December 15, 2021

MEMORANDUM TO: TONY MENKE, P.E., CHIEF
BUREAUOF CONSTRUCTION & MATERIALS

We are handing you Final Plans for the project noted below for the January 2022 letting.

Jeff Sims / Paul Kulseth
Design Squad

40-55 KA-3915-01 STP-A391(501)	Logan	0.52 mile
Project Number	County	Length

REMARKS:

Grading and Surfacing (Asphalt), Bridge, and Seeding

US-40: Bridge #008 (North Bridge Hackberry Creek) Located 4.85 Miles Northeast of East Junction K-25

APPROVED:

Stephen F. Rockhus

For: CHIEF, BUREAU OF ROAD DESIGN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	1	71

STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

PROJ. NO. 40-55 KA-3915-01
FEDERAL AID PROJ. NO. STP-A391(501)

GRADING AND SURFACING (ASPHALT)
BRIDGE
SEEDING

PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY

FEDERAL AID PROJECT

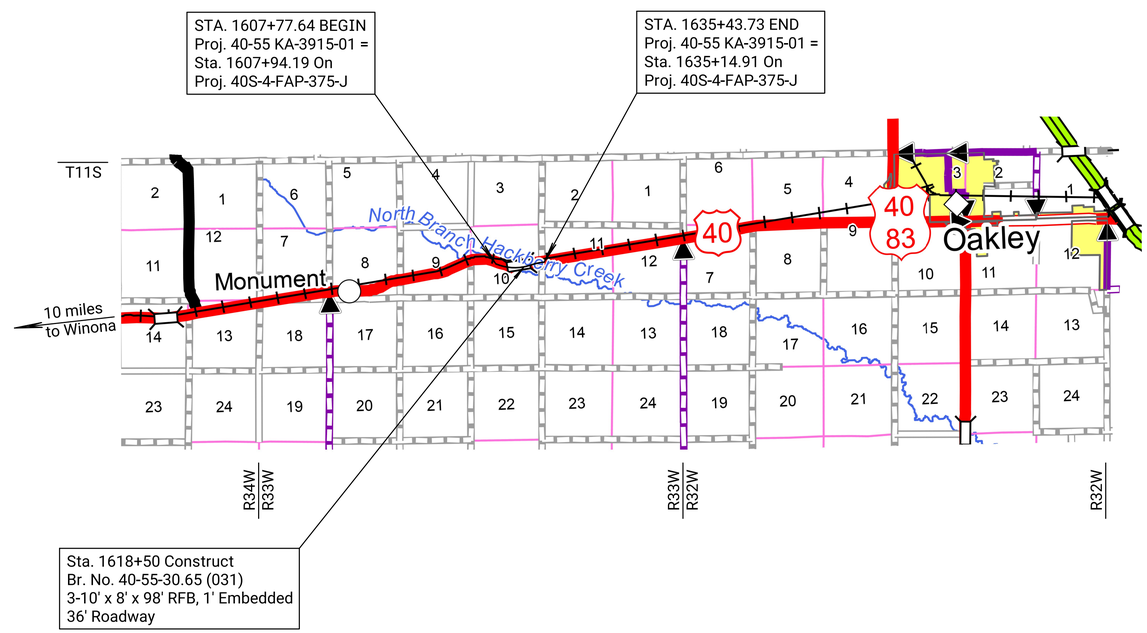
LOGAN COUNTY

US - 40

SCALE: 1" = 1 Mile

INDEX OF SHEETS

1	TITLE SHEET
2	SIGN AND SEAL SHEET
3	TYPICAL SECTIONS
4	COMPACTION & SUBGRADING DETAIL SHEET
5	SALVAGED TOPSOIL
6	GENERAL NOTE SHEET
7-10	PLAN-PROFILE SHEETS
11	SECTION CORNER MONUMENTATION DETAIL SHEET
12	RIGHT OF WAY MONUMENT INSTALLATION DETAIL SHEET
13-14	PAVING DETAILS
15-17	METAL END SECTIONS
18	CONCRETE END SECTIONS
19-20	PIPE CULVERT SUMMARY
21-28	BRIDGE NO. 40-55-30.65 (031)
29	SUMMARY OF QUANTITIES SHEET
30	PROJECT SURFACING SHEET
31-41	TEMPORARY EROSION AND POLLUTION CONTROL
42	SEEDING
43-45	CONSTRUCTION SEQUENCE
46-60	TRAFFIC CONTROL
61-71	CROSS SECTIONS



DESIGN DESIGNATION

AADT (2021)	= 1,600 vpd
AADT (2041)	= 2,000 vpd
DHV	= 10%
D	= 55%
T	= 24%
V	= 65 mph
C of A	= None
Clear Zone	= 32 ft.

NOTE:
TRAFFIC TO BE CARRIED THROUGH STAGED CONSTRUTION.
SEE SH. NO. 43-45 CONSTRUCTION SEQUENCING DETAILS

CONVENTIONAL SIGNS

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

GROSS LENGTH OF PROJECT 2766.09 FT. (Includes Equations)

EXCEPTIONS

NET LENGTH OF PROJECT	2766.09	FT.	0.52	MILES
NET LENGTH OF BRIDGES	0	FT.	0	MILES
NET LENGTH OF ROAD	2766.09	FT.	0.52	MILES

Approved Dec 15, 2021
Date

State Transportation Engineer

By:

Chief, Bureau of Road Design

KANSAS DEPARTMENT OF TRANSPORTATION

	BY	DATE
SURVEY	M. Selley	5/2007
CADD TECHNICIAN	R. Bowman	1/2022
DESIGNERS	R. Bowman (Road) / P. Tobaben (Bridge)	1/2022
SQUAD	J. Sims (Road) / P. Kulseth (Bridge)	1/2022

Plotted by : rbowman 08-DEC-2021 08:33
File : KA391501rti-01.dgn

CADconform Certify This File

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	2	71

JEFFREY S. SIMS LICENSED 23132 KANSAS PROFESSIONAL ENGINEER Nov. 12, 2021 Name: Jeff Sims, P.E. Co. Name: Kansas Department of Transportation Plan Section: Road	PAUL A. KULSETH LICENSED 20051 KANSAS PROFESSIONAL ENGINEER Nov 12, 2021 Name: Paul Kulseth, P.E. Co. Name: KDOT Plan Section: Bridge	DAVID ALAN CHURCH LICENSED 14034 KANSAS PROFESSIONAL ENGINEER Nov 12, 2021 Name: David Church, P.E. Co. Name: Kansas Department of Transportation Plan Section: Temporary Traffic Control					

KANSAS DEPARTMENT OF TRANSPORTATION

Signature Seal Sheet

RD048

KDOT Graphics Certified 01-24-2018

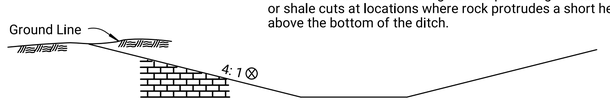
Sheet No. 2

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	3	71

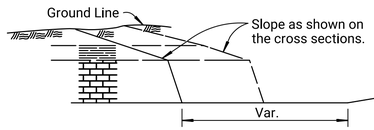
Guide to designer: Use this sheet when subgrading in rock or shale is not required. See Soils and Geology Reports for additional plan notes.

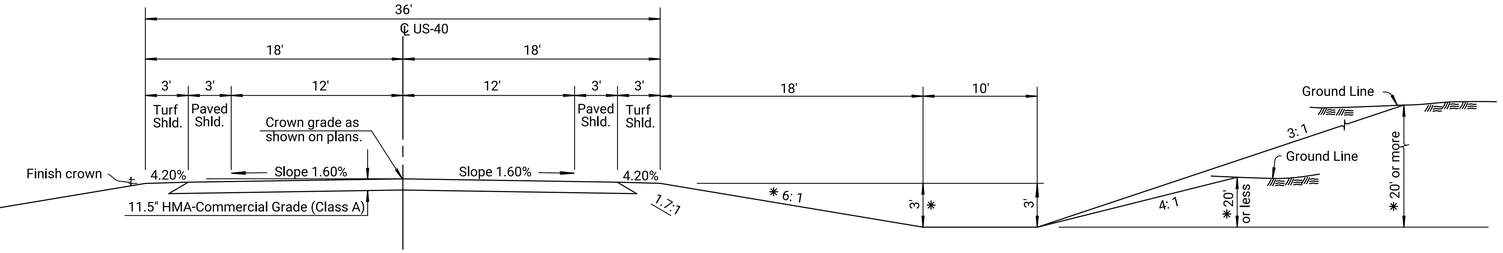
Note: Method of constructing backslope through shallow rock or shale cuts at locations where rock protrudes a short height above the bottom of the ditch.



CUT SECTION

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





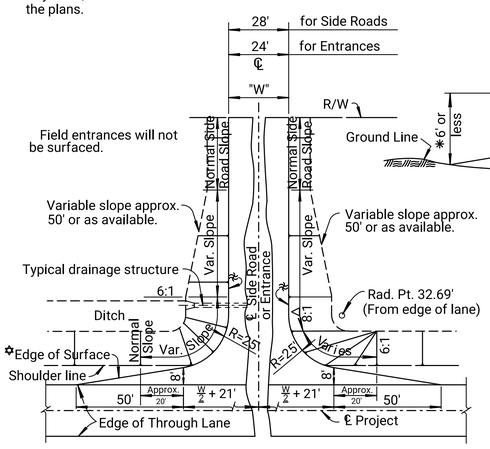
CUT SECTION

✳ 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.

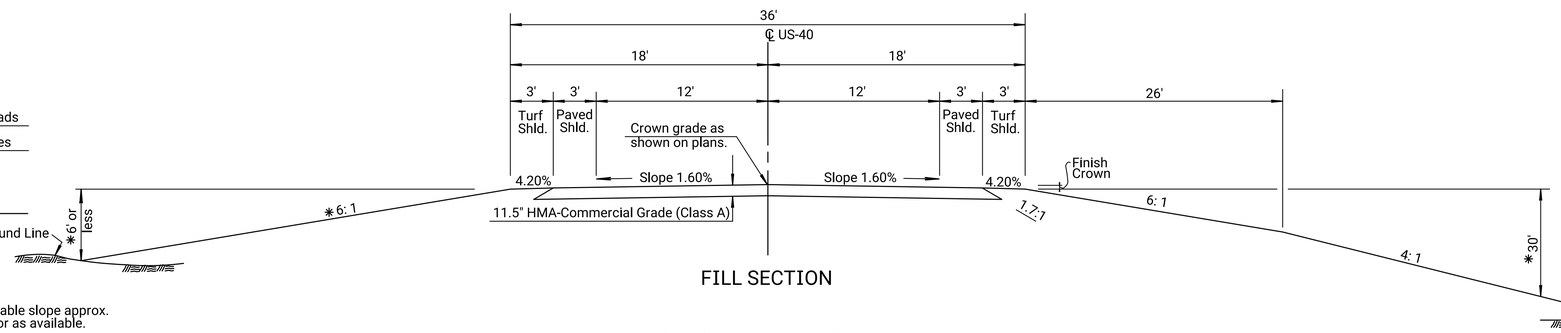
✳On side roads and entrances which slope toward the highway, a low point approx. 6" deep shall be constructed to divert surface drainage into the highway ditch, unless otherwise shown on the plans.



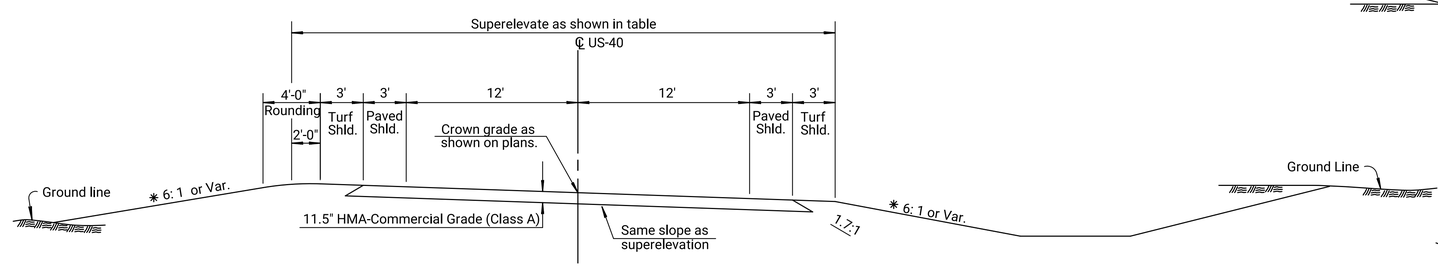
FLARE OF SHOULDERS
AT ENTRANCES AND SIDE ROADS

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

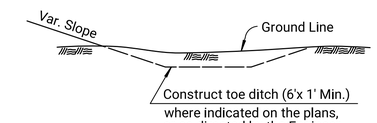
△8: 1 Slope at the appropriate clear zone shall apply to all mound entrances and mound side roads to 10' fill height. Normal Slope (but not steeper than 6:1) over 10' fill height.



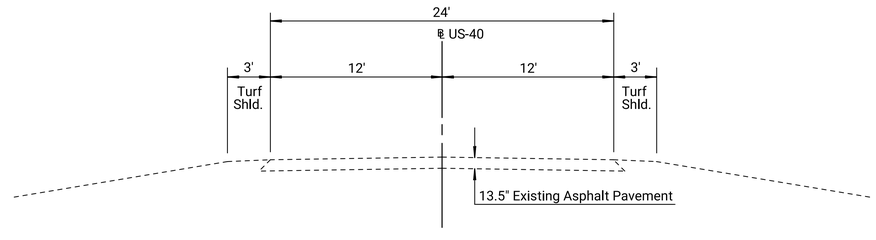
FILL SECTION



SUPERELEVATED SECTION



Construct toe ditch (6'x 1' Min.) where indicated on the plans, or as directed by the Engineer.



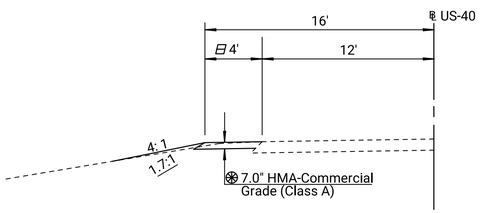
EXISTING TYPICAL SECTION
(FOR INFORMATION ONLY)

US-40 Existing Pavement History

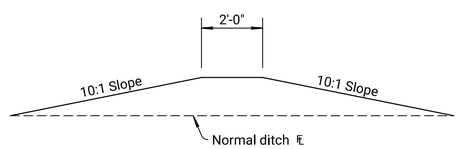
2015	Chip Seal	0.5" x 24'
2012	SM-9.5A	1.0" x 24'
2012	SR-19A	2.5" x 24'
2002	CRECYL	3.5" x 24'
1950-1970	SEALS	2.0" x 24'
1946	BMA-1	2.5" x 24'
1936	BITCOV	1.5" x 24'
1928	Gravel	2.0" x 24'

⊛ The HMA-Commercial Grade (Class A) mix has modified requirements as shown in special provision 15-PS0161 for 40% RAP

⊟ From ℄ Sta. 1602+75 to ℄ Sta 1614+00 Lt. & ℄ Sta. 1630+08 to ℄ Sta 1639+25 Lt. Widen 12' Lane to 16' Lane



TEMPORARY WIDENING SECTION



SKETCH OF DITCH PLUG

SOIL FOR EMBANKMENT CONSTRUCTION: All soil used in the top 18" of the embankment shall conform at the following requirements:
8 ≤ PI ≤ 25 and 20 ≤ LL ≤ 45. Soils which contain substantial organic material, such as those classified as OL or OH according to the Unified Soil Classification System (ASTM D2487), should not be used to construct the embankment or subgrade. The organic material may be used as select soil to cap the sideslopes of the embankment.

Sta. P.I. Curve		Radius	Design Speed	Super %	Transition - (Lin.Ft.) L	A	B
℄ US-40	1618+44.17	2,710.00'	65 MPH	6.00%	See Superelevation Diagram Sheet No. 14		
℄ US-40	1631+53.21	2,710.00'	65 MPH	6.00%			

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	1 1-10-04	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 SECTIONS

~~RD600~~

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

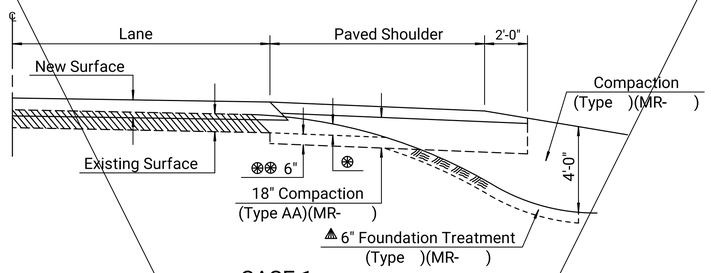
KDOT Graphics Certified 07-08-2021 Sh. No. 3

KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:34
File : KA3915 01rts-01.dgn

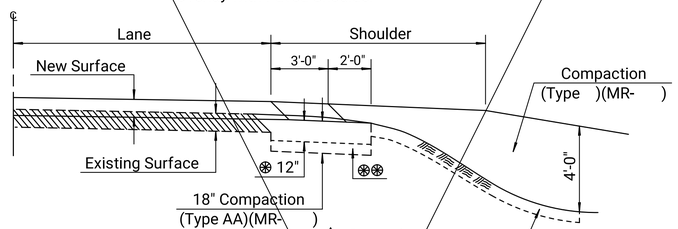
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	4	71

REHABILITATION



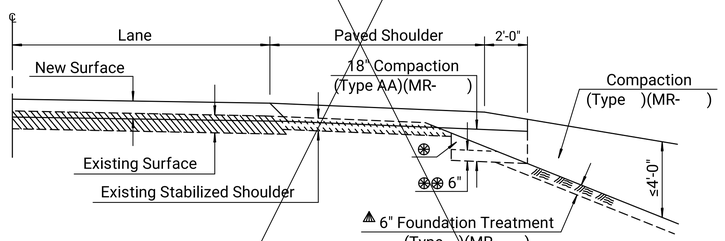
CASE 1

Overlay with Paved Shoulder



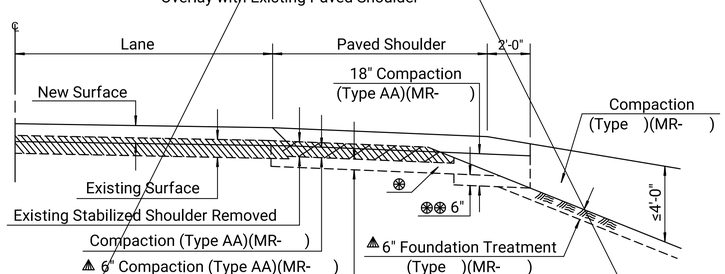
CASE 2

Overlay with Composite Shoulder



CASE 3

Overlay with Existing Paved Shoulder



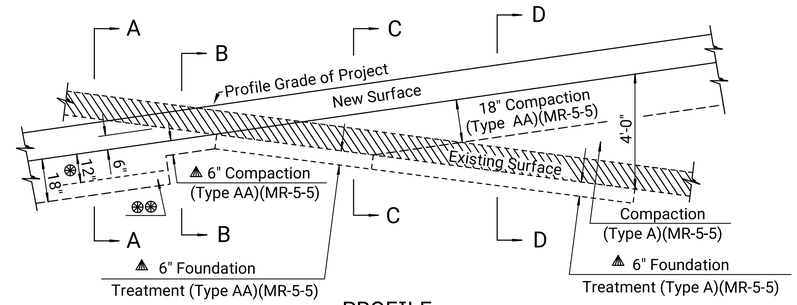
CASE 4

Overlay with Shoulder Replacement

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

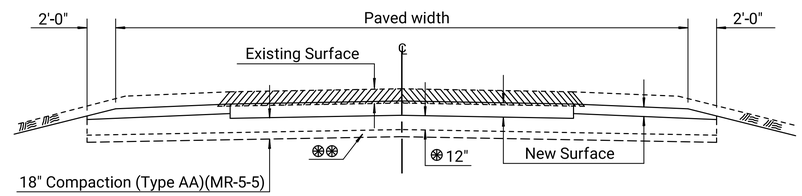
Note: These are 4 general cases. Specific compaction requirements are determined on a project-by-project basis.

RECONSTRUCTION

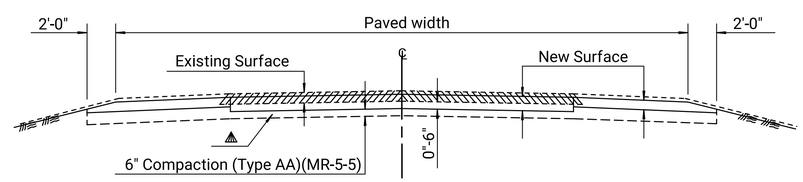


PROFILE

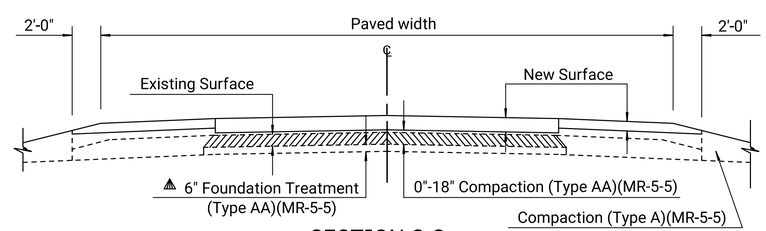
⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



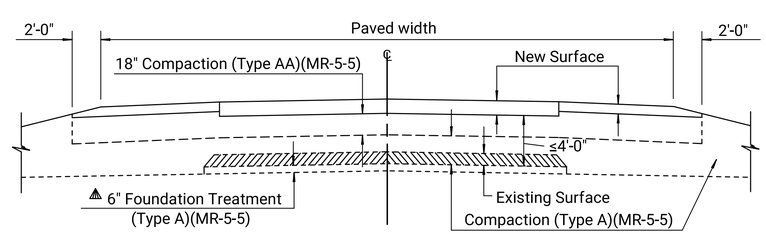
SECTION A-A



SECTION B-B

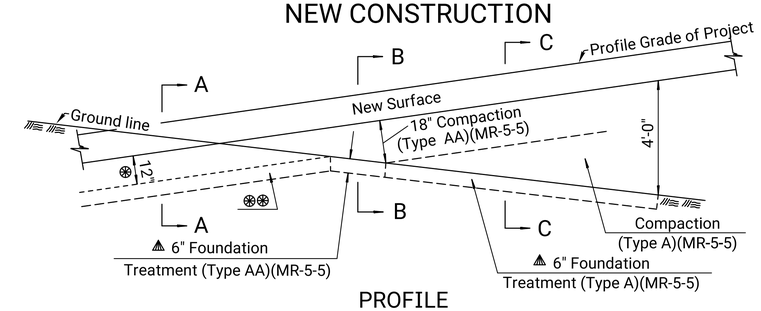


SECTION C-C



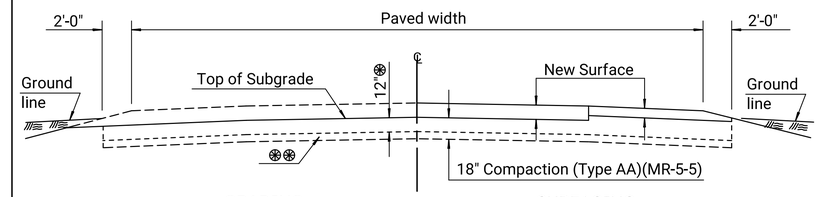
SECTION D-D

NEW CONSTRUCTION

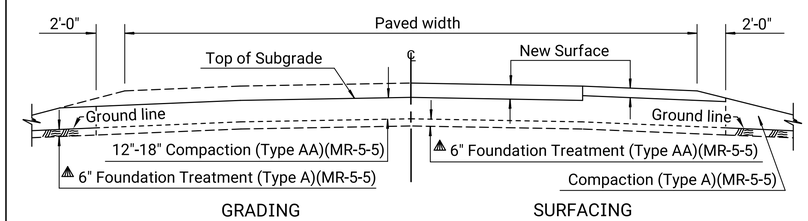


PROFILE

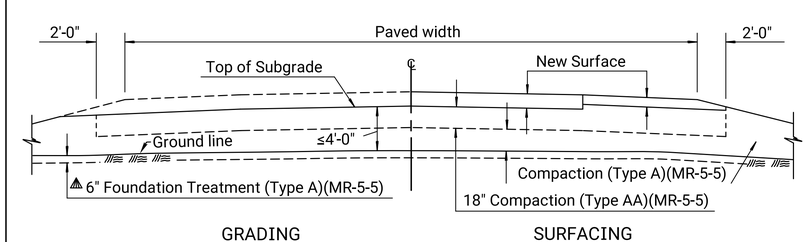
⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



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	10-17-1 1	Revised General Note	S.W.K.	J.O.B.
4	1-05-1 0	Added additional subsidiary comp.	S.W.K.	J.O.B.
3	2-16-05	Redrawn, Rev. Recon. Sec. C-C & D-D	S.W.K.	J.O.B.
2	5-29-98	Revised Reconstruction Section B-B	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FOUNDATION TREATMENT & COMPACTION OF EARTHWORK

~~RD605~~

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

KDOT Graphics Certified 07-06-2021 Sh. No. 4

KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:34
File : KA391501rss605-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	5	71

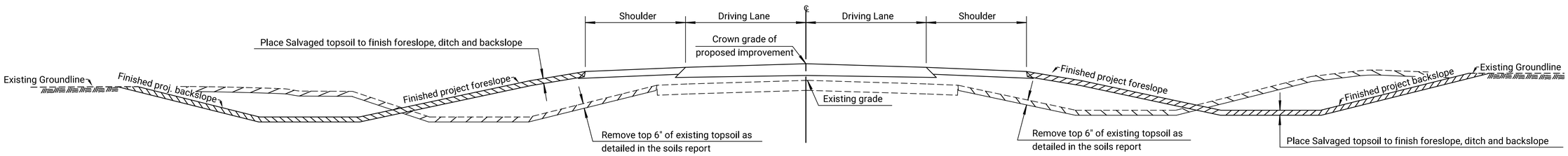
GENERAL NOTE

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.

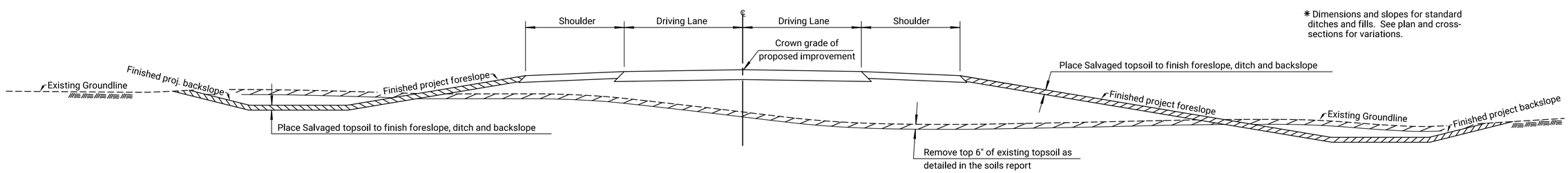
Soften and round the intersection of all slope lines for pleasing appearance.

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.



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.



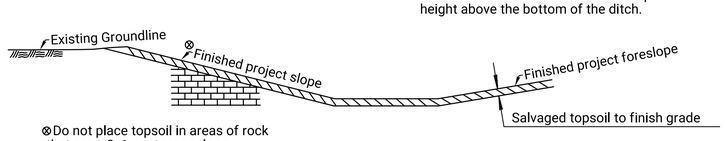
NEW ROADWAY ALIGNMENT
(Removal and Placement of Salvaged Topsoil)

LEGEND

Topsoil to be Salvaged

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 04-26-2021 Sh. No. 5

KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:34
File : KA391501rss599a-01.dgn

GENERAL NOTE

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

AT BORROW AREA LOCATIONS ADJACENT TO THE RIGHT OF WAY, UTILITY POLES MAY BE SET AT THE PERMANENT LOCATIONS PRIOR TO CONSTRUCTION AS APPROVED BY THE ENGINEER PROVIDED A MINIMUM VERTICAL CLEARANCE, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL SAFETY CODE, IS OBTAINED. THE CONTRACTOR WILL BE REQUIRED TO WORK ARROUND 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 APPERANCE ON THE PROJECT WILL NOT BE APPROVED.

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

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

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

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

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

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

ALL SAWCUTS SHALL BE FULL DEPTH OR AS APPROVED BY THE ENGINEER AND SHALL NOT BE PAID FOR DIRECTLY; BUT SHALL BE SUBSIDIARY TO OTHER BID ITEMS ON THE CONTRACT.

DRAINAGE STRUCTURES WHICH ARE TO REMAIN, WHETHER EXTENDED OR NOT, SHALL BE CLEANED OUT BY THE CONTRACTOR, AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PAID FOR UNDR THE BID ITEM "CLEANING OF EXISTING STURCTURES."

A GROSS VMF 0F 0.70 WAS USED TO COMPUTE EARTHWORK QUANTITIES FOR THIS PROJECT. THIS FACTOR INCLUDES QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT.

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

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

SOIL FOR EMBANKMENT CONSTRUCTION: ALL SOIL USED IN THE TOP 18" INCHES OF THE EMBANKMENT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: $8 \leq PI \leq 25$ AND $20 \leq LL \leq 45$. SOILS WHICH CONTAIN SUBSTANTIAL ORGANIC MATERIAL, SUCH AS THOSE CLASSIFIED AS OL OR OH ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487) SHOULD NOT BE USED TO CONSTRUCT THE EMBANKMENT OR SUBGRADE. THE ORGANIC MATERIAL MAY BE USED AS SELECT SOIL TO CAP THE SIDESLOPES OF THE EMBANKMENT.

TEMPORARY EASEMENT OBTAINED FROM UPRR THROUGH A MAINTENANCE CONSENT LETTER DATED 4/23/20 UP FOLDER NO. 3204-04.

UTILITY OWNERS

Fiber Optic:

S&T Communications
320 Kansas Ave.
Brewster, KS 67732
Locator: Dennis
800-432-8294

PROJECT SURVEY CONTROL

HORIZONTAL DATUM
Proj. Coord. x 0.99981484 =
State Plane Coordinates North Zone (NAD 83)

VERTICAL DATUM
NAVD 1988 NGS Benchmark "PACIFIC" (1951)
Elev. = 3,109.67'

KANSAS DEPARTMENT OF TRANSPORTATION

GENERAL NOTES
& UTILITY OWNERS

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	7	71

℄ P.O.T. Sta. 1607+77.64
N 297,267.141 E 469,697.954
1. = ℄ Sta. 1607+77.64
2. Not Set

℄ P.C. Sta. 1609+07.64
N 297,221.983 E 469,819.600
1. = ℄ Sta. 1609+07.64
2. Not Set

℄ P.C. Sta. 1609+56.13
N 297,205.142 E 469,865.063
1. Set ½" Rebar (0.3' deep)
2. ℄ Top R/W marker 57.0' SSE
3. TW US-40 Hwy. 1.0' S
4. N.O.R.A.

℄ P.I. Sta. 1612+63.62 (Bk.)= 1612+52.13 (Ahd.)
△= 27°-04'-39" (Lt.)
N 297,098.329 E 470,153.412
1. Set ½" Rebar w/orange plastic cap, (8" deep)
2. Spk. & KDOT wshr. top cor. fence post 278.4' E
3. "T" post = BM#13 (flush w/ground) 79.7' NNE
4. N.O.R.A.

℄ P.T. Sta. 1615+59.63
N 297,134.479 E 470,458.777
1. Set ½" Rebar (0.3' deep)
2. Spk. & KDOT wshr. top cor. fence post 59.4' SSW
3. Spk. & KDOT wshr. top cor. fence post 82.9' SE
4. Fence line to South 31.5' W

℄ P.I. Sta. 1618+44.17 (Bk.)= 1617+74.53 (Ahd.)
N 296,896.669 E 470,697.806
1. 264.26' Rt. of ℄ Sta. 1617+69.04
2. Not Set

℄ P.O.T. Sta. 1625+00
N 297,245.030 E 471,392.625
1. Set ½" Rebar (0.3' deep)
2. Spk. & KDOT wshr. top fence post 76.9' SW
3. Spk. & KDOT wshr. top fence post 50.6' SSW
4. Spk. & KDOT wshr. top fence post 55.3' SE

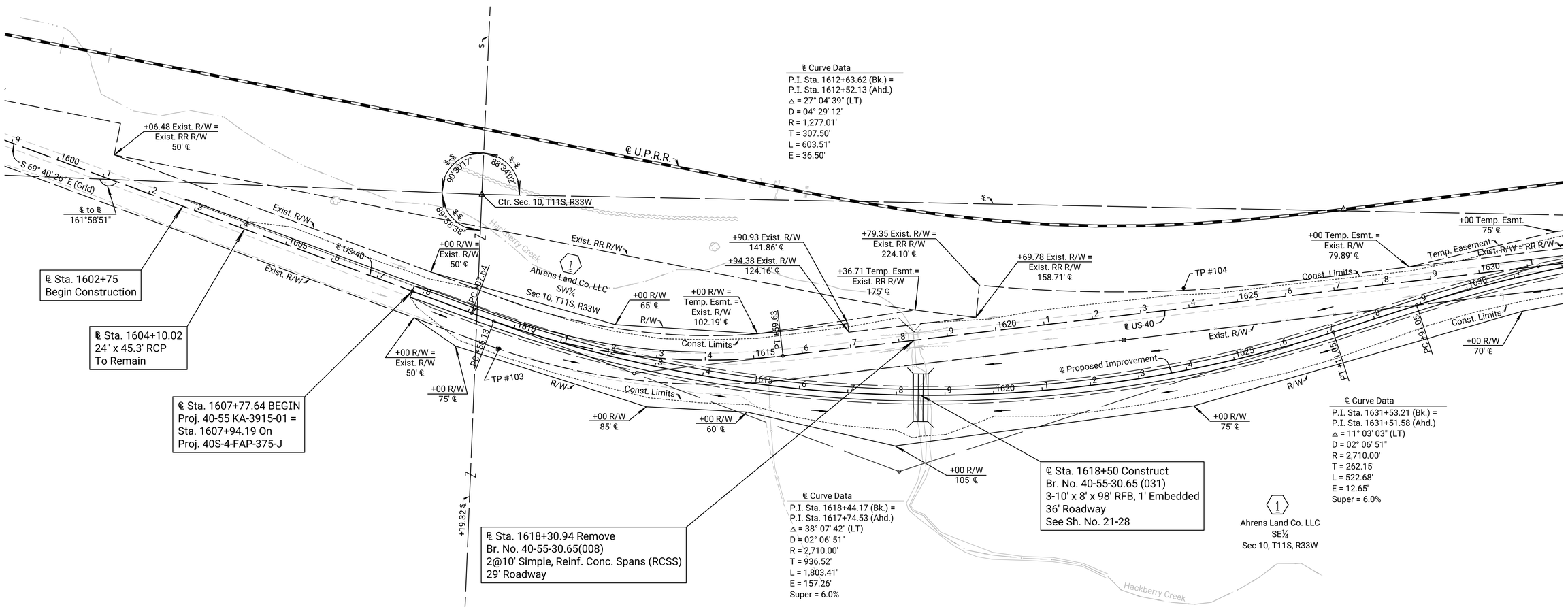
℄ P.T. Sta. 1627+11.05
N 297,182.992 E 471,589.486
1. 84.75' Rt. of ℄ Sta. 1626+88.20
2. Not Set

℄ P.C. Sta. 1628+91.05
N 297,238.023 E 471,760.867
1. 50.25' Lt. of ℄ Sta. 1628+64.86
2. Not Set

℄ P.I. Sta. 1631+53.21 (Bk.)= 1631+51.58 (Ahd.)
N 297,318.171 E 472,010.468
1. = ℄ Sta. 1631+22.16
2. Not Set

Traverse Point #103
N 297,148.952 E 469,876.646
1. Set ½" rebar w/orange plastic cap
2. 49.02' Rt. of ℄ Sta. 1609+85.39

Traverse Point #104
N 297,273.214 E 471,281.880
1. Set ½" rebar w/orange plastic cap
2. 41.01' Lt. of ℄ Sta. 1623+93.34



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

W ¼ Cor. Sec. 10, T11S, R33W
N 297,572.416 E 467,200.312
1. Found ½" Square Rebar (6" deep)
2. 301.68' E. along ⅛ Tangent Sta. 1578+78.95 N.W.∡= 22° 48' 26"
3. 127.39' S. along ⅛ Tangent Sta. 1582+07.57 N.W.∡= 113° 22' 08"
4. Center Top Gasline Marker Post 54.8' SE

Ctr. Sec. 10, T11S, R33W
N 297,466.048 E 469,840.649
1. Found 6" x 6" Concrete Post (3" Above Ground)
2. 763.50' E. along ⅛ ℄ Sta. 1601+16.55 N.W.∡= 18° 01' 09"
3. 248.33' N. along ⅛ ℄ Sta. 1609+19.33 S.E.∡= 72° 00' 13"
4. Center E-W Row of Cedar Trees 35.0' N

SW Cor. Sec. 10, T11S, R33W
N 294,911.730 E 467,080.966
1. Found ⅜" Rebar (12" deep)
2. Rebar with Yellow Plastic Cap 6" deep 3.19' NNE
3. Spk. & Shiner in Power Pole 41.1' ESE
4. Spk. & Shiner in Power Pole 72.1' SSE

S ¼ Cor. Sec. 10, T11S, R33W
N 294,815.473 E 469,732.810
1. Set ½" Rebar with KDOT Alum Cap (8" deep)
2. 2,404.44' S. along ⅛ ℄ Sta. 1609+19.33 S.E.∡= 72° 00' 13"
3. Center E-W County Road 2.5' N
4. Center Top Steel Gasline Marker Post 23.4' SSW

B.M. #12 Set " T" shaped post 1.0' S. of " T" post
43.91' Lt. of ℄ Sta. 1602+02.93 Elev.= 3,105.13

B.M. #13 Set " T" shaped post 1.0' S. of " T" post
38.71' Lt. of ℄ Sta. 1612+84.13 Elev.= 3,100.41

B.M. #14 Found " + " cut on E. end of S. hdwl. of RCB
15.51' Rt. of ℄ Sta. 1618+41.60 Elev.= 3,098.58

B.M. #15 Set " T" shaped post 1.0' S. of " T" post
39.54' Lt. of ℄ Sta. 1628+89.85 Elev.= 3,110.02

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

STA. 1600+00 TO STA. 1632+00

	BY	DATE
REFERENCES NOTED	R. Bowman	1/2020
REFERENCES CHECKED	C. Meadows	2/2020

Plotted by : rbowman 08-DEC-2021 08:35
File : KA391501rpl-01.dgn

KDOT Graphics Certified

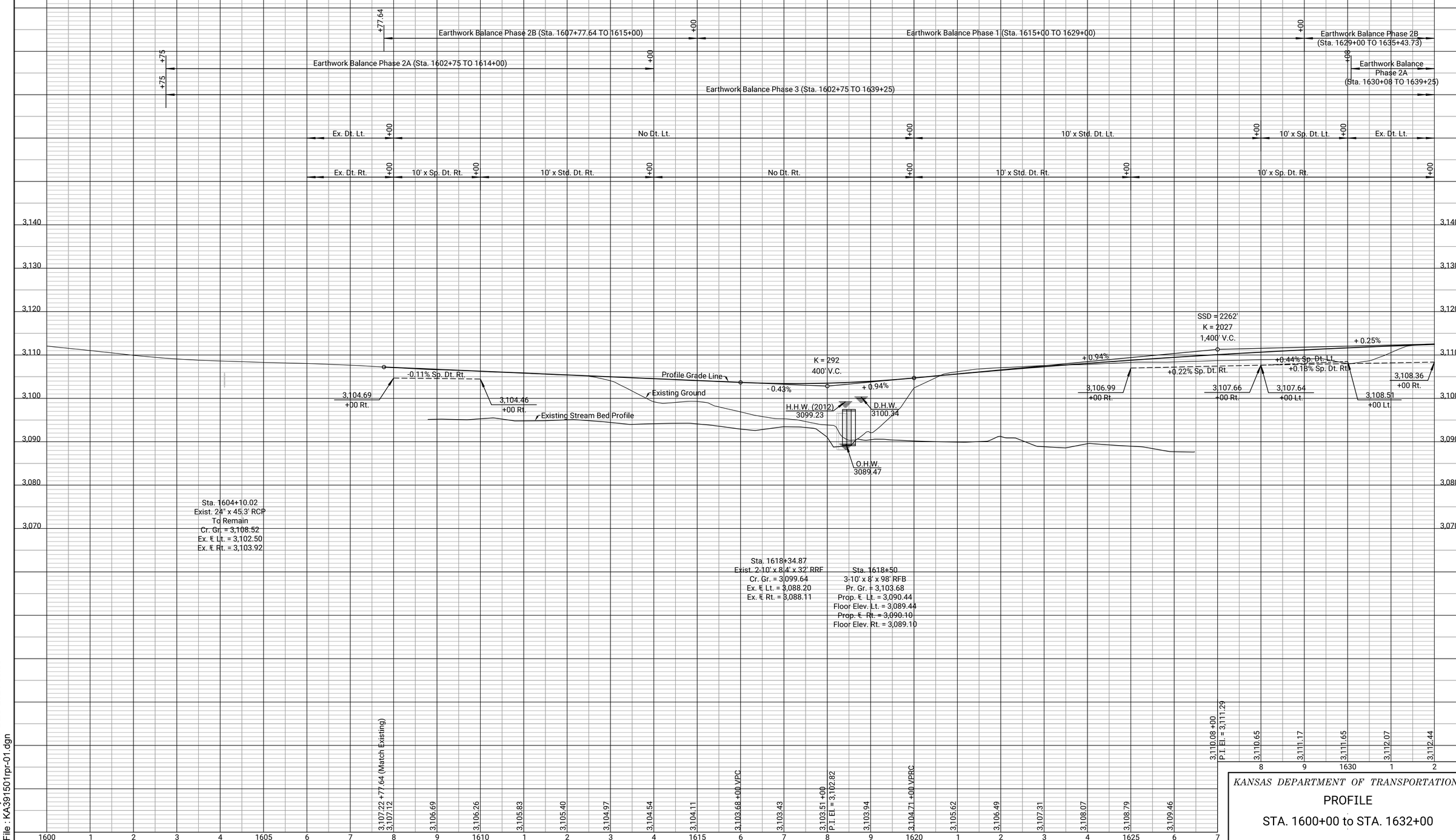
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	8	71

Phase 2A (Sta. 1602+75 TO 1614+00 & Sta. 1630+08 TO 1639+25)
134 Cu. Yds. Common Excavation (VMF = 0.70)
292 Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.70)
298 Cu. Yds. Embankment

Phase 3 (Sta. 1602+75 TO 1639+25)
⊗7,171 Cu. Yds. Common Excavation (VMF = 0.70)
1,967 Cu. Yds. Embankment
2,552 Cu. Yds. Rock Excavation (VMF = 1.00) (To Be Wasted)
Includes: ⊗4,361 Cu. Yds. To Be Wasted

Phase 1 (Sta. 1615+00 TO 1629+00)
⊗4,938 Cu. Yds. Common Excavation (VMF = 0.70)
15,188 Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.70)
◎14,088 Cu. Yds. Embankment
Includes: ⊗6 Cu. Yds. from County Road 380
◎45 Cu. Yds. for County Road 380

Phase 2B (Sta. 1607+77.64 TO 1615+00 & Sta. 1629+00 TO 1635+43.73)
1,821 Cu. Yds. Common Excavation (VMF = 0.70)
1,006 Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.70)
1,979 Cu. Yds. Embankment
349 Cu. Yds. Rock Excavation (VMF = 1.00) (To Be Wasted)



KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 1600+00 to STA. 1632+00

Plotted by : rbowman 08-DEC-2021 08:35
File : KA391501rpr-01.dgn

KDOT Graphics Certified 07-08-2021

Sh. No. 8

KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	9	71

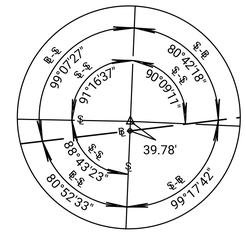
℄ P.T. Sta. 1634+13.73
N 297,348.991 E 472,270.804
1. = ℄ Sta. 1633+84.31
2. Not Set

℄ P.O.T. Sta. 1635+43.73
N 297,364.274 E 472,399.903
1. = ℄ Sta. 1635+14.31
2. Not Set

℄ P.I. Sta. 1636+09.80 △= 0° 10' 15" (Lt.)
=P.O.T. Sta. 1636+10.4 on Proj. 40S-4-FAP-375-J (1936)
N 297,375.499 E 472,494.727
1. Found ½" square bar (20" deep)
2. ℄ Top N. end RCP 38.5' NE
3. 60d Spk. top cor. fence post 69.5' SE
4. Spk. & KDOT wshr. in ◫ 61.6' SW

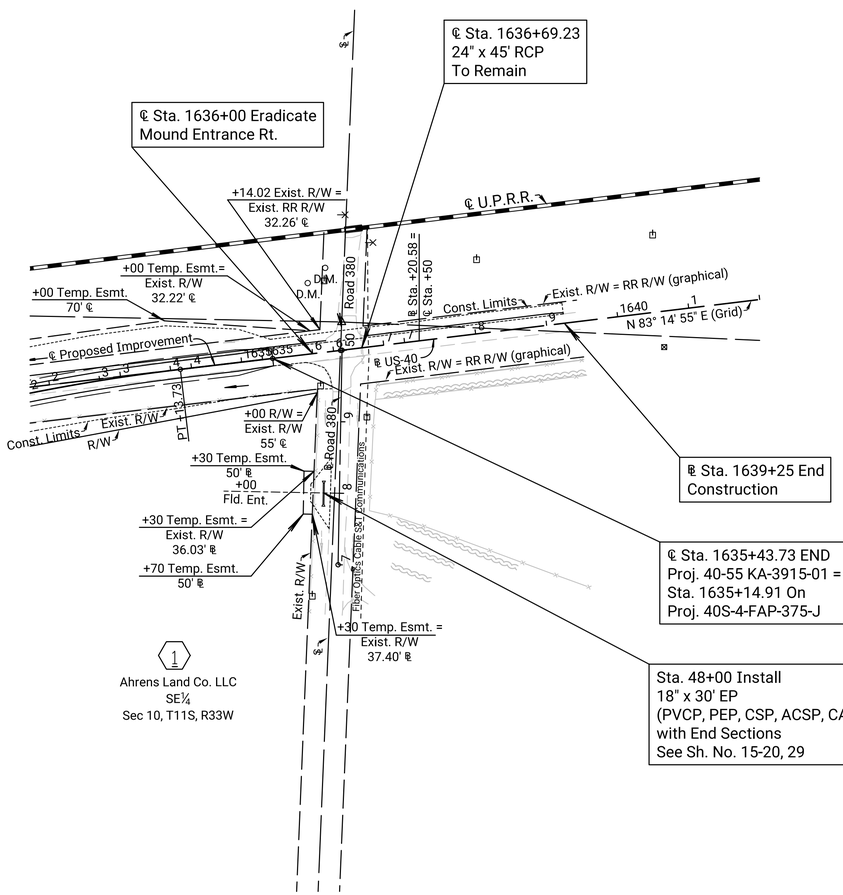
℄ Road 380 P.O.T. Sta. 47+00
N 297,075.809 E 472,491.315
1. 297.21' Rt. of ℄ Sta. 1635+71.18
2. Not Set

℄ Road 380 P.O.T. Sta. 50+00
N 297,375.758 E 472,496.857
1. = ℄ Sta. 1636+11.94
2. Not Set



E ¼ Cor. Sec. 10, T11S, R33W
Note: Not to Scale

SCALE: 1" = 100'



UTILITY OWNERS

Fiber Optic:

S&T Communications
320 Kansas Ave.
Brewster, KS 67732
Locator: Dennis
800-432-8294

E ¼ Cor. Sec. 10, T11S, R33W
N 297,415.249 E 472,496.374
1. Set ½" Rebar with KDOT Alum Cap (4" deep)
2. 39.78' N. along ℄ ℄ P.I. Sta. 1636+09.80 S.W.&= 80° 52' 33"
3. Rebar with Yellow Plastic Cap (6" deep) 6.47' E
4. Center N-S County Road 4.5' E

SE Cor. Sec. 10, T11S, R33W
N 294,719.216 E 472,384.654
1. Found ½" Rebar (6" deep)
2. 2,658.57' S. along ℄ ℄ P.I. Sta. 1636+09.80 S.W.&= 80° 52' 33"
3. ⅝" Rebar with Yellow Plastic Cap 5.77' NE
4. Spk. & wshr. Top Lone Wood Post 41.4' NE

B.M. #16 Set " T" shaped post 1.0' N. of ◫
49.75' Rt. of ℄ Sta. 1635+74.40 Elev.= 3,110.02

DATE	BY	
1/2020	R. Bowman	REFERENCES NOTED
2/2020	C. Meadows	REFERENCES CHECKED

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

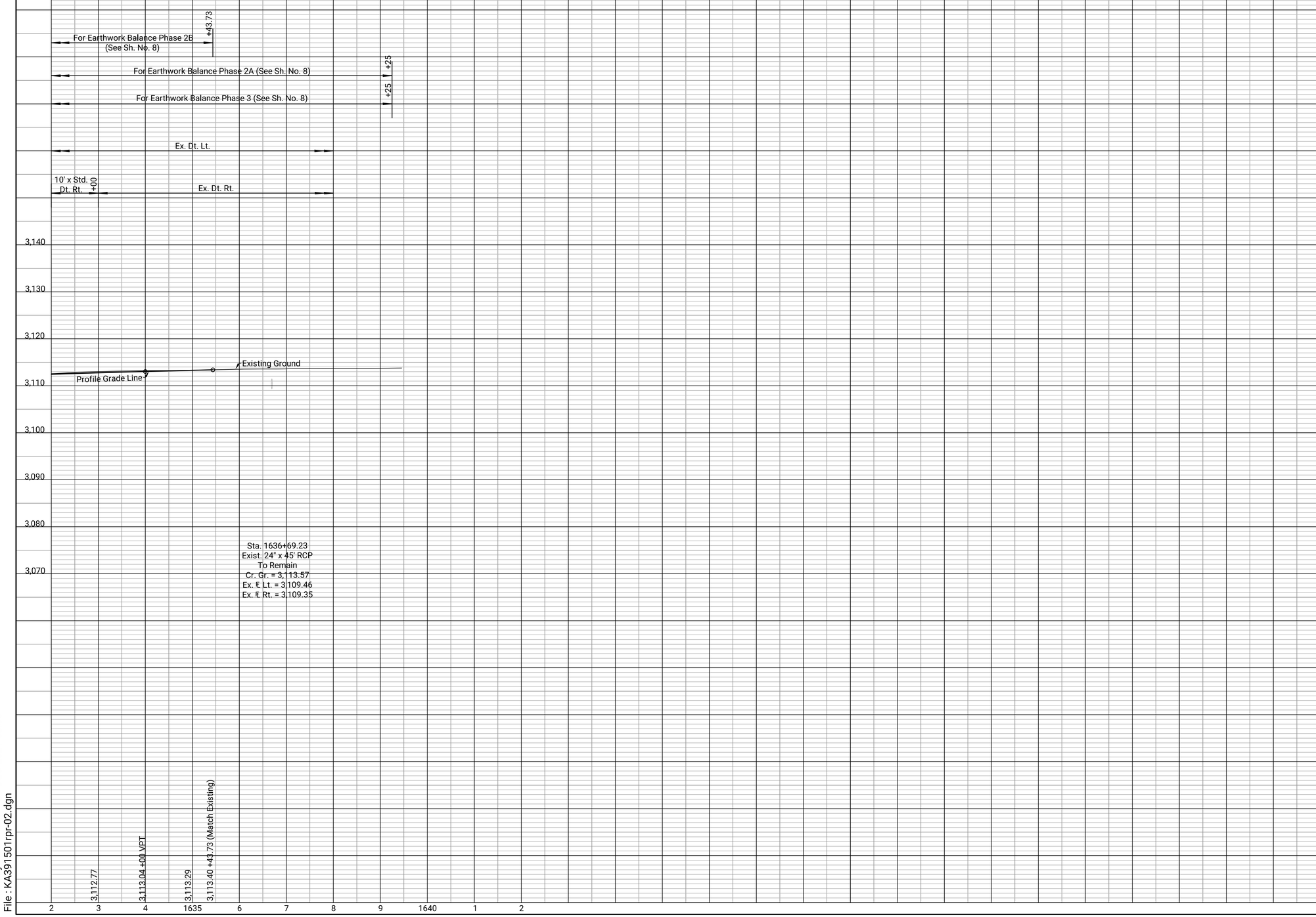
STA. 1632+00 TO STA. 1642+00

KDOT Graphics Certified 07-14-2021 Sh. No. 9

KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:36
File : KA391501rpl-02.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	10	71



KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 1632+00 TO STA. 1642+00

KDOT Graphics Certified 07-08-2021

Sh. No. 10

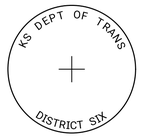
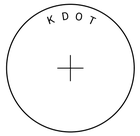
KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:36
File : KA3915 01rpr-02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	11	71

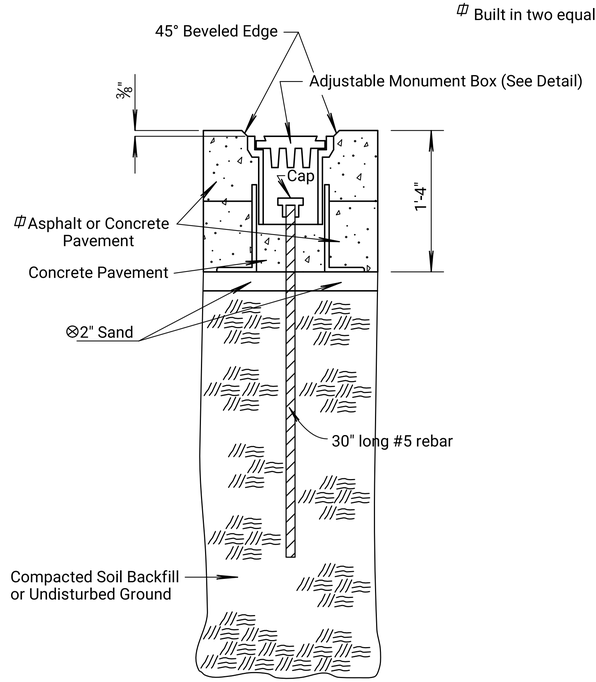
EXHIBIT

2" DIA. PRE-STAMPED ALUMINUM CAPS

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

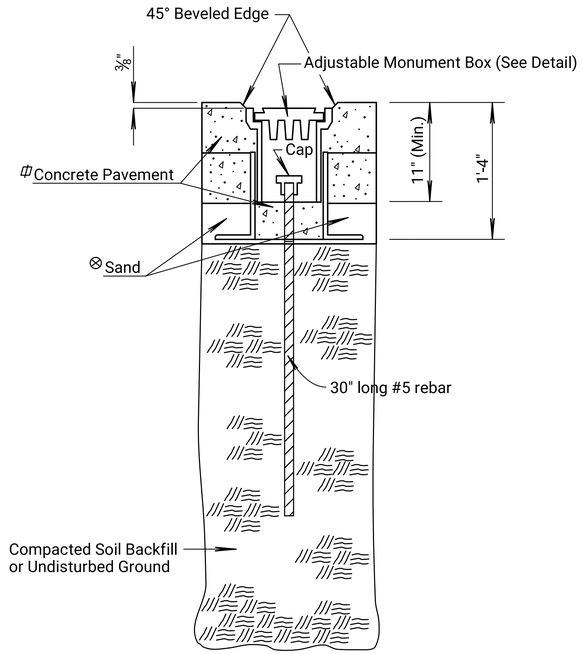
⊗ Hand tamp sand to achieve Type B compaction.

Φ Built in two equal lifts



TYPE A-1

(Standard Land Corner Monument Box)



TYPE A-2

(Standard Land Corner Monument Box)

GENERAL NOTES

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

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

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

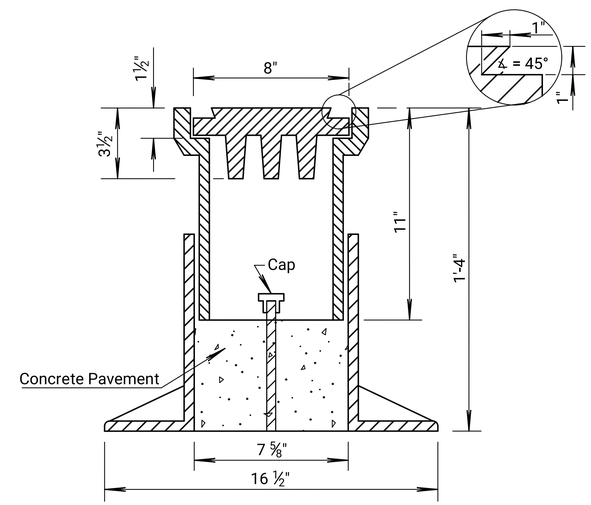
Reset all PLSS corners in accordance with KDOT's Standard Specifications.

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

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

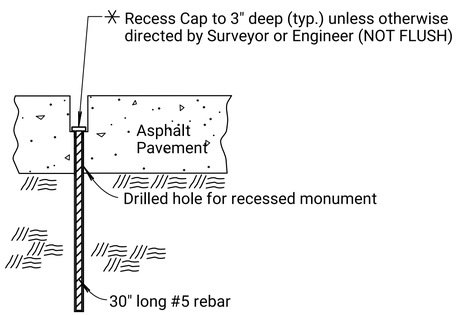
Type A monumentation may be used on a project as specified in the plans or as directed by the Engineer. Typically, Type A monuments are used on high traffic volume roadways, in urban areas, or as required by local governmental codes. Otherwise, use Types B-D monumentation. Avoid installing monument boxes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

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



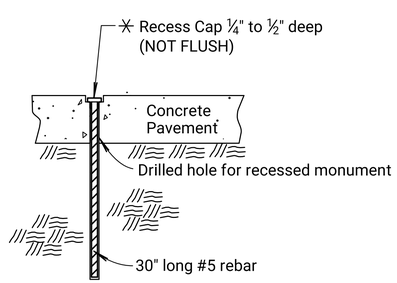
ADJUSTABLE MONUMENT BOX DETAIL

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



Type B

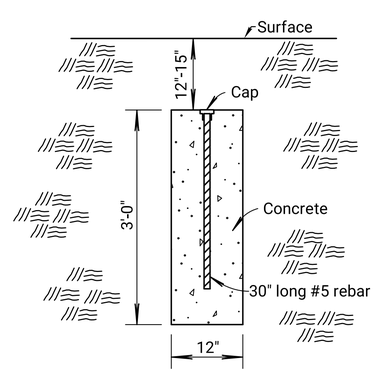
(Recessed Bar)



Type C

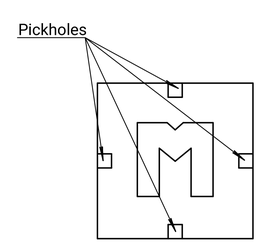
(Drilled Hole)

✳ No Surface Monuments Allowed in Pavement



Type D

(Shoulder/Ditch Subsurface Monument)



MONUMENT BOX LID (PLAN VIEW)

Not to Scale

NO.	DATE	REVISIONS	BY	APP'D
4	8-24-18	Rev. Det. Mon. Box AND Rev. Gen. Note	A.L.R.	T.T.R.
3	1-15-16	Add. Det., Retrofit & Rev. Gen. Note	T.T.R.	S.W.K.
2	10-17-13	Revised Detail, Recessed Bar	S.W.K.	J.O.B.
1	11-10-03	Revised Monument Types	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SECTION CORNER MONUMENTATION DETAIL SHEET

RD990

FHWA APPROVAL 8-7-2019		APP'D. SCOTT W. KING	
DESIGNED	DETAILED KAHLE	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK. RHOADS	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 04-21-2021

Sh. No. 11

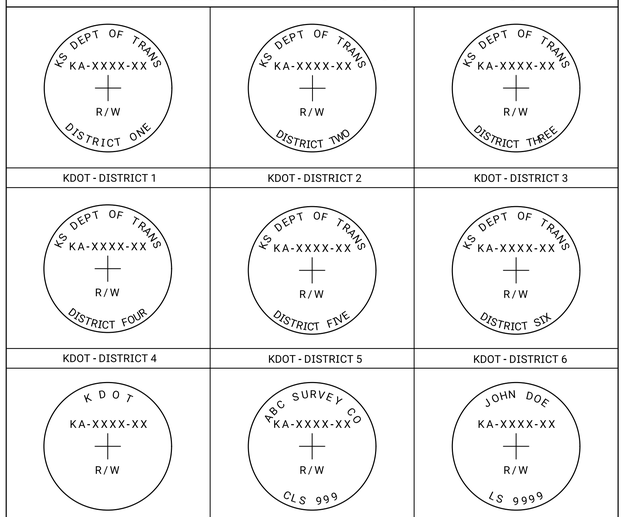
KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:36
File : KA3915 01rss990-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	12	71

EXHIBIT

2" DIA. PRE-STAMPED ALUMINUM CAPS

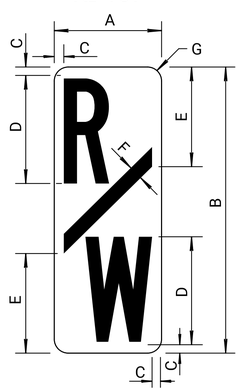


KDOT - DISTRICT 1	KDOT - DISTRICT 2	KDOT - DISTRICT 3
KDOT - DISTRICT 4	KDOT - DISTRICT 5	KDOT - DISTRICT 6
KDOT STATE SURVEY CREW BUREAU OF RIGHT-OF-WAY	SURVEY COMPANY WITH A VALID CORPORATION LICENSE	INDEPENDENT SURVEYOR OR SOLE PROPRIETOR COMPANY

NOTES:

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

KI-107

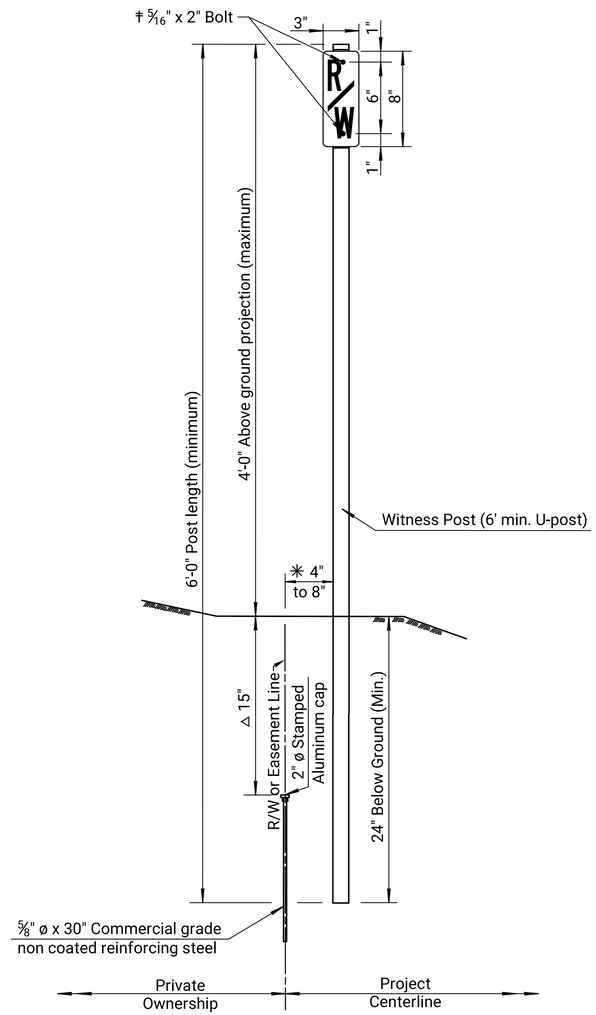


COLORS:

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

A	B	C	D	E	F	G
3"	8"	¼"	3"	2¾"	⅜"	⅜"

R/W SIGN DETAIL



PLAN VIEW

NOTES

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

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

△ Or as directed by the Engineer.

GENERAL NOTE

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

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

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

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

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

Mount R/W survey monument signs facing the road.

✡ Additional R/W Survey Monuments set by Contractor

Station	Offset (Lt./Rt.)	Northing	Easting

✡ Additional R/W Survey Monuments set by Contractor

Station	Offset (Lt./Rt.)	Northing	Easting

NO.	DATE	REVISIONS	BY	APP'D
4	1-6-16	Revised Notes	T.T.R.	S.W.K.
3	5-24-13	Revised General Note	S.W.K.	J.O.B.
2	2-7-07	Removed dual cap note	S.W.K.	J.O.B.
1	6-2-04	Revised caps and notes.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

R/W SURVEY MONUMENT INSTALLATION DETAIL SHEET

RD995

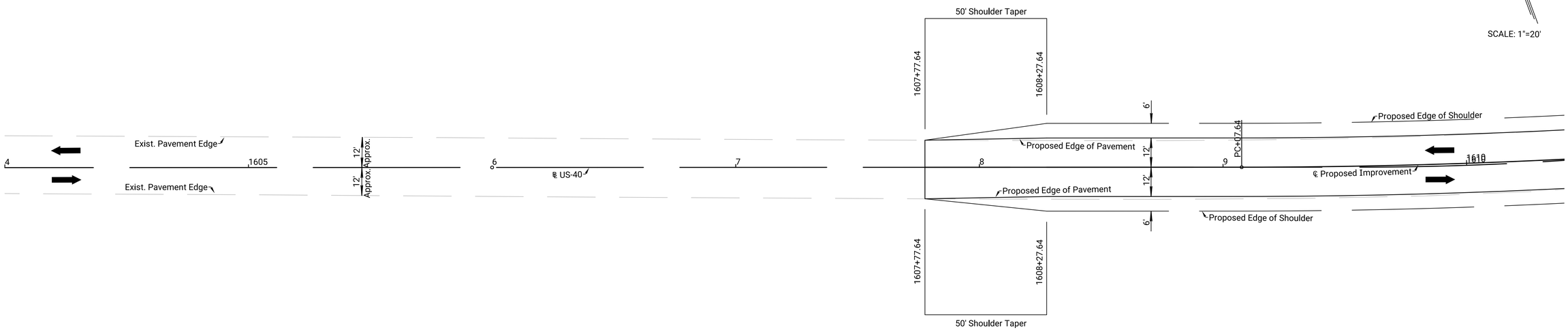
FHWA APPROVAL	3-16-16	APP'D.	SCOTT W. KING
DESIGNED	DETAILED KAHLE	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK. RHOADS	QUAN.CK.	TRACE CK.

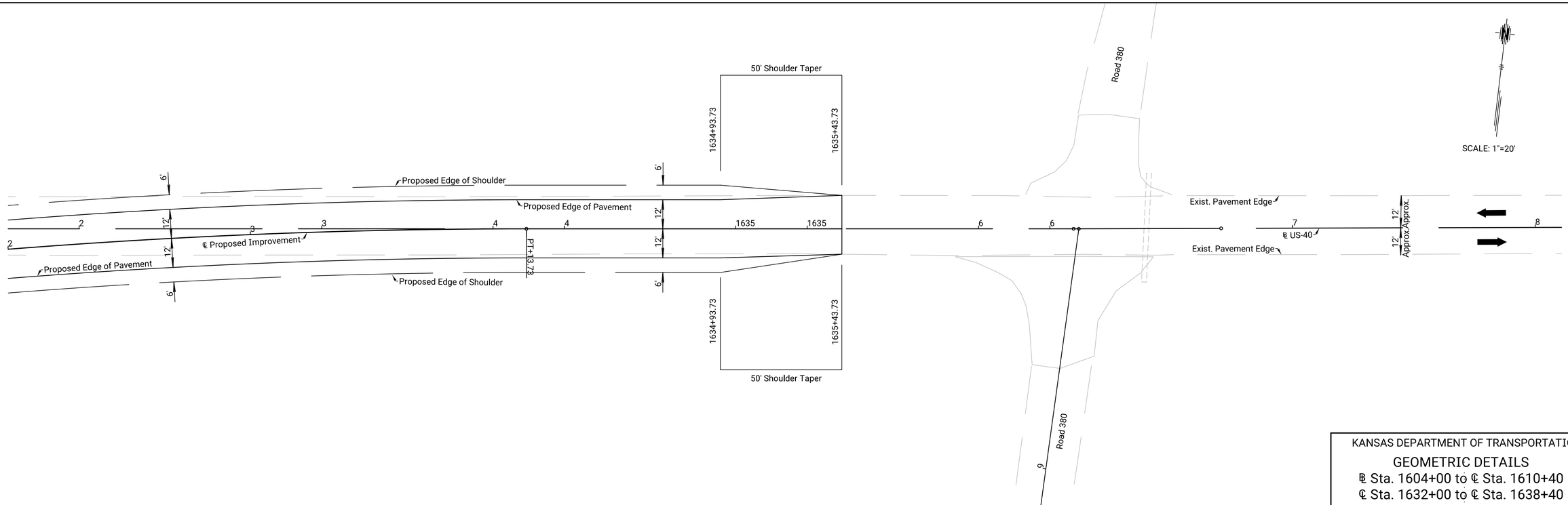
KDOT Graphics Certified 04-21-2021 Sh. No. 12

KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:37
File : KA3915O1rss995-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	13	71





DATE	BY	
6/2020	B. Andrews	REFERENCES NOTED
6/2020	R. Bowman	REFERENCES CHECKED

KANSAS DEPARTMENT OF TRANSPORTATION

GEOMETRIC DETAILS

℄ Sta. 1604+00 to ℄ Sta. 1610+40

℄ Sta. 1632+00 to ℄ Sta. 1638+40

Plotted by : rbowman 08-DEC-2021 08:37
File : KA391501rgd-01.dgn

KDOT Graphics Certified 05-26-2021 Sh. No. 13

KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
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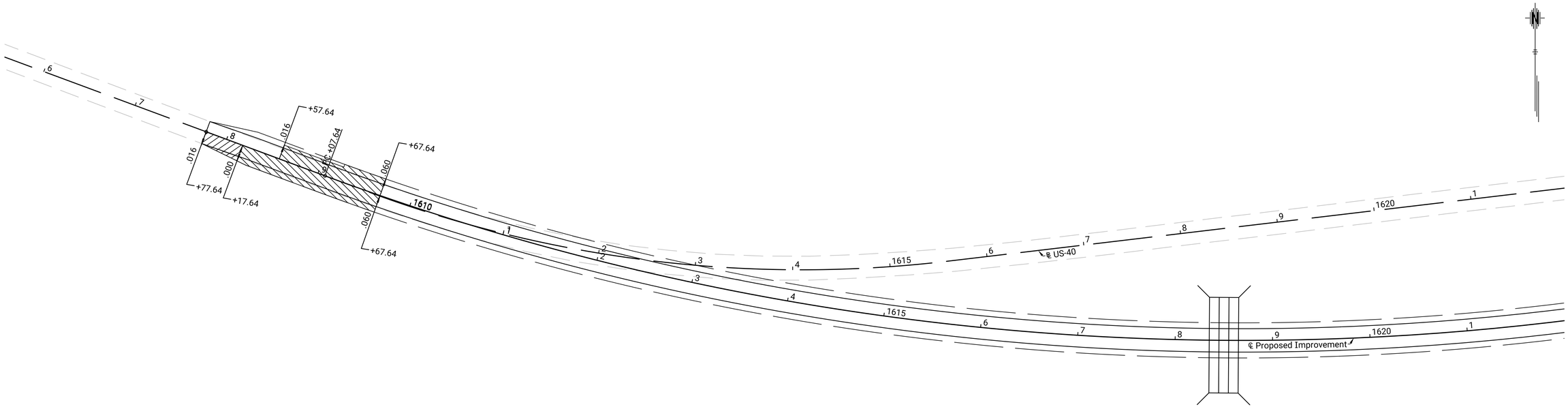
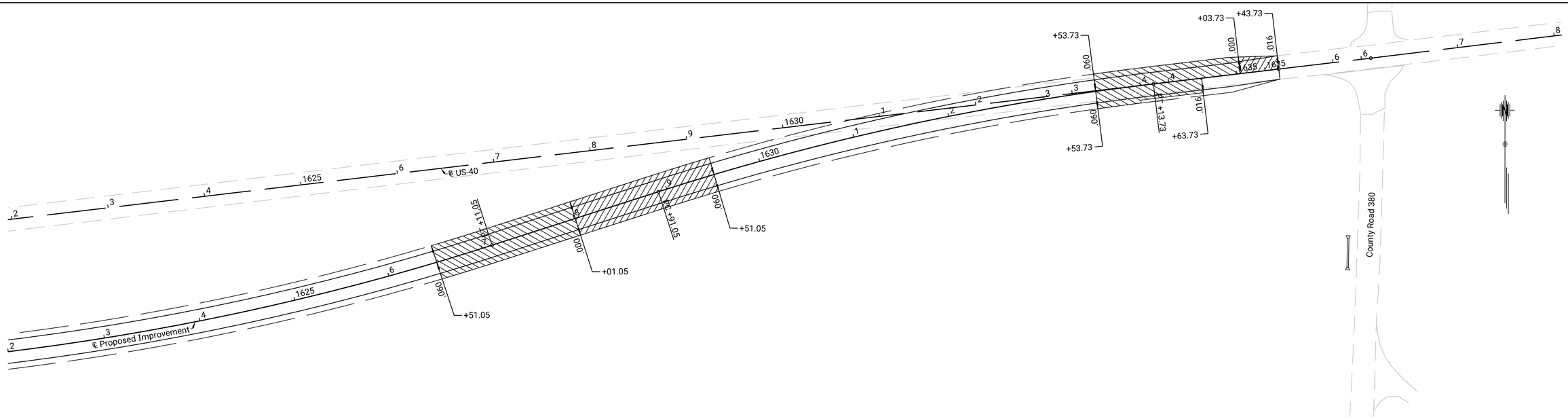




SCALE

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

PROFILE: Horiz. same as above

Vert. 5' 0

LEGEND

SUPERELEVATION TRANSITION FT/FT

KANSAS DEPARTMENT OF TRANSPORTATION

SUPERELEVATION

DETAIL

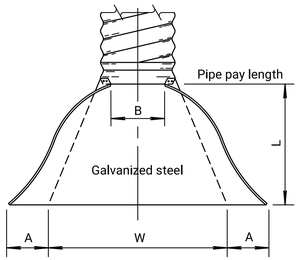
Plotted by : rbowman 08-DEC-2021 08:37
File : KA391501rse-01.dgn

KDOT Graphics Certified 04-26-2021

Sh. No. 14

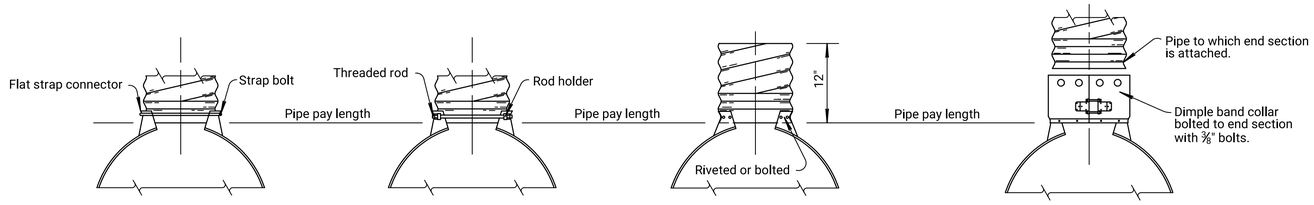
KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	15	71



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.

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.

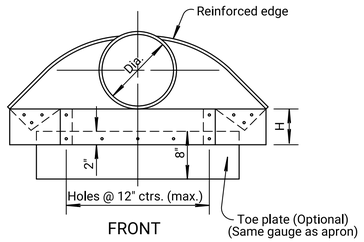
Toe plate extension, when specified, is an accessory and shall be the same gauge and metal as end section. Toe plate shall be punched to match holes in apron lip and attached with furnished 3#8" diameter nuts & bolts.

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.

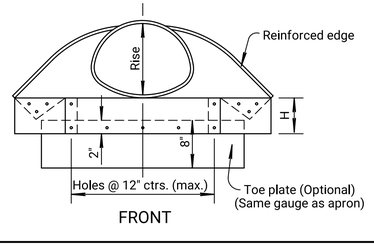
Multiple panel end sections may contain dual gauges of like metal and shall have lap seams which are tightly joined with rivets or bolts. For 60" and larger diameter round pipe end sections and 77"x52" arch pipe end sections, the reinforced edges are supplemented with stiffener angles. The angles are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

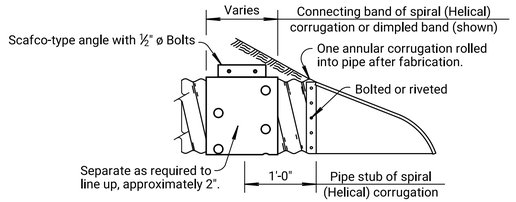
Connection of end sections by welding will not be permitted.



FRONT



FRONT



SPIRAL (HELICAL) CORRUGATION

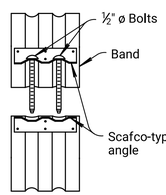
For all sizes of round and arch culvert pipes having Spiral (Helical) corrugations, the end sections and connecting bands shall be as shown above.

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.

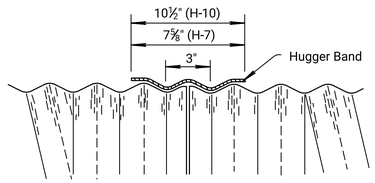
Pipe Dia. (In.)	CS, ACS or CA Gauge	Dimensions in Inches					Approx. Slope
		A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	
12"	16	5	7	6	21	22	2½: 1
15"	16	6	8	6	26	28	2½: 1
18"	16	7	10	6	31	34	2½: 1
21"	16	8	12	6	36	40	2½: 1
24"	16	9	13	6	41	46	2½: 1
30"	14	11	16	8	51	55	2½: 1
36"	14	13	19	9	60	70	2½: 1
42"	12	15	25	10	69	82	2½: 1
48"	12	17	29	12	78	88	2½: 1
54"	12	17	33	12	84	100	2½: 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.)



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")

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.

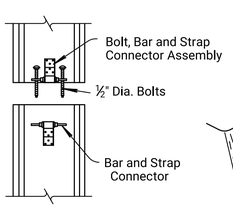
There shall be no payment for gain in pipe length due to fit of pipe at connecting band.

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.

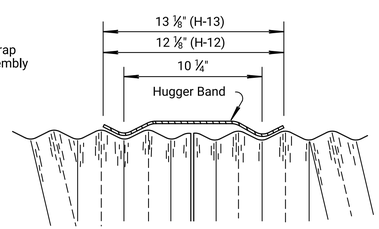
⊛ Pipe gauge listed in the tables on this sheet are minimum for E'=750 p.s.i. soil. Pipe gauge will be determined for each site based on the Design Manual Volume I- Part C Fill Height Tables and shall shall be listed in the Pipe Culvert Summary. Gauges shown on this Standard Drawing are KDOT minimum 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.

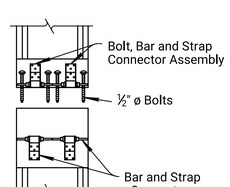


CONNECTION DETAIL
SINGLE HARNESS



UNIVERSAL REFORMED END with
HUGGER BAND

DETAILS FOR H-12 or H-13 HUGGER BAND



CONNECTION DETAIL
DOUBLE HARNESS

NO.	DATE	REVISIONS	BY	APP'D
4	9-10-09	Rev. Round and Arch tables, add. Alum.	S.W.K.	J.O.B.
3	1-20-09	Rev. Round Pipe Gauges	S.W.K.	J.O.B.
2	4-1 8-08	Rev. layout, details, tables and notes	S.W.K.	J.O.B.
1	4-27-98	Added pipe corrugation option note	R.J.S.	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 Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

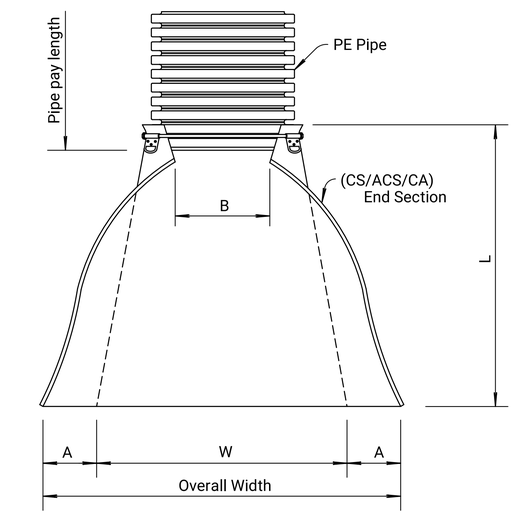
KDOT Graphics Certified 04-21-2021 Sh. No. 15

KDOT Graphics Certified

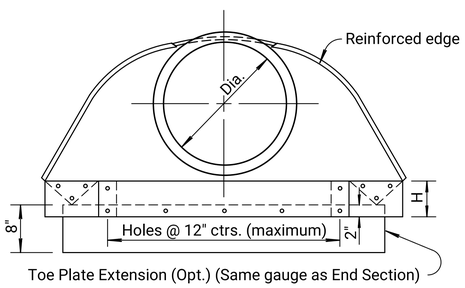
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume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

Plotted by : rbowman 08-DEC-2021 08:38
File : KA391501rss660-01.dgn

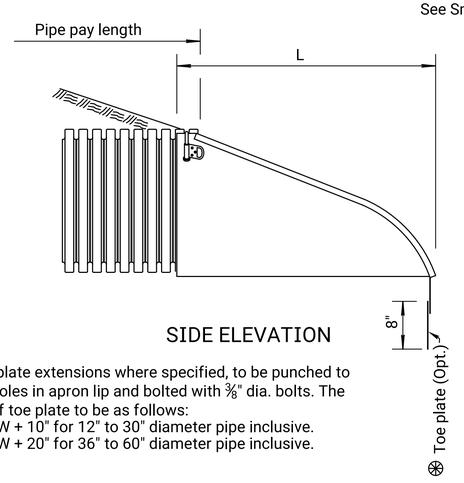
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	16	71



PLAN
(Illustrated with Type 2 Connector)

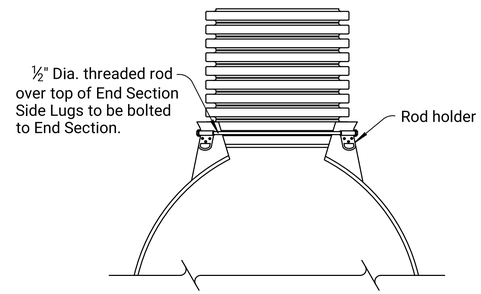


FRONT ELEVATION

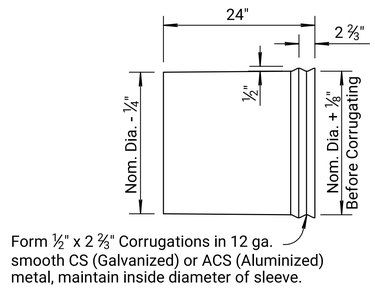


SIDE ELEVATION

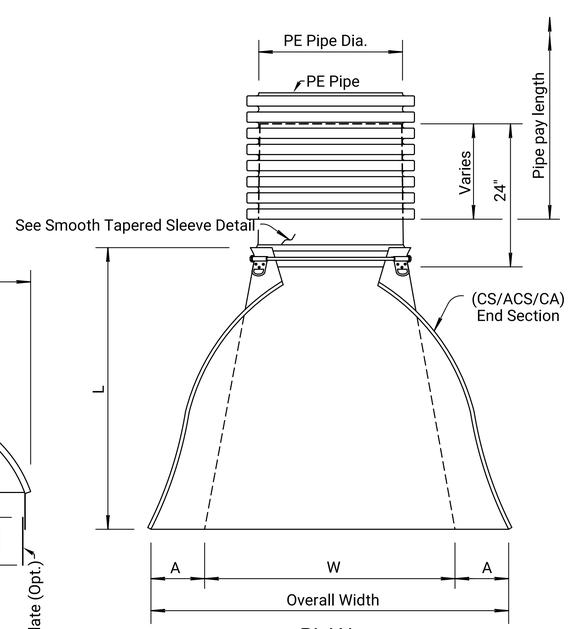
⊛ Toe plate extensions where specified, to be punched to match holes in apron lip and bolted with ⅜" dia. bolts. The length of toe plate to be as follows:
W + 10" for 12" to 30" diameter pipe inclusive.
W + 20" for 36" to 60" diameter pipe inclusive.



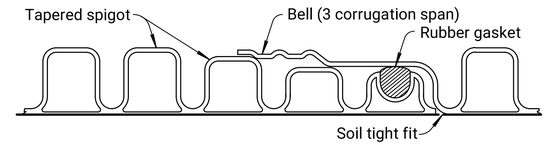
TYPE 2 CONNECTOR
(12" & Larger)



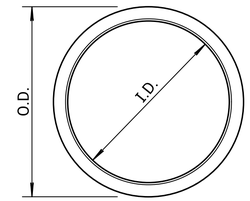
SMOOTH TAPERED SLEEVE DETAIL
(Required)



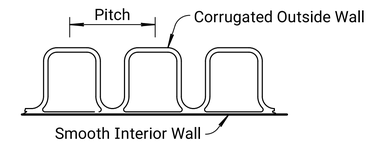
PLAN
TAPERED SLEEVE FOR ATTACHING
METAL END SECTION TO PE PIPE
(Illustrated with Type 2 Connector)



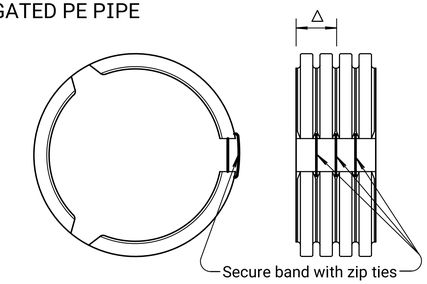
PEP BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT



DETAILS OF
CORRUGATED PE PIPE

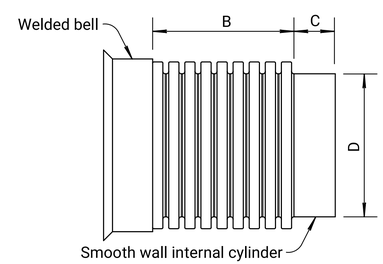


TYPICAL SECTION
CORRUGATED PE PIPE



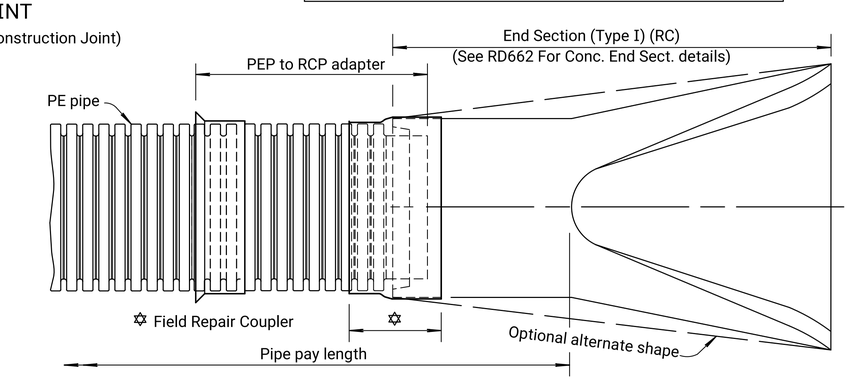
△ Two Full Corrugations (Minimum Overlap)

PEP SPLIT BAND COUPLER
SOIL TIGHT JOINT
This band is used for (Field Splice Construction Joint)



PEP to RCP ADAPTER

PEP TO RCP 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"



PEP to RCP 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).

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

See Standard Specifications for PE 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 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 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
2	7-17-17	Changed tapered slv. requirement	A.L.R.	S.W.K.
1	2-8-08	Added ref. to KDOT pipe policy	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD667

FHWA APPROVAL	8-9-17	APP'D. Scott W. King	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

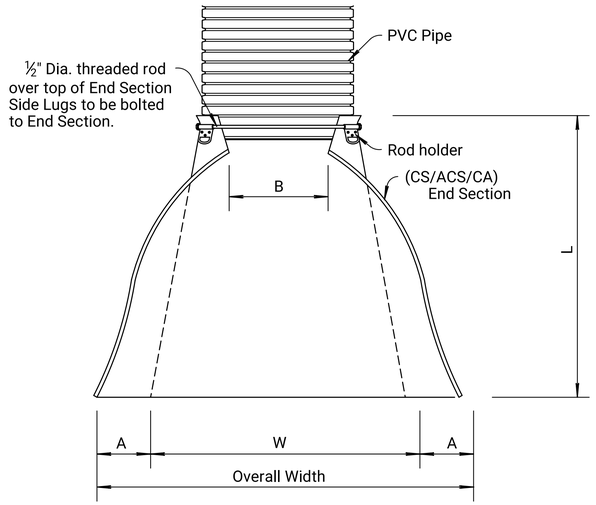
KDOT Graphics Certified 04-21-2021 Sh. No. 16

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

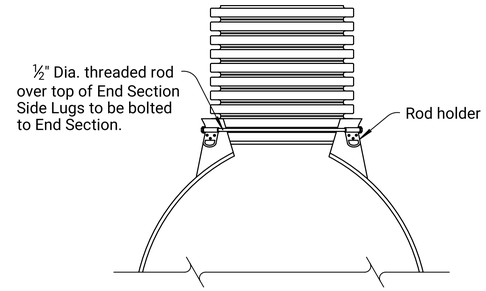
Plotted by : rbowman 08-DEC-2021 08:38
File : KA3915O1rss667-01.dgn

KDOT Graphics Certified

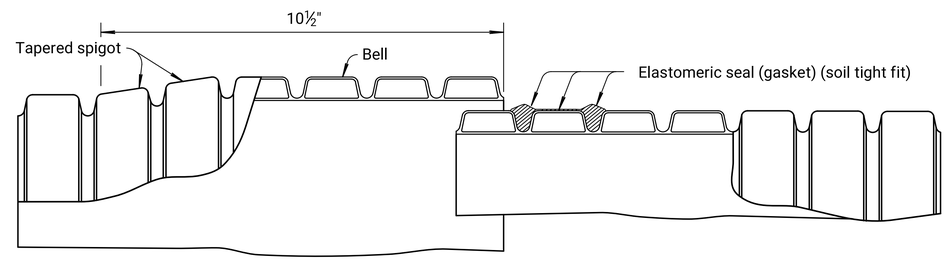
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	17	71



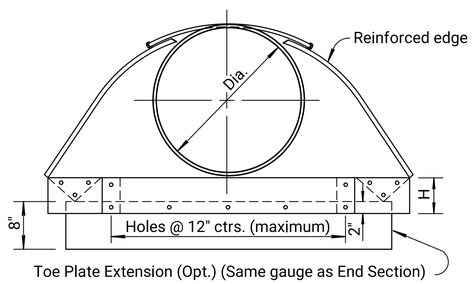
PLAN
(Illustrated with Type 2 Connector on 12" or larger)



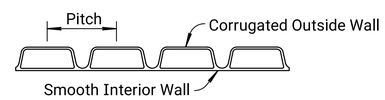
TYPE 2 CONNECTOR
(12" & Larger)



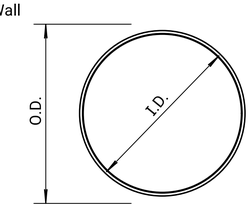
PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT



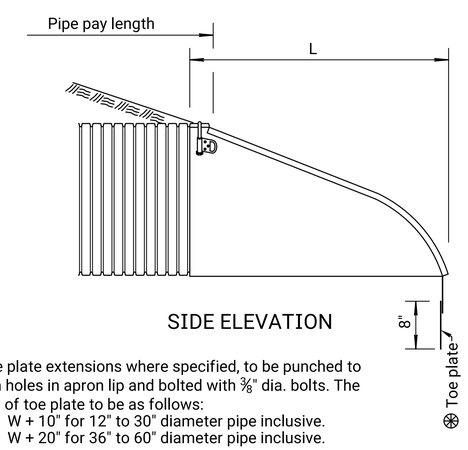
FRONT ELEVATION



TYPICAL SECTION
CORRUGATED PVC PIPE



DETAILS OF
CORRUGATED PVC PIPE



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.

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

NO.	DATE	REVISIONS	BY	APP'D
	2-9-08	Added ref. to KDOT Pipe Policy	S.W.K	J.O.B

KANSAS DEPARTMENT OF TRANSPORTATION

METAL END SECTION
(TYPE I)
for PVC PIPE

RD667 B

FHWA APPROVAL 6-27-08		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

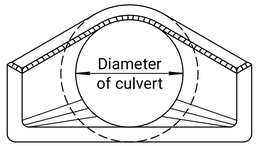
KDOT Graphics Certified 04-21-2021 Sh. No. 17

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

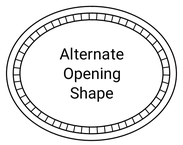
Plotted by : rbowman 08-DEC-2021 08:38
File : KA391501rss667b-01.dgn

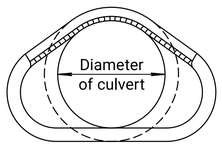
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	18	71



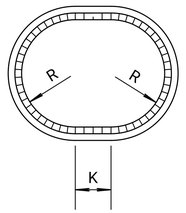
END ELEVATION (TYPE I)



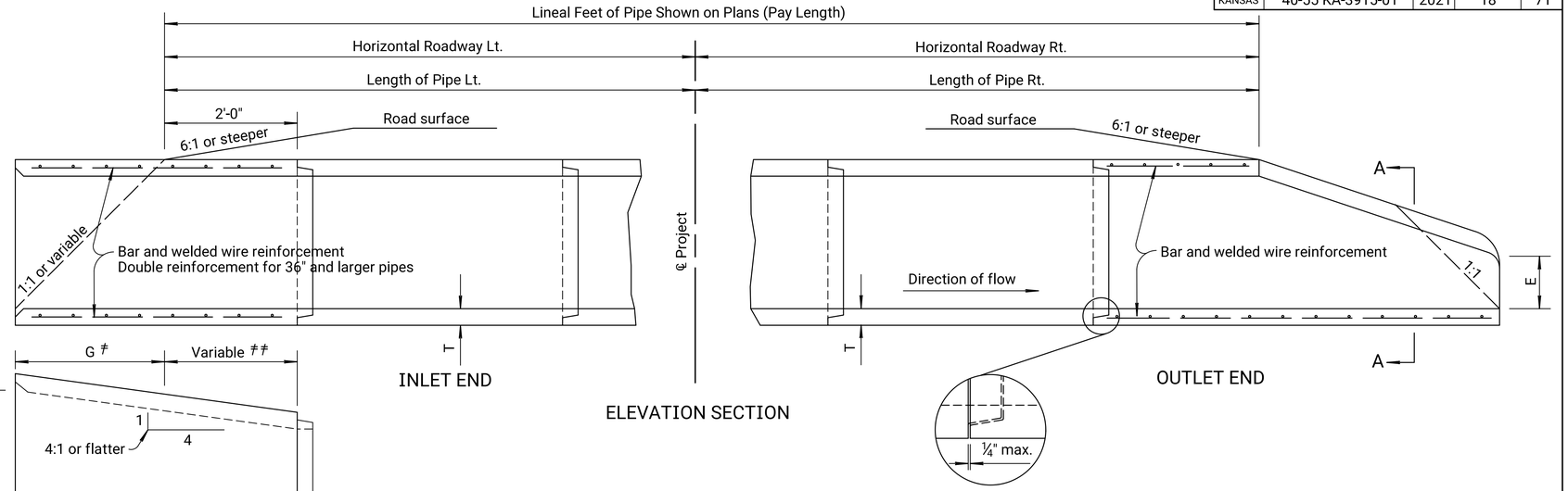


SECTION A-A

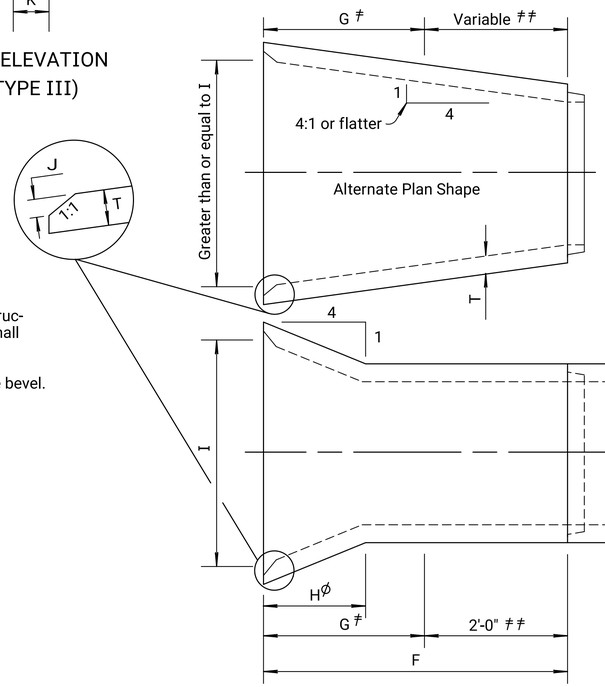
Showing rounding of inside edge of end section.

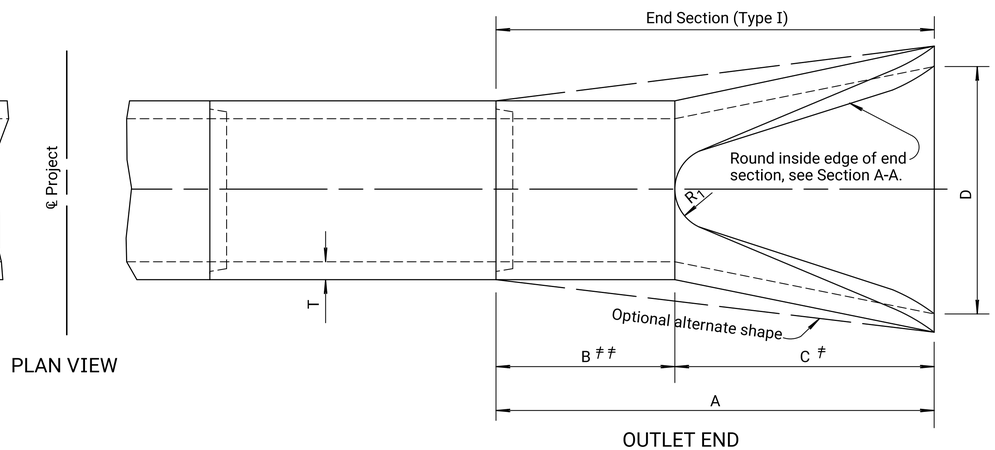


END ELEVATION (TYPE III)



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





PLAN VIEW

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

END SECTION (TYPE I) NOMINAL DIMENSIONS

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

SIDE TAPERED INLET SECTION (TYPE III)-NOMINAL DIMENSIONS

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

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

NO.	DATE	REVISIONS	BY	APP'D
2	4-18-08	Added ref. to KDOT Pipe Policy	S.W.K	J.O.B
1	4-05-05	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 6-27-08		APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. King

KDOT Graphics Certified 04-21-2021 Sh. No. 18

KDOT Graphics Certified

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

Plotted by : rbowman 08-DEC-2021 08:38
File : KA3915O1rss662-01.dgn

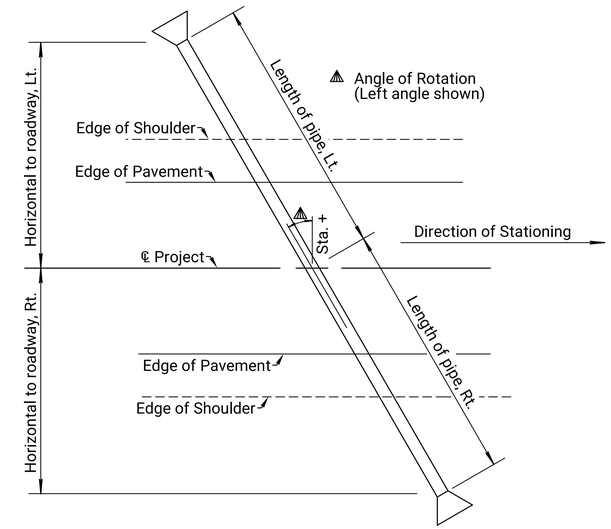
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	19	71

PIPE CULVERT SUMMARY

Station	Type	Size or 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
									See Sh. No. 29											

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

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



PLAN
(Showing Rotation about ℄)

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.

Type	ALLOWABLE LOCATION ▲ Mainline	Side Road	Entrance	Storm Sewer Under ML	Storm Sewer Not Under ML
✡ PVCP	X	X	X	X	X
⊟ PEP	X	X	X	X	X
CSP	X	X	X		X
ACSP	X	X	X		X
CAP	X	X	X	X	X
RCP	X	X	X	X	X

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

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

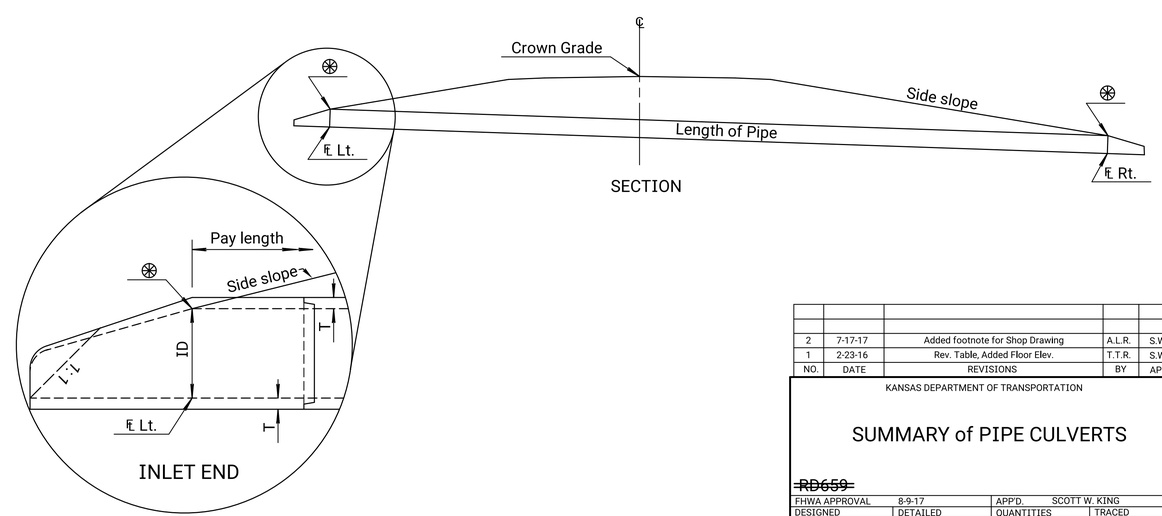
⊟ When inside diameter of pipe is 60" or less.

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

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

Ψ Submit Shop Drawing of connection for review

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



NO.	DATE	REVISIONS	BY	APP'D
2	7-17-17	Added footnote for Shop Drawing	A.L.R.	S.W.K.
1	2-23-16	Rev. Table, Added Floor Elev.	T.T.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY of PIPE CULVERTS

~~RD659~~

FHWA APPROVAL	8-9-17	APP'D.	SCOTT W. KING
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

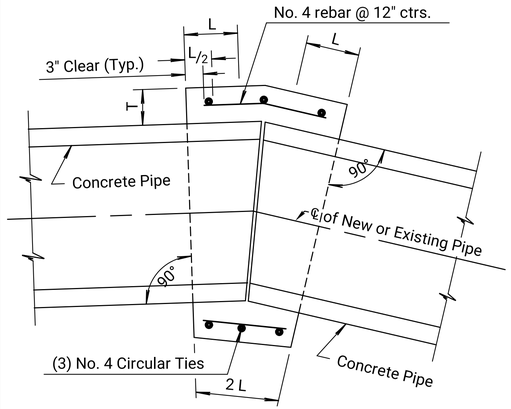
KDOT Graphics Certified 07-14-2021

Sh. No. 19

KDOT Graphics Certified

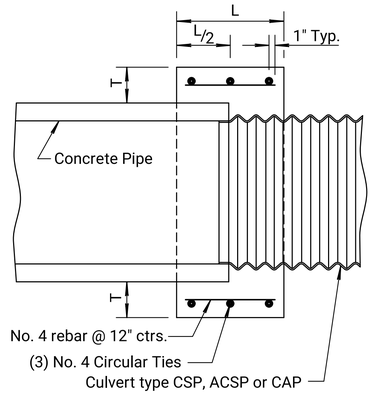
Plotted by : rbowman 08-DEC-2021 08:39
File : KA391501rss659-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	20	71



PIPE COLLAR AT CHANGE IN ALIGNMENT

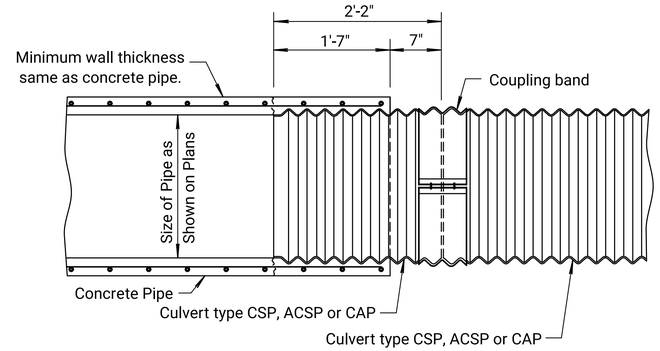
TYPE A COLLAR



PIPE COLLAR AT CHANGE IN PIPE MATERIAL

TYPE B COLLAR

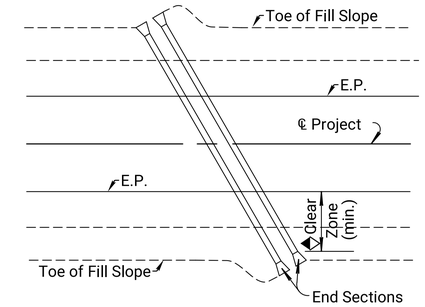
CONCRETE PIPE COLLAR		
Pipe Dia.	L	T
18"	1'-0"	6"
24"	1'-0"	6"
36"	1'-6"	8"
48"	1'-6"	10"
60"	1'-9"	11"



(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.



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".

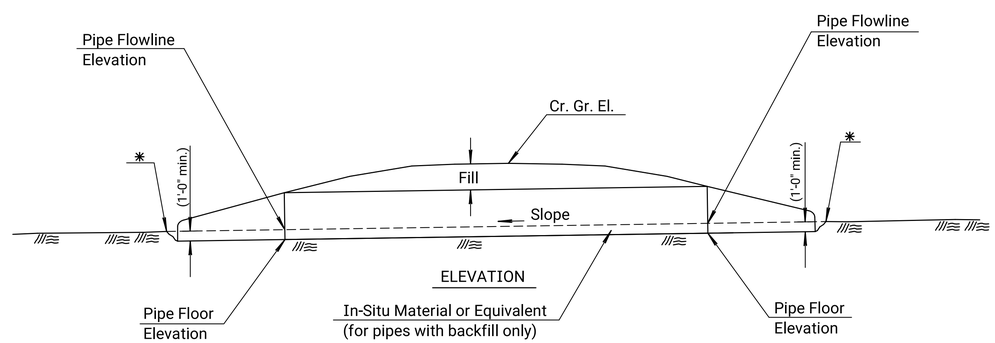
PIPE COLLARS

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.

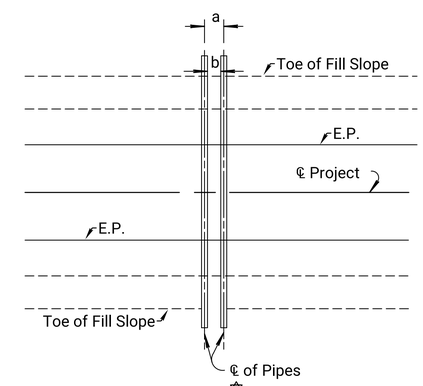
For pipes where the height or rise is less than or equal to 4'-0" install the pipe such that embedment will occur through natural sedimentation. See Pipe Embedment detail shown on this sheet.

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

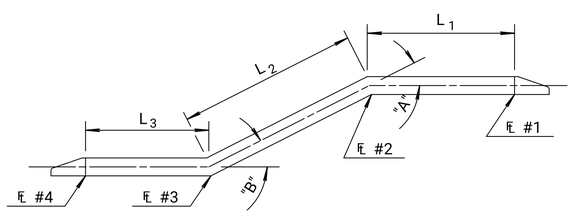
Type IV = W+ 2A

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
6	1-21-16	Added Details, Pipe Embedment	T.T.R.	S.W.K.
5	5-17-13	Rev. Dimension, Type B Collar	S.W.K.	J.O.B.
4	4-18-08	Added asphaltic paint note	S.W.K.	J.O.B.
3	1-28-05	Changed Class to Grade concrete	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS

PIPE CULVERT DETAILS

RD668

FHWA APPROVAL	3-16-16	APP'D. SCOTT W. KING	
DESIGNED	DETAILED KAHLE	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK. RHOADS	QUAN.CK.	TRACE CK.

Plotted by : rbowman 08-DEC-2021 08:39

File : KA3915 01rss668-01.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	21	71

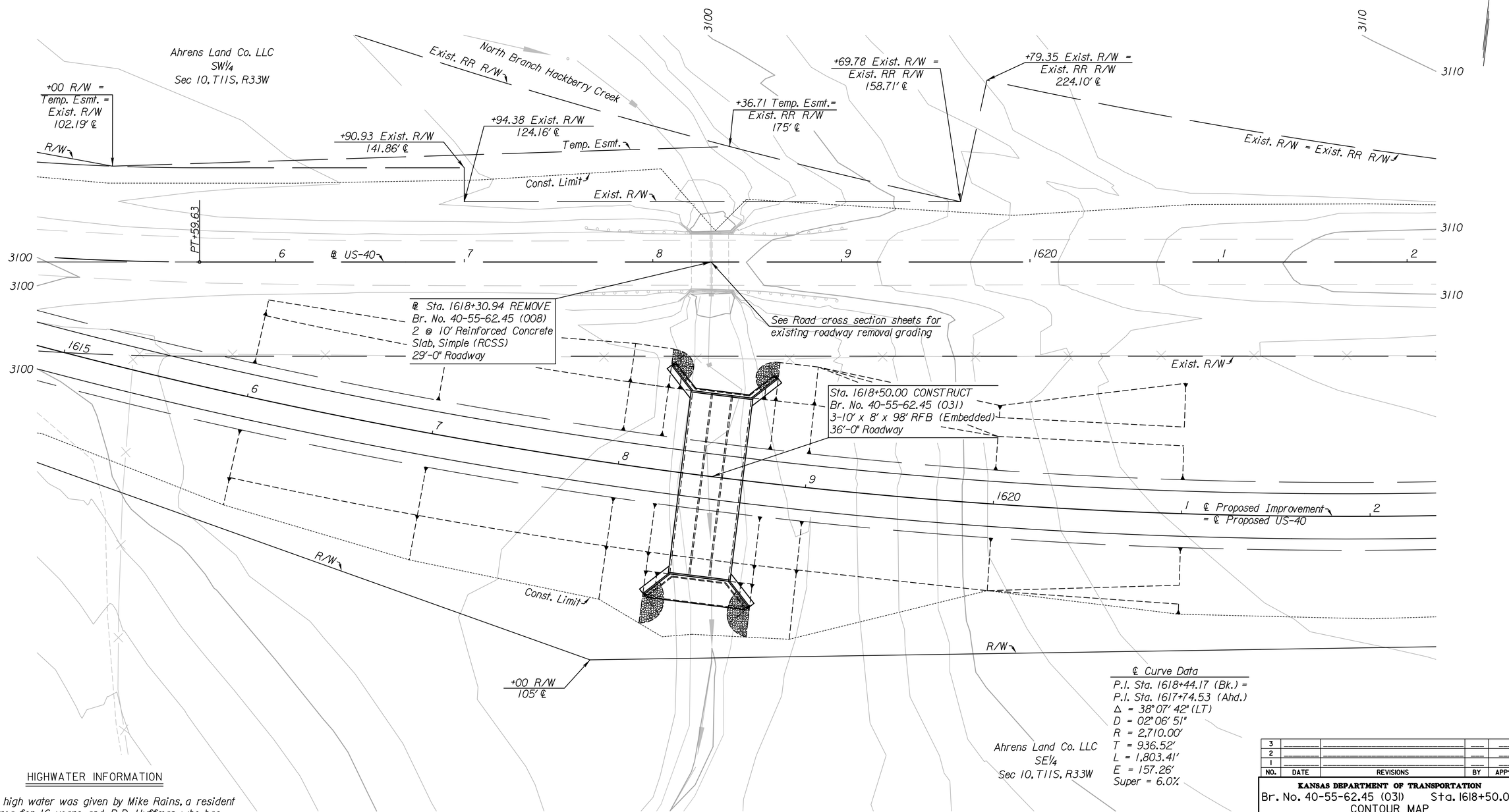
℄ P.I. Sta. 1612+63.62 (Bk.)= 1612+52.13 (Ahd.)
Δ= 27°-04'-39" (Lt.)
N 297,098.329 E 470,153.412
1. Set 1/2" Rebar w/orange plastic cap, (8" deep)
2. Spk. & KDOT wshr. top cor. fence post 278.4' E
3. "T" post = BM#13 (flush w/ground) 79.7' NNE
4. N.O.R.A.

℄ P.T. Sta. 1615+59.63
N 297,134.479 E 470,458.777
1. Set 1/2" Rebar (0.3' deep)
2. Spk. & KDOT wshr. top cor. fence post 59.4' SSW
3. Spk. & KDOT wshr. top cor. fence post 82.9' SE
4. Fence line to South 31.5' W

℄ P.I. Sta. 1618+44.17 (Bk.)=
1617+74.53 (Ahd.)
N 296,896.669 E 470,697.806
1. 264.26' Rt. of ℄ Sta. 1617+69.04
2. Not Set

℄ P.O.T. Sta. 1625+00.00
N 297,245.030 E 471,392.625
1. Set 1/2" Rebar (0.3' deep)
2. Spk. & KDOT wshr. top fence post 76.9' SW
3. Spk. & KDOT wshr. top fence post 50.6' SSW
4. Spk. & KDOT wshr. top fence post 55.3' SE

Scale: 1" = 25'-0"



℄ Curve Data
P.I. Sta. 1618+44.17 (Bk.) =
P.I. Sta. 1617+74.53 (Ahd.)
Δ = 38°07' 42" (LT)
D = 02°06' 51"
R = 2,710.00'
T = 936.52'
L = 1,803.41'
E = 157.26'
Super = 6.0%

HIGHWATER INFORMATION

Historic high water was given by Mike Rains, a resident of the area for 16 years, and P.D. Huffman, who has worked for KDOT Maintenance for 16 years. Mike Rains placed the high water at the edge of asphalt of US-40. HHW Elev. 3099.23.

Sea Level Datum NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 40-55-62.45 (031) Sta. 1618+50.00
CONTOUR MAP
US-40 over North Branch
Hackberry Creek
Proj. 40-55 KA-3915-01 Logan Co.

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

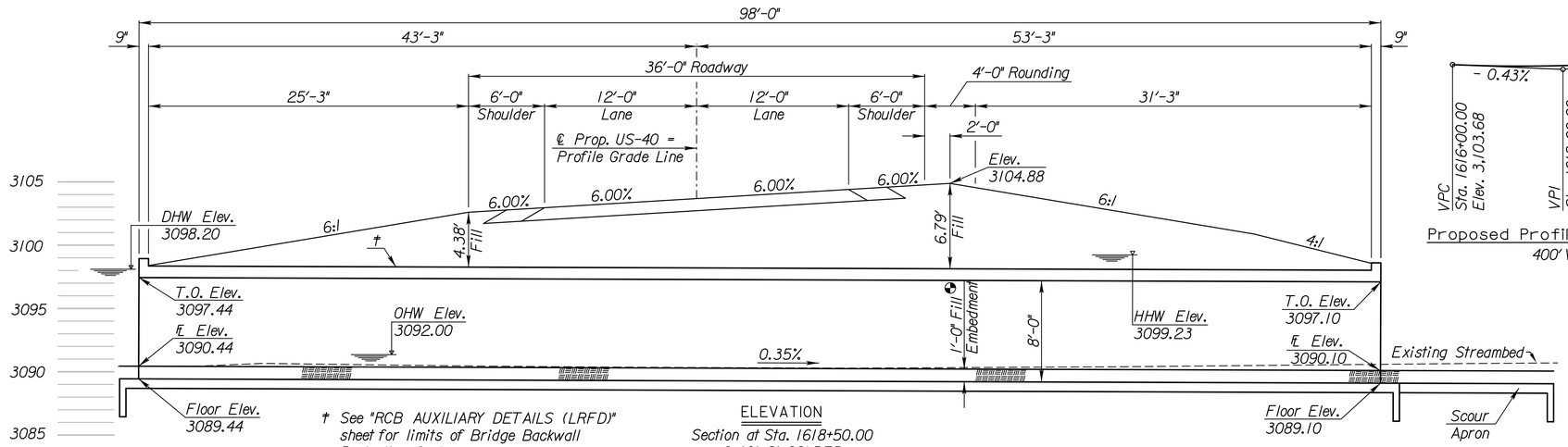
KDOT Graphics Certified 12-07-2021

Sheet No. 21

KDOT Graphics Certified

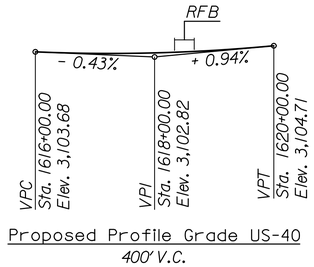
Plotted By: cmorris
Plot Location: Bridge
File: ka3915\bbr0008-001.dgn
Plot Date: 08-DEC-2021 08:35

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	22	71



† See "RCB AUXILIARY DETAILS (LRFD)" sheet for limits of Bridge Backwall Protection System.

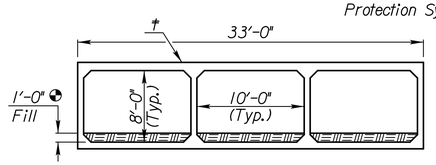
ELEVATION
Section at Sta. 1618+50.00
3-10'x8'x98' RFB
36'-0" Roadway
(Embed 1'-0" Below Streambed)



Proposed Profile Grade US-40
400' V.C.

DRAINAGE DATA

Drainage Area	14.5	sq. mi.
Design Frequency	50	yrs
Design Discharge (Q50)	2030	cfs
Design High Water Elevation	3098.20	
Change In Design Backwater	-1.84	ft.
Design Backwater Elevation	3098.20	ft.
Overtopping Elevation (Sta. 1617+25.48)	3103.41	
Overtopping Discharge	5477	cfs
Overtopping Frequency	>200	yrs
Discharge at Q100	2800	cfs
Change in Backwater at Q100	+ 0.10	ft.
Backwater Elevation at Q100	3100.71	
Historic High Water Elevation	3099.23	
Ordinary High Water Elevation	3092.00	
Total Waterway Provided	208.7	sq. ft.
Design Waterway Provided	208.7	sq. ft.
Estimated Ordinary High Water Discharge	19	cfs
Change in Waterway Opening	+ 40.7	sq. ft.



TYPICAL SECTION

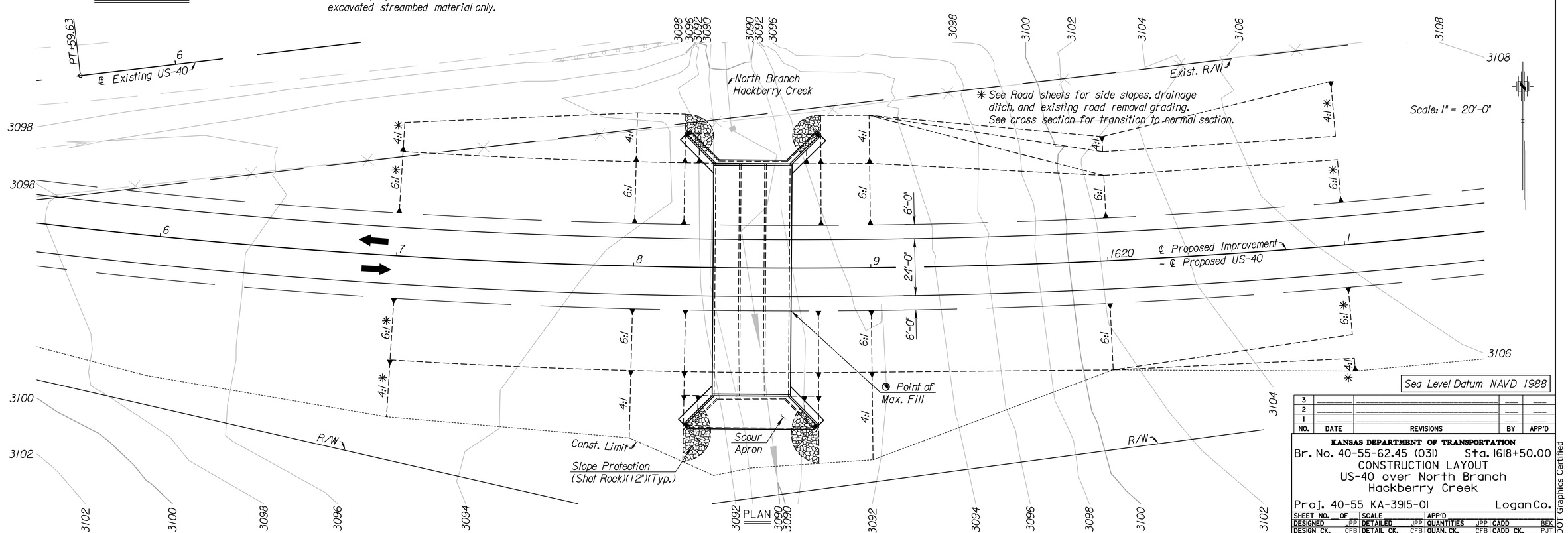
B.M. #13 Set "T" shaped post 1.0' S. of "T" post
38.71' Lt. of ℄ Sta. 1612+84.13 Elev.= 3,100.41

B.M. #14 Found "+" cut on E. end of S. hdwl. of RCB
15.51' Rt. of ℄ Sta. 1618+41.60 Elev.= 3,098.58

B.M. #15 Set "T" shaped post 1.0' S. of "T" post
39.54' Lt. of ℄ Sta. 1628+89.85 Elev.= 3,110.02

Max Fill Hieght = 6.86'

Note: Backfill proposed structure with excavated streambed material only.



PLAN

Sea Level Datum NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 40-55-62.45 (031) Sta. 1618+50.00
CONSTRUCTION LAYOUT
US-40 over North Branch Hackberry Creek
Proj. 40-55 KA-3915-01 Logan Co.

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

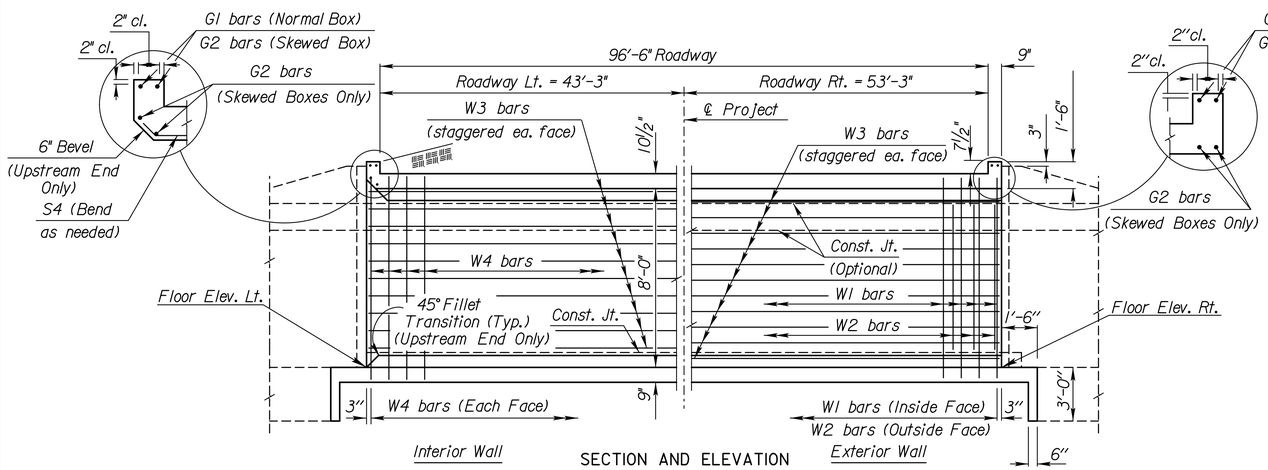
KDOT Graphics Certified 12-03-2021

Sheet No. 22

Plotted By: cmorris
Plot Location: Bridge
File: ka39150bbr0008-002.dgn
Plot Date: 08-DEC-2021 08:35

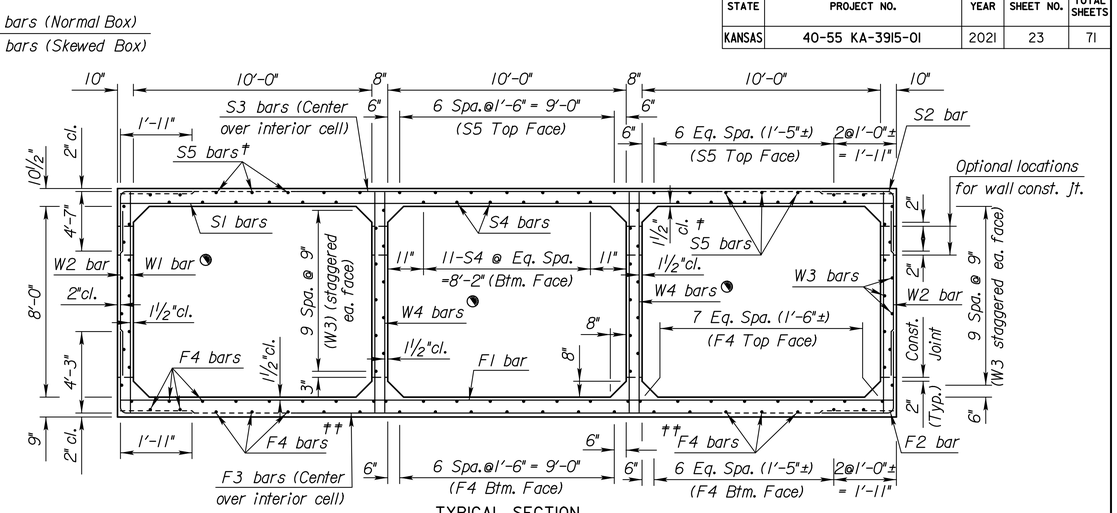
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	23	71



SECTION AND ELEVATION

(Normal to ℄ Roadway)



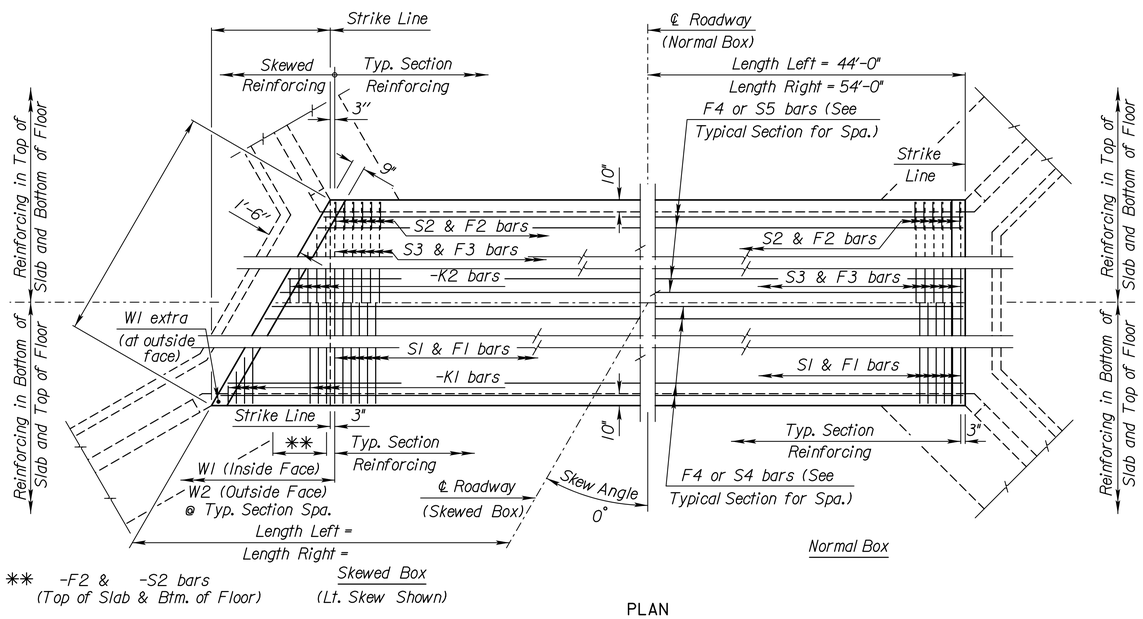
TYPICAL SECTION

◔ See RCB Auxiliary Details for Optional Splice.

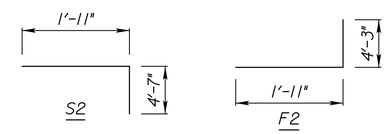
† Place when S3 bar extends to exterior walls.

†† Place when F3 bar extends to exterior walls.

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



PLAN



BENDING DIAGRAM

All Dimensions are out to out of bars.

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 shall include the surfacing.

CONCRETE: Grade 4.0 Concrete shall be used throughout. Bevel all exposed edges with a ¾inch triangular moulding. Where Grade 4.0 Concrete (AE) is specified, it shall be placed in the top slab above the Construction Joint.

REINFORCING: All reinforcing shall conform to ASTM A615, Grade 60. All dimensions relative to reinforcing steel shall be to centerline of 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: A Seal Course may be required by the Engineer. The Seal Course shall be unreinforced Concrete (Commercial Grade) to 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 their construction is required by the plans. Payment for additional quantities that result from including seal course and/or floating apron, as a change in 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: Wingwalls and that portion of the RCB outside the Strike Line shall be constructed level. Footing for wingwalls shall be constructed with the culvert floor. See wingwall detail sheet.

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

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

CULVERT SUMMARY

⧗ For design purposes ONLY. Do NOT use for Construction ◔ includes any welded wire fabric

Floor Elev. Lt.	Floor Elev. Rt.	Crown Gr. Elev.	⧗Design Fill Ht.	Skew	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.)	LRFR RATING FACTORS HL-93 Loading Inventory	LRFR RATING FACTORS HL-93 Loading Operating
3089.44	3089.10	3103.68	0	0	Flared	Flared	Yes	No	292.38	45.65	338.03	64272	4127	68400	2.40	3.11

△ Epoxy Coated Bars
* See Bending Diagram

BAR SCHEDULE

△ F1 Size	Spa.	No.	Length	△ F2 * Size	Spa.	No.	Length	△ F3 Size	Spa.	No.	Length	△ F4 Size	No.	Length	△ S1 Size	Spa.	No.	Length	△ S2 * Size	Spa.	No.	Length	△ S3 Size	Spa.	No.	Length	△ S4 Size	No.	Length	△ S5 Size	No.	Length
5	6½"	181	32'-8"	5	6"	392	6'-2"	6	6"	196	32'-4"	4	141	33'-6"	7	6½"	181	32'-8"	5	6"	392	6'-6"	6	6"	196	32'-8"	5	66	49'-9"	4	69	33'-6"

△ K1 Size	Spa.	No.	Length	△ K2 Size	Spa.	No.	Length	△ W1 Size	Spa.	No.	Length	△ W2 Size	Spa.	No.	Length	△ W3 Size	No.	Length	△ W4 Size	Spa.	No.	Length	△ G1 Size	No.	Length	△ G2 Size	No.	Length	Size	Spa.	No.	Length
N/A	N/A	N/A		N/A	N/A	N/A		5	1'-1"	182	9'-3"	4	6"	392	7'-9"	4	120	33'-6"	5	6½"	724	9'-3"	5	4	32'-8"	N/A	N/A	N/A				

SUMMARY OF QUANTITIES

Concrete (Grade 4.0)(RCB BR)	218.3	C.Y.
Concrete (Grade 4.0)(AE)(RCB BR)	119.7	C.Y.
Bridge Backwall Protection System	375	S.Y.
Reinforcing Steel (Gr. 60)	4130	Lbs.
Reinforcing Steel (Gr.60)(Epoxy Coated)	64270	Lbs.
Class III Excavation	390	C.Y.
Foundation Stabilization	87	C.Y.
Concrete for Seal Course (Set)	1	C.Y.
Granular Backfill (Wingwalls)	104	C.Y.
Slope Protection (Shot Rock)	25	C.Y.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 40-55-62.45 (031) Sta. 1618+50.00
RCB BOX
US-40 over North Branch Hackberry Creek

Proj. 40-55 KA-3915-01 Logan Co.

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

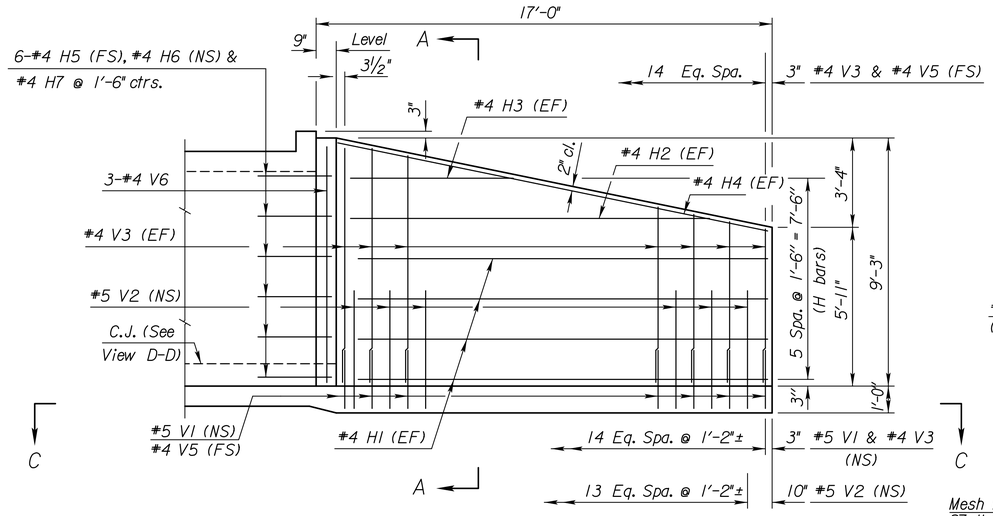
KDOT Graphics Certified 12-07-2021

Sheet No. 23

KDOT Graphics Certified

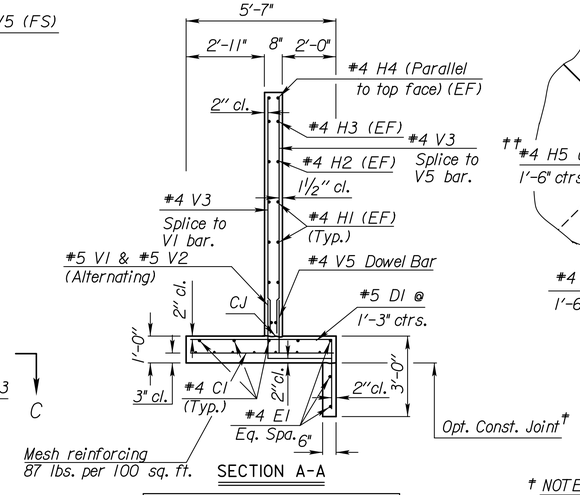
Plotted By: cmorris Plot Location: Bridge
File: ka39150bbr0008-003.dgn
Plot Date: 08-DEC-2021 08:35

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	24	71



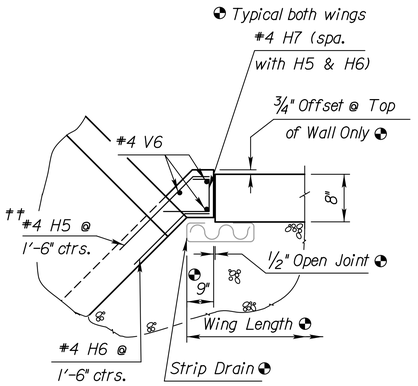
ELEVATION OF WINGWALL

(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. D1 bars or mesh may be spliced thus: ⌐ Minimum overlap shall be 1'-3". No increase in quantities or cost shall be allowed when Contractor elects this option.

GENERAL NOTES

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

CONCRETE: Grade 4.0 Concrete shall be used throughout. Bevel all exposed edges with a ¾" triangular moulding.

REINFORCING: All reinforcing shall conform to ASTM A615, Grade 60. Welded Wire Fabric shall conform to ASTM A185. All dimensions relative to reinforcing steel shall be to center-line of bar unless otherwise noted. Wire Reinforcing mesh shall be electrically welded and shall be composed of 6 x 6- W6 x W6 welded wire fabric and shall be classified as pounds of reinforcing and included in the total quantity for the bid item Reinforcing Steel (Gr. 60)

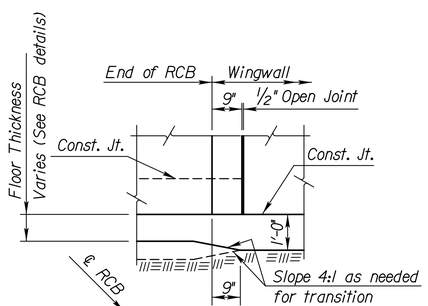
QUANTITIES: Wingwall Quantities include all quantities outside the neat lines of the box, excluding the hubguard.

APRON: A 5" concrete slab shall be constructed between the downstream wings in locations subject to scour only when specified on the plans or by the Engineer.

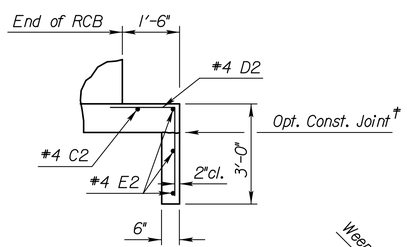
BACKFILL MATERIAL: Use Granular Backfill material meeting the requirements of SB-1, SB-2, SCA-1, SCA-2.
Backfill all wings to limits shown on the "RCB Auxiliary Sheet".

FILTER FABRIC: Separate in-situ material from granular backfill with approved filter fabric complying with Section 1710.
Filter Fabric is subsidiary to "Granular Backfill".

FOUNDATION STABILIZATION: Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.

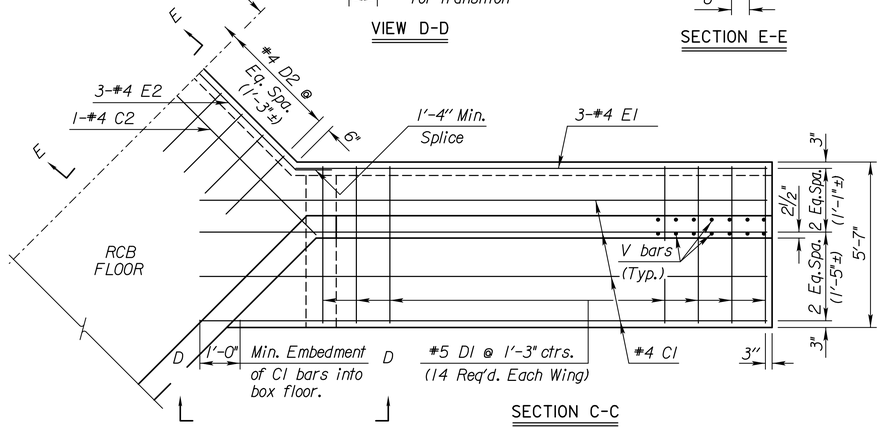


VIEW D-D



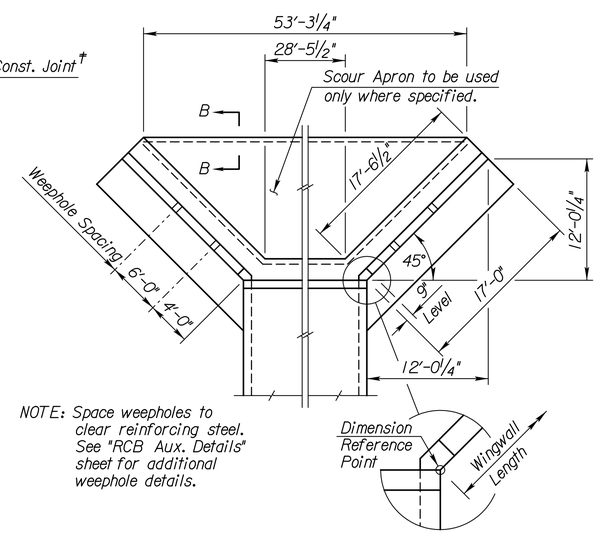
SECTION E-E

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



SECTION C-C

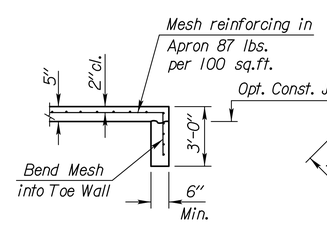
(Plan of Footing)



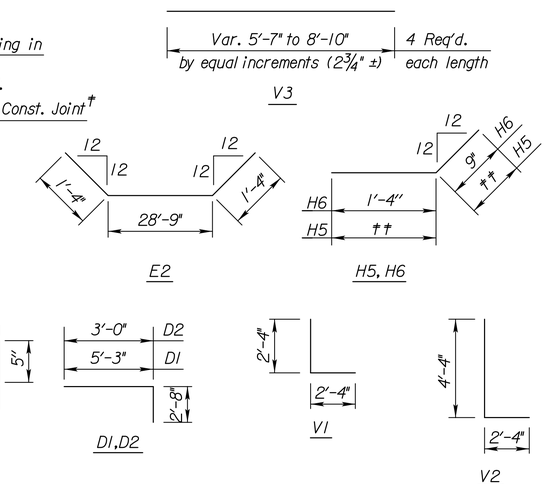
NOTE: Space weepholes to clear reinforcing steel. See "RCB Aux. Details" sheet for additional weephole details.

WING DIMENSIONS FOR NORMAL BOX

(3½:1 Embankment Slope)



SECTION B-B



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	4.91	(C.Y.)	17.65	(C.Y.)
Apron	8.90	(C.Y.)	10.35	(C.Y.)
Soil Saver	0.00	(C.Y.)	0.00	(C.Y.)

Reinforcing Steel (Gr. 60)	1608	Lbs.
Welded Wire Fabric (Wings)	165	Lbs.
Welded Wire Fabric (Apron)	580	Lbs.
Granular Backfill (Wingwalls)	52.00	C.Y.
Filter Fabric (subsidiary)	48.00	S.Y.

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

✳ See Bending Diagram

0° Skew	Mark	#4C1	#5D1	#4E1	#4C2	#4D2	#4E2	#5V1	#5V2	#4V3	#4H1	#4H2	#4H3	#4H4	#4H5	#4H6	#4H7	#4V5	#4V6
	Number	8	28✳	6	1	23 ✳	3✳	30 ✳	28 ✳	60	16	4	4	4	12 ✳	12 ✳	12 ✳	30	6
	Length	20'-6"	7'-11"	17'-4"	32'-8"	5'-8"	31'-5"	4'-8"	6'-8"	✳	15'-10"	13'-8"	6'-4"	16'-2"	1'-10"	2'-1"	2'-6"	2'-2"	9'-0"

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 40-55-62.45 (031) Sta. 1618+50.00
RCB WING
US-40 over North Branch Hackberry Creek
Proj. 40-55 KA-3915-01 Logan Co.

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

KDOT Graphics Certified 12-03-2021

Sheet No. 24

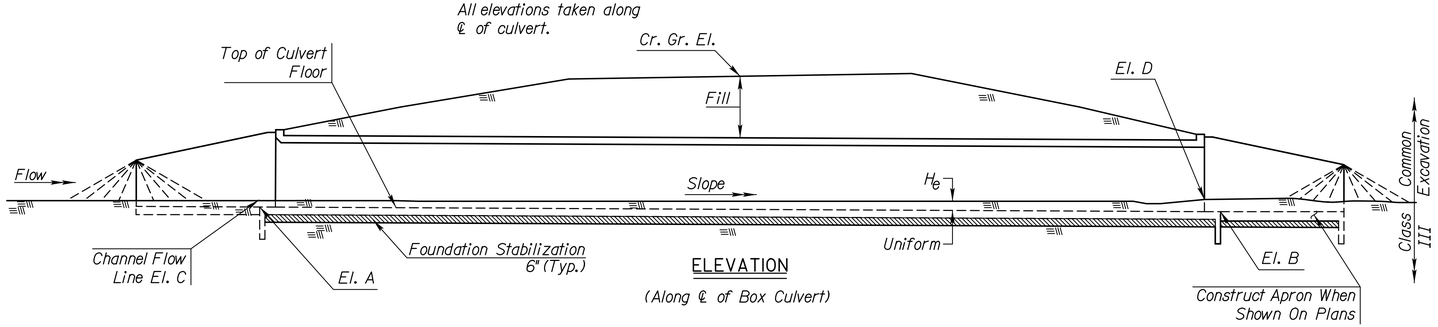
KDOT Graphics Certified

Plot Location: Bridge
Plotted By: cmorris
File: ka39150bbr0008-004.dgn
Plot Date: 08-DEC-2021 08:35

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	25	71

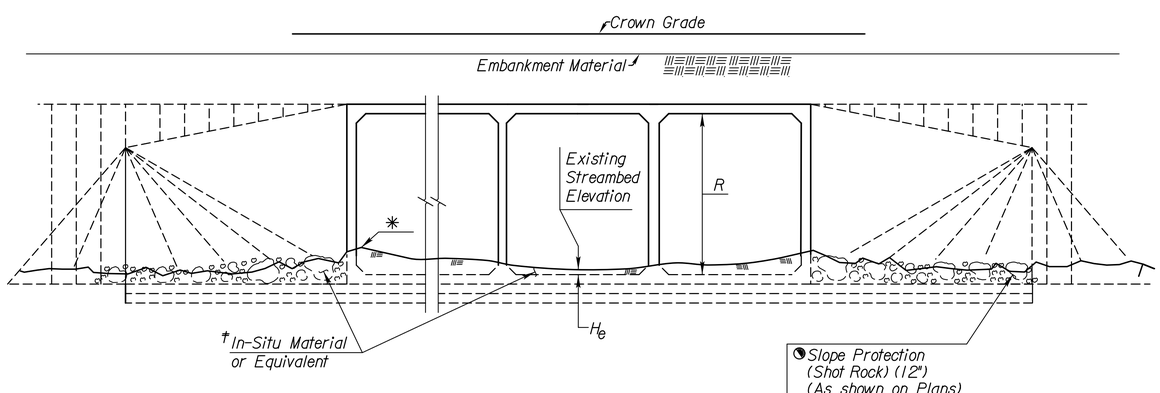
SUMMARY OF HYDRAULIC STRUCTURES											
Serial No.	Str. Type	Sta.	Size No. Cells - Span x Rise	Cr. Gr. El.	H_e	Floor El. A	Floor El. B	BackFill El. C	BackFill El. D	Up Stream Apron	Down Stream Apron
(031)	RFB	1618+50.00	3 - 10' x 8'	3103.68	12.0"	3089.44	3089.10	3090.44	3090.10	NO	YES

NOTE:
All elevations taken along
℄ of culvert.



ELEVATION

(Along ℄ of Box Culvert)



TYPICAL SECTION

(At the end of the box culvert)

GENERAL NOTES

† Backfill:
The backfill within the barrel will occur by natural process for structures equal to or less than 4'-0" in height. For these structures the contractor will backfill to the limits shown outside of the barrel. Backfill structures larger than 4'-0" in height to a minimum depth of 1'-0". Work and material required for backfill is not paid for directly, but is subsidiary to Foundation Stabilization.

Material:
Backfill shall be with insitu or equivalent material. Material shall be reasonably free of organic material. Slope Protection (Shot Rock) shall conform to KDOT Specifications. Place this material to the limits shown. The intent of the Slope Protection material is to protect the toe of the embankment which wraps around the wing walls.

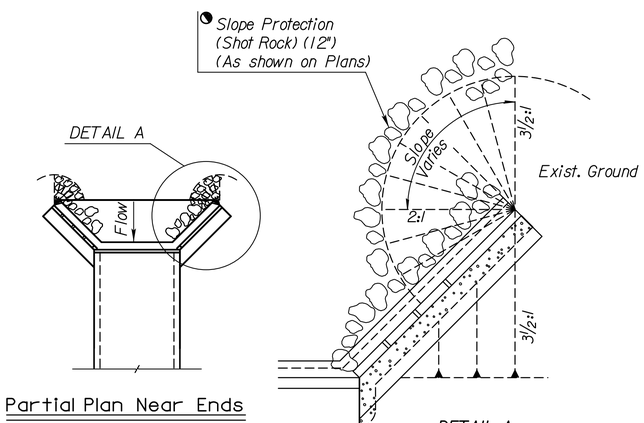
Excavation:
The grading contractor will excavate and clear the channel to the limits shown on standard BR100. The bridge contractor will consider the additional excavation below this elevation as Class III for bridge sized structures. Excavation below the floor shall be subsidiary to Foundation Stabilization.

Loading:
For structures larger than 4'-0" in height, place in-situ material or equivalent in an uncompacted state to a minimum depth of 1'-0". Do not operate equipment on floor until the concrete has reached a strength of at least 3.0 ksi.

* Shape backfill in exterior cells so that top elevation of backfill material is 4" to 6" higher than the backfill material at ℄.

◔ See "RCB Box" Sheet for "Slope Protection" Quantities.

† Backfill material is limited to the material found within the footprint of the excavated structure.



Partial Plan Near Ends

DETAIL A

NO.	DATE	REVISIONS	BY	APP'D
3				
2	5/06/16	Various Revisions	MJO	JPJ
1	6/18/12	Modified Per 2012 Requirements	JPJ	TLF

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 40-55-62.45 (031) Sta. 1618+50.00

RCB AUXILIARY DETAILS
(Embedded Structure)
With Rise > 48"

Project No. 40-55 KA-3915-01 Logan Co.

SHEET NO. OF	SCALE	APP'D	
DESIGNED JPJ/MJO	DETAILED JPJ/MJO	QUANTITIES JPP	CADD RAA
DESIGN CK. JPP	DETAIL CK. JPP	QUAN. CK. CFB	CADD CK. JPP

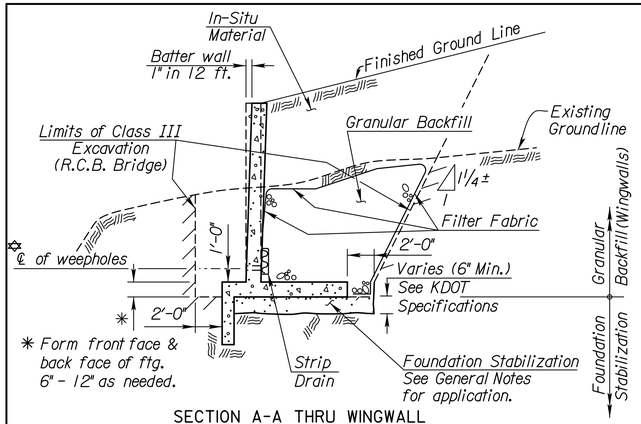
KDOT Graphics Certified 12-03-2021

Sheet No. 25

KDOT Graphics Certified

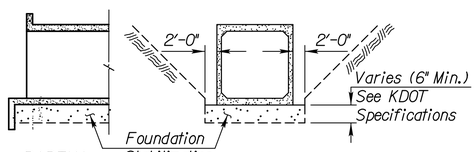
Plotted By: cmorris
Plot Location: Bridge
File: ka39150bbr0008-005.dgn
Plot Date: 08-DEC-2021 08:36

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	26	71



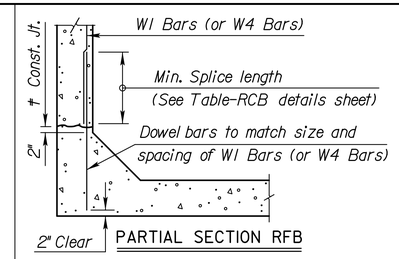
SECTION A-A THRU WINGWALL

Granular Backfill And Foundation Stabilization



PARTIAL ELEVATION

SECTION



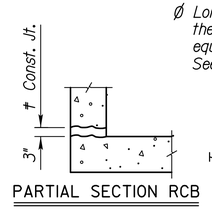
PARTIAL SECTION RFB

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.

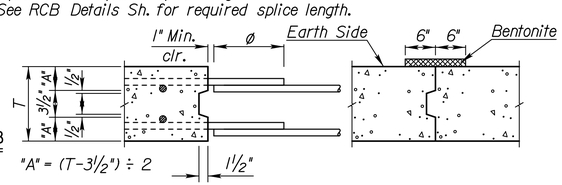
† OPTIONAL COLD JOINT

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 Sh. for required splice length.

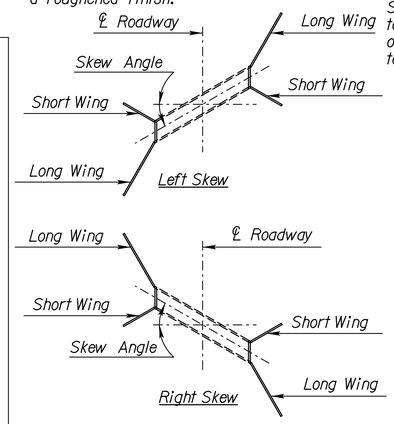


VERTICAL CONSTRUCTION JOINTS

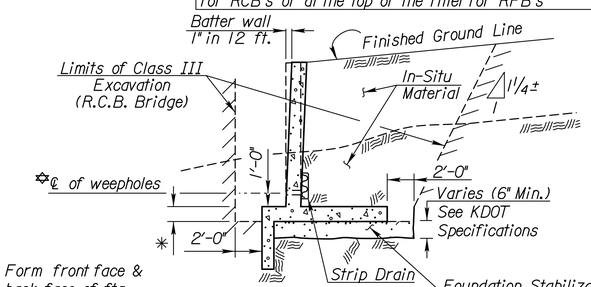
NOTE: Vertical construction joints shall be perpendicular to the longitudinal axis of the RCB and shall be placed at any location as needed for construction and as approved by the Engineer.

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".



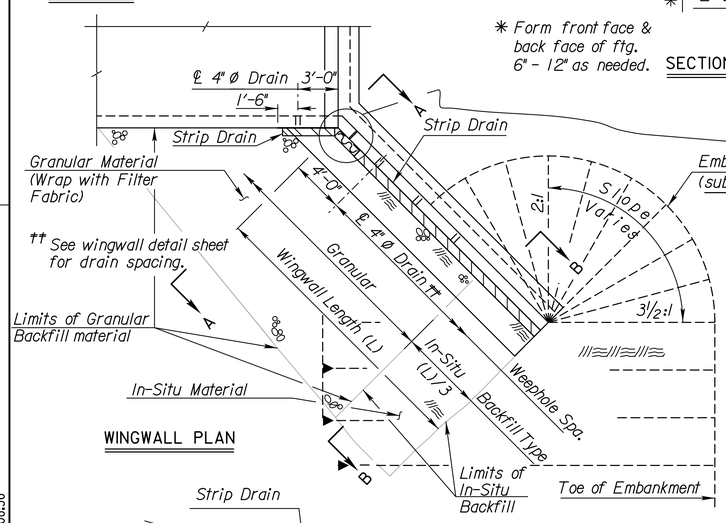
PLAN VIEW SKEWED R.C.B.



✳ Form front face & back face of ftg. 6" - 12" as needed.

SECTION B-B THRU WINGWALL

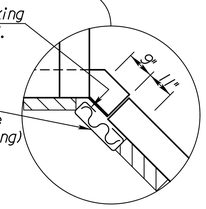
✡ Weep holes will be adjusted up by the amount of embeddment shown on BR025 if the structure is embedded.



WINGWALL PLAN

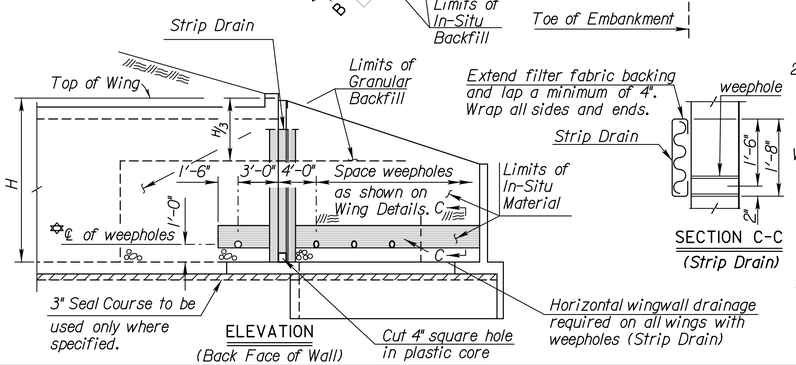
Embankment required (subsidiary to Grade 4.0 Conc.)

Extend filter fabric backing and lap a minimum of 4". Wrap all sides and ends.



Strip Drain (Extend to top of footing). Cut 4" square hole in plastic core at top of footing)

VERTICAL STRIP DRAIN



ELEVATION

(Back Face of Wall)

Extend filter fabric backing and lap a minimum of 4". Wrap all sides and ends.

Strip Drain

SECTION C-C

(Strip Drain)

GENERAL NOTES

Wingwall Drainage:

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

Wingwall Foundation Stabilization:

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

Seal Course:

1. 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.

GENERAL NOTES

Foundation Stabilization:

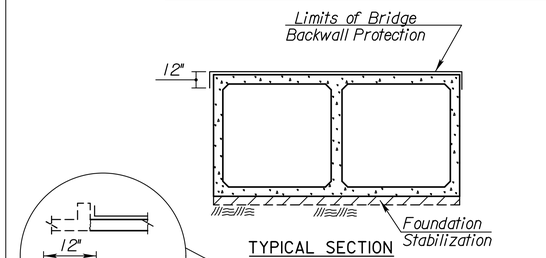
The depth of Foundation Stabilization may be increased by the Engineer. The Contractor may underrun Foundation Stabilization under the barrel if founded on firm material and with the Engineer's approval. Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.

Granular Backfill (Wingwalls):

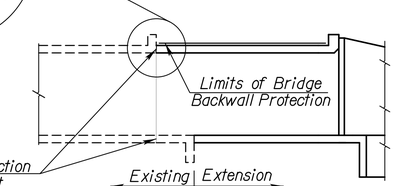
1. Granular Backfill shall be used to backfill behind wingwalls to the limits shown in the WINGWALL PLAN and Elevation detail. Granular Backfill construction may be used separately or combined with Foundation Stabilization as directed by the Engineer.
2. Measurement for the bid item, "Granular Backfill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

In-Situ Backfill (Wingwalls):

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

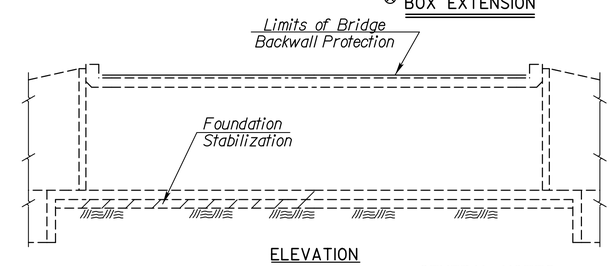


TYPICAL SECTION



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

⊗ BOX EXTENSION



ELEVATION

(New Construction)

GENERAL NOTES

Bridge Backwall Protection System:

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

NO.	DATE	REVISIONS	BY	APP'D
7	2/6/18	Filter Fabric Clarification	MLL	JPJ
6	6/7/17	Filter Fabric Modification	JPJ	JPJ
5	10/11/13	Granular Backfill Limits	JPJ	LRR
4	10/11/12	Added Weep Hole Note	JPJ	TLF
3	8/2/12	Modified Backwall Notes	JPJ	TLF
2	3/7/12	Added Filter Fabric to Detail	JPJ	TLF
1	12/15/11	Added Bridge Backwall Protection	JPJ	TLF

KANSAS DEPARTMENT OF TRANSPORTATION

RCB AUXILIARY DETAILS (LRFD)

BR020B

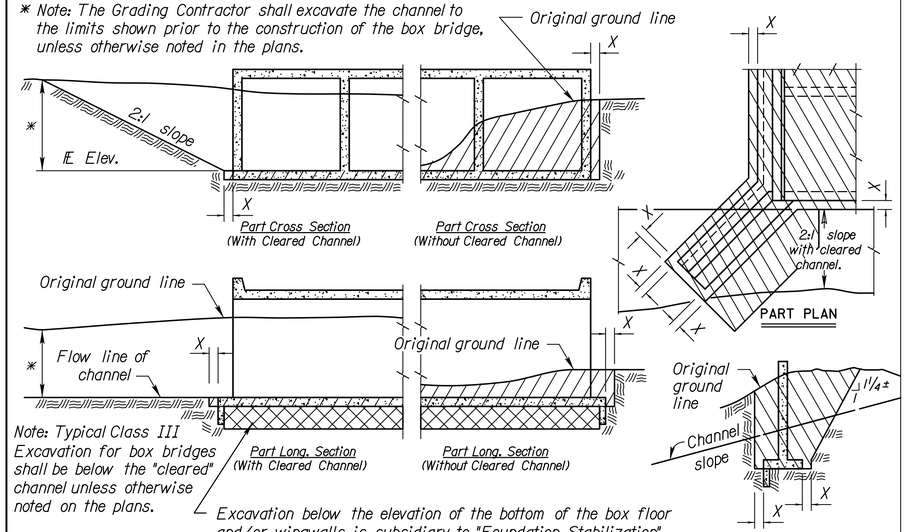
FHWA APPROVAL			4/17/10	APP'D		TERRY L. FLECK	
DESIGNED	JPJ	DETAILED	RAA	QUANTITIES		CADD	RAA
DESIGN CK.	JSR	DETAIL CK.	JPJ	QUAN.CK.		CADD CK.	JPJ

Std. Base File: br020.dgn
Plotted By: cmorris
Plot Location: Bridge
File: ka3915l bss0220b-001.dgn
Plot Date: 08-DEC-2021 08:36

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	27	71

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

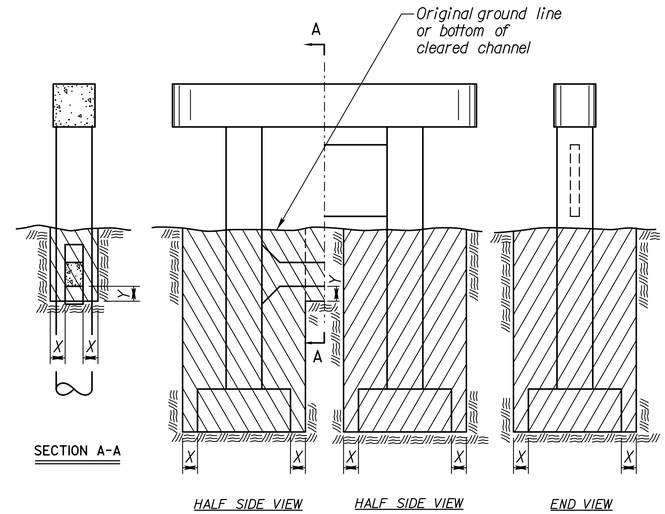


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

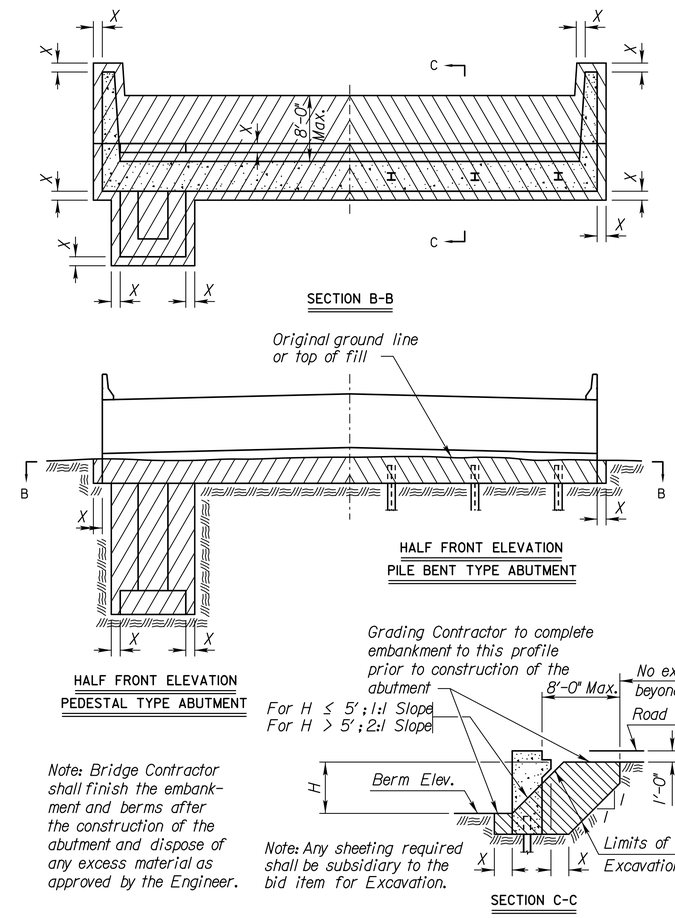
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

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



EXCAVATION DETAILS FOR TYPICAL PIERS

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

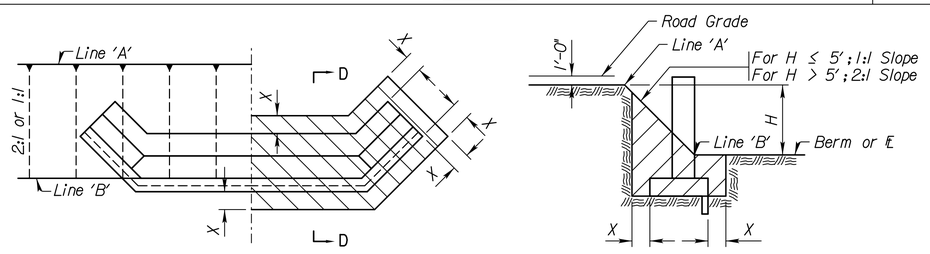


Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

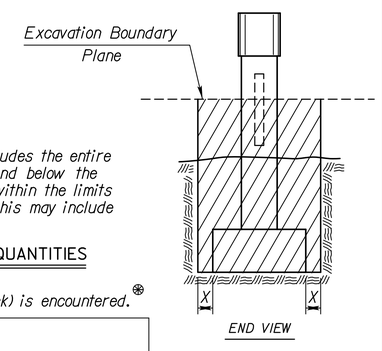
Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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



EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



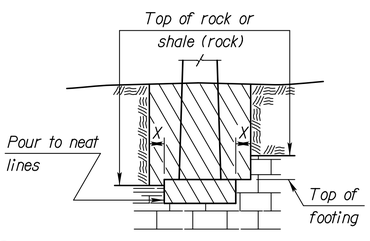
Note: Class II Excavation includes the entire volume of whatever nature found below the "Excavation Boundary Plane", within the limits specified for measurement. This may include water or air.

CLASS II EXCAVATION QUANTITIES

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

Note: 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.

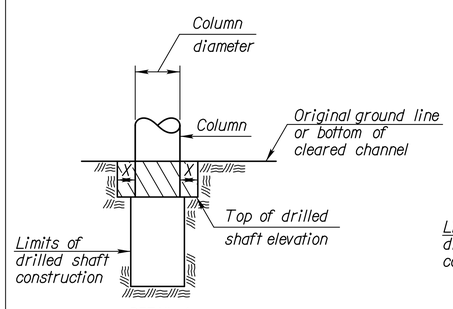
Sides of trenches in hard or compacted soil including embankments shall be shored, sheeted, braced or otherwise supported when the trench is more than 5 feet in depth and 8 feet or more in length. In lieu of the shoring, the sides of the trench above the 5 foot level may be sloped to preclude collapse.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



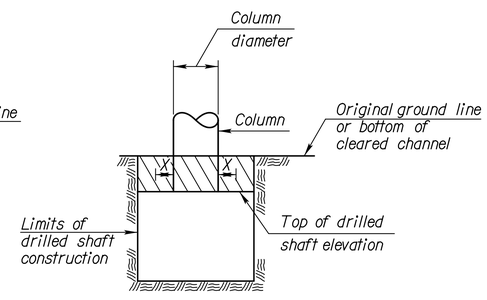
⊛ EXCAVATION DETAIL FOR FOOTINGS IN ROCK OR SHALE (ROCK)

(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.



DETAIL A



DETAIL B

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

DRILLED SHAFT DETAILS

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

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

NO.	DATE	REVISIONS	BY	APP'D
7				
6	8-15-12	Embeddement Excavation Subsidiary	JPJ	TLF
5	5-15-12	Revised Wing Excavation	JPJ	TLF
4	3-3-10	Revised Wing Excavation	JPJ	TLF
3	10-16-06	Revised "Foundation Stab." Note	JPJ	KFH
2	10-19-04	Concrete - Class to Grade	RAM	KFH
1	4-10-02	Added "Foundation Stab." Note	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BRIOOB

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

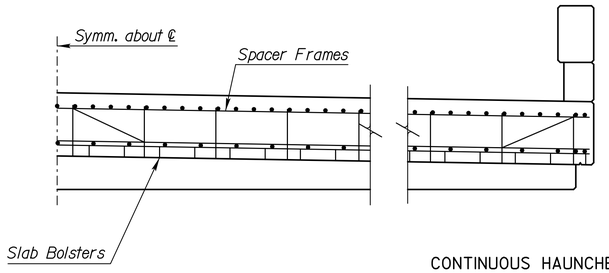
KDOT Graphics Certified 12-03-2021

Sheet No. 27

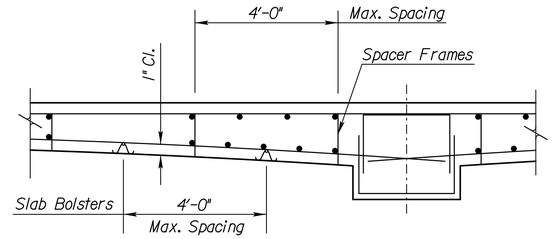
Std. Base File: br100.dgn
Plotted By: cmorris
Plot Location: Bridge
File: ka3915010bss100b-002.dgn
Plot Date: 08-DEC-2021 08:36

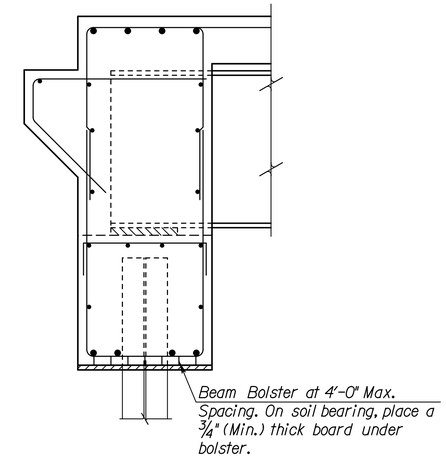
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	28	71

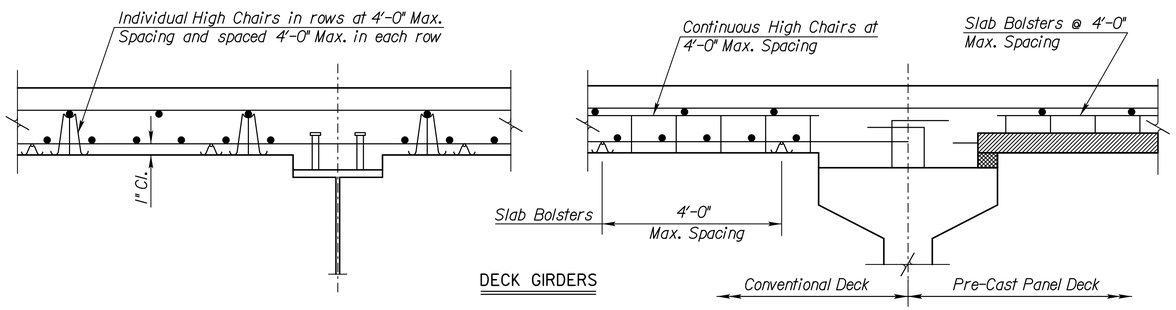


CONTINUOUS HAUNCHED SLAB

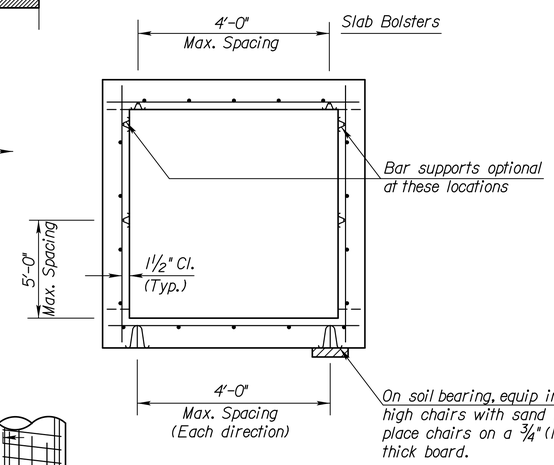




ABUTMENT



DECK GIRDERS



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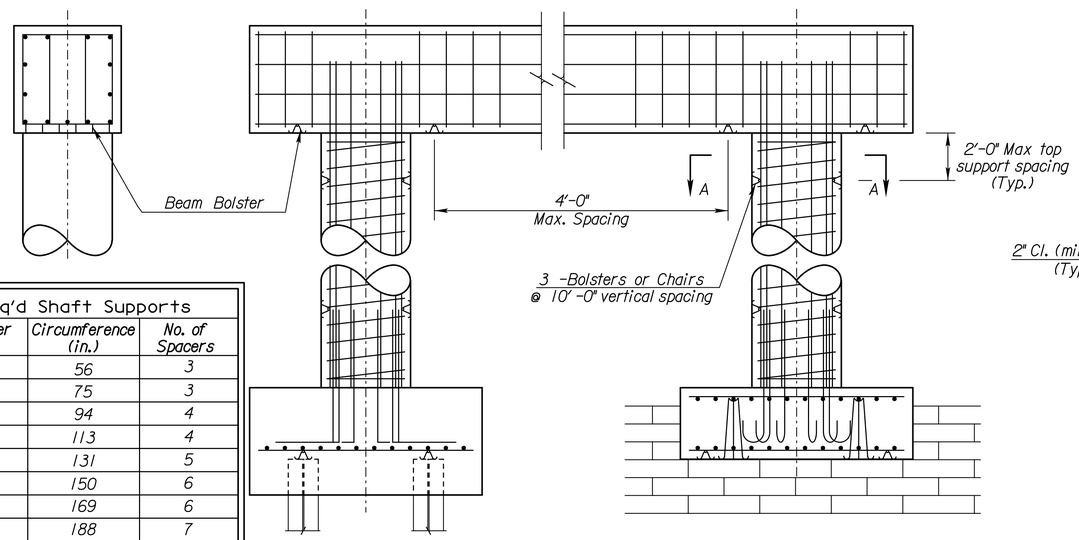

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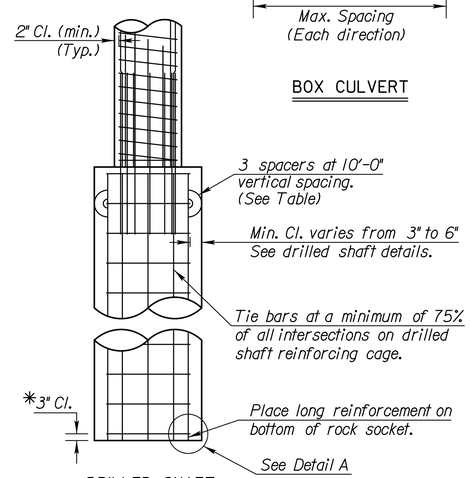

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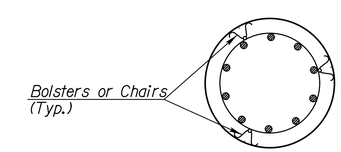
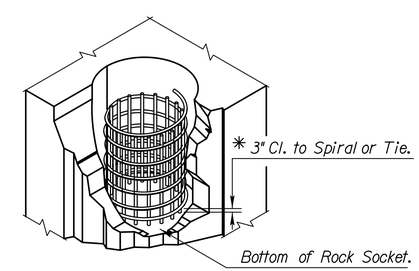


SECTION A-A



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.

GENERAL NOTES

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

Use only the following types of bar supports:

1) Wire Bar Supports:

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

2) Plastic Bar Supports

3) Supplementary bars

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

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

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

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

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

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

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

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

Req'd Shaft Supports

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BRI20

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

KDOT Graphics Certified 12-03-2021

Sheet No. 28

Std. Base File: bri20.dgn
Plotted By: amorris
Plot Location: Bridge
File: ka39150lbss120-003.dgn
Plot Date: 08-DEC-2021 08:36

KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	29	71

EARTHWORK

LOCATION	STATION to STATION	EXCAVATION COMMON CU.YDS.	EXCAVATION COMMON VMF	EXCAVATION ROCK CU.YDS.	EXCAVATION ROCK VMF	CONTR. FURN. CU.YDS.	COMPACTION TYPE AA MR-5-5 CU.YDS.	COMPACTION TYPE A MR-5-5 CU.YDS.	SALVAGED TOPSOIL (SQ.YDS.)
PHASE 1									
US-40	1615+00 to 1629+00	4,932	0.70	-		15,130	1,404	12,639	17,701.5
County Rd 380	47+50 to 48+50	6	0.70	-		58	-	45	189.5
	PHASE 1 TOTAL	4,938		-		15,188	1,404	12,684	17,891.0
PHASE 2A									
US-40	1602+75 to 1614+00	86	0.70	-		165	-	176	-
US-40	1630+08 to 1639+25	48	0.70	-		127	-	122	-
	PHASE 2A TOTAL	134		-		292	-	298	-
PHASE 2B									
US-40	1607+77.64 to 1615+00	1,180	0.70	194	1.00	800	139	1,247	4,074.4
US-40	1629+00 to 1635+43.73	641	0.70	155	1.00	206	59	534	3,589.1
	PHASE 2B TOTAL	1,821		349		1,006	198	1,781	7,663.5
PHASE 3									
US-40	1602+75 to 1639+25	◎ 7,171	0.70	2,552	1.00	-	197	1,770	15,984.2
	TOTALS	14,064		2,901		16,486	1,799	16,533	41,538.7

◎ Includes 4,361 Cu. Yds. to be Wasted

DRAINAGE STRUCTURES

STATION	SIDE	SIZE	TYPE	ENTRANCE PIPES PVCP, PEP, CSP, ACSP, CAP, RCP				END SECTIONS ◔ 18"	END SECTIONS TYPE I LT.	END SECTIONS TYPE I RT.	REMARKS
					18"			18"	LT.	RT.	
Road 380 48+00	℄	18"	PVCP, PEP, CSP, ACSP, CAP, RCP		30			2	1	1	
			TOTAL		30			2			

◔ - See Pipe Culvert Summary Sh. No. 19 for allowable End Section types.

REMOVAL OF EXISTING STRUCTURES (FOR INFORMATION ONLY)

STATION TO STATION	SIDE	REMARKS
℄ US-40 1618+30.94	℄	Existing Br. No. 40-55-30.65 (008)
℄ US-40 1617+64.09 to 1619+03.24	Lt.	Existing Guardrail
℄ US-40 1617+57.77 to 1618+98.30	Rt.	Existing Guardrail

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

RECAPITULATION OF ROAD QUANTITIES

ITEM	QUANTITY	UNIT
Cleaning of Existing Structures	Lump Sum	Lump Sum
Contractor Construction Staking	Lump Sum	Lump Sum
Field Office & Laboratory (Type C)	1	Each
Foundation Stabilization (Set Price)	1	Cu. Yd.
Mobilization	Lump Sum	Lump Sum
Mobilization (DBE)	Lump Sum	Lump Sum
Removal of Existing Structures	Lump Sum	Lump Sum
✳ Maintenance and Restoration of Haul Roads (Set Price)	Lump Sum	Lump Sum
Concrete for Seal Course (Set Price)	1	Cu. Yd.
Clearing and Grubbing	Lump Sum	Lump Sum
Salvaged Topsoil	41,539	Sq. Yd.
Common Excavation (Rural Small)	14,064	Cu. Yd.
Common Excavation (Contractor Furnished)	16,486	Cu. Yd.
Rock Excavation	2,901	Cu. Yd.
Compaction of Earthwork (Type A) (MR-5-5)	16,533	Cu. Yd.
Compaction of Earthwork (Type AA) (MR-5-5)	1,799	Cu. Yd.
Water (Grading) (Set Price)	1	M. Gal.
End Sections (18")	2	Each
Entrance Pipe (18")	30	Lin. Ft.
Right of Way Survey Monument	11	Each
Temporary Surfacing Material (Aggregate) (Set Price)	1	Cu. Yd.

✳ Federally Non-Participating Item

For Bridge Quantities, See Sh. No. 21
For Project Surfacing Quantities, See Sh. No. 30
For Temporary Erosion and Pollution Control Quantities, See Sh. No. 31-32
For Seeding Quantities, See Sh. No. 42
For Traffic Control Quantities, See Sh. No. 60

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 11-10-2021

KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:39
File : KA391501rpq-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	30	71

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 A)(MR-5-5) except, when ordered by the Engineer, the top 3" shall be left uncompacted for seeding.

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

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

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

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

~~Quantities for aggregate for shoulders, AS-1, are calculated on the basis of 150 lbs. per cu. ft. Quantities for stabilized base course, AB-3, are calculated on the basis of 1.56 lbs. per cu. ft. Weight/cu. ft. includes moisture allowed by specification.~~

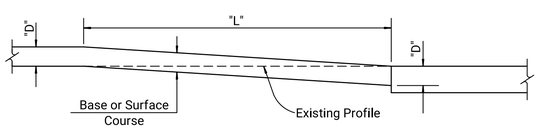
~~The base course shall be constructed to the plan thickness as shown.~~

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

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

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

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



TYPICAL PROFILE AT GRADE CONTROL POINTS

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

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

TABLE OF DIMENSIONS

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

SUMMARY OF QUANTITIES

LOCATION	STATION TO STATION		SIDE	ψ HMA-COMMERCIAL GRADE (CLASS A) (TONS)					REMARKS
				11.5"	7"				
℄ US-40	1615+00	1629+00	℄	3,023.7					Phase 1: Mainline
℄ US-40	1602+75	1614+00	Lt.		191.4				Phase 2A: Temporary
℄ US-40	1630+08	1639+25	Lt.		106.7				Phase 2A: Temporary
℄ US-40	1607+77.64	1615+00	Rt.	780.4					Phase 2B: Mainline
℄ US-40	1629+00	1635+43.73	Rt.	688.9					Phase 2B: Mainline
℄ US-40	1607+77.64	1615+00	Lt.	774.4					Phase 3: Mainline
℄ US-40	1629+00	1635+43.73	Lt.	696.1					Phase 3: Mainline
TOTALS				5,963.5	298.1				

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

RECAPITULATION OF QUANTITIES

ITEM	TOTAL	UNIT
HMA-Commerical Grade (Class A)	6,262	TONS
Field Office and Laboratory (Type A)	1	Each

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES
(Surfacing)

~~RD051~~

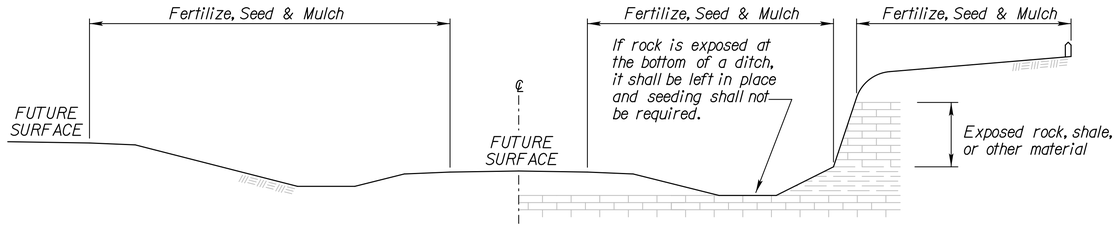
FHWA APPROVAL	9-06-06	APP'D. James O. Brewer	
DESIGNED	DETAILED	QUANTITIES	TRACED Bowser
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. Hecht

KDOT Graphics Certified 12-08-2021 Sh. No. 30

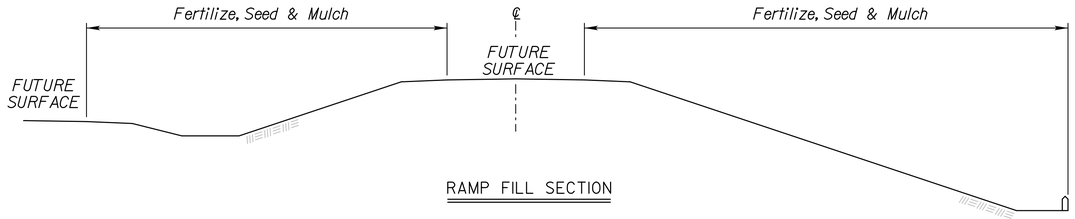
KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:40
File : KA3915 01rsq-01.dgn

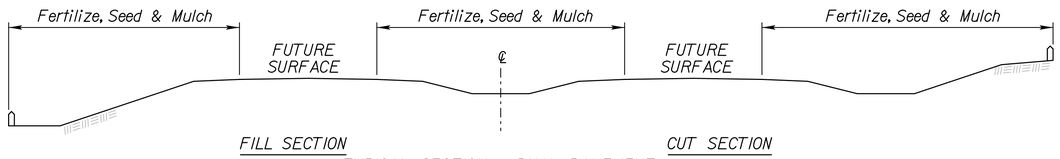
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	31	71



RAMP CUT SECTION



RAMP FILL SECTION



TYPICAL SECTION - DUAL PAVEMENT

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150		8		Temporary Fertilizer (16 - 20 - 0)	1200	LB
20		8		Temporary Seed (Canada Wildrye)	160	LB
45		8		Temporary Seed (Grain Oats)	360	LB
45		8		Temporary Seed (Sterile Wheatgrass)	360	LB
	47.8		0.4	Soil Erosion Mix	19.1	LB
				Erosion Control (Class 1, Type C)	418	SQ YD
				Erosion Control (Class 2, Type E)	1389	SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)		CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")		LF
				Biodegradable Log (12")		LF
				Biodegradable Log (20")	160	LF
				Filter Sock (18")	160	LF
				Geotextile (Erosion Control)	1	SQ YD
				Silt Fence		LF
				SWPPP Design †	Lump Sum	LS
				SWPPP Inspection †	40	EACH
				Water Pollution Control Manager †	66	EACH
900 lbs / acre		7.6		Mulch Tacking Slurry	6840	LB
2 tons / acre		7.6		Mulching	22.8	TON
				Water (Erosion Control) (Set Price)	1	MGAL

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

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

Regreen and Quick Guard are the approved sterile wheatgrass products.

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

**** List size of material.

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

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

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
150	Fertilizer (16-20-0)	*
1	Blue Grama (Lovington)	0.4
24.5	Buffalograss (Treated)	9.8
6.3	Side Oats Grama (El Reno)	2.5
10	Sterile Wheatgrass	4.0
6	Western Wheat (Barton)	2.4
47.8	Total (lb)	19.1

*Fertilizer quantity for Soil Erosion Mix included in total quantity shown above.

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

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

KDOT Graphics Certified 12-09-2021

Sheet No. 31

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
Plot Location: Landscape
File: la852a.dgn
Plot Date: 09-DEC-2021 09:52

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	32	71

EROSION CONTROL- CLASS 1, TYPE C

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
US-40				
1618+07.01 to 1618+92.82	Lt	85.81	18.50	176
1618+08.69 to 1618+91.10	Rt	82.41	19.00	174
Rd 380				
47+81.24 to 47+96.55	Lt	15.31	20.00	34
48+01.36 to 48+16.74	Lt	15.38	20.00	34

TOTAL EROSION CONTROL (CLASS 1, TYPE C) = 418 Sq. Yds

EROSION CONTROL- CLASS 2, TYPE E

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
US-40				
1609+00.00 to 1614+00.00	Rt	500.00	25.00	1389

TOTAL EROSION CONTROL (CLASS 2, TYPE E) = 1389 Sq. Yds

Std. Base File:
Plotted By: melissa
Plot Location: *Landscape*
File: *la852a-ec.dgn*
Plot Date: 09-DEC-2021 09:52

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

EROSION CONTROL
SEEDING-SODDING

LA852A-EC

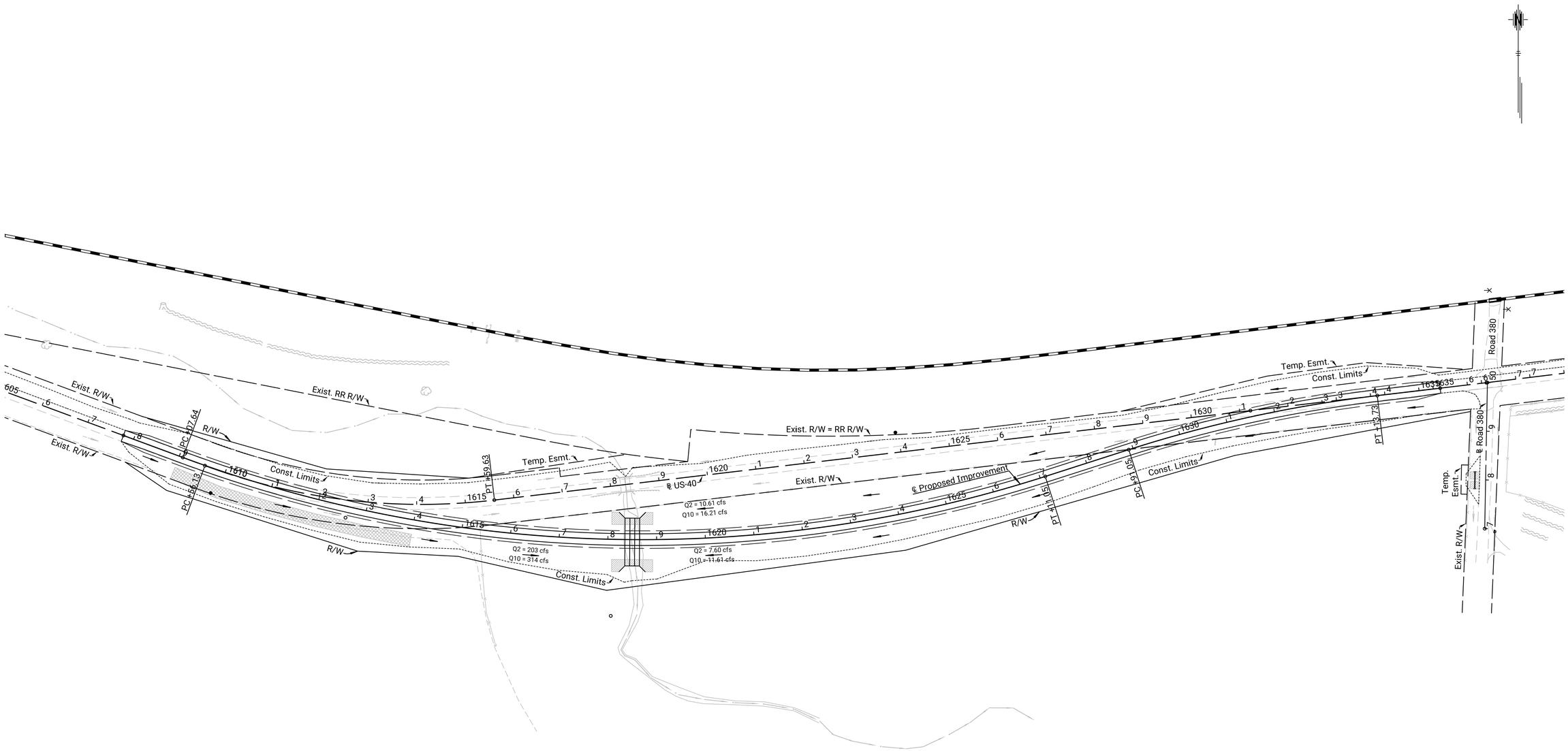
FHWA APPROVAL			1/04/2006	APP'D		Scott H. Shields	
DESIGNED	MRM	DETAILED	MRM	QUANTITIES		CADD	MRM
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN.CK.		CADD CK.	SHS

KDOT Graphics Certified 05-26-2021

Sheet No. 32

KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	33	71



SCALE

100′ 0 100′ 200′

PLAN: Lat. & Long.

PROFILE: Horiz. same as above

Vert.

10′ 0

LEGEND

Class 1 Erosion Control

Class 2 Erosion Control

KANSAS DEPARTMENT OF TRANSPORTATION

PROPOSED FINAL
EROSION CONTROL PLAN
STA. 1606+00 TO STA. 1638+00

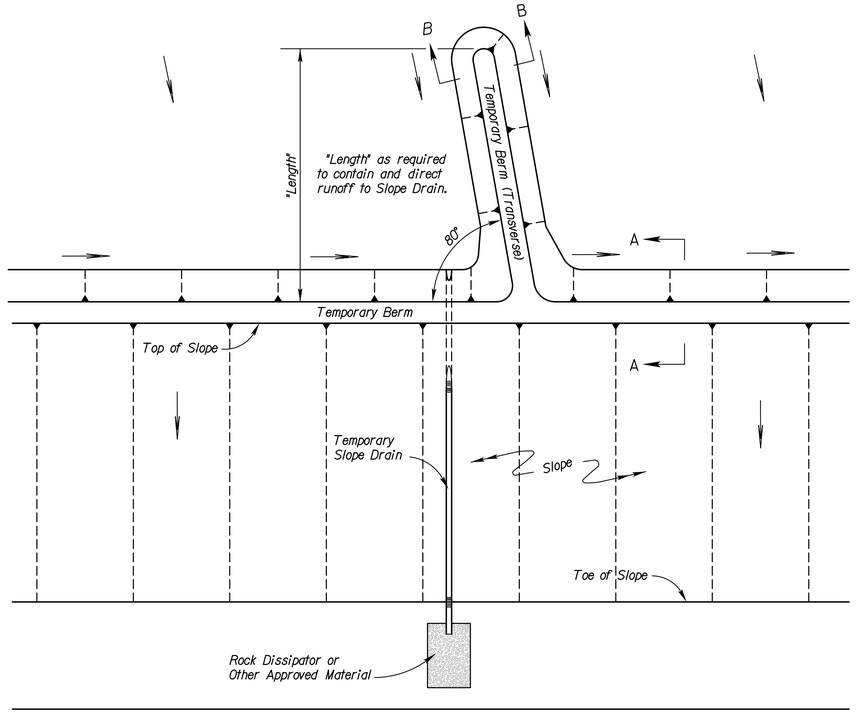
Plotted by : rbowman 08-DEC-2021 08:40
File : KA391501rec-01.dgn

KDOT Graphics Certified 05-26-2021

Sh. No. 33

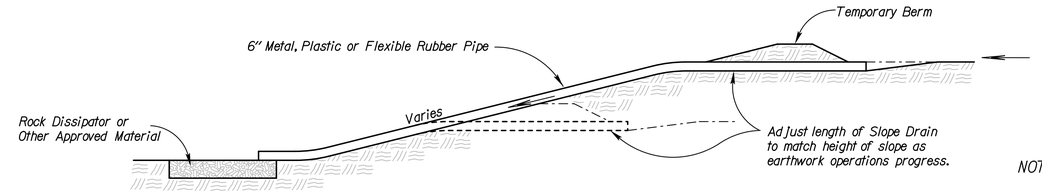
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	34	71



TYPICAL PLAN VIEW OF TEMPORARY BERM AND TEMPORARY SLOPE DRAIN

NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN

NO SCALE

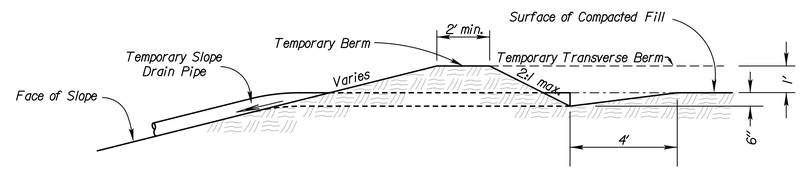
NOTES:

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

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

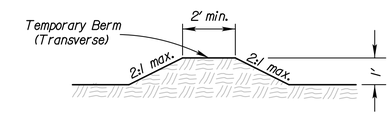
3) Pipe shall be secured in place as approved by Engineer.

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



SECTION A-A

NO SCALE

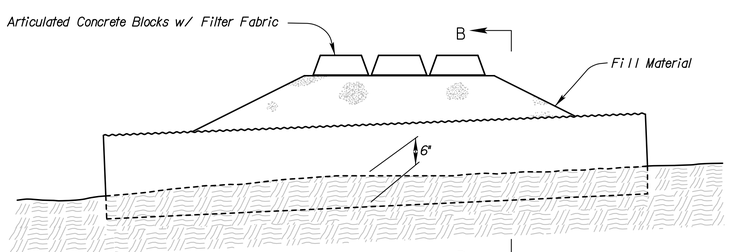


SECTION B-B

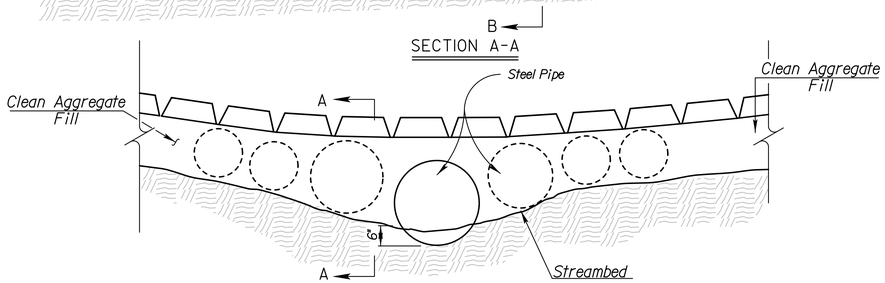
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM

NO SCALE



SECTION A-A



SECTION B-B

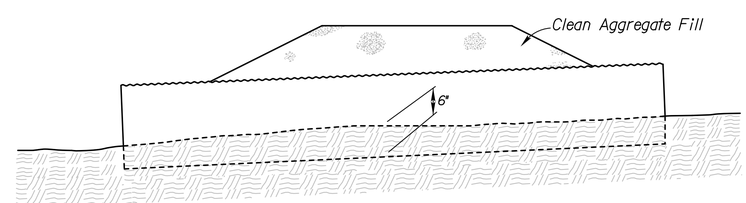
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)

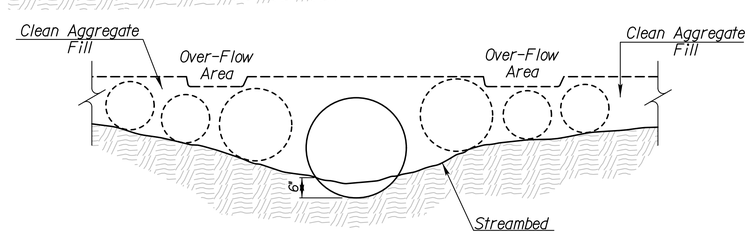
NO SCALE

Pipe size may vary

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

See KDOT Specifications for more information





SECTION B-B

TEMPORARY STREAM CROSSING (AGGREGATE)

NO SCALE

Pipe size may vary

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

See KDOT Specifications for more information

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

TEMPORARY SLOPE DRAIN

TEMPORARY STREAM CROSSING (AGGREGATE)

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

LA852B

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

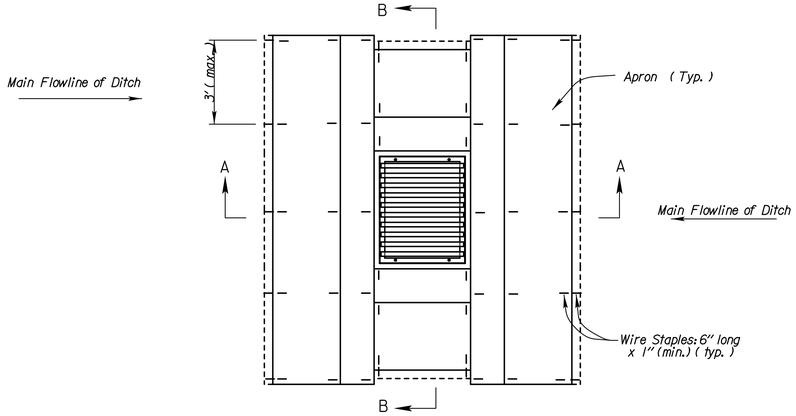
KDOT Graphics Certified 05-26-2021

Sheet No. 34

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
Plot Location: Landscape
File: la852b.dgn
Plot Date: 09-DEC-2021 09:52

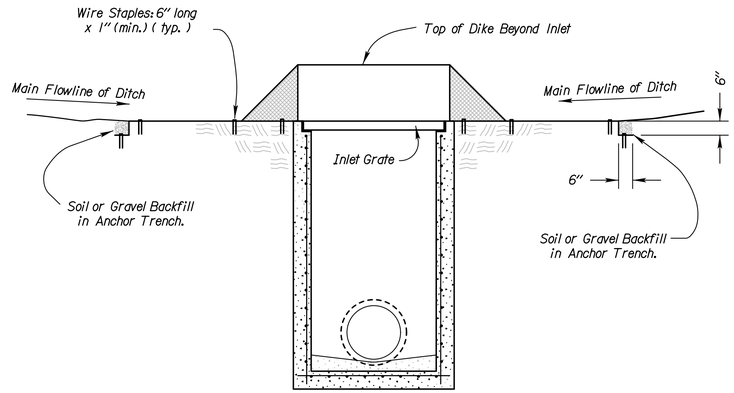
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	35	71



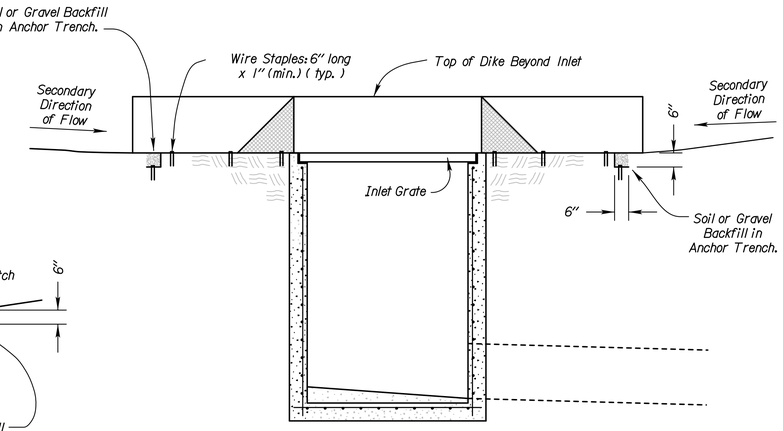
PLAN

TEMPORARY INLET SEDIMENT BARRIER
(TRIANGULAR SILT DIKE METHOD)

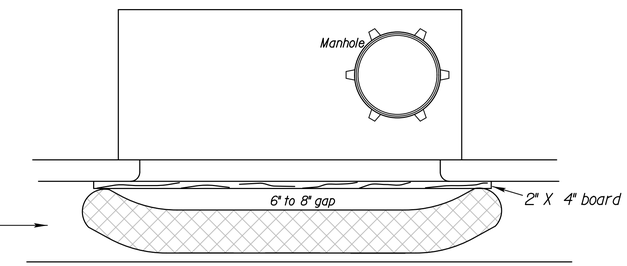
NO SCALE



SECTION A - A



SECTION B - B

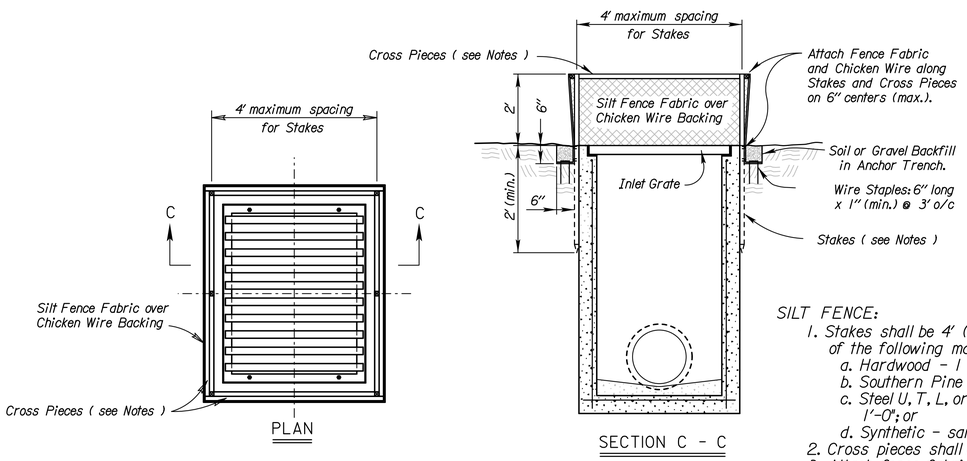


Bags = synthetic net (3mm mesh) or burlap bags

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.



PLAN

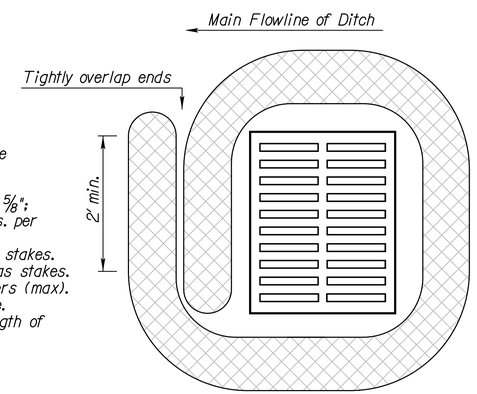
SECTION C - C

TEMPORARY INLET SEDIMENT BARRIER
(SILT FENCE METHOD)

NO SCALE

SILT FENCE:

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



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

Stake every 4'

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

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

NO.	DATE	REVISIONS	BY	APP'D
3	9/26/19	Changed Direction of Main Flowline of Ditch Arrow	MRD	SHS
2	3/10/15	Revised Standard	RA	SHS
1	6/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

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

LA852C

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

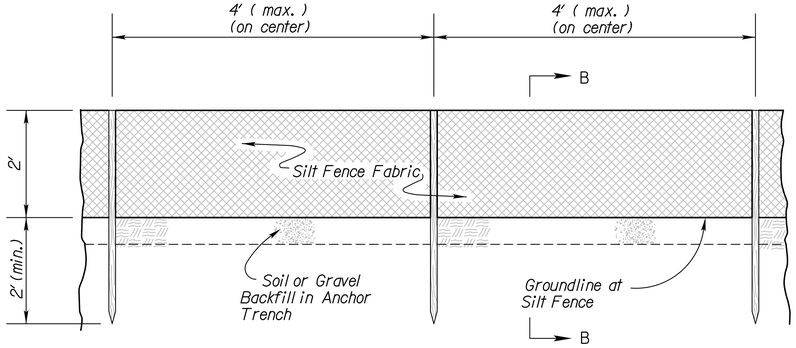
KDOT Graphics Certified 05-26-2021

Sheet No. 35

Std. Base File:
Plotted By: melissa | Plot Location: Landscape
File: la852c.dgn
Plot Date: 09-DEC-2021 09:53

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	36	71



TYPICAL ELEVATION

SILT FENCE BARRIER

NO SCALE

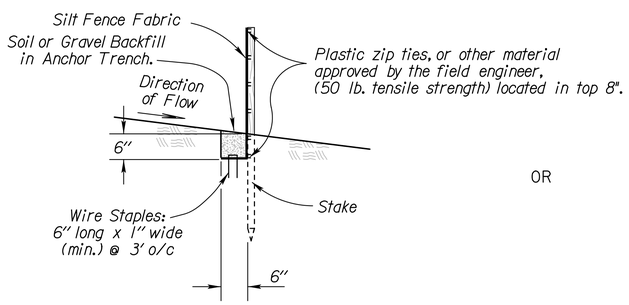
INSTALLATION NOTES

SILT FENCE:

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

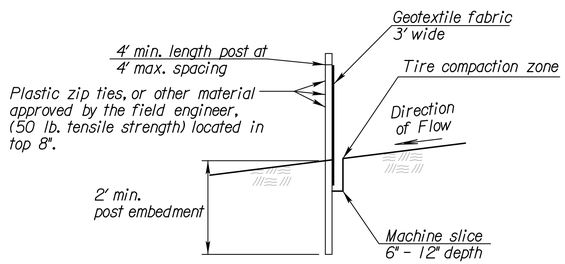
BIODEGRADABLE LOG OR FILTER SOCK

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



SECTION B-B

OR



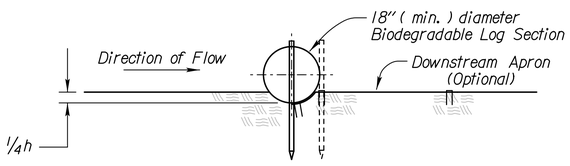
SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions

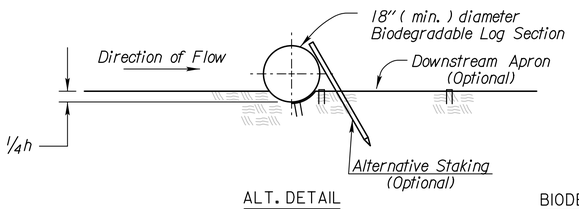
		PRODUCT		
		9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
Slope Gradient	≤4H:1V	40	60	80
	3H:1V	30	45	60

Deviations should be approved by the Field Engineer.

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

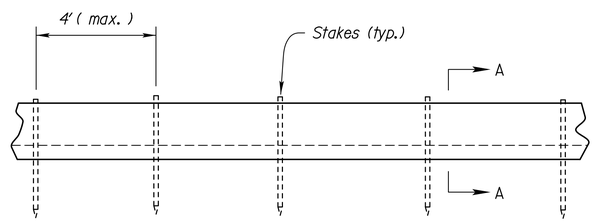


SECTION A - A



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

GENERAL NOTES

1) Slope interruptions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.

2) The maximum length of the slope interruptions shall not exceed 250 feet, and the barrier ends need to be staggered.

3) Interruptions damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor at no additional cost to KDOT.

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

SLOPE INTERRUPTIONS
BIODEGRADABLE LOG / SILT FENCE

LA852D

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

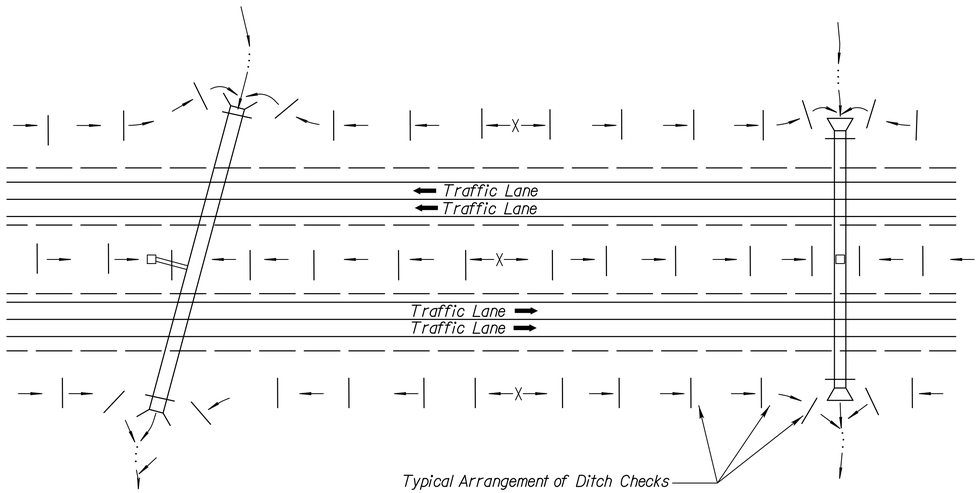
KDOT Graphics Certified 05-26-2021

Sheet No. 36

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
Plot Location: Landscape
File: la852d.dgn
Plot Date: 09-DEC-2021 09:53

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	37	71



TYPICAL DITCH CHECK LAYOUT PLAN

NO SCALE

20" BIOLOG CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	*125*
2.0	*60*
3.0	*40*
4.0	*30*
5.0	*25*
NOTE: Use this spacing for all except Rock Ditch Checks.	

18" FILTER SOCK CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	*110*
2.0	*55*
3.0	*35*
4.0	*25*
5.0	*20*
NOTE: Use this spacing for all except Rock Ditch Checks.	

GENERAL NOTES

1) *The choice of ditch check methods is at the option of the Contractor.*

2) *Use only rock checks in situations where the ditch slope is 6 percent or greater.*

2) *Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.*

Std. Base File:	
Plotted By: melissa	Plot Location: *Landscape*
File: *la852e.dgn*	
Plot Date: 09-DEC-2021 09:53	

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

DITCH CHECKS

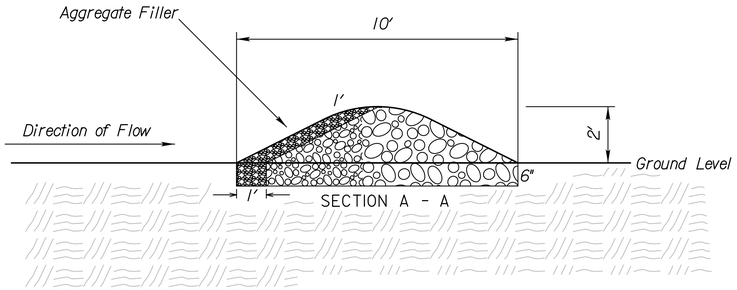
LA852E

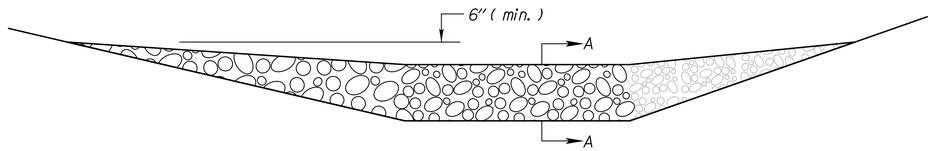
FHWA APPROVAL		9/14/2016	APP'D	Scott H. Shields	
DESIGNED	SHS	DETAILED RAA	QUANTITIES	CADD	RAA
DESIGN CK.	SHS	DETAIL CK. SHS	QUAN.CK.	CADD CK.	SHS

KDOT Graphics Certified 05-26-2021

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	38	71





TYPICAL ELEVATION

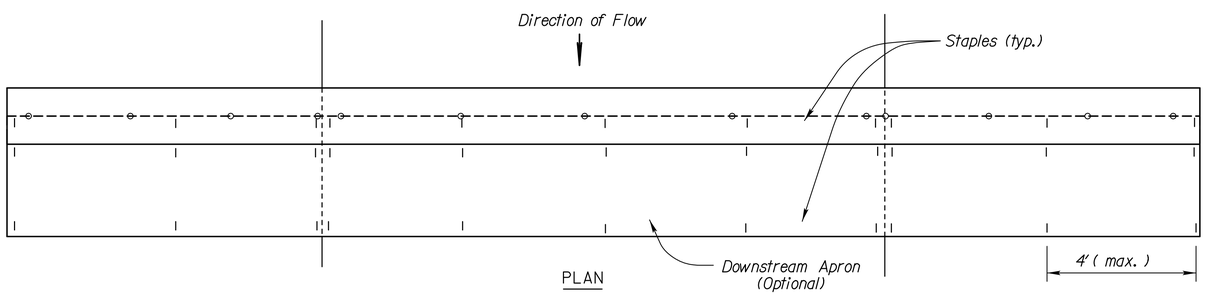
ROCK DITCH CHECK

NO SCALE

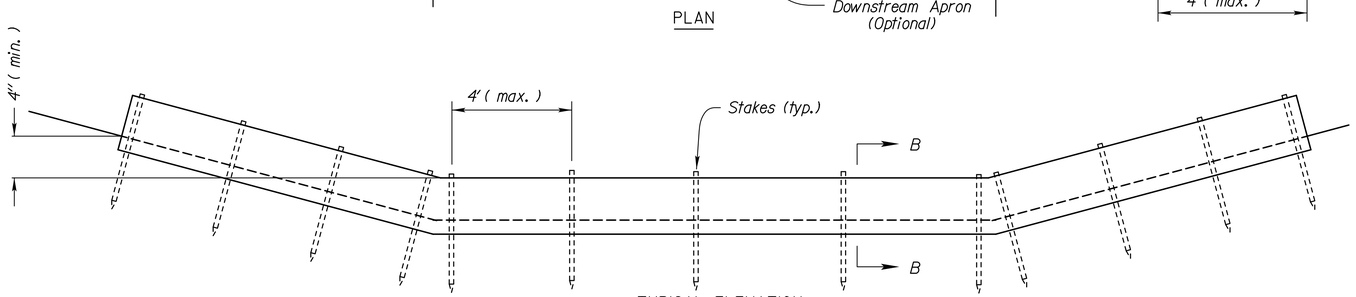
TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
NOTE: Use this spacing for Rock Ditch Checks only.	

ROCK DITCH CHECK NOTES

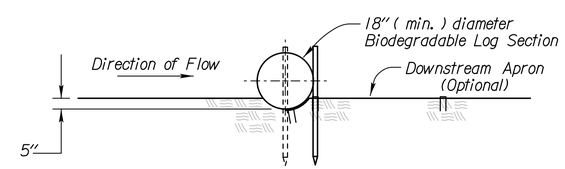
1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch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



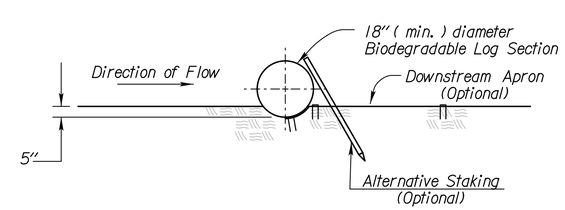
PLAN



TYPICAL ELEVATION



SECTION B - B



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE

BIODEGRADABLE LOG DITCH CHECK NOTES

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852G

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

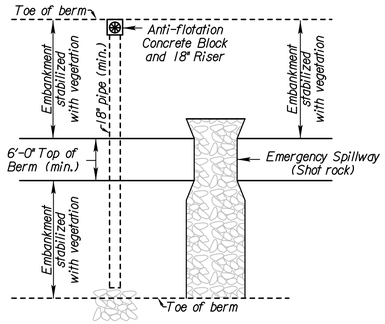
Std. Base File: la852g.dgn
Plotted By: melissa
Plot Location: Landscape
File: la852g.dgn
Plot Date: 09-DEC-2021 09:53

KDOT Graphics Certified 05-26-2021

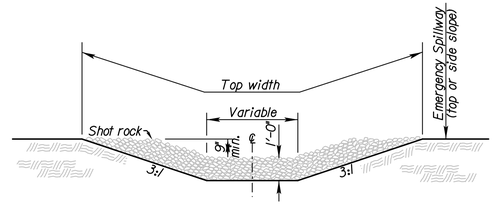
Sheet No. 38

KDOT Graphics Certified

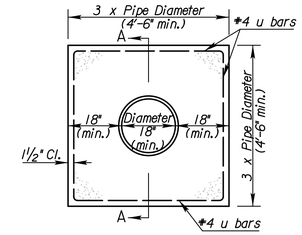
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	39	71



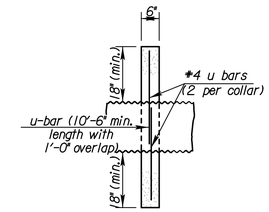
SEDIMENT STORAGE BASIN (PLAN)



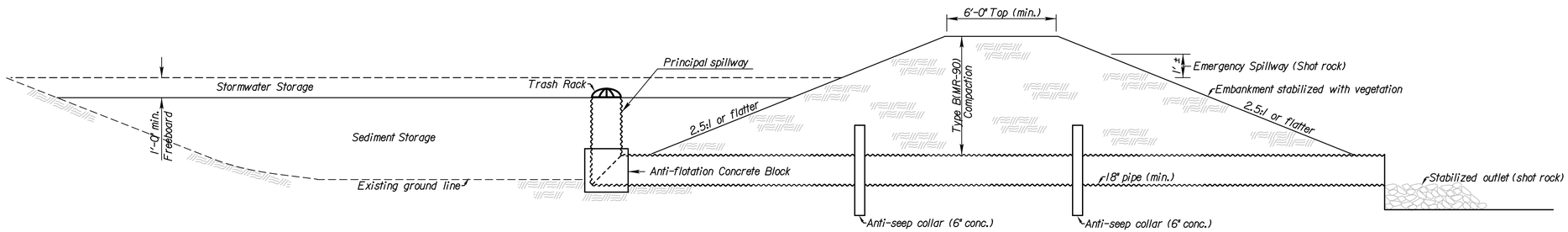
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



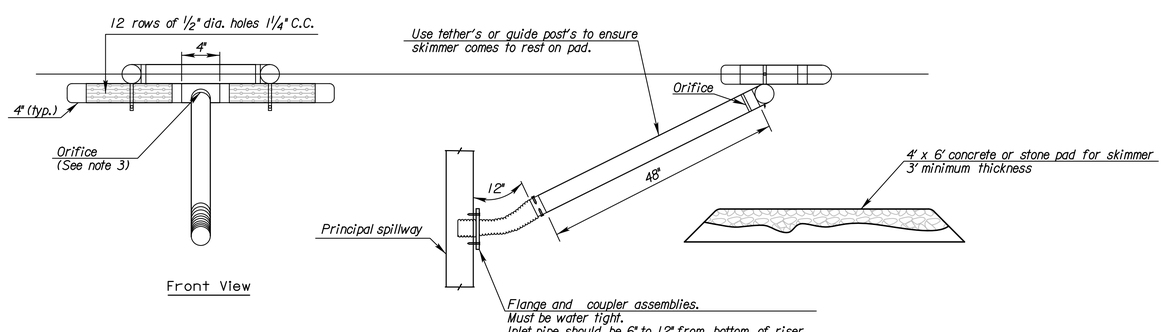
SEDIMENT STORAGE BASIN (ELEVATION)

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.



Front View

Side View

Notes:

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

SKIMMER DEWATERING DEVICE

SEDIMENT STORAGE BASIN LOCATIONS

STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

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

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

SEDIMENT STORAGE BASIN

LA852H

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

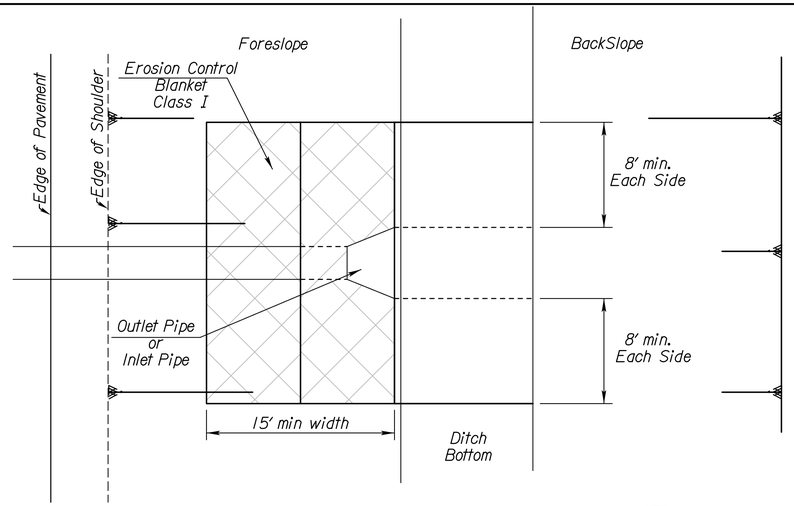
KDOT Graphics Certified 05-26-2021

Sheet No. 39

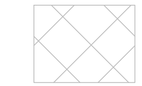
KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
Plot Location: Landscape
File: la852h.dgn
Plot Date: 09-DEC-2021 09:54

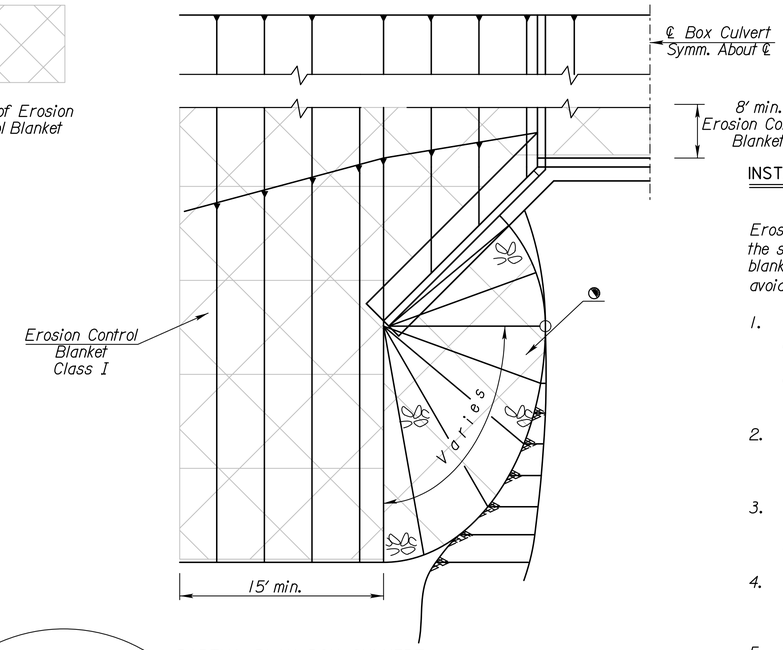
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	40	71



PARTIAL PLAN PIPE



Limits of Erosion Control Blanket



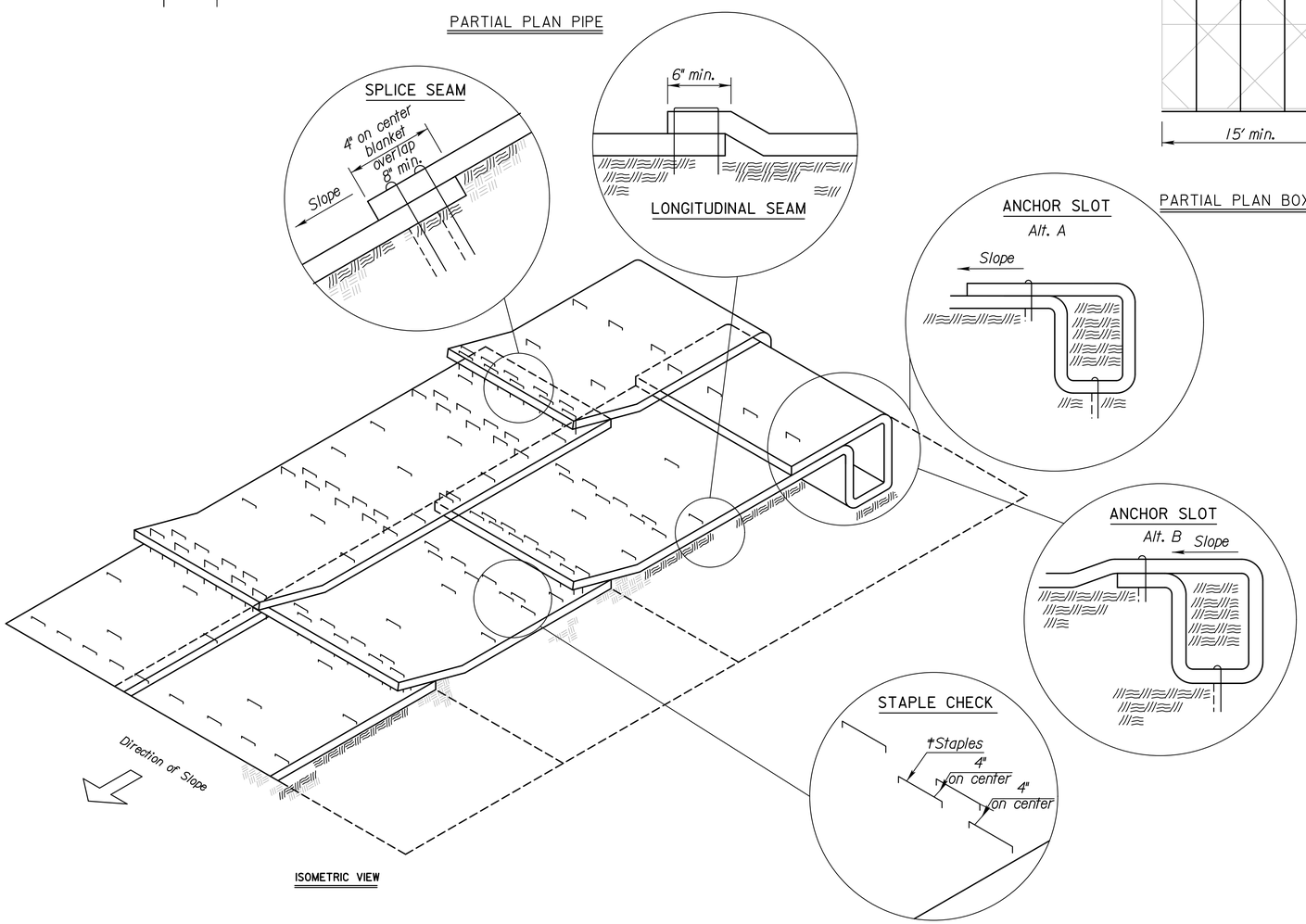
PARTIAL PLAN BOX CULVERT

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

INSTALLATION DETAILS FOR EROSION CONTROL CLASS I

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

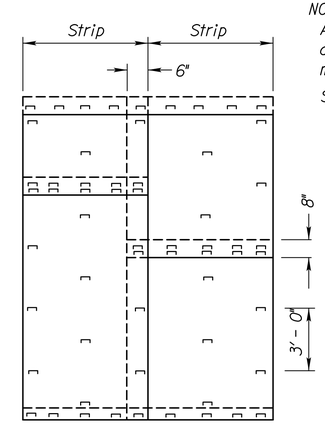
1. ANCHOR SLOTS: The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
2. LONGITUDINAL SEAMS: The edges of the blanket should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.
3. SPLICE SEAM: When splices are necessary, overlapend 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.



ISOMETRIC VIEW

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

Single post ring and shank staple is acceptable.



PLAN VIEW - ANCHORING DIAGRAM

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

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS I
SLOPE PROTECTION

LA855

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

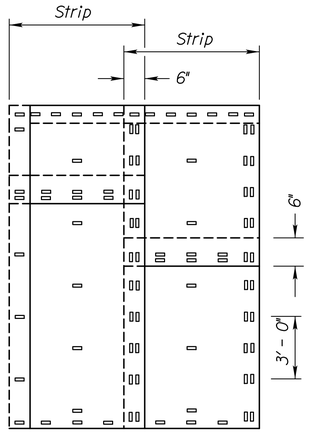
KDOT Graphics Certified 05-26-2021

Sheet No. 40

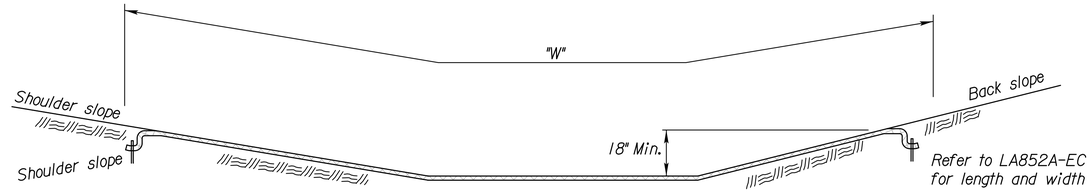
Std. Base File:	la855.dgn
Plotted By:	melissa
Plot Location:	Landscape
File:	la855.dgn
Plot Date:	09-DEC-2021 09:54

KDOT Graphics Certified

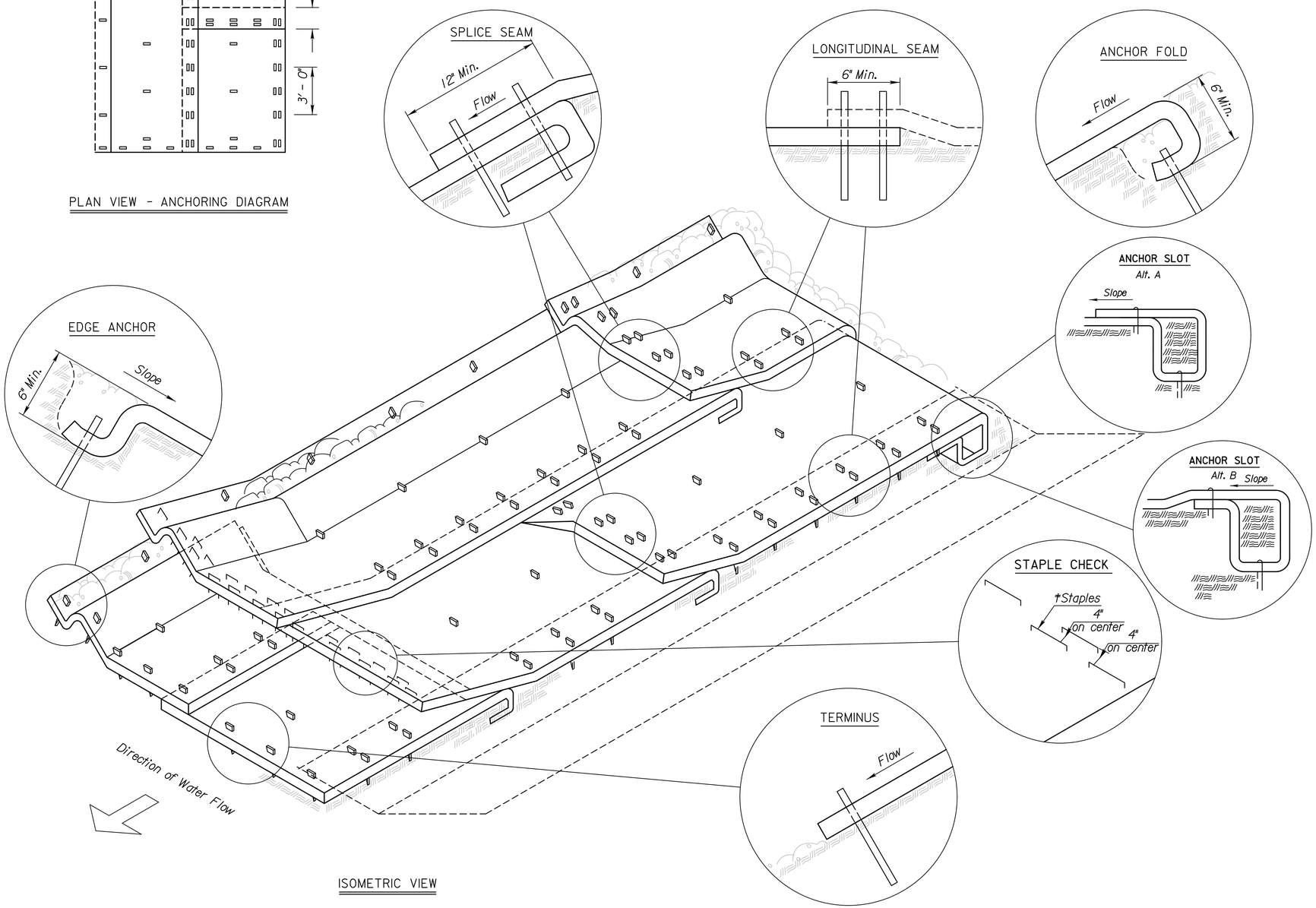
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	41	71



PLAN VIEW - ANCHORING DIAGRAM



CROSS SECTION (Ditch Lining)



ISOMETRIC VIEW

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS 2
FLEXIBLE CHANNEL LINER

LA856

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

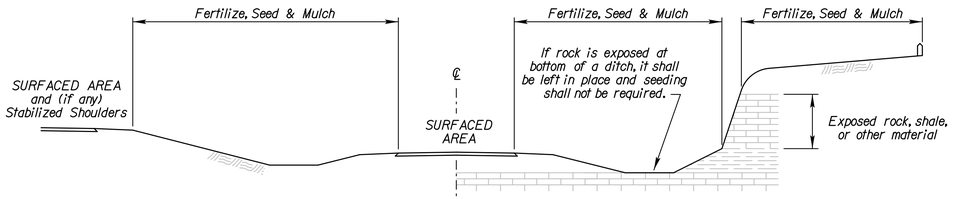
KDOT Graphics Certified 05-26-2021

Sheet No. 41

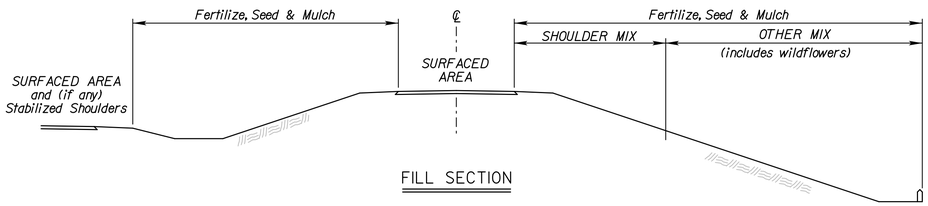
KDOT Graphics Certified

Std. Base File: la856.dgn
Plotted By: melissa
Plot Location: Landscape
File: la856.dgn
Plot Date: 09-DEC-2021 09:54

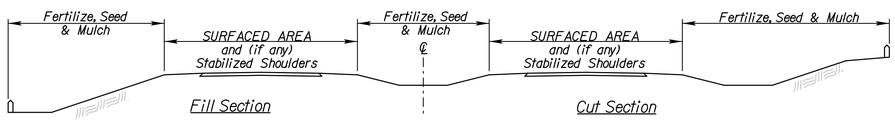
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	42	71



CUT SECTION



FILL SECTION



TYPICAL SECTION - DUAL PAVEMENT

GRASS & WILDFLOWER SEEDING SEASONS

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

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

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

SODDING SEASONS

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

NATIVE WILDFLOWER MIX 1

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

NATIVE WILDFLOWER MIX 2

PLS RATE	NAME	QTY (lb)
0.3	Butterfly Milkweed	1.80
0.3	Black Eyed Susan	1.80
0.5	Black Sampson Coneflower	3.00
1.0	Blanket Flower	6.00
0.2	Maximilian Sunflower	1.20
0.2	Plains Coreopsis	1.20
0.2	Upright Prairie Coneflower	1.20
0.2	Western Yarrow	1.20
0.3	Lemon Mint	1.80
0.4	Pitcher Sage	2.40
1.5	Illinois Bundleflower	9.00
0.2	Common Evening Primrose	1.20
1.0	Blue Wild Indigo	6.00
0.4	Leadplant	2.40
0.4	Purple Prairie Clover	2.40
0.3	White Prairie Clover	1.80
7.4	Total (lb)	44.4

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

OPTION: Broadcast Tall Drop Seed on the soil surface.

SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE SHLDR	P.L.S. RATE/ACRE OTHER			ACRES SHLDR	ACRES OTHER			BID ITEM	QUANTITY	UNIT
50	50			1.6	6			Fertilizer (16 - 20 - 0)	380	Lbs
	2				6			Seed (Big Bluestem (Kaw))	12	Lbs
1	1			1.6	6			Seed (Blue Grama (Lovington))	7.6	Lbs
24.5	8.8			1.6	6			Seed (Buffalograss (Treated))	92	Lbs
	2				6			Seed (Indiangrass (Osage))	12	Lbs
	2.5				6			Seed (Little Bluestem (Aldous))	15	Lbs
6.3	6.3			1.6	6			Seed (Side Oats Grama (El Reno))	47.9	Lbs
10	10			1.6	6			Seed (Sterile Wheatgrass)	76	Lbs
	1				6			Seed (Switchgrass (Blackwell))	6	Lbs
6	4			1.6	6			Seed (Western Wheat (Barton))	33.6	Lbs
	7.4				6			Seed (Native Wildflower Mix 2)	44.4	Lbs
								Mulching *		

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING
SUMMARY OF SEEDING QUANTITIES

LA850

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

KDOT Graphics Certified 05-26-2021

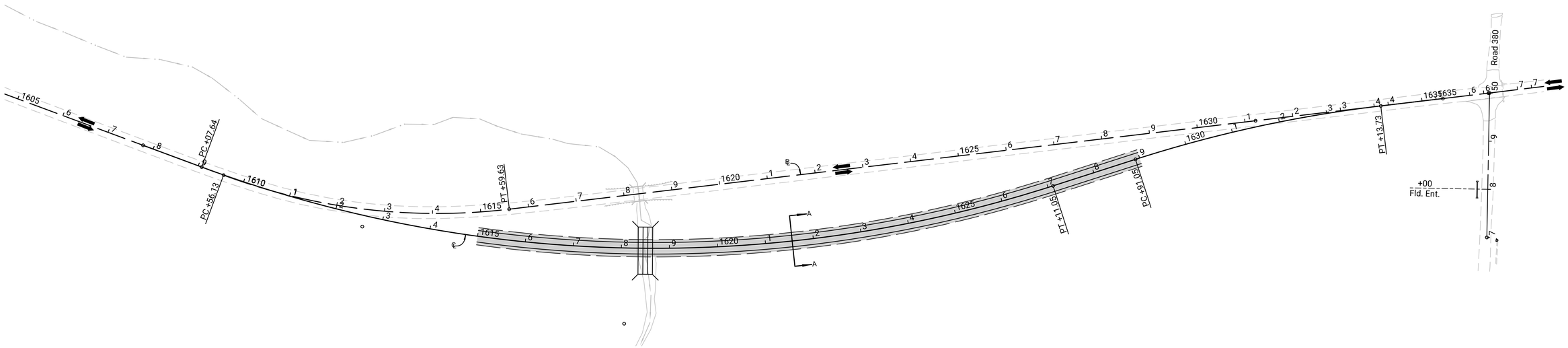
Sheet No. 42

KDOT Graphics Certified

Std. Base File:
Plotted By: melissa
Plot Location: Landscape
File: la850.dgn
Plot Date: 09-DEC-2021 09:55

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	43	71

Scale: 1"=100'

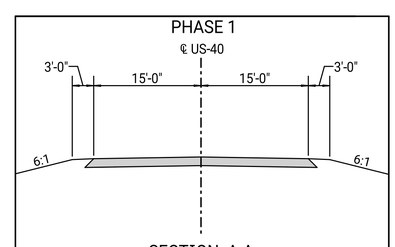


CONSTRUCTION NOTES

1. Construct ℄ US-40 from Sta. 1615+00 to Sta. 1629+00 and Br. No. 40-55-30.65 (031). Construct Field Entrance on County Road 380.

TRAFFIC HANDLING

1. Carry traffic on existing US-40.



Scale: 1"=10'

SECTION A-A

LEGEND

Phase Construction

Traffic Direction

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 1

KDOT Graphics Certified 09-14-2021

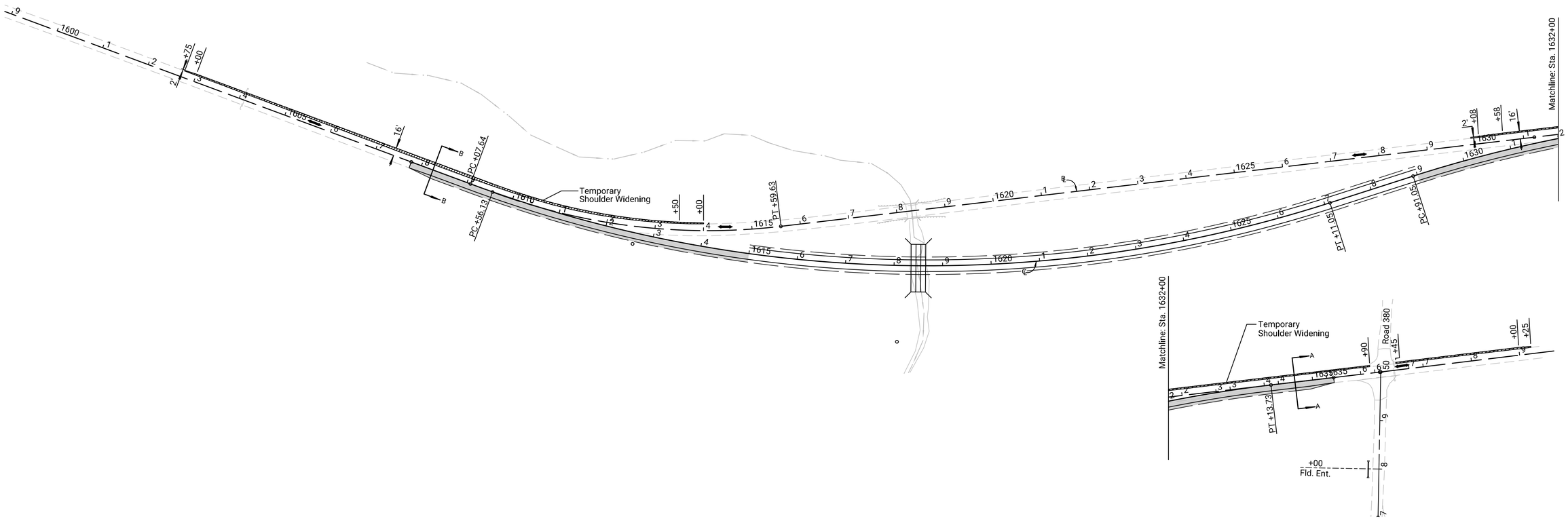
Sh. No. 43

KDOT Graphics Certified

Plotted by : rbowman 08-DEC-2021 08:40
File : KA391501rcs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	44	71

Scale: 1"=100'



CONSTRUCTION NOTES

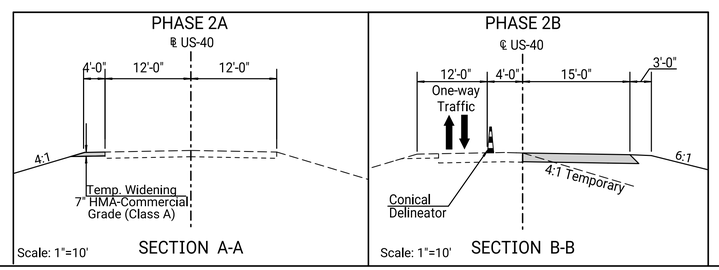
2A. Construct temporary shoulder widening ℄ Sta. 1602+75 Lt. to ℄ Sta. 1614+00 Lt. and ℄ Sta. 1630+08 Lt. to ℄ Sta. 1639+25 Lt. with a tapered section back to existing pavement on each end.

2B. Construct eastbound US-40 from ℄ Sta. 1607+77.64 to ℄ Sta. 1615+00 & ℄ Sta. 1629+00 to ℄ Sta. 1635+43.73.

TRAFFIC HANDLING

2A. Close County Road 380. Use flagging to accomodate traffic.

2B. Shift traffic to existing westbound lane, using temporary signals to accomodate alternating one-way trafffic. County Road 380 to remain closed.



LEGEND

- Temp. Shoulder Widening
- Phase Construction
- Traffic Direction

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

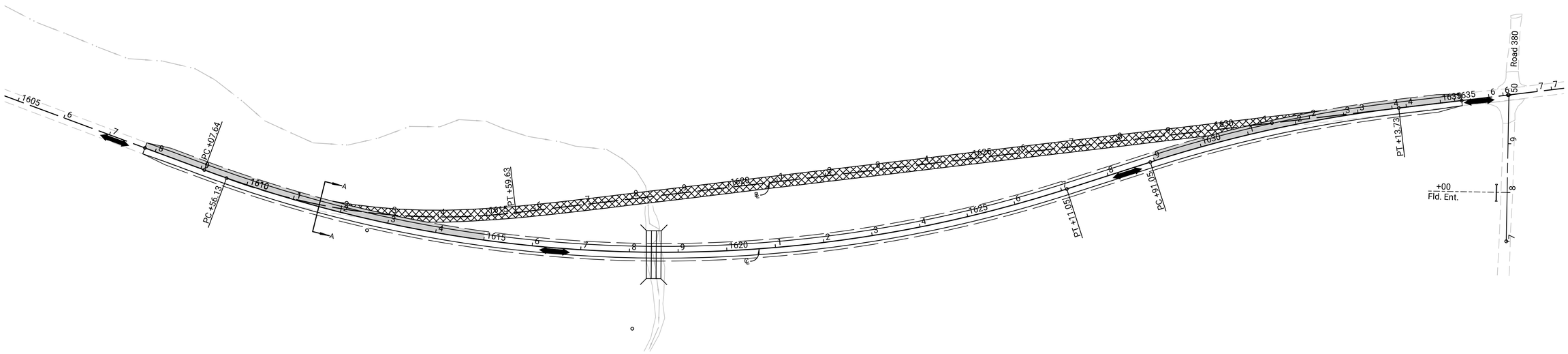
PHASE 2

Plotted by : rbowman 08-DEC-2021 08:41
File : KA3915O1rcs-02.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	45	71

Scale: 1"=100'

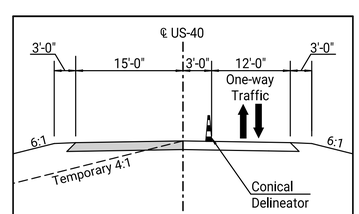


CONSTRUCTION NOTES

3. Remove temporary shoulder widening ℄ Sta. 1606+50 Lt. to ℄ Sta. 1614+00 Lt. and ℄ Sta. 1630+08 Lt. to ℄ Sta. 1635+90 Lt.
Remove existing US-40 mainline pavement from ℄ Sta. 1607+77.64 to ℄ Sta. 1635+14.31.
Construct westbound US-40 ℄ Sta. 1607+77.64 to ℄ Sta. 1615+00 & ℄ Sta. 1629+00 to ℄ Sta. 1635+43.73

TRAFFIC HANDLING

3. Shift traffic to the proposed eastbound lane, using temporary signals to accomodate alternating one-way trafffic. County Road 380 to remain closed.



SECTION A-A

Scale: 1"=10'

LEGEND

- Phase Construction
- Pavement Removal
- Traffic Direction

KANSAS DEPARTMENT OF TRANSPORTATION

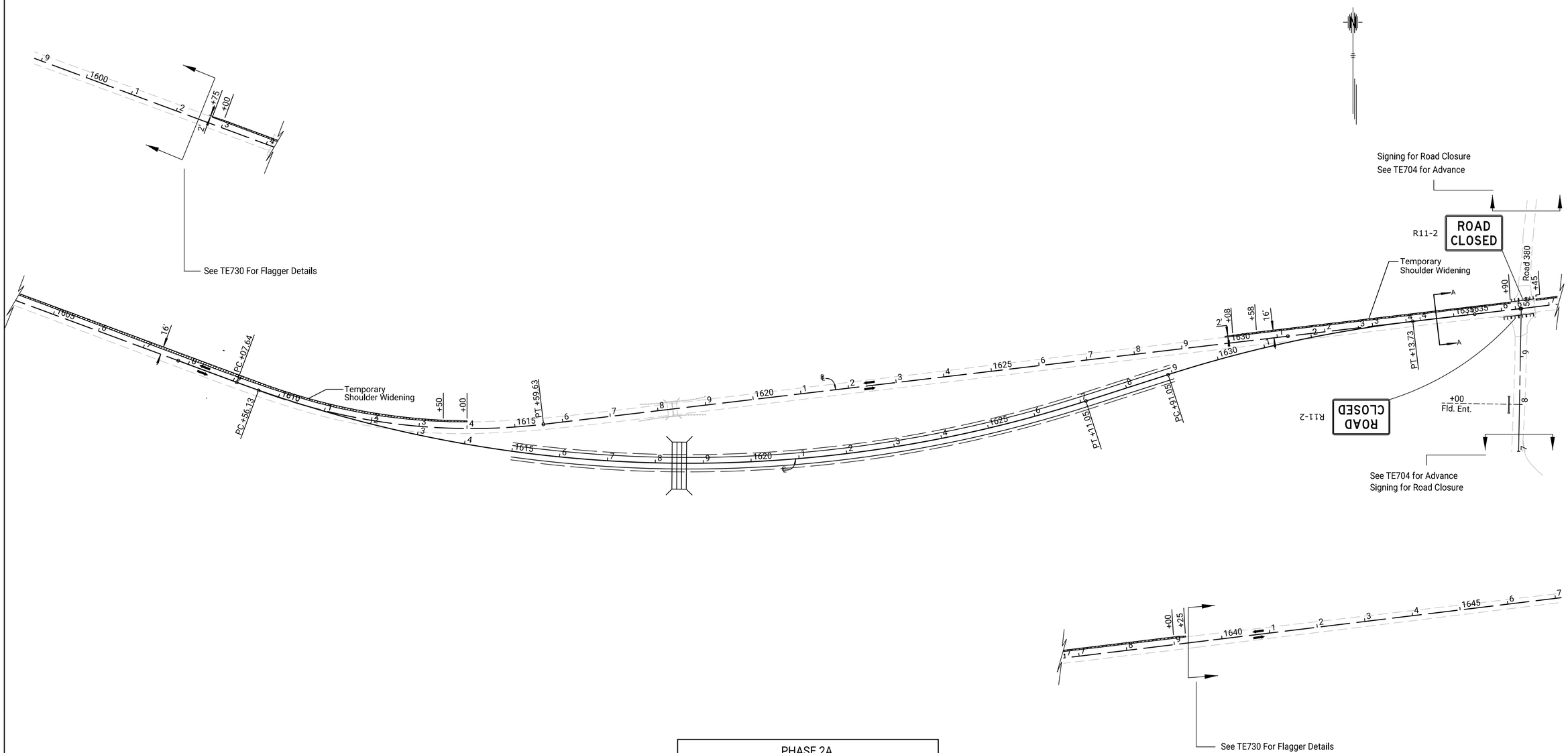
CONSTRUCTION SEQUENCING

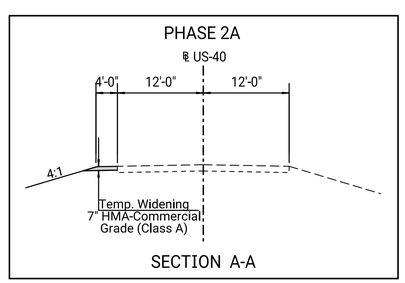
PHASE 3

Plotted by : rbowman 08-DEC-2021 08:41
File : KA3915O1rcs-03.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	46	71





LEGEND

- Temp. Shoulder Widening
- Traffic Direction
- Type III Barricade

CONSTRUCTION NOTES

2A. Construct temporary shoulder widening ℄ Sta. 1606+50 Lt. to ℄ Sta. 1614+00 Lt. and ℄ Sta. 1630+08 Lt. to ℄ Sta. 1635+90 Lt. with a 50' tapered section back to existing pavement on each end.

TRAFFIC HANDLING

2A. Close County Road 380. Use flagging to accomodate traffic.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

PHASE 2A

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

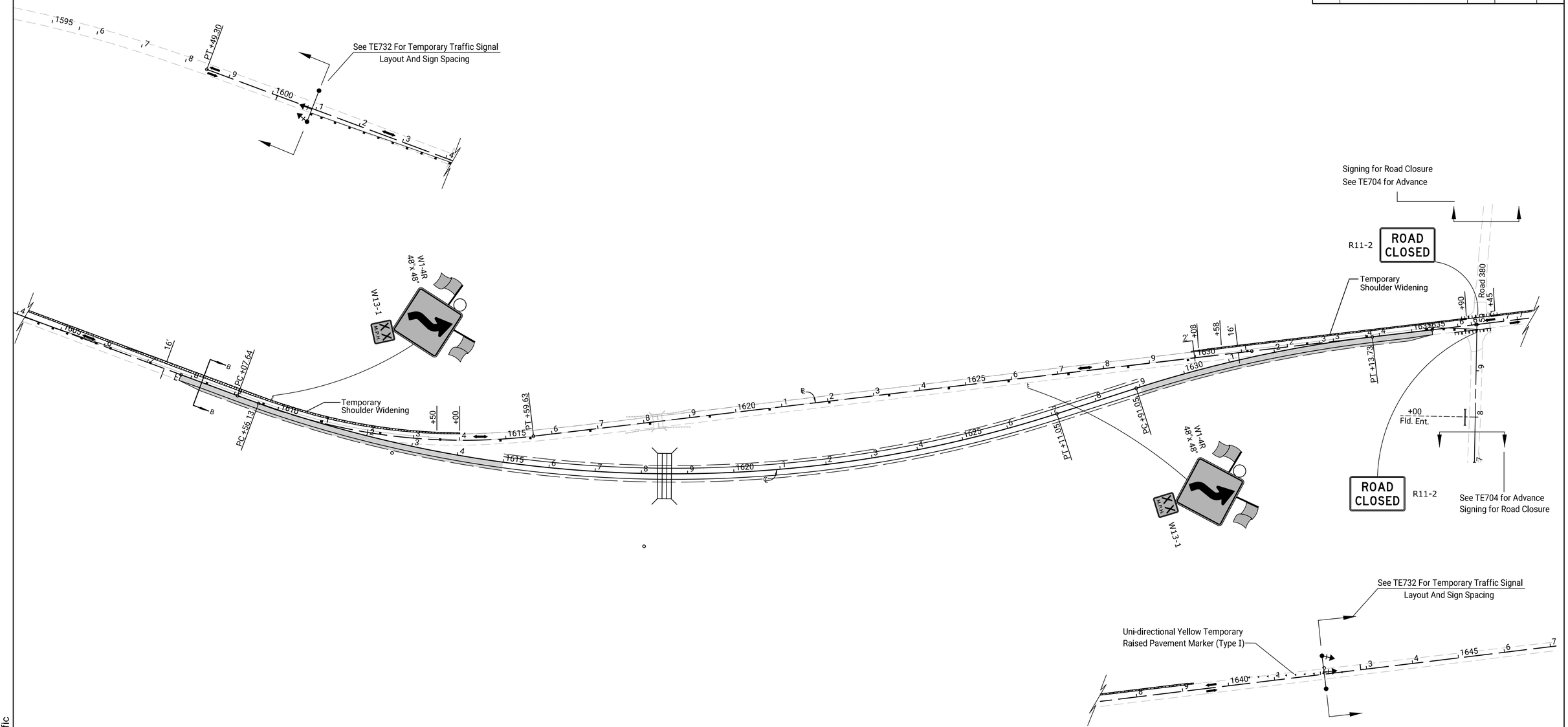
KDOT Graphics Certified 07-21-2021

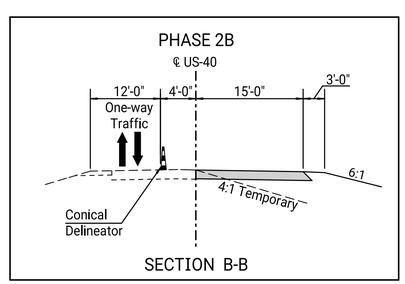
Sh. No. 46

KDOT Graphics Certified

Plotted by : jmadrid 21-JUL-2021 14:38 Traffic
File : ka3915 01cpl-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	47	71





LEGEND

- Temp. Shoulder Widening
- Phase Construction
- Traffic Direction

CONSTRUCTION NOTES

2B. Construct eastbound US-40 from ℄ Sta. 1607+77.64 to ℄ Sta. 1615+00 & ℄ Sta. 1629+00 to ℄ Sta. 1635+43.73.

TRAFFIC HANDLING

2B. Shift traffic to existing westbound lane, using temporary signals to accomodate alternating one-way trafffic. County Road 380 to remain closed.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

Phase 2B

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

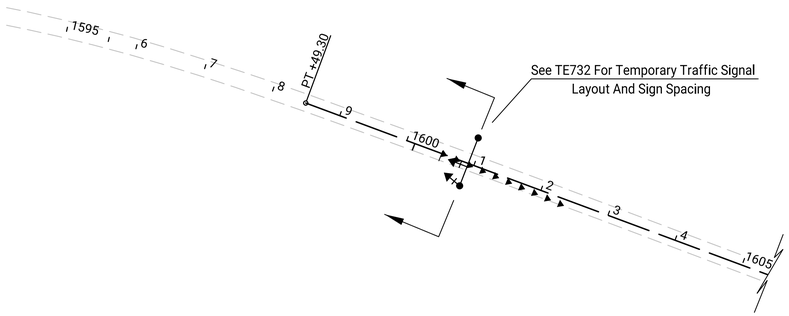
KDOT Graphics Certified 07-21-2021

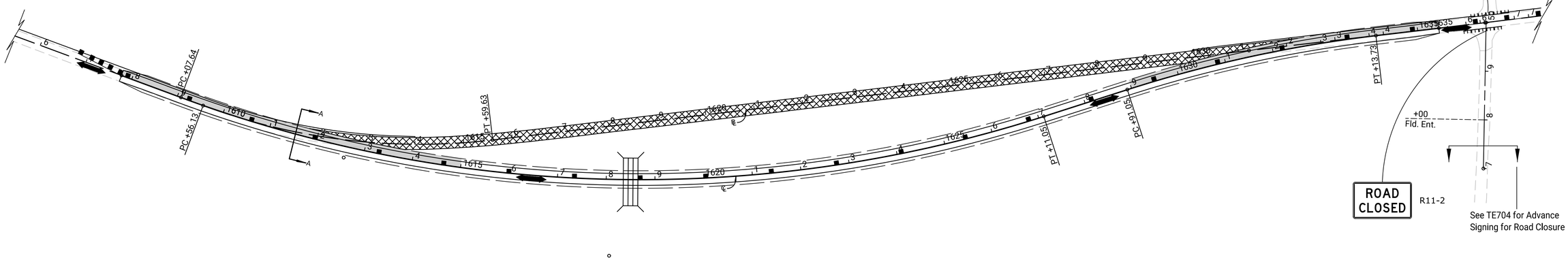
Sh. No. 47

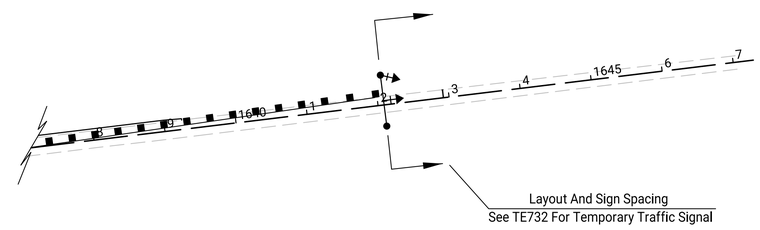
Plotted by : jmadrid 21-JUL-2021 14:38 Traffic
File : ka3915 01cpl-02.dgn

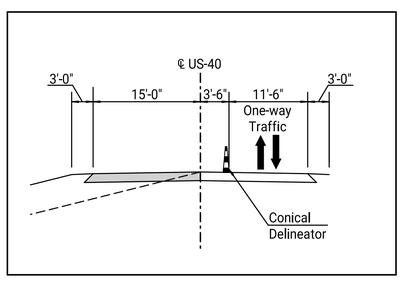
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	48	71









LEGEND

- Temp. Shoulder Widening
- Phase Construction
- Traffic Direction

CONSTRUCTION NOTES

3. Remove temporary shoulder widening ℄ Sta. 1606+50 Lt. to ℄ Sta. 1614+00 Lt. and ℄ Sta. 1630+08 Lt. to ℄ Sta. 1635+90 Lt. Remove existing US-40 mainline pavement from ℄ Sta. 1607+77.64 to ℄ Sta. 1635+14.31.
Construct westbound US-40 ℄ Sta. 1607+77.64 to ℄ Sta. 1615+00 & ℄ Sta. 1629+00 to ℄ Sta. 1635+43.73

TRAFFIC HANDLING

3. Shift traffic to the proposed eastbound lane, using temporary signals to accomodate alternating one-way trafffic. County Road 380 to remain closed.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

PHASE 3

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 07-21-2021

Sh. No. 48

Plotted by : jmadrid 21-JUL-2021 14:39 Traffic
File : ka3915501cpl-03.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	49	71

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

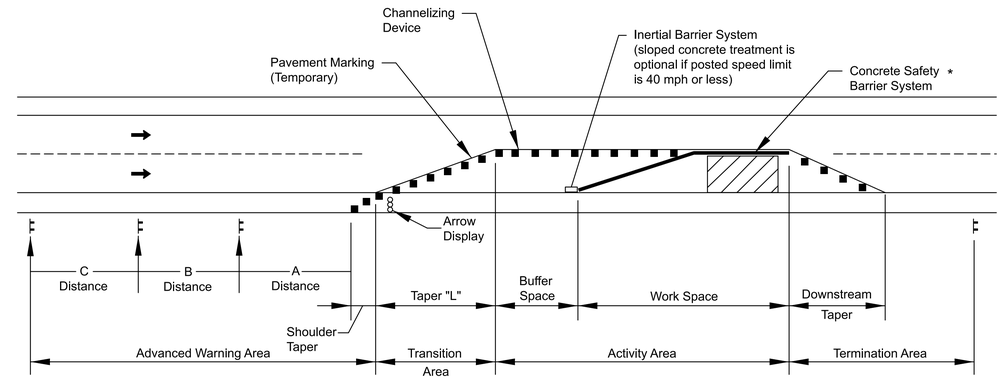
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

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

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

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

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



TYPICAL WORK ZONE COMPONENTS

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

Minimum advance warning sign spacing (in feet):

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

✳ Posted speed prior to work starting

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

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

Taper Formulas:

$L = WS$ for speeds of 45 MPH or more

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

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

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

Channelizer Placement:

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

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

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

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

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

Buffer Space

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

✳ Posted speed prior to work starting

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

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

NO.	DATE	REVISIONS	BY	APP'D
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

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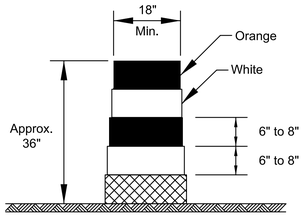
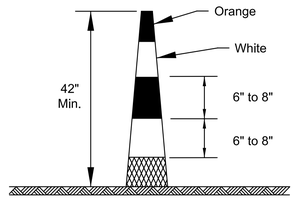
Sh. No.49

Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:43
File : te700.dgn

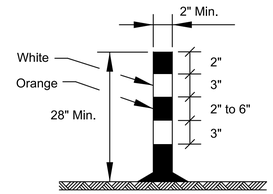
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	50	71



DRUM

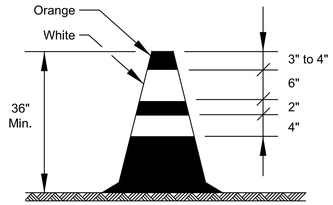


CONICAL DELINEATOR

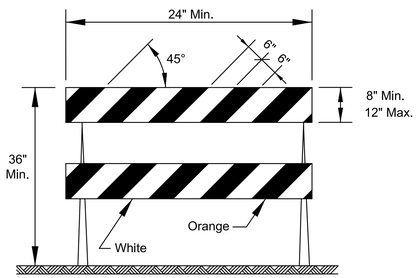


TUBULAR MARKER

Striping as shown for up to 42".

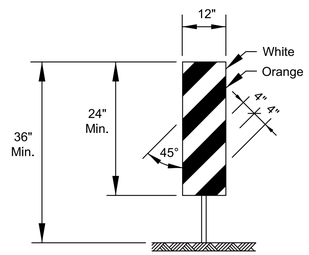


TRAFFIC CONE



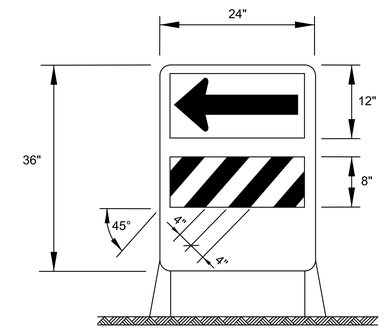
TYPE 2 BARRICADE

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



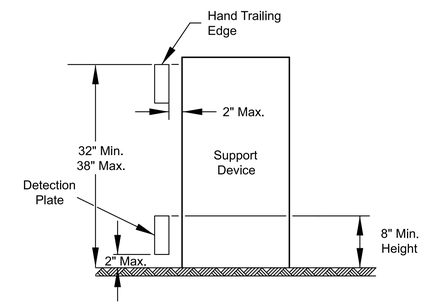
VERTICAL PANEL

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. 50

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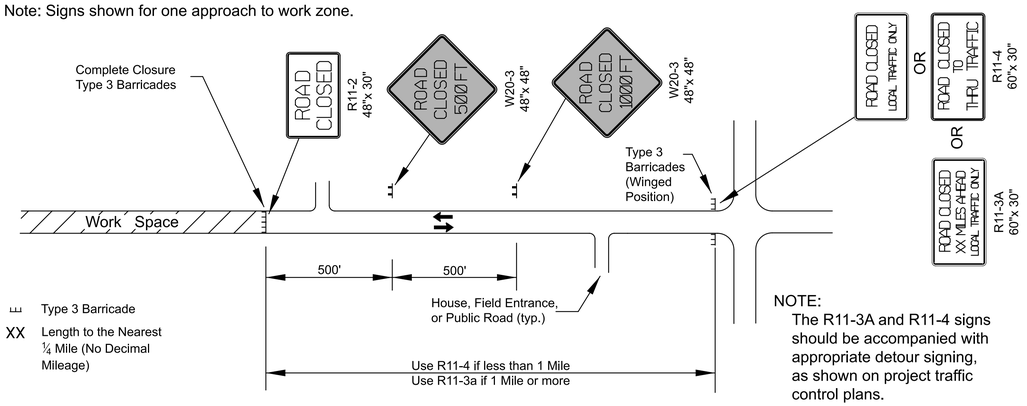
Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:45
File : te702.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	51	71

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)

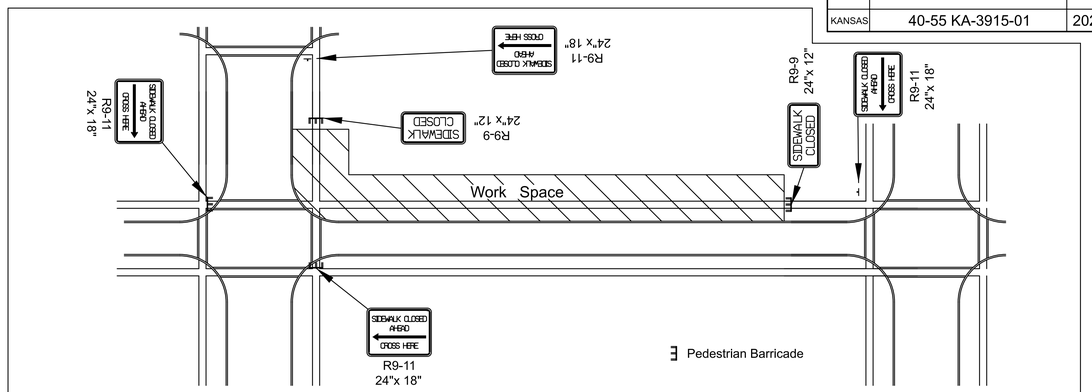


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE

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

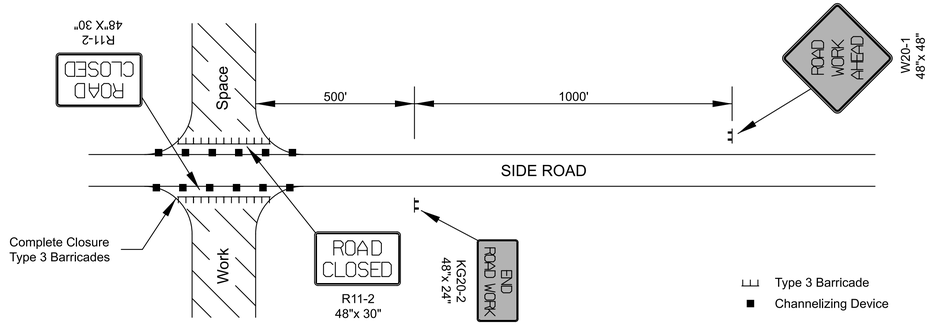


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

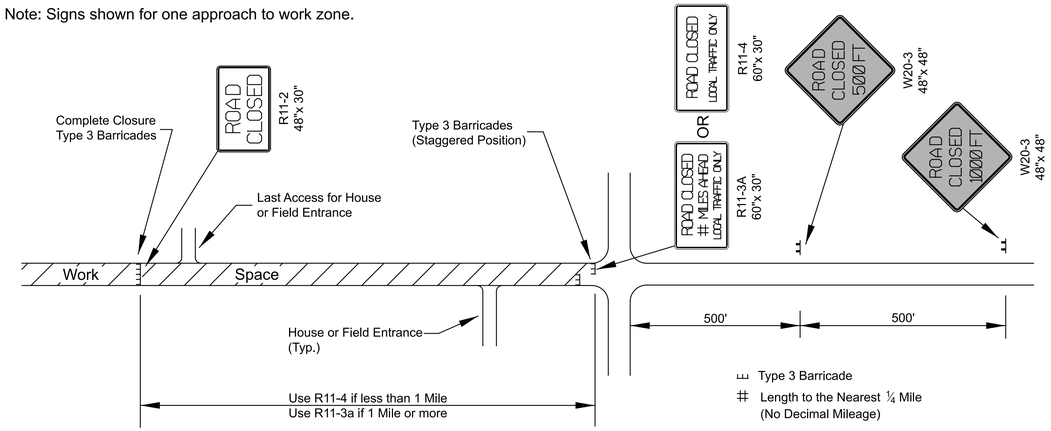
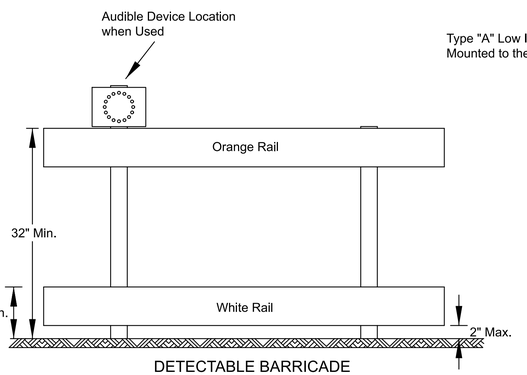
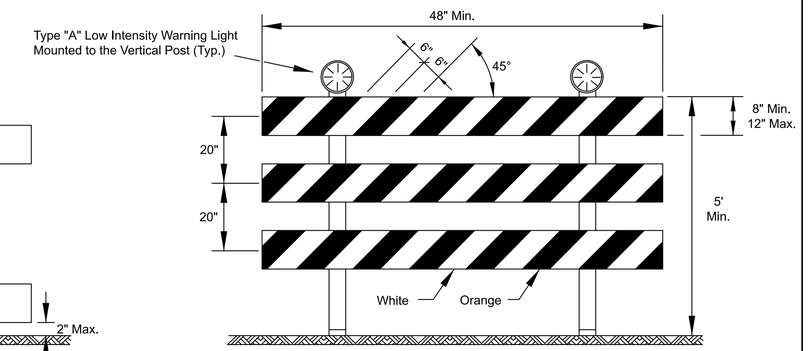


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS



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. 51

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:44
File : te704.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	52	71

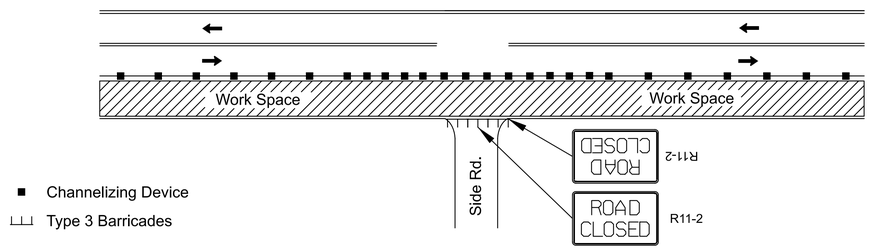


FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

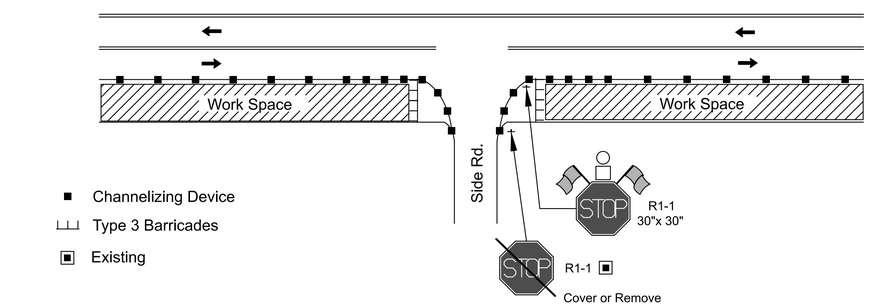


FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

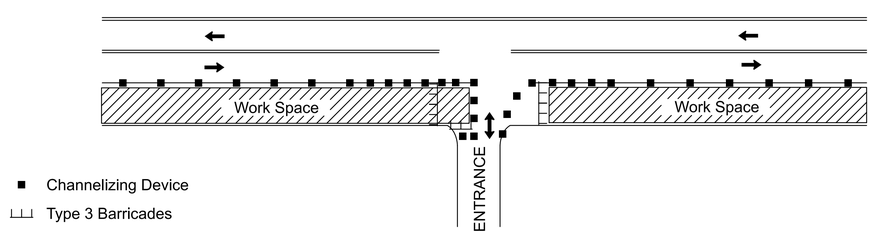


FIGURE 3: LOW VOLUME ENTRANCE CONTRUCTED HALF AT A TIME

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

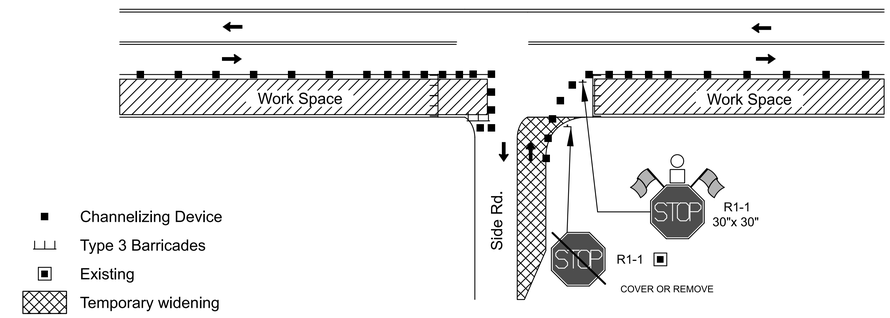


FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME:
TWO WAY TRAFFIC REQUIRED

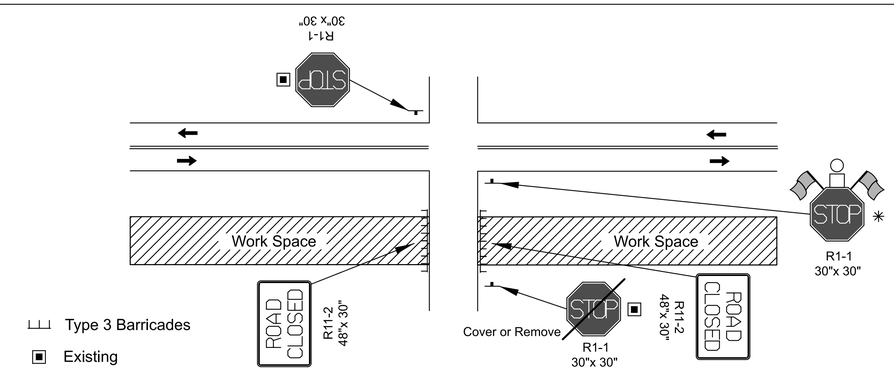


FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY

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.	

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File : te705.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	53	71

SIGN LAYOUT INFORMATION

KG20-2

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

KG20-5

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

KM4-2O

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

W7-3a

Mileage to be Determined by the Engineer.

W8-15

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

W8-7

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

W8-15p

Std. Size Expwy/Freeway
30"x 24"

W8-17

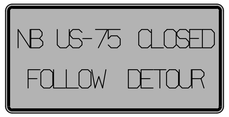
Std. Size Expwy/Freeway
48"x 48"

W8-11

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

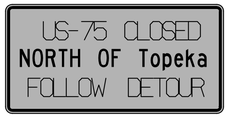
W8-17P
(Optional)

Std. Size Expwy/Freeway
30"x 24"



SP-01
(Special Sign)

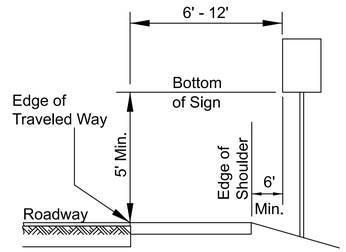
Std. Size	Expwy/Freeway
6" C	10" D



SP-02
(Special Sign)

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

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

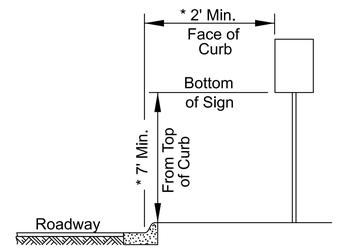


RURAL

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

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

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



URBAN

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

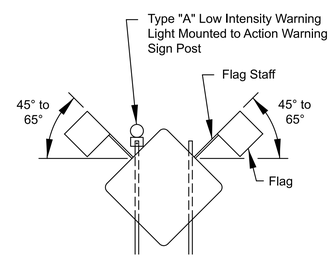
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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

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

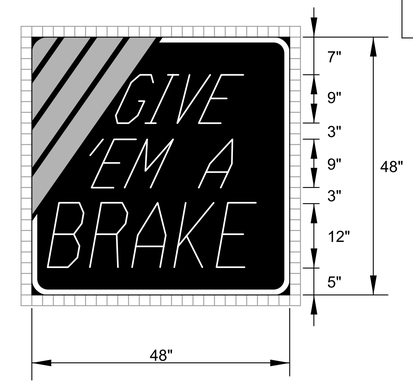
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

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



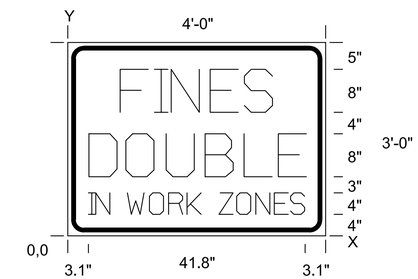
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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



KI-104a

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



KI-105a

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

Dimensions in inches

Spacings are to start of next letter

LETTER SPACINGS

Y FONT																	HT LEN
23.0 D		F	I	N	E	S											8.0
	9.7	6.4	3.2	7.3	6.4	5.4	9.7										28.6
11.0 D		D	O	U	B	L	E										8.0
	3.9	6.9	7.5	7.3	7.3	6.4	4.9	3.9									40.3
4.0 D		I	N		W	O	R	K		Z	O	N	E	S			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.	

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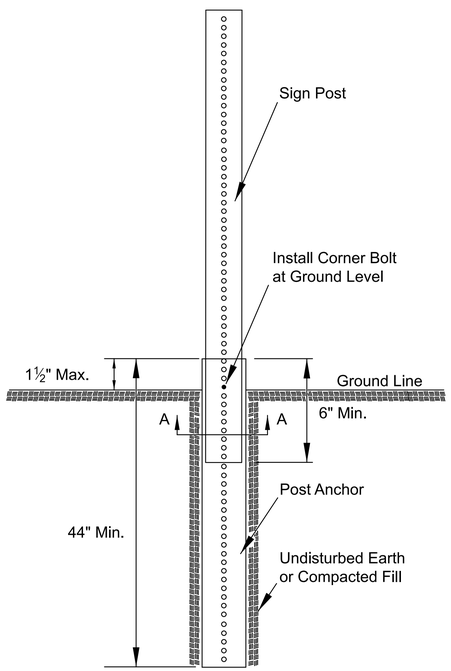
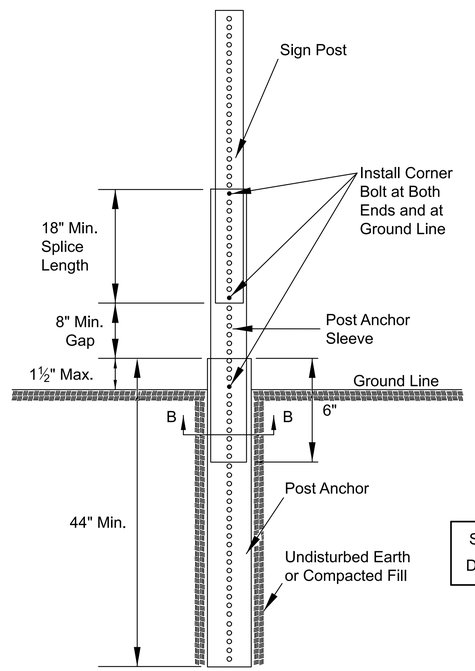
Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:44
File : te710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	54	71

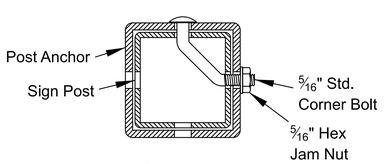
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



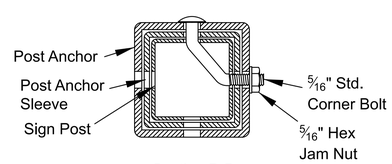
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

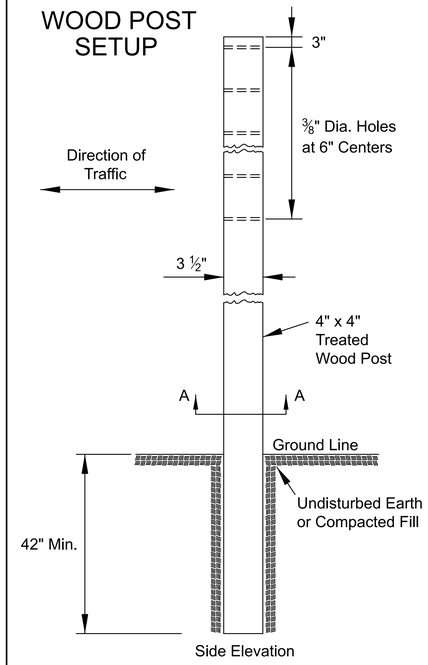


Section B-B

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

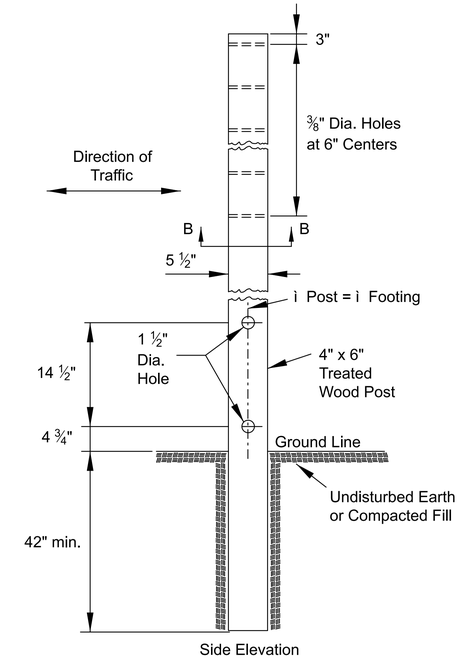
Place bolts in the same corner along each sign post.

WOOD POST SETUP



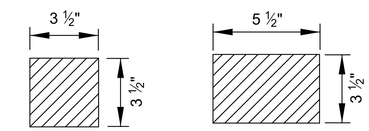
Side Elevation

4" x 4" Wood Post in Soil



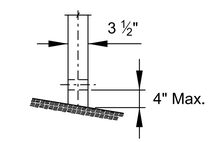
Side Elevation

4" x 6" Wood Post in Soil



Section A-A

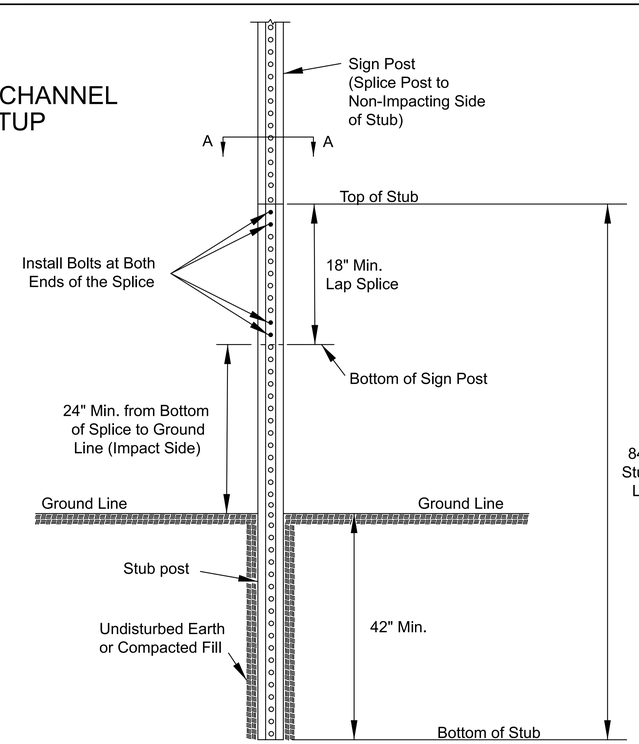
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

3 LB/F U-CHANNEL SETUP

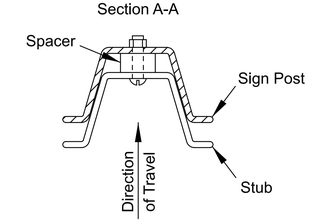


Notes:

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.

Section A-A



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.	

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Sh. No. 54

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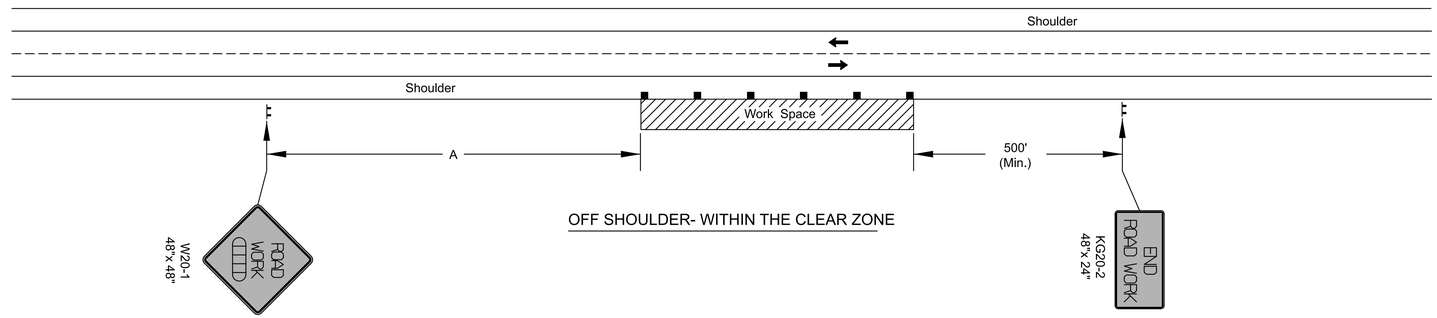
File : te712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	55	71

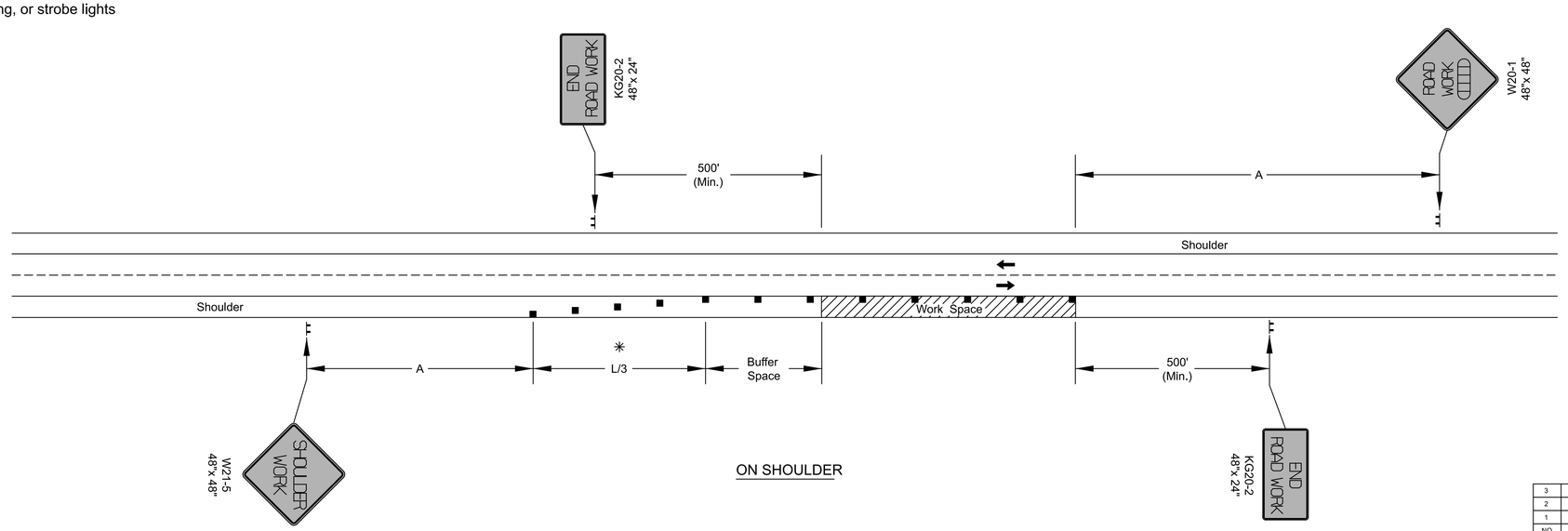


OFF SHOULDER- WITHIN THE CLEAR ZONE

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

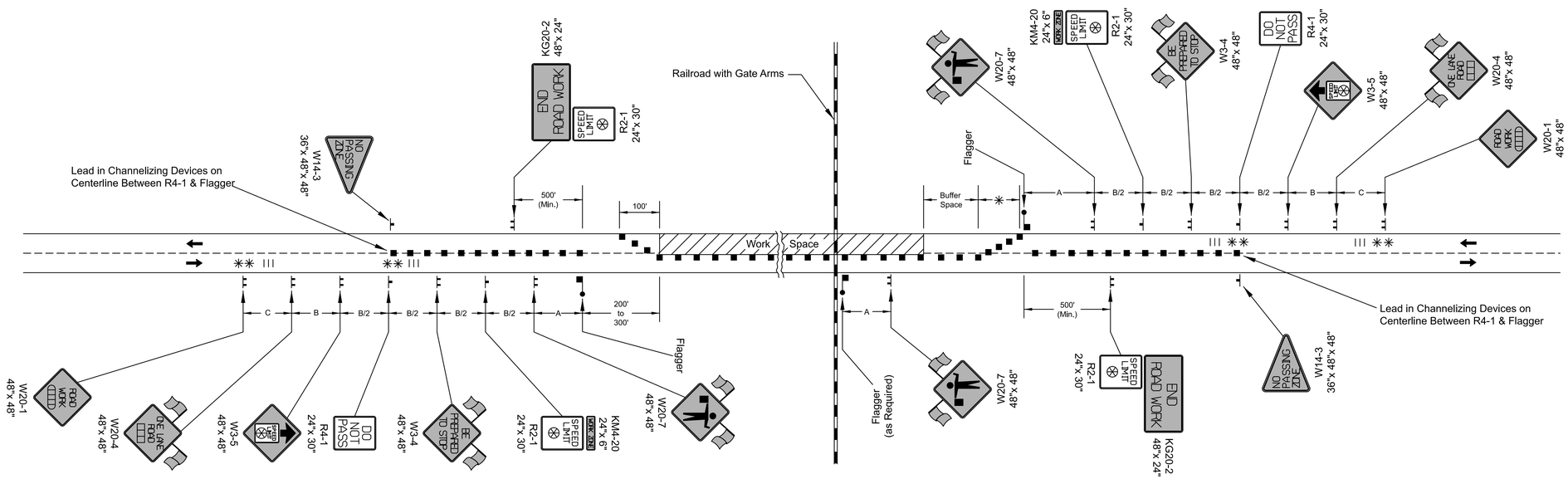
KDOT Graphics Certified

Sh. No. 55

Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:44
File : te720.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	56	71

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.

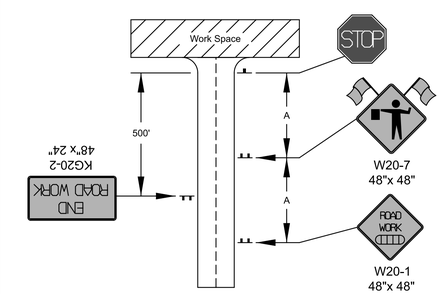
✳✳ Optional rumble strips may be placed: One set between the W20-1 and W20-4, and one set between the R4-1 and W3-4, on each approach.

△ Not required on substantial maintenance projects (1R).

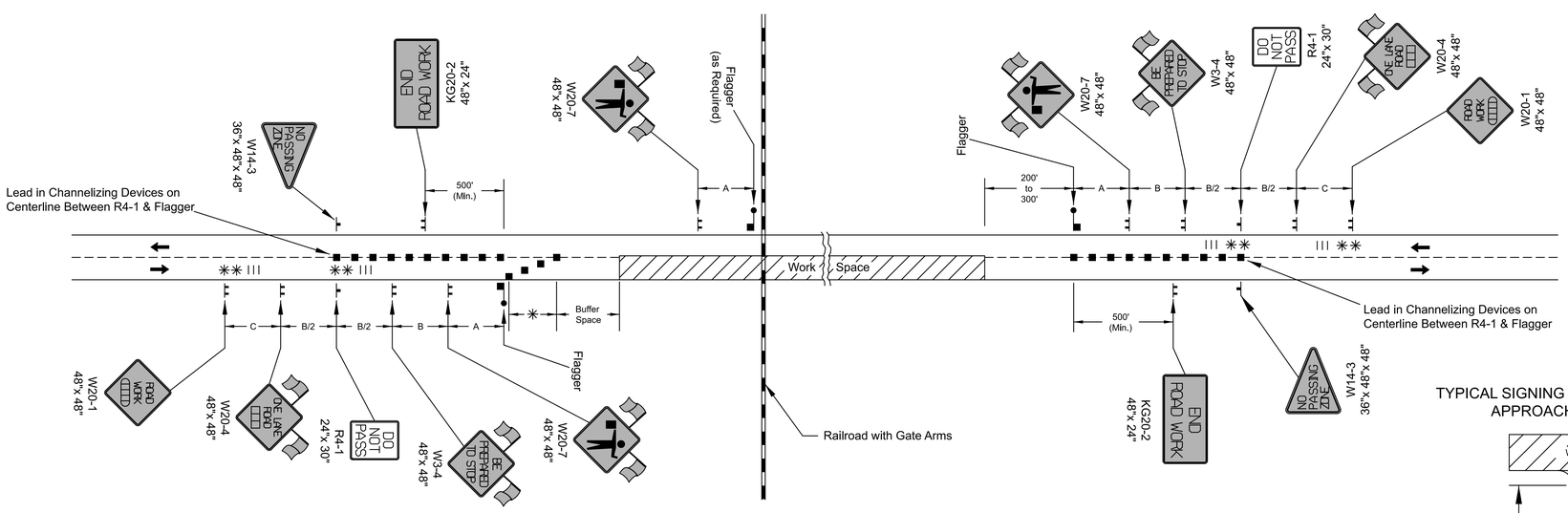
△△ The KG20-5 (WAIT FOR PILOT CAR) sign shall be mounted on an approved portable support and not attached to the existing stop sign post.

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.

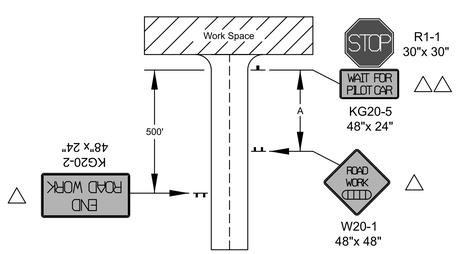
TYPICAL SIGNING FOR HIGHWAY OR MAJOR COLLECTOR APPROACH TO WORK SPACE



FLAGGER AND PILOT CAR



TYPICAL SIGNING FOR A MINOR SIDE ROAD APPROACH TO WORK SPACE



- ■ 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

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

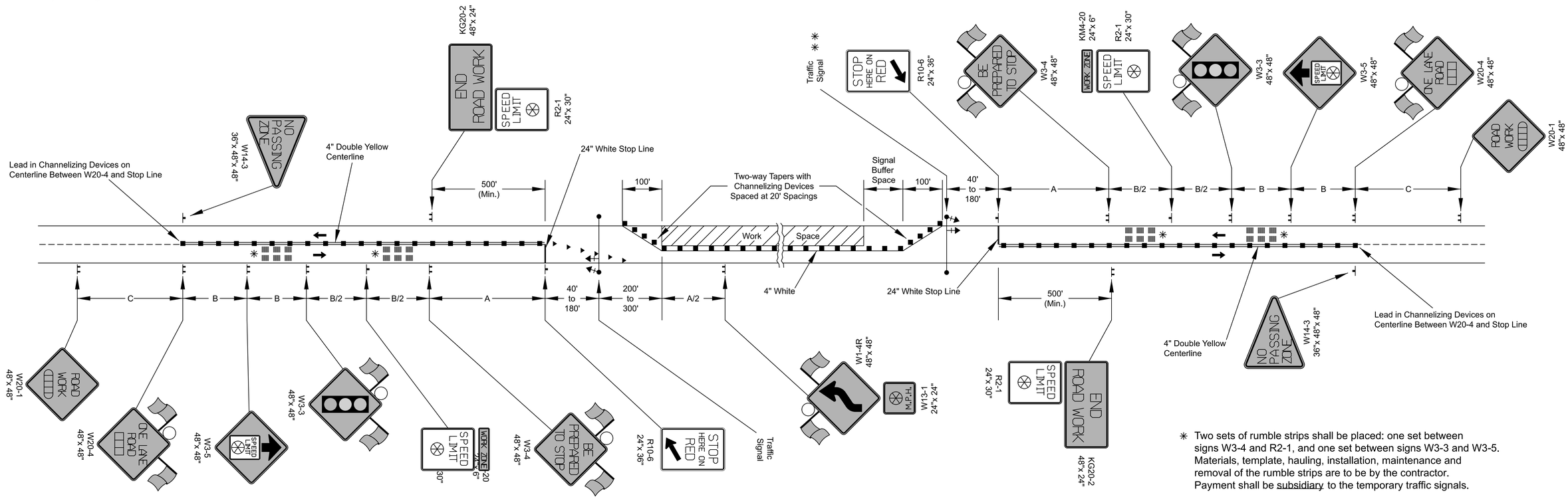
Sh. No. 56

KDOT Graphics Certified

Plotted by : Robert.Barton@ks.gov 13-DEC-2021 23:44
File : te730.dgn

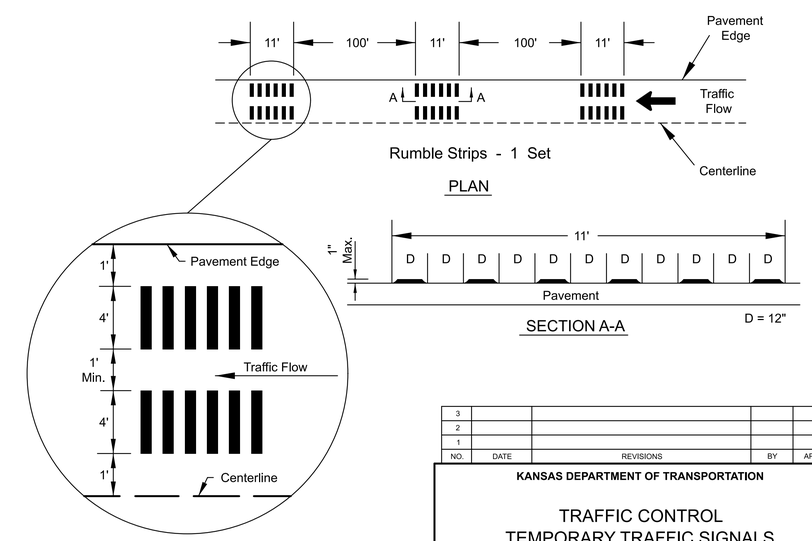
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	57	71

NOTE: Refer to TE733 and TE734 for additional temporary traffic signal details.



✳ Two sets of rumble strips shall be placed: one set between signs W3-4 and R2-1, and one set between signs W3-3 and W3-5. Materials, template, hauling, installation, maintenance and removal of the rumble strips are to be by the contractor. Payment shall be subsidiary to the temporary traffic signals.

TYPICAL ASPHALT RUMBLE STRIP DETAILS

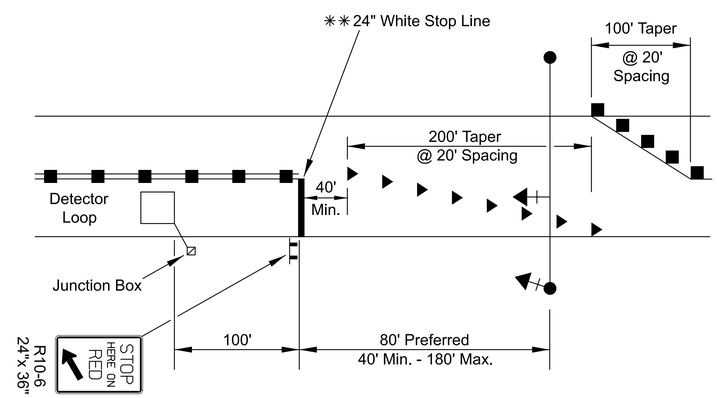


SIGNAL BUFFER SPACE

SPEED (MPH) ▲	20	25	30	35	40	45	50	55	60	65	70
LENGTH (FT)	35	50	65	85	100	115	130	150	165	165	165

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

▲ Posted speed prior to work starting



✳✳ Stop Line Created Using (6) 4" Strips of Temporary Tape

- ▸ Uni-Directional Yellow Temporary Raised Pavement Marker (Type 1) (Facing Right)
- ■ Channelizing Device
- Ahead, 1500 ft, or 1 Mile
- Ahead, 1000 ft, 1500 ft, or ½ Mile
- Speed to be determined by the Engineer
- Signal Head with Back Plate
- ● Temporary Signal Pole or Trailer
- ○ Type "A" Low Intensity Warning Light

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
TEMPORARY TRAFFIC SIGNALS

TE732

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

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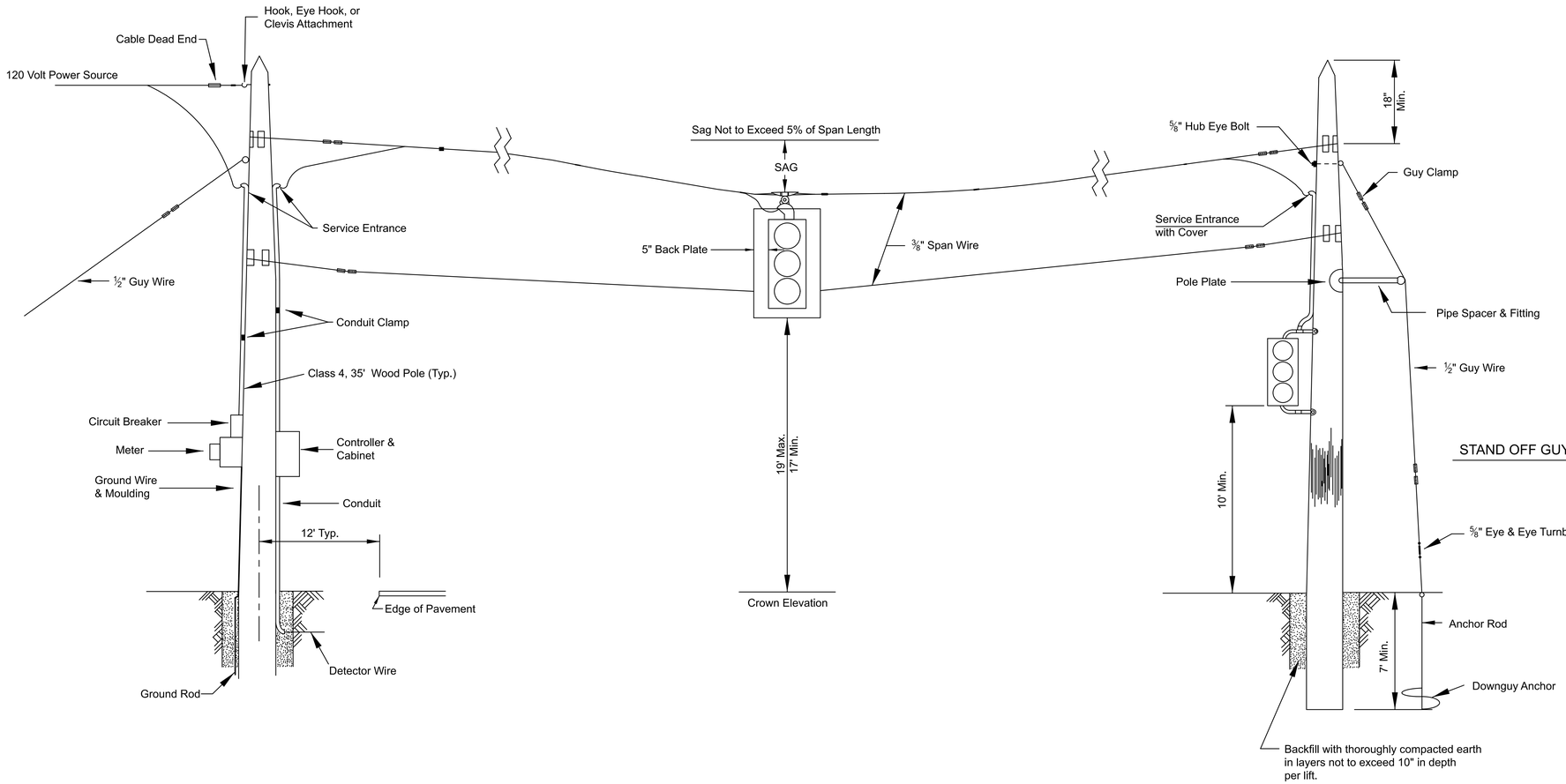
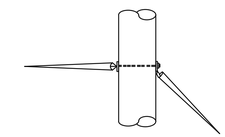
File : te732.dgn

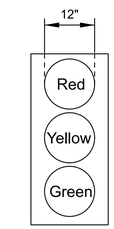
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	58	71



STAND OFF GUY ALTERNATE



Alternate method of mounting for spanwire & downguy traffic signal support pole.



SIGNAL INDICATIONS

GENERAL NOTES

The engineer in charge of construction will need to approve all locations for traffic signals to be installed. Final positions & aiming of signal faces to be determined in the field.

Trailer mounted portable traffic signals may be substituted for span wire signals.

The traffic signal system shall conform to and be operated according to the requirements of the M.U.T.C.D.

Contact local utility companies to advise them of installation and coordinate power hook-up if needed.

All wiring installed shall conform to the national electrical code and local ordinances & requirements.

The power supply and the operation & maintenance of the signal system shall be the responsibility of the contractor.

Note:
See TE734 for additional information.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
TEMPORARY TRAFFIC SIGNAL DETAILS

TE733

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

KDOT Graphics Certified 03-29-2018

Sh. No. 58

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:44
File : te733.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	59	71

The control equipment shall be designed in such a manner that the normal dwell condition shall be an all red" signal display. Upon receipt of a detector actuation from one approach, the signals facing that approach shall cycle to a green indication for a minimum period (minimum green). Subsequent detector actuations from the same direction shall result in additional green time being allocated to that movement (unit extension). In the event that an actuation exists for the direction of travel not having the right of way, a maximum green time setting shall provide a preset time limit for the direction having the right of way.

The control equipment shall provide for different clearance sequences, one for each required phase.

If the green indication has been displayed to one approach to the zone, no vehicle actuation exists on the opposite approach and another actuation occurs during the yellow display to the approach just serviced, the display shall proceed to an all red display for a period of time (red revert) to prevent the display of green - yellow - green indications to the motorist.

If the right of way is to be transferred to another approach, an all red indication shall be provided so that opposing traffic does not meet within the one way zone.

Response to a vehicle actuation from another approach shall be immediate if all timings have expired. In the event that all time settings have not expired at the point at which a vehicle actuation occurs, the system shall continue to provide the appropriate clearance interval timings before acting upon an actuation input.

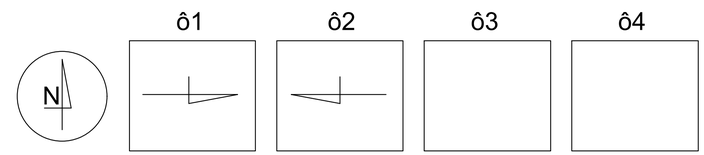
Vehicle actuations received from the detector at approaches other than that which last received a green indication shall have preference over additional actuations received from the end which last had the right of way in the event that any clearance interval timings have not expired when the actuation(s) occurs. If all timings have expired, response shall be on a first come, first served basis.

All time settings shall be user adjustable and shall be accomplished from the equipment front panel by way of a keyboard and menu screen format. All applicable portions of the
KDOT standard specifications for vehicle actuation shall apply except that a standard NEMA conflict monitor shall be acceptable.

Signals shall be capable of actuation. On asphalt roadways, detection loops may be sawed into the road. Commercially made loop mats may also be used. Do not cut loops into concrete pavement. Other types of detection may be used if approved prior to installation by the Engineer. Do not use microwave detection systems in urban areas. Detector shall be set to operate in the locking mode.

If used, detection loops shall be 6' by 6' and have three turns of wire (see detail). Center loops in the lane of traffic and locate 100' behind the stop line. Cut slots in pavement for loops $\frac{5}{16}$" wide with 1"
minimum depth. Fill slots with asphalt or an approved elastic epoxy sealant (concrete pavement) to within $\frac{1}{8}$" of pavement surface. Other than a "western union" type splice or approved connector at their junction, feeder cable and loop wire shall be of continuous run with no splices. The loop and the feeder cable connection shall be twisted 2 turns per foot.

SIGNAL PHASING AND TIMING

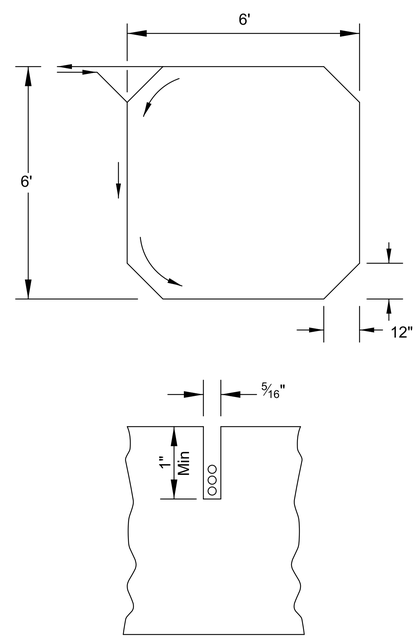


Phase	Minimum Green	Maximum Green	Yellow	All Red
ô1	10	60	4	86
ô2	10	60	4	86

Phase		Stationing
EB	Stopline	1600+12
EB	Signal	1600+92
WB	Signal	1642+12.75
WB	Stopline	1642+92.75

All times in seconds.
Normal dwell shall be "all red".
Unit extension shall be 3.0 seconds.
Red revert shall be 5.0 seconds.

LOOP DETECTOR DETAIL



Note: See TE733 for additional information.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
TEMPORARY TRAFFIC SIGNAL DETAILS

TE734

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

KDOT Graphics Certified 07-21-2021

Sh. No. 59

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:43
File :te734.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	60	71

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

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

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

✳ Quantity most used on the project at any one time

Work Zone Signs ✳			
Sign No.	Size - Sq.Ft.		
	0-9.25	9.26-16.25	16.26 & Over
W20-7		2	
W20-1		2	
W20-4		2	
W3-5		2	
R4-1		2	
W3-4		2	
R2-1	4		
KM4-20	2		
KG20-2		2	
W14-3		2	
W3-3		2	
R10-6	2		
W1-4R		2	
W13-1	2		
R11-2		2	
KI-104a		2	
KI-105a		2	
W21-5		2	
W20-3		4	

Barricades ✳		Channelizing Devices ✳		
Type 3 (4' to 12')	Pedestrian	Fixed	Portable	Pedestrian
14			120	

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	20
Work Zone Warning Light (Red Type "B" High Intensity)	
Arrow Display	
Portable Changeable Message Sign	

Recapitulation of Quantities		
Item	Quantity	Unit
Work Zone Signs (0 to 9.25 Sq.Ft.)	4450	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)	14,240	Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')	6230	Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)	53,400	Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)	8900	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)	195	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'))	36.5	Sta./Line
Pavement Marking Removal	9,329	Lin. Ft.
Work Zone Sign (Special) (16.25 Sq. Ft. & Less)		Each
Work Zone Sign (Special) (16.26 Sq. Ft. & More)		Each
Rigid Raised Pavement Marker (Type I)	20	Each
Rigid Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)	Lump Sum	Lump Sum
Traffic Control (Initial Set Up)	Lump Sum	Lump Sum
Traffic Control		Lump Sum
Flagger (Set Price)	1	Hour

NO.	DATE	REVISIONS	BY	APP'D
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.

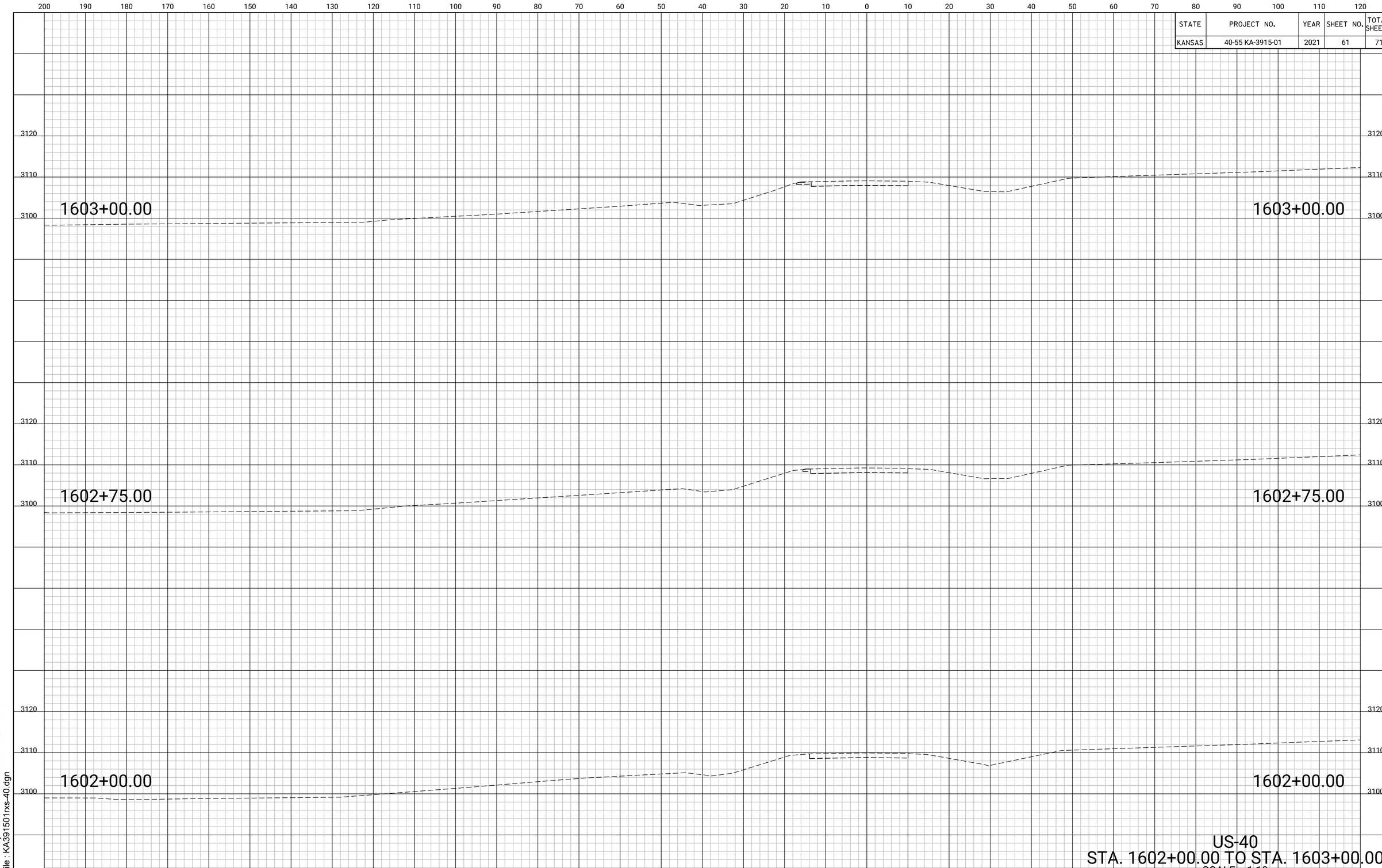
KDOT Graphics Certified 12-13-2021

Sh. No. 60

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 13-DEC-2021 23:44
File : te795.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	61	71



US-40
STA. 1602+00.00 TO STA. 1603+00.00
SCALE = 1:10

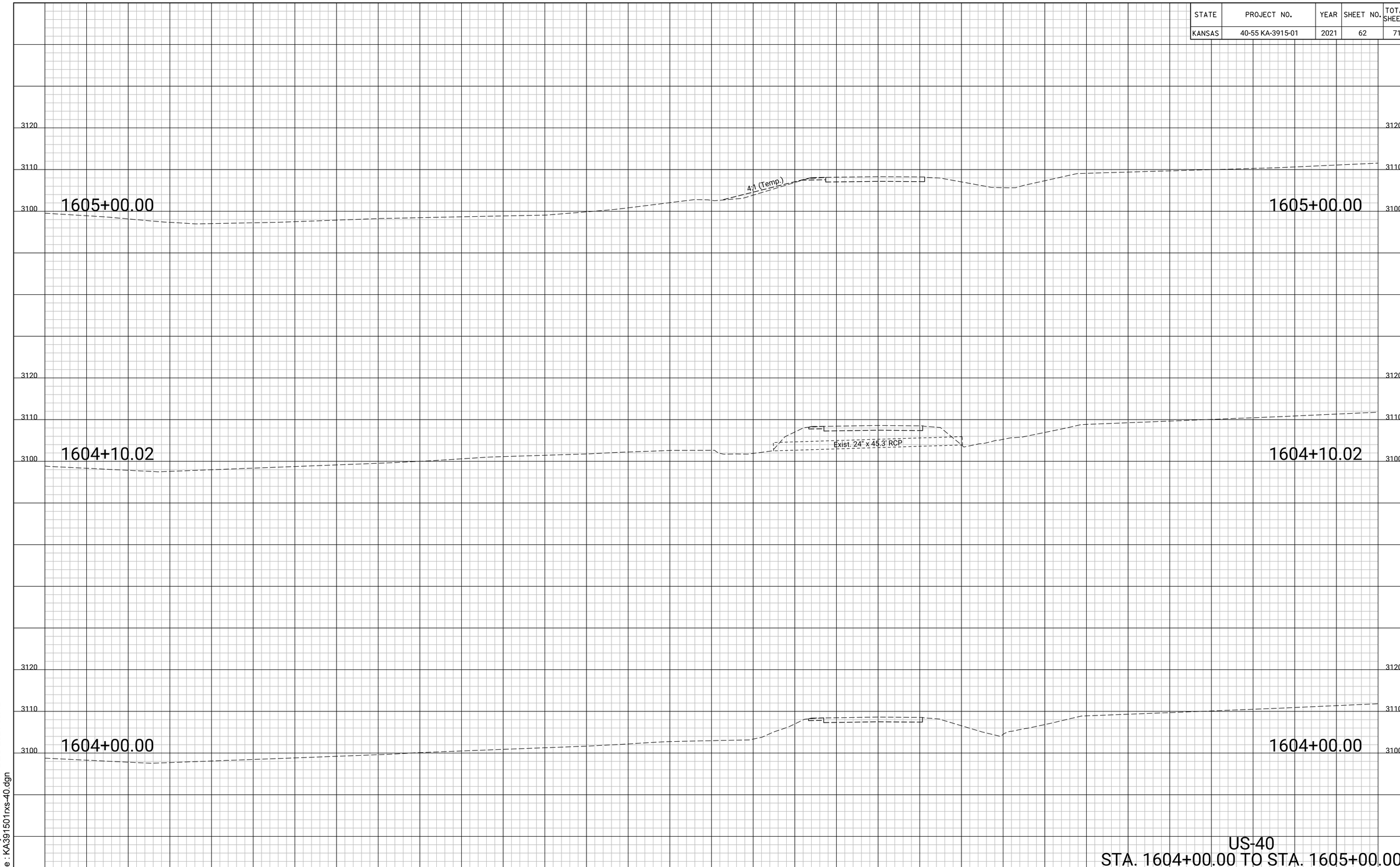
KDOT Graphics Certified 11-10-2021

Sht. 61

Plotted by : rbowman 08-DEC-2021 08:42
File : KA3915 01rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	62	71



US-40
STA. 1604+00.00 TO STA. 1605+00.00
SCALE = 1:10

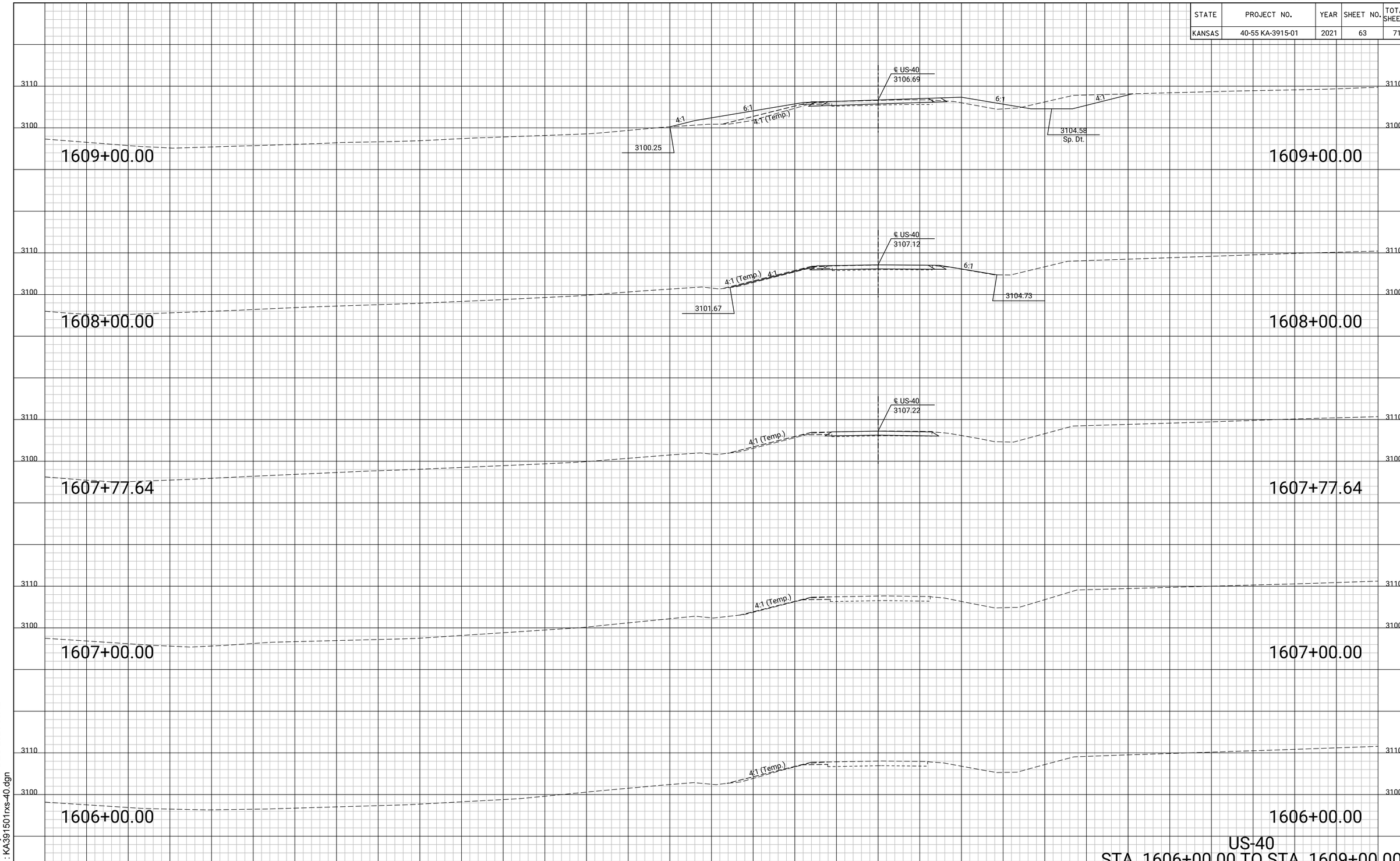
KDOT Graphics Certified 11-10-2021

Sht. 62

Plotted by : rbowman 08-DEC-2021 08:42
File : KA391501rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	63	71



US-40
STA. 1606+00.00 TO STA. 1609+00.00
SCALE = 1:10

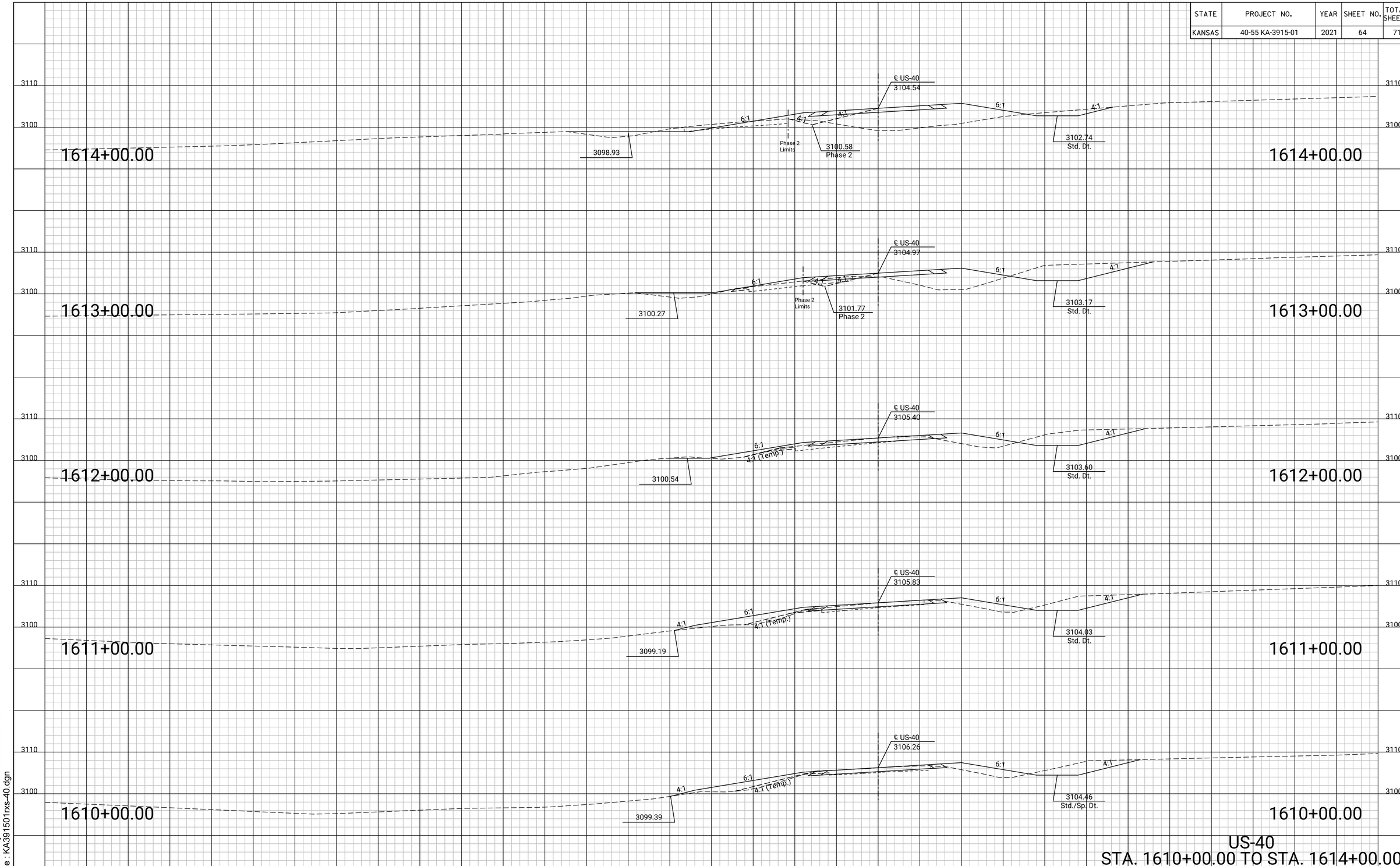
KDOT Graphics Certified 11-10-2021

Sht. 63

Plotted by : rbowman 08-DEC-2021 08:42
File : KA3915 01rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	64	71



US-40
STA. 1610+00.00 TO STA. 1614+00.00
SCALE = 1:10

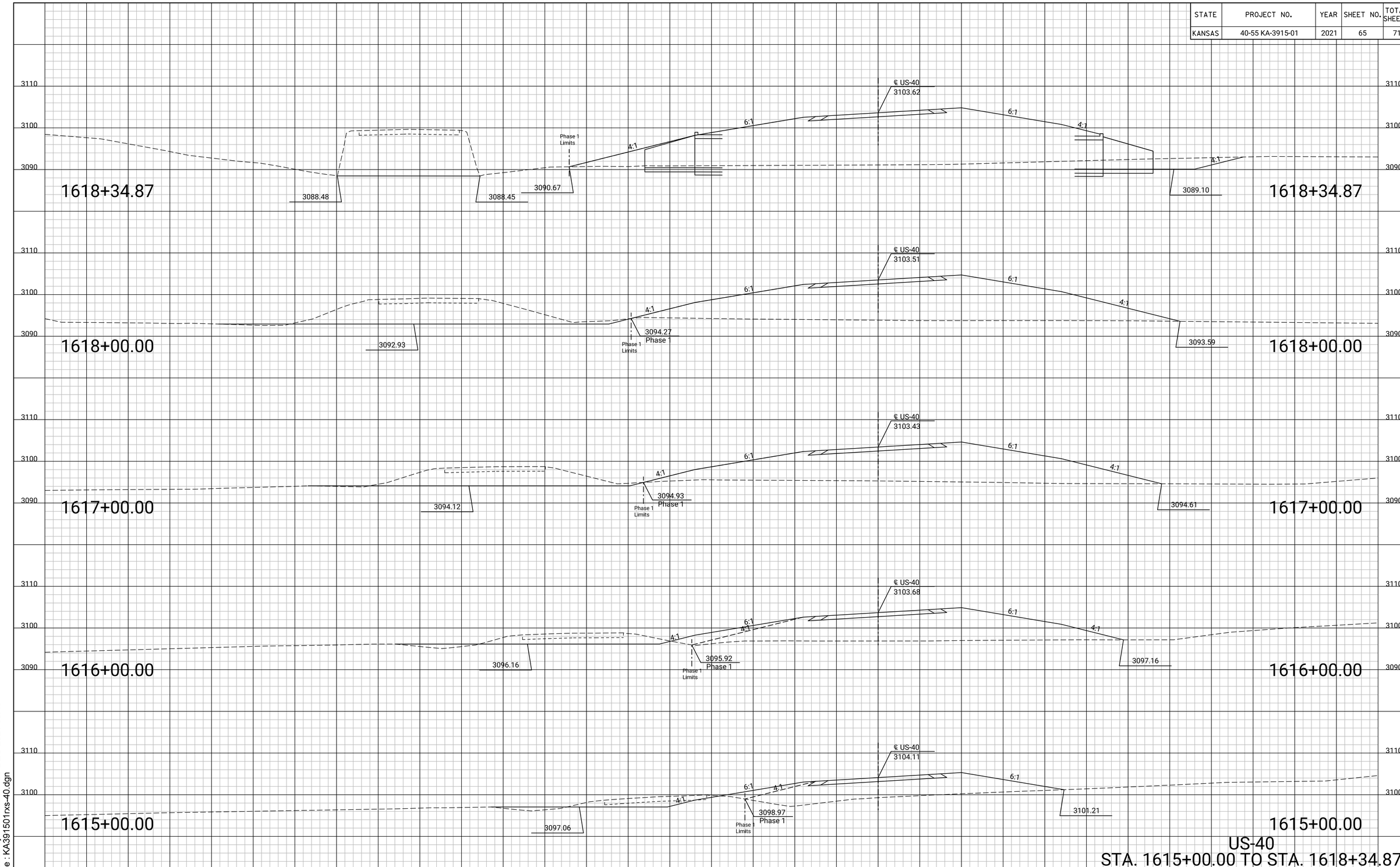
KDOT Graphics Certified 11-10-2021

Sht. 64

Plotted by : rbowman 08-DEC-2021 08:43
File : KA3915 01rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	65	71



US-40
STA. 1615+00.00 TO STA. 1618+34.87
SCALE = 1:10

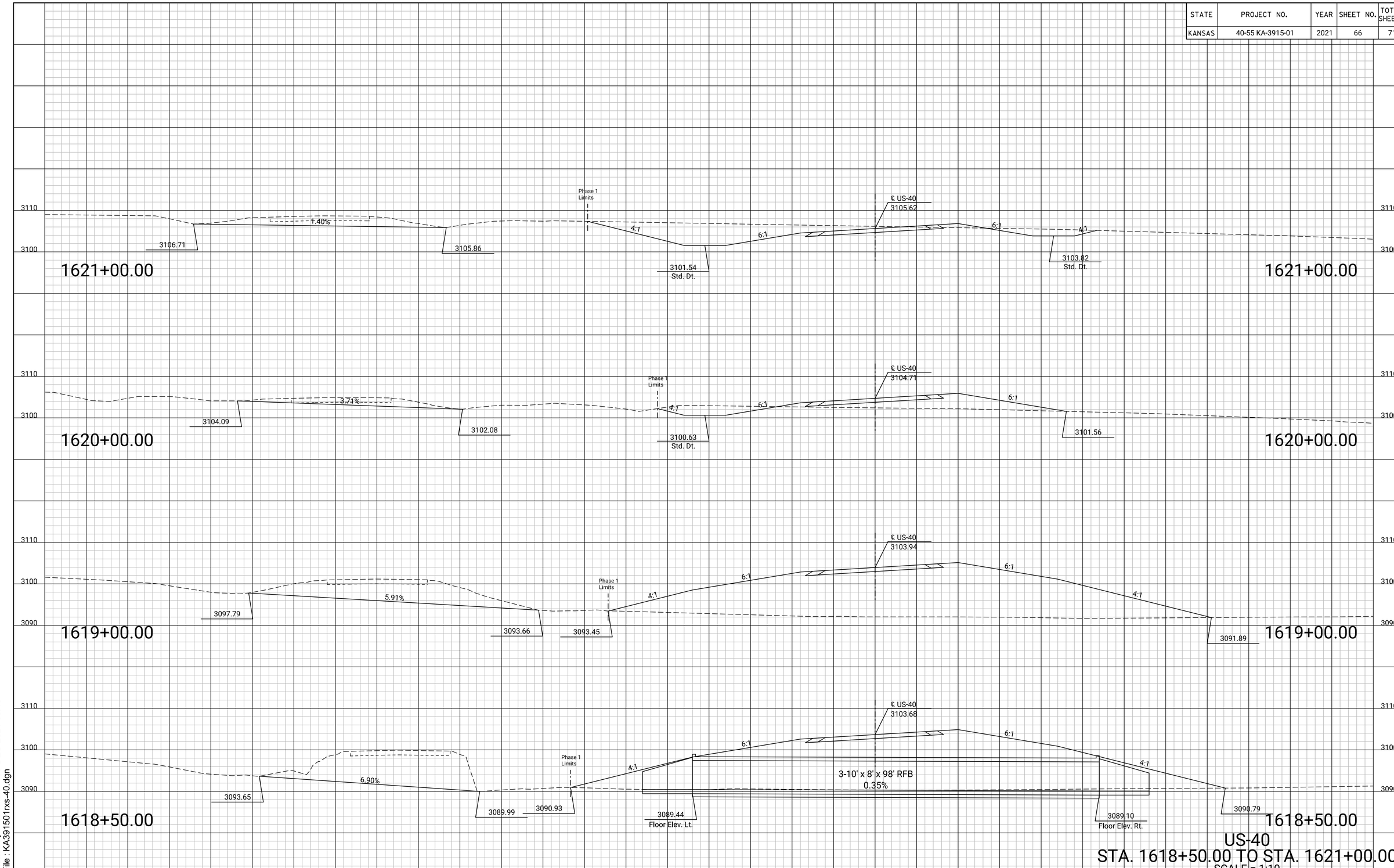
KDOT Graphics Certified 11-10-2021

Sht. 65

Plotted by : rbowman 08-DEC-2021 08:43
File : KA391501rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	66	71



US-40
STA. 1618+50.00 TO STA. 1621+00.00
SCALE = 1:10

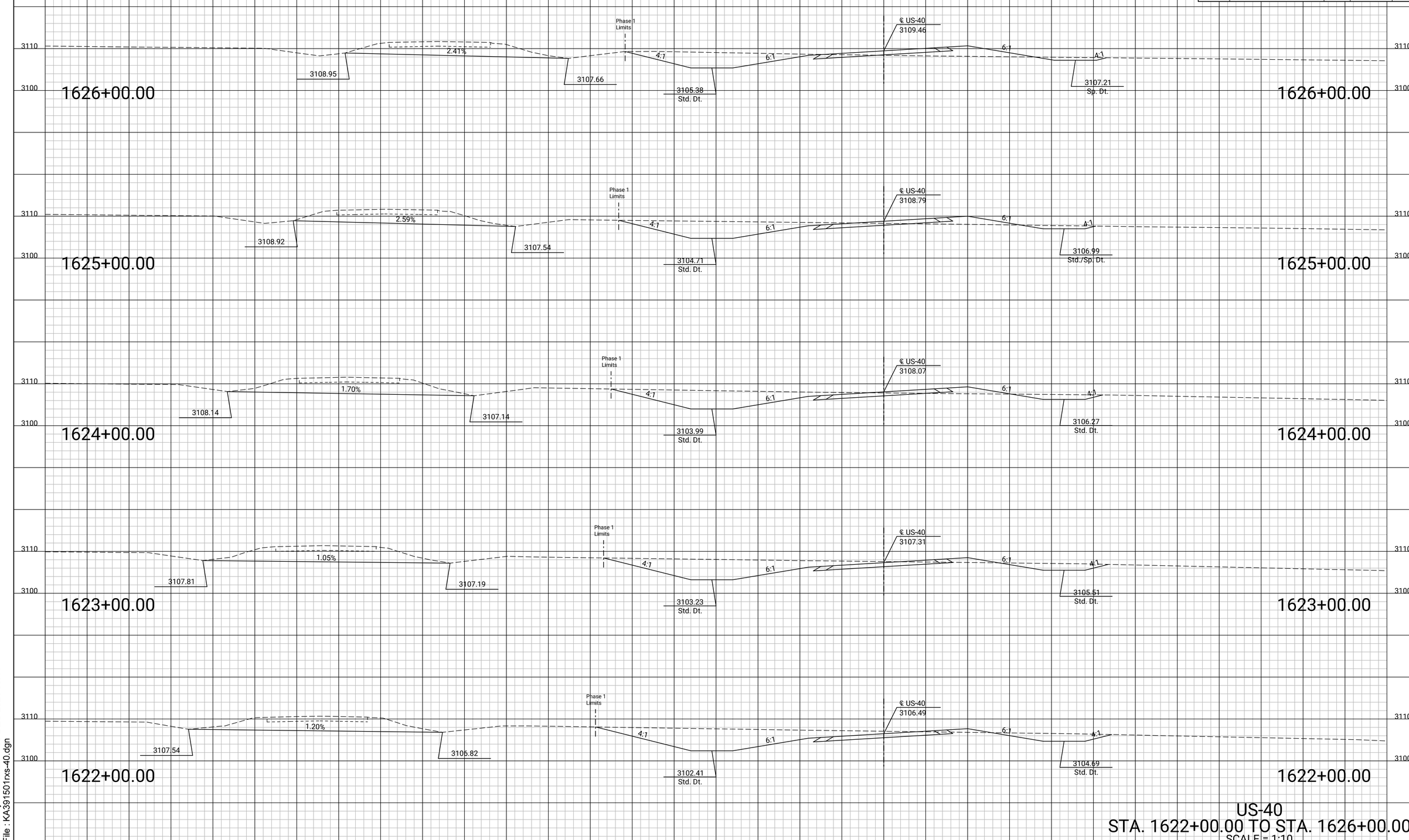
KDOT Graphics Certified 11-10-2021

Sht. 66

Plotted by : rbowman 08-DEC-2021 08:43
File : KA391501rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	67	71



US-40
STA. 1622+00.00 TO STA. 1626+00.00
SCALE = 1:10

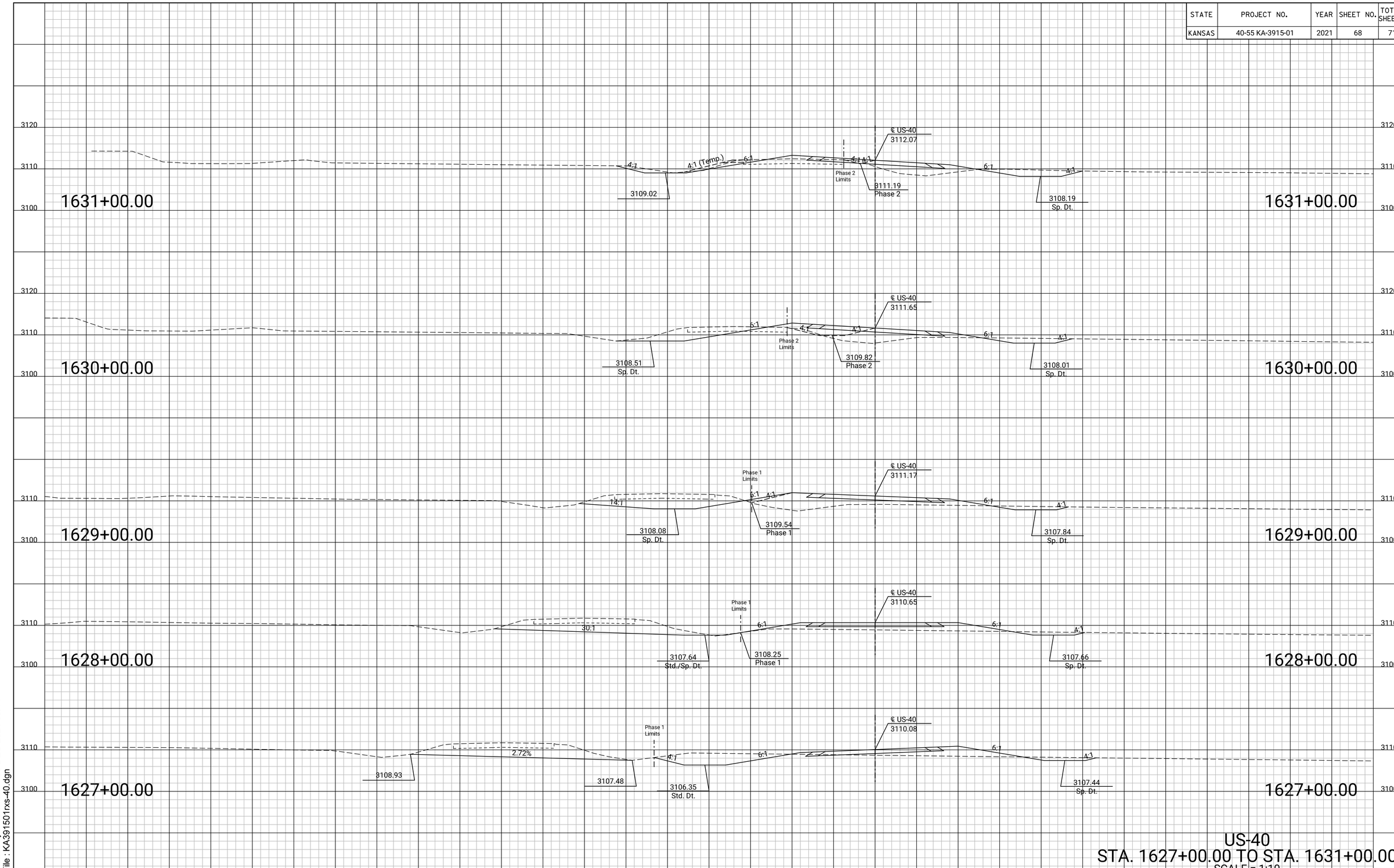
KDOT Graphics Certified 11-10-2021

Sht. 67

Plotted by : rbowman 08-DEC-2021 08:44
File : KA391501rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	68	71



US-40
STA. 1627+00.00 TO STA. 1631+00.00
SCALE = 1:10

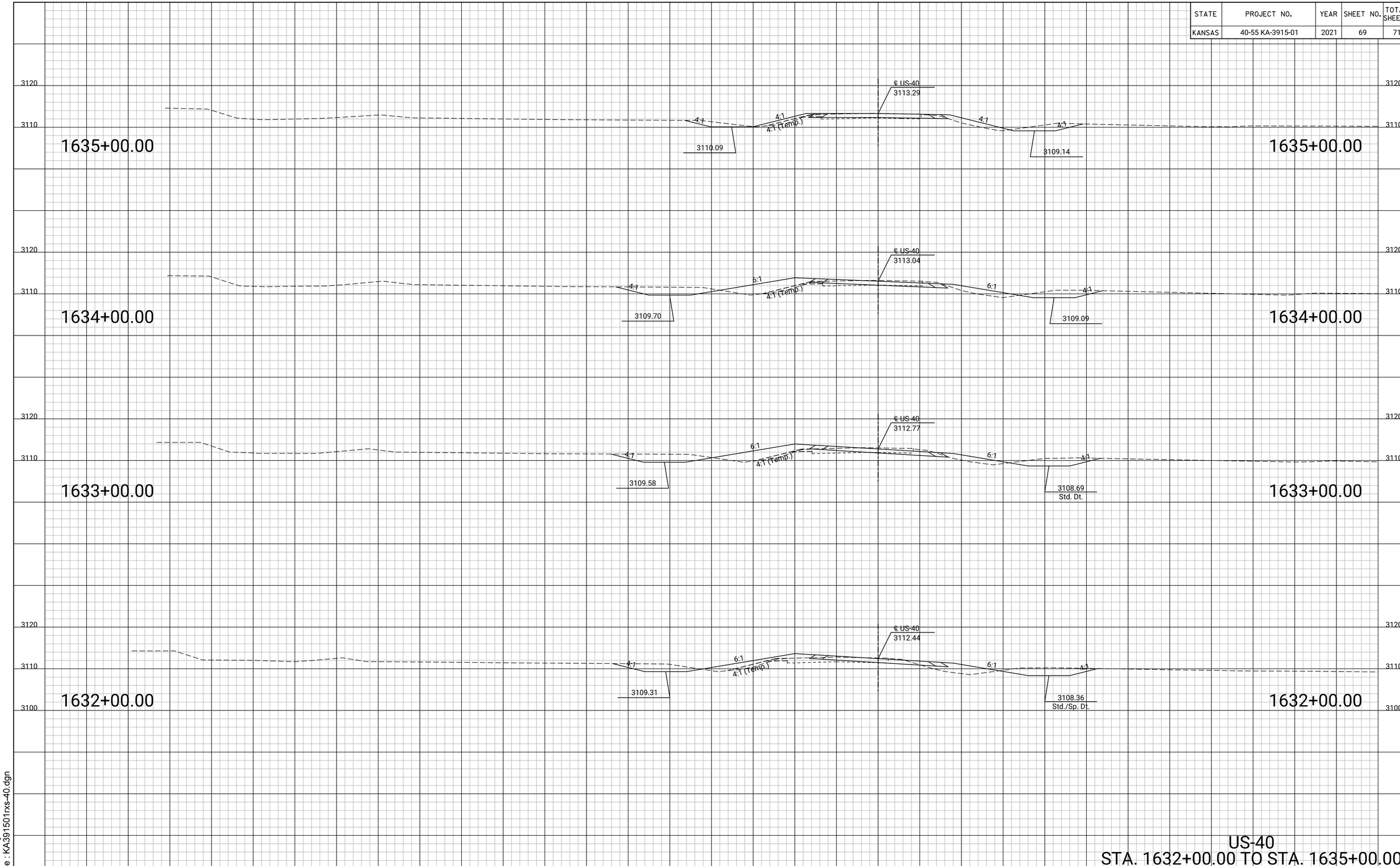
KDOT Graphics Certified 11-10-2021

Sht. 68

Plotted by : rbowman 08-DEC-2021 08:44
File : KA3915 01rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	69	71



US-40
STA. 1632+00.00 TO STA. 1635+00.00
SCALE = 1:10

KDOT Graphics Certified 11-10-2021

Sht. 69

Plotted by : rbowman 08-DEC-2021 08:45
File : KA391501rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	70	71

US-40
STA. 1635+43.73 TO STA. 1637+00.00
SCALE = 1:10

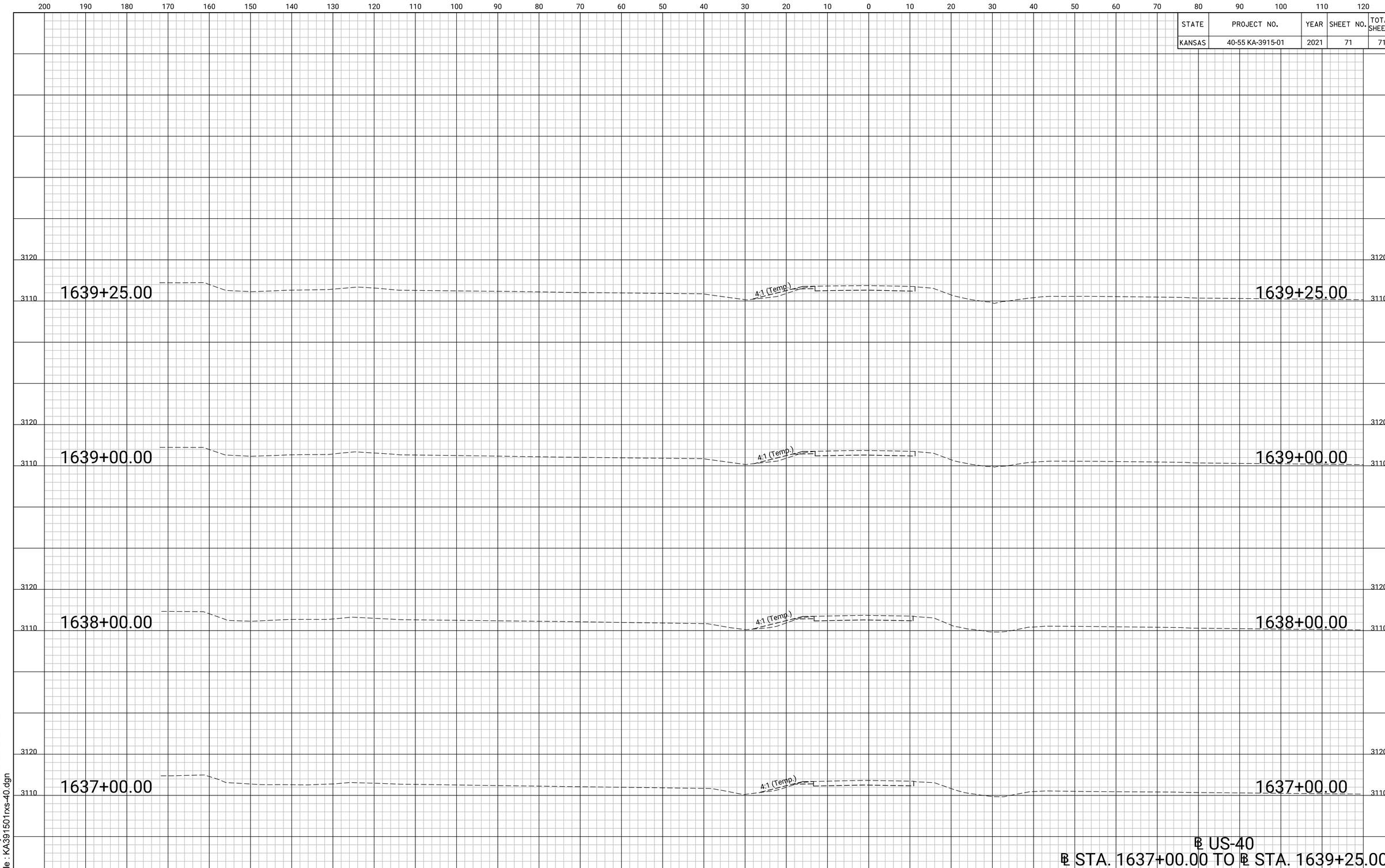
KDOT Graphics Certified 11-10-2021

Sht. 70

Plotted by : rbowman 08-DEC-2021 08:45
File : KA391501rxs-40.dgn

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	40-55 KA-3915-01	2021	71	71



KDOT Graphics Certified 11-10-2021

Sht. 71

Plotted by : rbowman 08-DEC-2021 08:45
File : KA3915O1rxs-40.dgn

KDOT Graphics Certified