STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	1	161

STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

PROJ. NO. 81–96 KA–5772–01
FED PROJ. NO. BRF–A577(201)

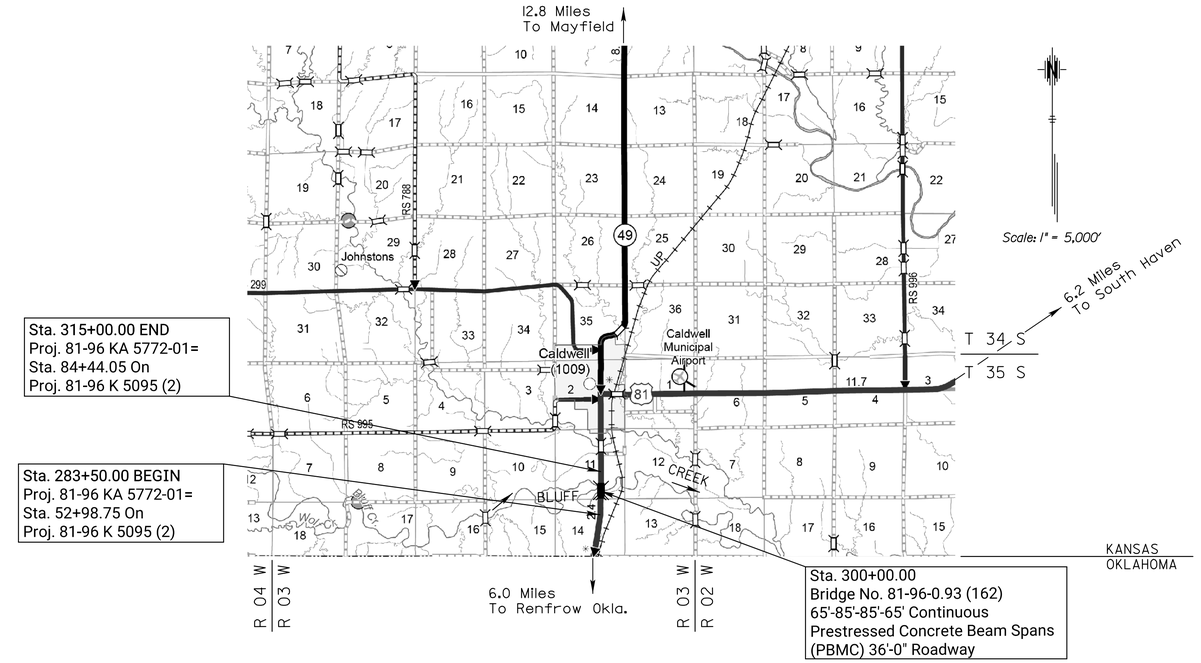
PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

FEDERAL AID PROJECT
SUMNER COUNTY
US–81

GRADING & SURFACING (ASPHALT)
BRIDGE
SEEDING
SIGNING
PAVEMENT MARKING

INDEX OF SHEETS

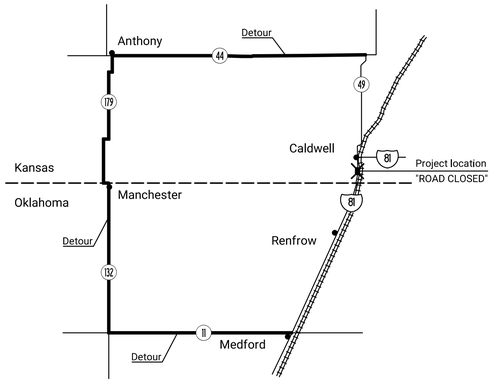
1	Title Sheet
2	Signature Seal Sheet
3 - 4	Typical Sections
5	Foundation Treatment & Compaction of Earthwork
6	Salvaged Topsoil
7 - 10	Plan & Profile
11	Right of Way Monument Installation Detail
12 - 14	Pavement Details
15 - 22	Guardrail
23	Slope Protection Details
24 - 29	End Sections
30	Miscellaneous Pipe Culvert Details
31	Pipe Culvert Summary
32 - 34	Culverts
35 - 62	Bridge No. 81-96-0.93 (162)
63	Bridge Excavation
64	Standard Pile Details
65	Supports and Spacers for Reinforcing Steel
66 - 67	Summary of Quantities
68	Project Surfacing
69 - 80	Temporary Erosion and Pollution Control
81	Seeding
82 - 85	Pavement Marking
86 - 105	Signing
106	Construction Sequence
107 - 130	Traffic Control
131 - 135	Concrete Safety Barrier (Temporary)
136	Inertial Barrier
137 - 161	Cross Sections



Sta. 315+00.00 END
Proj. 81-96 KA 5772-01=
Sta. 84+44.05 On
Proj. 81-96 K 5095 (2)

Sta. 283+50.00 BEGIN
Proj. 81-96 KA 5772-01=
Sta. 52+98.75 On
Proj. 81-96 K 5095 (2)

Sta. 300+00.00
Bridge No. 81-96-0.93 (162)
65'-85'-85'-65' Continuous
Prestressed Concrete Beam Spans
(PBMC) 36'-0" Roadway



NOTE:
Traffic to be carried around construction on existing highway and state detour route. The detour route shall be K-49, K-44, K-179, O-132 and O-11. See Sh. No. 106 for construction sequencing.

DESIGN DESIGNATION

AADT (2024) = 1100
AADT (2044) = 1400
DHV = 11%
D = 65%
T = 29%
V = 70 MPH
C of A = NONE
CLEAR ZONE = 26'

CONVENTIONAL SIGNS

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

GROSS LENGTH OF PROJECT	3150.00 FT. (Includes Equations)		
EXCEPTIONS	NONE		
NET LENGTH OF PROJECT	3150.00 FT.	0.596	MILES
NET LENGTH OF BRIDGES	303.00 FT.	0.057	MILES
NET LENGTH OF ROAD	2847.00 FT.	0.539	MILES

PLANS PREPARED BY :
WSP

Approved: Aug 16, 2024
Date

State Transportation Engineer

By:
Chief, Bureau of Road Design

KANSAS DEPARTMENT OF TRANSPORTATION

	BY	DATE
SURVEY	J. LILAK - BARTLETT & WEST, INC.	4/2021
CADD TECHNICIAN	G. BAKER, D. WILLIAMS - WSP	1/2024
DESIGNERS	A. HAMADA (BRIDGE) T. VOTH (ROAD) - WSP	1/2024
	S. SCHWENSEN (BRIDGE), S. BASS (ROAD) - KDOT	1/2024

Plotted : 8/16/2024
Drawn By :
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201_sht_plan.dgn

KDOT Graphics Certified 08-15-2024

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	2	161

 Name: Abdel Hamada Co. Name: WSP USA, Inc. Plan Section: 1, 2, 12-14, 32-65	 Name: Tyler Voth Co. Name: WSP USA, Inc. Plan Section: 3-11, 15-31, 66-81, 106-114, 122-161	 Name: Daniela Gonzales Co. Name: WSP USA, Inc. Plan Section: 82-105, 115-121					

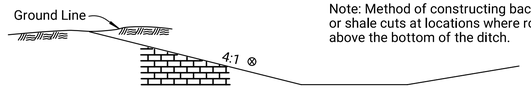
KANSAS DEPARTMENT OF TRANSPORTATION

Signature Seal Sheet

RD048

KDOT Graphics Certified

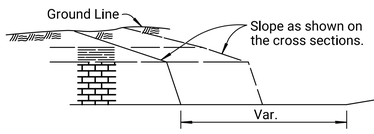
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	3	161

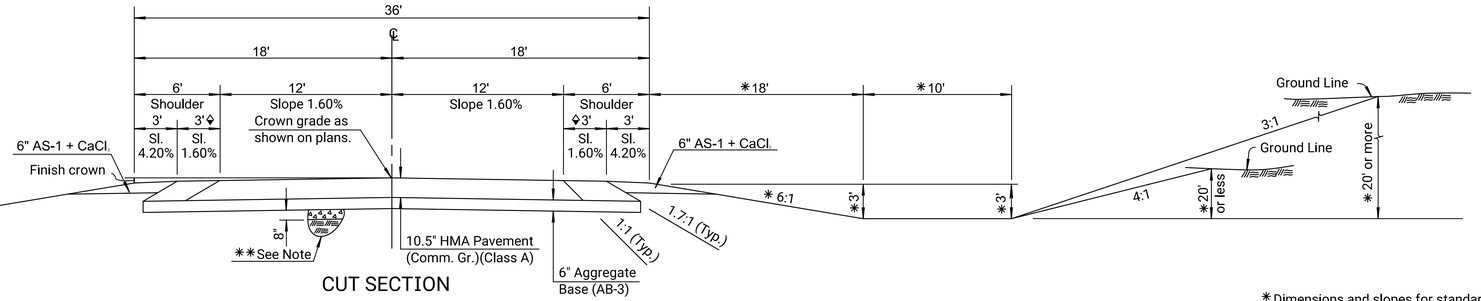


Note: Method of constructing backslope through shallow rock or shale cuts at locations where rock protrudes a short height above the bottom of the ditch.

CUT SECTION

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





CUT SECTION

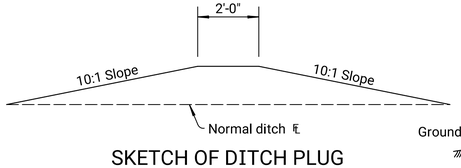
✳✳ Overbreakage in limestone or sandstone rock shall be brought to within 8" of the subgrade line with crushed stone, shot rock, and/or rock rubble, properly compacted, and then brought to the subgrade line with crushed stone meeting the requirements for "Crushed Stone for Backfill" in accordance with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

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

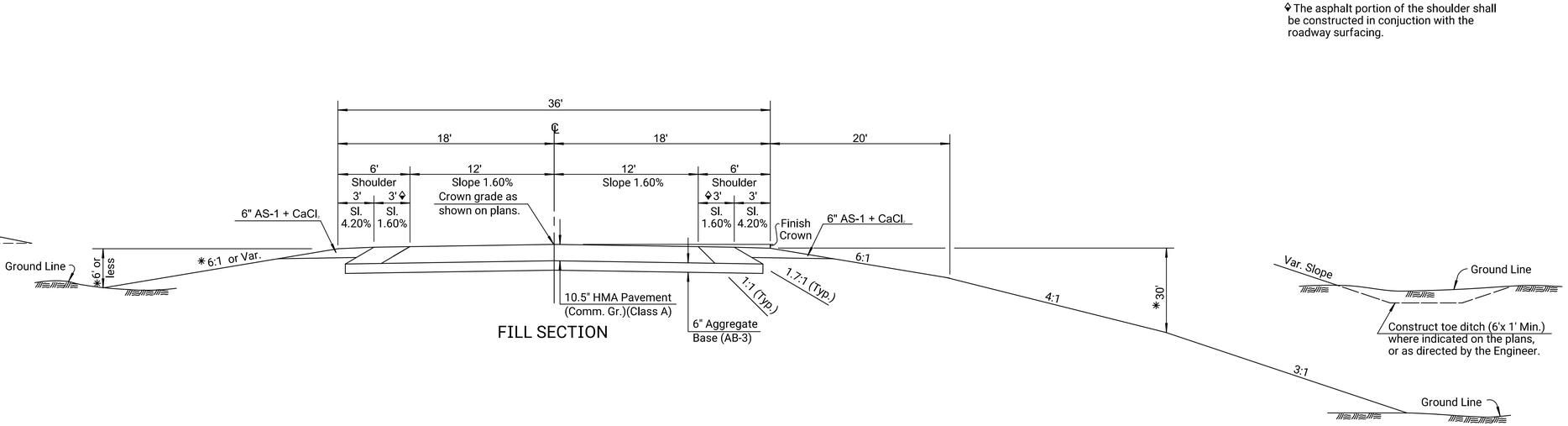
Note: Intersection of all slope lines shall be softened and rounded for pleasing appearance.

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

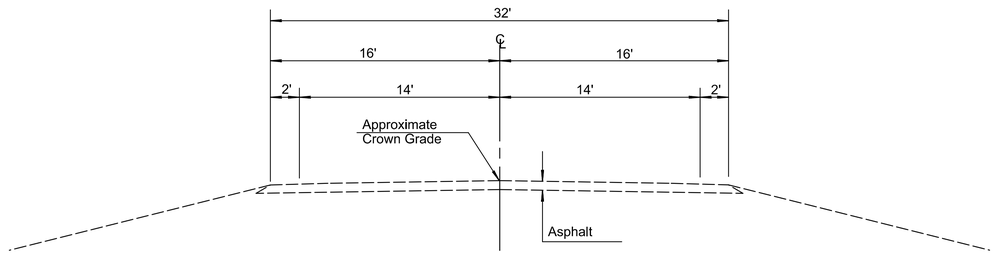
◆The asphalt portion of the shoulder shall be constructed in conjuction with the roadway surfacing.



SKETCH OF DITCH PLUG



FILL SECTION



EXISTING SECTION

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

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION GRADING & SURFACING

~~RD600~~

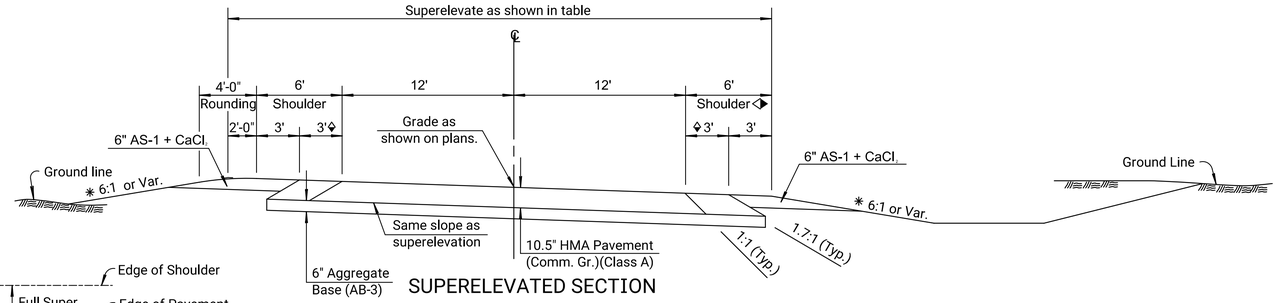
FHWA APPROVAL	5-21-2013	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sheet No. 3

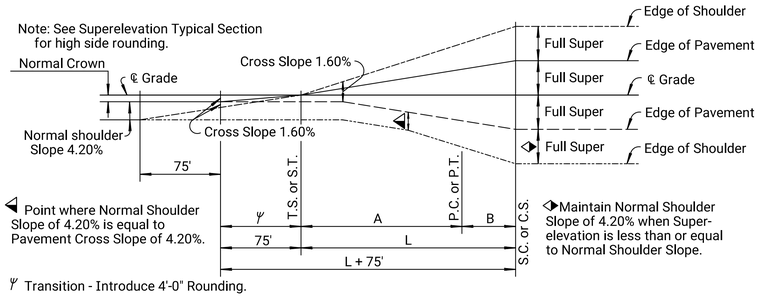
Guide to designer: Use this sheet when subgrading in rock or shale is not required.
See Soils and Geology Reports for additional plan notes.

Plotted :8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rts01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	4	161



SUPERELEVATED SECTION



PROFILE SHOWING METHOD OF ATTAINING

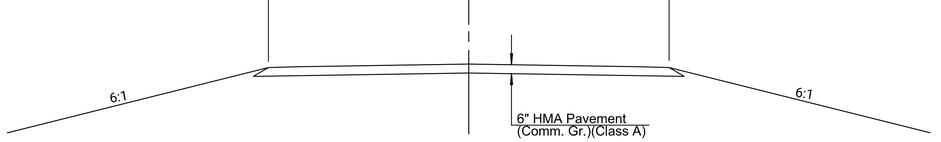
* Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

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

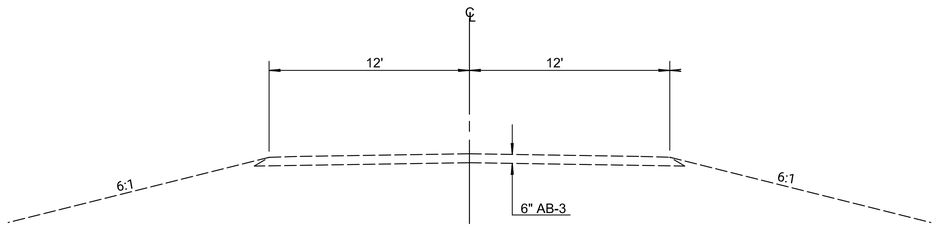
Ditch Plugs within the appropriate clear zone shall have side slopes of 10:1 or flatter.

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

Sta. P.I. Curve	Radius	Design Speed	Super %	Transition - (Lin.Ft.)		
				L	A	B
Sta. 287+66.44	4000'	70 MPH	5.0%	120	90	30
Sta. 298+56.15	5700'	70 MPH	3.6%	90	68	22
Sta. 309+42.24	7000'	70 MPH	3.0%	80	60	20



PAVED ENTRANCE TYPICAL
Sta. 285+75 Rt.



GRAVEL FIELD ENTRANCE TYPICAL
Sta. 296+30 Rt.
Sta. 296+90 Lt.
Sta. 307+50 Lt.
Sta. 307+50 Rt.
Sta. 311+00 Rt.
Sta. 313+50 Lt.

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

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION GRADING & SURFACING

~~RD600~~

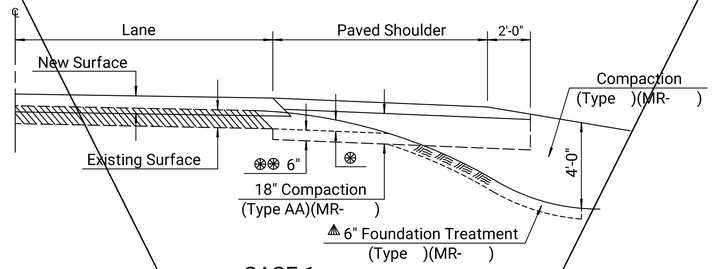
FHWA APPROVAL	5-21-2013	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

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

Plotted: 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rts02.dgn

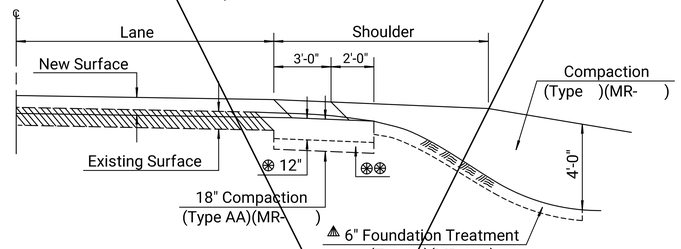
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	5	161

REHABILITATION



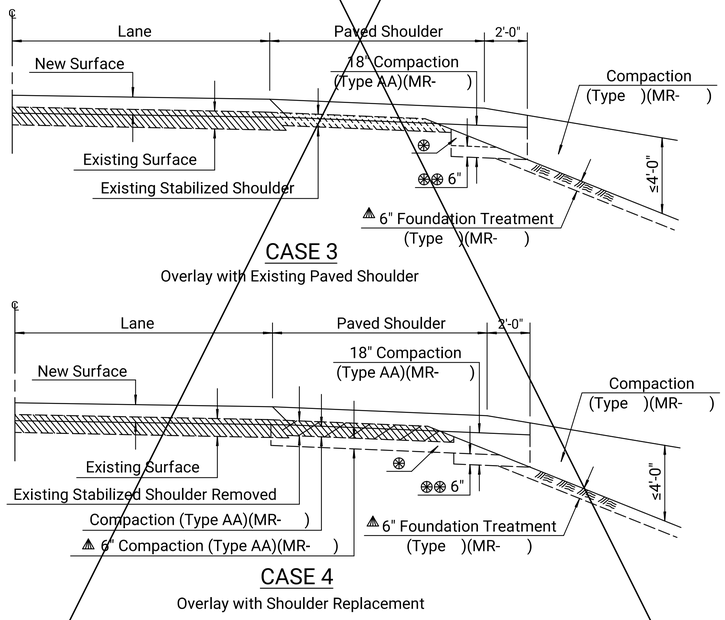
CASE 1

Overlay with Paved Shoulder



CASE 2

Overlay with Composite Shoulder



CASE 3

Overlay with Existing Paved Shoulder

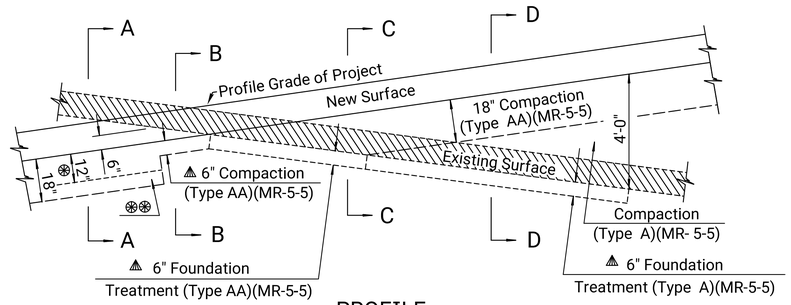
CASE 4

Overlay with Shoulder Replacement

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

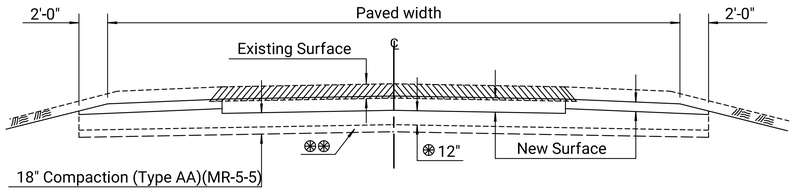
Note: These are 4 general cases. Specific compaction requirements are determined on a project-by-project basis.

RECONSTRUCTION

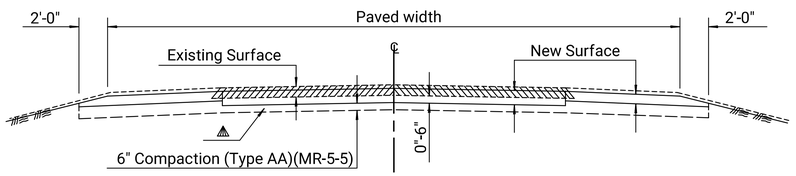


PROFILE

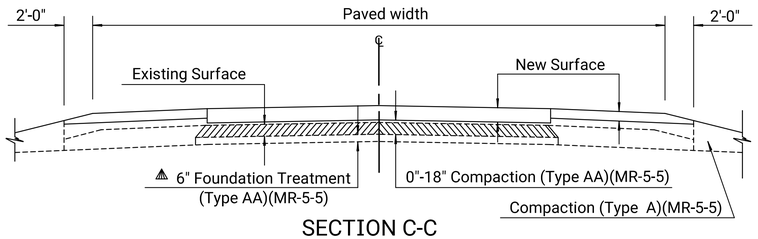
❀ Excavation thru Cuts not Subgraded
❀❀ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



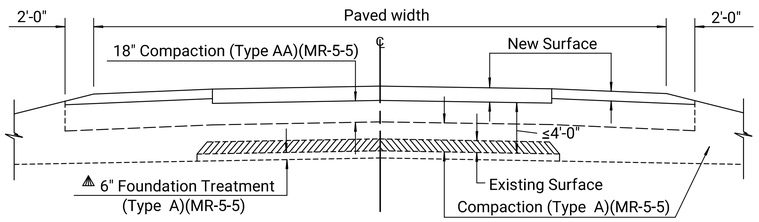
SECTION A-A



SECTION B-B

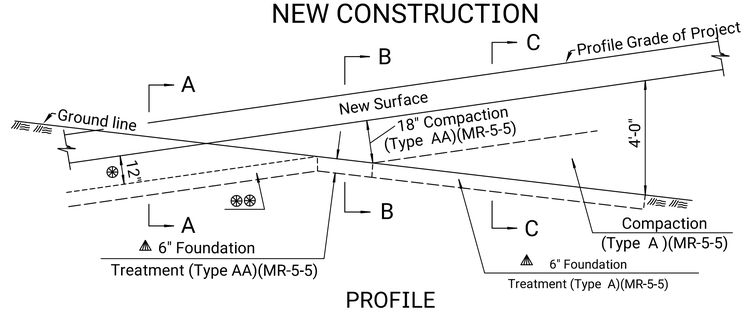


SECTION C-C



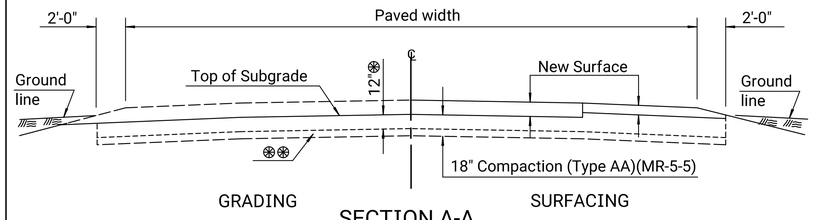
SECTION D-D

NEW CONSTRUCTION

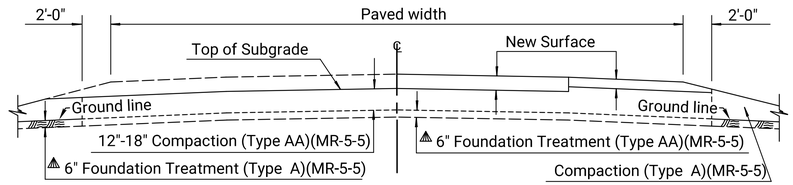


PROFILE

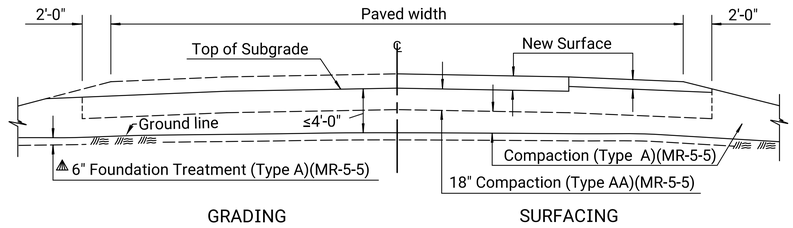
❀ Excavation thru Cuts not Subgraded
❀❀ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



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
5	10-17-11	Revised General Note	S.W.K.	J.O.B.
4	1-05-10	Added additional subsidiary comp.	S.W.K.	J.O.B.
3	2-16-05	Redrawn, Rev. Recon. Sec. C-C & D-D	S.W.K.	J.O.B.
2	5-29-98	Revised Reconstruction Section B-B	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FOUNDATION TREATMENT & COMPACTION OF EARTHWORK

~~RD605~~

FHWA APPROVAL 12-5-11		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 01-26-2024

KDOT Graphics Certified

Plotted: 8/16/2024
Drawn By: _
File: c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss605.dgn

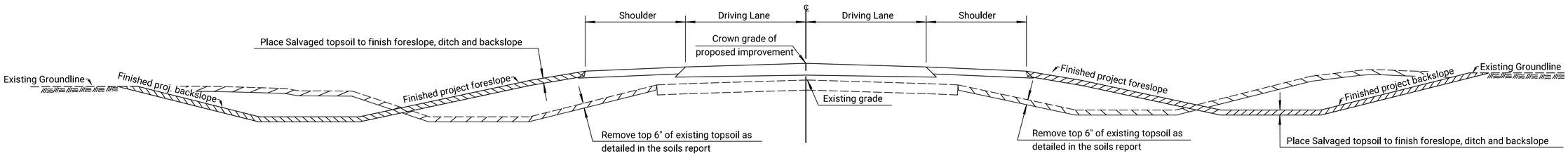
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	6	161

GENERAL NOTE

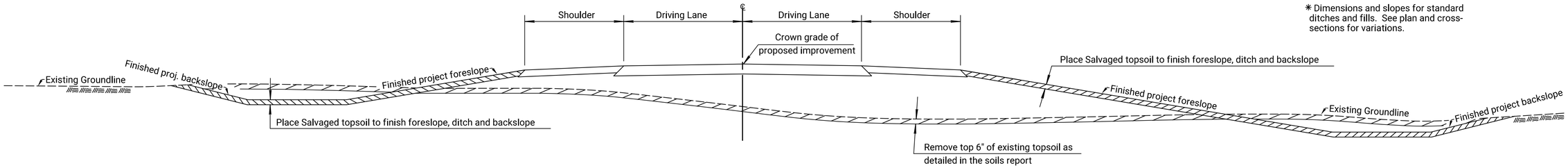
Adjust the cut and fill sections to accommodate the placement of the salvaged topsoil such that after placement the cross section will be at the final grade as shown on the plans.

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.

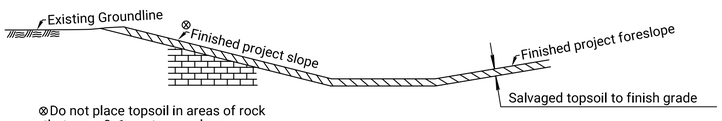
LEGEND

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
3				
2				
1	12-16-09	Initial Release	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SALVAGED TOPSOIL

RD599A

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

KDOT Graphics Certified 01-25-2024

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 :8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rd599a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	7	161

GENERAL NOTE

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

SOIL FOR EMBANKMENT: ALL SOIL USED IN THE TOP 18 INCHES OF THE EMBANKMENT SHOULD CONFORM TO THE FOLLOWING REQUIREMENTS: 7 < PI < 30 AND 20 < LL < 50. SOILS WHICH CONTAIN SUBSTANTIAL ORGANIC MATTER, SUCH AS THOSE CLASSIFIED AS OL OR OH ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487) SHOULD NOT BE USED TO CONSTRUCT THE EMBANKMENT OR SUBGRADE, THE ORGANIC MATERIAL MAY BE USED AS SELECT SOIL TO CAP THE SIDESLOPES OF THE EMBANKMENT.

A GROSS VMF OF 0.74 WAS USED TO COMPUTE EARTHWORK QUANTITIES FOR THIS PROJECT. THIS FACTOR INCLUDES QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT.

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

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

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

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.

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

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

EXISTING PIPES WITH A 24" DIAMETER OR GREATER, 500 TONS OF MILLINGS FROM ALL MILLED SURFACES, EXCESS EXCAVATION, AND GUARDRAIL DESIGNATED FOR REMOVAL SHALL BE SALVAGED AND WILL BECOME THE PROPERTY OF KDOT AND STOCKPILED WITHIN THE PROJECT RIGHT-OF-WAY AS DIRECTED BY THE ENGINEER. ITEMS WILL BE TRANSPORTED BY THE CONTRACTOR TO THE KDOT MIXING STRIP AT THE K-44 & K-49 INTERSECTION. THE TRANSPORTATION OF THESE ITEMS WILL BE PAID FOR AS "TRANSPORTATION OF SALVAGEABLE MATERIAL." TRANSPORTING THIS MATERIAL WILL BE A FEDERALLY NON-PARTICIPATING BID ITEM. REMAINING PAVEMENT TO BE ROCK EXCAVATION.

CONTRACTOR SHALL CLEAN THE STRUCTURES WITHIN THE LIMITS OF THE PROJECT.

CONTRACTOR WILL BE RESPONSIBLE FOR THE PERMANENT SIGNING AND STRIPING.

ANY EXISTING WATER WELLS FOUND WITHIN THE PROJECT RIGHT-OF-WAY SHALL BE PLUGGED IN ACCORDANCE WITH KDOT STANDARD SPECIFICATIONS.

TEMPORARY SHORING:

THE CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS AND SHOP DRAWINGS SEALED BY A LICENSED PROFESSIONAL ENGINEER IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS TO THE ENGINEER FOR APPROVAL.

EXCAVATION FOR TEMPORARY SHORING SHALL BE SUBSIDIARY TO TEMPORARY SHORING. LOCATIONS AREA AS FOLLOWS: RCB AT STA. 296+60.

AGGREGATE SURFACING MATERIAL WILL BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM THE PROJECT SITE.

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

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

THE EXISTING RIGHT OF WAY DEPICTED FOR THIS PROJECT IS FOR INFORMATION ONLY AND ARE BASED UPON HISTORIC PLANS AND RECORD DOCUMENTS AND NOT FROM FIELD SURVEYS.

SCALE

100' 0 100' 200'

PLAN: Lat. & Long.

PROFILE: Horiz. same as above

Vert.

10' 0

PROJECT SURVEY CONTROL

Hor. Datum: KRCS Zone 18 Arkansas City (NAVD 83)(2011)

Vert. Datum: North American Vertical Datum of 1988 (NAVD 88)

Datum Bench Mark: NGS Monument B-14
NGS Standard Disc set on NE Corner of Concrete Bridge Abutment along the UPRR Railroad Tracks
Elev = 1108.610

UTILITIES

Telephone

AT&T
301 N Topeka St.
Wichita, KS 67202
Contact: Rob Johnson
Ph: 316-250-2433

Sprint
23900 S Camp Branch Rd
Harrisonville, MO 64701
Contact: Jason Cantrell
Ph: 913-488-8489
Email: jason.cantrell@sprint.com

Gas

Atmos
PO Box 650205
Dallas, TX 75265-0205
Contact: Nick Planansky
Ph: 970-846-1213

Power

Wheatland Electric Cooperative Inc.
906 Central Street
Harper, KS 67058
Contact: Denzil Reed
Area Supervisor
Ph: 620-896-1006

Fiber Optic

KanOkla
PO Box 111
100 KanOkla Ave.
Caldwell, KS 67022
Contact: Kirby Hagans,
Plant Supervisor
Ph: 620-845-5628,
620-845-4113
Email: kirby@kanoklanetworks.com
Contact: Zack Turner,
Plant Mapping/Eng
Ph: 620-845-4005
Email: zack@kanoklanetworks.com

Water

City of Caldwell
14 W Central Ave.
Caldwell, KS 67022
Contact: Josh Vanek
Ph: 620-845-6676

P.I. ℄ Sta. 40+67.29 Bk. = 40+67.27 Ahd.
N 134,828.648 E 18,468,578.831
1. Set ⅝" Rebar and Aluminum cap stamped Bartlett and West Inc., 2" deep
2. Set mag nail in East face of fence post 62.57' WNW
3. Set mag nail in Northeast face of power pole 110.77' NNW
4. Set mag nail in East face of fiber optic marker post 118.01' SW

P.C. ℄ Sta. 49+33.81
N 135,683.231 E 18,468,722.302
1. Set ⅝" Rebar and Aluminum cap stamped Bartlett and West Inc., 4" deep
2. South end 24" RCP 77.44' NE
3. Set mag nail in East face of fiber optic marker post 79.34' NW
4. Set mag nail in East face of power pole 103.30' SW

P.T. ℄ Sta. 52+06.40 Bk. = ℄ Sta. 282+57.65 Ahd.
N 135,954.568 E 18,468,744.913
1. Set ⅝" Rebar and Aluminum cap stamped Bartlett and West Inc., 4" deep
2. Set mag nail in East face of power pole 133.95' NNW
3. Northwest corner concrete fire pit 135.74' SE
4. Set mag nail in East face power pole 139.79' SSW

Office Relocation
P.C. ℄ Sta. 284+86.19
N 136,183.106 E 18,468,744.900
1. = ℄ US-81
2. Not Set.

Scale: 1"=100'

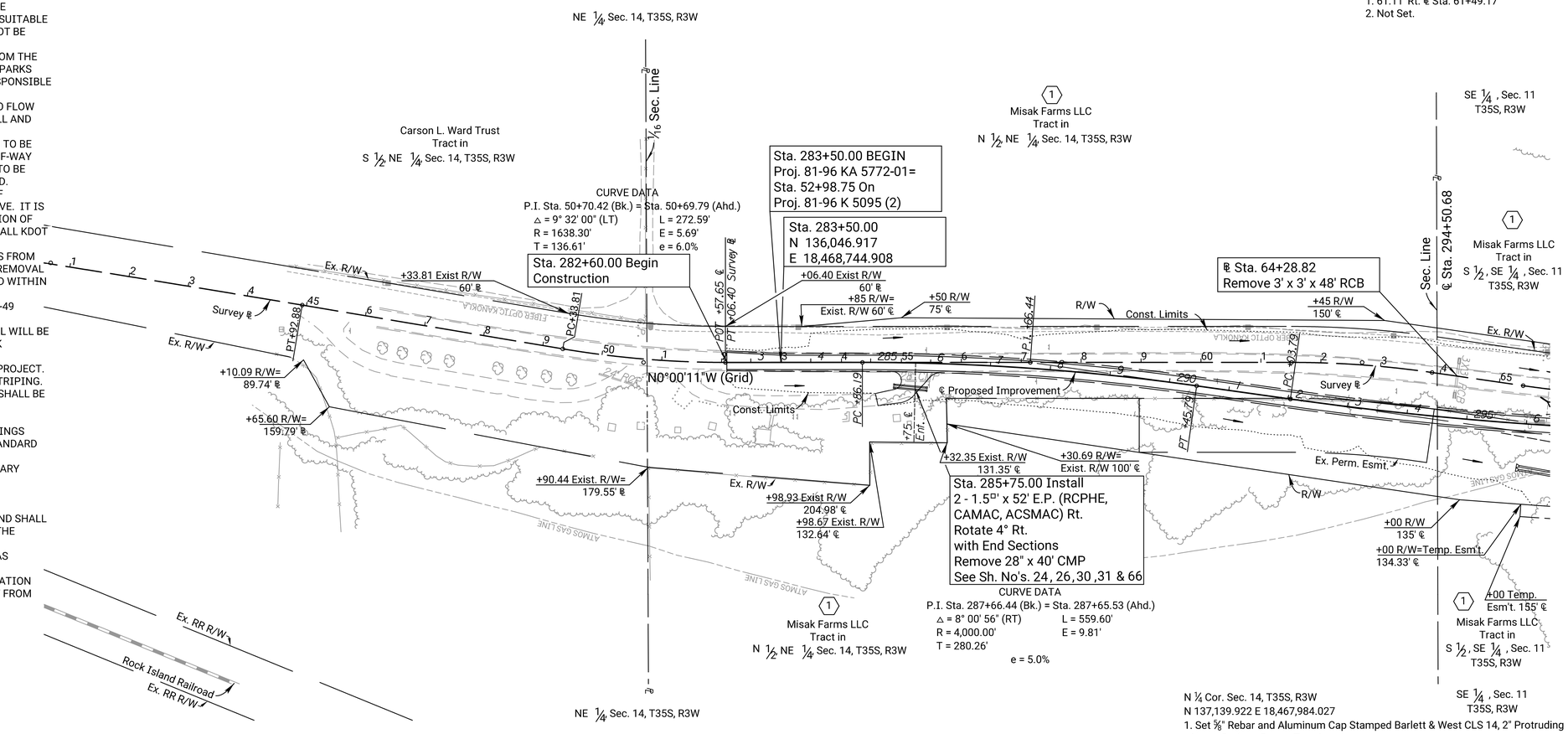
P.T. ℄ Sta. 44+92.88
N 135,248.389 E 18,468,649.299
1. Set ⅝" Rebar and Aluminum cap stamped Bartlett and West Inc., 5" deep
2. Set mag nail in North face of cut off power pole 53.72' ESE
3. Set mag nail in West face stop sign 88.79' NNE
4. Set mag nail in North face power pole 101.28' SW

P.I. ℄ Sta. 50+70.42 Bk. = 50+69.79 Ahd.
N 135,817.957 E 18,468,744.920
1. Set ⅝" Rebar and Aluminum cap stamped Bartlett and West Inc., 3" deep
2. Set mag nail in West face stop sign post 31.32' ESE
3. Set mag nail in East face power pole 64.53' WNW
4. Set mag nail in East face fiber optic marker post 104.56' SW

Office Relocation
P.I. ℄ Sta. 287+66.44 Bk. = 287+65.53 Ahd.
N 136,463.362 E 18,468,744.885
1. = ℄ US-81
2. Not Set.

Office Relocation
P.T. ℄ Sta. 290+45.79
N 136,740.883 E 18,468,783.950
1. 39.08' Rt. ℄ Sta. 59+92.71
2. Not Set.

Office Relocation
P.C. ℄ Sta. 292+03.79
N 136,897.341 E 18,468,805.974
1. 61.11' Rt. ℄ Sta. 61+49.17
2. Not Set.



Center Cor. Sec. 14, T35S, R3W
N 134,498.430 E 18,467,992.020
1. Found ½" Smooth bar, 8" Above Existing Ground Surface
2. 537.90' West (Lt.) of ℄ Sta. 37+37.07; Northwest Angle (℄ to ℄) = 99°02'13"
3. 537.80' West (Lt.) of ℄ Sta. 37+37.06 Back; Northwest Angle (Tan ℄ to ℄) = 98°55'32"
4. Set 60D Nail in Southwest Face of an 6" Diameter Elm Tree 13.51' WNW
5. Set 60D Nail in Northeast Face of an 18" Diameter Elm Tree 22.44' W

E ¼ Cor. Sec. 14, T35S, R3W
N 134,516.233 E 18,470,617.970
1. Found 12" x 6" x 3" Limestone in Center of Rock Mound, 3" Above Surface
2. 2088.12' East (Rt.) of ℄ Sta. 37+37.07; Northeast Angle (℄ to ℄) = 80°57'47"
3. 2088.21' East (Rt.) of ℄ Sta. 37+37.06 Ahd.; Northeast Angle (Tan ℄ to ℄) = 81°04'28"
4. Set ½" Rebar on East Side of Limestone 0.20' E
5. Set ⅝" Rebar & Aluminum Cap Stamped Bartlett & West CLS 14, on West Side of Limestone 0.34' W

B.M. # 9 3.5' T Post 2.28' South of concrete Right of Way marker and 9.87' East of North/South Fence line. 0.4' down
59.20' Lt. of ℄ Sta. 45+08.49 El. 1136.07

E ⅛ Cor. of the NW ¼ Cor. Sec. 14, T35S, R3W
N 135,820.311 E 18,467,988.020
1. Found 4"x3"x8" Limestone, 6" Below Existing Ground Surface
2. 751.67' West (Lt.) of ℄ Sta. 50+75.37; Northwest Angle (℄ to ℄) = 94°50'08"
3. 756.91' West (Lt.) of ℄ Sta. 50+75.53 Ahd.; Northwest Angle (Tan ℄ to ℄) = 90°15'11"
4. Set ⅝" Rebar and Aluminum Cap Stamped Barlett & West CLS 14, on North Side of Limestone 0.35' N
5. Set ½" Rebar (No Cap) on South side of Limestone 0.40' S

E ⅛ Cor. of the NE ¼ Cor. Sec. 14, T35S, R3W
N 135,832.024 E 18,470,609.100
1. Set ⅝" Rebar and Aluminum Cap Stamped Barlett & West CLS 14, Flush with Surface
2. 1869.44' East (Rt.) of ℄ Sta. 50+75.37; Northeast Angle (℄ to ℄) = 85°09'52"
3. 1864.20' East (Rt.) of ℄ Sta. 50+75.53 Ahd.; Northeast Angle (Tan ℄ to ℄) = 89°44'49"
4. Found Concrete Triangle 4" Above Surface 17.93' NNW
5. Set 60D Nail in Northwest Face of 4" Diameter Cedar Tree 26.32' E

B.M. #10 "□" Cut in Northwest corner of the North most concrete barbeque slab in road side park
97.68' Rt. ℄ Sta. 55+16.29 El. 1118.65

N ¼ Cor. Sec. 14, T35S, R3W
N 137,139.922 E 18,467,984.027
1. Set ⅝" Rebar and Aluminum Cap Stamped Barlett & West CLS 14, 2" Protruding Above Surface Due to Terrain
2. 778.94' West (Lt.) of ℄ Sta. 63+95.00; Northwest Angle (℄ to ℄) = 98°24'12"
3. Set 60D Nail in Northwest Face of a 10" Diameter Walnut Tree 0.99' SSW
4. Set 60D Nail in Northeast Face of a 6" Diameter Walnut Tree 13.18' NNW

NE ¼ Cor. Sec. 14, T35S, R3W
N 137,147.814 E 18,470,600.230
1. Set ⅝" Rebar and Aluminum Cap Stamped Barlett & West CLS 14, 1" Protruding Above Surface Due to Terrain
2. 1837.27' East (Rt.) of ℄ Sta. 63+95.00; Northeast Angle (℄ to ℄) = 81°35'48"
3. Set 60D Nail in North Face of 8" Diameter Cedar Tree 61.97' SW
4. Set 60D Nail in South Face of 6" Diameter Cedar Tree 74.69' ENE

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

STA. 282+51.65 TO STA. 296+00

KDOT Graphics Certified 08-16-2024 Sheet No. 7

KDOT Graphics Certified

BY	DATE
A. BUSENITZ - WSP	7/12/21
T. VOTH - WSP	7/21/21
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rpl01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	8	161

Phase 1A - Temporary pavement from Sta. 295+00 to Sta. 296+05 & Sta. 298+13 to Sta. 298+93.

16 Cu. Yds. Common Excavation (VMF = 0.74)
39 Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.74)
41 Cu. Yds. Embankment

Phase 1B - Br. No. 81-96-0.93(162) over Bluff Creek and US-81 roadway paving from Sta. 292+00 to Sta. 298+49. East 100' pf RCB at 296+60.

3,437 Cu. Yds. Common Excavation (VMF = 0.74)
5,615 Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.74)
**6,698 Cu. Yds. Embankment

**Includes: 1,210 Cu. Yds. for Sta. 296+30 Rt. Entrance

Phase 2 - Roadway paving from Sta. 282+60 to Sta. 292+00 and Sta. 301+52 to Sta. 315+50. West 8' of the RCB at 296+60.

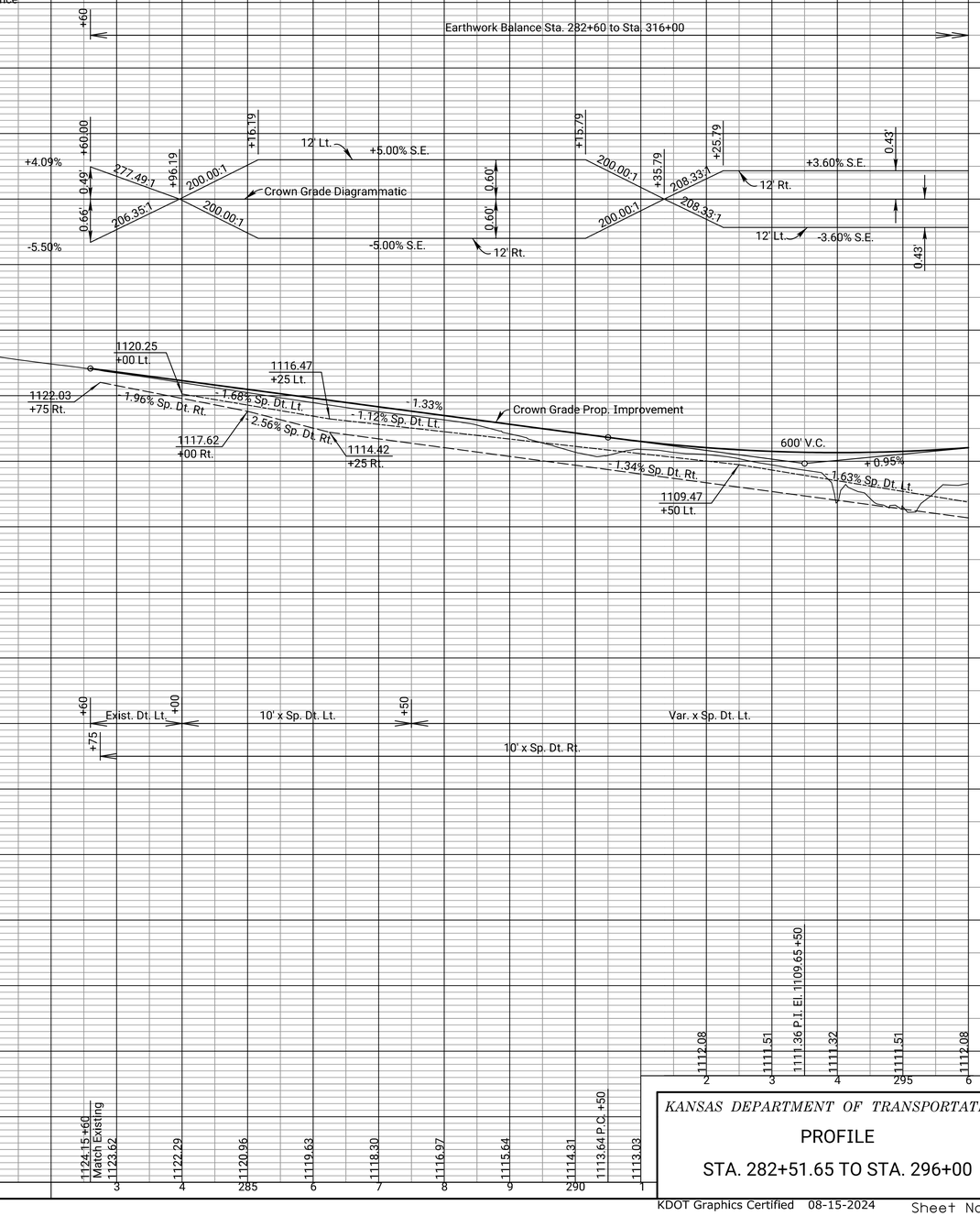
*7,925 Cu. Yds. Common Excavation (VMF = 0.74)
3,046 Cu. Yds. Rock Excavation (Existing Pavement to be Wasted)
8,041 Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.74)
**11,815 Cu. Yds. Embankment

*Includes: 13 Cu. Yds. for Sta. 307+50 Rt. Entrance
21 Cu. Yds. for Sta. 311+00 Rt. Entrance
21 Cu. Yds. for Sta. 313+50 Lt. Entrance
**Includes: 74 Cu. Yds. for Sta. 285+75 Rt. Entrance
627 Cu. Yds. for Sta. 307+50 Lt. Entrance
433 Cu. Yds. for Sta. 307+50 Rt. Entrance

Phase 3 - Removal of existing & finalize grading of US-81 embankment

*3,778 Cu. Yds. Common Excavation (VMF = 0.74)
1,380 Cu. Yds. Rock Excavation (Existing Pavement to be Wasted)
**740 Cu. Yds. Embankment

*Includes: 6 Cu. Yds. for Sta. 296+90 Lt. Entrance
2,779 Cu. Yds. to be wasted
373 Cu. Yds. for Channel
**Includes: 377 Cu. Yds. for Sta. 296+90 Lt. Entrance



KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 282+51.65 TO STA. 296+00

KDOT Graphics Certified 08-15-2024

Sheet No. 8

KDOT Graphics Certified

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcadlbms\wsp-pb-us-pw-02\d0341324\ka5772201rpr01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	9	161

Scale: 1"=100'

Office Relocation
P.I. ℄ Sta. 298+56.15 Bk. = 298+50.50 Ahd.
N 137,543.337 E 18,468,896.907
1. 96.31' Rt. ℄ Sta. 67+98.39
2. Not Set

Office Relocation
P.T. ℄ Sta. 305+02.86
N 138,193.174 E 18,468,839.532
1. 38.83' Rt ℄ Sta. 74+48.21
2. Not Set

Office Relocation
P.C. ℄ Sta. 306+30.86
N 138,320.678 E 18,468,828.274
1. 27.55' Rt. ℄ Sta. 75+75.72
2. Not Set

Office Relocation
P.I. ℄ Sta. 309+42.24 Bk. = 309+41.83 Ahd.
N 138,630.847 E 18,468,800.889
1. = ℄ US-81
2. Not Set.

Office Relocation
P.T. ℄ Sta. 312+53.21
N 138,942.224 E 18,468,801.152
1. = ℄ US-81
2. Not Set.

Office Relocation
P.O.T. ℄ Sta. 316+00.00 = ℄ Sta. 85+44.05 Ahd.
N 139,289.017 E 18,468,801.444
1. = ℄ US-81
2. Not Set.

P.O.T. Channel ℄ Sta. 47+00.00
N 137,733.637 E 18,468,561.458
1. 300.00' Lt ℄ Sta. 300+45.00
2. Not Set

P.O.T. Channel ℄ Sta. 49+39.18
N 137,735.487 E 18,468,800.627
1. = ℄ Sta. 69+90.52
2. Not Set

P.O.T. Channel ℄ Sta. 50+00.00
N 137,735.957 E 18,468,861.449
1. = ℄ Sta. 300+45.00
2. Not Set

SE ¼ Sec. 11, T35S, R3W

¼ Sec. Line

Ex. R/W

① Misak Farms LLC
Tract in
S ½ SE ¼ Sec. 11, T35S, R3W

② Brenda Volavka
Tract in
N ½ SE ¼ Sec. 11, T35S, R3W

¼ Sec. Line = ℄ Sta. 90+19.02

Sta. 296+60.00 Const.
8'x5'x108' RCB
Skew 30° Lt.
See Sh. No's 32 - 34 & 66

Sta. 296+90.00 Install
30" x 44' E.P. (ACSP,CAP,RCP) Lt.
Rotate 11° Rt.
with End Sections
See Sh. No's.24 ,25 ,31 & 66

CURVE DATA
P.I. Sta. 298+56.15 (Bk.) = 298+50.50 (Ahd.)
△ = 13° 03' 29" (LT) L = 1,299.08'
R = 5,700.00' E = 37.21'
T = 652.36' e = 3.6%

℄ Sta. 69+36.00 Remove
Exist Bridge No. 81-96-0.93 (040)
45'-45'-45'-45' Reinf. Conc.
Girder Simple Spans (R.D.G.H.)
28' Roadway. Pile Bent Abutments
and Pedestal Type Piers

Sta. 307+50.00 Install
5□' x 56' E.P. (RCPHE,
CAMAC,ACSMAC) Lt.
Rotate 1° Lt.
with End Sections
Remove 58" x 28" x 20' MAC
See Sh. No's. 24 ,26 ,31 &66

Sta. 315+00.00 END
Proj. 81-96 KA 5772-01=
Sta. 84+44.05 On
Proj. 81-96 K 5095 (2)

Sta. 315+25.00 Install
24" x 89' CRP (RCP)
with End Sections
Remove 24" x 83' CMP
See Sh. No's. 25 ,31 & 66

+60 R/W=Temp. Esm't. 133.34' ℄
+60 Temp. Esm't. 150' ℄
+00 Perm. Drainage Esm't. 360.00' ℄
Perm. Drainage Esm't.
+15 Perm. Drainage Esm't. 330.00' ℄
POT 47+00.00
+00 Perm. Drainage Esm't.= Temp. Esm't. 150' ℄
+00 R/W=Perm. Drainage Esm't. 130' ℄
+30 R/W= Exist. R/W 117.50' ℄
+25.35 Exist R/W 118.38' ℄
+90 ℄ Field Ent.
Channel ℄
Bluff Creek
Sta. 69+90.52 Survey ℄ = Sta. 49+39.18 Channel ℄
+75 R/W= Exist. R/W 118.37' ℄
+15 R/W 125' ℄
+00 R/W=Perm. Drainage Esm't. 111.49' ℄
+31.06 R/W= Exist. R/W 105' ℄
+50 ℄ Field Ent.
+70.56 R/W= Exist. R/W 105' ℄
Sta. 313+50.00 Construct Mound Entrance Lt.
+20 R/W=Temp. Esm't. 85.88' ℄
+20 Temp. Esm't. 105' ℄
+80 Temp. Esm't. 105' ℄
+80 R/W=Temp. Esm't. 85.64' ℄
+40 R/W 85' ℄
+90 R/W= Exist. R/W 60' ℄
+18.65 Exist R/W 60' ℄
Const. Limits
Ex. R/W
R/W
POT 400.00
Survey ℄
PT +02.86
PC +30.86
PT +53.21
PC+87.11
8°38'49" 10 ℄
N0°02'54"E (Grid)
Ex. R/W
Proposed Improvement
POT 50+00.00
+60 R/W 95' ℄
+75 R/W 135' ℄
+60 R/W=Temp. Esm't. 134.78' ℄
+30 ℄ Field Ent.
+60 Temp. Esm't. 155' ℄
+30 ℄ Field Ent. (Close)
PT +56.15
Sta. 300+45.00
Sta. 50+00.00 Channel ℄
Sta. 298+30.00 Eradicate Mound Entrance Rt.
Sta. 300+00.00 Const.
Bridge No. 81-96-0.93 (162)
65'-85'-85'-65' Continuous
Prestressed Concrete Beam (PBMC)
36'-0" Roadway, 0° Skew
See Sh. No's. 35 - 65
+00 R/W 110' ℄
R/W
PC +30.86
+55 ℄ Field Ent. (Close)
+80 R/W=Temp. Esm't. 110.07' ℄
+80 Temp. Esm't. 130' ℄
+50 ℄ Field Ent.
+20 Temp. Esm't. 130' ℄
+20 R/W=Temp. Esm't. 110.67' ℄
+30 R/W=Temp. Esm't. 100.98' ℄
+13.48 R/W= Exist. R/W 100' ℄
+30 Temp. Esm't. 120' ℄
+70 Temp. Esm't. 120' ℄
+70 R/W=Temp. Esm't. 100' ℄
+00 ℄ Field Ent.
Sta. 311+00.00 Const. Mound Entrance Rt.
Sta. 316+00.00 End Construction
Sta. 315+00.00
N 139,189.017
E 18,468,801.360
+99.65 Exist R/W 60' ℄
BLD
Keith E. Wiggins
Tract in
N ½ SE ¼ Sec. 11, T35S, R3W
Crocker Family Trust
Tract in
S ½ NE¼ Sec. 11, T35S, R3W
Brenda Volavka
Tract in
S ½ NE¼ Sec. 11, T35S, R3W
Sta. 296+30.00 Install
2-30" x 82' E.P. (ACSP,CAP,
RCP,PEP,PPP,PVCP,SRPE) Rt.
Rotate 6° Rt.
with End Sections
See Sh. No's. 24 ,25 ,27-31 & 66
Sta. 296+73 to Sta. 297+16 Const.
Slope Protection
(Riprap Stone)(200 Lb.) Rt.
See Sh. No's.23 & 67
① Misak Farms LLC
Tract in
S ½ SE ¼ Sec. 11, T35S, R3W
Sta. 306+65.00
Remove 28" x 32' CMP
Eradicate Entrance Rt.
Sta. 306+82 Plug
Water Wells 95' Rt.
See Sh. No. 67
Sta. 307+50.00 Install
30" x 60' E.P. (ACSP,CAP,
RCP,PEP,PPP,PVCP,SRPE) Rt.
Rotate 4° Rt.
with End Sections
Remove 28" x 48' CMP
See Sh. No's.24 ,25 ,27-29 , 31 & 66
① Misak Farms LLC
Tract in
N ½ SE ¼ Sec. 11, T35S, R3W
Crocker Family Trust
Tract in
N ½ SE ¼ Sec. 11, T35S, R3W
CURVE DATA
P.I. Sta. 309+42.24 (Bk.) = 309+41.83 (Ahd.)
△ = 5° 05' 38" (RT) L = 622.34'
R = 7,000.00' E = 6.92'
T = 311.38' e = 3.0%
FIBER OPTIC KANOKLA
ATMOS GAS LINE
WATER LINE CITY OF CALDWELL
28" CMP
24" CMP

P.O.T. ℄ Sta. 90+19.02
N 139,763.984 E 18,468,801.845
1. Found ½" Rebar, 1" deep
2. Set mag nail in West face of power pole 97.56' NNE
3. Set mag nail in Northwest face of power pole 167.70' SE
4. Top center of steel brace post 252.97' SSW

P.C. ℄ Sta. 93+87.11
N 140,132.075 E 18,468,802.155
1. Found ½" Rebar, 3" deep
2. Set mag nail in West face of power pole 81.19' SE
3. Set mag nail in East face of power pole 146.26' NNW
4. Set mag nail in West face of power pole 185.88' NNE

P.I. ℄ Sta. 98+17.12 Bk. = 98+17.11 Ahd.
N 140,562.085 E 18,468,802.518
1. Set ⅝" Rebar and Aluminum cap stamped Bartlett and West Inc., 4" deep
2. Top Center "U" Post 42.64' NNE
3. Top Center "U" Post 54.96' NNW
4. Set mag nail in West face of power pole 74.13' SE

E ⅛ Cor. of the NW ¼ Cor. Sec. 11, T35S, R3W
N 141,074.669 E 18,467,949.380
1. Found 4" x 8" Concrete Monument, 1.65' Below Surface
2. 847.09' West (Lt.) of ℄ Sta. 103+33.22; Northwest Angle (℄ to ℄) = 89°33'51"
3. Found ⅝" Rebar 0.32' N
4. To North & South Running Fence Line 16.96' E

E ⅛ Cor. of the NE ¼ Cor. Sec. 11, T35S, R3W
N 141,085.536 E 18,470,581.310
1. Found ½" x 10" Rebar over Center of Found 12" x 10" x 8" Limestone 12" Below Surface (Limestone is held as the Corner)
2. 1784.87' East (Rt.) of ℄ Sta. 103+33.22; Northeast Angle (℄ to ℄) = 90°26'09"
3. To Travelway of North and South Drive 4.00' W
4. Set 60D Nail in Southwest Face of 15" Diameter Walnut Tree 62.03' SE

Center Cor. Sec. 11, T35S, R3W
N 139,759.493 E 18,467,956.485
1. Found 8" x 5" Stone (Concrete) Monument, 0.60' Below Surface
2. 845.37' West (Lt.) of ℄ Sta. 90+19.02; Northwest Angle (℄ to ℄) = 90°21'11"
3. Found ½" Iron Pipe Along North Side of Concrete Moument 0.28' N
4. Found Mag Nail in Wood Brace Post 5.92' N

E ¼ Cor. Sec. 11, T35S, R3W
N 139,773.463 E 18,470,582.530
1. Found 12" x 6" x 6" Limestone with ⅝" Rebar over Top Center, 3.5' Deep
2. 1780.71' East (Rt.) of ℄ Sta. 90+19.02; Northeast Angle (℄ to ℄) = 89°38'49"
3. Found 3" x 3" Triangle Concrete Monument 4.58' N
4. Set 60D Nail in West side of Honey Locust Tree 20.29' SSE

UTILITIES

Water	City of Caldwell
Gas	ATMOS
Fiber Optic	KanOkla
Telephone	AT&T
Telephone	Sprint
Power	Wheatland Electric Cooperative Inc.

B.M. #11 "⊡" Cut in top of hub guard at the Southeast corner of bridge over Bluff Creek
15.75' Rt. of ℄ Sta. 68+17.23 El. 1112.00

B.M. #11A "⊡" Cut in top of hub guard at the Northwest corner of bridge over Bluff Creek
14.91' Lt. of ℄ Sta. 70+52.14 El. 1111.89

B.M. #12 Found T Post 5.36' West Southwest of the top of a 24" CMP 0.5' down
36.38' Rt. of ℄ Sta. 84+82.10 El. 1100.53

B.M. #13B "⊡" Cut in center of West headwall of a 3'x3' RCB
22.74' Lt. of Sta. ℄ 98+53.89 El. 1106.76

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

STA. 296+00 TO STA. 315+50

KDOT Graphics Certified 08-15-2024

Sheet No. 9

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED
7/12/21	A. BUSENITZ - WSP	T. VOTH - WSP	
7/21/21			

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardtdocuments\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rpl02.dgn

KDOT Graphics Certified

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KANSAS	81-96 KA-5772-01	2024	10	161

For Earthwork Balances, See Sh. No. 8

+00

+3.60% S.E.
2' Rt.
0.43'
-3.60% S.E.
12' Lt.
0.43'

+80.86
208.33:1
+70.86
222.22:1
+50.86
208.33:1
222.22:1

12' Lt.
+3.00% S.E.
Crown Grade Diagrammatic
-3.00% S.E.
12' Rt.

0.36'
+33.21
222.22:1
+13.21
222.22:1
12' Lt. & Rt.
-1.60%
0.36'
+70.54
390.63:1
+88.21
0.19'
+50.00

+60
8'x5'x108' RCB

D.H.W. El. 1108.99
(Q_{50})
Clearance = 0.38'

H.H.W. El. 1111.58

Crown Grade Prop. Improvement

1103.42
+21 Lt.
+ 0.95%
+ 5.25% Sp. Dt. Lt.
1108.88
+50 Lt.
1103.42
+46 Lt.
1100.22
+85 Rt.

700' V.C.
SSD = 956'

1108.19
+00 Lt.
1108.10
+00 Rt.
- 2.40% Sp. Dt. Lt.
1109.34
+52.01 Lt.

- 0.98% Sp. Dt. Rt.
1104.18
+00 Rt.
- 2.54% Sp. Dt. Rt.
- 1.23% Sp. Dt. Lt.
1100.81
+00 Lt.
- 0.83%
1099.76
+75 Lt.
1097.83
+50 Rt.
- 0.60% Sp. Dt. Lt.

+ 5.00% Sp. Dt. Rt.
1104.00
+75 Rt.
1104.11
+25 Rt.
1100.25
+00 Rt.
1101.71
+25 Lt.
- 2.00% Sp. Dt. Rt.
1102.11
+25 Rt.
+ 0.52% Sp. Dt. Lt.

300' V.C.

+25
24"x89' CRP (RCP)

1100.52
+00 Lt.
1102.62
+00 Lt.
1098.65
+00 Rt.
- 0.52% Sp. Dt. Rt.
+ 0.45%
- 2.24% Sp. Dt. Lt.
1097.16
+50 Lt.

Existing Ground Line

1101.87
+00 Rt.
+ 5.16% Sp. Dt. Rt.
1098.00
+25 Rt.
1096.84
+00 Lt.
- 0.64% Sp. Dt. Lt.

Sta. 315+25
Cr. Gr.= 1104.78
℄ Lt.= 1097.74
℄ Rt.= 1097.98

Sta. 296+60
Cr. Gr.= 1112.60
℄ Lt.= 1103.42
℄ Rt.= 1100.22

O.H.W. El. 1085.21

Streambed Lt.
Streambed Rt.

Var. x Sp. Dt. Lt.
+50
+85
No Dt. Rt.
+52.01
+00
Var. x Sp. Dt. Lt.
+75
10' x Sp. Dt. Lt.
+50
No Dt. Rt.
+00
+75
No Dt. Lt.
+25
10' x Sp. Dt. Lt.
+00
No Dt. Lt.
+00
10' x Sp. Dt. Lt.
+50
+00
Var. x Sp. Dt. Lt.
+75
No Dt. Rt.
+25
No Dt. Rt.
10' x Sp. Dt. Rt.

1130
1120
1110
1100
1090
1080
1070
1060
1050
1040

1112.08
1112.50 P.R.C. +50
1112.95
1113.64
1114.08
1114.27 P.I. El. 1115.83 +00
1114.20
1113.88
1113.31
1112.92 P.T. +50
1112.51
1111.68
1110.85
1110.02
1109.19
1108.36
1107.53
1106.70
1105.87
1105.45 P.C. +50
1105.09
1104.69 P.I. El. 1104.21 +00
1104.71
1104.88 P.T. +50
Match Existing

6 7 8 9 300 1 2 3 4 305 6 7 8 9 310 1 2 3 4 315 6

Date: $DATE$
Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rpr02.dgn

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KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 296+00 TO STA. 315+50

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	11	161

EXHIBIT

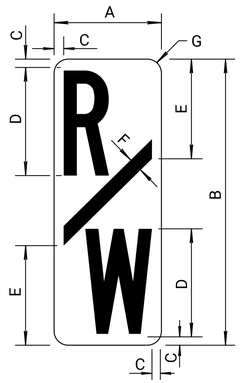
2" DIA. PRE-STAMPED ALUMINUM CAPS

KS DEPT OF TRANS KA-XXXX-XX R/W DISTRICT ONE	KS DEPT OF TRANS KA-XXXX-XX R/W DISTRICT TWO	KS DEPT OF TRANS KA-XXXX-XX R/W DISTRICT THREE
KDOT - DISTRICT 1	KDOT - DISTRICT 2	KDOT - DISTRICT 3
KS DEPT OF TRANS KA-XXXX-XX R/W DISTRICT FOUR	KS DEPT OF TRANS KA-XXXX-XX R/W DISTRICT FIVE	KS DEPT OF TRANS KA-XXXX-XX R/W DISTRICT SIX
KDOT - DISTRICT 4	KDOT - DISTRICT 5	KDOT - DISTRICT 6
K D O T KA-XXXX-XX R/W	ABC SURVEY CO KA-XXXX-XX R/W CLS 999	JOHN DOE KA-XXXX-XX R/W LS 9999
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

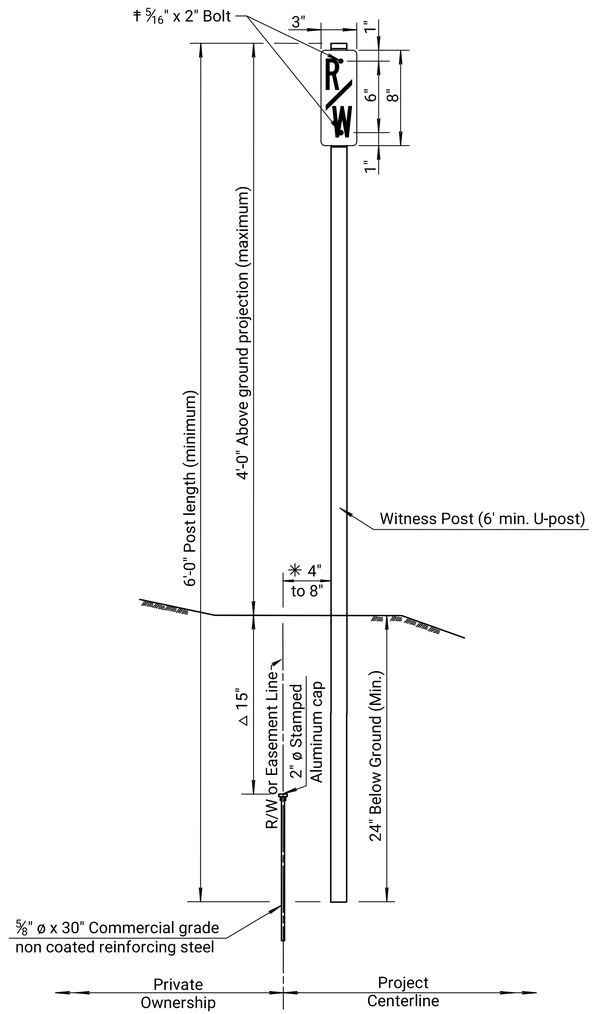


COLORS:

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.

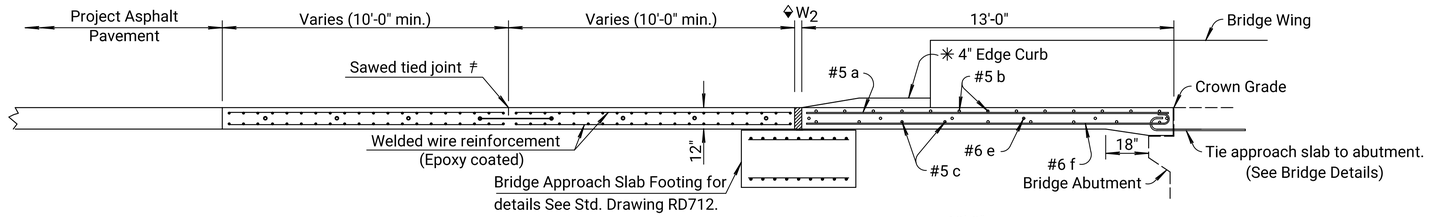
In an urban area, the witness post may be omitted as directed by the Engineer.

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.

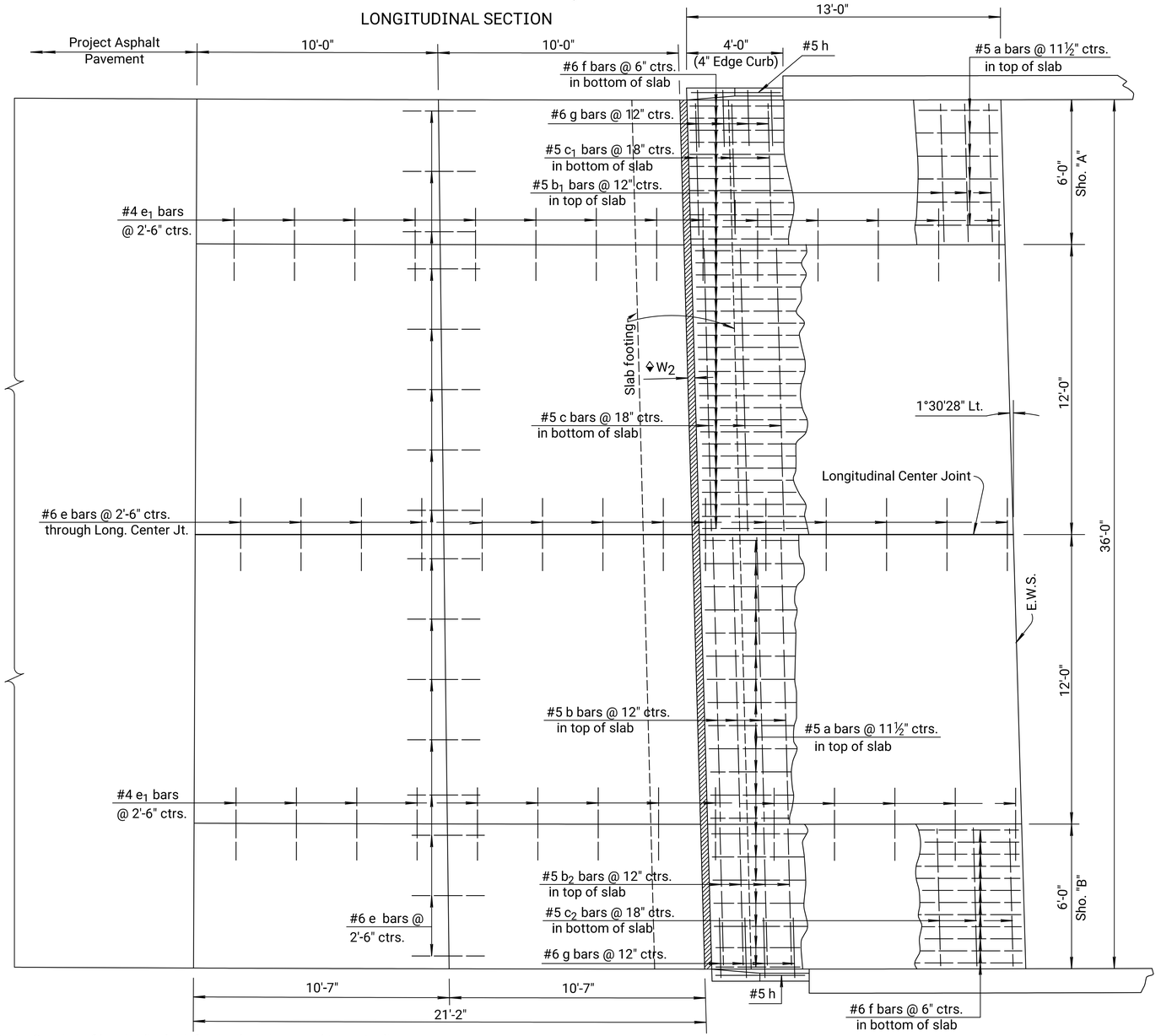
Mount R/W survey monument signs facing the road.

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	12	161



LONGITUDINAL SECTION



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

PLAN VIEW

✳ For details of 4" Edge Curb, See Std. Drawing RD711.

W2 for Expansion Joint width and details See Standard Drawing RD712.

≠ Contractor has the option of substituting a Tied Keyed Construction Joint.

GENERAL NOTE

Special Concrete Bridge Approach shall be paid for as Sq. Yds. of Concrete Pavement (10.5" 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 expansion joints and pressure relief joints 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.

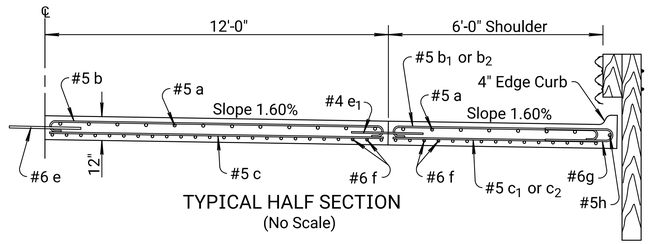
All reinforcing steel shall be epoxy coated.

See Standard Drawing RD711 for details of joints, welded wire reinforcement and edge curb.

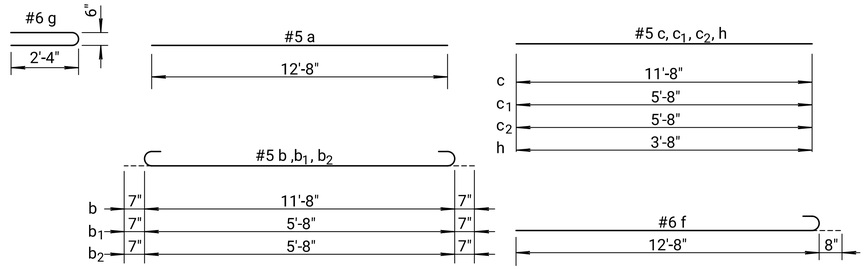
Clearance from the face of concrete for all reinforcing steel shall be 2 inches.

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

The pressure relief joint shall be omitted when the concrete bridge approach pavement abuts asphalt pavement.



TYPICAL HALF SECTION
(No Scale)



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

BENDING DIAGRAMS

1°30'28" Skew Lt.
BILL OF MATERIALS

Bar Schedule

Bar	a	b	b_1	b_2	c	c_1	c_2	e	e_1	f	g	h
No.	38	26	13	13	18	9	9	30	28	72	8	2
Size	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	#6	#5
Length	12'-8"	12'-10"	6'-10"	6'-10"	11'-8"	5'-8"	5'-8"	3'-0"	3'-0"	13'-4"	4'-11"	3'-8"

Reinforcing Steel (Grade 60) (Epoxy Coated)	3,060 lbs.
Concrete Pavement (10.5" Unif.)(AE)(Br. App.)	134.8 Sq. Yds.
Expansion Jt. Membrane Sealant	36.0 Lin. Ft.
Bridge Approach Slab Footing	10.7 Cu. 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
12	04-04-13	Rev. Exp./Pr. Relief Joint Dim.	S.W.K.	J.O.B.
11	09-09-09	Revised Reinforcing Steel listing	S.W.K.	J.O.B.
10	05-14-09	Revised pressure relief jt. material	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE APPROACH PAVEMENT SKEWED APPROACH

~~RD714A~~ 1°30'28" Skew Lt.

FHWA APPROVAL		05-21-13	APP'D.	James O. Brewer			
DESIGNED	SB	DETAILED	SB	QUANTITIES	SB	TRACED	SB
DESIGN CK.	PY	DETAIL CK.	PY	QUAN.CK.	PY	TRACE CK.	PY

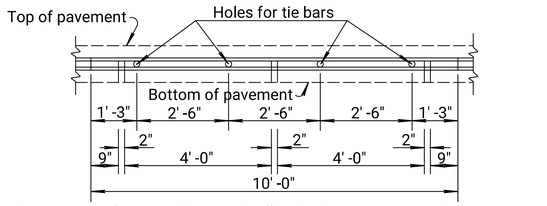
KDOT Graphics Certified 08-15-2024

KDOT Graphics Certified

12

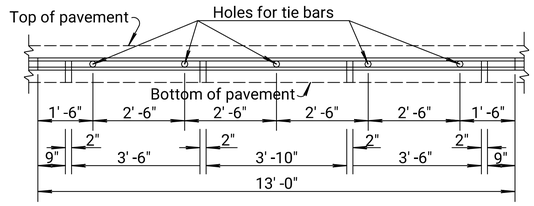
Plotted :8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss714a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	13	161



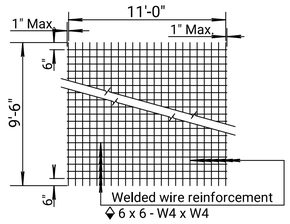
To be used only against forms. Shall not extend through contraction joints.

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



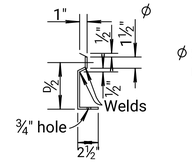
To be used only against forms. Shall not extend through contraction joints.

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



TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

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



SECTION OF RECESSED
FORM LEG

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



DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

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

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

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.

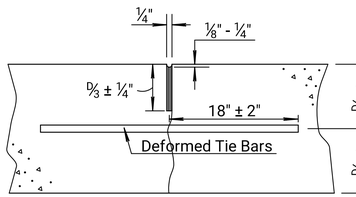
At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.

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

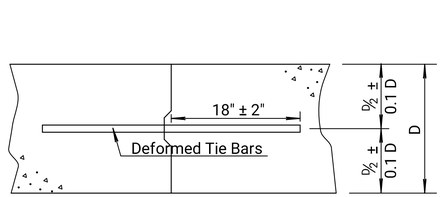
The 4 inch edge curb shall be constructed integral with the approach slab shoulder.

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

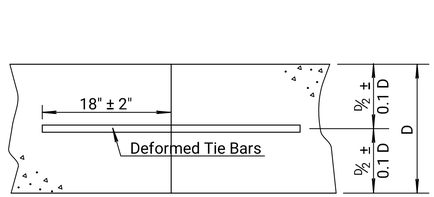
Tie bars shall be evenly spaced along the length of the slab and no tie bars shall be within 12" of contraction joint.



Tied Non-Keyed



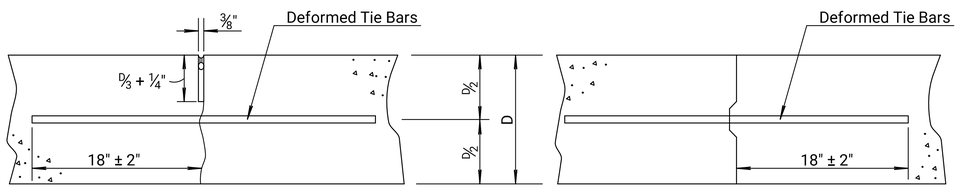
Tied Keyed Construction



Tied Butt Construction

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.



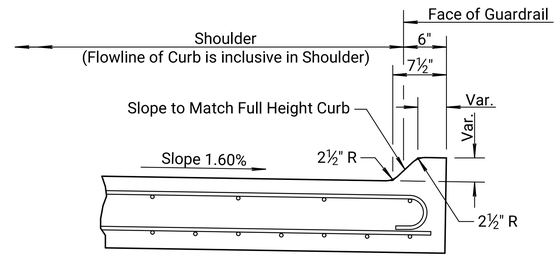
Monolithic Pour

Construction Joint

TRANSVERSE JOINTS

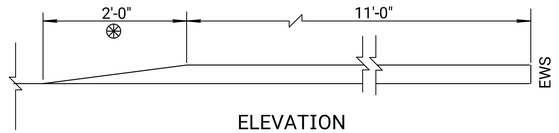
Note: A construction joint is required when the concrete placement has been interrupted for a substantial length of time or at the end of a day's placement.

SECTION A-A

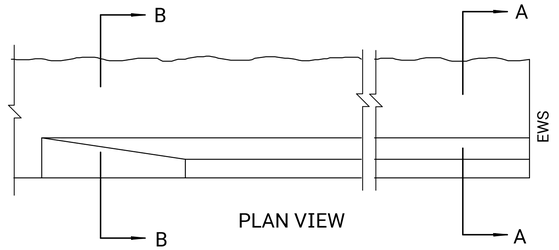


SECTION B-B

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



ELEVATION



PLAN VIEW

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

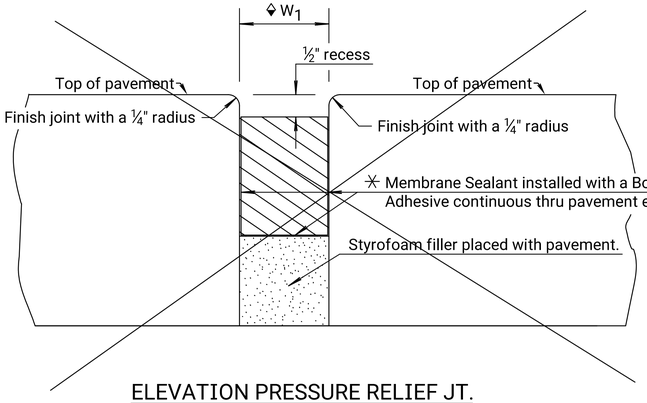
FHWA APPROVAL		10-23-13	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 08-15-2024

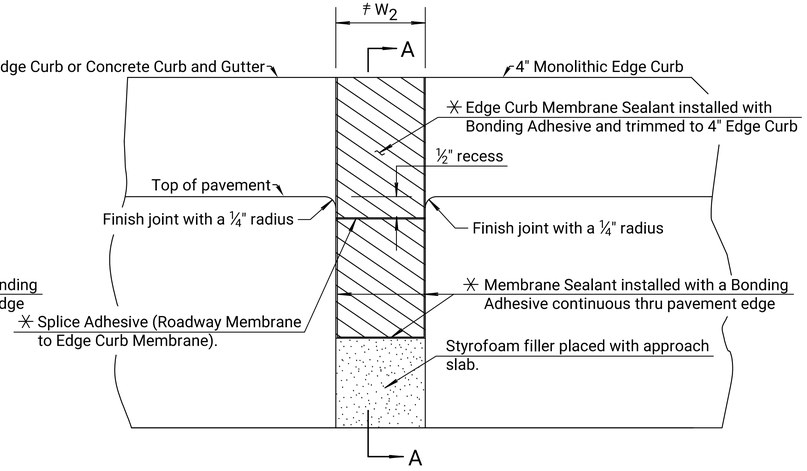
KDOT Graphics Certified

Plotted 8/16/2024
Drawn By: _
File: c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss711.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	14	161



ELEVATION PRESSURE RELIEF JT.



ELEVATION EXPANSION JT.

GENERAL NOTES

EXPANSION/PRESSURE RELIEF JOINTS

See Concrete Bridge Approach Pavement standard drawings for location of expansion and pressure relief joints.

Form the joint opening prior to placement of the pavement approach. Remove the material used to form the joint after the pavement approach has been in place for a minimum of 6 days.

Clean and construct the joint only after the concrete in the approach slab has cured for a minimum of 7 days.

Thoroughly clean the joint by sandblasting and by high pressure air blast to remove all laitance and contaminants from the joint. When any joint is shaped by saw cutting in lieu of forming, blast the joint with water prior to sandblasting and air cleaning.

Accomplish sandblasting in two passes to clean each face of the joint (one pass for each face). Hold the nozzle 1 to 2 inches from the joint face at an angle to the joint face.

Remove any contaminants such as oil, curing compound, etc. by sandblasting to the satisfaction of the Engineer. Solvents, wire brushing, or grinding are not permitted.

Air blast the joint just prior to installing the Membrane Sealant. Equip the air compressor used to clean the joint with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. Spot check the joint to verify any residual dust or dirt has been removed. The Engineer is required to inspect the joint immediately prior to installing the joint material.

⚹ See KDOT Standard Specifications for Membrane Sealant, Bonding Adhesive and Splice Adhesive. The width of the membrane sealant is 4 inches (nominal).

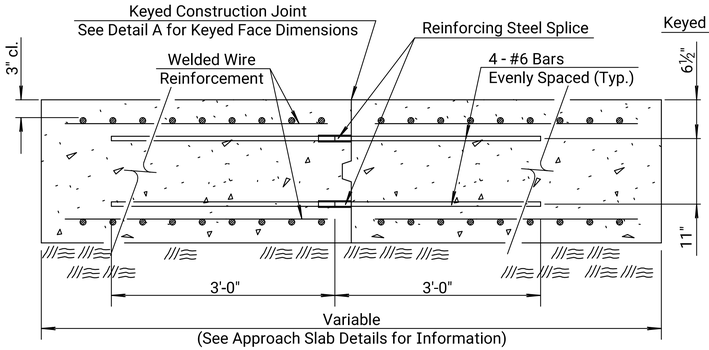
Do not allow traffic on the joint for a minimum of 3 hours unless otherwise directed by the Engineer.

Use splice materials and methods recommended by the Manufacturer.

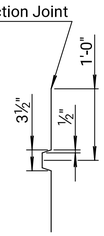
All work and materials for the preparation, construction, and installation of the joint will be subsidiary to the concrete approach pavement.

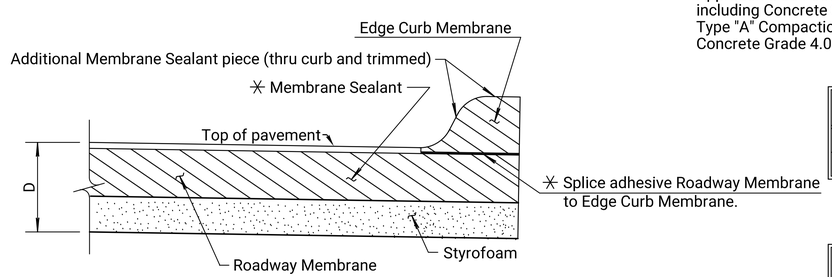
BRIDGE APPROACH SLAB FOOTING

Pay for the Bridge Approach Slab Footing at the unit price bid per cubic yard for "Bridge Approach Slab Footing". This price will be full compensation for furnishing all materials and labor including Concrete Grade 4.0 (AE) Pavement, Reinforcing Steel (Gr. 60) (Epoxy Coated), excavation, Type "A" Compaction and materials used to prevent bonding of concrete. The Contractor may use Concrete Grade 4.0 (AE) or the mix used in the concrete pavement for the slab footing.



DETAIL A





SECTION A-A

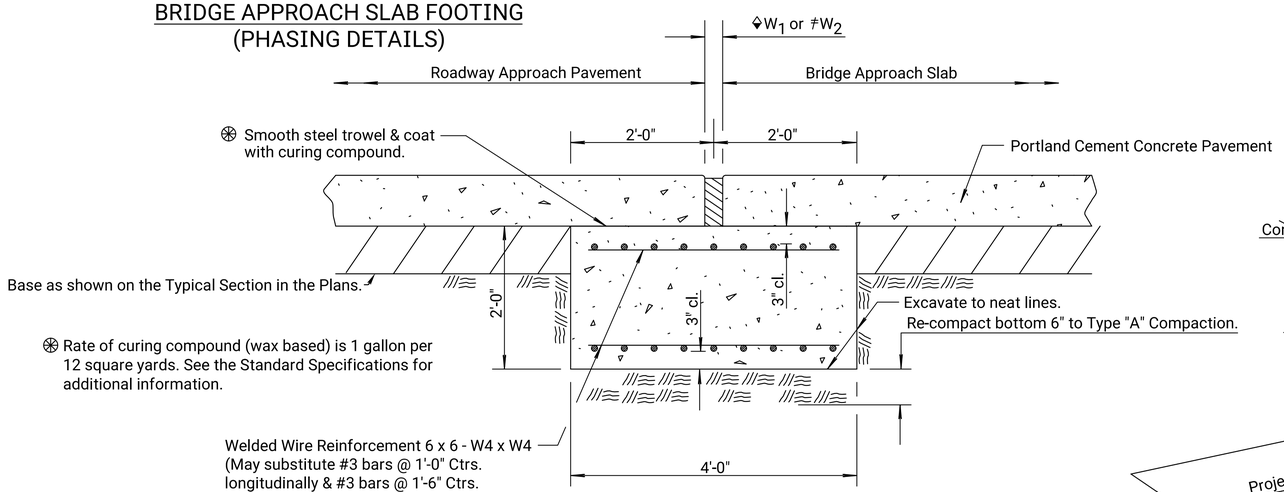
(See Std. Drawing RD711 for details of 4" Edge Curb.)

◆ PRESSURE RELIEF JOINT WIDTH DETAILS (W_1)							
ᵞ Temperature (F°)	40°	50°	60°	70°	80°	90°	100°
Formed Concrete Opening Size	4.0"	3¾"	3½"	3¼"	3.0"	2¾"	2½"

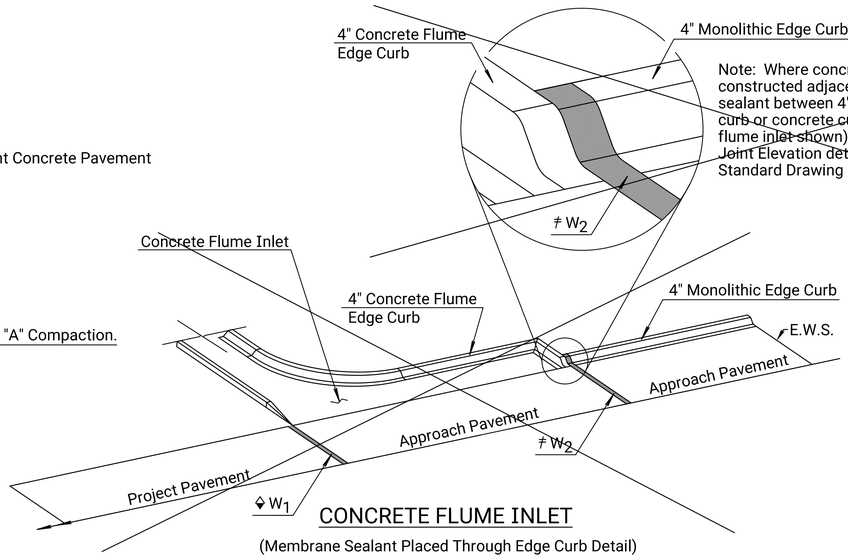
ᵞ Average Ambient Temperature over previous 24 hours.

≠ EXPANSION JOINT WIDTH DETAILS (W_2)
See bridge construction layout sheet for details.

BRIDGE APPROACH SLAB FOOTING
(PHASING DETAILS)



BRIDGE APPROACH SLAB FOOTING



CONCRETE FLUME INLET

(Membrane Sealant Placed Through Edge Curb Detail)

Note: Where concrete flume inlets or concrete curb and gutter are constructed adjacent to bridge approach slab pavement place membrane sealant between 4" monolithic edge curb and 4" concrete flume inlet edge curb or concrete curb and gutter as shown on this sheet (concrete flume inlet shown). See approach slab Standard Drawings, Expansion Joint Elevation detail this sheet, Standard Drawing RD628, and Standard Drawing RD635 for additional details.

LEGEND

Membrane Sealant

NO.	DATE	REVISIONS	BY	APP'D
10	01-22-16	Add. Det., Keyed Joint & Flume Inlet	T.T.R.	S.W.K.
09	10-16-13	Revised General Note	S.W.K.	J.O.B.
08	04-04-13	Rev. Joint Width Det. Table	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE APPROACH SLAB DETAILS
EXPANSION/PRESSURE RELIEF JOINT/
BRIDGE APPROACH SLAB FOOTING

~~RD712~~

FHWA APPROVAL		02-01-16	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 08-15-2024

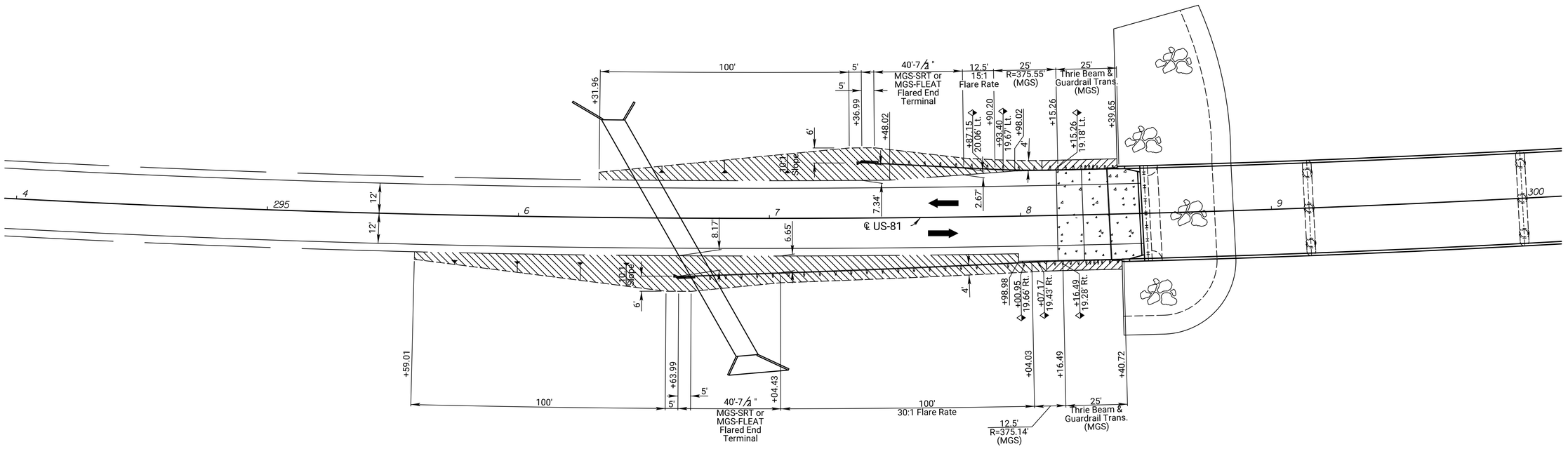
KDOT Graphics Certified

Plotted 8/16/2024
Drawn By: _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	15	161

BY	DATE
REFERENCES NOTED	
REFERENCES CHECKED	

Scale: 1"=20'



LEGEND

- Permanent Guardrail
- 4" HMA
- 6" AS-1
- Traffic Direction
- Concrete Bridge Approach Pavement

Notes:
Station, Offset and Radius information for Guardrail is to face of rail.

See Sh. No's. 17-22 for Guardrail Details.

♦ Station and Offset shown to the Face of Post.

PLAN AT STA. 300+00

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL LAYOUT

US-81 OVER BLUFF CREEK

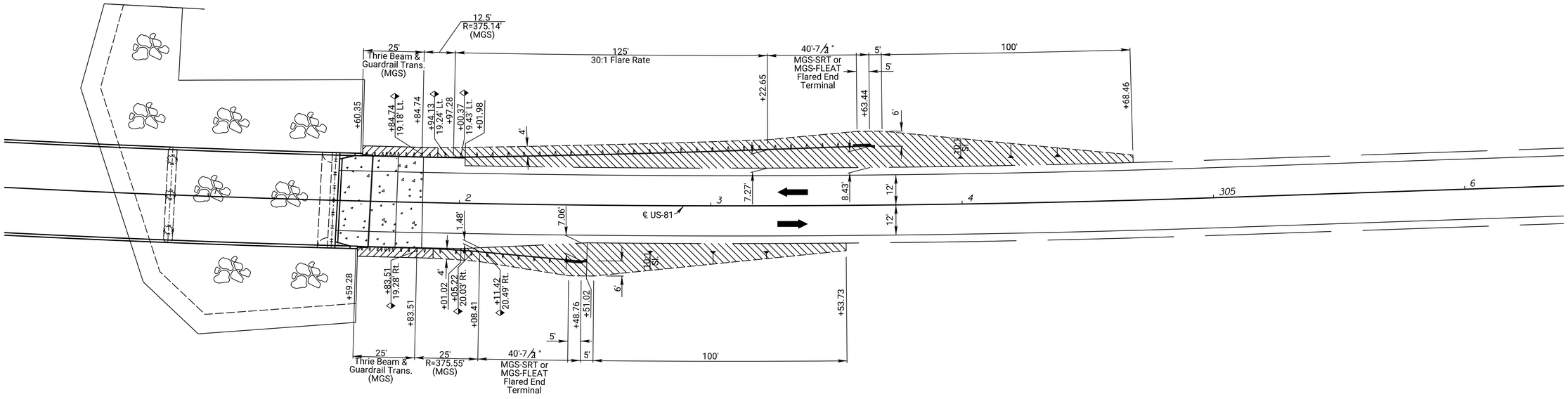
KDOT Graphics Certified 08-15-2024 Sheet No. 15

KDOT Graphics Certified

Date: $DATE$ Plotted : 8/16/2024
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	16	161

Scale: 1"=20'



PLAN AT STA. 300+00

Notes:
Station, Offset and Radius information for Guardrail is to face of rail.

See Sh. No's.17 -22 for Guardrail Details.

♦ Station and Offset shown to the Face of Post.

LEGEND

- Permanent Guardrail
- 4" HMA
- 6" AS-1
- Traffic Direction
- Concrete Bridge Approach Pavement

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL LAYOUT

US-81 OVER BLUFF CREEK

Sheet No. 16

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

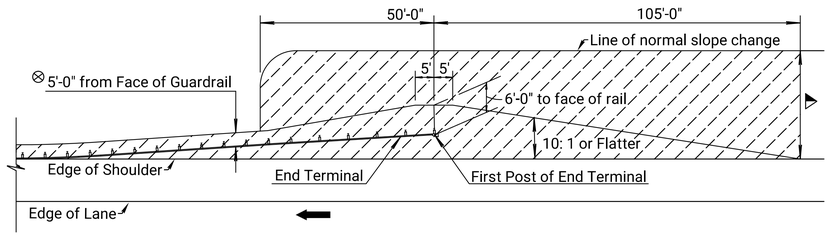
Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772o1gr02.dgn

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.

Plotted: 8/16/2024
Drawn By: _
File: c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rs606.dgn

GUARDRAIL CLEAR AREA

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



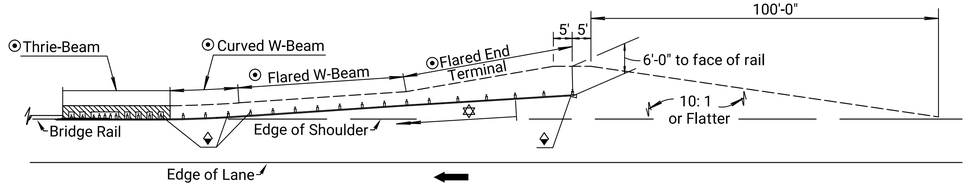
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet 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

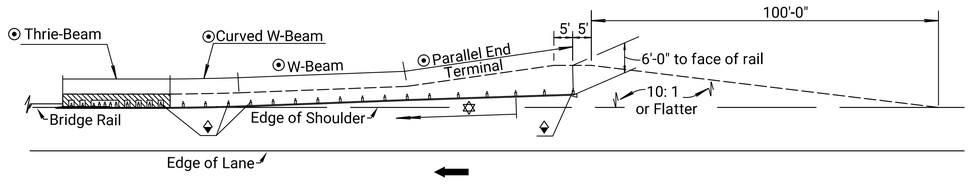
FLARED GUARDRAIL DETAIL

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	81-96 KA-5772-01	2024	17	161

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.

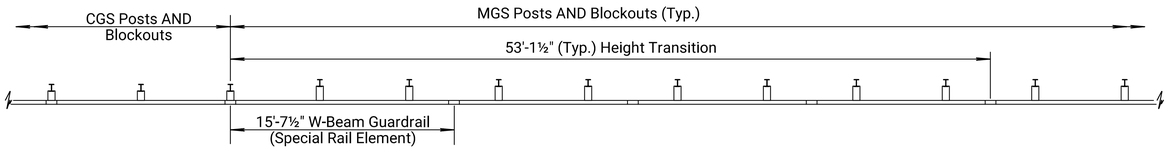
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even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

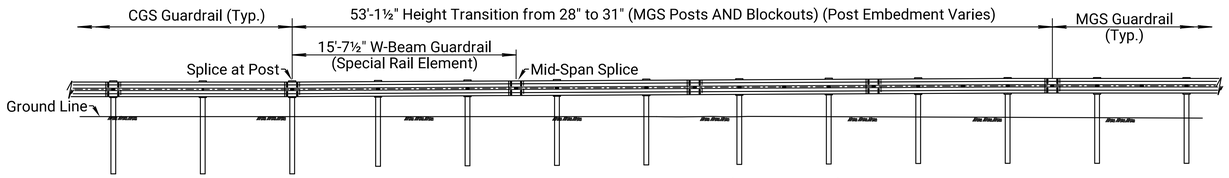
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered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

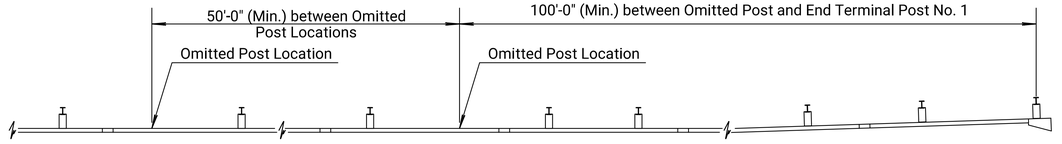
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



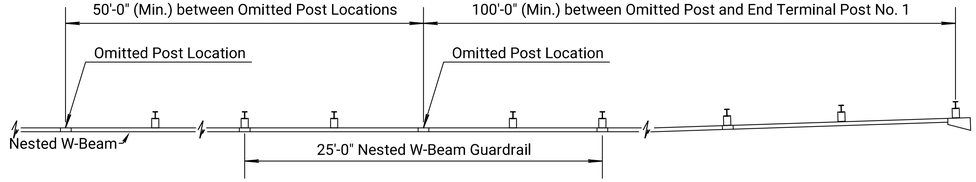
CGS TO MGS TRANSITION DETAILS (PLAN)



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
2	9-5-18	ADD. OMITTED POST AND TRANS. DETAILS	A.L.R.	T.T.R.
1	6-5-18	INITIAL RELEASE	A.L.R.	T.T.R.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL AUXILIARY DETAILS

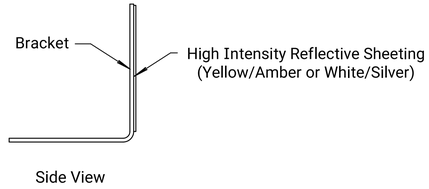
RD606

FHWA APPROVAL	9-25-18	APP'D.	SCOTT W. KING
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

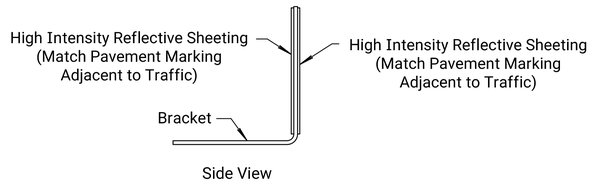
KDOT Graphics Certified 09-26-2018

KDOT Graphics Certified

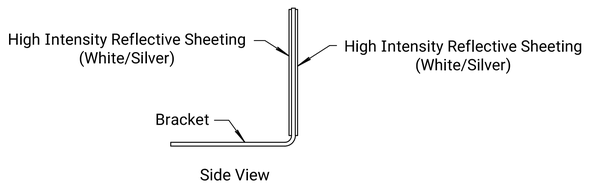
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	18	161



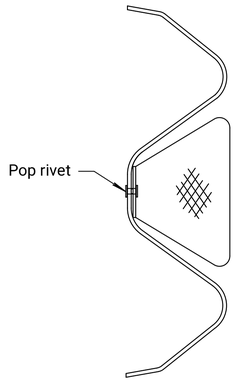
Flexible Marker
One-Way Traffic



Flexible Marker
Median Locations

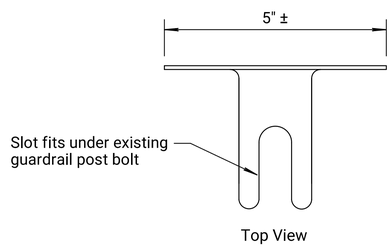


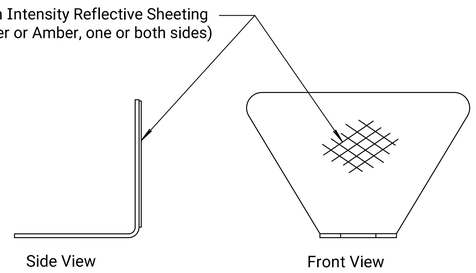
Flexible Marker
Two-Way Traffic



Typical Mounting on W-Beam

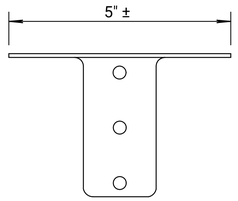
Pop rivet attachment to Guardrail when necessary.



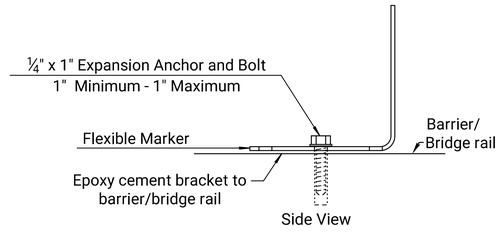


Flexible Guardrail Marker

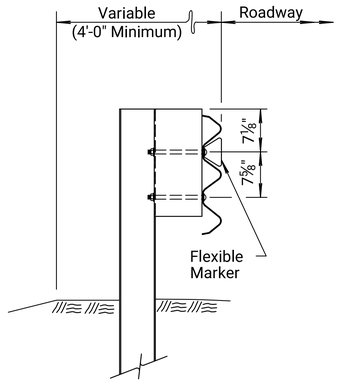
(High Impact Polycarbonate approx. .085" thick, 5¼" x 3")



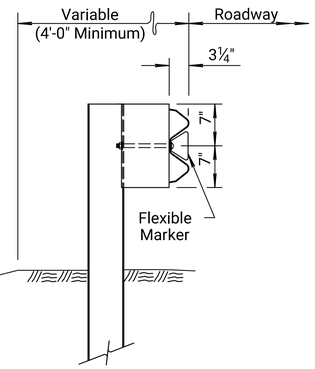
Barrier/Bridge Rail



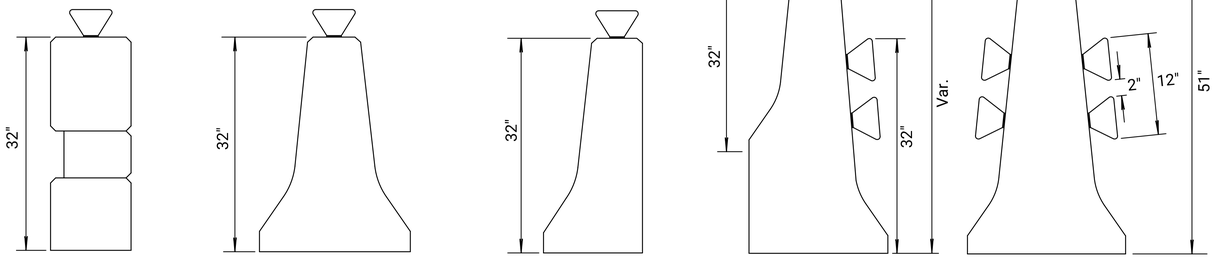
Method of Attaching Flexible
Marker to Barrier/Bridge Rail



THRIE-BEAM GUARDRAIL



W-BEAM GUARDRAIL



TYPICAL 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
9	9-11-17	Rev. Det. Markers, Rev. Gen. Note	A.L.R.	S.W.K.
8	11-15-10	Revised notes	S.W.K.	J.O.B.
7	12-21-08	AKT marker or approved equal	S.W.K.	J.O.B.
6	3-10-09	Add. Flexible rem. Button deline	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MARKER DETAILS FOR GUARDRAIL,
BARRIER, AND BRIDGE RAILS

RD610

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

KDOT Graphics Certified 03-16-2018

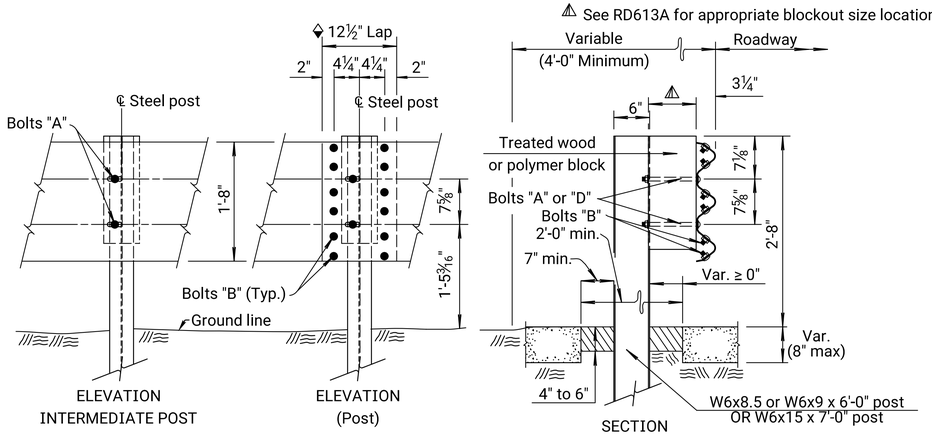
KDOT Graphics Certified

Drawn By: : __
Plotted :8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss610.dgn

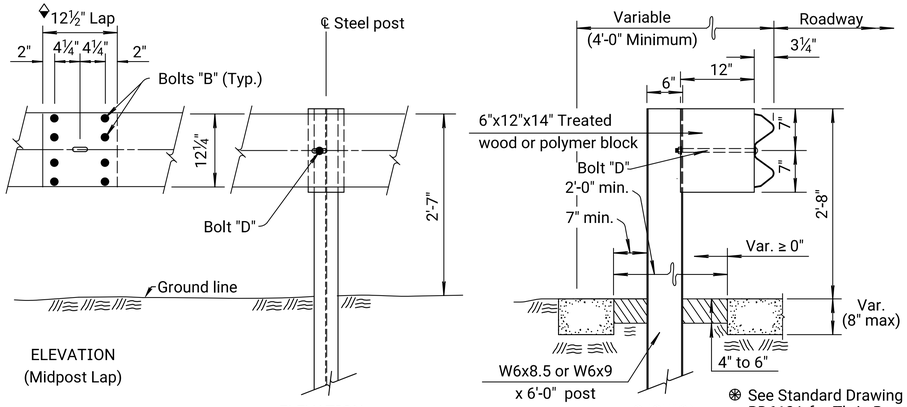
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	19	161

♦ 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

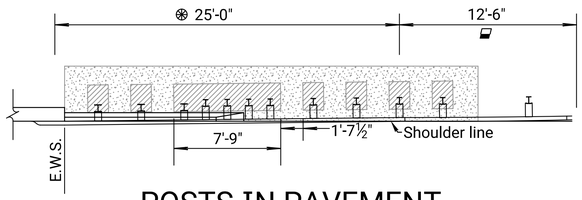


⊛ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.

✡ Non-Metallic (Polymer) or Treated Wood Block

▭ See Guardrail Layout Sheets for Details.

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



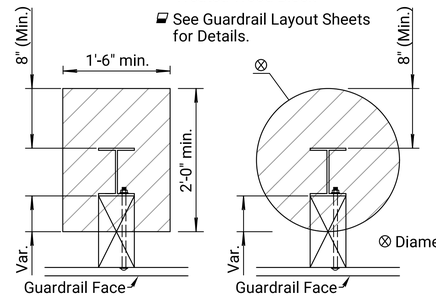
POSTS IN PAVEMENT

(Not to Scale)

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

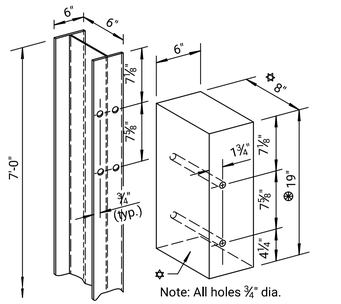
▨ Pavement (Concrete or Asphalt)

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.

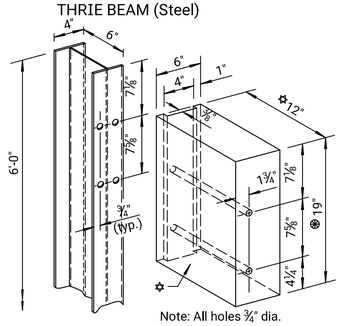


PLAN
(ALTERNATE GEOMETRIES)

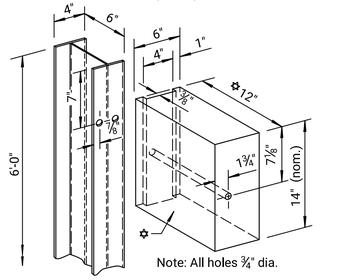
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".



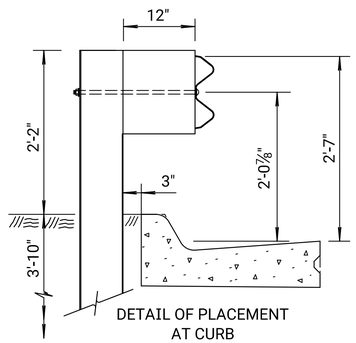
THRIE BEAM (Steel)



THRIE BEAM (Steel)



"W" BEAM (Steel)



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.

GENERAL NOTES (Steel Posts)

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

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

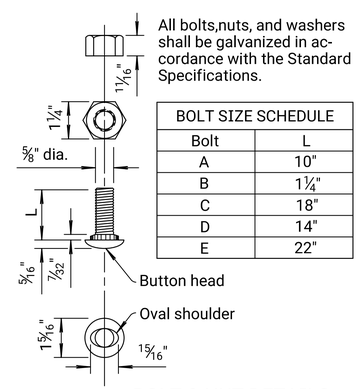
Wood blockouts may be used through the 25'-0" thrie-beam section with wood or polymer blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation. For wood/polymer blockout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



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

BOLT & NUT DETAILS

NO.	DATE	REVISIONS	BY	J.O.B.
5	9-24-15	Separated Steel/Wood Post Details	T.T.R.	S.W.K.
4	11-8-12	Revised Detail, Posts in Pavement	S.W.K.	J.O.B.
3	8-1-12	Revised Note to Designer	S.W.K.	J.O.B.
2	5-24-12	Revised Detail, Posts in Pavement	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (STEEL) (MGS) DETAILS

RD611A

FHWA APPROVAL	1-29-16	APP'D. Scott. W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 03-28-2018

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 8/16/2024

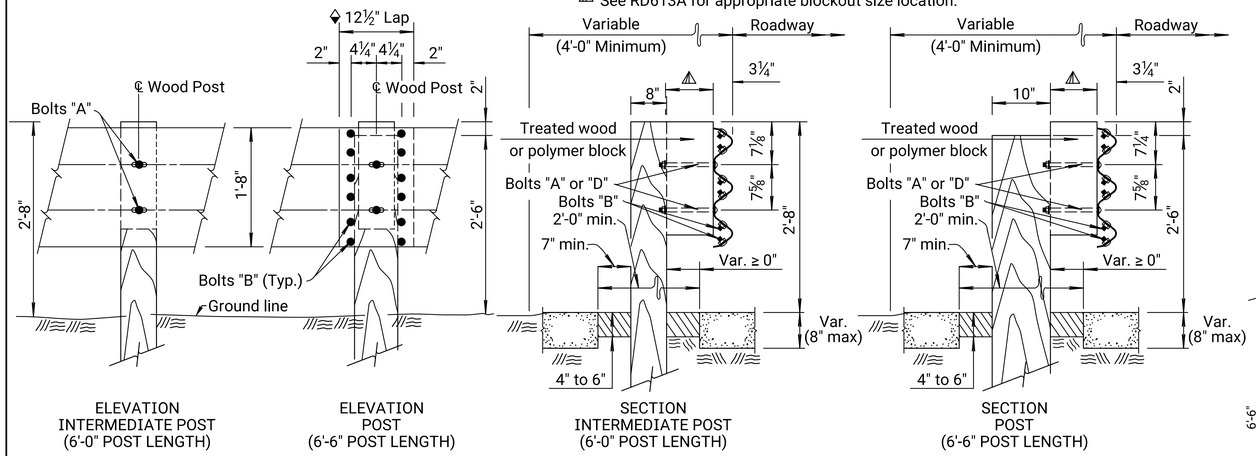
Drawn By : _

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	20	161

◈ 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.



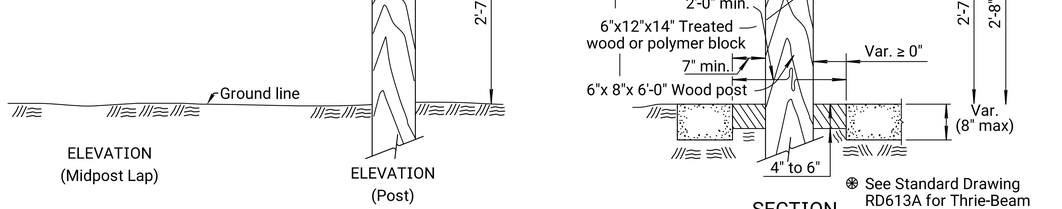
ELEVATION
INTERMEDIATE POST
(6'-0" POST LENGTH)

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)

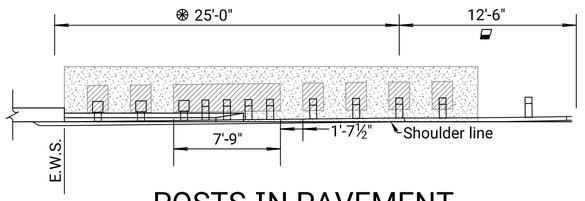
SECTION

W-BEAM (MGS) 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.



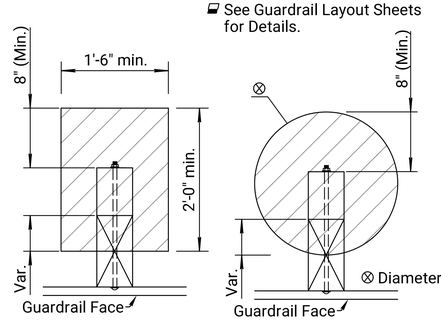
POSTS IN PAVEMENT

(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.

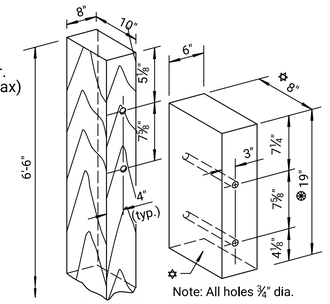


RECTANGULAR GEOMETRY

CIRCULAR GEOMETRY

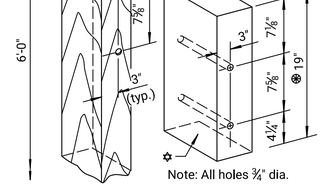
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

PLAN
(ALTERNATE GEOMETRIES)



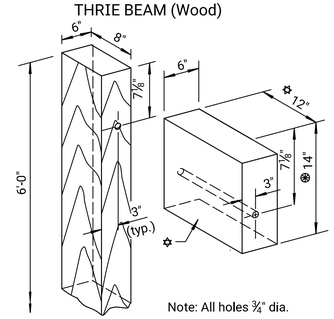
Note: All holes ¾" dia.

THRIE BEAM (Wood)



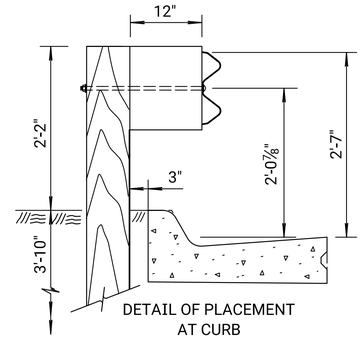
Note: All holes ¾" dia.

THRIE BEAM (Wood)



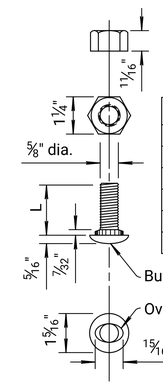
Note: All holes ¾" dia.

"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
4	9-24-15	Initial Release	T.T.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (WOOD) (MGS) DETAILS

RD611B

FHWA APPROVAL	1-29-16	APP'D. Scott W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 03-28-2018

KDOT Graphics Certified

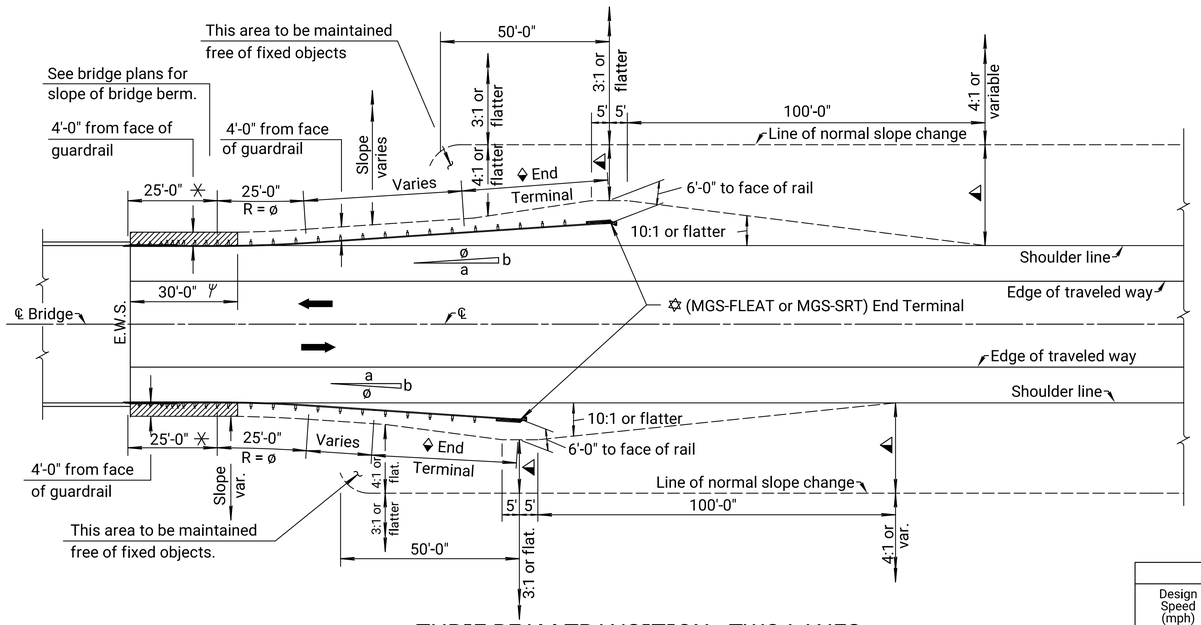
Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

Plotted: 8/16/2024

Drawn By : _

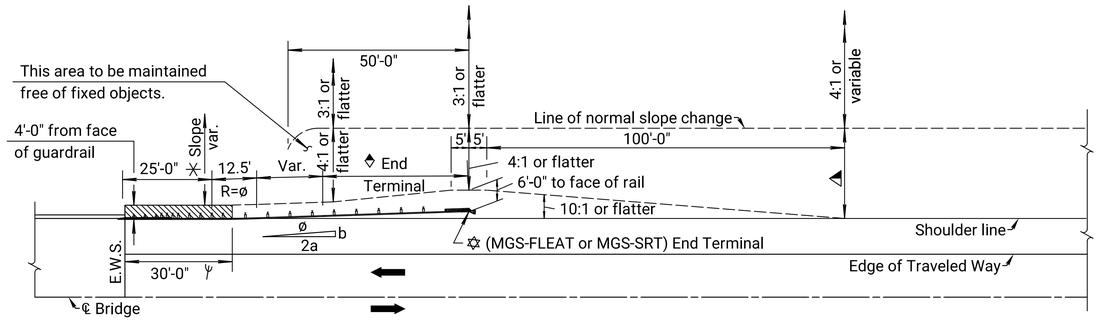
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	21	161



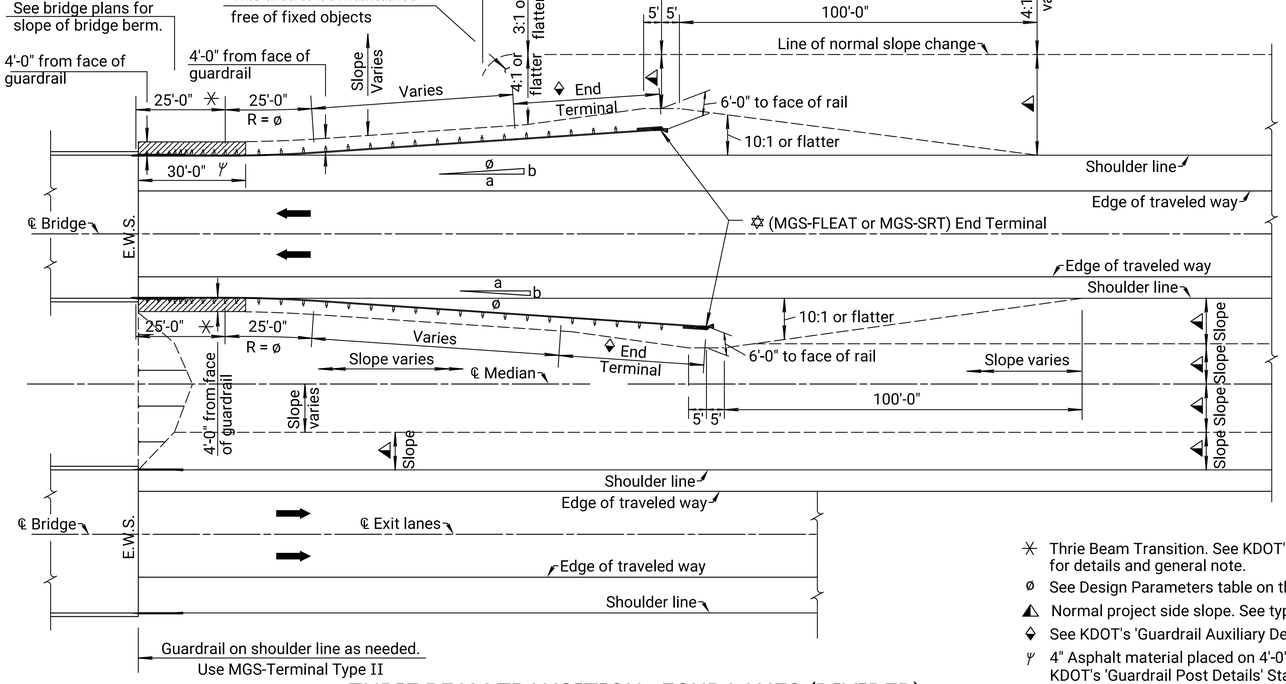
THRIE BEAM TRANSITION - TWO LANES

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.
- ℽ 4" Asphalt material placed on 4'-0" embankment widening unless flume inlet and slope drain is constructed. See KDOT's 'Guardrail Post Details' Standard Drawings for "Post in Pavement" details.
- ✡ The minimum length of w-beam guardrail required between the guardrail end terminal and any transition section, including the thrie-beam transition, is 12'-6".

NO.	DATE	REVISIONS	BY	APP'D
4	6-5-18	Removed Flare-beyond-the-Flare	A.L.R.	T.T.R.
3	5-15-17	Removed X-LITE	A.L.R.	S.W.K.
2	6-7-12	Revised Note to Designer	S.W.K.	J.O.B.
1	1-25-12	Revised Layout, End Term.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD612C

FHWA APPROVAL	6-19-18	APP'D. SCOTT W. KING	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-18-2018

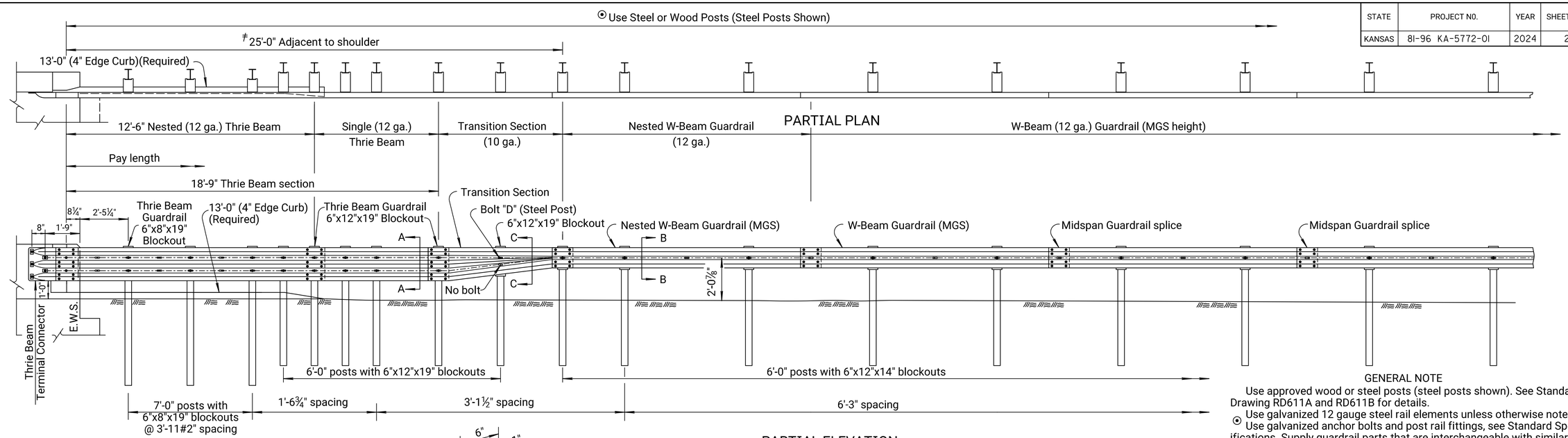
KDOT Graphics Certified

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

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

Plotted 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss612c.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	22	161



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
2	2-10-16	Added Detail, Wood Post	T.T.R.	S.W.K.
1	1-25-12	Revised Details, Thrie-Beam	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS OF THRIE BEAM to (MGS) GUARDRAIL TRANSITION

RD613A

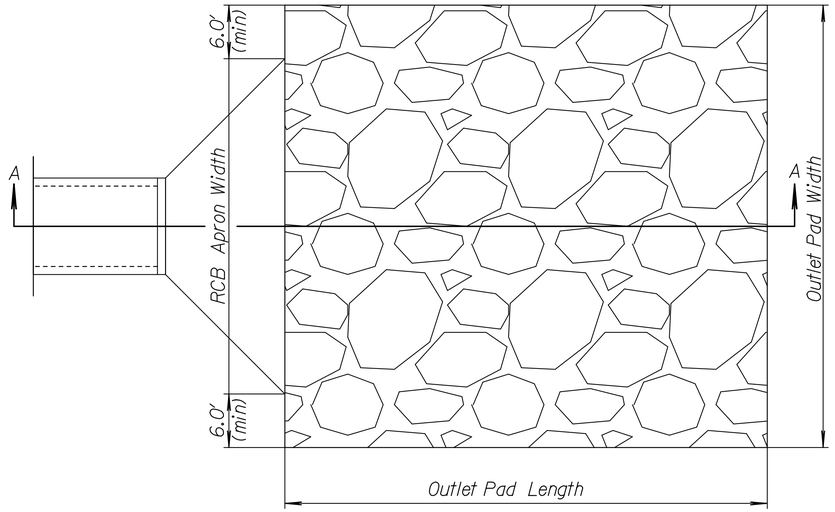
FHWA APPROVAL	4-21-16	APP'D.	SCOTT W. KING
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 08-03-2021

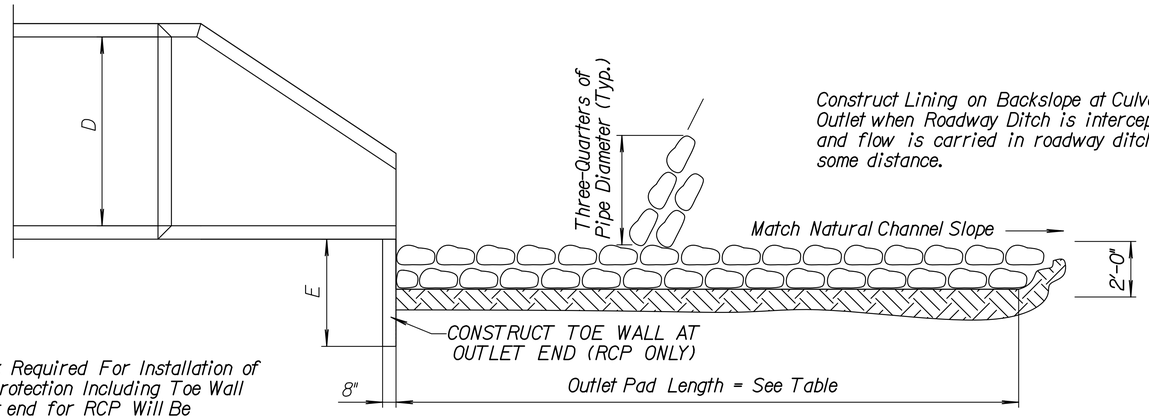
KDOT Graphics Certified

Plotted :8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss613a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	23	161



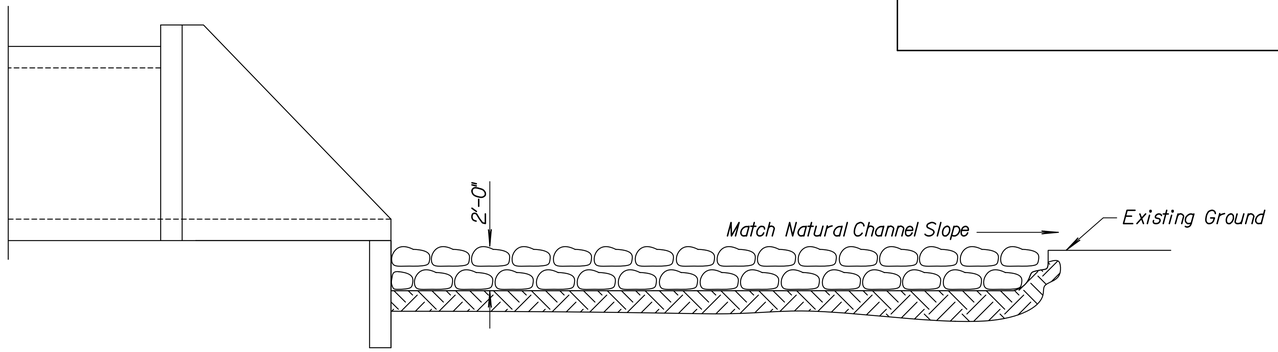
STANDARD METHOD - PLAN VIEW



STANDARD SLOPE PROTECTION FOR CULVERT OUTLET (RCP) - SIDE VIEW

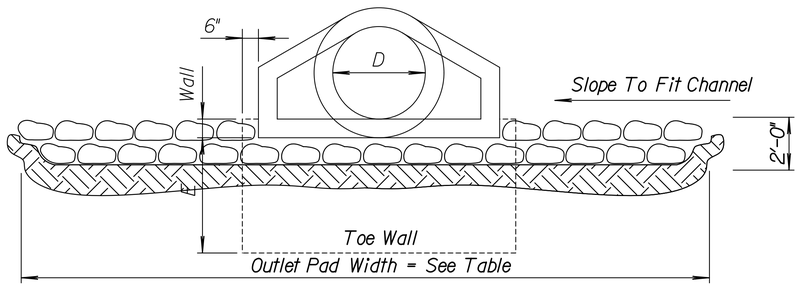
Paid For as "Slope Protection (Riprap)

Note:
All Work Required For Installation of Slope Protection Including Toe Wall at outlet end for RCP Will Be Considered Subsidiary To The Bid Item "Slope Protection (Riprap)



SECTION A-A

OUTLET PROTECTION DETAILS (BOX CULVERTS)

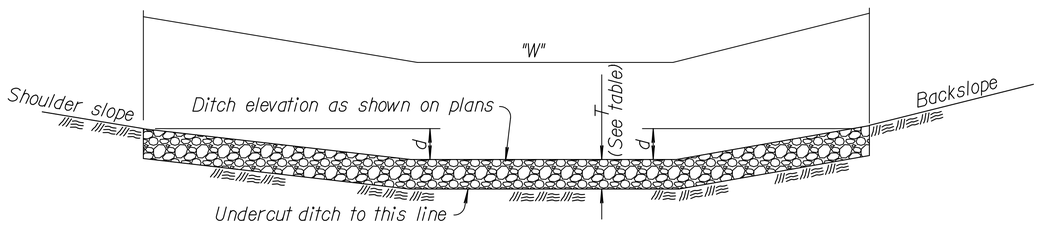


STANDARD SLOPE PROTECTION FOR CULVERT OUTLET (RCP) - END VIEW

OUTLET PROTECTION DETAILS (CIRCULAR CULVERTS)

* TOE WALL DEPTH	
Culvert Size (D)	Toe Wall Depth (E) (ft)
18"	1.5
24"	2.0
30"	2.0
36"	2.0
42"	2.0
48"	2.0

* For Circular Culverts Only



DITCH LINING - SLOPE PROTECTION (RIPRAP STONE)

Class	d (ft)	T
100 lb	1.5	1.5
200 lb	1.5	2.0

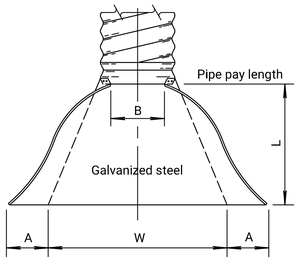
Note:
All work and materials required for the construction of the ditch lining shall be paid for by the cubic yard of "Slope Protection (Riprap Stone)".
Dumped riprap shall be spread in reasonable conformity with the ditch section as shown and as directed by the Engineer.
Ditch Lining shall be measured and paid for by the cubic yard and shall be full compensation for excavation for undercutting, furnishing, hauling, placing and maintaining the material as specified to complete the work.

KANSAS DEPARTMENT OF TRANSPORTATION

SLOPE PROTECTION DETAILS

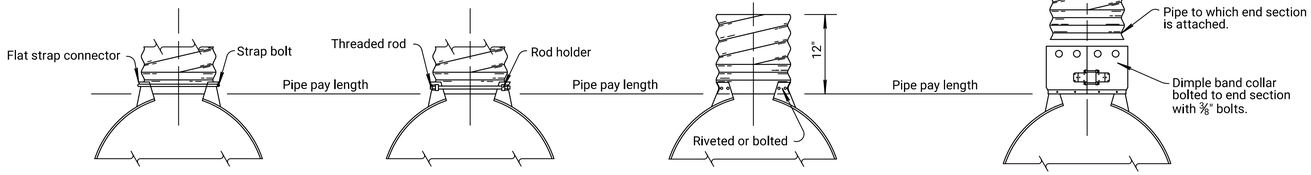
Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772\01eec796-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	24	161



PLAN

(Illustrated with Type #3 Connection)



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.

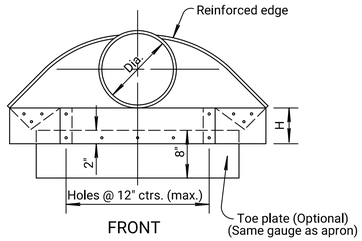
TYPE 3

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

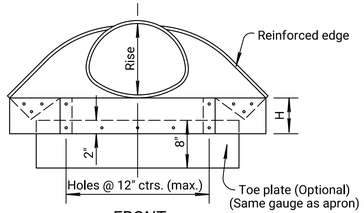
TYPE 5

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

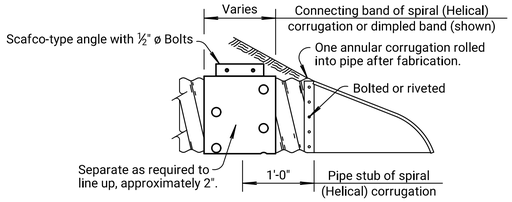
Note: Type 3 connection may be furnished instead of Type 1 or Type 2 for smaller round or arch pipe.



FRONT



FRONT



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					Approx. Slope
		A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	
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	Dimensions in Inches 2⅔" x ½" Corrugations						Dimensions in Inches 3" x 1" or 5" x 1" Corr.						Approx. Slope
		Span & Rise	CS, ACS or CA Gauge	A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	CS, ACS or CA Gauge	A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	
1.0	1.1	17" x 13"	16	5	9	6	20	28							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.

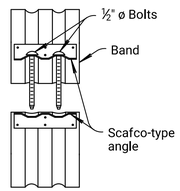
Toe plate extension, when specified, is an accessory and shall be the same gauge and metal as end section. Toe plate shall be punched to match holes in apron lip and attached with furnished 3#8" diameter nuts & bolts.

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.

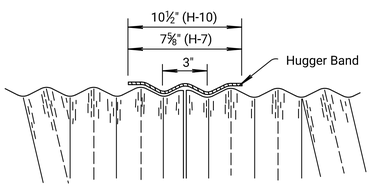
Multiple panel end sections may contain dual gauges of like metal and shall have lap seams which are tightly joined with rivets or bolts. For 60" and larger diameter round pipe end sections and 77"x52" arch pipe end sections, the reinforced edges are supplemented with stiffener angles. The angles are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

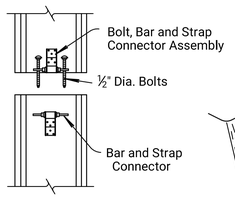


CONNECTION DETAIL
H-7 or H-10 BAND

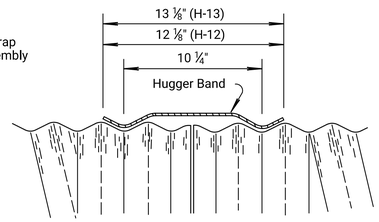


UNIVERSAL REFORMED END with
H-7 or H-10 HUGGER BAND

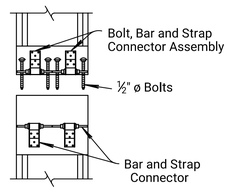
DETAILS FOR H-7 HUGGER BAND (12" thru 36")
or H-10 HUGGER BAND (12" thru 120")



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.	3" x 1" Corr.		5" x 1" Corr.		2⅔"x ½" Corr.	3" x 1" Corr.	
	CSP or ACSP	CSP or ACSP		CSP or ACSP		CAP	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.	3" x 1" Corr.	5" x 1" Corr.	2⅔"x ½" Corr.	3" x 1" Corr.
				CSP or ACSP	CSP or ACSP	CSP or ACSP	CAP	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.

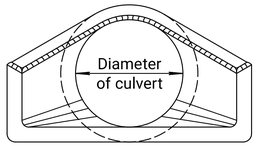
KDOT Graphics Certified 05-16-2022 Sh. No. 24

KDOT Graphics Certified

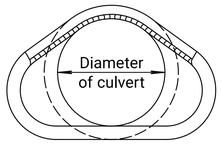
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume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

Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\RD660-04.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	25	161

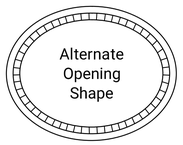


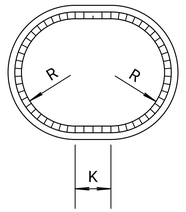
END ELEVATION (TYPE I)



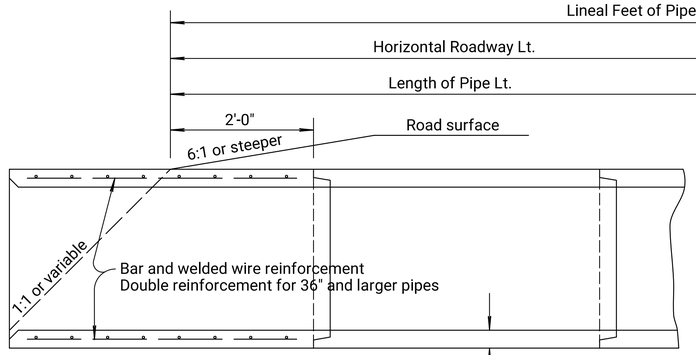
SECTION A-A

Showing rounding of inside edge of end section.

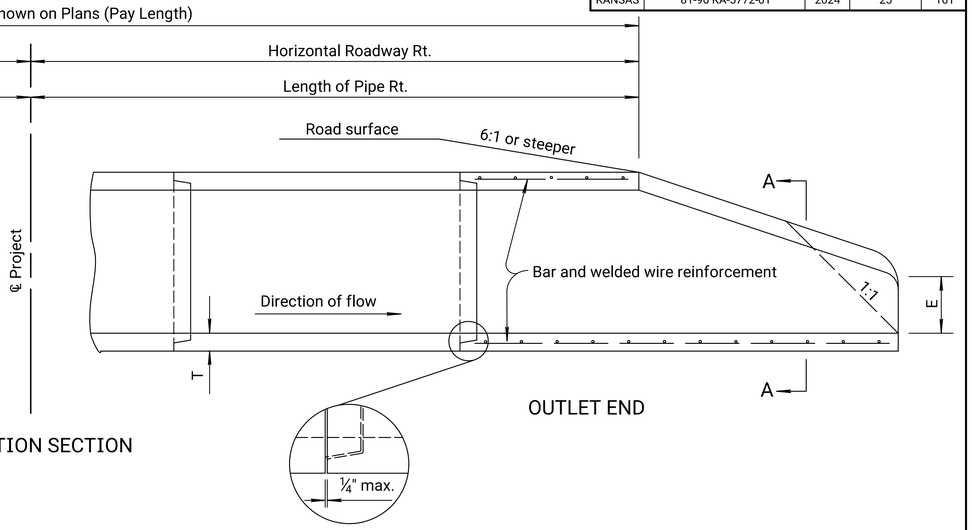




END ELEVATION
(TYPE III)



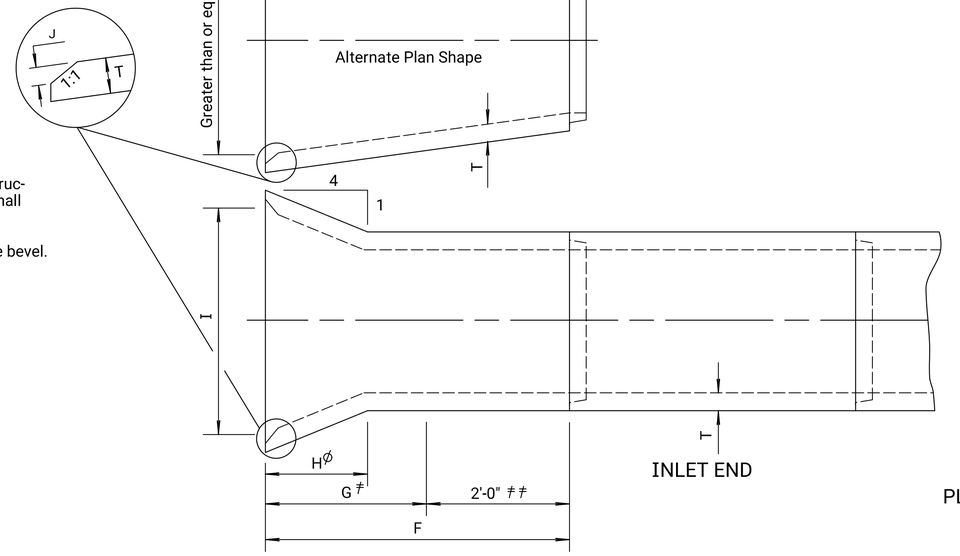
INLET END



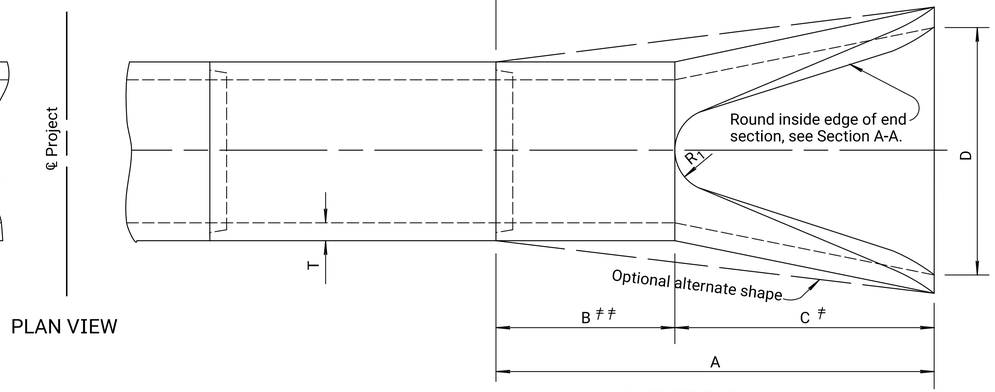
OUTLET END

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. 25

KDOT Graphics Certified

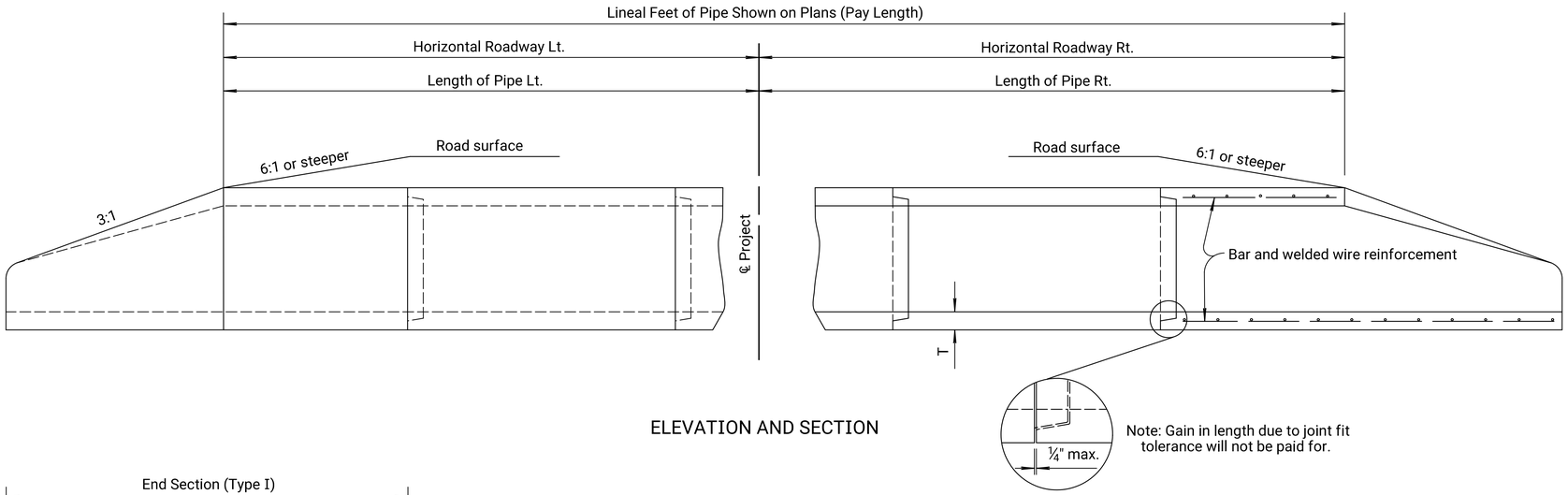
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume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

Plotted : 8/16/2024

Drawn By : _

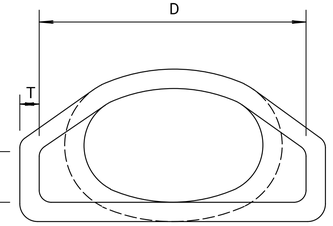
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	26	161

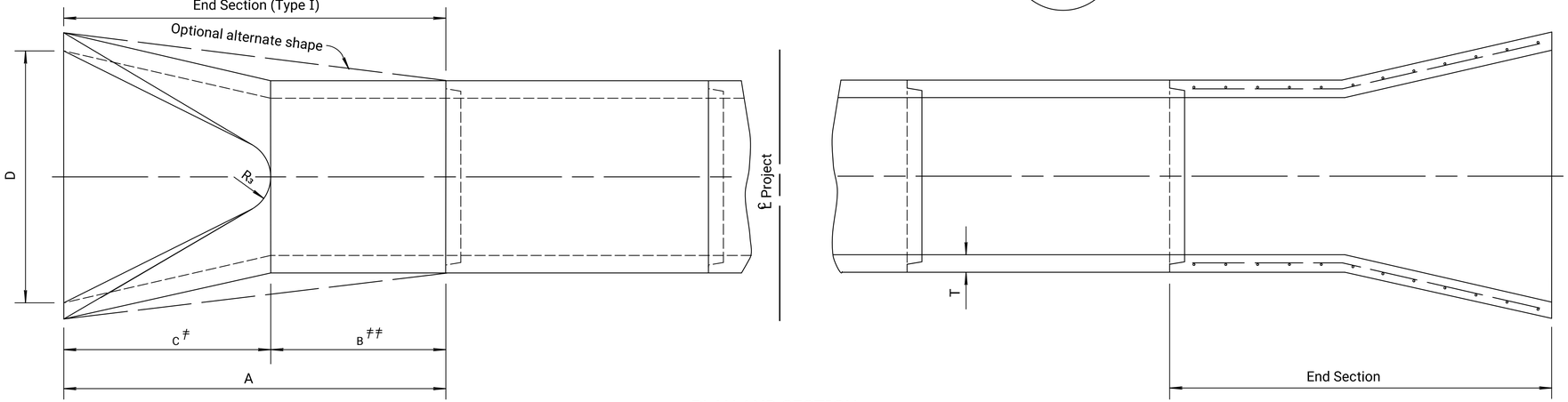


ELEVATION AND SECTION

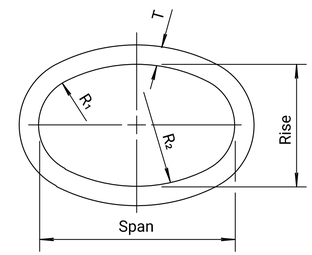
Note: Gain in length due to joint fit tolerance will not be paid for.



FLARED END SECTION ELEVATION



PLAN AND SECTION



END ELEVATION

END SECTION (TYPE I) NOMINAL DIMENSIONS

Bid Designation Sq. Ft.	Equiv. Dia. (in.)	Min. W.W. Area Sq. Ft.	Span	Rise	Overall Length A	Barrel Length B ≠≠	C≠	D	E	R₁	R₂	R₃	T
1.0 or 1.5	18"	1.8	23"	14"	6'-0"	3'-9"	2'-3"	3'-0"	8"	6"	20"	6"	2¾"
2.0, 2.5 or 3.0	24"	3.3	30"	19"	6'-0"	2'-9"	3'-3"	4'-0"	8½"	8¼"	26¼"	7"	3¼"
4.0	27"	4.1	34"	22"	6'-0"	2'-2"	3'-10"	4'-6"	9"	9¼"	29 17/32"	8"	3½"
5.0	30"	5.1	38"	24"	6'-0"	1'-6"	4'-6"	5'-0"	9½"	10¼"	32¾"	9"	3¾"
6.0	33"	6.3	42"	27"	6'-0"	1'-3"	4'-9"	5'-6"	10⅜"	11 7/16"	36 3/16"	10½"	3¾"
7.0	36"	7.4	45"	29"	8'-0"	3'-0"	5'-0"	6'-0"	11¼"	12¼"	39¼"	12"	4½"
8.5	39"	8.8	49"	32"	8'-0"	3'-0"	5'-0"	6'-3"	12"	13 9/16"	42 21/32"	12½"	4¾"
10.0	42"	10.2	53"	34"	8'-0"	3'-0"	5'-0"	6'-6"	15¾"	14¾"	46"	13"	5"
11.0 or 12.5	48"	12.9	60"	38"	8'-0"	3'-0"	5'-0"	7'-0"	21"	16½"	51¾"	14"	5½"
14.0 or 16.5	54"	16.6	68"	43"	8'-0"	3'-0"	5'-0"	7'-6"	25½"	18 21/32"	58 13/32"	16"	6"

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

≠≠ Included in pay length of pipe.

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE END SECTION FOR REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE TYPE I

RD663

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

KDOT Graphics Certified 05-16-2022 Sh. No. 26

KDOT Graphics Certified

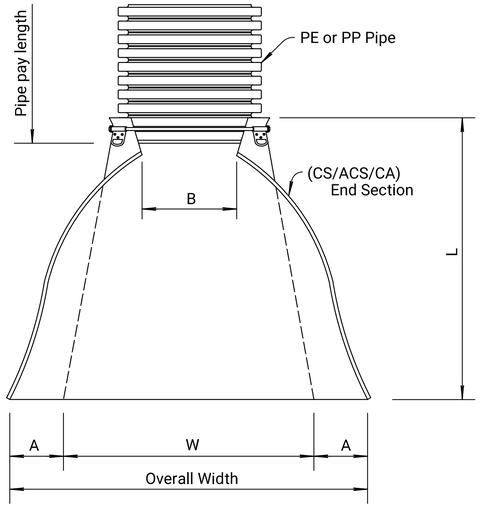
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume 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 : 8/16/2024

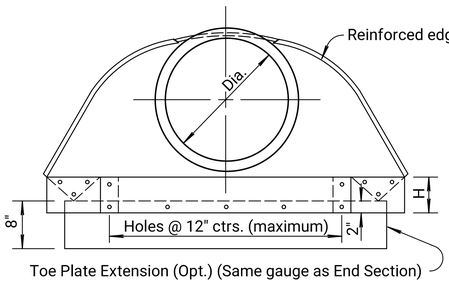
Drawn By : _

File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772rd663.dgn

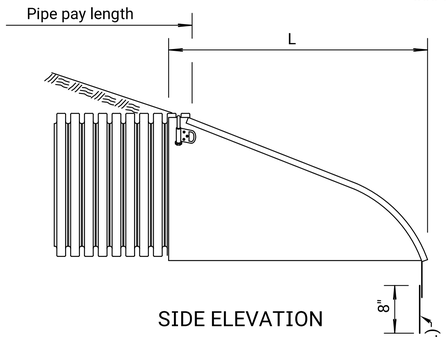
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	27	161



PLAN
(Illustrated with Type 2 Connector)

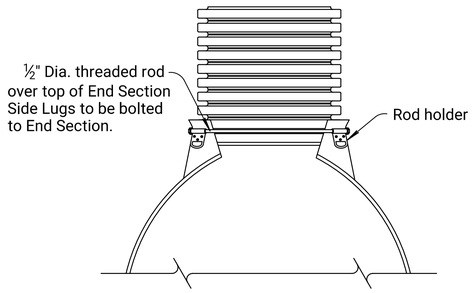


FRONT ELEVATION

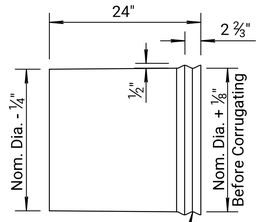


SIDE ELEVATION

⊛ 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.

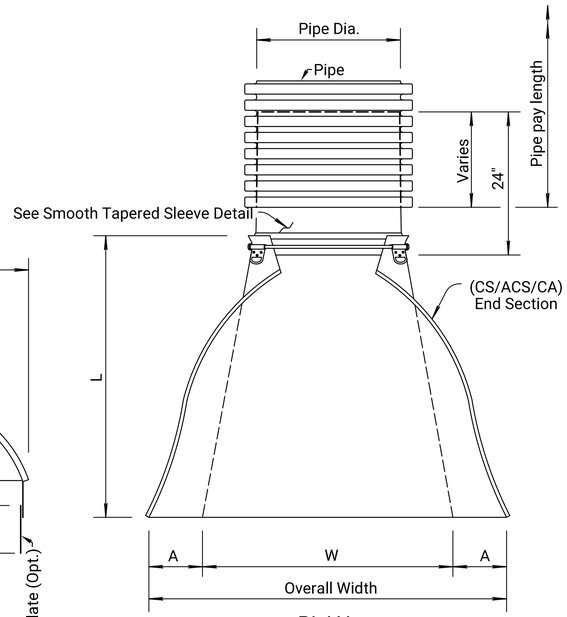


TYPE 2 CONNECTOR
(12" & Larger)

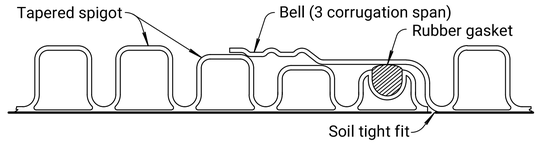


Form ½" x 2 ⅔" Corrugations in 12 ga. smooth CS (Galvanized) or ACS (Aluminized) metal, maintain inside diameter of sleeve.

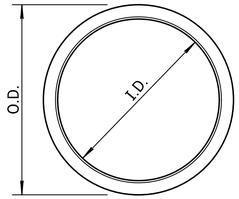
SMOOTH TAPERED SLEEVE DETAIL
(Required)



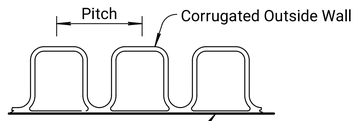
PLAN
TAPERED SLEEVE FOR ATTACHING
METAL END SECTION TO PE OR PP PIPE
(Illustrated with Type 2 Connector)



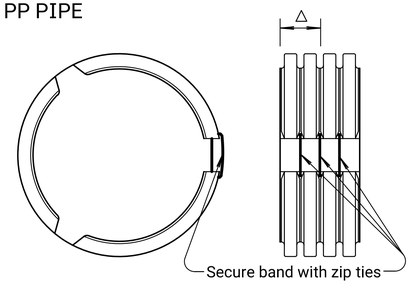
PE or PP PIPE BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT



DETAILS OF CORRUGATED
PE or PP PIPE

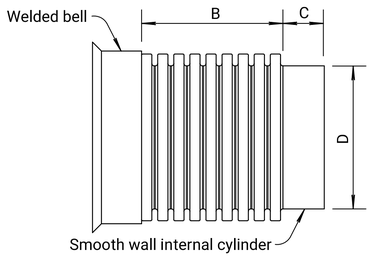


TYPICAL SECTION
CORRUGATED PE or PP PIPE



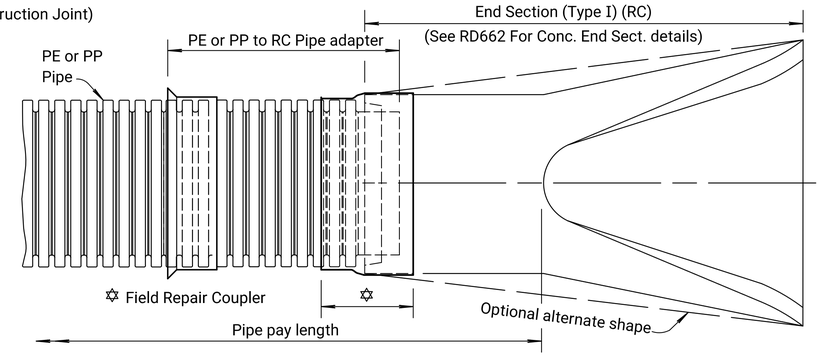
△ Two Full Corrugations (Minimum Overlap)

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

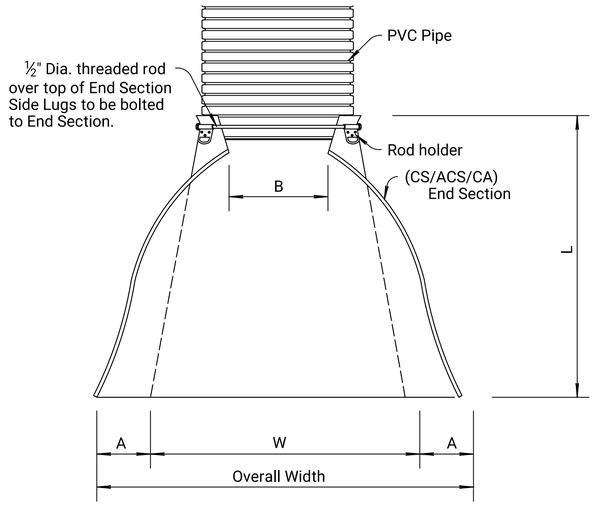
FHWA APPROVAL	06-08-22	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 27

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

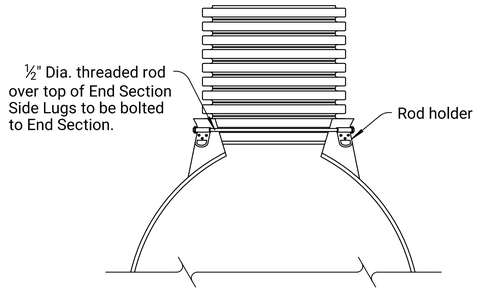
Plotted : 8/16/2024
Drawn By : _
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	28	161



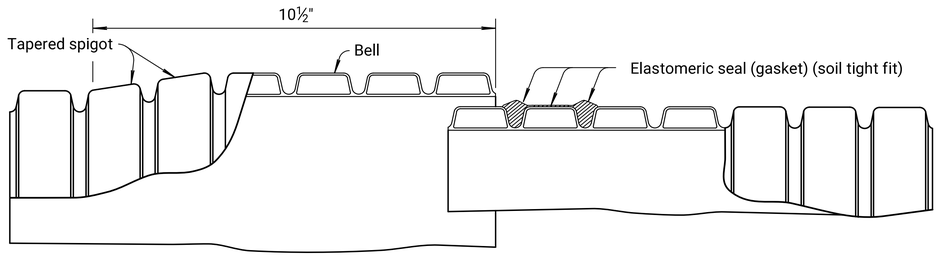
PLAN

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

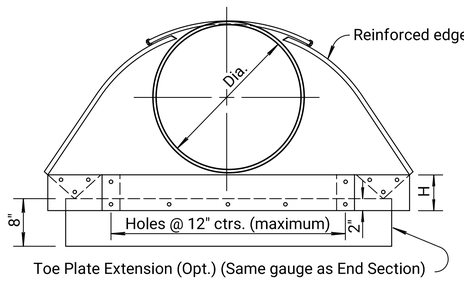


TYPE 2 CONNECTOR

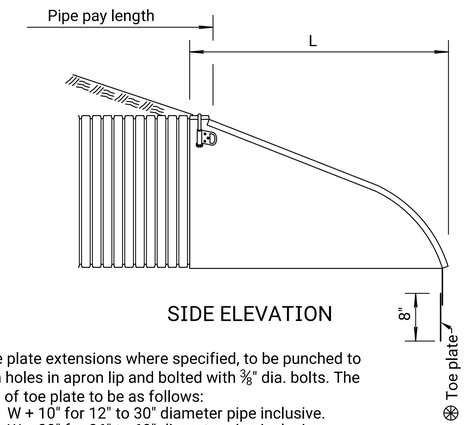
(12" & Larger)



PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

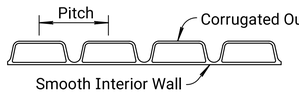


FRONT ELEVATION

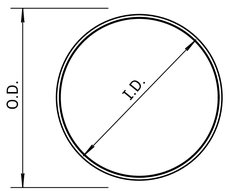


SIDE ELEVATION

⊛ 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 height.

Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341\projects\000\ks0000000\drg

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

KANSAS DEPARTMENT OF TRANSPORTATION

METAL END SECTION
(TYPE I)
for PVC PIPE

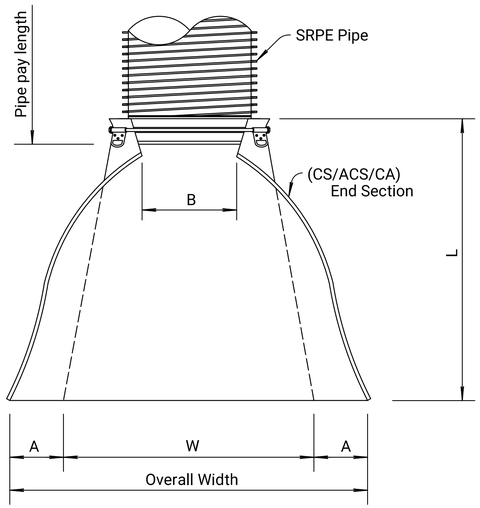
RD667B

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

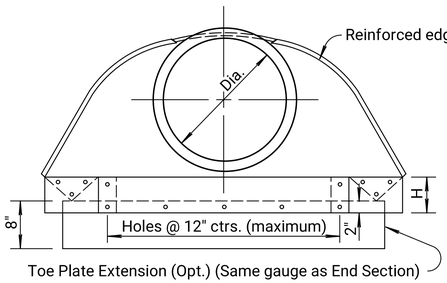
KDOT Graphics Certified 05-16-2022 Sh. No. 28

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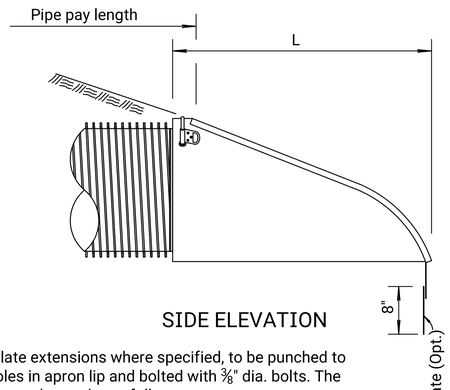
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	29	161



PLAN
(Illustrated with Type 2 Connector)

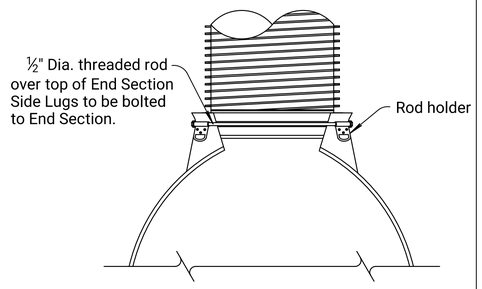


FRONT ELEVATION

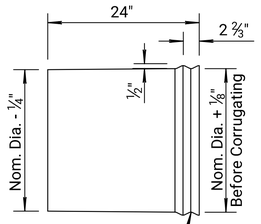


SIDE ELEVATION

⊛ 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.

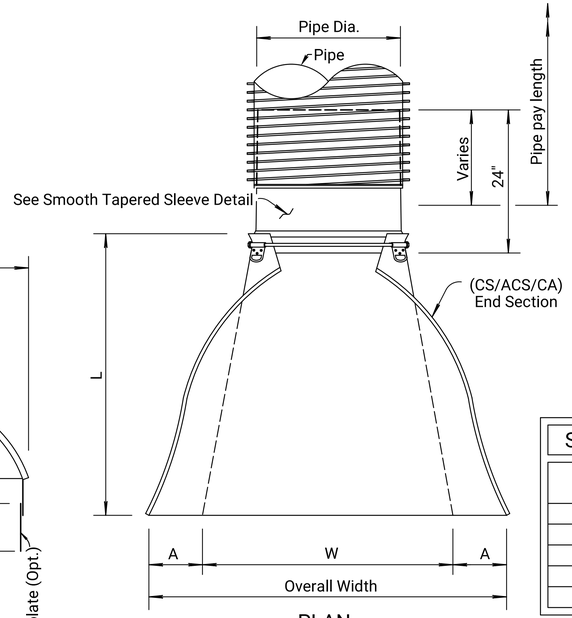


TYPE 2 CONNECTOR
(30" & Larger)

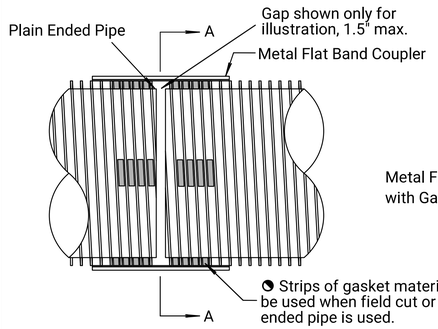


Form ½" x 2 ⅔" Corrugations in 12 ga. smooth CS (Galvanized) or ACS (Aluminized) metal, maintain inside diameter of sleeve.

SMOOTH TAPERED SLEEVE DETAIL
(Required)

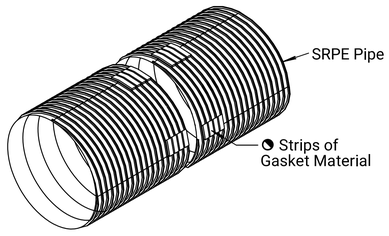


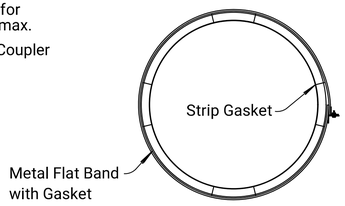
PLAN
TAPERED SLEEVE FOR ATTACHING
METAL END SECTION TO SRPE PIPE
(Illustrated with Type 2 Connector)



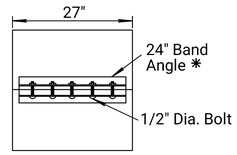
SIDE ELEVATION

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

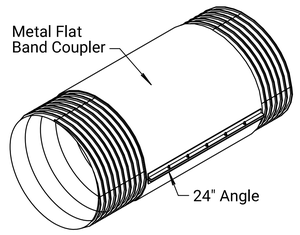




SECTION A-A



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.

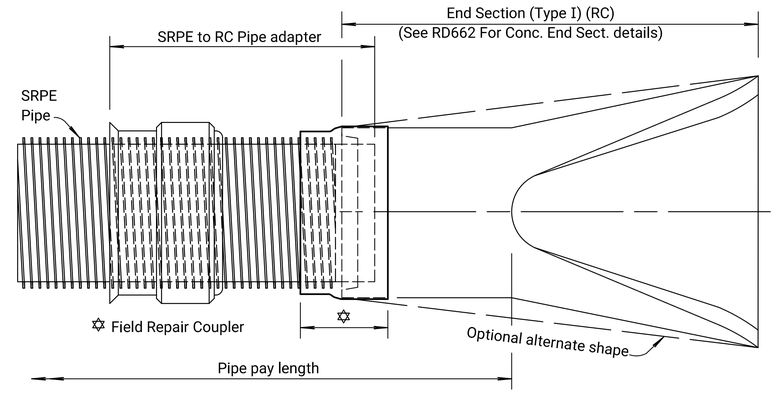
Attachment to SRPE pipe 30" diameter and up shall be made with Type 2 Connector.

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					Slope
		A (min.)	B (max.)	H (min.)	L (+/-2")	W (min.)	
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.



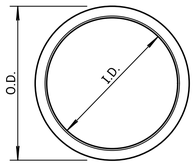
(This installation is for Acidic Soil Conditions)

SRPE to RC PIPE ADAPTER

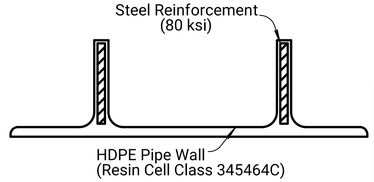
SRPE TO RC PIPE ADAPTER

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.



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 1) FOR SRPE PIPE

RD667D

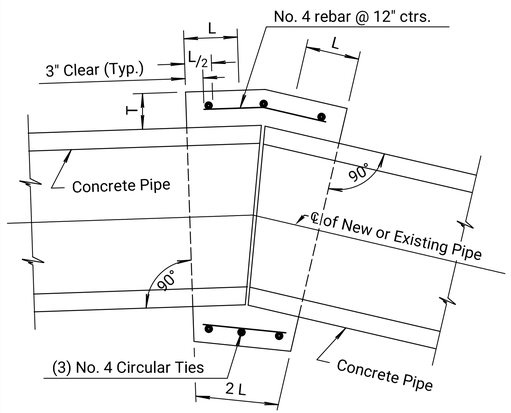
FHWA APPROVAL	06-08-22	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-14-2022 Sh. No. 29

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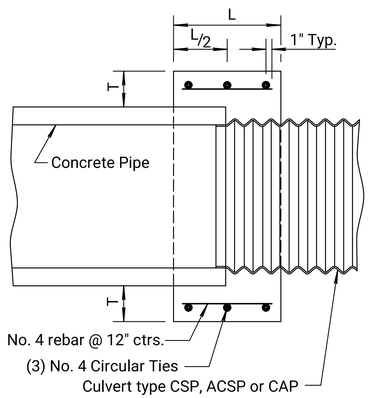
Note to Designer:
KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, PPP, SRPEP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design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

Plotted : 8/16/2024
Drawn By : __
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PIPE COLLAR AT CHANGE IN ALIGNMENT

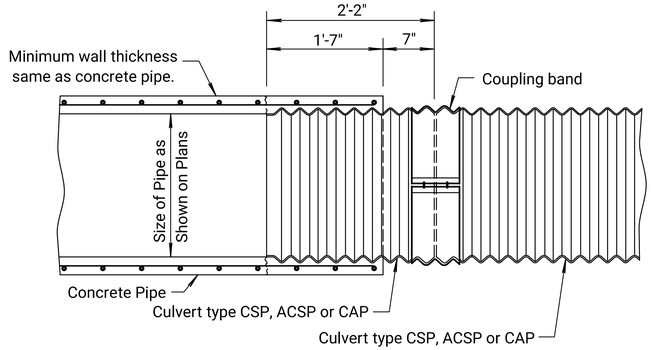
TYPE A COLLAR



PIPE COLLAR AT CHANGE IN PIPE MATERIAL

TYPE B COLLAR

CONCRETE PIPE COLLAR		
Pipe Dia.	L	T
18"	1'-0"	6"
24"	1'-0"	6"
36"	1'-6"	8"
48"	1'-6"	10"
60"	1'-9"	11"

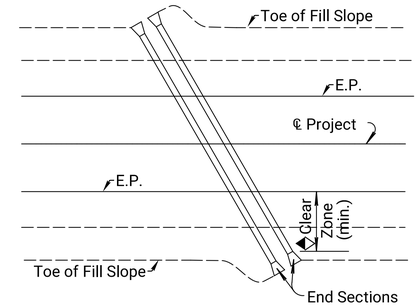


(CONCRETE PIPE CONNECTED TO CORRUGATED METAL PIPE)

TYPE C COLLAR ⚠

⚠ A section of concrete pipe (6'-0" min.) is cast 1'-7" short with the re-steel protruding. Tack weld the re-steel to the 2'-2" section of CMP and finish casting the remaining 1'-7" of RCP around the CMP. This is an approved connection provided it is fabricated as an integral part of a section of concrete pipe.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	30	161



PLACEMENT OF ROTATED PIPES

RELATIVE TO FILL SLOPE

AND CLEAR ZONE

♦ Pipe culverts 2'-0" or less in height may terminate within the clear zone with Type I or Type III End Section. Any size pipe may terminate within the clear zone with a Type IV End Section.

General Notes:

Pipe collar shall be used to join pipes of different diameters or materials or where change in alignment or grade exceeds that allowed for ordinary joints.

All concrete shall be Concrete Grade 3.0. All reinforcing steel shall be Grade 60 and shall have a minimum of 2" of cover.

The diameter of the circular ties shall be the outside diameter of the larger pipe plus "T".

The maximum allowable distance between the ends of the pipes at any point is 2".

All labor, materials and incidentals required to construct the pipe collar Type A, B or C shall not be paid for directly but shall be subsidiary to the individual pipe bid items.

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.

Pipe ends shall be trimmed such that the maximum distance between pipes at any point is 2".

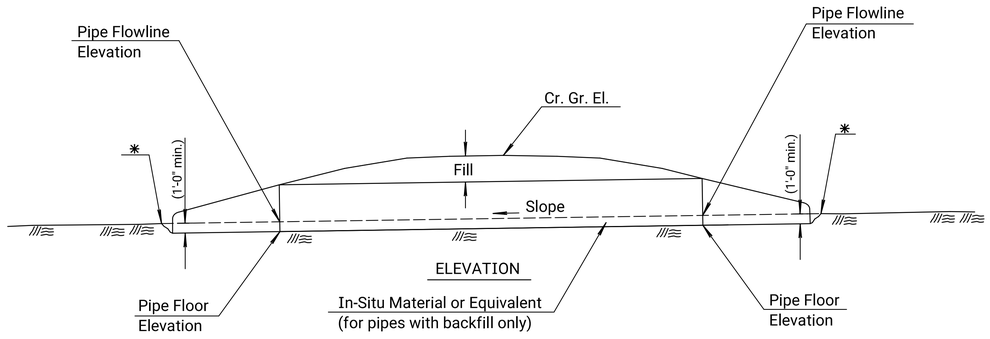
PIPE COLLARS

GENERAL NOTE

For pipes where the height or rise is greater than 4'-0" place uncompacted backfill through the pipe, including the end sections, 1'-0" (Min.). Backfill material will be reasonably free of organic material. In-situ material may be used for backfill as approved by the Engineer.

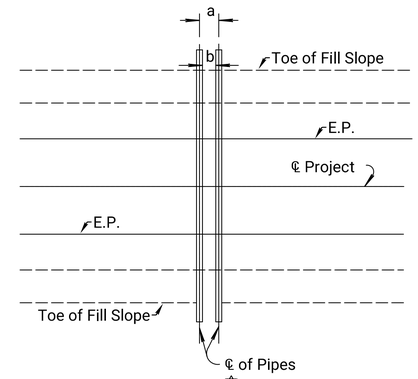
For pipes where the height or rise is less than or equal to 4'-0" install the pipe such that embedment will occur through natural sedimentation. See Pipe Embedment detail shown on this sheet.

Work and material for embedding pipes will not be paid for directly, but will be Subsidiary to the other pipe bid items in the contract.



PIPE EMBEDMENT

✳Natural channel or ditch flowline elevation. See profile sheets and cross sections for details.



a = Face width of end section ✡ + 1'.

✡ Face width is equal to the following dimension shown on the end section std. drawing.

Type I Concrete = D

Type III Concrete = I

Type I CM = W+ 2A

Type III CM = G

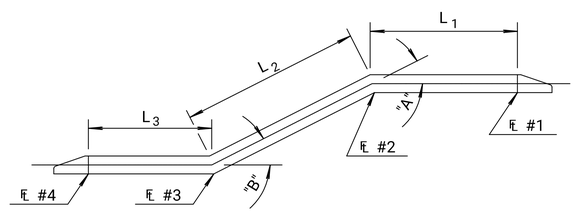
Type IV = W+ 2A

b = Pipe diameter or span (3' min.)

Spacing shall be equal to the larger of dimensions a or b.

Spacing for three or more pipes shall be determined using a similar method.

MULTIPLE PIPE SPACING



Sketch Along ℄ CRP (CMP)

Broken-Back

SUMMARY OF BROKEN BACK PIPES											
STATION	SIZE	FLOW LINES				LENGTH			ANGLES		REMARKS
		#1	#2	#3	#4	L_1	L_2	L_3	A	B	

NO.	DATE	REVISIONS	BY	APP'D
06	01-21-16	Added Details, Pipe Embedment	T.T.R.	S.W.K.
05	05-17-13	Rev. Dimension, Type B Collar	S.W.K.	J.O.B.
04	04-18-08	Added asphaltic paint note	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS
PIPE CULVERT DETAILS

RD668

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

KDOT Graphics Certified 05-02-2022 Sh. No. 30

KDOT Graphics Certified

Plotted : 8/16/2024

Drawn By : _

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	31	161

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 heights and classes of pipe.

Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss659.dgn

PIPE CULVERT SUMMARY

Station	Type	Size or Bid Designation Sq. Ft.	Crown Grade Elev.	Flow Line Lt.	Flow Line Rt.	✳ Floor Elev. Lt.	✳ Floor Elev. Rt.	Horizontal Roadway Lt.	Horizontal Roadway Rt.	Degree of Rotation	Length of Pipe Lt.	Length of Pipe Rt.	Lin. Ft. of Pipe	Height of Fill (max.) Ft.	Concrete Pipe AASHTO Class No.	Pipe Gauge ◔ Steel	Pipe Gauge ◔ Alum.	Pipe Corrugations ◔ Steel	Pipe Corrugations ◔ Alum.	Remarks
285+75 Rt.	E.P. (RCPHE,CAMAC,ACSMAC)	2-1.5 Sq. Ft.		1115.24	1116.57			18	34	4 Rt.	18	34	104	2.3	HE-III					
296+30 Rt.	E.P. (ACSP, CAP, RCP, PEP, PPP, PVCP, SRPE)	2-30"		1100.37	1101.47			43	39	6 Rt.	43	39	164	7.2	II					
296+90 Lt.	E.P. (ACSP, CAP, RCP)	30"		1106.69	1104.39			24	20	11 Rt.	24	20	44	2.2	II					
307+50 Rt.	E.P. (ACSP, CAP, RCP, PEP, PPP, PVCP, SRPE)	30"		1099.56	1101.08			32	28	4 Rt.	32	28	60	4.8	II					
307+50 Lt.	E.P. (RCPHE,CAMAC,ACSMAC)	5.0 Sq. Ft.		1101.07	1101.76			27	29	1 Lt.	27	29	56	3.6	HE-I					
315+25 ℄	CRP (RCP)	24"	1104.78	1097.74	1097.98			45	44		45	44	89	4.9	II					

◔ 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.

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

✡ 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.

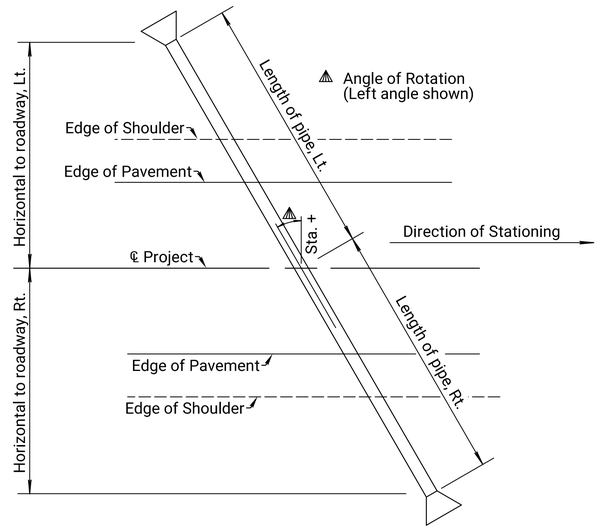
For inside diameter: ≥ 30"

✳ RCPHE, CAMAC, ACMAC for Eliptical/Arch Culverts

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

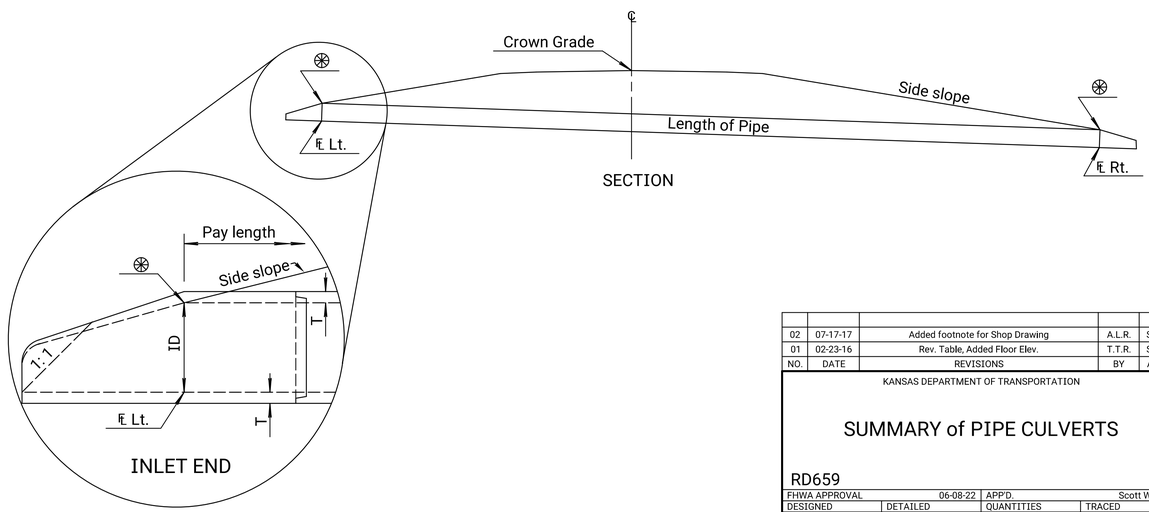
◆ Type IV End Sections are only made of CS or ACS.

Ψ Submit Shop Drawing of connection for review



PLAN
(Showing Rotation about ℄)

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



SECTION

INLET END

NO.	DATE	REVISIONS	BY	APP'D
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.

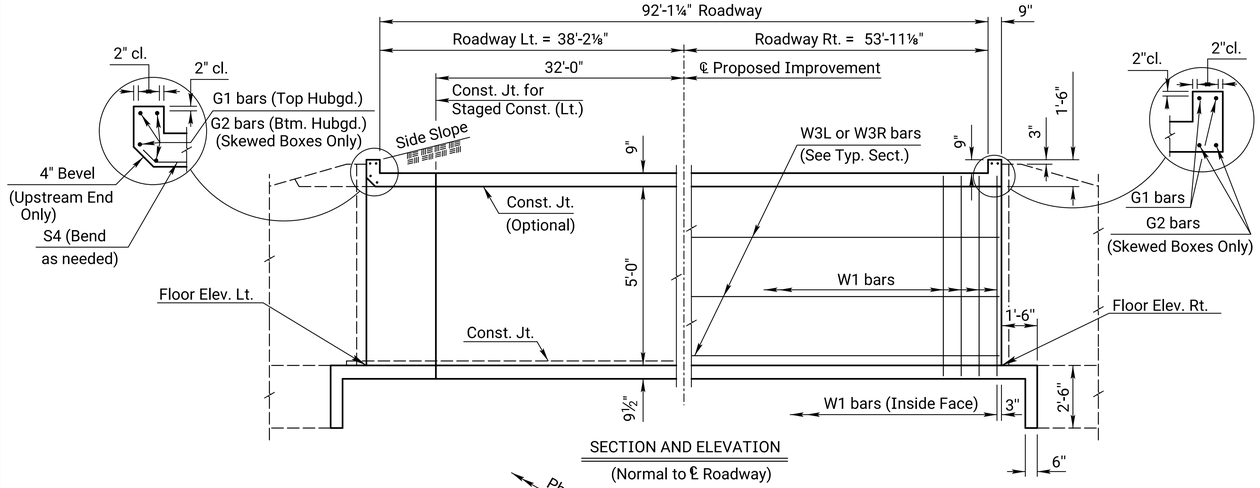
KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY of PIPE CULVERTS

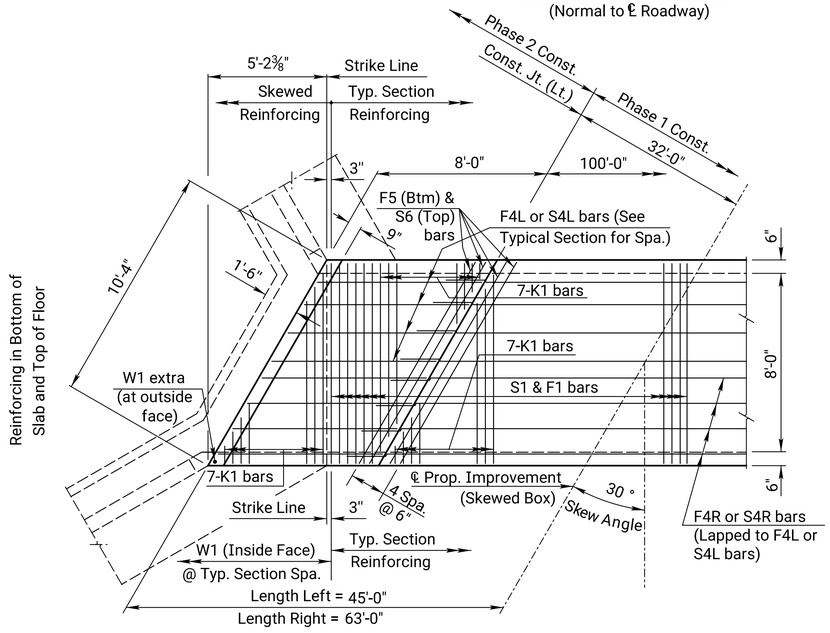
RD659

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	81-96 KA-5772-01	2024	32	161

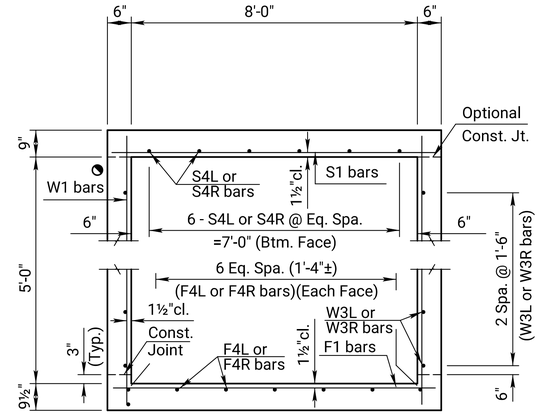


SECTION AND ELEVATION
(Normal to ℄ Roadway)



Skewed Box
(Lt. Skew Shown)

PLAN



TYPICAL SECTION

F1 & S1 bars are not placed with K1 bars near the Construction Joint for Staged Const. (Lt.), similar to what is done beyond the Strike Line at the ends of the box.

Extend the F4R, S4R and W3R bars a distance equal to the minimum splice length plus 2 inches beyond the Construction Joint. These bars are lapped to their respective "L" bars.

† 190 Req'd for Phase 1
6 Req'd for Phase 2

†† 270 Req'd for Phase 1
24 Req'd for Phase 2

Varies from 8'-3" to 3'-0" by 10½"Increments

K1
(Cut 8 each length)

BENDING DIAGRAM

All Dimensions are out to out of bars.

See RCB Auxiliary Details for Optional Splice.

Cast In Place only, Precast not allowed.

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

TEMPORARY SHORING: The bid item, "Temporary Shoring", includes all labor and material necessary to furnish shoring at this location for the temporary bracing of the embankment during excavation and for the staged construction of the RCB. 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 in the State of Kansas. 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.

⧗ For design purposes ONLY. Do NOT use for Construction — CULVERT SUMMARY — ◔ includes any welded wire fabric — LRFR RATING FACTORS

Floor Elev. Lt.	Floor Elev. Rt.	Crown Gr. Elev.	⧗Design Fill Ht.	Skew Lt	Left Wings	Right Wings	Scour Apron	Soil Saver	Concrete Barrel (Cu.Yds.)	Concrete Wings (Cu.Yds.)	Concrete Total (Cu.Yds.)	Reinf. Steel (Gr. 60) Barrel (Lbs.)	Reinf. Steel (Gr. 60) ◔Wings (Lbs.)	Reinf. Steel (Gr. 60) Total (Lbs.)	HL-93 Loading Inventory	HL-93 Loading Operating
1103.42	1100.22	1112.60	3	30	Flared	Flared	Yes	No	75.91	18.59	94.50	8430	2147	10577	1.35	1.76

△ Epoxy Coated Bars
✳ See Bending Diagram

BAR SCHEDULE

△F1 † Size	Spa.	No.	Length	△ F4L Size	No.	Length	△ F4R Size	No.	Length	△ F5 Size	No.	Length	△ S1 Size	Spa.	No.	Length	△ S4L Size	No.	Length	△ S4R Size	No.	Length	Size	No.	Length	△ S6 Size	No.	Length
6	6"	196	8'-8"	4	7	7'-8"	4	21	34'-9"	6	4	10'-0"	6	6"	196	8'-8"	4	6	7'-8"	4	18	34'-9"				6	4	10'-0"

△ K1 Size	Spa.	No.	Length	K2 Size	Spa.	No.	Length	△ W1 †† Size	Spa.	No.	Length	Size	Spa.	No.	Length	△ W3L Size	No.	Length	△ W3R Size	No.	Length	△ G1 Size	No.	Length	△ G2 Size	No.	Length	Size	Spa.	No.	Length
6	6"	56	✳	N/A	N/A	N/A		4	9"	294	6'-2"	N/A	N/A	N/A	N/A	4	6	7'-8"	4	18	34'-9"	5	4	10'-1"	6	4	10'-1"				

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

SUMMARY OF QUANTITIES	
Concrete (Grade 4.0)(RCB)	94.5 C.Y.
Concrete (Grade 4.0)(AE)	0.0 C.Y.
Bridge Backwall Protection System	S.Y.
Reinforcing Steel (Gr. 60)	2150 Lbs.
Reinforcing Steel (Gr. 60)(Epoxy Coated)	8430 Lbs.
Class III Excavation	C.Y.
Foundation Stabilization	35 C.Y.
Concrete for Seal Course (Set)	1 C.Y.
Temporary Shoring	1 L.S.
Granular Backfill (Wingwalls)	48 C.Y.

NO.	DATE	REVISIONS	BY	APP'D
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Sta. 296+60
SINGLE 8 ft x 5 ft RCB
(30°SKEW LT.)

BR 1.8.5 P — Sumner Co.

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

KDOT Graphics Certified 08-15-2024

KDOT Graphics Certified

SYSTEM PART	VERSION/ID
CADD V8A	12/15/2010
DATABASE	5/4/2020
RCB PROGRAM	7.1.22
KBOX MODEL ID	13N
CELL LIBRARY	2/8/2022

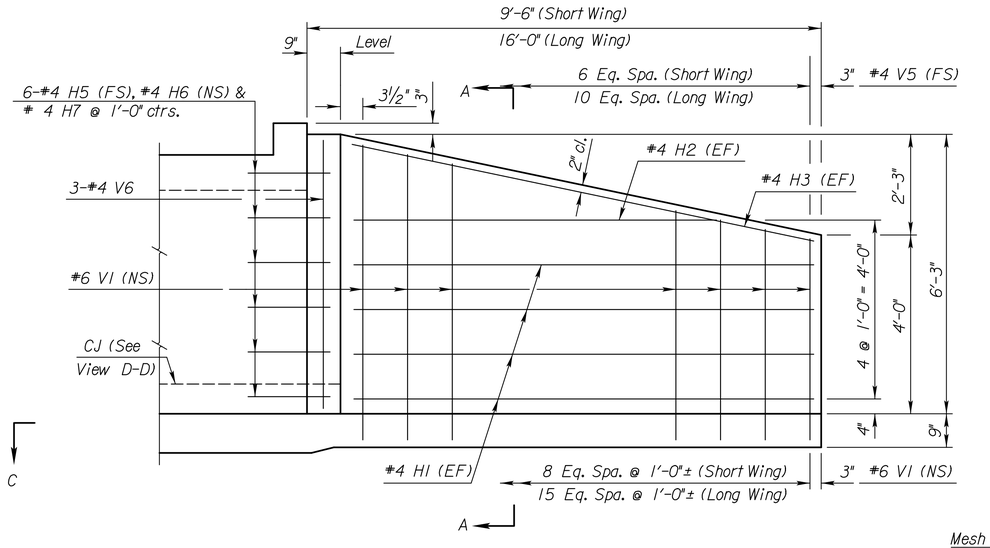
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Plotted By: —
Plot Location:
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Plot Date: 8/16/2024

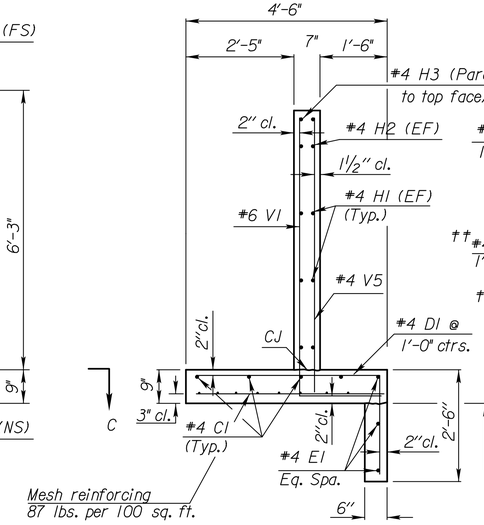
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	33	161

GENERAL NOTES

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

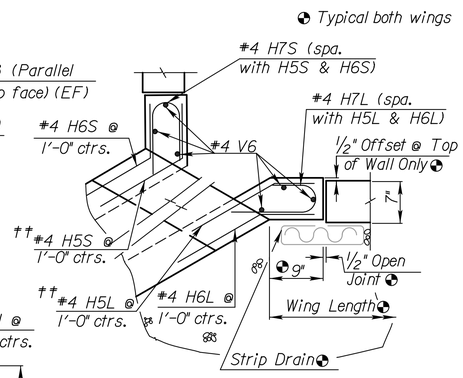


ELEVATION OF WINGWALL
(Backface Shown)



SECTION A-A

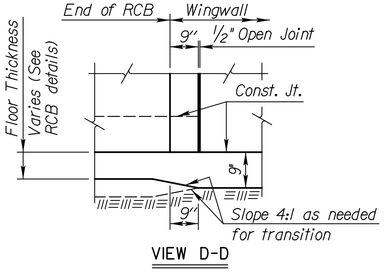
See "RCB Aux. Details" sheet for additional requirements.



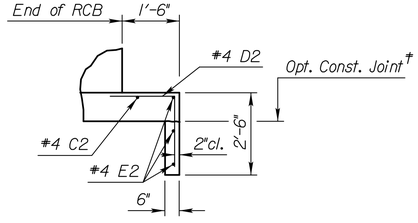
WINGWALL JOINT DETAIL
(Plan View)

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

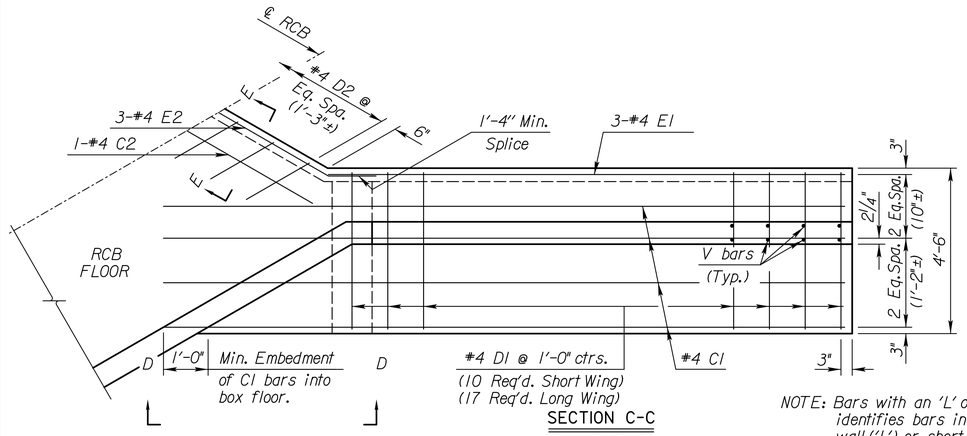
NOTE:
EF = Each Face
NS = Near Side
FS = Far Side
CJ = Const. Joint



VIEW D-D

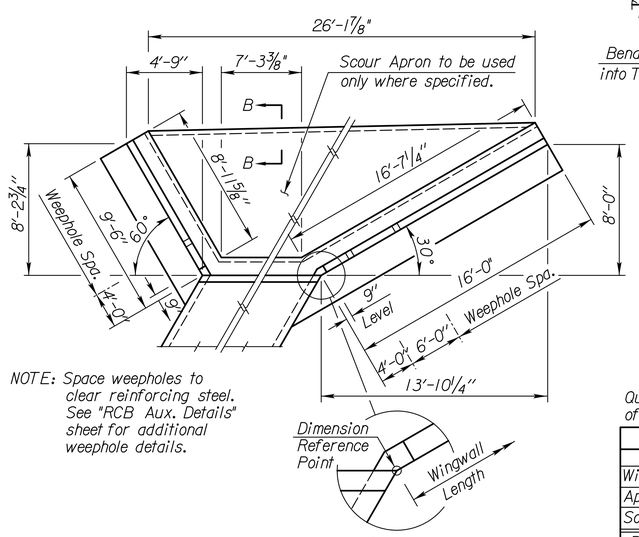


SECTION E-E



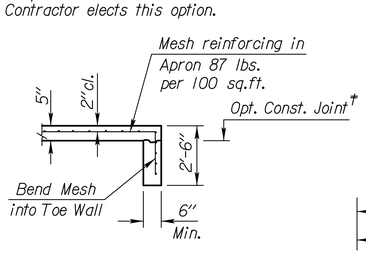
SECTION C-C
(Plan of Footing)

NOTE: Bars with an 'L' or 'S' designation identifies bars in the long wingwall ('L') or short wingwall ('S'); ie. #4 H2L, #4 H2S, etc.



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

WING DIMENSIONS FOR 30° SKEWED BOX
(3½:1 Embankment Slope)



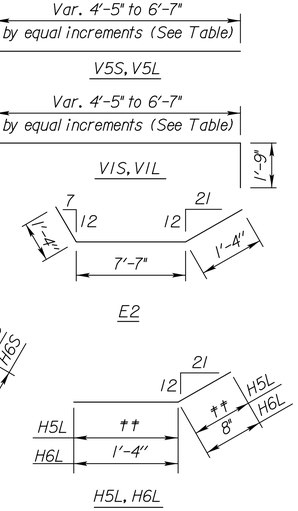
SECTION B-B

Bar	Incrmts.
V1S	3¼"
V1L	1¾"
V5S	4⅝"
V5L	2⅝"

Var. 4'-5" to 6'-7"
by equal increments (See Table)

V5S, V5L

Var. 4'-5" to 6'-7"
by equal increments (See Table)



BENDING DIAGRAM
(All dimensions are out to out of bars.)
†† Bend in Field

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

WINGWALL QUANTITIES (One End Only)				
	Foundation Stabilization		Concrete (Gr. 4.0)	
Wingwalls	3.44	(C.Y.)	7.77	(C.Y.)
Apron	2.23	(C.Y.)	3.04	(C.Y.)
Soil Saver	0.00	(C.Y.)	0.00	(C.Y.)
Reinforcing Steel (Gr. 60)			887	Lbs.
Welded Wire Fabric (Wings)			100	Lbs.
Welded Wire Fabric (Apron)			173	Lbs.
Granular Backfill (Wingwalls)			24.00	C.Y.
Filter Fabric (subsidiary)			29.00	S.Y.

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

*See Bending Diagram

30° Skew	Mark	#4 C1S	#4 C1L	#4 D1	#4 E1S	#4 E1L	#4 C2	#4 D2	#4 E2	#6 V1S	#6 V1L	#4 H1S	#4 H1L	#4 H2S	#4 H2L	#4 H3S	#4 H3L	#4 H5S	#4 H5L	#4 H6L	#4 H6S	#4 H7S	#4 H7L	#4 V5L	#4 V5S	#4 V6
	Number	4	4	27*	3	3	1	6 *	3 *	9	16	8	8	2	2	2	2	6 *	6 *	6 *	6 *	6 *	6 *	11	7	6
	Length	11'-9"	20'-9"	6'-4"	8'-9"	16'-6"	10'-1"	5'-2"	10'-3"	*	*	8'-4"	14'-10"	6'-7"	11'-8"	8'-6"	15'-0"	2'-1"	1'-10"	2'-0"	2'-0"	1'-9"	1'-8"	*	*	6'-0"

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Sta. 296+60
FLARED WINGWALLS
5 ft Rise (30*SKEW)

BR 10.30.05 Sumner Co.

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

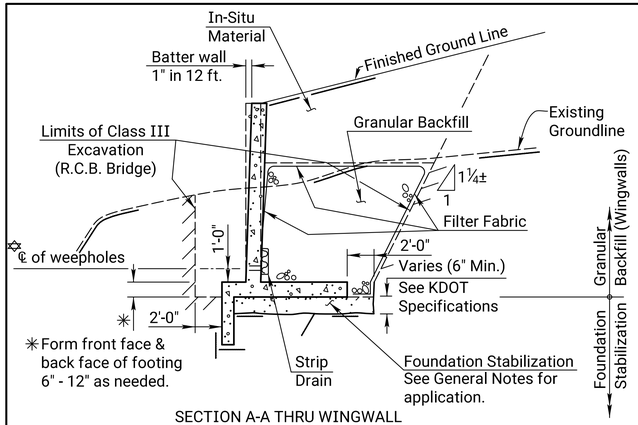
KDOT Graphics Certified 08-15-2024

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Plotted By: —
File:
Plot Date: 8/16/2024

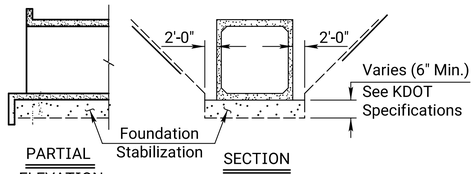
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	34	161



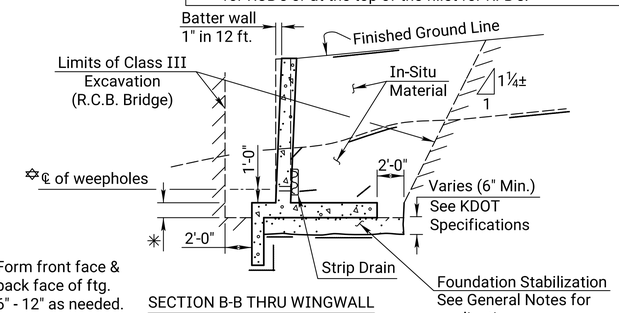
SECTION A-A THRU WINGWALL

Granular Backfill And Foundation Stabilization



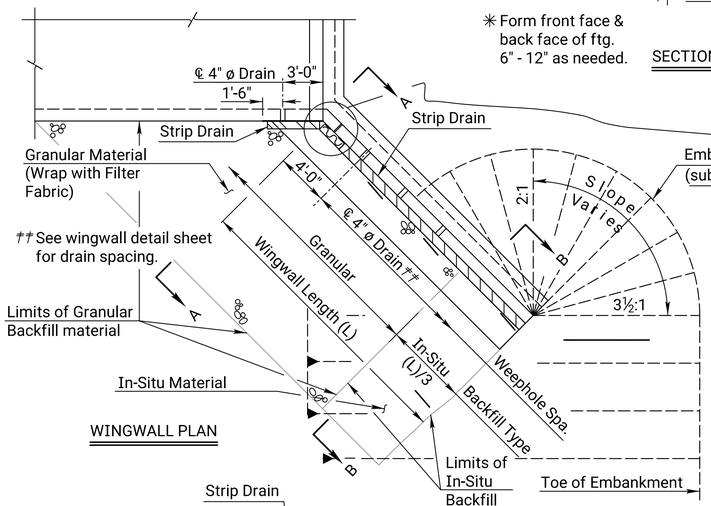
PARTIAL ELEVATION

SECTION

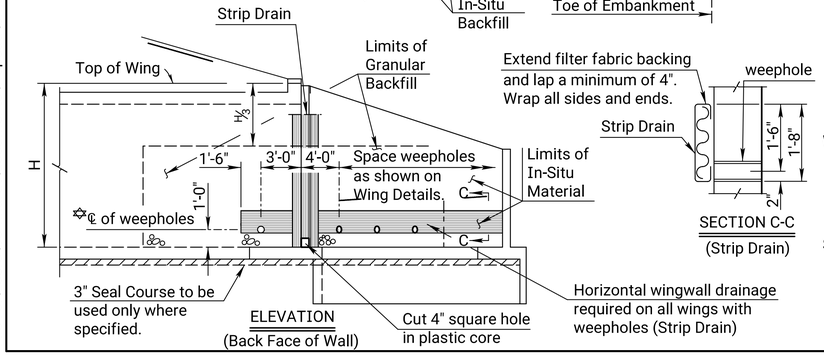


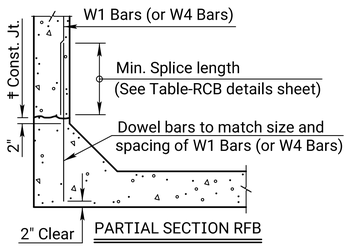
SECTION B-B THRU WINGWALL

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



WINGWALL PLAN





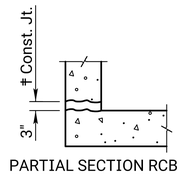
PARTIAL SECTION RFB

OPTIONAL BAR DETAIL

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

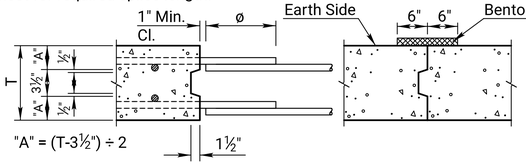
‡ OPTIONAL COLD JOINT

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



PARTIAL SECTION RCB

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

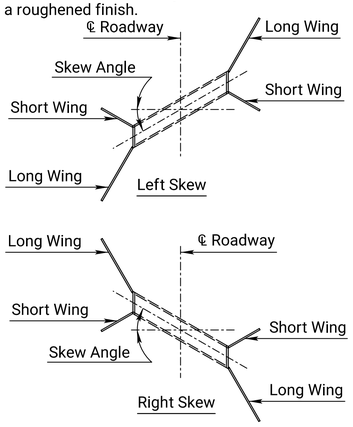


VERTICAL CONSTRUCTION JOINTS

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

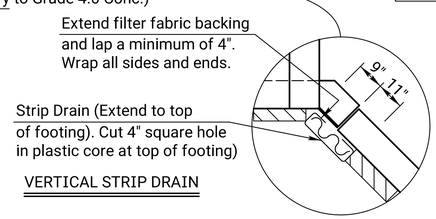
NOTE: Horizontal construction joints shall be a roughened finish.

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



PLAN VIEW SKEWED R.C.B.

SECTION C-C (Strip Drain)



VERTICAL STRIP DRAIN

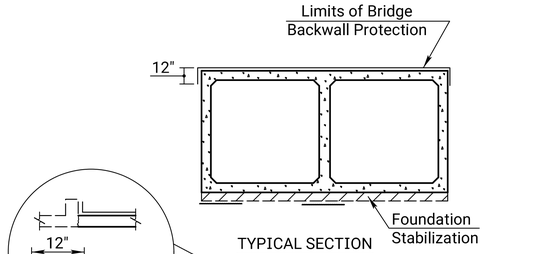
GENERAL NOTES

Wingwall Drainage:

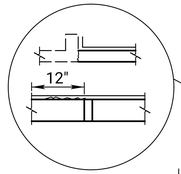
1. All wingwalls with weepholes shall have horizontal and vertical wingwall drainage as shown. Strip drains will be used. See KDOT Specifications for "Abutment Strip Drains" for strip drain requirements.
2. Construction and materials for wingwall drainage, including weepholes, and strip drain shall be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

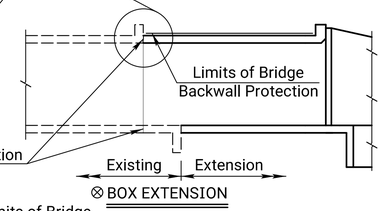
Wingwall Foundation Stabilization:
The Foundation Stabilization quantity has been calculated to the limits shown in the Section Thru Wingwall. The depth may be increased by the Engineer. Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.

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



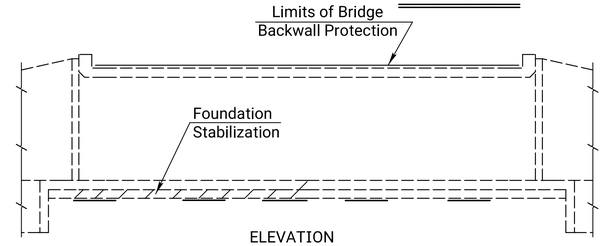
TYPICAL SECTION





⊗ BOX EXTENSION

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



ELEVATION
(New Construction)

GENERAL NOTES

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

Granular Backfill (Wingwalls):

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

In-Situ Backfill (Wingwalls):

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

GENERAL NOTES

Bridge Backwall Protection System:

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

RCB AUXILIARY DETAILS (LRFD)

BR020B

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

KDOT Graphics Certified 06-20-2022 Sh. No. 34

KDOT Graphics Certified

Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201bss020b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	35	161

SUMMARY OF QUANTITIES - Bridge No. 81-96-0.93 (162)

Item / Location	Excavation Class I (Cu. Yds.)	Excavation Class II (Cu. Yds.)	Concrete (Grade 4.0)(AE) (Cu. Yds.)	Concrete (Grade 4.0)(AE)(SW) (Cu. Yds.)	Reinforcing Steel (Grade 60) (Lbs.)	Reinforcing Steel (Grade 60) (Epoxy Coated) (Lbs.)	Piles (Steel) (HP12x53) ◔(Lin. Ft.)	Test Piles (Special) (HP12x53) ◔(Lin. Ft.)	Drilled Shaft (48")(Cased) (Lin. Ft.)	Sonic Test Drilled Shaft (Set Price) (Each)	Bridge Backwall Prot. System (Sq. Yds.)	Abutment Aggregate Drain (Cu. Yds.)	Slope Protection (RipRap Stone) (Cu. Yds.)	Prestressed Concrete Beam (NU35+2) (Lin. Ft.)	Bridge Deck Grooving (Sq. Yds.)	Core Hole (Investigative) (Lin. Ft.)
Abutment #1	110.8	-	22.9	✳	2,544	✳	476.0	-	-	-	43.5	39.4	400	-	-	-
Pier #1	-	-	31.9	✳	9,157	264	-	-	177.8	-	-	-	-	-	-	192.0
Pier #2	-	-	48.8	✳	11,784	264	-	-	139.3	-	-	-	-	-	-	162.0
Pier #3	-	-	43.6	✳	11,092	264	-	-	151.2	-	-	-	-	-	-	156.0
Abutment #2	110.8	-	22.9	✳	2,544	✳	408.0	78.0	-		43.5	39.4	810	-	-	-
Substr. Total	-		170.0	-	37,121	792	884.0	78.0	468.3	1	87.0	78.8	1,210	-	-	510.0
Superstr. Total	221.6	-	-	439.9	-	133,357	-	-	-	-	-	-	-	1,490.0	1,144.7	-
Total	222	-	170.0	439.9	37,120	134,150	ǂ 884	ǂ 78	468	1	87	79	1,210	1,490	1,145	510.0

✳ Quantities are included in the Superstructure Total quantity.

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

◔ NOTE: Use only steel HP12x53 piles in the abutments. The lengths shown are for bidding purposes only. Actual lengths shall be determined by the Engineer based on Test Pile Driving results.

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
Prestressed Beam Concrete	f'c = 9.6 ksi
Reinforcing Steel (Grade 60)	fy = 60 ksi
Prestressing Strand	0.6" ø Grade 270 uncoated 7-wire, low relaxation strand.
Steel Piles (Gr. 50)	fy = 50 ksi

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength I	Service I	Phi
Abutments	75	54	0.65

LRFD DESIGN DRILLED SHAFT LOAD:

Design Loading (Tons/D.S.)	Strength I	Service I	Phi (Side)	Phi (End)
Piers	319	232	0.55	0.5

INDEX TO BRIDGE DRAWINGS

Sheet No.	Drawing
35	Quantities & Index of Sheets
36	General Notes
37	Contour Map
39	Construction Layout
40	Engineering Geology
41	Abutment Beam Details
42	Abutment Diaphragm
43	Abutment Aggregate Drain
45	Pier Details
46	Miscellaneous Pier Details
47	Standard Prestressed Concrete Beam Details
48	NU35+2 Beam Details
49	Geometric Layout
50	Framing Plan
51	Beam Auxiliary Details
52	Temporary Diaphragm Details
53	Pier Diaphragm Details
54	Deck Details I
55	Deck Details II
56	Deck Details III
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58	Deck Details V
59	Corral Rail Details I
60	Corral Rail Details II
61	Corral Rail Details III
62	Bill of Reinforcing Steel and Bending Diagrams
	Standards
63	Bridge Excavation (LRFD)
64	Standard Pile Details
65	Supports and Spacers for Reinforcing Steel

LRFR RATING FACTORS

Design Load / Rating Level	Inventory	Operating
HL-93 Loading	1.09	1.46
2018 Manual for Bridge Evaluation, 2019 Interim		

ǂ SUMMARY OF PILING

Abutment #1	7 @ 68 Ft. (Vert.)
Abutment #2	6 @ 68 Ft. (Vert.) 1 @ 78 Ft. (Test)(Vert.)

LFD RATING FACTORS

Truck / Rating Level	Inventory	Operating
HS-20 (36T)	1.16	2.14
HET (110T)		1.10
2002 LFD Rating, 17th Edition AASHTO		

TRAFFIC DATA - (162)

AADT (2024)	1,100
AADT (2044)	1,400
DHV	11%
D	65%
T	29%

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

QUANTITIES & INDEX OF SHEETS
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

SHEET NO. OF	SCALE	APP'D	AH
DESIGNED CM	DETAILED DE	QUANTITIES CM	CADD CM
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

KDOT Graphics Certified 08-15-2024

KDOT Graphics Certified

Plot Location:
File: c:\Users\bernhardh\documents\wsgpcad\bms\wsp-pb-us-pw-02\d0341324\kd577201\bbr162-0005.dgn
Plotted By: _
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	36	161

GENERAL NOTES

EXISTING STRUCTURE: Plans of the existing structure are on file and available for inspection by qualified bidders at the: State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison St., Topeka, KS. 66603-3929.

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

BRIDGE EXCAVATION: Elevation 1086.71 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. Additional excavation beyond the minimum required (as defined on the "Bridge Excavation"sheet) may be required to provide sufficient room to construct the pier columns and webwalls.

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

Abutment No. 1	75	Tons
Abutment No. 2	75	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.

TEST PILE (SPECIAL): Drive the test pile special at the locations directed by the Engineer/Geologist or as shown on the Plans. Use Pile Driving Analyzer (PDA) equipment and methods compliant with KDOT Specifications. The test piling shall remain in place as permanent piling. Drive the test pile special piling to the resistance value of the Strength I load divided by Phi shown on the plans.

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

PERMANENT CASING: See KDOT Specifications.

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 locations shown on the plans. See KDOT Specifications.

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

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

SHALE DEGRADATION: Drilled shafts will be placed into the Ninnescah Shale Formation, which degrades quickly when exposed to air and water. Due to the degradation of the Ninnescah Shale, it is recommended that the drilled shafts be poured within eight (8) hours following drilling and cleaning operations.

INVESTIGATIVE CORE HOLES: Please contact the El Dorado 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.

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 Heavy ¼ Ton Series as described in Division 1100 placed to the limits shown on the plans.

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: Backfilling the annular space between the temporary casing and the permanent casing, as defined in the KDOT Specifications, is not required at this location.

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.

ERECTION ELEVATION CHECKS: After the abutment and pier concrete has cured and before setting any prestressed beams, present verification to the engineer that the elecations at the bearings match plan elevation (±1/4").

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

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

BACKFILL COMPACTION: Compact backfill at the abutments.

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.

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. See the Bridge Design Manual, Section 16.1 "Review and Approval of Falsework Plans", for a listing of items to be included on the falsework plan. 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.

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

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

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

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

PRESTRESSED BEAM CONCRETE: Use air entrained concrete with select coarse aggregate as specified in the Special Provisions. The release strength and 28 day strength requirements shall be as noted on the plans. Submit mix designs to the Bureau of Materials and Research for approval.

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 ¾ inch triangular molding, except where noted on the plans. Construction joints are optional, but if used, place only at locations shown, or at locations approved by the Engineer.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615, Grade 60. Spiral bars may meet the requirements of either ASTM A615 (Gr. 40 or 60) or AASHTO M 32, and are included in the bid item "Reinforcing Steel (Gr. 60)"

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

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.

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, indluding admixtures, shall be at the Contractor's expense and shall be considered subsidiary to the bid item, "Concrete (Grade 4.0)(AE)(SW)". Approval of the Contractor's alternate sequence is required prior to placement of concrete in the deck.

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

ASBESTOS INFORMATION: Samples of this structure were tested to determine the amount of Asbestos Containing Materials (ACM) present in the components. The results are given in NVLAP Report B-76827, Date of Report October 14,2021. Samples were taken from concrete deck, abutment, rails, and apron. The results: None detected.

Results less than 1% require no abatement.

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.

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

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

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.

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

CONCRETE RUBBLE: The amounf of suitable concrete rubble available for slope protection is approximate and is furnished only as an aid in the Contractor.

Concrete Rubble = 180 C.Y.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

GENERAL NOTES
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

SHEET NO. OF	SCALE	APP'D	AH
DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD CM
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

KDOT Graphics Certified 08-14-2024

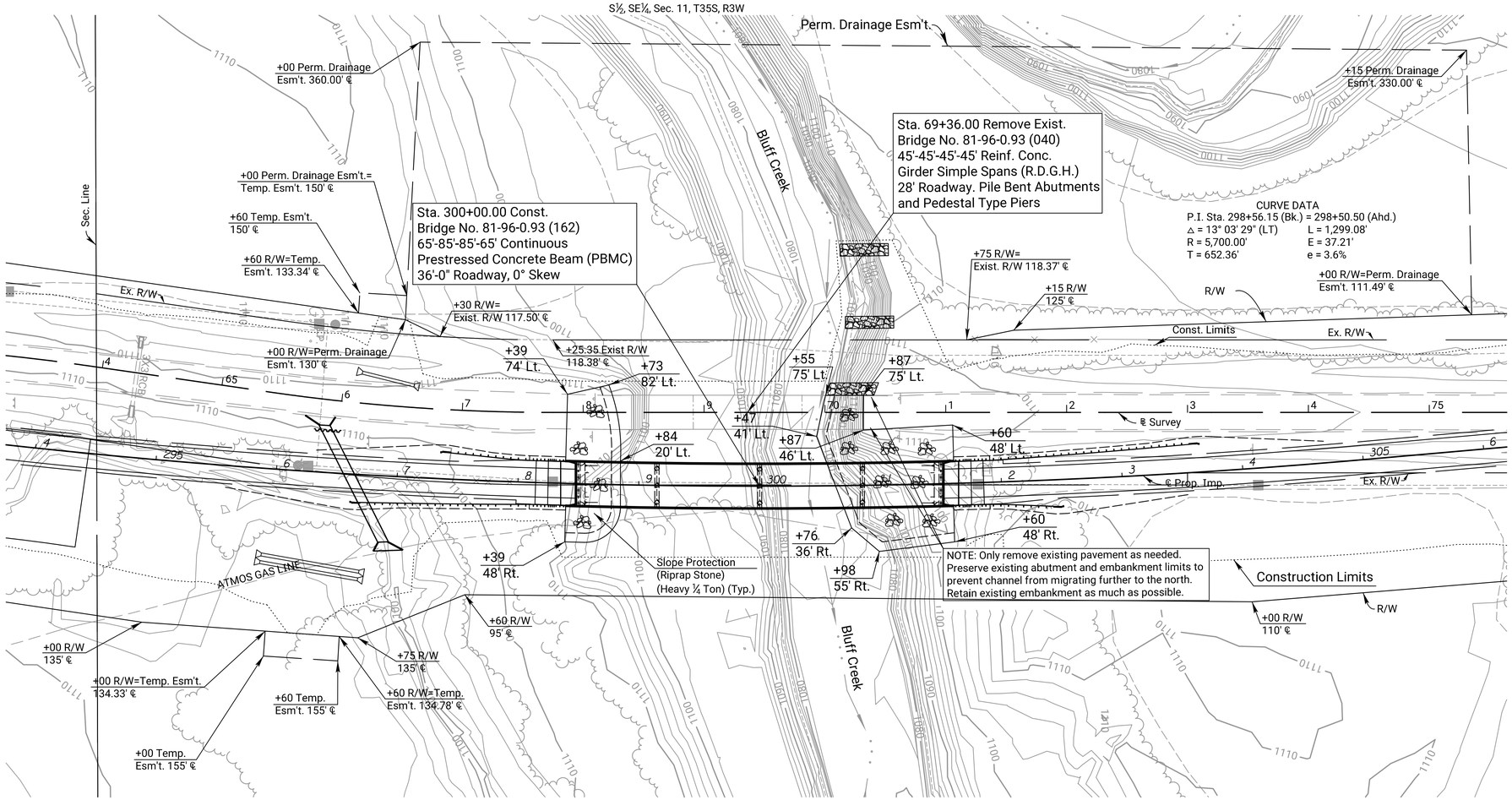
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Plotted By: _____ Plot Location:
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Plot Date: 8/16/2024

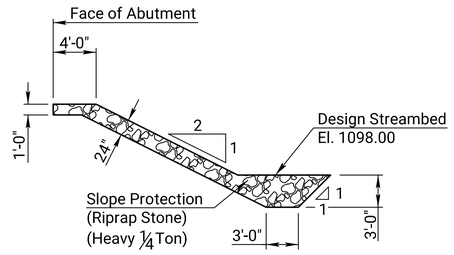
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	37	161

P.I. ℄ Sta. 298+56.15 Bk. = 298+50.50 Ahd.
N 137,543.337 E 18,468,896.907
1. Not Set

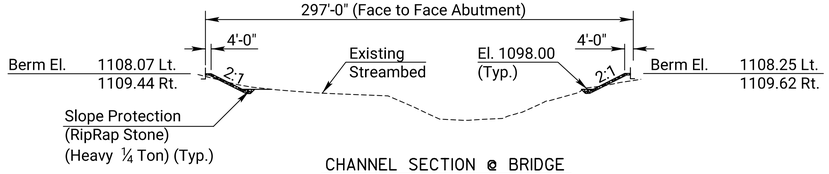
P.T. ℄ Sta. 305+02.86
N 138,193.174 E 18,468,839.532
1. Not Set



SCALE
PLAN: Lat. & Long. 50' 0 50' 100'
1' Contour Interval



SLOPE PROTECTION DETAILS



CHANNEL SECTION ℄ BRIDGE

Unless otherwise noted, the elevations shown are referenced to the NAVD88 Vertical datum.

Center Cor. Sec. 11, T35S, R3W
N 139,759.493 E 18,467,956.485
1. Found 8" x 5" Stone (Concrete) Monument, 0.60' Below Surface
2. 845.37' West (Lt.) of ℄ Sta. 90+19.02; Northwest Angle (℄ to ℄) = 90°21'11"
3. Found½" Iron Pipe Along North Side of Concrete Moument 0.28' N
4. Found Mag Nail in Wood Brace Post 5.92' N

E ¼ Cor. Sec. 11, T35S, R3W
N 139,773.463 E 18,470,582.530
1. Found 12" x 6" x 6" Limestone with ⅝" Rebar over Top Center, 3.5' Deep
2. 1780.71' East (Rt.) of ℄ Sta. 90+19.02; Northeast Angle (℄ to ℄) = 89°38'49"
3. Found 3" x 3" Triangle Concrete Monument 4.58' N
4. Set 60D Nail in West side of Honey Locust Tree 20.29' SSE

REMOVE OF EXISTING STRUCTURE:
The Contractor shall remove the existing structure K.D.O.T. Bridge No. 81-96-0.93. Consisting of 45'-45'-45'-45' Simple Span Reinforced Concrete Girder Simple Spans (R.D.G.H.). Remove existing structure 2' below final grade. Removal of existing structure is included in the bid item, "Removal of Existing Structures", Lump Sum. All materials from the existing structure shall be wasted at a site selected by the Contractor and approved by the Engineer. The Contractor shall excavate the channel at the Bridge Site prior to construction of the Bridge.

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.

Rail Concrete	none detected
Pier Concrete	none detected
Abutment Concrete	none detected
Deck Concrete	none detected
Date of Report	01-12-2022

HISTORICAL HIGHWATER INFORMATION:
Historic Highwater: According to Mr Wayne Wensel who has farmed the Campbell farms for 30 years, water goes over the highway several times a year. Highwater is at BL Survey Sta. 72+31.00 at El. 1111.58.

UTILITIES

Water	City of Caldwell
Gas	ATMOS
Fiber Optic	KanOkla
Telephone	AT&T
Telephone	Sprint
Power	Wheatland Electric Cooperative Inc.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00
CONTOUR MAP
US-81 OVER BLUFF CREEK
Proj. 81-96 KA-5772-01 Sumner Co.

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

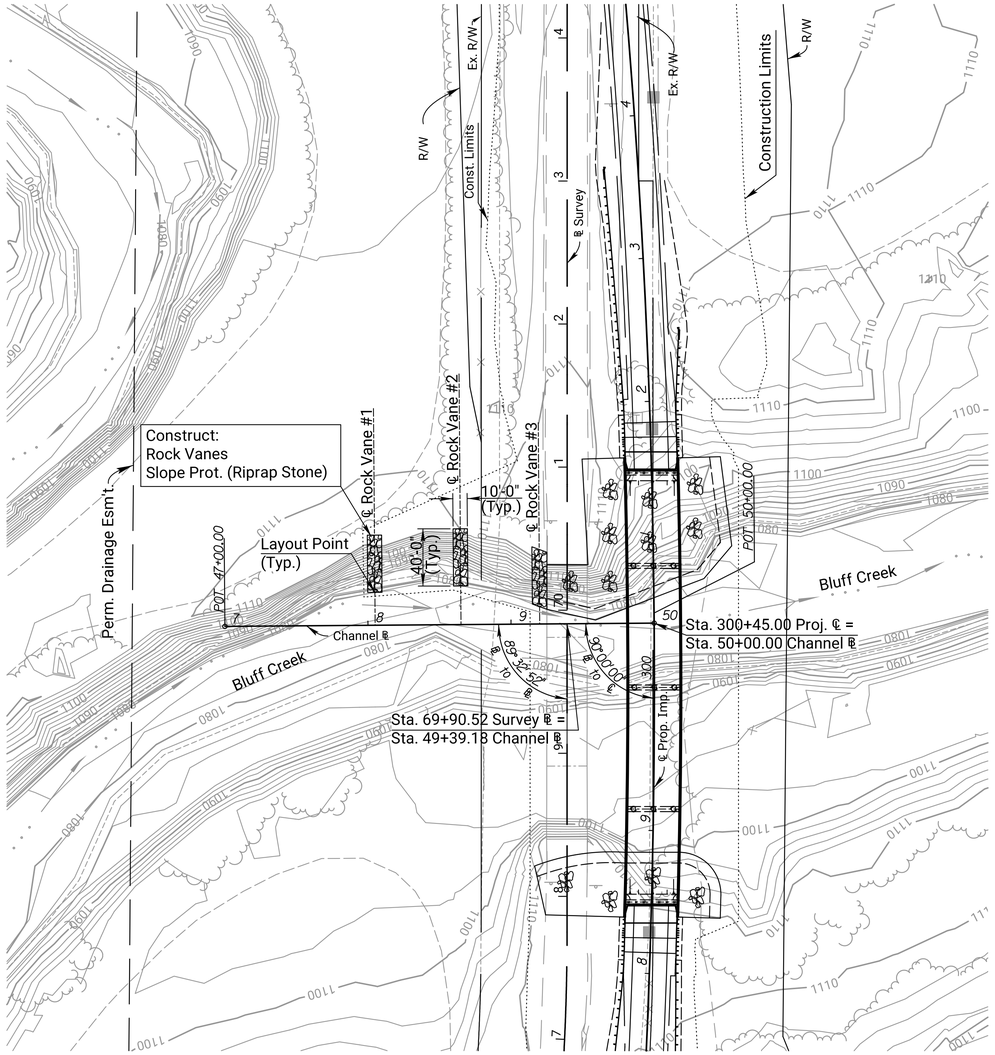
KDOT Graphics Certified 08-14-2024

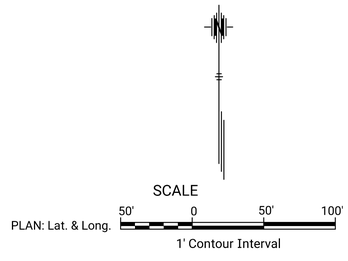
Sheet No. 37

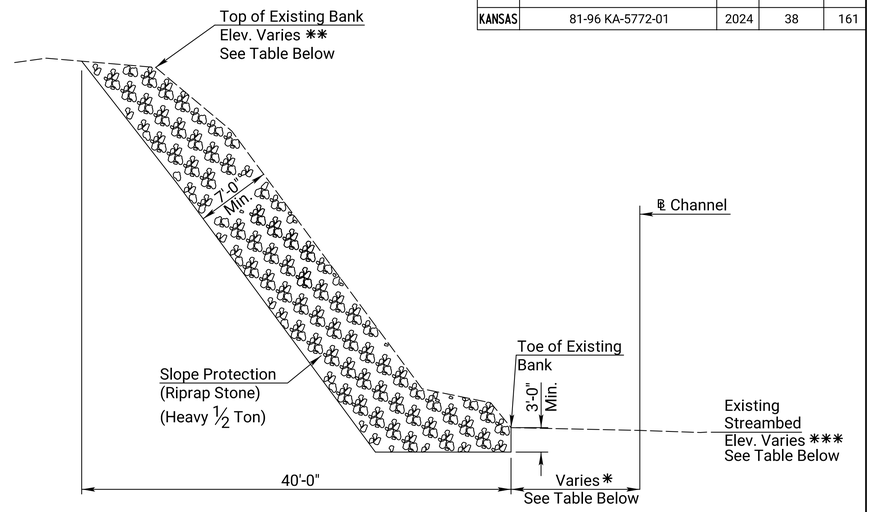
KDOT Graphics Certified

Plot Location: Files: c:\Users\bernhardt\Documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772\01\bbr162-00l5.DGN.dgn
Plotted By: _
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	38	161







ROCK VANE DETAILS
Section A-A

ROCK VANE LAYOUT POINTS					
Description	Channel Sta.	Proj. Sta.	*Offset (Lt.)(Ft.)	** Top of Exist. Bank Elev.	*** Exist. Streambed Elev.
Rock Vane #1	48+05.00	300+68.81	23	1110.52	1077.18
Rock Vane #2	48+65.00	300+72.65	27	1110.05	1077.44
Rock Vane #3	49+20.06	300+57.27	12	1110.81	1076.15

Note: All Rock Vane points are shown rounded to nearest foot.

GENERAL NOTES

QUANTITIES: The quantities for the Rock Vanes are shown on Road Summary of Quantities, Sheet 67

SURVEY: The topographic survey was performed in April 2021. Actual current field condition may have changed due to ongoing erosion. Adjust as necessary in coordination with the Engineer.

CLEARING AND GRUBBING: Clear and remove debris, logs, stumps, drift, or other items at the bridge or that which impedes construction. The Contractor shall provide for proper off- site disposal of all debris. Transport and dispose of all debris in accordance with all the applicable laws and regulations. Soil excavated during construction shall be used as backfill behind the Rock Vanes. No trees of trunk diameter greater than one inch shall be removed on the project, except as necessary for those located in the construction limits.

EXCAVATION: Soil excavation from the project site shall be used to backfill behind the Rock Vanes. Top elevation of backfill be uniform along the south streambank and shall not be higher than the top elevation of the Rock Vanes. Any excess material shall be wasted at a site approved by the Engineer.

STREAMBANK: During construction, equipment and materials shall be kept back from the top of bank in order to minimize sloughing of existing back into the stream.

SLOPE PROTECTION (RIPRAP STONE): All riprap used on the north bank shall meet gradation requirements for ½ Ton Heavy Series.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

CHANNEL PROTECTION DETAILS
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

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

KDOT Graphics Certified 08-15-2024

Sheet No. 38

KDOT Graphics Certified

Plotted By: —
Plot Location:
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Plot Date: 8/16/2024

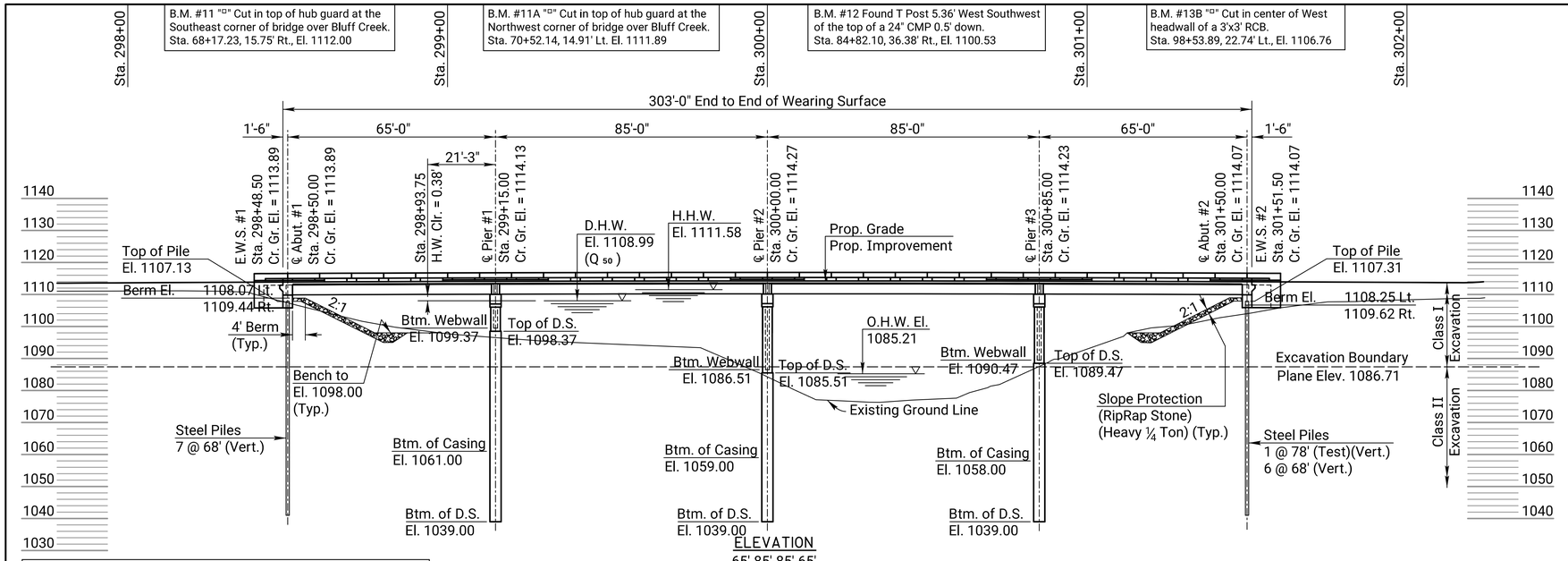
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	39	161

B.M. #11 "O" Cut in top of hub guard at the Southeast corner of bridge over Bluff Creek. Sta. 68+17.23, 15.75' Rt., El. 1112.00

B.M. #11A "O" Cut in top of hub guard at the Northwest corner of bridge over Bluff Creek. Sta. 70+52.14, 14.91' Lt. El. 1111.89

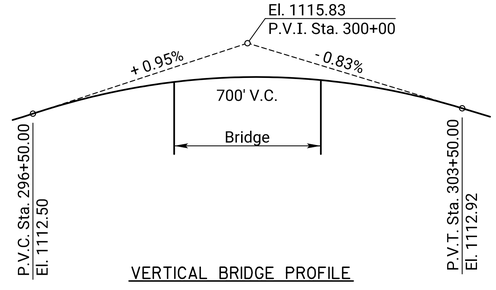
B.M. #12 Found T Post 5.36' West Southwest of the top of a 24" CMP 0.5' down. Sta. 84+82.10, 36.38' Rt., El. 1100.53

B.M. #13B "O" Cut in center of West headwall of a 3'x3' RCB. Sta. 98+53.89, 22.74' Lt., El. 1106.76



ELEVATION
65'-85'-85'-65'

NU35+2 Continuous Prestressed Concrete Beam (PBMC) Spans
Pile Bent Abutments and Drilled Shaft Piers
36'-0" Roadway, 0° Skew.



VERTICAL BRIDGE PROFILE

THERMAL MOVEMENT OF APPROACH SLAB							
Temp. (°F)	30°	40°	50°	60°	70°	80°	90°
"W₂", (in.)	3½"	3⅜"	3¼"	3⅛"	3"	2⅞"	2¾"

All bents are parallel to the Radial Line @ Sta. 300+00

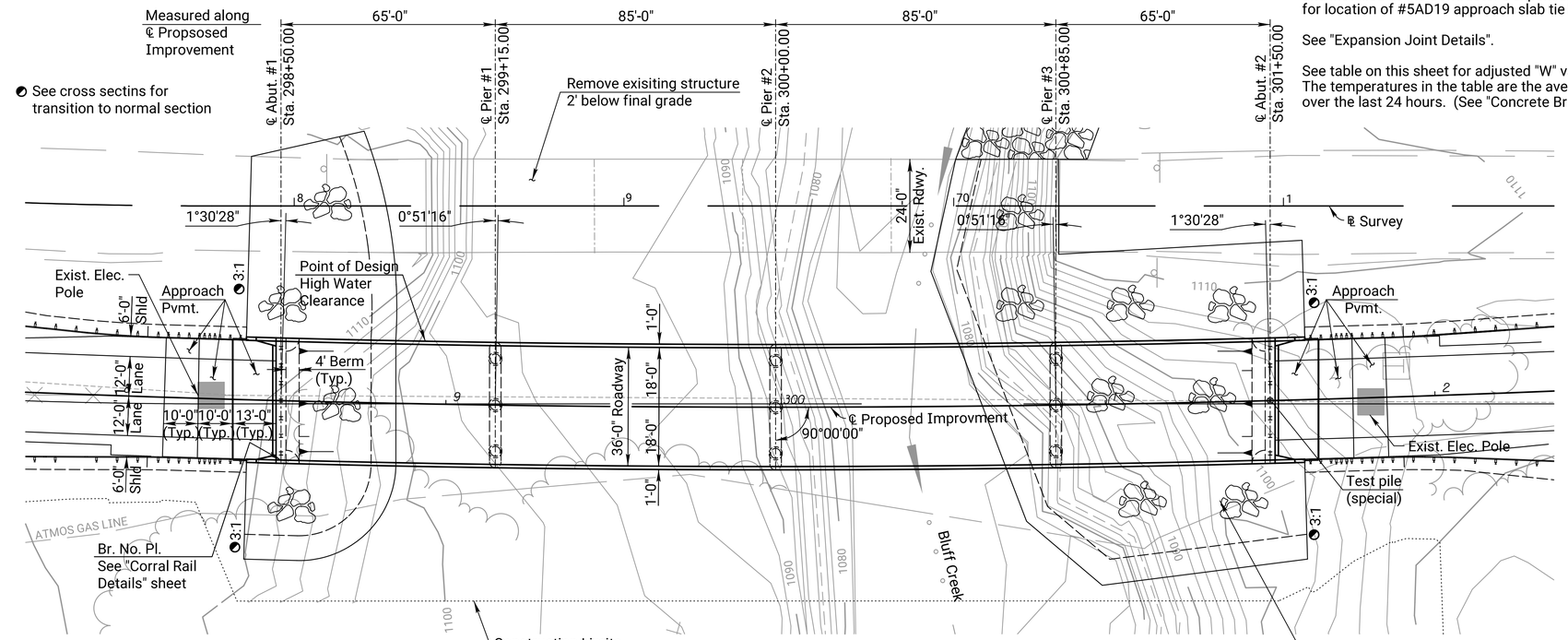
NOTE:

Approach slab reinforcing tie bars shall be protected by the Contractor throughout construction. Tie bars inadequately protected and subsequently damaged will be replaced with similar bars drilled and grouted into place and installed at the Contractor's expense. See "Abutment Diaphragm Details" for location of #5AD19 approach slab tie bars.

See "Expansion Joint Details".

See table on this sheet for adjusted "W" values. "W" is the formed gap. The temperatures in the table are the average ambient temperature over the last 24 hours. (See "Concrete Bridge Approach Pavement").

SCALE
PLAN: Lat. & Long. 20' 0 20' 40'



PLAN

Unless otherwise noted, the elevations shown are referenced to the NAVD88 Vertical datum.

DRAINAGE DATA

	Drainage Area	439.6	Sq. Mi.
	Design Frequency	50	Years
	Design Discharge (Q_{50})	29,000	cfs
	Design High Water Elevation	1108.99	
✳	Design Backwater	0.37	Ft.
	Design Backwater Elevation	1109.51	
	Overtopping Elevation (Sta. 287+50.00)	1104.00	
	Overtopping Discharge	20,000	cfs
	Overtopping Frequency	< 25	Years
	Discharge at Q_{100}	35,500	cfs
✳✳	Backwater at Q_{100}	-0.24	Ft.
	Backwater Elevation at Q_{100}	1111.19	
	Ordinary High Water Elevation	1085.21	
	Estimated Ordinary High Water Discharge	1,164	cfs
	Total Waterway Provided	4,852	Sq. Ft.
	Design Waterway Provided	7,400	Sq. Ft.
	Historic Highwater Elevation	1,111.58	

✳ 0.71 Change in Backwater from Existing.
✳✳ 0.00 Change in Backwater from Existing.

See Sh. #41 -43 for Abutment Details.
See Sh. #59 -61 for Corral Rail Details.

UTILITIES

Water	City of Caldwell
Gas	ATMOS
Fiber Optic	KanOkla
Telephone	AT&T
Telephone	Sprint

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00
CONSTRUCTION LAYOUT
US-81 OVER BLUFF CREEK
Proj. 81-96 KA-5772-01 Sumner Co.

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

KDOT Graphics Certified 08-14-2024

Sheet No. 39

Plot Location: Files: c:\users\bernhardh\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\kd577201bbr162-0060.DGN.dgn
Plotted By: _
Plot Date: 8/16/2024

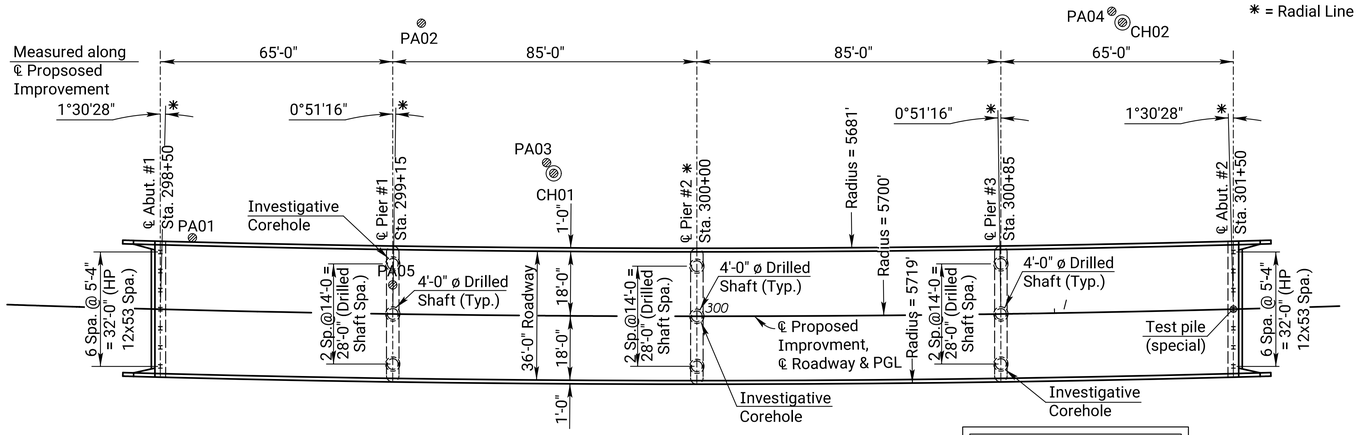
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	40	161

Casing will be required for drilled shafts to prevent the caving and collapse of the excavation walls. Set casing into bedrock to the planned elevations to reduce the risk of mantle, weathered bedrock, and groundwater from entering the rock socket and to ensure the rock socket of the shaft occurs in sound, unweathered bedrock. A wet pour may be anticipated if groundwater is not sufficiently sealed off or if there is water flowing into the excavation.

Note that the shafts have end bearing components and it is important that the bottom socket be clean and relatively flat. Allow no loose material within the footing when the footing is considered ready to pour.

The Ninnescah Scale Formation could be degrade rapidly in the presence of air and water. Place reinforcing steel and concrete no more than eight (8) hours from the completion of the excavation of the shaft to minimize exposure time of the shale to air and groundwater.



PLAN

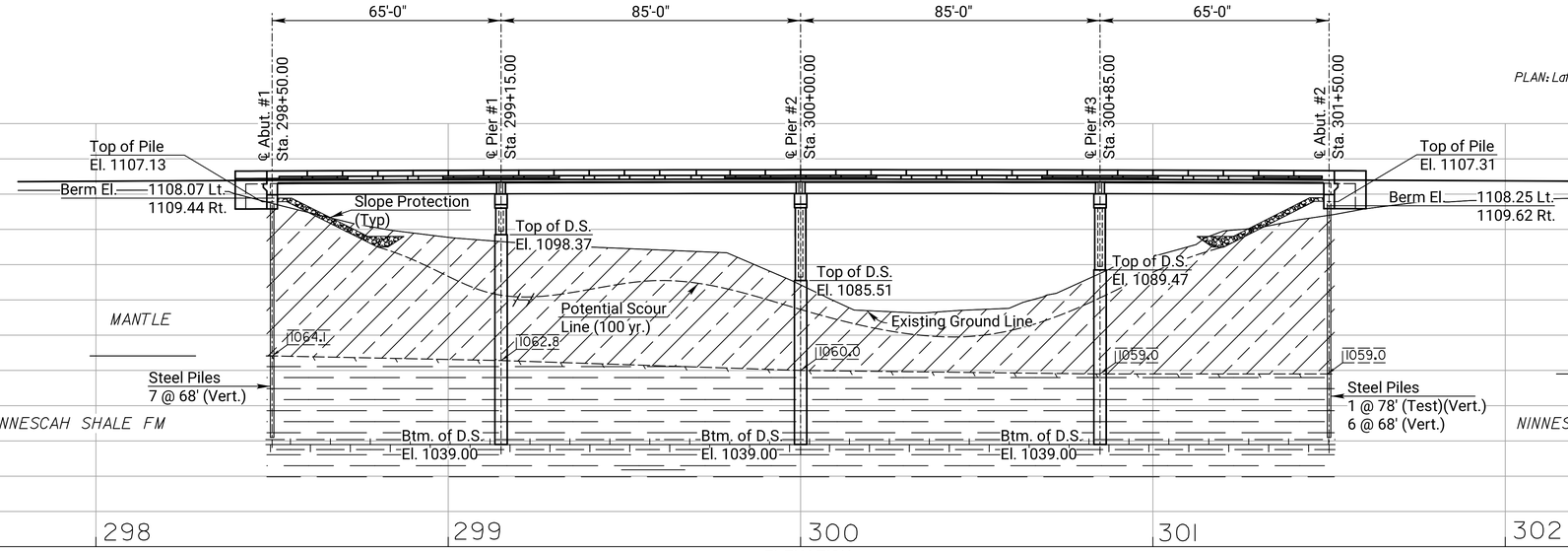
All bents are parallel to the Radial Line @ Sta. 300+00.00

Piling:
Once sufficient resistance is achieved, driving must cease to avoid damage to the pile. Final pile tip elevations should be determined in the field based on recommendations provided through the use of the Pile Driving Analyzer. Do not drive pile below plan tip elevation without utilizing restrike procedures as outlined in the Standard Specifications, or as directed by KDOT Geology."

Test Pile (Special):
Contact KDOT Geology in Topeka at (785)291-3861 when a schedule for pile driving has been established. A minimum of 5 working days is necessary to allow for proper scheduling. Excavation to plan grade should be performed prior to PDA testing. At least 24 hours for each test should be allowed to account for possible restrikes."

NOTE:
Use only steel piles Gr. 50 HP12x53 in the abutments. The lengths shown are for bidding purposes only. Actual lengths shall be determined by the Engineer based on Test Pile Driving results.

SCALE
20' 0 20' 40'
PLAN: Lat. & Long



STANDARD GEOLOGIC SYMBOLS

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

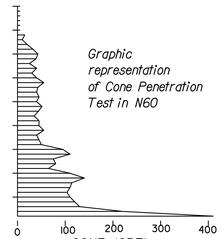
ELEVATION

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

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

UNCONFINED COMPRESSION TEST
Elevation
Tons/sq. ft.
000.0 00
000.0 00

STANDARD PENETRATION TEST
Elevation
Blows/ft.
000.0 00
000.0 00



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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

ENGINEERING GEOLOGY
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

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

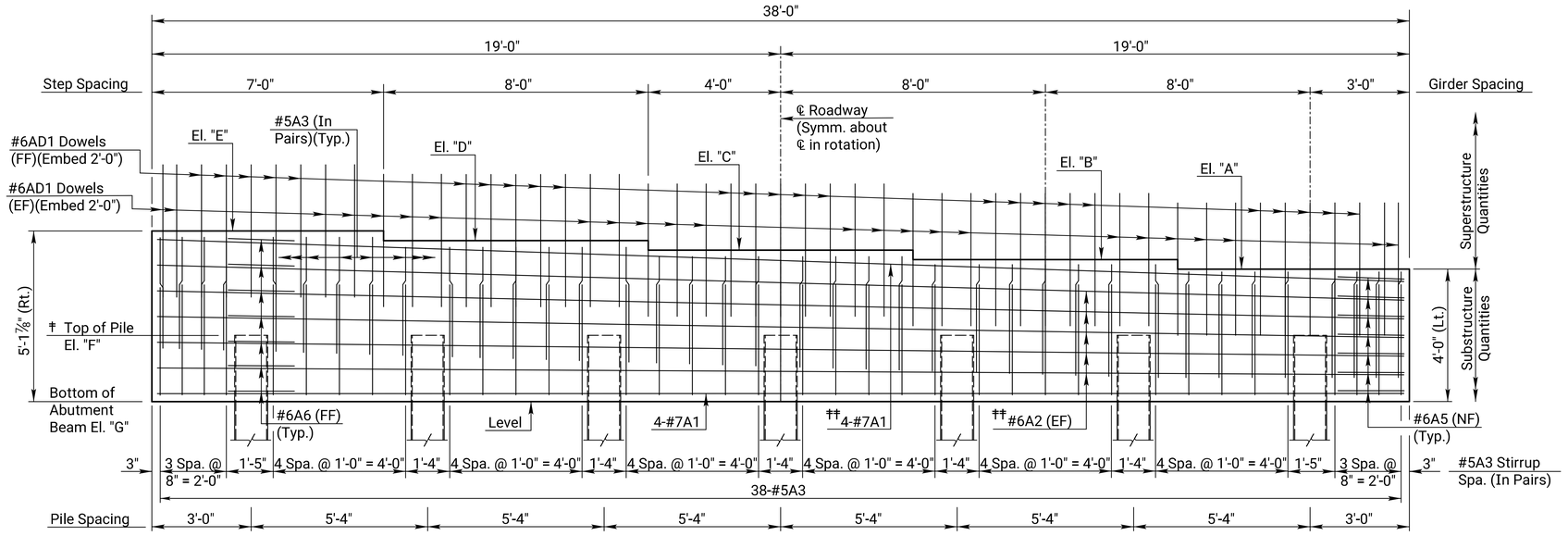
KDOT Graphics Certified 08-14-2024

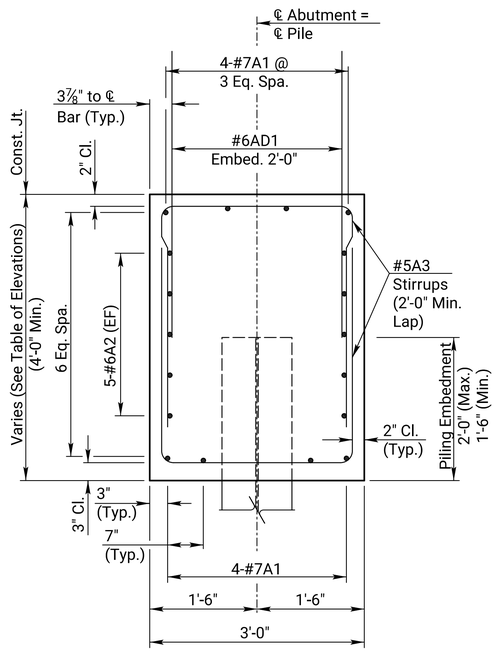
Sheet No. 40

KDOT Graphics Certified

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Plotted By: _
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	41	161





SECTION A-A

TABLE OF ELEVATIONS @ ℄ ABUTMENT		
Abut. / Loc.	Abut. #1	Abut. #2
"A"	1109.13	1109.31
"B"	1109.42	1109.60
"C"	1109.71	1109.89
"D"	1110.00	1110.18
"E"	1110.29	1110.47
"F"	1107.13	1107.31
"G"	1105.13	1105.31

† Top of Piling Elevation based on 2'-0" maximum embedment.

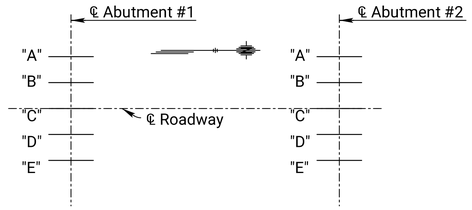
†† Flare bars as shown.

◔ NOTE: The elevations shown are theoretical based on 8½" deck + 3½" fillet @ ℄ beam + 3'-1⅜" beam + ¾" bearing pad.

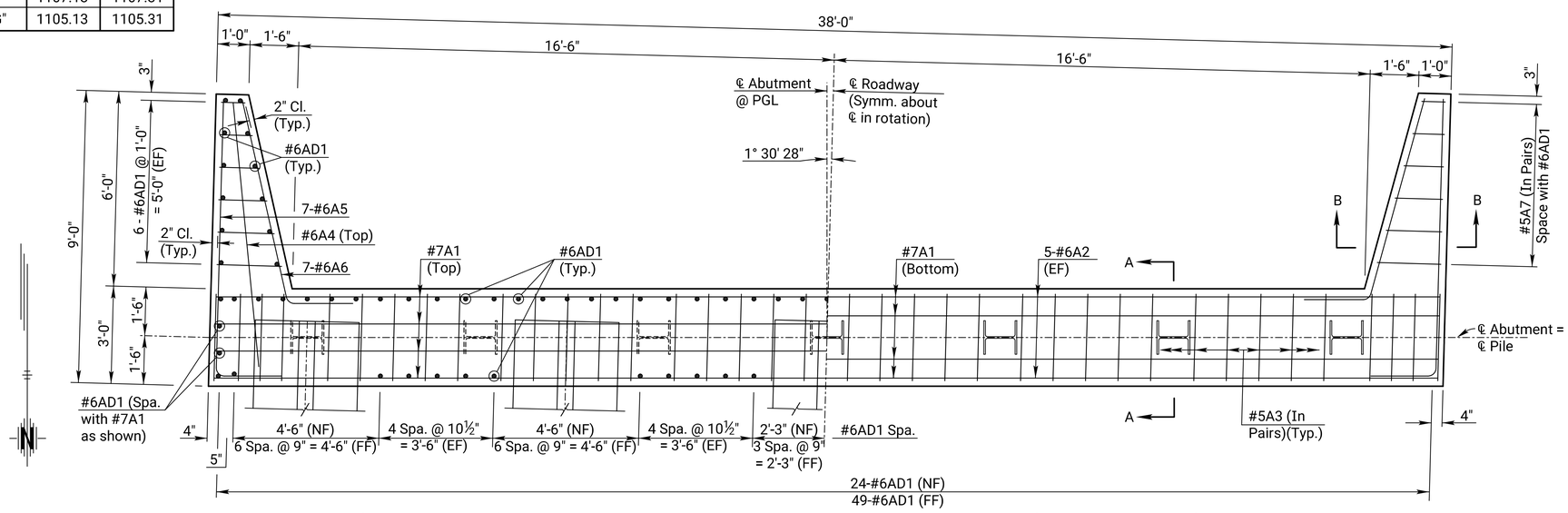
ELEVATION

(Abutment #1 shown; Abutment #2 similar)
(Looking Backstation)

LRFD DESIGN PILE LOAD:				
	Design Loading (Tons/Pile)	Strength	Service	Phi
	Abutments	75	54	0.65



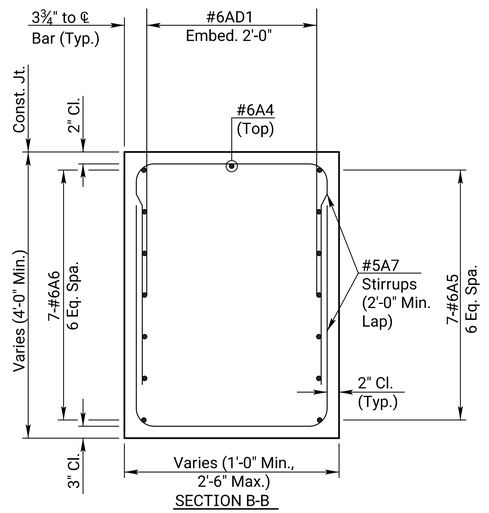
PLAN SHOWING ELEVATION LOCATIONS



Reinforcing Steel in Top of Abutment Beam

Reinforcing Steel in Bottom of Abutment Beam

PLAN



SECTION B-B

LEGEND

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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 81-96-0.93 (162) Sta. 300+00.00

ABUTMENT BEAM DETAILS
US-81 OVER BLUFF CREEK

Proj. No. 81-96 KA-5772-01 Sumner Co.

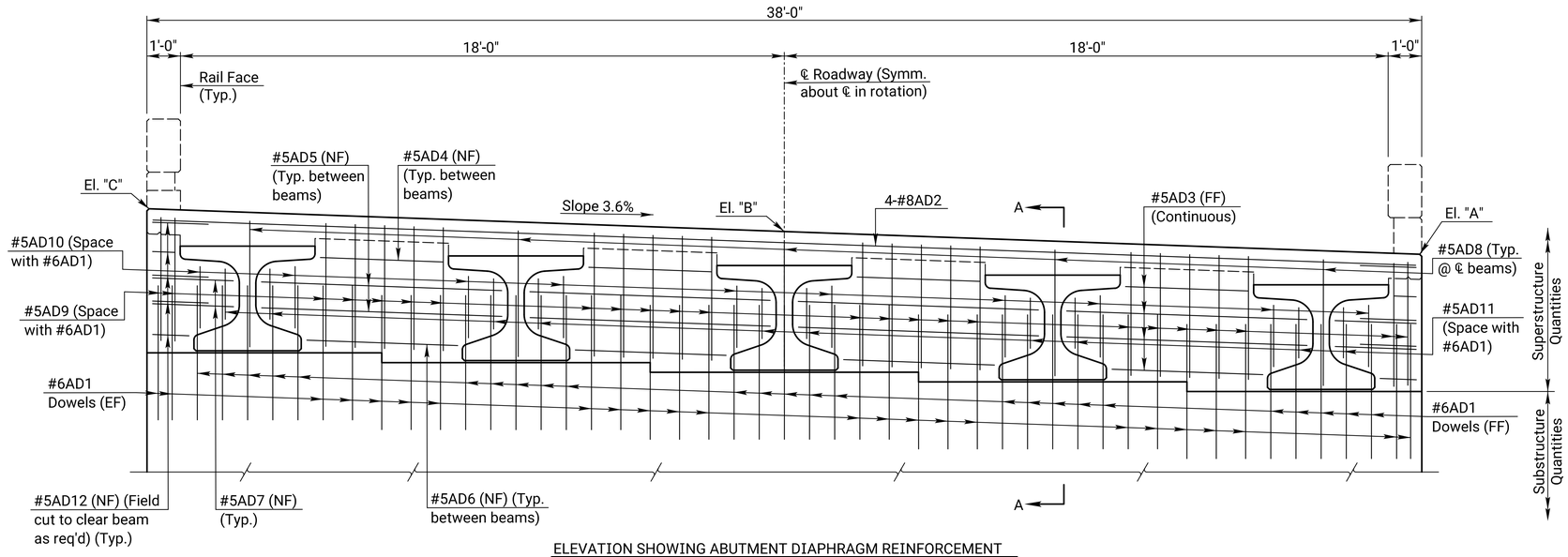
SHEET NO.	OF	SCALE		APP'D			
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD	
DESIGN CK.		DETAIL CK.	PY	QUAN. CK.	PY	CADD CK.	

Plotted By: -
File: -
Plot Date: -
Plot Location:

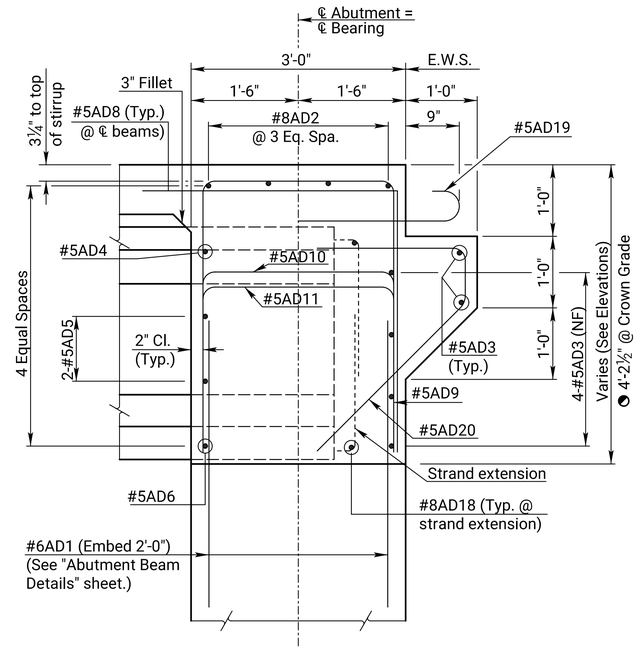
KDOT Graphics Certified 06-09-2023

KDOT Graphics Certified

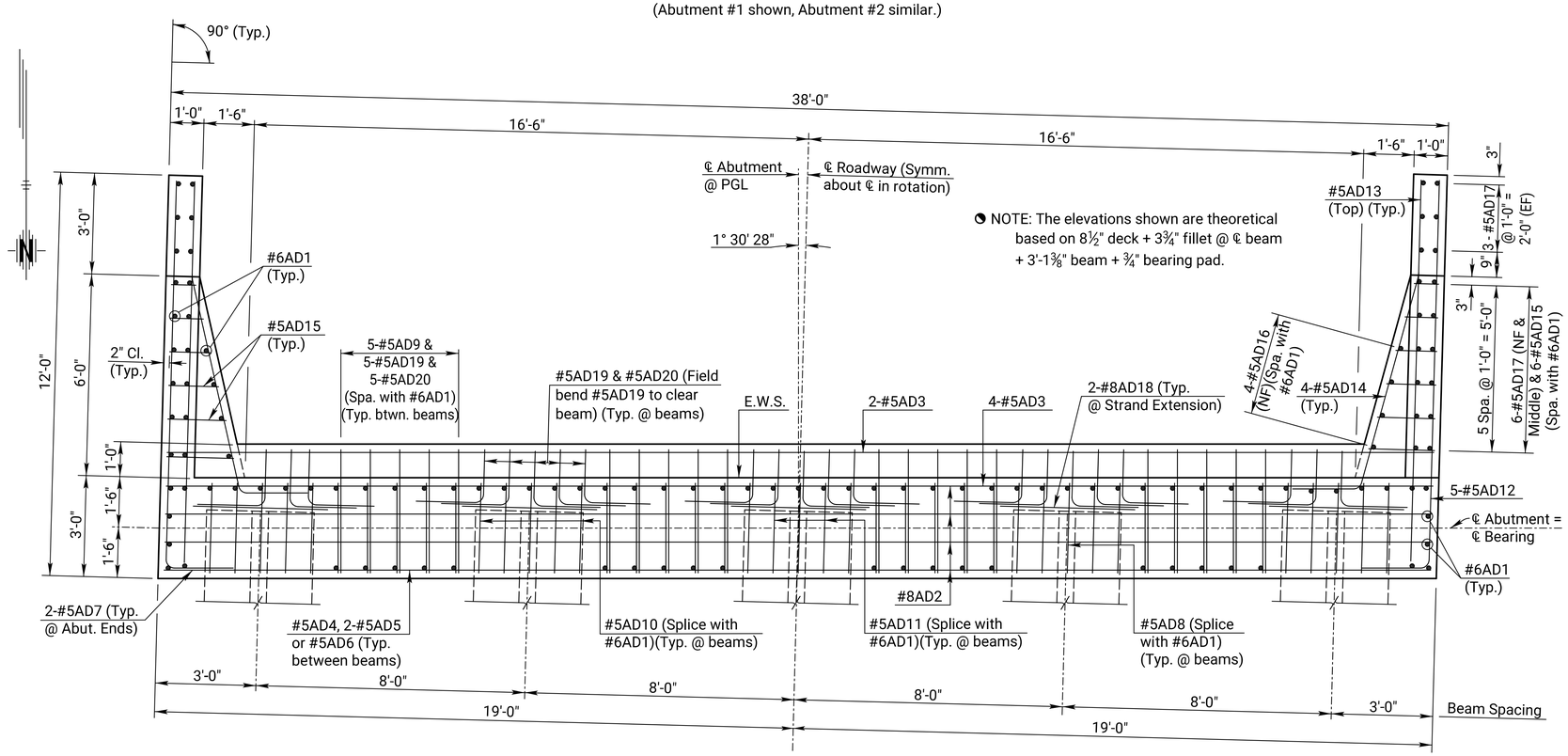
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	42	161



ELEVATION SHOWING ABUTMENT DIAPHRAGM REINFORCEMENT
(Abutment #1 shown, Abutment #2 similar.)



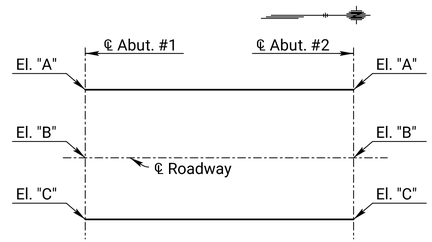
SECTION A-A



PLAN SHOWING ABUTMENT DIAPHRAGM REINFORCEMENT
(Abutment #1 shown, Abutment #2 similar.)

TABLE OF ELEVATIONS @ ℄ ABUTMENT

Loc. \ Abut.	Abut. #1	Abut. #2
"A"	1113.21	1113.39
"B"	1113.89	1114.07
"C"	1114.58	1114.76



PLAN SHOWING ELEVATION LOCATIONS

See Sh. #41 for Abutment Beam Details.

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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

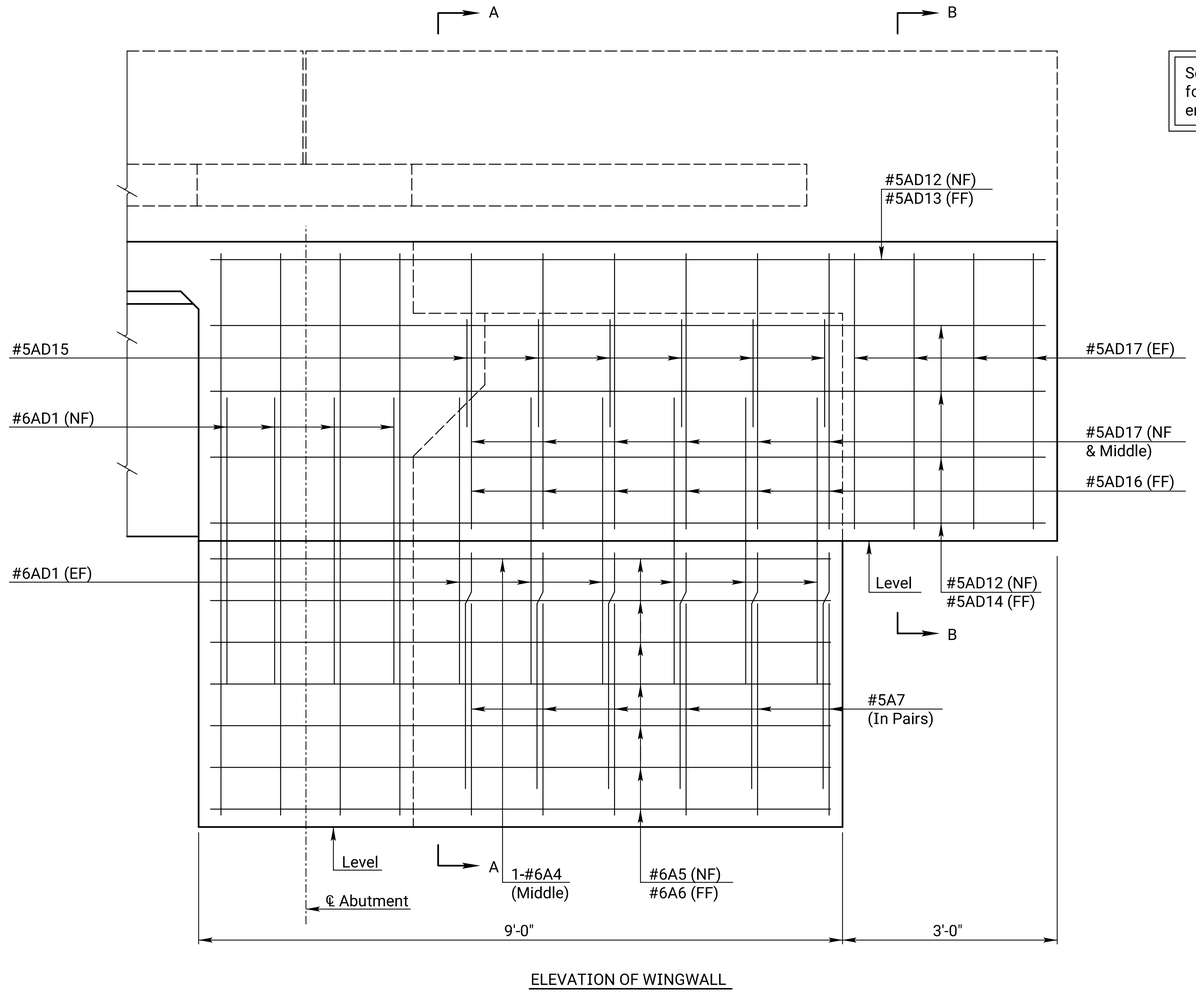
ABUTMENT DIAPHRAGM DETAILS
US-81 OVER BLUFF CREEK

Proj. No. 81-96 KA-5772-01 Sumner Co.

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

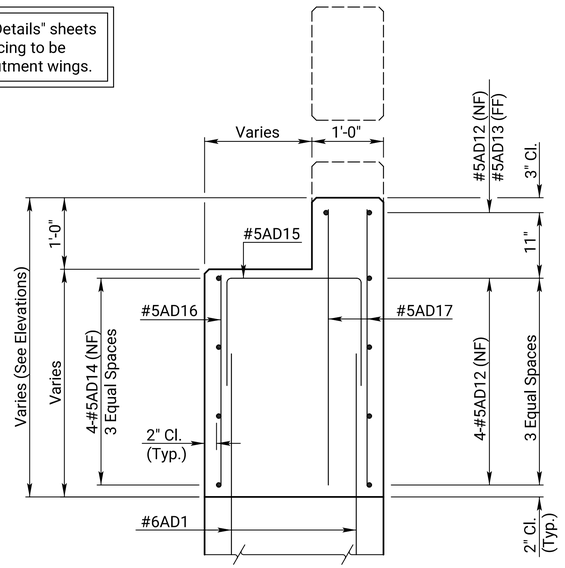
Plotted By: -
File: -
Plot Date: -
Plot Location:

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	43	161

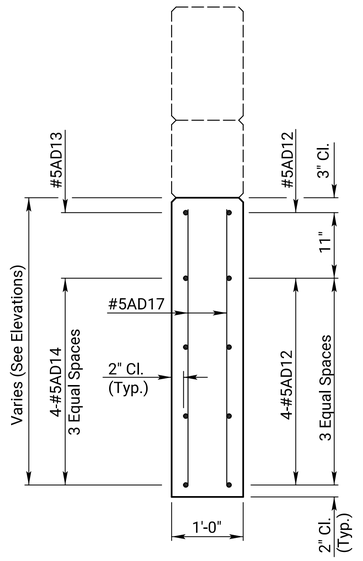


ELEVATION OF WINGWALL

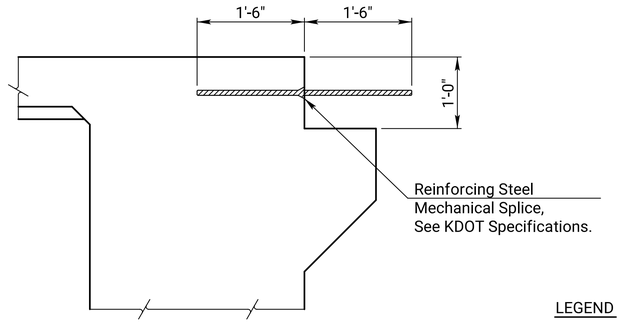
See "Corral Rail Details" sheets for corral reinforcing to be embedded in abutment wings.



SECTION A-A



SECTION B-B



APPROACH SLAB TIE BAR OPTION

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

LEGEND

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

See Sheet #42 for Abutment Diaphragm Details.
See Sh. No.'s 59 - 61 for Corral Rail Details.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

ABUTMENT AUXILIARY DETAILS
US-81 OVER BLUFF CREEK

Proj. No. 81-96 KA-5772-01 Sumner Co.

SHEET NO. OF	SCALE	APP'D		
DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD	
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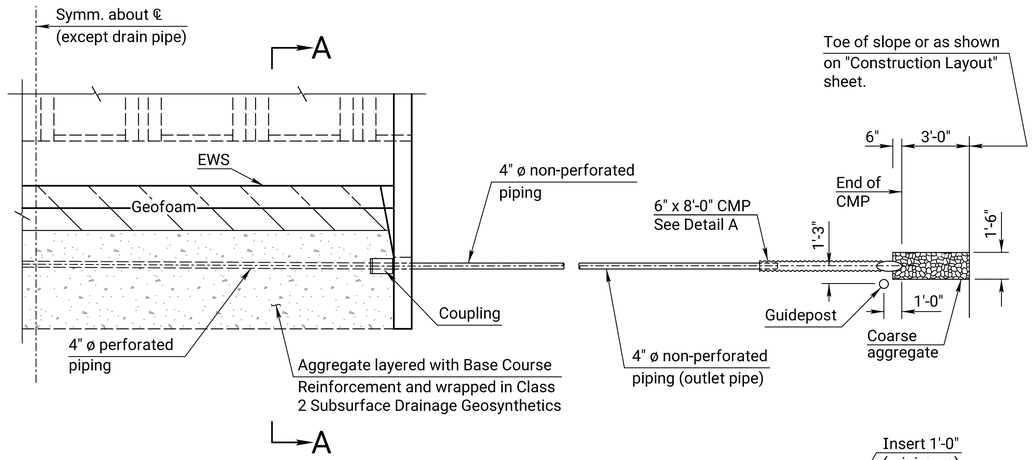
KDOT Graphics Certified 08-14-2024

Sheet No. 43

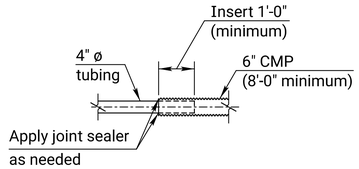
KDOT Graphics Certified

Plotted By: -
File: -
Plot Date: -
Plot Location:

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	44	161

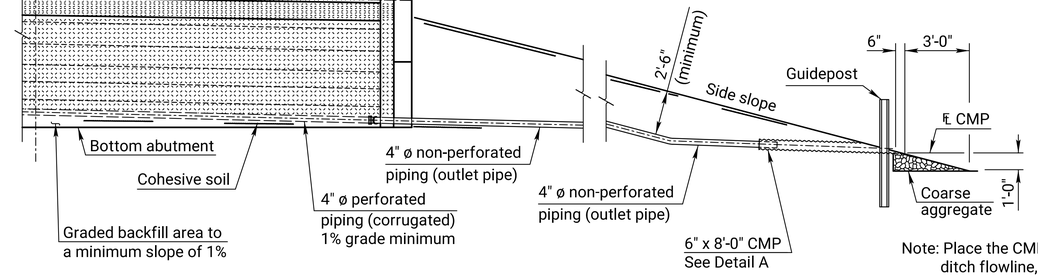


PLAN



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.



✳ Limits of Bridge Backwall Protection System & Geofoam

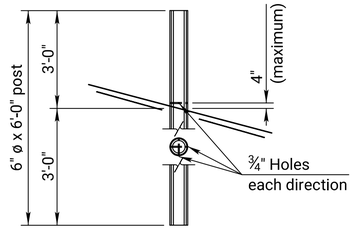
ELEVATION

Note: Place the CMP flowline 1'-0" above ditch flowline, toe of sideslope, or as shown on the "Construction Layout" sheet. For stream crossings place outlet on downstream side of bridge.

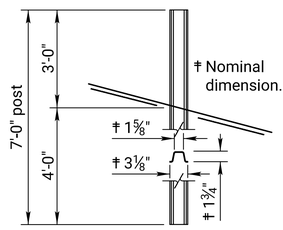
Notes:

Wood Guideposts: Apply a preservative treatment conforming to the KDOT Specifications to the posts. Use only one type of preservative treatment on a project. Apply two coats of aluminum paint to the top 18" of the posts. Apply one coat of International Orange paint to the top 12" of the posts. State forces will apply reflectorized material.

Metal Guideposts: Posts shall conform to the KDOT Specifications. Posts shall have a galvanized or baked enamel coating. Apply one coat of International Orange paint to the top 12" of the posts.



Wood Guidepost Option
(6" ø x 6'-0")



Metal Guidepost Option
7'-0" at 3.0 lbs/ft
flanged channel

GUIDEPOST

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 top can be overlapped and the end folded to completely enclose the aggregate drain. 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. Lap the top of the fabric a minimum of 3'-0", fold and wrap the ends to enclose the drainage materials. Secure the folds and wraps by sewing or approved methods.

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.

SOIL CAP: The soil will have a Unified Soil Classification of CL or ML according to ASTM D2487. Compact to Type A, MR-90.

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

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. Guidepost and coarse aggregate are subsidiary to this bid item. Guidepost and coarse aggregate are not required if the CMP empties onto Slope Protection. Enclose the entire Abutment Aggregate Drain with the geotextile

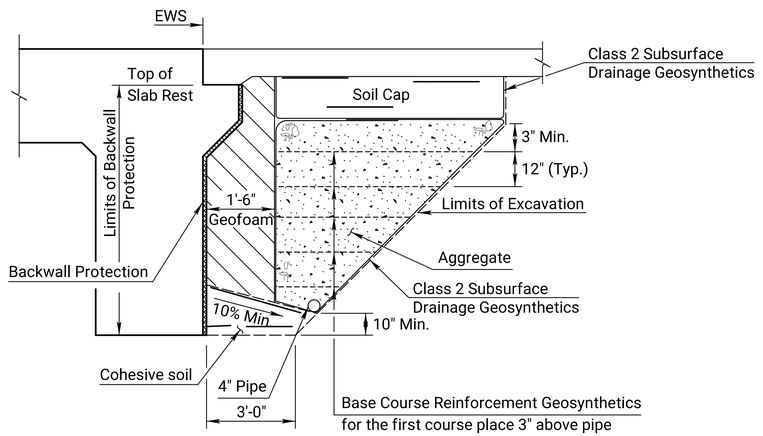
BRIDGE BACKWALL PROTECTION SYSTEM: Apply a non coal-tar Bridge Backwall Protection System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Repair any damage 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. Place Coarse aggregate at the outlet end as shown.

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.



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

SUMMARY OF QUANTITIES (2 Abutments)	
Abutment Aggregate Drain	78.8 Cu. Yds.
Bridge Backwall Protection System	87.0 Sq. Yds.
Items subsidiary to Abutment Aggregate Drain	
4" ø Perforated Pipe	80 Lin. Ft.
4" ø Outlet Pipe	50 Lin. Ft.
6" ø CMP	16 Lin. Ft.
Guidepost	2 Each
Soil Cap	17.3 Cu. Yds.
Geosynthetics (Class 2 Subsurface Drainage)	249.1 Sq. Yds.
Geosynthetics (Base Course Reinforcement)	248.8 Sq. Yds.
Geofoam	22.5 Cu. Yds.

NO.	DATE	REVISIONS	BY	APP'D
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.
05	11-18-14	Removed SB-3	J.P.J.	C.E.R.

KANSAS DEPARTMENT OF TRANSPORTATION

ABUTMENT AGGREGATE DRAIN

DESIGNED	J.P.J.	DETAILED	J.P.J.	QUANTITIES		CADD	R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.		CADD CK.	

KDOT Graphics Certified 08-15-2024

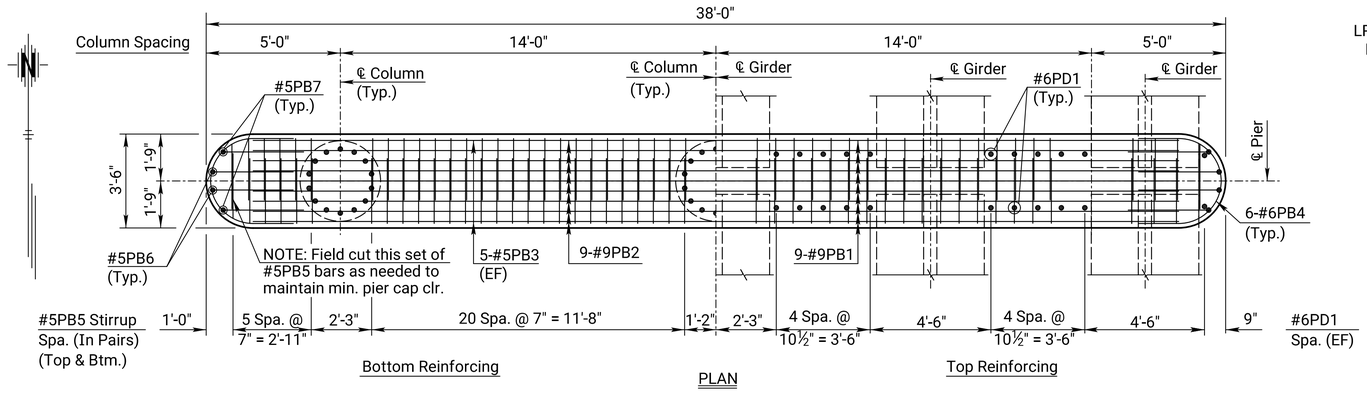
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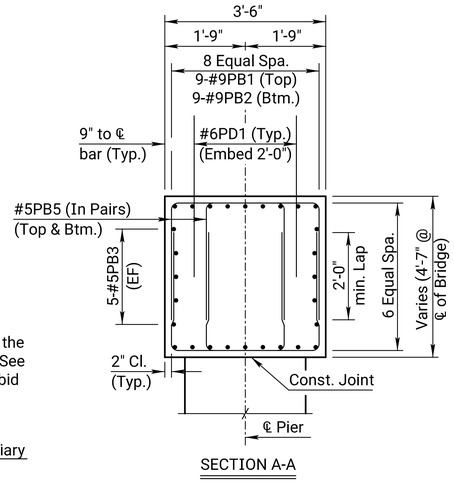
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Drawn By : _
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	45	161

LRFD DESIGN DRILLED SHAFT LOAD:

Design Loading (Tons/D.S.)	Strength I	Service I	Phi (Side)	Phi (End)
	319	232	0.55	0.50

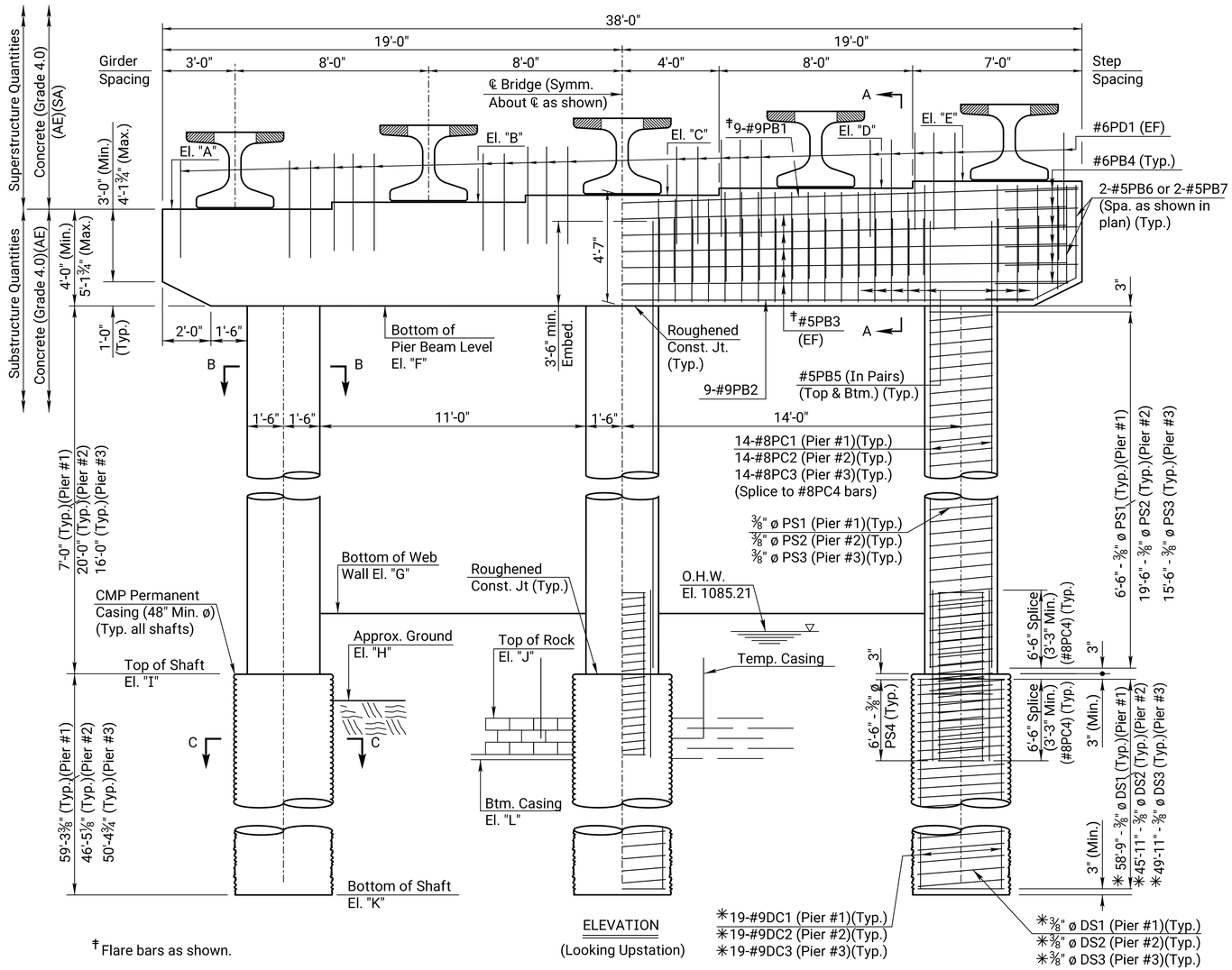




SECTION A-A

Note: Use the Cased Method in the construction of the drilled shafts. Permanent Casings are required. See Geology Report. The casing is subsidiary to the bid item "Drilled Shaft (48") (Cased)"

✳ All Drilled Shaft reinforcing steel shall be subsidiary to the bid item "Drilled Shaft (48")(Cased)"



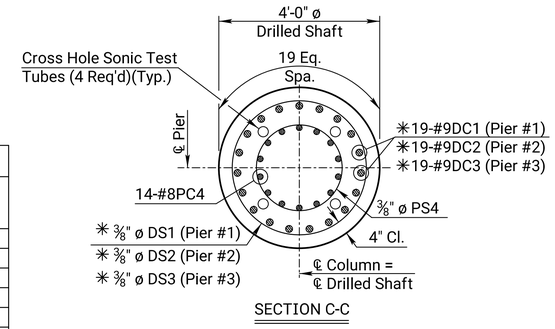
† Flare bars as shown.

◔TABLE OF ELEVATIONS

Loc. \ Pier	Pier #1	Pier #2	Pier #3
"A"	1109.37	1109.51	1109.47
"B"	1109.66	1109.80	1109.76
"C"	1109.95	1110.09	1110.05
"D"	1110.23	1110.38	1110.34
"E"	1110.52	1110.66	1110.62
"F"	1105.37	1105.51	1105.47
"G"	1099.37	1086.51	1090.47
"H"	1097.00	1087.00	1085.00
"I"	1098.37	1085.51	1089.47
"J"	1062.80	1060.00	1059.00
"K"	1039.00	1039.00	1039.00
"L"	1061.00	1059.00	1058.00

◔ NOTE: The elevations shown are theoretical based on 8½" deck + 3½" fillet @ ℄ beam + 3'-1⅜" beam + ¾" bearing pad.

SECTION B-B



SECTION C-C

See Sh. #46 for Web Wall Details.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

PIER DETAILS
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

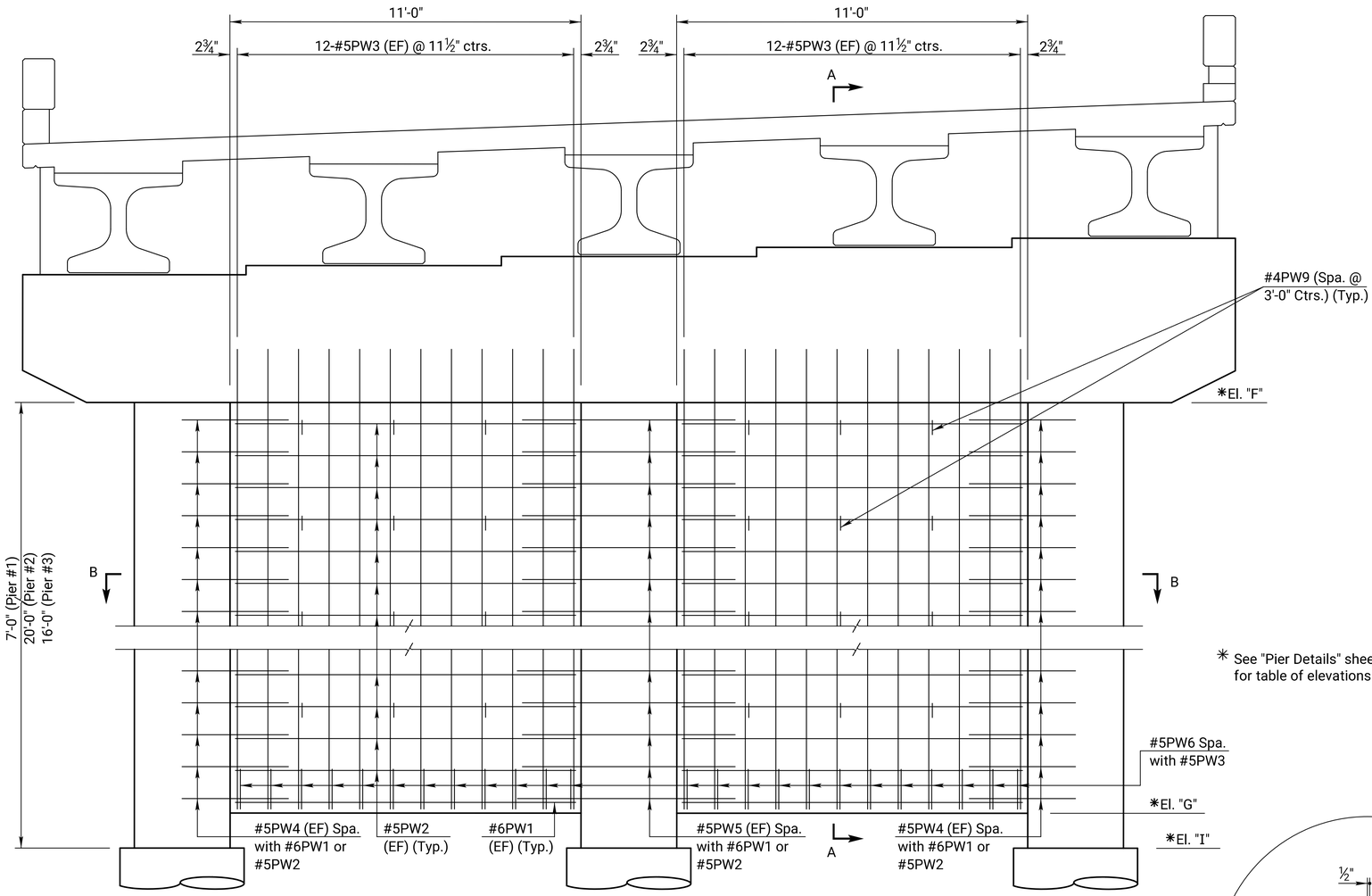
SHEET NO.	OF	SCALE		APP'D			AH
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD	SB/GB
DESIGN CK.	AH/NW	DETAIL CK.	PY	QUAN. CK.	PY	CADD CK.	AH/NW

KDOT Graphics Certified 08-15-2024 Sheet No. 45

KDOT Graphics Certified

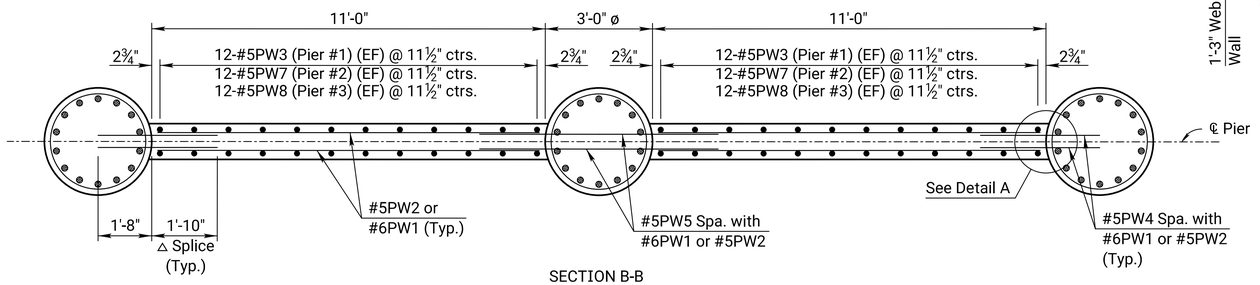
Plotted By: —
Plot Location:
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Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	46	161

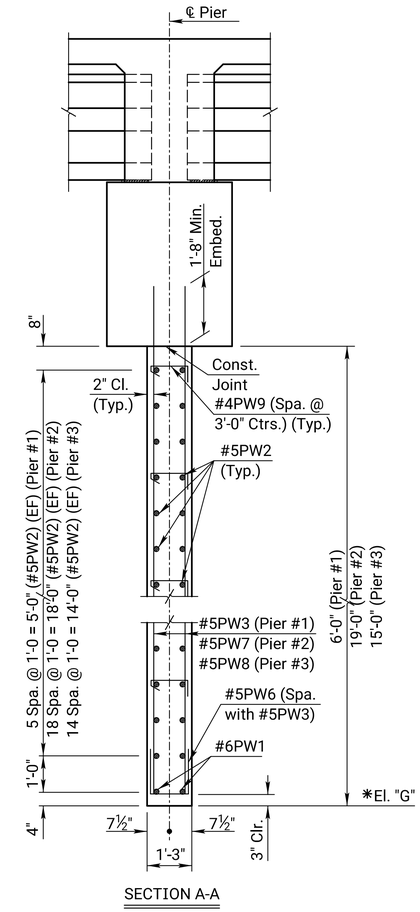


WEB WALL ELEVATION
(Looking Backstation)

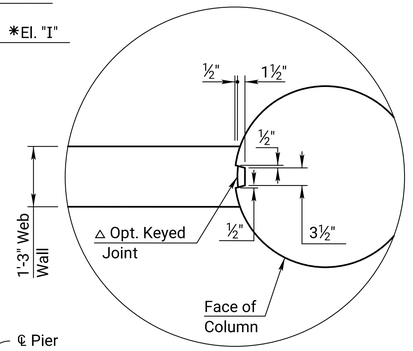
✳ See "Pier Details" sheet for table of elevations.



SECTION B-B



SECTION A-A



DETAIL A

△ NOTE: The contractor has the option of either casting the columns and pier web monolithically or casting the columns separately using a keyed joint as show in Detail A. If the columns are cast separately. The Contractor may use threaded inserts and threaded deformed bars in lieu of the PW4 or PW5 bars. Bar diameter and embedment length into the web wall shall be as designated. The inserts shall develop the full yield strength of the bars. No change in compensation shall be allowed with the use of inserts. Coil inserts will not be allowed.

LEGEND

EF= Each Face

See Sh. #45 for Pier Details.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

MISC. PIER DETAILS
US-81 OVER BLUFF CREEK

Proj. No. 81-96 KA-5772-01 Sumner Co.

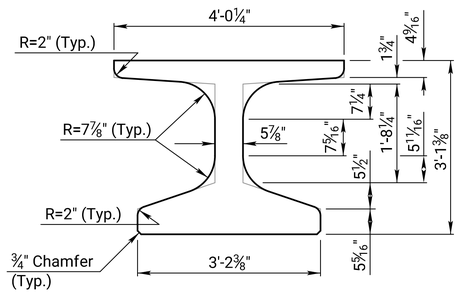
SHEET NO.	OF	SCALE		APP'D			AH
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD	
DESIGN CK.		DETAIL CK.	PY	QUAN. CK.	PY	CADD CK.	GB

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KDOT Graphics Certified

Plotted By: _
Plot Location:
File: c:\users\bernhardf\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\kd577201bbr162-0315.dgn
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	47	161



TYPE NU35+2

Area	744.7	in.²
IcG	144,993	in.⁴
Y Bot	18.75	in.
Vol./Surf. Area	3.50	in.
Wt./Ft.	776	lbs

TYPICAL BEAM SECTION

(Dimensions and properties are converted from metric fabrication forms.)

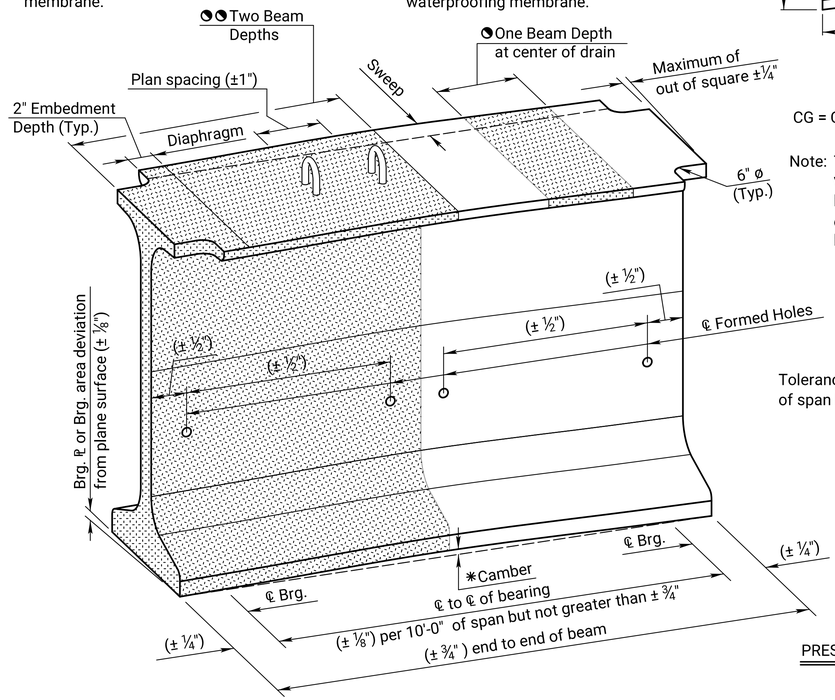
Prior to shipping, the camber shall be no greater than the design camber +½". The design camber is equal to the 50 day camber shown in the plans.

◔◔ At expansion joint locations coat beam with approved epoxy substructure waterproofing membrane.

◔◔ Two Beam Depths

◔ At bridge deck drain locations coat beam with approved epoxy substructure waterproofing membrane.

◔ One Beam Depth at center of drain



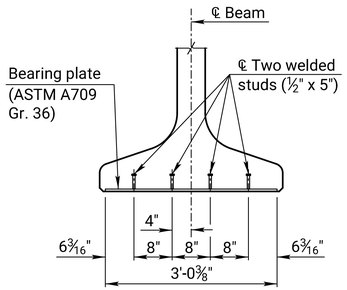
PRESTRESSED BEAM FABRICATION TOLERANCES

Tolerance for sweep is ⅛" per 10'-0" of span but not greater than 1".

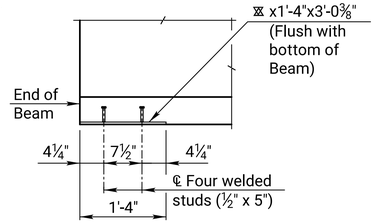
Note: Tolerance for camber is 1" maximum variation in camber between adjacent beams; and ± ⅛" per 10'-0" of span deviation from the specified camber but not greater than ±1" deviation.

CG = Center of Gravity

⧖ Use ¾" ℞ when field welding will occur, otherwise use ½" ℞.

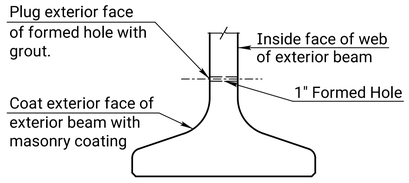


End View



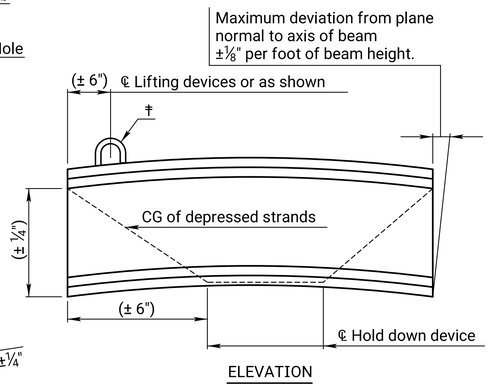
Side View

BEARING PLATE DETAILS

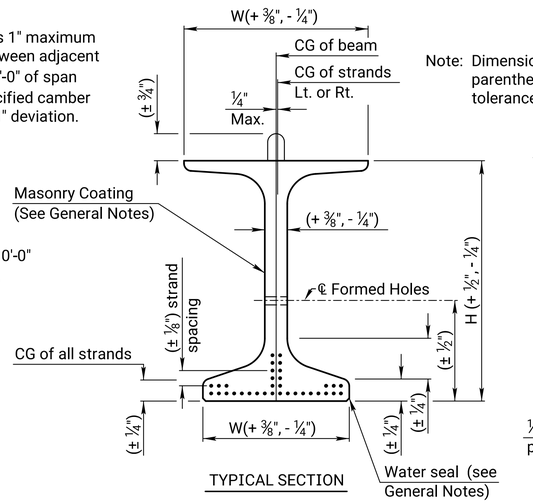


DETAIL OF FORMED HOLE(S)

(See "Beam Details" sheet for locations)

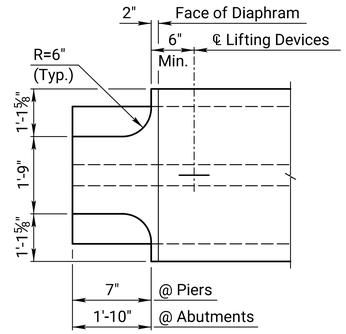


ELEVATION

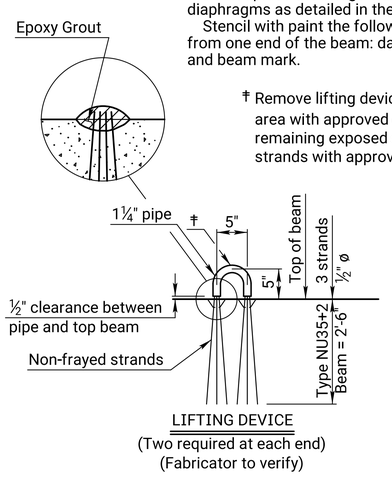


TYPICAL SECTION

Note: Dimensions shown in parentheses are tolerances only.



TOP FLANGE BLOCKOUT DETAIL



LIFTING DEVICE

(Two required at each end)

(Fabricator to verify)

Note: Stud welding will be in accordance with the latest edition of AWS D1.1.

Use plate conforming to the requirements of ASTM A709 Grade 36. The stud anchors will be made of material as specified for Shear Connector Studs in the KDOT Specifications.

The exposed surface of the bearing plates shall be galvanized.

All work and material to install the bearing plates shall be subsidiary to the bid item "Prestressed Concrete Beam".

GENERAL NOTES

Fabricate the precast prestressed beams in accordance with the KDOT Specifications. Submit shop drawings in accordance with the KDOT Specifications.

Use air entrained concrete. The KDOT Materials Section shall approve the mix design. Unless otherwise shown on the plans, f'c = 9,600 psi and f'c at release = 7,000 psi.

Use reinforcing steel conforming to the requirements of ASTM A615, Grade 60. The reinforcing steel shown shall be uncoated unless otherwise indicated. Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Use 0.60" nominal diameter (unless otherwise indicated), uncoated, seven-wire, low relaxation prestressing tendons conforming to the requirements of ASTM A416, Grade 270.

Use bolts having an ultimate strength 50% in excess of the manufacturer's safe load. All items (except the tendons) cast-in or inserted in prestressed beams shall be epoxy coated or galvanized. Show Formed Holes on shop drawings. All bolts, nuts and washers shall be subsidiary to the bid item, "Prestressed Concrete Beams".

Show on the shop drawings any hardware, holes or other appurtenances that are required to be incorporated into the girder to construct the girder or for any temporary works needed to construct the bridge (e.g. safety railing pockets).

After beams are in the final position, remove lifting devices. See "Lifting Device" detail below. Removal of the lifting devices, coating and grouting shall be subsidiary to the bid item: "Prestressed Concrete Beams".

Use elastomeric bearing pads conforming to the KDOT Specifications. Bearing pads and Type B expansion joint material shall be subsidiary to the bid item, "Prestressed Concrete Beams".

The beam lengths shown on the design plans are net lengths measured horizontally along the beam centerline. The beam manufacturer shall make necessary allowances for grade, and for shortening due to elastic shortening, creep and shrinkage.

The beams shall reasonably conform to the lines and dimensions shown on the design plans and be within the tolerances specified in the latest edition of Prestressed Concrete Institute's, "Manual for Quality Control for Plants and Production of Structural Precast Concrete Products", except as modified by this sheet or the KDOT Specifications.

Apply an initial force of 1,000 to 3,000 pounds to each strand to take up any slack in the cables. Unless otherwise noted on the plans, apply a force of 43,900 pounds to each strand. Stress harped strands to a magnitude such that they are tensioned to 43,900 pounds after they are in position.

The center portion of the girder top flange shall be rough finished by scarlfying the surface transversely with a wire brush or stiff broom and no laitance shall remain on the surface. The outside 9" on each side of the top flange shall be steel troweled to a smooth finish and a bond breaker shall be applied to this region only. Bond breaker shall be 30# roofing felt. Secure roofing felt to the top flange with an adhesive approved by the engineer.

Fill trapped air holes and surface voids on the exterior face of the exterior beams with an approved concrete masonry coating. This work shall conform to KDOT Specifications. This work shall be subsidiary to the bid item, "Prestressed Concrete Beams".

Detension strands in a sequence which minimizes lateral eccentricity. Show the method and sequence of strand release on the shop drawings. Use extreme care when lifting, handling, storing and transporting beams. Use the lifting system shown or an alternate system approved by the Engineer. Keep the beam in an upright position at all times. Support the beam on bearing points positioned directly below the designated lifting points or designated bearing points.

Do not place the bridge slab before the beams are 28 days old. Pour diaphragms as detailed in the bridge plans.

Stencil with paint the following information on the webs approximately 5'-0" from one end of the beam: date of concrete placement, date of strand release, and beam mark.

‡ Remove lifting device within ½" from top of beam. Coat area with approved epoxy bonding agent. Completely cover remaining exposed strands and fill depressions adjacent to strands with approved epoxy grout.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 81-96-0.93 (162) Sta. 300+00.00

STD. PRESTRESSED US-81 OVER BLUFF CREEK

Proj. No. 81-96 KA-5772-01 Sumner Co.

SHEET NO. OF	SCALE	APP'D	AH
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DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

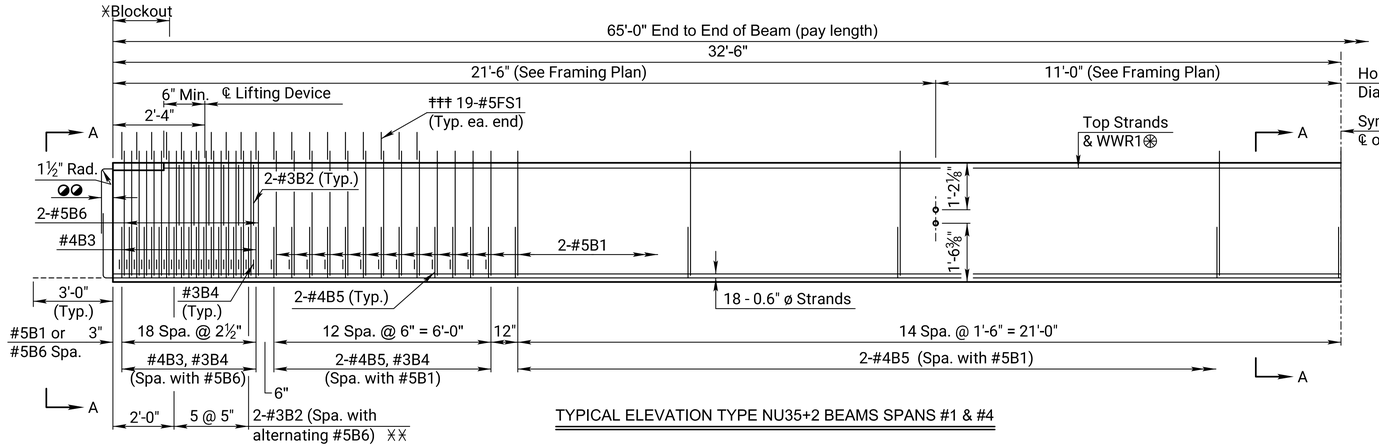
KDOT Graphics Certified 08-14-2024

Sheet No. 47

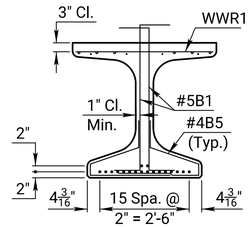
KDOT Graphics Certified

Plotted By: _
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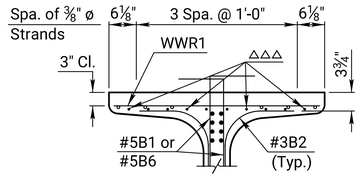
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	48	161



TYPICAL ELEVATION TYPE NU35+2 BEAMS SPANS #1 & #4



SECTION A-A



TOP FLANGE DETAIL ††

△△△ ⅜" Dia. reinforcement support strands (required). Tension to 2.0 kips/strand and place symmetrical about ℄ beam. May be moved laterally in pairs to maintain symmetry.

†† Check flange for Overhang Bracket loads where applicable.

WELDED WIRE REINFORCEMENT EQUIVALENT STEEL A_S						
Size	3"	6"	9"	12"	15"	18"
#3	0.440	0.220	0.147	0.110	0.088	0.073
#4	0.800	0.400	0.267	0.200	0.160	0.133
#5	1.234	0.617	0.411	0.308	0.247	0.206
#6	1.761	0.880	0.587	0.440	0.352	0.293

† If Welded Wire Reinforcement (WWR) is used in-lieu of reinforcing steel bars shown on this sheet, the spacing of wires for the WWR shall be equal to or less than the vertical bars shown in the typical beam section above. The equivalent A_S for the WWR shall be equal to or greater than typical beam section above.

⁑ See Blockout Detail on "Standard Prestressed Concrete Beam Details" sheet.

⁑⁑ Spacing of #3B2 bar @ Abutment End.

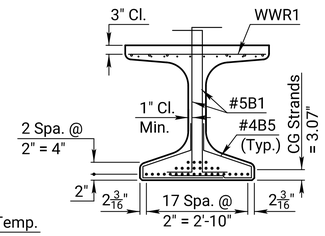
⊛ Discontinue WWR1 at top flange blockout location.

††† See "Deck Details II" sheet for more information.

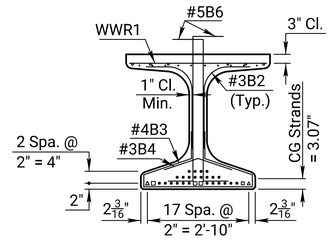
△△ 3 Spa. @ 4"

◔ Epoxy Coated Bar

◒◒ 4" @ Abutments 8" @ Piers



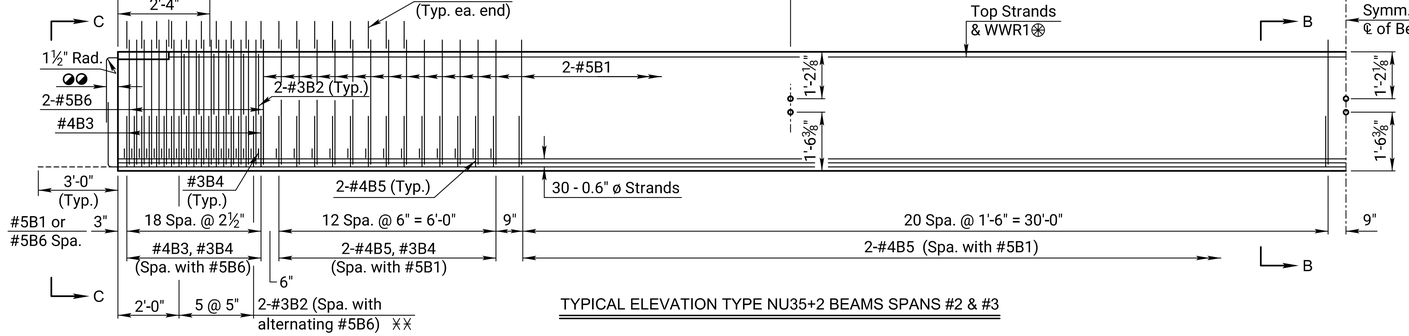
SECTION B-B



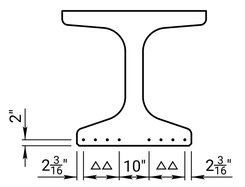
SECTION C-C

□ = Debonded 4' each end

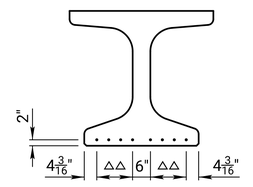
△ = Debonded 6' each end



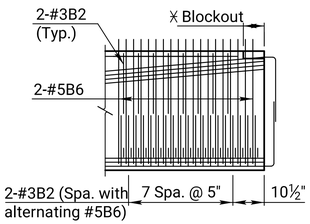
TYPICAL ELEVATION TYPE NU35+2 BEAMS SPANS #2 & #3



STRAND EXTENSION DETAIL
(84'-0" span beams)

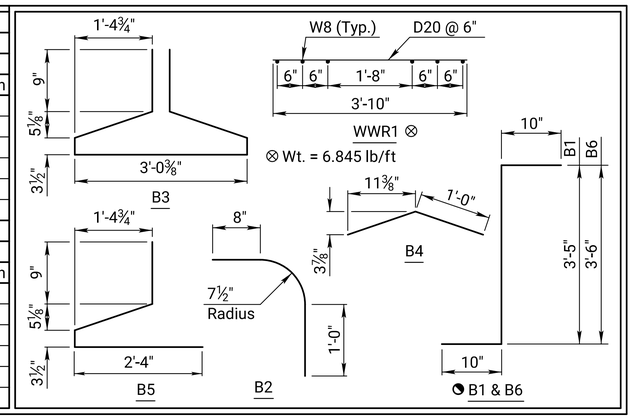


STRAND EXTENSION DETAIL
(65'-0" span beams)



ELEVATION PIER END
(Spacing of #3B2 bar)

BILL OF REINFORCING STEEL								
65'-0" Beam (1 Listed - 10 Reqd.) (end spans)								
Straight bars				Bent bars				
Mark	No.	Size	Length	Mark	No.	Size	Length
				B2	28	#3	2'-8"
				B4	64	#3	2'-0"
				B3	38	#4	7'-8"
				B5	110	#4	4'-8"
				◔ B1	110	#5	5'-1"
				◔ B6	76	#5	5'-2"
84'-0" Beam (1 Listed - 10 Reqd.) (interior span)								
Straight bars				Bent bars				
Mark	No.	Size	Length	Mark	No.	Size	Length
				B2	32	#3	2'-8"
				B4	64	#3	2'-0"
				B3	38	#4	7'-8"
				B5	136	#4	4'-8"
				◔ B1	136	#5	5'-1"
				◔ B6	76	#5	5'-2"



BILL OF MATERIAL		
Item	Unit	Quantity
Prestressed Concrete Beams (NU35+2) Spans 65'-0" & 84'-0"	Lin.Ft.	1,490
The following quantities are given for information only and shall not be paid for directly but shall be made subsidiary to the bid item "Prestressed Concrete Beams"		
Beam concrete (f'c= 9,600 PSI) (per end span beam)	Cu.Yds.	12.2
Beam concrete (f'c= 9,600 PSI) (per interior span beam)	Cu.Yds.	16.0
Approx. Wt. per 65'-0" beam (per end span beam)	Tons	24.8
Approx. Wt. per 84'-0" beam (per interior span beam)	Tons	32.4
0.6" ø Prestressing strand (270 KSI low relaxation fy= 243 KSI)	Lin.Ft.	37,860
Epoxy reinforcing steel (fy=60,000 PSI)	Lbs.	21,234
Reinforcing steel (fy=60,000 PSI)	Lbs.	13,125
Welded Wire Reinforcement (fy=70,000 PSI)	Lbs.	10,199
Elastomeric Brg. pads (Abut.) (¾"x8"x3'-0")	Each	10
Elastomeric Brg. pads (Piers) (¾"x8"x3'-0")	Each	30
1" Formed Holes	Each	100
Lifting devices	Each	40
Bearing plates (⁑x 1'-4" x 3'-0⅜")	Each	40

NOTE: Extend 8 strands 3'-0" beyond the end of the beam. Strands not shown shall be cut flush with the end of the beam. See "Strand Extension Details."

NOTE: During transportation and construction only, support beams on bearing points a maximum of 5 feet from the beam end. The Fabricator shall show the proposed support locations on the shop drawings.

See Sh. # 56 for Deck Details III.

⁑ Use ¾" when field welding will occur, otherwise use ½" ℄

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

NU35+2 BEAM DETAILS
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

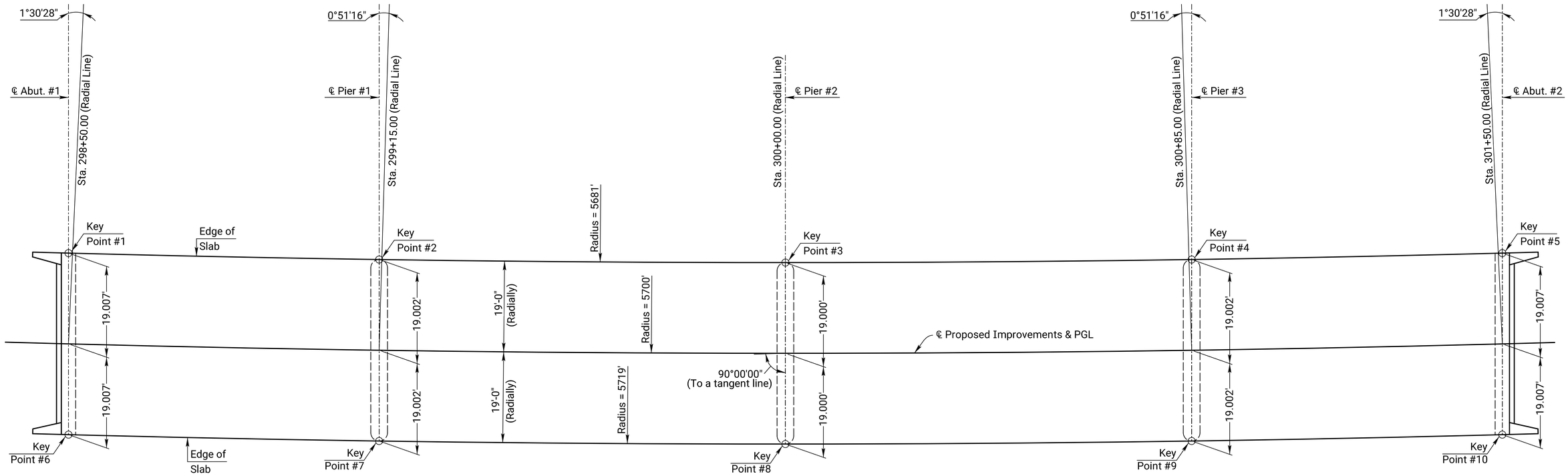
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DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD DE/GB
DESIGN CK. AH/PY	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

KDOT Graphics Certified 08-14-2024

KDOT Graphics Certified

Plot Location:
File: c:\users\bernhardf\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772l01\bbr162-0402.dgn
Plotted By: _
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	49	161



GEOMETRIC LAYOUT

TABLE OF KEY POINT LOCATIONS		
Label	*Northing*	*Easting*
Key Point #1	137540.98	18468840.62
Key Point #2	137605.96	18468841.97
Key Point #3	137690.96	18468842.62
Key Point #4	137775.96	18468842.00
Key Point #5	137840.94	18468840.66
Key Point #6	137540.97	18468878.63
Key Point #7	137605.96	18468879.97
Key Point #8	137690.95	18468880.62
Key Point #9	137775.95	18468880.00
Key Point #10	137840.94	18468878.68

℄ Abutments and ℄ Piers are parallel with each other and with the radial line at Station 300+00.00. Deck is to be placed on a horizontal curve. All stations are given along ℄ Proposed Improvement.

Curve Data

P.I. Sta. 298+56.15 (Bk.) = Sta. 298+50.50 (Ahd.)

△ = 13°03'29" (Lt.)
T = 652.36'
L = 1,299.08'
R = 5,700.00
E = 37.21'

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

GEOMETRIC LAYOUT
US-24 OVER SOLDIER CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

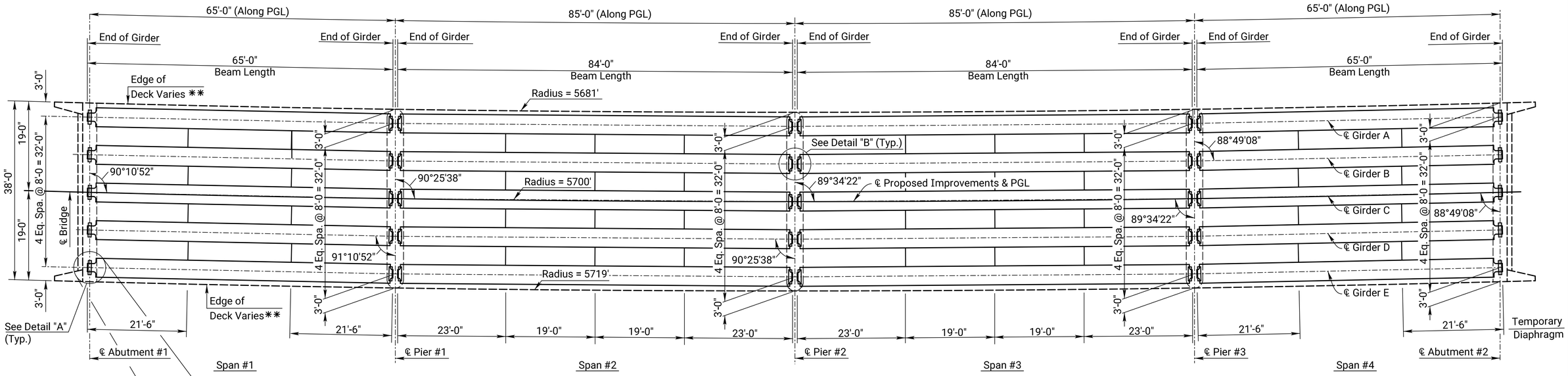
SHEET NO.	OF	SCALE		APP'D				AH
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD	DE/GB	
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KDOT Graphics Certified 08-14-2024 Sheet No. 49

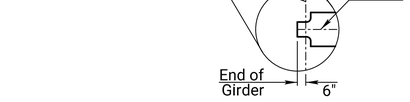
KDOT Graphics Certified

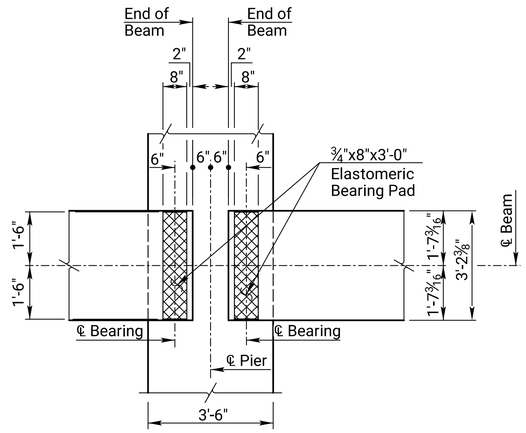
Plotted By: —
Plot Location:
File: c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201\br162-0424.dgn
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	50	161

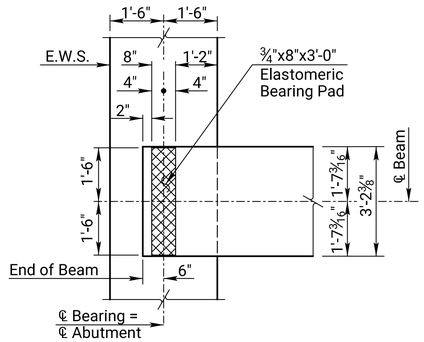


FRAMING PLAN

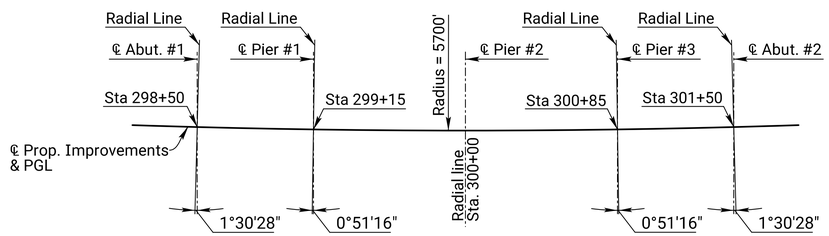




Detail "B"



Detail "A"



GEOMETRIC LAYOUT

N.T.S

Table of Overhangs **					
Span		1	2	3	4
Left Overhang	Min	2.91'	2.84'	2.84'	2.91'
	Max	3.00'	3.00'	3.00'	3.00'
Right Overhang	Min	3.00'	3.00'	3.00'	3.00'
	Max	3.10'	3.16'	3.16'	3.10'

NOTE:
Girder spacings are measured along ℄ Abutment & ℄ Pier.

℄ Abutments and ℄ Piers are parallel with each other and with the radial line at Station 300+00.00. Deck is to be placed on a horizontal curve. All beams are on chords. ℄ Beams coincide at ℄ Bents.

Curve Data

P.I. Sta. 298+56.15 (Bk.) = Sta. 298+50.50 (Ahd.)

△ = 13°03'29" (Lt.)
T = 652.36'
L = 1,299.08'
R = 5,700.00
E = 37.21'

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

FRAMING PLAN
US-24 OVER SOLDIER CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

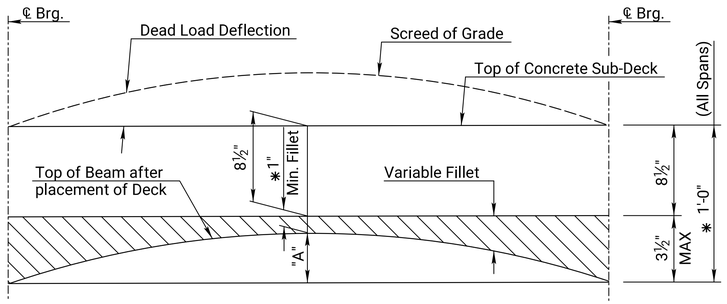
SHEET NO.	OF	SCALE		APP'D		AH
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD DE/GB
DESIGN CK.	AH/NW	DETAIL CK.	PY	QUAN. CK.	PY	CADD CK. GB

KDOT Graphics Certified 08-14-2024 Sheet No. 50

KDOT Graphics Certified

Plot Location: —
File: c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772_1bbr162-0425.dgn
Plotted By: —
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	51	161



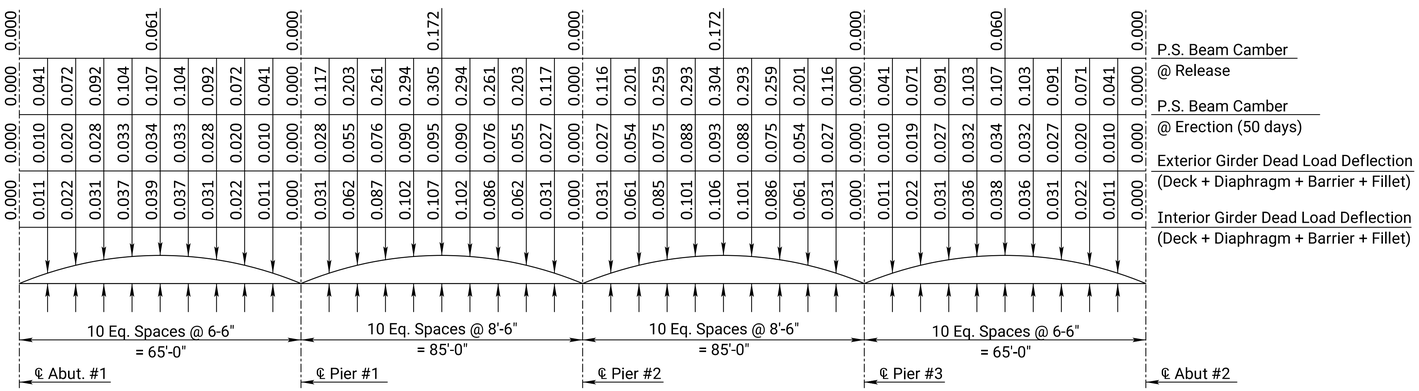
Dimension "A" = (Camber @ 50 days) - Dead Load Deflection (Deck + Diaphragm + Barrier + Fillet)
Total Thickness @ ℄ Brg. = (Dimension "A") + (Total Deck Thickness) + (1" Fillet)

CAMBER DIAGRAM SHOWING VARIABLE FILLET THICKNESS

* Dimensions shown are along ℄ of the Beam.
Theoretical fillet depth at mid-span is
2⅞" (Spans 1 & 4) and 1⅜" (Spans 2 & 3).

CAMBER: Construct the finished deck to plan grade by varying the depth of the fillet over the beam to provide for prestress camber, concrete dead load deflection and vertical curvature. After the prestressed beams are erected measure the camber in the field by taking a profile of each beam. Correct any variation between the actual camber and concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the beam so that the finished floor is constructed to the theoretical grade. The minimum depth of the deck over the beam shall be 8½" @ ℄ beam (not including Fillets). Prior to shipping, the camber shall be no greater than the design camber +½". The design camber is equal to the 50 day camber shown in the plans.

The theoretical amount of concrete required for the fillets is 46.02 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.



NU35+2 BEAM CAMBER AND DEAD LOAD DEFLECTION

Measure beam camber at midspan by the Contractor at the project site at time of delivery. Submit a copy of the field notes of measured beam camber to the Engineer not more than 5 working days after delivery of the beams to the site. Beam camber shall meet the tolerance specified on the "Standard Prestressed Concrete Beam Details" sheet.

Ordinates are in feet

Beam Concrete, Ei= 4,815 ksi (f'ci = 7.0 ksi)
Ef= 5,639 ksi (f'c = 9.6 ksi)

Note:
Camber is Upward
Instantaneous Dead Load Deflections are Downward

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

BEAM AUXILIARY DETAILS
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

SHEET NO. OF	SCALE	APP'D	AH
DESIGNED CM	DETAILED	QUANTITIES CM	CADD DE/GB
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

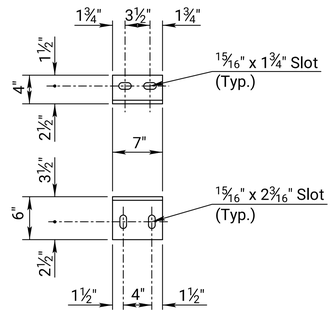
KDOT Graphics Certified 08-14-2024

Sheet No. 51

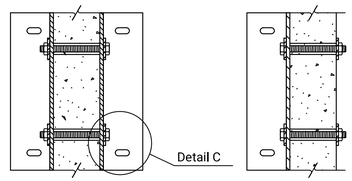
KDOT Graphics Certified

Plot Location:
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Plot Date: 8/16/2024
Plotted By: _

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	52	161

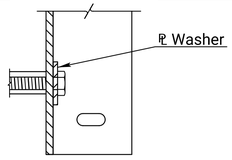


7" CONNECTION ANGLE
(80 each Req'd.)
(Weight = 9.45 Lb. each)



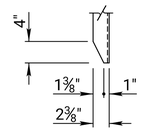
DETAIL A

DETAIL B

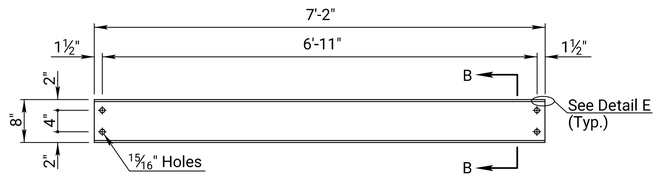


DETAIL C

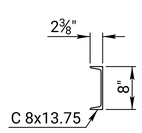
TEMPORARY DIAPHRAGMS: Use ASTM A709 Gr. 36 steel for all angles and bent plates for temporary diaphragms. All bolts, nuts, and washers for fasteners shall conform to the heavy hex structural requirements of ASTM F3125 Gr. A325, Type 1. Galvanize the angles, bolts, nuts, and washers in accordance with the KDOT Specifications. Use hardened steel washers over any oversized holes. Use $\frac{5}{16}$" plate washers over any slotted holes along with hardened washers under the turned elements. Use the turn-of-the-nut tightening method. DTI's are not required. Install the temporary diaphragms, as shown in the details, prior to placing any superstructure concrete. Leave the temporary diaphragms in place until the concrete diaphragms and deck have cured. Remove the angles from the Girders and fill the holes in the prestressed Girders with an approved epoxy grout. The bent plate diaphragms, angles, nuts, bolts, and washers shall remain the property of the Contractor. Submit shop drawings of the temporary diaphragms to the KDOT Bridge Section for review and approval. The material, equipment, and labor necessary for the installation of the temporary diaphragms, including filling the bolt holes, shall not be paid for directly, but shall be subsidiary to the bid item "Prestressed Concrete Girders (NU35+2)".



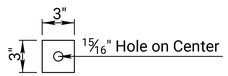
DETAIL E



TEMPORARY DIAPHRAGM
(or equivalent)
(40 each Req'd.)

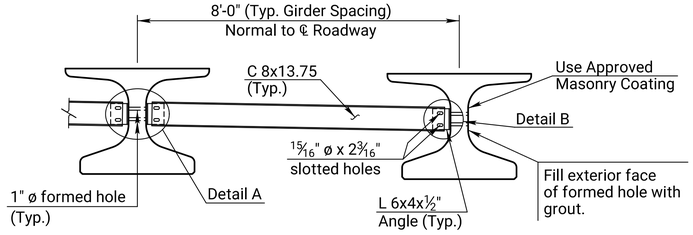


SECTION B-B



5/16" PLATE WASHER
160 each Req'd. (Channel to Angles)
160 each Req'd. (Interior Web Girders)

CONNECTION ANGLE DETAILS
(or equivalent)



ELEVATION OF TEMPORARY DIAPHRAGMS

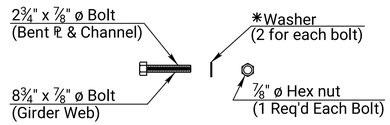


*Plate washers required for slotted holes.

FASTENER DETAILS

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

TEMPORARY DIAPHRAGM DETAILS
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

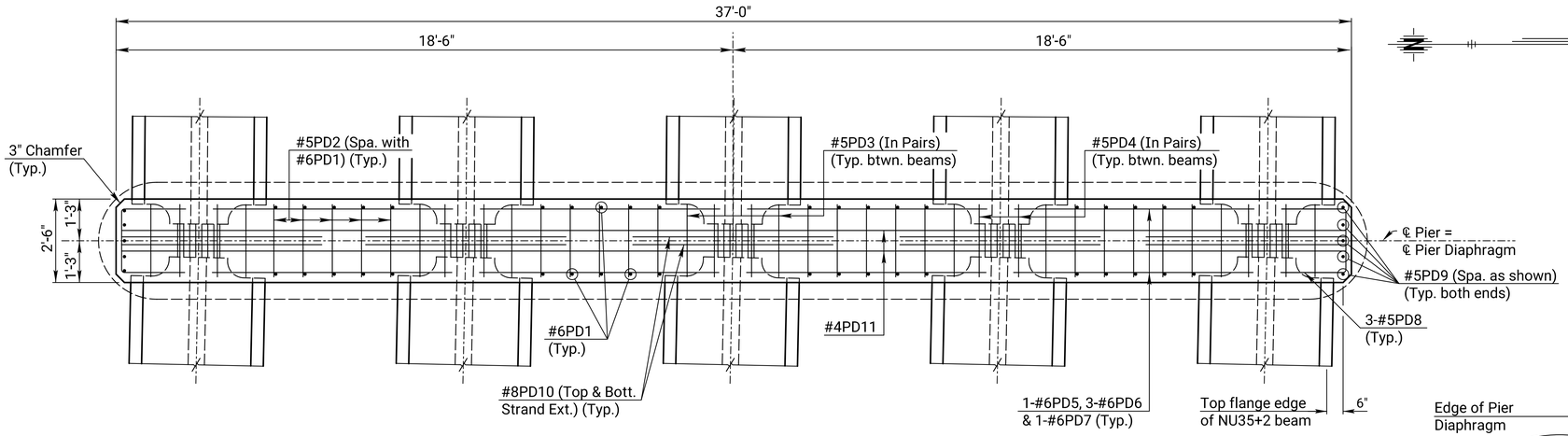
SHEET NO.	OF	SCALE		APP'D			AH
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD	DE/GB
DESIGN CK.	AH/NW	DETAIL CK.	PY	QUAN. CK.	PY	CADD CK.	GB

KDOT Graphics Certified 08-14-2024 Sheet No. 52

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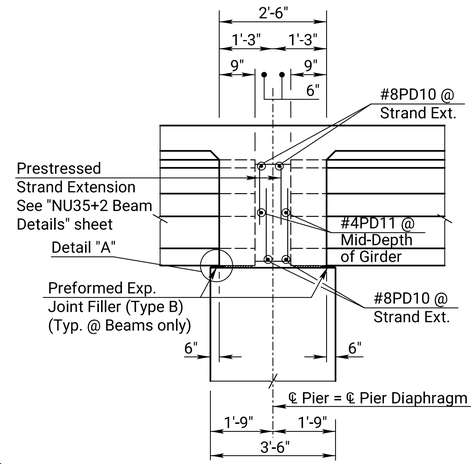
Plotted By: _
Plot Location:
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Plot Date:8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	53	161



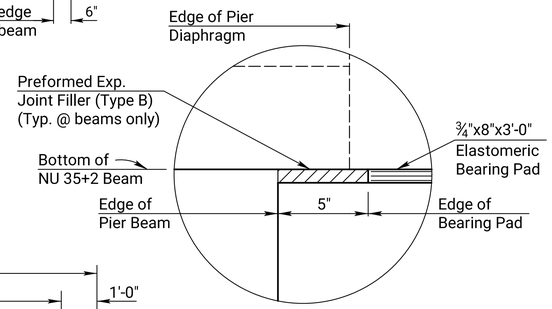
SECTION C-C

(Details shown for Pier #1, other piers similar)

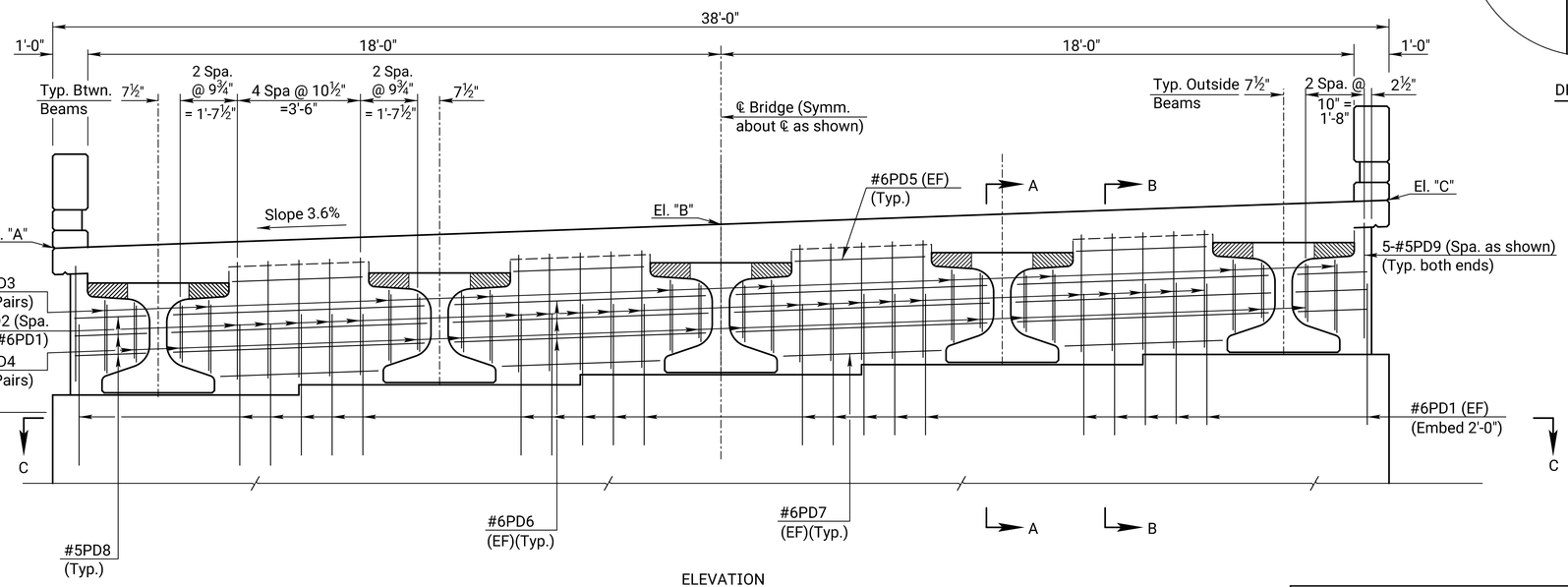


SECTION A-A

(At Beams)

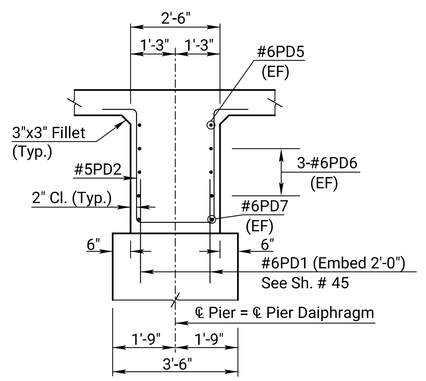


DETAIL "A"



ELEVATION

(Looking Upstation)



SECTION B-B

(Between Beams)

LEGEND

EF = Each Face

See Sh. #48 for NU35+2 Beam Details.

TABLE OF ELEVATIONS @ ℄ PIER			
Loc. \ Pier	Pier #1	Pier #2	Pier #3
"A"	1113.44	1113.59	1113.54
"B"	1114.13	1114.27	1114.23
"C"	1114.81	1114.95	1114.91

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

PIER DIAPHRAGM DETAILS
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-9772-01 Sumner Co.

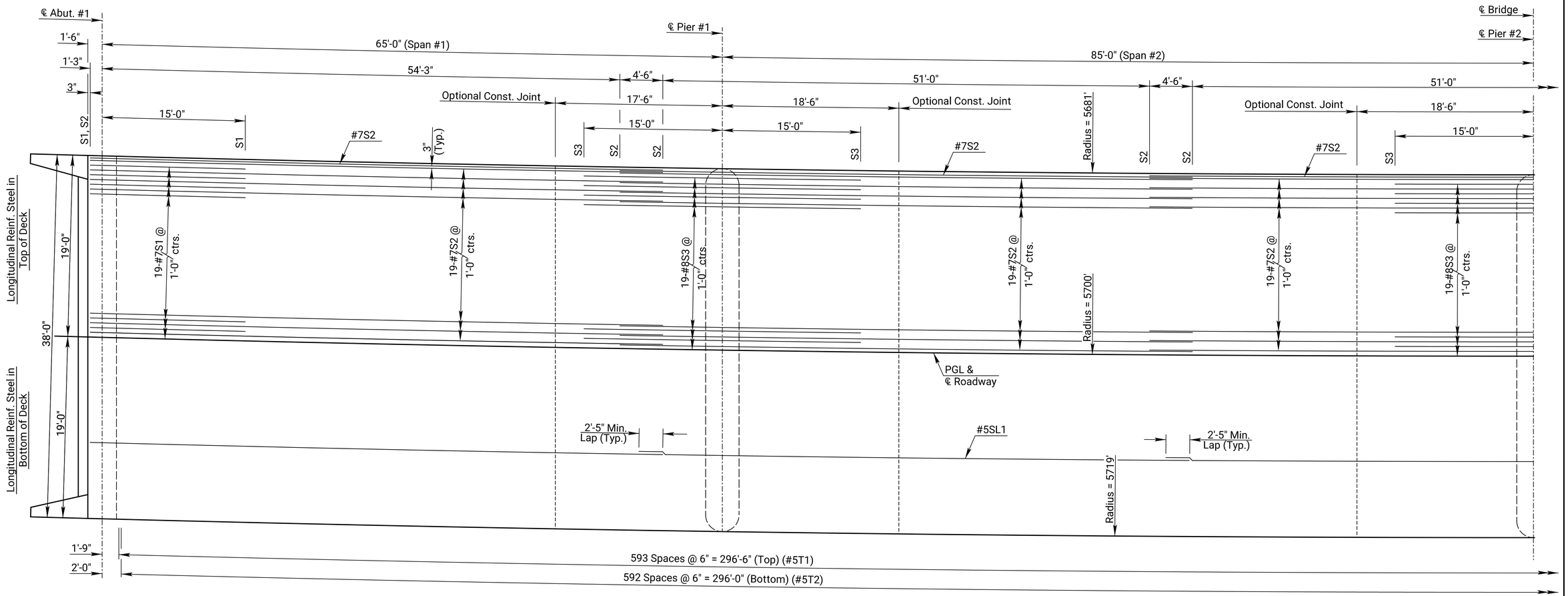
SHEET NO.	OF	SCALE		APP'D		AH
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD DE/GB
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KDOT Graphics Certified

Plotted By: —
Plot Location:
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Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	54	161



PART PLAN VIEW SHOWING REINFORCEMENT IN DECK

Note:
Place all transverse steel in the deck parallel to ℄ Abutments and ℄ Piers. Place all longitudinal steel along the arc of the curve. Span lengths are measured along the curve of ℄ Proposed Improvement. See "Framing Plan" sheet for additional details.

See Sh. #50 for Framing Plan.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

DECK DETAILS I
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

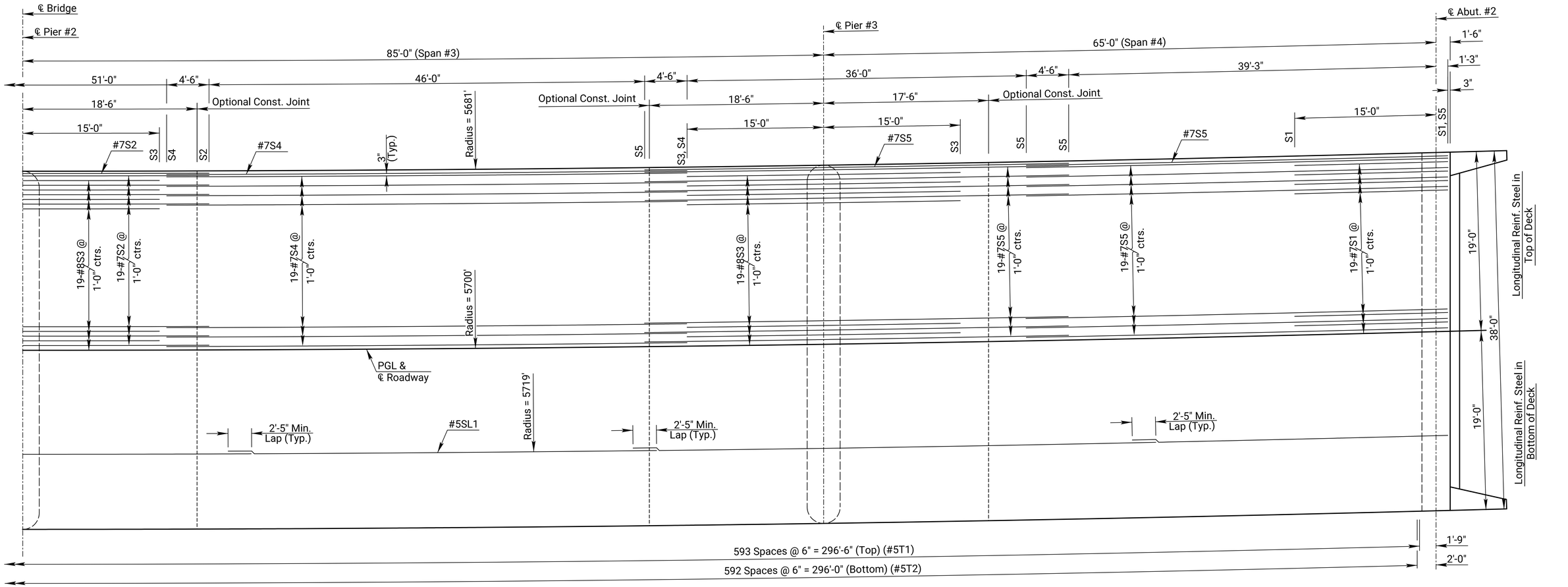
SHEET NO. OF	SCALE	APP'D	AH
DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD DE/GB
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

KDOT Graphics Certified 08-15-2024

KDOT Graphics Certified

Plot Location:
File: c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772101\bbr162-0710.dgn
Plot Date: 8/16/2024
Plotted By: —

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	55	161



PART PLAN VIEW SHOWING REINFORCEMENT IN DECK

Note:
Place all transverse steel in the deck parallel to ℄ Abutments and ℄ Piers. Place all longitudinal steel along the arc of the curve. Span lengths are measured along the curve of ℄ Proposed Improvement. See "Framing Plan" sheet for additional details.

See Sh. #50 for Framing Plan.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

DECK DETAILS II
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

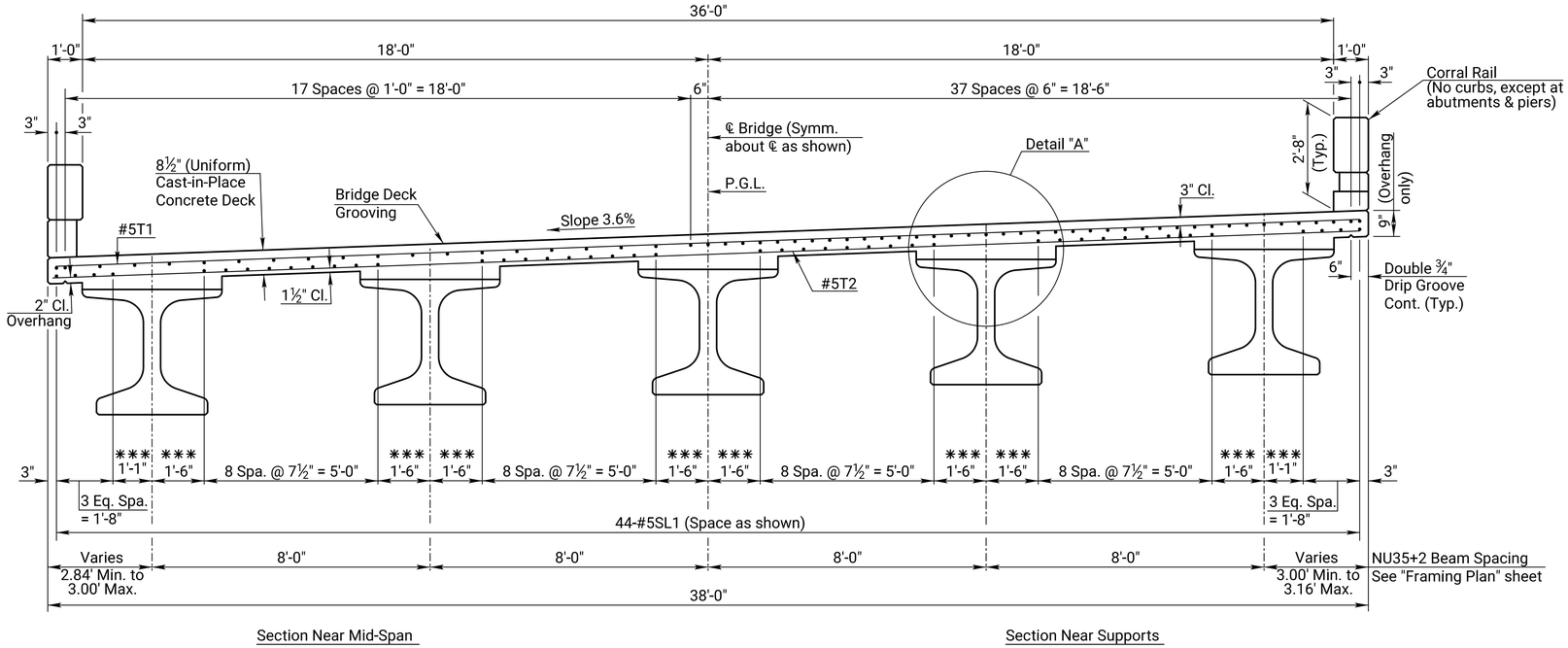
SHEET NO. OF	SCALE	APP'D	AH
DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD DE/GB
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

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KDOT Graphics Certified

Plot Location: _
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Plot Date: 8/16/2024
Plotted By: _

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	56	161

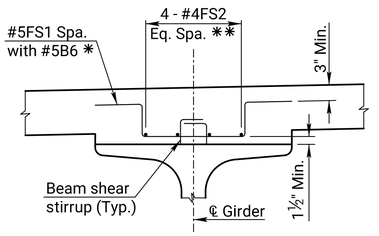


Section Near Mid-Span

Section Near Supports

TYPICAL SECTION
(Looking Upstation)

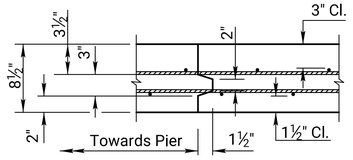
*** Dimension indicative over supports. Dimensions varies over slab length as slab reinforcing is placed to match slab edge curves.



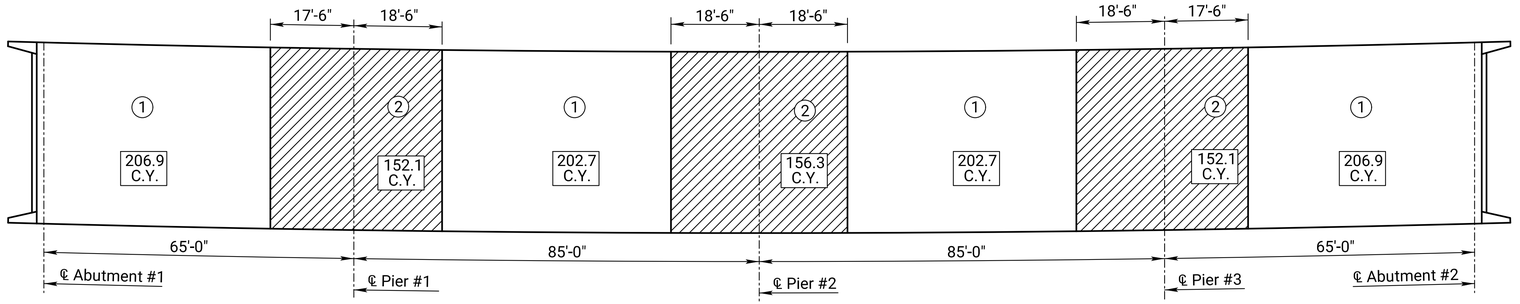
DETAIL "A"
(Deck reinforcing not shown for clarity)

* #5FS1 bars spaced with #5B6 bundled with #5B6 (every second bar) or #5B1 (every bar) beam reinforcing from both ends of each beam for 8'-6" length at 6" max spa. See "NU35+2 Beam Details" sheet for spacing.

** #4FS2 bars located at both ends of each beam, at #5FS1 locations. Extend 1'-0" past last #5FS1 bar.



TRANSVERSE DECK CONSTRUCTION JOINT
(Optional)



CONCRETE PLACING SEQUENCE
(Optional)
(Concrete quantities include deck, fillets and abutment diaphragm, and pier diaphragms)

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

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

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

See Sh. # 48 for NU35+2 Beam Details.
See Sh. # 50 for Framing Plan.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

DECK DETAILS III
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

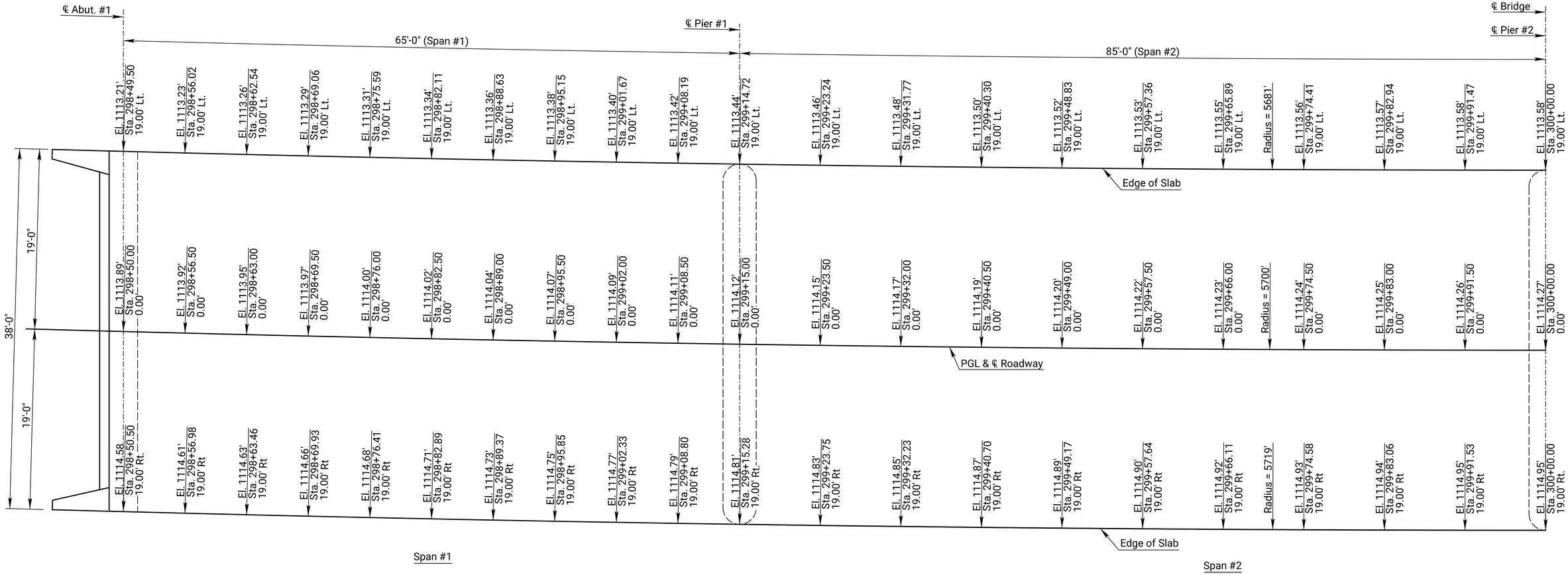
SHEET NO. OF	SCALE	APP'D	AH
DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD DE/GB
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

KDOT Graphics Certified 06-15-2023

KDOT Graphics Certified

Plotted By: —
Plot Location:
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Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	57	161



PART PLAN VIEW SHOWING DECK ELEVATIONS

Elevations are shown at tenth points along PGL and Deck Lt. & Rt.

Plotted By: --
Plot Location:
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Plot Date: 8/16/2024

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

DECK DETAILS IV
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

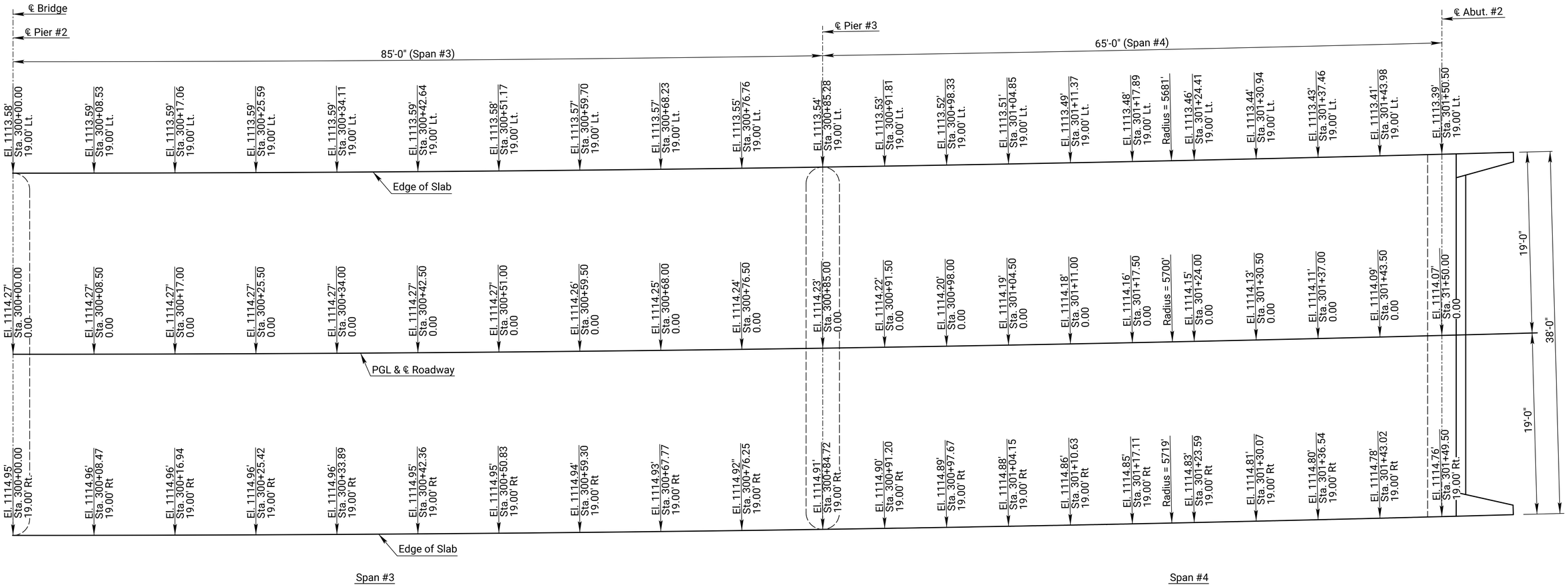
SHEET NO.	OF	SCALE		APP'D		AE
DESIGNED	CM	DETAILED	CM	QUANTITIES	CM	CADD DE/GB
DESIGN CK.	AH/NW	DETAIL CK.	PY	QUAN. CK.	PY	CADD CK. GB

KDOT Graphics Certified 08-15-2024

Sheet No. 57

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	58	161



PART PLAN VIEW SHOWING DECK ELEVATIONS

Elevations are shown at tenth points along PGL and Deck Lt. & Rt.

Plotted By: --
Plot Location:
File: c:\Users\bernhardt\Documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\kd577201\bbr162-0717.dgn
Plot Date: 8/16/2024

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

DECK DETAILS V
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

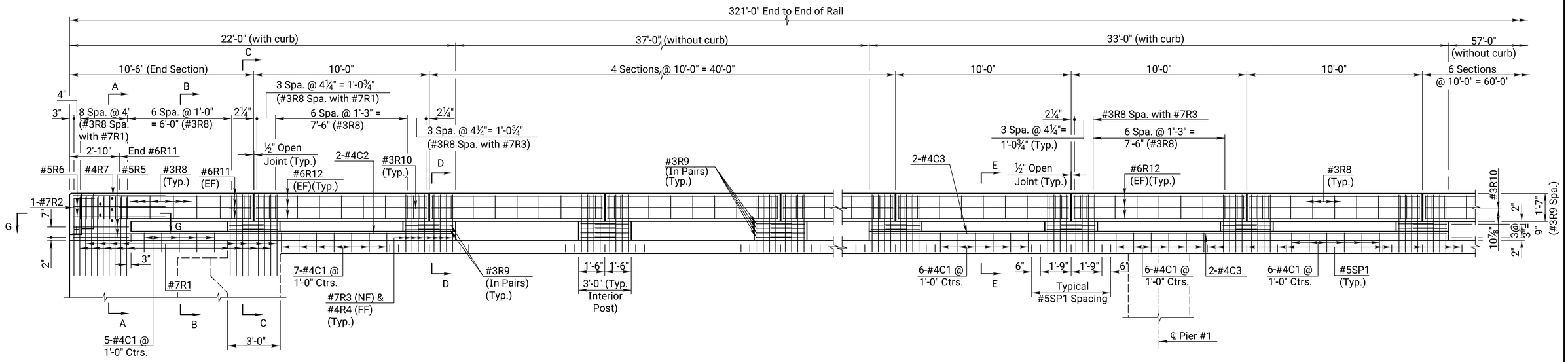
SHEET NO. OF	SCALE	APP'D		AE
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DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK.	GB

KDOT Graphics Certified 08-15-2024

Sheet No. 58

KDOT Graphics Certified

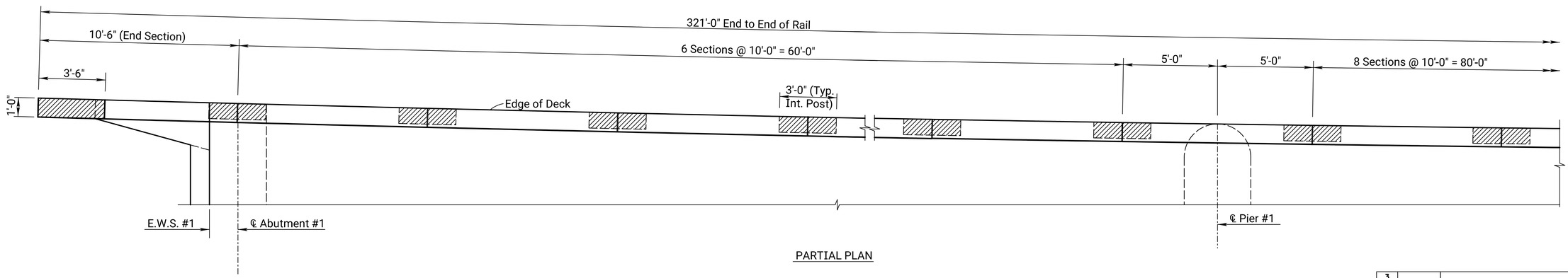
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	59	161



† Extend the 12:3 taper to the top of the approach slab curb.

PARTIAL ELEVATION

(Along Traffic Face. West Corral Rail shown, East Corral Rail similar.)



PARTIAL PLAN

NOTE: Provide Guardrail connection details at all 4 corners of bridge.

See Sh. #39 for Construction Layout

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

CORRAL RAIL DETAILS I
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

SHEET NO. OF	SCALE	APP'D AH
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DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

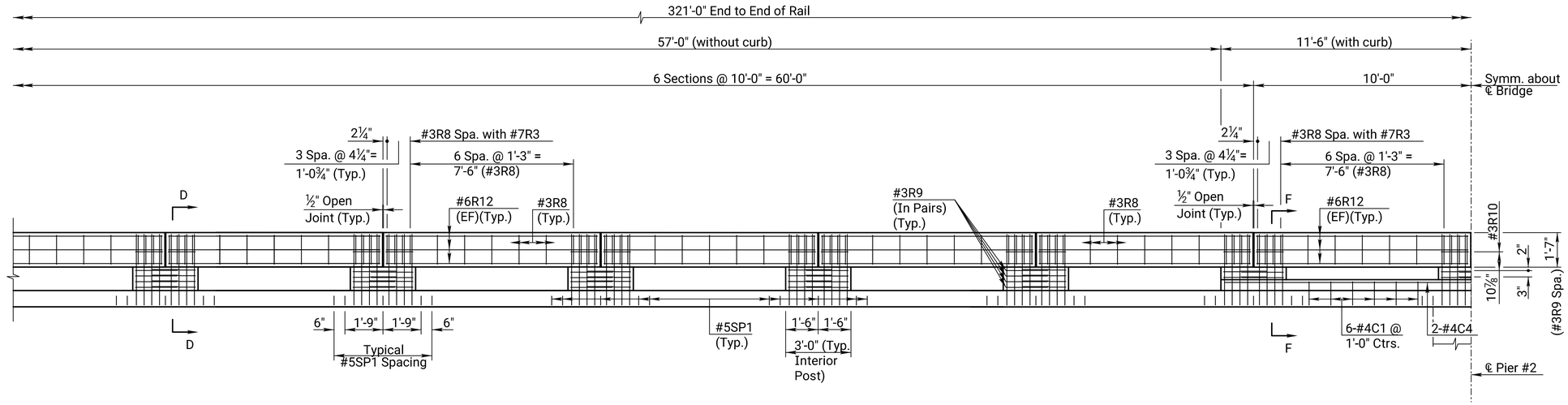
KDOT Graphics Certified 08-15-2024

Sheet No. 59

KDOT Graphics Certified

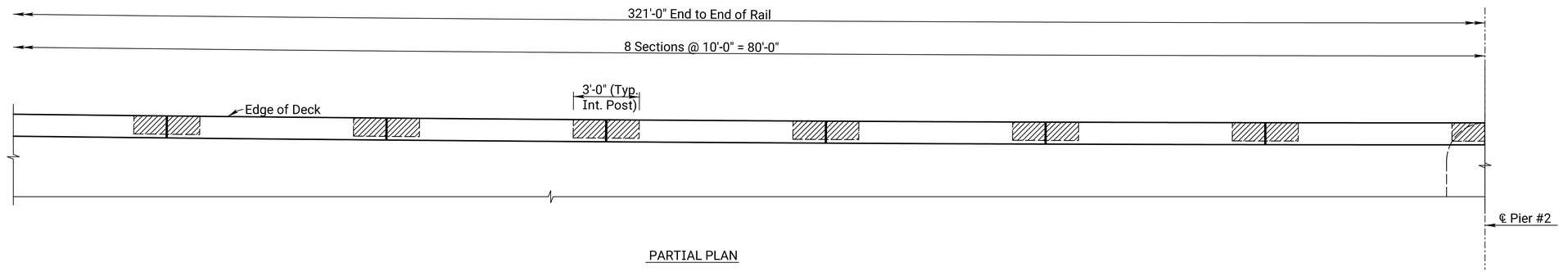
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Plot Location:
Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	60	161



PARTIAL ELEVATION

(Along Traffic Face. West Corral Rail shown, East Corral Rail similar.)



PARTIAL PLAN

See Sh. #39 for Construction Layout

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

CORRAL RAIL DETAILS II
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

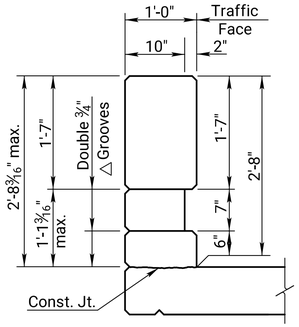
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DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD DE/GB
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

KDOT Graphics Certified 08-15-2024

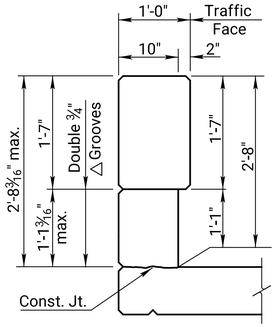
KDOT Graphics Certified

Plotted By: —
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Plot Date: 8/16/2024

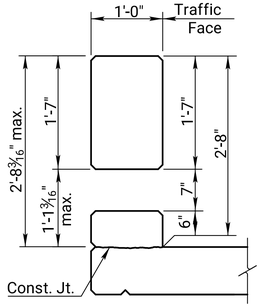
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	61	161



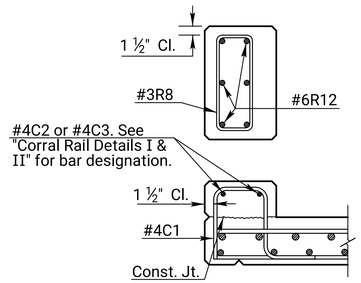
TYPICAL "WITH CURB" INTERIOR POST



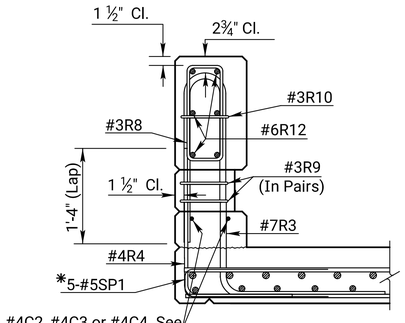
TYPICAL "WITHOUT CURB" INTERIOR POST



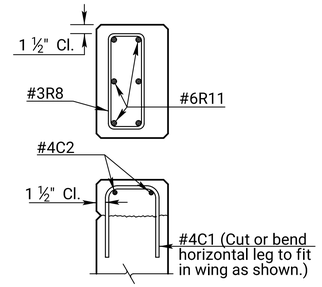
TYPICAL "WITH CURB" SECTION BETWEEN POSTS



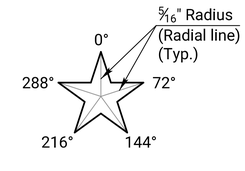
SECTION E-E



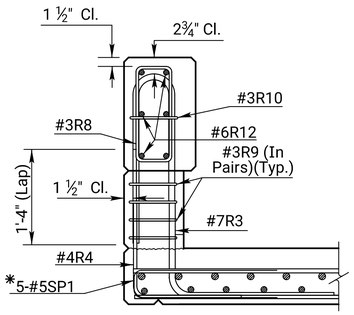
SECTION D-D



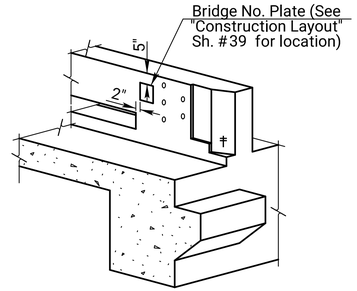
SECTION B-B



STAR GEOMETRY



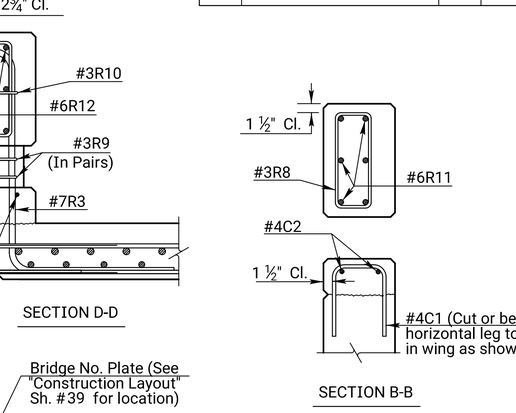
SECTION F-F



BRIDGE NUMBER PLATE PLACEMENT DETAIL

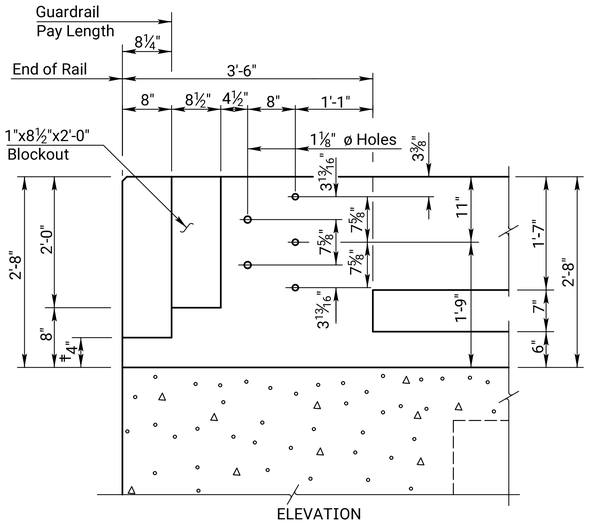
† Extend the 12:3 taper to the top of the approach slab curb.

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

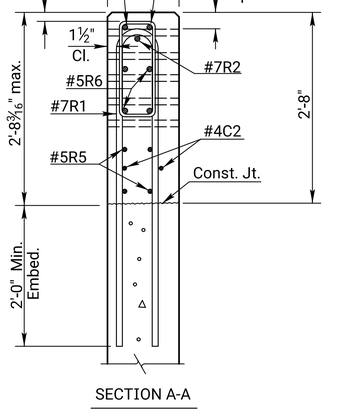


XX Year Bridge is Completed.

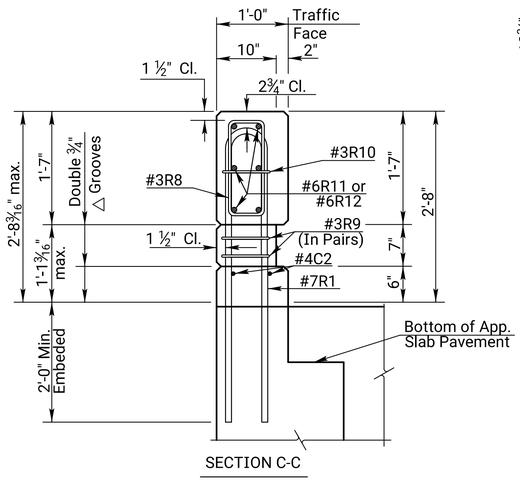
BRIDGE NUMBER PLATE
(1 Required)
(See "Construction Layout" Sh. #39 for Location.)



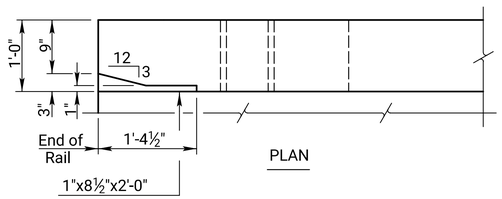
ELEVATION
(Dimensions at Traffic Face of Rail)



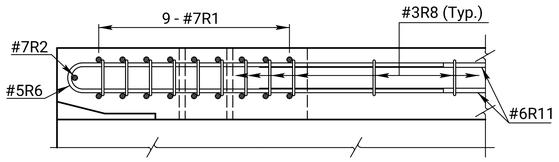
SECTION A-A



SECTION C-C



PLAN



SECTION G-G

See "Corral Rail Details I & II" sheets for Section locations.

See Sh. #39 for Construction Layout

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

CORRAL RAIL DETAILS III
US-81 OVER BLUFF CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

SHEET NO. OF	SCALE	APP'D	AH
DESIGNED CM	DETAILED CM	QUANTITIES CM	CADD DE/GB
DESIGN CK. AH/NW	DETAIL CK. PY	QUAN. CK. PY	CADD CK. GB

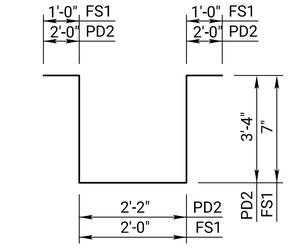
KDOT Graphics Certified 08-15-2024

Sheet No. 61

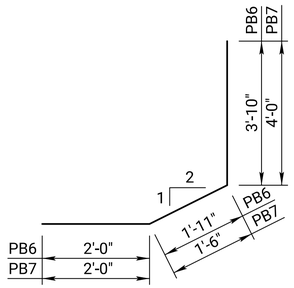
KDOT Graphics Certified

Plotted By: _
Plot Location:
File: c:\Users\bernhardt\Documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\kda577201\bbr162-0827.dgn
Plot Date: 8/16/2024

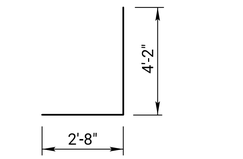
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	62	161



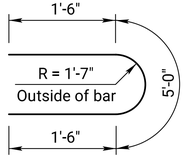
PD2, FS1



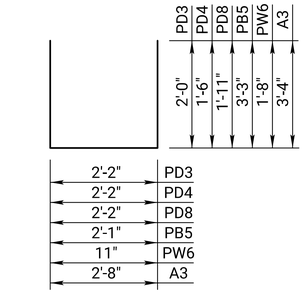
PB6, PB7



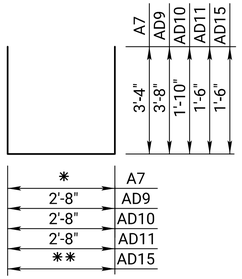
AD8 AD19



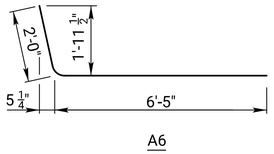
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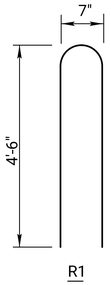
PD3, PD4, PD8, PB5, PW6 & A3



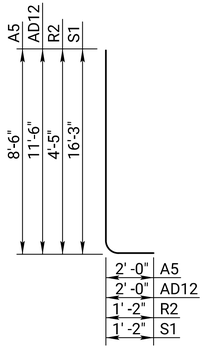
A7, AD9, AD10, AD11 & AD15



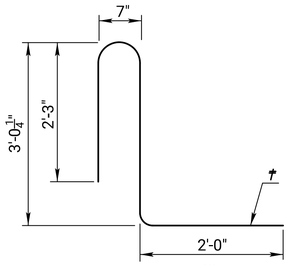
A6



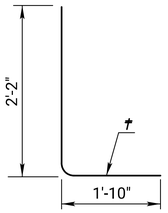
R1



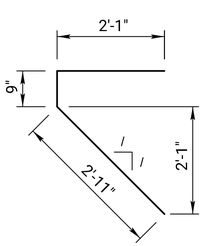
A5, AD12, R2 & S1



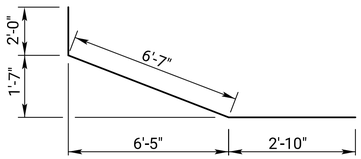
R3



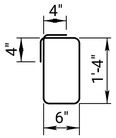
R4
(Lap 1'-4" with R3)



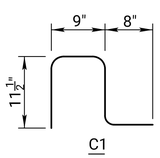
AD20



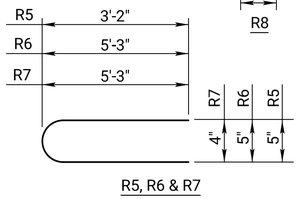
AD14



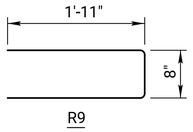
R8



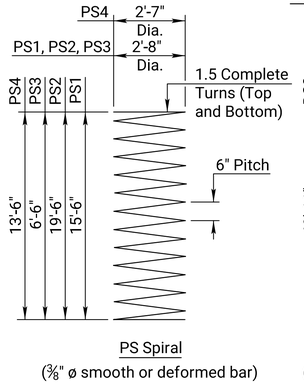
C1



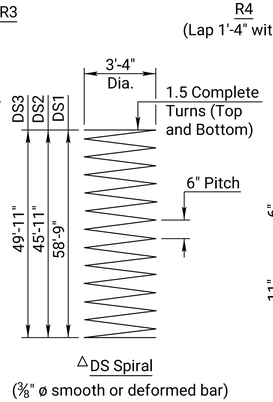
R5, R6 & R7



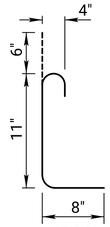
R9



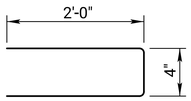
PS Spiral
(⅜" ø smooth or deformed bar)



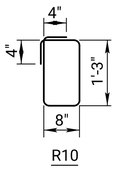
△DS Spiral
(⅜" ø smooth or deformed bar)



PW9



SP1



R10

BENDING DIAGRAMS

All dimensions are out to out of bars.

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

* Increase from 8 1/2" to 1'-11 1/2" by 3" increments (Cut 4 each length) (per abutment).

** Increase from 7 1/4" to 1'-10 1/4" by 3" increments (Cut 4 each length).

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

Spiral Spacer Bars:
1) Are included in the weight of reinforcing steel.
2) Minimum section modulus = 0.008 in³
3) 4 required per spiral.

△ All Drilled Shaft reinforcing steel shall be subsidiary to the bid item "Drilled Shaft (48")(Cased)"

PW3 is only for Pier #1, PW7 is only for Pier #2 and PW8 is only for Pier #3.

SUPERSTRUCTURE BILL OF REINFORCING STEEL EPOXY COATED GRADE 60

	Straight Bars				Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Abutment Diaphragms (Listed for Both)	AD2	#8	8	37'-8"	AD8	#5	10	6'-10"
	AD18	#8	20	4'-0"	AD9	#5	44	10'-0"
					AD10	#5	20	6'-4"
	AD1	#6	194	4'-0"	AD11	#5	20	5'-8"
					AD12	#5	20	13'-6"
	AD3	#5	12	37'-8"	AD14	#5	16	11'-5"
	AD4	#5	8	3'-8"	AD15	#5	24	⊗
	AD5	#5	16	7'-2"	AD19	#5	82	2'-10"
	AD6	#5	8	4'-6"	AD20	#5	82	5'-9"
	AD7	#5	8	2'-5"				
	AD13	#5	4	11'-4"				
	AD16	#5	24	2'-11"				
	AD17	#5	72	3'-10"				
Pier Diaphragms (Listed for All Three)	PD10	#8	60	6'-0"				
					PD2	#5	60	12'-10"
	PD5	#6	24	3'-8"	PD3	#5	60	6'-2"
	PD6	#6	72	7'-2"	PD4	#5	60	5'-2"
	PD7	#6	24	4'-6"	PD8	#5	18	6'-0"
	PD9	#5	30	3'-4"				
	PD11	#4	6	36'-8"				

SUPERSTRUCTURE (CONTINUED) BILL OF REINFORCING STEEL EPOXY COATED GRADE 60

	Straight Bars				Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Deck	S3	#8	111	30'-0"	FS1	#5	720	5'-2"
					S1	#7	74	17'-9"
	S2	#7	120	60'-0"				
	S4	#7	40	55'-0"				
	S5	#7	80	45'-0"				
	SL1	#5	264	52'-11"				
	T1	#5	594	37'-8"				
	T2	#5	593	37'-8"				
	FS2	#4	160	9'-6"				
Corral Rail								
	R11	#6	24	7'-6"	R1	#7	68	9'-3"
	R12	#6	360	9'-8"	R2	#7	4	5'-7"
					R3	#7	464	7'-7"
	C2	#4	8	21'-8"				
	C3	#4	8	32'-8"	R5	#5	8	6'-6"
	C4	#4	4	22'-8"	R6	#5	8	10'-8"
					SP1	#5	290	4'-4"
					C1	#4	144	3'-4"
					R4	#4	464	4'-0"
					R7	#4	4	10'-8"
					R8	#3	852	4'-4"
					R9	#3	376	4'-6"
					R10	#3	124	4'-6"

PIER BILL OF REINFORCING STEEL LISTED FOR ONE (THREE REQUIRED) NON-EPOXY COATED GRADE 60

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
△ DC1	#9	57	58'-9"	PB4	#6	12	8'-0"
△ DC2	#9	57	45'-11"				
△ DC3	#9	57	49'-11"	PB5	#5	216	8'-7"
PB1	#9	9	34'-6"	PB6	#5	4	7'-9"
PB2	#9	9	34'-0"	PB7	#5	4	7'-6"
				PW6	#5	24	4'-3"
PC1	#8	42	10'-6"	PW9	#5	96	2'-1"
PC2	#8	42	23'-6"				
PC3	#8	42	19'-6"	PS1	#3	3	⊗
PC4	#8	42	13'-6"	PS2	#3	3	⊗
				PS3	#3	3	⊗
◔ PD1	#6	44	4'-0"	△ PS4	#3	3	⊗
PW1	#6	4	10'-8"	△ DS1	#3	3	⊗
				△ DS2	#3	3	⊗
PB3	#5	10	34'-6"	DS3	#3	3	⊗
PW2	#5	***	10'-8"				
◔◔ PW3	#5	48	7'-5"				
PW4	#5	***	3'-6"				
PW5	#5	****	6'-8"				
◔◔ PW7	#5	48	20'-5"				
◔◔ PW8	#5	48	16'-5"				

ABUTMENT BILL OF REINFORCING STEEL LISTED FOR ONE (TWO REQUIRED) NON-EPOXY COATED GRADE 60

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
A1	#7	8	37'-8"	A5	#6	14	10'-6"
				A6	#6	14	8'-5"
A2	#6	10	37'-8"				
A4	#6	2	8'-2"	A3	#5	76	9'-4"
				A7	#5	24	⊗

⊗ See Bending Diagrams.
◔ Epoxy Coated

*** Pier 1 - 20
Pier 2 - 72
Pier 3 - 56

**** Pier 1 - 10
Pier 2 - 36
Pier 3 - 28

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 81-96-0.93 (162) Sta. 300+00.00

BILL OF REINFORCING AND BENDING DIAGRAM
US-24 OVER SOLDIER CREEK

Proj. 81-96 KA-5772-01 Sumner Co.

SHEET NO.	OF	SCALE		APP'D			AH
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DESIGN CK.	AH/PY	DETAIL CK.	PY	QUAN. CK.	PY	CADD CK.	GB

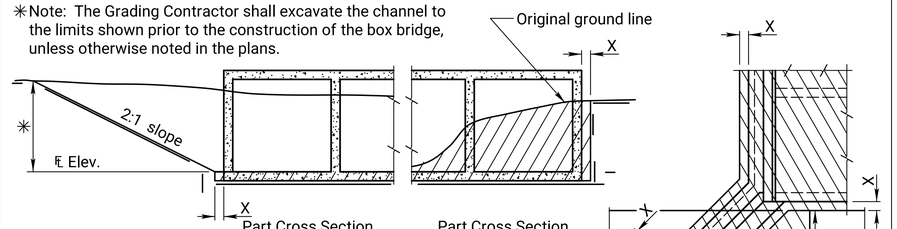
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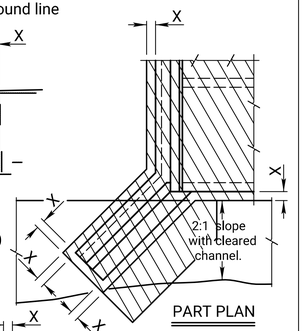
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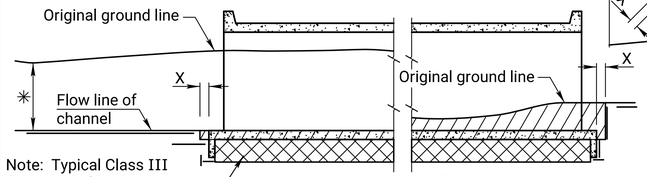
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Plot Date: 8/16/2024

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	63	161

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

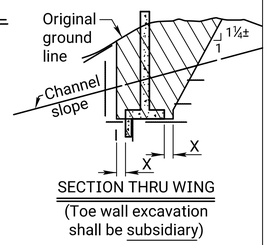






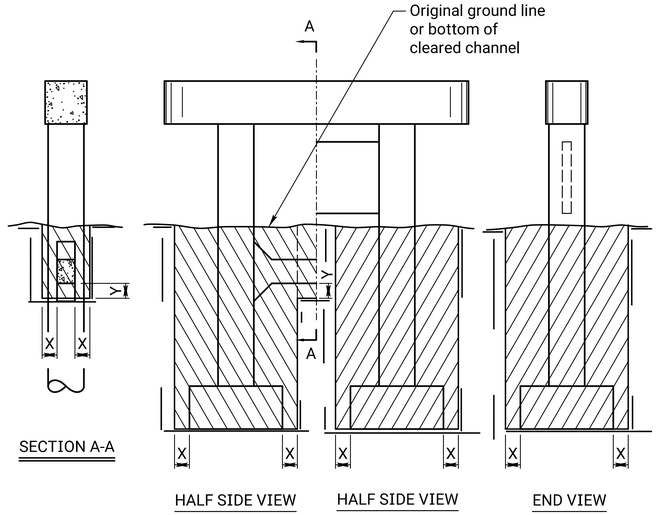
Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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



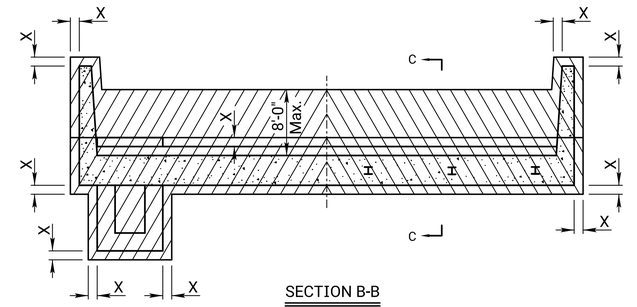
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

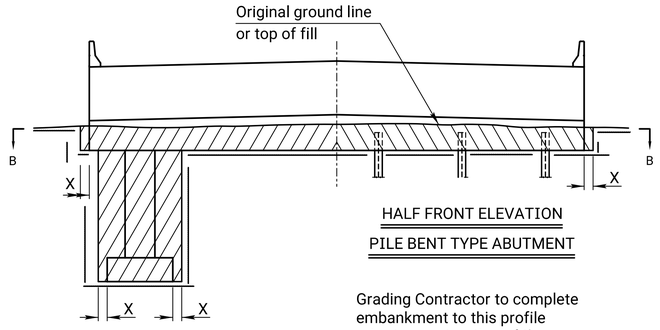
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.

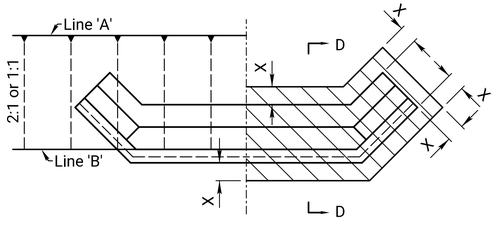


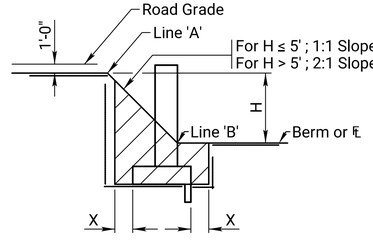
EXCAVATION DETAILS FOR TYPICAL PIERS

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

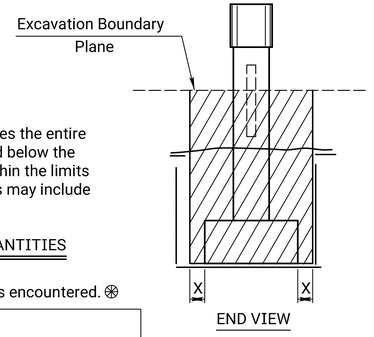








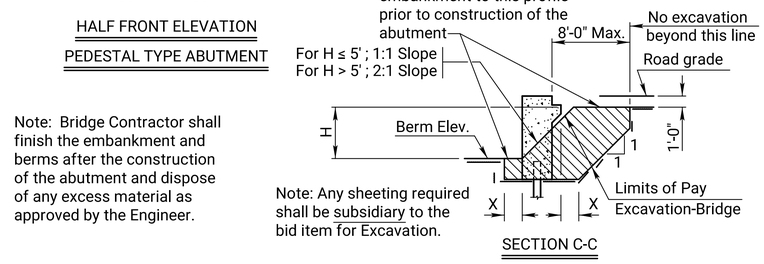
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



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. ❀



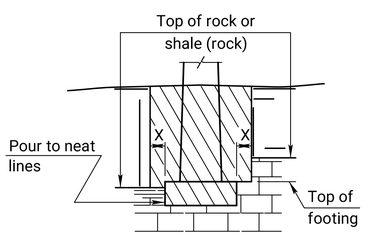
HALF FRONT ELEVATION
PEDESTAL TYPE ABUTMENT

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

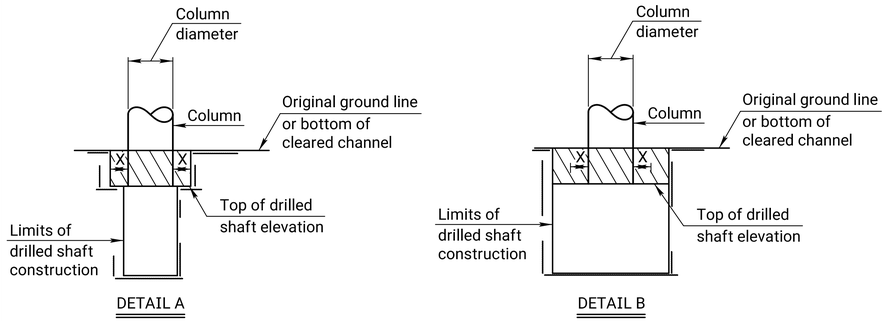
See detail when rock or shale (rock) is encountered. ❀



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

(Piers and Abutments)

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



DRILLED SHAFT DETAILS

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BR100B

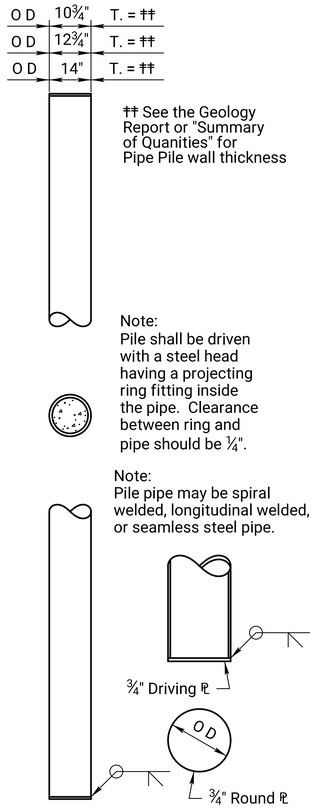
FHWA APPROVAL		04-17-10	APP'D.		Terry L. Fleck
DESIGNED	DETAILED	R.D.R.	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	L.R.R.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 08-15-2024 Sh. No. 63

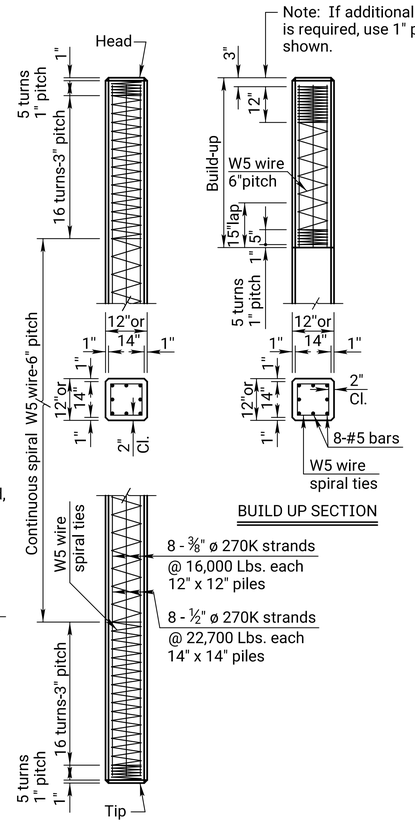
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Plotted : 8/16/2024
Drawn By : _
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	64	161

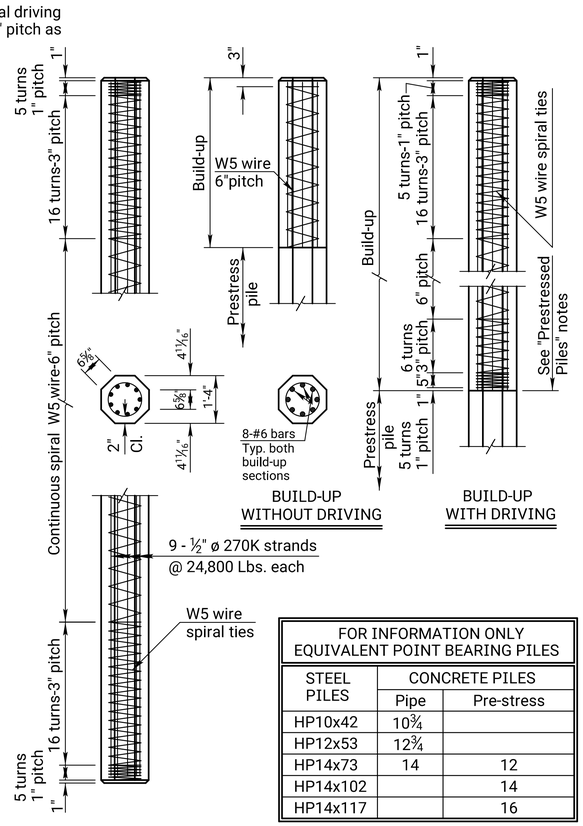


PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



12" OR 14"
PRESTRESSED
CONCRETE PILES

BUILD UP SECTION



16" PRESTRESSED
CONCRETE PILES

BUILD-UP
WITHOUT DRIVING

BUILD-UP
WITH DRIVING

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

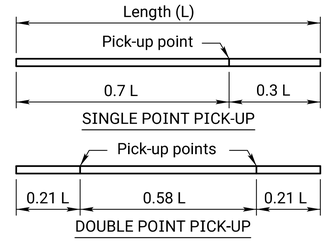
All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

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

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

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

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



PICK-UP POINTS FOR PRESTRESSED PILING

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

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



SHELL PILE POINT

CAST STEEL PILE POINT

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

Weld Symbology Definition

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

Lay full penetration root weld from beveled side of splice.

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

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

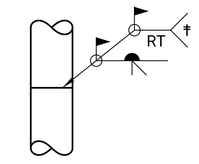
Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

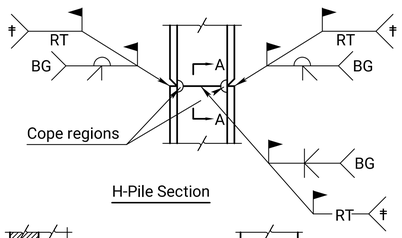
SPLICES: Splices for steel piles and shell piling shall be in accordance with details shown on this sheet and the Standard Specifications.

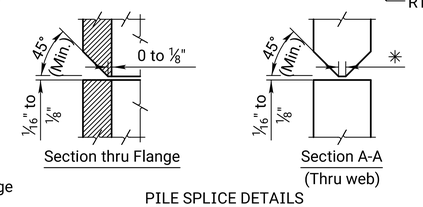
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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

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







✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

BR110

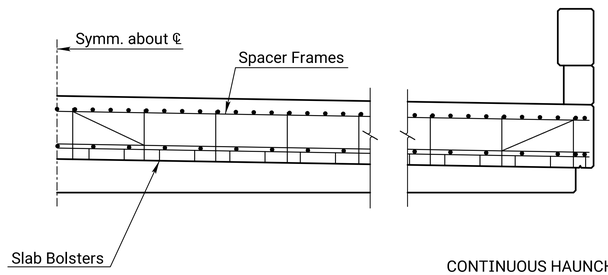
FHWA APPROVAL		10-04-12	APP'D.	Terry L. Fleck
DESIGNED	J.P.J.	DETAILED	QUANTITIES	TRACED R.A.A.
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.

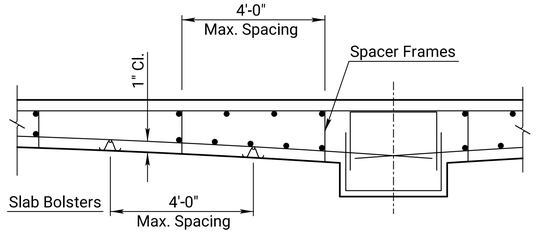
KDOT Graphics Certified 08-15-2024 Sh. No. 64

KDOT Graphics Certified

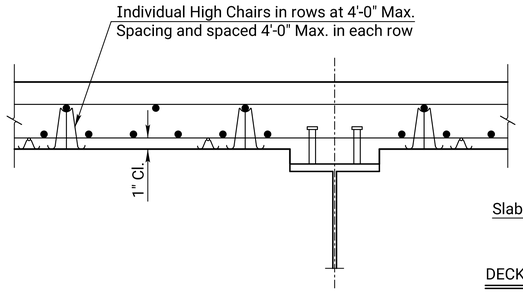
Drawn By: _
Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201\br162-br110.dgn

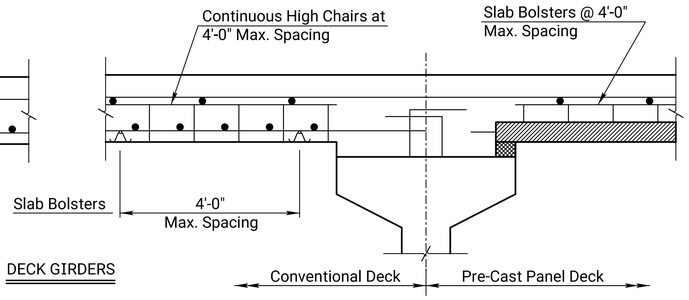
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	65	161



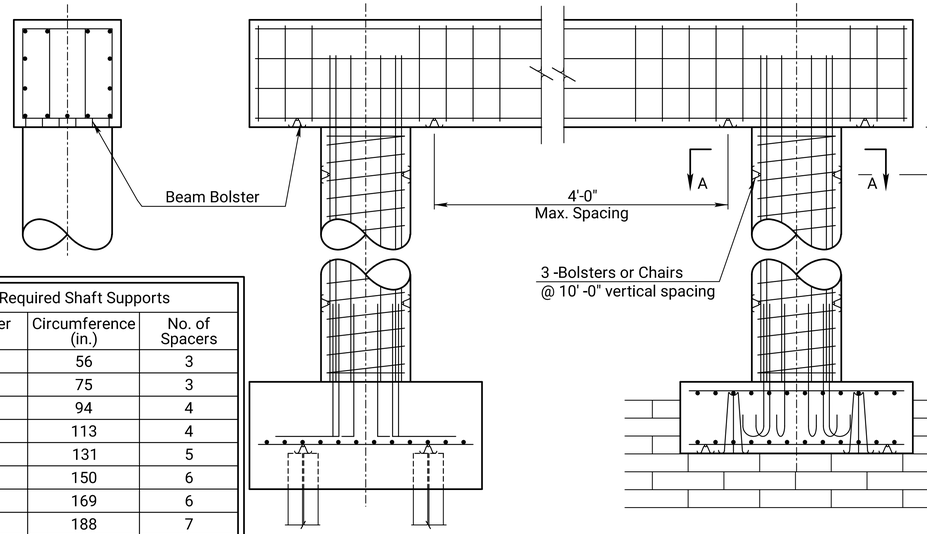


CONTINUOUS HAUNCHED SLAB



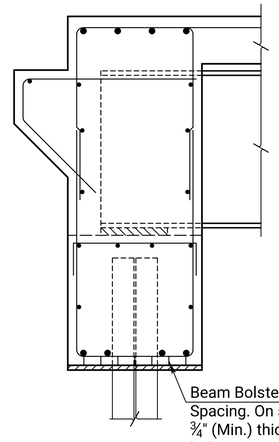


DECK GIRDERS

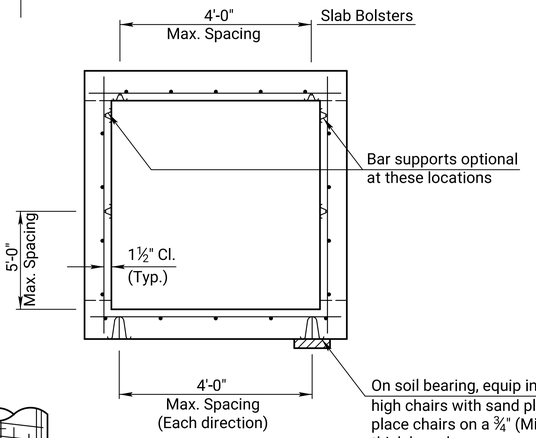


PIER

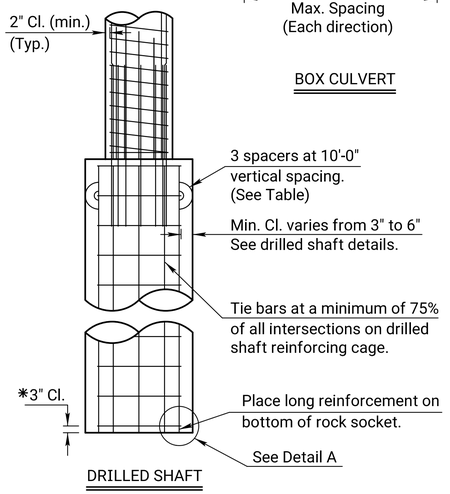
Required Shaft Supports		
Diameter (in.)	Circumference (in.)	No. of Spacers
18	56	3
24	75	3
30	94	4
36	113	4
42	131	5
48	150	6
54	169	6
60	188	7
66	207	7
72	226	8
78	244	9
84	263	9
90	282	10
96	301	11
102	320	11
108	339	12



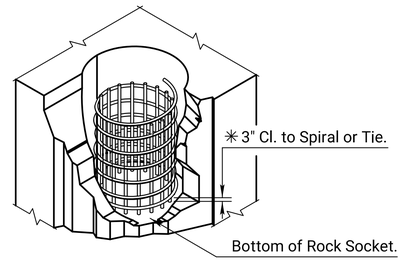
ABUTMENT



BOX CULVERT

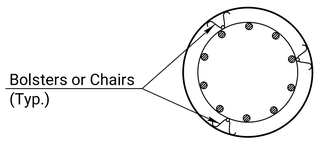


DRILLED SHAFT



DETAIL A

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



SECTION A-A

GENERAL NOTES

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

Use only the following types of bar supports:

1) Wire Bar Supports:

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

2) Plastic Bar Supports

3) Supplementary bars

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

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

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

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

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

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

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

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

NO.	DATE		BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BR120

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

KDOT Graphics Certified 08-15-2024 Sh. No. 65

KDOT Graphics Certified

Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201bbr162-br120.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	66	161

DRAINAGE STRUCTURES

STATION	SIDE	SIZE	TYPE	Gr. 4.0 CONC. (RCB) (Cu.Yds.)	Gr. 4.0 (AE) CONC. (Cu.Yds.)	BRIDGE BACKWALL PROT. SYSTEM (Sq. Yds.)	REINF. STEEL (GRADE 60) (LBS.)	REINF. STEEL (GRADE 60) (EPOXY COATED) (LBS.)	FOUND. STAB. (Cu. Yds.)	GRAN. BACK FILL (Wingwalls) (Cu. Yds.)	CROSS ROAD PIPES				ENTRANCE PIPES				END SECTIONS											REMARKS
											RCP				RCPHE, CAMAC, ACSMAC		ACSP, CAP, RCP, PEP, PPP, PVCP, SRPE	ACSP, CAP, RCP	◔				TYPE I		TYPE III		TYPE IV			
											24"				1.5 Ft.[1]	5.0 Ft.[1]	30"	30"	24"	1.5 Ft.[1]	30"	5.0 Ft.[1]	LT.	RT.	LT.	RT.	LT.	RT.	Slope	
285+75	Rt.	2-1.5 Sq. Ft.	E.P. (RCPHE,CAMAC,ACSMAC)												104					4			2	2						
296+30	Rt.	2-30"	E.P. (ACSP, CAP, RCP, PEP, PPP, PVCP, SRPE)														164				4		2	2						
296+60	℄	8'x5'	RCB	94.5			2,150	8,430	35	48																				
296+90	Lt.	30"	E.P. (ACSP, CAP, RCP)															44			2		1	1						
307+50	Rt.	30"	E.P. (ACSP, CAP, RCP, PEP, PPP, PVCP, SRPE)														60				2		1	1						
307+50	Lt.	5.0 Sq. Ft.	E.P. (RCPHE,CAMAC,ACSMAC)													56						2	1	1						
315+25	℄	24"	CRP (RCP)								89								2				1	1						
TOTALS				94.5			2,150	8,430	35	48	89				104	56	224	44	2	4	8	2								

Note:

◔ - See Pipe Culvert Summary Sheet for allowable End Section types.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	5-28-08	Initial Release	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF DRAINAGE STRUCTURES

RD049

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

KDOT Graphics Certified 08-15-2024

KDOT Graphics Certified

Drawn By : _
Plotted :8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss049.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	67	161

✳ REMOVAL OF EXISTING STRUCTURES (FOR INFORMATION ONLY)

STATION	SIDE	REMARKS
US-81		
285+75	Rt.	28" x 40' CMP
306+65	Rt.	28" x 32' CMP
307+50	Rt.	28" x 48' CMP
307+50	Lt.	58" x 28" x 20' MAC
315+25	℄	24" x 83' CMP

✳ The list shown may not be complete. Payment for structures or obstruction not listed but whose removal is required by the construction as determined by the Engineer, shall not be paid for directly, but shall be included in the bid item "Removal of Existing Structures"
For Permanent Signing Removals, See Sheet No. 96
For items to be salvaged, See General Note on Sheet No. 7

✳ REMOVAL OF EXISTING STRUCTURES (CONTINUED)(FOR INFORMATION ONLY)

STATION	SIDE	REMARKS
US-81		
℄ Sta. 64+28.82	℄	3' x 3' x48' RCB
℄ Sta. 69+36	℄	Existing Bridge No. 81-96-0.93 (040) 45'-45'-45'-45' R.D.G.H Spans, Pile Bent Abutments and Pedestal Type Piers

SLOPE PROTECTION (RIPRAP STONE)

STATION to STATION		SIDE	T (IN.)	L (FT.)	W (FT.)	d (IN.)	200 LB. (CU. YD.)	½ Ton (CU. YD.)	REMARKS
US-81									
296+73	297+16	Rt.	24	44	35	18	99	-	Outlet Protection
Channel									
# 48+00	48+10	Lt.	-	-	-	-	-	130	Rock Vane
# 48+60	48+70	Lt.	-	-	-	-	-	120	Rock Vane
# 49+15	49+25	Lt.	-	-	-	-	-	123	Rock Vane
TOTAL							99	373	

Rock Vane dimensions shown on sheet 38

EARTHWORK

PHASE	EXCAVATION						COMPACTION		THRU CUTS NOT SUBGRADED		✳✳ WASTE
	COMMON		✳ ROCK		CONTRACTOR FURNISHED		TYPE AA MR-5-5	TYPE A MR-5-5	COMMON EXC.	TYPE AA MR-5-5	
	CU. YDS.	VMF	CU. YDS.	VMF	CU. YDS.	VMF	CU. YDS.	CU. YDS.	CU. YDS.	CU. YDS.	CU. YDS.
1A	16	0.74	0	1.0	39	0.74	0	41	0	0	0
1B	3,437	0.74	0	1.0	5,615	0.74	1,324	5,374	231	231	0
2	7,925	0.74	3,046	1.0	8,041	0.74	3,382	8,433	925	925	0
3	3,778	0.74	1,380	1.0	0	0.74	0	740	0	0	2,779
TOTALS	15,157		4,426		13,695		4,706	14,588	1,156	1,156	2,779

✳ 500 tons of Millings from US-81 ML will be hauled by contractor to KDOT mixing strip at intersection of K-44 & K-49. See Sht. No. 68 for Transporting Salvageable Material. All other rock excavation is existing pavement removal and is to be wasted.
✳✳ Does not include pavement to be wasted. Excess soil shall be salvaged.

GUARDRAIL - STEEL PLATE (MGS)

STATION to STATION		SIDE	LIN. FT.	ALT. #1 MGS-SRT TERM.	ALT. #2 MGS-FLEAT TERM.	REMARKS
296+63.99	298+40.72	Rt.	137.50	1	1	Flared
297+36.99	298+39.65	Lt.	62.50	1	1	Flared
291+59.28	292+48.76	Rt.	50.00	1	1	Flared
291+60.35	293+63.44	Lt.	162.50	1	1	Flared
TOTALS			412.50	4	4	

CONCRETE PAVEMENT

STATION to STATION		SIDE	LENGTH (FT.)	CONCRETE PAVEMENT (10.5" UNIFORM)(AE)(Br App)		BRIDGE NO.
				WIDTH (FT.)	SURFACE AREA (SQ. YDS.)	
298+14.32	298+48.50	℄	VARIES	36'-0"	134.8	81-96-0.93(162)
301+51.50	301+85.68	℄	VARIES	36'-0"	134.8	81-96-0.93(162)
TOTAL					269.6	

BRIDGE APPROACH SLAB FOOTING

STATION to STATION		SIDE	LENGTH (FT.)	WIDTH (FT.)	DEPTH (FT.)	VOLUME (CU. YDS.)	BRIDGE NO.
298+33.35	298+37.35	℄	4	36.00	2	10.7	81-96-0.93(162)
301+62.65	301+66.65	℄	4	36.00	2	10.7	81-96-0.93(162)
TOTAL						21.4	

TRANSPORTING SALVAGEABLE MATERIAL

ITEM	STATION		SIDE	QUANTITY	REMARKS	Delivery Location
Guardrail	298+43	301+37	Lt./Rt.	200 ft.	Existing	KDOT Mixing Strip, Intersection of K-44 & K-49
28" CMP	285+75		Rt.	40 ft.	Entrance Pipe	KDOT Mixing Strip, Intersection of K-44 & K-49
28" CMP	306+65		Rt.	32 ft.	Entrance Pipe	KDOT Mixing Strip, Intersection of K-44 & K-49
28" CMP	307+50		Rt.	48 ft.	Entrance Pipe	KDOT Mixing Strip, Intersection of K-44 & K-49
58"x28" MAC	307+50		Lt.	20'	Entrance Pipe	KDOT Mixing Strip, Intersection of K-44 & K-49
24" CMP	315+25		Lt./Rt.	83 ft.	Cross Road Pipe	KDOT Mixing Strip, Intersection of K-44 & K-49

TRANSPORTING SALVAGEABLE MATERIAL

ITEM	STATION		SIDE	VOLUME (Cu. Yds.)	REMARKS	Delivery Location
Excess Soil	282+60	316+00	Lt./Rt.	2,779	Soil	KDOT Mixing Strip, Intersection of K-44 & K-49
TOTAL				2,779		

⸙ GUARDRAIL - REMOVAL OF STEEL PLATE

⸙ See General Note on Sheet No. 7

STATION to STATION		SIDE	LIN. FT.	REMARKS
298+43	298+93	Lt.	50.00	
298+43	298+93	Rt.	50.00	
300+87	301+37	Lt.	50.00	
300+87	301+37	Rt.	50.00	
TOTAL			200.00	

CLEANING EXISTING STRUCTURES

STATION	SIDE	REMARKS
285+75	Rt.	24" x 40' CMP
306+65	Rt.	28" x 32' CMP
307+50	Lt.	28" x 48' CMP
307+50	Rt.	58" x 28" x20' MAC
315+25	℄	24" x 83' CMP

SALVAGED TOPSOIL

STATION to STATION		SIDE	SQ. YDS.
282+60	298+38	Lt.	9,718
282+60	298+38	Rt.	10,896
301+63	316+00	Lt.	7,941
301+63	316+00	Rt.	9,578
TOTAL			38,133

MOWING

STATION to STATION		P.M.P.S.
282+60	316+00	1.3
TOTAL		1.3

PLUGGING (WATER) WELLS

STATION	SIDE	OFFSET (FT.)	EACH
306+82	Rt.	95	2
TOTAL			2

RECAPITULATION OF ROAD QUANTITIES

	ITEM	QUANTITY	UNIT
	Cleaning Existing Structures	Lump Sum	Lump Sum
	Contractor Construction Staking	Lump Sum	Lump Sum
	Field Office and Laboratory (Type A)	1	Each
	Foundation Stabilization	35	Cu. Yds.
	Foundation Stabilization (Set Price)	1	Cu. Yds.
	Granular Backfill (Wingwalls)	48	Cu. Yds.
	Mobilization	Lump Sum	Lump Sum
	Mobilization (DBE)	Lump Sum	Lump Sum
	Removal of Existing Structures	Lump Sum	Lump Sum
##	Maintenance & Restoration of Haul Roads (Set Price)	Lump Sum	Lump Sum
	Concrete for Seal Course (Set Price)	1	Cu. Yd.
##	Transporting Salvageable Material	Lump Sum	Lump Sum
##	Transporting Salvageable Material	2,779	Cu. Yd.
	Clearing and Grubbing	Lump Sum	Lump Sum
	Common Excavation (Rural Small)	16,313	Cu. Yds.
	Common Excavation (Contractor Furnish)	13,695	Cu. Yds.
	Rock Excavation	4,426	Cu. Yds.
	Compaction of Earthwork (Type AA) (MR-5-5)	5,862	Cu. Yds.
	Compaction of Earthwork (Type A) (MR-5-5)	14,588	Cu. Yds.
	Salvaged Topsoil	38,133	Sq. Yds.
	Water (Grading) (Set Price)	1	M. Gal.
	Concrete (Grade 4.0) (RCB)	94.5	Cu. Yds.
	Reinforcing Steel (Grade 60)	2,150	Lbs.
	Reinforcing Steel (Grade 60) (Epoxy Coated)	8,430	Lbs.
	Temporary Shoring	Lump Sum	Lump Sum
	Cross Road Pipe (24") (RCP)	89	Lin. Ft.
	End Section (1.5 Sq. Ft.)	4	Each
	End Section (24") (RC)	2	Each
	End Section (30")	8	Each
	End Section (5.0 Sq. Ft.)	2	Each
	Entrance Pipe (1.5 Sq. Ft.)	104	Lin. Ft.
	Entrance Pipe (30")	268	Lin. Ft.
	Entrance Pipe (5.0 Sq. Ft.)	56	Lin. Ft.
	Guardrail, Steel Plate (MGS)	412.50	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	200.00	Lin. Ft.
	Slope Protection (Riprap Stone)	472	Cu. Yds.
	Temporary Surfacing Material (Aggregate) (Set Price)	1	Cu. Yds.
	Temporary Surfacing Material (HMA) (Set Price)	1	Ton
	Inertial Barrier System (TL-3)	1	Each
	Replacement Modules (IBS)	15	Each
	Concrete Safety Barrier (Type F3)(Temporary)	363	Lin. Ft.
	Mowing	1.3	P.M.P.S.
	Plugging (Water) Wells	2	Each
	Right-of-Way Survey Monument	18	Each
	Concrete Pavement (10.5" Uniform)(AE)(Br App)	270	Sq. Yds.
	Bridge Approach Slab Footing	21.4	Cu. Yds.
	Curing Environment	Lump Sum	Lump Sum

Non-Participating

RECAPITULATION OF BRIDGE QUANTITIES

BRIDGE NUMBER	STATION	SEE SHEET NO.
81-96-0.93 (162)	300+00.00	35

For Drainage Structure Quantities, See Sheet No. 66
For Surfacing Quantities, See Sheet No. 68
For Erosion Control Quantities, See Sheet No. 69
For Seeding Quantities, See Sheet No. 81
For Pavement Marking Quantities, See Sheet No. 85
For Signing Quantities, See Sheet No. 98
For Traffic Control Quantities, See Sheet No. 130

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

RD050

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

KDOT Graphics Certified 08-15-2024

KDOT Graphics Certified

Drawn By : _
Plotted :8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rpq050.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	68	161

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 6" HMA-Commercial Grade (Class A) to the R/W line as indicated on the detail. All side roads and house entrances with existing asphalt surface shall be surfaced with 6" HMA-Commercial Grade (Class A) at least to the R/W line or to the end of construction, as directed by the Engineer. ~~Each mailbox turnout (ON PROJECTS WHERE STABILIZED SHOULDERS ARE NOT SPECIFIED) shall be surfaced with 6" HMA-Commercial Grade (Class A) to the limits shown on the detail.~~

Surfacing material (AB-3) shall be used for surfacing house entrances and side roads (0.17 C.Y./SQ. YD.) beyond the limits of the asphalt surface to the limits of construction as determined by the Engineer.

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

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

~~Quantities for Pavement Edge Wedge (Rock), are calculated on the basis of 150 lbs. per cu. ft. Quantities for stabilized base course, AB-3, are calculated on the basis of 156 lbs. per cu. ft. Weight/cu. ft. includes moisture allowed by specification.~~

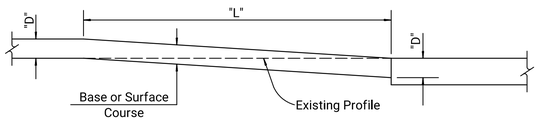
The base course shall be constructed to the plan thickness as shown.

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

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

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

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



TYPICAL PROFILE AT GRADE CONTROL POINTS

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

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

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

SUMMARY OF QUANTITIES							
ITEM	US-81	ENTRANCES	GUARDRAIL PAD	TEMP. PAVEMENT (7.5" HMA)		TOTAL	UNIT
HMA-Commercial Grade (Class A)	5,864.55	95.35	11.68	39.65		6011.2	Tons
Aggregate Base (AB-3)(6")	11,017.3					11,017.3	Sq. Yds.
Water (Aggregate Base)(Set Price)✳✳	1.0					1.0	M. Gal.
Surfacing Material (AB-3)(6")		610.35				610.35	Tons
Aggregate Shoulder (AS-1)(6")	1942.8		570.8			2513.6	Sq. Yds.
Calcium Chloride	3.2					3.2	Tons

✳✳ Quantity includes Aggregate Base placed under the approach slab

TRANSPORTING SALVAGEABLE MATERIAL (8+ Mi.)				
Station	Side	Quantity	Remarks	Delivery Location
Exist. US-81	Lt./Rt.	500 tons	Millings from US-81	KDOT Mixing Strip, Intersection of K-44 & K-49
Total		500 tons		

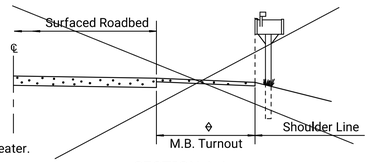
✳ MILLING			
Station	Side	Quantity	Remarks
Exist. US-81	Lt./Rt.	500 tons	Mill 1" from US-81
Total		500 tons	

✳Computed at the rate of 127 lbs/cu ft

RATES OF APPLICATION				
RATE	UNIT	ITEM		
145	lb./cu. Ft.	HMA-Commercial Grade (Class A)		
156	lb./cu. Ft.	Surfacing Material (AB-3)		

RECAPITULATION OF QUANTITIES					
ITEM				TOTAL	UNIT
HMA-Commercial Grade (Class A)				6,011	Tons
Field Office and Laboratory (Type A)				1	Each
Aggregate Base (AB-3)(6")				11,018	Sq. Yds.
Water (Aggregate Base)(Set Price)				1	M. Gal.
Surfacing Material (AB-3)				610	Tons
Aggregate Shoulder (AS-1)(6")				2,514	Sq. Yds.
Water (Aggregate Shoulders)(Set Price)				1	M. Gal.
Calcium Chloride				4	Tons
Milling				500	Tons
✳✳ Transporting Salvageable Material (8+ Mi.)				500	Tons

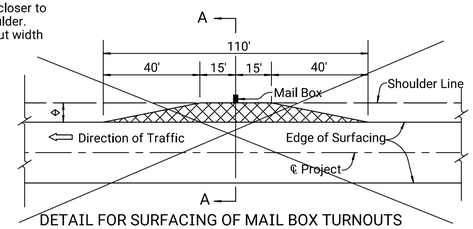
✳✳Federally Non-Participating



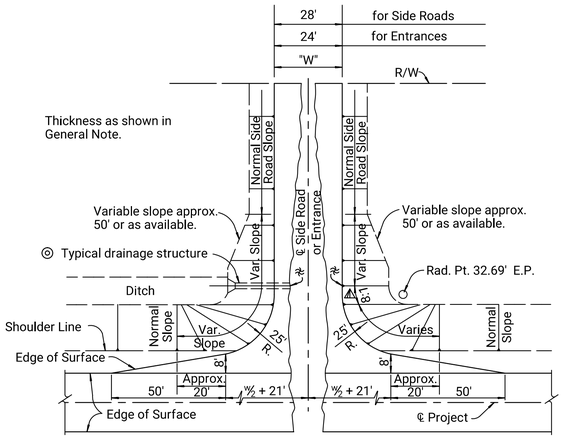
SECTION A-A

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

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



DETAIL FOR SURFACING OF MAIL BOX TURNOUTS



WITH DRAINAGE STRUCTURE — MOUND ENTRANCE OR SIDE ROAD

DETAIL FOR SURFACING OF SIDE ROADS & HOUSE ENTRANCES

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES (Surfacing)

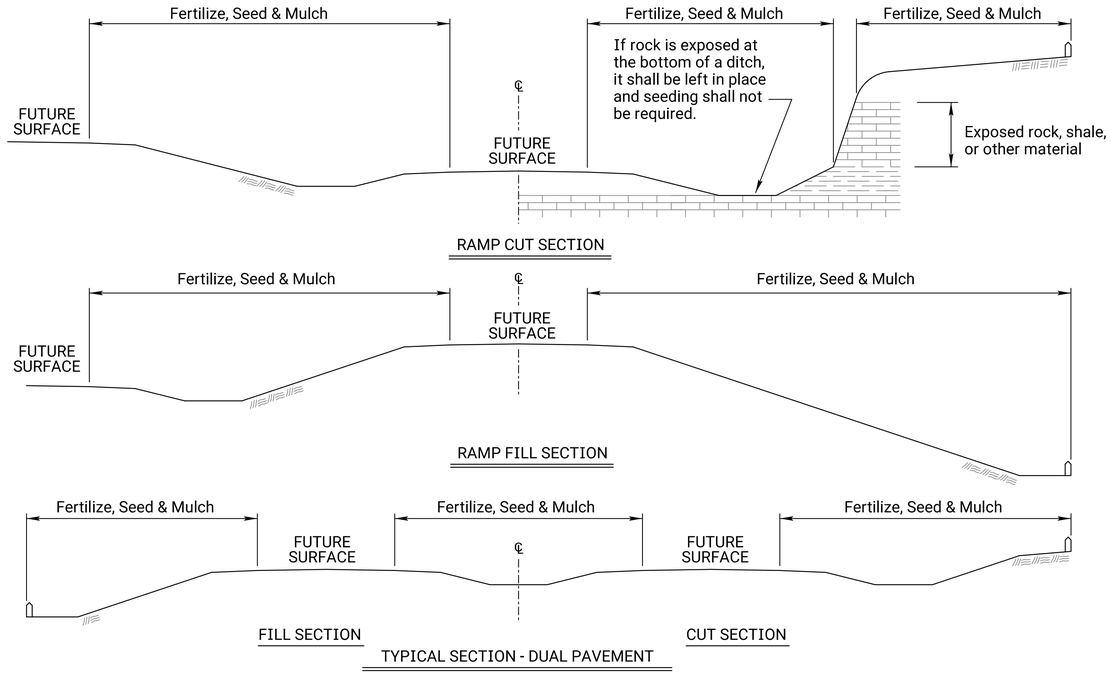
~~RD051~~

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

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Drawn By : _
Plotted :8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rsq051.DGN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	69	161



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	8.37	3.60	Temporary Fertilizer (16 - 20 - 0)	1,796	LB
20		8.37		Temporary Seed (Canada Wildrye)	167.4	LB
45		8.37		Temporary Seed (Grain Oats)	376.7	LB
45		8.37		Temporary Seed (Sterile Wheatgrass)	376.7	LB
	109.9		3.60	Soil Erosion Mix	395.6	LB
				Erosion Control (Class 1, Type C)	363	SQ YD
				Erosion Control (Class 2, Type F)	16,924	SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)	2,490	CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")	288	LF
				Biodegradable Log (12")	960	LF
				Biodegradable Log (20")	3,450	LF
				Filter Sock (12")	288	LF
				Filter Sock (18")	288	LF
				Geotextile (Erosion Control)		SQ YD
				Silt Fence	815	LF
				SWPPP Design ǂ	Lump Sum	LS
				SWPPP Inspection ǂ	46	EACH
				Water Pollution Control Manager ǂ	46	EACH
900 lbs / acre		8.37		Mulch Tacking Slurry	7,533	LB
2 tons / acre		8.37		Mulching	25.1	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.

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

✱✱✱✱ List size of material.

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

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

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
0.5	Blue Grama (Lovington)	1.80
4.5	Buffalo Grass (Treated)	16.20
45	Perennial Ryegrass	162.00
2.6	Prairie Junegrass	9.36
6.3	Side Oats Grama (El Reno)	22.68
45	Tall Fescue (Endophyte Free)	162.00
6	Western Wheatgrass (Barton)	21.60
109.9	Total (lb)	395.64

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.

Fertilizer quantity for Soil Erosion Mix is included and shown on the summary chart above

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.

Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201eec852a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	70	161

EROSION CONTROL- CLASS 1, TYPE C

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
US-81				
285+38 - 285+52	Rt.	14	11.76	18.3
285+74 - 285+96	Rt.	22	12.77	31.2
295+86 - 296+04	Rt.	18	21.91	43.8
296+60 - 296+78	Lt.	18	19.12	38.2
297+02 - 297+17	Lt.	15	17.53	29.2
307+17 - 307+32	Rt.	15	21.72	36.2
307+18 - 307+33	Lt.	15	21.00	35.0
307+69 - 307+84	Lt.	15	21.00	35.0
307+72 - 307+86	Rt.	14	23.27	36.2
315+14 - 315+36	Rt.	22	12.13	29.7
315+14 - 315+36	Lt.	22	12.36	30.2
TOTAL EROSION CONTROL (CLASS 1, TYPE C) =				363.0

EROSION CONTROL- CLASS II, TYPE F

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
US-81				
282+75 - 285+39	Rt.	264	20.86	611.9
284+00 - 296+64	Lt.	1264	53.83	7560.1
285+96 - 295+87	Rt.	991	22.02	2424.6
297+08 - 297+51	Lt.	43	36.41	174.0
301+52 - 307+18	Lt.	566	43.95	2764.0
302+00 - 307+17	Rt.	517	22.13	1271.2
307+84 - 309+75	Lt.	191	16.73	355.0
307+86 - 308+50	Rt.	64	20.39	145.0
310+00 - 310+77	Rt.	77	19.75	169.0
311+25 - 312+25	Rt.	100	20.79	231.0
311+25 - 313+00	Lt.	175	22.08	429.3
314+00 - 316+00	Rt.	200	19.47	432.7
314+00 - 316+00	Lt.	200	16.03	356.2
TOTAL EROSION CONTROL (CLASS II, TYPE F) =				16,924.1

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

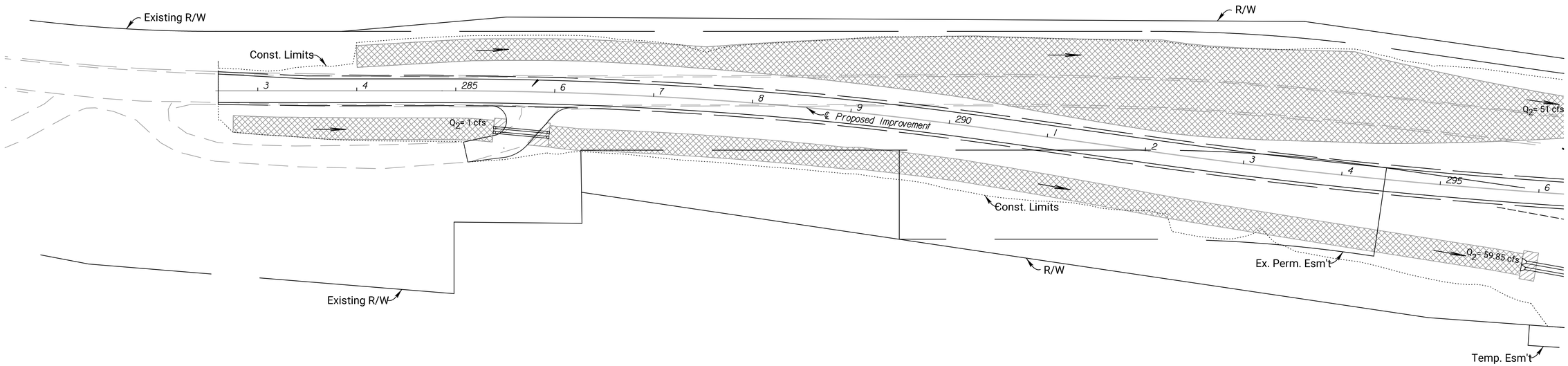
EROSION CONTROL SEEDING-SODDING

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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	71	161

Scale: 1"=50'



LEGEND

Class I Erosion Control

Class II Erosion Control

KANSAS DEPARTMENT OF TRANSPORTATION

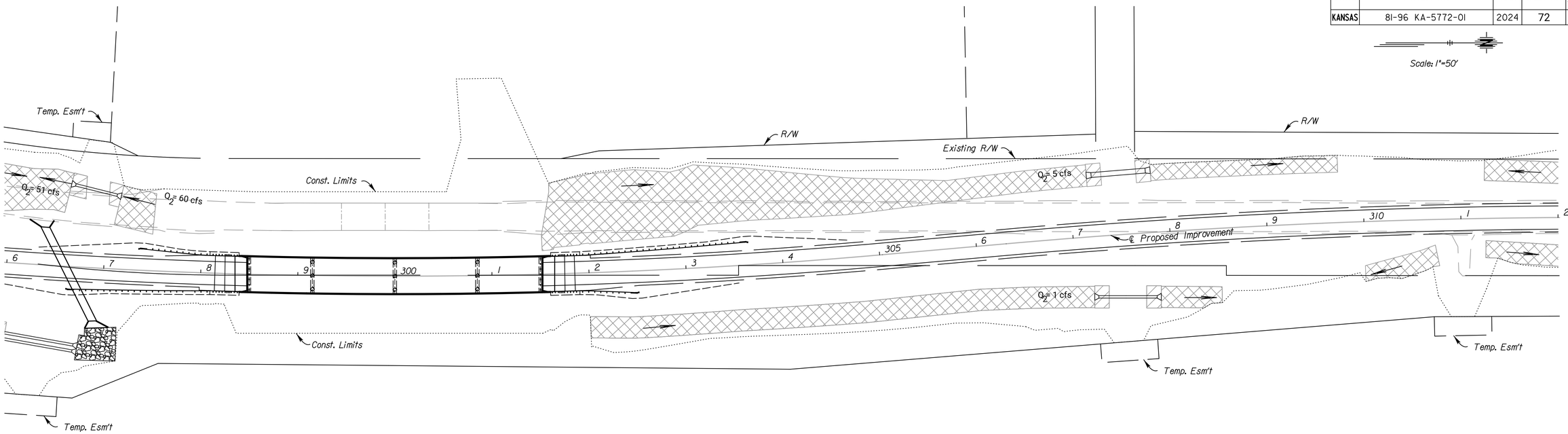
SWPPP BASE SHEET
STA. 282+51 TO STA. 296+00

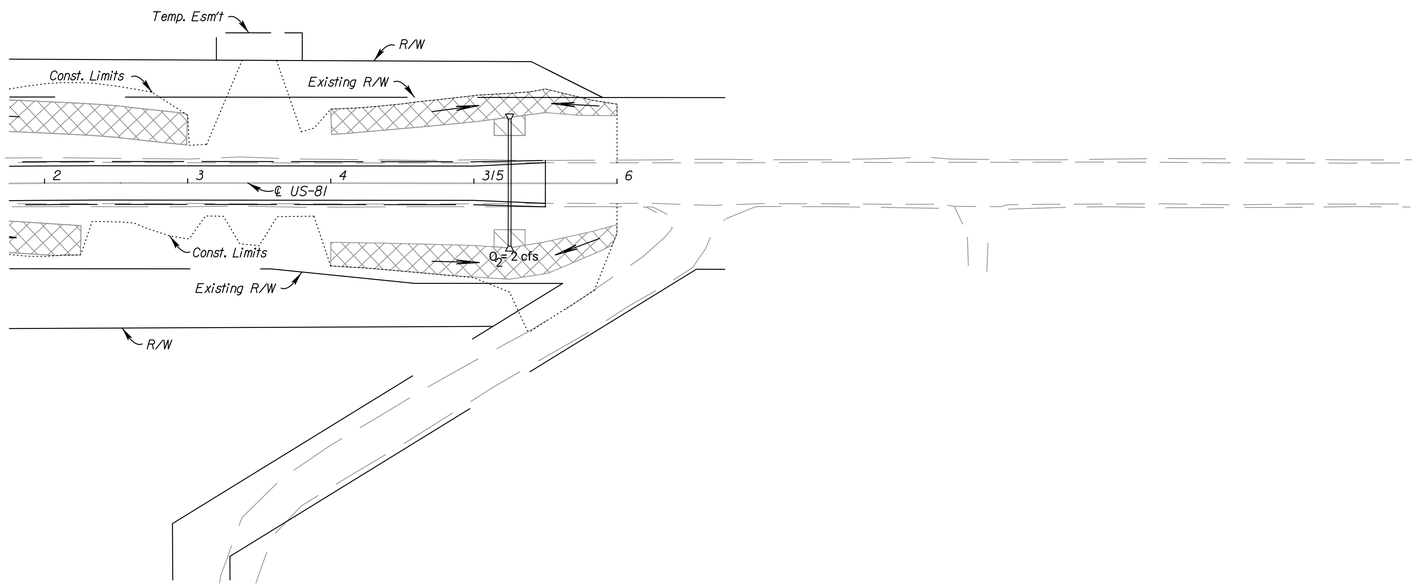
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Plotted : 8/16/2024
Date: $DATE$
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	72	161

Scale: 1"=50'





LEGEND

- Class I Erosion Control
- Class II Erosion Control
- Slope Protection (RipRap Stone)

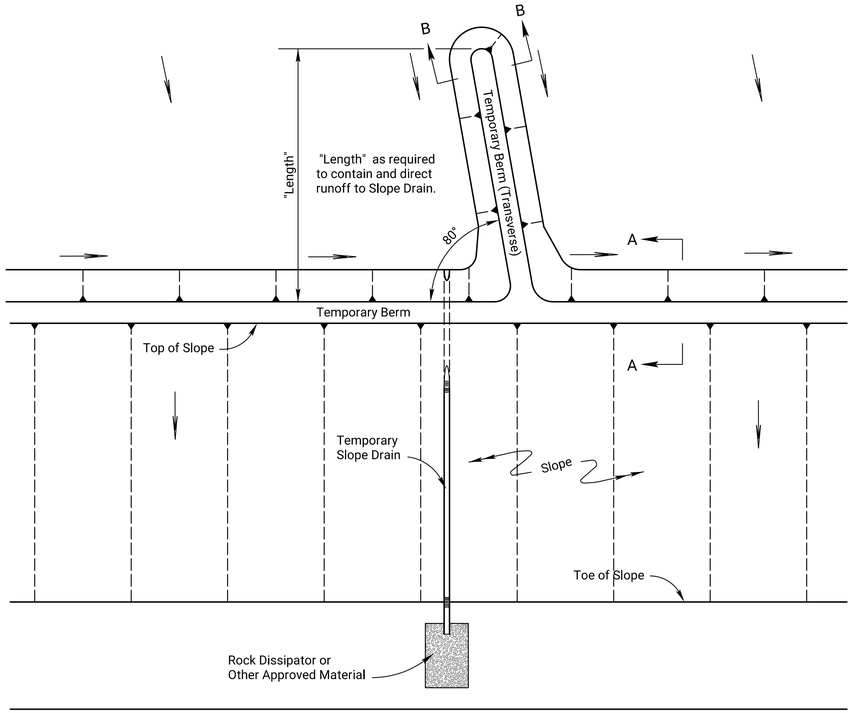
KANSAS DEPARTMENT OF TRANSPORTATION

SWPPP BASE SHEET
STA. 296+00 TO STA. 315+50

Sheet No. 72

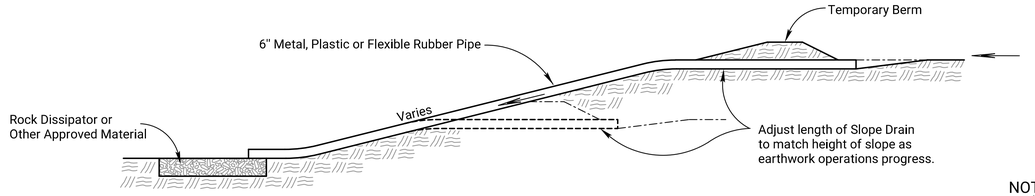
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Date: $DATE$
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	73	161



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

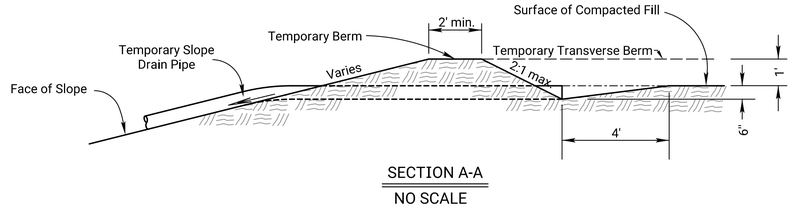
NOTES:

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.

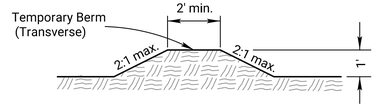
3) Pipe shall be secured in place as approved by Engineer.

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



SECTION A-A

NO SCALE

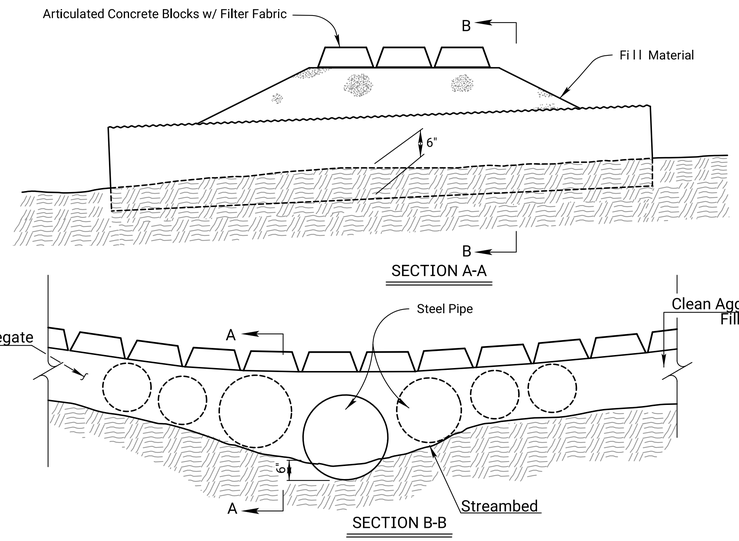


SECTION B-B

NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

NO SCALE



Pipe size may vary.

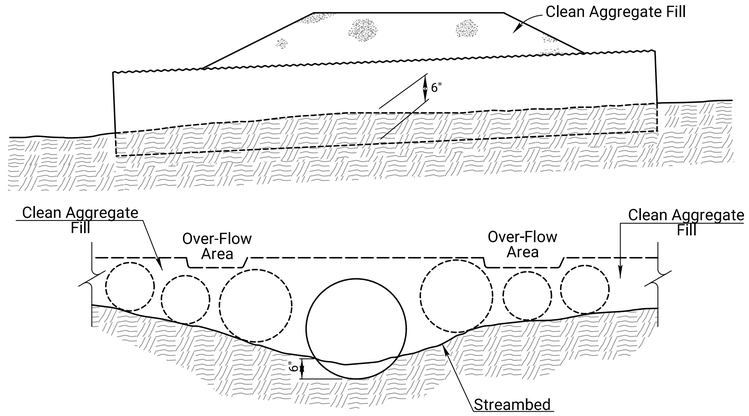
Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the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

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

See KDOT Specifications for more information.

TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

NO SCALE



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.

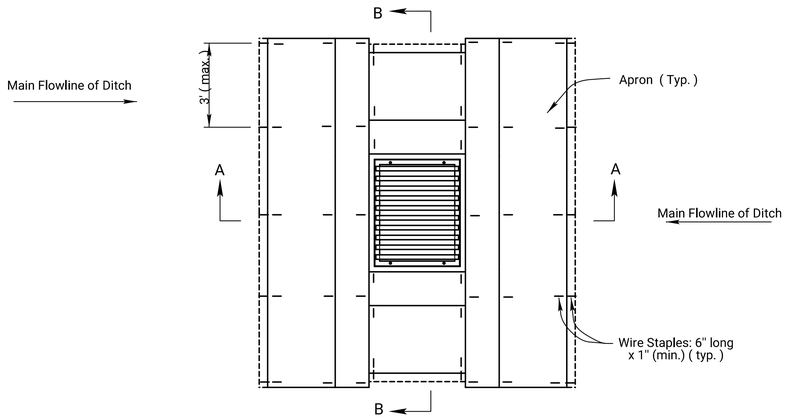
KDOT Graphics Certified 06-17-2022

Sh. No. 73

KDOT Graphics Certified

Plotted : 8/16/2024
Drawn By : _
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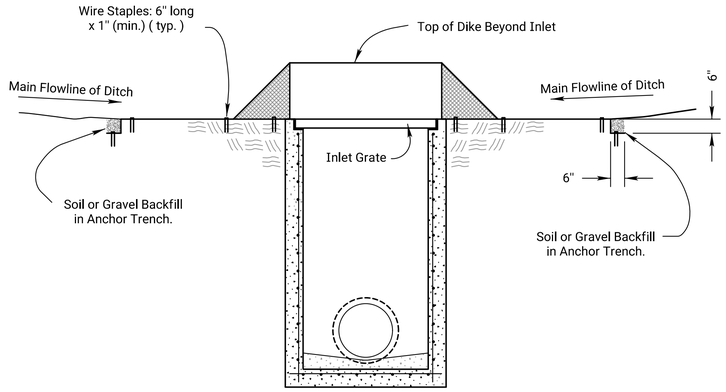
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	74	161



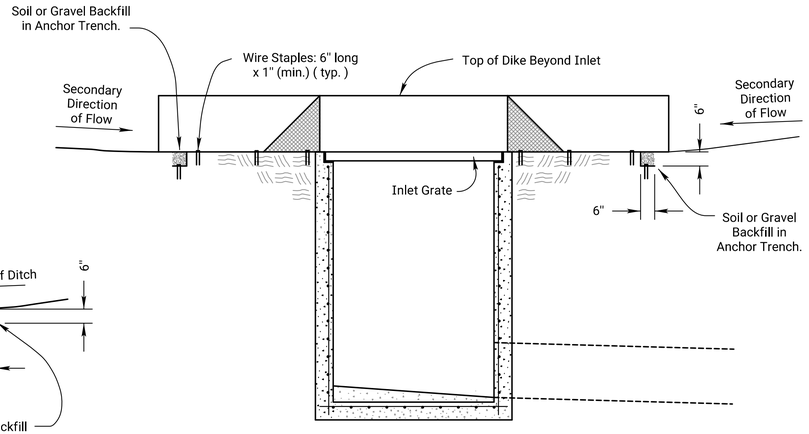
PLAN

TEMPORARY I NLET SEDI MENT BARRI ER
(TRI ANGULAR SI LT DI KE METHOD)

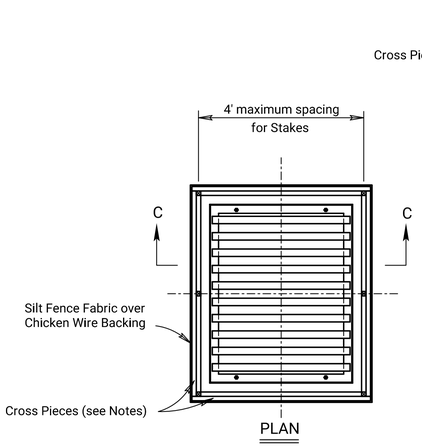
NO SCALE



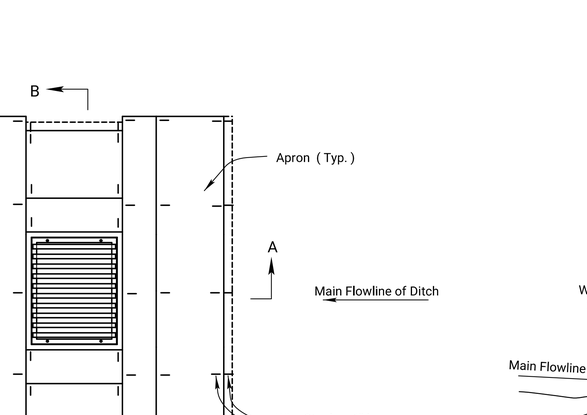
SECTION A - A



SECTION B - B



PLAN



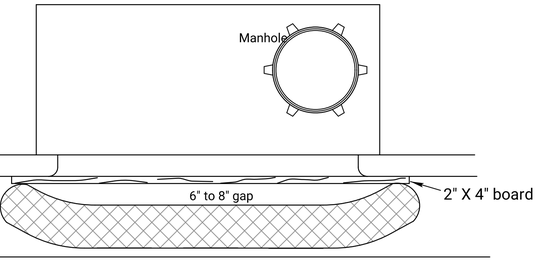
SECTION C - C

TEMPORARY I NLET SEDI MENT BARRI ER
(SI LT FENCE METHOD)

NO SCALE

SILT FENCE:

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

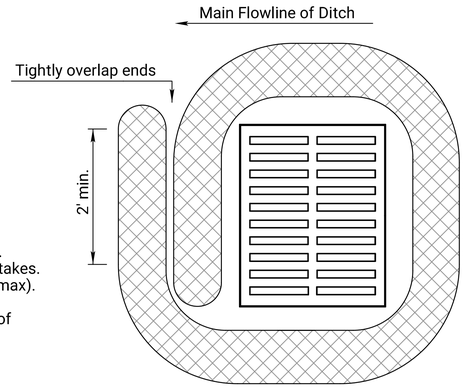


Bags = synthetic net (3mm mesh) or burlap bags

Rock = approximately 1" to 2" diameter

CURB INLET PROTECTION

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



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

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

Stake every 4'

Material Requirements
Use 100% shredded mulch or other non-compost biodegradable material as fill for logs.
No compost or fines.
No hay or straw.
Do not use material which prohibits water infiltration.
Log Mesh: Use mesh with ¼" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852C

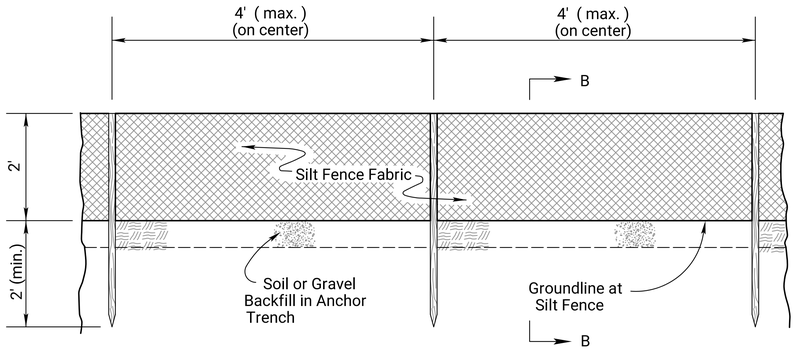
FHWA APPROVAL		03-10-15	APP'D.	Scott H. Shields
DESIGNED	R.A.	DETAILED R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK. S.H.S.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-18-2022 Sh. No. 74

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Drawn By : _
Plotted : 8/16/2024
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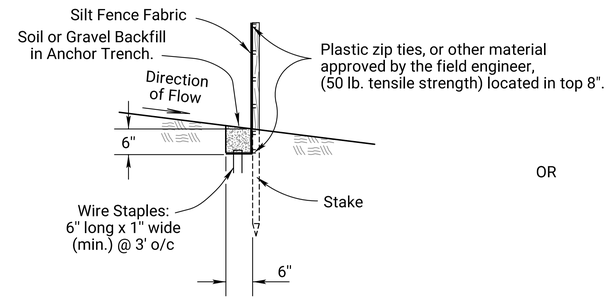
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	75	161



TYPICAL ELEVATION

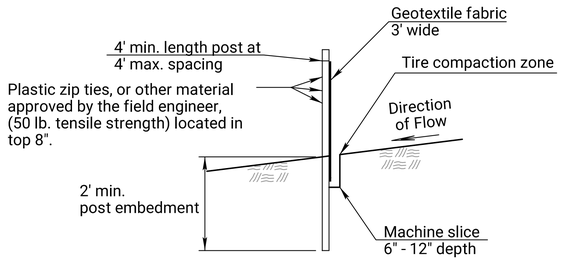
SILT FENCE BARRIER

NO SCALE

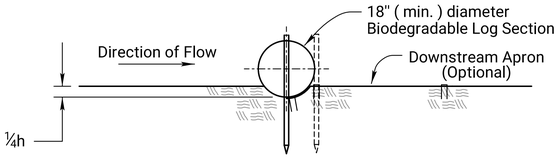


SECTION B-B

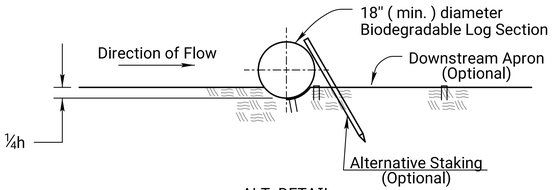
OR



SECTION B-B

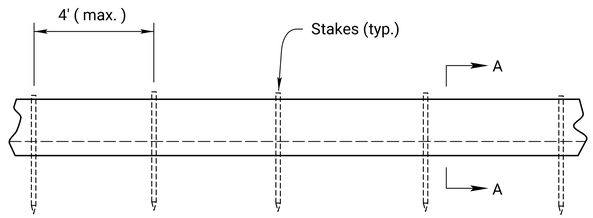


SECTION A - A



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

INSTALLATION NOTES

SILT FENCE:

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

BIODEGRADABLE LOG OR FILTER SOCK

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

Biodegradable Log or Filter Sock Slope Interruptions

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

Deviations should be approved by the Field Engineer.

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

GENERAL NOTES

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE

LA852D

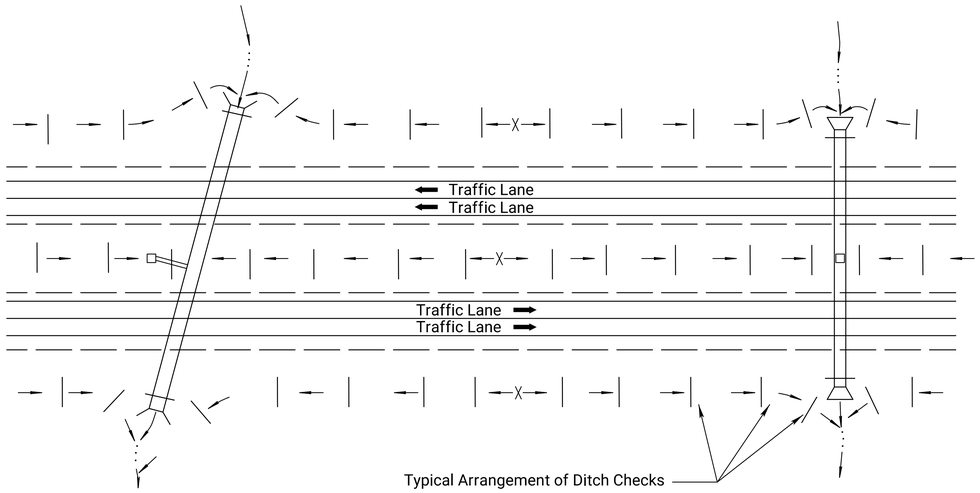
FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields
DESIGNED	S.H.S.	DETAILED R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-18-2022 Sh. No. 75

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Plotted : 8/16/2024
Drawn By: : _
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	76	161



Typical Arrangement of Ditch Checks

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

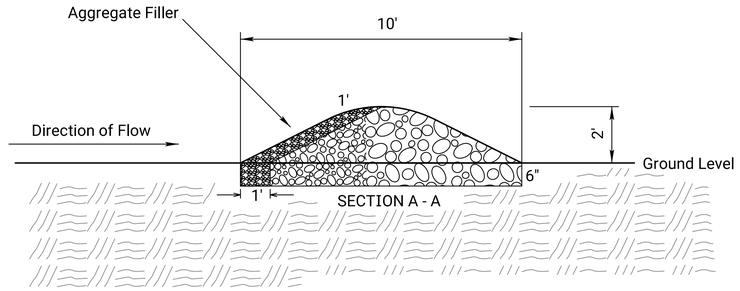
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DESIGNED	S.H.S.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
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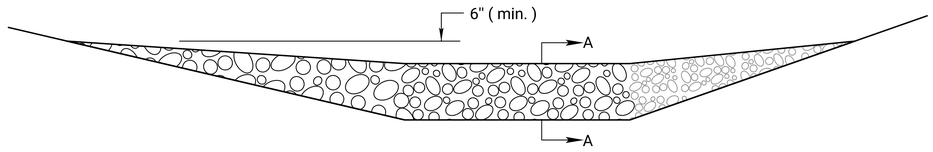
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KDOT Graphics Certified

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Plotted : 8/16/2024
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	77	161





TYPICAL ELEVATION

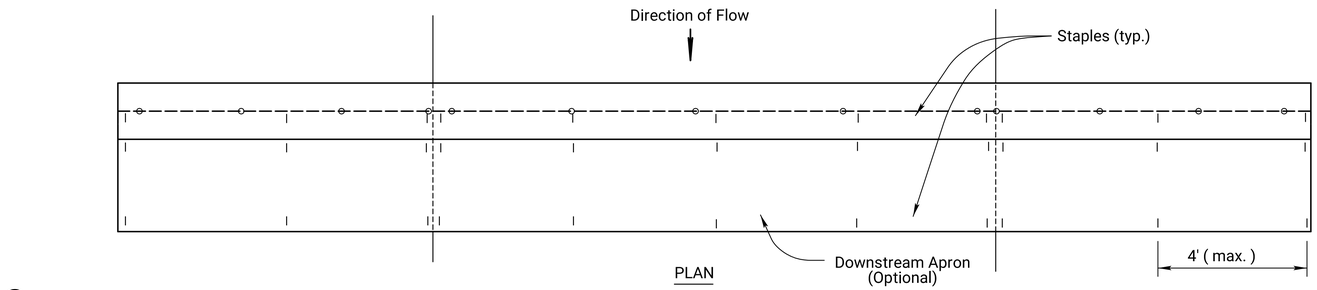
ROCK DITCH CHECK

NO SCALE

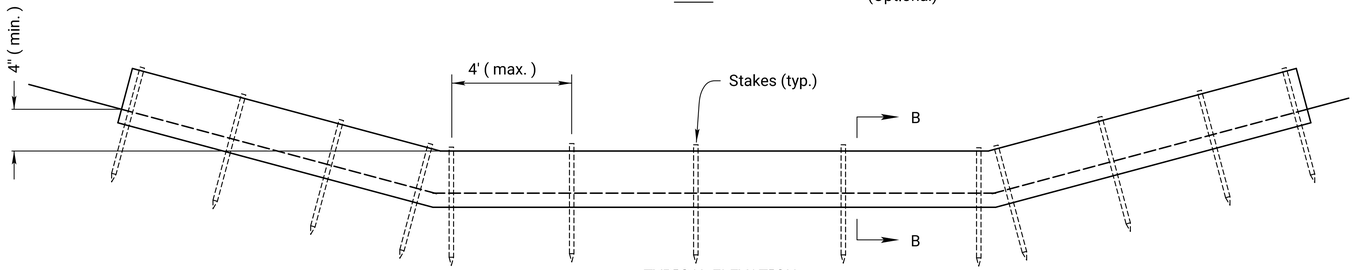
TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
NOTE: Use this spacing for Rock Ditch Checks only.	

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

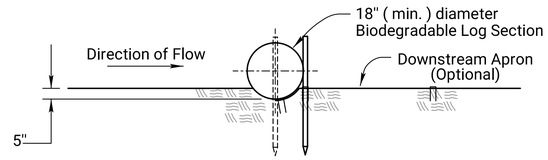


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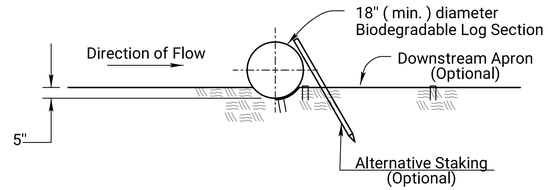
BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE



SECTION B - B



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG DITCH CHECK NOTES

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

NO.	DATE	REVISIONS	BY	APP'D
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.	

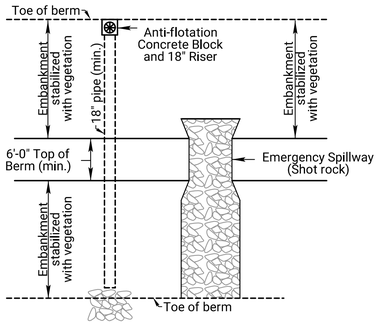
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Sh. No. 77

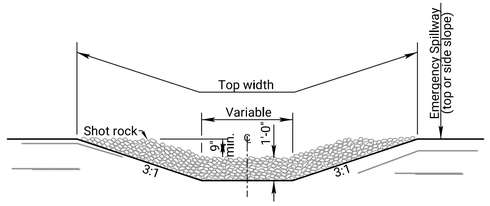
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Plotted : 8/16/2024
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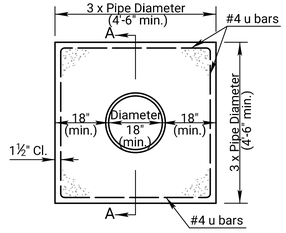
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KANSAS	81-96 KA-5772-01	2024	78	161



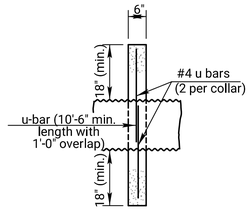
SEDIMENT STORAGE BASIN (PLAN)



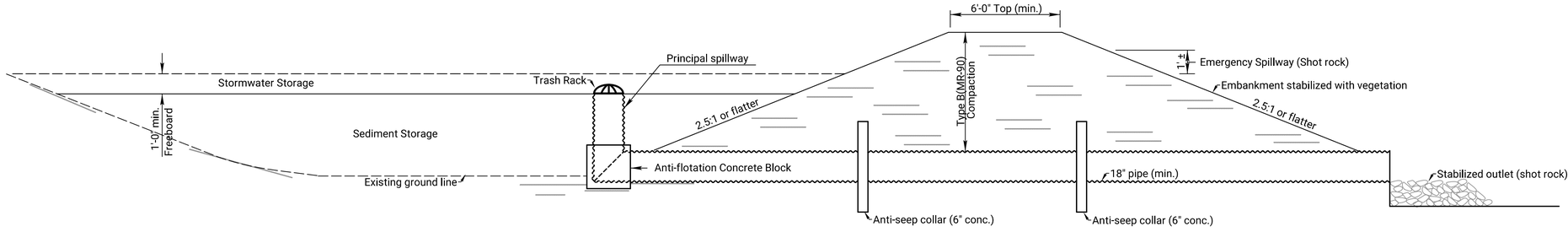
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



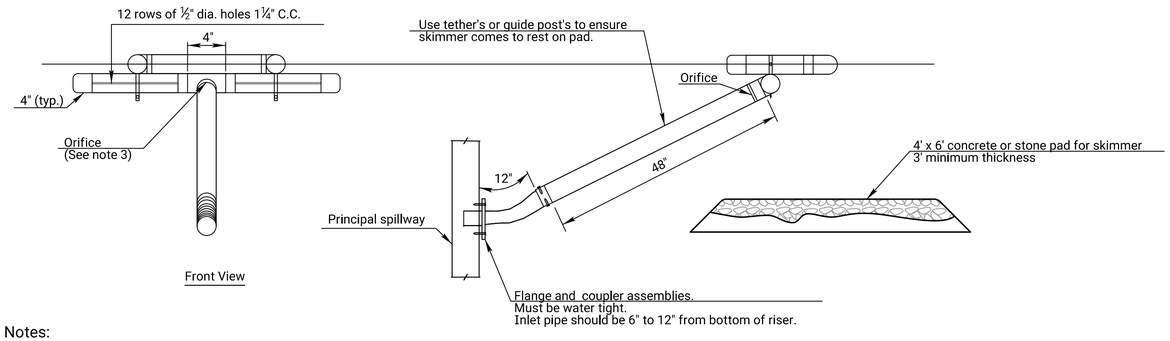
SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

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

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

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



Notes:

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

SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

NO.	DATE	REVISIONS	BY	APP'D
02	09-03-13	Added Skimmer Dewatering Device	M.R.M.	S.H.S.
01	07-17-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL SEDIMENT STORAGE BASIN

LA852H

FHWA APPROVAL			09-24-13	APP'D.			
DESIGNED	B.B.	DETAILED	B.B.	QUANTITIES		TRACED	B.B.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

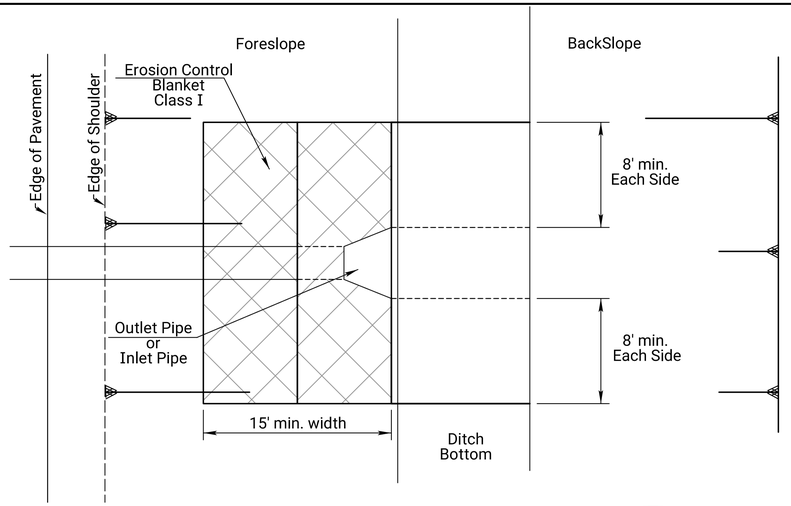
KDOT Graphics Certified 06-20-2022

Sh. No. 78

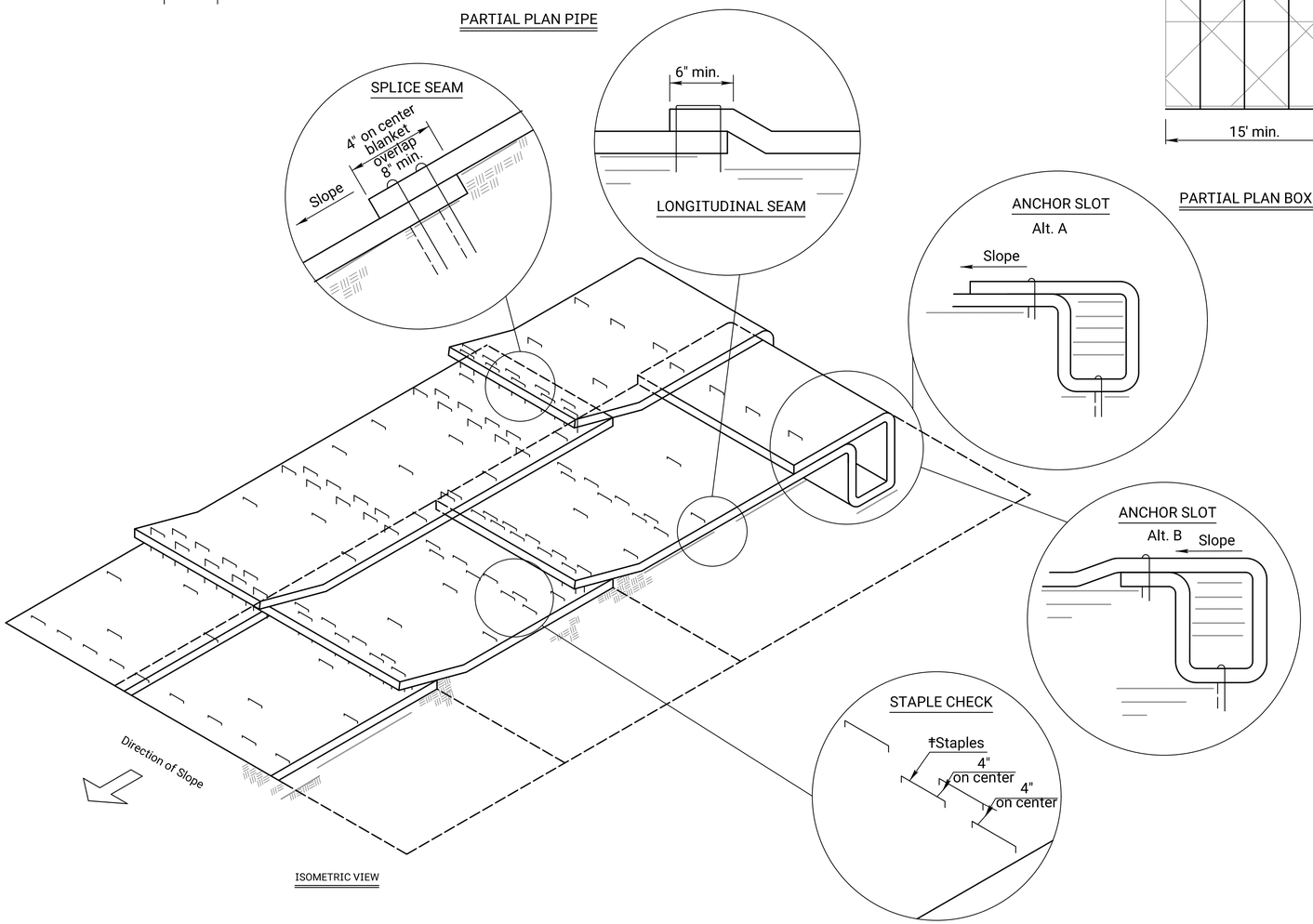
KDOT Graphics Certified

Plotted : 8/16/2024
Drawn By : _
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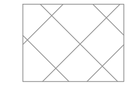
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	79	161



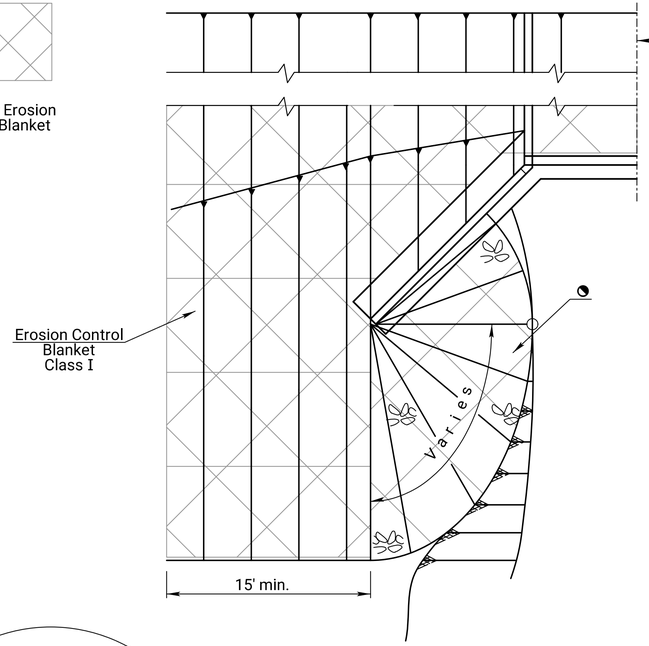
PARTIAL PLAN PIPE



ISOMETRIC VIEW



Limits of Erosion Control Blanket



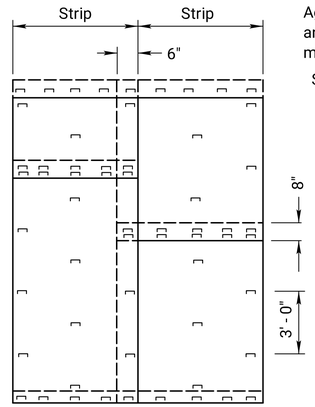
PARTIAL PLAN BOX CULVERT

◔ 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

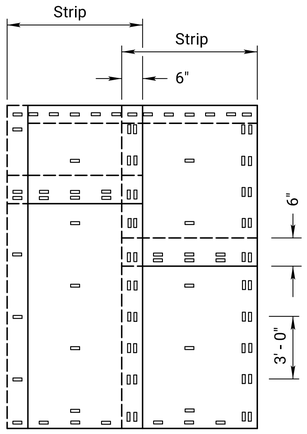
FHWA APPROVAL			03-10-15	APP'D.		Scott H. Shields	
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.		TRACE CK.	R.A.A.

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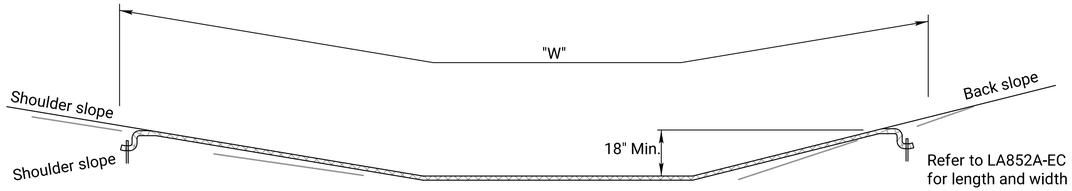
KDOT Graphics Certified

Plotted : 8/16/2024
Drawn By : _
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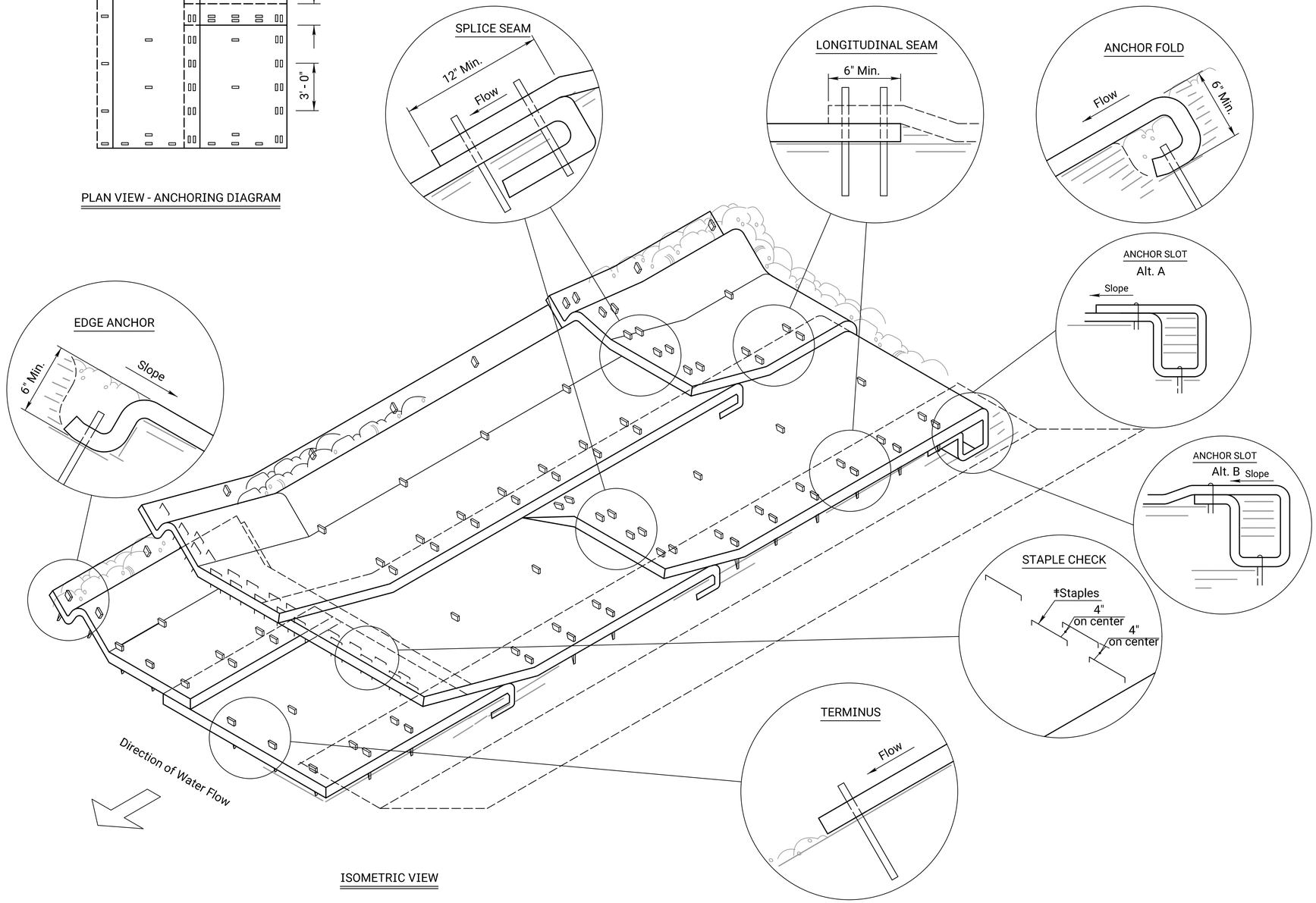
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	80	161



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

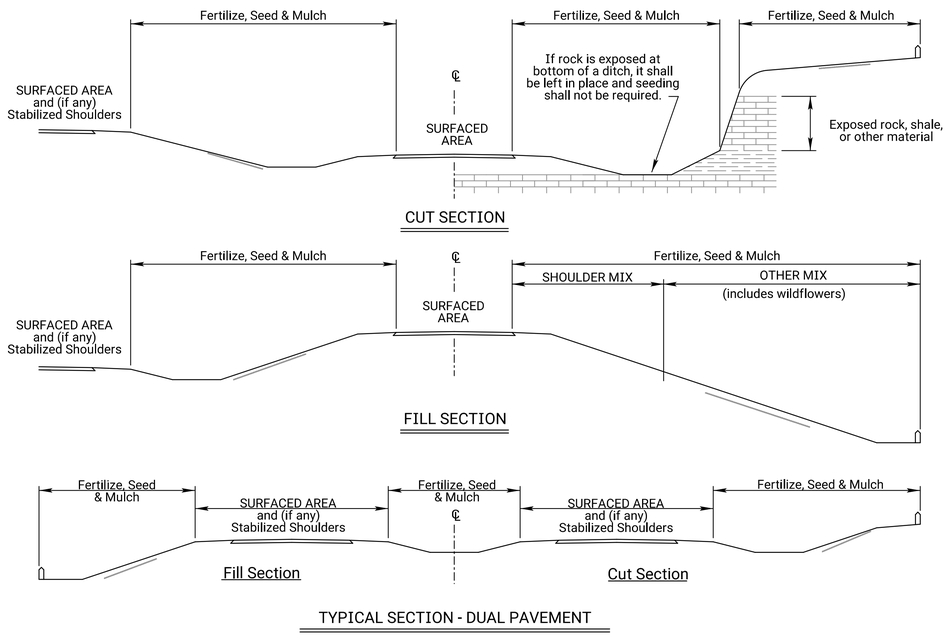
FHWA APPROVAL			11-02-15	APP'D.		Scott H. Shields	
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DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 06-20-2022 Sh. No. 80

KDOT Graphics Certified

Plotted : 8/16/2024
Drawn By : _
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
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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.

NATIVE WILDFLOWER MIX 1

PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	1.98
0.3	Common Milkweed	1.98
0.3	Black Eyed Susan	1.98
0.5	Blanket Flower	3.31
0.5	False Sunflower	3.31
0.5	Lance-Leaf Coreopsis	3.31
0.2	Maximilian Sunflower	1.32
0.1	New England Aster	0.66
0.2	Pinnate Prairie Coneflower	1.32
0.2	Plains Coreopsis	1.32
0.3	Purple Coneflower	1.98
0.3	Upright Prairie Coneflower	1.98
0.3	Dames Rocket	1.98
0.3	Lemon Mint	1.98
0.2	Pitcher Sage	1.32
0.2	Wild Bergamot	1.32
1.0	Illinois Bundleflower	6.61
0.2	Common Evening Primrose	1.32
0.1	Hoary Verbena	0.66
0.8	Purple Prairie Clover	5.29
0.3	Roundhead Lespedeza	1.98
3.0	Showy Partridge Pea	19.83
0.2	White Prairie Clover	1.32
10.3	Total (lb)	68.06

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		1.76		Fertilizer (13-13-13)	352.0	LB
	80		6.61	Fertilizer (16-20-0)	528.8	LB
	2		6.61	Big Bluestem Grass Seed (Kaw)	13.2	LB
0.5		1.76		Blue Grama Grass Seed (Lovington)	0.9	LB
4.5		1.76		Buffalograss Seed (Treated)	7.9	LB
	10		6.61	Canada Wildrye Grass Seed	66.1	LB
	2		6.61	Indiangrass Seed (Osage)	13.2	LB
	2		6.61	Little Bluestem Grass Seed (Aldous)	13.2	LB
45		1.76		Perennial Ryegrass	79.2	LB
2.6		1.76		Prairie Junegrass	4.6	LB
6.3	6.3	1.76	6.61	Side Oats Grama Grass Seed (El Reno)	52.7	LB
	10		6.61	Sterile Wheatgrass (Regreen/Quick Guard)	66.1	LB
	1		6.61	Switchgrass Seed (Blackwell)	6.6	LB
	0.5		6.61	Tall Dropseed	3.3	LB
45		1.76		Tall Fescue (Endophyte Free)	79.2	LB
6	4	1.76	6.61	Western Wheatgrass Seed (Barton)	37.0	LB
	10.3		6.61	Native Wildflower Mix 1	68.1	LB
				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

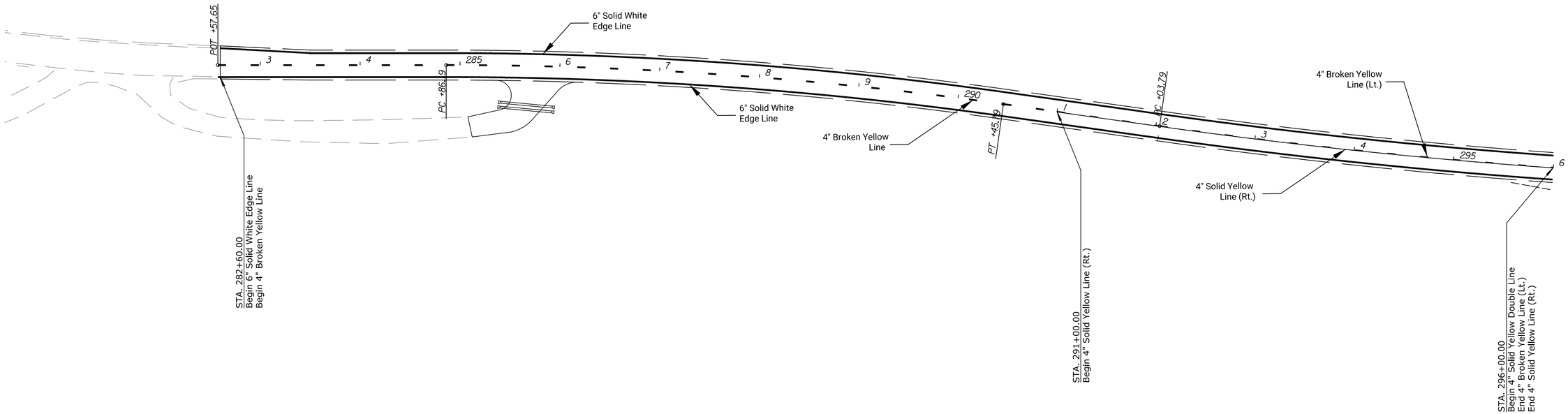
FHWA APPROVAL	05-06-19	APP'D.	Mervin Lare
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 81

Drawn By : _
Plotted : 8/16/2024
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	82	161

Scale: 1"=50'



KANSAS DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING

MAINLINE US-81

STA. 282+51 TO STA. 296+00

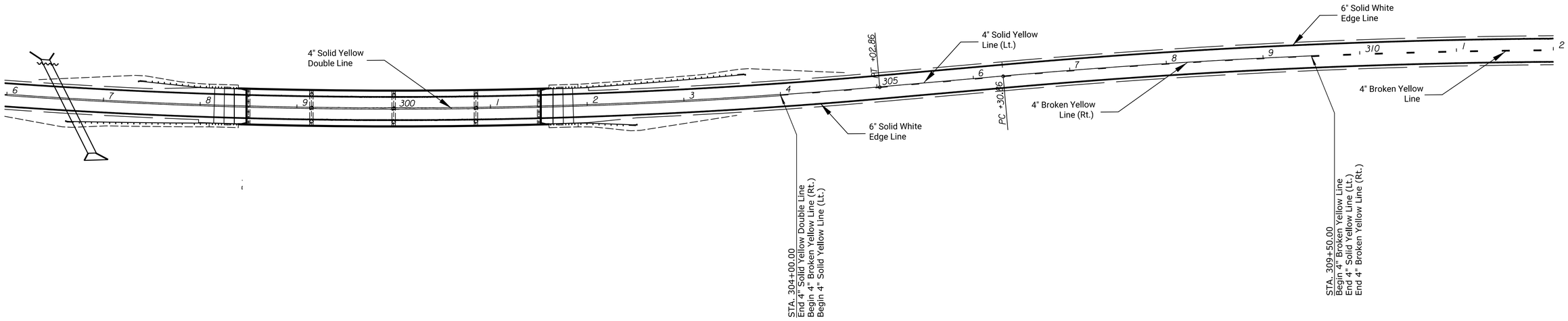
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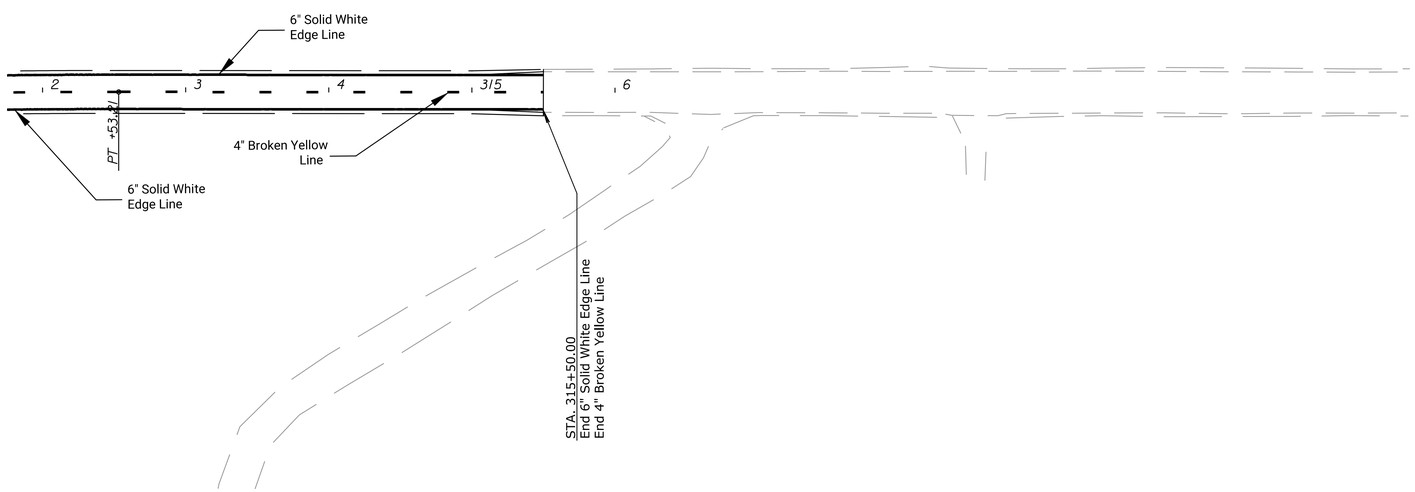
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	83	161

Scale: 1"=50'





KANSAS DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING

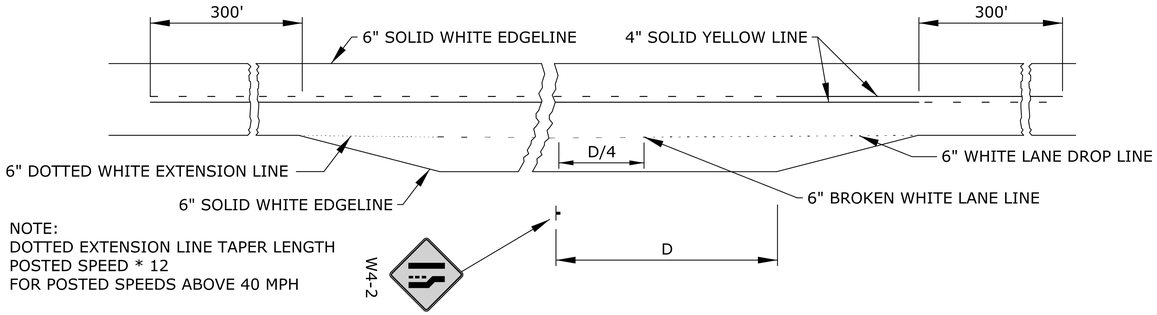
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Sheet No. 83

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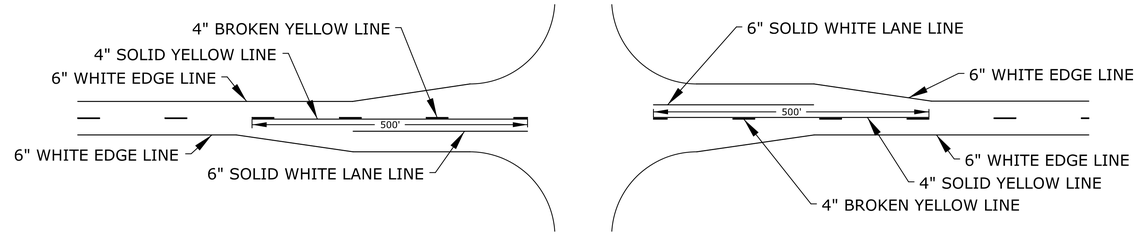


NOTE:
DOTTED EXTENSION LINE TAPER LENGTH
POSTED SPEED * 12
FOR POSTED SPEEDS ABOVE 40 MPH

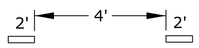
TYPICAL MARKING FOR AUXILIARY PASSING LANE

NOTE:
ALL PAVEMENT MARKINGS SHALL BE BROKEN AT CROSS ROADS.

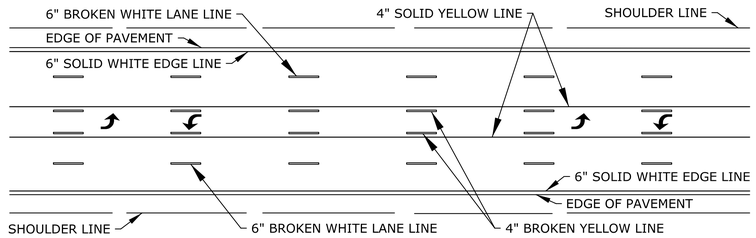
FOR HIGHWAY JUNCTIONS THE NO PASSING ZONE WILL EXTEND 1000' FROM INTERSECTION.



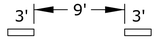
TYPICAL ROAD JUNCTION MARKINGS WITH BYPASS LANES



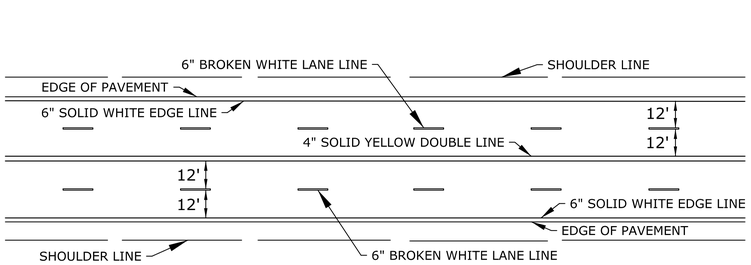
TYPICAL SPACING FOR DOTTED EXTENSION LINES, UNLESS OTHERWISE NOTED ON PLANS.



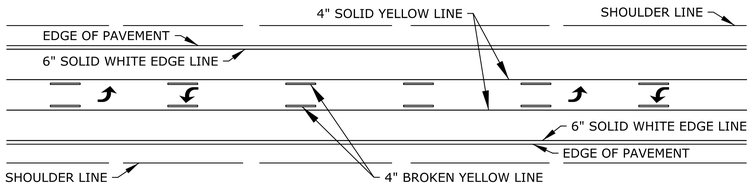
TWO-WAY LEFT TURN DETAIL FOR FIVE LANE ROADWAY



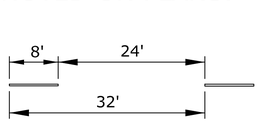
TYPICAL SPACING FOR LANE DROP. UNLESS OTHERWISE NOTED ON PLANS.



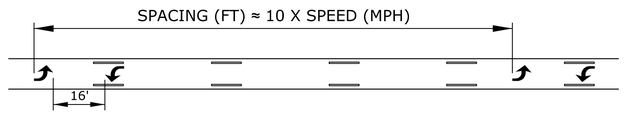
TYPICAL MARKINGS FOR FOUR LANE ROADWAY



TWO-WAY LEFT TURN DETAIL FOR THREE LANE ROADWAY

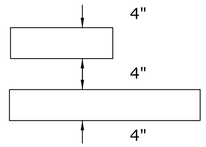


TYPICAL SPACING FOR BROKEN LINES UNLESS OTHERWISE NOTED ON PLANS

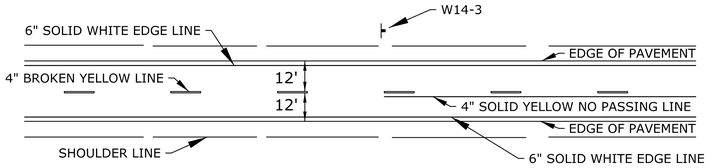


TWO-WAY LEFT TURN ARROW SPACING DETAIL

NOTE:
IF ARROWS ARE USED SPACE THE ARROWS AS SHOWN IN THE SPACING DETAIL.



TYPICAL SPACING FOR NO PASSING LINES UNLESS OTHERWISE NOTED ON PLANS



TYPICAL TWO LANE MARKINGS

NOTE:
LONGITUDINAL PAVEMENT MARKING LINES SHALL BE OFFSET A MINIMUM OF 2" FROM LONGITUDINAL PAVEMENT JOINTS.

NOTE:
ON NON I, US, AND K ROUTES, 4" EDGE LINES MAY BE INSTALLED.
6" EDGE LINES ARE NOT REQUIRED ON NON I, US, AND K ROUTES.

NO.	DATE	REVISIONS	BY	APP'D
3	5/25/12	Added Dotted Extension and Lane Drop Lines	B.A.H.	B.D.G.
2	9/20/05	Removed Aux. Passing Lane Dotted Ext. Line	J.F.F.	B.D.G.
1	7/26/05	New FHWA Approval Date	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL PAVEMENT MARKING DETAILS FOR UNDIVIDED ROADWAYS

TE308

FHWA APPROVAL		5/25/2012	APP'D	Brian D. Gower	
DESIGNED	J.F.F.	DETAILED	J.F.F.	QUANTITIES	TRACED
DESIGN CK.	B.D.G.	DETAIL CK.	B.D.G.	QUAN. CK.	TRACE CK.

KDOT Graphics Certified 07-17-2018

Sh. No. 84

KDOT Graphics Certified

Plotted : 16-AUG-2024 10:54

Drawn By : _
File : ka577201mss308.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	85	161

SUMMARY OF PAVEMENT MARKINGS

LOCATION	4" Solid WHITE Edge Line	6" Solid WHITE Edge Line	6" Broken WHITE Lane Line	6" Broken WHITE Lane Line (PCP)	6" Dotted WHITE Extension Line	6" Broken WHITE Lane Drop Line	6" Solid WHITE Lane Line	8" Broken WHITE Lane Drop Line	8" Solid WHITE Gore Line	8" Dotted WHITE Extension Line	12" Solid WHITE Diagonal Line	12" Solid WHITE Chevron Line	12" Solid WHITE Type I Crosswalk Line	24" Solid WHITE Type II Crosswalk Line	24" Solid WHITE Stop Line	4" Solid YELLOW Edge Line	4" Solid YELLOW Double Line	4" Solid YELLOW Line	4" Broken YELLOW Line	6" Solid YELLOW Edge Line	12" Solid YELLOW Diagonal Line
MAINLINE US-81:																					
STA: 282+60.00 - STA: 296+00.00		2683																500	1343		
STA: 296+00.00 - STA: 315+50.00		3900															800	550	1150		
TOTALS		6583															1600	1050	624		

SUMMARY OF WORD & SYMBOL MARKINGS

LOCATION							STOP	ONLY	X-ING	SCHOOL			24	400	18						
TOTALS																					

NOTE: FOR SPECIFIC PAVEMENT MARKING DETAILS AND DIMENSIONS SEE PLAN SHEETS

NOTE: ALL TOTALS REFLECT ACTUAL QUANTITY OF PAVEMENT MARKING MATERIALS REQUIRED.

RECAPITULATION OF QUANTITIES

ITEMS	TOTAL	UNITS
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(4")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(6")	6583	FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(8")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(12")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(4")	3274	FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(6")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(12")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(4")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(6")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(8")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(12")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(4")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(6")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(12")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(4")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(6")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(8")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(12")		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(4")		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(6")		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(12")		FT
PAVEMENT MARKING (INTERSECTION GRADE)(WHITE)(12")		FT
PAVEMENT MARKING (INTERSECTION GRADE)(WHITE)(24")		FT
PAVEMENT MARKING (INTERSECTION GRADE)(YELLOW)(12")		FT
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(US-SHIELD)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(K-SHIELD)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(I-SHIELD)( )		EACH
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(6")		FT
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(8")		FT
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(12")		FT
PAVEMENT MARKING REMOVAL		FT

NOTE:
WORDS & SYMBOLS SHALL CONFORM TO THE LATEST EDITION OF "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" PRINTED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

PRIOR TO COMMENCEMENT OF PAVEMENT MARKING WORK THE ENGINEER WILL ESTABLISH THE LIMITS FOR "NO PASSING" ZONES. THESE LIMITS SHALL BE USED FOR THE LOCATION OF "NO PASSING" LINES AND FOR THE COMPUTATION OF ACTUAL MARKING QUANTITIES FOR THIS LINE TYPE.

NO.	DATE	REVISIONS	BY	APP'D
2	5/25/12	Added Line Types, Symbols, and Shields	B.A.H.	B.D.G.
1	7/26/05	New FHWA Approval Date	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY AND RECAPITULATION OF PAVEMENT MARKING QUANTITIES

TE311

FHWA APPROVAL		5/25/2012	APP'D	Brian D. Gower	
DESIGNED	J.F.F.	DETAILED	J.F.F.	QUANTITIES	TRACED
DESIGN CK.	B.D.G.	DETAIL CK.	B.D.G.	QUAN. CK.	TRACE CK.

Plotted : 16-AUG-2024 10:54
Drawn By : __
File : ka577201mss311.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	86	161

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

86 SIGNING INDEX, SYMBOLS, & GENERAL NOTES
POST SPACING & SIGN ANGLE DETAILS
87 HEIGHT & LATERAL DISTANCE FOR ERECTION
POSITIONING, DESIGN, & MOUNTING OF DELINEATORS
88 ,89 POSITIONING, DESIGN, & MOUNTING FOR OBJECT MARKERS (TYPE 2 & 3)
POSITIONING FOR CHEVRON (W1-8) SIGNS
90 , 91 PLAN SHEETS (INSTALLATIONS)
92 , 93 PLAN SHEETS (REMOVALS)
94 QUANTITIES SHEETS (INSTALLATIONS)
95 QUANTITIES SHEET (DELINEATORS & OBJECT MARKERS)
96 SUMMARY SHEET (INSTALLATIONS & REMOVALS)
97 SUMMARY SHEET (REMOVAL & RESET)
98 RECAPITULATION SHEET
99 , 100 STANDARD STRUCTURAL SIGN SUPPORTS (WOOD & STEEL POSTS)
101 MOUNTING OF SIGNS ON WOOD POSTS
MOUNTING OF FLAT SHEET SIGNS ON STEEL I-BEAM POSTS
MOUNTING OF REINFORCED PANEL SIGNS ON I-BEAM POSTS
102, 103 DETAILS FOR FLAT SHEET SIGN BLANKS
DETAILS FOR PROCESSED SIGNS
DETAILS FOR REINFORCED PANELS
DETAILS FOR GUIDE SIGN LEGEND
104 DETAILS FOR GUIDE SIGNS
105 DETAILED SIGN SPECIFICATIONS

NO.	DATE	REVISIONS	BY	APP'D
2	10/01/19	Changed symbols, notes, & index	D.D.G.	E.W.N.
1	7/23/10	Changed General Notes and Spec Book Date	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

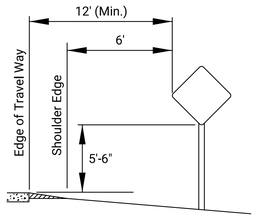
SIGNING SYMBOL KEY
GENERAL NOTES
AND INDEX

TE402 7/1/03

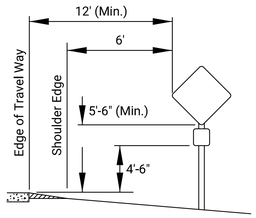
FHWA APPROVAL			10/01/2019	APP'D	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.	

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Drawn By : _
File : ka577201pss402.dgn

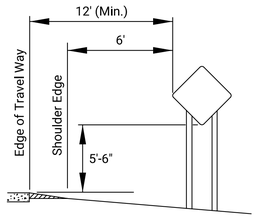
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	87	161



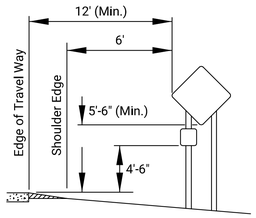
ONE POST



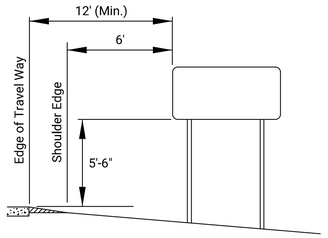
ONE POST WITH SUPPLEMENTAL SIGN



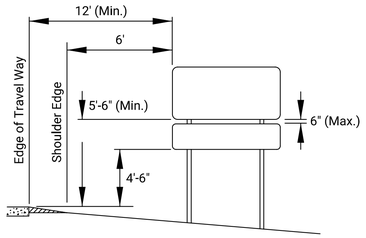
TWO POSTS



TWO POSTS WITH SUPPLEMENTAL SIGN

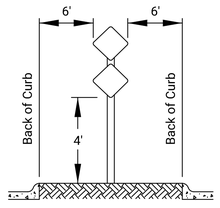


MULTIPLE POSTS

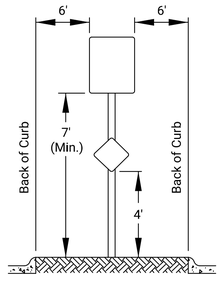


MULTIPLE POSTS WITH SUPPLEMENTAL SIGN

CONVENTIONAL HIGHWAY AND SIDE ROADS

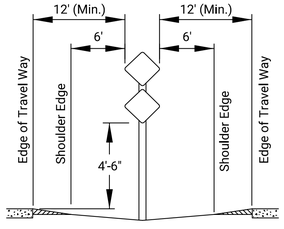


ONE OR TWO OM1-3

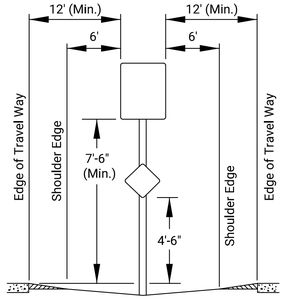


PRIMARY SIGN WITH OM1-3

RAISED



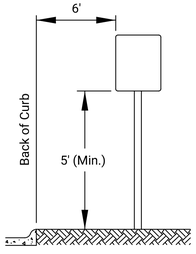
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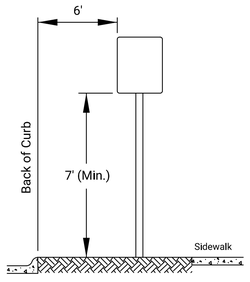
PRIMARY SIGN WITH OM1-3

DEPRESSED

MEDIANS AND ISLANDS

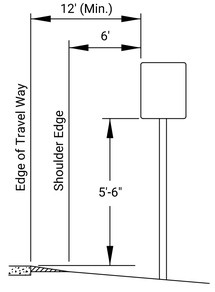


NO PARKING OR SIDEWALK



PARKING OR SIDEWALK

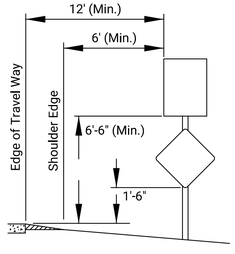
CURB



TYPICAL

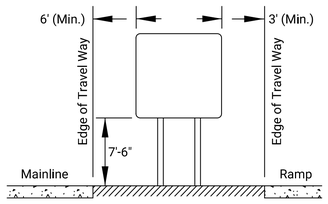
NO CURB

URBAN ROADWAYS

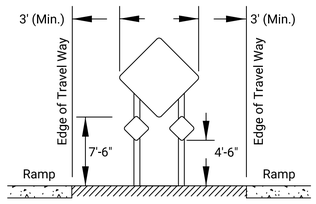


TYPICAL

ADOPT A HIGHWAY

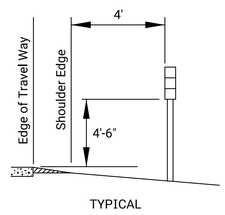


MAINLINE/RAMP



RAMP/RAMP

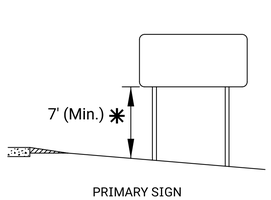
HIGHWAY GORES



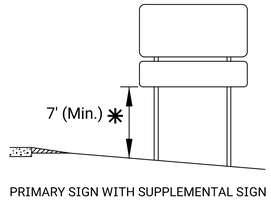
TYPICAL

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 guard rail, the near edge of the sign shall not extend beyond the back side of the guard rail and the nearest sign post shall be a minimum of 5' from the face of the guard rail. Shoulder mounted shall not be located between 100' in advance of and 50' beyond the nose of the guard rail.

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			10/01/2019	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 12-17-2019

Sh. No. 87

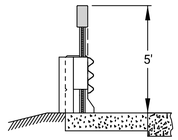
KDOT Graphics Certified

Plotted : 16-AUG-2024 10:54

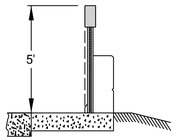
Drawn By : _

File : ka577201pss407.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	88	161

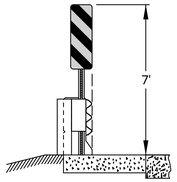


WITH GUARDRAIL

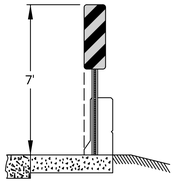


WITHOUT GUARDRAIL

SHOULDER WIDTH 6 FEET OR GREATER (TYPE 2 OBJECT MARKER)



WITH GUARDRAIL

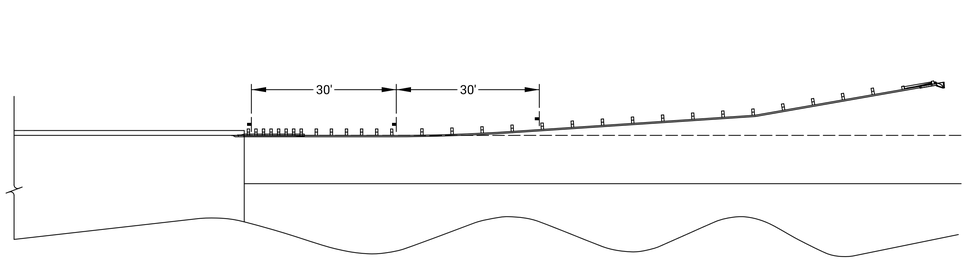


WITHOUT GUARDRAIL

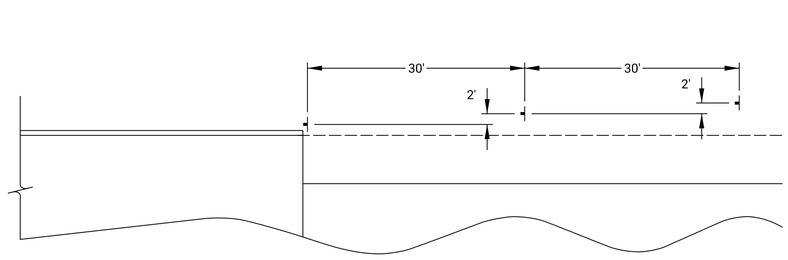
SHOULDER WIDTH LESS THAN 6 FEET (TYPE 3 OBJECT MARKER)

NOTE:
The longitudinal location of the object markers from the structure end shall be a maximum spacing of 42".

END OF STRUCTURE

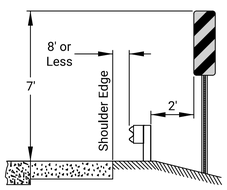


LONGITUDINAL PLACEMENT

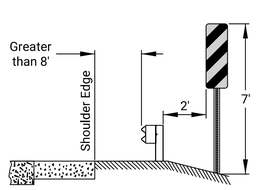


LONGITUDINAL PLACEMENT

NOTE:
The lateral offset is measured from the centerline of the object markers.

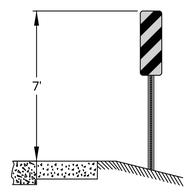


GUARDRAIL 8' OR LESS FROM SHOULDER EDGE



GUARDRAIL GREATER THAN 8' FROM SHOULDER EDGE

STRUCTURE APPROACH GUARDRAIL WITHOUT MARKERS



STRUCTURE APPROACH WITHOUT GUARDRAIL

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR
OBJECT MARKERS (TYPE 2 & 3)
FOR STRUCTURES WITH PARAPETS

TE415 10/01/19

FHWA APPROVAL			10/01/2019	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.	

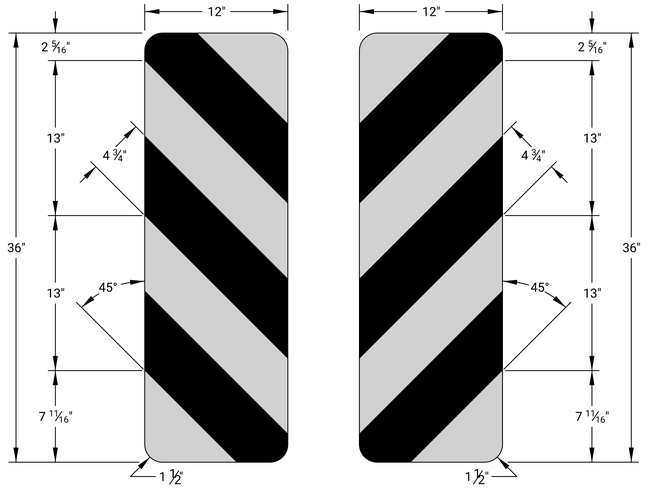
KDOT Graphics Certified 12-17-2019

Sh. No. 88

KDOT Graphics Certified

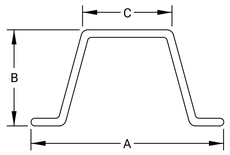
Plotted : 16-AUG-2024 10:54
Drawn By : _
File : ka577201pss415.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	89	161



OM3-L

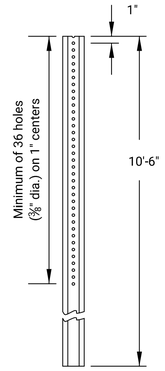
OM3-R



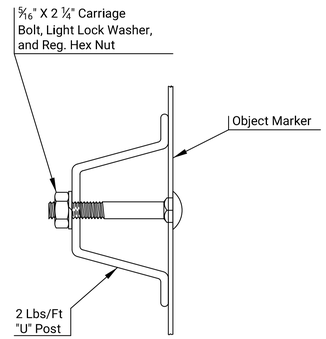
DIMENSIONS	
A	3 1/8
B	1 17/32
C	1 1/4

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS



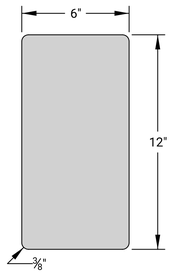
MOUNTING DETAILS

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

TYPE 3 OBJECT MARKER

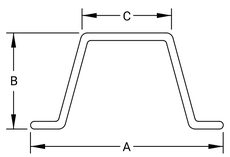
GENERAL NOTE:
See flat sheet sign blank standard sheets for the 6" x 12" and 12" x 36" sign blank details.

The object markers shall be covered with Type XI High Intensity yellow retroreflective sheeting.



OM2

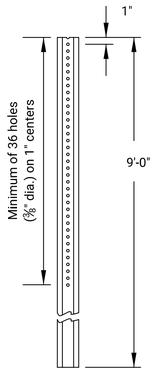
COLOR:
Yellow Background (Reflective)



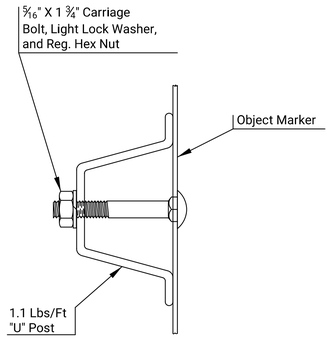
DIMENSIONS	
A	2 1/16
B	7/8
C	1 3/16

(Dimensions are nominal)

DELINEATOR POST
(1.1 lb/ft "U" Post)



PUNCHING DETAILS



MOUNTING DETAILS

TYPE 2 OBJECT MARKER

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
DESIGN DETAILS
FOR OBJECT MARKERS
TYPE 2 AND TYPE 3

TE416 10/01/19

FHWA APPROVAL		10/01/2019	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 12-17-2019

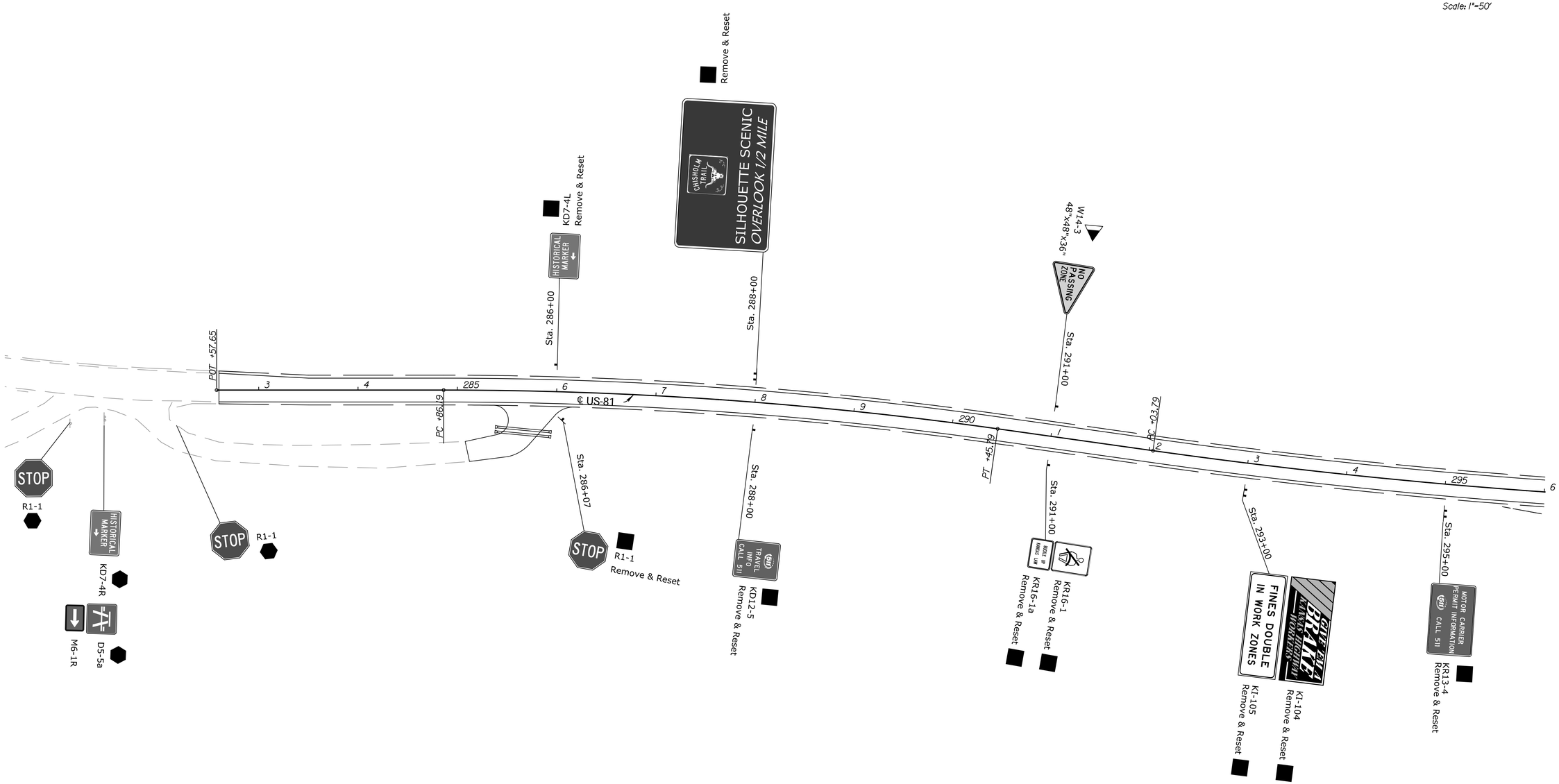
Sh. No. 89

KDOT Graphics Certified

Plotted : 16-AUG-2024 10:55
Drawn By : _
File : ka577201pss416.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	90	161

Scale: 1"=50'



KANSAS DEPARTMENT OF TRANSPORTATION

SIGNING PLAN

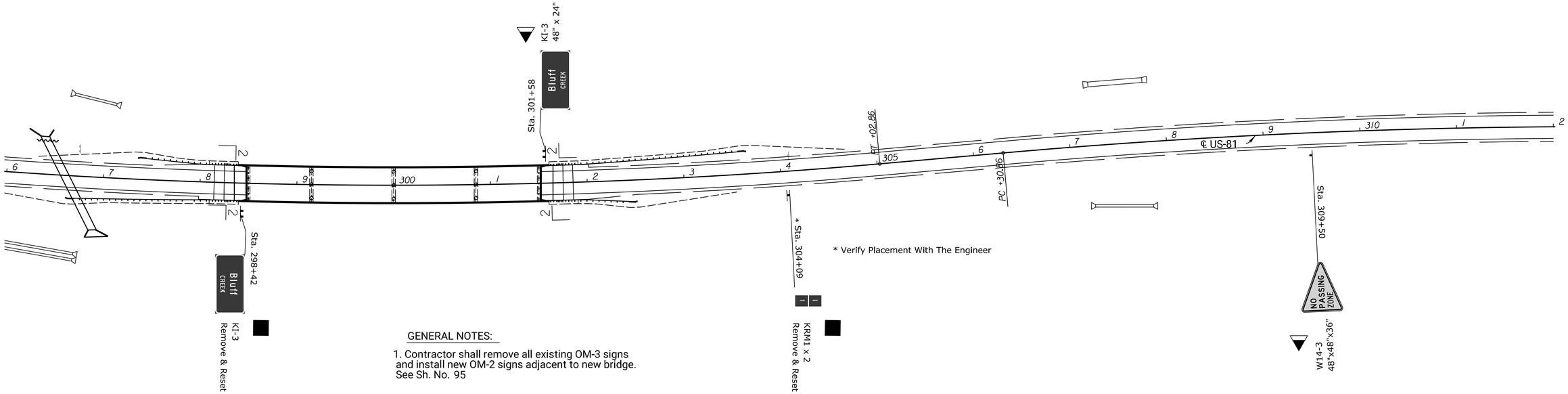
STA. 282+51.65 TO STA. 296+00

Sheet No. 90

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772101ppl01.dgn

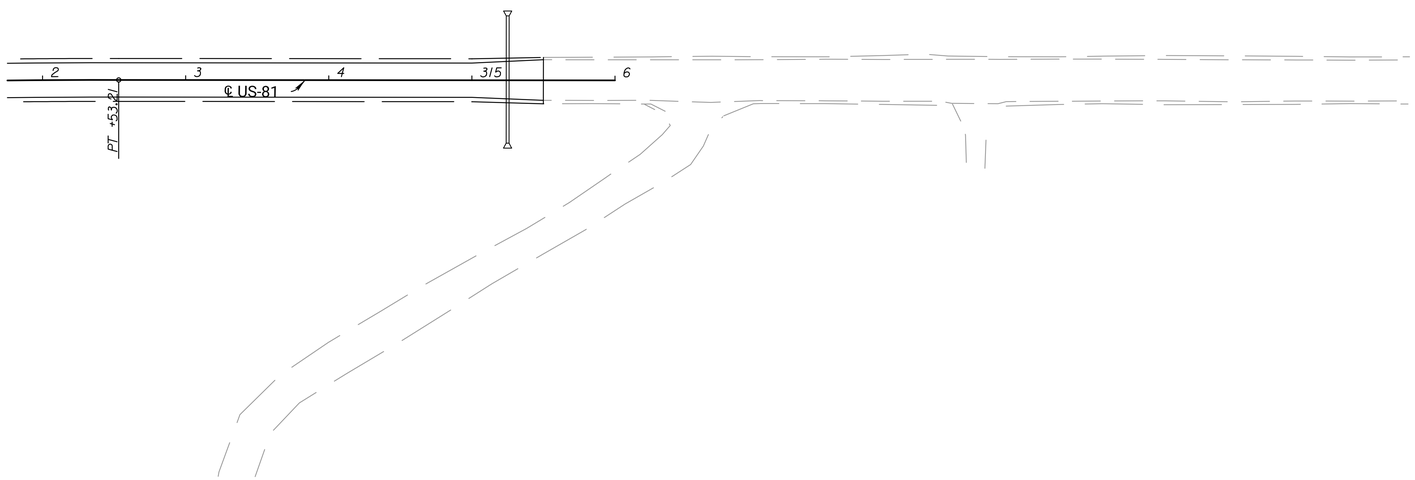
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	91	161

Scale: 1"=50'



GENERAL NOTES:

1. Contractor shall remove all existing OM-3 signs and install new OM-2 signs adjacent to new bridge. See Sh. No. 95



KANSAS DEPARTMENT OF TRANSPORTATION

SIGNING PLAN

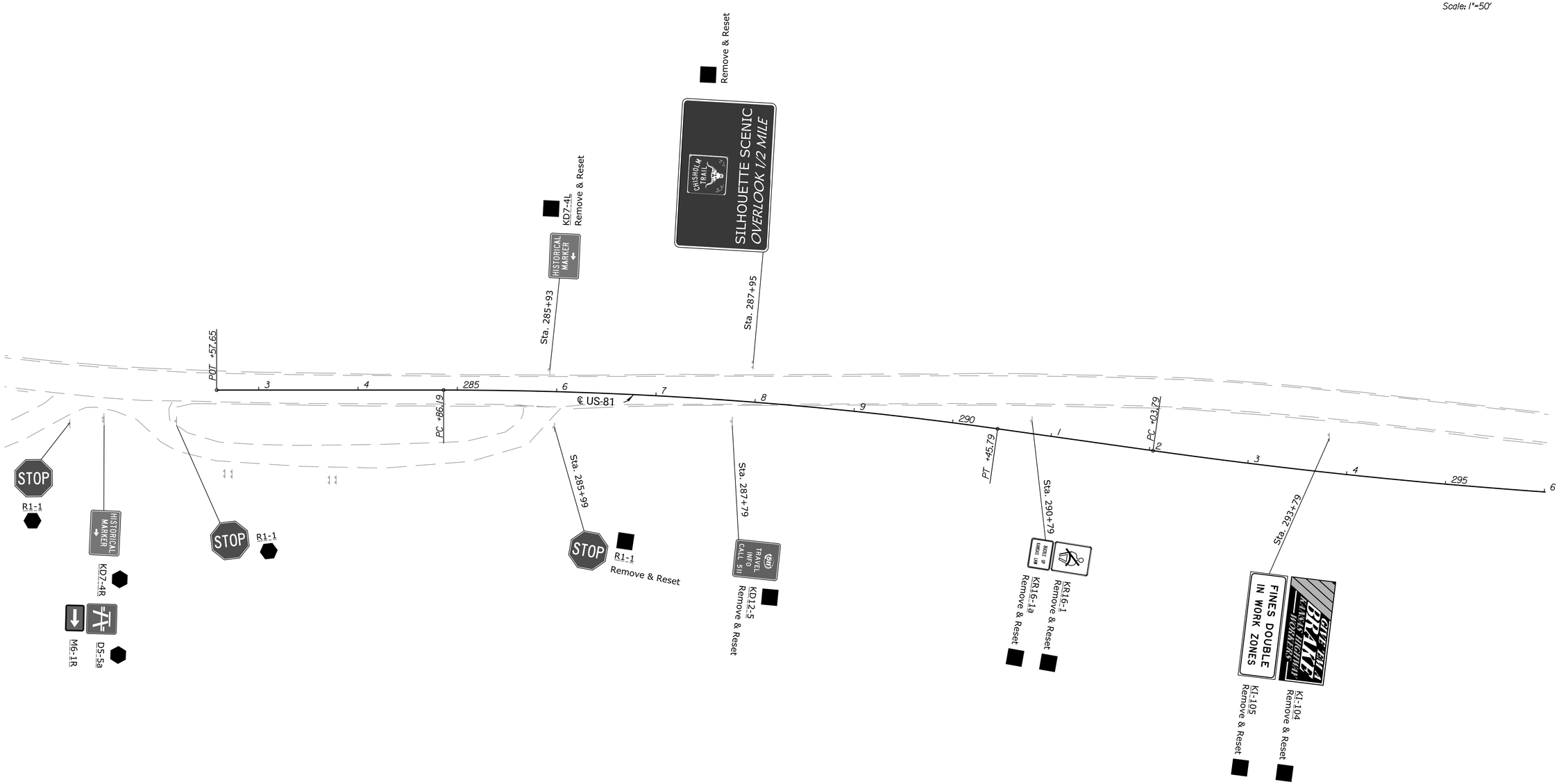
STA. 296+00 TO STA. 315+50

Sheet No. 91

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcadd\bms\wsp-pb-us-pw-02\d0341324\ka577201ppl02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	92	161

Scale: 1"=50'



KANSAS DEPARTMENT OF TRANSPORTATION

SIGNING REMOVAL PLAN

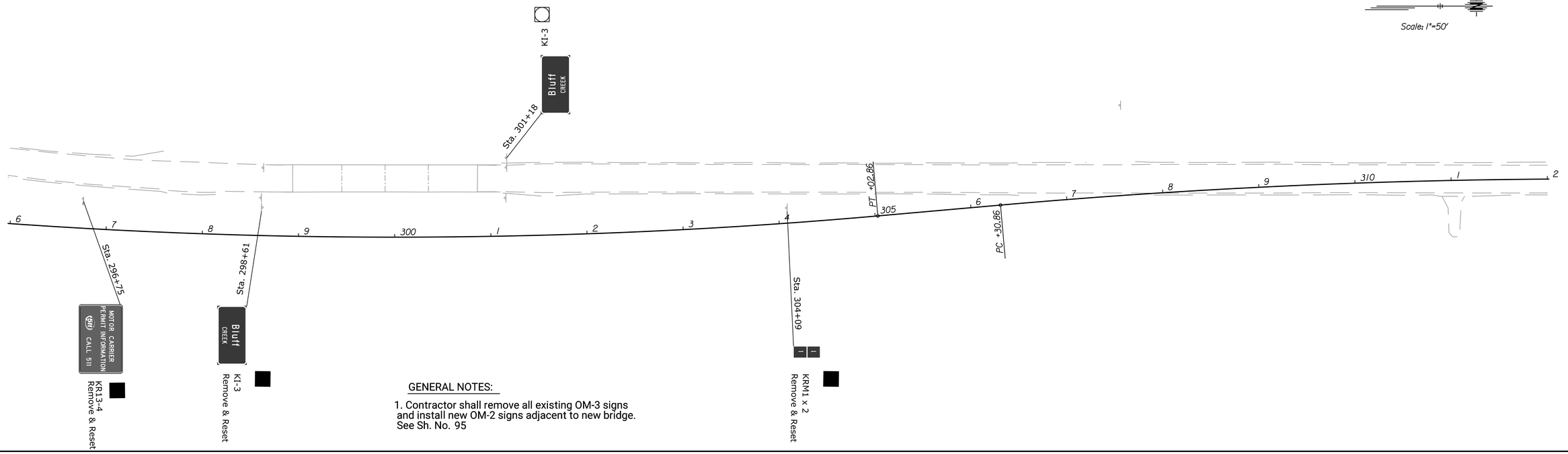
STA. 282+51.65 TO STA. 296+00

Sheet No. 92

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcadd\bms\wsp-pb-us-pw-02\d0341324\ka577201prm01.dgn

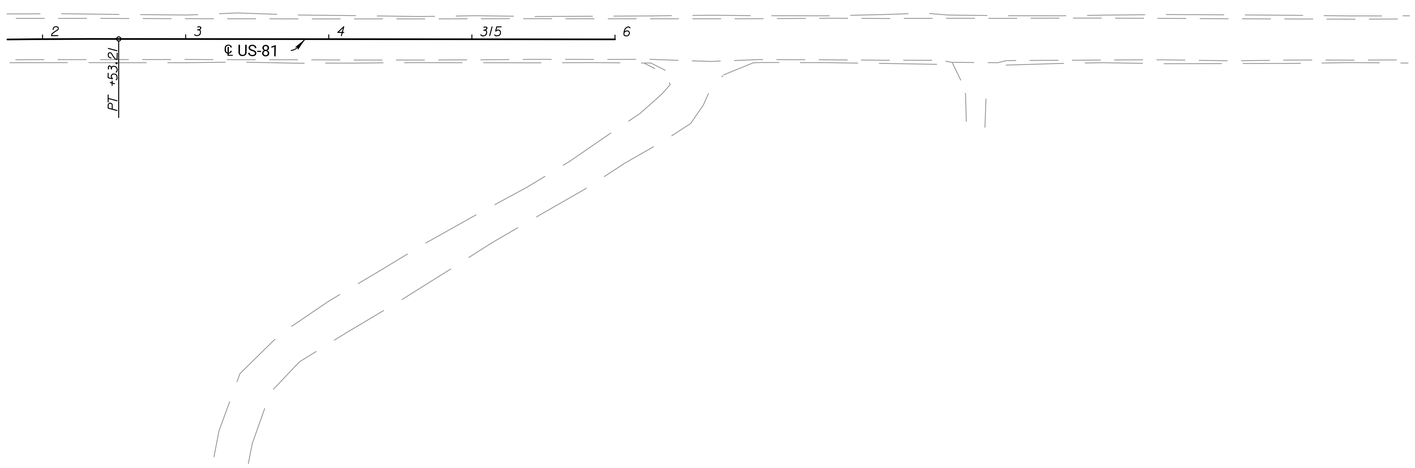
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	93	161

Scale: 1"=50'



GENERAL NOTES:

1. Contractor shall remove all existing OM-3 signs and install new OM-2 signs adjacent to new bridge. See Sh. No. 95



KANSAS DEPARTMENT OF TRANSPORTATION

SIGNING REMOVAL PLAN

STA. 296+00 TO STA. 315+50

Sheet No. 93

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcadd\bms\wsp-pb-us-pw-02\d0341324\ka577201prm02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	94	161

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			3|2.25 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		
Exist.	286+00	L/S	KD7-4L	36" x 24"					1																																
Exist.	286+07	R/S	R1-1	36" x 36"					1																																
Exist.	288+00	R/S	KD12-5	30" x 36"					1																																
Exist.	288+00	L/S	Hist.	84" x 48"					2																																
Exist.	291+00	R/S	KR16-1	24" x 30"					1																																
Exist.	291+00	R/S	KR16-1a	24" x 18"																																					
90	291+00	L/S	W14-3	48" x 48" x 36"		X			1																																
Exist.	293+00	R/S	KI-104	84" x 36"					2																																
Exist.	293+00	R/S	KI-105	84" x 30"																																					
Exist.	295+00	R/S	KR13-4	84" x 36"					2																																
Exist.	298+42	R/S	KI-3	36" x 24"					1																																
91	301+58	L/S	KI-3	36" x 24"		X			1																																
Exist.	304+09	R/S	KRM1	6" x 6"									1																												
Exist.	304+09	R/S	KRM1	6" x 6"																																					
91	309+50	R/S	W14-3	48" x 48" x 36"		X			1																																

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
2	10/01/19	Added Tapered Tube. Removed Couplers.	D.D.G.	E.W.N.
1	7/23/10	Added Coupler and Coupler/Footing Quantity	D.D.G.	D.B.

FHWA APPROVAL				10/01/2019	APP'D	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.S.	QUANTITIES		TRACED	B.B.
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.		TRACE CK.	

TE430

7/1/03

Sh. No. 94

Plotted : 16-AUG-2024 10:56
Drawn By: __
File : ka577201pss430.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	95	161

QUANTITIES SHEET

DELINEATORS AND OBJECT MARKERS

			RIGID DELINEATORS												FLEXIBLE DELINEATORS												OBJECT MARKERS				
			TYPE 'A'								TYPE 'B'				TYPE 'A'								TYPE 'B'				TYPE 2	TYPE 3			
			WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW		WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW						
BEGINNING STATION	ENDING STATION	LOCATION DESCRIPTION	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	'U' POST	LEFT	RIGHT	CENTER	BACK TO BACK
298+37 Lt./Rt.		South side of Bluff Creek																									2				
301+63 Lt./Rt.		North side of Bluff Creek																									2				

NO.	DATE	REVISIONS	BY	APP'D
1	10/01/19	Added delineator & object marker types	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

QUANTITIES SHEET
DELINEATORS & OBJECT MARKERS

TE436 7/1/03

FHWA APPROVAL			10/01/2019	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 12-17-2019

Sh. No. 95

KDOT Graphics Certified

Plotted : 16-AUG-2024 10:56

Drawn By : _
File : ka577201pss436.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	96	161

SUMMARY OF QUANTITIES

SIGNS

TYPE	NUMBER	SQUARE FEET
FLAT SHEET	3	17.12
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	
	OM2-2V	
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	14				1											
FEET	210				10											

POST FOOTINGS AND BRACKETS

	CONCRETE FOOTING (DIA.)					PERFORATED SQUARE STEEL					
						TUBE FOOTING				BRACKET	
	WOOD	A36 STEEL		A572 STEEL (ALT)							
	18"	24"	30"	24"	30"	1-3/4"	2"	2-1/4"	2-1/2"	1-3/4"	2"
NUMBER											
FEET											

BASE PLATES AND STUB POSTS

	W6x9		W10x12		W10x22	
BREAKAWAY BASES	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)
BASE PLATE (TOP)						
STUB POST WITH BASE PLATE						
NON-BREAKAWAY BASES						
BASE PLATE						

REMOVALS

TYPE	NUMBER
SIGNS	1
POSTS	13
FOOTINGS	
SIGN STRUCTURES	

NUMBER & LENGTHS OF POSTS & ALUMINUM BEAMS (INFORMATION ONLY)

LENGTH OF POST OR BEAM	4" x 6" POST			3I2.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
2.1' - 4'																
4.1' - 6'																
6.1' - 8'																
8.1' - 10'					1											
10.1' - 12'																
12.1' - 14'	8															
14.1' - 16'	6															
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
2	10/01/19	Revised Tables	D.D.G.	E.W.N.
1	7/23/10	Revised Tables	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES
FOR
INSTALLATIONS AND REMOVALS

~~TE439~~ 7/1/03

FHWA APPROVAL		10/01/2019	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.

Plotted : 16-AUG-2024 10:56
Drawn By : _
File : ka577201pss439.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	97	161

SUMMARY OF QUANTITIES

REMOVAL AND RESETTING OF SIGNS ON PROJECT

EXISTING PLAN STATION NUMBER	NEW PLAN STATION NUMBER	SIGN TYPE	SIGN SIZE
US-81			
285+92 Lt.	286+00 Lt.	KD7-4L	36" x 24"
285+98 Rt.	286+07 Rt.	R1-1	36" x 36"
287+78 Rt.	288+00 Rt.	KD12-5	30" x 36"
287+96 Lt.	288+00 Lt.	HIST.	84" x 48"
290+78 Rt.	291+00 Rt.	KR16-1	24" x 30"
290+78 Rt.	291+00 Rt.	KR16-1a	24" x 18"
293+79 Rt.	293+00 Rt.	KI-104	84" x 36"
293+79 Rt.	293+00 Rt.	KI-105	84" x 30"
296+74 Rt.	295+00 Rt.	KR13-4	84" x 36"
298+60 Rt.	298+42 Rt.	KI-3	36" x 24"
304+09 Rt.	304+09 Rt.	KRM1	6" x 6"
304+09 Rt.	304+09 Rt.	KRM1	6" x 6"

EXISTING PLAN STATION NUMBER	NEW PLAN STATION NUMBER	SIGN TYPE	SIGN SIZE

EXISTING PLAN STATION NUMBER	NEW PLAN STATION NUMBER	SIGN TYPE	SIGN SIZE

EXISTING PLAN STATION NUMBER	NEW PLAN STATION NUMBER	SIGN TYPE	SIGN SIZE

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES
FOR REMOVAL AND RESETTING
OF SIGNS

TE445 7/1/03

FHWA APPROVAL			7/22/2003	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.	

Plotted : 16-AUG-2024 10:56
Drawn By : __
File : ka577201pss445.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	98	161

RECAPITULATION OF SIGNING & DELINEATION BID ITEMS

BID ITEMS	APPROXIMATE QUANTITIES		UNITS
SIGN (FLAT SHEET) (HIGH PERFORMANCE)	17.12		SQUARE FOOT
SIGN (REINFORCED PANEL) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN (OVERLAY) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)	210		LINEAR FOOT
SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)			LINEAR FOOT
SIGN POST (2 LB/FT "U" STEEL)	10		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
SIGN (REMOVE & RESET)	L.S.	LUMP SUM

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
2	10/01/19	Removed PSST coupler and changed the tables	D.D.G.	E.W.N.
1	7/23/10	Changed Bid Items as per Spec Book (2007)	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

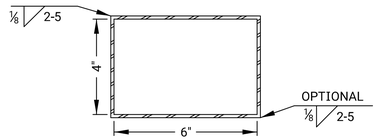
RECAPITULATION OF SIGNING & DELINEATION BID ITEMS

TE450 7/1/03

FHWA APPROVAL			10/01/2019	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.	

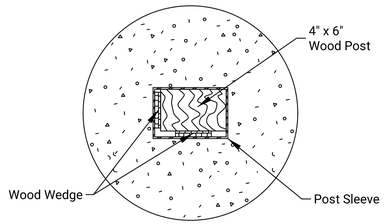
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Drawn By : _
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	99	161

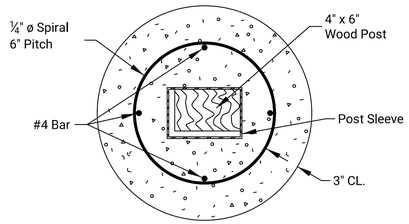


NOTE: Dimensions are to inside of post sleeve.

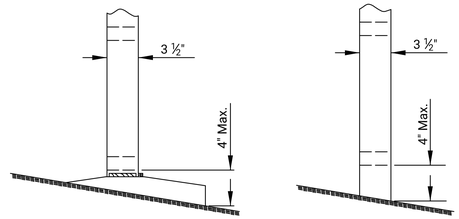
POST SLEEVE



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

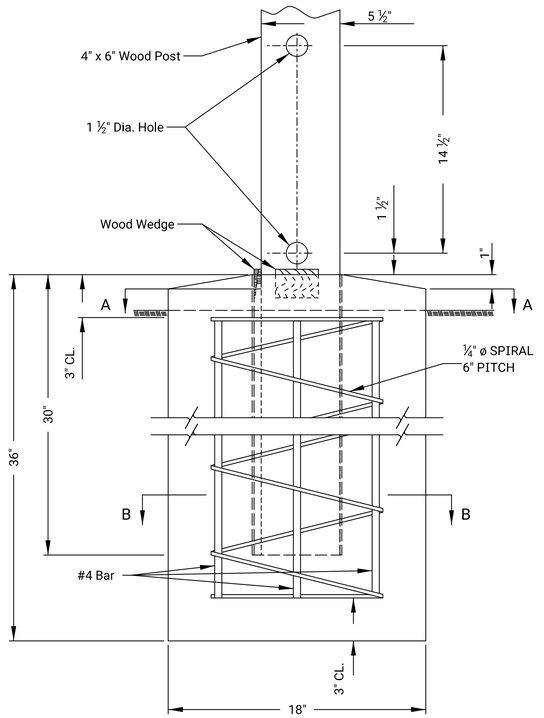
The post sleeve shall be formed from 10 gauge sheet steel to meet the requirements of ASTM A653 and zinc coated to meet the requirements of coating designation A123. If galvanized sheet steel is used, no other galvanization is required. It is permissible to close the bottom of the sleeve with a metal 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.

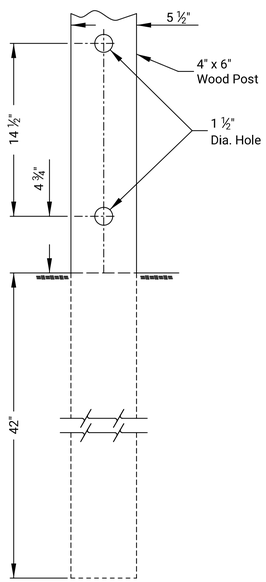
Prior to sealing the opening between the wood post and the top of the concrete footing, secure the post by placing 3" wide by 2" long wood wedges into the opening on two adjacent sides of the post. The wedges are be flush with up to a maximum of ⅜" sticking up above the top of the footing.

Commercial grade concrete may be substituted for sign support footings.



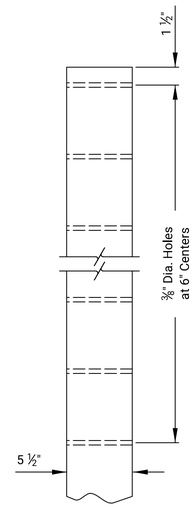
SIDE ELEVATION

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
1	10/01/19	Change details and note	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR WOOD POSTS

TE460 7/1/03

FHWA APPROVAL			10/01/2019	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.	

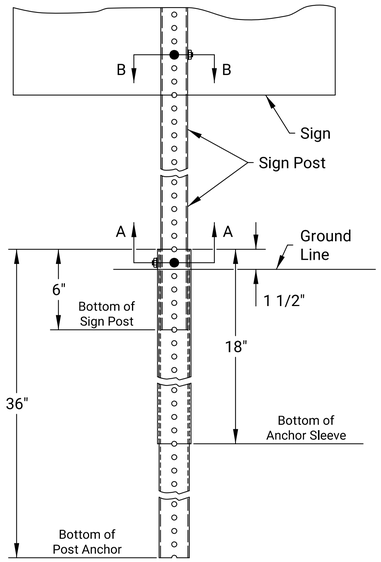
KDOT Graphics Certified 12-17-2019

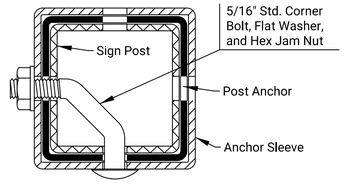
Sh. No. 99

KDOT Graphics Certified

Plotted : 16-AUG-2024 10:56
Drawn By : __
File : ka577201pss460.dgn

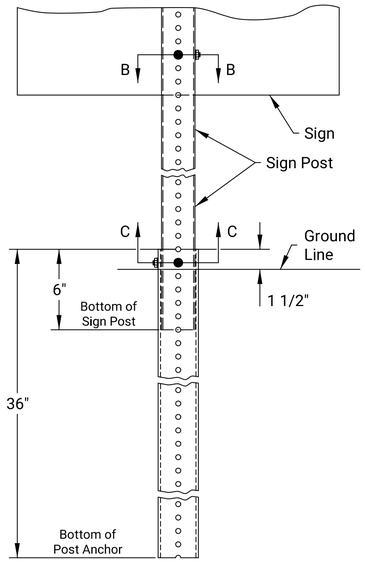
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	100	161

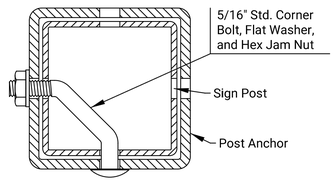




SECTION A-A

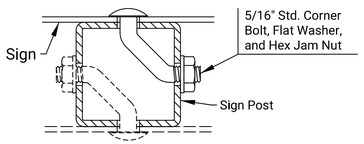
1 ¾", 2", OR 2 ¼" PSST SIGN POST





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.

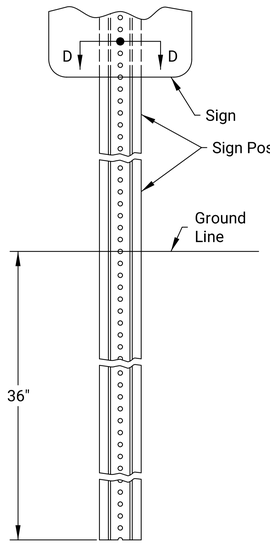
INSTALLATION PROCEDURES

1. Plumb and drive post anchor into the ground 18", if anchor sleeve is required, or to the specified height above the ground line.

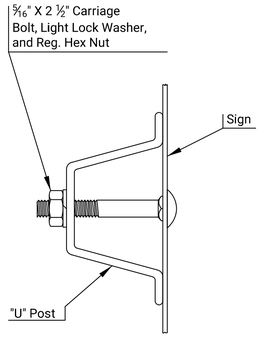
2. Install anchor sleeve (if required) on the post anchor and align the first holes above the ground line. Plumb and drive post anchor with anchor sleeve into the ground to the specified height above the ground line.

3. Install sign post into the post anchor.

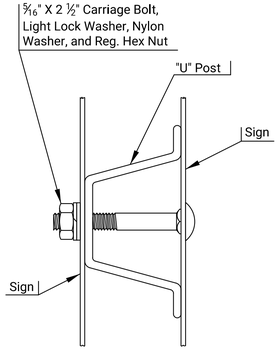
PERFORATED SQUARE STEEL TUBE POST (PSST)



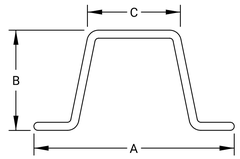
TYPICAL



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

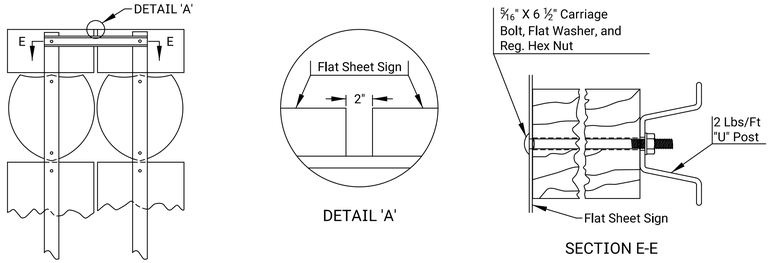
FHWA APPROVAL			10-01-19	APP'D.	Eric W.Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 05-26-2022 Sh. No. 100

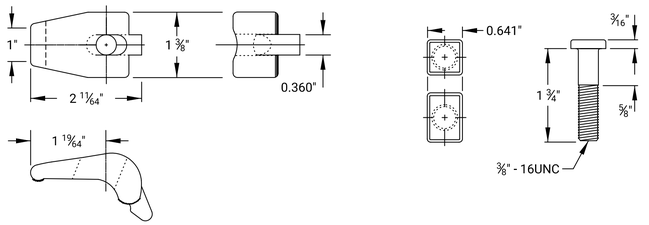
KDOT Graphics Certified

Drawn By: _
Plotted : 8/16/2024
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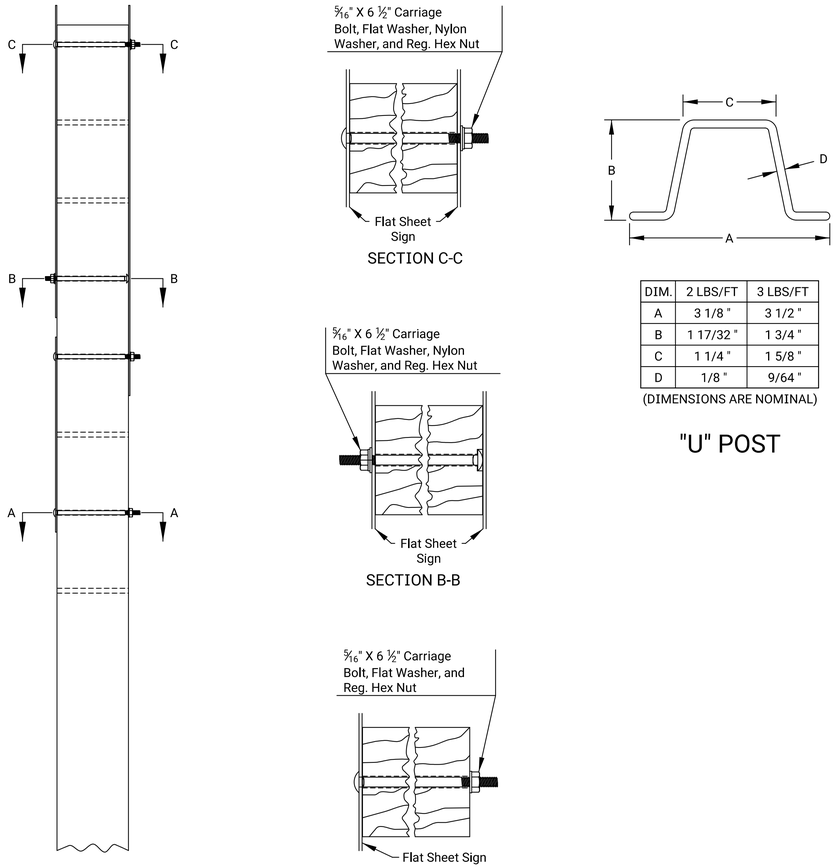
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	101	161



ROUTE MARKER ASSEMBLIES ATTACHMENT



ALUMINUM POST CLIP AND POST CLIP BOLT

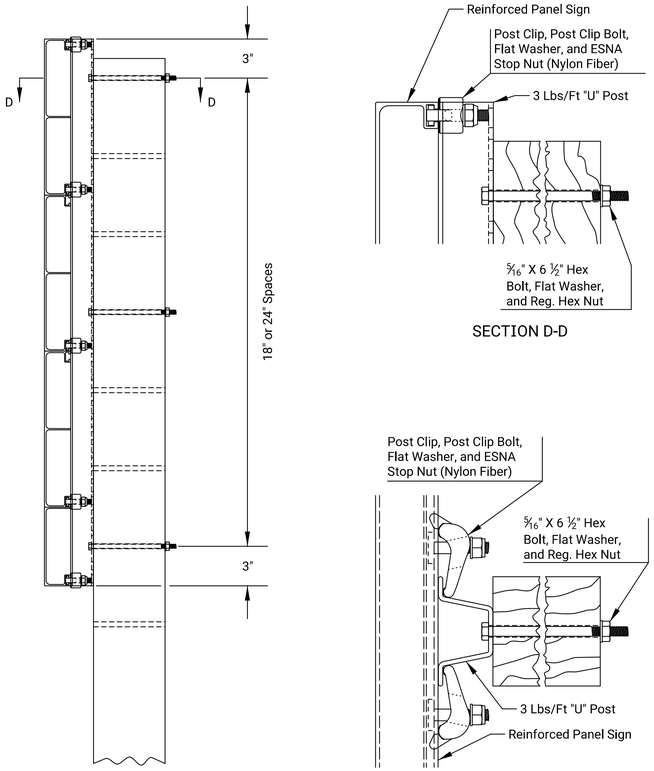


TYPICAL MOUNTING OF FLAT SHEET SIGNS

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 REINFORCED PANEL SIGNS

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.

All dimensions are in inches

NO.	DATE	REVISIONS	BY	APP'D
1	10/01/19	Revised drawings and notes	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR MOUNTING SIGNS ON WOOD POSTS

FLAT SHEET AND REINFORCED PANEL

TE481 7/1/03

FHWA APPROVAL			10/01/2019	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 12-17-2019

Sh. No. 101

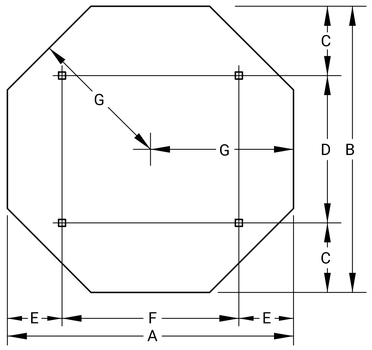
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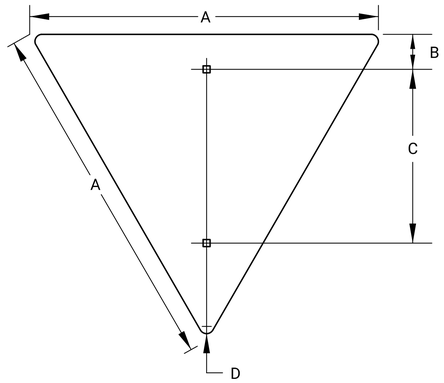
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File : ka577201pss481.dgn

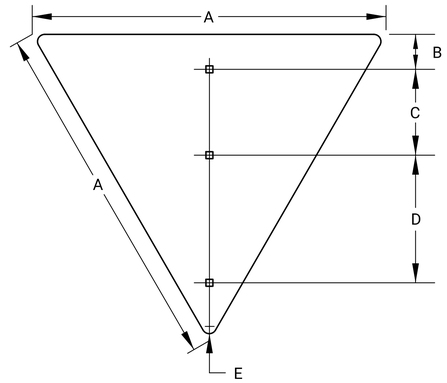
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	102	161



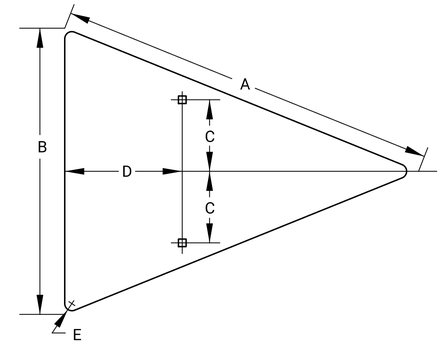
SIGN SIZE	A	B	C	D	E	F	G	T	AREA
48 X 48	48	48	12	24	9	30	24	0.100	13.25



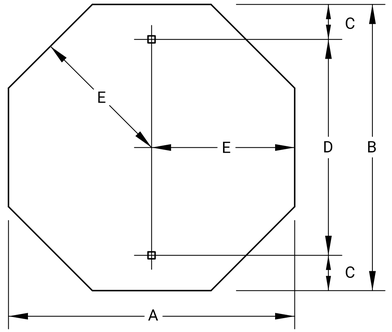
SIGN SIZE	A	B	C	D	T	AREA
36 X 36	36	3	18	2	0.080	3.90



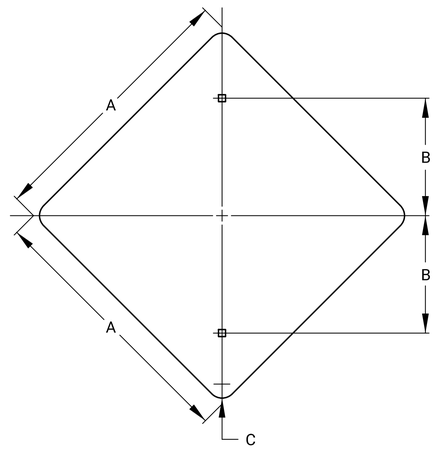
SIGN SIZE	A	B	C	D	E	T	AREA
48 X 48	48	3	12	18	3	0.080	6.93
60 X 60	60	3	18	18	4	0.100	10.83



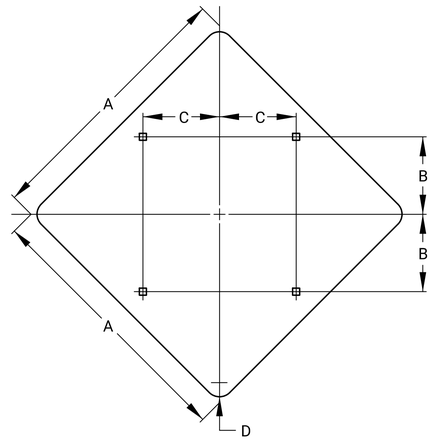
SIGN SIZE	A	B	C	D	E	T	AREA
48 X 36	48	36	9	14 ¾	2 ¼	0.125	5.56



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
	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 7/1/03

FHWA APPROVAL			10/01/2019	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 12-17-2019

Sh. No. 102

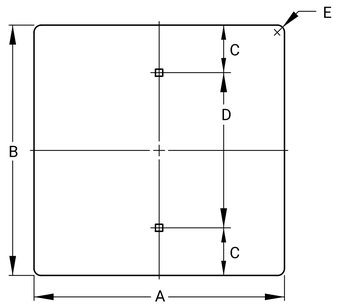
KDOT Graphics Certified

Plotted : 16-AUG-2024 10:57

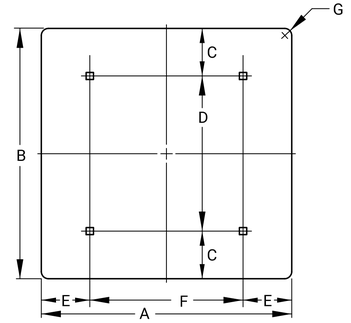
Drawn By : _

File : ka577201pss503.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	103	161



	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
1	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

TE506 7/1/03

FHWA APPROVAL			10/01/2019	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.	

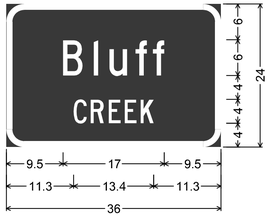
KDOT Graphics Certified 12-17-2019

Sh. No. 103

KDOT Graphics Certified

Plotted : 16-AUG-2024 10:57
Drawn By : _
File : ka577201pss506.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	104	161



I3/CONVENTIONAL;
3.0" Radius, 1.0" Border, White on Green;
"Bluff", C; "CREEK", C;
Table of distances between letter and object lefts

	B	l	u	f	f	
9.5	5.1	2.7	4.4	2.9	1.9	9.5

	C	R	E	E	K	
11.3	2.8	3.1	2.7	2.6	2.2	11.3

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcadd\bms\wsp-pb-us-pw-02\d0341324\ka577201psd-01.dgn

KANSAS DEPARTMENT OF TRANSPORTATION
US-81
SIGN DETAILS

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	105	161

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
2	10/01/19	Changed notes	D.D.G.	E.W.N.
1	7/23/10	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 7/01/03

FHWA APPROVAL			10/01/2019	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 12-17-2019

Sh. No. 105

KDOT Graphics Certified

Plotted : 16-AUG-2024 10:58

Drawn By : _

File : ka577201pss590.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	106	161

CONSTRUCTION SEQUENCE

PHASE	CONSTRUCTION	TRAFFIC	REMARKS
1A	Construct temporary pavement ℄ Sta. 64+52 to ℄ Sta. 65+55 & ℄ Sta. 67+60 to ℄ Sta. 68+40 Install IBS (TL-3) and Temp. Concrete Safety Barrier	Two-way traffic to be maintained on existing US-81 roadway and bridge with Flagger or Flagger & Pilot Car during daytime hours while the Traffic control items and Temporary Pavement is being constructed	Access to all adjacent properties must be maintained at all times. If drop off exists during Non-working hours, refer to KDOT spec. 805 to place 3:1 slope wedge and signs.
1B	Construct Br. No. 81-96-0.93 (162) over Bluff Creek and US-81 roadway paving from Sta. 292+00 to Sta. 298+49 Construct East 100' of the RCB at 296+60	Two-way traffic to be maintained on existing US-81 roadway and bridge	Access to all adjacent properties must be maintained at all times
2	Construct Roadway paving from Sta. 282+60 to Sta. 292+00 and Sta. 301+52 to Sta. 315+50 Construct West 8' of the RCB at 296+60	Traffic to be carried on State detour	Access to all adjacent properties must be maintained at all times
3	Remove existing pavement and finalize grading of US-81 embankment Construct Channel Rock Vanes Slope Protection	Two-way traffic to be carried on US-81 roadway and bridge with Flagger or Flagger & Pilot Car during daytime hours while the existing pavement is removed and final grading constructed	Access to all adjacent properties must be maintained at all times

GENERAL NOTES

The traffic control requirements shown on these plans are minimum requirements only. The Engineer reserves the right to require additional or supplemental traffic control devices and implementation procedures not shown on the plans, but which may be necessary for effective traffic control.

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcadtbms\wsp-pb-us-pw-02\d0341324\ka577201rcs-01.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE

KDOT Graphics Certified 08-16-2024

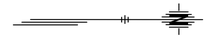
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	107	161

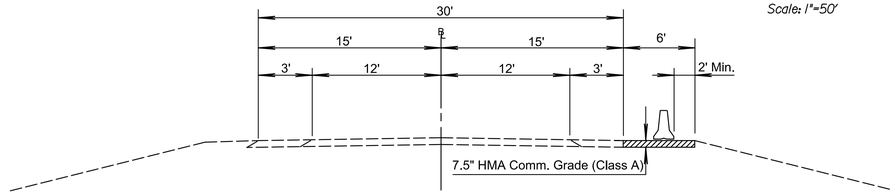
LEGEND

- Current Phase Construction
- Channelizing Device
- Direction of Traffic
- Sign
- Type F3 Temporary Concrete Safety Barrier

For Construction Phasing See Sh. 106

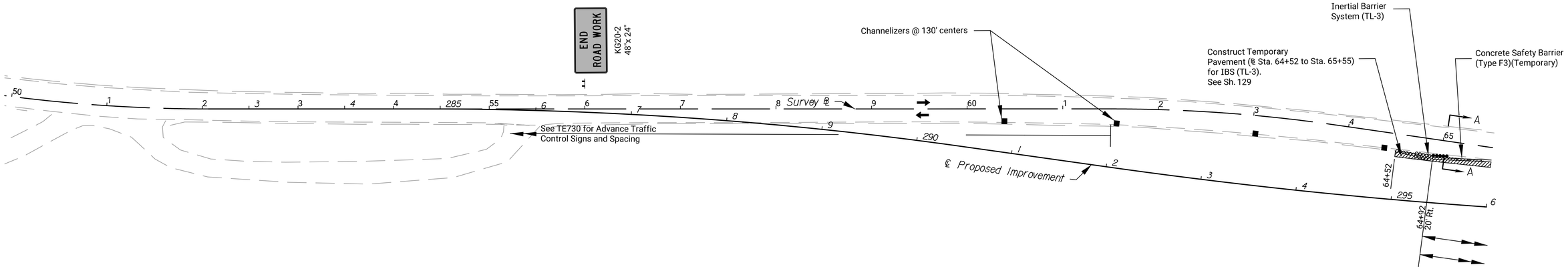


Scale: 1"=50'



SECTION A-A

NOTE: Traffic will be maintained with a Flagger or Flagger & Pilot Car in Phase 1A during daytime hours while the Traffic control items and Temporary Pavement is being constructed for use in Phase 1B. See Sh. 129



KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE

PHASE IA

STA. 282+51.65 TO STA. 296+00

Sh. No. 107

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Drawn By : __
Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rcs-02a.dgn

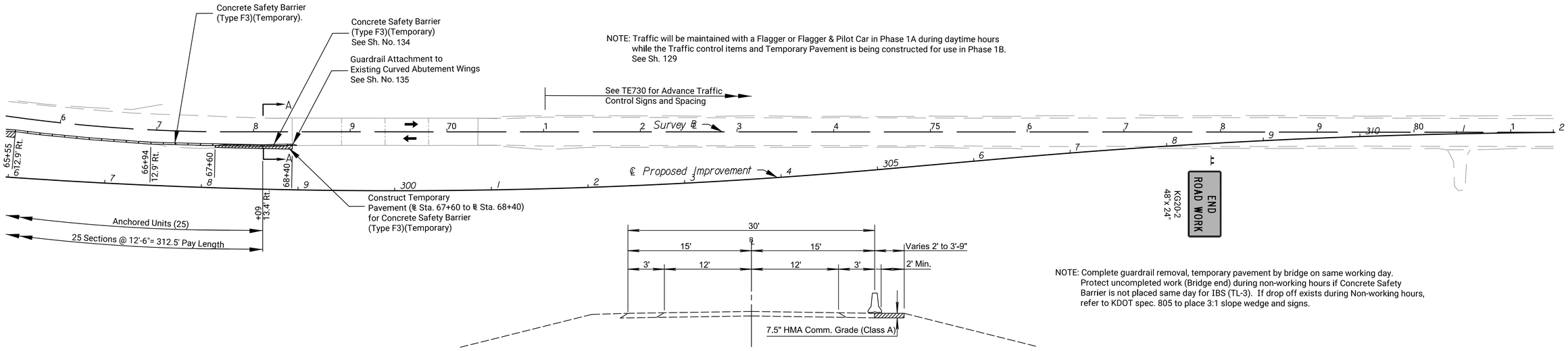
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	108	161

LEGEND

- Current Phase Construction
- Direction of Traffic
- Sign
- Type F3 Temporary Concrete Safety Barrier

For Construction Phasing See Sh. 106

Scale: 1"=50'

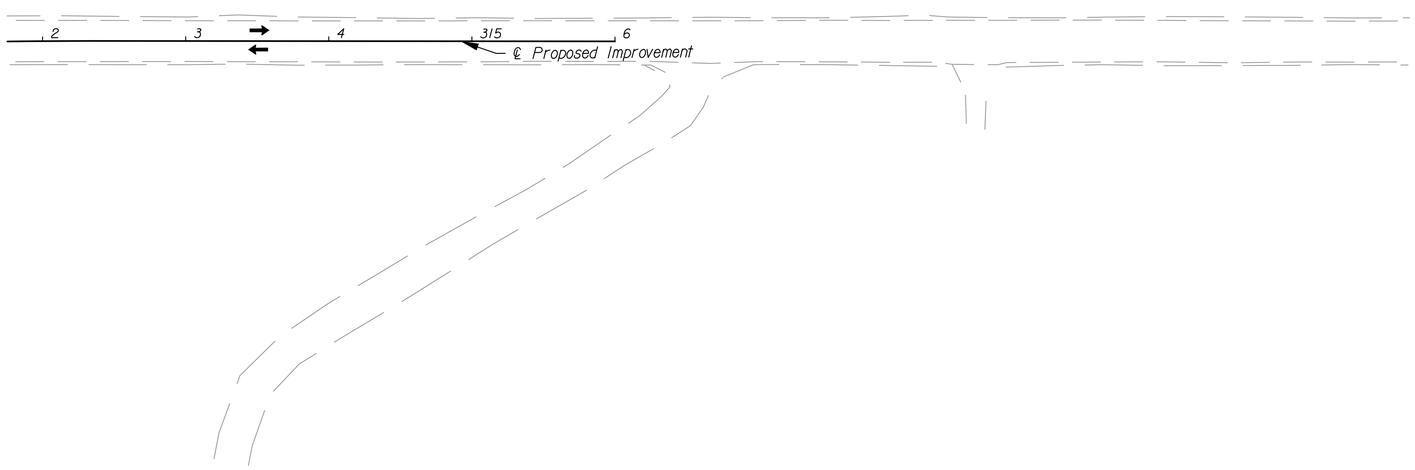


NOTE: Traffic will be maintained with a Flagger or Flagger & Pilot Car in Phase 1A during daytime hours while the Traffic control items and Temporary Pavement is being constructed for use in Phase 1B. See Sh. 129

SECTION A-A

NOTE: Complete guardrail removal, temporary pavement by bridge on same working day. Protect uncompleted work (Bridge end) during non-working hours if Concrete Safety Barrier is not placed same day for IBS (TL-3). If drop off exists during Non-working hours, refer to KDOT spec. 805 to place 3:1 slope wedge and signs.

NOTE: Traffic will be maintained with a Flagger or Flagger & Pilot Car in Phase 1A while the Traffic control items and Temporary Pavement is being constructed for use in Phase 1B. See Sh. 129



DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted : 8/16/2024
Drawn By : __
File : c:\users\bernhardt\documents\wspcadtbms\wsp-pb-us-pw-02\d0341324\ka577201rcs-02b.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE
PHASE IA
STA. 296+00 TO STA. 315+50

KDOT Graphics Certified 08-16-2024 Sh. No. 108

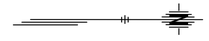
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	109	161

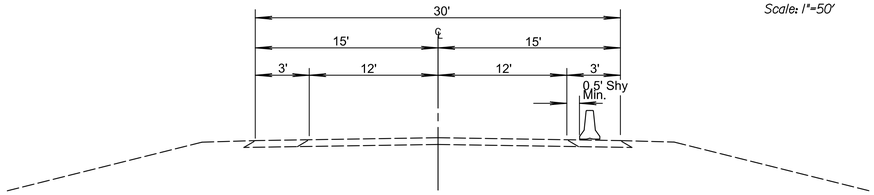
LEGEND

- Current Phase Construction
- Previous Phase Completed Pavement
- Channelizing Device
- Direction of Traffic
- Sign
- Type F3 Temporary Concrete Safety Barrier

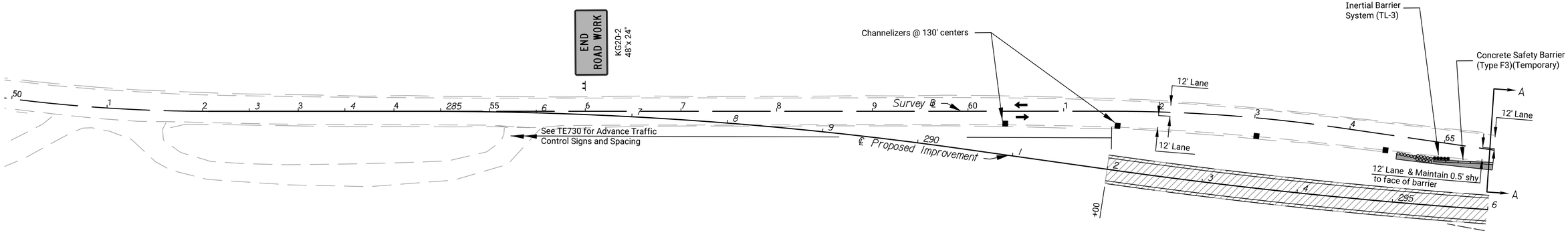
For Construction Phasing See Sh. 106



Scale: 1"=50'



SECTION A-A



KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE

PHASE IB

STA. 282+51.65 TO STA. 296+00

KDOT Graphics Certified 08-16-2024

Sh. No. 109

KDOT Graphics Certified

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

Drawn By : __

Plotted : 8/16/2024

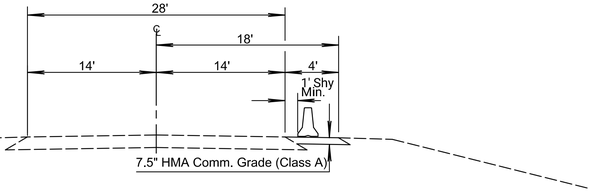
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	110	161

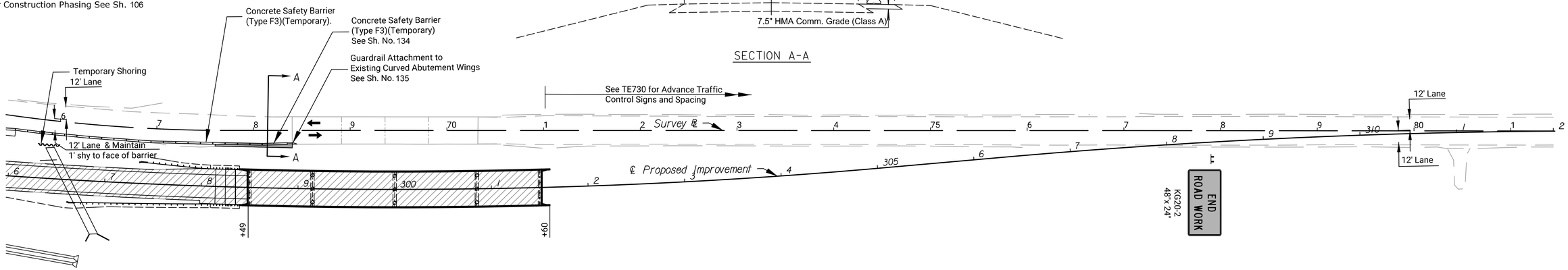
LEGEND

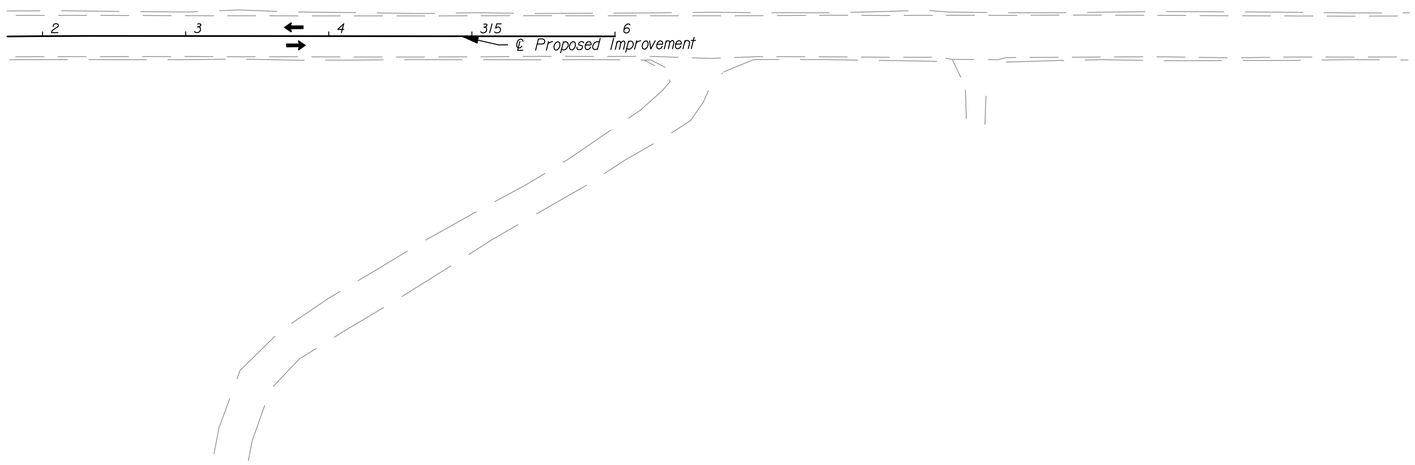
- Current Phase Construction
- Previous Phase Completed Pavement
- Direction of Traffic
- Sign
- Type F3 Temporary Concrete Safety Barrier

For Construction Phasing See Sh. 106



SECTION A-A





DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted : 8/16/2024
Drawn By : __
File : c:\users\bernhardt\documents\wspcadtbms\wsp-pb-us-pw-02\d0341324\ka577201rcs-02b_a.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE
PHASE IB
STA. 296+00 TO STA. 315+50

KDOT Graphics Certified 08-16-2024 Sh. No. 110

KDOT Graphics Certified

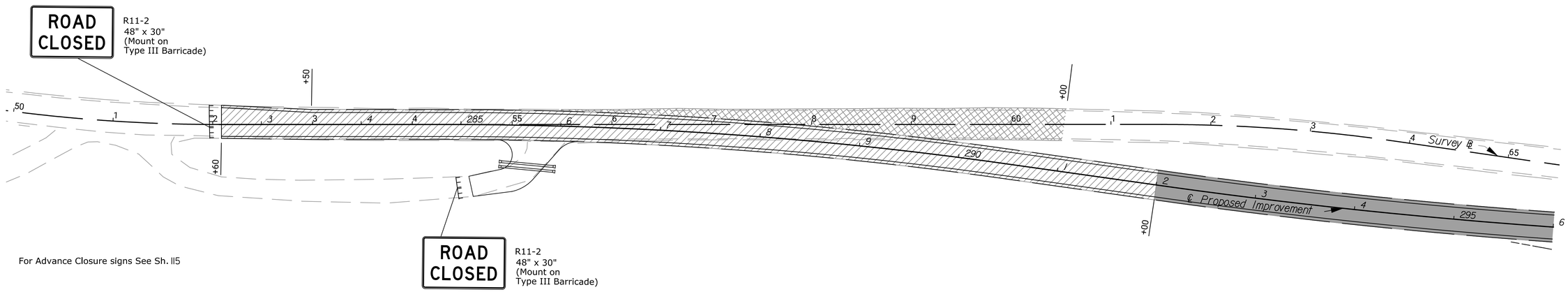
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	111	161

Scale: 1"=50'

LEGEND

- Current Phase Construction
- Pavement/Bridge Removal
- Previous Phase Completed Pavement
- Type 3 Barricades

For Construction Phasing See Sh. 106



For Advance Closure signs See Sh. 115

Note: Traffic will be carried on State Detour.
See Sht.'s 115 - 120

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE

PHASE 2

STA. 282+51.65 TO STA. 296+00

KDOT Graphics Certified 08-16-2024

Sh. No. 111

KDOT Graphics Certified

BY	DATE
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rcs-03a.dgn

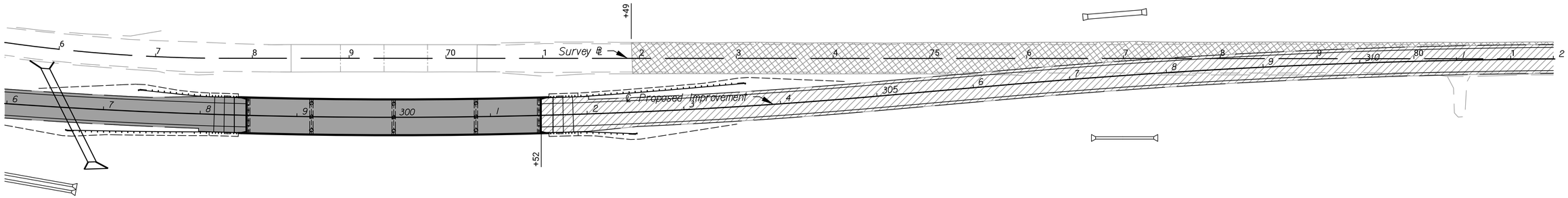
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	112	161

LEGEND

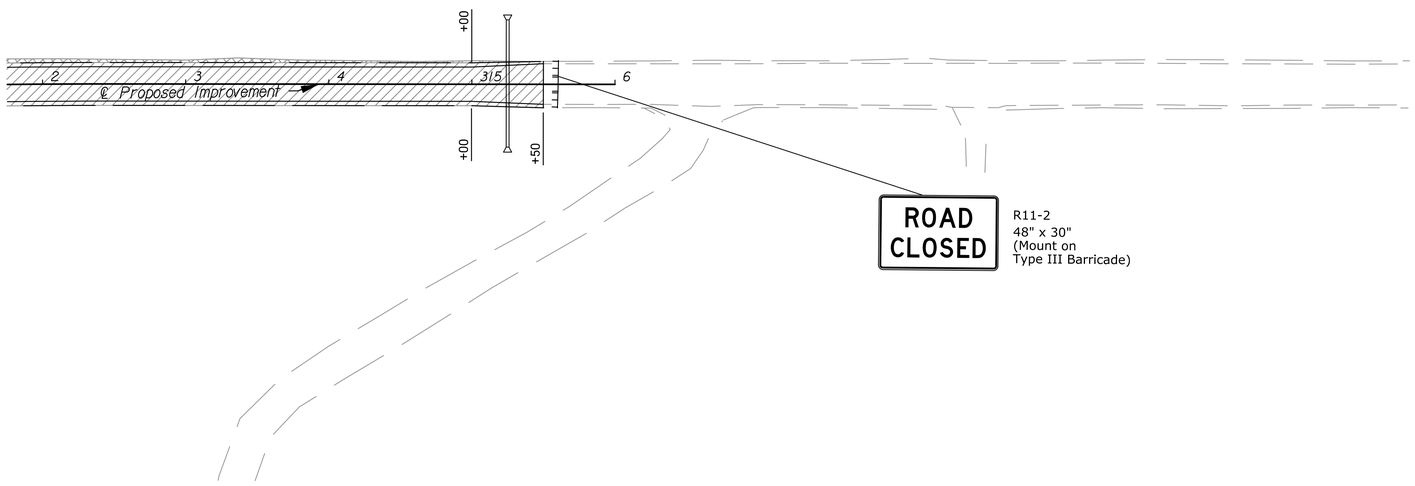
- Current Phase Construction
- Pavement/Bridge Removal
- Previous Phase Completed Pavement
- Type 3 Barricades

For Construction Phasing See Sh. 106

Scale: 1"=50'



For Advance Closure signs See Sh. 115



R11-2
48" x 30"
(Mount on
Type III Barricade)

Note: Traffic will be carried on State Detour.
See Sht.'s 115 - 120

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE

PHASE 2

STA. 296+00 TO STA. 315+50

KDOT Graphics Certified 08-16-2024 Sh. No. 112

KDOT Graphics Certified

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted : 8/16/2024

Drawn By : __

File : c:\users\bernhardt\documents\wspcadtbms\wsp-pb-us-pw-02\d0341324\ka577201rcs-03b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	113	161

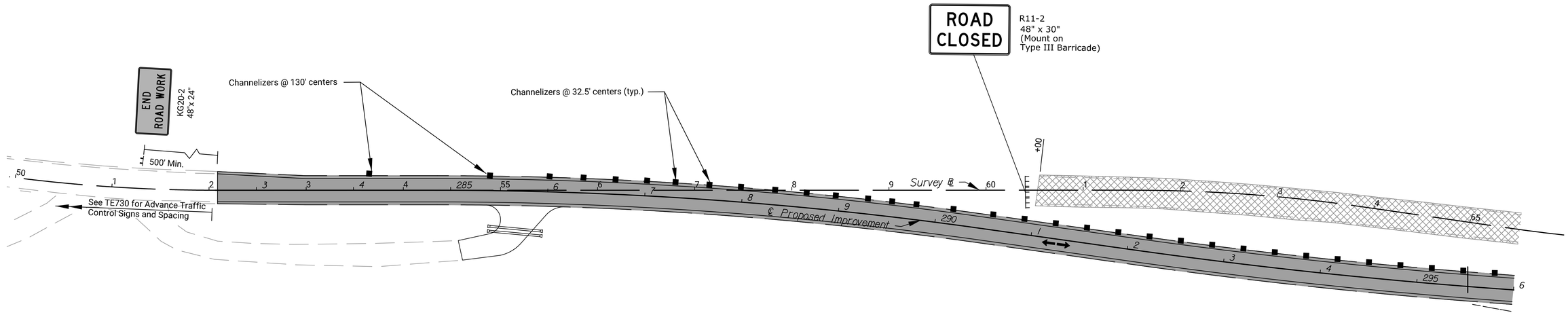
Scale: 1"=50'

LEGEND

- Pavement/Bridge Removal
- Previous Phase Completed Pavement
- Type 3 Barricades
- Channelizing Device
- Direction of Traffic
- Sign

For Construction Phasing See Sh. 106

NOTE: Traffic will be maintained with a Flagger or Flagger & Pilot Car in Phase 3 while the existing pavement is being removed and final grading is constructed. See Sh. 129



KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE

PHASE 3

STA. 282+51.65 TO STA. 296+00

KDOT Graphics Certified 08-16-2024

Sh. No. 113

KDOT Graphics Certified

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

Drawn By: : __
Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rcs-04a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	114	161

LEGEND

Pavement/Bridge Removal

Previous Phase Completed Pavement

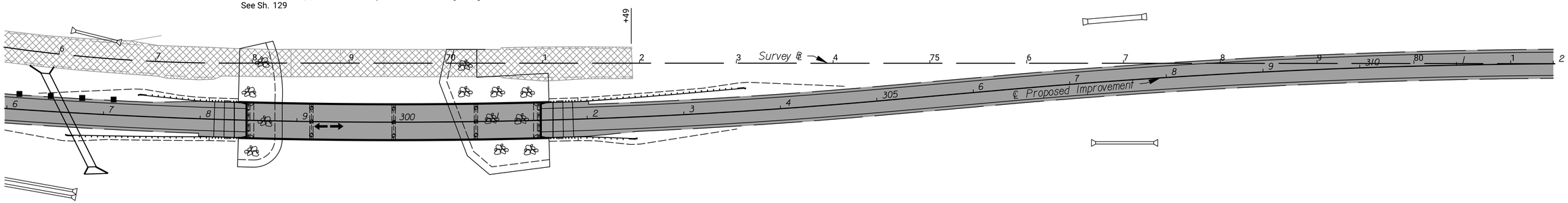
Direction of Traffic

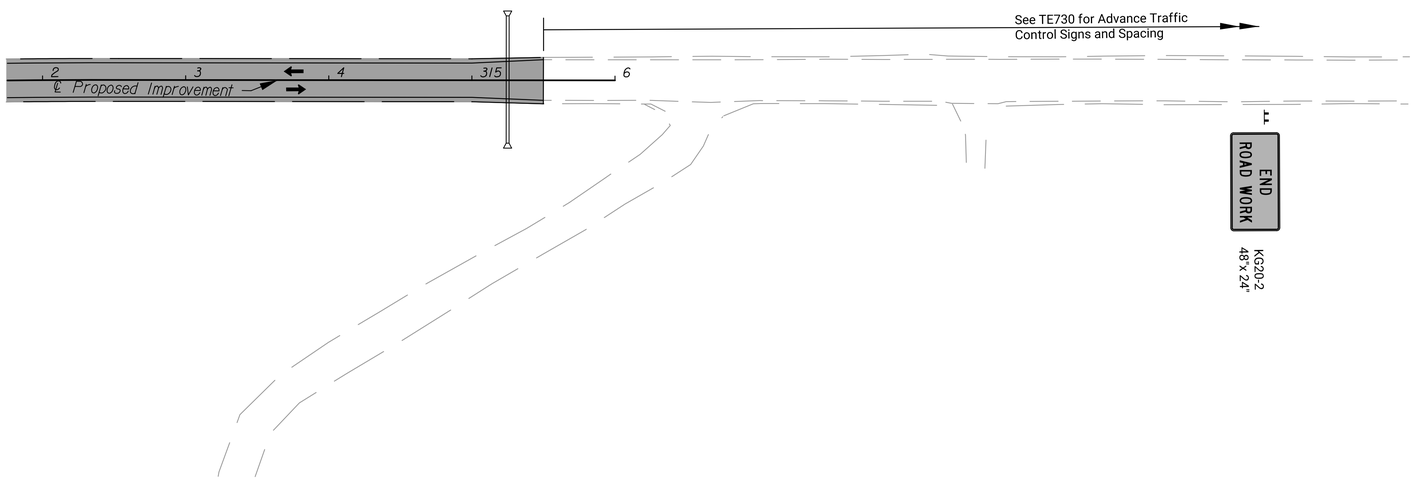
Sign

For Construction Phasing See Sh. 106

Scale: 1"=50'

NOTE: Traffic will be maintained with a Flagger or Flagger & Pilot Car in Phase 3 while the existing pavement is being removed and final grading is constructed. See Sh. 129





DATE

BY

REFERENCES NOTED

REFERENCES CHECKED

Plotted : 8/16/2024

Drawn By : __

File : c:\users\bernhardt\documents\wspcadd\bms\wsp-pb-us-pw-02\d0341324\ka577201rcs-04b.dgn

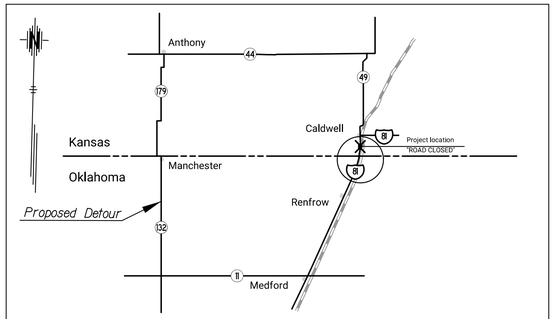
KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCE

PHASE 3

STA. 296+00 TO STA. 315+50

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	115	161



STATE ROUTE DETOUR

The detour shall be on K-49, K-44, K-179, O-132 and O-11.
(Not to Scale)

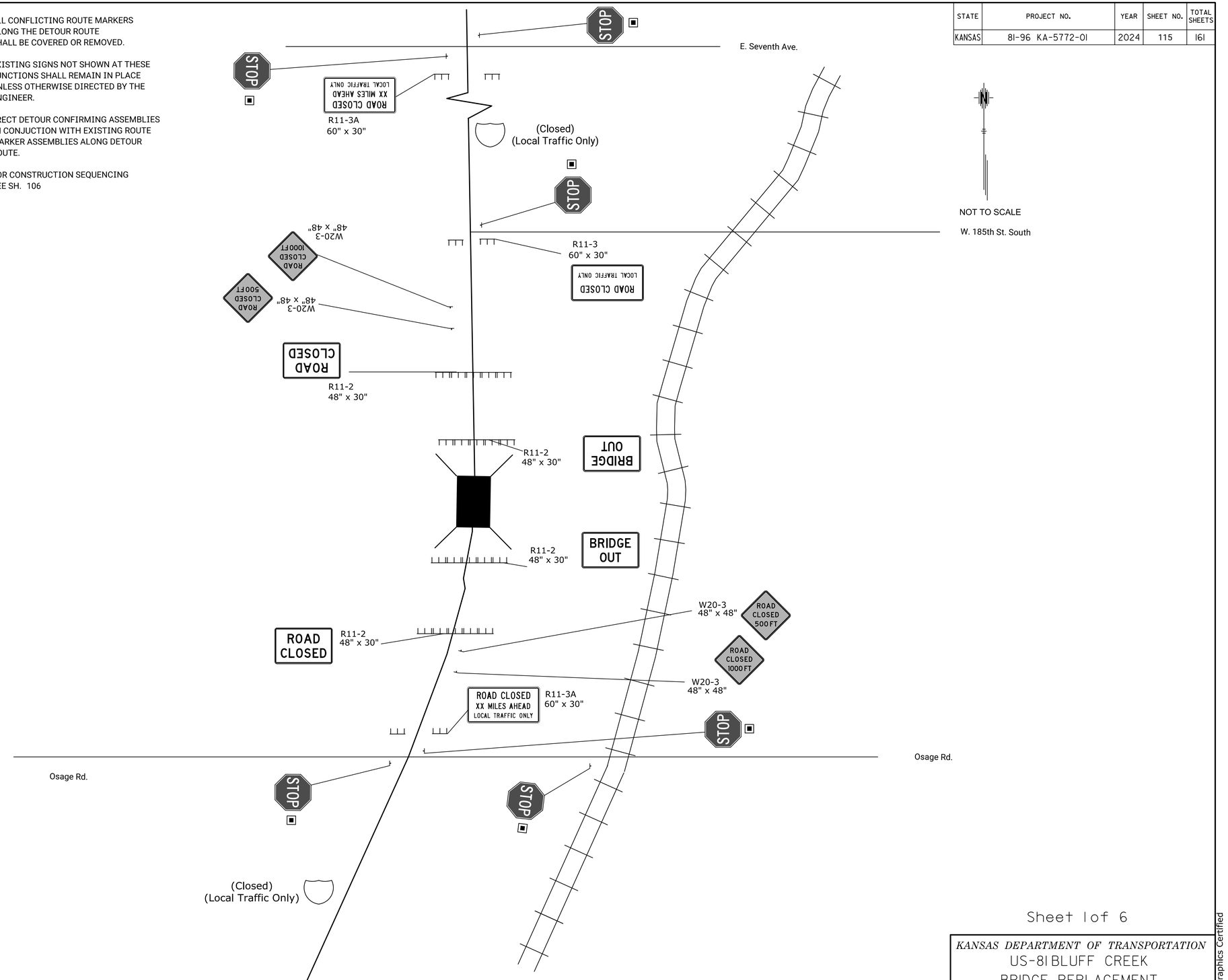
NOTE: CIRCLE ON MAP DENOTES LOCATION OF DETAILED AREA.

ALL CONFLICTING ROUTE MARKERS ALONG THE DETOUR ROUTE SHALL BE COVERED OR REMOVED.

EXISTING SIGNS NOT SHOWN AT THESE JUNCTIONS SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ERECT DETOUR CONFIRMING ASSEMBLIES IN CONJUCTION WITH EXISTING ROUTE MARKER ASSEMBLIES ALONG DETOUR ROUTE.

FOR CONSTRUCTION SEQUENCING SEE SH. 106



NOT TO SCALE

W. 185th St. South

LEGEND

- Type III Barricades
- Existing Sign
- Type A Low Intensity Warning Light

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201cdt-01.dgn

Sheet 1of 6

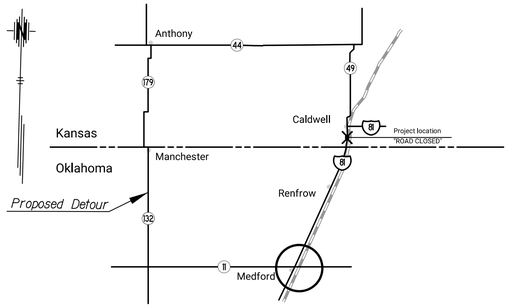
KANSAS DEPARTMENT OF TRANSPORTATION
US-81 BLUFF CREEK
BRIDGE REPLACEMENT
DETOUR

KDOT Graphics Certified 08-16-2024

Sheet No. 115

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	116	161



STATE ROUTE DETOUR

The detour shall be on K-49, K-44, K-179, O-132 and O-11.
(Not to Scale)

NOTE: CIRCLE ON MAP DENOTES LOCATION OF DETAILED AREA.

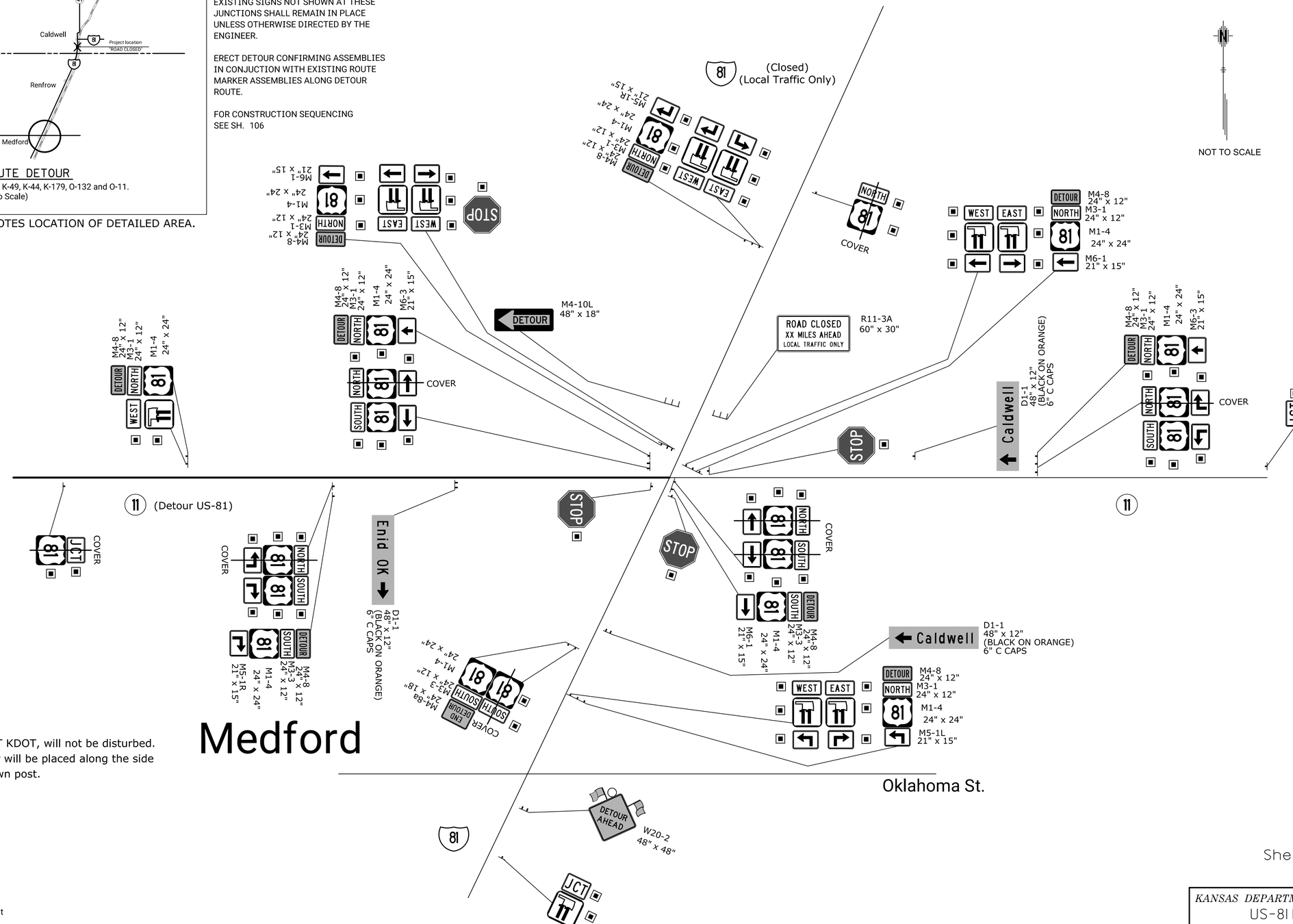
ALL CONFLICTING ROUTE MARKERS ALONG THE DETOUR ROUTE SHALL BE COVERED OR REMOVED.

EXISTING SIGNS NOT SHOWN AT THESE JUNCTIONS SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ERECT DETOUR CONFIRMING ASSEMBLIES IN CONJUCTION WITH EXISTING ROUTE MARKER ASSEMBLIES ALONG DETOUR ROUTE.

FOR CONSTRUCTION SEQUENCING SEE SH. 106

NOT TO SCALE



NOTE: Signs or posts that are NOT KDOT, will not be disturbed. Any signs needed for detour will be placed along the side of existing signs, with it's own post.

LEGEND

- Type III Barricades
- Existing Sign
- Type A Low Intensity Warning Light

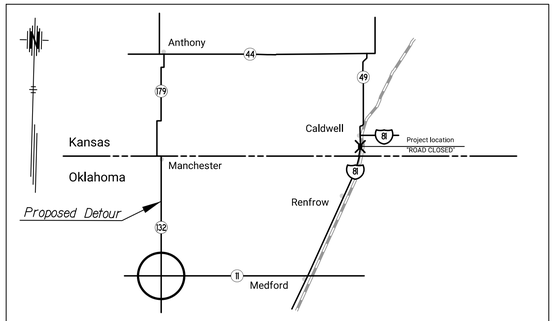
DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

Plotted : 8/16/2024
Date: $DATE$
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Sheet 2 of 6

KANSAS DEPARTMENT OF TRANSPORTATION
US-81 BLUFF CREEK
BRIDGE REPLACEMENT
DETOUR

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	117	161



STATE ROUTE DETOUR

The detour shall be on K-49, K-44, K-179, O-132 and O-11.
(Not to Scale)

NOTE: CIRCLE ON MAP DENOTES LOCATION OF DETAILED AREA.

ALL CONFLICTING ROUTE MARKERS ALONG THE DETOUR ROUTE SHALL BE COVERED OR REMOVED.

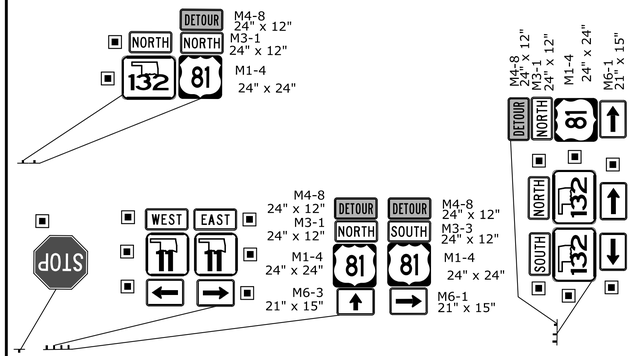
EXISTING SIGNS NOT SHOWN AT THESE JUNCTIONS SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

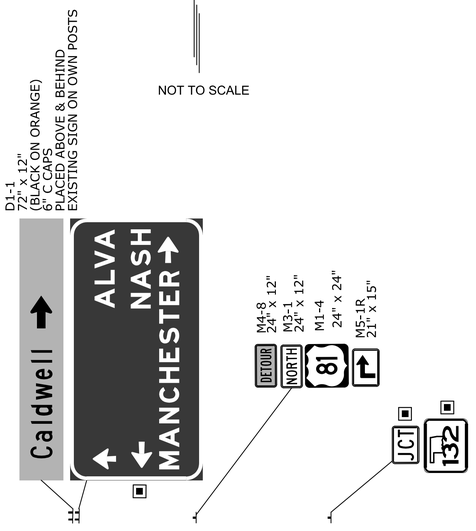
ERECT DETOUR CONFIRMING ASSEMBLIES IN CONJUCTION WITH EXISTING ROUTE MARKER ASSEMBLIES ALONG DETOUR ROUTE.

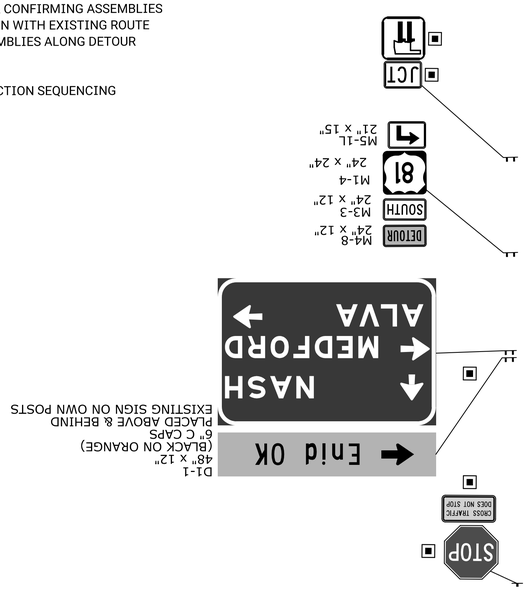
FOR CONSTRUCTION SEQUENCING SEE SH. 106

NOT TO SCALE

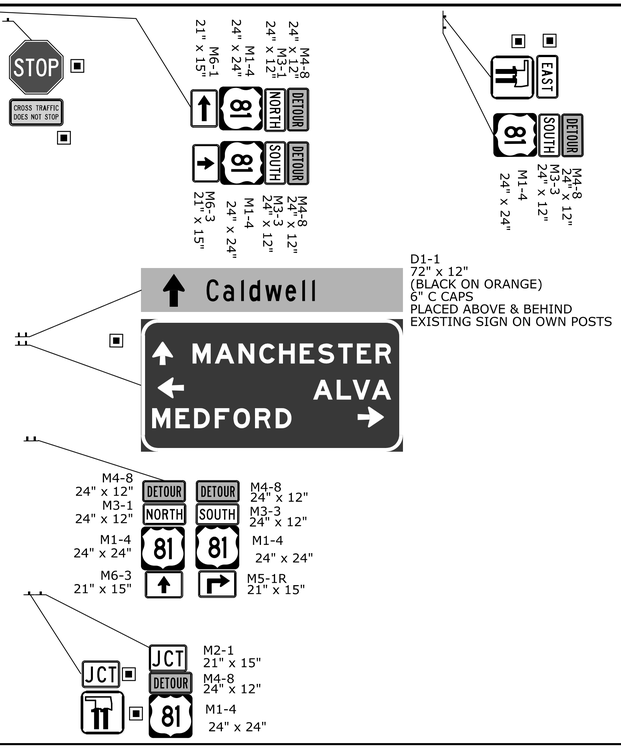
132 (Detour US-81)

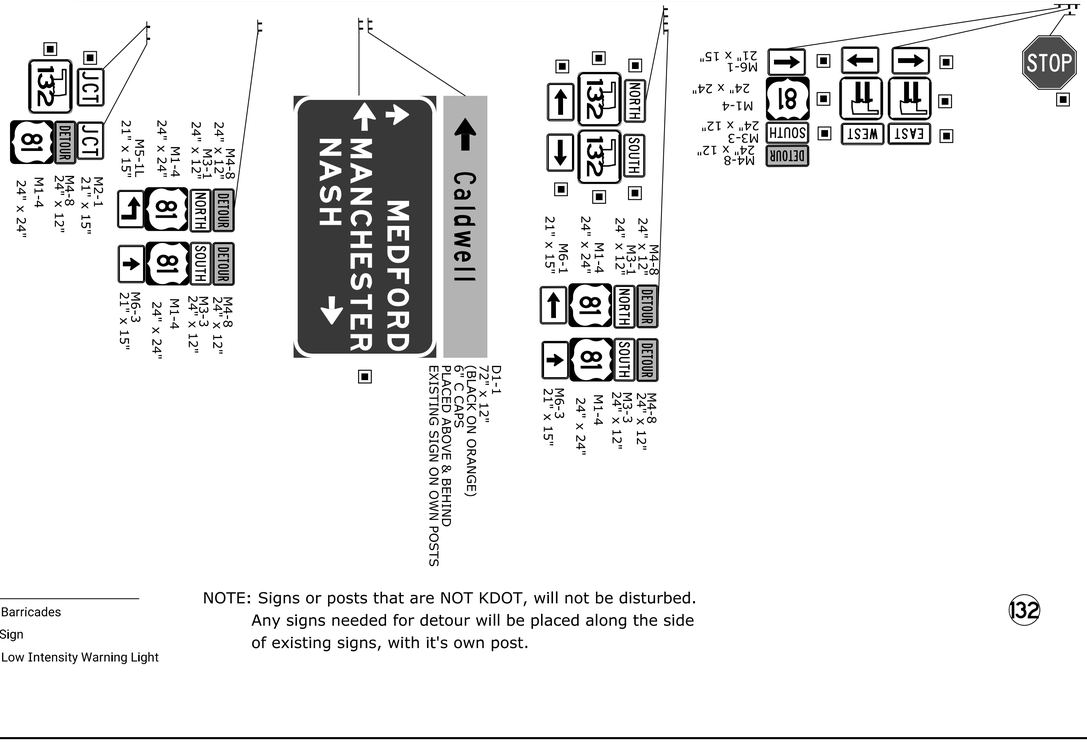




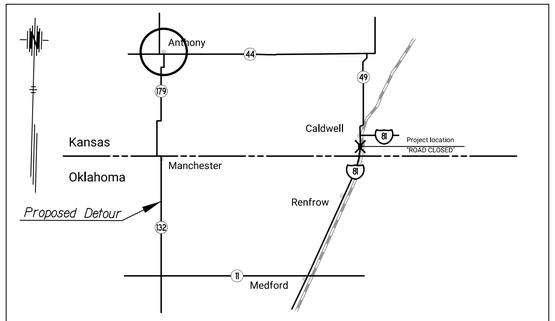


11 (Detour US-81)




JCT
132
81
DETOUR
M2-1 21" x 15"
M4-8 24" x 12"
M1-4 24" x 24"
M5-1L 21" x 15"
NORTH
SOUTH
M3-3 24" x 12"
M6-3 21" x 15"
MEDFORD
MANCHESTER
NASH
Caldwell
D1-1
72" x 12"
(BLACK ON ORANGE)
6" C CAPS
PLACED ABOVE & BEHIND
EXISTING SIGN ON OWN POSTS
M6-1 21" x 15"
M1-4 24" x 24"
M3-1 24" x 12"
M4-8 24" x 12"
M6-1 21" x 15"
M5-1R 21" x 15"
M6-1 21" x 15"
M1-4 24" x 24"
M3-3 24" x 12"
M4-8 24" x 12

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	118	161



STATE ROUTE DETOUR

The detour shall be on K-49, K-44, K-179, O-132 and O-11.
(Not to Scale)

NOTE: CIRCLE ON MAP DENOTES LOCATION OF DETAILED AREA.

ALL CONFLICTING ROUTE MARKERS ALONG THE DETOUR ROUTE SHALL BE COVERED OR REMOVED.

EXISTING SIGNS NOT SHOWN AT THESE JUNCTIONS SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ERECT DETOUR CONFIRMING ASSEMBLIES IN CONJUCTION WITH EXISTING ROUTE MARKER ASSEMBLIES ALONG DETOUR ROUTE.

FOR CONSTRUCTION SEQUENCING SEE SH. 106

NOT TO SCALE

Anthony

N Jennings Ave.

2

M4-8 24" x 12"
M3-3 24" x 12"
M1-4 24" x 24"
M6-1 21" x 15"
DETOUR SOUTH 81
44
179

TO 2 14 44 179 END
DETOUR NORTH 81
M4-8 24" x 12"
M3-1 24" x 12"
M1-4 24" x 24"
M6-1 21" x 15"

D1-1
48" X 12"
(BLACK ON ORANGE)
6" C CAPS
PLACED ABOVE & BEHIND
EXISTING SIGN ON OWN POSTS

Enid OK
HARPER
MANCHESTER OK

M4-8 24" x 12"
M3-3 24" x 12"
M1-4 24" x 24"
M5-1L 21" x 15"
DETOUR SOUTH 81
JCT 179

44 (Detour US-81)

81 DETOUR NORTH
M4-8 24" x 12"
M3-1 24" x 12"
M1-4 24" x 24"

179 44
81 DETOUR NORTH
M6-3 21" x 15"
M4-8 24" x 12"
M3-1 24" x 12"
M1-4 24" x 24"
81 DETOUR SOUTH
M6-1 21" x 15"
M4-8 24" x 12"
M3-3 24" x 12"
M1-4 24" x 24"

HARPER
CALDWELL

DETOUR NORTH 81
M4-8 24" x 12"
M3-1 24" x 12"
M1-4 24" x 24"
M5-1R 21" x 15"
JCT 44

81 DETOUR SOUTH
M4-8 24" x 12"
M3-3 24" x 12"
M1-4 24" x 24"
179

179 DETOUR SOUTH 81
M4-8 24" x 12"
M3-3 24" x 12"
M1-4 24" x 24"

Enid OK
JCT K-49
MANCHESTER OK

D1-1
48" X 12"
(BLACK ON ORANGE)
6" C CAPS
PLACED ABOVE & BEHIND
EXISTING SIGN ON OWN POSTS

JCT 179 DETOUR SOUTH 81
M4-8 24" x 12"
M1-4 24" x 24"

81 DETOUR NORTH
M6-3 21" x 15"
M4-8 24" x 12"
M3-1 24" x 12"
M1-4 24" x 24"
81 DETOUR SOUTH
M6-1 21" x 15"
M4-8 24" x 12"
M3-3 24" x 12"
M1-4 24" x 24"
M5-1R 21" x 15"

179 (Detour US-81)

LEGEND

- Type III Barricades
- Existing Sign
- Type A Low Intensity Warning Light

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

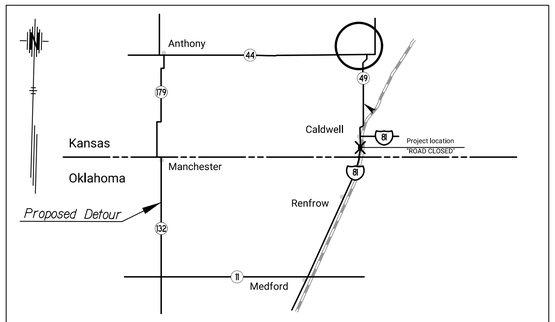
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Date: $DATE$
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Sheet 4 of 6

KANSAS DEPARTMENT OF TRANSPORTATION
US-81 BLUFF CREEK
BRIDGE REPLACEMENT
DETOUR

Sheet No. 118

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	119	161



STATE ROUTE DETOUR

The detour shall be on K-49, K-44, K-179, O-132 and O-11.
(Not to Scale)

NOTE: CIRCLE ON MAP DENOTES LOCATION OF DETAILED AREA.

ALL CONFLICTING ROUTE MARKERS ALONG THE DETOUR ROUTE SHALL BE COVERED OR REMOVED.

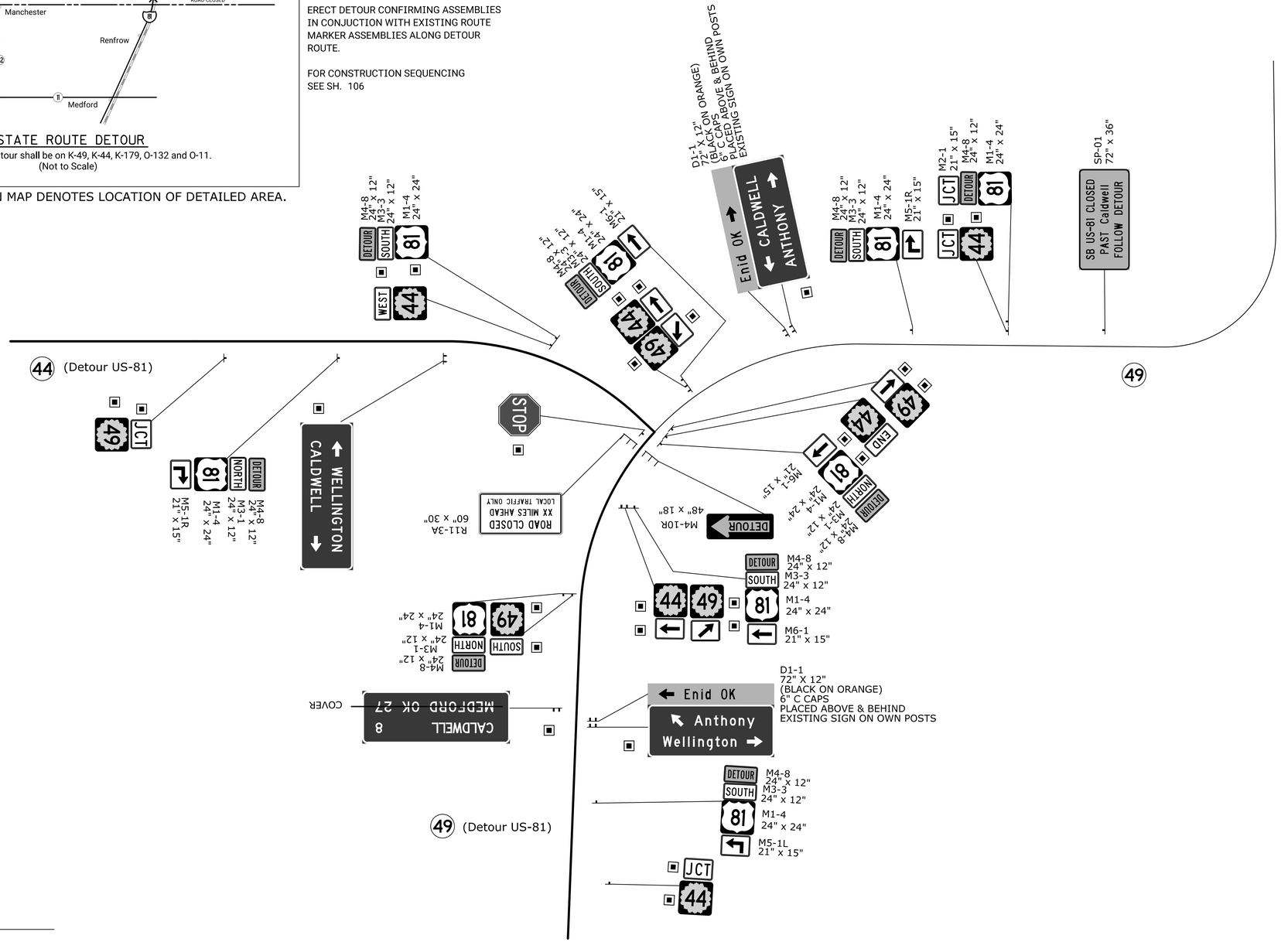
EXISTING SIGNS NOT SHOWN AT THESE JUNCTIONS SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ERECT DETOUR CONFIRMING ASSEMBLIES IN CONJUCTION WITH EXISTING ROUTE MARKER ASSEMBLIES ALONG DETOUR ROUTE.

FOR CONSTRUCTION SEQUENCING SEE SH. 106

NOTE: Coordinate Detour Route with KDOT project 81-96 KA-5768-01, US-81 over Spring Creek.
If the construction schedules align and the detours for US-81 are in use at the same time, they will overlap on K-49 between K-44 and US-81.
If detours are in use at the same time, Traffic will be maintained using NW leg (North on K-49 and East on US-160 to Wellington) of detour for 81-96 KA-5768-01.

NOT TO SCALE



LEGEND

- Type III Barricades
- Existing Sign
- Type A Low Intensity Warning Light

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

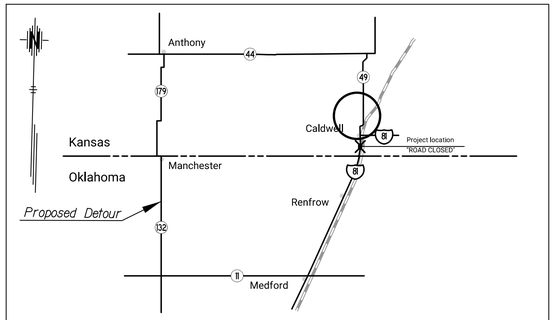
Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201cdt-05.dgn

Sheet 5 of 6

KANSAS DEPARTMENT OF TRANSPORTATION
US-81 BLUFF CREEK
BRIDGE REPLACEMENT
DETOUR

Sheet No. 119

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	120	161



STATE ROUTE DETOUR

The detour shall be on K-49, K-44, K-179, O-132 and O-11.
(Not to Scale)

NOTE: CIRCLE ON MAP DENOTES LOCATION OF DETAILED AREA.

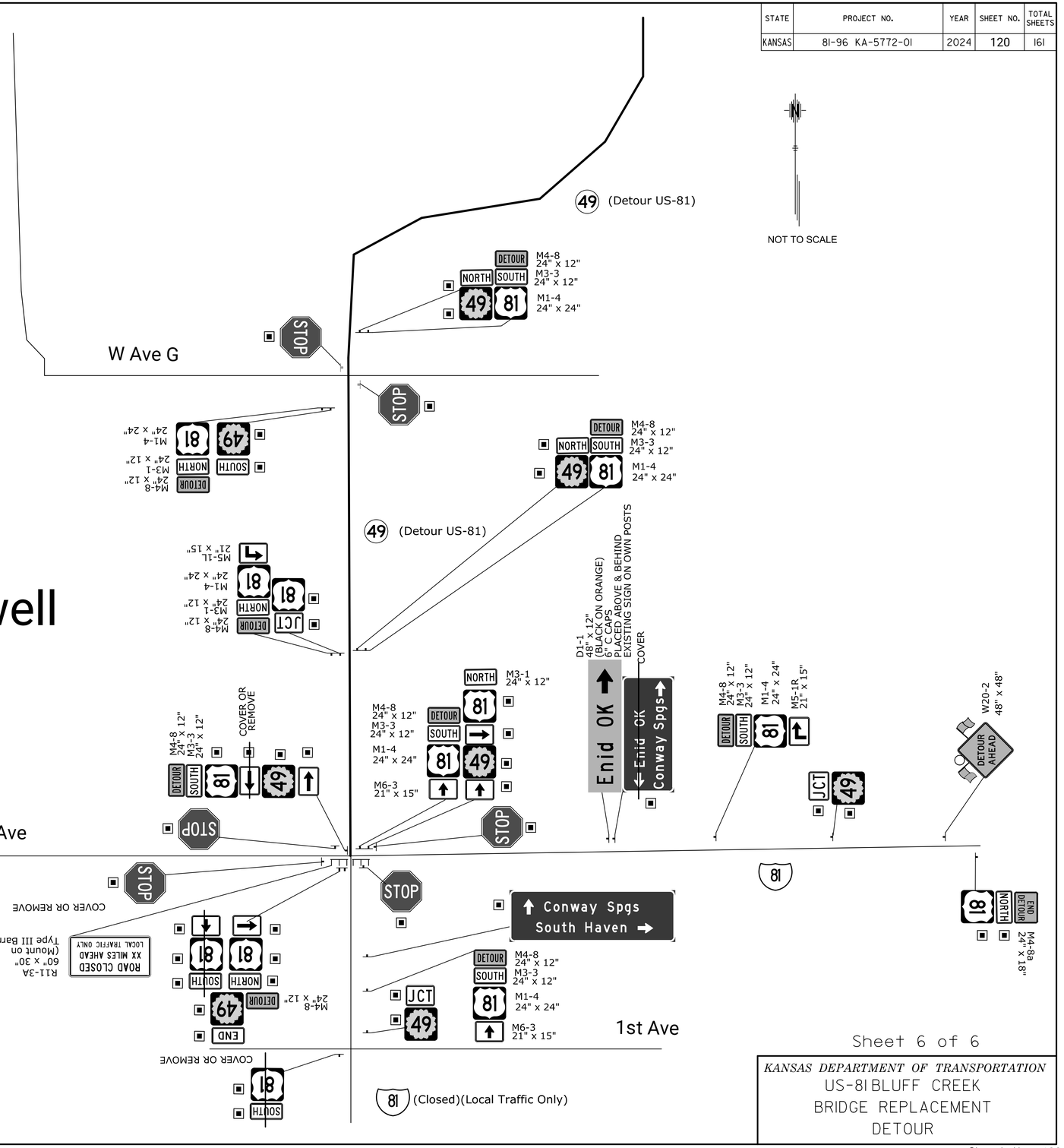
ALL CONFLICTING ROUTE MARKERS ALONG THE DETOUR ROUTE SHALL BE COVERED OR REMOVED.

EXISTING SIGNS NOT SHOWN AT THESE JUNCTIONS SHALL REMAIN IN PLACE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

ERECT DETOUR CONFIRMING ASSEMBLIES IN CONJUCTION WITH EXISTING ROUTE MARKER ASSEMBLIES ALONG DETOUR ROUTE.

FOR CONSTRUCTION SEQUENCING
SEE SH. 106

NOTE: Coordinate Detour Route with KDOT project 81-96 KA-5768-01, US-81 over Spring Creek.
If the construction schedules align and the detours for US-81 are in use at the same time, they will overlap on K-49 between K-44 and US-81.
If detours are in use at the same time, Traffic will be maintained using NW leg (North on K-49 and East on US-160 to Wellington) of detour for 81-96 KA-5768-01.



LEGEND

- Type III Barricades
- Existing Sign
- Type A Low Intensity Warning Light

NOT TO SCALE

Sheet 6 of 6

KANSAS DEPARTMENT OF TRANSPORTATION
US-81 BLUFF CREEK
BRIDGE REPLACEMENT
DETOUR

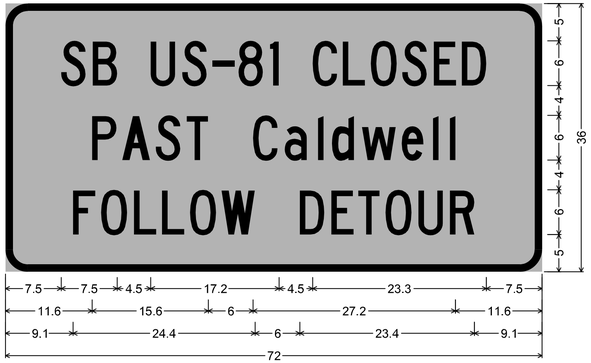
Sheet No. 120

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201cdt-06.dgn

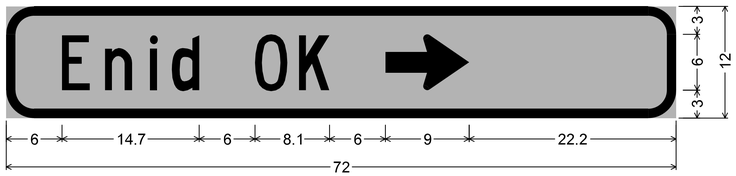
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	2-4 KA-5706-01	2023	121	108

SP-01



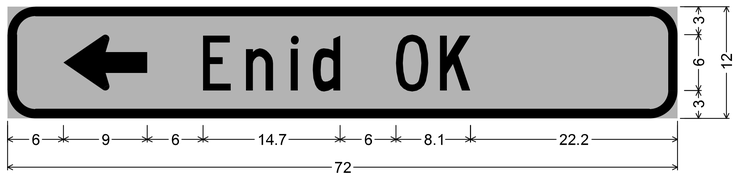
SP-01/CONVENTIONAL/3 LINE;
3.0" Radius, 1.0" Border, Black on Orange;
"SB US-81 CLOSED", C 75% spacing; "PAST Caldwell", C 75% spacing;
"FOLLOW DETOUR", C 75% spacing;
Table of distances between letter and object lefts

7.5	S 4.2	B 7.8	U 4.2	S 4.1	- 3.5	8 4.2	1 5.7	C 4.1	L 3.7	O 4.2	S 4.3	E 3.7	D 3.3	7.5
11.6	P 4.1	A 4.5	S 4.0	T 9.0	C 4.3	a 4.3	l 2.0	d 4.0	w 5.4	e 4.1	l 2.2	l 0.9	11.6	
9.1	F 3.7	O 4.5	L 3.7	L 3.8	O 4.2	W 10.5	D 4.2	E 3.5	T 3.8	O 4.4	U 4.2	R 3.3	9.1	



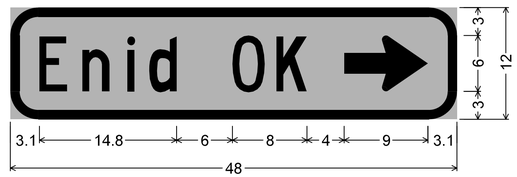
D1-1/CONVENTIONAL/1 LINE;
3.0" Radius, 1.0" Border, Black on Orange;
"Enid OK", C; Standard Arrow Custom 9.0" X 6.0" 0°;
Table of distances between letter and object lefts

6.0	E 4.6	n 4.8	i 2.4	d 8.9	O 4.8	K 9.3	→ 9.0	22.2



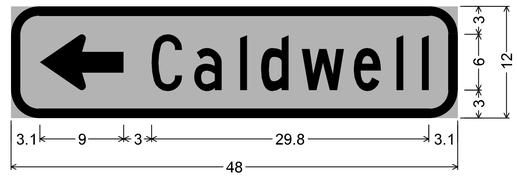
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Table of distances between letter and object lefts

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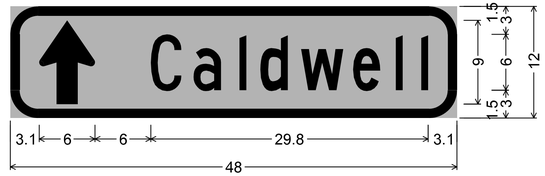
D1-1/CONVENTIONAL/1 LINE;
3.0" Radius, 1.0" Border, Black on Orange;
"Enid OK", C; Standard Arrow Custom 9.0" X 6.0" 0°;
Table of distances between letter and object lefts

3.1	E 4.6	n 4.9	i 2.3	d 9.0	O 4.7	K 7.3	→ 9.0	3.1



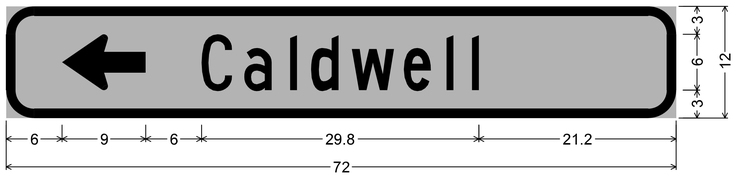
D1-1/CONVENTIONAL/1 LINE;
3.0" Radius, 1.0" Border, Black on Orange;
Standard Arrow Custom 9.0" X 6.0" 180°; "Caldwell", C;
Table of distances between letter and object lefts

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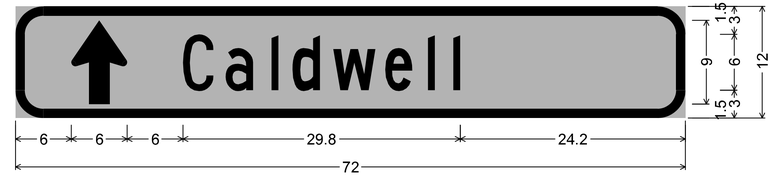
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3.0" Radius, 1.0" Border, Black on Orange;
Standard Arrow Custom 9.0" X 6.0" 90°; "Caldwell", C;
Table of distances between letter and object lefts

3.1	↑ 12.0	C 4.6	a 4.8	l 2.4	d 4.3	w 5.6	e 4.5	l 2.8	l 0.8	3.1



D1-1/CONVENTIONAL/1 LINE;
3.0" Radius, 1.0" Border, Black on Orange;
Standard Arrow Custom 9.0" X 6.0" 180°; "Caldwell", C;
Table of distances between letter and object lefts

6.0	← 15.0	C 4.6	a 4.8	l 2.4	d 4.3	w 5.6	e 4.5	l 2.8	l 0.8	21.2



D1-1/CONVENTIONAL/1 LINE;
3.0" Radius, 1.0" Border, Black on Orange;
Standard Arrow Custom 9.0" X 6.0" 90°; "Caldwell", C;
Table of distances between letter and object lefts

6.0	↑ 12.0	C 4.6	a 4.8	l 2.4	d 4.3	w 5.6	e 4.5	l 2.8	l 0.8	24.2

KANSAS DEPARTMENT OF TRANSPORTATION

DETOUR
SIGN DETAILS

Sheet No. 121

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201cdt-SP01.dgn

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

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

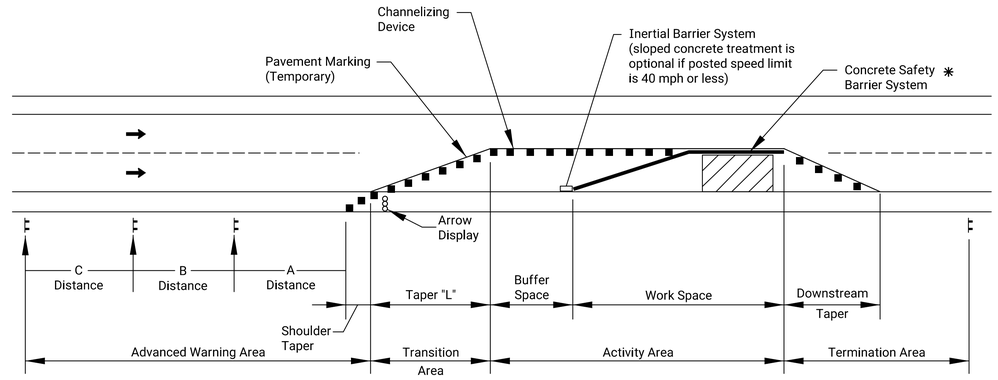
3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that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

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

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

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	122	161



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
3				
2	03/13/18	W8-15p usage changed to Shall	R.W.B.	E.G.K.
1	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.

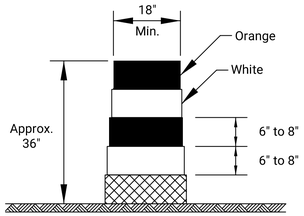
KDOT Graphics Certified 03-13-2018

Sh. No. 122

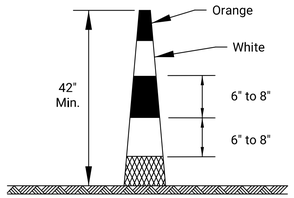
KDOT Graphics Certified

Plotted : 16-AUG-2024 11:01
Drawn By : __
File : ka577201css700.dgn

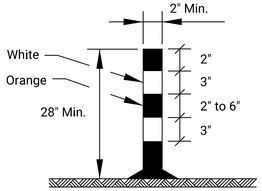
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	123	161



DRUM

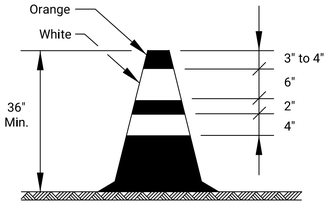


CONICAL DELINEATOR

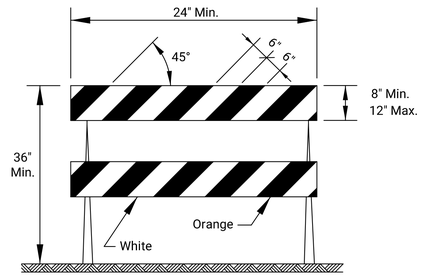


TUBULAR MARKER

Striping as shown for up to 42".

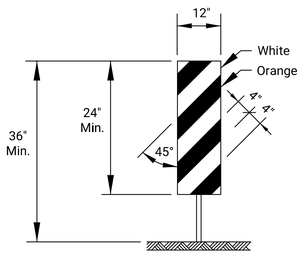


TRAFFIC CONE



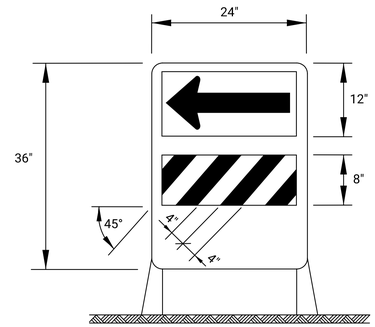
TYPE 2 BARRICADE

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



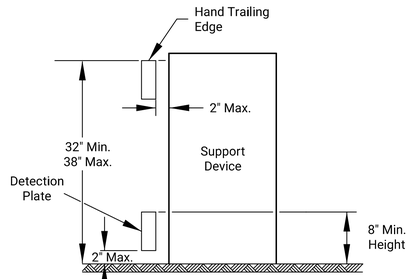
VERTICAL PANEL

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
3				
2				
1				

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 03-29-2018

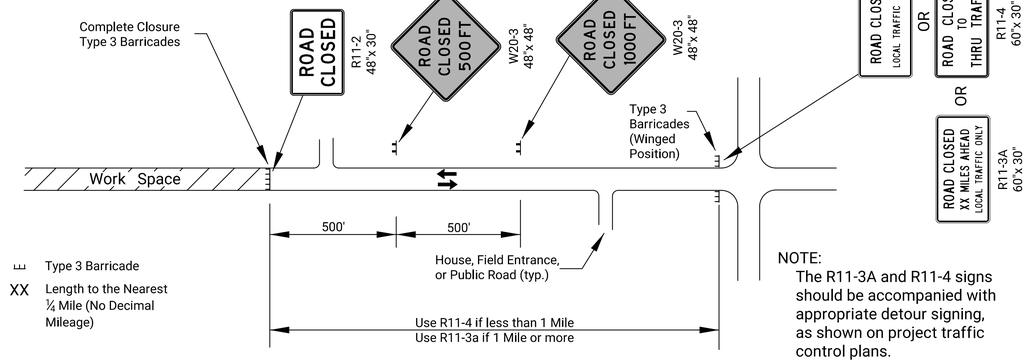
Sh. No. 123

KDOT Graphics Certified

Plotted : 16-AUG-2024 11:01
Drawn By: __
File : ka577201css702.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	124	161

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)

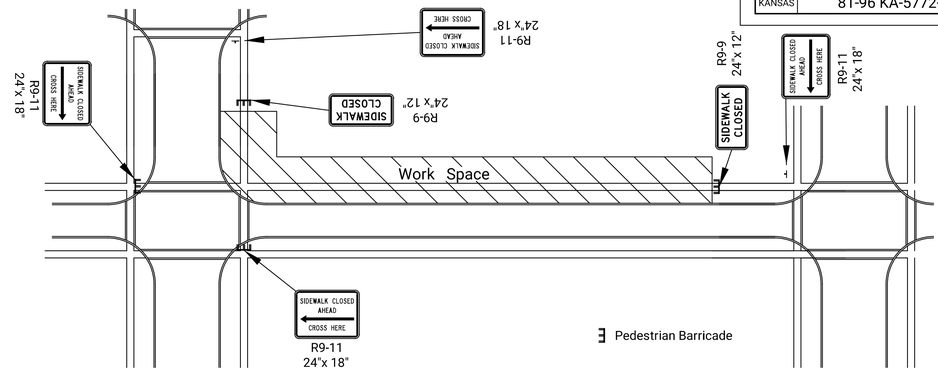


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE

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

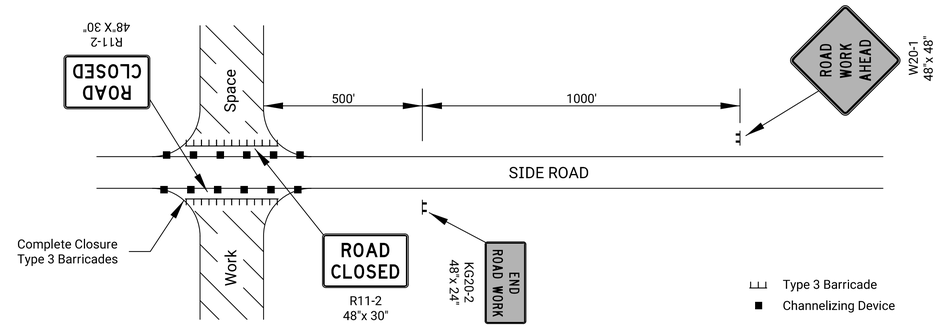


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

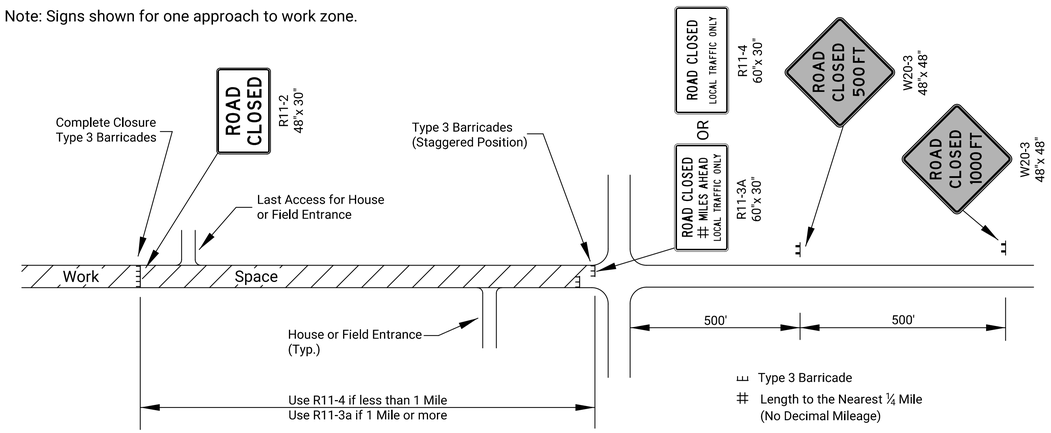
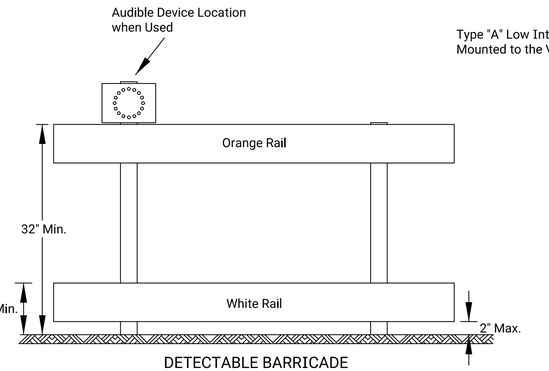
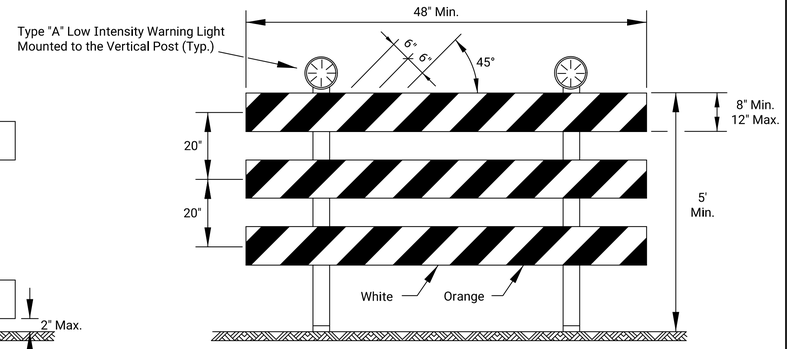


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS



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
3				
2				
1				

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 03-29-2018

Sh. No. 124

KDOT Graphics Certified

Plotted :16-AUG-2024 11:01

Drawn By: _
File : ka577201css704.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	125	161

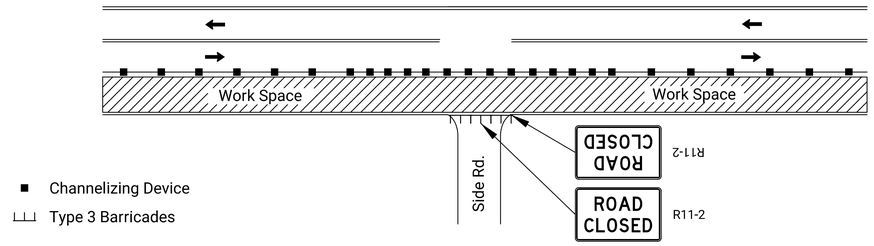


FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

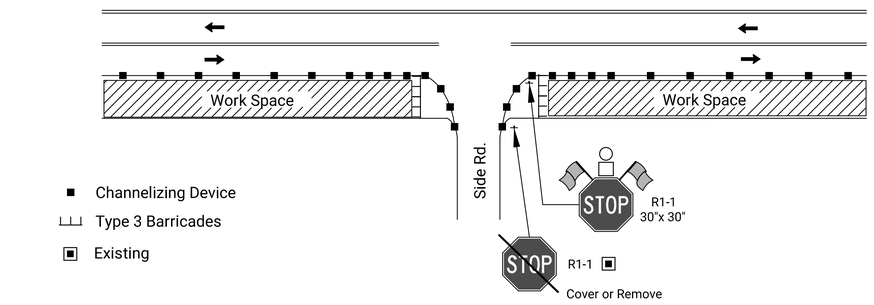


FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

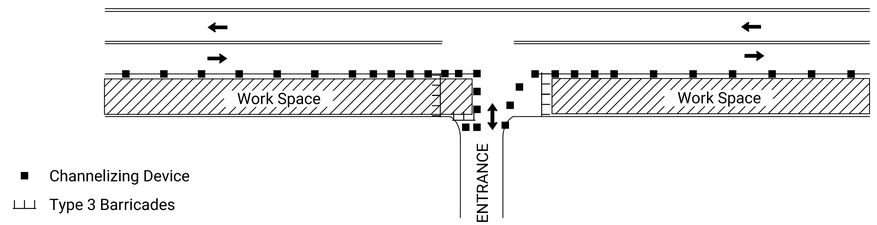


FIGURE 3: LOW VOLUME ENTRANCE CONTRUCTED HALF AT A TIME

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

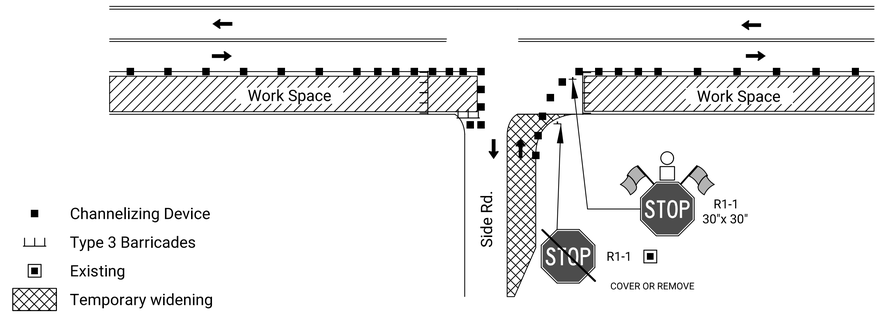


FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME: TWO WAY TRAFFIC REQUIRED

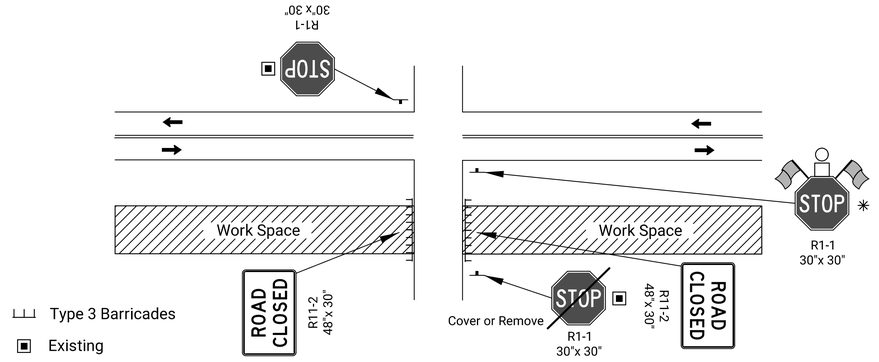


FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY

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 03-29-2018

Sh. No. 125

KDOT Graphics Certified

Plotted : 16-AUG-2024 11:01
Drawn By : __
File : ka577201css705.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	126	161

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"

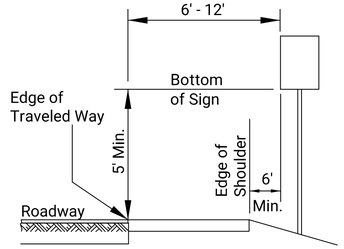
UNEVEN LANES
W8-11
Std. Size Expwy/Freeway: 8" D, 48"x 48"

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	Uppercase: 10" D
Lowercase: 4.5" C	Lowercase: 8" D

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

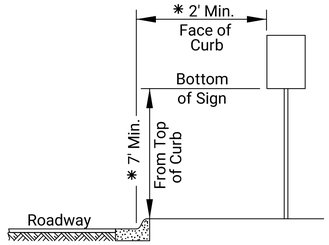


RURAL

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

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

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



URBAN

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

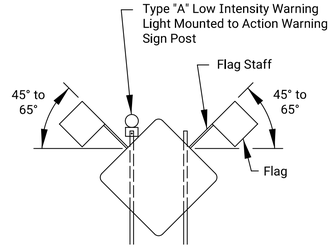
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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

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

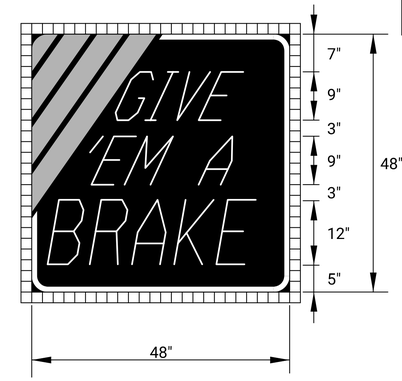
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

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



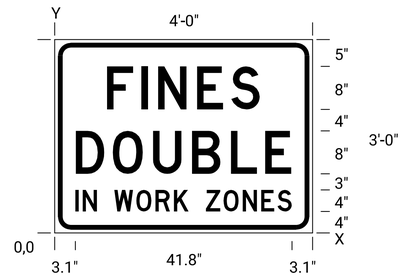
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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



KI-104a

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



KI-105a

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

Dimensions in inches — Spacings are to start of next letter

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

Notes:

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN INFORMATION

TE710

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

KDOT Graphics Certified 03-29-2018

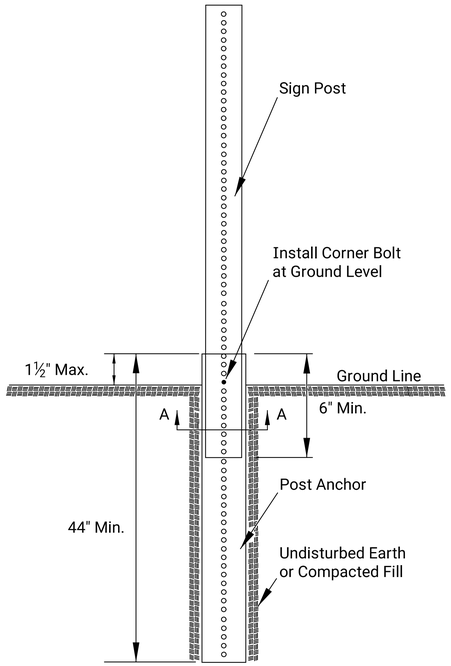
KDOT Graphics Certified

Sh. No. 126

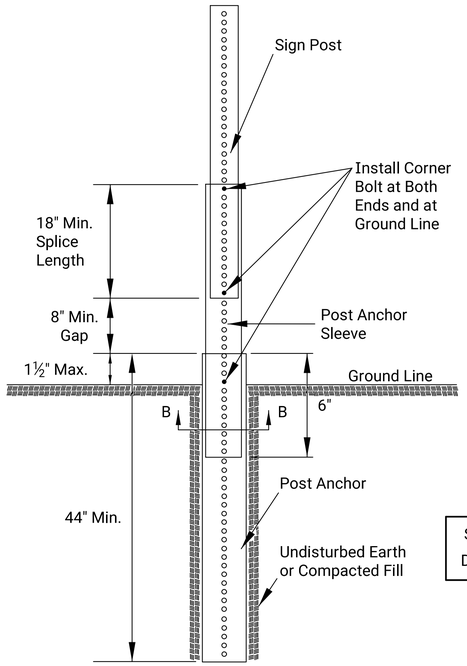
Plotted : 16-AUG-2024 11:01
Drawn By : _
File : ka577201css710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	127	161

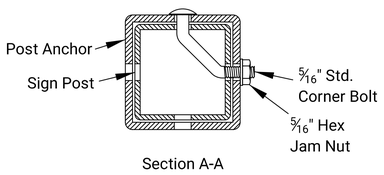
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



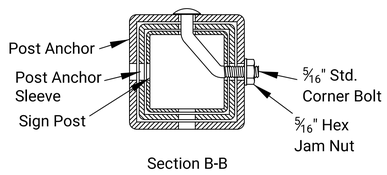
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

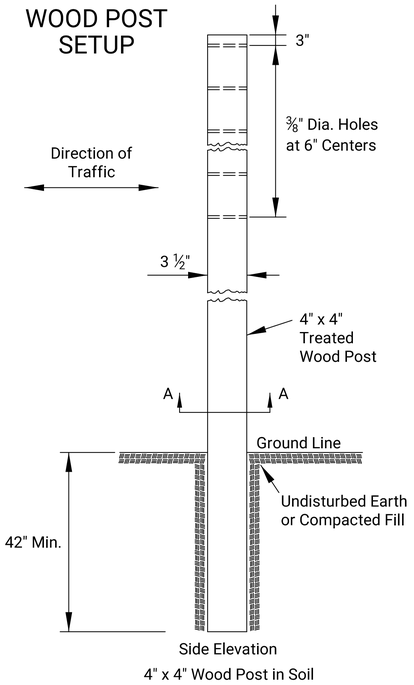


Section B-B

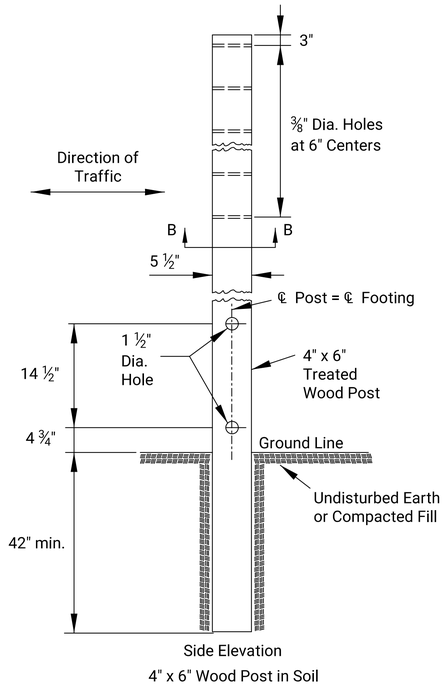
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

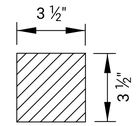
WOOD POST SETUP



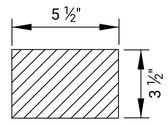
Side Elevation
4" x 4" Wood Post in Soil



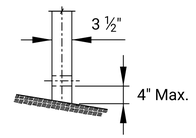
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



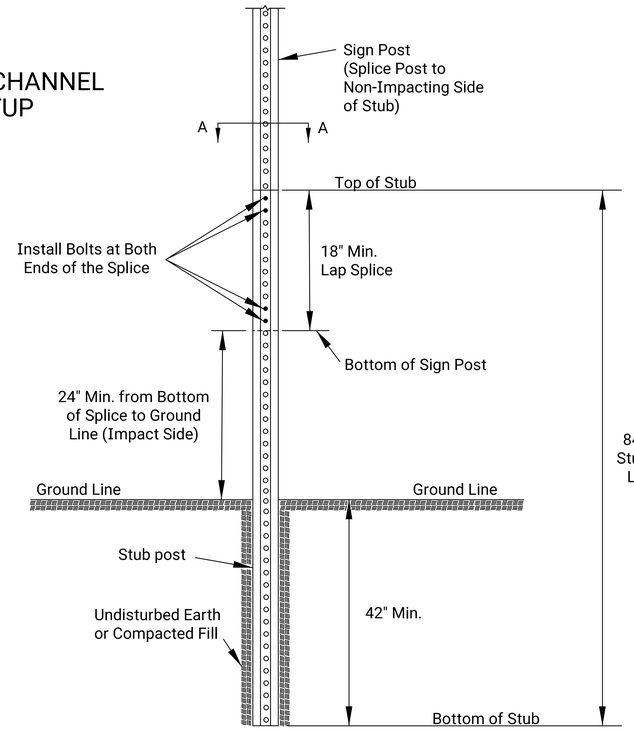
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

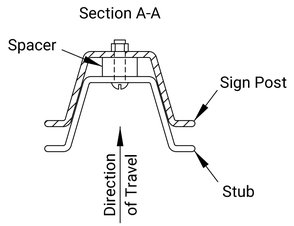
3 LB/F U-CHANNEL SETUP



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
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

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

KDOT Graphics Certified 03-29-2018

KDOT Graphics Certified

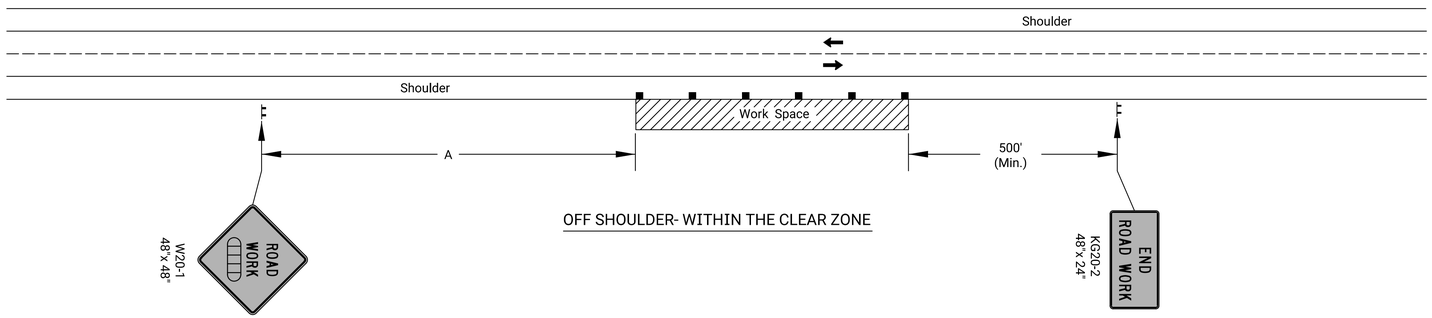
Sh. No. 127

Plotted : 16-AUG-2024 11:01

Drawn By : —

File : ka577201css712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	128	161

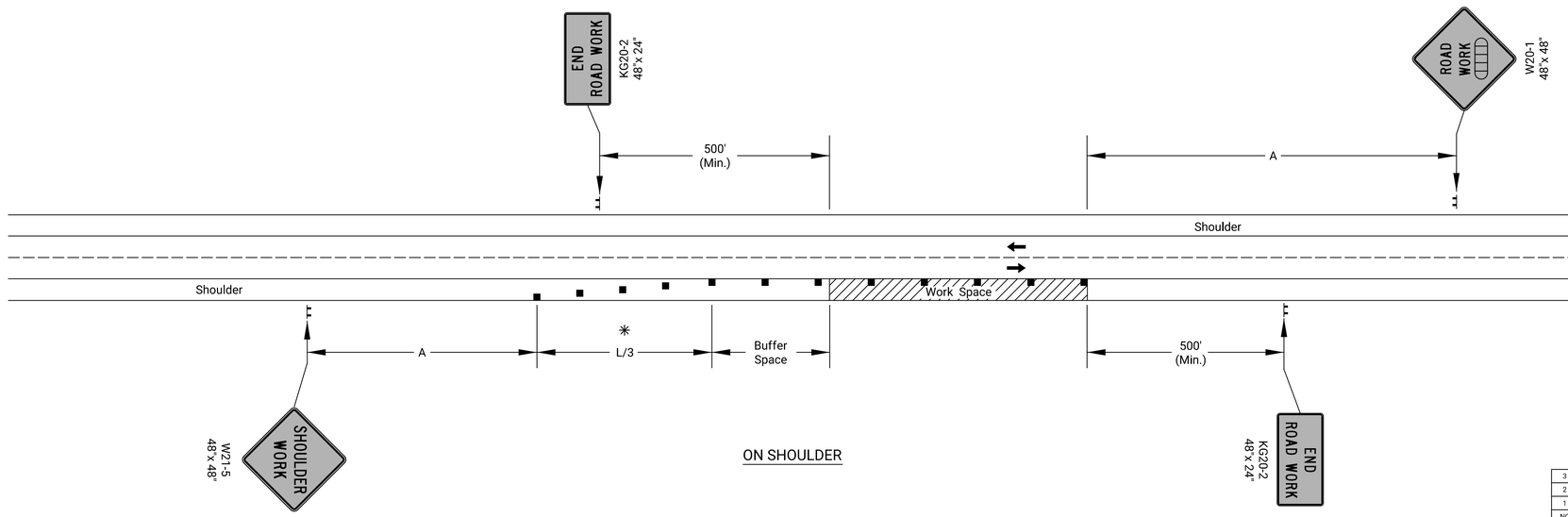


OFF SHOULDER- WITHIN THE CLEAR ZONE

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
3				
2				
1				

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 03-29-2018

Sh. No. 128

KDOT Graphics Certified

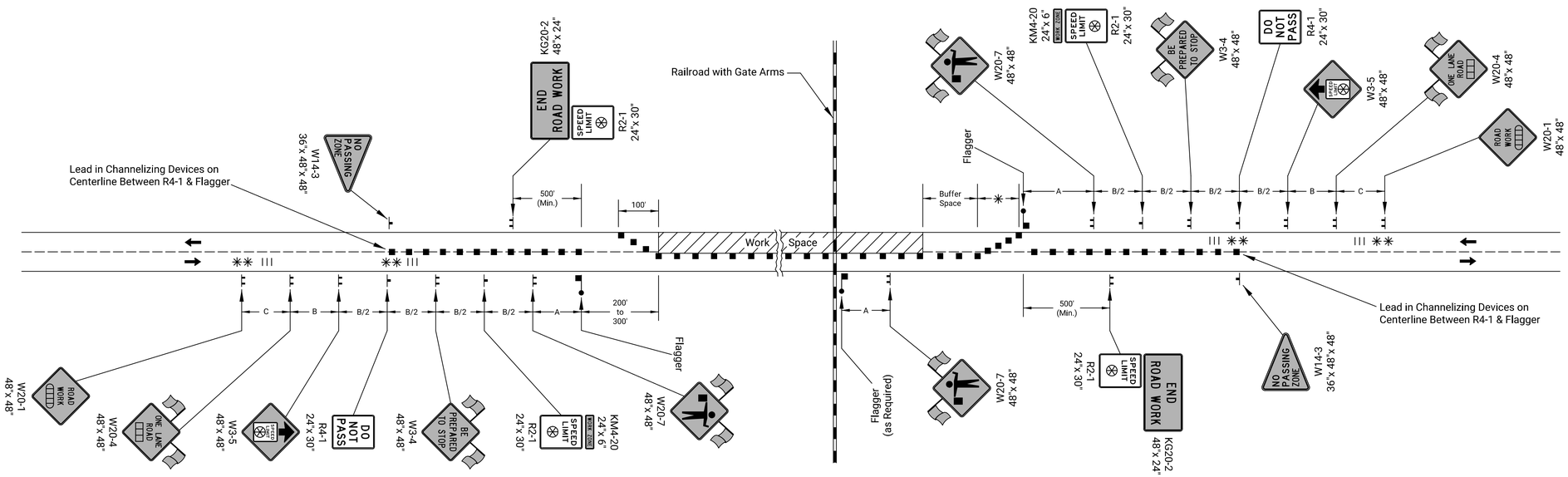
Plotted : 16-AUG-2024 11:02

Drawn By: __

File : ka577201css720.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	129	161

FLAGGER



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.

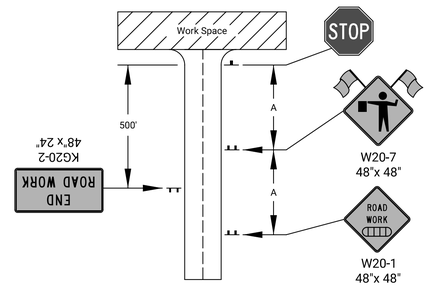
∗∗ Optional rumble strips may be placed: One set between the W20-1 and W20-4, and one set between the R4-1 and W3-4, on each approach.

△ Not required on substantial maintenance projects (1R).

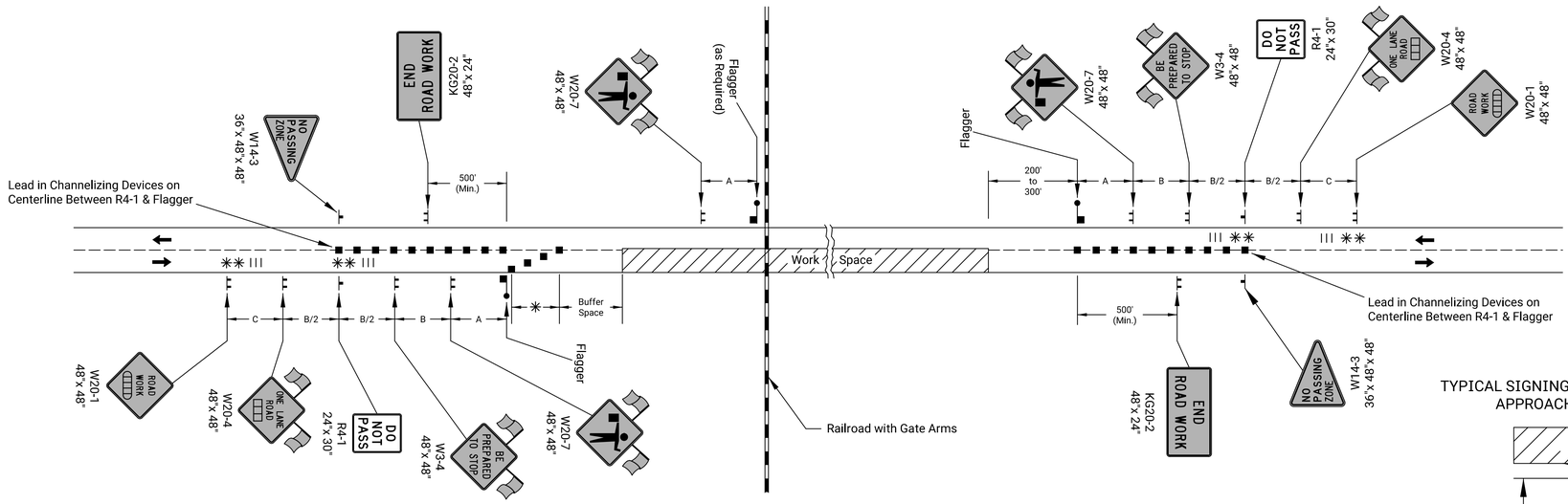
△△ The KG20-5 (WAIT FOR PILOT CAR) sign shall be mounted on an approved portable support and not attached to the existing stop sign post.

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

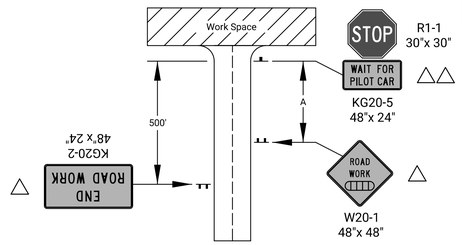


FLAGGER AND PILOT CAR



■ 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

TYPICAL SIGNING FOR A MINOR SIDE ROAD APPROACH TO WORK SPACE



NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

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 03-29-2018

Sh. No. 129

Plotted : 16-AUG-2024 11:02
Drawn By : _
File : ka577201css730.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	130	161

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

Work Zone Sign (Special)		
Sign No.	16.25 Sq.Ft. & Less	16.26 Sq.Ft. & Over
SP-01		1

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		3	
KG20-2	2		
M1-4	62		
M2-1	3		
M3-1	30		
M3-3	31		
M4-8	65		
M4-8a	2		
M4-10L	1		
M4-10R	1		
M5-1L	6		
M5-1R	9		
M6-1	14		
M6-3	19		
D1-1	12		
R2-1	4		
R4-1	2		
R11-2		5	
R11-3		1	
R11-3A		5	
W3-4		2	
W3-5		2	
W14-3	2		
W20-1		2	
W20-2		2	
W20-3		4	
W20-4		2	
W21-5		2	
KI-104a		2	
KI-105a		2	
	265	34	

Barricades ✳		Channelizing Devices ✳		
Type 3 (4' to 12')	Pedestrian	Fixed	Portable	Pedestrian
40			70	

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	39
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.)	79,500	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)	10,200	Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')	12,000	Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)	21,000	Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)	11,700	Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)		Each Per Day
Arrow Display		Each Per Day
Portable Changeable Message Sign		Each Per Day
Pavement Marking (Temporary)		
4" Solid (Type I)		Sta./Line
4" Solid (Type II)		Sta./Line
4" Broken (8.0') (Type I)		Sta./Line
4" Broken (8.0') (Type II)		Sta./Line
4" Broken (3.0') (Type I)		Sta./Line
4" Broken (3.0') (Type II)		Sta./Line
4" Dotted Extension (Type I)		Sta./Line
4" Dotted Extension (Type II)		Sta./Line
Solid (Line Masking Tape)		Sta./Line
Broken (Line Masking Tape)		Sta./Line
Symbol (Type I)		Each
Symbol (Type II)		Each
Flexible Raised Pavement Marker (4" Broken (8.0'))		Sta./Line
Flexible Raised Pavement Marker (4" Broken (3.0'))	32.9	Sta./Line
Pavement Marking Removal		Lin. Ft.
Work Zone Sign (Special) (16.25 Sq. Ft. & Less)		Each
Work Zone Sign (Special) (16.26 Sq. Ft. & More)	1	Each
Rigid Raised Pavement Marker (Type I)		Each
Rigid Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)		Lump Sum
Traffic Control (Initial Set Up)	Lump Sum	Lump Sum
Traffic Control		Lump Sum
Flagger (Set Price)	1	Hour

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

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 : 16-AUG-2024 11:02
Drawn By: _
File : ka577201css795.dgn

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".

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	131	161

SUMMARY OF QUANTITIES

			⊙ CONCRETE SAFETY BARRIER (TYPE F3)					
LOCATION (ROUTE)	STATION (OR STATION RANGE)	SIDE	FLARE RATE (WHERE APPLICABLE)	TEMPORARY	TEMPORARY-RELOCATE	TEMPORARY-INSTALL ONLY	UNIT	COMMENTS
Survey ℄	64+92 to 68+40	Rt.	15:1 Min.	337.5			Lin. Ft.	Phase I

⊙ 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).
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
1	2-11-15	Initial Release	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

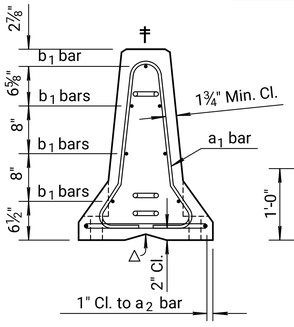
SUMMARY OF QUANTITIES
TEMPORARY CONCRETE SAFETY BARRIER AND END TREATMENTS

RD052

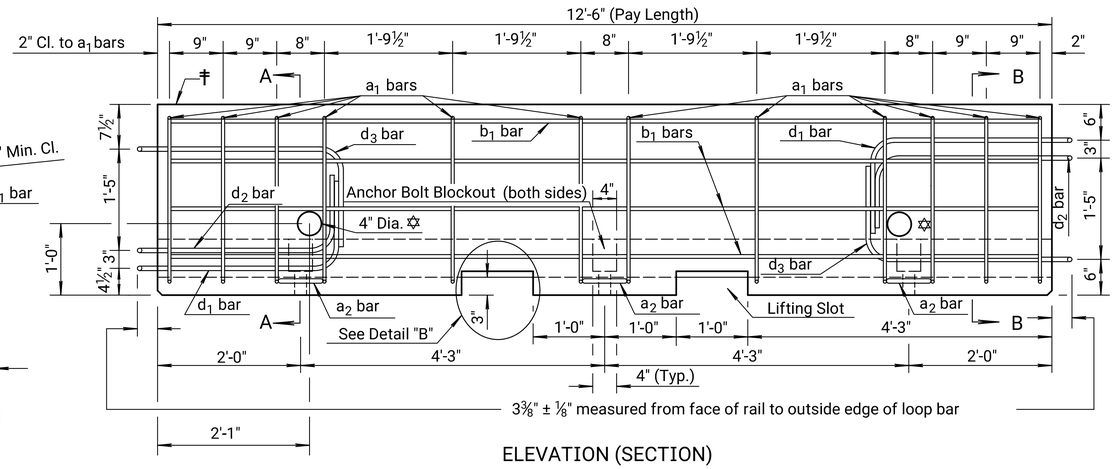
FHWA APPROVAL	9-16-15	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Hecht

Drawn By : _
Plotted 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss052.dgn

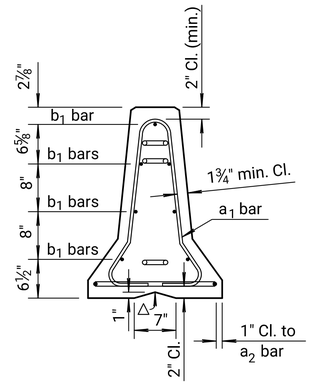
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	132	161



SECTION A-A
TYPICAL SECTION
(Stirrup Placement)



ELEVATION (SECTION)



SECTION B-B
TYPICAL SECTION
(Stirrup Placement)

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.

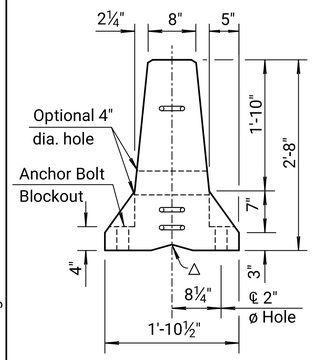
When traffic flow is in one direction, the delineators shall be yellow when used on the left, white when used on the right. When traffic flow is in both directions delineators shall be placed back-to-back, and shall correspond to the color of the edge line.

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).

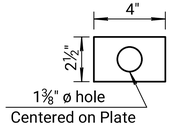
If necessary, include Standard Drawing RD622A for Taper Section, Standard drawing RD622B for anchor and tie down details, Standard Drawing RD622C for Bridges with thermal expansion of 1½" or greater and Standard Drawing RD622D for Barrier Layouts.

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".

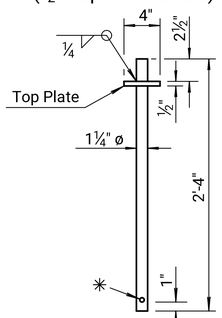
† Marked End
✡ 4" diameter - 11 gauge steel round mechanical tubing sleeve. These holes are optional.
△ V Notch is optional



END VIEW



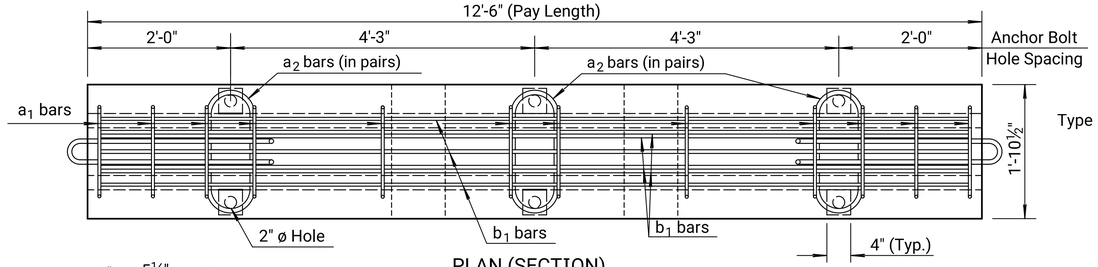
(½" Top Plate Detail)



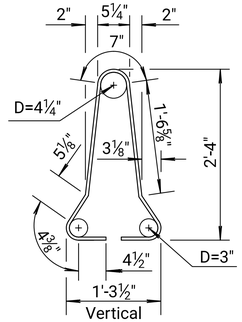
DETAIL 'A'
CONNECTION PIN
(A36 Steel) 10.9 lbs. each

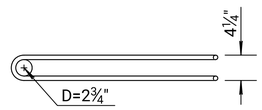
✳ ⅝" ø hole for retainer bolt. The retainer bolt & nut are installed at Contractor's option.

Note: Retainer bolt & nut required with Tie Down Strap.



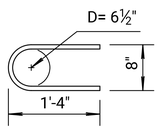
PLAN (SECTION)



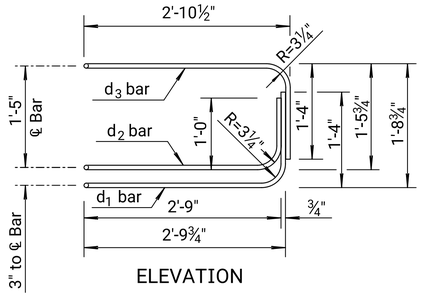


PLAN
LOOP BAR ASSEMBLY
(Marked end shown, invert for other end)

(Material as stated in General Notes)



a_2 bar



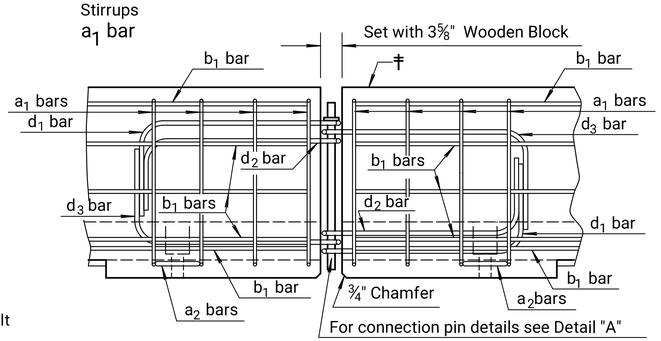
ELEVATION

Per 12'-6" Barrier Section

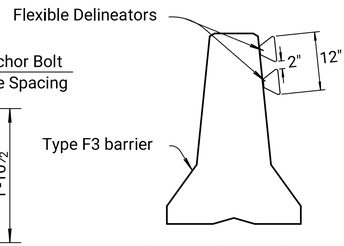
REINFORCING A615 Gr. 60					
Bar	Bar Size	Shape	No. of Bars	Length Ft.	Weight Lbs.
a_1	#4		12	6'-0"	48.1
a_2	#6		6	2'-11"	26.3
b_1	#5		7	12'-2"	88.8
LOOP ASSEMBLY					
d_1	#6		2	8'-5"	25.3
d_2	#6		2	7'-7"	22.8
d_3	#6		2	8'-6"	25.5

Concrete Quantity = 1.3 C.Y.

(Dimensions are out to out of bars unless otherwise noted.)

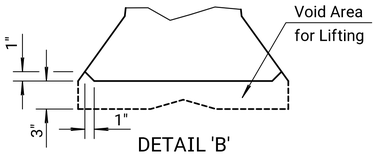


DETAILS OF BARRIER CONNECTION



DELINEATOR DETAILS

NOTE: At no time shall the barriers be lifted, moved, etc. by use of the loop bars: d_1, d_2 or d_3.



DETAIL 'B'
LIFTING SLOT DETAIL
(1" Chamfer to prevent spalling)

NO.	DATE	REVISIONS	BY	APP'D
7	9-11-17	Revised Markers	A.L.R.	S.W.K.
6	7-17-17	Revised General Note	A.L.R.	S.W.K.
5	8-27-15	Added Note, Pay Length	K.E.K.	S.W.K.
4	5-17-13	Revised General Note, Clear Area	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3

RD622

FHWA APPROVAL	3-5-18	APP'D. Scott W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 03-16-2018

KDOT Graphics Certified

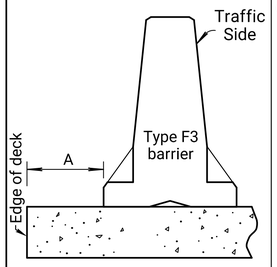
Plotted: 8/16/2024
Drawn By: —
File: c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772o1rss622.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	133	161

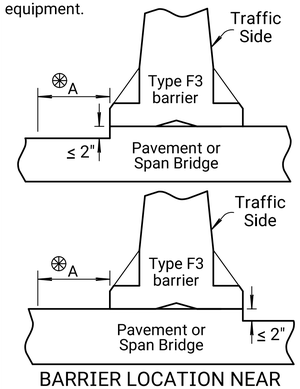
GENERAL NOTES:
INSTALLATION: Holes into the pavement to anchor the concrete safety barrier may be drilled after positioning barrier. When anchoring with 3 bolts on traffic side, install barrier with through anchor bolt where possible, use grouted anchor bolts where through bolt can't be used. Do not 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.

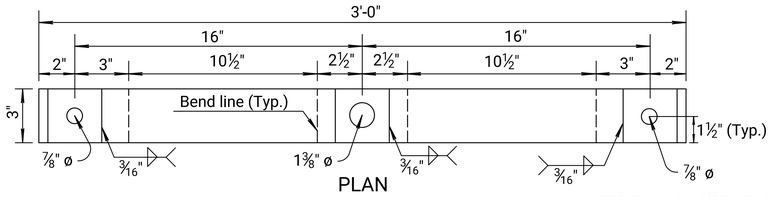
NO ANCHORAGE REQUIRED unless shown on plans		
"A" DISTANCE	A ≥ 4'	A ≥ 2'
LOCATION	Span Bridge	⊛ Box Culverts Roadways - Flexible or Rigid Pvmnt.



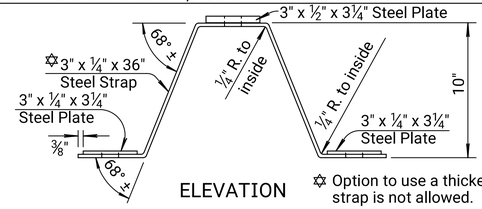
⊛Applies on span bridges when the action creates a height differential of ≤ 2". Measured from the toe of the barrier, the "A" distance should be free of obstacles and equipment.



BARRIER LOCATION NEAR HEIGHT DIFFERENTIAL



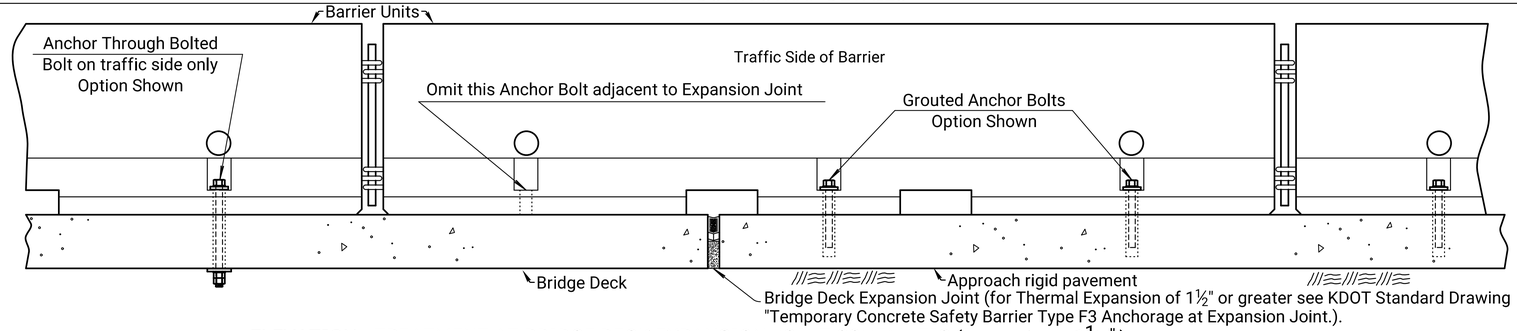
PLAN



ELEVATION

✡ Option to use a thicker steel strap is not allowed.

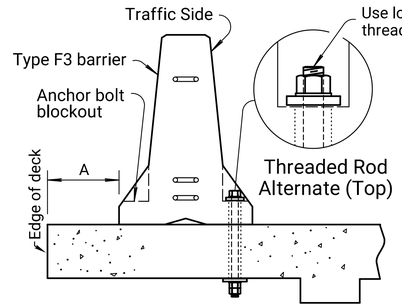
TIE-DOWN STRAP DETAILS

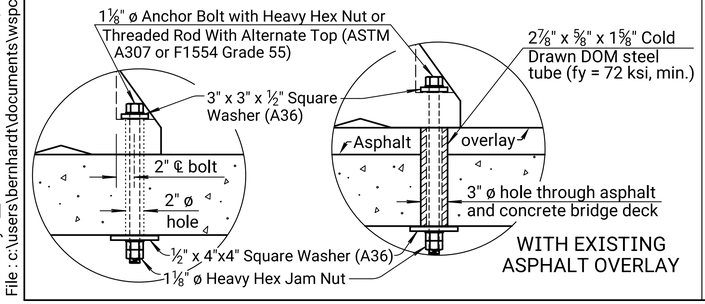


ELEVATION - TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC (Expansion < 1½")

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

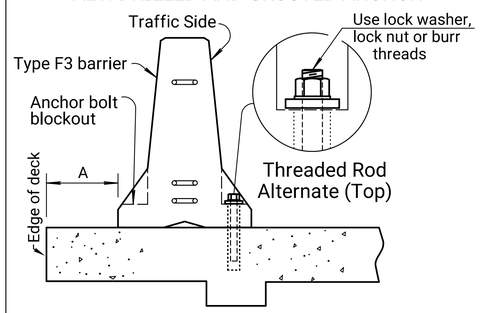
THROUGH BOLT (Preferred)



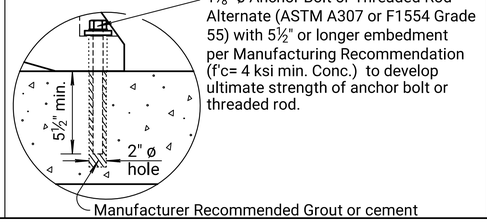


WITH EXISTING ASPHALT OVERLAY

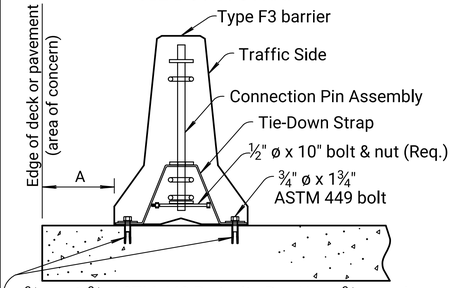
✧ALT. DRILLED AND GROUTED ANCHOR



✧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.

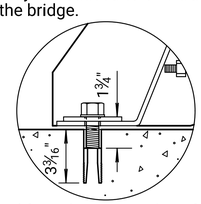


TIE-DOWN STRAP



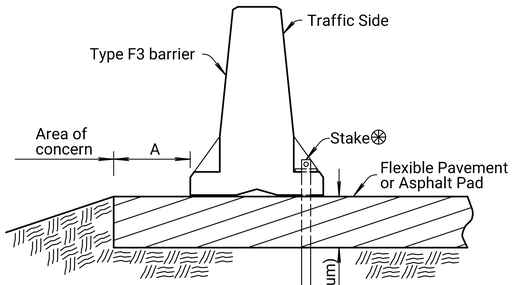
¾" ø x 1 ¾" ASTM 449 Bolt with Red Head ¾" drop in anchor, Red Head large diameter Tapcon (LDT) ¾" ø x 4 ½" long, or Simpson Titen HD ¾" ø x 5" long

△"A" distance may be reduced to 6" if traffic does not travel under the bridge.

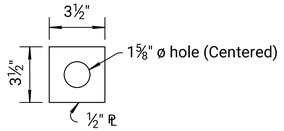


With prior approval from the State Bridge Office, anchoring the barrier with 3 bolts (Through Bolt OR Drilled & Grouted Anchor oprtions) on the traffic side may be used in lieu of tie-down straps.

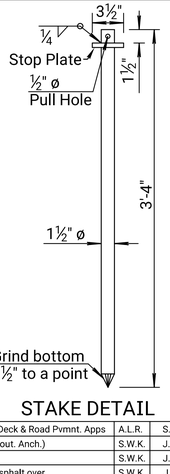
STAKED DOWN



⊛ Predrill 1½" ø holes in flexible pavement prior to installing stakes.



STOP PLATE DETAIL



STAKE DETAIL

NO.	DATE	REVISIONS	BY	APP'D
7	4-21-21	Revised Layouts for Br. Deck & Road Pvmnt. Apps	A.L.R.	S.W.K.
6	12-31-13	Rev. Note (Alt. Drill. & Grout. Anch.)	S.W.K.	J.O.B.
5	6-27-11	Revised General Note	S.W.K.	J.O.B.
4	9-14-10	Add. through bolt with asphalt over.	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 07-09-2021

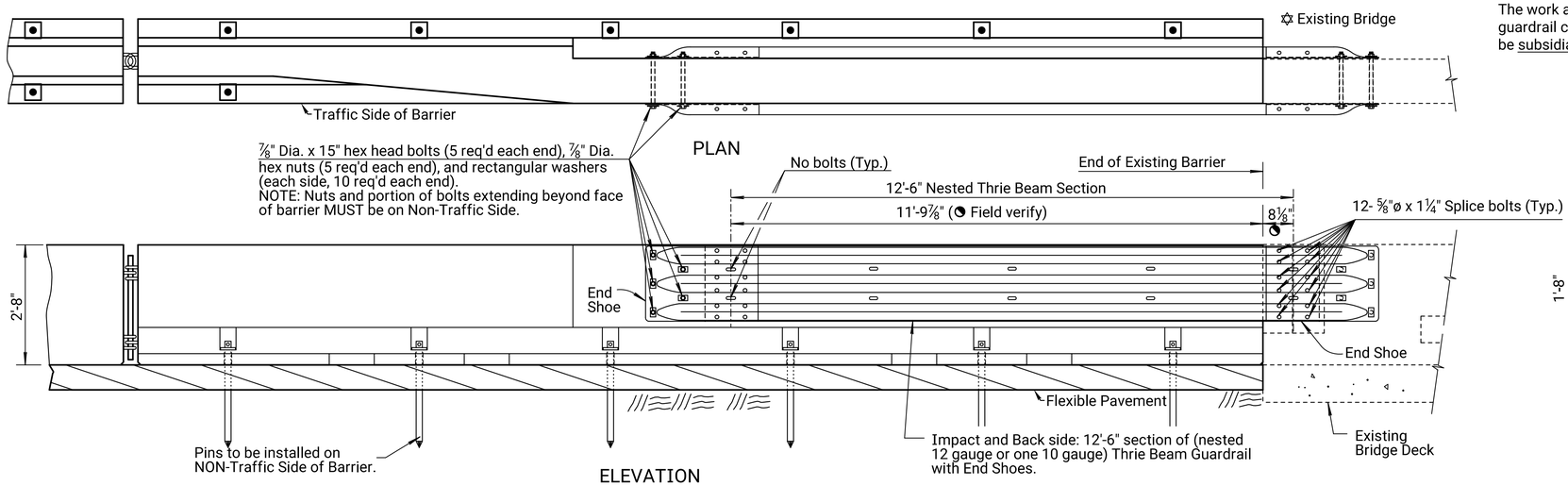
KDOT Graphics Certified

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.

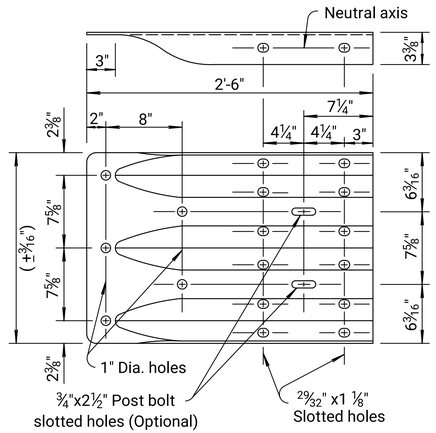
Plotted :8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rss622b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	134	161

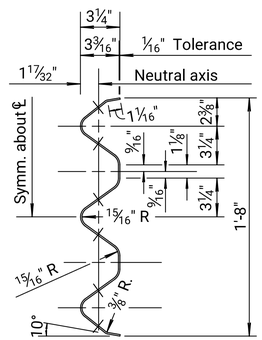
GENERAL NOTES:
The work and materials required for the installation & removal of the guardrail connection and barrier anchors as shown on this sheet shall be subsidiary to the "Concrete Safety Barrier(Type F3)(Temporary)" bid item.



✡ GUARDRAIL CONNECTION–EXISTING BRIDGE TO ANCHORED/RIGID BARRIER



TERMINAL CONNECTOR



THRU RAIL ELEMENT
TYPICAL THRIE BEAM

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.

Sh. No. 134

✱ 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 : 8/16/2024
Drawn By : _
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772001rss622d.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	135	161

GENERAL NOTES

UNIT STRESSES:
Concrete (Grade 4.0)(AE); f'c = 4,000 p.s.i.
Reinforcing Steel; fy = 60,000 p.s.i.

CONCRETE:
Concrete (Grade 4.0)(AE) shall be used throughout. Bevel all exposed edges approved edging tool.

REINFORCING:
All reinforcing steel shall conform to ASTM A615, Grade 60. All dimensions relative to reinforcing steel shall be to center line of bar unless otherwise noted. All reinforcing steel shall be epoxy coated.

PAYMENT:
The Concrete, Drill and Grout, and Reinforcing Steel for the concrete block, shall be subsidiary to "Concrete Safety Barrier (Type F3)(Temporary)", which price shall be considered full compensation for all materials, labor, tools, equipment and incidentals necessary to complete the work.

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. Remove this material from the site.

GUARDRAIL CONNECTION:
See Bridge Rail Standards for bolt hole spacing and details including proper distance of spacing from end of Rail Block.

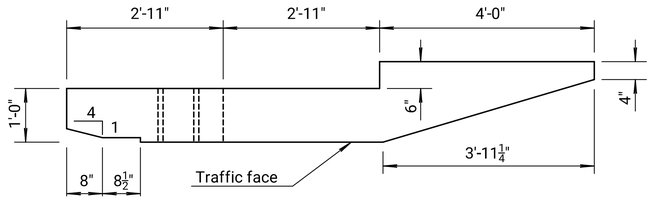
⊛ 8" Minimum clear, post to wing

Proposed modifications made to Bridge Rail Block and Guardrail are to be implemented at all four corners of the bridge, mirrored along the ℄ of the bridge. See plans for variations.

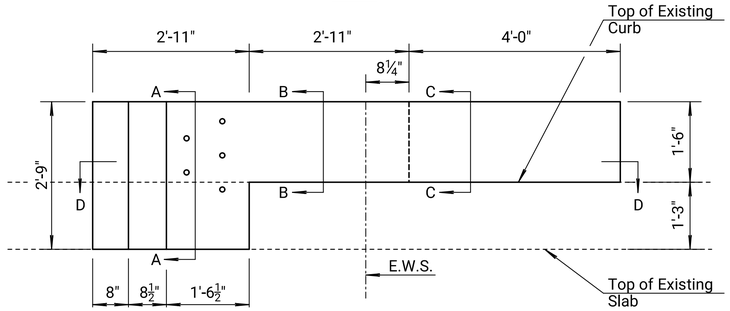
◔ SUMMARY OF QUANTITIES

ITEM	UNITS	QUANTITY
Concrete (Grade 4.0) (AE)	Cu. Yd.	0.7
Reiforcing Steel (Grade 60) (Epoxy Coated)	Lbs.	170
Drilling and Grouting	Each	23

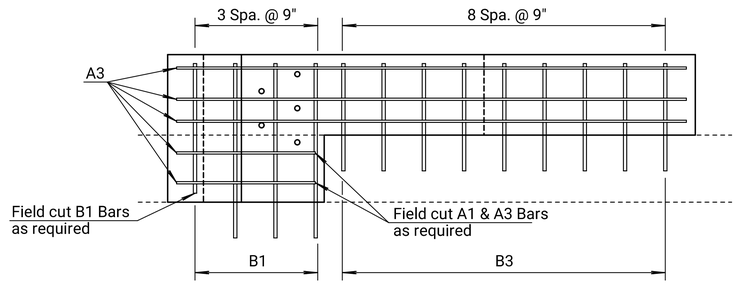
◔ For information only.



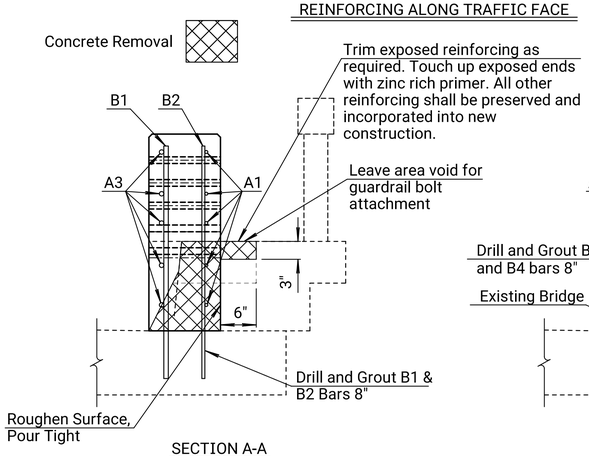
PLAN



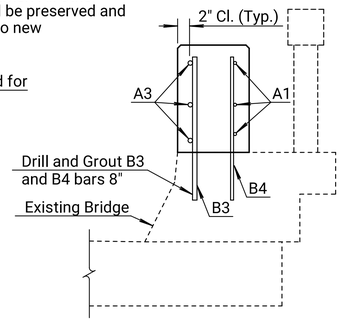
ELEVATION - SHOWING DIMENSIONS



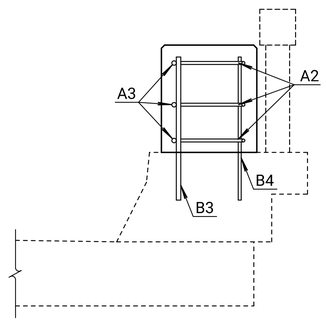
ELEVATION - SHOWING REINFORCING ALONG TRAFFIC FACE



SECTION A-A

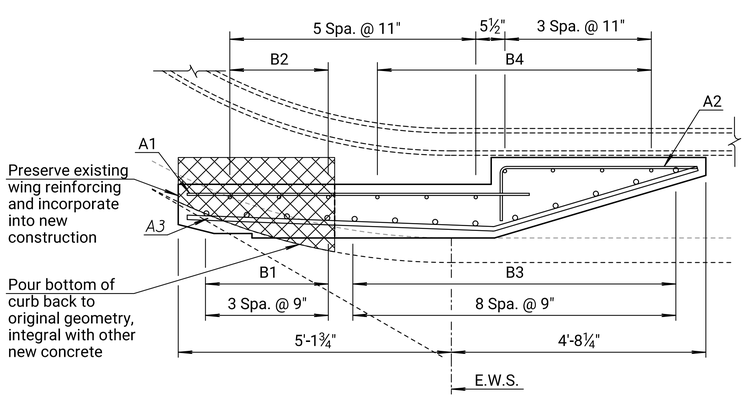


SECTION B-B



SECTION C-C

Note: Field Cut bottom two A1 and A3 bars as required.

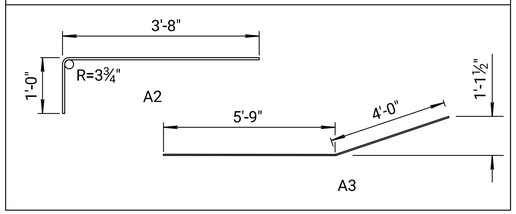


SECTION D-D

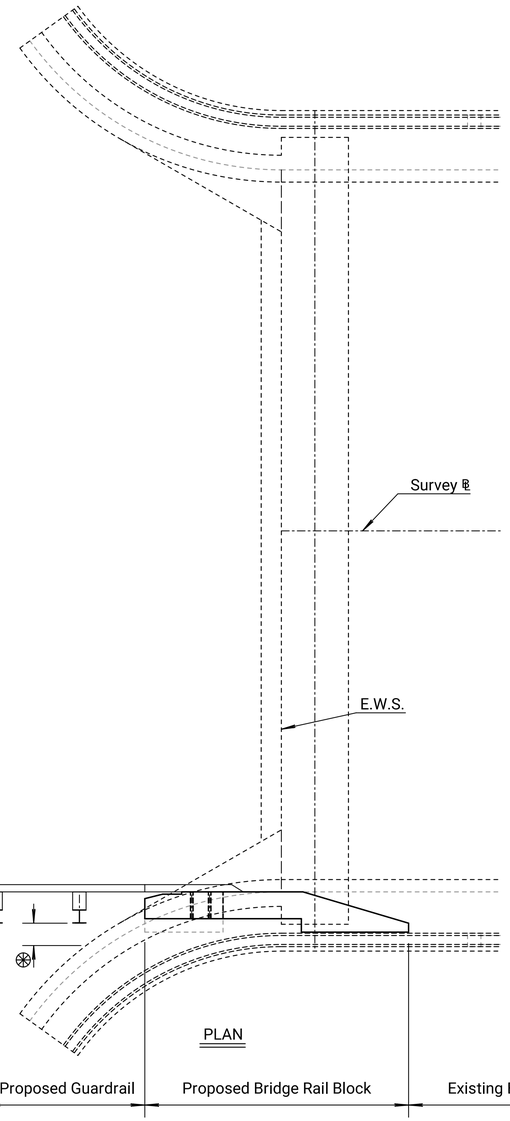
◔ REINFORCING SCHEDULE

Mark	Shape	Size	No.	Length	Weight (lbs.)
A1	——	4	5	6'-5"	21.50
A2	⌐	4	3	4'-8"	9.35
A3	——	6	5	9'-9"	73.13
✱B1	——	6	4	3'-3"	19.53
✱B2	——	4	3	3'-3"	6.51
✱B3	——	6	9	2'-0"	27.04
✱B4	——	4	7	2'-0"	9.35

BENT BAR DIAGRAM



✱Drill and Grout



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

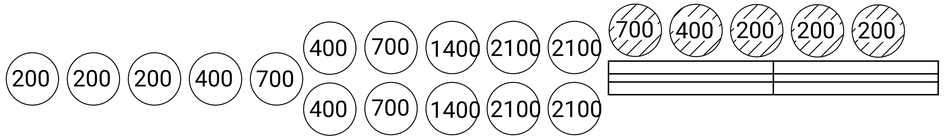
GUARDRAIL ATTACHMENT TO EXISTING CURVED ABUTMENT WINGS

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

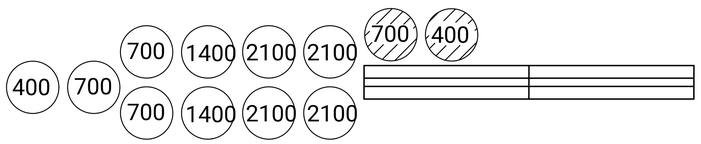
Plotted 8/16/2024
Drawn By: _
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	136	161

HIGH SPEED TL-3
(V > 45 MPH)



LOW SPEED TL-2
(V ≤ 45 MPH)



INERTIAL BARRIER SYSTEM			
Station	Side	Design Speed	Comments
℄ Sta. 64+92	Rt.	70 MPH	Phase I

GENERAL NOTE

This drawing details general configurations for Inertial Barrier Systems. Some project specific conditions may require variations which are designed to meet prevailing criteria.

Use Inertial Barrier System consisting of the units as shown for the specified design speed, all hardware and attachments.

Install Inertial Barrier System on a flat, stable base with cross-slope no steeper than 10: 1. See Manufacturer's recommendations for module materials and method of installation.

See standard specifications for mixture to fill modules requirements.

Provide a 6" spacing between modules and one foot between the end of concrete barrier or other rigid object.

When installed as part of project traffic control, the bid item "Inertial Barrier" includes the original installation and required relocations.

Keep available replacement modules to replace any size module used on site, Engineer's direction.

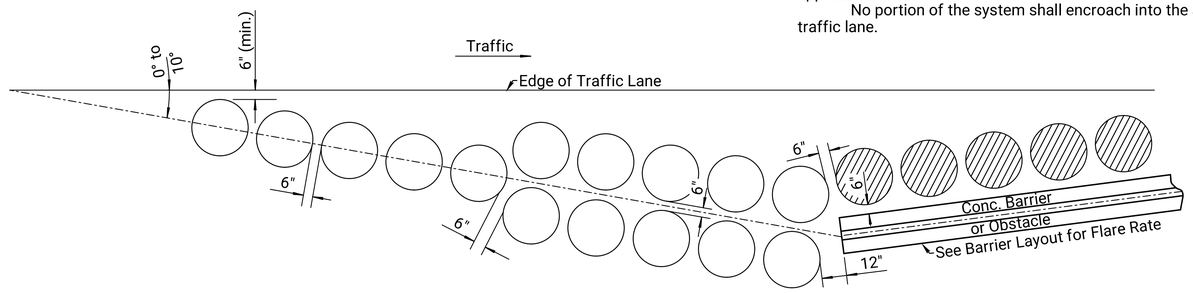
Inertial Barrier System modules damaged by the Contractor during relocation of Inertial Barrier System are replaced at the Contractor's expense.

Module weights shown are in pounds.

Install 270 square inches of Type II High Performance (vertical, rectangular or diamond shape) reflective sheeting on first module of Inertial Barrier System facing traffic.

Where sufficient space is available the Inertial Barrier System may be aligned at an angle, not to exceed 10°, in the direction of approach traffic.

No portion of the system shall encroach into the approach traffic lane.

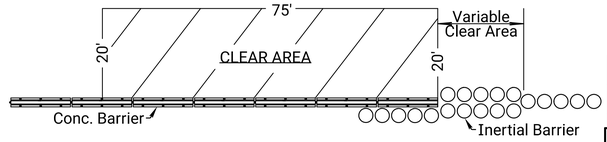


TYPICAL PLAN of INERTIAL BARRIER

When two-way traffic is adjacent to only one side of Concrete Barrier or Obstacle, these additional modules will be placed on the Traffic Side of Concrete Barrier or Obstacle. Traffic adjacent to both sides of the Concrete Barrier or Obstacle requires an additional set of modules each side if approach traffic is exposed to the back portion of the Inertial Barrier. These additional modules are not required along the sides of Concrete Barrier or Obstacle when it's location is outside the Clear Zone or one-way directional traffic.



PLAN
Replacement Module



PLAN - CLEAR AREA

NO.	DATE	REVISIONS	BY	APP'D
8	1-27-15	Rev. Layouts (TL-2/TL-3)	K.E.K.	J.O.B.
7	5-17-13	Added Detail, Clear Area	S.W.K.	J.O.B.
6	2-3-12	Revised General Note	S.W.K.	J.O.B.
5	6-27-11	Revised notes & Typical Plan detail	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

INERTIAL BARRIER (TL2 or TL3)

RD620

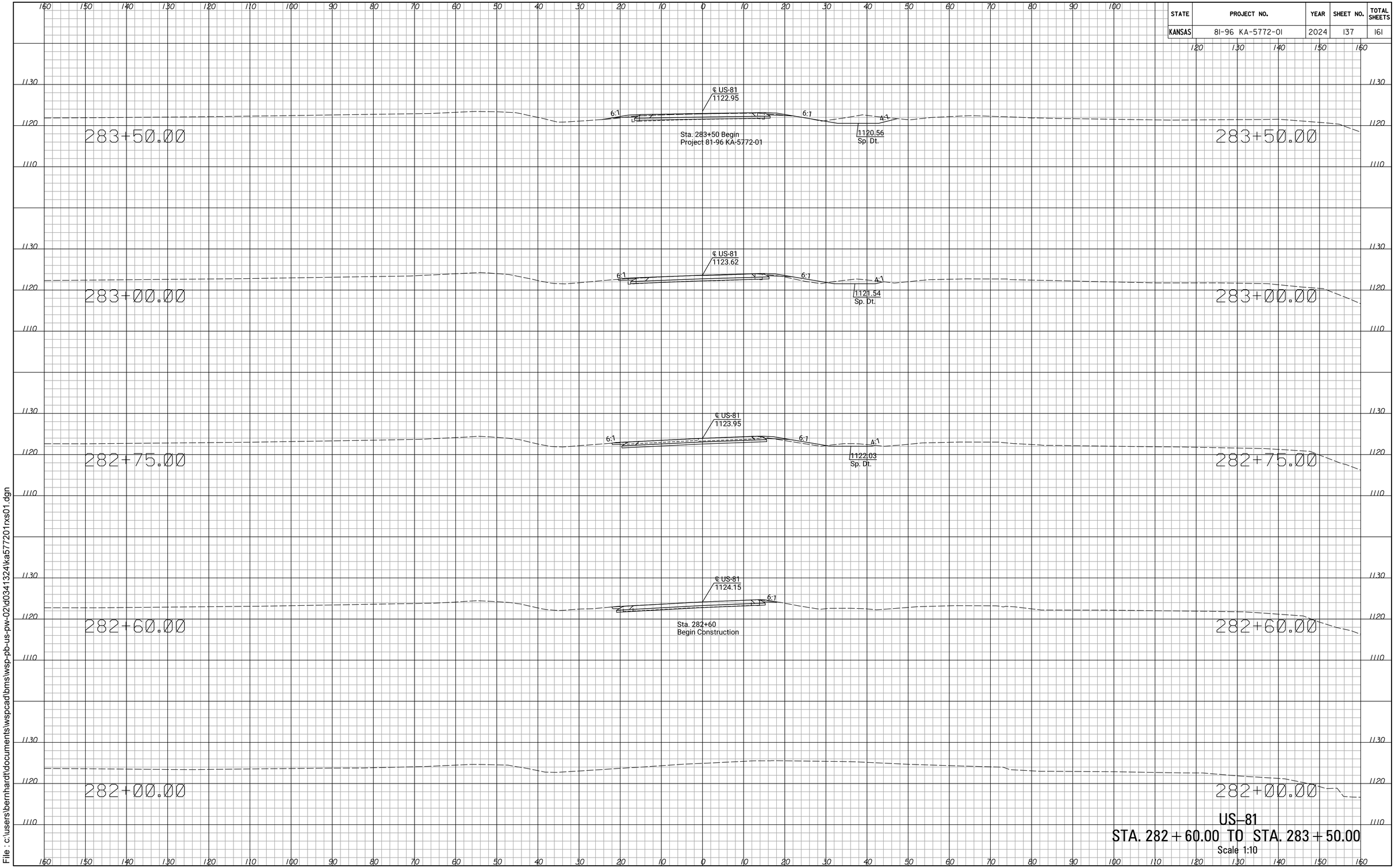
FHWA APPROVAL	9-16-15	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 02-06-2024

KDOT Graphics Certified

Plotted :8/16/2024
Drawn By : _
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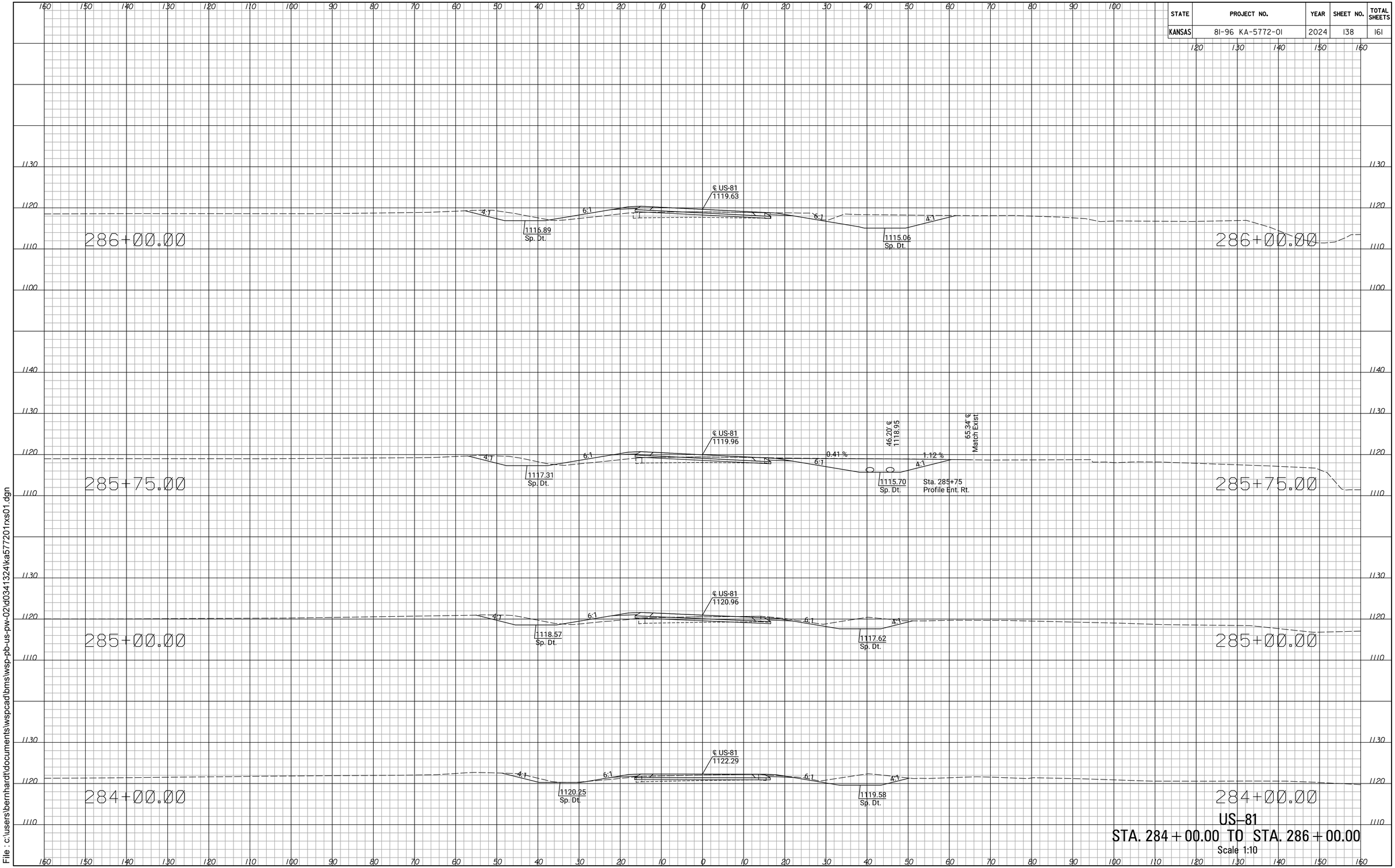
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	137	161



US–81
STA. 282 + 60.00 TO STA. 283 + 50.00
Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	138	161



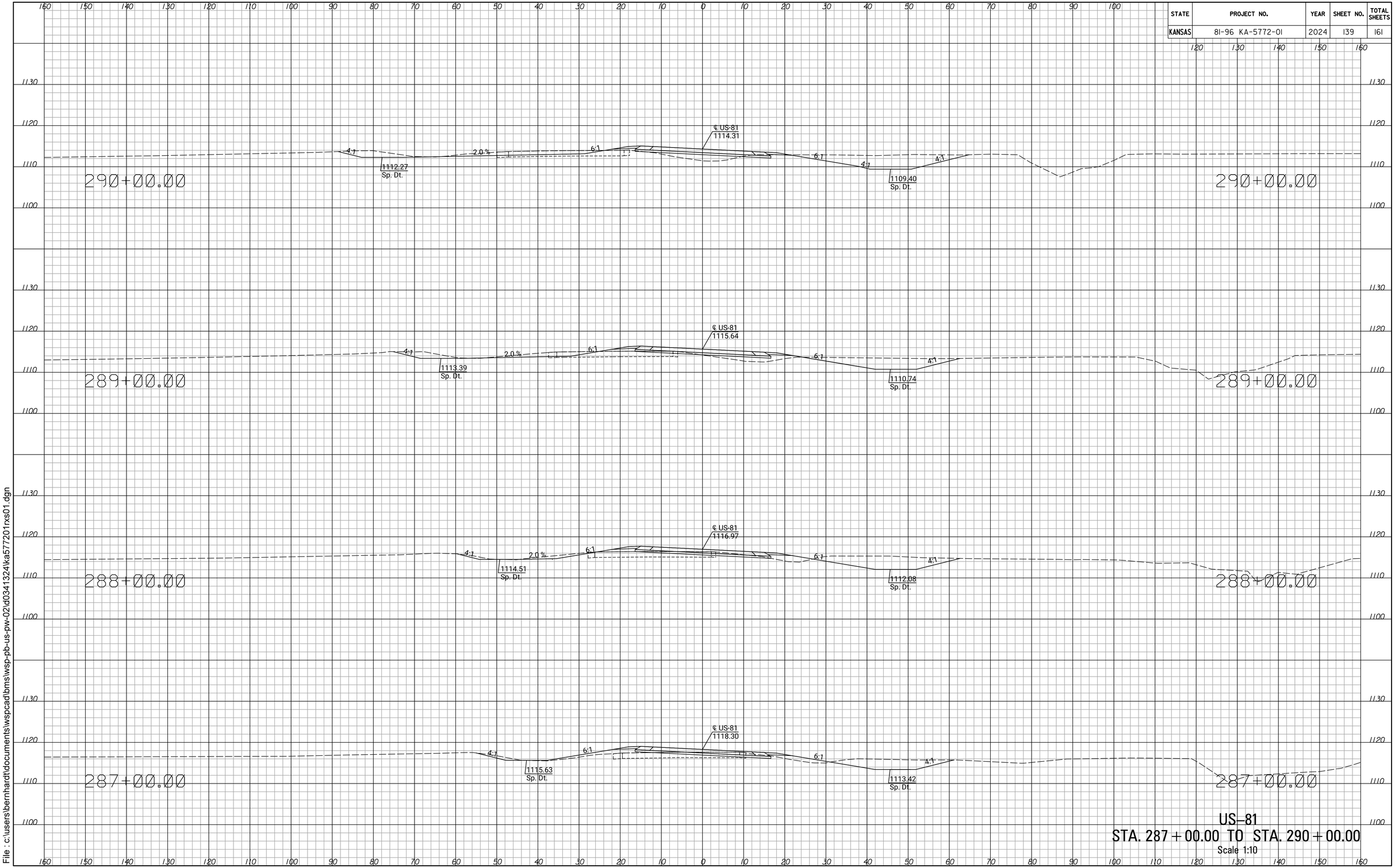
US-81

STA. 284+00.00 TO STA. 286+00.00

Scale 1:10

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	139	161



US–81
STA. 287 + 00.00 TO STA. 290 + 00.00
Scale 1:10

Date: $DATE$ Plotted : 8/16/2024
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	140	161

294+00.00

1107.02
Sp. Dt.

4:1

Perm. Grading

2.0 %

Temp. Grading
1.51 %

6:1

1109.15

℄ US-81
1111.32

6:1

4:1

4:1

1104.04
Sp. Dt.

294+00.00

293+00.00

4:1

1108.65
Sp. Dt.

2.0 %

Perm. Grading

2.82 %

Temp. Grading

6:1

1109.25

℄ US-81
1111.51

6:1

4:1

4:1

1105.38
Sp. Dt.

293+00.00

292+00.00

Perm. Grading

1110.03
Sp. Dt.

2.0 %

Temp. Grading
3.15 %

6:1

1110.60

℄ US-81
1112.08

6:1

4:1

4:1

1106.72
Sp. Dt.

292+00.00

291+00.00

4:1

1111.15
Sp. Dt.

2.0 %

Perm. Grading

6:1

Temp. Grading
1111.95

℄ US-81
1113.03

6:1

4:1

4:1

1108.06
Sp. Dt.

291+00.00

1120
1110
1100
1090

160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

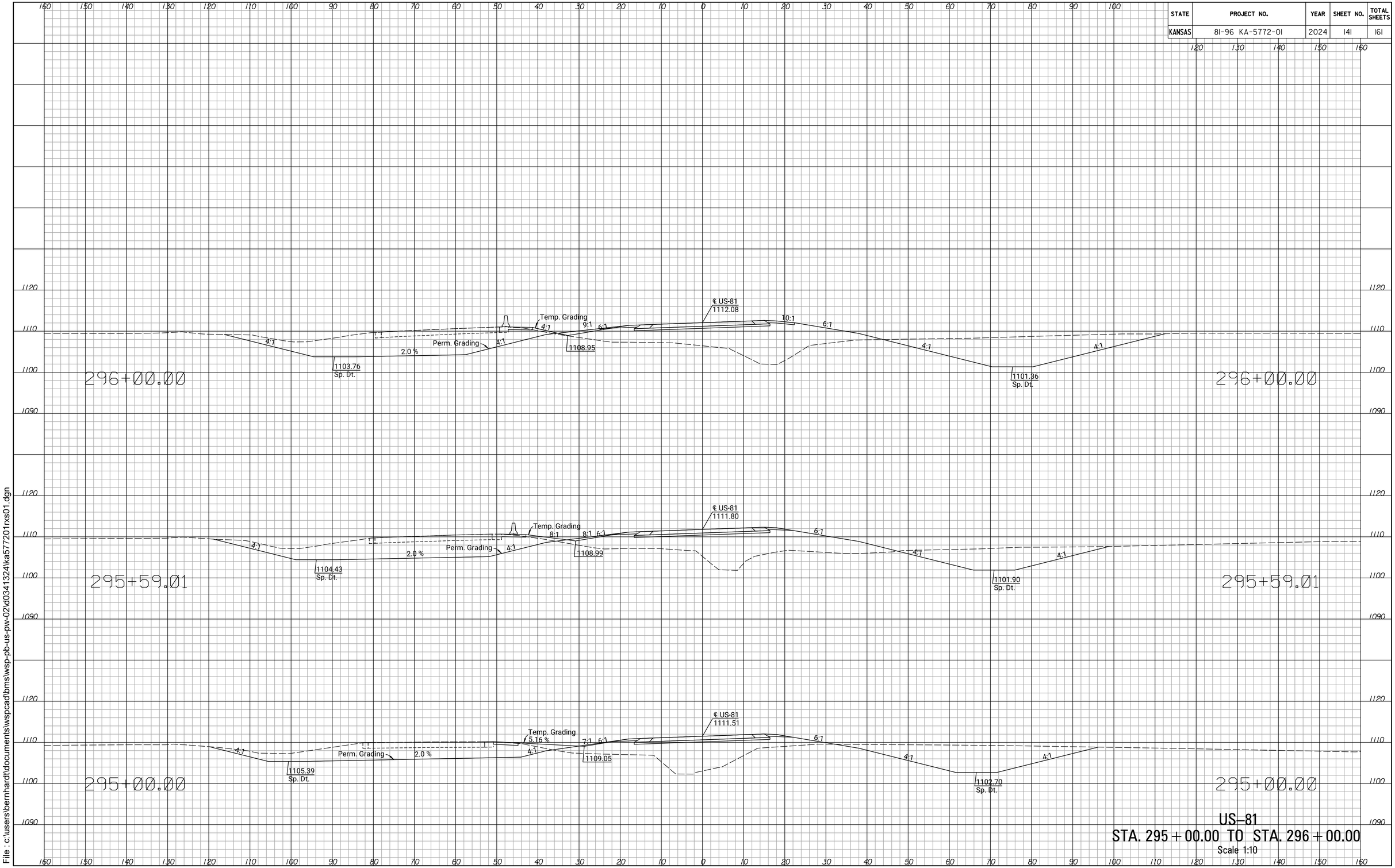
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US–81

STA. 291+00.00 TO STA. 294+00.00

Scale 1:10

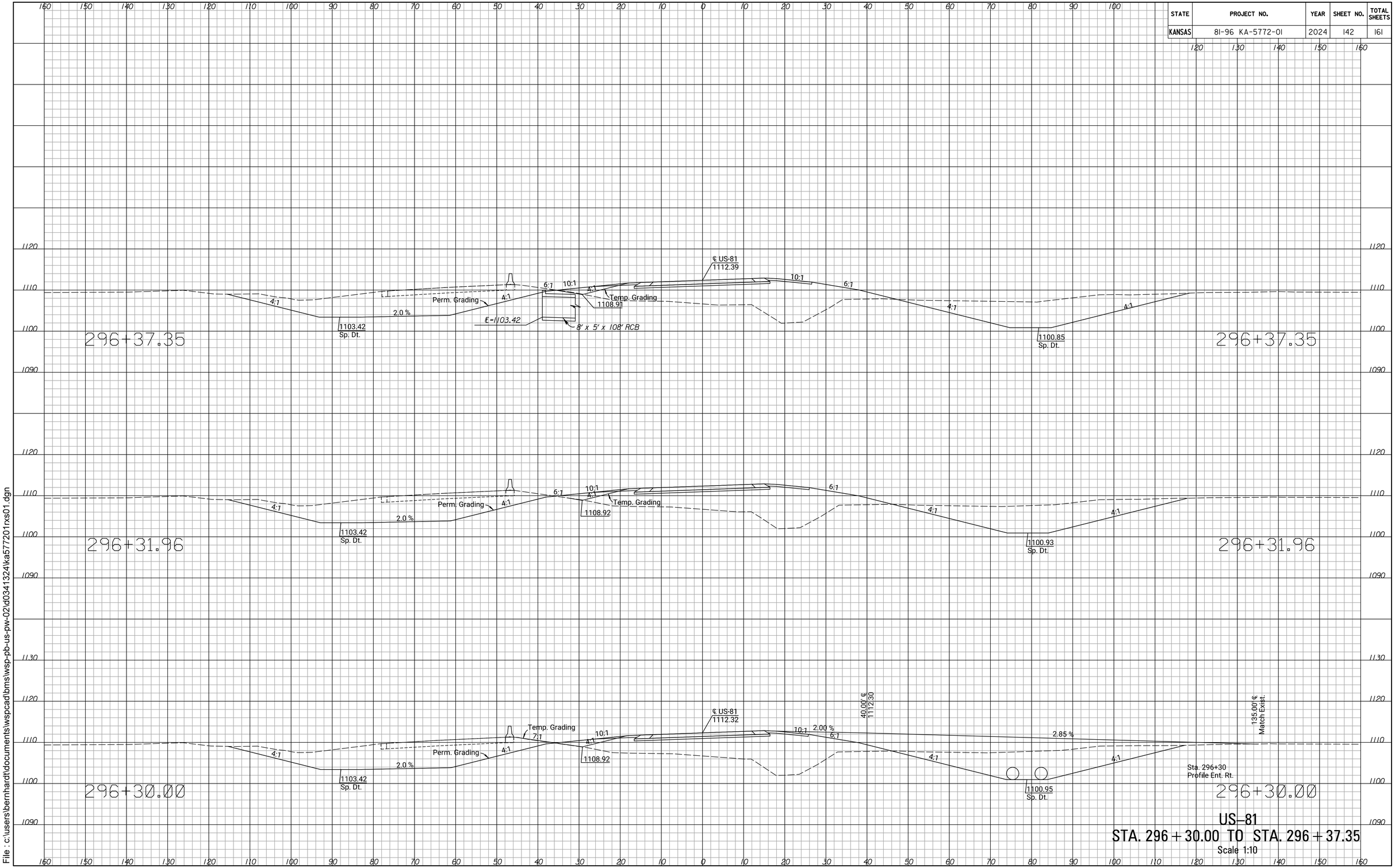
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	141	161



US–81
STA. 295+00.00 TO STA. 296+00.00
Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	142	161



US–81
STA. 296 + 30.00 TO STA. 296 + 37.35
Scale 1:10

Plotted : 8/16/2024
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	143	161

297+00.00

℄ US-81
1112.95

4:1 2.0 % 4:1 Perm. Grading 4:1 8:1 9:1 10:1 Temp. Grading

1106.25
Sp. Dt.

1108.85

10:1 6:1 4:1

297+00.00

296+91.20

℄ US-81
1112.87

4:1 2.0 % 4:1 Perm. Grading 4:1 9:1 10:1 Temp. Grading

1105.79
Sp. Dt.

1108.86

10:1 6:1 4:1

8' x 5' x 110' RCB

℄ =1100.22

1100.22
Sp. Dt.

296+91.20

296+90.00

130.00' ℄
Match Exist.

Sta. 296+90
Profile Ent. Lt.

℄ US-81
1112.86

4:1 2.88 % 4:1 Perm. Grading 4:1 9:1 10:1 Temp. Grading

1105.73
Sp. Dt.

1108.86

10:1 6:1 4:1

8' x 5' x 108' RCB

℄ =1100.22

1100.22
Sp. Dt.

296+90.00

296+63.99

℄ US-81
1112.63

4:1 2.0 % 4:1 Perm. Grading 4:1 9:1 10:1 Temp. Grading

1104.36
Sp. Dt.

1108.89

10:1 6:1 4:1

8' x 5' x 108' RCB

1100.50
Sp. Dt.

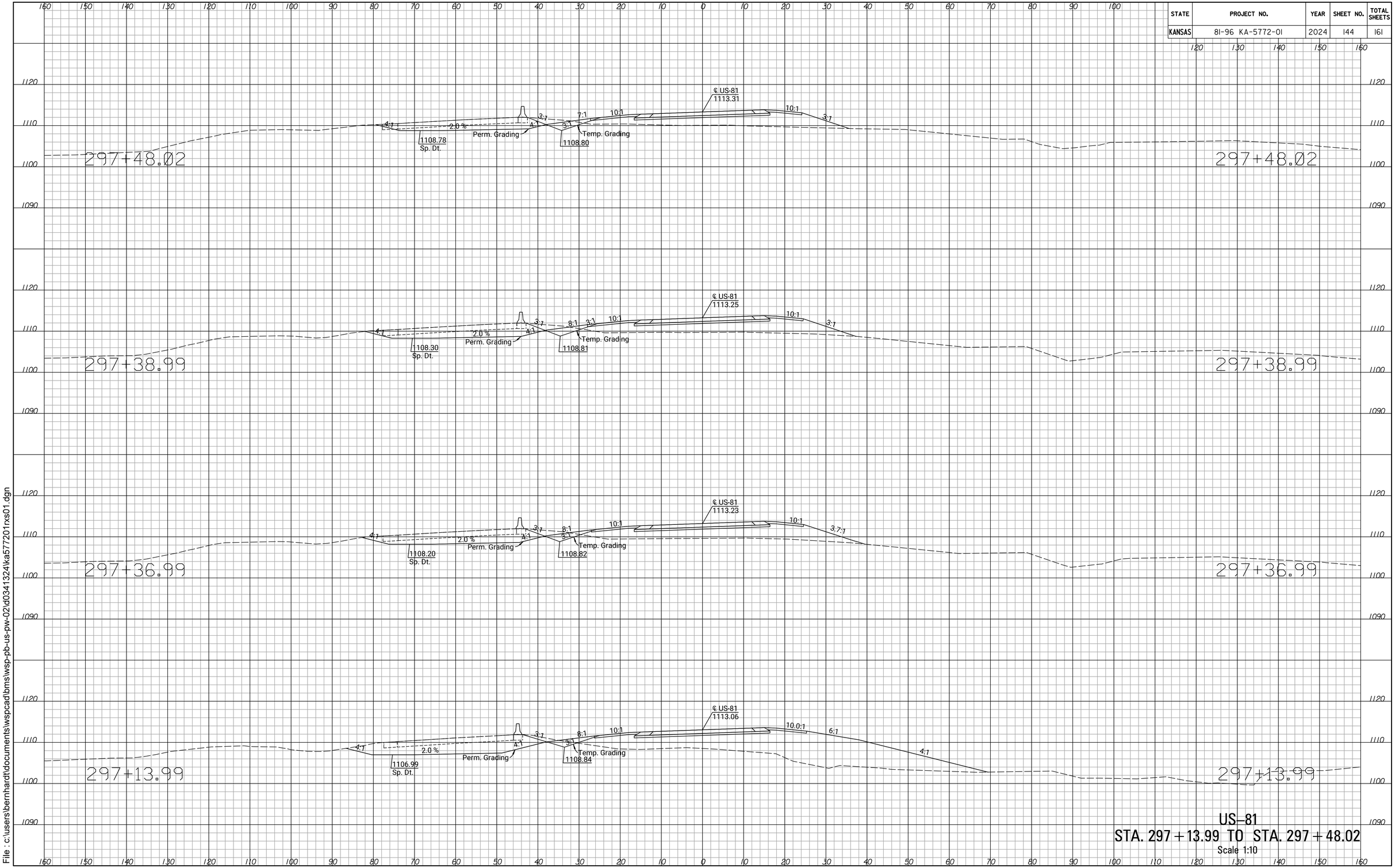
296+63.99

US-81
STA. 296+63.99 TO STA. 297+00.00

Scale 1:10

Date: $DATE$ Plotted : 8/16/2024
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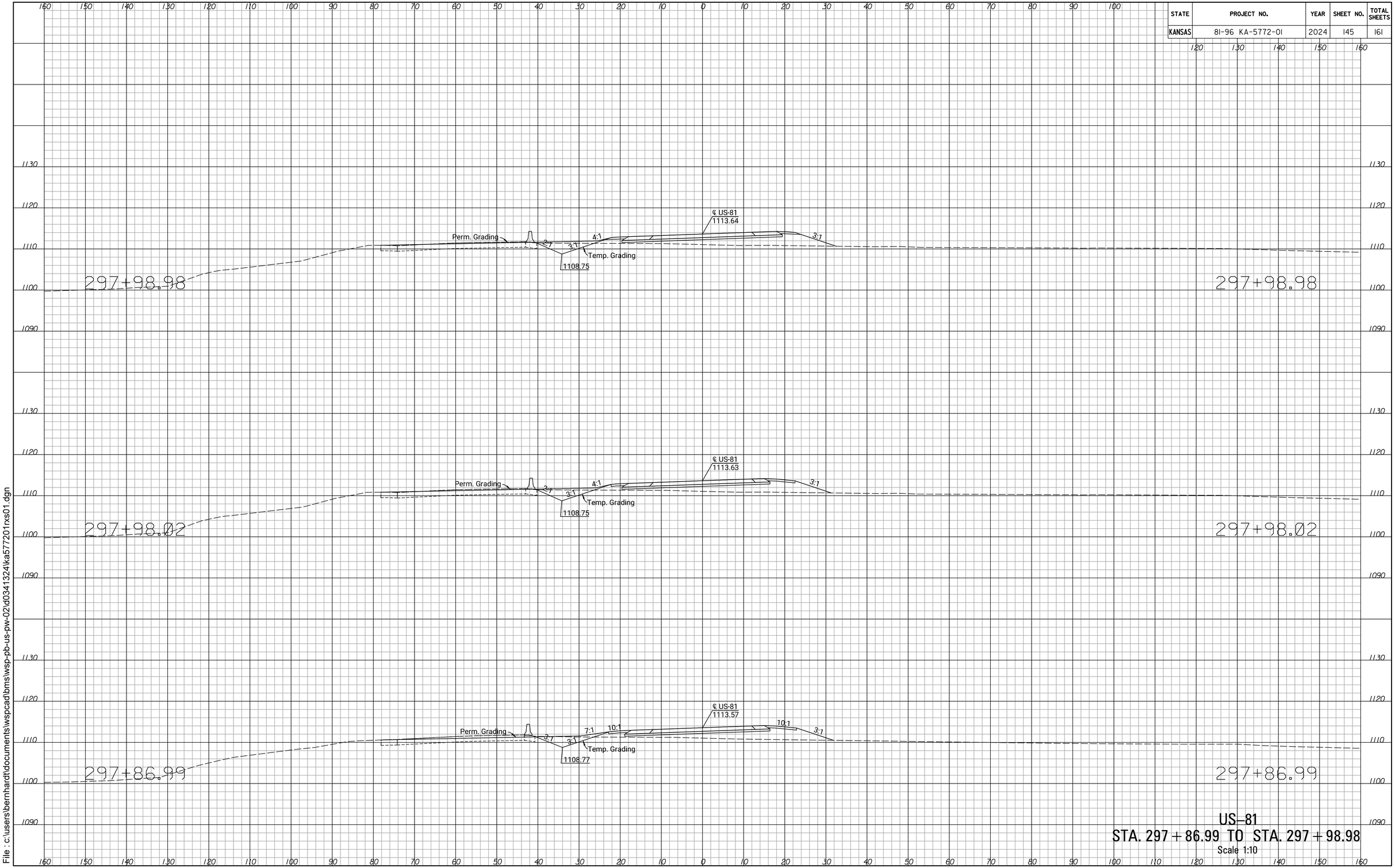
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	144	161



US–81
STA. 297+13.99 TO STA. 297+48.02
Scale 1:10

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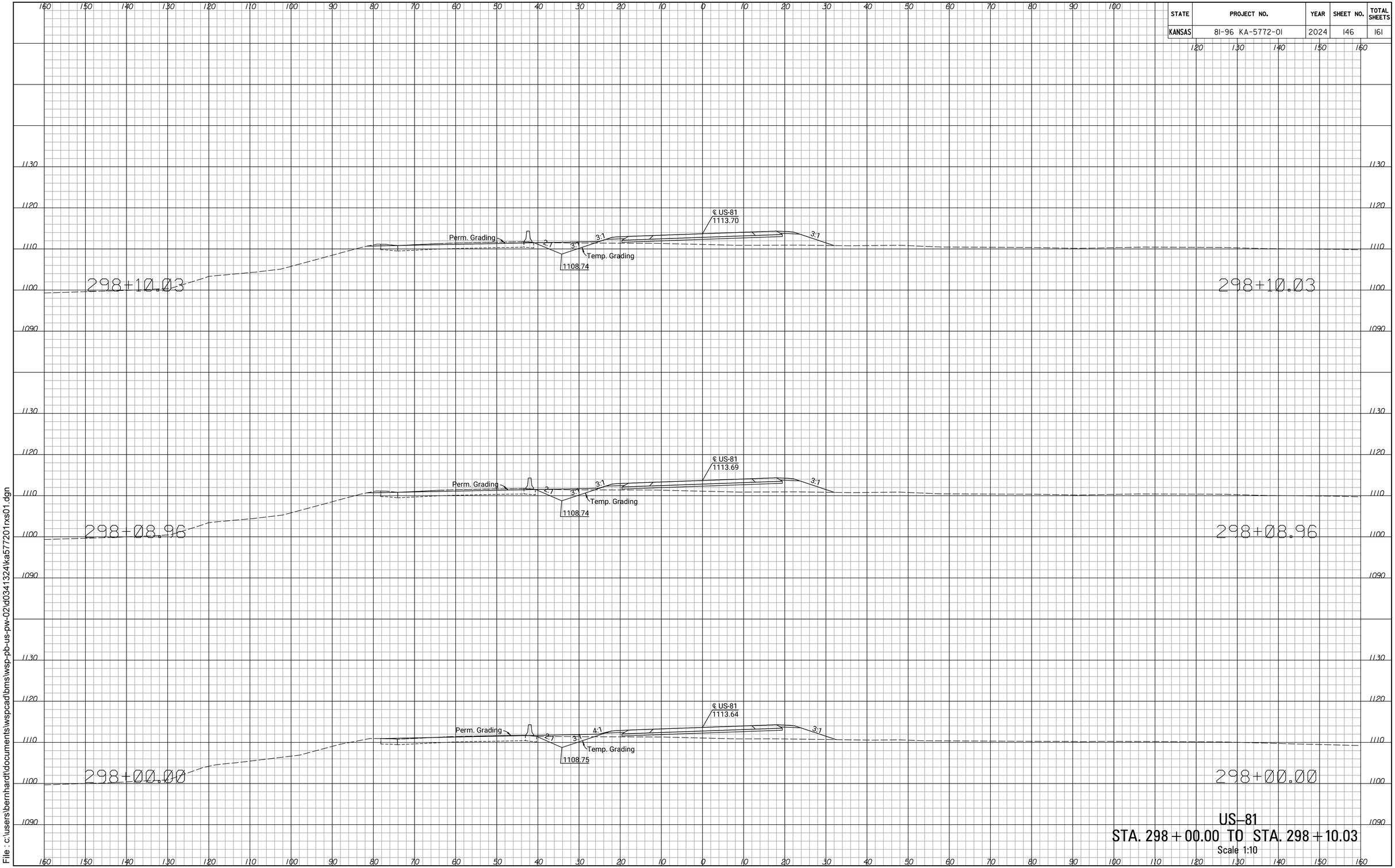
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KANSAS	81-96 KA-5772-01	2024	145	161



US-81
STA. 297+86.99 TO STA. 297+98.98
Scale 1:10

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka577201rxs01.dgn

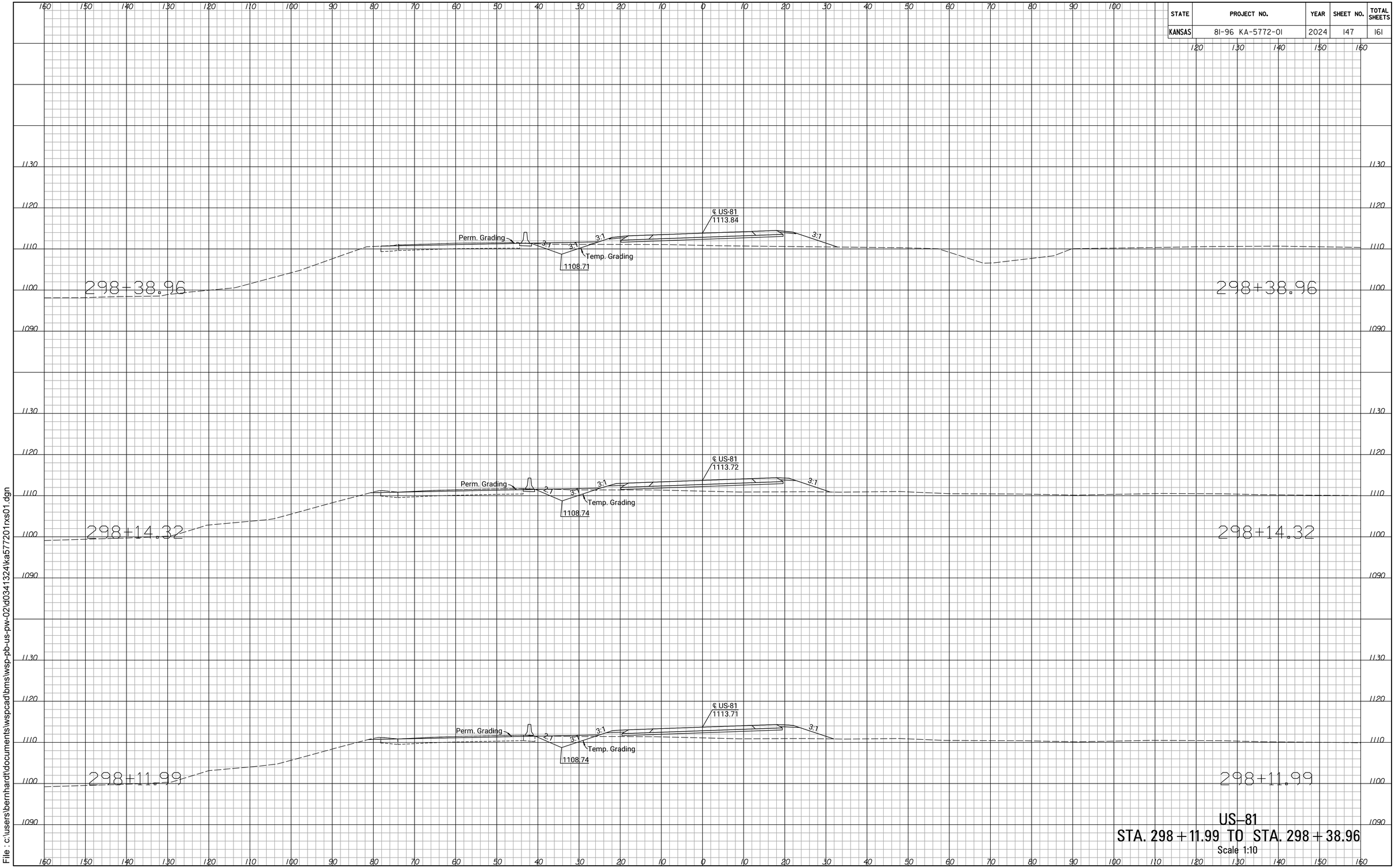
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	146	161



US-81
STA. 298+00.00 TO STA. 298+10.03
Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772o1rxs01.dgn

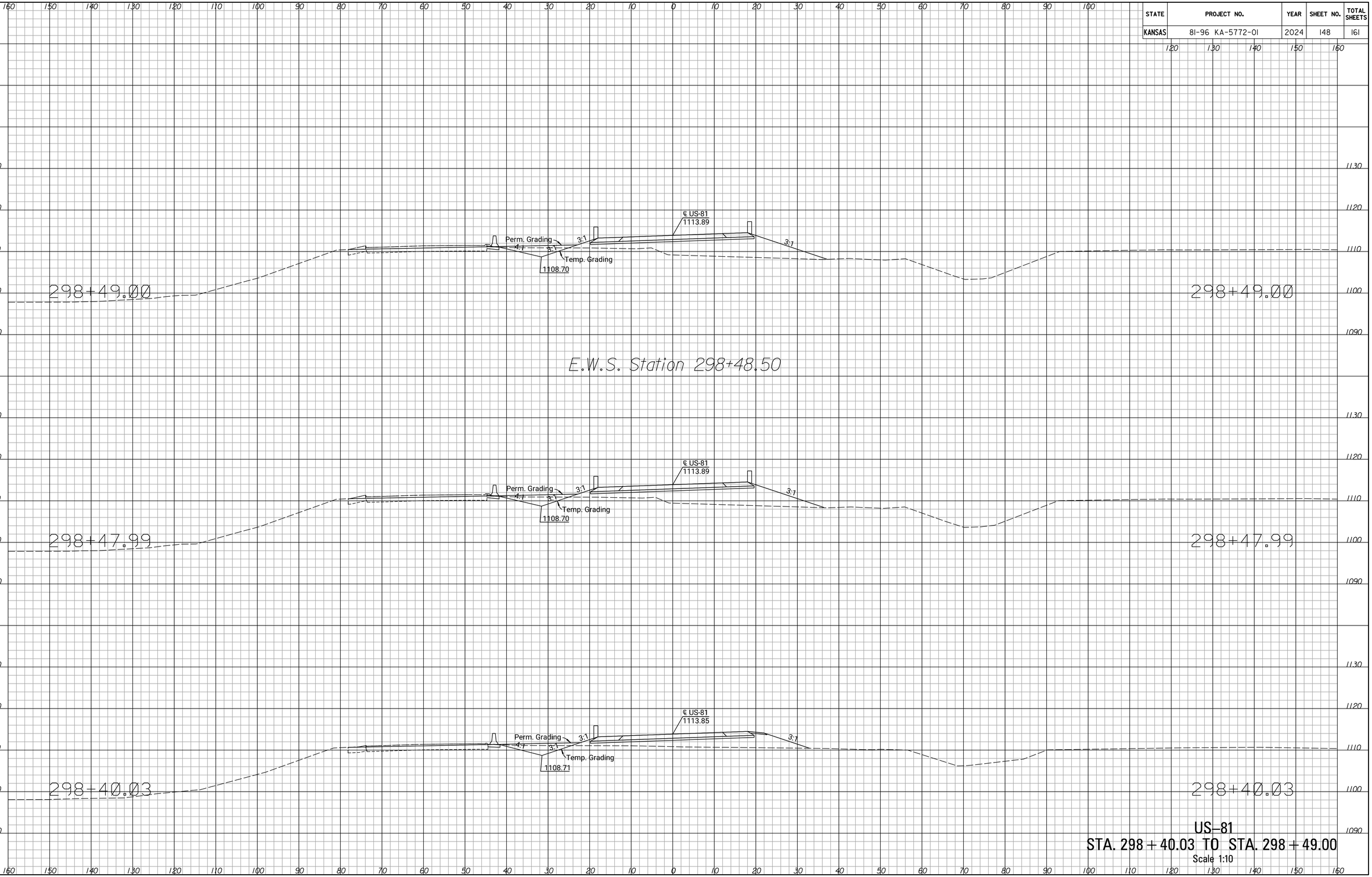
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	147	161



US-81
STA. 298+11.99 TO STA. 298+38.96
Scale 1:10

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772o1rxs01.dgn

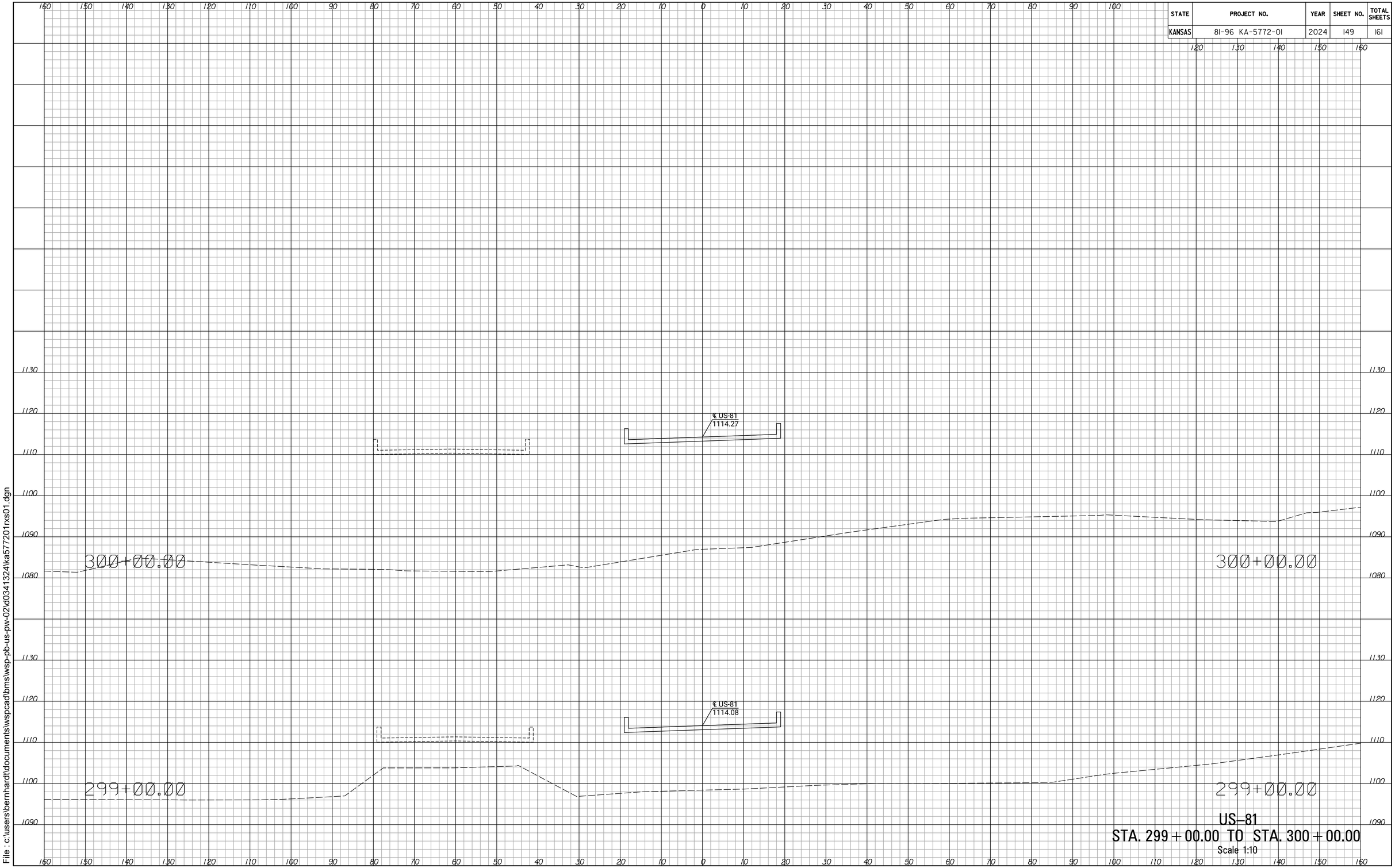
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	148	161



US-81
STA. 298+40.03 TO STA. 298+49.00
Scale 1:10

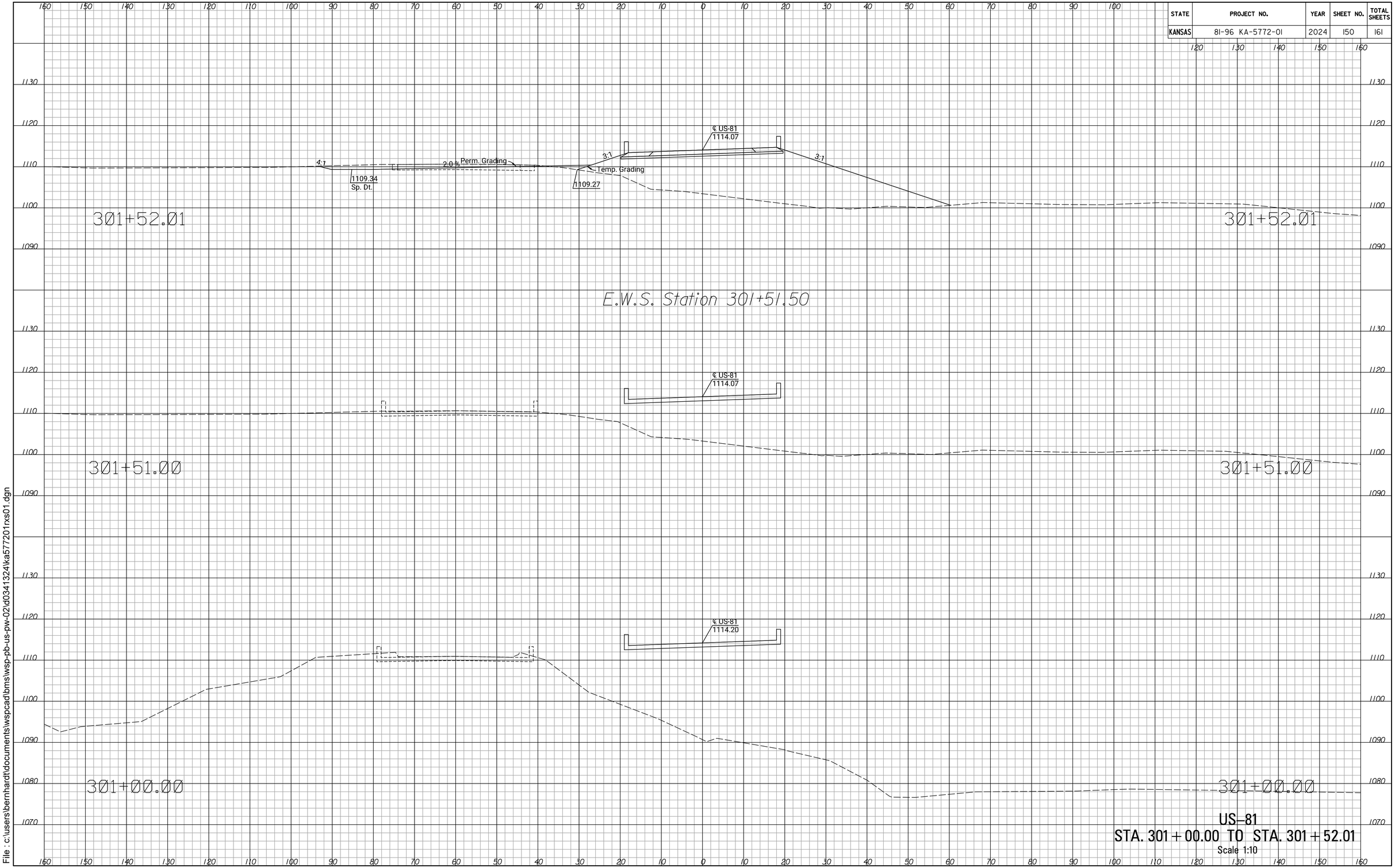
Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	149	161



Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

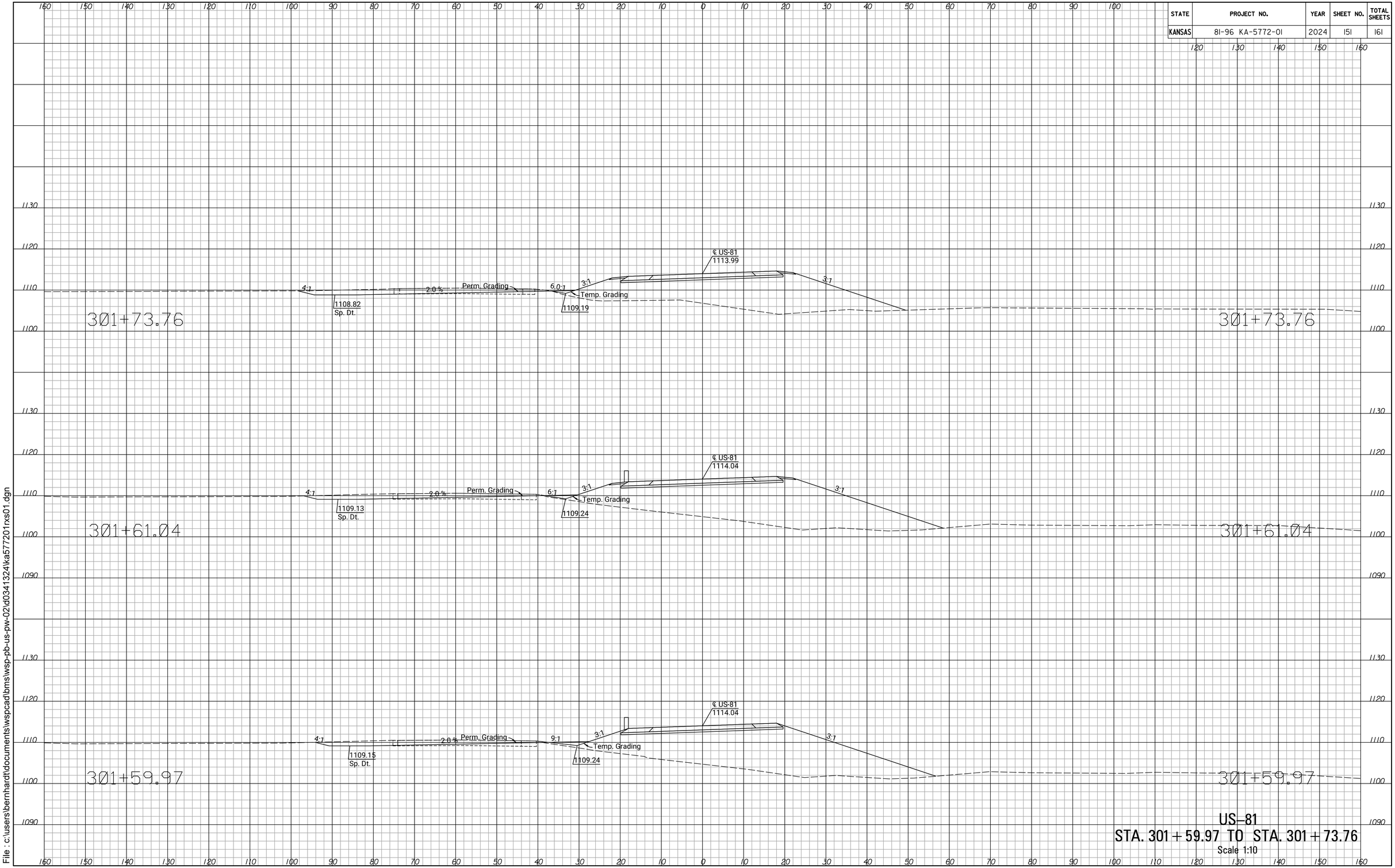
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	150	161



US–81
STA. 301 + 00.00 TO STA. 301 + 52.01
Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

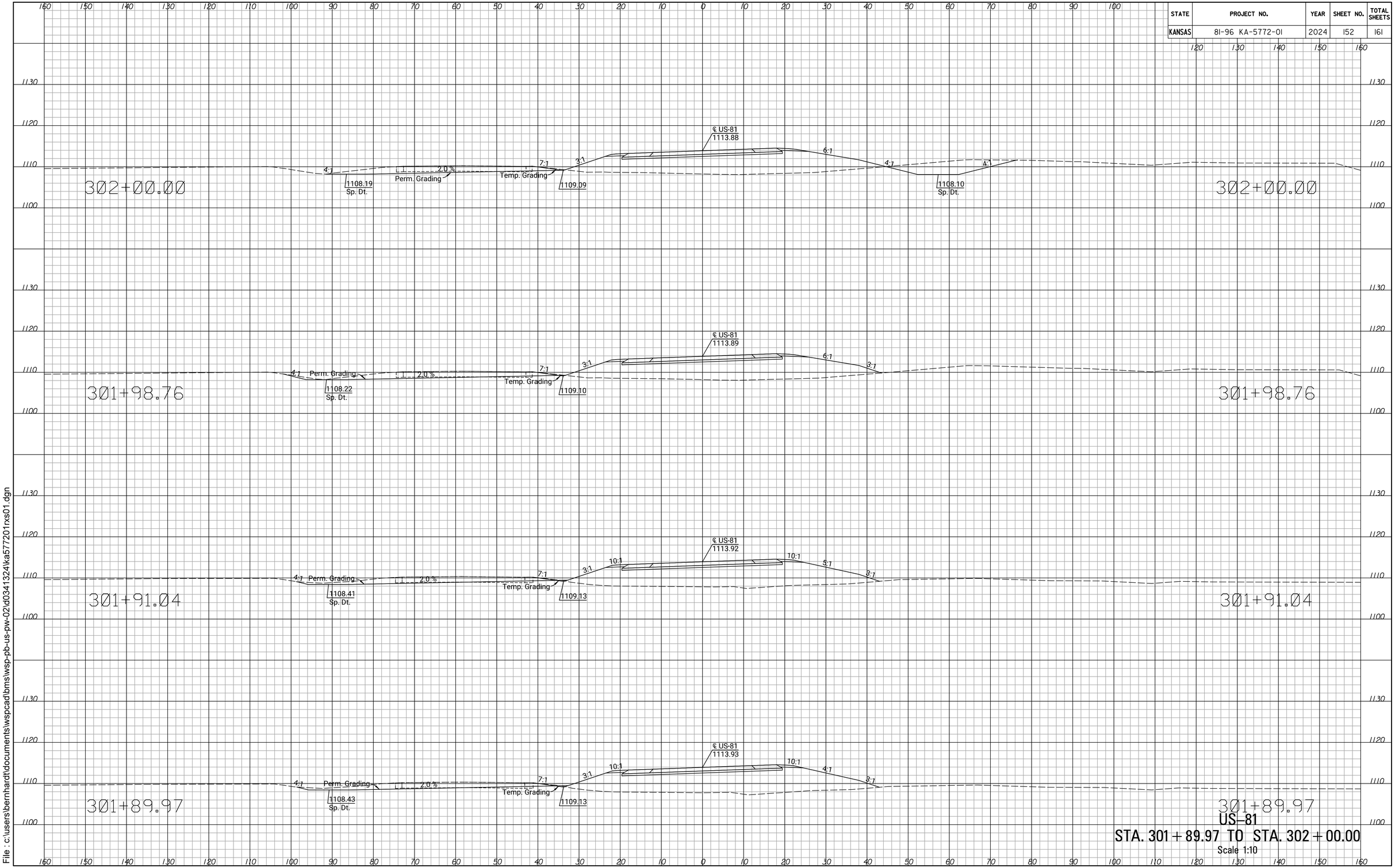
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	151	161



US–81
STA. 301+59.97 TO STA. 301+73.76
Scale 1:10

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772o1rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	152	161



US-81

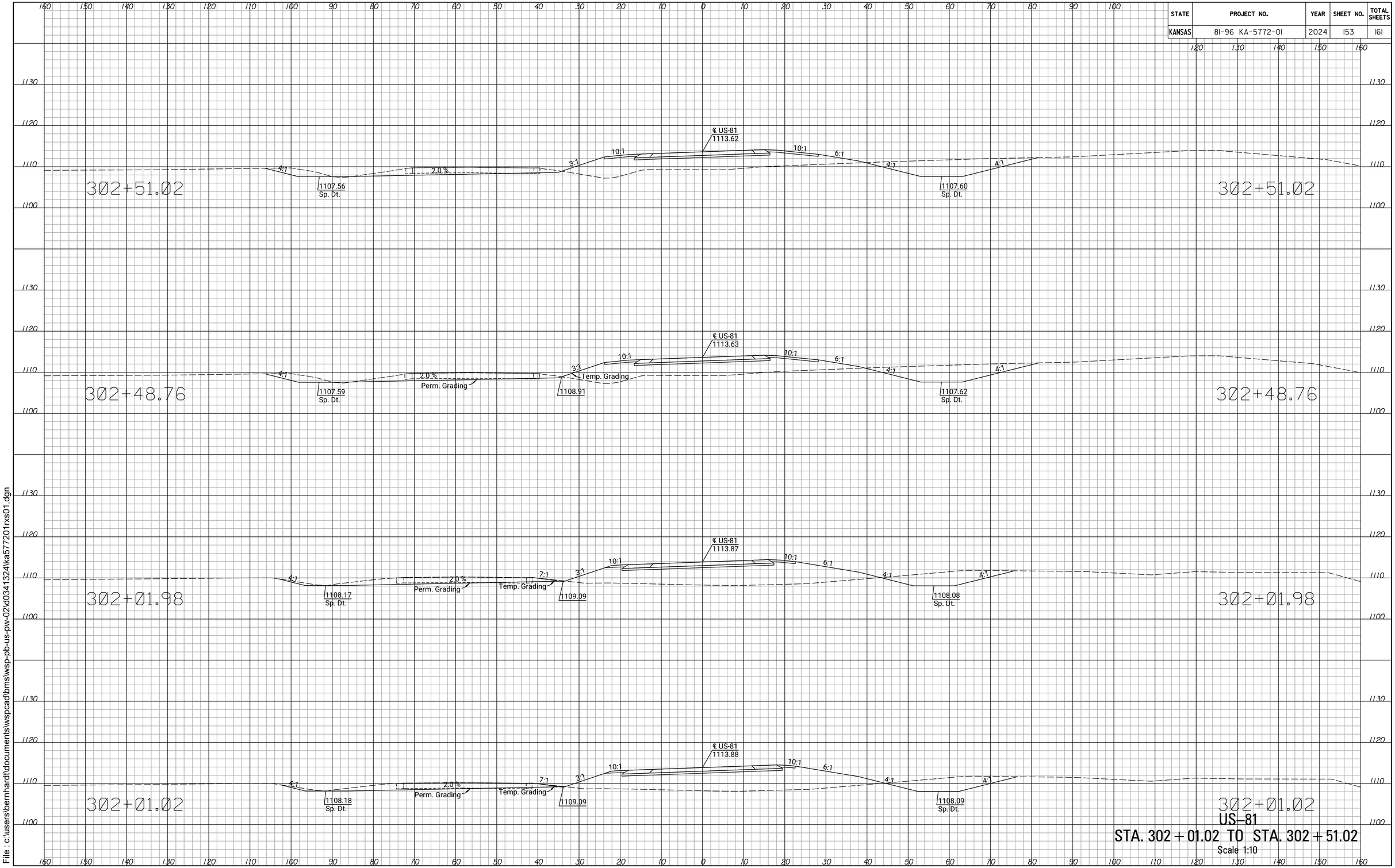
STA. 301+89.97 TO STA. 302+00.00

Scale 1:10

Date: $DATE$ Plotted : 8/16/2024

File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	153	161



US-81

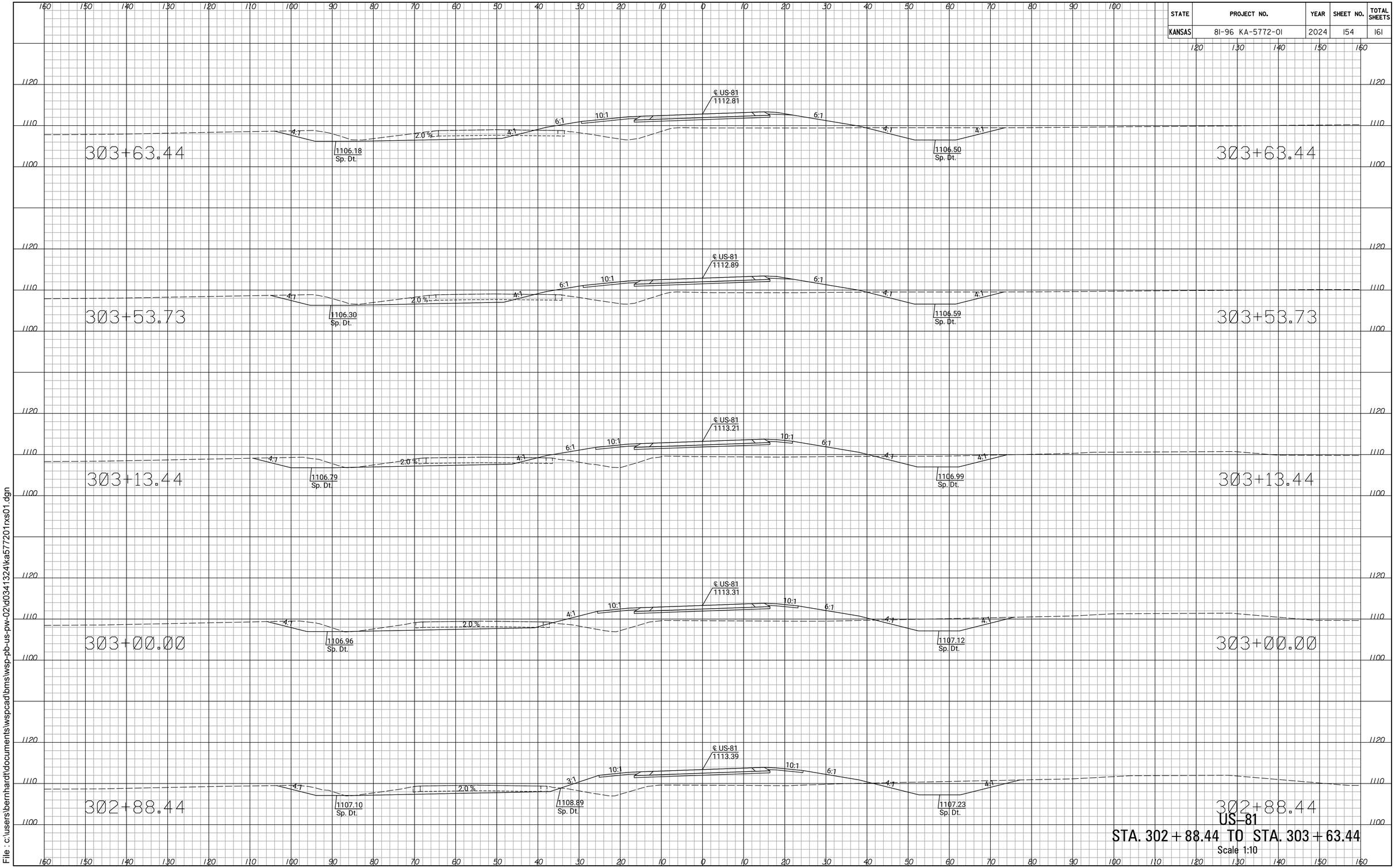
STA. 302 + 01.02 TO STA. 302 + 51.02

Scale 1:10

Date: $DATE$ Plotted : 8/16/2024

File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	154	161



US-81

STA. 302+88.44 TO STA. 303+63.44

Scale 1:10

Plotted : 8/16/2024

Date: $DATE$

File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	155	161

306+00.00

℄ US-81
1110.85

1103.27
Sp. Dt.

1104.18
Sp. Dt.

306+00.00

305+00.00

℄ US-81
1111.68

1104.50
Sp. Dt.

2.0 %

1105.16
Sp. Dt.

305+00.00

304+68.46

℄ US-81
1111.94

1104.89
Sp. Dt.

2.0 %

1105.47
Sp. Dt.

304+68.46

304+00.00

℄ US-81
1112.51

1105.73
Sp. Dt.

2.0 %

1106.14
Sp. Dt.

304+00.00

US-81
STA. 304+00.00 TO STA. 306+00.00
Scale 1:10

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	156	161

308+50.00

℄ US-81
1108.77

6:1
4:1
1100.51
Sp. Dt.
1097.83
Sp. Dt.

308+00.00

℄ US-81
1109.19

1100.81
Sp. Dt.
1099.10
Sp. Dt.

307+50.00

89.37' ℄
Match Exist.
40.00' ℄
1109.49
℄ US-81
1109.60
110.00' ℄
Match Exist.
5.85 %
2.00 %
3.02 %
Sta. 307+50
Profile Ent. Lt.
1101.43
Sp. Dt.
1100.37
Sp. Dt.
Sta. 307+50
Profile Ent. Rt.

307+00.00

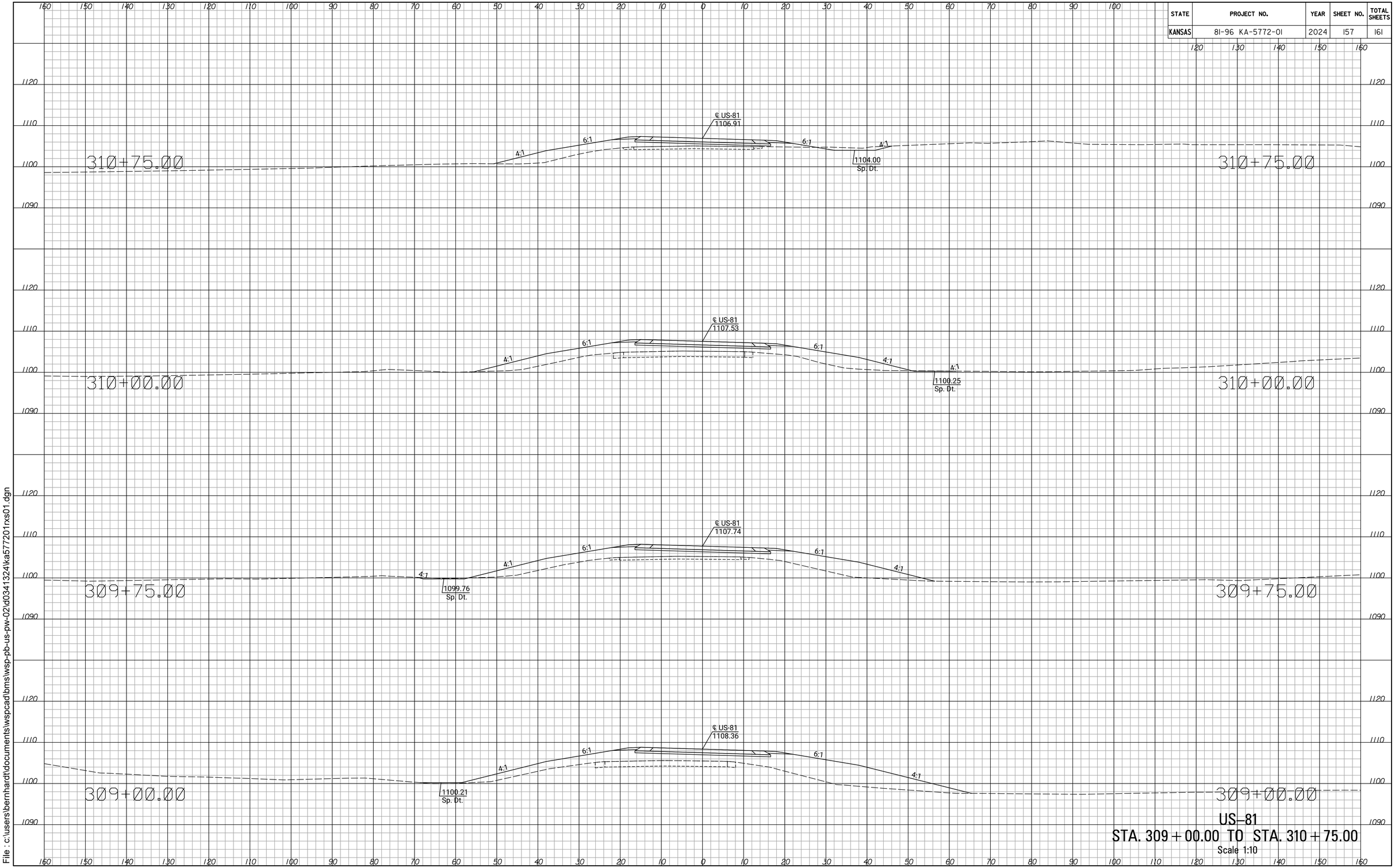
℄ US-81
1110.02

1102.04
Sp. Dt.
1101.64
Sp. Dt.

US–81
STA. 307+00.00 TO STA. 308+50.00
Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	157	161



US–81
STA. 309 + 00.00 TO STA. 310 + 75.00
Scale 1:10

Date: $DATE$ Plotted : 8/16/2024
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	158	161

312+25.00

℄ US-81
1105.66

4:1
4:1
6:1
6:1
4:1

1102.23
Sp. Dt.

1102.11
Sp. Dt.

312+25.00

312+00.00

℄ US-81
1105.87

4:1
4:1
6:1
6:1
4:1

1102.10
Sp. Dt.

1102.61
Sp. Dt.

312+00.00

311+25.00

℄ US-81
1106.49

4:1
4:1
6:1
6:1
4:1

1101.71
Sp. Dt.

1104.11
Sp. Dt.

311+25.00

311+00.00

℄ US-81
1106.70

4:1
6:1
6:1
1.74 %
4.46 %

50.00' ℄
1105.56

75.00' ℄
Match Exist.

Sta. 311+00
Profile Ent. Rt.

311+00.00

US-81
STA. 311+00.00 TO STA. 312+25.00
Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	159	161

315+00.00

1098.28
Sp. Dt.

℄ US-81
1104.71

Sta. 315+00 End
Project 81-96 KA-5772-01

1098.13
Sp. Dt.

315+00.00

314+00.00

1100.52
Sp. Dt

℄ US-81
1104.69

1098.65
Sp. Dt.

314+00.00

313+50.00

82.70' ℄
Match Exist.

1.86 %

50.00' ℄
1104.31

0.87 %

Sta. 313+50
Profile Ent. Lt.

℄ US-81
1104.84

313+50.00

313+00.00

1102.62
Sp. Dt.

℄ US-81
1105.09

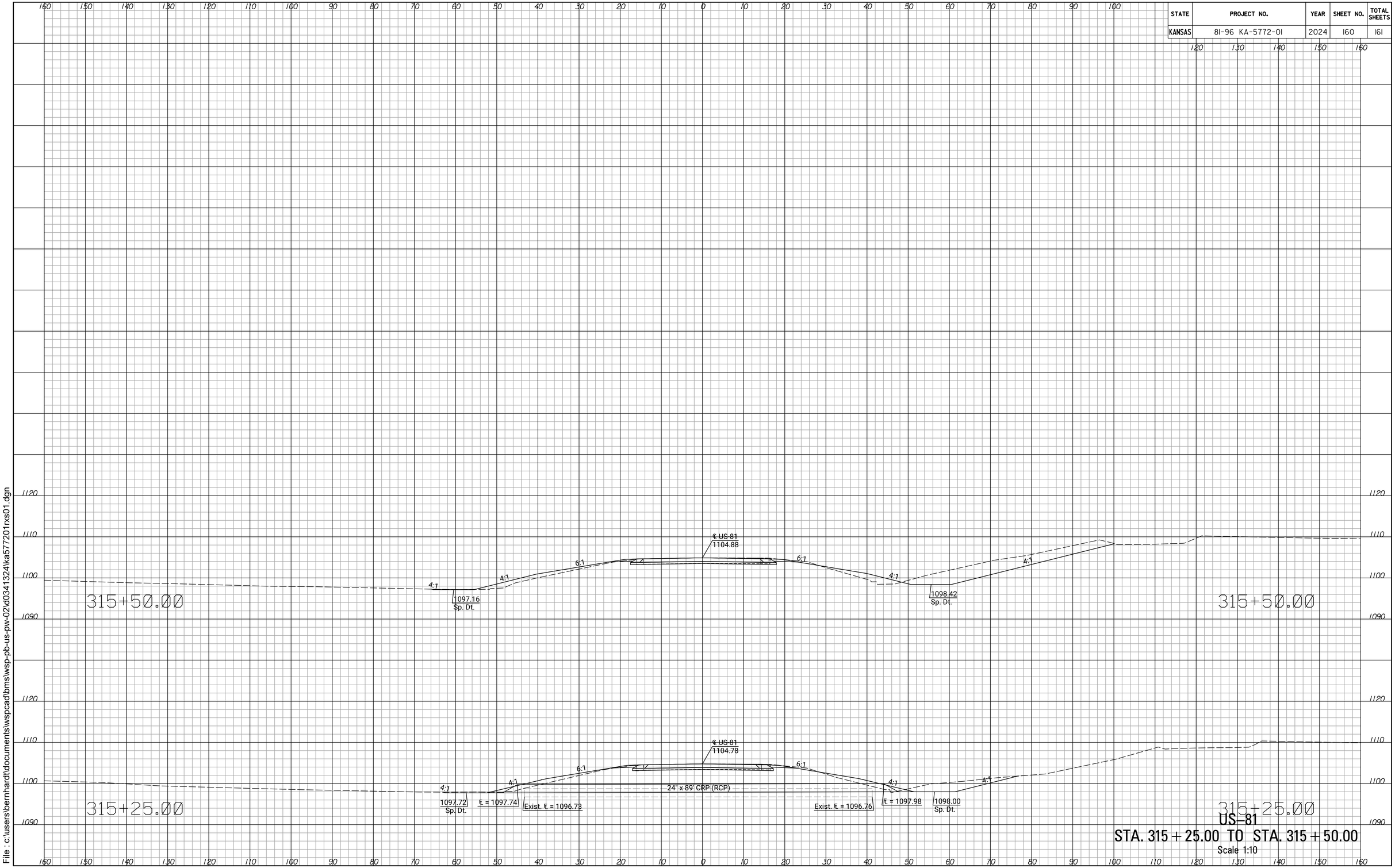
313+00.00

US-81
STA. 313 + 00.00 TO STA. 315 + 00.00

Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	160	161



US-81

STA. 315 + 25.00 TO STA. 315 + 50.00

Scale 1:10

Plotted : 8/16/2024

Date: $DATE$

File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772201rxs01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	81-96 KA-5772-01	2024	161	161



US-81
STA. 316+00.00 TO STA. 317+00.00
Scale 1:10

Plotted : 8/16/2024
Date: $DATE$
File : c:\users\bernhardt\documents\wspcad\bms\wsp-pb-us-pw-02\d0341324\ka5772o1rxs01.dgn