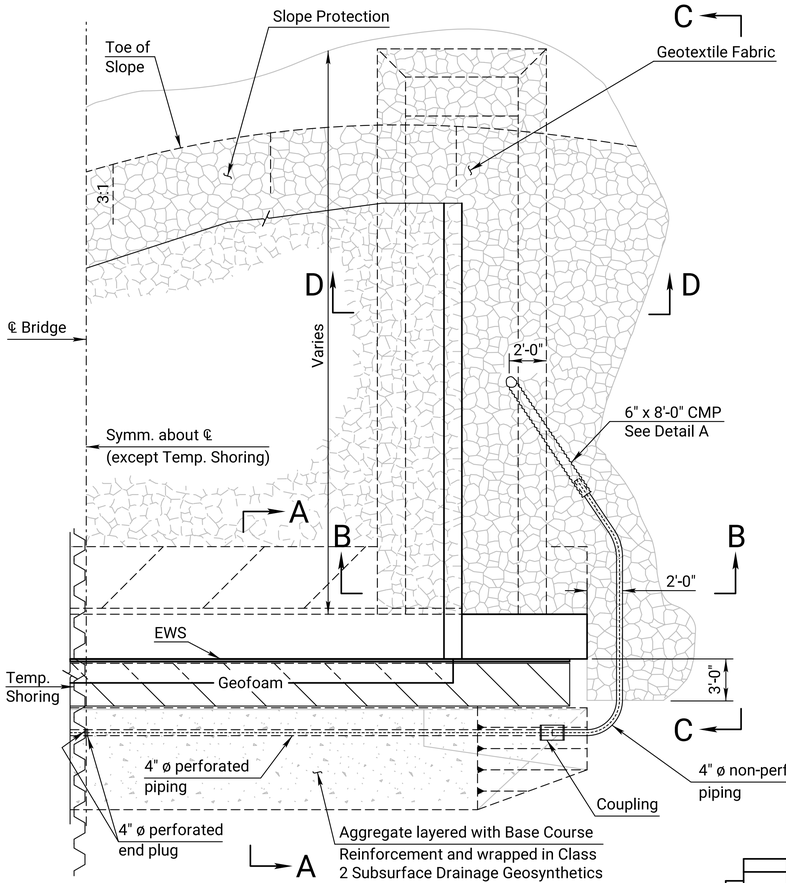
Sheet No. 42

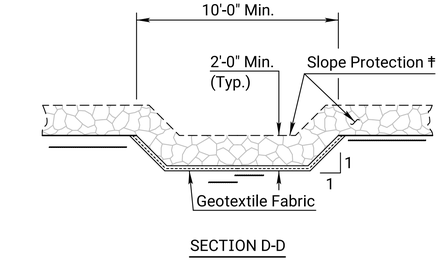
KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\br00048-21.dgn
Plot Date: 15-JUL-2024 16:00

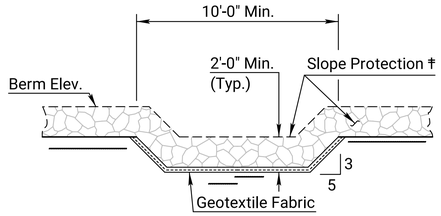
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	43	141



PLAN



SECTION D-D



SECTION B-B

GENERAL NOTES

GEOSYNTHETICS: Use material that complies with KDOT Specification Section 1710 Class 2 subsurface drainage fabric. Place the Class 2 subsurface drainage fabric on graded and compacted material shaped as shown. Allow for enough material so that the sides can be overlapped and that the ends fully separate the aggregate drain from the embankment soils. Place the perforated drain pipe and couple to non-perforated pipe as shown. Allow the non-perforated pipe to pass through a hole carefully cut in fabric. Place aggregate within fabric to just leave the top of the pipe visible. Verify the slope of the pipe, that it is not damaged or displaced and that the couplers are firmly coupled. Continue to backfill to the elevation and shape shown.

AGGREGATE: Use aggregates that complies with KDOT Specifications for SB-1 or SB-2.

BASE COURSE REINFORCEMENT: Use "Base Course Reinforcement" that complies with KDOT Specification Division 1700 or approved material. Place this material in uniform layers without gaps or sags per the manufacturer's recommendations.

GEOFOAM: Use "Geofoam" that complies with ASTM D6817 EPS 12. Acceptance according to Type "C" certification. Bond this material to the backwall protection using materials recommended by the manufacturer.

GEOTEXTILE FABRIC: Use "Geotextile Fabric" that conforms with KDOT Specification 1710 and found on the Prequalified Materials List.

PIPE: Place perforated pipe within the limits and use non-perforated pipe outside the limits of the Abutment Aggregate Drain.

ǂ All "Slope Protection (Riprap Stone)" on this sheet shall meet gradation requirements of 1/4 Ton Class.

ABUTMENT AGGREGATE DRAIN: The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation Sheet. Backfill, compact & grade the cohesive soil to the limits shown. Place the bridge backwall protection, geofoam, geotextile, perforated pipe, alternating layers of aggregate and base course reinforcement as shown. Place the outlet pipe, the CMP, and the backfill. Separate as shown the entire Abutment Aggregate Drain with the geotextile.

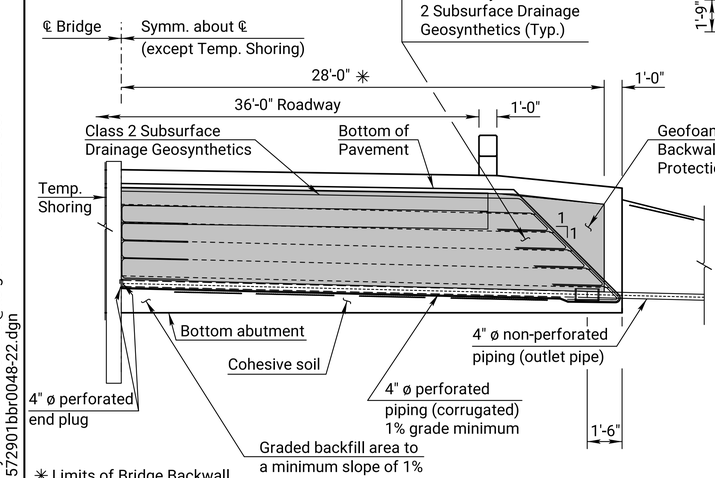
BRIDGE BACKWALL PROTECTION SYSTEM: Apply a non coal-tar Bridge Backwall Protection System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Repair any damage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

Compact the abutment backfill. See the KDOT Specifications.

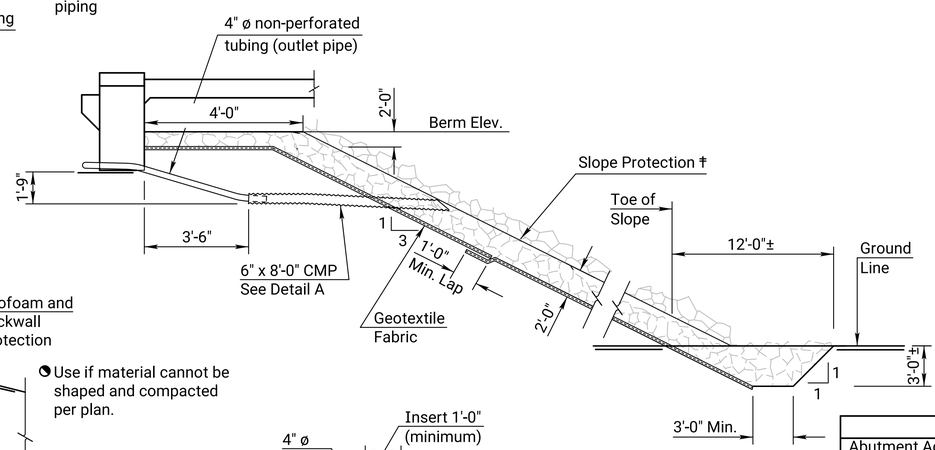
Perforated pipe and non-perforated outlet pipe shall be corrugated polyethylene tubing conforming to the KDOT Specifications.

Fit the CMP end section with 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.

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.

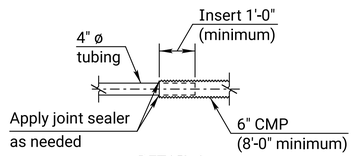


ELEVATION



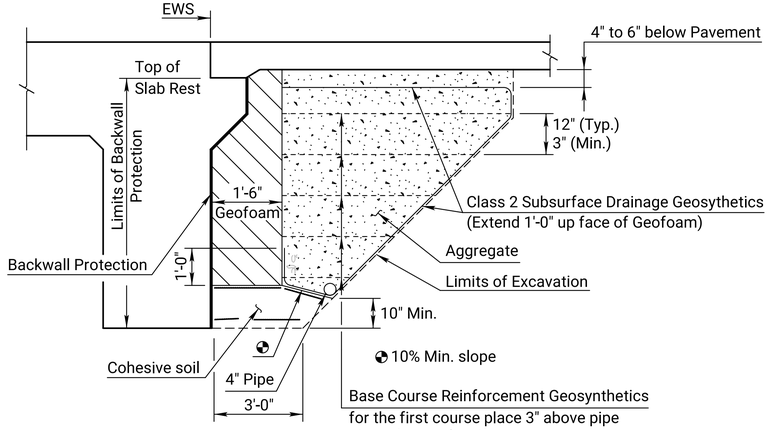
SECTION C-C

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



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. For stream crossings place outlet on downstream side of bridge.



SECTION A-A
(Abutment Aggregate Drain)
Taken at ℄

SUMMARY OF QUANTITIES (2 Abutments)	
Abutment Aggregate Drain	126 Cu. Yds.
Bridge Backwall Protection System	98 Sq. Yds.
Items subsidiary to Abutment Aggregate Drain	
4" ø Perforated Pipe	112 Lin. Ft.
4" ø Outlet Pipe	57 Lin. Ft.
6" ø CMP	32 Lin. Ft.
Geosynthetics (Class 2 Subsurface Drainage)	356 Sq. Yds.
Geosynthetics (Base Course Reinforcement)	320 Sq. Yds.
Geofoam	35 Cu. Yds.
Items subsidiary to Slope Protection	
Geotextile Fabric	102 Sq. Yds.

NO.	DATE	REVISIONS	BY	APP'D
08	05-05-23	Removed soil cap; Geofoam bottom flat	M.L.L.	M.A.H.
07	12-11-18	Corrected std. base file name	M.L.L.	J.P.J.
06	02-04-15	Modified Per 2015 Specification	J.P.J.	C.E.R.

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

ABUTMENT DRAINAGE DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

DESIGNED	J.P.J.	DETAILED	J.P.J.	QUANTITIES	CADD	M.L.L.
DESIGN CK.		DETAIL CK.		QUAN.CK.	CADD CK.	

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Sh. No. 43

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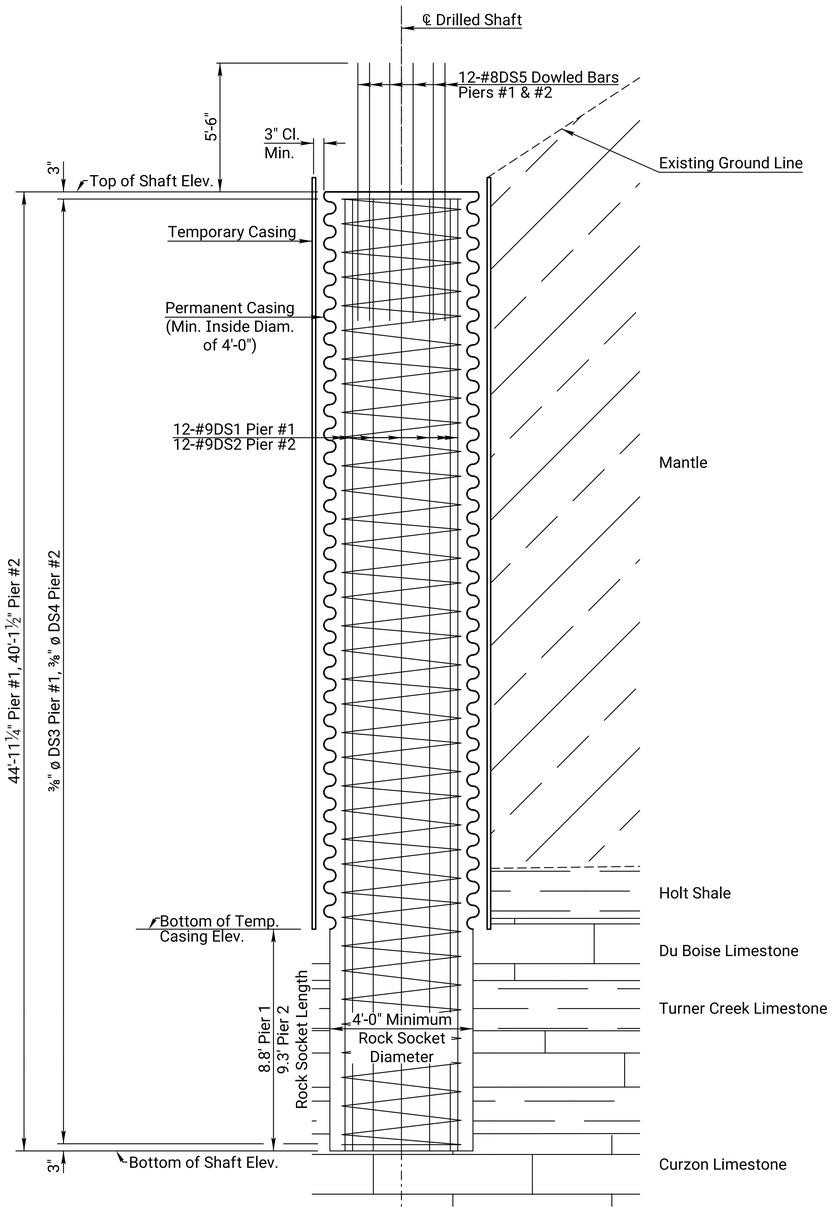
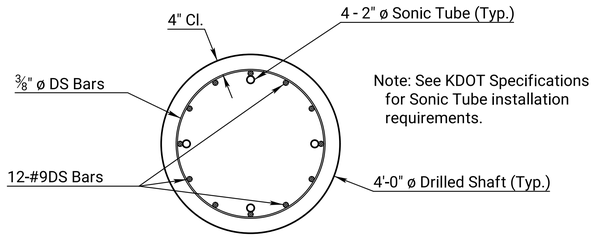
File : ka572901bbr0048-22.dgn

Note: Contact the KDOT Topeka Regional Geology Office prior to the construction of the drilled shafts.



TYPICAL ELEVATION VIEW OF DRILLED SHAFT



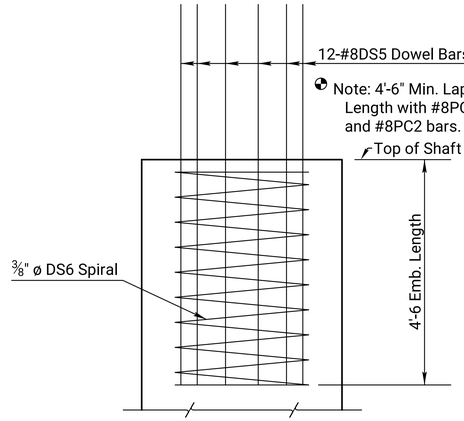
Note: See KDOT Specifications for Sonic Tube installation requirements.

TYPICAL SECTION OF DRILLED SHAFT

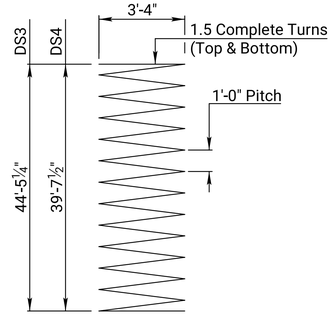
BILL OF REINFORCING STEEL
Grade 60 Non-Epoxy
Total for Pier #1 & #2
Subsidiary to Drilled Shafts
Shown for Information Only

Mark	Size	Number	Length
DS1	9	48	44'-8¼"
DS2	9	48	39'-10½"
DS5	8	96	10'-0"
DS3	⅜" ø	4	††
DS4	⅜" ø	4	††
DS6	⅜" ø	8	††

†† See Bending Diagram



DETAIL OF DRILLED SHAFT DOWEL BARS

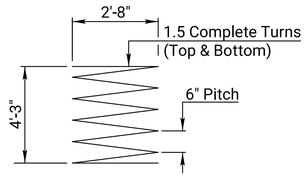


DS3, DS4

(⅜"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) Minimum section modulus = 0.008 in.³
2) 4 required per spiral



DS6

(⅜"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) Minimum section modulus = 0.008 in.³
2) 4 required per spiral

Pier	Station	Top of Shaft Elev.	Exist. Ground Line Elev.	Top of Rock Elev.	Bottom of Casing Elev.	Bottom of Shaft Elev.	Drilled Shaft Length (ft)
Pier No. 1	61+73.30	1036.94	1036.23±	1001.3	1000.8	992.0	44'-11¼"
Pier No. 2	62+73.30	1032.12	1030.45±	1003.8	1001.3	992.0	40'-1½"

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	44	141

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 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.

PERMANENT CASING: See KDOT Specifications

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.

DRILLED SHAFT BACKFILL: Backfill the annular space between the temporary casing and the permanent casing with granular material as defined in the KDOT Specifications.

ROCK SOCKET LENGTH: Provide a minimum Rock Socket Length below the bottom of the casing as shown. Contact the KDOT Bridge Design Section if not able to provide the minimum Rock Socket Length.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

DRILLED SHAFT DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sh. No. 44

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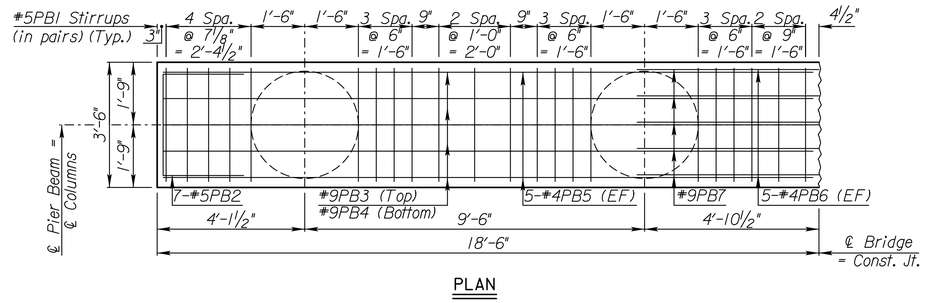
File : ka572901bbr0048-25.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	45	141



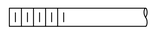
PLAN

NOTE: Pier Beam bars are to be spliced from Phase II to Phase III utilizing mechanically spliced rebar. See the "Splice/Coupler Reinforcing Detail" on the "AUXILIARY PIER DETAILS" sheet.

Mechanical splice bars not shown in Plan and Elevation views for clarity.

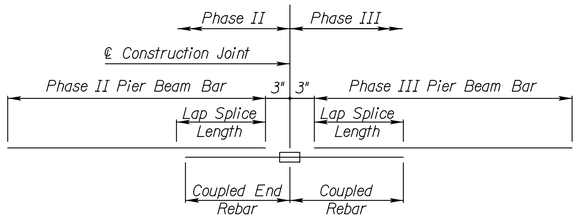
Coupled End Rebar

(Place in Phase II Const.)



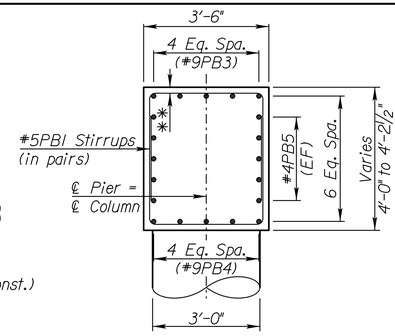
Coupled Rebar

(Place in Phase III Const.)

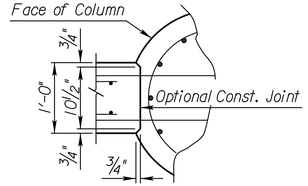


SPLICE/COUPLER REINFORCING DETAIL

Note: See the "AUXILIARY PIER DETAILS" sheet for "Table of Pier Reinforcing Splices".



SECTION THRU PIER BEAM



WEBWALL CONSTRUCTION JOINT DETAIL

TABLE OF ELEVATIONS		
Elevation	Pier #1	Pier #2
A	1047.94	1048.12
B	1048.04	1048.22
C	1048.15	1048.33
F	1043.94	1044.12
G	1042.94	1043.12
H	1037.94	1033.12
I	1036.94	1032.12
J	992.00	992.00

Note: Elevations are located along the Pier ℄.

Note: See "AUXILIARY PIER DETAILS" sheet for locations of Preformed Anchor Bolt Holes.

Note: Either cast the columns and pier web monolithically, or cast the columns separately using a keyed joint as shown. If the columns are cast separately, use threaded deformed bars in lieu of the #4PW4 & #4PW5 dowel bars. Bar diameter and embedment length into the web wall shall be as designated. The inserts shall develop the full yield strength of bars. No change in compensation is allowed with the use of inserts. Coil inserts are not allowed.

** The clearance from the top of the Pier beam to the #5PB1 stirrups will vary with a minimum of 2".

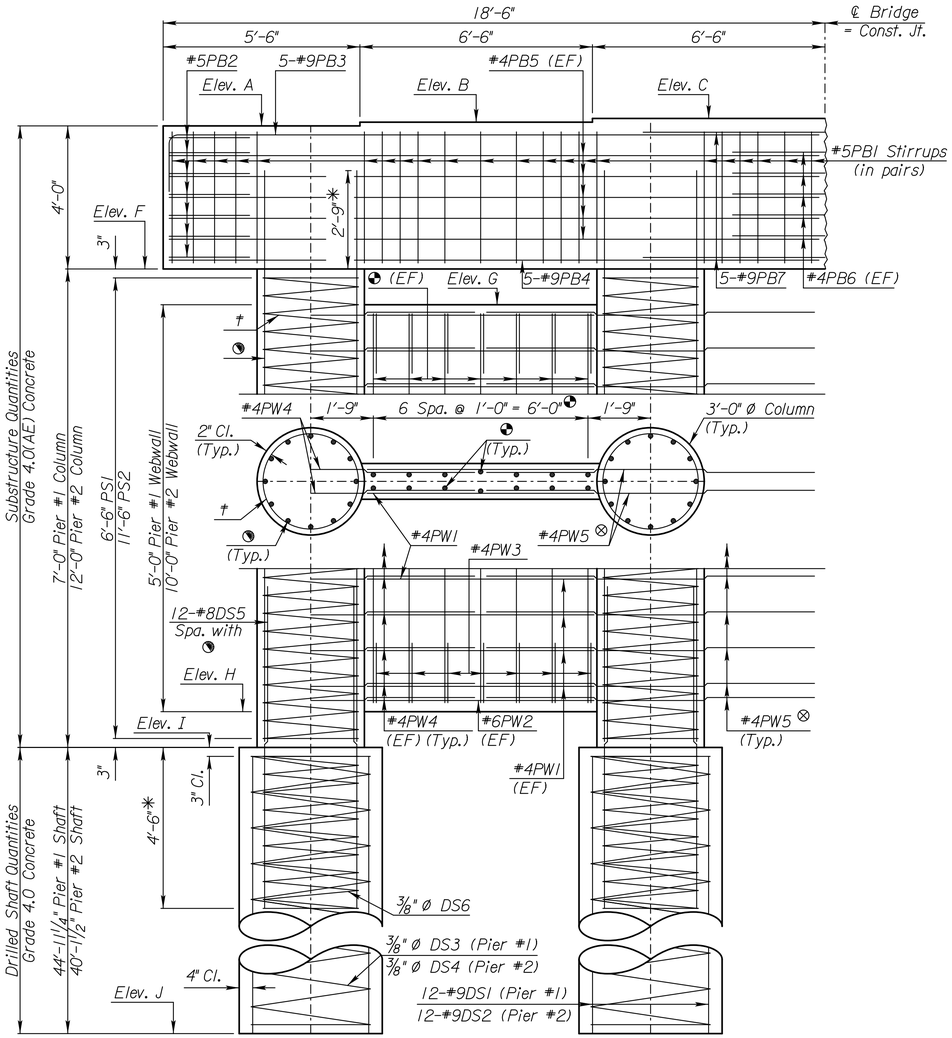
✳ Minimum Embedment

◔ 12-#8PC1 for Pier #1 & 12-#8PC2 for Pier #2

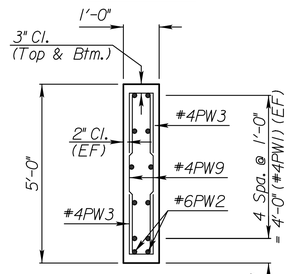
† 3/8"Ø PS1 for Pier #1 & 3/8"Ø PS2 for Pier #2

◕ #4PW9 for Pier #1 & #4PW8 for Pier #2

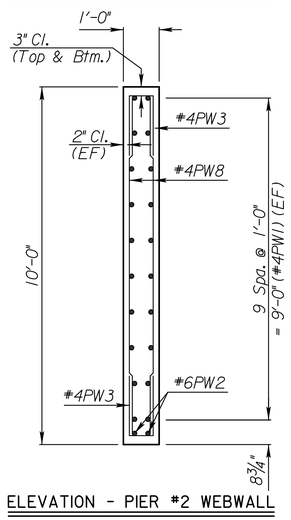
⊗ The #4PW5 bars will be spliced to the #6PW7 and #4PW6 bars in Phase III



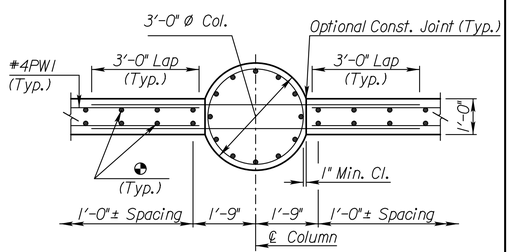
ELEVATION
(Looking North)



ELEVATION - PIER #1 WEBWALL



ELEVATION - PIER #2 WEBWALL



SECTION THRU COLUMN

Legend

EF = Each Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

PIER DETAILS I
(Phase II Construction)

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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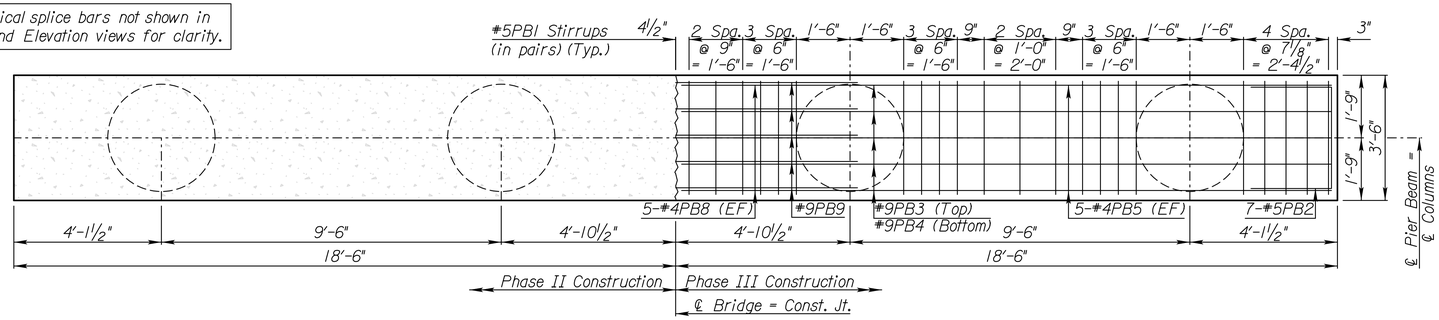
Sheet No. 45

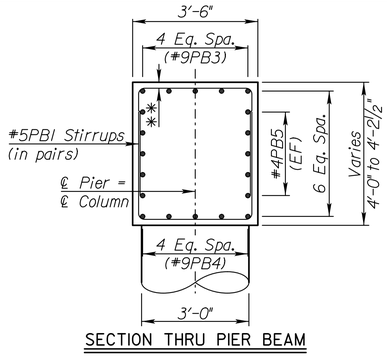
KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov
File: ks57290\bbr0048-27.dgn
Plot Date: 15-JUL-2024 15:53
Plot Location: Bridge

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	46	141

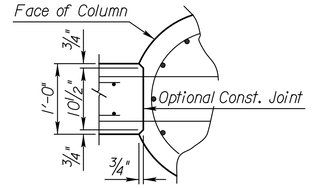
Mechanical splice bars not shown in Plan and Elevation views for clarity.





SECTION THRU PIER BEAM

TABLE OF ELEVATIONS		
Elevation	Pier #1	Pier #2
A	1047.94	1048.12
B	1048.04	1048.22
C	1048.15	1048.33
D	1048.04	1048.22
E	1047.94	1048.12
F	1043.94	1044.12
G	1042.94	1043.12
H	1037.94	1033.12
I	1036.94	1032.12
J	992.00	992.00



WEBWALL CONSTRUCTION JOINT DETAIL

Note: Elevations are located along the Pier ℄.

Note: See "AUXILIARY PIER DETAILS" sheet for locations of Preformed Anchor Bolt Holes.

Note: Either cast the columns and pier web monolithically, or cast the columns separately using a keyed joint as shown. If the columns are cast separately, use threaded deformed bars in lieu of the #4PW4 & #4PW5 dowel bars. Bar diameter and embedment length into the web wall shall be as designated. The inserts shall develop the full yield strength of bars. No change in compensation is allowed with the use of inserts. Coil inserts are not allowed.

** The clearance from the top of the Pier beam to the #5PB1 stirrups will vary with a minimum of 2".

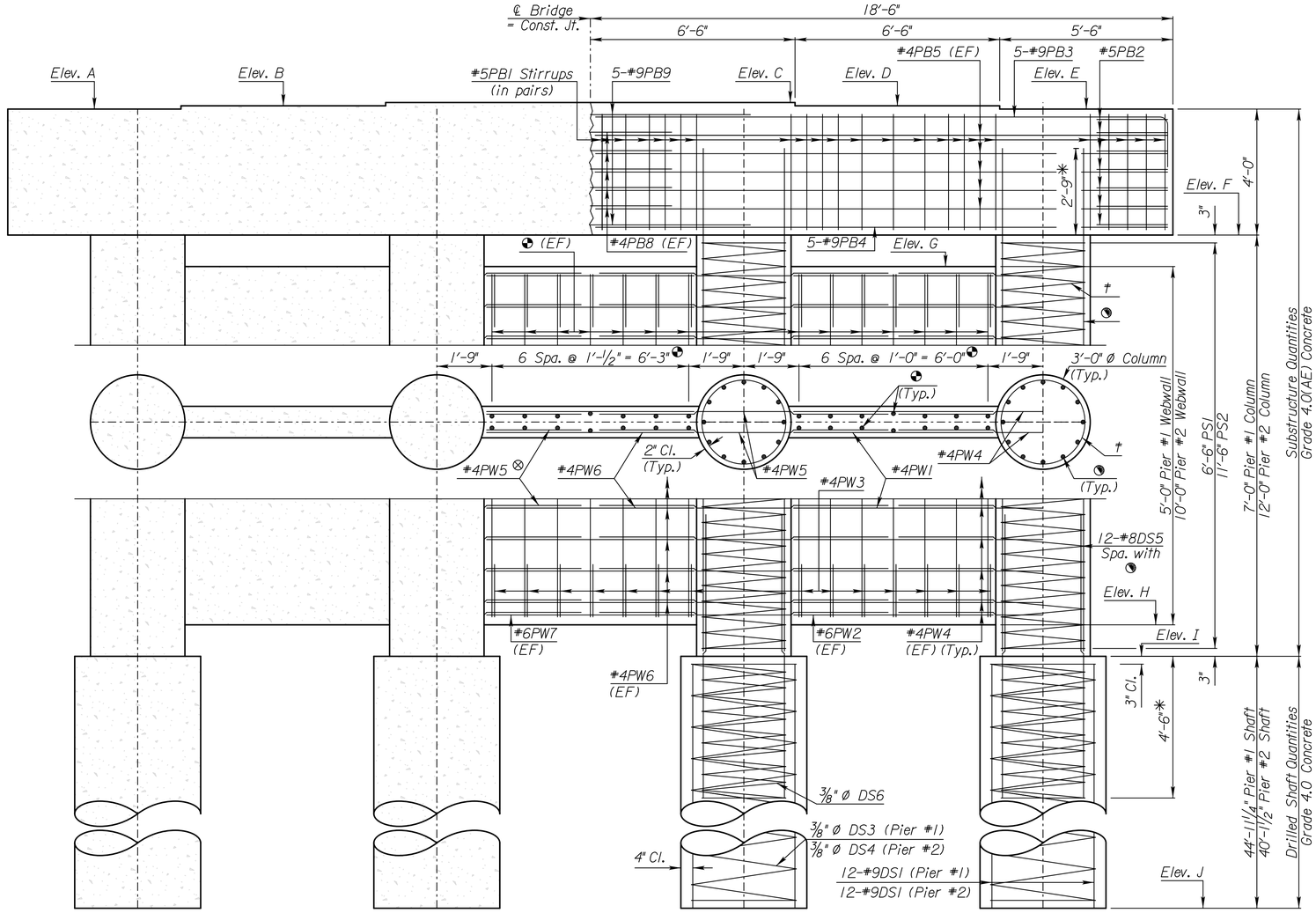
✳ Minimum Embedment

◔ 12-#8PC1 for Pier #1 & 12-#8PC2 for Pier #2

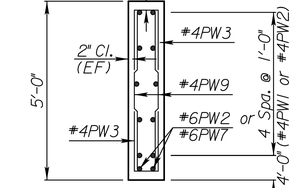
† ⅜"Ø PS1 for Pier #1 & ⅜"Ø PS2 for Pier #2

◕ #4PW9 for Pier #1 & #4PW8 for Pier #2

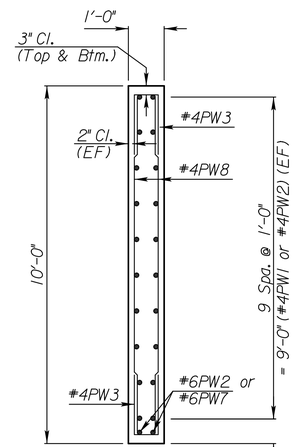
⊗ Splice the #4PW6 and #6PW7 bars to the #4PW5 bars from Phase II



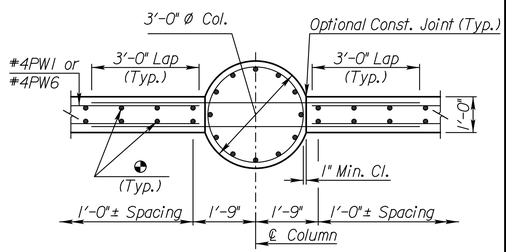
ELEVATION
(Looking North)



ELEVATION - PIER #1 WEBWALL



ELEVATION - PIER #2 WEBWALL



SECTION THRU COLUMN

Legend
EF = Each Face

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30

PIER DETAILS 2
(Phase III Construction)

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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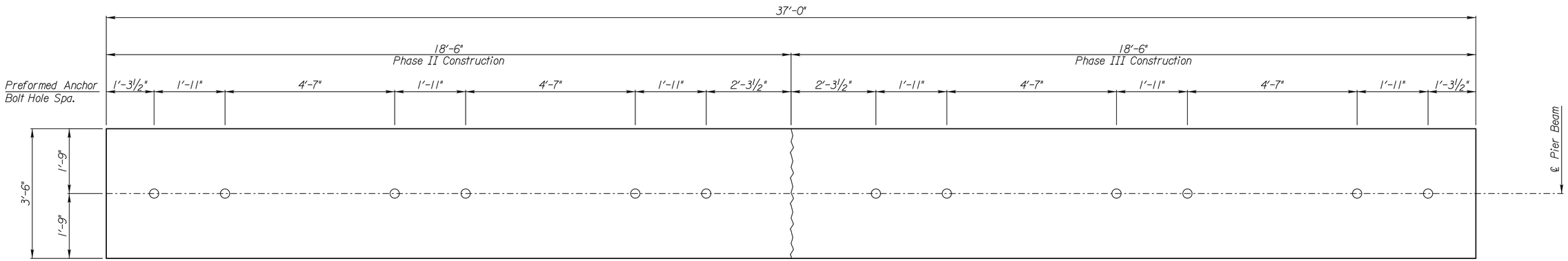
Sheet No. 46

KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ka572901bbr0048-29.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	47	141



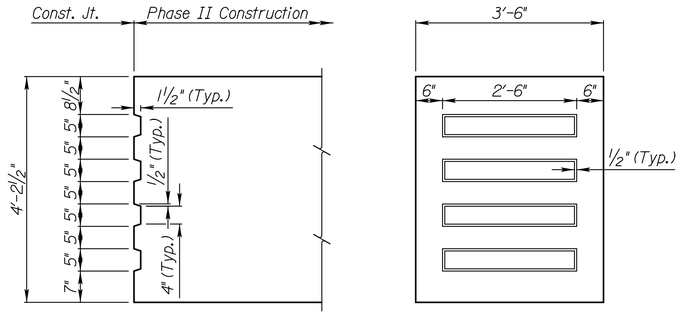
PLAN

NOTE: Spacing shown to centerline of Preformed Anchor Bolt Holes.

ANCHOR BOLTS: Anchor bolts will adhere to KDOT Standard Specification Division 1600 (Grade 55) with the following exception. The threads may be rolled or cut. The bolts and nuts shall be galvanaized.

Place the pier beam reinforcing bars to clear the anchor bolts.

PREFORMED ANCHOR BOLT HOLES: Preform 3 inch diameter holes at the locations shown. When temperatures are expected to go below freezing, seal the preformed holes or fill them with a propylene glycol-based antifreeze to prevent expansion damage. The holes will be free of water, antifreeze or other foreign materials at the time of grouting the anchor bolts. The polyethylene tubing may remain in place. Trim the tubing flush with the top of the concrete This work shall be subsidiary to Concrete Grade 4.0 (AE).



PIER BEAM CONSTRUCTION JOINT

Phase II	Phase II Splice	Phase III	Phase III Splice
#9PB3	#9PB7	#9PB3	#9PB9
#9PB4	#9PB7	#9PB4	#9PB9
#4PB5	#4PB6	#4PB5	#4PB8

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

AUXILIARY PIER DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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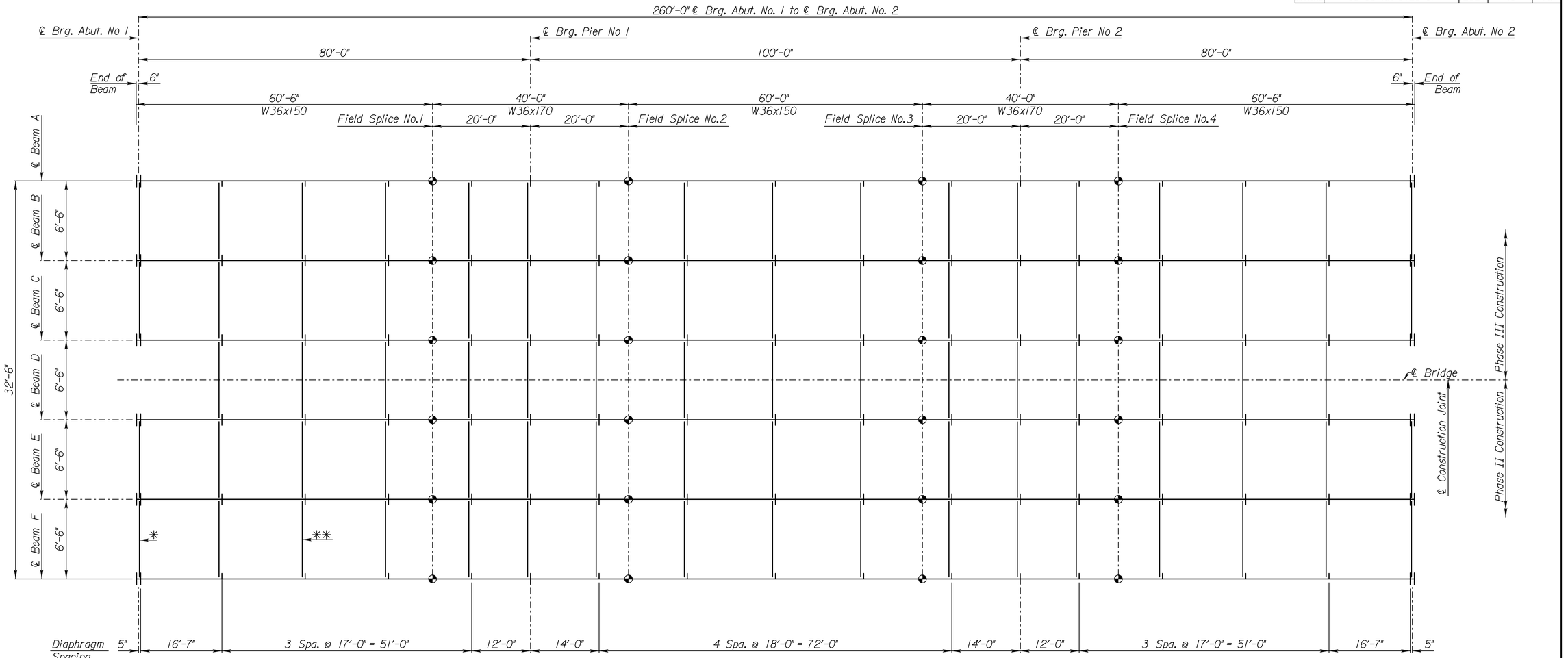
Sheet No. 47

KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\br00048-31.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	48	141



* See "Abutment Frame Details" sheet.
** See "Diaphragm Details" sheet.

Note: Attach the intermediate diaphragms between Beams C and D after the placement of Phase III deck concrete. Field drill holes in the Beam D connections stiffeners using holes in the diaphragms as a template.

Note: All longitudinal dimensions are horizontal. All transverse web stiffeners are perpendicular to the top flange of the beam, except bearing stiffeners, which shall be vertical. Cut beam ends vertical. Correct beam length for grade.

Note: Blast clean all bent plate diaphragms and stiffeners at bolted connections to a surface condition of SSPC-SP6 or better to satisfy Class B Surface requirements.

FRAMING PLAN

STRUCTURAL STEEL SUMMARY			
Item	ASTM A709 Gr. 50 (lb)	ASTM A709 Gr. 50W (lb)	AASHTO M270 Gr. 50W T3 (lb)
Beams			244,500
Flange Splice Plates			7,887
Web Splice Plates			3,641
Stiffeners		4,928	
Fill Plates	608		
Bearing Stiffeners (Pier only)		938	
Abutment Frames		1,040	
Bent Plate Diaphragm		16,509	
Beam Supports	1,219		
Total Structural Steel	1,827	23,415	256,028

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30
FRAMING PLAN
Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sheet No. 48

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Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290lbr0048-32.dgn
Plot Date: 15-JUL-2024 15:56

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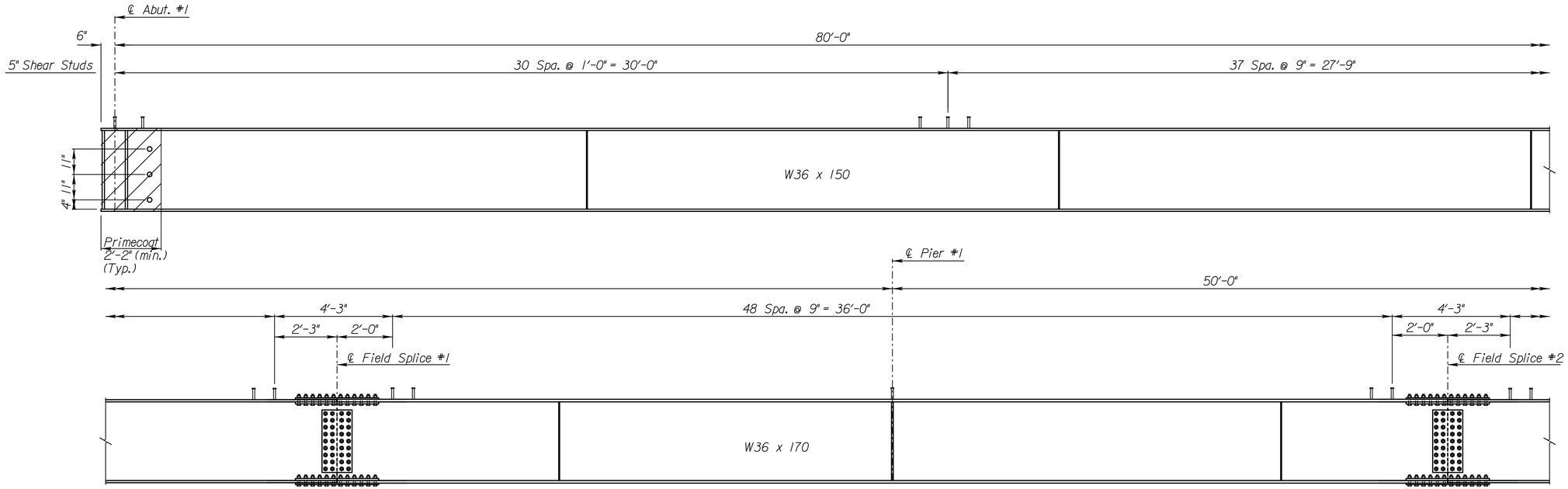
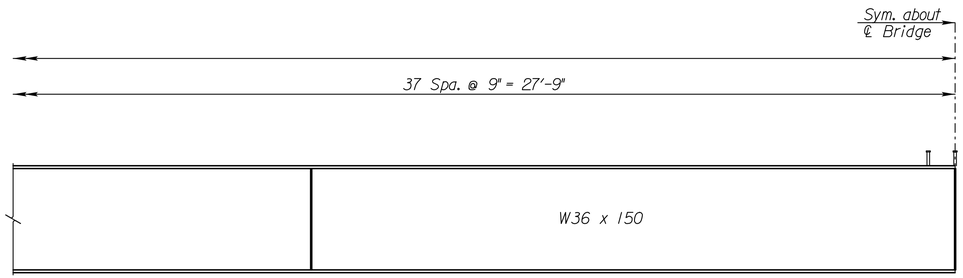
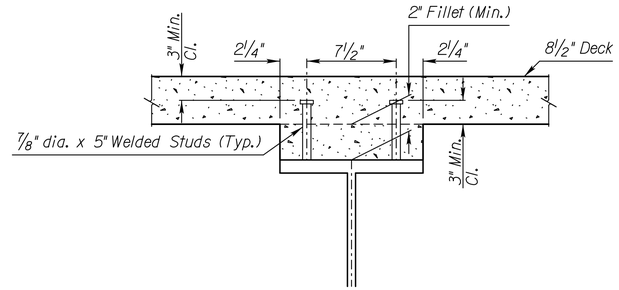
KANSAS	63-66 KA-5729-01	2024	49	141





LOCATION OF WELDED SHEAR CONNECTORS

(618 - 7/8" Ø x 5" studs Req'd per Beam)



SHEAR STUD CONNECTORS DETAIL

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

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BEAM DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sheet No. 49

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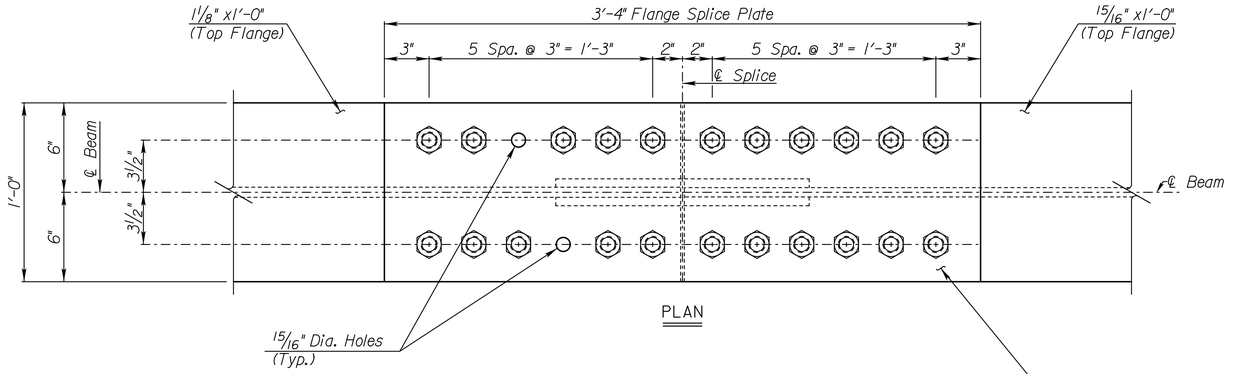
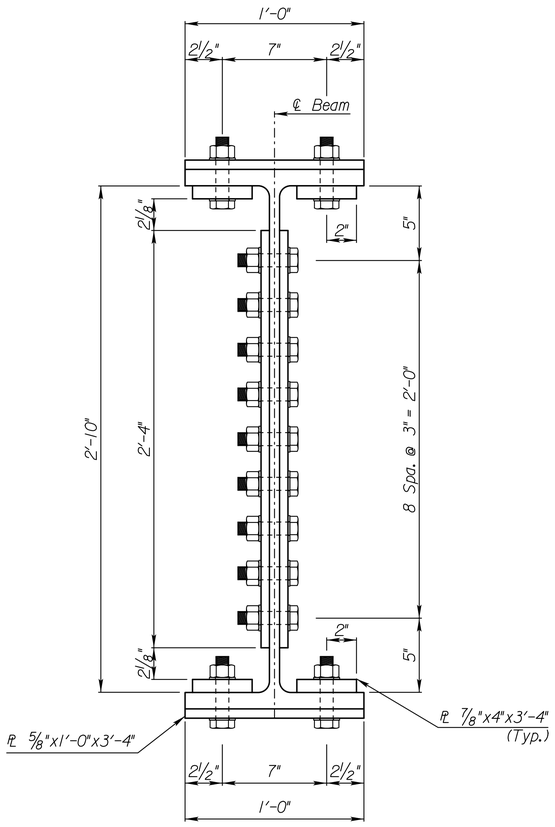
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ka572901tbr0048-34.dgn
Plot Date: 15-JUL-2024 15:55

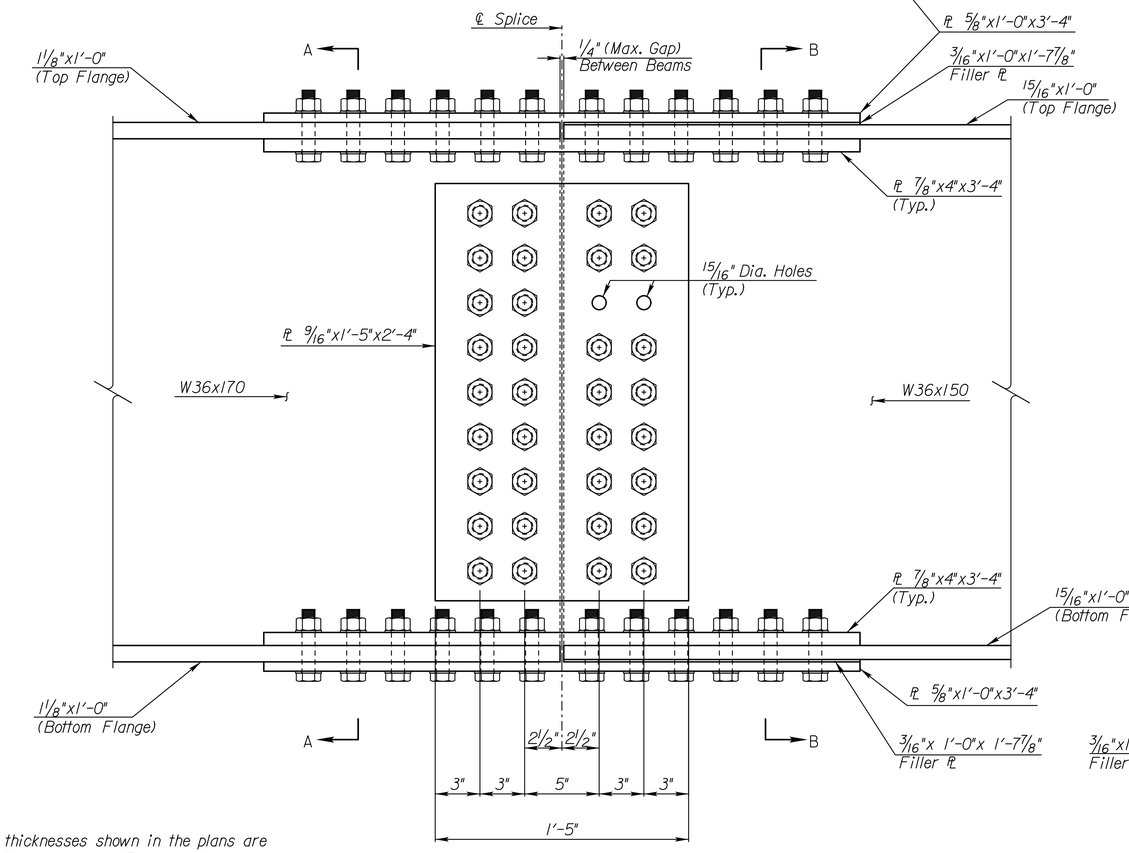
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	50	141



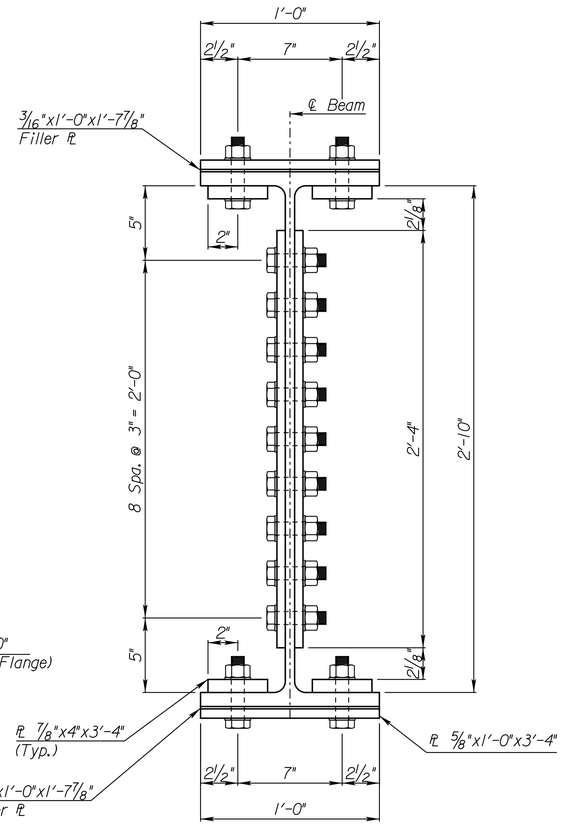
PLAN



Section A-A



ELEVATION



Section B-B

Field Splice Notes:

Fasteners for field splices shall be 7/8" high strength steel bolts. Use ASTM F3125 Grade 325 (Type 3) with DTI washers and hardened washers.

Flange splice plates and web splice plates shall be AASHTO M270 Grade 50W T3 Structural Steel.

Filler plates shall be ASTM A709 Gr. 50 Structural Steel.

FILL PLATES: Fill plate thicknesses shown in the plans are based on nominal AISC dimensions. Fabricators are required to revise plan fill plate thicknesses as necessary to account for as-rolled variations in flange and web thickness or overall beam depth. Minimum fill plate thickness = 1/8". By itself, a change in fill plate thickness does not require a resubmittal of shop drawings.

BOLTED FIELD SPLECE DETAILS

(24 splices required)
(84 - 7/8" Ø F3125 Grade 325 HS Bolts Req'd per Splice)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30

BOLTED FIELD SPLICE DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sheet No. 50

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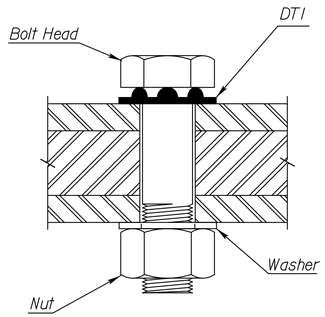
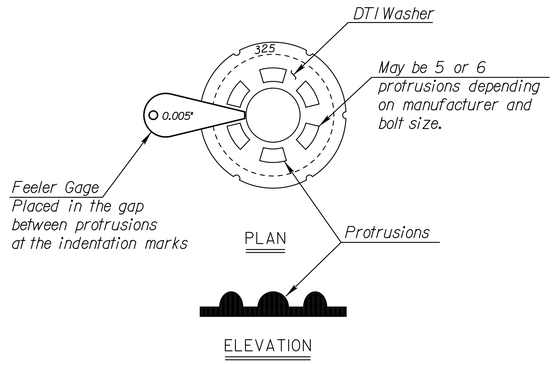
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\bbr0048-36.dgn
Plot Date: 15-JUL-2024 16:01

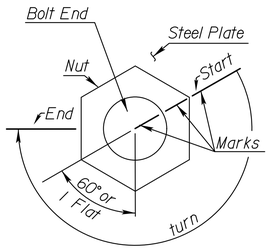
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	51	141



TYPICAL BOLT AND DIRECT TENSION INDICATOR (DTI)

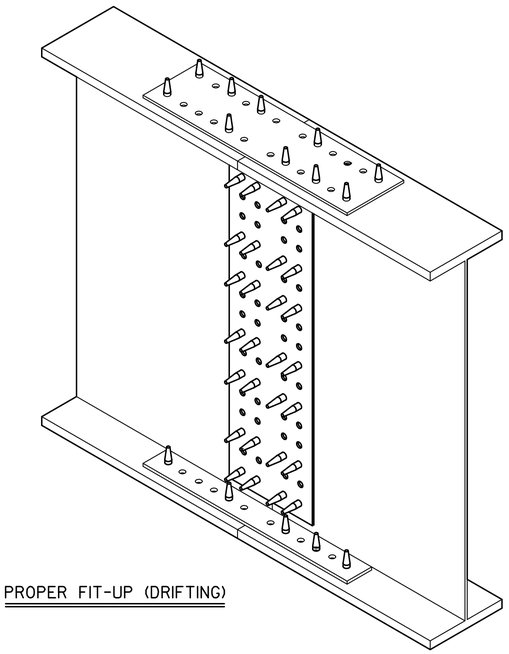


TYPICAL DIRECT TENSION INDICATOR (DTI)

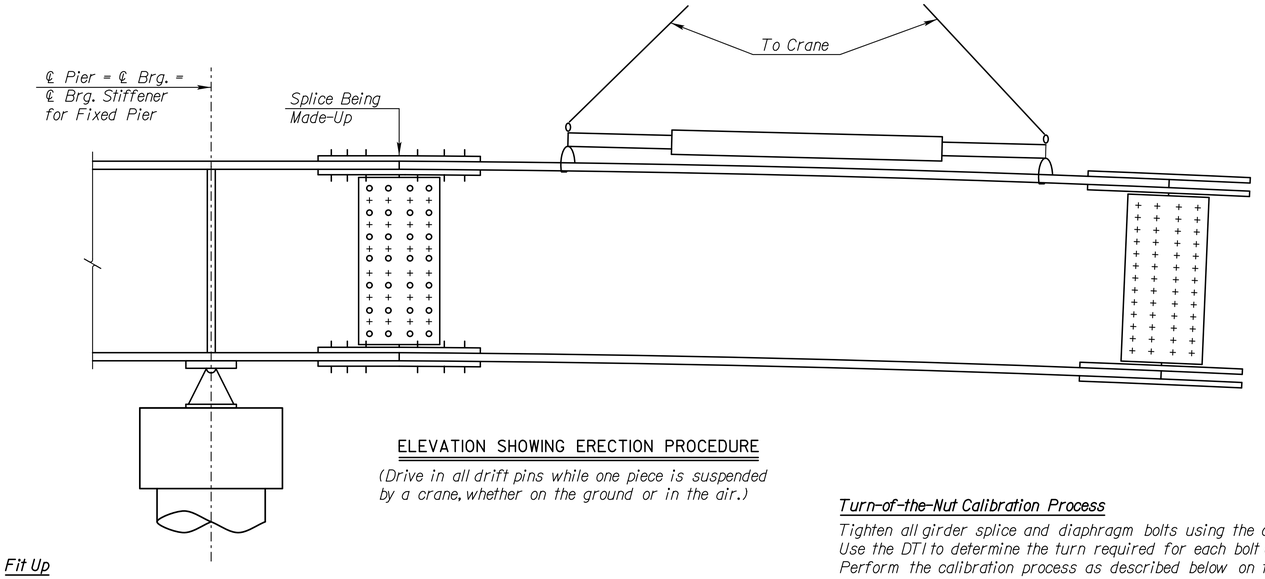


REQUIRED MARKING DETAIL

(shows calibrated turn = 3½ flats from snug tight condition). Example only, calibrated turn may be more or less than shown.



PROPER FIT-UP (DRIFTING)



ELEVATION SHOWING ERECTION PROCEDURE

(Drive in all drift pins while one piece is suspended by a crane, whether on the ground or in the air.)

Drift Pin Diameter = Hole Diameter
Hole Ø = 15/16" for girder splice
Hole Ø = 13/16" for X-frame or diaphragm connection.

DRIFT PIN

Production Bolt Tightening

1. Install bolts and tighten to "snug tight" in a pattern, starting at the center of the splice and working toward the edge. On large girders this may have to be done twice, as the center bolts will become loose as plates are "Ironed out". This step is important because typically, any variation in results during production bolting is the result of a change in the materials, lubricant or equipment used to take the bolts to a "snug tight" condition during the calibration process.

2. Mark all of the bolts, nuts and the plate as shown in the marking detail. Mark the socket with a start and stop point. The stop point corresponds to the target rotation determined earlier.

3. Align the start mark on the socket with the line on the plate. While the bolt is being backed up, turn the nut until the stop mark on the socket lines up with the start mark on the plate.

4. Repeat with all bolts of the same length in the splice.

Acceptance and Rejection of Bolts

1. The Engineer will check all bolts with a feeler gage.

2. All nuts must be turned at least the target rotation beyond "snug tight".

3. All DTI's must have at least 3 refusals of the 0.005" gage.

4. If all gaps refuse the 0.005" gage, and the nut, plate and bolt are not marked, reject the bolt.

5. If all gaps refuse the 0.005" gage, and the turned element has not been rotated more than 45° beyond the calibrated turn, accept the bolt.

6. If all gaps refuse the 0.005" gage, and the turned element has been rotated more than 45° beyond the calibrated turn, reject the bolt.

For additional information see the structural steel section of the Bridge Construction Manual.

Suggested Impact wrench models:
CP 611
IR 2940
Cleco WS2110
ATP 1011/1040
Norbar PT1500

Fit Up

During the fit up, install drift pins in all corner bolt holes, plus 25 percent of the bolt holes (as a min.), evenly distributed throughout the splice. Fill at least 25 percent of the bolt holes with high strength bolts. Fully tighten these bolts by the calibrated turn-of-the-nut method before removing any drift pins or moving the members. These bolts may be either erection bolts or production bolts. Erection bolts are used during fit up, to compress the plies of the splice to achieve a snug condition. Erection bolts are the property of the Contractor and do not remain in the bridge permanently. Erection bolts must be A325, and can be reused. Erection bolts are required when the abutting plates are of different thickness and no fill plate is provided. This situation usually results in a slight bending of the splice plates. If erection bolts are not used, the DTI's may fully compress before the plates are in firm contact. This would be cause for rejecting the splice. Clearly mark the erection bolts so that they are not left in the splice.

Erection

Two independent crews will survey the bearing seat elevations. The Engineer will verify that the results of those surveys show that the bearing seat elevations are within ± ¼ inch of the plan elevations before erection begins. Use the blocking diagram, as shown on the shop drawings, when erecting the beams/girders on the ground. Do not lift the assembled pieces into position until at least 25 percent of the holes are filled with fully tightened bolts. Locate the centerline of the bearing stiffener with the centerline of bearing device. Secure the beams/girders to the top of the pier cap prior to placement of the bearing device anchor bolts.

Turn-of-the-Nut Calibration Process

Tighten all girder splice and diaphragm bolts using the calibrated turn-of-the-nut method. Use the DTI to determine the turn required for each bolt diameter & length. Perform the calibration process as described below on the actual beam splice or using 3 plies of steel plate with the same thickness as the actual splice.

1. Bring at least 25 percent of the bolts in the splice to a "snug-tight-condition". "Snug tight condition" is defined as (with all plies in firm contact) "the full effort of a man on a spud wrench". Usually a smaller impact gun (½" drive) is used to snug the splice and a larger impact gun (1" drive) is used for final tightening. This is preferred over the use of a spud wrench. Production bolting and calibration must use the same tools and lubricating procedures. If an impact wrench is used to "iron the plates" and snug the bolts for calibration, then an impact wrench must be used during the snugging process during production bolting.

2. See "Required Marking Detail" (choose a bolt at the center of the splice and recheck snug on adjacent bolts)
- *a. Mark the outside of the socket at one of the corners.*
- *b. Mark the bolt, plate, and nut at a corner with a start line.*
- *c. Align the mark on the socket with the start mark on the bolt end.*
- *d. While holding a backup wrench on the head of the bolt, turn the nut turn (3 flats).*
- *e. Record the number of refusals.*
- *f. If all of the gaps refuse, go to another bolt and turn the nut 2 flats (1/3 turn).*
- *g. If there are fewer than 3 refusals turn the nut an additional ¼*
- *h. Repeat step g, turning the nut 1/3 of a flat or less each time, until all of the gaps refuse the feeler gage. Record the amount required to cause all of the gaps to refuse the feeler gage. This is the target rotation.*

3. Repeat this process for each bolt diameter and length.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

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Br. No. 63-66-54.90 (048) Sta. 62+23.30

STEEL ERECTION FIT-UP AND BOLTING PROCEDURE

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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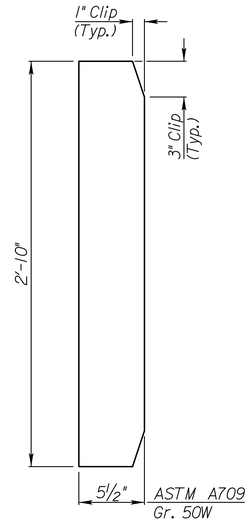
Sheet No. 51

KDOT Graphics Certified

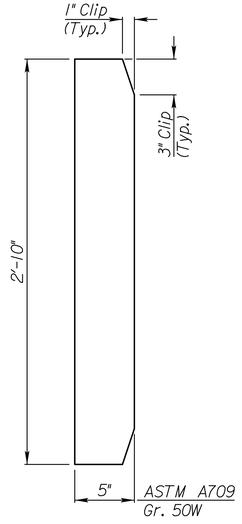
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ka57290\bbr0048-38.dgn
Plot Date: 15-JUL-2024 16:00

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	52	141



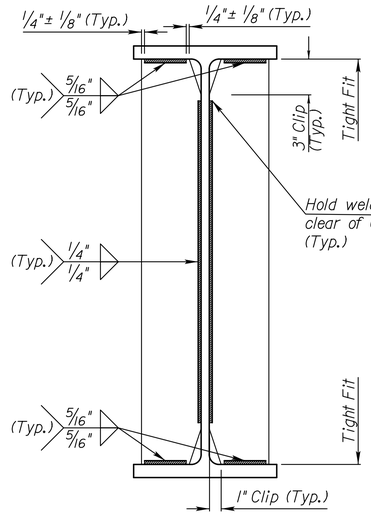
PIER STIFFENERS

PL ¾"x5½"x2'-10"
(ASTM A709 Gr. 50W)
(24 Req'd)

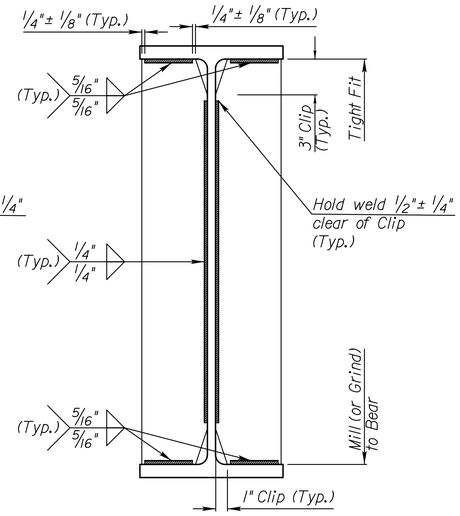


INTERMEDIATE STIFFENERS

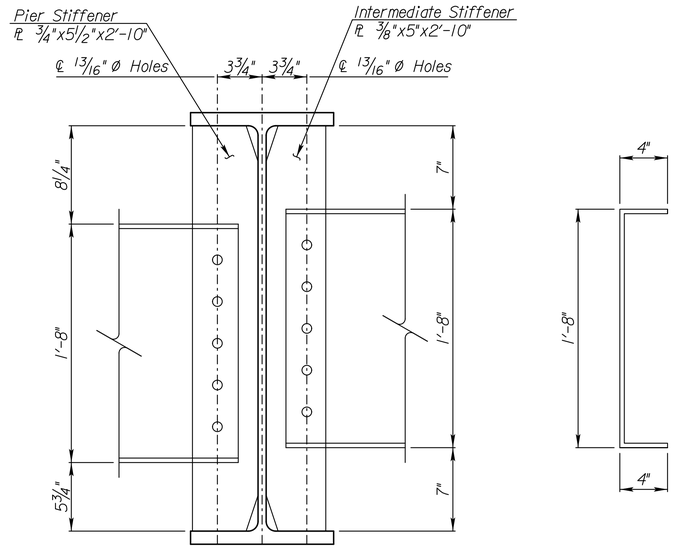
PL ⅜"x5"x2'-10"
(ASTM A709 Gr. 50W)
(130 Req'd)



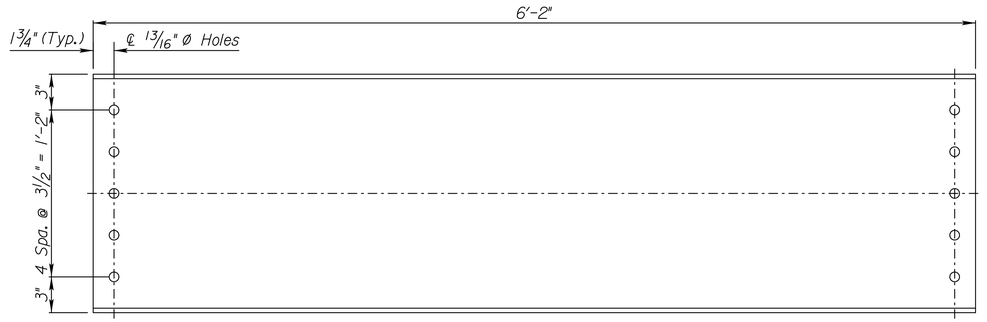
CONNECTION STIFFENER WELDS



PIER STIFFENER WELDS



PIER AND INTERMEDIATE DIAPHRAGM CONNECTIONS



INTERMEDIATE & PIER DIAPHRAGM MEMBER

(⅜"x2'-4"x6'-2")
(75 Req'd.)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

DIAPHRAGM DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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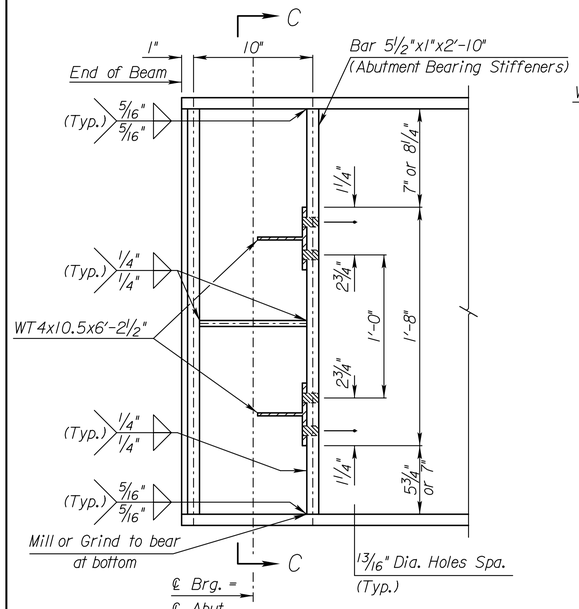
Sheet No. 52

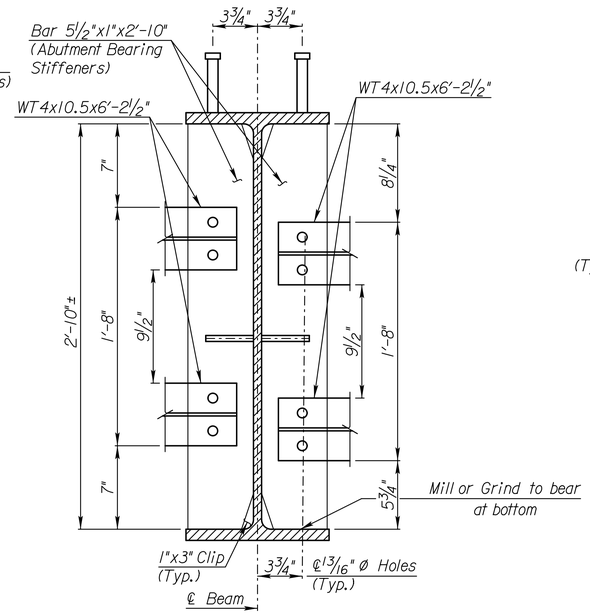
KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\bbr0048-40.dgn
Plot Date: 15-JUL-2024 15:59

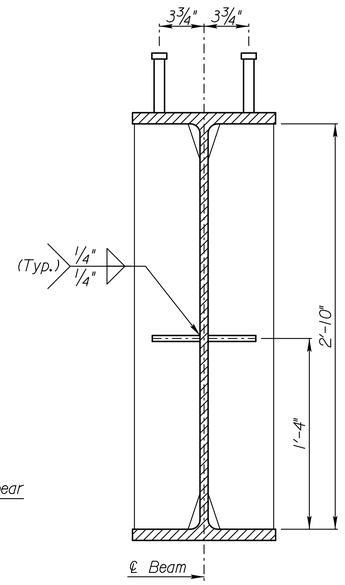
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	53	141



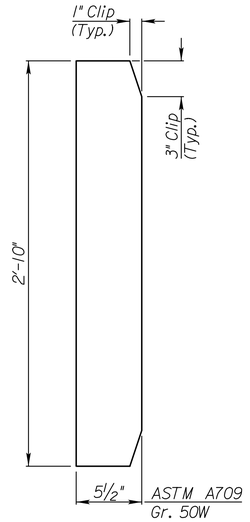
Beam Elevation



Section C-C

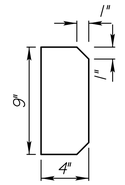


HORIZONTAL STIFFENER DETAIL



ABUTMENT BEARING STIFFENERS

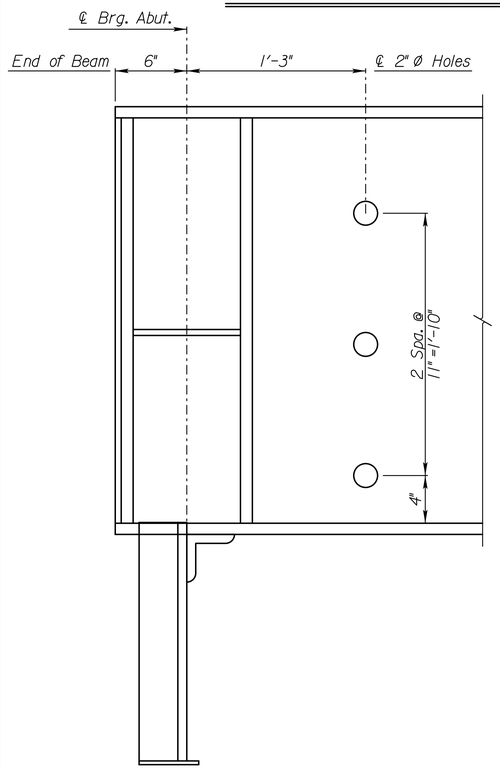
Bar 1"X5½"x2'-10"
(ASTM A709 Gr. 50W)
(48 Req'd)

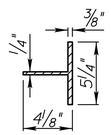


HORIZONTAL STIFFENER

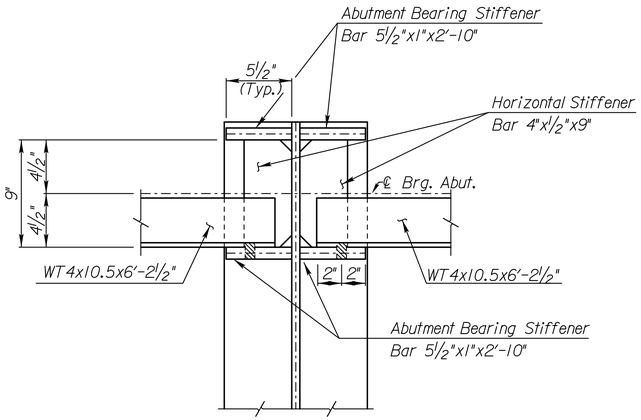
Horizontal Stiffeners
Bar 4"x½"x9"
(ASTM A709 Gr. 50W)
(24 Req'd)

STIFFENER AND ABUTMENT FRAME CONNECTIONS

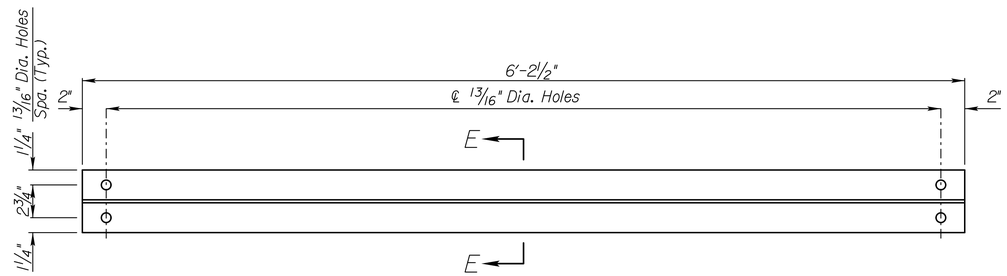




Section E-E



ABUTMENT FRAME CONNECTION DETAIL



ABUTMENT FRAME MEMBER

(ASTM A709 Gr. 50W)
(16 Req'd)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30

ABUTMENT FRAME DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sheet No. 53

KDOT Graphics Certified

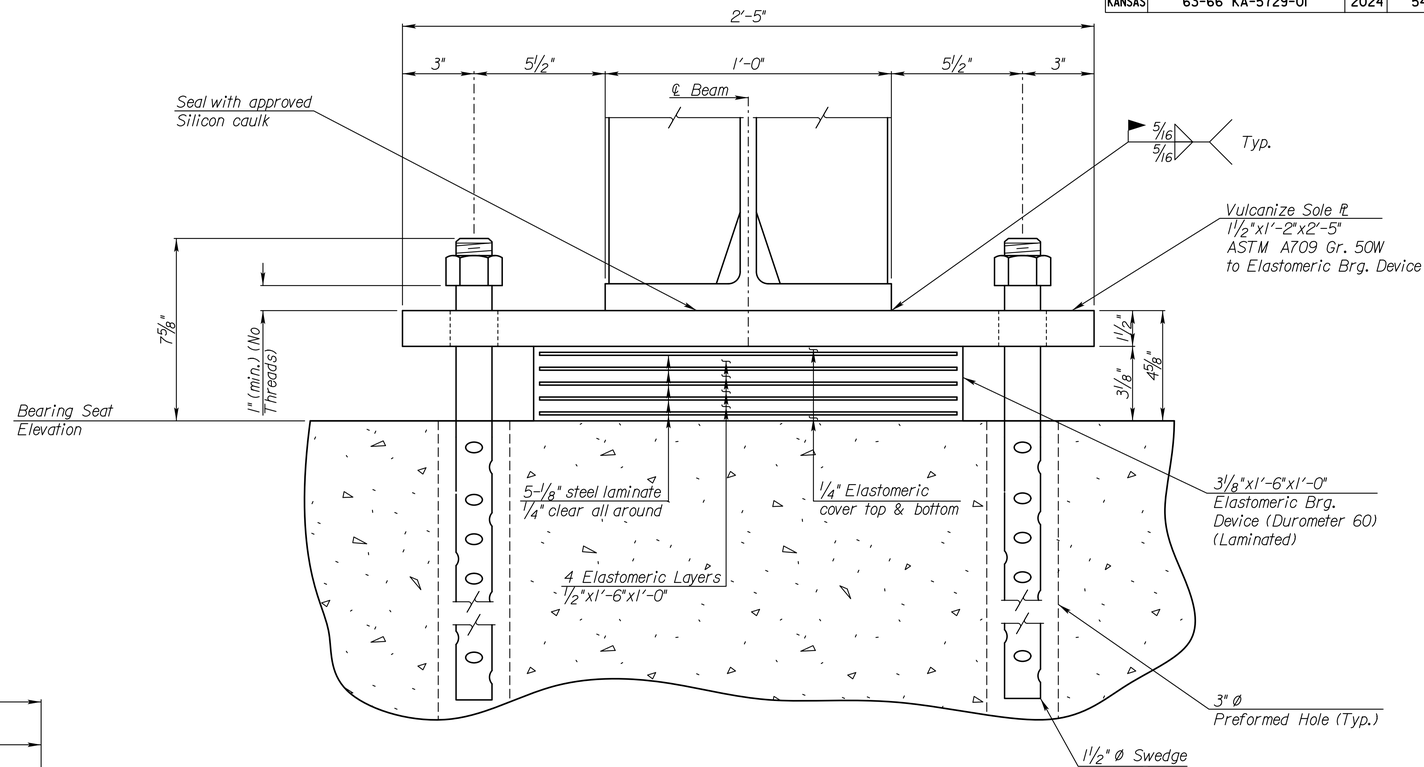
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\bbr0048-42.dgn
Plot Date: 15-JUL-2024 15:55

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	54	141

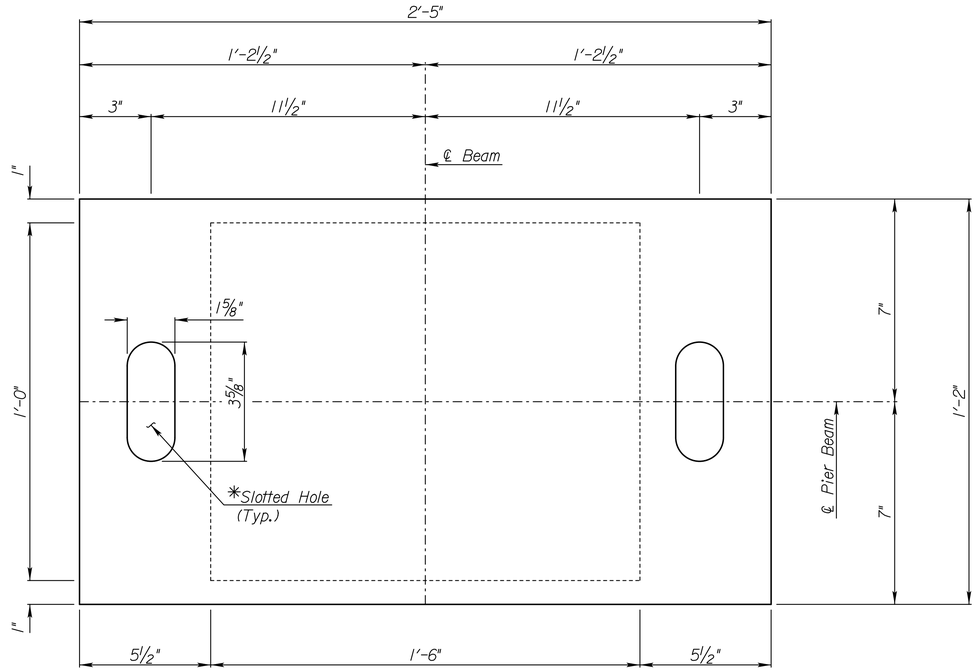
BEARING (STEEL REINFORCED ELASTOMERIC) (Method A):
Bearing devices at Piers No. 1 and 2 shall be fabricated with an elastomer satisfying:
- Shore A Durometer Hardness of 60
- Low Temperature Grade 3 requirements
- Type A certification for elastomeric bearing device acceptance is required
- Include design method and all material properties on shop details

BEARING (STEEL REINFORCED ELASTOMERIC): Elastomeric Bearing Device shall be factory bonded to the steel sole plate by a vulcanization process. The steel sole plate and swedge anchor bolt are subsidary to the bid item, "Bearing (Steel Reinforced Elastomeric)" and shall be furnished by the bearing device fabricator.

The sole plate shall be ASTM A709 Gr. 50W structural steel.

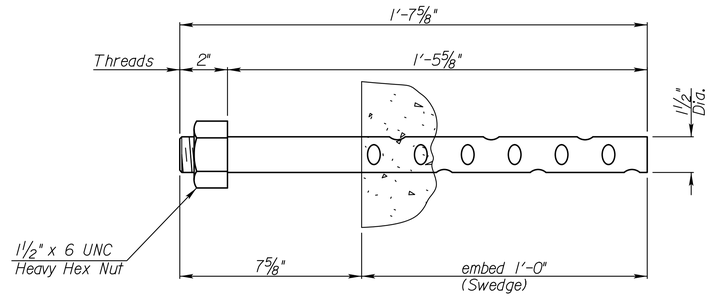


SECTION THROUGH BEARING DEVICE



PLAN OF BEARING DEVICE FOR PIER NO. 1 AND 2
(12 required)

*Note: Center the anchor bolts in the center of the slotted holes regardless of installation temperature.



SWEDGE ANCHOR BOLT
(24 Required)

ANCHOR BOLTS: Anchor bolts and nuts will adhere to KDOT Standard Specification Section 1600 (Grade 55) with the following exception: The threads may be rolled or cut. The bolts and nuts shall be galvanized.

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\bbr0048-44.dgn
Plot Date: 15-JUL-2024 15:59

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30

BEARING DEVICE DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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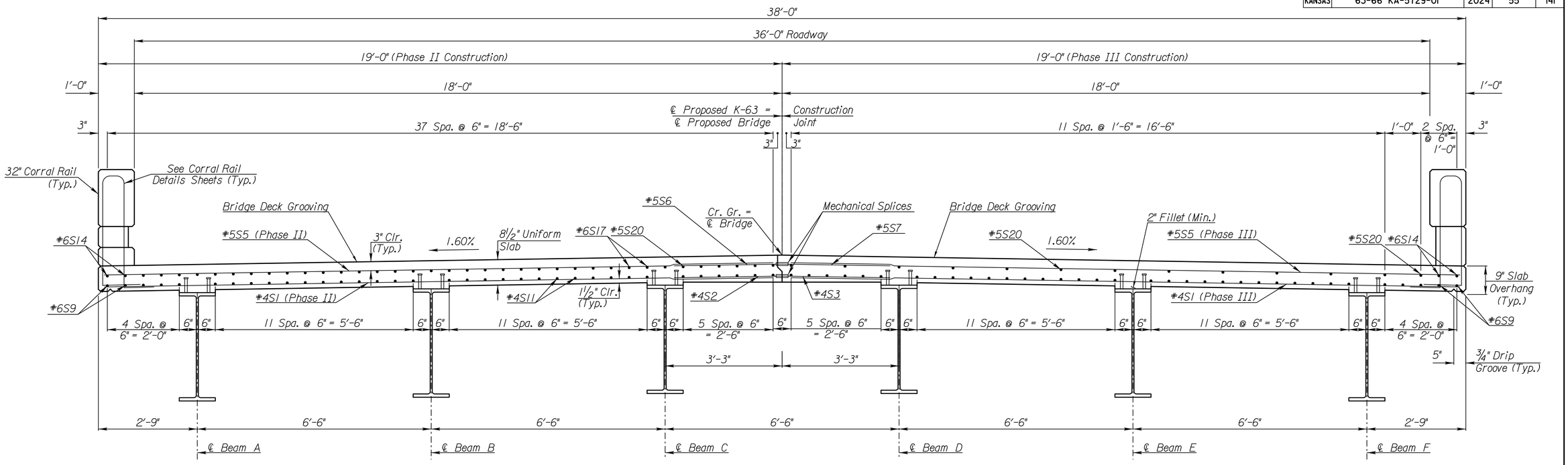
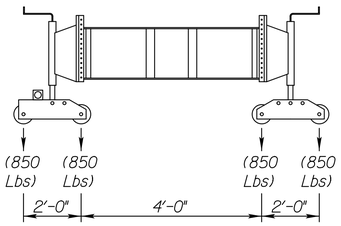
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	55	141



Section near Pier

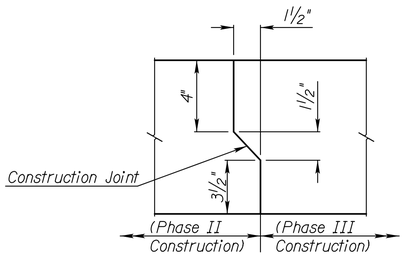
Section near Mid-Span



ASSUMED FINISHING MACHINE VALUES LOADING DIAGRAM

NOTE: Rotation (maximum = 1°) in the exterior girder was calculated assuming screed wheel loads as shown and placed 3" beyond the outside of the deck. The maximum overhang bracket spacing was assumed at 3 ft. The actual screed loadings or bracket spacing will be reflected in the design calculations for a torsional analysis of the exterior girder and bracing. The design calculations shall bear the seal of a licensed Professional Engineer. Submit accourding to KDOT Specifications Section 700 for falsework and formwork.

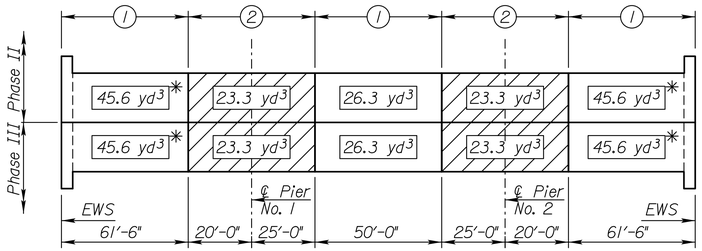
TYPICAL SECTION



CONSTRUCTION JOINT DETAIL

Elevation on Top of Splice Plate at ℄ Field Splice				
Beam	F.S. #1	F.S. #2	F.S. #3	F.S. #4
A	1051.38	1051.47	1051.57	1051.62
B	1051.48	1051.57	1051.68	1051.73
C	1051.59	1051.68	1051.78	1051.83
D	1051.59	1051.68	1051.78	1051.83
E	1051.48	1051.57	1051.68	1051.73
F	1051.38	1051.47	1051.57	1051.62

Adjustments made for beam dead load deflection.



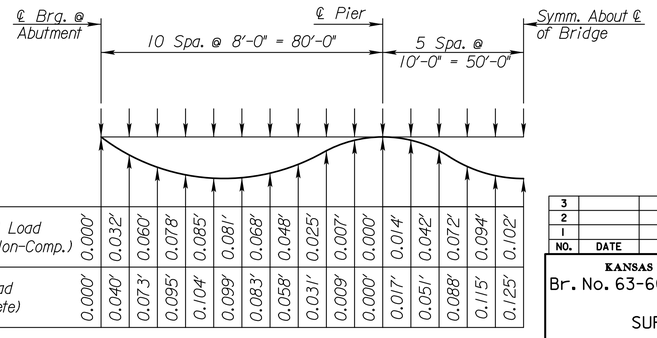
CONCRETE PLACING SEQUENCE

* Includes Superstructure portion of Abutment concrete (Cu.Yd.)

CONCRETE PLACING SEQUENCE: Segmental, combined or continuous pours are allowed by an approved alternate placing sequence. Any discontinuous pour must stop at a construction joint short of a pier.

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

PLACING SEQUENCE: The Contractor will adhere to the placing direction/sequence shown on the plans. Changes will be accepted only if the Contractor's Engineer adjusts the deflection diagram so that the Contractor can adjust the fillet depth [and Headed Stud Anchor heights] accordingly. This revised diagram will be approved by the design Engineer prior to deck forming. If profile grinding decreases the clearance to the top mat of reinforcement to less than 2½", a polymer overlay will be placed at no cost to the State



Concrete Dead Load (Composite + Non-Comp.)	0.000'	0.032'	0.060'	0.078'	0.085'	0.081'	0.068'	0.048'	0.025'	0.007'	0.000'	0.014'	0.042'	0.072'	0.094'	0.102'
Total Dead Load (Steel + Concrete)	0.000'	0.040'	0.073'	0.095'	0.104'	0.099'	0.083'	0.058'	0.031'	0.009'	0.000'	0.017'	0.051'	0.088'	0.115'	0.125'

DEAD LOAD DEFLECTION DIAGRAM AT TENTH POINTS

(Ordinates are in feet)

DEAD LOAD DEFLECTION OF FIELD SPLICES		
	Concrete	Total
F.S. #1	0.036'	0.045'
F.S. #2	0.042'	0.051'
F.S. #3	0.042'	0.051'
F.S. #4	0.036'	0.045'

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

SUPERSTRUCTURE DETAILS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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Sheet No. 55

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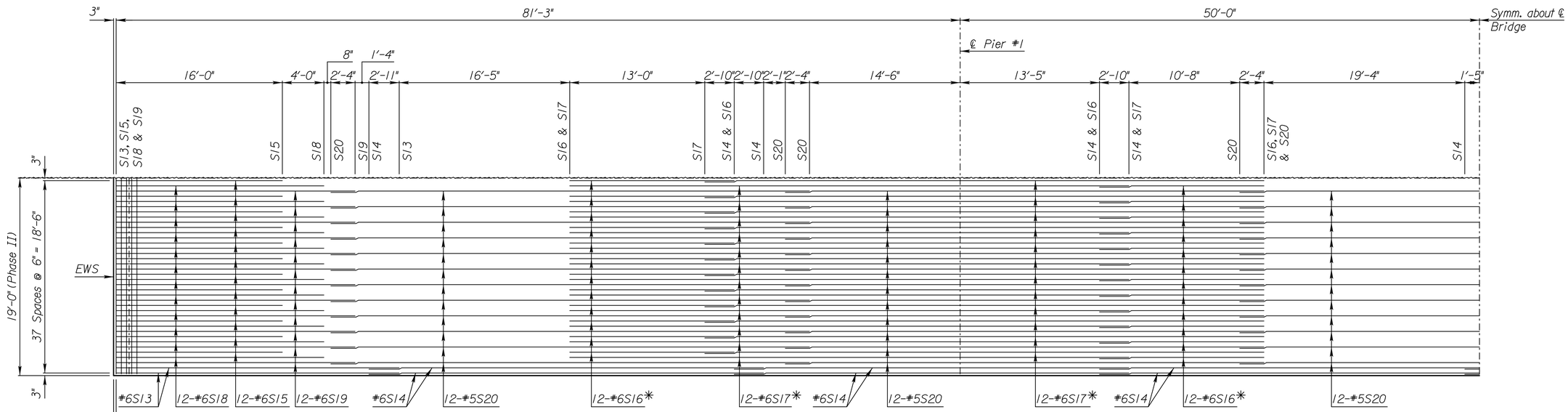
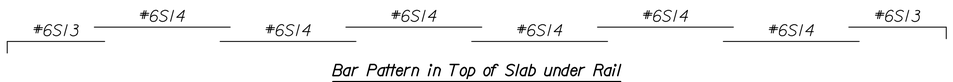
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\br0048-47.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	56	141



PLAN OF SLAB REINFORCING STEEL

(Phase II Top Deck Reinforcement)



Bar Pattern in Top of Slab under Rail

(Min. Lap 2'-10") (2 Sets)
(2-S13 & 6-S14 per set)

Bar Pattern in Top of Slab

(Min. Lap 2'-4") (12 Sets)
(2-S19 & 5-S20 per set)

*NOTE: #6S16 spliced to #6S17. (Min. lap 2'-10")

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

SLAB DETAILS I
Phase II Construction

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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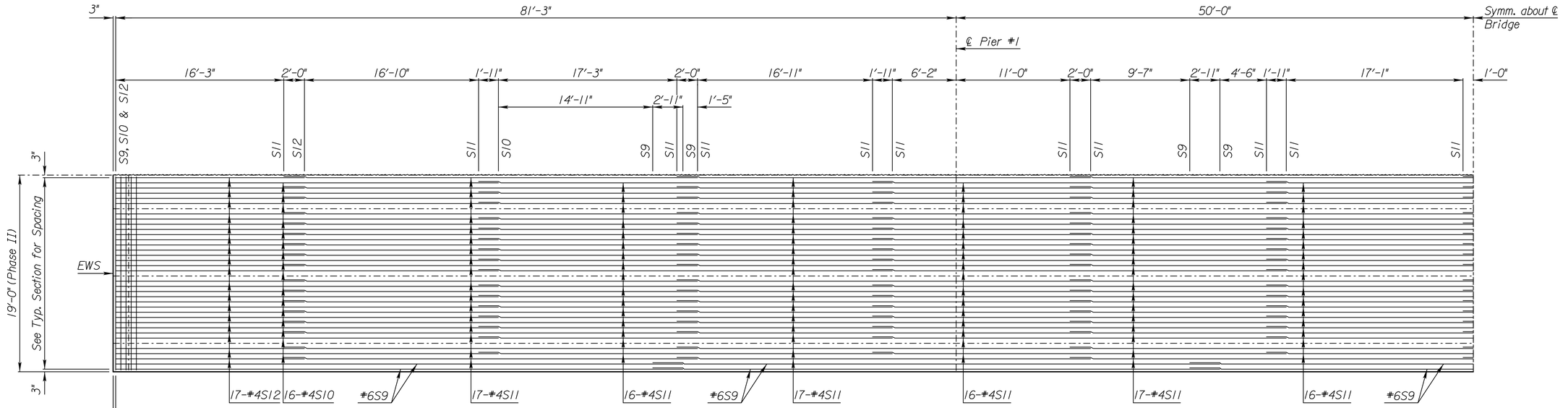
Sheet No. 56

KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks572301bbr00049-49.dgn
Plot Date: 15-JUL-2024 15:55

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	57	141



PLAN OF SLAB REINFORCING STEEL

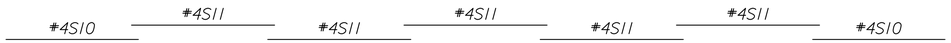
(Phase II Bottom Deck Reinforcement)

Bar Pattern in Bottom of Slab under Rail

(Min. Lap 2'-10") (2 Sets)
(5-S9 per set)

Bar Pattern in Bottom of Slab

(Min. Lap 1'-11") (17 Sets)
(6-S11, 2-S12 per set)



Bar Pattern in Bottom of Slab

(Min. Lap 1'-11") (16 Sets)
(5-S11, 2-S10 per set)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

SLAB DETAILS 2
Phase II Construction

Proj. 63-66 KA-5729-01 Nemaha Co.

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

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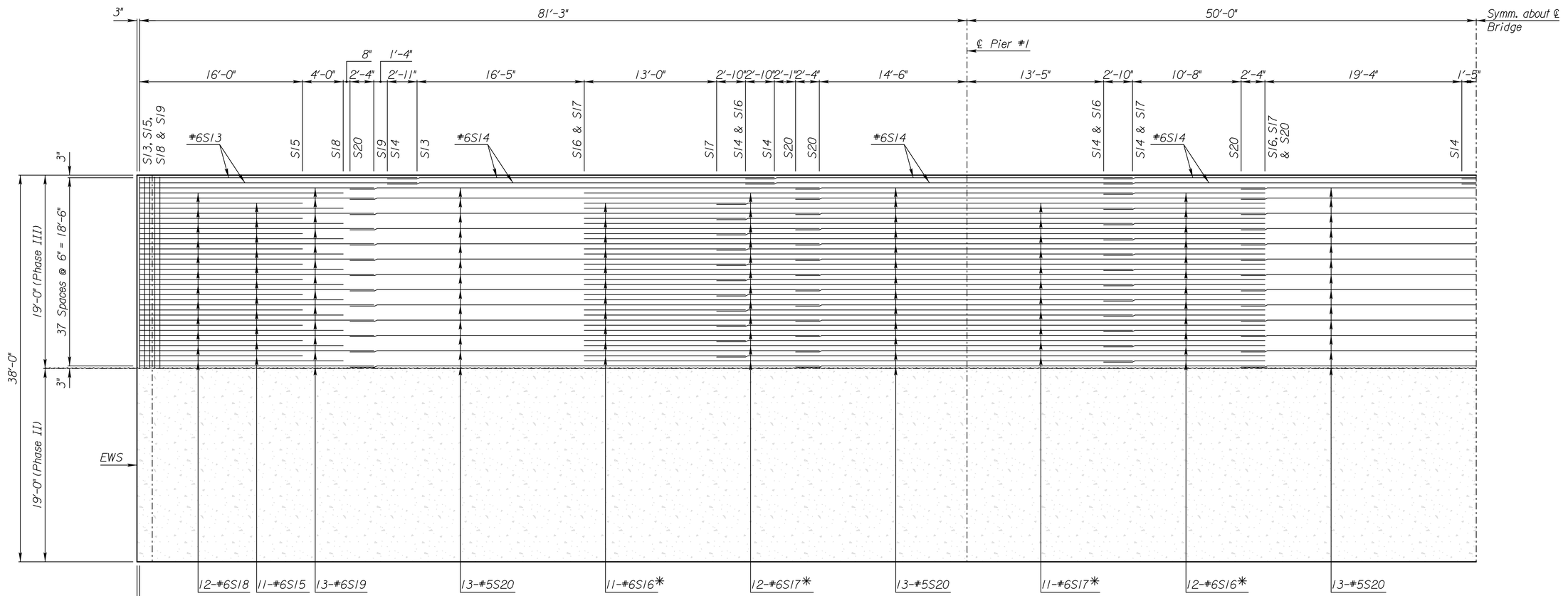
Sheet No. 57

KDOT Graphics Certified

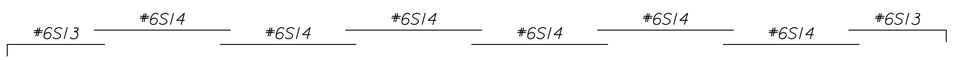
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: *Bridge*
File: *ka572901bbr00049-51.dgn*
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	58	141



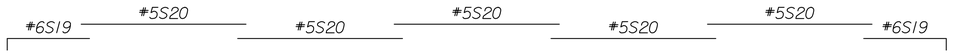
PLAN OF SLAB REINFORCING STEEL

(Phase III Top Deck Reinforcement)



Bar Pattern in Top of Slab under Rail

(Min. Lap 2'-10") (2 Sets)
(2-S13 & 6-S14 per set)



Bar Pattern in Top of Slab

(Min. Lap 2'-4") (13 Sets)
(2-S19 & 5-S20 per set)

*NOTE: #6S16 spliced to #6S17. (Min. lap 2'-10")

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

SLAB DETAILS 3
Phase III Construction

Proj. 63-66 KA-5729-01 Nemaha Co.

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

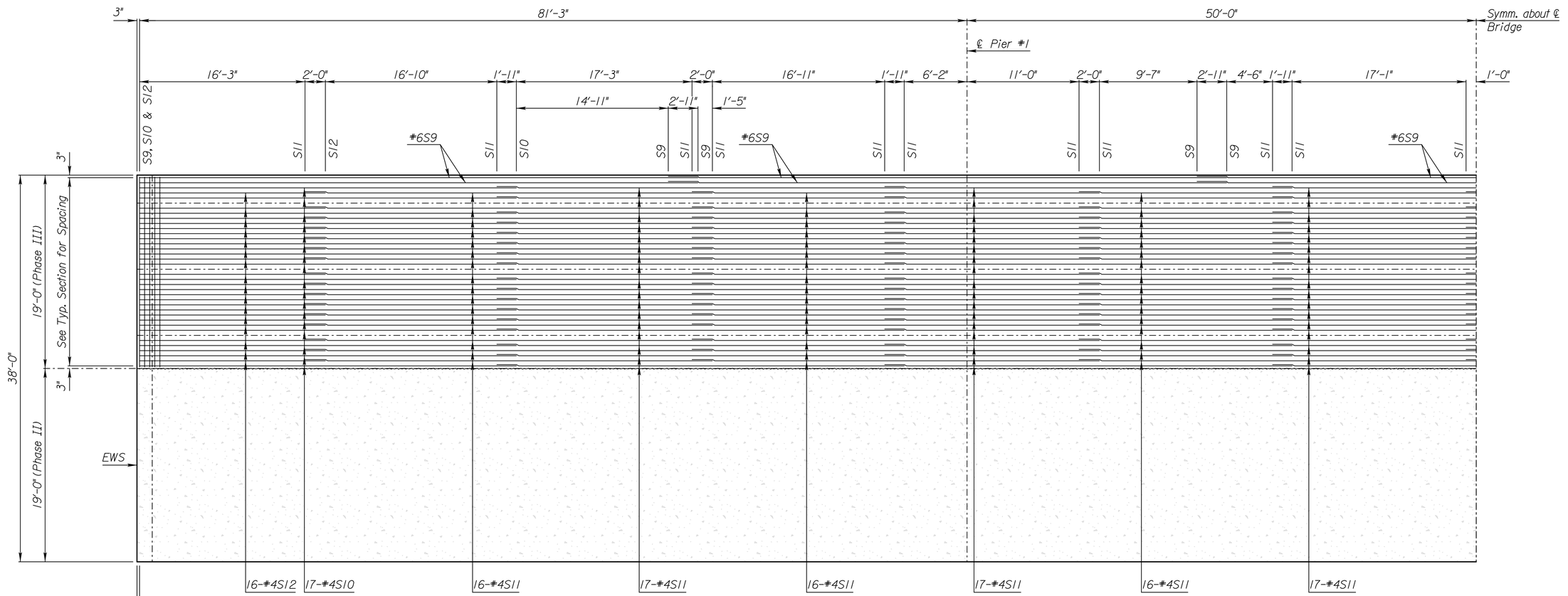
KDOT Graphics Certified 03-15-2024

Sheet No. 58

KDOT Graphics Certified

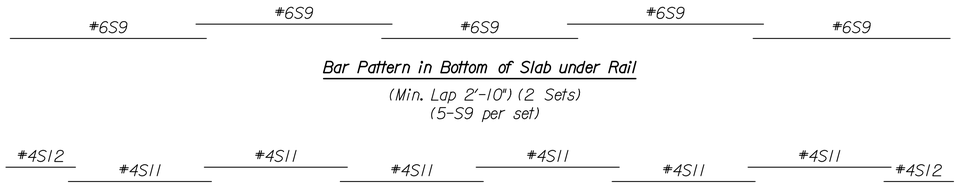
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ka572901bbr0048-53.dgn
Plot Date: 15-JUL-2024 16:00

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	59	141



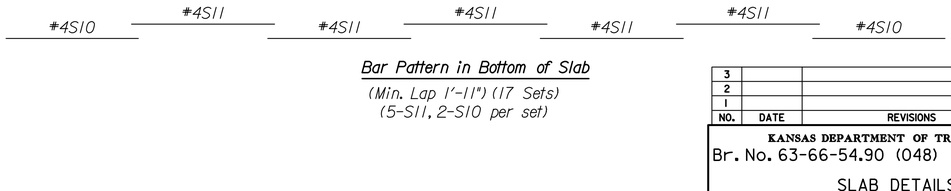
PLAN OF SLAB REINFORCING STEEL

(Phase III Bottom Deck Reinforcement)



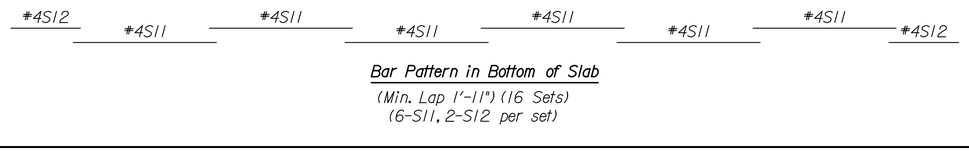
Bar Pattern in Bottom of Slab under Rail

(Min. Lap 2'-10") (2 Sets)
(5-S9 per set)



Bar Pattern in Bottom of Slab

(Min. Lap 1'-11") (17 Sets)
(5-S11, 2-S10 per set)



Bar Pattern in Bottom of Slab

(Min. Lap 1'-11") (16 Sets)
(6-S11, 2-S12 per set)

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

SLAB DETAILS 4
Phase III Construction

Proj. 63-66 KA-5729-01 Nemaha Co.

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

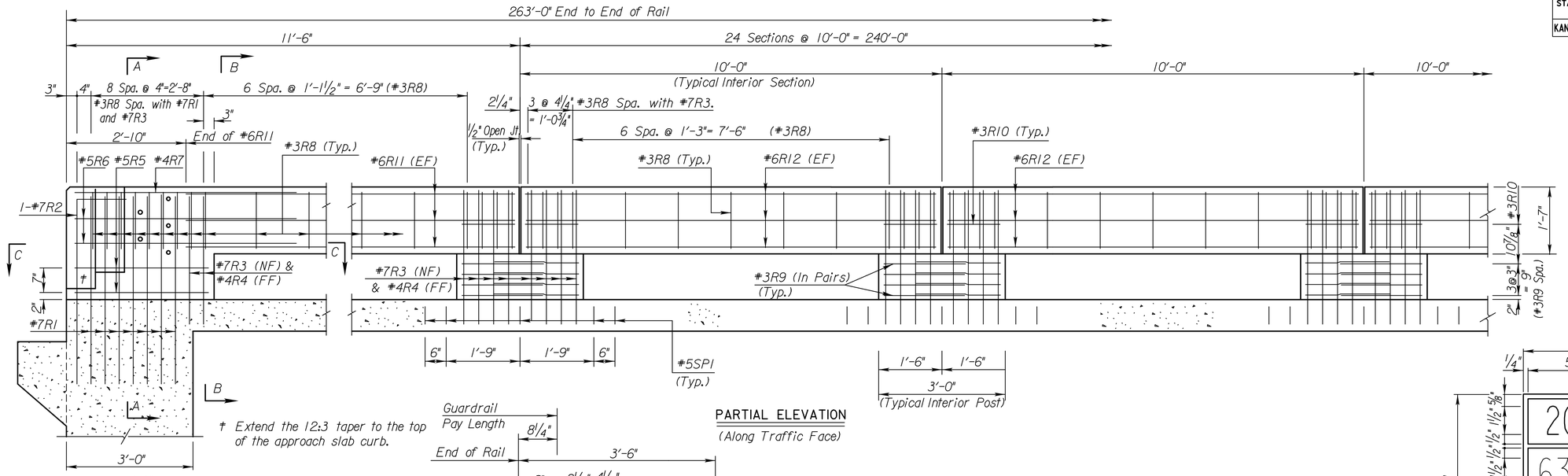
KDOT Graphics Certified 03-15-2024

Sheet No. 59

KDOT Graphics Certified

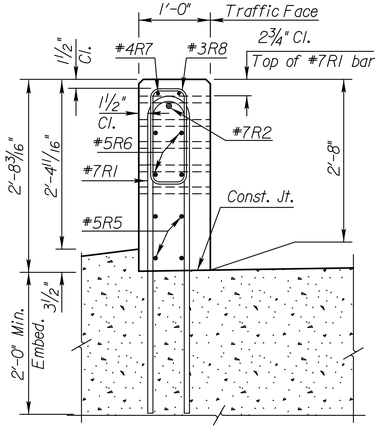
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ka572901bbr0048-55.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	60	141

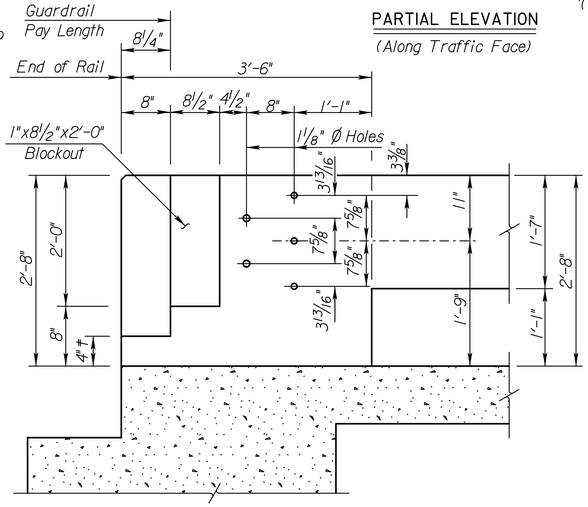


PARTIAL ELEVATION

(Along Traffic Face)

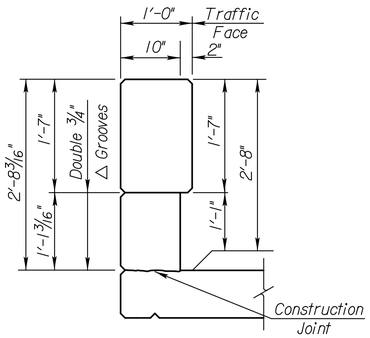


SECTION A-A



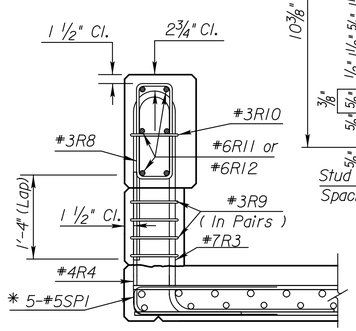
ELEVATION

(Dimensions at traffic face of rail.)



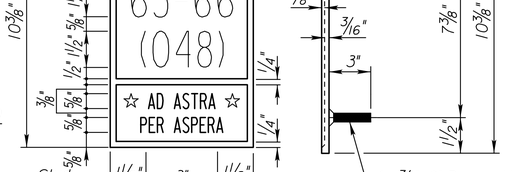
TYPICAL INTERIOR POST

(Without Curb)



SECTION THRU POST

* Note:
The hook may be canted to provide clearance and/or fit between reinforcing.

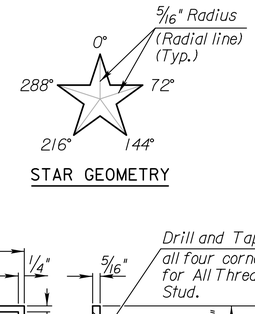


** Year Bridge is Completed.

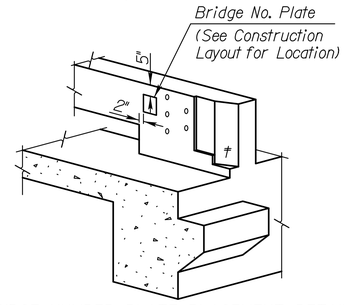
BRIDGE NUMBER PLATE

(1 Required)

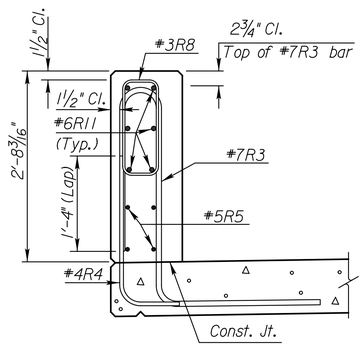
(See Construction Layout for Location)



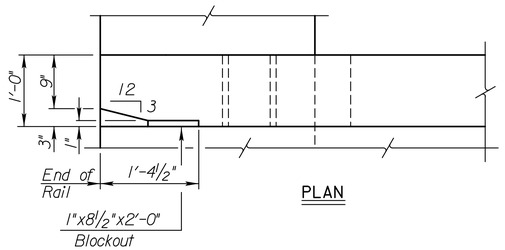
STAR GEOMETRY



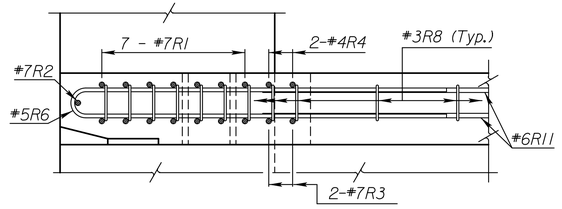
BRIDGE NUMBER PLATE PLACEMENT DETAIL



SECTION B-B



PLAN



SECTION C-C

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

CORRAL RAIL DETAILS I

Proj. 63-66 KA-5729-01 Nemaha Co.

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

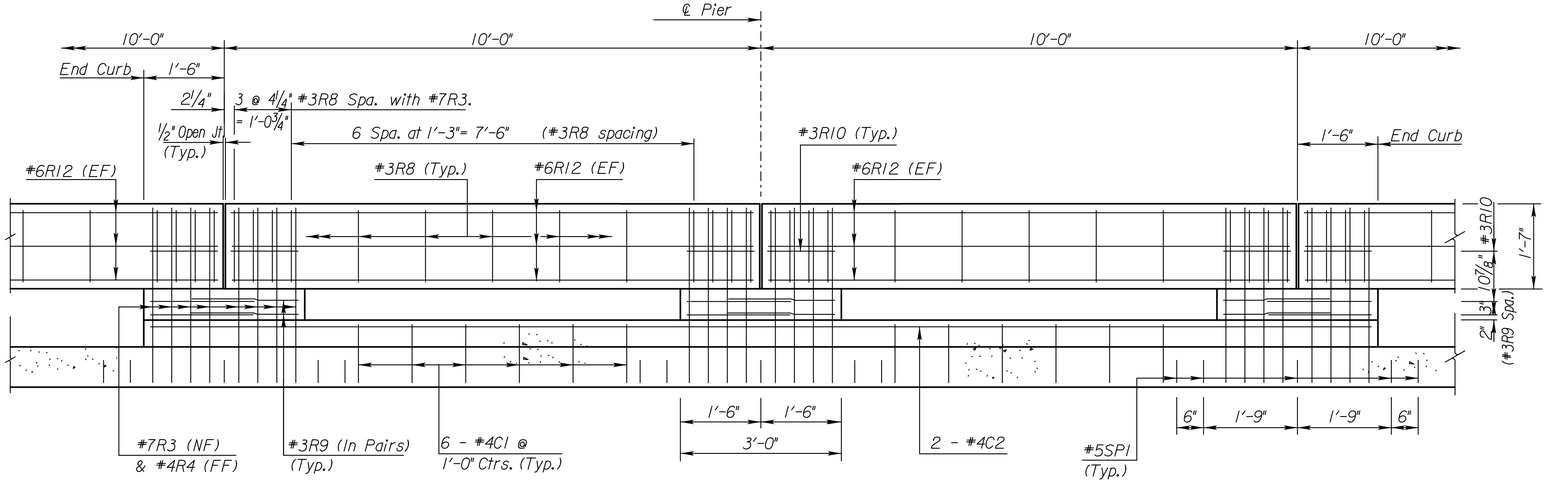
KDOT Graphics Certified 03-15-2024

Sheet No. 60

KDOT Graphics Certified

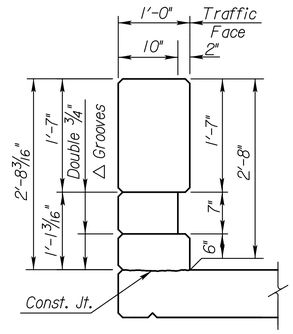
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ka572901tbr0048-56.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	61	141



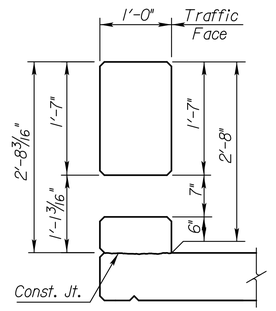
PARTIAL ELEVATION AT PIERS

(Along Traffic Face)



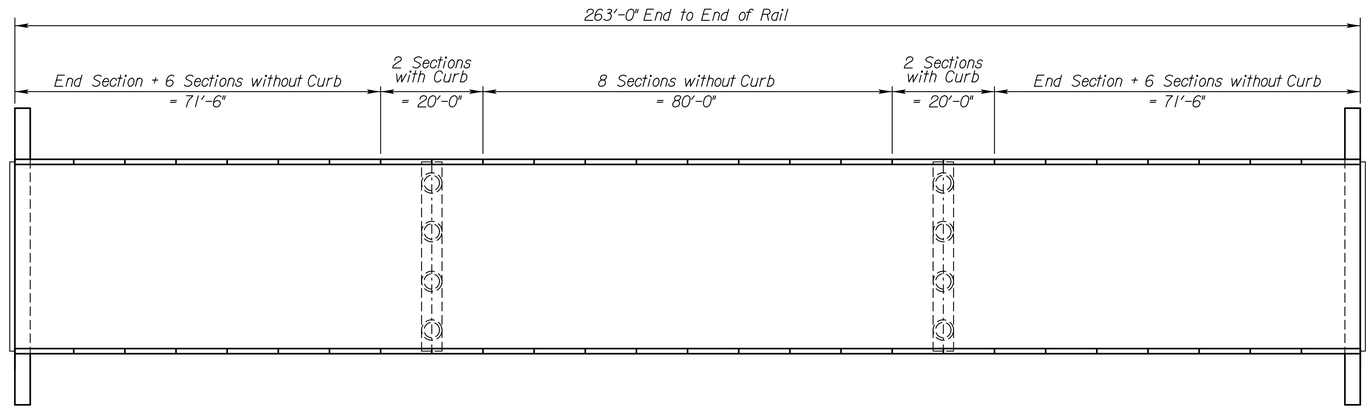
TYPICAL INTERIOR POST

(With Curb)

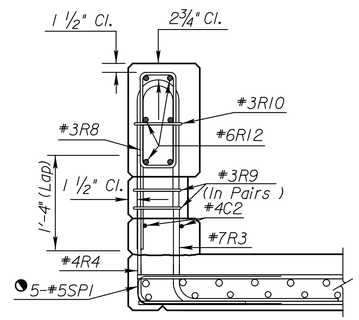


TYPICAL SECTION BETWEEN POSTS

(With Curb)

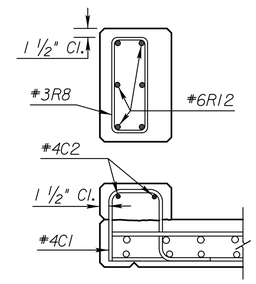


RAIL SECTION LAYOUT



SECTION THRU POSTS

(With Curb)



TYPICAL SECTION BETWEEN POSTS

(With Curb)

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

Legend

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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 63-66-54.90 (048) Sta. 62+23.30

CORRAL RAIL DETAILS 2

Proj. 63-66 KA-5729-01 Nemaha Co.

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

KDOT Graphics Certified 03-15-2024

Sheet No. 61

KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\bbr0048-58.dgn
Plot Date: 15-JUL-2024 15:59

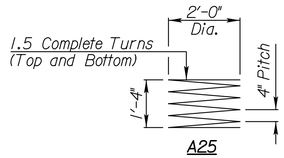
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	62	141

Superstructure
Abutment - Deck - Rail

BILL OF REINFORCING STEEL
Epoxy Coated - Grade 60

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
A1	#8	32	28'-8"	A14	#8	20	10'-0"
A6	#8	20	21'-6"				
				R1	#7	28	9'-5"
R11	#6	24	8'-6"	R2	#7	4	5'-8"
R12	#6	288	9'-8"	R3	#7	408	7'-7"
S9	#6	20	54'-10"				
S14	#6	24	38'-0"	S13	#6	8	29'-9"
S16	#6	94	15'-10"	S15	#6	48	18'-6"
S17	#6	94	53'-10"	S18	#6	48	22'-6"
				S19	#6	48	25'-6"
A2	#5	40	28'-8"				
A3	#5	8	28'-2"	A7	#5	116	15'-4"
A4	#5	8	25'-6"	A8	#5	12	⊗
A5	#5	8	23'-6"	A9	#5	128	8'-8"
S5	#5	1052	18'-8"	A10	#5	72	11'-2"
S20	#5	120	46'-1"	A11	#5	24	10'-8"
				A12	#5	12	⊗
A17	#4	4	18'-2"	A13	#5	20	⊗
C2	#4	8	22'-8"	A15	#5	44	6'-6"
S1	#4	1052	18'-8"	R5	#5	8	6'-6"
S10	#4	64	37'-0"	R6	#5	8	10'-8"
S11	#4	363	40'-0"	SP1	#5	250	4'-5"
S12	#4	66	18'-3"				
				A16	#4	80	7'-0"
				A18	#4	80	4'-3"
				A25	#4	16	⊗
				C1	#4	48	3'-5"
				R4	#4	408	4'-2"
				R7	#4	4	10'-8"
				R8	#3	696	4'-4"
				R9	#3	352	4'-6"
				R10	#3	100	4'-6"

⊗ See Bending Diagram NOTE: S4 and S8 bar marks were intentionally skipped.

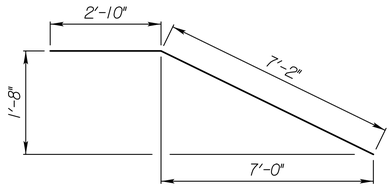


A25

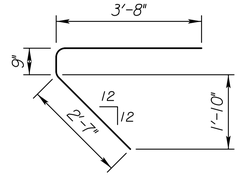
(1/2" ø smooth or deformed bar)

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

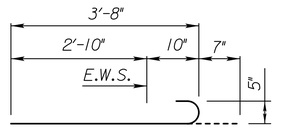
Spiral Spacer Bars:
1) Are included in the mass of reinforcing steel
2) Minimum section modulus = 0.030 in^3
3) 3 required per spiral



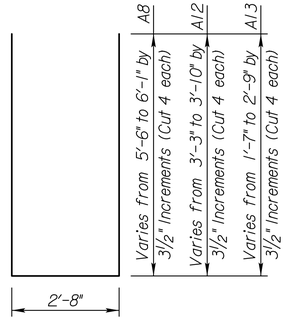
A14



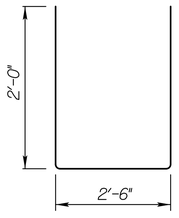
A16



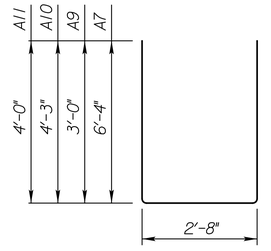
A18



A8, A12 & A13

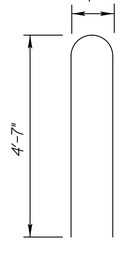


A15

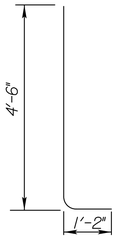


A7, A9, A10 & A11

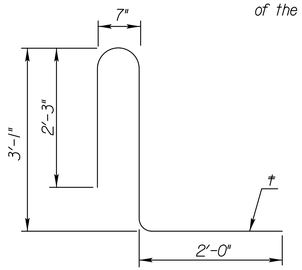
* Bend this leg to match the slope of the roadway.



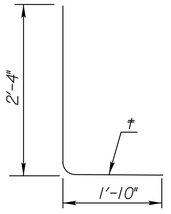
R1



R2

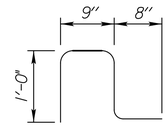


R3

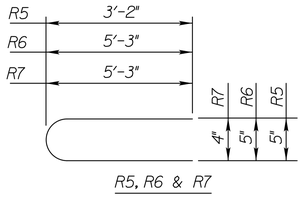


R4

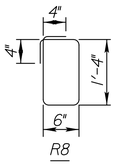
(Lap 1'-4" with R3)



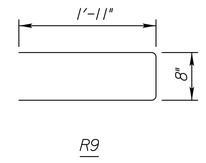
C1



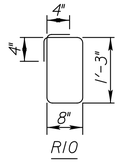
R5, R6 & R7



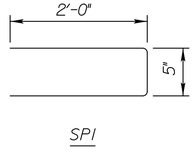
R8



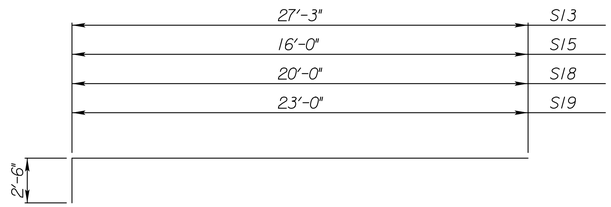
R9



R10



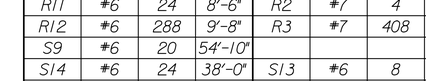
SP1



S13, S15, S18 & S19

BENDING DIAGRAMS

(All dimensions are out to out of bars.)



Coupled Rebar (Place in Phase III Construction)

Coupled End Rebar (Place in Phase II Constuction)

THREADED REBAR SPLICE SYSTEM

Epoxy Coated Threaded Rebar Splices (Grade 60)

Threaded Bars				Coupled Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
A20	#8	26	5'-1"	A19	#8	26	5'-1"
A22	#5	32	3'-3"	A21	#5	32	3'-3"
S7	#5	526	2'-7"	S6	#5	526	2'-7"
A24	#4	2	2'-7"	A23	#4	2	2'-7"
S3	#4	526	2'-1"	S2	#4	526	2'-1"

NOTE: The weight of the Threaded and Coupled rebars will be included in the weight of reinforcing steel. The Mechanical splice system shall meet the requirements of the KDOT specifications for "Fatigue Resistant" mechanical couplers. The addional material & labor shall be subsidiary to the bid item "Reinforcing Steel (Gr. 60) Epoxy Coated."

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 63-66-54.90 (048) Sta. 62+23.30

BILL OF REINFORCING STEEL & BENDING DIAGRAMS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

KDOT Graphics Certified 07-15-2024

Sheet No. 62

KDOT Graphics Certified

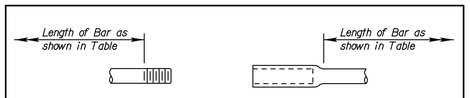
Plotted: Cooper.Bettis@ks.gov | Plot Location: Bridge
File: ks57290\bbr0048-61.dgn
Plot Date: 15-JUL-2024 20:52

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	63	141

BILL OF REINFORCING STEEL
Non-Epoxy Coated - Grade 60

		Straight Bars				Bent Bars			
		Mark	Size	Number	Length	Mark	Size	Number	Length
Superstructure	Pier	PB4	9	20	18'-2"	PB3	9	20	19'-9"
		PC1	8	48	9'-7"	PB1	5	176	9'-2"
		PC2	8	48	14'-7"	PB2	5	28	7'-7"
		PW2	6	8	6'-4"	PW3	4	84	4'-0"
		PW7	6	4	6'-7"				
						PS1	3	4	⊗
		PB5	4	40	18'-2"	PS2	3	4	⊗
		PW1	4	60	6'-4"				
		PW4	4	68	4'-7"				
		PW5	4	68	9'-2"				
		PW6	4	30	6'-7"				
		PW8	4	42	9'-6"				
		PW9	4	42	4'-6"				

⊗ See Bending Diagram



Coupled Rebar (Place in Phase III Construction)

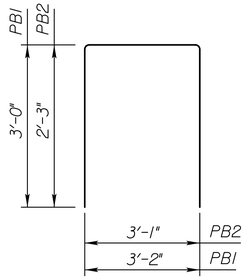
Coupled End Rebar (Place in Phase II Constuction)

THREADED REBAR SPLICE SYSTEM

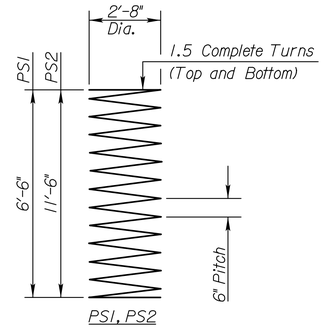
Threaded Rebar Splices (Grade 60)

Threaded Bars				Coupled Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
PB9	9	20	5'-1"	PB7	9	20	5'-1"
PB8	4	20	2'-7"	PB6	4	20	2'-7"

NOTE: The weight of the Threaded and Coupled rebars will be included in the weight of reinforcing steel. The Mechanical splice system shall meet the requirements of the KDOT specifications for "Fatigue Resistant" mechanical couplers. The addional material & labor shall be subsidiary to the bid item "Reinforcing Steel (Gr. 60) Epoxy Coated."



PB1, PB2

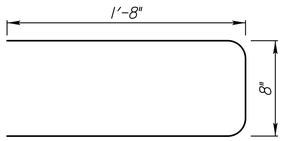


PS1, PS2

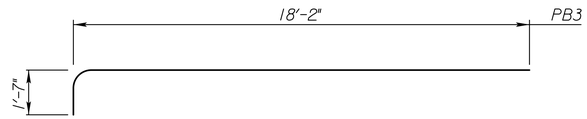
(⅜" Ø smooth or deformed bar)

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

Spiral Spacer Bars:
1) Are included in the mass of reinforcing steel
2) Minimum section modulus = 0.008 in^3
3) 4 required per spiral in PS1 & PS2



PW3



PB3

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. 63-66-54.90 (048) Sta. 62+23.30

BILL OF REINFORCING STEEL & BENDING DIAGRAMS

Proj. 63-66 KA-5729-01 Nemaha Co.

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

KDOT Graphics Certified 03-15-2024

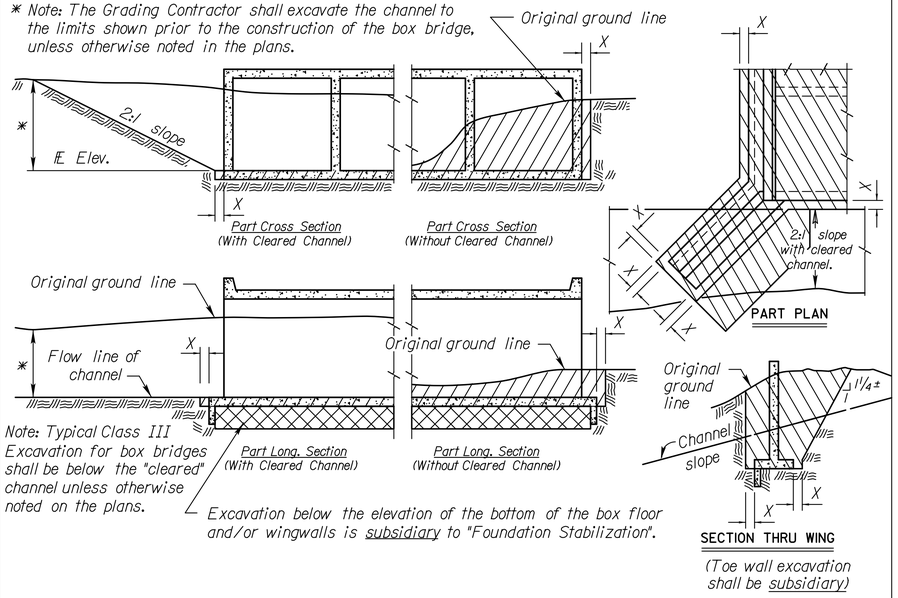
Sheet No. 63

KDOT Graphics Certified

Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290\bbr0048-63.dgn
Plot Date: 15-JUL-2024 15:58

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	64	141

* 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.

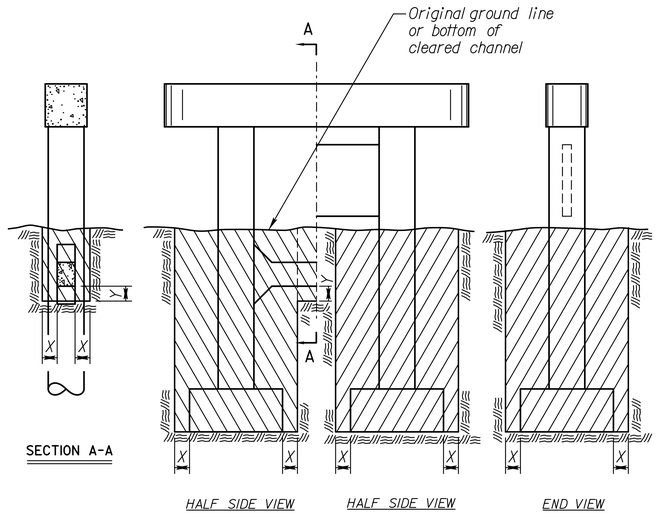


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

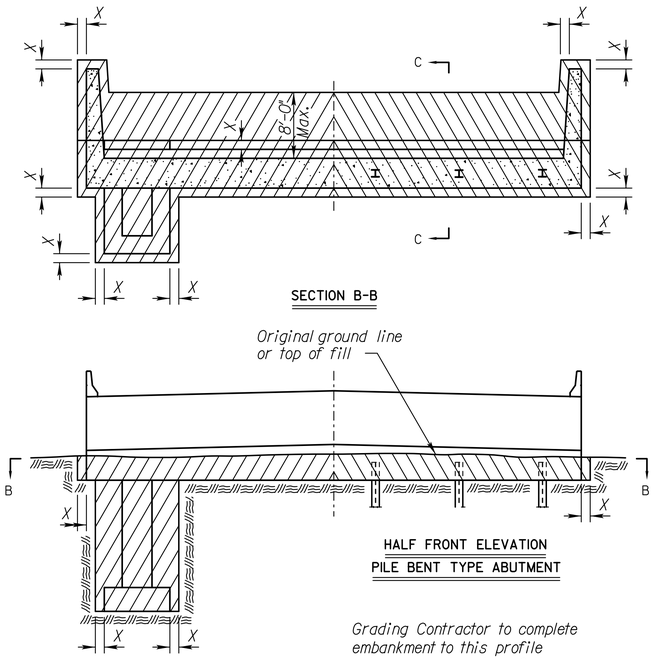
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

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.

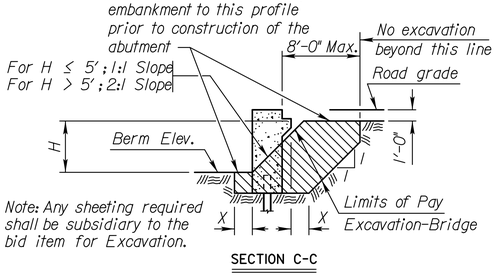


EXCAVATION DETAILS FOR TYPICAL PIERS

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



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

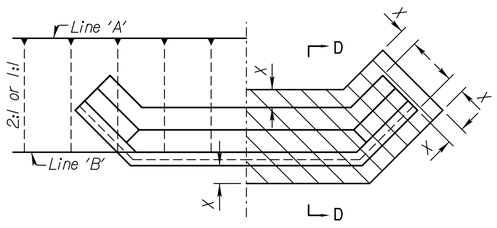


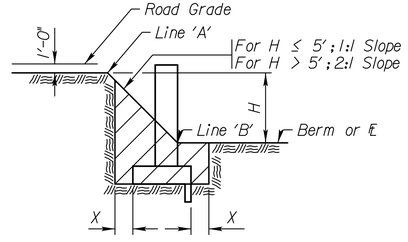
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

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

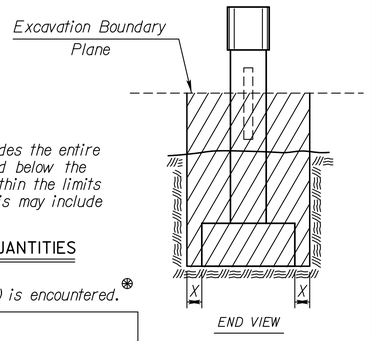
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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





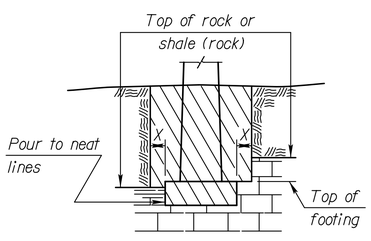
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



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

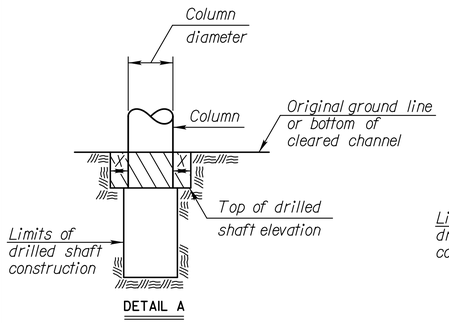
See detail when rock or shale (rock) is encountered. ⊛

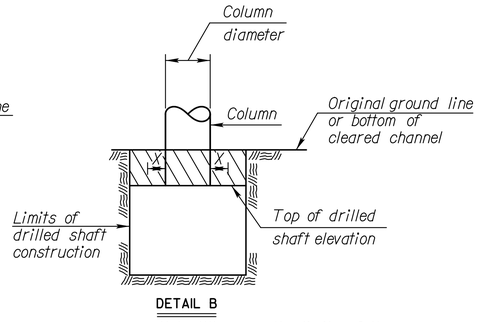


⊛ EXCAVATION DETAIL FOR FOOTINGS IN ROCK OR SHALE (ROCK)

(Piers and Abutments)

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





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)

DRILLED SHAFT DETAILS

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
7				
6	8-15-12	Embeddement Excavation Subsidiary	JPJ	TLF
5	5-15-12	Revised Wing Excavation	JPJ	TLF
4	3-3-10	Revised Wing Excavation	JPJ	TLF
3	10-16-06	Revised 'Foundation Stab.' Note	JPJ	KFH
2	10-19-04	Concrete - Class to Grade	RAM	KFH
1	4-10-02	Added 'Foundation Stab.' Note	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BRIOOB

FHWA APPROVAL			4/17/10 APP'D		TERRY L. FLECK
DESIGNED	DETAILED	RDR	QUANTITIES	CADD	
DESIGN CK.	DETAIL CK.	LRR	QUAN.CK.	CADD CK.	

KDOT Graphics Certified 03-15-2024

KDOT Graphics Certified

Sheet No. 64

Std. Base File: br100.dgn
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks572901/bss0048-01
Plot Date: 15-JUL-2024 16:00

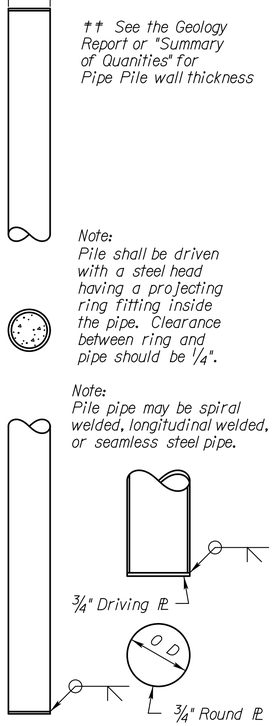
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	65	141

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

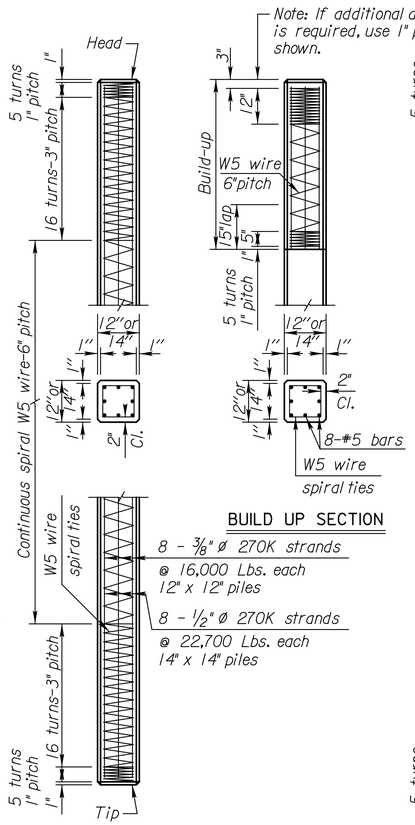
†† See the Geology Report or "Summary of Quanities" for Pipe Pile wall thickness

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

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

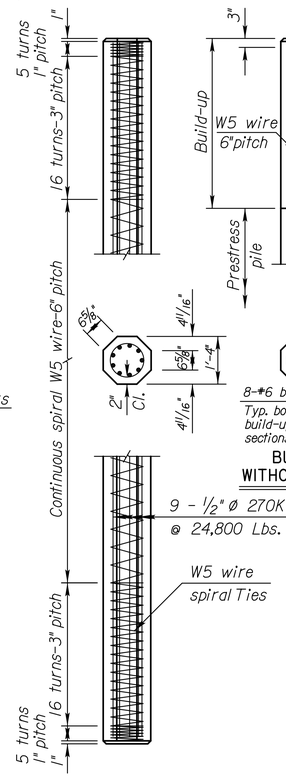


PLAIN ROUND CAST-IN-PLACE CONCRETE PILES



12" OR 14" PRESTRESSED CONCRETE PILES

BUILD UP SECTION

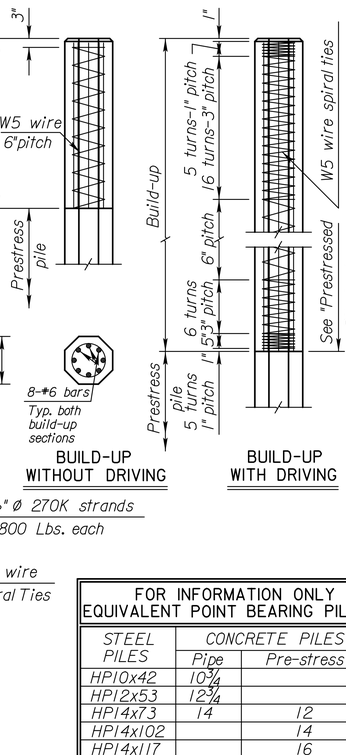


16" PRESTRESSED CONCRETE PILES

8 - ⅜" Ø 270K strands @ 16,000 Lbs. each 12" x 12" piles

8 - ½" Ø 270K strands @ 22,700 Lbs. each 14" x 14" piles

9 - ½" Ø 270K strands @ 24,800 Lbs. each



BUILD-UP WITHOUT DRIVING

BUILD-UP WITH DRIVING

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

GENERAL NOTES

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

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

ALTERNATE METHODS: Method of attachment of a pile to build-up may be by any of the following methods:
1. Cut off at least 2'-0" of pile and expose a minimum of 2'-0" of strands.
2. Cast 8-#6, or 8-#5 bars (equally (spaced into pile head. All bars shall extend into pile head and project from pile head a minimum of 2'-0".
3. Drill 8 holes in pile head (equally spaced) for installation of 8 grouted dowel bars of same size and length as in 2.
4. Provide cored holes for bars as in 3.
No bars or strands are to extend from head of pile or build-up into footing or pile cap unless approved by the Engineer.

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

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

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

The following items are covered in Division 1000 of 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 stress relieved or low relaxation prestressing strand conforming to ASTM A416, Gr. 270.

SPECIFICATIONS: Standard Specifications for State Road and Bridge Construction as currently used by the Kansas Department of Transportation. The following items are covered in Division 700 of the Standard Specifications:

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. See General Notes or proper storage of welding rod. welding filler rod (electrode) for field welding of splices.

New electrode are to be purchased for each KDOT project. The electrode 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 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.

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

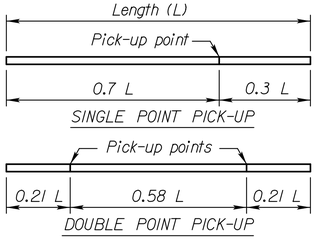
PILE POINTS: Pile points shall conform to the dimensions shown and to requirements of the Standard Specifications.

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.

CAST STEEL PILE POINT

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



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.

PIPE PILE POINT

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.

Use E7018, 7016, or 7015 series welding rod (electrode) for all welding applications during pile splicing. See General Notes for proper storage of welding rod.

Lay full penetration root weld from beveled side of splice.

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

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

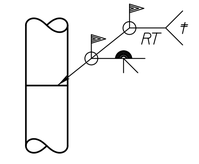
Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

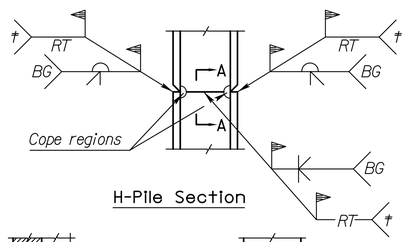
SPLICES: Splices for steel piles and shell piling shall be in accordance with details shown on this sheet and the Standard Specifications.

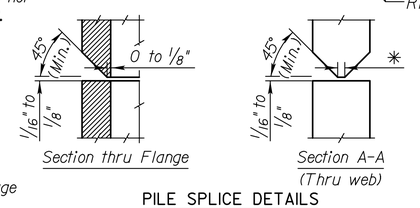
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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

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







✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

NO.	DATE	REVISIONS	BY	APP'D
4	08-16-18	Add splice web section, clarify note	MLL	JPJ
3	09-15-15	Clarify Notes	JPJ	CER
2	06-18-12	Clarify f'c, rod type, use and weld	JPJ	TLF
1	1-5-09	Pile Splice Location and Weld Test	JPJ	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

BRIIO

FHWA APPROVAL	10-04-12	APP'D	Terry L. Fleck
DESIGNED JPJ	DETAILED	QUANTITIES	CADD RAA
DESIGN CK.	DETAIL CK.	QUAN.CK.	CADD CK.

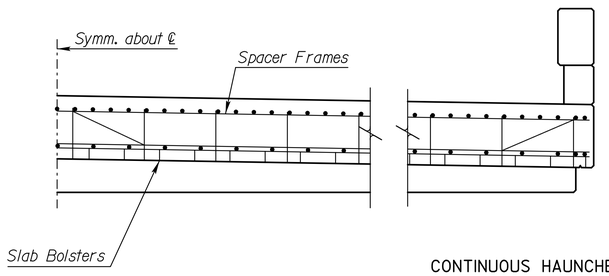
KDOT Graphics Certified 03-15-2024

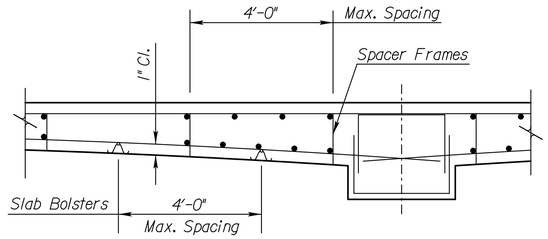
Sheet No. 65

KDOT Graphics Certified

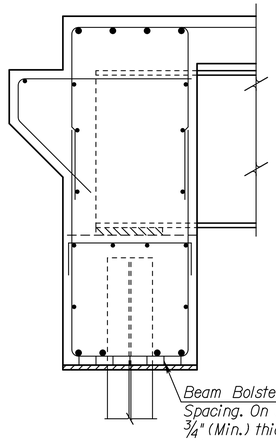
Plotted: Jake.Pfannenstiel@ks.gov Plot Location: Bridge
File: ks57290/bss0048-02_b.dgn
Plot Date: 15-JUL-2024 15:59

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	66	141



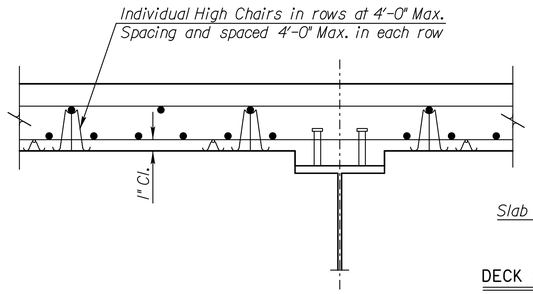


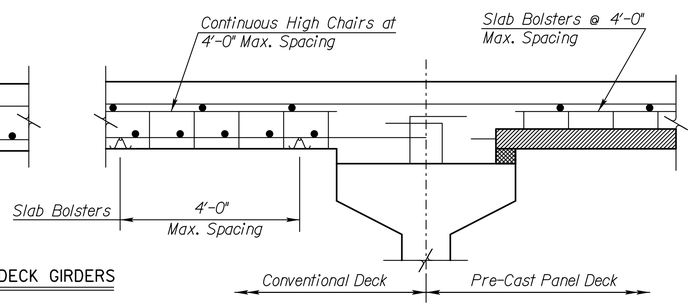
CONTINUOUS HAUNCHED SLAB



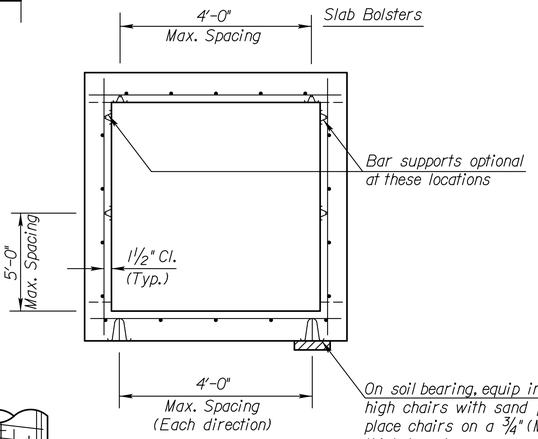
Beam Bolster at 4'-0" Max. Spacing. On soil bearing, place a 3/4" (Min.) thick board under bolster.

ABUTMENT

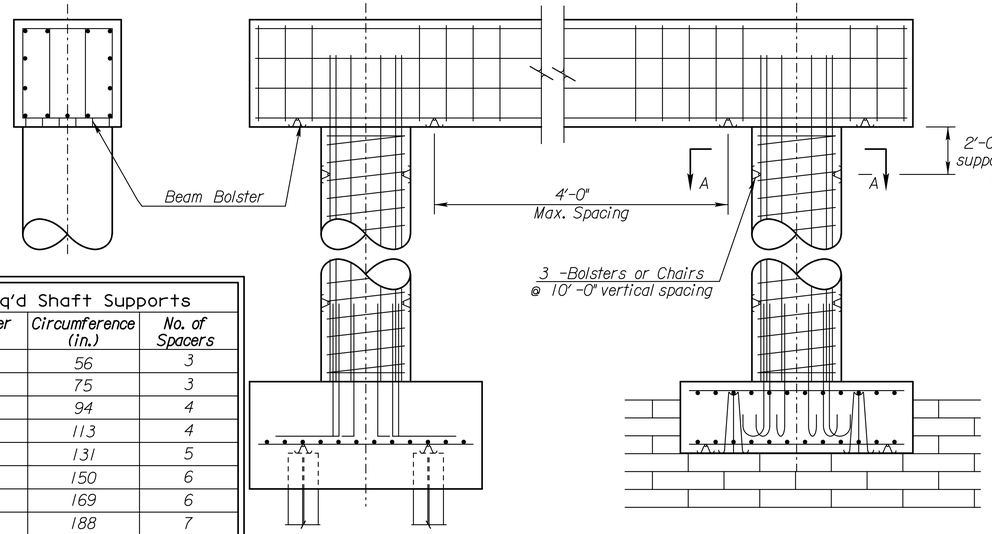




DECK GIRDERS

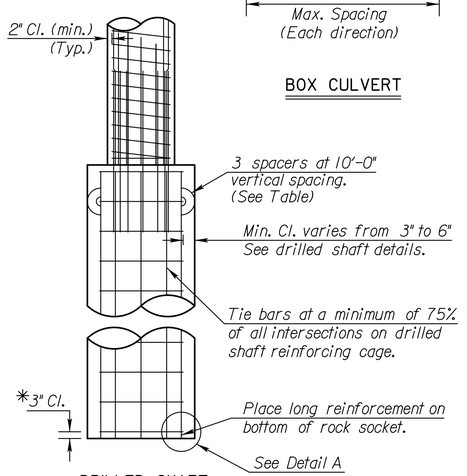


BOX CULVERT

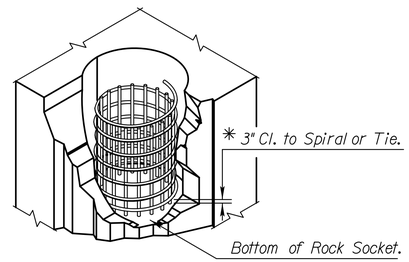


PIER

Req'd 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

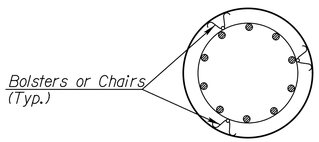


DRILLED SHAFT



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 1/4" of that indicated on the plans.

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
5	11-10-10	Column Bar Supports Req'd	JPJ	TLF
4	12-01-05	Drilled Shaft Spiral Steel Placement	JPJ	KFH
3	8-21-00	Added Pre-Cast Panel Detail	RAM	KFH
2	12-20-99	Added Haunched Slab Bolsters	RAM	KFH
1	12-09-99	Revised Drilled Shaft Clearance	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BRI20

FHWA APPROVAL		11-17-10	APP'D	Terry L. Fleck	
DESIGNED	RAM	DETAILED	RAA	QUANTITIES	CADD RAA
DESIGN CK.	LRR	DETAIL CK.	RAM	QUAN.CK.	CADD CK. RAM

KDOT Graphics Certified

Std. Base File: bri20.dgn
Plotted: Jake.Pfannenstiel@ks.gov
Not Location: Bridge
File: ka572901bss0048-03
Plot Date: 15-JUL-2024 15:58

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	67	141

DRAINAGE STRUCTURES

LOCATION	STATION	OFFSET	SIDE	SIZE	TYPE	ENTRANCE PIPES (FT.)					END SECTIONS (EACH) Θ				REMARKS
						RCP	PVCP, PEP, PPP, ACSP, CAP, RCP		PVCP, PEP, PPP, SRPE, ACSP, CAP, RCP	PEP, PPP, SRPE, ACSP, CAP, RCP					
						24"	18"	24"	30"	42"	18"	24"	30"	42"	
Field Ent.	1+20		℄	30"	EP				92				2		
Field Ent.	2+80		℄	24"	EP			86				2			
Field Ent.	6+20		℄	18"	EP		48				2				
K-63	73+00	78'	Lt.	42"	EP					60				2	
Ditch Realign.	3+00	2.5'	Lt.	24"	EP	36						2			Low Water Crossing
Ditch Realign.	3+00	2.5'	Rt.	24"	EP	36						2			Low Water Crossing
					TOTAL	72	48	86	92	60	2	6	2	2	

Θ See Summary of Pipe Culverts Sheet No. 32 for Allowable End Section Types

STEEL PLATE GUARDRAIL (MGS)

ROUTE	STATION to STATION	SIDE	LENGTH (FT)	END TERMINALS FLARED		MGS THRIE BEAM BRIDGE CONNECTION (INFO ONLY)	REMARKS
				MGS SRT Alt. 1	MGS FLEAT Alt. 2		
K-63	59+39.34 to 60+91.80	Rt.	112.50	1	1	1	
K-63	60+02.00 to 60+91.80	Lt.	50	1	1	1	
K-63	63+54.80 to 64+44.60	Rt.	50	1	1	1	
K-63	63+54.80 to 65+07.15	Lt.	112.50	1	1	1	
	TOTAL		325.00	4	4	4	

APPROACH SLAB PAVEMENT QUANTITIES

LOCATION	BRIDGE	STATION TO STATION		WIDTH FEET	LENGTH FEET	CONCRETE PAVEMENT (10" UNIFORM) (AE)(BR APP) SQ.YD.	REMARKS
K-63	63-66-54.90 (048)	60+78.80	60+91.80	36	13	53.4	
K-63	63-66-54.90 (048)	63+54.80	63+67.80	36	13	53.4	
TOTAL						106.8	

TEMPORARY CONCRETE SAFETY BARRIER

LOCATION	STATION TO STATION		TYPE F3 (TEMPORARY) (LIN. FT.)	TYPE F3 (TEMPORARY - RELOCATE) (LIN. FT.)	IMPACT ATTENUATOR (TEMPORARY) (TL-3)	REPLACEMENT MODULES (IMPACT ATTENUATOR)	REMARKS
PHASE 2: K-63 LT	47+25	86+75	3,800		2	10	
PHASE 3: K-63 RT	48+00	76+00		3,800			Impact Attenuator and Replacement Modules relocate to Phase 3
TOTAL			3,800	3,800	2	10	

GUARDRAIL, REMOVAL OF STEEL PLATE

ROUTE	STATION	SIDE	LENGTH (FT)	REMARKS
K-63	60+50.56 to 61+23.82	Rt.	76.04	Leave on Site
K-63	60+61.87 to 61+23.82	Lt.	62.86	Leave on Site
K-63	63+76.38 to 64+64.57	Lt.	87.82	Leave on Site
K-63	63+76.38 to 64+64.77	Rt.	87.78	Leave on Site
	TOTAL		314.50	

EARTHWORK

LOCATION	STATION to STATION	EXCAVATION COMMON CU.YDS.	COMMON VMF	ROCK CU.YDS.	ROCK VMF	CONTR. 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.	NOT SUBGRADED THROUGH CUTS TYPE A CU.YDS.	SALVAGE TOPSOIL SQ.YD.
Phase I: Temporary Widening												
℄ K-63	46+00 to 88+00	547	0.82	——		1,149		1,391				
Phase II: Lt.												
℄ K-63	49+00 to 85+00	10,391	0.82	——		13,325	2,543	16,905	462	462		34,226.7
Phase III: Rt.												
℄ K-63	49+00 to 85+00	12,239	0.82	——		2,829	2,721	9,634	679	679		38,153.9
TOTALS		23,117				17,303	5,264	27,930	1,141	1,141		72,380.6

REMOVAL OF EXISTING STRUCTURES (FOR INFORMATION ONLY)

ROUTE	STATION	SIDE	REMARKS
K-63	55+00	℄	3' x 3' x 73.06' RCB
K-63	60+30	Rt.	48" x 48.5' CMP
K-63	62+50	℄	Br. No. 63-66-54.91 (023)
K-63	64+83	Lt.	60" x 37.1' CMP w/ Flap Gate
K-63	73+00	Rt.	24" x 41.6' EP

The listing shown may not be complete and is for information only. Additional structures not listed but whose removal is required during construction as determined by the Engineer will not be paid for directly, but will be subsidiary to the bid item, "Removal of Existing Structures".

RECAPITULATION OF ROAD QUANTITIES

ITEM	QUANTITY	UNIT
Contractor Construction Staking	Lump Sum	Lump Sum
Field office & Laboratory (Type A)	1	Each
Foundation Stabilization (Set Price)	1	Cu. Yd.
Mobilization	Lump Sum	Lump Sum
Mobilization (DBE)	Lump Sum	Lump Sum
Removal of Existing Structures	Lump Sum	Lump Sum
✳Maintenance and Restoration of Haul Roads (Set Price)	Lump Sum	Lump Sum
Concrete for Seal Course (Set Price)	1	1
Clearing and Grubbing	Lump Sum	Lump Sum
Common Excavation (Rural Small)	24,318	Cu. Yd.
Common Excavation (Contractor Furnished)	17,303	Cu. Yd.
Compaction of Earthwork (Type A) (MR-5-5)	27,930	Cu. Yd.
Compaction of Earthwork (Type AA) (MR-5-5)	6,405	Cu. Yd.
Salvaged Topsoil	72,381	Sq. Yd.
Water (Grading) (Set Price)	1	M. Gal.
End Section (18")	2	Each
End Section (24")	6	Each
End Section (30")	2	Each
End Section (42")	2	Each
Entrance Pipe (18")	48	Lin. Ft.
Entrance Pipe (24") (RCP)	72	Lin. Ft.
Entrance Pipe (24")	86	Lin. Ft.
Entrance Pipe (30")	92	Lin. Ft.
Entrance Pipe (42")	60	Lin. Ft.
Guardrail, Steel Plate (MGS)	325	Lin. Ft.
Guardrail End Terminal (MGS-SRT) Alt. 1	4	Each
Guardrail End Terminal (MGS-FLEAT) Alt. 2	4	Each
Guardrail, Removal of Steel Plate	314.50	Lin. Ft.
Impact Attenuator (TL-3) (Temporary)	2	Each
Replacement Modules (Impact Attenuator)	10	Each
Concrete Safety Barrier (Type F3) (Temporary)	3,800	Lin. Ft.
Concrete Safety Barrier (Type F3) (Temporary - Relocate)	3,800	Lin. Ft.
Right-of-Way Survey Monument	5	Each
Concrete (Commercial Grade)	47.4	Cu. Yd.
Concrete Pavement (10" Uniform) (AE) (Br. App.)	107	Sq. Yd.
Curing Environment	Lump Sum	Lump Sum
Temporary Surfacing Material (Aggregate) (Set Price)	1	Cu. Yd.

✳Non- Participating

For Low Water Crossing Quantities, See Sh. No. 13
For Bridge Quantities, See Sh. No. 33
For Surfacing Quantities, See Sh. No. 68
For Temporary Erosion and Pollution Control Quantities, See Sh. No. 69
For Seeding Quantities, See Sh. No. 80
For Signing Quantities, See Sh. No. 94
For Traffic Control Quantities, See Sh. No. 118

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		APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

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Sh. No. 67

Plotted by: Brogan.Andrews@ks.gov 17-JUL-2024 15:46
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	68	141

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

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

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

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

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

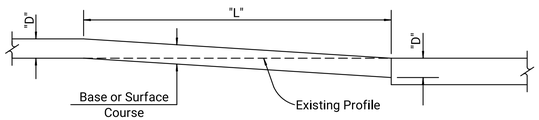
The base course shall be constructed to the plan thickness as shown.

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

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

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

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



TYPICAL PROFILE AT GRADE CONTROL POINTS

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

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

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

SUMMARY OF QUANTITIES

LOCATION	STATION TO STATION		SIDE	✱ HMA-COMMERCIAL GRADE (CLASS A) (TONS) 4.0"	6.0"	9.0"	AGGREGATE BASE (AB-3) (6.0") (SQ.YD.)	AGGREGATE SHOULDER (AS-1) (6.0") (SQ.YD.)	ϕ CALCIUM CHLORIDE (TONS)	REMARKS
Phase I:										
℄ K-63	46+00	49+00	Lt.		36.9		128.4			Temporary Widening
℄ K-63	47+00	87+00	Rt.		542.0		1,821.1			Temporary Widening
℄ K-63	84+98.44	88+00	Lt.		36.9		128.4			Temporary Widening
℄ K-63	86+86.90	87+82.07	Lt.					83.6	0.04	216th Rd
Phase II:										
℄ K-63	49+00	60+78.80	Lt.			1,060.0	2,198.4			Mainline
℄ K-63	49+00	57+00	Lt.					184.2	0.23	Shoulder
℄ K-63	57+13.02	57+86.77	Lt.					417.6	0.53	Field Entrance
℄ K-63	59+96.95	60+91.80	Lt.	2.9				62.1	0.08	Guardrail Pad
℄ K-63	63+54.80	65+12.15	Lt.	2.9				110.5	0.14	Guardrail Pad
℄ K-63	63+67.80	85+00	Lt.			1,842.8	3,823.7			Mainline
℄ K-63	67+00	85+00	Lt.					418.2	0.53	Shoulder
℄ K-63	72+63.27	73+36.73	Lt.					279.9	0.35	Field Entrance
Phase III:										
℄ K-63	49+00	60+78.80	Rt.			988.0	2,051.4			Mainline
℄ K-63	49+00	60+78.80	Rt.					295.8	0.37	Shoulder
℄ K-63	57+12.52	57+87.22	Rt.					1,233.6	1.55	Field Entrance
℄ K-63	59+34.42	60+91.80	Rt.	2.9				109.9	0.14	Guardrail Pad
℄ K-63	63+54.80	64+49.57	Rt.	2.9				62.2	0.08	Guardrail Pad
℄ K-63	63+67.80	85+00	Rt.			1,778.2	3,692.4			Mainline
℄ K-63	67+00	85+00	Rt.					516.0	0.65	Shoulder
℄ K-63	72+62.73	73+37.27	Rt.					212.1	0.27	Field Entrance
TOTALS				11.6	615.8	5,669.0	13,843.8	3,985.7	5.0	

✱ Computed at the rate of 145 lbs./Cu. Ft.

ϕ Computed at the rate of 0.003726 tons per Cu. Ft. of AS-1

MILLING

LOCATION	MILLING (TONS) †	REMARKS
Phase II: Sta. 49+00 to Sta. 85+00	2,056	Exist. Lt. Lane
Phase III: Sta. 49+00 to Sta. 85+00	2,656	Exist. Rt. Lane & Temp. Pavement
TOTAL	4,712	

† Computed at the rate of 145 lbs/cu.ft.

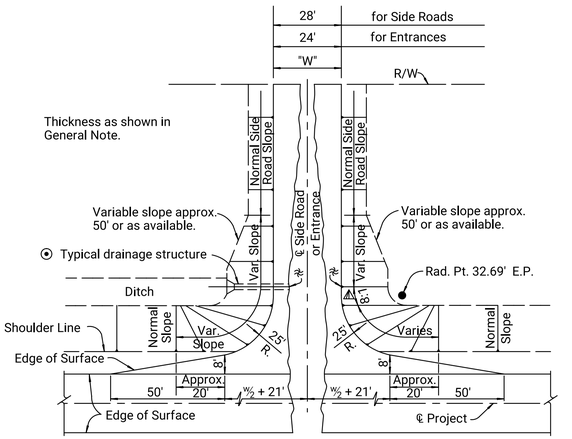
TRANSPORTING SALVAGEABLE MATERIAL

ITEM	TOTAL	UNIT	DELIVERY LOCATION
Millings	4,712	Tons	KDOT Mixing Strip 1.6 miles N. of Seneca on K-63

RECAPITULATION OF QUANTITIES

ITEM	TOTAL	UNIT
HMA-Commerical Grade (Class A)	6,296	Tons
Field office and Laboratory (Type A)	1	Each
Aggregate Base (AB-3)(6.0")	13,844	SQ. YD.
Aggregate Shoulder (AS-1)(6.0")	3,986	SQ. YD.
Water (Aggregate Base) (Set Price)	1	MGal.
Water (Aggregate Shoulder) (Set Price)	1	MGal.
Calcium Chloride	5	Tons
Milling	4,712	Tons
⊛Transporting Salvageable Material (5-8MI)	4,712	Tons

⊛ Non-Participating



WITH DRAINAGE STRUCTURE — MOUND ENTRANCE OR SIDE ROAD

DETAIL FOR SURFACING OF SIDE ROADS & HOUSE ENTRANCES

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

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

⌯ On side roads and entrances which slope toward the highway, a low point approx. 6" deep shall be constructed to divert surface drainage into the high-way 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.

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Sh. No. 68

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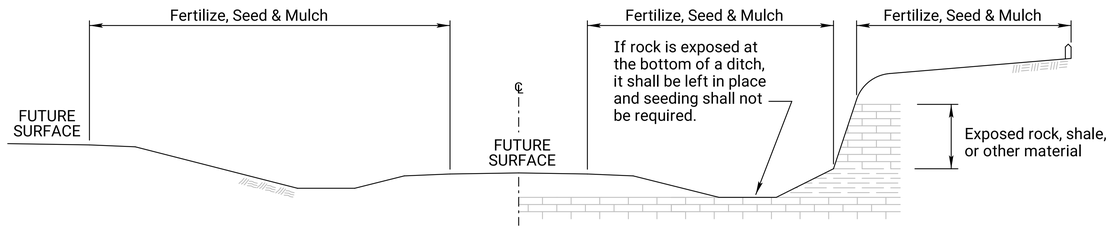
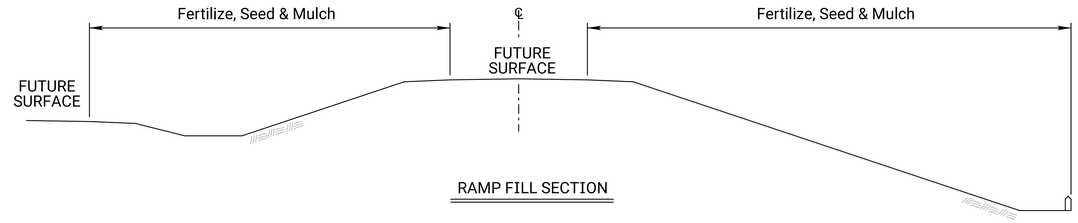
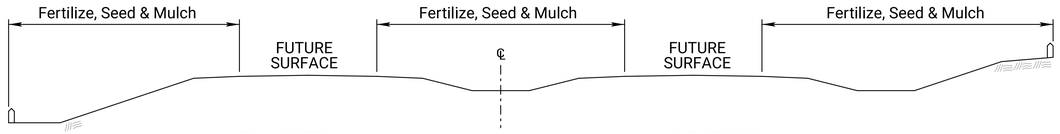
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	69	141



RAMP CUT SECTION



RAMP FILL SECTION



FILL SECTION CUT SECTION

TYPICAL SECTION - DUAL PAVEMENT

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150	150	13.58	0.38	Temporary Fertilizer (15 - 30 - 15)	2,094.0	LB
20		13.58		Temporary Seed (Canada Wildrye)	271.6	LB
45		13.58		Temporary Seed (Grain Oats)	611.1	LB
45		13.58		Temporary Seed (Sterile Wheatgrass) (Regreen/Quick Guard)	611.1	LB
	109.9		0.38	Soil Erosion Mix	41.7	LB
				Erosion Control (Class 1, Type C)	579	SQ YD
				Erosion Control (Class 2, Type G)	400	SQ YD
				Erosion Control (Class 2, Type H)	858	SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)	71.0	CU YD
				Biodegradable Log (20")	220	LF
				Filter Sock (18")	220	LF
				SWPPP Design †	1	LS
				SWPPP Inspection †	52	EACH
				Water Pollution Control Manager †	52	EACH
900 lbs / acre		13.58		Mulch Tacking Slurry	12,222	LB
2 tons / acre		13.58		Mulching	40.7	TON
				Water (Erosion Control) (Set Price)	1	MGAL

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

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

Regreen and Quick Guard are the approved sterile wheatgrass products.

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

**** List size of material.

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

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

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
0.5	Seed (Blue Grama Grass Seed) (Lovington)	0.19
4.5	Seed (Buffalograss Seed) (Treated)	1.71
45	Seed (Perennial Ryegrass)	17.08
2.6	Seed (Prairie Junegrass)	0.99
6.3	Seed (Side Oats Grama Grass Seed) (El Reno)	2.39
45	Seed (Tall Fescue) (Endophyte Free)	17.08
6	Seed (Western Wheatgrass Seed) (Barton)	2.28
109.9	Total (lb)	41.71

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.

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File : la852a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	70	141

EROSION CONTROL- CLASS 1, TYPE C

STATION TO STATION	ROUTE	SIDE	LENGTH	WIDTH	SQ YARD
56+98.98 TO 57+14.08	℄ K-63	LT	15.1	20	34
57+86.28 TO 58+01.26	℄ K-63	LT	14.98	20	33
57+03.43 TO 57+18.34	℄ K-63	RT	14.91	20	33
57+84.16 TO 57+99.25	℄ K-63	RT	15.09	20	34
57+97.00 TO 58+12.00	℄ K-63	RT	15	18	30
60+34.00 TO 60+49.00	℄ K-63	RT	15	18	30
72+63.00 TO 72+78.00	℄ K-63	LT	15	22	37
72+21.00 TO 72+36.00	℄ K-63	LT	15	22	37
0+01.00 TO 2+81.00	℄ C.R.	RT	280	6	187
0+01.00 TO 2+81.00	℄ C.R.	LT	280	4	124
TOTAL EROSION CONTROL (CLASS 1, TYPE C) =					579

EROSION CONTROL- CLASS 2, TYPE G & H

STATION TO STATION	ROUTE	SIDE	LENGTH	WIDTH	SQ YARD
G					
49+00 TO 51+00	℄ K-63	RT	200	18	400
H					
49+00 TO 50+60	℄ K-63	LT	160	18	320
3+20 TO 5+40	℄ C.R.	℄	220	22	538
				TOTAL TYPE H	858
TOTAL EROSION CONTROL (CLASS 2, TYPE G & H) =					1,258

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.

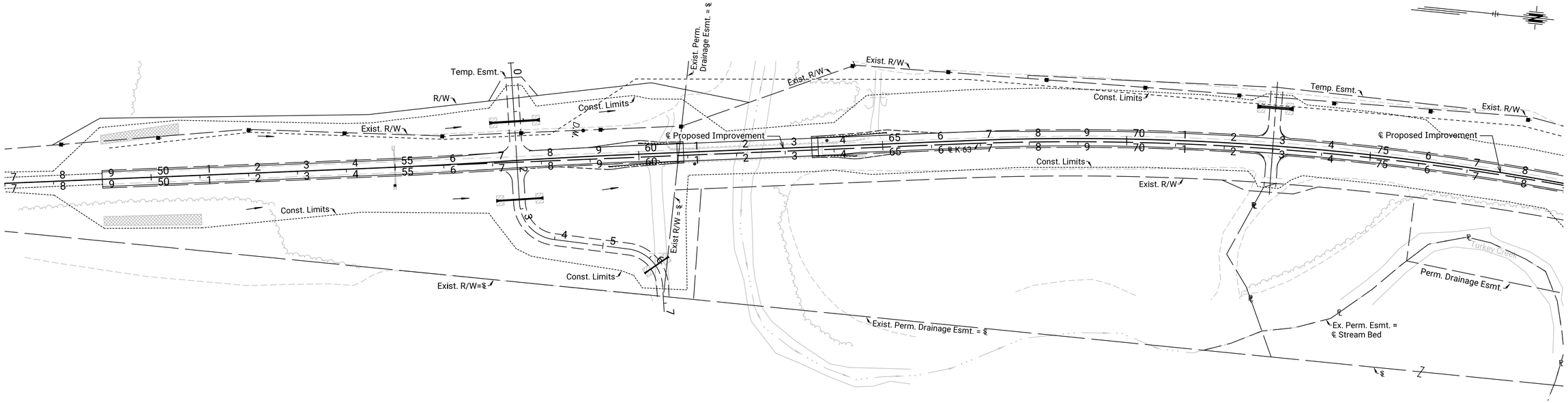
CADconform Certify This File

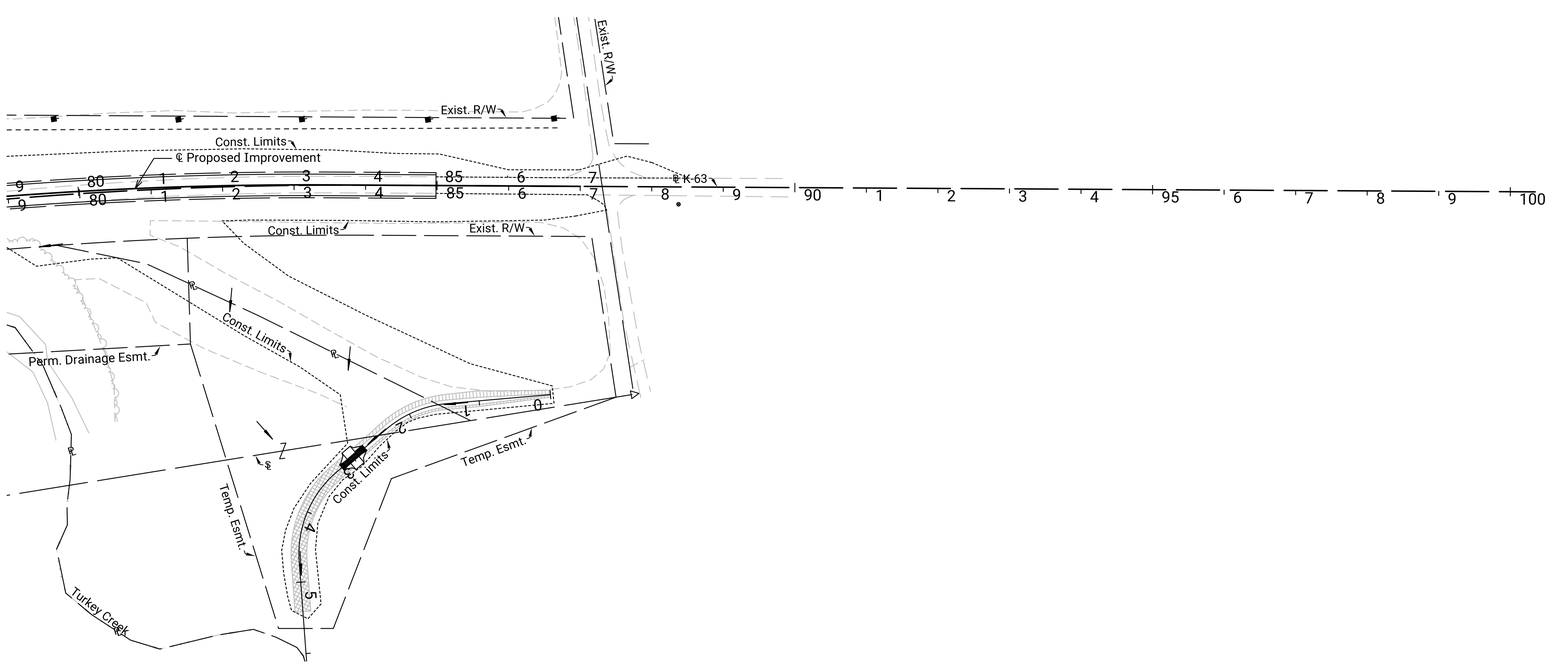
Sh. No. 70

CADconform Certify This File

Plotted by : Brogan.Andrews@ks.gov 15-JUL-2024 17:49
File : LA852A-EC.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	71	141





SCALE

PLAN: Lat. & Long. 100' 0 100' 200'

LEGEND

- Class I Erosion Control
- Class II Erosion Control

KANSAS DEPARTMENT OF TRANSPORTATION

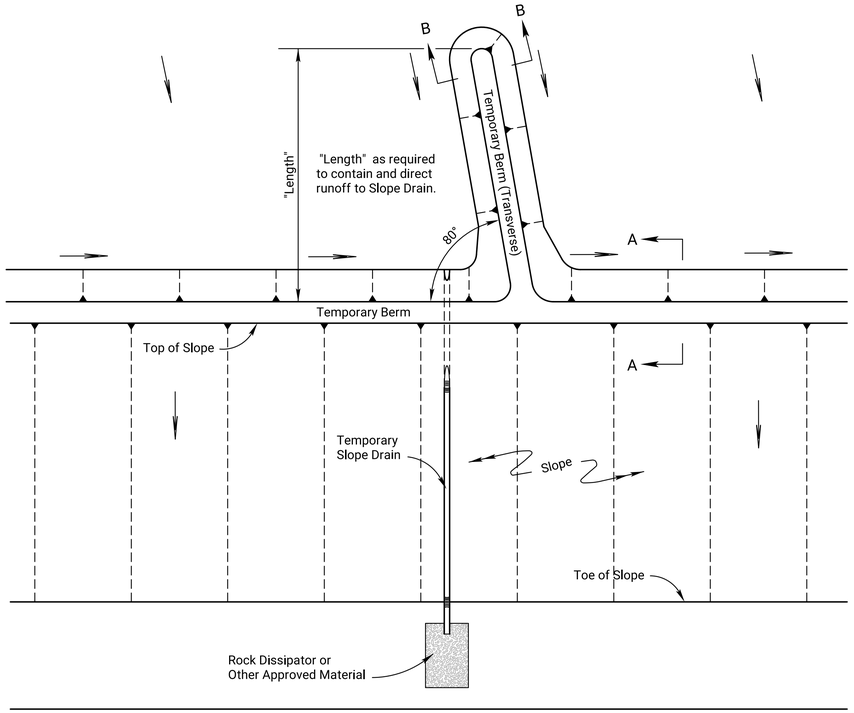
TEMPORARY EROSION CONTROL DETAIL

Sh. No. 71

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

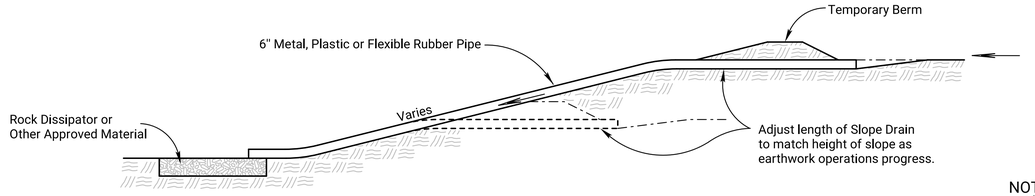
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:39
File : KA572901rec-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	72	141



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

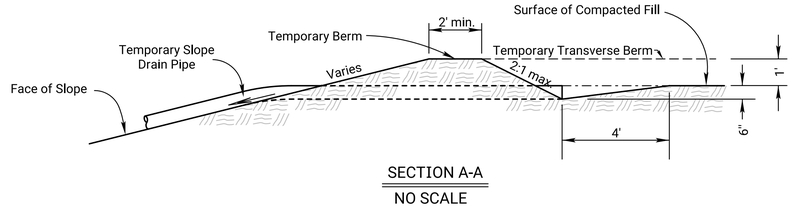
NOTES:

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

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

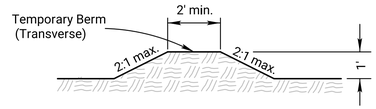
3) Pipe shall be secured in place as approved by Engineer.

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



SECTION A-A

NO SCALE

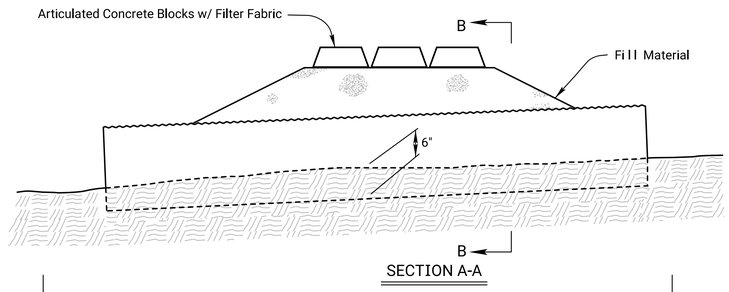


SECTION B-B

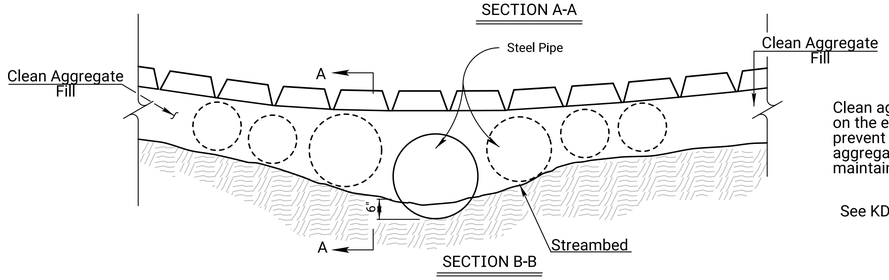
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

NO SCALE



SECTION A-A



SECTION B-B

TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

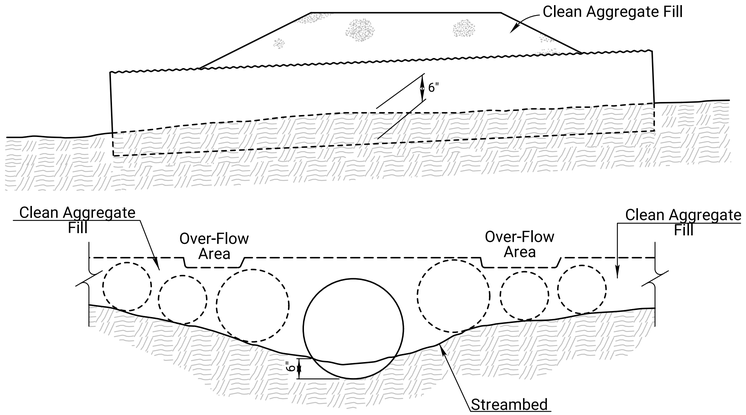
NO SCALE

Pipe size may vary.

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

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

See KDOT Specifications for more information.



SECTION B-B

TEMPORARY STREAM CROSSING (AGGREGATE)

NO SCALE

Pipe size may vary.

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

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

See KDOT Specifications for more information.

NO.	DATE	REVISIONS	BY	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. 72

KDOT Graphics Certified

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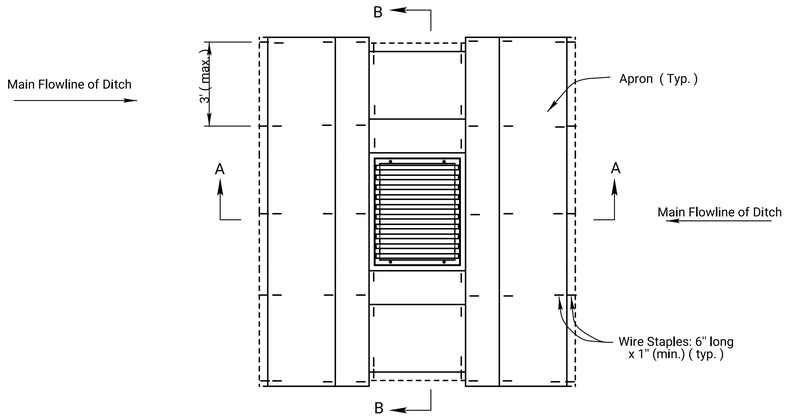
File : LA852B.dgn

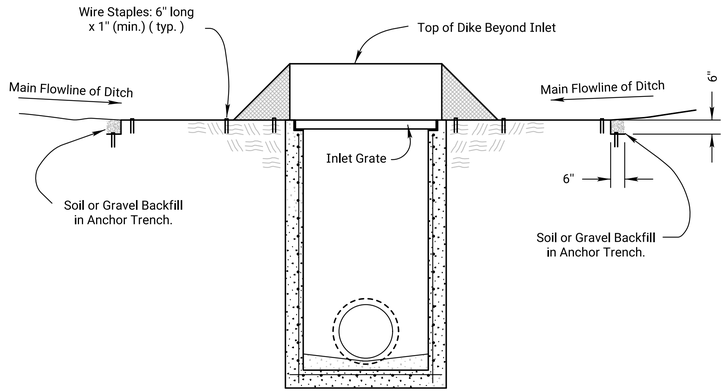
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	73	141



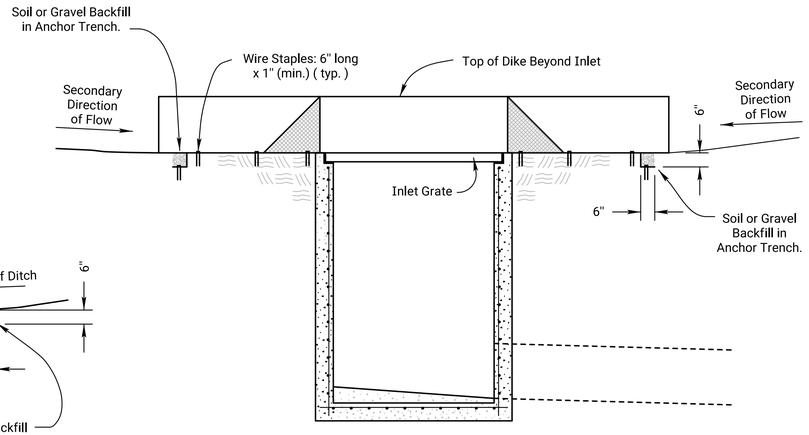
PLAN

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

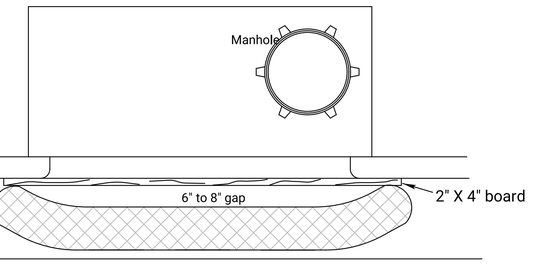
NO SCALE



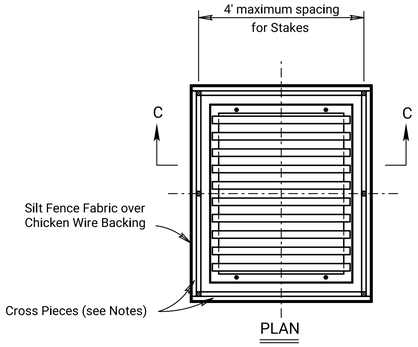
SECTION A - A



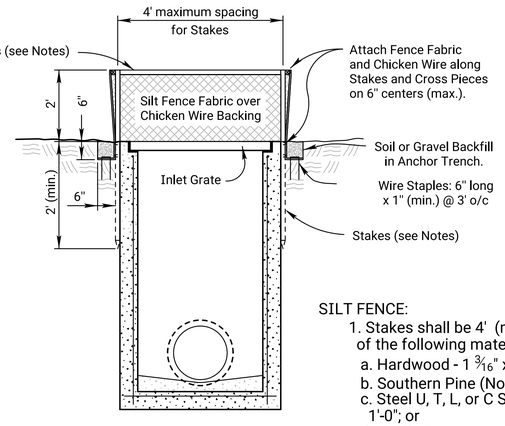
SECTION B - B



CURB INLET PROTECTION



PLAN



SECTION C - C

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

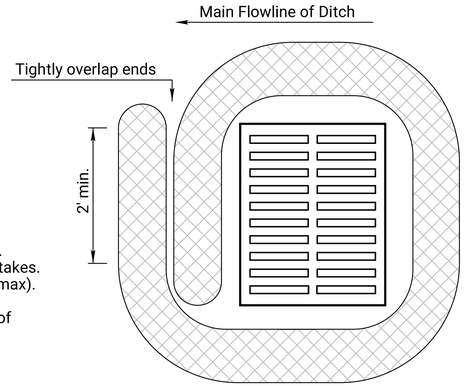
NO SCALE

SILT FENCE:

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

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

Rock = approximately 1" to 2" diameter



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

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

Stake every 4'

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852C

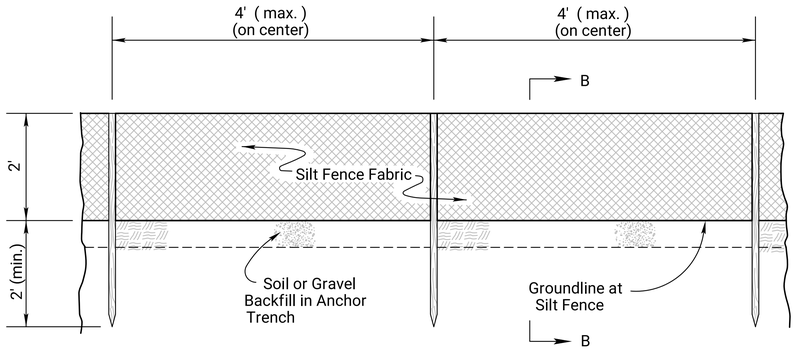
FHWA APPROVAL		03-10-15	APP'D.	Scott H. Shields
DESIGNED	R.A.	DETAILED R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK. S.H.S.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-14-2022 Sh. No. 73

KDOT Graphics Certified

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:39
File : LA852C.dgn

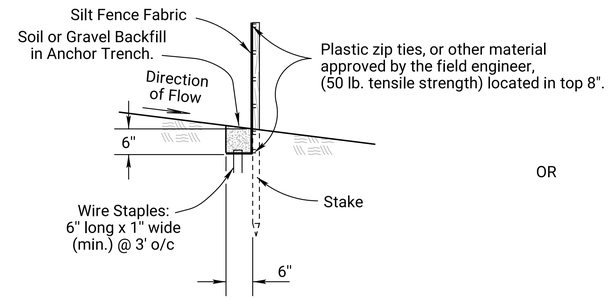
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	74	141



TYPICAL ELEVATION

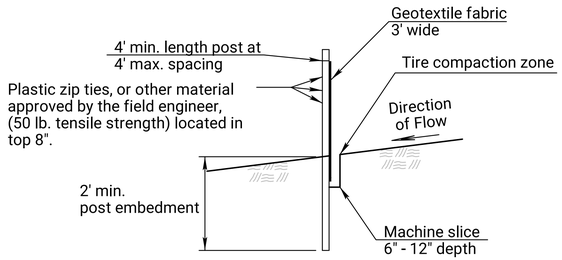
SILT FENCE BARRIER

NO SCALE

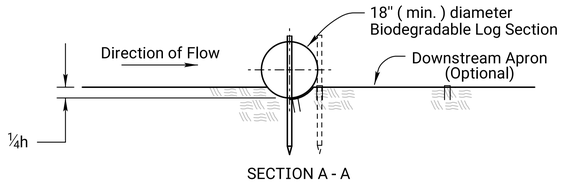


SECTION B-B

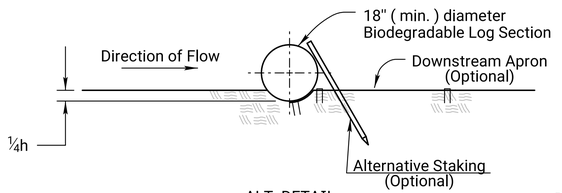
OR



SECTION B-B

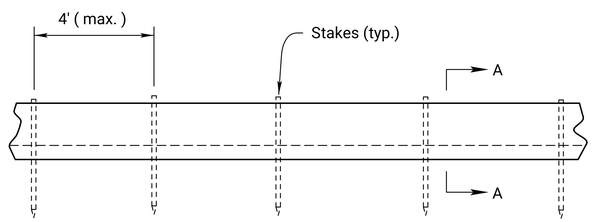


SECTION A - A



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

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

Deviations should be approved by the Field Engineer.

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

GENERAL NOTES

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

NO.	DATE	REVISIONS	BY	APP'D
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. 74

KDOT Graphics Certified

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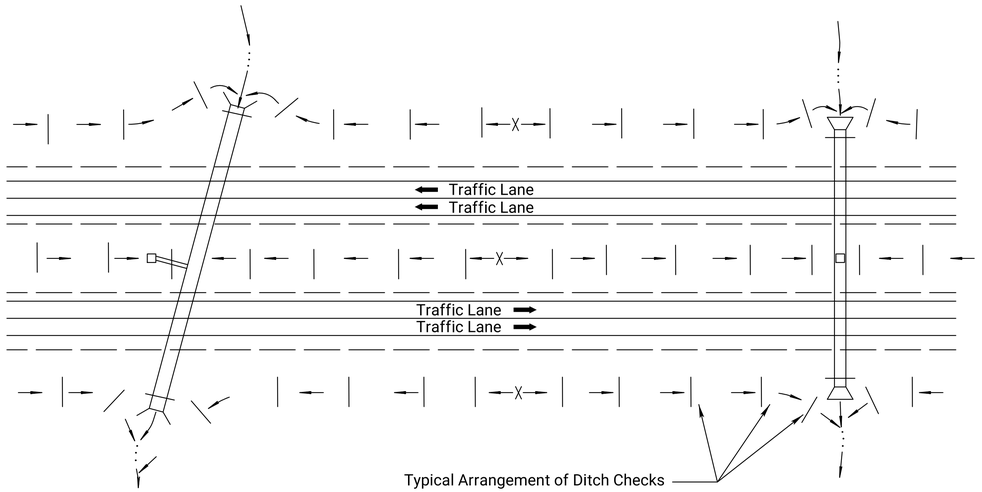
File : la852d.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	75	141



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.

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Sh. No. 75

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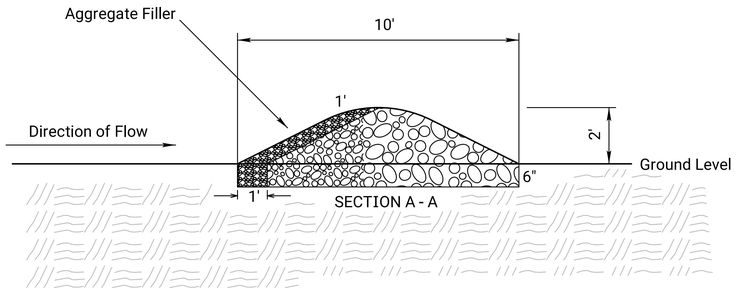
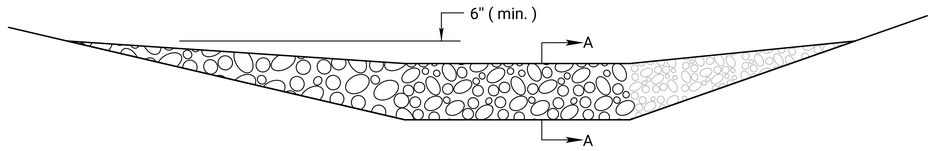
File : la852e.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	76	141





TYPICAL ELEVATION

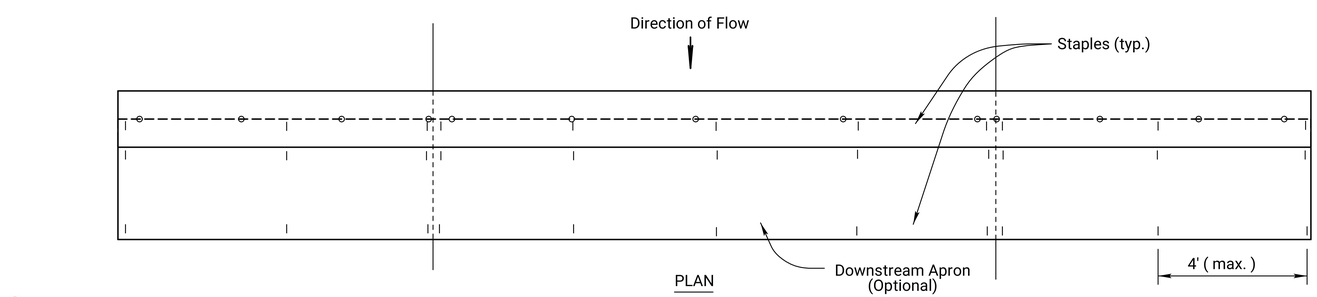
ROCK DITCH CHECK

NO SCALE

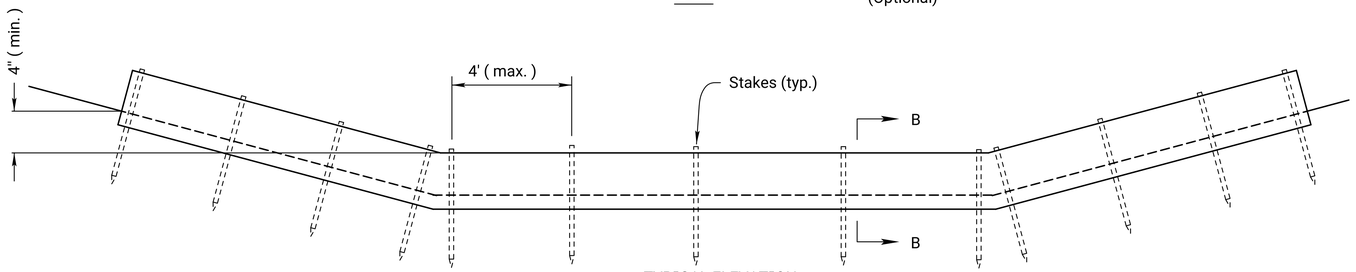
TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
NOTE: Use this spacing for Rock Ditch Checks only.	

ROCK DITCH CHECK NOTES

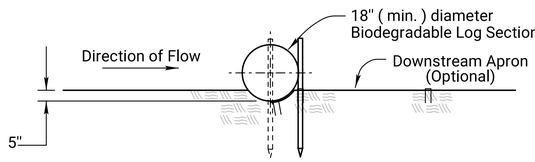
1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch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



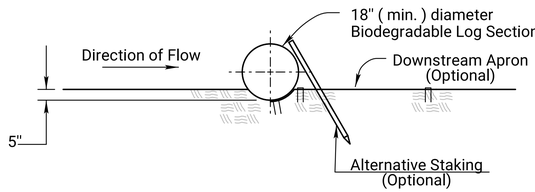
PLAN



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.

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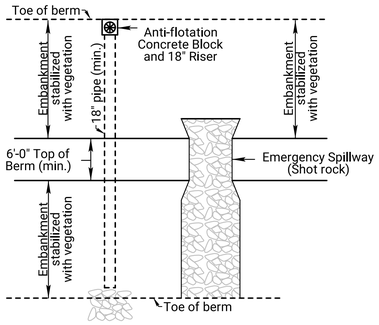
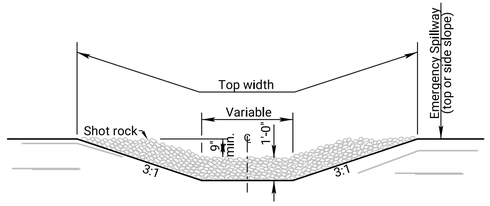
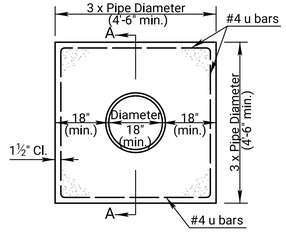
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	77	141



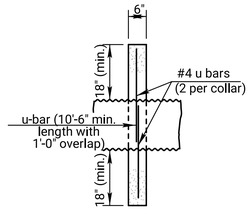
SEDIMENT STORAGE BASIN (PLAN)



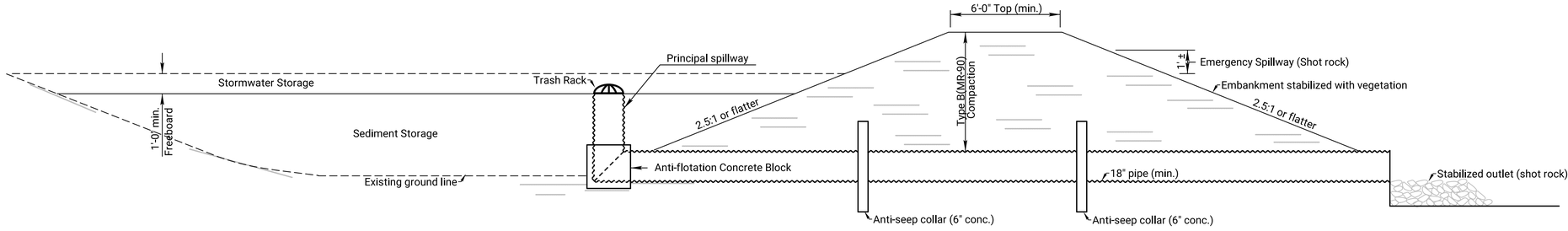
CROSS SECTION (EMERGENCY SPILLWAY)



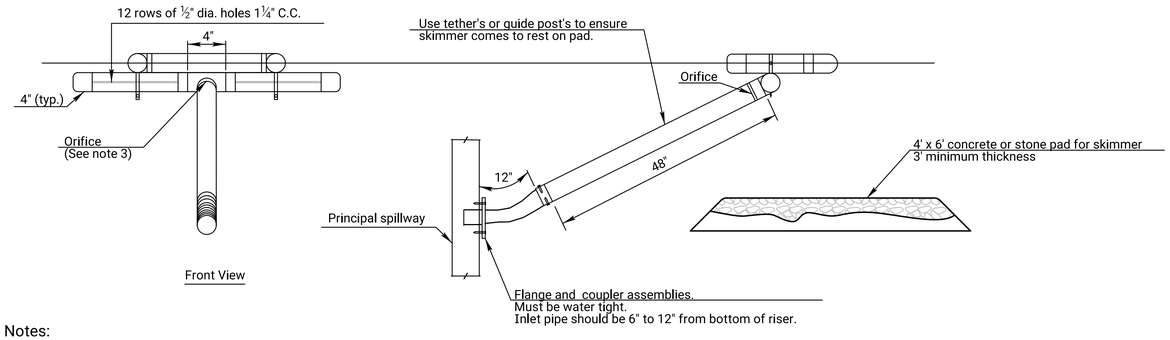
CONCRETE ANTI-SEEP COLLAR



SECTION A-A



SEDIMENT STORAGE BASIN (ELEVATION)



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

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.

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.

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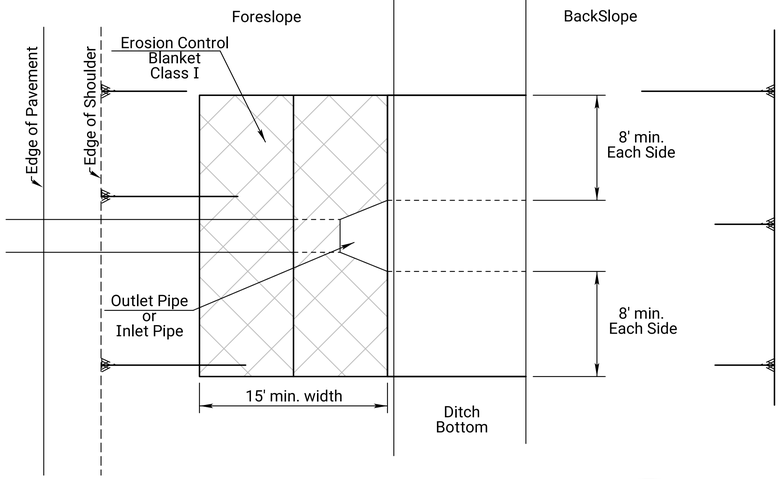
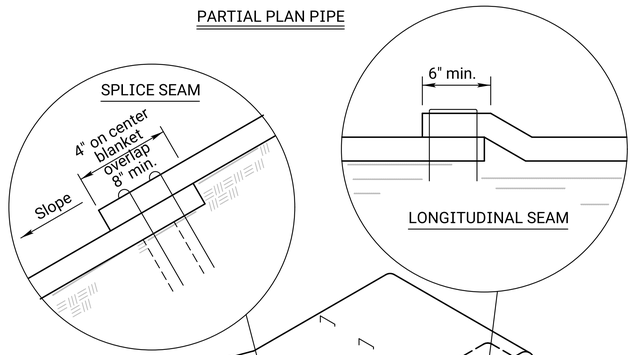
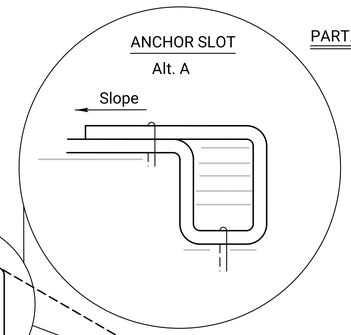
File : LA852H.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	78	141

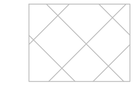


PARTIAL PLAN PIPE

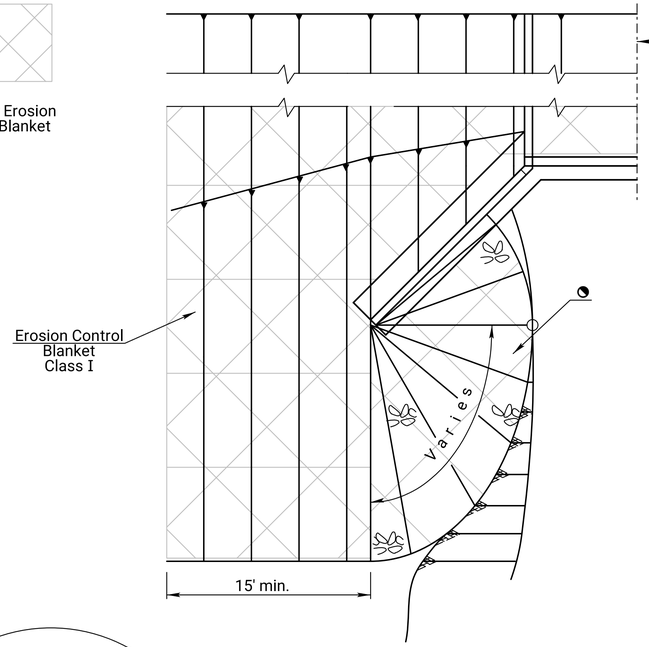




ISOMETRIC VIEW



Limits of Erosion Control Blanket



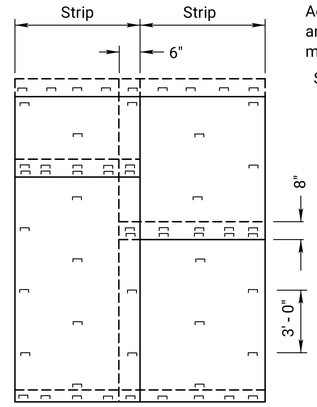
PARTIAL PLAN BOX CULVERT

◔ 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.

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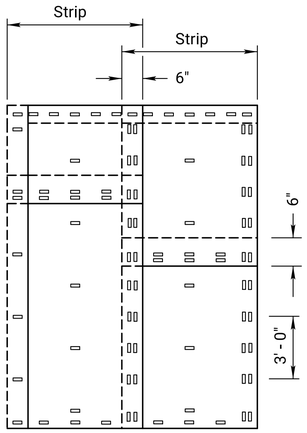
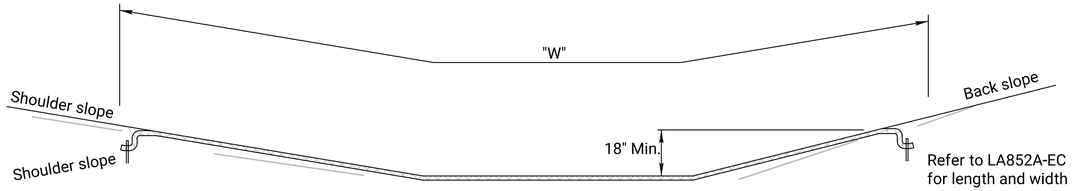
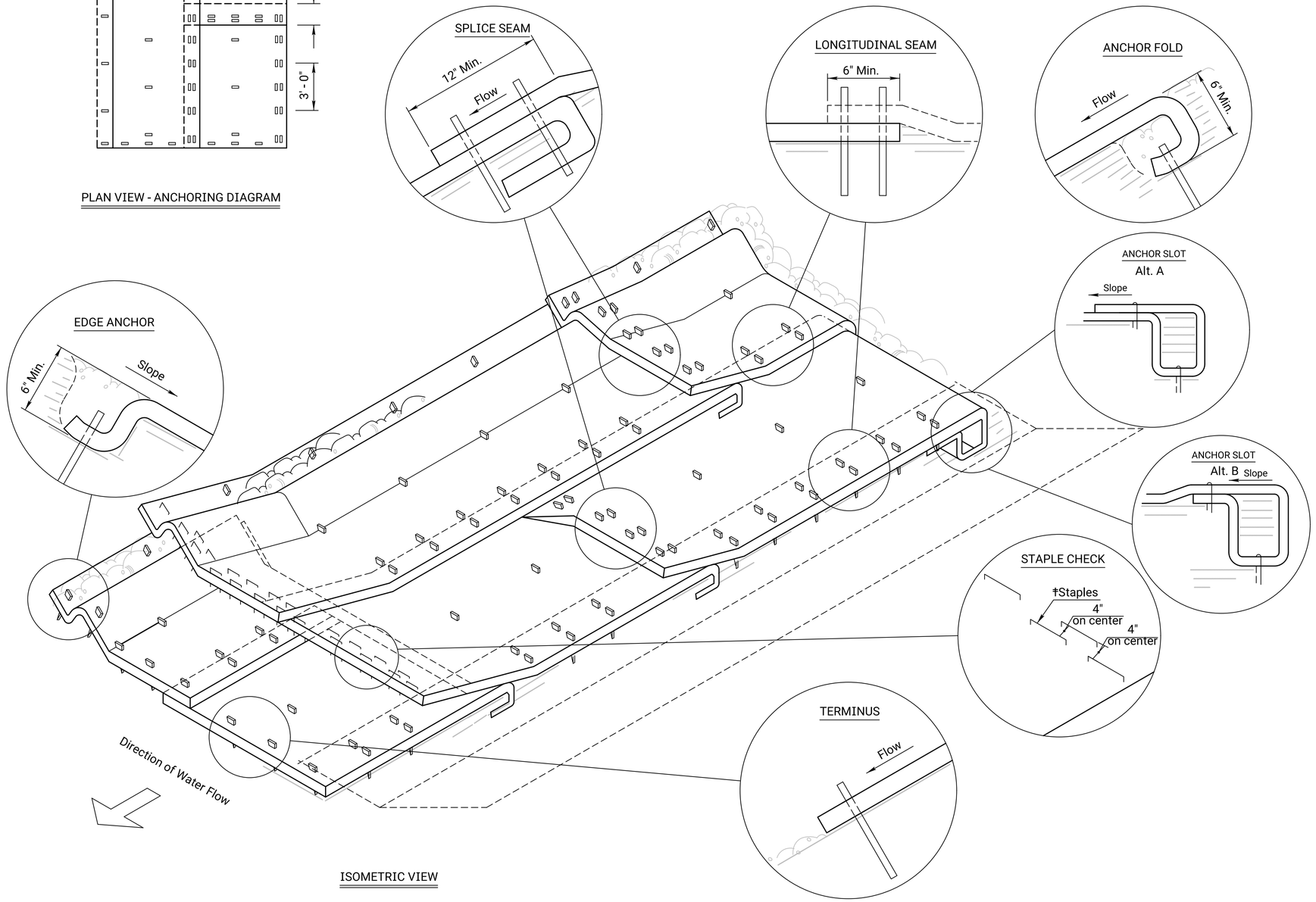
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	79	141



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.	

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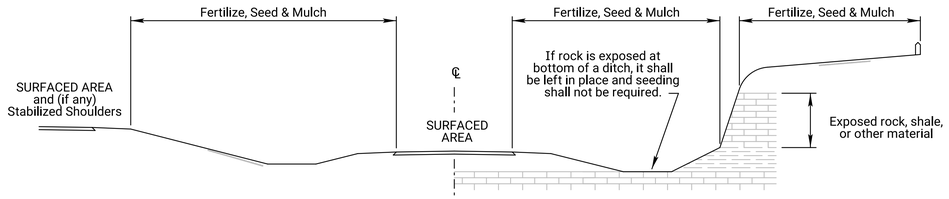
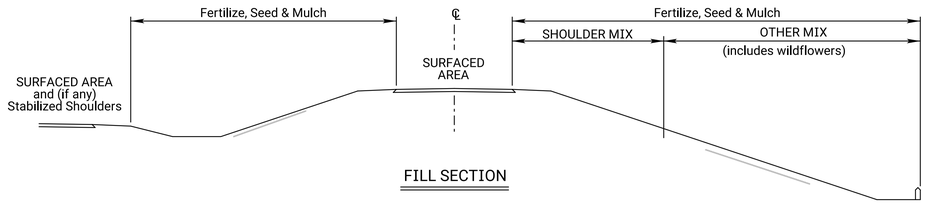
File : la856.dgn

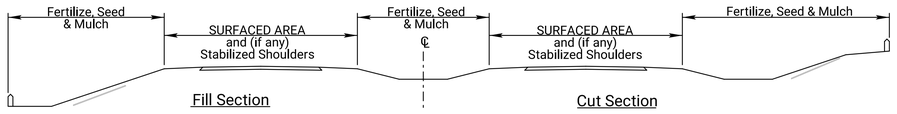
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	80	141



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	3.38
0.3	Common Milkweed	3.38
0.3	Black Eyed Susan	3.38
0.5	Blanket Flower	5.64
0.5	False Sunflower	5.64
0.5	Lance-Leaf Coreopsis	5.64
0.2	Maximilian Sunflower	2.25
0.1	New England Aster	1.13
0.2	Pinnate Prairie Coneflower	2.25
0.2	Plains Coreopsis	2.25
0.3	Purple Coneflower	3.38
0.3	Upright Prairie Coneflower	3.38
0.3	Dames Rocket	3.38
0.3	Lemon Mint	3.38
0.2	Pitcher Sage	2.25
0.2	Wild Bergamot	2.25
1.0	Illinois Bundleflower	11.27
0.2	Common Evening Primrose	2.25
0.1	Hoary Verbena	1.13
0.8	Purple Prairie Clover	9.02
0.3	Roundhead Lespedeza	3.38
3.0	Showy Partridge Pea	33.81
0.2	White Prairie Clover	2.25
10.3	Total (lb)	116.09

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
200		2.31		Fertilizer (13-13-13)	462.0	Lbs
	80		11.27	Fertilizer (15-30-15)	901.6	Lbs
	2		11.27	Seed (Big Bluestem Grass Seed) (Kaw)	22.5	Lbs
0.5		2.31		Seed (Blue Grama Grass Seed) (Lovington)	1.2	Lbs
4.5		2.31		Seed (Buffalograss Seed) (Treated)	10.4	Lbs
	10		11.27	Seed (Canada Wildrye Grass Seed)	112.7	Lbs
	2		11.27	Seed (Indiangrass Seed) (Osage)	22.5	Lbs
	2		11.27	Seed (Little Bluestem Grass Seed) (Aldous)	22.5	Lbs
45		2.31		Seed (Perennial Ryegrass)	104.0	Lbs
2.6		2.31		Seed (Prairie Junegrass)	6.0	Lbs
6.3	6.3	2.31	11.27	Seed (Side Oats Grama Grass Seed) (El Reno)	85.6	Lbs
	10		11.27	Seed (Sterile Wheatgrass) (Regreen/Quick Guard)	112.7	Lbs
	0.7		11.27	Seed (Switchgrass Seed) (Blackwell)	7.9	Lbs
	0.5		11.27	Seed (Tall Dropseed)	5.6	Lbs
45		2.31		Seed (Tall Fescue) (Endophyte Free)	104.0	Lbs
6	4	2.31	11.27	Seed (Western Wheatgrass Seed) (Barton)	58.9	Lbs
	10.3		11.27	Seed (Native Wildflower Mix 1)	116.1	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.

CADconform Certify This File

Sh. No. 80

Plotted by : Brogan.Andrews@ks.gov 15-JUL-2024 17:52
File : LA850.dgn

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	81	141

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

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

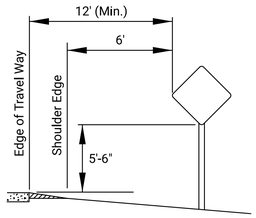
FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-16-2024 Sh. No. 81

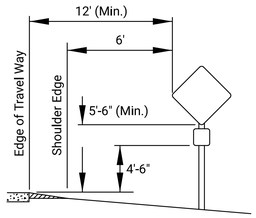
KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:37
File : KA572901pss402-01.dgn

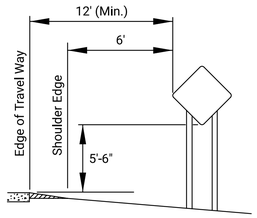
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	82	141



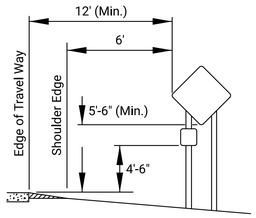
ONE POST



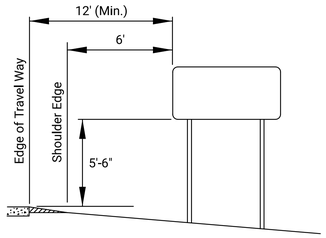
ONE POST WITH SUPPLEMENTAL SIGN



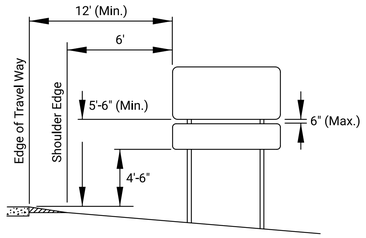
TWO POSTS



TWO POSTS WITH SUPPLEMENTAL SIGN

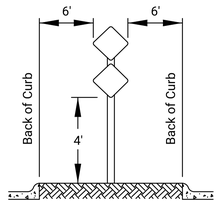


MULTIPLE POSTS

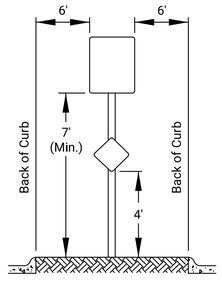


MULTIPLE POSTS WITH SUPPLEMENTAL SIGN

CONVENTIONAL HIGHWAY AND SIDE ROADS

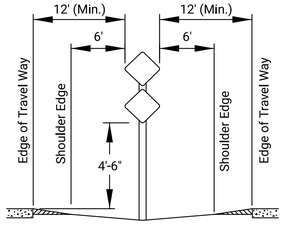


ONE OR TWO OM1-3

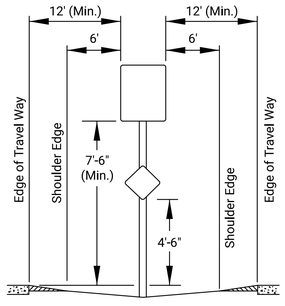


PRIMARY SIGN WITH OM1-3

RAISED



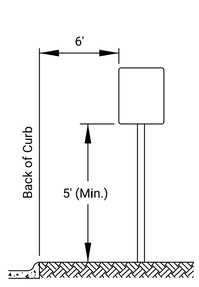
ONE OR TWO OM1-3



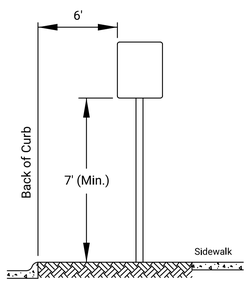
PRIMARY SIGN WITH OM1-3

DEPRESSED

MEDIANS AND ISLANDS

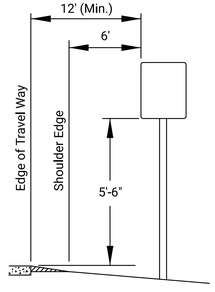


NO PARKING OR SIDEWALK



PARKING OR SIDEWALK

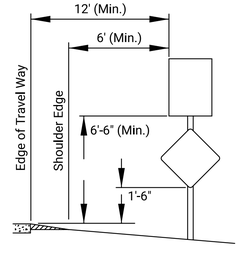
CURB



TYPICAL

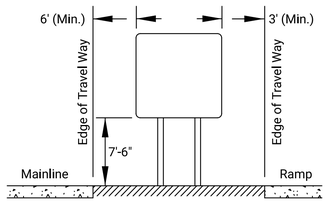
NO CURB

URBAN ROADWAYS

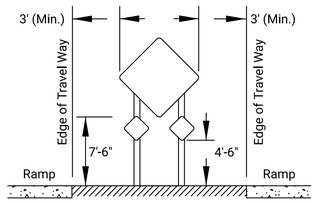


TYPICAL

ADOPT A HIGHWAY

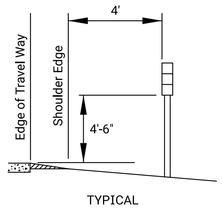


MAINLINE/RAMP



RAMP/RAMP

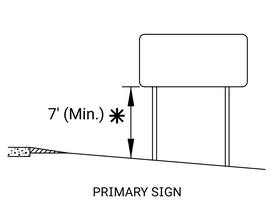
HIGHWAY GORES



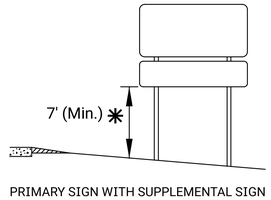
TYPICAL

Reference Marker Post: 2 Lb/Ft "U" Post

REFERENCE MARKERS



PRIMARY SIGN



PRIMARY SIGN WITH SUPPLEMENTAL SIGN

✱NOTE: Measured from the nearest point between the sign and the groundline.

GROUND CLEARANCE FOR STEEL BEAM POSTS

NOTES

The "Edge of Travel Way" is the edge line or the edge of the driving lane.

The outer edge of the sign shall not extend beyond the right of way line.

A minimum lateral clearance of 6' from pavement edge may be used where lateral offsets are limited.

In business, commercial, or residential districts where with limited lateral offsets, a minimum lateral clearance of 2' with a 7'-6" minimum mounting height may be used.

When signs are behind guardrail, the near edge of the sign shall not extend beyond the back side of the guardrail and the nearest sign post shall be a minimum of 5' from the face of the guardrail. Shoulder mounted signs shall not be located between 100' in advance of and 50' beyond the nose of the guardrail.

When the median or island is too narrow for the typical lateral placement, the sign may be placed a minimum of 2' from the back of the curb. In no case shall the sign edge extend beyond the back edge of the curb.

The gore sign shall be installed in the paved gore area. The edges of the gore sign shall not extend beyond the shoulder edge. The minimum distance from the centerline of the posts to the back of the paved gore area is 2'.

Signs may be moved laterally or longitudinally if it will improve visibility of the sign or other signs or if it will protect the sign more. The maximum allowable longitudinal adjustment is 100', with the exception of the reference marker which is 50'.

The minimum spacing between signs, excluding reference markers is 100'.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

MOUNTING HEIGHT & LATERAL OFFSET FOR CONVENTIONAL HIGHWAYS, SIDE ROADS, MEDIANS, ISLANDS, GORES, AND URBAN ROADWAYS

TE407 10-01-19

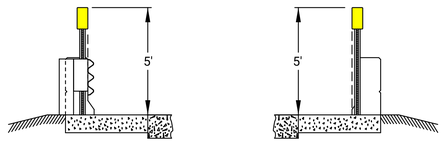
FHWA APPROVAL		10-01-19	APP'D.	Eric W. Nichol	
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES	TRACED
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-11-2022 Sh. No. 82

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:36
File : KA572901pss407-01.dgn

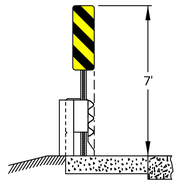
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	83	141



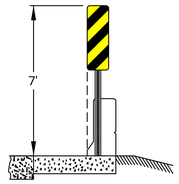
WITH GUARDRAIL

WITHOUT GUARDRAIL

SHOULDER WIDTH 6 FEET OR GREATER (TYPE 2 OBJECT MARKER)



WITH GUARDRAIL

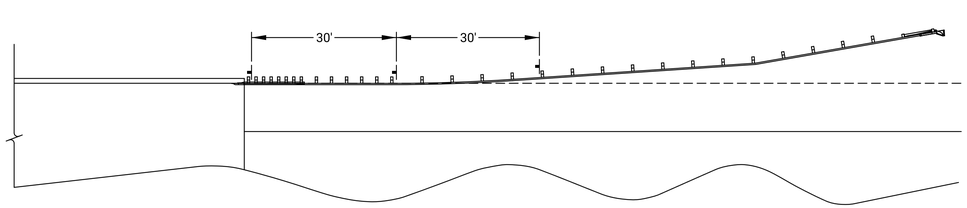


WITHOUT GUARDRAIL

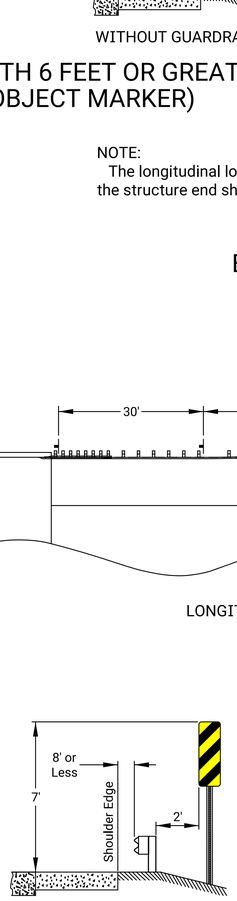
SHOULDER WIDTH LESS THAN 6 FEET (TYPE 3 OBJECT MARKER)

NOTE:
The longitudinal location of the object markers from the structure end shall be a maximum spacing of 42".

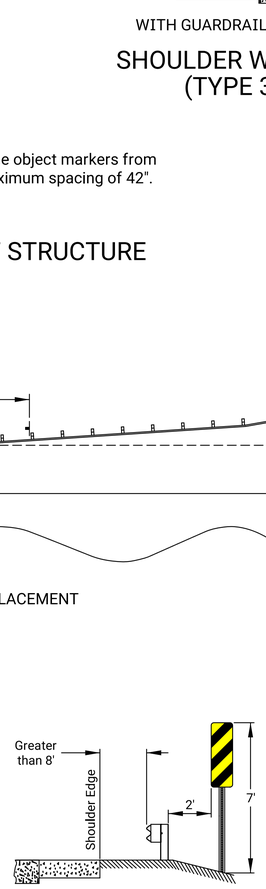
END OF STRUCTURE



LONGITUDINAL PLACEMENT

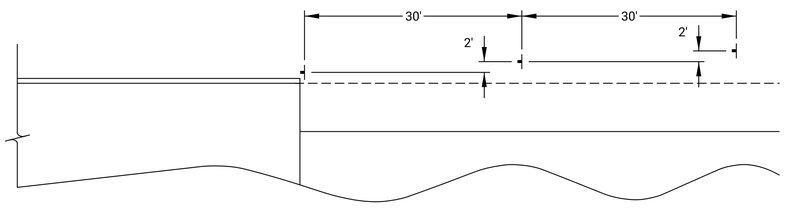


GUARDRAIL 8' OR LESS
FROM SHOULDER EDGE



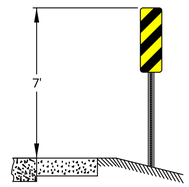
GUARDRAIL GREATER THAN 8'
FROM SHOULDER EDGE

STRUCTURE APPROACH GUARDRAIL WITHOUT MARKERS



LONGITUDINAL PLACEMENT

NOTE:
The lateral offset is measured from the centerline of the object 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

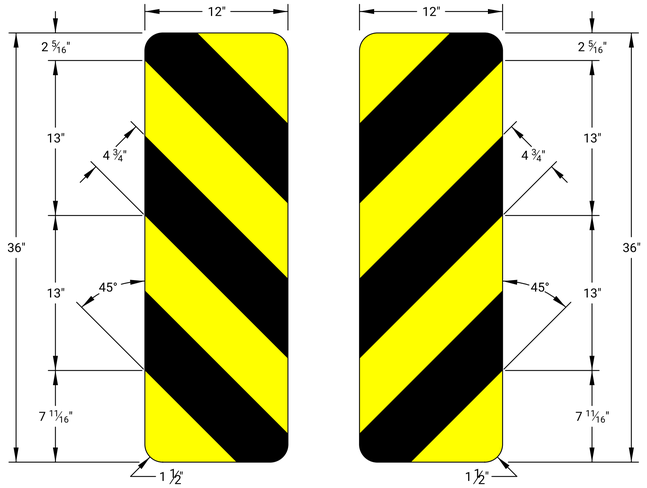
FHWA APPROVAL		10-01-19	APP'D.	Eric W. Nichol			
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES	TRACED		
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.	TRACE CK.		

KDOT Graphics Certified 05-25-2022 Sh. No. 83

KDOT Graphics Certified

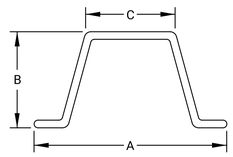
Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:36
File : KA5729O1pss415-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	84	141



OM3-L

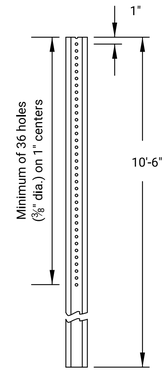
OM3-R



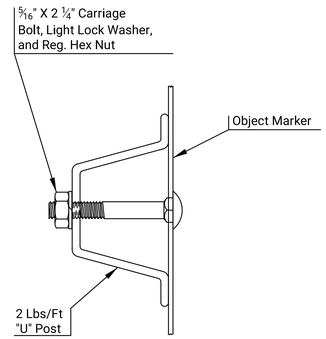
DIMENSIONS	
A	3 1/8
B	1 17/32
C	1 1/4

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS



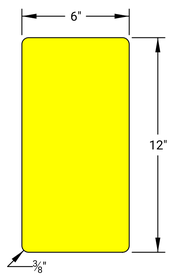
MOUNTING DETAILS

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

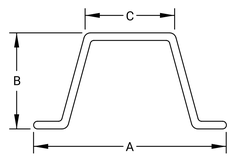
TYPE 3 OBJECT MARKER

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.



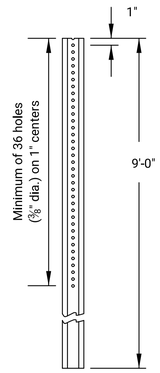
OM2



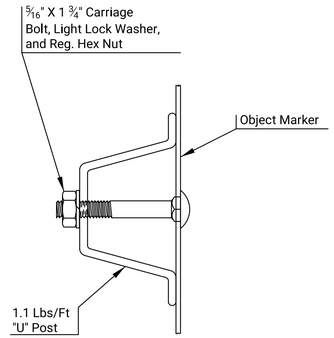
DIMENSIONS	
A	2 1/16
B	7/8
C	13/16

(Dimensions are nominal)

DELINEATOR POST
(1.1 lb/ft "U" Post)



PUNCHING DETAILS



MOUNTING DETAILS

COLOR:
Yellow Background (Reflective)

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.

KDOT Graphics Certified 07-07-2022 Sh. No. 84

KDOT Graphics Certified

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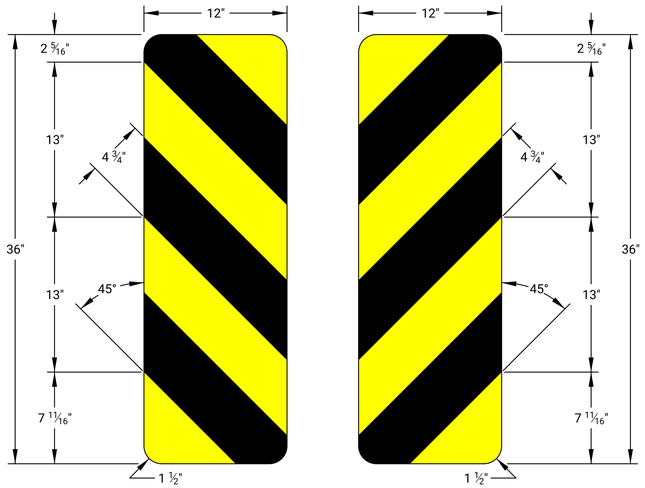
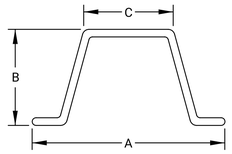
File : KA572901pss416-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	85	141



OM3-L

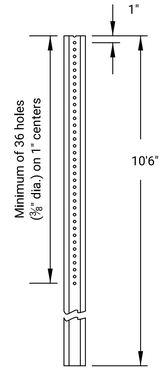
OM3-R



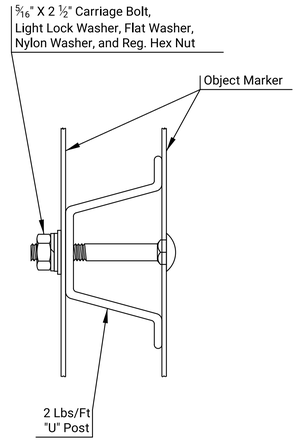
DIMENSIONS	
A	3 1/8
B	1 17/32
C	1 1/4

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS



MOUNTING DETAILS

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

GENERAL NOTE:
See flat sheet sign blank standard sheets for the 12" x 36" sign blank details.

The object markers shall be covered with Type IV or better High Intensity yellow retroreflective sheeting.

TYPE 3 OBJECT MARKER

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR
TYPE 3 OBJECT MARKERS
(BACK TO BACK)

TE417 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.	

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KDOT Graphics Certified

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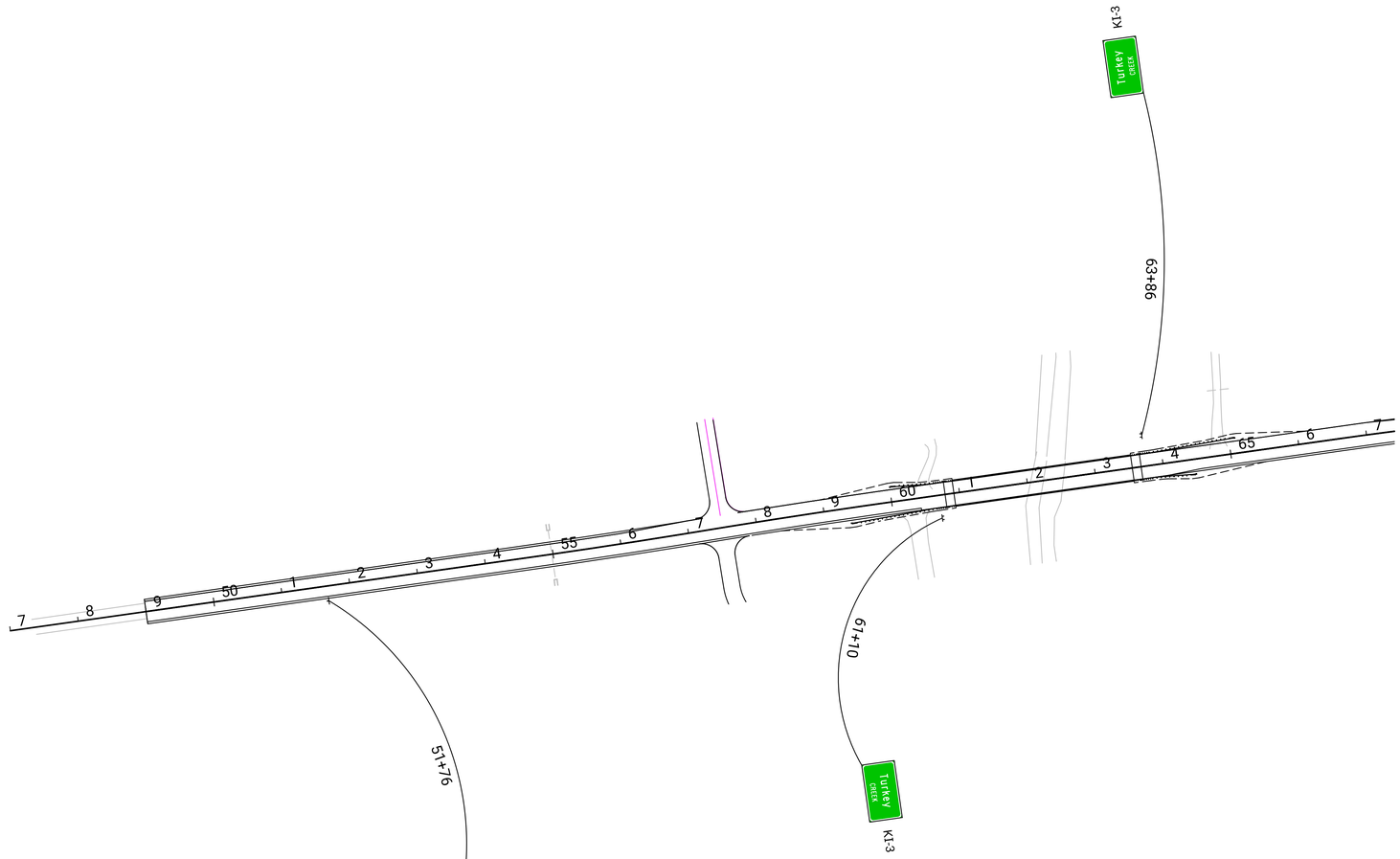
File : KA572901pss417-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	86	141

SCALE 1" = 100'



NOTE: SIGNS AND LEGEND NOT TO SCALE

KANSAS DEPARTMENT OF TRANSPORTATION

K-63 MAINLINE
STA. 47+00 TO STA. 66+00

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 07-16-2024

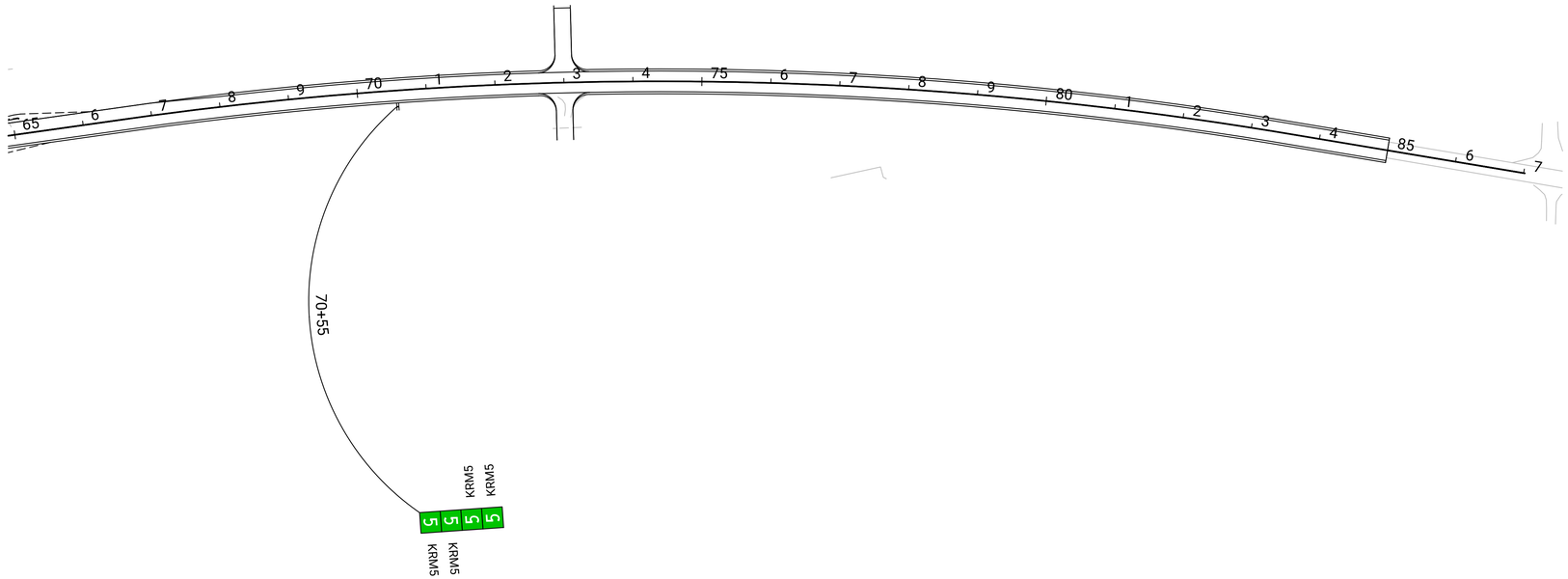
Sh. No. 86

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:35
File : KA572901ppl-01.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	87	141

SCALE 1" = 100'



NOTE: SIGNS AND LEGEND NOT TO SCALE

KANSAS DEPARTMENT OF TRANSPORTATION

K-63 MAINLINE
STA. 66+00 TO STA. 87+00

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 07-16-2024

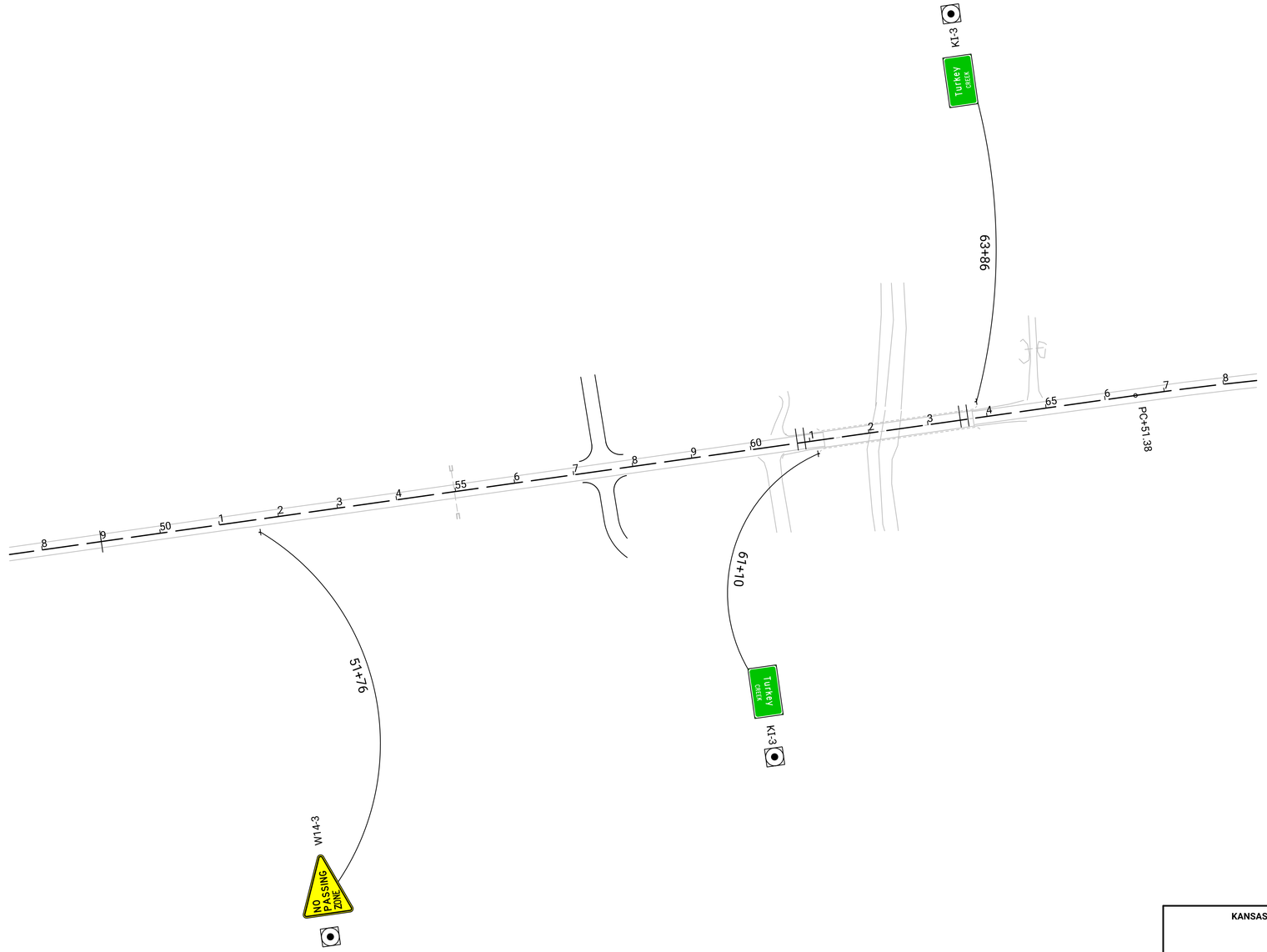
Sh. No. 87

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:36
File : KA572901ppl-02.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	88	141

SCALE 1" = 100'



Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:35
File : KA572901prm-01.dgn Traffic

KANSAS DEPARTMENT OF TRANSPORTATION

K-63 MAINLINE
STA. 48+00 TO STA. 66+00
REMOVALS

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

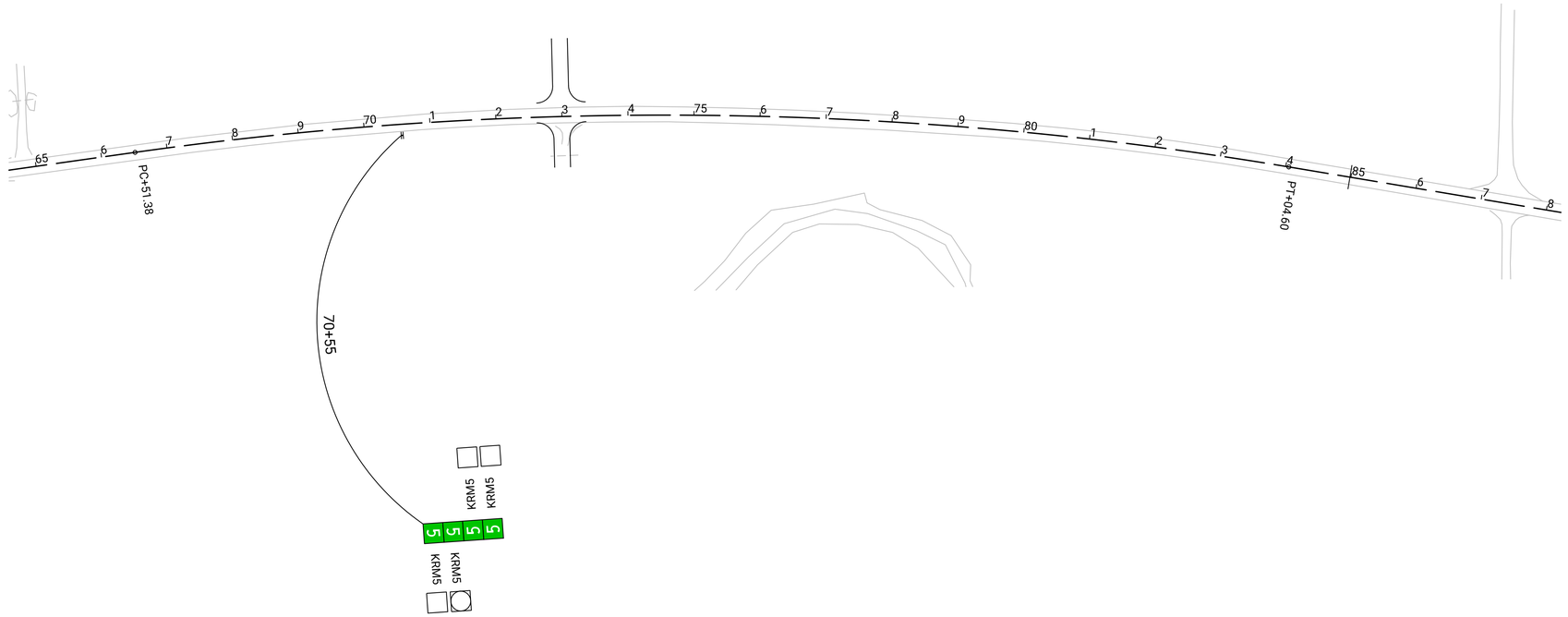
KDOT Graphics Certified 07-16-2024

Sh. No. 88

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	89	141

SCALE 1" = 100'



NOTE: SIGNS AND LEGEND NOT TO SCALE

KANSAS DEPARTMENT OF TRANSPORTATION

K-63 MAINLINE
STA. 66+00 TO STA. 87+00
REMOVALS

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

KDOT Graphics Certified 07-16-2024

Sh. No. 89

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:35
File : KA572901prm-02.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	90	141

QUANTITIES SHEET

SIGNS, POSTS, & FOOTINGS TO BE INSTALLED ON PROJECT

PLAN SHEET NUMBER	PLAN STATION NUMBER	CENTERLINE LOCATION / INSTALL POSITION	SIGN DESIGNATION	SIGN SIZE	SIGN LAYOUT SHEET NUMBER	TYPE OF SIGN FABRICATION			4" X 6" POSTS			3I2.25 ALUMINUM BEAM	U-POSTS		GALVANIZED STEEL BEAM POSTS						PERFORATED SQUARE STEEL TUBE (PSST) POSTS										CONCRETE FOOTINGS					SIGN STRUCTURE TYPE						VERTICAL SUPPORT MOUNT	MOUNT ABOVE GUIDE SIGN DESIGNATION
									WOOD		STEEL				W6x9		W10x12		W10x22		1 3/4"			2"			2 1/4"		2 1/2"		WOOD POST	STEEL BEAM POST										
																																A36		A572 (ALT)								
						FLAT SHEET	REINFORCED PANEL	OVERLAY	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LB PER FT	3 LB PER FT	A36	A572 (ALT)	A36	A572 (ALT)	A36	A572 (ALT)	POST	FOOTING	BRACKET	POST	FOOTING	BRACKET	POST	FOOTING	POST	FOOTING	18" DIA.	24" DIA.	30" DIA.	24" DIA.	30" DIA.	OVERHEAD	CANTILEVER	BUTTERFLY	BRIDGE MOUNT ATTACHMENT	MAST ARM	SINGLE TAPERED TUBE		
pl001	51+76	R/S	W14-3	48" x 48" x 36"		X			1																																
pl001	61+10	R/S	KI-3	36" x 24"	sl001	X			2																																
pl001	63+86	L/S	KI-3	36" x 24"	sl001	X			2																																
pl002	70+55	R/S	KRM 5	6" x 6"	sl001	X							1																												
			KRM 5	6" x 6"	sl001	X																																			
			KRM 5	6" x 6"	sl001	X																																			
			KRM 5	6" x 6"	sl001	X																																			

CENTERLINE LOCATION
L or LL - Left of Centerline
R or RR - Right of Centerline
C - On the Centerline

INSTALL POSITION
S - Shoulder Mount
O - Offset Mount
G - Gore Mount
M - Median Mount
OH - Overhead Mount

NOTE: See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Added Tapered Tube. Removed Couplers.	D.D.G.	E.W.N.
01	07-23-10	Added Coupler and Coupler/Footing Quantity	D.D.G.	D.B.

FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.S.	QUANTITIES	TRACED D.B.
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

TE430

07-01-03

KDOT Graphics Certified 07-16-2024

Sh. No. 90

KDOT Graphics Certified

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File : KA572901pss430-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	91	141

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	'U' POST	'U' POST	'U' POST	BACK TO BACK 'U' POST
61+00	64+00	Mainline K-63																									4				

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.

KDOT Graphics Certified 07-16-2024 Sh. No. 91

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:35
File : KA572901pss436-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	92	141

SUMMARY OF QUANTITIES

SIGNS

TYPE	NUMBER	SQUARE FEET
FLAT SHEET	7	18.562
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)		4
TYPE 3 ("U" POST)		
INFORMATION ONLY	OM3-L	
	OM3-R	
	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	5				1											
FEET	71.0				10.5											

POST FOOTINGS AND BRACKETS

	CONCRETE FOOTING (DIA.)					PERFORATED SQUARE STEEL					
	WOOD	A36 STEEL		A572 STEEL (ALT)		TUBE FOOTING				BRACKET	
	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	7
POSTS	4
FOOTINGS	2
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'					1											
12.1' - 14'	4															
14.1' - 16'	1															
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.

KDOT Graphics Certified 05-25-2022 Sh. No. 92

KDOT Graphics Certified

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File : KA5729O1pss439-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	93	141

RECAPITULATION OF SIGNING & DELINEATION BID ITEMS

BID ITEMS	APPROXIMATE QUANTITIES		UNITS
SIGN (FLAT SHEET) (HIGH PERFORMANCE)	18.56		SQUARE FOOT
SIGN (REINFORCED PANEL) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN (OVERLAY) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)	71		LINEAR FOOT
SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)			LINEAR FOOT
SIGN POST (2 LB/FT "U" STEEL)	11		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)	4		EACH
SIGNING OBJECT MARKER (TYPE 3)			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

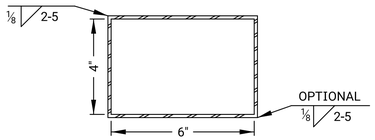
TE450 07-01-03

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.

KDOT Graphics Certified 05-26-2022

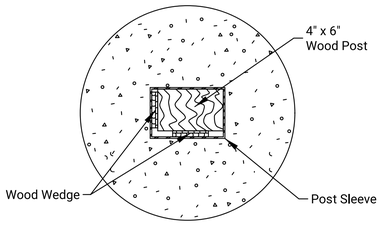
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	94	141

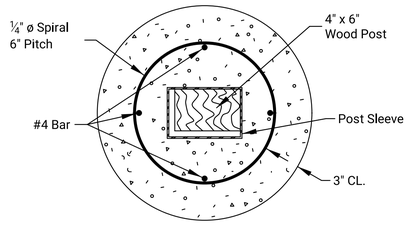


NOTE: Dimensions are to inside of post sleeve.

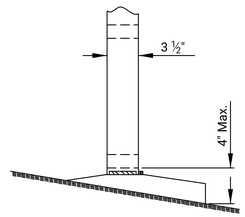
POST SLEEVE



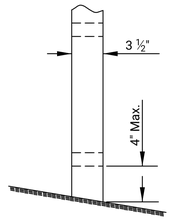
SECTION A-A



SECTION B-B



FRONT ELEVATION
CONCRETE FOOTING



FRONT ELEVATION
SOIL

NOTE TO THE ENGINEER:
The intent of the "AASHTO Roadside Design Guide" and these plans is to have a 4" or less projection above the finished ground line after impact.

BREAKAWAY CLEARANCE

GENERAL NOTES

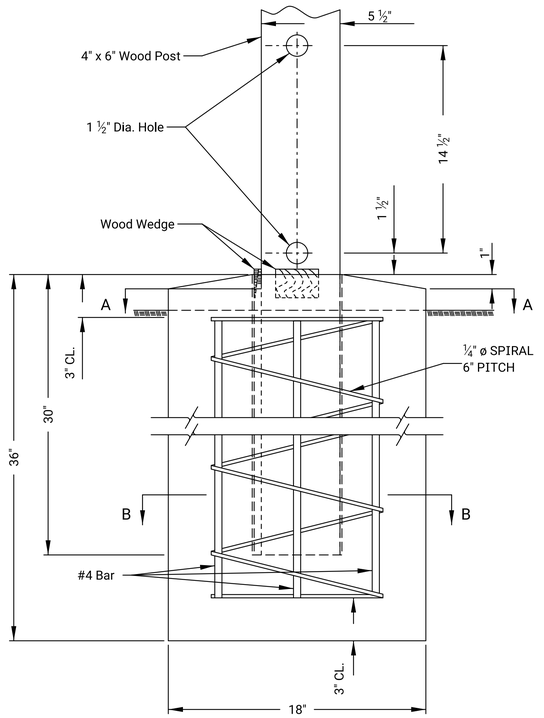
The post sleeve shall be formed from 10 gauge sheet steel to meet the requirements of ASTM A653 and zinc coated to meet the requirements of coating designation A123. If galvanized sheet steel is used, no other galvanization is required. It is permissible to close the bottom of the sleeve with a metal plate. Basis of acceptance shall be visual inspection of the finished sleeve and determination of zinc thickness by magnetic gage.

All sign mounting holes in the wood posts shall be drilled prior to treating.

Breakaway holes, field drilled sign mounting holes, and field cuts shall be treated in accordance with the preservative treatment specifications.

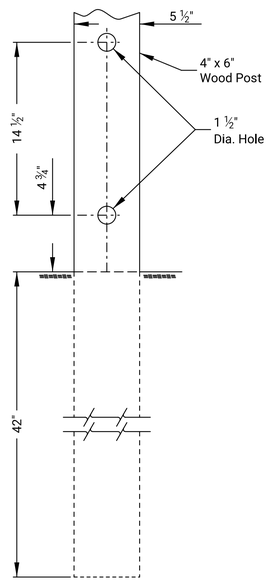
Prior to sealing the opening between the wood post and the top of the concrete footing, secure the post by placing 3" wide by 2" long wood wedges into the opening on two adjacent sides of the post. The wedges are be flush with up to a maximum of ⅜" sticking up above the top of the footing.

Commercial grade concrete may be substituted for sign support footings.



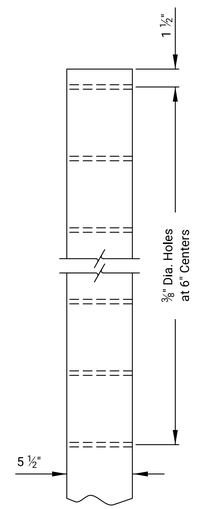
SIDE ELEVATION

WOOD POST IN CONCRETE FOOTING



SIDE ELEVATION

WOOD POST IN SOIL



SIGN POST

SIGN MOUNTING HOLES

All dimensions in inches unless otherwise noted.

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Change details and note	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR WOOD POSTS

TE460 07-01-03

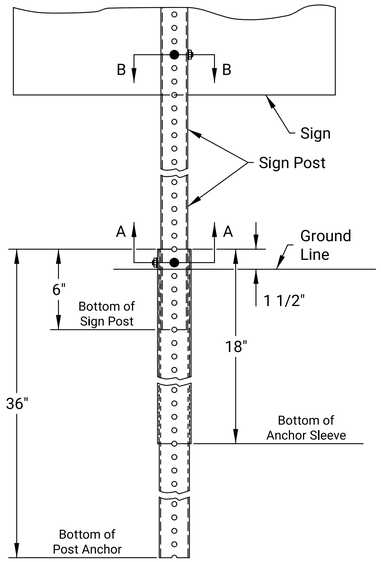
FHWA APPROVAL			10-01-19	APP'D.		Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.		TRACE CK.	

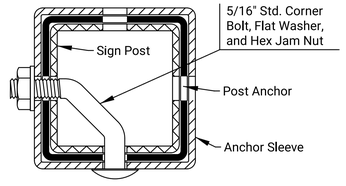
KDOT Graphics Certified 05-26-2022 Sh. No. 94

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:35
File : KA5729001pss460-01.dgn

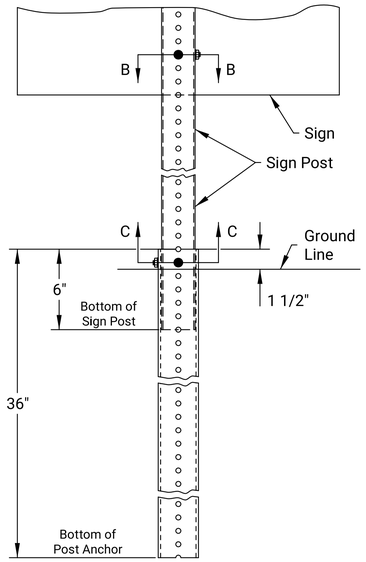
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	95	141

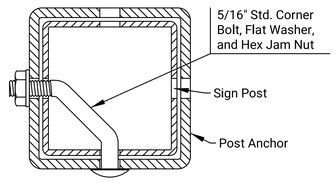




SECTION A-A

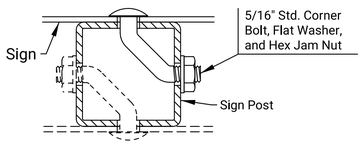
1 ¾", 2", OR 2 ¼" PSST SIGN POST





SECTION C-C

2 ½" PSST SIGN POST



SECTION B-B

MATERIALS TABLE FOR SIGN POST AND FOOTING		
SIGN POST 12 GA. OR 14 GA.	FOOTING	
	POST ANCHOR	ANCHOR SLEEVE
1 ¾" X 1 ¾"	2" X 2" X 12 GA.	2 ¼" X 2 ¼" X 12 GA.
2" X 2"	2 ¼" X 2 ¼" X 12 GA.	2 ½" X 2 ½" X 12 GA.
2 ¼" X 2 ¼"	2 ½" X 2 ½" X 12 GA.	3" X 3" X 7 GA.
2 ½" X 2 ½"	3" X 3" X 7 GA.	Not Required

NOTE: 14 ga. posts must meet a certified minimum yield strength of 60,000 p.s.i.

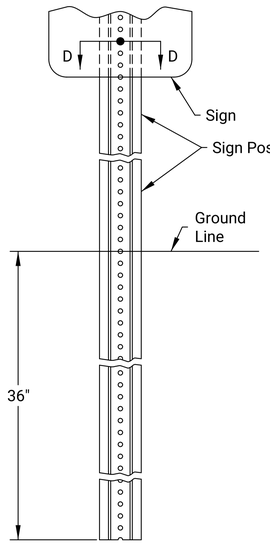
INSTALLATION PROCEDURES

1. Plumb and drive post anchor into the ground 18", if anchor sleeve is required, or to the specified height above the ground line.

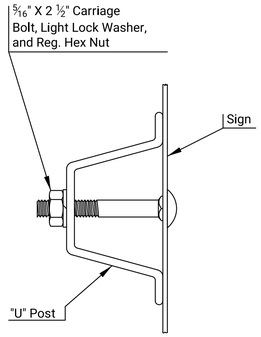
2. Install anchor sleeve (if required) on the post anchor and align the first holes above the ground line. Plumb and drive post anchor with anchor sleeve into the ground to the specified height above the ground line.

3. Install sign post into the post anchor.

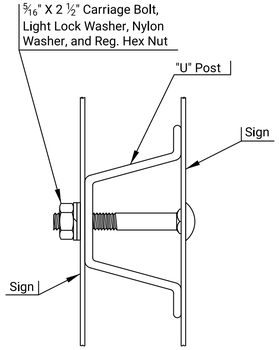
PERFORATED SQUARE STEEL TUBE POST (PSST)



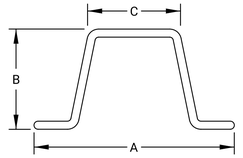
TYPICAL



SECTION D-D
(TYPICAL)



SECTION D-D
(BACK TO BACK)



DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8 "	3 1/2 "
B	1 17/32 "	1 3/4 "
C	1 1/4 "	1 5/8 "

(Dimensions are nominal)

"U" POST

STEEL "U" POST

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR PERFORATED SQUARE STEEL TUBE POSTS (PSST) AND STEEL "U" POSTS

TE466 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.	

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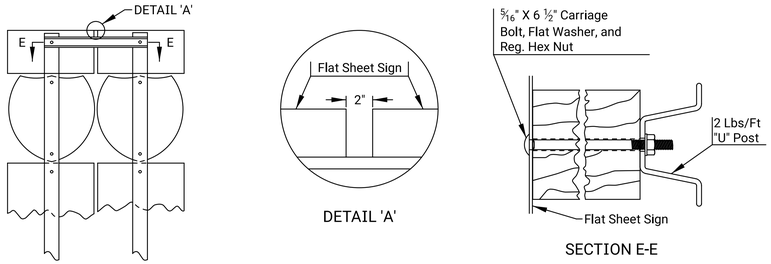
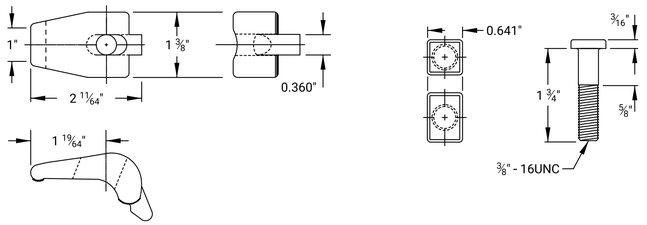
KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:37
File : KA572901pss466-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	96	141



ROUTE MARKER ASSEMBLIES ATTACHMENT



ALUMINUM POST CLIP AND POST CLIP BOLT

NOTES:

The top of the post shall not extend above the top of the sign.

When signs are mounted back to back, the signs shall be mounted at their prescribed height. In general installations, the bottom holes of the signs should be aligned. In order to prevent having to drill holes in the signs or posts, the sign on the back should be raised and positioned such that the holes are aligned. When a sign is mounted on the back of the R1-1 (Stop) sign, that sign is to be centered vertically on the R1-1 sign. When a sign is mounted on the back of the R1-2 (Yield) sign, the top holes of the signs should be aligned.

The primary sign and supplemental sign are to be mounted at their prescribed height, but under no circumstances shall the signs overlap each other. If the primary sign cannot be mounted without overlapping, then it shall be raised above the supplemental sign.

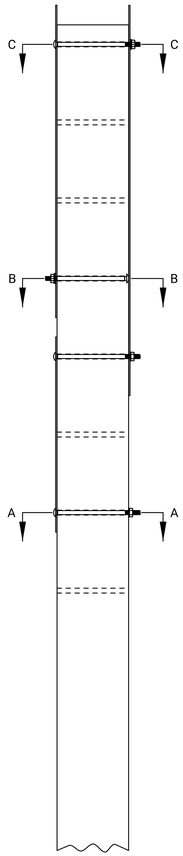
Any additional mounting holes, either through the sign or post, shall be drilled by the contractor. All holes drilled in the post shall be treated with a perservative. All holes drilled in the sign shall be free of any defects and the sheeting around the hole shall not be damaged.

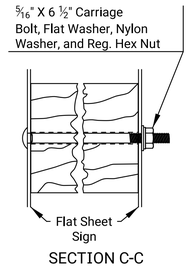
A nylon washer shall be placed against the sheeting when a nut is to be tightened against the sign face.

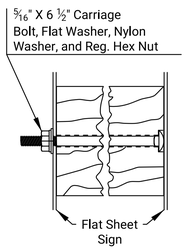
The 3 lb/ft steel "U" post used for reinforced panel sign installations is to be included in the bid item 'SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)'.

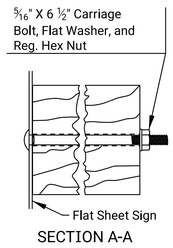
When the 2 lb/ft steel "U" post is used for the route marker assemblies attachment, it shall be subsidiary to the bid item 'SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)'.

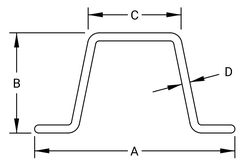
The aluminum post clip bolt may have a rectangular head if the smaller dimension is equal to the square head dimension.









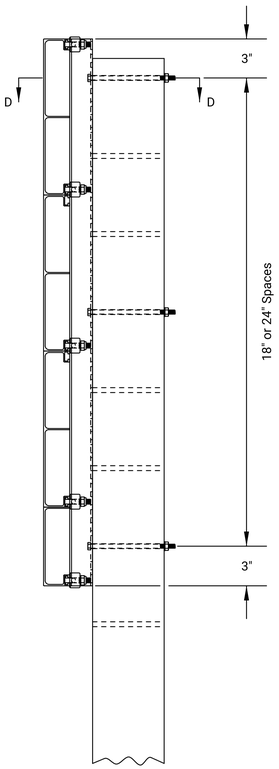


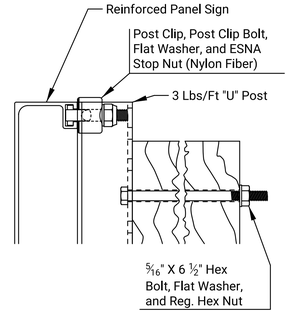
DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8 "	3 1/2 "
B	1 17/32 "	1 3/4 "
C	1 1/4 "	1 5/8 "
D	1/8 "	9/64 "

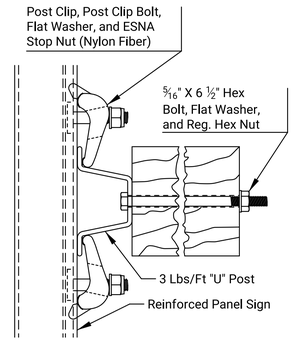
(DIMENSIONS ARE NOMINAL)

"U" POST

TYPICAL MOUNTING OF FLAT SHEET SIGNS







TYPICAL MOUNTING OF REINFORCED PANEL SIGNS

All dimensions are in inches

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Revised drawings and notes	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR MOUNTING SIGNS ON WOOD POST FLAT SHEET AND REINFORCED PANEL

TE481 07-01-03

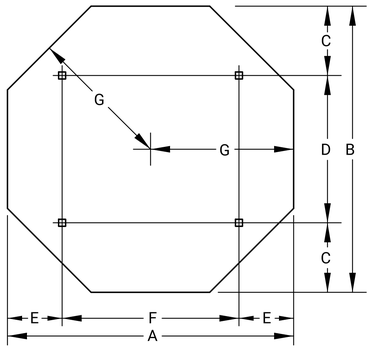
FHWA APPROVAL			10-01-19	APP'D.	Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-26-2022 Sh. No. 96

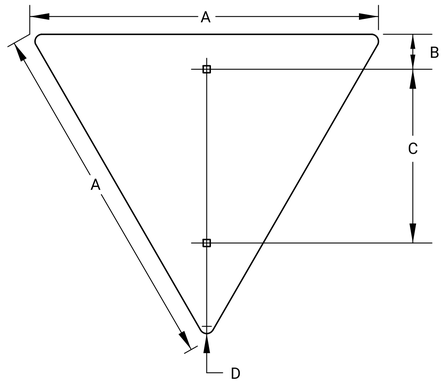
KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:36
File : KA572901pss481-01.dgn

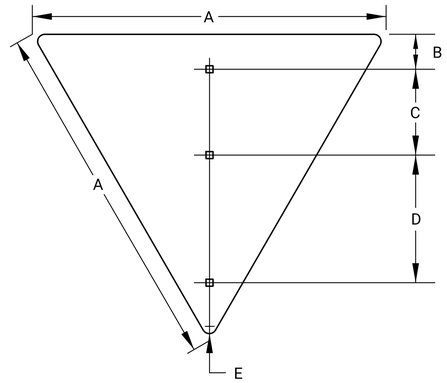
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	97	141



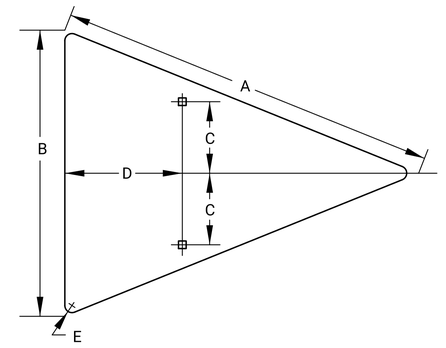
SIGN SIZE	A	B	C	D	E	F	G	T	AREA
48 X 48	48	48	12	24	9	30	24	0.100	13.25



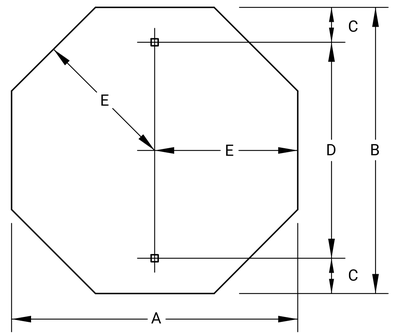
SIGN SIZE	A	B	C	D	T	AREA
36 X 36	36	3	18	2	0.080	3.90



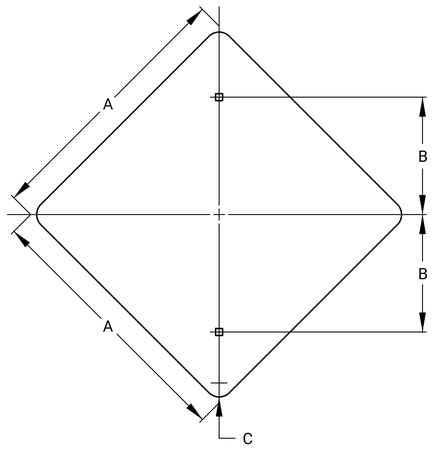
SIGN SIZE	A	B	C	D	E	T	AREA
48 X 48	48	3	12	18	3	0.080	6.93
60 X 60	60	3	18	18	4	0.100	10.83



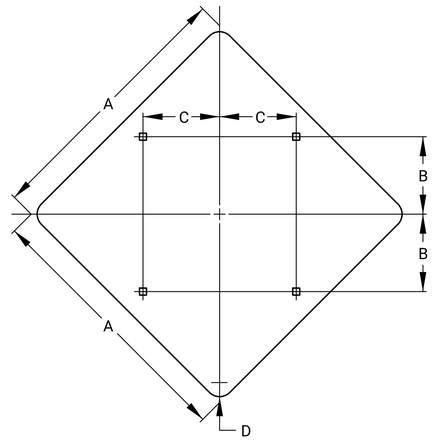
SIGN SIZE	A	B	C	D	E	T	AREA
48 X 36	48	36	9	14 ¾	2 ¼	0.125	5.56



SIGN SIZE	A	B	C	D	E	T	AREA
30 X 30	30	30	3	24	15	0.080	5.18
36 X 36	36	36	6	24	18	0.080	7.46



SIGN SIZE	A	B	C	T	AREA
18 X 18	18	6	1 ½	0.080	2.25
24 X 24	24	12	1 ½	0.080	4.00
30 X 30	30	12	1 ⅞	0.080	6.25
(1) 36 X 36	36	18	2 ¼	0.080	9.00



SIGN SIZE	A	B	C	D	T	AREA
48 X 48	48	12	15	3	0.100	16.00

NOTE:
All holes are 3/8 " square unless otherwise noted.

The dimension "t" is the thickness of the aluminum blank.

(1) Center hole is required.

All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Update sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR FLAT SHEET SIGNS

TE503 07-01-03

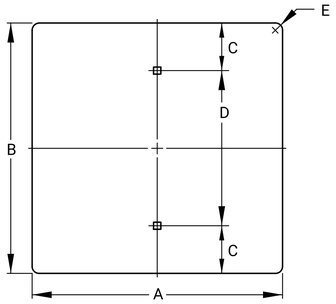
FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

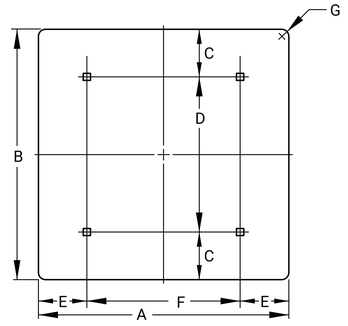
KDOT Graphics Certified 05-26-2022 Sh. No. 97

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:36
File : KA572901pss503-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	98	141





	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

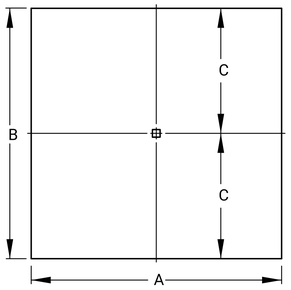
FHWA APPROVAL			10-01-19	APP'D.	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED		
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.		

KDOT Graphics Certified 05-26-2022 Sh. No. 98

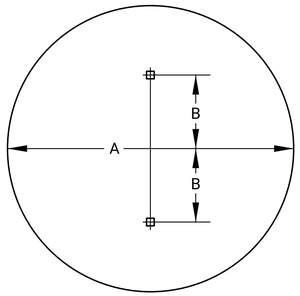
KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:35
File : KA572901psst506-01.dgn

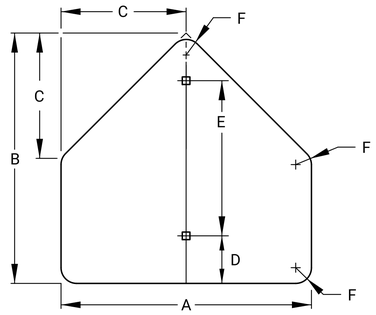
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	99	141



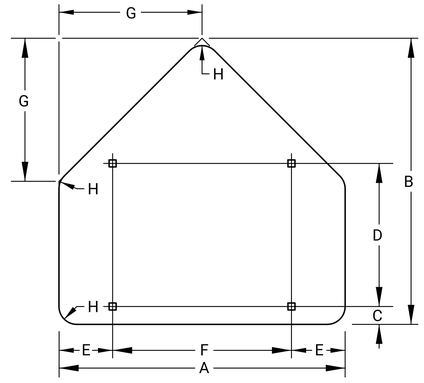
SIGN SIZE	A	B	C	T	AREA
6 X 6	6	6	3	0.063	0.25



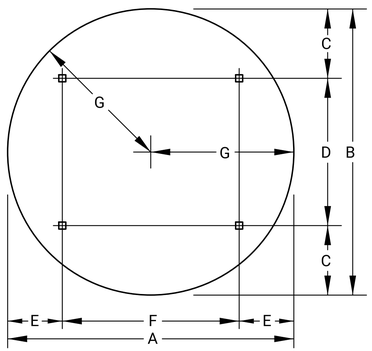
SIGN SIZE	A	B	T	AREA
36 DIA	36	12	0.080	7.07



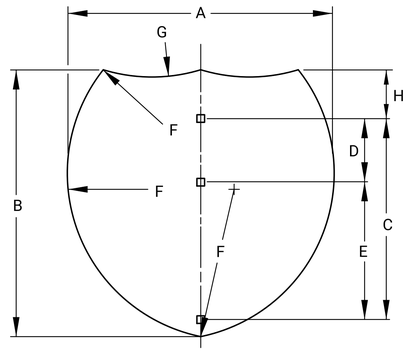
SIGN SIZE	A	B	C	D	E	F	T	AREA
30 X 30	30	30	15	3	24	1 ⅞	0.080	4.69
36 X 36	36	36	18	6	24	2 ¼	0.080	6.75



SIGN SIZE	A	B	C	D	E	F	G	H	T	AREA
48 X 48	48	48	3	24	9	30	24	3	0.100	12.00



SIGN SIZE	A	B	C	D	E	F	G	T	AREA
48 X 48	48	48	12	24	9	30	24	0.100	12.57



INDEPENDENT USE

DIMENSIONS										
SIZE	A	B	C	D	E	F	G	H	T	AREA
24 X 24	24	24	18	-	-	15	15	3	0.080	3.20
36 X 36	36	36	30	12	18	22 ½	22 ½	3	0.080	7.20
30 X 24	30	24	18	-	-	17	24	3	0.080	3.99
45 X 36	45	36	30	12	18	25 ½	36	3	0.100	8.99

NOTE:
All holes are ⅜" square, unless otherwise noted.
Dimension "T" is the thickness of the aluminum blank.

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

TE509 07-01-03

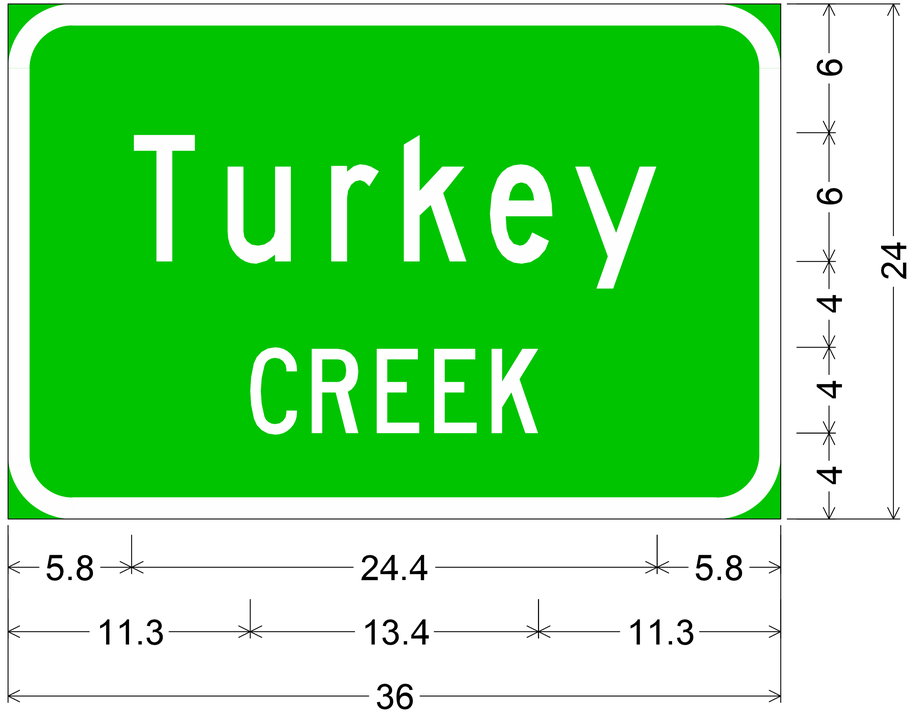
FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-26-2022 Sh. No. 99

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:37
File : KA572901pss509-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	100	141



KI-3 Turkey Creek;

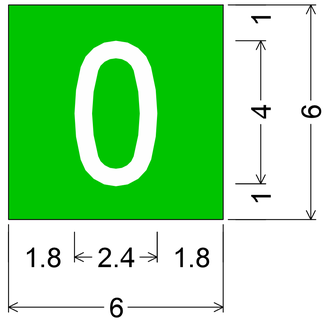
3.0" Radius, 1.0" Border, White on Green;

"Turkey", C; "CREEK", C;

Table of letter and object lefts

T 5.8	u 10.2	r 15.1	k 18.4	e 22.4	y 26.4

C 11.3	R 14.1	E 17.2	E 19.9	K 22.5



KRM0 ;

No border, None on Green;

"0" White, C;

Table of distances between letter and object lefts

1.8	0 2.4	1.8

NOTE: SIGNS AND LEGEND NOT TO SCALE

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS
FOR SIGNS

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 07-16-2024

Sh. No. 100

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:35
File : KA572901psl-01.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	101	141

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.	

KDOT Graphics Certified 05-24-2022 Sh. No. 101

KDOT Graphics Certified

Plotted by : austin.loyd@ks.gov 16-JUL-2024 20:36
File : KA572901pss590-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	102	141

CONSTRUCTION NOTES

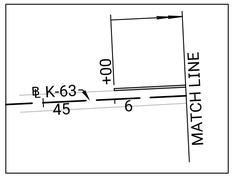
1a. Construct temporary widening from ℄ Sta. 47+00 Rt. to ℄ Sta. 60+00 Rt. and from ℄ Sta. 65+00 Rt. to ℄ Sta. 87+00 Rt. to accomodate traffic during Phase 2.

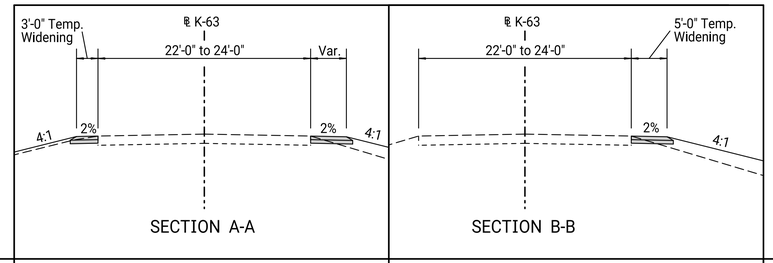
1b. Construct temporary widening from ℄ Sta. 46+00 Lt. to ℄ Sta. 49+00 Lt. & ℄ Sta. 84+98.44 Lt. to ℄ Sta. 88+00 to accomodate traffic during Phase 3.

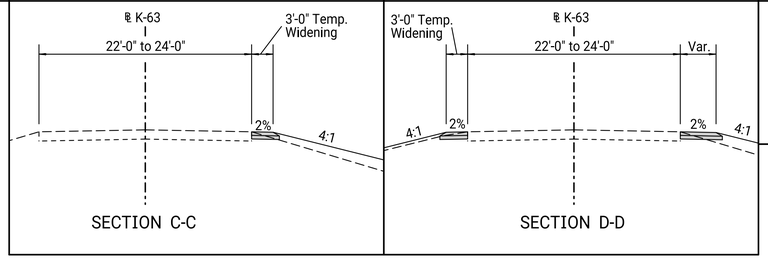
TRAFFIC HANDLING

1a. Close northbound K-63. Use flagging to accomodate traffic.

1b. Close southbound K-63. Use flagging to accomodate traffic.

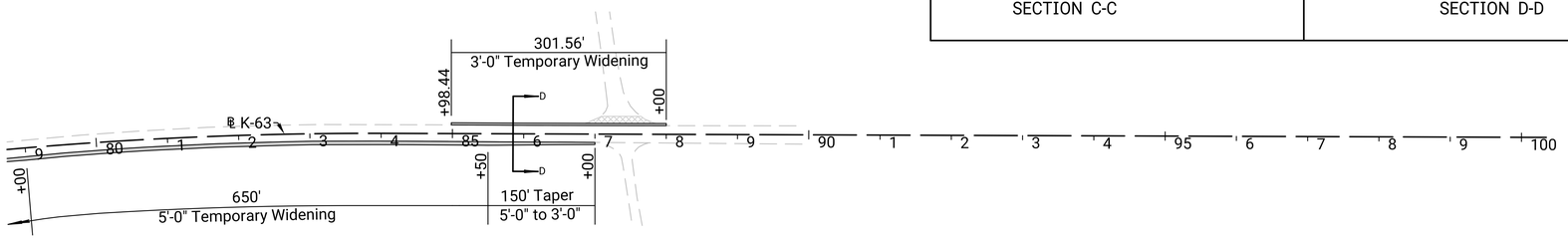






LEGEND

- Shoulder Widening
- Aggregate Shoulder (AS-1) (6") + $CaCl_2$



SCALE
PLAN: Lat. & Long. 100' 0 100' 200'

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 1

Sh. No. 102

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:30
File : KA572901ref-01.dgn

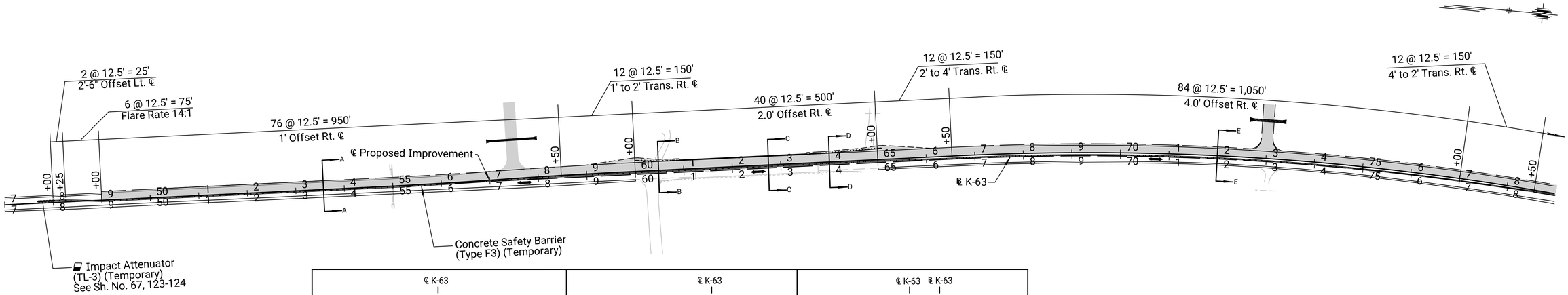
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	103	141

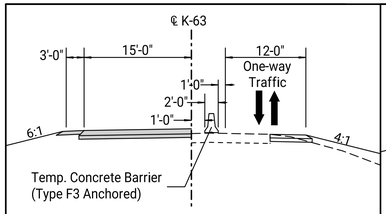
CONSTRUCTION NOTES

2. Place temporary concrete safety barrier from ℄ Sta. 48+00 to ℄ Sta. 86+00. Construct proposed southbound K-63 to accomodate traffic during Phase 3.

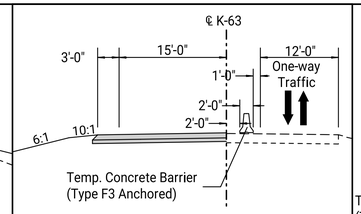
TRAFFIC HANDLING

2. Shift traffic to the widened northbound lane, using temporary signals to accomodate alternating one-way trafffic.

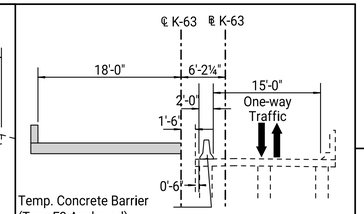




SECTION A-A



SECTION B-B

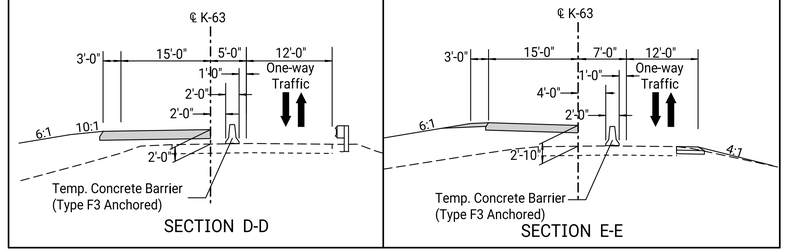


SECTION C-C
See Sh. No. (38-39)

LEGEND

Construction During Phase

SCALE
PLAN: Lat. & Long. 100' 0 100' 200'



SECTION D-D

SECTION E-E

⊛Concrete Safety Barrier (Type F3) (Temporary) Phase 2				
Station to Station	Design Speed	Side	Type F3 (Free Standing)	Type F3 (Anchored)
48+00 to 86+00	60 mph	Rt.	0'	▱3,800

⊛ For information only
▱ To be relocated to Phase 3
See Temporary Concrete Safety Barrier (Type F3) standards for anchorage and transition details.

SCALE
PLAN: Lat. & Long. 100' 0 100' 200'

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 2

Sh. No. 103

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:31
File : KA572901ref-01.dgn

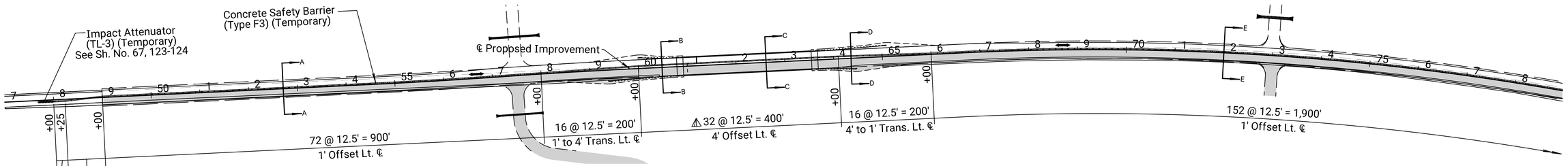
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	104	141

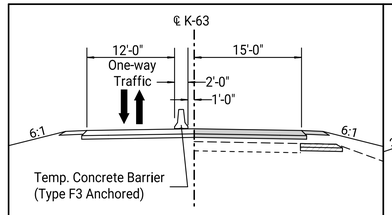
CONSTRUCTION NOTES

3. Relocate temporary concrete safety barrier and impact attenuators from Phase 2 and place barriers from ℄ Sta. 48+00 to ℄ Sta. 86+00. Mill the temporary pavement from ℄ 49+00 Rt. to ℄ 60+00 Rt. and ℄ 65+00 Rt. to ℄ 85+00 Rt. Construct proposed northbound K-63. Temporary pavement from ℄ 46+00 to ℄ 49+00 and ℄ 85+00 to ℄ 88+00 shall remain.

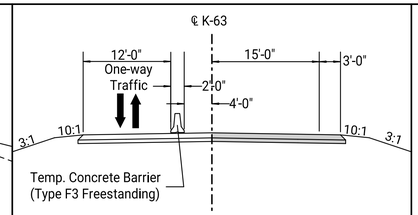
TRAFFIC HANDLING

3. Shift traffic to the proposed southbound lane, using temporary signals to accomodate alternating one-way trafffic.

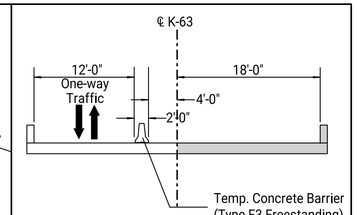




SECTION A-A

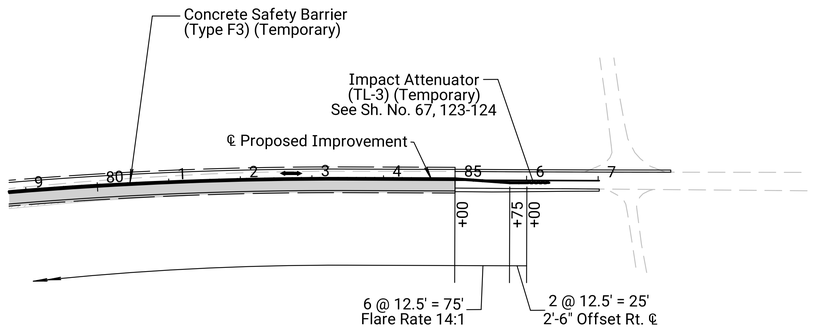


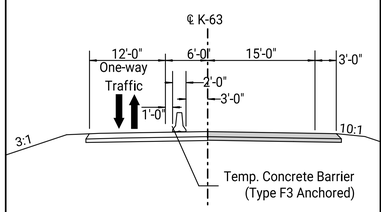
SECTION B-B



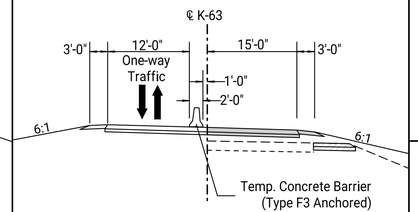
SECTION C-C
See Sh. No. 39

SCALE
PLAN: Lat. & Long. 100' 0 100' 200'





SECTION D-D



SECTION E-E

LEGEND
- Construction During Phase
- Removal During Phase

⊛Concrete Safety Barrier (Type F3) (Temporary - Relocate) Phase 3				
Station to Station	Design Speed	Side	Type F3 (Free Standing)	Type F3 (Anchored)
48+00 to 86+00	60 mph	Lt.	400'	3,400'

⊛ For information only
⚠ Type F3 Concrete Safety Barrier (Freestanding) See Temporary Concrete Safety Barrier (Type F3) standards for anchorage and transition details.

SCALE
PLAN: Lat. & Long. 100' 0 100' 200'

KANSAS DEPARTMENT OF TRANSPORTATION

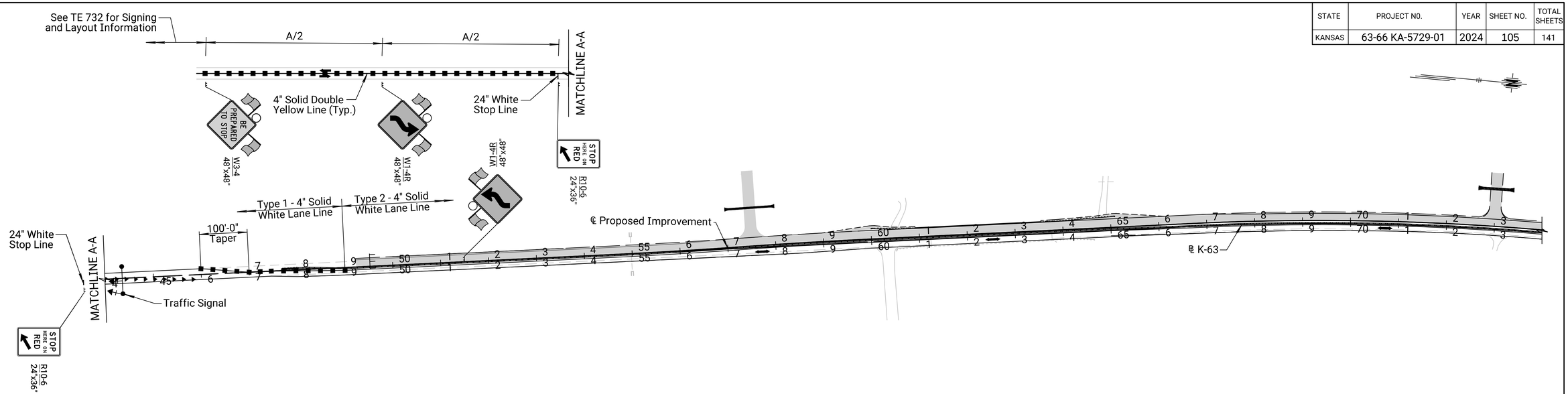
CONSTRUCTION SEQUENCING

PHASE 3

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

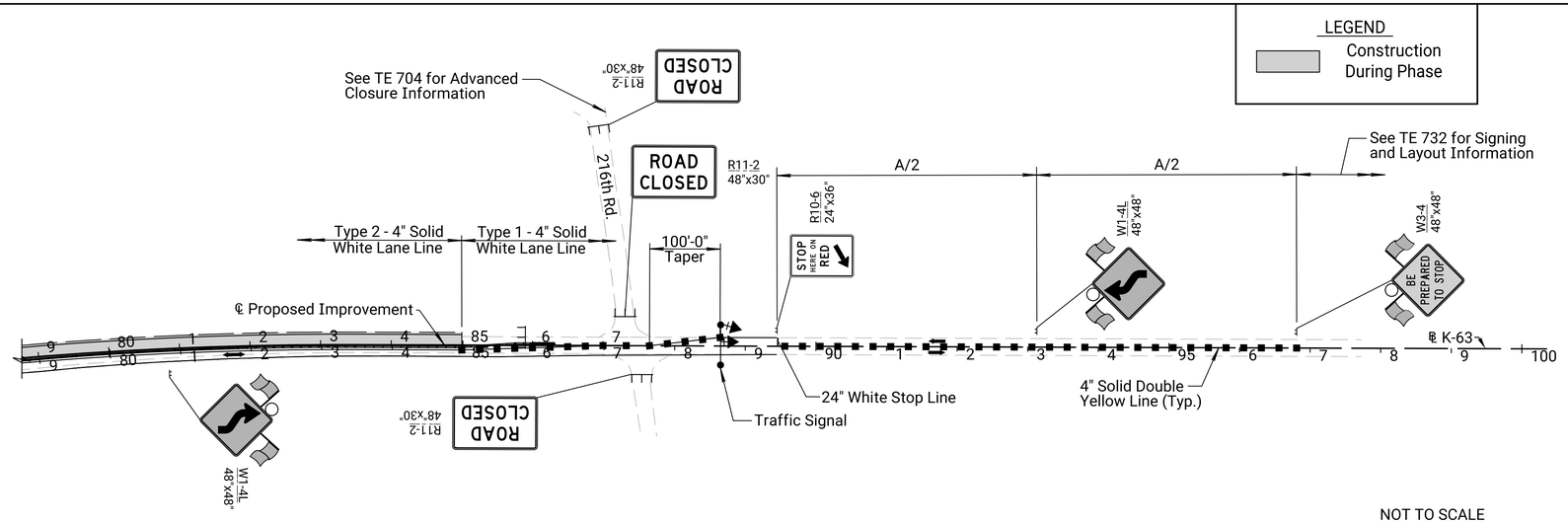
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:31
File : KA572901ref-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	105	141



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

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED



LEGEND
Construction During Phase

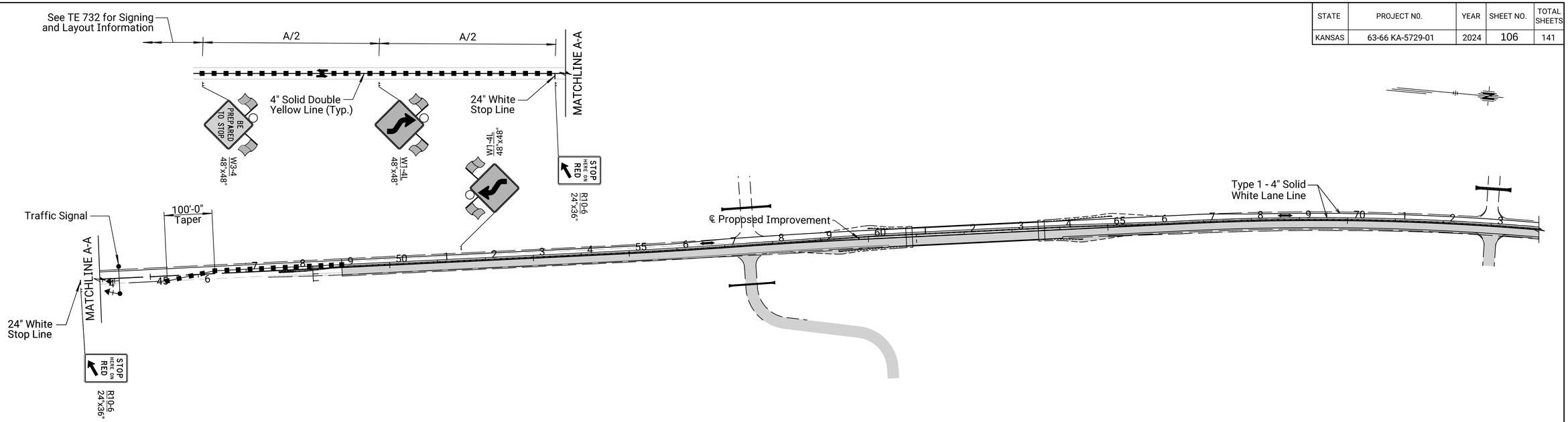
NOT TO SCALE
- TYPE III BARRICADES
- CHANNELIZING DEVICE
- UNI-DIRECTIONAL TEMPORARY RAISED PAVEMENT MARKER
- TYPE "A" LOW INTENSITY WARNING LIGHT

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

KANSAS DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL
PHASE 2

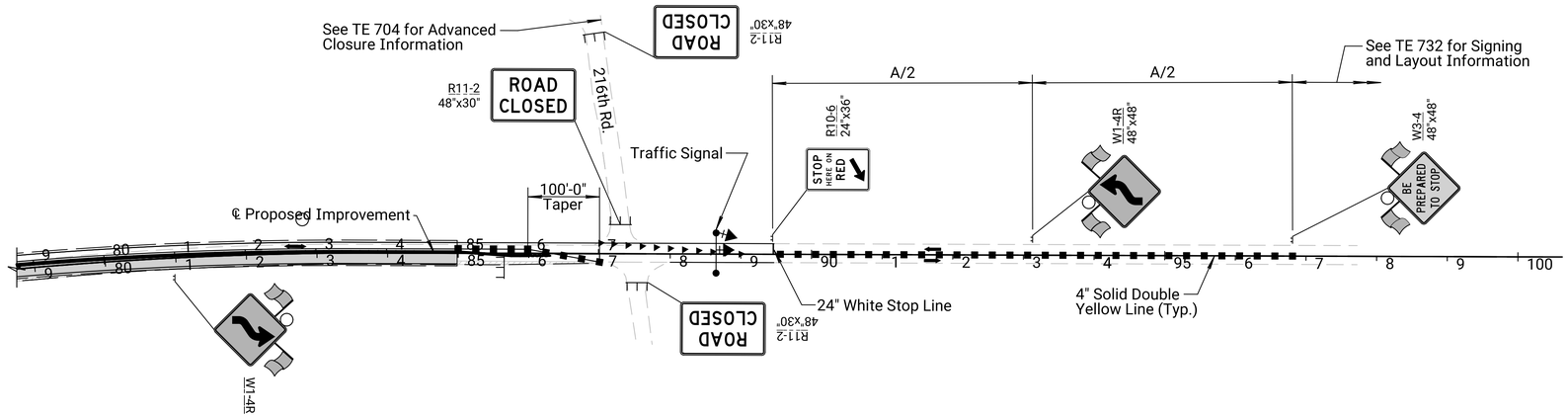
Plotted by : JLDowning 19-JAN-2024 16:08
File : KA572901ref-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	106	141



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

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED



LEGEND
- Construction During Phase
- Removal During Phase

NOT TO SCALE
- TYPE III BARRICADES
- CHANNELIZING DEVICE
- UNI-DIRECTIONAL TEMPORARY RAISED PAVEMENT MARKER
- TYPE "A" LOW INTENSITY WARNING LIGHT

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

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

PHASE 3

Plotted by : JLDowning 19-JAN-2024 16:10
File : KA572901ref-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	107	141

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

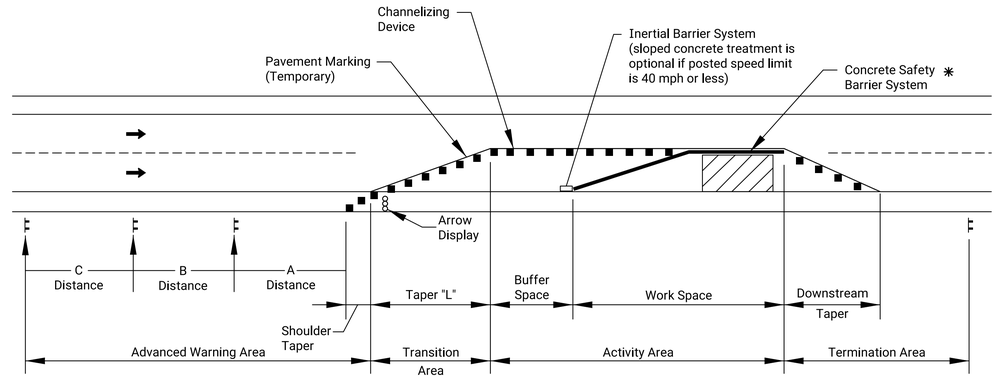
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

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

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

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

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



TYPICAL WORK ZONE COMPONENTS

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

Minimum advance warning sign spacing (in feet):

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

✳ Posted speed prior to work starting

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

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

Taper Formulas:

L = WS for speeds of 45 MPH or more

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

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

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

Channelizer Placement:

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

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

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

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

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

Buffer Space

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

✳ Posted speed prior to work starting

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

TE700

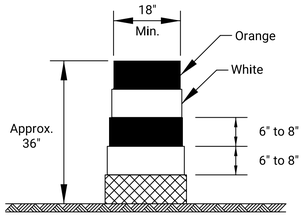
FHWA APPROVAL		03-13-18	APP'D.	Eric Kocher	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 07-18-2022 Sh. No. 107

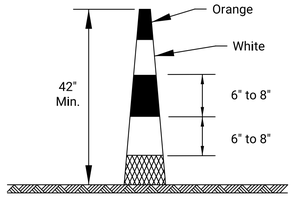
KDOT Graphics Certified

Plotted by: JLDowning 17-JAN-2024 16:55
File : te700.dgn

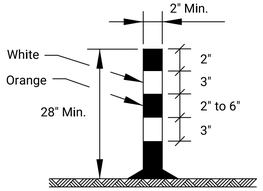
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	108	141



DRUM

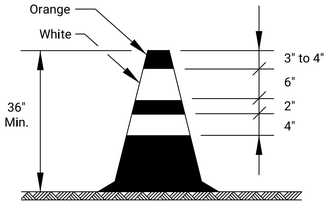


CONICAL
DELINEATOR

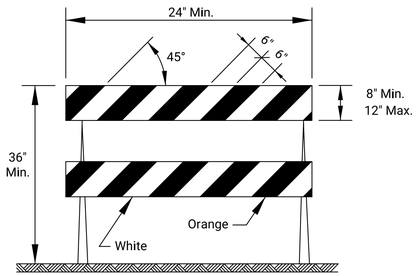


TUBULAR MARKER

Striping as shown for up to 42".

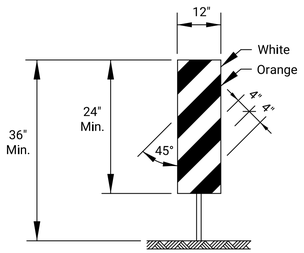


TRAFFIC CONE



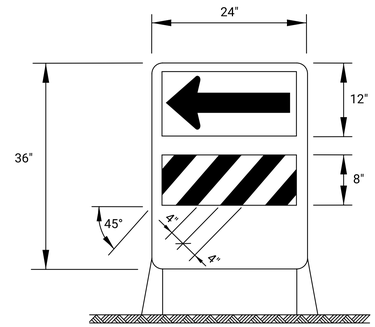
TYPE 2 BARRICADE

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



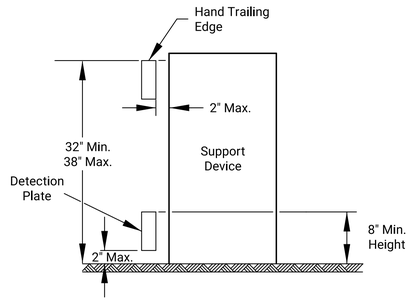
VERTICAL PANEL

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.	

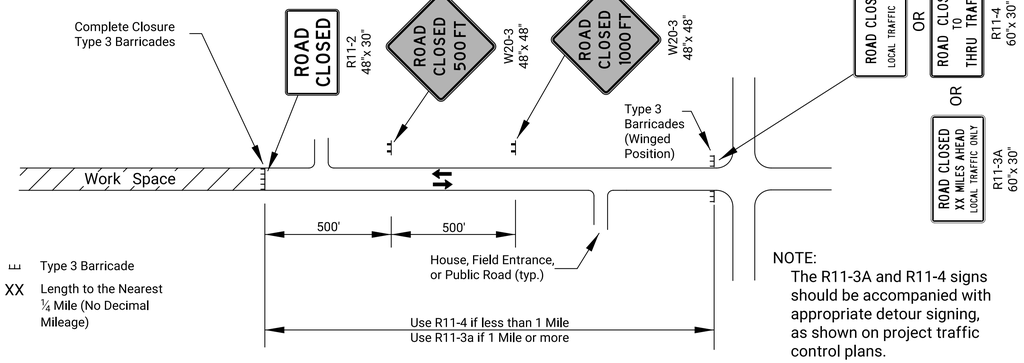
KDOT Graphics Certified 07-18-2022 Sh. No. 108

KDOT Graphics Certified

Plotted by : JLDowning 17-JAN-2024 16:55
File : te702.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	109	141

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)

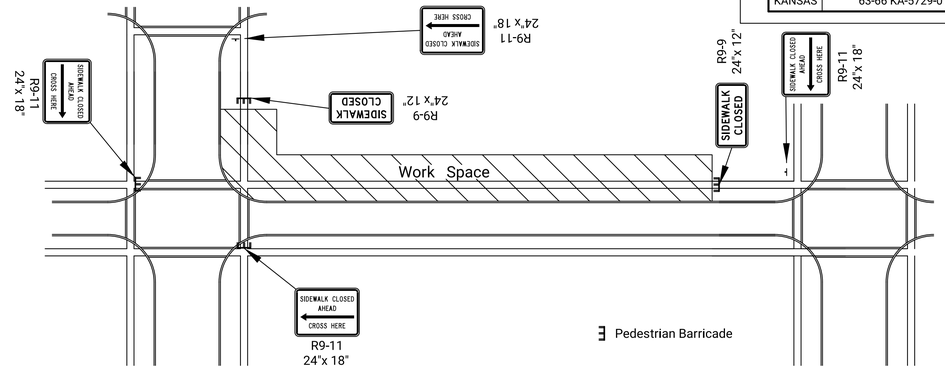


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE

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

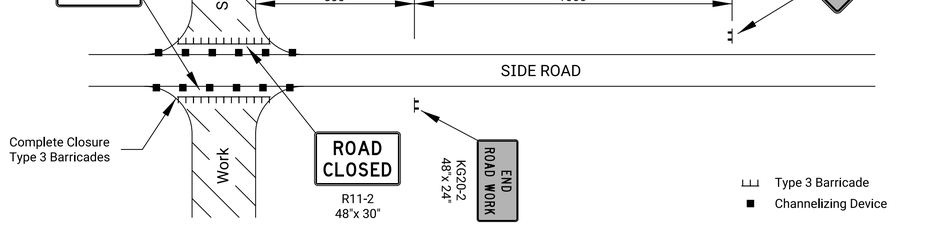


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

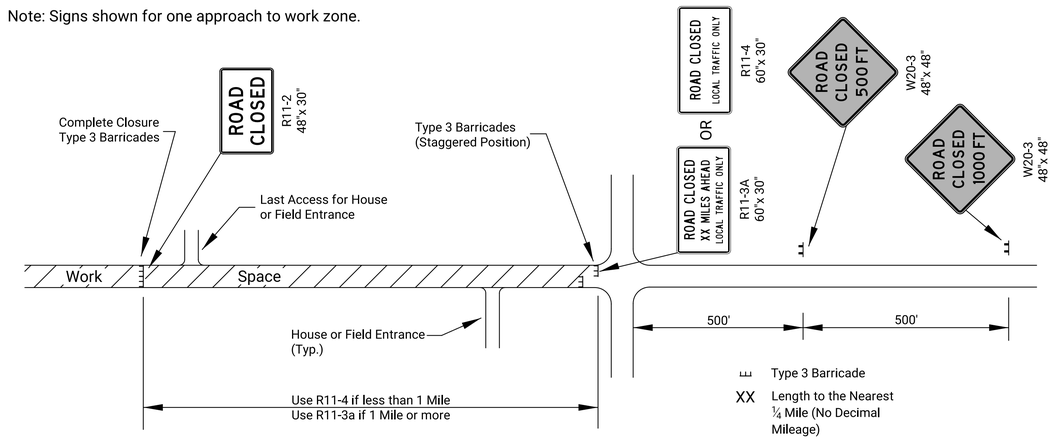
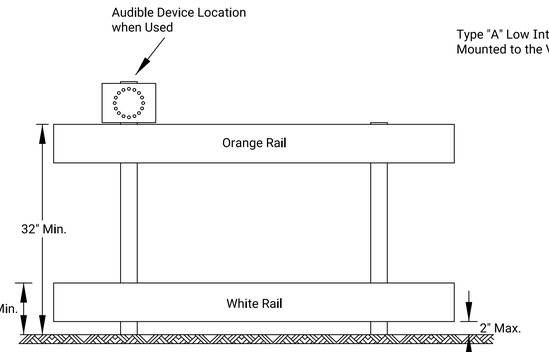
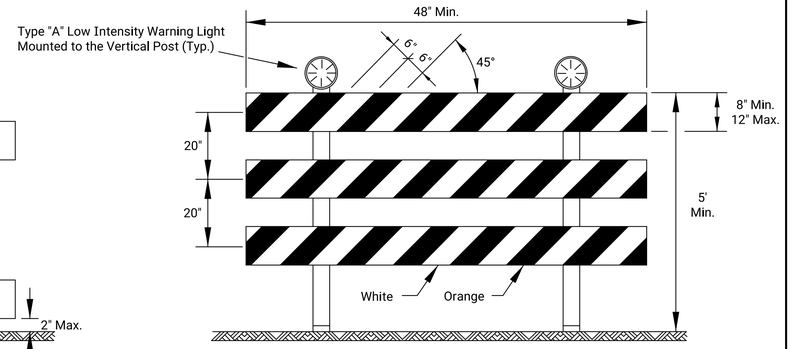


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS



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. 109

KDOT Graphics Certified

Plotted by : JLDowning 17-JAN-2024 16:55
File : te704.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	110	141

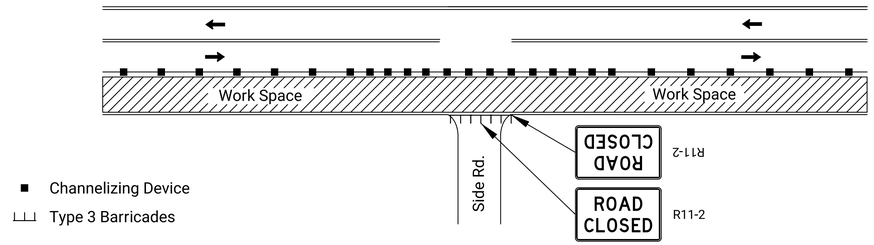


FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

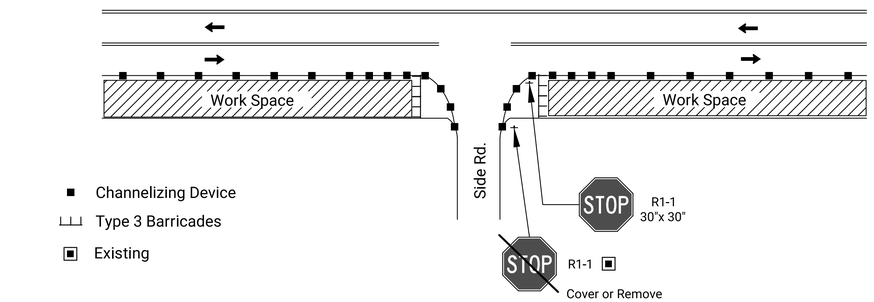


FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

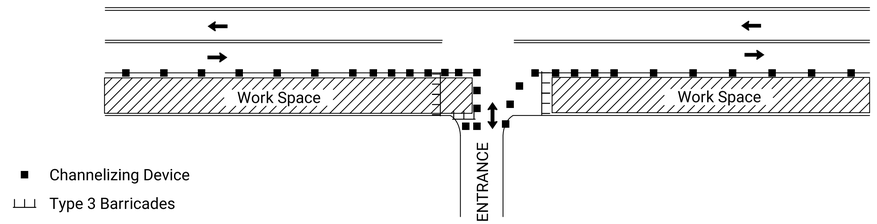


FIGURE 3: LOW VOLUME ENTRANCE CONTRUCTED HALF AT A TIME

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

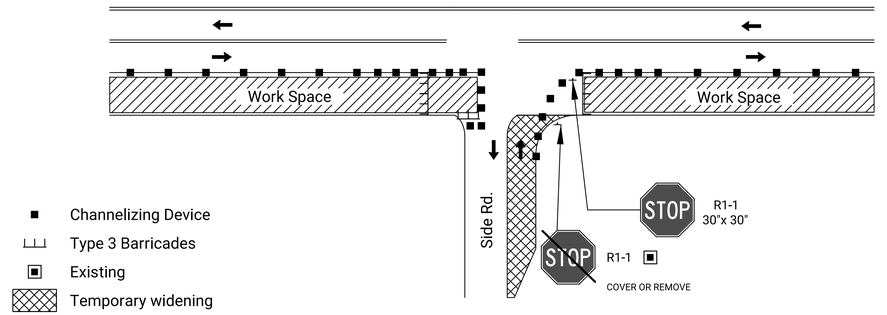


FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME:
TWO WAY TRAFFIC REQUIRED

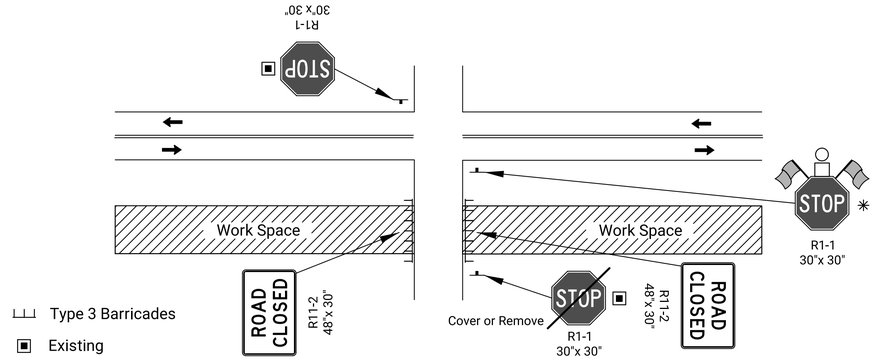


FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY

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. 110

KDOT Graphics Certified

Plotted by : JLDowning 17-JAN-2024 16:55
File : te705.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	111	141

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"

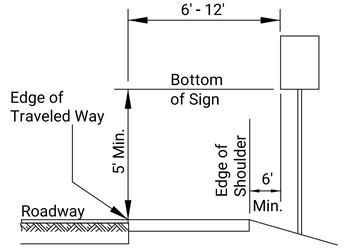
UNEVEN LANES
W8-11
Std. Size Expwy/Freeway
8" D
48"x 48"

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.

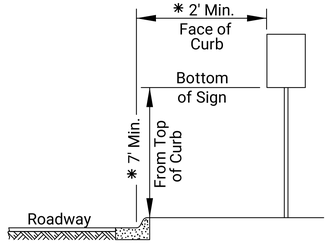


RURAL

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.

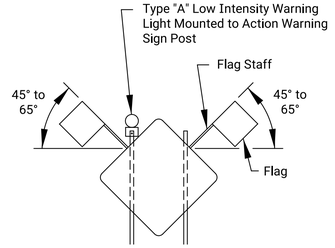
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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.

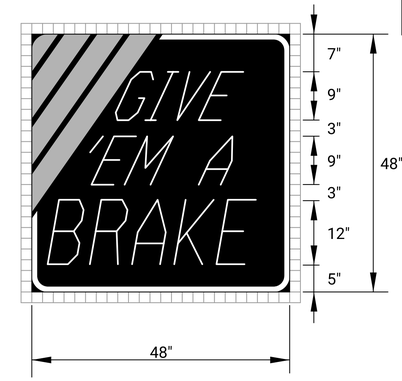
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

* 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.	

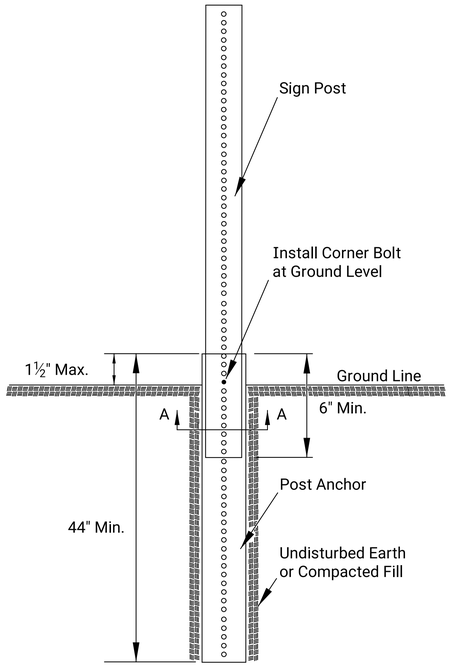
KDOT Graphics Certified 12-16-2022 Sh. No. 111

KDOT Graphics Certified

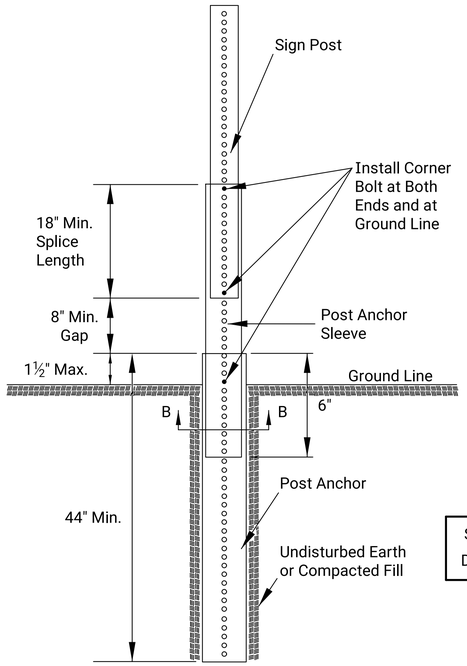
Plotted by : JLDowning 17-JAN-2024 16:56
File : te710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	112	141

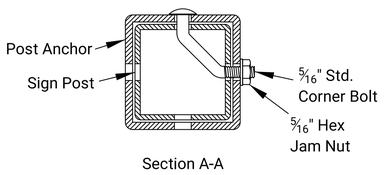
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



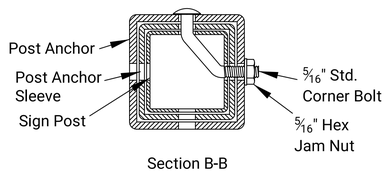
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

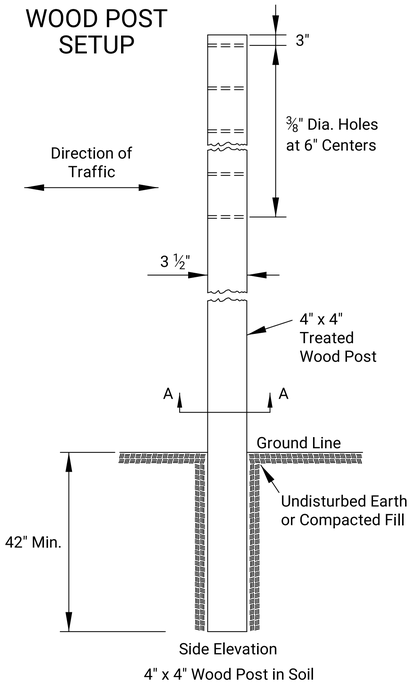


Section B-B

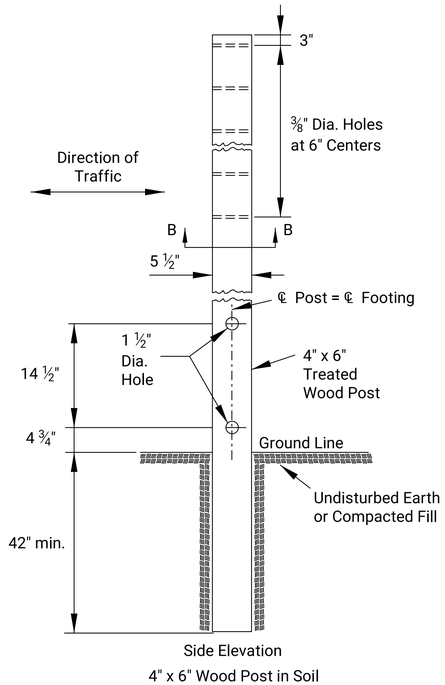
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

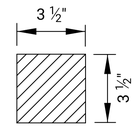
WOOD POST SETUP



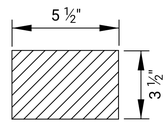
Side Elevation
4" x 4" Wood Post in Soil



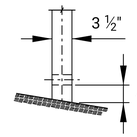
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



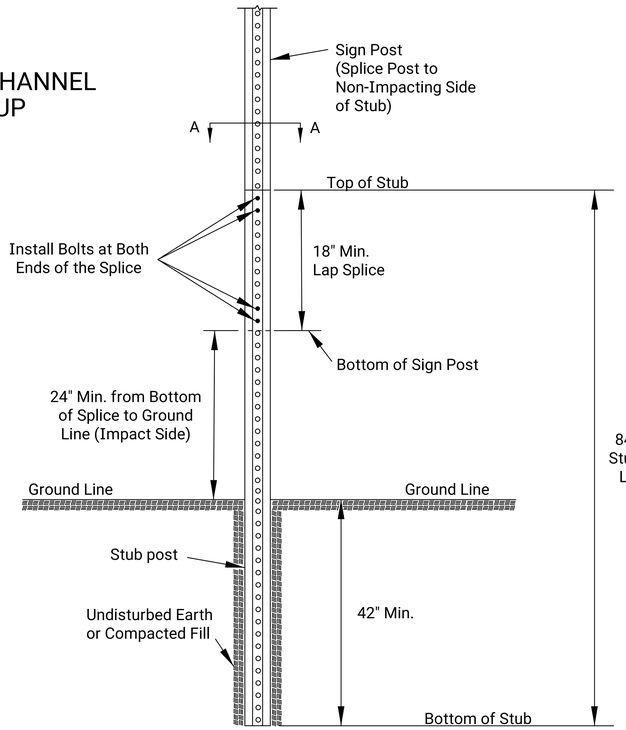
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

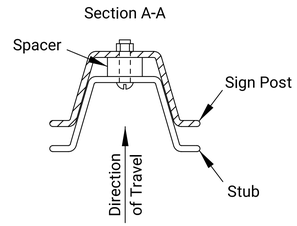
3 LB/F U-CHANNEL SETUP



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

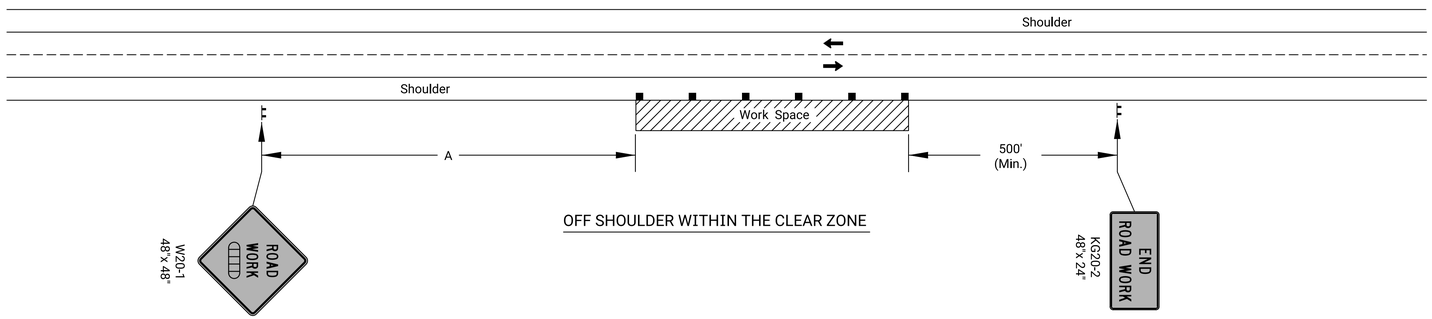
FHWA APPROVAL		06-01-15	APP'D.	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 07-18-2022 Sh. No. 112

KDOT Graphics Certified

Plotted by: JLDowning 17-JAN-2024 16:56
File : te712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	113	141

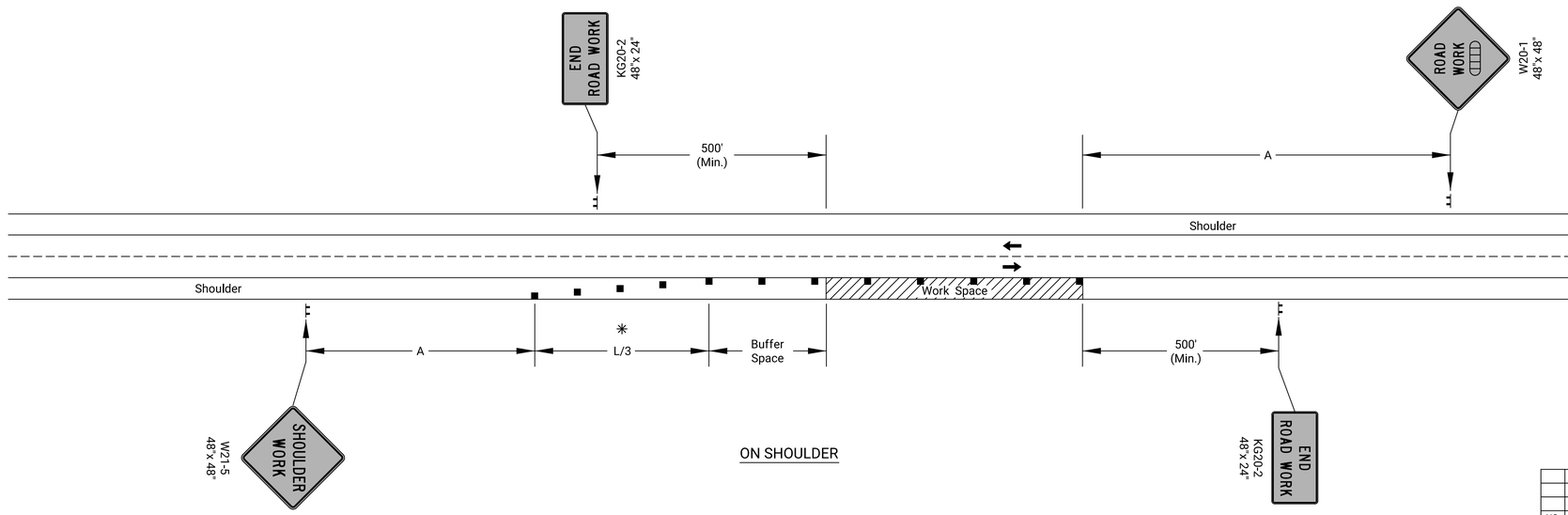


OFF SHOULDER WITHIN THE CLEAR ZONE

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.	

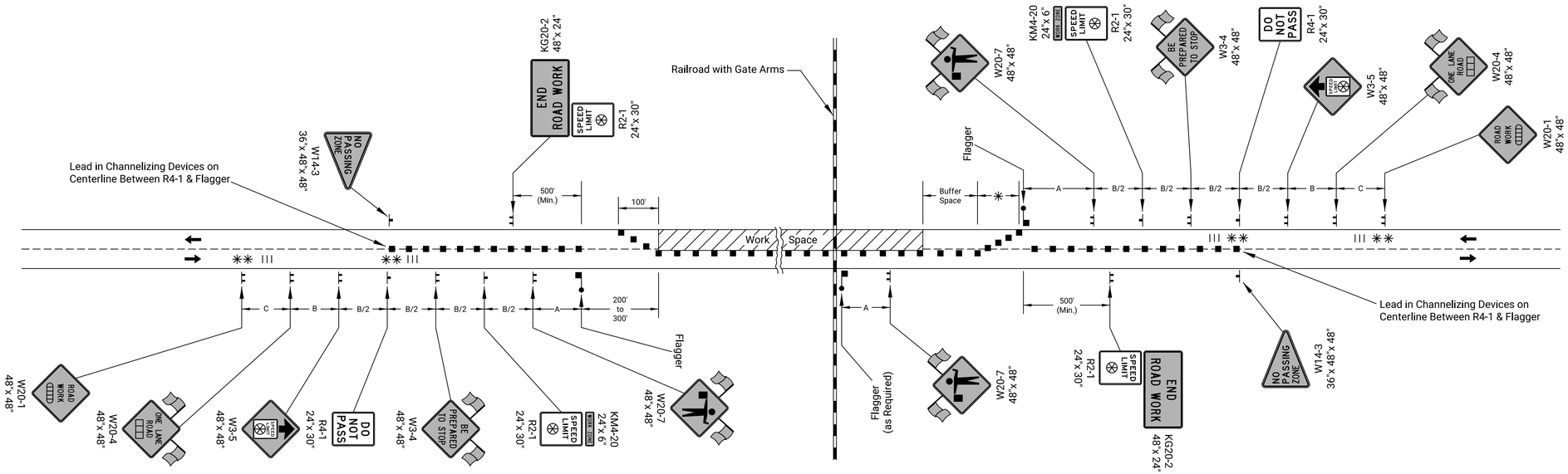
KDOT Graphics Certified 07-18-2022 Sh. No. 113

KDOT Graphics Certified

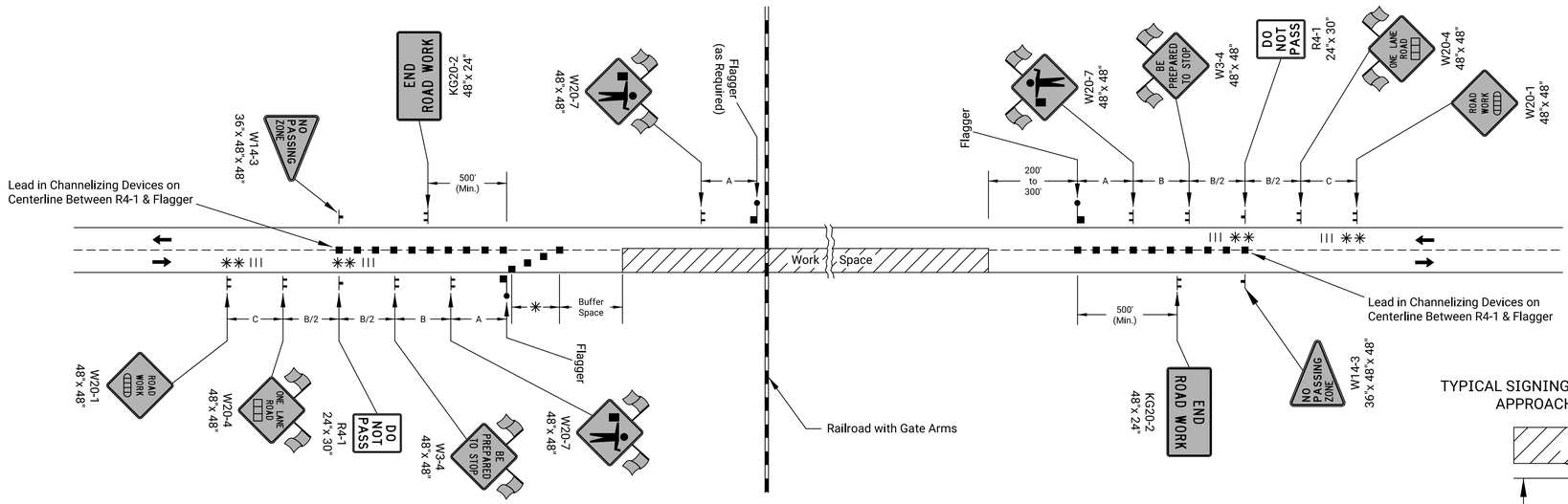
Plotted by : JLDowning 17-JAN-2024 16:56
File : te720.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	114	141

FLAGGER



FLAGGER AND PILOT CAR



- ■ Channelizing Device
- Ahead, 1500 ft, or 1 Mile
- Ahead, 1000 ft, 1500 ft, or ½ Mile
- Speed to be Determined by the Engineer
- ○ Type "A" Low Intensity Warning Light
- ||| Temporary Portable Rumble Strips

USE TE731 FOR FLAGGER OR PILOT CAR ON ROADWAYS WITH CONCRETE SHOULDERS GREATER THAN 8 FT.

Notes:

Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around the Flagger.

Place a Flagger at all highway and major collector intersections and at-grade railroad intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor side road intersections shall be determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger.

Existing signs shall not be covered or removed between Flagger stations.

Temporary rumble strips may be used in lieu of lead in channelizing devices when the roadway is less than or equal to 30' including paved shoulders. When extenuating circumstances exist, the Area Engineer may elect to eliminate both the lead in channelizers and the rumble strips.

∗ Minimum six (6) channelizers spaced at 20' intervals.

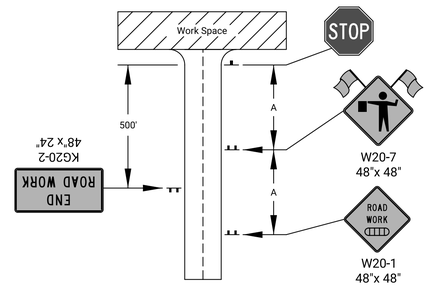
∗∗ Optional rumble strips may be placed: One set between the W20-1 and W20-4, and one set between the R4-1 and W3-4, on each approach.

△ Not required on substantial maintenance projects (1R).

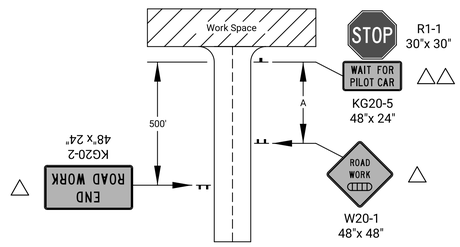
△△ The KG20-5 (WAIT FOR PILOT CAR) sign shall be mounted on an approved portable support and not attached to the existing stop sign post.

The KG20-5 sign shall be placed immediately in front of the existing stop sign, a minimum of 6" below the bottom of the stop sign. The sign should be removed or covered when there is no pilot car.

TYPICAL SIGNING FOR HIGHWAY OR MAJOR COLLECTOR APPROACH TO WORK SPACE



TYPICAL SIGNING FOR A MINOR SIDE ROAD APPROACH TO WORK SPACE



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FLAGGER OR PILOT CAR

TE730

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.	

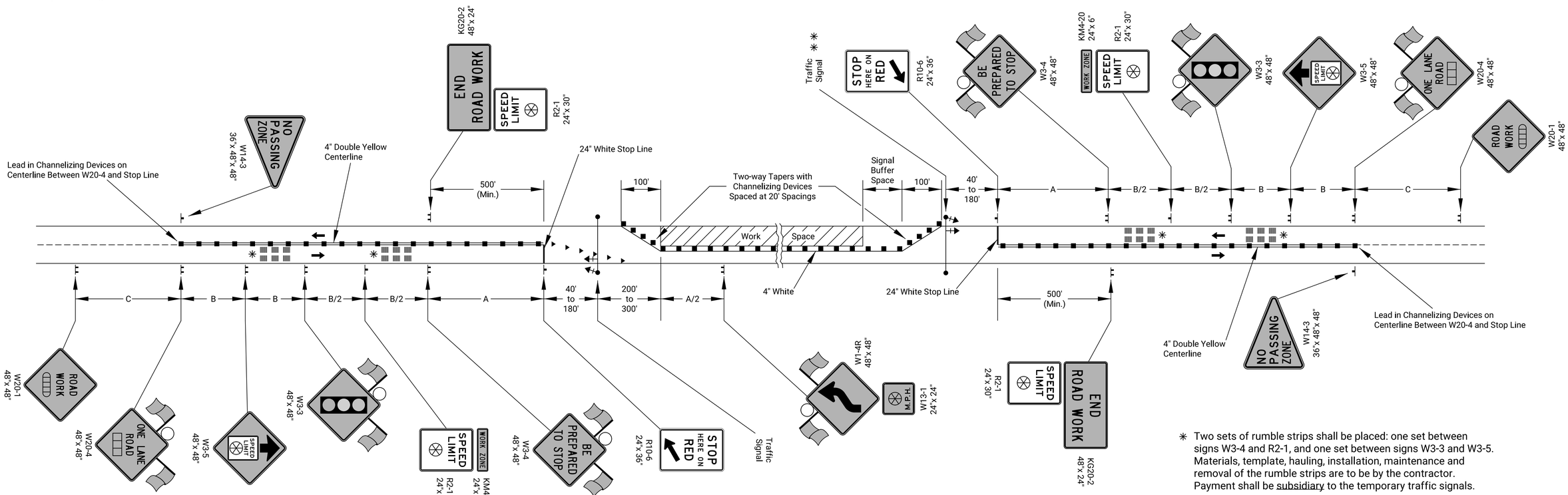
KDOT Graphics Certified 07-18-2022 Sh. No. 114

KDOT Graphics Certified

Plotted by : JLDowning 17-JAN-2024 16:56
File : te730.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	115	141

NOTE: Refer to TE733 and TE734 for additional temporary traffic signal details.



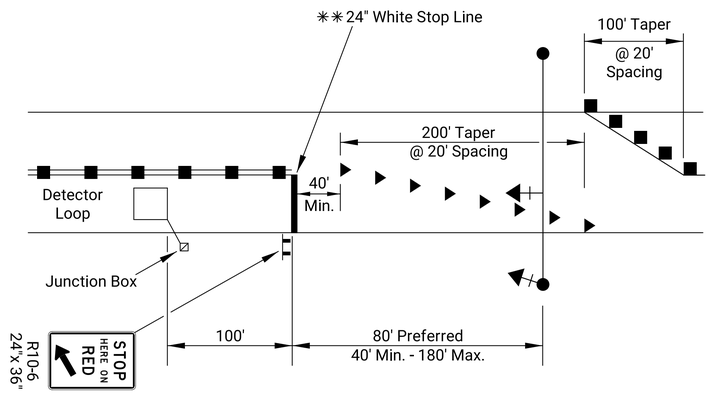
✳ Two sets of rumble strips shall be placed: one set between signs W3-4 and R2-1, and one set between signs W3-3 and W3-5. Materials, template, hauling, installation, maintenance and removal of the rumble strips are to be by the contractor. Payment shall be subsidiary to the temporary traffic signals.

SIGNAL BUFFER SPACE

SPEED (MPH) ⚠	20	25	30	35	40	45	50	55	60	65	70
LENGTH (FT)	35	50	65	85	100	115	130	150	165	165	165

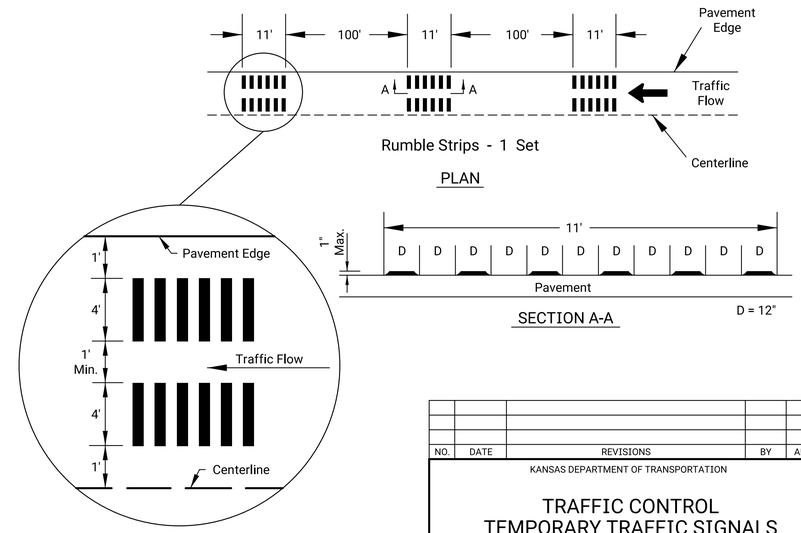
Neither work activity nor storage of equipment, vehicles, or material should occur in the buffer space. When a protection vehicle is placed in advance of the work space, only the space upstream of the vehicle constitutes the buffer space.

⚠ Posted speed prior to work starting



✳✳ Stop Line Created Using (6) 4" Strips of Temporary Tape

TYPICAL ASPHALT RUMBLE STRIP DETAILS



- ▸ Uni-Directional Yellow Temporary Raised Pavement Marker (Type 1) (Facing Right)
- ■ Channelizing Device
- Ahead, 1500 ft, or 1 Mile
- Ahead, 1000 ft, 1500 ft, or ½ Mile
- Speed to be determined by the Engineer
- Signal Head with Back Plate
- ● Temporary Signal Pole or Trailer
- ○ Type "A" Low Intensity Warning Light

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL TEMPORARY TRAFFIC SIGNALS

TE732

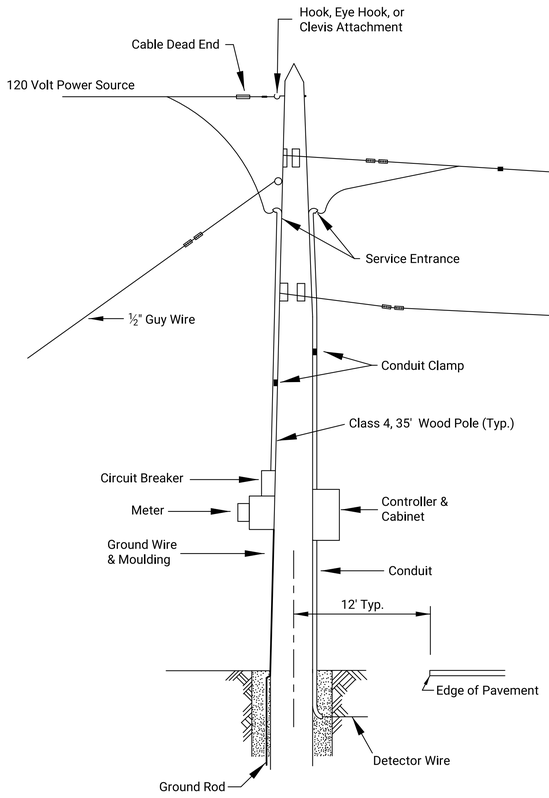
FHWA APPROVAL		06-01-15	APP'D.	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES		TRACED
DESIGN CK.		DETAIL CK.	QUAN.CK.		TRACE CK.

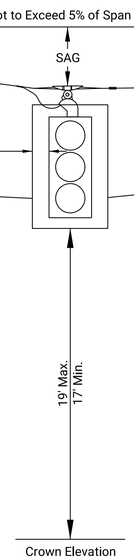
KDOT Graphics Certified 07-18-2022 Sh. No. 115

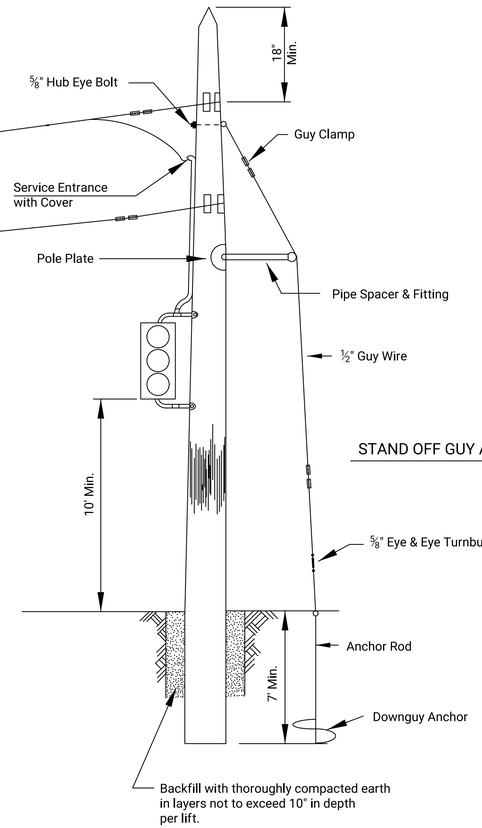
KDOT Graphics Certified

Plotted by : JLDowning 17-JAN-2024 16:56
File : te732.dgn

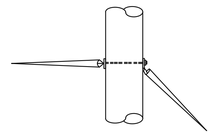
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	116	141



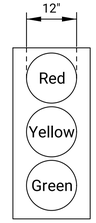




STAND OFF GUY ALTERNATE



Alternate method of mounting for spanwire & downguy traffic signal support pole.



SIGNAL INDICATIONS

GENERAL NOTES

The engineer in charge of construction will need to approve all locations for traffic signals to be installed. Final positions & aiming of signal faces to be determined in the field.

Trailer mounted portable traffic signals may be substituted for span wire signals.

The traffic signal system shall conform to and be operated according to the requirements of the M.U.T.C.D.

Contact local utility companies to advise them of installation and coordinate power hook-up if needed.

All wiring installed shall conform to the national electrical code and local ordinances & requirements.

The power supply and the operation & maintenance of the signal system shall be the responsibility of the contractor.

Note:
See TE734 for additional information.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
TEMPORARY TRAFFIC SIGNAL DETAILS

TE733

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. 116

Plotted by : JLDowning 17-JAN-2024 16:56
File : te733.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	117	141

The control equipment shall be designed in such a manner that the normal dwell condition shall be an all red" signal display. Upon receipt of a detector actuation from one approach, the signals facing that approach shall cycle to a green indication for a minimum period (minimum green). Subsequent detector actuations from the same direction shall result in additional green time being allocated to that movement (unit extension). In the event that an actuation exists for the direction of travel not having the right of way, a maximum green time setting shall provide a preset time limit for the direction having the right of way.

The control equipment shall provide for different clearance sequences, one for each required phase.

If the green indication has been displayed to one approach to the zone, no vehicle actuation exists on the opposite approach and another actuation occurs during the yellow display to the approach just serviced, the display shall proceed to an all red display for a period of time (red revert) to prevent the display of green - yellow - green indications to the motorist.

If the right of way is to be transferred to another approach, an all red indication shall be provided so that opposing traffic does not meet within the one way zone.

Response to a vehicle actuation from another approach shall be immediate if all timings have expired. In the event that all time settings have not expired at the point at which a vehicle actuation occurs, the system shall continue to provide the appropriate clearance interval timings before acting upon an actuation input.

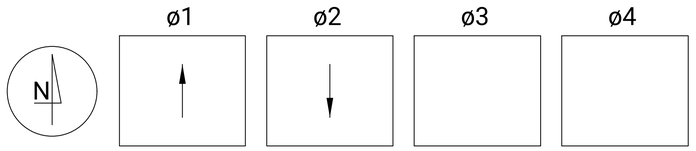
Vehicle actuations received from the detector at approaches other than that which last received a green indication shall have preference over additional actuations received from the end which last had the right of way in the event that any clearance interval timings have not expired when the actuation(s) occurs. If all timings have expired, response shall be on a first come, first served basis.

All time settings shall be user adjustable and shall be accomplished from the equipment front panel by way of a keyboard and menu screen format. All applicable portions of the
KDOT standard specifications for vehicle actuation shall apply except that a standard NEMA conflict monitor shall be acceptable.

Signals shall be capable of actuation. On asphalt roadways, detection loops may be sawed into the road. Commercially made loop mats may also be used. Do not cut loops into concrete pavement. Other types of detection may be used if approved prior to installation by the Engineer. Do not use microwave detection systems in urban areas. Detector shall be set to operate in the locking mode.

If used, detection loops shall be 6' by 6' and have three turns of wire (see detail). Center loops in the lane of traffic and locate 100' behind the stop line. Cut slots in pavement for loops $\frac{5}{16}$" wide with 1"
minimum depth. Fill slots with asphalt or an approved elastic epoxy sealant (concrete pavement) to within $\frac{1}{8}$" of pavement surface. Other than a "western union" type splice or approved connector at their junction, feeder cable and loop wire shall be of continuous run with no splices. The loop and the feeder cable connection shall be twisted 2 turns per foot.

SIGNAL PHASING AND TIMING

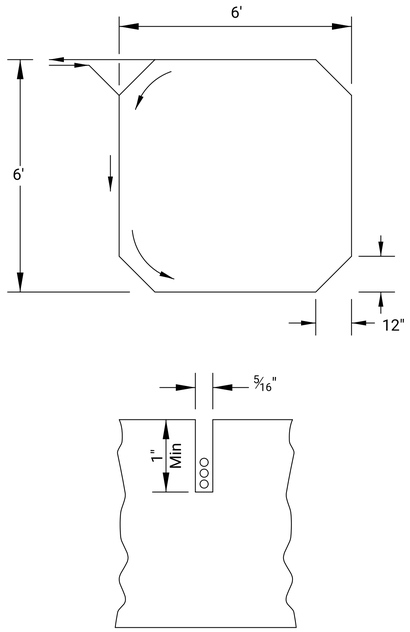


Phase	Minimum Green	Maximum Green	Yellow	All Red
2	10	60	4	92
3	10	60	4	92

Phase		Stationing
2 & 3	Stopline	43+55
2 & 3	Signal	44+35
2 & 3	Signal	88+65
2 & 3	Stopline	89+45

All times in seconds.
Normal dwell shall be "all red".
Unit extension shall be 3.0 seconds.
Red revert shall be 5.0 seconds.

LOOP DETECTOR DETAIL



Note: See TE733 for additional information.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
TEMPORARY TRAFFIC SIGNAL DETAILS

TE734

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

Sh. No. 117

Plotted by : JLDowning 17-JAN-2024 16:56
File : te734.dgn

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

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

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

✳ Quantity most used on the project at any one time

Work Zone Signs ✳			
Sign No.	Size - Sq.Ft.		
	0-9.25	9.26-16.25	16.26 & Over
W20-7		2	
W21-5		1	
W20-1		2	
KG20-2	2		
W20-4		2	
W3-5		2	
R4-1	2		
W3-4		2	
R2-1	4		
W14-3	2		
KM4-20	2		
W3-3		2	
R10-6	2		
W1-4		3	
R11-2		3	
R11-4		1	
KI-104a		2	
KI-105a		2	
W20-3		2	

Barricades ✳	
Type 3 (4' to 12')	Pedestrian
20	

Channelizing Devices ✳		
Fixed	Portable	Pedestrian
	85	

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	20
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.)	4,620	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)	8,580	Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')	6,600	Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)	28,050	Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)	6,600	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)	240	Sta./Line
4" Solid (Type II)	75	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	8500	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)	22	Each
Rigid Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)	Lump Sum	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

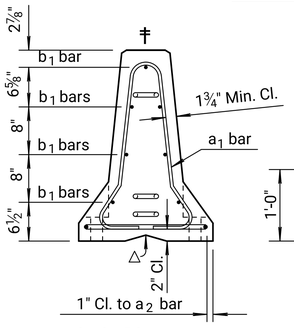
TRAFFIC CONTROL
SUMMARY OF DEVICES
RECAPITULATION OF QUANTITIES

TE795

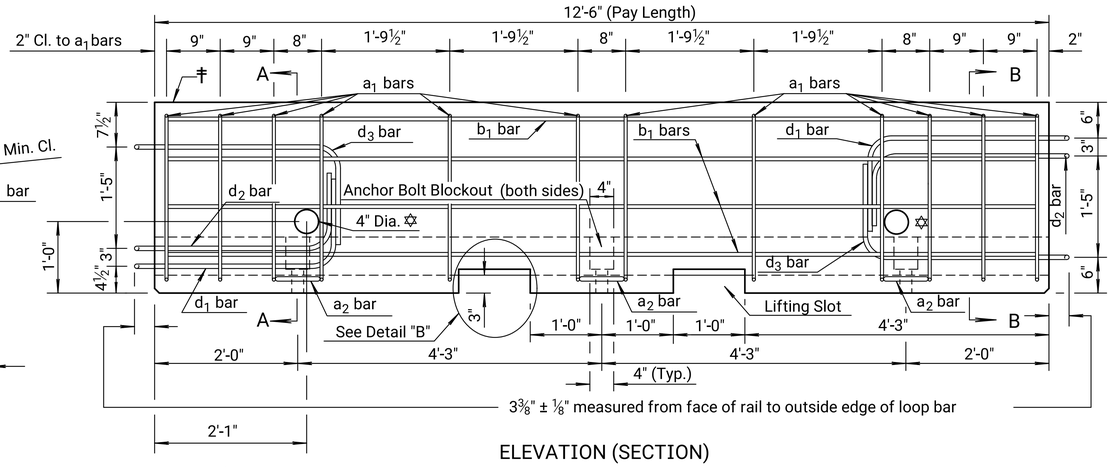
FHWA APPROVAL 06-01-15		APP'D. Kristina Ericksen	
DESIGNED B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Plotted by : JLDowning 19-JAN-2024 16:13
File : te795.dgn

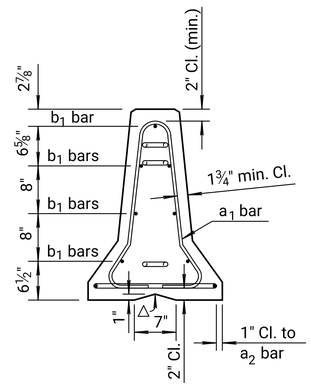
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	119	141



SECTION A-A
TYPICAL SECTION
(Stirrup Placement)

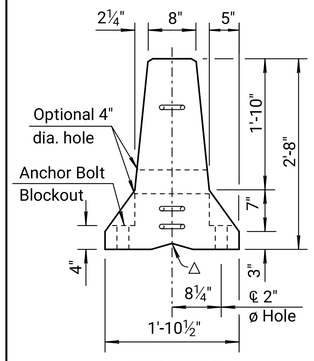


ELEVATION (SECTION)

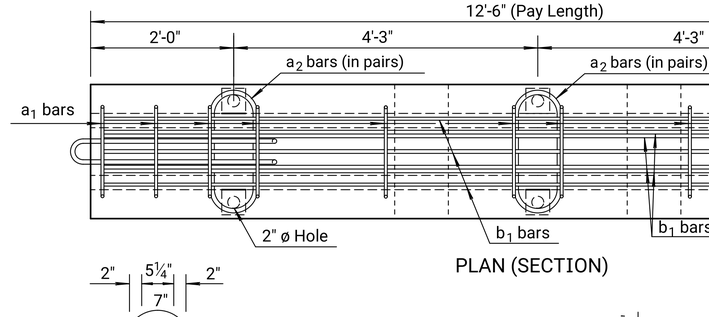


SECTION B-B
TYPICAL SECTION
(Stirrup Placement)

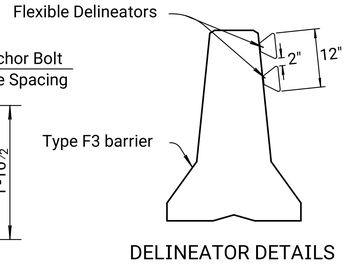
‡ Marked End
✡ 4" diameter - 11 gauge steel round mechanical tubing sleeve. These holes are optional.
△ V Notch is optional



END VIEW



PLAN (SECTION)



DELINEATOR DETAILS

GENERAL NOTES:

MATERIAL: Use ASTM A615, Grade 60 reinforcing bars, except for the loop bars (d_1, d_2 and d_3). The loop bars (d_1, d_2 and d_3) shall be ¾" smooth steel bars with a minimum yield of 60 ksi, a tensile strength of not less than 1.25 times the yield strength but a minimum of 80 ksi, a minimum 14% elongation in 8 inches, and passing a 180 degree bend test using a 3.5 D pin bend diameter. The loops shall be installed within ⅛" of the plan dimensions.

Use air-entrained concrete with f'c = 5,000 p.s.i.

SECTION: The section furnished must generally comply with dimensions shown. Requests for minor variations in section geometry and attachments may be submitted to the Engineer for approval.

LIFTING SLOTS: Lifting slots shall be constructed where specified on the plans to facilitate the drainage of water after installation on the roadway.

TEMPORARY CONCRETE SAFETY BARRIER: Furnishing and placing of all materials when required and all labor and equipment required to position the temporary barrier shall be included in the Contract unit price bid for "Concrete Safety Barrier (Type F3)(Temporary)". Any relocation of the barrier required for the project shall be paid in accordance with the Special Provisions under the bid item "Concrete Safety Barrier (Type F3) (Temporary-Relocate)". Unless otherwise noted on the Plans, the Temporary Concrete Safety Barrier shall become the property of the Contractor and shall be removed from the site upon acceptance of the completed project.

Approximate weight of one unit equals 2.7 tons.

PLACEMENT: Barrier shall be placed on a paved surface. All loose dirt and sand shall be removed from the roadway surface just prior to placement of the barrier.

After the barrier is placed and the connection pin is inserted, tension or pull the barrier such that the installation is taut and the connection pin cannot freely move vertically. If the connection pin or loop bar assembly are damaged during the tensioning process, it is the responsibility of the Contractor to repair the damaged area or replace the temporary barrier section.

MARKING: The left end (‡) of each barrier shall be permanently marked by stamping or forming into the barrier the following information:

- Type F3
- Manufacturer code (as specified by KDOT Bureau of Const. & Maint.)
- Date manufactured (month and year)

DELINEATION: Delineators shall be spaced on 50' centers, except through curves where they shall be spaced on 25' centers. See Standard Drawing RD610 for additional details.

The delineation shall be mounted on the side of the Temporary Concrete Safety Barrier with two delineators at each location. Each delineator shall have a minimum height-to-width ratio of 1.75, and a minimum reflective surface area of 7 sq. in.. The delineators shall be affixed to the Temporary Concrete Safety Barrier as recommended by the manufacturer.

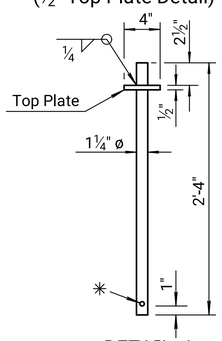
Delineators shall be attached to bridge rail or other structures in construction zones when roadway is narrowed and traffic is adjacent to the structure. The method and location of placement shall be similar to permanent barrier delineation.

When traffic flow is in one direction, the delineators shall be yellow when used on the left, white when used on the right. When traffic flow is in both directions delineators shall be placed back-to-back, and shall correspond to the color of the edge line.

The work and materials required for the installation of delineators as mentioned shall be subsidiary to the bid item "Concrete Safety Barrier (Type F3) (Temporary).

If necessary, include Standard Drawing RD622A for Taper Section, Standard drawing RD622B for anchor and tie down details, Standard Drawing RD622C for Bridges with thermal expansion of 1½" or greater and Standard Drawing RD622D for Barrier Layouts.

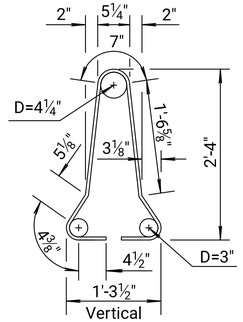
The Contractor shall be responsible for maintaining a clear area, shown as dimension "A" on Standard Drawing RD622B. The clear area is located behind the Temporary Concrete Safety Barrier and shall be kept free of any equipment, material stockpiles or other obstacles. For non-anchored roadway applications, dimension "A" shall be a minimum of 2'-0".

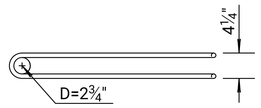


DETAIL A
CONNECTION PIN
(A36 Steel) 10.9 lbs. each

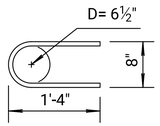
✳ ⅝" ø hole for retainer bolt. The retainer bolt & nut are installed at Contractor's option.

Note: Retainer bolt & nut required with Tie Down Strap.

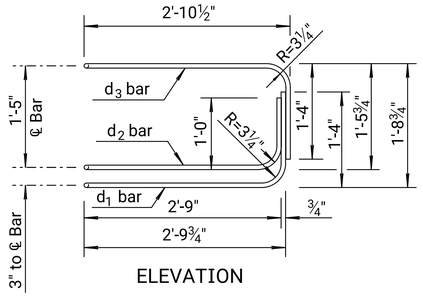




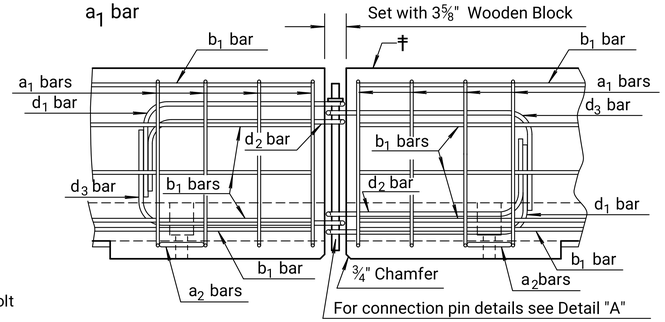
PLAN
LOOP BAR ASSEMBLY
(Marked end shown, invert for other end)
(Material as stated in General Notes)



a_2 bar



ELEVATION



DETAILS OF BARRIER CONNECTION

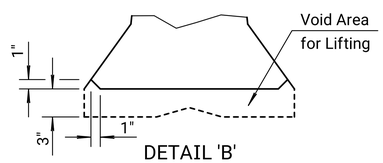
Per 12'-6" Barrier Section

REINFORCING A615 Gr. 60

Bar	Bar Size	Shape	No. of Bars	Length Ft.	Weight Lbs.
a_1	#4		12	6'-0"	48.1
a_2	#6		6	2'-11"	26.3
b_1	#5		7	12'-2"	88.8
LOOP ASSEMBLY					
d_1	#6		2	8'-5"	25.3
d_2	#6		2	7'-7"	22.8
d_3	#6		2	8'-6"	25.5

Concrete Quantity = 1.3 C.Y.

(Dimensions are out to out of bars unless otherwise noted.)



DETAIL 'B'
LIFTING SLOT DETAIL
(1" Chamfer to prevent spalling)

NOTE: At no time shall the barriers be lifted, moved, etc. by use of the loop bars: d_1, d_2 or d_3.

NO.	DATE	REVISIONS	BY	APP'D
07	09-11-17	Revised Markers	A.L.R.	S.W.K.
06	07-17-17	Revised General Note	A.L.R.	S.W.K.
05	08-27-15	Added Note, Pay Length	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3

RD622

FHWA APPROVAL	03-05-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-12-2022 Sh. No. 119

KDOT Graphics Certified

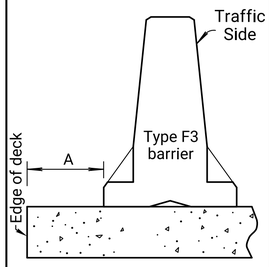
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:30
File : KA572901rss622-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	120	141

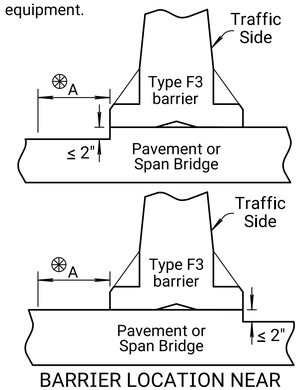
GENERAL NOTES:
INSTALLATION: Holes into the pavement to anchor the concrete safety barrier may be drilled after positioning barrier. When anchoring with 3 bolts on traffic side, install barrier with through anchor bolt where possible, use grouted anchor bolts where through bolt can't be used. Do not drill into or otherwise damage support beams, girders, or expansion joints. All work & materials required for the installation of the anchors are subsidiary to the bid item "Concrete Safety Barrier".
UTILITIES & STRUCTURES (Stakes): Verify buried utilities & structures within stake depth. If conflicts between stake & buried elements exist, up to 2 stakes maximum in a single barrier may be omitted if adjacent barriers have 3 stakes each.

ANCHORAGE: Use galvanized grouted anchor bolts, through anchor bolts, nuts & washers that meet standard specifications. Install 3 anchor bolts or asphalt pins per barrier on the traffic side except on transition barrier as shown.
BARRIER REMOVAL: Completely remove all anchor systems. Remove grouted or drop-in anchor system by drilling the anchor with a core barrel 2x the diameter of the insert. Core to a depth equal to the installed depth & remove the core, prepare the hole by removing dust & debris. Fill hole with material that meets KDOT Pre-qualified "Non-shrink grouts for grouting anchor bolts & reinforcing into previously poured concrete". Follow the manufacturer's procedures for mixing, hole preparation & curing. To fill through bolt anchor or screw-in anchor system, remove & completely fill the hole using instructions for drop-in anchors except no coring is required.
For removed or relocated barrier on flexible pavement, fill stake holes completely with hot or cold asphalt patch material. Work & materials required to remove & patch anchor holes are subsidiary to the bid item "Concrete Safety Barrier".
TEMPORARY BARRIERS: Temporary Barriers shown in the details of this drawing are not allowed for permanent installations.
See KDOT Standard Drawing "Temporary Concrete Safety Barrier Type F3 Transition Layouts" for transition details between anchored & free-standing barriers. See KDOT Standard Drawing "Temporary Concrete Safety Barrier Type F3" for details & quantities not shown on this sheet.
SIGNING: For sign spacing, traffic control device details & reference notes, see Index of Sheets.

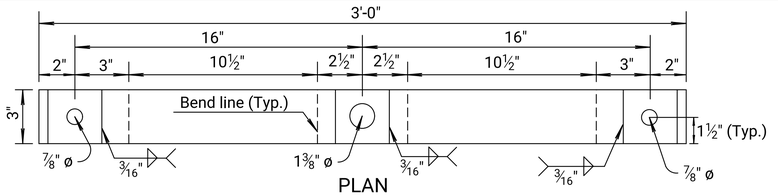
NO ANCHORAGE REQUIRED unless shown on plans		
"A" DISTANCE	A ≥ 4'	A ≥ 2'
LOCATION	Span Bridge	⊛ Box Culverts Roadways - Flexible or Rigid Pvmnt.



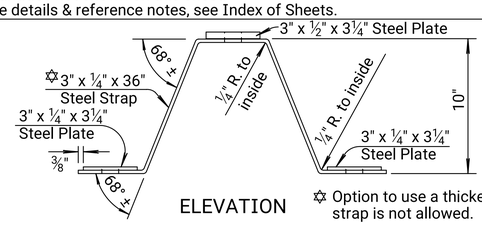
⊛Applies on span bridges when the action creates a height differential of ≤ 2". Measured from the toe of the barrier, the "A" distance should be free of obstacles and equipment.



BARRIER LOCATION NEAR HEIGHT DIFFERENTIAL



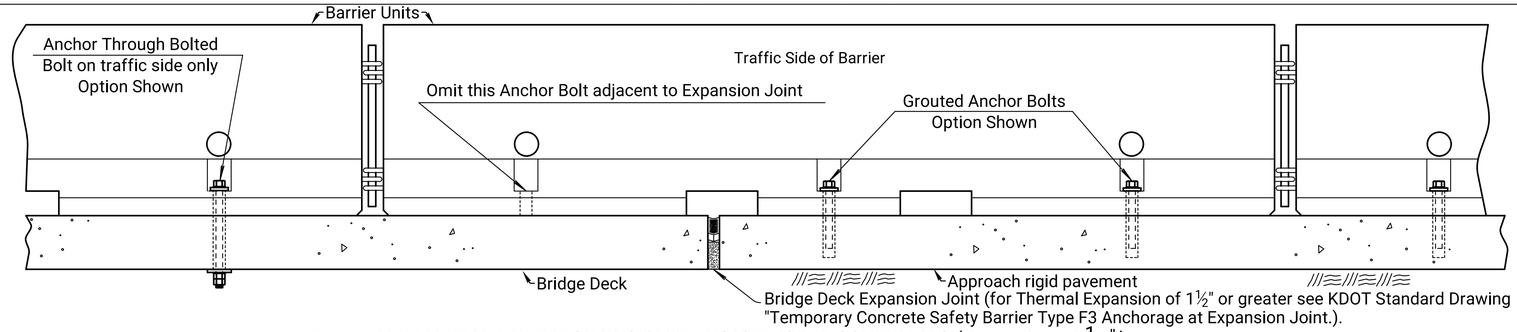
PLAN



ELEVATION

✡ Option to use a thicker steel strap is not allowed.

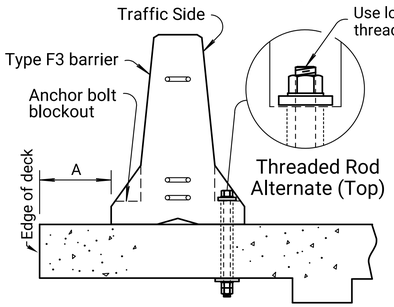
TIE-DOWN STRAP DETAILS

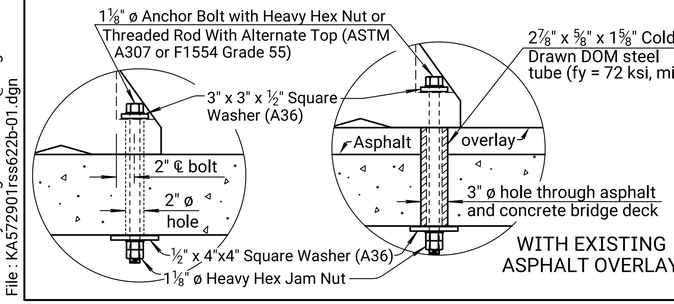


ELEVATION - TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC (Expansion < 1½")

ANCHORAGE	ANCHOR BARRIER with 3 BOLTS ON TRAFFIC SIDE	ANCHOR BARRIER with 3 BOLTS ON TRAFFIC SIDE		ANCHOR BARRIER with TIE-DOWN STRAP		ANCHOR BARRIER with STAKES
"A" DISTANCE	0' ≤ A < 2'	0' ≤ A < 2'		△ 2' ≤ A < 4'	6" ≤ A < 2'	6" ≤ A < 2'
LOCATION	Span Bridge	Span Bridge	Box Culverts Roadways - RIGID Pavement	Span Bridge	Box Culverts Roadways - RIGID Pavement	Box Culverts (ceiling below stake depth) Roadways - FLEXIBLE Pavement

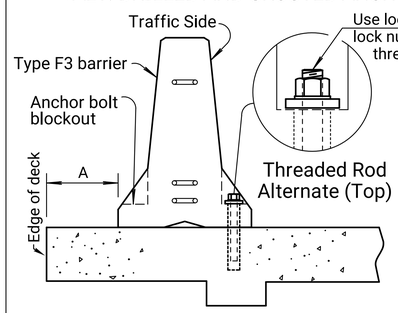
THROUGH BOLT (Preferred)



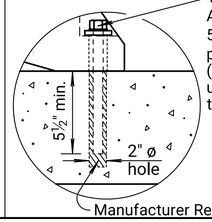


WITH EXISTING ASPHALT OVERLAY

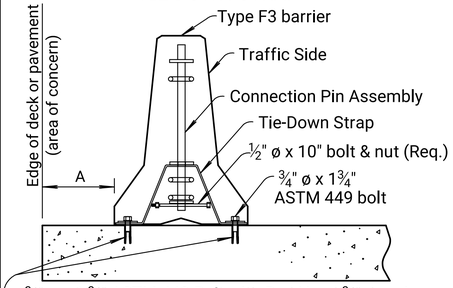
✧ALT. DRILLED AND GROUTED ANCHOR



✧Note: Alternate Drilled and Grouted Anchor installation avoids damage to the support beams, girders or expansion joint. The State Bridge Office shall approve the use of the Alternate Drilled and Grouted Anchor installation for bridge applications.

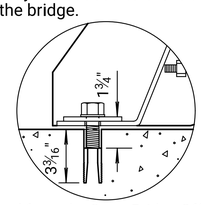


TIE-DOWN STRAP



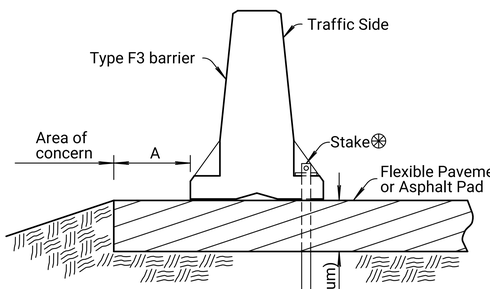
¾" ø x 1 ¾" ASTM 449 Bolt with Red Head ¾" drop in anchor, Red Head large diameter Tapcon (LDT) ¾" ø x 4 ½" long, or Simpson Titen HD ¾" ø x 5" long

△"A" distance may be reduced to 6" if traffic does not travel under the bridge.

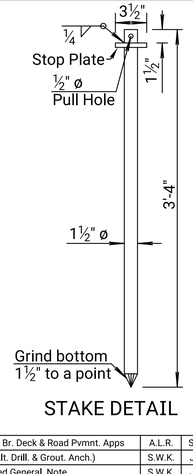


With prior approval from the State Bridge Office, anchoring the barrier with 3 bolts (Through Bolt OR Drilled & Grouted Anchor oprtions) on the traffic side may be used in lieu of tie-down straps.

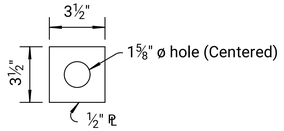
STAKED DOWN



⊛ Predrill 1½" ø holes in flexible pavement prior to installing stakes.



STAKE DETAIL



STOP PLATE DETAIL

NO.	DATE	REVISIONS	BY	APP'D
07	04-21-21	Revised Layouts for Br. Deck & Road Pvmnt. Apps	A.L.R.	S.W.K.
06	12-31-13	Rev. Note (Alt. Drill. & Grout. Anch.)	S.W.K.	J.O.B.
05	06-27-11	Revised General Note	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 ANCHORAGE

RD622B

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

KDOT Graphics Certified 05-13-2022 Sh. No. 120

KDOT Graphics Certified

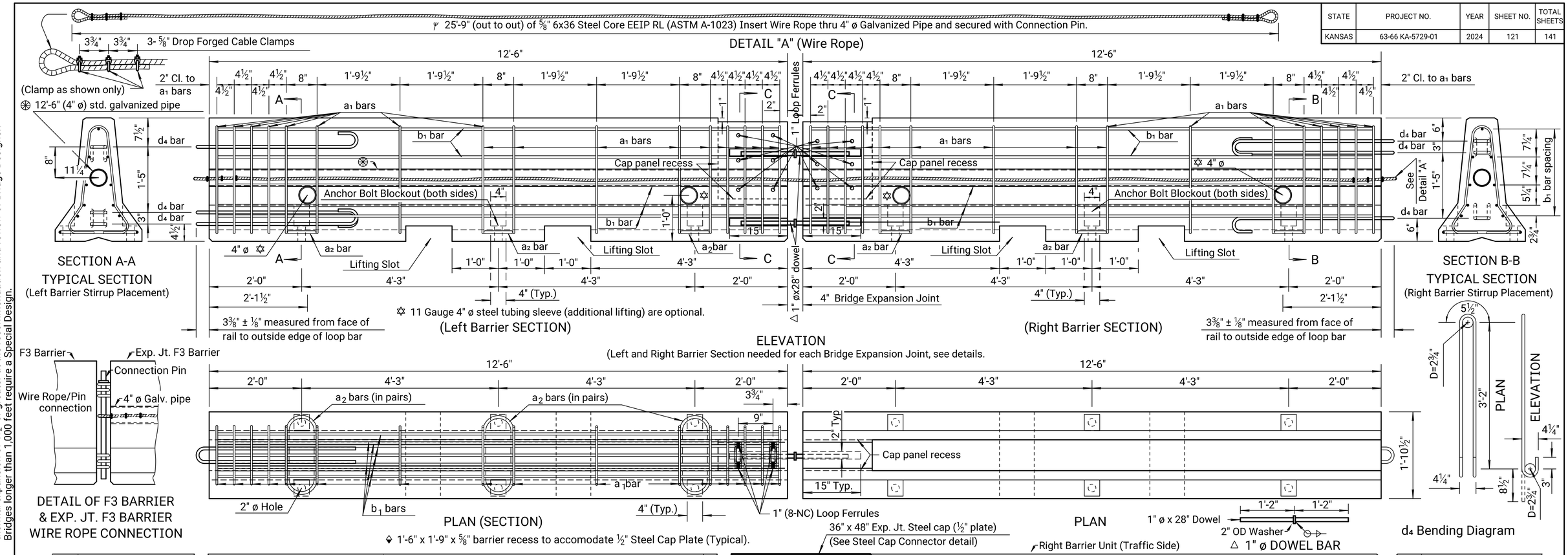
Note to Designer: For use on Haunched slab bridges, the Road Designer shall coordinate with the Bridge Designer for "corridor In the reinforcing steel layout to accommodate barrier anchoring."
Road Designer shall coordinate barrier layout with Bridge Designer to accomodate for expansion during construction.

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:40
File : KA572901rss622b-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	121	141

Note to Designer: This F3 Barrier Anchorage at Expansion Joint is only for use on bridges with thermal expansion of 1½" or greater at the recommendation and review of Bridge Designer. Bridges longer than 1,000 feet require a Special Design.

Plotted by: Brogan.Andrews@ks.gov 16-APR-2024 17:35
File : KA572901rss622c-01.dgn



DETAIL OF F3 BARRIER & EXP. JT. F3 BARRIER WIRE ROPE CONNECTION

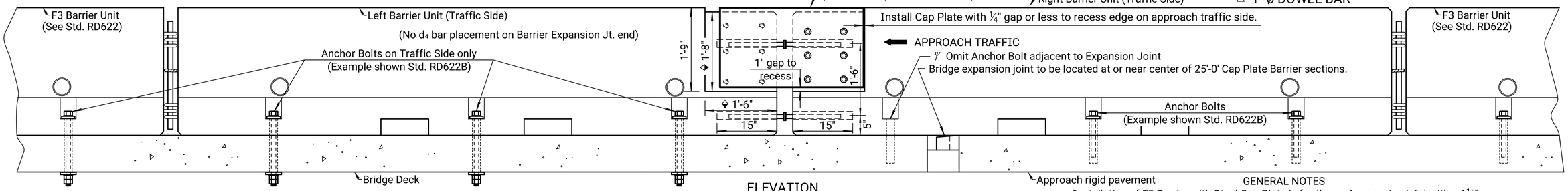
PLAN (SECTION)

PLAN

△ 1" ø DOWEL BAR

d4 Bending Diagram

♦ 1'-6" x 1'-9" x ⅝" barrier recess to accomodate ½" Steel Cap Plate (Typical).



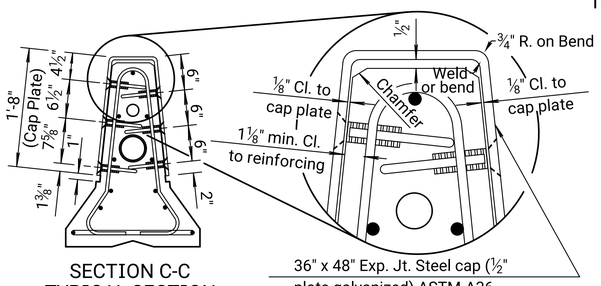
℣ If two or more Anchor Bolts are omitted, then add an additional cable.

ELEVATION
TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC

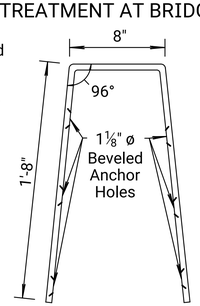
Per 12'-6" Barrier Section

REINFORCING A615 Gr. 60					
Bar	Bar Size	Shape	No.of Bars	Length Ft.	Weight Lbs.
a1	#4		16	6'-0"	64.1
a2	#6		6	2'-11"	26.3
b1	#5		9	12'-2"	114.2
LOOP ASSEMBLY					
d4	#6		3	8'-2"	36.8
½" Structural Steel Cap Plate					201.3

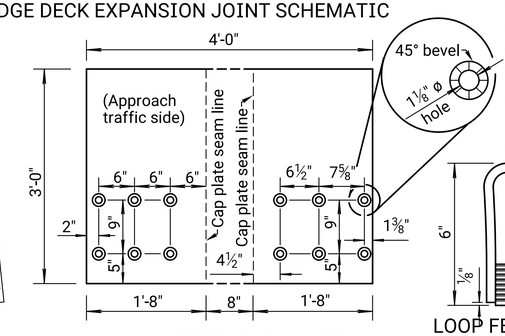
Concrete Quantity = 1.3 C.Y.
(Dimensions are out to out of bars unless otherwise noted.)
Reinf., Struct. and Concrete quantities are for "Information Only".



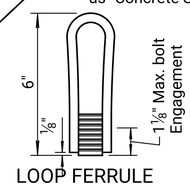
SECTION C-C
TYPICAL SECTION



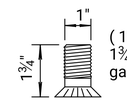
END VIEW
STEEL CAP PLATE



PLAN (STEEL CAP PLATE)



LOOP FERRULE
(1" Galvanized)



FLAT HEAD SOCKET CAP SCREW-Coarse

GENERAL NOTES

Installation of F3 Barrier with Steel Cap Plate is for thermal expansion joint with ≥ 1½".
This two barrier system (25'-0") is reversible to match with regular F3 Barrier layout. The Cap Plate sections are installed with no greater than 4" gap and pinned as shown in Expansion Jt. schematic. Install Cap Plate flush to recess on Traffic Approach side and bolt in place front and back of barrier with attachment types shown.
See Standard Drawing RD622 for reinforcing bending diagrams and additional details not shown on this sheet.
The State Bridge Office will review shop details before fabrication begins.
All materials, labor and equiptment needed for (Type F3) (25' Expansion Joint Unit) shall be bid as "Concrete Safety Barrier (Type F3) (Temporary)".

NO.	DATE	REVISIONS	BY	APP'D
03	07-26-07	Chg. flat head screw & ferrul to 1" ø	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 ANCHORAGE at EXPANSION JT.

RD622C

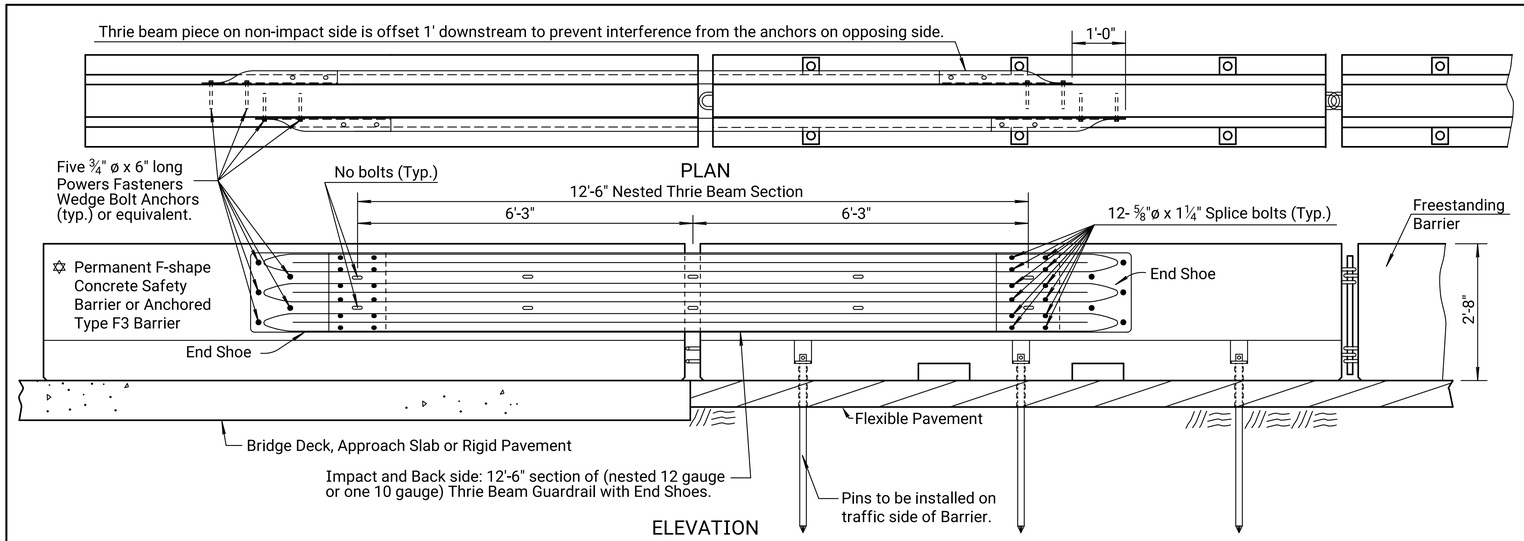
FHWA APPROVAL		10-05-07	APP'D.	James O. Brewer
DESIGNED	DETAILED		QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK. S.W.K.

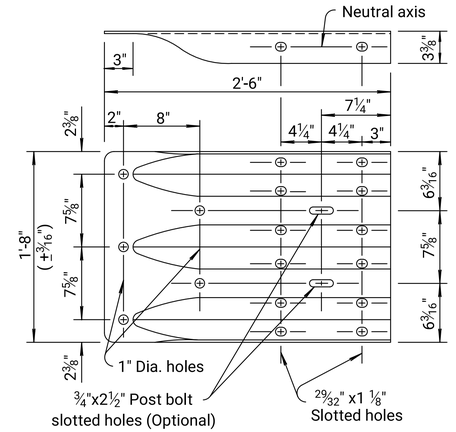
KDOT Graphics Certified 05-13-2022 Sh. No. 121

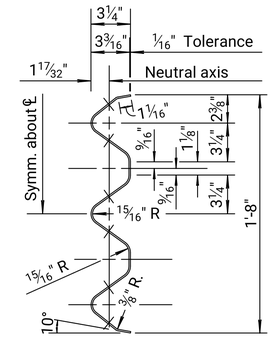
KDOT Graphics Certified

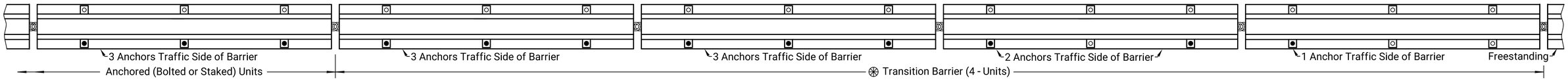
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	122	141

GENERAL NOTES:
The work and materials required for the installation & removal of the guardrail connection and barrier anchors as shown on this sheet shall be subsidiary to the "Concrete Safety Barrier" bid item.

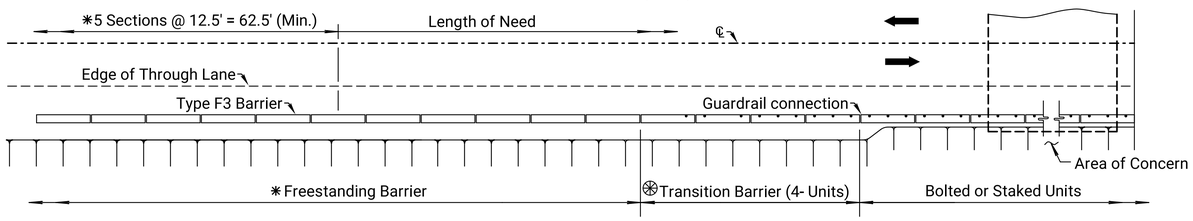




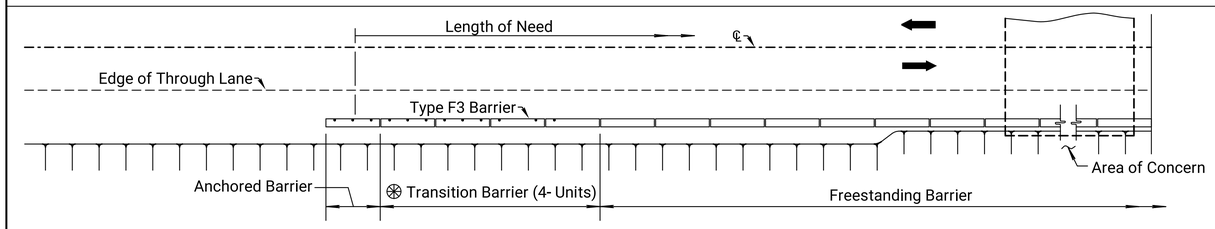




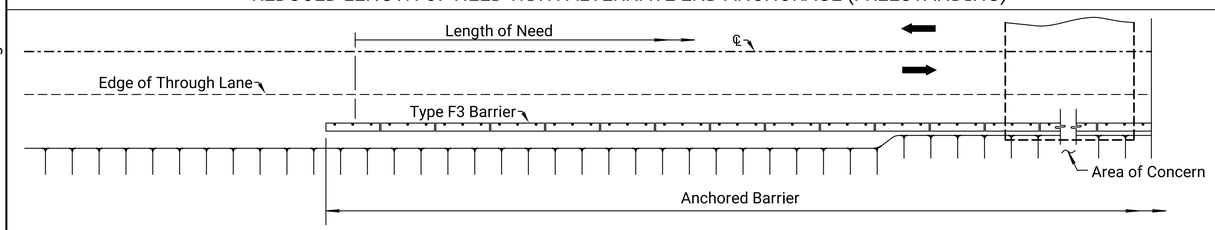
LENGTH OF NEED (LON)



LENGTH OF NEED WITH FREESTANDING TYPE F-3 CONCRETE BARRIER ENDING

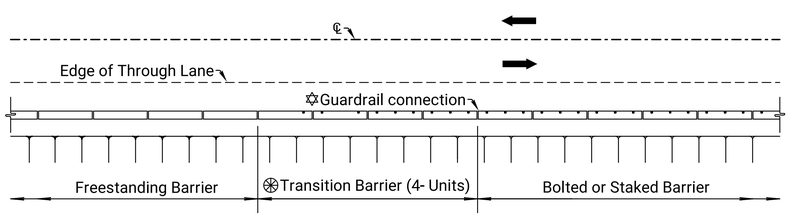


REDUCED LENGTH OF NEED WITH ALTERNATE END ANCHORAGE (FREESTANDING)



REDUCED LENGTH OF NEED WITH ALTERNATE END ANCHORAGE (ANCHORED)

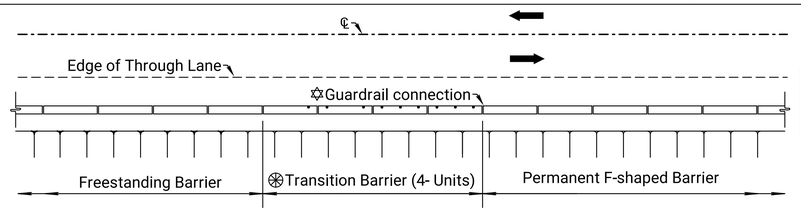
TRANSITION LAYOUTS



TRANSITION "From/To"	✡	✡
Transition from a Freestanding Barrier to a Type F3 Barrier anchored to a rigid pavement with bolted connection or bolted to a bridge deck.	YES	YES
Transition from a Freestanding Barrier to a Type F3 Barrier pinned/staked to asphalt pavement.	NO	YES

✡ Guardrail Connection ✡ Transition Barrier

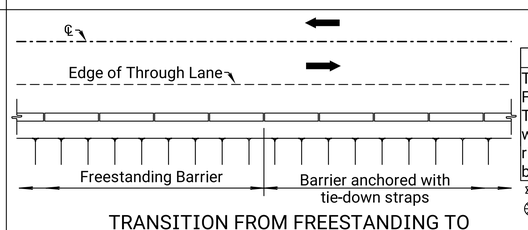
TRANSITION FROM FREESTANDING TO AN ANCHORED (BOLTED OR STAKED) TYPE F-3 BARRIER



TRANSITION "From/To"	✡	✡
Transition from a Freestanding Barrier to a Permanent F-Shape Barrier.	YES	YES

✡ Guardrail Connection ✡ Transition Barrier

TRANSITION FROM FREESTANDING TO PERMANENT F-SHAPED BARRIER



TRANSITION "From/To"	✡	✡
Transition from a Freestanding Barrier to a Type F3 Barrier anchored with tie-down straps on a rigid pavement or a bridge deck.	NO	NO

✡ Guardrail Connection ✡ Transition Barrier

TRANSITION FROM FREESTANDING TO TYPE F3 BARRIER ANCHORED WITH STRAPS

NO.	DATE	REVISIONS	BY	APP'D
02	07-19-19	Added LON & Transition Layouts	A.L.R.	T.T.R.
01	01-30-07	Rem. temp. details from perm. barrier	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 TRANSITION LAYOUTS

RD622D

FHWA APPROVAL	08-07-19	APP'D.	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

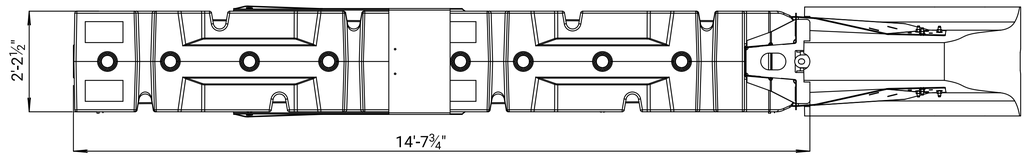
KDOT Graphics Certified 05-13-2022 Sh. No. 122

KDOT Graphics Certified

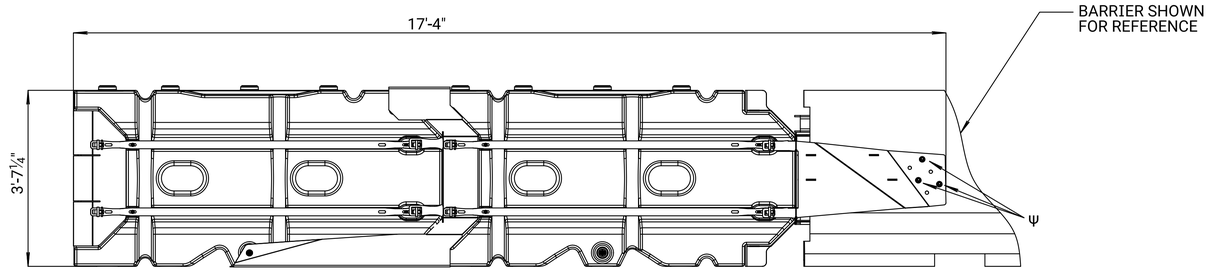
✳ Note to Designer: The minimum length for Freestanding Temporary Concrete Safey Barrier (TCSB) Installations is 11 sections @ 12.5' = 137.5'. In a Freestanding TCSB installation, if both ends are anchored, fewer than 11 sections of Freestanding TCSB may be used.
The 5 sections of Freestanding TCSB beyond the length of need may be reduced to 3 sections if the barrier is located on the exit end and traffic is traveling in a single direction.

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:33
File : KA572901rss622d-01.dgn

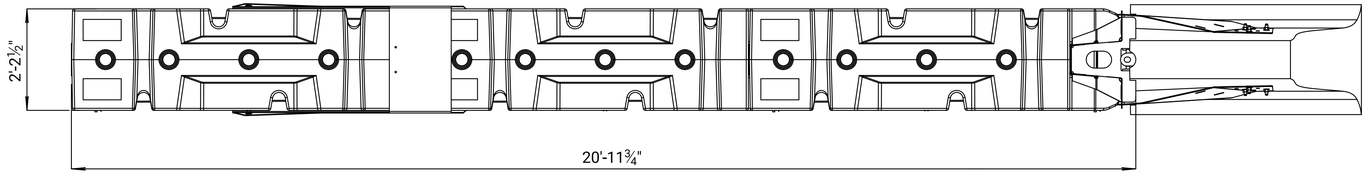
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	123	141



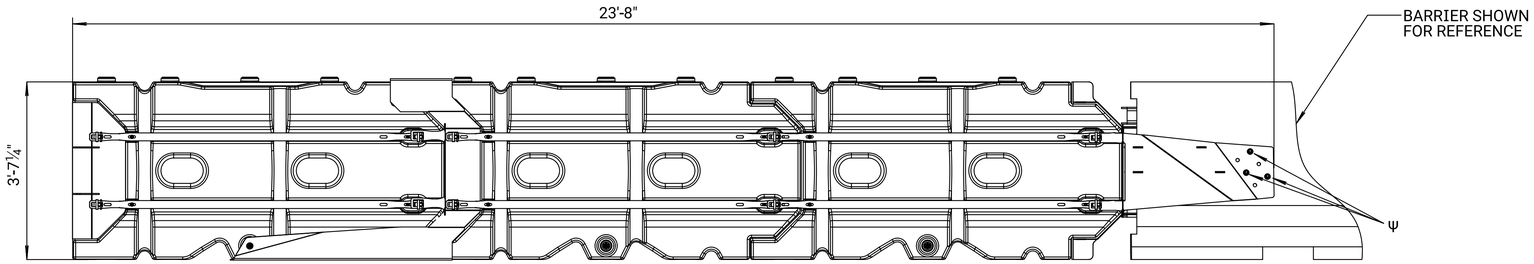
PLAN (TL2 ≤ 45 mph)



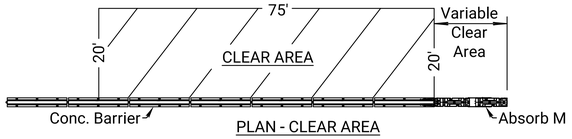
ELEVATION (TL2 ≤ 45 mph)



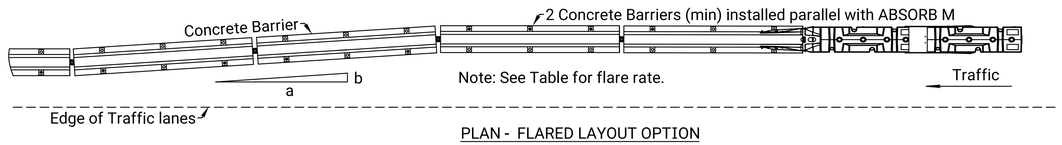
PLAN (TL3 > 45 mph)



ELEVATION (TL3 > 45 mph)



PLAN - CLEAR AREA



PLAN - FLARED LAYOUT OPTION

Design Parameters	
Design Speed (mph)	Flare Rate (a:b)
70	15:1
60	14:1
55	12:1
50	11:1
45	10:1
40	8:1

GENERAL NOTES

Details shown on this sheet for ABSORB-M are for Information Only and may not be an exact detail of ABSORB-M. See the Manufacturer's Installation Manual furnished to the Engineer for details of components and installation for the ABSORB-M.

ABSORB-M is an anchorless system designed to perform on a variety of foundations including concrete, asphalt, and any other surfaces capable of bearing the weight of the system with a maximum cross-slope of 8.0%. Contact the manufacturer for slopes greater than 8.0%.

The installation area should be flattened and free from large debris. The ABSORB-M system should be approximately parallel with the barrier or ℄ of merging barriers. Maintain a clear area 20' parallel from the back of barrier for a distance of 75' behind ABSORB-M Terminal Assembly free of stockpiled material, equipment, temporary signs or obstructions regardless of crash worthiness. Do not install Absorb-M Impact Attenuator in Narrow Medians, on Elevated Structures or where Clear Area can't be achieved.

The front element of the ABSORB-M system should be left empty, while the remaining system is to be filled with water. Installation in Kansas requires an anti-freeze solution to prevent the water from freezing. See the Manufacturer's Installation Manual for acceptable anti-freeze solutions.

The unit shown on this sheet abuts a barrier up to 24" wide. The ABSORB-M TL2 & TL3 can be connected to permanent or temporary saftey shape, constant slope, and other shapes of barriers up to 42" height. Refer to the Manufacturer's Installation Manual for these connections.

Ψ Anchorage holes must be drilled to depth as per the Manufacturer's Installation Manual and cleared of debris to achieve proper anchorage.

For system relocation information, see Manufacturer's Installation Manual.

All work and material required for installation of this attenuator shall be paid under the bid item "Impact Attenuator (Temporary)(TL-2 or TL-3)".

NO.	DATE	REVISIONS	BY	APP'D
01	04-15-22	Initial Release	A.L.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY IMPACT ATTENUATOR ABSORB-M

RD621A

FHWA APPROVAL	04-21-22	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-02-2022 Sh. No. 123

KDOT Graphics Certified

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:36
File : KA572901rss621a-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	124	141

Note to Designer: Report the quantity for temporary concrete safety barrier in linear feet.
The quantity is calculated by multiplying the number of barrier units by 12'-6".

SUMMARY OF QUANTITIES

LOCATION (ROUTE)	STATION (OR STATION RANGE)	SIDE	⊙ CONCRETE SAFETY BARRIER (TYPE F3) FLARE RATE (WHERE APPLICABLE)	TEMPORARY	TEMPORARY-RELOCATE	TEMPORARY-INSTALL ONLY	UNIT	IMPACT ATTENUATOR (TL-3) (TEMPORARY)	COMMENTS
PHASE 2									
K-63	48+00	LT						1	
K-63	48+00 to 48+25	LT		25			L.F.		
K-63	48+25 to 49+00	RT	14:1	75			L.F.		
K-63	49+00 to 85+00	RT		3,600			L.F.		
K-63	85+00 to 85+75	RT	14:1	75			L.F.		
K-63	85+75 to 86+00	LT		25			L.F.		
K-63	86+00	LT						1	
PHASE 3									
K-63	48+00	RT						✡ 1	
K-63	48+00 to 48+25	RT			25		L.F.		
K-63	48+25 to 49+00	LT	14:1		75		L.F.		
K-63	49+00 to 85+00	LT			3,600		L.F.		
K-63	85+00 to 85+75	LT	14:1		75		L.F.		
K-63	85+75 to 86+00	RT			25		L.F.		
K-63	86+00	RT						✡ 1	
			TOTALS	3,800	3,800			2	

⊙ The quantity reported does not include the 3⅝" gap between 12'-6" sections of barrier. The 3⅝" gap will not be included in the pay length for Concrete Safety Barrier (Type F3) (Temporary).
✡ Relocated from Phase 2.
See the Summary of Quantities on Sheet No. 67 for Recap of Temporary Concrete Safety Barrier and End Treatments.

Design Parameters	
Design Speed (mph)	Flare Rate (a:b)
70	15:1
60	14:1
55	12:1
50	11:1
45	10:1
40	8:1
30	7:1

Note: The flare rates listed here apply only to temporary concrete safety barrier installations. See temporary concrete safety barrier layouts included in the plans for variations. Typical alternate flare rates may be used as approved by the Engineer.

NO.	DATE	REVISIONS	BY	APP'D
01	02-11-15	Initial Release	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

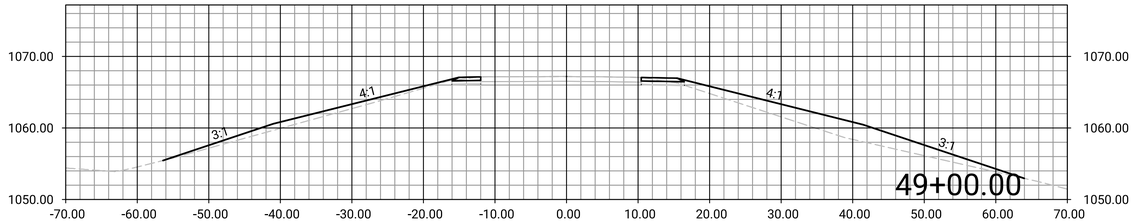
SUMMARY OF QUANTITIES
TEMPORARY CONCRETE SAFETY BARRIER AND END TREATMENTS

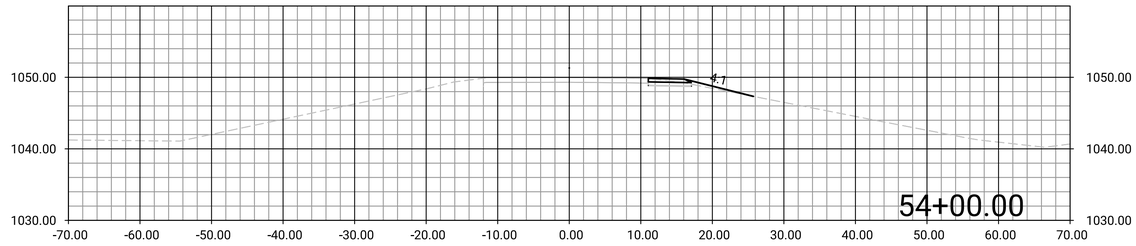
~~RD052~~

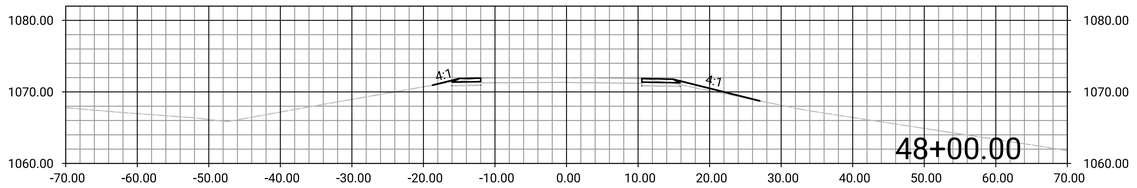
FHWA APPROVAL	09-16-15	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

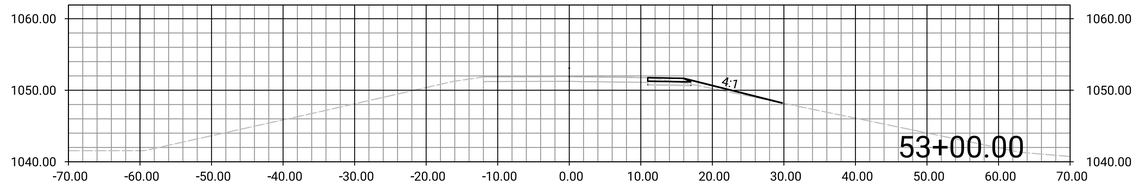
CADconform Certify This File

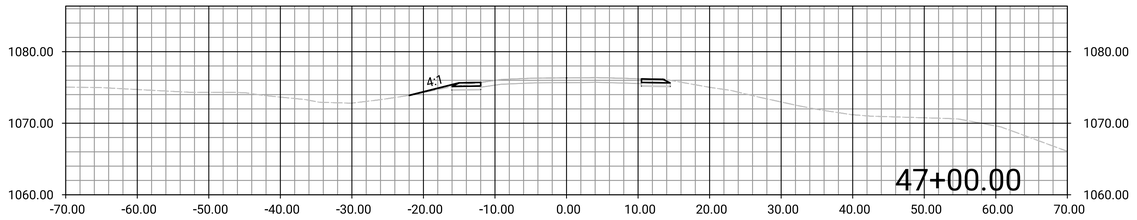
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	125	141

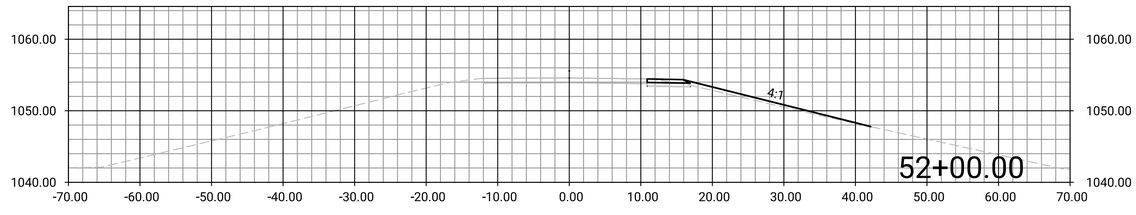


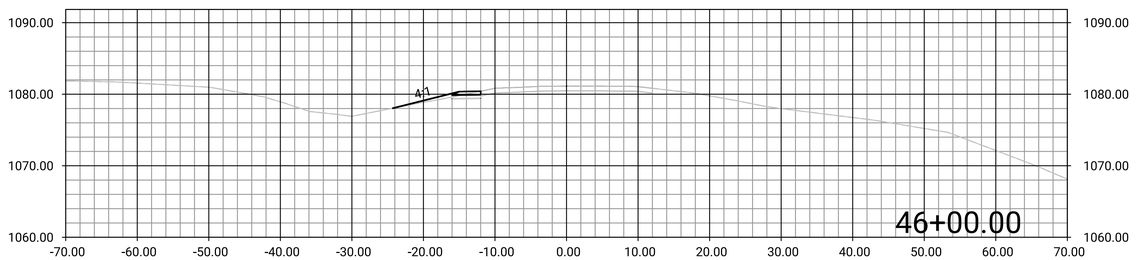


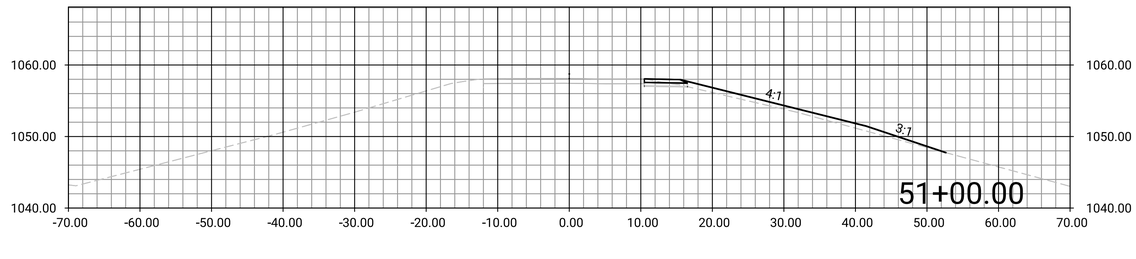


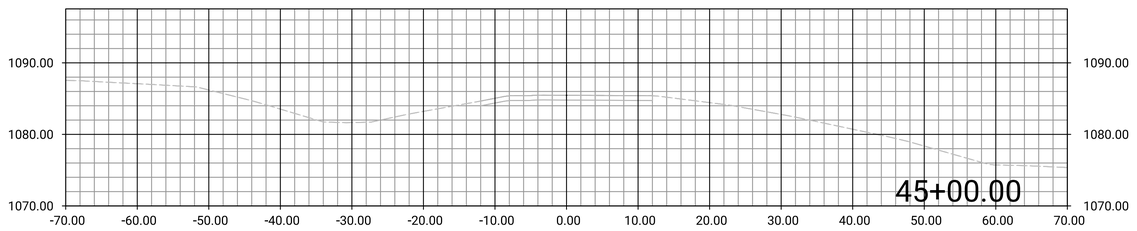


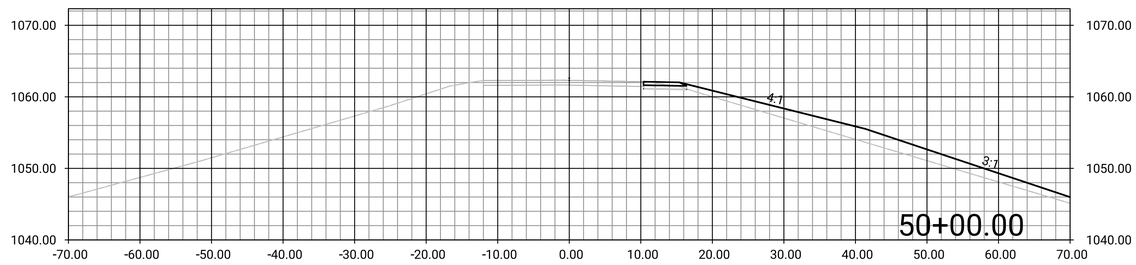










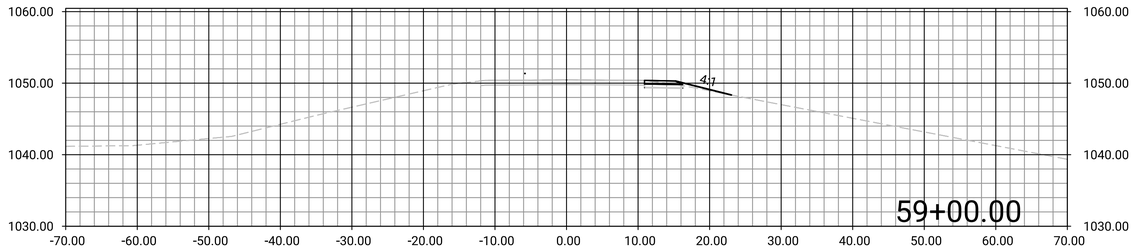


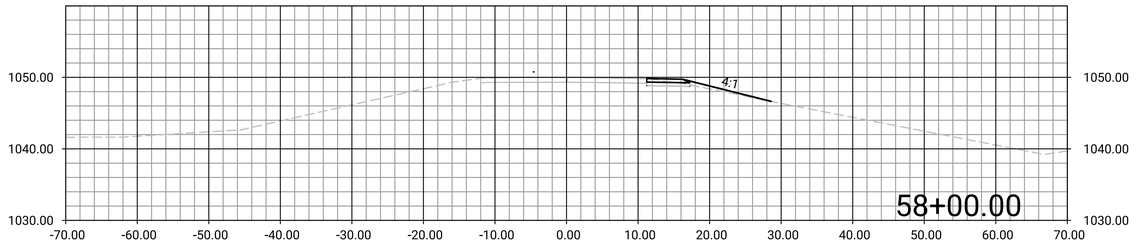
TEMPORARY WIDENING
STA. 45+00 TO STA. 54+00
SCALE 1:10

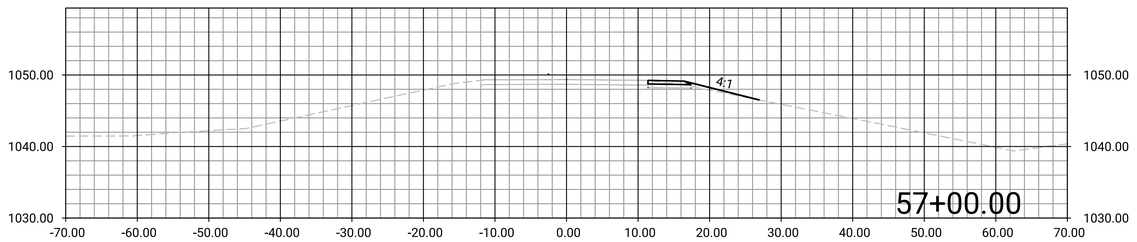
DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

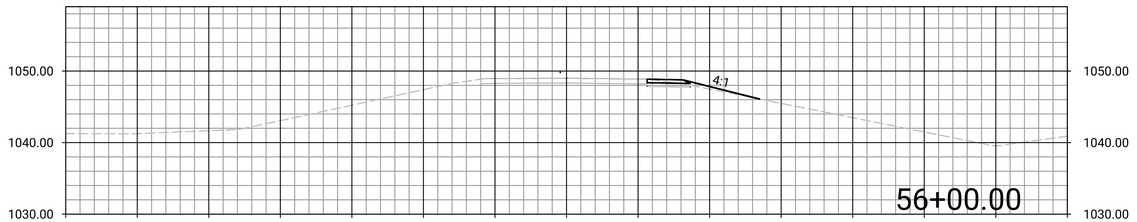
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:27
File : KA572901rco-00.dgn

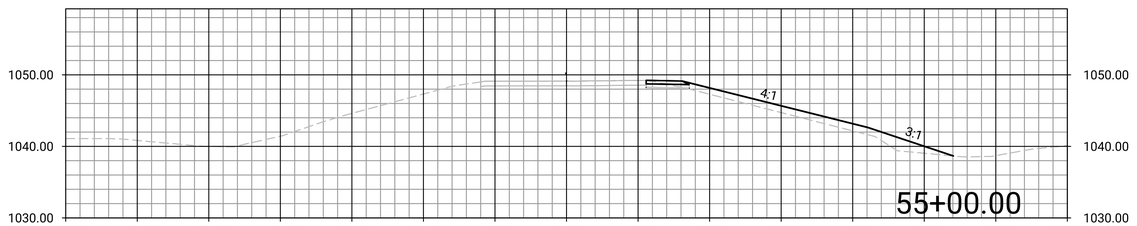
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	126	141

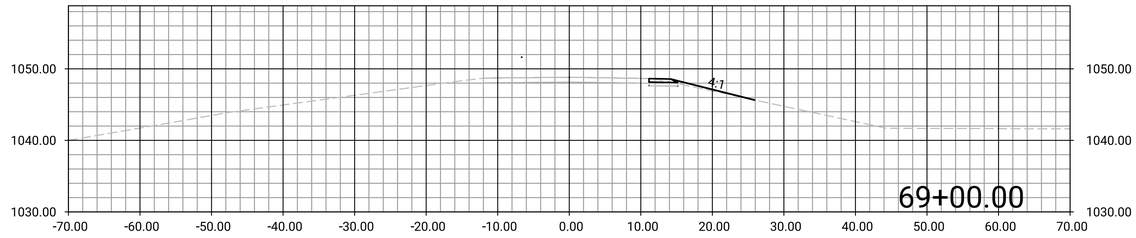


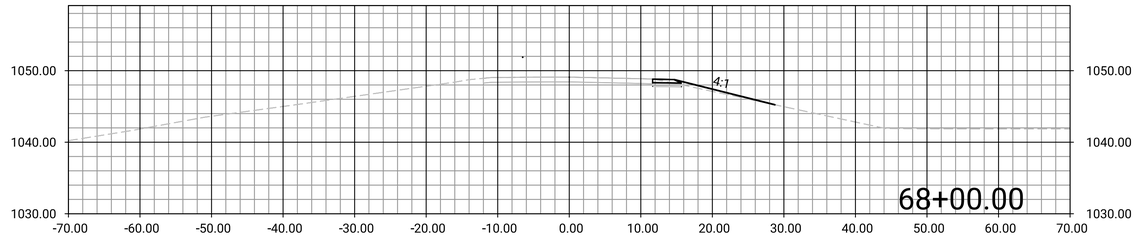


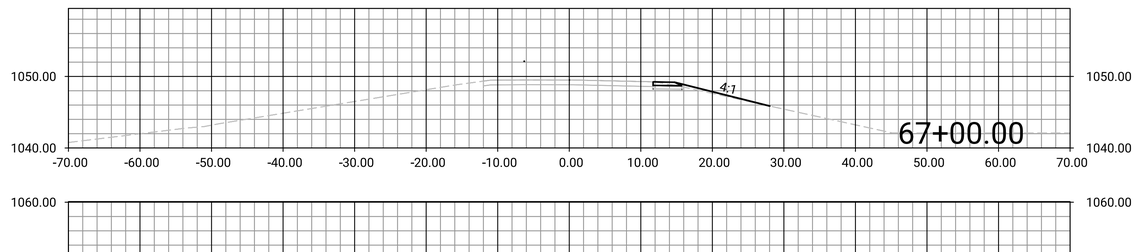


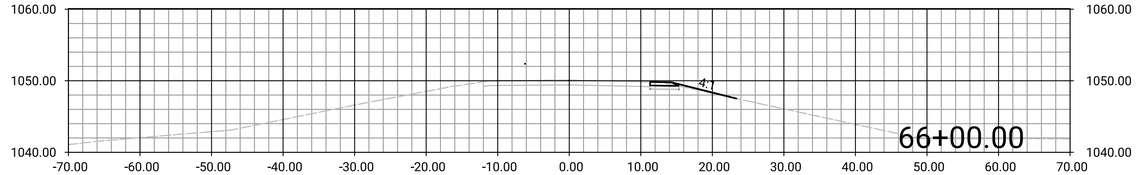


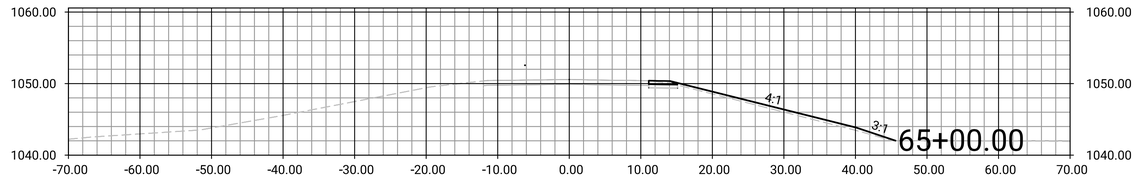


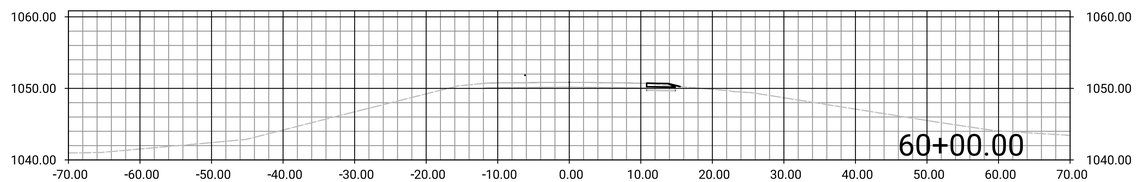










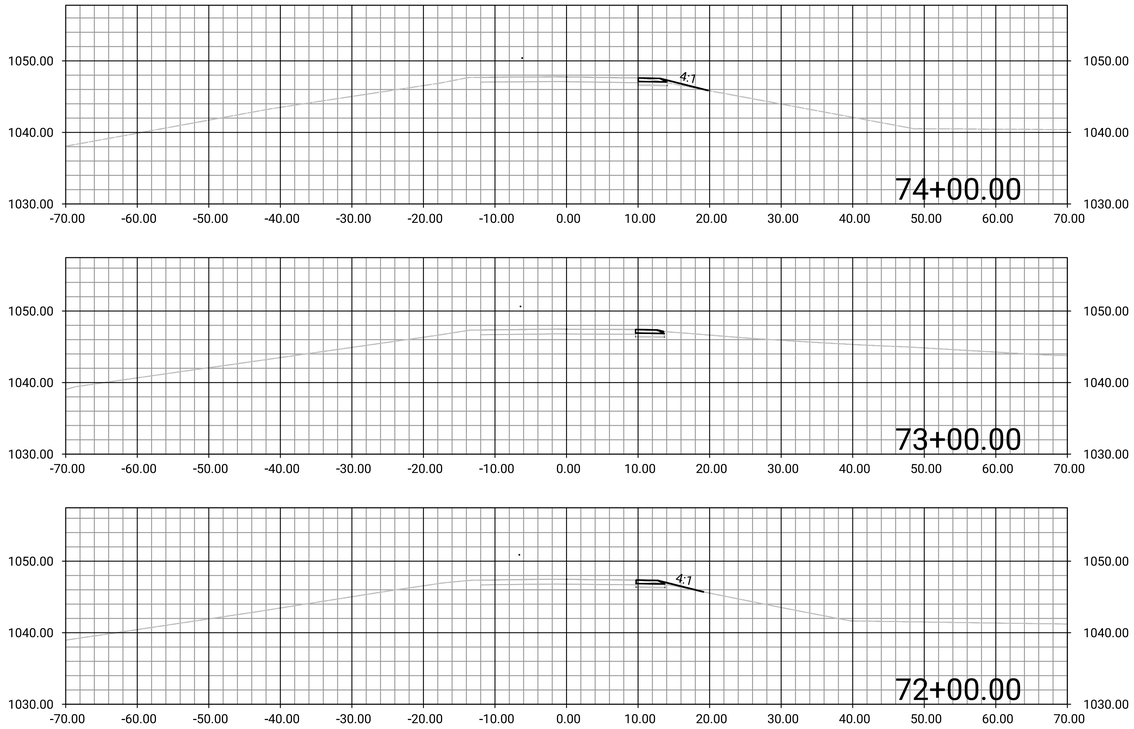


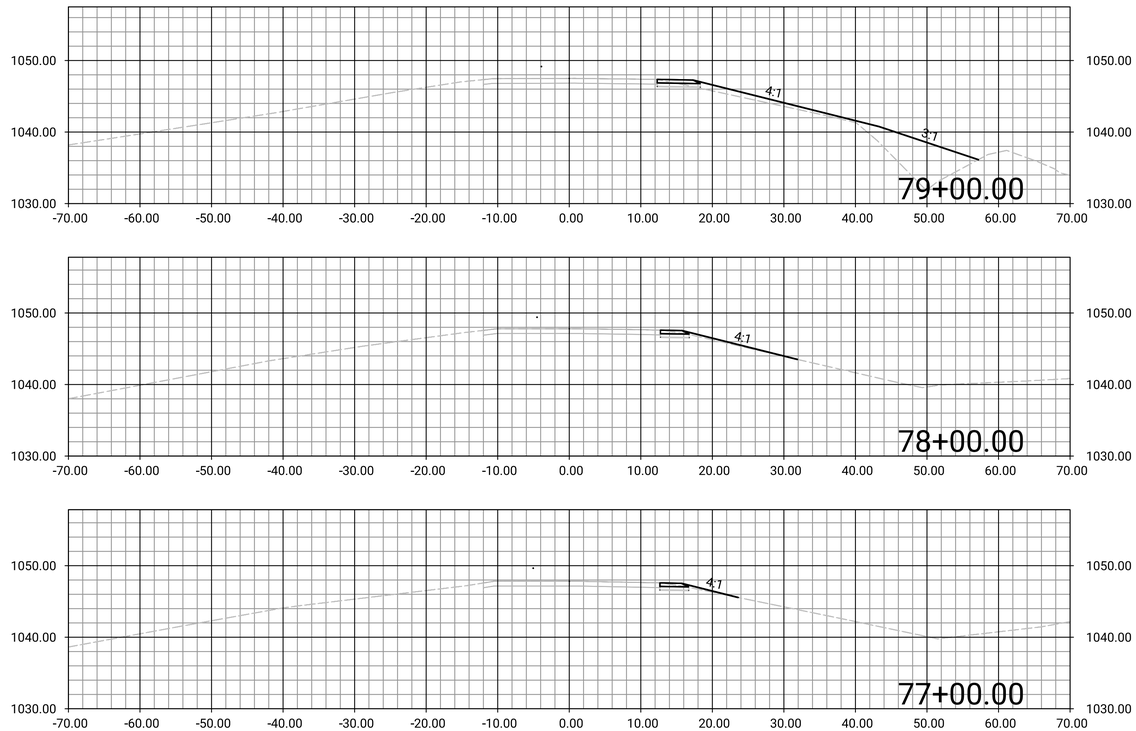
TEMPORARY WIDENING
STA. 55+00 TO STA. 69+00
SCALE 1:10

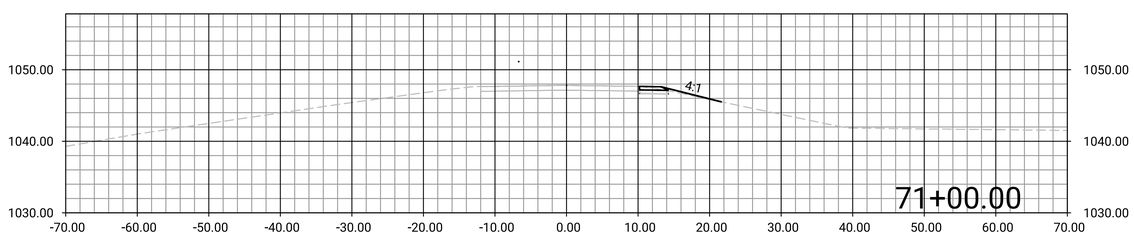
DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

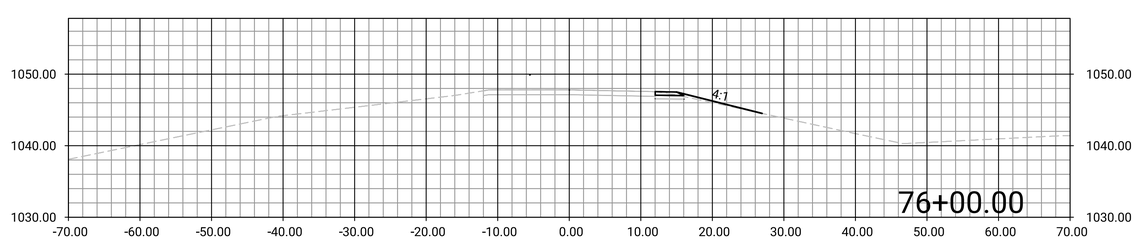
Plotted by: Brogan.Andrews@ks.gov 16-APR-2024 17:28
File : KA572901rco-00.dgn

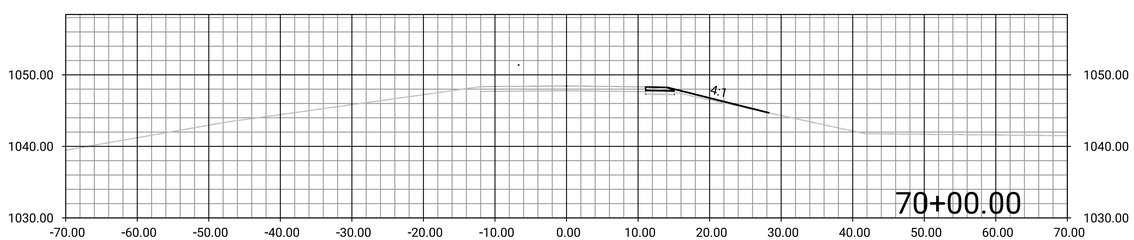
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	127	141

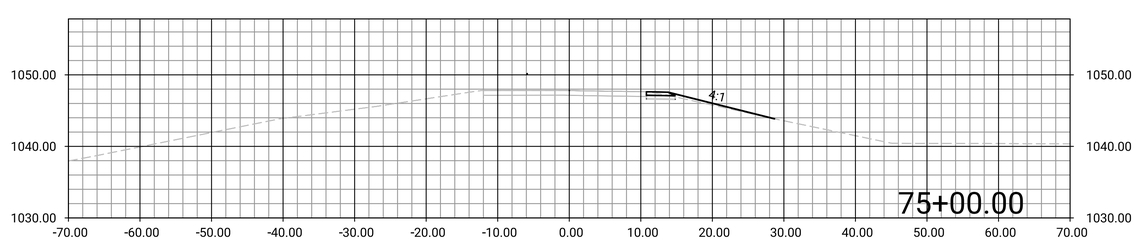










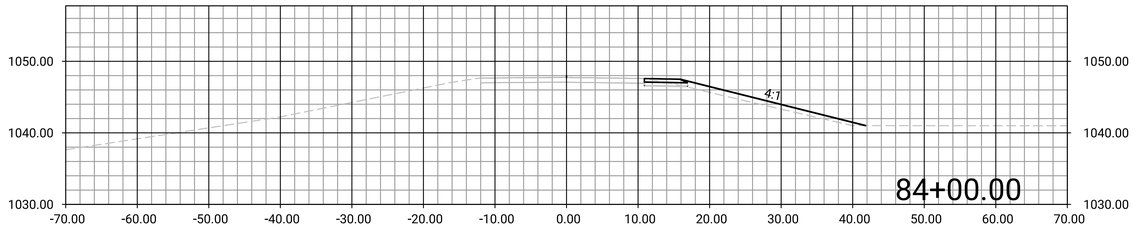


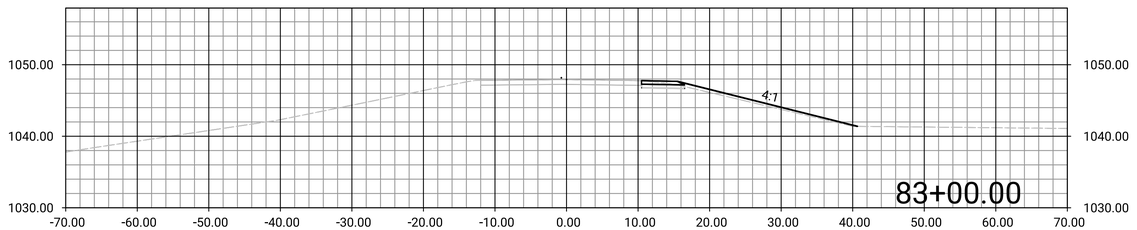
TEMPORARY WIDENING
STA. 70+00 TO STA. 79+00
SCALE 1:10

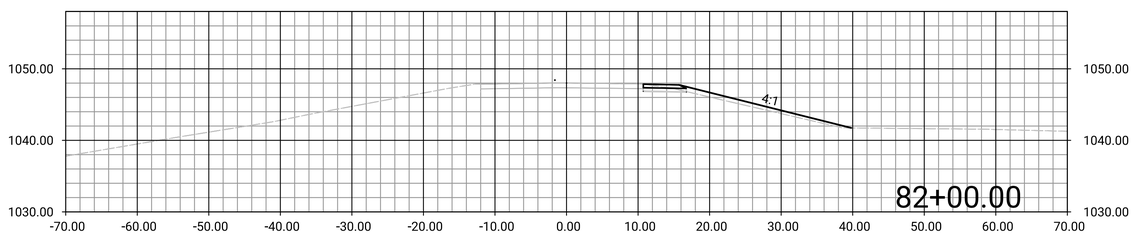
BY	DATE
REFERENCES NOTED	
REFERENCES CHECKED	

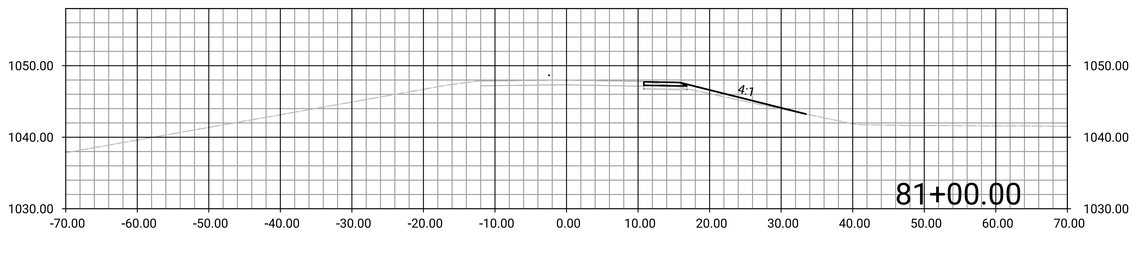
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:29
File : KA572901rco-00.dgn

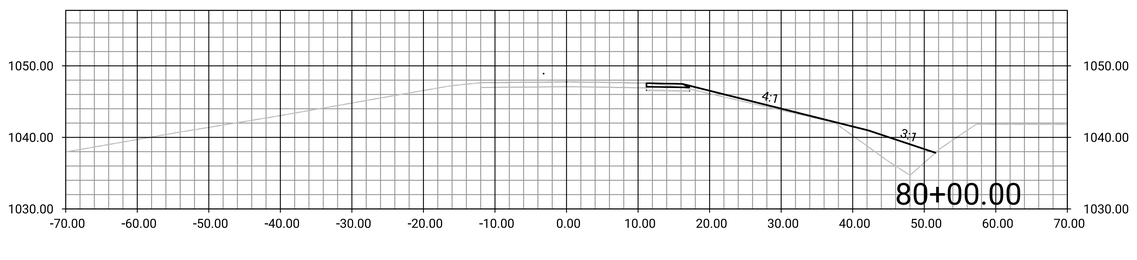
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	128	141

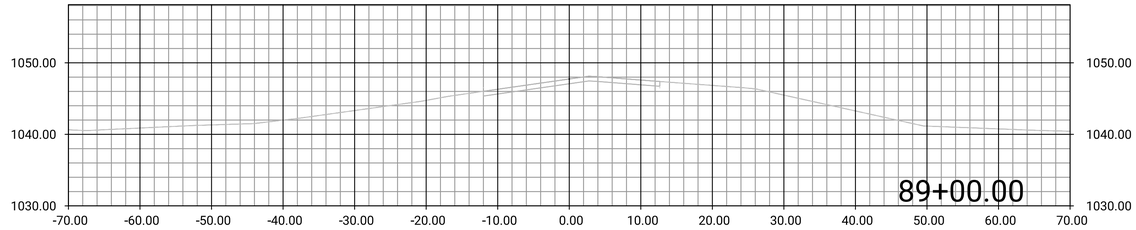


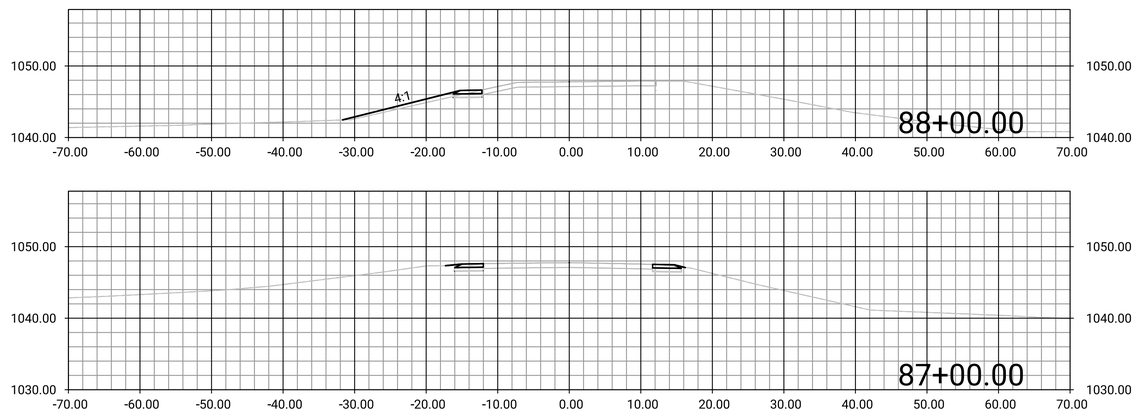


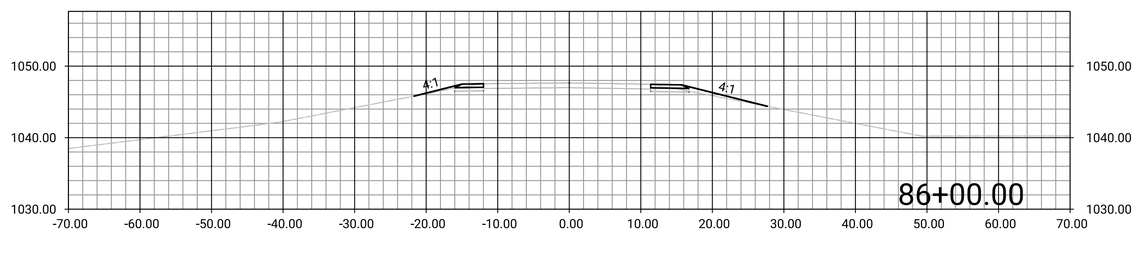


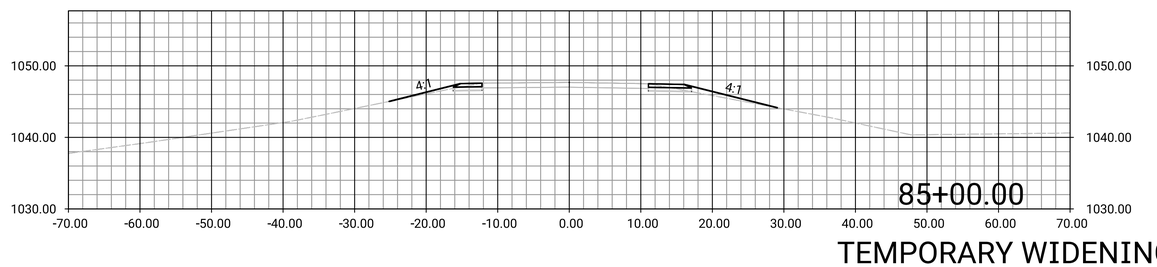










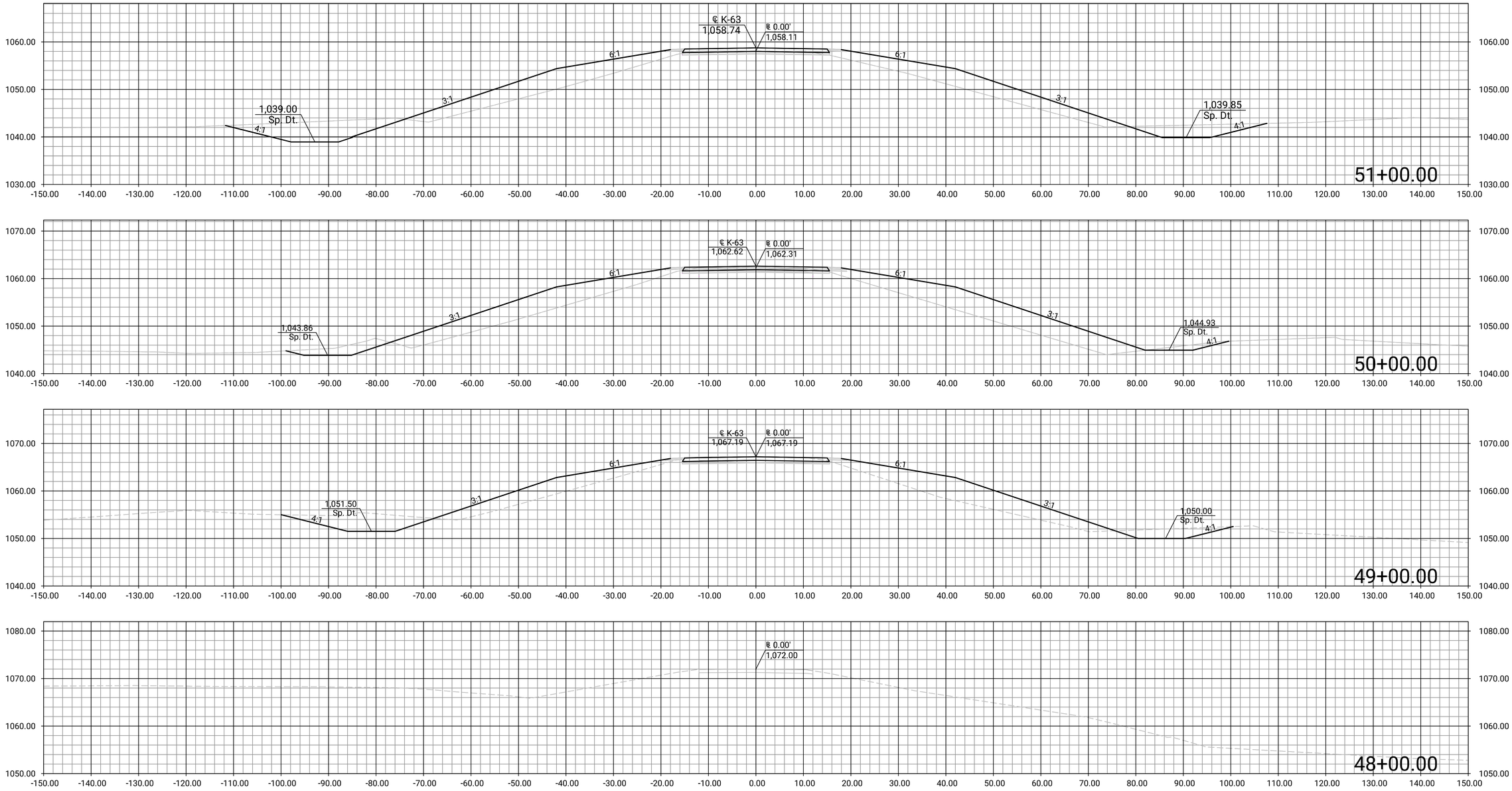


TEMPORARY WIDENING
STA. 80+00 TO STA. 89+00
SCALE 1:10

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:29
File : KA572901rco-00.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	129	141

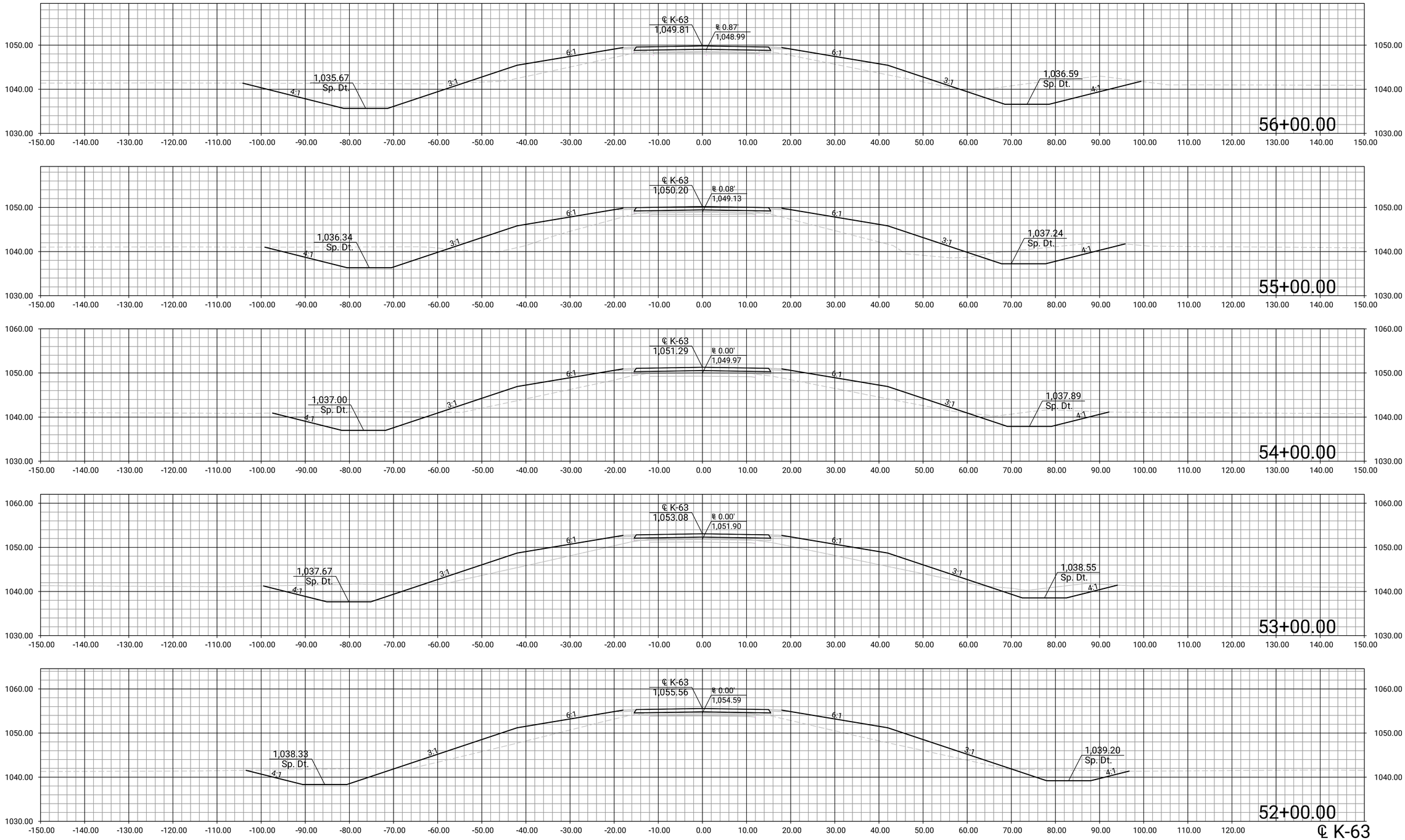


℄ K-63
STA. 48+00 TO 51+00
SCALE 1:10

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:33
File : KA572901rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	130	141

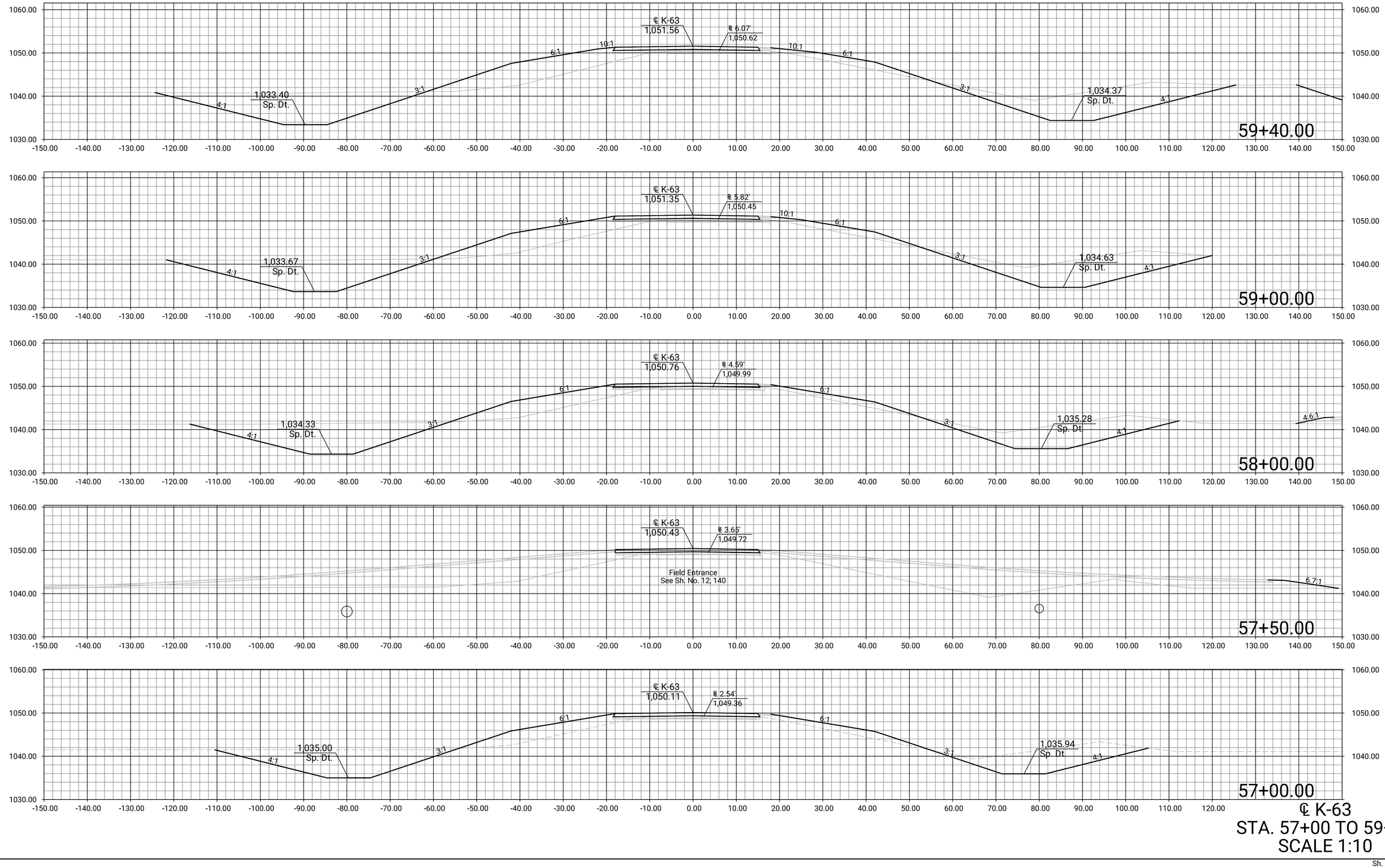


℄ K-63
STA. 52+00 TO 56+00
SCALE 1:10

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:34
File : KA572901rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	131	141

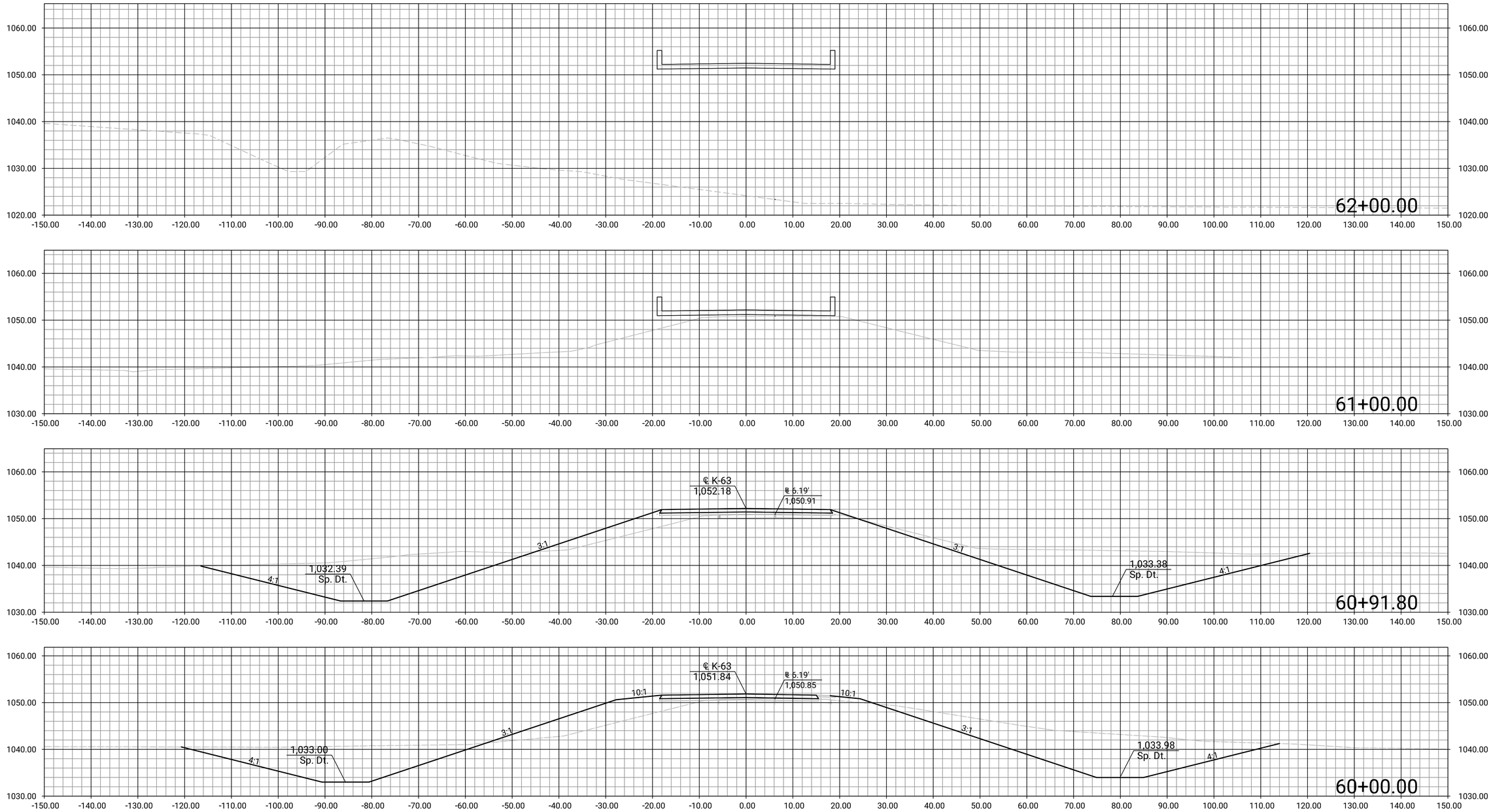


DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:34
File : KA572901rxs-01.dgn

℄ K-63
STA. 57+00 TO 59+40
SCALE 1:10

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	132	141

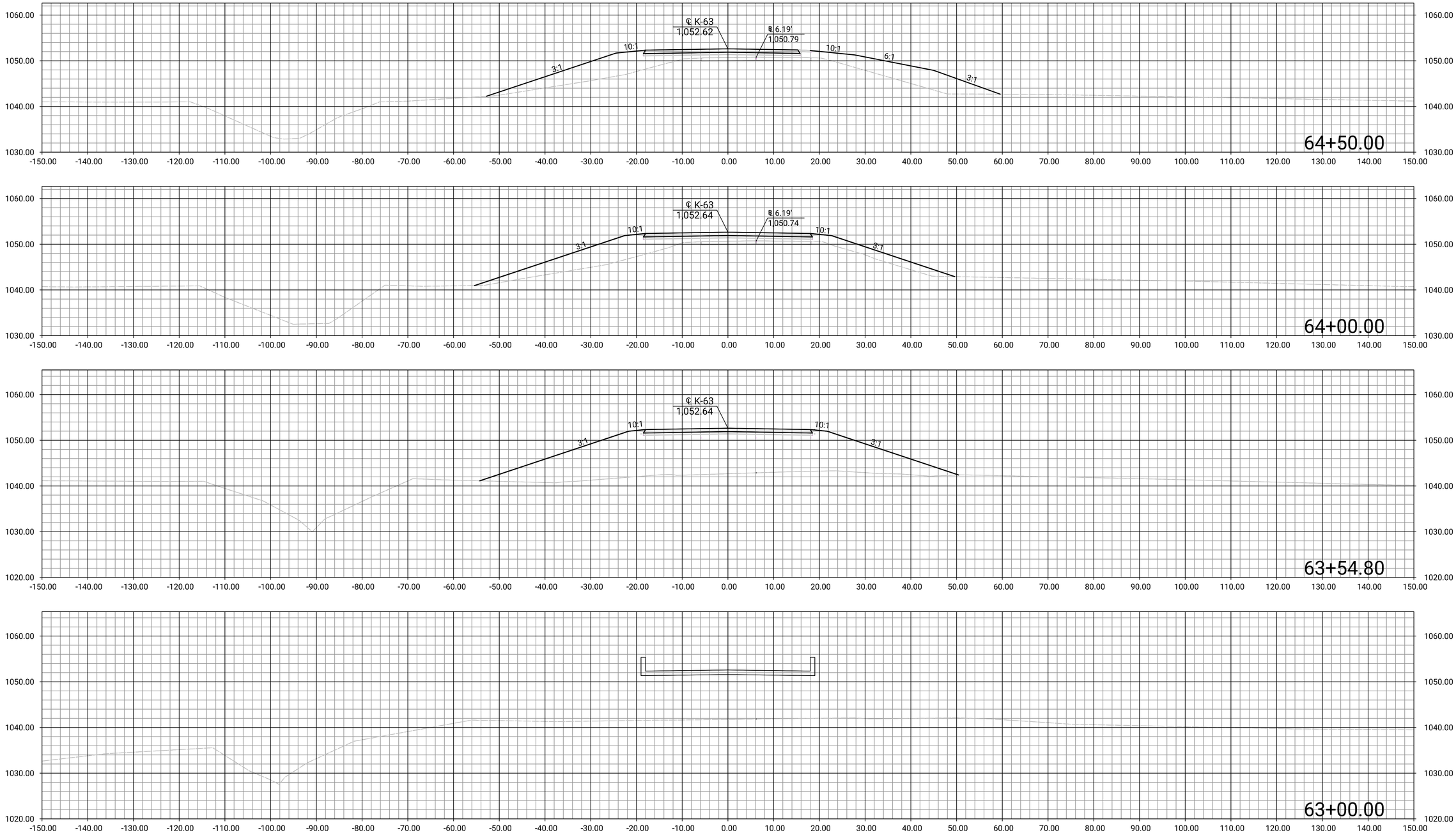


℄ K-63
STA. 60+00 TO 62+00
SCALE 1:10

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by: Brogan.Andrews@ks.gov 16-APR-2024 17:35
File : KA572901rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	133	141

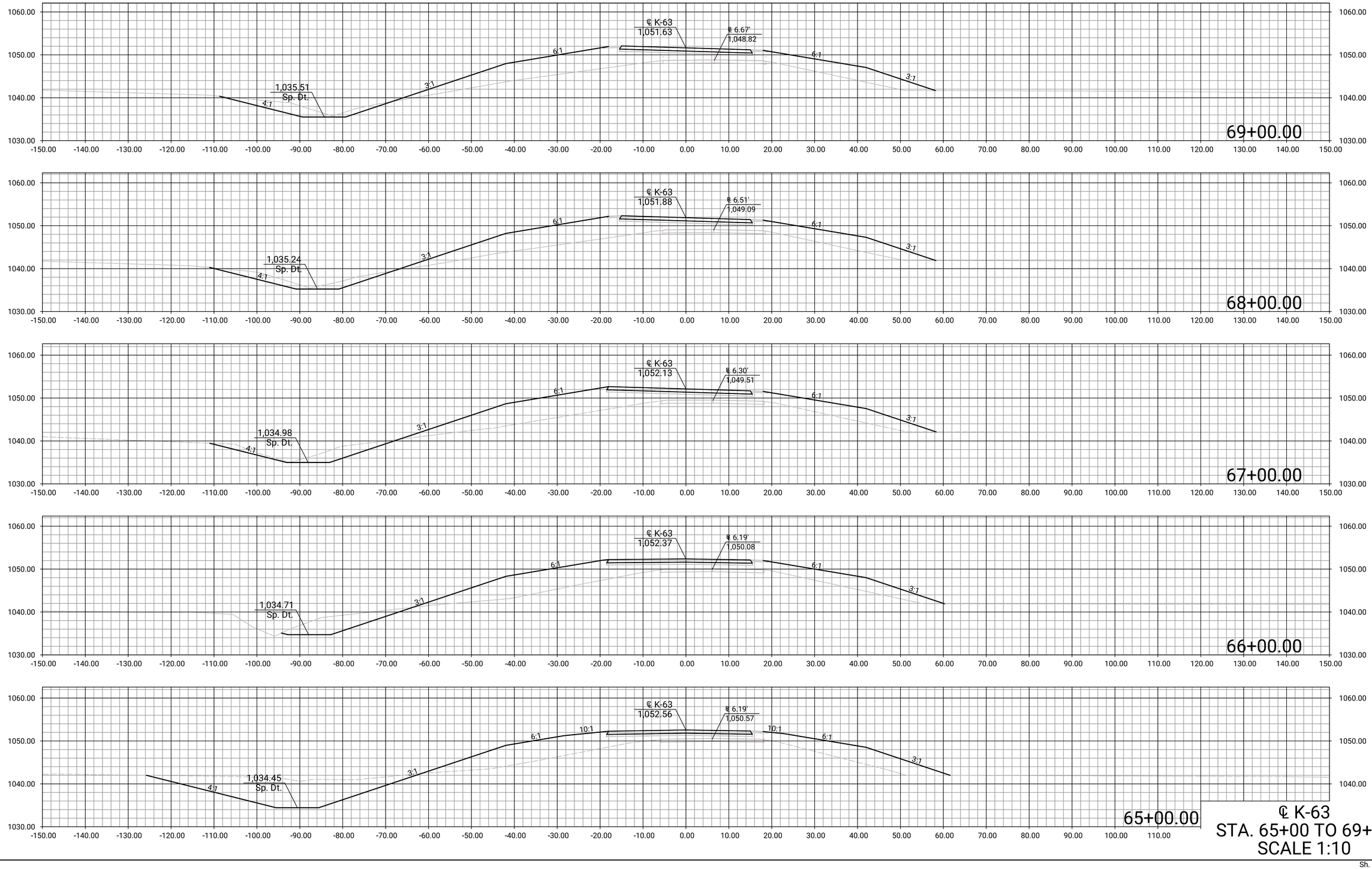


DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:35
File : KA572901rxs-01.dgn

℄ K-63
STA. 63+00 TO 64+50
SCALE 1:10

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	134	141

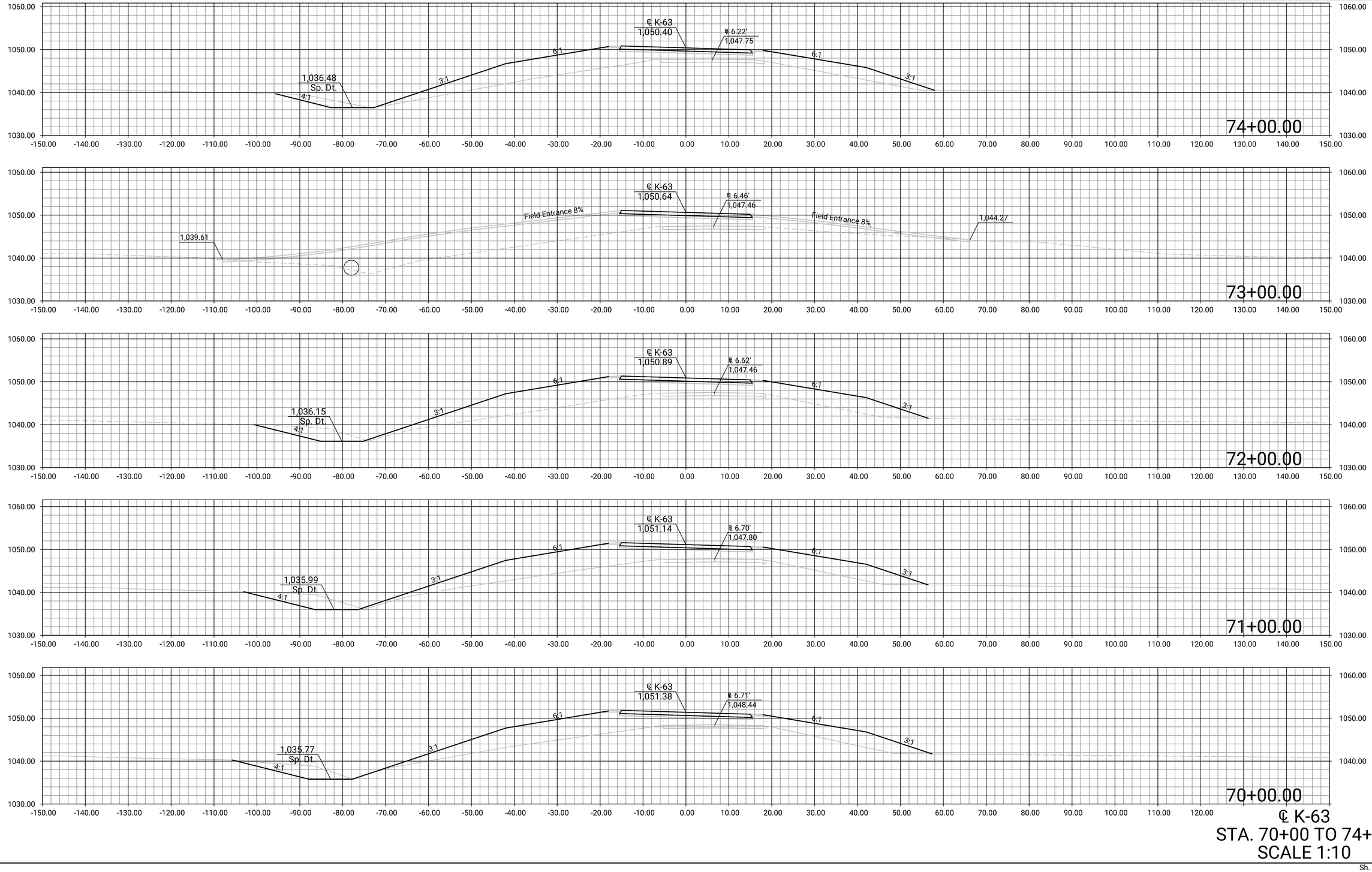


DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:35
File : KA572901rxs-01.dgn

℄ K-63
STA. 65+00 TO 69+00
SCALE 1:10

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	135	141



℄ K-63
STA. 70+00 TO 74+00
SCALE 1:10

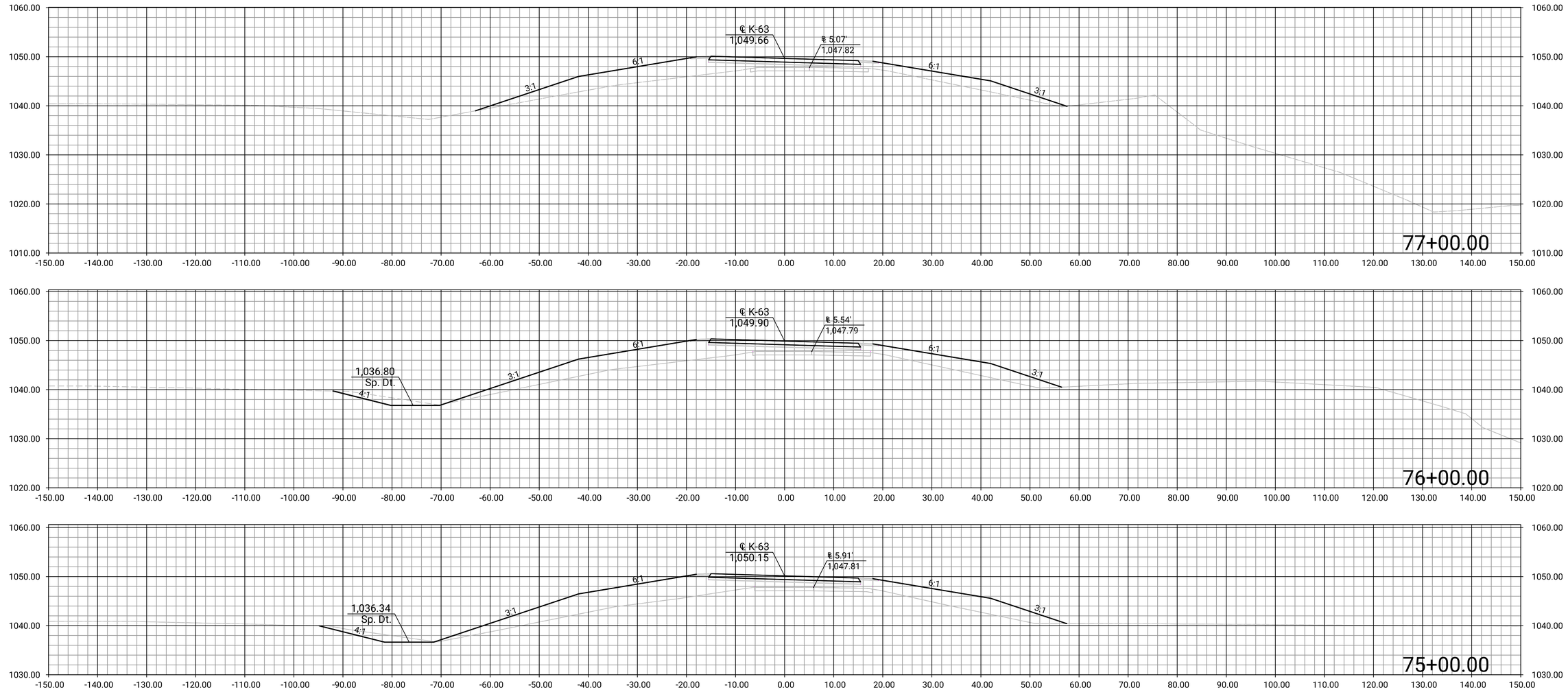
Sh. No. 135

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:36
File : KA572901rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	136	141

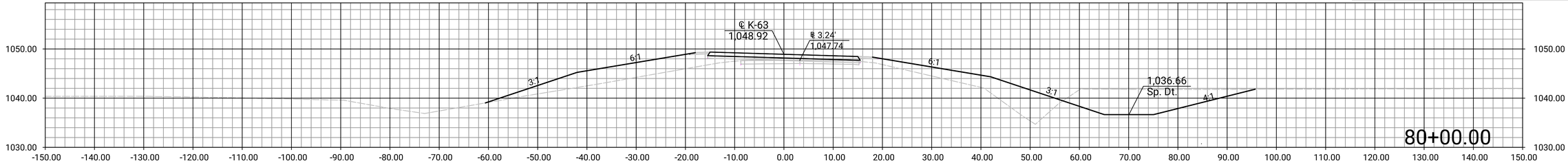
DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

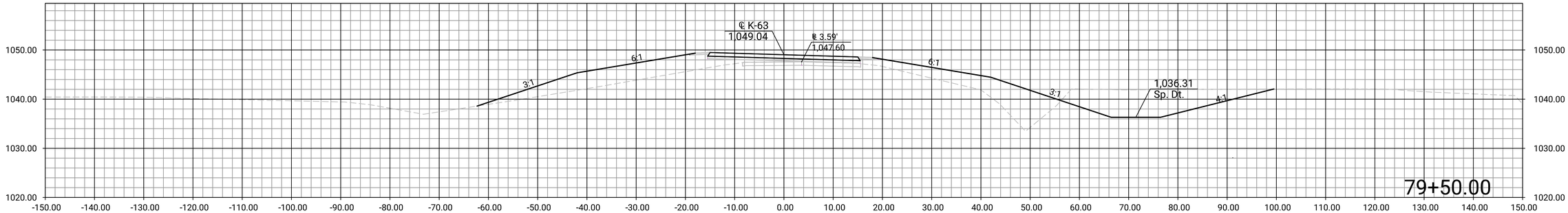


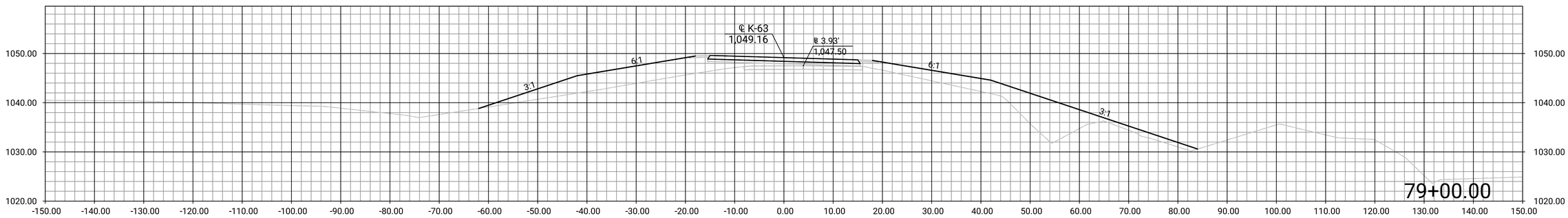
℄ K-63
STA. 75+00 TO 77+00
SCALE 1:10

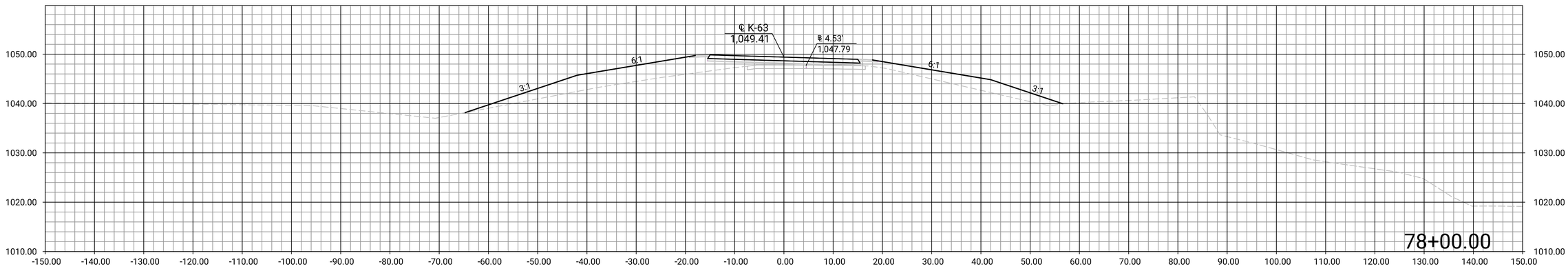
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:36
File : KA572901rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	137	141







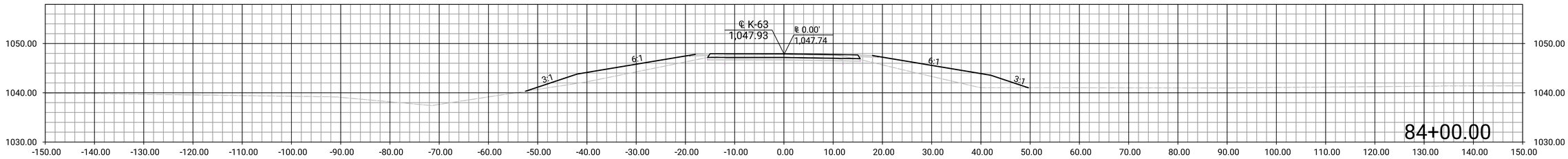


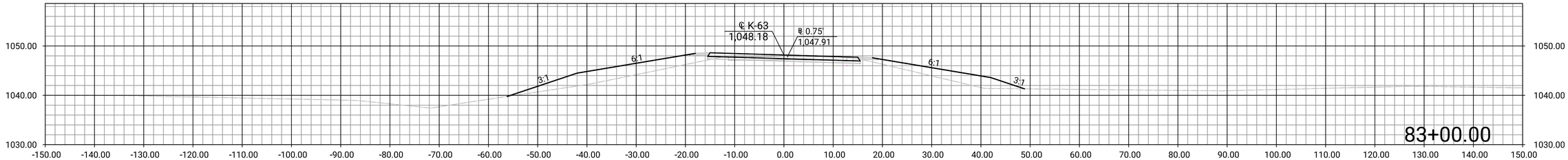
℄ K-63
STA. 78+00 TO 80+00
SCALE 1:10

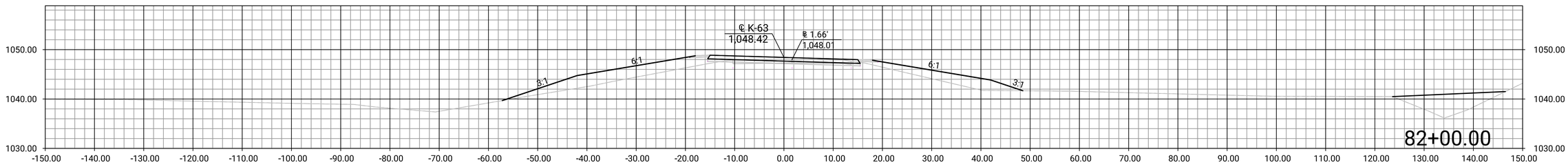
DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

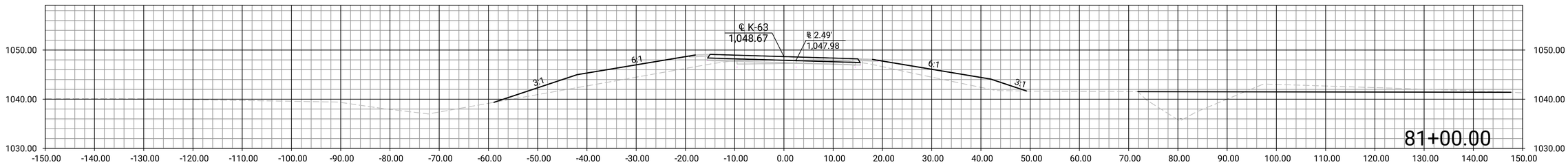
Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:37
File : KA572901rxs-01.dgn

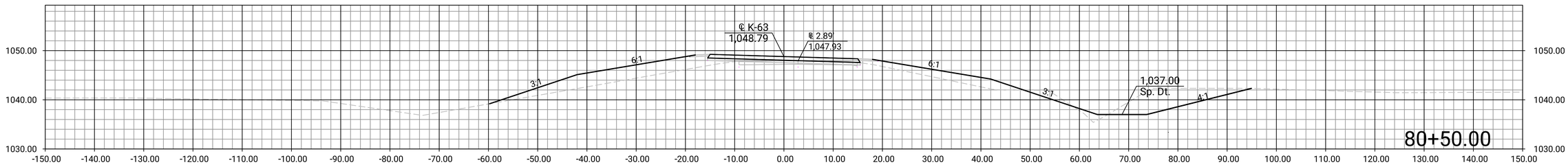
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	138	141











℄ K-63
STA. 80+50 TO 84+00
SCALE 1:10

DATE
BY
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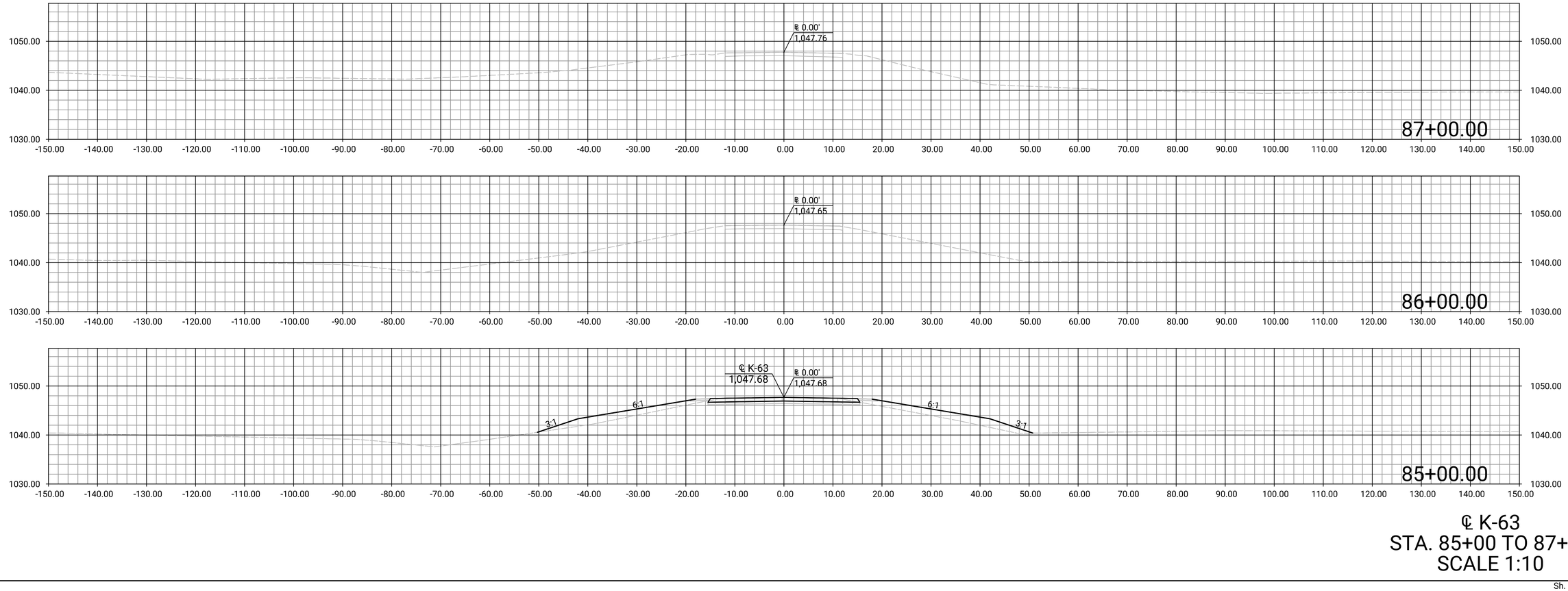
REFERENCES CHECKED

Plotted by : Brogan.Andrews@ks.gov 16-APR-2024 17:37
File : KA572901rxs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	139	141

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



℄ K-63
STA. 85+00 TO 87+00
SCALE 1:10

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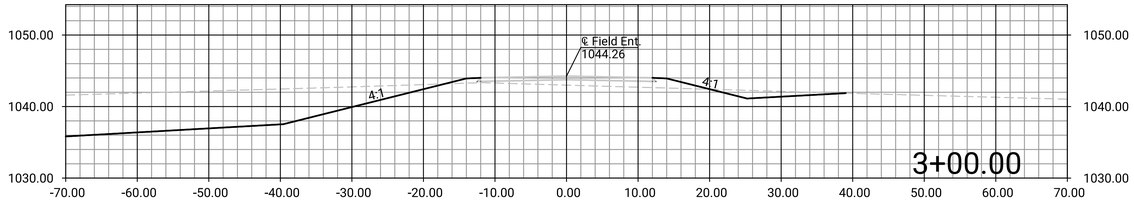
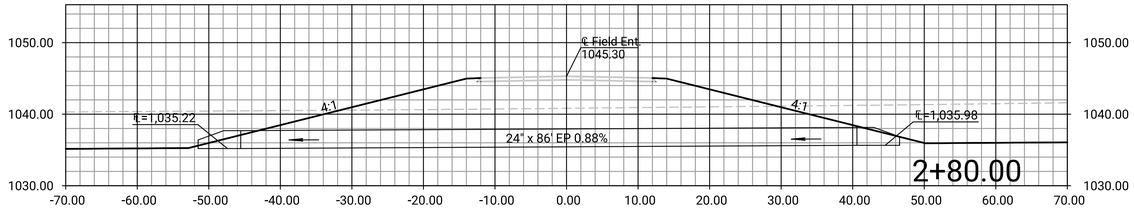
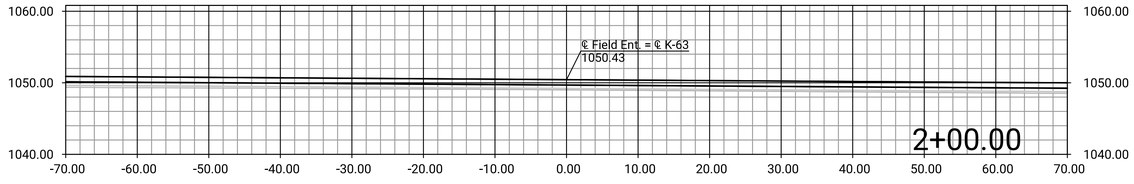
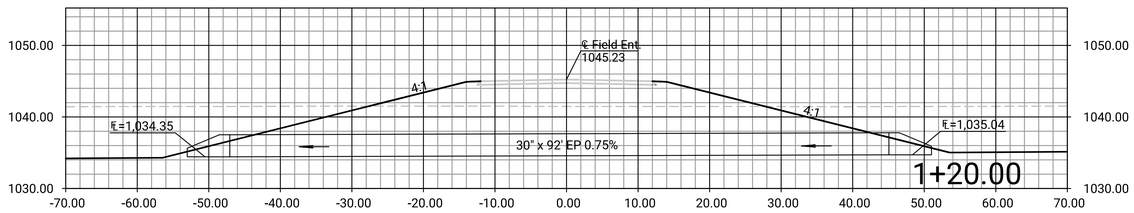
File : KA572901rxs-01.dgn

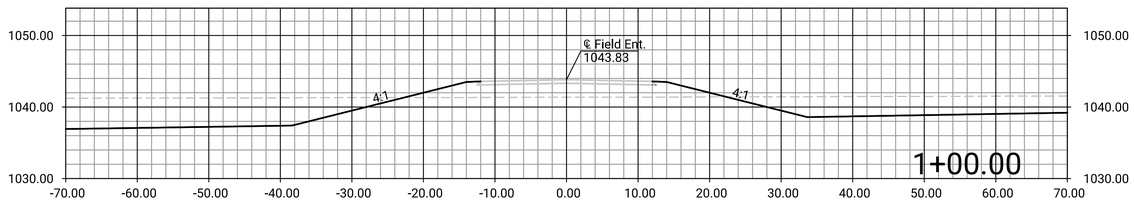
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	140	141

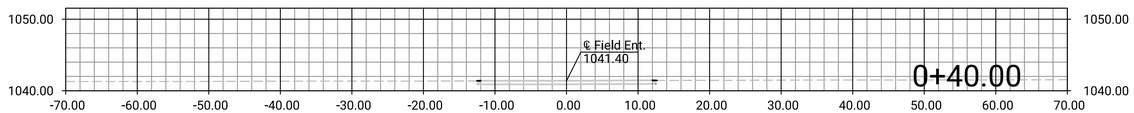


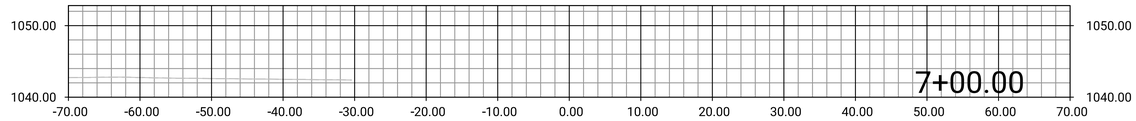


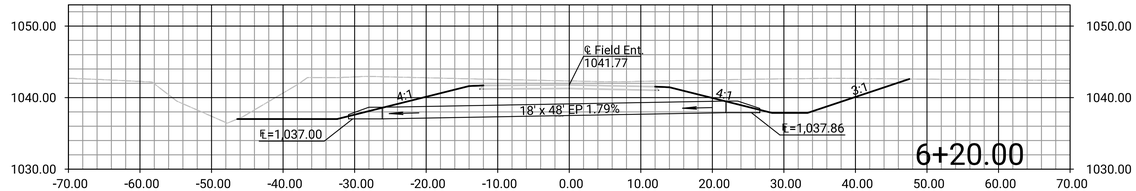


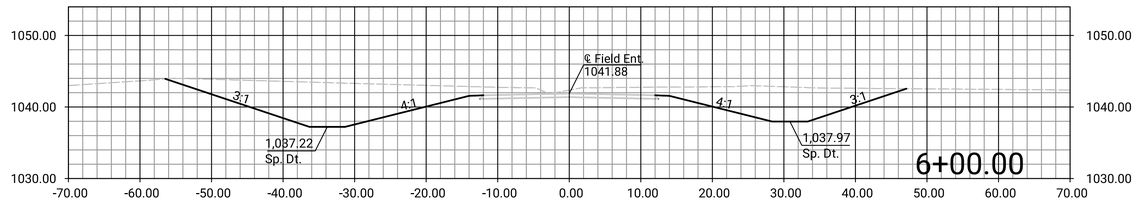


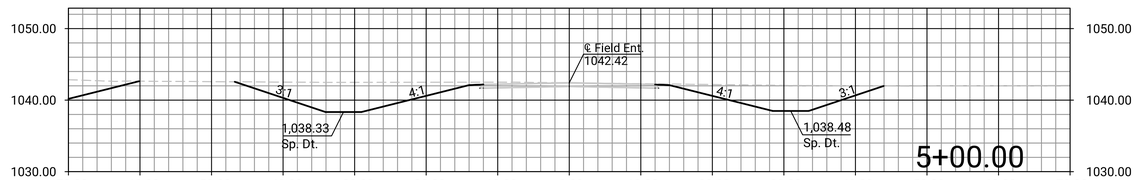


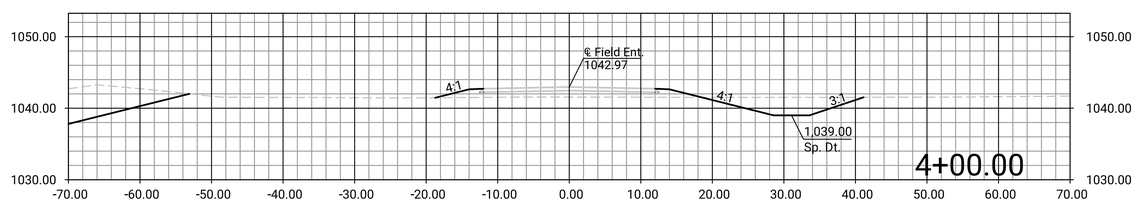












FIELD ENTRANCE
STA. 0+40 TO STA. 7+00
SCALE 1:10

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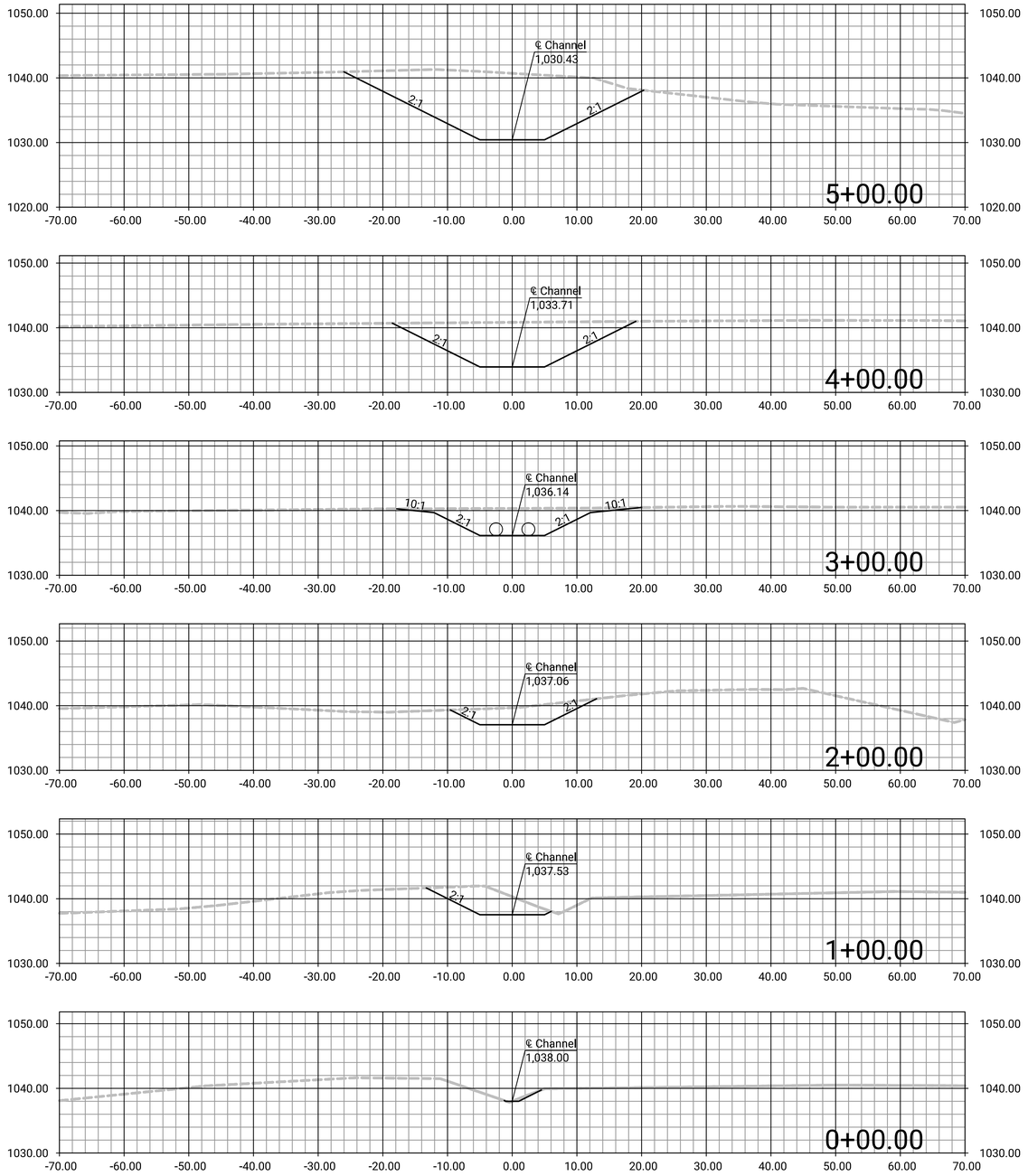
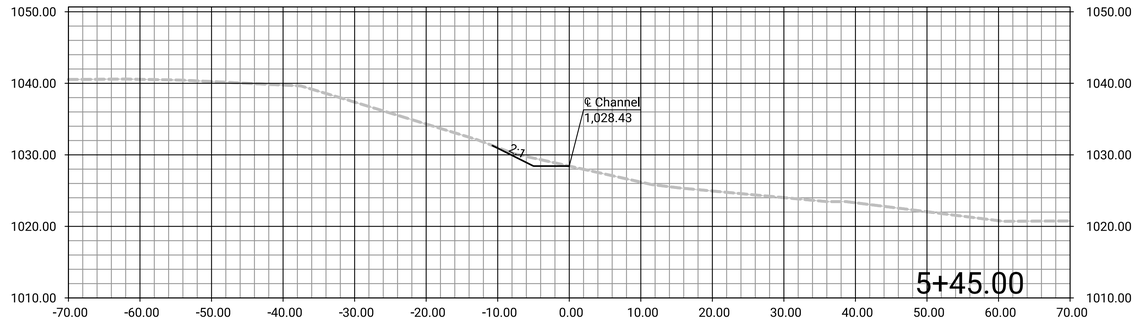
File : KA572901rco-04.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	63-66 KA-5729-01	2024	141	141





CHANNEL REALIGNMENT
STA. 0+00 TO STA. 5+45
SCALE 1:10

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

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File : KA572901rco-05.dgn