STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	1	230

STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

PROJ. NO. 160-18 KA-6475-01
FEDERAL AID PROJ. NO. ACSTP-A647(501)

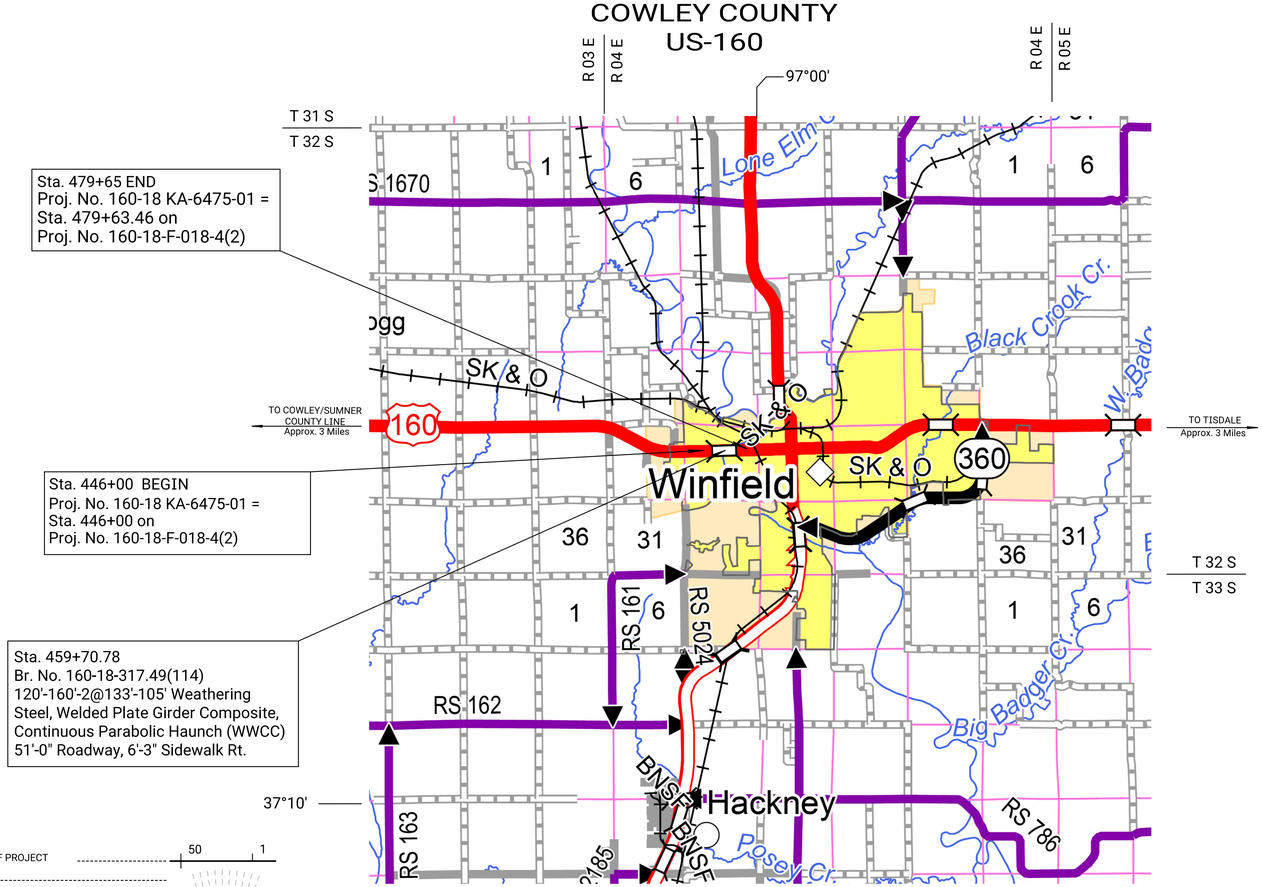
GRADING AND SURFACING (CONCRETE)
BRIDGE
SEEDING
LIGHTING
SIGNING AND PAVEMENT MARKING

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

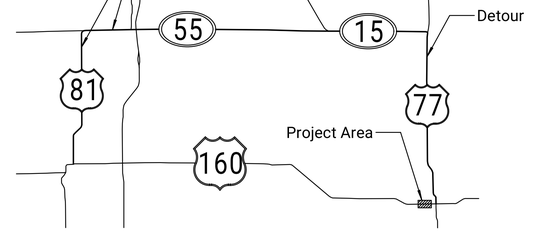
FEDERAL AID PROJECT
COWLEY COUNTY
US-160

INDEX OF SHEETS

1	TITLE SHEET
2	SIGNATURE SHEET
3-6	TYPICAL SECTIONS
7	FOUNDATION TREATMENT & COMP. OF EARTHWORK
8	SALVAGED TOPSOIL
9	GENERAL NOTES & UTILITY OWNERS
10-17	PLAN AND PROFILE SHEETS
18	SECTION CORNER MONUMENTATION DETAIL
19	RIGHT OF WAY MONUMENT INSTALLATION DETAIL
20-26	PAVING DETAILS
27-34	PAVEMENT DETAILS
35-37	INLET AND MANHOLE DETAILS
38	SEWER DETAILS
39	SCHEDULE OF INLETS AND MANHOLES
40	DITCH LINING
41-43	CONCRETE SAFETY BARRIER
44-50	END SECTIONS
51	PIPE CULVERT SUMMARY
52-113	BRIDGE NO. 160-18-317.49(114)
114	BRIDGE EXCAVATION
115	STANDARD PILE DETAILS
116	SUPPORTS AND SPACERS FOR REINFORCING STEEL
117-118	SUMMARY OF QUANTITIES SHEETS
119	PROJECT SURFACING
120-128	TEMPORARY EROSION AND POLUTION CONTROL
129	SEEDING
130-135	LIGHTING
136-161	SIGNING AND PAVEMENT MARKING
162-169	CONSTRUCTION SEQUENCING
170-192	TRAFFIC CONTROL
193-200	CONCRETE SAFETY BARRIER (TEMPORARY)
201-228	CROSS SECTIONS
17	DELETED SHEET
229-230	DELETED SHEETS



SCALE: 1" = 1 Mile



Sketch of Detour
(Not to Scale)

NOTE: Traffic to be carried through staged construction as well as a short-term state route detour. See Sh. No. 162-169 for phasing and detour information.

DESIGN DESIGNATION

AADT (2025)	= 5,700 vpd
AADT (2045)	= 7,000 vpd
DHV	= 10%
D	= 55%
T	= 11.5%
V	= 40 mph
C of A	= Low Order Partial
Clear Zone	= 28'

CONVENTIONAL SIGNS

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

GROSS LENGTH OF PROJECT	3,365.00	FT. (Includes Equations)	
EXCEPTIONS	NONE		
NET LENGTH OF PROJECT	3,365.00	FT.	0.637 MILES
NET LENGTH OF BRIDGES	656.50	FT.	0.124 MILES
NET LENGTH OF ROAD	2,708.50	FT.	0.513 MILES

Approved: Oct 21, 2025
Date

State Transportation Engineer

By:

Chief, Bureau of Road Design

KANSAS DEPARTMENT OF TRANSPORTATION

	BY	DATE
SURVEY		
CADD TECHNICIAN	D. Taylor (CFS)	3/2022
DESIGNERS	J. Austin (Road)	8/2025
SQUAD	J. Austin (Road)	8/2025
	R. Bowman (Road) / P. Tobaben (Bridge)	8/2025

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 16:31
File : KA647501rti-01.dgn

KDOT Graphics Certified 10-15-2025 Sh. No. 1

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	2	230

RYAN JAMES BOWMAN LICENSED 29109 KANSAS PROFESSIONAL ENGINEER Oct 08, 2025 Name: Ryan Bowman Co. Name: KDOT - Road Sheet Range: 1-51, 117-129, 162-169, 193-230	JAMES K. SCHMITT LICENSED 30000 KANSAS PROFESSIONAL ENGINEER Oct 20, 2025 Name: James Schmitt Co. Name: Garver - Lighting Sheet Range: 130-135	PETER TOBABEN LICENSED 28019 KANSAS PROFESSIONAL ENGINEER Oct 21, 2025 Name: Peter Tobaben Co. Name: KDOT - Bridge Sheet Range: 52-116	NICHOLAS ROGERS LICENSED 19805 KANSAS PROFESSIONAL ENGINEER Oct 21, 2025 Name: Nicholas Rogers Co. Name: KDOT - Traffic Sheet Range: 170-192	NATHAN T. JEFFRIES LICENSED 25390 KANSAS PROFESSIONAL ENGINEER Oct 21, 2025 Name: Nathan Jeffries Co. Name: KDOT - Bureau of Traffic Eng Plan Section: Permanent Signing	DONNA JO LEE LICENSED 12434 KANSAS PROFESSIONAL ENGINEER Oct 21, 2025 Name: Donna.Lee Co. Name: KDOT Traffic Engineering Plan Section: Pavement Marking		

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

KANSAS DEPARTMENT OF TRANSPORTATION

Signature Seal Sheet

RD048

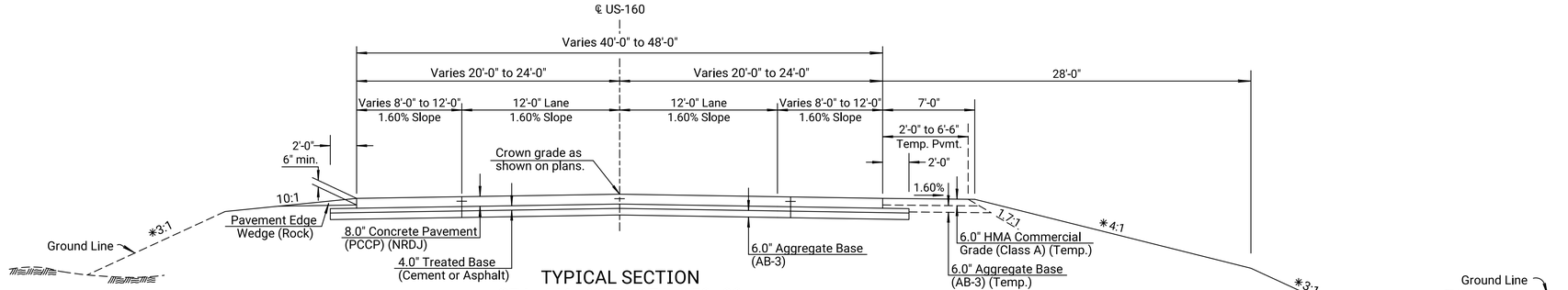
FHWA APPROVAL		APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

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

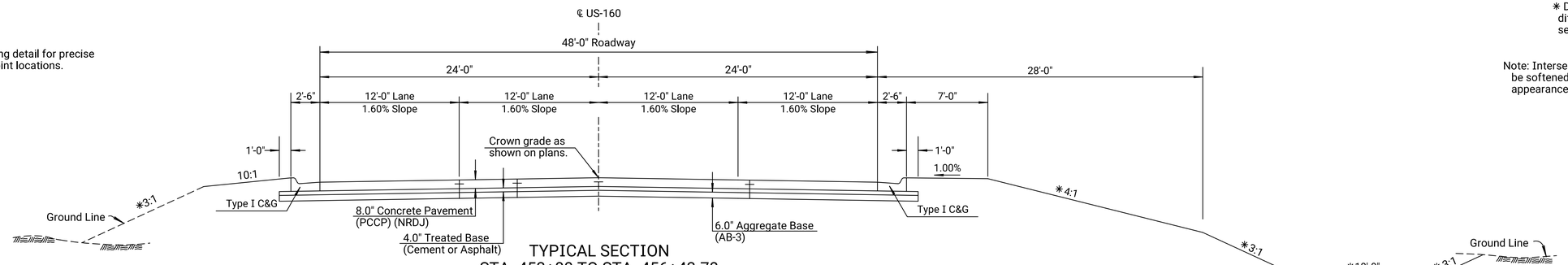
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:48
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	3	230



TYPICAL SECTION
STA. 446+00 TO STA. 453+00

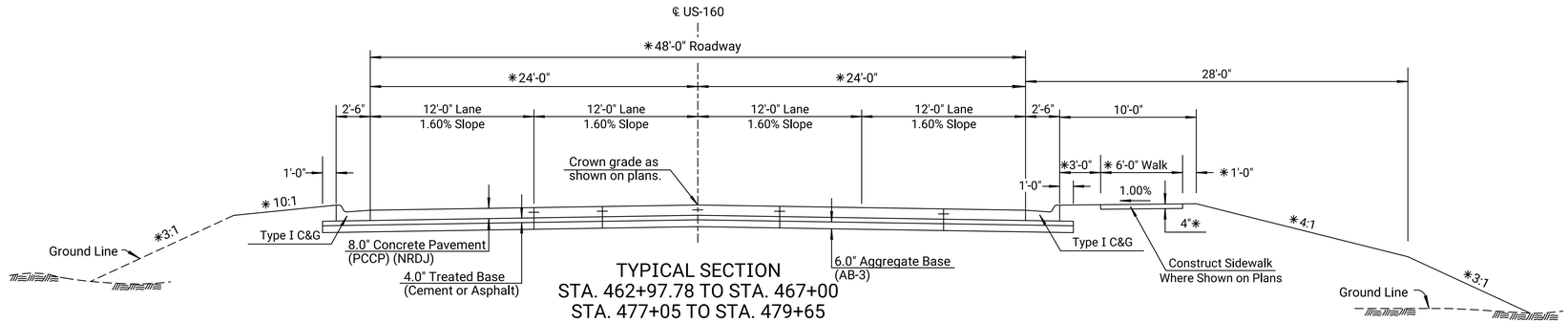


TYPICAL SECTION
STA. 453+00 TO STA. 456+43.78

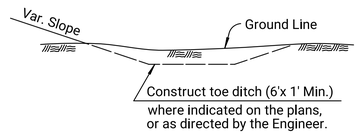
Note: See jointing detail for precise longitudinal joint locations.

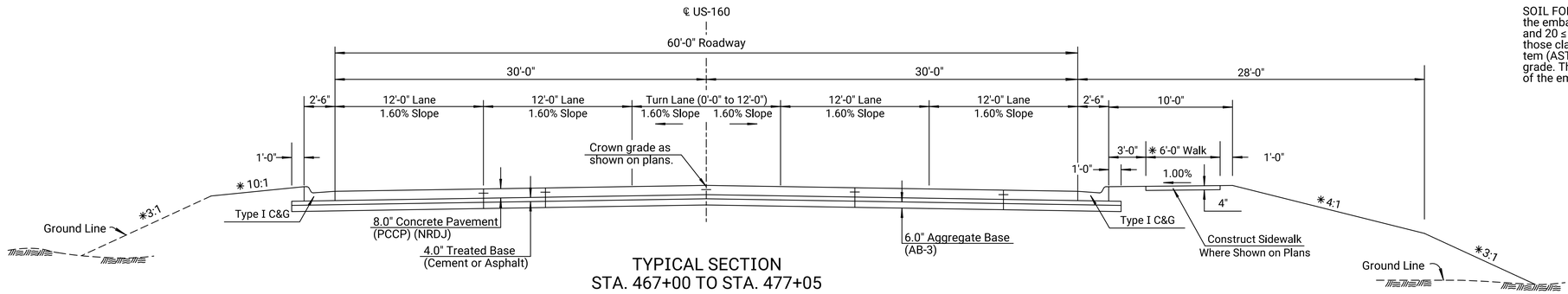
✳ Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

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



TYPICAL SECTION
STA. 462+97.78 TO STA. 467+00
STA. 477+05 TO STA. 479+65





TYPICAL SECTION
STA. 467+00 TO STA. 477+05

SOIL FOR EMBANKMENT CONSTRUCTION: All soil used in the top 18" of the embankment shall conform to the following requirements: 10 ≤ PI ≤ 35 and 20 ≤ LL ≤ 55. Soils which contain substantial organic material, such as those classified as OL or OH according to the Unified Soil Classification System (ASTM D2487), should not be used to construct the embankment or subgrade. The organic material may be used as select soil to cap the sideslopes of the embankment.

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 SECTION GRADING & SURFACING US-160

~~RD600~~

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

KDOT Graphics Certified 09-25-2025

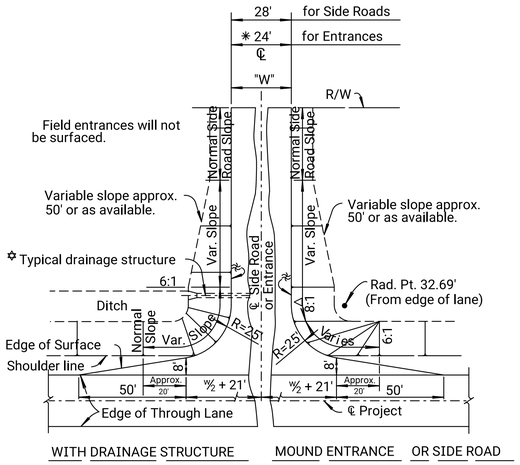
Sh. No. 3

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	4	230

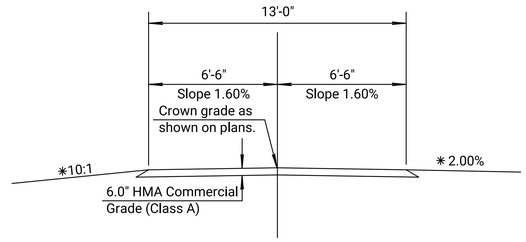
≋ On side roads and entrances which slope toward the highway, a low point approx. 6" deep shall be constructed to divert surface drainage into the high-way ditch, the plans.



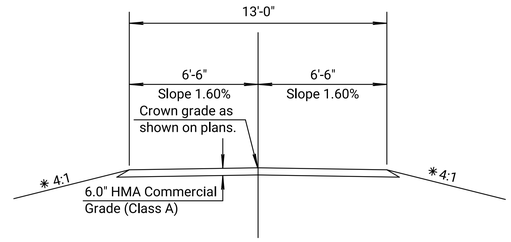
FLARE OF SHOULDERS AT ENTRANCES AND SIDE ROADS

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

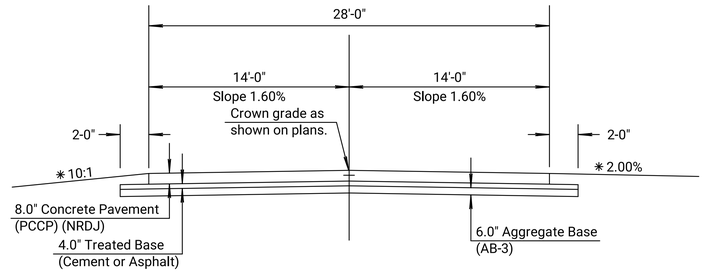
△ 8:1 Slope at the appropriate clear zone shall apply to all mound entrances and mound side roads to 10' fill height. Normal Slope (but not steeper than 6:1) over 10' fill height.



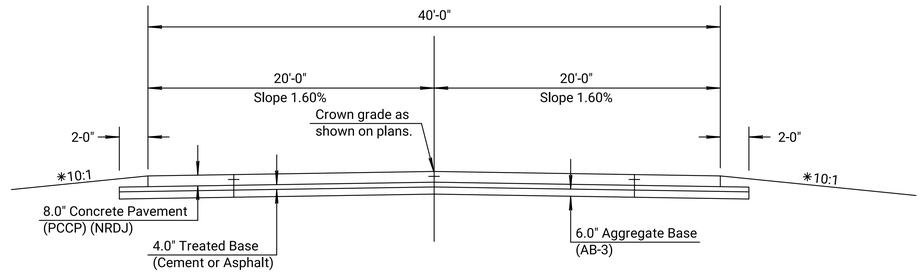
TYPICAL SECTION (HOME ENTRANCES)



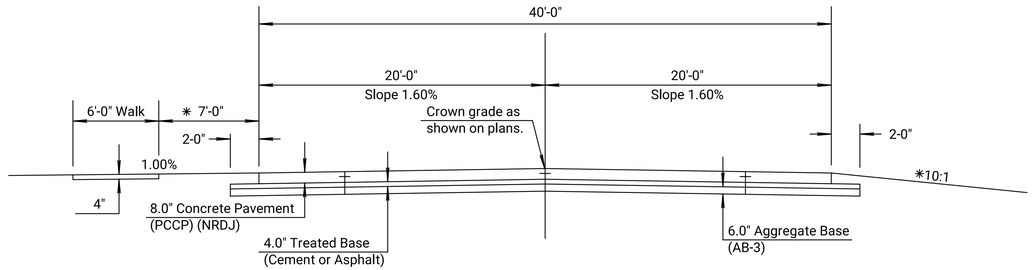
TYPICAL SECTION (FIELD ENTRANCE)



TYPICAL SECTION (PHILLIPS SHEPPARD RD)



TYPICAL SECTION (WEST FAIRGROUND ENTRANCE)



TYPICAL SECTION (EAST FAIRGROUND ENTRANCE)

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

Note: See jointing detail for precise longitudinal joint locations.

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

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 SECTION SIDE ROAD & ENTRANCES

~~RD600~~

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

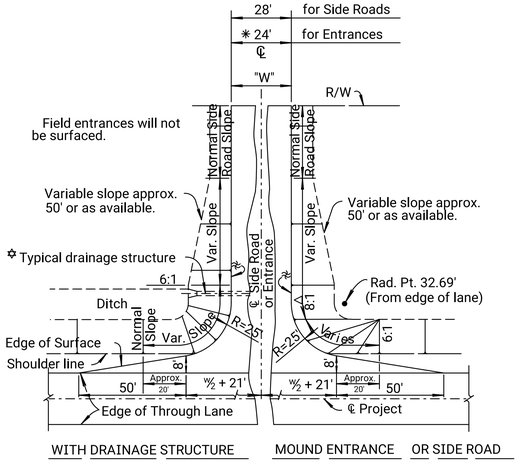
KDOT Graphics Certified 09-25-2025 Sh. No. 4

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	5	230

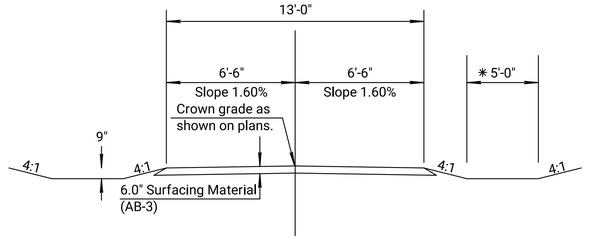
≋ On side roads and entrances which slope toward the highway, a low point approx. 6" deep shall be constructed to divert surface drainage into the high-way ditch, the plans.



FLARE OF SHOULDERS AT ENTRANCES AND SIDE ROADS

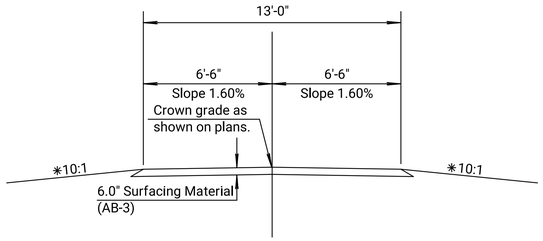
✡ Normal Slope (but not steeper than 6: 1) at approximate ℄ Struc-ture or appropriate clear zone width.

△ 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.



TYPICAL SECTION (CUT) FAIRGROUND GRAVEL ROAD

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



TYPICAL SECTION (FILL) FAIRGROUND GRAVEL ROAD

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

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 SECTION FAIRGROUND GRAVEL ROAD

~~RD600~~

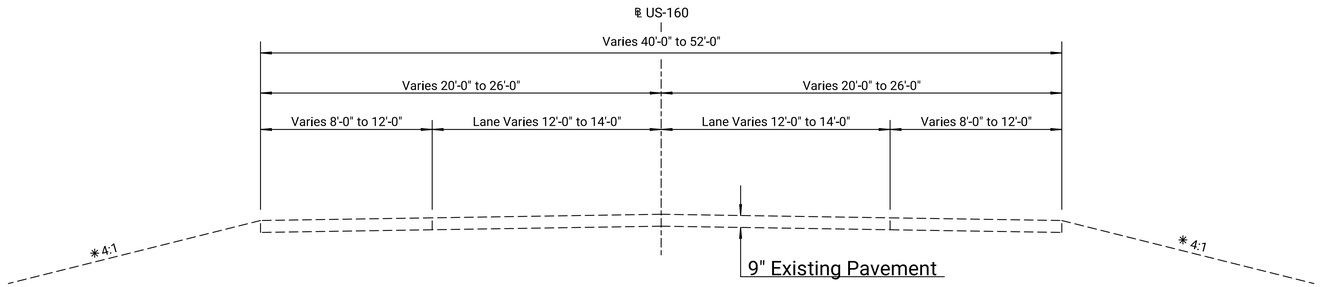
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DESIGNED	DETAILED	QUANTITIES	TRACED
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KDOT Graphics Certified 10-14-2025 Sh. No. 5

KDOT Graphics Certified

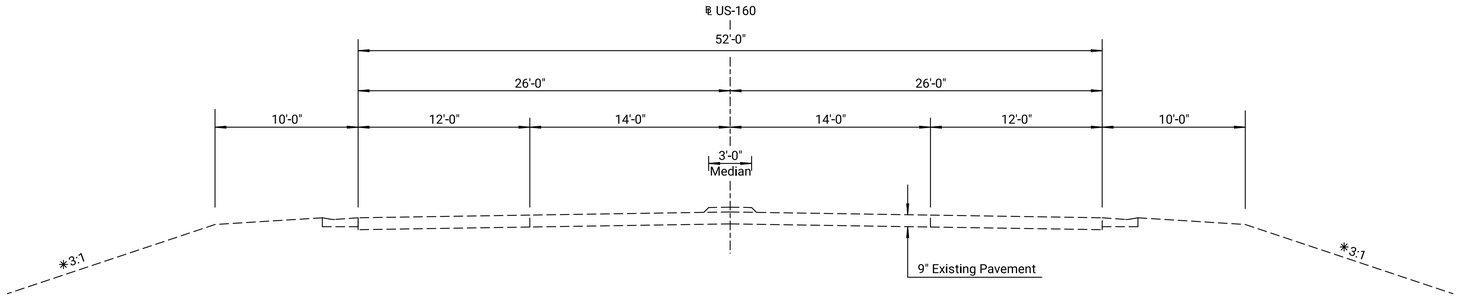
Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 16:31
File : KA647501rts-03.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	6	230



⫫ STA. 446+00 TO STA. 452+95

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

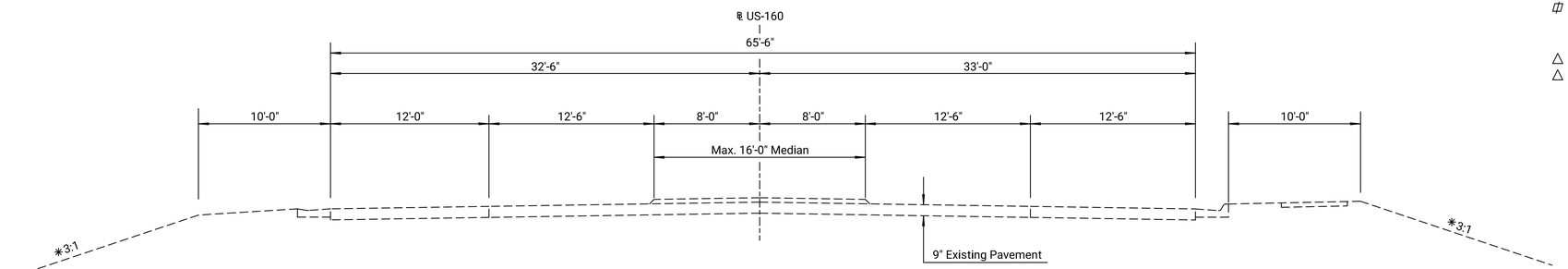


✳ Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

⫫ STA. 452+95 TO STA. 456+71.38
△ STA. 462+83.71 TO STA. 464+25

Pavement History

⫫	2007	HMA	2.0" x 24'
⫫	1957	PCCPAV	7.0" x 24'
⫫	1957	PCCPAB	4.0" x 24'
△	1957	PCCPAV	9.0" x 24'
△	1957	PCCPAB	4.0" x 24'



△ STA. 464+25 TO STA. 477+98.45

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 SECTION EXISTING

~~RD600~~

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

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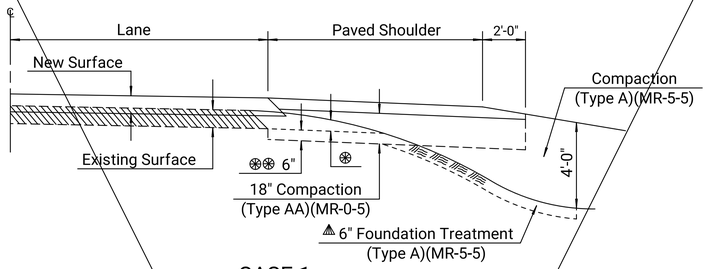
Sh. No. 6

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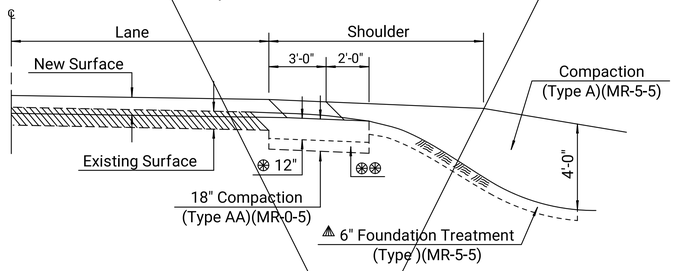
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	7	230

REHABILITATION



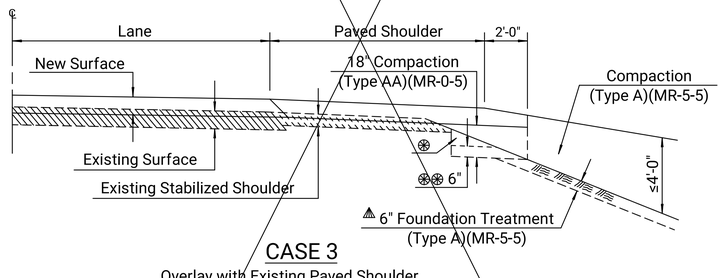
CASE 1

Overlay with Paved Shoulder



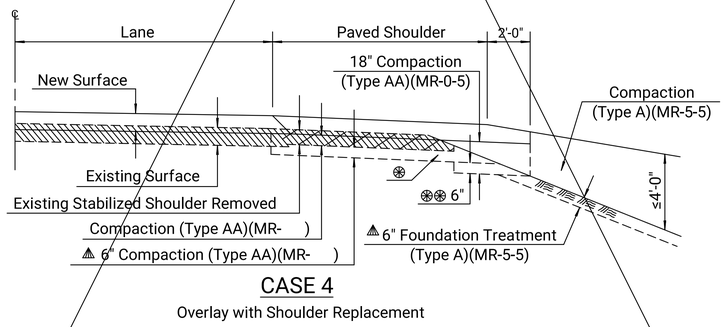
CASE 2

Overlay with Composite Shoulder



CASE 3

Overlay with Existing Paved Shoulder



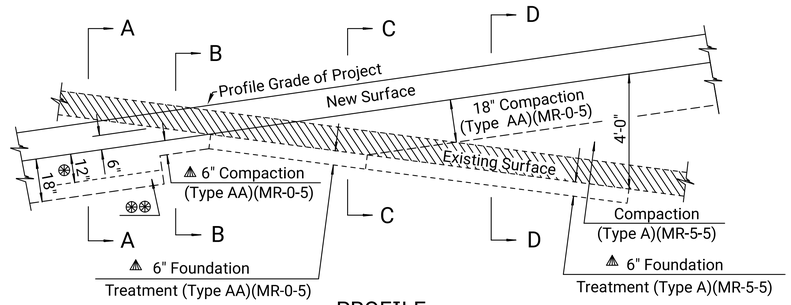
CASE 4

Overlay with Shoulder Replacement

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

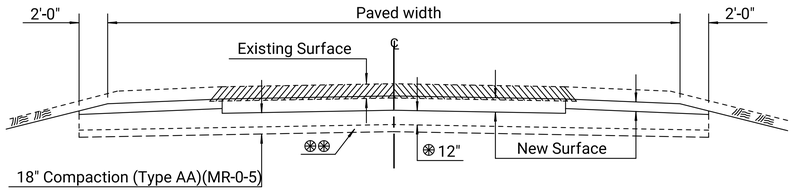
Note: These are 4 general cases. Specific compaction requirements are determined on a project-by-project basis.

RECONSTRUCTION

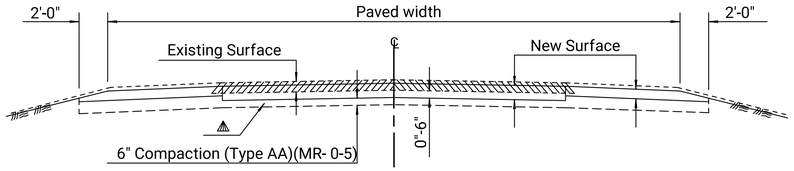


PROFILE

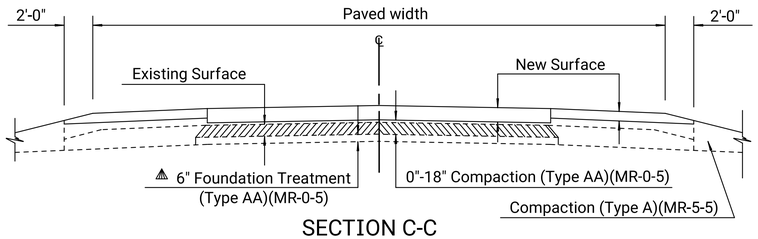
⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



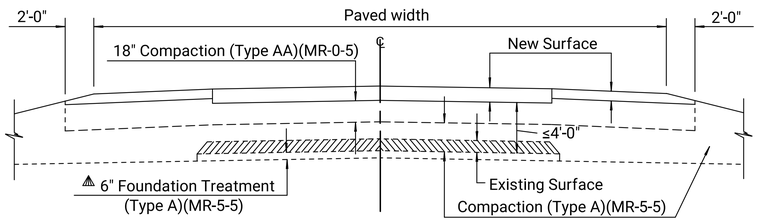
SECTION A-A



SECTION B-B

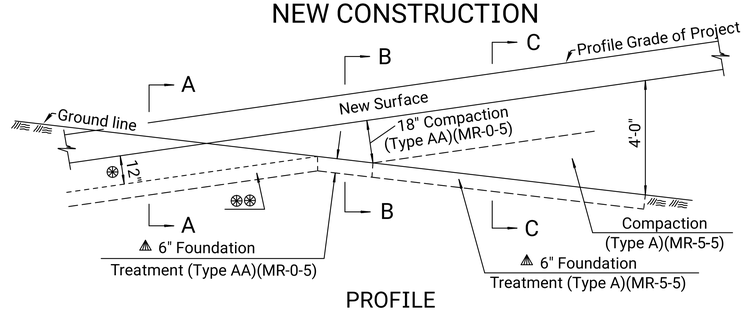


SECTION C-C



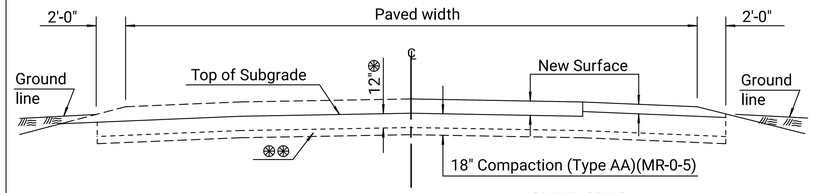
SECTION D-D

NEW CONSTRUCTION

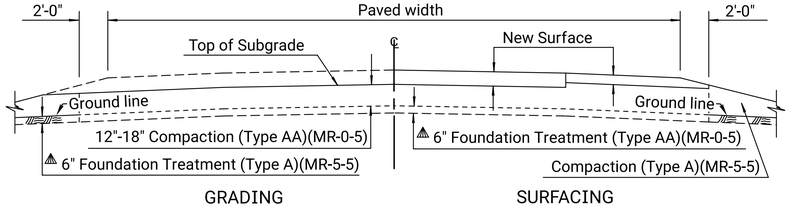


PROFILE

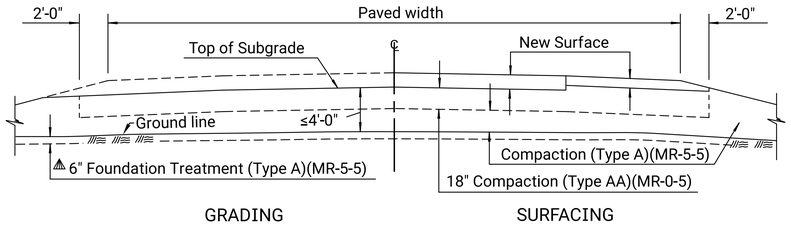
⊛ Excavation thru Cuts not Subgraded
⊛⊛ The lower 6" of Compaction is subsidiary.
⚠ Compaction of this material shall be subsidiary.



SECTION A-A



SECTION B-B



SECTION C-C

General Note

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

FOUNDATION TREATMENT & COMPACTION OF EARTHWORK (CONCRETE)

~~RD605~~

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

KDOT Graphics Certified 06-18-2025 Sh. No. 7

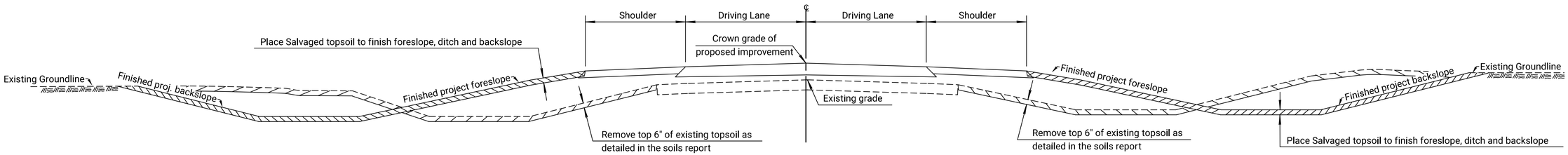
KDOT Graphics Certified

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File : KA647501rss605-02.dgn

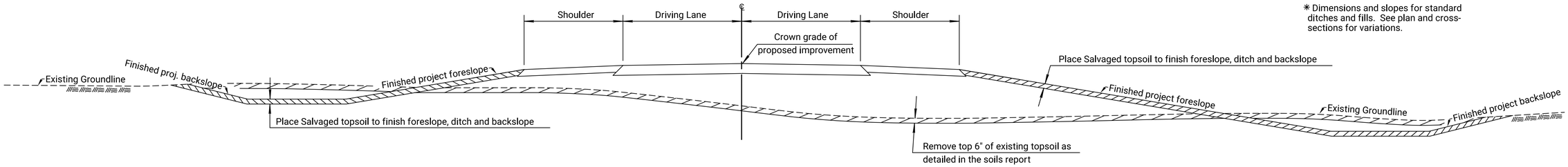
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	8	230

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

GENERAL NOTE
Adjust the cut and fill sections to accommodate the placement of the salvaged topsoil such that after placement the cross section will be at the final grade as shown on the plans.
Salvaging, Stockpiling and Placing Topsoil bid as "Salvaged Topsoil" in Square Yards. See KDOT Standard Specifications for details.
Soften and round the intersection of all slope lines for pleasing appearance.



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

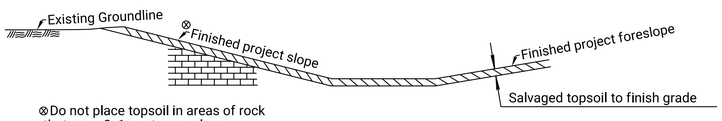


✳ Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

LEGEND
Topsoil to be Salvaged
Placement of Salvaged Topsoil

NEW ROADWAY ALIGNMENT
(Removal and Placement of Salvaged Topsoil)

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



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

CUT SECTION

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

KANSAS DEPARTMENT OF TRANSPORTATION

SALVAGED TOPSOIL

RD599A

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

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File : KA647501rss599a-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	9	230

GENERAL NOTE

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

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

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

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

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

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

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

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

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

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

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

A GROSS VMF OF 0.81 HAS BEEN ESTIMATED FOR THIS PROJECT, WHICH INCLUDES QUANTITIES FOR INITIAL CONSOLIDATION SETTLEMENT.

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

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.

EXISTING BRIDGE RAIL TO BE REMOVED SHALL BECOME THE PROPERTY OF KDOT AND BE STOCKPILED, AS DIRECTED BY THE ENGINEER, ON SITE FOR REMOVAL BY KDOT FORCES.

THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF WINFIELD ABOUT REMOVAL OF THE HISTORIC SIGNING OUTSIDE OF THE FAIRGROUND ENTRANCES. THE CITY WILL REMOVE THE SIGNS BEFORE CONSTRUCTION AT THE ENTRANCES BEGINS AND WILL REINSTALL AFTER THE PROJECT IS COMPLETE.

THE CONTRACTOR SHALL CONTACT THE TENANTS FARMING THE LAND ADJACENT TO PHILLIPS SHEPPARD ROAD PRIOR TO BEGINNING CONSTRUCTION AND SHALL COMMUNICATE THE EXPECTED TIMELINE SO THAT THEY MAY PLAN THEIR HARVEST ACCORDING TO THE SIDEROAD CLOSURE (WORK WITH DISTRICT/AREA STAFF FOR CONTACT INFORMATION). ANY MAJOR DELAYS OR SCHEDULE CHANGES SHOULD BE EFFECTIVELY COMMUNICATED.

BNSF TO COMPLETE RAILROAD CROSSING IMPROVEMENT PROJECT WHILE US-160 IS CLOSED. WORK TO LAST APPROXIMATELY 1 WEEK WITHIN THE 6 WEEK CLOSURE. CONTRACTOR TO WORK WITH THE BNSF-SELECTED CONTRACTOR TO COORDINATE WHEN WORK WILL OCCUR AND INTERUPTIONS TO THE RAILROAD CROSSING.

UTILITY OWNERS

ELECTRIC

E1 City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

E2 AT&T
154 N Broadway Room 210
Wichita, KS 67202
800-778-9140

E3 Evergy
818 Kansas Avenue
Topeka, KS 66612
785-379-4476

FIBER OPTIC

F1 AT&T
154 N Broadway Room 210
Wichita, KS 67202
800-778-9140

GAS

G1 City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

SANITARY

S1 City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

TELEPHONE

T1 AT&T
154 N Broadway Room 210
Wichita, KS 67202
800-778-9140

WATER

W1 City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

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File : KA647501rgn-01.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

GENERAL NOTES &
UTILITY OWNERS

KDOT Graphics Certified 09-23-2025

Sh. No. 9

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	10	230

℄ P.O.T Sta. 440+99.78
N 220,966.295 E18,639,856.965
1. Set ⅝" rebar
2. To top ℄ key fire hydrant 57.06' NE
3. Spike & washer in power pole 66.31' SE
4. Spike & washer in power pole 83.19' SW

℄ P.C. Sta. 446+00.00
N 220,976.233 E 18,640,357.086
1. = ℄ Sta. 446+00.00
2. Not Set

℄ P.I. Sta. 448+41.86 (Bk.) = +41.72 (Ahd.)
N 220,981.038 E 18,640,598.900
△ = 03°23'59" (RT)
1. 1.28' Rt. ℄ Sta. 448+41.86
2. Not Set

℄ P.R.C. Sta. 450+83.58
N 220,971.495 E 18,640,840.573
1. 17.24' Rt. ℄ Sta. 450+83.19
2. Not Set

℄ P.I. Sta. 453+52.73 (Bk.) = +52.53 (Ahd.)
N 220,960.875 E 18,641,109.513
△ = 03°46'59" (LT)
1. 35.00' Rt. ℄ Sta. 453+51.75
2. Not Set

℄ P.T. Sta. 456+21.68
N 220,968.023 E 18,641,378.567
1. 35.00' Rt. ℄ Sta. 456+20.90
2. Not Set

℄ P.C. Sta. 464+00.78
N 220,988.712 E 18,642,157.389
1. 35.00' Rt. ℄ Sta. 464+00.00
2. Not Set

CP #101
N 221,009.243 E 18,640,035.280
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W 160 Hwy 40.00' S
3. To SE corner metal Morton Bld. 29.80' NNW
4. To SW corner metal Morton Bld. 59.78' NW

CP #102
N 220,945.506 E 18,640,324.700
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W 160 Hwy 31.00' N
3. To ℄ N-S Grand St. 18.00' W
4. To N side 2" steel street sign 3.50' S

CP #103
N 220,956.182 E 18,640,862.360
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W 160 Hwy 33.00' N
3. In line with ℄ gravel entr. to SSE
4. To RR spike in N face power pole 17.10' SSW

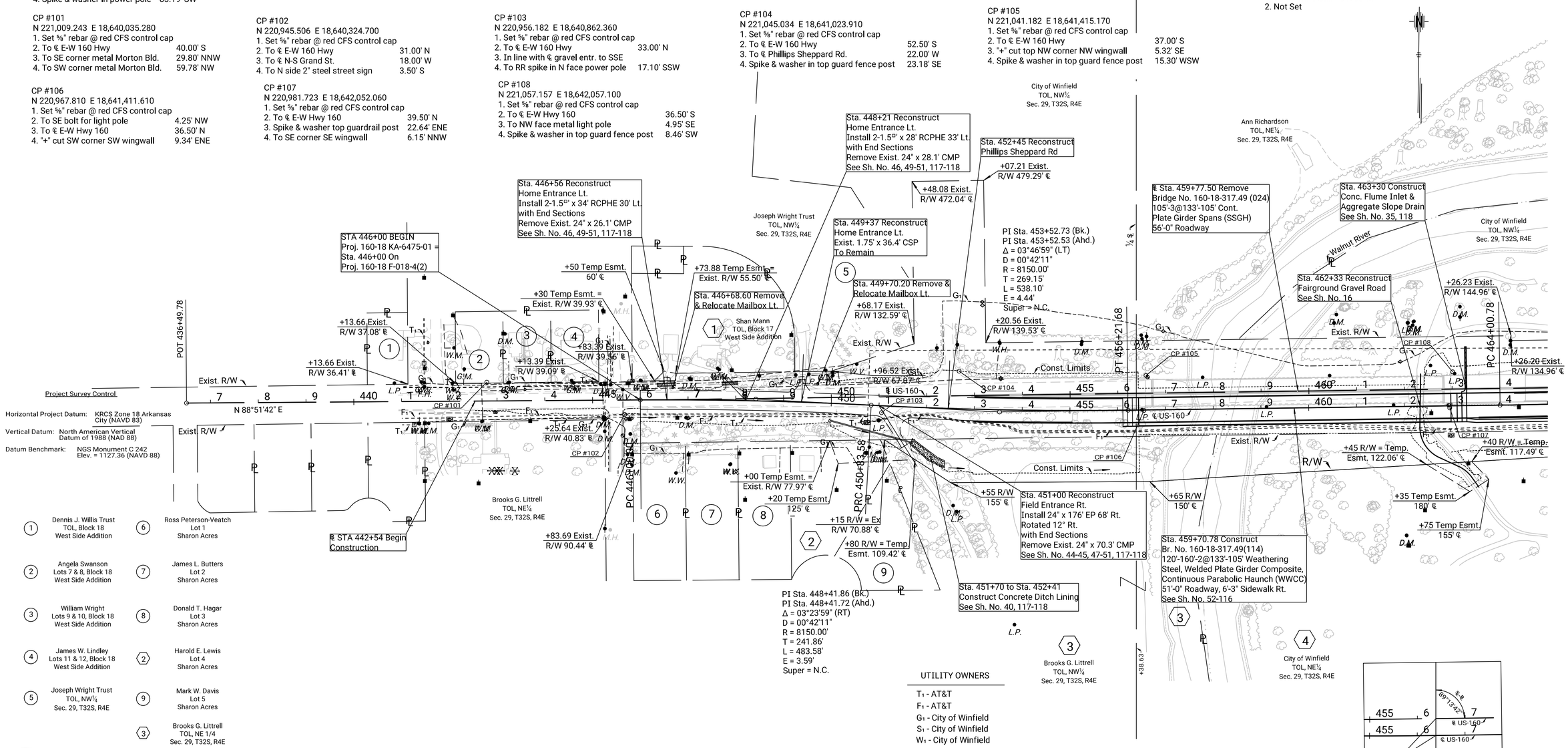
CP #104
N 221,045.034 E 18,641,023.910
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W 160 Hwy 52.50' S
3. To ℄ Phillips Sheppard Rd. 22.00' W
4. Spike & washer in top guard fence post 23.18' SE

CP #105
N 221,041.182 E 18,641,415.170
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W 160 Hwy 37.00' S
3. "+" cut top NW corner NW wingwall 5.32' SE
4. Spike & washer in top guard fence post 15.30' WSW

CP #106
N 220,967.810 E 18,641,411.610
1. Set ⅝" rebar @ red CFS control cap
2. To SE bolt for light pole 4.25' NW
3. To ℄ E-W Hwy 160 36.50' N
4. "+" cut SW corner SW wingwall 9.34' ENE

CP #107
N 220,981.723 E 18,642,052.060
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W Hwy 160 39.50' N
3. Spike & washer top guardrail post 22.64' ENE
4. To SE corner SE wingwall 6.15' NNW

CP #108
N 221,057.157 E 18,642,057.100
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W Hwy 160 36.50' S
3. To NW face metal light pole 4.95' SE
4. Spike & washer in top guard fence post 8.46' SW



1. Dennis J. Willis Trust, TOL, Block 18, West Side Addition
2. Angela Swanson, Lots 7 & 8, Block 18, West Side Addition
3. William Wright, Lots 9 & 10, Block 18, West Side Addition
4. James W. Lindley, Lots 11 & 12, Block 18, West Side Addition
5. Joseph Wright Trust, TOL, NW¼, Sec. 29, T32S, R4E
6. Ross Peterson-Veatch, Lot 1, Sharon Acres
7. James L. Butters, Lot 2, Sharon Acres
8. Donald T. Hagar, Lot 3, Sharon Acres
2. Harold E. Lewis, Lot 4, Sharon Acres
9. Mark W. Davis, Lot 5, Sharon Acres
3. Brooks G. Littrell, TOL, NE 1/4, Sec. 29, T32S, R4E

UTILITY OWNERS

T₁ - AT&T
F₁ - AT&T
G₁ - City of Winfield
S₁ - City of Winfield
W₁ - City of Winfield

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

W ¼ Cor. Sec. 29, T32S, R4E
N 220,240.51 E 18,638,805.44
1. Found 1/2" pipe 1.0 feet deep
2. To 1-¾" iron at center of section 29-32-4 2604.07' E
3. To ¾" rebar 8.53' E
4. MAG nail & shiner in power pole 22.88' NW

N ¼ Cor. Sec. 29, T32S, R4E
N 222,775.296 E 18,641,372.158
1. Found Railroad Rail standing on end 1.3 feet deep
2. To ℄ of S rail of S RR tracks 245.60' NNE
3. Spike & washer in 20" Hackberry tree 190.43' NNE
4. Spike & washer in 40" Elm tree 177.00' NE

Center Cor. Sec. 29, T32S, R4E
N 220,123.355 E 18,641,406.878
1. Found 1-3/4" iron 1.0 feet deep
2. To "+" cut on SW corner of SW conc. wingwall bridge 847.84' NNE
3. To top ℄ of fire hydrant key 282.83' NW
4. MAG nail in W face of power pole 173.10' N

B.M. #10 "x" cut SSE hex bolt fire hydrant Bonnet
30.51' Lt. of ℄ Sta. 441+47.83 Elev. = 1174.82

B.M. #11 "O" cut top of E. curb Grand St.
74.34' Rt. of ℄ Sta. 445+62.64 Elev. = 1166.11

B.M. #12 Railroad spike in N face light pole
49.16' Rt. of ℄ Sta. 450+98.55 Elev. = 1148.62

B.M. #13 "+" cut top NW corner conc. hubguard bridge
33.56' Lt. of ℄ Sta. 456+62.80 Elev. = 1141.61

B.M. #14 "O" cut top SE corner conc. hubguard bridge
33.68' Rt. of ℄ Sta. 462+92.33 Elev. = 1136.75

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

STA. 446+00 TO STA. 465+00

Sh. No. 10

DATE	9/2022	11/2022
BY	J. AUSTIN	B. ANDREWS
REFERENCES NOTED		
REFERENCES CHECKED		

Plotted by : Jackie.Austin@ks.gov 6-OCT-2025 20:43
File : KA-6475-01 sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	11	230

Phase 1 Balance 1 Earthwork (℄ Sta. 442+54 to ℄ Sta. 451+75)

♦	173	Cu. Yds. Common Excavation (VMF = 0.81)
	17	Cu. Yds. Rock Excavation (VMF = 1.00)
	29	Cu. Yds. Embankment

♦ Includes 137 Cu. Yds. to be used in Phase 2A

Phase 2A Balance 1 Earthwork (℄ Sta. 446+00 to ℄ Sta. 456+43.78)

	774	Cu. Yds. Common Excavation (VMF = 0.81)
	23,230	Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.81)
≠	111	Cu. Yds. Rock Excavation
♦	19,554	Cu. Yds. Embankment

≠ Includes 30 Cu. Yds. Existing Pavement (VMF = 1.00)
81 Cu. Yds. Doyle Shale (VMF = 1.10)

♦ Includes 137 Cu. Yds. from Phase 1

Phase 2B Balance 1 Earthwork (℄ Sta. 446+00 to ℄ Sta. 451+75)

	133	Cu. Yds. Common Excavation (VMF = 0.81)
	112	Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.81)
	148	Cu. Yds. Rock Excavation (VMF = 1.00)
	199	Cu. Yds. Embankment

Phase 3A Balance 1Earthwork (℄ Sta. 456+10.78 to ℄ Sta. 456+43.78)

◫	42	Cu. Yds. Common Excavation (VMF = 0.81)
	76	Cu. Yds. Rock Excavation (VMF = 1.00)
	1	Cu. Yds. Embankment

◫ Includes 41 Cu. Yds. to be Wasted

Phase 3B Balance 1Earthwork (℄ Sta. 451+75 to ℄ Sta. 456+10.78)

≈	453	Cu. Yds. Common Excavation (VMF = 0.81)
	634	Cu. Yds. Rock Excavation (VMF = 1.00)
	33	Cu. Yds. Embankment

≈ Includes 412 Cu. Yds. to be Wasted

Phase 3C Balance 1 Earthwork (℄ Sta. 446+00 to ℄ Sta. 451+75)

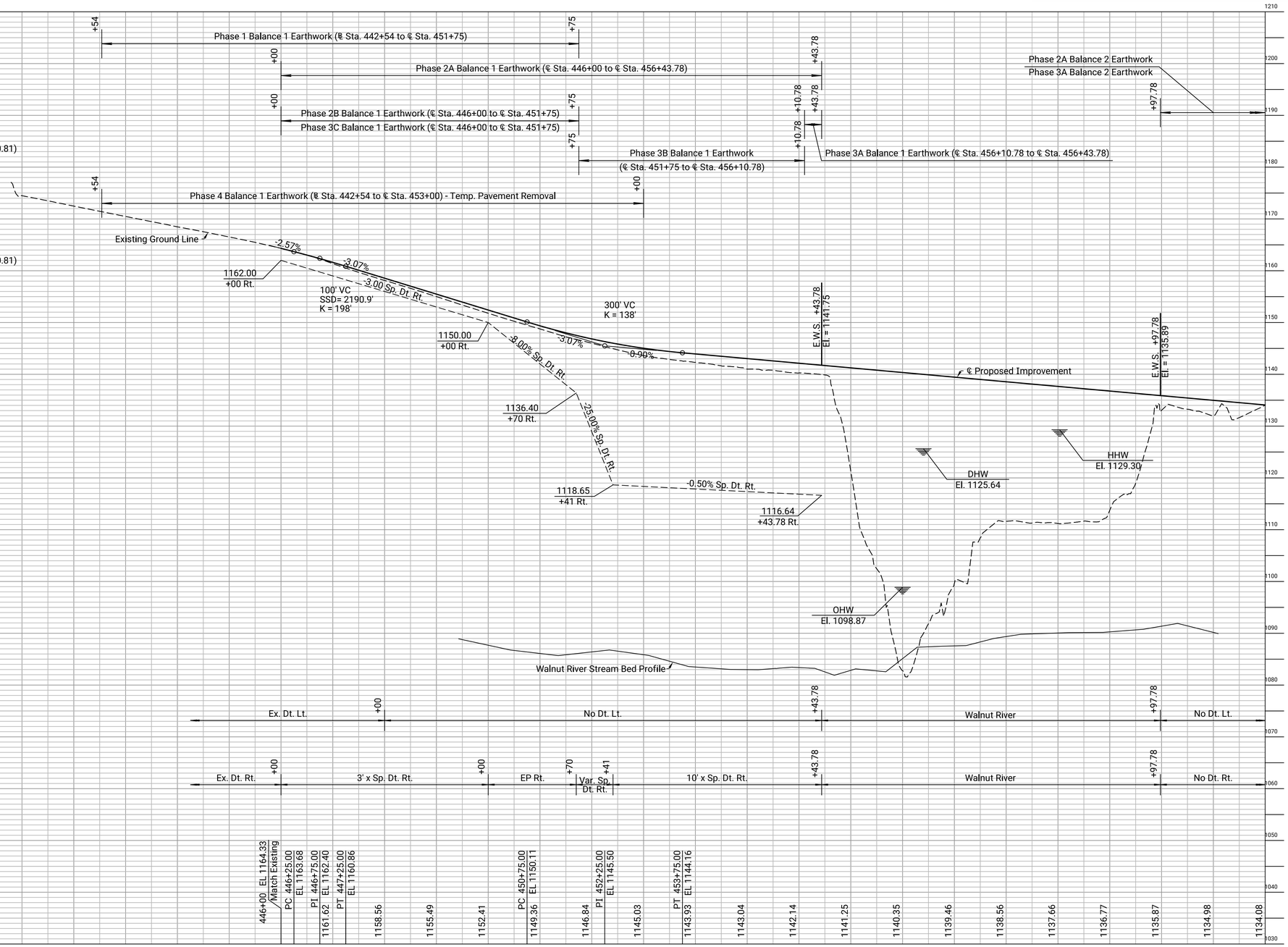
Ψ	431	Cu. Yds. Common Excavation (VMF = 0.81)
	444	Cu. Yds. Rock Excavation (VMF = 1.00)
	2	Cu. Yds. Embankment

Ψ Includes 280 Cu. Yds. to be used in Phase 4

Phase 4 Balance 1 Earthwork (℄ Sta. 442+54 to ℄ Sta. 453+00)

	227	Cu. Yds. Rock Excavation (VMF = 1.00)
Ψ	227	Cu. Yds. Embankment

Ψ Includes 280 Cu. Yds. from Phase 3C



DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:39
File : KA-6475-01 sheets.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 446+00 TO STA. 465+00

Sh. No. 11

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	12	230

℄ P.I. Sta. 466+67.97 (Bk.) = +67.77 (Ahd.)
N 220,995.807 E 18,642,424.482
△ = 03°49'19" (LT)
1. 35.00 Rt. ℄ Sta. 466+67.19
2. Not Set

℄ P.R.C. Sta. 469+34.96
N 221,020.381 E 18,642,690.537
1. 17.50' Rt. ℄ Sta. 469+33.90
2. Not Set

℄ P.I. Sta. 472+02.15 (Bk.) = +01.96 (Ahd.)
N 221,044.955 E 18,642,956.593
△ = 03°45'19" (RT)
1. = ℄ Sta. 472+00.47
2. Not Set

℄ P.T. Sta. 474+69.15
N 221,052.050 E 18,643,223.686
1. = ℄ Sta. 474+67.60
2. Not Set

℄ P.I. Sta. 478+67.79
∡ Rt 00°01'00" (No Curve)
N 221,062.636 E 18,643,622.192
1. Set ⅝" rebar
2. + Cut top of curb @ E end median island 62.72' W
3. Spike & washer in power pole 69.96' NE
4. Top ℄ 6" steel gate post for levee 104.83' N

℄ P.O.T. Sta. 479+65.00
N 221,065.189 E 18,643,719.364
1. = ℄ Sta. 479+63.46
2. Not Set

℄ P.O.T. Sta. 482+50.00
N 221,072.715 E 18,644,005.810
1. Set ⅝" rebar
2. + Cut ℄ N edge curb inlet 32.90' NNW
3. + Cut ℄ S edge curb inlet 41.63' SW
4. Top ℄ N end W RR spur rail 47.05' SSE

CP #109
N 220,992.122 E 18,642,594.490
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ Hwy 160 43.50' N
3. To ℄ W entr. to Winfield Fairgrounds 45.00' E
4. To NE corner Winfield Fairgrounds sign 24.82' SE

HCP #110
N 221,090.257 E 18,643,004.690
1. Set ⅝" rebar @ red CFS control cap
2. Spike in top W guardrail post 43.72' N
3. Spike & washer in top S guardrail post 57.35' E
4. To N back of curb Hwy 160 8.45' S

HCP #111
N 221,040.771 E 18,643,905.580
1. Set ⅝" rebar @ red CFS control cap
2. To S back curb Hwy 160 2.98' N
3. To ℄ Bell Systems manhole 12.80' N
4. To NE corner RR signal shack 26.81' SW

℄ (Walnut River)

PI Sta. 466+67.97 (Bk.)
PI Sta. 446+67.77 (Ahd.)
Δ = 03°45'19" (LT)
D = 00°42'11"
R = 8150.00'
T = 267.19'
L = 534.18'
E = 4.38'
Super = N.C.

City of Winfield
TOL, NE¼
Sec. 29, T32S, R4E

Sta. 472+90 Eradicate
Entrance Lt.
Remove Existing Guardrail

Sta. 478+69
DO NOT DISTURB
Levee Lt.

+60 Temp Esmt.
110' ℄

+60 Temp Esmt. =
Exist. R/W 99.99' ℄

+15 Temp Esmt.
110' ℄

+15 Temp Esmt. =
Exist. R/W 99.99' ℄

+74.34 Exist.
R/W 100' ℄
= RR R/W

POT 488+67.79

Const. Limits

℄ US-160

N 88°28'42" E

PRC 469+34.96

PT 474+69.15

+53.65 Temp Esmt. =
Exist. R/W 100' ℄

+07.71 Temp Esmt. =
Exist. R/W 100' ℄

+03.94 R/W = Ex
R/W 105' ℄

+19.22 Exist.
R/W 276.10' ℄

+30.14 Exist.
R/W 296.62' ℄

+15.82 Exist.
R/W 281.83' ℄

+33.98 Exist.
R/W 298.92' ℄

Exist. R/W

Sta. 477+26.50
DO NOT DISTURB
Levee Rt.

+15 Temp Esmt. =
Exist. R/W 90.02' ℄

+15 Temp Esmt.
105' ℄

+70 Temp Esmt. =
Exist. R/W 90.02' ℄

+70 Temp Esmt.
105' ℄

+56.70 Exist.
R/W 90' ℄
= RR R/W

℄ BNSF R.R.

Exist. RR R/W

STA 479+65 END
Proj. 160-18 KA-6475-01 =
Sta. 479+63.46 On
Proj. 160-18 F-018-4(2)

Sta. 475+50 Do Not Disturb Manhole
Adjust Sidewalk as Necessary

Sta. 468+81 Reconstruct
West Fairground Entrance Rt.
See Sh. No. 14

Sta. 472+85 Reconstruct
East Fairground Entrance Rt.
See Sh. No. 15

1 +59.07 Exist.
R/W 74.19' ℄

2 +06.13 Exist.
R/W 85.80' ℄

3 +67.83 Exist.
R/W 89.38' ℄

PI Sta. 472+02.15 (Bk.)
PI Sta. 472+01.96 (Ahd.)
Δ = 03°45'19" (RT)
D = 00°42'11"
R = 8150.00'
T = 267.19'
L = 534.18'
E = 4.38'
Super = N.C.

UTILITY OWNERS

T_1 - AT&T
F_1 - AT&T
G_1 - City of Winfield
S_1 - City of Winfield
W_1 - City of Winfield

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

NE Cor. Sec. 29, T32S, R4E
N 222,658.982 E 18,644,012.697
1. Found 1-3/4" iron 1.0 feet deep
2. MAG nail in power pole 20'± N of RR tracks 147.53' S
3. MAG nail in power pole 98.97' SSW
4. To ℄ of small E-W drainage ditch 5.00' S

SE Cor. Sec. 29, T32S, R4E
N 217,418.416 E 18,644,052.371
1. Found 3/4" iron 1.2 feet deep
2. Spike in N side of 70" Elm tree 206.97' S
3. To ½" rebar on N side of 70" Pecan tree 208.66' SSE
4. Spike & washer in 70" Elm tree 226.52' SW

B.M. #15 "D" cut NW corner conc. base of 4-H sign
156.90' Rt. of ℄ 468+45.33 Elev. = 1126.15

B.M. #16 "D" cut NE corner conc. base for Grantham Memorial
59.48' Rt. of ℄ Sta. 472+53.88 Elev. = 1130.90

B.M. #17 "D" cut SE corner curb inlet
29.75' Rt. of ℄ Sta. 480+19.47 Elev. = 1129.46

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED
9/2022	J. AUSTIN		
11/2022	B. ANDREWS		

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 21:03
File : KA-6475-01 sheets.dgn

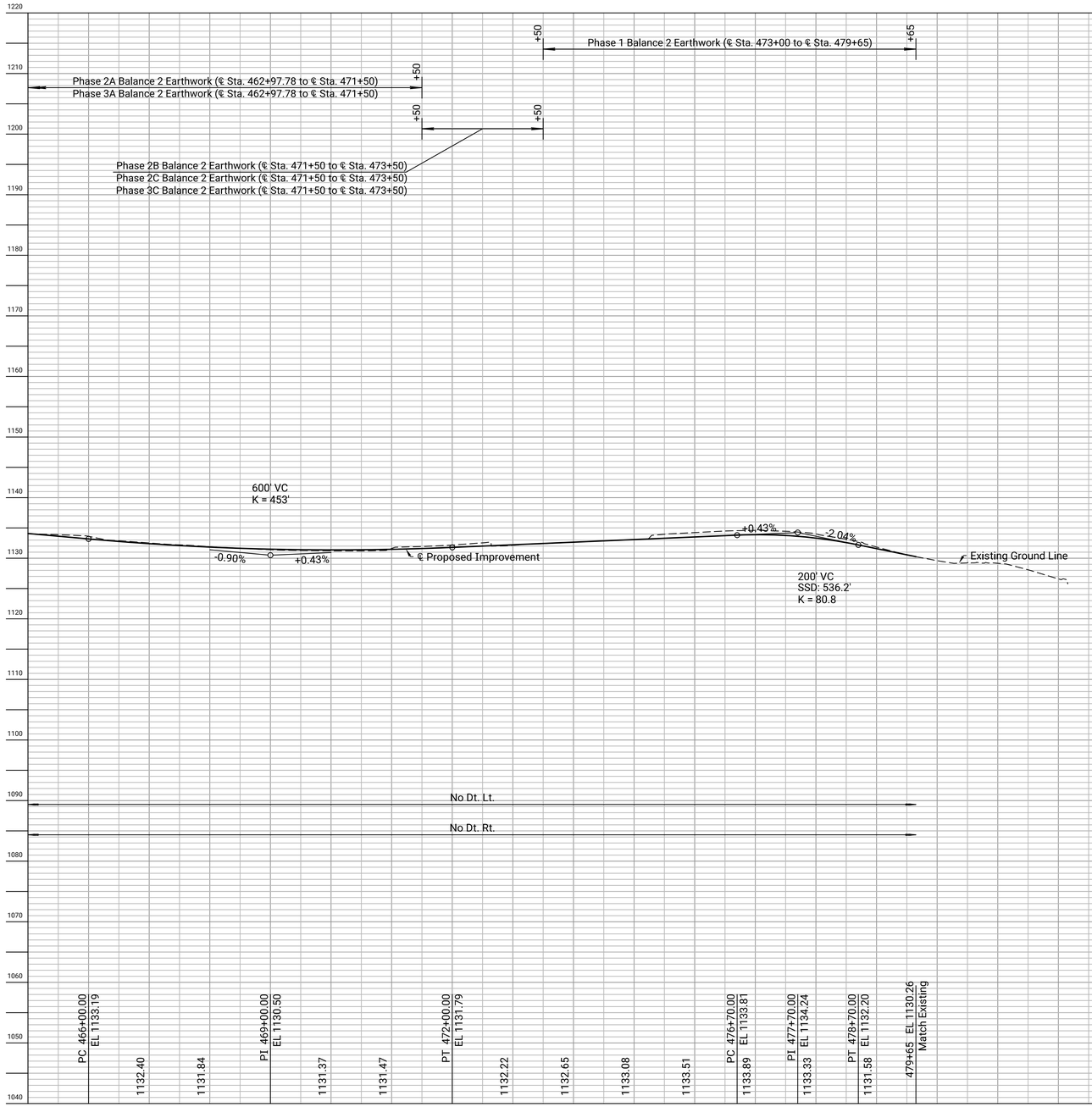
KANSAS DEPARTMENT OF TRANSPORTATION

PLAN

STA. 465+00 TO STA. 479+55

Sh. No. 12

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	13	230



Phase 1 Balance 2 Earthwork (℄ Sta. 473+50 to ℄ Sta. 479+65)

✳	1,511	Cu. Yds. Common Excavation (VMF = 0.81)
	1,235	Cu. Yds. Rock Excavation (VMF = 1.00)
	27	Cu. Yds. Embankment

✳ Includes 1,478 Cu. Yds. to be used in Phase 2A

Phase 2A Balance 2 Earthwork (℄ Sta. 462+97.78 to ℄ Sta. 471+50)

△	986	Cu. Yds. Common Excavation (VMF = 0.81)
	9,614	Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.81)
✡	435	Cu. Yds. Rock Excavation (VMF = 1.00)
✳ ⊙	9,783	Cu. Yds. Embankment

△ Includes 206 Cu. Yds. from West Fairground Entrance

✡ Includes 86 Cu. Yds. from West Fairground Entrance

✳ Includes 1,478 Cu. Yds. from Phase 1

⊙ Includes 4 Cu. Yds. for West Fairground Entrance

Phase 2B Balance 2 Earthwork (℄ Sta. 471+50 to ℄ Sta. 473+50)

≈	86	Cu. Yds. Common Excavation (VMF = 0.81)
	53	Cu. Yds. Rock Excavation (VMF = 1.00)

≈ Includes 86 Cu. Yds. to be Wasted

Phase 2C Balance 2 Earthwork (℄ Sta. 471+50 to ℄ Sta. 473+50)

≠	293	Cu. Yds. Common Excavation (VMF = 0.81)
†	24	Cu. Yds. Common Excavation (Contractor Furnished) (VMF = 0.81)
†	210	Cu. Yds. Rock Excavation (VMF = 1.00)
⊗	256	Cu. Yds. Embankment

≠ Includes 180 Cu. Yds. from East Fairground Entrance

† Includes 101 Cu. Yds. from East Fairground Entrance

⊗ Includes 1 Cu. Yd. for East Fairground Entrance

Phase 3A Balance 2 Earthwork (℄ Sta. 462+97.78 to ℄ Sta. 471+50)

◆	3,460	Cu. Yds. Common Excavation (VMF = 0.81)
	1,199	Cu. Yds. Rock Excavation (VMF = 1.00)
	4	Cu. Yds. Embankment

◆ Includes 3,454 Cu. Yds. to be Wasted

Phase 3C Balance 2 Earthwork (℄ Sta. 471+50 to ℄ Sta. 473+50)

⅄	270	Cu. Yds. Common Excavation (VMF = 0.81)
	180	Cu. Yds. Rock Excavation (VMF = 1.00)
	11	Cu. Yds. Embankment

⅄ Includes 257 Cu. Yds. to be Wasted

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 16:34
File : KA-6475-01 sheets.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE

STA. 465+00 TO STA. 479+55

Sh. No. 13

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	14	230

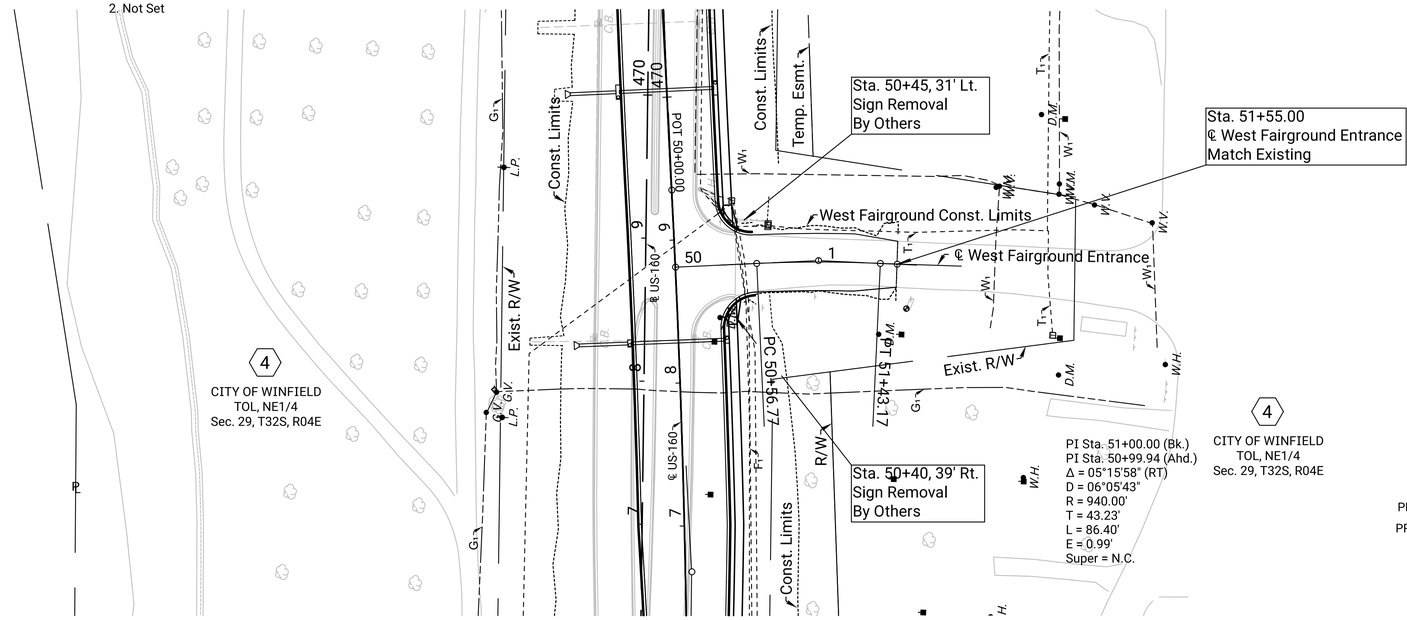
POT Sta. 50+00.00
N 221,015.596 E 18,642,636.786
1. = ℄ Sta. 468+81.00
2. Not Set

PC Sta. 50+56.77
N 220,959.031 E 18,642,641.633
1. 56.77' Rt. ℄ Sta. 468+81.00
2. Not Set

PI Sta. 51+00.00 (Bk.) = 50+99.94 (Ahd.)
N 220,915.961 E 18,642,645.324
Δ = 05°15'58" (RT)
1. 100.00' Rt. ℄ Sta. 468+81.00
2. Not Set

PT Sta. 51+43.17
N 220,872.734 E 18,642,645.046
1. 143.04' Rt. ℄ Sta. 468+77.10
2. Not Set

POT Sta. 51+55.00
N 220,860.901 E 18,642,645.122
1. 154.83' Rt. ℄ Sta. 468+76.04
2. Not Set



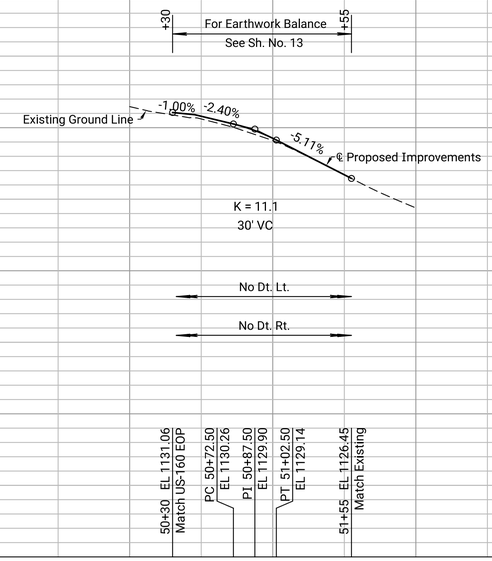
UTILITY OWNERS

F_1 - AT&T
G_1 - City of Winfield
T_1 - AT&T
W_1 - City of Winfield

SCALE

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

PROFILE: Horiz. same as above
Vert. 5' 0



REFERENCES NOTED	REFERENCES CHECKED
BY	J. AUSTIN / R. BOWMAN
DATE	11/2023 / 4/2024

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:40
File : KA-6475-01 sheets.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

WEST FAIRGROUND ENTRANCE

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	15	230

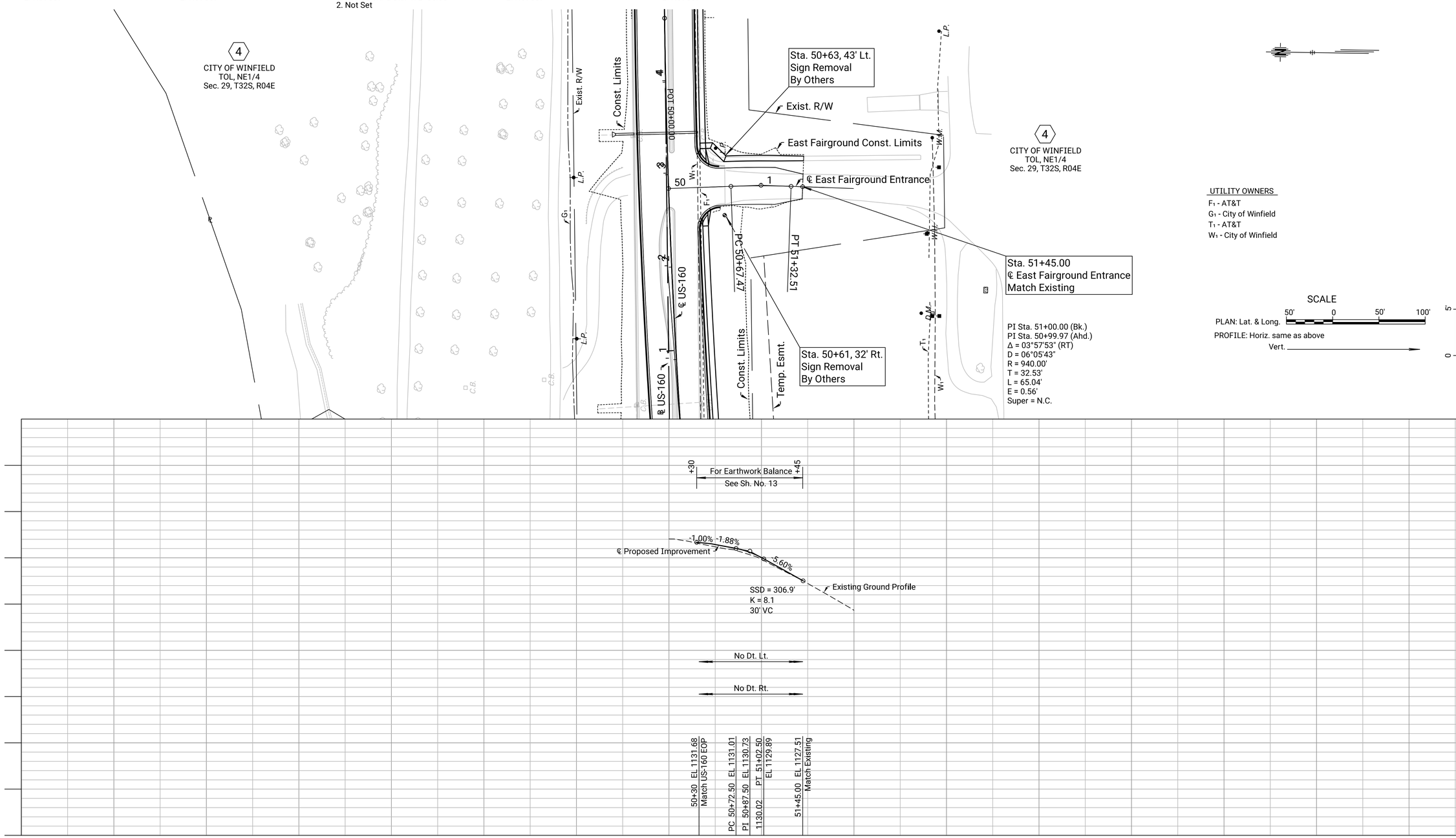
POT Sta. 50+00.00
N 221,045.081 E 18,643,039.674
1. = ℄ Sta. 472+85.00
2. Not Set

PC Sta. 50+67.47
N 220,977.697 E 18,643,042.988
1. 67.46' Rt. ℄ Sta. 472+85.00
2. Not Set

PI Sta. 51+00.00 (Bk.) = 50+99.97 (Ahd.)
N 220,945.201 E 18,643,044.587
Δ = 03°57'53" (RT)
1. 100.00' Rt. ℄ Sta. 472+85.00
2. Not Set

PT Sta. 51+32.51
N 220,912.673 E 18,643,043.935
1. 132.46' Rt. ℄ Sta. 472+82.71
2. Not Set

POT Sta. 51+45.00
N 220,900.186 E 18,643,043.685
1. 144.92' Rt. ℄ Sta. 472+81.83
2. Not Set



UTILITY OWNERS
F_1 - AT&T
G_1 - City of Winfield
T_1 - AT&T
W_1 - City of Winfield

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

	BY	DATE
REFERENCES NOTED	J. AUSTIN	11/2023
REFERENCES CHECKED	R. BOWMAN	4/2024

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:40
File : KA-6475-01 sheets.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

EAST FAIRGROUND ENTRANCE

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	16	230

POT Sta. 50+00.00
N 220,981.755 E 18,641,990.042
1. 2.94' Rt. ℄ Sta. 462+33.31
2. Not Set

PC Sta. 50+40.29
N 220,941.469 E 18,641,989.991
1. 42.78' Rt. ℄ Sta. 462+32.19
2. Not Set

PI Sta. 50+85.85 (Bk.) = 50+75.51 (Ahd.)
N 220,895.907 E 18,641,989.933
Δ = 66°07'11" (LT)
1. 88.33' Rt. ℄ Sta. 462+30.92
2. Not Set

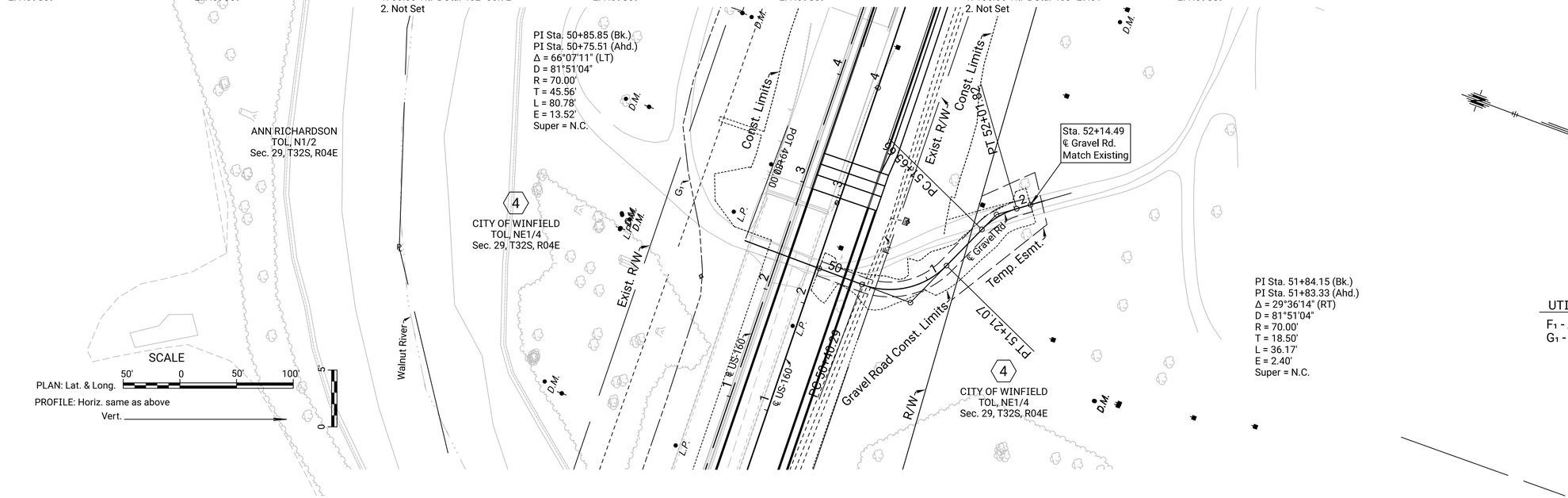
PT Sta. 51+21.07
N 220,877.409 E 18,642,031.571
1. 107.92' Rt. ℄ Sta. 462+72.05
2. Not Set

PC Sta. 51+65.66
N 220,859.306 E 18,642,072.321
1. 127.10' Rt. ℄ Sta. 463+12.31
2. Not Set

PI Sta. 51+84.15 (Bk.) = 51+83.33 (Ahd.)
N 220,851.796 E 18,642,089.225
Δ = 29°36'14" (RT)
1. 135.06' Rt. ℄ Sta. 463+29.01
2. Not Set

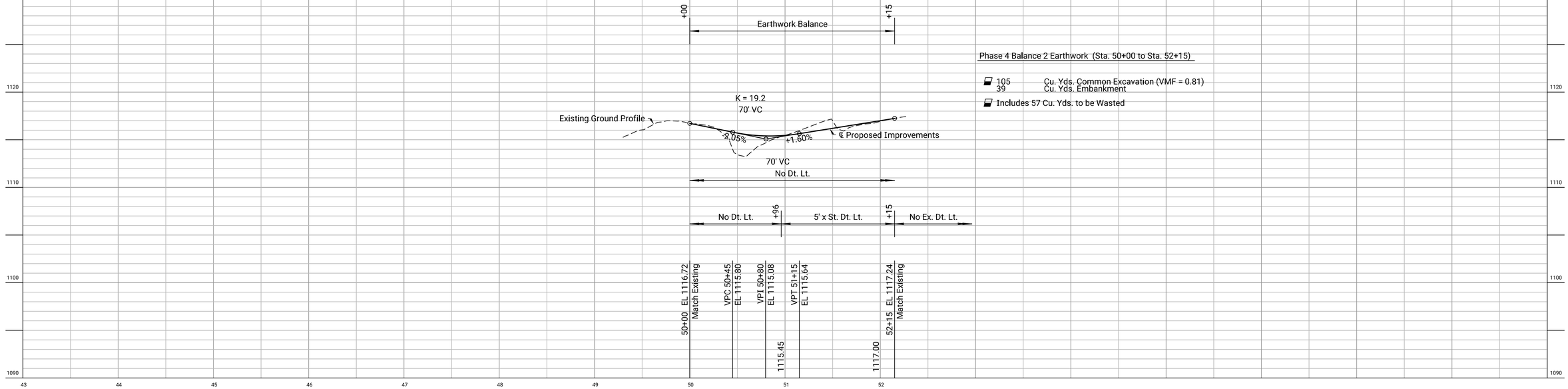
PT Sta. 52+01.82
N 220,836.916 E 18,642,100.213
1. 150.22' Rt. ℄ Sta. 463+39.59
2. Not Set

POT Sta. 52+14.49
N 220,826.728 E 18,642,107.737
1. 160.61' Rt. ℄ Sta. 463+46.84
2. Not Set



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

UTILITY OWNERS
F1 - AT&T
G1 - City of Winfield



KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
FAIRGROUND GRAVEL ROAD

Sh. No. 16

DATE	BY	
11/2023	J. AUSTIN	REFERENCES NOTED
4/2024	R. BOWMAN	REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:40
File : KA-6475-01 sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	17	230

POT Sta. 49+10.00
N 221,151.893 E 18,643,593.017
1. 90.00' Rt. ℄ Sta. 478+41.00
2. Not Set

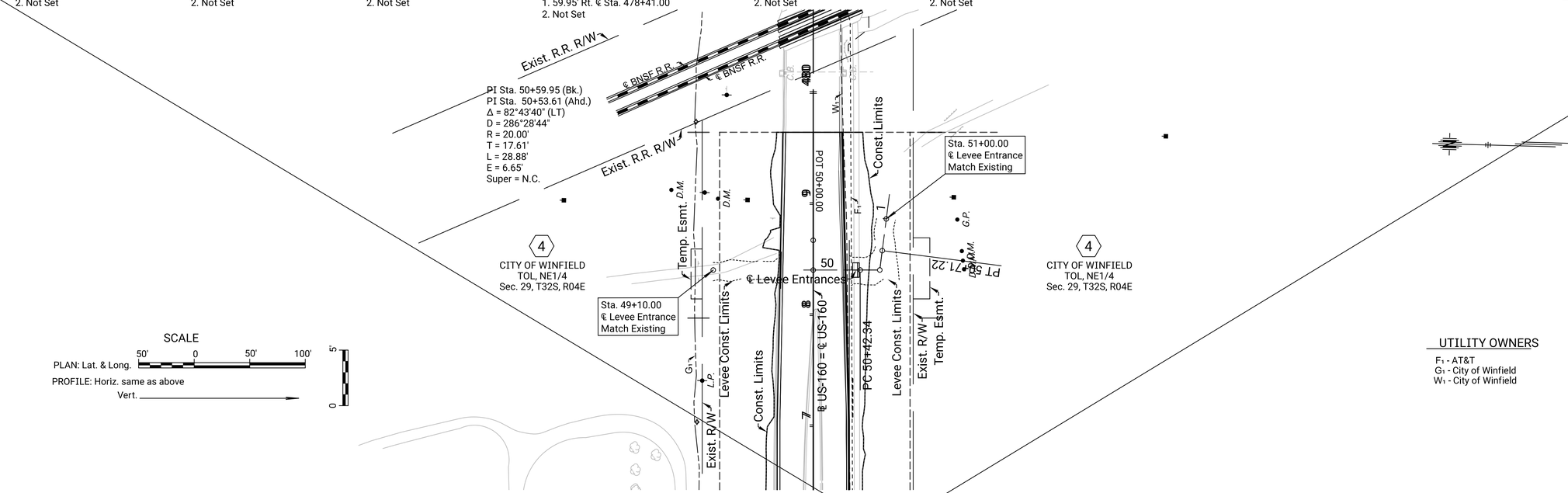
PT Sta. 50+00.00
N 221,061.925 E 18,643,595.407
1. = ℄ Sta. 478+41.00
2. Not Set

PC Sta. 50+42.34
N 221,019.598 E 18,643,596.531
1. 42.34' Rt. ℄ Sta. 478+41.00
2. Not Set

PI Sta. 50+59.95 (Bk.) = 50+53.61 (Ahd.)
N 221,001.994 E 18,643,596.999
Δ = 82°43'40" (LT)
1. 59.95' Rt. ℄ Sta. 478+41.00
2. Not Set

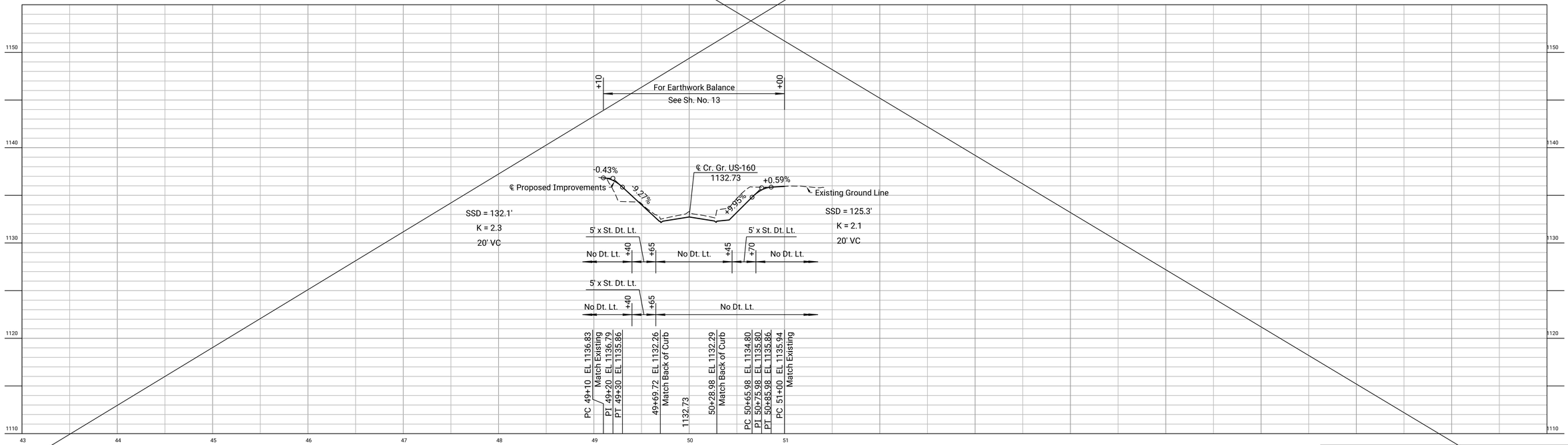
PT Sta. 50+71.22
N 221,000.230 E 18,643,614.520
1. 62.18' Rt. ℄ Sta. 478+58.47
2. Not Set

POT Sta. 51+00.00
N 220,997.346 E 18,643,643.157
1. 66.29' Rt. ℄ Sta. 478+87.04
2. Not Set



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

UTILITY OWNERS
F1 - AT&T
G1 - City of Winfield
W1 - City of Winfield



DATE	BY
11/2023	J. AUSTIN
4/2024	R. BOWMAN
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 16:34
File : KA-6475-01 sheets.dgn

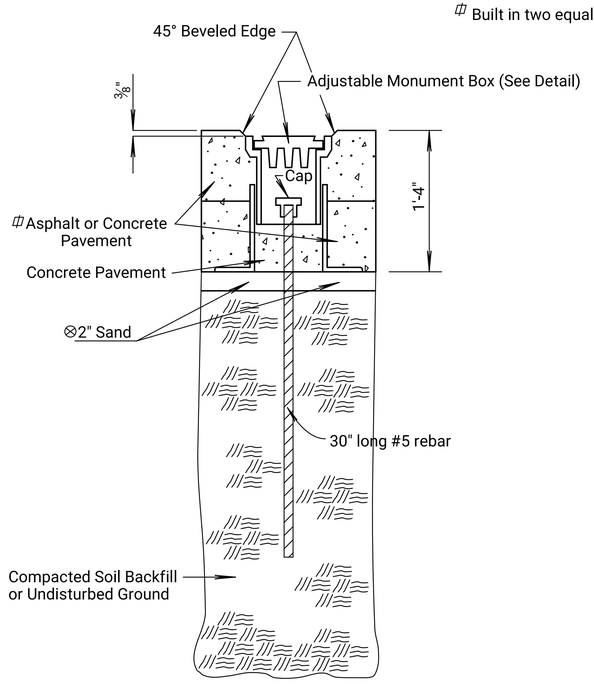
KANSAS DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE
LEVEE ENTRANCES

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	18	230

EXHIBIT

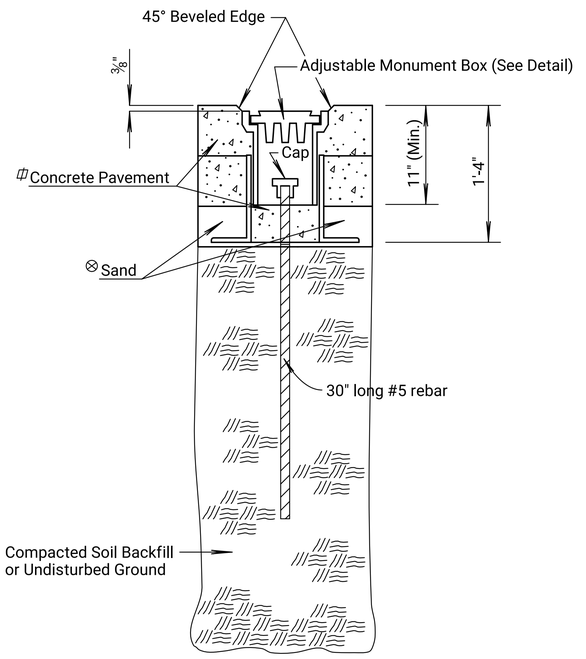
2" DIA. PRE-STAMPED ALUMINUM CAPS

KS DEPT OF TRANS / DISTRICT ONE	KS DEPT OF TRANS / DISTRICT TWO	KS DEPT OF TRANS / DISTRICT THREE
KDOT - DISTRICT 1	KDOT - DISTRICT 2	KDOT - DISTRICT 3
KS DEPT OF TRANS / DISTRICT FOUR	KS DEPT OF TRANS / DISTRICT FIVE	KS DEPT OF TRANS / DISTRICT SIX
KDOT - DISTRICT 4	KDOT - DISTRICT 5	KDOT - DISTRICT 6
K D O T	ABC SURVEY CO / CPS 999	JOHN DOE / PS 9999
KDOT STATE SURVEY CREW BUREAU OF RIGHT OF WAY	SURVEY COMPANY WITH A VALID CORPORATION LICENSE	INDEPENDENT SURVEYOR OR SOLE PROPRIETOR COMPANY



TYPE A-1

(Standard Land Corner Monument Box)



TYPE A-2

(Standard Land Corner Monument Box)

GENERAL NOTES

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

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

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

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

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

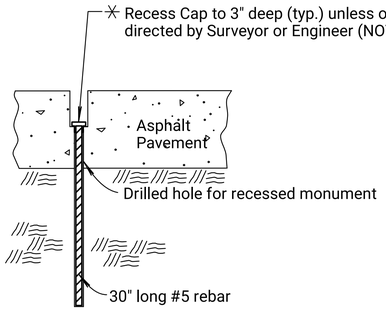
Use Type A-1 or Type A-2 monuments as directed by the Surveyor or the Engineer.

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

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

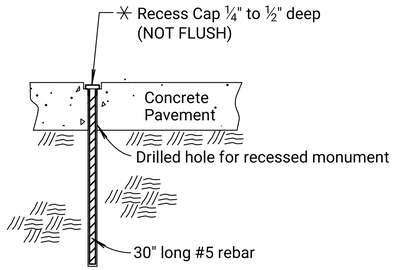
ADJUSTABLE MONUMENT BOX DETAIL

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



Type B

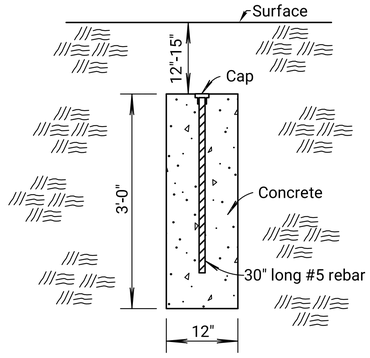
(Recessed Bar)



Type C

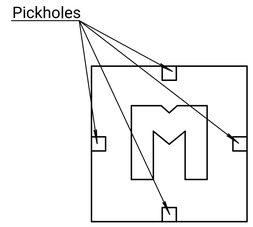
(Drilled Hole)

No Surface Monuments Allowed in Pavement



Type D

(Shoulder/Ditch Subsurface Monument)



MONUMENT BOX LID (PLAN VIEW)

Not to Scale

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

KANSAS DEPARTMENT OF TRANSPORTATION

SECTION CORNER MONUMENTATION DETAIL SHEET

RD990

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

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

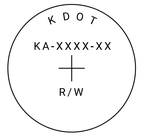
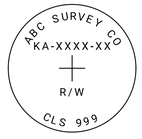
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:37
File : KA647501rss990-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	19	230

EXHIBIT

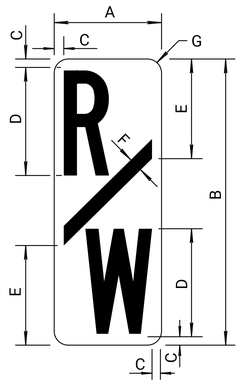
2" DIA. PRE-STAMPED ALUMINUM CAPS

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

NOTES:

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

KI-107

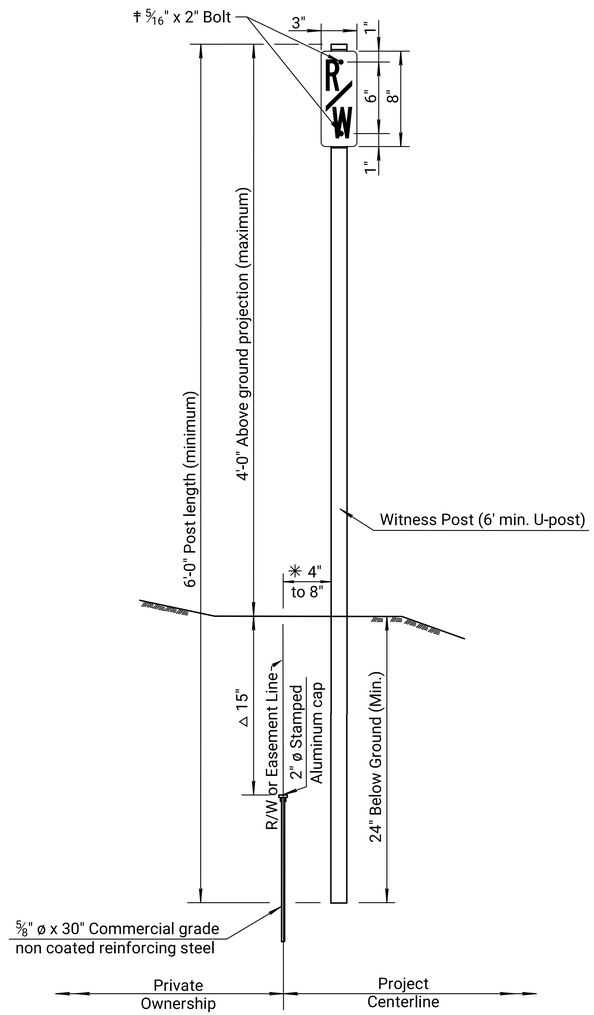


COLORS:

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

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

R/W SIGN DETAIL



PLAN VIEW

NOTES

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

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

△ Or as directed by the Engineer.

GENERAL NOTE

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

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

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

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

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

Mount R/W survey monument signs facing the road.

✡ Additional R/W Survey Monuments set by Contractor

Station	Offset (Lt./Rt.)	Northing	Easting

✡ Additional R/W Survey Monuments set by Contractor

Station	Offset (Lt./Rt.)	Northing	Easting

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

KANSAS DEPARTMENT OF TRANSPORTATION

R/W SURVEY MONUMENT INSTALLATION DETAIL SHEET

RD995

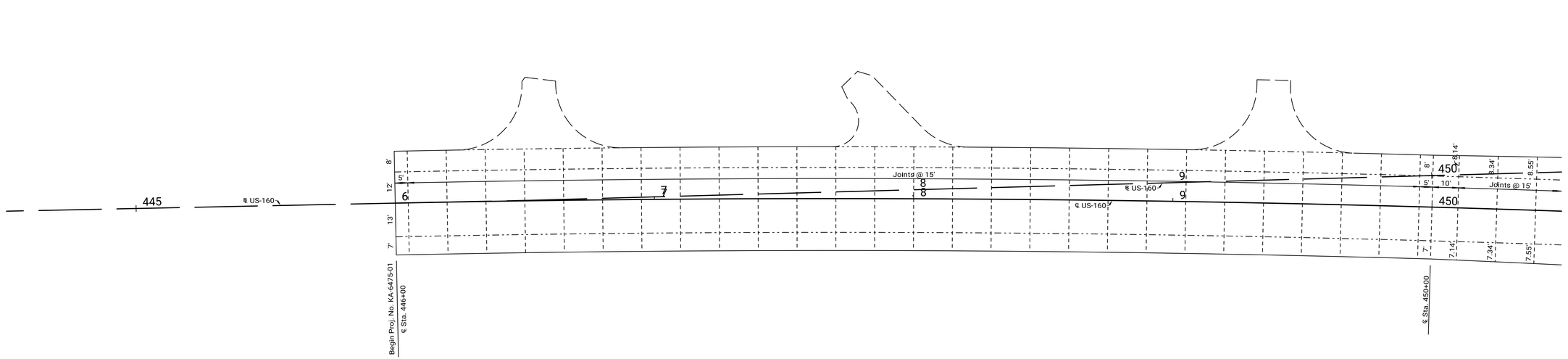
FHWA APPROVAL	03-16-16	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-27-2022 Sh. No. 19

KDOT Graphics Certified

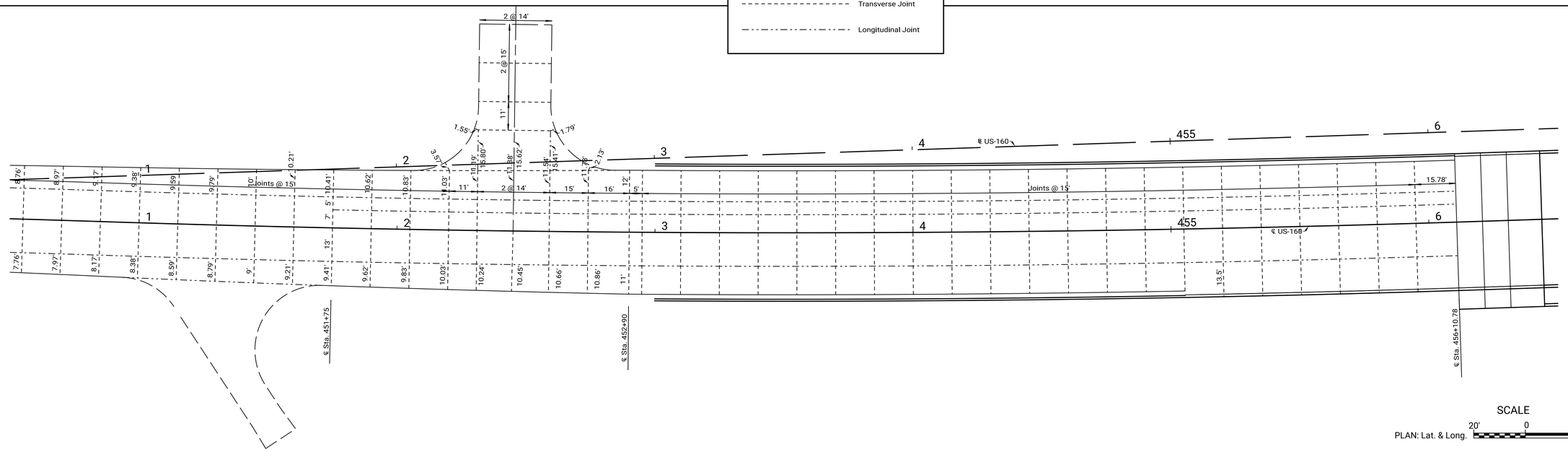
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 15:02
File : KA647501rss995-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	20	230



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

LEGEND
Transverse Joint
Longitudinal Joint



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

KANSAS DEPARTMENT OF TRANSPORTATION

JOINTING PLAN

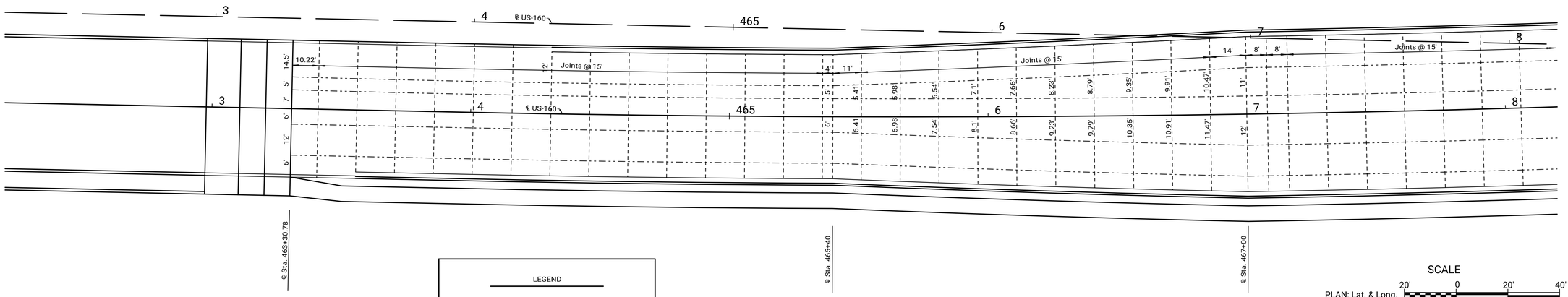
STA. 446+00 TO STA. 456+10.78

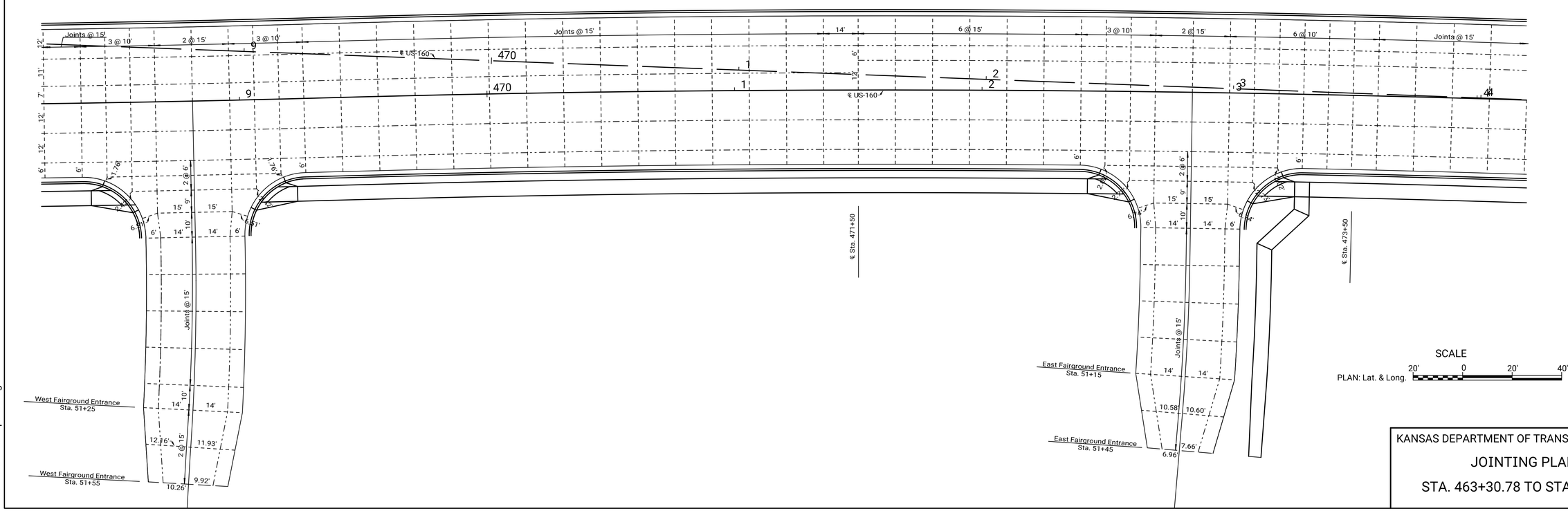
DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

#102

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:40
File : KA647501rpv-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	21	230





KANSAS DEPARTMENT OF TRANSPORTATION

JOINTING PLAN

STA. 463+30.78 TO STA. 474+20

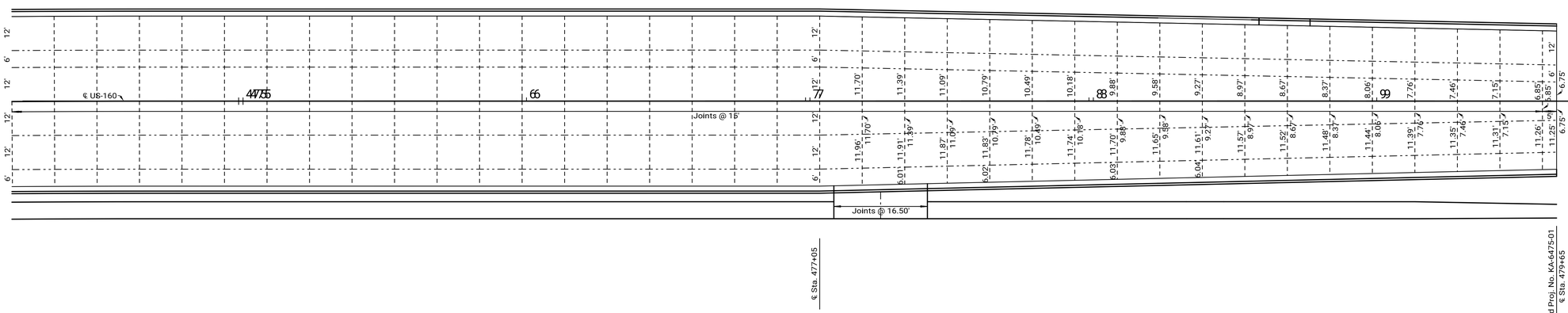
Sh. No. 21

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:44
File : KA647501rpv-02.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	22	230

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



SCALE

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

KANSAS DEPARTMENT OF TRANSPORTATION

JOINTING PLAN

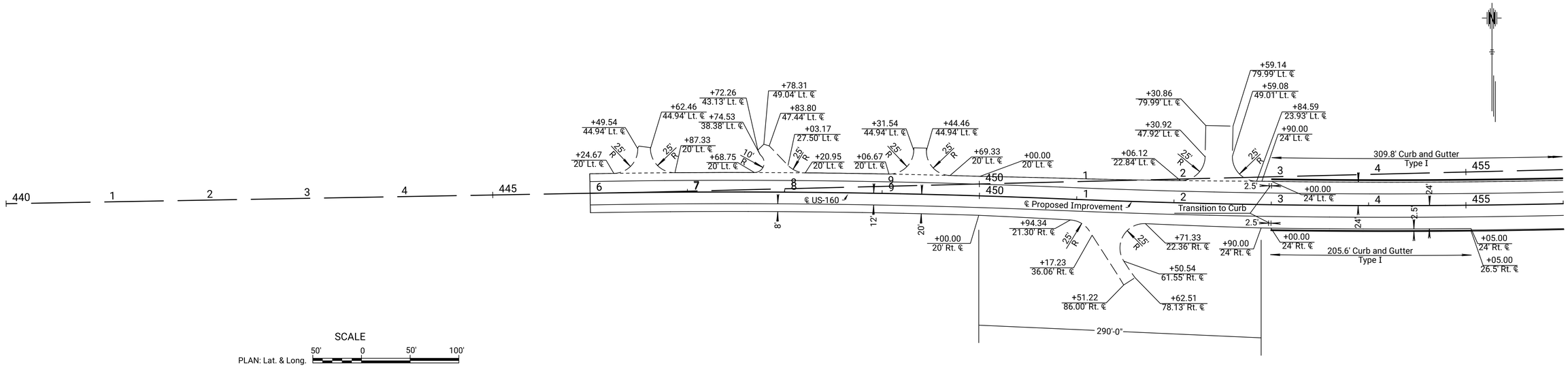
STA. 474+20 TO STA. 479+65

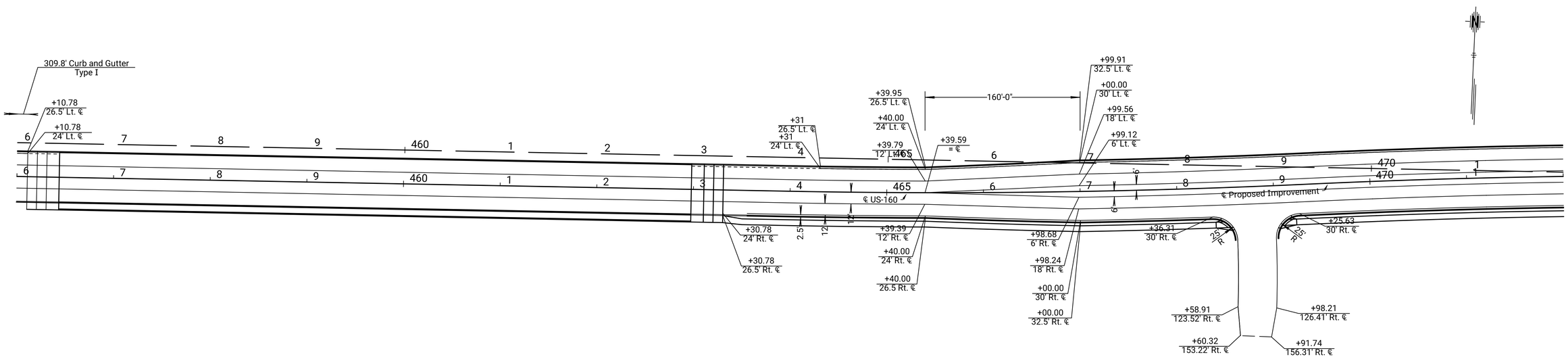
Sh. No. 22

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 18:33
File : KA647501rpv-03.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	23	230

DATE	BY	
9/25/24	Ulysses Najera Parra	REFERENCES NOTED
9/25/24	Ryan Bowman	REFERENCES CHECKED





For curb and gutter measurements east of the bridge, See. Sh. No. 25-26

KANSAS DEPARTMENT OF TRANSPORTATION

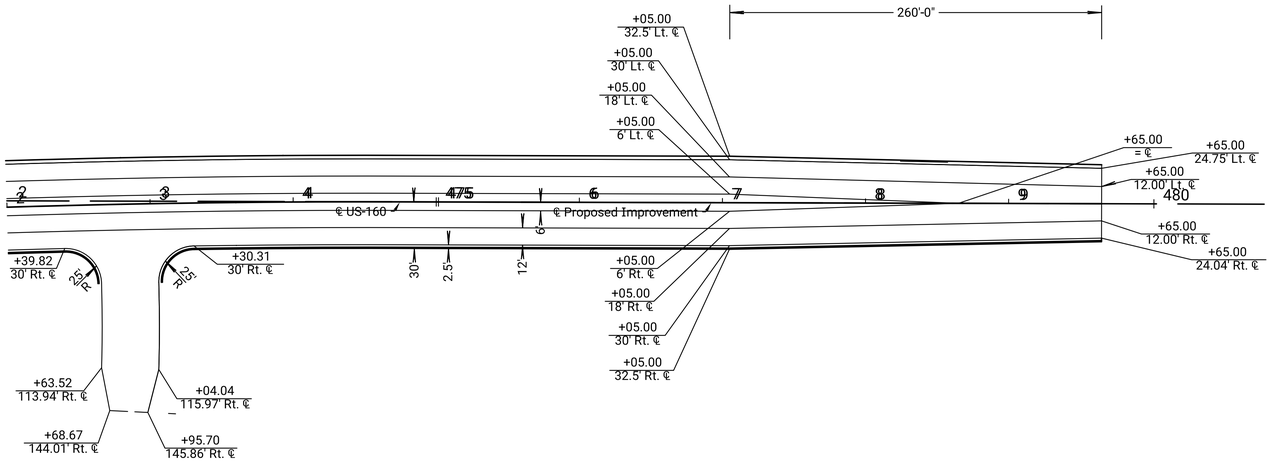
PAVEMENT DETAIL

STA. 446+00 TO STA. 472+00

Sh. No. 23

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:43
File : ka647501rpv-04.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	24	230





1 2 3 4 485 6 7

DATE	BY	
9/25/24	Ulysses Najera Parra	REFERENCES NOTED
9/25/24	Ryan Bowman	REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 18:52
File : ka6475501rpv-04.dgn

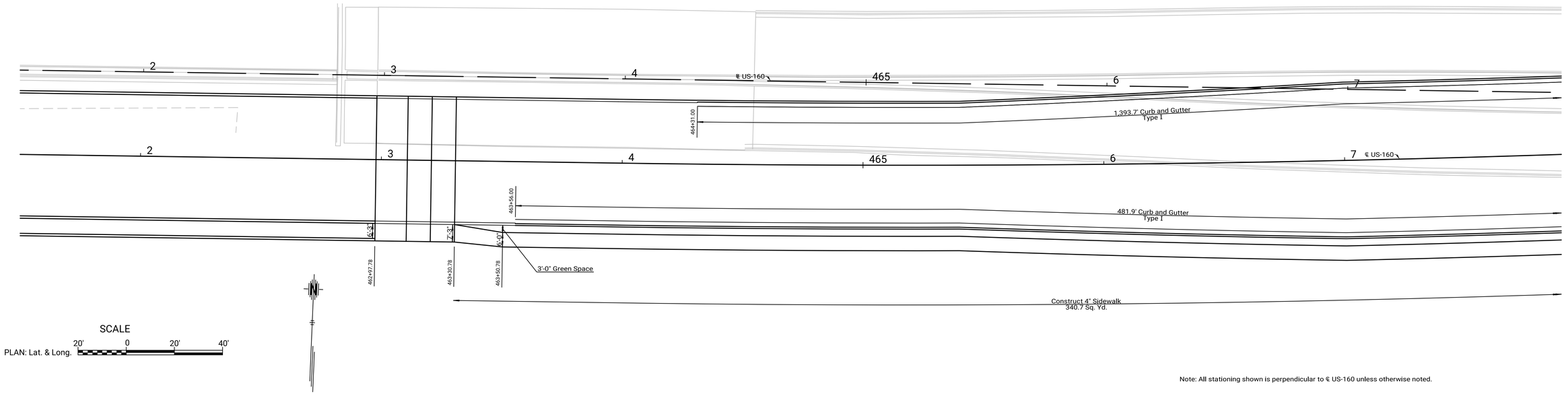
SCALE
PLAN: Lat. & Long. 50' 0 50' 100'

KANSAS DEPARTMENT OF TRANSPORTATION

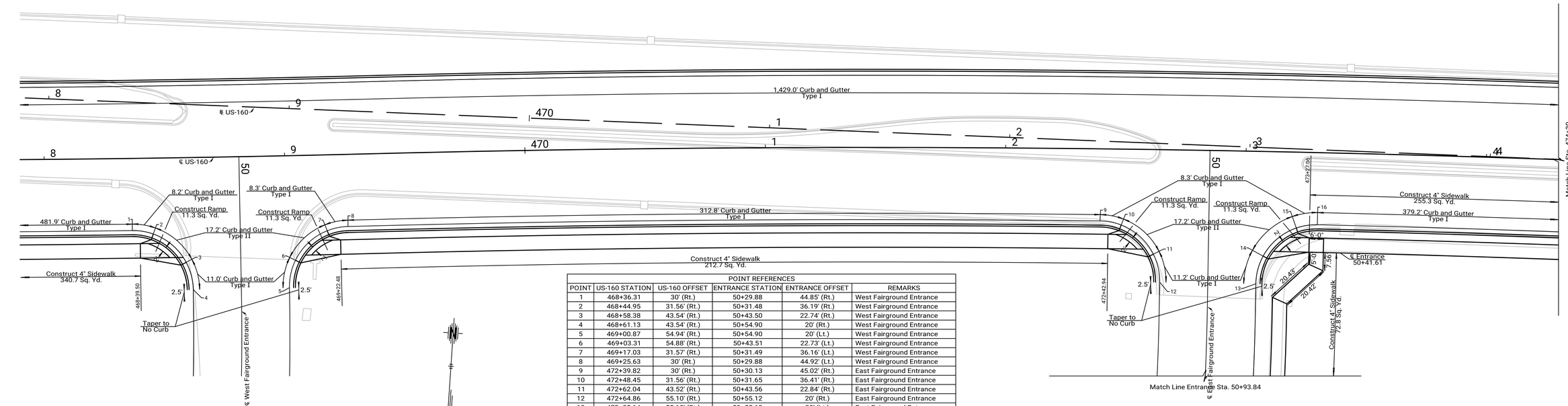
PAVEMENT DETAIL

STA. 472+00 TO STA. 480+00

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	25	230



Note: All stationing shown is perpendicular to ℄ US-160 unless otherwise noted.



POINT REFERENCES					
POINT	US-160 STATION	US-160 OFFSET	ENTRANCE STATION	ENTRANCE OFFSET	REMARKS
1	468+36.31	30' (Rt.)	50+29.88	44.85' (Rt.)	West Fairground Entrance
2	468+44.95	31.56' (Rt.)	50+31.48	36.19' (Rt.)	West Fairground Entrance
3	468+58.38	43.54' (Rt.)	50+43.50	22.74' (Rt.)	West Fairground Entrance
4	468+61.13	43.54' (Rt.)	50+54.90	20' (Rt.)	West Fairground Entrance
5	469+00.87	54.94' (Rt.)	50+54.90	20' (Lt.)	West Fairground Entrance
6	469+03.31	54.88' (Rt.)	50+43.51	22.73' (Lt.)	West Fairground Entrance
7	469+17.03	31.57' (Rt.)	50+31.49	36.16' (Lt.)	West Fairground Entrance
8	469+25.63	30' (Rt.)	50+29.88	44.92' (Lt.)	West Fairground Entrance
9	472+39.82	30' (Rt.)	50+30.13	45.02' (Rt.)	East Fairground Entrance
10	472+48.45	31.56' (Rt.)	50+31.65	36.41' (Rt.)	East Fairground Entrance
11	472+62.04	43.52' (Rt.)	50+43.56	22.84' (Rt.)	East Fairground Entrance
12	472+64.86	55.10' (Rt.)	50+55.12	20' (Rt.)	East Fairground Entrance
13	473+05.14	55.10' (Rt.)	50+55.13	20' (Lt.)	East Fairground Entrance
14	473+07.96	43.52' (Rt.)	50+43.56	22.84' (Lt.)	East Fairground Entrance
15	473+21.56	31.56' (Rt.)	50+31.65	36.41' (Lt.)	East Fairground Entrance
16	473+30.31	30' (Rt.)	50+30.13	45.14' (Lt.)	East Fairground Entrance

For curb and gutter measurements west of the bridge, See Sh. No. 23

KANSAS DEPARTMENT OF TRANSPORTATION

MISC. PAVING DETAILS

SIDEWALK + CURB TRANSITIONS

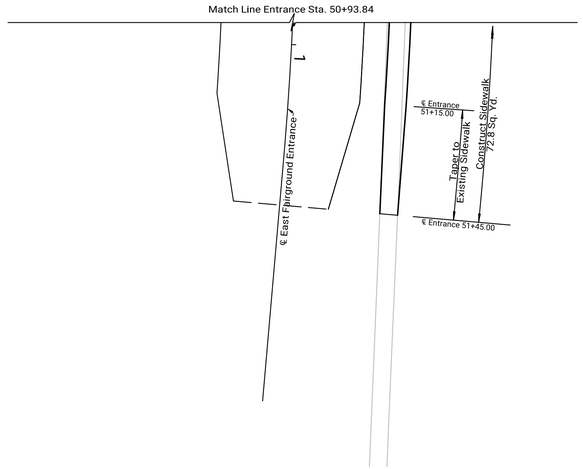
Sh. No. 25

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 16:36
File : KA647501rpv-05.dgn

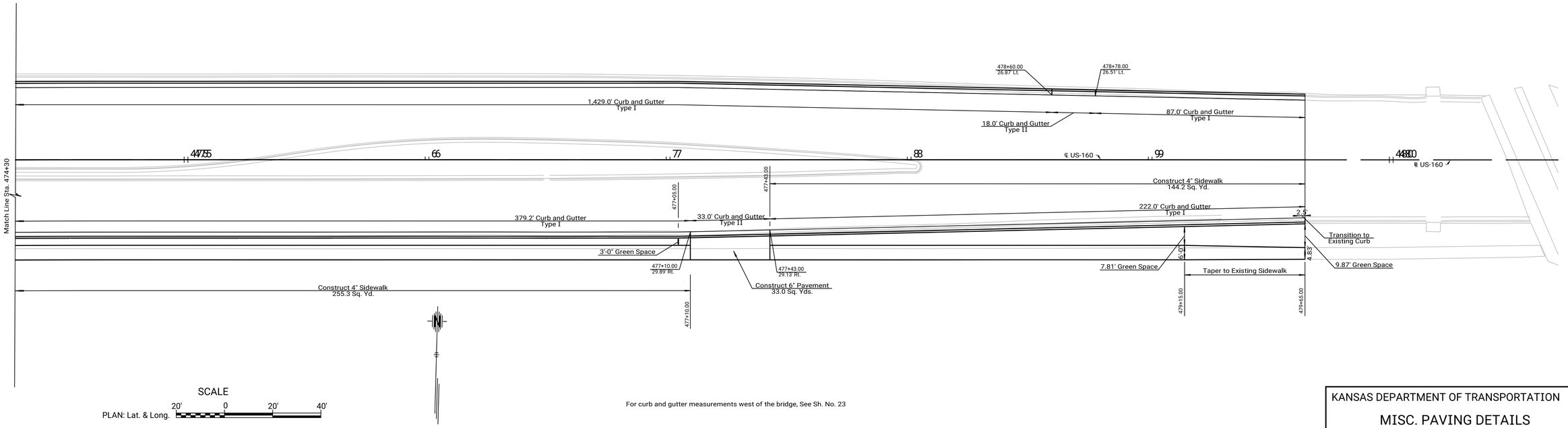
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	26	230

DATE	BY
REFERENCES NOTED	
REFERENCES CHECKED	



Note: All stationing shown is perpendicular to ℄ US-160 unless otherwise noted.

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



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

For curb and gutter measurements west of the bridge, See Sh. No. 23

KANSAS DEPARTMENT OF TRANSPORTATION

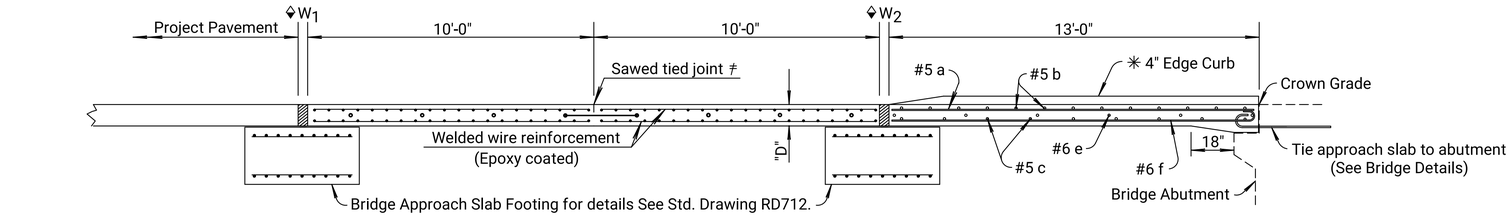
MISC. PAVING DETAILS

SIDEWALK + CURB TRANSITIONS

Sh. No. 26

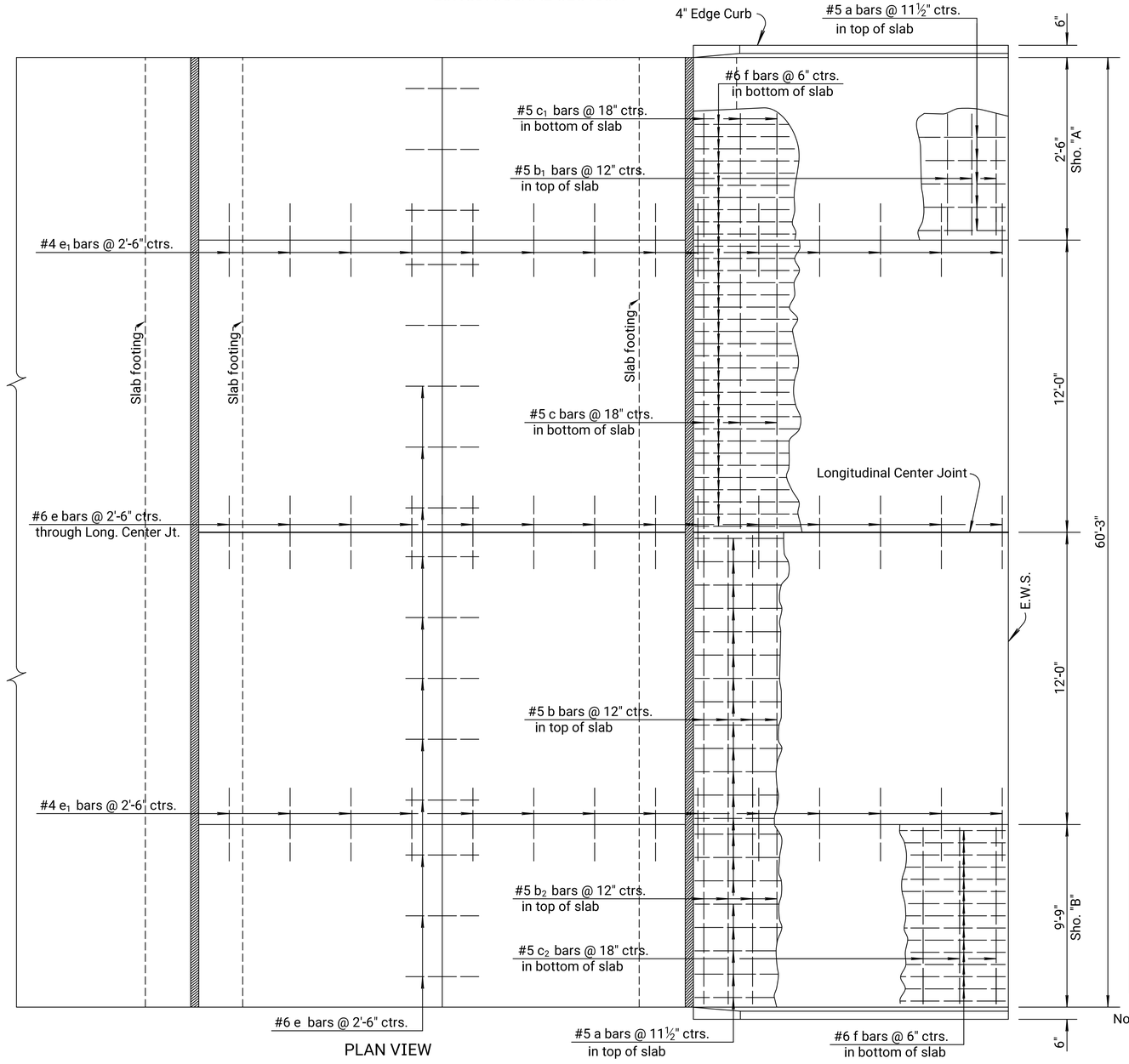
Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 18:56
File : KA647501rpv-05.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	27	230



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

LONGITUDINAL SECTION



PLAN VIEW

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

♦ W_1 and W_2 for Expansion/Pressure Relief Joint width and details See Standard Drawing RD712.

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

GENERAL NOTE

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

All work and materials required for installation of expansion joints and pressure relief joints shall be subsidiary to this bid item.

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

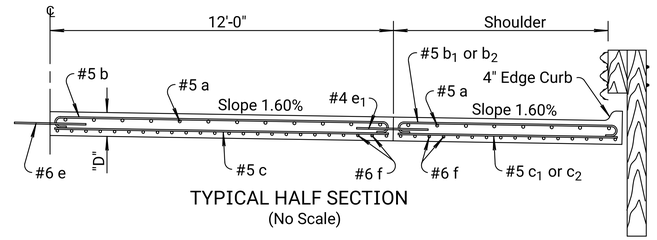
All reinforcing steel shall be epoxy coated.

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

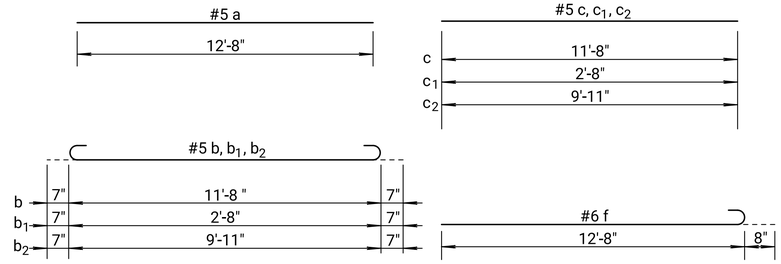
Clearance from the face of concrete for all reinforcing steel shall be 2 inches.

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

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



TYPICAL HALF SECTION
(No Scale)



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

BENDING DIAGRAMS

BILL OF MATERIALS

Bar Schedule

Bar	a	b	b_1	b_2	c	c_1	c_2	e	e_1	f	
No.	66	52	13	13	36	9	9	66	28	122	
Size	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	
Length	12'-8"	12'-10"	3'-10"	11'-1"	11'-8"	2'-8"	9'-11"	3'-0"	3'-0"	13'-4"	

Reinforcing Steel (Grade 60) (Epoxy Coated)	5,123 lbs.
Concrete Pavement (10 " Unif.)(AE)	222.36 Sq. Yds.
Expansion Jt. Membrane Sealant	60.25 Lin. Ft.
Pressure Relief Jt. Membrane Sealant	60.25 Lin. Ft.

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

NO.	DATE	REVISIONS	BY	APP'D
12	04-04-13	Rev. Exp./Pr. Relief Joint Dim.	S.W.K.	J.O.B.
11	09-09-09	Revised Reinforcing Steel listing	S.W.K.	J.O.B.
10	05-14-09	Revised pressure relief jt. material	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE APPROACH PAVEMENT NORMAL APPROACH

~~RD713~~

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

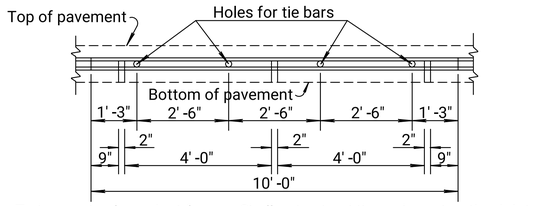
KDOT Graphics Certified

KDOT Graphics Certified 07-25-2025 Sh. No. 27

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

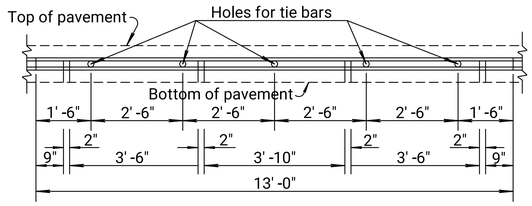
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:38
File : KA647501rss713-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	28	230



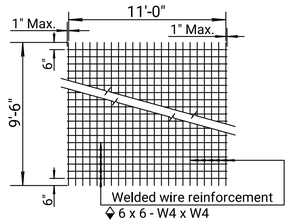
To be used only against forms. Shall not extend through contraction joints.

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



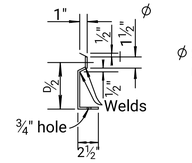
To be used only against forms. Shall not extend through contraction joints.

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



TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

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



SECTION OF RECESSED
FORM LEG

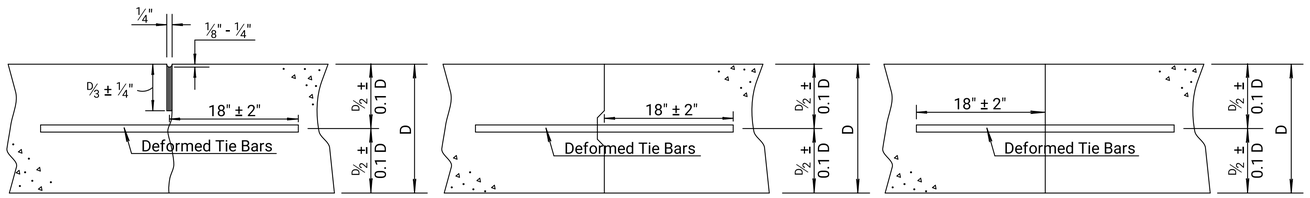
ϕ Snap-in leg or other approved designs may be used in lieu of welded leg.



DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

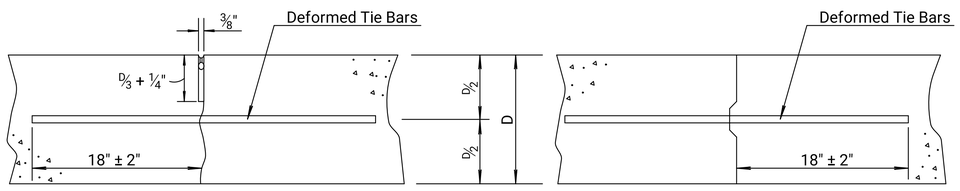
The lap shall extend beyond the first transverse or bag wire of each sheet.

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



LONGITUDINAL JOINTS

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



TRANSVERSE JOINTS

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

GENERAL NOTES

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

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

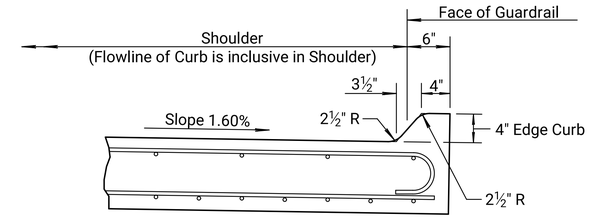
At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.

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

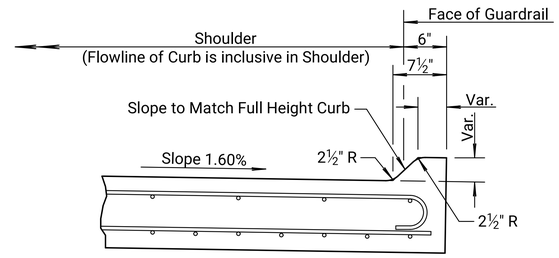
The 4 inch edge curb shall be constructed integral with the approach slab shoulder.

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

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

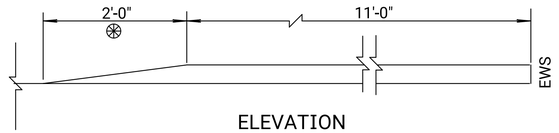


SECTION A-A

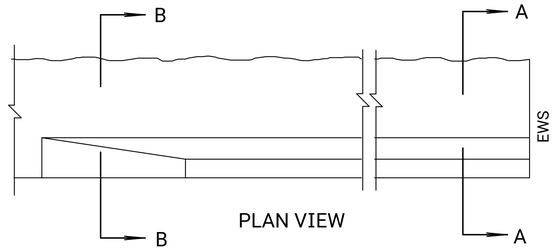


SECTION B-B

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



ELEVATION



PLAN VIEW

4" EDGE CURB DETAIL

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

KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS
FOR CONCRETE
BRIDGE APPROACH PAVEMENT

RD711

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

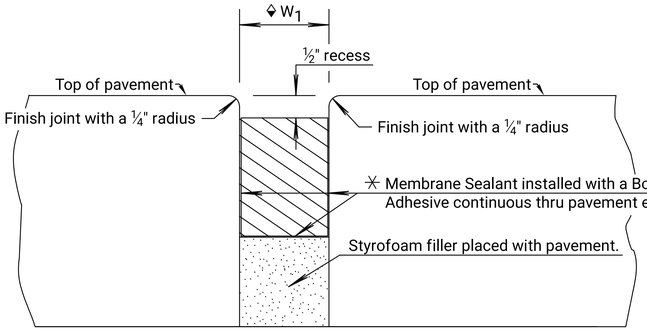
KDOT Graphics Certified 07-18-2022 Sh. No. 28

KDOT Graphics Certified

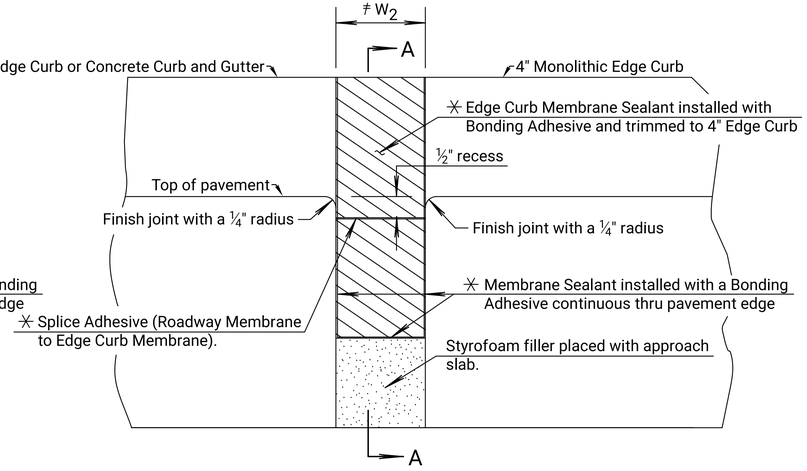
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:45
File : KA647501rss711-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	29	230

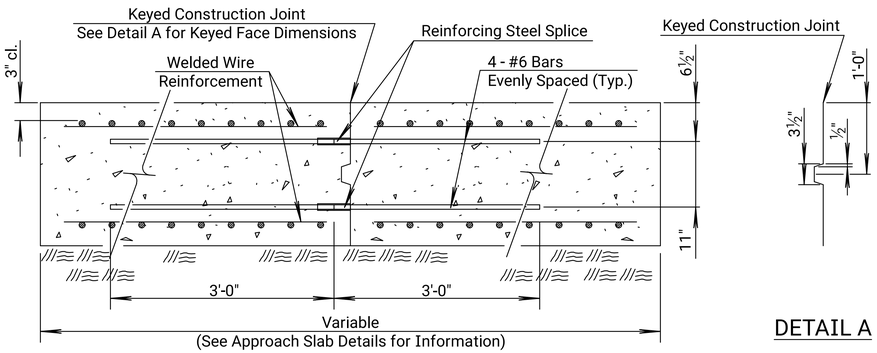
Note to Designer: For Membrane Sealant Expansion Joint on Non-skewed Bridges the maximum length of expansion is: 380' for Steel Bridges, 410' for Concrete Bridges.



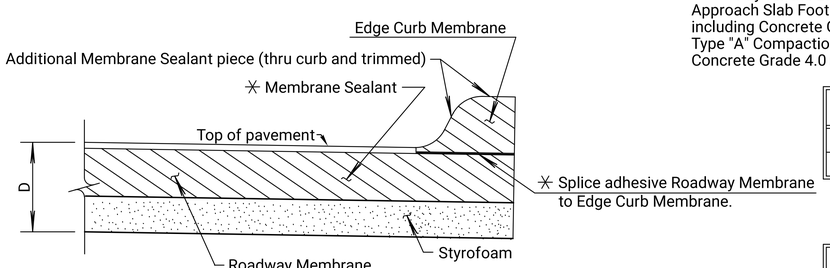
ELEVATION PRESSURE RELIEF JT.



ELEVATION EXPANSION JT.



DETAIL A



SECTION A-A

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

GENERAL NOTES

EXPANSION/PRESSURE RELIEF JOINTS

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

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

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

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

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

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

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

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

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

Use splice materials and methods recommended by the Manufacturer.

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

BRIDGE APPROACH SLAB FOOTING

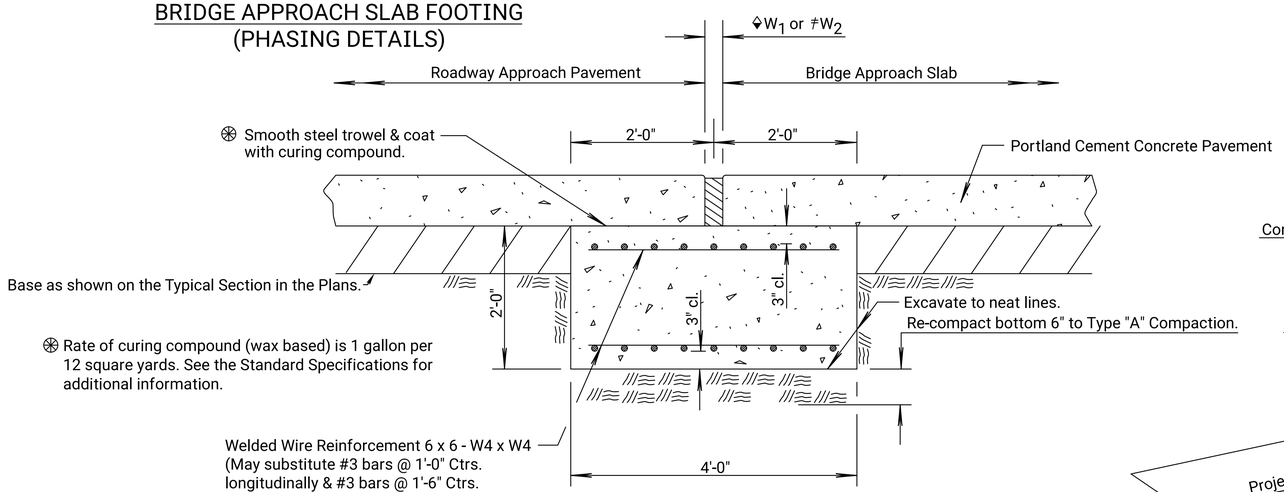
Pay for the Bridge Approach Slab Footing at the unit price bid per cubic yard for "Bridge Approach Slab Footing". This price will be full compensation for furnishing all materials and labor including Concrete Grade 4.0 (AE) Pavement, Reinforcing Steel (Gr. 60) (Epoxy Coated), excavation, Type "A" Compaction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

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

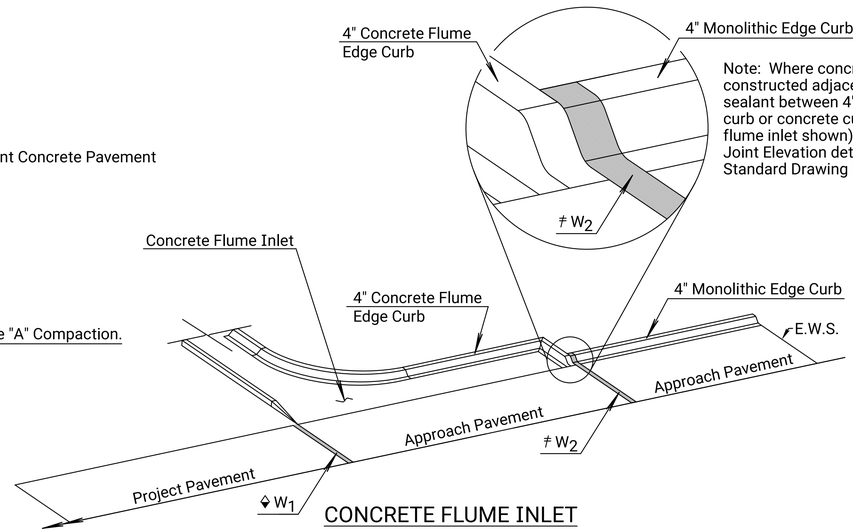
℉ Average Ambient Temperature over previous 24 hours.

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

BRIDGE APPROACH SLAB FOOTING
(PHASING DETAILS)



BRIDGE APPROACH SLAB FOOTING



CONCRETE FLUME INLET

(Membrane Sealant Placed Through Edge Curb Detail)

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

LEGEND

Membrane Sealant

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD712

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

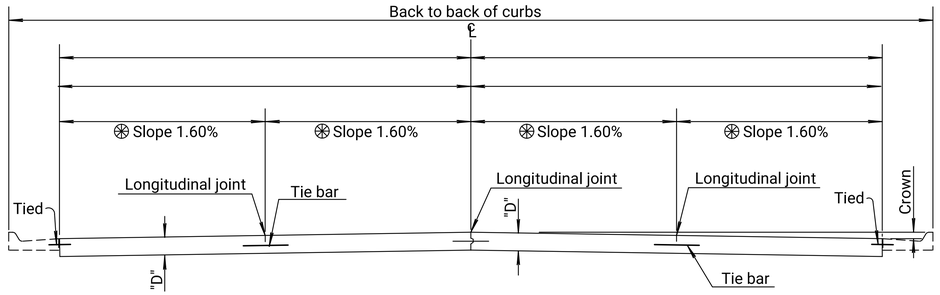
KDOT Graphics Certified 07-18-2022 Sh. No. 29

KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:41
File : KA647501rss712-01.dgn

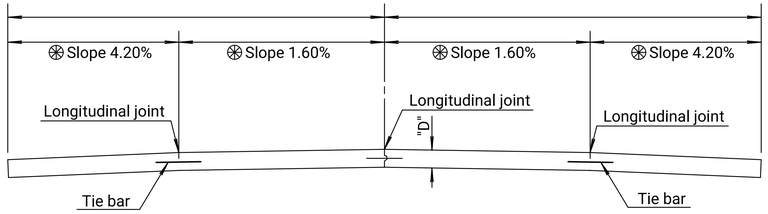
Note: Designer to add applicable dowel sizes.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	30	230



For Curb & Gutter details
See Standard Drawing RD635.

TRANSVERSE SECTION
(4-LANE WITH CURB & GUTTER)



TRANSVERSE SECTION
(2-LANE WITH SHOULDERS)

Slope Normal cross slopes. See Typical Section or Cross Sections for variations.

GENERAL NOTE

Epoxy coat all deformed tie bars that are straight. Patch any damage to the epoxy coating in accordance with the Standard Specifications.

Use billet steel Grade 40 reinforcing for deformed tie bars that require bending, may be epoxy coated at the Contractor's option.

Place pressure relief joint at the end of the bridge approach pavement slab (no bars through joint). For details of pressure relief joint see Standard Drawing RD712.

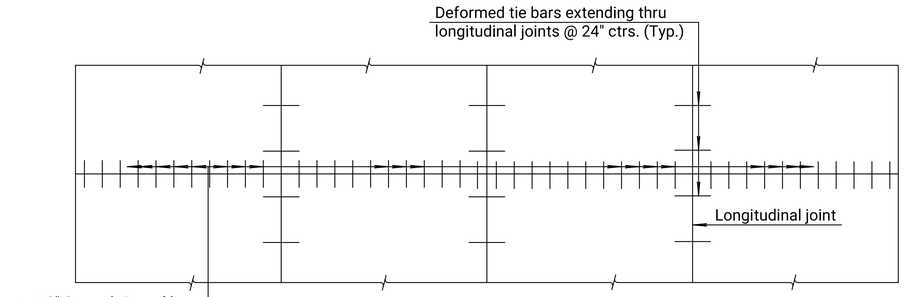
Use load transfer devices as shown in details at all construction joints on mainline pavement unless otherwise noted. Shoulder contraction joints have no dowels unless specifically shown on the plans.

Fill all sawed joints on the project in accordance with the Standard Specifications with the exception of those joints in pavement constructed over Cement or Asphalt Treated Base.

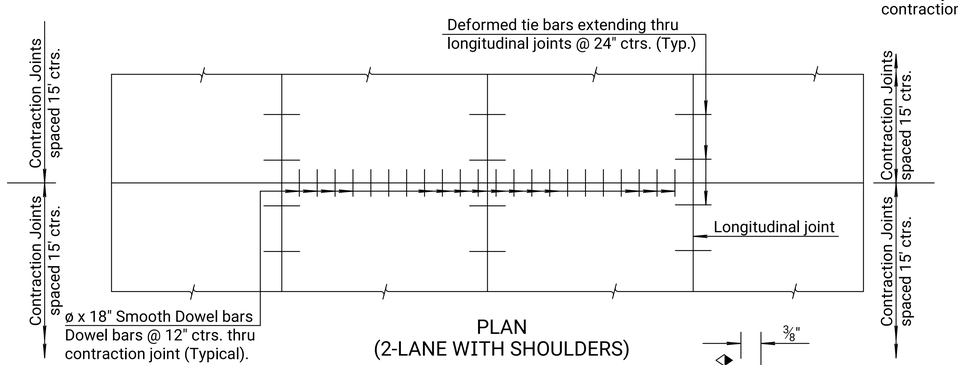
Use single saw cut, ⅛" wide, joint in pavement constructed over Cement or Asphalt Treated Base (Non-Sealed Joint Sawcut). Use single saw cut, ⅛" wide, joint for shoulder pavement adjacent to mainline pavement constructed over Asphalt or Cement Treated Base (Non-Sealed Joint Sawcut). See detail this sheet.

Shape all keyed joints similar to section of recessed form leg as shown on this sheet.

Evenly space tie bars along the length of slab with no tie bar within 12" of contraction joint. All longitudinal joints are tied.



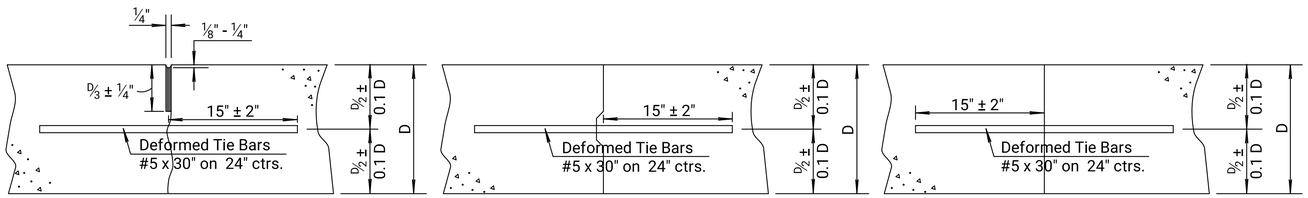
PLAN
(4-LANE WITH CURB & GUTTER)



PLAN
(2-LANE WITH SHOULDERS)

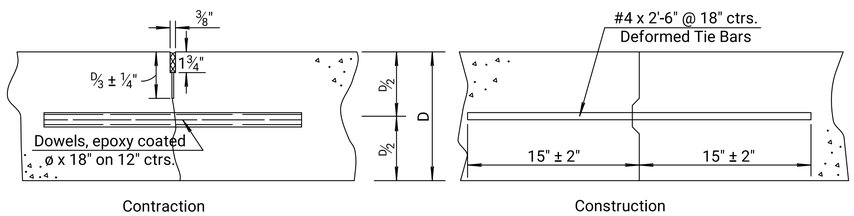
DOWEL SIZE	
D (in.)	Diameter
6 < D < 9	1"
9 ≤ D < 11	1¼"
D ≥ 11	1½"

PAVEMENT DEPTH
D= 8"



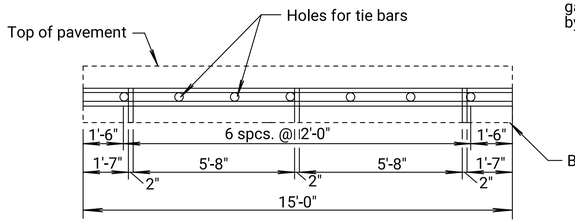
Note: For longitudinal construction joints the contractor has the option of using either the keyed or butt type. Place deformed tie bars mid-depth of the shoulder.

LONGITUDINAL JOINTS



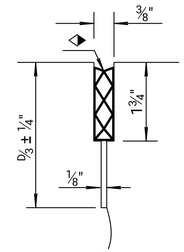
TRANSVERSE JOINTS

Note: Construct contraction joints at plan locations or at the Engineer's direction.
When necessary to interrupt continuous placement for a substantial length of time or at the end of a day's paving, the Contractor has the option of ending placement at a contraction joint or with a construction joint located a minimum of five (5) feet from a contraction joint. Construct either joint type by placing a header at the end of the pour or by paving past the joint location. After the concrete has hardened, saw joint and drill holes for tie bars or dowels.



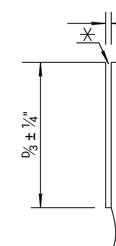
METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT

To be used only against forms, do not extend through contraction joints.
For automated placement tie bars are spaced at uniform 24" centers.
✡ Use snap-in leg or other approved design in lieu of welded leg.



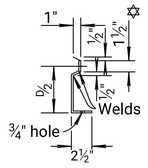
DETAIL OF SEALED
JOINT SAWCUT

Make an initial ⅛" saw cut (D/3 ± ¼" depth); the second ⅜" saw cut is a separate operation done after concrete has gained sufficient strength to avoid spalling as determined by the Engineer.



DETAIL OF NON-SEALED
JOINT SAWCUT

Make only the initial ⅛" saw cut after concrete has gained sufficient strength to avoid spalling as determined by the Engineer.



SECTION OF
RECESSED
FORM LEG

NO.	DATE	REVISIONS	BY	APP'D
19	05-17-13	Revised Note, Longitudinal Joints	S.W.K.	J.O.B.
18	03-21-12	Revised Table, Dowel Size	S.W.K.	J.O.B.
17	01-09-12	Added Detail, Non Sealed Joint	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE PAVEMENT DOWEL JOINTED NON-REINFORCED

RD708

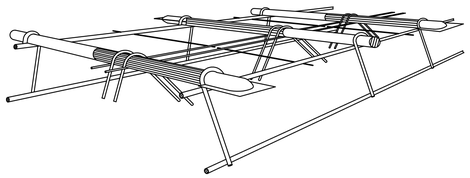
FHWA APPROVAL	10-23-13	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-16-2022 Sh. No. 30

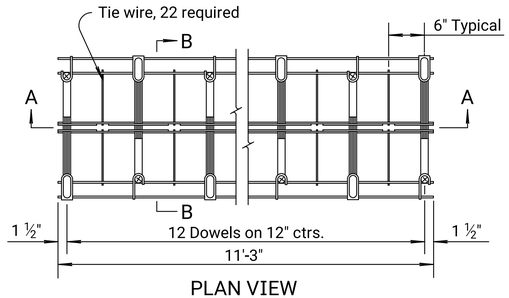
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:41
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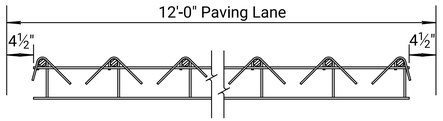
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	31	230



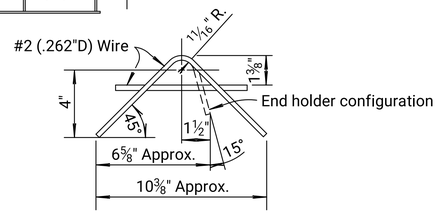
PERSPECTIVE VIEW

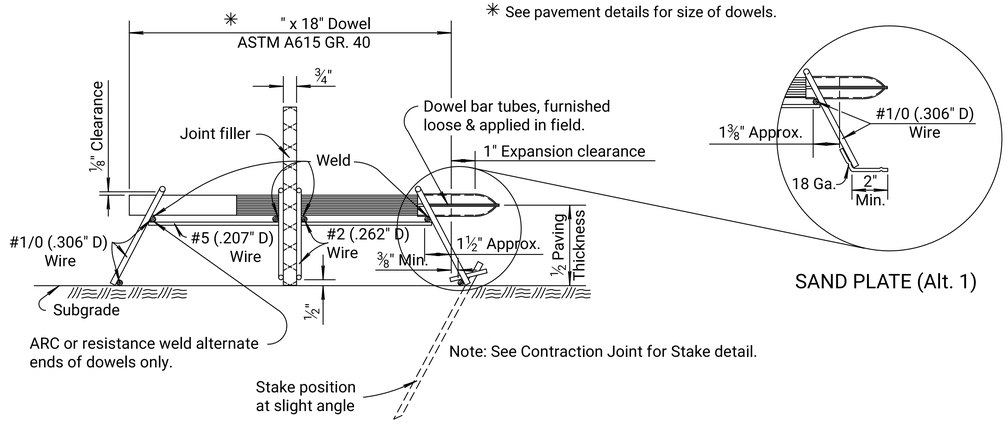


PLAN VIEW



SEC. A-A



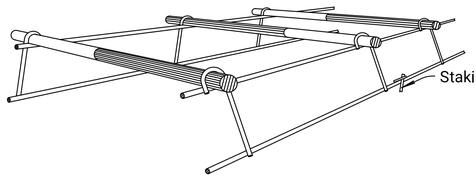


SEC. B-B

✳ See pavement details for size of dowels.

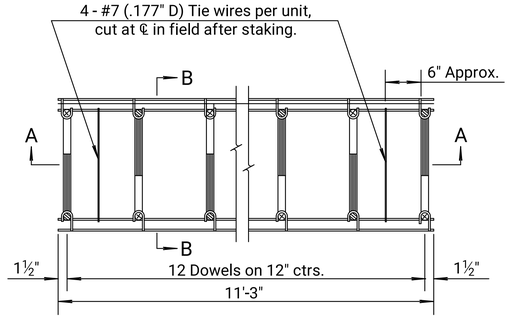
SAND PLATE (Alt. 1)

EXPANSION JOINT

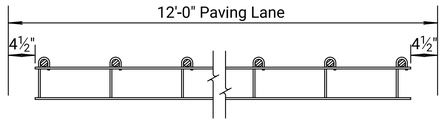


Staking position

PERSPECTIVE VIEW

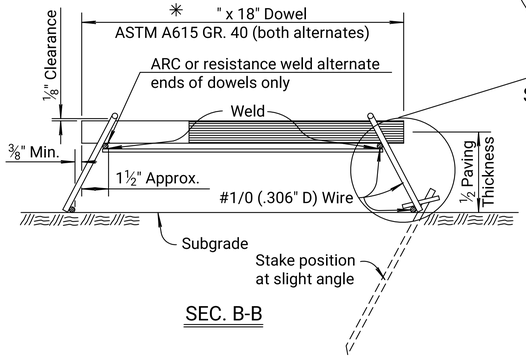


PLAN VIEW

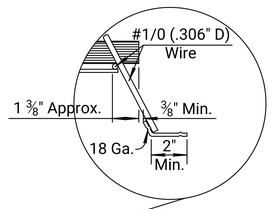


SEC. A-A

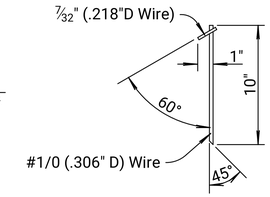
✳ See pavement details for size of dowels.



SEC. B-B



SAND PLATE (Alt. 1)



STAKE DETAIL

(6 Pieces minimum required)

CONTRACTION JOINT

GENERAL NOTE

Coat each dowel bar with an epoxy coating that meets the standard specifications. Uniformly apply the powdered epoxy coating according to accepted practices and the coating manufacturer's recommendations. The coating need not be applied to the end faces of the bars and will not be required within 2" of the end which will be fixed in the supporting bracket by welding.

Cut the dowel bars to length in such a manner to result in no appreciable deformation of the ends.

Dowel Baskets

Wire sizes shown are minimum required.

Stake baskets to subgrade as shown. Use ramset or similar type fastener with clip when subgrade condition requires it.

Sides held together with tie wire, allowing quick separation of sides and insertion of expansion material, provided in the field.

Use one length of Preformed Expansion Joint filler (Type B), or other approved material as determined by the Engineer, cut to fit crown and subgrade for each lane of pavement as expansion joint filler.

Stretch a string line between the pavement forms along the center line of the joint.

Visually inspect bond breaker was applied to the dowel bars in accordance with KDOT's Standard Specifications prior to placing concrete pavement.

Carefully level the entire joint assembly so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Replace any coating scraped off the dowels during assembly.

Check each completed contraction joint assembly to be certain the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab unless otherwise shown on the plans. Check the dowels to be certain they are level and will remain in a position parallel with the finished surface of the slab.

Place concrete over and adjacent to the joint in accordance with the requirements of the Standard Specifications.

After completion of machine finishing, floating, and straight edging the surface, carefully remove the concrete over the filler and edge the joint with an edger of the proper size.

Install expansion joint material in the field.

Alternative designs may be used in lieu of the type shown as approved by the Engineer.

GENERAL NOTE

Coat each dowel bar with an epoxy coating that meets the standard specifications. Uniformly apply the powdered epoxy coating according to accepted practices and the coating manufacturer's recommendations. The coating need not be applied to the end faces of the bars and will not be required within 2" of the end which will be fixed in the supporting bracket by welding.

Cut the dowel bars to length in such a manner to result in no appreciable deformation of the ends.

Dowel Baskets

Wire sizes shown are minimum required.

Stake baskets to subgrade as shown. Use ramset or similar type fastener with clip when subgrade condition requires it.

Stretch a string line between the pavement forms along the center line of the joint. Carefully mark the position of the joint so the saw cut will coincide with the center line of the joint.

Visually inspect bond breaker was applied to the dowel bars in accordance with KDOT's Standard Specifications prior to placing concrete pavement.

Carefully level the entire joint assembly so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Replace any coating scraped off the dowels during assembly.

Check each completed contraction joint assembly to be certain the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab unless otherwise shown on the plans. Check the dowels to be certain they are level and will remain in a position parallel with the finished surface of the slab.

Place concrete over and adjacent to the joint in accordance with the requirements of the Standard Specifications.

Alternative designs may be used in lieu of the type shown as approved by the Engineer.

NO.	DATE	REVISIONS	BY	APP'D
09	06-03-15	Rem. Opt., Mechanical Placement	T.T.R.	S.W.K.
08	02-15-06	Chg. Grade 60 to Grade 40 Steel	S.W.K.	J.O.B.
07	05-05-04	Revision on Epoxy coating	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CONTRACTION & EXPANSION JT. DOWEL ASSEMBLIES

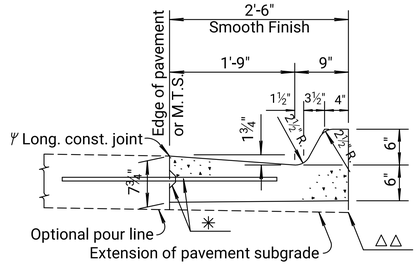
RD735

FHWA APPROVAL	03-30-16	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-18-2022 Sh. No. 31

KDOT Graphics Certified

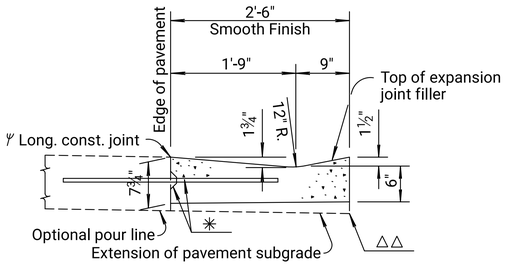
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:37
File : KA647501rss735-01.dgn



TYPICAL SECTION

Note: Conc. C.&G. I contains 0.060 cu. yds. Conc. Grade 3.0 (AE) per lin.ft.

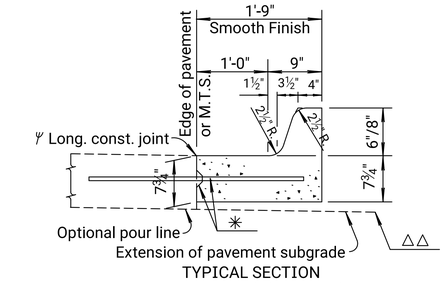
COMBINED CURB & GUTTER - TYPE I (2'-6" WIDTH)



TYPICAL SECTION

Note: Conc. C.&G. II contains 0.053 cu. yds. Conc. Grade 3.0 (AE) per lin.ft.

COMBINED CURB & GUTTER - TYPE II (2'-6" WIDTH)



TYPICAL SECTION

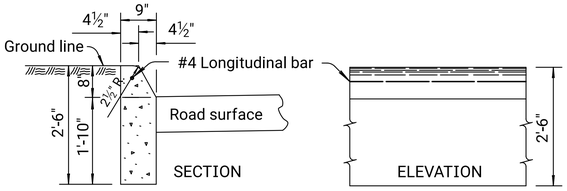
Note: Conc. C.&G. III contains 0.054 (8") & 0.051 (6") cu. yds. Conc. Grade 3.0 (AE) per lin. ft.

COMBINED CURB & GUTTER - TYPE III (1'-9" WIDTH)

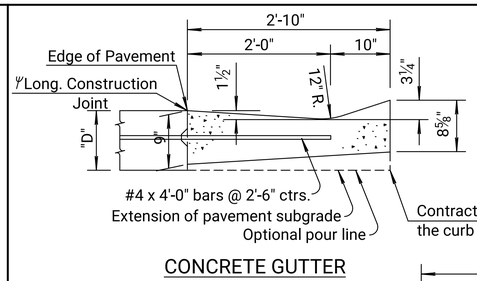
✳ Longitudinal construction joint and #4 x 3'-0" bars @ 2'-6" ctrs., where concrete pavement is constructed.

△△ Contractor has the option of thickening the curb and gutter as shown.

Note: Use Concrete Grade 3.0 (AE) throughout.
All exposed edges shall be finished with an edging tool.
Place a 1" Preformed Expansion Joint Filler (Nonextruding, Type B) at a spacing not to exceed 250'.

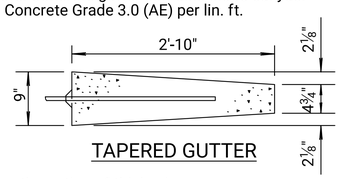


PROTECTION CURB 8"

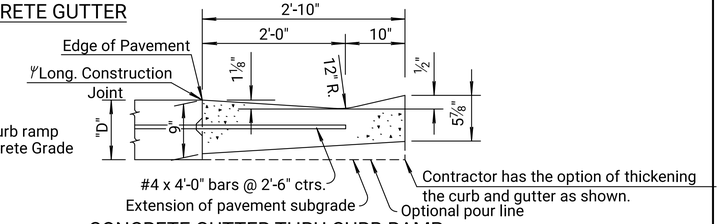


CONCRETE GUTTER

Note: Concrete gutter contains 0.065 cu. yds. Concrete Grade 3.0 (AE) per lin. ft.

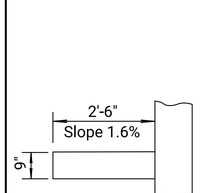


TAPERED GUTTER

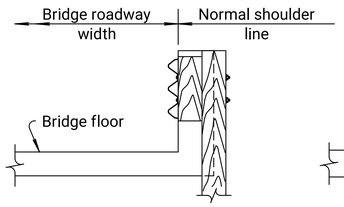


Note: Concrete gutter thru curb ramp contains 0.065 cu. yds. Concrete Grade 3.0 (AE) per lin. ft..

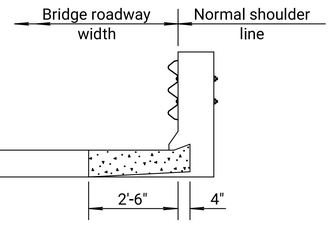
CONCRETE GUTTER THRU CURB RAMP



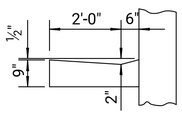
SECTION B-B



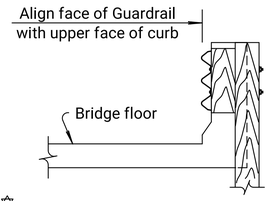
CONTROL POINT FOR FULL WIDTH ROADWAY BRIDGE



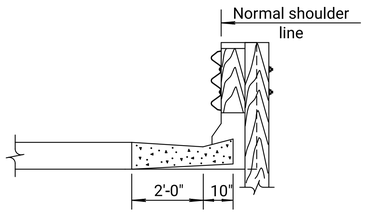
GUTTER NEAR E.W.S.



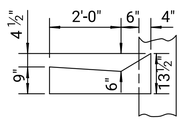
SECTION C-C



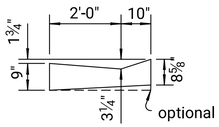
✡ CONTROL POINT FOR BRIDGE WITH SAFETY TYPE CURB



FULL GUTTER SECTION

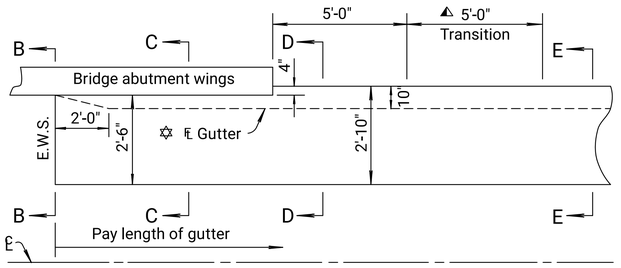


SECTION D-D



SECTION E-E

At locations where the centerline grade is relatively flat and the pavement grade is such that the gutter will direct drainage onto the bridge, the flowline depth may be reduced as directed by the Engineer to facilitate drainage.



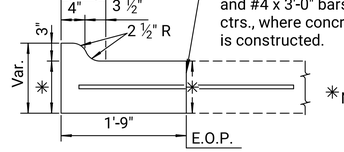
TYPICAL GUTTER @ BRIDGE ENDS

(Drawn for down grade end and "U" Type Abutments)

Note: Shaping of gutter is to be Subsidiary to "Gutter (AE)".

◭ Transition gutter to standard 2'-10" gutter section.

FOR RETROFIT OF BRIDGE APPROACHES WITH GUTTER



✳ Note: Thickness to match adjacent pavement.

COMBINED CURB AND GUTTER (SPECIAL) (1'-9" WIDTH)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	32	230

GENERAL NOTE

Combined curb and gutter or gutter adjoining concrete pavement may, at the contractor's option, be constructed either monolithically or separately, using either the mix used in the concrete pavement or Concrete Grade 3.0 (AE). The combined curb and gutter or gutter shall have the same section as shown on the plans. If constructed monolithically, the longitudinal joint and tie bars shall be omitted from the combined curb and gutter or gutter. Pavement Joints shall be continued through curb or gutter and no other planes of weakness will be required. Joints in the combined curb and gutter or gutter are to be filled with the same material as used for the pavement joints.

Expansion joints in the combined curb and gutter are to be placed opposite expansion joints in the pavement.

Where combined curb and gutter or gutter does not abut concrete pavement or concrete base course, omit tie bars and place a 1" Preformed Expansion Joint Filler (Type B) cut to the dimensions of the combined curb and gutter or gutter, at a spacing not to exceed 250' and at the ends of curb returns. Planes of weakness shall be constructed at 10'-0" intervals.

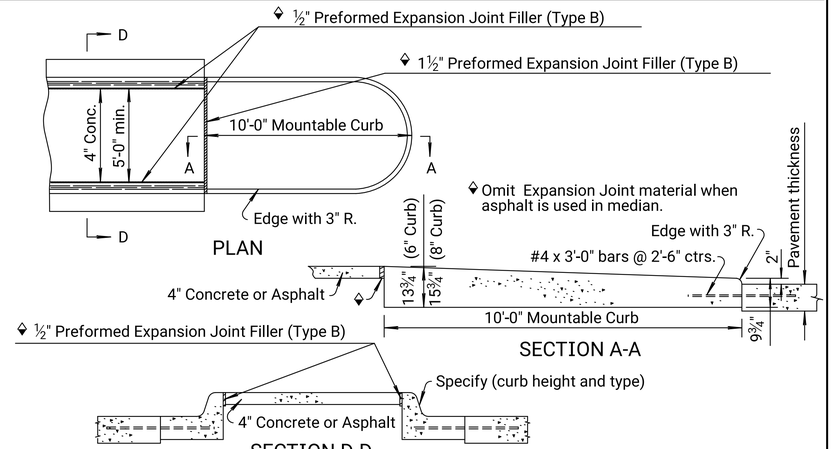
A 4' length of transition from normal gutter section to the tapered gutter section shall be used at the ends of each run of gutter except where the gutter abuts a curb, such as at the end of a bridge. Inlets shall be located so as not to fall within this transition section.

Where pressure relief joint is placed across the pavement, and gutter or curb and gutter is continued on for more than 10', use 4"x4" membrane sealant installed with bonding adhesive through gutter section, shaped to fit gutter or curb and gutter. See Std. Drawing RD712.

For expansion joint treatment where combined curb and gutter or gutter abuts a bridge wing on a U-type abutment see bridge drawings.

Longitudinal joints shall be sawed and sealed with joint sealant, see Standard Specifications.

℄ If constructed monolithically, the longitudinal joint is not required.



Note: Expansion joints shall be placed in concrete median as follows. In long runs expansion joints Expansion joints in the median shall match expansion joints in the curb and gutter with a maximum spacing of 125'. Plane of weakness in the median shall match plane of weakness in curb and gutter.

TYPICAL NOSE DETAILS FOR RAISED MEDIANS

Note: Additional Concrete Grade 3.0 (AE) needed to complete median nose shall be subsidiary to the bid item "Combined Curb & Gutter".

NO.	DATE	REVISIONS	BY	APP'D
20	02-23-17	Det., Conc. Gutter Thru Curb Ramp	T.T.R.	S.W.K.
19	01-29-13	Added Detail, Comb. C&G (Sp.)	S.W.K.	J.O.B.
18	08-13-12	Revised General Note	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

CURB, GUTTER AND COMBINED CURB & GUTTER

RD635

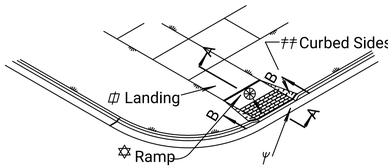
FHWA APPROVAL	03-07-17	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-27-2022 Sh. No. 32

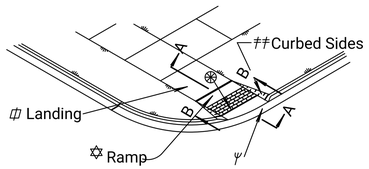
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:37
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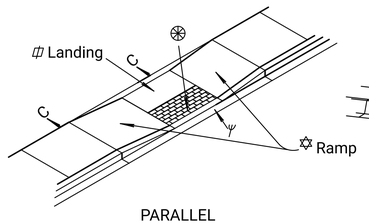
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	33	230



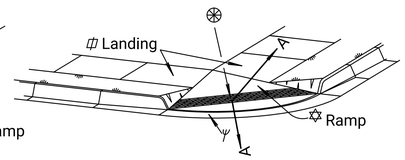
PERPENDICULAR
CURB RAMP (TYPE I)



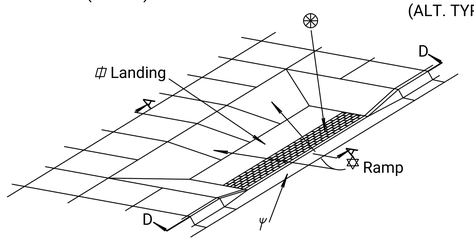
PERPENDICULAR
CURB RAMP THRU CURB RADIUS
(ALT. TYPE I)



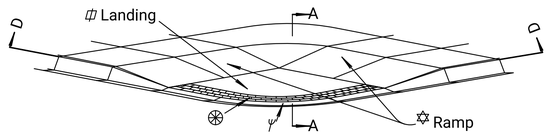
PARALLEL
CURB RAMP (TYPE 2)



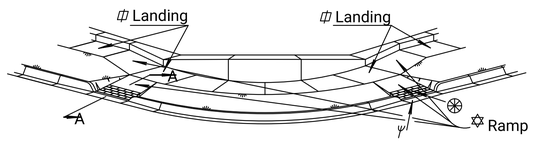
PARALLEL
CURB RAMP THRU CURB RADIUS
(ALT. TYPE 2)



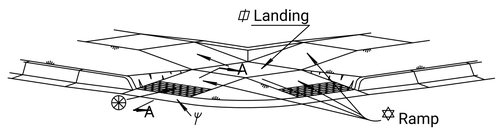
BLENDED TRANSITION
(TYPE 3)



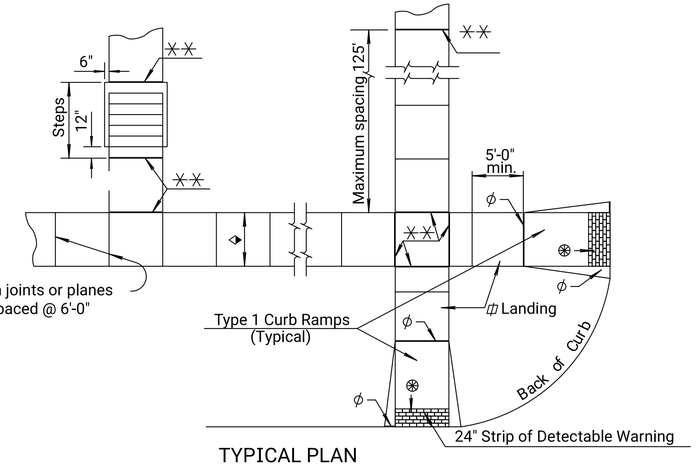
BLENDED TRANSITION
THRU CURB RADIUS (ALT. TYPE 3)



COMBINATION PERPENDICULAR/PARALLEL
CURB RAMP (TYPE 4)



COMBINATION PERPENDICULAR/PARALLEL
CURB RAMP (ALT. TYPE 4)



TYPICAL PLAN

ϕ Expansion Joint (¾" Redwood board) placed at either back of curb line, at sidewalk back of curb line, or at sidewalk line. Alternate expansion joint material may be used as approved by the Engineer.

⚹⚹ Expansion joint (¾" Redwood board) located as shown. Alternate expansion joint material may be used as approved by the Engineer.

⬙ The minimum width of newly constructed sidewalk is 5'-0". Where existing conditions prohibit the use of 5'-0" wide sidewalk, 4'-0" wide sidewalk may be used. Where sidewalk width is less than 5'-0" construct 5'-0" x 5'-0" passing spaces located at 200' intervals (max) as shown in the Passing Space Detail. In general, where new sidewalk is constructed parallel or adjacent to a roadway the sidewalk running slopes will match the grade of the adjacent roadway.

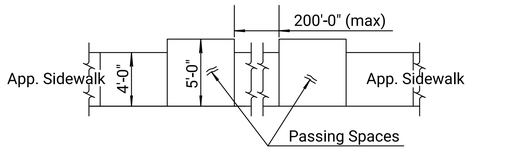
✡ New construction ramp running slopes are 5% (min) to 8.3% (max). Ramp slopes for blended transitions are 5% or flatter. The maximum allowable ramp cross slope is 2% or flatter. Match the ramp width to the width of the approach sidewalk. Curb ramp lengths will vary with curb height. Curb ramp lengths are 5'-0" (min) to 15'-0" (max). All other ramp lengths are 5'-0" (min) to 30'-0" (max). Where roadway grades are relatively flat and curb ramp lengths will exceed 15'-0", ramps may be constructed in succession to tie into existing sidewalk. Maintain ramp slopes and dimensions as previously stated and install a landing between successive ramp runs.

⎅ Use a landing slope of 2% or flatter. Landings are the same width as ramps and adjacent sidewalk with a length measured in the direction of the street crossing of 5'-0" (min). Landings are not required where the ramp running slope is 5% or flatter.

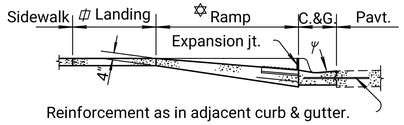
ψ Use a counter slope of 5% or flatter at the base of curb ramps. Refer to Standard Drawing RD725A for additional curb and gutter details.

⊛ Detectable warning installation is typical and required on Perpendicular Ramps (Type 1), Parallel Ramps (Type 2), Blended Transitions (Type 3), median ramp crossings with widths greater than or equal to 6'-0", and other locations as shown in the plans. Install detectable warnings parallel to pedestrian travel except where otherwise shown in the plans. See Standard Drawing RD725A for additional details.

‡‡ Use flared sides in place of curbed sides as shown in Flared Side Alt. when not located adjacent to landscaping, street furniture, chains, fencing, or railing. Curbed sides are not permitted within the pedestrian access route. See PROWAG for pedestrian access route definition.

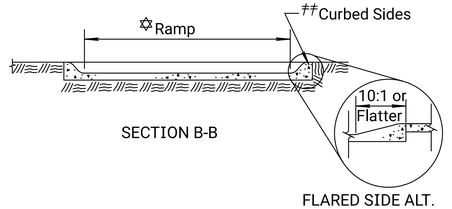


PASSING SPACE
DETAIL



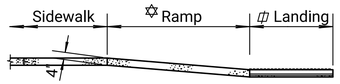
Reinforcement as in adjacent curb & gutter.

SECTION A-A

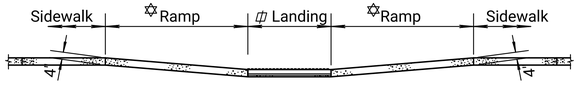


SECTION B-B

FLARED SIDE ALT.



SECTION C-C



SECTION D-D

GENERAL NOTES

Construct sidewalk and ramps in accordance with the current Public Rights of Way Accessibility Guidelines (PROWAG).

The details depicted here may not be appropriate for all locations. Construct to meet this criteria on all roadway alteration projects as defined by the Department of Justice/ Department of Transportation Joint Technical Assistance on ADA Title II Requirements. For an existing sidewalk facility where the sidewalk will be replaced, replace sidewalk in accordance with PROWAG.

Details shown on this sheet apply to newly constructed and existing sidewalk and ramps where roadway alteration projects take place. See KDOT's Standard Specifications for additional information.

Provide ramps at all corners of street intersections where there is an existing or proposed sidewalk and curb. Provide curb ramps at mid-block walk locations for hospitals, medical centers, and athletic stadiums.

Locate ramps as shown on the plans or as directed by the Engineer.

Do not place drainage structures in line with ramps except where existing drainage structures are being utilized in the new construction. Ramp locations should take precedence over the location of drainage structures. Where existing manhole access lids are located on ramps within the area of the detectable warnings and the manhole lid cannot be removed or relocated; install a lid with a detectable warning surface in accordance with PROWAG. Limit drainage across ramps where practicable.

Construct ramps with uniform grade free of sags and short grade changes.

Place ¾" Redwood expansion joints flush with the surface at a maximum spacing of 125'. Place ¾" Redwood expansion joints at sidewalk junctions, see plan details. Where sidewalk abuts a curb place ¾" Redwood board expansion joint flush with the surface.

Place ½" premolded (Type B or C) joint filler where sidewalk is parallel and adjacent to a rigid surface.

⚠ Place sidewalk shown to be constructed in back of an entrance 6" thick with welded wire mesh reinforcement. Gauge and spacing of wires are the same as entrance pavement (See Reinforcement Diagram). The bid item will be "Sidewalk Construciton" either with or without air entrainment. Macro fiber reinforcement may be substituted for welded wire. See KDOT's Standard Specifications for additional information. Slope sidewalk toward the street at 2% or flatter. Slope or depress sidewalk where necessary to fit alleys and entrances, see plans for details.

Contractor may opt to use Concrete Grade 3.0 (AE) throughout for construction of steps, but all work and materials are paid for under the bid item "Grade 3.0 Conc. (Misc.)".

All work and materials needed to construct sidewalk will be paid for under the bid item "Sidewalk Construction".

All work and materials needed to construct ramps will be paid for under the bid item "Sidewalk Ramps".

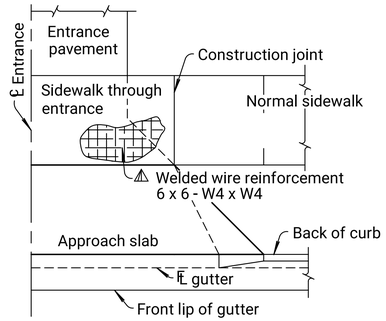
See Standard Drawing RD725A for additional information.

Ramps shall be present at each end of a crosswalk.

For handrails with steps see Standard Drawing RD725B for details.

For handrails with ramps see Standard Drawing RD725C for details.

For alley and entrance pavement see Standard Drawing RD726 for details.



REINFORCEMENT DIAGRAM
SIDEWALK THROUGH ENTRANCE

NO.	DATE	REVISIONS	BY	APP'D
13	10-31-17	Joint Filler Type C Added	A.L.R.	S.W.K.
12	02-23-17	Rev. Ramp Typ., Gen. Note, & Details	T.T.R.	S.W.K.
11	10-17-11	Revised General Note	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SIDEWALKS, RAMPS, & STEPS

RD725

FHWA APPROVAL	03-05-18	APP'D.	SCOTT W. KING
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

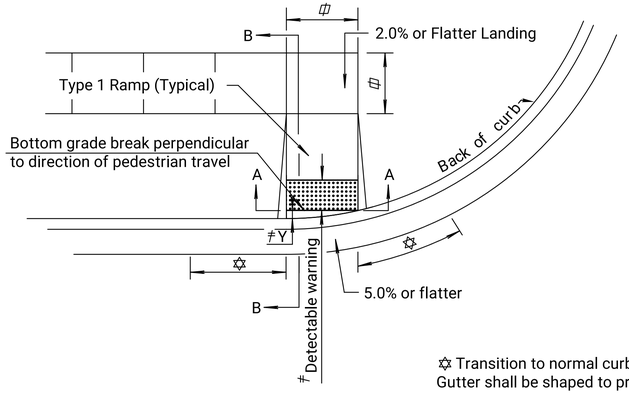
KDOT Graphics Certified 06-02-2025 Sh. No. 33

KDOT Graphics Certified

Note to Designer: Placing newly constructed curb ramps through curb radii should be avoided wherever practicable. The use of Parallel Curb Ramp Thru Curb Radius (Alt. Type 2) should be avoided wherever practicable. Review locations of fixed objects. Placing fixed objects in conflict with sidewalk and ramps should be avoided. Fixed objects may include, but are not limited to, fire hydrants, utility cabinets, drainage structures, manholes, inlets, signal poles, and utility poles.

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:37
File : KA6475O1rss725-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	34	230

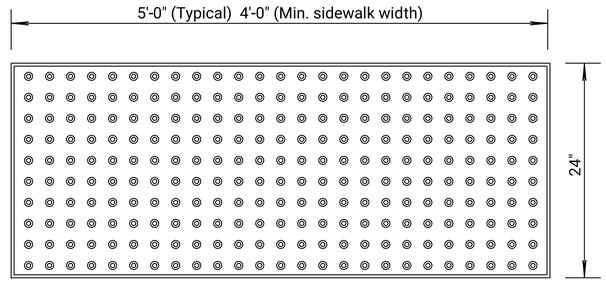


TYPICAL PLAN

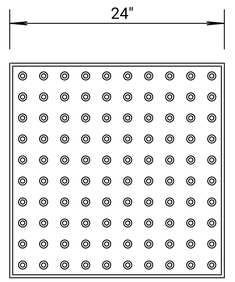
✡ Transition to normal curb and gutter section. Gutter shall be shaped to provide positive drainage.

⧠ See Standard Drawing No. RD725 for additional details.

≠ When the dimension "Y" from the back of curb to the bottom ramp grade break is greater than 5'-0" or the ramp is not located through a curb radius, place detectable warning at the back of curb. Otherwise, place detectable warning at the bottom grade break as shown.



ϒ COMPOSITE PANEL with TRUNCATED DOMES



ϒ PRESTRESSED RAMP PANEL with TRUNCATED DOME SURFACE

GENERAL NOTES

Construct sidewalk and ramps in accordance with the current Public Rights of Way Accessibility Guidelines (PROWAG).

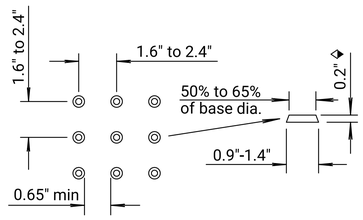
Details depicted here may not be appropriate for all locations. Design to meet this criteria on all roadway alteration projects as defined by the Department of Justice/ Department of Transportation Joint Technical Assistance on ADA Title II Requirements. For an existing sidewalk facility where the sidewalk will be replaced, replace sidewalk according to this drawing to the maximum extent feasible.

Install detectable warning surfaces at all ramp locations unless otherwise shown. Do not install detectable warning surfaces through residential driveway crossing locations. Use Paving Brick, Prestressed or Composite Panel (Truncated Dome Surface) units that meet the requirements of the Standard Specifications and comply with PROWAG. Use a contrasting color paving brick or panel to adjacent surfaces. Where existing manhole access lids are located on ramps within the area of the detectable warnings and the manhole lid cannot be removed or relocated, install a lid with a detectable warning surface in accordance with PROWAG.

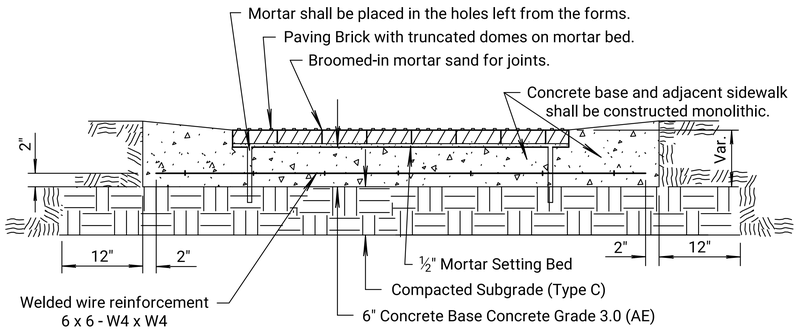
Cover the ramp width and 24" length with truncated dome surface, see examples Standard Drawing RD725 & RD725A. Saw cut (only) bricks or panels with not less than 25% of a full brick or panel installed. Place Truncated Dome Bricks or Panels to align parallel in the direction of pedestrian travel unless otherwise shown in the plans.

Prestressed or Composite Panels are installed in fresh concrete, Paver Bricks require mortar bed and mortar sand, see KDOT's Standard Specifications for information.

All work and materials needed to install detectable warnings will be paid for under the bid item "Sidewalk Ramps (Detectable Warning)".

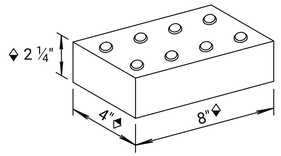


TRUNCATED DOME DIMENSIONS for SQUARE PATTERN (Parallel Alignment)

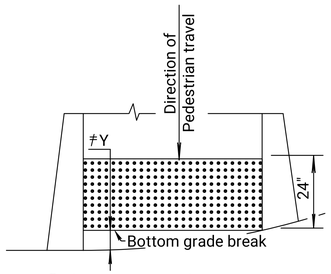


TYPICAL SECTION OF PAVER BRICK
SECTION A-A

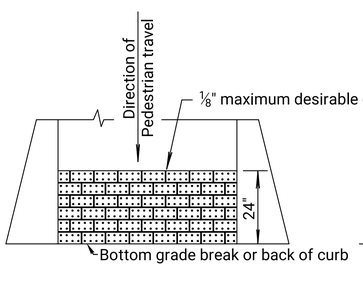
♦ These dimensions are nominal.



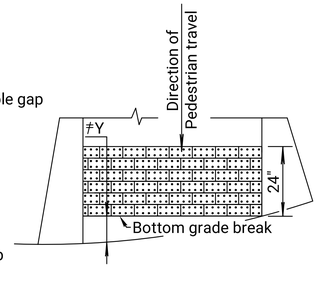
ϒ PAVER BRICK WITH TRUNCATED DOME SURFACE



⊗ CURB RADIUS DETAILS
Cut Prestressed Ramp Panels to fit.



⧠ STRAIGHT CURB DETAILS

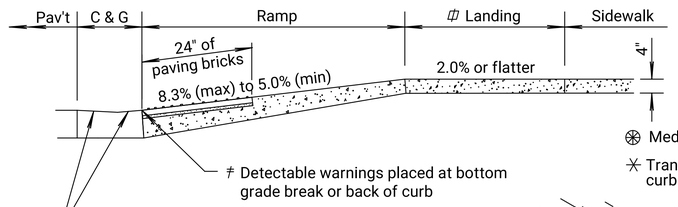


⧠ CURB RADIUS DETAILS

⧠ Installation shown for paving brick is running bond, use of other patterns is allowed with Engineer approval. Rotation 90° of Running Bond pattern is allowed to reduce space between bricks on curb radius installation, keep this space to a minimum. Place truncated domes on bricks in parallel alignment to pedestrian travel as shown.

⊗ Curb radius or greater than 5' ramp width will require more than one panel as approved by the Engineer. Limit number of panels installed at each site. Layouts shown are for example and may vary in the field.

ϒ Acceptable with no mixing of types within an installation.



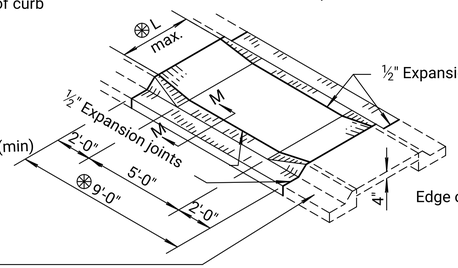
SECTION B-B

SECTION M-M

✳ Combined Curb & Gutter Type II (AE) unless shown otherwise on plans.

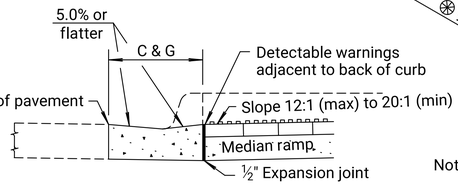
⊛ Median ramp crossing limits will be paid for as "Sidewalk Ramp."

✳ Transition Combined Curb & Gutter Type III (AE) through curb ramp as shown.

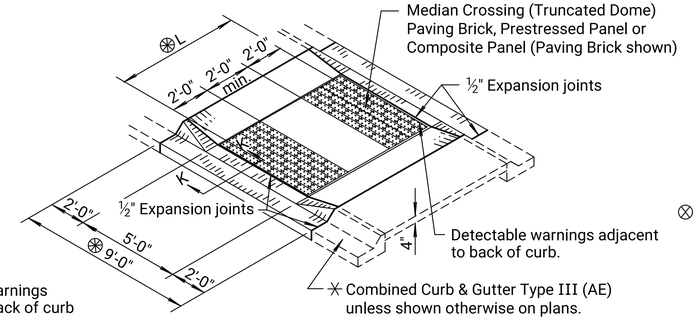


NARROW MEDIAN RAMP CROSSING
(L < 6'-0")

Note: A Median Ramp Crossing shall be constructed at Crosswalk locations. Do not install detectable warnings on narrow median ramp crossings.

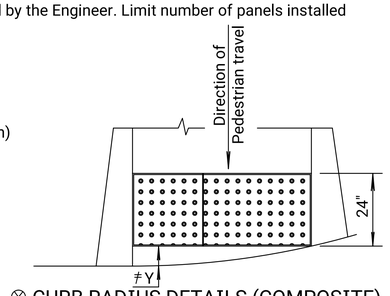


SECTION K-K



WIDE MEDIAN RAMP CROSSING
(L ≥ 6'-0")

Note: A Median Ramp Crossing shall be constructed at Crosswalk locations. Wider median islands will result in a 2' minimum gap between the detectable warning areas.



⊗ CURB RADIUS DETAILS (COMPOSITE)

Where truncated domes are placed through a curb radius, cut radius from 3'-0" long composite panel.

NO.	DATE	REVISIONS	BY	APP'D
05	02-23-17	Rev. Gen. Note & Panel Det.	T.T.R.	S.W.K.
04	02-10-10	Added Composite Panel	S.W.K.	J.O.B.
03	08-15-05	Added Prestressed Ramp Panel alt.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

AUXILIARY DETAILS FOR SIDEWALK & STEPS

RD725A

FHWA APPROVAL	03-07-17	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

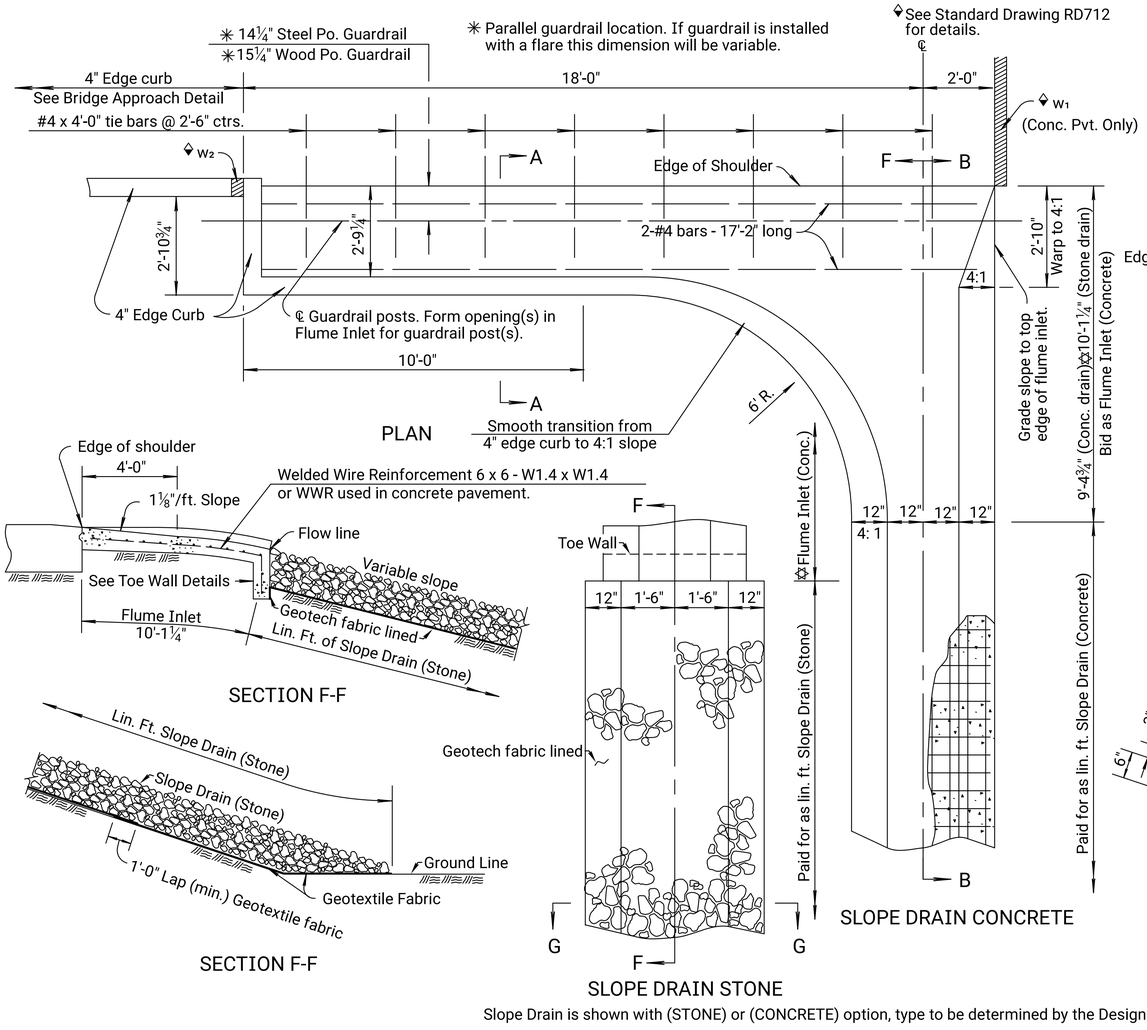
KDOT Graphics Certified 05-18-2022 Sh. No. 34

KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:46
File : KA647501rss725a-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	35	230

Note to Designer: When concrete flume inlets are used on projects with asphalt pavment use a 33'-0" bridge approach.



Slope Drain is shown with (STONE) or (CONCRETE) option, type to be determined by the Designer.

SLOPE DRAIN & TOE WALL DETAILS

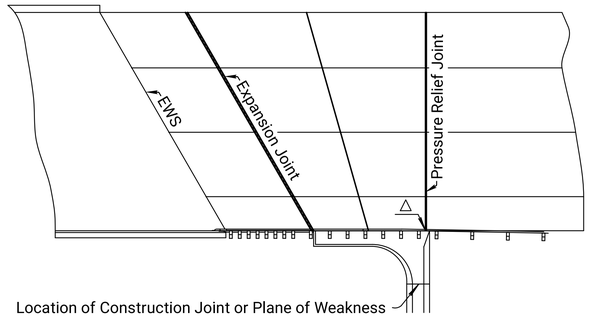
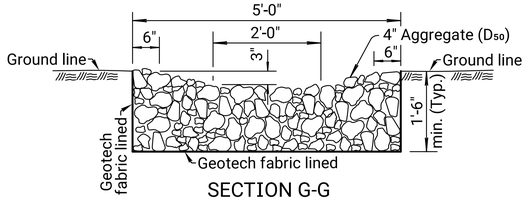
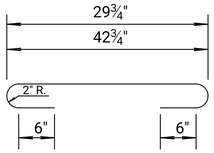


DIAGRAM of FLUME INLET at PRESSURE RELIEF JOINT

△ On projects with concrete paved shoulders where, due to skew of the bridge, the flume inlet extends beyond the 4" pressure relief joint of the special concrete bridge approach, the portion of inlet or gutter extending beyond the pressure relief joint shall not be tied to the concrete shoulder with tie bars.



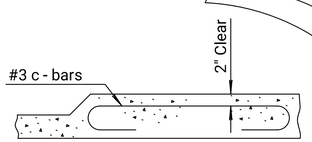
SECTION G-G



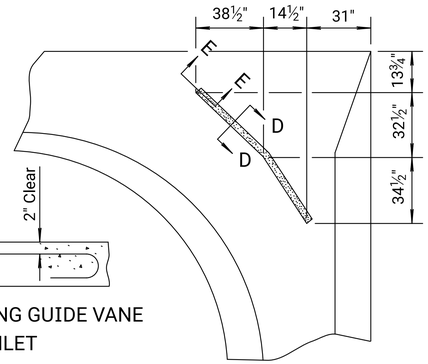
#3 c - bars

Bending Diagram

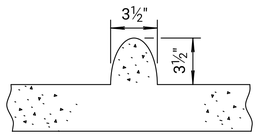
(Bend one bar each length)



METHOD of CONNECTING GUIDE VANE to FLUME INLET

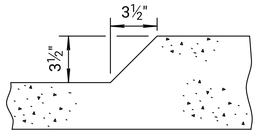


PARTIAL PLAN with GUIDE VANE



SECTION D-D

(Guide Vane formed monolithic)



SECTION E-E

(Typical both ends of vane)

GENERAL NOTE

Flume Inlets shall be paid for by unit price per each. Slope Drains (Stone or Concrete) shall be paid for by unit price per linear foot. Reinforcing steel & welded wire reinforcement are subsidiary to Flume Inlet and Slope Drain.

Flume Inlets will be constructed without Guide Vanes except at locations noted in plans or as directed by the Engineer. Construction of guide vanes, when required, shall be subsidiary to the bid item "Flume Inlet ".

The entire area of the Flume Inlet & Slope Drain shall be placed monolithic and struck off with a uniform thickness of 6 inches.

Guide Vanes may be formed monolithic with the Flume Inlet or tied to the Flume Inlet in the manner shown if constructed separately. Alternate methods of constructing Guide Vanes may be used with approval of the Engineer.

Concrete Grade 3.0 (AE) shall be used in Flume Inlet and Slope Drain.

On concrete pavement projects, the contractor may substitute the mix used in concrete pavement.

Transverse expansion and contraction joints of same type in pavement are to extend through the flume inlet and 4" edge curb, omitting load transfer devices. The edge curb section will be made continuous through any expansion joint by using a filler material approved by the Engineer to fill the void to the full height of the curb.

Joints will not extend into the Slope Drain.

All exposed edges shall be finished with an edging tool.

For details of 4" edge curb see Standard Drawing RD711.

No adjustment of guardrail post spacing will be permitted.

Flume inlet shall only be constructed adjacent to concrete pavement. Flume inlet shall be tied to the pavement with #4 x 4'-0" tie bars at 2'-6" centers. Tie bars shall be subsidiary to the Flume Inlet.

Shape of guide vane shown is approximate and may be altered slightly to simplify construction. Height and width dimension shall be as shown regardless of shape.

Aggregate for the Slope Drain (STONE) shall meet the reqirements of stone for Aggregate Ditch Lining and have a D_{50} of 4" unless otherwise noted on the plans. The Contractor shall place stone from bottom to the top of slope to produce a well graded mass without segregation of material sizes. Placement, measurement, and payment shall conform to KDOT Standard Specifications.

Slope Drain (STONE) shall be underlain with geotextile fabric that meets the KDOT Standard Specification. All work and materials for the geotextile fabric shall be subsidiary to the Slope Drain (STONE).

QUANTITIES (For information only)

SLOPE DRAIN (CONCRETE)

Flume Inlet Concrete:
1.9 cu. yds. Concrete ⊛
42 lbs. reinf. steel and WWR
Slope Drain (CONCRETE):
0.0833 cu. yds. Concrete per lin. ft.
0.79 lbs. WWR per lin. ft.
Toe wall shall be paid for as 1.5 lin. ft. of Slope drain.

SLOPE DRAIN (STONE)

Flume Inlet & Toe Wall Concrete:
2.2 cu. yds. Concrete ⊛
44 lbs. reinf. steel and WWR
Slope Drain (STONE): 4" Aggregate (D50)
0.25 cu. yds. 4" Agg. (D50) per lin. ft.
0.90 sq. yds. Geotextile fabric per lin. ft.

⊛ Does not include guide vanes.

NO.	DATE	REVISIONS	BY	APP'D
06	01-25-16	Added Note to Designer	T.T.R.	S.W.K.
05	09-12-07	Reorg. sheet, add. slope drain stone	S.W.K.	J.O.B.
04	01-28-05	Chg. Class to Grade conc., reinf.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FLUME INLET and SLOPE DRAIN (CONCRETE/STONE)

RD628

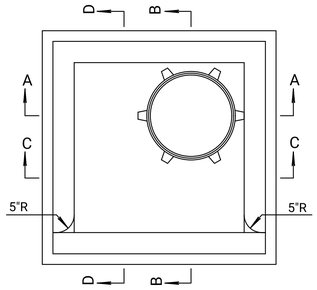
FHWA APPROVAL	02-01-16	APP'D.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-13-2022 Sh. No. 35

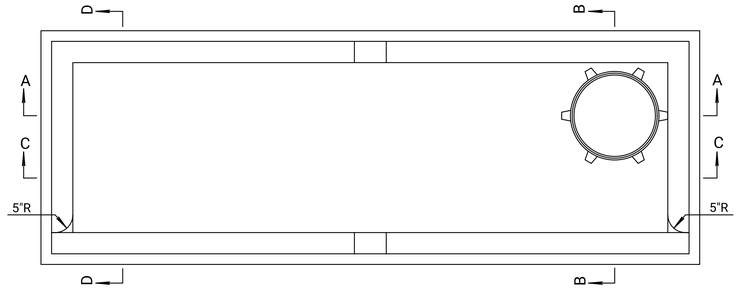
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:38
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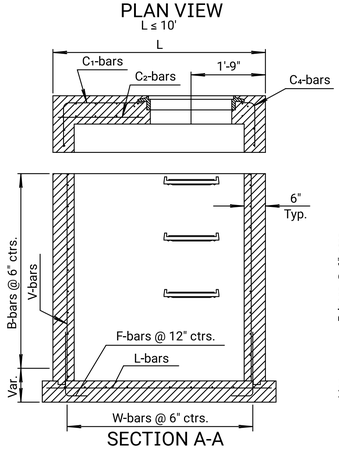
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	36	230



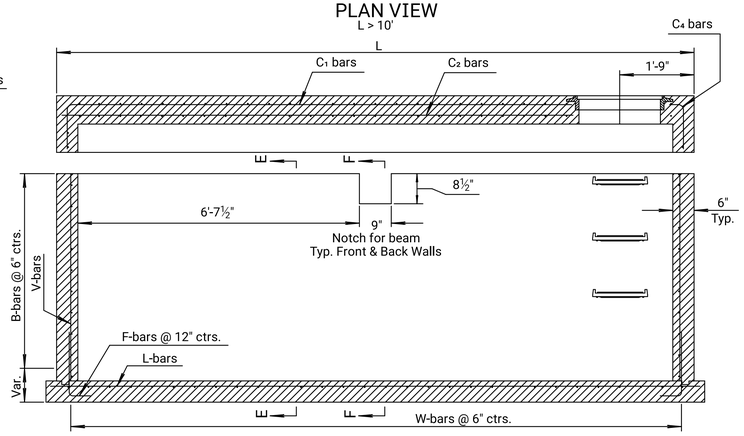
PLAN VIEW
L ≤ 10'



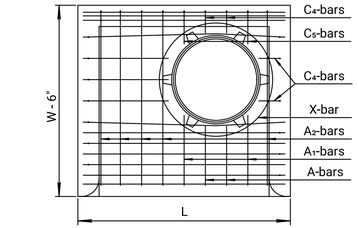
PLAN VIEW
L > 10'



SECTION A-A
L ≤ 10'



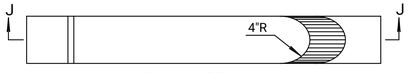
SECTION A-A
L > 10'



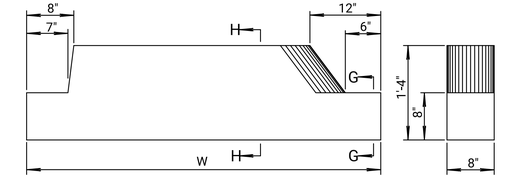
INLET TOP REINFORCING



INLET TOP FRONT ELEVATION

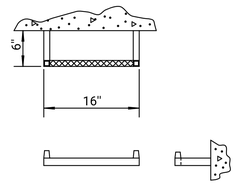


PLAN VIEW



ELEVATION

END VIEW



STEP DETAILS

GENERAL NOTES

Use Concrete Grade 3.0 (f'c ≥ 3000 psi) throughout. All exposed edges shall be finished with an edging tool.

Manhole opening and steps, where used shall be placed to afford easy access to top of shaped invert.

All castings shall be grey iron and shall comply with the KDOT Standard Specifications.

When so ordered by the Engineer, the top of the manhole shall be sloped slightly to approximately fit the ground line or other conditions.

Dimensions and weights of cast iron as shown on this sheet are minimum. Larger dimensions and/or heavier weights of cast iron may be used. The weight of castings includes no allowance for fillets and overruns.

Steps shall be installed in all storm sewer inlets when specified in the plans when "H" is equal to or greater than six feet. Steps shall comply with the KDOT Standard Specification.

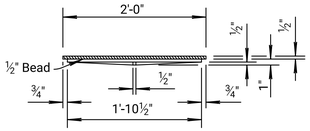
No reduction in pay length of curb, gutter, or curb & gutter will be made through the inlet area. Curb and Gutter sections shall be shaped as shown where required by the installation of curb inlets. This work shall be subsidiary to other bid items.

For additional notes and details on Light Type Cast Iron Manhole Cover and Ring Type C and Cast Iron Steps, see Standard Drawing RD633 "Reinforced Concrete Manhole".

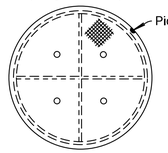
All reinforcing steel shall be #4 at 6" centers except where noted. Minimum clear distance to reinforcement shall be 1½".

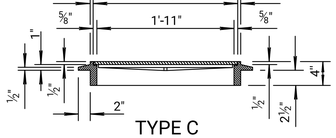
Floor of inlet shall be shaped as shown in various "Examples" on Reinforced Concrete Manhole Standard Drawing RD633. Concrete used for shaping shall be unreinforced Concrete Grade 3.0 or concrete pavement mix.

The Contractor shall determine pipe locations in the field prior to ordering Type 22 Precast Inlets, to insure proper positioning of pipe openings.

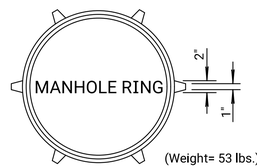


MANHOLE COVER TYPE C
(Weight= 64 lbs.)





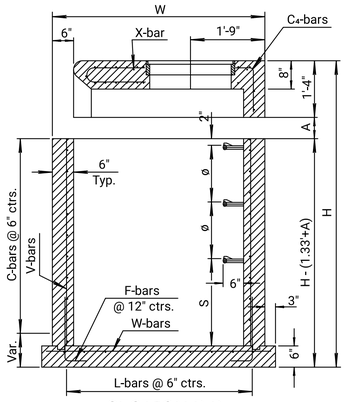
TYPE C



(Weight= 53 lbs.)

✳ LIGHT TYPE
MANHOLE COVER & RING

✳ Rings with four equally spaced lugs will be permitted.



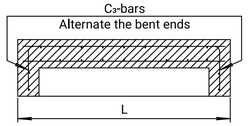
SECTION B-B

ø Steps shall be uniformly spaced. Spacing shall be 12" minimum and 16½" maximum.

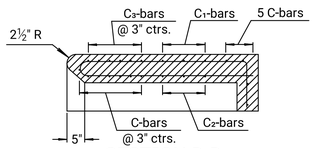
NOTES

"A" Adjustment space, 6" maximum. (Contractor's option, 1" to 6") Allows top to be adjusted to finished curb height, or slope top as may be required.

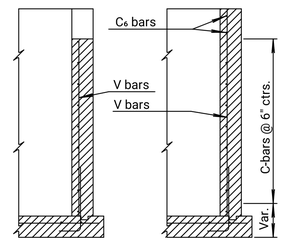
"S" maximum = 2'-3" + ½ x ID of outlet pipe.



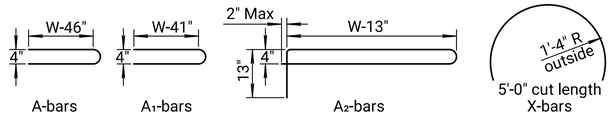
SECTION C-C



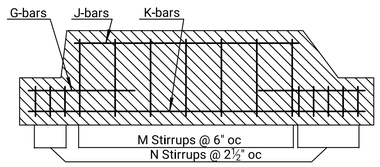
SECTION D-D



SECTION F-F SECTION E-E



BENDING DIAGRAMS

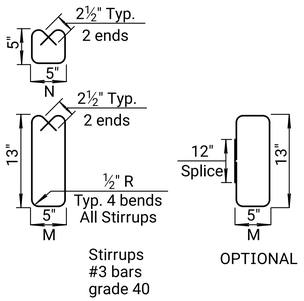


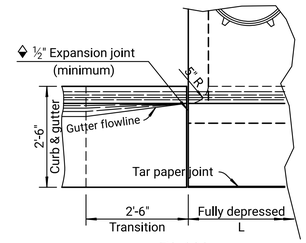
SECTION J-J



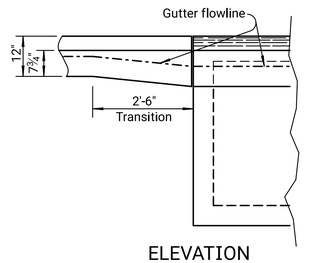
SECTION H-H SECTION G-G

CENTER BEAM DETAILS





PLAN



ELEVATION

DETAILS OF GUTTER TRANSITION

NO.	DATE	REVISIONS	BY	APP'D
03	01-28-05	Changed Class to Grade concrete	R.J.S.	J.O.B.
02	11-12-98	Added concrete strength	R.J.S.	J.O.B.
01	12-16-97	Revised step spacing	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPE 22 PRECAST INLETS

RD649

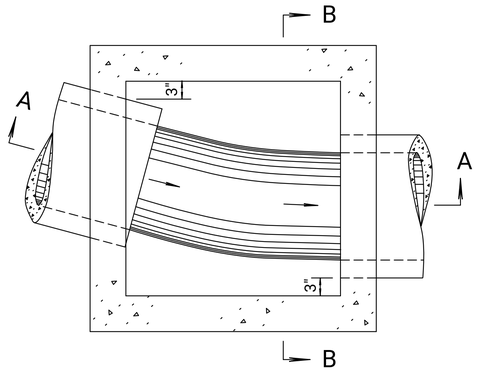
FHWA APPROVAL	06-10-05	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-16-2022 Sh. No. 36

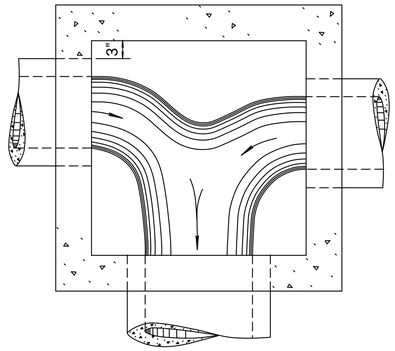
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:43
File : KA647501rss649-01.dgn

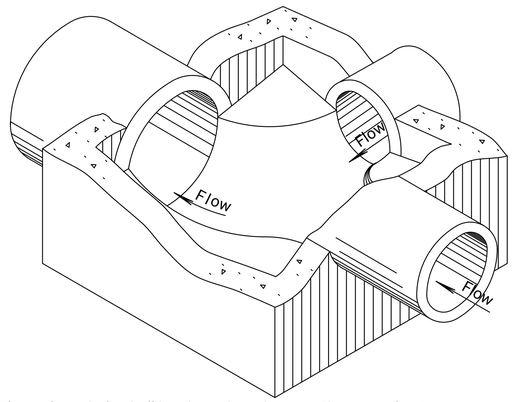
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	37	230



PLAN - FLOOR (Example I)



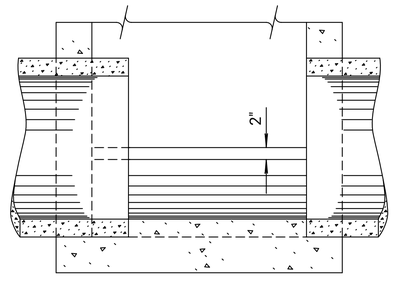
PLAN - FLOOR (Example III)



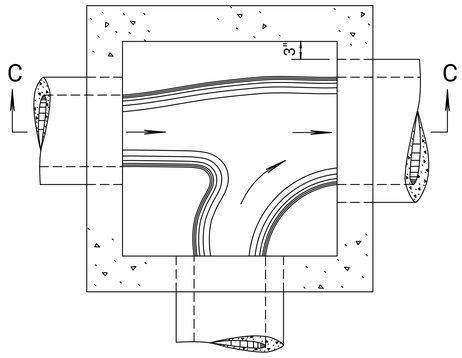
Floor of manhole shall be shaped as shown in the examples to increase hydraulic efficiency.

ISOMETRIC VIEW (Example IV)

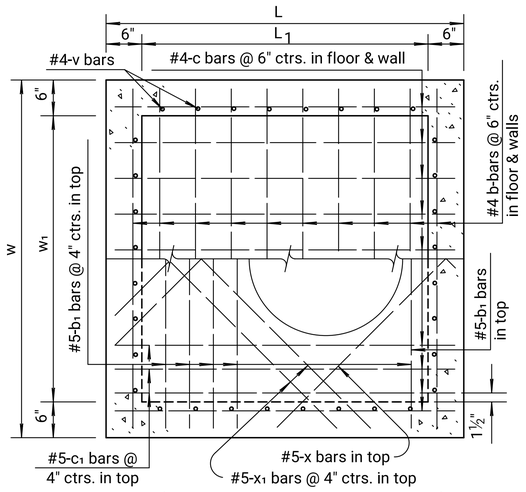
Note: Use Concrete Grade 3.0 throughout. All exposed edges shall be finished with an edging tool.
At the contractors option Concrete Grade 3.0 (AE) or mix used in concrete pavement may be used throughout.
In general, pipes will enter and leave manhole at various positions. Where possible bend bars around pipes.
Floor of manhole shall be shaped as shown in various "EXAMPLES" with unreinforced Concrete Grade 3.0.
Manhole opening and steps, where used, shall be placed to afford easy access to top of shaped invert. Top reinforcing bars shall be adjusted accordingly.
All castings shall be gray iron and shall comply with the KDOT Standard Specifications.
No deductions in concrete quantities shall be made for pipe openings or additions to concrete quantities shall be made for shaping floor of manholes.
The top of the manhole shall be sloped slightly to approximately fit the ground line or other condition as directed by the Engineer.
Dimensions and weights of cast iron as shown on this sheet are minimum. Larger dimensions and/or heavier weights of cast iron may be used.
The Contractor has the option of using precast manholes, as approved by the Engineer.
Steps shall be installed in all manholes when specified in the plans or when "H" is equal to or greater than six feet. Steps shall comply with the requirements of the KDOT Standard Specification.



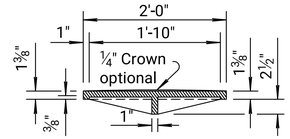
SECTION A-A (Example I)

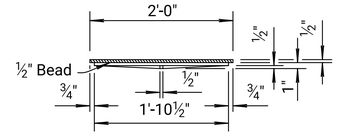


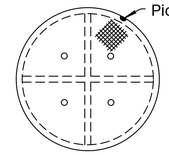
PLAN - FLOOR (Example IV)



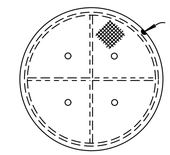
PLAN (Showing top & floor reinf.)





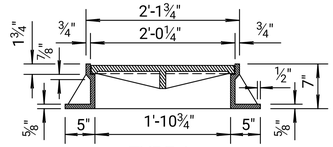


NOTE: All manhole castings are cast iron. Weight of castings includes no allowance for fillets and overruns.

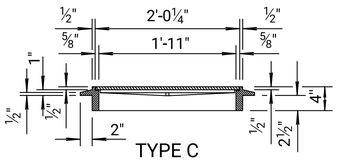


MANHOLE COVER TYPE A & B
(Weight=134 lbs.; without ¼" Crown= 125 lbs.)

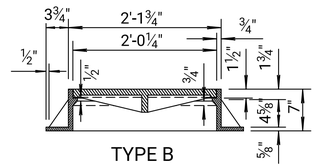
MANHOLE COVER TYPE C
(Weight= 64 lbs.)



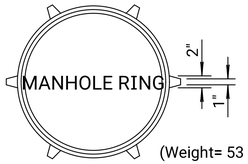
TYPE A



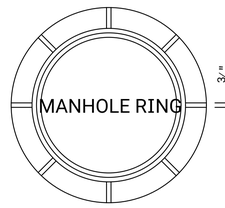
TYPE C



TYPE B



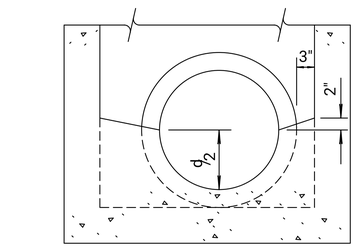
(Weight= 53 lbs.)



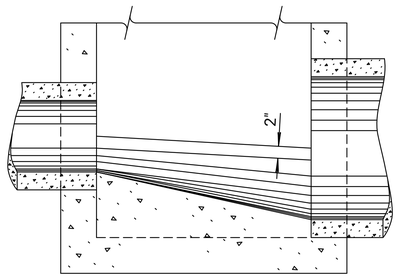
(Type A Ring= 192 lbs., Type B Ring= 198 lbs.)

✳ LIGHT TYPE
MANHOLE COVER & RING

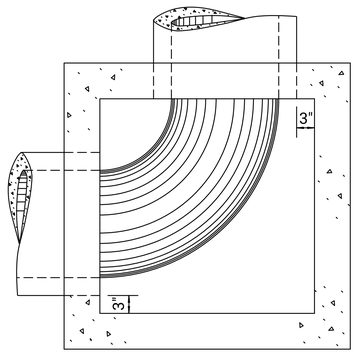
✳Rings with four equally spaced lugs will be permitted.



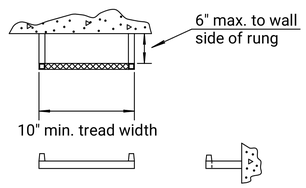
SECTION B-B (Example I)



SECTION C-C (Example IV)

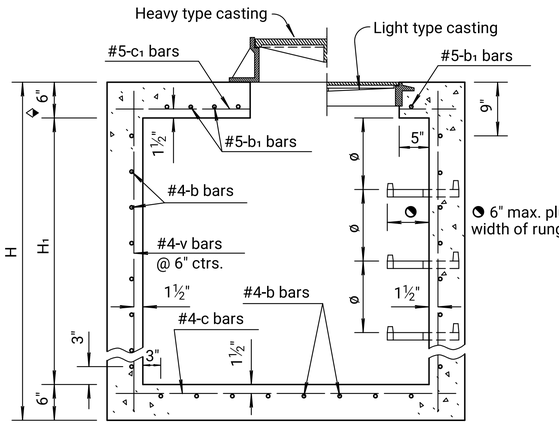


PLAN - FLOOR (Example II)



STEP DETAILS

ø Steps shall be uniformly spaced. Spacing shall be 12" minimum and 16½" maximum.



♦ Where dimension "L" or "W" is greater than 6'-0" use 8" slab thickness.

SECTION (Exclusive of floor shaping)

NO.	DATE	REVISIONS	BY	APP'D
32	07-17-17	Changed step dimensions	A.L.R.	S.W.K.
31	01-28-05	Changed Class to Grade concrete	S.W.K.	J.O.B.
30	12-12-97	Revised step spacing	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

REINFORCED CONCRETE MANHOLE

RD633

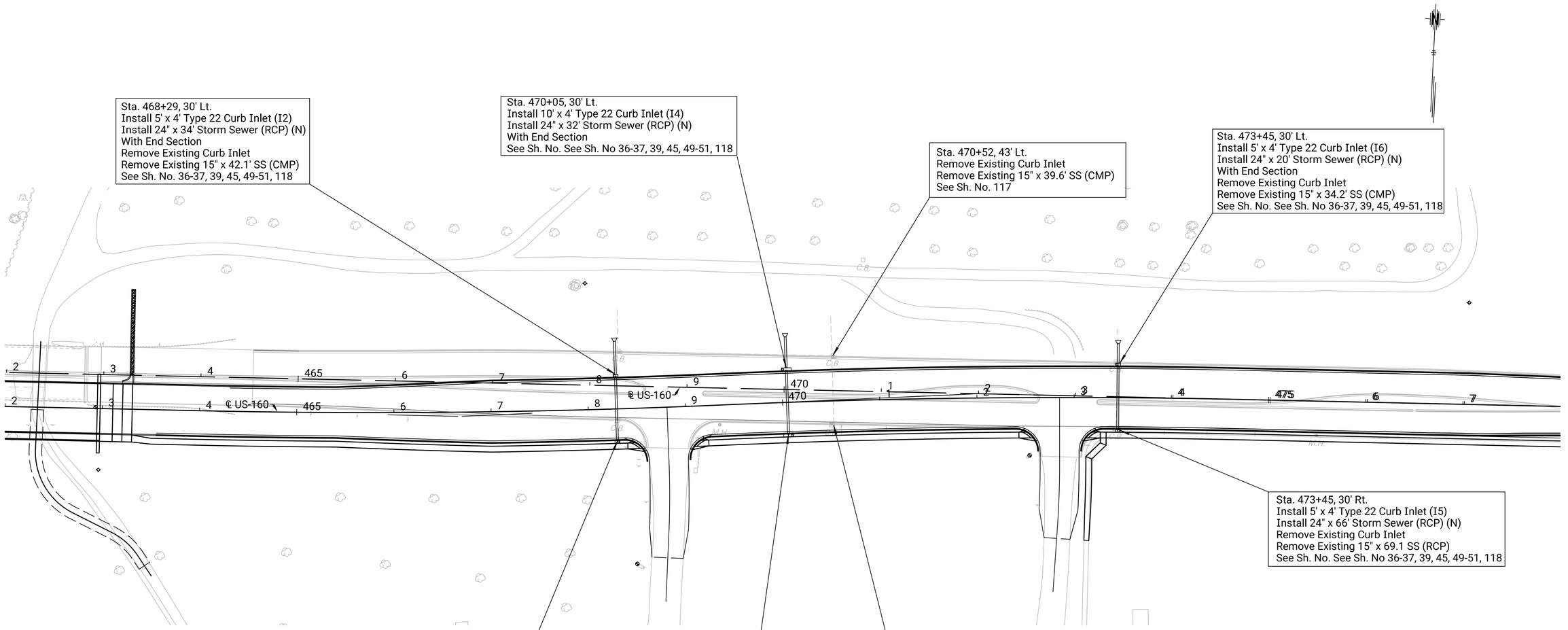
FHWA APPROVAL		08-09-17	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

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Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:52
File : KA647501rss633-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	38	230



SCALE

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

KANSAS DEPARTMENT OF TRANSPORTATION

STORM SEWER PLAN SHEET

Sh. No. 38

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:56
File : ka647501rdd-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	39	230

SCHEDULE OF INLETS AND MANHOLES

STATION	SIDE	TYPE: CURB INLETS (TYPE 22)	TYPE: GUTTER INLETS	TYPE: DITCH INLETS	SEWER DATA: INFLOW PIPES SIZE	INFLOW PIPES ℄ ELEV.	INFLOW PIPES SIZE	INFLOW PIPES ℄ ELEV.	INFLOW PIPES SIZE	INFLOW PIPES ℄ ELEV.	OUTFLOW PIPES SIZE	OUTFLOW PIPES ℄ ELEV.	OUTFLOW PIPES GRADE	ELEVATIONS TOP*	ELEVATIONS FLOOR	DIMENSIONS L (FT.)	DIMENSIONS W (FT.)	DIMENSIONS H (FT.)	STORM SEWER LIN. FT. 15"	18"	21"	24"	30"	36"				END SECTIONS 15"	18"	21"	24"			SEWER EXC. (CU.YD.) COMM.	ROCK	HT. FILL FT.	CONC. AASHTO CL. NO.	PIPE GAUGE STEEL		FOR INFORMATION ONLY: CLASS III EXC.	CAST IRON (LBS.)	STRUC. STEEL (LBS.)	REINF. STEEL (LBS.)	CONC. GD. 3.0 (CU.YD.)	STEPS	REMARKS
468+29	Rt.	1									24"	1126.37	0.50%	1131.59	1126.12	5	4	6				66																9.33			320	1.82		I1
468+29	Lt.	1			24"	1126.04					24"	1126.04	0.50%	1131.59	1125.79	5	4	6.33				34							1									9.85			340	1.92		I2
470+05	Rt.	1									24"	1126.03	0.50%	1131.25	1125.78	10	4	6				66																16.00			590	3.32		I3
470+05	Lt.	1			24"	1125.69					24"	1125.69	0.50%	1131.25	1125.45	10	4	6.33				32							1									16.88			620	3.47		I4
473+45	Rt.	1									24"	1127.07	0.50%	1132.29	1126.82	5	4	6				66																9.33			320	1.82		I5
473+45	Lt.	1			24"	1126.74					24"	1126.74	0.50%	1132.29	1126.49	5	4	6.33				20							1									9.85			340	1.92		I6
TOTAL		6																				284							3								71.24			2,530	14.27		

* Note: Top Elevation is located as follows:
1. Manhole - Top of Manhole Ring
2. Curb Inlet - Top of curb.
3. Gutter Inlet - Top back of gutter.
4. Inlet - Manhole, Special - Top of Grate.
5. Ditch Inlet - Top of Concrete at Cover Plate.

CURB INLET TYPE 22 CURB RADIUS _____ FEET

LEGEND	DIMENSIONS	LEGEND	DIMENSIONS
L	5	L_1	
W	4	W_1	
H	6	H_1	

BILL OF MATERIALS

BAR SYMBOLS	BAR SIZES	BAR TOTALS	BAR LENGTHS
A	#4	2	1.46
A_1	#4	2	1.96
A_2	#4	4	7.61
A_3	#4		
A_4	#4		
B	#4	26	3.75
B_1	#4	2	3.25
C	#4	31	4.75
C_1	#4	4	2.50
C_2	#4	4	2.25
V	#4	10	4.50
V_1	#4	20	5.75
V_2	#4		
V_3	#4		
U	#4		
X	#4	2	5.00

INLET LOCATIONS

468+29 (Rt.) (I1)
473+45 (Rt.) (I5)

CURB INLET TYPE 22 CURB RADIUS _____ FEET

LEGEND	DIMENSIONS	LEGEND	DIMENSIONS
L	5	L_1	
W	4	W_1	
H	6.33	H_1	

BILL OF MATERIALS

BAR SYMBOLS	BAR SIZES	BAR TOTALS	BAR LENGTHS
A	#4	2	1.46
A_1	#4	2	1.96
A_2	#4	4	7.61
A_3	#4		
A_4	#4		
B	#4	28	3.75
B_1	#4	2	3.25
C	#4	33	4.75
C_1	#4	4	2.50
C_2	#4	4	2.25
V	#4	10	4.83
V_1	#4	20	6.08
V_2	#4		
V_3	#4		
U	#4		
X	#4	2	5.00

INLET LOCATIONS

468+29 (Lt.) (I2)
473+45 (Lt.) (I6)

CURB INLET TYPE 22 CURB RADIUS _____ FEET

LEGEND	DIMENSIONS	LEGEND	DIMENSIONS
L	10	L_1	
W	4	W_1	
H	6	H_1	

BILL OF MATERIALS

BAR SYMBOLS	BAR SIZES	BAR TOTALS	BAR LENGTHS
A	#4	2	1.46
A_1	#4	2	1.96
A_2	#4	14	7.61
A_3	#4		
A_4	#4		
B	#4	36	3.75
B_1	#4	2	3.25
C	#4	31	9.75
C_1	#4	4	7.50
C_2	#4	4	7.25
V	#4	20	4.50
V_1	#4	30	5.75
V_2	#4		
V_3	#4		
U	#4		
X	#4	2	5.00

INLET LOCATIONS

470+05 (Rt.) (I3)

CURB INLET TYPE 22 CURB RADIUS _____ FEET

LEGEND	DIMENSIONS	LEGEND	DIMENSIONS
L	10	L_1	
W	4	W_1	
H	6.33	H_1	

BILL OF MATERIALS

BAR SYMBOLS	BAR SIZES	BAR TOTALS	BAR LENGTHS
A	#4	2	1.46
A_1	#4	2	1.96
A_2	#4	14	7.61
A_3	#4		
A_4	#4		
B	#4	38	3.75
B_1	#4	2	3.25
C	#4	33	9.75
C_1	#4	4	7.50
C_2	#4	4	7.25
V	#4	20	4.83
V_1	#4	30	6.08
V_2	#4		
V_3	#4		
U	#4		
X	#4	2	5.00

INLET LOCATIONS

470+05 (Lt.) (I4)

NO.	DATE	REVISIONS	BY	APP'D
03	01-28-05	Changed Class to Grade concrete	S.W.K.	J.O.B.
02	05-21-99	Added top elevation location note	R.J.S.	J.O.B.
01	10-08-90	Detailed on CADD	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SCHEDULE
INLETS AND MANHOLES

~~RD653H~~

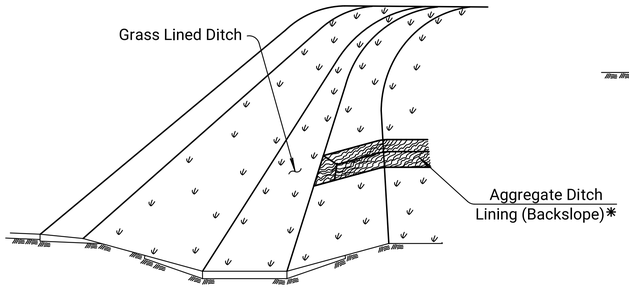
FHWA APPROVAL	06-10-05	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. R.J.S.

KDOT Graphics Certified 07-25-2025 Sh. No. 39

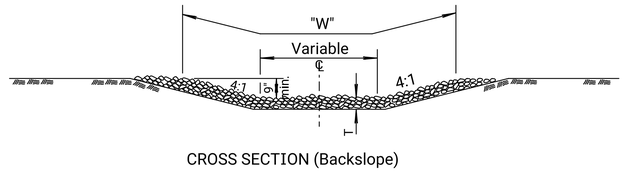
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:48
File : KA647501rss653h-01.dgn

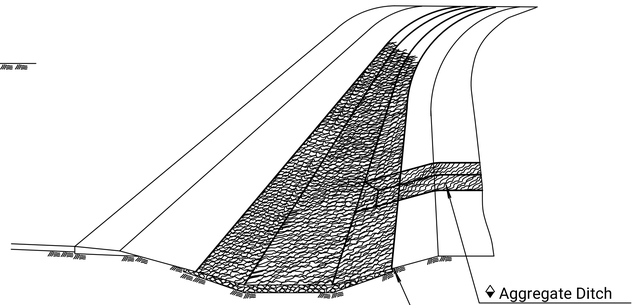
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	40	230



PERSPECTIVE VIEW
(Backslope Dt. Lining without Highway Dt. Lining)



CROSS SECTION (Backslope)



PERSPECTIVE VIEW

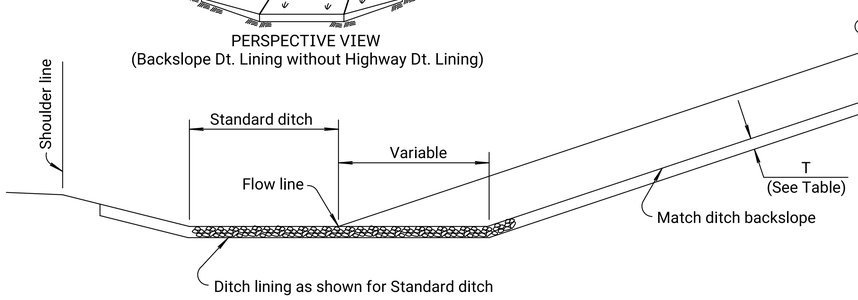
GENERAL NOTE

All work and materials required for this construction shall be paid for by the ton of "Aggregate Ditch Lining (D_{50})".

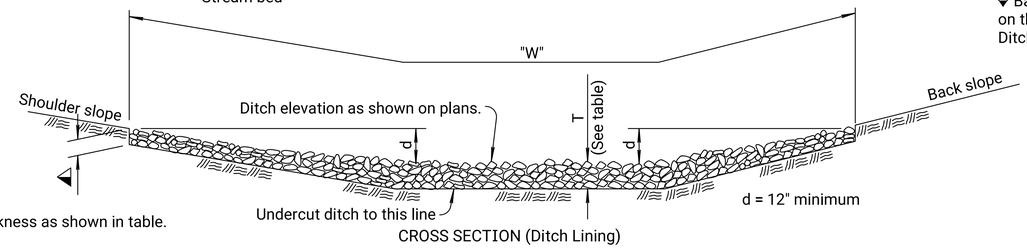
Dumped aggregate shall be spread in reasonable conformity with the ditch section as shown and as directed by the Engineer.

Aggregate Ditch Lining shall be measured and paid for by the ton in the vehicle at the location designated by the Engineer and shall be full compensation for excavation for undercutting, furnishing, hauling, placing and maintaining the material as specified to complete the work.

The weight of the aggregate is based on a standard density of 120 PCF. When the standard density of the material is more or less than 120 PCF, the thickness may vary correspondingly.



LONGITUDINAL SECTION (Backslope)



CROSS SECTION (Ditch Lining)

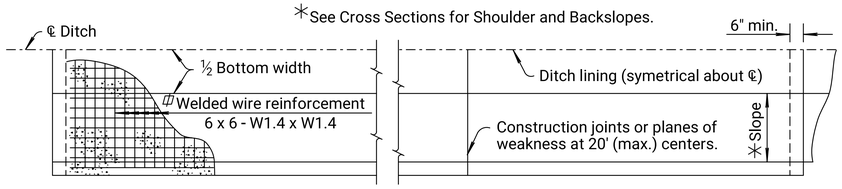
Feather edges to nominal thickness as shown in table.

◆ Backslope aggregate ditch lining, constructed as indicated on this sheet, shall be paid for by the ton of "Aggregate Ditch Lining (D_{50})."

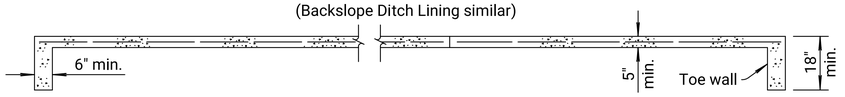
				QUANTITIES FOR TYPICAL 10' DITCH with 6:1 shoulder slope & 4:1 backslope			
D_{50}	T	◭		Approx. Excavation per Station (cu.yd.)			
				d = 1.0	d = 2.0	d = 3.0	d = 4.0
◔ 4"	12"	8"		68	99	130	161
6"	18"	12"		102	148	195	241

Note: Quantities provided for information only.
◔ Aggregate larger than 4 inches (D_{50}) should not be used within the clear zone.

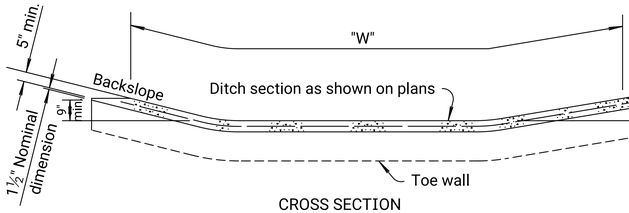
AGGREGATE DITCH LINING (D_{50})



HALF PLAN
(Backslope Ditch Lining similar)



LONGITUDINAL SECTION



CROSS SECTION

GENERAL NOTE

Concrete Grade 3.0 shall be used in Concrete Ditch Lining.

Welded wire reinforcement shall be of the electrically welded square mesh type with No. W1.4 wires spaced at 6" ctrs. each way.

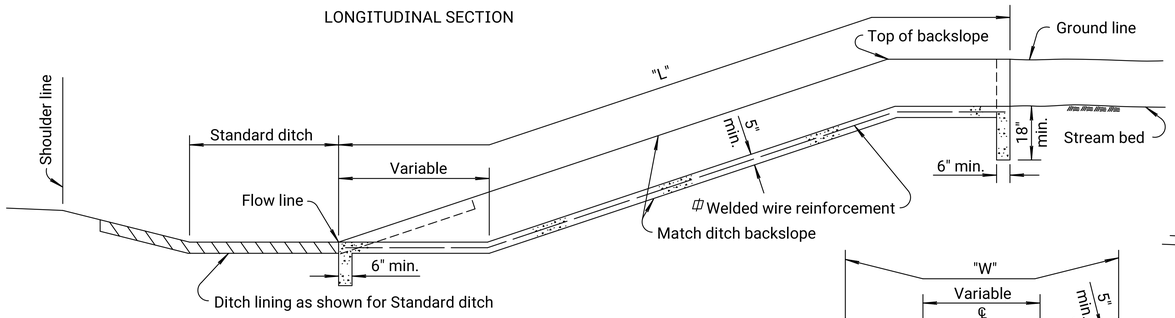
Reinforcement as shown is included in the unit price bid for "Concrete Ditch Lining".

Measurements of Concrete Ditch Lining shall be in sq. yds. of outside surface area. Add 1'-6" times "W" for each toewall.

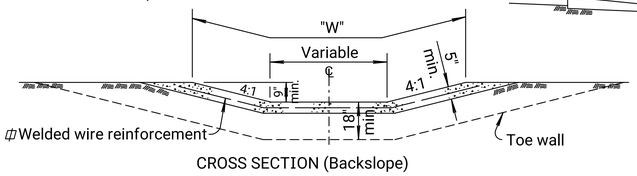
The exact location and dimensions may be adjusted, if required, by the Engineer at the time of construction.

Longitudinal construction joints may be constructed at the Contractor's option.

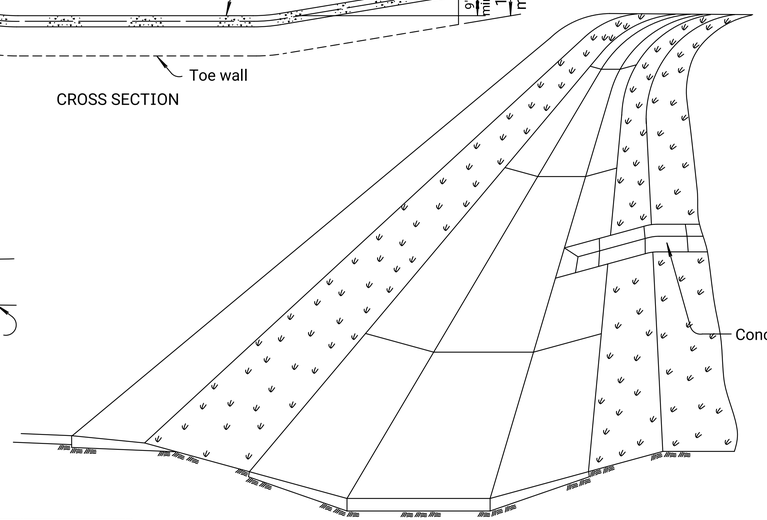
▱ Welded wire can be substituted with macro fiber reinforcement. See Standard Specifications for macro fiber and application rate requirements



LONGITUDINAL SECTION (Backslope)



CROSS SECTION (Backslope)



PERSPECTIVE VIEW

CONCRETE DITCH LINING

NO.	DATE	REVISIONS	BY	APP'D
10	03-27-18	Added Aggregate Size in Clear Zone Guidance	A.L.R.	T.T.R.
09	08-01-12	Revised General Note	S.W.K.	J.O.B.
08	03-20-08	Rev. agg. edge thickness and quant.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DITCH LINING

RD502

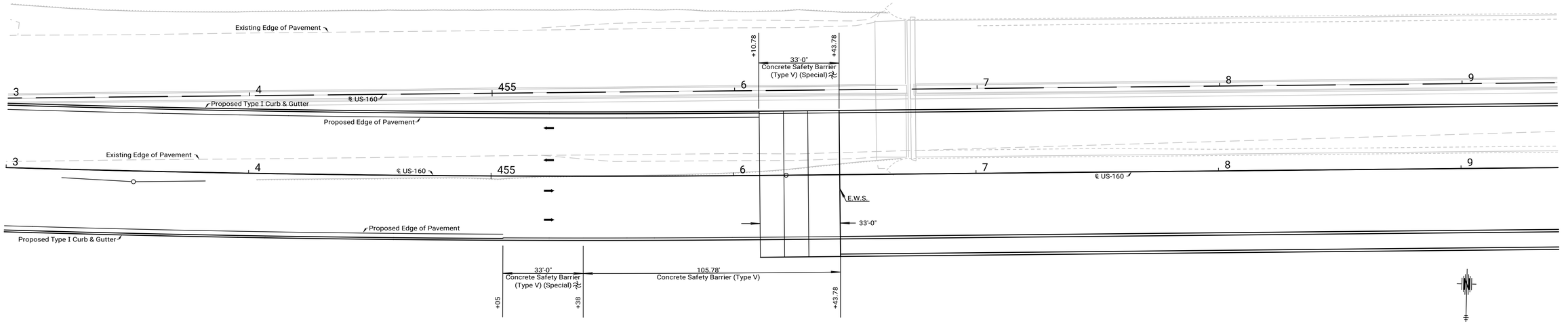
FHWA APPROVAL	06-19-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 04-18-2022 Sh. No. 40

KDOT Graphics Certified

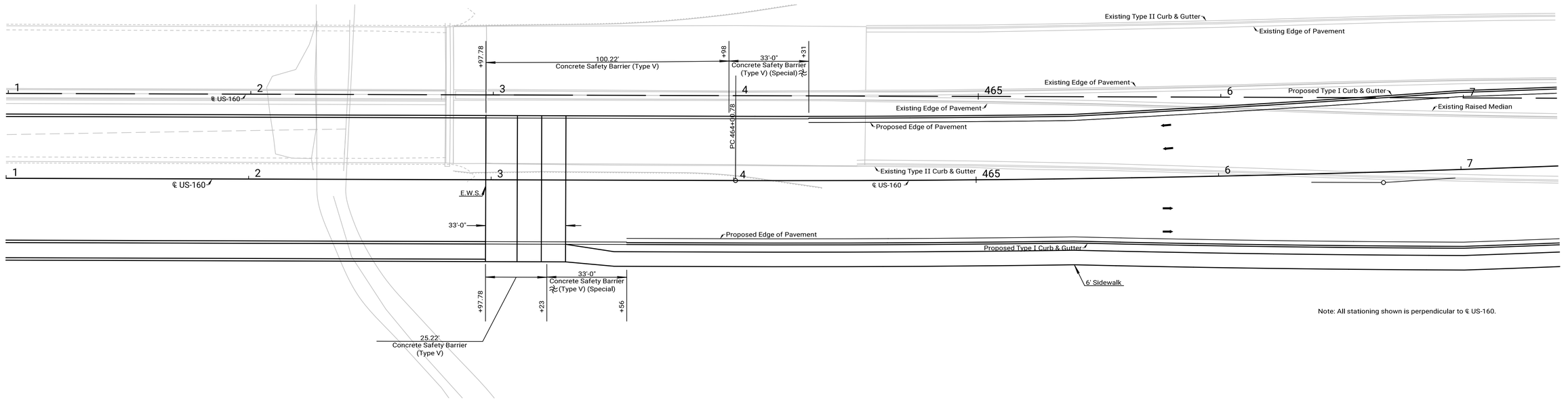
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:56
File : KA647501rss502-01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	41	230



See Sh. No. 43, 117, 118

Scale: 1" = 20'



Note: All stationing shown is perpendicular to ℄ US-160.

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE SAFETY

BARRIER LAYOUT

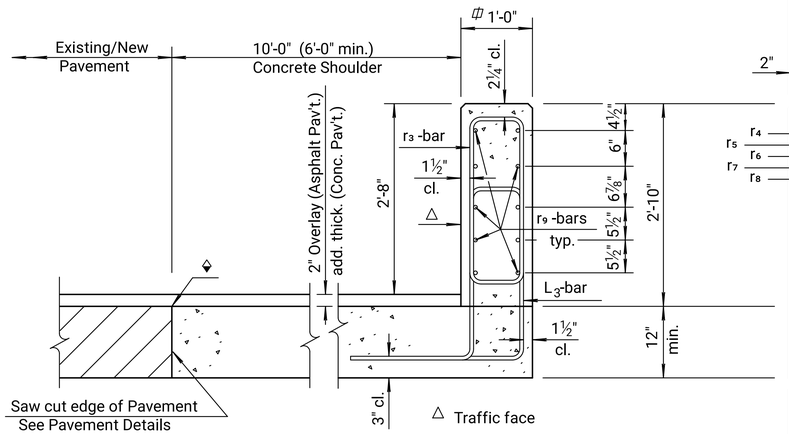
Sh. No. 41

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

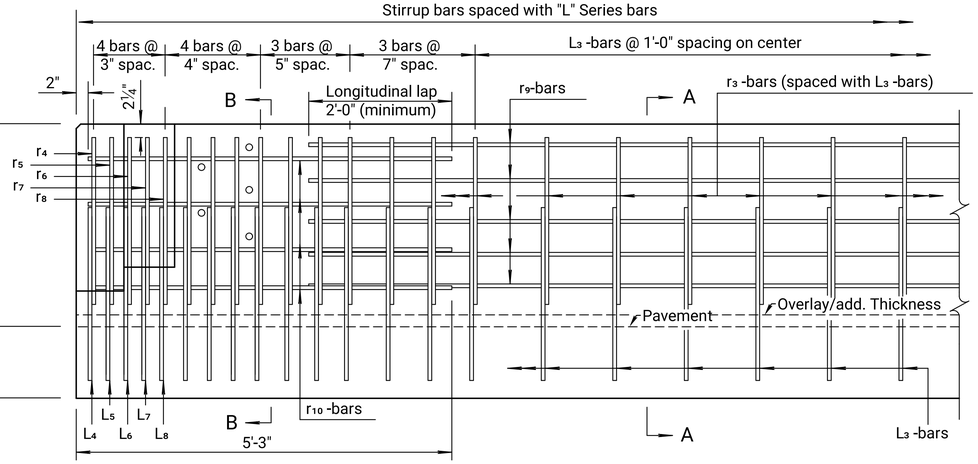
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:39
File : KA647501rgd-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	42	230

Note to Designer: This barrier (TL-3) is intended for applications such as traffic protection at piers. If longer barrier applications are used please coordinate with Bridge Design to modify this Standard Drawing and the barrier reinforcing appropriately.

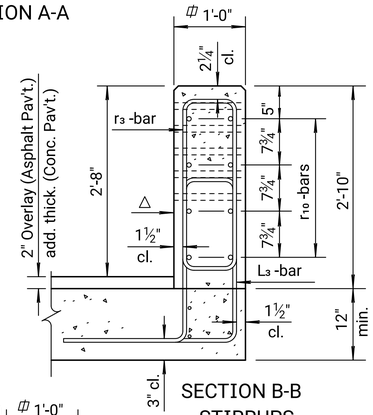


SECTION A-A

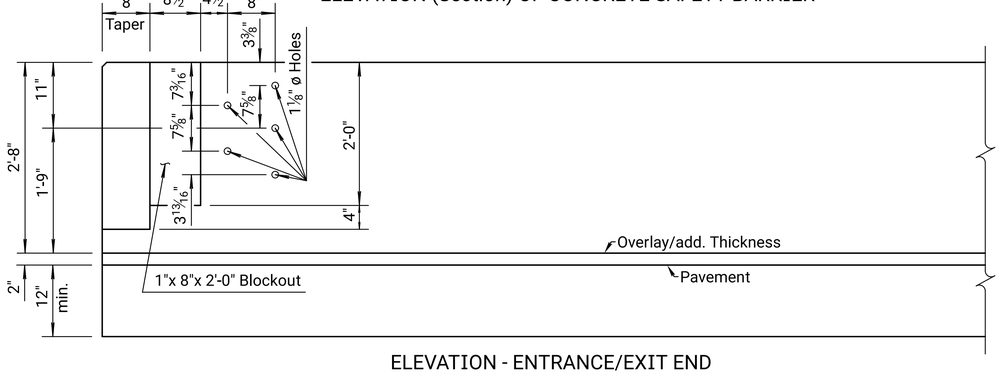


ELEVATION (Section) OF CONCRETE SAFETY BARRIER

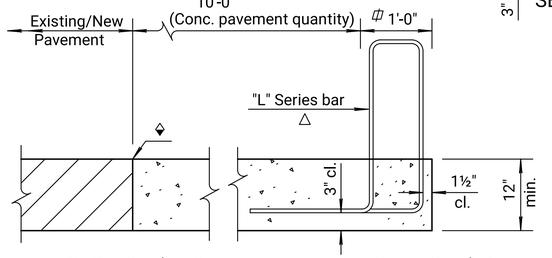
◈(Type V) Barrier/Conc. Sho. installed adjacent to Existing/New Concrete Pavement requires tie bars, see Standard Drawing "Pavement, Concrete, Dowel Jointed Non-Reinforced". See standard specifications for tie bar drilled and grouted into existing Concrete Pavement.



SECTION B-B
STIRRUPS

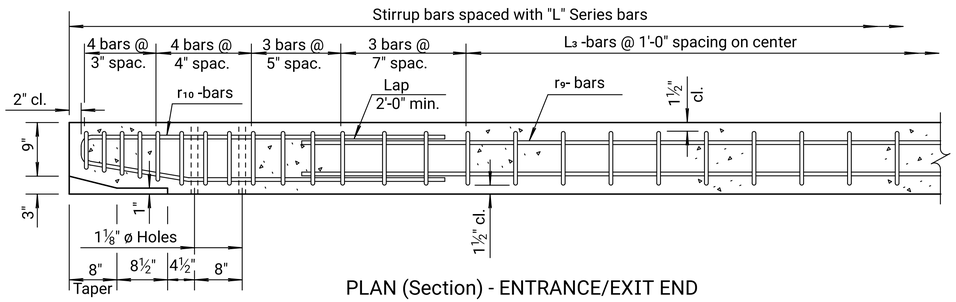


ELEVATION - ENTRANCE/EXIT END

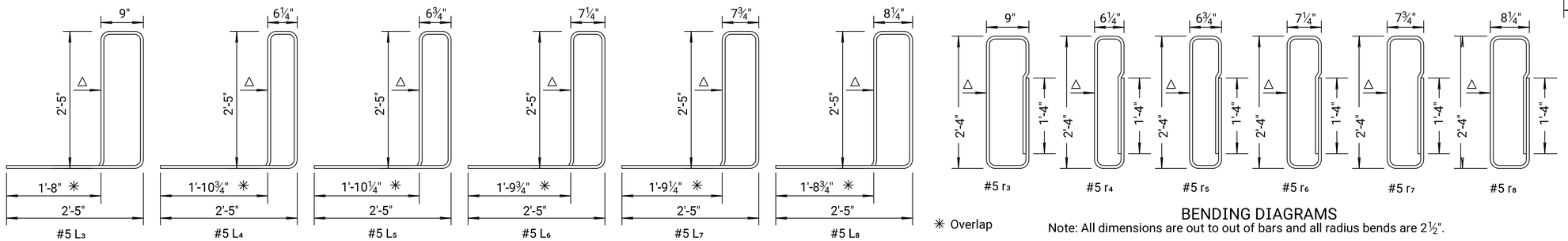


SECTION ("L" Series bar placed in Conc. Sho.) Phasing

Note: Place Concrete Barrier Shoulder with "L" Series bars and cure before adding (Type V) Barrier wall. (Type V) Barrier base (1'-0") placed congruent with 10' Concrete Shoulder.



PLAN (Section) - ENTRANCE/EXIT END



✳ Overlap

BENDING DIAGRAMS

Note: All dimensions are out to out of bars and all radius bends are 2½".

GENERAL NOTE

Use Concrete Grade 3.0 (AE) or Concrete Pavement Mix (Contractor's Option) except where noted, see standard specifications.

Use Grade 60 Epoxy Coated reinforcing steel. See details for spacing, keep a minimum reinforcing steel clear distance of 1½".

The section furnished must generally comply with the dimensions shown. Requests for minor variations in section geometry may be submitted for review.

Permanent Concrete barriers are cast in place or slip formed construction only. Precast barriers are not permitted.

Bevel all exposed edges with a ¾" triangular molding.

See Standard Specification to cut and epoxy coat dowel bars.

DELINEATION

See Standard Drawing RD624 for details of barrier delineation.

CONSTRUCTION JOINTS

Place Joint Material (Nonextruding, Type B) where shown for structures and at the end of day construction joint.

CONTRACTION JOINTS

25'-0" (Type V) Barrier shown does not require Contraction Joint unless directed by the Engineer. Longer (Type V) Barrier designs require formed or sawed Contraction joints on 20' centers maximum. Where barrier is adjacent to concrete pavement space joints to match contraction joints and definite transverse cracks in the pavement. Contraction joints not to exceed 20' centers.

Work and materials required for installation of joint material is subsidiary to Concrete Safety Barrier (Type V) and conforms to the standard specifications.

Payment for all work and material to install Concrete Safety Barrier (Type V) (Permanent) is per lin. ft. Concrete Pavement (Uniform 12") (AE) per Sq. Yd. included in Summary of Quantities. Asphalt Overlay (2") (when needed). See Summary of Quantities (Surfacing).

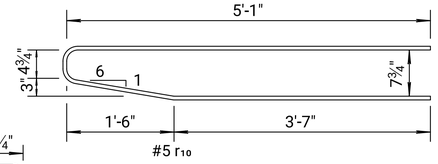
25' (TYPE V) BARRIER/CONCRETE SHOULDER

Bar	Bar Size	Shape	No. of Bars	Length ft.	Weight lbs.
L3	#5		33	9'-8"	332.7
L4	#5		2	9'-8"	20.2
L5	#5		2	9'-8"	20.2
L6	#5		2	9'-8"	20.2
L7	#5		2	9'-8"	20.2
L8	#5		2	9'-8"	20.2
r3	#5		33	7'-6"	258.1
r4	#5		2	7'-1"	14.8
r5	#5		2	7'-2"	14.9
r6	#5		2	7'-3"	15.1
r7	#5		2	7'-4"	15.3
r8	#5		2	7'-5"	15.5
r9	#5		10	18'-8"	194.7
r10	#5		8	10'-7"	88.3
⊗ Concrete Pavement (12" Uniform) (AE)					27.8 Sq. Yd.
Barrier Conc. Gr. 3.0 (AE)					3.4 Cu. Yd.
Reinf. Steel (Grade 60 Epoxy Coated)					1,050 Lbs.
HMA for 2" Shoulder overlay					3 Tons

Quantities shown are for 25'-0" Barrier Section, 10' x 25' of Concrete Pavement (12" Uniform)(AE) with 2" HMA overlay. Modification of design length or shoulder width requires revision of this sheet.

⊗ No HMA overlay bid as Concrete Pavement (14" Uniform) (AE).

⏍ 1'-0" Conc. Sho. widening bid as (Type V) Barrier.



NO.	DATE	REVISIONS	BY	APP'D
03	07-14-17	Revised 'L-Bar' Reinforcement	A.L.R.	S.W.K.
02	06-13-13	Revised Note to Designer	S.W.K.	J.O.B.
01	07-19-12	Revised Quantities	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT CONCRETE SAFETY BARRIER (TYPE V)

RD625C

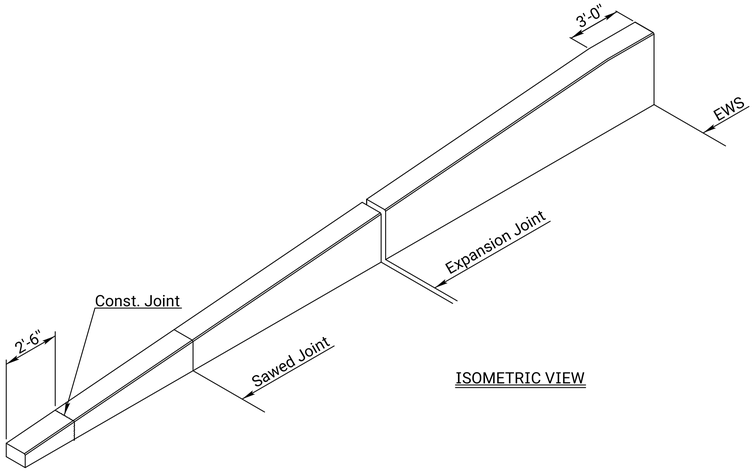
FHWA APPROVAL	03-05-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-14-2022 Sh. No. 42

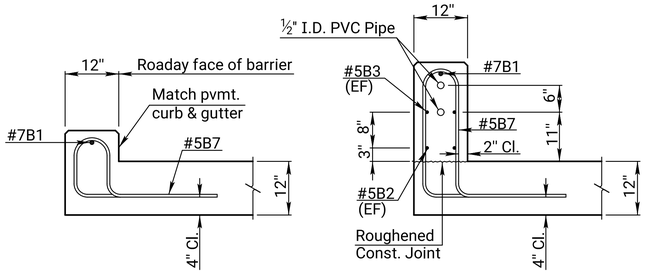
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:44
File : KA647501rss625c.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	43	230

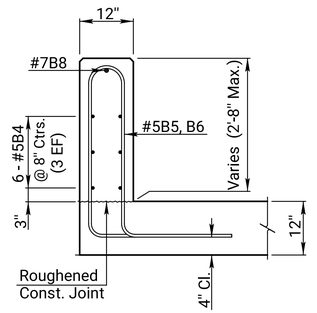


ISOMETRIC VIEW



SECTION C-C

SECTION B-B



SECTION A-A

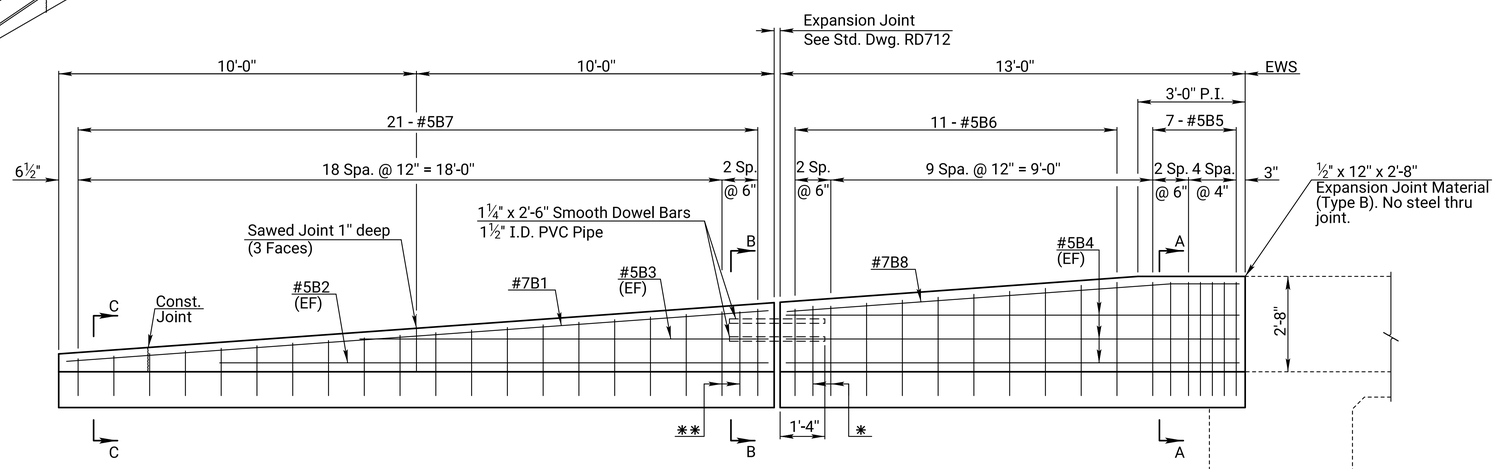
✳BILL OF REINFORCING STEEL							
STRAIGHT BARS				BENT BARS			
Mark	Size	No.	Length	Mark	Size	No.	Length
B1	#7	1	19'-8"	B8	#7	1	12'-8"
B2	#5	2	15'-4"	B5	#5	7	9'-8"
B3	#5	2	11'-5"	B6	#5	11	Varies
B4	#5	6	12'-8"	B7	#5	21	Varies

✳ Quantities listed are for one Concrete Safety Barrier Transition only.

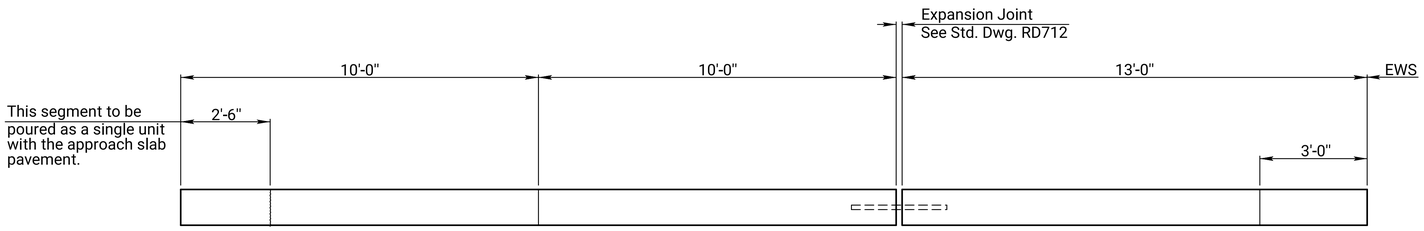
✳BILL OF MATERIALS		
Concrete Safety Barrier (Type V) (Special)	33.0	Lin. Ft.
Grade 4.0 Concrete (AE)	2.1	Cu. Yds.
Reinforcing Steel (Gr.60) (Epoxy Coated)	548	lbs.

Quantities listed are for one Concrete Safety Barrier Transition only. Four Concrete Safety Barrier Transitions req'd at US-160 Bridge over Walnut River. See Summary of Quantities Sh. No. 117-118

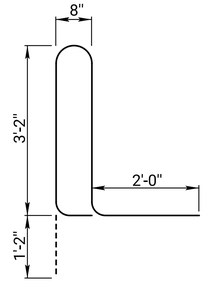
Note: Concrete and reinforcing steel are shown for information only.



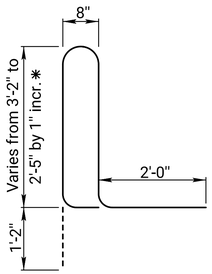
ELEVATION



PLAN

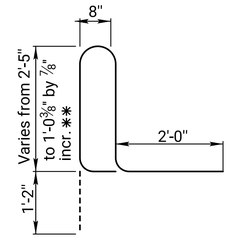


B5



B6

✳ 2'-6"



B7

✳✳ 2'-4⅛"

BENDING DIAGRAMS

GENERAL NOTES

Unit Stresses:
Concrete (Grade 4.0)(AE) f'c = 4 ksi
Reinforcing Steel Fy = 60 ksi

Concrete Safety Barrier including transition shall be paid for as linear feet of Concrete Safety Barrier (Type V) (Special) and includes all work, materials, labor, and incidentals required to construct the barriers and barrier transitions.
Construct the transition barrier rail as shown on this sheet.
Permanent Concrete barriers are cast-in-place or slip formed construction only. Precast barriers are not permitted.
All concrete shall be Concrete (Grade 4.0)(AE). Bevel all exposed edges of the concrete with a ¾" triangular molding, unless otherwise noted.
All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60 and shall be epoxy coated as set forth in the special provisions.
Bar supports shall be coated. Clearance from the face of concrete for all reinforcing steel shall be 2", unless otherwise noted.
All work and materials required for installation of expansion joints shall be subsidiary to this bid item.
See Std. Dwgs. RD711 and RD712 for details of joints.

LEGEND

EWS - Edge of Wearing Surface
EF - Each Face

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

CONCRETE SAFETY BARRIER
(Type V) (Special)
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

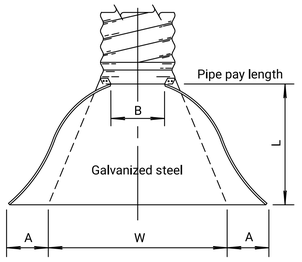
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Sh. No. 43

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:30
File : ka647501bbr114-070.dgn

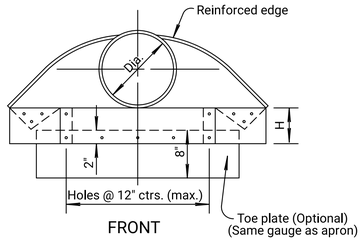
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	44	230

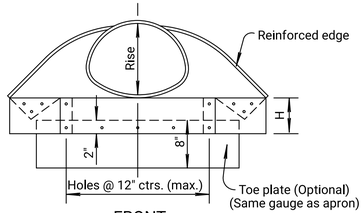


PLAN

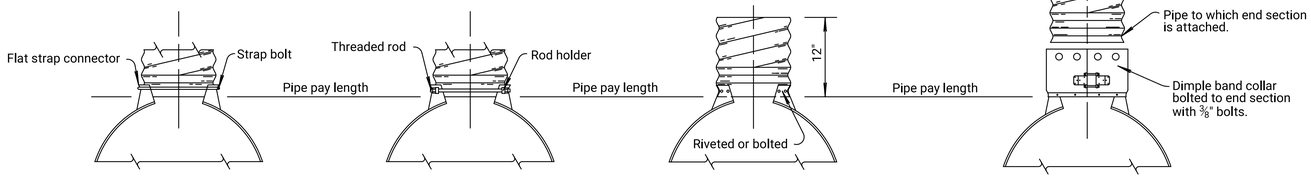
(Illustrated with Type #3 Connection)



FRONT



FRONT



TYPE 1

Available in sizes 12" through 24" only.

TYPE 2

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

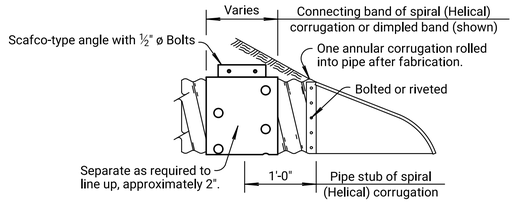
TYPE 3

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

TYPE 5

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

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



SPIRAL (HELICAL) CORRUGATION

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

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

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

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

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

GENERAL NOTE for END SECTIONS

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

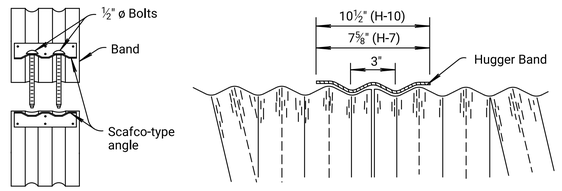
Toe plate extension, when specified, is an accessory and shall be the same gauge and metal as end section. Toe plate shall be punched to match holes in apron lip and attached with furnished 3#8" diameter nuts & bolts.

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

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

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

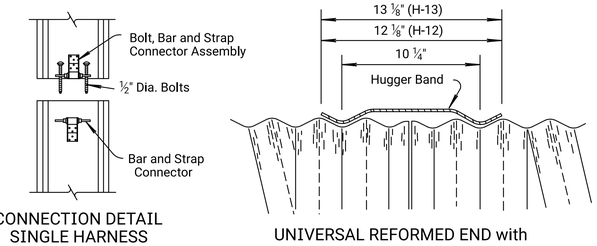
Connection of end sections by welding will not be permitted.



CONNECTION DETAIL H-7 or H-10 BAND

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

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

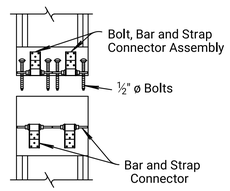


CONNECTION DETAIL SINGLE HARNESS

UNIVERSAL REFORMED END with HUGGER BAND

DETAILS FOR H-12 or H-13 HUGGER BAND

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



CONNECTION DETAIL DOUBLE HARNESS

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

GENERAL NOTE for METAL PIPE

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

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD660

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

KDOT Graphics Certified 05-16-2022 Sh. No. 44

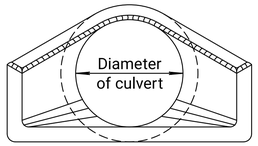
KDOT Graphics Certified

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

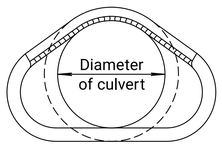
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	45	230

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.

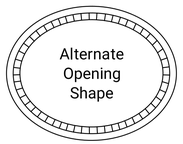


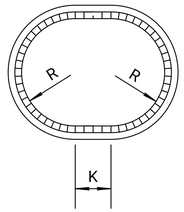
END ELEVATION (TYPE I)



SECTION A-A

Showing rounding of inside edge of end section.





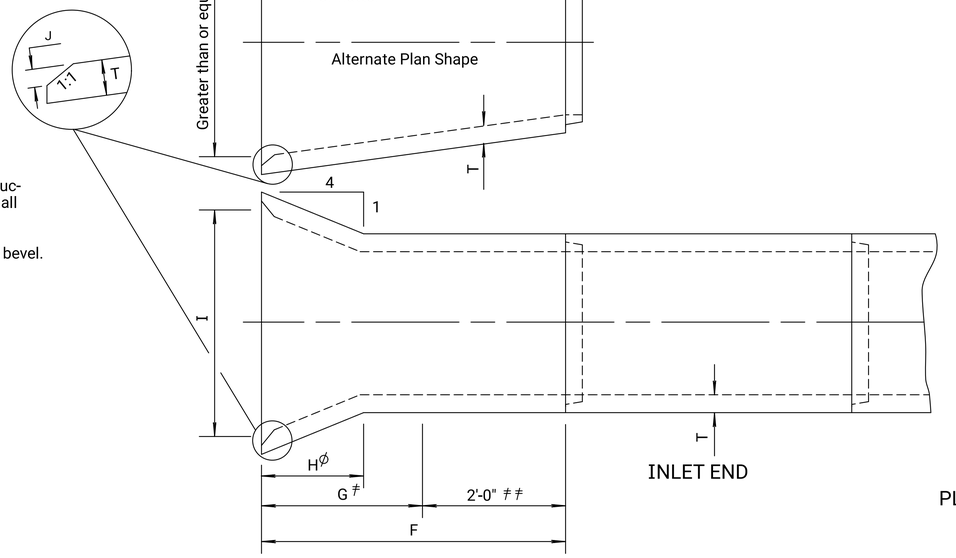
END ELEVATION
(TYPE III)

ϕ Transition to round pipe.

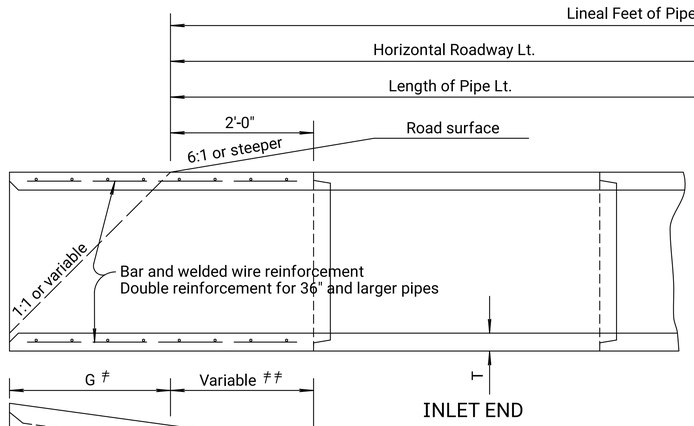
≠ Paid for as separate item of End Section, except when structures shall bid as alternates. In that case End Sections shall be subsidiary to bid item. "Drainage Structure No. ".

≠≠ Included in pay length of pipe.

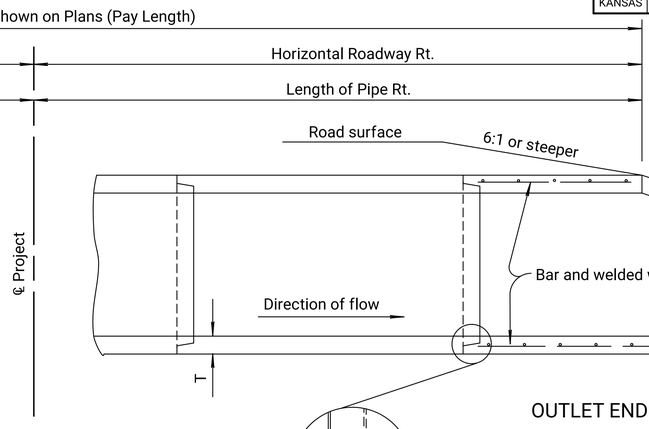
⚹ Minimum waterway area is calculated at the inside of the bevel.



INLET END



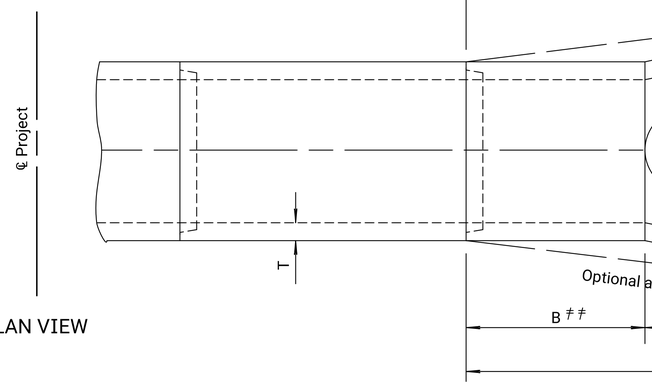
INLET END



OUTLET END

OUTLET END

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



PLAN VIEW

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD662

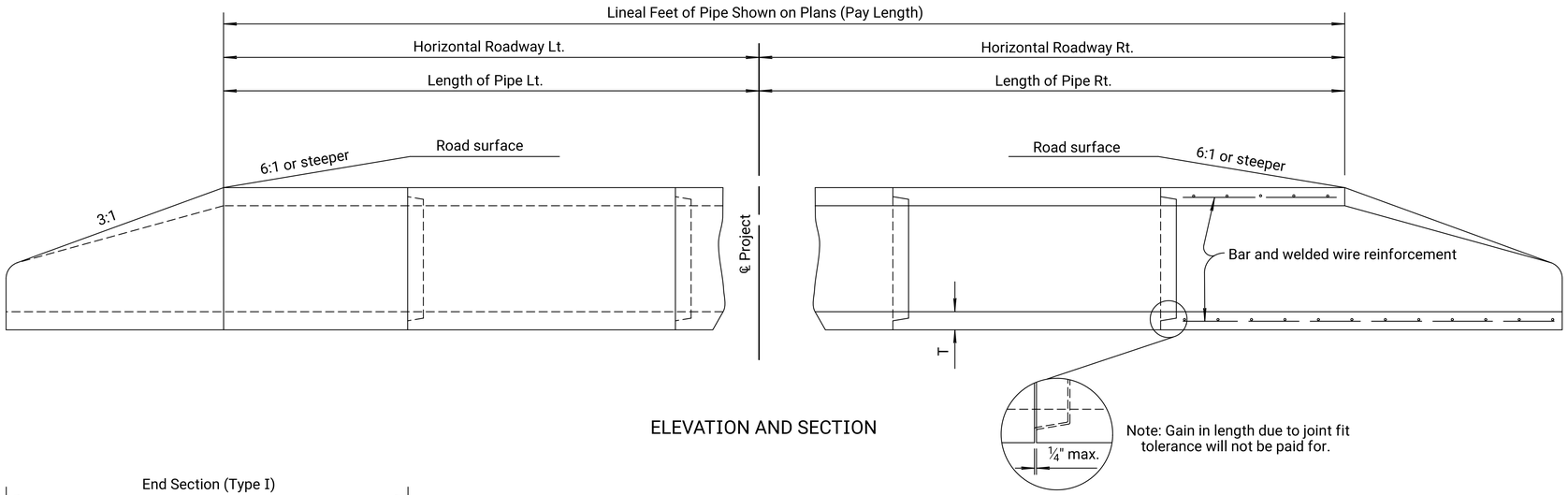
FHWA APPROVAL	06-27-08	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-16-2022 Sh. No. 45

KDOT Graphics Certified

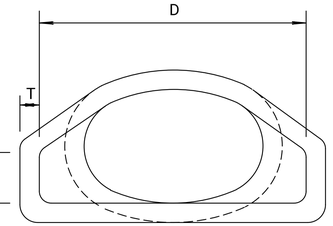
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:38
File : KA647501rss662-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	46	230

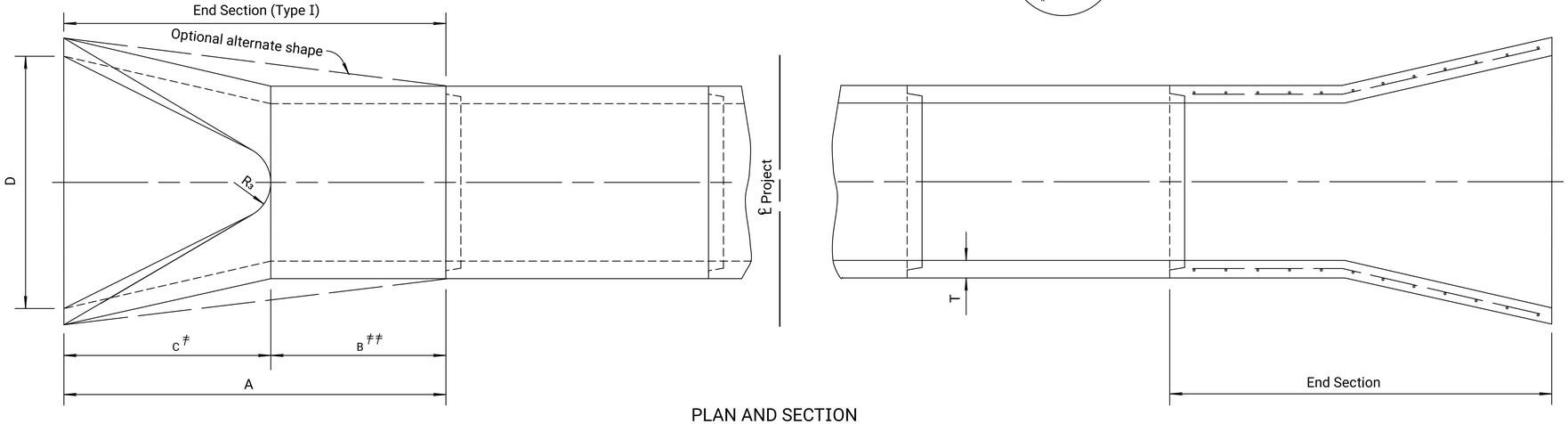


ELEVATION AND SECTION

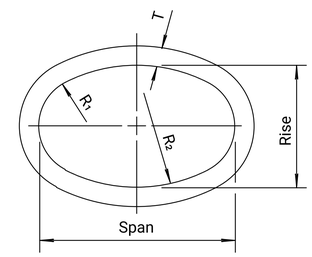
Note: Gain in length due to joint fit tolerance will not be paid for.



FLARED END SECTION ELEVATION



PLAN AND SECTION



END ELEVATION

END SECTION (TYPE I) NOMINAL DIMENSIONS

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

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

≠≠ Included in pay length of pipe.

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE END SECTION FOR REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE TYPE I

RD663

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

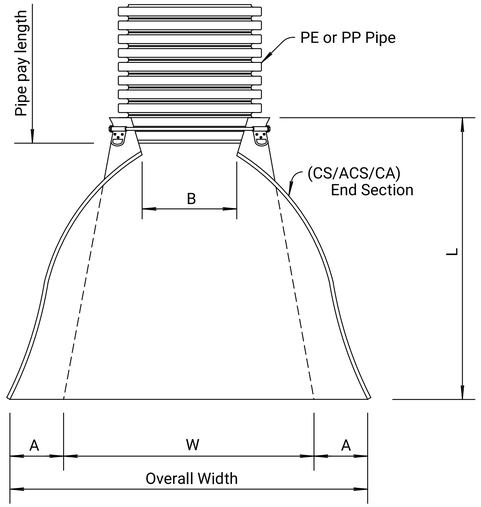
KDOT Graphics Certified 05-16-2022 Sh. No. 46

KDOT Graphics Certified

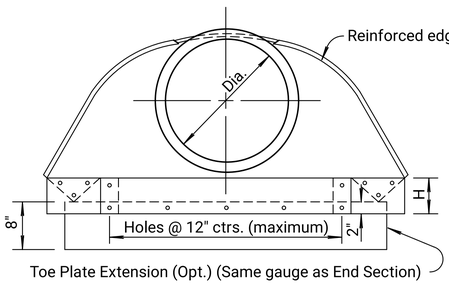
Note to Designer: KDOT Pipe Policy provides guidance in identifying the prohibited and/or restricted uses of CSP, ACSP, PEP, PVCP, CAP & RCP. Provide end sections of the same type and coating as the pipe. Exceptions to this are noted in the Standard Specifications. Refer to the KDOT Design Manual, Volume 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 : Jackie.Austin@ks.gov 25-SEP-2025 18:43
File : KA647501rss663-01.dgn

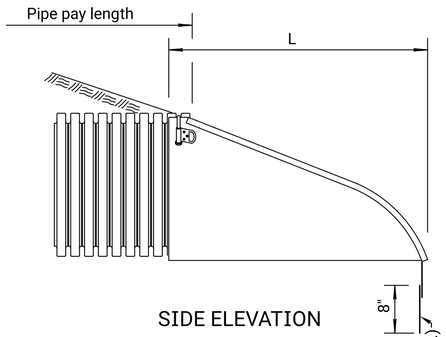
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	47	230



PLAN
(Illustrated with Type 2 Connector)

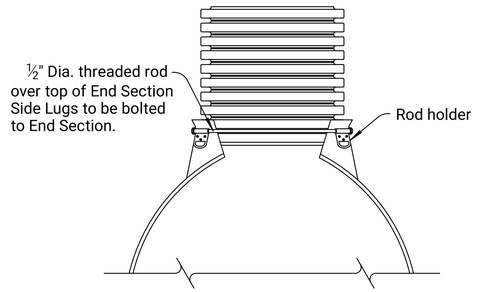


FRONT ELEVATION

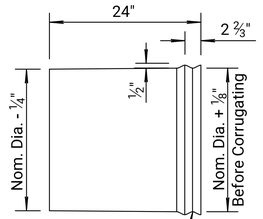


SIDE ELEVATION

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

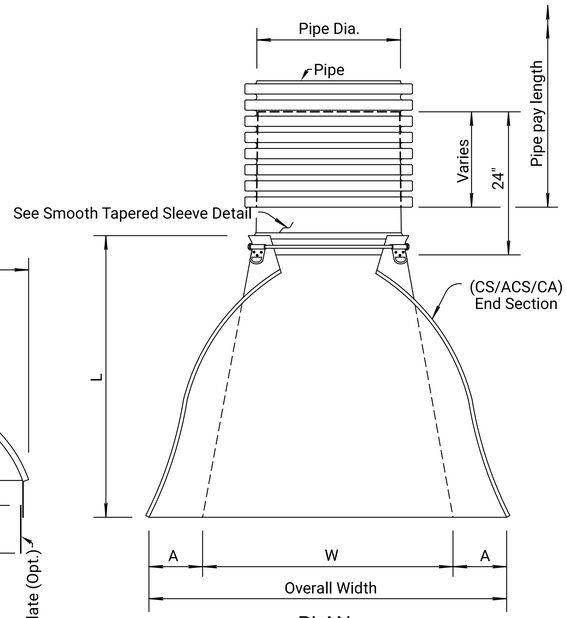


TYPE 2 CONNECTOR
(12" & Larger)

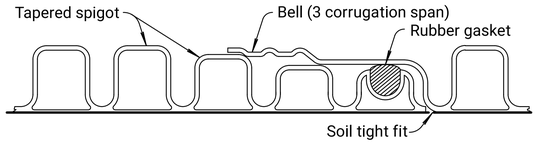


Form ½" x 2 ⅔" Corrugations in 12 ga. smooth CS (Galvanized) or ACS (Aluminized) metal, maintain inside diameter of sleeve.

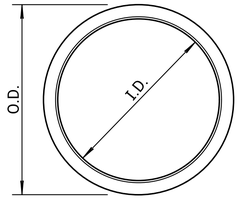
SMOOTH TAPERED SLEEVE DETAIL
(Required)



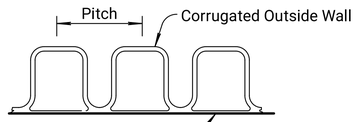
PLAN
TAPERED SLEEVE FOR ATTACHING
METAL END SECTION TO PE OR PP PIPE
(Illustrated with Type 2 Connector)



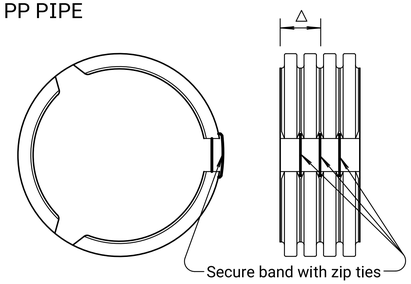
PE or PP PIPE BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT



DETAILS OF CORRUGATED
PE or PP PIPE

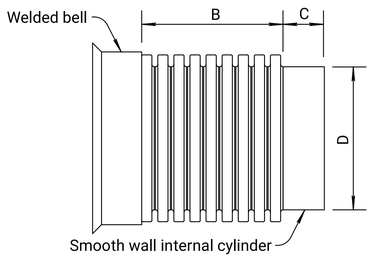


TYPICAL SECTION
CORRUGATED PE or PP PIPE



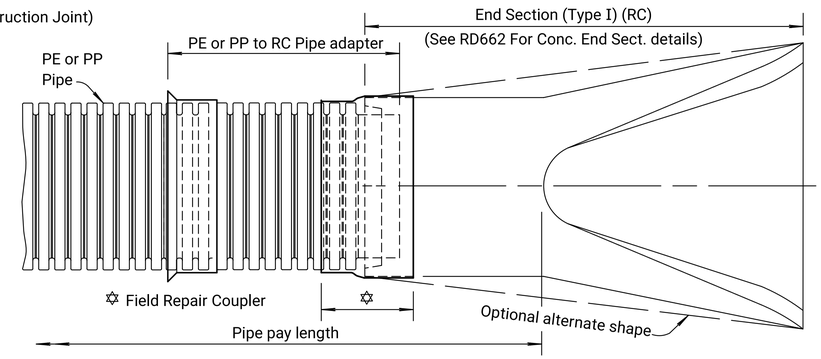
△ Two Full Corrugations (Minimum Overlap)

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



PE or PP to RC PIPE ADAPTER

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



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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

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

RD667

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

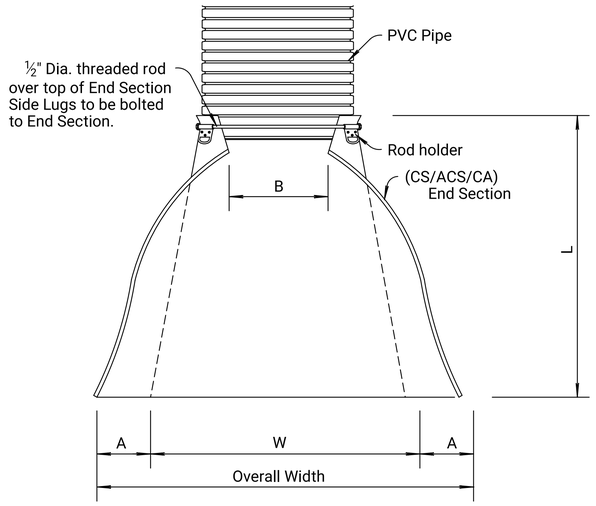
KDOT Graphics Certified 06-22-2022 Sh. No. 47

KDOT Graphics Certified

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

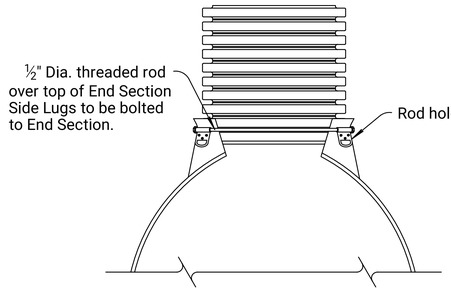
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:40
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	48	230



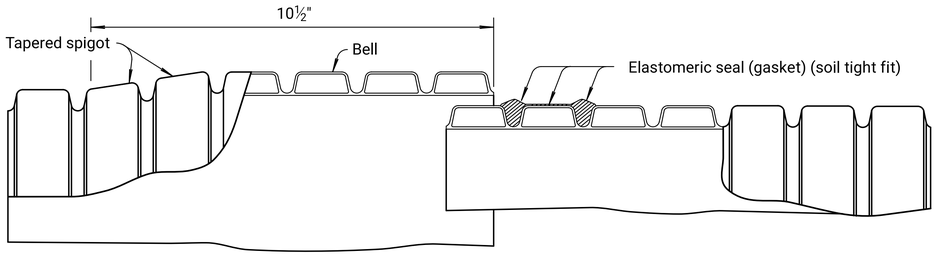
PLAN

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

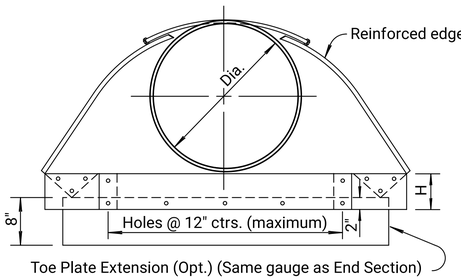


TYPE 2 CONNECTOR

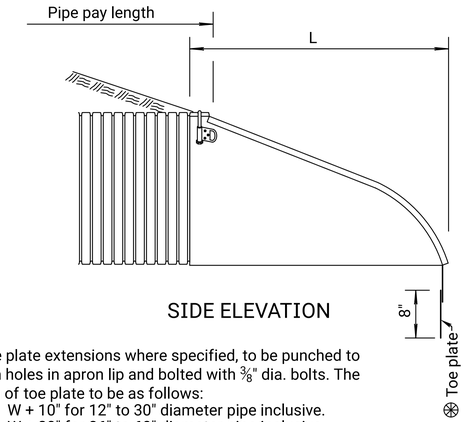
(12" & Larger)



PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

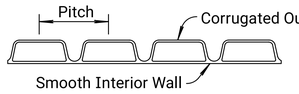


FRONT ELEVATION

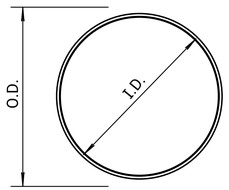


SIDE ELEVATION

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



TYPICAL SECTION
CORRUGATED PVC PIPE



DETAILS OF
CORRUGATED PVC PIPE

GENERAL NOTES

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

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

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

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

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

See Standard Specifications for PVC Pipe bedding and backfill.

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

METAL END SECTION (TYPE I) for PVC PIPE

RD667B

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

KDOT Graphics Certified 05-16-2022 Sh. No. 48

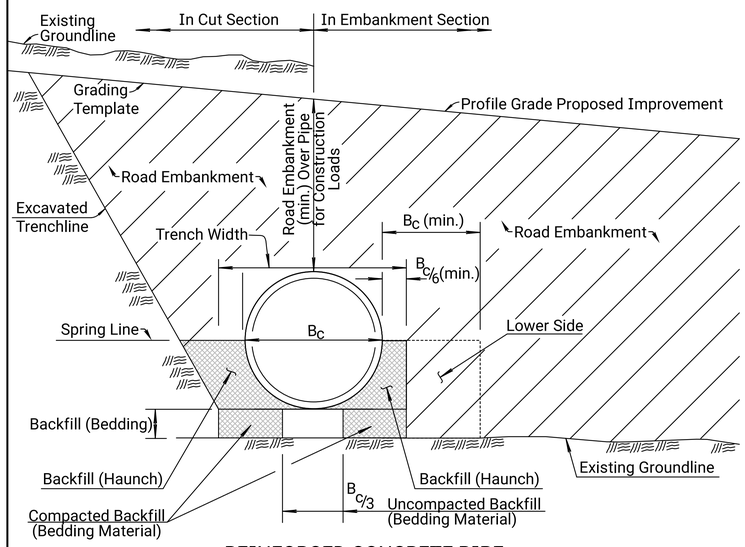
KDOT Graphics Certified

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

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File : KA647501rss667b-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	49	230

Trench Constuction



REINFORCED CONCRETE PIPE

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

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

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

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

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

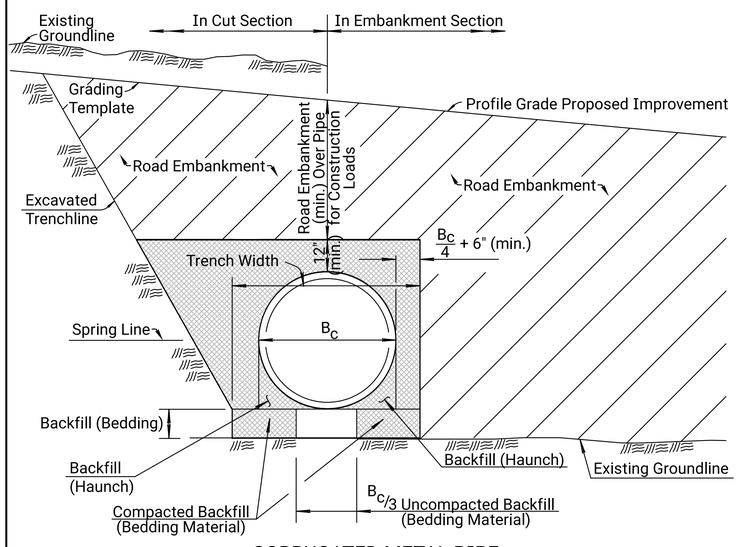
B_C: Outside Pipe Diameter

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

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

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

Trench Constuction



CORRUGATED METAL PIPE

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

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

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

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

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

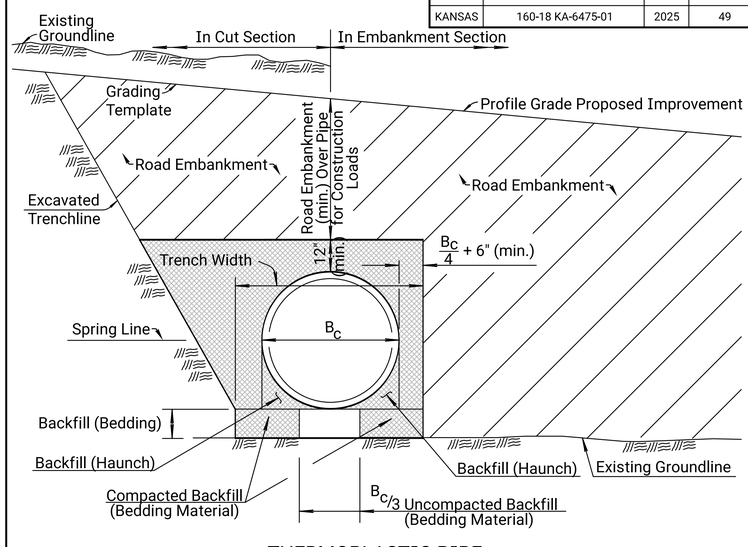
Trench Width: The minimum required trench width is the greater of:
$1.50 \times B_C + 12"$ or $B_C + 16"$

B_C: Outside Pipe Diameter

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

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

Trench Constuction



THERMOPLASTIC PIPE

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

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

Compacted Backfill Material: Use Type B compaction.

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

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

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

B_C: Outside Pipe Diameter

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

PIPE INSTALLATION DETAILS

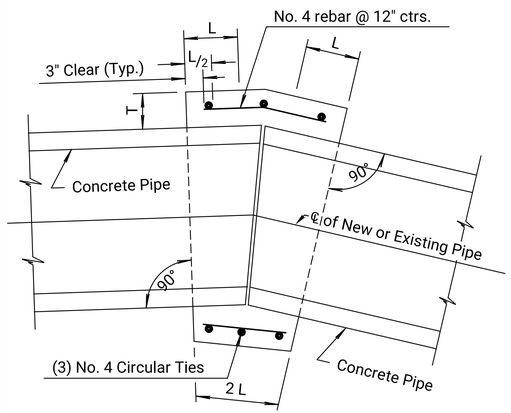
RD658

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

KDOT Graphics Certified 06-10-2022 Sh. No. 49

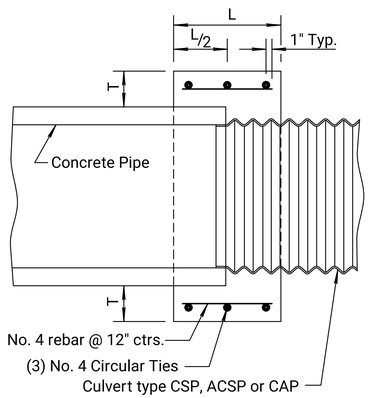
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PIPE COLLAR AT CHANGE IN ALIGNMENT

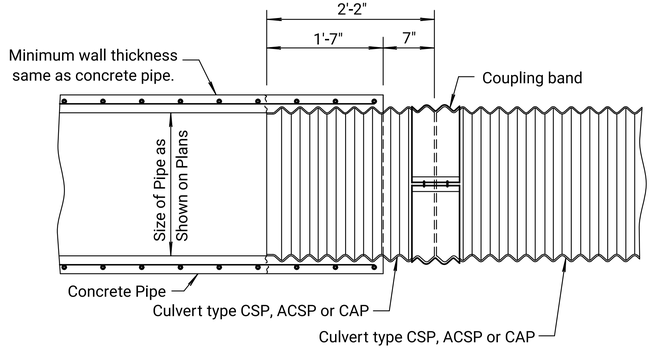
TYPE A COLLAR



PIPE COLLAR AT CHANGE IN PIPE MATERIAL

TYPE B COLLAR

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

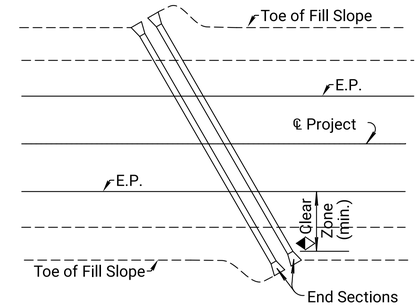


(CONCRETE PIPE CONNECTED TO CORRUGATED METAL PIPE)

TYPE C COLLAR ⚠

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	50	230



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".

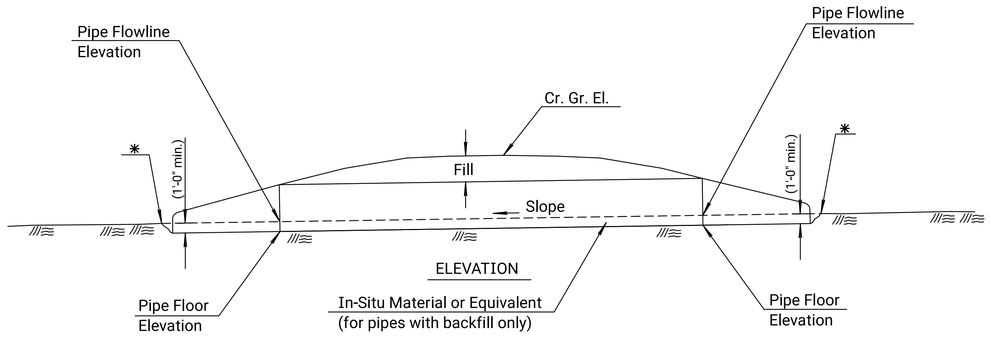
PIPE COLLARS

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.

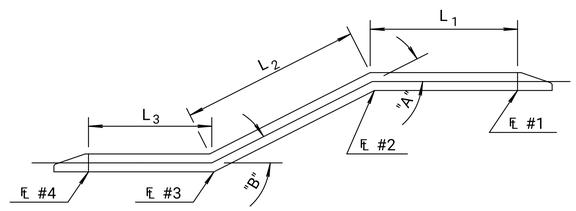
For pipes where the height or rise is less than or equal to 4'-0" install the pipe such that embedment will occur through natural sedimentation. See Pipe Embedment detail shown on this sheet.

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

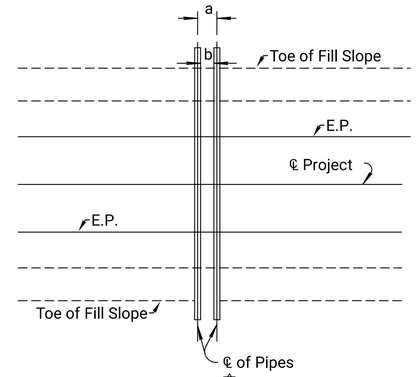
✳Natural channel or ditch flowline elevation. See profile sheets and cross sections for details.



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	



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

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

KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS
PIPE CULVERT DETAILS

RD668

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

KDOT Graphics Certified 05-02-2022 Sh. No. 50

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	51	230

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

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:38
File : KA647501rss659-01.dgn

PIPE CULVERT SUMMARY

Station	Type	Size or Bid Designation Sq. Ft.	Crown Grade Elev.	Flow Line Lt.	Flow Line Rt.	✳ Floor Elev. Lt.	✳ Floor Elev. Rt.	Horizontal Roadway Lt.	Horizontal Roadway Rt.	Degree of Rotation	Length of Pipe Lt.	Length of Pipe Rt.	Lin. Ft. of Pipe	Height of Fill (max.) Ft.	Concrete Pipe AASHTO Class No.	Pipe Gauge ◔ Steel	Pipe Gauge ◔ Alum.	Pipe Corrugations ◔ Steel	Pipe Corrugations ◔ Alum.	Remarks
				See Sh. No. 117 for Drainage Structure Quantities																

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

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

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

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

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

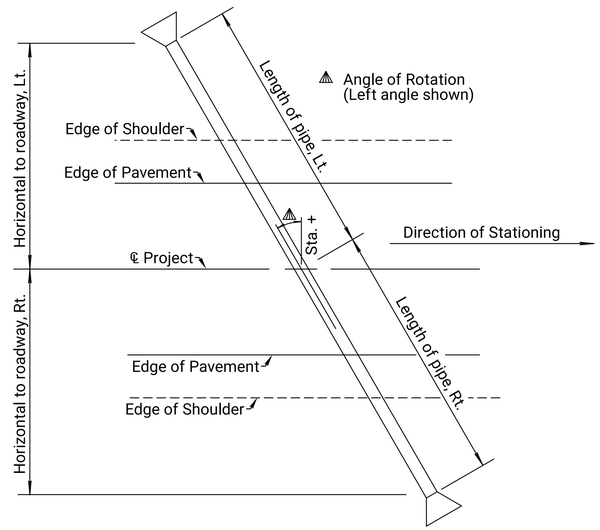
When inside diameter of pipe is 60" or less.

For inside diameter: ≥ 30"

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

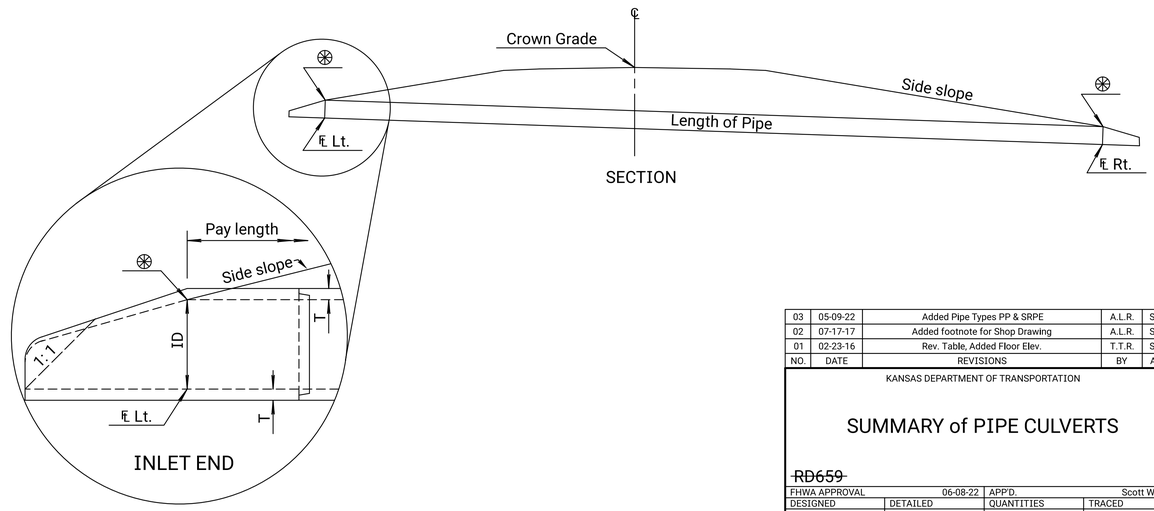
◆ Type IV End Sections are only made of CS or ACS.

Ψ Submit Shop Drawing of connection for review



PLAN
(Showing Rotation about ℄)

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



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

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY of PIPE CULVERTS

~~RD659~~

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

KDOT Graphics Certified 07-31-2025 Sh. No. 51

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	52	230

SUMMARY OF QUANTITIES

Item / Location	Excavation	Concrete		Reinforcing Steel		Structural Steel		Fence (Chain Link) (6')	Test Piles (Special)	Piles (Steel)	Core Hole	Drilled Shaft (48")	Sonic Test (Drilled Shaft)	Bearing (TFE/ Elastomeric)	Bearing (Steel Reinforced Elastomeric)	Bearing (Steel)	Welded Stud Shear Connectors	Abutment Aggregate Drain	Bridge Backwall Protection System	Slope Protection (Riprap Stone)	Temporary Shoring	Bridge Deck Grooving
	Class I	(Grade 4.0) (AE)(SA)	(Grade 4.0) (AE)	(Grade 60) Epoxy Coated	(Grade 60)	M270 (Gr. 50W)(T3)	A709 (Gr. 50W)	(Special)	(HP12x53) ‡	(HP12x53) ‡	(Investigative)	(Cased)	(Set Price)							‡‡		
	Cu. Yds.	Cu. Yds.	Cu. Yds.	Lbs.	Lbs.	Lbs.	Lbs.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lin. Ft.	Each	Each	Each	Each	Each	Cu. Yds.	Sq. Yds.	Cu. Yd.	Lump Sum	Sq. Yds.
Abutment No. 1	179.5	**	-	**	-	-	-	-	72	499	-	-	-	7	-	-	-	227.9	73.5	2,686	-	-
Pier No. 1	-	-	73.2	-	15,693	-	-	-	-	-	43.4	129.8	-	7	-	-	-	-	-	-	-	-
Pier No. 2	-	-	64.2	-	13,992	-	-	-	-	-	46.2	152.9	-	-	-	7	-	-	-	-	-	-
Pier No. 3	-	-	70.8	-	14,062	-	-	-	-	-	56.0	180.1	-	-	-	7	-	-	-	-	-	-
Pier No. 4	-	-	70.8	-	14,062	-	-	-	-	-	55.3	177.0	-	-	7	-	-	-	-	-	-	-
Abutment No. 2	154.7	**	-	**	-	-	-	-	-	480	-	-	-	7	-	-	-	227.9	73.5	1,463	-	-
Substr. Total	334.2	-	279.0	-	57,809	-	-	-	72	979	200.9	639.8	1	21	7	14	-	455.8	147.0	4,149	-	-
Superstr. Total	-	1,389.2	-	356,927	-	1,202,915	102,206	652	-	-	-	-	-	-	-	-	11,214	-	-	-	-	3,415.3
Total	334	1,389.2	279.0	356,930	57,810	1,202,915	102,206	652	72	979	201	640	1	21	7	14	11,214	456	147	4,149	Lump Sum	3,415

** Quantities are included in the Superstructure Total Quantity

Note: Only HP12x53 steel piles shall be used on this bridge.

‡ Summary of Piling
Abutment No. 1: 1 Test Pile @ 72', 5 Pile @ 62', 3 Battered Pile @ 63'
Abutment No. 2: 6 Piles @ 53', 3 Battered Pile @ 54'

‡‡ Gradation shall meet the requirements of 200 Lbs. class.

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

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

BRIDGE EXCAVATION: Elevation 1100.37 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See Bridge Excavation sheet for the limits of pay excavation.

BACKFILL COMPACTION: Compact backfill at the abutments.

PILING: Drive all piling to penetrate or bear upon Fort Riley Limestone Member. Driving shall stop when in the opinion of the Engineer additional driving may damage the piling. Drive all piling to the minimum computed bearing value equal to the Allowable Pile Load:

Abutment No. 1 124.5 Tons
Abutment No. 2 124.5 Tons

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

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

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

Please contact KDOT Geology in Topeka at (785)-291-3861 when a schedule for pile driving has been established. A minimum of 5 working days in necessary to allow for proper scheduling.

Excavation to plan grade should be performed prior to PDA testing. At least 24 hours for each test should be allowed to account for possible restrikes.

PERMANENT CASING: See KDOT Specifications.

GENERAL NOTES

PILING: Once sufficient resistance is achieved, driving must cease to avoid, to avoid damage to the pile. Final pile tip elevations should be determined in the field based on recommendations provided through the use of the Pile Driving Analyzer. These final pile tip elevations could vary significantly from the pile tip elevations shown in the plans due to the variable nature of the geology here.

Do not drive pile below plan tip elevation without utilizing restrike procedures as outlined in the Standard Specification, or as directed by KDOT Geology.

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

Drill an Investigative Core Hole at the locations shown on the plans. See KDOT Specifications.

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

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

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

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

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

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

SLOPE PROTECTION (Riprap Stone): Place Slope Protection (Riprap Stone) to the limits and thicknesses shown on the plans or as directed by the Engineer. Use (200 lbs) as described in Division 1100 placed to the limits shown on the plans.

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

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

REMOVAL OF EXISTING STRUCTURES: Removal of the existing structure is included in the bid item. "Removal of Existing Structures", Lump Sum. All other materials removed from the existing structure shall become the property of the with the exception of the two existing bridge number plates, which shall be salvaged by the Contractor and remain the property of the State.

DESIGN DATA

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

DESIGN LOADING:
HL-93

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

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength I	Service I	Phi
Abutment No. 1	124.5	87.2	0.65
Abutment No. 2	124.5	87.2	0.65

LRFD DESIGN DRILLED SHAFT LOAD:

Design Loading (Tons/Shaft)	Strength I	Service I	Phi
All Piers	603.3	424.1	0.50 End Bearing 0.55 Side Friction

UNIT STRESSES:

Concrete (Grade 4.0)	f'c = 4 ksi
Concrete (Grade 4.0)(AE)	f'c = 4 ksi
Concrete (Grade 4.0)(AE)(SA)	f'c = 4 ksi
Reinforcing Steel (Grade 60)	Fy = 60 ksi
Structural Steel (A709 Gr. 50W)	Fy = 50 ksi
Structural Steel (M270 Gr. 50W T3)	Fy = 50 ksi
Steel Piling (Gr. 50)	Fy = 50 ksi

INDEX TO BRIDGE DRAWINGS

Sheet No.	Drawing
52-53	General Notes and Quantities
54	Contour Map
55-56	Construction Layout
57-58	Engineering Geology
59-60	Phased Construction Details
61-65	Abutment Details
66-67	Abutment Aggregate Details
68-69	Drilled Shaft Details
70-77	Pier Details
78-81	Bearing Device Details
82-83	Framing Plan
84-86	Girder Details
87-93	Field Splice Details
94	Steel Erection, Fit-Up
95-97	Diaphragm Details
98-105	Slab Details
106	Typical Section
107	Auxiliary Superstructure Details
108-110	Rail Details
111	Pedestrian Fence
112-113	Bill of Reinforcing and Bending Diagrams
	Standards
114	Bridge Excavation
115	Standard Pile Details
116	Supports and Spacers for Reinforcing Steel

LFD & LRFR RATING FACTORS

Truck \ Rating Level	Inventory	Operating
HS-20 (36T)	1.794	2.997
Type HET (110T)		1.542
2002 LFD Rating. 17th Edition AASHTO		
HL-93 Loading	1.626	2.107
2021 Manual for Bridge Evaluation		

TRAFFIC DATA - (114)

AADT (2025)	5,700
AADT (2045)	7,000
DHV	10%
D	55/45
T	11.5%

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

GENERAL NOTES AND QUANTITIES
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

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Sh. No. 52

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:51
File : ka647501bbr114-001.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	53	230

GENERAL NOTES

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

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

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

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

ERECTION ELEVATION CHECKS: After the abutment and pier concrete has cured and before setting any structural steel, present verification to the Engineer that the elevations at the bearing match plan elevation (±¼"). Present verification to the Engineer that the elevations at all field splice locations match the elevations (±½") in the plans before any connection is fully tightened. (For steel girders that are blocked on the ground, fully tighten the bolted connections prior to erection.)

ERECTION: Bring each line of girders to the correct line, grade (or relative grade) and camber, and secure in place prior to connection of the girder field splices. Provide falsework bents as necessary to maintain the correct line and elevation. Leave the falsework bents in place until all girder splice connections are completed. Submit information which clearly shows the proposed layout and use of falsework bents. The Engineer shall approve such information prior to erection of structural steel.

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

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

PLACING SEQUENCE: The contractor will adhere to the placing direction direction/sequence shown on the plans. Changes will be accepted only if the Contractors Engineer adjusts the camber diagram so the fabricator can adjust the web camber and headed stud anchor heights accordingly. This revised diagram will be approved by the design Engineer prior to deck forming. If profile grinding decreases the clearance to the top mat of reinforcement to less than 2½" a polymer overlay will be placed at no cost to the State.

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

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

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

TEMPERATURE: The design temperature for all dimensions is 60 ºF.

STRUCTURAL STEEL: Girder flange plates and flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements except as noted. Girder web plates and web splice plates shall meet AASHTO M270 Gr. 50W T3 requirements except as noted. All other structural steel shall meet ASTM A709 Gr. 50W, unless noted otherwise. Shop and Field Splices shall be made only where shown on the Contract Plans as a "splice" or as an "optional splice". Elimination of any "splice" may be requested.

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

BOLTED CONNECTIONS: Girder Connections: Use ⅞ inch diameter heavy hex structural bolts for the main member connections. Use $^{15}/_{16}$ inch diameter drift pins in all corners and in ¼ of the remaining holes in each plate. See KDOT Specifications.

Secondary Member Connections: Use ¾ inch diameter heavy hex structural bolts for the secondary member connections. Use $^{13}/_{16}$ inch diameter bolt holes. Oversized and/or slotted holes, as specified in the KDOT Specifications. may be used in only of the two members connected and must be shown in the approved shop drawings. Oversized and/or slotted holes may require additional standard hardened washers or plate washers. Report to the Engineer prior to any required field reaming that will remove more than ¼ inch of material from one ply of the connected parts.

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

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

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

WELDING: Material, Fabrication and Construction shall conform to KDOT Specifications. On the shop drawings, show a code or symbol in the tail of the weld symbol that refers to an approved, pre-qualified weld procedure.

FILLETS: Camber the steel girders for the total dead load deflection and the vertical curvature, if necessary. The ordinates shown for concrete dead load deflection represent the amount of camber that should be in the girders after they are erected and bolted but prior to placing the floor forms. After the structural steel is completely erected and bolted but prior to placing the floor forms. After the structural steel is completely erected and the falsework bents are removed, measure the camber in the field by taking a profile of each girder. Correct any variation between the actual camber and the concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the girders so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the girder shall be 9½ inches.

The theoretical amount of concrete required for the fillets is 33.8 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

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

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

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

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

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

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

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

Field Work - Blast clean the tops of the top flanges to SSPC-SSP6 Specifications (latest Revision) before the studs are applied. After the studs are applied, blast clean the tops of the top flanges and the studs to SSPC-SP6 Specifications and paint with an approved organic zinc primer to a minimum dry film thickness of 3 mils.

Bearings: Blast clean to the bridge bearings, in the shop, except for the ANSI 125 finished surfaces. Paint the ANSI 125 finished surfaces with an approved dry film lubricant. After erection apply the water-borne acrylic finish coat to all exposed surfaces.

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

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

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

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615, Grade 60. Spiral bars may meet the requirements of either ASTM A615 (Gr. 40 or 60) or A82, and are included in the bid item "Reinforcing Steel (Gr. 60)".

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

ABUTMENT AGGREGATE DRAIN: See the General Notes on the "Abutment Aggregate Drain 2" sheet.

BRIDGE BACKWALL PROTECTION SYSTEM: See the General Notes on the "Abutment Aggregate Drain 2" sheet.

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

Concrete	0%
Date of Report	10/9/2024

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

GEOTECHNICAL REPORT: The geotechnical report (Dated December 2023) includes soil parameters for retaining wall (sheet pile) design. The report recommends a traffic surcharge of 250 lb/ft2. The geotechnical information shown on the plans is the best information available. The report is available for inspection by qualified bidders at the State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison, Topeka, KS.

GEOTECHNICAL REPORT: The geotechnical report (Dated December 2023) includes soil parameters for retaining wall (sheet pile) design. The report recommends a traffic surcharge of 250 lb/ft2. The geotechnical information shown on the plans is the best information available. The report is available for inspection by qualified bidders at the State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison, Topeka, KS.

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

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

CONCRETE: Superstructure concrete bid is as Concrete (Grade 4.0)(AE)(SA). Substructure concrete is bid as Concrete (Grade 4.0)(AE). If desired, the contractor may use Concrete (4.0) in the footings and in the abutments below the construction joint. Bevel all exposed edges of all concrete with a ¾ inch triangular molding, except where noted on the plans. Construction joints are optional, but if used, place only at locations shown, or at locations approved by the Engineer.

SUBSTRUCTURE CONCRETE STAIN PROTECTION AND SANDBLASTING: Protect the exposed surface of the piers and the front face of the abutments (by covering with polyethylene sheeting or other approved method) prior to erecting the structural steel and until after the deck slab has been placed. After the bridge is completed and prior to acceptance; sandblast the piers and front face of the abutment to a uniform appearance by removing all laitance, staining, any visible form lines, ect. This work will be subsidiary to structural steel.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

GENERAL NOTES
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

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CADconform Certify This File Sh. No. 53

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:54
File : ka647501bbr114-002.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	54	230

CP #105
N 221,041.182 E 18,641,415.170
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W 160 Hwy 37.00' S
3. "+" cut top NW corner NW wingwall 5.32' SE
4. Spike & washer in top guard fence post 15.30' WSW

℄ P.T. Sta. 456+21.68
N 220,968.023 E 18,641,378.567
1. 35.00' Rt. ℞ Sta. 456+20.90
2. Not Set

CP #106
N 220,967.810 E 18,641,411.610
1. Set ⅝" rebar @ red CFS control cap
2. To SE bolt for light pole 4.25' NW
3. To ℄ E-W Hwy 160 36.50' N
4. "+" cut SW corner SW wingwall 9.34' ENE

℄ P.C. Sta. 464+00.78
N 220,988.712 E 18,642,157.389
1. 35.00' Rt. ℞ Sta. 464+00.00
2. Not Set

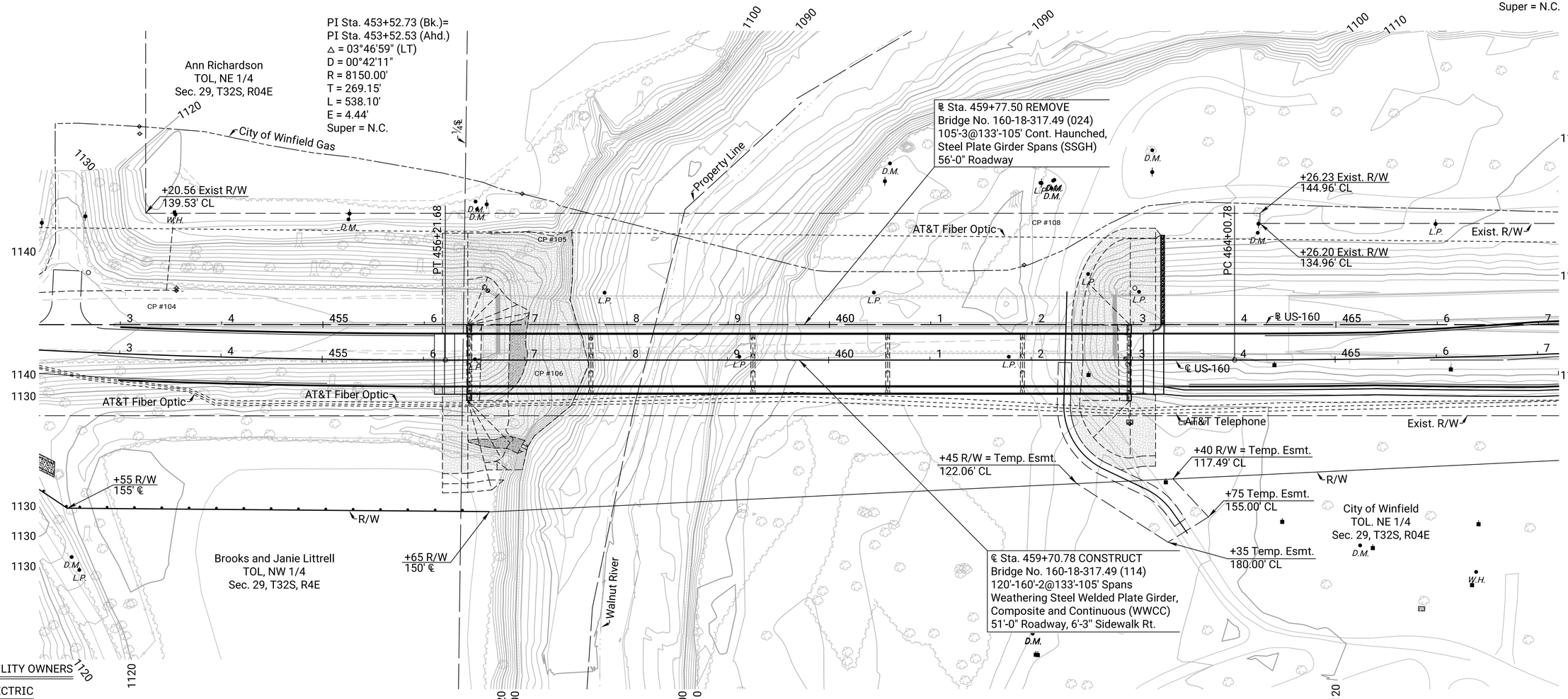
CP #107
N 220,981.723 E 18,642,052.060
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W Hwy 160 39.50' N
3. Spike & washer top guardrail post 22.64' ENE
4. To SE corner SE wingwall 6.15' NNW

CP #108
N 221,057.157 E 18,642,057.100
1. Set ⅝" rebar @ red CFS control cap
2. To ℄ E-W Hwy 160 36.50' S
3. To NW face metal light pole 4.95' SE
4. Spike & washer in top guard fence post 8.46' SW

Scale: 1" = 50'

PI Sta. 466+67.97 (Bk.)=
PI Sta. 466+67.77 (Ahd.)
△ = 03°45'19" (LT)
D = 00°42'11"
R = 8150.00'
T = 267.19'
L = 534.18'
E = 4.38'
Super = N.C.

PI Sta. 453+52.73 (Bk.)=
PI Sta. 453+52.53 (Ahd.)
△ = 03°46'59" (LT)
D = 00°42'11"
R = 8150.00'
T = 269.15'
L = 538.10'
E = 4.44'
Super = N.C.



UTILITY OWNERS

ELECTRIC

City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

AT&T
154 N Broadway Room 210
Wichita, KS 67202
800-778-9140

Evergy
818 Kansas Avenue
Topeka, KS 66612
785-379-4476

FIBER OPTIC

AT&T
154 N Broadway Room 210
Wichita, KS 67202
800-778-9140

GAS

City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

SANITARY

City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

TELEPHONE

AT&T
154 N Broadway Room 210
Wichita, KS 67202
800-778-9140

WATER

City of Winfield
200 E 9th Avenue
Winfield, KS 67156
620-221-5500

HISTORIC HIGHWATER

The City Engineer for the City of Winfield, Patrick Steward, indicated that in October/November 1998, water reached an elevation of ~1129.3 ft (0.3' over the road). It was fast moving and remained at that elevation for about 12 hours. He also noted the water stayed above flood stage for 48 hours and was fast-moving. Mr. Steward indicated that there were also high-water events in 2002, 2005, and 2019. The most recent event in 2019 left "an unusual amount of silt." He suspected it could be from a loose bank north of the bridge. Elev. 1129.3

Center Cor. Sec. 29, T32S, R4E
N 220,123.355 E 18,641,406.878
1. 881.13' S of ℞ Sta. 456+38.63, SE∠ = 90°-46'-18"
2. To "+" cut on SW corner of SW conc. wingwall bridge 847.84' NNE
3. To top ℄ of fire hydrant key 282.83' NW
4. MAG nail in W face of power pole 173.10' N

Sea Level Datum NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

CONTOUR MAP
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

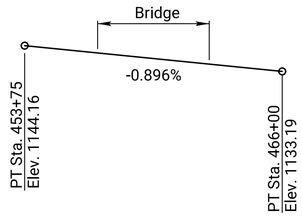
DESIGNED	JMN	DETAILED	JMN	QUANTITIES	CADD	JMN
DESIGN CK.	CFB	DETAIL CK.	CFB	QUAN.CK.	CADD CK.	CFB

CADconform Certify This File

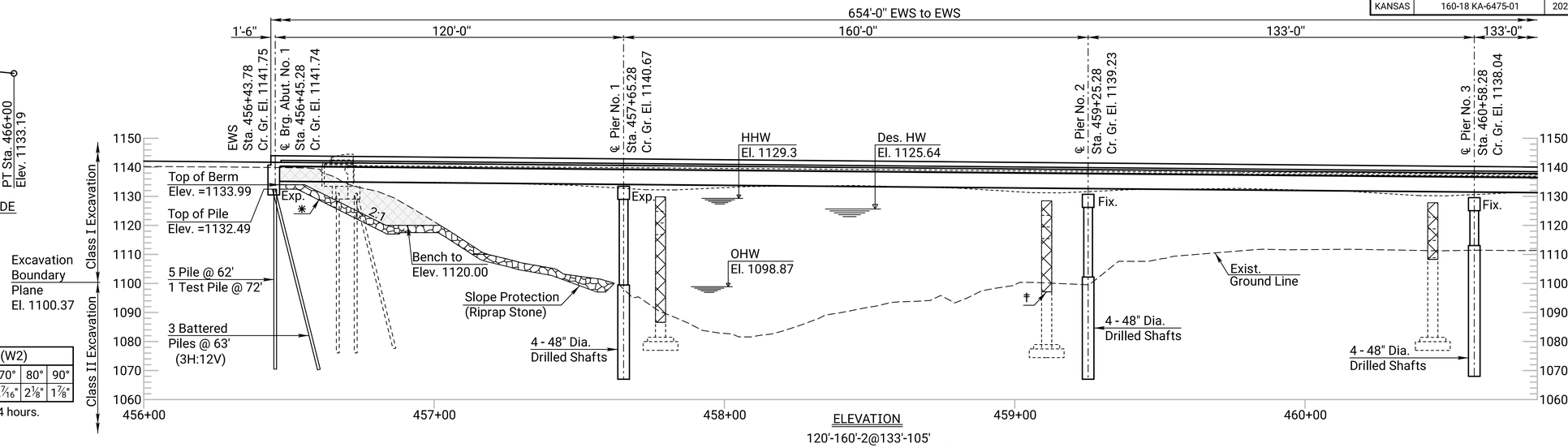
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Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:51
File : ka647501bbr114-003.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	55	230



PROPOSED US-160 PROFILE GRADE
1225' Tangent Section



ELEVATION

120'-160'-2@133'-105'
Weathering Steel, Welded Plate Girder
Composite, Continuous (WWCC)
Pile Bent Abutments, Pier Bents on Drilled Shafts
51'-0" Roadway, 6'-3" Sidewalk Rt.

EXPANSION JOINT WIDTH DETAILS (W2)						
Ψ Temperature	40°	50°	60°	70°	80°	90°
Formed Concrete Opening Size	3⅜"	3 1/16"	2¾"	2 7/16"	2⅛"	1⅞"

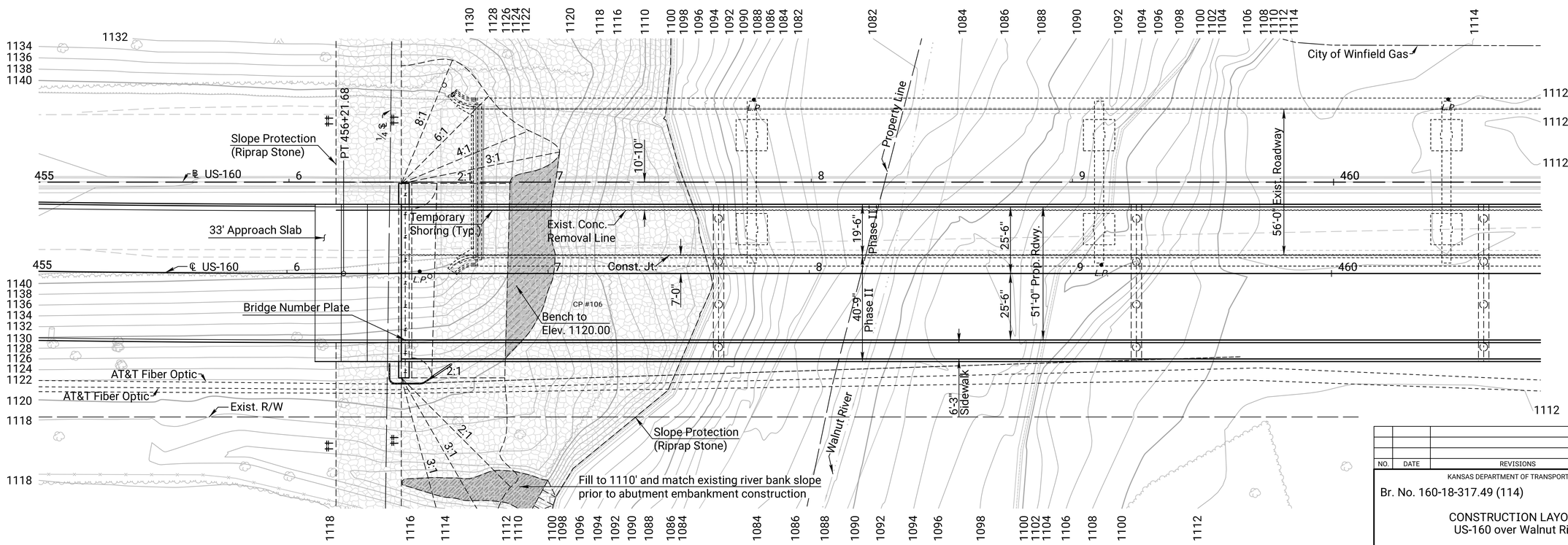
Ψ Average Ambient Temperature over previous 24 hours.

∗ Place Slope Protection (Riprap Stone) (2'-6") on the abutment berm slope.
The Riprap shall meet the specifications of Light (200 lb.).

† Remove existing structure 3 ft. below final groundline (Typ.).

B.M. #13 "+" cut top NW corner conc. hubguard bridge
33.56' Lt of ℄ Sta. 456+62.80 Elev. 1141.61

B. M. #14 "□" cut top SE corner conc. hubguard bridge
33.68' RT. of ℄ Sta. 462+92.33 Elev = 1136.75



PLAN

†† See Road Sheets for Transition to normal cross sections.

Sea Level Datum NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

CONSTRUCTION LAYOUT 1
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

CADconform Certify This File

Sh. No. 55

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:53
File : ka647501bbr114-004.dgn

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	56	230

654'-0" EWS to EWS

160'-0" | 133'-0" | 133'-0" | 105'-0" | 1'-6"

℄ Pier No. 2 Sta. 459+25.28 Cr. Gr. El. 1139.23

℄ Pier No. 3 Sta. 460+58.28 Cr. Gr. El. 1138.04

℄ Pier No. 4 Sta. 461+91.28 Cr. Gr. El. 1136.85

℄ Brg. Abut. No. 2 Sta. 462+96.28 Cr. Gr. El. 1135.91

EWS Sta. 462+97.78 Cr. Gr. El. 1135.90

HHW El. 1129.3

OHW El. 1098.87

Des. HW El. 1125.64

Des. Clear. 4.43'

26'-3"

Excavation Boundary Plane El. 1100.37

Class I Excavation

Class II Excavation

Fix. | Fix. | Exp. | Exp.

Existing Ground Line

‡

3:1

✱

Top of Berm Elev. =1128.16

Top of Pile Elev. =1126.66

6 Pile @ 53'

3 Battered Piles @ 54' (3H:12V)

4 - 48" Dia. Drilled Shafts

1150 1140 1130 1120 1110 1100 1090 1080 1070 1060

459+00 | 460+00 | 461+00 | 462+00 | 463+00

ELEVATION

120'-160'-2@133'-105'
Weathering Steel, Welded Plate Girder
Composite, Continuous (WWCC)
Pile Bent Abutments, Pier Pents on Drilled Shafts
51'-0" Roadway, 6'-3" Sidewalk Rt.

EXPANSION JOINT WIDTH DETAILS (W2)						
Ψ Temperature	40°	50°	60°	70°	80°	90°
Formed Concrete Opening Size	3⅜"	3 1⁄16"	2¾"	2 7⁄16"	2⅛"	1⅞"

Ψ Average Ambient Temperature over previous 24 hours.

B.M. #13 "+" cut top NW corner conc. hubguard bridge
33.56' Lt of ℄ Sta. 456+62.80 Elev. 1141.61

B. M. #14 "□" cut top SE corner conc. hubguard bridge
33.68' RT. of ℄ Sta. 462+92.33 Elev = 1136.75

DRAINAGE DATA

Drainage Area	1,998	sq. mi.
Design Frequency	50	yrs
Design Discharge (Q50)	84,000	cfs
Design High Water Elevation	1125.64	
Change In Design Backwater	-0.1	ft.
Design Backwater Elevation	1127.05	ft.
Overtopping Elevation (Sta. 494+89.83)	1130.67	
Overtopping Discharge	135,000	cfs
Overtopping Frequency	> 200	yrs
Discharge at Q100	104,000	cfs
Change in Backwater at Q100	-0.14	ft.
◔ Backwater Elevation at Q100	1129.83	
Historic High Water Elevation	1129.3	
Ordinary High Water Elevation	1098.87	
Total Waterway Provided	15,144	sq. ft.
Design Waterway Provided	11,151	sq. ft.
Change in Waterway Opening	+293	sq. ft.
Estimated Ordinary High Water Discharge	10,413	cfs

◔ The FEMA Flood Insurance Study found a Base Flood Elevation (BFE) of 1130.30 resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year.

✱ Place Slope Protection (Riprap Stone) (2'-6") on the abutment berm slope. The Riprap shall meet the specifications of Light (200 lb.).

‡ Remove existing structure 3 ft. below final groundline (Typ.).

1086 1088 1090 1092 1094 1096 1098 1100 1102 1104 1106 1108 1110 1112 1114 1114 1112 1110 1110 1112 1114 1116 1118 1120 1122 1124 1126 1128

City of Winfield Gas

L.P.

10'-10"

460

9 | 1 | 2 | 3 | 4

Exist. Conc. Removal Line

Const. Jt.

7'-0"

19'-6" Phase III

40'-9" Phase II

56'-0" Exist. Rdwy.

25'-6" | 25'-6" | 51'-0" Prop. Rdwy.

6'-3" Sidewalk

Exisiting R/W

AT&T Fiber Optic

AT&T Fiber Optic

3:1

Slope Protection (Riprap Stone)

CP #107

1118

℄ US-160

PC 464+00.78

Temporary Shoring (Typ.)

33' Approach Slab

1130 1132 1134 1132 1130 1128 1126 1124 1122 1120

Scale 1" = 20'

1098 1100 1102 1104 1106 1108 1110 1112 1112 1114 1116 1116

PLAN

†† See Road Sheets for Transition to normal cross sections.

Sea Level Datum NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

CONSTRUCTION LAYOUT 2
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

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Sh. No. 56

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File : ka647501bbr114-005.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	57	230

Note: Batter Piles on a 3H:12V

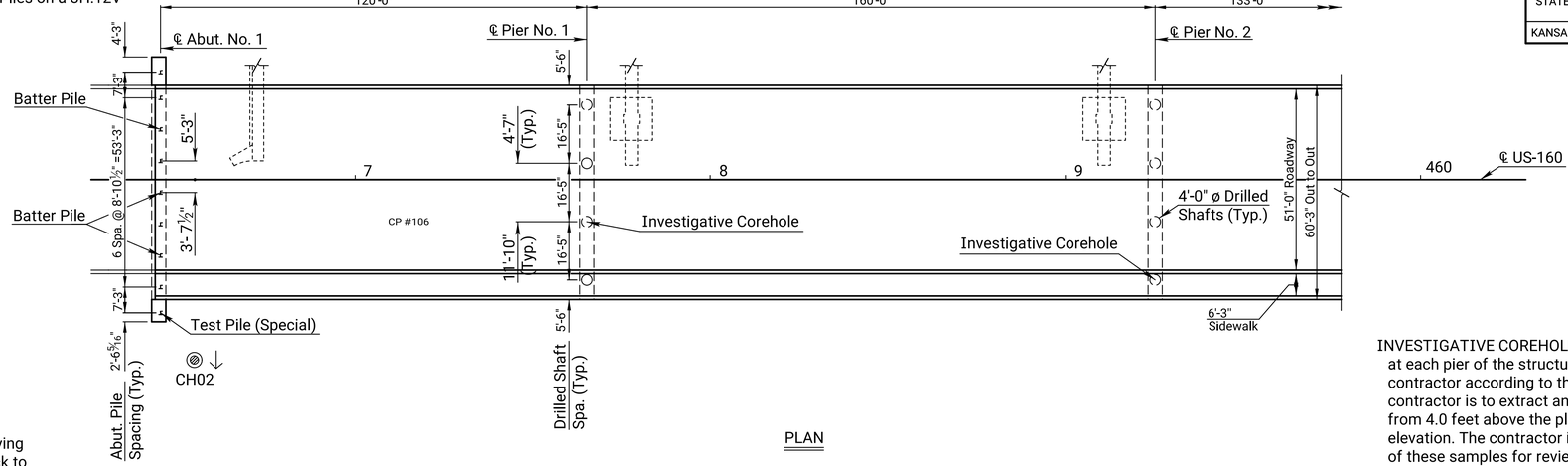
PILING NOTES: Once sufficient resistance is achieved, driving must cease to avoid damage to the pile. Final pile tip elevations should be determined in the field based on recommendations proviced through the use of the Pile Driving Analyzer.

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

Note: Use only HP 12x53 Gr. 50 Steel Piles

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

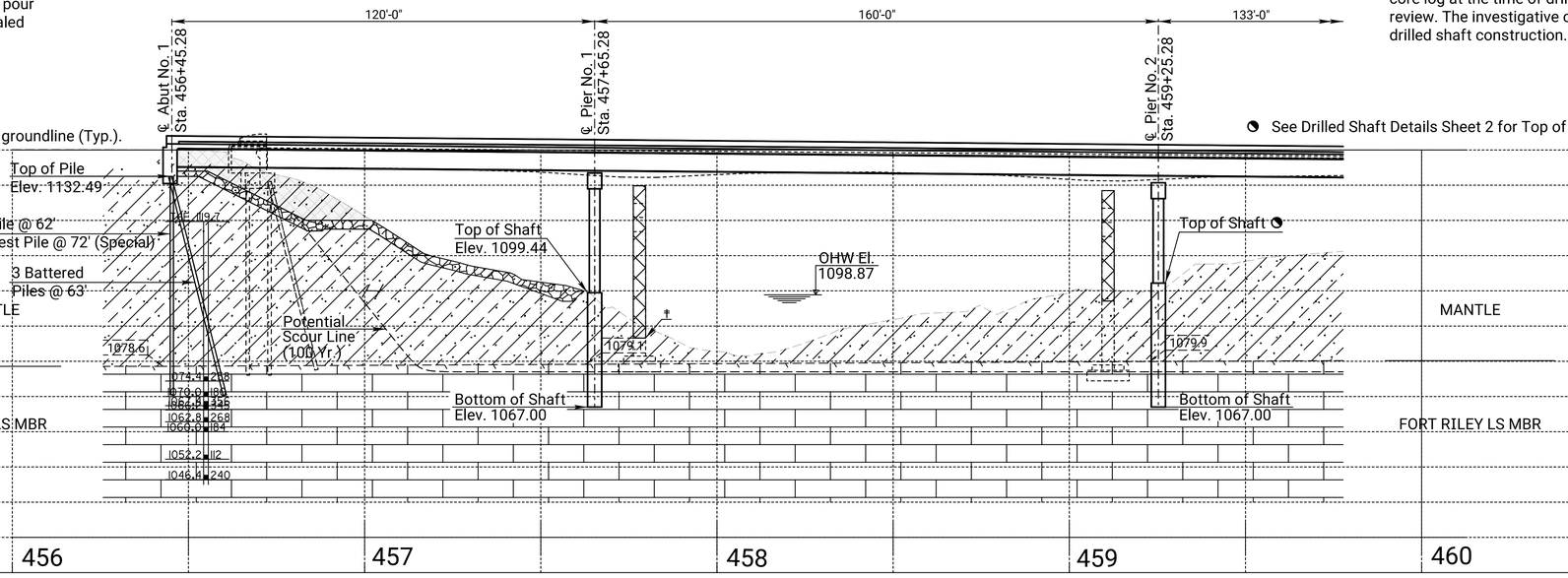
NOTE: Casing will be required for drilled shafts to prevent the caving and collapse of the excavation walls. Set casing in bedrock to reduce the risk of mantle, weathered bedrock, and groundwater from entering the rock socket and to ensure the rock socket of the shaft occurs in sound, unweathered bedrock.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



PLAN

Scale 1" = 20'

INVESTIGATIVE COREHOLE: An investigative core hole will be required at each pier of the structure. These core holes are required of the contractor according to the Construction Requirements 703.3b. The contractor is to extract and maintain a core of the foundation material from 4.0 feet above the plan tip elevation to 6.0 feet below the plan tip elevation. The contractor is to maintain and label elevation and location of these samples for review by the geologist. Core samples provided need to be NQ or NX size and organized in descending elevation and stored in standard core boxes. The driller will provide a continuous core log at the time of drilling and it is to be kept with the core for review. The investigative core holes will be done well in advance of the drilled shaft construction.



STANDARD GEOLOGIC SYMBOLS

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

GEOLOGIC PROFILE

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

000.0 Elevation interpolated or from adjacent soundings
000.0 Actual sounding elevation

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

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

Graphic representation of Cone Penetration Test in N60
0 100 200 300 400
CONE (CPT) PENETROMETER TEST
Scale: N60.

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

SCALE: 1"= 20' Horiz. 1"= 20' Vert.

Sea Level Datum NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ENGINEERING GEOLOGY 1
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

CADconform Certify This File

Sh. No. 57

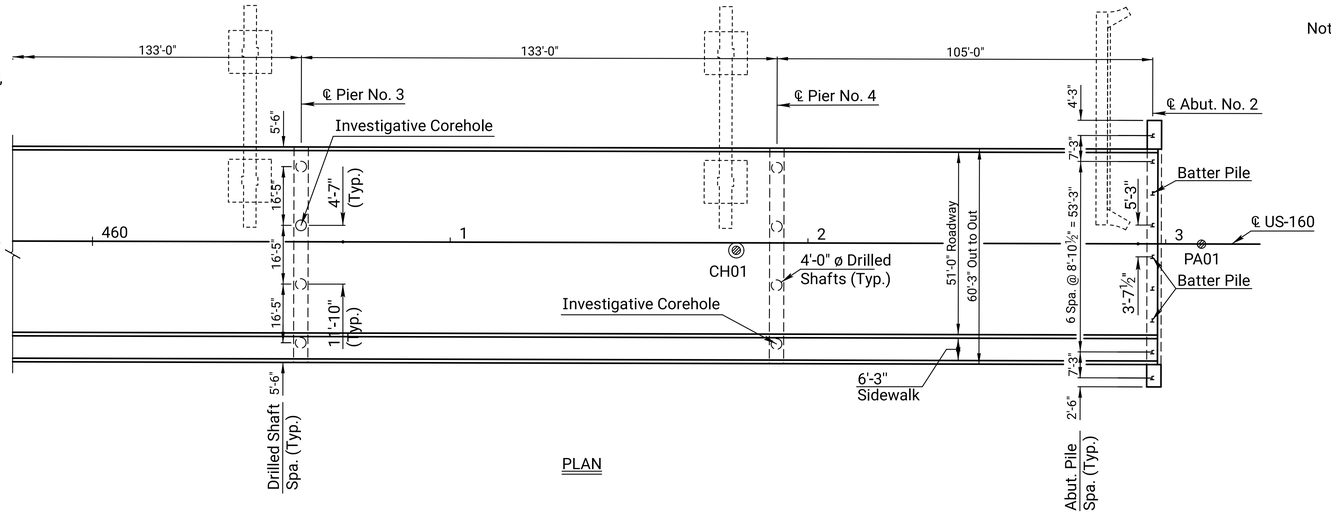
Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:53
File : ka6475001bbr114-006.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	58	230

PILING NOTES: Once sufficient resistance is achieved, driving must cease to avoid damage to the pile. Final pile tip elevations should be determined in the field based on recommendations proviced through the use of the Pile Driving Analyzer.

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

Note: Use only HP 12x53 Gr. 50 Steel Piles



PLAN

Note: Batter Piles on 3H:12V

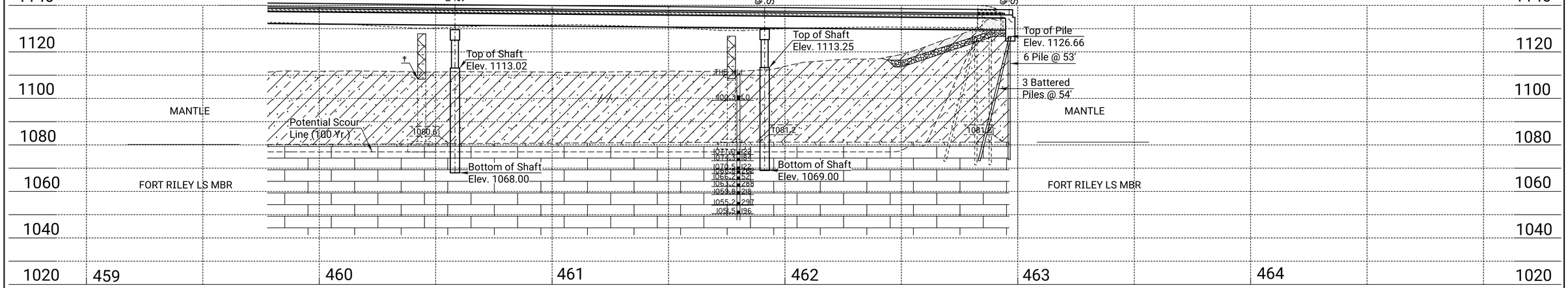
INVESTIGATIVE COREHOLE: An investigative core hole will be required at each pier of the structure. These core holes are required of the contractor according to the Construction Requirements 703.3b. The contractor is to extract and maintain a core of the foundation material from 4.0 feet above the plan tip elevation to 6.0 feet below the plan tip elevation. The contractor is to maintain and label elevation and location of these samples for review by the geologist. Core samples provided need to be NQ or NX size and organized in descending elevation and stored in standard core boxes. The driller will provide a continuous core log at the time of drilling and it is to be kept with the core for review. The investigative core holes will be done well in advance of the drilled shaft construction.

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

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

Scale 1" = 20'

† Remove existing structure 3 ft. below final groundline (Typ.).



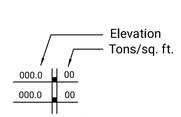
STANDARD GEOLOGIC SYMBOLS

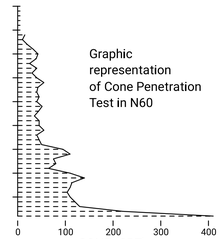
- Clay or Underclay
- Silty Clay
- Silt
- Sand
- Gravel
- Boulders
- Caliche
- Silty Clayey Shale
- Limy Shale
- Black or Fissile Shale
- Sandy Shale
- Gypsiferous Shale
- Weathered Shale
- Sandstone
- Shaly Sandstone
- Gypsum bed
- Dolomite
- Cross-bedded Sandstone
- Limestone
- Cherty Limestone
- Shaly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

GEOLOGIC PROFILE

SOUNDINGS

- Core drill
- Power auger
- Hand tools
- Cone (CPT) penetrometer
- Shelby tube
- Water level
- 000.0 Elevation interpolated or from adjacent soundings
- 000.0 Actual sounding elevation





Sea Level Datum NAVD 1988

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

SCALE: 1"= 20' Horiz. 1"= 20' Vert.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ENGINEERING GEOLOGY 2
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

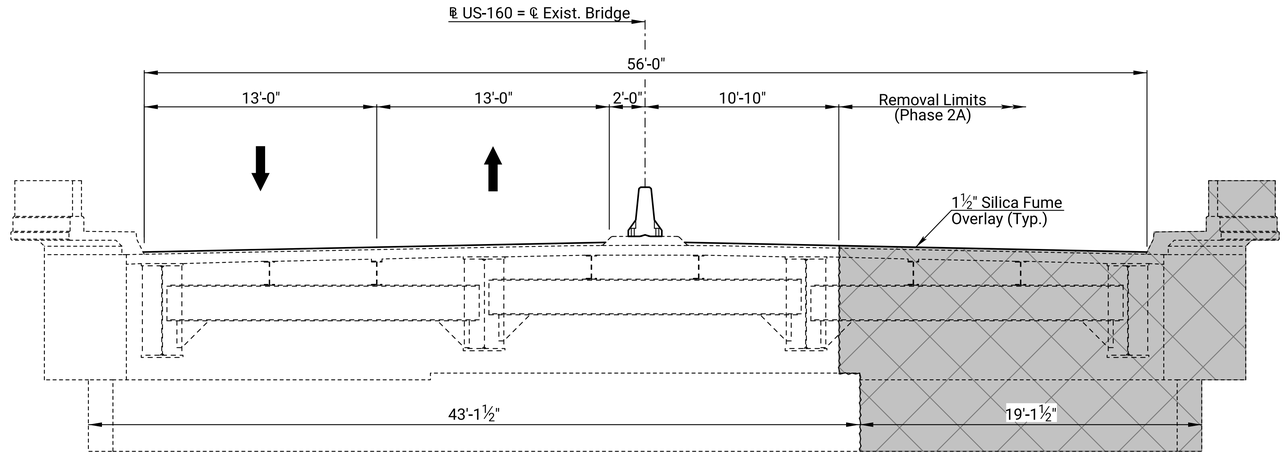
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Sh. No. 58

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File : ka647501bbr114-007.dgn

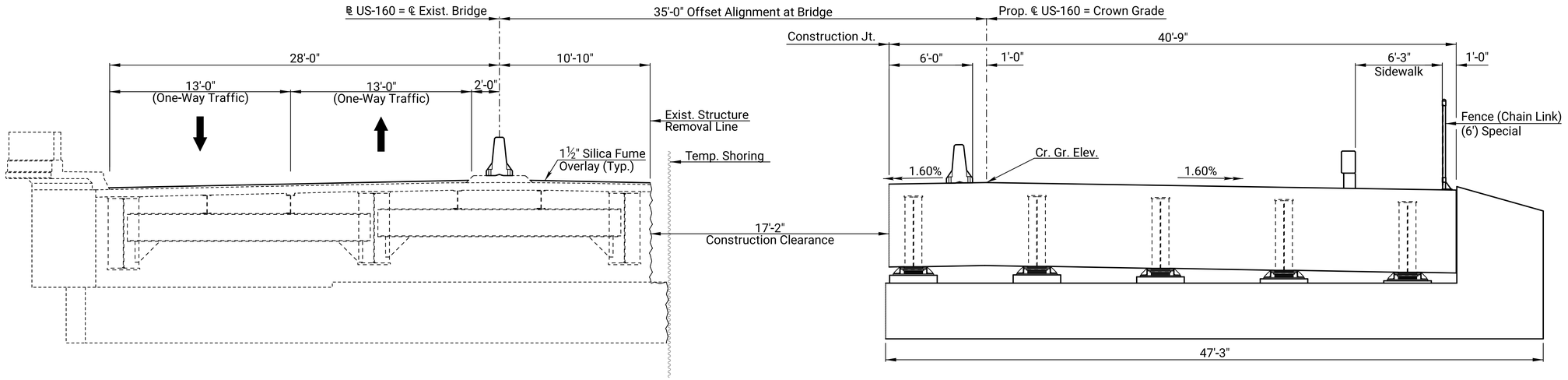
CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	59	230



PROPOSED TYPICAL SECTION - PHASE 2A TRAFFIC

(Abutment No. 2 shown, Looking Upstation)



TYPICAL SECTION - PHASE 2A CONSTRUCTION

(Abutment No. 2 shown, Looking Upstation)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PHASED CONSTRUCTION DETAILS 1

Proj. 160-18 KA-6475-01 Cowley Co.

DESIGNED	JMN	DETAILED	JMN	QUANTITIES	JPP	CADD	JMN
DESIGN CK.	CFB	DETAIL CK.	CFB	QUAN.CK.	CEM	CADD CK.	

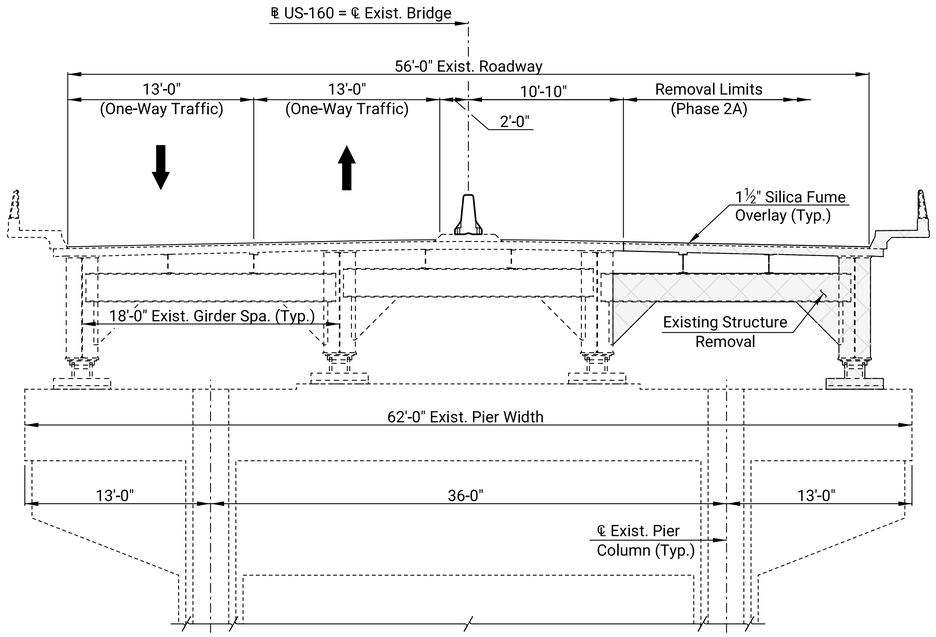
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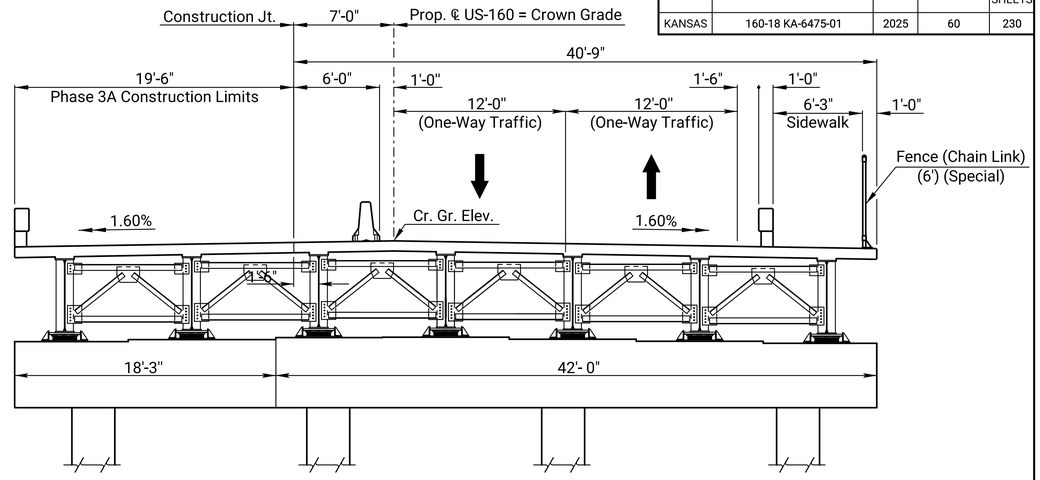
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	60	230



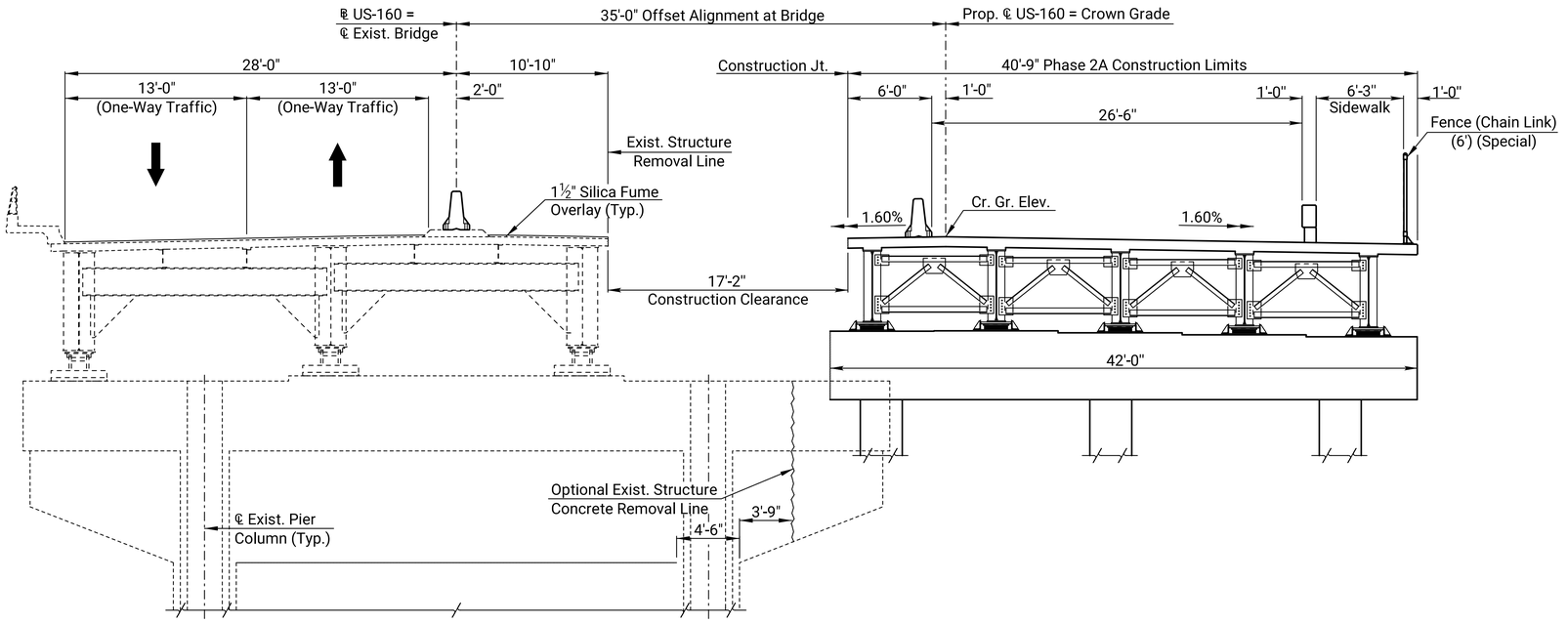
EXISTING TYPICAL SECTION - PHASE 2A TRAFFIC

(Looking Upstation)



PROPOSED TYPICAL SECTION - PHASE 3A

(Looking Upstation)



TYPICAL SECTION - PHASE 2A CONSTRUCTION

(Looking Upstation)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PHASED CONSTRUCTION DETAILS 2

Proj. 160-18 KA-6475-01 Cowley Co.

DESIGNED	JMN	DETAILED	JMN	QUANTITIES	JPP	TRACED	JMN
DESIGN CK.	CFB	DETAIL CK.	CFB	QUAN.CK.	CEM	TRACE CK.	CFB

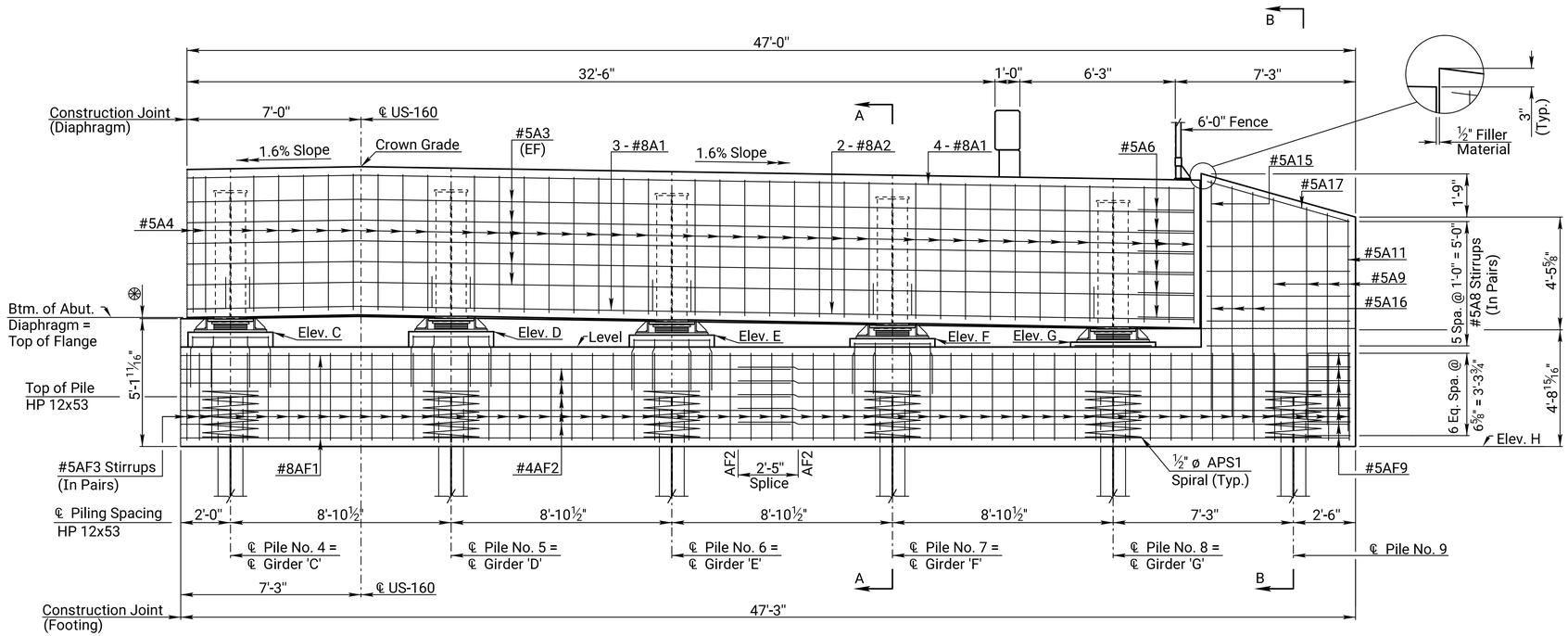
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Sh. No. 60

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File : ka647501bbr114-009.dgn

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	61	230



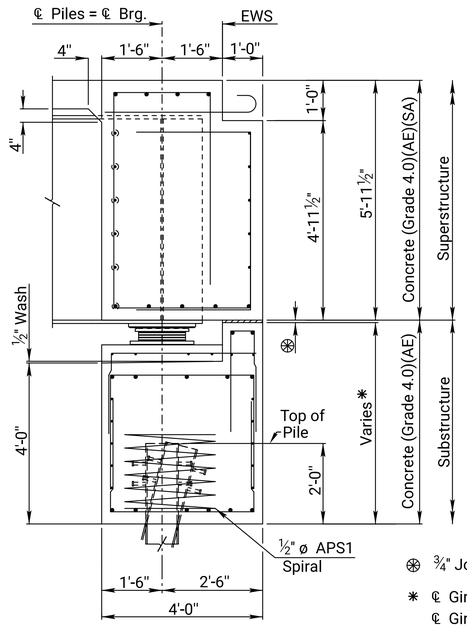
ELEVATION
Abutment No. 2 Shown at CL Brg.
Abutment No. 1 similar
(Looking East)
(Abutment Cross-Frames not shown for clarity)

TABLE OF ELEVATIONS		
	Abutment No. 1	Abutment No. 2
Elevation A	1134.80	1128.97
Elevation B	1134.94	1129.11
Elevation C	1135.08	1129.25
Elevation D	1135.11	1129.28
Elevation E	1134.97	1129.14
Elevation F	1134.82	1128.99
Elevation G	1134.68	1128.85
Elevation H	1130.49	1124.66
Top of Pile	1132.49	1126.66
Crown Grade	1141.74	1135.91

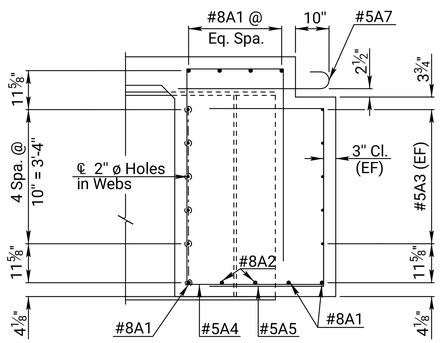
Table of Elevations are along CL of Brg.

Note: See the "AUXILIARY ABUTMENT DETAILS" sheet for "Abutment Construction Joint", "Splice/Coupler Reinforcing Detail", and pile welded shear connector details.

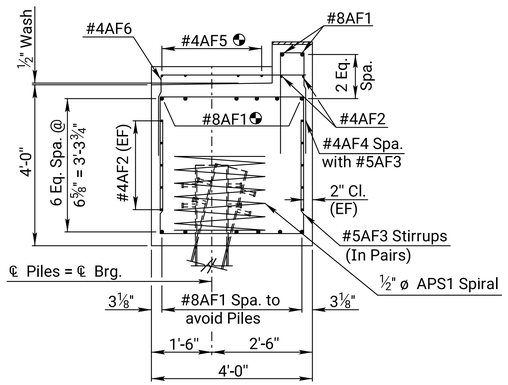
Note: Batter Piles No. 3, 5, & 7 on a 3H:12V



TYPICAL SECTION
(At Girder)



SECTION A-A
(Superstructure)



SECTION A-A
(Substructure)

SECTION B-B

✱ ℄ Girder C - 5'-1 11/16"
℄ Girder D - 5'-2 1/16"
℄ Girder E - 5'-0⅜"
℄ Girder F - 4'-10 9/16"
℄ Girder G - 4'-8 15/16"

⊛ ¾" Joint Filler Material

Spaced to avoid Preformed Holes

LEGEND
EWS - Edge of Wearing Surface
EF - Each Face

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT DETAILS 1
(Phase II Construction)

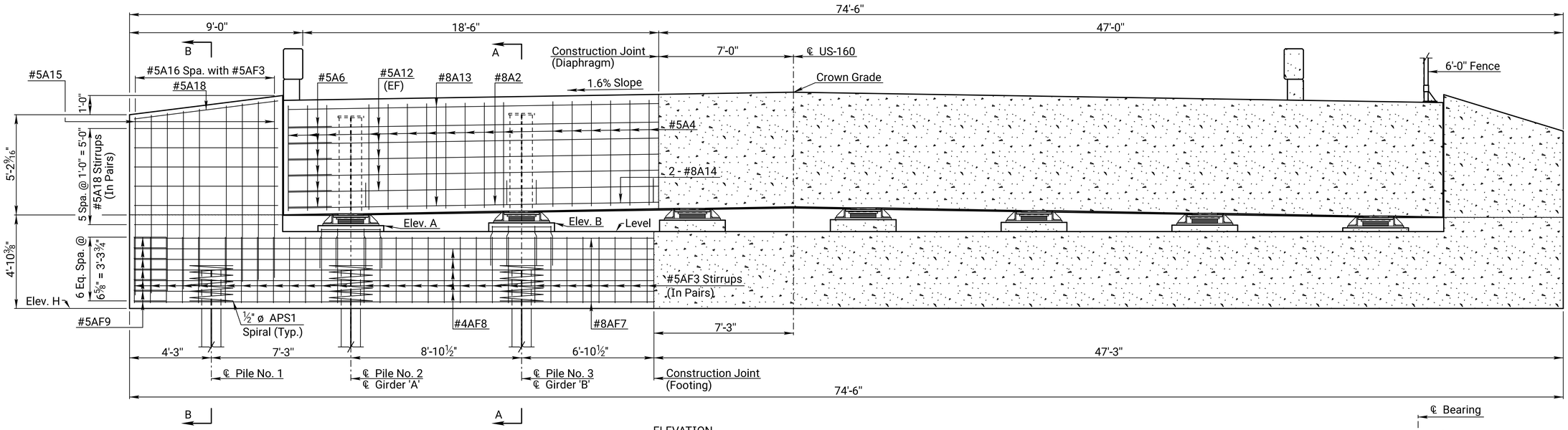
Proj. 160-18 KA-6475-01 Cowley Co.

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

Sh. No. 61

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:53
File : ka647501bbr114-010.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	62	230



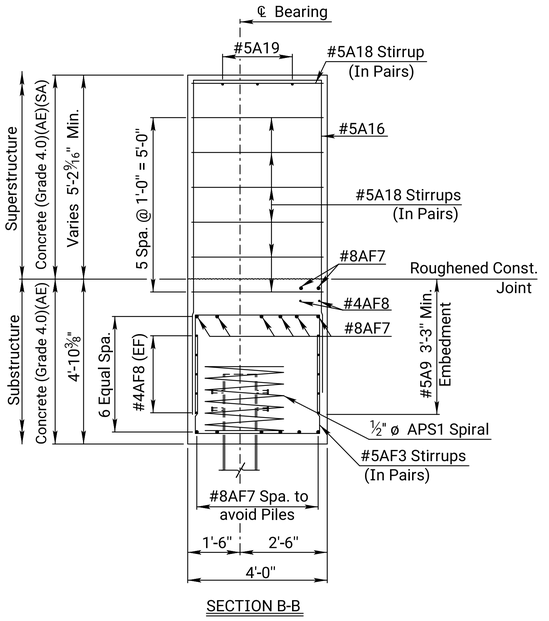
Note: Batter Piles No. 3, 5 & 7 on a 3H:12V

ELEVATION

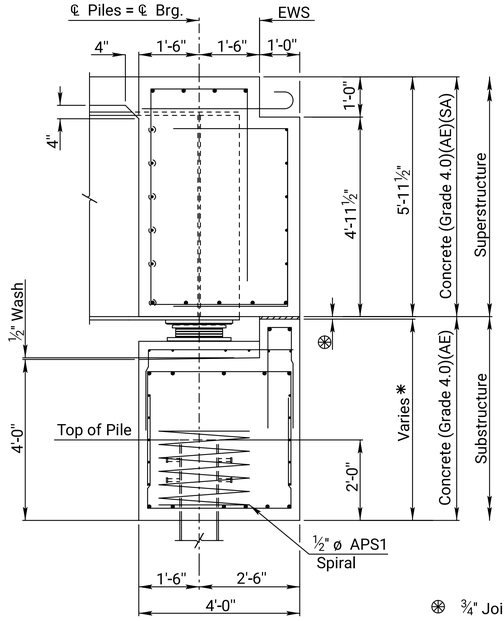
Abutment No. 2 (looking East)
Abutment No.1 similar
(Shown at ℄ Brg. Abutment)
(Abutment Cross-Frames not shown for clarity)

TABLE OF ELEVATIONS		
	Abutment No. 1	Abutment No. 2
Elevation A	1134.80	1128.97
Elevation B	1134.94	1129.11
Elevation C	1135.08	1129.25
Elevation D	1135.11	1129.28
Elevation E	1134.97	1129.14
Elevation F	1134.82	1128.99
Elevation G	1134.68	1128.85
Elevation H	1130.49	1124.66
Top of Pile	1132.49	1126.66
Crown Grade	1141.74	1135.91

Table of Elevations are along ℄ of Brg.



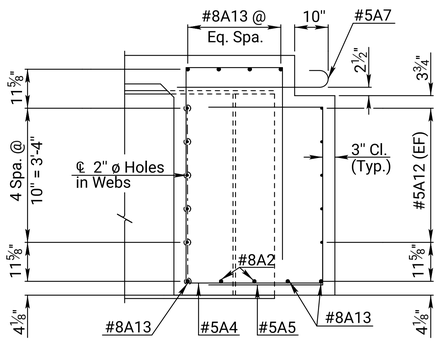
SECTION B-B



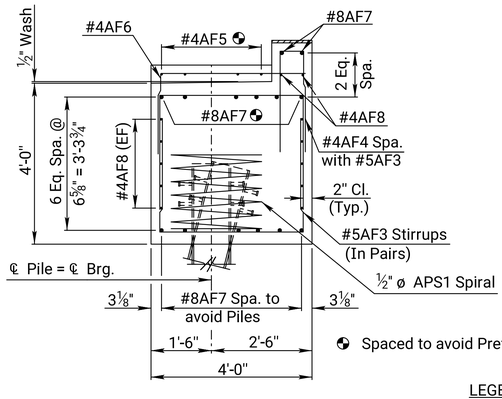
TYPICAL SECTION
(At Girder)

⊛ ¾" Joint Filler Material

✱ ℄ Girder B - 5'-0"
℄ Girder A - 4'-10⅜"



SECTION A-A
(Superstructure)



SECTION A-A
(Substructure)

Spaced to avoid Preformed Holes

LEGEND

EWS - Edge of Wearing Surface
EF - Each Face

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT DETAILS 2
(Phase III Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

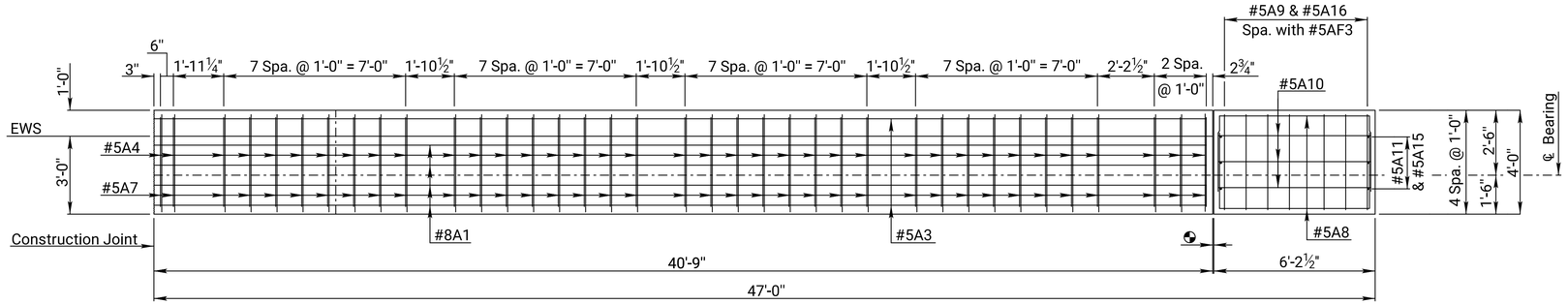
CADconform Certify This File

Sh. No. 62

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:50
File : ka647501bbr114-011.dgn

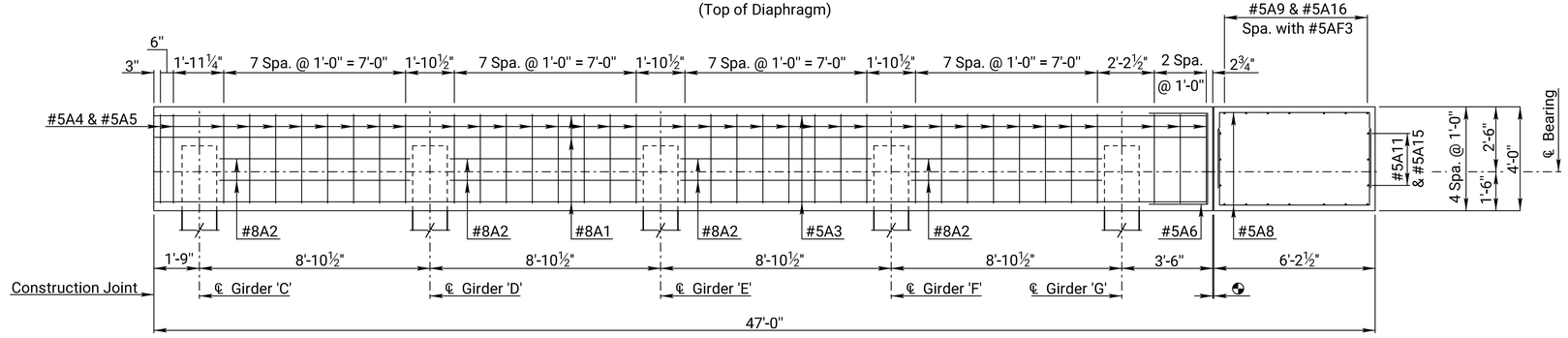
CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	63	230

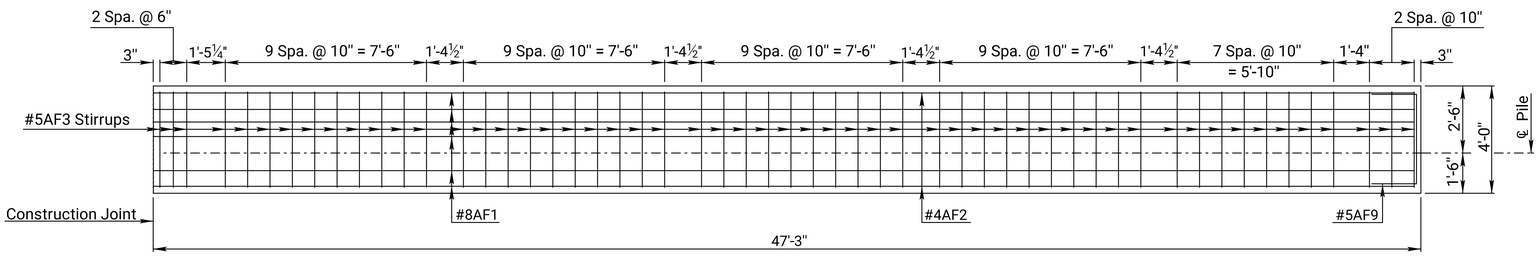


DIAPHRAGM PLAN
(Top of Diaphragm)

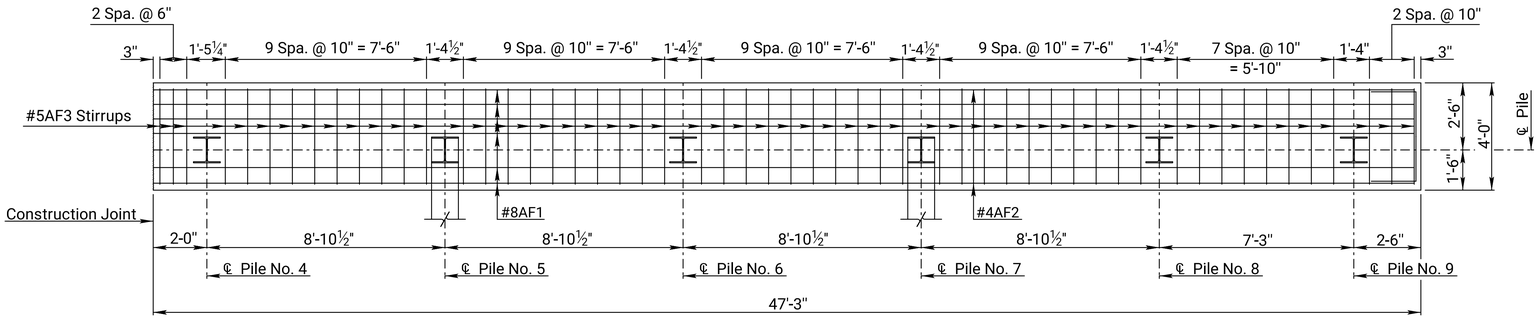
½" Exp. Joint Filler Material



DIAPHRAGM PLAN
(Bottom of Diaphragm)



FOOTING PLAN
(Top of Footing)



FOOTING PLAN
(Bottom of Footing)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT DETAILS 3
(Phase II Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

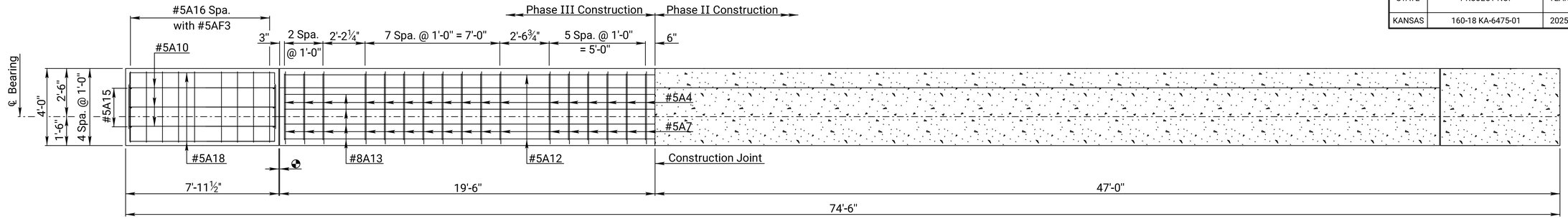
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Sh. No. 63

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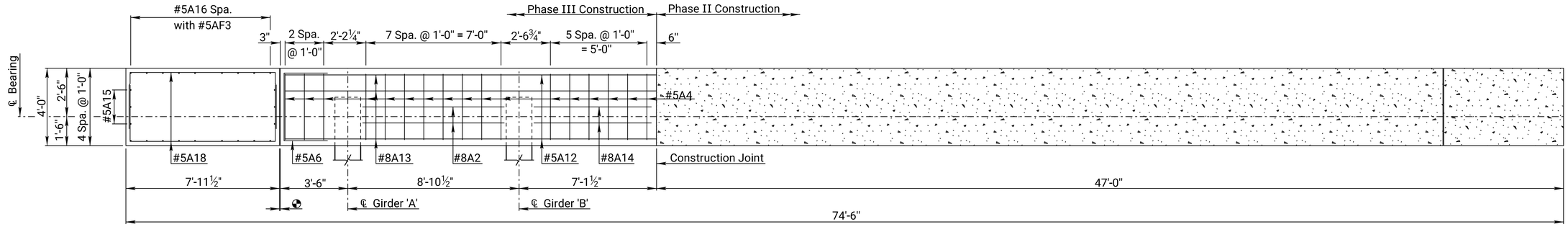
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File : ka647501bbr114-012.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	64	230

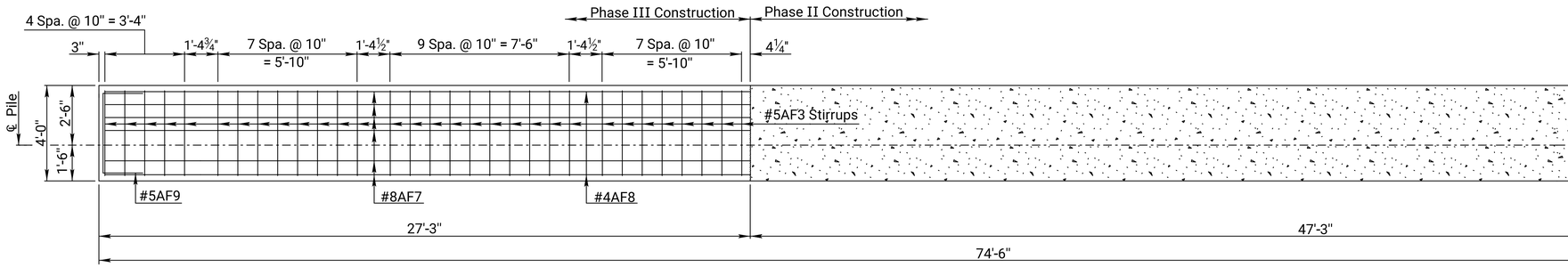


DIAPHRAGM PLAN
(Top of Diaphragm)

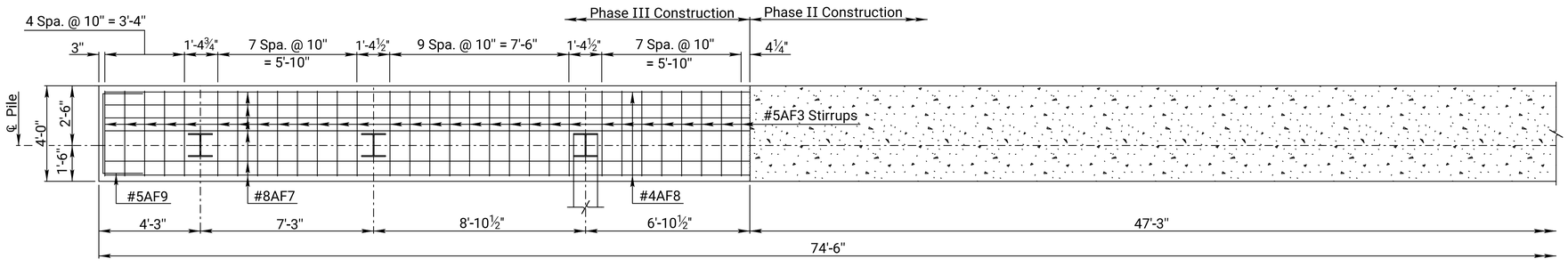
◔ ½" Exp. Joint
Filler Material



DIAPHRAGM PLAN
(Bottom of Diaphragm)



FOOTING PLAN
(Top of Footing)



FOOTING PLAN
(Bottom of Footing)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT DETAILS 4
(Phase III Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

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Sh. No. 64

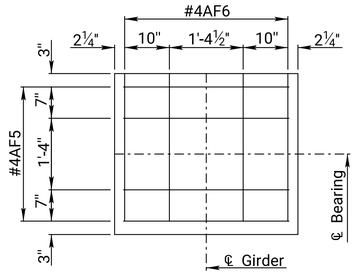
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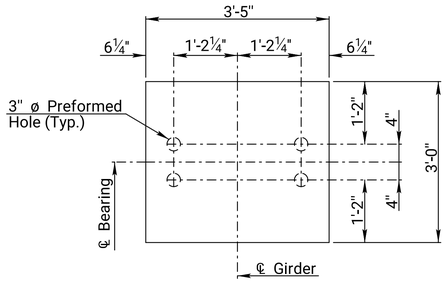
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	65	230

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

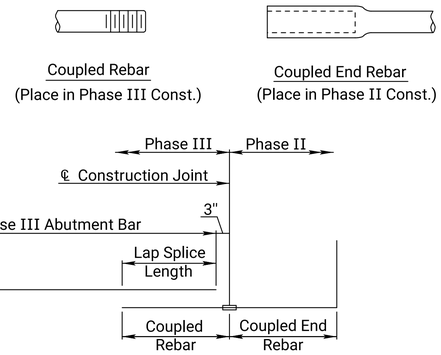
Mechanical splice bars not shown in Plan and Elevation views for clarity.



BEAM SEAT REINFORCING DETAIL

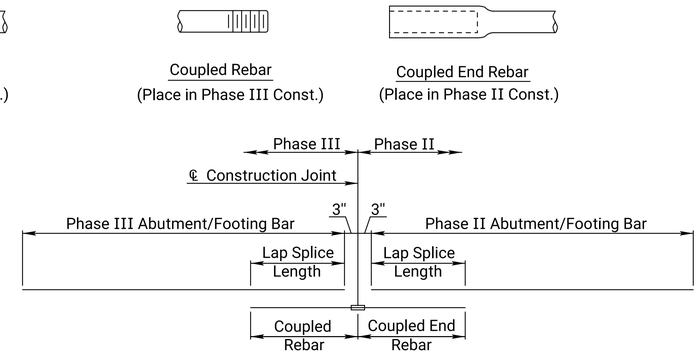


BEAM SEAT DETAIL



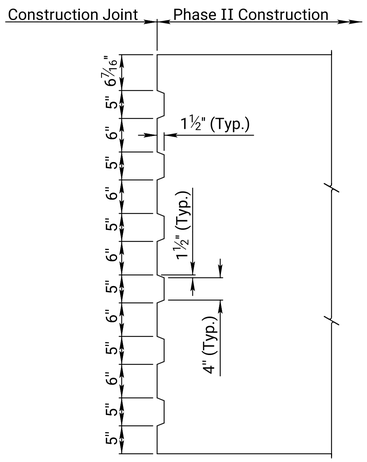
SPLICE/COUPLER REINFORCING DETAIL

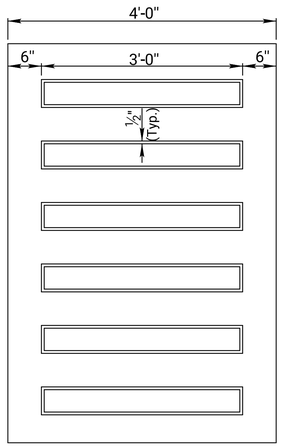
TABLE OF ABUTMENT REINFORCING SPLICES		
Phase II Splice Bar	Phase III Abut. Bar	Phase III Splice Bar
#8AS5	#8A13	#8AS2
#8AS5	#8A14	#8AS2



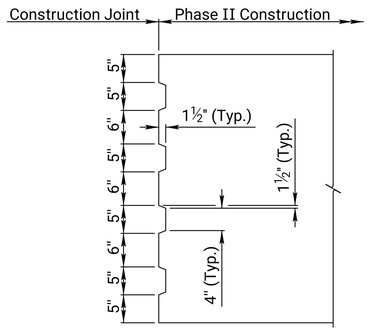
SPLICE/COUPLER REINFORCING DETAIL

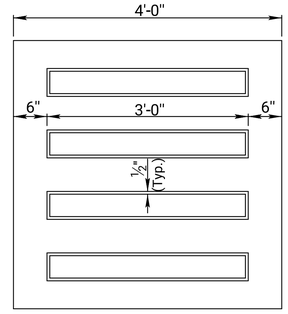
TABLE OF ABUTMENT REINFORCING SPLICES			
Phase II Abut. Bar	Phase II Splice Bar	Phase III Abut. Bar	Phase III Splice Bar
#8A1	#8AS1	#8A13	#8AS2
#5A3	#5AS3	#5A12	#5AS4
#8AF1	#8AFS1	#8AF7	#8AFS2
#4AF2	#4AFS3	#8AF8	#4AFS4



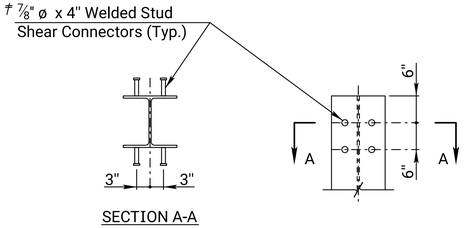


DIAPHRAGM CONSTRUCTION JOINT





FOOTING CONSTRUCTION JOINT



SECTION A-A

PILE WELDED STUD SHEAR CONNECTOR DETAIL

† Welded Stud Shear Anchors are subsidiary to HP12x53 Steel Piles.

72 Required for Abutment No. 1

72 Required for Abutment No. 2

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

AUXILIARY ABUTMENT DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

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

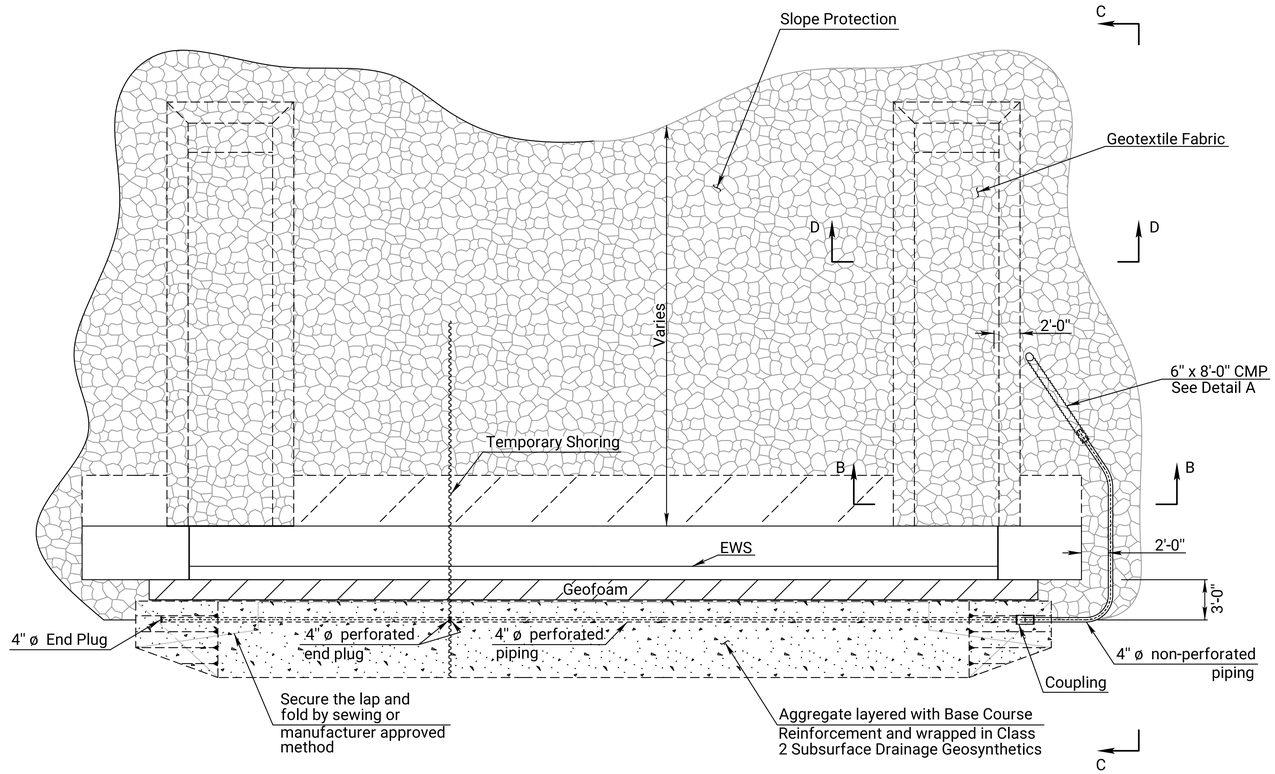
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Sh. No. 65

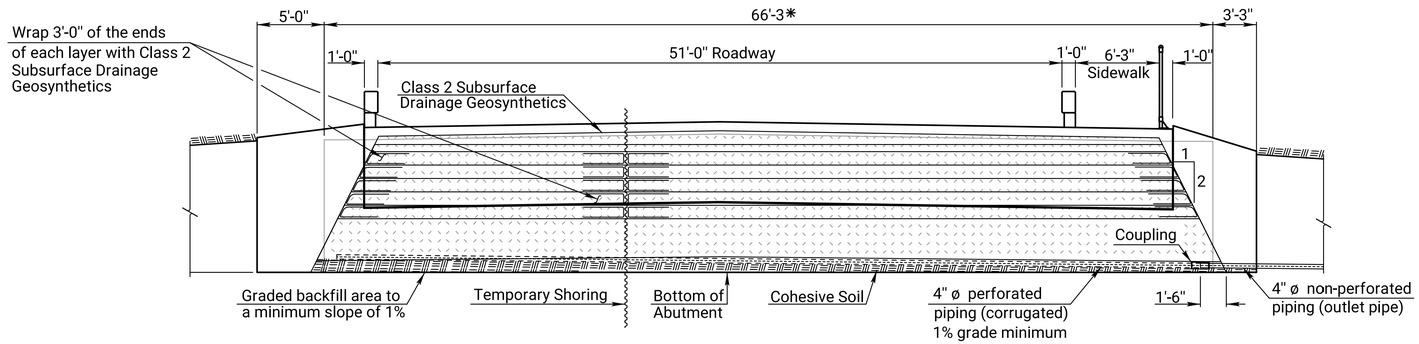
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	66	230



PLAN



* Limits of Bridge Backwall
Protection System & Geofoam

ELEVATION

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT AGGREGATE DRAIN
DETAILS 1

Proj. 160-18 KA-6475-01 Cowley Co.

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

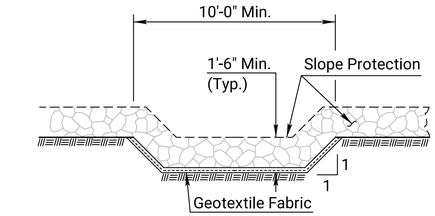
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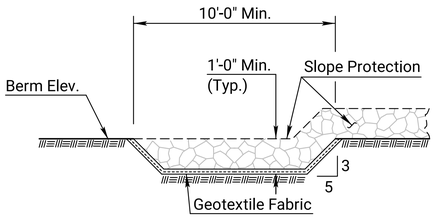
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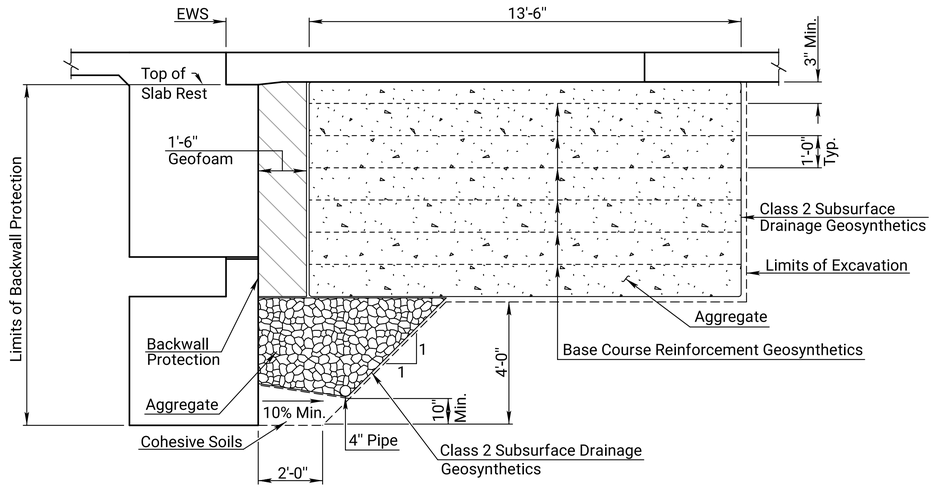
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	67	230



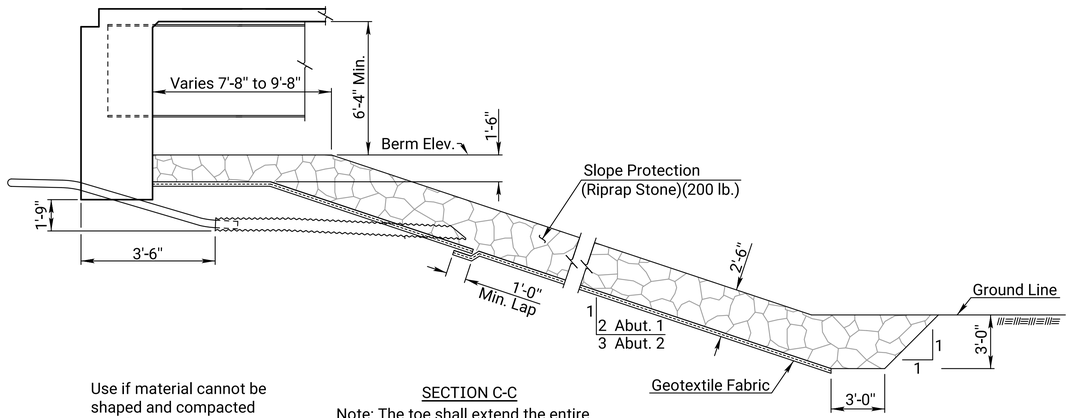
SECTION D-D



SECTION B-B



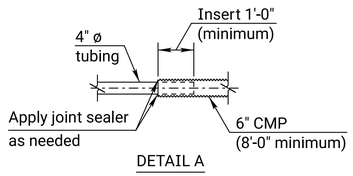
SECTION A-A



Use if material cannot be shaped and compacted per plan.

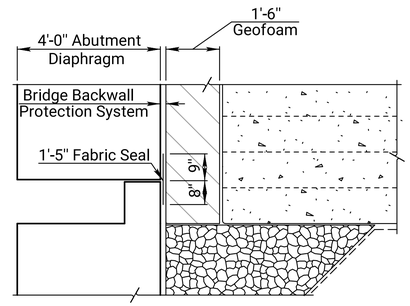
SECTION C-C

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



DETAIL A

Note: The 1'-0" lap and joint sealer may be replaced by a reducing coupler at the junction of the CMP and the 4" round tubing. For stream crossings place outlet on downstream side of bridge.



FABRIC SEAL DETAIL

Lap abutment beam and diaphragm Bridge Backwall Protection System over the full length 1-5" Fabric Seal.

SUMMARY OF QUANTITIES (2 Abutments)	
Abutment Aggregate Drain	455.8 Cu. Yds.
Bridge Backwall Protection System	147.0 Sq. Yds.
Items subsidiary to Abutment Aggregate Drain	
4" ø Perforated Pipe	129 Lin. Ft.
4" ø Outlet Pipe	41 Lin. Ft.
6" ø CMP	16 Lin. Ft.
Geosynthetics (Class 2 Subsurface Drainage)	978 Sq. Yds.
Geosynthetics (Base Course Reinforcement)	1,095 Sq. Yds.
Geofoam	46 Cu. Yds.
Items subsidiary to Slope Protection	
Geotextile Fabric	4743 Sq. Yds.

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

GEOFOAM: Use "Geofoam" that complies with ASTM D6817 EPS 12. Acceptance according to Type "C" Certification. Band this material to the back wall protection using materials recommended by the manufacturer.

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

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

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

ABUTMENT AGGREGATE DRAIN: The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation Sheet. Backfill, compact & grade the cohesive soil to the limits shown. Place the bridge backwall protection, geofoam, geotextile, perforated pipe, alternating layers of aggregate and base course reinforcement as shown. Place the outlet pipe, the CMP, and the backfill. Guidepost and coarse aggregate are subsidiary to this bid item. Guidepost and coarse aggregate are not required if the CMP, empties onto Slope Protection. Separate as shown the entire Abutment Aggregate Drain with the geotextile.

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

Compact the abutment backfill. See the KDOT Specifications.

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT AGGREGATE DRAIN 2
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

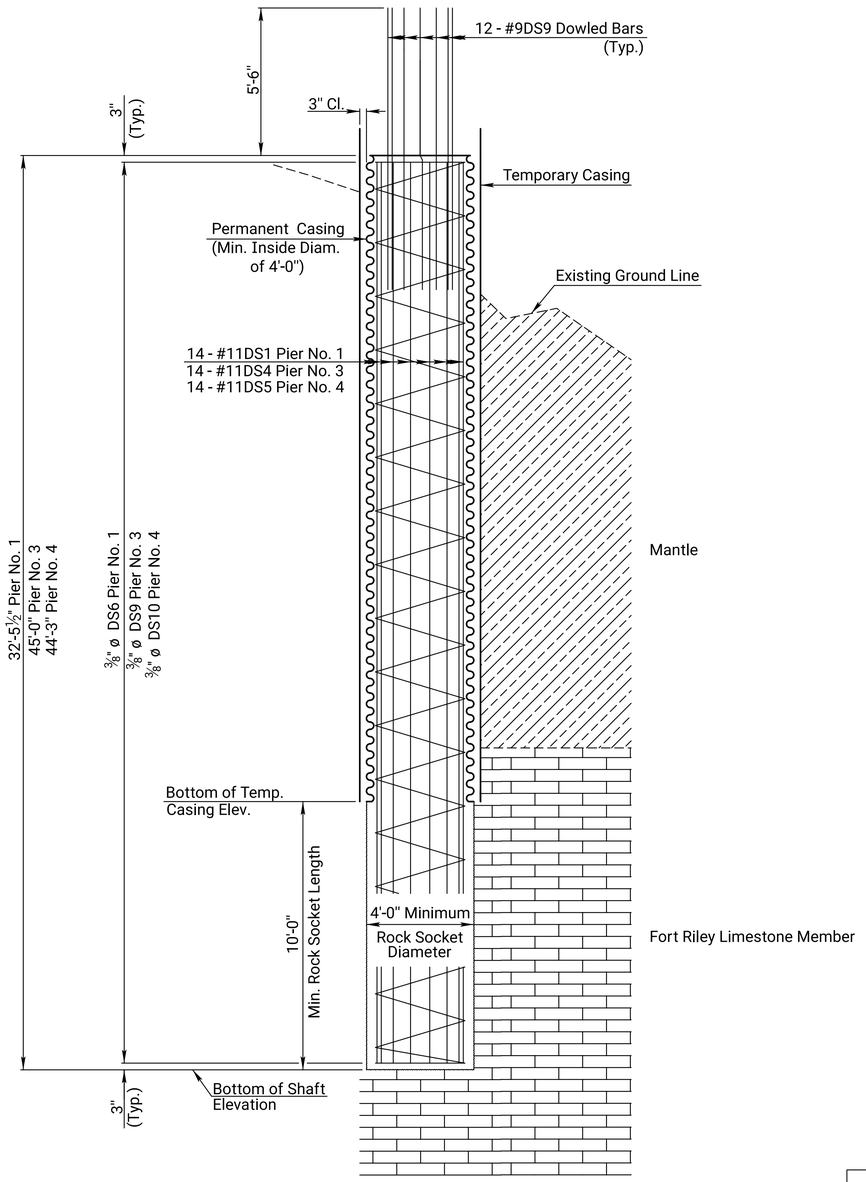
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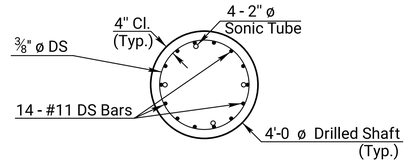
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	68	230

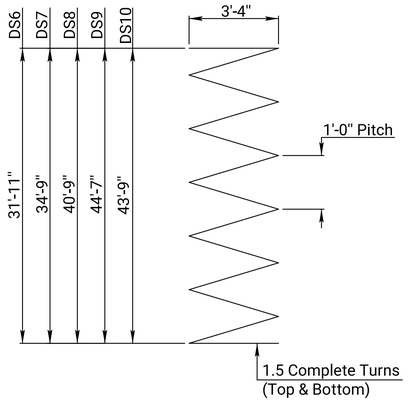


TYPICAL ELEVATION VIEW OF DRILLED SHAFT



TYPICAL SECTION OF DRILLED SHAFT

BILL OF REINFORCING STEEL Grade 60 Non-Epoxy Total for Pier No.1, 2, 3, & 4 Subsidiary to Drilled Shafts Shown for Information Only			
Mark	Size	Number	Length
DS1	11	56	31'-11"
DS2	11	28	34'-9"
DS3	11	28	40'-9"
DS4	11	56	44'-7"
DS5	11	56	43'-9"
DS12	9	192	10'-6"
DS6	⅜" ø	4	31'-11"
DS7	⅜" ø	2	34'-9"
DS8	⅜" ø	2	40'-9"
DS9	⅜" ø	4	44'-7"
DS10	⅜" ø	4	43'-9"
DS11	⅜" ø	16	4'-6"



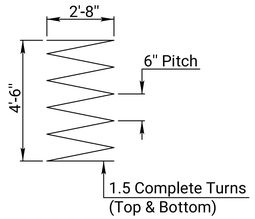
DS6, DS7, DS8, DS9, DS10

(⅜" ø smooth or deformed bar)

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

Spiral Spacer Bars:

1) Minimum section modulus = 0.008 in.
2) 4 required per spiral



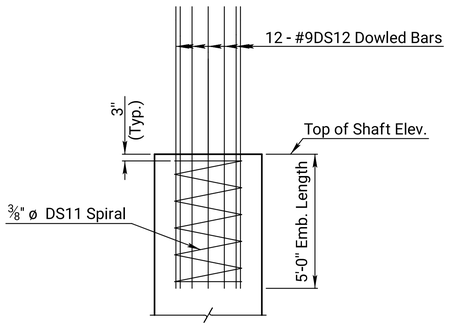
DS11

(⅜" ø smooth or deformed bar)

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

Spiral Spacer Bars:

1) Minimum section modulus = 0.008 in.
2) 4 required per spiral



DETAIL OF DRILLED SHAFT DOWEL BARS

TABLE OF ELEVATIONS				
	Pier No. 1	Pier No. 2	Pier No. 3	Pier No. 4
Top of Shaft Elevation	1099.44	◔	1113.02	1113.25
Exist. Ground Line Elev.	1092.32± to 1098.56±	◔	1110.84± to 1112.26±	1111.59± to 1112.17±
Bottom of Temporary Casing Elev.	1077.00	1077.00	1078.00	1079.00
Bottom of Shaft Elev.	1067.00	1067.00	1068.00	1069.00

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

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

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

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

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

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

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

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

PERMANENT CASING: See KDOT Specifications.

◔ See "Drilled Shaft Details 2" sheet

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

DRILLED SHAFT DETAILS 1

Proj. 160-18 KA-6475-01 Cowley Co.

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

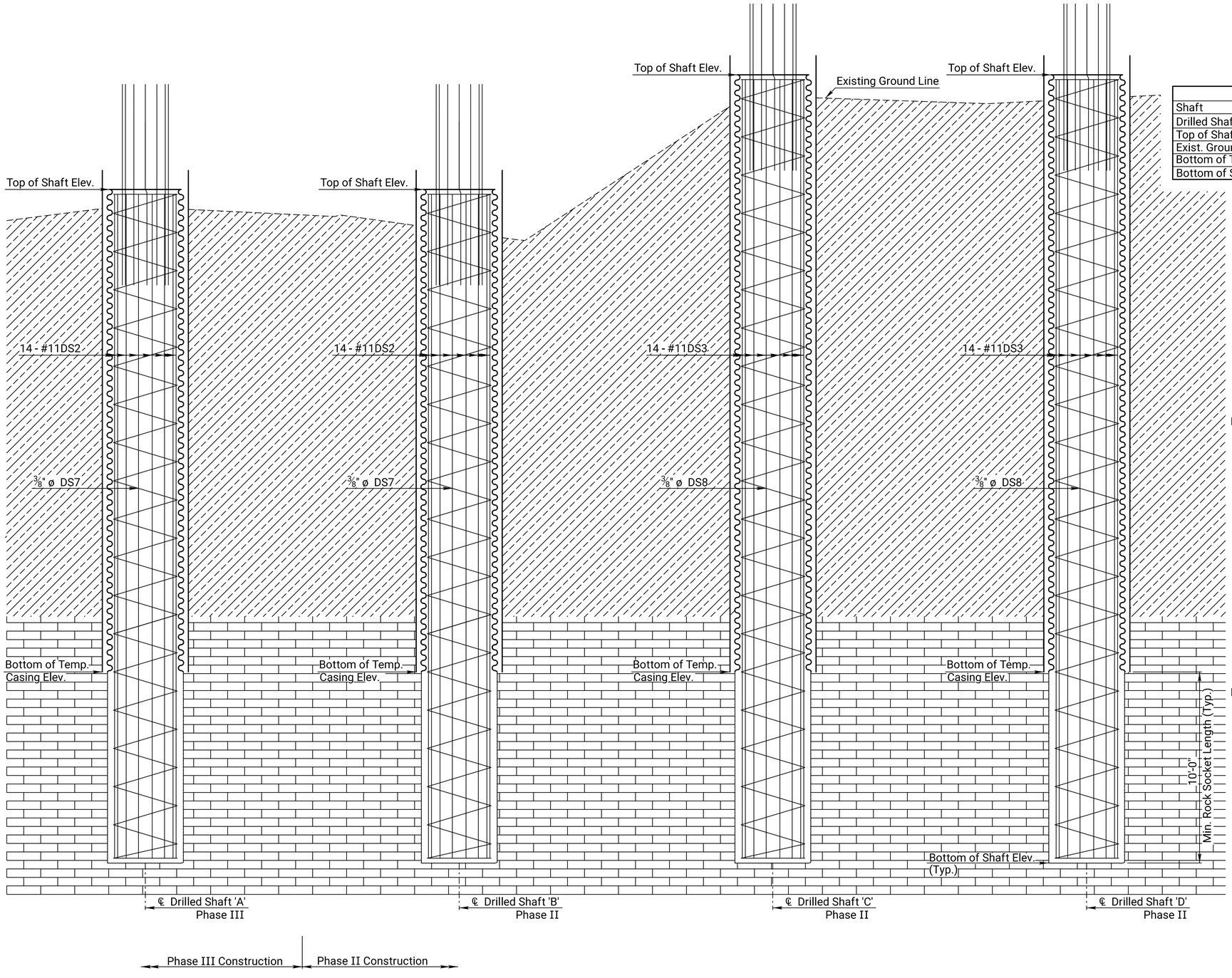
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Sh. No. 68

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	69	230



ELEVATION
(Looking East)

PIER 2 DRILLED SHAFTS				
Shaft	DS 'A'	DS 'B'	DS 'C'	DS 'D'
Drilled Shaft Length	35'-2½"	35'-2½"	41'-2½"	41'-2½"
Top of Shaft Elevation	1102.21	1102.21	1108.21	1102.21
Exist. Ground Line Elev.	1101.28±	1100.02±	1107.09±	1106.96±
Bottom of Temporary Casing Elev.	1077.00	1077.00	1077.00	1077.00
Bottom of Shaft Elev.	1067.00	1067.00	1067.00	1067.00

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

DRILLED SHAFT DETAILS 2

Proj. 160-18 KA-6475-01 Cowley Co.

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

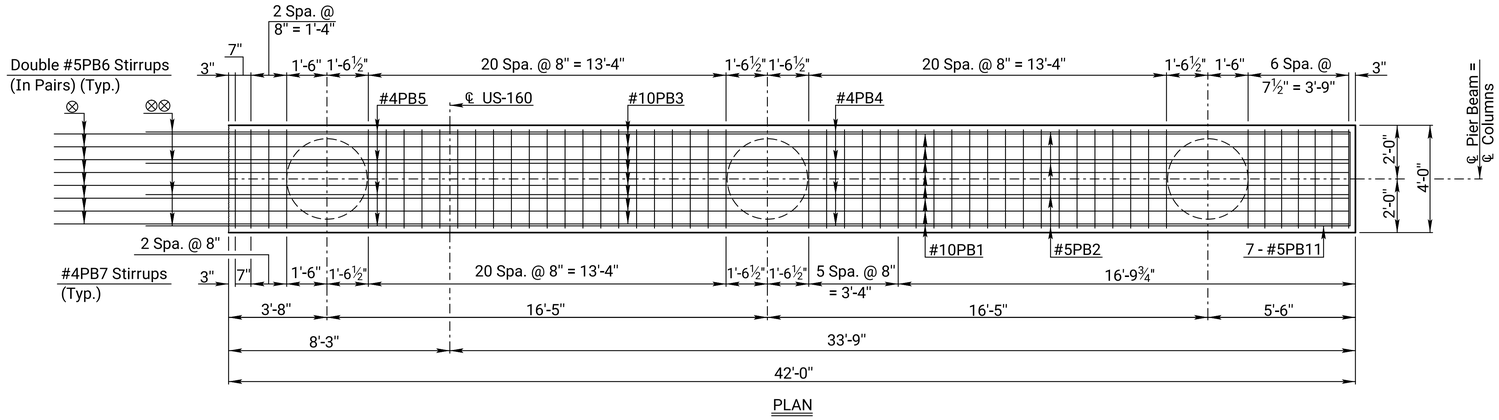
CADconform Certify This File

Sh. No. 69

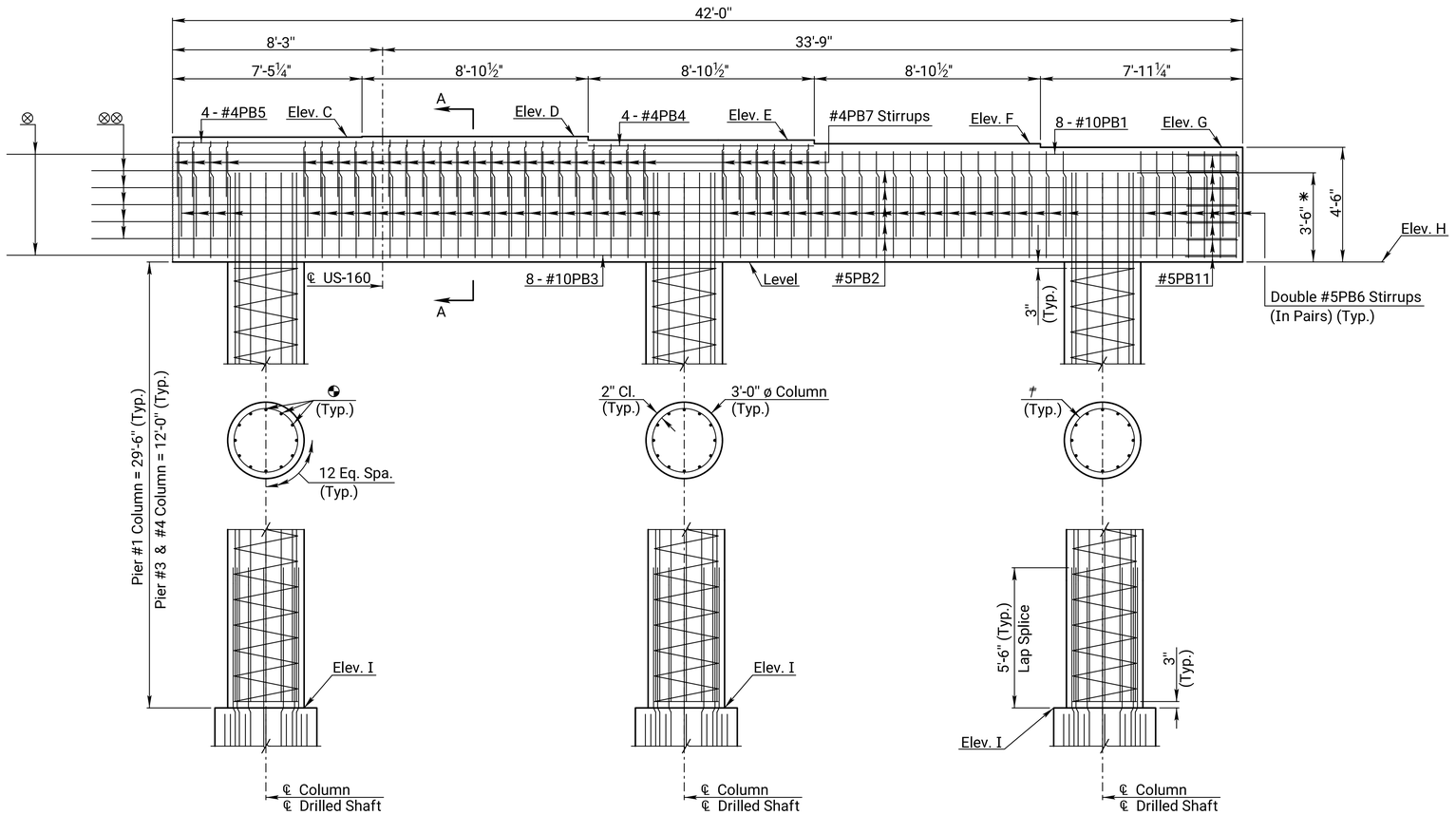
Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:51
File : ka647501bbr114-018.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	70	230



PLAN



ELEVATION
(Looking East)

TABLE OF ELEVATIONS	
Elevation	Pier No. 1
A	1133.56
B	1133.70
C	1133.84
D	1133.87
E	1133.73
F	1133.58
G	1133.44
H	1128.94
I	1099.44

⊗ #10PB1 bars extend 6'-6" beyond Const. Joint
#10PB3 bars extend 6'-6" beyond Const. Joint

⊗⊗ #5PB2 bars extend 3'-2" beyond Const. Joint

These bars will need to be protected during the removal of existing structure during Phase III.

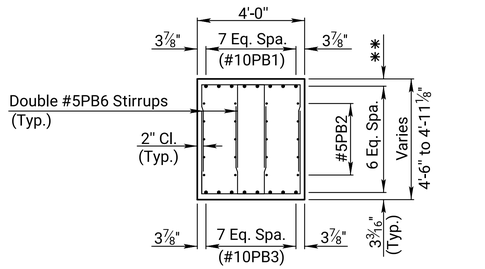
Note: See (AUXILIARY PIER DETAILS) sheet for location of Preformed Anchor Bolt Holes

◒ 12 - #9PC1 for Pier No. 1

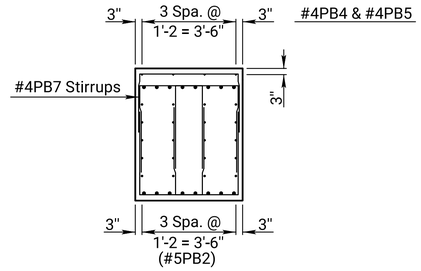
∗ Minimum Embedment

† ⅜" ø PS1 for Pier No. 1

∗∗ The spacing from the top of the Pier beam to the #10PB1 bar will vary with a minimum of 3¼"



SECTION THRU PIER BEAM



SECTION A-A

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PIER DETAILS 1
(Phase II Construction - Pier No. 1)

Proj. 160-18 KA-6475-01 Cowley Co.

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

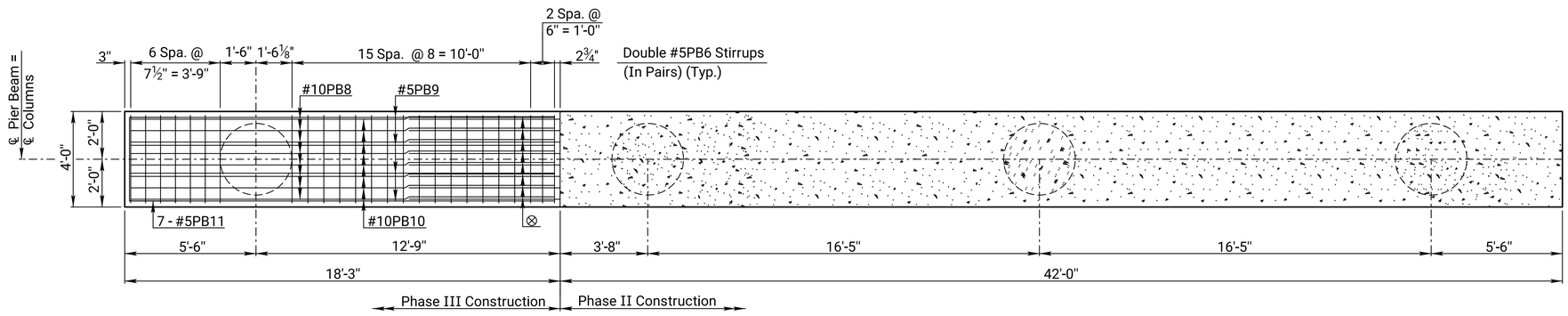
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Sh. No. 70

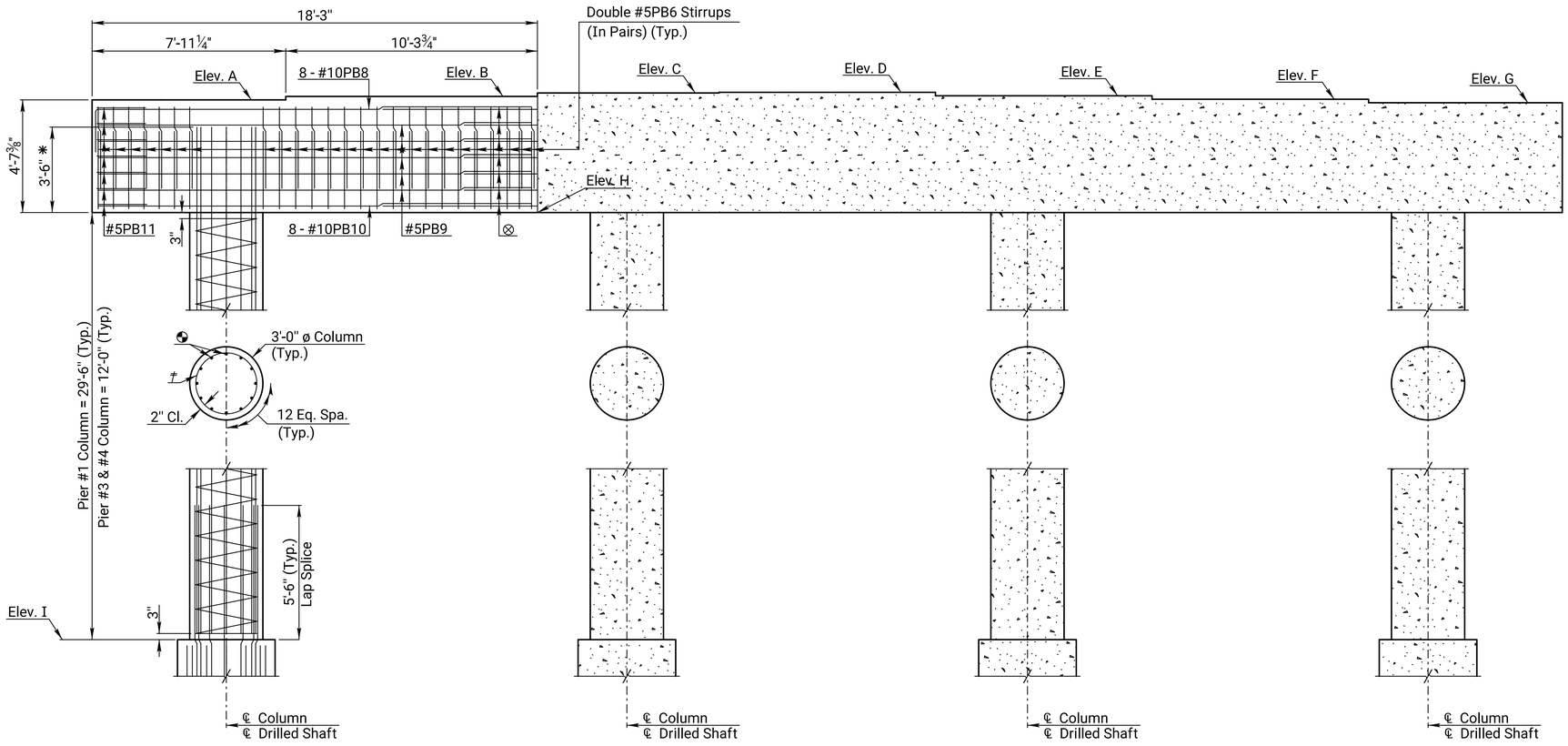
CADconform Certify This File

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File : ka647501bbr1114-019.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	71	230



PLAN



ELEVATION
(Looking East)

TABLE OF ELEVATIONS	
Elevation	Pier No. 1
A	1133.56
B	1133.70
C	1133.84
D	1133.87
E	1133.73
F	1133.58
G	1133.44
H	1128.94
I	1099.44

⊗ Splice the #10PB1 bars to the #10PB8 bars
Splice the #5PB2 bars to the #5PB9 bars
Splice the #10PB3 bars to the #10PB10 bars

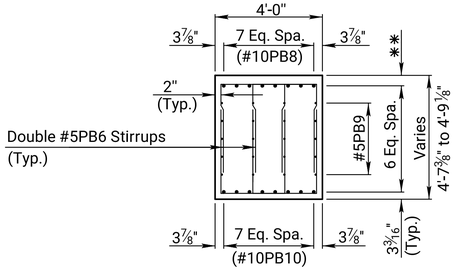
◔ 12 - #9PC1 for Pier No. 1

✱ Minimum Embedment

† ⅜" ø PS1 for Pier No. 1

✱✱ The spacing from the top of the Pier beam to the #10PB8 bar will vary with a minimum of 4⅝"

Note: See (AUXILIARY PIER DETAILS) sheet for location of Preformed Anchor Bolt Holes



SECTION THRU PIER BEAM

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PIER DETAILS 2
(Phase III Construction - Pier No. 1)

Proj. 160-18 KA-6475-01 Cowley Co.

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

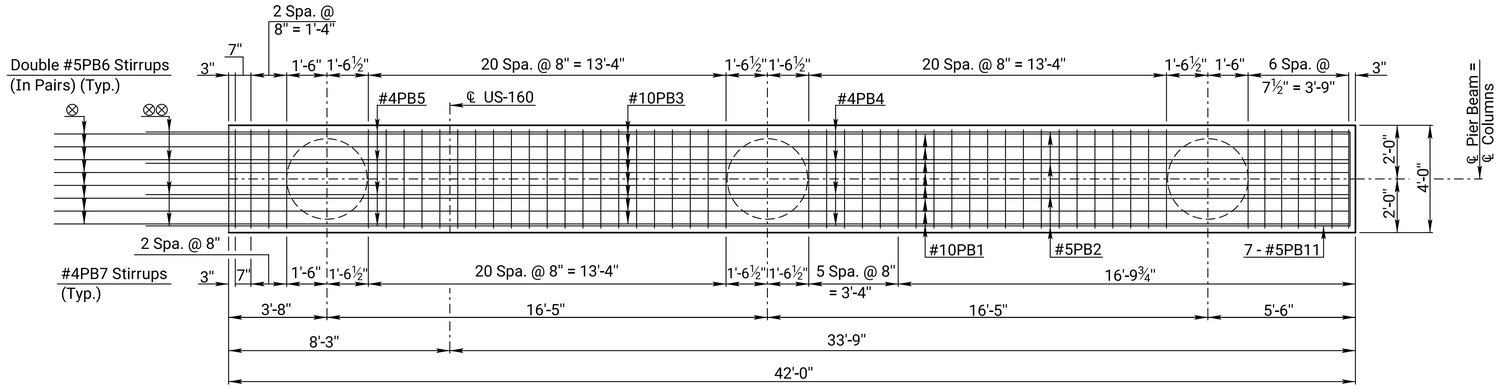
CADconform Certify This File

Sh. No. 71

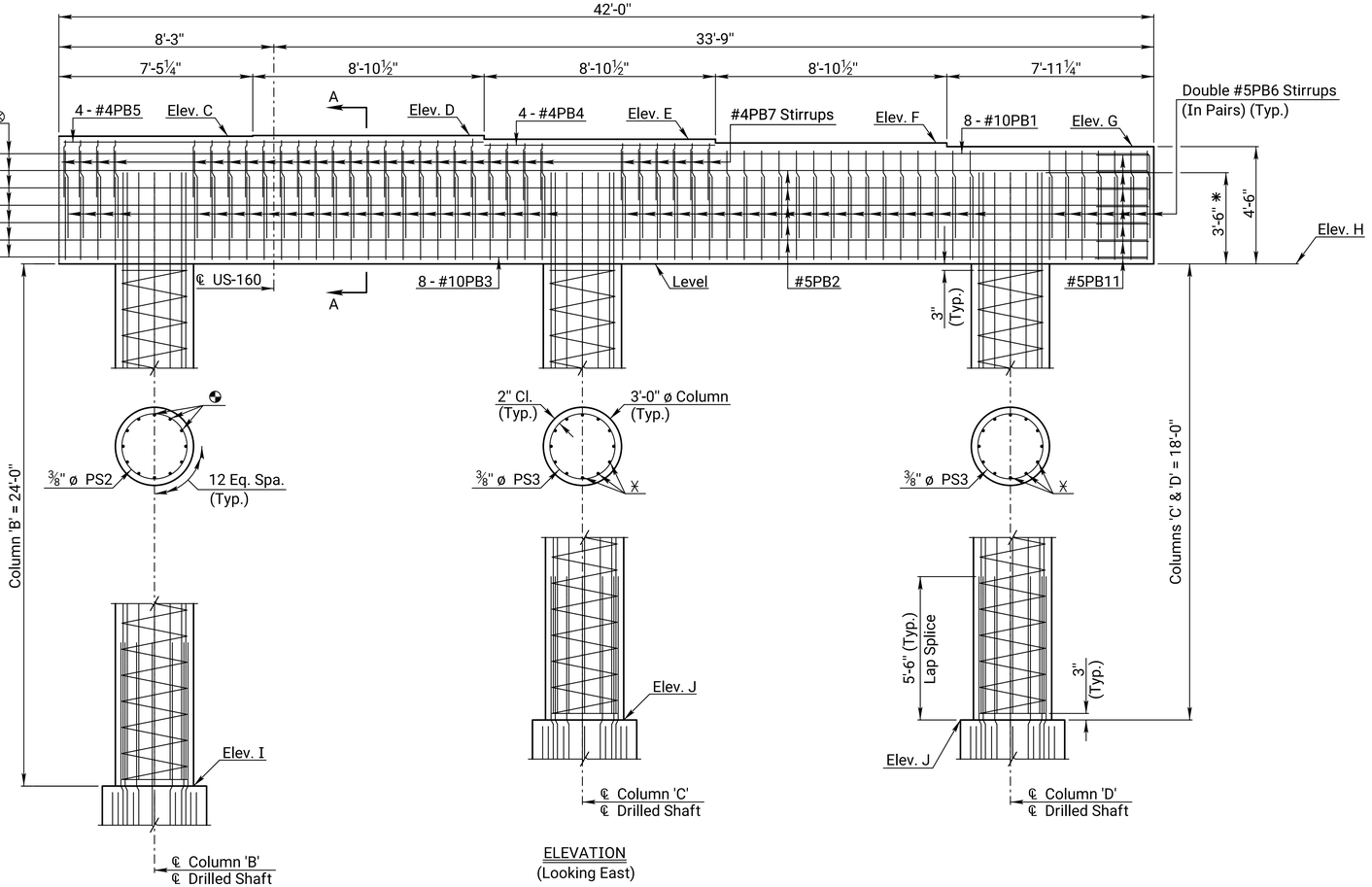
Plotted by: Jorge.Navarro@ks.gov 2-OCT-2025 19:54
File : ka647501bbr1114-020.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	72	230



PLAN



ELEVATION
(Looking East)

TABLE OF ELEVATIONS	
Elevation	Pier No. 2
A	1130.82
B	1130.96
C	1131.11
D	1131.13
E	1130.99
F	1130.85
G	1130.71
H	1126.21
I	1102.21
J	1108.21

⊗ #10PB1 bars extend 6'-6" beyond Const. Joint
#10PB3 bars extend 6'-6" beyond Const. Joint

⊗⊗ #5PB2 bars extend 3'-2" beyond Const. Joint

These bars will need to be protected during the removal of existing structure during Phase III.

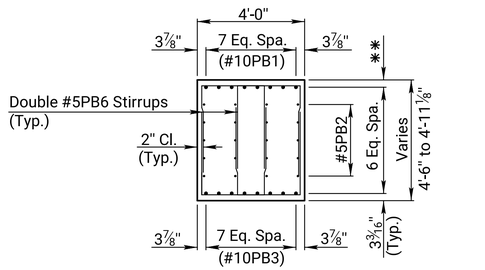
Note: See (AUXILIARY PIER DETAILS) sheet for location of Preformed Anchor Bolt Holes

◓ 12 - #9PC2 for Column 'B'

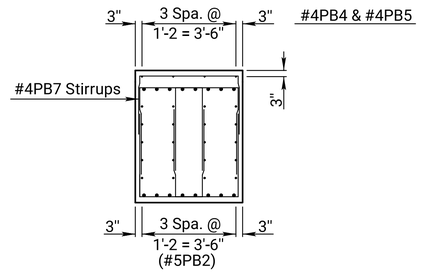
¥ 12 - #9PC3 for Column 'C'
12 - #9PC3 for Column 'D'

* Minimum Embedment

** The spacing from the top of the Pier beam to the #10PB1 bar will vary with a minimum of 3¼"



SECTION THRU BEAM



SECTION A-A

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PIER DETAILS 3
(Phase II Construction - Pier No. 2)

Proj. 160-18 KA-6475-01 Cowley Co.

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

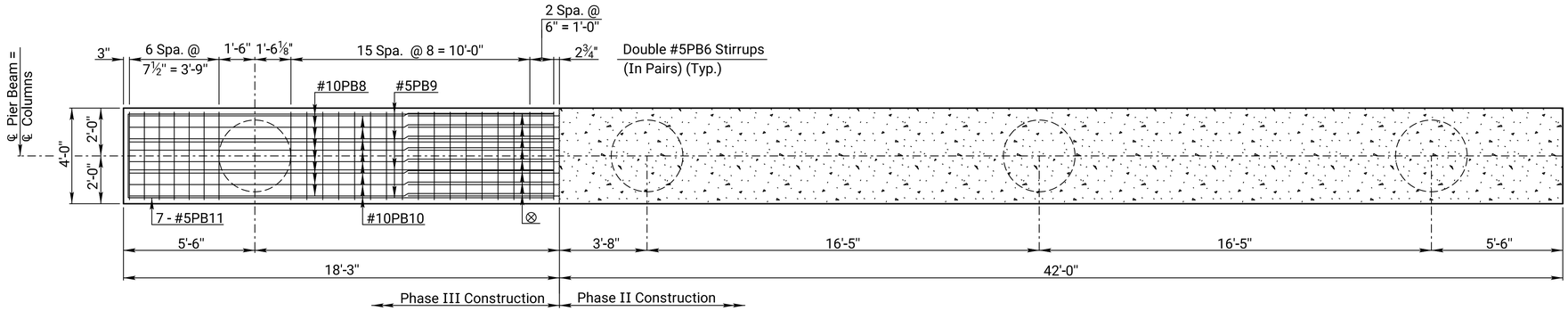
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Sh. No. 72

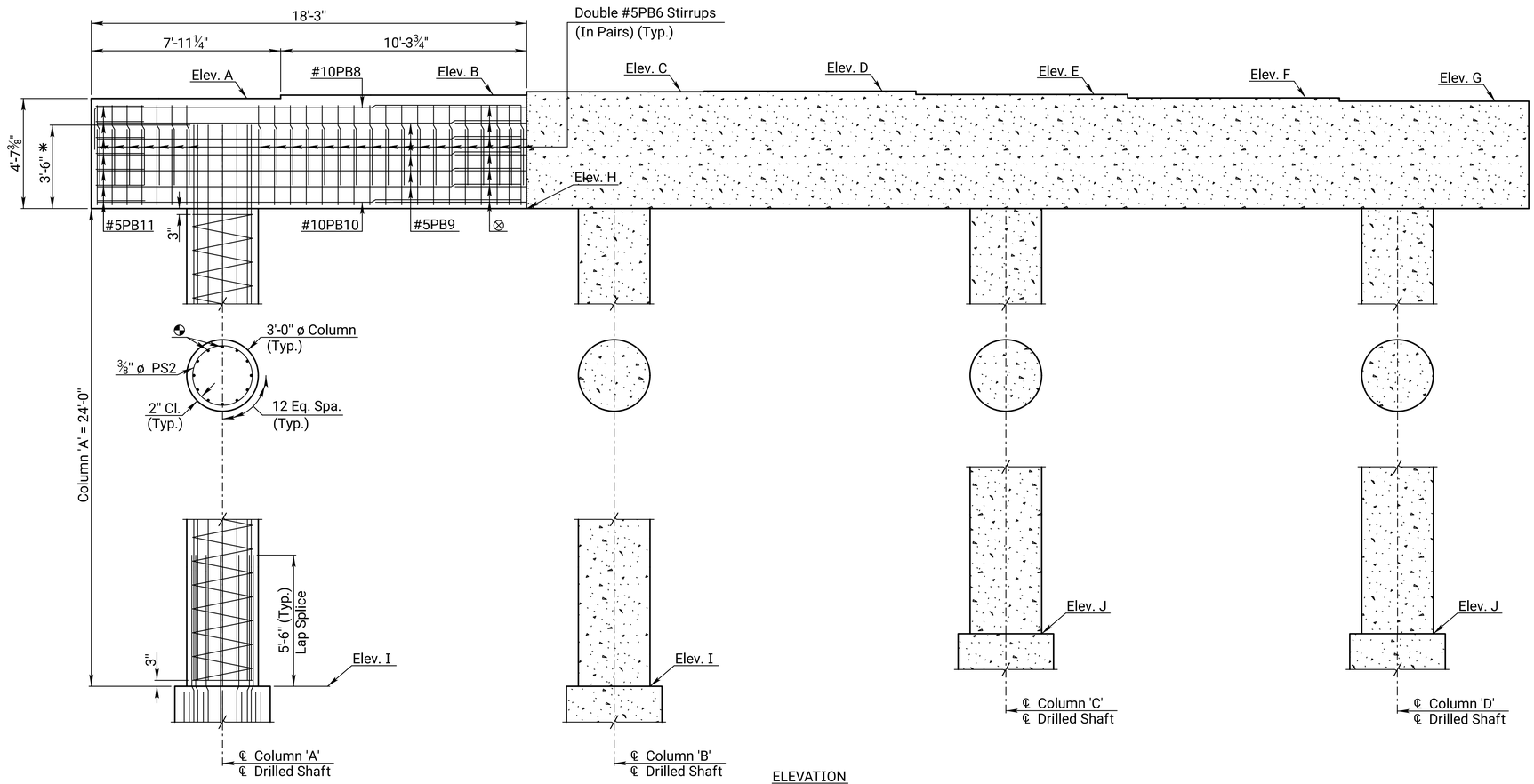
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File : ka647501bbr1114-021.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	73	230



PLAN



ELEVATION
(Looking East)

TABLE OF ELEVATIONS	
Elevation	Pier No. 2
A	1130.82
B	1130.96
C	1131.11
D	1131.13
E	1130.99
F	1130.85
G	1130.71
H	1126.21
I	1102.21
J	1108.21

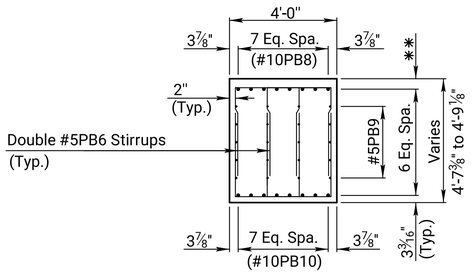
⊗ Splice the #10PB1 bars to the #10PB8 bars
Splice the #5PB2 bars to the #5PB9 bars
Splice the #10PB3 bars to the #10PB10 bars

◔ 12 - #9PC2 for Column 'A'

✱ Minimum Embedment

✱✱ The spacing from the rop of the Pier beam to the #10PB8 bar wil vary with a minimum of $4\frac{5}{8}$"

Note: See (AUXILIARY PIER DETAILS) sheet for location of Preformed Anchor Bolt Holes



Note: See (AUXILIARY PIER DETAILS) sheet for location of Preformed Anchor Bolt Holes

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PIER DETAILS 4
(Phase III Construction - Pier No. 2)

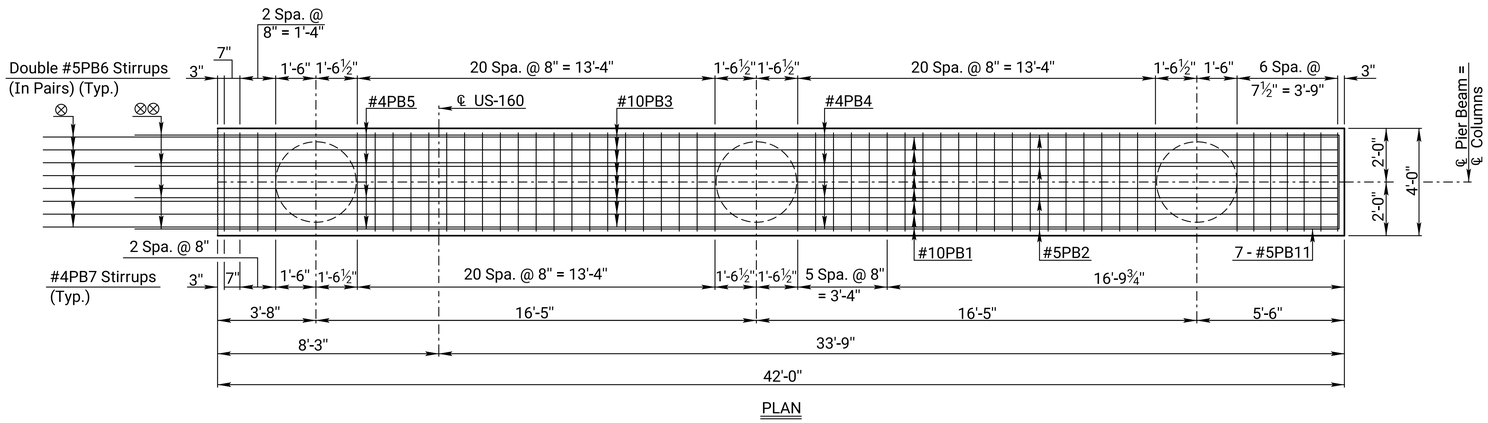
Proj. 160-18 KA-6475-01 Cowley Co.

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

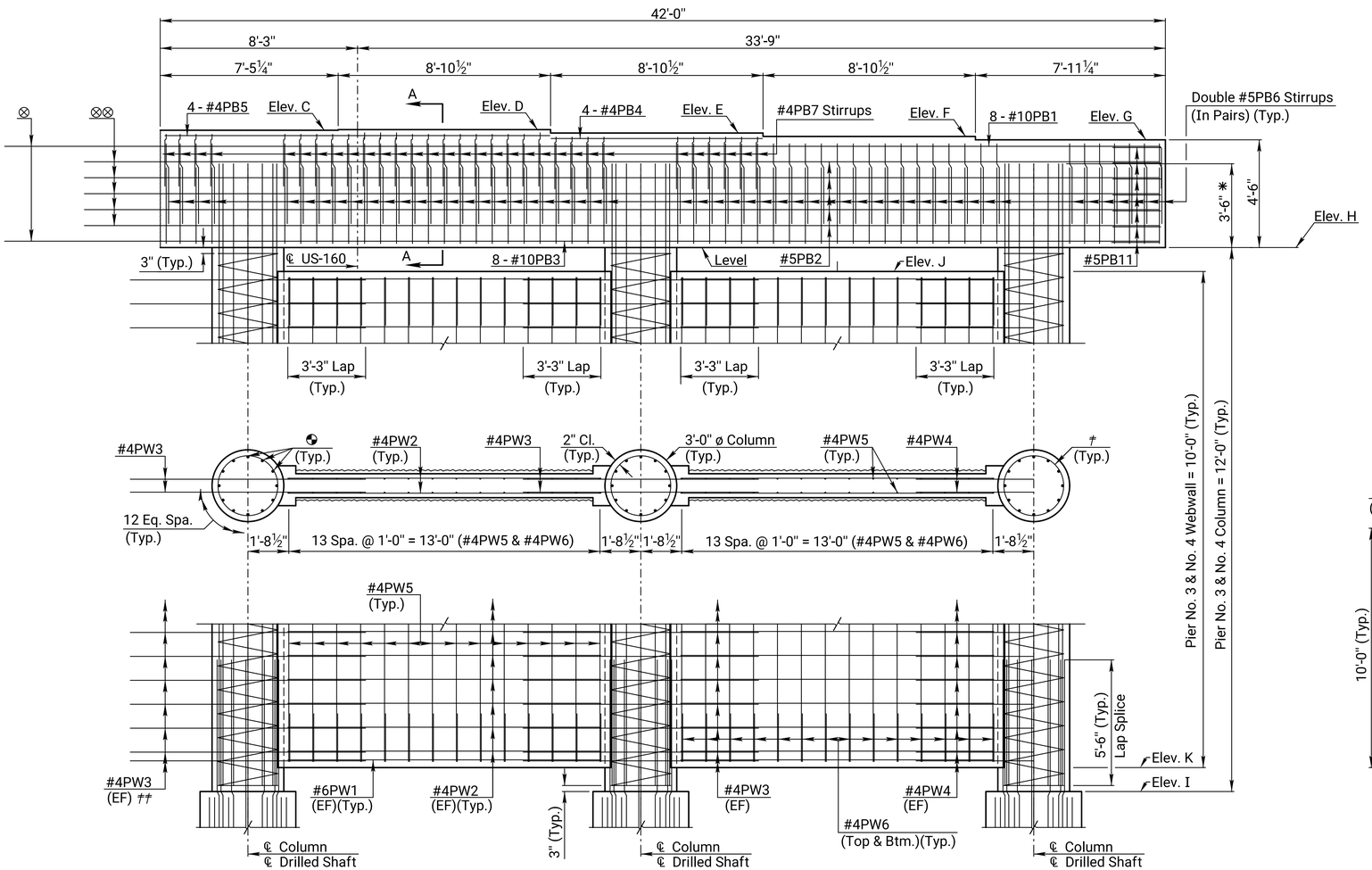
Sh. No. 73

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:51
File : ka647501bbr114-022.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	74	230



PLAN



ELEVATION
(Looking East)

⊗ #10PB1 bars extend 6'-6" beyond Const. Joint
#10PB3 bars extend 6'-6" beyond Const. Joint

⊗⊗ #5PB2 bars extend 3'-2" beyond Const. Joint

These bars will need to be protected during the removal of existing structure during Phase III.

†† The #4PW3 bars will be spliced to the #4PW2 and #6PW1 bars in Phase III

Note: See (AUXILIARY PIER DETAILS) sheet for location of Preformed Anchor Bolt Holes

See "Architectural Pier Detail" sheet for aesthetic web wall details.

TABLE OF ELEVATIONS		
Elevation	Pier No. 3	Pier No. 4
A	1129.63	1129.87
B	1129.77	1130.01
C	1129.92	1130.15
D	1129.94	1130.18
E	1129.80	1130.04
F	1129.66	1129.89
G	1129.52	1129.75
H	1125.02	1125.25
I	1113.02	1113.25
J	1124.02	1124.25
K	1114.02	1114.25

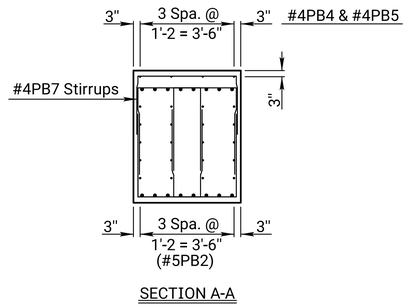
12 - #9PC4 for Pier No. 3
12 - #9PC4 for Pier No. 4

✱ Minimum Embedment

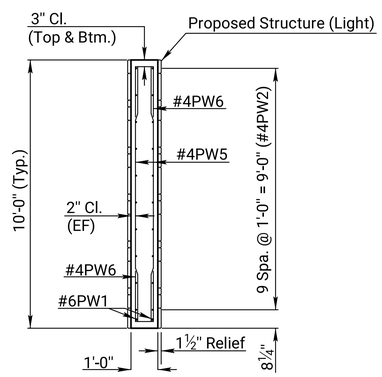
† ⅜" ø PS4 for Pier No. 3
⅜" ø PS4 for Pier No. 4

The spacing from the top of the Pier beam to the #10PB1 bar will vary with a minimum of 3¼"

SECTION THRU PIER BEAM



SECTION A-A



ELEVATION
(Pier Webwall)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PIER DETAILS 5
(Phase II Construction - Piers No. 3 & No. 4)

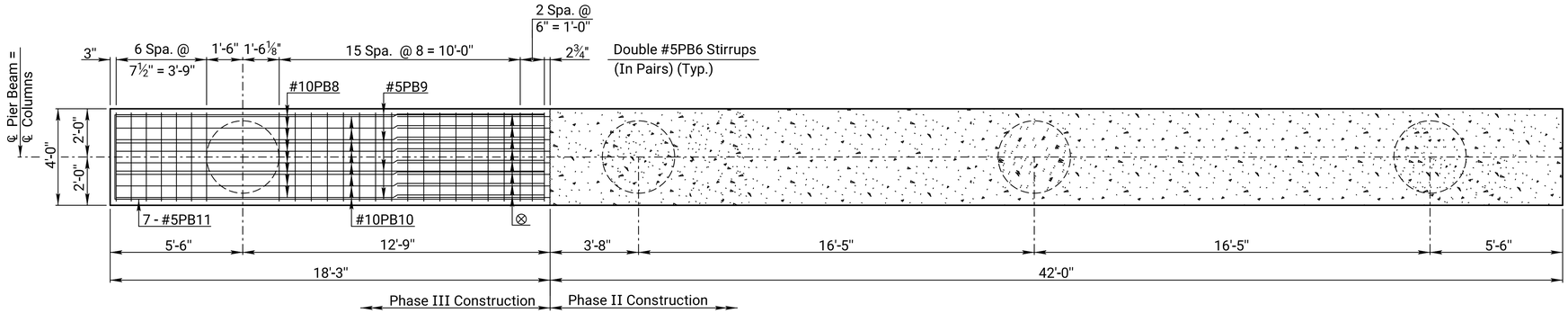
Proj. 160-18 KA-6475-01 Cowley Co.

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

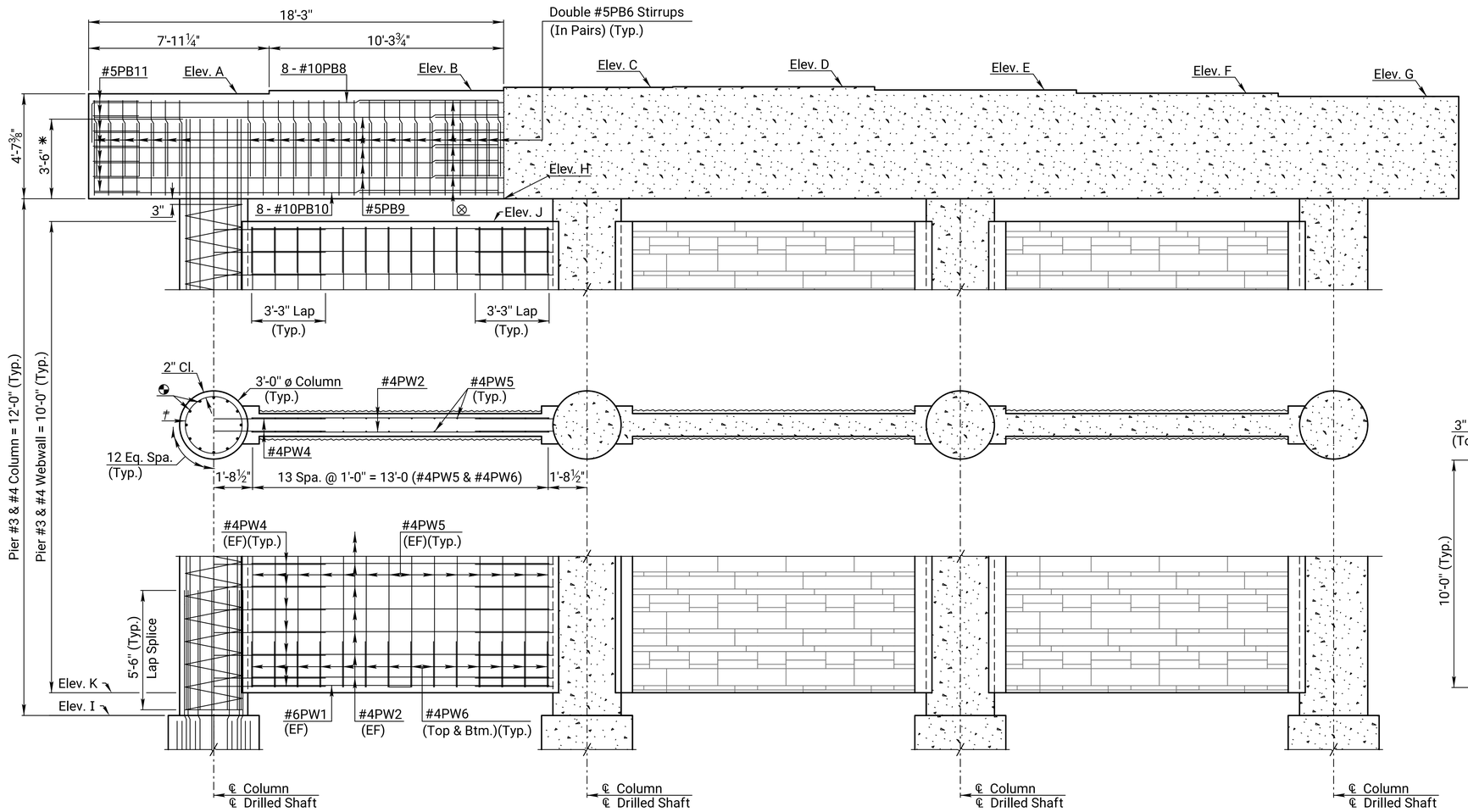
Sh. No. 74

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File : ka647501bbr114-023.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	75	230



PLAN



ELEVATION
(Looking East)

TABLE OF ELEVATIONS		
Elevation	Pier No. 3	Pier No. 4
A	1129.63	1129.87
B	1129.77	1130.01
C	1129.92	1130.15
D	1129.94	1130.18
E	1129.80	1130.04
F	1129.66	1129.89
G	1129.52	1129.75
H	1125.02	1125.25
I	1113.02	1113.25
J	1124.02	1124.25
K	1114.02	1114.25

⊗ Splice the #10PB1 bars to the #10PB8 bars
Splice the #5PB2 bars to the #5PB9 bars
Splice the #10PB3 bars to the #10PB10 bars

12 - #9PC4 for Pier No. 3
12 - #9PC4 for Pier No. 4

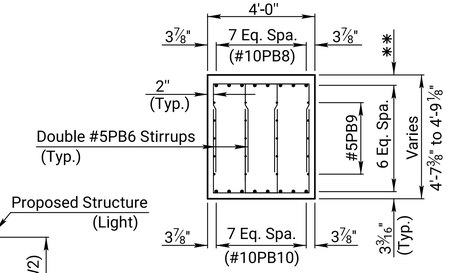
✱ Minimum Embedment

† ⅜" ø PS4 for Pier No. 3
⅜" ø PS4 for Pier No. 4

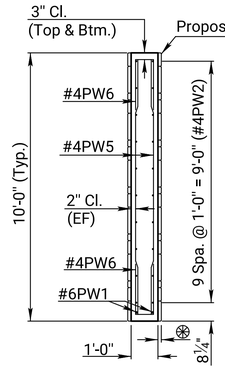
✱✱ The spacing from the top of the Pier beam to the #10PB8 bar wil vary with a minimum of 4⅝"

Note: See (AUXILIARY PIER DETAILS) sheet for location of Preformed Anchor Bolt Holes

See "Architectural Pier Detail" sheet for aesthetic web wall details.



SECTION THRU PIER BEAM



⊛ 1½" Relief

ELEVATION
(Pier Webwall)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PIER DETAILS 6
(Phase III Construction - Pier No. 3 & No. 4)

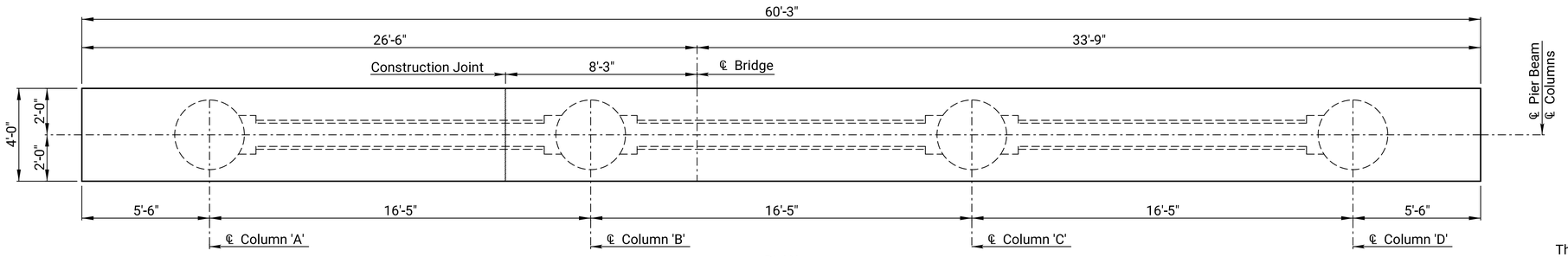
Proj. 160-18 KA-6475-01 Cowley Co.

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

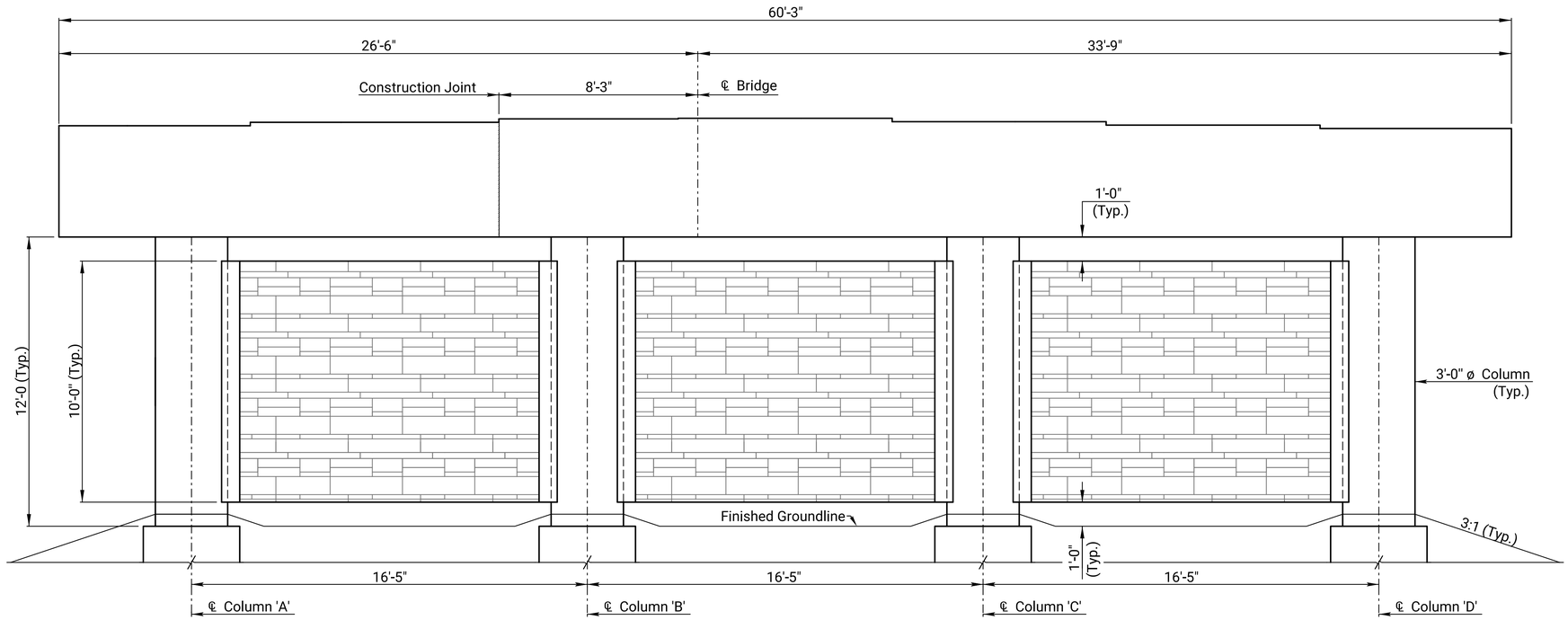
Sh. No. 75

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:53
File : ka647501bbr114-024.dgn

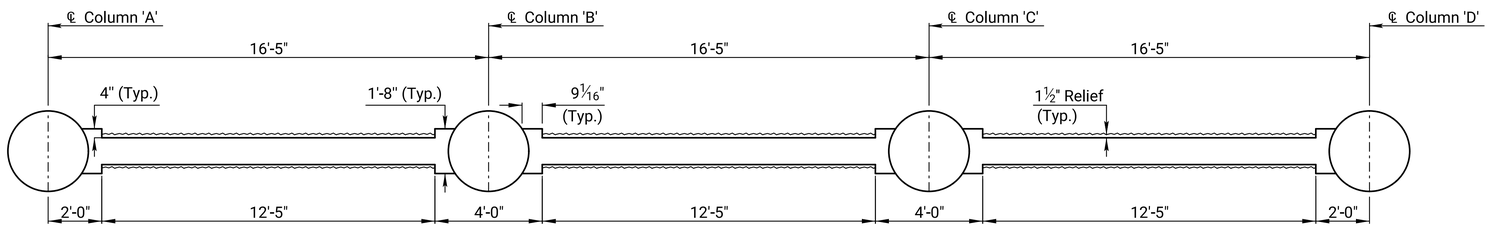
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	76	230



PLAN



ELEVATION
(Looking East)



WEB WALL PLAN

The Contractor shall submitit their proposed form liner for the 12'-5" inset section of the web wall to the Engineer for review and approval prior to placing concrete for the web wall. Patterning of simulated stone masonry shall appear natural and non-repeating. The following is a list of form liner manufacturers and types which may be used. The depth of relief for the form liner shall vary up to 1½". The height of any single "stone" shall be 1'-3" maximum. Give exposed surfaces outside the limits of the Ashlar Stone form liner a rubbed finish.

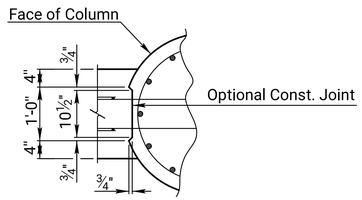
Scott System, Inc.: Form liner pattern #167D "Ashlar Stone D"

Fitzgerald Formliners: Form liner pattern #16086 "Georgetown Ashlar"

Custom Rock International: Form liner pattern #12020 "Tollway Ashlar"

Pier form liner shall be subsidiary to "Concrete Grade 4.0 (AE)"

Either cast the columns and pier web monolithically or cast the columns separately using a keyed joint as shown. If the columns are cast separately, use threaded deformed bars in lieu of the PW3 & PW4 dowel bars. Bar diameter and embedment length into the web wall shall be as designated. The inserts shall develop the full yield strength of the bars. No change is compensation is allowed with the use of inserts. Coil inserts are not allowed.



WEBWALL CONSTRUCTION
JOINT DETAIL

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ARCHITECTURAL PIER DETAILS
(Piers No. 3 & No. 4)

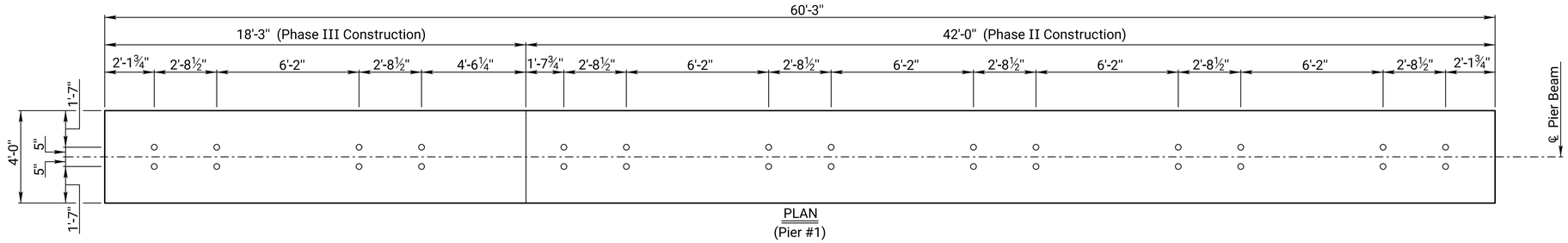
Proj. 160-18 KA-6475-01 Cowley Co.

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

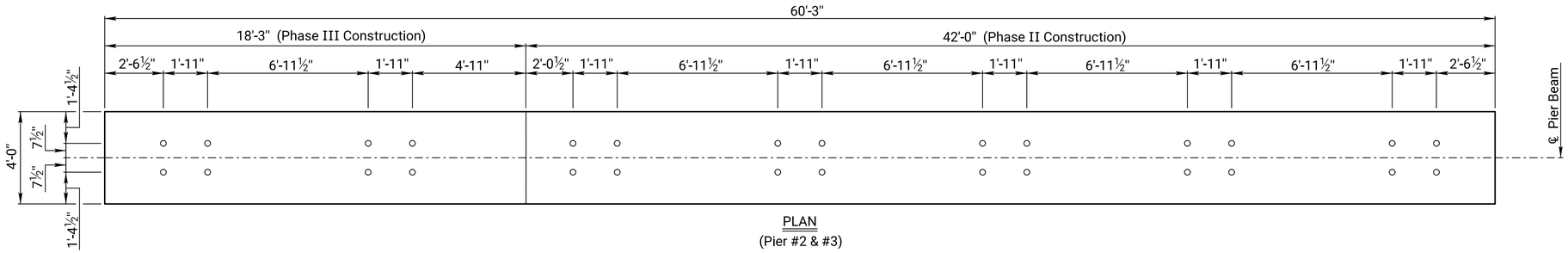
Sh. No. 76

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:55
File : ka647501bbr1114-025.dgn

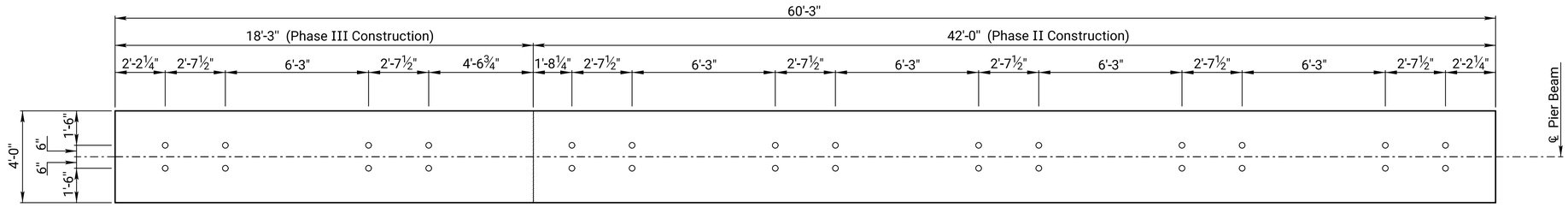
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	77	230



PLAN
(Pier #1)



PLAN
(Pier #2 & #3)

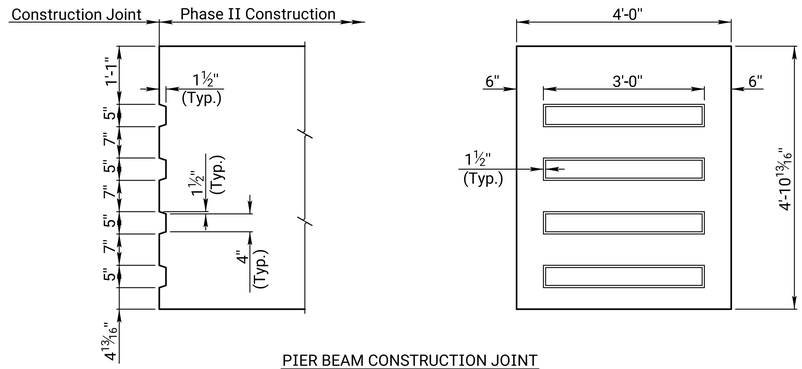


PLAN
(Pier #4)

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

ANCHOR BOLTS: Place the pier beam reinforcing bars to clear the anchor bolts.

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



PIER BEAM CONSTRUCTION JOINT

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

AUXILIARY PIER DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

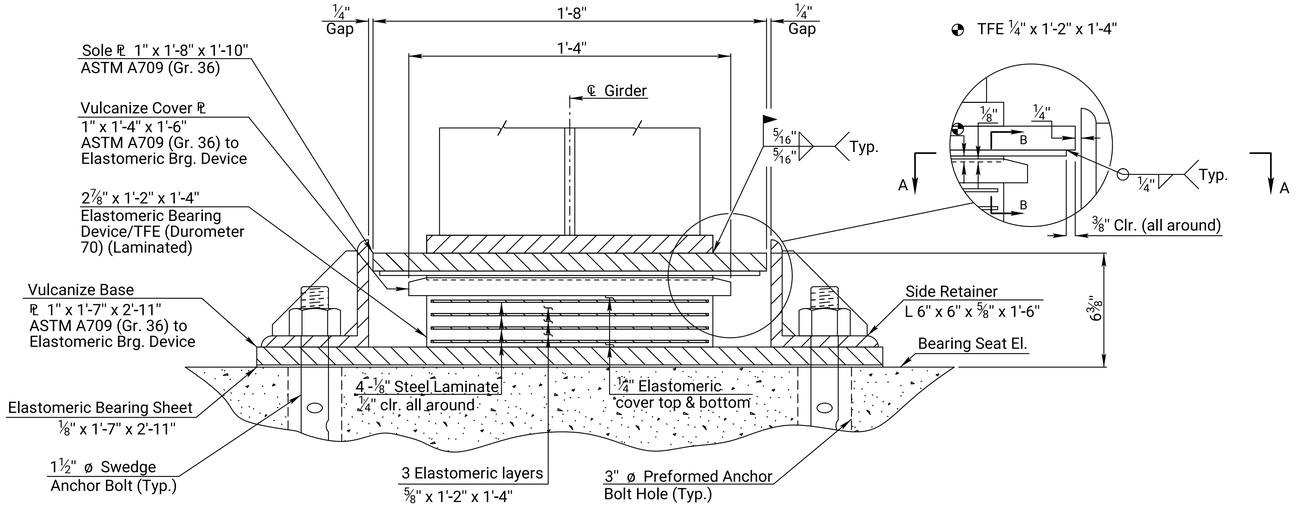
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DESIGN CK.	CFB	DETAIL CK.	CFB	QUAN.CK.	CADD CK.	CFB

CADconform Certify This File Sh. No. 77

CADconform Certify This File

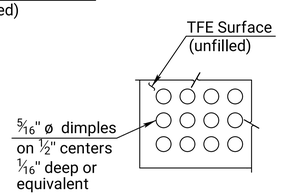
Plotted by: Jorge.Navarro@ks.gov 2-OCT-2025 19:50
File: ka647501bbr114-026.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	78	230

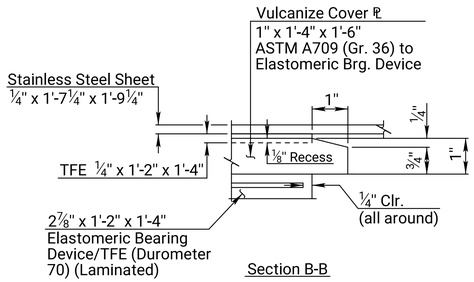


SECTION THRU BEARING DEVICE
(14 Required)

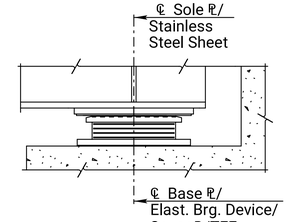
PREFORMED ANCHOR BOLT HOLES: Preform 3 inch diameter holes using only corrugated polyethylene tubing (Type C) at the locations shown. When temperatures are expected to go below freezing, seal the preformed holes or fill them with a propylene gycol-based antifreeze to prevent expansion damage. The holes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



Section A-A

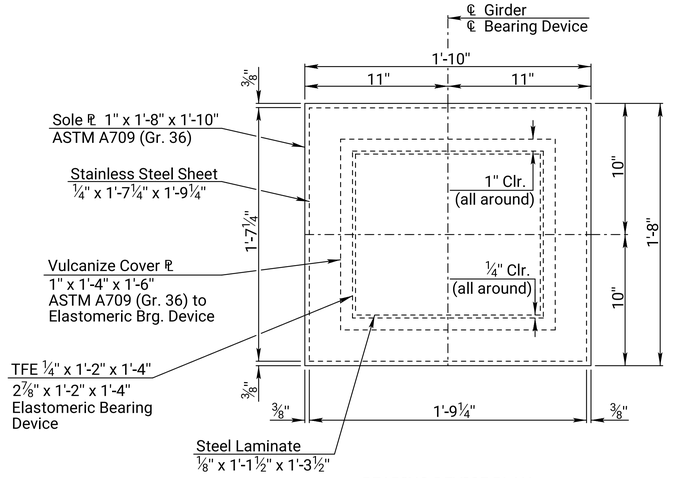


Section B-B

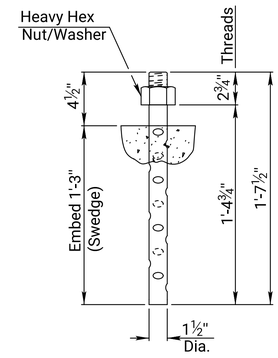


SECTION THROUGH BEARING DEVICE

Note: Side retainers and anchor bolts not shown for clarity.



BEARING DEVICE PLAN
(14 Required)



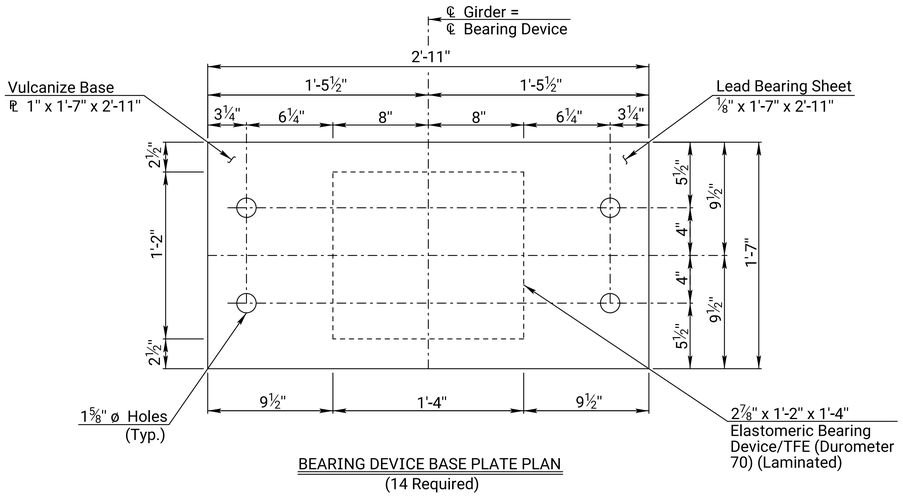
SWEDGE ANCHOR BOLT
(56 Required)
(Galvanized)

BEARING (TFE/ELASTOMERIC): The Elastomeric portion of the Bearing Device shall be factory bonded to the steel base plate and the steel cover plate by a vulcanization process. All exposed surfaces of the base plate, cover plate, sole plate and side retainers shall be painted with an inorganic zinc primer and water borne acrylic top coat. Repair painted surfaces damaged by welding operations. Mask all exposed stainless steel before field painting; clean any overspray on the stainless steel sheet. The steel plates, side retainers, and swedge anchor bolts are subsidiary to the bid item. "Bearing (TFE/Elastomeric)" and shall be furnished by the bearing device fabricator.

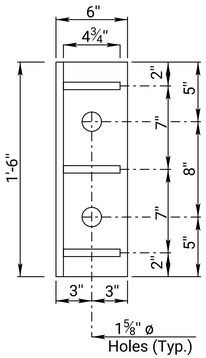
ANCHOR BOLTS: Place the reinforcing bars below the bearing devices to clear the anchor bolts.

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

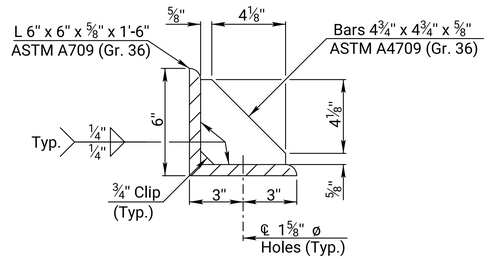
BEARING (STEEL REINFORCED ELASTOMERIC) (Method A):
Bearing devices at Abut. 1 & 2 shall be fabricated with elastomer satisfying:
- Shore A Durometer Hardness of 70
- Low Temperature Grade 3 requirements
- Type A certification of elastomeric bearing device acceptance is required
- Include design method and all material properties on shop details
- Abut. 1 Service 1 Design Dead Load: 51.5 Kips
- Abut. 2 Service 1 Design Dead Load: 47.9 Kips
- Abut. 1 Service 1 Design Live Load: 106.5 Kips
- Abut. 2 Service 1 Design Live Load: 101.9 Kips
- Abut. 1 Design Translation: 4.53 inches
- Abut. 2 Design Translation: 3.09 inches



BEARING DEVICE BASE PLATE PLAN
(14 Required)



Plan



SECTION

SIDE RETAINER
(28 Required)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT BEARING DEVICE DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

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

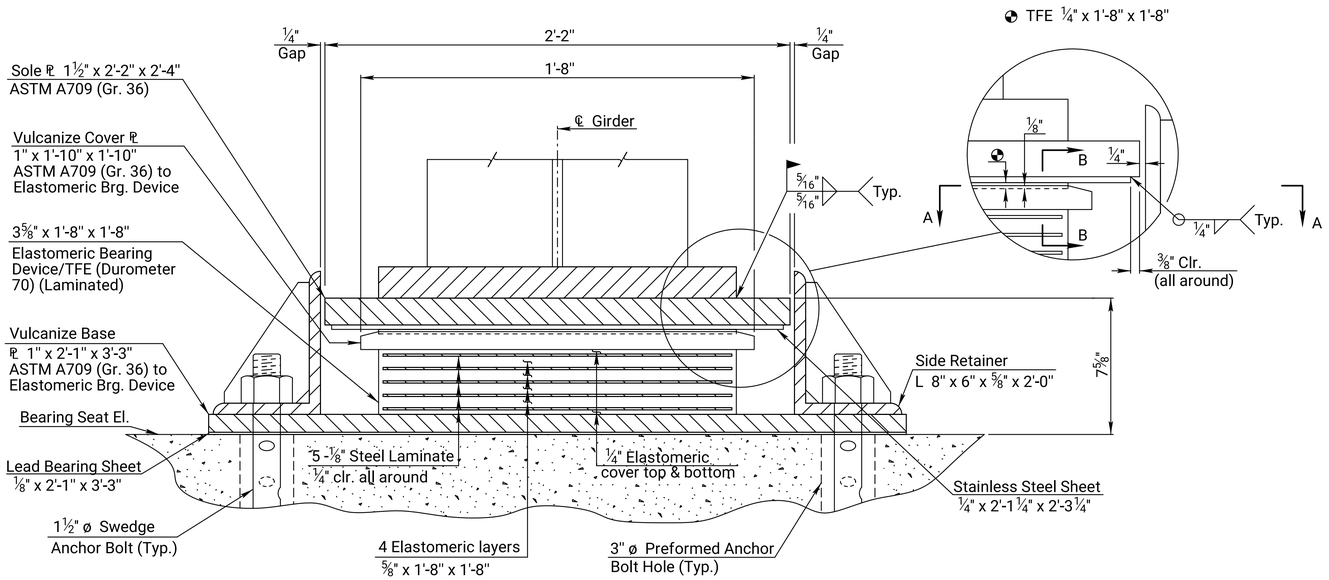
CADconform Certify This File

Sh. No. 78

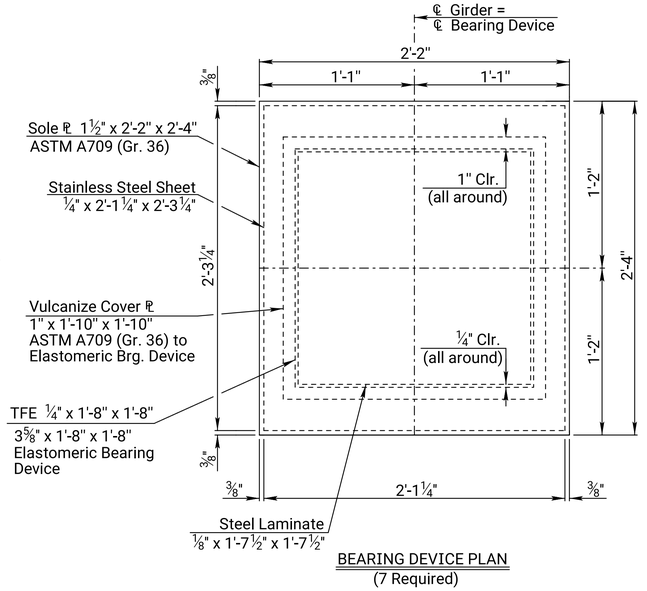
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CADconform Certify This File

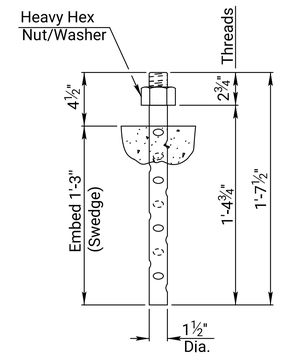
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	79	230



SECTION THRU BEARING DEVICE
(7 Required)

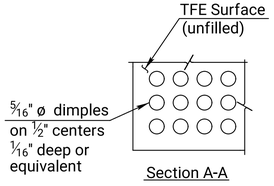


BEARING DEVICE PLAN
(7 Required)

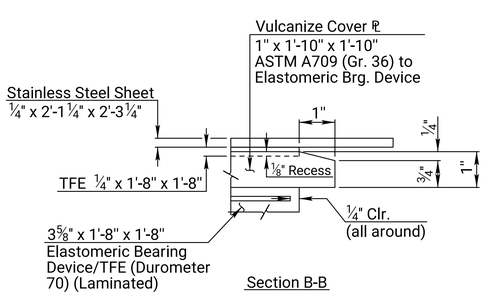


SWEDGE ANCHOR BOLT
(28 Required)
(Galvanized)

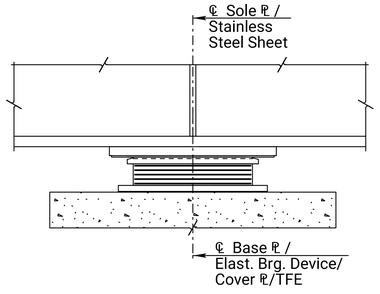
PREFORMED ANCHOR BOLT HOLES: Preform 3 inch diameter holes using only corrugated polyethylene tubing (Type C) at the locations shown. When temperatures are expected to go below freezing, seal the preformed holes or fill them with a propylene glycol-based antifreeze to prevent expansion damage. The holes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



Section A-A



Section B-B



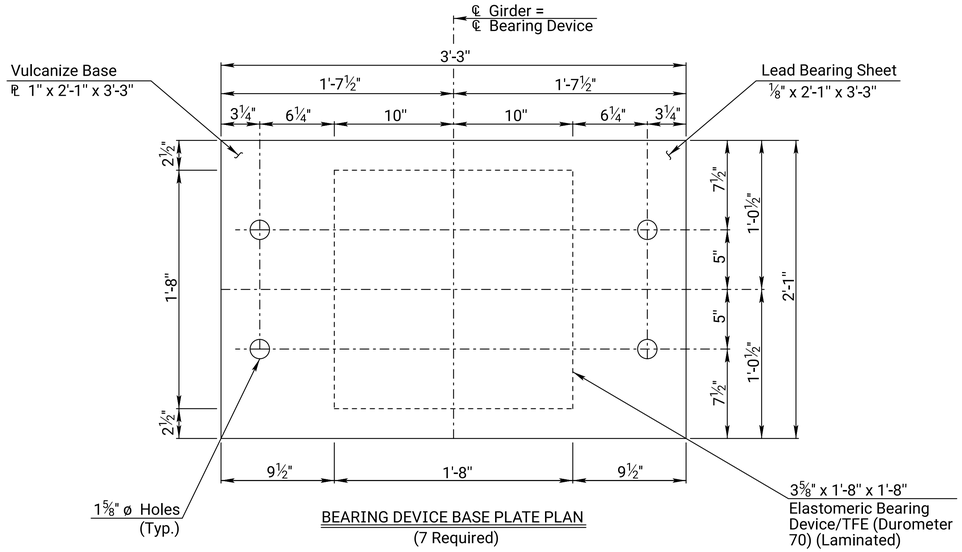
SECTION THROUGH BEARING DEVICE

Note: Side retainers and Anchor bolts not shown for clarity.

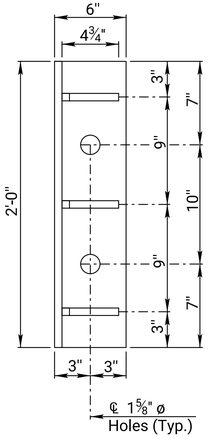
BEARING (TFE/ELASTOMERIC): The Elastomeric portion of the Bearing Device shall be factory bonded to the steel base plate and the steel cover plate by a vulcanization process. All exposed surfaces of the base plate, cover plate, sole plate and side retainers shall be painted with an inorganic zinc primer and water borne acrylic top coat. Repair painted surfaces damaged by welding operations. Mask all exposed stainless steel before field painting; clean any overspray on the stainless steel sheet. The steel plates, side retainers, and swedge anchor bolts are subsidiary to the bid item. "Bearing (TFE/Elastomeric)" and shall be furnished by the bearing device fabricator.

ANCHOR BOLTS: Place the reinforcing bars below the bearing devices to clear the anchor bolts.

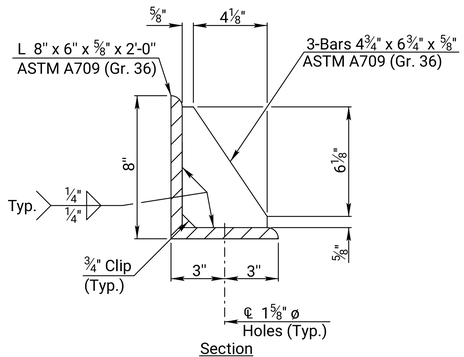
ANCHOR BOLTS: Anchor bolts will adhere to KDOT Standard Specification Division 1600 (Grade 55) with the following exception: the threads may be rolled or cut.



BEARING DEVICE BASE PLATE PLAN
(7 Required)



Plan



Section

SIDE RETAINER
(14 Required)

BEARING (STEEL REINFORCED ELASTOMERIC) (Method A):
Bearing devices at Pier No. 1 shall be fabricated with elastomer satisfying:
- Shore A Durometer Hardness of 70
- Low Temperature Grade 3 requirements
- Type A certification of elastomeric bearing device acceptance is required
- Include design method and all material properties on shop details
- Pier 1 Service 1 Design Dead Load: 206.9 Kips
- Pier 1 Service 1 Design Live Load: 207.5 Kips
- Pier 1 Service 1 Design Translation: 3.12 inches

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

EXPANSION PIER BEARING DEVICE DETAILS
(Pier No. 1)

Proj. 160-18 KA-6475-01 Cowley Co.

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

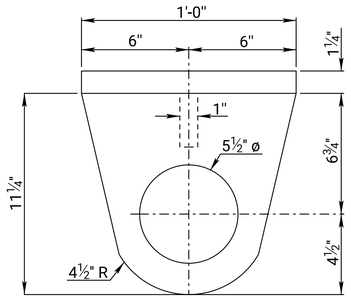
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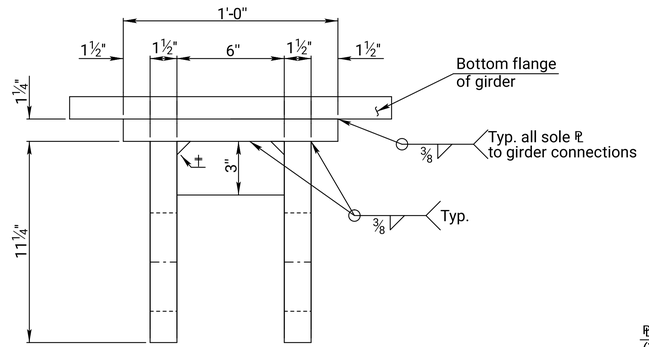
Sh. No. 79

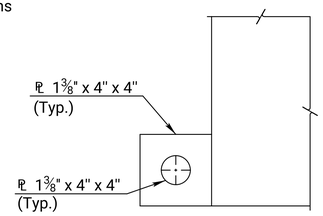
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CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	80	230







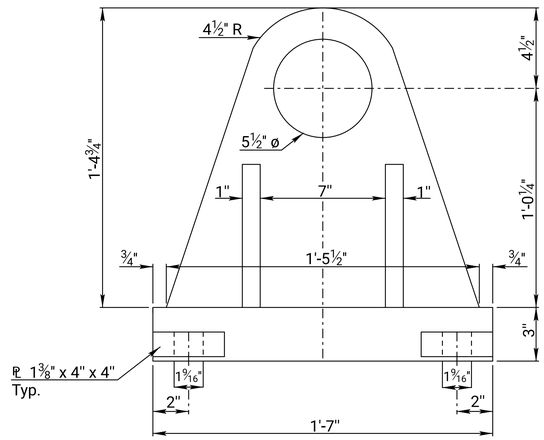
PARTIAL PLAN OF TYPICAL BOLSTER ℄

MATERIAL AT BEARINGS: All parts of Pier No. 1 and Pier No. 2 bearing devices shall be structural steel, ASTM A709 (Gr. 50), except pins and vertical bearing plates (both upper and lower). Use ASTM A276 Type 304 for the bearing pins. Use ASTM A240 Type 304 for vertical bearing Plates. The nuts for anchor bolts shall be "Heavy Hex Semi-Finished Nuts". Anchor bolts shall be Grade 55. No weathering steel allowed.

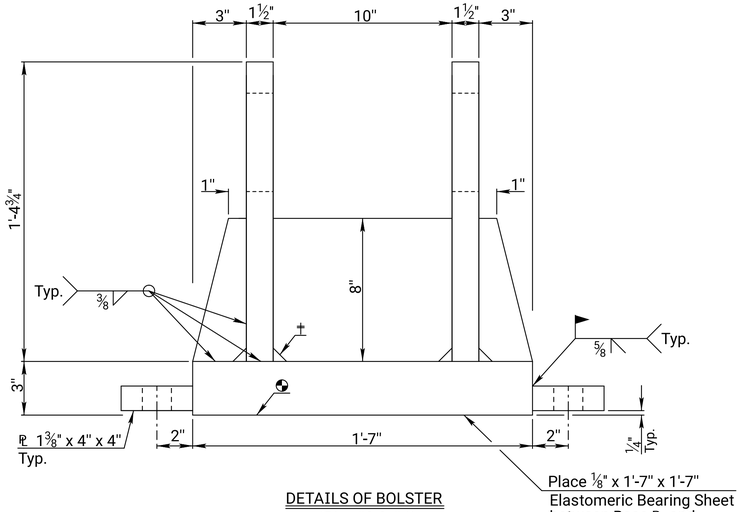
BEARING DEVICE WELDING: All welds shall be continuous fillet welds unless otherwise noted. Fillet weld size is determined by the thicker of two parts joined, and unless otherwise noted, shall be ⅜".

MAGNETIC PARTICLE INSPECTION: Magnetic particle inspection is required on the Steel Bearing Devices with the exception of stainless steel to stainless steel to carbon steel, where liquid penetrate inspection shall be used in accordance with KDOT Standard Specifications.

ANCHOR BOLTS: Anchor bolts will adhere to KDOT StandardSpecification Division 1600 (Grade 55) with the following exception: the threads may be rolled or cut.

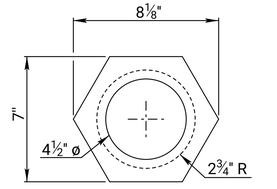


SIDE ELEVATION OF BOLSTER

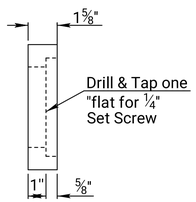


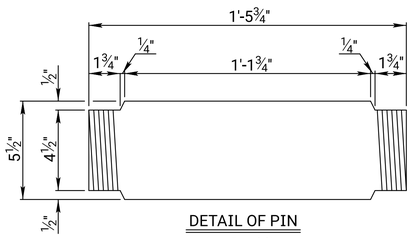
DETAILS OF BOLSTER
(Pier #3 & #4)
(7 Req'd per Pier)

SWEDGE ANCHOR BOLT FOR BOLSTERS
(28 Req'd per Pier)
(Gr. 55)



DETAILS OF RECESSED PIN NUT
(28 Req'd)





DETAIL OF PIN
(14 Req'd)

Rough Cut to Plane Surface

℄ ¾" x ¾" Clip

Pier 2 Service 1 Design Dead Load: 192.5 Kips
Pier 3 Service 1 Design Dead Load: 158.4 Kips
Pier 2 Service 1 Design Live Load: 207.9 Kips
Pier 3 Service 1 Design Live Load: 191.6 Kips

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FIXED PIER BEARING DEVICE DETAILS
(Pier No. 2 & No. 3)

Proj. 160-18 KA-6475-01 Cowley Co.

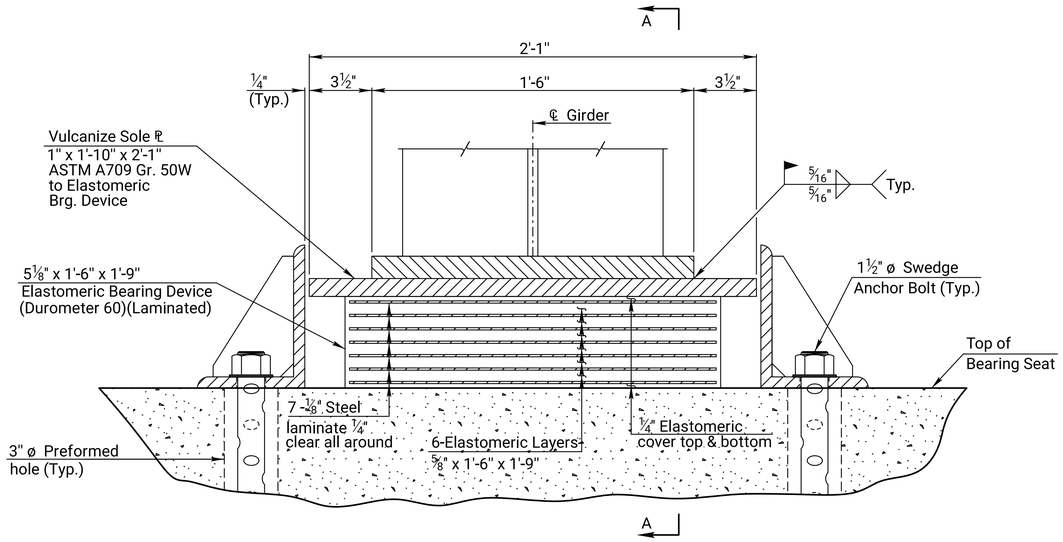
DESIGNED	JMN	DETAILED	JMN	QUANTITIES		CADD	JMN
DESIGN CK.	CFB	DETAIL CK.	CFB	QUAN.CK.		CADD CK.	CFB

CADconform Certify This File Sh. No. 80

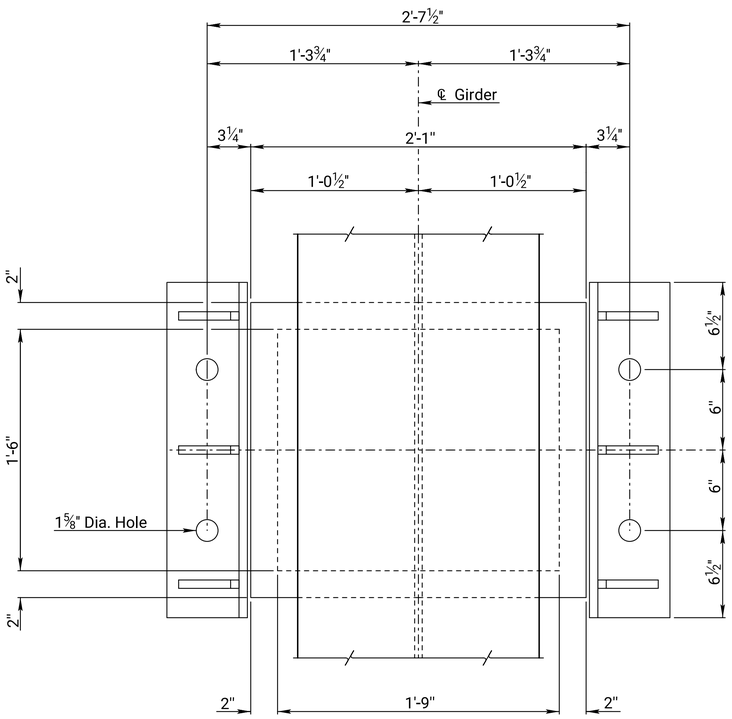
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CADconform Certify This File

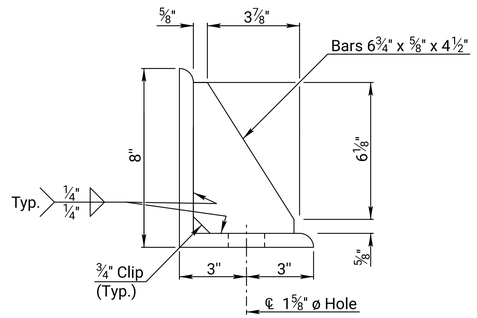
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	81	230



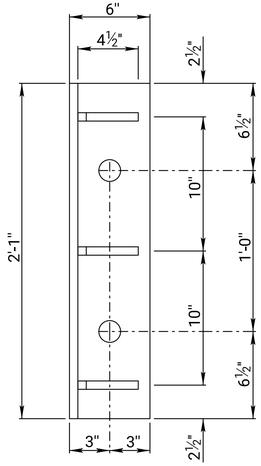
SECTION THRU BEARING DEVICE



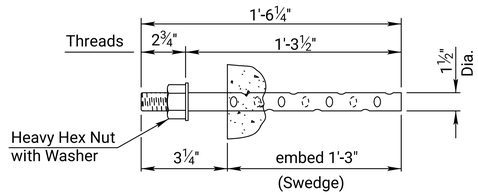
PLAN OF BEARING DEVICE
(7 Required)



SECTION THRU SIDE RETAINER



PLAN OF SIDE RETAINER
(14 Required)



(Swedge)

SWEDGE ANCHOR BOLT
(28 Required)

BEARING (STEEL REINFORCED ELASTOMERIC) (Method A):
Bearing devices at Pier No. 4 shall be fabricated with elastomer satisfying:
- Shore A Durometer Hardness of 60
- Low Temperature Grade 3 requirements
- Type A certification of elastomeric bearing device acceptance is required
- Include design method and all material properties on shop details
- Pier 4 Service 1 Design Dead Load: 167.2 Kips
- Pier 4 Service 1 Design Live Load: 185.5 Kips
- Pier 4 Design Translation: 1.86 inches

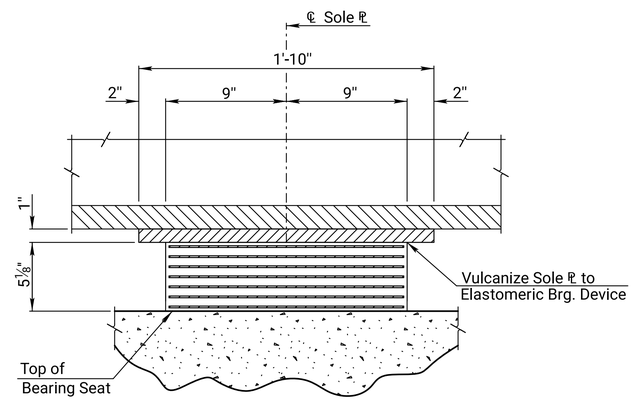
BEARING (STEEL REINFORCED ELASTOMERIC): Elastomeric Bearing Device shall be factory bonded to the steel sole plate by a vulcanization process. The steel sole plate, side retainers, and swedge anchor bolts are subsidiary to the bid item, "Bearing (Steel Reinforced Elastomeric)" and shall be furnished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

The sole plate and side retainers shall be ASTM A709 Gr. 50W structural steel. The side retainers shall be painted. The anchor bolts and nuts shall meet KDOT specifications for Gr. 55 anchor bolts and shall be galvanized.

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

ANCHOR BOLTS: Place the reinforcing bars below the bearing devices to clear the anchor bolts.

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



SECTION A-A
(Bearing Stiffner not shown)

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

EXPANSION PIER BEARING DEVICE DETAILS
(Pier No. 4)

Proj. 160-18 KA-6475-01 Cowley Co.

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

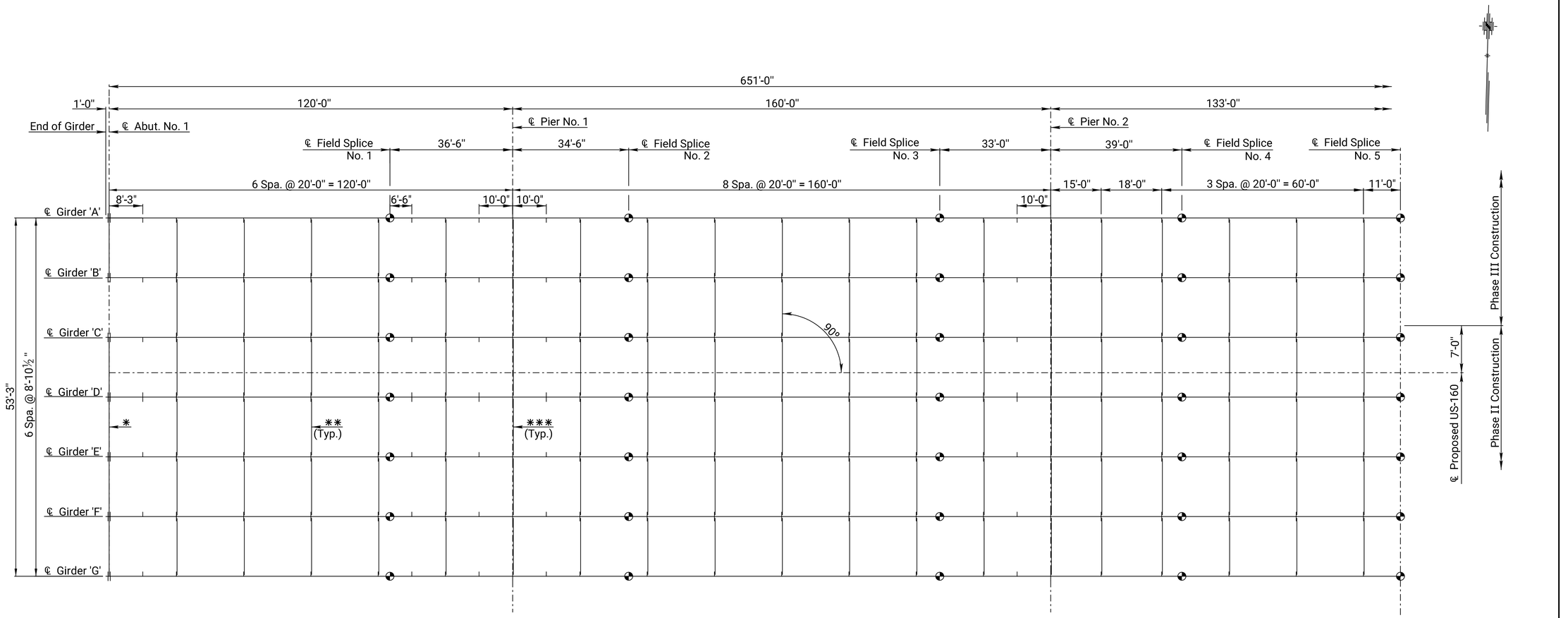
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File : ka647501bbr114-030.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	82	230



FRAMING PLAN

* See "Abutment Frame Details" sheet.

** See "Intermediate Cross Frame Details" sheet.

*** See "Pier Cross Frame Details" sheet.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FRAMING PLAN 1

Proj. 160-18 KA-6475-01 Cowley Co.

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

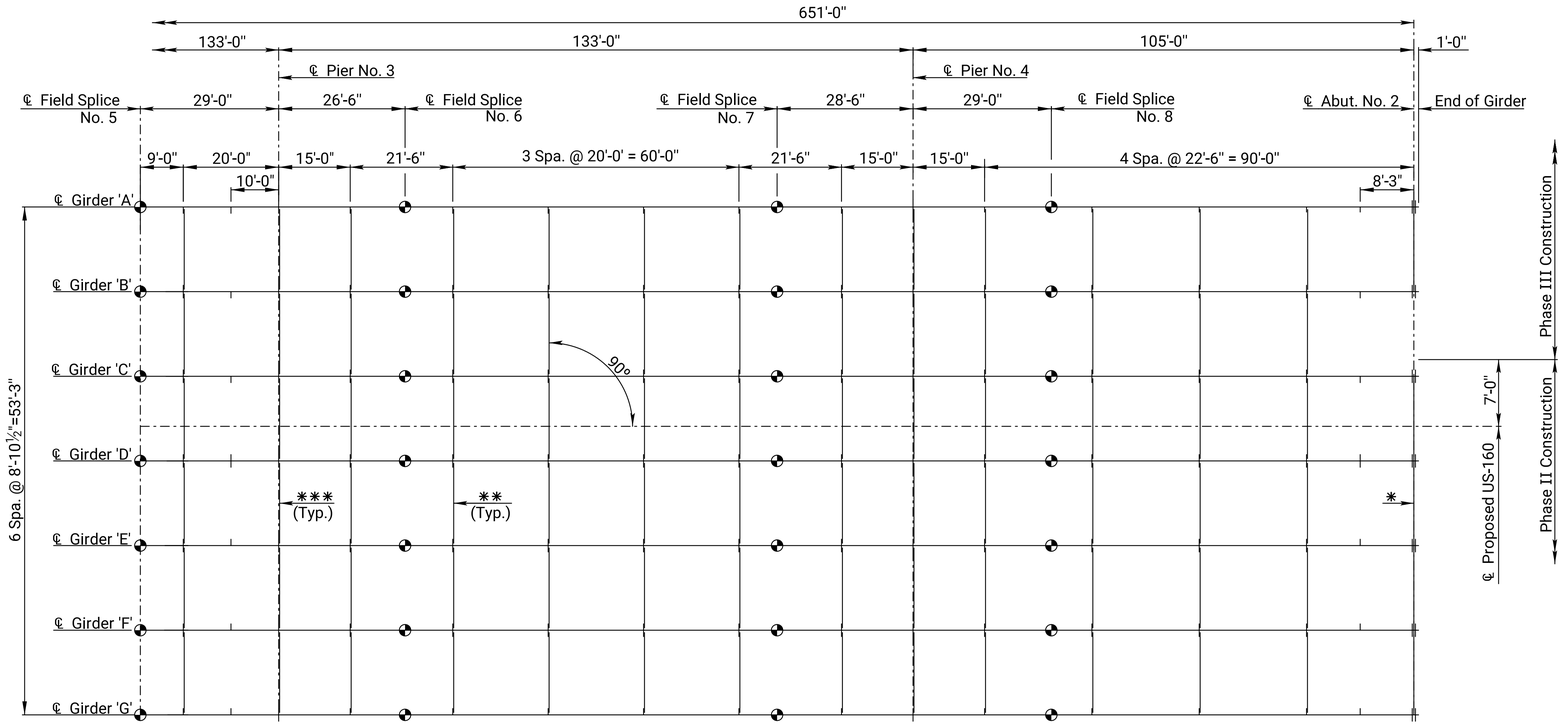
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File : ka647501bbr114-031.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	83	230



FRAMING PLAN

* See "Abutment Frame Details" sheet.

** See "Intermediate Cross Frame Details" sheet.

*** See "Pier Cross Frame Details" sheet.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FRAMING PLAN 2

Proj. 160-18 KA-6475-01 Cowley Co.

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

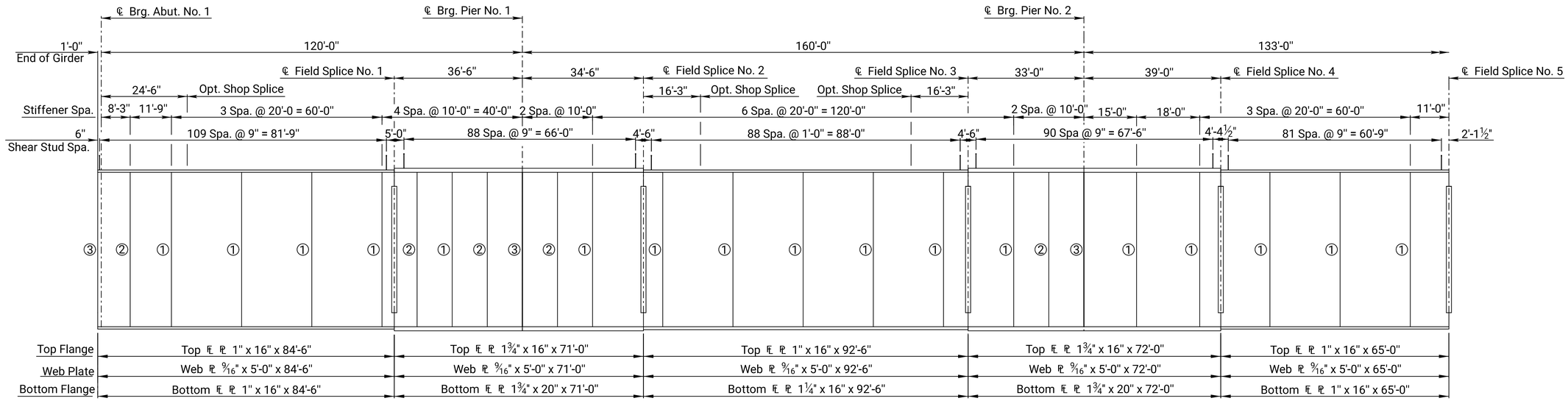
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File : ka647501bbr114-032.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	84	230



ELEVATION VIEW OF GIRDER

Bill of Stiffeners			
Location	No.	Size	Type
①	336	½" x 6"	Conn. Sitff. ℙ
②	56	½" x 6"	Int. Stiff. ℙ
③	112	1" x 7"	Brg. Stiff. ℙ
Bill of Welded Stud Shear Connectors			
1602 7/8" ø x 6" / Girder = 11,214 Total			

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

GIRDER DETAILS 1

Proj. 160-18 KA-6475-01 Cowley Co.

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

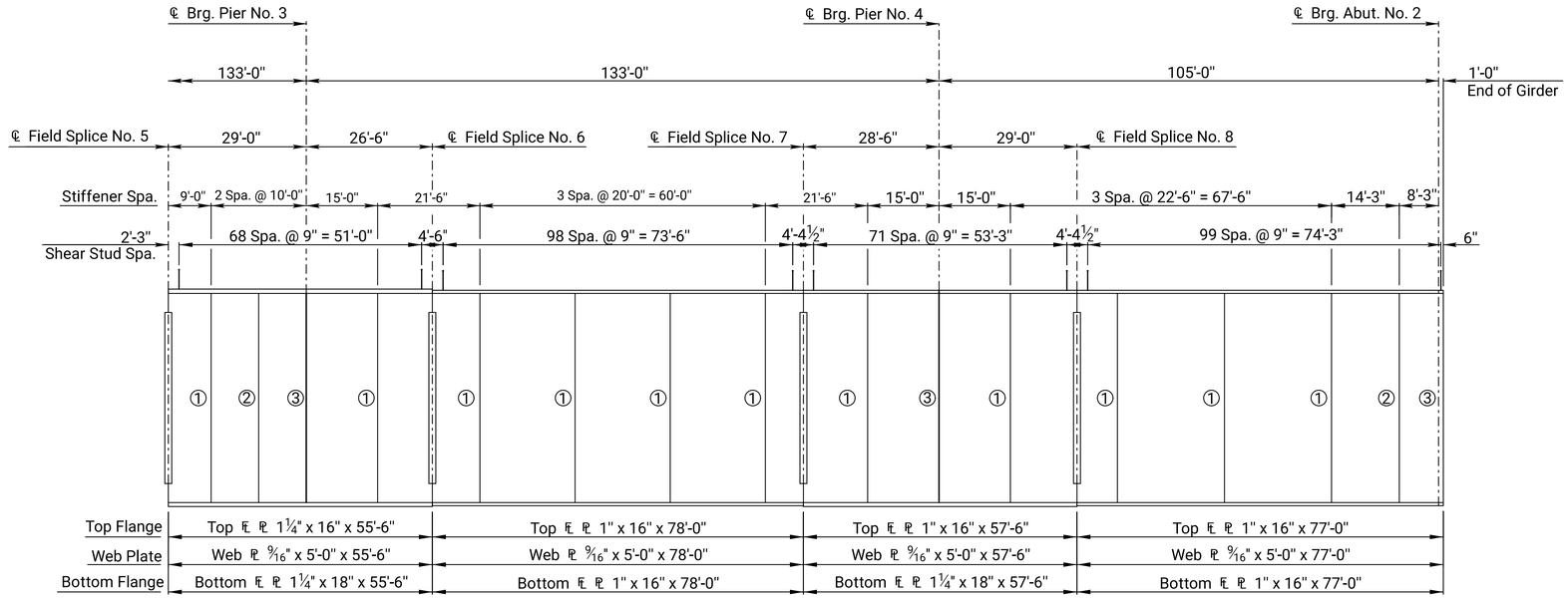
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Sh. No. 84

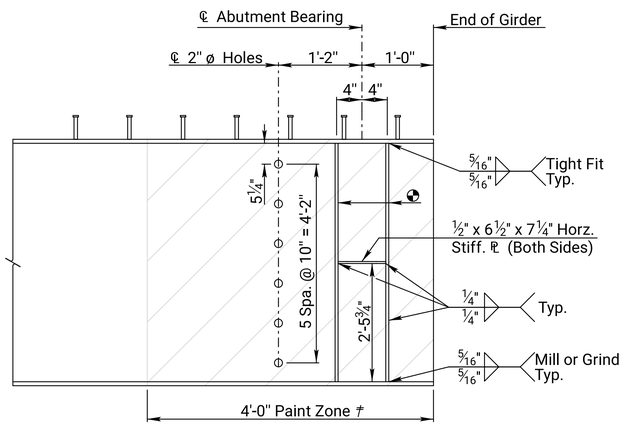
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	85	230



ELEVATION VIEW OF GIRDER



TYPICAL GIRDER END AT ABUTMENT

◔ 1" x 7" x 5'-0" Abut. Bearing Stiff. ℙ

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

Bill of Stiffeners			
Location	No.	Size	Type
①	336	½" x 6"	Conn. Sitff. ℙ
②	56	½" x 6"	Int. Stiff. ℙ
③	112	1" x 7"	Brg. Stiff. ℙ
Bill of Welded Stud Shear Connectors			
1602 7/8" ø x 6" / Girder = 11,214 Total			

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

GIRDER DETAILS 2

Proj. 160-18 KA-6475-01 Cowley Co.

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

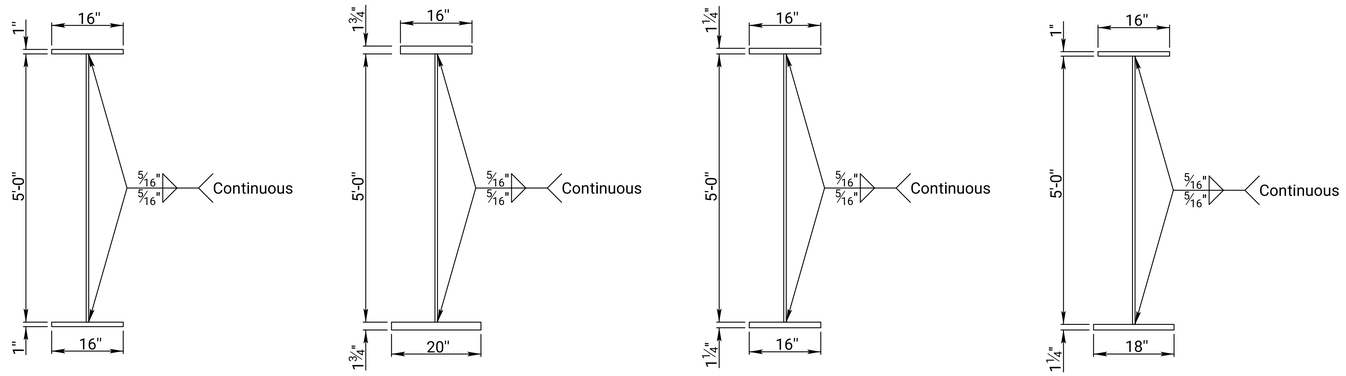
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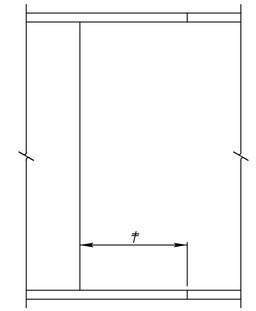
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	86	230

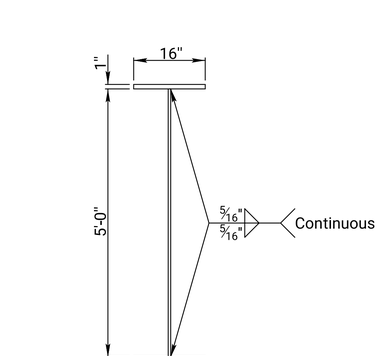


WELDED PLATE GIRDER DETAILS

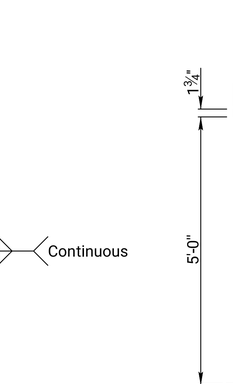


Shop Splice Offset

℄ Offset web splices a minimum of 12" from flange splices.



Conn. Stiffener ℙ
& Int. Stiffener ℙ
(Location ① & ②)

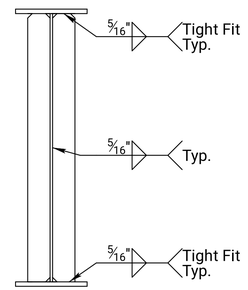


Bearing Stiffener ℙ
(Location ③)

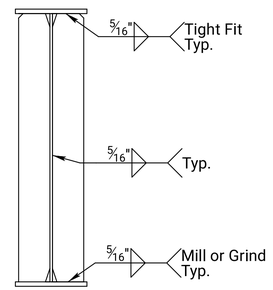
Horizontal Stiffener ℙ
(Location ③)*

STIFFENER DETAILS

* Only at Abutment Locations

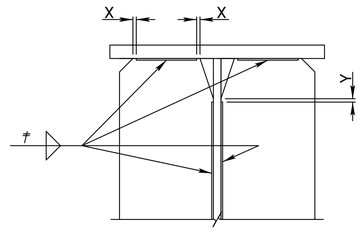


Conn. Stiffener
& Int. Stiffener
(Location ① & ②)



Bearing Stiffener
(Location ③)

WELDED DETAILS



TYPICAL WELD LIMIT DETAIL

X = ¼" ± ⅛"
Y = ½" ± ¼"

℄ See "WELDED DETAILS"

STRUCTURAL STEEL SUMMARY		
ITEM	AASHTO M270 Gr. 50W T3 (Lbs.)	ASTM A709 Gr. 50W (Lbs.)
Girder Flanges	634,326	
Girder Webs	524,461	
Flange Splice Plates	27,224	
Web Splice Plates	13,075	
Fill Splice Plates	3,827	
Bearing Stiffener Plates		13,215
Connection Stiffeners Plates		16,991
Intermediate Stiffeners		2,832
Abutment Horizontal Stiffeners		183
Intermediate Cross Frames		56,286
Pier Cross Frames		8,964
Abutment Cross Frames		3,735
TOTAL STUCTURAL STEEL	1,202,915	102,206

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

AUXILIARY GIRDER DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

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

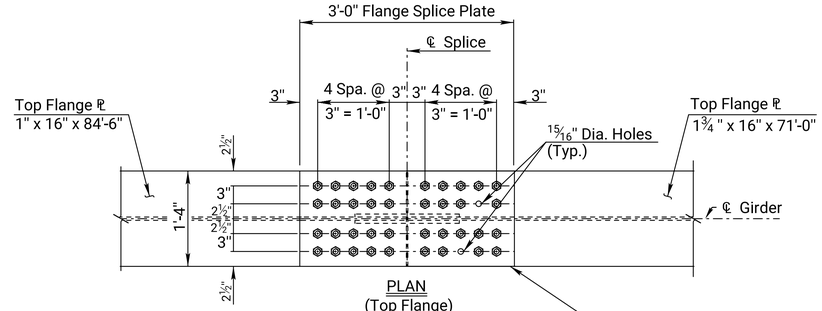
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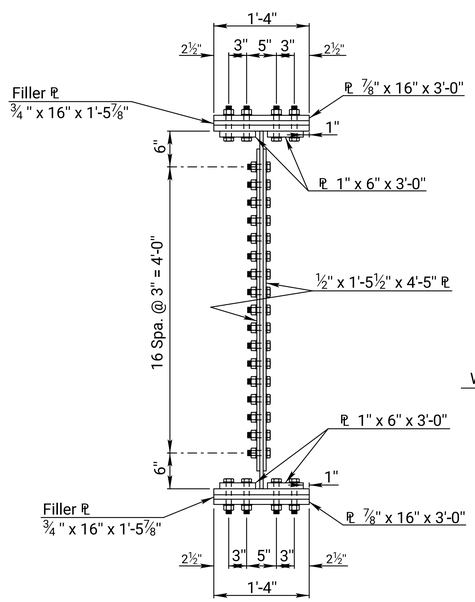
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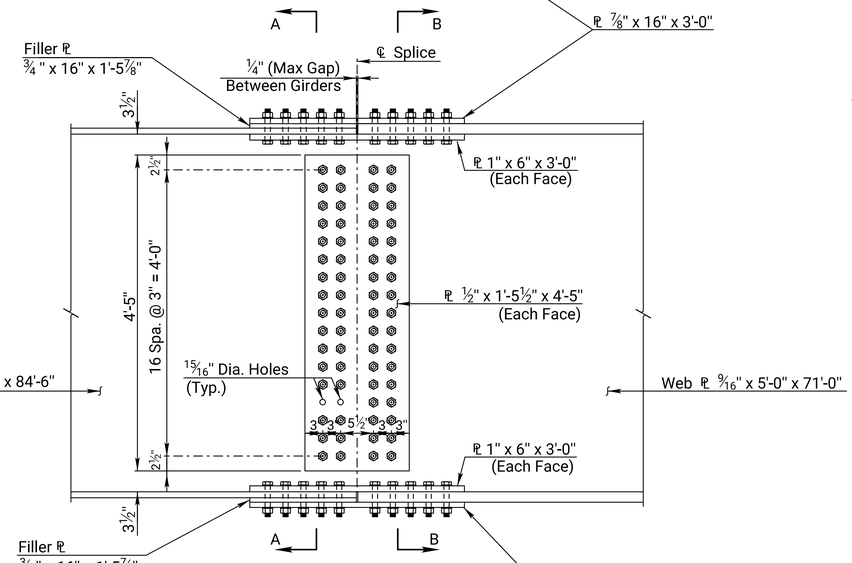
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	87	230



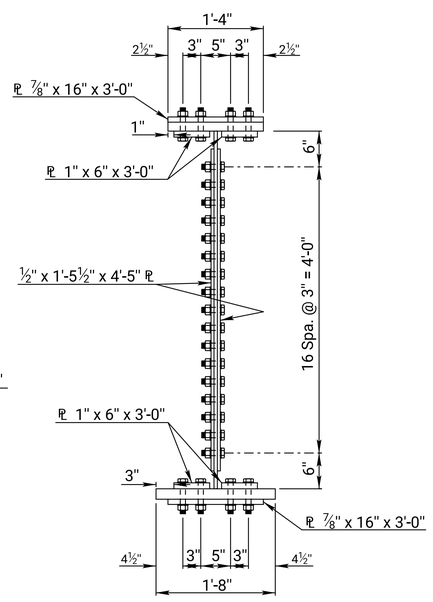
PLAN
(Top Flange)



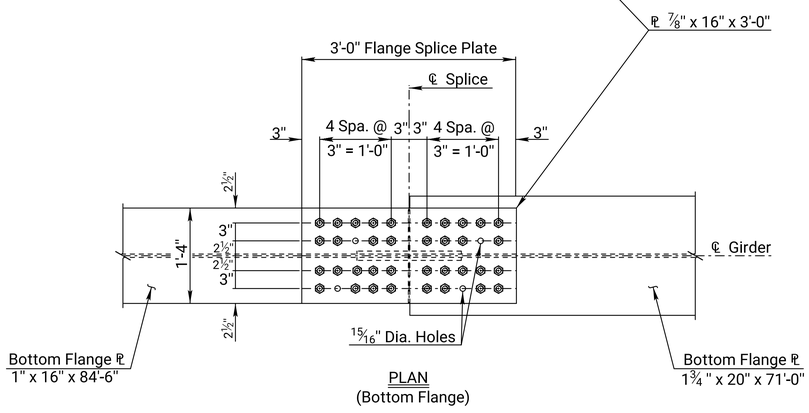
Section A-A



ELEVATION
(Field Splice No. 1)



Section B-B



PLAN
(Bottom Flange)

BOLT DIMENSIONS
(1 Splice)

(Includes 1-hardened washer & 1-DTI)

Top Flange	40 - ⅞"ø x 5¼"
Web Plate	68 - ⅞"ø x 3¼"
Bottom Flange	40 - ⅞"ø x 5¼"

STRUCTURAL STEEL: The flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. The web splice plates and flange fill plates shall meet ASTM A709 Gr. 50W requirements.

PAINTING: Blast clean faying surfaces prior to connection. Shop prime coat the Top Flange, Top Splice Plates, and the Flange Fill Plates (Top & Bottom).

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FIELD SPLICE DETAILS 1
(Field Splice No. 1)

Proj. 160-18 KA-6475-01 Cowley Co.

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

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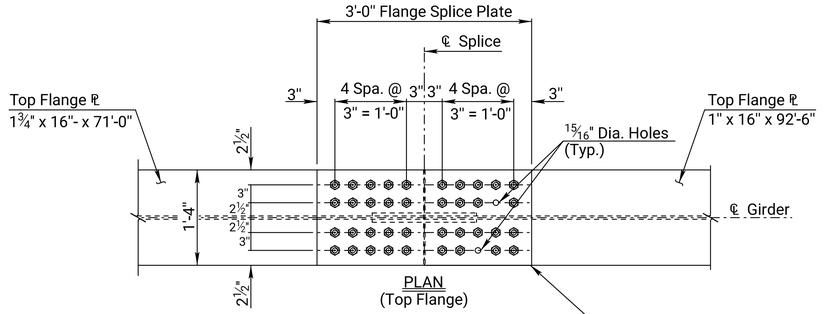
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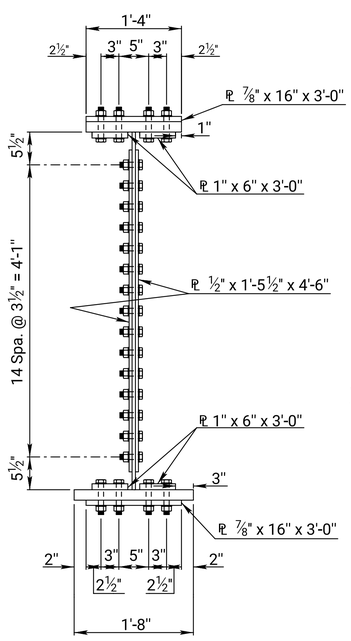
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	88	230

STRUCTURAL STEEL: The flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. The web splice plates and flange fill plates shall meet ASTM A709 Gr. 50W requirements.

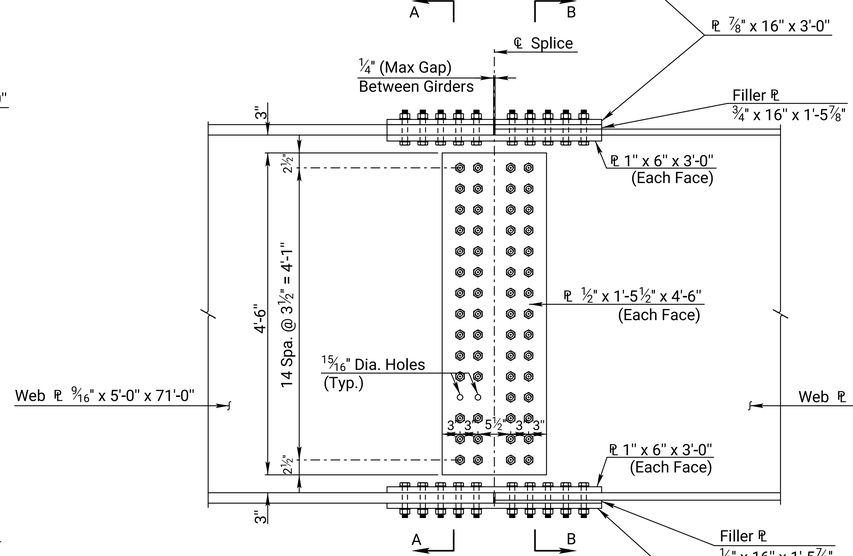
PAINTING: Blast clean faying surfaces prior to connection. Shop prime coat the Top Flange, Top Splice Plates, and the Flange Fill Plates (Top & Bottom).



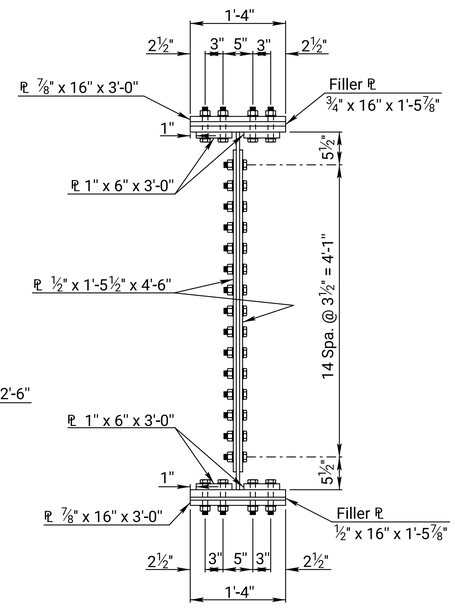
PLAN
(Top Flange)



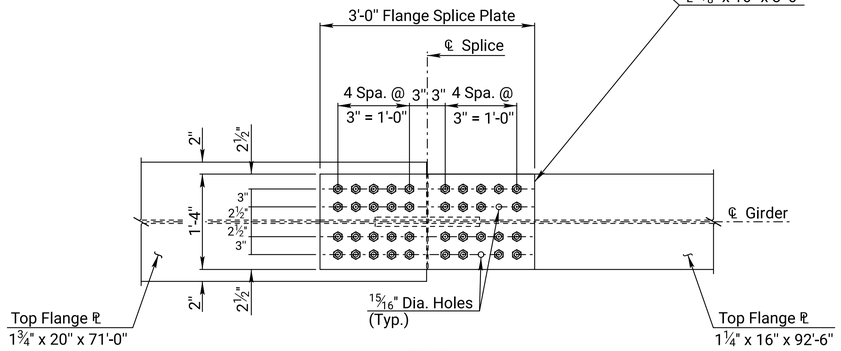
Section A-A



ELEVATION
(Field Splice No. 2)



Section B-B



PLAN
(Bottom Flange)

BOLT DIMENSIONS
(1 Splice)

(Includes 1-hardened washer & 1-DTI)

Top Flange	40 - ⅞"ø x 5¼"
Web Plate	60 - ⅞"ø x 3¼"
Bottom Flange	40 - ⅞"ø x 5½"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FIELD SPLICE DETAILS 2
(Field Splice No. 2)

Proj. 160-18 KA-6475-01 Cowley Co.

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

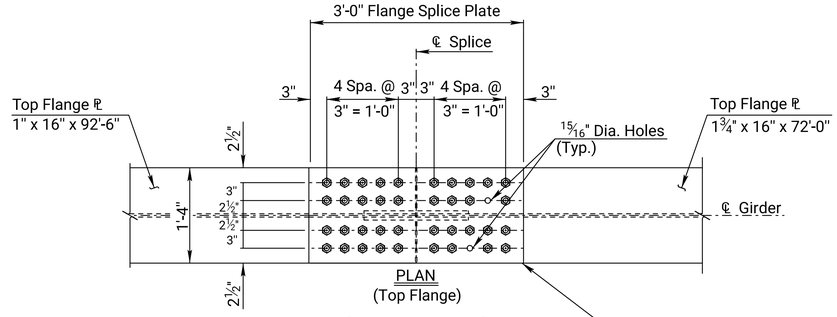
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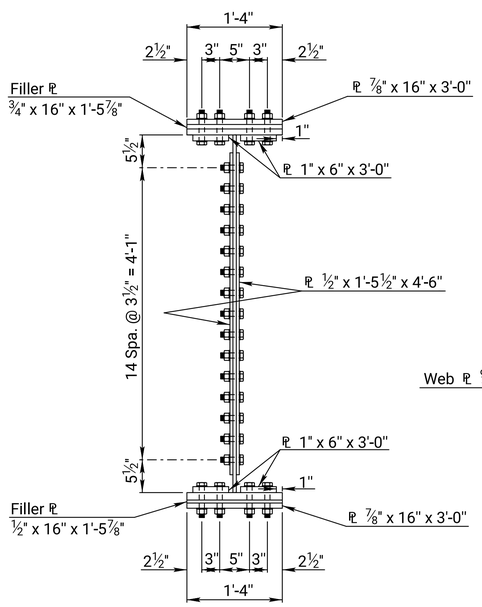
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	89	230

STRUCTURAL STEEL: The flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. The web splice plates and flange fill plates shall meet ASTM A709 Gr. 50W requirements.

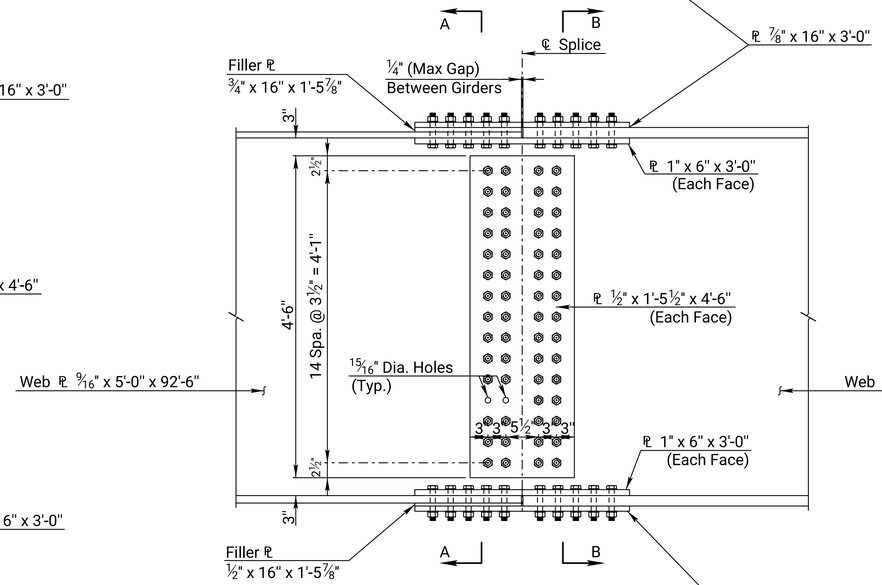
PAINTING: Blast clean faying surfaces prior to connection. Shop prime coat the Top Flange, Top Splice Plates, and the Flange Fill Plates (Top & Bottom).



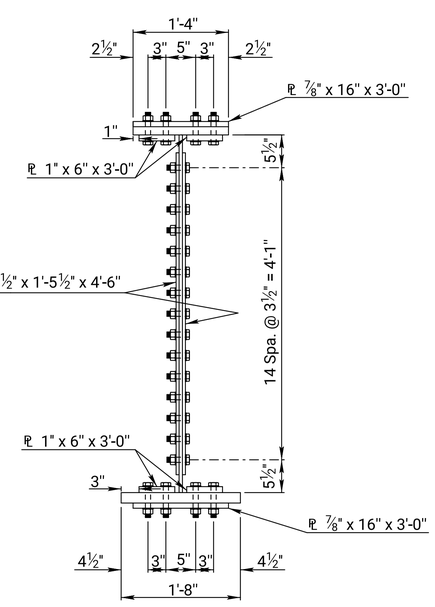
PLAN
(Top Flange)



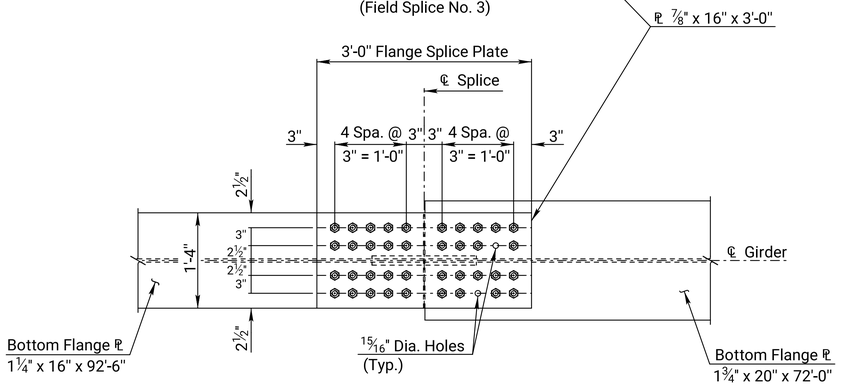
Section A-A



ELEVATION
(Field Splice No. 3)



Section B-B



PLAN
(Bottom Flange)

BOLT DIMENSIONS
(1 Splice)

(Includes 1-hardened washer & 1-DTI)

Top Flange	40 - ⅞"ø x 5¼"
Web Plate	60 - ⅞"ø x 3¼"
Bottom Flange	40 - ⅞"ø x 5½"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FIELD SPLICE DETAILS 3
(Field Splice No. 3)

Proj. 160-18 KA-6475-01 Cowley Co.

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

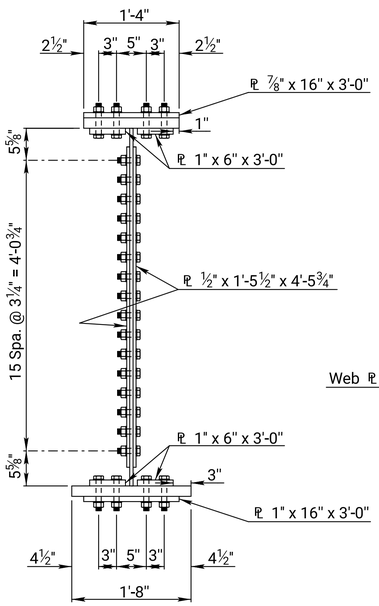
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Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:52
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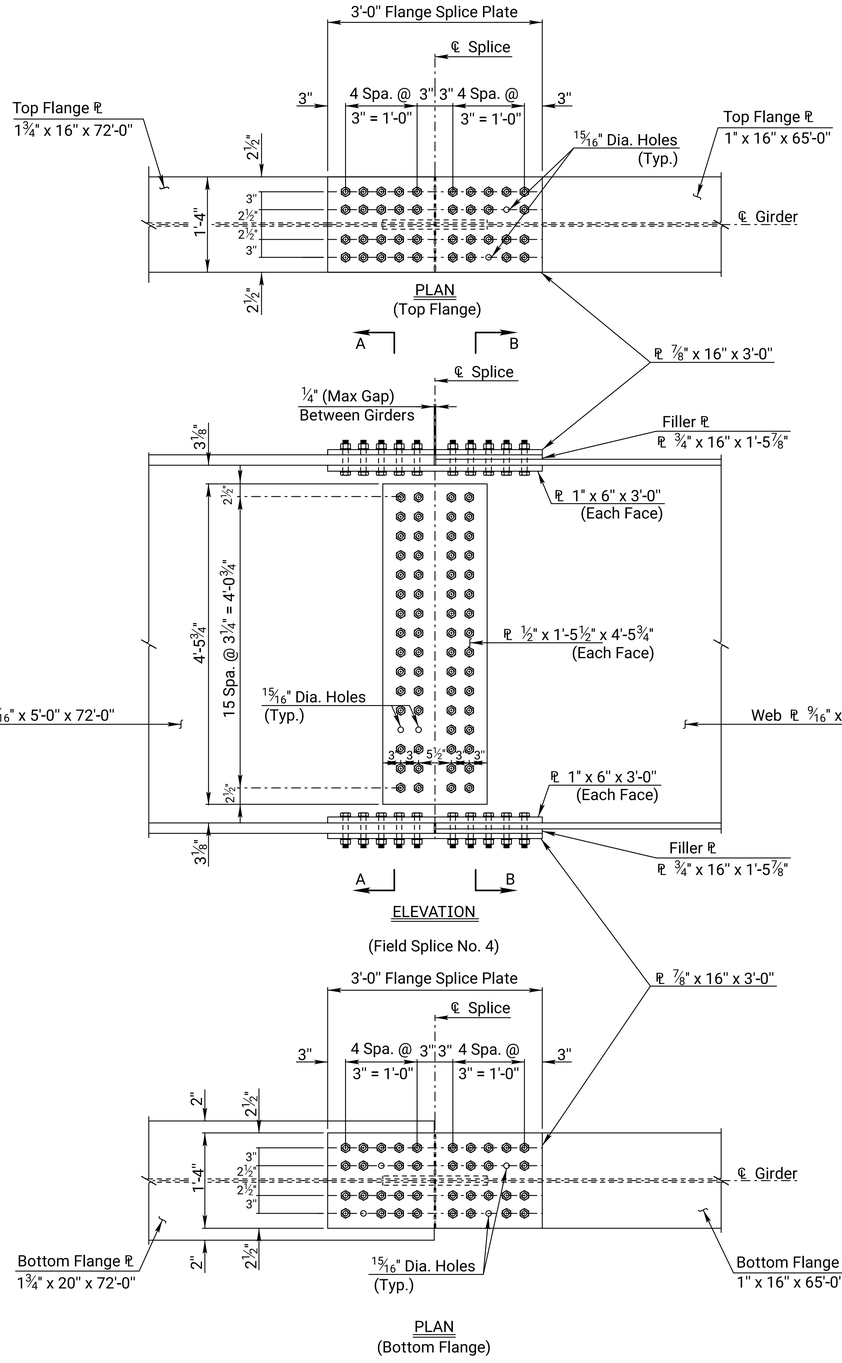
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	90	230

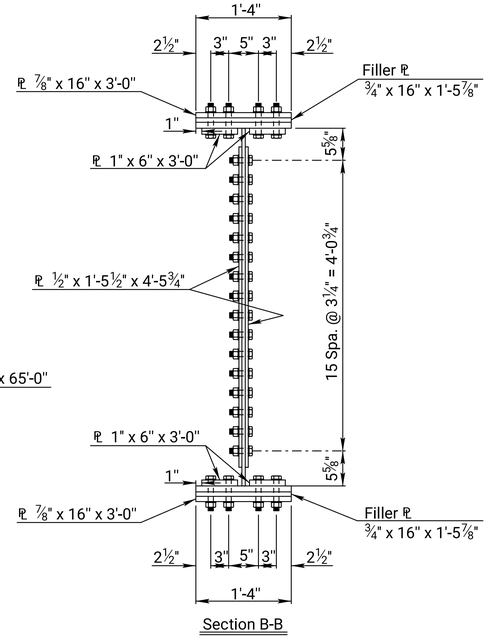
STRUCTURAL STEEL: The flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. The web splice plates and flange fill plates shall meet ASTM A709 Gr. 50W requirements.

PAINTING: Blast clean faying surfaces prior to connection. Shop prime coat the Top Flange, Top Splice Plates, and the Flange Fill Plates (Top & Bottom).



Section A-A





Section B-B

BOLT DIMENSIONS
(1 Splice)

(Includes 1-hardened washer & 1-DTI)

Top Flange	40 - ⅞"ø x 5¼"
Web Plate	64 - ⅞"ø x 3¼"
Bottom Flange	40 - ⅞"ø x 5½"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FIELD SPLICE DETAILS 4
(Field Splice No. 4)

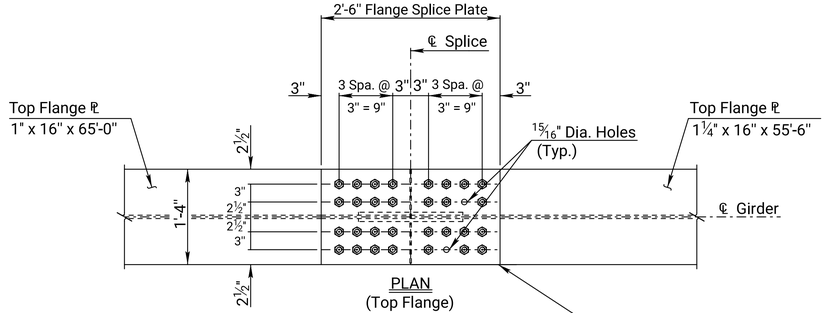
Proj. 160-18 KA-6475-01 Cowley Co.

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

Sh. No. 90

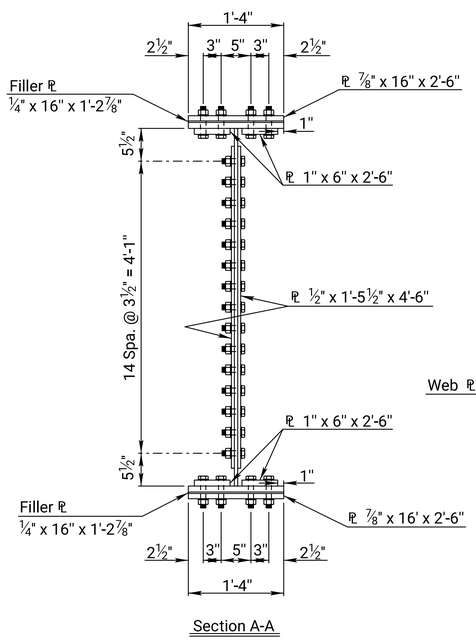
Plotted by: Jorge.Navarro@ks.gov 2-OCT-2025 19:55
File : ka647501bbr114-039.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	91	230

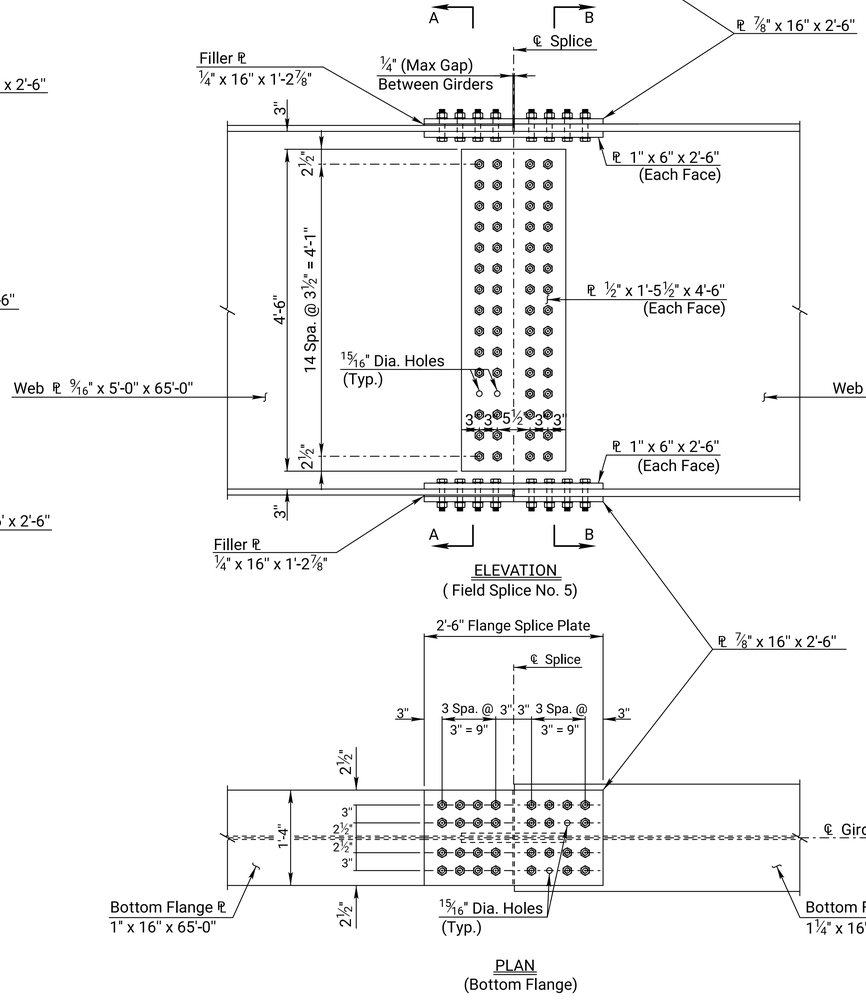


STRUCTURAL STEEL: The flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. The web splice plates and flange fill plates shall meet ASTM A709 Gr. 50W requirements.

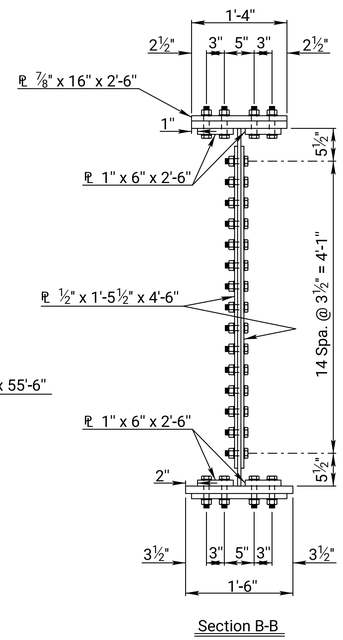
PAINTING: Blast clean faying surfaces prior to connection. Shop prime coat the Top Flange, Top Splice Plates, and the Flange Fill Plates (Top & Bottom).



Section A-A



ELEVATION
(Field Splice No. 5)



Section B-B

PLAN
(Bottom Flange)

BOLT DIMENSIONS
(1 Splice)

(Includes 1-hardened washer & 1-DTI)

Top Flange	32 - ⅞"ø x 4½"
Web Plate	60 - ⅞"ø x 3¼"
Bottom Flange	32 - ⅞"ø x 4¾"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FIELD SPLICE DETAILS 5
(Field Splice No. 5)

Proj. 160-18 KA-6475-01 Cowley Co.

DESIGNED	JMN	DETAILED	JMN	QUANTITIES		CADD	JMN
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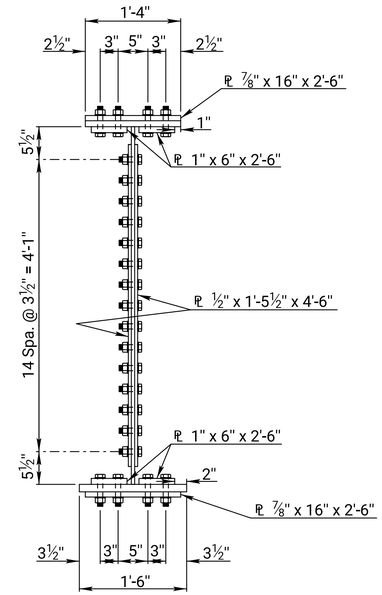
Sh. No. 91

Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:53
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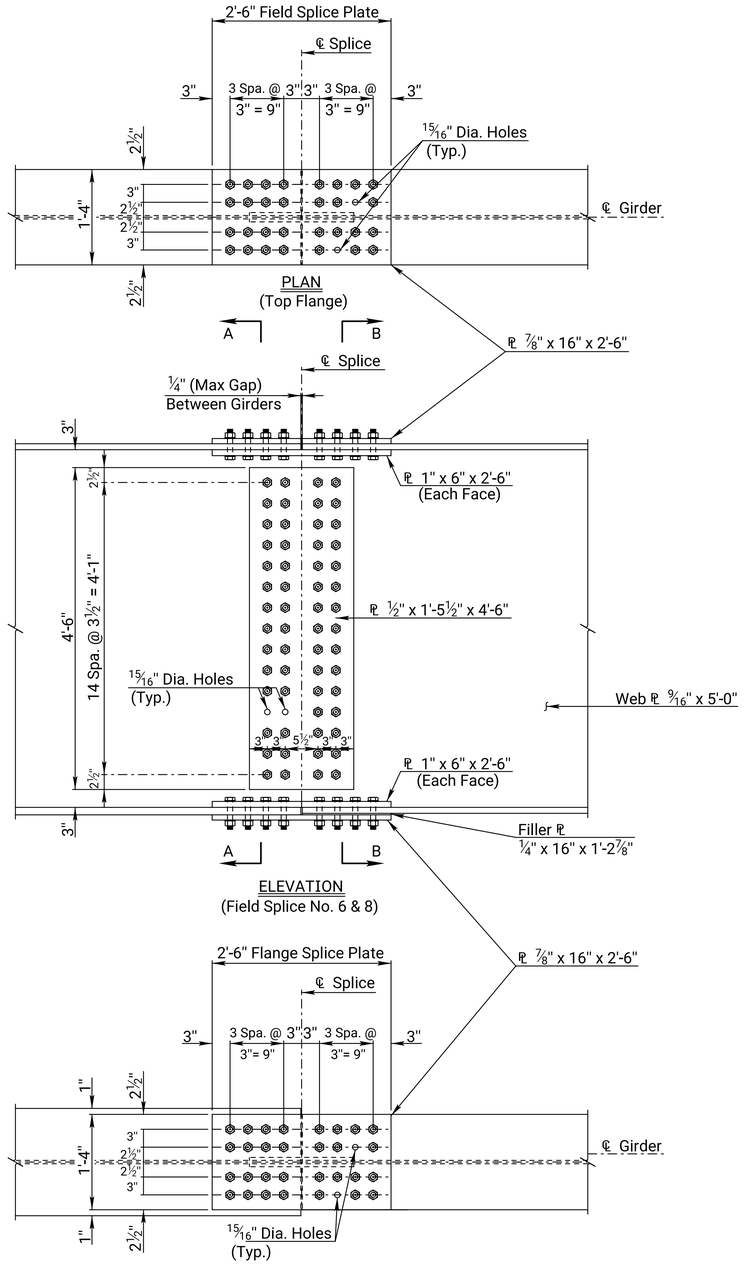
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	92	230

STRUCTURAL STEEL: The flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. The web splice plates and flange fill plates shall meet ASTM A709 Gr. 50W requirements.

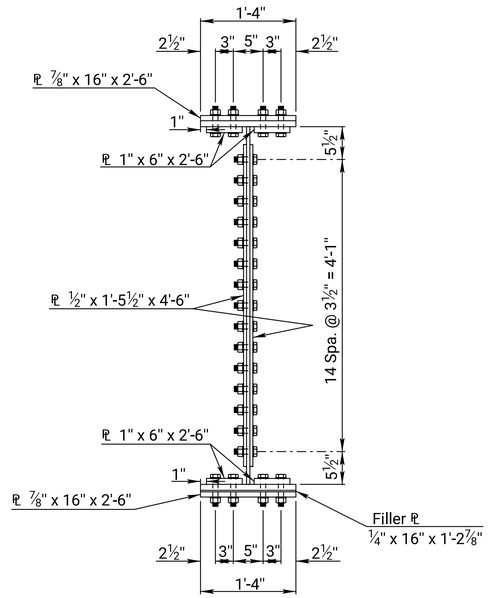
PAINTING: Blast clean faying surfaces prior to connection. Shop prime coat the Top Flange, Top Splice Plates, and the Flange Fill Plates (Top & Bottom).



Section A-A



ELEVATION
(Field Splice No. 6 & 8)



Section B-B

PLAN
(Bottom Flange)

BOLT DIMENSIONS
(1 Splice)

(Includes 1-hardened washer & 1-DTI)

Top Flange	32 - ⅞"ø x 4½"
Web Plate	60 - ⅞"ø x 3¼"
Bottom Flange	32 - ⅞"ø x 4¾"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

FIELD SPLICE DETAILS 6
(Field Splice No. 6 & 8)

Proj. 160-18 KA-6475-01 Cowley Co.

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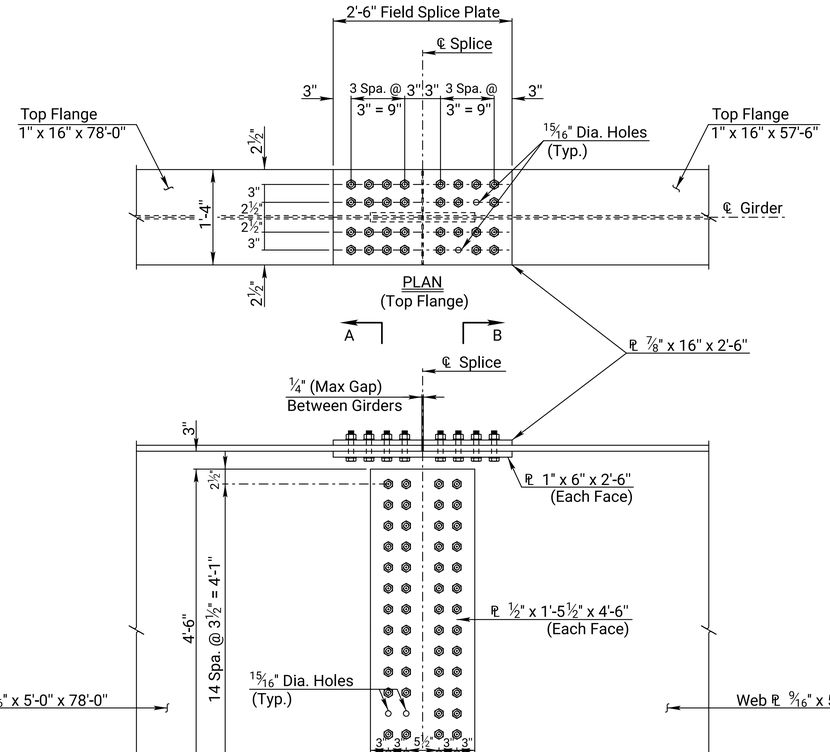
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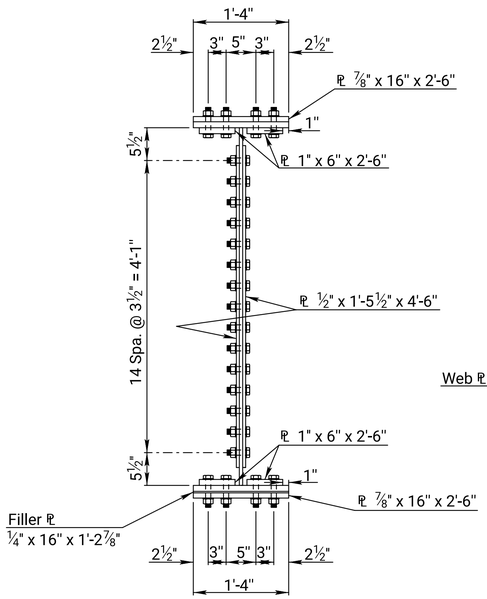
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	93	230

STRUCTURAL STEEL: The flange splice plates shall meet AASHTO M270 Gr. 50W T3 requirements. The web splice plates and flange fill plates shall meet ASTM A709 Gr. 50W requirements.

PAINTING: Blast clean faying surfaces prior to connection. Shop prime coat the Top Flange, Top Splice Plates, and the Flange Fill Plates (Top & Bottom).

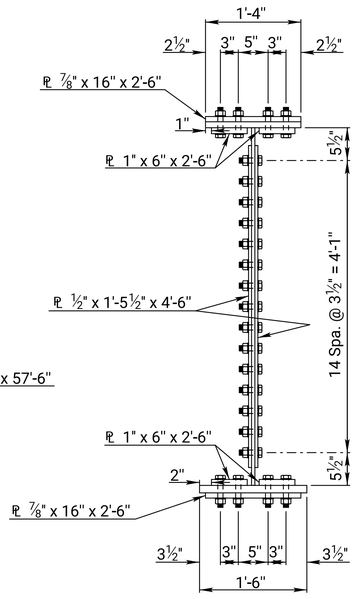


PLAN
(Top Flange)

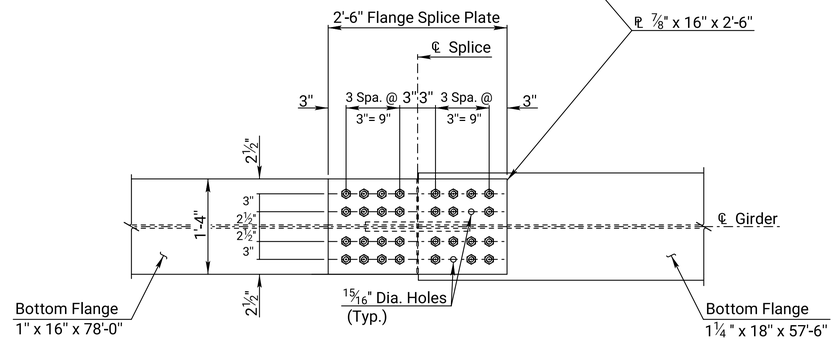


Section A-A

ELEVATION
(Field Splice No. 7)



Section B-B



PLAN
(Bottom Flange)

BOLT DIMENSIONS
(1 Splice)

(Includes 1-hardened washer & 1-DTI)

Top Flange	32 - ⅞"ø x 4½"
Web Plate	60 - ⅞"ø x 3¼"
Bottom Flange	32 - ⅞"ø x 4¾"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+78.78

FIELD SPLICE DETAILS 7
(Field Splice No. 7)

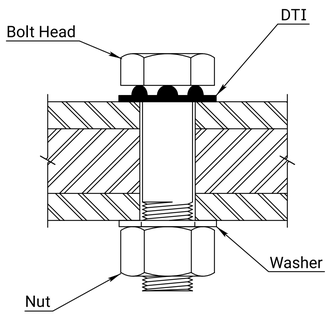
Proj. 160-18 KA-6475-01 Cowley Co.

DESIGNED	JMN	DETAILED	JMN	QUANTITIES	CADD	JMN
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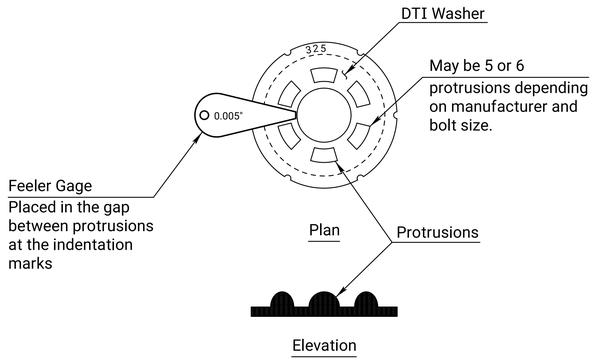
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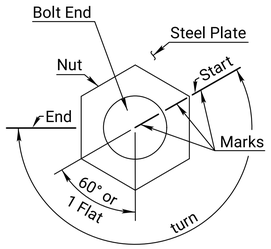
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	94	230



TYPICAL BOLT AND
DIRECT TENSION INDICATOR (DTI)

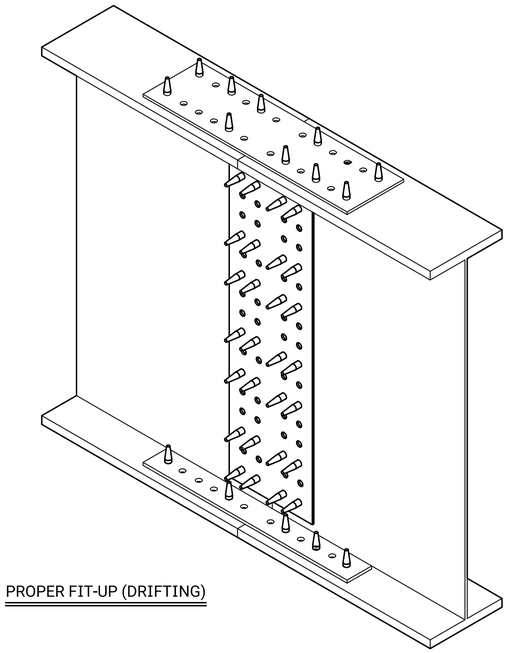


TYPICAL DIRECT TENSION INDICATOR (DTI)

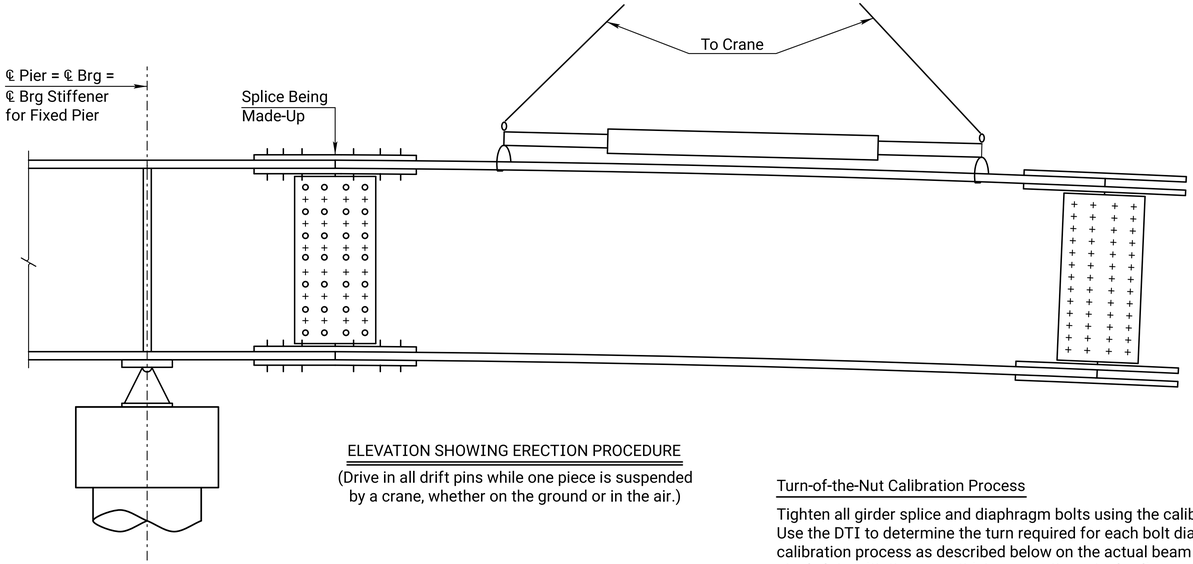


REQUIRED MARKING DETAIL

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



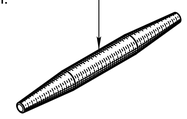
PROPER FIT-UP (DRIFTING)



ELEVATION SHOWING ERECTION PROCEDURE

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

Drift Pin Diameter = Hole Diameter
Hole ø = $^{15}/_{16}$" for girder splice.
Hole ø = $^{13}/_{16}$" for X-frame or diaphragm connection.



DRIFT PIN

Production Bolt Tightening

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

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

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

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

Acceptance and Rejection of Bolts

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

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

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

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

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

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

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

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

Fit Up

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

Erection

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

Turn-of-the-Nut Calibration Process

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

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

2. See "Required Marking Detail" (choose a bolt at the center of the splice and recheck snug on adjacent bolts).
   a. Mark the outside of the socket at one of the corners.
   b. Mark the bolt, plate, and nut at a corner with a start line.
   c. Align the mark on the socket with the start mark on the bolt end.
   d. While holding a backup wrench on the head of the bolt, turn the nut 1/2 turn (3 flats).
   e. Record the number of refusals.
   f. If all of the gaps refuse, go to another bolt and turn the nut 2 flats (1/3 turn).
   g. If there are fewer than 3 refusals turn the nut an additional 1/4 of a flat (15 degrees).
   h. Repeat step g., turning the nut 1/3 of a flat or less each time, until all of the gaps refuse the feeler gage. Record the amount required to cause all of the gaps to refuse the feeler gage. This is the target rotation.

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

NO.	DATE	REVISIONS	BY	APP'D
03				
02				
01	04-25-05	Current Release	R.A.M.	K.F.H.

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

STEEL ERECTION, FIT-UP
AND BOLTING PROCEDURE

Proj. 160-18 KA-6475-01 Cowley Co.

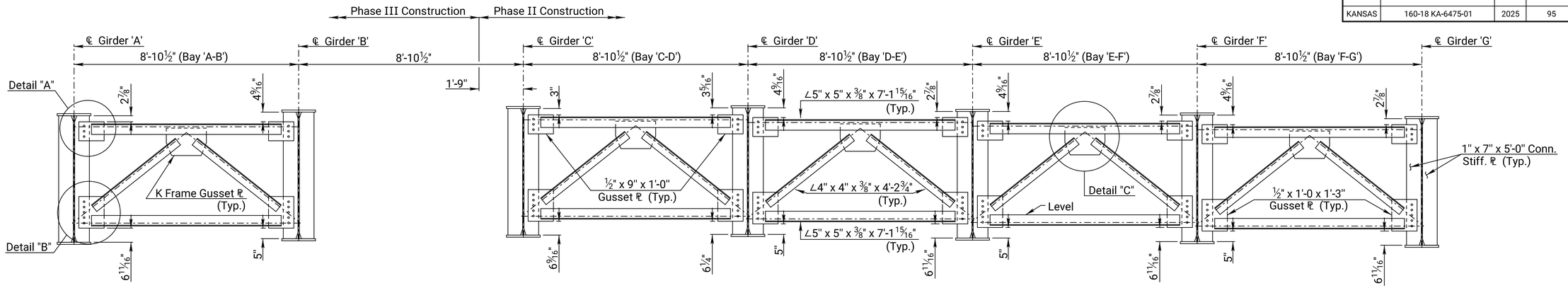
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KDOT Graphics Certified 07-15-2022 Sh. No. 94

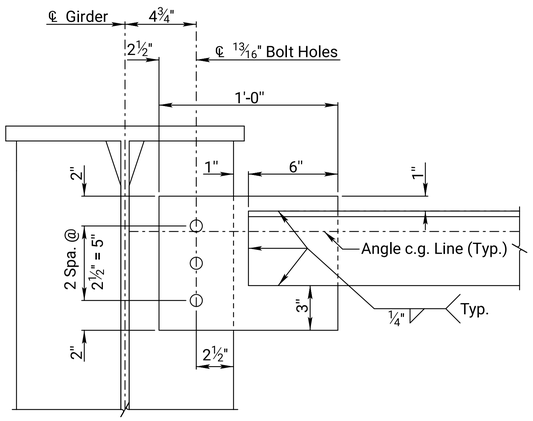
KDOT Graphics Certified

Plotted by: Jorge.Navarro@ks.gov 2-OCT-2025 19:52
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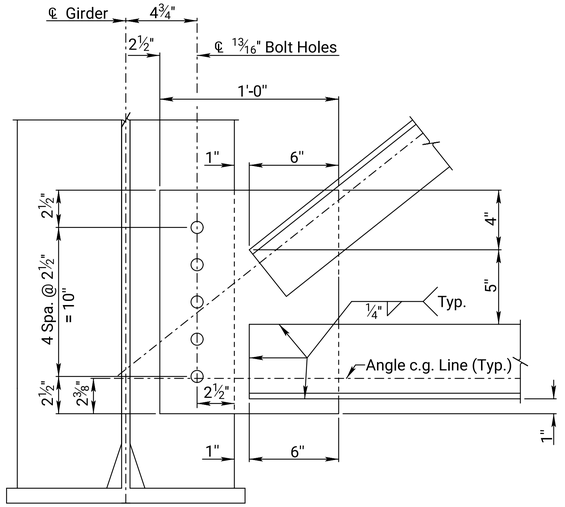
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	95	230



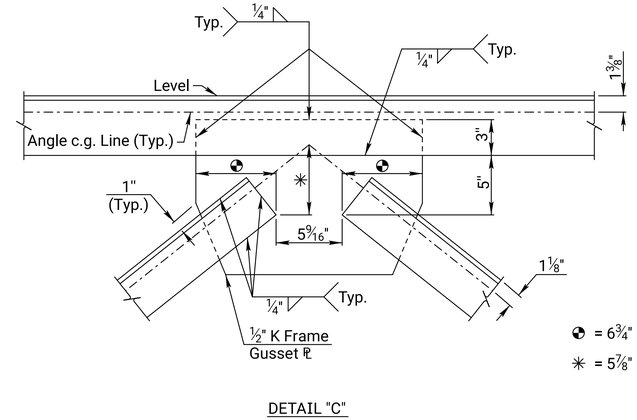
ABUTMENT FRAME DETAILS
(Looking upstation)



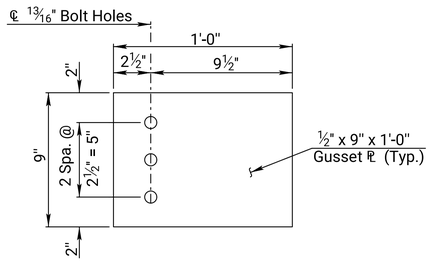
DETAIL "A"



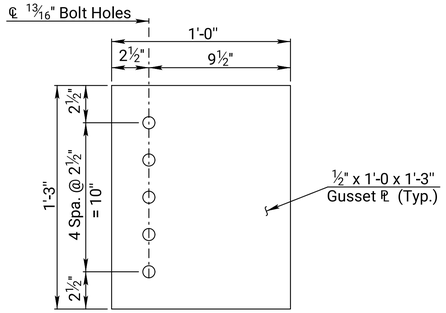
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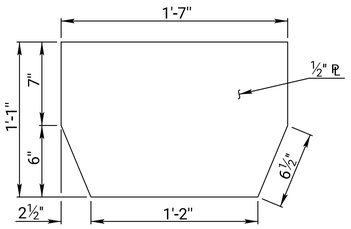
DETAIL "C"



CONNECTION PLATE
(2 Req'd per Abutment Frame)



CONNECTION PLATE
(2 Req'd per Abutment Frame)



K FRAME GUSSET ℙ DETAIL
(1 Req'd per Abutment Frame)

H.S. BOLT DIMENSIONS
(1 Abutment Frame)

(Includes 2-hardened washer & 1-DTI)

16 - ¾" ø x 2¾"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

ABUTMENT FRAME DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

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

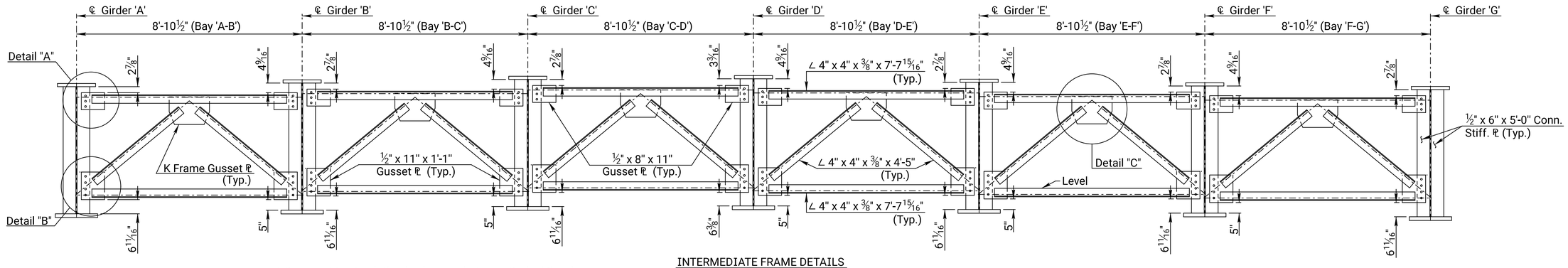
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Sh. No. 95

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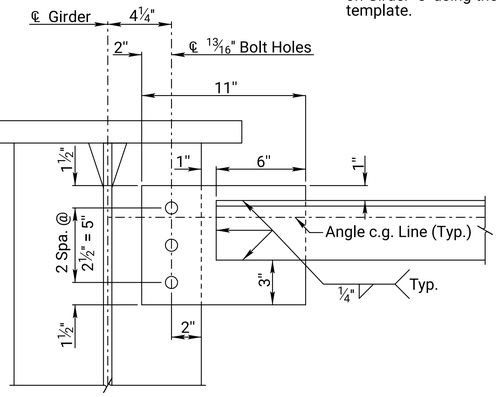
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	96	230

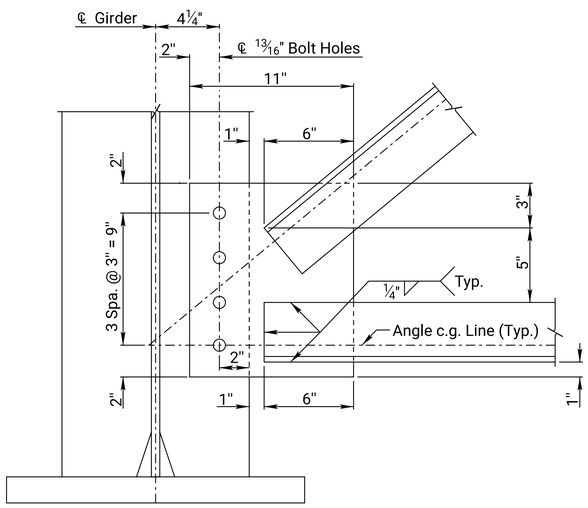


INTERMEDIATE FRAME DETAILS
(Looking upstation)

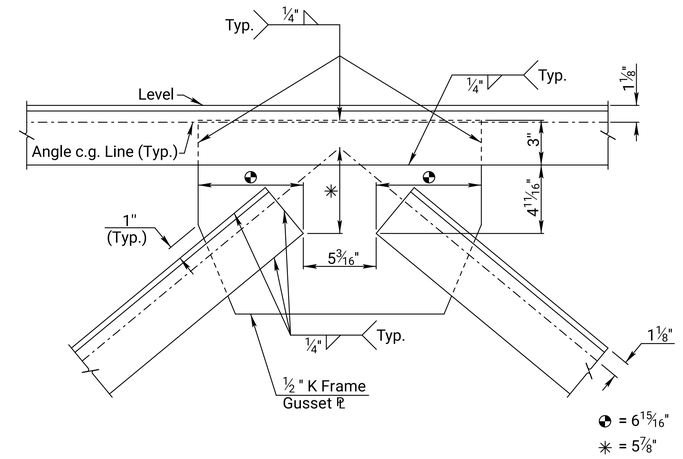
NOTE: Wait to attach the diaphragms between Girder 'B' and Girder 'C' until after the Phase III deck concrete is placed. Field drill the holes in the connection stiffeners on Girder 'C' using the holes in the diaphragm as a template.



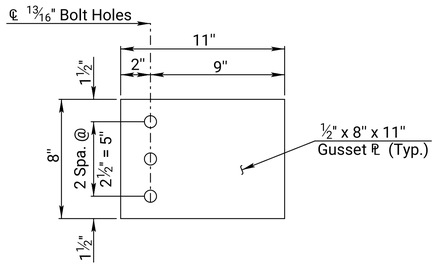
DETAIL "A"



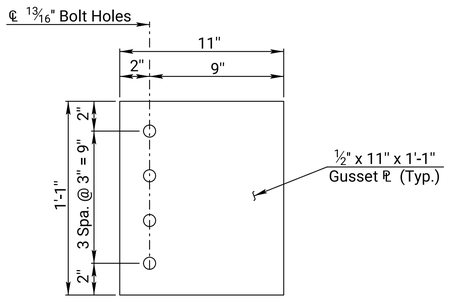
DETAIL "B"



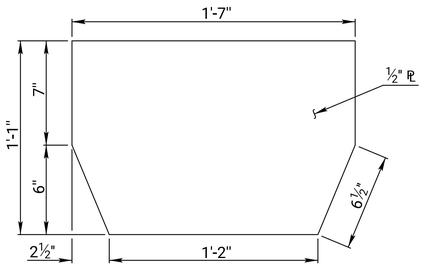
DETAIL "C"



CONNECTION PLATE
(2 Req'd per Int. K Frame)



CONNECTION PLATE
(2 Req'd per Int. K Frame)



K Frame Gusset ℙ Detail
(1 Req'd per Abutment Frame)

H.S. BOLT DIMENSIONS
(1 Intermediate Cross Frame)

(Includes 2-hardened washer & 1-DTI)
14 - ¾" ø x 2½"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

INTERMEDIATE CROSS FRAME DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

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

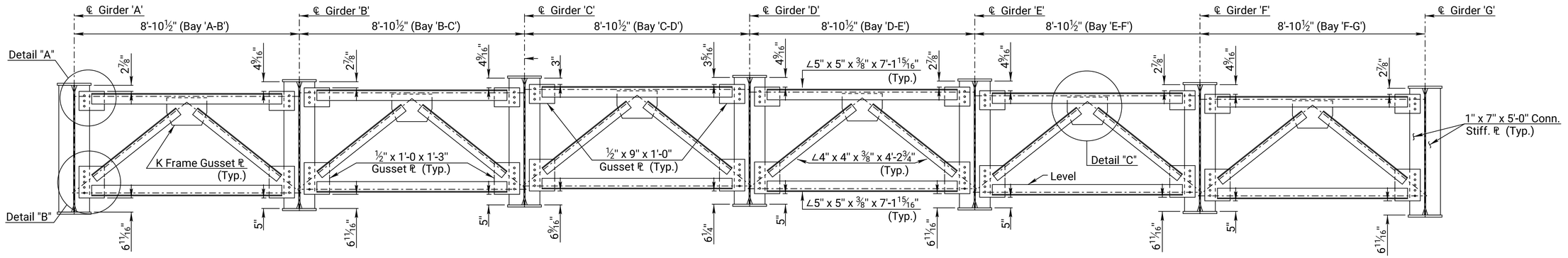
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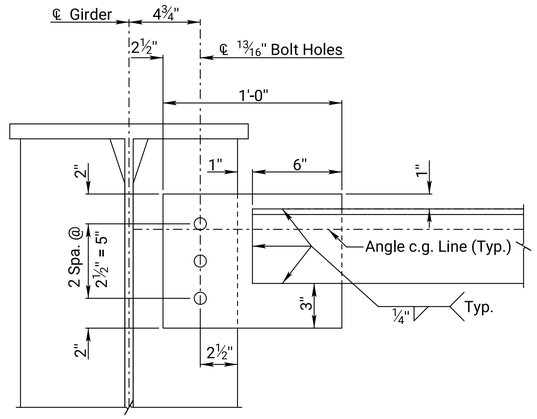
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File : ka647501bbr114-045.dgn

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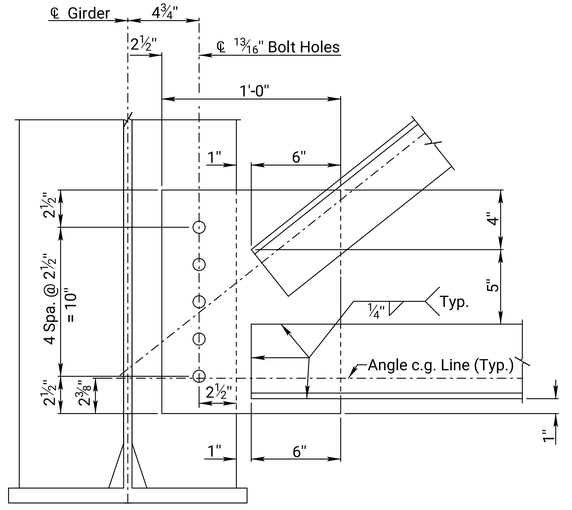
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	97	230



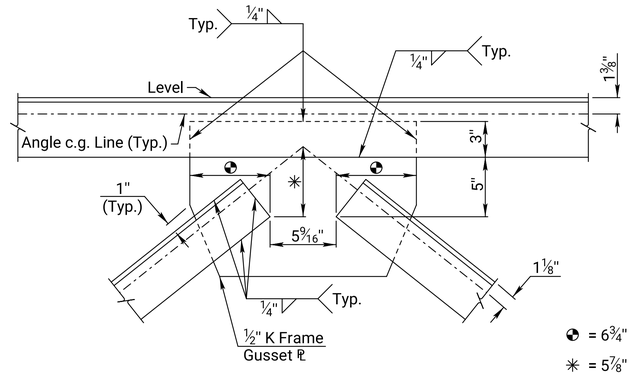
PIER FRAME DETAILS
(Looking upstation)



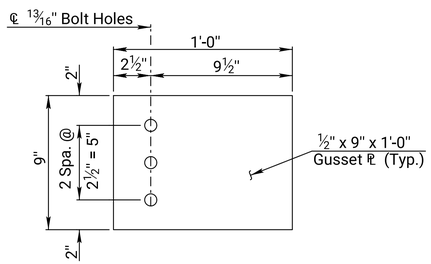
DETAIL "A"



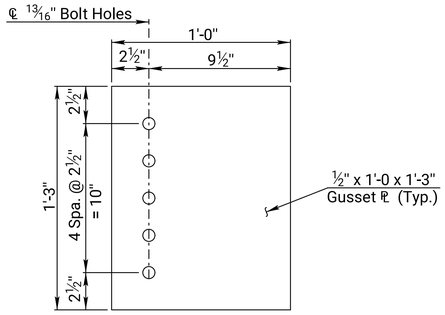
DETAIL "B"



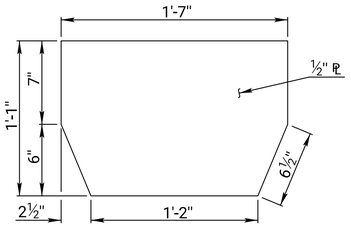
DETAIL "C"



CONNECTION PLATE
(2 Req'd per Pier Frame)



CONNECTION PLATE
(2 Req'd per Pier Frame)



K FRAME GUSSET ℙ DETAIL
(1 Req'd per Pier Frame)

H.S. BOLT DIMENSIONS
(1 Pier Frame)

(Includes 2-hardened washer & 1-DTI)

16 - ¾" ø x 2¾"

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PIER CROSS FRAME DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

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

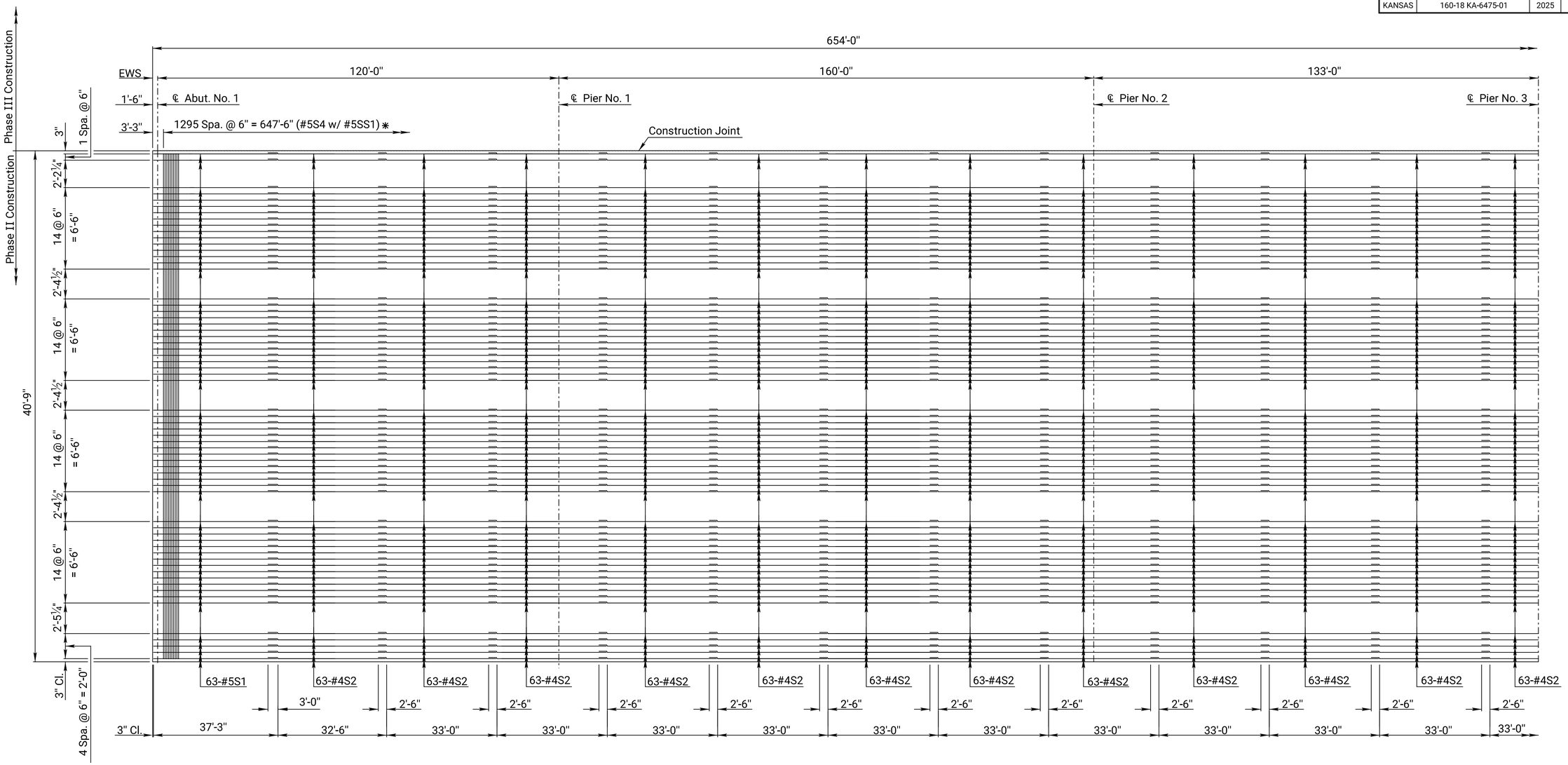
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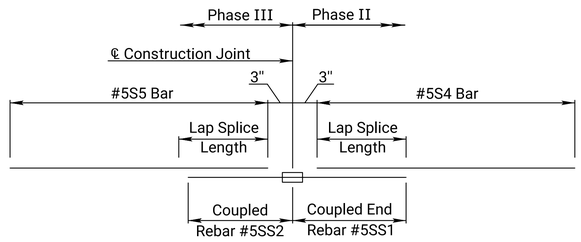
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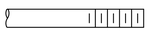
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	98	230





SPLICE/COUPLER REINFORCING DETAIL



Coupled Rebar
(Place in Phase III Const.)



Coupled End Rebar
(Place in Phase II Const.)

PLAN OF SLAB REINFORCING STEEL

(Phase II Bottom Deck Reinforcement)

✱ NOTE: #5S4 are to be spliced to the #5S5 bars from Phase III utilizing mechanically spliced rebar. See the "Splice/Coupler Reinforcing Detail".

Mechanical splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 1
(Phase II Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

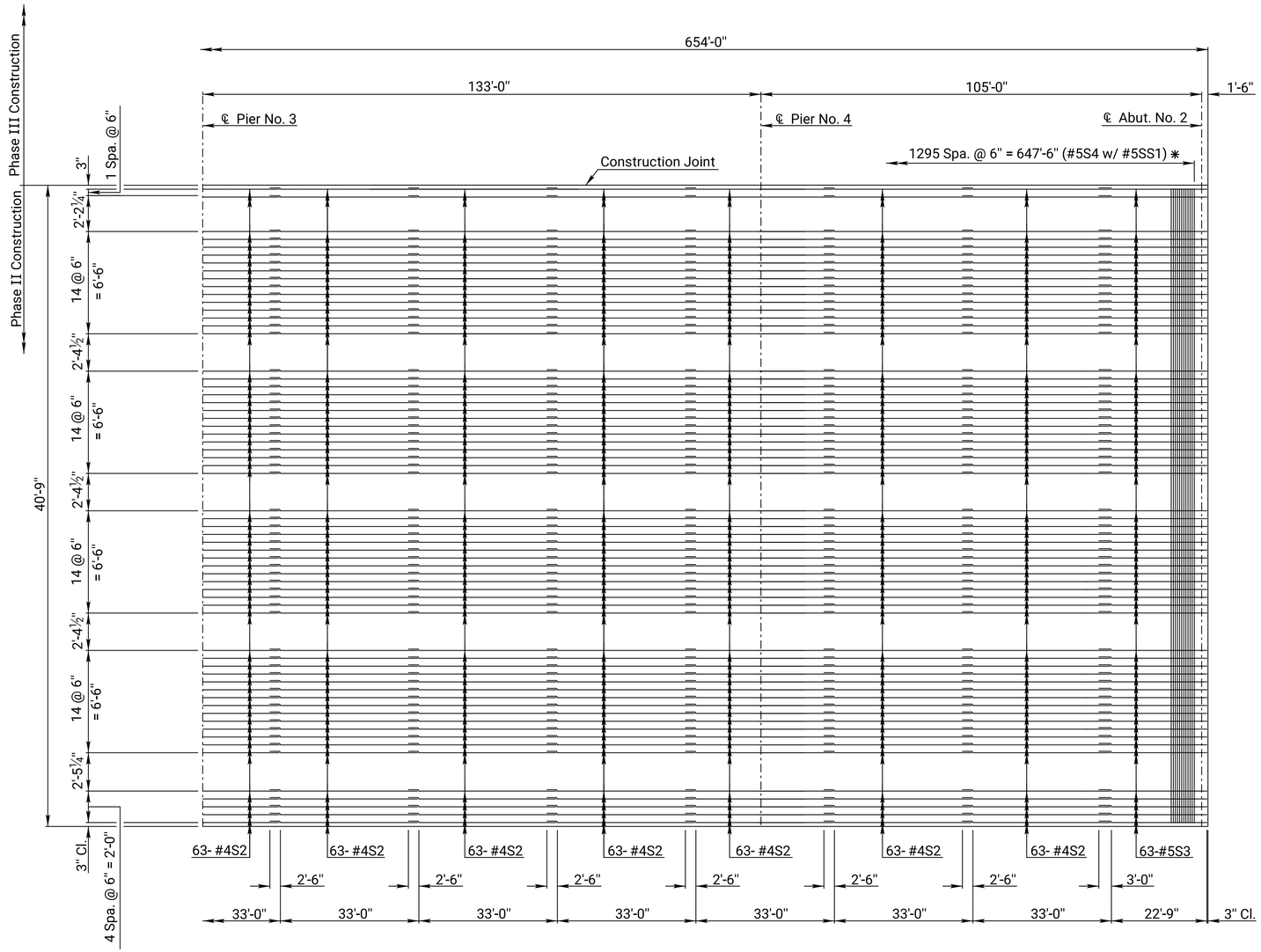
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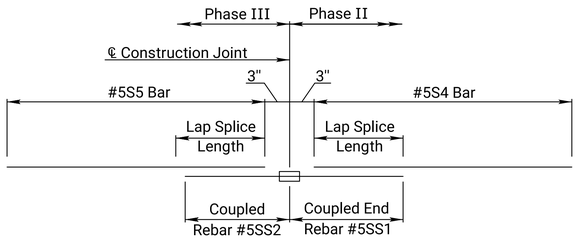
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	99	230

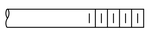


PLAN OF SLAB REINFORCING STEEL

(Phase II Bottom Deck Reinforcement)



SPLICE/COUPLER REINFORCING DETAIL



Coupled Rebar
(Place in Phase III Const.)



Coupled End Rebar
(Place in Phase II Const.)

✱ NOTE: #5S4 are to be spliced to the #5S5 bars from Phase III utilizing mechanically spliced rebar. See the "Splice/Coupler Reinforcing Detail".

Mechanical splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 2
(Phase II Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

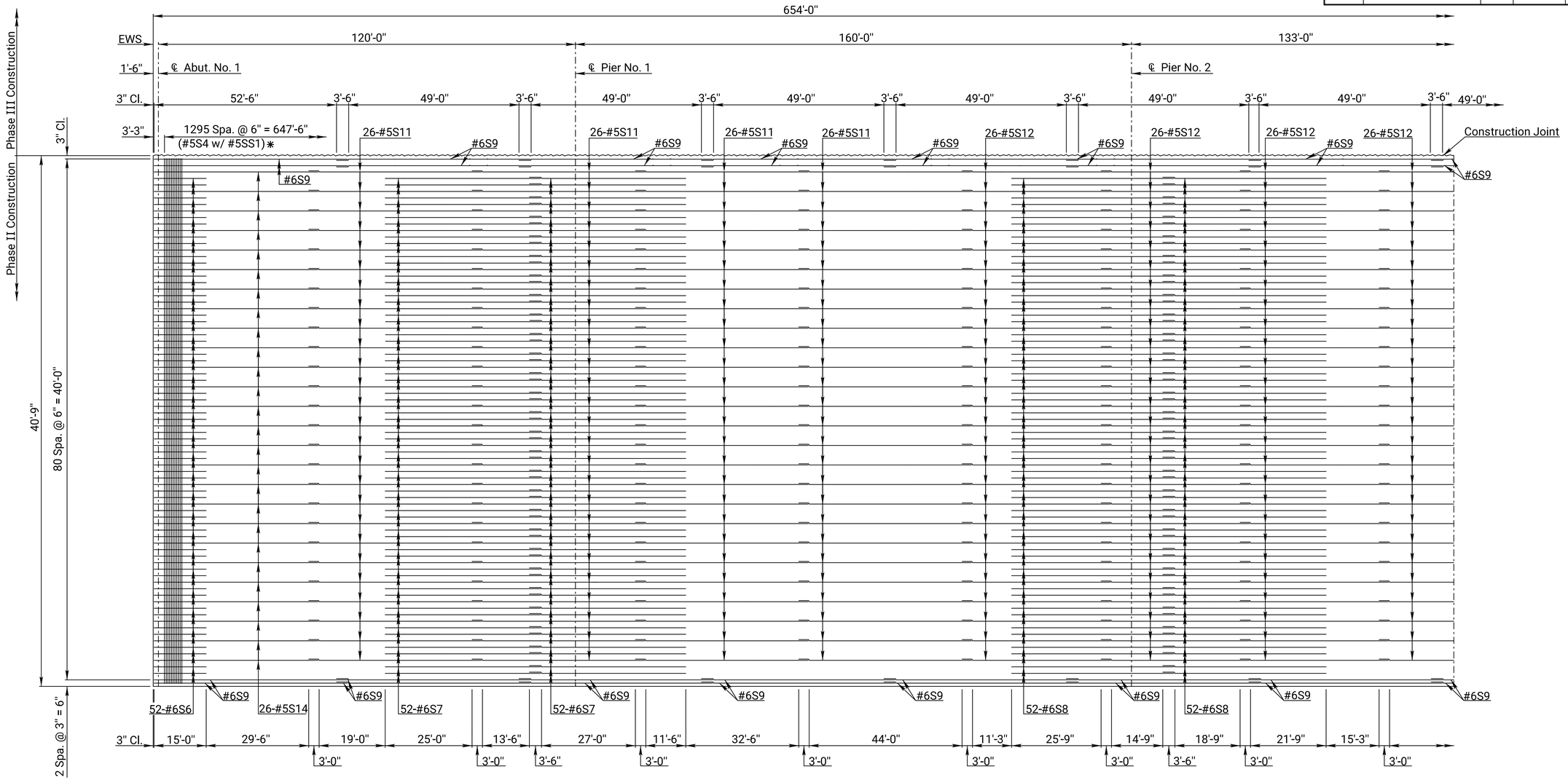
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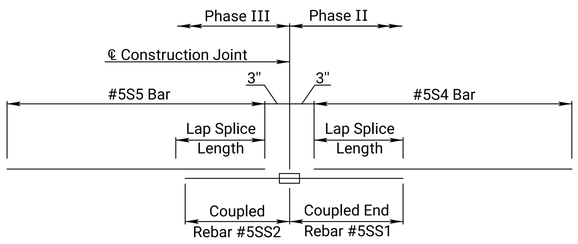
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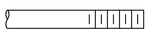
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	100	230



PLAN OF SLAB REINFORCING STEEL
(Phase II Top Deck Reinforcement)



SPLICE/COUPLER REINFORCING DETAIL



Coupled Rebar
(Place in Phase III Const.)



Coupled End Rebar
(Place in Phase II Const.)

∗ NOTE: #5S4 are to be spliced to the #5S5 bars from Phase III utilizing mechanically spliced rebar. See the "Splice/Coupler Reinforcing Detail".

Mechanical splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 3
(Phase II Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

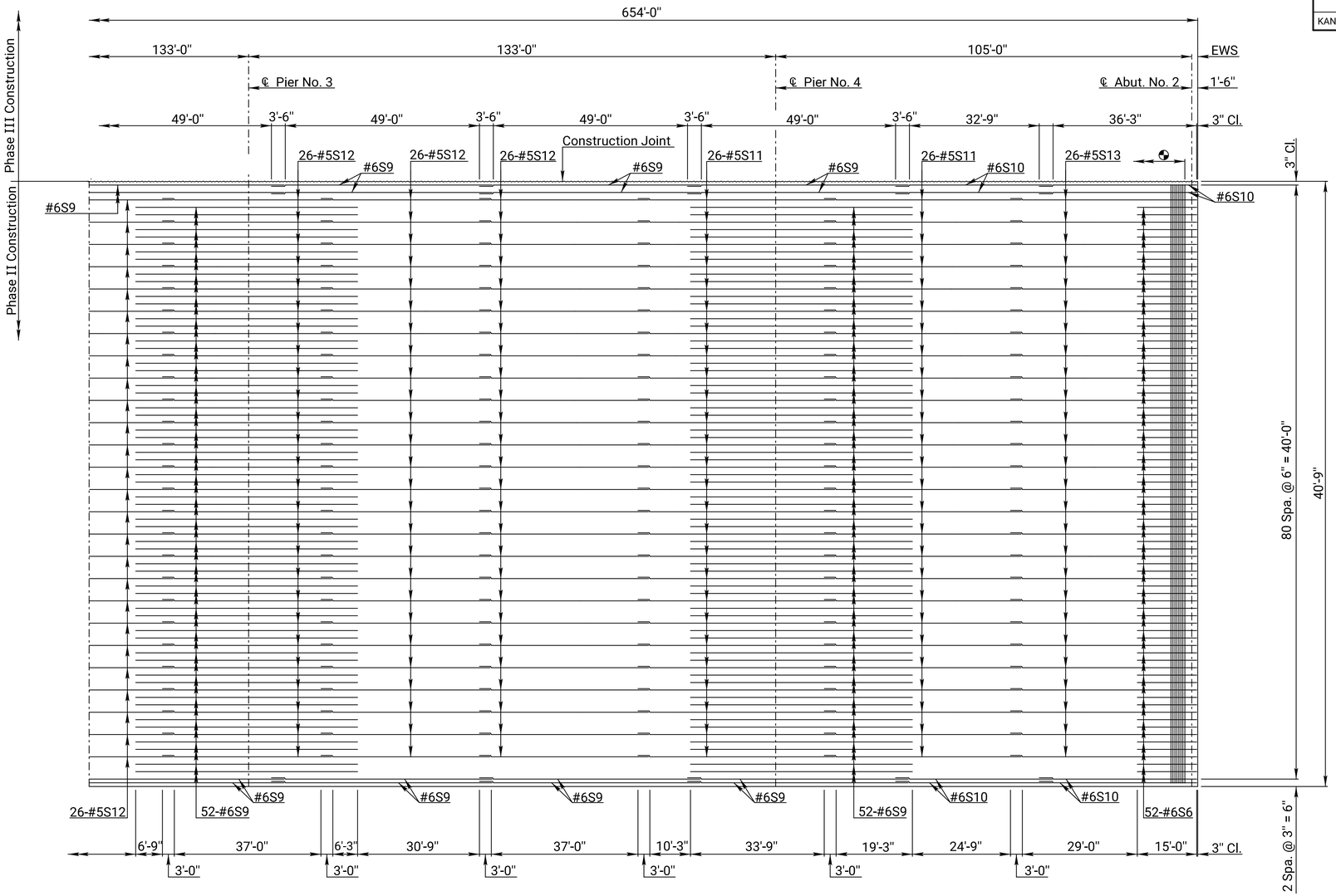
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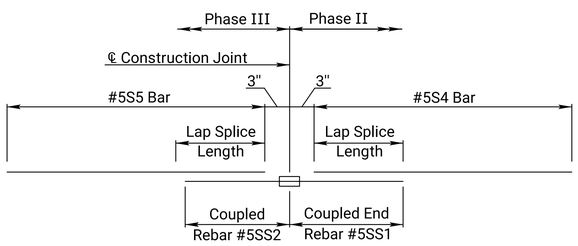
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	101	230

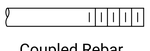


1295 Spa. @ 6" = 647'-6" (#5S4 w/ #5SS1)*

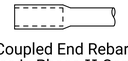
PLAN OF SLAB REINFORCING STEEL
(Phase II Top Deck Reinforcement)



SPLICE/COUPLER REINFORCING DETAIL



Coupled Rebar
(Place in Phase III Const.)



Coupled End Rebar
(Place in Phase II Const.)

* NOTE: #5S4 are to be spliced to the #5S5 bars from Phase III utilizing mechanically spliced rebar. See the "Splice/Coupler Reinforcing Detail".

Mechanical splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 4
(Phase II Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

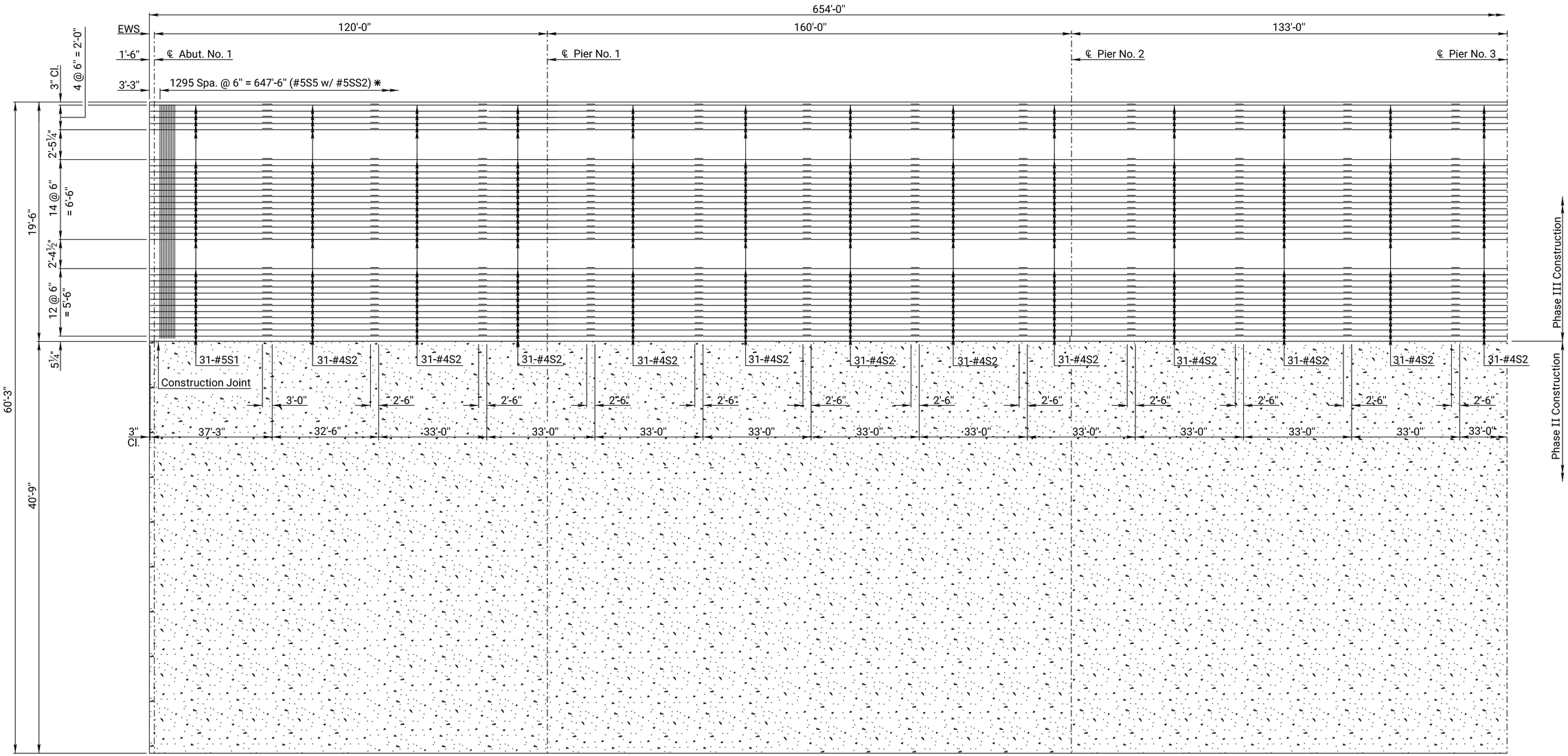
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File : ka647501bbr114-050.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	102	230



PLAN OF SLAB REINFORCING STEEL

(Phase III Bottom Deck Reinforcment)

✱ NOTE: #5S5 bars are to be spliced to the #5S4 bars from Phase II utilizing mechanically spliced bars. See the "Splice/Coupler Reinforcing Detail" on the "SLAB DETAILS 1" sheet.

Mechanically splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 5
(Phase III Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

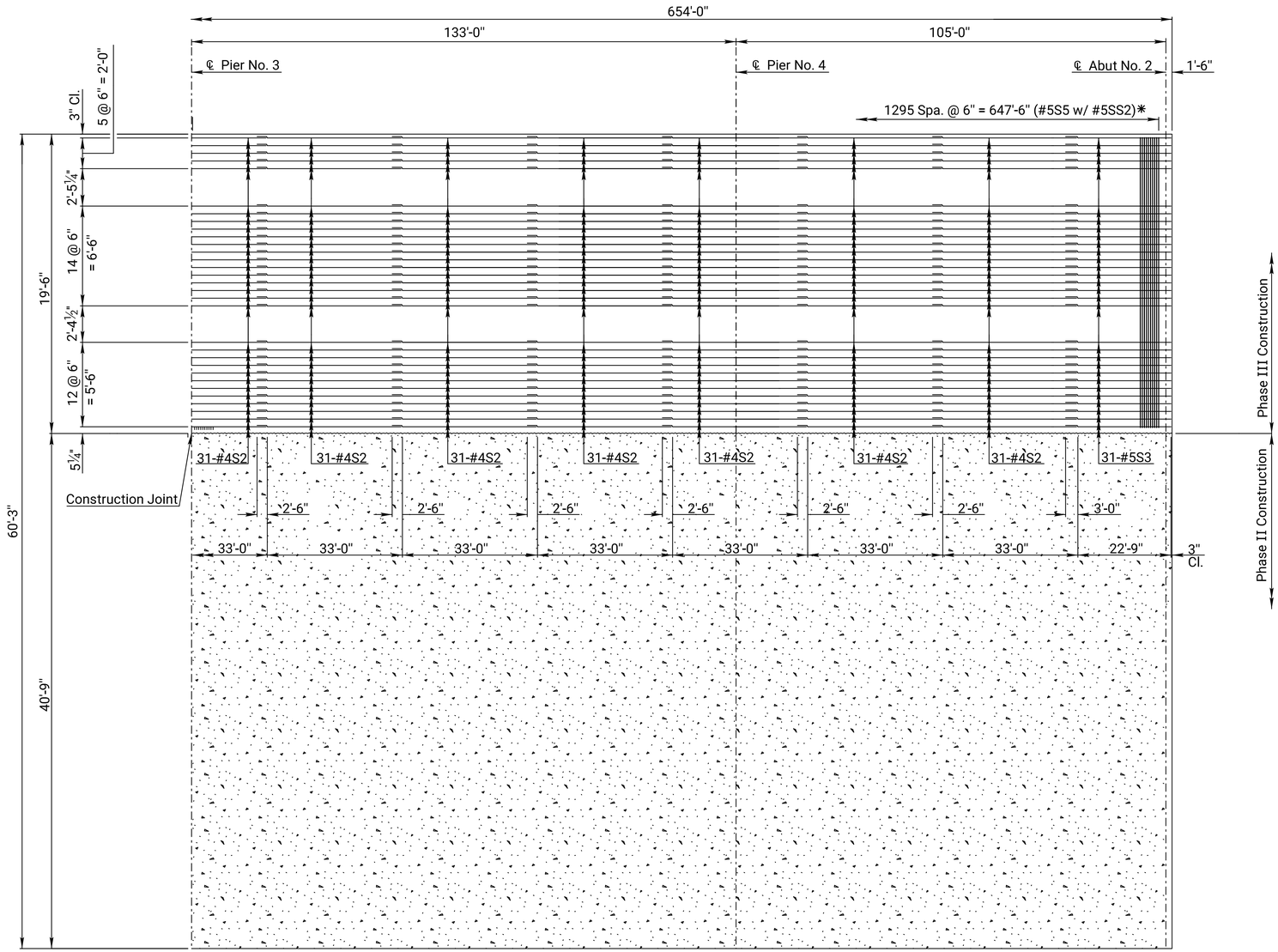
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File : ka647501bbr114-051.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	103	230



PLAN OF SLAB REINFORCING STEEL

(Phase III Bottom Deck Reinforcement)

* NOTE: #5S5 bars are to be spliced to the #5S4 bars from Phase II utilizing mechanically spliced bars. See the "Splice/Coupler Reinforcing Detail" on the "SLAB DETAILS 2" sheet.

Mechanically splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 6
(Phase III Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

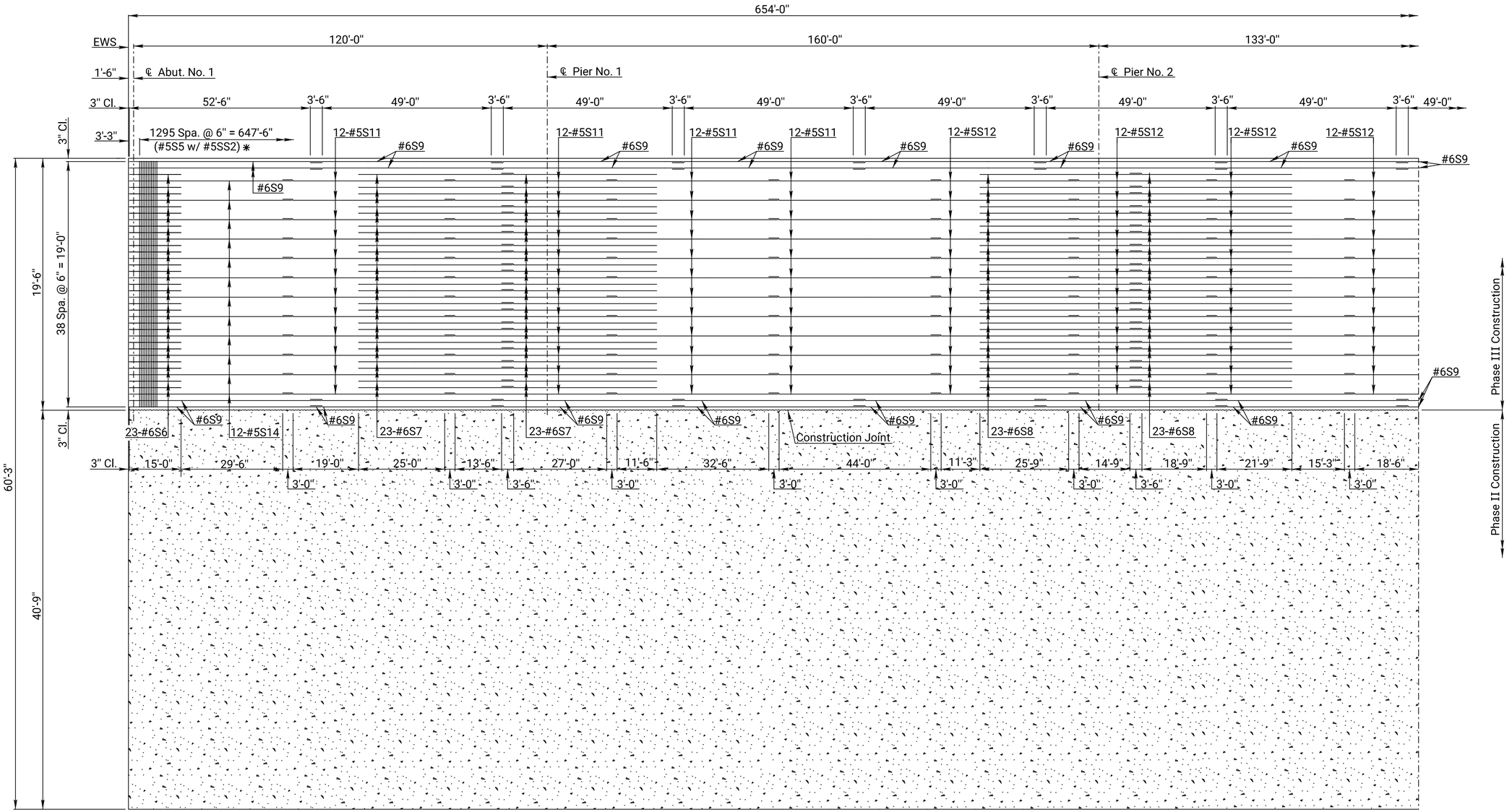
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File : ka647501bbr114-052.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	104	230



PLAN OF SLAB REINFORCING STEEL
(Phase III Top Deck Reinforcement)

✱ NOTE: #5S5 bars are to be spliced to the #5S4 bars from Phase II utilizing mechanically spliced bars. See the "Splice/Coupler Reinforcing Detail" on the "SLAB DETAILS 3" sheet.

Mechanically splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 7
(Phase III Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

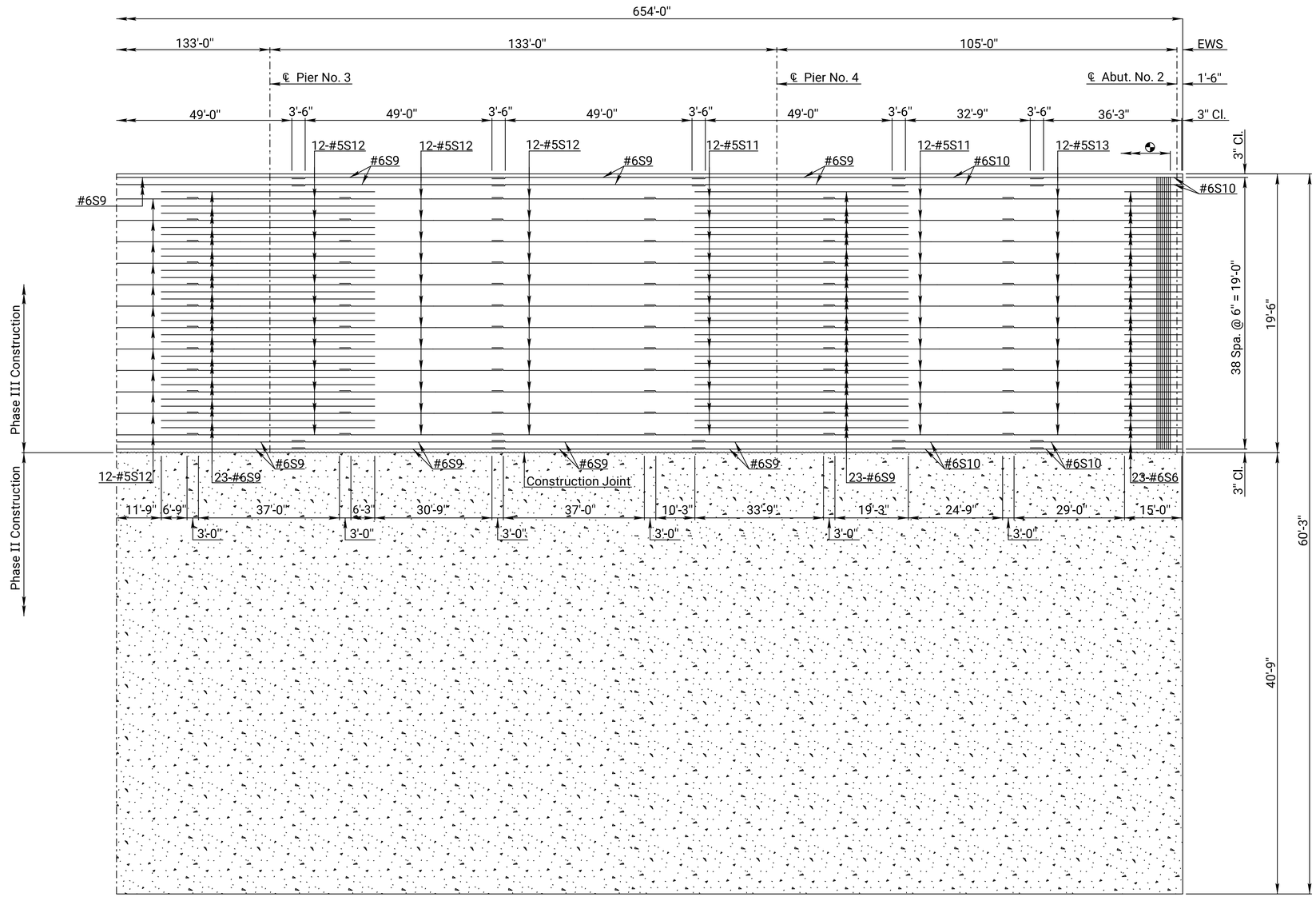
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	105	230



PLAN OF SLAB REINFORCING STEEL
(Phase III Top Deck Reinforcement)

1295 Spa. @ 6" = 647'-6" (#5S5 w/ #5SS2)*

* NOTE: #5S5 bars are to be spliced to the #5S4 bars from Phase II utilizing mechanically spliced bars. See the "Splice/Coupler Reinforcing Detail" on the "SLAB DETAILS 4" sheet.

Mechanically splice bars not shown in Plan view for clarity.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

SLAB DETAILS 8
(Phase III Construction)

Proj. 160-18 KA-6475-01 Cowley Co.

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

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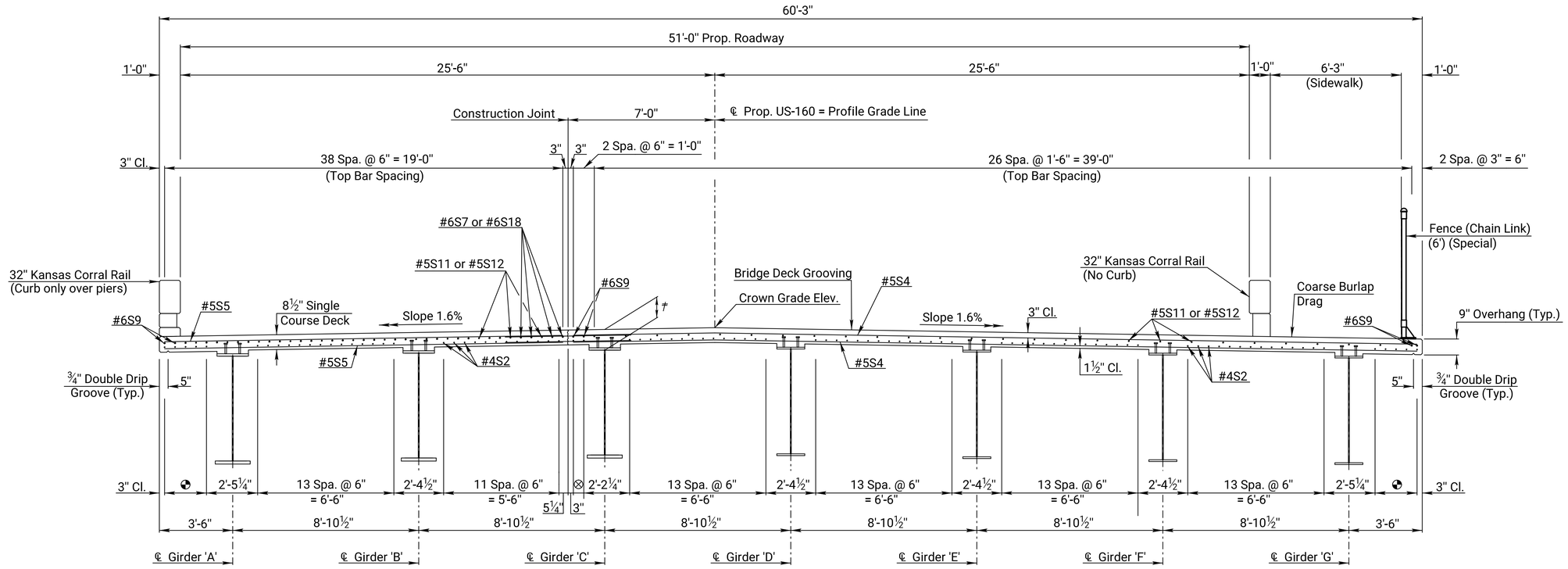
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	106	230

† Note: Fabricate girders to provide a constant theoretical distance of 11½" from top of deck to the top of web plate.



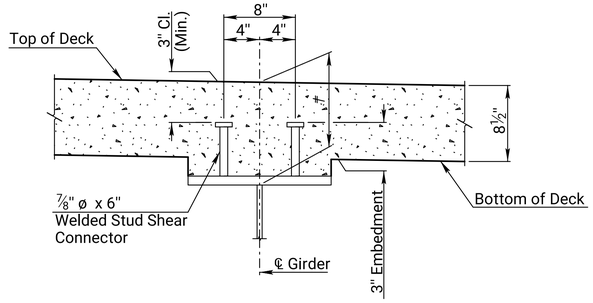
Phase III Section Near Pier

Phase II Section Near Midspan

4 Spa. @ 6" = 2'-0"

⊗ 6"

TYPICAL SECTION
(Looking East)



SHEAR CONNECTOR DETAIL

FILLETS: Camber the steel girders for the total dead load deflection and the vertical curvature, if necessary. The ordinates shown for concrete dead load deflection represent the amount of camber that should be in the girders after they are erected and bolted but prior to placing the floor forms. After the structural steel is completely erected and the falsework bents are removed, measure the camber in the field by taking a profile of each girder. Correct any variation between the actual camber and the concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the girders so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the girder shall be 9 inches.

The theoretical amount of concrete required for the fillets is 33.1 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

TYPICAL SECTION

Proj. 160-18 KA-6475-01 Cowley Co.

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

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	107	230

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

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

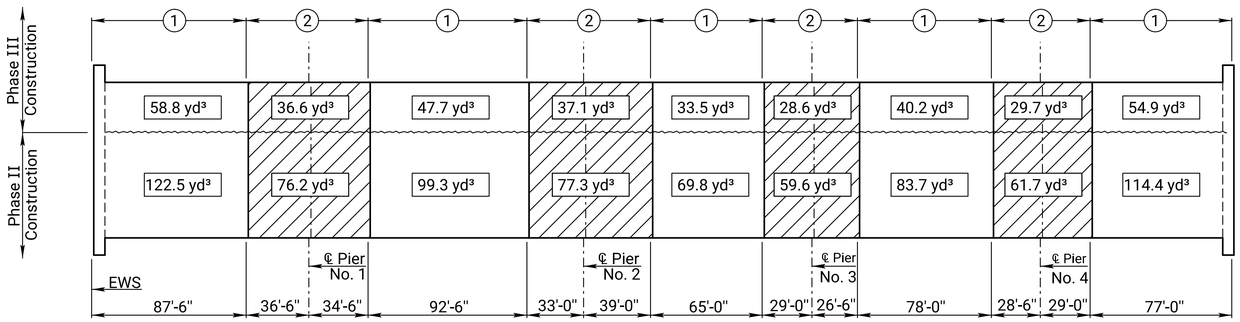
CONCRETE PLACING SEQUENCE: The sequence of placing concrete in the slab and curbs shall be as shown, or the Contractor may submit an alternate placing sequence for review. Submit the alternate placing sequence to the Engineer at the Preconstruction Conference. Include the proposed rate of concrete placement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

DEFECTION AND CAMBER NOTES:
The girder shall be fabricated sucha that under load, the top of the girder web will parallel the finished slab grade.

"Dead Load Steel" ordinates represent the amount of deflection due to all structural steel.

"Dead Load Concrete" ordinates represent the amount of deflection due to the deck and barrier rail pours, these ordinates represent the amount of camber that should be in the girders after they are erected and pror to placing deck formwork.

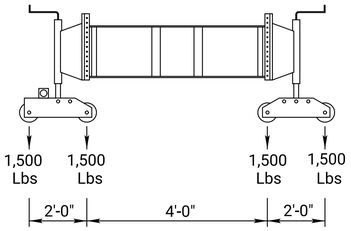
"Total Dead Load" ordinates represent the total deflection which is the sum of the steel and concrete deflections. The distance from the top of the deck to the top of the girder web shall be 11½" measured at the ℄ girder.



CONCRETE PLACING SEQUENCE

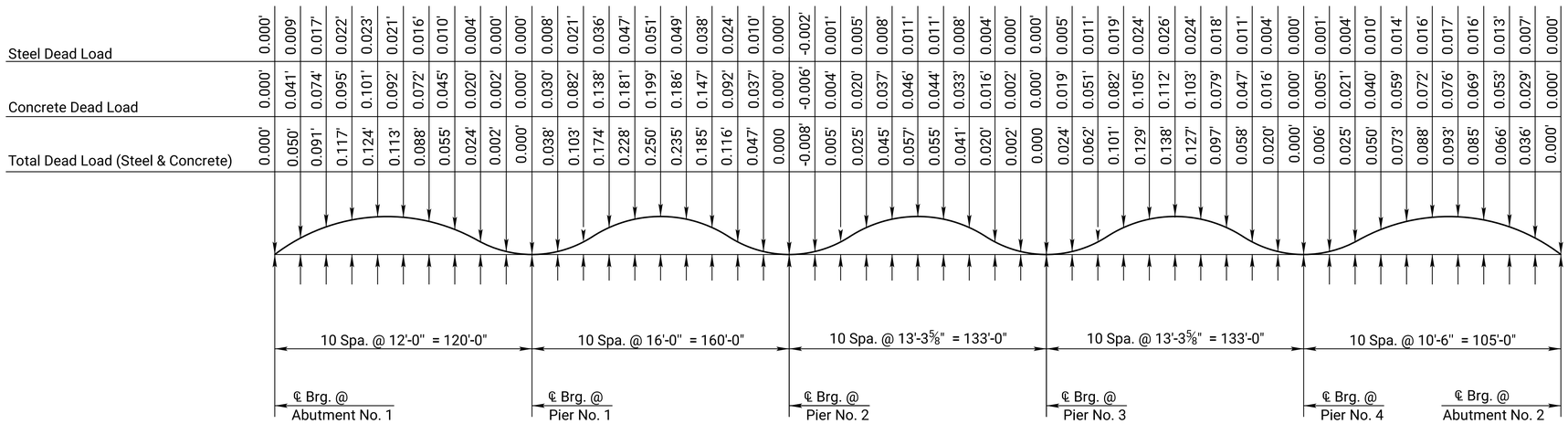
GIRDER SPLICE ELEVATIONS ⊗							
Location	Girder A	Girder B	Girder C	Girder D	Girder E	Girder F	Girder G
Splice No. 1	1139.93	1140.07	1140.21	1140.24	1140.10	1139.96	1139.81
Splice No. 2	1139.34	1139.48	1139.62	1139.65	1139.51	1139.36	1139.22
Splice No. 3	1138.52	1138.66	1138.80	1138.83	1138.68	1138.54	1138.40
Splice No. 4	1137.79	1137.94	1138.08	1138.10	1137.96	1137.82	1137.68
Splice No. 5	1137.17	1137.31	1137.45	1137.48	1137.34	1137.20	1137.05
Splice No. 6	1136.71	1136.85	1136.99	1136.02	1136.87	1136.73	1136.59
Splice No. 7	1135.99	1136.13	1136.27	1136.30	1136.15	1135.01	1135.87
Splice No. 8	1135.46	1135.60	1135.74	1135.77	1135.62	1135.48	1135.34

⊗ Note: Elevations are to the top of the Top Flange Splice Plates and include the theoeretical concrete dead load camber before deck pour.



ASSUMED FINISHING MACHINE VALUES LOADING DIAGRAM

Note: Rotation (maximum = 1°) in the exterior girder was calculated assuming screed wheel loads as shown and placed 3" beyond the outside of the deck. The maximum overhang bracket spacing was assumed at 2 ft. The actual screed loadings or bracket spacing will be reflected in the design calculations for a torsional analysis of the exterior girder and bracing. The design calculations shall bear the seal of a licensed Professional Engineer. Submit according to KDOT Specifications Section 700 for falsework and formwork.



GIRDER DEAD LOAD CAMBER DIAGRAM
(Ordinates are in Feet)

Dead Load Camber at Field Splices (ft.)			
Location	Steel	Concrete	Total
Splice No. 1	0.010	0.046	0.057
Splice No. 2	0.024	0.091	0.115
Splice No. 3	0.025	0.095	0.120
Splice No. 4	0.005	0.019	0.024
Splice No. 5	0.005	0.019	0.024
Splice No. 6	0.012	0.050	0.062
Splice No. 7	0.012	0.051	0.064
Splice No. 8	0.008	0.036	0.044

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

AUXILIARY SUPERSTRUCTURE DETAILS
US-160 over Walnut River

Proj. 160-18 KA-6475-01 Cowley Co.

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

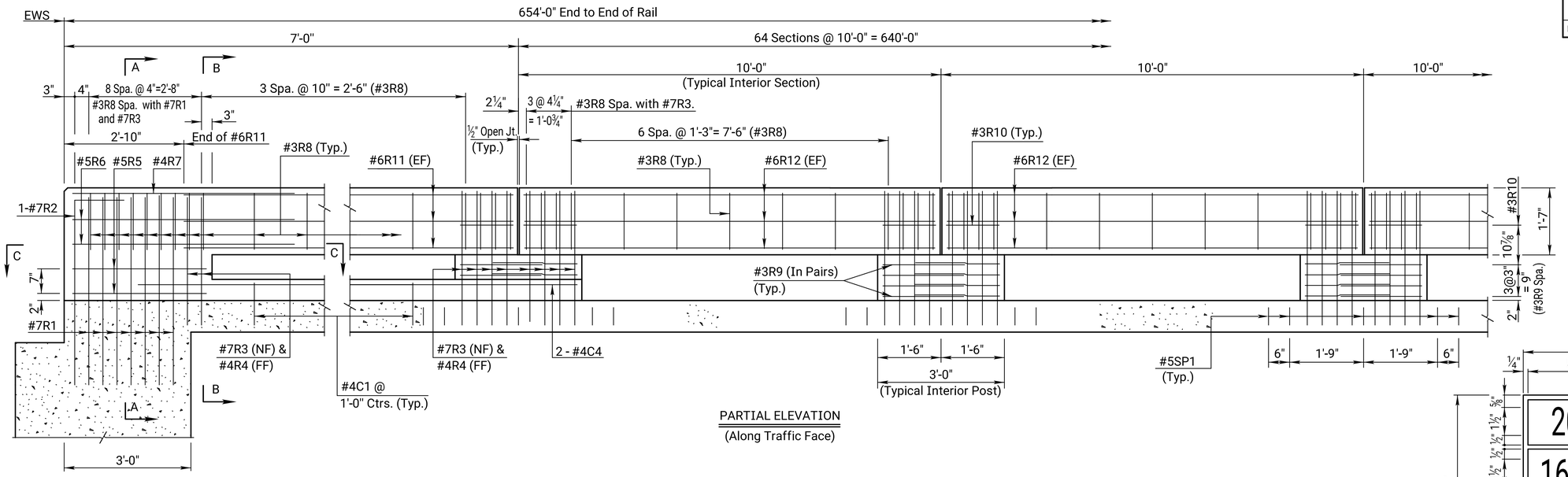
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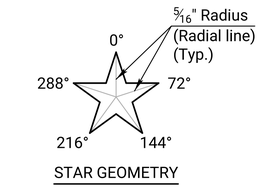
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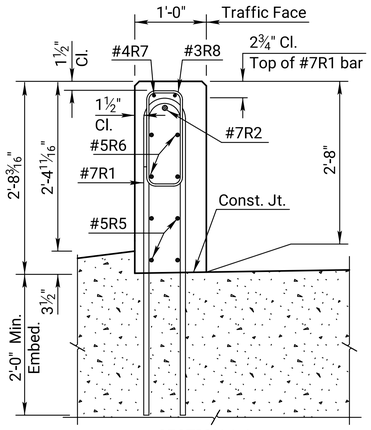
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	108	230



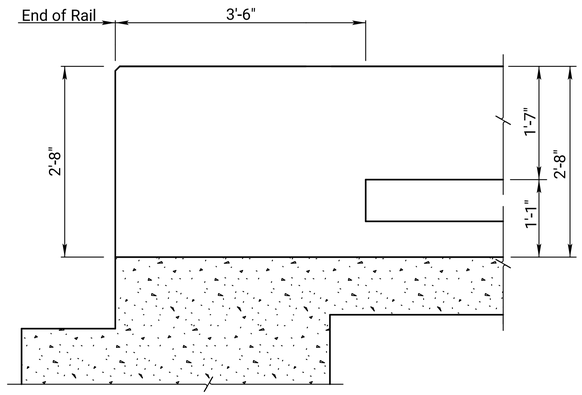
PARTIAL ELEVATION
(Along Traffic Face)



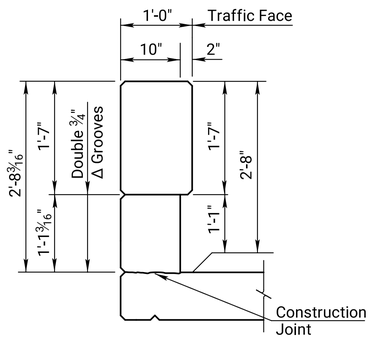
STAR GEOMETRY



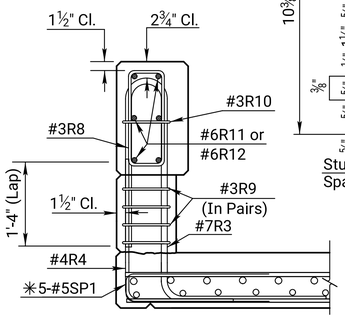
SECTION A-A
(Exterior rail shown, interior rail similar)



ELEVATION
(Dimensions at traffic face of rail.)

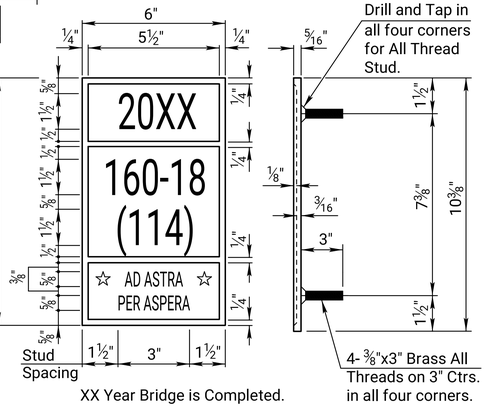


TYPICAL INTERIOR POST
(Exterior rail shown, interior rail similar)



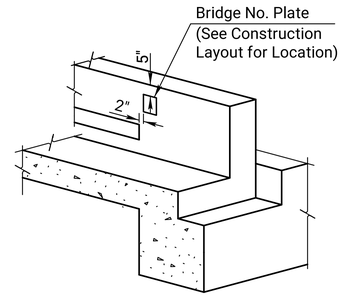
SECTION THRU POST
(Exterior rail shown, interior rail similar)

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

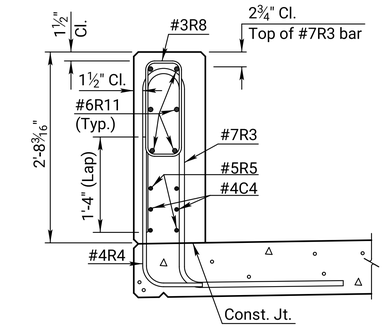


XX Year Bridge is Completed.

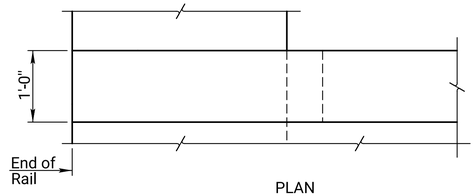
BRIDGE NUMBER PLATE
(1 Required)
(See Construction Layout for Location)



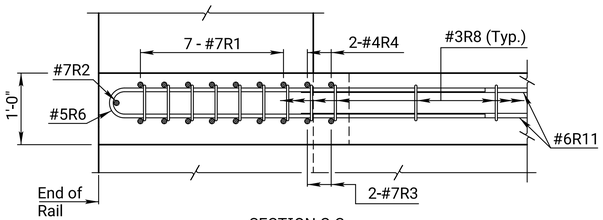
BRIDGE NUMBER PLATE PLACEMENT DETAIL



SECTION B-B
(Exterior rail shown, interior rail similar)



PLAN
(Exterior rail shown, interior rail similar)



SECTION C-C
(Exterior rail shown, interior rail similar)

LEGEND

EWS - Edge of Wearing Surface
EF - Each Face
NF - Near Face
FF - Far Face

NO.	DATE	REVISIONS	BY	APP'D
03				
02	12-03-21	Changed Bridge Number Plate detail	M.L.L.	M.A.H.
01	06-30-05	Current Release		

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

32" KANSAS CORRAL RAIL
(Without Curb)

Proj. 160-18 KA-6475-01 Cowley Co.

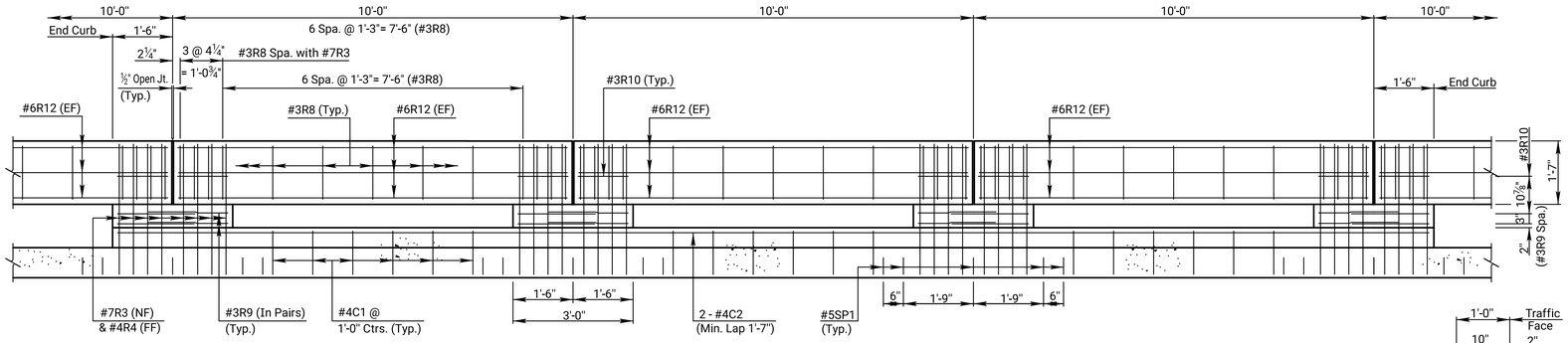
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DESIGN CK.	CFB	DETAIL CK.	CFB	QUAN.CK.	CFB	CADD CK.	CFB

KDOT Graphics Certified 07-31-2025 Sh. No. 108

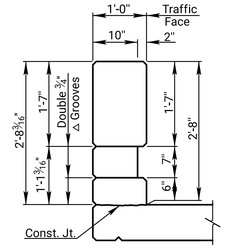
KDOT Graphics Certified

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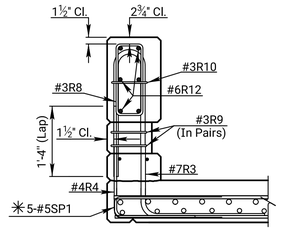
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	109	230



PARTIAL ELEVATION AT PIERS
(3 Sections with Curb)
(Along Traffic Face)

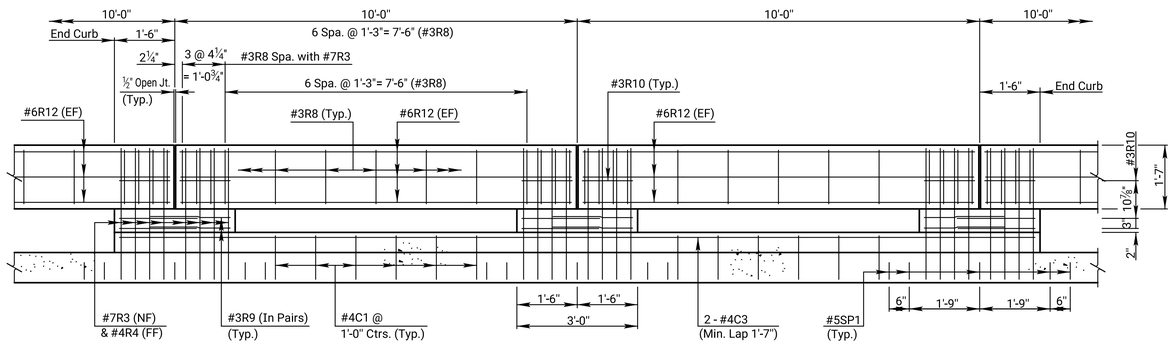


TYPICAL INTERIOR POST
(With Curb)
(Exterior rail shown, interior rail similar)

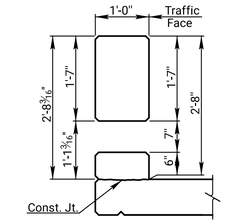


SECTION THRU POSTS
(With Curb)
(Exterior rail shown, interior rail similar)

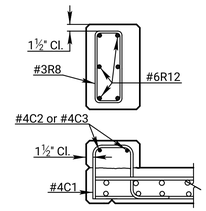
✳Note:
The hook may be canted to provide clearance and/or fit between reinforcing.



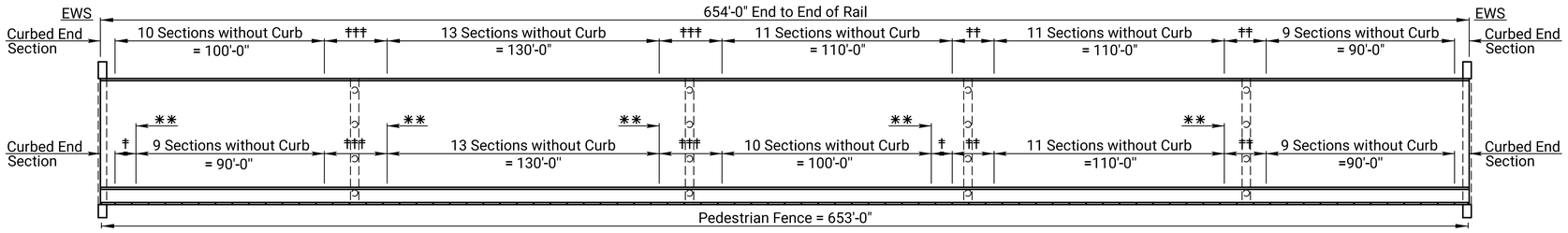
PARTIAL ELEVATION AT PIERS
(2 Sections with Curb)
(Along Traffic Face)



TYPICAL SECTION BETWEEN POSTS
(With Curb)
(Exterior rail shown, interior rail similar)



TYPICAL SECTION BETWEEN POSTS
(With Curb)
(Exterior rail shown, interior rail similar)



††† 3 Sections with Curb = 30'-0"
†† 2 Sections with Curb = 20'-0"
† Sections without Curb = 10'-0"
✳✳ 4'-0" Interior Post for lighting - see Corral Rail Details 3 sheet

RAIL SECTION LAYOUT

LEGEND

EWS - Edge of Wearing Surface
EF - Each Face
NF - Near Face
FF - Far Face

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

32' KANSAS CORRAL RAIL
(with curb)

Proj. 160-18 KA-6475-01 Cowley Co.

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

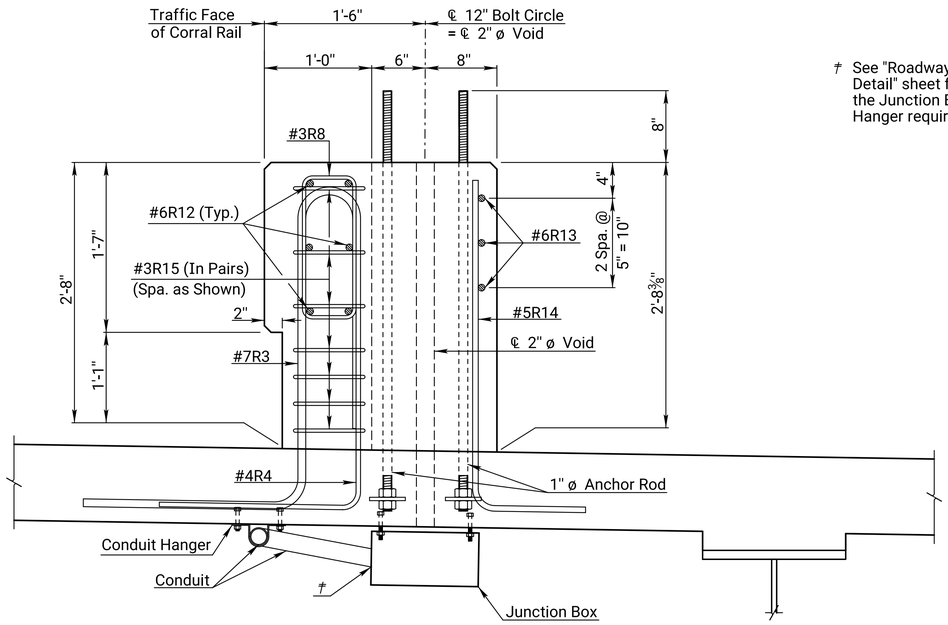
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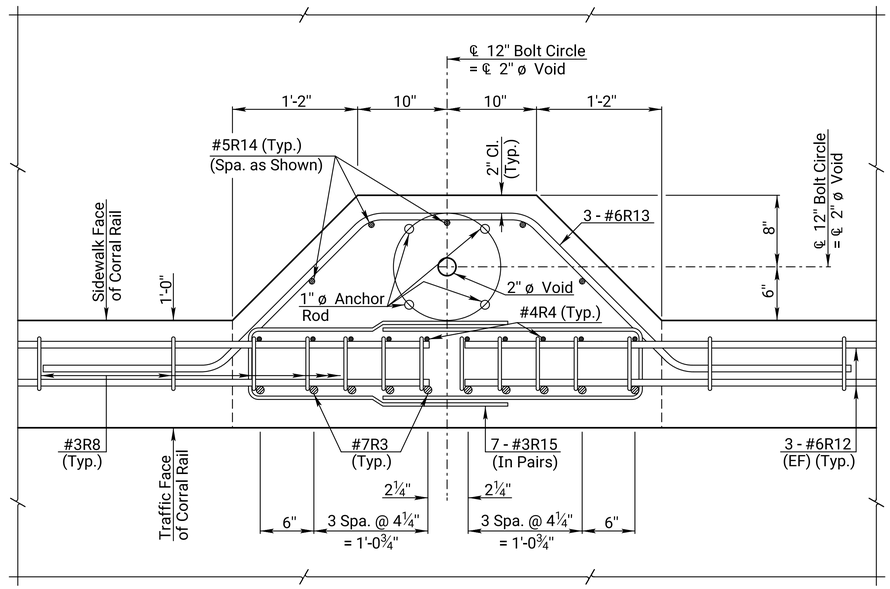
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	110	230



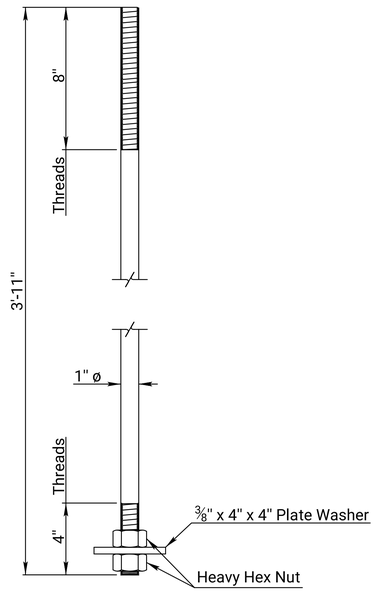
TYPICAL SECTION THRU LIGHT STANDARD

ǂ See "Roadway Lighting Conventional Pole Detail" sheet for additional information on the Junction Box, Conduit, and Conduit Hanger requirements.



PLAN VIEW OF LIGHT STANDARD

Note: Slab reinforcing not shown for clarity.



ANCHOR ROD DETAIL
(20 Required)

Note: The anchor rods shall meet the requirements for AASHTO M314 Grade 55. The nuts shall meet the requirements for ASTM A 563. The plate washer shall meet the requirements for ASTM 709 Gr. 36. The anchor rods, washers, and plate washers shall be galvanized according to KDOT specifications.

LIGHT STANDARD STATIONING	
Station	Side
456+60.78	South
457+80.78	South
459+10.78	South
460+40.78	South
461+80.78	South

LEGEND

EF = Each Face

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

32" KANSAS CORRAL RAIL
(Lighting Supports)

Proj. 160-18 KA-6475-01 Cowley Co.

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

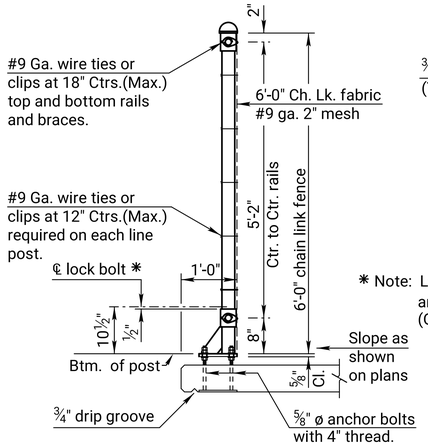
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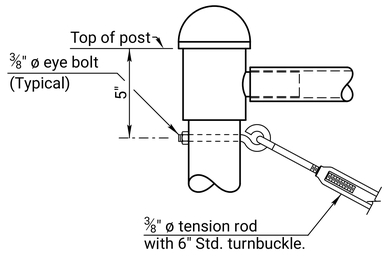
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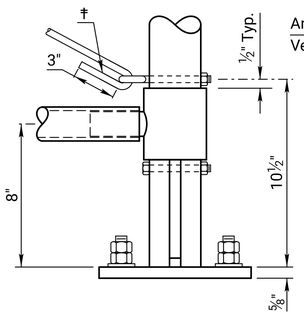
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	111	230



TYPICAL SECTION

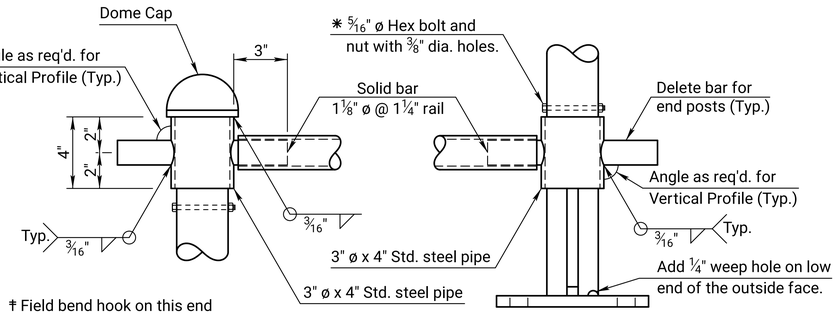


✱ Note: Lock bolt shall be ⅝" ø hex head bolt and nut. Bolt holes shall be ⅜" diameter. (Omit at pull post & end post.)



TENSION ROD DETAIL

‡ Field bend hook on this end to fit. Shorten as required to achieve 3" tangent.



POST - RAIL CONNECTION

GENERAL NOTES

FENCE (CHAIN LINK) (6') (SPECIAL): The chain link fence on the sidewalk shall be bid per lineal foot as per bid item, "Fence (Chain Link) (6') Special or Special Duplex/PVC". This item shall include the furnishing of all material, fabrication of all parts, and all of the equipment and labor required to erect the fence in accordance with these plans and specifications. All parts shall be galvanized or duplex coated after fabrication and all welds shall be free of slag holes prior to galvanizing or duplex coating. Galvanization or Duplex coating shall conform to KDOT's Standard Specifications.

POST AND RAIL: The Contractor shall use extra strong pipe for the posts and for the top and bottom rail. The pipe shall conform to Section 1600 of the Standard Specifications for Road and Bridge Construction. Diameters shown for tubular steel posts and rails are nominal. Weight tolerances shall be as shown in the Specifications.

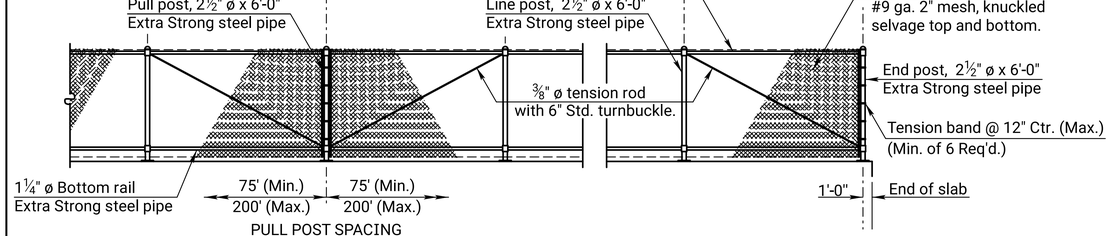
CHAIN LINK FABRIC: All chain link fabric shall be zinc coated (galvanized) or PVC coated. The chain link fabric shall be double knuckled. Intermediate pull posts are required when pedestrian fence exceeds 200 ft. Spacing of pull posts shall be 75 ft. (min.) to 200 ft. (max.) from another pull post or end post.

BOLTS: Bolts, including Anchor bolt, lockbolts, eyebolts and turnbuckle, shall be coated in accordance with the weight of coating requirements of ASTM A 153 and shall conform to ASTM A307 or A36.

STRUCTURAL STEEL: Miscellaneous plates, bars, shapes including tension rod shall conform to ASTM A36.

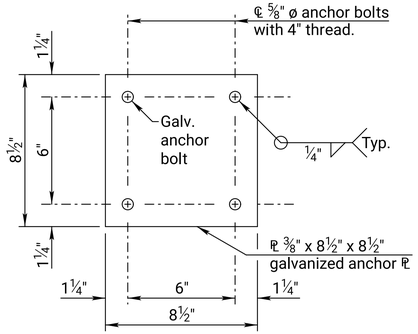
ERECTION PROCEDURE: The details of the connections require that the post and rail installation be accomplished in a sequential manner. Following the erection of a post, the rails must be installed before an adjacent post can be erected. The installation may begin with an end post or with an interior post and extend both ways.

SHOP DRAWINGS: Approval of shop details and materials is required before installation begins.

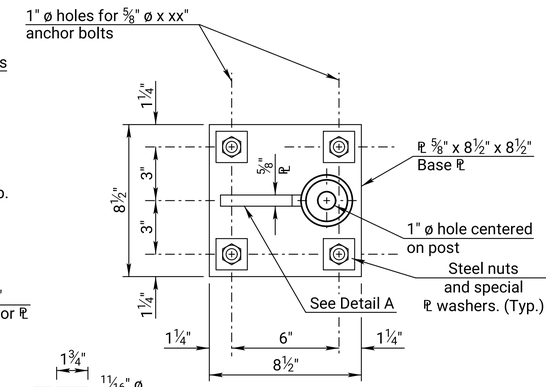


PULL POST SPACING

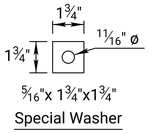
PART ELEVATION



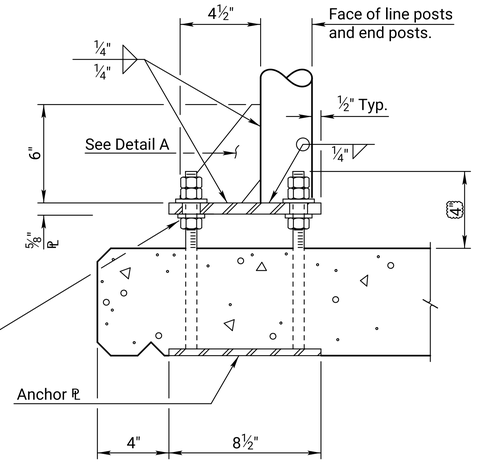
ANCHOR PLATE



Plan

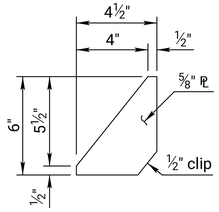


5/16"x 1¾"x1¾"
Special Washer



Section

BASE PLATE DETAILS FOR END POST AND LINE POSTS



Detail A

SUMMARY OF QUANTITIES	
Fence (Chain Link)(6') Special	652.0 Lin. Ft.

Dead Load = 19 Lbs./Ft.
Loads applied in accordance with 2007 AASHTO Specs.

NO.	DATE	REVISIONS	BY	APP'D
09	05-02-15	Added Tension Rod Bolt	J.P.J.	C.E.R.
08	05-13-13	Added Duplex Coating	J.P.J.	T.L.F.
07	08-03-07	Base Plate Detail & Stretcher	J.P.J.	K.F.H.

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

PEDESTRIAN FENCE AND CURB DETAILS

Proj. 160-18 KA-6475-01 Cowley Co.

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

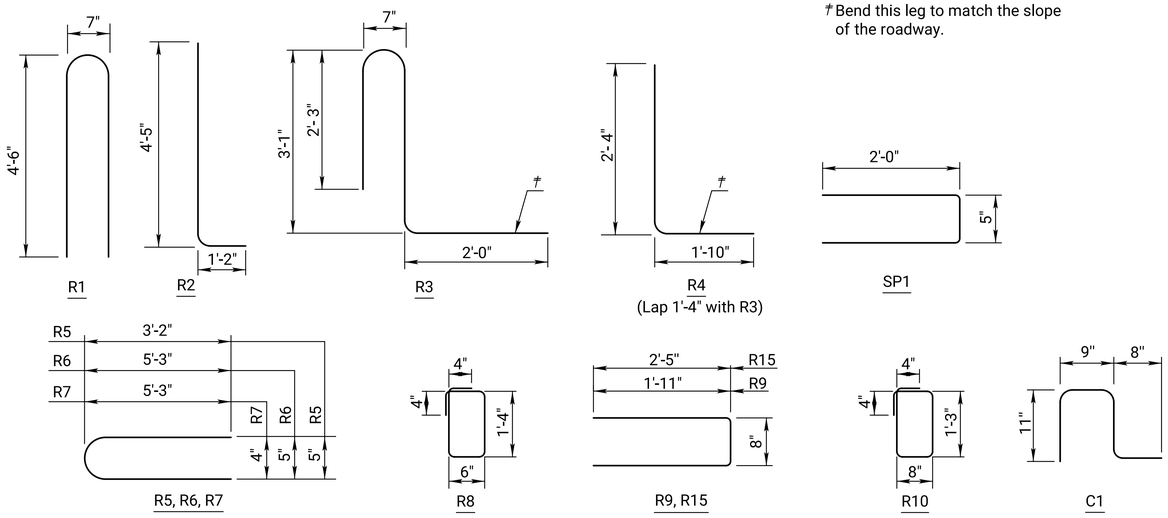
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Sh. No. 111

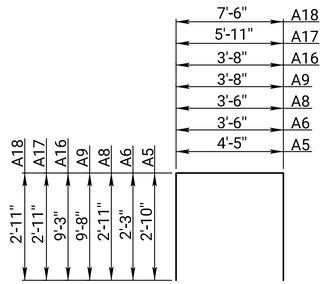
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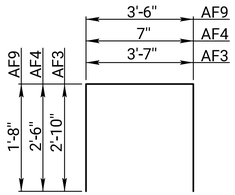
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	112	230



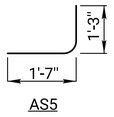
\# Bend this leg to match the slope of the roadway.



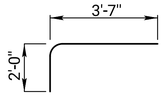
A5, A6, A8, A9, A16, A17, A18



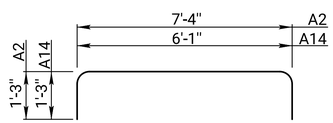
AF3, AF4, AF9



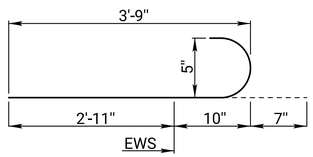
AS5



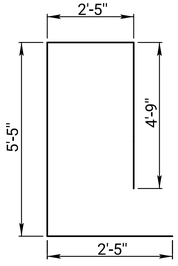
AF6



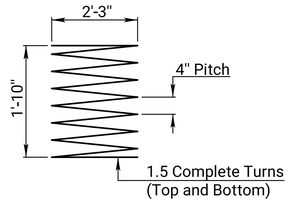
A2, A14



A7



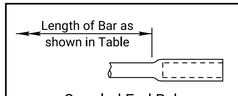
A4



APS1

BENDING DIAGRAMS

All dimensions are out to out of bars.



THREADED REBAR SPLICE SYSTEM

Threaded Rebar Splices
Epoxy Coated - (Grade 60)

Coupled Bars				Threaded Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
AS1	#8	12	5'-6"	AS2	#8	12	5'-6"
AS5	#8	6	5'-6"	AS2	#8	6	5'-6"
AFS1	#8	24	5'-6"	AFS2	#8	24	5'-6"
AS3	#5	20	3'-0"	AS4	#5	20	3'-0"
SS1	#5	2592	3'-0"	SS2	#5	2592	3'-0"
AFS3	#4	20	2'-6"	ASF4	#4	20	2'-6"

NOTE: The reinforcing bar lengths are calculated to the center of the coupling device. The mechanical splice system shall meet the requirements of the KDOT Specifications for "Fatigue Resistant" mechanical couplers. The additional material and labor shall be subsidiary to the bid item "Reinforcing Steel (Gr. 60)" epoxy coated.

BILL OF REINFORCING STEEL
Epoxy Coated - Grade 60

Abutment - Deck - Rail

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
A1	#8	14	40'-6"	A2	#8	20	9'-10"
A13	#8	14	19'-0"	A14	#8	4	8'-7"
AF1	#8	28	46'-9"				
AF7	#8	28	26'-9"	R1	#7	28	9'-3"
				R2	#7	4	5'-7"
S6	#6	150	15'-0"	R3	#7	1058	7'-7"
S7	#6	150	45'-0"				
S8	#6	150	47'-0"	R13	#6	15	8'-6"
S9	#6	238	56'-0"				
S10	#6	16	39'-9"	A4	#5	108	16'-0"
R11	#6	24	4'-0"	A5	#5	108	10'-1"
R12	#6	768	9'-8"	A6	#5	24	8'-0"
				A7	#5	108	4'-4"
S1	#5	94	37'-3"	A8	#5	24	11'-7"
S3	#5	94	25'-9"	A9	#5	8	20'-8"
S4	#5	2592	40'-3"	A16	#5	24	22'-2"
S5	#5	2592	19'-0"	A17	#5	4	11'-9"
S11	#5	228	50'-0"	A18	#5	28	13'-4"
S12	#5	266	43'-0"	AF3	#5	340	9'-3"
S13	#5	38	47'-0"	AF9	#5	28	6'-8"
S14	#5	38	47'-6"	R5	#5	8	6'-6"
A3	#5	20	40'-6"	R6	#5	8	10'-8"
A10	#5	6	5'-11"	SP1	#5	325	4'-5"
A11	#5	6	8'-6"	R14	#5	25	4'-1"
A12	#5	20	19'-0"				
A15	#5	18	9'-3"	AF4	#4	170	5'-7"
A19	#5	6	7'-6"	AF6	#4	48	5'-7"
				R4	#4	1058	4'-2"
S2	#4	1692	35'-6"	R7	#4	4	10'-7"
AF2	#4	48	24'-7"	C1	#4	128	3'-3"
AF5	#4	56	3'-1"	APS1	#4	18	◔
AF8	#4	24	26'-9"				
C2	#4	16	17'-4"	R8	#3	1734	4'-4"
C3	#4	16	12'-4"	R9	#3	928	4'-6"
C4	#4	8	6'-7"	R10	#3	260	4'-6"
				R15	#3	70	5'-6"

◔ See Bending Diagram

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

BILL OF REINFORCING STEEL
& BENDING DIAGRAMS

Proj. 160-18 KA-6475-01 Cowley Co.

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

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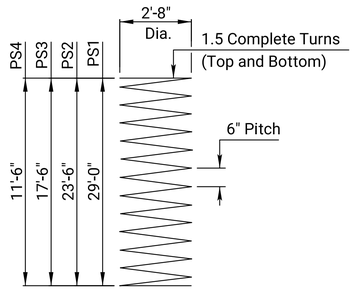
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File : ka647501bbr114-061a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	113	230

BILL OF REINFORCING STEEL
Non-Epoxy Coated - Grade 60

	Straight Bars				Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Pier	PB3	#10	32	48'-4"	PB1	#10	32	50'-1"
	PB10	#10	32	17'-11"	PB8	#10	32	19'-8"
	PC1	#9	48	32'-9"	PB6	#5	1248	8'-11"
	PC2	#9	24	27'-3"	PB11	#5	56	7'-8"
	PC3	#9	24	21'-3"				
	PC4	#9	96	15'-3"	PB7	#4	124	8'-0"
					PW6	#4	168	4'-8"
	PW1	#6	12	13'-1"				
					PS1	#3	4	◔
	PB2	#5	80	45'-0"	PS2	#3	2	◔
	PB9	#5	80	17'-11"	PS3	#3	2	◔
					PS4	#3	8	◔
	PB4	#4	16	8'-10"				
	PB5	#4	16	16'-1"				
	PW2	#4	120	13'-1"				
	PW3	#4	88	9'-10"				
	PW4	#4	88	4'-11"				
	PW5	#4	168	9'-6"				

◔ See Bending Diagram

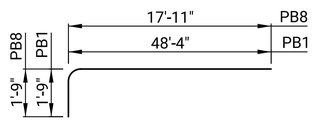


PS1, PS2, PS3, PS4
(3/8" ø smooth or deformed bar)

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

Spiral Spacer Bars:

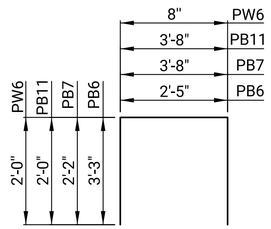
1) Are included in the mass of reinforcing steel.
2) Minimum section modulus = 0.008 in³
3) 4 required per spiral.



PB1, PB8

BENDING DIAGRAMS

All dimensions are out to out of bars.



PB6, PB7, PB11, PW6

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 160-18-317.49 (114) Sta. 459+70.78

BILL OF REINFORCING STEEL
& BENDING DIAGRAMS

Proj. 160-18 KA-6475-01 Cowley Co.

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

CADconform Certify This File

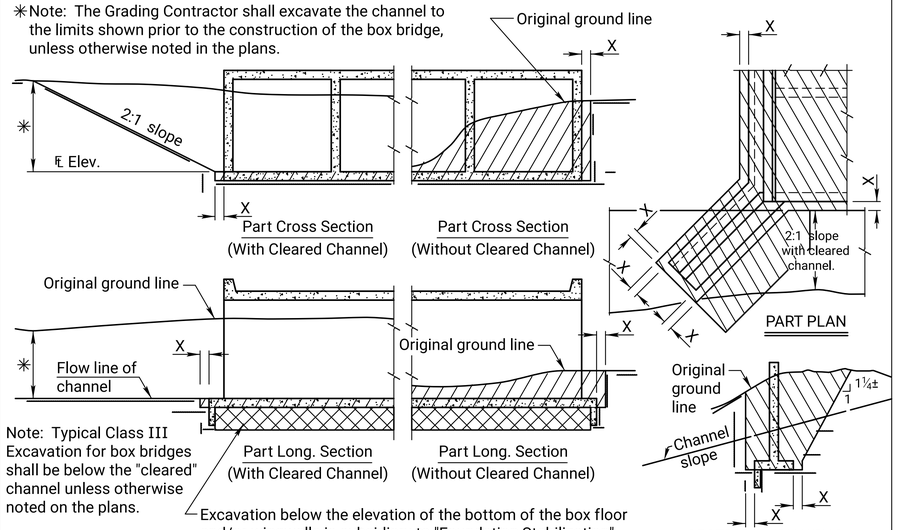
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File : ka647501bbr114-061b.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	114	230

✳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.

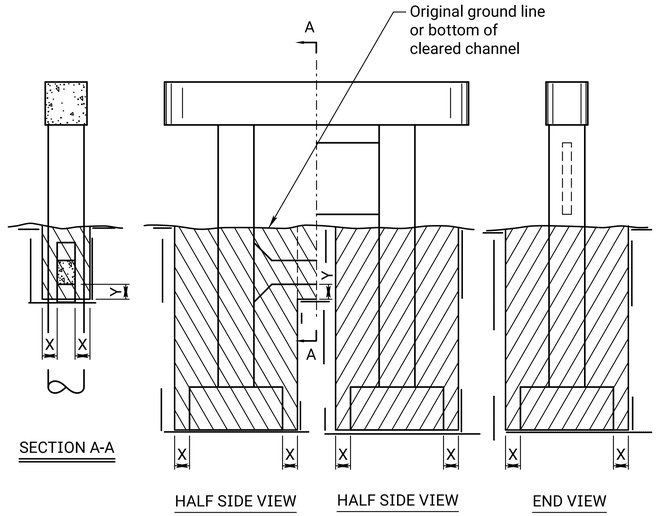


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

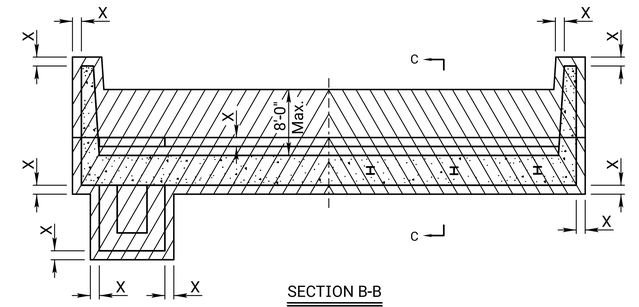
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

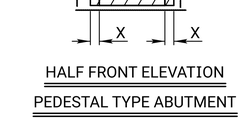
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.



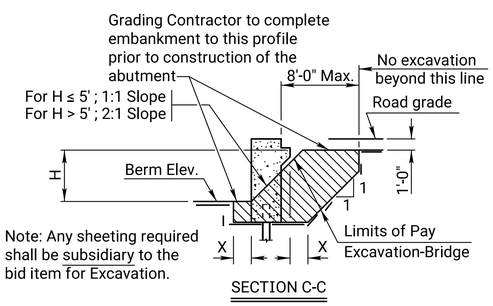
EXCAVATION DETAILS FOR TYPICAL PIERS

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





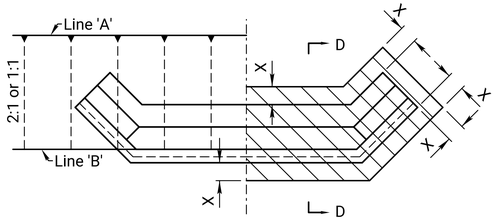
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

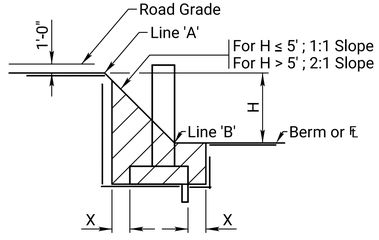


Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

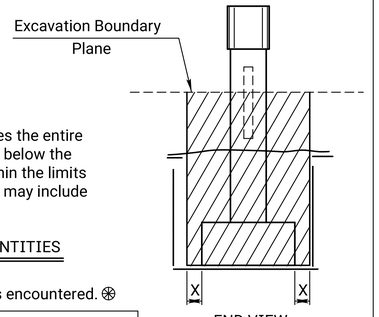
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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

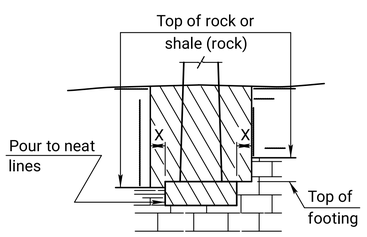
See detail when rock or shale (rock) is encountered. ❀

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.

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

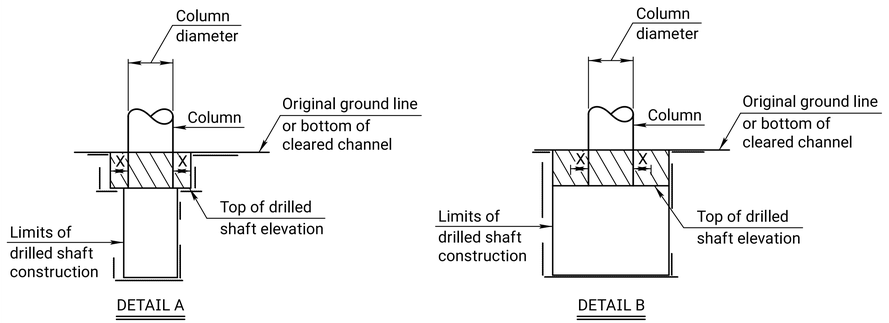
Dimension "Y" shall be 1'-6" unless indicated otherwise on the general plans.



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

(Piers and Abutments)

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



DRILLED SHAFT DETAILS

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BR100B

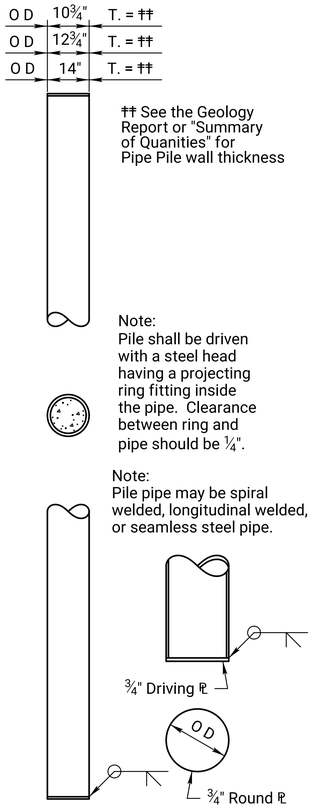
FHWA APPROVAL		04-17-10	APP'D.	Terry L. Fleck
DESIGNED	DETAILED	R.D.R.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	L.R.R.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 06-20-2022 Sh. No. 114

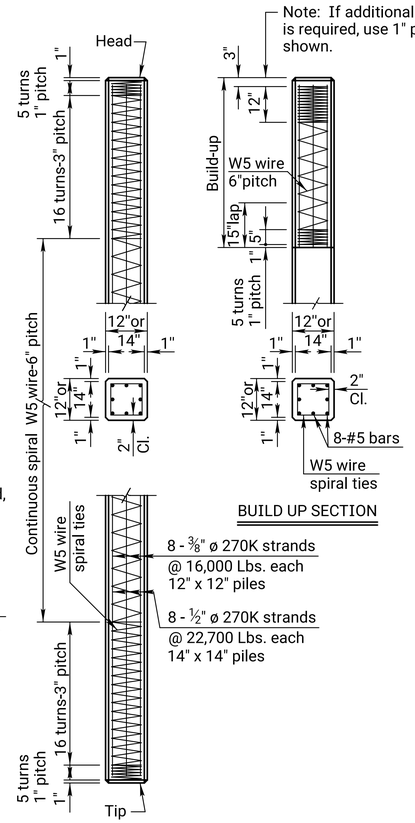
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	115	230

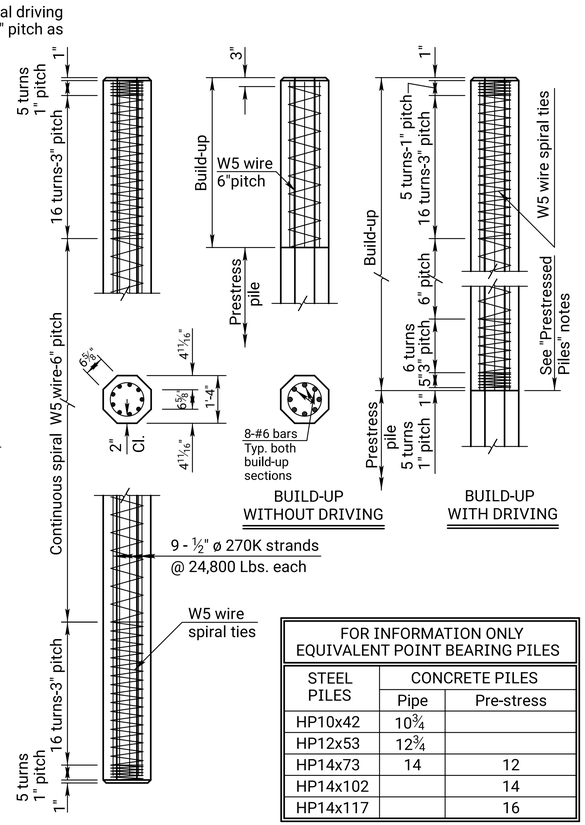


PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



12" OR 14"
PRESTRESSED
CONCRETE PILES

BUILD UP SECTION



16" PRESTRESSED
CONCRETE PILES

BUILD-UP
WITHOUT DRIVING

BUILD-UP
WITH DRIVING

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

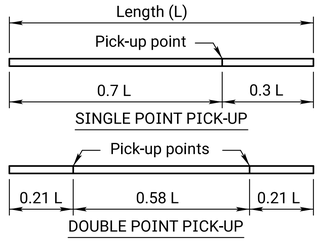
All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

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

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

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

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



PICK-UP POINTS FOR PRESTRESSED PILING

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

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



SHELL PILE POINT

CAST STEEL PILE POINT

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

Weld Symbology Definition

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

Lay full penetration root weld from beveled side of splice.

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

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

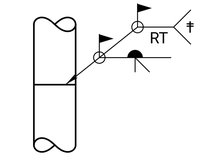
Verify that enough filler metal has been correctly placed in all weld locations to obtain a flush or convex surface with no concavity produced upon completion of the final welds.

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

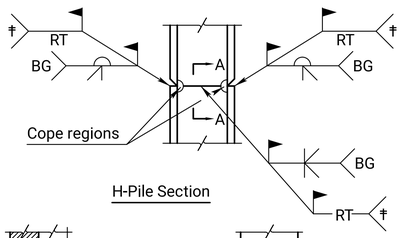
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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

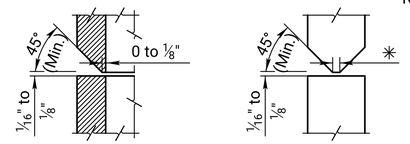
† For integral pile bent abutments and piers, if a splice is located within the regions described above, then the Contractor will test the welds by Radiograph (RT) test methods. Repair and retest any welds not passing the test(s). Each weld tested will have written confirmation of results. Report these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



Pipe Section



H-Pile Section



Section thru Flange

Section A-A
(Thru web)

✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

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

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

BR110

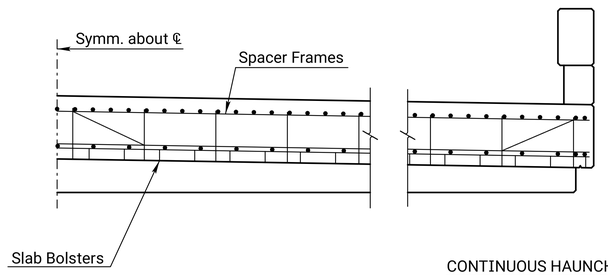
FHWA APPROVAL		10-04-12	APP'D.	Terry L. Fleck
DESIGNED	J.P.J.	DETAILED	QUANTITIES	TRACED R.A.A.
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.

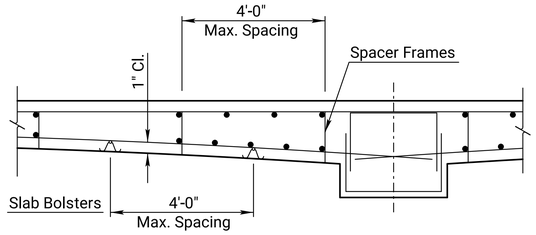
KDOT Graphics Certified

KDOT Graphics Certified 06-20-2022 Sh. No. 115

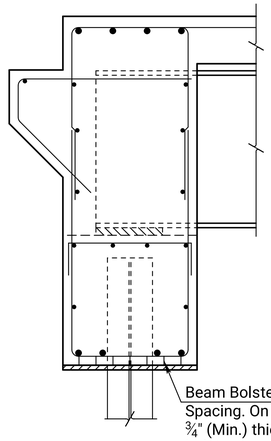
Plotted by : Jorge.Navarro@ks.gov 2-OCT-2025 19:50
File : ka647501bss110.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	116	230



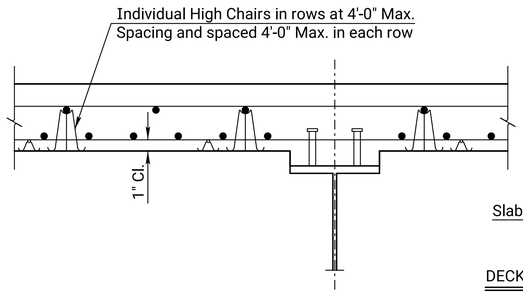


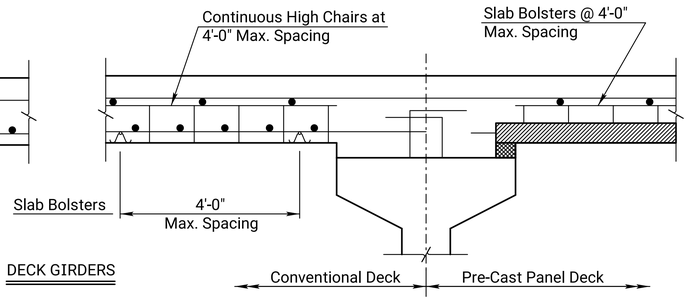
CONTINUOUS HAUNCHED SLAB



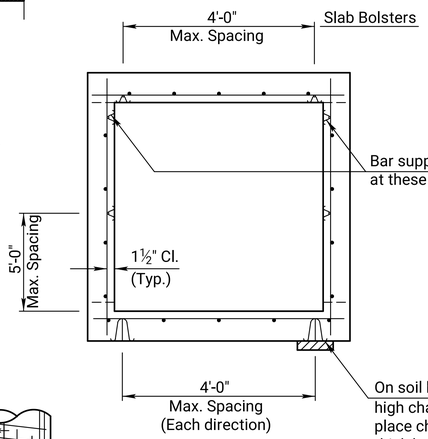
Beam Bolster at 4'-0" Max. Spacing. On soil bearing, place a ¾" (Min.) thick board under bolster.

ABUTMENT

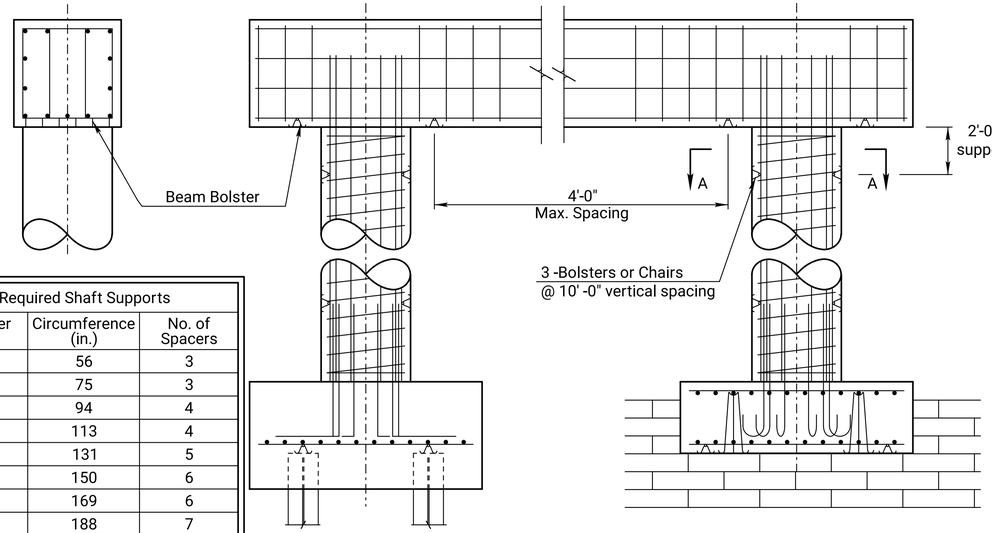




DECK GIRDERS

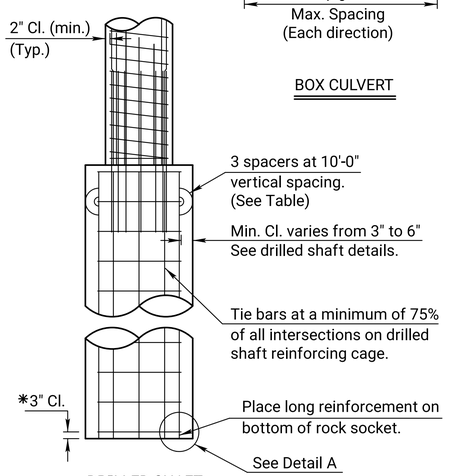


BOX CULVERT

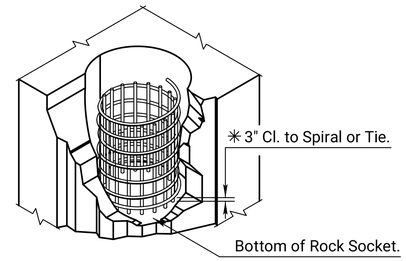


PIER

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

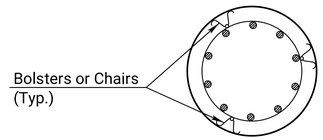


DRILLED SHAFT



DETAIL A

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



SECTION A-A

GENERAL NOTES

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

Use only the following types of bar supports:

1) Wire Bar Supports:

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

2) Plastic Bar Supports

3) Supplementary bars

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

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

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

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BR120

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

KDOT Graphics Certified 06-20-2022 Sh. No. 116

KDOT Graphics Certified

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160-18 KA-6475-01

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	117	230

CONCRETE DITCH LINING

STATION to STATION	SIDE	"T" (IN.)	"W" (FT.)	SQ. YD.
451+70 to 452+41	Rt.	5	Varies	136.9

REMOVAL OF EXISTING STRUCTURES (FOR INFORMATION ONLY)

LOCATION	STATION to STATION	SIDE	REMARKS
℄ US-160	446+56	Lt.	24" x 26.1' CMP
℄ US-160	448+21	Lt.	24" x 28.1' CMP
℄ US-160	451+00	Rt.	24" x 70.3' CMP
℄ US-160	452+81.31 to 456+63.60	Lt.	Existing Guardrail
℄ US-160	454+02.54 to 456+68.34	Rt.	Existing Guardrail
℄ US-160	459+77.50	Lt.	Br. No. 160-18-317.49(024)
℄ US-160	462+83.92 to 464+34.45	Lt.	Existing Guardrail
℄ US-160	462+83.62 to 464+35.54	Rt.	Existing Guardrail
℄ US-160	468+29	Rt.	Existing Curb Inlet
℄ US-160	468+29	℄	Existing 15" x 72.0' Storm Sewer (RCP)
℄ US-160	468+29	Lt.	Existing Curb Inlet
℄ US-160	468+29	Lt.	Existing 15" x 42.1' Storm Sewer (CMP)
℄ US-160	470+52	Rt.	Existing Curb Inlet
℄ US-160	470+52	℄	Existing 15" x 70.3' Storm Sewer (RCP)
℄ US-160	470+52	Lt.	Existing Curb Inlet
℄ US-160	470+52	Lt.	Existing 15" x 39.6' Storm Sewer (CMP)
℄ US-160	472+46.62 to 473+06.74	Lt.	Existing Guardrail
℄ US-160	473+45	Rt.	Existing Curb Inlet
℄ US-160	473+45	℄	Existing 15" x 69.1' Storm Sewer (RCP)
℄ US-160	473+45	Lt.	Existing Curb Inlet
℄ US-160	473+45	Lt.	Existing 15" x 34.2' Storm Sewer (CMP)

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

DRAINAGE STRUCTURES

STATION	SIDE	SIZE	TYPE	ENTRANCE PIPE (FT)					END SECTIONS (EACH)		
				1.5▫'	24"				RCHE 1.5▫'	24" Θ	
446+56	Lt.	2-1.5▫'	RCPHE	68					4		
448+21	Lt.	2-1.5▫'	RCPHE	56					4		
451+00	Rt.	24"	PVCP, PEP, PPP, ACSP, CAP, RCP		176					2	
TOTALS				124	176				8	2	

Θ See Summary of Pipe Culverts Sheet No. 51 for Allowable End Section Types

APPROACH SLAB PAVEMENT QUANTITIES

LOCATION	BRIDGE	STATION to STATION	WIDTH (FEET)	LENGTH (FEET)	CONCRETE PAVEMENT (10.0" UNIF.) (AE) (BR. APPR.) (SQ. YD.)	APPROACH SLAB FOOTING (CU. YD.)
℄ US-160	160-18-317.49(114)	456+10.78 to 456+43.78	60.25	33.00	222.36	35.70
℄ US-160	160-18-317.49(114)	462+97.78 to 463+30.78	60.25	33.00	222.36	35.70
				TOTAL	444.72	71.40

SIDEWALKS

LOCATION	STATION to STATION	SIDE	SIDEWALK CONSTRUCTION 4" (AE) (SQ. YDS.)	SIDEWALK RAMP (SQ. YDS.)
US-160	463+30.78 to 468+39.50	Rt.	340.7	11.3
US-160	469+22.48 to 472+42.94	Rt.	212.7	22.6
US-160	473+27.06 to 479+65	Rt.	399.5	11.3
East Fairground Entrance	50+41.61 to 51+45	Lt.	72.8	—
Total			1,025.7	45.2

CURB AND GUTTER, COMBINED (AE)

STATION to STATION	SIDE	TYPE (I or II)	LENGTH (LN. FT.)
US-160			
453+00 to 456+10.78	Lt.	I	309.8
453+00 to 455+05	Rt.	I	205.6
464+31 to 478+60	Lt.	I	1429.0
478+60 to 478+78	Lt.	II	18.0
478+78 to 479+65	Lt.	I	87.0
463+56 to 468+36.31	Rt.	I	481.9
469+25.63 to 472+39.82	Rt.	I	312.8
473+30.31 to 477+10	Rt.	I	379.2
477+10 to 477+43	Rt.	II	33.0
477+43 to 479+65	Rt.	I	222.0
West Fairground Entrance			
50+29.88 to 50+31.48	Rt.	I	8.2
50+29.88 to 50+31.49	Lt.	I	8.3
50+31.48 to 50+43.50	Rt.	II	17.2
50+31.49 to 50+43.51	Lt.	II	17.2
50+43.50 to 50+54.90	Rt.	I	11.0
50+43.51 to 50+54.90	Lt.	I	11.0
East Fairground Entrance			
50+30.13 to 50+31.65	Rt.	I	8.3
50+30.13 to 50+31.65	Lt.	I	8.3
50+31.65 to 50+43.56	Rt.	II	17.2
50+31.65 to 50+43.56	Lt.	II	17.2
50+43.65 to 50+55.12	Rt.	I	11.2
50+43.65 to 50+55.13	Lt.	I	11.2
Total			3,624.5

CONCRETE SAFETY BARRIER

STATION to STATION	SIDE	CONCRETE BARRIER (TYPE V)	CONCRETE BARRIER (TYPE V) (SPECIAL)
455+05 to 456+43.78	Rt.	105.8	33.0
456+10.78 to 456+43.78	Lt.	—	33.0
472+97.78 to 473+56	Rt.	25.2	33.0
472+97.78 to 474+31	Lt.	100.2	33.0
Total		231.2	132.0

EARTHWORK

PHASE	BALANCE	STATION to STATION	EXCAVATION COMMON CU.YDS.	COMMON VMF	ROCK CU.YDS.	ROCK VMF	ROCK CU.YDS.	ROCK VMF	CONTR. FURN. CU.YDS.	COMPACTION TYPE AA MR-0-5 CU.YDS.	TYPE AA MR-5-5 CU.YDS.	TYPE A MR-5-5 CU.YDS.	NOT SUBGRADED THROUGH CUTS COMM. CU.YDS.	TYPE AA CU.YDS.		REMARKS
1	1	℄ 442+54 to ℄ 451+75	≈173	0.81	17	1.00	—	1.10	—	15	—	14				
1	2	473+50 to 479+65	▱1,511	0.81	1,235	1.00	—	1.10	—	—	—	27				
2A	1	446+00 to 456+43.78	774	0.81	30	1.00	81	1.10	23,230	555	—	18,999				
2A	2	462+97.78 to 471+50	986	0.81	435	1.00	—	1.10	9,614	538	—	9,245				Includes West Fairground Entrance
2B	1	446+00 to 451+75	133	0.81	148	1.00	—	1.10	112	—	20	179				Includes Field Entrance
2B	2	471+50 to 473+50	◆ 86	0.81	53	1.00	—	1.10	—	—	—	—				
2C	2	471+50 to 473+50	293	0.81	210	1.00	—	1.10	24	—	—	256				Includes East Fairground Entrance
3A	1	456+10.78 to 456+43.78	▬ 42	0.81	76	1.00	—	1.10	—	—	—	1				
3A	2	462+97.78 to 471+50	†3,460	0.81	1,199	1.00	—	1.10	—	—	—	4				
3B	1	451+75 to 456+10.78	△ 453	0.81	634	1.00	—	1.10	—	—	—	33				Includes Phillips Sheppard Rd.
3C	1	446+00 to 451+75	ǂ 431	0.81	444	1.00	—	1.10	—	—	2	—				Includes Home Entrances
3C	2	471+50 to 473+50	✳ 270	0.81	180	1.00	—	1.10	—	—	—	11				
4	1	℄ 442+54 to ℄ 453+00	—	0.81	227	1.00	—	1.10	—	—	—	227				Temporary Pavement Removal
4	2	50+00 to 52+15	ᛘ 105	0.81	—	1.00	—	1.10	—	—	—	39				Fairground Gravel Road
		TOTALS	8,717		4,969				32,980	1,108	22	29,035				

≈ Includes 137 Cu. Yds. to be used in Phase 2A Balance 1
▱ Includes 1,478 Cu. Yds to be used in Phase 2A Balance 2
◆ Includes 86 Cu. Yds. to be Wasted
▬ Includes 41 Cu. Yds. to be Wasted
† Includes 3,454 Cu. Yds. to be Wasted
△ Includes 412 Cu. Yds. to be Wasted
ǂ Includes 280 Cu. Yds. to be used in Phase 4 Balance 1 and 149 Cu. Yds. to be Wasted
✳ Includes 257 Cu. Yds. to be Wasted
ᛘ Includes 57 Cu. Yds. to be Wasted

MAILBOX INSTALLATION (FOR INFORMATION ONLY)

LOCATION ROUTE	LOCATION STATION	SIDE	QUANTITY	REMARKS
℄ US-160	446+68.80	Lt.	1	Remove & Reset
℄ US-160	449+70.20	Lt.	1	Remove & Reset
Total			2	

SALVAGED TOPSOIL

Station to Station	Side	Quantity (SQ YD)
446+00 to 456+43.78	Lt	917.6
℄ 442+54 to ℄ 456+43.78	Rt	10,504.6
462+97.78 to 479+65	Lt	3,179.6
462+97.78 to 479+65	Rt	9,214.2
Total		23,816.0

NO.	DATE	REVISIONS	BY	APP'D
02	01-14-08	Rem. Drainage Structure summary	S.W.K.	J.O.B.
01	01-09-91	Detailed on CADD	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

~~RD050~~

FHWA APPROVAL	05-28-08	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

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File : KA647501rpq-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	118	230

FLUME INLET (CONCRETE) & SLOPE DRAIN (STONE)

STATION	SIDE	FLUME INLET (CONC.) (EA.)	SLOPE DRAIN (STONE) (LN. FT.)	REMARKS
463+29	Lt.	1	87.5	Northeast Bridge Approach
TOTALS		1	87.5	

CONCRETE PAVEMENT

STATION TO STATION	SIDE	PAVEMENT WIDTH (FT.)	CONCRETE PAVEMENT (8" UNIFORM) (AE) (NRDJ) (SQ. YD.)	CONCRETE PAVEMENT (6" UNIFORM) (AE) (NRDJ) (SQ. YD.)	4" CTB (SQ. YD.)	4" ATB (TONS)◫	AGGREGATE BASE (AB-3) (6.0") (SQ. YD)	REMARKS
PHASE 1								
446+00 TO 451+75	Rt.	7-9.4	473.0		592.5	128.9	598.5	
473+50 TO 479+65	℄	48.75-60	3,957.8	33.4	4,372.3	951.0	4,416.5	6" Pavement for Levee Access
℄ 442+54 to ℄ 446+00	Rt.	0-9.3	—		—	—	257.5	Temporary Pavement≷
PHASE 2A								
451+75 TO 456+10.78	Rt.	29.4-31	1,498.3		1,623.1	353.0	1,639.5	
463+30.78 TO 471+50	Rt.	31-37	3,191.3		3,459.1	752.4	3,506.8	
468+81	Rt.	32.2-40	575.5		630.1	137.0	636.4	West Fairground Entrance
446+00 to 453+00	Rt.	2-6.5	—		—	—	422.4	Temporary Pavement≷
PHASE 2B								
446+00 TO 451+75	Rt.	13	834.7		822.2	178.9	830.6	
471+50 TO 473+50	℄	12	268.0		268.0	57.4	266.7	
PHASE 2C								
471+50 TO 473+50	Rt.	18	402.0		473.0	102.9	477.8	
472+85	Rt.	26.6-40	524.6		575.6	125.2	581.4	East Fairground Entrance
PHASE 3A								
463+30.78 TO 471+50	Lt.	17-23	1,750.9		2,197.5	478.0	2,219.6	
PHASE 3B								
451+75 TO 456+10.78	Lt.	15.4-17	817.1		952.0	207.1	961.6	
452+45	Lt.	23	206.9		228.8	49.8	231.1	Phillips Sheppard Rd.
PHASE 3C								
446+00 TO 451+75	Lt.	20-22.4	1,307.8		1,414.7	307.7	1,429.0	
471+50 TO 473+50	Lt.	30	670.0		737.0	160.3	744.4	
TOTALS			16,477.9	33.4	18,345.9	3,989.6	19,219.8	

◫ Computed at the rate of 145 lb/cu. ft.

≷ See Sh. No. 119 for HMA Quantities

PAVEMENT EDGE WEDGE (ROCK)

ALIGNMENT	CONSTRUCTION PHASE	STA. TO STA.	QUANTITY (TONS) ⅄
℄ US-160	3B	451+75 to 453+00	5.3
℄ US-160	3C	446+00 to 451+75	34.4
		TOTAL	39.7

⅄ Computed at the rate of 150 lb/cu. ft.

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 A)	1	Each
Foundation Stabilization (Set Price)	1	Cu. Yd.
Mobilization	Lump Sum	Lump Sum
Mobilization (DBE)	Lump Sum	Lump Sum
Removal of Existing Structures	Lump Sum	Lump Sum
Maintenance & Restoration of Haul Roads (Set Price)	Lump Sum	Lump Sum
Concrete for Seal Course (Set Price)	1	Cu. Yd.
Clearing & Grubbing	Lump Sum	Lump Sum
Salvaged Topsoil	23,816	Sq. Yd.
Common Excavation (Rural Small)	8,717	Cu. Yd.
Common Excavation (Contractor Furnished)	32,980	Cu. Yd.
Rock Excavation	4,969	Cu. Yd.
Compaction of Earthwork (Type A) (MR-5-5)	29,035	Cu. Yd.
Compaction of Earthwork (Type AA) (MR-5-5)	22	Cu. Yd.
Compaction of Earthwork (Type AA) (MR-0-5)	1,108	Cu. Yd.
Water (Grading) (Set Price)	1	M. Gal.
End Section (1.5 Sq. Ft.) (RCHE)	8	Each
End Section (24")	5	Each
Entrance Pipe (1.5 Sq. Ft.) (RCPHE)	124	Ln. Ft.
Entrance Pipe (24")	176	Ln. Ft.
Inlet (Type 22 Curb)	6	Each
Curb & Gutter, Combined (AE)	3,625	Ln. Ft.
Concrete Ditch Lining	137	Sq. Yd.
Slope Drain (Stone)	88	Ln. Ft.
Flume Inlet (Concrete)	1	Each
Storm Sewer (24") (RCP)	284	Ln. Ft.
Sidewalk Construction (4") (AE)	1,025	Sq. Yd.
Sidewalk Ramp	45	Sq. Yd.
Temporary Surfacing Material (Aggregate) (Set Price)	1	Cu. Yd.
Impact Attenuator (TL-2) (Temporary)	4	Each
Replacement Modules (Impact Attenuator)	10	Each
Concrete Safety Barrier (Type V)	231	Ln. Ft.
Concrete Safety Barrier (Type V) (Special)	132	Ln. Ft.
Concrete Safety Barrier (Type F3) (Temporary)	2,050	Ln. Ft.
Concrete Safety Barrier (Type F3) (Temporary - Relocate)	3,863	Ln. Ft.
Mailbox Installation (Set Price)	2	Each
Concrete Pavement (6" Uniform) (AE) (NRDJ)	33	Sq. Yd.
Concrete Pavement (8" Uniform) (AE) (NRDJ)	16,478	Sq. Yd.
Concrete Pavement (10" Uniform) (AE) (Br. Appr.)	445	Sq. Yd.
Bridge Approach Slab Footing	71.4	Cu. Yds.
Cement Treated Base (Alt #1)	18,346	Sq. Yd.
Asphalt Treated Base (Alt #2)	18,346	Sq. Yd.
Quality Control Testing (CTB) (Alt #1)	18,346	Sq. Yd.
Quality Control Testing (HMA) (Alt #2)	3,990	Tons
Asphalt Air Void Pay Adjustment (Alt #2)	1	Each
Asphalt Density Pay Adjustment (Alt #2)	1	Each
Asphalt Core (Set Price) (Alt #2)	1	Each
Field Office and Laboratory (Type A) (Alt #2)	1	Each
Quality Control Testing (PCCP)	16,478	Sq. Yd.
Concrete Pavement Composite Pay Adjustment	1	Each
Concrete Pavement Smoothness	1	Each
Concrete Cores (Set Price)	1	Each
Aggregate Base (AB-3) (6.0")	19,220	Sq. Yd.
Pavement Edge Wedge (Rock)	40	Tons
Water (Earthwork Compaction) (Set Price)	1	M. Gal.
Curing Environment	Lump Sum	Lump Sum
Water (Aggregate Base) (Set Price)	1	Sq. Yd.

⚹ Non-Participating

For Inlet Quantities, See Sh. No. 39
For Bridge Quantities, See Sh. No. 52
For Surfacing Quantities, See Sh. No. 119
For Temporary Erosion & Pollution Control Quantities, See Sh. No. 120
For Seeding Quantities, See Sh. No. 129
For Lighting Quantities, See Sh. No. 135
For Signing Quantities, See Sh. No. 149
For Pavement Marking Quantities, See Sh. No. 161
For Temporary Traffic Control Quantities, See Sh. No. 192
For Temporary Concrete Safety Barrier Quantities, See Sh. No. 193

NO.	DATE	REVISIONS	BY	APP'D
02	01-14-08	Rem. Drainage Structure summary	S.W.K.	J.O.B.
01	01-09-91	Detailed on CADD	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

~~RD050~~

FHWA APPROVAL	05-28-08	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	119	230

Note to Designer: Report the quantity for temporary concrete safety barrier in linear feet.
The quantity is calculated by multiplying the number of barrier units by 12'-6".

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-0-5)".

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

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

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

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

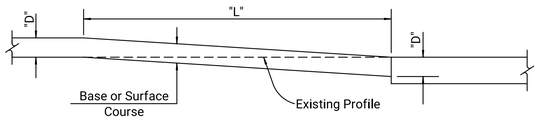
The base course shall be constructed to the plan thickness as shown.

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				
CONSTRUCTION PHASE	STA. TO STA.	HMA COMMERCIAL GRADE (CLASS A) (6") (TONS) ⫻	SURFACING MATERIAL (AB-3) (6") (TONS) △	NOTES
1	℄ 442+54 to ℄ 446+00	73.1		Temporary Pavement ⬙
2A	446+00 to 453+00	149.4		Temporary Pavement ⬙
2B	451+00	47.7		Field Entrance
3C		23.6		Home Entrance Sta. 446+56
3C		19.2		Home Entrance Sta. 448+21
3C		20.1		Home Entrance Sta. 449+37
4			107.7	Fairground Gravel Road
	TOTALS	333.1	107.7	

⫻ Computed at the rate of 145 lb/cu. ft.
△ Computed at the rate of 156 lb/cu. ft.
⬙ See Sh. No. 118 for Aggregate Base (AB-3) Quantities

RECAPITULATION OF QUANTITIES		
ITEM	TOTAL	UNIT
HMA Commercial Grade (Class A)	333	TON
Surfacing Material (AB-3)	108	TON

NO.	DATE	REVISIONS	BY	APP'D
01	02-11-15	Initial Release	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES (SURFACING)

~~RD051~~

FHWA APPROVAL	09-16-15	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

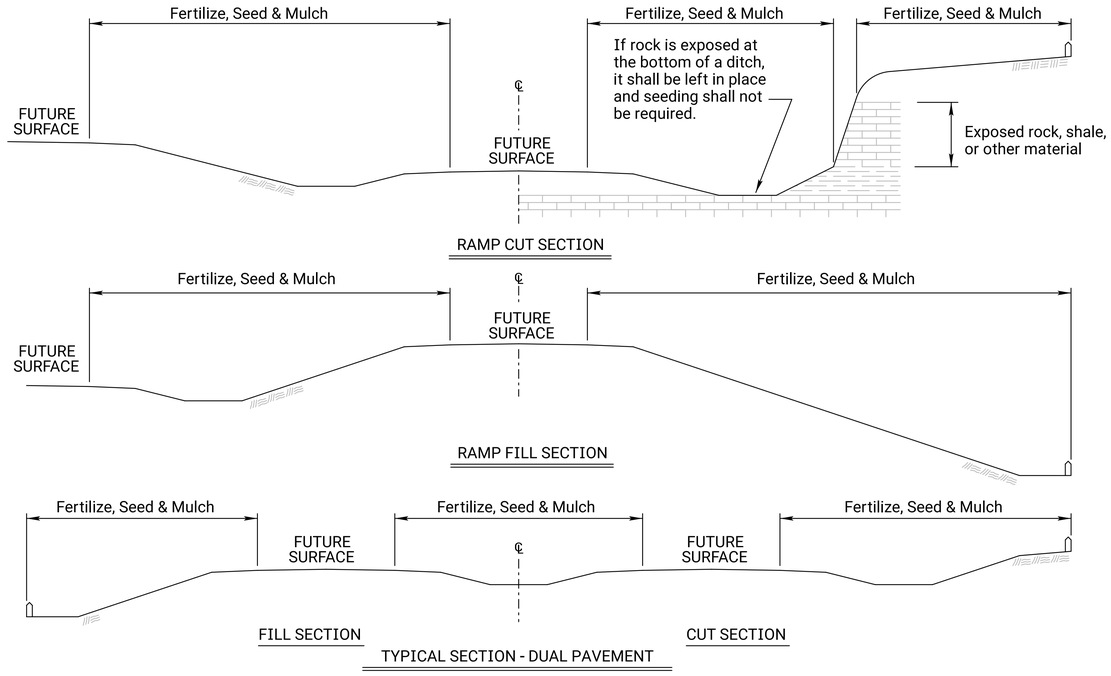
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Sh. No. 119

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	120	230



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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150	150	5.34	0.20	Temporary Fertilizer (16-20-0)	831.0	LB
50		5.34		Temporary Seed (Annual Ryegrass)	267.0	LB
	42.5		0.20	Soil Erosion Mix	8.5	LB
				Erosion Control (Class 1, Type D)	145	SQ YD
				Erosion Control (Class 2, Type E)		SQ YD
				Erosion Control (Class 2, Type F)	600	SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)	170	CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")	129	LF
				Biodegradable Log (12")	172	LF
				Biodegradable Log (20")	1495	LF
				Filter Sock (8")		LF
				Filter Sock (12")	129	LF
				Filter Sock (18")	1136	LF
				Geotextile (Erosion Control)	4737	SQ YD
				Silt Fence	1076	LF
				SWPPP Design †	1	LS
				SWPPP Inspection †	TBD	EACH
				Water Pollution Control Manager †	TBD	EACH
900 lbs / acre		5.34		Mulch Tacking Slurry	7209	LB
2 tons / acre		5.34		Mulching	16.0	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: lbs/ac SHLD	Acres SHLD	Bid Item	Quantity	Unit
2.5	0.20	Seed (Blue Grama Grass Seed) (Lovington)	0.50	Lbs
40	0.20	Seed (Buffalograss Seed) (Treated)	8.00	Lbs
42.5	lbs/ac	Totals	8.50	Lbs

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

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

NO.	DATE	REVISIONS	BY	APP'D
03	08-03-20	Added Note	M.R.D.	M.L.
02	12-01-17	Revised Standard	M.R.D.	S.H.S.
01	06-01-17	Revised Standard	M.R.D.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

~~LA852A~~

FHWA APPROVAL			01-26-18	APP'D.	Scott H. Shields
DESIGNED	M.R.D.	DETAILED	M.R.D.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK.

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	121	230

EROSION CONTROL- CLASS 1, TYPE D

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
446+35.87 TO 446+49.50	LT	13.63	15	23.0
446+62.47 TO 446+74.26	LT	11.79	14	18.0
447+70.15 TO 447+78.71	LT	8.56	14	13.0
447+87.39 TO 448+03.88	LT	16.49	12	22.0
449+94.39 TO 450+13.84	RT	19.45	17	36.0
451+57.29 TO 451+75.70	RT	18.41	16	33.0
TOTAL EROSION CONTROL (CLASS 1, TYPE D) = 145.0				

EROSION CONTROL- CLASS 2, TYPE F

STATION TO STATION	SIDE	LENGTH	WIDTH	SQ YARD
446+00.00 TO 450+00.00	RT	400	13.5	600
TOTAL EROSION CONTROL (CLASS 2, TYPE F) = 600				

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File : KA647501la852a-ec.dgn

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

EROSION CONTROL
SEEDING-SODDING

~~LA852A-EC~~

FHWA APPROVAL				APP'D.	Scott H. Shields		
DESIGNED	M.R.M.	DETAILED	M.R.M.	QUANTITIES		TRACED	M.R.M.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

KDOT Graphics Certified 07-30-2025 Sh. No. 121

KDOT Graphics Certified

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	122	230

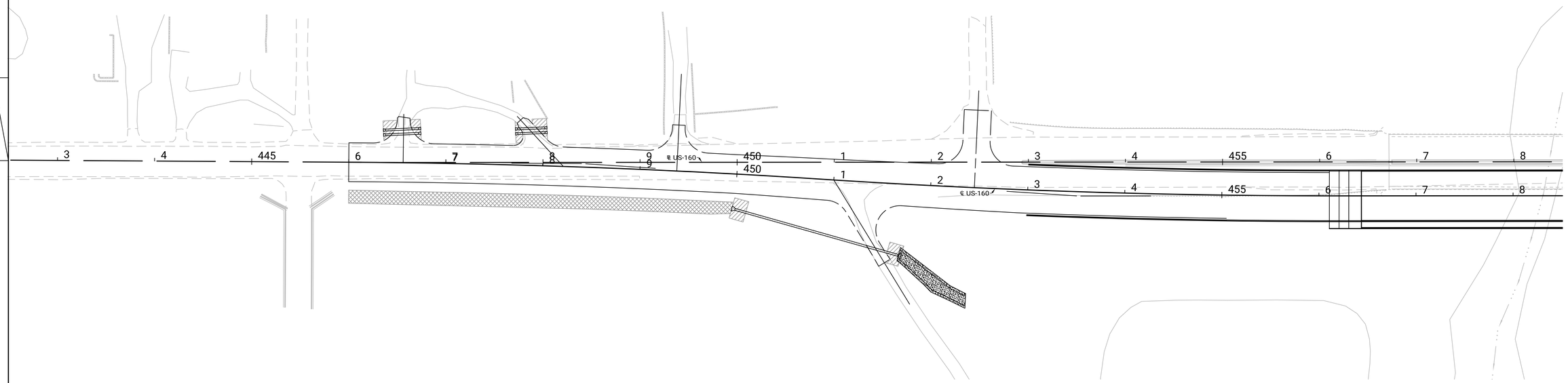
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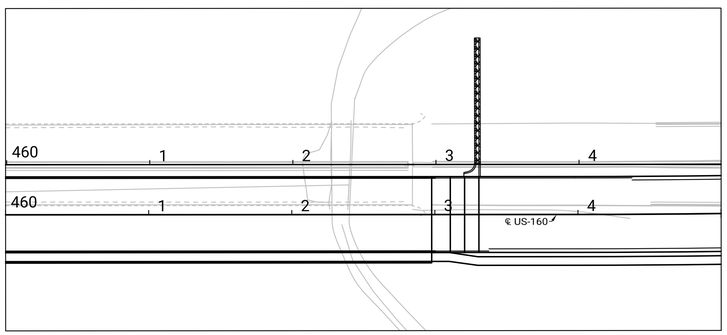
PLAN: Lat. & Long. 50' 0 50' 100'

PROFILE: Horiz. same as above

Vert. 5 0

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED
REFERENCES





Class I Erosion Control (Type D)

Class II Erosion Control (Type F)

Concrete Ditch Lining

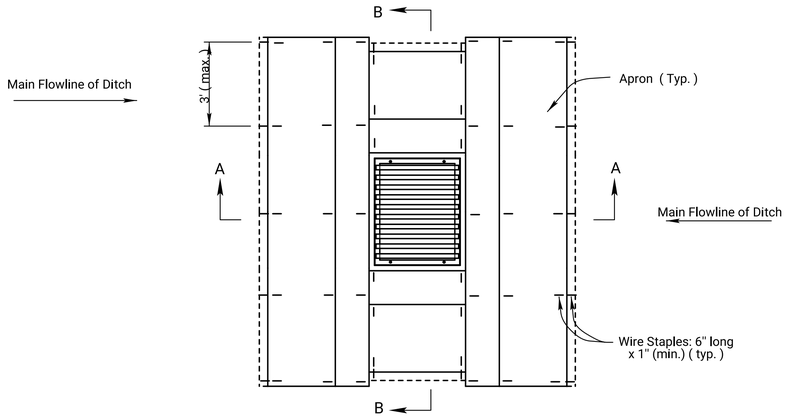
Slope Drain (Stone)

KANSAS DEPARTMENT OF TRANSPORTATION

PROPOSED EROSION CONTROL PLAN

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:42
File : KA647501rec-01.dgn

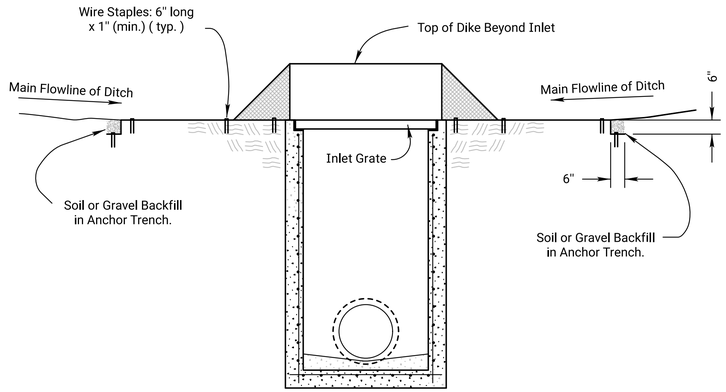
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	123	230



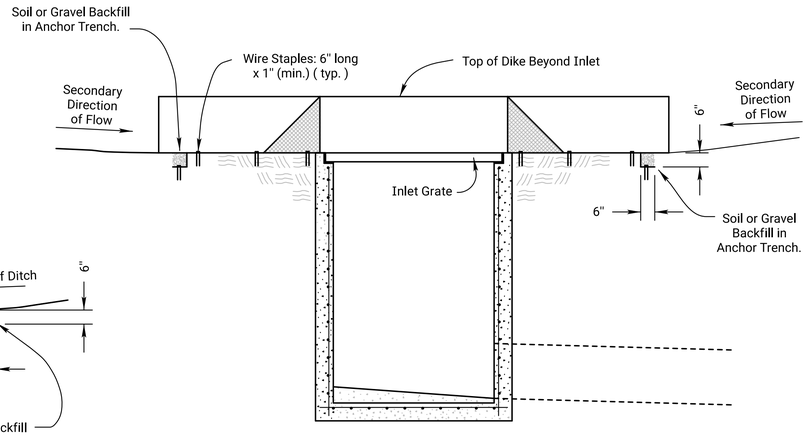
PLAN

TEMPORARY I NLET SEDI MENT BARRI ER
(TRI ANGULAR SI LT DI KE METHOD)

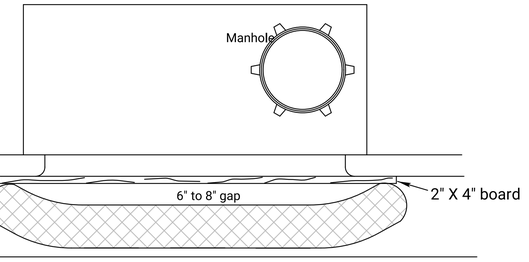
NO SCALE

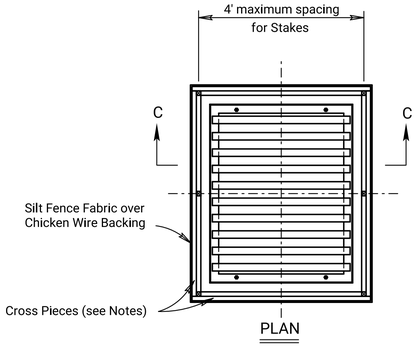


SECTION A - A

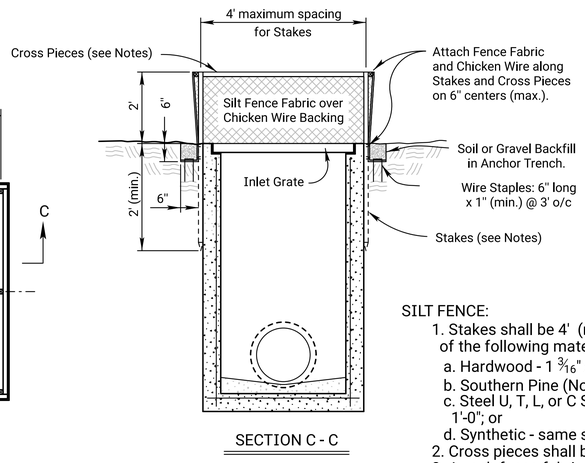


SECTION B - B





PLAN



SECTION C - C

TEMPORARY I NLET SEDI MENT BARRI ER
(SI LT FENCE METHOD)

NO SCALE

SILT FENCE:

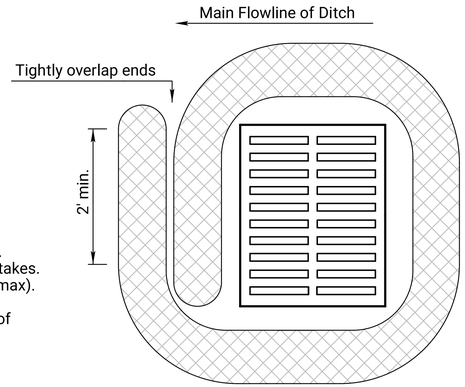
1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 3/16" x 1 3/16";
   b. Southern Pine (No. 2) - 2 5/8" x 2 5/8";
   c. Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Cross pieces shall be of same material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

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

Rock = approximately 1" to 2" diameter

CURB INLET PROTECTION

1. If multiple gravel bags are required, place them in such a way that no gaps are evident.
2. Height of bags (8" minimum diameter) must not be above top of curb.
3. Alternative products may be used other than gravel bags such as the "Gutter Buddy". Products must be approved by the Engineer.
4. Curb inlet protection will be measured and paid for as Filter Sock.



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

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

Stake every 4'

Material Requirements
Use 100% shredded mulch or other non-compost biodegradable material as fill for logs.
No compost or fines.
No hay or straw.
Do not use material which prohibits water infiltration.
Log Mesh: Use mesh with ¼" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

NO.	DATE	REVISIONS	BY	APP'D
03	09-26-19	Changed Direction of Main Flowline of Ditch Arrow	M.R.D.	S.H.S.
02	03-10-15	Revised Standard	R.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL, TEMPORARY INLET SEDIMENT BARRIER (SILT FENCE) TEMP. INLET SEDIMENT BARRIER (T.S.D.)

LA852C

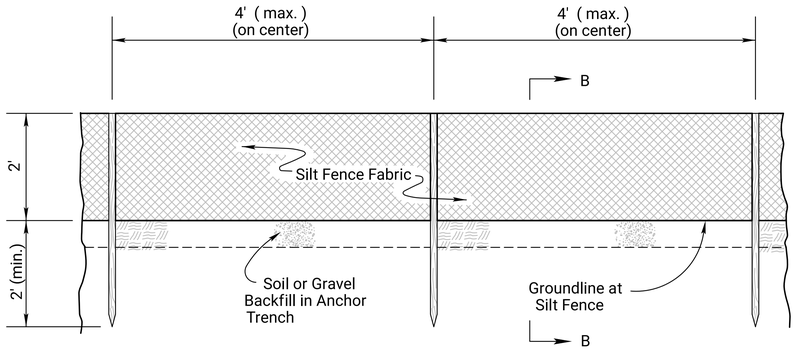
FHWA APPROVAL			03-10-15	APP'D.	Scott H. Shields		
DESIGNED	R.A.	DETAILED	R.A.	QUANTITIES	TRACED		
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK.		

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File : KA647501la852c.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	124	230



TYPICAL ELEVATION

SILT FENCE BARRIER

NO SCALE

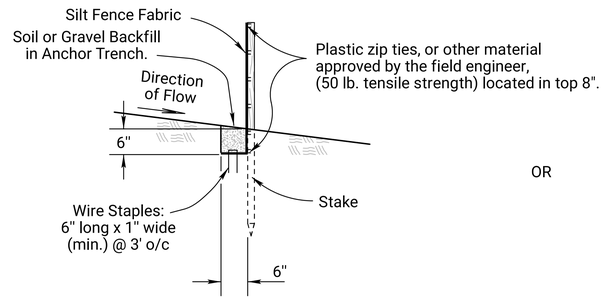
INSTALLATION NOTES

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 aperformance basis.
3. Use of high flow material is acceptable.
4. Refer to plan sheets to estimate the length of silt fence required.

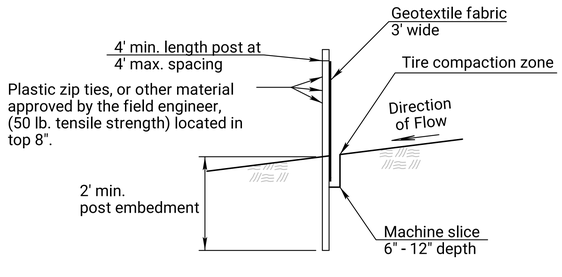
BIODEGRADABLE LOG OR FILTER SOCK

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



SECTION B-B

OR



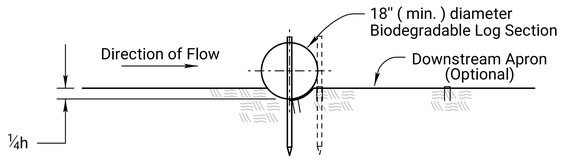
SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions

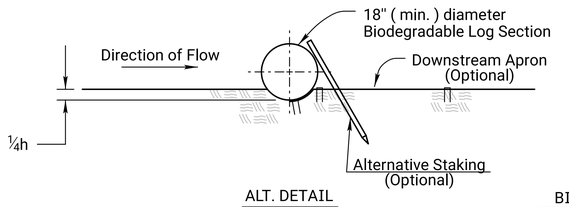
Slope Gradient	PRODUCT	9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
	≤4H:1V	40	60	80
	3H:1V	30	45	60

Deviations should be approved by the Field Engineer.

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

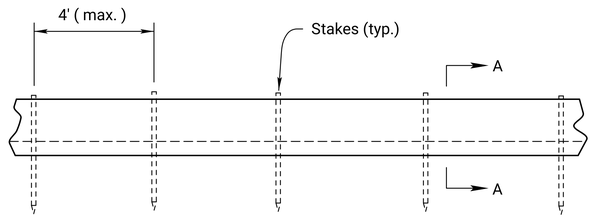


SECTION A - A



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
03	06-28-16	Revised Standard	R.A.	S.H.S.
02	03-01-15	Revised Standard	R.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE

LA852D

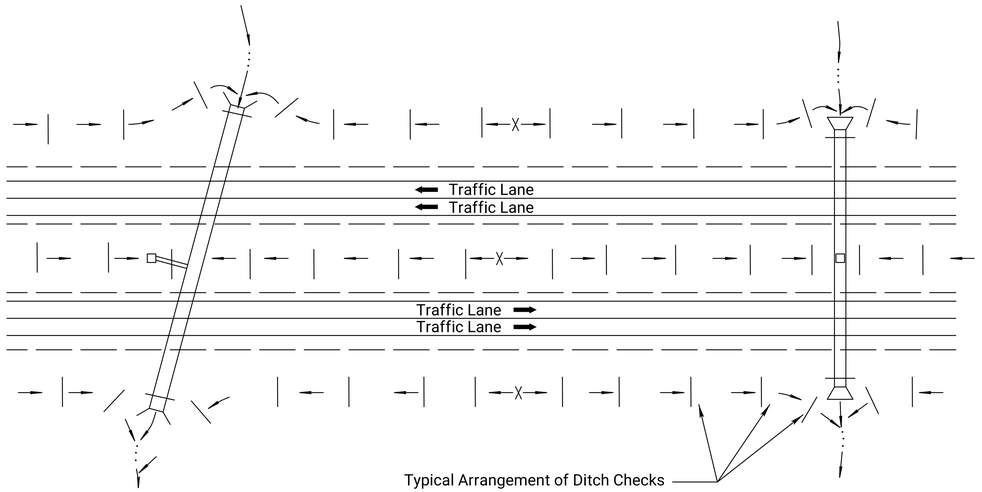
FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields	
DESIGNED	S.H.S.	DETAILED	R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.		QUAN.CK.	TRACE CK.

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File : KA647501la852d.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	125	230



Typical Arrangement of Ditch Checks

TYPICAL DITCH CHECK LAYOUT PLAN

NO SCALE

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

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

GENERAL NOTES

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
03	08-10-16	Revised Standard	R.A.A.	S.H.S.
02	06-28-16	Revised Standard	R.A.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL DITCH CHECKS

LA852E

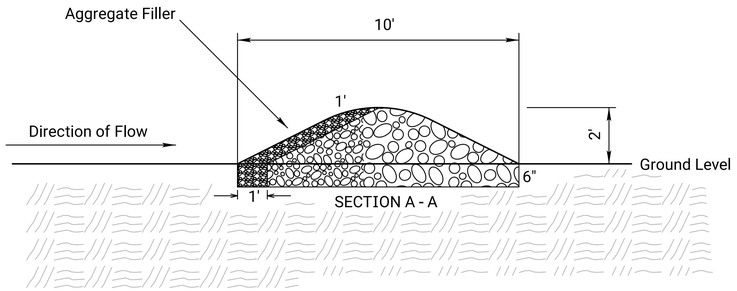
FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields			
DESIGNED	S.H.S.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

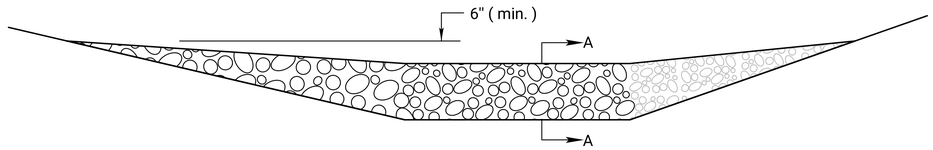
KDOT Graphics Certified 06-18-2022 Sh. No. 125

KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:52
File : KA647501la852e.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	126	230





TYPICAL ELEVATION

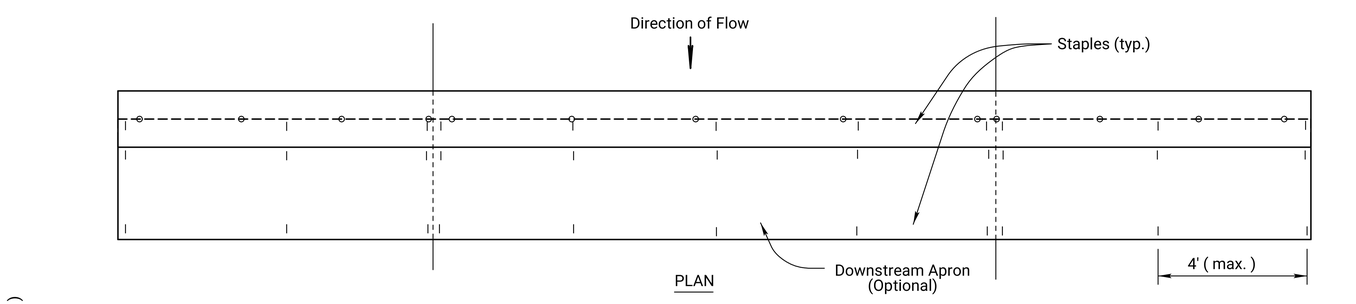
ROCK DITCH CHECK

NO SCALE

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

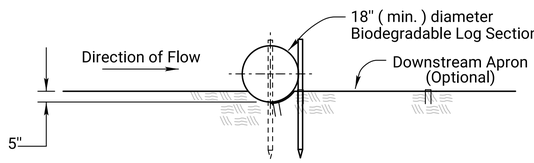
ROCK DITCH CHECK NOTES

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

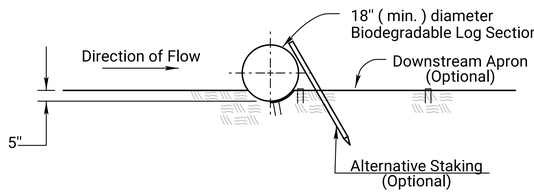


PLAN

TYPICAL ELEVATION



SECTION B - B



ALT. DETAIL
OPTIONAL

BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE

BIODEGRADABLE LOG DITCH CHECK NOTES

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

NO.	DATE	REVISIONS	BY	APP'D
03	11-19-20	Revised Standard	M.R.D.	M.L.
02	08-10-16	Revised Standard	R.A.A.	S.H.S.
01	10-21-15	Revised Standard	R.A.A.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

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

LA852G

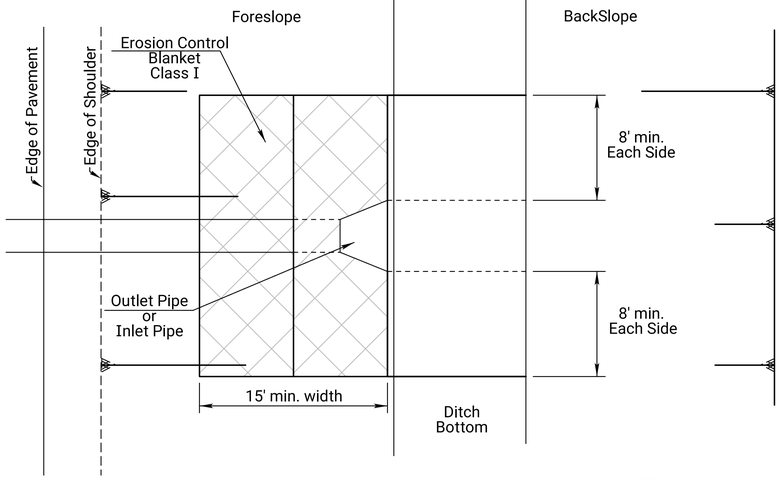
FHWA APPROVAL			11-19-20	APP'D.		Mervin Lare	
DESIGNED	M.L.	DETAILED	D.K.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	M.L.	DETAIL CK.	M.L.	QUAN.CK.		TRACE CK.	R.A.A.

KDOT Graphics Certified 07-14-2022 Sh. No. 126

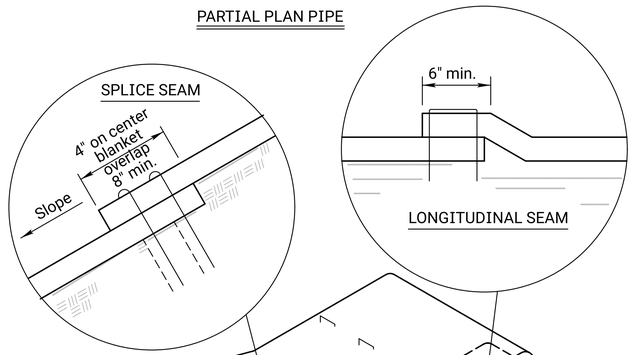
KDOT Graphics Certified

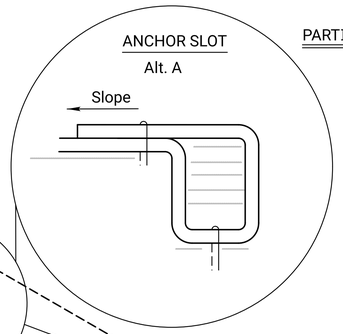
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:48
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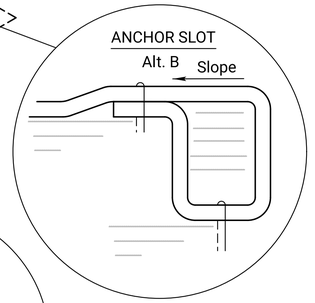
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	127	230

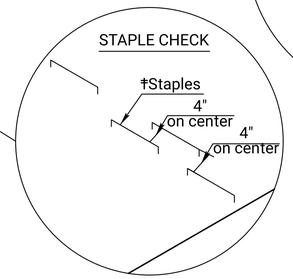


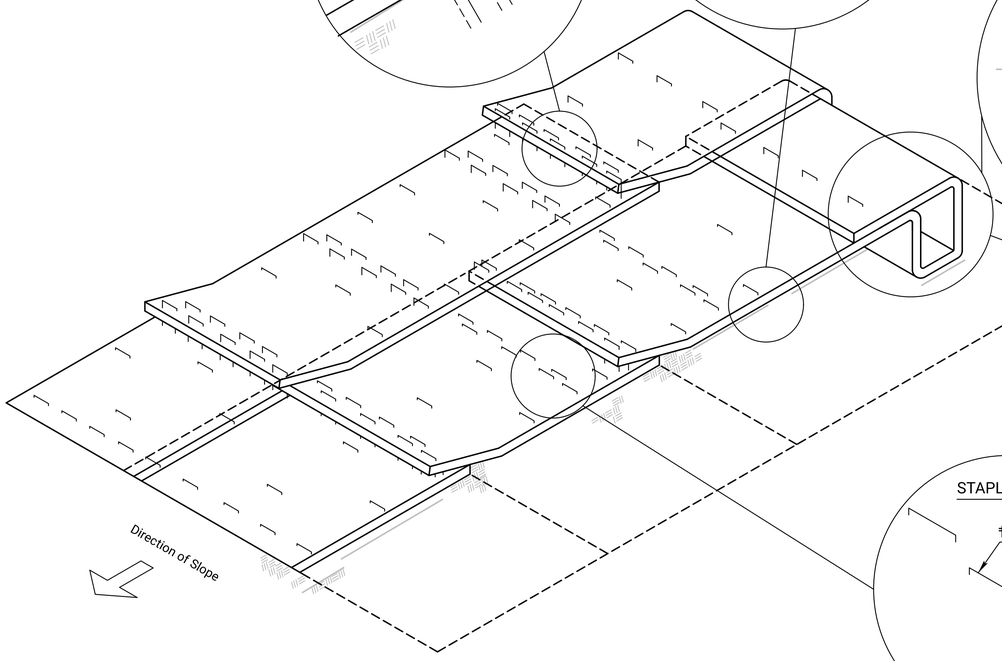
PARTIAL PLAN PIPE





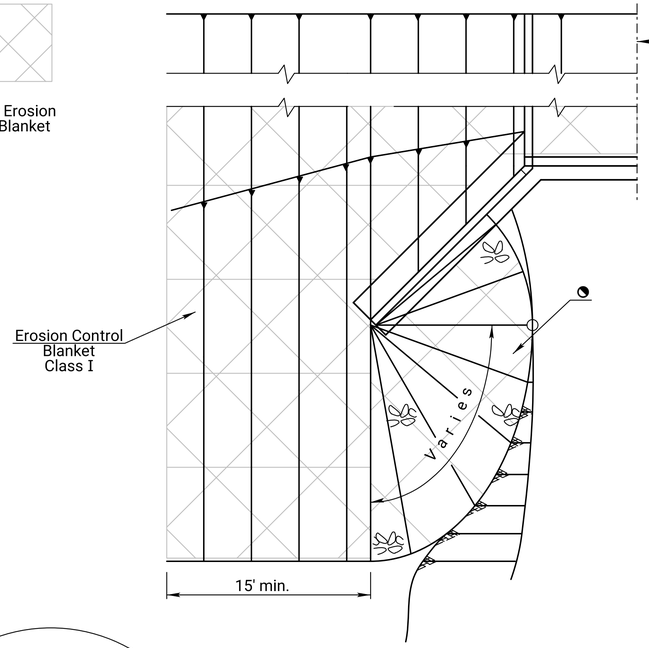






ISOMETRIC VIEW

Limits of Erosion Control Blanket



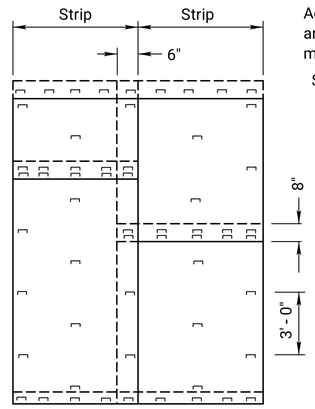
PARTIAL PLAN BOX CULVERT

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

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

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

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



PLAN VIEW - ANCHORING DIAGRAM

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

Single post ring and shank staple is acceptable.

NO.	DATE	REVISIONS	BY	APP'D
04	03-01-15	Revised Standard	R.A.A.	S.H.S.
03	02-23-15	Revised Standard	R.A.A.	S.H.S.
02	09-15-14	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL EROSION CONTROL CLASS 1 SLOPE PROTECTION

LA855

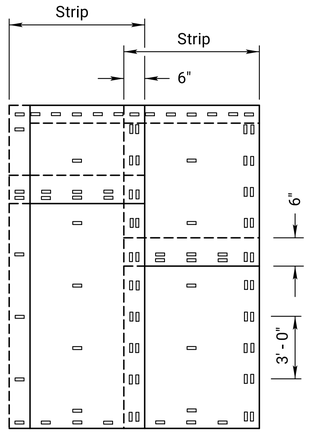
FHWA APPROVAL			03-10-15	APP'D.	Scott H. Shields		
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.		DETAIL CK.		QUAN.CK.		TRACE CK.	R.A.A.

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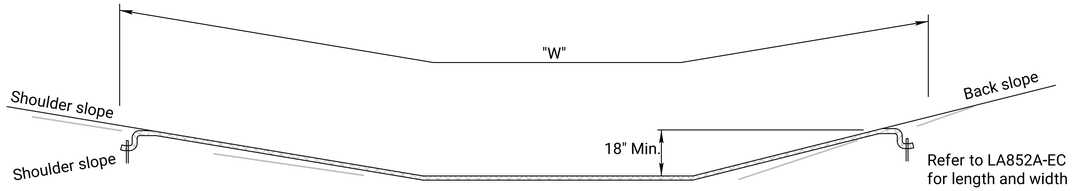
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Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:42
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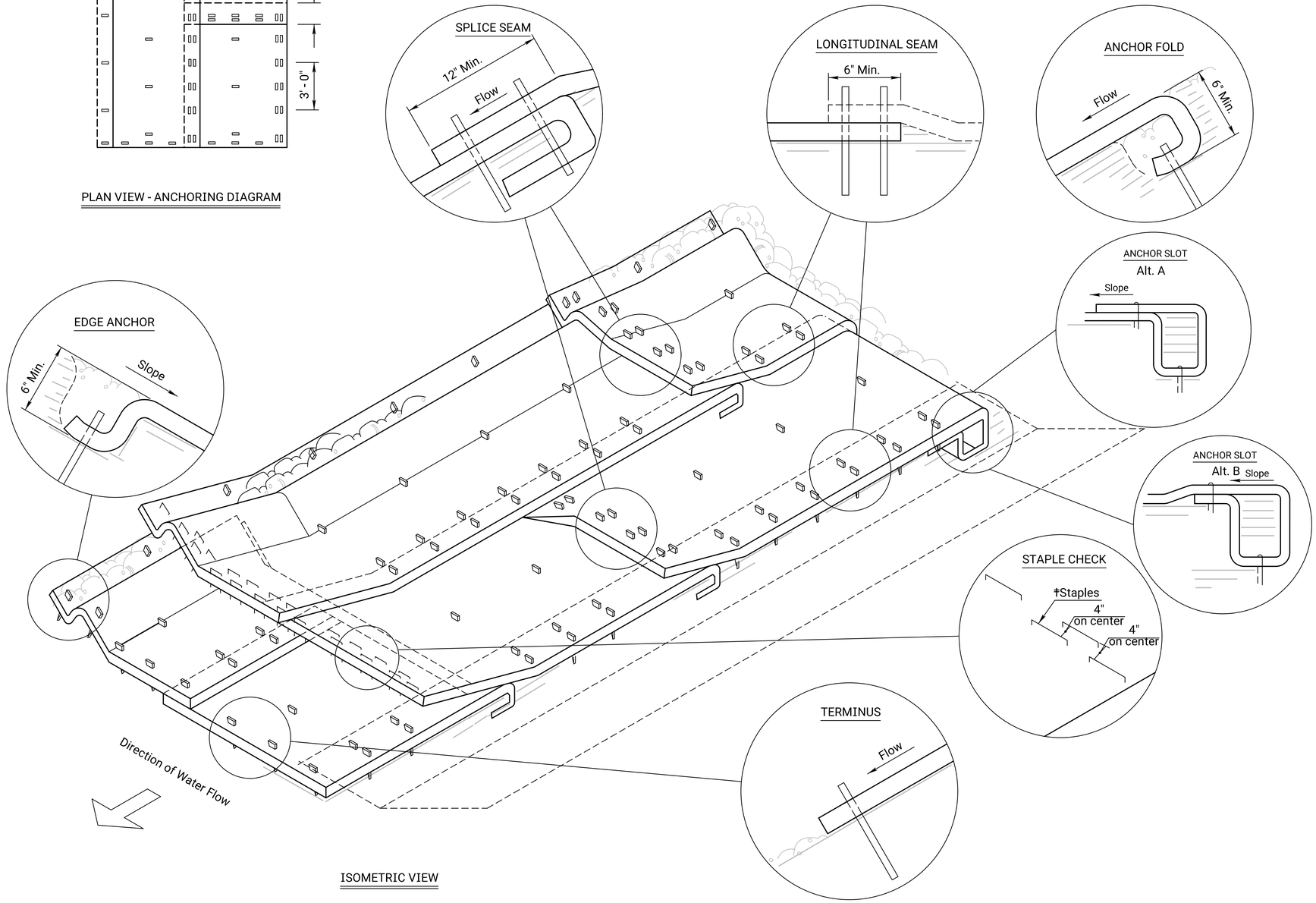
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	128	230



PLAN VIEW - ANCHORING DIAGRAM



CROSS SECTION (Ditch Lining)



ISOMETRIC VIEW

INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

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

1. ANCHOR FOLD: The top of the mat should be folded under, buried and secured with approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot, 6 inches wide x 6 inches deep; anchored in the bottom of the slot, backfilled, and the mat folded over the top as shown in detail.

2. LONGITUDINAL SEAMS: The adjacent edges of the mat should overlap a minimum of 6 inches, with anchors catching the edges of both mats.

3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 12 inches in direction of water flow. Stagger splice seams.

4. STAPLE CHECK: ‡Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.

5. EDGE ANCHOR: Lay outside edge of mat into trench at top of side slope. Anchor at 3 foot intervals along trench.

6. TERMINUS: The bottom edge of the mat shall be anchored in place with anchors spaced at 9 inch intervals along the terminating edge.

7. TYPICAL ANCHORS: Anchor design shall be as recommended by the manufacturer.

NO.	DATE	REVISIONS	BY	APP'D
04	09-25-15	Modified Staple Check	R.A.A.	S.H.S.
03	09-15-14	Revised Standard	R.A.A.	S.H.S.
02	03-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
EROSION CONTROL CLASS 2
FLEXIBLE CHANNEL LINER

LA856

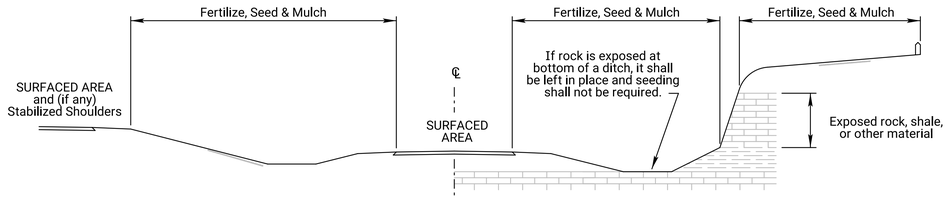
FHWA APPROVAL			11-02-15	APP'D.	Scott H. Shields		
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DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 06-20-2022 Sh. No. 128

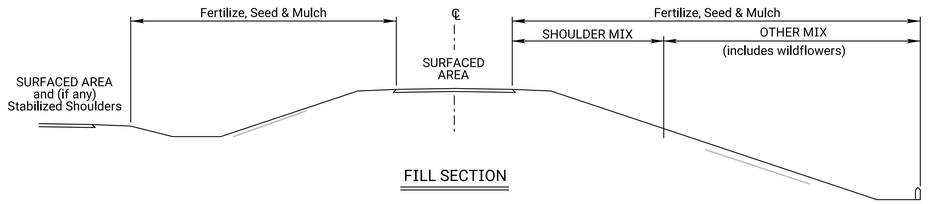
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:56
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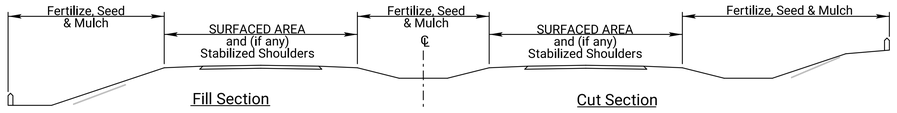
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	129	230



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

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed ⅛" -¼". Place the wildflower seed in a separate seed box and drill (cover) seed 1/16" maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE				ACRES				BID ITEM	QUANTITY	UNIT
SHLDR	OTHER			SHLDR	OTHER					
50				5.34				Fertilizer 15-30-15	267.0	Lbs
2.5				5.34				Seed (Blue Grama Grass Seed) (Lovington)	13.4	Lbs
40				5.34				Seed (Buffalograss Seed) (Treated)	213.6	Lbs
								Mulching *		

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
02	11-25-20	Updated Seeding / Sodding Periods Charts	M.R.D.	M.L.
01	08-03-20	Revised Standard	M.R.D.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING
SUMMARY OF SEEDING QUANTITIES

LA850

FHWA APPROVAL	05-06-19	APP'D.	Mervin Lare
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 09-26-2025 Sh. No. 129

KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 26-SEP-2025 19:56
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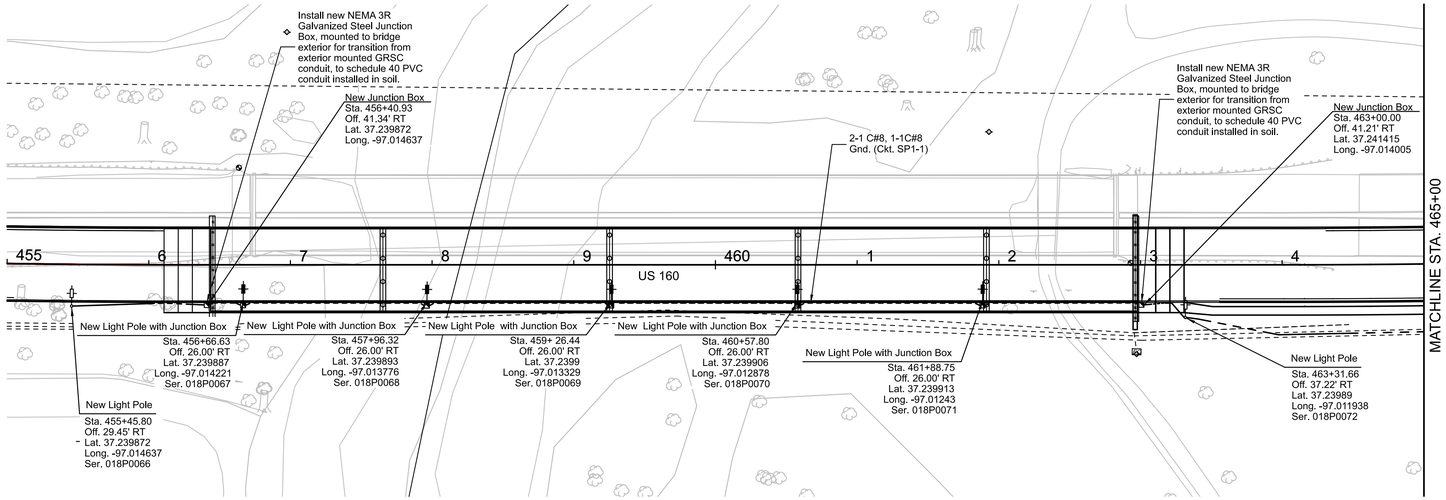
LIGHTING LEGEND

- New 30' Light Pole With 6' Arm, Mounted To Foundation
- New 30' Light Pole With 6' Arm, Mounted To Bridge
- New Pull Box
- New 100A Power Controller
- New 2" GSRC Conduit With Conductors As Shown
- New 3" HDPE Schedule 80 Conduit, Bored, Under Roadway With Conductors As Shown
- New 2" Schedule 40 PVC Conduit, Trenched, With Conductors As Shown

GENERAL NOTES

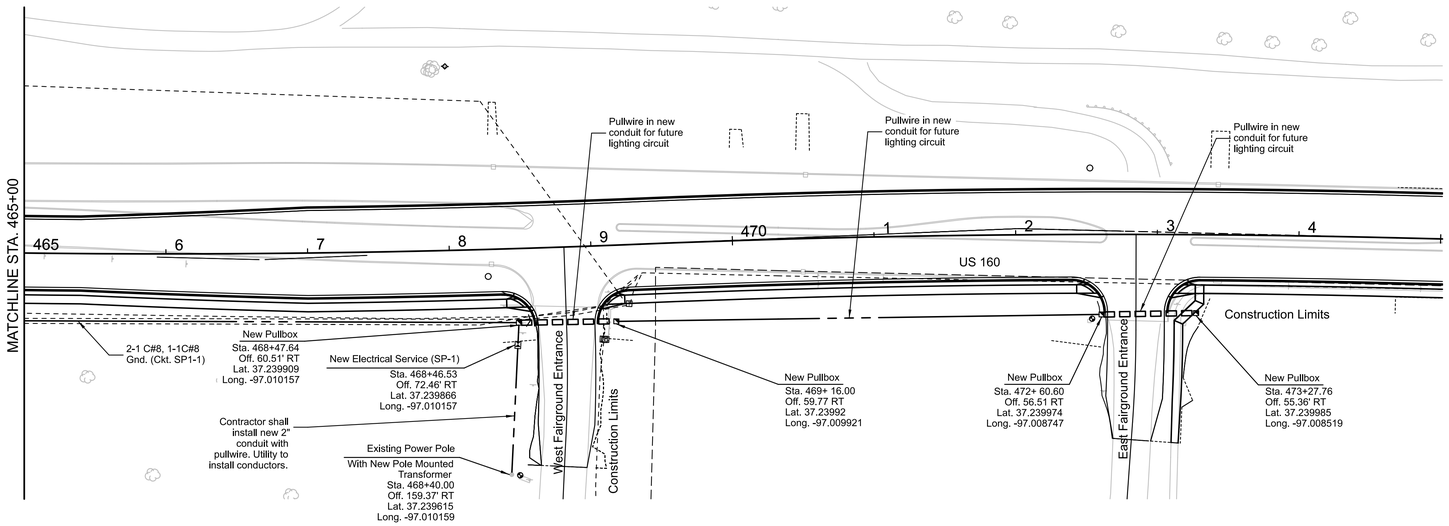
1. Lighting equipment and materials on this sheet shall meet KDOT standards and specifications.
2. At bridge expansion joints and other locations where the bridge could shift, convert conduit from Galvanized Rigid Steel Conduit (GRSC) to Liquidtight Flexible Metal Conduit (LFMC) to avoid damage to lighting infrastructure. Quantity shall be as noted under the Expansion Joint item in the lighting quantity table.
3. Coordinate exact light and pullbox locations during construction, adjusting as needed to meet KDOT clearance requirements from roadway and pavement edges, and to match detailing of the bridge plans.
4. Light fixture shall be a Leotek GreenCobra Midsize LED Streetlight, J-Series, specification number GCM3-60J-MV-40K-3R-XX-170, or approved equal. Color shall match existing light pole colors. Contractor shall verify fixture and pole color with client, prior to purchase.
5. All light poles shall be aimed to be perpendicular to the roadway edge.

3" HDPE (Sched. 80) TO BE INSTALLED		
Station	Location	Lin. Ft.
468+81.00	West Fairground Entrance	70
472+85.00	East Fairground Entrance	70
Total		140



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

LIGHTING CONTROLLER "SP-1" 120/240V, 1PH, 3W, SERVICE		
Main Breaker	100	AMP
Secondary Breaker		
Circuit No. 1	2-POLE / 20	AMP
Circuit No. 2		AMP
Circuit No. 3		AMP
Circuit No. 4		AMP
Electrically Held Contactors		
Circuit No. 1	2-POLE / 30	AMP
Circuit No. 2		AMP
Circuit No. 3		AMP
Circuit No. 4		AMP



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

NOTE: The Contractor shall contact David Madrigal at 620-221-5600 for utility requirements and shall install meter and conduit per design and service standards. The contractor shall be responsible for any fees associated with the power connection.

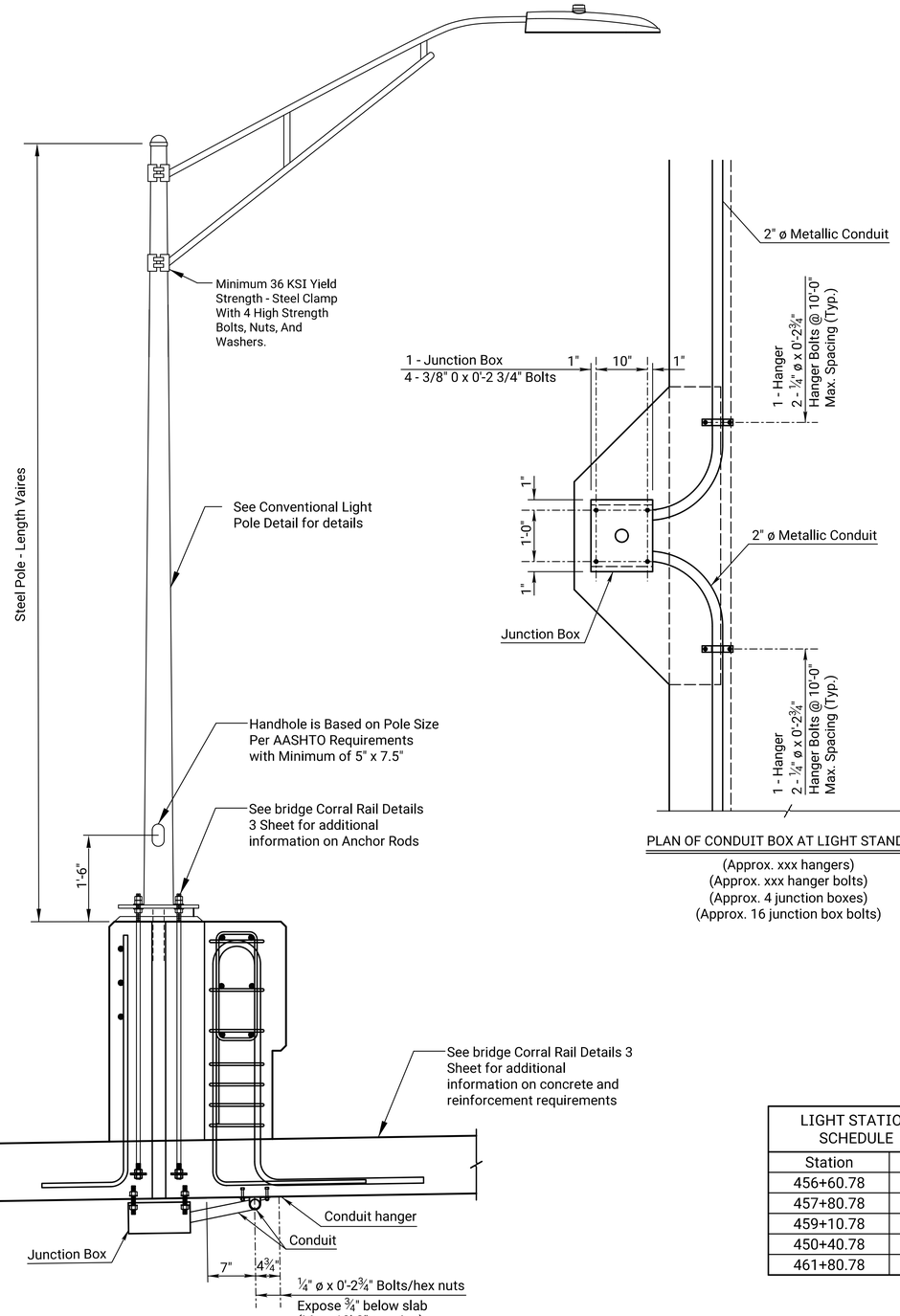
KANSAS DEPARTMENT OF TRANSPORTATION

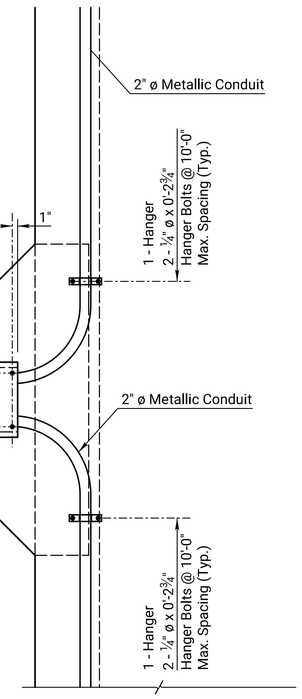
US160
LIGHTING PLAN

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : ZJDickson 17-OCT-2025 10:05
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KA-6475-01	2025	131	230

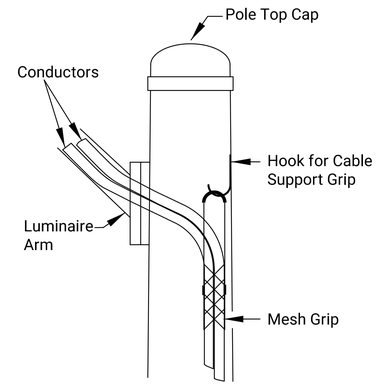




PLAN OF CONDUIT BOX AT LIGHT STANDARD

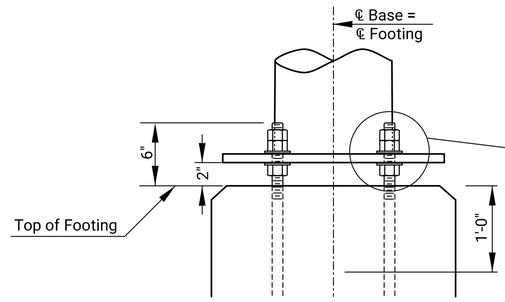
(Approx. xxx hangers)
(Approx. xxx hanger bolts)
(Approx. 4 junction boxes)
(Approx. 16 junction box bolts)

LIGHT STATION SCHEDULE	
Station	Side
456+60.78	RT
457+80.78	RT
459+10.78	RT
450+40.78	RT
461+80.78	RT

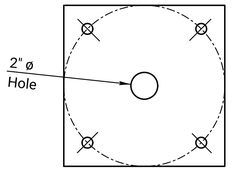


CABLE SUPPORT GRIP

NOTE: The cable support grip shall be installed on the hook supplied within the light pole as shown above.



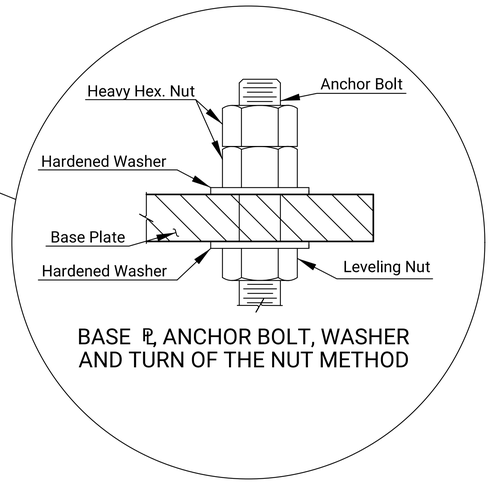
TOWER ATTACHMENT DETAILS



Bolt pattern and anchor rod layout shall match manufacturer recommendations

Plan

ANCHOR BOLT
(5 Required)



BASE ℙ, ANCHOR BOLT, WASHER AND TURN OF THE NUT METHOD

GENERAL NOTES

JUNCTION BOXES: Junction boxes shall be made of fourteen (14) gauge sheet metal (steel) with welded seams, knockouts and weatherproof screw cover. Boxes shall be hot dipped galvanized in accordance with ASTM A123 or electroplated with a minimum thickness of 0.4 mil. after fabrication. The cost of the junction boxes shall be included in the unit bid price for "Electric Lighting System".

ELECTRICAL CONDUIT: The Contractor shall furnish and install 2" metallic conduit as shown on the plans. The conduit shall be supported by hangers which are supported by bolts cast into the bottom of the slab. The spacing of the hangers shall be no more than ten feet center to center. The conduit, fittings and miscellaneous hardware shall conform to the Standard Specifications. All materials and labor shall be included in the bid item "Electric Lighting System".

DIMENSION VERIFICATION: The Contractor shall verify the bolt spacings shown on the plans are correct for the conduit hangers and junction boxes that will be furnished.

LEVELLING: After installation, contractor shall verify that light pole is horizontally and vertically level, and adjust as needed.

LOCATION: Light Standard bases shall be constructed at the nearest lighting blister to the Station shown. Maximum deviation is five feet from the Station shown.

ANCHOR BOLTS: Anchor bolt assemblies shall be hot-dip galvanized after fabrication. All bolts and nuts shall be zinc or cadmium plated, conforming to KDOT Standard Specifications. Anchor bolt plate shall meet the requirements of ASTM A36. Two inch diameter voids may be formed with plastic pipe. Anchor bolt assemblies, bolts, nuts and voids shall be furnished and installed by the Bridge Contractor. The cost of these items shall not be paid for directly, but shall be included in the unit price bid for "Concrete".

KANSAS DEPARTMENT OF TRANSPORTATION

ROADWAY LIGHTING
CONVENTIONAL POLE DETAIL
NO FRANGIBLE BASE

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

CADconform Certify This File

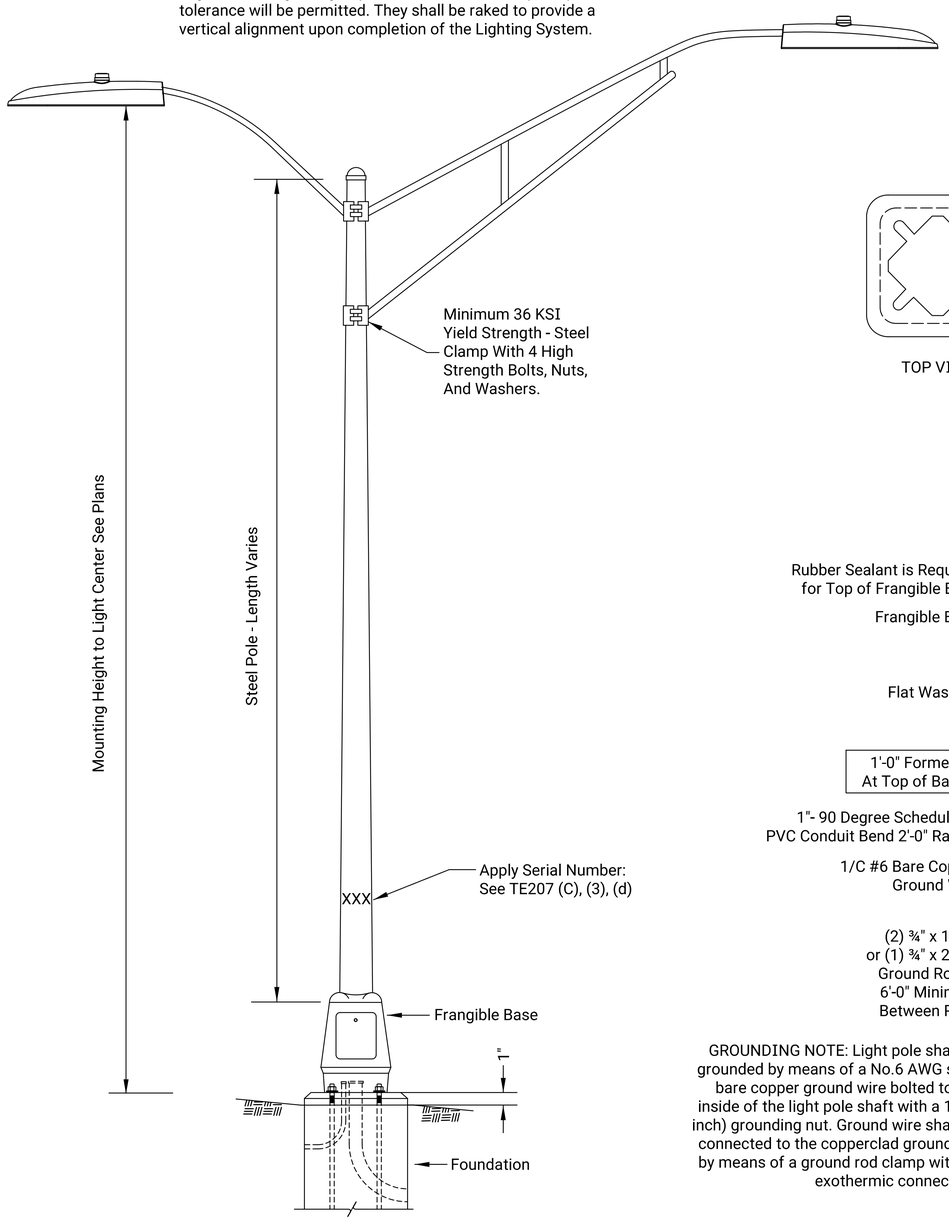
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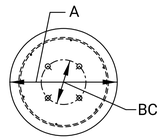
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File : US160_ILL_D6.dgn

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KA-6475-01	2025	132	230

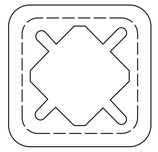
NOTE: Single member luminaire arms are 6 and 8 ft. in length. Truss arms are 10, 12, or 15 ft. in length. These are determined in the design and shall be shown in the plans and/or on the TE209 CONSTRUCTION QUANTITIES. All luminaires shall be supported with light centers up to 55 ft. above grade. The careful alignment and grading of pole is essential and no perceptible tolerance will be permitted. They shall be raked to provide a vertical alignment upon completion of the Lighting System.



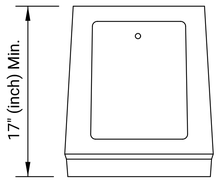


TOP VIEW FOUNDATION

MOUNTING HEIGHT	FRANGILBLE BASE	BC	A	B	C
30'	TB1-17	1'-3"	2'-6"	8 - #9	2'-0"
40'	TB1-17	1'-3"	2'-6"	8 - #9	2'-0"
50'	TB3-17	1'-5 ¼"	3'-0"	8 - #10	2'-6"
55'	TB3-17	1'-5 ¼"	3'-0"	8 - #10	2'-6"



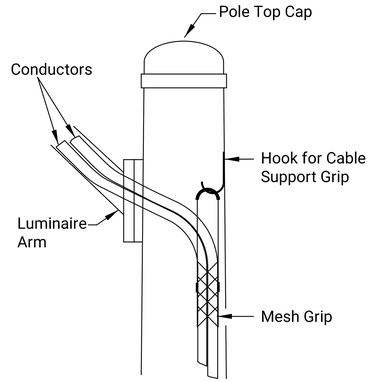
TOP VIEW



SIDE VIEW

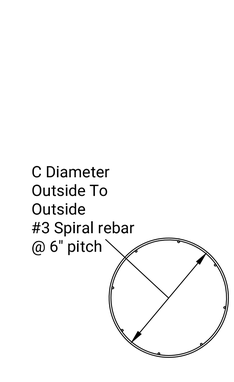
FRANGIBLE BASE

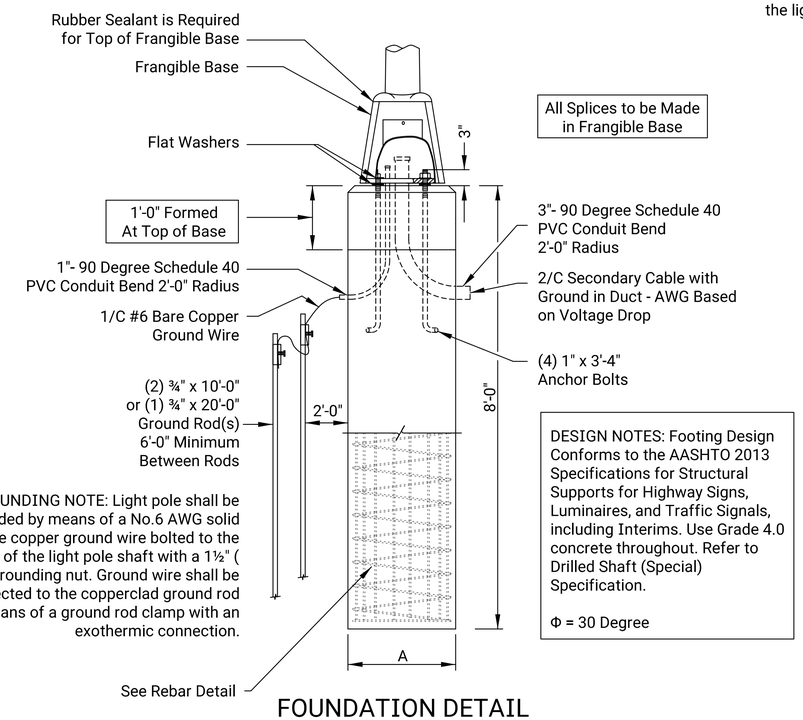
NOTE: The frangible base must accommodate up to a BC bottom bolt circle.



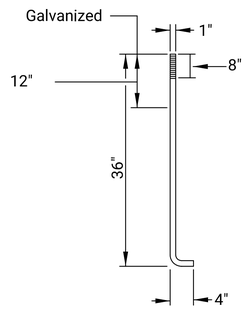
CABLE SUPPORT GRIP

NOTE: The cable support grip shall be installed on the hook supplied within the light pole as shown above.

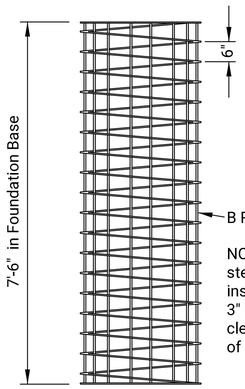




FOUNDATION DETAIL



ANCHOR BOLT DETAIL



NOTE: Reinforcing steel shall be installed to provide 3" (inch) minimum clearance from edge of foundation.

REBAR DETAIL

NO.	DATE	REVISIONS	BY	APP'D
02	05/23/23	Added 50' Pole/Serial Number/Bolt Clearance	J.A.P.	S.M.P.
01	05-05-21	Luminaire arm/grounding/andchor bolt/detail changes	J.A.P.	S.M.P.

KANSAS DEPARTMENT OF TRANSPORTATION

ROADWAY LIGHTING CONVENTIONAL POLE DETAIL WITH FRANGIBLE BASE

~~TE201A~~

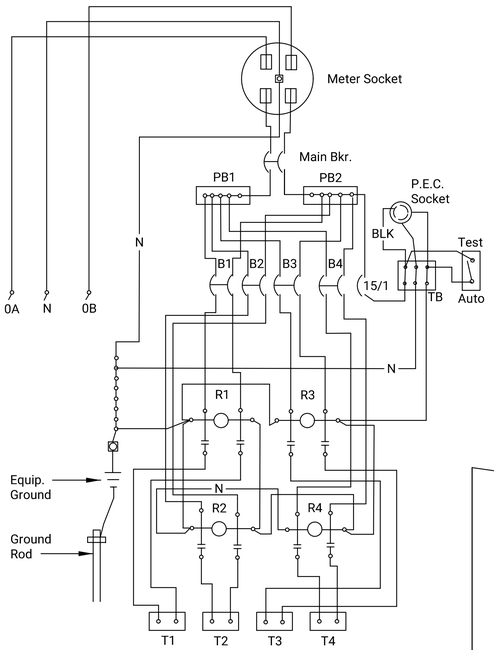
FHWA APPROVAL		07-07-23	APP'D.	Karen M. Peterson	
DESIGNED	J.A.P.	DETAILED	J.A.P.	QUANTITIES	TRACED
DESIGN CK.	K.M.P.	DETAIL CK.	K.M.P.	QUAN.CK.	TRACE CK.

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Sh. No. 132

Plotted by : BVWells 13-OCT-2025 11:43
File : US160_ILL_D4.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KA-6475-01	2025	133	230



WIRING DIAGRAM

NOTES:

The controller cabinet shall be constructed of 5052 alloy aluminum 0.125" (inch) thick. The cabinet shall be of clean cut design having no sharp edges, corners or projections.

The controller shall increase in size with the number of circuits.

The customer door shall be hinged the full length of the door and have suitable means of holding the door in the fully open position.

The dead front door shall be hinged and have 3/4 turn clips or other suitable means of locking.

Service entrance in back of controller shall have a hinged or a lift off cover with pad lock provisions.

The secondary breaker for the photo-cell circuit shall be 277 volt, 15 amp single pole.

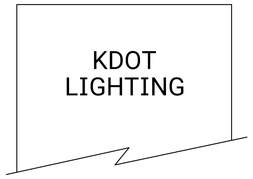
The wiring from PB1 and PB2 to T1 through T4 shall be No. 6 AWG THW.

The wiring for the load and line side of the main breaker shall be the same size with the wire.

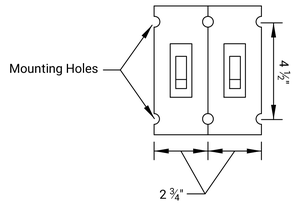
The wiring for the photo electric control circuit shall be No. 12 AWG THW.

All wiring and wiring methods shall comply with the most current national electric code standards. Any changes to these standards shall be approved by the authority having jurisdiction.

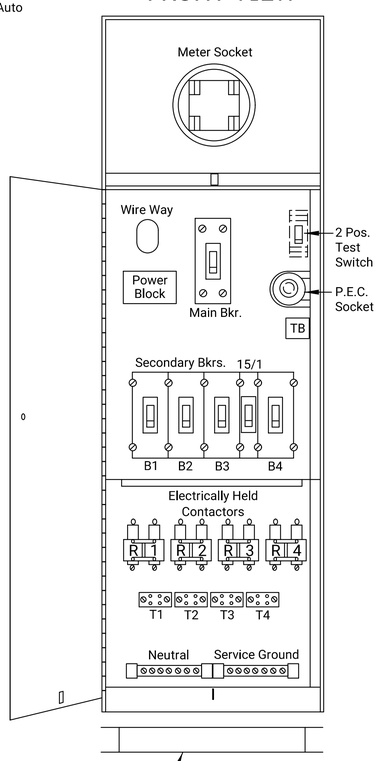
FRONT PANEL



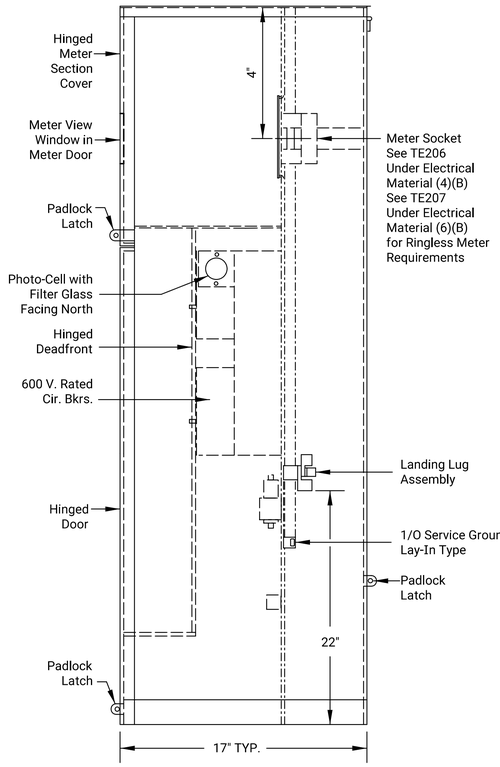
TYPICAL BREAKER DETAILS (2 POLE)

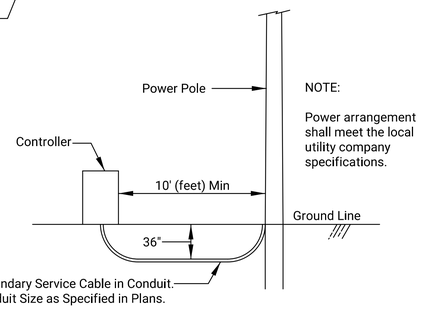


FRONT VIEW



SIDE VIEW

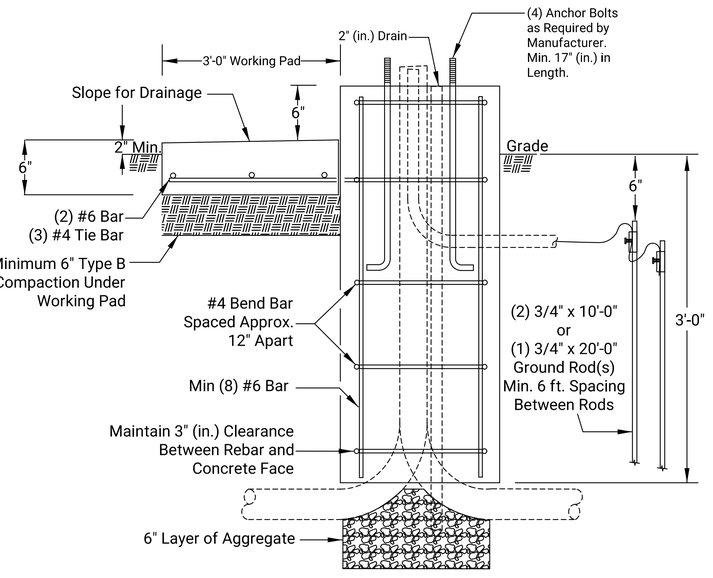




NOTE:

Power arrangement shall meet the local utility company specifications.

POWER ARRANGEMENT



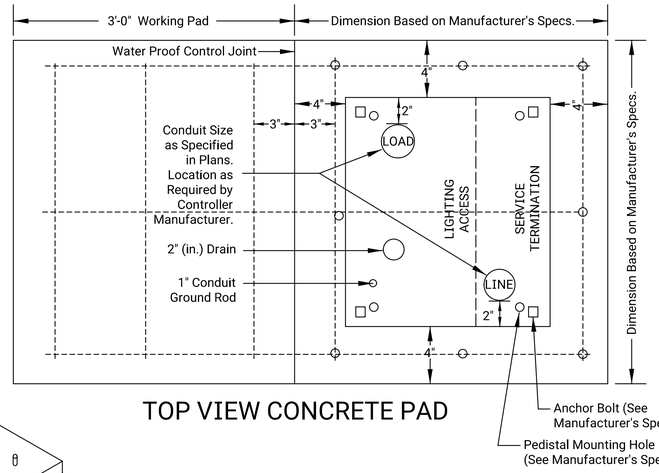
SECTION

NOTE:

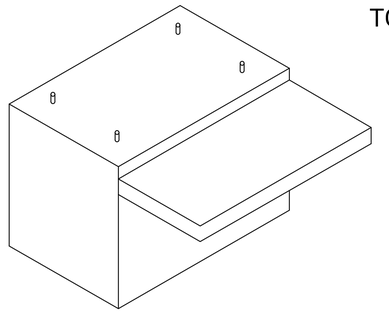
The duct for secondary cable shall extend 1" (inch) past the end of the conduit bend.

All conduit to extend 3" (inch) min. above concrete surface. Drain shall be flush or slightly below floor.

Dimensions shall be adjusted accordingly for the width of the controller to be installed.



TOP VIEW CONCRETE PAD



NO.	DATE	REVISIONS	BY	APP'D
03	05-05-21	New pad design/front panel	J.A.P.	S.M.P.
02	01-16-18	Added N Facing/Chg TE Std Loc Side View	C.E.	B.D.G.
01	01-05-15	Added See Meter Options on TE206 & TE207	C.E.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL CONTROLLER DETAILS

TE202

FHWA APPROVAL		06-08-21	APP'D.	Sara M. Peters	
DESIGNED	J.A.P.	DETAILED	J.A.P.	QUANTITIES	TRACED
DESIGN CK.	S.M.P.	DETAIL CK.	S.M.P.	QUAN.CK.	TRACE CK.

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Sh. No. 133

Plotted by : BVWells 13-OCT-2025 11:43
File : US160_1LL_D5.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KA-6475-01	2025	134	230

(A) NOTE:

(1) TE Standards are intended to describe the equipment, material, and construction requirements for the Lump Sum Bid Item; ELECTRIC LIGHTING SYSTEM.

(2) PRE-QUALIFICATION. All construction items and materials shall be on the Roadway Lighting Systems and Equipment Prequalified List (PQL 24.2). The PQL is available on the KDOT website: www.ksdot.org, under "Doing Business as" - "Highway Contractors" - "Pre-Qualified Materials". A manufacturer or supplier intending to supply lighting materials under these specifications shall submit an original copy of any catalog cuts, drawings, and/or data sheets for the material(s). A manufacturer or fabricator shall submit shop drawings with supporting calculations meeting AASHTO and KDOT Standards. This information shall be submitted to the Bureau of Traffic Engineering for review and approval.

(B) CONSTRUCTION:

(1) See Standard Specifications, Latest Edition, Sections 814 (ELECTRIC LIGHTING SYSTEMS AND TRAFFIC SIGNALS), & 1703 (ELECTRIC LIGHTING SYSTEMS AND TRAFFIC SIGNALS EQUIPMENT). Locate all existing utilities prior to beginning work. Staking for controllers, poles, and junction boxes shall be done by the contractor, and approved by the engineer in charge.

(C) CONVENTIONAL STEEL LIGHT POLE:

(1) DESIGN. Design shall be in accordance with 2013 AASHTO Specifications for Structural Supports for the Highway Signs, Luminaries and Traffic Signals, including Interims, and KDOT Special Provision 744 (STRUCTURAL METALS FABRICATION). Pole design and shop drawings shall be sealed and signed by a professional engineer registered in the State of Kansas. Shop drawings shall reference the actual pole material to be used in the fabrication of poles for a specific Kansas Department of Transportation project. Shop drawings shall include weld details, referencing approved weld procedures and their given procedure numbers. Weld procedures shall be approved by KDOT prior to use. EPA shall be calculated at 0.86 sq. ft. and weight of 25 lbs.

(2) DESIGN for BRIDGE MOUNTED POLES. Design requirements for bridge mounted light poles shall include Fatigue Importance Category I with Limit State Pressure of 7.2 psf as defined in Section 11.7.2 of the AASHTO Standard Specifications. Assume the base of the light pole is 55 (feet) above finished groundline.

(3) MATERIAL and FABRICATION. Shall comply with the 2013 AASHTO Specifications for Structural Supports for the Highway Signs, Luminaries and Traffic Signals, including Interims, KDOT Special Provision 744 (STRUCTURAL METALS FABRICATION), and Section 1600 (STRUCTURAL STEEL TUBING). The pole shall be one section. The pole base shall have a CJP weld at the base plate, with a backing ring. The base plate shall be made of steel plate meeting the requirements of above or ASTM A-36. Field welds will not be allowed. Pole and foundations details are shown on the ROADWAY LIGHTING DETAIL SHEET TE201a/TE201b.

(a) FRANGIBLE BASE. Shall be cast aluminum and conform to the AASHTO Publication, Standard Specifications for Structural Supports for the Highway Signs, Luminaires, and Traffic Signals. The frangible base shall have high density plastic doors. The color shall be pigmented throughout to give the appearance of aluminum. The doors shall withstand temperature extremes of -70° to 150° F and are compounded with U.V. inhibitors. Contractor shall install per manufacturer's procedures. Fabricator shall provide high strength bolt installation procedure for top and bottom.

(b) LUMINAIRE ARM. Shall be fabricated from 2" (inch) standard pipe meeting the requirements of ASTM A53, ASTM A513, or ASTM A500.

(c) FINISH. The base, luminaire arm, and light pole shall be galvanized according to ASTM A123.

(d) SERIAL NUMBERS. Stencil 2 in. serial numbers in permanent black paint. This shall be ledgible from the pole's assigned route and 5-6 ft above ground level looking up station.

(D) ELECTRICAL MATERIAL:

(1) PHOTO CELL. Shall be solid state type, 1000 Watts, 1800 VA ballast, single pole, single throw, twist lock mounting. ANSI C136.10, ROHS compliant, UL listed, surge rated in excess of ANSI C136.10 to 20kV/10kA. Shall be made by the same manufacturer as the luminaire, and fail in the on mode.

(2) DISTRIBUTION WIRE. Shall be Type USE-2, stranded, annealed copper meeting the requirements of ASTM B8 and ASTM B33, and be the size specified in the plans.

(3) SECONDARY SERVICE CABLE IN CONDUIT (CIC). Shall be stranded copper single conductor cable for operation at 600 volts maximum. Material shall meet the applicable requirement of ICEA Standard S-105-692 and listed by UL as Type USE-2 for direct burial. Make splices in the secondary service cable inside of tower bases, pole bases, and junction boxes only. Contact the Bureau of Traffic Engineering for approval of other splice locations. The duct shall be polyethylene with minimum tensile strength of 3100 psi, sized to provide the correct fill based on NEC requirements, and shall meet ASTM D-3485 (Latest Revision).

(4) LED LUMINAIRES. Luminaires shall have a housing of aluminum alloy casting, capable of mounting to a 2" (inch) luminaire arm, and in compliance with ANSI C136-37. Shall be IP-66 rated for optical assembly and IP-65 rated for electrical components, and shall have the following: three-hole terminal blocks for incoming #10 AWG AC lines, minimum 20kV/10kA surge protection, a 7-pin photo control receptacle with electronic photocontrol or shorting cap, and an electronic dimmable driver (power supply, rated for 100,000 hours). Shall be fully tested in accordance with IESNA Standard LM-79, pre-wired for installation, and shall maintain 70% of initial lumen output after 100,000 hours of operation. LED luminaire criteria: (lumen output, luminaire wattage, lumens per watt, input voltage, bug rating, CCT (4000k +/- 300k), CRI (70), photometric requirements, and distribution), and the photometric performance criteria: (maintained horizontal illumination, avg/min and max/min uniformity ratios) shall be determined by the project designer. Designers shall conform to the IESNA Standard RP-8-18 and/or AASHTO Standard GL-7-2018 for required illumination, show the BASIS FOR DESIGN (ADDITIONAL CRITERIA) on the TE209, and submit a photometric report to the Bureau of Traffic Engineering for approval.

(5) CONTROLLER. The controller cabinet shall be constructed of 5052 alloy aluminum 0.125" (inch) thick. The cabinet shall be of clean cut design having no sharp edges, corners or projections. The circuiting shall be serviceable by means of a full length hinged door with padlock provisions. The controller shall have 600 volt rated molded case main and secondary breakers, twist-lock photo-cell socket, and electrically held contactors. The equipment within the controller shall be wired prior to delivery. The controller shall have a meter view window and a glass to allow light to the photo-cell that faces NORTH. All conductors coming in to the controller shall be identified with a permanent label.

(a) The main and secondary breakers shall have a mounting dimension of 1 3/8" (inch) wide x 4 1/2" (inch) high mounting holes shall be positioned to accommodate a breaker 2 3/4" (inch) wide side by side. See CONTROLLER DETAIL SHEET TE202.

(b) The contractor shall contact the power company prior to acquiring the lighting controller. An exposed ringless meter design and cover, 200 AMP 5 terminal meter socket with horn bypass, is an approved option for remote access if required by the power company.

(E) GENERAL MATERIALS AND NOTES:

(1) MISCELLANEOUS HARDWARE. Hardware that requires galvanizing or electroplating shall conform to the Standard Kansas Department of Transportation Standard Specifications, Latest Edition, Section 1703.2 (c) (ELECTRIC LIGHTING SYSTEMS AND TRAFFIC SIGNALS EQUIPMENT).

(2) CONDUIT INSTALLATION. Conduit shall be installed per Section 814.3 (ELECTRIC LIGHTING SYSTEMS AND TRAFFIC SIGNALS) of the Standard Specifications and as noted. All electrical conduit above ground shall be metallic. Conduit attached to the bridge shall have expansion fittings installed at the ends of the bridge and at each expansion joint. All attachments to bridges shall have a Highway Right of Way Permit (DOT304), and Utility Attachment Permit (DOT 310) approved before work begins, in accordance with the current Kansas Department of Transportation Utility Accommodation Policy. When pulling wires through conduit, a pulling sock or other similar device shall be used to equalize pulling strain on the conductors.

(3) METALLIC CONDUIT. See Standard Specification 1703.2 (ELECTRIC LIGHTING SYSTEMS AND TRAFFIC SIGNALS EQUIPMENT). Shall be rigid steel conduit meeting the requirements of American Standard Specification C-80.1. Metallic conduit fittings shall be zinc coated and shall meet the requirements of NEMA FB-1.

(4) NON-METALLIC CONDUIT. See Standard Specification 1703.2 (ELECTRIC LIGHTING SYSTEMS AND TRAFFIC SIGNALS EQUIPMENT).

(a) RIGID POLYVINYL CHLORIDE (PVC). Shall meet the requirements of NEMA TC-2, Federal Specifications No. WC 1094A and UL 651. Each length shall bear the Underwriters, Inc. Label. Non-metallic conduit fittings shall be fabricated from polyvinyl chloride meeting the requirements of NEMA TC-3, Federal Specifications No. WC 1094A and UL 514. Each shall bear the Underwriters, Inc. Label. The joints shall be made in accordance with the manufacturers recommendations.

(b) HIGH DENSITY POLYETHYLENE (HDPE). Shall meet the requirements of ASTM F 2160, ASTM F 2176, and NEMA Standard TC-7. Shall be coilable, smooth wall, Schedule 40 or Schedule 80. A letter of certification (LOC) will be required from the conduit producer and/or resin producer. The conduit will need to be marked with ASTM F 2160 designation on the print line. Shall be continuous from outlet to outlet, with no splices allowed. Bend radii shall not exceed the manufacturer's recommendations. Cable filles should not exceed the values set by the NEC.

(5) GROUNDING. Ground all metal parts including poles, controllers, junction boxes, and conduit used above ground with a No. 6 bare wire. Ground wire shall be a #6 AWG Solid bare copper wire and arrangement shall be as noted on plans. Ground rods shall be copper clad 3/4" (inch) diameter by 20' (feet) long, or two ground rods at 10' (feet) each.

(6) ANCHOR BOLTS. Shall conform to the Standard Specification Section 1600 (FERROUS AND NON-FERROUS METALS) (Grade 55) with the following exception: Do not use cut threads, use rolled threads.

(7) BREAK-AWAY CABLE CONNECTORS. The connectors shall provide a fused waterproof wiring connection that when subjected to strain consistant with a knockdown will separate without damage to wiring. When separation occurs, the connectors shall have no contacts exposed to present a shock hazard. The cable connectors shall meet the 2013 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. Connector installation shall be as directed by the manufacturer.

(a) Fuses for inline connectors shall be Class CC and sized in accordance with ampacity conductors in the pole.

(8) JUNCTION BOXES (IN-GROUND). The junction box shall be of sufficient size to facilitate the conduit and wiring as indicated in the plans. Junction boxes shall have the minimum nominal dimensions of 12" (inch) deep with a minimum physical opening of 130 square inches. In-ground junction boxes may be constructed of one of the following methods: Pre-cast concrete with a cast iron cover; Polymer concrete with a polymer concrete cover; fiberglass reinforced polymer body with a polymer concrete ring and cover; High density polyethylene body with polymer concrete ring and cover. The ring shall be securely attached to the body. All conductors coming in to the junction box shall be identified with a permanent label.

(a) Enclosures, boxes and covers are required to conform to all test provisions of ANSI/SCTE 77 2017 "Specification for Underground Integrity" for TIER 15 applications.

(b) The cover shall bear the logo "LIGHTING" clearly and permanently molded or etched into the cover.

(9) JUNCTION BOXES (ABOVE-GROUND). Shall have the nominal dimensions of 12" (inch) by 12" (inch) by 6" (inch). The junction box shall be made of 14 gauge sheet metal (steel) with welded seams, knockouts and weather proof screw cover. Boxes shall be hot dipped galvanized in accordance with ASTM A-123 after fabrication. All conductors coming in to the junction box shall be identified with a permanent label.

(10) WEDGE TYPE STUD BOLT ANCHORS. The contractor shall install two 3/8" (inch) x 3" (inch) wedge type anchors for conduit clamps. The anchors shall be wedge type made from carbon steel meeting AISI 12L14 steel. The minimum embedded depth shall be 1 3/4" (inch).

(11) CONDUIT CLAMPS WITH CLAMP BACKS. The contractor shall install 2" (inch) conduit clamps with a compatible clamp back. Clamps shall be heavy duty steel to secure the 2" (inch) rigid conduit to structure. Conduit clamps are to be spaced at 6' (foot) intervals.

(12) CABLE GRIP SUPPORTS. The contractor shall install one (1) cable support grip in each roadway lighting pole. The cable support grip shall be made of high grade, non-magnetic tin coated bronze strand. The cable support grip shall be capable of securing two (2) #10 AWG type USE-2 cables in a vertical position holding the weight of the cables and cable connectors off the luminaire assembly. See ROADWAY LIGHTING DETAILS SHEET TE201a and TE201b.

NO.	DATE	REVISIONS	BY	APP'D
03	05-23-23	Added design details/serial numbers/fuse detail	J.A.P.	S.M.P.
02	05-05-21	PQL/Frang. base/AASHTO GL-7-2018/grnd rod/fatigue	J.A.P.	C.P.A.
01	04-28-20	CJP weld/RP-8-18/mast arm requirement	J.A.P.	C.P.A.

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION AND MATERIAL REQUIREMENTS FOR HIGHWAY LIGHTING (CONVENTIONAL)

TE207

FHWA APPROVAL			07-07-23	APP'D.		Sara M. Peters	
DESIGNED	J.A.P.	DETAILED	J.A.P.	QUANTITIES		TRACED	
DESIGN CK.	S.M.P.	DETAIL CK.	S.M.P.	QUAN.CK.		TRACE CK.	

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Plotted by : BVWells 13-OCT-2025 11:43
File : US160_ILL_LN.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KA-6475-01	2025	135	230

SUMMARY OF ELECTRIC LIGHTING SYSTEM QUANTITIES (HARDWARE)

ID NO	Item	Unit	Quantity
1	Solid State Photo Cell	Each	1
2	Controller	Each	1
3	Junction Box	Each	11
4	Cable Support Grip	Each	7
5	Expansion Joint	Each	6
6	Breakaway Connectors	Each	21
	600 Volt 2/C Secondary Cable with Ground Wire (CIC) #4 AWG	Lin Ft	
	600 Volt 2/C Secondary Cable with Ground Wire (CIC) #6 AWG	Lin Ft	
7	600 Volt 2/C Secondary Cable with Ground Wire (CIC) #8 AWG	Lin Ft	651
	600 Volt 2/C Secondary Cable with Ground Wire (CIC) #10 AWG	Lin Ft	
8	600 Volt 2/C Secondary Cable with Ground Wire #8 AWG	Lin Ft	717
9	600 Volt 1/C Secondary Cable #10 AWG	Lin Ft	832
10	Groundwire, #6 AWG Solid Bare Copper	Lin Ft	165
	1" Metallic Conduit	Lin Ft	
11	2" Metallic Conduit	Lin Ft	717
	3" Metallic Conduit	Lin Ft	
12	2" Schedule 40 Conduit	Lin Ft	578
	2" Schedule 80 Conduit	Lin Ft	
12	3" Schedule 80 Conduit	Lin Ft	140
14	3" 90 Degree Sch 40 PVC Conduit Bends 24" Radius	Each	4
15	1" 90 Degree Sch 40 PVC Conduit Bends 24" Radius	Each	3
16	3/8" X 3" Wedge Type Anchor Bolts	Each	238
17	2" Conduit Clamps w/ Clamp Backs	Each	119
18	Ground Rods with Clamps 3/4" X 20'	Each	3

SUMMARY OF ELECTRIC LIGHTING SYSTEM QUANTITIES (LIGHT POLES)

ID NO	Item	Unit	Quantity
19	30' Mounting Height Light Pole with 6' Luminaire Arm and Frangible Base	Each	2
20	30' LED Luminaire (See Basis of Design)	Each	7
21	30' Mounting Height Light Pole with 06' Luminaire Arm and Non-Frangible Base	Each	5
	55' LED Luminaire (See Basis of Design)	Each	
22	30" Concrete Base (30' Pole)	Each	2
	36" Concrete Base (55' Pole)	Each	

SUMMARY OF ELECTRIC LIGHTING SYSTEM QUANTITIES (MISCELLANEOUS ITEMS)

ID NO	Item	Unit	Quantity
23	Boring	Lin Ft	140
24	Trench and Backfill	Lin Ft	1229
	Removal of Concrete Base	Each	

NOTES:

1. Linear quantities are approximate and included for information only. The contractor shall conduct all work, furnish and install all lighting equipment necessary, including towers, concrete bases for towers, anchor bolts, luminaires, lamps, wiring, conduit, conduit fittings, supports, interconnections, ground rods, and all incidentals necessary for the complete installation within the limits shown on the plans. To insure complete and satisfactory operation of the Electric Lighting System whether specifically mentioned or not.

2. The bid item “High Mast Light Tower" includes all work persons, tools, equipment and new hardware necessary to complete the work.

3. Items not specifically called out are subsidiary to other bid items.

4. For additional construction quantities, see the following sheets, as applicable:
   a. CONSTRUCTION AND MATERIAL REQUIREMENTS AND QUANTITIES FOR SIGN LIGHTING.
   b. UNDERDECK LIGHTING DETAIL.
   c. FOOTING DETAILS AND ENGINEERING GEOLOGY (for footing lengths).

SUMMARY OF ELECTRIC LIGHTING SYSTEM QUANTITIES (TOWER)

ID NO	Item	Unit	Quantity
	LED Luminaire (See Basis of Design)	Each	
	Lowering Device	Each	
	1/2" Heavy Duty Reversible Drill	Each	
	Step Down Transformer	Each	

BID ITEM

Item	Unit	Quantity
Electric Lighting System	L.S.	Lump Sum
High Mast Light Tower (100')(48" Concrete Base)	Each	
High Mast Light Tower (110')(48" Concrete Base)	Each	
High Mast Light Tower (120')(48" Concrete Base)	Each	
High Mast Light Tower (100')	Each	
High Mast Light Tower (110')	Each	
High Mast Light Tower (120')	Each	

BASIS OF DESIGN (ADDITIONAL CRITERIA)

	Designed Lumens	
	Maximum Wattage	
	Distribution Type	
	Other	
	Designed Lumens	16,872
	Maximum Wattage	111W
	Distribution Type	Type 3R
	Other	

NO.	DATE	REVISIONS	BY	APP'D
03	05-25-23	Added boring	J.A.P.	S.M.P.
02	03-17-21	High mast footing to 48"/ground rod	J.A.P.	C.P.A.
01	04-28-20	Add 55' pole/change footing size	J.A.P.	C.P.A.

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION QUANTITIES
ELECTRIC LIGHTING SYSTEMS

~~TE209~~

FHWA APPROVAL		07-07-23	APP'D.	Sara M. Peters	
DESIGNED	J.A.P.	DETAILED	J.A.P.	QUANTITIES	TRACED
DESIGN CK.	S.M.P.	DETAIL CK.	S.M.P.	QUAN.CK.	TRACE CK.

CADconform Certify This File 08-10-2023

Sh. No. 135

Plotted by : BVWells 13-OCT-2025 11:43
File : US160_ILL_QTY.dgn

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	136	230

SYMBOL KEY

- REMOVE SIGN
- REMOVE POST
- REMOVE FOOTING
- REMOVE SIGN & POST
- REMOVE POST & FOOTING
- REMOVE SIGN, POST, & FOOTING
- MOUNT ON WOOD POST IN CONCRETE FOOTING
- MOUNT ON WOOD POST IN SOIL
- MOUNT ON STEEL BEAM BREAKAWAY POST
- MOUNT ON STEEL U-POST
- MOUNT ON PSST POST
- MOUNT ON EXISTING POST
- MOUNT ON VERTICAL SUPPORT
- SHOULDER MOUNTED INSTALLATION
- OFFSET MOUNTED INSTALLATION
- EXISTING SIGN
- EXISTING SIGN TO BE OVERLAID
- SIGN IS NOT PART OF PROJECT
- TYPE 'A' DELINEATOR (RIGID)
- TYPE 'A' DELINEATOR (RIGID) (BK-BK)
- TYPE 'B' DELINEATOR (RIGID)
- TYPE 'A' DELINEATOR (FLEXIBLE)
- TYPE 'A' DELINEATOR (FLEXIBLE) (BK-BK)
- TYPE 'B' DELINEATOR (FLEXIBLE)
- TYPE 2 OBJECT MARKER
- TYPE 3 OBJECT MARKER
- TYPE 3 OBJECT MARKER (BK-BK)

GENERAL NOTES

In order to expedite the completion of the project for traffic service, the signing and delineator work shall be sequenced with any other contract work such that the phases of construction may proceed and be completed at the same time.

New signs erected on the project which are in conflict with existing signing are to be completely covered until the existing signs are removed or the new signing is applicable. The existing signs that are being replaced, removed, or do not follow the current MUTCD signing standards are to be removed when the project is completed or as determined by the Engineer.

The Contractor shall exercise caution at all times when installing sign supports in and around areas where utilities exist, either underground or overhead, and will be held responsible for any damage incurred to the system. The installation of sign supports shall include the excavation, drilling, or driving the support footing and the erection of the sign support. The contractor shall exercise caution when working around any existing signs that are to remain and will be held responsible for any damage to the signs, supports, or footings. The Contractor shall exercise care when working around shrubbery while removing or installing signs or sign supports.

An existing sign post installation shall be plumb and the compaction of the backfill soil shall comply with the specifications after the removal and resetting of a sign, the removal and replacement of a sign, or the installation of a new sign.

The Contractor shall provide mounting bolts that are of a length that does not extend more than a nominal 1 inch beyond the sign post. The Contractor shall not make any field modifications to the mounting bolt prior to or after the sign is installed.

Specific service (LOGO) signs that are to be removed shall have the business logo plaques removed and transported to location determined by KDOT, at which time the plaques become the property of KDOT. The Contractor will be assessed a replacement cost for any damage to a business logo plaque prior to the plaque becoming the property of KDOT.

The materials and fabrication for signing and delineation work shall conform to the Standard Specifications for State Road and Bridge Construction (2015 edition) and Special Provisions.

INDEX OF SHEETS

SIGNING INDEX, SYMBOLS, & GENERAL NOTES
POST SPACING & SIGN ANGLE DETAILS
HEIGHT & LATERAL DISTANCE FOR ERECTION
POSITIONING, DESIGN, & MOUNTING OF DELINEATORS
POSITIONING, DESIGN, & MOUNTING FOR OBJECT MARKERS (TYPE 2 & 3)
POSITIONING FOR CHEVRON (W1-8) SIGNS
PLAN SHEETS (INSTALLATIONS)
PLAN SHEETS (REMOVALS)
QUANTITIES SHEETS (INSTALLATIONS)
QUANTITIES SHEET (DELINEATORS & OBJECT MARKERS)
SUMMARY SHEET (INSTALLATIONS & REMOVALS)
SUMMARY SHEET (REMOVAL & RESET)
RECAPITULATION SHEET
STANDARD STRUCTURAL SIGN SUPPORTS (WOOD & STEEL POSTS)
MOUNTING OF SIGNS ON WOOD POSTS
MOUNTING OF FLAT SHEET SIGNS ON STEEL I-BEAM POSTS
MOUNTING OF REINFORCED PANEL SIGNS ON I-BEAM POSTS
DETAILS FOR FLAT SHEET SIGN BLANKS
DETAILS FOR PROCESSED SIGNS
DETAILS FOR REINFORCED PANELS
DETAILS FOR GUIDE SIGN LEGEND
DETAILS FOR GUIDE SIGNS
DETAILED SIGN SPECIFICATIONS

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Changed symbol, notes, & index	D.D.G.	E.W.N.
01	07-23-10	Changed General Notes and Spec Book Date	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGNING SYMBOL KEY GENERAL NOTES AND INDEX

TE402 07-01-03

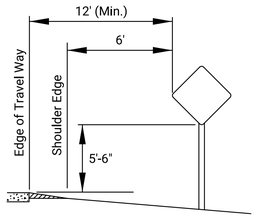
FHWA APPROVAL			10-01-19	APP'D.		Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 02-13-2023 Sh. No. 136

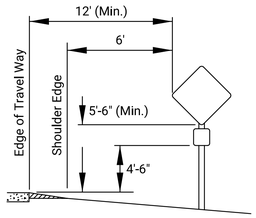
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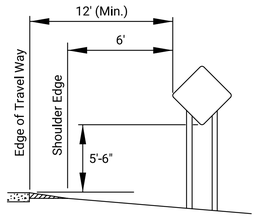
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	137	230



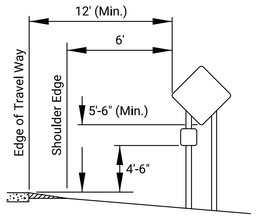
ONE POST



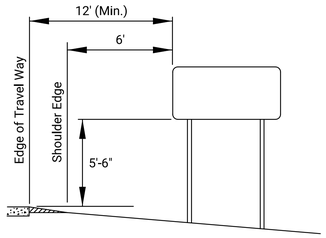
ONE POST WITH SUPPLEMENTAL SIGN



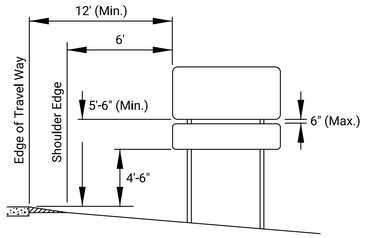
TWO POSTS



TWO POSTS WITH SUPPLEMENTAL SIGN

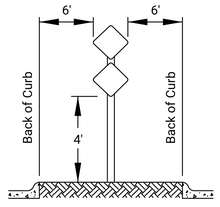


MULTIPLE POSTS

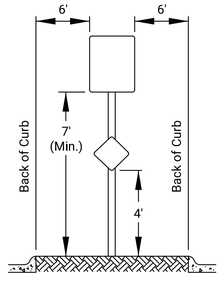


MULTIPLE POSTS WITH SUPPLEMENTAL SIGN

CONVENTIONAL HIGHWAY AND SIDE ROADS

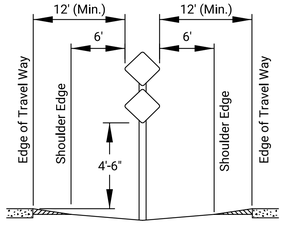


ONE OR TWO OM1-3

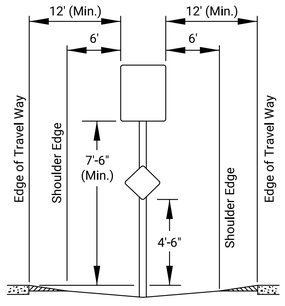


PRIMARY SIGN WITH OM1-3

RAISED



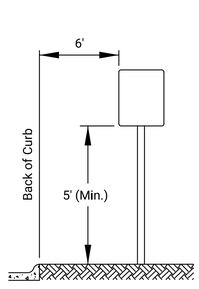
ONE OR TWO OM1-3



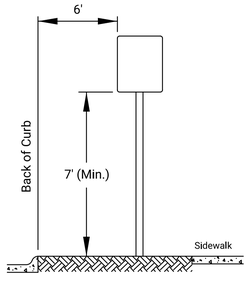
PRIMARY SIGN WITH OM1-3

DEPRESSED

MEDIANS AND ISLANDS

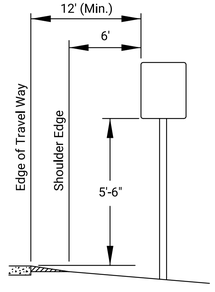


NO PARKING OR SIDEWALK



PARKING OR SIDEWALK

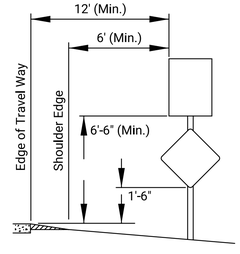
CURB



TYPICAL

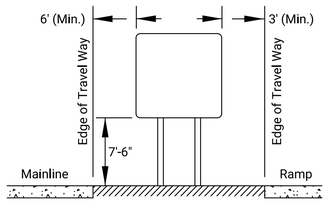
NO CURB

URBAN ROADWAYS

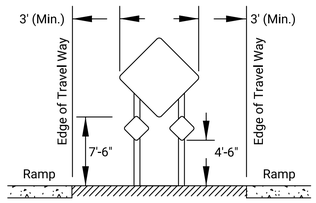


TYPICAL

ADOPT A HIGHWAY

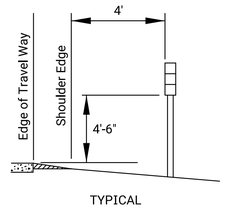


MAINLINE/RAMP



RAMP/RAMP

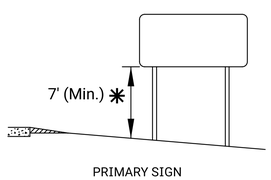
HIGHWAY GORES



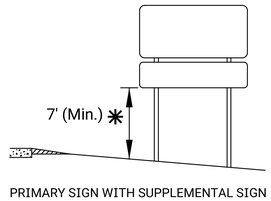
TYPICAL

Reference Marker Post: 2 Lb/Ft "U" Post

REFERENCE MARKERS



PRIMARY SIGN



PRIMARY SIGN WITH SUPPLEMENTAL SIGN

✱NOTE: Measured from the nearest point between the sign and the groundline.

GROUND CLEARANCE FOR STEEL BEAM POSTS

NOTES

The "Edge of Travel Way" is the edge line or the edge of the driving lane.

The outer edge of the sign shall not extend beyond the right of way line.

A minimum lateral clearance of 6' from pavement edge may be used where lateral offsets are limited.

In business, commercial, or residential districts where with limited lateral offsets, a minimum lateral clearance of 2' with a 7'-6" minimum mounting height may be used.

When signs are behind guardrail, the near edge of the sign shall not extend beyond the back side of the guardrail and the nearest sign post shall be a minimum of 5' from the face of the guardrail. Shoulder mounted signs shall not be located between 100' in advance of and 50' beyond the nose of the guardrail.

When the median or island is too narrow for the typical lateral placement, the sign may be placed a minimum of 2' from the back of the curb. In no case shall the sign edge extend beyond the back edge of the curb.

The gore sign shall be installed in the paved gore area. The edges of the gore sign shall not extend beyond the shoulder edge. The minimum distance from the centerline of the posts to the back of the paved gore area is 2'.

Signs may be moved laterally or longitudinally if it will improve visibility of the sign or other signs or if it will protect the sign more. The maximum allowable longitudinal adjustment is 100', with the exception of the reference marker which is 50'.

The minimum spacing between signs, excluding reference markers is 100'.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

MOUNTING HEIGHT & LATERAL OFFSET FOR CONVENTIONAL HIGHWAYS, SIDE ROADS, MEDIANS, ISLANDS, GORES, AND URBAN ROADWAYS

TE407 10-01-19

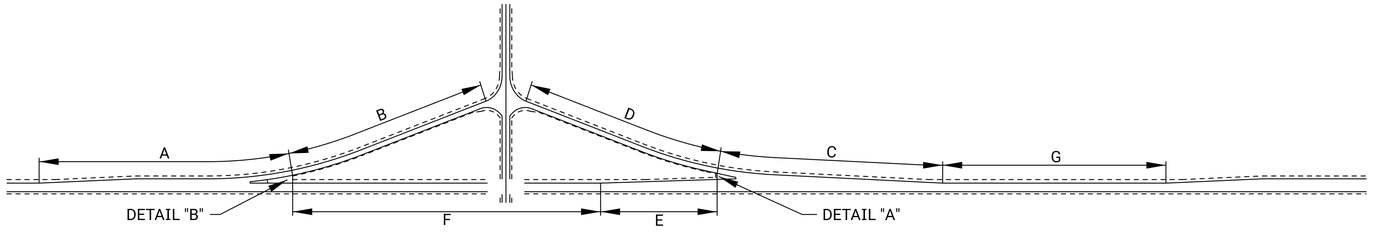
FHWA APPROVAL		10-01-19	APP'D.	Eric W. Nichol	
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES	TRACED
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-11-2022 Sh. No. 137

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:58
File : KA647501pss407-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	138	230



DELINEATION SPACING TABLE

	Beginning Point	Ending Point	Typical Spacings	Delineator Type
A	End of acceleration lane taper	Perpendicular to entrance ramp gore	100 Feet	"B"
B	Perpendicular to entrance ramp gore	Ramp terminal radius	100 Feet	"A"
C	End of deceleration lane taper	Perpendicular to exit ramp gore sign	100 Feet	"B"
D	Perpendicular to exit ramp gore sign	Ramp terminal radius	100 Feet	"A"
E	Perpendicular to exit ramp gore sign	End of exit gore taper	75-100 Ft	"A"
F	End of exit gore taper	Entrance ramp gore	400-500 Ft	"A"
	Beginning of curve for direction of travel (mainline)	End of curve for direction of travel (mainline)	20-528 Ft (1)	"A"
	Beginning of curve for direction of travel (ramp)	End of curve for direction of travel (ramp)	20-100 Ft (1)	"A"
	Beginning of curve for outside lane (two way traffic)	End of curve for outside lane (two way traffic)	10-140 Ft (1)	"A" (2)

	Beginning Point	Ending Point	Typical Spacings	Delineator Type
G	End of acceleration or deceleration lane taper (mainline)	End of acceleration or deceleration lane taper (3) (mainline)	528 Ft	"A"
	3000 feet from perpendicular to exit ramp gore sign (Exit Only lane)	Perpendicular to exit ramp gore sign (Exit Only lane)	100 Feet	"B"
	Perpendicular to exit ramp gore sign (Auxiliary lane 4000 feet or less in length✳)	Perpendicular to entrance ramp gore (Auxiliary lane 4000 feet or less in length✳)	100 Feet	"B"
	3000 feet from perpendicular to exit ramp gore sign (Auxiliary lane greater than 4000 feet in length✳)	Perpendicular to exit ramp gore sign (Auxiliary lane greater than 4000 feet in length✳)	100 Feet	"B"
	1000 feet from perpendicular to entrance ramp gore (Auxiliary lane greater than 4000 feet in length✳)	Perpendicular to entrance ramp gore (Auxiliary lane greater than 4000 feet in length✳)	100 Feet	"B"
	1000 feet from perpendicular to entrance ramp gore (Auxiliary lane greater than 5000 feet in length✳)	Perpendicular to entrance ramp gore (Auxiliary lane greater than 5000 feet in length✳)	100 Feet	"B"
	1000 feet from perpendicular to entrance ramp gore (Auxiliary lane greater than 5000 feet in length✳)	3000 feet from perpendicular to exit ramp gore sign (Auxiliary lane greater than 5000 feet in length✳)	528 Ft	"A"

(1) Spacing is rounded to nearest foot using the formula:

Spacing = $3 \times \sqrt{(\text{Radius} - 50)}$

(2) Delineators are back to back on the post.

(3) 3000 feet from perpendicular to exit ramp gore sign for Exit Only lane

✳ Auxiliary lane length is measured from perpendicular to entrance ramp gore to perpendicular to exit ramp gore sign

Note:
See 'Delineation Spacing Table' for type of delineator and typical spacing. The spacing shall be continuous and uniform. The color of delineation shall match the color of the pavement marking edgeline.

Delineation shall be located on the outside edge of mainline, acceleration lanes, deceleration lanes, ramps, and curves. Delineation is not to be used along the mainline median or on the left side of a ramp, unless the roadway curves to the right. Delineation shall not be used on curves or loops when chevrons (W1-8 signs) are used, except at the entrance and exit gore areas. When changing from delineating one edge of the roadway to the other edge, the delineation on both edges shall overlap the typical spacing shown in the delineation spacing table.

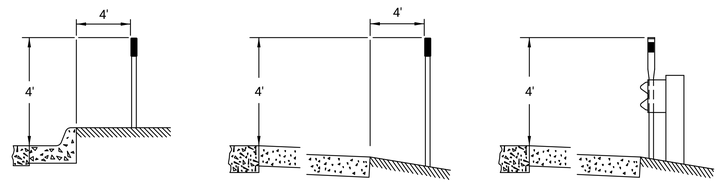
When delineating a curve, the first delineator should be located at the beginning of the curve. The spacing on the curve shall not exceed the typical spacing for the road type.

All delineation used within 100 feet in advance of the nose of guardrail end terminal and throughout the area with guardrail shall be flexible post mounted.

Delineation located on a median between the entrance and exit ramps should be installed according to median width:

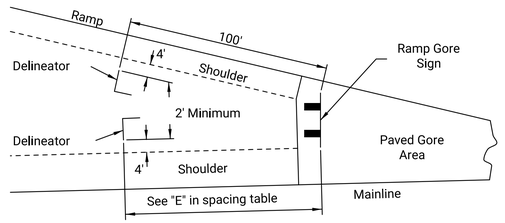
Median width less than 6 ft: delineation installed back-to-back on a single post along the median centerline.

Median width greater than or equal to 6 ft: delineation installed as shown for the typical delineator locations.

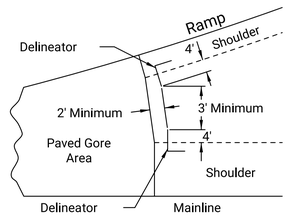


CURB SECTION SHOULDER SECTION GUARDRAIL SECTION

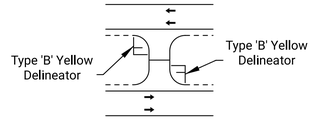
DELINEATOR INSTALLATIONS



DETAIL "A"



DETAIL "B"



MEDIAN CROSS-OVER

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR POSITIONING OF DELINEATORS

TE410 10-01-19

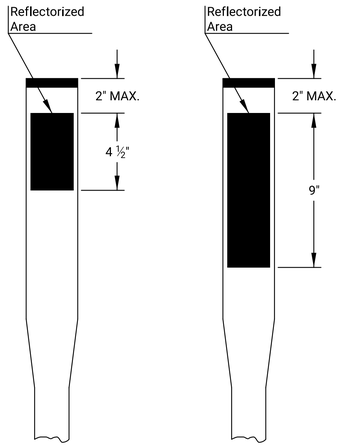
FHWA APPROVAL			10-01-19	APP'D.	Eric W. Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 07-11-2022 Sh. No. 138

KDOT Graphics Certified

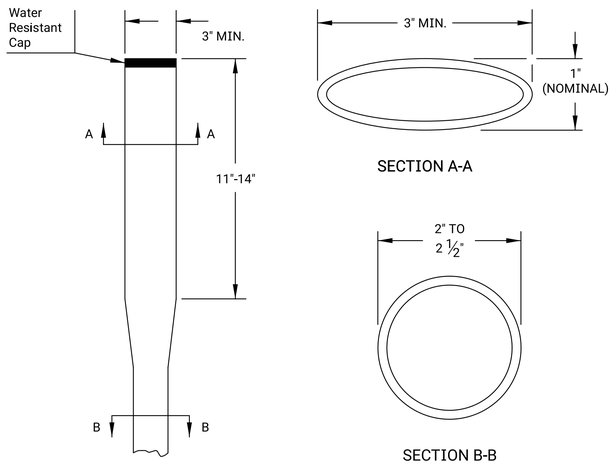
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
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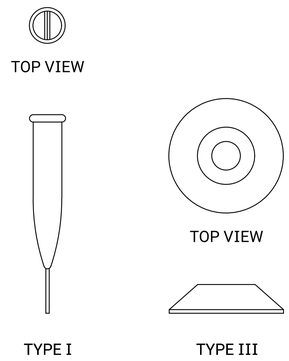


TYPE "A" TYPE "B"

REFLECTORIZED AREA POSITIONING



FLEXIBLE DELINEATOR POST DETAILS



TYPE I TYPE III

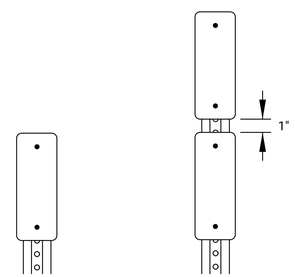
ANCHORING DEVICES

FLEXIBLE POST DELINEATOR INSTALLATION

GENERAL NOTE:
See the "Design Details for Positioning of Delineators" standard and/or plan sheets for the delineator spacing, type, and color. The delineators shall be covered with Type XI High Intensity white or yellow retroreflective sheeting.

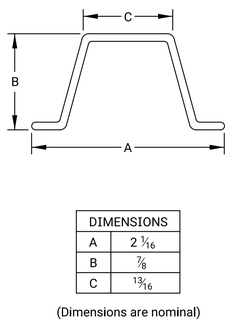
FLEXIBLE POST DELINEATORS:
The total length of the flexible delineator post shall be determined by the contractor, as per location and anchoring device. The reflectorized area for flexible delineators shall be a minimum of 3" in width.

STEEL POST DELINEATORS:
See flat sheet sign blank standard sheets for the 3" x 8" delineators details.



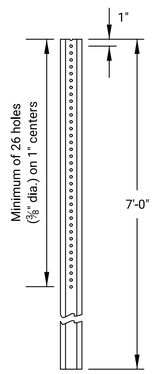
TYPE "A" TYPE "B"

TYPICAL DELINEATOR ASSEMBLY

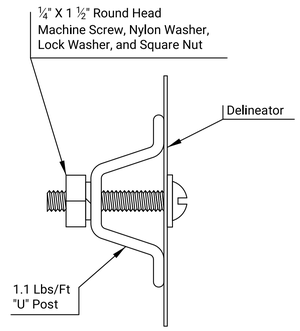


DIMENSIONS	
A	2 3/16
B	7/8
C	13/16

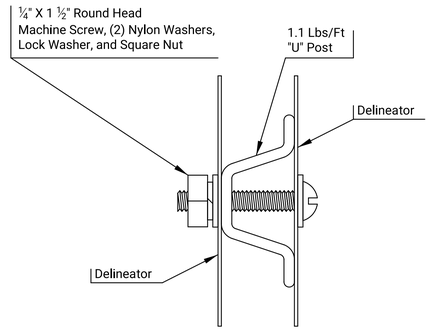
(Dimensions are nominal)



PUNCHING DETAILS



MOUNTING DETAILS (TYPICAL)



MOUNTING DETAILS (BACK TO BACK)

STEEL POST DELINEATOR INSTALLATION

All dimensions are in inches unless otherwise noted.
See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Changed drawings and notes	D.D.G.	E.W.N.
01	07-23-10	Changed Sheeting Type	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DELINEATOR DESIGN DETAILS STEEL POST MOUNT & FLEXIBLE POST MOUNT

TE412 07-01-03

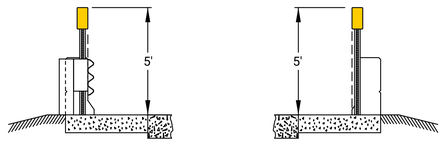
FHWA APPROVAL			10-01-19	APP'D.		Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 07-07-2022 Sh. No. 139

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss412-01.dgn

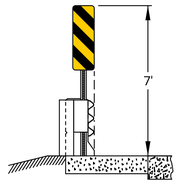
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	140	230



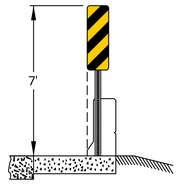
WITH GUARDRAIL

WITHOUT GUARDRAIL

SHOULDER WIDTH 6 FEET OR GREATER (TYPE 2 OBJECT MARKER)



WITH GUARDRAIL

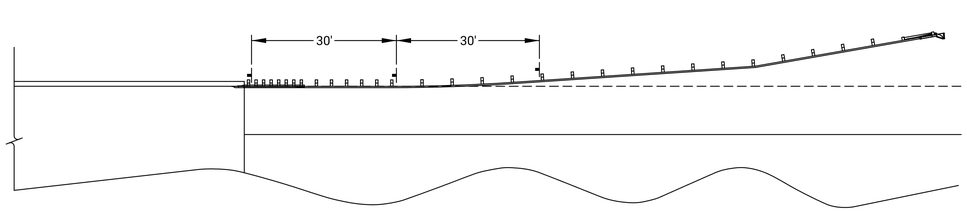


WITHOUT GUARDRAIL

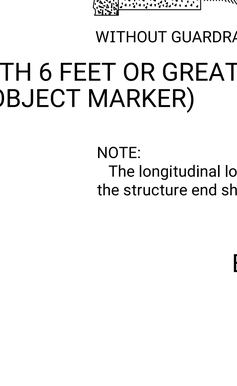
SHOULDER WIDTH LESS THAN 6 FEET (TYPE 3 OBJECT MARKER)

NOTE:
The longitudinal location of the object markers from the structure end shall be a maximum spacing of 42".

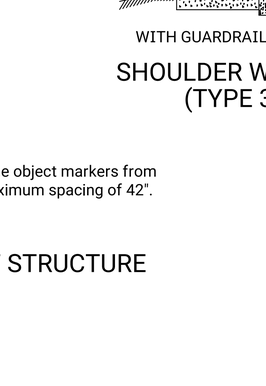
END OF STRUCTURE



LONGITUDINAL PLACEMENT

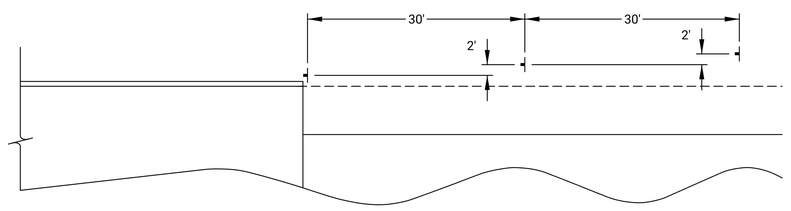


GUARDRAIL 8' OR LESS FROM SHOULDER EDGE



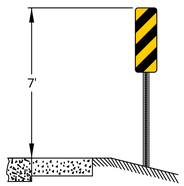
GUARDRAIL GREATER THAN 8' FROM SHOULDER EDGE

STRUCTURE APPROACH GUARDRAIL WITHOUT MARKERS



LONGITUDINAL PLACEMENT

NOTE:
The lateral offset is measured from the centerline of the object markers.



STRUCTURE APPROACH WITHOUT GUARDRAIL

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR OBJECT MARKERS (TYPE 2 & 3) FOR STRUCTURES WITH PARAPETS

TE415 10-01-19

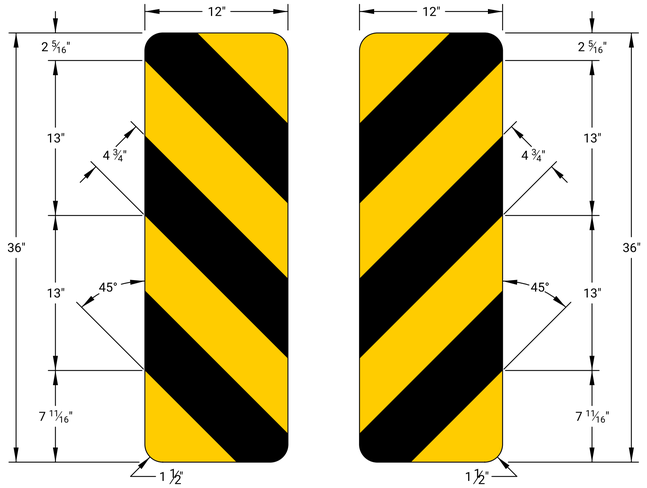
FHWA APPROVAL		10-01-19	APP'D.	Eric W. Nichol			
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES	TRACED		
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.	TRACE CK.		

KDOT Graphics Certified 05-25-2022 Sh. No. 140

KDOT Graphics Certified

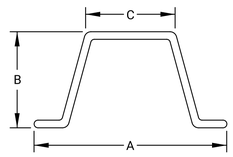
Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss415-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	141	230



OM3-L

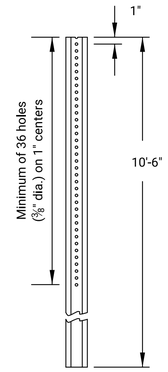
OM3-R



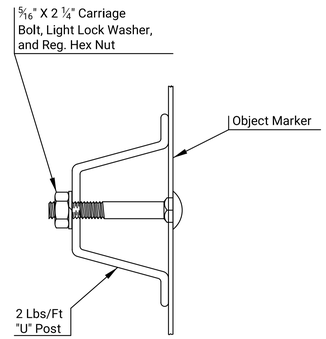
DIMENSIONS	
A	3 1/8
B	1 17/32
C	1 1/4

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS



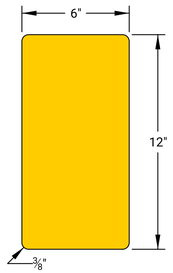
MOUNTING DETAILS

COLORS:
Yellow Background (Reflective)
Black Stripes (Non-reflective)

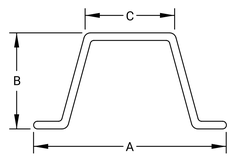
TYPE 3 OBJECT MARKER

GENERAL NOTE:
See flat sheet sign blank standard sheets for the 6" x 12" and 12" x 36" sign blank details.

The object markers shall be covered with Type XI High Intensity yellow retroreflective sheeting.



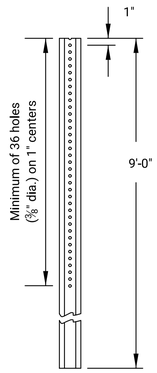
OM2



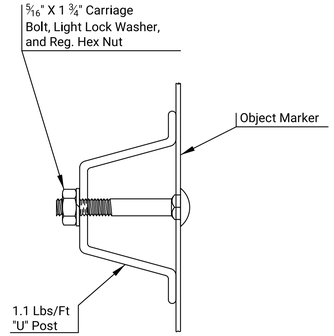
DIMENSIONS	
A	2 1/16
B	7/8
C	13/16

(Dimensions are nominal)

DELINEATOR POST
(1.1 lb/ft "U" Post)



PUNCHING DETAILS



MOUNTING DETAILS

COLOR:
Yellow Background (Reflective)

TYPE 2 OBJECT MARKER

All dimensions are in inches unless otherwise noted.
See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DESIGN DETAILS FOR OBJECT MARKERS TYPE 2 AND TYPE 3

TE416 10-01-19

FHWA APPROVAL			10-01-19	APP'D.	Eric W. Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 07-07-2022 Sh. No. 141

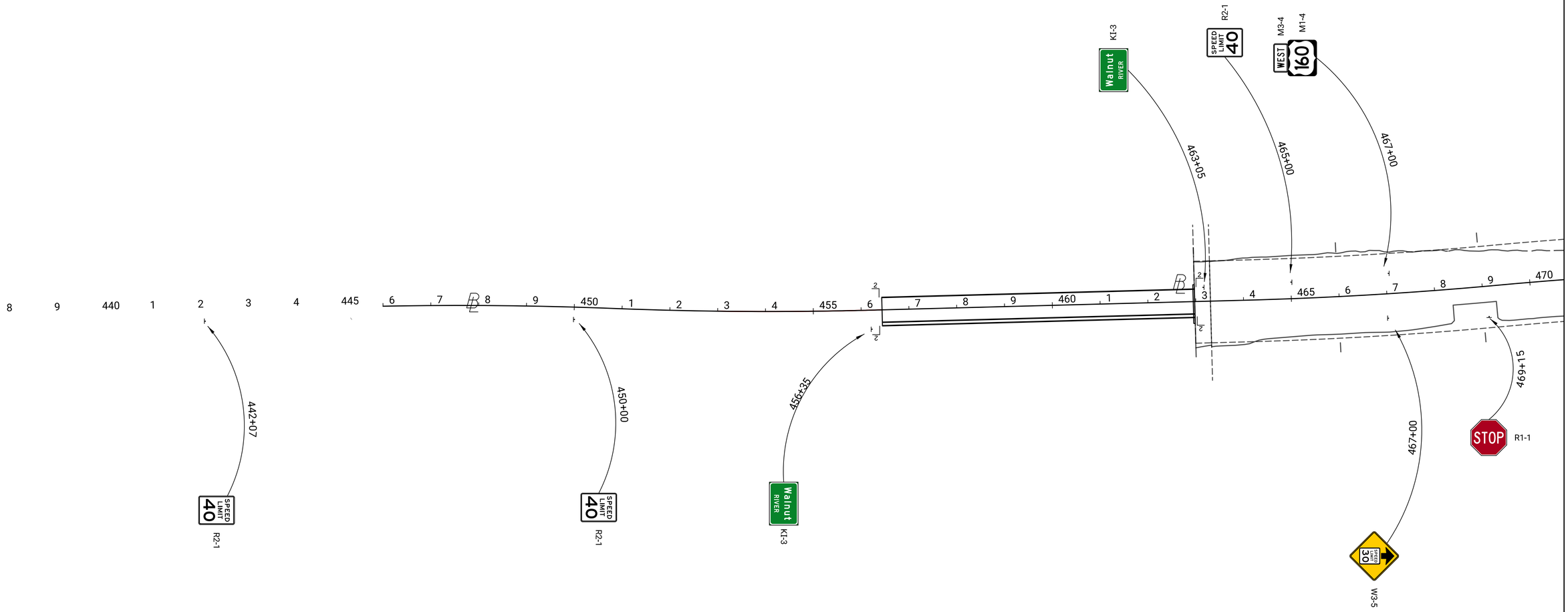
KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss416-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	142	230

General Note:
After construction is complete, the contractor is responsible for communicating with both the city/county and KDOT to discuss where the city/county is to install the signs that are designated for removal and resetting on the removal plans, there are 12 total.

SCALE 1" = 100'



KANSAS DEPARTMENT OF TRANSPORTATION

U-160 MAINLINE
STA. 437+00 TO STA. 470+50
SIGNING PLANS

APP'D.			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 10-17-2025

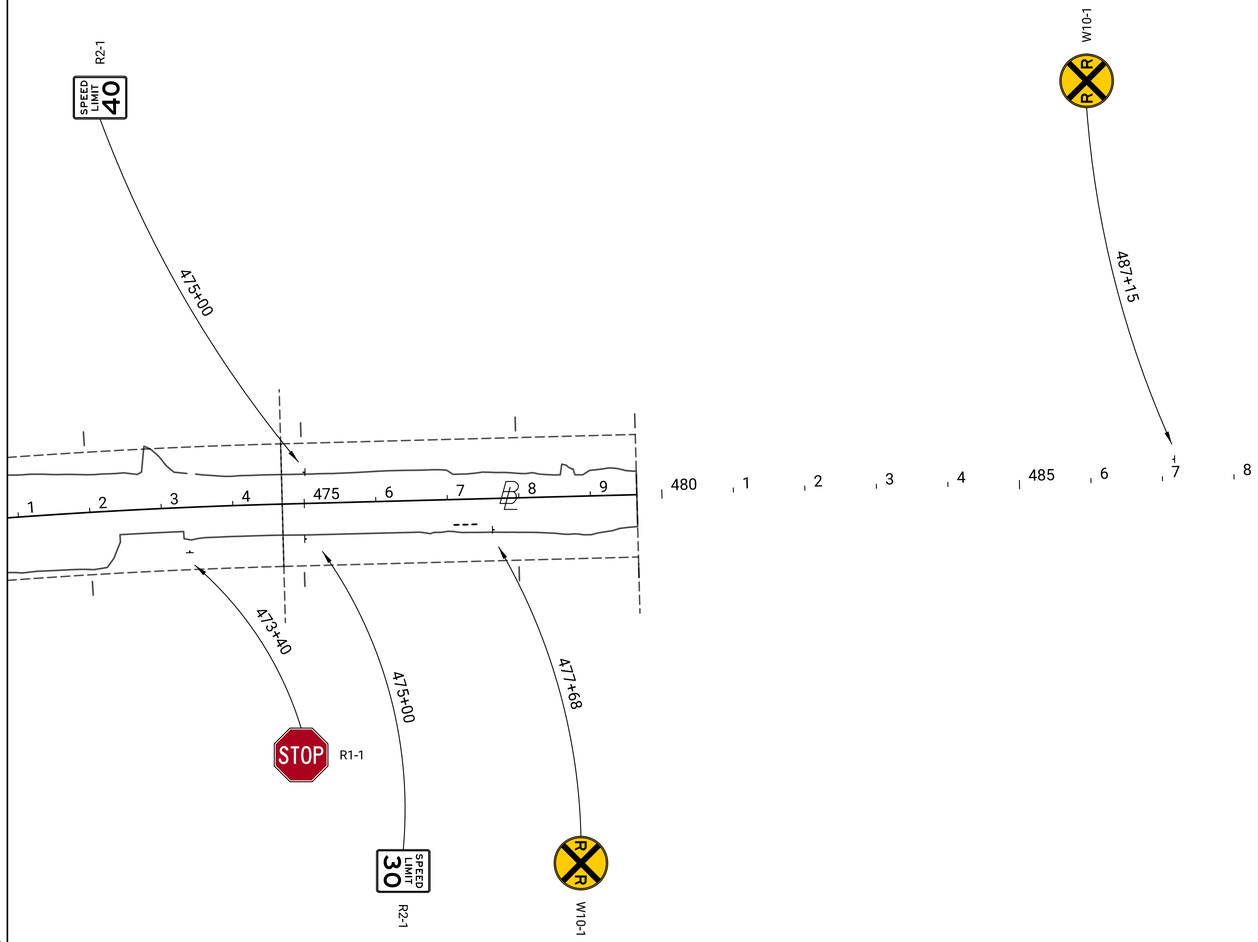
Sh. No. 142

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 17-OCT-2025 13:36
File : KA647501ppl-01.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	143	230

SCALE 1" = 100'



Plotted by : Jake.Comstock@ks.gov 17-OCT-2025 13:36
File : KA647501ppl-02.dgn Traffic

KANSAS DEPARTMENT OF TRANSPORTATION

U-160 MAINLINE
STA. 469+90 TO STA. 488+66.25
SIGNING PLANS

APP'D.			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 10-17-2025

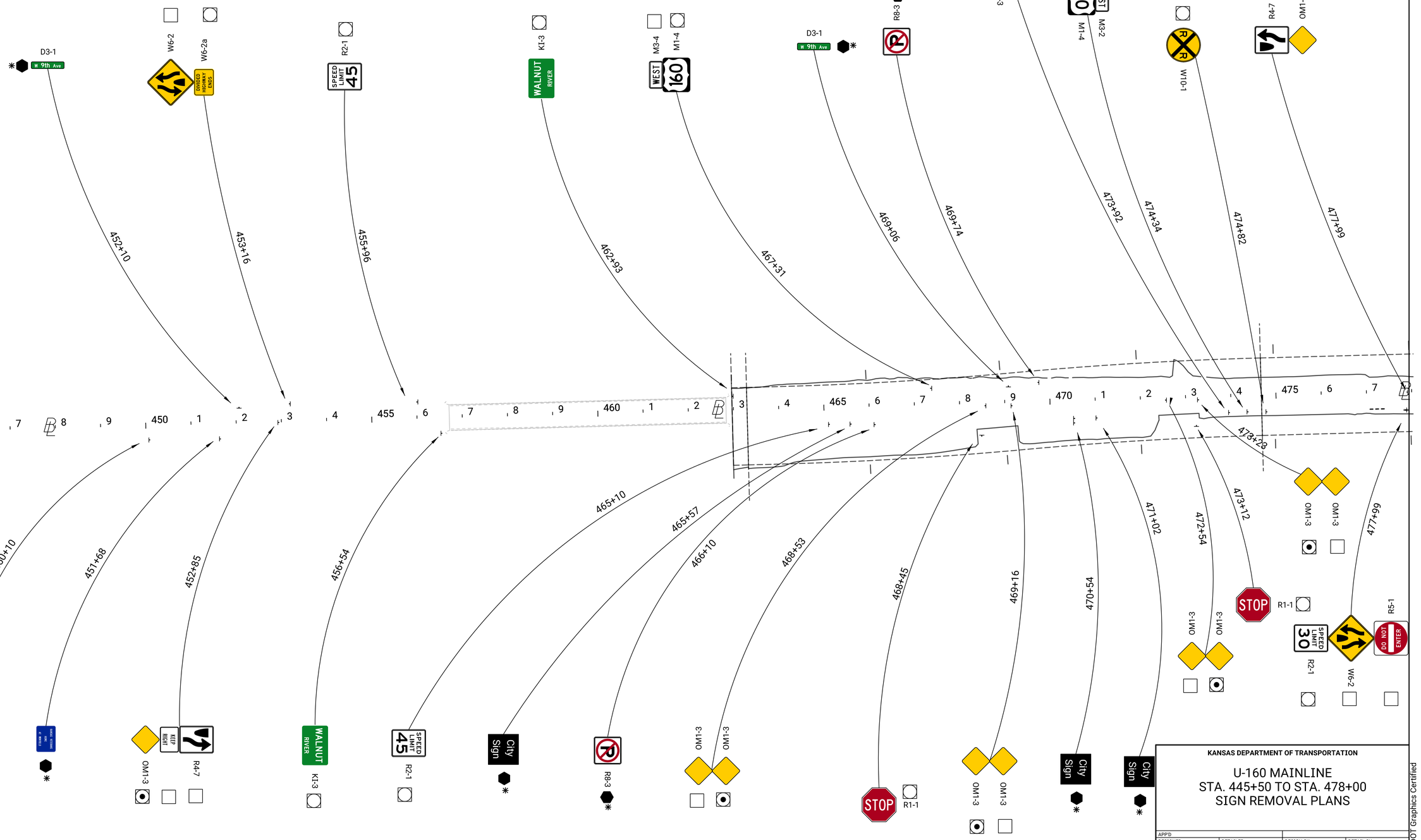
KDOT Graphics Certified

Sh. No. 143

General Note:
The signs designated with as 'not part of project' with an ✳, there are 12 of them, are property of the city/county.
The contractor is responsible for contacting the city/county to discuss removal of the signs by the city/county prior to construction.
After construction is complete the contractor is responsible for contacting both the city/county and KDOT to discuss location of installation of the signs.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	144	230

SCALE 1" = 100'



KANSAS DEPARTMENT OF TRANSPORTATION

U-160 MAINLINE
STA. 445+50 TO STA. 478+00
SIGN REMOVAL PLANS

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 10-17-2025

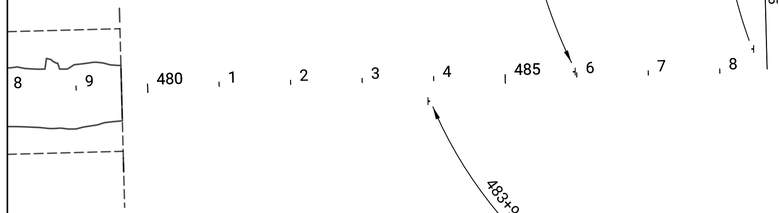
Sh. No. 144

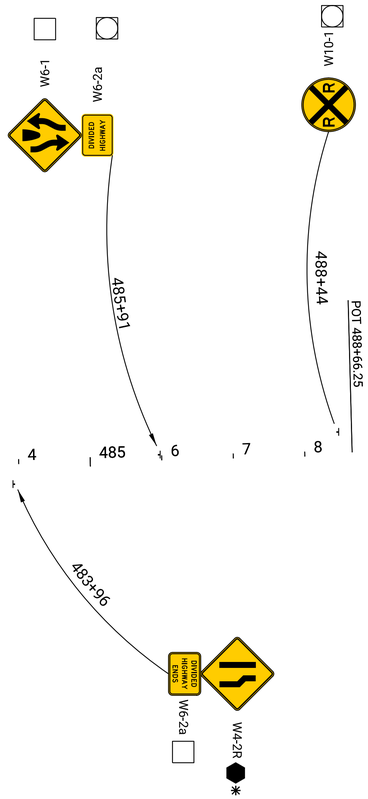
Plotted by : Jake.Comstock@ks.gov 17-OCT-2025 13:36
File : KA647501prm-01.dgn Traffic

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	145	230

SCALE 1" = 100'





Plotted by : Jake.Comstock@ks.gov 17-OCT-2025 13:36
File : KA647501prm-02.dgn Traffic

KANSAS DEPARTMENT OF TRANSPORTATION

U-160 MAINLINE
STA. 478+00 TO STA. 488+66.25
SIGN PLAN REMOVALS

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 10-17-2025

KDOT Graphics Certified

Sh. No. 145

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	146	230

QUANTITIES SHEET

SIGNS, POSTS, & FOOTINGS TO BE INSTALLED ON PROJECT

PLAN SHEET NUMBER	PLAN STATION NUMBER	CENTERLINE LOCATION / INSTALL POSITION	SIGN DESIGNATION	SIGN SIZE	SIGN LAYOUT SHEET NUMBER	TYPE OF SIGN FABRICATION			4" X 6" POSTS			3I2.25 ALUMINUM BEAM	U-POSTS		GALVANIZED STEEL BEAM POSTS						PERFORATED SQUARE STEEL TUBE (PSST) POSTS										CONCRETE FOOTINGS					SIGN STRUCTURE TYPE							VERTICAL SUPPORT MOUNT	MOUNT ABOVE GUIDE SIGN DESIGNATION
									WOOD		STEEL				W6x9		W10x12		W10x22		1 3/4"			2"			2 1/4"			2 1/2"			WOOD POST	STEEL BEAM POST				OVERHEAD	CANTILEVER	BUTTERFLY	BRIDGE MOUNT ATTACHMENT	MAST ARM	SINGLE TAPERED TUBE		
																															A36		A572 (ALT)										
						FLAT SHEET	REINFORCED PANEL	OVERLAY	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LB PER FT	3 LB PER FT	A36	A572 (ALT)	A36	A572 (ALT)	A36	A572 (ALT)	POST	FOOTING	BRACKET	POST	FOOTING	BRACKET	POST	FOOTING	POST	FOOTING	18" DIA.	24" DIA.	30" DIA.	24" DIA.	30" DIA.								
142	442+07	R/S	R2-1	24" x 30"		X			1																																	
142	450+00	R/S	R2-1	24" x 30"		X			1																																	
142	456+35	R/S	KI-3	36" x 24"	156	X			1																																	
142	463+05	L/S	KI-3	36" x 24"	156	X			1																																	
142	465+00	L/S	R2-1	24" x 30"		X			1																																	
142	467+00	L/S	M1-4	30" x 24"		X			1																																	
142	467+00	L/S	M3-4	24" x 12"		X			1																																	
142	467+00	R/S	W3-5	36" x 36"		X			1																																	
142	469+15	R/S	R1-1	30" x 30"		X			1																																	
143	473+40	R/S	R1-1	30" x 30"		X			1																																	
143	475+00	L/S	R2-1	24" x 30"		X			1																																	
143	475+00	R/S	R2-1	24" x 30"		X			1																																	
143	477+68	R/S	W10-1	36" DIA.		X			1																																	
143	487+15	L/S	W10-1	36" DIA.		X			1																																	

CENTERLINE LOCATION
L or LL - Left of Centerline
R or RR - Right of Centerline
C - On the Centerline

INSTALL POSITION
S - Shoulder Mount
O - Offset Mount
G - Gore Mount
M - Median Mount
OH - Overhead Mount

NOTE: See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Added Tapered Tube. Removed Couplers.	D.D.G.	E.W.N.
01	07-23-10	Added Coupler and Coupler/Footing Quantity	D.D.G.	D.B.

FHWA APPROVAL		10-01-19	APP'D.		Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	K.S.	QUANTITIES	TRACED D.B.
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

TE430

07-01-03

KDOT Graphics Certified 07-07-2022

Sh. No. 146

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss430-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	147	230

QUANTITIES SHEET

DELINEATORS AND OBJECT MARKERS

			RIGID DELINEATORS												FLEXIBLE DELINEATORS												OBJECT MARKERS				
			TYPE 'A'								TYPE 'B'				TYPE 'A'								TYPE 'B'				TYPE 2	TYPE 3			
			WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW		WHITE		WHITE (BACK TO BACK)		YELLOW		YELLOW (BACK TO BACK)		WHITE		YELLOW						
BEGINNING STATION	ENDING STATION	LOCATION DESCRIPTION	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	'U' POST	BRACKET MOUNT	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	TYPE I ANCHOR	TYPE III ANCHOR	'U' POST	'U' POST	'U' POST	'U' POST	BACK TO BACK 'U' POST
456+41	463+00	U-160 MAINLINE																									4				

NO.	DATE	REVISIONS	BY	APP'D
01	10-09-21	Added delineator & object marker types	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

QUANTITIES SHEET
DELINEATORS & OBJECT MARKERS

TE436 07-01-03

FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED D.D.G.	DETAILED K.D.S.	QUANTITIES	TRACED		
DESIGN CK. S.A.B.	DETAIL CK. D.D.G.	QUAN.CK.	TRACE CK.		

KDOT Graphics Certified 05-11-2022 Sh. No. 147

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss436-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	148	230

SUMMARY OF QUANTITIES

SIGNS

TYPE	NUMBER	SQUARE FEET
FLAT SHEET	14	77.49
REINFORCED PANEL		
OVERLAY		

DELINEATORS

TYPE	FLEXIBLE DELINEATOR		RIGID DELINEATOR	
	TYPE I ANCHOR	TYPE III ANCHOR	"U" POST	BRACKET MOUNT
TYPE 'A' WHITE				
TYPE 'A' YELLOW				
TYPE 'B' WHITE				
TYPE 'B' YELLOW				
TYPE 'A' WHITE (BACK TO BACK)				
TYPE 'A' YELLOW (BACK TO BACK)				

OBJECT MARKERS

TYPE		NUMBER
TYPE 2 ("U" POST)		4
TYPE 3 ("U" POST)		
INFORMATION ONLY	OM3-L	
	OM3-R	
	OM3-C	
TYPE 3 ("U" POST) (BACK TO BACK)		

POSTS AND ALUMINUM BEAMS

	4" x 6" POST			3I2.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
NUMBER	14															
FEET	205.0															

POST FOOTINGS AND BRACKETS

	CONCRETE FOOTING (DIA.)					PERFORATED SQUARE STEEL					
						TUBE FOOTING				BRACKET	
	WOOD	A36 STEEL		A572 STEEL (ALT)							
	18"	24"	30"	24"	30"	1-3/4"	2"	2-1/4"	2-1/2"	1-3/4"	2"
NUMBER											
FEET											

BASE PLATES AND STUB POSTS

	W6x9		W10x12		W10x22	
BREAKAWAY BASES	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)
BASE PLATE (TOP)						
STUB POST WITH BASE PLATE						
NON-BREAKAWAY BASES						
BASE PLATE						

REMOVALS

TYPE	NUMBER
SIGNS	32
POSTS	19
FOOTINGS	6
SIGN STRUCTURES	

NUMBER & LENGTHS OF POSTS & ALUMINUM BEAMS (INFORMATION ONLY)

LENGTH OF POST OR BEAM	4" x 6" POST			3I2.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
2.1' - 4'																
4.1' - 6'																
6.1' - 8'																
8.1' - 10'																
10.1' - 12'																
12.1' - 14'	5															
14.1' - 16'	8															
16.1' - 18'	1															
18.1' - 20'																
20.1' - 22'																
22.1' - 24'																
24.1' - 26'																
26.1' - 28'																
28.1' - 30'																
30.1' - 32'																

SIGN STRUCTURES

TYPE	NEW	MODIFIED	REMOVE AND RESET	RESET
OVERHEAD STRUCTURE				
CANTILEVER STRUCTURE				
BUTTERFLY STRUCTURE				
BRIDGE MOUNT ATTACHMENT				
MAST ARM SIGN SUPPORT				
SINGLE TAPERED TUBE SIGN SUPPORT				

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Revised Tables	D.D.G.	E.W.N.
01	07-23-10	Revised Tables	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES FOR INSTALLATIONS AND REMOVALS

TE439 07-01-03

FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 10-15-2025 Sh. No. 148

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 15:00
File : KA647501pss439-01.dgn

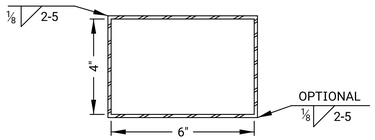
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	149	230

RECAPITULATION OF SIGNING & DELINEATION BID ITEMS

BID ITEMS	APPROXIMATE QUANTITIES		UNITS
SIGN (FLAT SHEET) (HIGH PERFORMANCE)	77.49		SQUARE FOOT
SIGN (REINFORCED PANEL) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN (OVERLAY) (HIGH PERFORMANCE)			SQUARE FOOT
SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)	205		LINEAR FOOT
SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)			LINEAR FOOT
SIGN POST (2 LB/FT "U" STEEL)			LINEAR FOOT
SIGN POST (3 LB/FT "U" STEEL)			LINEAR FOOT
SIGN POST (1-3/4" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2-1/4" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (2-1/2" PERFORATED SQUARE STEEL TUBE)			LINEAR FOOT
SIGN POST (4" X 6" STRUCTURAL STEEL)			LINEAR FOOT
SIGN POST (3 I 2.25 ALUMINUM)			LINEAR FOOT
	A36	A572(ALT)	
SIGN POST (W6X9 STEEL BEAM)			LINEAR FOOT
SIGN POST (W10X12 STEEL BEAM)			LINEAR FOOT
SIGN POST (W10X22 STEEL BEAM)			LINEAR FOOT
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W6X9)			EACH
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W10X12)			EACH
SIGN POST STUB WITH BREAKAWAY BASE PLATE (W10X22)			EACH
SIGN POST BREAKAWAY BASE PLATE (W6X9)			EACH
SIGN POST BREAKAWAY BASE PLATE (W10X12)			EACH
SIGN POST BREAKAWAY BASE PLATE (W10X22)			EACH
SIGN POST FOOTING (24" Dia. CONCRETE)(STEEL BEAM POST)			LINEAR FOOT
SIGN POST FOOTING (30" Dia. CONCRETE)(STEEL BEAM POST)			LINEAR FOOT
SIGN POST FOOTING (18" Dia. CONCRETE)(WOOD POST)			LINEAR FOOT
SIGN POST FOOTING (1-3/4" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2-1/4" PERFORATED SQUARE STEEL TUBE)			EACH
SIGN POST FOOTING (2-1/2" PERFORATED SQUARE STEEL TUBE)			EACH
SIGNING OBJECT MARKER (TYPE 2)	4		EACH
SIGNING OBJECT MARKER (TYPE 3)			EACH
SIGNING DELINEATOR (TYPE A)(WHITE RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW RIGID, "U" POST)			EACH
SIGNING DELINEATOR (TYPE A)(WHITE FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW FLEXIBLE)(TYPE I ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(WHITE FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE A)(YELLOW FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(WHITE FLEXIBLE)(TYPE 3 ANCHOR)			EACH
SIGNING DELINEATOR (TYPE B)(YELLOW FLEXIBLE)(TYPE 3 ANCHOR)			EACH

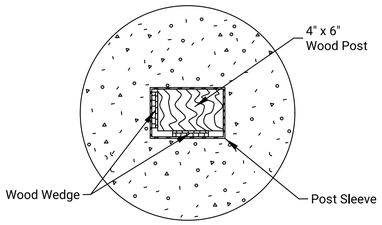
BID ITEMS	APPROXIMATE QUANTITIES	UNITS

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	150	230

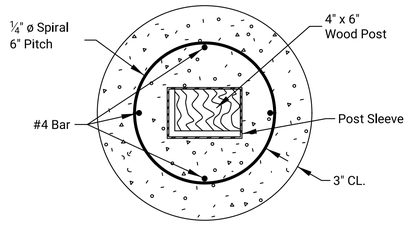


NOTE: Dimensions are to inside of post sleeve.

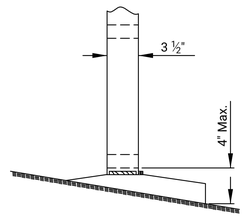
POST SLEEVE



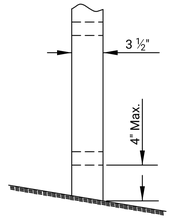
SECTION A-A



SECTION B-B



FRONT ELEVATION
CONCRETE FOOTING



FRONT ELEVATION
SOIL

NOTE TO THE ENGINEER:
The intent of the "AASHTO Roadside Design Guide" and these plans is to have a 4" or less projection above the finished ground line after impact.

BREAKAWAY CLEARANCE

GENERAL NOTES

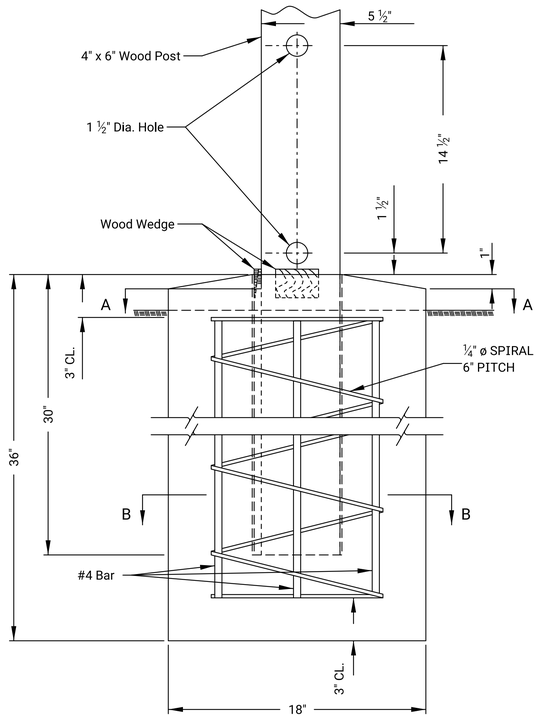
The post sleeve shall be formed from 10 gauge sheet steel to meet the requirements of ASTM A653 and zinc coated to meet the requirements of coating designation A123. If galvanized sheet steel is used, no other galvanization is required. It is permissible to close the bottom of the sleeve with a metal plate. Basis of acceptance shall be visual inspection of the finished sleeve and determination of zinc thickness by magnetic gage.

All sign mounting holes in the wood posts shall be drilled prior to treating.

Breakaway holes, field drilled sign mounting holes, and field cuts shall be treated in accordance with the preservative treatment specifications.

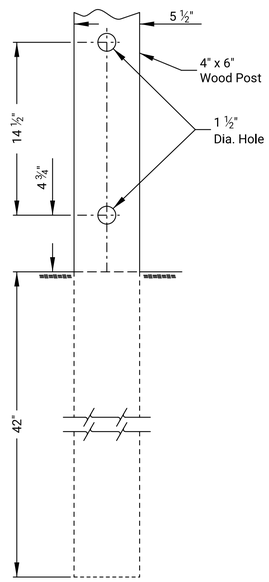
Prior to sealing the opening between the wood post and the top of the concrete footing, secure the post by placing 3" wide by 2" long wood wedges into the opening on two adjacent sides of the post. The wedges are be flush with up to a maximum of ⅜" sticking up above the top of the footing.

Commercial grade concrete may be substituted for sign support footings.



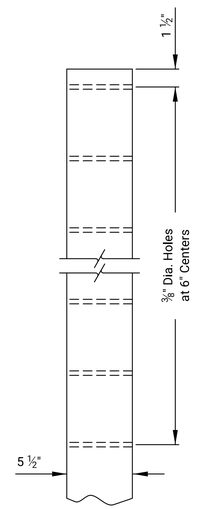
SIDE ELEVATION

WOOD POST IN CONCRETE FOOTING



SIDE ELEVATION

WOOD POST IN SOIL



SIGN POST

SIGN MOUNTING HOLES

All dimensions in inches unless otherwise noted.

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Change details and note	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR WOOD POSTS

TE460 07-01-03

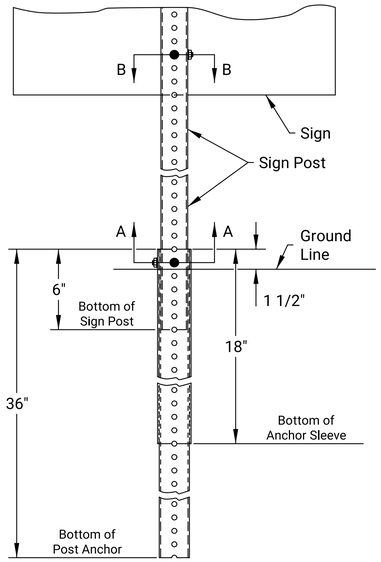
FHWA APPROVAL			10-01-19	APP'D.		Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.		TRACE CK.	

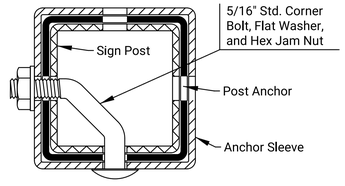
KDOT Graphics Certified 05-26-2022 Sh. No. 150

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss460-01.dgn

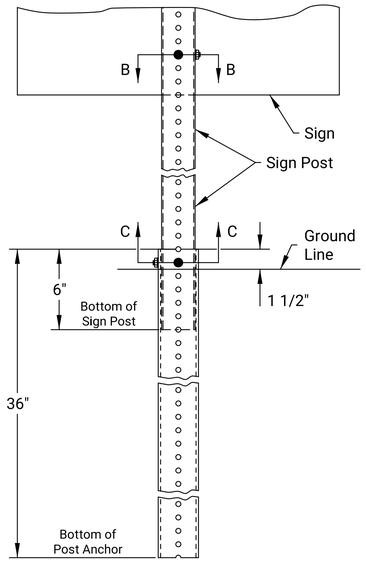
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	151	230

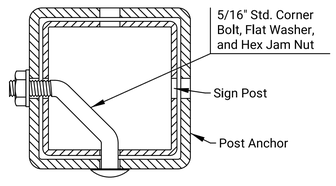




SECTION A-A

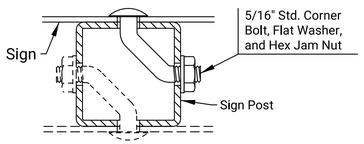
1 ¾", 2", OR 2 ¼" PSST SIGN POST





SECTION C-C

2 ½" PSST SIGN POST



SECTION B-B

MATERIALS TABLE FOR SIGN POST AND FOOTING		
SIGN POST 12 GA. OR 14 GA.	FOOTING	
	POST ANCHOR	ANCHOR SLEEVE
1 ¾" X 1 ¾"	2" X 2" X 12 GA.	2 ¼" X 2 ¼" X 12 GA.
2" X 2"	2 ¼" X 2 ¼" X 12 GA.	2 ½" X 2 ½" X 12 GA.
2 ¼" X 2 ¼"	2 ½" X 2 ½" X 12 GA.	3" X 3" X 7 GA.
2 ½" X 2 ½"	3" X 3" X 7 GA.	Not Required

NOTE: 14 ga. posts must meet a certified minimum yield strength of 60,000 p.s.i.

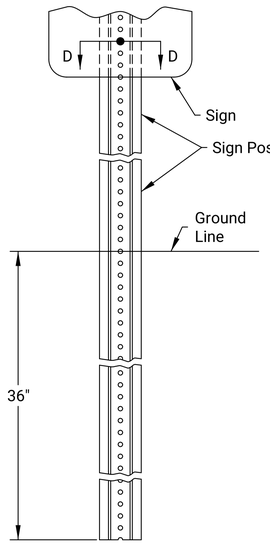
INSTALLATION PROCEDURES

1. Plumb and drive post anchor into the ground 18", if anchor sleeve is required, or to the specified height above the ground line.

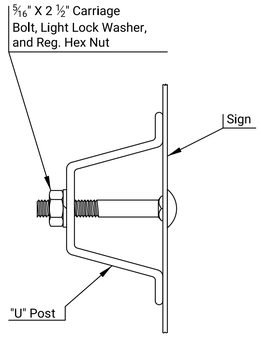
2. Install anchor sleeve (if required) on the post anchor and align the first holes above the ground line. Plumb and drive post anchor with anchor sleeve into the ground to the specified height above the ground line.

3. Install sign post into the post anchor.

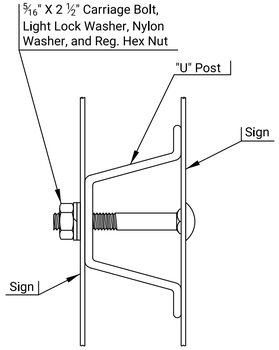
PERFORATED SQUARE STEEL TUBE POST (PSST)



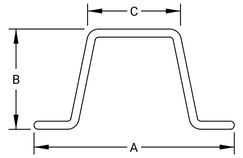
TYPICAL



SECTION D-D
(TYPICAL)



SECTION D-D
(BACK TO BACK)



DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8 "	3 1/2 "
B	1 17/32 "	1 3/4 "
C	1 1/4 "	1 5/8 "

(Dimensions are nominal)

"U" POST

STEEL "U" POST

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR PERFORATED SQUARE STEEL TUBE POSTS (PSST) AND STEEL "U" POSTS

TE466 10-01-19

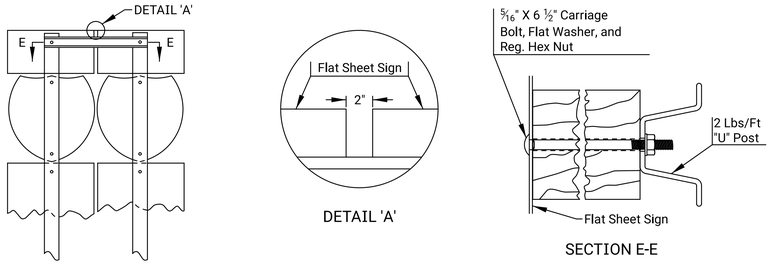
FHWA APPROVAL			10-01-19	APP'D.	Eric W.Nichol		
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES		TRACED	
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN.CK.		TRACE CK.	

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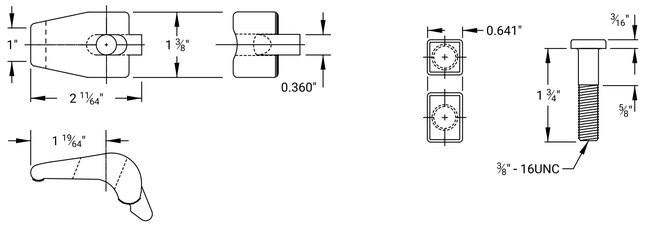
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File : KA647501pss466-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	152	230



ROUTE MARKER ASSEMBLIES ATTACHMENT



ALUMINUM POST CLIP AND POST CLIP BOLT

NOTES:

The top of the post shall not extend above the top of the sign.

When signs are mounted back to back, the signs shall be mounted at their prescribed height. In general installations, the bottom holes of the signs should be aligned. In order to prevent having to drill holes in the signs or posts, the sign on the back should be raised and positioned such that the holes are aligned. When a sign is mounted on the back of the R1-1 (Stop) sign, that sign is to be centered vertically on the R1-1 sign. When a sign is mounted on the back of the R1-2 (Yield) sign, the top holes of the signs should be aligned.

The primary sign and supplemental sign are to be mounted at their prescribed height, but under no circumstances shall the signs overlap each other. If the primary sign cannot be mounted without overlapping, then it shall be raised above the supplemental sign.

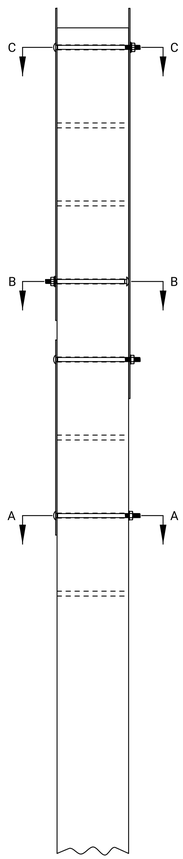
Any additional mounting holes, either through the sign or post, shall be drilled by the contractor. All holes drilled in the post shall be treated with a perservative. All holes drilled in the sign shall be free of any defects and the sheeting around the hole shall not be damaged.

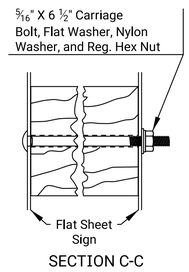
A nylon washer shall be placed against the sheeting when a nut is to be tightened against the sign face.

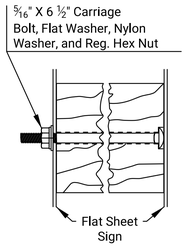
The 3 lb/ft steel "U" post used for reinforced panel sign installations is to be included in the bid item 'SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)'.

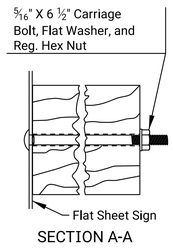
When the 2 lb/ft steel "U" post is used for the route marker assemblies attachment, it shall be subsidiary to the bid item 'SIGN POST (4" x 6" WOOD) (FLAT SHEET SIGN)'.

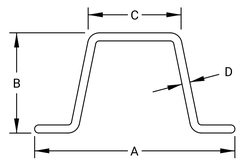
The aluminum post clip bolt may have a rectangular head if the smaller dimension is equal to the square head dimension.









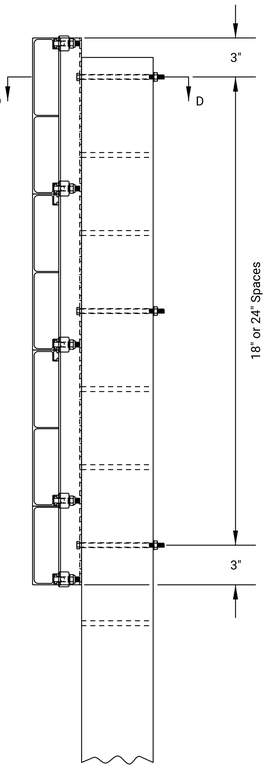


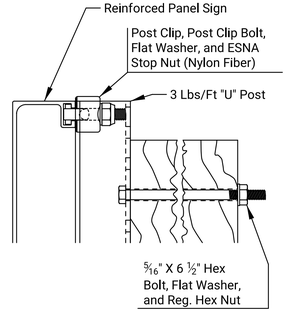
DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8 "	3 1/2 "
B	1 17/32 "	1 3/4 "
C	1 1/4 "	1 5/8 "
D	1/8 "	9/64 "

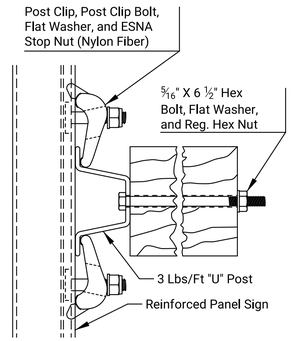
(DIMENSIONS ARE NOMINAL)

"U" POST

TYPICAL MOUNTING OF FLAT SHEET SIGNS







TYPICAL MOUNTING OF REINFORCED PANEL SIGNS

All dimensions are in inches

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Revised drawings and notes	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS FOR MOUNTING SIGNS ON WOOD POST FLAT SHEET AND REINFORCED PANEL

TE481 07-01-03

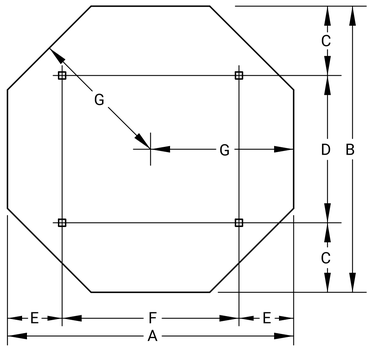
FHWA APPROVAL			10-01-19	APP'D.	Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

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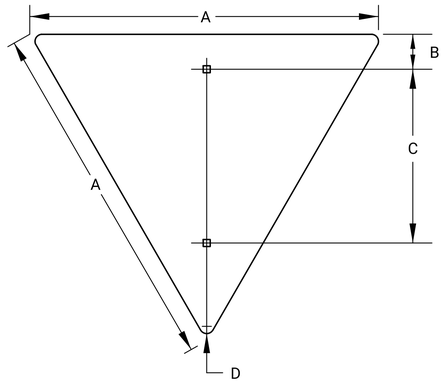
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Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss481-01.dgn

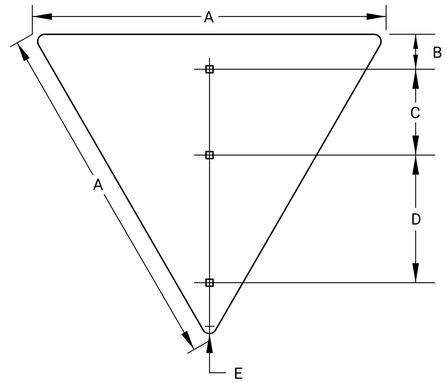
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	153	230



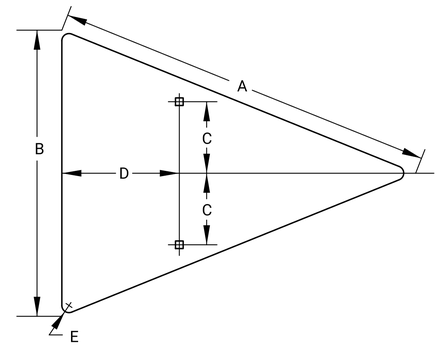
SIGN SIZE	A	B	C	D	E	F	G	T	AREA
48 X 48	48	48	12	24	9	30	24	0.100	13.25



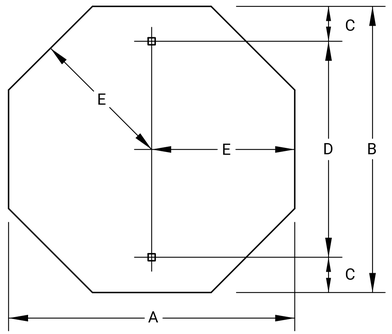
SIGN SIZE	A	B	C	D	T	AREA
36 X 36	36	3	18	2	0.080	3.90



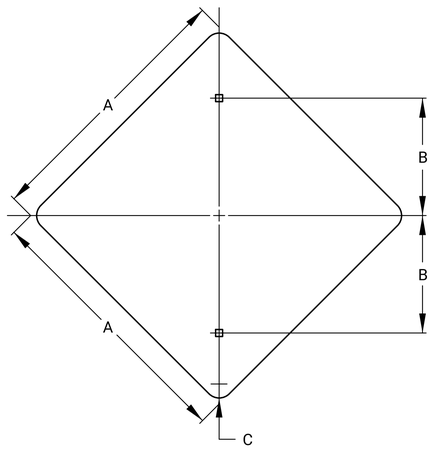
SIGN SIZE	A	B	C	D	E	T	AREA
48 X 48	48	3	12	18	3	0.080	6.93
60 X 60	60	3	18	18	4	0.100	10.83



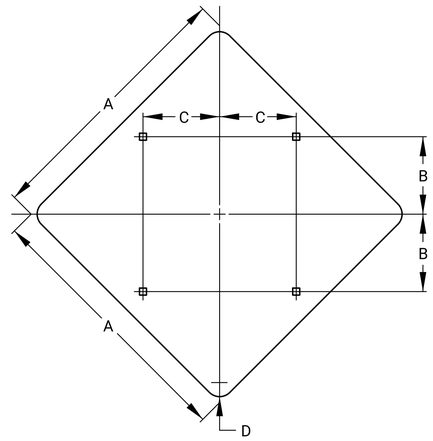
SIGN SIZE	A	B	C	D	E	T	AREA
48 X 36	48	36	9	14 ¾	2 ¼	0.125	5.56



SIGN SIZE	A	B	C	D	E	T	AREA
30 X 30	30	30	3	24	15	0.080	5.18
36 X 36	36	36	6	24	18	0.080	7.46



SIGN SIZE	A	B	C	T	AREA
18 X 18	18	6	1 ½	0.080	2.25
24 X 24	24	12	1 ½	0.080	4.00
30 X 30	30	12	1 ⅞	0.080	6.25
(1) 36 X 36	36	18	2 ¼	0.080	9.00



SIGN SIZE	A	B	C	D	T	AREA
48 X 48	48	12	15	3	0.100	16.00

NOTE:
All holes are 3/8 " square unless otherwise noted.

The dimension "t" is the thickness of the aluminum blank.

(1) Center hole is required.

All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Update sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR FLAT SHEET SIGNS

TE503 07-01-03

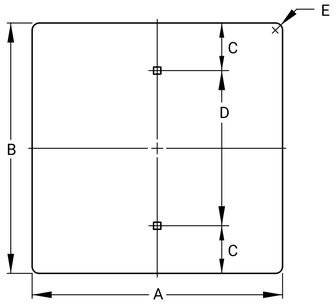
FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED D.D.G.	DETAILED A.A.D.		QUANTITIES	TRACED	
DESIGN CK. S.A.B.	DETAIL CK. D.D.G.		QUAN.CK.	TRACE CK.	

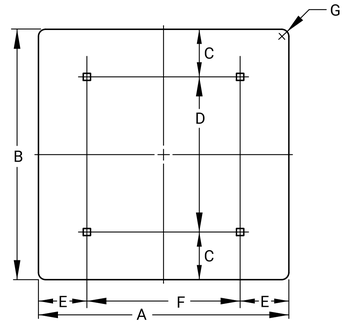
KDOT Graphics Certified 05-26-2022 Sh. No. 153

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss503-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	154	230





	SIGN SIZE	A	B	C	D	E	T	AREA
(1)	3 X 8	3	8	1	6	3/8	0.040	0.17
(1)	6 X 12	6	12	3	6	3/8	0.063	0.50
	12 X 6	12	6	1 1/2	3	3/4	0.063	0.50
	12 X 9	12	9	1 1/2	6	1 1/2	0.063	0.75
	12 X 18	12	18	3	12	1 1/2	0.063	1.50
	12 X 24	12	24	3	18	1 1/2	0.080	2.00
	12 X 36	12	36	6	24	1 1/2	0.080	3.00
	12 X 48	12	48	6	36	1 1/2	0.080	4.00
	18 X 6	18	6	1 1/2	3	1 1/2	0.063	0.75
	18 X 18	18	18	3	12	1 1/2	0.063	2.25
	18 X 30	18	24	3	24	1 1/2	0.080	3.75
	18 X 36	18	24	6	24	1 1/2	0.080	4.50
	18 X 42	18	24	6	30	1 1/2	0.080	5.25
	18 X 48	18	24	6	36	1 1/2	0.080	6.00
	21 X 15	21	15	1 1/2	12	1 1/2	0.080	2.19
	24 X 6	24	6	1 1/2	3	1 1/2	0.080	1.00
	24 X 12	24	12	3	6	1 1/2	0.080	2.00
	24 X 18	24	18	3	12	1 1/2	0.080	3.00
	24 X 24	24	24	3	18	1 1/2	0.080	4.00
	24 X 30	24	30	3	24	1 1/2	0.080	5.00
	24 X 36	24	36	6	24	1 1/2	0.080	6.00
	30 X 12	30	12	3	6	1 7/8	0.080	2.50
	30 X 15	30	15	1 1/2	12	1 7/8	0.080	3.13
	30 X 18	30	18	3	12	1 7/8	0.080	3.75
	30 X 21	30	21	1 1/2	18	1 1/2	0.080	4.38
	30 X 24	30	24	3	18	1 7/8	0.080	5.00
	30 X 30	30	30	3	24	1 7/8	0.080	6.25
	30 X 36	30	36	6	24	1 7/8	0.080	7.50
	36 X 12	36	12	3	6	1 1/2	0.080	3.00
	36 X 18	36	18	3	12	1 1/2	0.080	4.50
	36 X 24	36	24	3	18	1 1/2	0.080	6.00
	36 X 30	36	30	3	24	2 1/4	0.080	7.50
	36 X 36	36	36	6	24	2 1/4	0.080	9.00
(3)	45 X 36	45	36	3	30	2 1/4	0.100	11.25

	SIGN SIZE	A	B	C	D	E	F	G	T	AREA
	36 X 12	36	12	3	6	3	30	1 1/2	0.080	3.00
	36 X 30	36	30	3	24	3	30	2 1/4	0.080	7.50
	36 X 48	36	48	9	30	6	24	0	0.100	12.00
	36 X 60	36	60	12	36	6	24	0	0.100	15.00
(2)	36 X 72	36	72	6	60	6	24	0	0.100	18.00
	42 X 12	48	12	3	6	6	30	1 1/2	0.080	3.50
	42 X 18	48	18	3	12	6	30	1 1/2	0.080	5.25
	42 X 24	48	24	6	12	6	30	1 7/8	0.080	7.00
	42 X 36	48	36	6	24	6	30	0	0.100	10.50
	48 X 12	48	12	3	6	9	30	1 1/2	0.080	4.00
	48 X 18	48	18	3	12	9	30	1 1/2	0.080	6.00
	48 X 24	48	24	6	12	9	30	1 7/8	0.080	8.00
	48 X 30	48	30	6	18	9	30	0	0.100	10.00
	48 X 36	48	36	6	24	9	30	0	0.100	12.00
	48 X 42	48	42	6	30	9	30	0	0.100	14.00
	48 X 48	48	48	9	30	9	30	0	0.100	16.00
	48 X 60	48	60	12	36	9	30	0	0.100	20.00
(2)	48 X 72	48	72	6	60	9	30	0	0.100	24.00
(2)	48 X 96	48	96	12	72	9	30	0	0.100	32.00
	60 X 12	60	12	3	6	12	36	0	0.100	5.00

SIGN SIZE	A	B	C	D	E	F	G	T	AREA
60 X 18	60	18	3	12	12	36	0	0.100	7.50
60 X 24	60	24	6	12	12	36	0	0.100	10.00
60 X 30	60	30	6	18	12	36	0	0.100	12.50
60 X 36	60	36	6	24	12	36	0	0.100	15.00
60 X 42	60	42	6	30	12	36	0	0.100	17.50
60 X 48	60	48	9	30	12	36	0	0.100	20.00
72 X 12	72	12	3	6	15	42	0	0.100	6.00
72 X 18	72	18	3	12	15	42	0	0.100	9.00
72 X 24	72	24	6	12	15	42	0	0.100	12.00
72 X 30	72	30	6	18	15	36	0	0.100	15.00
72 X 36	72	36	6	24	15	42	0	0.100	18.00
72 X 42	72	42	6	30	15	42	0	0.100	21.00
72 X 48	72	48	9	30	15	42	0	0.100	24.00
84 X 12	84	18	3	6	18	48	0	0.100	7.00
84 X 18	84	18	3	12	18	48	0	0.100	10.50
84 X 24	84	24	6	12	18	48	0	0.100	14.00
84 X 30	84	30	6	18	18	48	0	0.100	17.50
84 X 36	84	36	6	24	18	48	0	0.100	21.00
84 X 42	84	42	6	30	18	48	0	0.100	24.50
84 X 48	84	48	9	30	18	48	0	0.100	28.00

NOTE:
All holes are 3/8" square, unless otherwise noted.

The dimension "T" is the thickness of the aluminum blank.

(1) Holes shall be 5/16" diameter.

(2) Dimension "D" requires a center hole.

(3) Additional hole 12" below top hole.

All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Updated sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR FLAT SHEET SIGNS

TE506 07-01-03

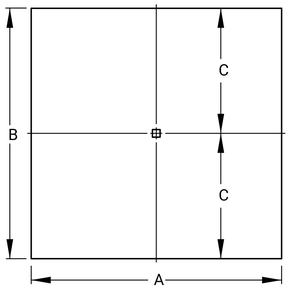
FHWA APPROVAL			10-01-19	APP'D.	Steven A. Buckley		
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED		
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.		

KDOT Graphics Certified 05-26-2022 Sh. No. 154

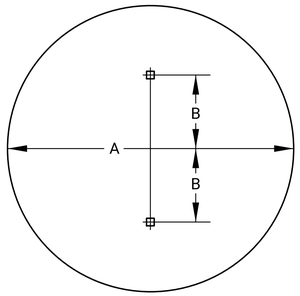
KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501psst506-01.dgn

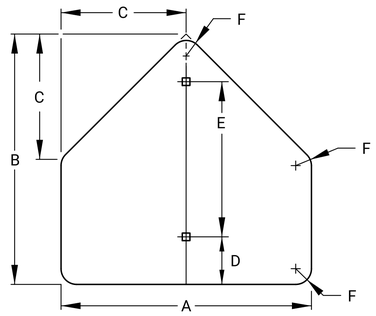
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	155	230



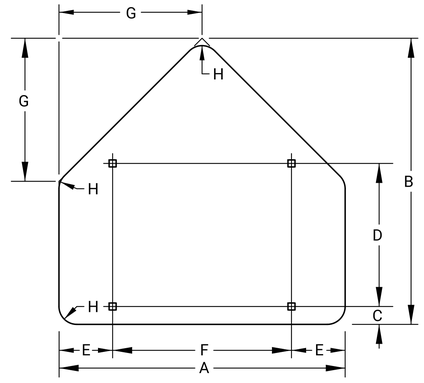
SIGN SIZE	A	B	C	T	AREA
6 X 6	6	6	3	0.063	0.25



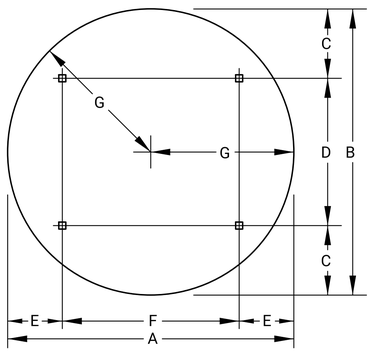
SIGN SIZE	A	B	T	AREA
36 DIA	36	12	0.080	7.07



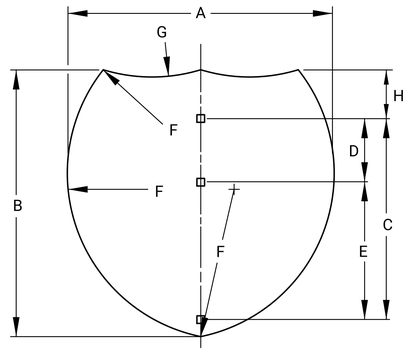
SIGN SIZE	A	B	C	D	E	F	T	AREA
30 X 30	30	30	15	3	24	1 ⅞	0.080	4.69
36 X 36	36	36	18	6	24	2 ¼	0.080	6.75



SIGN SIZE	A	B	C	D	E	F	G	H	T	AREA
48 X 48	48	48	3	24	9	30	24	3	0.100	12.00



SIGN SIZE	A	B	C	D	E	F	G	T	AREA
48 X 48	48	48	12	24	9	30	24	0.100	12.57



INDEPENDENT USE

DIMENSIONS										
SIZE	A	B	C	D	E	F	G	H	T	AREA
24 X 24	24	24	18	-	-	15	15	3	0.080	3.20
36 X 36	36	36	30	12	18	22 ½	22 ½	3	0.080	7.20
30 X 24	30	24	18	-	-	17	24	3	0.080	3.99
45 X 36	45	36	30	12	18	25 ½	36	3	0.100	8.99

NOTE:
All holes are ⅜" square, unless otherwise noted.
Dimension "T" is the thickness of the aluminum blank.

All dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
01	10-01-19	Updated sign blank details and dimensions	D.D.G.	E.W.N.

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR FLAT SHEET SIGNS

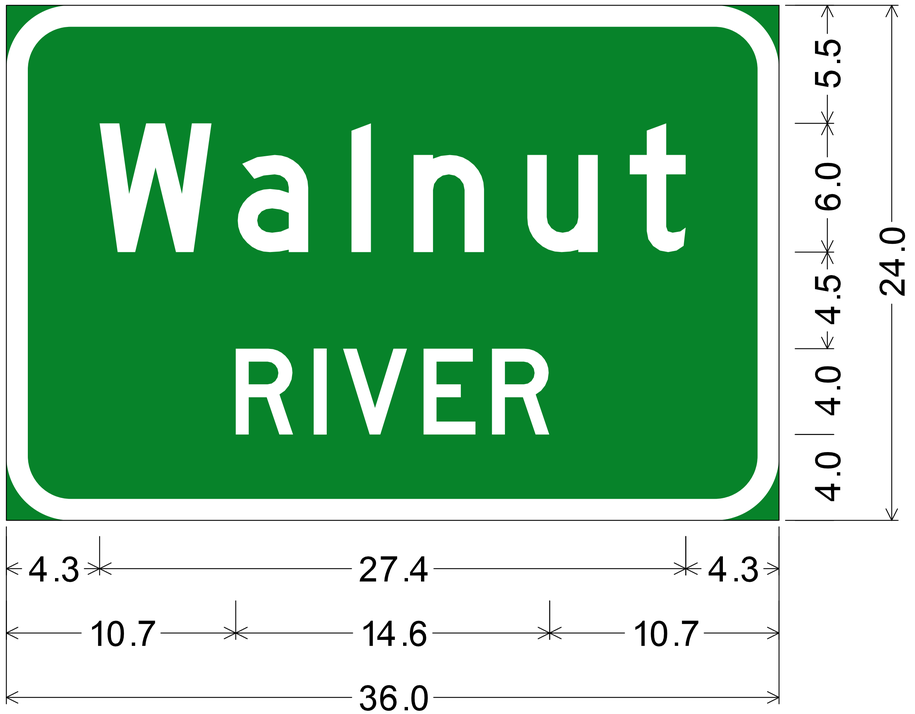
TE509 07-01-03

FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	A.A.D.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-26-2022 Sh. No. 155

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 15:00
File : KA647501pss509-01.dgn



3.0" Radius, 1.0" Border, White on Green;
"Walnut", D; "RIVER", D;
Table of distances between letter and object lefts

	W	a	l	n	u	t	
4.3	6.5	5.3	2.9	5.3	4.7	2.7	4.3

	R	I	V	E	R	
10.7	3.6	1.4	3.7	3.2	2.7	10.7

CADconform Certify This File

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	157	230

DETAILED SPECIFICATIONS FOR FLAT SHEET SIGNS AND OVERLAY PANELS

All new flat sheet sign blanks shall be of the fabrication and thickness shown on the flat sheet blank detail sheets, unless other details are shown in the plans.

Flat sheet blanks shall be used for signs that are less than or equal to 7'-0" in length and/or less than or equal to 4'-0" in height, unless other details are shown in the plans. Flat sheet blanks shall also be used for signs that are 4'-0" in length and less than or equal to 8'-0" in height, unless other details are shown in the plans.

The design details for signs (color, letter height, and letter series) shall be as shown in the FHWA Standard Highway Signs and Markings book (2004 edition and supplements), unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The school warning signs, the "SCHOOL" portion of the S5-1 sign, S4-3p plaque, and any supplemental plaques used with these warning signs shall have a fluorescent yellow-green background, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

DETAILED SPECIFICATIONS FOR REINFORCED PANEL SIGNS

All new reinforced sign panels shall be of the fabrication and thickness shown on the reinforced panel detail sheets. If extrusheet fabricated sign panels are used, they shall be of the length, width and in the position shown. If extrusheet fabricated panel dimensions are not shown, a line of legend should be placed entirely on one panel. If extruded fabricated sign panels are used, either 1'-0" or 6" panels shall be used. The 6" panels shall be used only at the top or bottom of signs.

Reinforced panels shall be used for signs that are greater than 7'-0" in length or greater than 4'-0" in height, unless other details are shown in the plans.

All sign faces shall be covered with Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The sheeting used for the direct applied legend and borders shall be Type IV high intensity retroreflective sheeting, unless otherwise noted in the plans.

The type of adhesive used for retroreflective sheeting or lettering film shall be heat activated or pressure sensitive.

Letters and numbers on reinforced panel signs are modified Series "E" unless otherwise shown.

Spacing table dimensions are in inches.

NO.	DATE	REVISIONS	BY	APP'D
02	10-01-19	Changed notes	D.D.G.	E.W.N.
01	07-23-10	Changed Notes and Sheeting Type	D.D.G.	D.B.

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS

TE590 07-01-03

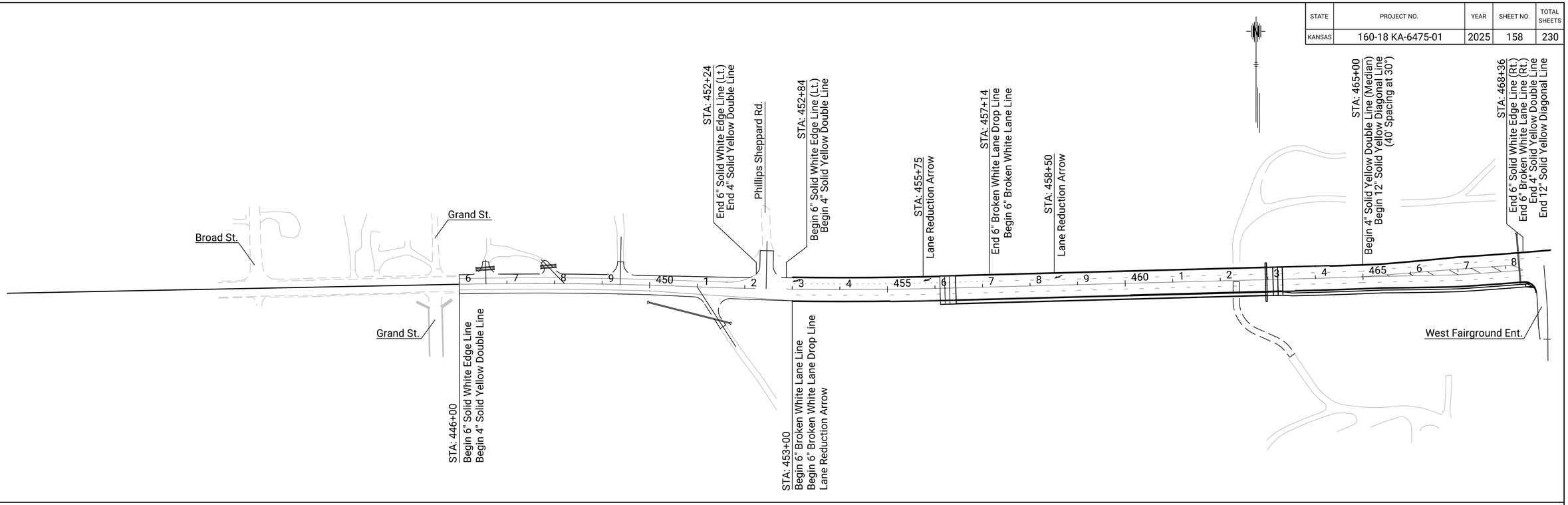
FHWA APPROVAL			10-01-19	APP'D.		Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES		TRACED	
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.		TRACE CK.	

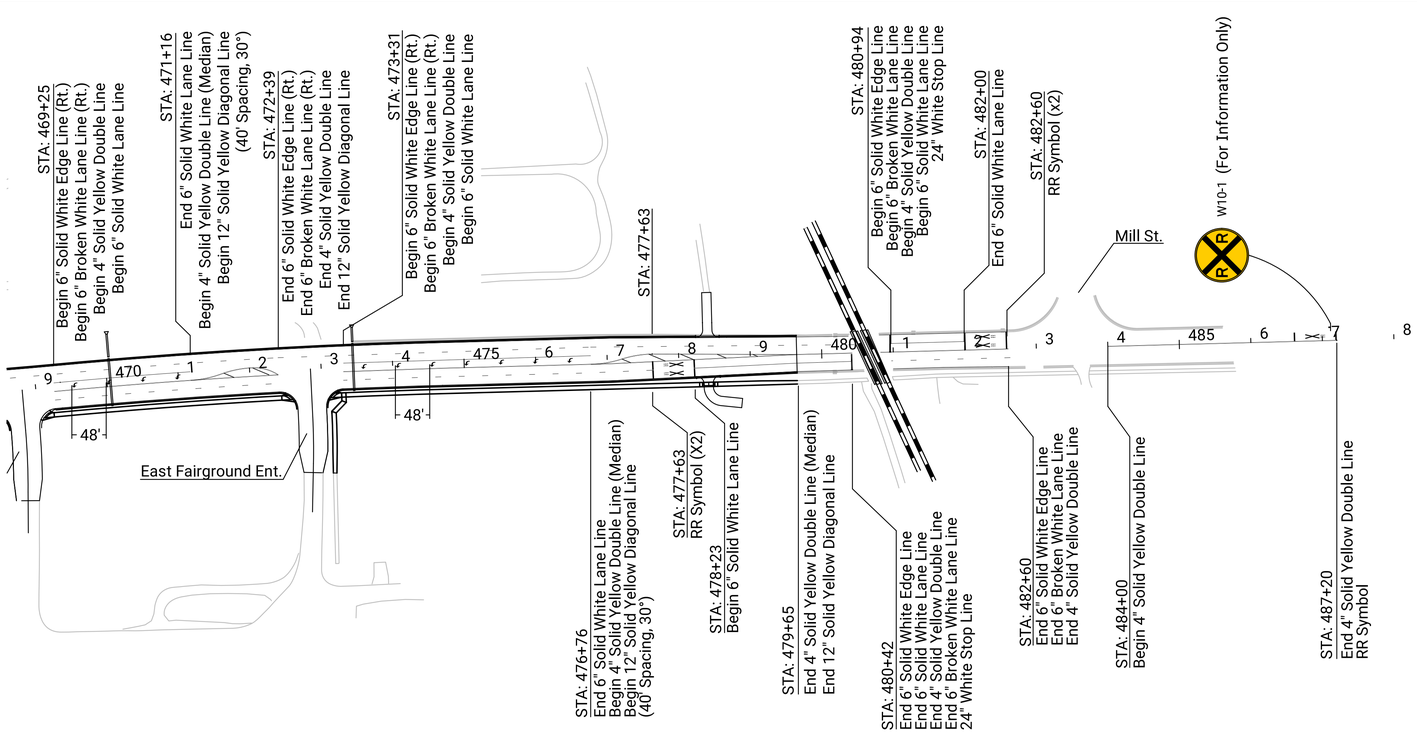
KDOT Graphics Certified 05-24-2022 Sh. No. 157

KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 15-OCT-2025 14:59
File : KA647501pss590-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	158	230





Project 160-18 KA-6475-01 Notes:
All permanent, duarbale pavement markings East of the RR crossing shall be installed and in place prior to any Temporary Traffic Control operation/phasings to assist with traffic management.

KANSAS DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING
MAINLINE US-160 / W. 9th Ave.

STA: 446+00 - STA: 487+20

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

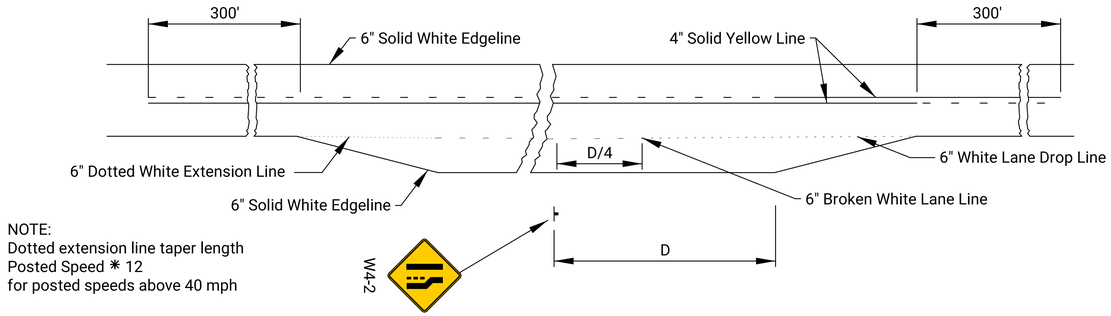
KDOT Graphics Certified 10-03-2024

Sh. No. 158

Plotted by : Jonny.Madrid@ks.gov 10-OCT-2025 17:07
File : 160.18 KA.6475.01-mpl-01.dgn Traffic

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	159	230

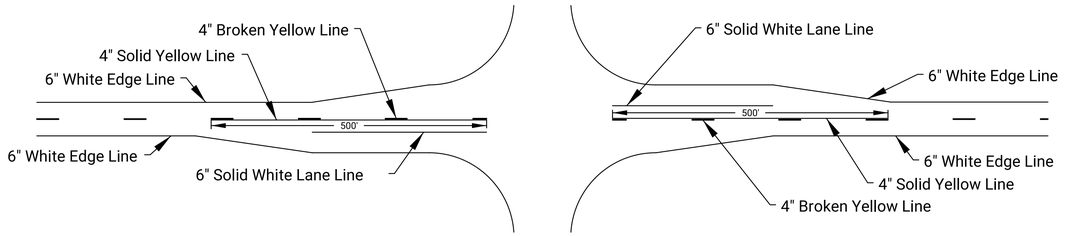


NOTE:
Dotted extension line taper length
Posted Speed ✳ 12
for posted speeds above 40 mph

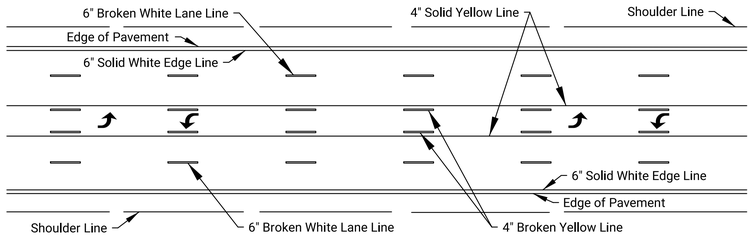
TYPICAL MARKING FOR AUXILIARY PASSING LANE

NOTE:
All pavement markings shall be broken at cross roads.

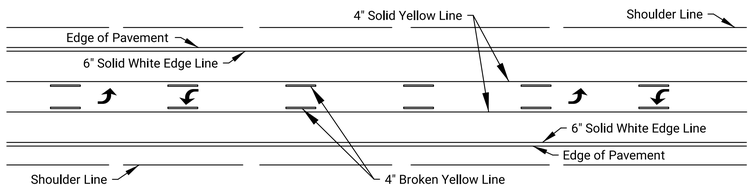
For highway junctions the no passing zone will extend 1000' from intersection.



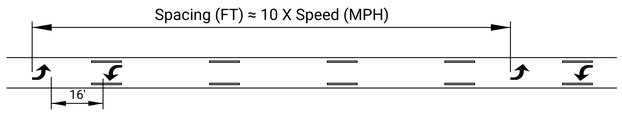
TYPICAL ROAD JUNCTION MARKINGS WITH BYPASS LANES



TWO-WAY LEFT TURN DETAIL FOR FIVE LANE ROADWAY

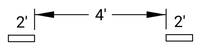


TWO-WAY LEFT TURN DETAIL FOR THREE LANE ROADWAY

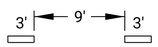


TWO-WAY LEFT TURN ARROW SPACING DETAIL

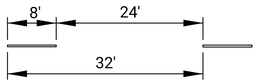
NOTE:
If arrows are used space the arrows as shown in the spacing detail.



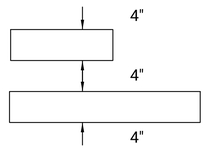
TYPICAL SPACING FOR DOTTED EXTENSION LINES, UNLESS OTHERWISE NOTED ON PLANS.



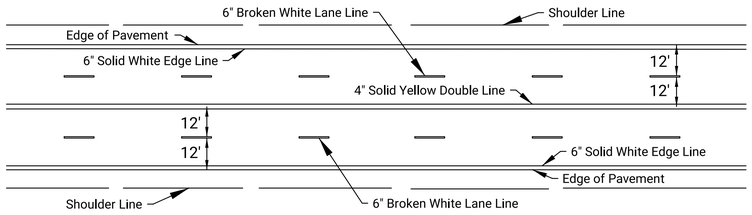
TYPICAL SPACING FOR LANE DROP, UNLESS OTHERWISE NOTED ON PLANS.



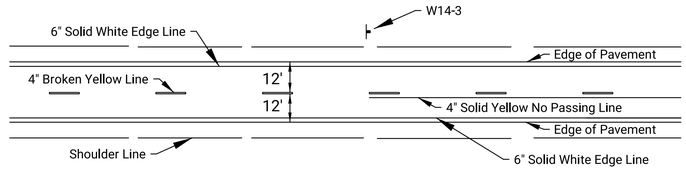
TYPICAL SPACING FOR BROKEN LINES, UNLESS OTHERWISE NOTED ON PLANS



TYPICAL SPACING FOR NO PASSING LINES, UNLESS OTHERWISE NOTED ON PLANS



TYPICAL MARKINGS FOR FOUR LANE ROADWAY



TYPICAL TWO LANE MARKINGS

NOTE:
Longitudinal pavement marking lines shall be offset a minimum of 2" from longitudinal pavement joints.

On non I, US, and K routes, 4" edge lines may be installed.
6" edge lines are not required on non I, US, and K routes.

NO.	DATE	REVISIONS	BY	APP'D
03	05-25-12	Added Dotted Extension and Lane Drop Lines	B.A.H.	B.D.G.
02	09-20-05	Removed Aux. Passing Lane Dotted Ext. Line	J.F.F.	B.D.G.
01	07-26-05	New FHWA Approval Date	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL PAVEMENT MARKING DETAILS FOR UNDIVIDED ROADWAYS

TE308

FHWA APPROVAL		05-25-12	APP'D.	Brian D. Gower	
DESIGNED	J.F.F.	DETAILED	J.F.F.	QUANTITIES	TRACED
DESIGN CK.	B.D.G.	DETAIL CK.	B.D.G.	QUAN.CK.	TRACE CK.

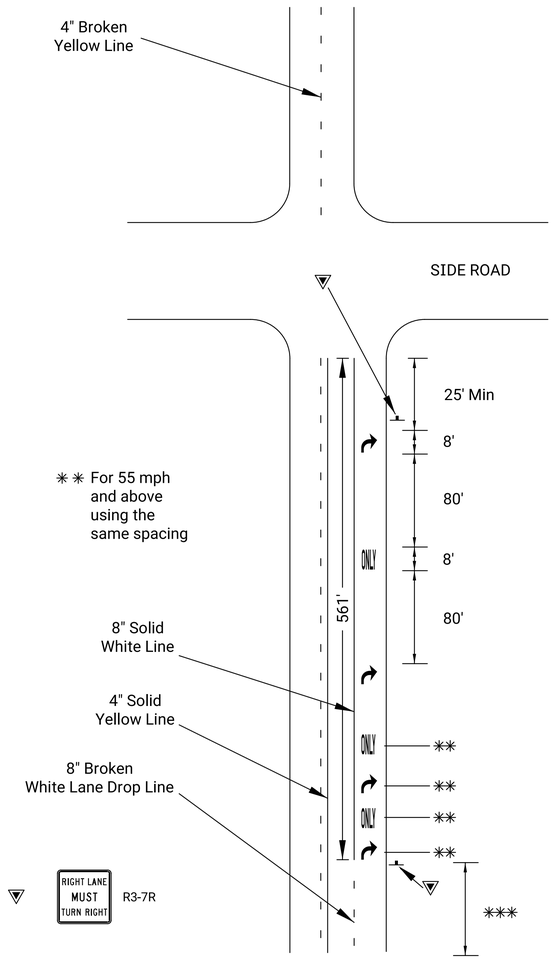
KDOT Graphics Certified 07-19-2022 Sh. No. 159

KDOT Graphics Certified

Plotted by : Jonny.Madrid@ks.gov 10-OCT-2025 17:07
File : te308.dgn

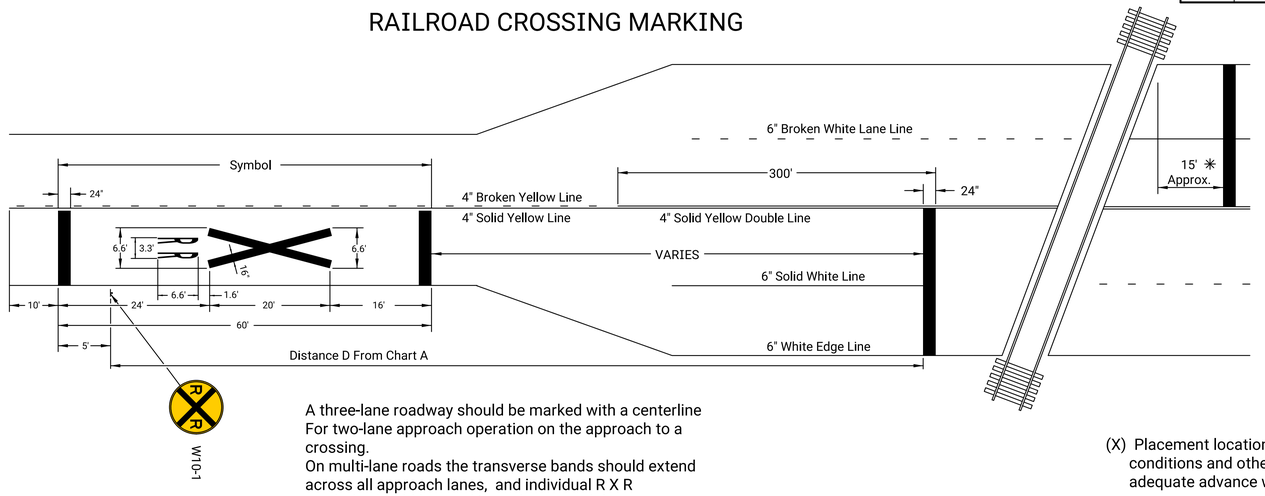
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	160	230

TYPICAL SIGNING AND MARKING FOR RIGHT LANE MUST TURN RIGHT



✳✳✳ The lane drop markings length is a minimum of 100' and a maximum of 250' prior to the 8"solid white line

RAILROAD CROSSING MARKING



A three-lane roadway should be marked with a centerline For two-lane approach operation on the approach to a crossing.
On multi-lane roads the transverse bands should extend across all approach lanes, and individual R X R symbols should be used in each approach lane.
Refer to standard alphabet for highway signs and markings for R X R symbols details.

✳Stop line 8' from near edge of gate or cantilever, if present.

NOTE:
On non I, US, and K routes, 4" edge lines may be installed.
6" edge lines are not required on non I, US, and K routes.

CHART "A"

SPEED MPH	DISTANCE D (feet)
75	850
70	750
65	650
60	550
55	450
50	375
45	300
40	225
35	150
30	(X)
25	(X)
20	(X)

All distances are minimum.

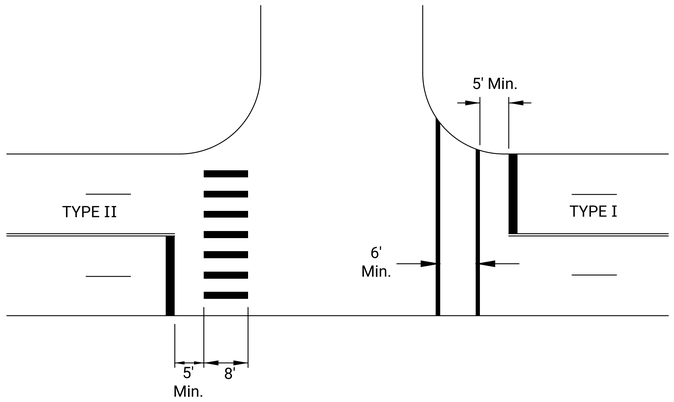
(X) Placement location is dependent on site conditions and other signing to provide adequate advance warning to the driver

TYPICAL CROSSWALKS

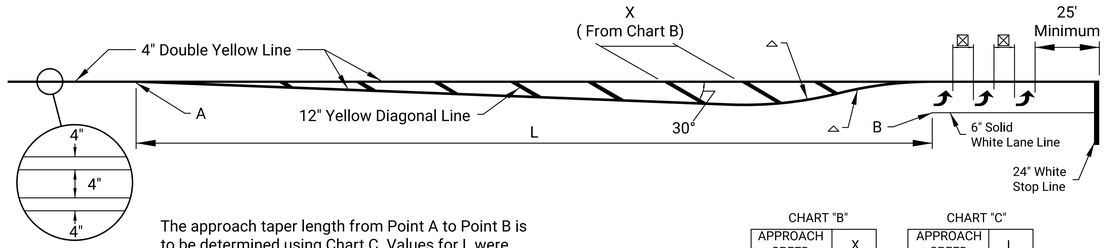
TYPE I: Crosswalk lines shall be 12" solid white lines. They shall be spaced a minimum of 6' apart from inside edge to inside edge.

TYPE II: These lines should be solid white 24" wide placed parallel to the direction of traffic flow. The line placement is determined by lane line, center line, and wheel path in such a manner as to minimize traffic wear. The crosswalk width should be not less than 8'. The transverse crosswalk lines may be added.

When required, stop lines shall be installed a minimum of 5' from crosswalks.



TYPICAL APPROACH TAPER DETAIL



The approach taper length from Point A to Point B is to be determined using Chart C. Values for L were calculated using the equations below and increased to the next higher 5 mph increment.

- SPEEDS < 45 MPH $L = \frac{W \times S^2}{60}$
- SPEEDS = 45 MPH $L = W \times S$

If arrows are used and unless otherwise specified the space between lines should be at least four times the height of the characters for low speed roads but not more than ten times the height of the characters, under any conditions.

For speeds less than or equal to 40 mph, R=150'.
for speeds greater than or equal to 45 mph, R=300'.

CHART "B"

APPROACH SPEED	X
20 MPH	20'
25 MPH	25'
30 MPH	30'
35 MPH	35'
40 MPH	40'
45 MPH	45'
50 MPH	50'
55 MPH	55'
60 MPH	60'
65 MPH	65'
70 MPH	70'

CHART "C"

APPROACH SPEED	L
20 MPH	80'
25 MPH	125'
30 MPH	180'
35 MPH	245'
40 MPH	320'
45 MPH	540'
50 MPH	600'
55 MPH	660'
60 MPH	720'
65 MPH	780'
70 MPH	840'

NO.	DATE	REVISIONS	BY	APP'D
03	05-25-12	Updated Chart B and Lane Drop Lines	B.A.H.	B.D.G.
02	10-20-06	RR Xing Symbol Changed from 18" to 16"	T.L.H.	B.D.G.
01	09-20-05	Added 4" Solid Yellow Double Line to RRxing	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL MISCELLANEOUS PAVEMENT MARKING DETAIL SHEET

TE309

FHWA APPROVAL		07-26-05	APP'D.	Brian D. Gower	
DESIGNED	J.F.F.	DETAILED	J.F.F.	QUANTITIES	TRACED
DESIGN CK.	B.D.G.	DETAIL CK.	B.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-05-2022 Sh. No. 160

KDOT Graphics Certified

Plotted by : Jonny.Madrid@ks.gov 10-OCT-2025 17:07
File : te309.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	161	230

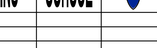
SUMMARY OF PAVEMENT MARKINGS

LOCATION	4" Solid WHITE Edge Line	6" Solid WHITE Edge Line	6" Broken WHITE Lane Line	6" Broken WHITE Lane Line (PCP)	6" Dotted WHITE Extension Line	6" Broken WHITE Lane Drop Line	6" Solid WHITE Lane Line	8" Broken WHITE Lane Drop Line	8" Solid WHITE Gore Line	8" Dotted WHITE Extension Line	12" Solid WHITE Diagonal Line	12" Solid WHITE Chevron Line	12" Solid WHITE Type I Crosswalk Line	24" Solid WHITE Type II Crosswalk Line	24" Solid WHITE Stop Line	4" Solid YELLOW Edge Line	4" Solid YELLOW Double Line	4" Solid YELLOW Line	4" Broken YELLOW Line	6" Solid YELLOW Edge Line	12" Solid YELLOW Diagonal Line
MAINLINE US-160 / W. 9th Ave.																					
STA: 446+00 - STA: 468+63		6,975	4,776			414	860								48		4,512				219
TOTALS		6,975	1,194			104	860								48		9,024				219

RECAPITULATION OF QUANTITIES

ITEMS	TOTAL	UNITS
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(4")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(6")	9,133	FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(8")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(12")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(4")	9,024	FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(6")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(12")	219	FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(4")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(6")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(8")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(12")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(4")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(6")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(12")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(4")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(6")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(8")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(12')		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(4')		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(6')		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(12")		FT
PAVEMENT MARKING (INTERSECTION GRADE)(WHITE)(12')		FT
PAVEMENT MARKING (INTERSECTION GRADE)(WHITE)(24')	48	FT
PAVEMENT MARKING (INTERSECTION GRADE)(YELLOW)(12")		FT
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)(LEFT ARROW)	11	EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE) (MERGE LEFT ARROW)	3	EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)(X-ING)	5	EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(US-SHIELD)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(K-SHIELD)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(I-SHIELD)( )		EACH
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(6")		FT
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(8")		FT
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(12")		FT
PAVEMENT MARKING REMOVAL	1,650	FT

SUMMARY OF WORD & SYMBOL MARKINGS

LOCATION							STOP	ONLY	X-ING	SCHOOL											
STA: 446+00 - STA: 468+63					11															3	5
TOTALS					11															3	5

NOTE:
For specific pavement marking details and dimensions see plan sheets.

All totals reflect actual quantity of pavement marking materials required.

Prior to commencement of pavement marking work the Engineer will establish the limits for "no passing" zones. These limits shall be used for the location of "no passing" lines and for the computation of actual marking quantities for this line type.

Words & symbols shall conform to the latest edition of "Standard Alphabets for Highway Signs and Pavement Markings" printed by the U.S. Department of Transportation, Federal Highway Administration.

Project 160-18 KA-6475-01 Notes:
All permanent, duarbale pavement markings East of the RR crossing shall be installed and in place prior to any Temporary Traffic Control operation/phasings to assist with traffic management.

NO.	DATE	REVISIONS	BY	APP'D
02	05-25-12	Added Line Types, Symbols, and Shields	B.A.H.	B.D.G.
01	07-26-05	New FHWA Approval Date	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY AND RECAPITULATION OF PAVEMENT MARKING QUANTITIES

~~TE311~~

FHWA APPROVAL		05-25-12	APP'D.	Brian D. Gower	
DESIGNED	J.F.F.	DETAILED	J.F.F.	QUANTITIES	TRACED
DESIGN CK.	B.D.G.	DETAIL CK.	B.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 10-30-2024 Sh. No. 161

KDOT Graphics Certified

Plotted by : Jonny.Madrid@ks.gov 10-OCT-2025 17:06
File : te311.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	162	230

PHASE 1

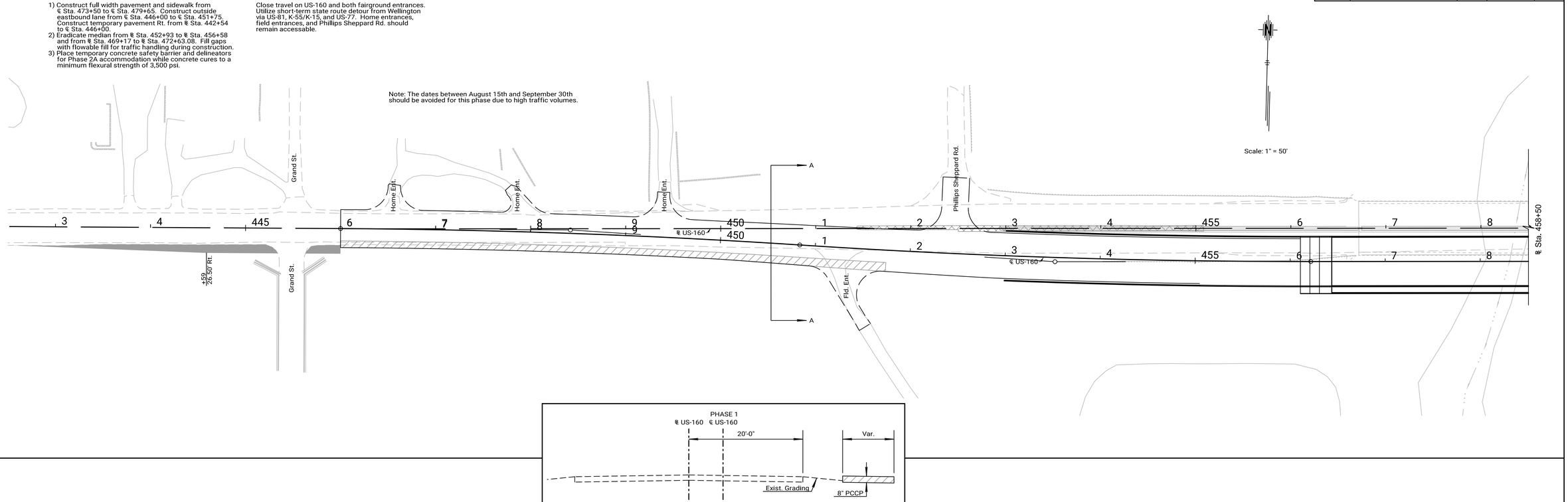
PHASE 1 - CONSTRUCTION

1) Construct full width pavement and sidewalk from ℄ Sta. 473+50 to ℄ Sta. 479+65. Construct outside eastbound lane from ℄ Sta. 446+00 to ℄ Sta. 451+75. Construct temporary pavement Rt. from ℄ Sta. 442+54 to ℄ Sta. 446+00.
2) Eradicate median from ℄ Sta. 452+93 to ℄ Sta. 456+58 and from ℄ Sta. 469+17 to ℄ Sta. 472+63.08. Fill gaps with flowable fill for traffic handling during construction.
3) Place temporary concrete safety barrier and delineators for Phase 2A accommodation while concrete cures to a minimum flexural strength of 3,500 psi.

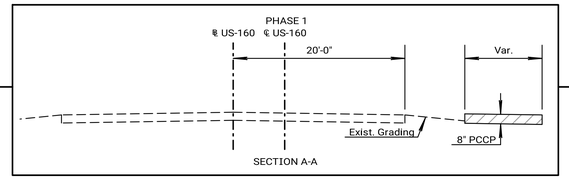
PHASE 1 - TRAFFIC

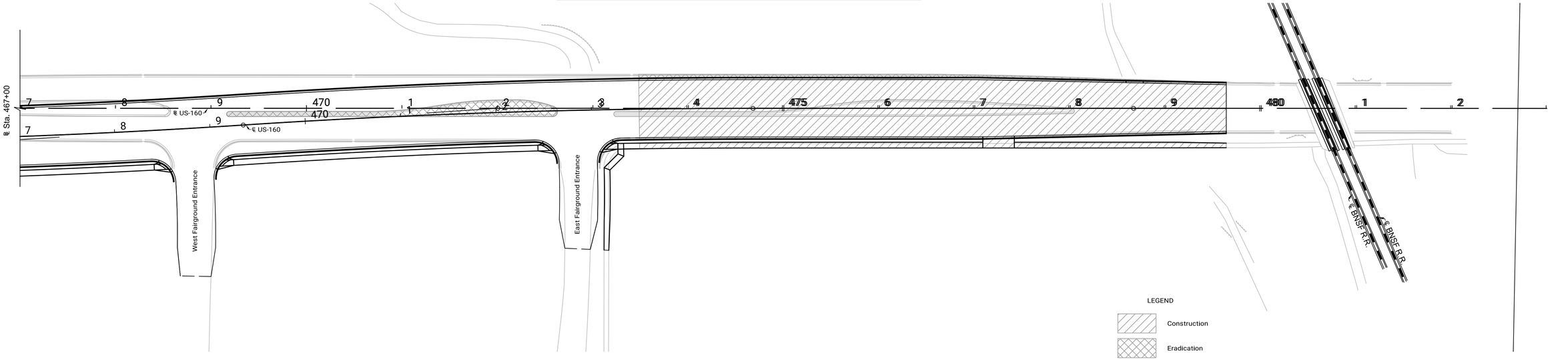
Close travel on US-160 and both fairground entrances. Utilize short-term state route detour from Wellington via US-81, K-55/K-15, and US-77. Home entrances, field entrances, and Phillips Sheppard Rd. should remain accessable.

Note: The dates between August 15th and September 30th should be avoided for this phase due to high traffic volumes.



Scale: 1" = 50'





LEGEND

- Construction
- Eradication
- Temporary Pavement

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 1

Sh. No. 162

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 19:47
File : KA6475501rcs-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	163	230

PHASE 2A

PHASE 2A - CONSTRUCTION

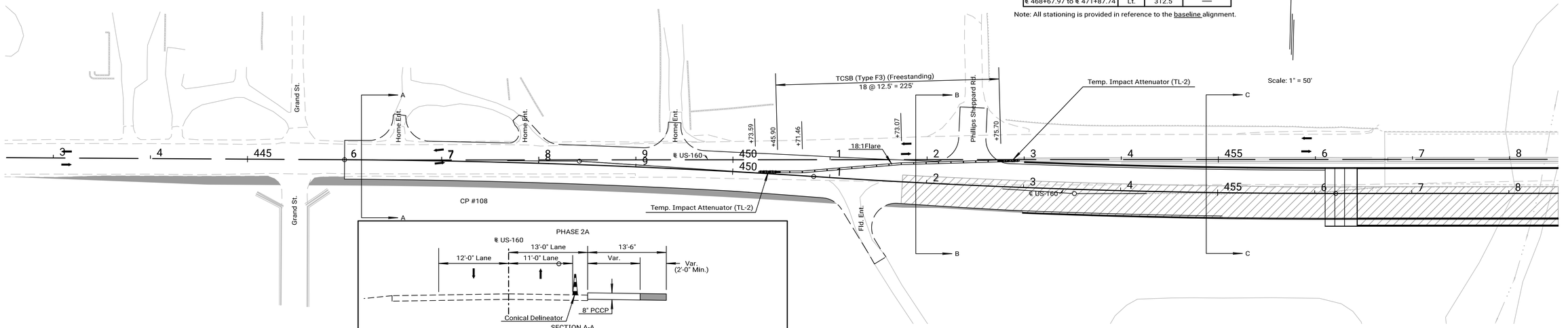
1) Construct Rt. side of Bridge No. 160-18-317.49(114).
2) Construct pavement Rt. from ℄ Sta. 451+75 to ℄ Sta. 471+50. Construct temporary pavement Rt. from ℄ Sta. 446+00 to ℄ Sta. 452+90. Construct sidewalks from ℄ Sta. 462+97.78 to ℄ Sta. 471+50.
3) Construct tapered permanent concrete safety barrier Rt.
4) Reconstruct fairground entrance at ℄ Sta. 468+81.

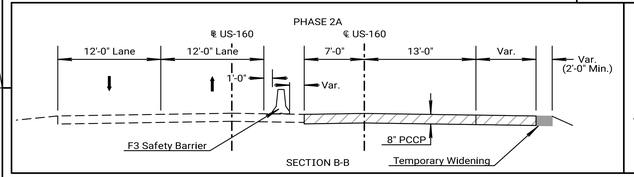
PHASE 2A - TRAFFIC

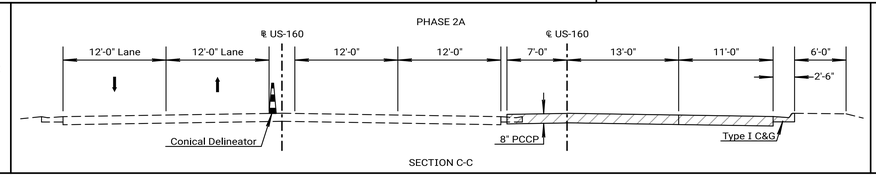
Shift traffic onto existing westbound lanes, carrying one lane of traffic in both directions. Traffic will shift back to proper lanes east of the fairground entrance at ℄ Sta. 472+85. Drivers will be able to access the fairgrounds using the east entrance only.

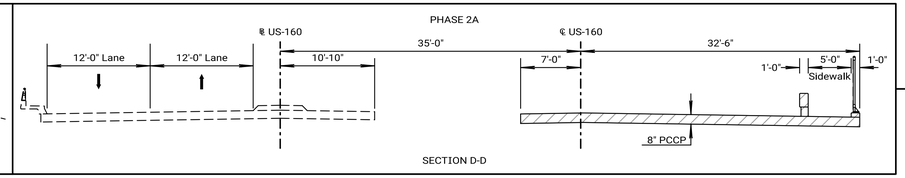
Temporary Concrete Safety Barrier (Type F3) Phase 2A			
Station to Station	Side	Type F3	Type F3 (Anchored)
℄ 450+45.90 to ℄ 452+75.70	Lt.	225'	—
℄ 468+67.97 to ℄ 471+87.74	Lt.	312.5'	—

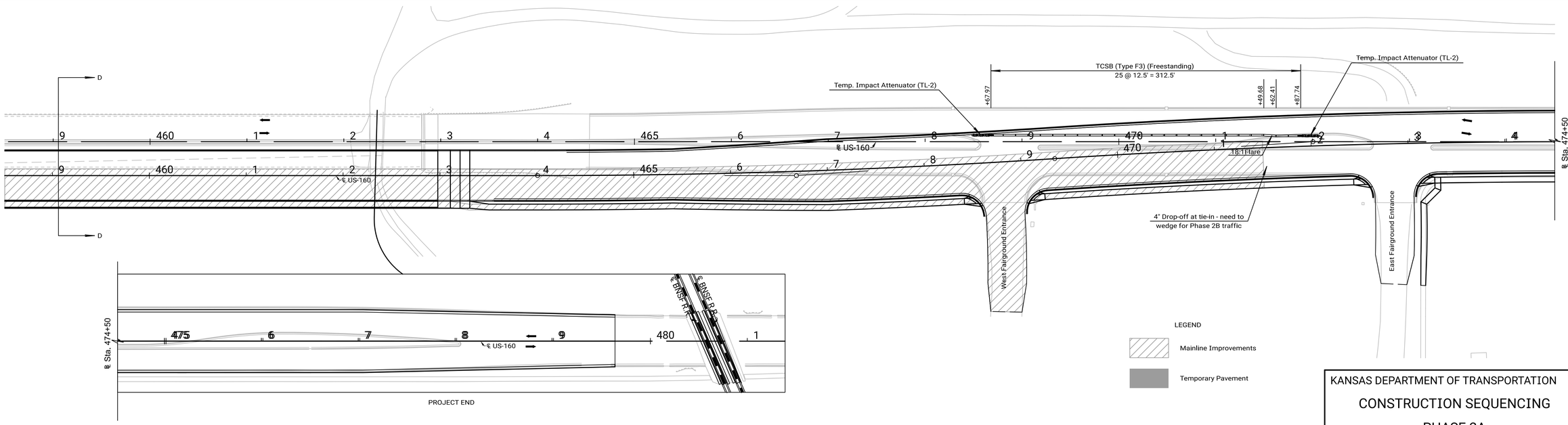
Note: All stationing is provided in reference to the baseline alignment.











LEGEND

- Mainline Improvements
- Temporary Pavement

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 2A

Sh. No. 163

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 21-OCT-2025 15:17
File : KA6475501rcs-02.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	164	230

PHASE 2B

PHASE 2B - CONSTRUCTION

1) Install temporary concrete safety barrier to accommodate traffic during Phase 2B.
2) Construct inside eastbound lane Rt. from ℄ Sta. 446+00 to ℄ Sta. 451+75 and from ℄ Sta. 471+50 to ℄ Sta. 473+50.
3) Reconstruct field entrance at ℄ Sta. 451+00.

PHASE 2B - TRAFFIC

Carry traffic on one lane in each direction; eastbound traffic on newly constructed eastbound pavement, and westbound traffic on existing westbound pavement.

Note: Right-in-right-out at all entrances, Grand St., and Phillips Sheppard Rd.

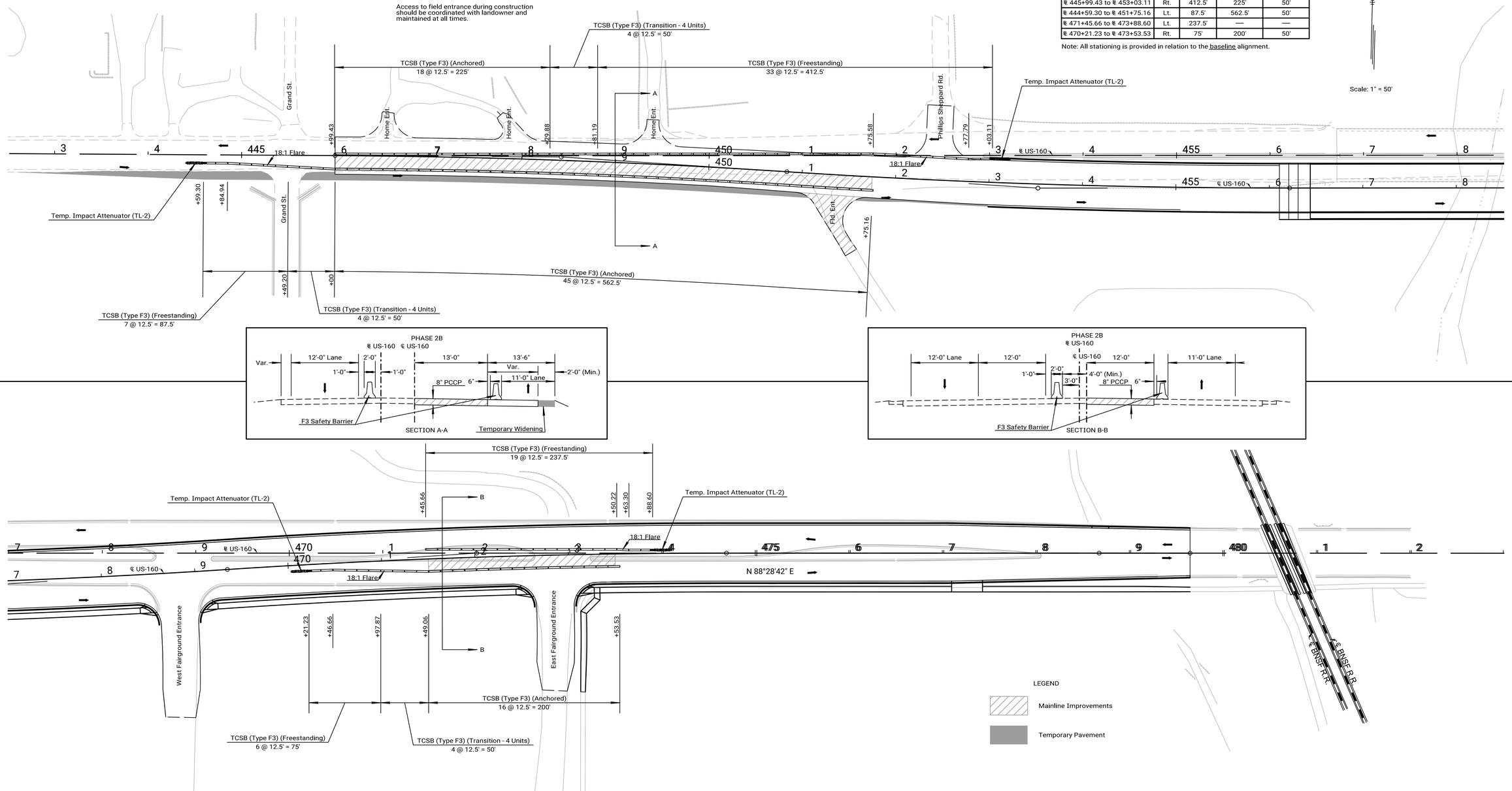
Access to field entrance during construction should be coordinated with landowner and maintained at all times.

Temporary Concrete Safety Barrier (Type F3) Phase 2B				
Station to Station	Side	Type F3	Type F3 (Anchored)	Type F3 (Transition)
℄ 445+99.43 to ℄ 453+03.11	Rt.	412.5'	225'	50'
℄ 444+59.30 to ℄ 451+75.16	Lt.	87.5'	562.5'	50'
℄ 471+45.66 to ℄ 473+88.60	Lt.	237.5'	—	—
℄ 470+21.23 to ℄ 473+53.53	Rt.	75'	200'	50'

Note: All stationing is provided in relation to the baseline alignment.



Scale: 1" = 50'



DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 19:42
File : KA647501rcs-03.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 2B

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	165	230

PHASE 2C

PHASE 2C - CONSTRUCTION

1) Reconfigure temporary concrete barrier for traffic accommodation during Phase 2C.
2) Construct outer eastbound lane from ℄ Sta. 471+50 to ℄ Sta. 473+50.
3) Reconstruct fairground entrance at ℄ Sta. 472+85.

PHASE 2C - TRAFFIC

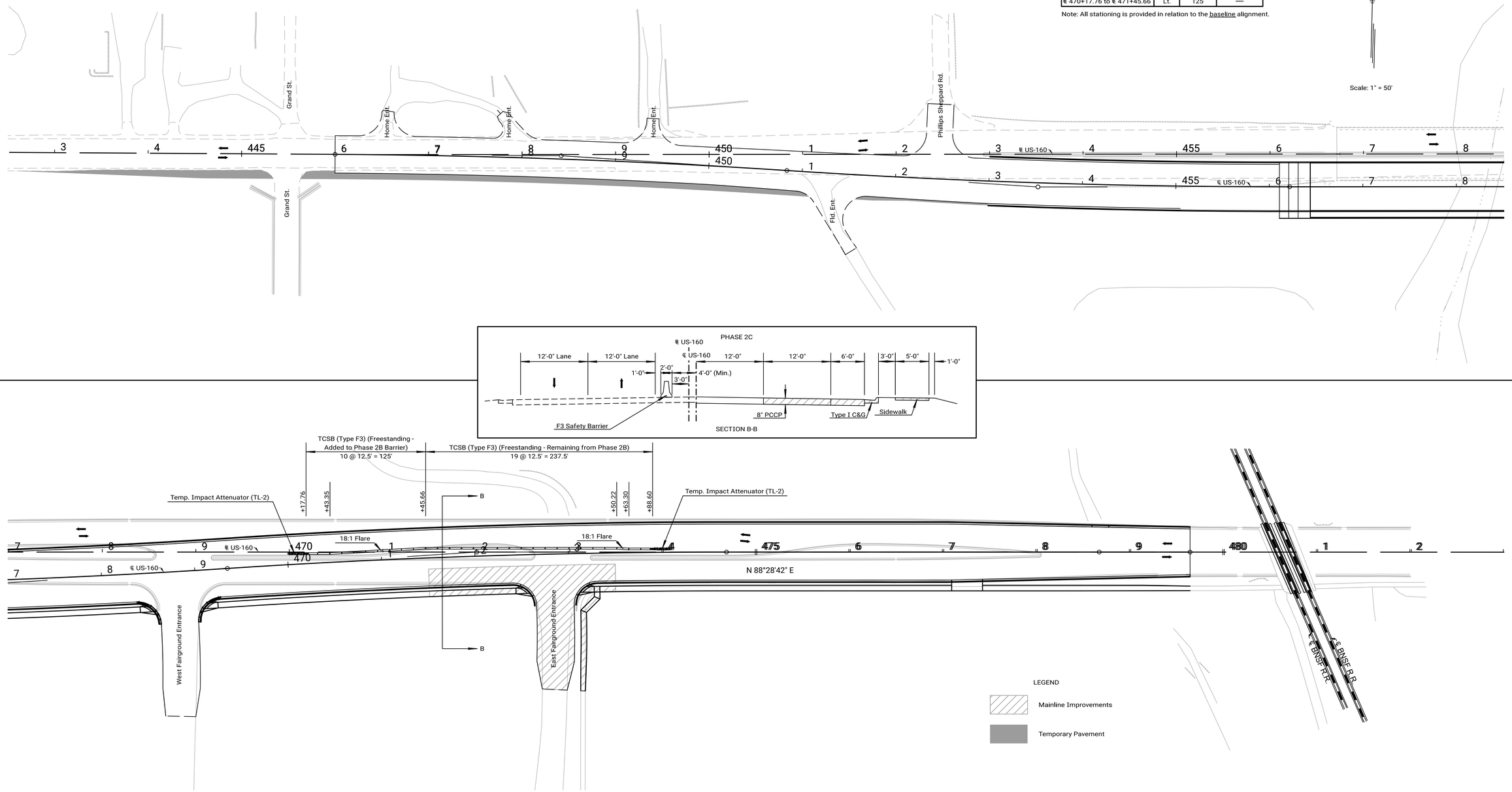
Carry traffic in both directions using the existing westbound lanes, one lane for each direction. Drivers will be able to access the fairgrounds using the west entrance only.

Temporary Concrete Safety Barrier (Type F3) Phase 2C (New Barrier Quantity)			
Station to Station	Side	Type F3	Type F3 (Anchored)
℄ 470+17.76 to ℄ 471+45.66	Lt.	125'	—

Note: All stationing is provided in relation to the baseline alignment.



Scale: 1" = 50'



LEGEND

Mainline Improvements

Temporary Pavement

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 19:42
File : KA6475501rcs-04.dgn

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 2C

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	166	230

PHASE 3A

PHASE 3A - CONSTRUCTION

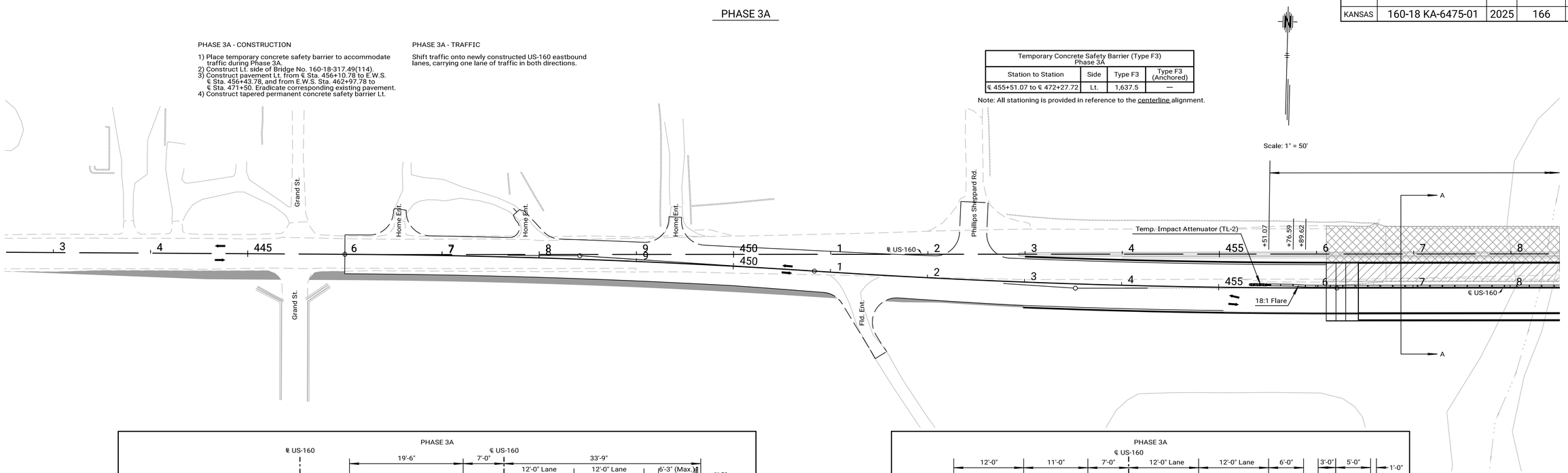
1) Place temporary concrete safety barrier to accommodate traffic during Phase 3A.
2) Construct Lt. side of Bridge No. 160-18-317.49(114).
3) Construct pavement Lt. from ℄ Sta. 456+10.78 to E.W.S. ℄ Sta. 456+43.78, and from E.W.S. Sta. 462+97.78 to ℄ Sta. 471+50. Eradicate corresponding existing pavement.
4) Construct tapered permanent concrete safety barrier Lt.

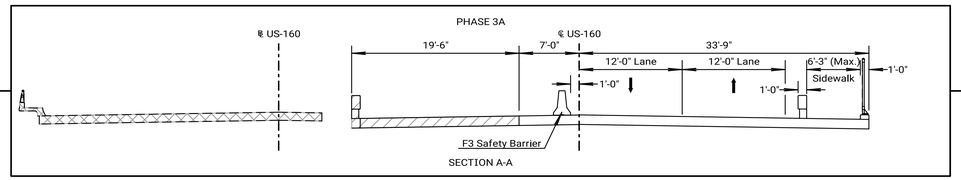
PHASE 3A - TRAFFIC

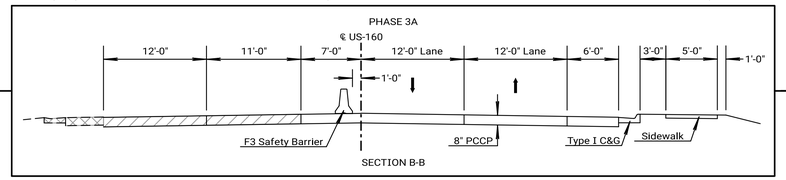
Shift traffic onto newly constructed US-160 eastbound lanes, carrying one lane of traffic in both directions.

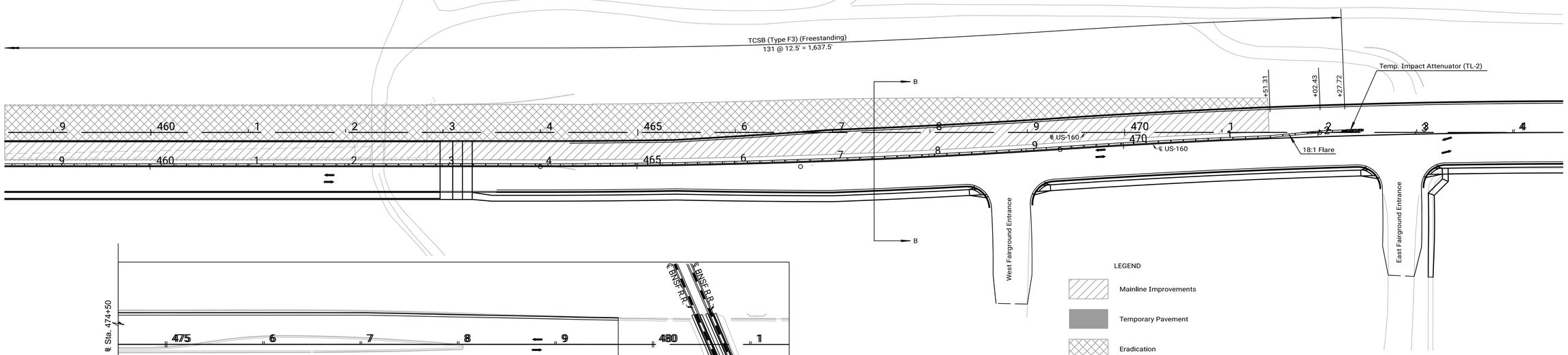
Temporary Concrete Safety Barrier (Type F3) Phase 3A			
Station to Station	Side	Type F3	Type F3 (Anchored)
℄ 455+51.07 to ℄ 472+27.72	Lt.	1,637.5	—

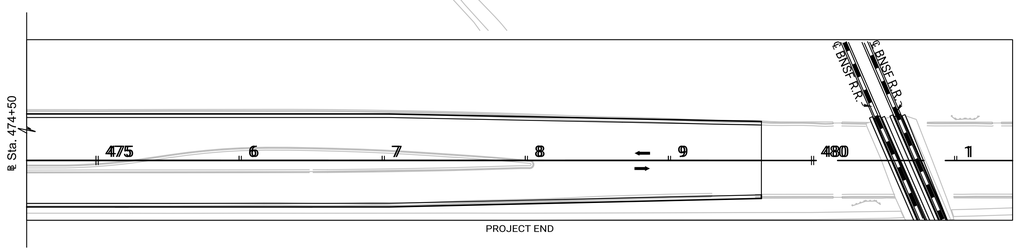
Note: All stationing is provided in reference to the centerline alignment.











LEGEND

- Mainline Improvements
- Temporary Pavement
- Eradication

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 3A

Sh. No. 166

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 19:42
File : KA647501rcs-05.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	167	230

PHASE 3B

PHASE 3B - CONSTRUCTION

1) Place temporary concrete safety barrier to accommodate traffic during Phase 3B, adding on to the barrier used for Phase 3A.
2) Construct pavement Lt. from ℄ Sta. 451+75 to ℄ Sta. 456+10.78. Eradicate corresponding existing pavement.
3) Reconstruct side road at ℄ Sta. 452+45.

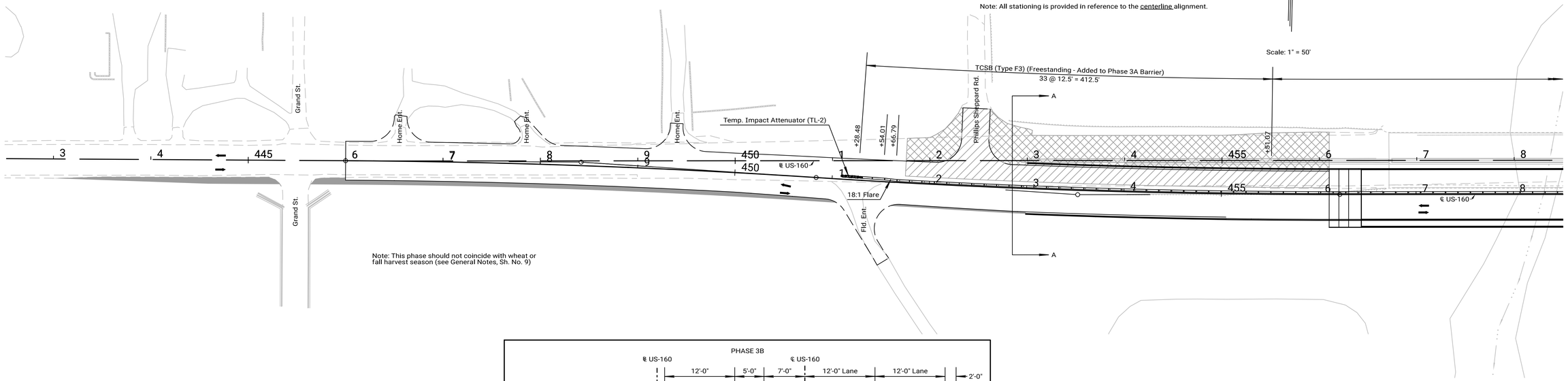
PHASE 3B - TRAFFIC

Close Phillips Sheppard Rd. for reconstruction, using Broad St. for short-term access to the rail yard. Continue utilizing newly constructed US-160 eastbound lanes to carry traffic as executed in Phase 3A; carry one lane of traffic in each direction.

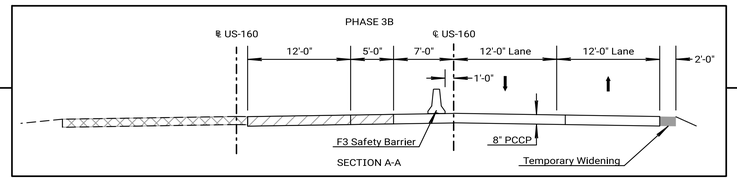
Temporary Concrete Safety Barrier (Type F3) Phase 3B (New Barrier Quantity)			
Station to Station	Side	Type F3	Type F3 (Anchored)
℄ 451+28.48 to ℄ 455+51.07	Lt.	412.5	—

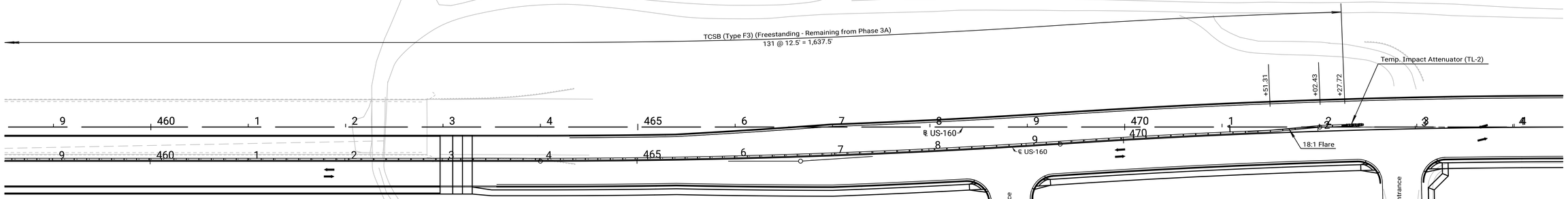
Note: All stationing is provided in reference to the centerline alignment.

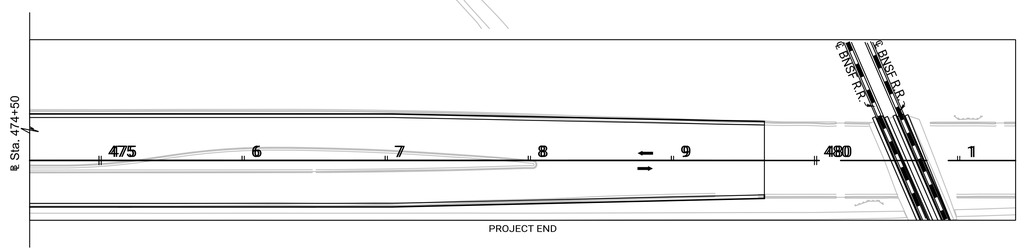
Scale: 1" = 50'



Note: This phase should not coincide with wheat or fall harvest season (see General Notes, Sh. No. 9)







LEGEND

- Mainline Improvements
- Temporary Pavement
- Eradication

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 3B

Sh. No. 167

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 19:42
File : KA647501rcs-06.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	168	230

PHASE 3C

PHASE 3C - CONSTRUCTION

1) Install temporary concrete safety barrier to accommodate traffic during Phase 3C.
2) Construct tie-in pavement Lt. from ℄ Sta. 446+00 to ℄ Sta. 451+75, and from ℄ Sta. 471+50 to ℄ Sta. 473+50. Eradicate corresponding existing pavement.
3) Reconstruct home entrances Lt. at ℄ Sta. 446+56, ℄ Sta. 448+21, and ℄ Sta. 449+38.

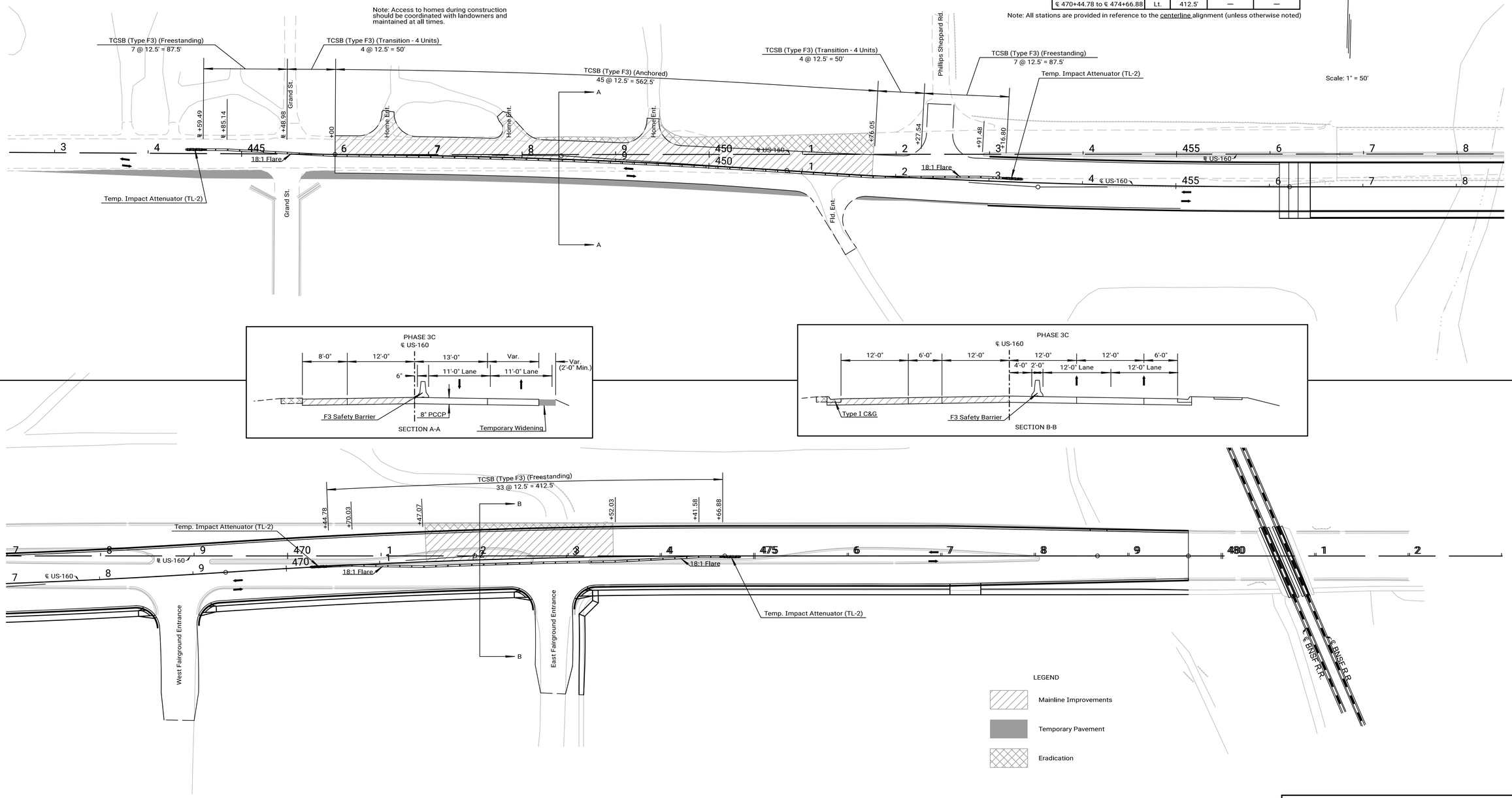
PHASE 3C - TRAFFIC

Carry traffic on one lane in each direction on US-160, utilizing the newly constructed eastbound lanes. Close Grand St. to the north, using Broad St. for access.

Note: Access to homes during construction should be coordinated with landowners and maintained at all times.

Temporary Concrete Safety Barrier (Type F3) Phase 3C				
Station to Station	Side	Type F3	Type F3 (Anchored)	Type F3 (Transition)
℄ 444+59.49 to ℄ 453+16.80	Lt.	175'	562.5'	100'
℄ 470+44.78 to ℄ 474+66.88	Lt.	412.5'	—	—

Note: All stations are provided in reference to the centerline alignment (unless otherwise noted)



LEGEND

- Mainline Improvements
- Temporary Pavement
- Eradication

KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 3C

Sh. No. 168

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 19:41
File : KA647501rcs-07.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	169	230

PHASE 4

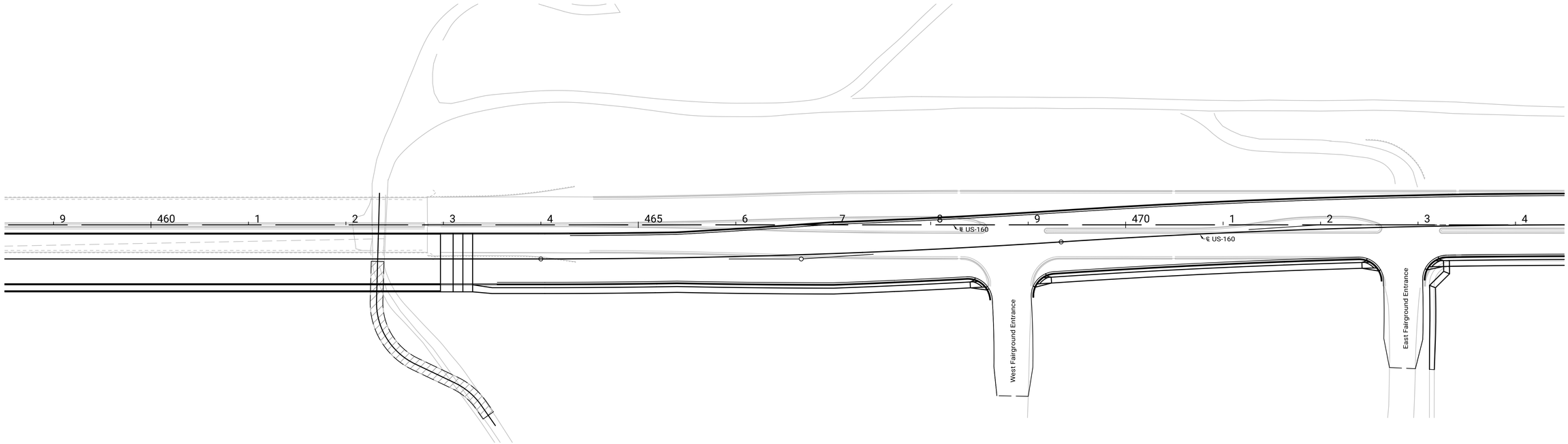
PHASE 4 - CONSTRUCTION

1) Reconstruct gravel road underneath the new bridge.
2) Remove all temporary pavement.
3) Finalize grading.

PHASE 4 - TRAFFIC

Carry traffic as normal on new US-160 lanes.

Scale: 1" = 50'



LEGEND

Construction

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:39
File : KA6475501rcs-08.dgn

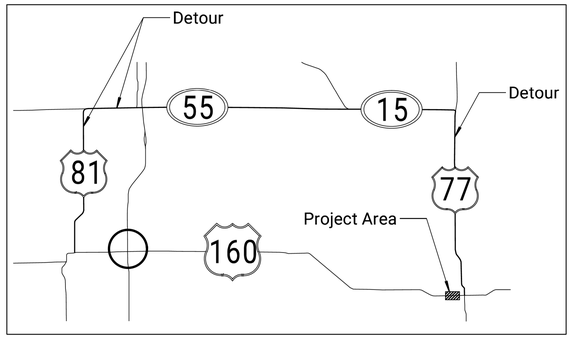
KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION SEQUENCING

PHASE 4

Sh. No. 169

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	170	230



NOTE: Circle on map denotes location of detour.

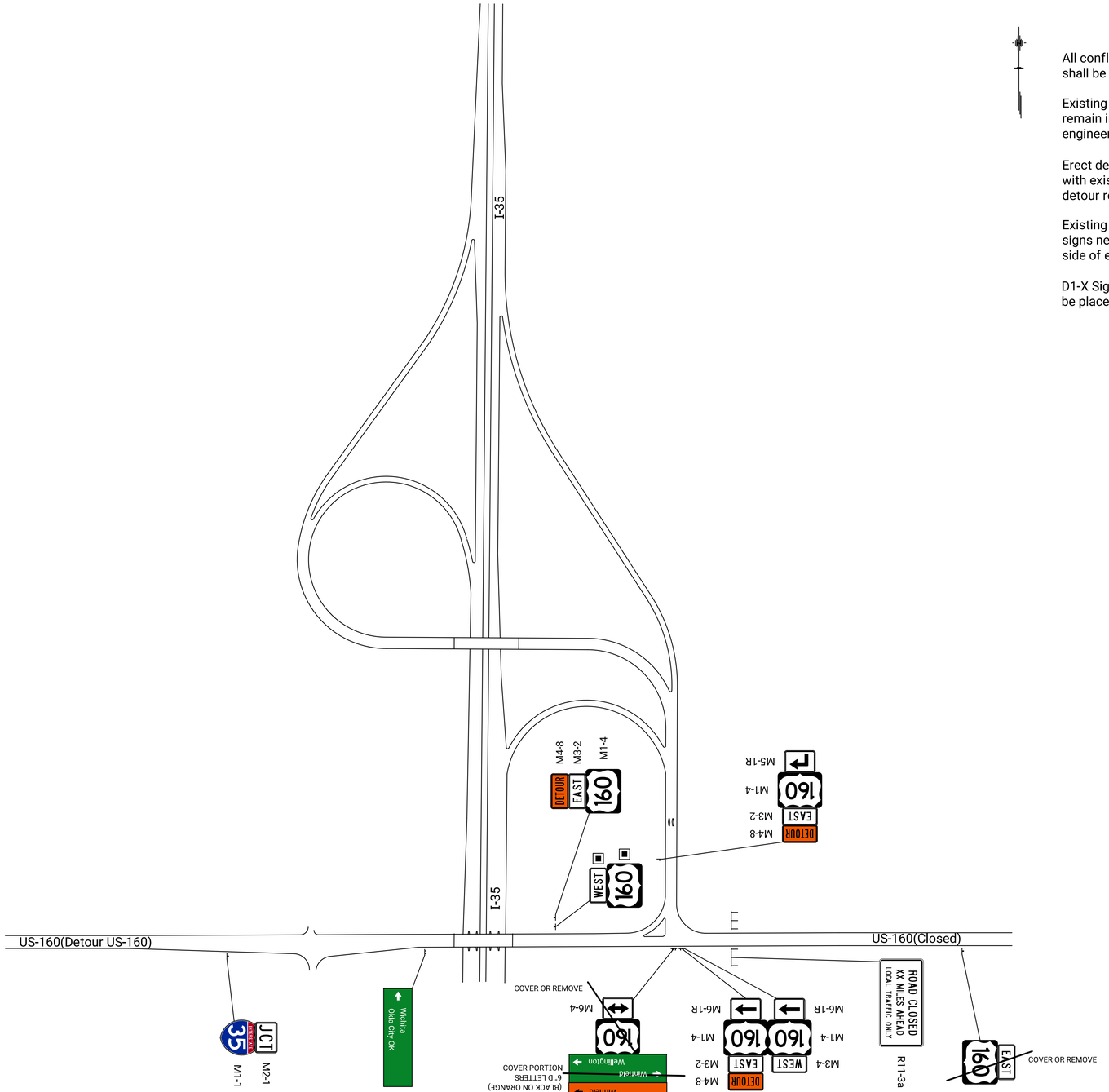
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.

Existing sign posts should not be disturbed. Any signs needed for detour should be placed along side of existing sign posts, with it's own post.

D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⌴ Type III Barricades
- ▣ Existing

SHEET 1 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

I-35/US-160 Interchange (Detour US-160)

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

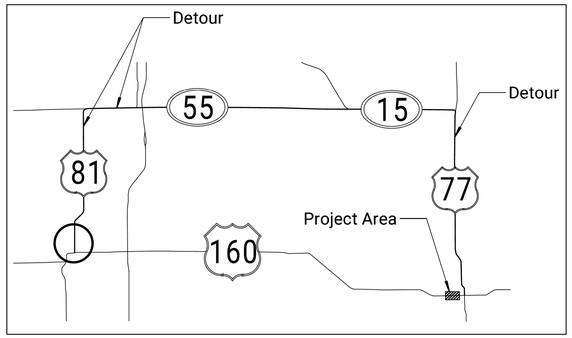
KDOT Graphics Certified 11-18-2024

Sh. No. 170

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : ka6475501cdt-1.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	171	230



NOTE: Circle on map denotes location of detour.

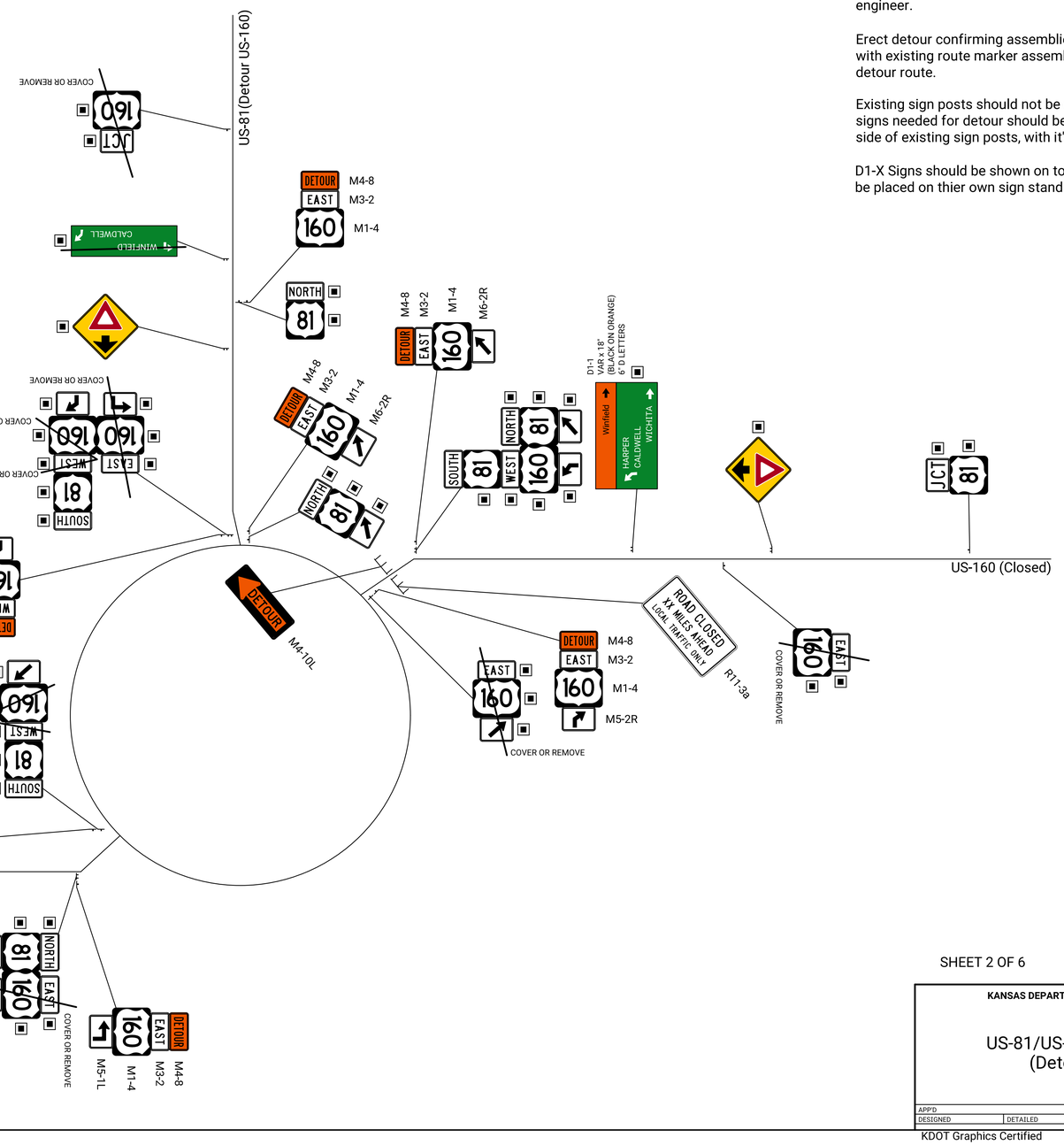
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.

Existing sign posts should not be disturbed. Any signs needed for detour should be placed along side of existing sign posts, with it's own post.

D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- Type III Barricades
- ▣ Existing

SHEET 2 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

US-81/US-160 Intersection (Detour US-160)

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

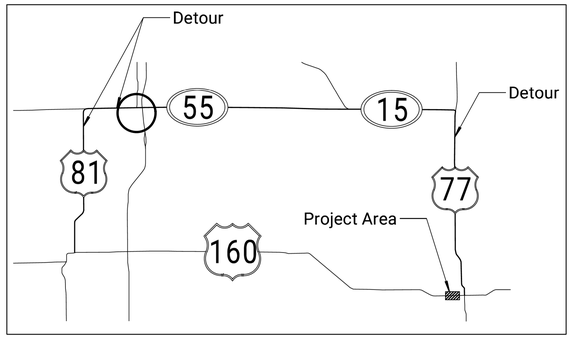
KDOT Graphics Certified 11-20-2024

Sh. No. 171

KDOT Graphics Certified

Plotted by: Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : ka647501cdt-2.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	172	230



NOTE: Circle on map denotes location of detour.

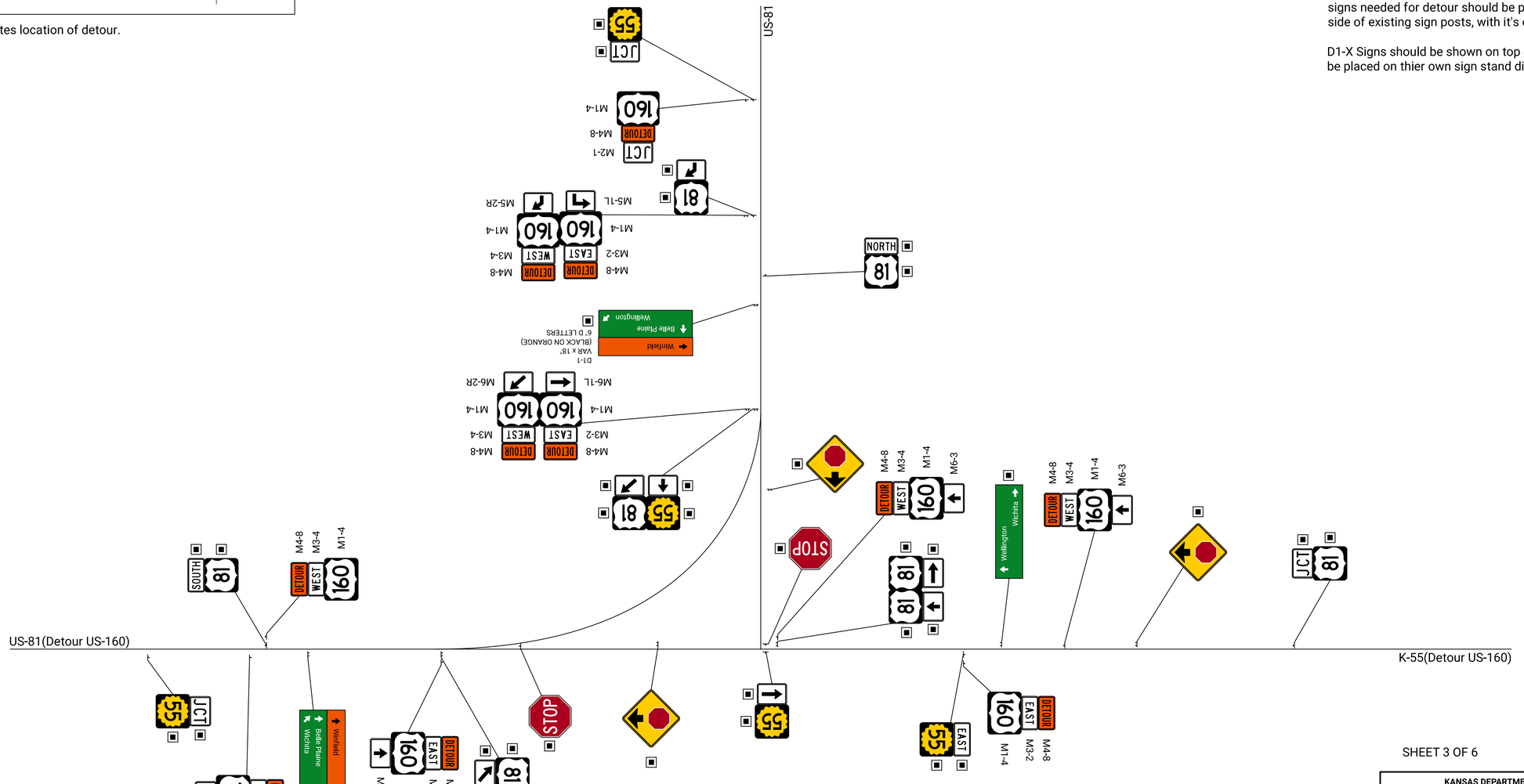
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.

Existing sign posts should not be disturbed. Any signs needed for detour should be placed along side of existing sign posts, with it's own post.

D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔⊔ Type III Barricades
- ▣ Existing

SHEET 3 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

US-81/K-55 Intersection (Detour K-160)

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

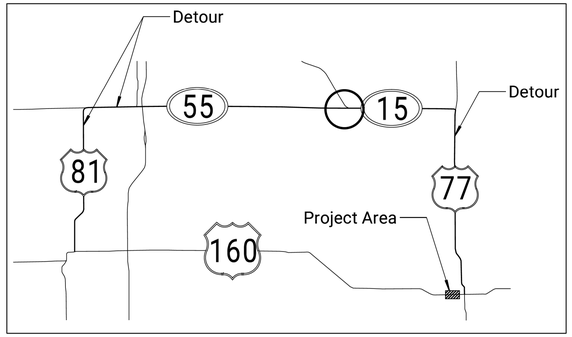
KDOT Graphics Certified 11-19-2024

Sh. No. 172

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : ka647501cdt-3.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	173	230



NOTE: Circle on map denotes location of detour.

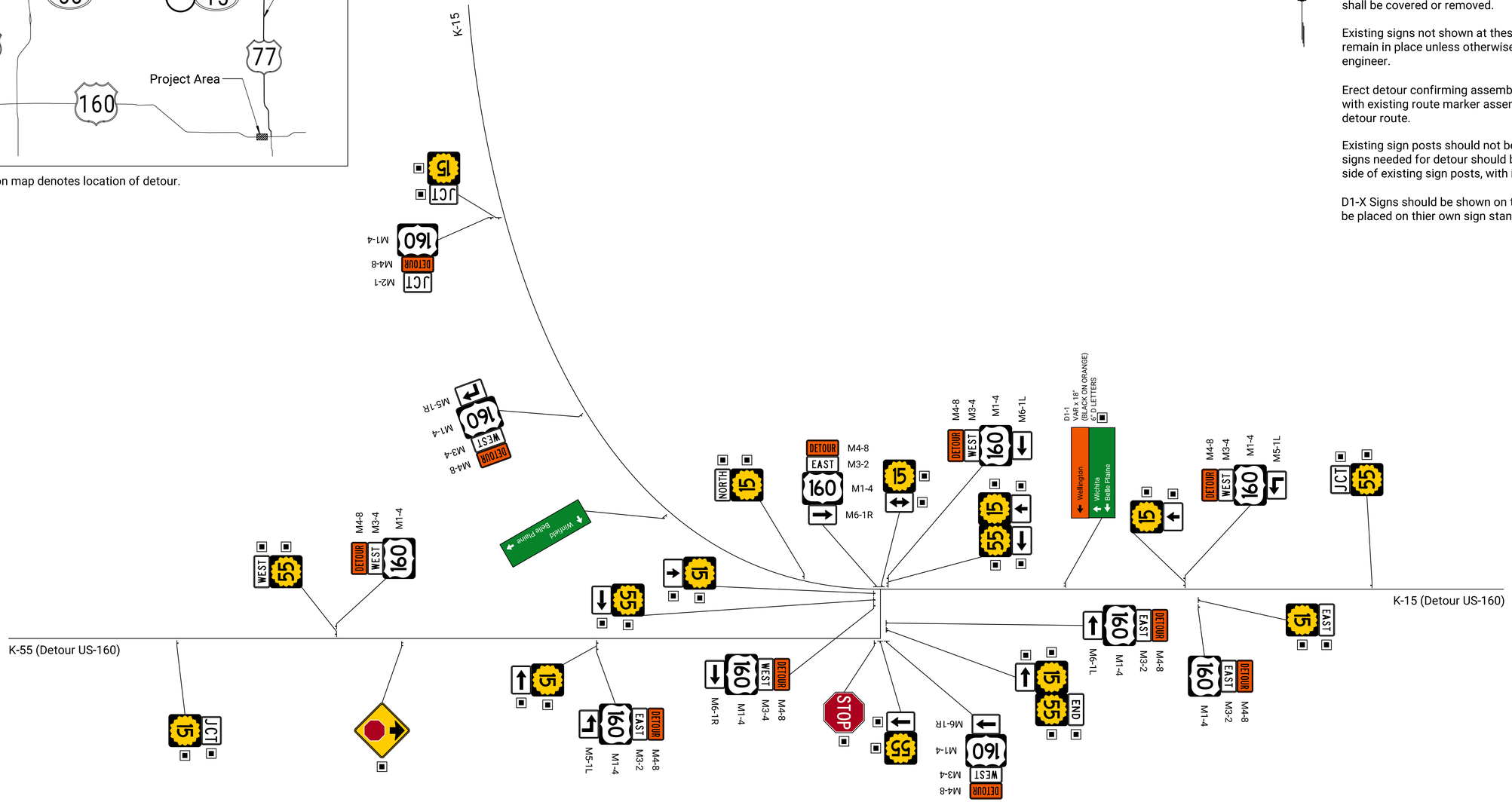
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.

Existing sign posts should not be disturbed. Any signs needed for detour should be placed along side of existing sign posts, with it's own post.

D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔⊔ Type III Barricades
- ▣ Existing

SHEET 4 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

Phase 1 Detour
K-15/K-55 intersection
(Detour US-160)

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

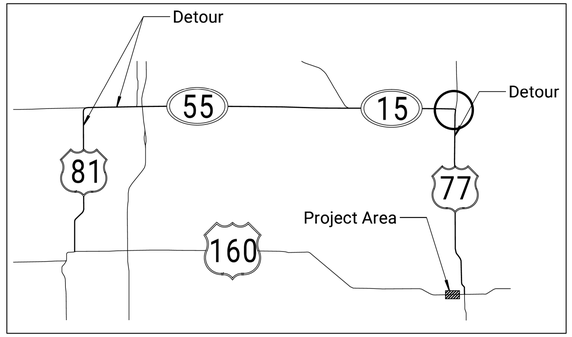
KDOT Graphics Certified 11-18-2024

Sh. No. 173

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : ka6475501cdt-4.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	174	230



NOTE: Circle on map denotes location of detour.

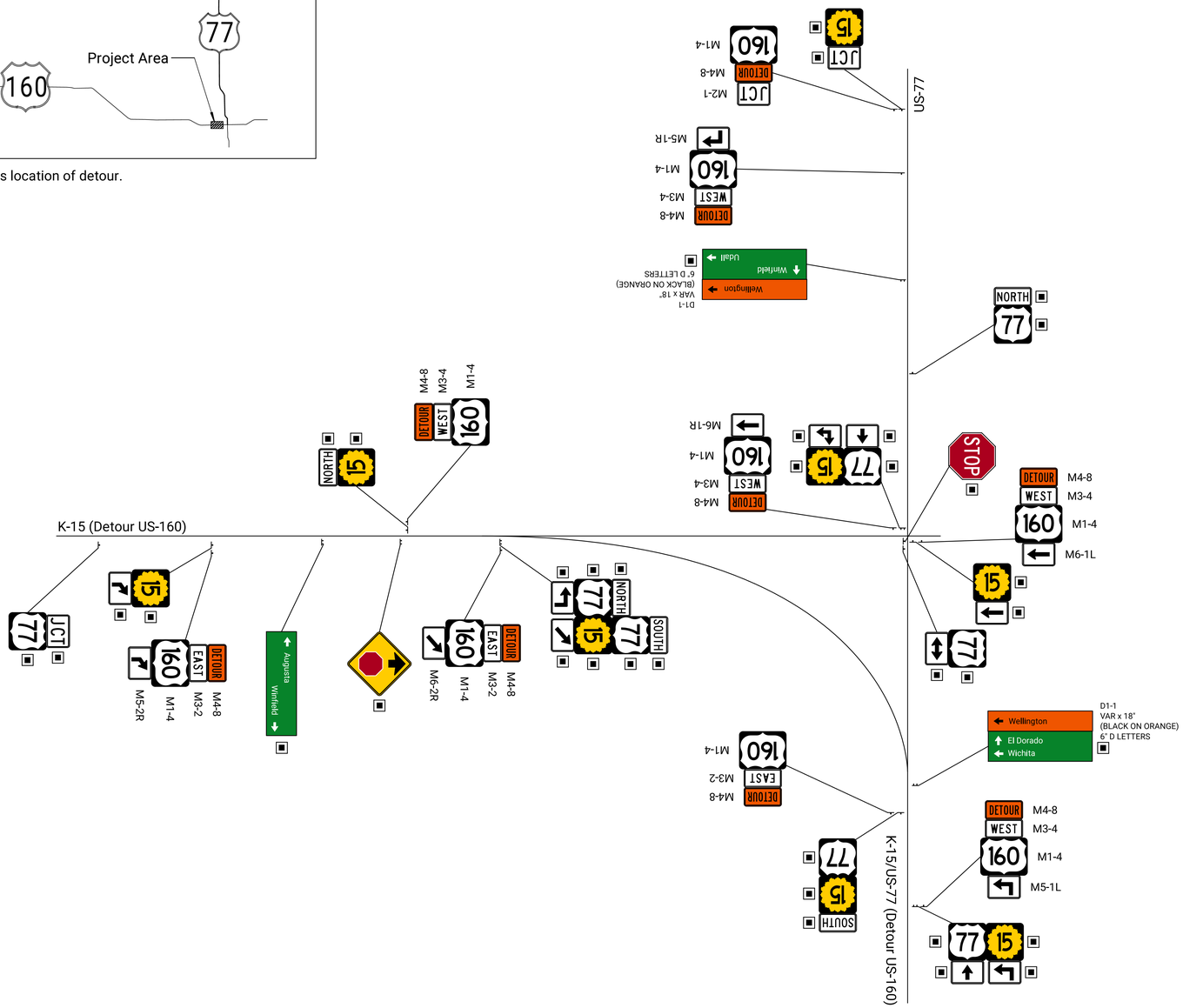
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.

Existing sign posts should not be disturbed. Any signs needed for detour should be placed along side of existing sign posts, with it's own post.

D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- Type III Barricades
- ▣ Existing

SHEET 5 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

Detour Phase 1
US-77/K-15 Intersection
(Detour US-160)

APP'D.			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

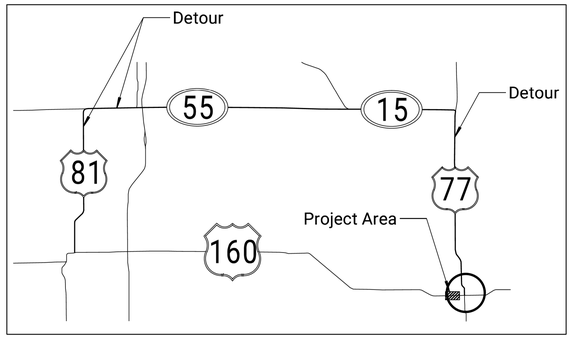
KDOT Graphics Certified 11-19-2024

Sh. No. 174

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:47
File : ka647501cdt-5.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	175	230



NOTE: Circle on map denotes location of detour.

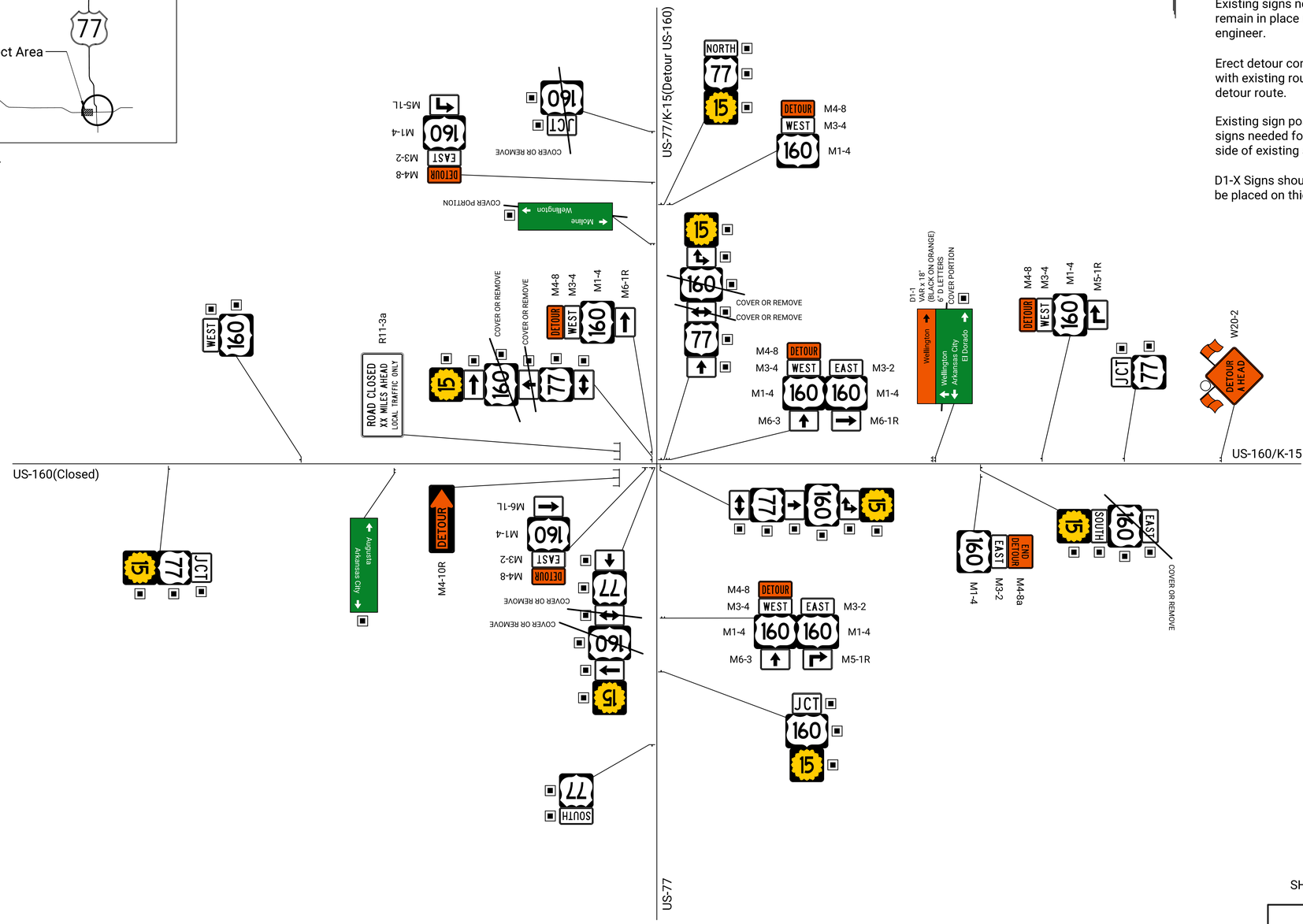
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.

Existing sign posts should not be disturbed. Any signs needed for detour should be placed along side of existing sign posts, with it's own post.

D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔⊔ Type III Barricades
- ▣ Existing

SHEET 6 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

Phase 1 Detour
US-77/US-160/K-15 Intersection
(Detour US-160)

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

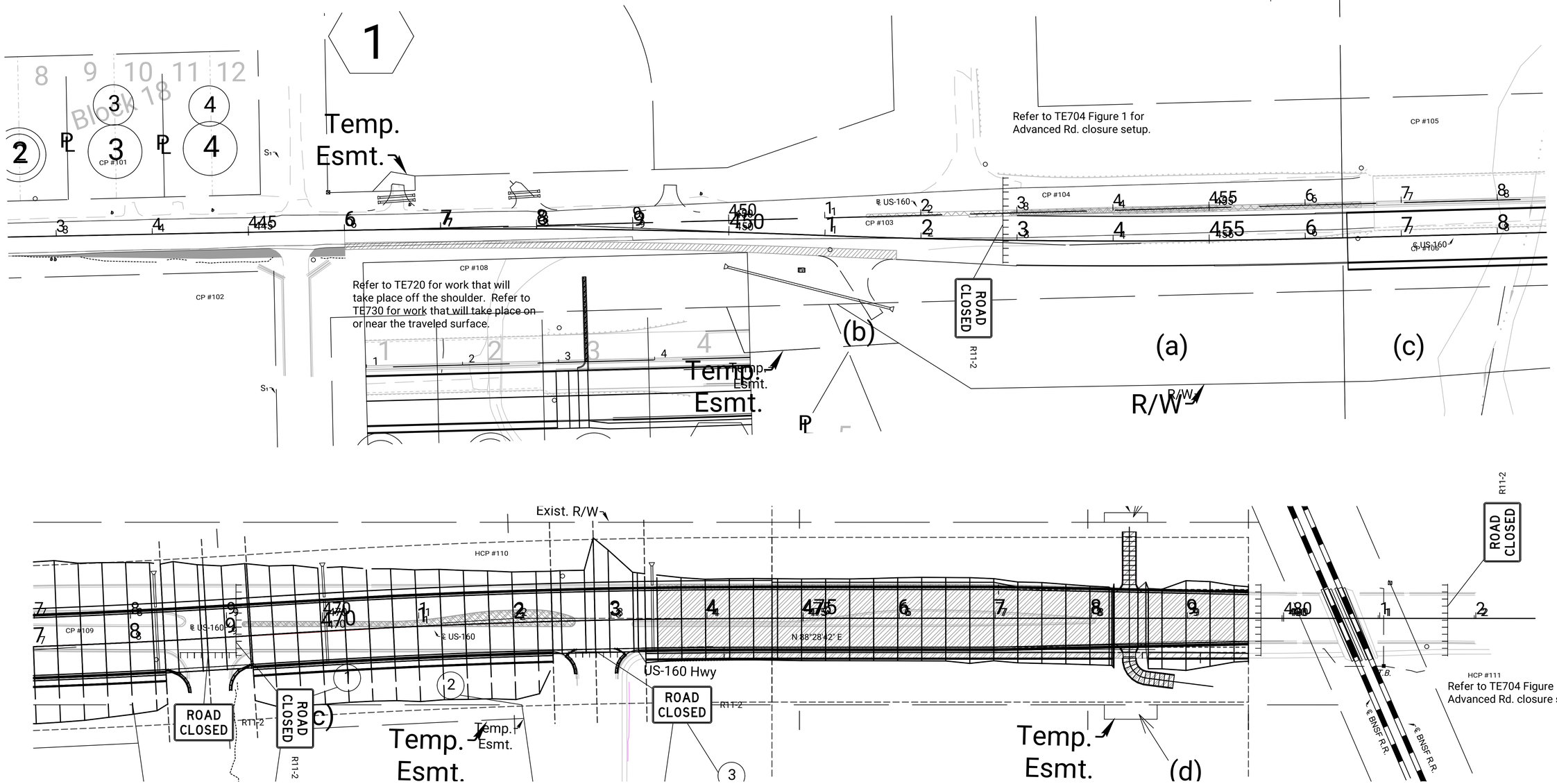
KDOT Graphics Certified 11-19-2024

Sh. No. 175

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : ka647501cdt-6.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	176	230



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔ Type III Barricades
- ▣ Existing

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control
Phase 1

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 11-18-2024

Sh. No. 176

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : ka647501cpl-1.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	177	230

3

4

CP #101

Grand St.

Phillips Sheperd Rd.

4" Temp. Double Solid Yellow Centerline

4" Temp. Solid White Edgeline

CP #104

CP #103

CP #108

CP #102

CP #106

100' Min.

100' Min.

100' Min.

100' Min.

280' shifting taper

ROAD WORK AHEAD W20-1

W3-5

SPEED LIMIT XX R2-1

KM4-20

W13-1

W1-4L

4" Temp. Double Solid Yellow Centerline

4" Temp. Solid White Edgeline

HCP #110

STOP R1-1

CP #109

CP #107

US-160 Hwy

COVER OR REMOVE

STOP R1-1

W13-1

Temp. Esmt.

W4-2L

KM4-20

R2-1

4" Temp. Solid Yellow Centerline

180' Merging Taper

100' Min

100' Min

R4-1

DO NOT PASS

W20-5

RIGHT LANE CLOSED AHEAD

W20-1

ROAD WORK AHEAD

END ROAD WORK

Mill St.

KG20-2

W20-1

ROAD WORK AHEAD

100' Min

100' Min

W20-5

RIGHT LANE CLOSED AHEAD

W20-1

ROAD WORK AHEAD

W10-1

Temp Esmt

4" Temp. Solid White Edgeline

Arrow Board

STA: 477+63 RR Symbol (x2)

4" Temp. broken White centerline

4" Temp. solid White centerline

24" White Stop Line

W10-1

NOT TO SCALE

- Type "A" Low Intensity Warning Light
- Type III Barricades
- Existing

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control
Phase 2A

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

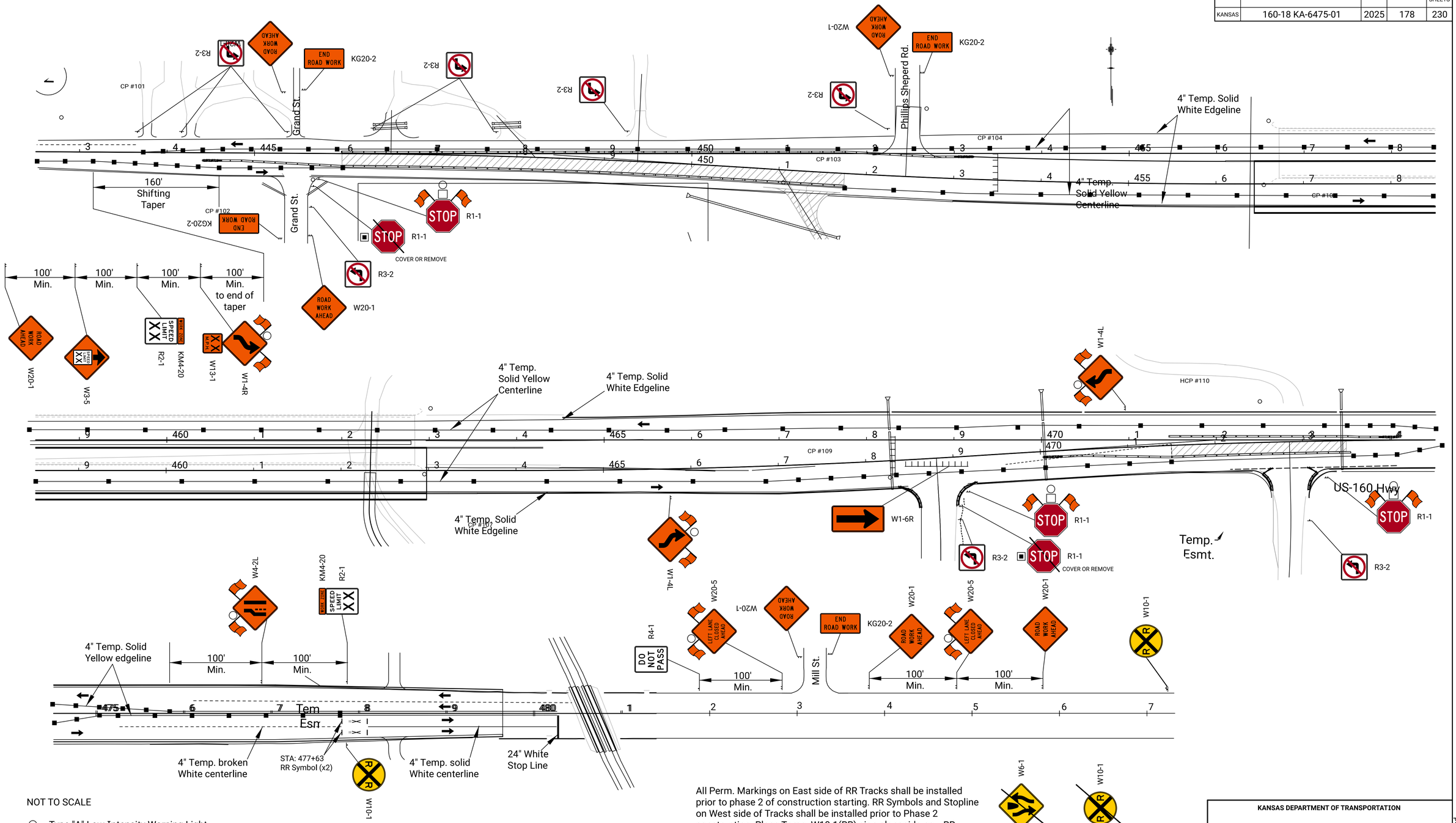
KDOT Graphics Certified 11-20-2024

Sh. No. 177

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : ka647501cpl-2.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	178	230



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- Type III Barricades
- ▣ Existing

All Perm. Markings on East side of RR Tracks shall be installed prior to phase 2 of construction starting. RR Symbols and Stopline on West side of Tracks shall be installed prior to Phase 2 construction. Place Temp. W10-1(RR) sign alongside new RR markings at 487+15 for WB traffic, and 477+68 for EB traffic on US-160.

Cover or Remove Existing W6-1 and W10-1 signs on East side of RR Tracks

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control
Phase 2B

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

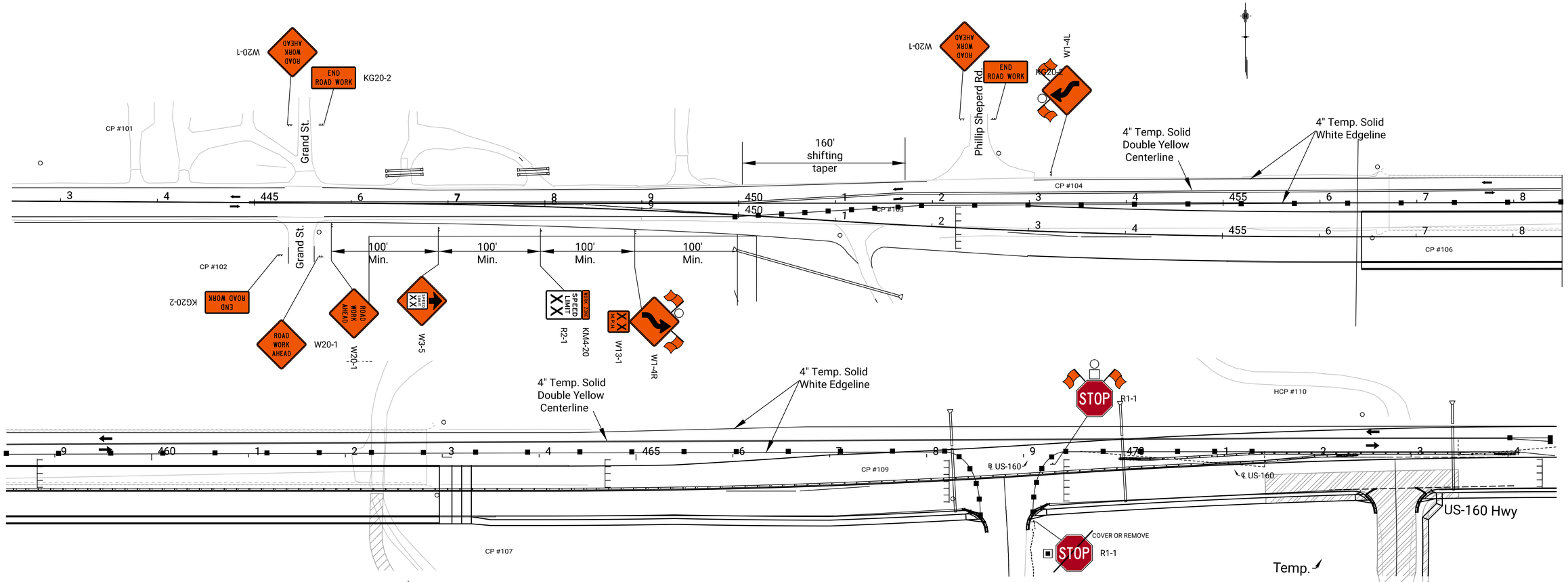
KDOT Graphics Certified 11-20-2024

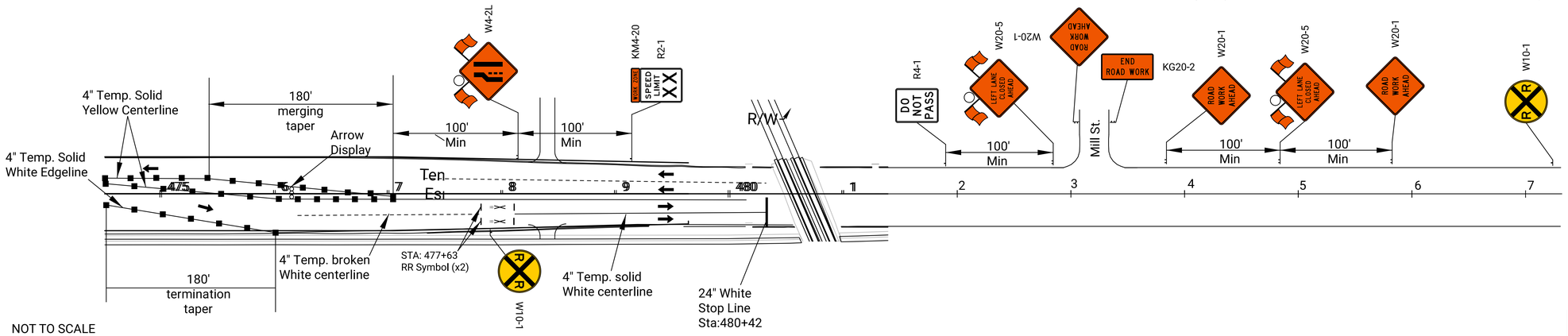
Sh. No. 178

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:50
File : ka647501cpl-03.dgn Traffic

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	179	230





NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔⊔ Type III Barricades
- ▣ Existing

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control
Phase 2C

APP'D.			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

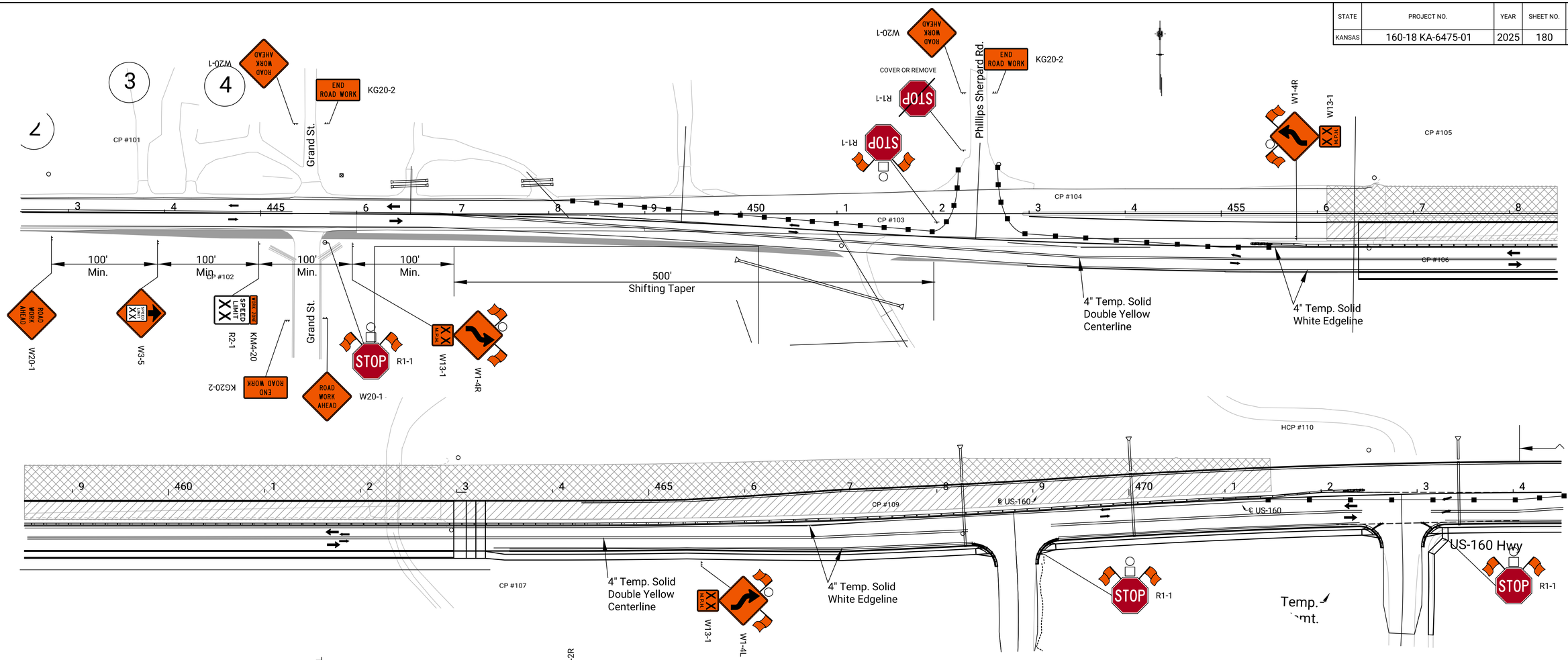
KDOT Graphics Certified 11-20-2024

Sh. No. 179

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:49
File : ka647501cpl-4.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	180	230



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔⊔ Type III Barricades
- ▣ Existing

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:49
File : ka647501cpl-5.dgn Traffic

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control Phase 3A

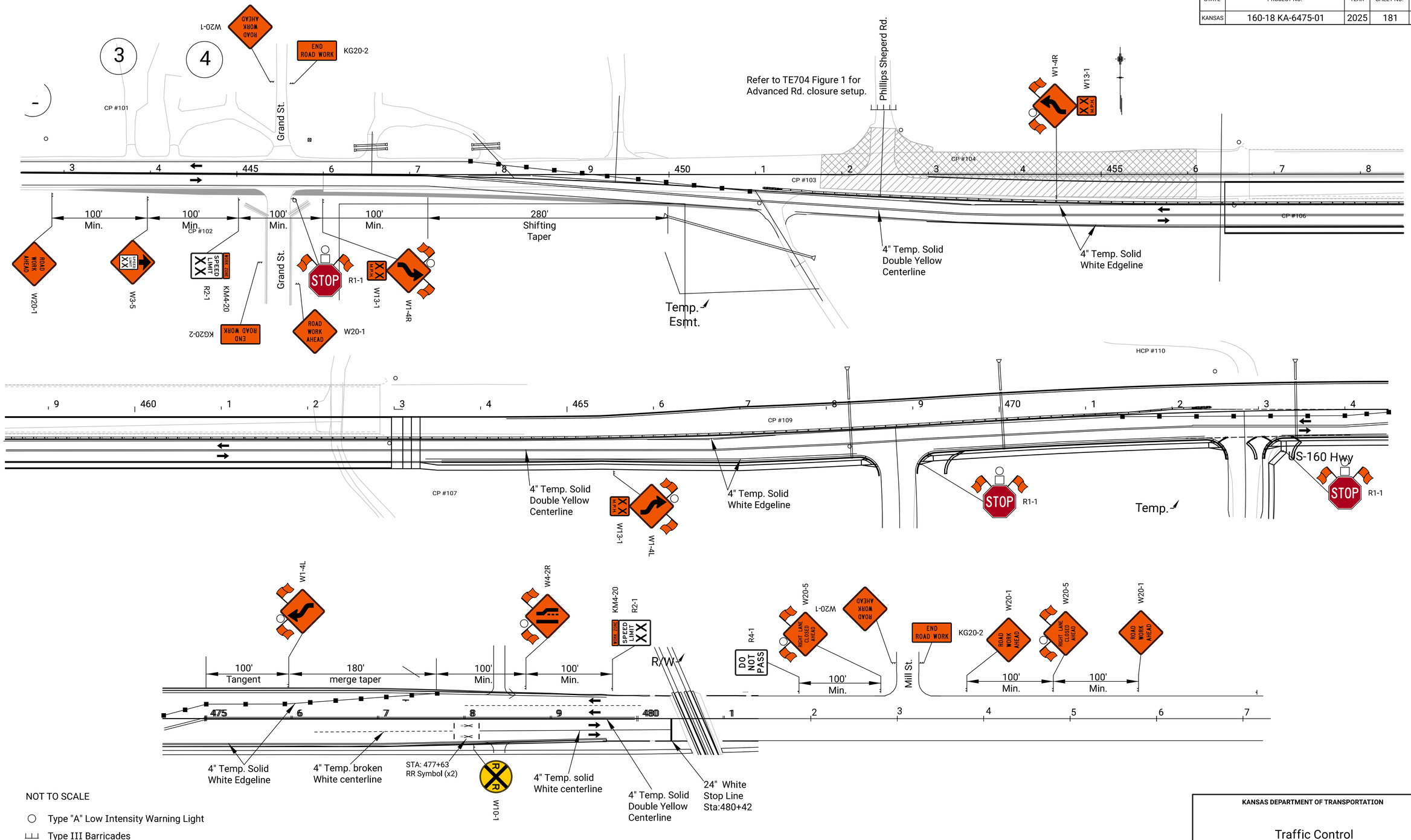
APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 11-20-2024

Sh. No. 180

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	181	230



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- Type III Barricades
- ▣ Existing

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:49
File : ka647501cpl-6.dgn Traffic

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control Phase 3B

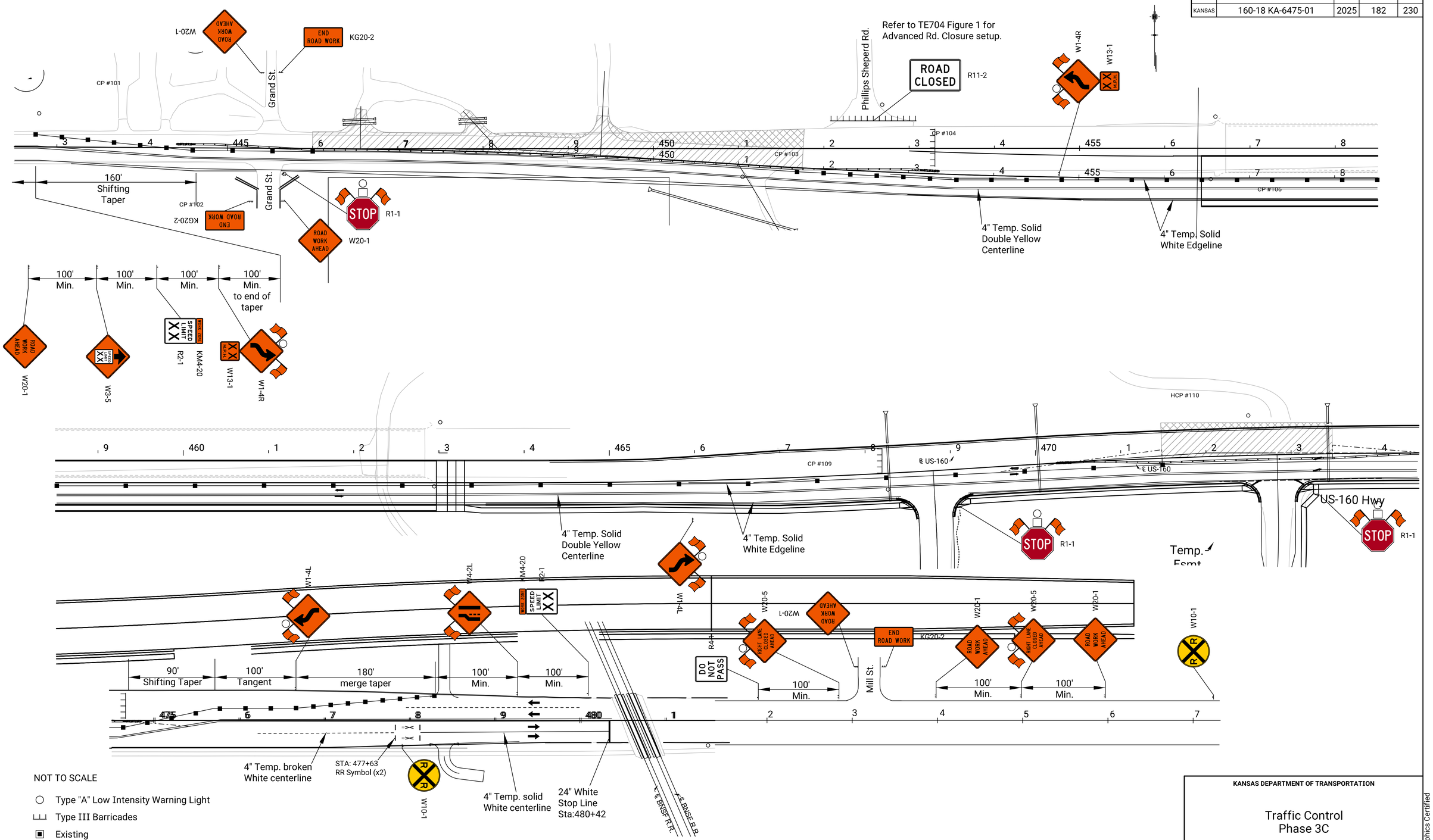
APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 11-20-2024

Sh. No. 181

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	182	230



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔ Type III Barricades
- ▣ Existing

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control
Phase 3C

APP'D			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

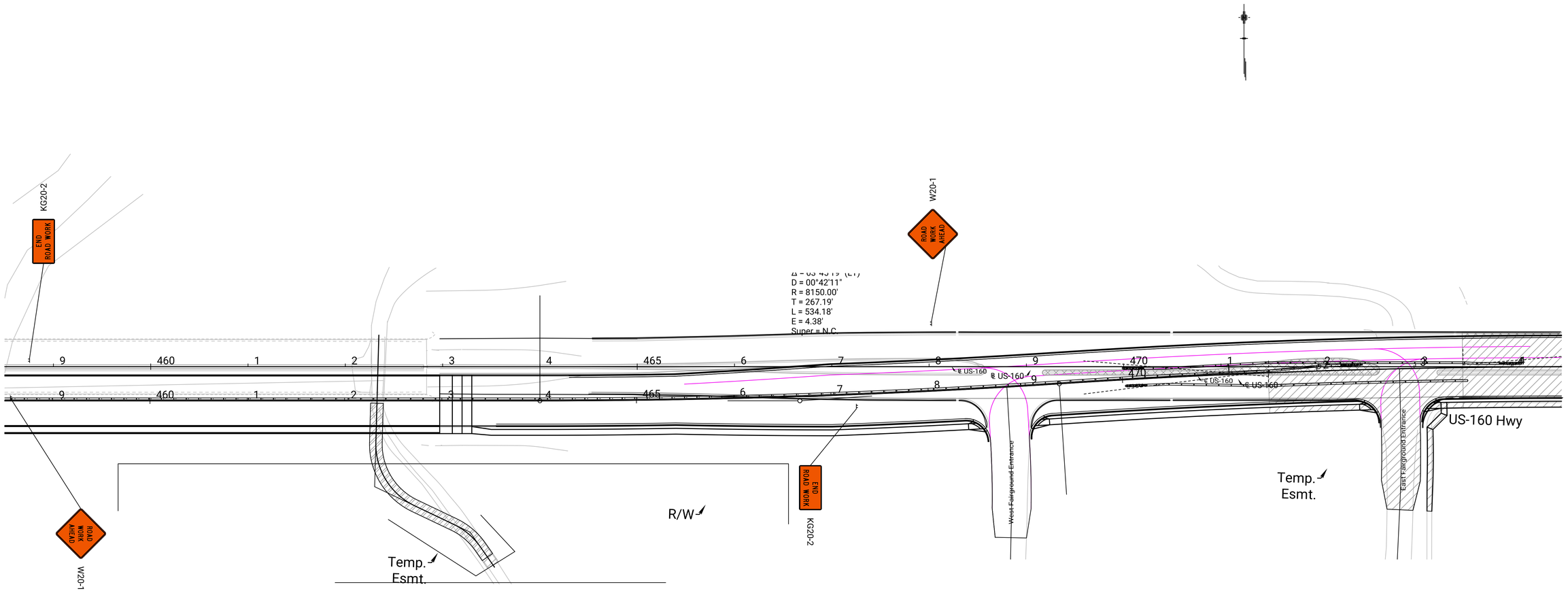
KDOT Graphics Certified 11-20-2024

Sh. No. 182

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:49
File : ka647501cpl-7.dgn Traffic

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	183	230



NOT TO SCALE

- ○ Type "A" Low Intensity Warning Light
- ⊔⊔ Type III Barricades
- ▣ Existing

KANSAS DEPARTMENT OF TRANSPORTATION

Traffic Control
Phase 4

APP'D.			
DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

CADconform Certify This File

Sh. No. 183

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:50
File : ka647501cpl-8.dgn Traffic

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	184	230

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

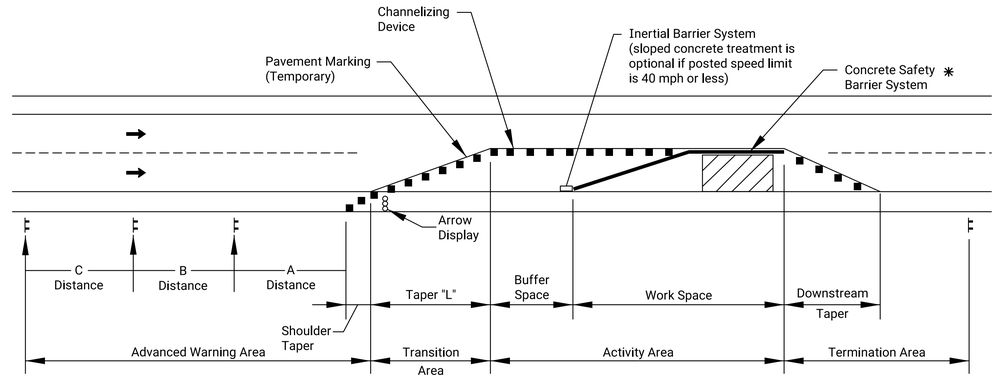
2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11' may require restricted roadway width signing.

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

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

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

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



TYPICAL WORK ZONE COMPONENTS

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

Minimum advance warning sign spacing (in feet):

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

✳ Posted speed prior to work starting

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

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

Taper Formulas:

L = WS for speeds of 45 MPH or more

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

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

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

Channelizer Placement:

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

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

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

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

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

Buffer Space

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

✳ Posted speed prior to work starting

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

TE700

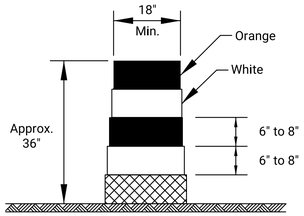
FHWA APPROVAL		03-13-18	APP'D.	Eric Kocher	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 07-18-2022 Sh. No. 184

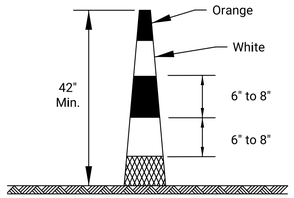
KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:47
File : TE700.dgn

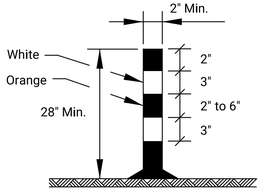
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	185	230



DRUM

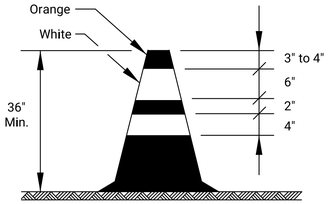


CONICAL DELINEATOR

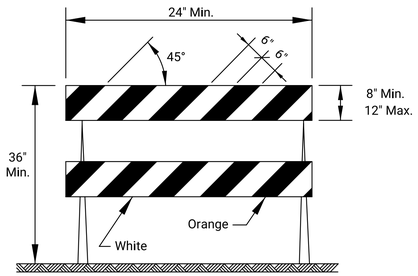


TUBULAR MARKER

Striping as shown for up to 42".

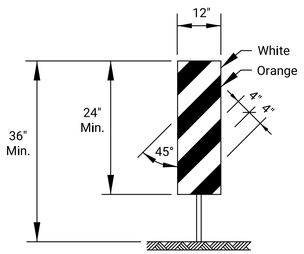


TRAFFIC CONE



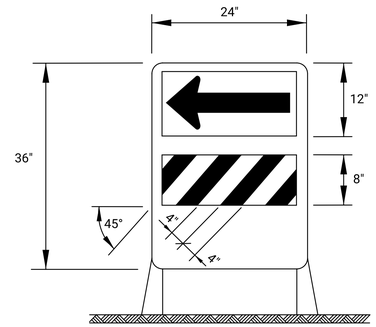
TYPE 2 BARRICADE

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



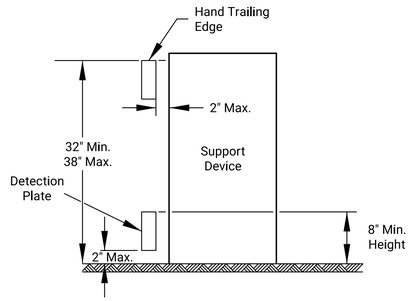
VERTICAL PANEL

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



DIRECTION INDICATOR BARRICADE

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



PEDESTRIAN CHANNELIZER

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CHANNELIZING DEVICES

TE702

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

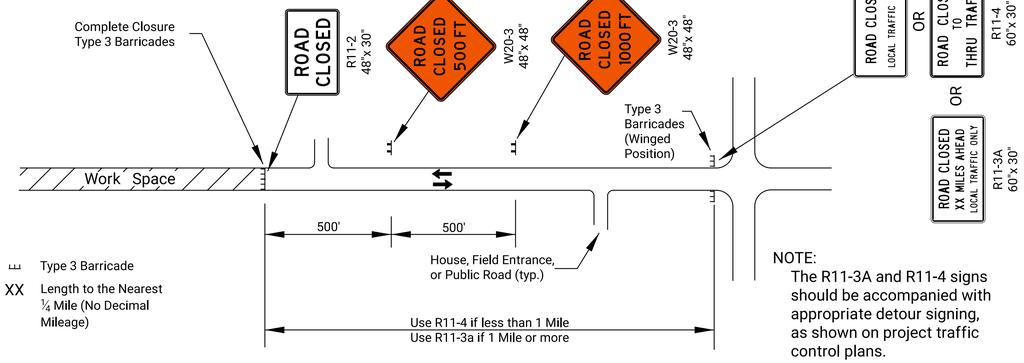
KDOT Graphics Certified 07-18-2022 Sh. No. 185

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:47
File : TE702.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	186	230

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)

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

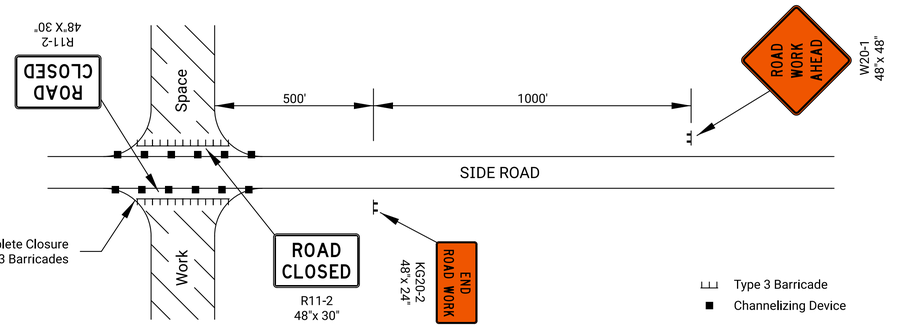


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

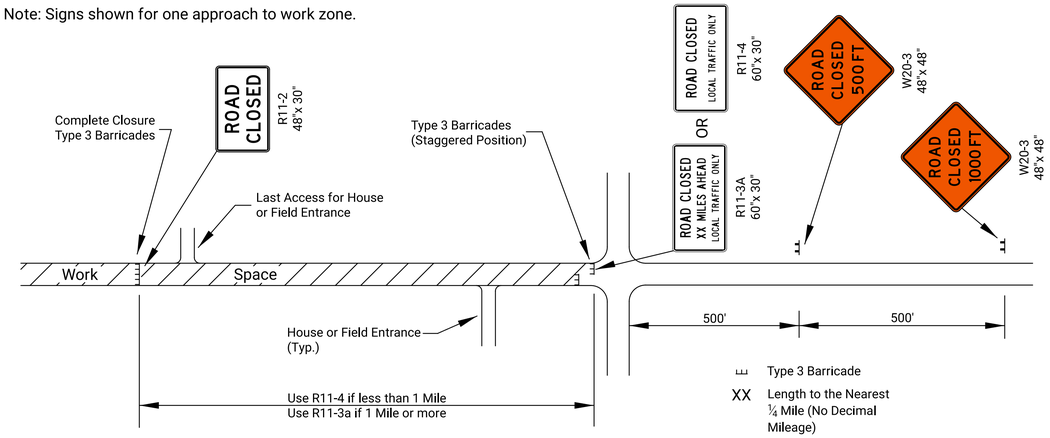


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

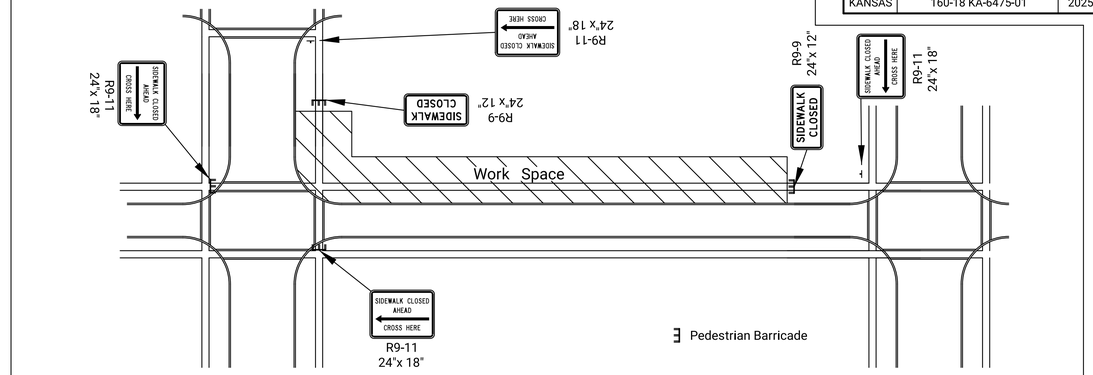
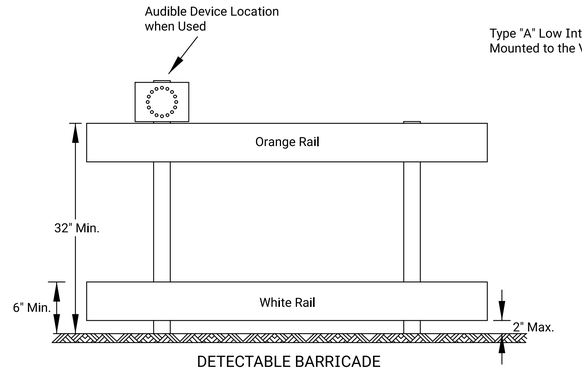
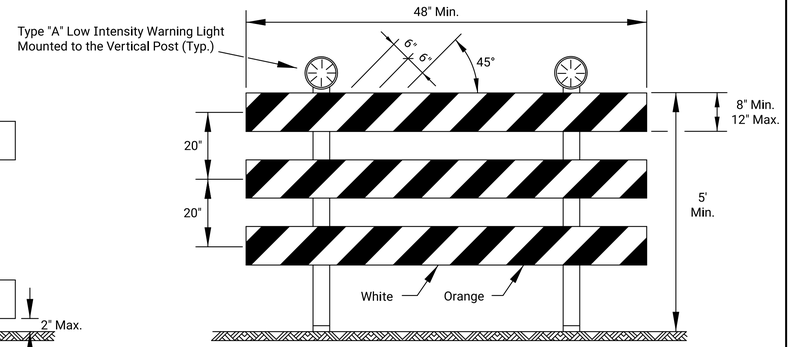


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE



DETECTABLE BARRICADE

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



TYPE 3 BARRICADE WITH LIGHTS

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

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

ROAD CLOSED GENERAL NOTES

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CLOSURES

TE704

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

KDOT Graphics Certified 07-18-2022 Sh. No. 186

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:47
File : TE704.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	187	230

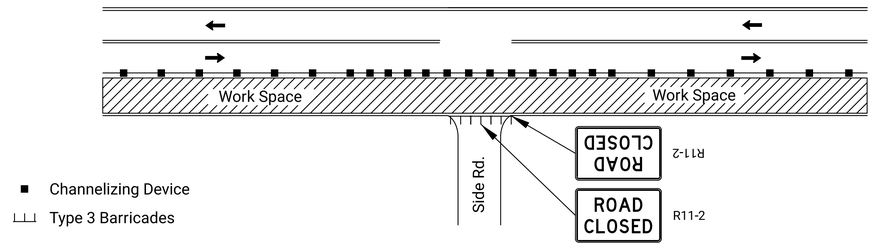


FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

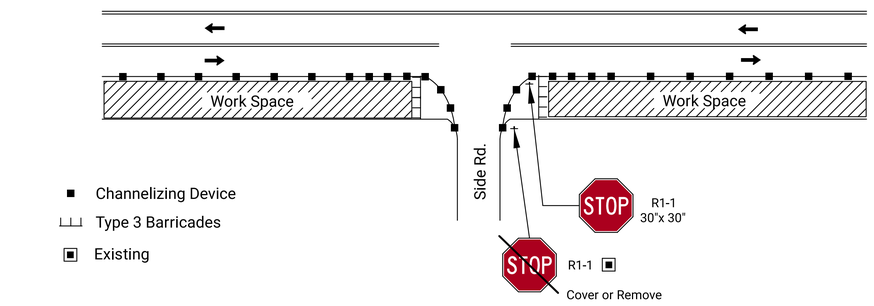


FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

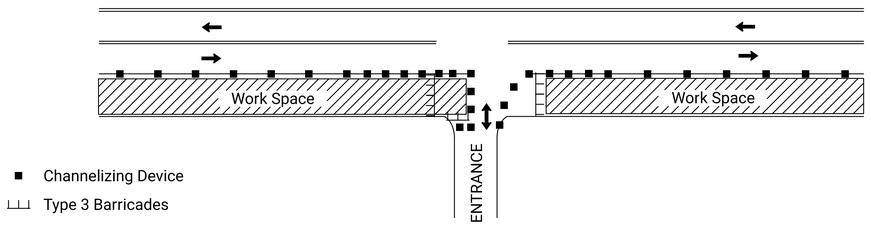


FIGURE 3: LOW VOLUME ENTRANCE CONTRUCTED HALF AT A TIME

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

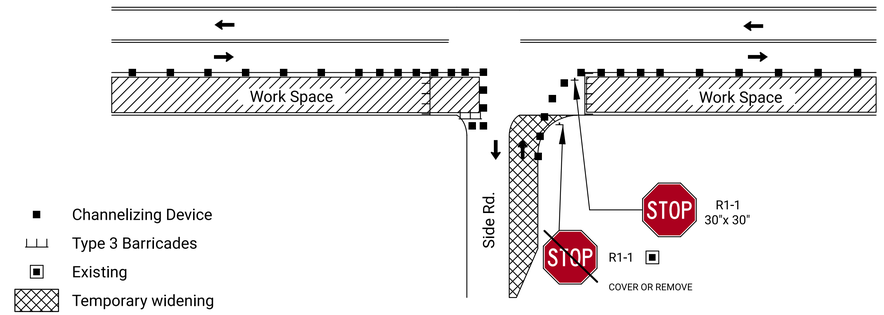


FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME:
TWO WAY TRAFFIC REQUIRED

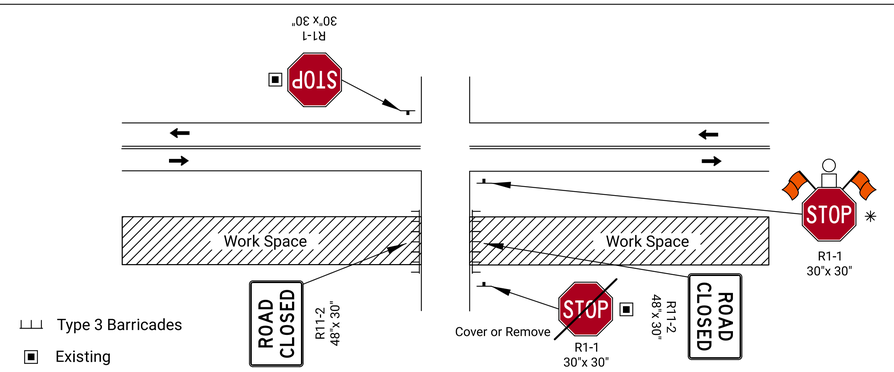


FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY

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

SIGN LAYOUT INFORMATION



KG20-2

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



KG20-5

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



KM4-20

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



W7-3a

Mileage to be Determined by the Engineer.



W8-17

Std. Size Expwy/Freeway
48"x 48"



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"



W8-11

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



W8-17P
(Optional)

Std. Size Expwy/Freeway
30"x 24"



SP-01
(Special Sign)

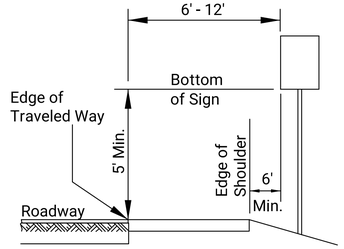
Std. Size: 6" C
Expwy/Freeway: 10" D



SP-02
(Special Sign)

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

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

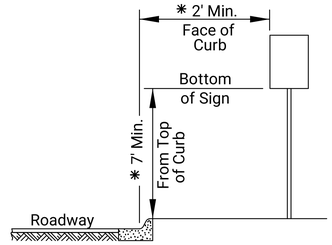


RURAL

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

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

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



URBAN

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

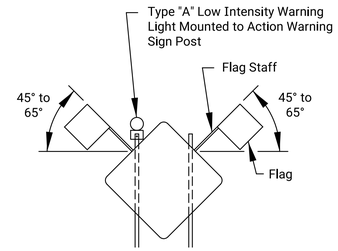
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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

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

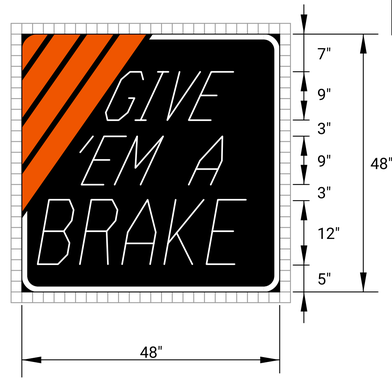
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

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



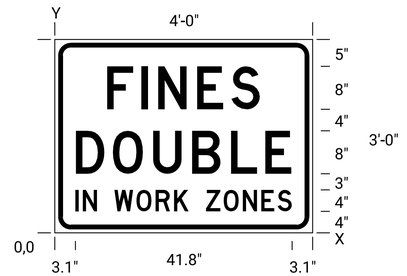
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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



KI-104a

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



KI-105a

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

Dimensions in inches — Spacings are to start of next letter

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

Notes:

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

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

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	188	230

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SIGN INFORMATION

TE710

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

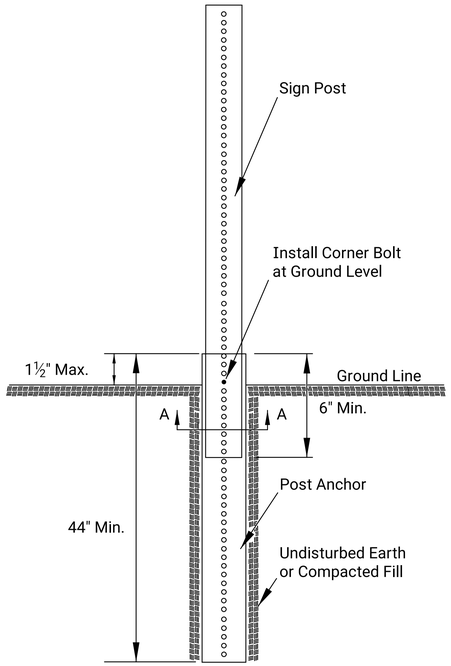
KDOT Graphics Certified 12-16-2022 Sh. No. 188

KDOT Graphics Certified

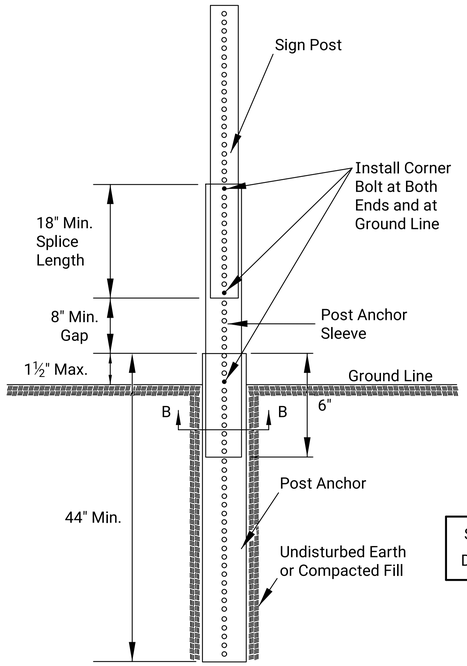
Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:47
File : TE710.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	189	230

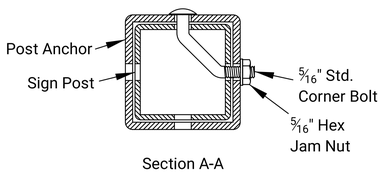
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



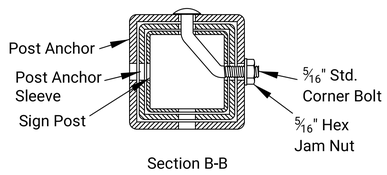
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

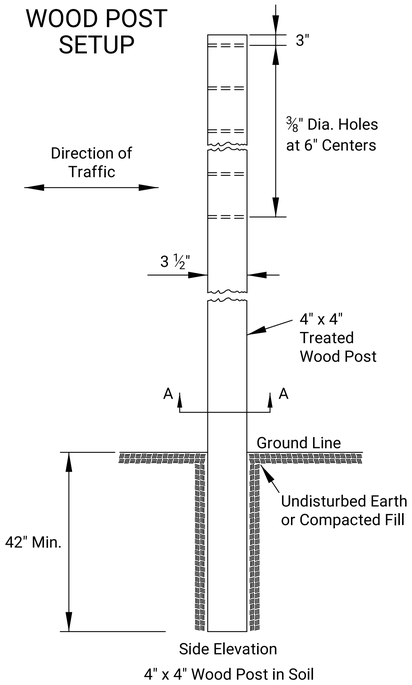


Section B-B

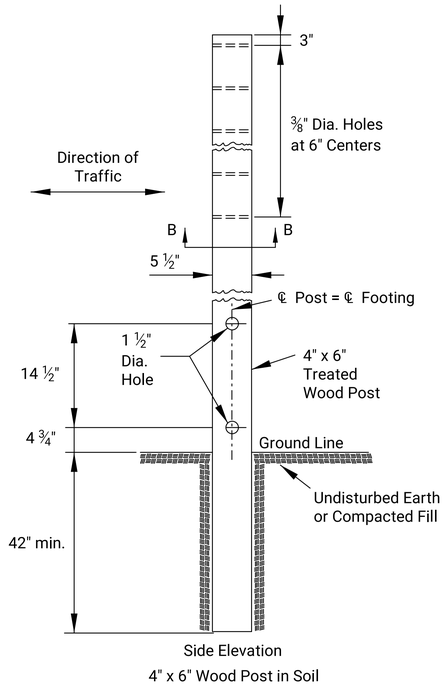
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

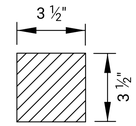
WOOD POST SETUP



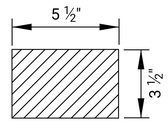
Side Elevation
4" x 4" Wood Post in Soil



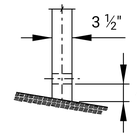
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



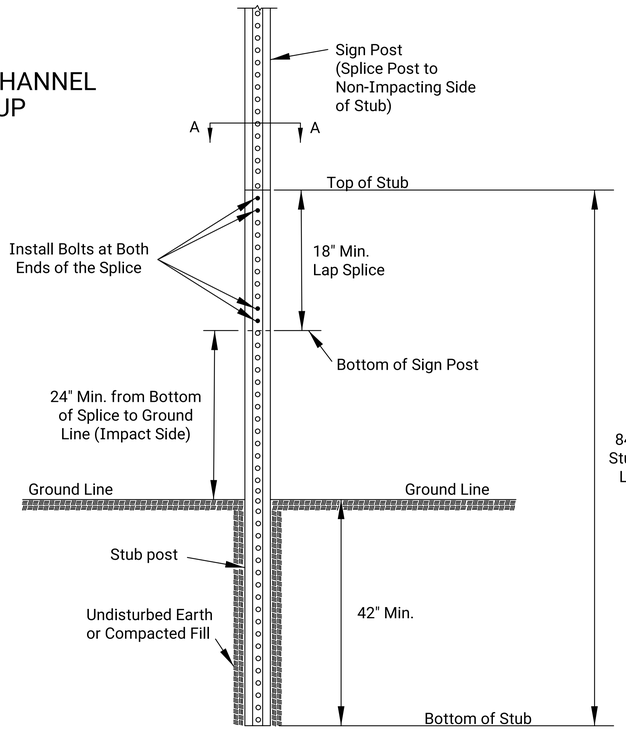
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

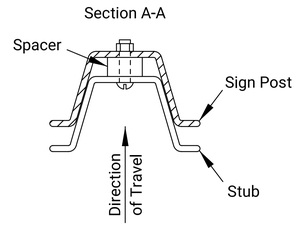
3 LB/F U-CHANNEL SETUP



Notes:

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

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



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

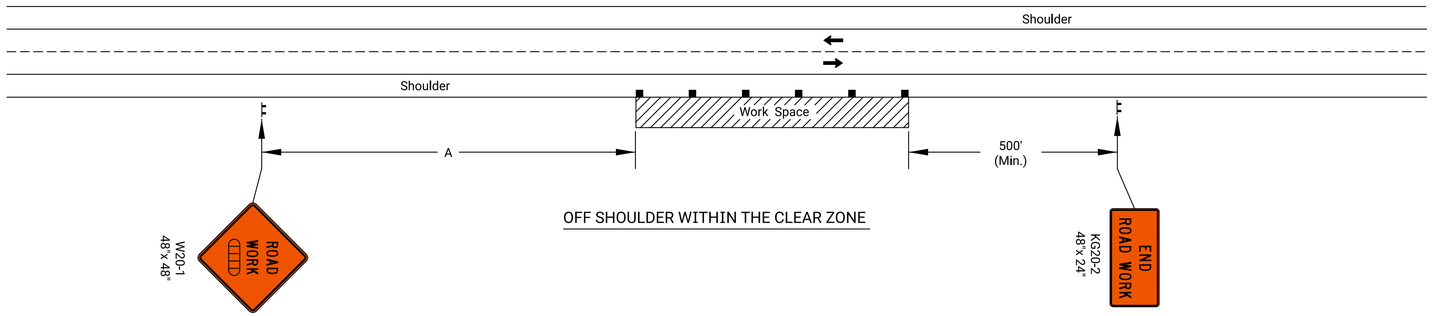
FHWA APPROVAL		06-01-15	APP'D.	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

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File : TE712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	190	230

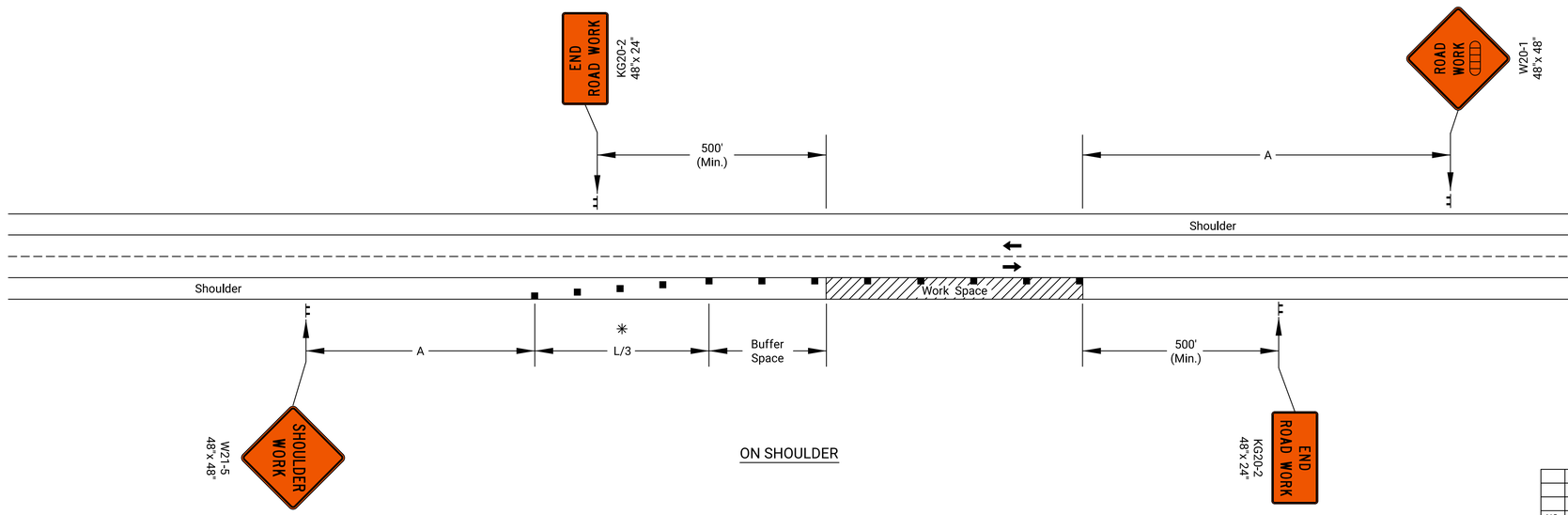


OFF SHOULDER WITHIN THE CLEAR ZONE

Notes:

No traffic control is required if the Work Space is located outside of the clear zone.

For operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with high-intensity rotating, flashing, oscillating, or strobe lights is used.



ON SHOULDER

✳ Omit taper if paved shoulder is less than 8' wide.

■ Channelizing Device

Ahead, 1500 ft, or 1 Mile

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SHOULDER WORK UNDIVIDED ROADWAY

TE720

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

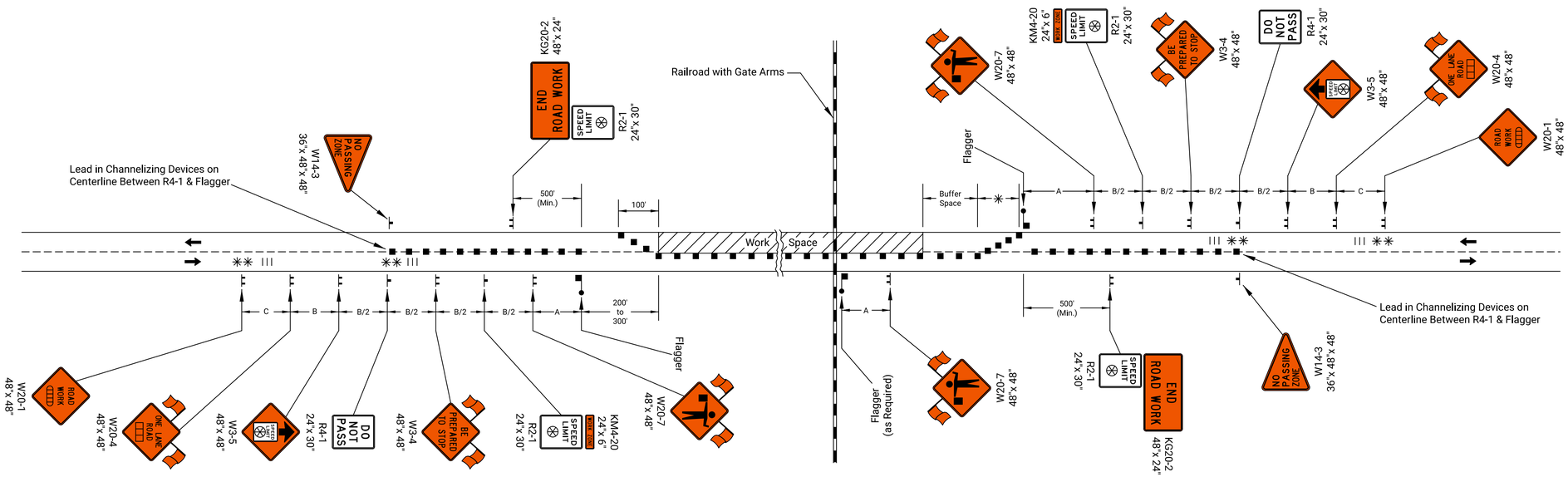
KDOT Graphics Certified 07-18-2022 Sh. No. 190

KDOT Graphics Certified

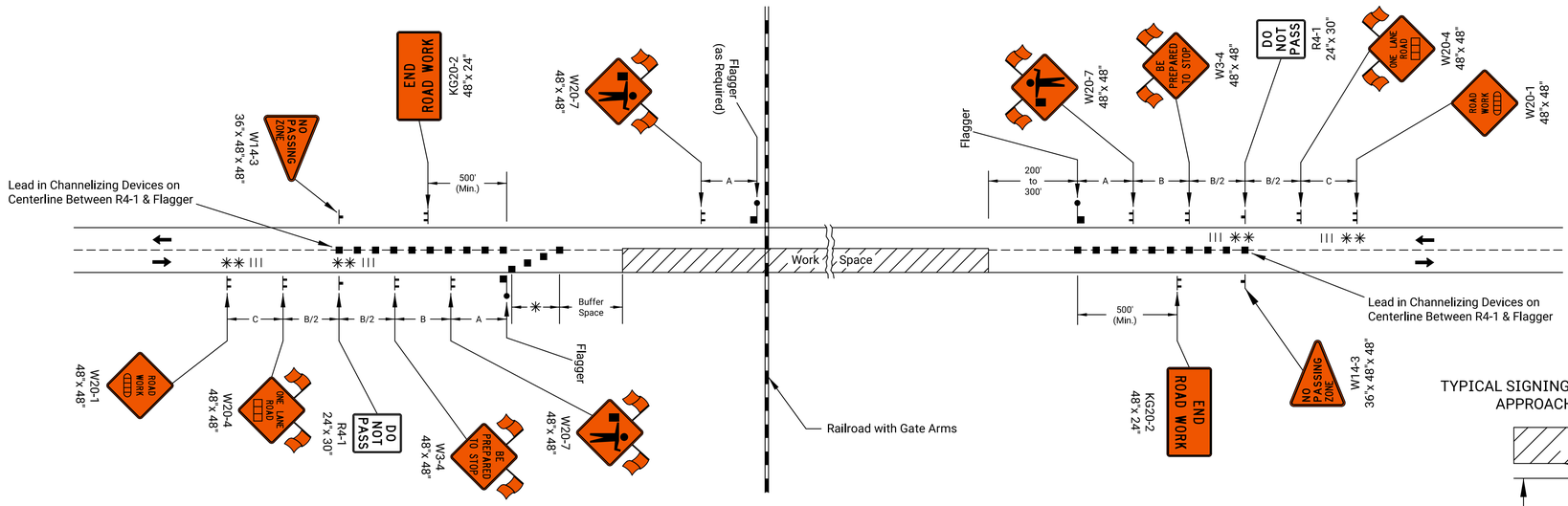
Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:47
File : TE720.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	191	230

FLAGGER



FLAGGER AND PILOT CAR



- ■ Channelizing Device
- Ahead, 1500 ft, or 1 Mile
- Ahead, 1000 ft, 1500 ft, or ½ Mile
- Speed to be Determined by the Engineer
- ○ Type "A" Low Intensity Warning Light
- ||| Temporary Portable Rumble Strips

USE TE731 FOR FLAGGER OR PILOT CAR ON ROADWAYS WITH CONCRETE SHOULDERS GREATER THAN 8 FT.

Notes:

Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around the Flagger.

Place a Flagger at all highway and major collector intersections and at-grade railroad intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor side road intersections shall be determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger.

Existing signs shall not be covered or removed between Flagger stations.

Temporary rumble strips may be used in lieu of lead in channelizing devices when the roadway is less than or equal to 30' including paved shoulders. When extenuating circumstances exist, the Area Engineer may elect to eliminate both the lead in channelizers and the rumble strips.

✳ Minimum six (6) channelizers spaced at 20' intervals.

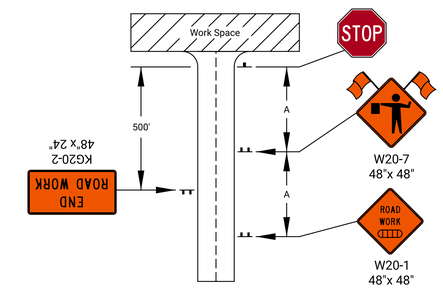
✳✳ Optional rumble strips may be placed: One set between the W20-1 and W20-4, and one set between the R4-1 and W3-4, on each approach.

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

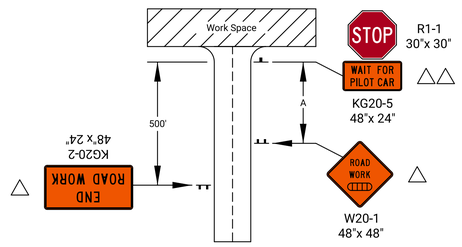
△△ The KG20-5 (WAIT FOR PILOT CAR) sign shall be mounted on an approved portable support and not attached to the existing stop sign post.

The KG20-5 sign shall be placed immediately in front of the existing stop sign, a minimum of 6" below the bottom of the stop sign. The sign should be removed or covered when there is no pilot car.

TYPICAL SIGNING FOR HIGHWAY OR MAJOR COLLECTOR APPROACH TO WORK SPACE



TYPICAL SIGNING FOR A MINOR SIDE ROAD APPROACH TO WORK SPACE



NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FLAGGER OR PILOT CAR

TE730

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

KDOT Graphics Certified 07-18-2022 Sh. No. 191

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File : TE730.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	192	230

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	
M4-8	79		
M1-4	83		
M5-1	12		
M6-1	13		
M3-2	38		
M3-4	39		
M4-8a	2		
M4-10	2		
R11-2			
R11-3a		2	
M5-2	3		
M6-2	5		
D1-1	9		
M6-3	6		
W20-1		5	
W20-2		2	
W20-3		4	
KG20-2	2		
W21-5		1	
W20-4		2	
W3-5		2	
R4-1	2		
KM4-20	2		
R2-1	4		
W14-3	2		
W1-4		4	
W13-1		4	
W20-5		2	
W4-2		1	
R1-1	4		
W10-1	2		
R9-9	2		

Barricades ✳		Channelizing Devices ✳		
Type 3 (4' to 12')	Pedestrian	Fixed	Portable	Pedestrian
50			160	10

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	40
Work Zone Warning Light (Red Type "B" High Intensity)	4
Arrow Display	
Portable Changeable Message Sign	

Recapitulation of Quantities		
Item	Quantity	Unit
Work Zone Signs (0 to 9.25 Sq.Ft.)	195,930	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)	19,530	Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')	31,500	Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)	100,800	Each Per Day
Channelizer (Pedestrian)	6300	Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)	25,200	Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)	2520	Each Per Day
Arrow Display		Each Per Day
Portable Changeable Message Sign		Each Per Day
Pavement Marking (Temporary)		
4" Solid (Type I)	780	Sta./Line
4" Solid (Type II)		Sta./Line
4" Broken (8.0') (Type I)		Sta./Line
4" Broken (8.0') (Type II)		Sta./Line
4" Broken (3.0') (Type I)		Sta./Line
4" Broken (3.0') (Type II)		Sta./Line
4" Dotted Extension (Type I)		Sta./Line
4" Dotted Extension (Type II)		Sta./Line
Solid (Line Masking Tape)		Sta./Line
Broken (Line Masking Tape)		Sta./Line
Symbol (Type I)		Each
Symbol (Type II)		Each
Flexible Raised Pavement Marker (4" Broken (8.0'))		Sta./Line
Flexible Raised Pavement Marker (4" Broken (3.0'))		Sta./Line
Pavement Marking Removal	18000	Lin. Ft.
Work Zone Sign (Special) (16.25 Sq. Ft. & Less)		Each
Work Zone Sign (Special) (16.26 Sq. Ft. & More)		Each
Rigid Raised Pavement Marker (Type I)		Each
Rigid Raised Pavement Marker (Type II)		Each
Traffic Signal Installation (Temporary)		Lump Sum
Traffic Control (Initial Set Up)	Lump Sum	Lump Sum
Traffic Control		Lump Sum
Flagger (Set Price)	1	Hour

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SUMMARY OF DEVICES RECAPITULATION OF QUANTITIES

TE795

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

KDOT Graphics Certified 11-21-2024 Sh. No. 192

KDOT Graphics Certified

Plotted by : Robert.Bartron@ks.gov 6-OCT-2025 15:48
File : TE795.dgn

Note to Designer: Report the quantity for temporary concrete safety barrier in linear feet.
The quantity is calculated by multiplying the number of barrier units by 12'-6".

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	193	230

SUMMARY OF QUANTITIES

				⊙ CONCRETE SAFETY BARRIER (TYPE F3)					
LOCATION (ROUTE)	PHASE	STATION (OR STATION RANGE)	SIDE	FLARE RATE (WHERE APPLICABLE)	TEMPORARY	TEMPORARY-RELOCATE	TEMPORARY-INSTALL ONLY	UNIT	COMMENTS
US-160	2A	℄ 450+45.90 to ℄ 452+75.70	Lt.	18:1	225			Ln. Ft.	
US-160	2A	℄ 468+67.97 to ℄ 471+87.74	Lt.	18:1	312.5			Ln. Ft.	
US-160	2B	℄ 445+99.43 to ℄ 453+03.11	Rt.	18:1	150	537.5		Ln. Ft.	
US-160	2B	℄ 444+59.30 to ℄ 451+75.16	Lt.	18:1	700			Ln. Ft.	
US-160	2B	℄ 471+45.66 to ℄ 473+88.60	Lt.	18:1	237.5			Ln. Ft.	
US-160	2B	℄ 470+21.23 to ℄ 473+53.53	Rt.	18:1	325			Ln. Ft.	
US-160	2C	℄ 470+17.76 to ℄ 471+45.66	Lt.			125		Ln. Ft.	Added to Phase 2B Barrier
US-160	3A	℄ 455+51.07 to ℄ 472+27.72	Lt.	18:1		1,637.5		Ln. Ft.	
US-160	3B	℄ 451+28.48 to ℄ 455+51.07	Lt.	18:1	100	312.5		Ln. Ft.	Added to Phase 3A Barrier
US-160	3C	℄ 444+59.49 to ℄ 453+16.80	Lt.	18:1		837.5		Ln. Ft.	
US-160	3C	℄ 470+44.78 to ℄ 474+66.88	Lt.	18:1		412.5		Ln. Ft.	
				TOTAL	2,050	3,862.5			

⊙ The quantity reported does not include the 3⅝" gap between 12'-6" sections of barrier. The 3⅝" gap will not be included in the pay length for Concrete Safety Barrier (Type F3) (Temporary).
See the Summary of Quantities on Sheet No. 110 for Recap of Temporary Concrete Safety Barrier and End Treatments.

IMPACT ATTENUATORS (TEMPORARY)

LOCATION (ROUTE)	PHASE	SIDE	TL-2 (EACH)	⚠ TL-2 RELOCATE (EACH)
US-160	2A	Lt.	4	
US-160	2B	Rt.		2
US-160	2B	Lt.		2
US-160	2C	Lt.		1
US-160	3A	Lt.		2
US-160	3B	Lt.		1
US-160	3C	Lt.		4
TOTAL			4	12

⚠ Temporary TL-2 Relocate is Subsidiary to Bid Item

Design Parameters	
Design Speed (mph)	Flare Rate (a:b)
70	15:1
60	14:1
55	12:1
50	11:1
45	10:1
40	8:1
30	7:1

Note: The flare rates listed here apply only to temporary concrete safety barrier installations. See temporary concrete safety barrier layouts included in the plans for variations. Typical alternate flare rates may be used as approved by the Engineer.

NO.	DATE	REVISIONS	BY	APP'D
01	02-11-15	Initial Release	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES
TEMPORARY CONCRETE SAFETY BARRIER AND END TREATMENTS

~~RD052~~

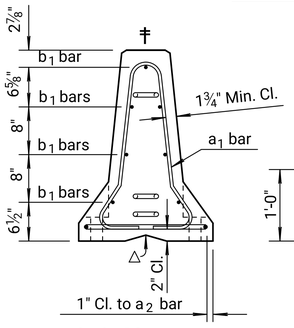
FHWA APPROVAL	09-16-15	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-30-2025 Sh. No. 193

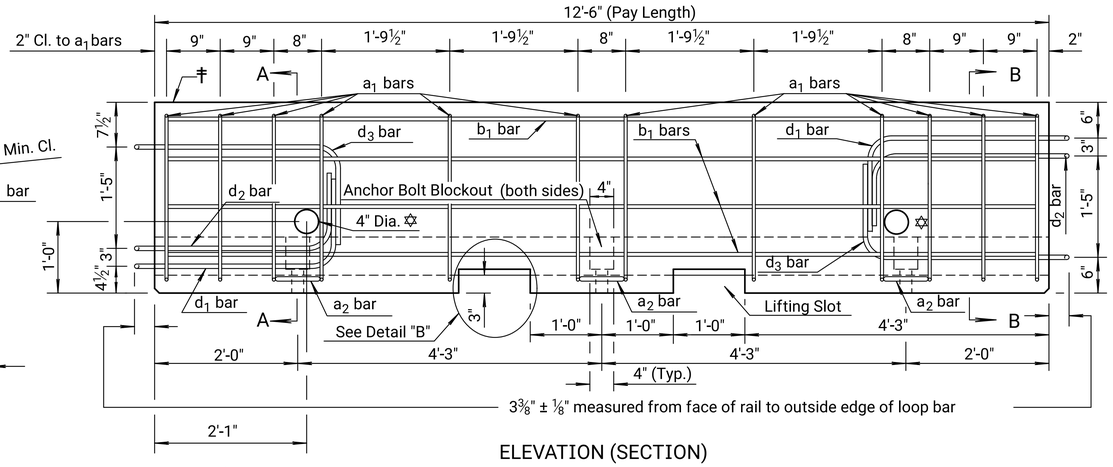
KDOT Graphics Certified

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:40
File : KA647501rss052-01.dgn

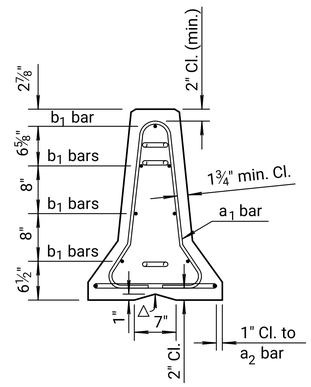
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	194	230



SECTION A-A
TYPICAL SECTION
(Stirrup Placement)

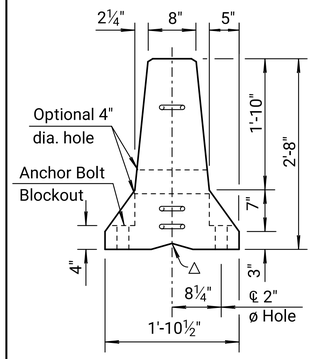


ELEVATION (SECTION)

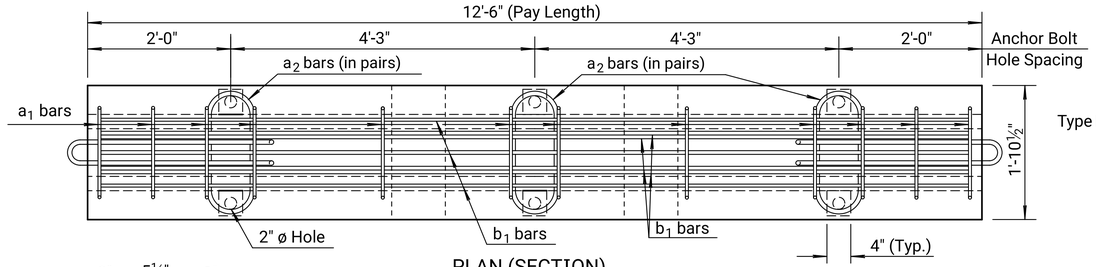


SECTION B-B
TYPICAL SECTION
(Stirrup Placement)

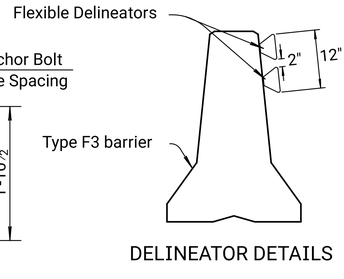
† Marked End
✡ 4" diameter - 11 gauge steel round mechanical tubing sleeve. These holes are optional.
△ V Notch is optional



END VIEW



PLAN (SECTION)



DELINEATOR DETAILS

GENERAL NOTES:

MATERIAL: Use ASTM A615, Grade 60 reinforcing bars, except for the loop bars (d_1, d_2 and d_3). The loop bars (d_1, d_2 and d_3) shall be ¾" smooth steel bars with a minimum yield of 60 ksi, a tensile strength of not less than 1.25 times the yield strength but a minimum of 80 ksi, a minimum 14% elongation in 8 inches, and passing a 180 degree bend test using a 3.5 D pin bend diameter. The loops shall be installed within ⅛" of the plan dimensions.

Use air-entrained concrete with f'c = 5,000 p.s.i.

SECTION: The section furnished must generally comply with dimensions shown. Requests for minor variations in section geometry and attachments may be submitted to the Engineer for approval.

LIFTING SLOTS: Lifting slots shall be constructed where specified on the plans to facilitate the drainage of water after installation on the roadway.

TEMPORARY CONCRETE SAFETY BARRIER: Furnishing and placing of all materials when required and all labor and equipment required to position the temporary barrier shall be included in the Contract unit price bid for "Concrete Safety Barrier (Type F3)(Temporary)". Any relocation of the barrier required for the project shall be paid in accordance with the Special Provisions under the bid item "Concrete Safety Barrier (Type F3) (Temporary-Relocate)". Unless otherwise noted on the Plans, the Temporary Concrete Safety Barrier shall become the property of the Contractor and shall be removed from the site upon acceptance of the completed project.

Approximate weight of one unit equals 2.7 tons.

PLACEMENT: Barrier shall be placed on a paved surface. All loose dirt and sand shall be removed from the roadway surface just prior to placement of the barrier.

After the barrier is placed and the connection pin is inserted, tension or pull the barrier such that the installation is taut and the connection pin cannot freely move vertically. If the connection pin or loop bar assembly are damaged during the tensioning process, it is the responsibility of the Contractor to repair the damaged area or replace the temporary barrier section.

MARKING: The left end (†) of each barrier shall be permanently marked by stamping or forming into the barrier the following information:

- Type F3
- Manufacturer code (as specified by KDOT Bureau of Const. & Maint.)
- Date manufactured (month and year)

DELINEATION: Delineators shall be spaced on 50' centers, except through curves where they shall be spaced on 25' centers. See Standard Drawing RD610 for additional details.

The delineation shall be mounted on the side of the Temporary Concrete Safety Barrier with two delineators at each location. Each delineator shall have a minimum height-to-width ratio of 1.75, and a minimum reflective surface area of 7 sq. in.. The delineators shall be affixed to the Temporary Concrete Safety Barrier as recommended by the manufacturer.

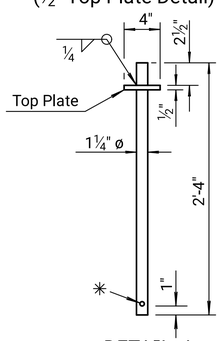
Delineators shall be attached to bridge rail or other structures in construction zones when roadway is narrowed and traffic is adjacent to the structure. The method and location of placement shall be similar to permanent barrier delineation.

When traffic flow is in one direction, the delineators shall be yellow when used on the left, white when used on the right. When traffic flow is in both directions delineators shall be placed back-to-back, and shall correspond to the color of the edge line.

The work and materials required for the installation of delineators as mentioned shall be subsidiary to the bid item "Concrete Safety Barrier (Type F3) (Temporary).

If necessary, include Standard Drawing RD622A for Taper Section, Standard drawing RD622B for anchor and tie down details, Standard Drawing RD622C for Bridges with thermal expansion of 1½" or greater and Standard Drawing RD622D for Barrier Layouts.

The Contractor shall be responsible for maintaining a clear area, shown as dimension "A" on Standard Drawing RD622B. The clear area is located behind the Temporary Concrete Safety Barrier and shall be kept free of any equipment, material stockpiles or other obstacles. For non-anchored roadway applications, dimension "A" shall be a minimum of 2'-0".

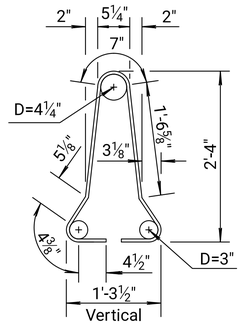


(½" Top Plate Detail)

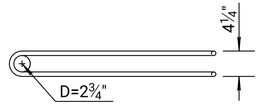
DETAIL A
CONNECTION PIN
(A36 Steel) 10.9 lbs. each

✳ ⅝" ø hole for retainer bolt. The retainer bolt & nut are installed at Contractor's option.

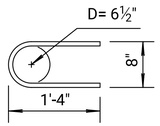
Note: Retainer bolt & nut required with Tie Down Strap.



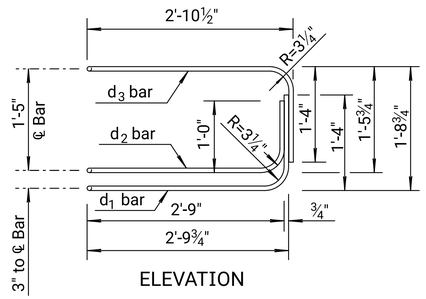
a_1 bar



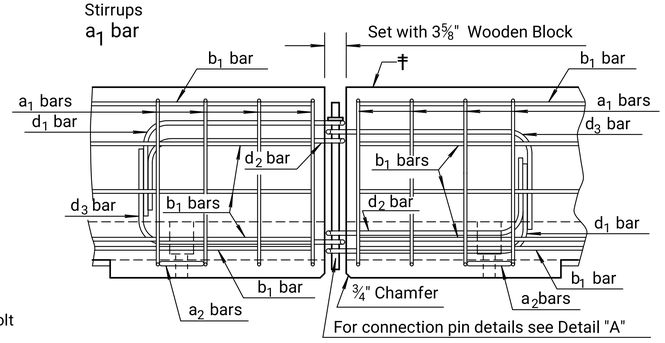
PLAN
LOOP BAR ASSEMBLY
(Marked end shown, invert for other end)
(Material as stated in General Notes)



a_2 bar



ELEVATION



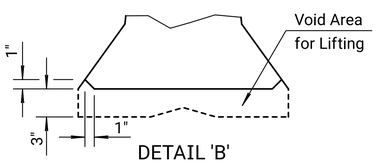
DETAILS OF BARRIER CONNECTION

Per 12'-6" Barrier Section

REINFORCING A615 Gr. 60					
Bar	Bar Size	Shape	No. of Bars	Length Ft.	Weight Lbs.
a_1	#4		12	6'-0"	48.1
a_2	#6		6	2'-11"	26.3
b_1	#5		7	12'-2"	88.8
LOOP ASSEMBLY					
d_1	#6		2	8'-5"	25.3
d_2	#6		2	7'-7"	22.8
d_3	#6		2	8'-6"	25.5

Concrete Quantity = 1.3 C.Y.

(Dimensions are out to out of bars unless otherwise noted.)



DETAIL 'B'
LIFTING SLOT DETAIL
(1" Chamfer to prevent spalling)

NOTE: At no time shall the barriers be lifted, moved, etc. by use of the loop bars: d_1, d_2 or d_3.

NO.	DATE	REVISIONS	BY	APP'D
07	09-11-17	Revised Markers	A.L.R.	S.W.K.
06	07-17-17	Revised General Note	A.L.R.	S.W.K.
05	08-27-15	Added Note, Pay Length	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY
CONCRETE SAFETY BARRIER
TYPE F3

RD622

FHWA APPROVAL	03-05-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-12-2022 Sh. No. 194

KDOT Graphics Certified

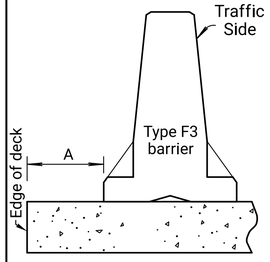
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:37
File : KA647501rss622-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	195	230

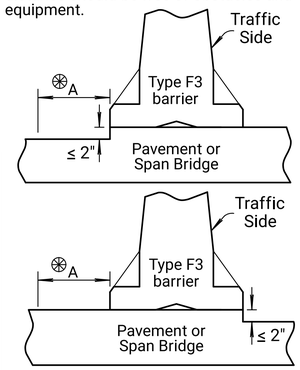
GENERAL NOTES:
INSTALLATION: Holes into the pavement to anchor the concrete safety barrier may be drilled after positioning barrier. When anchoring with 3 bolts on traffic side, install barrier with through anchor bolt where possible, use grouted anchor bolts where through bolt can't be used. Do not drill into or otherwise damage support beams, girders, or expansion joints. All work & materials required for the installation of the anchors are subsidiary to the bid item "Concrete Safety Barrier".
UTILITIES & STRUCTURES (Stakes): Verify buried utilities & structures within stake depth. If conflicts between stake & buried elements exist, up to 2 stakes maximum in a single barrier may be omitted if adjacent barriers have 3 stakes each.

ANCHORAGE: Use galvanized grouted anchor bolts, through anchor bolts, nuts & washers that meet standard specifications. Install 3 anchor bolts or asphalt pins per barrier on the traffic side except on transition barrier as shown.
BARRIER REMOVAL: Completely remove all anchor systems. Remove grouted or drop-in anchor system by drilling the anchor with a core barrel 2x the diameter of the insert. Core to a depth equal to the installed depth & remove the core, prepare the hole by removing dust & debris. Fill hole with material that meets KDOT Pre-qualified "Non-shrink grouts for grouting anchor bolts & reinforcing into previously poured concrete". Follow the manufacturer's procedures for mixing, hole preparation & curing. To fill through bolt anchor or screw-in anchor system, remove & completely fill the hole using instructions for drop-in anchors except no coring is required.
For removed or relocated barrier on flexible pavement, fill stake holes completely with hot or cold asphalt patch material. Work & materials required to remove & patch anchor holes are subsidiary to the bid item "Concrete Safety Barrier".
TEMPORARY BARRIERS: Temporary Barriers shown in the details of this drawing are not allowed for permanent installations.
See KDOT Standard Drawing "Temporary Concrete Safety Barrier Type F3 Transition Layouts" for transition details between anchored & free-standing barriers. See KDOT Standard Drawing "Temporary Concrete Safety Barrier Type F3" for details & quantities not shown on this sheet.
SIGNING: For sign spacing, traffic control device details & reference notes, see Index of Sheets.

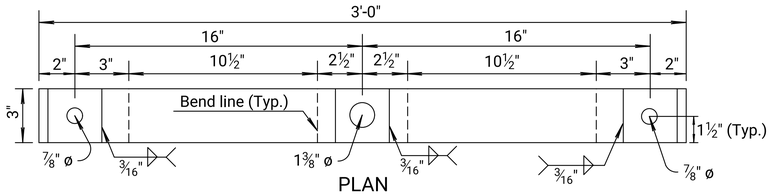
NO ANCHORAGE REQUIRED unless shown on plans		
"A" DISTANCE	A ≥ 4'	A ≥ 2'
LOCATION	Span Bridge	⊛ Box Culverts Roadways - Flexible or Rigid Pvmnt.



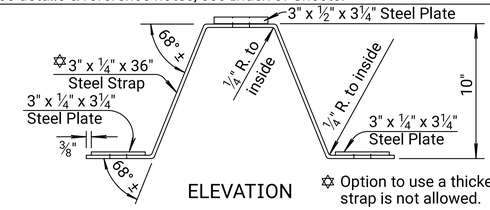
⊛Applies on span bridges when the action creates a height differential of ≤ 2". Measured from the toe of the barrier, the "A" distance should be free of obstacles and equipment.



BARRIER LOCATION NEAR HEIGHT DIFFERENTIAL



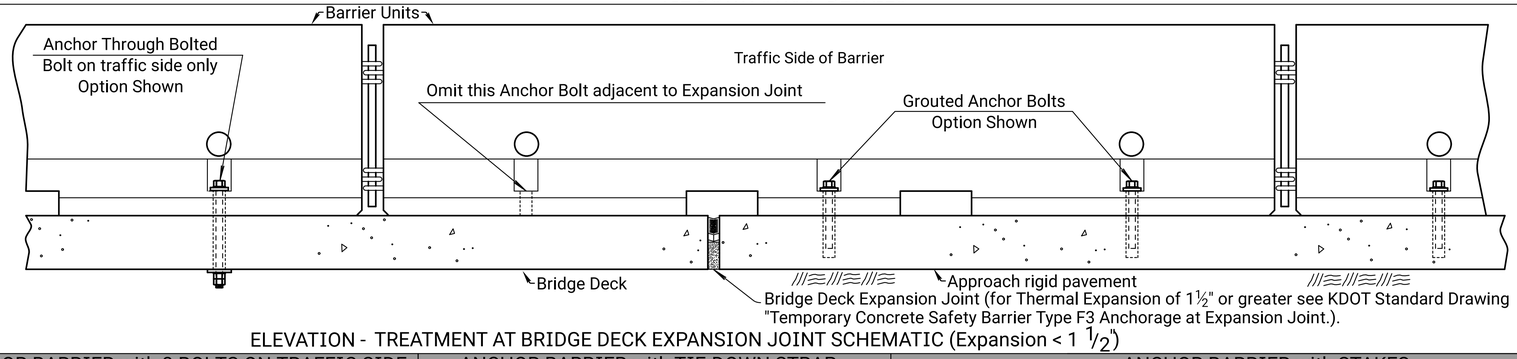
PLAN



ELEVATION

✡ Option to use a thicker steel strap is not allowed.

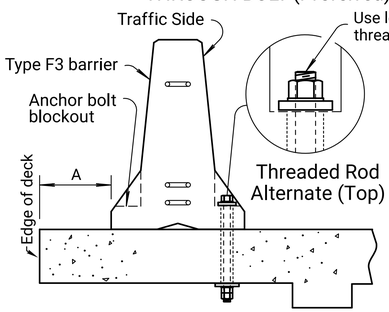
TIE-DOWN STRAP DETAILS

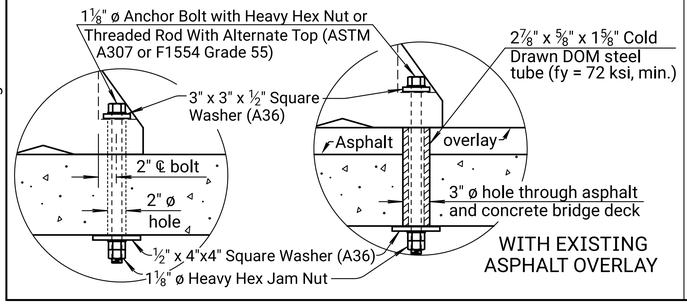


ELEVATION - TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC (Expansion < 1 1/2")

ANCHORAGE	ANCHOR BARRIER with 3 BOLTS ON TRAFFIC SIDE	ANCHOR BARRIER with 3 BOLTS ON TRAFFIC SIDE		ANCHOR BARRIER with TIE-DOWN STRAP		ANCHOR BARRIER with STAKES
"A" DISTANCE	0' ≤ A < 2'	0' ≤ A < 2'		△ 2' ≤ A < 4'	6" ≤ A < 2'	6" ≤ A < 2'
LOCATION	Span Bridge	Span Bridge	Box Culverts Roadways - RIGID Pavement	Span Bridge	Box Culverts Roadways - RIGID Pavement	Box Culverts (ceiling below stake depth) Roadways - FLEXIBLE Pavement

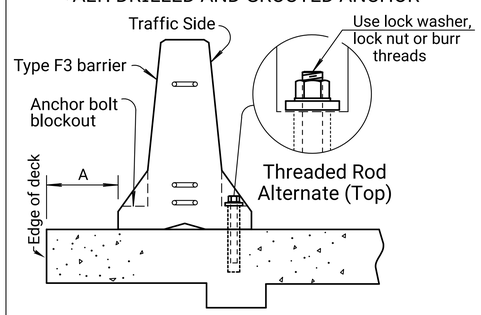
THROUGH BOLT (Preferred)



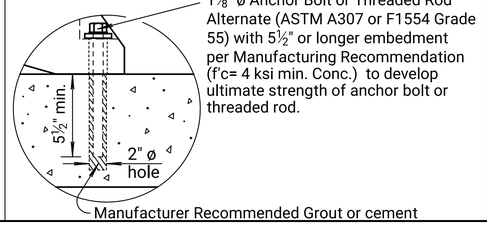


WITH EXISTING ASPHALT OVERLAY

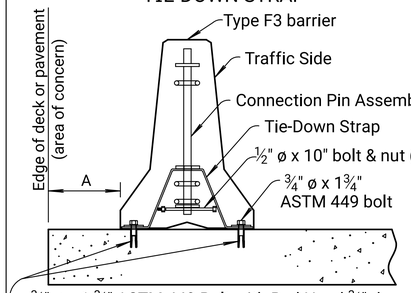
✡ALT. DRILLED AND GROUTED ANCHOR



✡Note: Alternate Drilled and Grouted Anchor installation avoids damage to the support beams, girders or expansion joint. The State Bridge Office shall approve the use of the Alternate Drilled and Grouted Anchor installation for bridge applications.

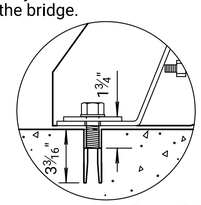


TIE-DOWN STRAP



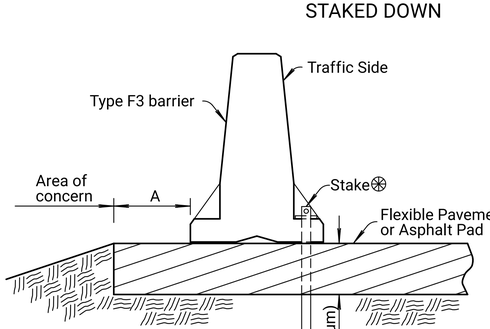
¾" ø x 1 ¾" ASTM 449 Bolt with Red Head ¾" drop in anchor, Red Head large diameter Tapcon (LDT) ¾" ø x 4 ½" long, or Simpson Titen HD ¾" ø x 5" long

△"A" distance may be reduced to 6" if traffic does not travel under the bridge.

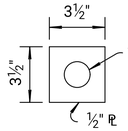


With prior approval from the State Bridge Office, anchoring the barrier with 3 bolts (Through Bolt OR Drilled & Grouted Anchor oprtions) on the traffic side may be used in lieu of tie-down straps.

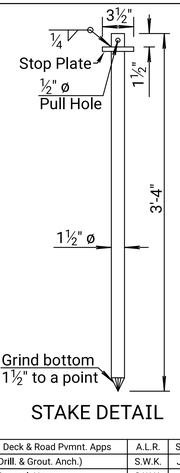
STAKED DOWN



⊛ Predrill 1½" ø holes in flexible pavement prior to installing stakes.



STOP PLATE DETAIL



STAKE DETAIL

NO.	DATE	REVISIONS	BY	APP'D
07	04-21-21	Revised Layouts for Br. Deck & Road Pvmnt. Apps	A.L.R.	S.W.K.
06	12-31-13	Rev. Note (Alt. Drill. & Grout. Anch.)	S.W.K.	J.O.B.
05	06-27-11	Revised General Note	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 ANCHORAGE

RD622B

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

KDOT Graphics Certified 05-13-2022 Sh. No. 195

KDOT Graphics Certified

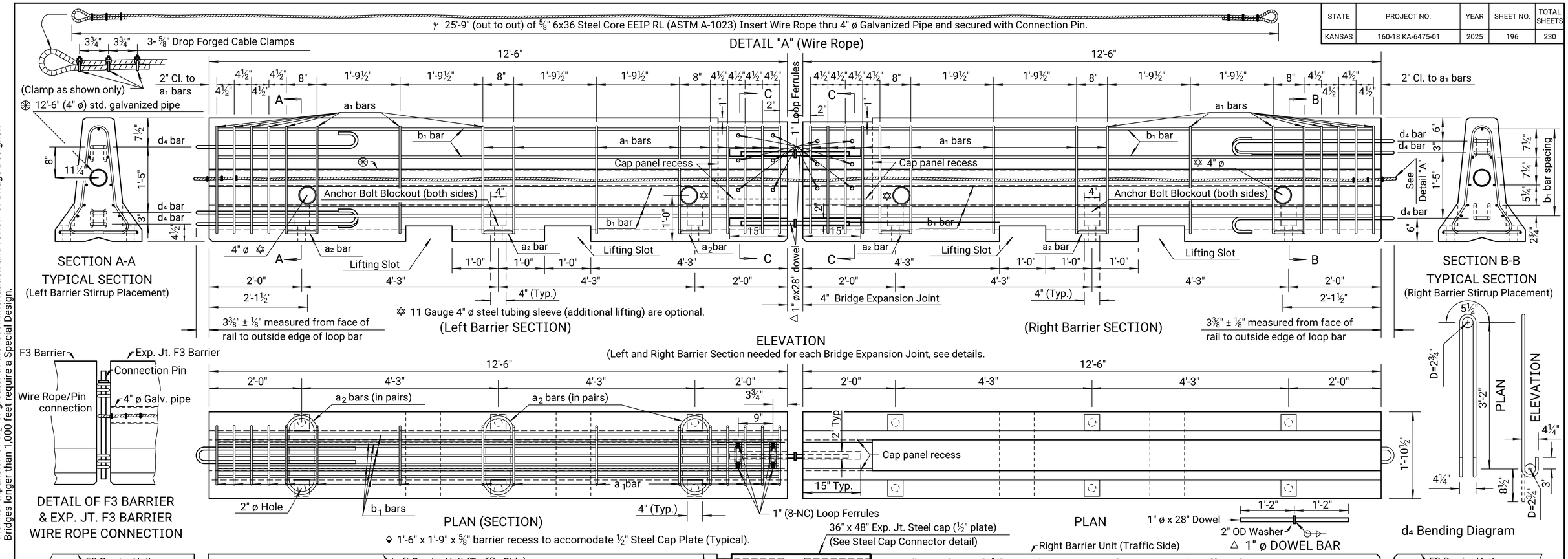
Note to Designer: For use on Haunched slab bridges, the Road Designer shall coordinate with the Bridge Designer for "corridor In the reinforcing steel layout to accommodate barrier anchoring."
Road Designer shall coordinate barrier layout with Bridge Designer to accomodate for expansion during construction.

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:37
File : KA647501rss622b-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	196	230

Note to Designer: This F3 Barrier Anchorage at Expansion Joint is only for use on bridges with thermal expansion of 1½" or greater at the recommendation and review of Bridge Designer. Bridges longer than 1,000 feet require a Special Design.

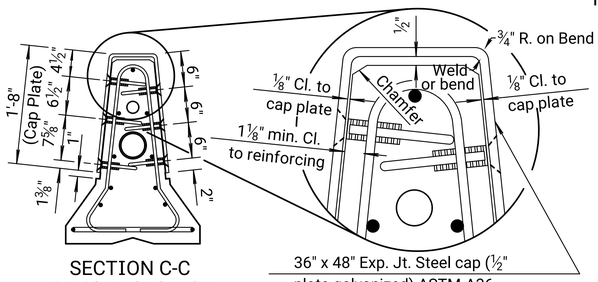
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:41
File : KA647501rss6222c-01.dgn



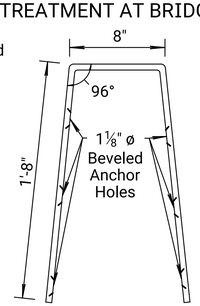
Per 12'-6" Barrier Section

REINFORCING A615 Gr. 60					
Bar	Bar Size	Shape	No.of Bars	Length Ft.	Weight Lbs.
a₁	#4		16	6'-0"	64.1
a₂	#6		6	2'-11"	26.3
bₗ	#5		9	12'-2"	114.2
LOOP ASSEMBLY					
d₄	#6		3	8'-2"	36.8
½" Structural Steel Cap Plate					201.3

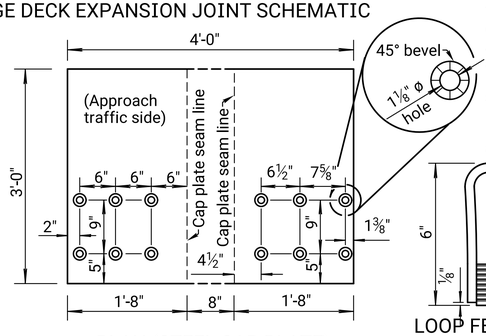
Concrete Quantity = 1.3 C.Y.
(Dimensions are out to out of bars unless otherwise noted.)
Reinf., Struct. and Concrete quantities are for "Information Only".



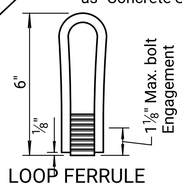
SECTION C-C
TYPICAL SECTION



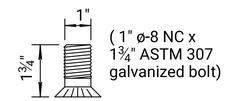
END VIEW
STEEL CAP PLATE



PLAN (STEEL CAP PLATE)



LOOP FERRULE
(1" Galvanized)



FLAT HEAD
SOCKET CAP
SCREW-Coarse

GENERAL NOTES

Installation of F3 Barrier with Steel Cap Plate is for thermal expansion joint with ≥ 1½". This two barrier system (25'-0") is reversible to match with regular F3 Barrier layout. The Cap Plate sections are installed with no greater than 4" gap and pinned as shown in Expansion Jt. schematic. Install Cap Plate flush to recess on Traffic Approach side and bolt in place front and back of barrier with attachment types shown.

See Standard Drawing RD622 for reinforcing bending diagrams and additional details not shown on this sheet.

The State Bridge Office will review shop details before fabrication begins.

All materials, labor and equiptment needed for (Type F3) (25' Expansion Joint Unit) shall be bid as "Concrete Safety Barrier (Type F3) (Temporary)".

NO.	DATE	REVISIONS	BY	APP'D
03	07-26-07	Chg. flat head screw & ferrul to 1" ø	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 ANCHORAGE at EXPANSION JT.

RD622C

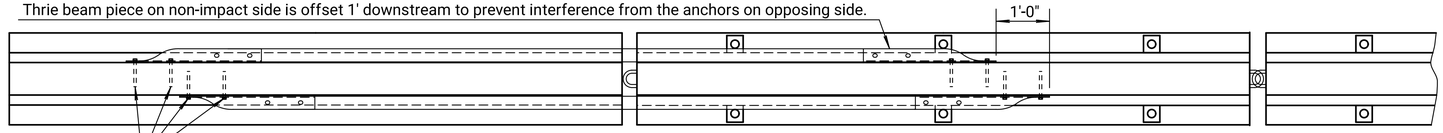
FHWA APPROVAL		10-05-07	APP'D.	James O. Brewer
DESIGNED	DETAILED		QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK. S.W.K.

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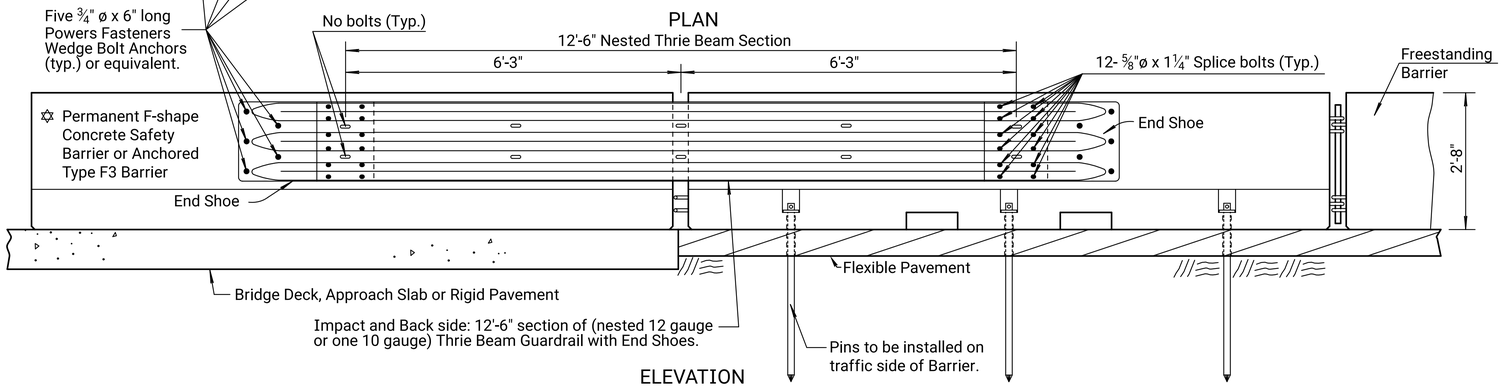
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	197	230

Thrie beam piece on non-impact side is offset 1' downstream to prevent interference from the anchors on opposing side.

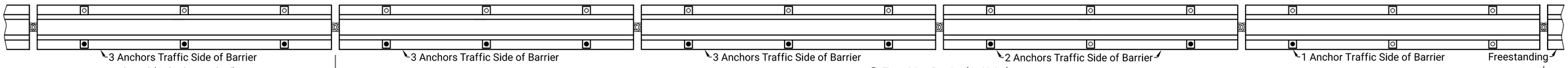


PLAN



ELEVATION

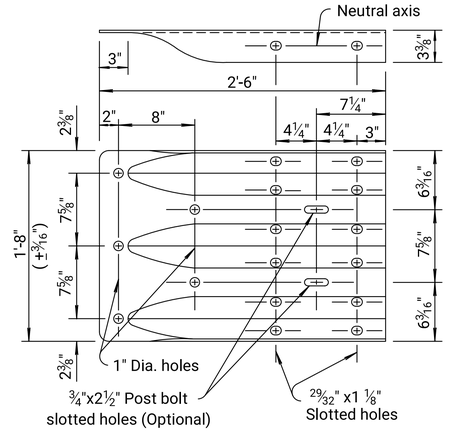
✡GUARDRAIL CONNECTION–ANCHORED/RIGID BARRIER TO FREESTANDING BARRIER



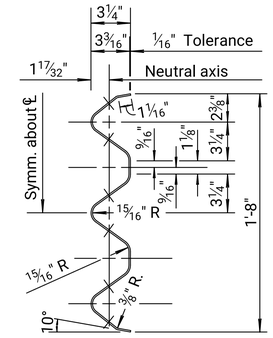
PLAN - TRANSITION BARRIER ⊛

GENERAL NOTES:

The work and materials required for the installation & removal of the guardrail connection and barrier anchors as shown on this sheet shall be subsidiary to the "Concrete Safety Barrier" bid item.

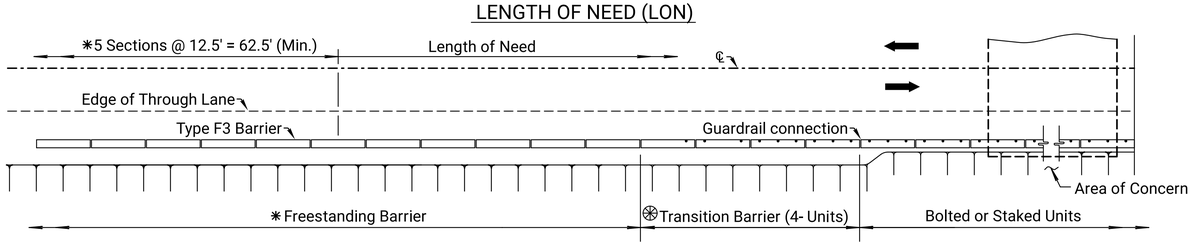


TERMINAL CONNECTOR

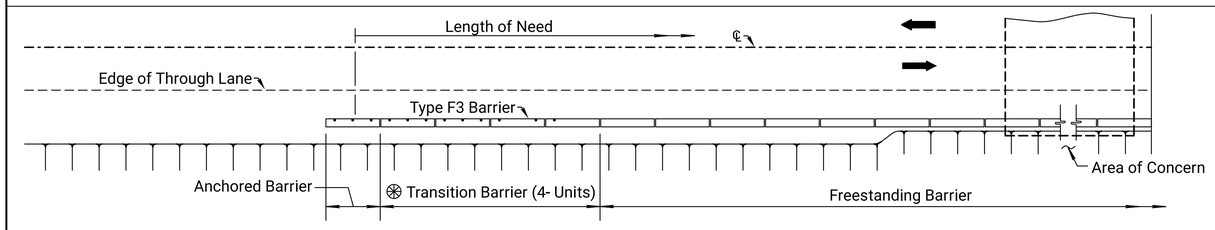


THRU RAIL ELEMENT
TYPICAL THRIE BEAM

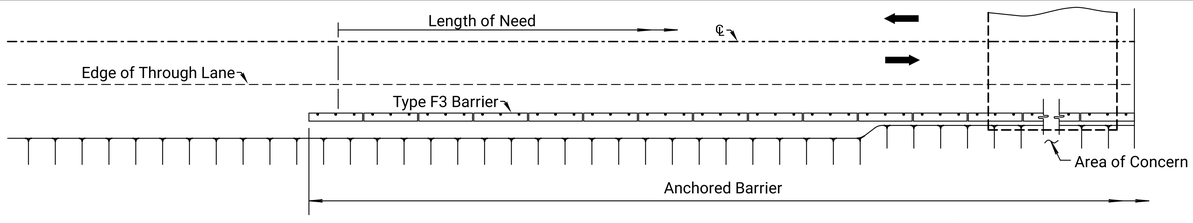
LENGTH OF NEED (LON)



LENGTH OF NEED WITH FREESTANDING TYPE F-3 CONCRETE BARRIER ENDING

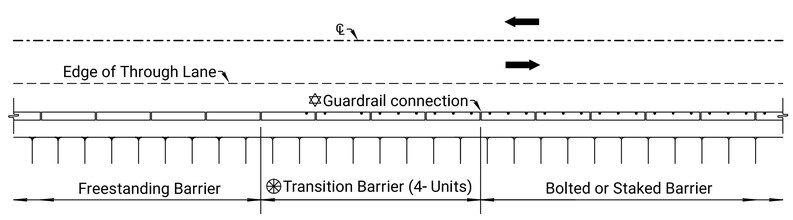


REDUCED LENGTH OF NEED WITH ALTERNATE END ANCHORAGE (FREESTANDING)



REDUCED LENGTH OF NEED WITH ALTERNATE END ANCHORAGE (ANCHORED)

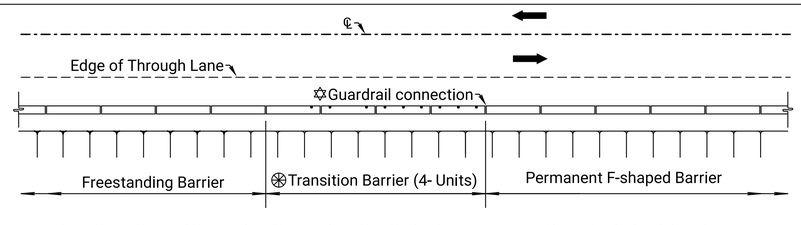
TRANSITION LAYOUTS



TRANSITION "From/To"	✡	⊛
Transition from a Freestanding Barrier to a Type F3 Barrier anchored to a rigid pavement with bolted connection or bolted to a bridge deck.	YES	YES
Transition from a Freestanding Barrier to a Type F3 Barrier pinned/staked to asphalt pavement.	NO	YES

✡ Guardrail Connection ⊛ Transition Barrier

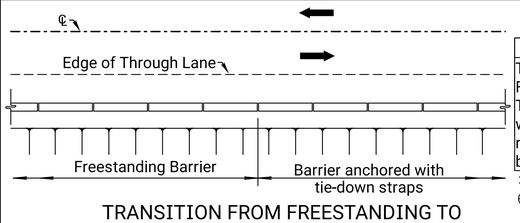
TRANSITION FROM FREESTANDING TO AN ANCHORED (BOLTED OR STAKED) TYPE F-3 BARRIER



TRANSITION "From/To"	✡	⊛
Transition from a Freestanding Barrier to a Permanent F-Shape Barrier.	YES	YES

✡ Guardrail Connection ⊛ Transition Barrier

TRANSITION FROM FREESTANDING TO PERMANENT F-SHAPED BARRIER



TRANSITION "From/To"	✡	⊛
Transition from a Freestanding Barrier to a Type F3 Barrier anchored with tie-down straps on a rigid pavement or a bridge deck.	NO	NO

✡ Guardrail Connection
⊛ Transition Barrier

TRANSITION FROM FREESTANDING TO TYPE F3 BARRIER ANCHORED WITH STRAPS

✳Note to Designer: The minimum length for Freestanding Temporary Concrete Safey Barrier (TCSB) Installations is 11 sections @ 12.5' = 137.5'. In a Freestanding TCSB installation, if both ends are anchored, fewer than 11 sections of Freestanding TCSB may be used.
The 5 sections of Freestanding TCSB beyond the length of need may be reduced to 3 sections if the barrier is located on the exit end and traffic is traveling in a single direction.

NO.	DATE	REVISIONS	BY	APP'D
02	07-19-19	Added LON & Transition Layouts	A.L.R.	T.T.R.
01	01-30-07	Rem. temp. details from perm. barrier	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 TRANSITION LAYOUTS

RD622D

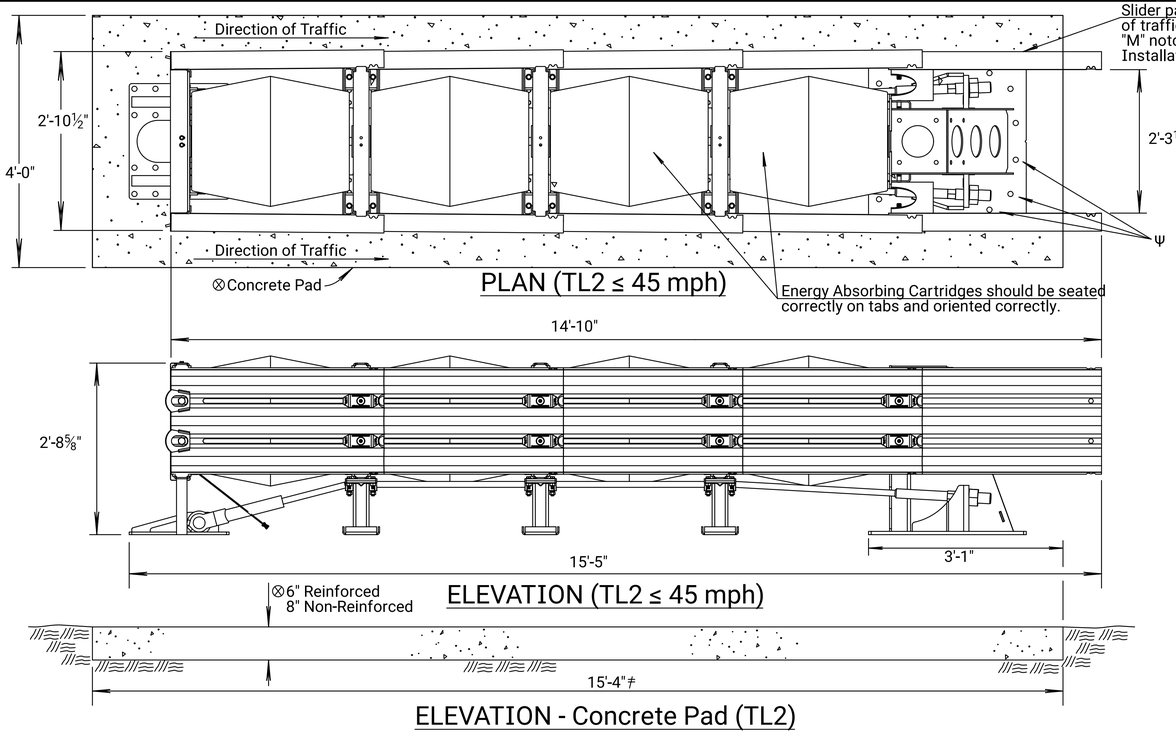
FHWA APPROVAL	08-07-19	APP'D.	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

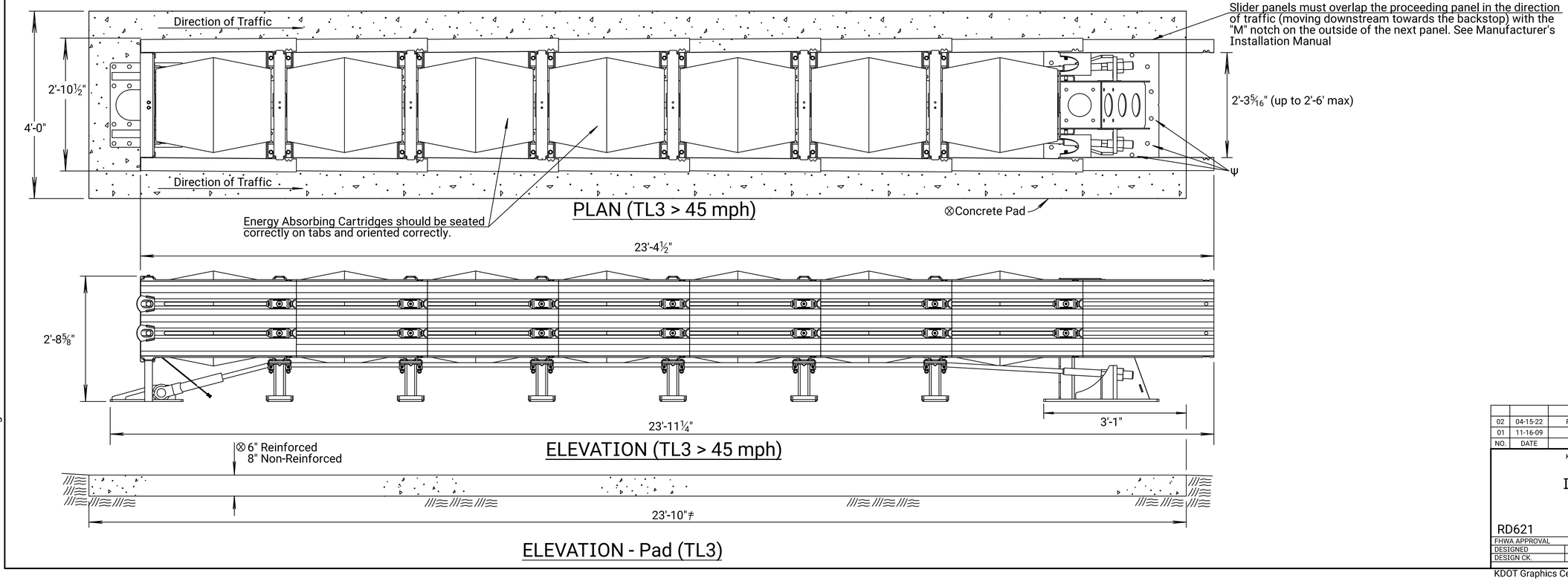
KDOT Graphics Certified 05-13-2022 Sh. No. 197

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File : KA647501rss622d-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	198	230





GENERAL NOTES

Details shown on this sheet of TAU-M TL2 & TL3 are for Information Only and may not be an exact detail of TAU-M TL2 & TL3. See the Manufacturer's Installation Manual furnished to the Engineer for details of components and installation for the TAU-M TL2 & TL3.

⊗ Concrete shall have a minimum compressive strength of 4,000 p.s.i. For concrete pad thickness and details, see the manufacturer's Installation Manual.

If foundation pad extends from a concrete curb, wall, abutment, or other concrete hazzard, see Manufacturer's Installation Manual for adjustment of the foundation length.

≠ Maximum cross-slope is 8.0%. If cross-slope varies more than 2% over the length of the system, the concrete pad will require leveling.

The installation area should be free from elevated objects or depressions.

Anchorage holes must be drilled to depth as per the Manufacturer's Installation Manual and cleared of debris to achieve proper anchorage.

Ψ The TAU-M TL2 & TL3 system should be approximately parallel with the barrier or ℄ of merging barriers. In unidirectional traffic applications, the Tau-M is free standing. The unit can abut a barrier up to 30" wide. In bi-directional traffic the system requires a transition to a barrier system or guardrail. See Manufacturer's Installation Manual for acceptable transition configurations.

All work and material required for installation of this attenuator shall be paid under the bid item "Impact Attenuator (TL2 or TL3)".

NO.	DATE	REVISIONS	BY	APP'D
02	04-15-22	Replaced Tau-II with Tau-M model attenuator	A.L.R.	S.W.K.
01	11-16-09	Revised Temporary Bid Item	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

IMPACT ATTENUATOR TAU-M (TL2 & TL3)

RD621

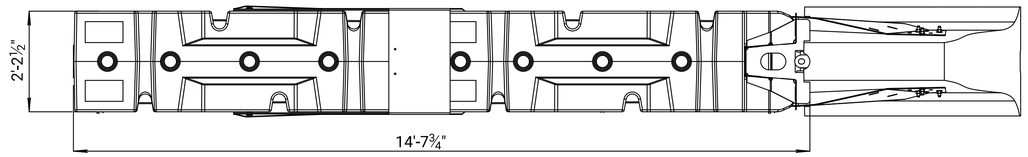
FHWA APPROVAL	04-21-22	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-02-2022 Sh. No. 198

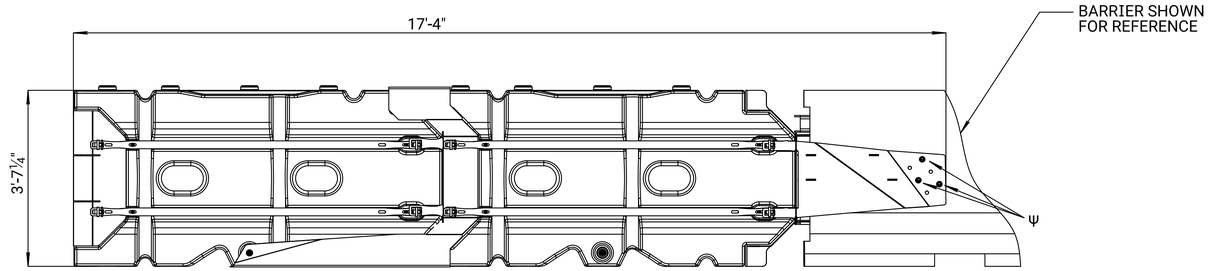
KDOT Graphics Certified

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File : KA647501rss621-01.dgn

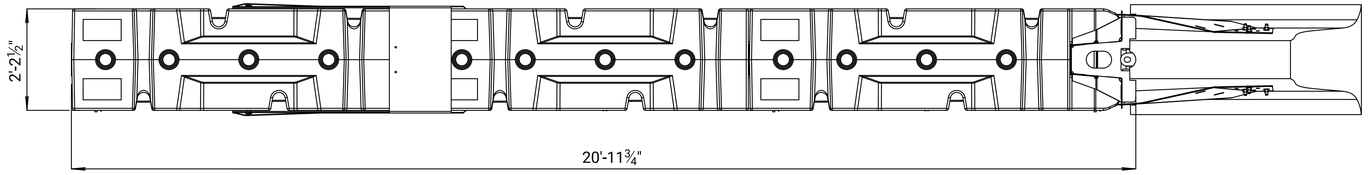
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	199	230



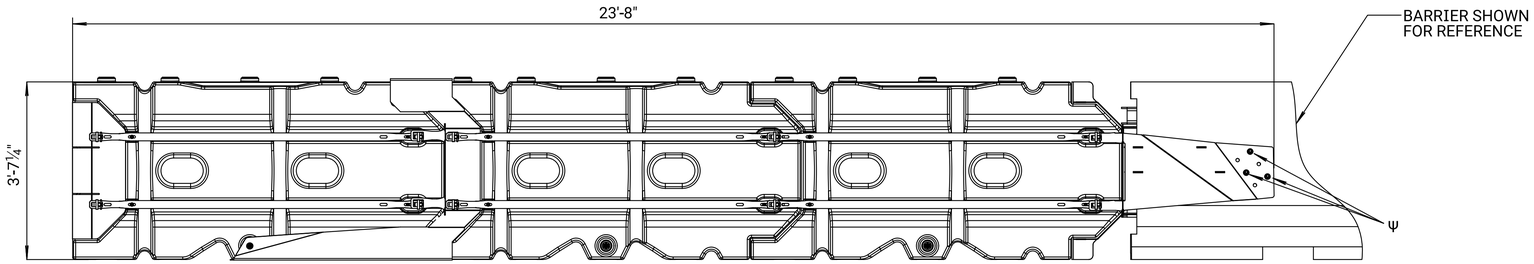
PLAN (TL2 ≤ 45 mph)



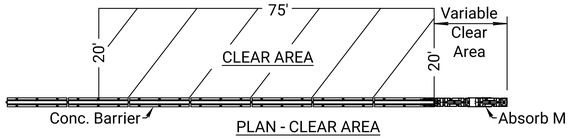
ELEVATION (TL2 ≤ 45 mph)



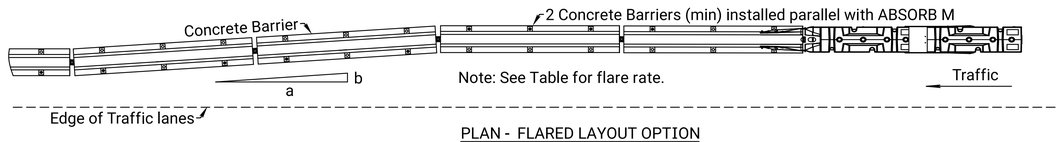
PLAN (TL3 > 45 mph)



ELEVATION (TL3 > 45 mph)



PLAN - CLEAR AREA



PLAN - FLARED LAYOUT OPTION

Design Parameters	
Design Speed (mph)	Flare Rate (a:b)
70	15:1
60	14:1
55	12:1
50	11:1
45	10:1
40	8:1

GENERAL NOTES

Details shown on this sheet for ABSORB-M are for Information Only and may not be an exact detail of ABSORB-M. See the Manufacturer's Installation Manual furnished to the Engineer for details of components and installation for the ABSORB-M.

ABSORB-M is an anchorless system designed to perform on a variety of foundations including concrete, asphalt, and any other surfaces capable of bearing the weight of the system with a maximum cross-slope of 8.0%. Contact the manufacturer for slopes greater than 8.0%.

The installation area should be flattened and free from large debris. The ABSORB-M system should be approximately parallel with the barrier or ℄ of merging barriers. Maintain a clear area 20' parallel from the back of barrier for a distance of 75' behind ABSORB-M Terminal Assembly free of stockpiled material, equipment, temporary signs or obstructions regardless of crash worthiness. Do not install Absorb-M Impact Attenuator in Narrow Medians, on Elevated Structures or where Clear Area can't be achieved.

The front element of the ABSORB-M system should be left empty, while the remaining system is to be filled with water. Installation in Kansas requires an anti-freeze solution to prevent the water from freezing. See the Manufacturer's Installation Manual for acceptable anti-freeze solutions.

The unit shown on this sheet abuts a barrier up to 24" wide. The ABSORB-M TL2 & TL3 can be connected to permanent or temporary saftey shape, constant slope, and other shapes of barriers up to 42" height. Refer to the Manufacturer's Installation Manual for these connections.

Ψ Anchorage holes must be drilled to depth as per the Manufacturer's Installation Manual and cleared of debris to achieve proper anchorage.

For system relocation information, see Manufacturer's Installation Manual.

All work and material required for installation of this attenuator shall be paid under the bid item "Impact Attenuator (Temporary)(TL-2 or TL-3)".

NO.	DATE	REVISIONS	BY	APP'D
01	04-15-22	Initial Release	A.L.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY IMPACT ATTENUATOR ABSORB-M

RD621A

FHWA APPROVAL	04-21-22	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

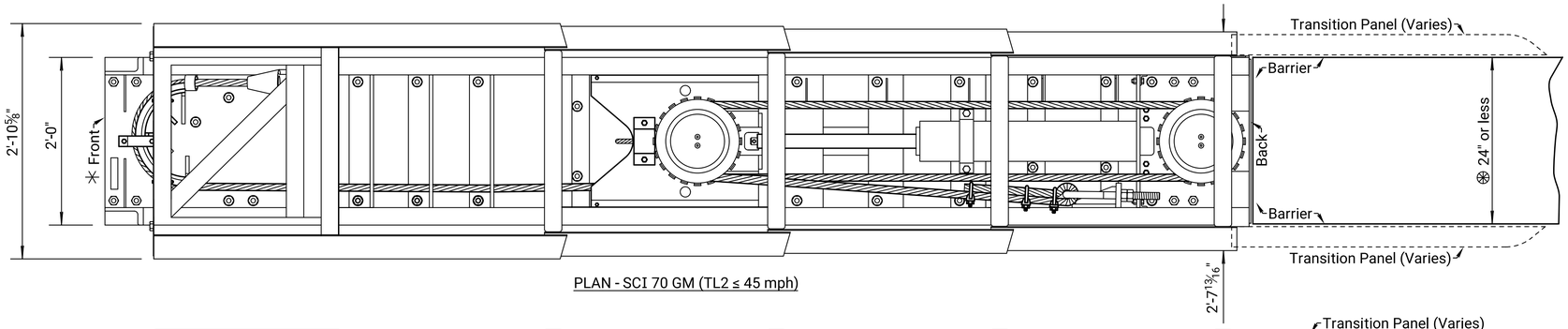
KDOT Graphics Certified 05-02-2022 Sh. No. 199

KDOT Graphics Certified

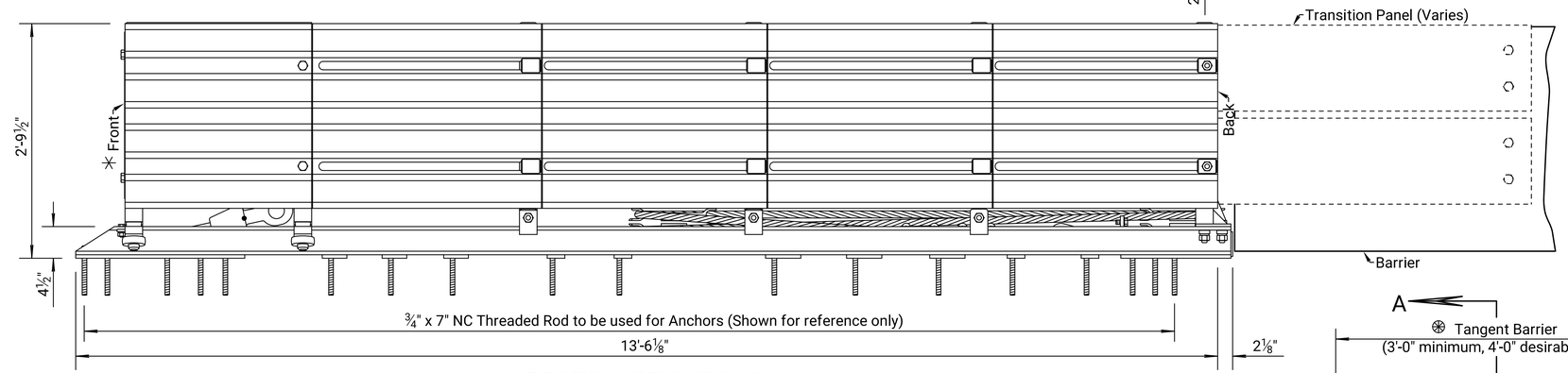
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:38
File : KA647501rss621a-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	200	230

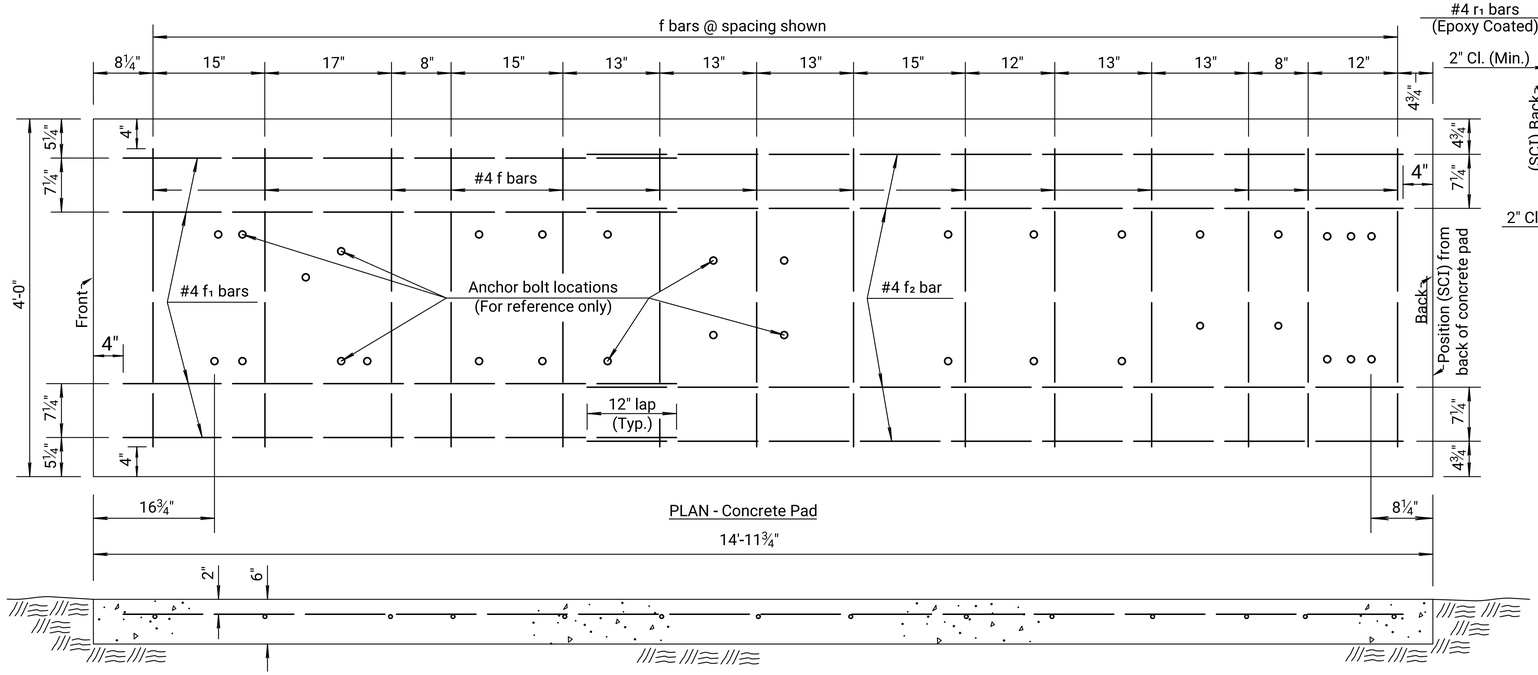
Note to Designer - Prepare concrete barrier transition details when concrete barrier height and width transitions are required.



PLAN - SCI 70 GM (TL2 ≤ 45 mph)



ELEVATION - SCI 70 GM (TL2 ≤ 45 mph)



PLAN - Concrete Pad

ELEVATION - Concrete Pad

GENERAL NOTES

Details shown on this sheet of SCI 70 GM are for Information Only and may not be an exact detail of SCI 70 GM. See the manufacturer's Installation Manual furnished to the Engineer for details of components and installation for the SCI 70 GM.

Concrete shall have a minimum compressive strength of 4,000 p.s.i.

Maximum cross-slope is 8.0%. If cross-slope varies more than 2% over the length of the system, the concrete pad will require leveling.

The installation area should be free from elevated objects or depressions.

The SCI 70 GM system should be approximately parallel with the barrier or ℄ of merging barriers.

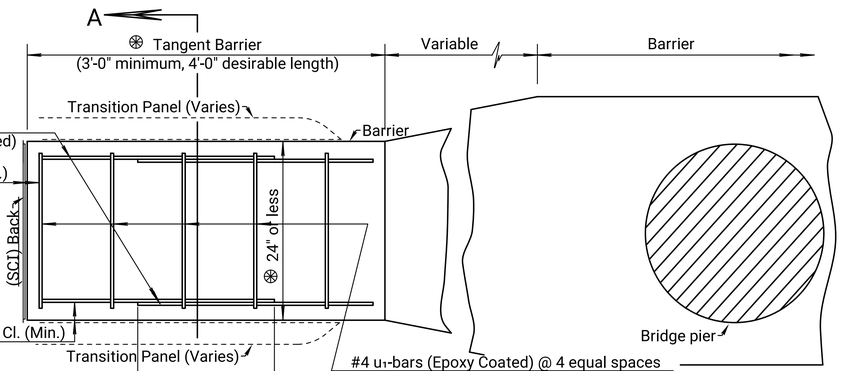
⊛ The Side Panel may travel up to 30" beyond the last terminal brace at the back of cushion. This area must be clear to allow for motion, performance and not cause undue damage to the crash cushion.

The unit shown on this sheet abuts a barrier up to 24" wide with transition panels. The SCI can be connected to permanent or temporary F-Shape Barrier. Refer to the manufacturer's Installation Manual for these transition connections along with other connections. A barrier that is greater than 24" wide requires a special design.

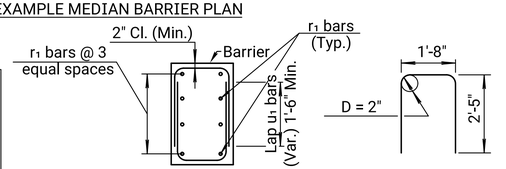
All work and material required for installation of this attenuator shall be paid under the bid item "Impact Attenuator (TL2)".

For temporary installations, the unit can be placed on a 8" Asphalt Pad. All work and material to install and remove the unit will be paid under the bid item "Impact Attenuator (Temporary)".

For temporary and permanent applications install a retroreflective delineator panel on the front face of the attenuator.



EXAMPLE MEDIAN BARRIER PLAN



SECTION A-A
(NOT TO SCALE)

BENDING DIAGRAM
(NOT TO SCALE)

BILL OF MATERIALS

Conc. Pad SCI 70 GM		
Bar	No.	Length
f	14	3'-4"
f_1	4	6'-2¼"
f_2	4	9'-2"
Conc. Gr. 4.0		1.15 Cu.Yd.
Reinf. Steel		72 lbs.

Conc. Barrier		
Bar	No.	Length
u_1	10	6'-6"
r_1	16	2'-7"
Conc. Gr. 4.0		0.79 Cu.Yd.
Reinf. St. (Epoxy Coated)		72 lbs.

NOTE: ALL REINFORCING BARS ARE SIZE #4.

NO.	DATE	REVISIONS	BY	APP'D
02	11-16-09	Revised Temporary Bid Item	S.W.K.	J.O.B.
01	12-16-08	General Note temporary use	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

IMPACT ATTENUATOR (SCI-TL2)

RD627

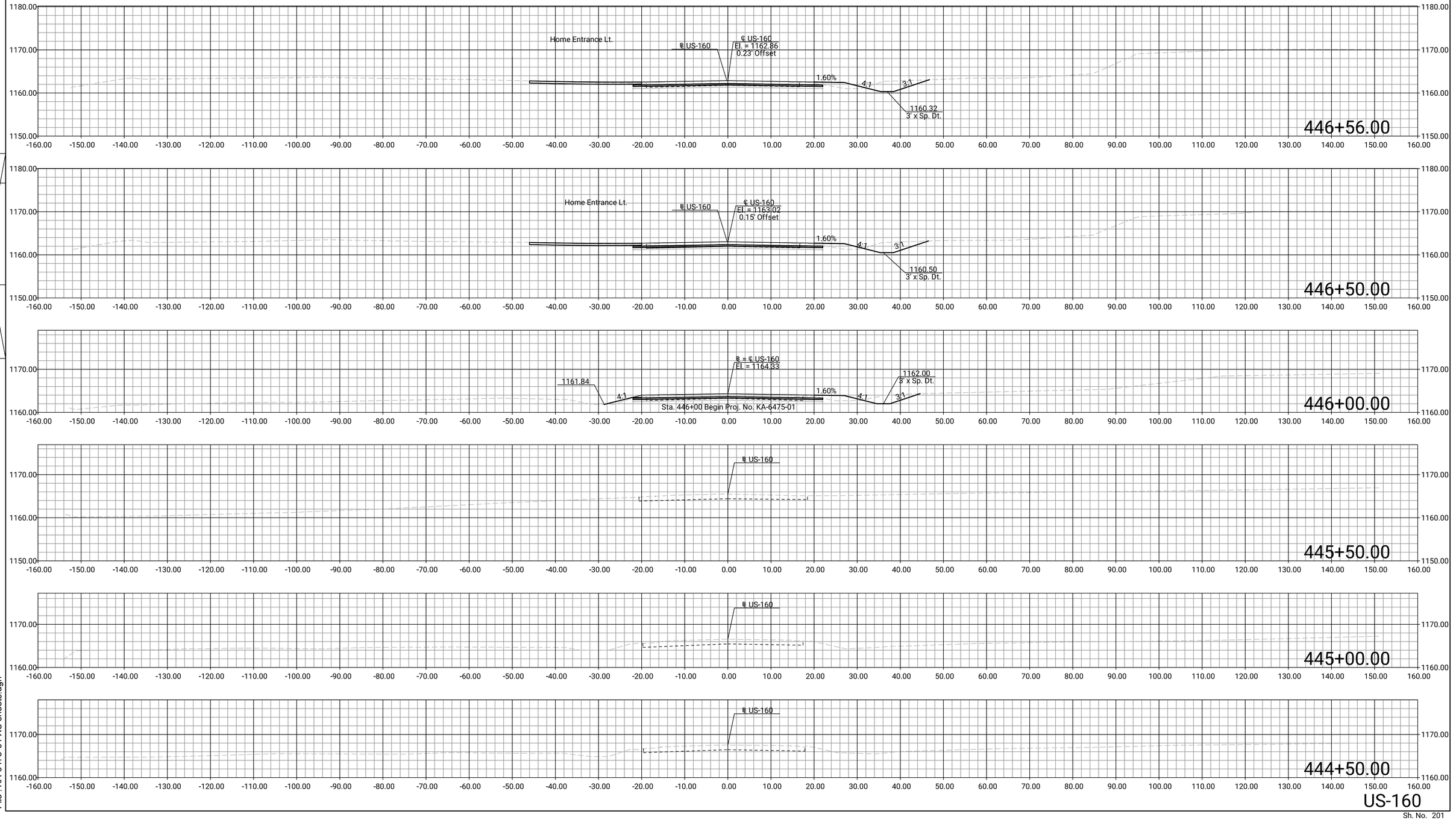
FHWA APPROVAL	12-18-09	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified 05-13-2022 Sh. No. 200

KDOT Graphics Certified

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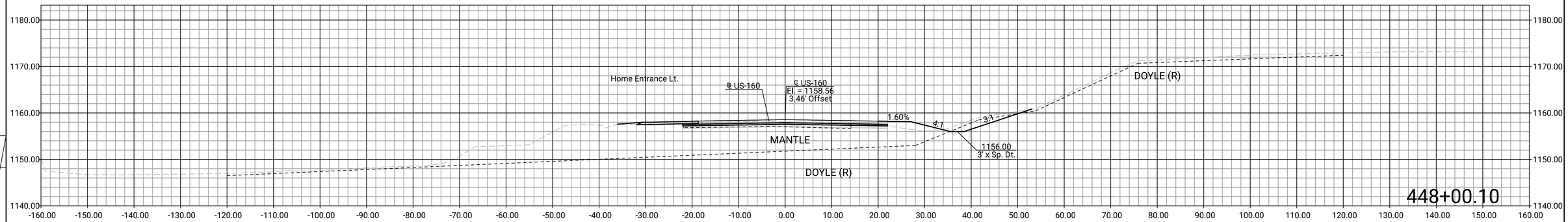
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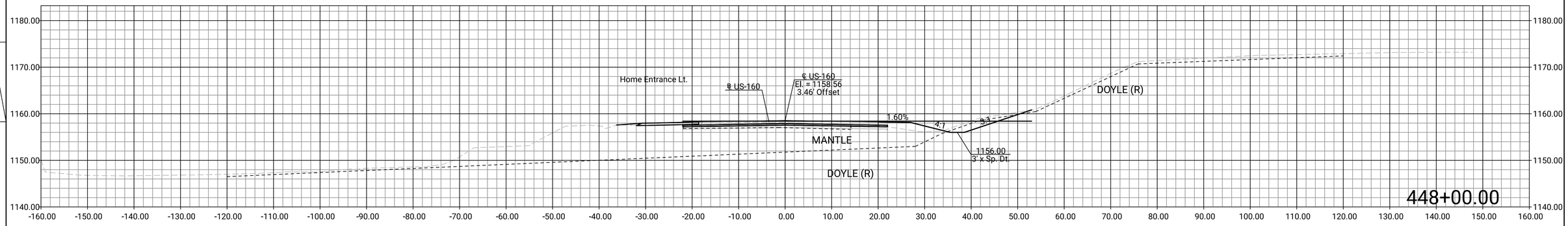
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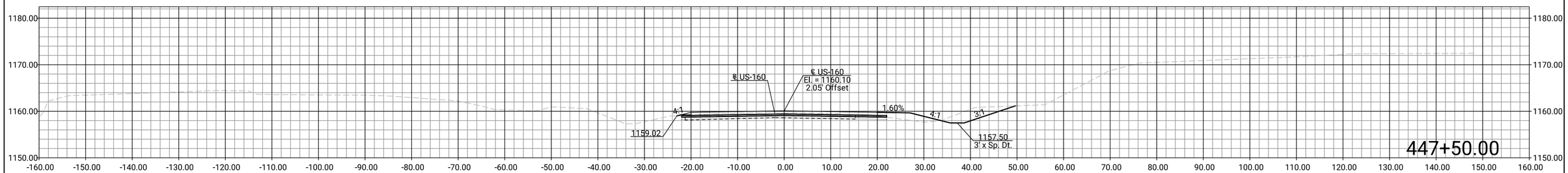
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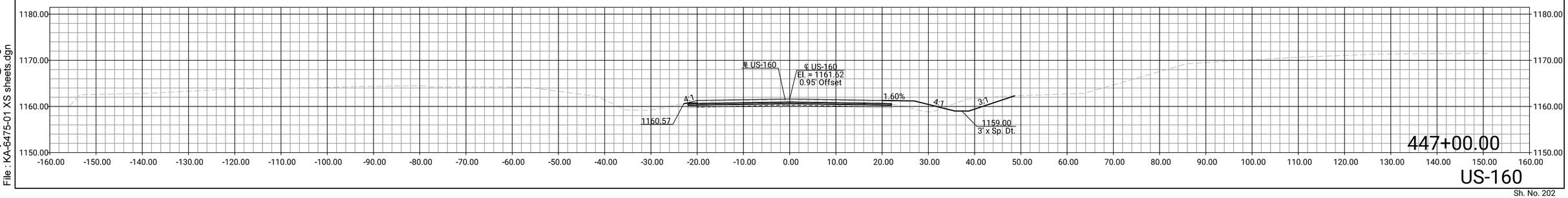
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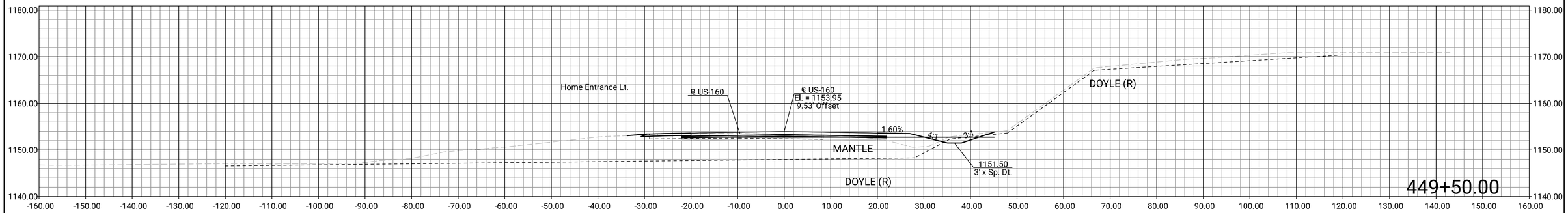


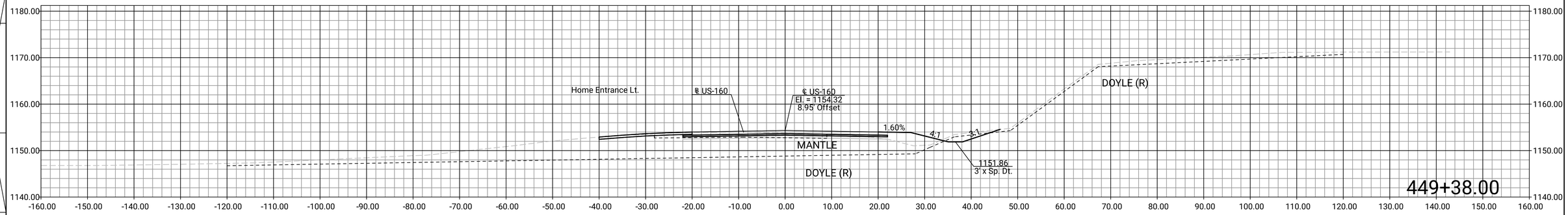
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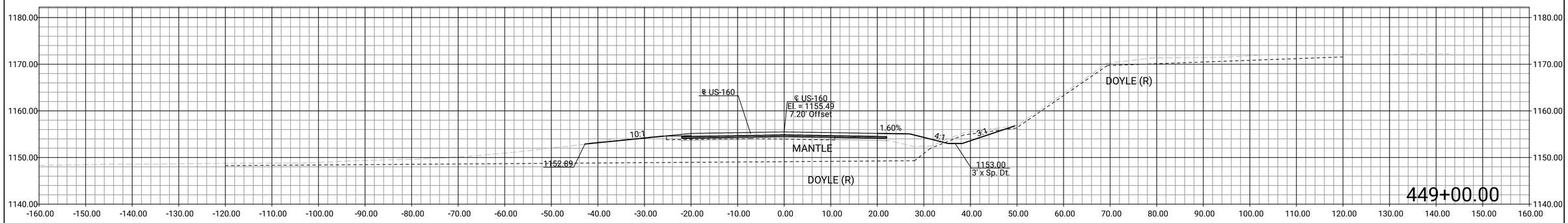
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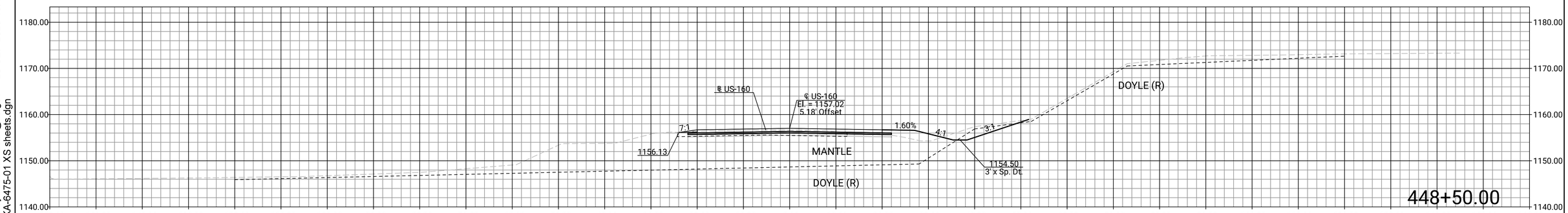
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US-160

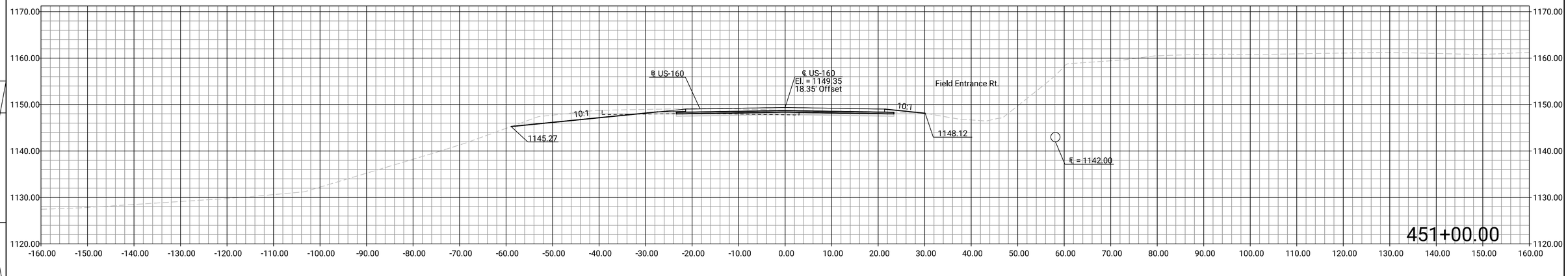
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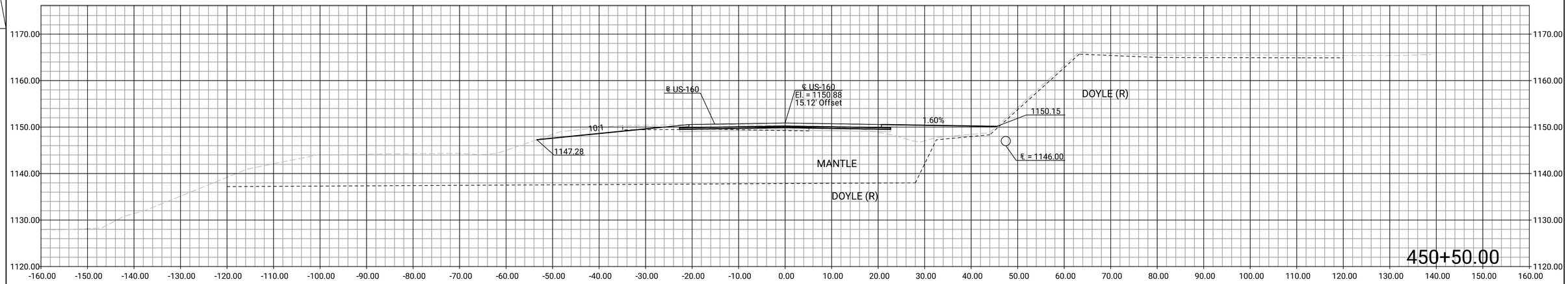
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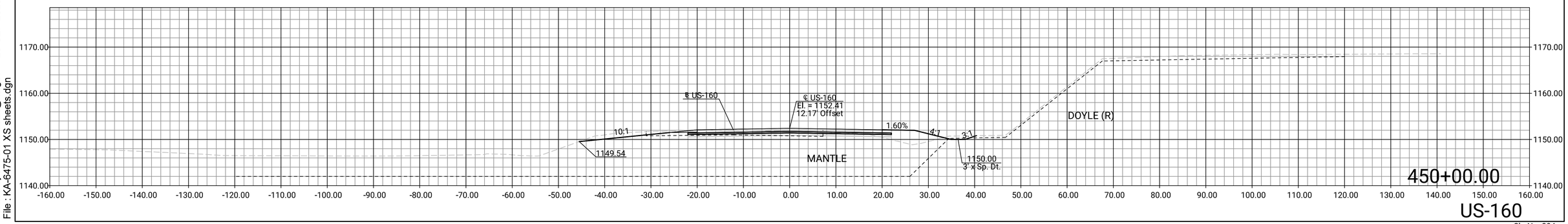
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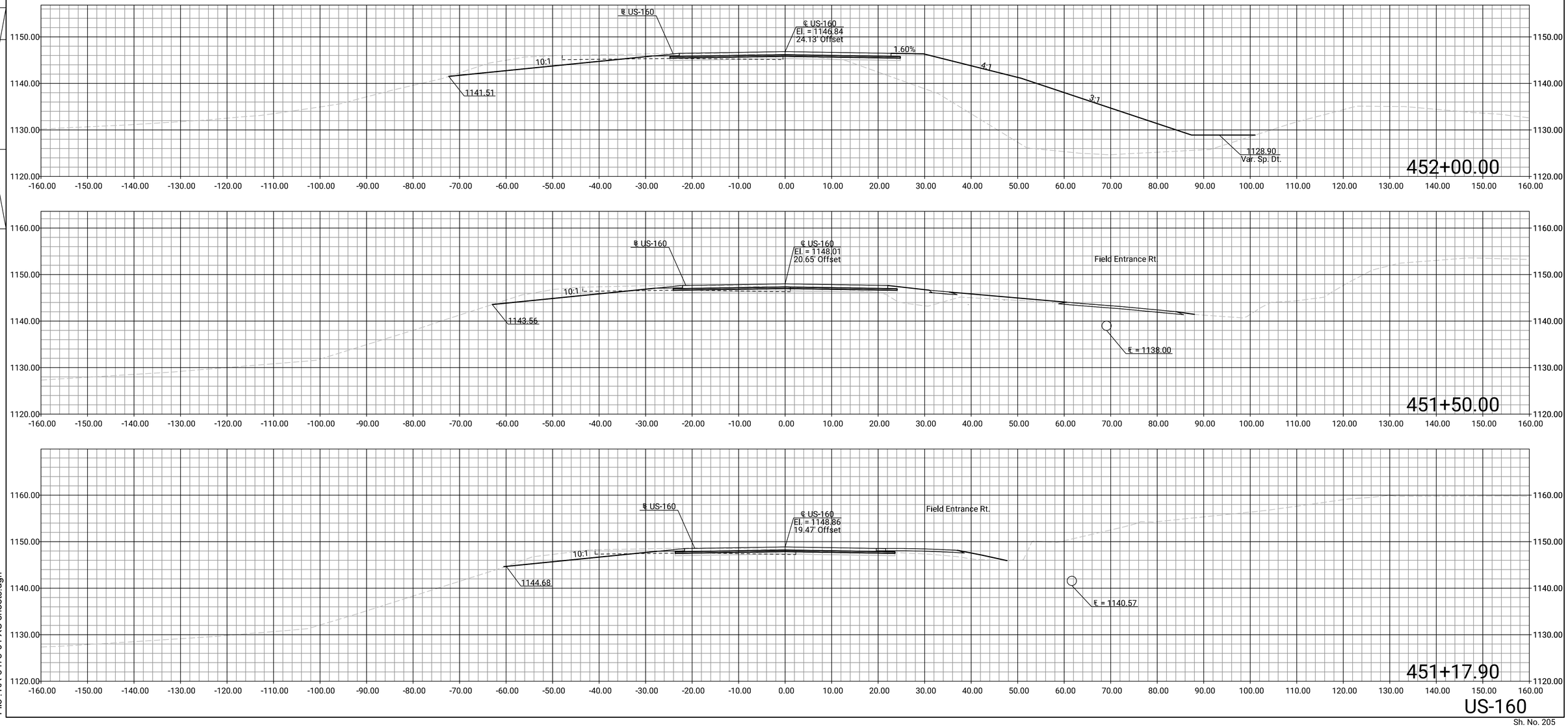
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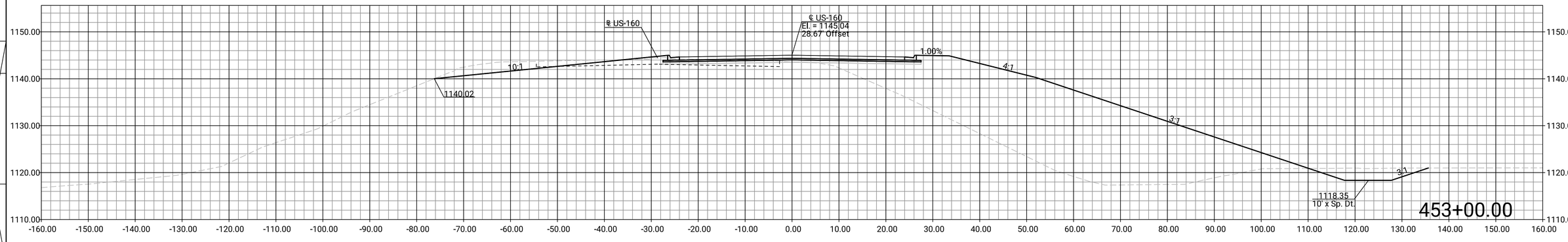
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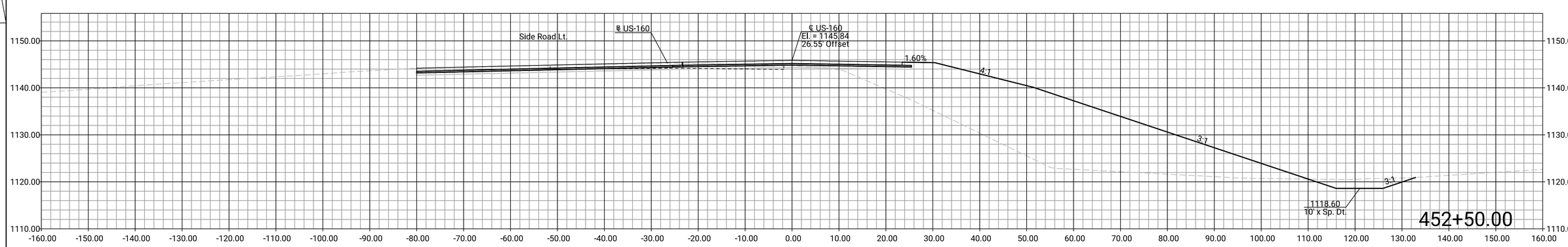
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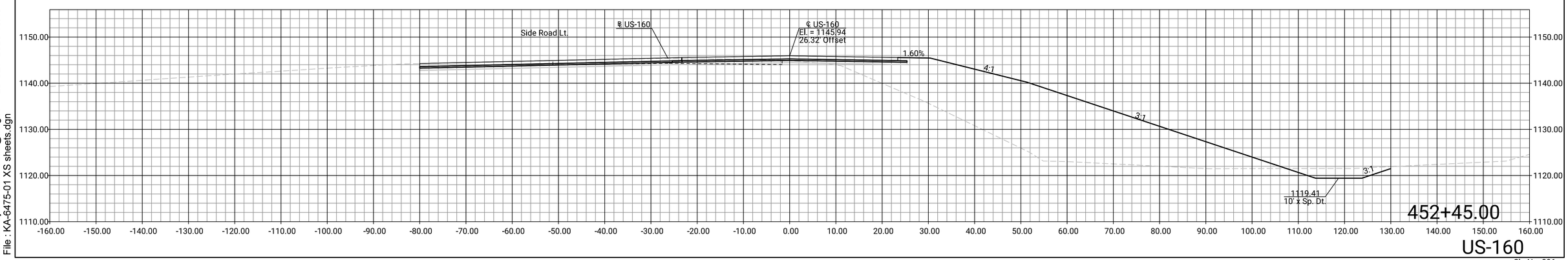


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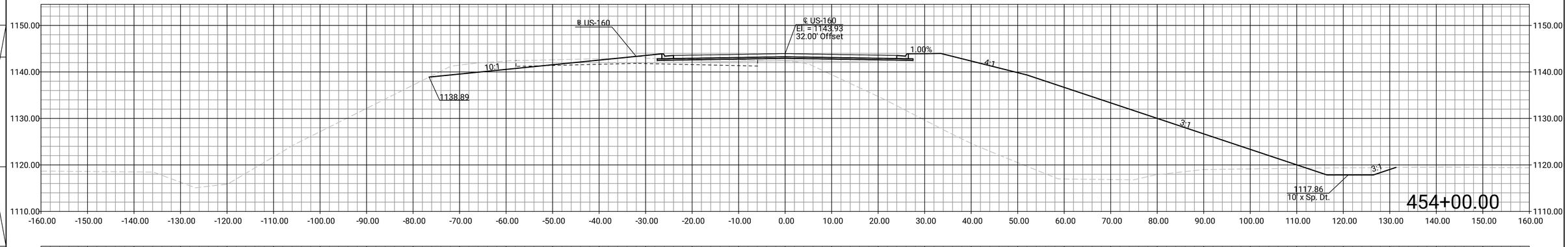
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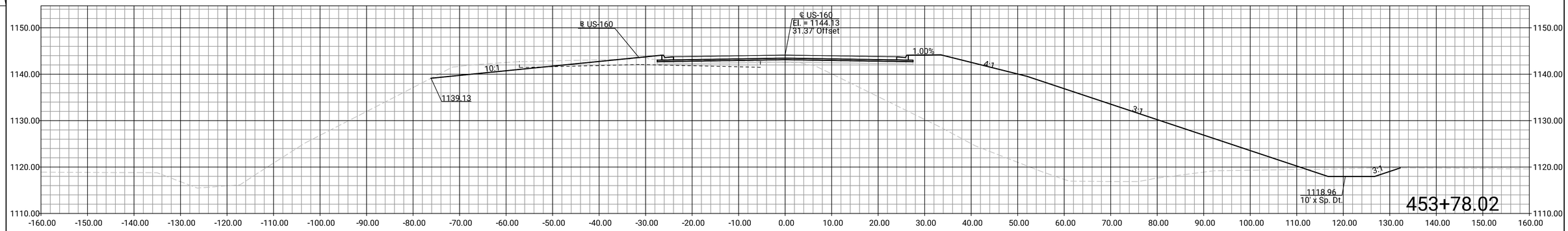
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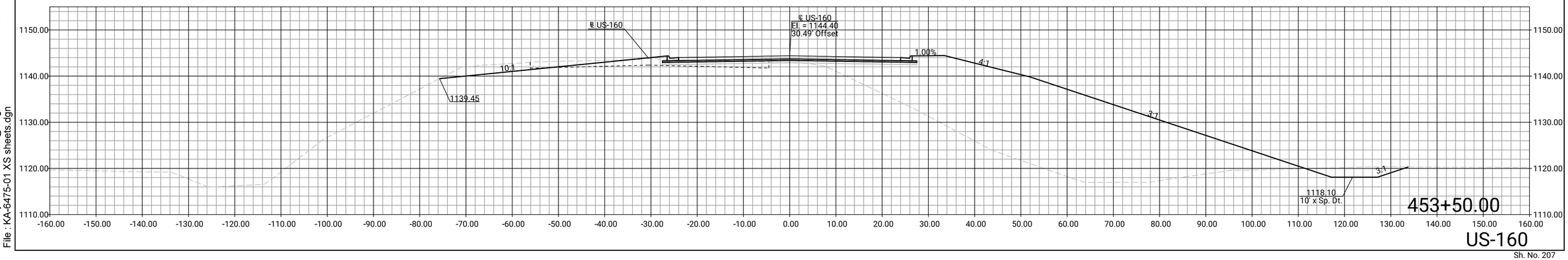
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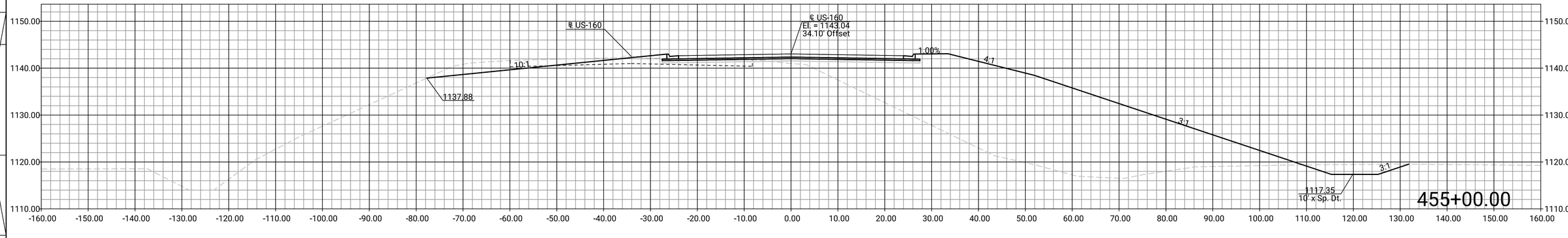
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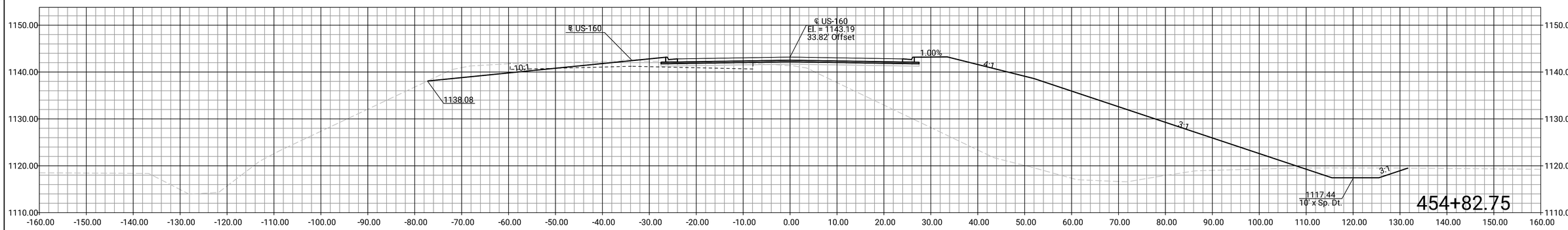
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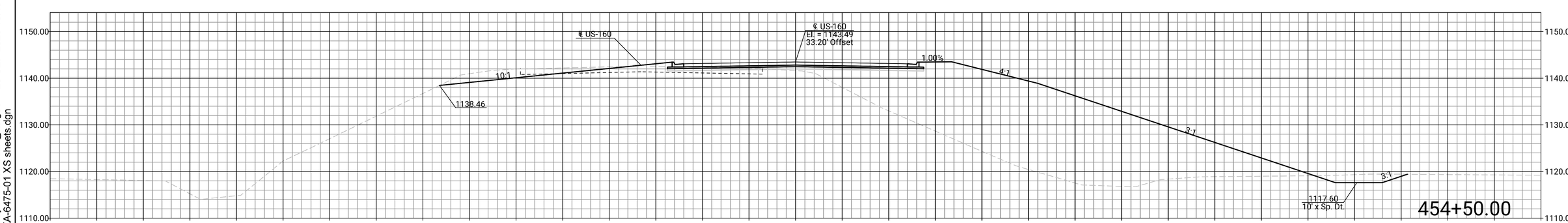
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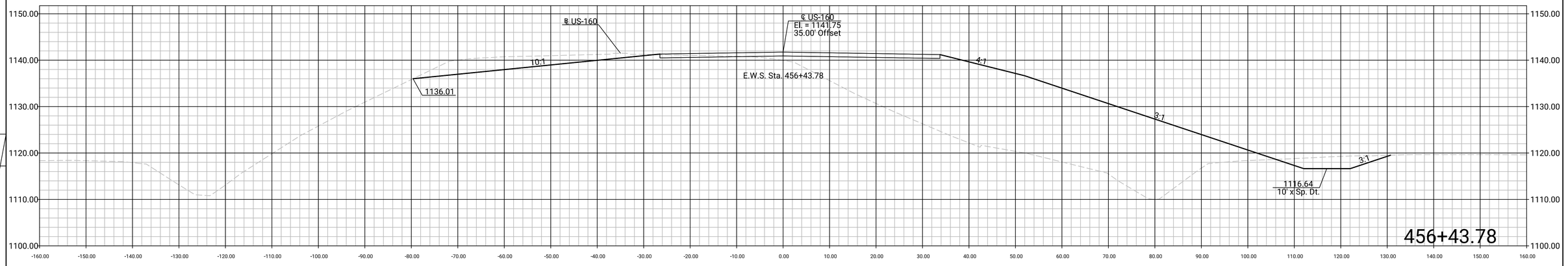
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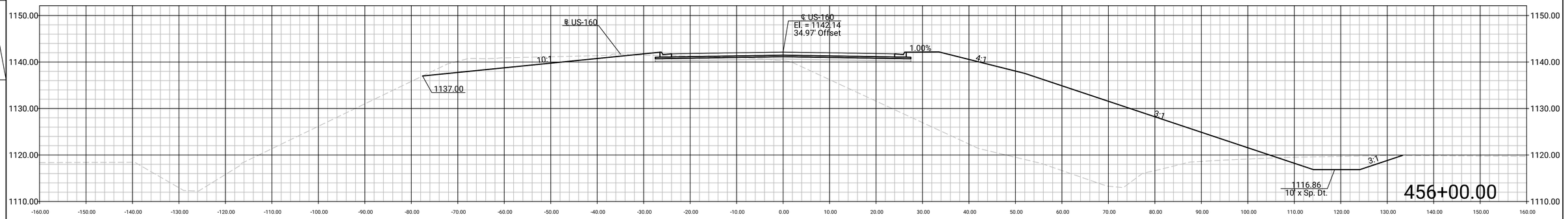
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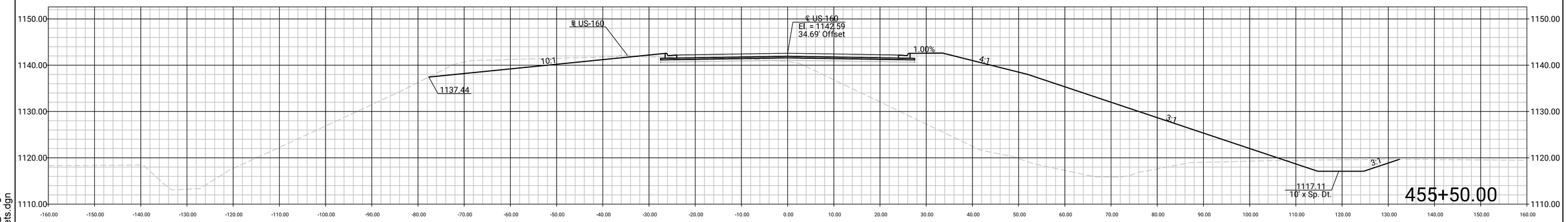
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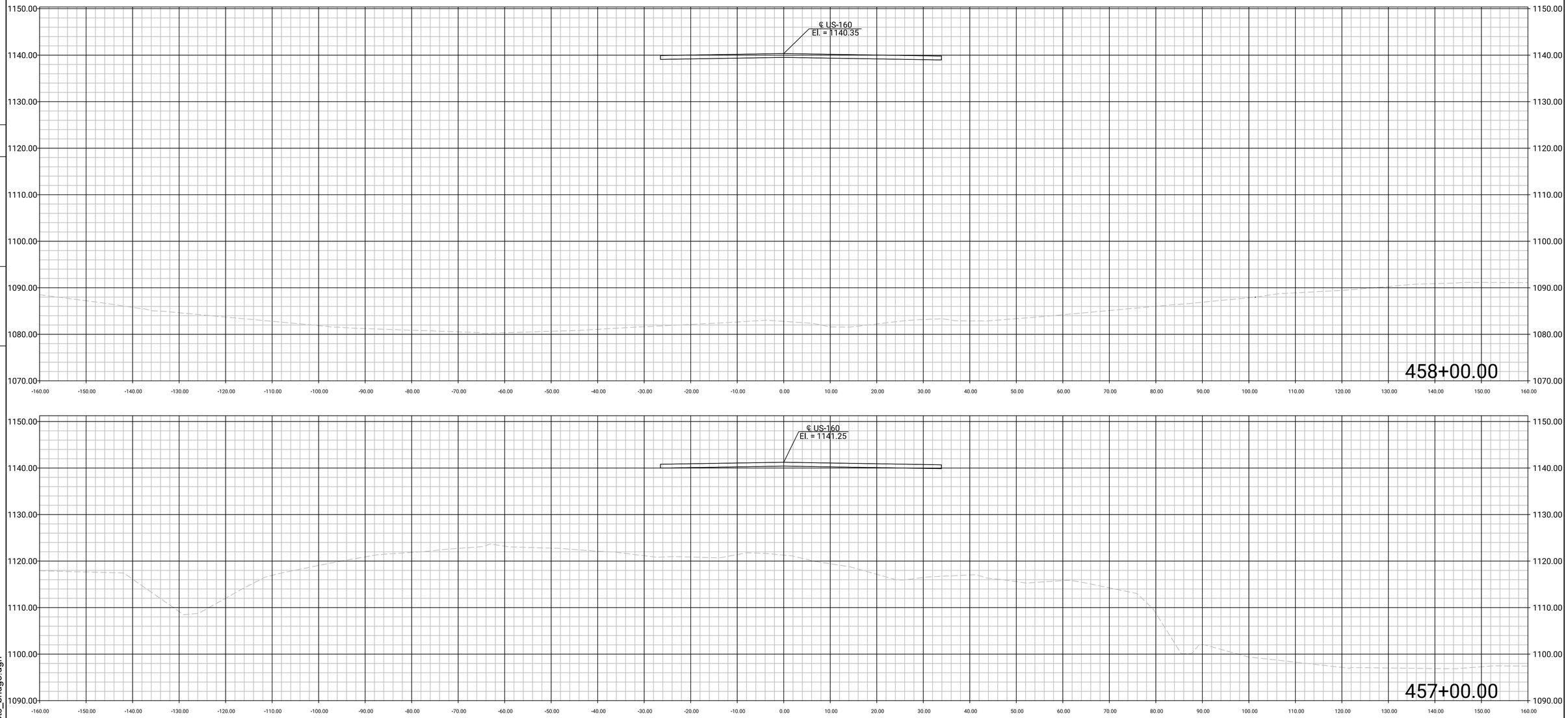


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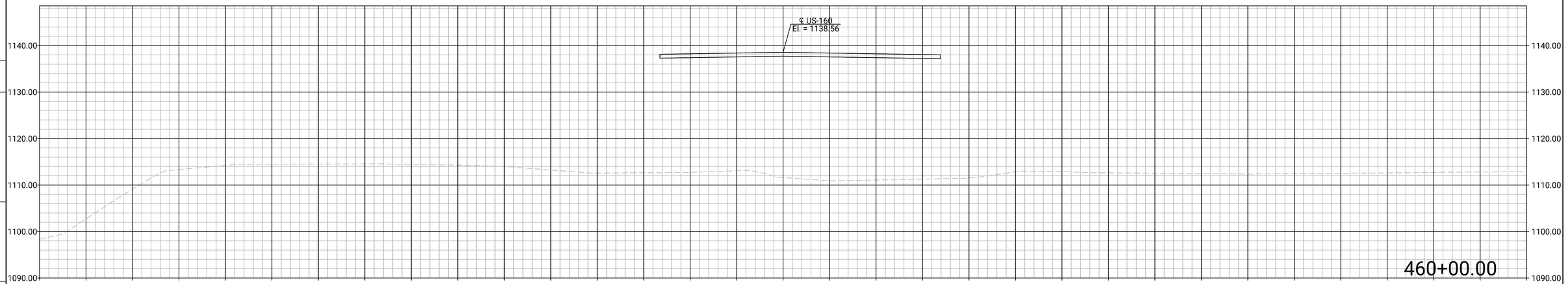
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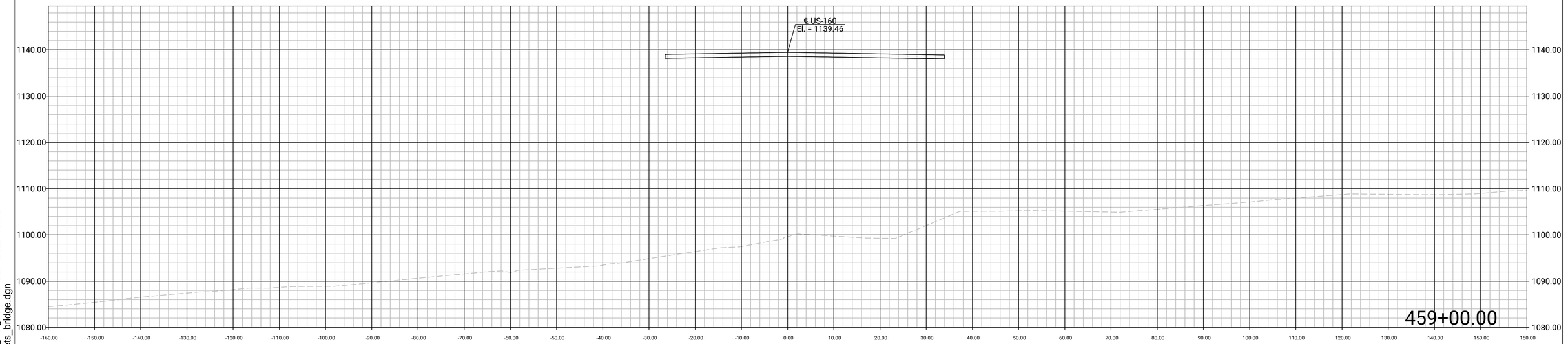
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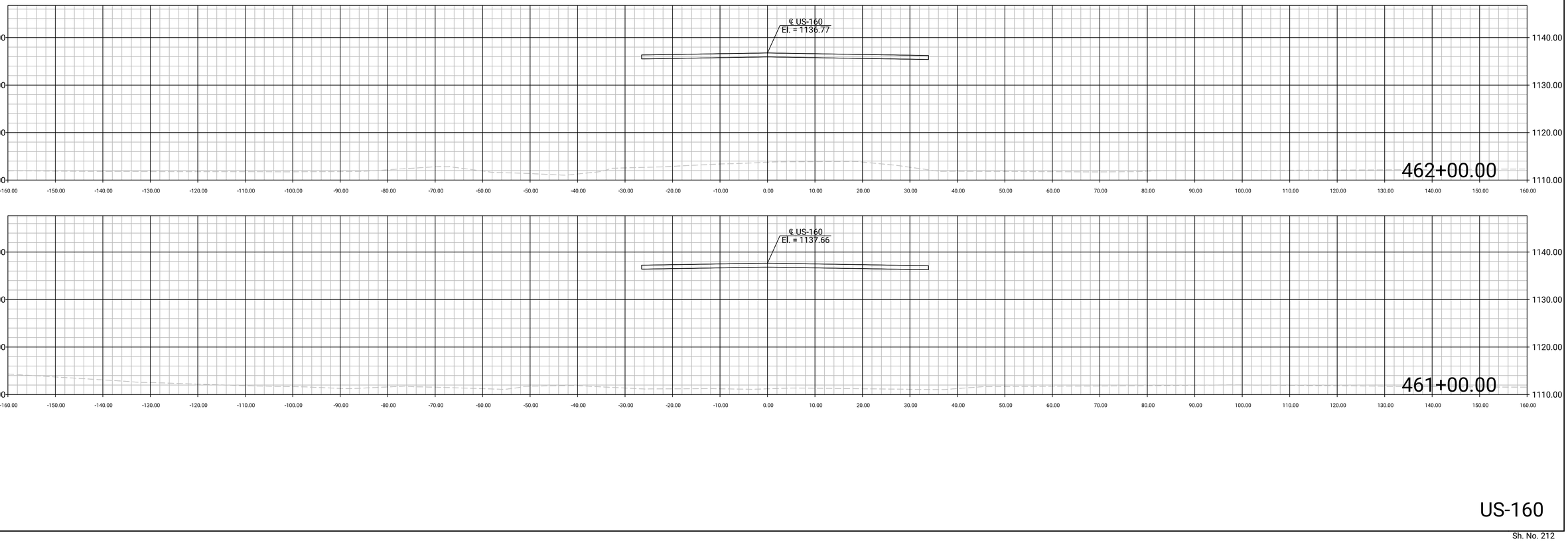


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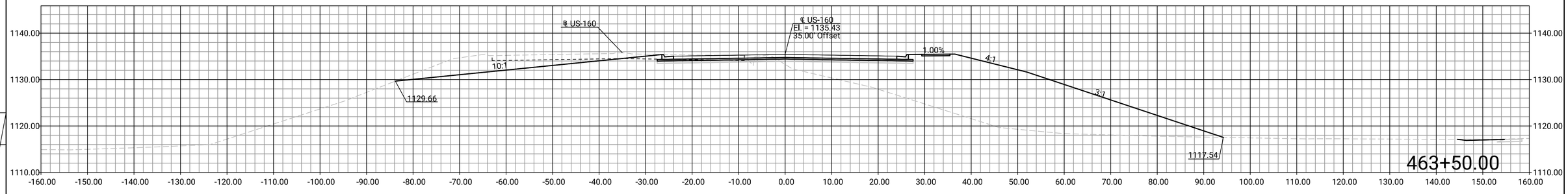


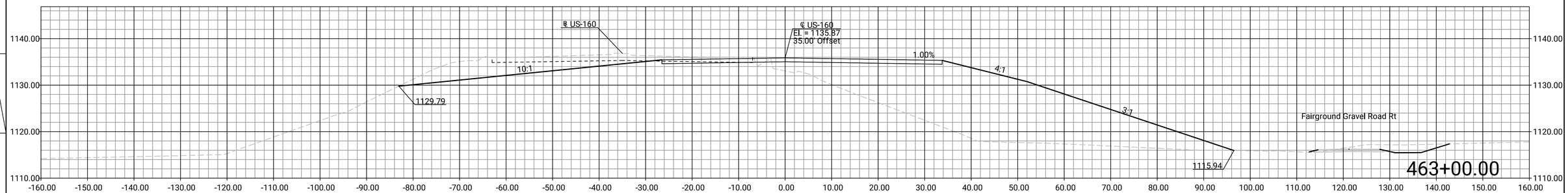
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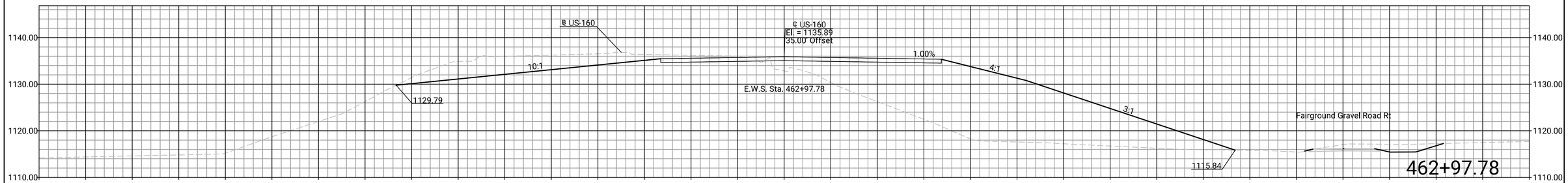
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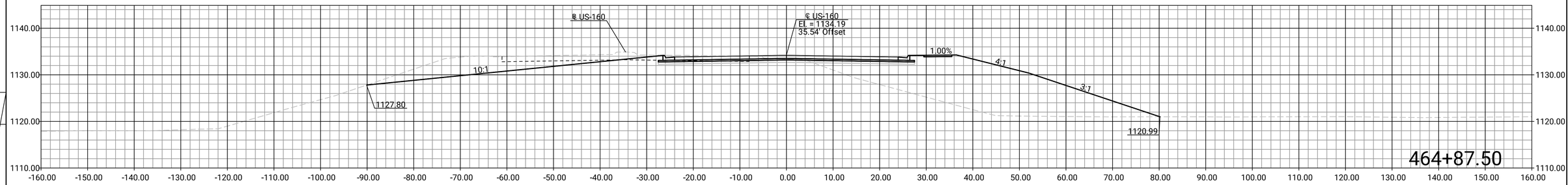


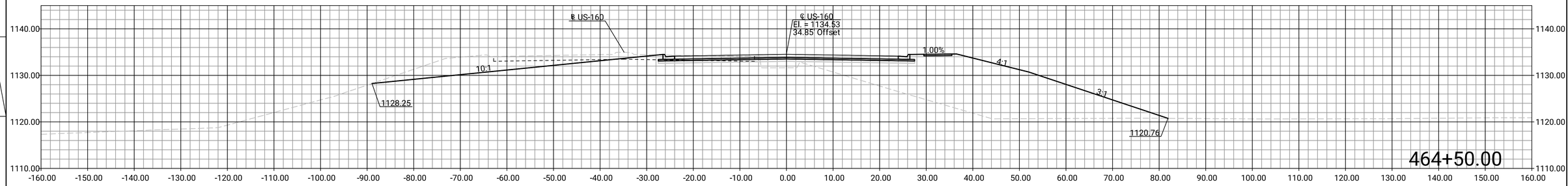
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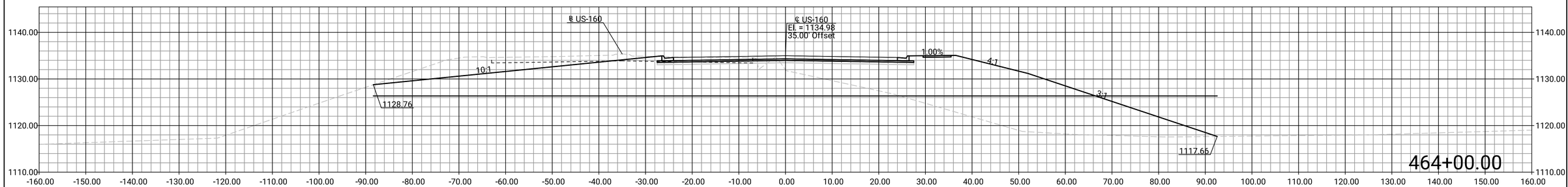
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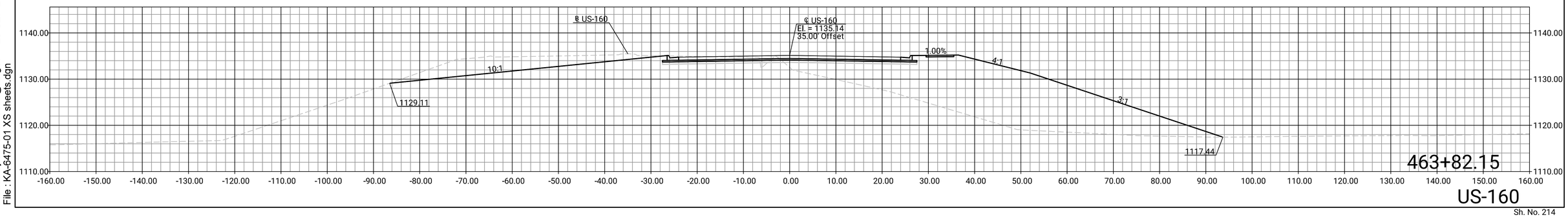
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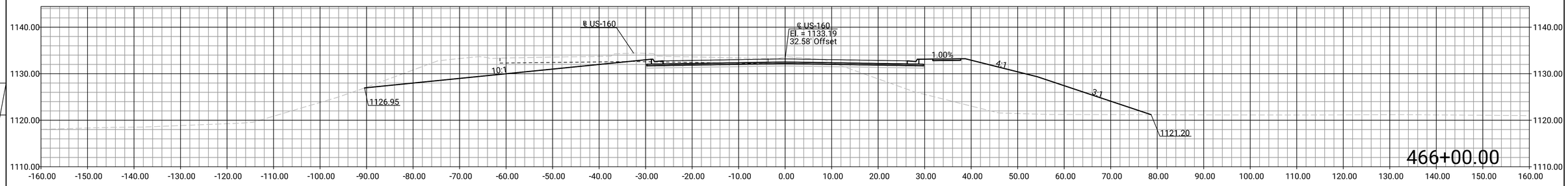
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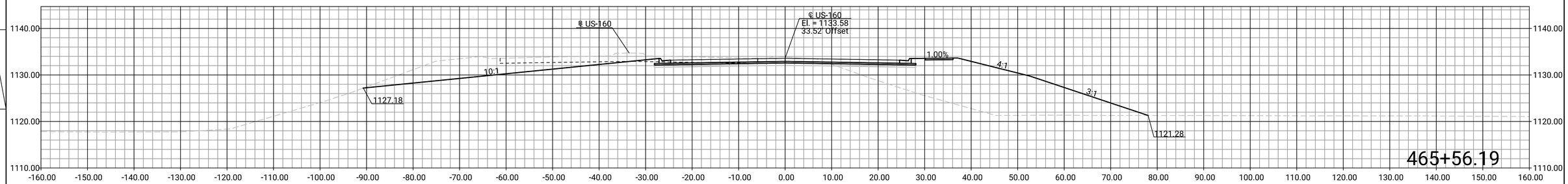
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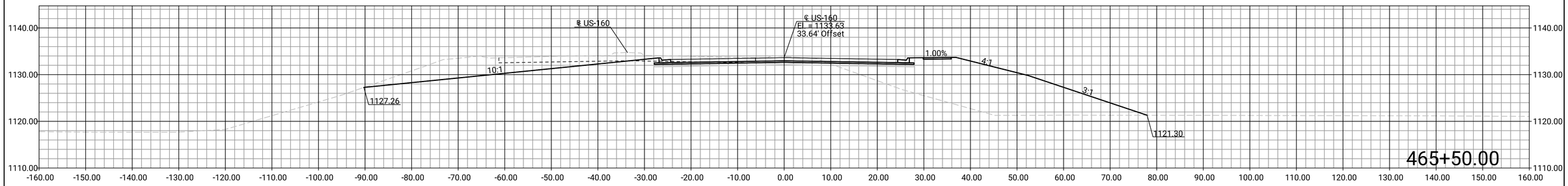
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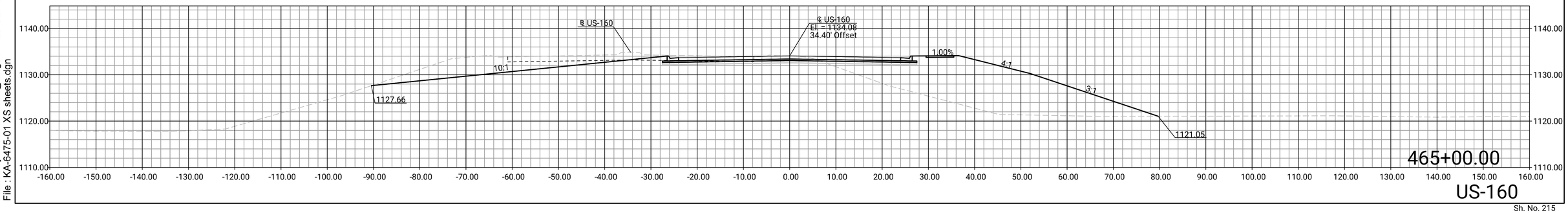
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	215	230

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED









US-160

Sh. No. 215

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:47
File : KA-6475-01 XS sheets.dgn

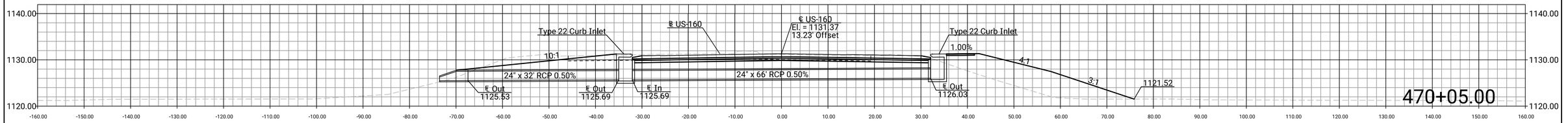
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	216	230

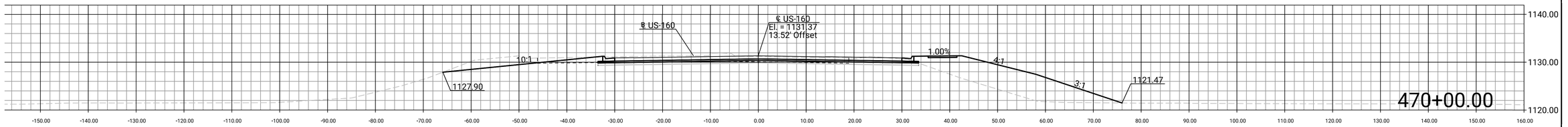
DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

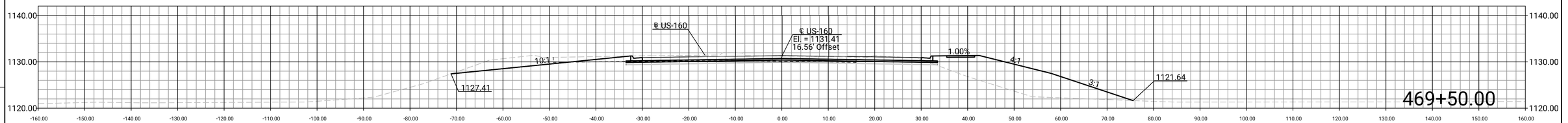
Plotted by : Bailey.Curtis 21-JUL-2025 11:49
File : KA-6475-01 XS sheets.dgn

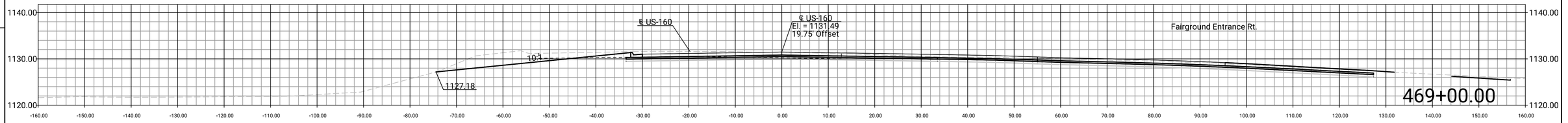
US-160

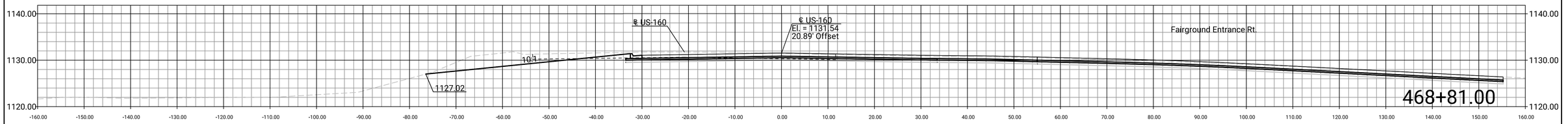
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	217	230

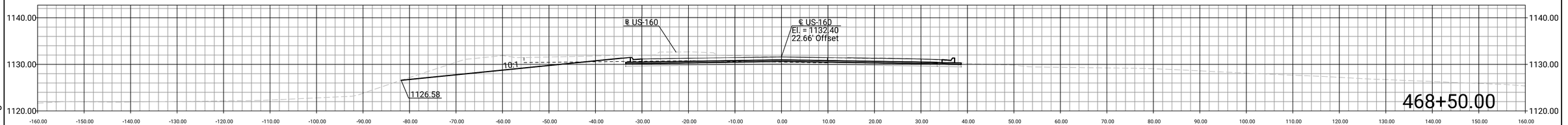












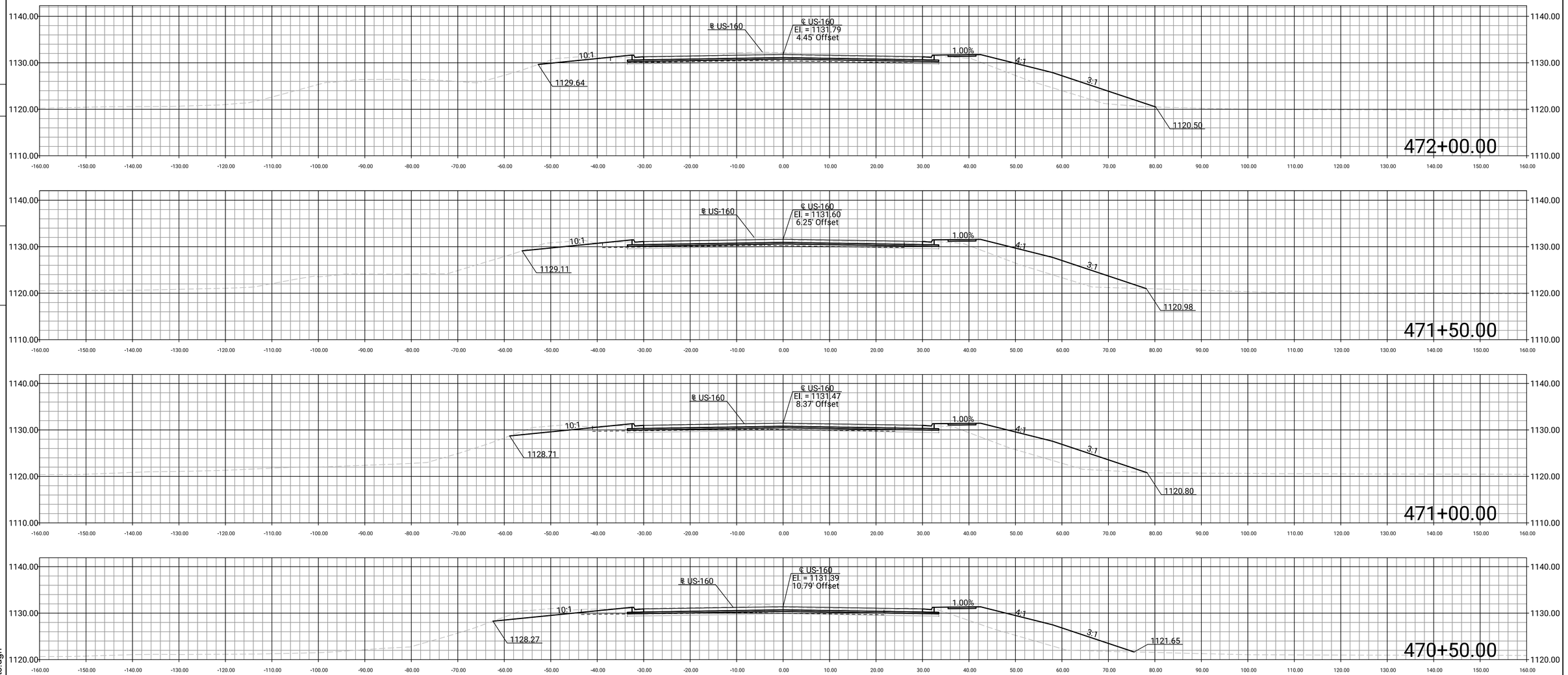
DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Bailey.Curtis 31-JUL-2025 10:24
File : KA-6475-01 XS sheets.dgn

US-160

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	218	230

DATE	BY	
REFERENCES NOTED		
REFERENCES CHECKED		



US-160

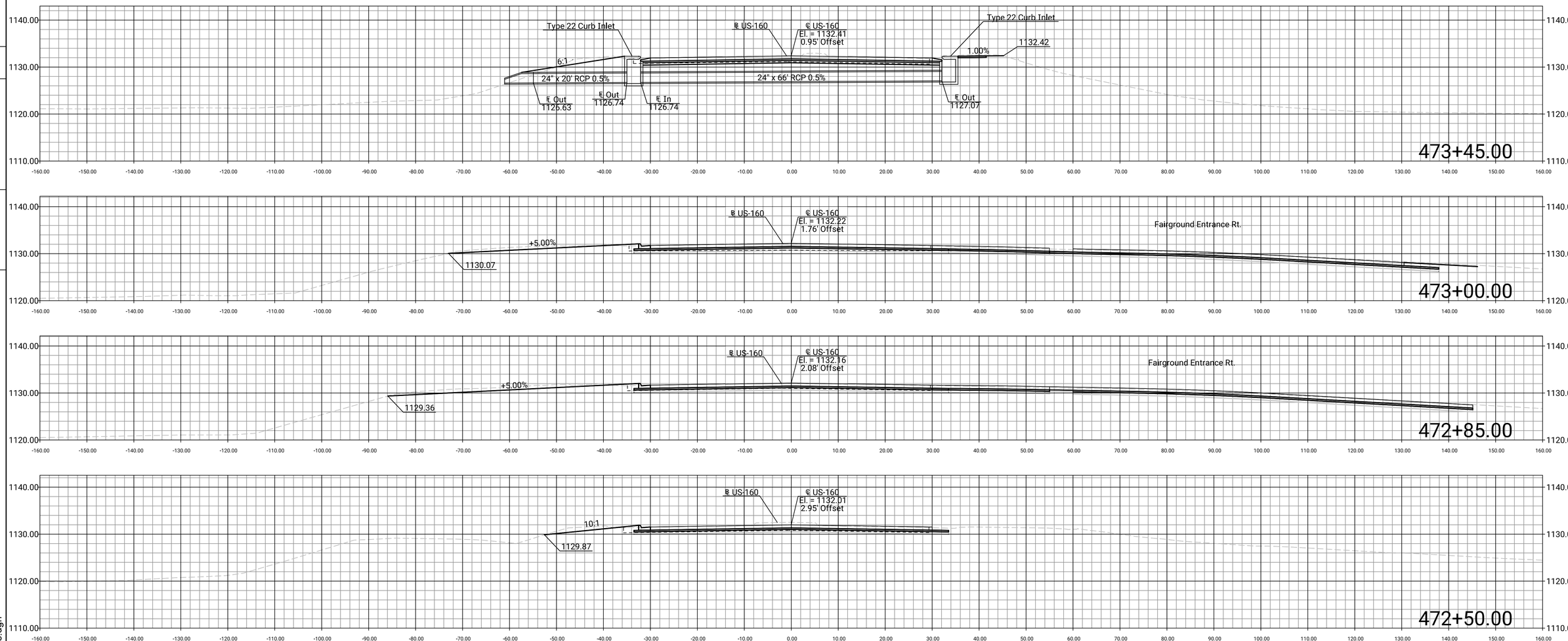
Sh. No. 218

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:51
File : KA-6475-01 XS sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	219	230

DATE	BY	

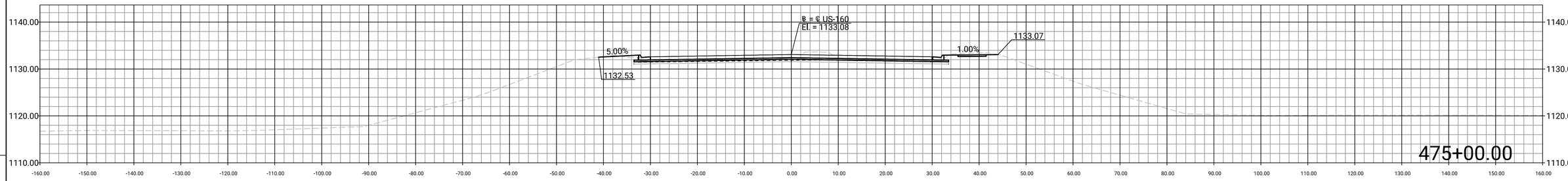
REFERENCES NOTED
REFERENCES CHECKED

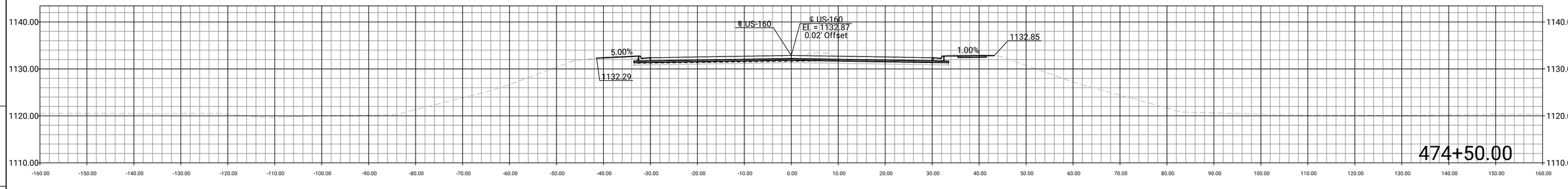


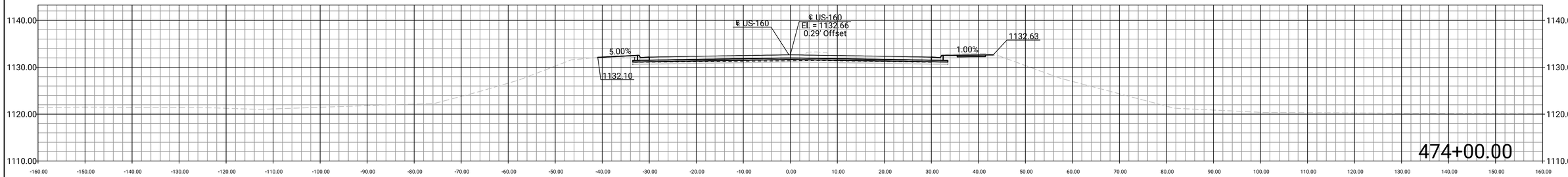
Plotted by : Bailey.Curtis 21-JUL-2025 12:04
File : KA-6475-01 XS sheets.dgn

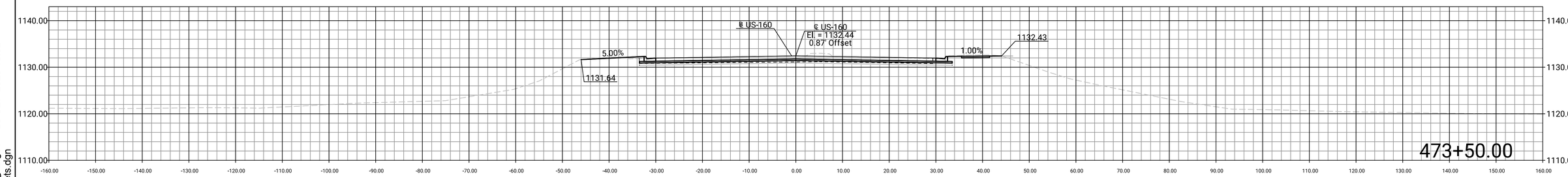
US-160

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	220	230









US-160

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:52
File : KA-6475-01 XS sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	221	230

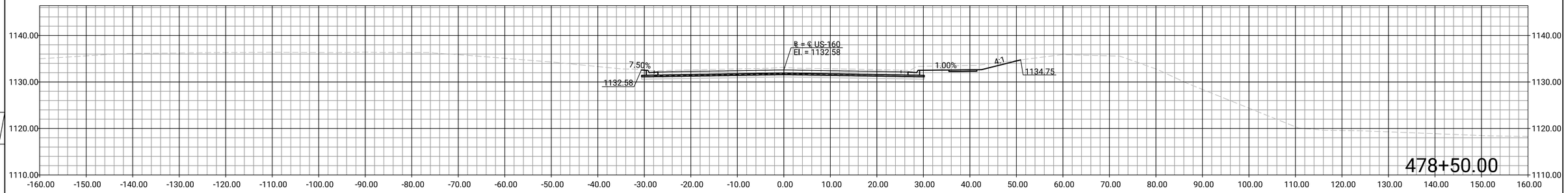
DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

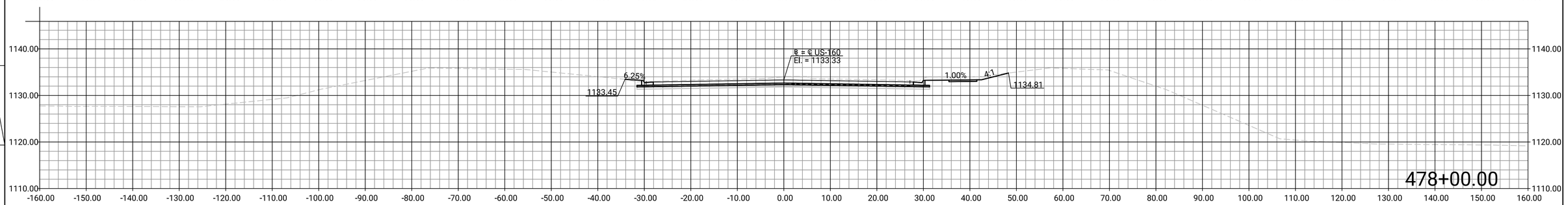
US-160

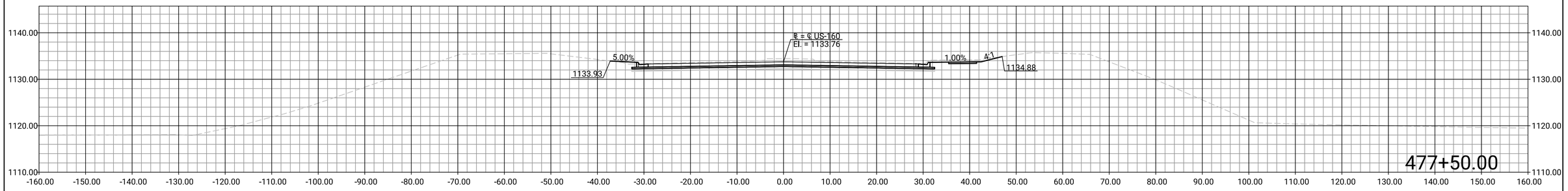
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:47
File : KA-6475-01 XS sheets.dgn

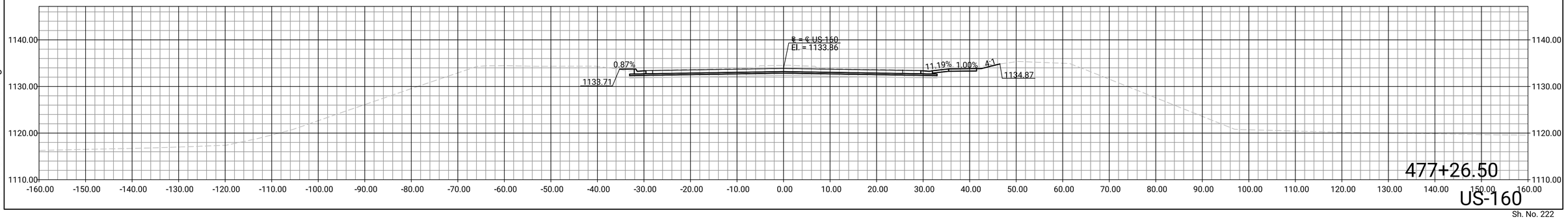
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	222	230

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED







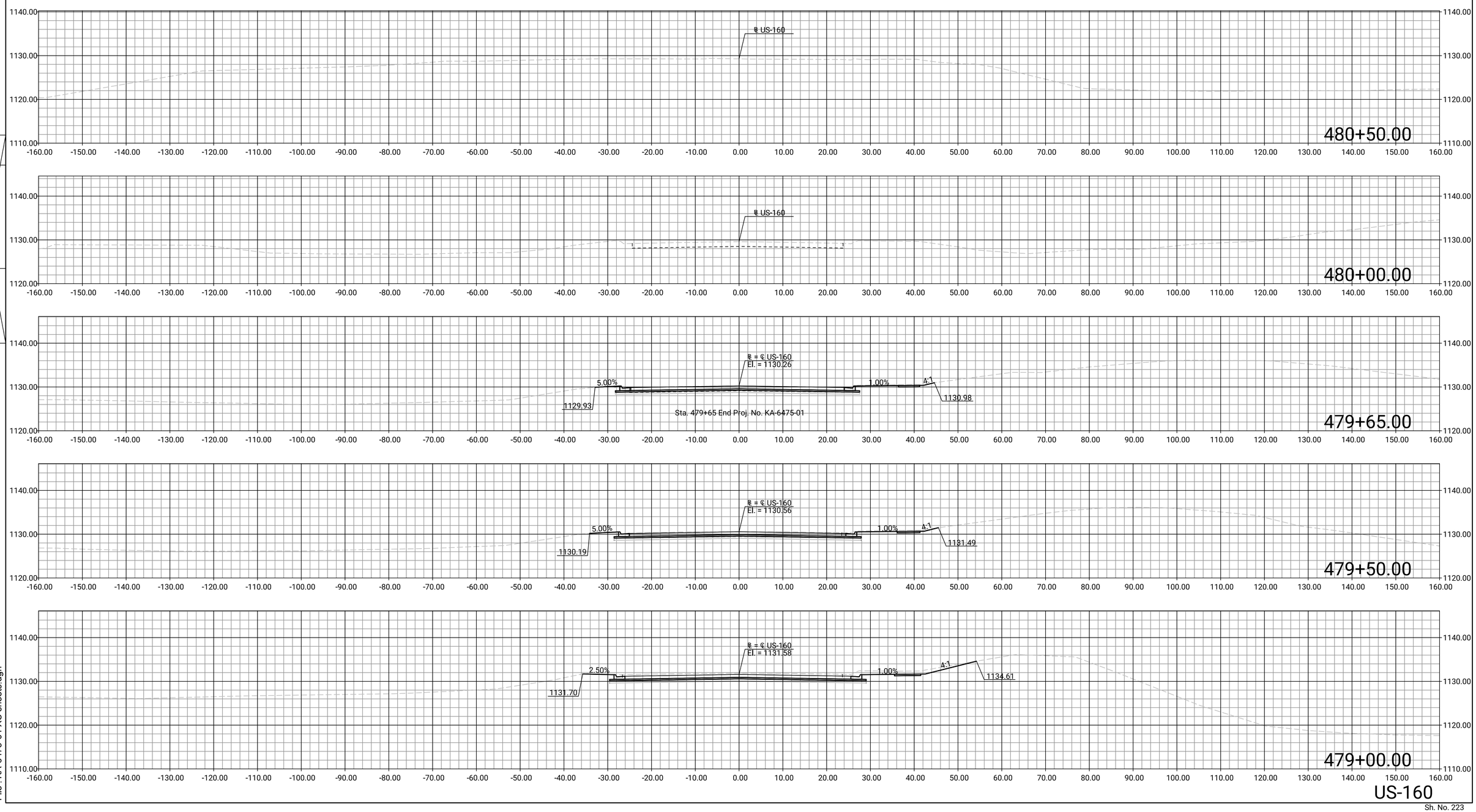


US-160

Sh. No. 222

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 20:00
File : KA-6475-01 XS sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	223	230

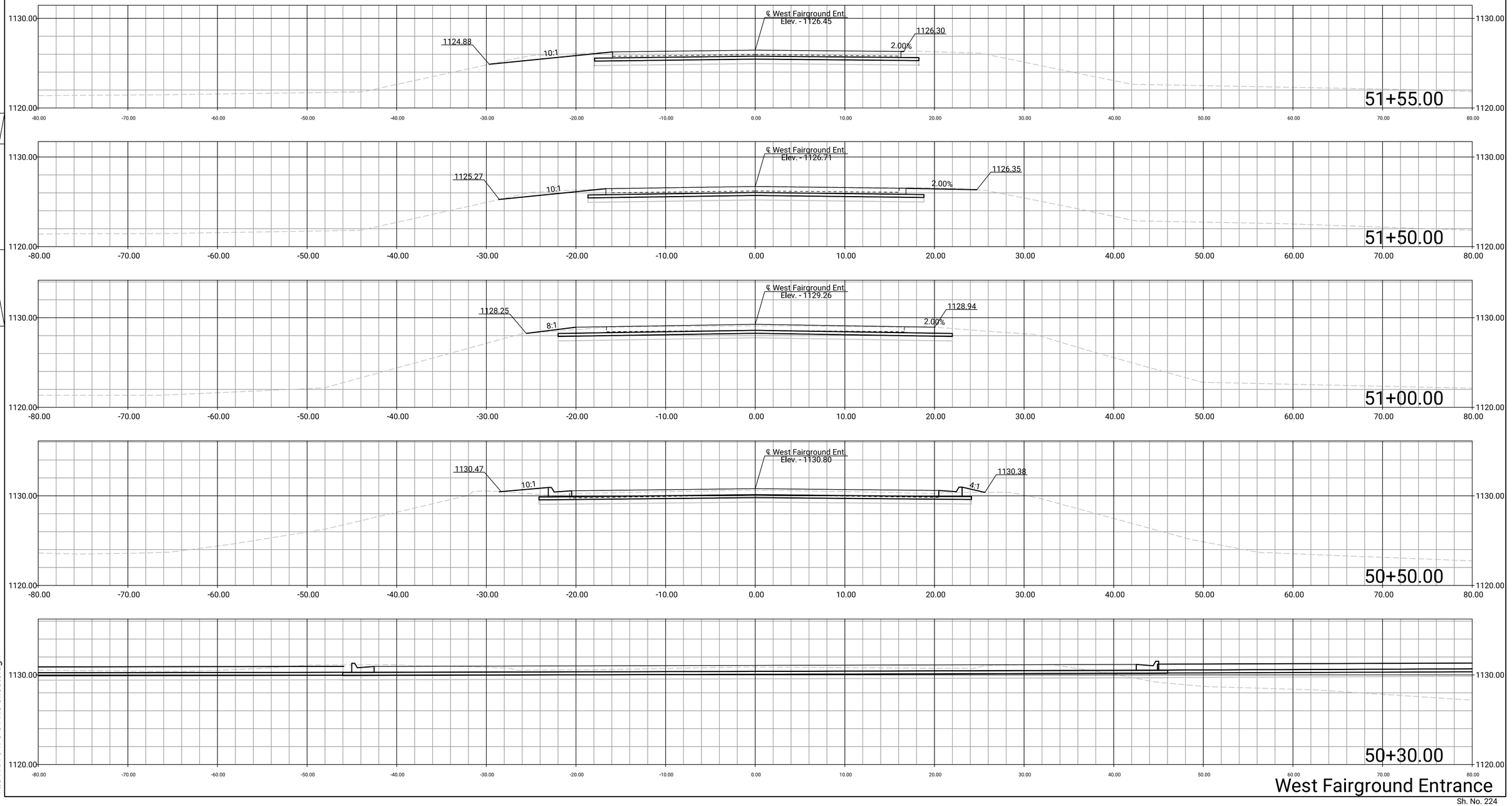


DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 16-OCT-2025 20:00
File : KA-6475-01 XS sheets.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	224	230

230



DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

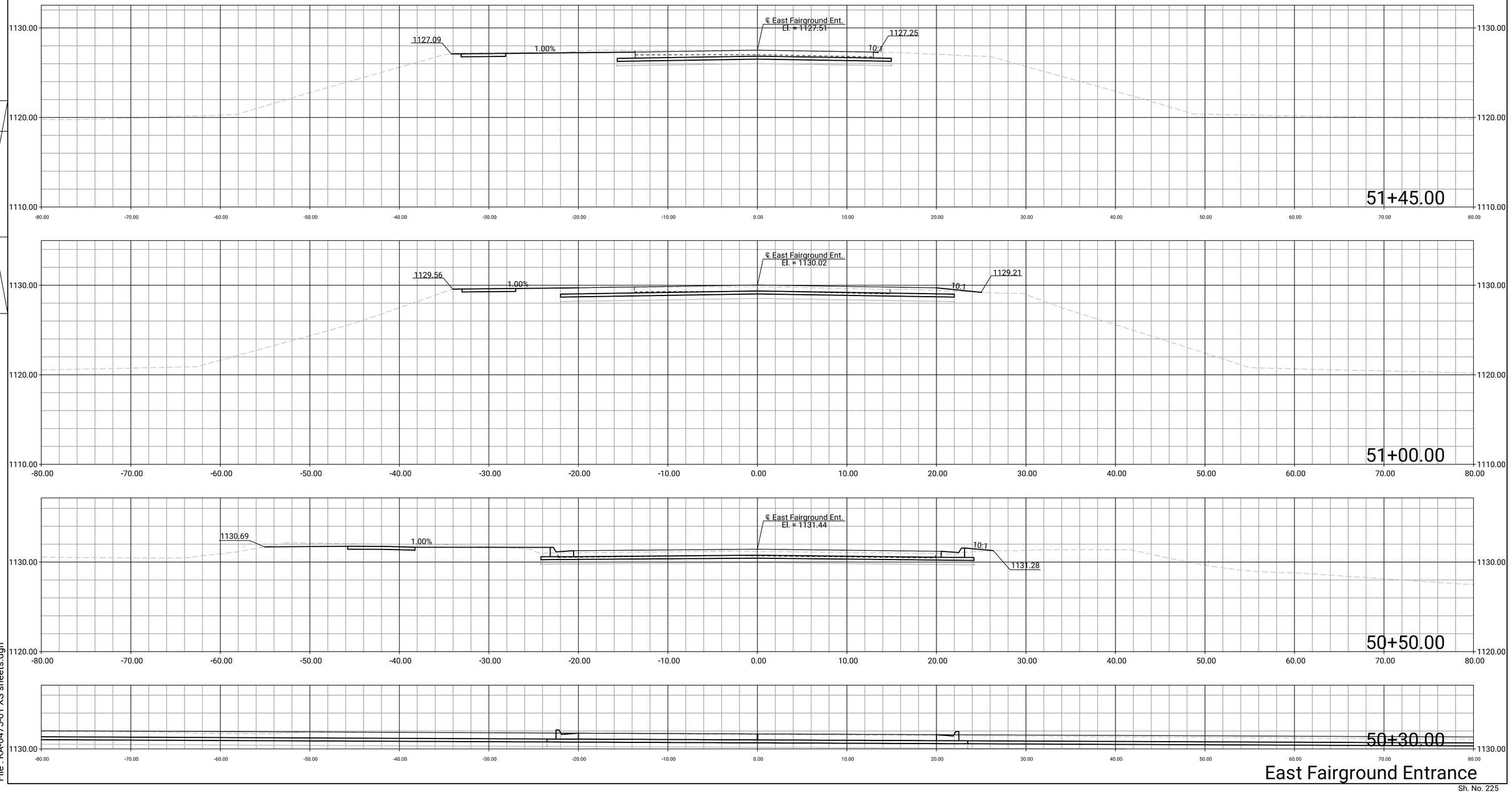
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:43
File : KA-6475-01 XS sheets.dgn

West Fairground Entrance

Sh. No. 224

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	225	230

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED



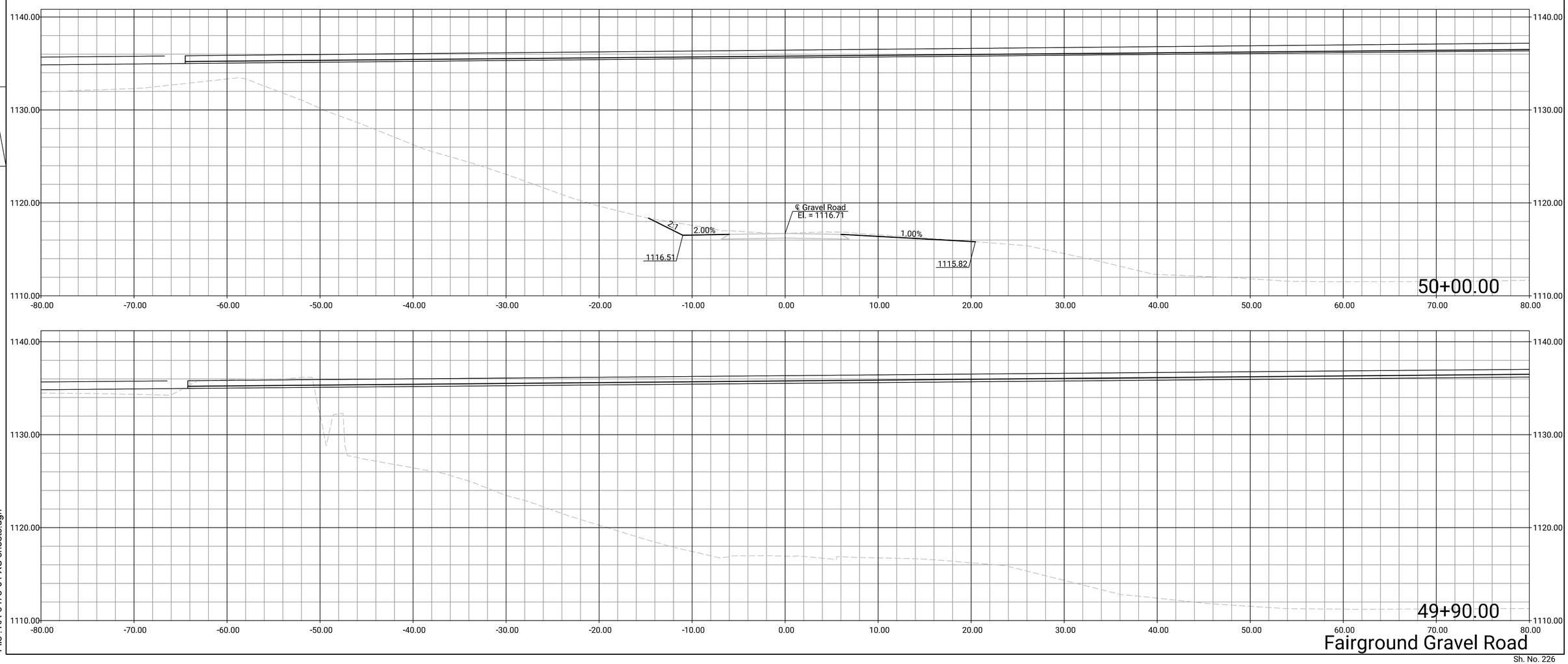
East Fairground Entrance

Sh. No. 225

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:43
File : KA-6475-01 XS sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	226	230

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

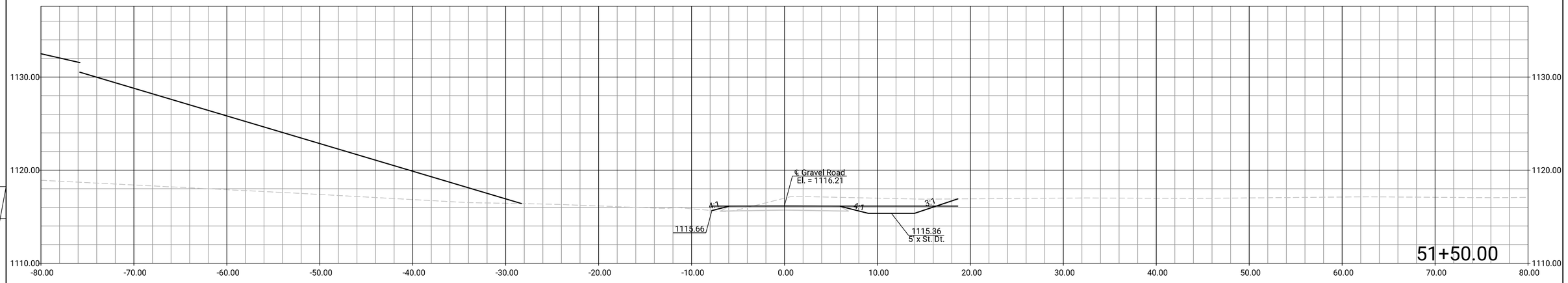


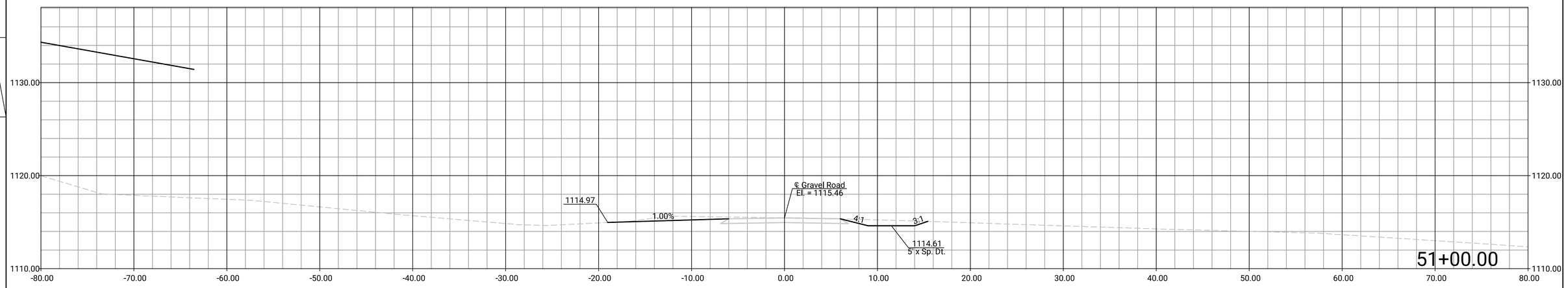
Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:48
File : KA-6475-01 XS sheets.dgn

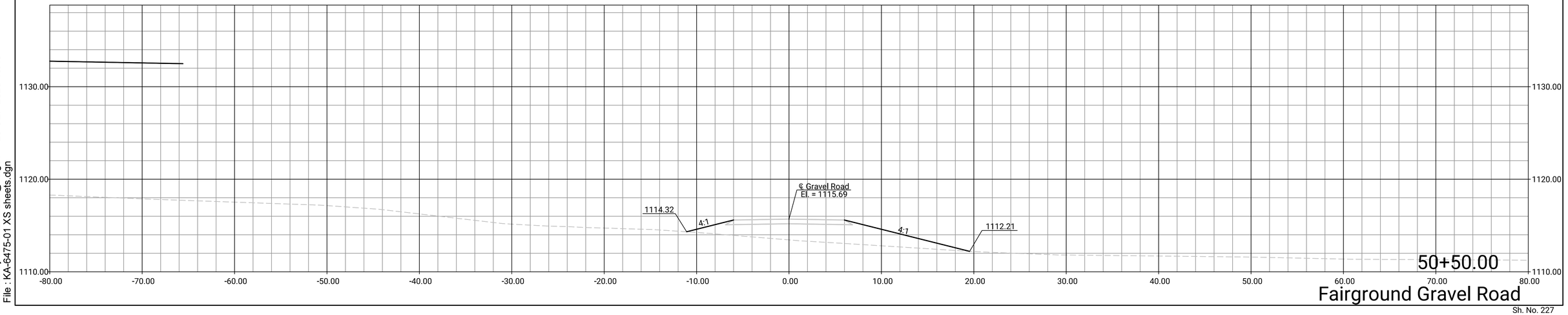
Sh. No. 226

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	227	230

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED







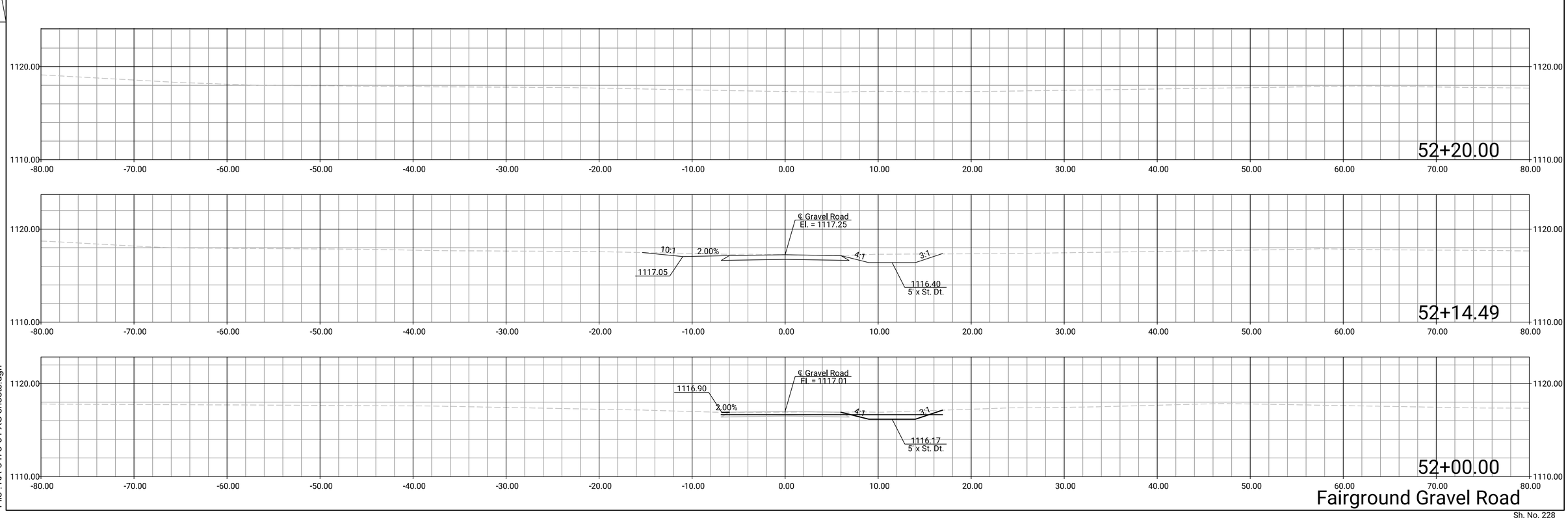
Fairground Gravel Road

Sh. No. 227

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:48
File : KA-6475-01 XS sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	228	230

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

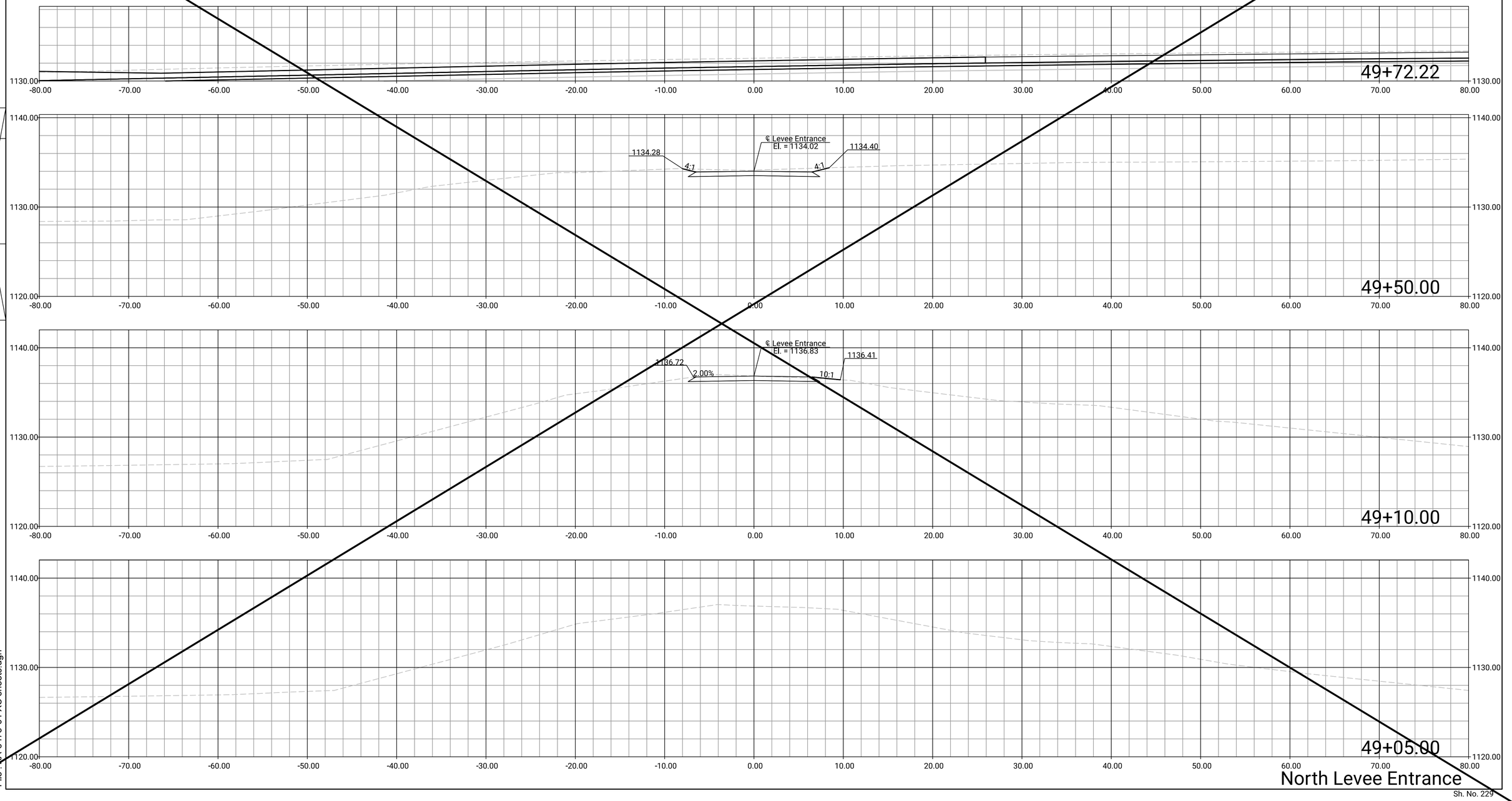


Fairground Gravel Road

Sh. No. 228

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:49
File : KA-6475-01 XS sheets.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	229	230

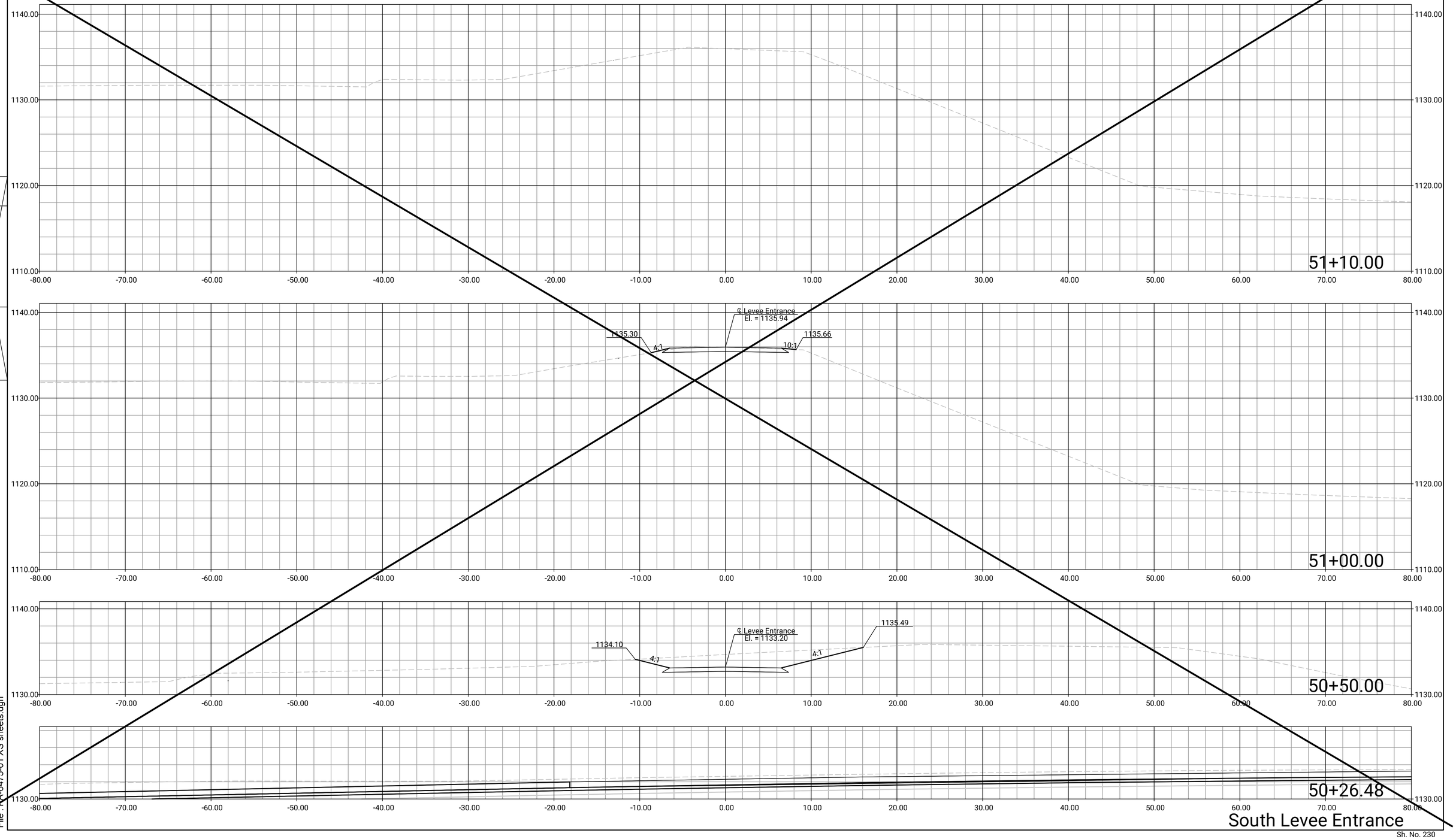


DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:50
File : KA-6475-01 XS sheets.dgn

North Levee Entrance

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	160-18 KA-6475-01	2025	230	230



DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Jackie.Austin@ks.gov 25-SEP-2025 18:50
File : KA-6475-01 XS sheets.dgn

South Levee Entrance

Sh. No. 230