

DATE	BY
01/22	K. LaRiviere
9/25	C. Wilkus
9/25	C. Wilkus
9/25	Smith/Tobben
SURVEY	
CADD TECHNICIAN	
DESIGNERS	
SQUAD	

Plotted by : Chris Wilkus@ks.gov
File : KA-6484-01rti-01.dgn

16-DEC-2025 21:03

INDEX OF SHEETS

- 1 TITLE SHEET
- 2 SIGNATURE SEAL SHEET
- 3 TYPICAL SECTIONS
- 4 COMPACTION OF EARTHWORK AND FOUNDATION TREATMENT
- 5 SALVAGED TOPSOIL
- 6 GENERAL NOTE SHEET
- 7-8 PLAN AND PROFILE SHEETS
- 9 SECTION CORNER MONUMENTATION DETAIL
- 10 RIGHT OF WAY MONUMENT DETAIL
- 11-13 PAVEMENT DETAILS SHEETS
- 14 SLOPE DRAIN AND FLUME INLET DETAIL SHEET
- 15-21 GUARDRAIL DETAIL SHEETS
- 22 METAL END SECTION DETAILS
- 23 SUMMARY OF PIPE CULVERTS
- 24-47 BRIDGE NO. 15-21-187.56 (114) DETAIL SHEETS
- 48 SUMMARY OF QUANTITIES
- 49 SUMMARY OF SURFACING QUANTITIES
- 50-59 TEMPORARY EROSION AND POLLUTION CONTROL DETAILS
- 60 SEEDING DETAIL SHEET
- 61-77 SIGNING
- 78-91 TRAFFIC CONTROL DETAILS
- 92-100 CROSS SECTION SHEETS

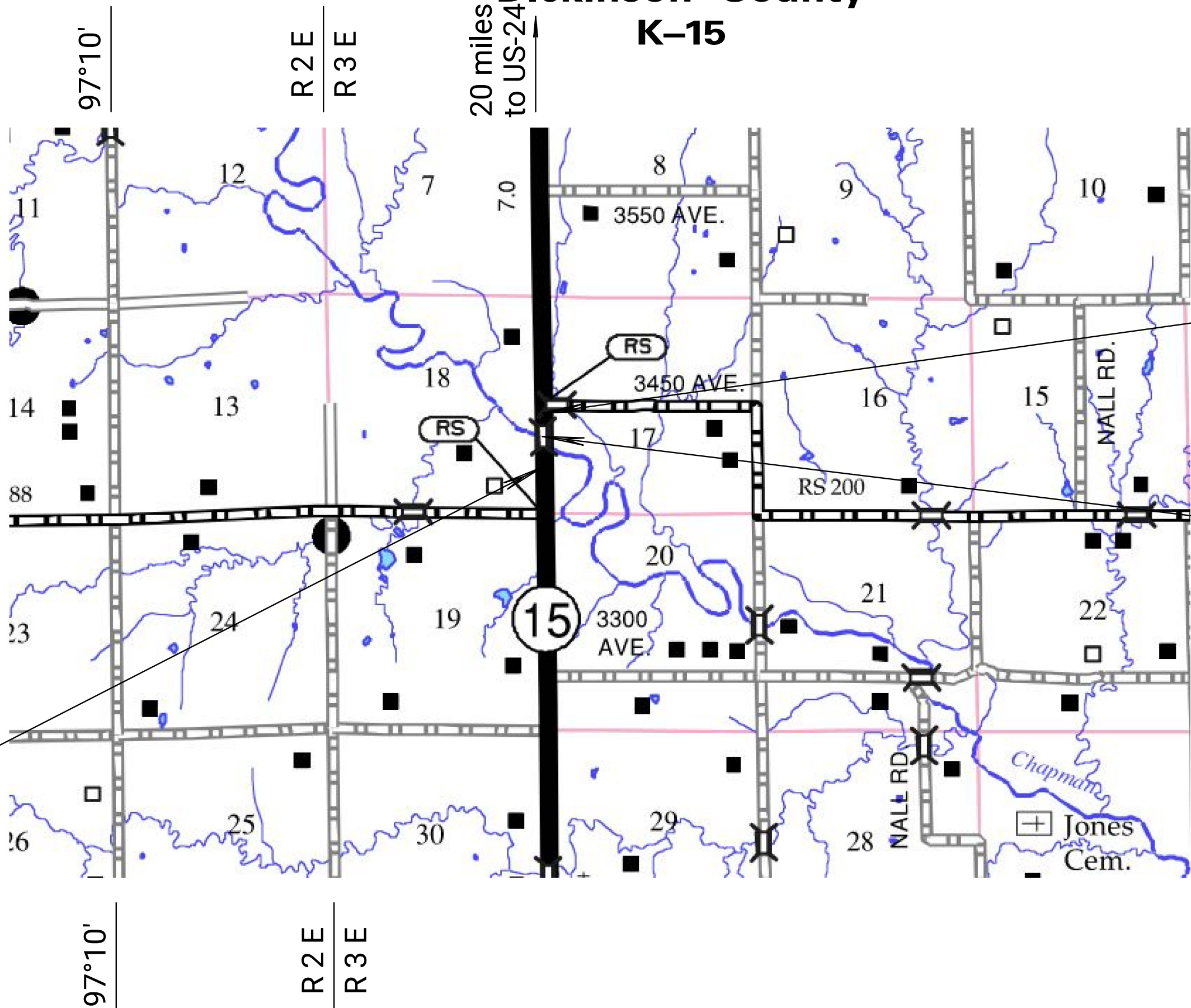
DESIGN DESIGNATION

AADT(2025) 1,300
AADT(2045) 1,600
DHV 10%
D 60%
T 27%
V 70 MPH
C of A None
Clear Zone 30'

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

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY
FEDERAL AID PROJECT
Dickinson County
K-15

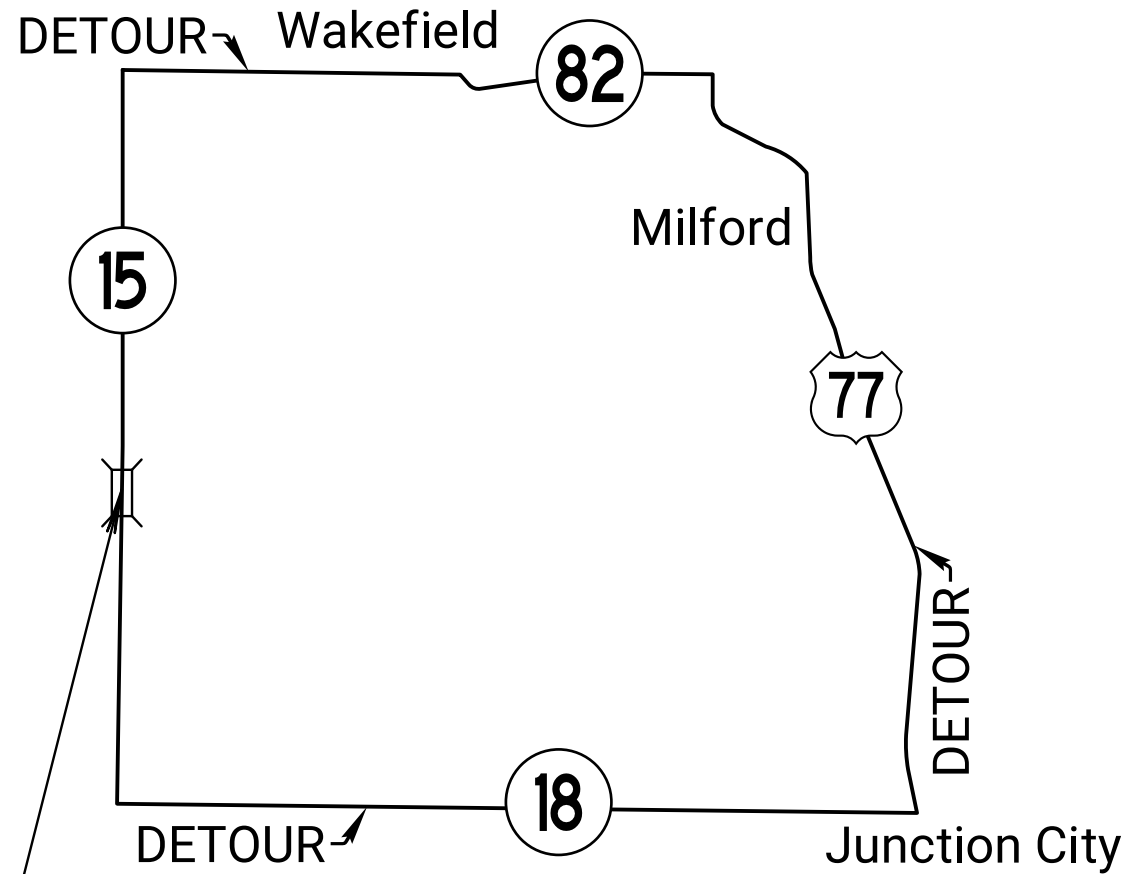


Sta. 244+00.00 BEGIN
Proj. No. 15-21 KA-6484-01 =
Sta. 244+00.00 on
Proj. 15-21-F045-2(1) (1951)

Sta. 259+00.00 END
Proj. No. 15-21 KA-6484-01 =
Sta. 259+00.00 on
Proj. 15-21-F045-2(1) (1951)

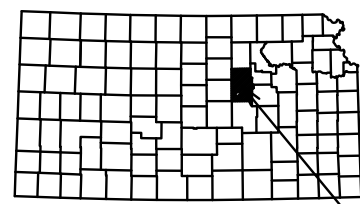
Sta. 251+68.00 CONSTRUCT
Bridge. No. 15-21-187.56 (114)
74'-2@75"-74'
Prestressed Concrete Beam
Continuous (PBMC)
40'-0" Roadway, 30° Rt. Skew

PROJECT LOCATION



DETOUR SKETCH
(NOT TO SCALE)

NOTE: TRAFFIC SHALL BE CARRIED ON STATE ROUTES
DURING CONSTRUCTION AS SHOWN ON THE SKETCH



Dickinson County

GROSS LENGTH OF PROJECT 1500 FT. (Includes Equations)

EXCEPTIONS

NET LENGTH OF PROJECT 1500 FT. 0.284 MILES
NET LENGTH OF BRIDGES 302.04 FT. 0.057 MILES
NET LENGTH OF ROAD 1197.96 FT. 0.227 MILES

Approved: Dec 17, 2025
Date

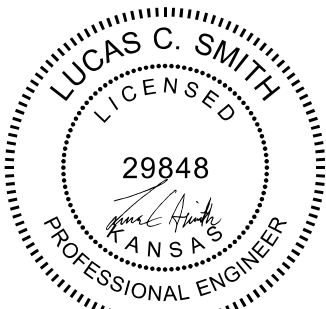
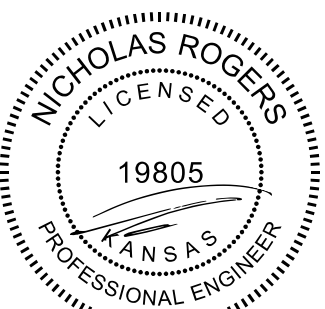
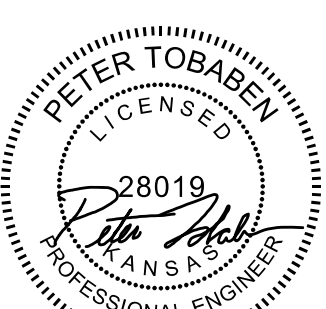
State Transportation Engineer

By:

Chief, Bureau of Road Design

KANSAS DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	2	100

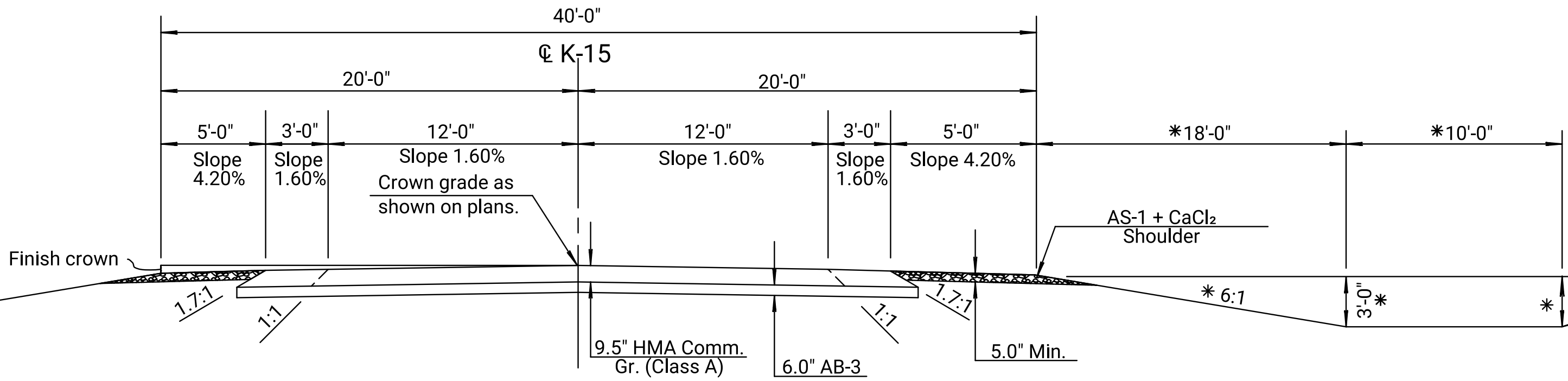
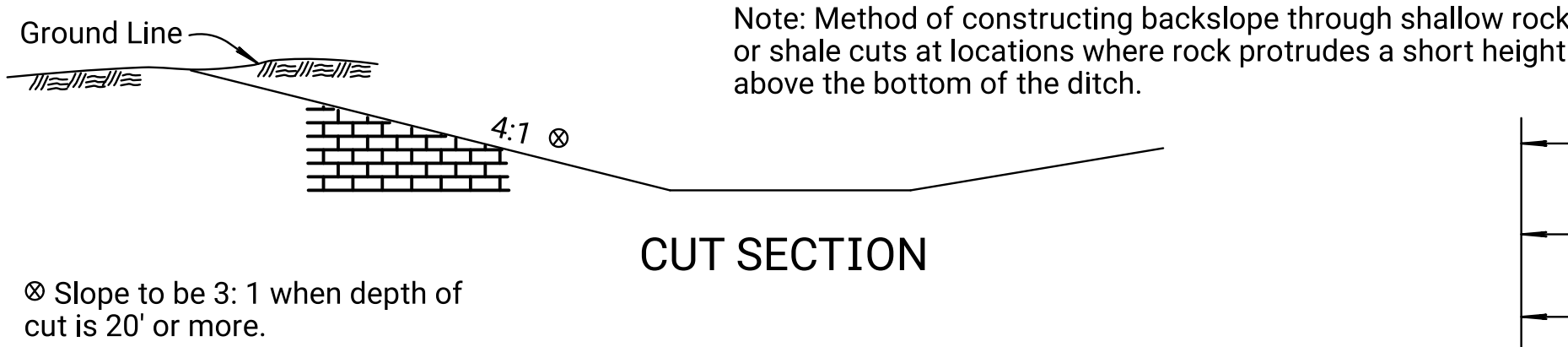
 Dec 16, 2025 Name: Lucas Smith, P.E. Co. Name: KDOT -Bureau of Road Design Plan Section: Road	 Dec 16, 2025 Name: Nicholas Rogers, P.E. Co. Name: KDOT Bureau of Traffic Engineering Plan Section: Traffic Control	 Dec 16, 2025 Name: Peter Tobaben Co. Name: KDOT - BSGS Plan Section: Bridge	 Dec 17, 2025 Name: Michael Whitlatch Co. Name: KDOT - Traffic Engineering Plan Section: Permanent Signing				

01	01-24-18	Initial Release	A.L.R.	S.W.K.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
Signature Seal Sheet				
RD048				
FHWA APPROVAL		APPD.		
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	
		Scott W. King		

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

Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 14:11
File : KA-6484-01rtr-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	3	100

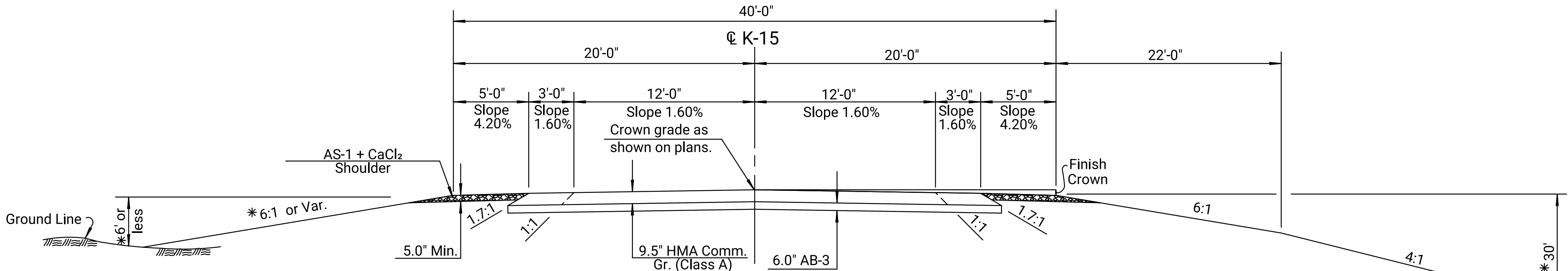


CUT SECTION

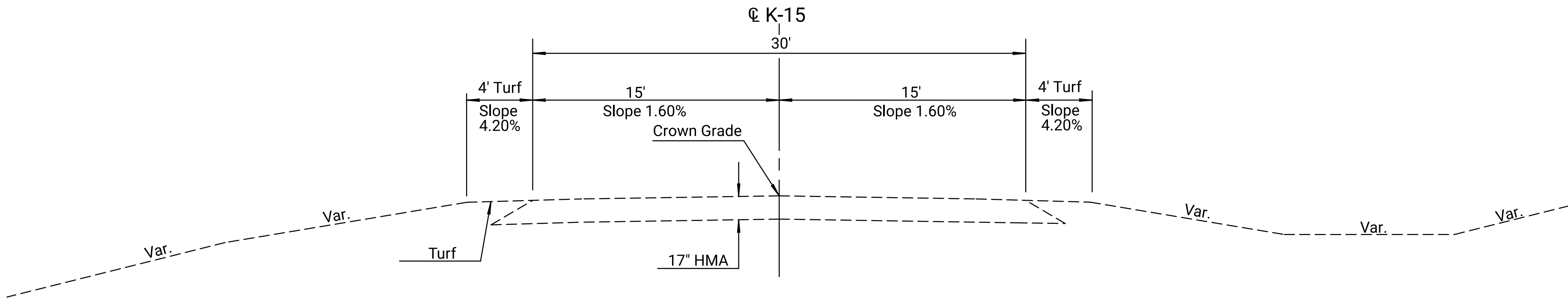
* Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.

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

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



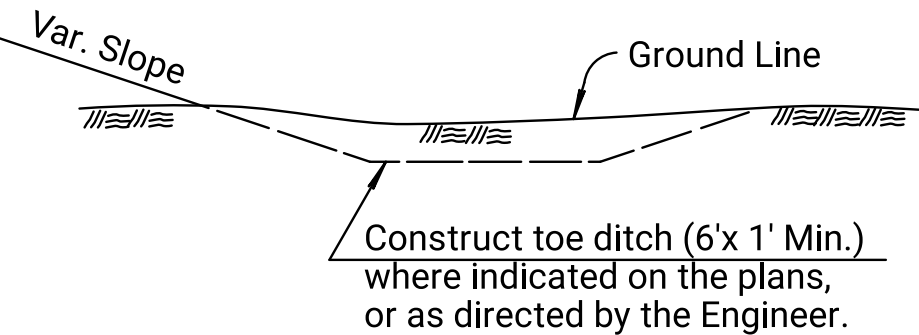
FILL SECTION



FILL

EXISTING SECTION

CUT

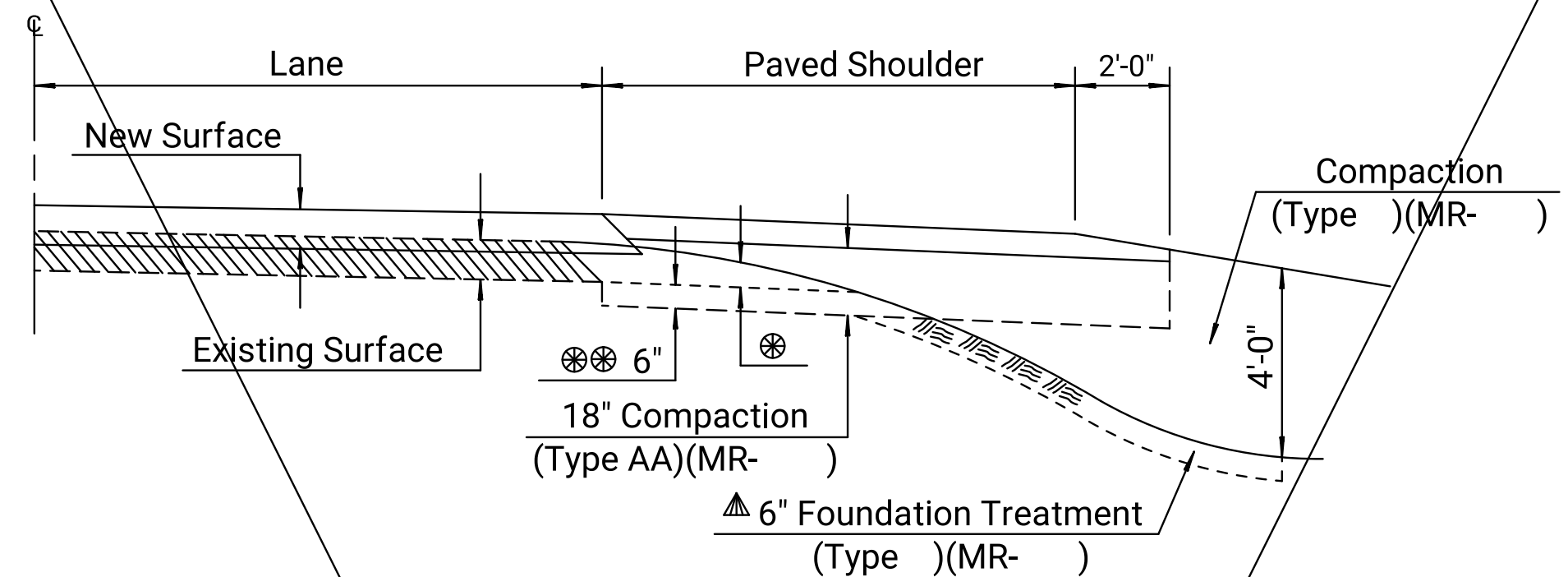


21	01-25-13	Removed Slope, Pvmnt. Edge	S.W.K.	J.O.B.
20	05-20-09	8:1/6:1 over 10' fill mound ent./sd.rd.	S.W.K.	J.O.B.
19	11-10-04	Changed slope labels to percent	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION				
TYPICAL SECTION GRADING & SURFACING				
RD600				
FHWA APPROVAL		05-21-13	APPD.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED	B.N.B.
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	W.L.H.

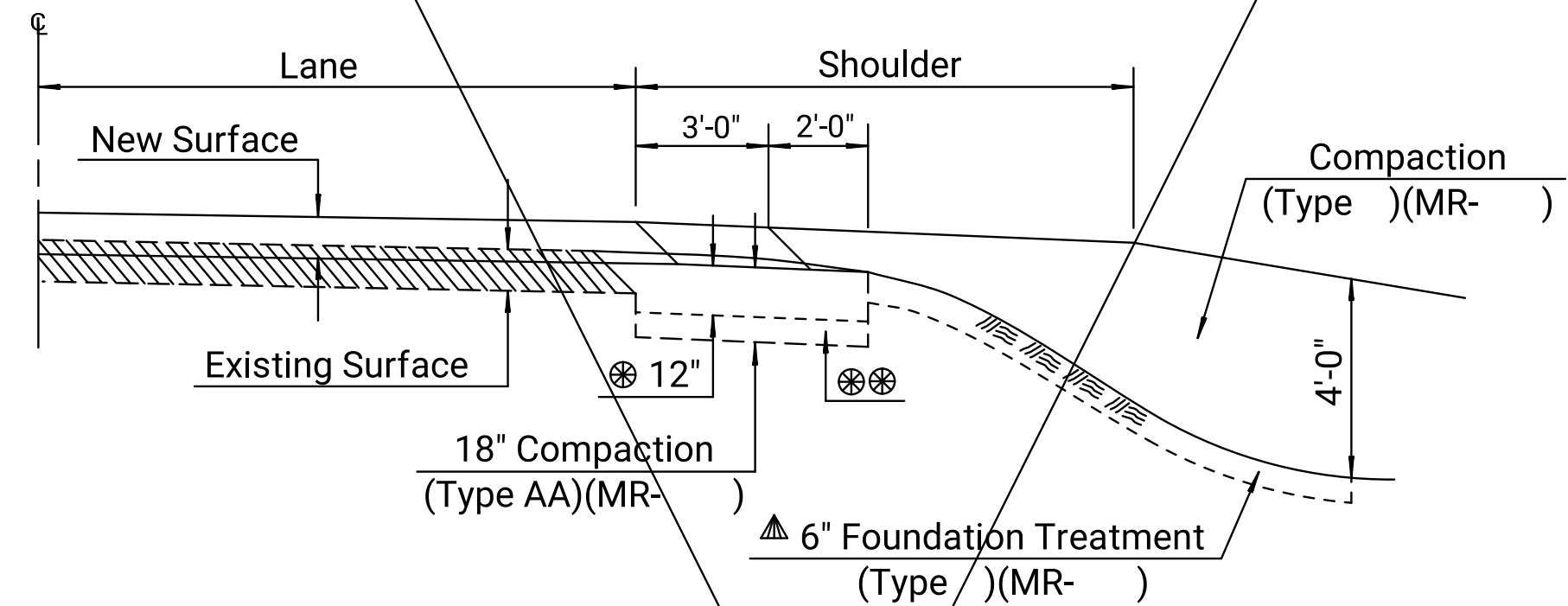
Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 14:11
File : KA-6484-01rrs-02.dgn

REHABILITATION



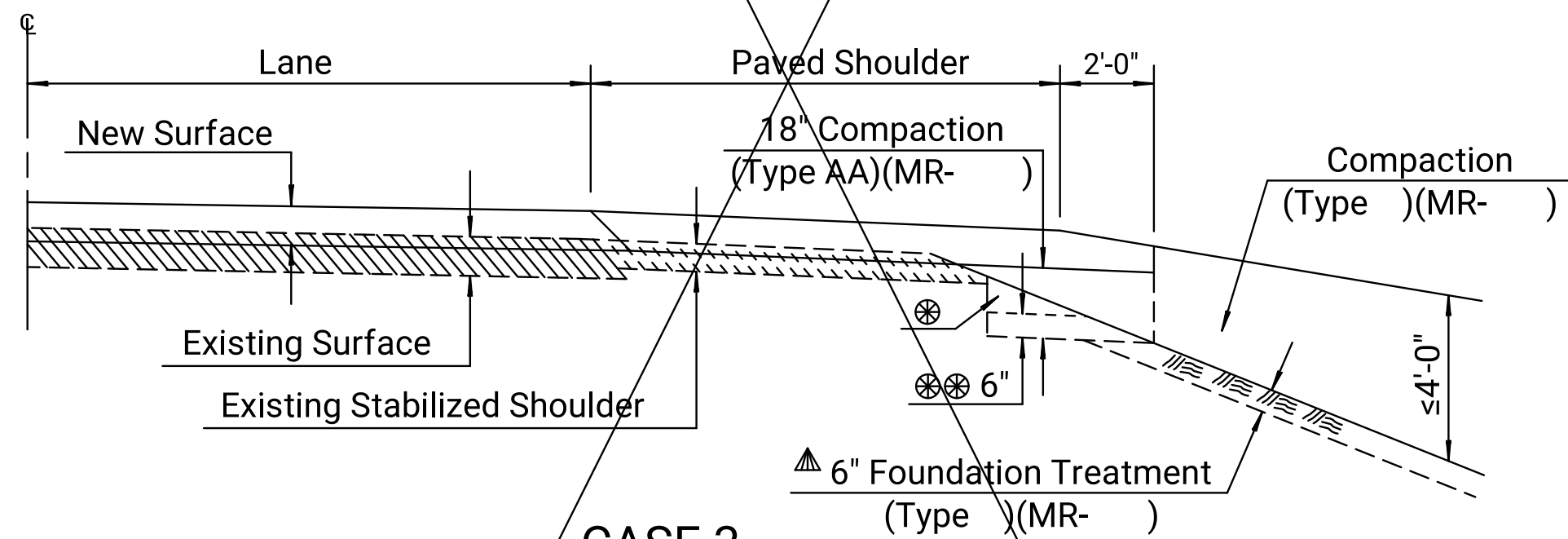
CASE 1

Overlay with Paved Shoulder



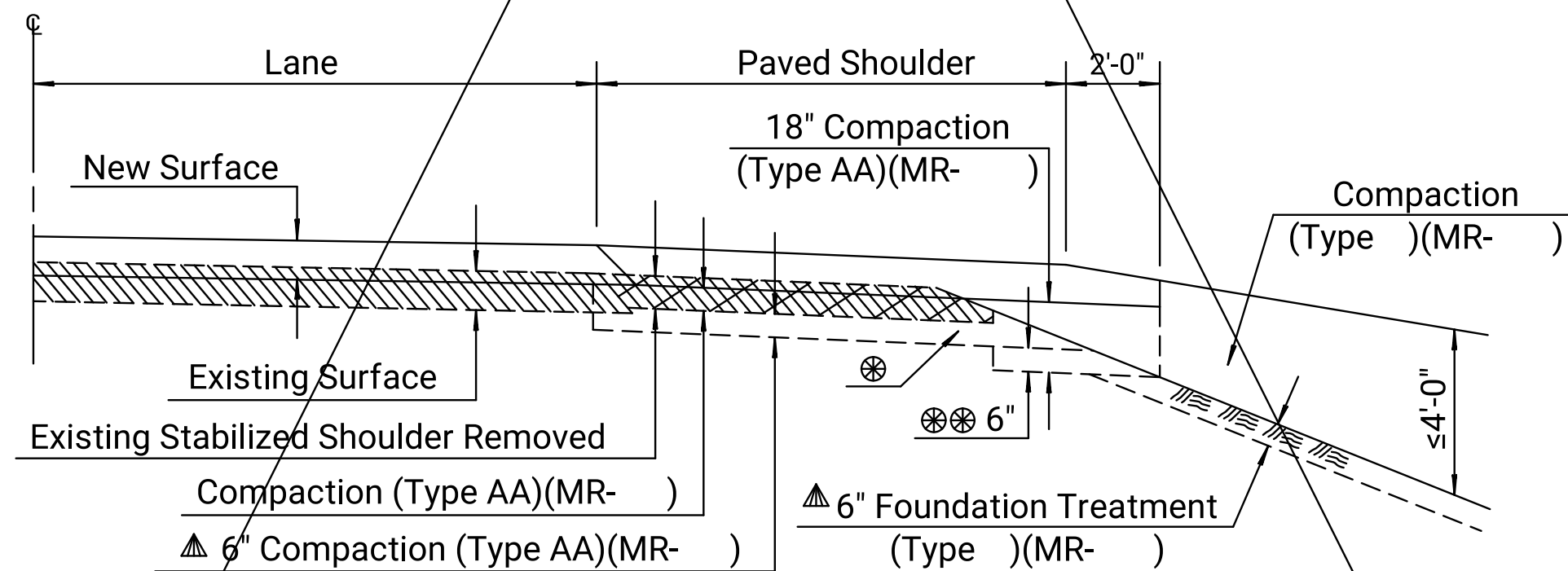
CASE 2

Overlay with Composite Shoulder



CASE 3

Overlay with Existing Paved Shoulder



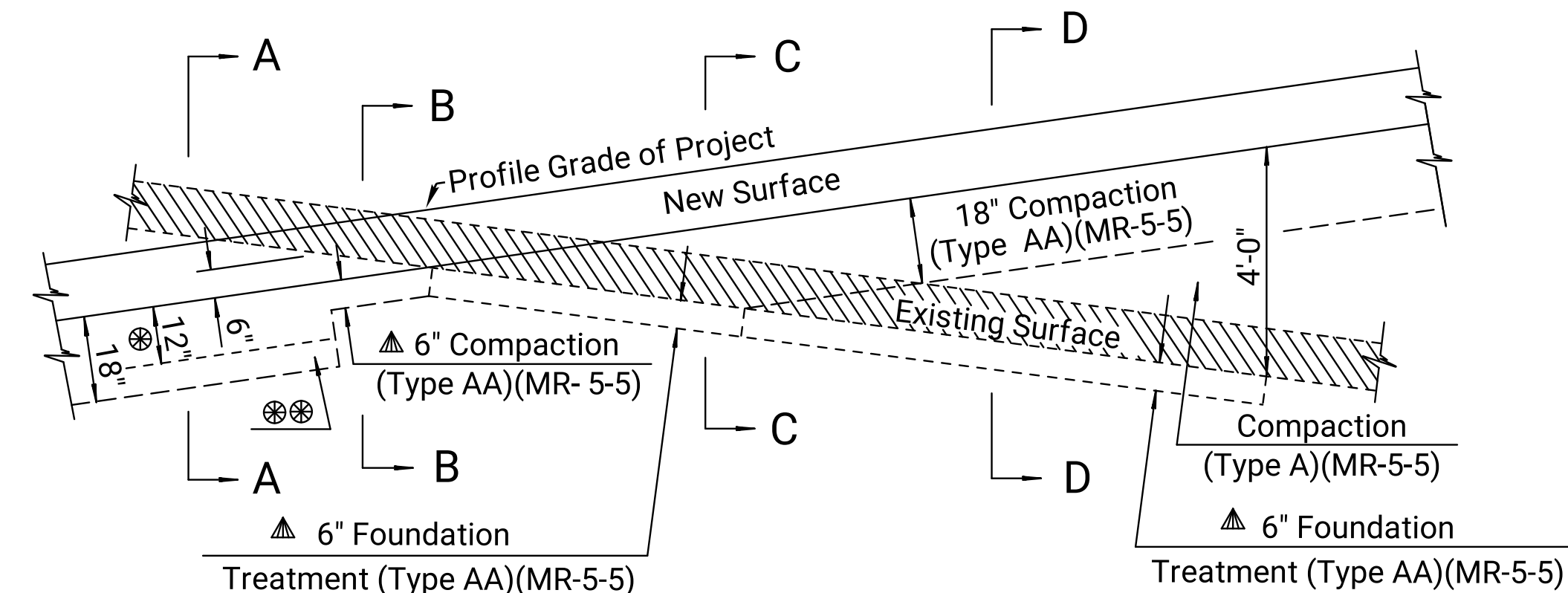
CASE 4

Overlay with Shoulder Replacement

- ⊗ Excavation thru Cuts not Subgraded
- ⊗⊗ The lower 6" of Compaction is subsidiary.
- ▲ Compaction of this material shall be subsidiary.

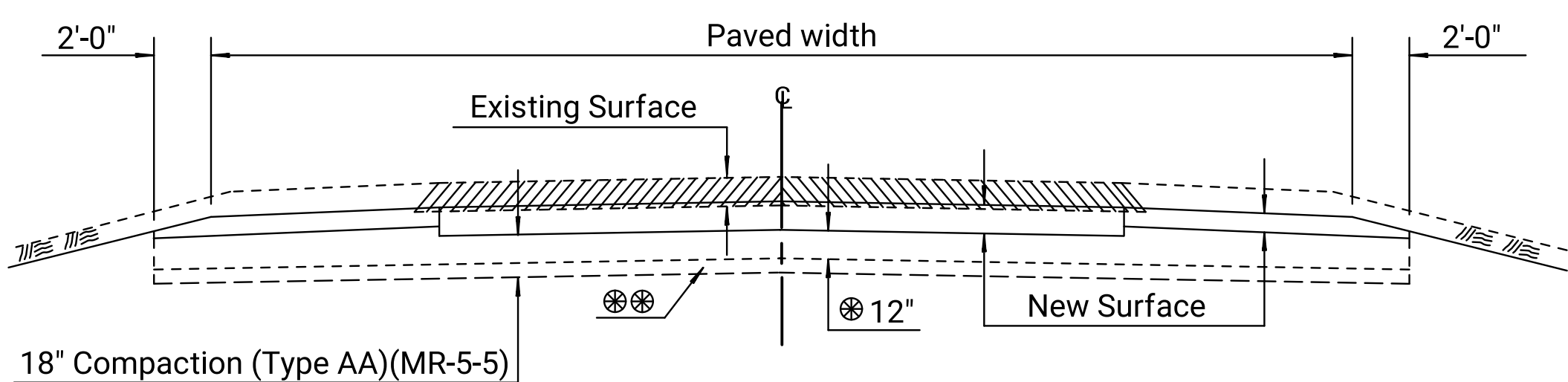
Note: These are 4 general cases. Specific compaction requirements are determined on a project-by-project basis.

RECONSTRUCTION

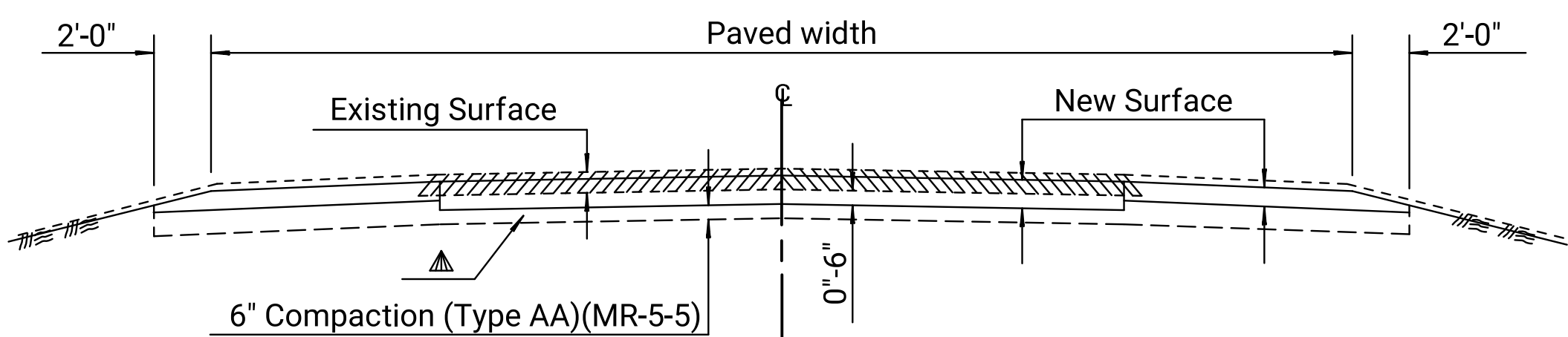


PROFILE

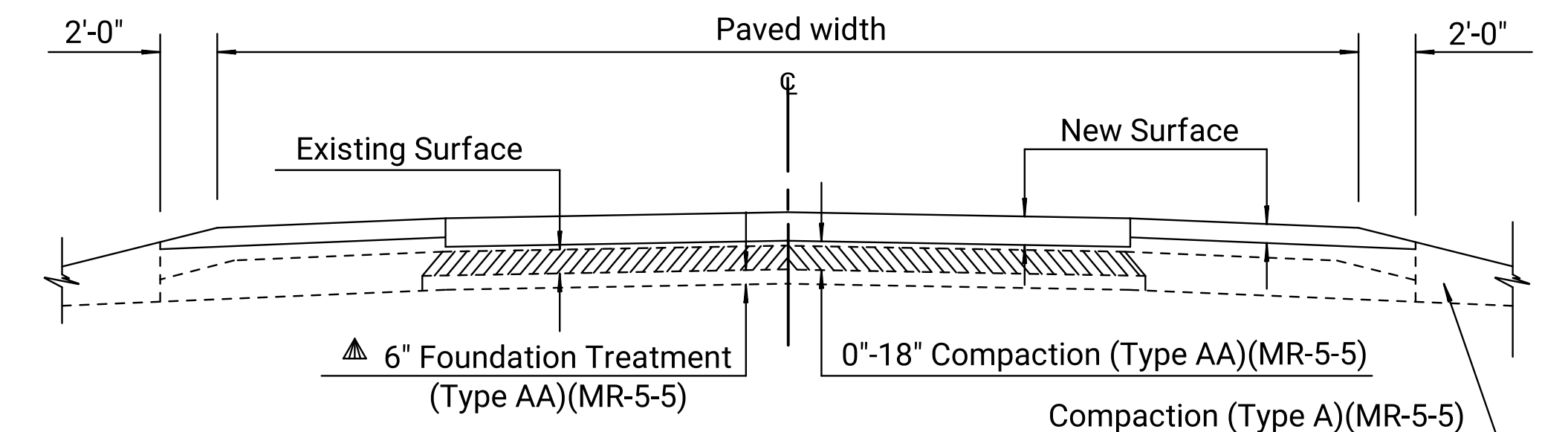
- ⊗ Excavation thru Cuts not Subgraded
- ⊗⊗ The lower 6" of Compaction is subsidiary.
- ▲ Compaction of this material shall be subsidiary.



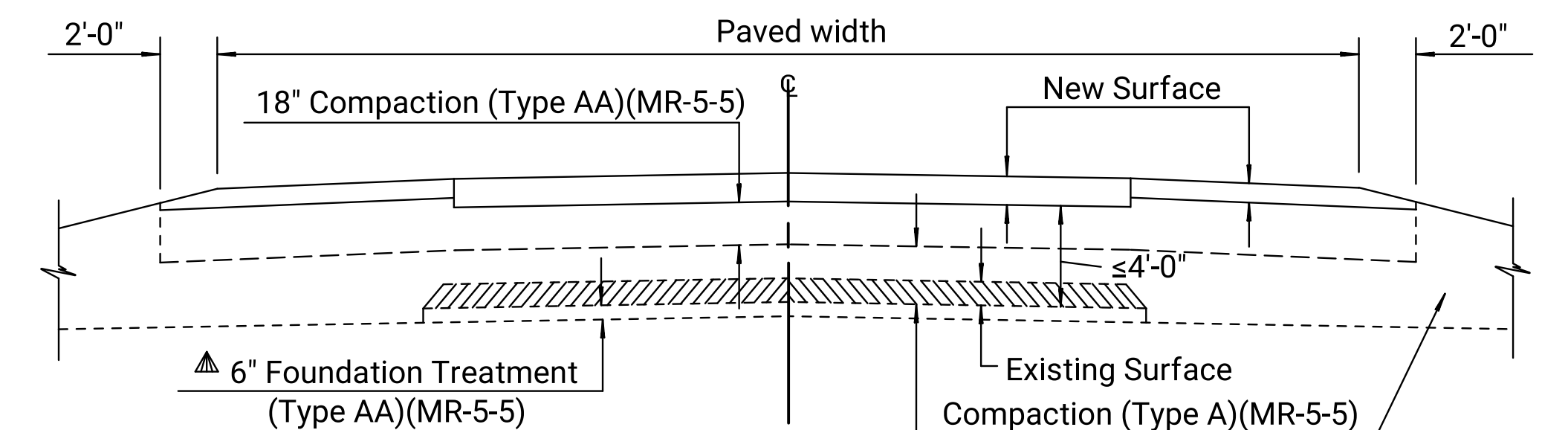
SECTION A-A



SECTION B-B

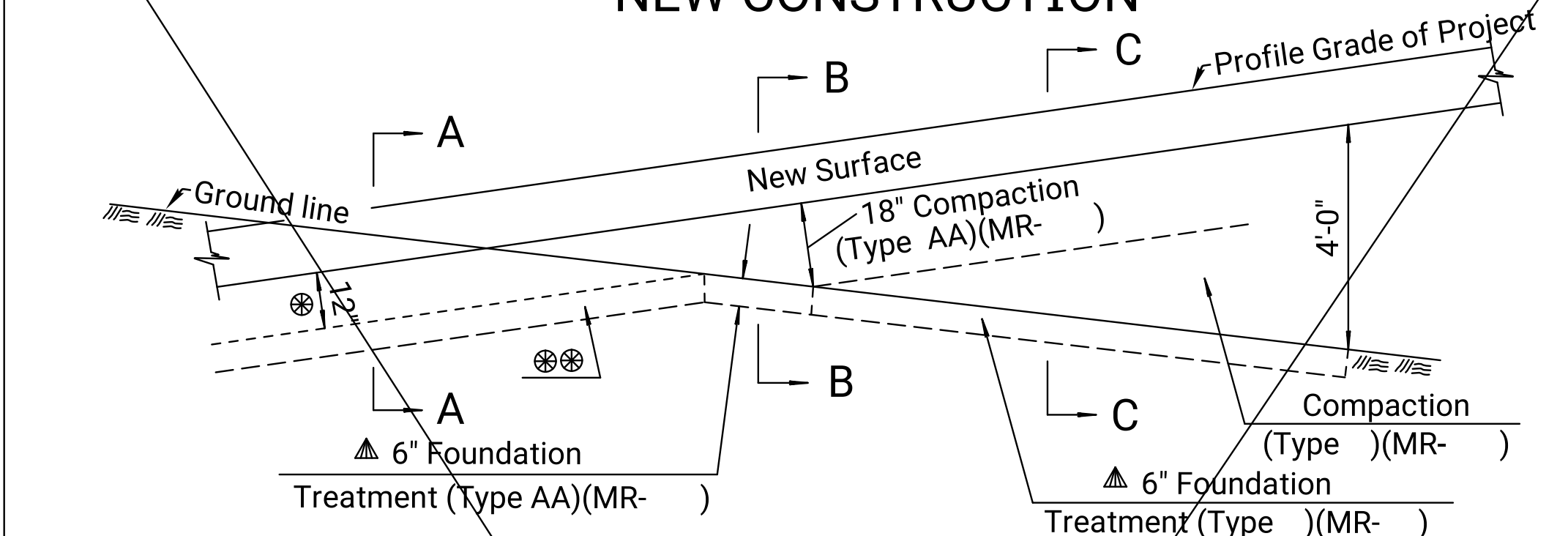


SECTION C-C



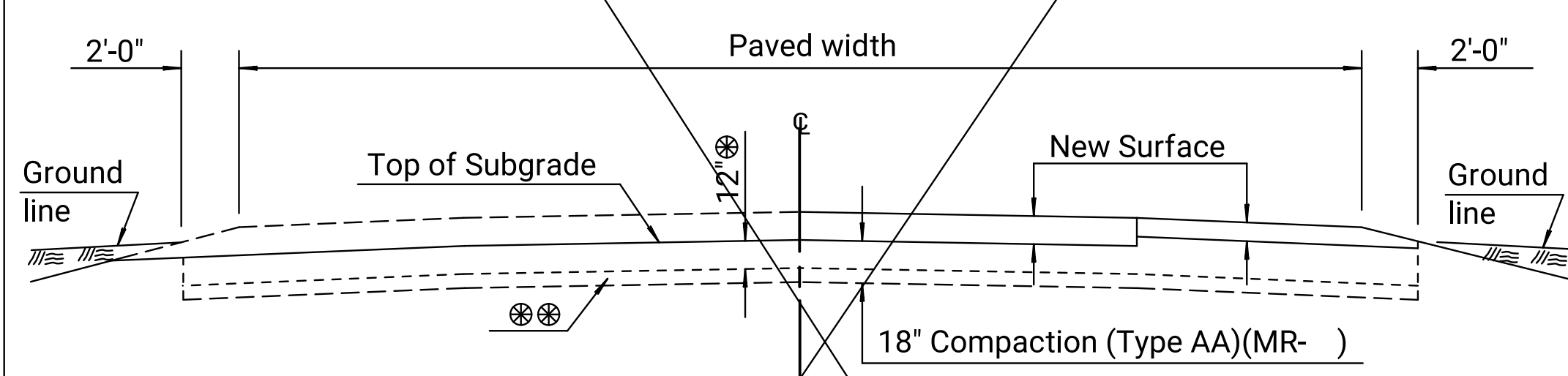
SECTION D-D

NEW CONSTRUCTION

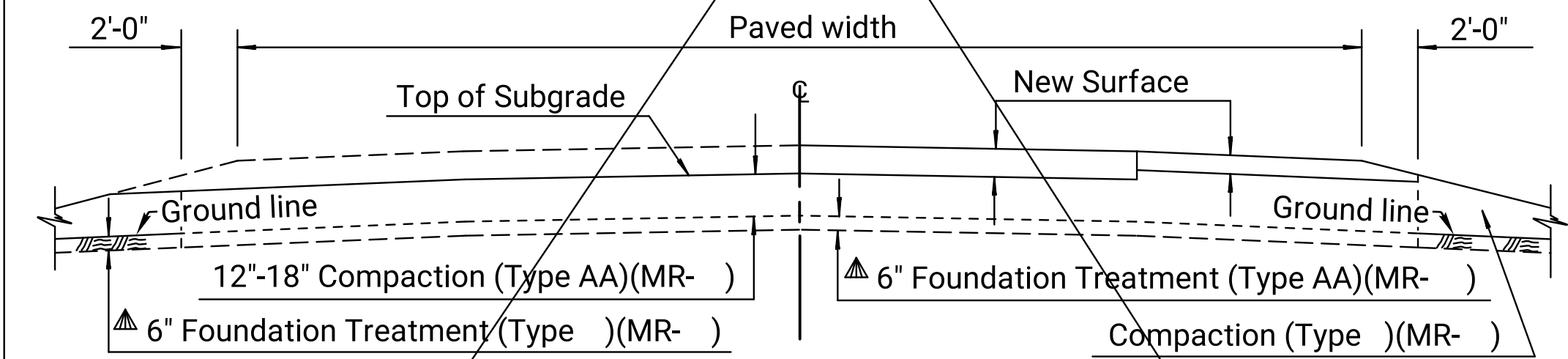


PROFILE

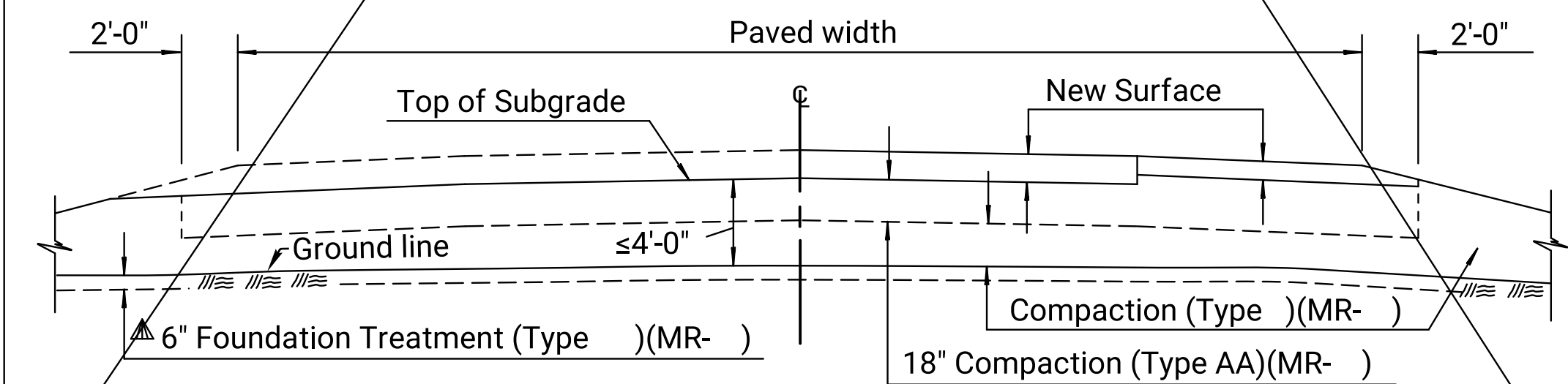
- ⊗ Excavation thru Cuts not Subgraded
- ⊗⊗ The lower 6" of Compaction is subsidiary.
- ▲ Compaction of this material shall be subsidiary.



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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	4	100

NO.	DATE	REVISIONS	BY	APPD
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.

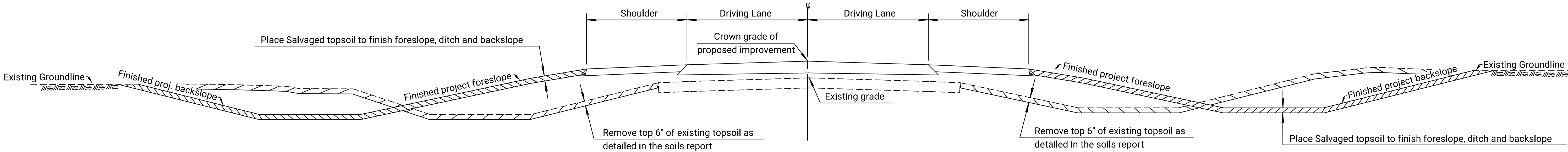
KANSAS DEPARTMENT OF TRANSPORTATION				
RD605				
DESIGNED	12-05-11	APPD.	James O. Brewer	
QUANTITIES				
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACED	TRACE CK.

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

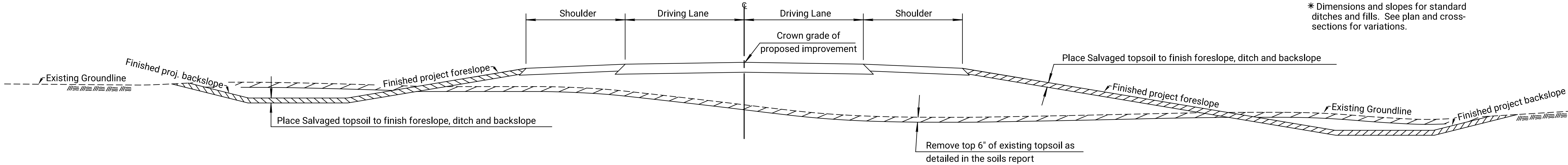
Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 14:12
File : KA-6484-01rss599a.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	5	100

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.



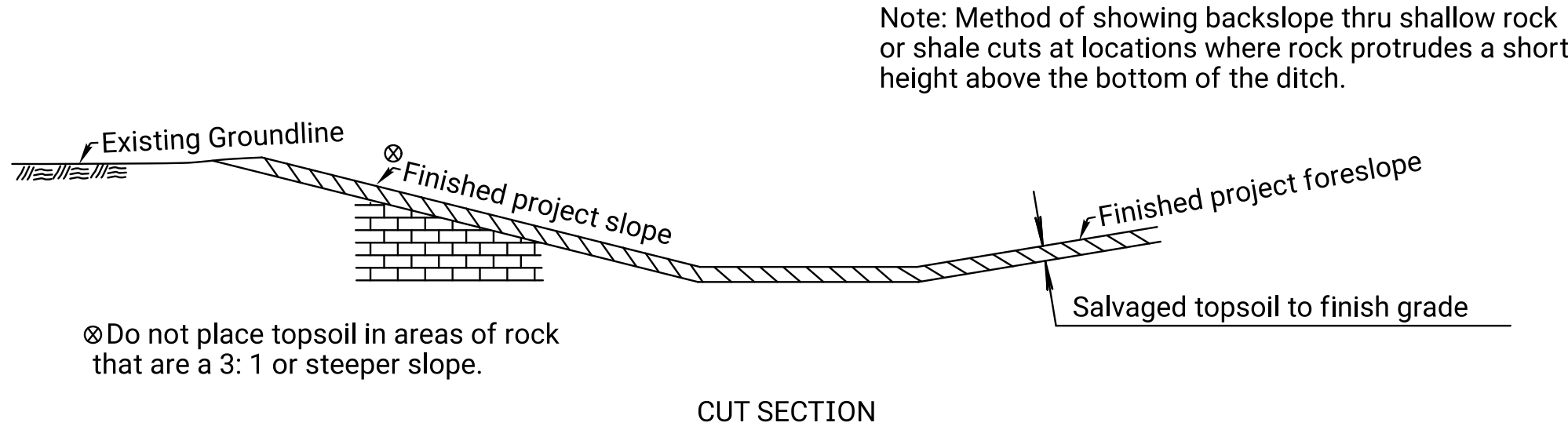
RECONSTRUCTION/REHABILITATION OF EXISTING ROADWAY
(Removal and Placement of Salvaged Topsoil)



* 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)



01	12-16-09	Initial Release	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
SALVAGED TOPSOIL				
RD599A				
FHWA APPROVAL		APPD.		
DESIGNED	DETAILED	QUANTITIES	TRACED	B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	S.W.K.

REFERENCES NOTED	BY	DATE
REFERENCES CHECKED	L. Smith	11/22
	R. Meyer	11/22

Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 14:11
File : KA-6484-01trgn-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	6	100

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.

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

GENERAL NOTE CONT'D

ADDITIONAL SECTION CORNER REFERENCES AND TIES ARE AVAILABLE UPON REQUEST.

THE INFORMATION SHOWN IN THESE PLANS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGES THERETO.

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

SOIL FOR EMBANKMENT CONSTRUCTION: ALL SOIL USED IN THE TOP 18" INCHES OF THE EMBANKMENT SHOULD CONFORM TO THE FOLLOWING REQUIREMENTS: $10 \leq PI \leq 30$ AND $20 \leq LL \leq 50$. SOILS WHICH CONTAIN SUBSTANTIAL ORGANIC MATERIAL, SUCH AS THOSE CLASSIFIED AS OL OR OH ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487) SHOULD NOT BE USED TO CONSTRUCT THE EMBANKMENT OR SUBGRADE. THE ORGANIC MATERIAL MAY BE USED AS SELECT SOIL TO CAP THE SIDESLOPES OF THE EMBANKMENT.

A GROSS VMF OF 0.80 WAS USED TO COMPUTE EARTHWORK QUANTITIES FOR THIS PROJECT. THIS FACTOR INCLUDES QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT.

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

PROJECT SURVEY CONTROL

Horizontal Datum: Kansas Regional Coordinate System Zone 7 (Salina) using NAD 83(2011)

Vertical Datum: North American Vertical Datum (NAVD) 1988, using Geoid 18 Datum Benchmark = GE1 Elevation = 1169.95

UTILITIES

Twin Valley
Contact: Michelle
Phone: 316-520-0077

DSO Overhead Power
Phone: 785-655-2011

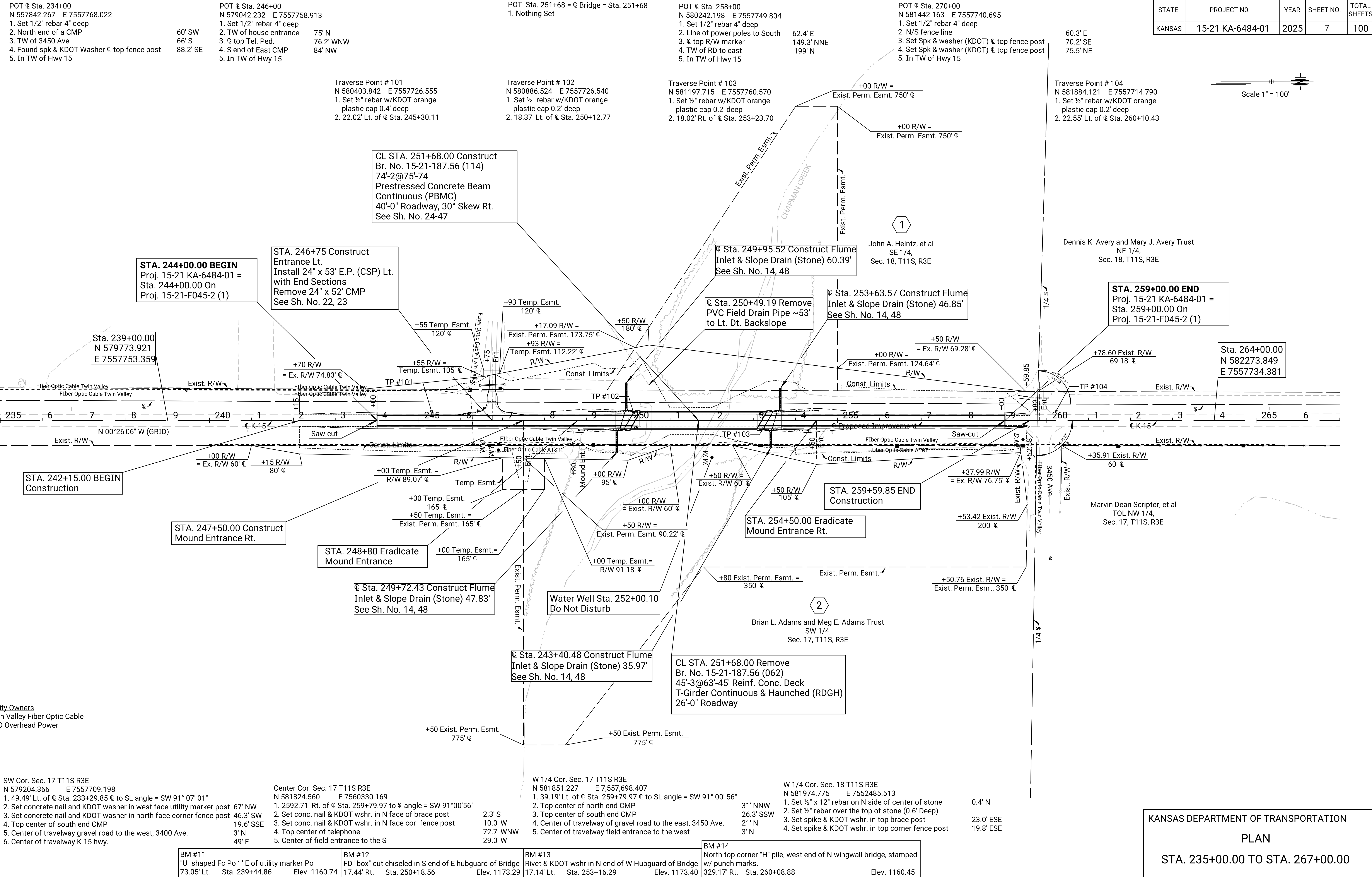
KANSAS DEPARTMENT OF TRANSPORTATION

GENERAL NOTES, UTILITIES &

PROJECT SURVEY CONTROL

DATE	11/22
BY	L. Smith R. Meyer
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rpp-01.dgn
16-DEC-2025 21:06



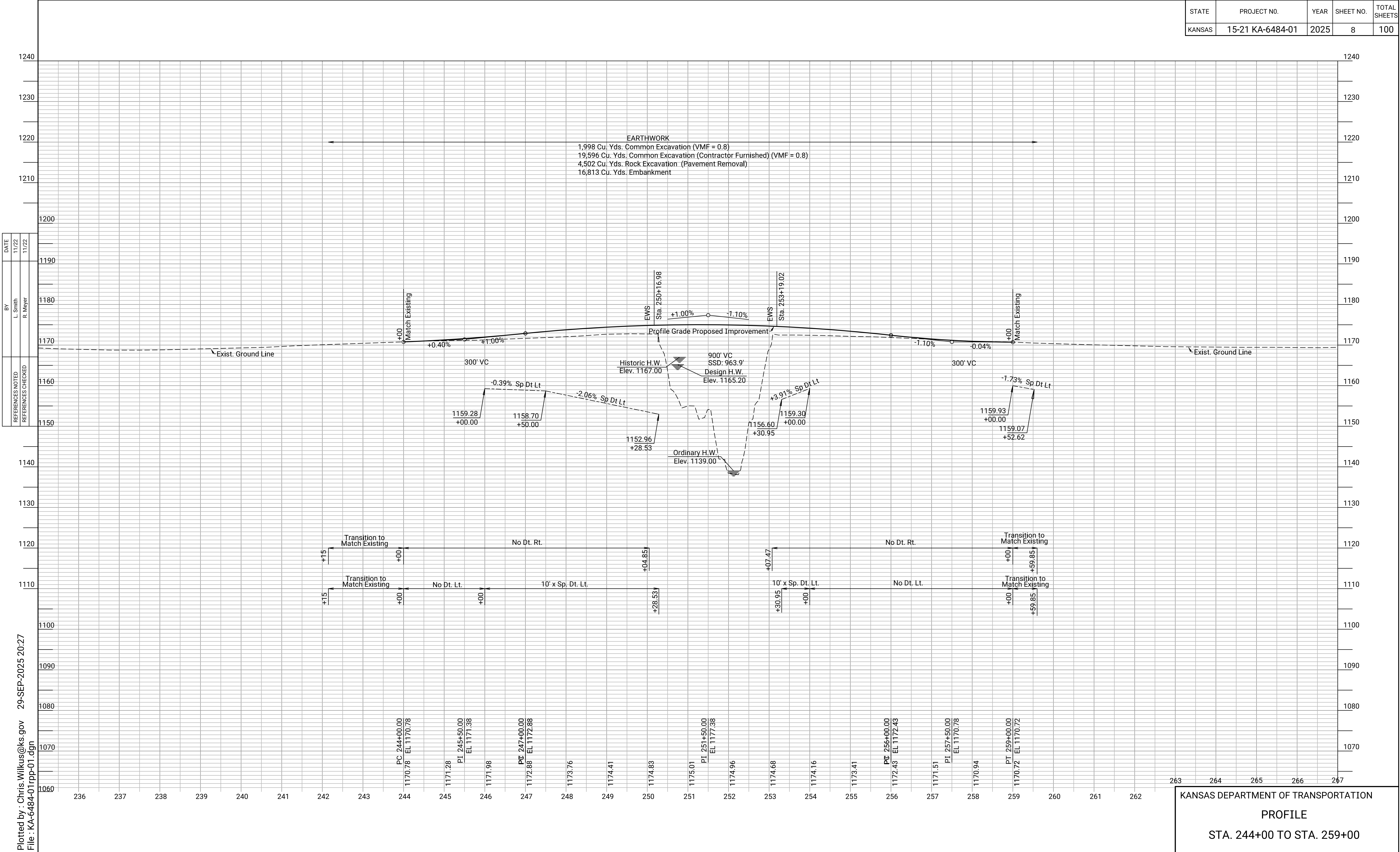
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	7	100

KANSAS DEPARTMENT OF TRANSPORTATION	
PLAN	
STA. 235+00.00 TO STA. 267+00.00	

REFERENCES NOTED	REFERENCES CHECKED	BY	DATE
		L. Smith	11/22
		R. Meyer	11/22

Plotted by : Chris.Wilkus@ks.gov 29-SEP-2025 20:27
File : KA-6484-01 rpp-01.dgn

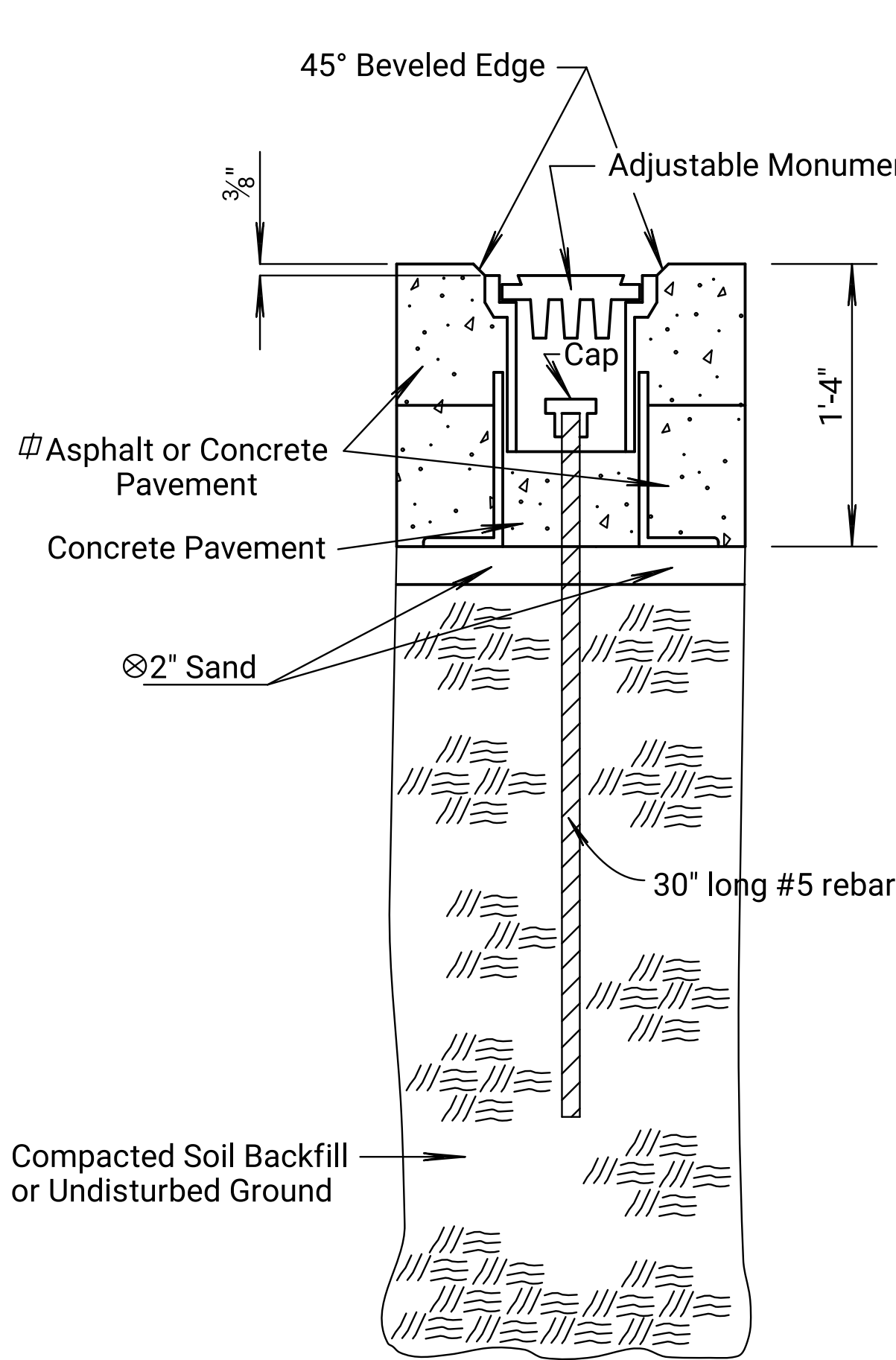
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	8	100



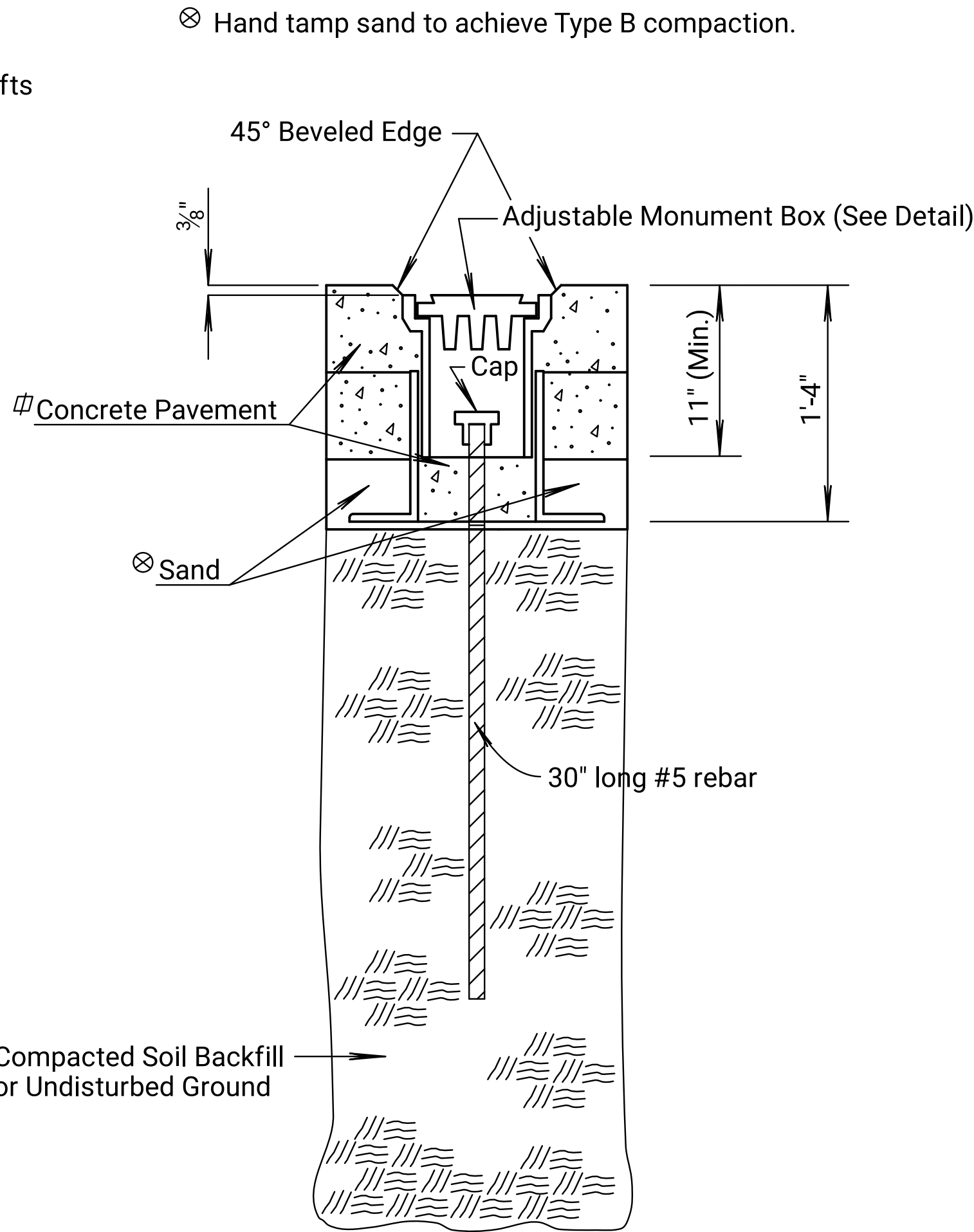
Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rss990-01.dgn

16-SEP-2025 14:13

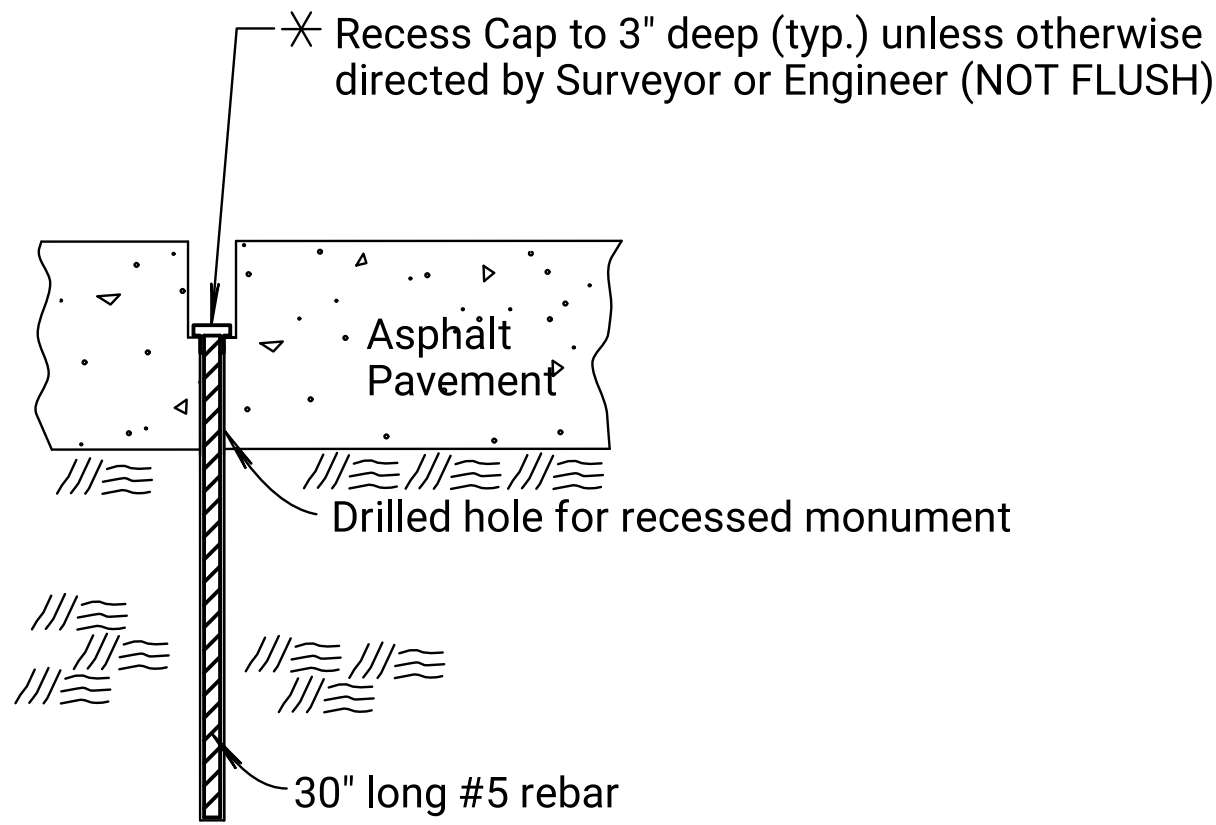
EXHIBIT		
2" DIA. PRE-STAMPED ALUMINUM CAPS		
KDOT - DISTRICT 1	KDOT - DISTRICT 2	KDOT - DISTRICT 3
KDOT - DISTRICT 4	KDOT - DISTRICT 5	KDOT - DISTRICT 6
KDOT STATE SURVEY CREW BUREAU OF RIGHT OF WAY	SURVEY COMPANY WITH A VALID CORPORATION LICENSE	INDEPENDENT SURVEYOR OR SOLE PROPRIETOR COMPANY



TYPE A-1
(Standard Land Corner
Monument Box)

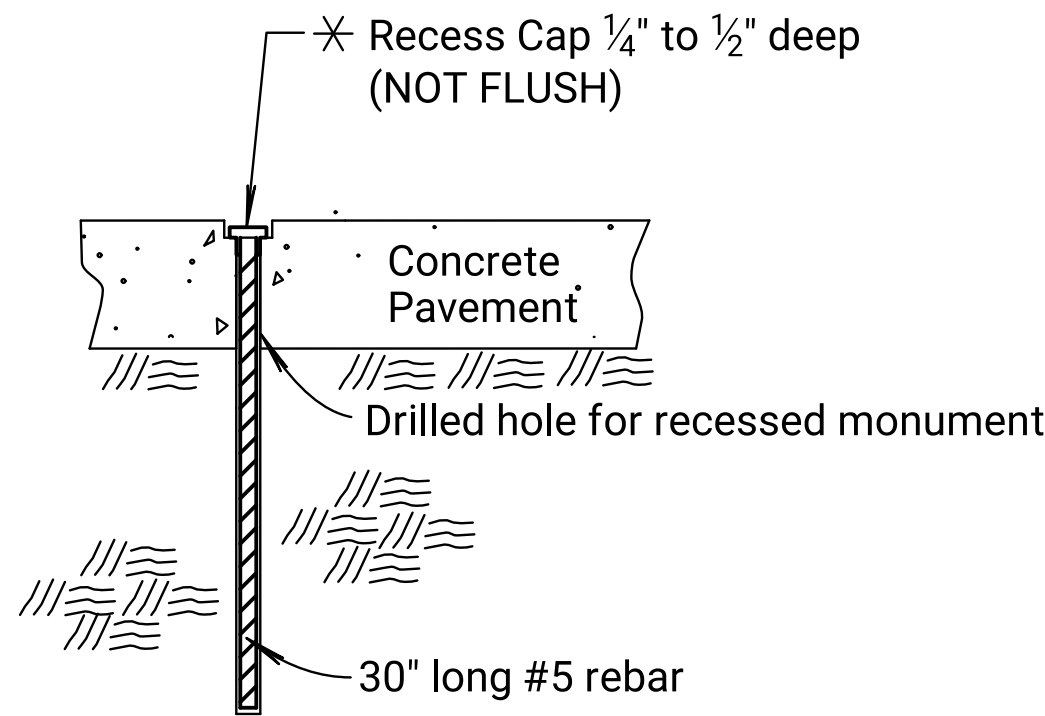


TYPE A-2
(Standard Land Corner
Monument Box)

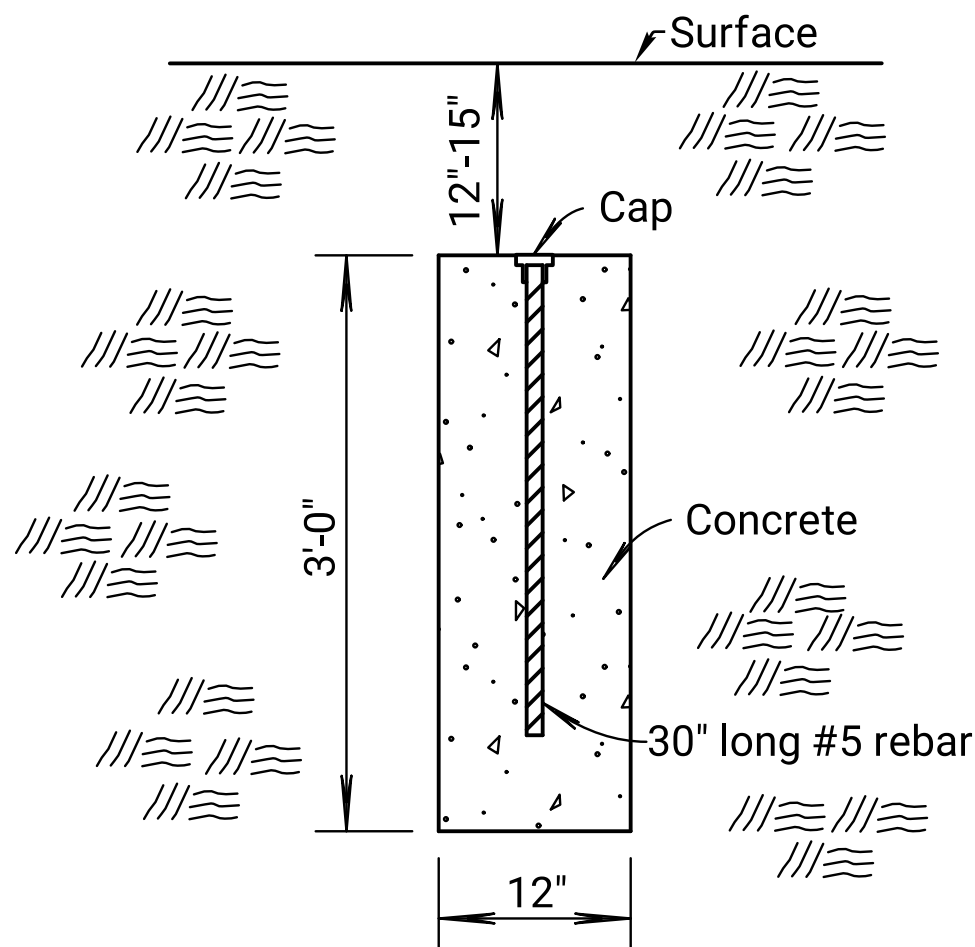


Type B
(Recessed Bar)

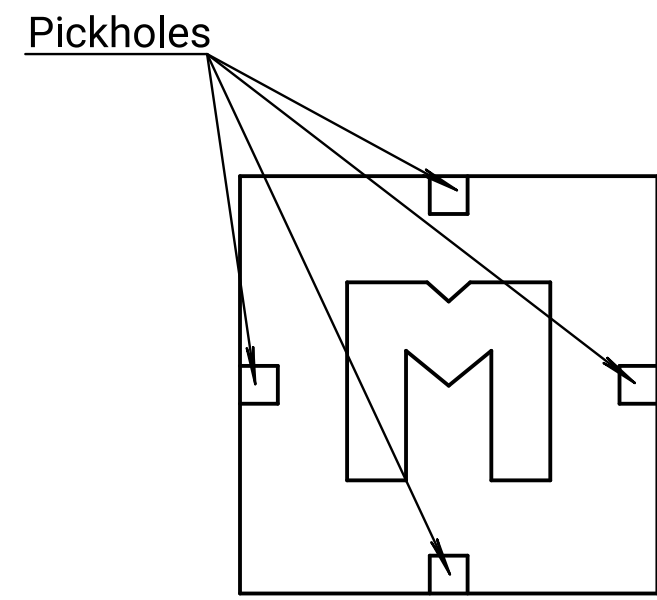
* No Surface Monuments Allowed in Pavement



Type C
(Drilled Hole)

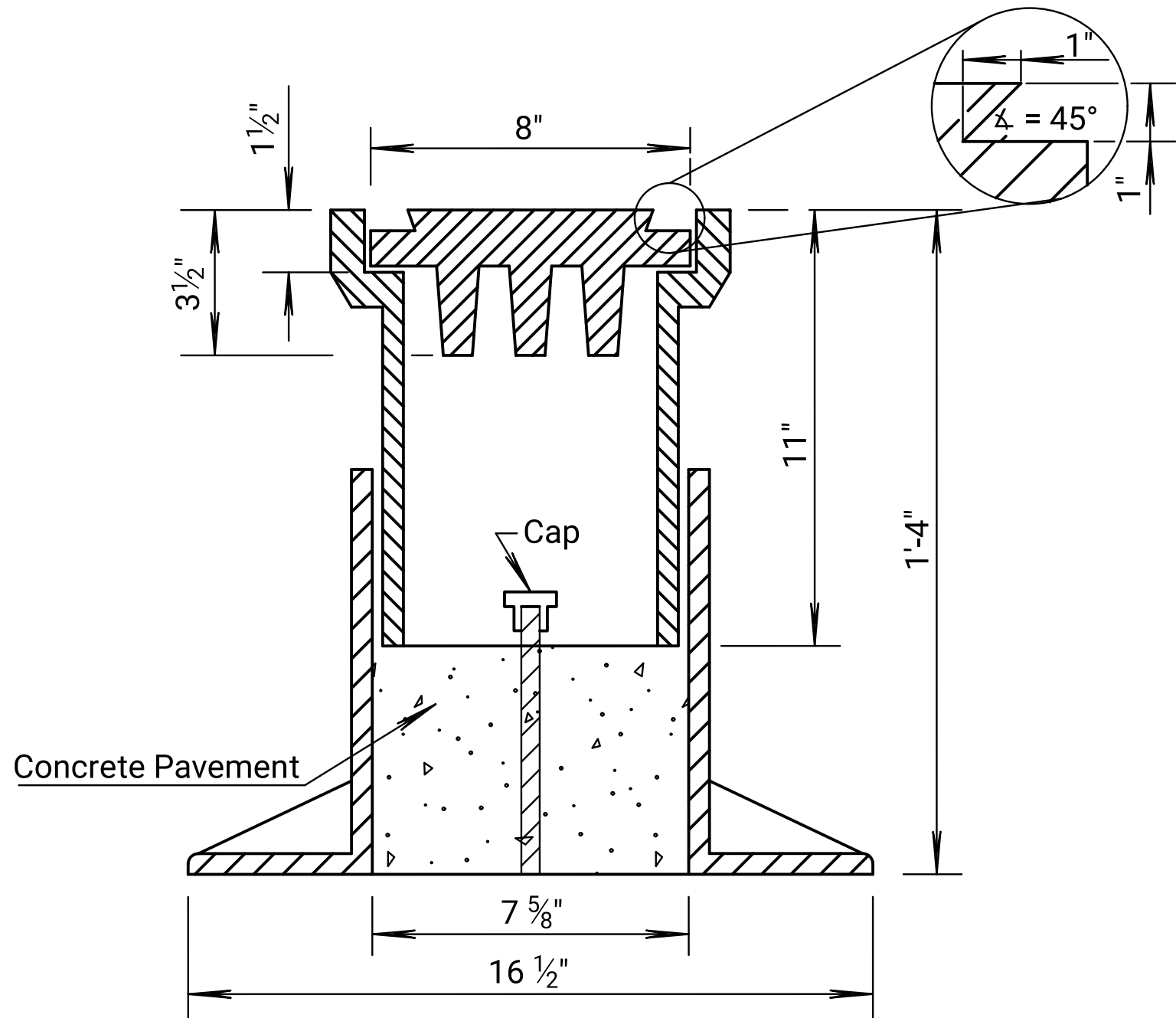


Type D
(Shoulder/Ditch Subsurface
Monument)



MONUMENT BOX LID (PLAN VIEW)

Not to Scale



ADJUSTABLE MONUMENT BOX DETAIL

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	9	100

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.

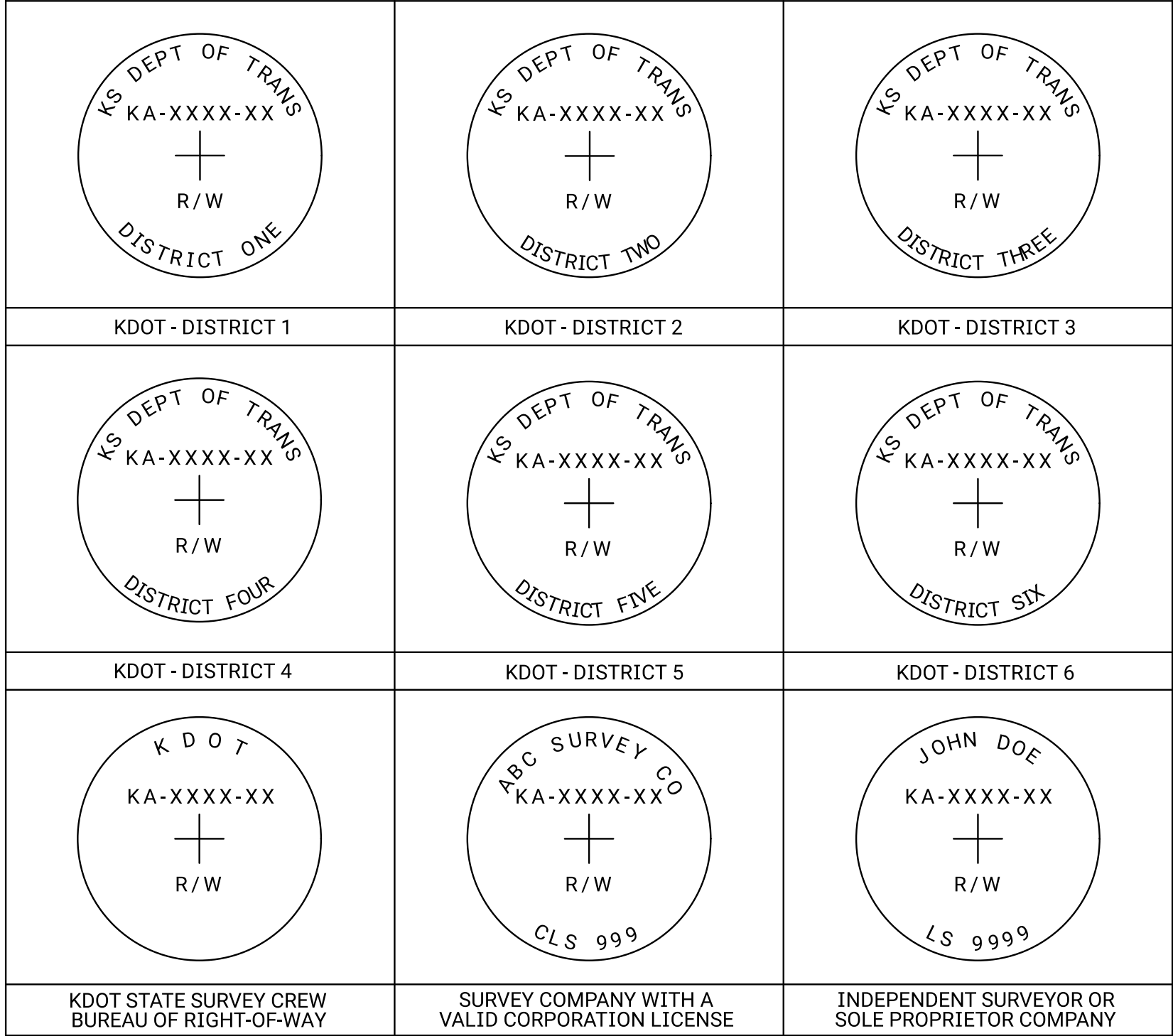
04	08-24-18	Rev. Det. Mon. Box AND Rev. Gen. Note	A.L.R.	T.T.R.
03	01-15-16	Add. Det. Retrofit & Rev. Gen. Note	T.T.R.	S.W.K.
02	10-17-13	Revised Detail, Recessed Bar	S.W.K.	J.O.B.

NO.	DATE	REVISIONS	BY	APPD
-----	------	-----------	----	------

KANSAS DEPARTMENT OF TRANSPORTATION				
SECTION CORNER MONUMENTATION DETAIL SHEET				
RD990				
FHWA APPROVAL		08-07-19	APPD.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

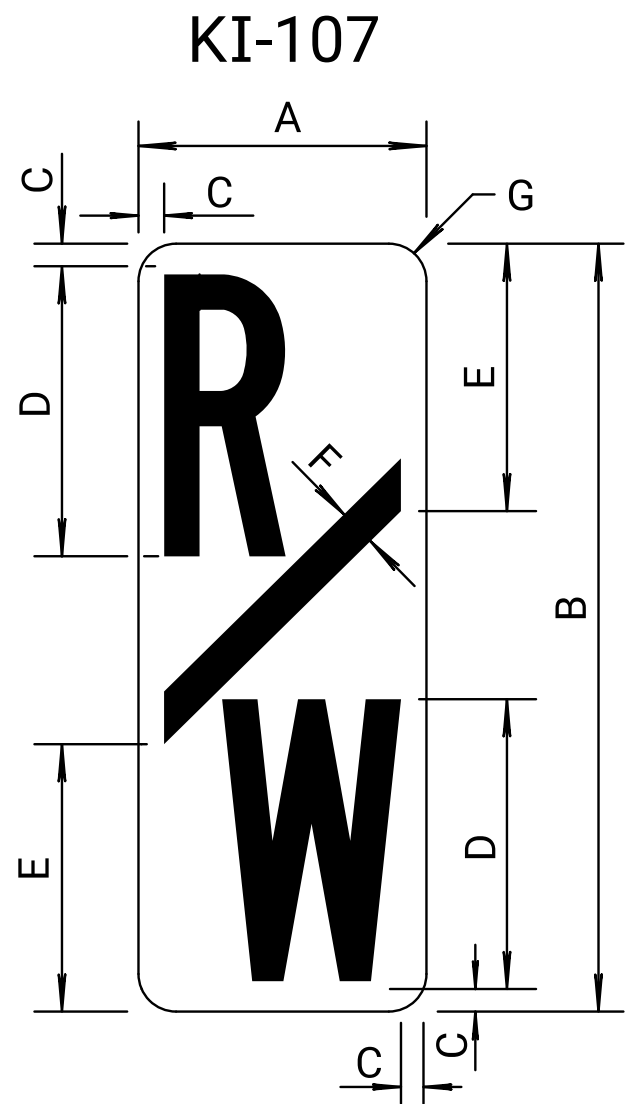
EXHIBIT

2" DIA. PRE-STAMPED ALUMINUM CAPS



NOTES:

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

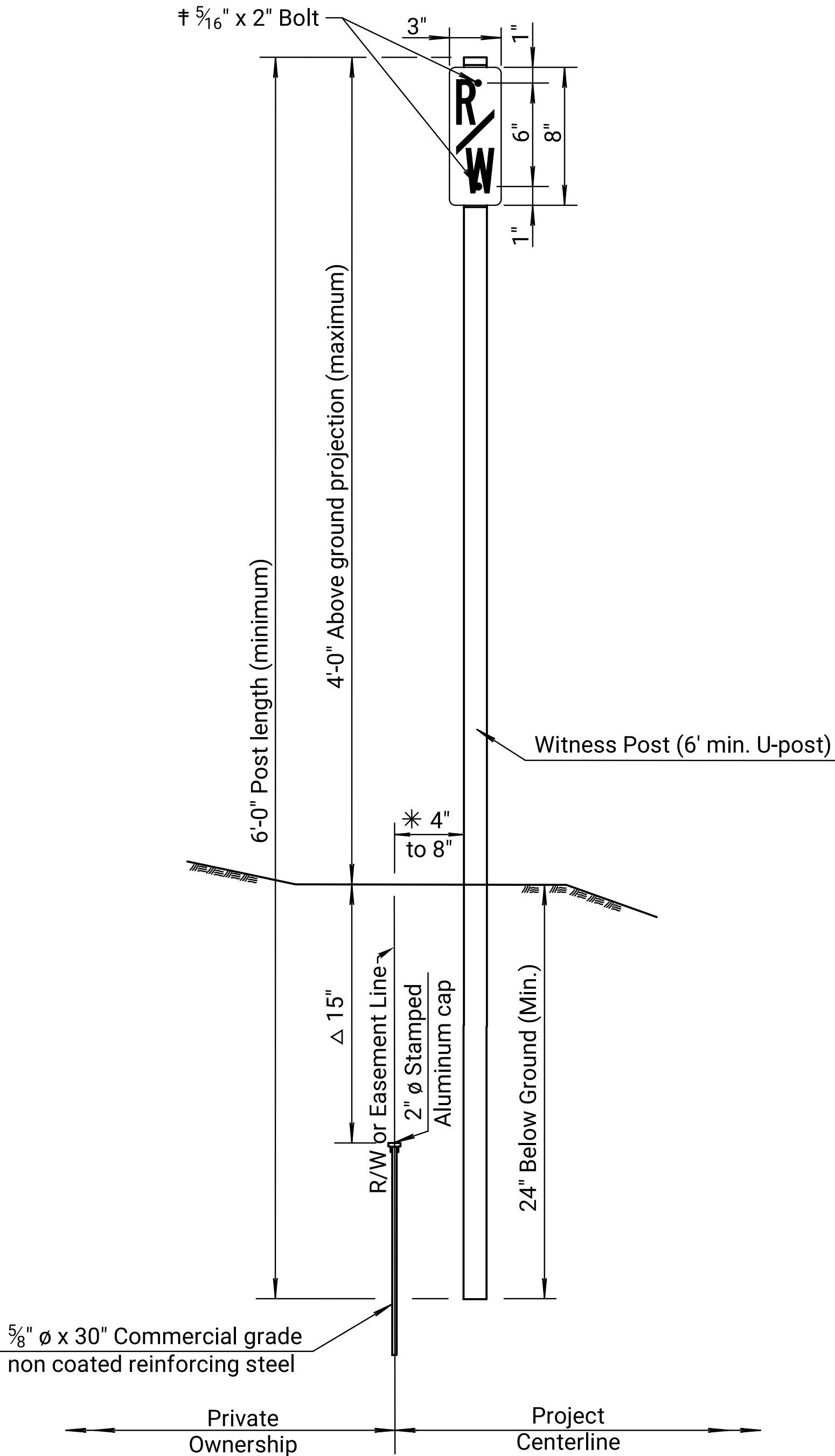


COLORS:

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

A	B	C	D	E	F	G
3"	8"	$\frac{1}{4}"$	3"	$2\frac{3}{4}"$	$\frac{3}{8}"$	$\frac{3}{8}"$

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.

[illegible][illegible]

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.
NO.	DATE	REVISIONS	BY	APP'D

NO.	DATE	REVISIONS	BY	APP'D
-----	------	-----------	----	-------

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.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	11	100

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.

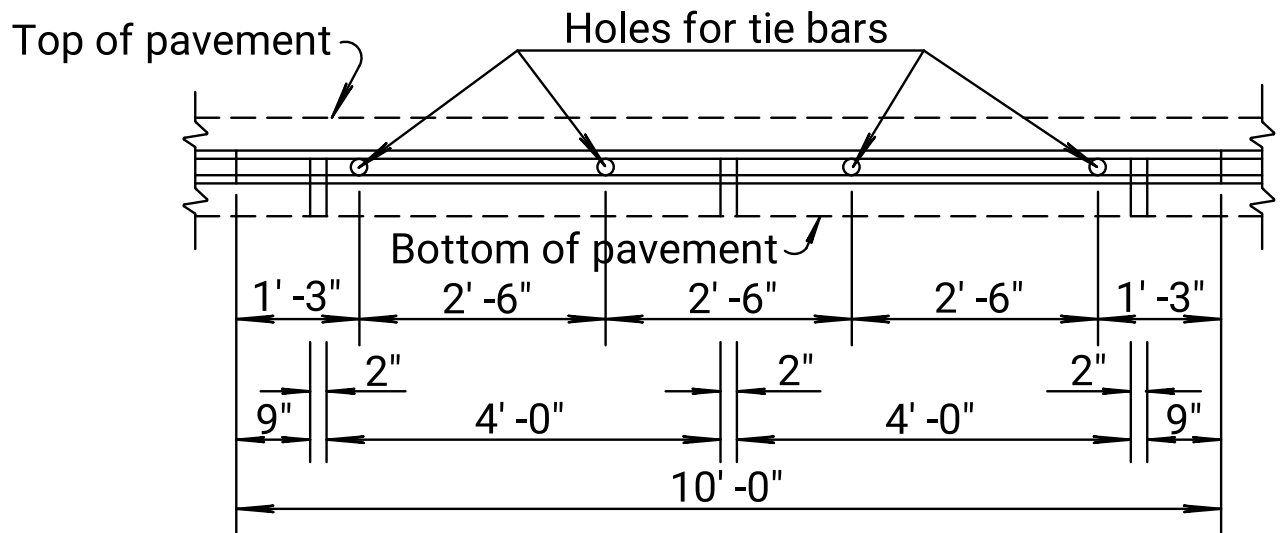
At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.

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.

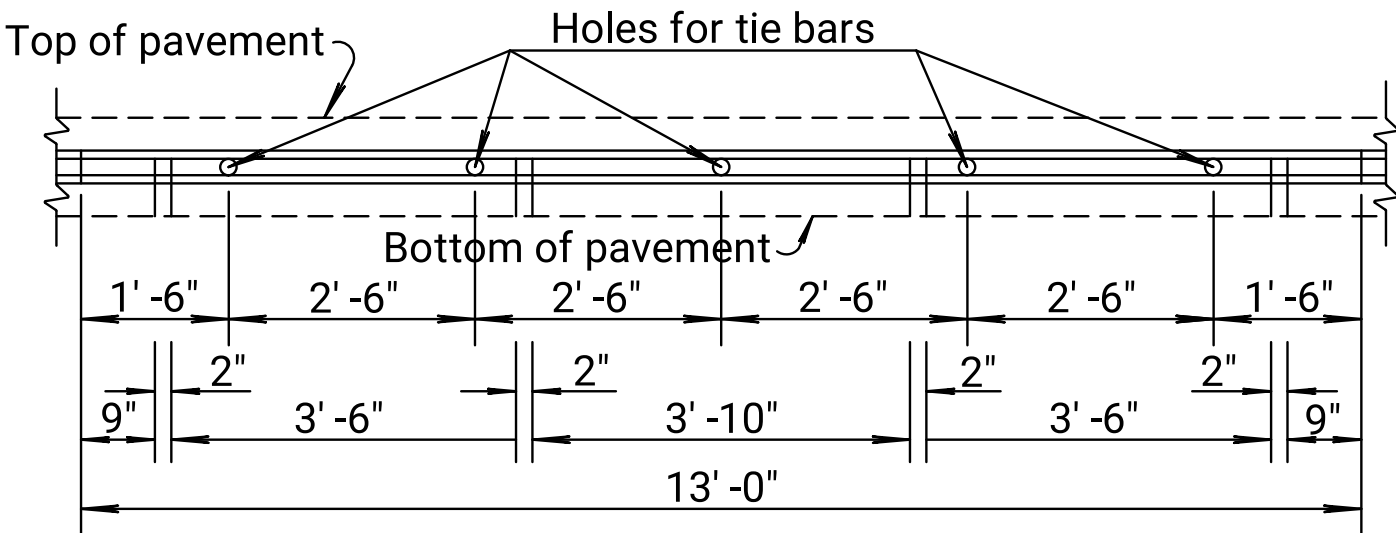
All materials and work required for this construction shall be subsidiary to the concrete approach slab.

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



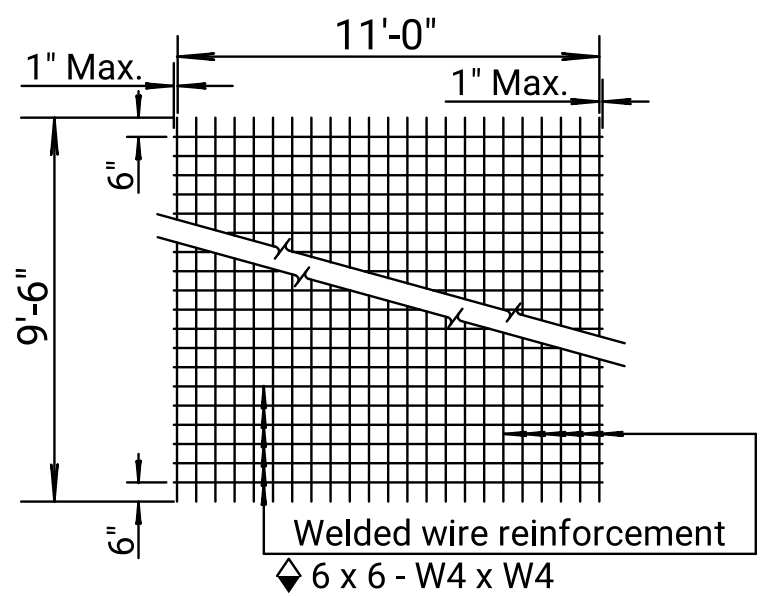
To be used only against forms. Shall not extend through contraction joints.

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



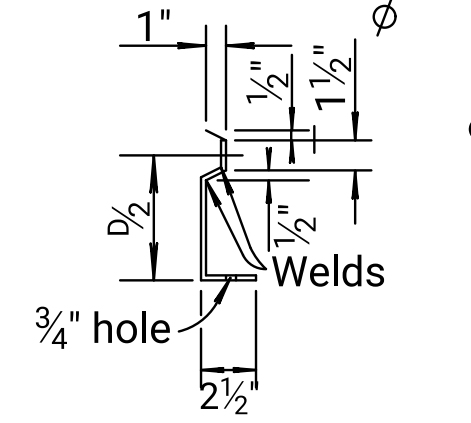
To be used only against forms. Shall not extend through contraction joints.

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



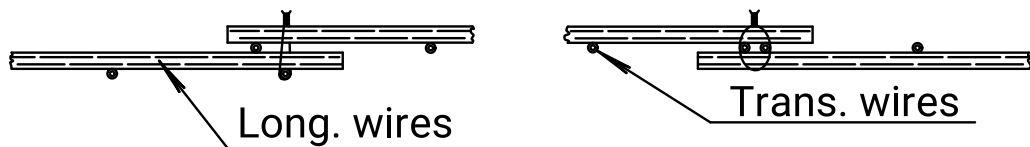
TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

◆ 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

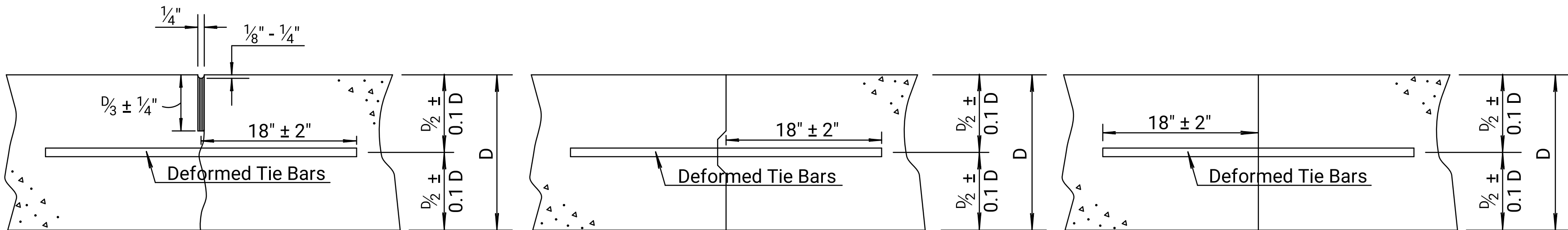
∅ Snap-in leg or other approved designs may be used in lieu of welded leg.



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.



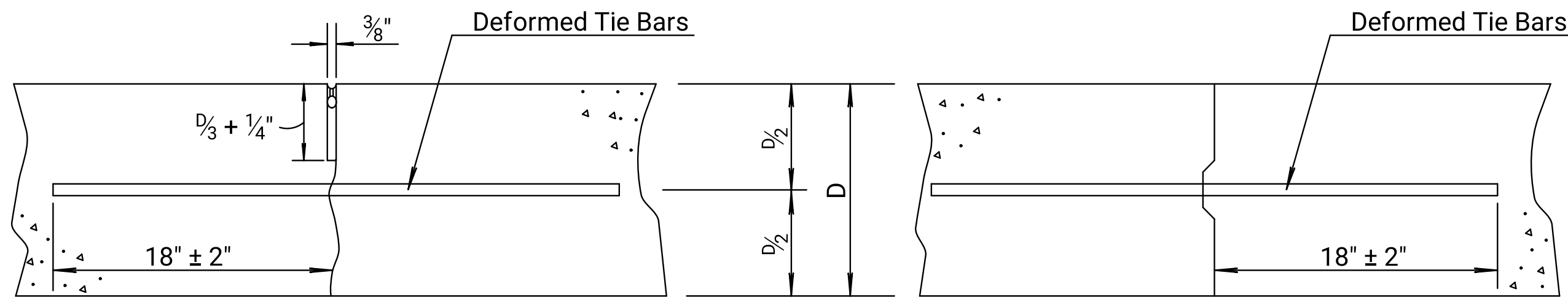
Tied Non-Keyed

Tied Keyed Construction

Tied Butt Construction

LONGITUDINAL JOINTS

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



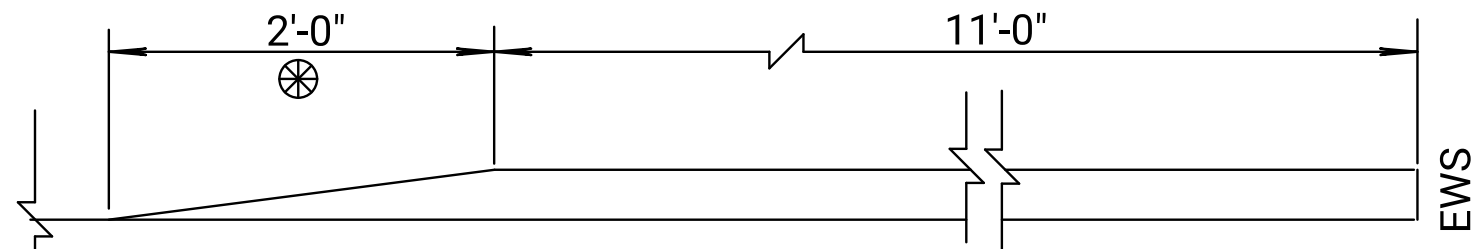
Monolithic Pour

Construction Joint

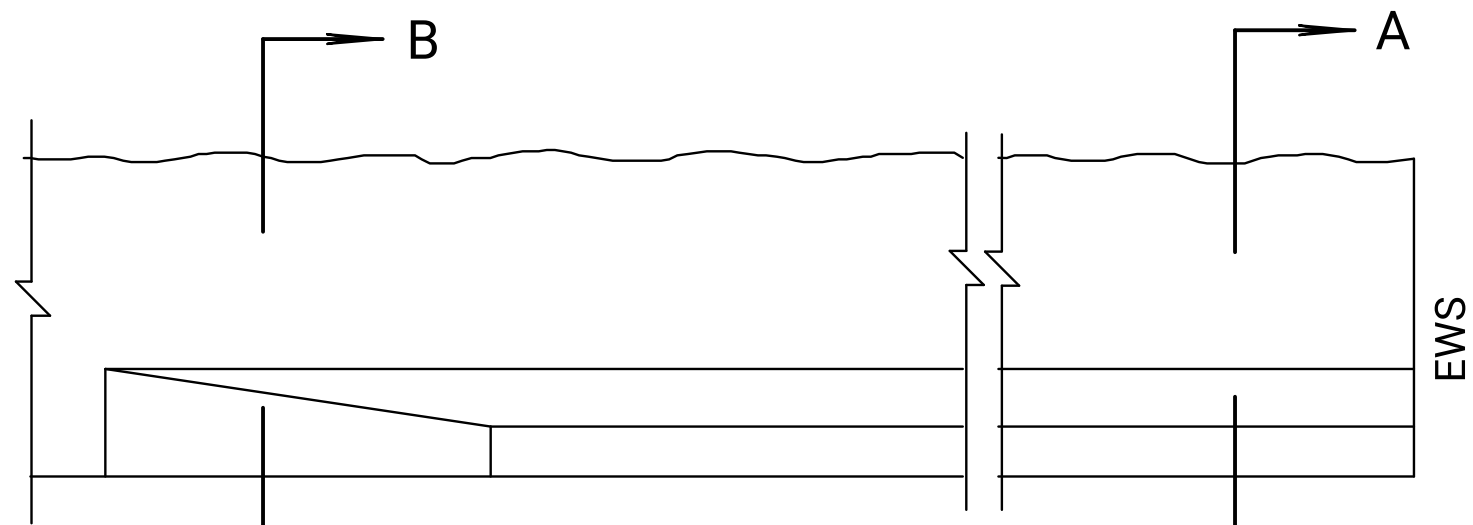
TRANSVERSE JOINTS

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

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

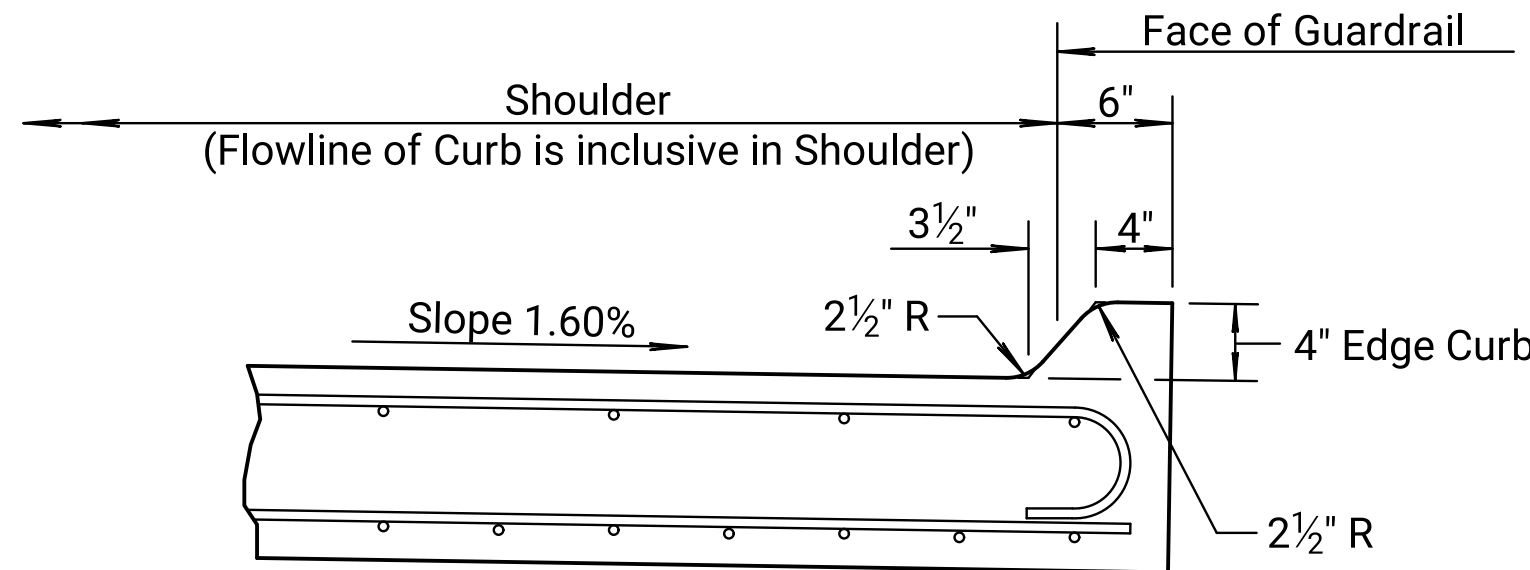


ELEVATION

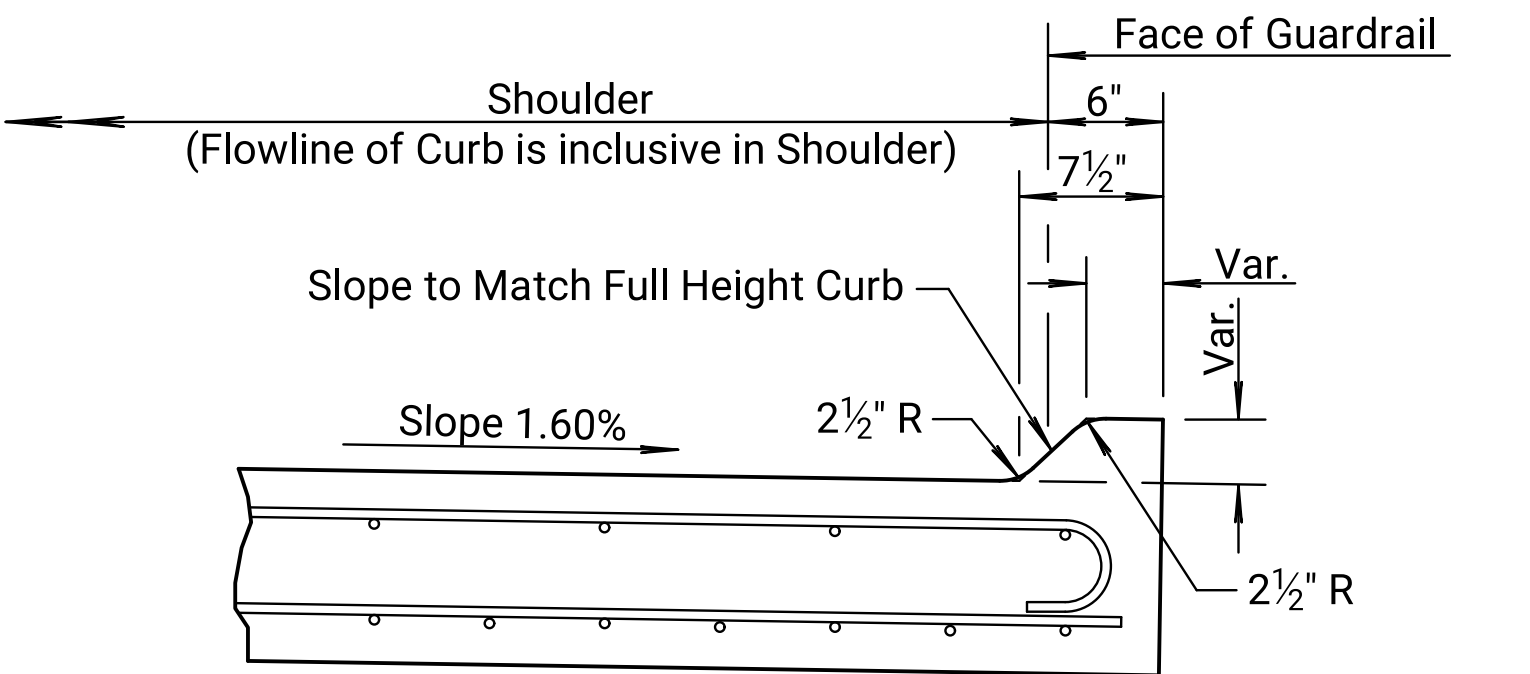


PLAN VIEW

4" EDGE CURB DETAIL



SECTION A-A



SECTION B-B

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.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
MISCELLANEOUS DETAILS FOR CONCRETE BRIDGE APPROACH PAVEMENT				
RD711				
FHWA APPROVAL 10-23-13 APPD. James O. Brewer				
DESIGNED	QUANTITIES	TRACED		
DESIGN CK.	DETAIL CK.	QUAN. CK.		

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.

Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 14:12
File : KA-6484-01rss712.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	12	100

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.

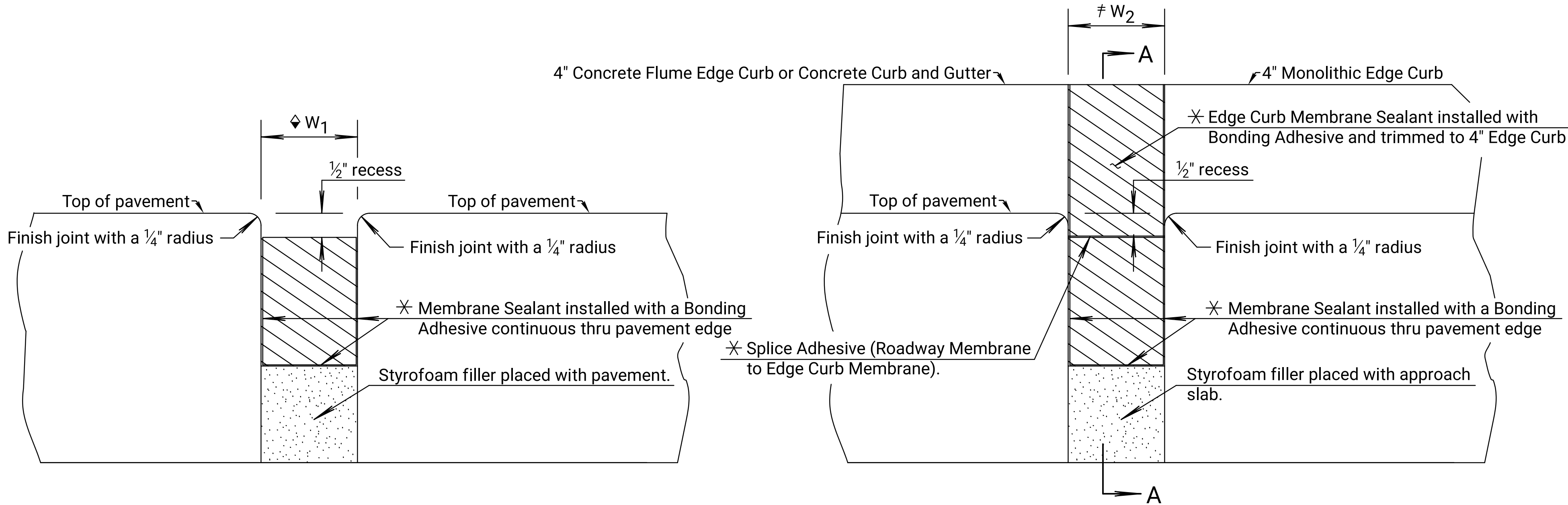
♦ PRESSURE RELIEF JOINT WIDTH DETAILS (W₁)

ψ Temperature (F°)	40°	50°	60°	70°	80°	90°	100°
Formed Concrete Opening Size	4.0"	3¾"	3½"	3¼"	3.0"	2¾"	2½"

ψ Average Ambient Temperature over previous 24 hours.

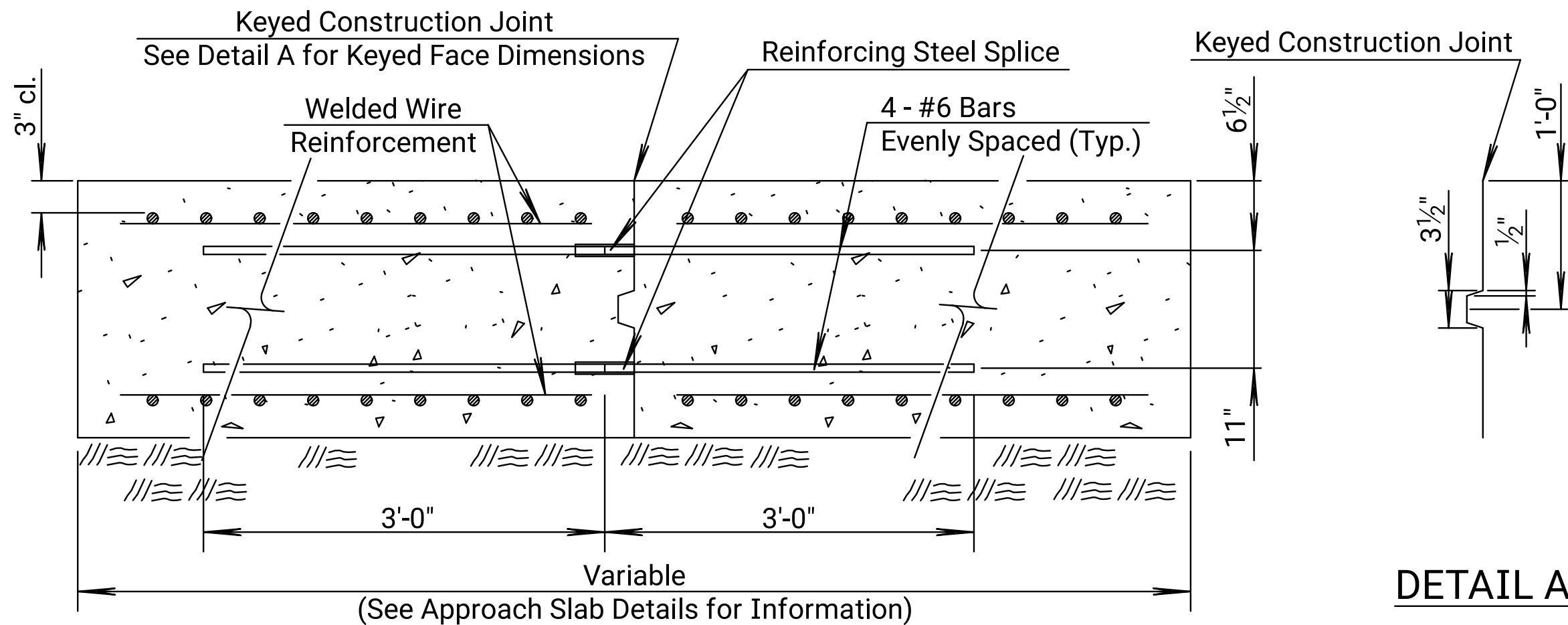
≠ EXPANSION JOINT WIDTH DETAILS (W₂)

See bridge construction layout sheet for details.

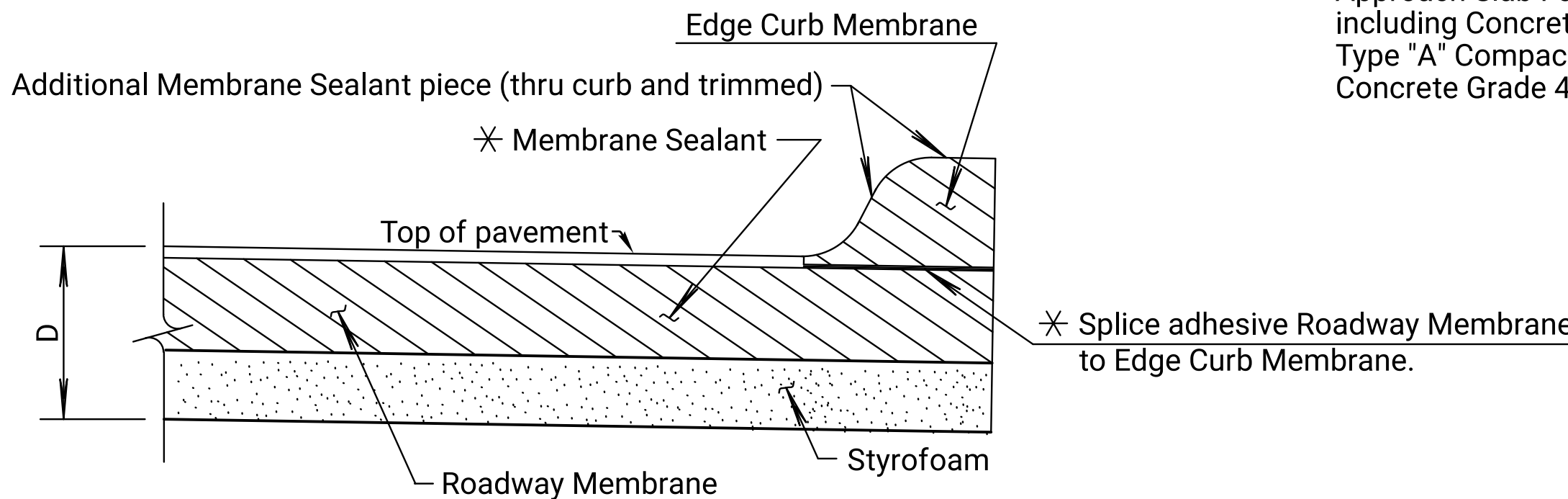


ELEVATION PRESSURE RELIEF JT.

ELEVATION EXPANSION JT.



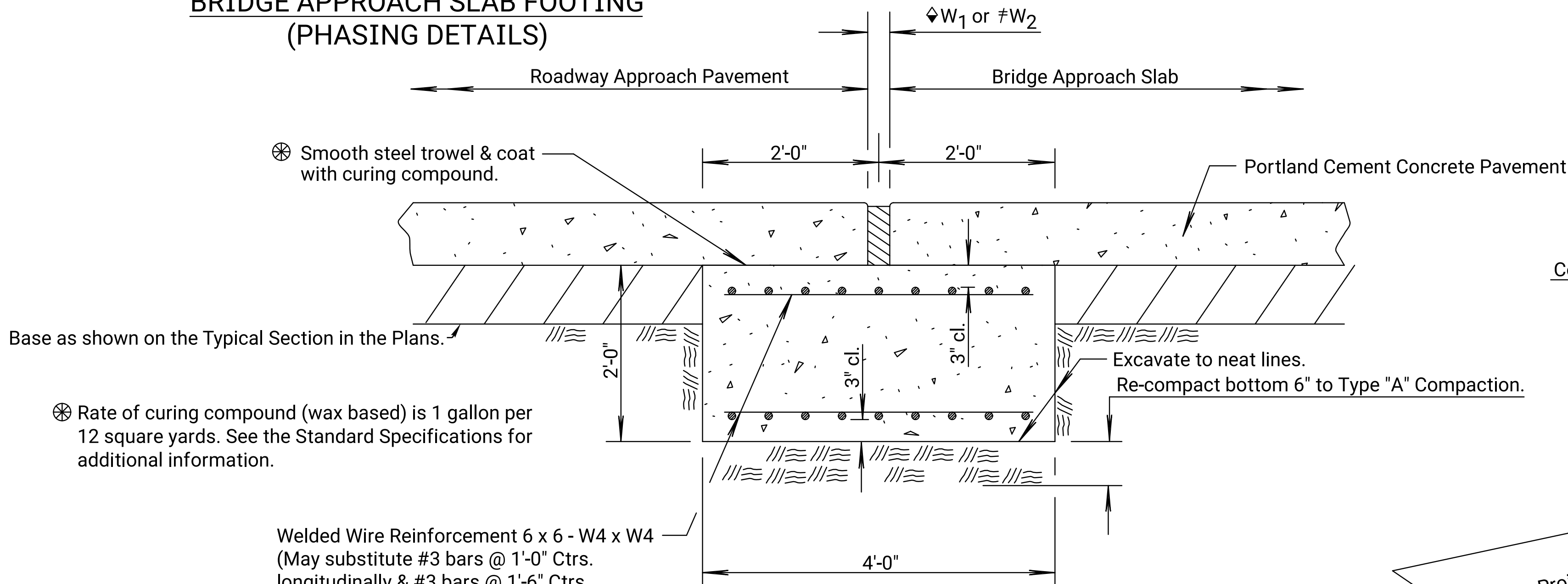
DETAIL A



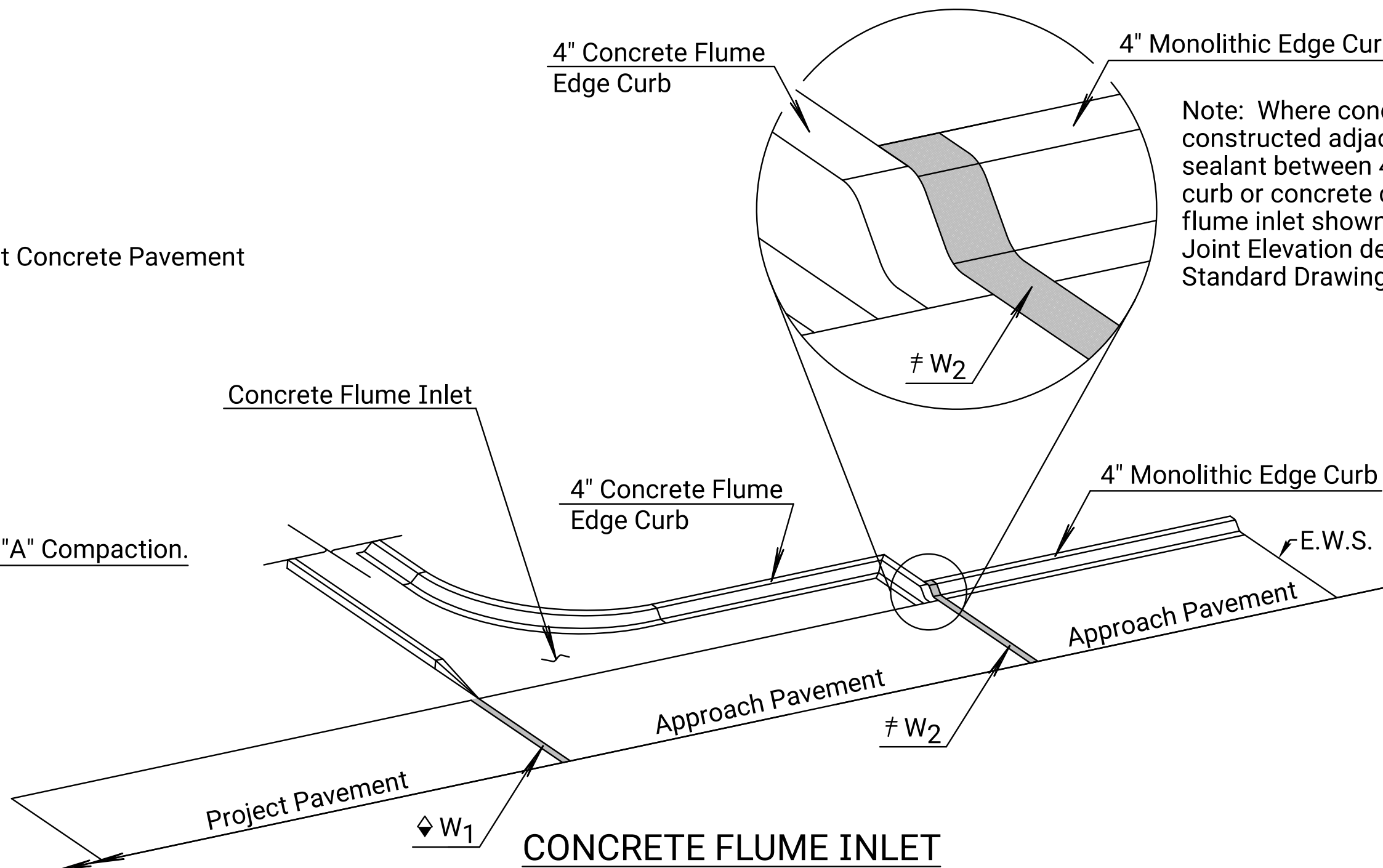
SECTION A-A

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

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

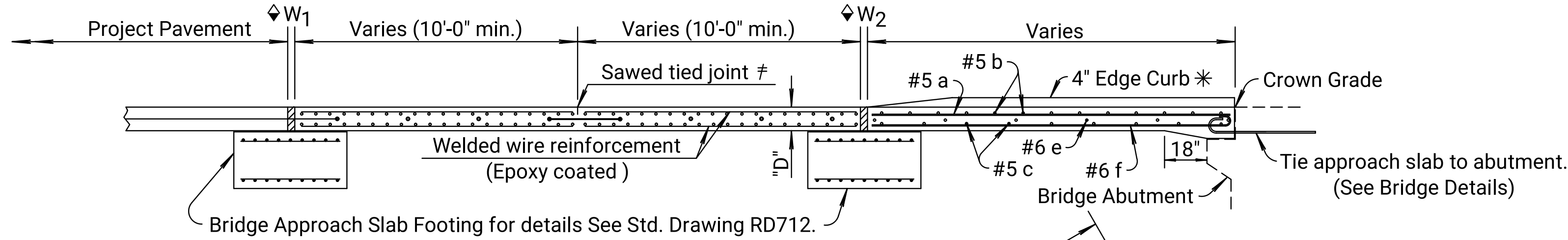
Membrane Sealant

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.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION				
BRIDGE APPROACH SLAB DETAILS EXPANSION/PRESSURE RELIEF JOINT/ BRIDGE APPROACH SLAB FOOTING				
RD712				
FHWA APPROVAL		02-01-16	APPD.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

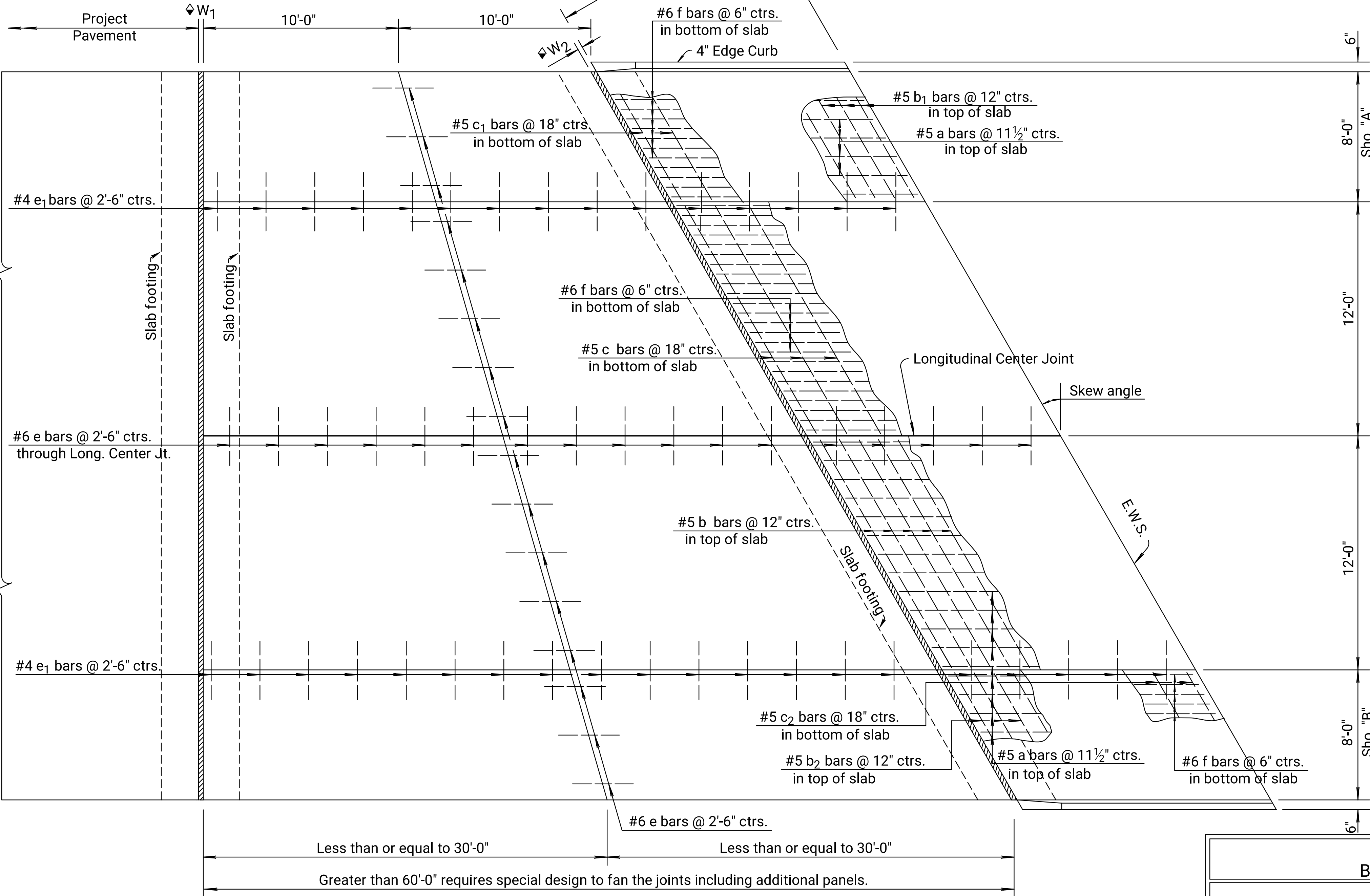
Note to Designer: The designer shall be responsible for designating pavement thickness and computing reinforcing steel and concrete quantities and dimensions necessary to complete this sheet.

Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 14:11
File : KA-6484-01rss714.dgn



LONGITUDINAL SECTION

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



PLAN VIEW

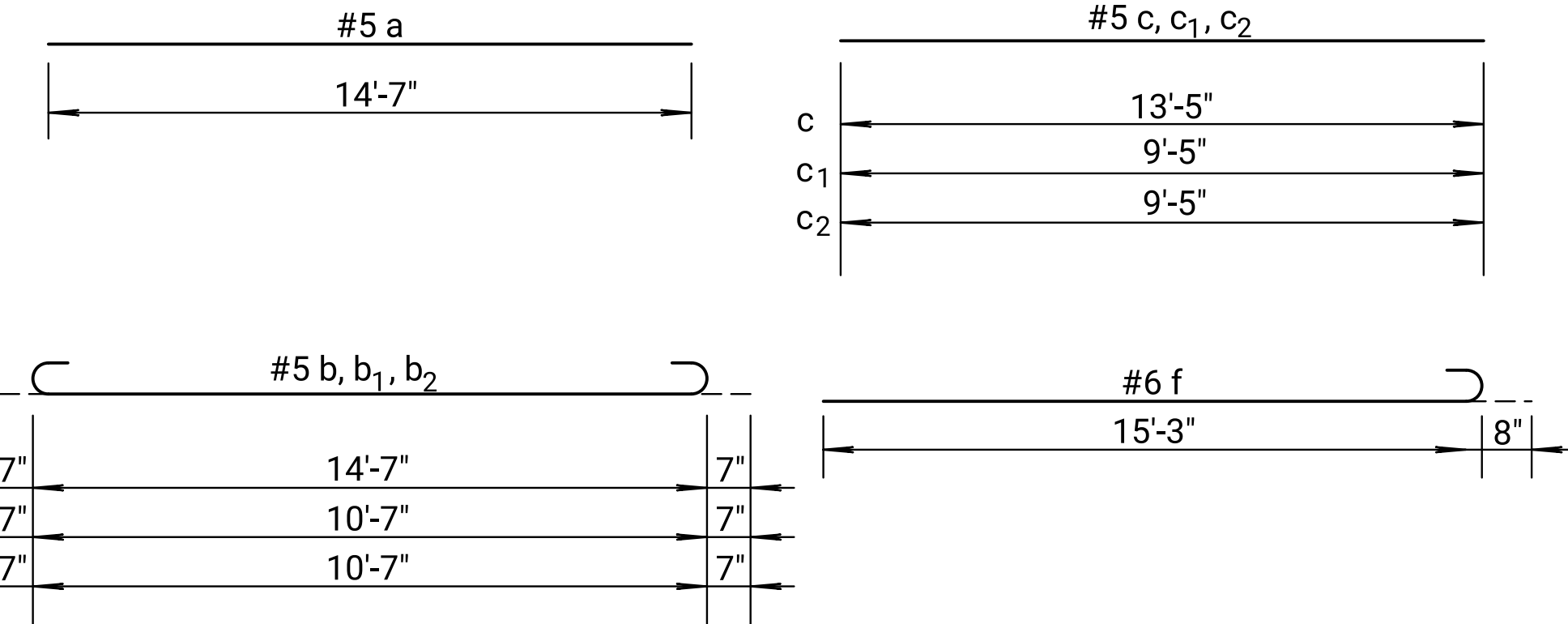
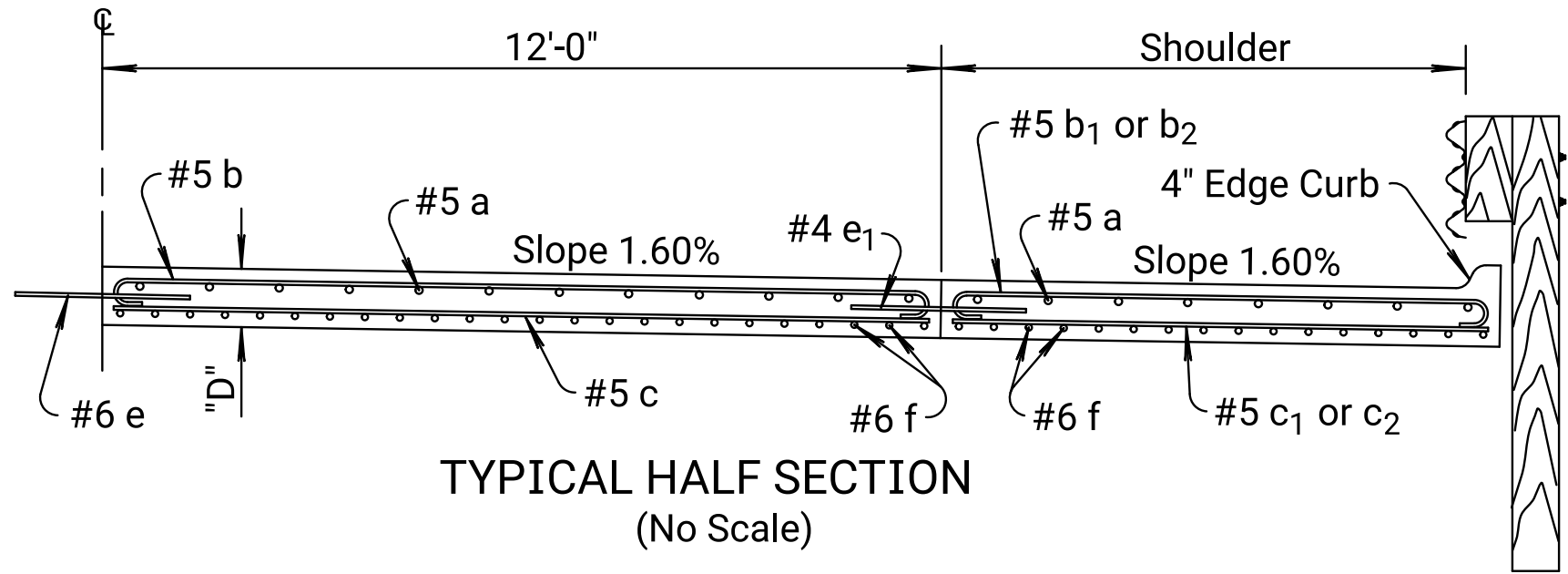
(No Scale)

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

- ⊗ Measured along the Expansion/Pressure Relief Joint.
- * For details of 4" Edge Curb, See Std. Drawing RD711.
- ◆ W₁ and W₂ 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.



BENDING DIAGRAMS

30° Skew BILL OF MATERIALS										
Bar Schedule										
Bar	a	b	b ₁	b ₂	c	c ₁	c ₂	e	e ₁	f
No.	48	30	15	15	20	10	10	36	37	82
Size	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6
Length	14'-7"	14'-7"	10'-7"	10'-7"	13'-5"	9'-5"	9'-5"	3'-0"	3'-0"	15'-3"
Reinforcing Steel (Grade 60) (Epoxy Coated)										4058 lbs.
Concrete Pavement (10" Unif.)(AE)(Br. App.)										208.59 Sq. Yds.
Expansion Jt. Membrane Sealant ⊗										46.19 Lin. Ft.
Pressure Relief Jt. Membrane Sealant										40 Lin. Ft.

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

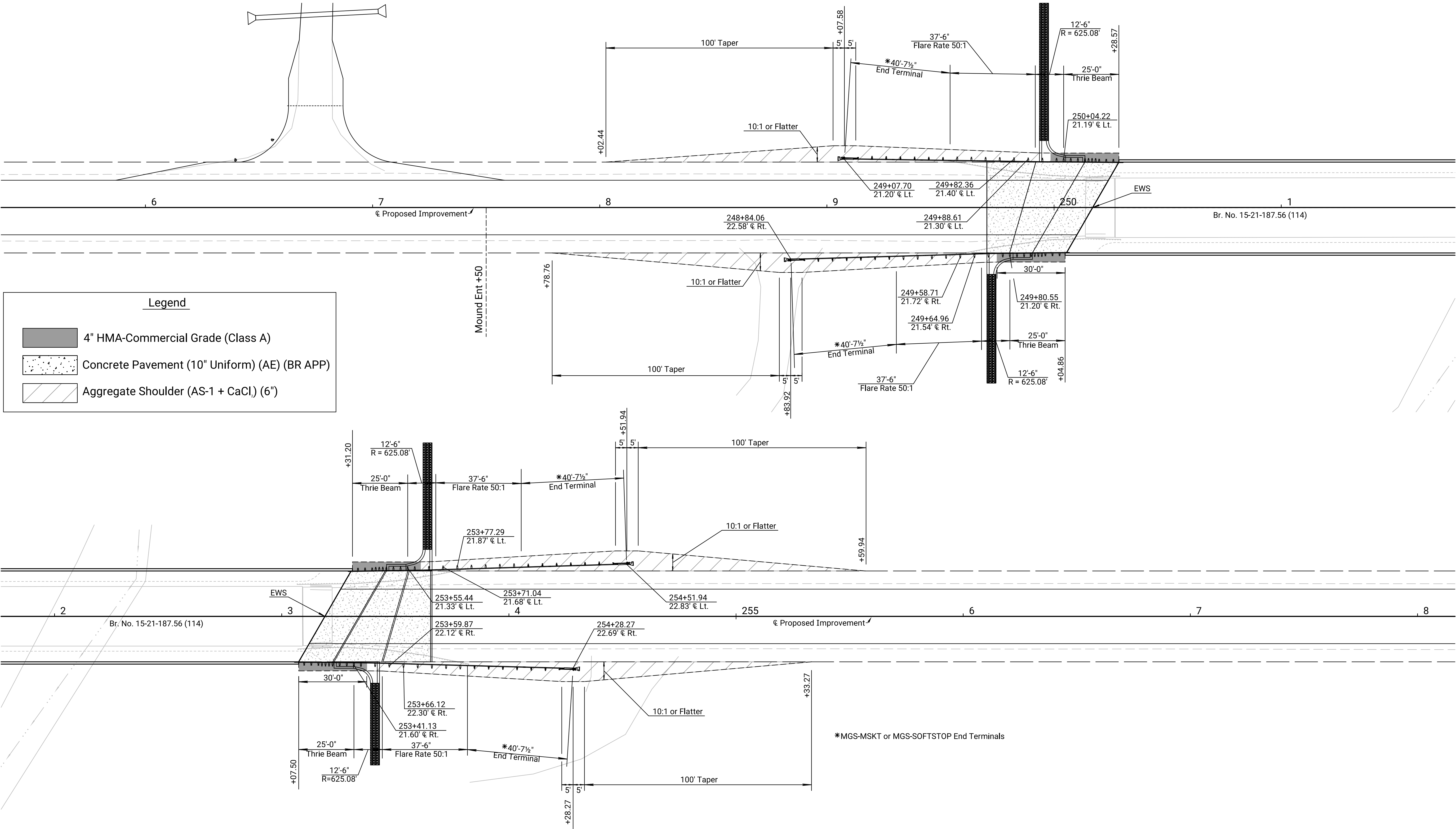
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	13	100

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

KANSAS DEPARTMENT OF TRANSPORTATION				
CONCRETE BRIDGE APPROACH PAVEMENT SKEWED APPROACH				
RD714				
° Skew				
FHWA APPROVAL 05-21-13 APPD. James O. Brewer				
DESIGNED	DETAIL	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	15	100

DATE	
BY	
REFERENCES NOTED	
REFERENCES CHECKED	



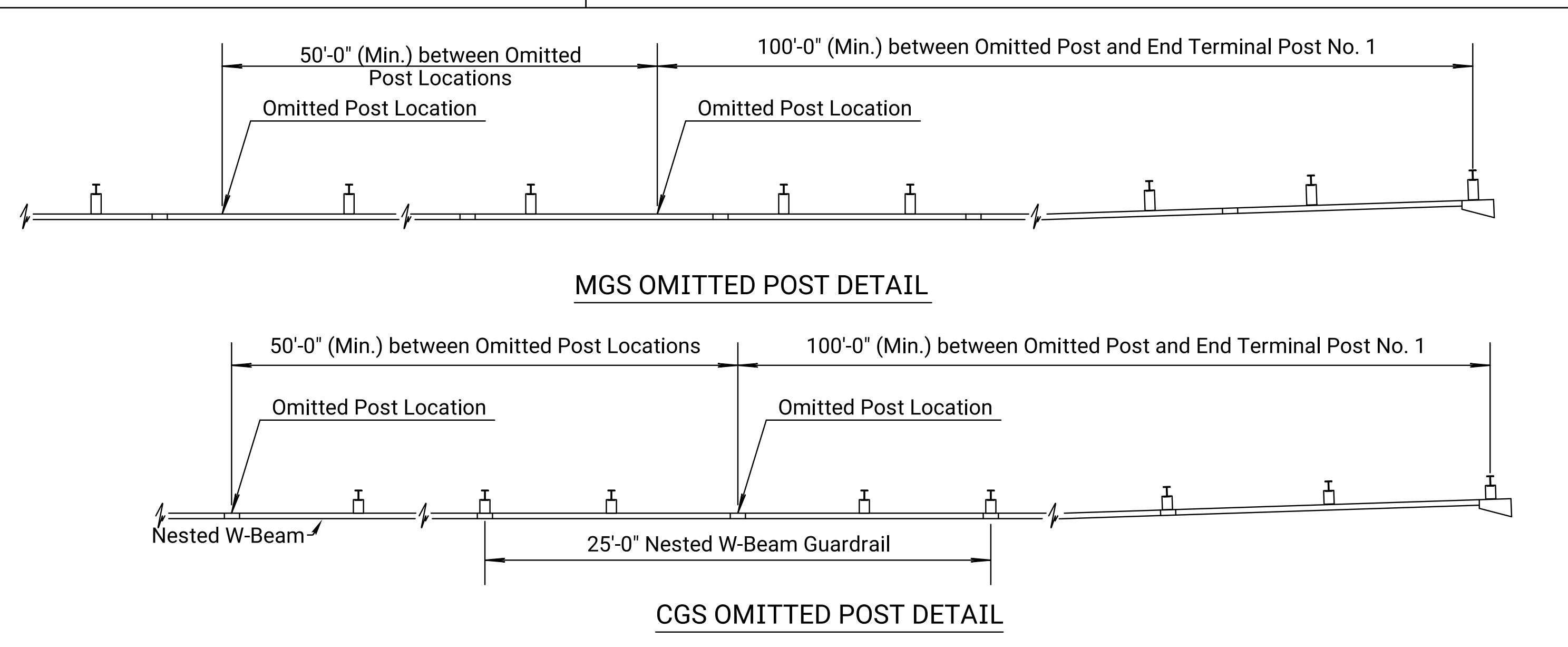
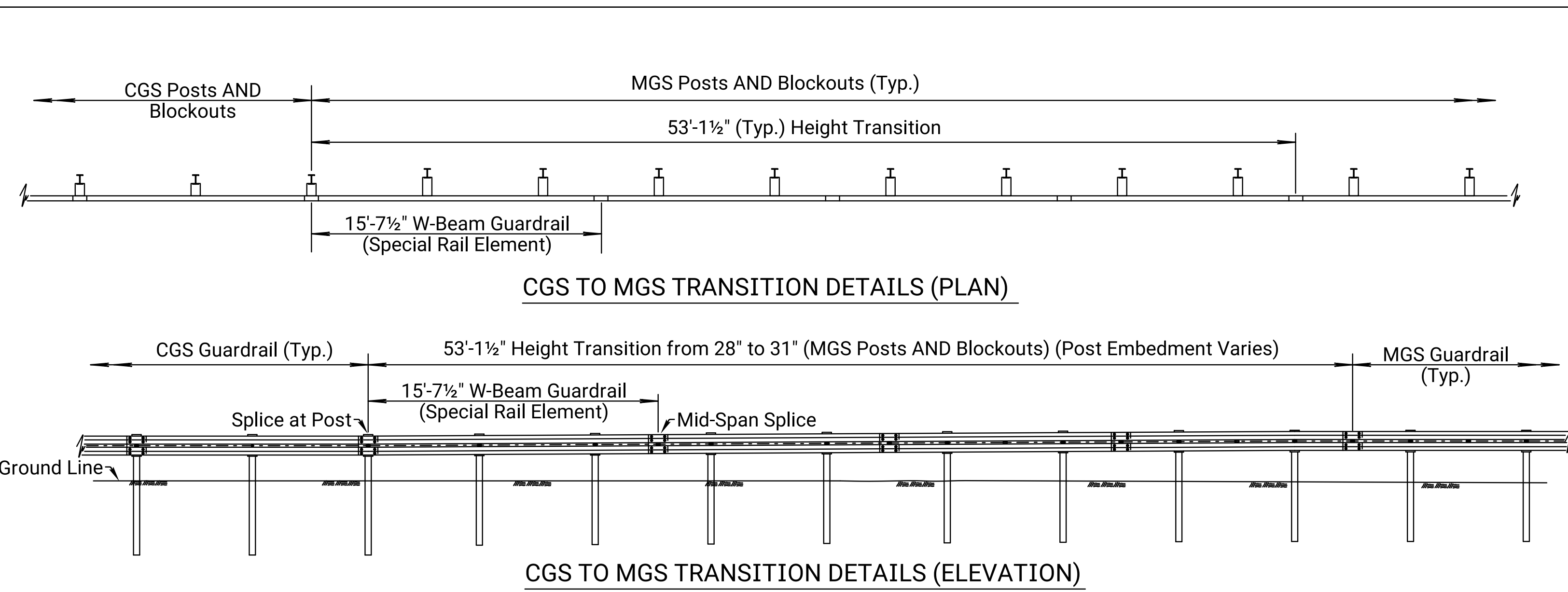
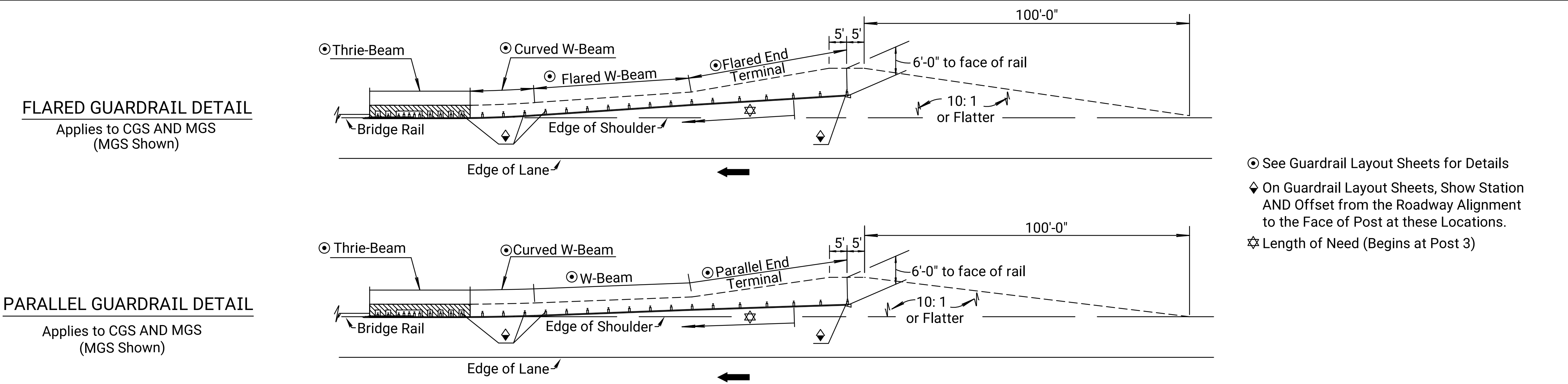
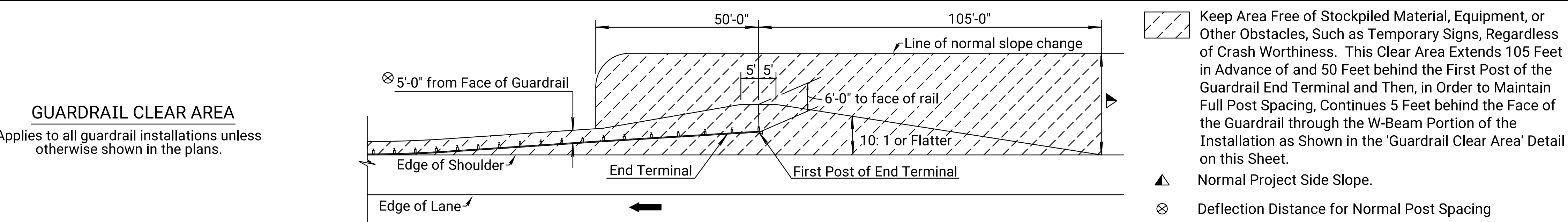
KANSAS DEPARTMENT OF TRANSPORTATION

Guardrail Layout

Plotted by : Chris.Wilkus@ks.gov 8-OCT-2025 22:18
File : KA-6484-01gr-01.dgn

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

Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 14:12
File : KA-6484-01rss606.dgn



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

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	16	100

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

02	09-05-18	ADD. OMITTED POST AND TRANS. DETAILS			A.L.R. T.T.R.
01	06-05-18	INITIAL RELEASE			A.L.R. T.T.R.
NO. DATE		REVISIONS			BY APP'D
KANSAS DEPARTMENT OF TRANSPORTATION					
GUARDRAIL AUXILIARY DETAILS					
RD606					
FHWA APPROVAL		09-25-18	APP'D.		Scott W. King
DESIGNED	DETAILED	QUANTITIES		TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.		TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	17	100

GENERAL NOTES

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

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

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

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

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

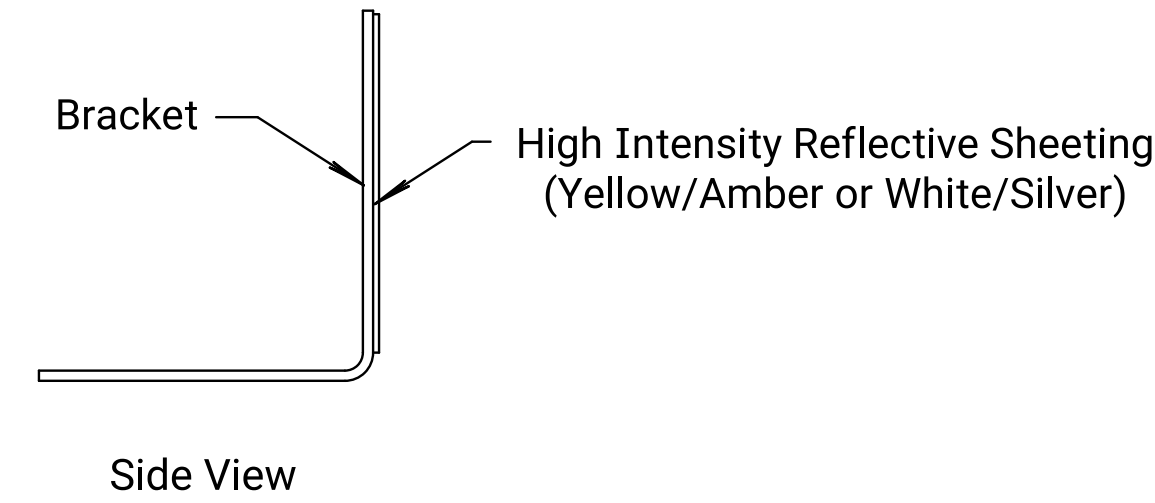
For guardrail located on one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located on the outside edge of one-way or divided roadways, use flexible markers with reflective sheeting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

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

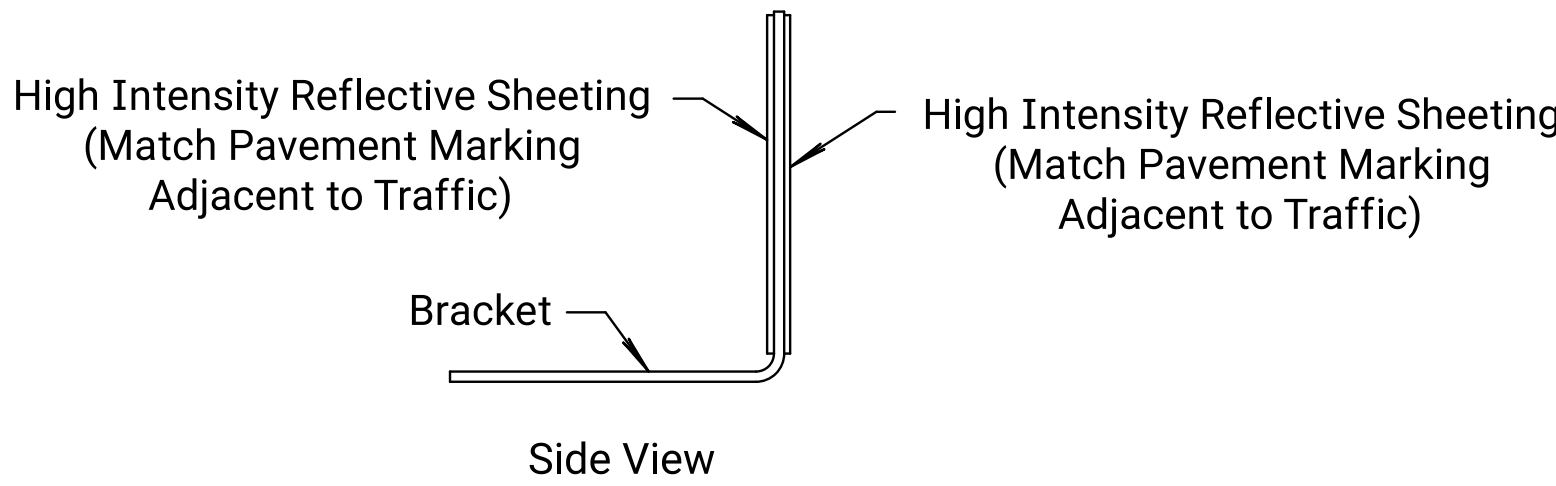
Use zinc or cadmium plated fasteners that comply with Standard Specifications.

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

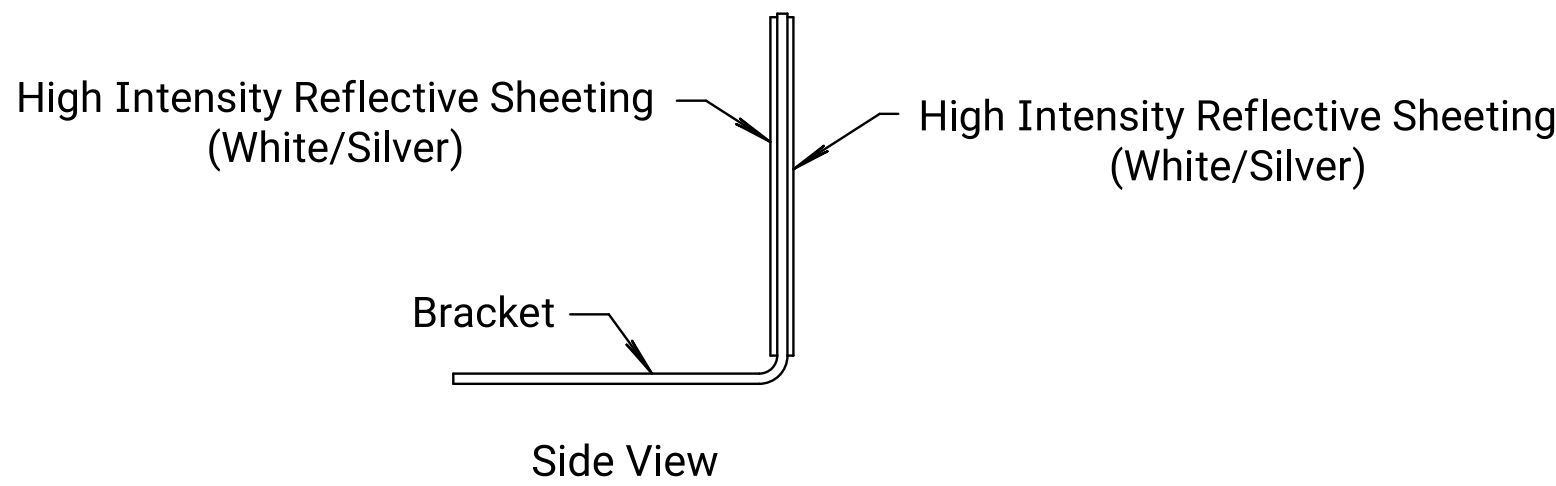
Install flexible markers for the final (permanent) traffic configuration.



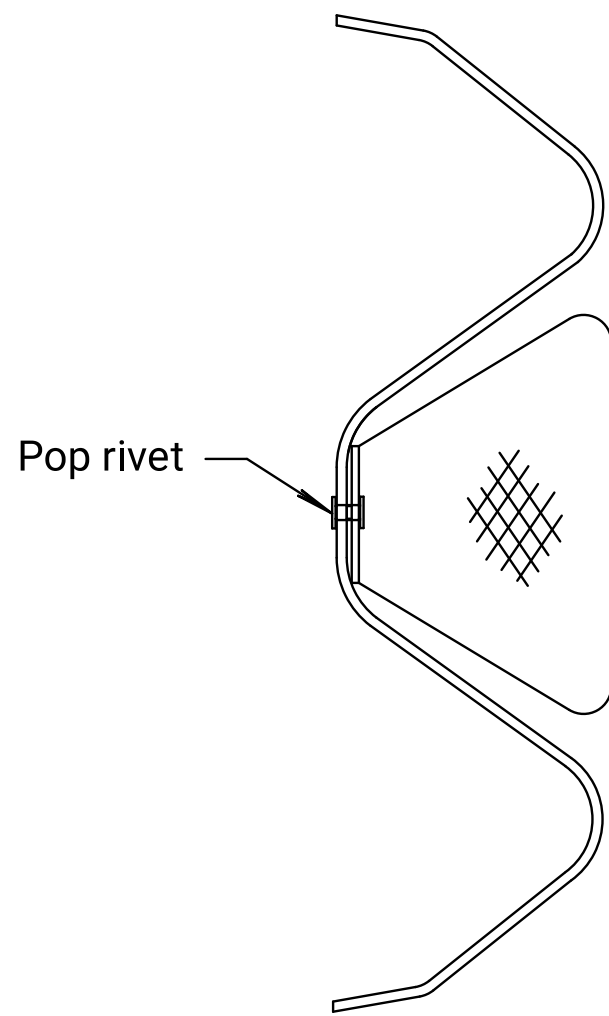
Flexible Marker
One-Way Traffic



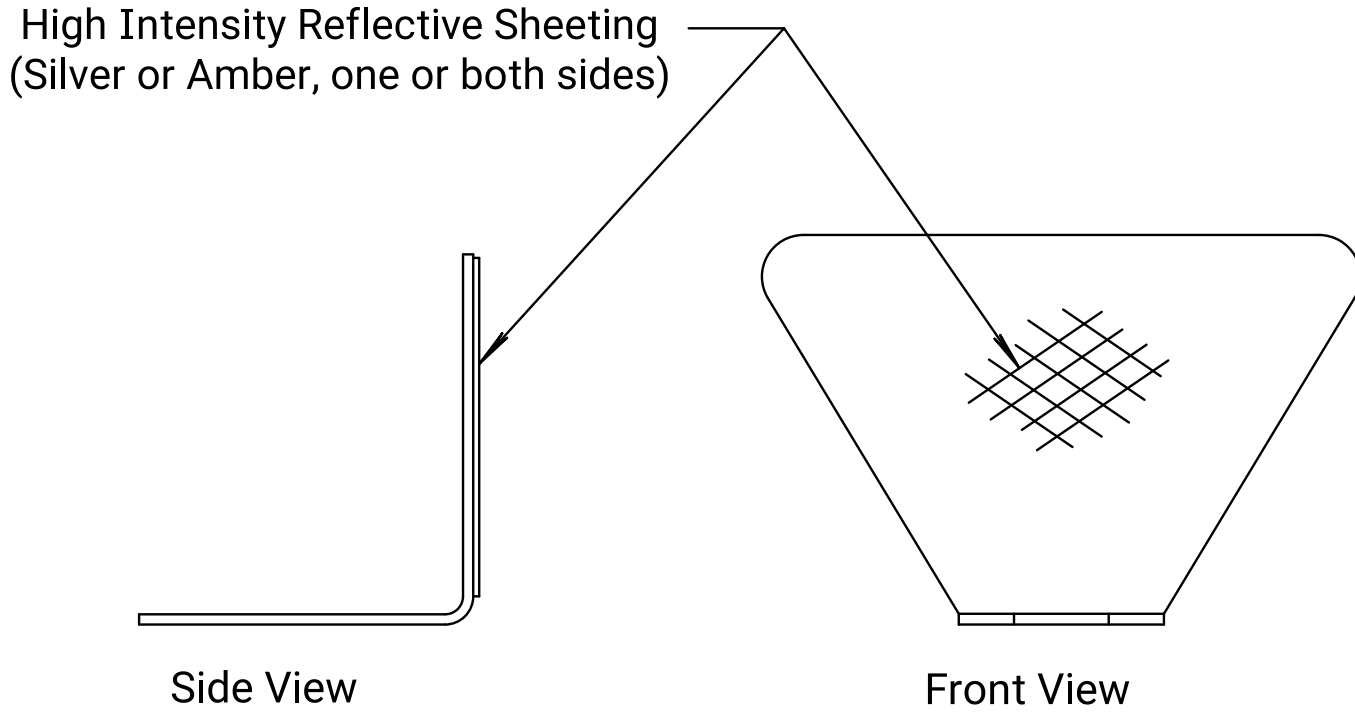
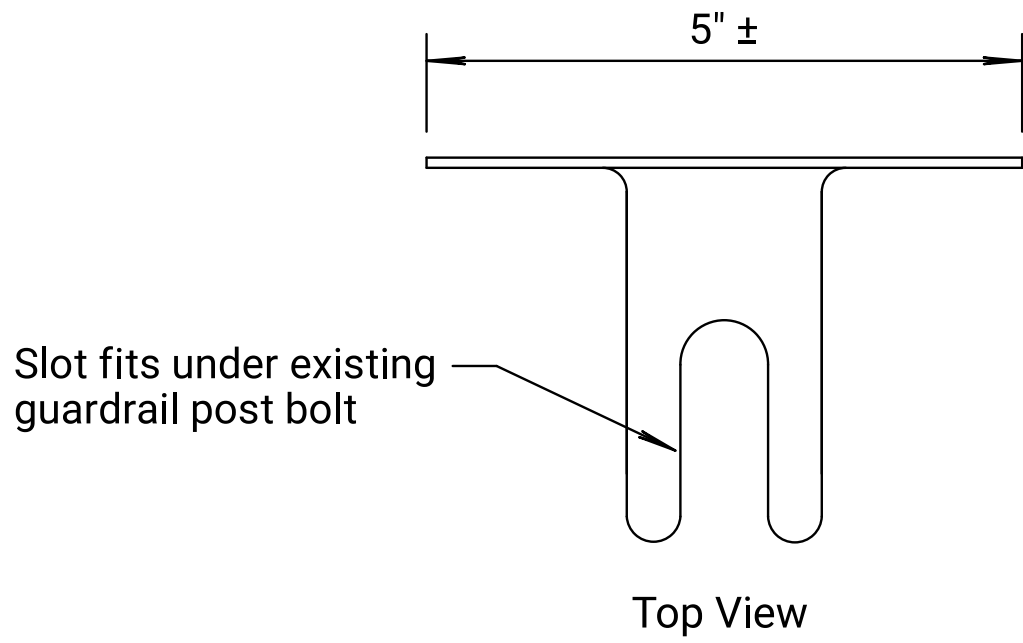
Flexible Marker
Median Locations



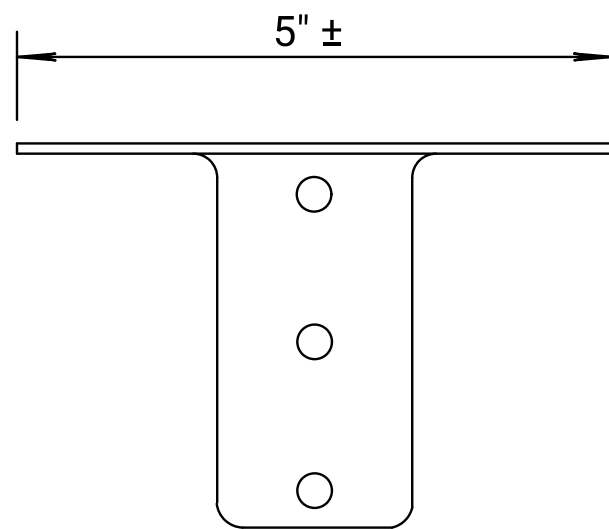
Flexible Marker
Two-Way Traffic



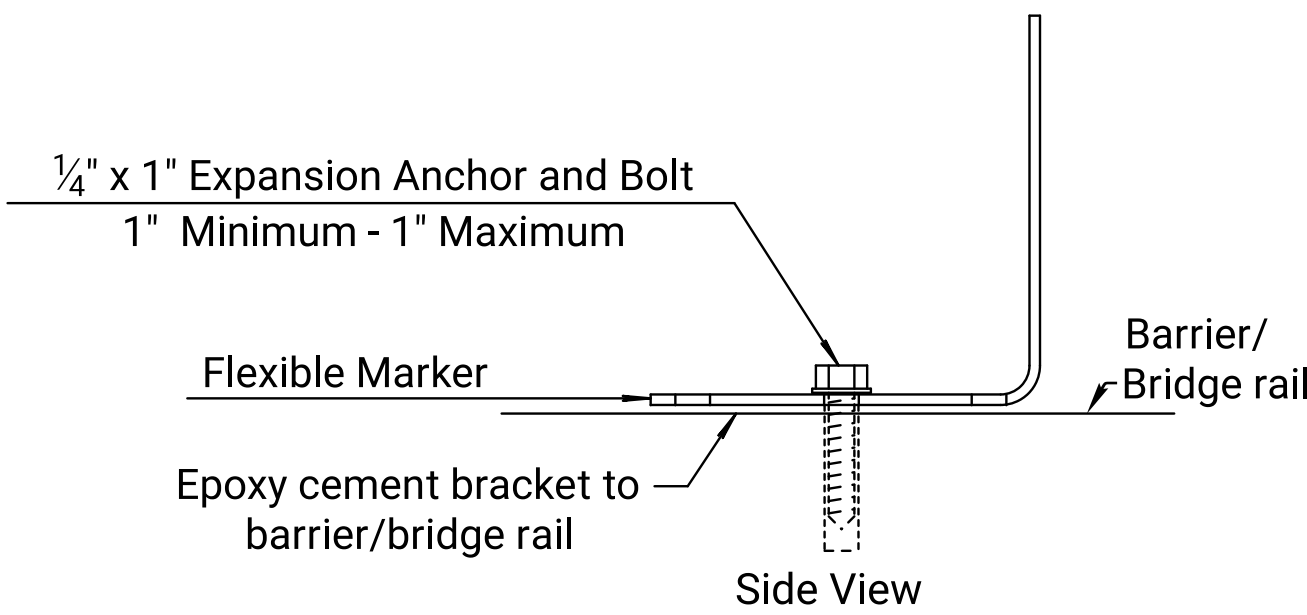
Typical Mounting on W-Beam
Pop rivet attachment to Guardrail when necessary.



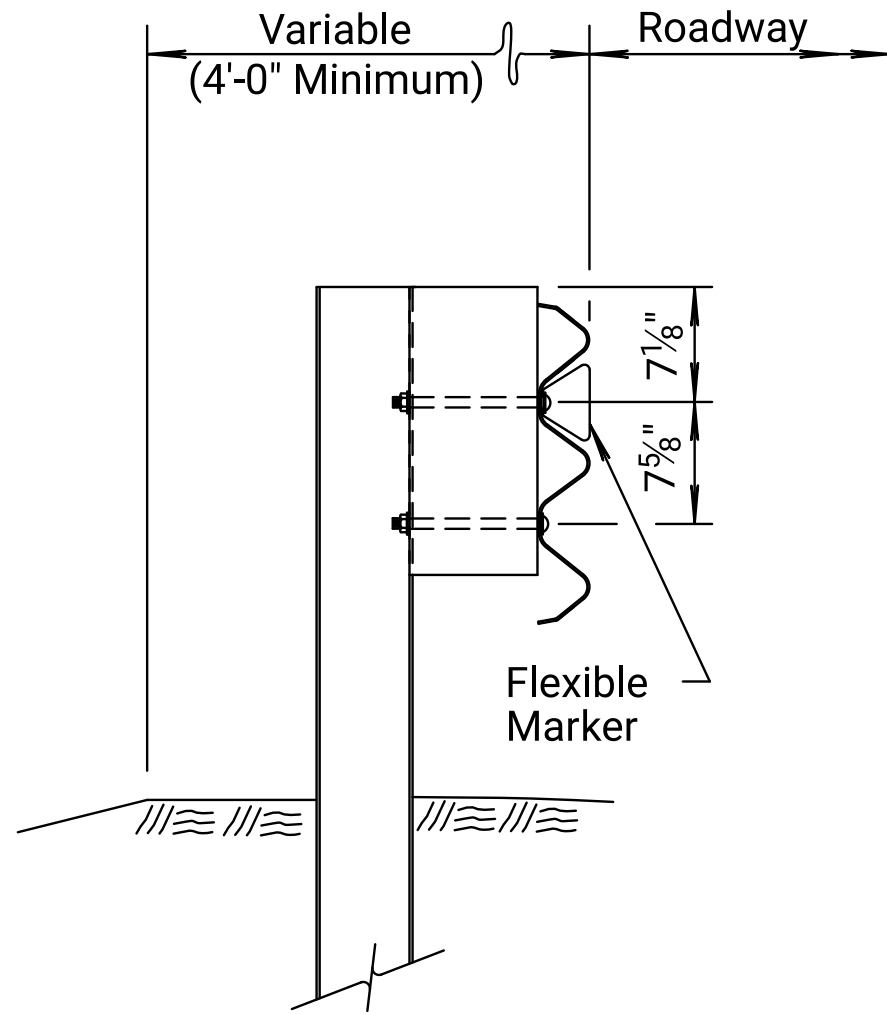
Flexible Guardrail Marker
(High Impact Polycarbonate approx. .085" thick, 5 1/4" x 3")



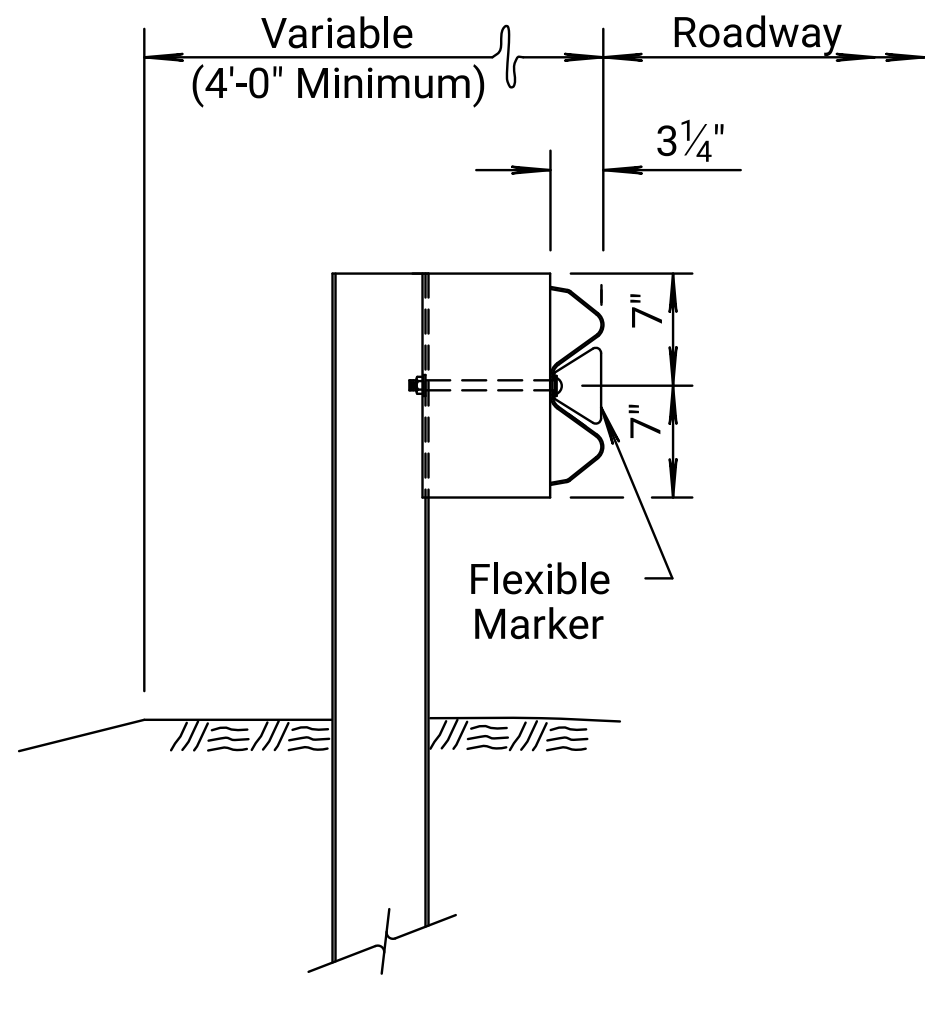
Barrier/Bridge Rail



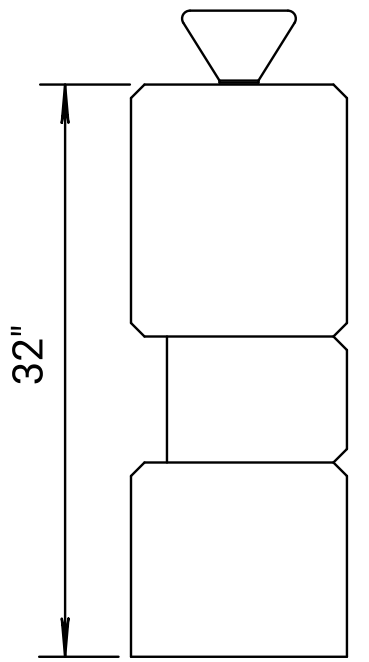
Method of Attaching Flexible
Marker to Barrier/Bridge Rail



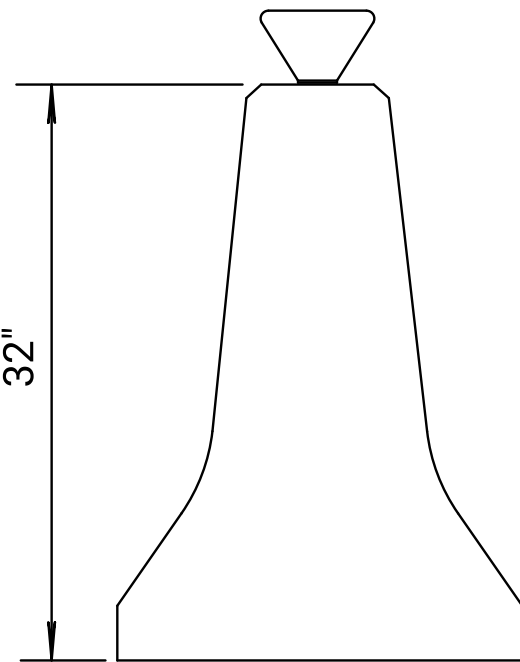
THRIE-BEAM GUARDRAIL



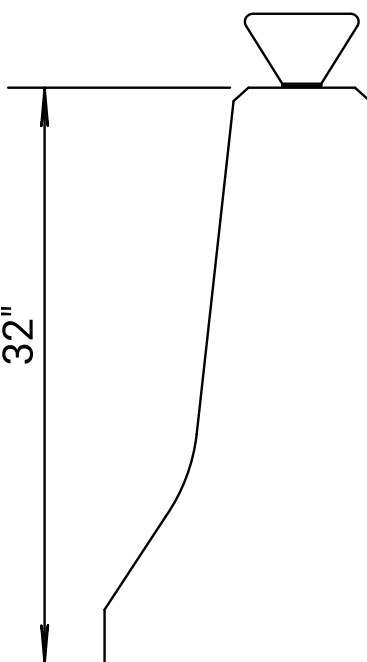
W-BEAM GUARDRAIL



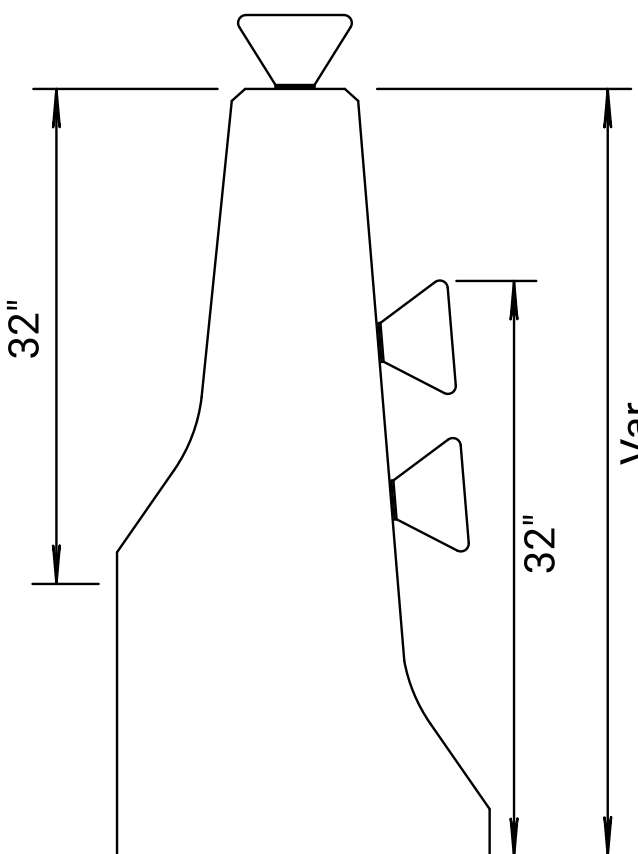
CORRAL RAIL



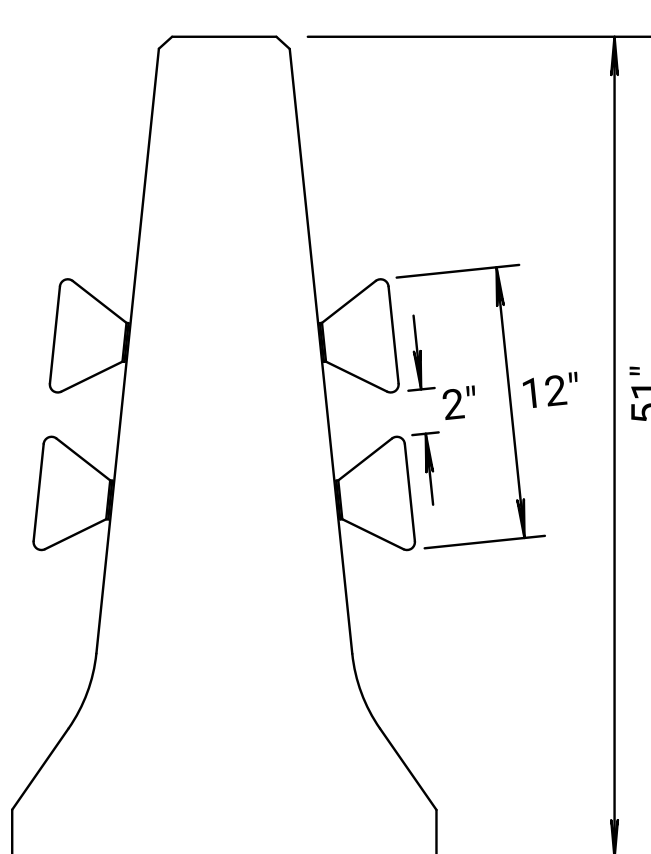
TYPE I CSB



TYPE II CSB or
F-SHAPED BRIDGE RAIL



TYPE III CSB



TYPE IV CSB

TYPICAL BARRIER/BRIDGE RAIL MOUNTING DETAILS

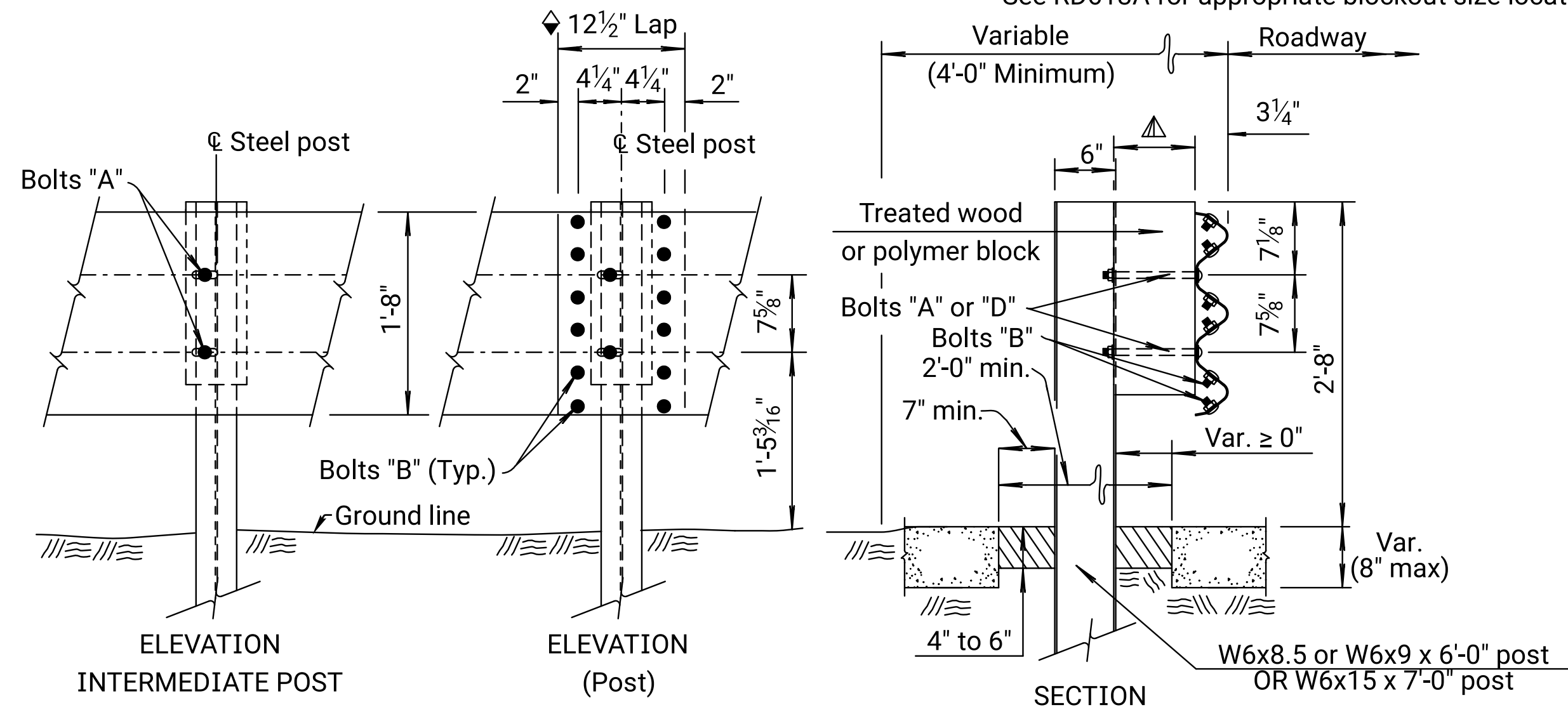
09	09-11-17	Rev. Det. Markers, Rev. Gen. Note	A.L.R.	S.W.K.
08	11-15-10	Revised notes	S.W.K.	J.O.B.
07	12-21-08	AKT marker or approved equal	S.W.K.	J.O.B.

NO.	DATE	REVISIONS	BY	APPD
-----	------	-----------	----	------

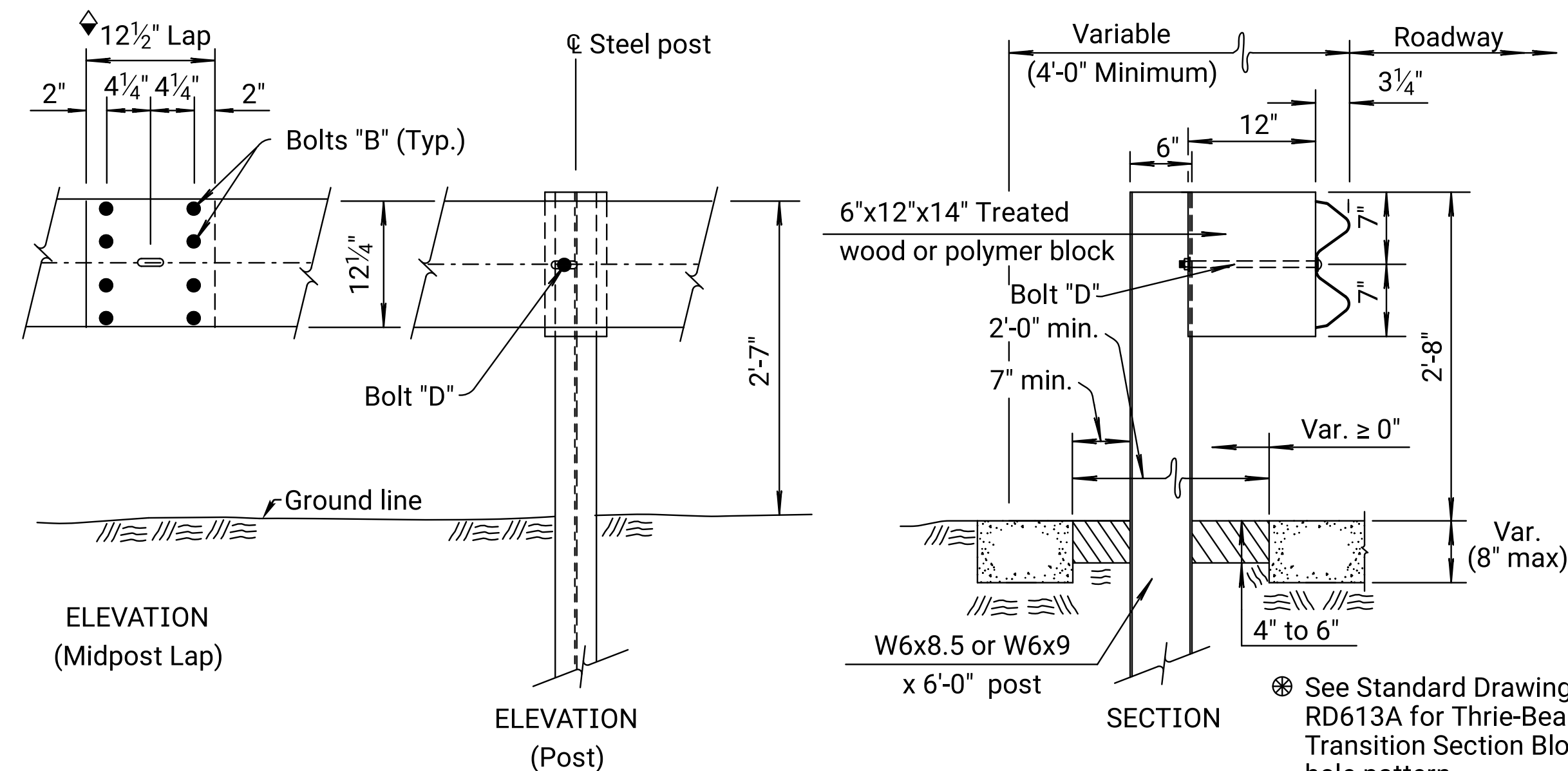
KANSAS DEPARTMENT OF TRANSPORTATION				
MARKER DETAILS FOR GUARDRAIL, BARRIER, AND BRIDGE RAILS				
RD610				
FHWA APPROVAL		03-15-18	APPD.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

◆ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

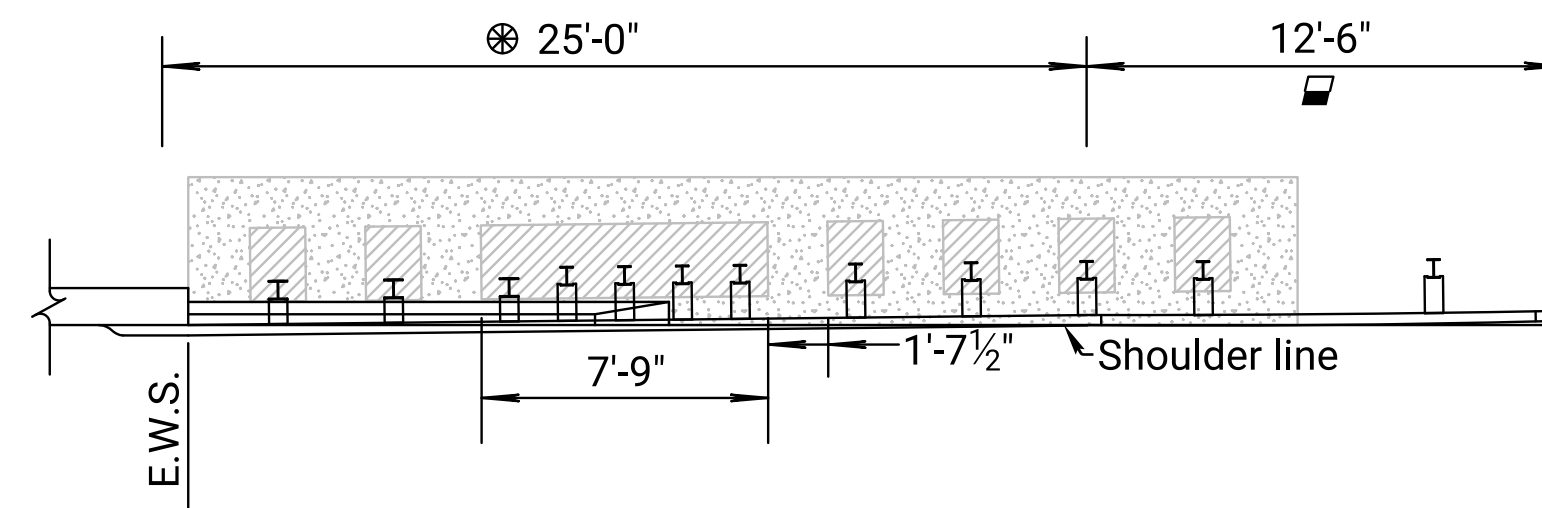
▲ See RD613A for appropriate blackout size location.



THRIE BEAM POST DETAILS/POSTS IN PAVEMENT



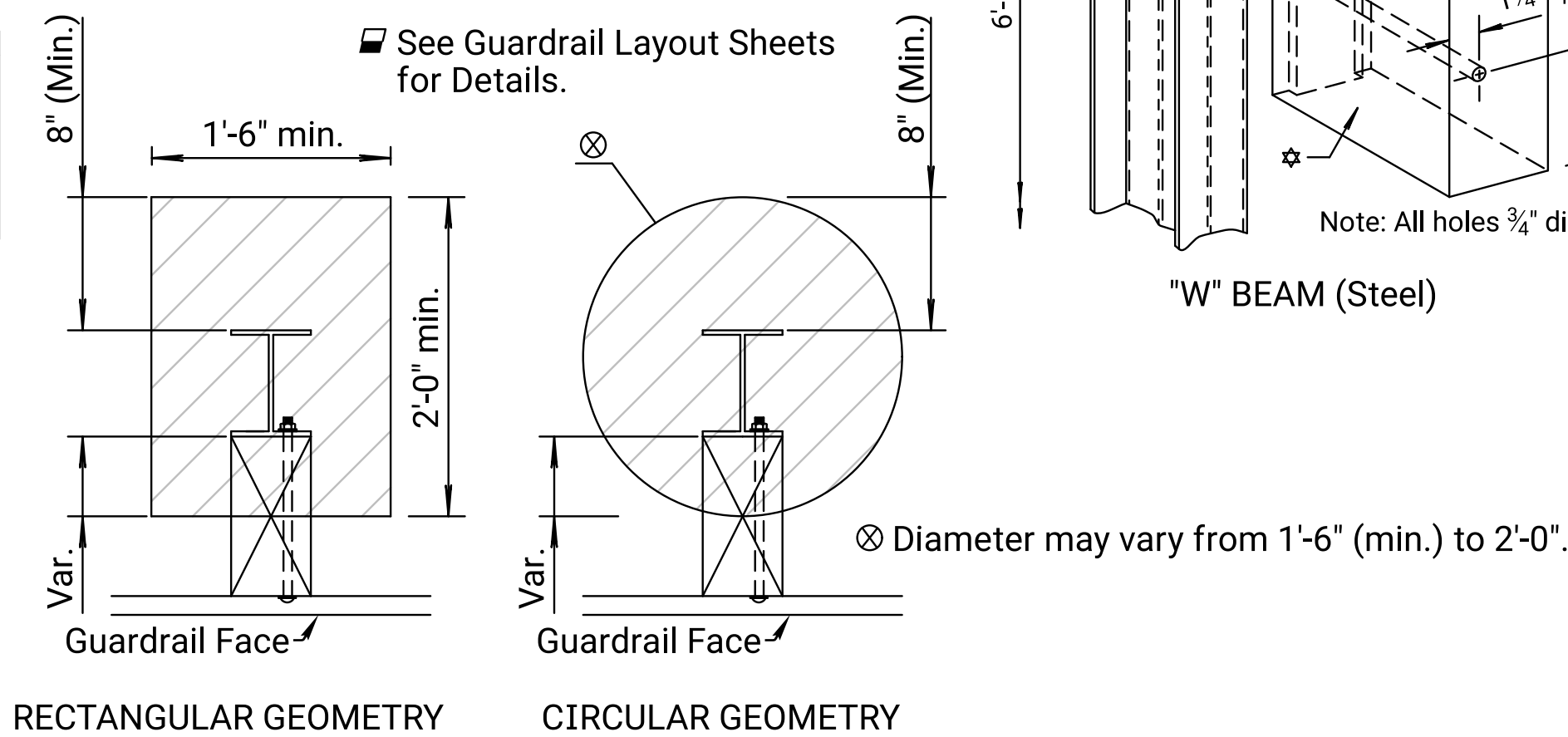
W-BEAM (MGS) POST DETAILS/POSTS IN PAVEMENT



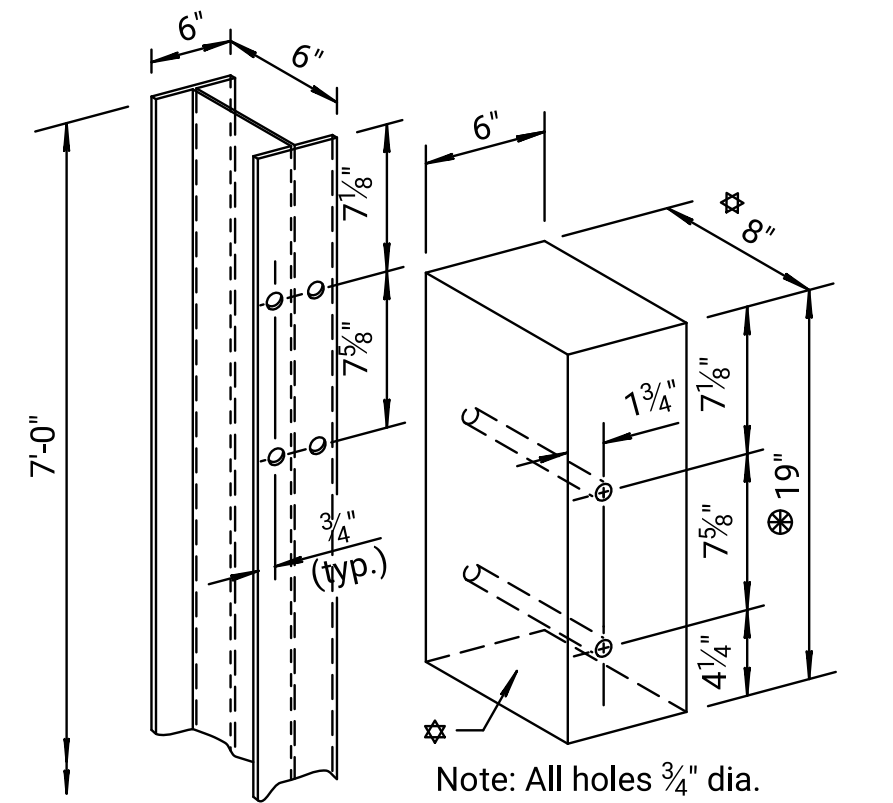
POSTS IN PAVEMENT

- ☐ Slurry Grout (Low Strength)
See KDOT's Standard Specifications
- ☐ Pavement (Concrete or Asphalt)

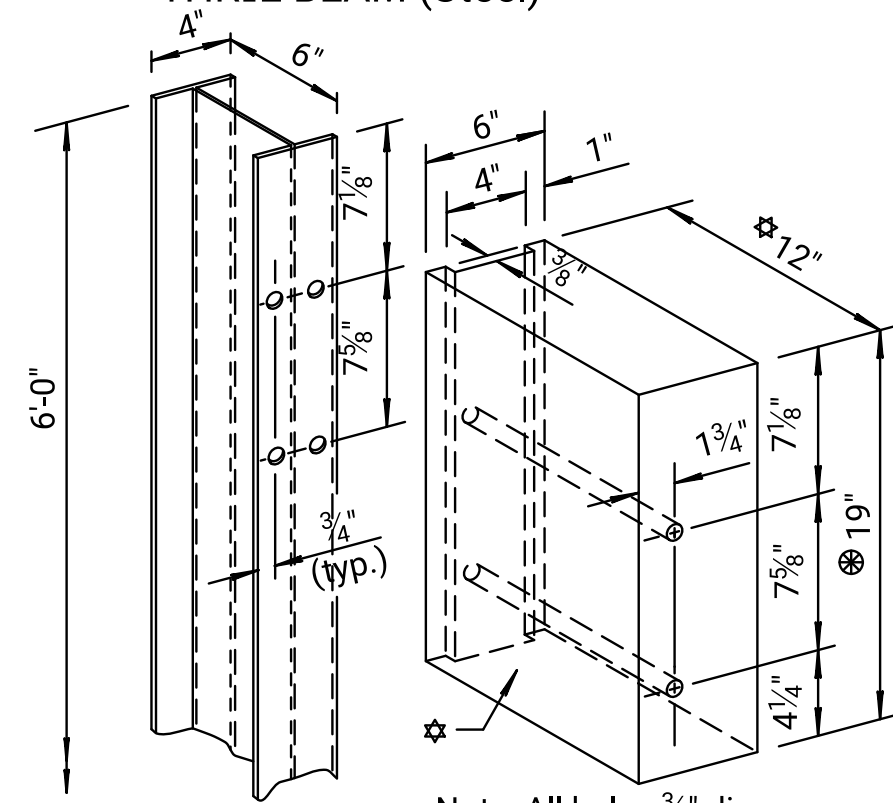
Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's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



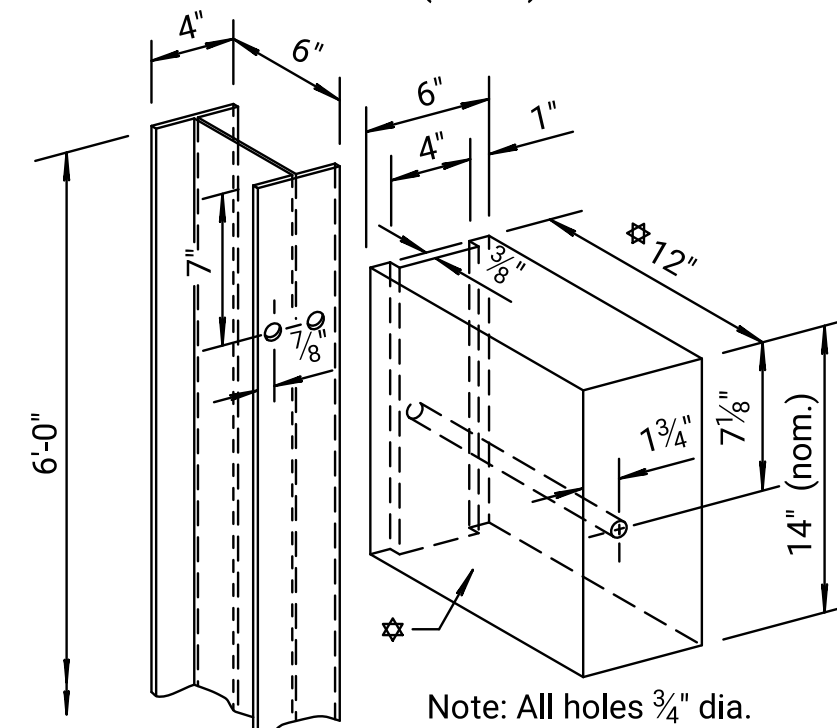
PLAN (ALTERNATE GEOMETRIES)



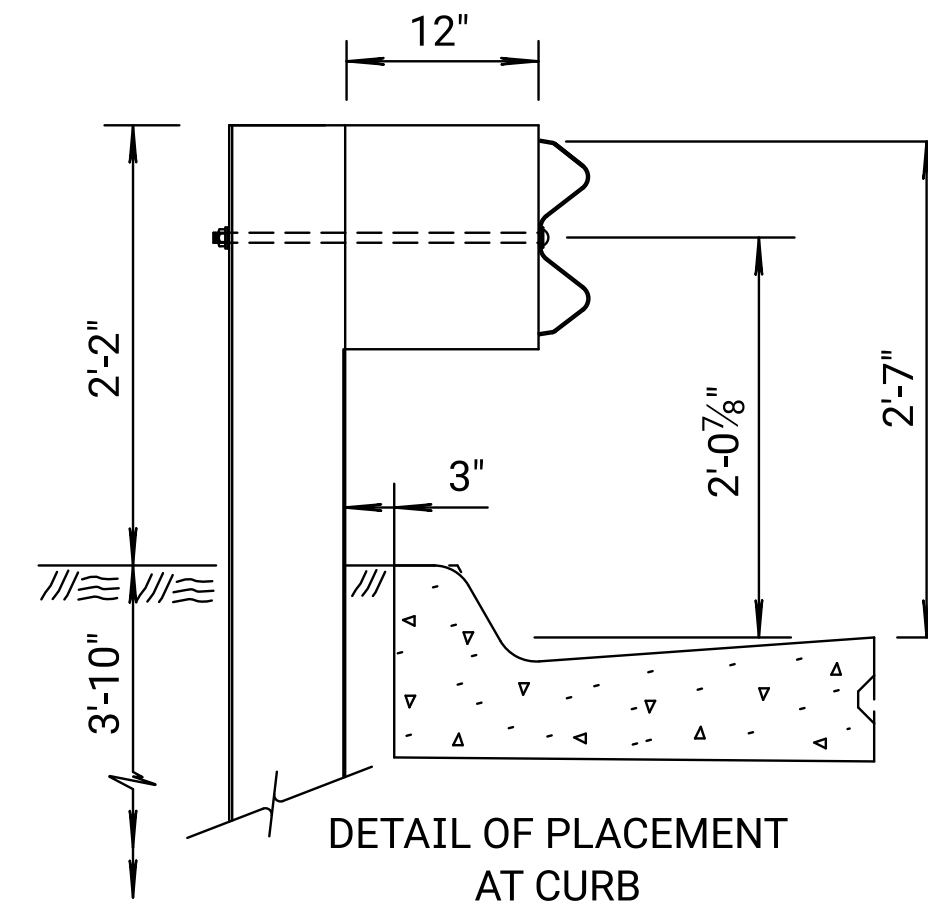
THREE BEAM (Steel)



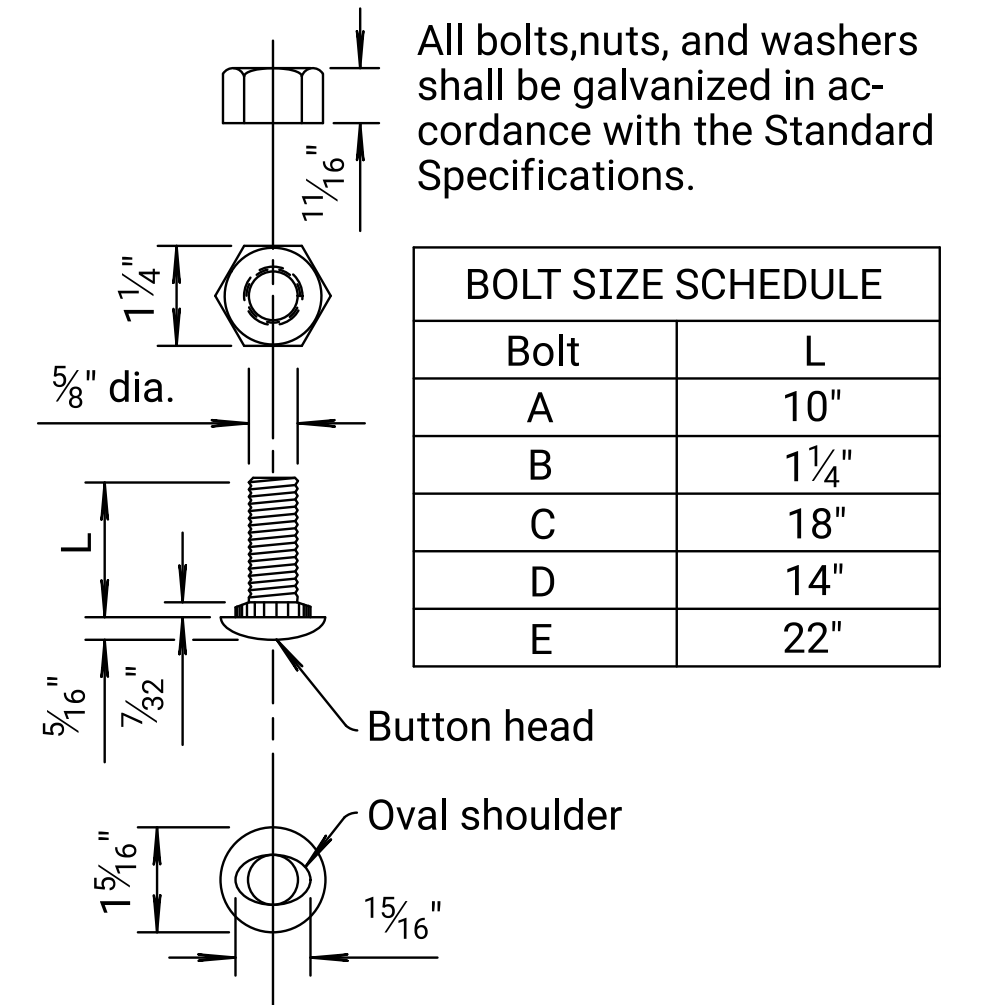
THRIE BEAM (Steel)



"W" BEAM (Steel)



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



BOLT & NUT DETAILS

	STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
	KANSAS	15-21 KA-6484-01	2025	18	100

GENERAL NOTES (Steel Posts)

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

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

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

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

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

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

All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made.

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

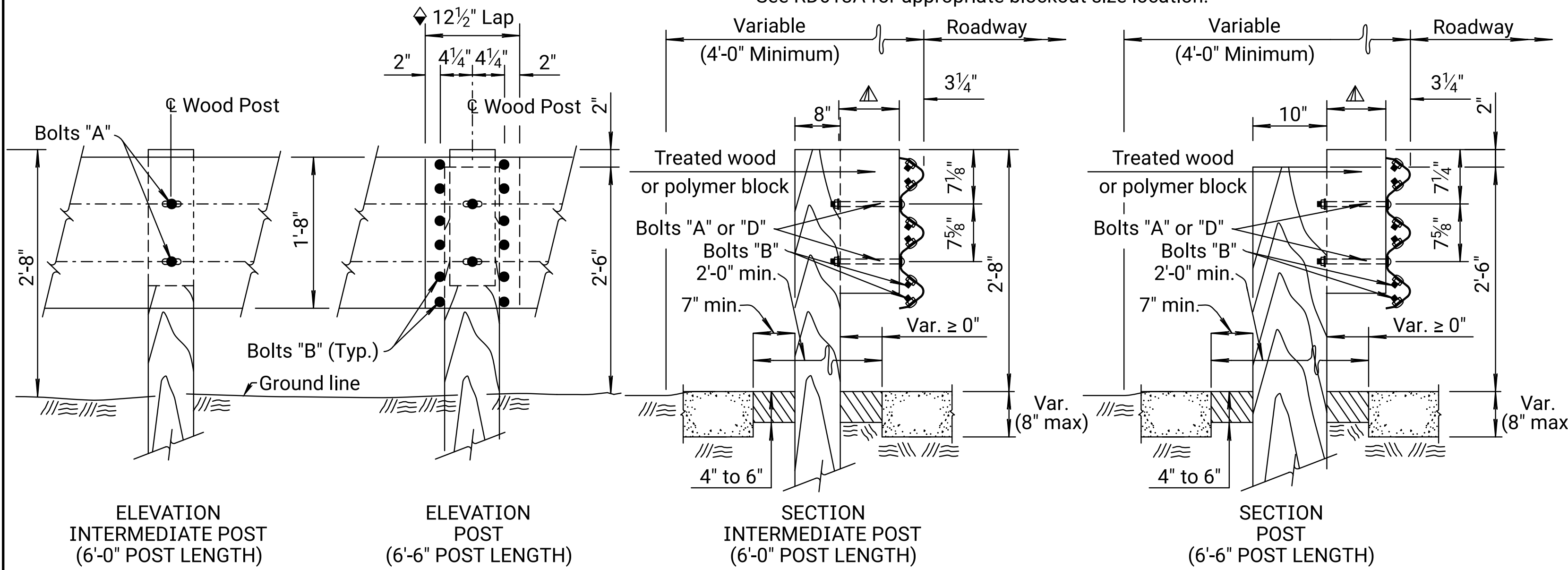
05	09-24-15	Separated Steel/Wood Post Details	S.W.K.	S.W.K.
04	11-08-12	Revised Detail, Posts in Pavement	S.W.K.	J.O.B.
03	08-01-12	Revised Note to Designer	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION GUARDRAIL POST (STEEL) (MGS) DETAILS RD611A				
FHWA APPROVAL		01-29-16	APP'D	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

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

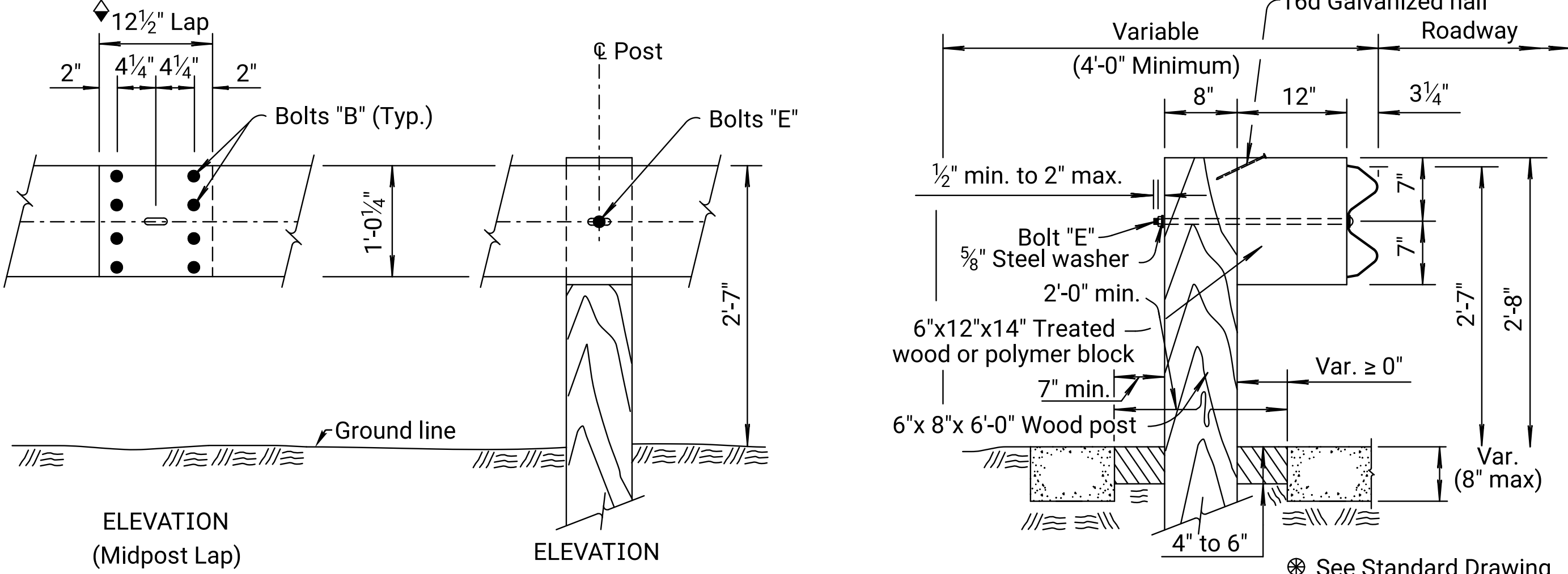
Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rss611b.dgn
16-SEP-2025 14:12

⬠ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

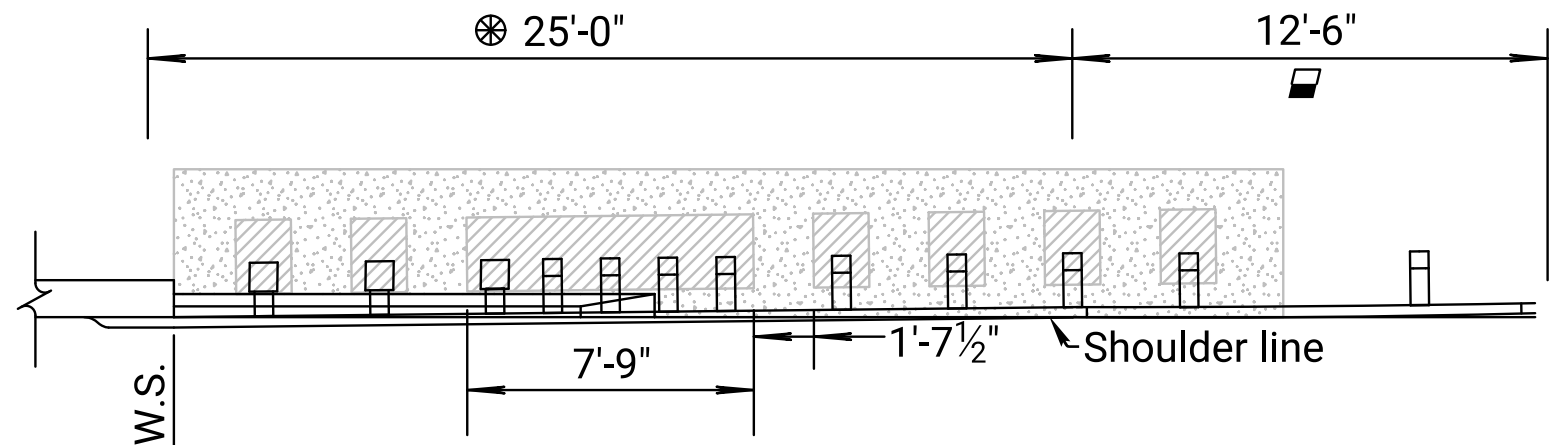
⚠ See RD613A for appropriate blackout size location.



THRIE BEAM POST DETAILS/POSTS IN PAVEMENT



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



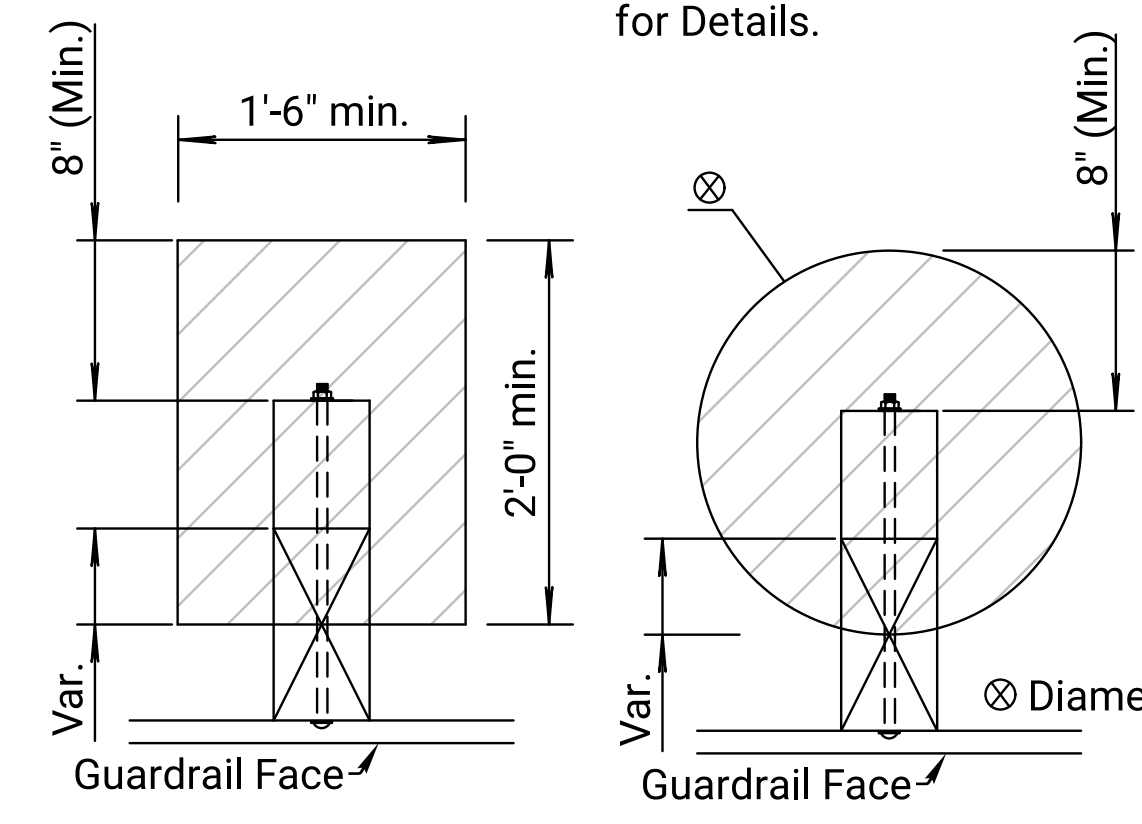
POSTS IN PAVEMENT

(Not to Scale)

- ▣ Slurry Grout (Low Strength)
See KDOT's Standard Specifications
- ▣ Pavement (Concrete or Asphalt)

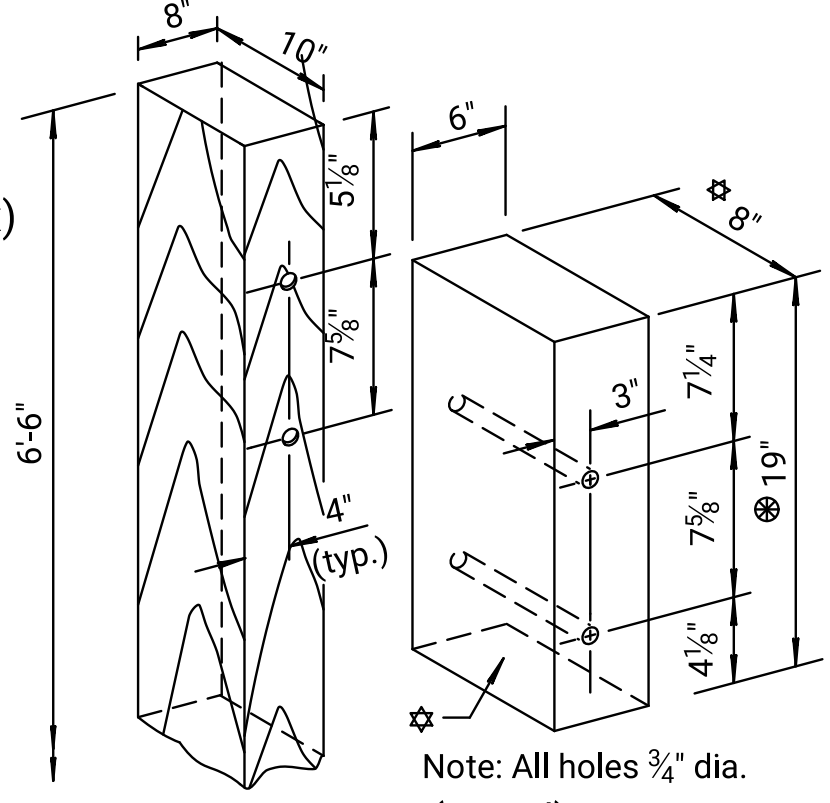
Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's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

- ⊗ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.
- ★ Non-Metallic (Polymer) or Treated Wood Block
- ▣ See Guardrail Layout Sheets for Details.

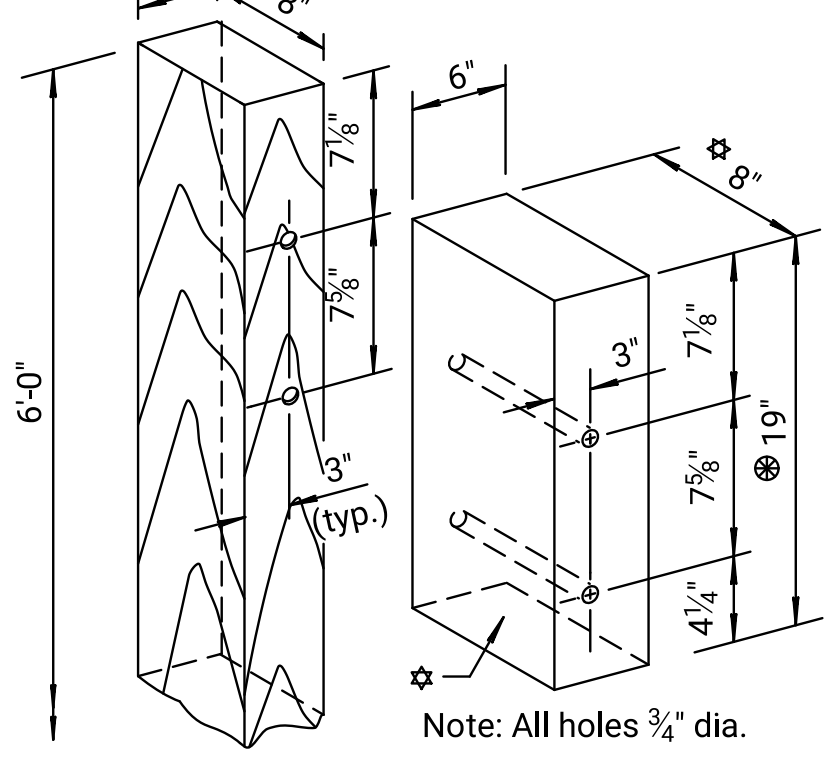


RECTANGULAR GEOMETRY CIRCULAR GEOMETRY

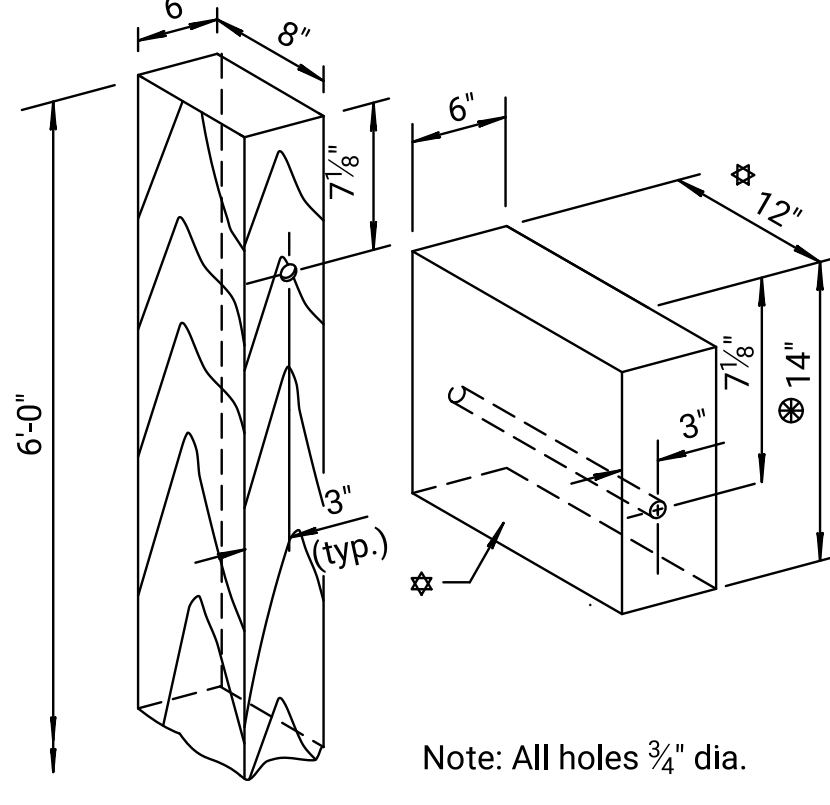
PLAN (ALTERNATE GEOMETRIES)



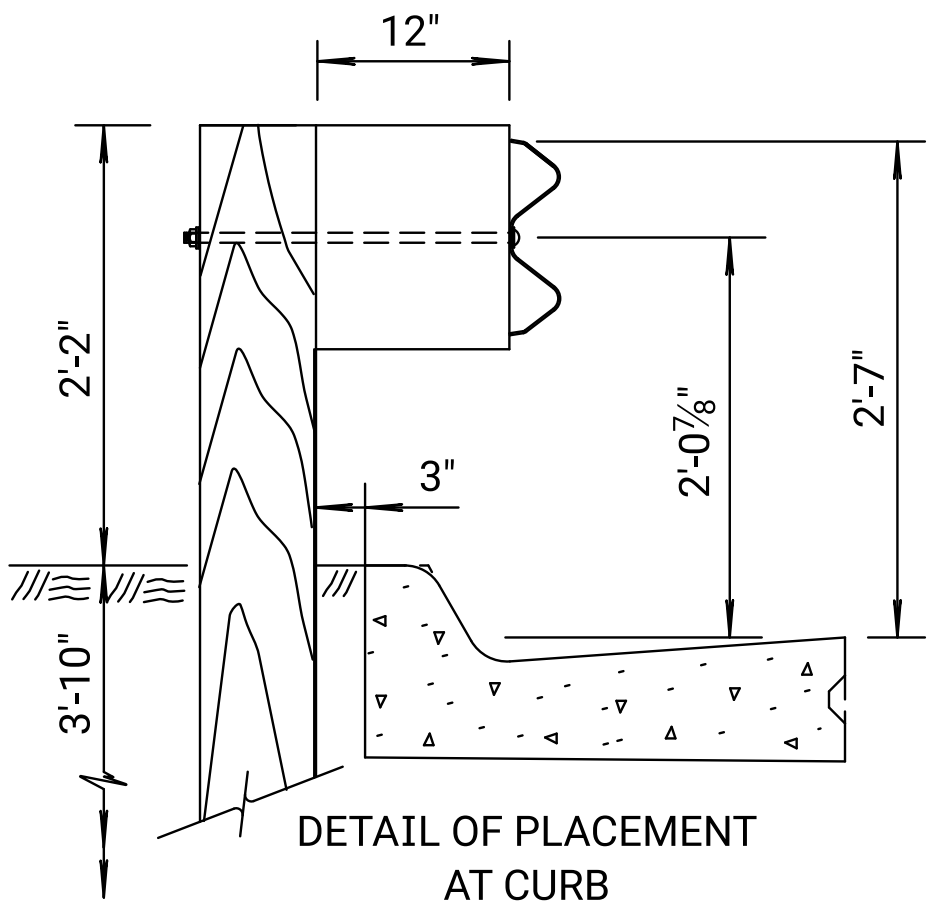
THRIE BEAM (Wood)



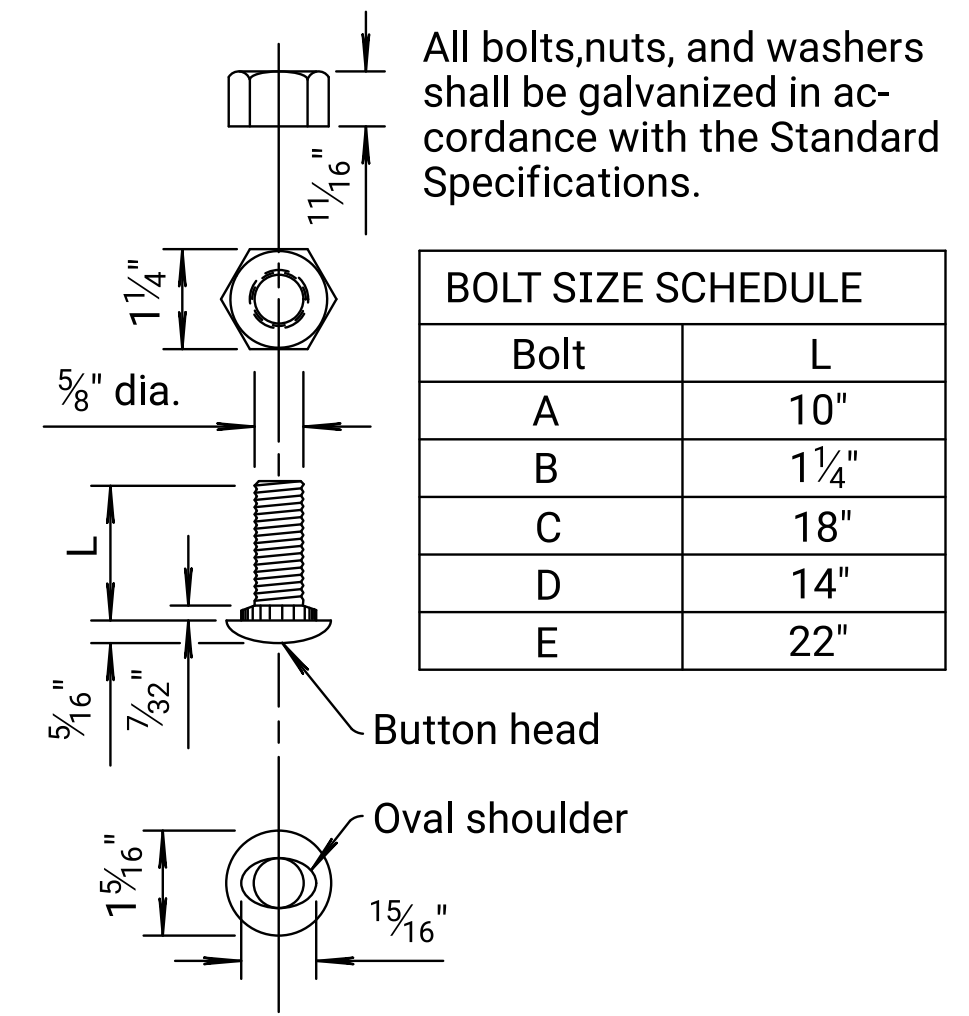
THRIE BEAM (Wood)



"W" BEAM (Wood)



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



BOLT SIZE SCHEDULE	
Bolt	L
A	10"
B	1 1/4"
C	18"
D	14"
E	22"

GENERAL NOTES (Wood Posts)

Give all wood posts and wood blocks a preservative treatment, see standard specifications. Thoroughly saturate all cuts, injuries and bolt holes on wood posts and blocks with preservative. Use only one type of preservative treatment on a project.

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

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

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

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

All dimensions are nominal and are subject to manufacturing tolerances.

Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made.

KANSAS DEPARTMENT OF TRANSPORTATION	
GUARDRAIL POST (WOOD) (MGS) DETAILS	
RD611B	
DESIGNED	QUANTITIES
DETAIL CK.	TRACE CK.
01-29-16	APPD.
05-11-2022	Sh. No. 19

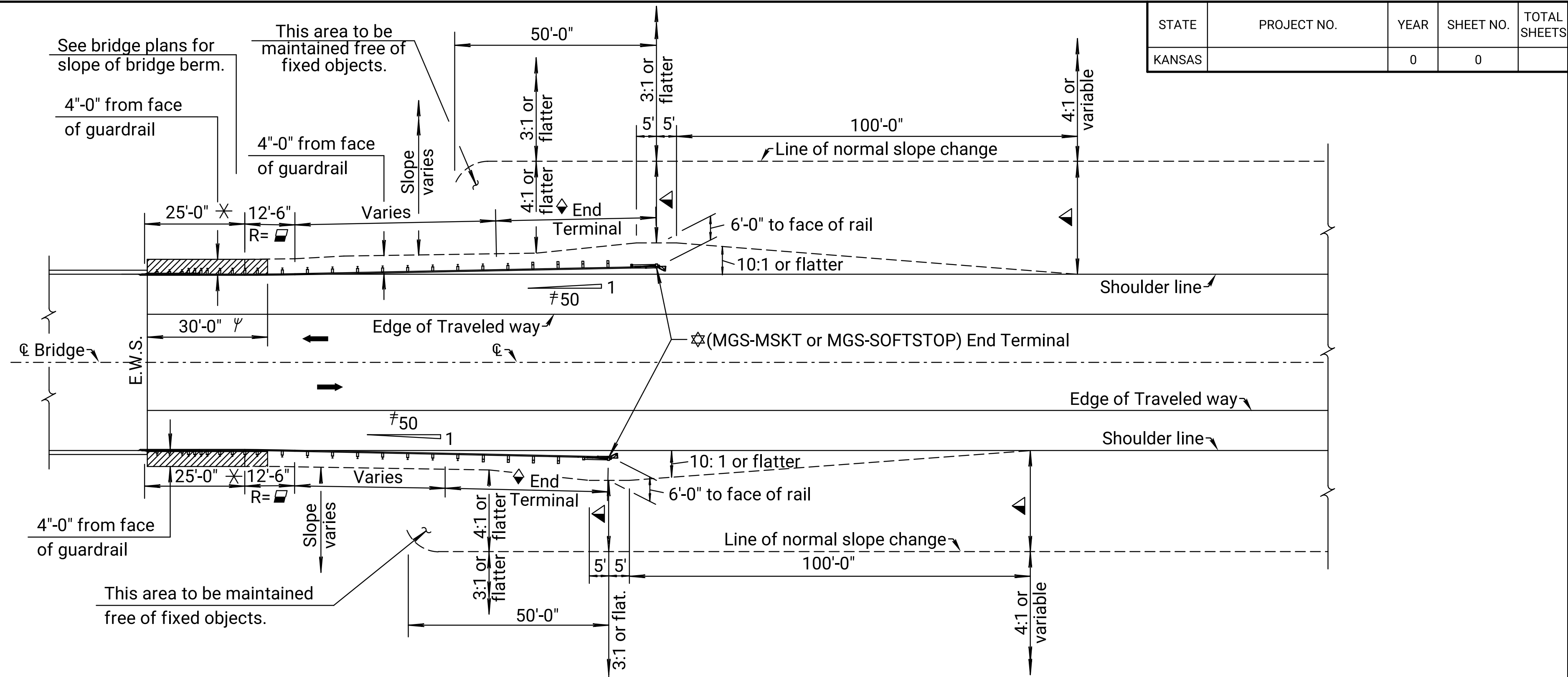
Notes to Designer: Determine the guardrail length of need using either KDOT's Length of Need Equation or a graphic design approach with an L₁ distance measured from the edge of the area of concern to the P.I. of the curved guardrail section. Combine material for asphalt widening in the plan quantities.

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

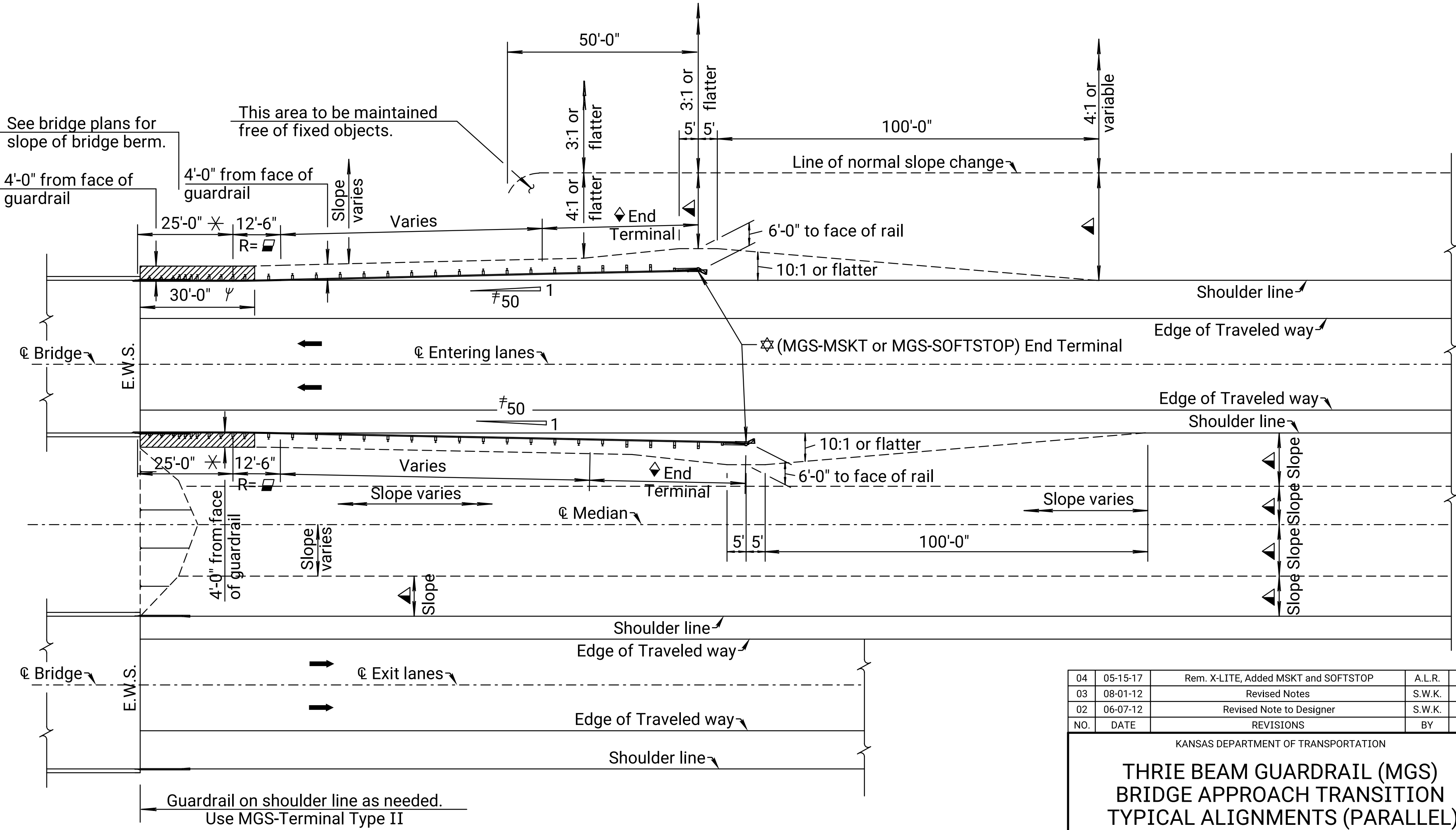
Plotted by : KDOT#CADD.Support_Lks.gov 11~JUN-2022 00:50

File : rd612b.dgn

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



THRIE BEAM TRANSITION - TWO LANES

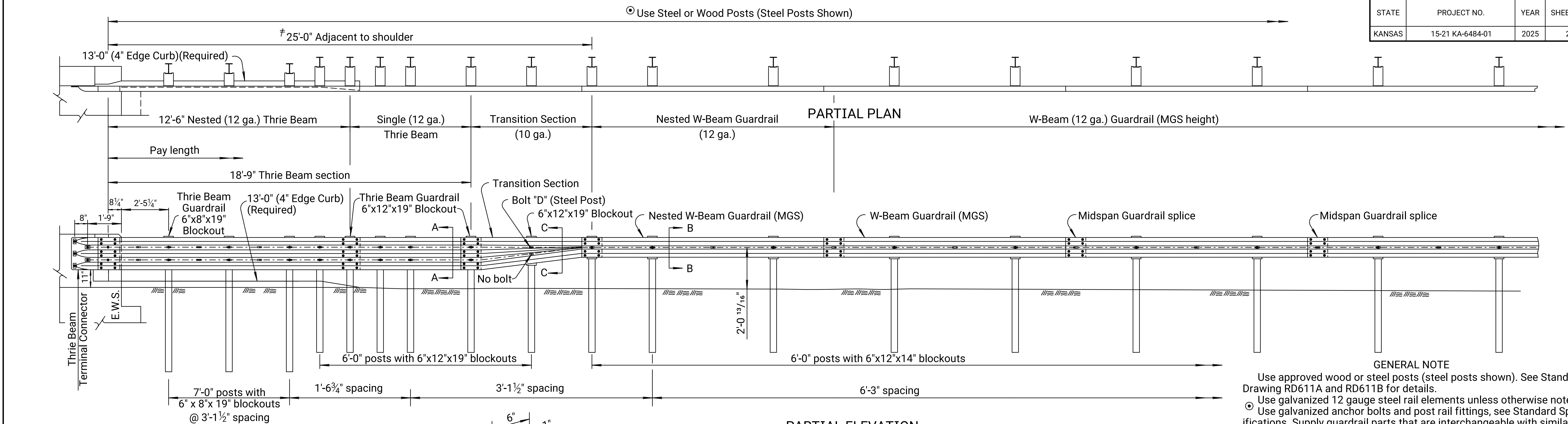


THRIE BEAM TRANSITION - FOUR LANES (DIVIDED)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		0	0	

04	05-15-17	Rem. X-LITE, Added MSKT and SOFTSTOP	A.L.R.	S.W.K.
03	08-01-12	Revised Notes	S.W.K.	J.O.B.
02	06-07-12	Revised Note to Designer	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
THRIE BEAM GUARDRAIL (MGS) BRIDGE APPROACH TRANSITION TYPICAL ALIGNMENTS (PARALLEL)				
RD612B				
FHWA APPROVAL		10-12-17	APPD.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	21	100



GENERAL NOTE

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

- Use galvanized 12 gauge steel rail elements unless otherwise noted.
- Use galvanized anchor bolts and post rail fittings, see Standard Specifications. Supply guardrail parts that are interchangeable with similar parts regardless of source or manufacturer.

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

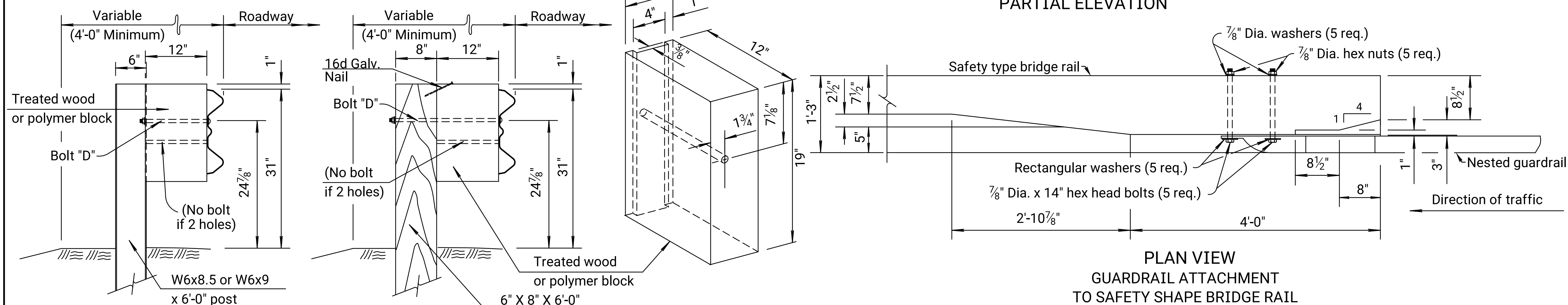
Fabricate Terminal Connector from 10 gauge steel, see Standard Specification. The connector has the same section as thrie beam guardrail. Terminal connector is Subsidiary to the bid item "Guardrail, Steel Plate (MGS)".

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

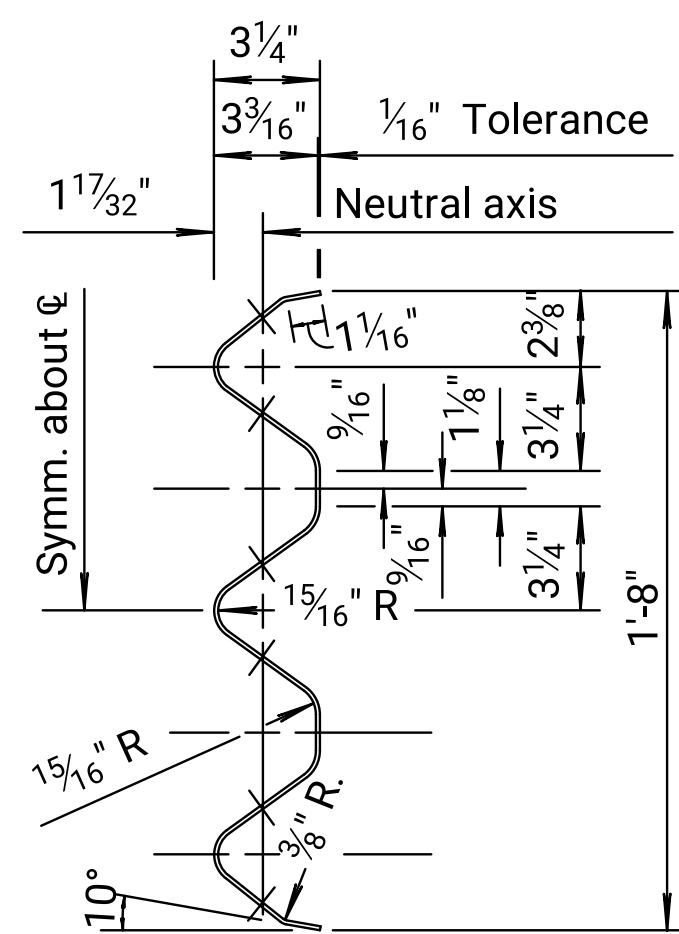
Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

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

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

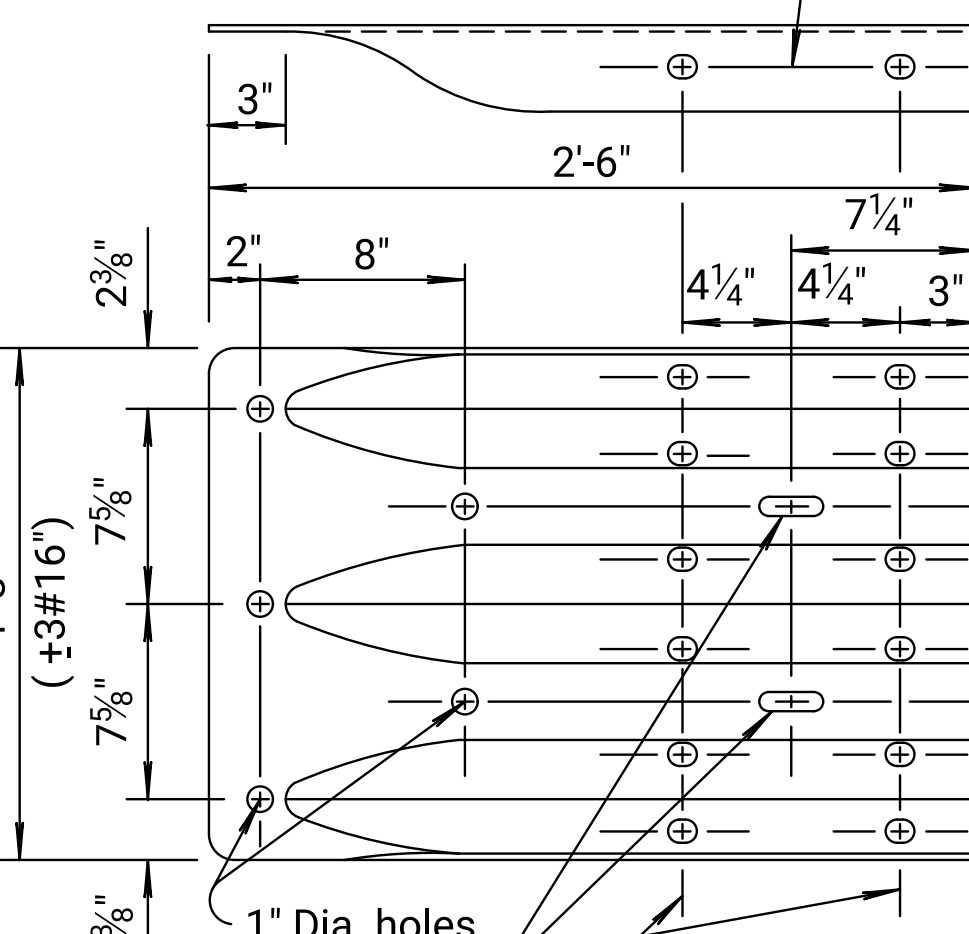


⊙ SECTION C-C
(STEEL POST)



SECTION A-A
THRU RAIL ELEMENT
TYPICAL THRIE BEAM

⊙ SECTION C-C
(WOOD POST)

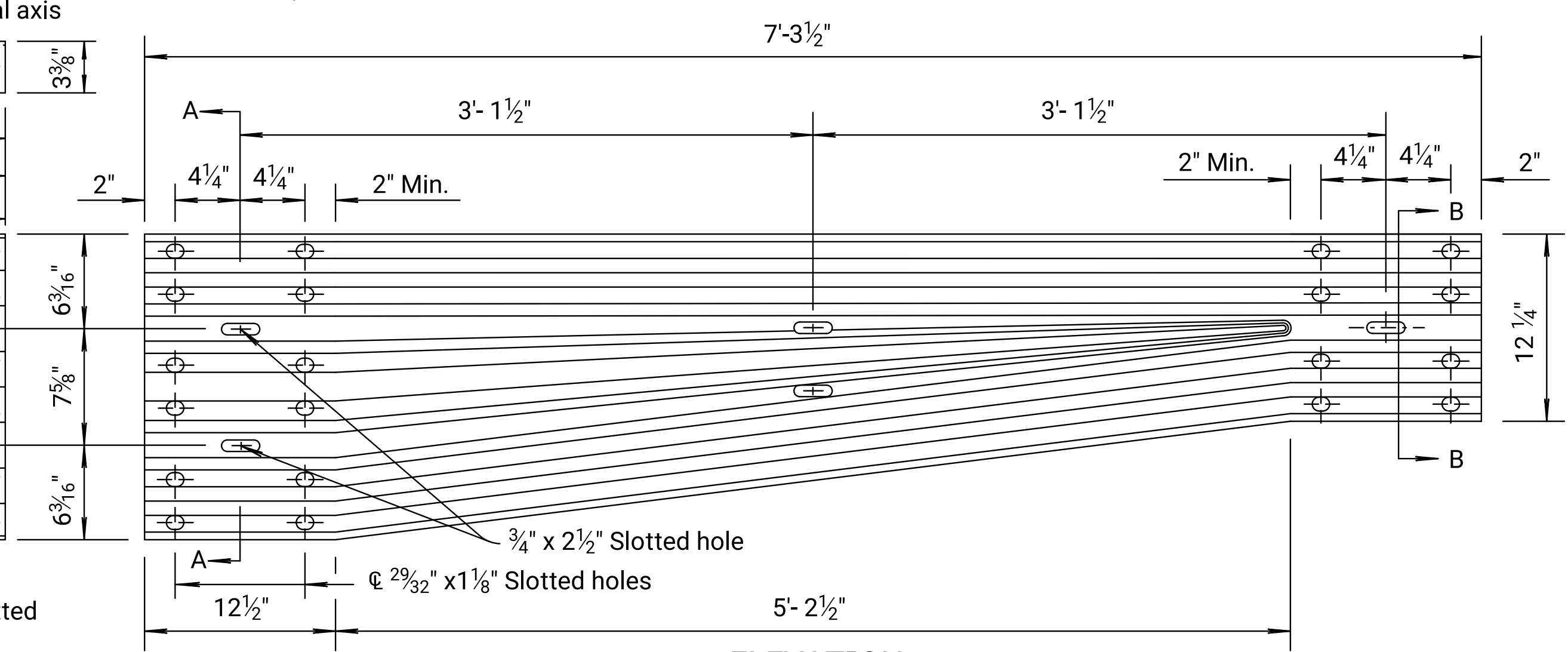


TERMINAL CONNECTOR

⊗ Optional $29/32"$ x $1 3/4"$ Slotted holes Rotated 50° (Typical) (12 req'd.)

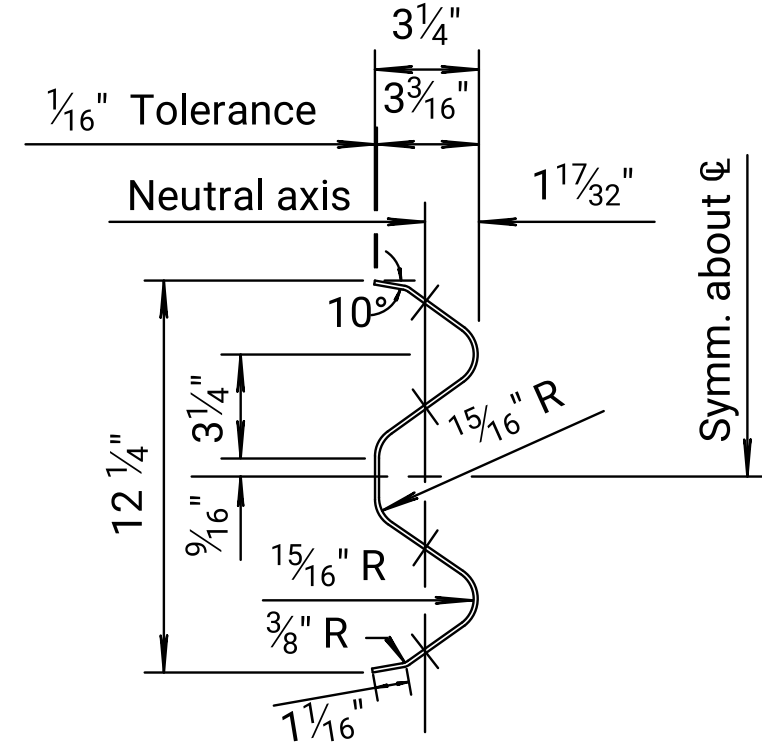
SECTION C-C (BLOCKOUTS)

Note: All holes $\frac{3}{4}$ " dia.

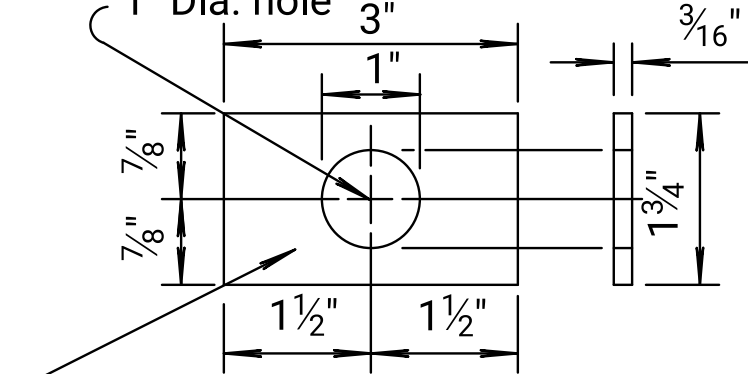


ELEVATION

ASYMMETRICAL TRANSITION SECTION



SECTION B-B
THRU RAIL ELEMENT
TYPICAL W-BEAM



Rectangular washer to be used on Terminal Connector only.

RECTANGULAR WASHER
(Other approved washer may be used.)

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

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS OF THRIE BEAM to (MGS) GUARDRAIL TRANSITION

RD613A

FHWA APPROVAL

DESIGNED

DESIGN CK.

KDOT Graphics Certified

4-21-16	APP'D
---------	-------

	QUAN
--	------

	QUAN
--	------

12-06-2024

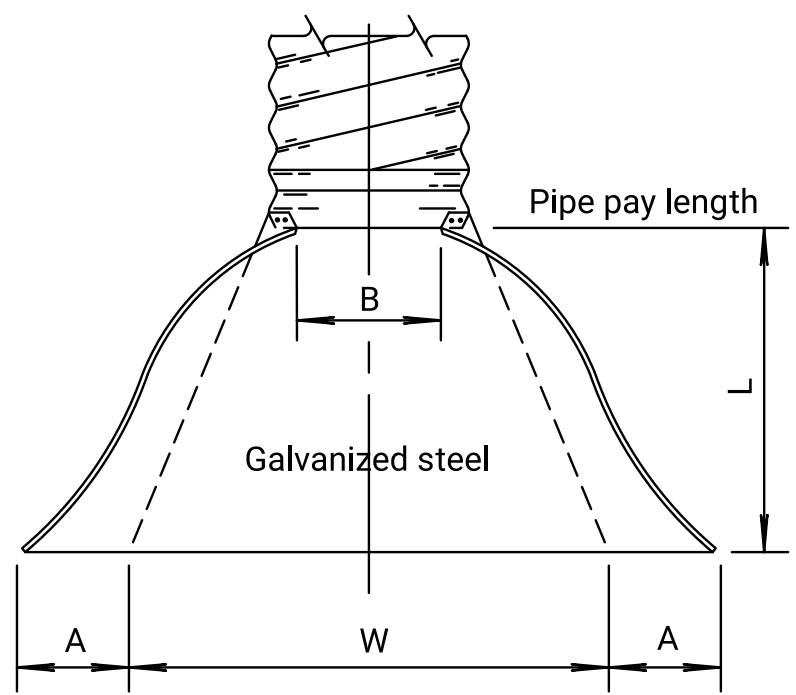
Scott W. King

CED

CE CK.

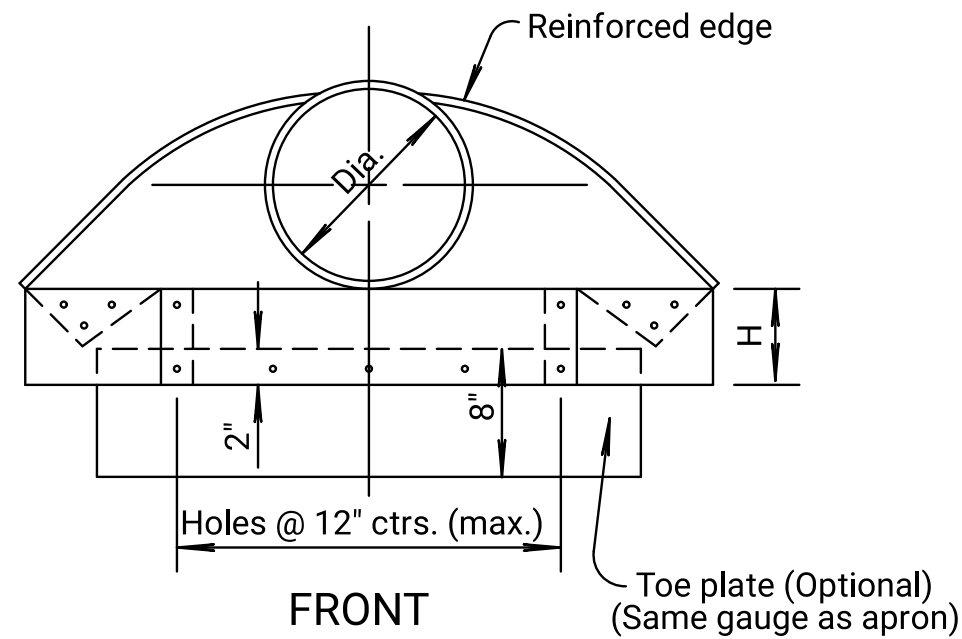
Sh. No. 21

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.

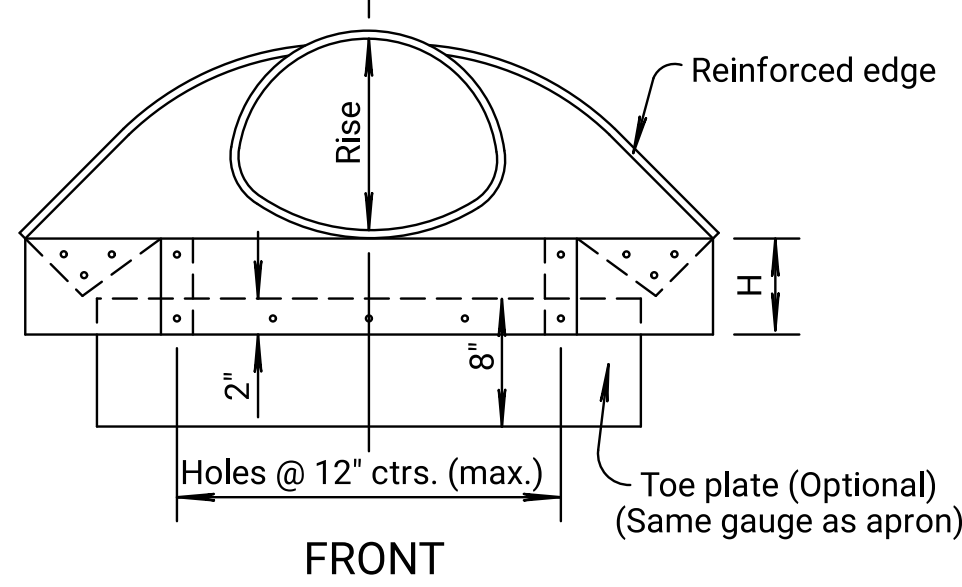


PLAN

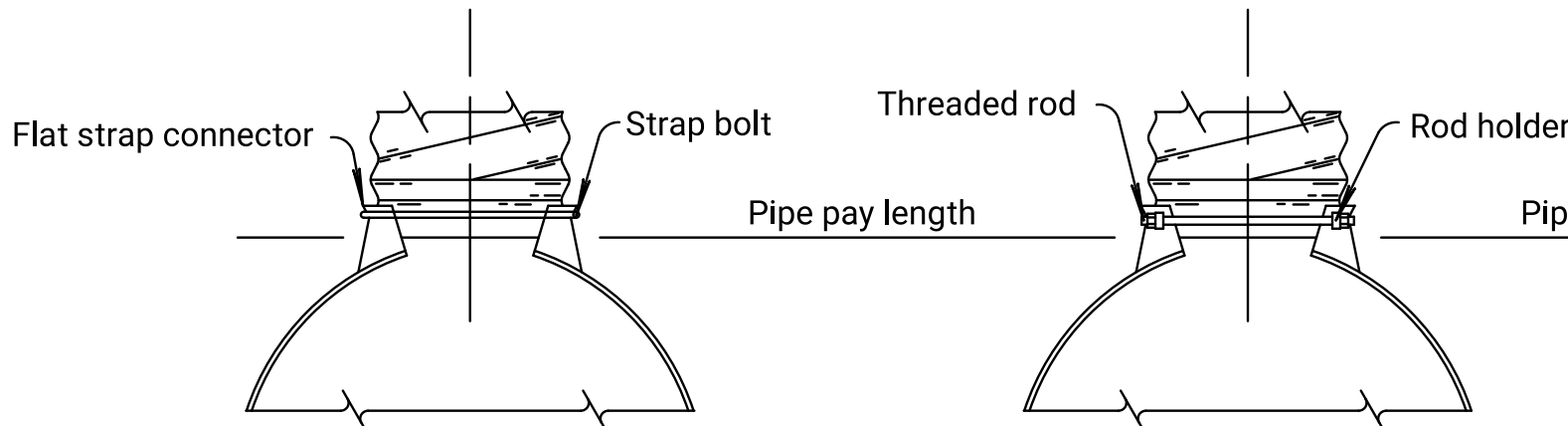
(Illustrated with Type #3 Connection)



FRONT

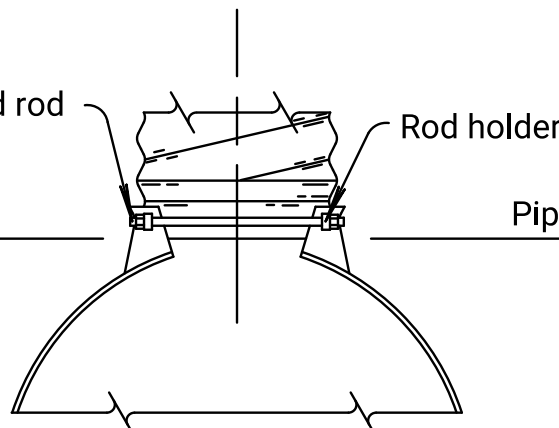


FRONT



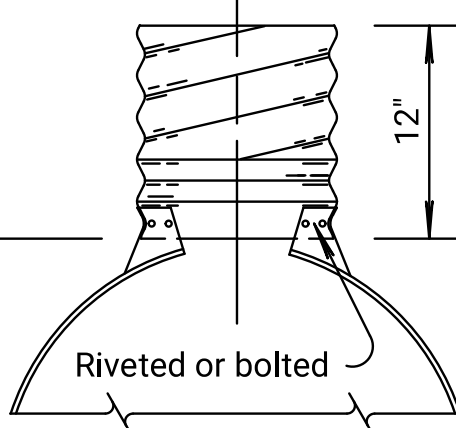
TYPE 1

Available in sizes 12" through 24" only.



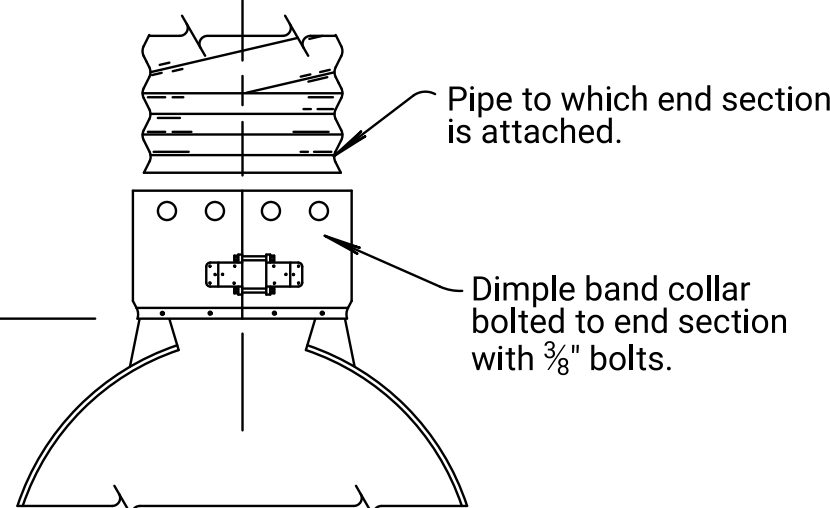
TYPE 2

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



TYPE 3

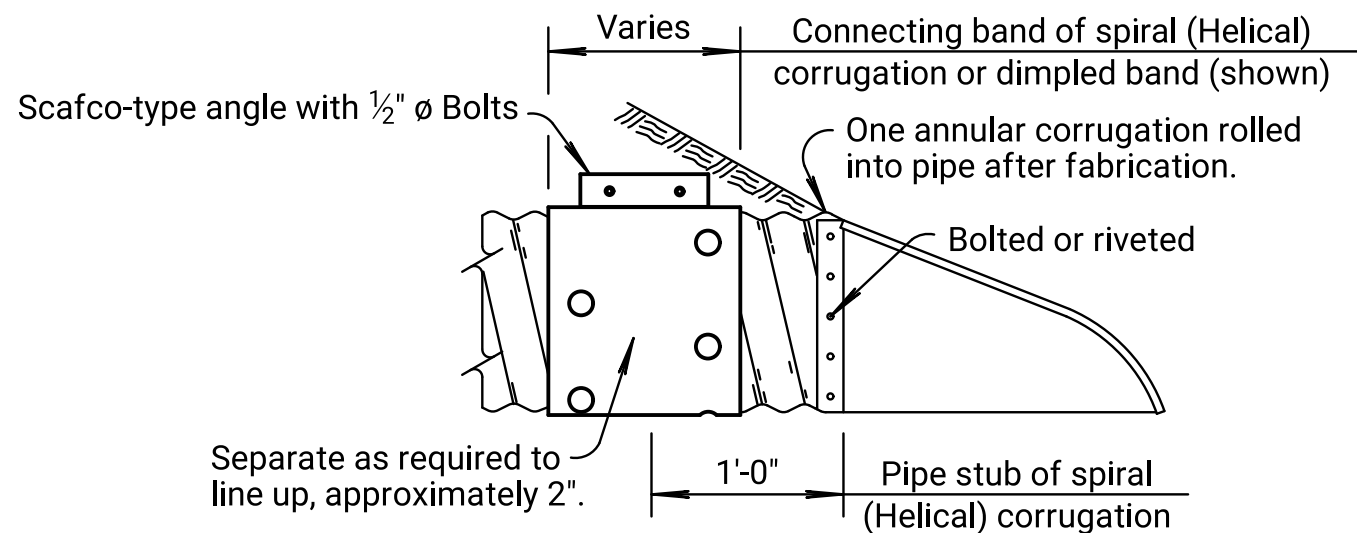
Available in sizes 42" through 96" Round and 60"x46" through 81"x59" Pipe-Arches.



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

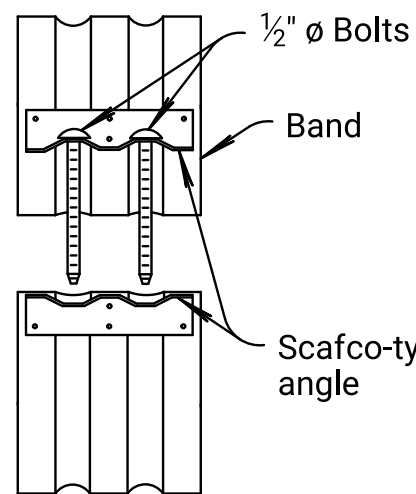
For all sizes of round and arch culvert pipes having Spiral (Helical) corrugations, the end sections and connecting bands shall be as shown above.

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.

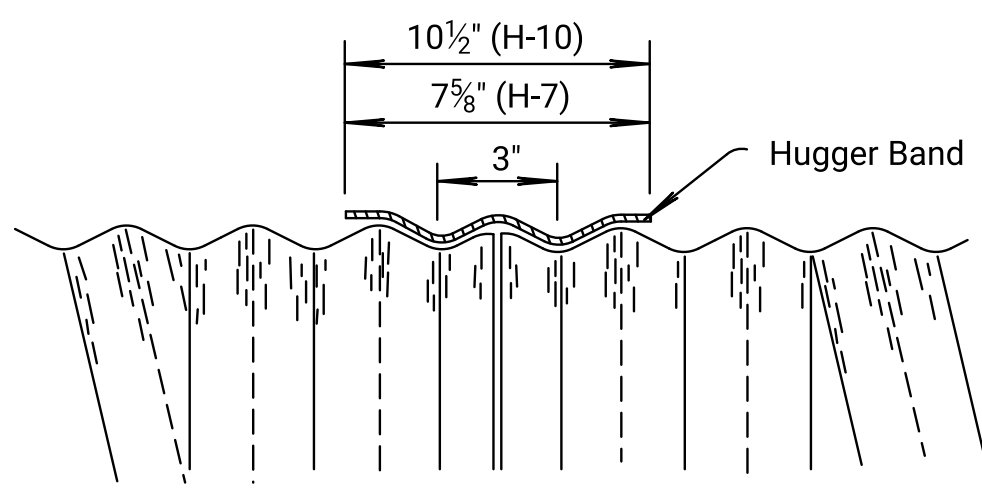
Pipe Dia. (In.)	CS, ACS or CA Gauge	Dimensions in Inches					Approx. Slope
		A (min.)	B (max.)	H (min.)	L (±2")	W (min.)	
12"	16	5	7	6	21	22	2½: 1
15"	16	6	8	6	26	28	2½: 1
18"	16	7	10	6	31	34	2½: 1
21"	16	8	12	6	36	40	2½: 1
24"	16	9	13	6	41	46	2½: 1
30"	14	11	16	8	51	55	2½: 1
36"	14	13	19	9	60	70	2½: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

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

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

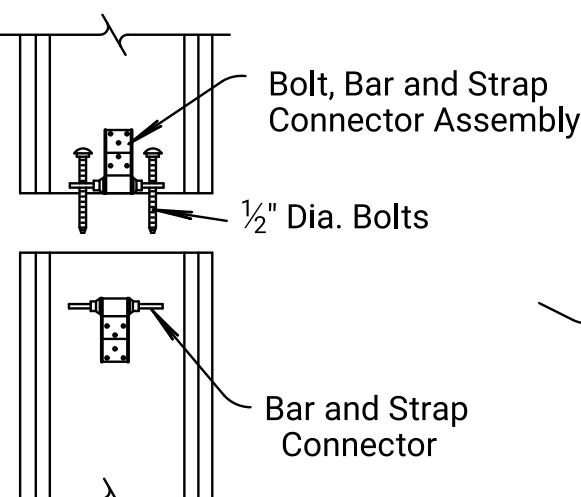


CONNECTION DETAIL H-7 or H-10 BAND

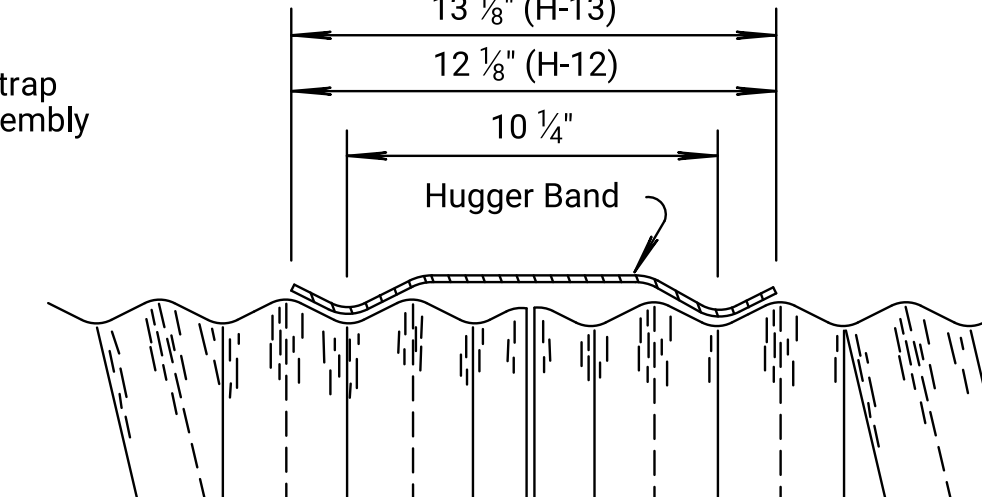


UNIVERSAL REFORMED END with H-7 or H-10 HUGGER BAND

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

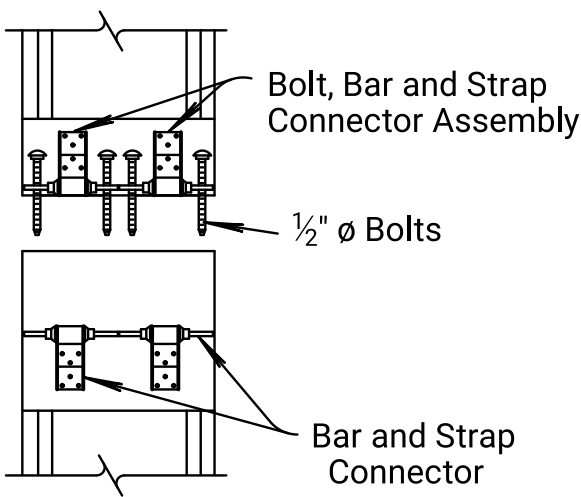


CONNECTION DETAIL SINGLE HARNESS



UNIVERSAL REFORMED END with HUGGER BAND

DETAILS FOR H-12 or H-13 HUGGER BAND



CONNECTION DETAIL DOUBLE HARNESS

Pipe Dia. Inches	Minimum Gauge of Round Pipe				
	2½" x ½" Corr. CSP or ACSP	3" x 1" Corr. CSP or ACSP	5" x 1" Corr. CSP or ACSP	2½"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
54"	12	14	16	14	16
60"	10	14	16	14	16
66"	10	14	16	14	16
72"	10	14	16	14	16
78"	8	14	14	14	14
84"	8	14	14	14	14
90"		14	14	14	14
96"		12	12	12	12
102"		12	12	12	10
108"		12	12	12	10
114"		12	12	12	8
120"		10	10	10	8

Bid Designation Sq. Ft.	Pipe Dimension Span & Rise	Sq. Ft.	Equiv. Round Pipe Diameter	Minimum Gauge of Arch Pipe				
				2½"x ½" Corr. CSP or ACSP	3" x 1" Corr. CSP or ACSP	5" x 1" Corr. CSP or ACSP	2½"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 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.

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.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
METAL END SECTION FOR ROUND & ARCH METAL CULVERTS (TYPE I) & PIPE GAUGE TABLES				
RD660				
FHWA APPROVAL		12-16-09	APPD.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	
KDOT Graphics Certified 05-16-2022 Sh. No. 22				

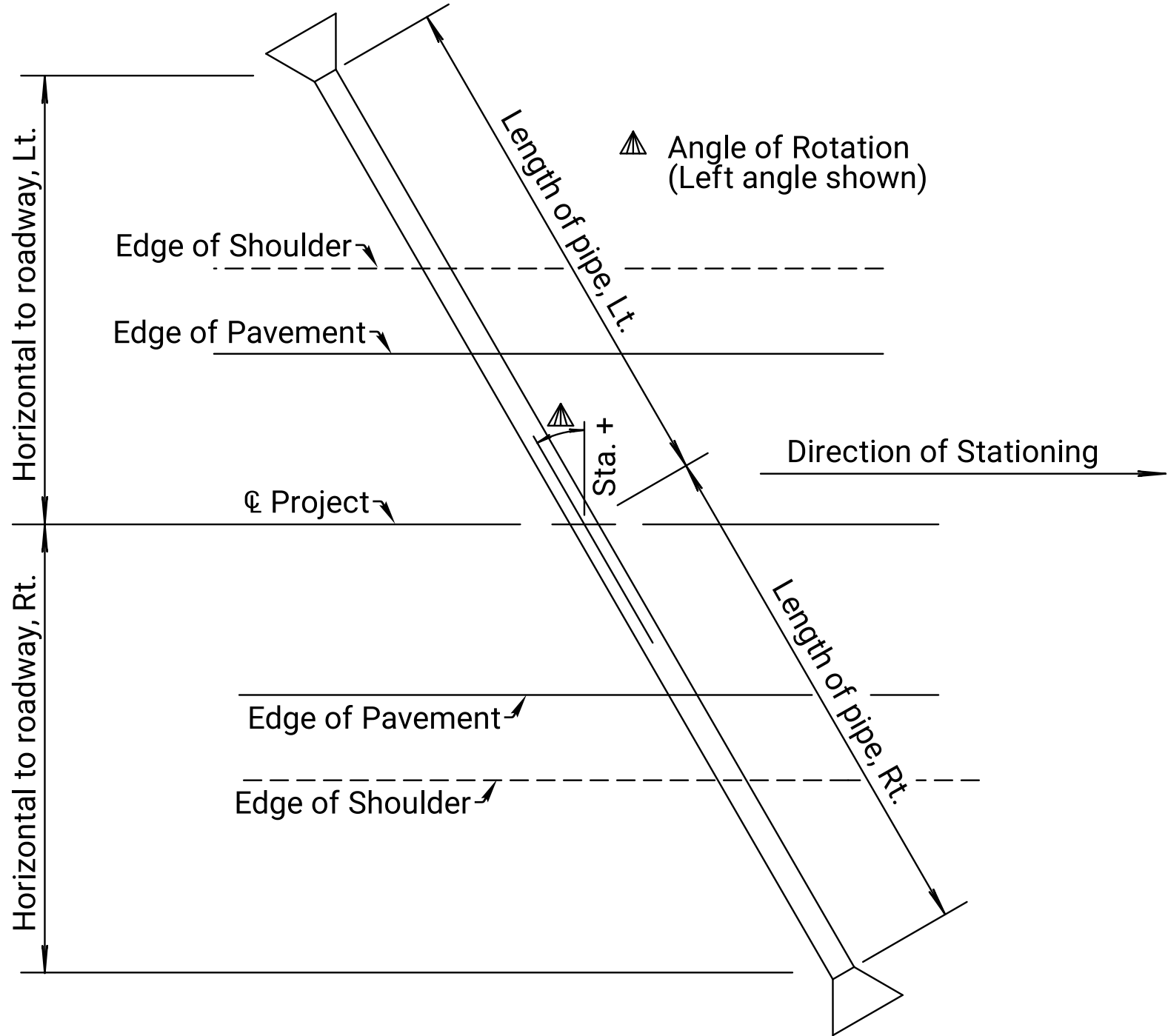
Note to Designer:

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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	23	100

[illegible]

- Unless otherwise noted, minimum pipe gauge & corrugations to be as shown in RD660. See Summary of Quantities for End Section information.
- ✱ Only include floor elevations for embedded pipes. See RD668 for details. For structures not embedded, the floor elevations may be omitted.



PLAN
(Showing Rotation about $\mathbb{C}$)

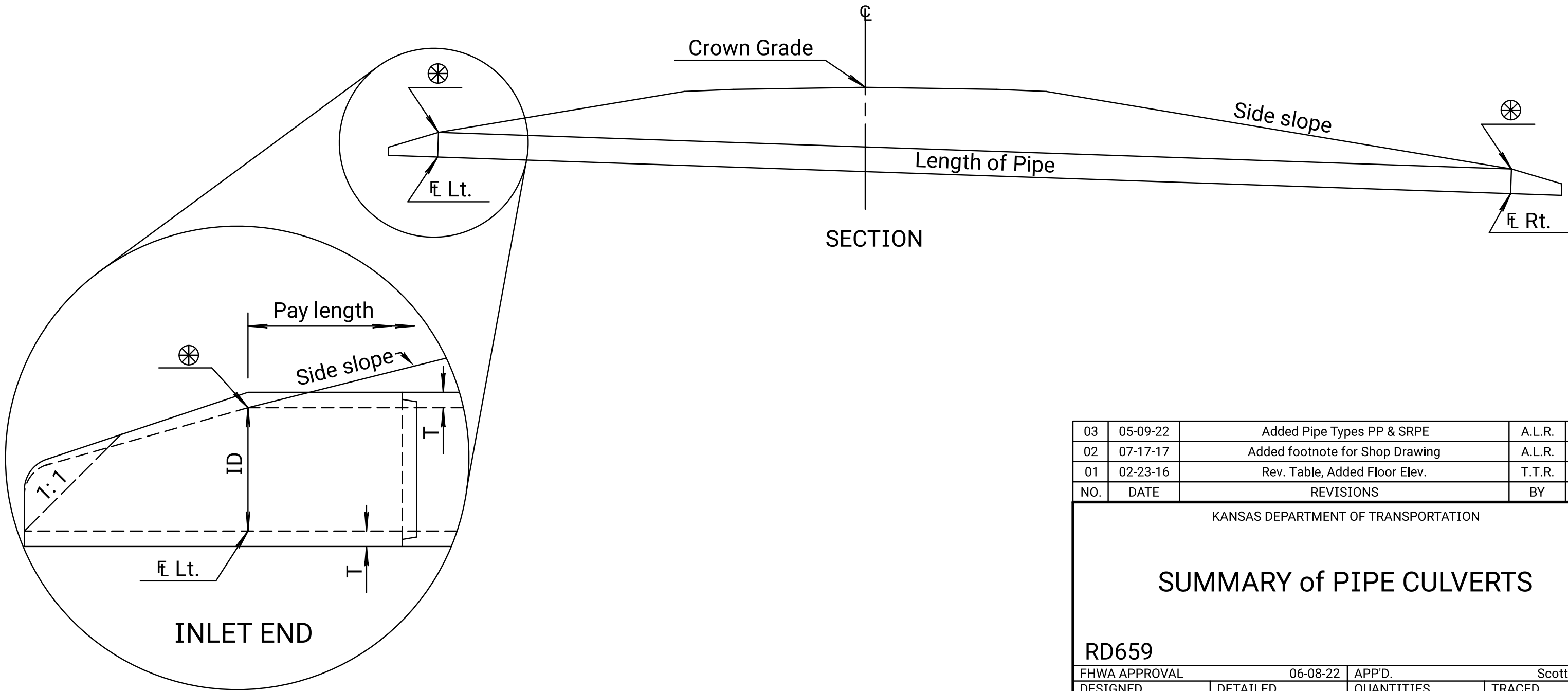
⊗ Design side slope to intersect inside diameter of pipe outside of Clear Zone.

Type	ALLOWABLE LOCATION 			
	Mainline	Side Road	Entrance	Storm Sewer Under ML Not Under ML
 PVC/P	X	X	X	
 PEP	X	X	X	
 PPP	X	X	X	
 SRPE	X	X	X	
CSP				
ACSP	X	X	X	
CAP	X	X	X	
RCP	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: $\geq 30"$

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

- ◆ Type IV End Sections are only made of CS or ACS.
- ψ Submit Shop Drawing of connection for review



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.
NO.	DATE	REVISIONS	BY	APP'D
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.	

Plotted by : Ben.Dyhouse@ks.gov
File : ka648401bbr114-001.dgn

12-DEC-2025 19:58

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	24	100

SUMMARY OF QUANTITIES																
Item Location	Excavation	Concrete		Reinforcing Steel		Prestressed	# Piles	# Test Piles	Cast Steel	Drilled Shaft	Core Hole	Sonic Test	Bridge	Abutment	Bridge	Slope
	Class I	Grade 4.0	Grade 4.0	Epoxy Coated	Grade 60	Concrete Beams	(Steel)	(Special)	Pile Points	(48")	(Investigative)	(Drilled Shaft)	Deck	Aggregate	Backwall	
	Cu. Yds.	(AE)(SW)	(AE)	(Grade 60)		(K3)	(HP12x53)	(HP12x53)	Each	(Cased)	Lin. Ft.	(Set Price)	Grooving	Drain	Prot. System	(Riprap Stone)
		Cu. Yds.	Cu. Yds.	Lbs.	Lbs.	Lin. Ft.	Lin. Ft.	Lin. Ft.		Lin. Ft.		Each	Sq. Yds.	Cu. Yds.	Sq. Yds.	Cu. Yds.
Abutment No. 1	159.8	**	26.9	**			392	61	8					73.6	55.1	273.8
Pier No. 1		**	46.8	**	9,492					197.9	72.0					
Pier No. 2		**	61.4	**	11,796					167.9	62.0					
Pier No. 3		**	61.5	**	11,796					162.9	60.3					
Abutment No. 2	160.4	**	27.0	**			413	64	8					73.9	55.3	316.1
Substr. Total	320.2		223.6		33,084		805	125	16	528.7	194.3	1		147.5	110.4	589.9
Superstr. Total		522.3		125,720		1,776							1,206			
Total	320	522.3	223.6	125,720	33,080	1,776	805	125	16	529	194	1	1,206	148	110	590

** Included in the Superstr. Total Quantity.

NOTE: Use HP 12x53 piles at abutments

† Summary of piling
Abutment No. 1 7 @ 56 Ft. & 1 Test Pile @ 61 Ft.
Abutment No. 2 7 @ 59 Ft. & 1 Test Pile @ 64 Ft.

TRAFFIC DATA - (114)	
AADT (2025)	1,300
AADT (2045)	1,600
DHV	10%
D	60%
T	27%

DESIGN DATA

DESIGN SPECIFICATIONS:
AASHTO Specifications, 9th Edition and latest Interim Specifications. Load and Resistance Factor Design

DESIGN LOADING:
HL-93

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

UNIT STRESSES:
Concrete (Grade 4.0) f'c = 4 ksi
Concrete (Grade 4.0)(AE) f'c = 4 ksi
Concrete (Grade 4.0)(AE)(SW) f'c = 4 ksi
Prestressed Beam Concrete f'c = 5 ksi
Reinforcing Steel (Grade 60) fy = 60 ksi
Steel Piling (Gr. 50) fy = 50 ksi
Prestressed Strands ½" ø Grade 270 uncoated 7-wire low-relaxation strand

LRFD DESIGN PILE LOAD:
Design Loading (Tons/Pile) Strength I Service I Phi
Abutment 1 & 2 84 58 0.65

LRFD DESIGN DRILLED SHAFT LOAD:
Design Loading (tons/shaft) Strength I Service I Phi
Pier 1, 2, & 3 339 256 End Bearing 0.50
Side Friction 0.55

GENERAL NOTES

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 1140.50 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

BACKFILL COMPACTION: Compact backfill at the abutments.

PILING: Drive all piling to bear upon the Towanda Limestone Member. Driving shall stop when in the opinion of the Engineer additional driving may damage the piling. Drive all piling to the Pile Driving Formula Load of:

Abutment No. 1 84 Tons
Abutment No. 2 84 Tons

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

PILING SPLICE LOCATION: Integral pile splice locations and weld testing criteria for, Abutments 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 Driver 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.

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

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

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)". Use Grade 4.0 Concrete in the drilled shaft. In no case shall the bottom of the drilled shaft be placed higher than the elevation shown unless otherwise directed by the KDOT Geologist.

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

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

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

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

DRILLED SHAFT BACKFILL: Backfill the annular space between the temporary casing and the permanent casing with grout/flowable fill as defined in the KDOT Specifications

PERMANENT CASING: See KDOT Specifications.

INDEX TO BRIDGE DRAWINGS	
Sheet No.	Drawing
24-25	General Notes and Quantities
26	Contour Map
27	Construction Layout
28	Engineering Geology
29-30	Abutment Details
31	Abutment Aggregate Drain
32	Drilled Shaft Details
33	Pier Details
34	Pier Diaphragm Details
35	Temporary Diaphragm Details
36	Framing Plan
37	Standard Prestressed Beam Details
38	K3 Beam Details
39	Slab Details
40	Slab Camber Details
41	Typical Section
42-43	32" Corral Rail Details
44	Bill of Reinforcing and Bending Diagrams
	Standards
45	Bridge Excavation
46	Standard Pile Details
47	Supports and Spacers for Reinforcing Steel

LFD & LRFR RATING FACTORS			
Rating Level			
Truck		Inventory	Operating
HS-20	(36T)	1.235	2.610
Type HET	(110T)		1.451
2002 LFD Rating. 17th Edition AASHTO			
HL-93 Loading		1.204	2.122
2021 Manual for Bridge Evaluation			

NO.	DATE	REVISIONS		BY APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 15-21-187.56 (114)			Sta. 251+68.00	
GENERAL NOTES AND QUANTITIES K-15 over Chapman Creek				
Proj. 15-21 KA-6484-01			Dickinson Co.	
DESIGNED	BDD	DETAILED	BDD	QUANTITIES
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.
			CADD	
			CADD CK.	CEM

CADconform Certify This File

Sh. No. 24

CADconform Certify This File

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	25	100

GENERAL NOTES

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

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

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

CAMBER: Construct the finished deck to plan grade by varying the depth of the fillet over the beam to provide for prestress camber, concrete dead load deflection and, if necessary, vertical curvature. After the prestressed beams are erected measure the camber in the field by taking a profile of each beam. Correct any variation between the actual camber and concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the beam so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the beam shall be 9" inches. Prior to shipping, the camber shall be no greater than the design camber plus $\frac{1}{2}$ ". The design camber is equal to the 50 day camber shown in the plans.

The theoretical amount of concrete required for the fillets is 16.5 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

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

ERECTION ELEVATION CHECKS: After the abutment and pier concrete has cured and before setting any prestressed beams, present verification to the Engineer that the elevations at the bearings match plan elevation ($\pm \frac{1}{4}''$).

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

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.

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

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

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

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.

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

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

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

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

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

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

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

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 A Structure. Submit detailed Erection Plans to the Field Engineer per KDOT Specifications. A Licensed Professional Engineer is not required.

SLOPE PROTECTION (Riprap Stone): Place Slope Protection (Riprap Stone) to the limits and thicknesses shown on the plans or as directed by the Engineer. Use Light Series 200# Gradation as described in Division 1100 placed to the limits shown on the plans. Place a 10 foot wide mat of geotextile under the rock/rubble embankment on the berm and berm slopes and centered on the drip lines of the slab

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 Jan. 17, 2023

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

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

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

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

PIER BEAM CONSTRUCTION: Cure the columns as required by the KDOT Specifications before beginning the pier beam construction (placing resteel or formwork). Do not drill and grout bolts or other devices into the columns used for falsework support unless approved by the Engineer. Cure the columns as required by the KDOT Specifications before placing pier beam concrete. Do not remove falsework used to support the pier beam until the pier beam concrete has cured as required by the KDOT Specifications. Do not set girders or beams on the pier beam until after the falsework is removed or the pier beam concrete has 0.75f'c strength as tested.

NO.	DATE	REVISIONS					BY	APP'D	
KANSAS DEPARTMENT OF TRANSPORTATION									
Br. No. 25-21-187.56 (114)						Sta. 251+68.00			
GENERAL NOTES									
K-15 over Chapman Creek									
Proj. 25-21 KA-6484-01						Dickinson Co.			
DESIGNED	BDD	DETAILED	BDD	QUANTITIES	BDD	CADD	BDD		
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.	CEM	CADD CK.	CEM		

POT @ Sta. 234+00
N 557842.267 E 7557768.022
1. Set 1/2" rebar 4" deep
2. North end of a CMP
3. TW of 3450 Ave
4. Found spk & KDOT Washer @ top fence post
5. In TW of Hwy 15

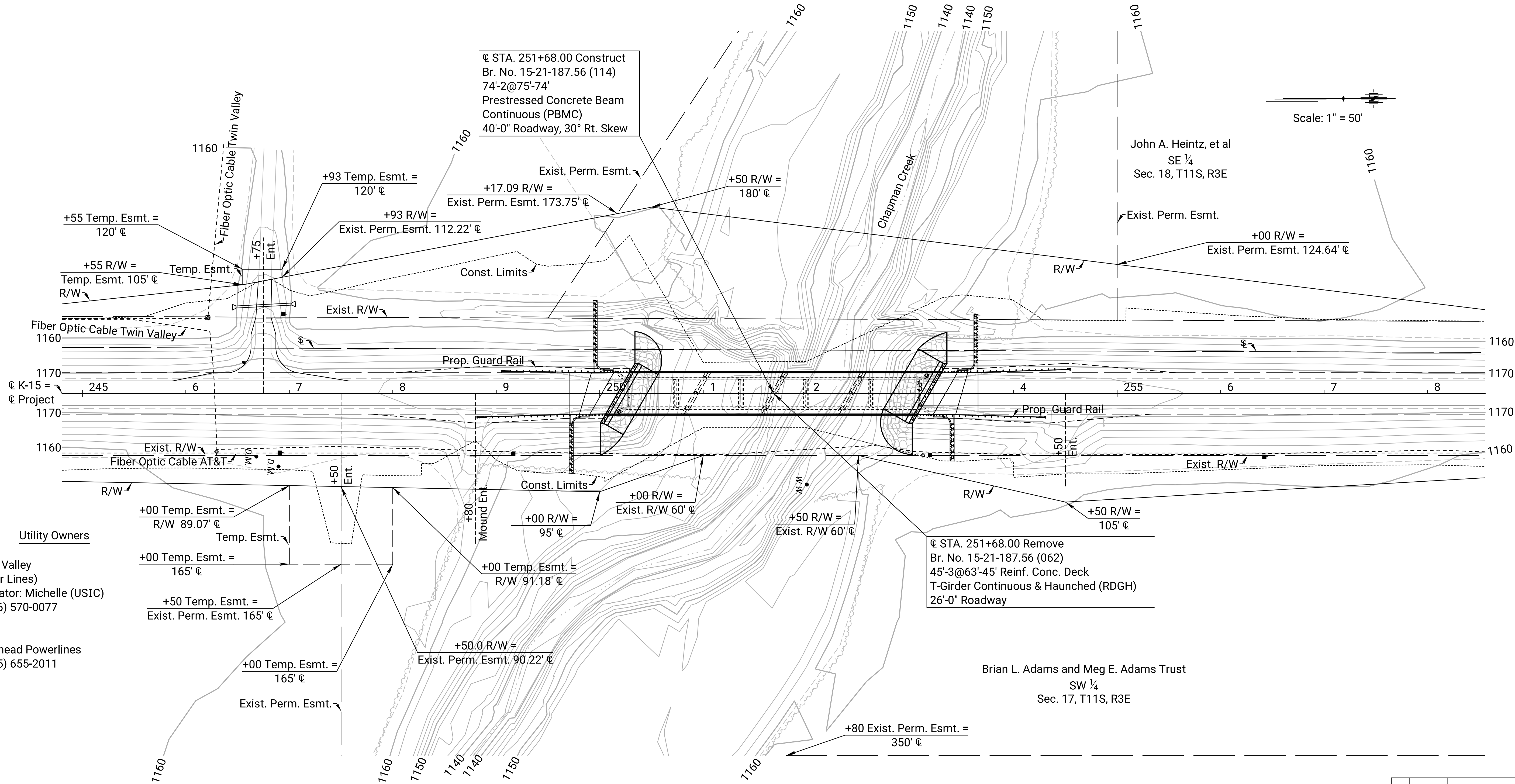
POT @ Sta. 246+00
N 579042.232 E 7557758.913
1. Set 1/2" rebar 4" deep
2. TW of house entrance
3. @ top Tel. Ped.
4. S end of East CMP
5. In TW of Hwy 15

POT Sta. 251+68 = @ Bridge = Sta. 251+68
1. Nothing Set

POT @ Sta. 258+00
N 580242.198 E 7557749.804
1. Set 1/2" rebar 4" deep
2. Line of power poles to South
3. @ top R/W marker
4. TW of RD to east
5. In TW of Hwy 15

POT @ Sta. 270+00
N 581442.163 E 7557740.695
1. Set 1/2" rebar 4" deep
2. N/S fence line
3. Set Spk & washer (KDOT) @ top fence post
4. Set Spk & washer (KDOT) @ top fence post
5. In TW of Hwy 15

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	26	100



SW Cor. Sec. 17 T11S R3E
N 579204.366 E 7557709.198
1. 49.49' Lt. of @ Sta. 233+29.85 @ to SL angle = SW 91° 07' 01"
2. Set concrete nail and KDOT washer in west face utility marker post
3. Set concrete nail and KDOT washer in north face corner fence post
4. Top center of south end CMP
5. Center of travelway gravel road to the west, 3400 Ave.
6. Center of travelway K-15 hwy.

67' NW
46.3' SW
19.6' SSE
3' N
49' E

W 1/4 Cor. Sec. 17 T11S R3E
N 581851.227 E 7557698.407
1. 39.19' Lt. of @ Sta. 259+79.97 @ to SL angle = SW 91° 00' 56"
2. Top center of north end CMP
3. Top center of south end CMP
4. Center of travelway of gravel road to the east, 3450 Ave.
5. Center of travelway field entrance to the west

31' NNW
26.3' SSW
21' N
3' N

HISTORIC HIGHWATER INFORMATION

According to resident Dennis Avery and Mark Willman of the Clay Center KDOT Office, Chapman Creek rose to 2-3 ft. from the top of opening in summer of 1993.
HHW Elev. = 1167

Sea Level Datum of NAVD 1988

NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 15-21-187.56 (114)			Sta. 251+68.00	
CONTOUR MAP K-15 over Chapman Creek				
Proj. 15-21 KA-6484-01			Dickinson Co.	
DESIGNED	BDD	DETAILED	BDD	QUANTITIES
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.
			CEM	CADD CK.
				CEM

CADconform Certify This File

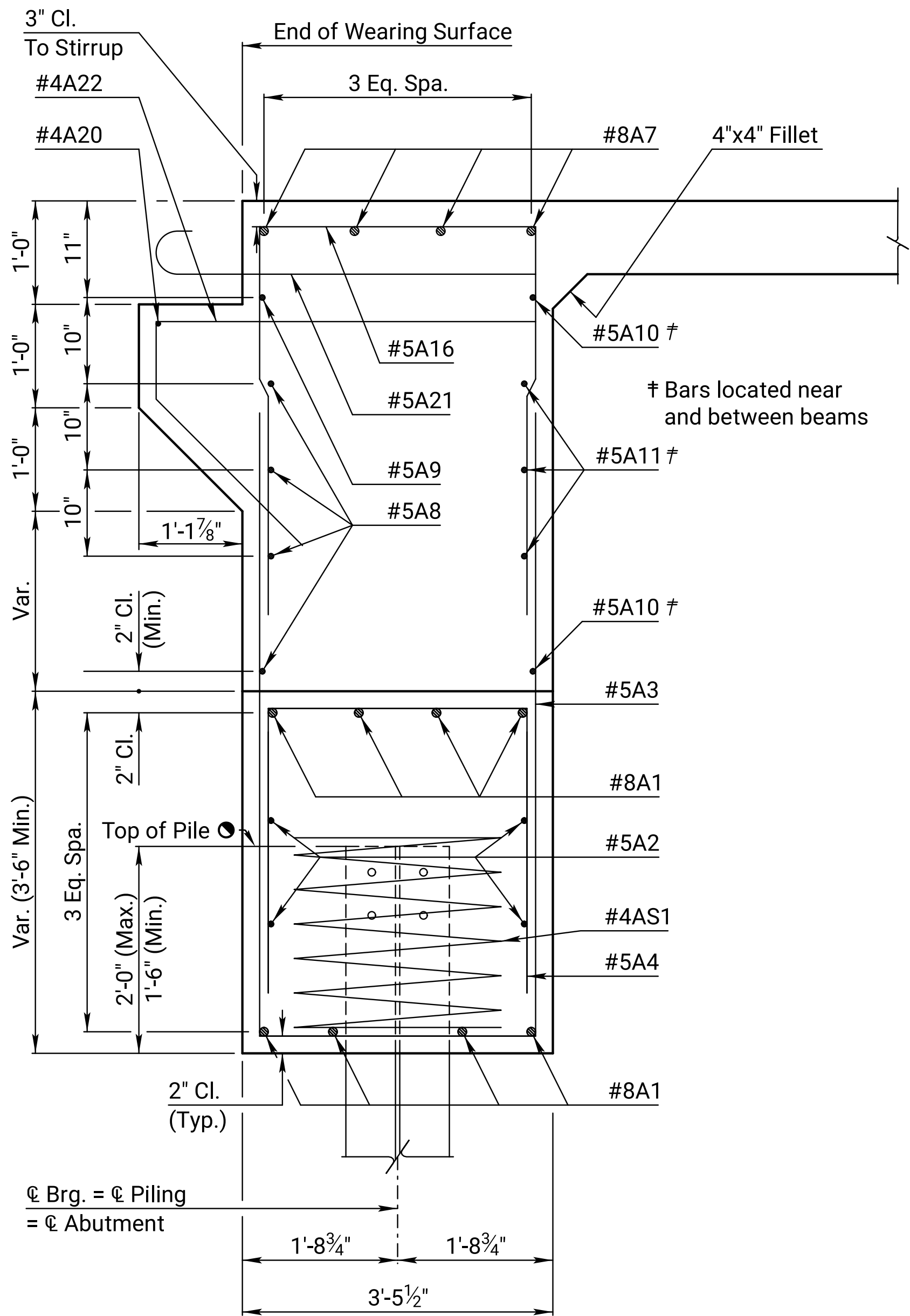
Sh. No. 26

Plotted by : Ben.Dyhouse@ks.gov 12-DEC-2025 20:02
File : ka648401bbr114-012.dgn

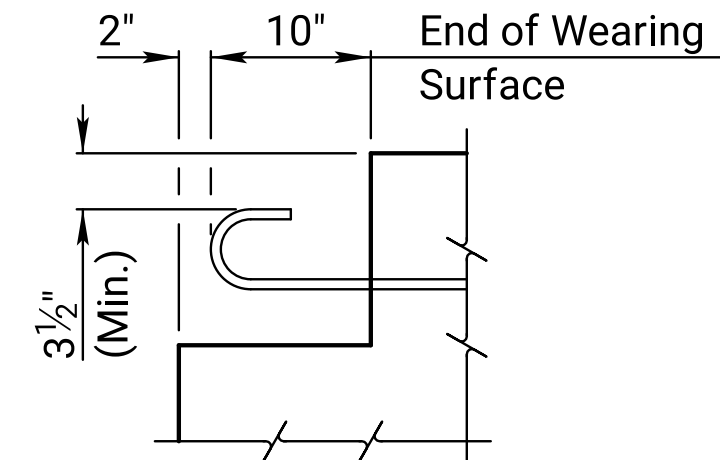
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	30	100

TABLE OF ELEVATIONS		
	Abut. No. 1	Abut. No. 2
Crown Grade Elev.	1174.88	1174.61
West Edge of Slab Elev.	1174.58	1174.22
East Edge of Slab Elev.	1174.51	1174.32
Beam 'A' Seat Elev.	1169.88	1169.53
Beam 'B' Seat Elev.	1169.98	1169.67
Beam 'C' Seat Elev.	1170.09	1169.80
Beam 'D' Seat Elev.	1170.08	1169.82
Beam 'E' Seat Elev.	1169.95	1169.72
Beam 'F' Seat Elev.	1169.83	1169.62
Bot. of Abut. Beam Elev.	1166.33	1166.03
Top of Pile Elev. ●	1168.33	1168.03

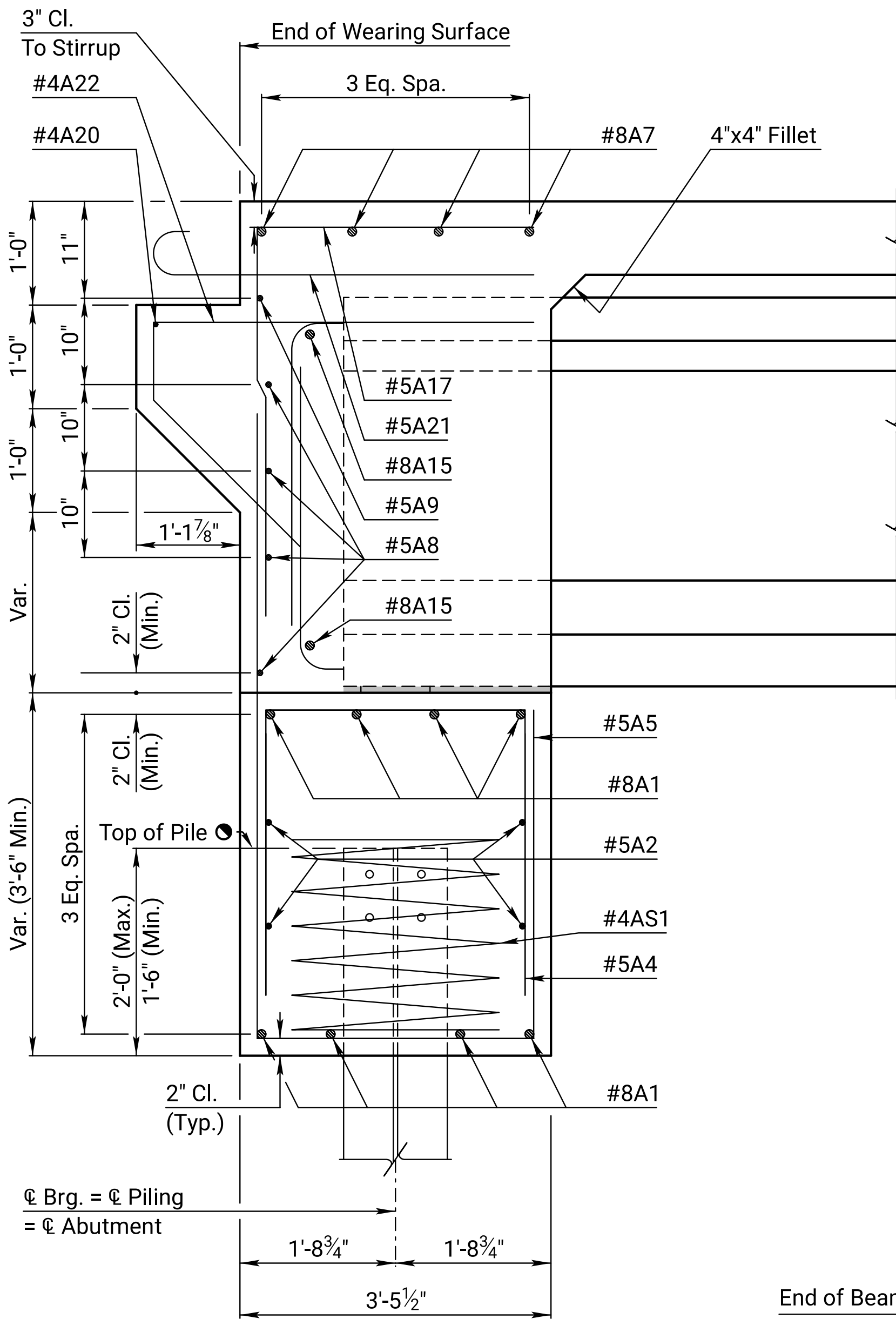
● Note: Top of pile elevations are based on the 2'-0" maximum embedment. Minimum embedment is 1'-6"



SECTION BETWEEN BEAM

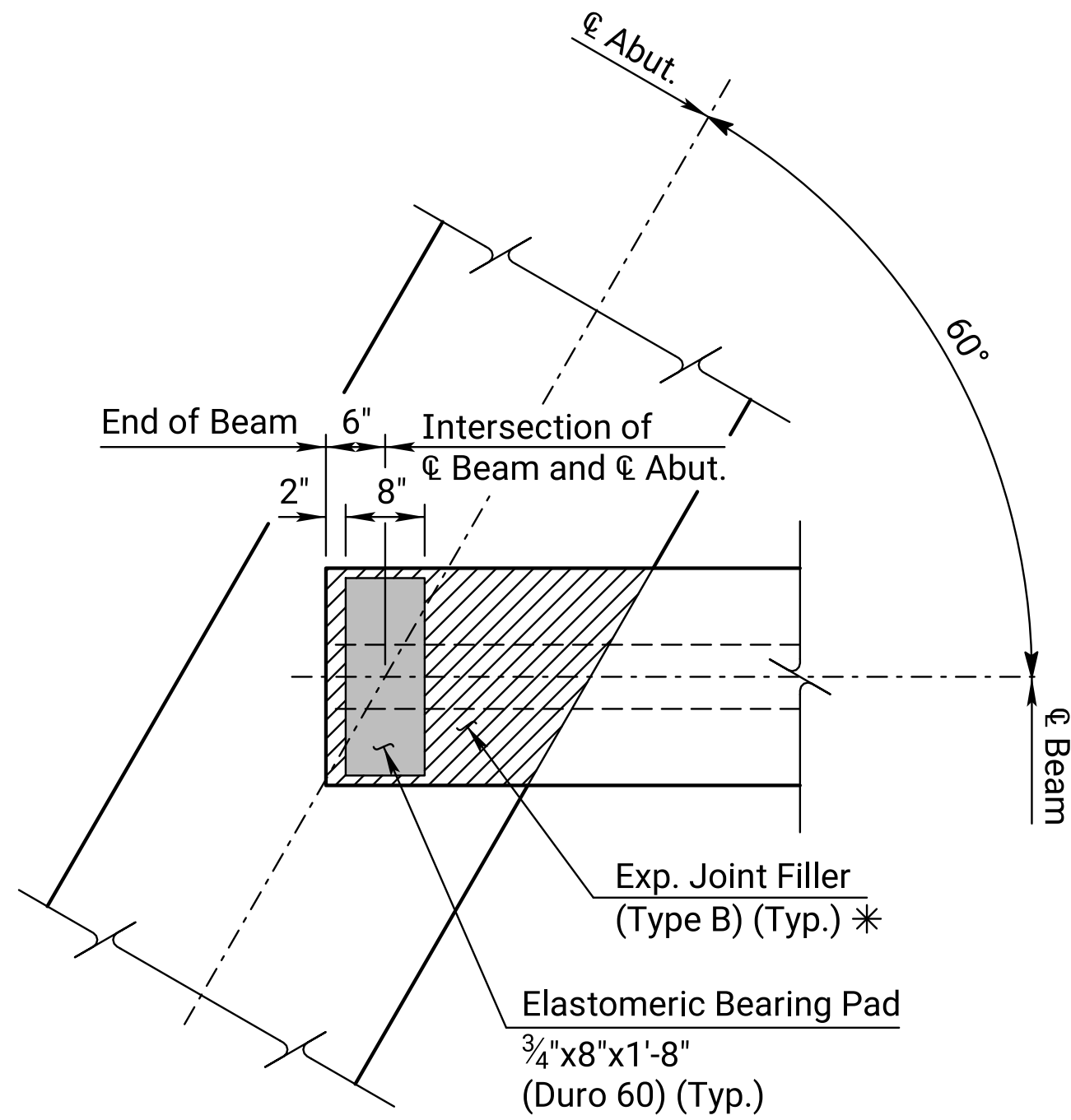


APPROACH SLAB TIE DETAIL



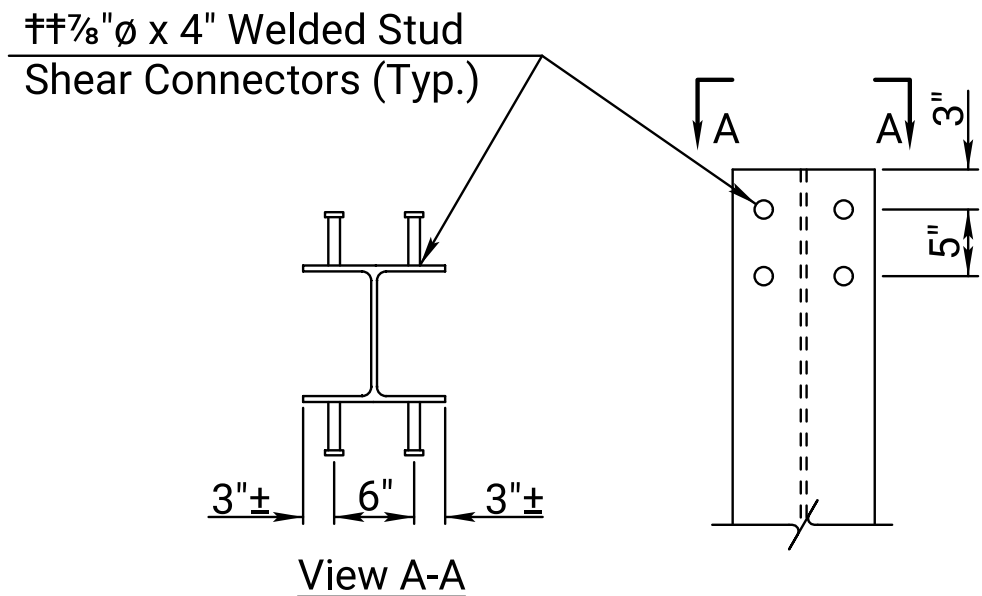
SECTION NEAR BEAM

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



TYPICAL LAYOUT FOR BEAM ENDS AT ABUTMENTS

* Note: Determine thickness of Expansion Joint Filler in the field to fill gap between beam and bearing seat.



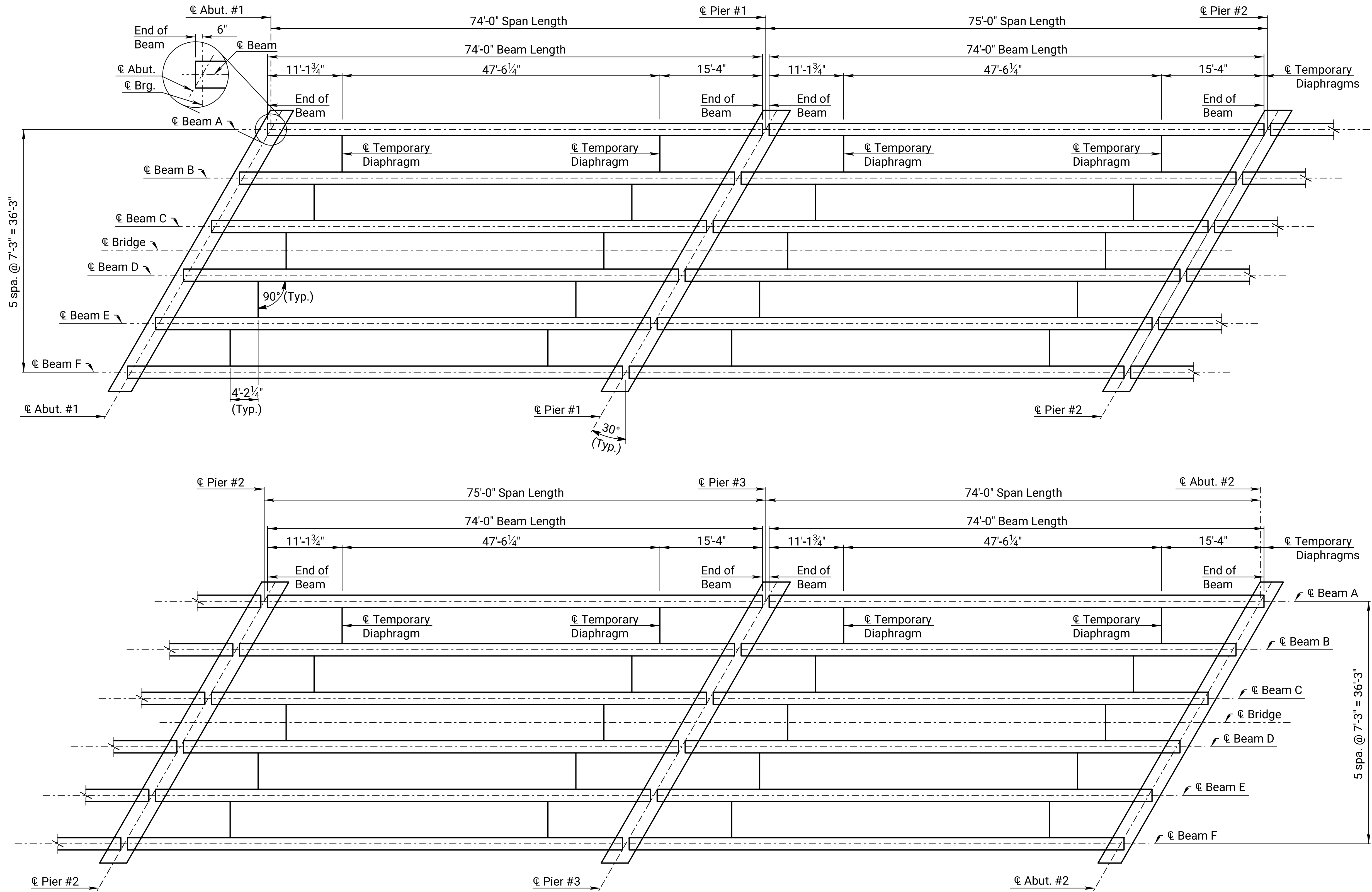
PILE WELDED STUD SHEAR CONNECTOR DETAIL

†† Welded Stud Shear Anchors are subsidiary to HP 12x53 Steel Piles

64 Req'd. per Abutment

NO.	DATE	REVISIONS		BY APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 15-21-187.56 (114)			Sta. 251+68.00	
ABUTMENT DETAILS				
Proj. 15-21 KA-6484-01			Dickinson Co.	
DESIGNED	BDD	DETAILED	BDD	QUANTITIES
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	36	100



FRAMING PLAN

NO.	DATE	REVISIONS		BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION					
Br. No. 15-21-187.56 (114)			Sta. 251+68.00		
FRAMING PLAN					
Proj. 15-21 KA-6484-01			Dickinson Co.		
DESIGNED	BDD	DETAILED	BDD	QUANTITIES	BDD
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.	CEM
				CADD CK.	CEM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	37	100

GENERAL NOTES

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

Use air entrained concrete. The KDOT Materials Section shall approve the mix design.

Unless otherwise shown on the plans, $f'c = 5,000$ psi and $f'c$ at release = 4,300 psi.

Use reinforcing steel conforming to the requirements of ASTM A615, Grade 60. The reinforcing steel shown shall be uncoated unless otherwise indicated.

Use $\frac{1}{2}$ " nominal diameter (unless otherwise indicated), uncoated, seven-wire, low relaxation prestressing tendons conforming to the requirements of ASTM A416, Grade 270.

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

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

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

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

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

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

Bevel all exposed edges of beams except the tops and ends with a $\frac{3}{4}$ " triangular molding or round the edges to a $\frac{3}{4}$ " radius. Round the angle of intersection between the web and the flanges.

Apply an initial force of 1,000 to 3,000 pounds to each strand to take up any slack in the cables. Unless otherwise noted on the plans, apply a force of 31,000 pounds to each strand. Stress harped strands to a magnitude such that they are tensioned to 31,000 pounds after they are in position.

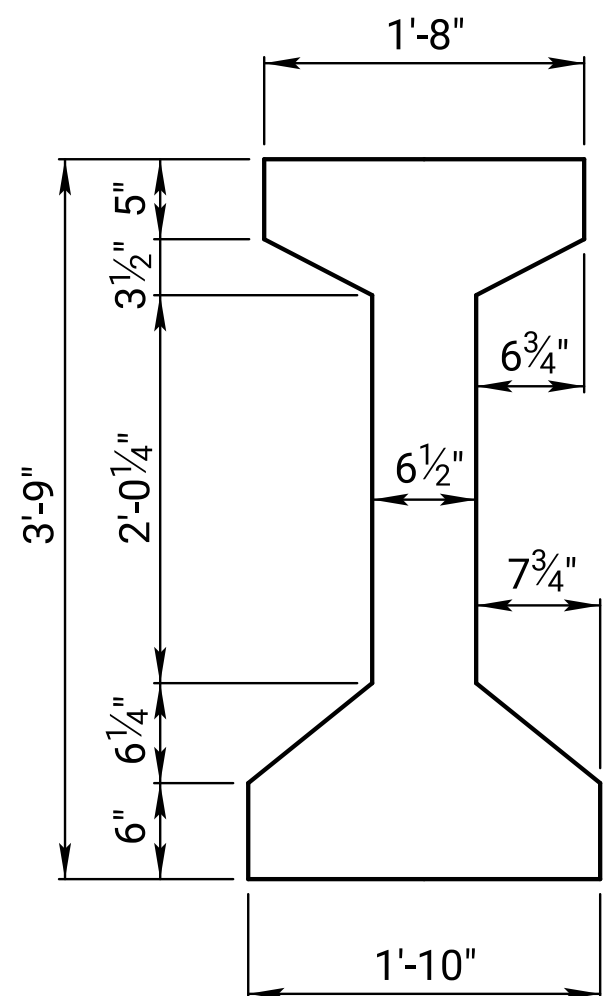
Strike off level and apply a wire brush or stiff broom finish to the tops of the beams. Apply the finish transverse to the length of the beam. (Note: When using precast panels for deck construction, the outside 5" on each side of the top flange shall be finished smooth with a steel trowel.) At approximately the time of initial set, brush the top of the beam transversely with a coarse wire brush to remove all laitance.

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

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

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

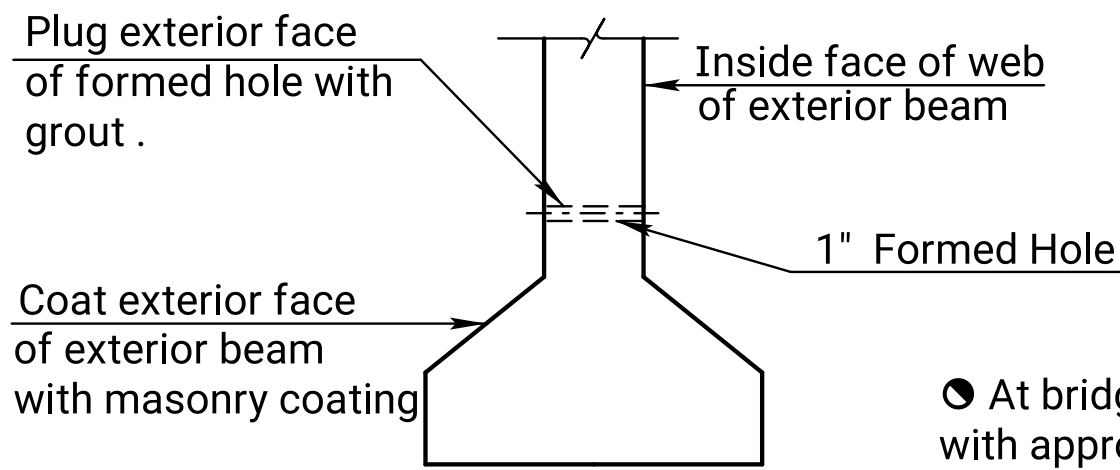
Stencil with paint the following information on the webs approximately 5'-0" from one end of the beam: date of concrete placement, date of strand release, and beam mark.



TYPE K3

Area	525 in. ²
IcG	127,490 in. ⁴
Y Bot	21.02 in.
Vol./Surf. Area	3.56 in.
Wt./Ft.	547 lbs.

TYPICAL BEAM SECTIONS



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

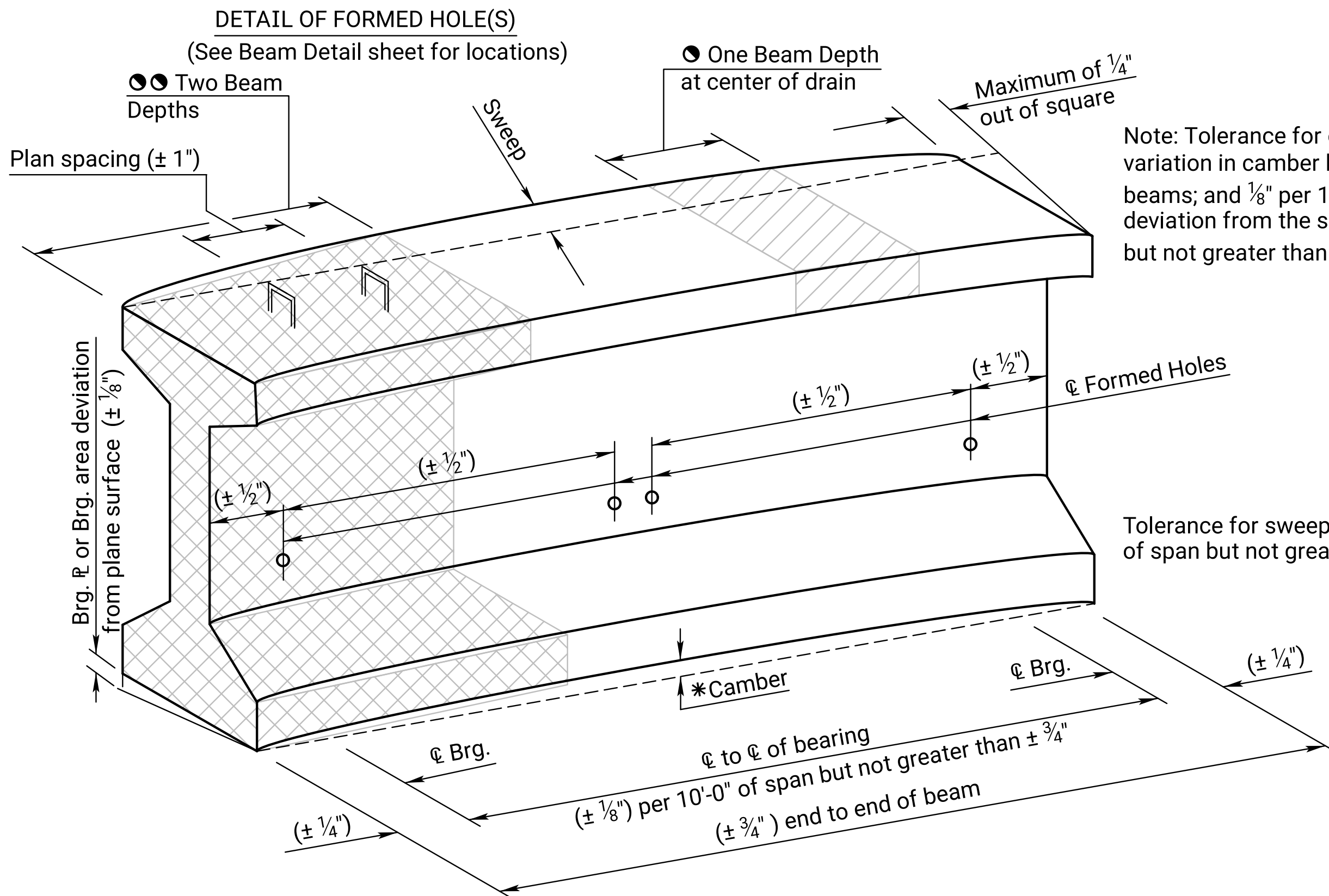
At expansion joint locations coat beam with approved epoxy substructure waterproofing membrane.

Note: Dimensions shown in parentheses are tolerances only.

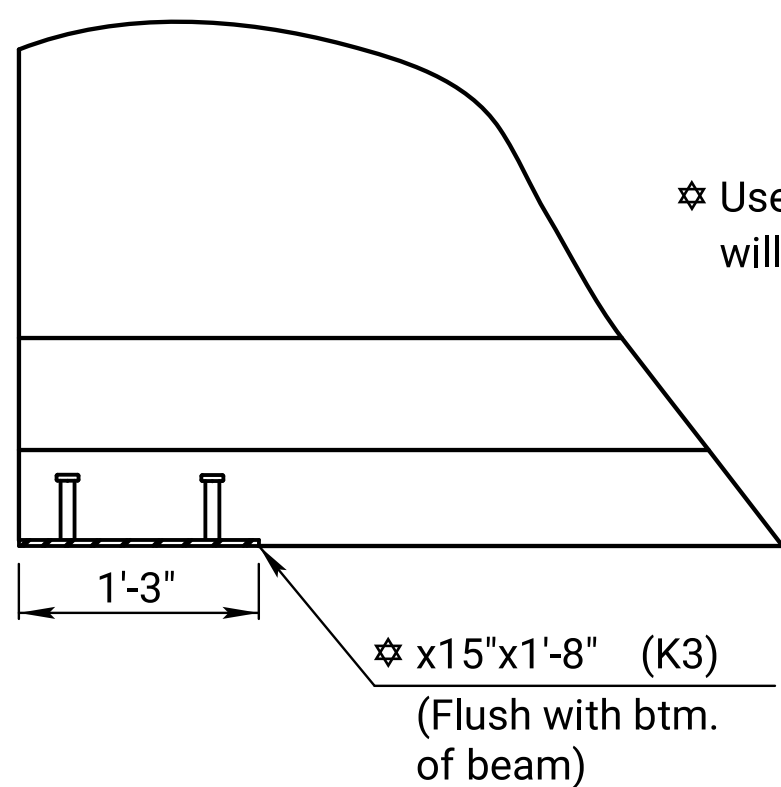
CG = Center of Gravity

Note: Tolerance for camber is 1" maximum variation in camber between adjacent beams; and $\frac{1}{8}$ " per 10'-0" of span deviation from the specified camber but not greater than $\frac{1}{2}$ " deviation.

Tolerance for sweep is $\frac{1}{8}$ " per 10'-0" of span but not greater than 1".

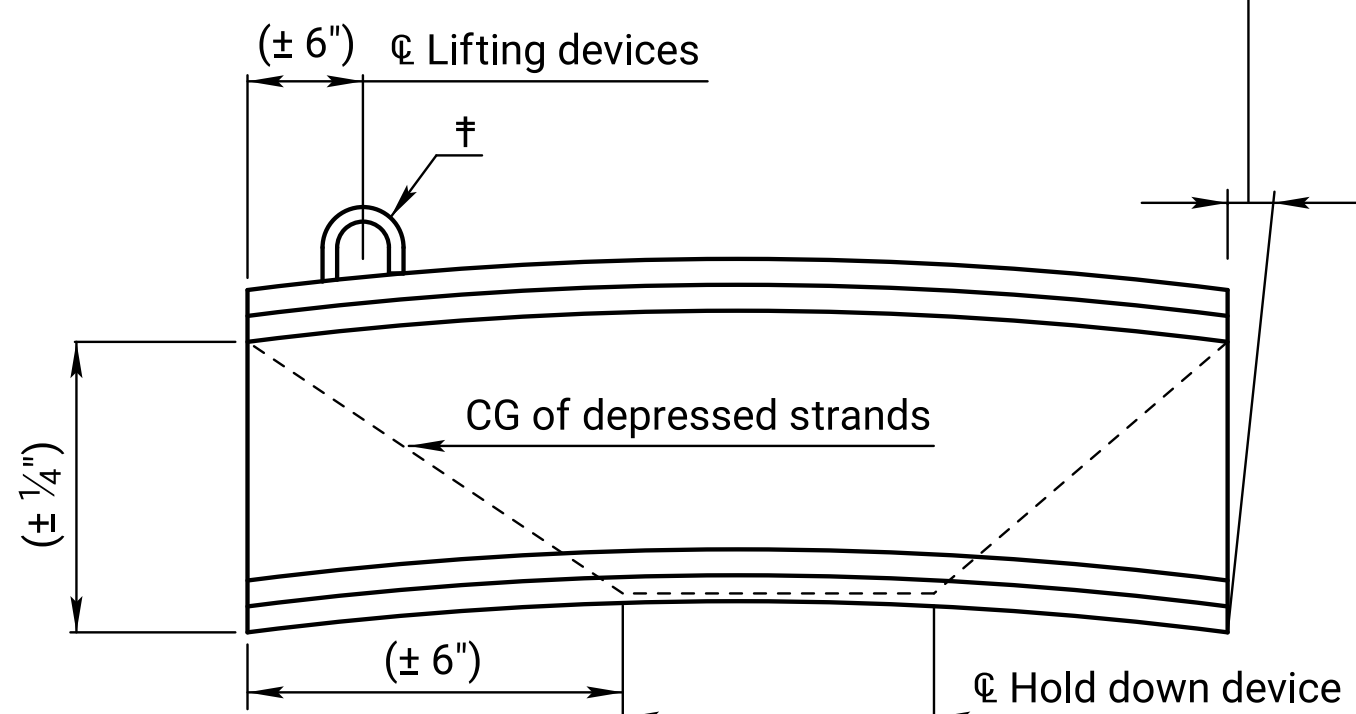


PRESTRESSED BEAM FABRICATION TOLERANCES

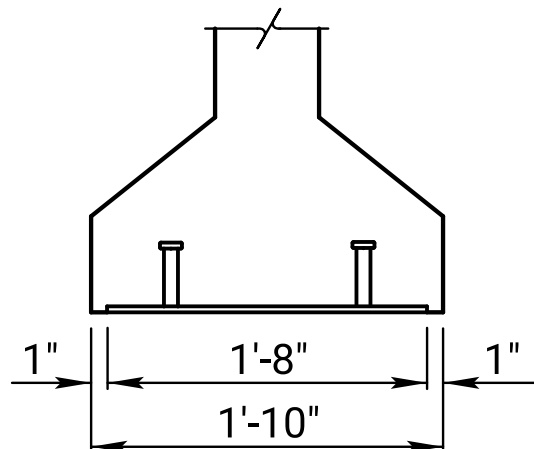


ELEVATION

Maximum deviation from plane normal to axis of beam $\frac{1}{8}$ " per ft. of beam height



ELEVATION



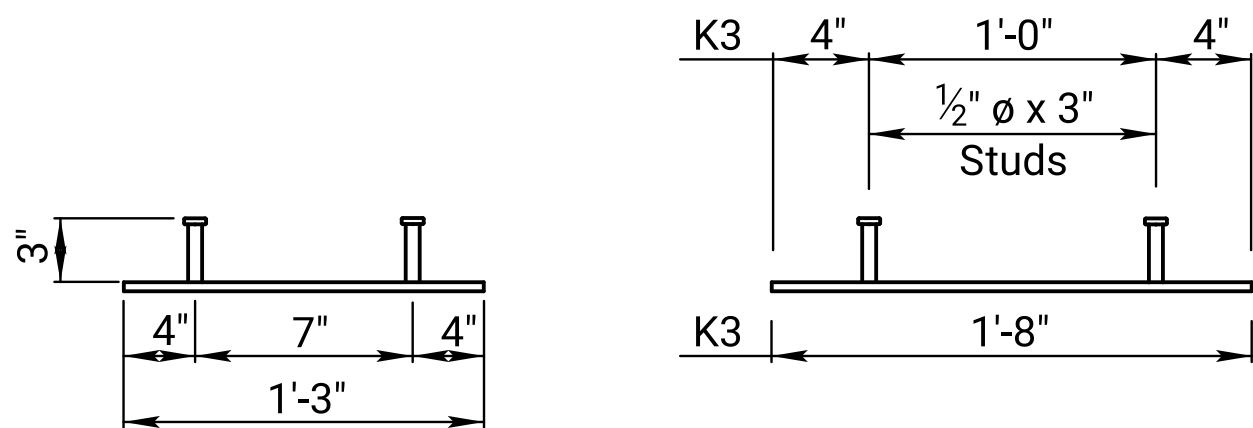
END VIEW
(K3 Beam)

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

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

The exposed surface of the bearing plates shall be galvanized.

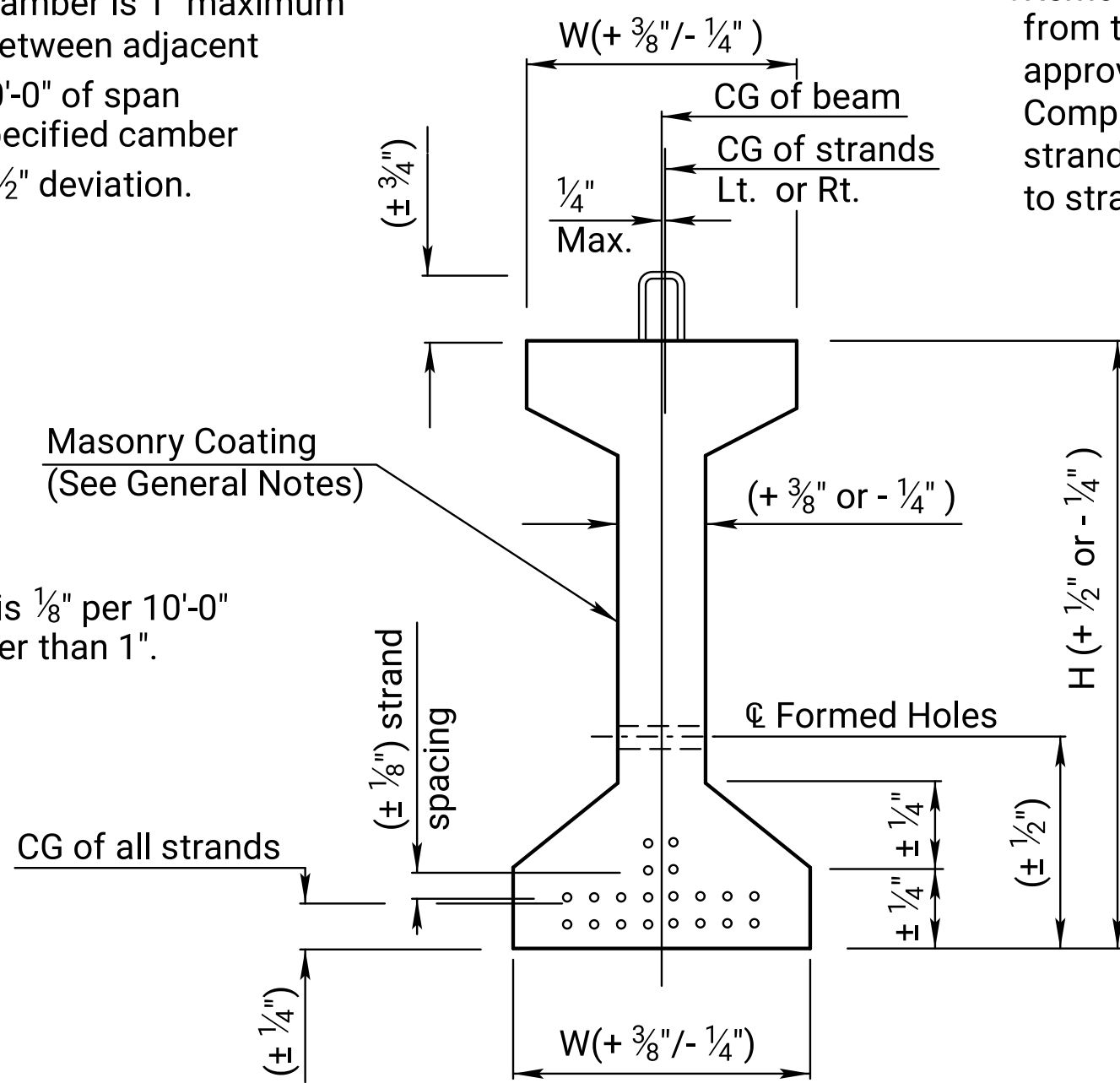
All work and material to install the bearing plates shall be subsidiary to the bid item "Prestressed Concrete Beam".



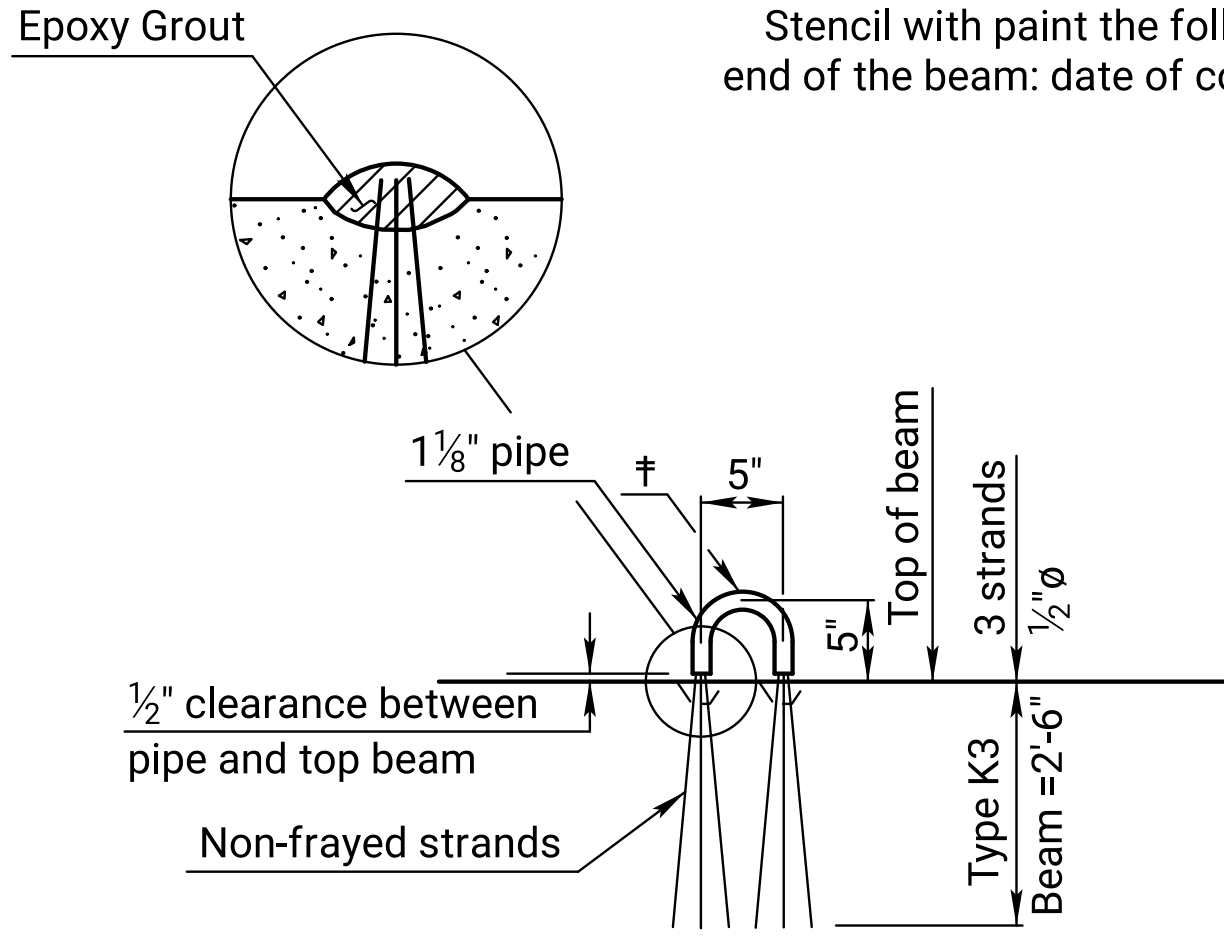
BEARING PLATE DETAILS

*Prior to shipping, the camber shall be no greater than the design camber + $\frac{1}{2}$ ". The design camber is equal to the 50 day camber shown in the plans.

Remove lifting device within $\frac{1}{2}$ " from top of beam. Coat area with approved epoxy bonding agent. Completely cover remaining exposed strands and fill depressions adjacent to strands with approved epoxy grout.



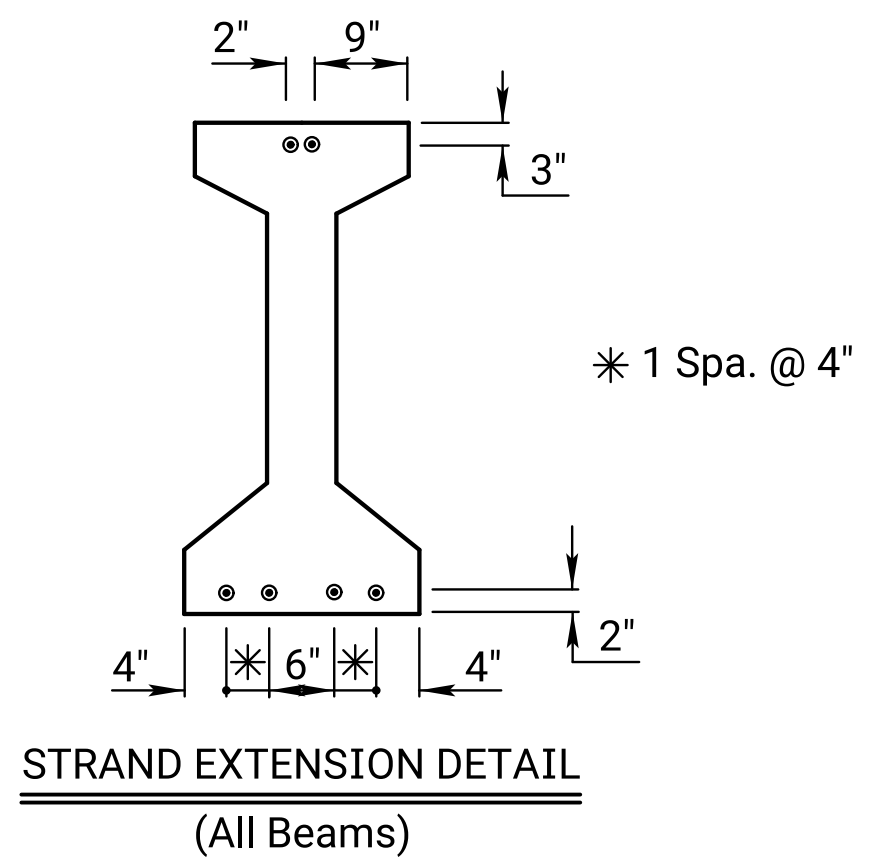
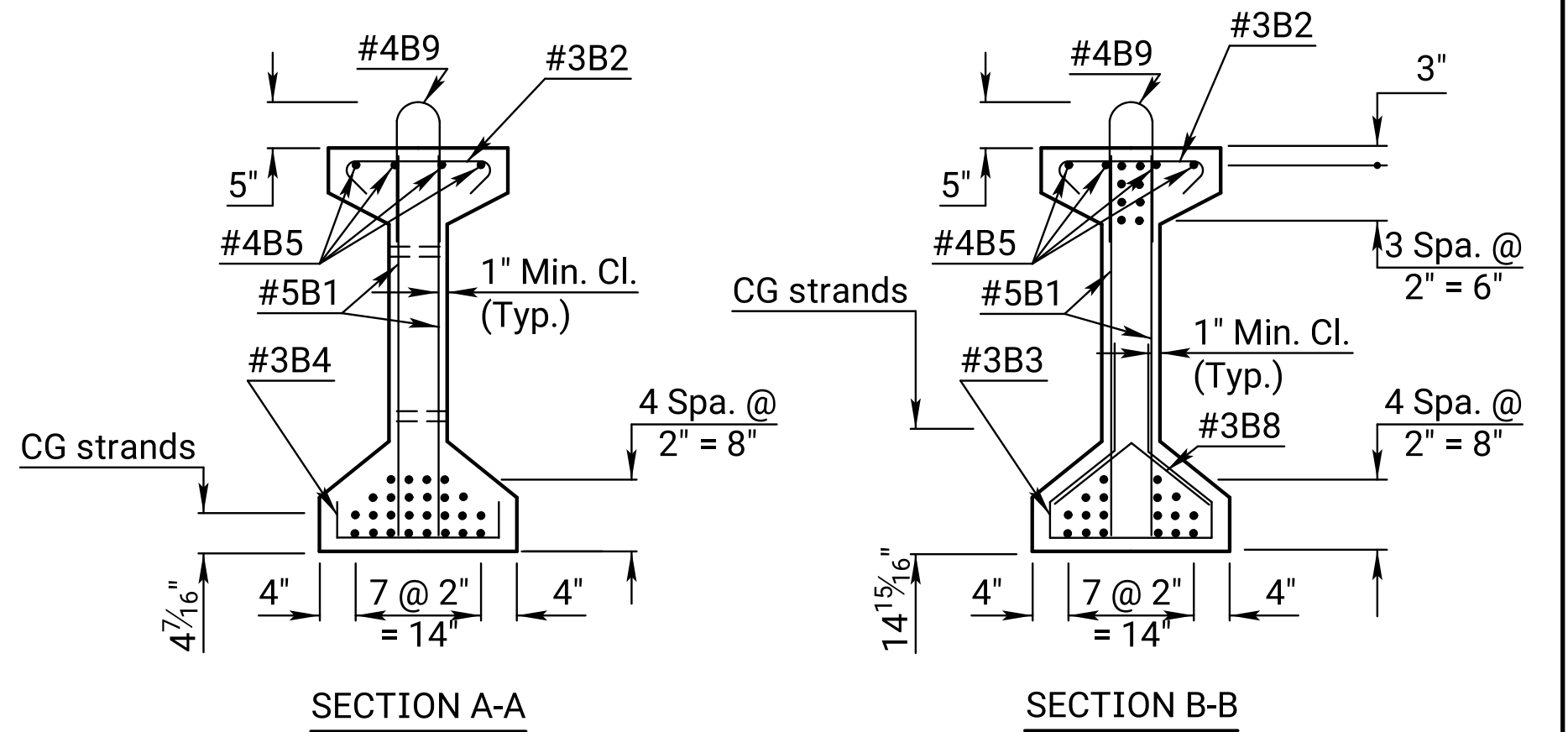
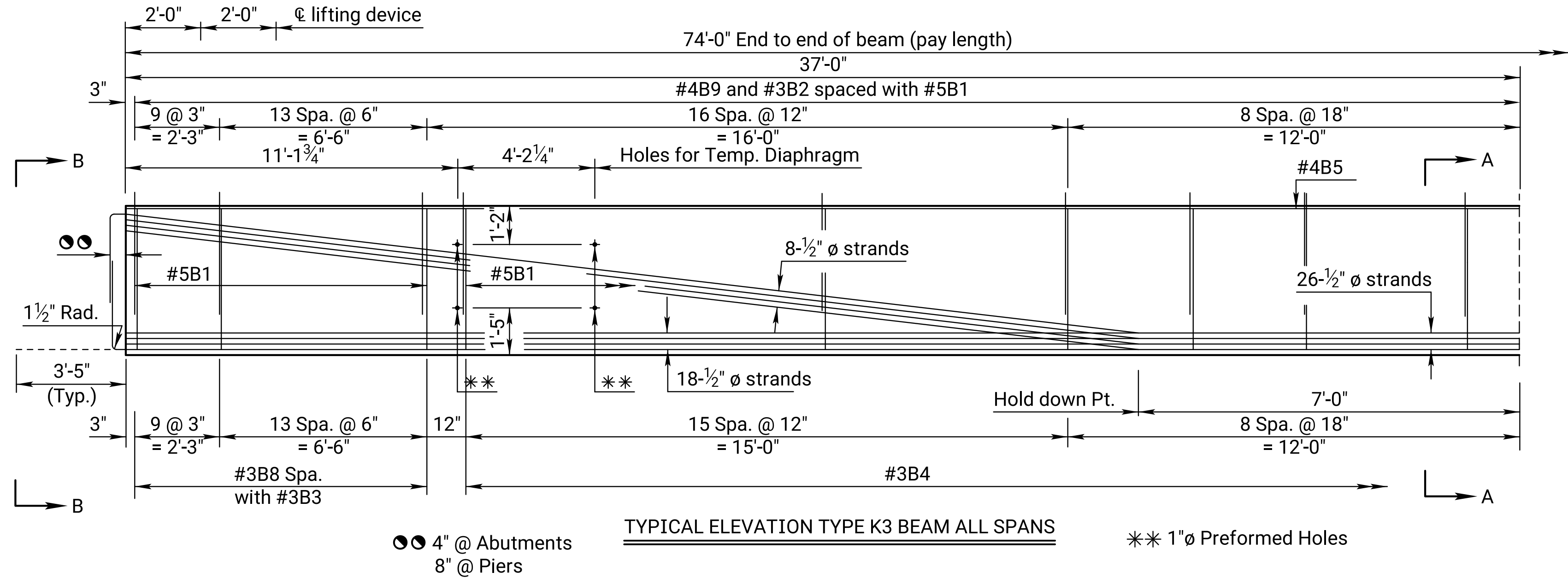
TYPICAL SECTION



LIFTING DEVICE

NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 15-21-187.56 (114)			Sta. 251+68.00	
STANDARD PRESTRESSED BEAM DETAILS				
Proj. 15-21 KA-6484-01			Dickinson Co.	
DESIGNED	BDD	DETAILED	BDD	QUANTITIES
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	38	100



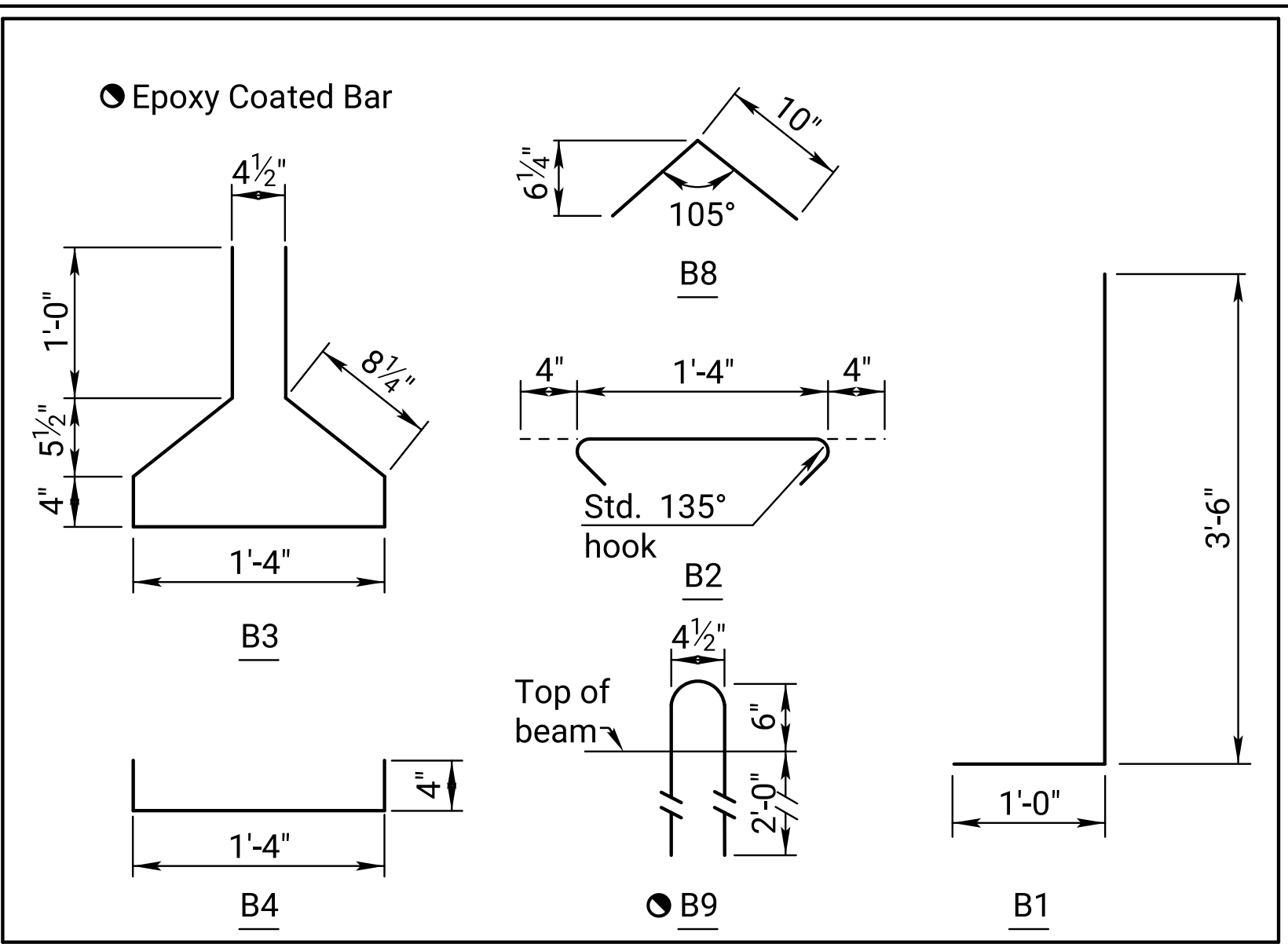
NOTE: During transportation and construction only, support beams on bearing points a maximum of 5 ft. from the beam end. The Fabricator shall show the proposed support locations on the shop drawings.

NOTE: The hold down force at the harp points for 8 strands at 3.01 kips per strand = 24.1 kips total.

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

NOTE: Extend 6 strands 3'-5" beyond the end of the beam. Strands not shown shall be cut flush with the end of the beam. See "Strand Extension Details".

Welded Wire Reinforcement Equivalent Steel As ‡						
Size	3"	6"	9"	12"	15"	18"
#3	0.440	0.220	0.147	0.110	0.088	0.073
#4	0.800	0.400	0.267	0.200	0.160	0.133
#5	1.234	0.617	0.411	0.308	0.247	0.206
#6	1.761	0.880	0.587	0.440	0.352	0.293

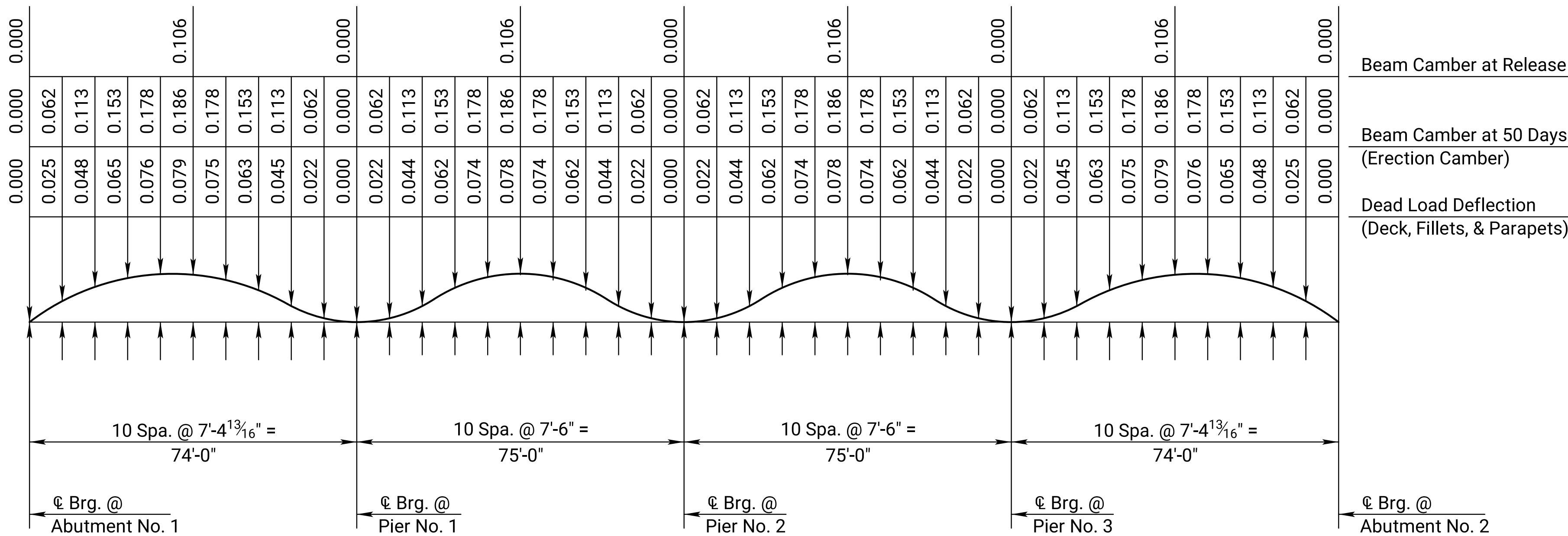
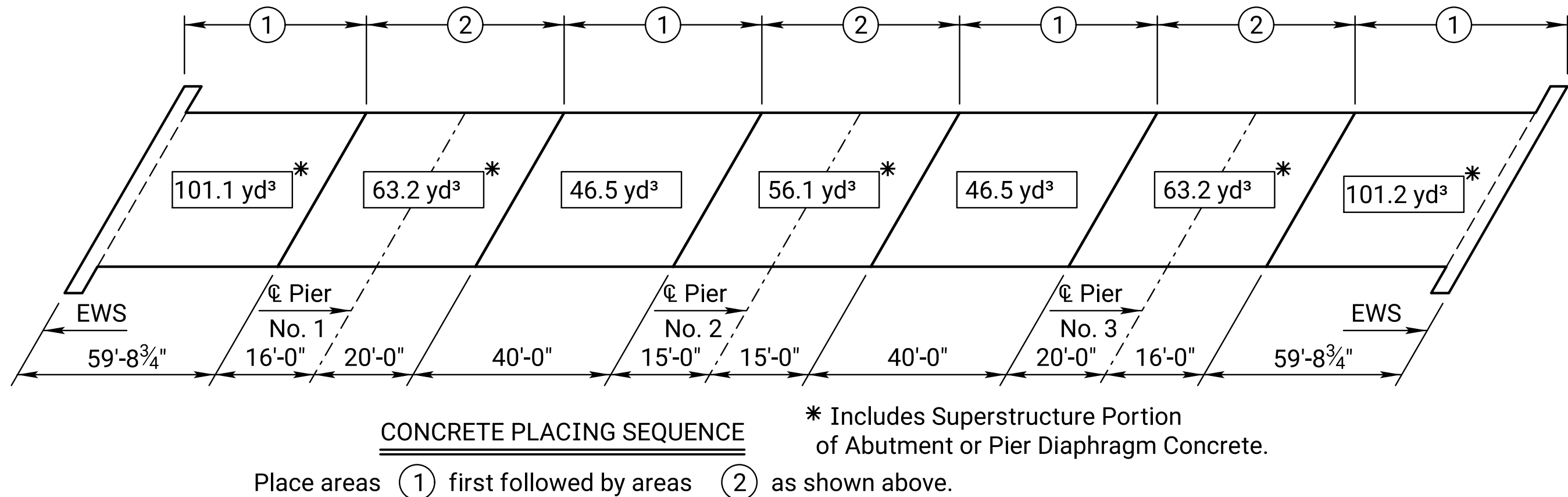
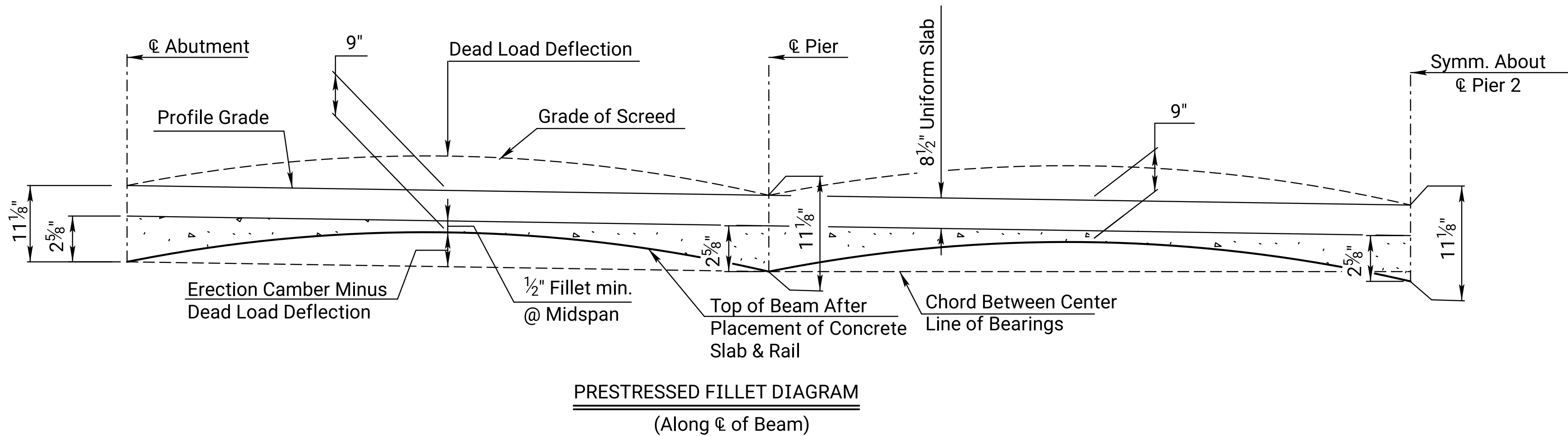
[illegible]

BILL OF MATERIAL		
Item	Unit	Quantity
Prestressed concrete beams (K3) All spans	Lin.Ft.	1,776
The following quantities are given for information only and shall not be paid for directly but shall be made <u>subsidiary</u> to the bid item "Prestressed Concrete Beams".		
Beam concrete (f'c= 5000 PSI) (per beam)	Cu.Yds.	10.0
Approx. Wt. per 74'-0" beam	Tons	20.2
1/2" Ø Prestressing strand (270 KSI low relaxation fy= 243 KSI)	Lin.Ft.	47,211
Epoxy reinforcing steel (fy=60,000 PSI)	Lbs.	7,700
Reinforcing steel (fy=60,000 PSI)	Lbs.	31,240
Elastomeric Brg. pads (3/4" x 8" x 1'-8")	Each	48
1" Ø Formed Hole	Each	192
Lifting devices	Each	96
Bearing plates (Ø x 15" x 1'-8")	Each	48

☆ Use $\frac{3}{4}$ " $\mathbb{R}$ when field welding will occur, otherwise use $\frac{1}{2}$ " $\mathbb{R}$.

3	7-26-11			
2	4-25-11			
1	9/22/10	Prepare for WWF option		
NO.	DATE	REVISIONS		BY APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 15-21-187.56 (114)			Sta. 251+68.00	
K3 BEAM DETAILS				
Proj. 15-21 KA-6484-01			Dickinson Co.	
DESIGNED	BDD	DETAILED	BDD	QUANTITIES
DESIGN CK.	CEM	DETAIL CK.	CEM	CEM
				CADD CK.
				CEM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	40	100



K3 BEAM CAMBER AND DEAD LOAD DEFLECTION

NOTE: Camber is Upward
Deflection is Downward
Ordinates are in feet

NOTE: Concrete dead load deflection shall be added to the plan grade to provide for deflections. This will be accomplished by increasing or decreasing the depth of the concrete fillets over the beams. The minimum depth of the slab over the beam should be 9"

Beam Concrete: $E_i = 3,778 \text{ ksi}$ ($f'_{ci} = 4.3 \text{ ksi}$)
 $E_f = 4,074 \text{ ksi}$ ($f'_c = 5.0 \text{ ksi}$)

CAMBER: Construct the finished deck to plan grade by varying the depth of the fillet over the beam to provide for prestress camber, concrete dead load deflection and, if necessary, vertical curvature. After the prestressed beams are erected measure the camber in the field by taking a profile of each beam. Correct any variation between the actual camber and concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the beam so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the beam shall be 9" inches. Prior to shipping, the camber shall be no greater than the design camber plus 1/2". The design camber is equal to the 50 day camber shown in the plans.

The theoretical amount of concrete required for the fillets is 16.5 C.Y. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

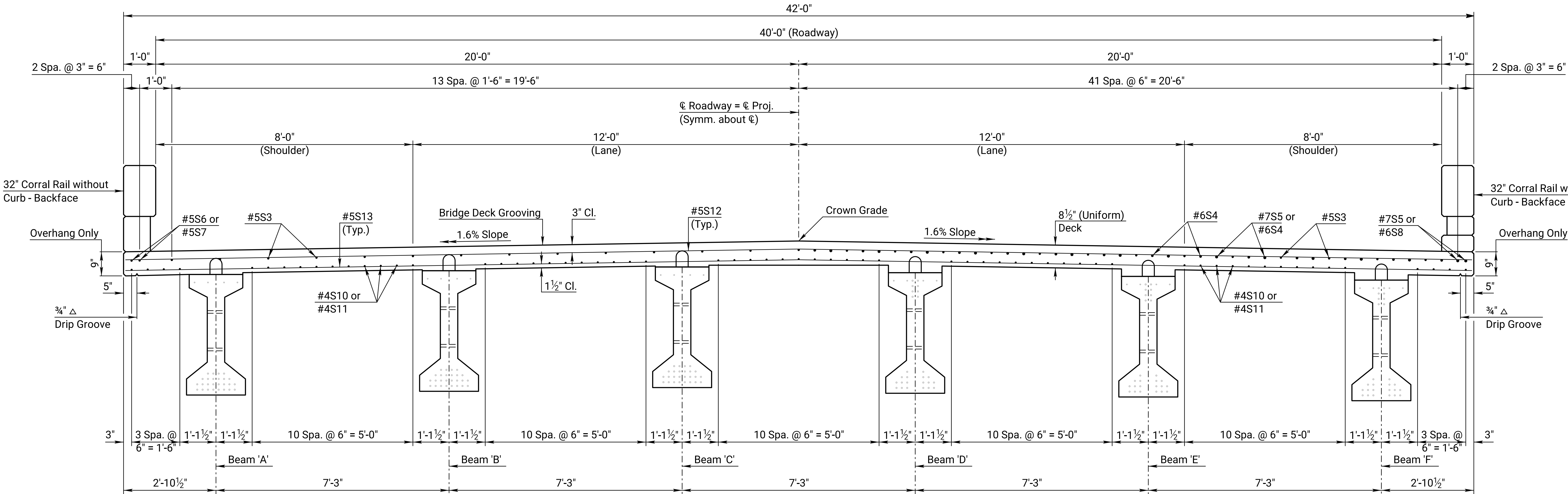
CONCRETE PLACING SEQUENCE: Segmental, combined or continuous pours are allowed by an approved alternate placing sequence. Any discontinuous pour must stop at a construction joint short of a pier.

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

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

NO.	DATE	REVISIONS		BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION					
Br. No. 15-21-187.56 (114)			Sta. 251+68.00		
SLAB CAMBER DETAILS					
Proj. 15-21 KA-6484-01			Dickinson Co.		
DESIGNED	BDD	DETAILED	BDD	QUANTITIES	BDD
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN.CK.	CEM
				CADD	BDD
				CADD CK.	CEM

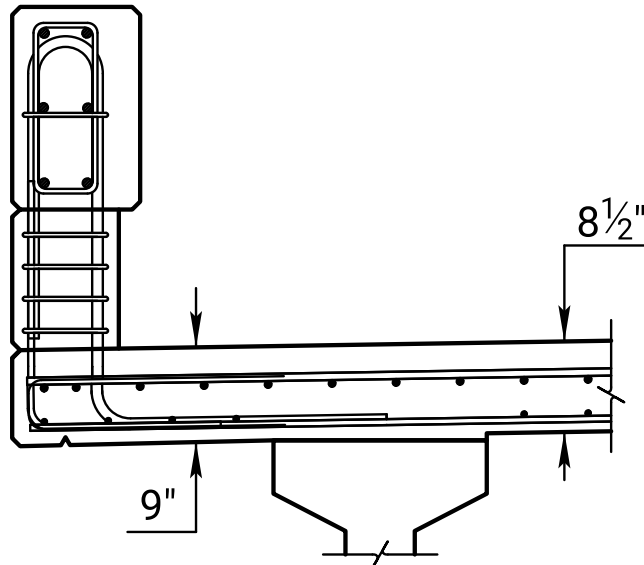
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	41	100



Section Near Mid-Span

Section Near Pier

TYPICAL SECTION



TYPICAL OVERHANG DETAILS

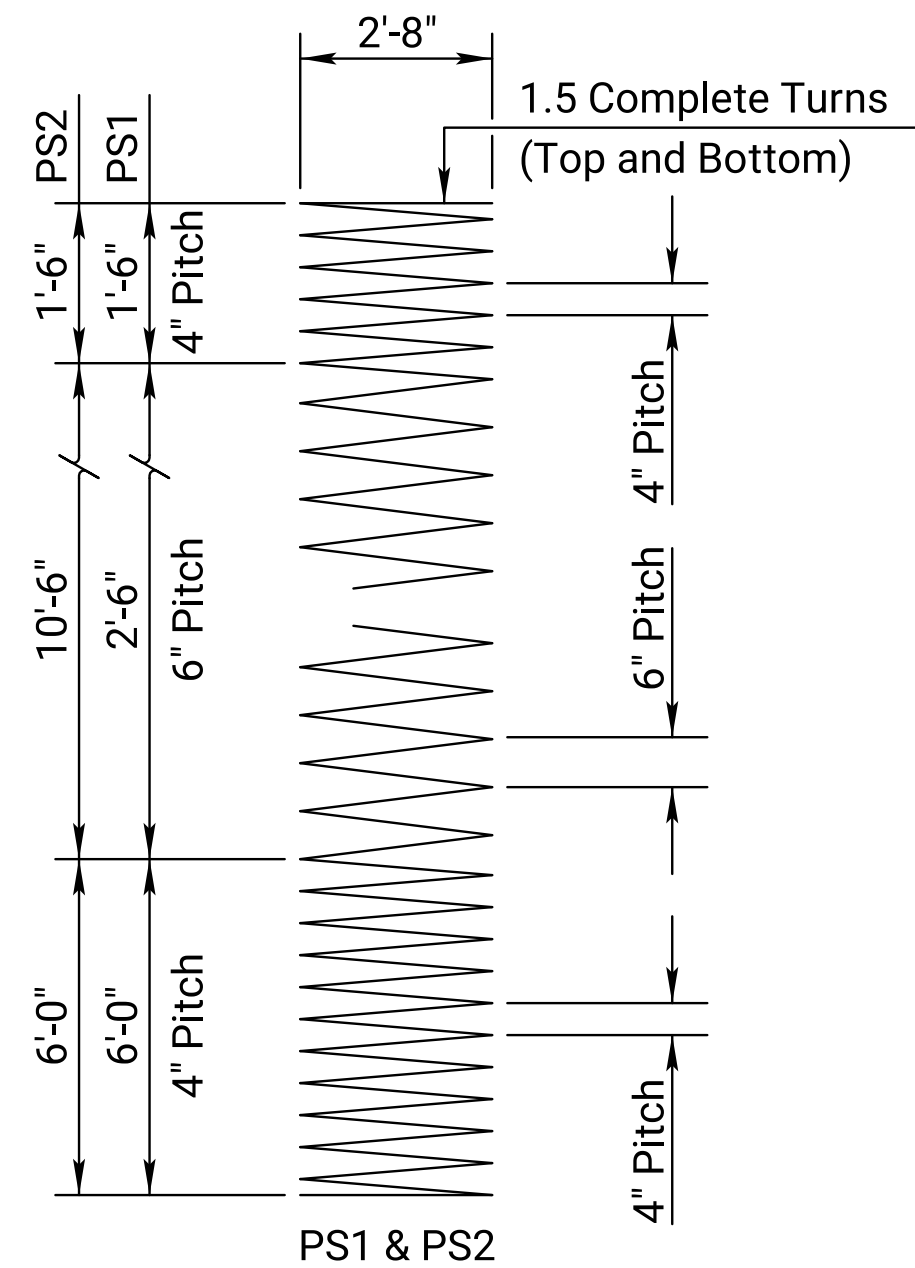
NO.	DATE	REVISIONS		BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION					
Br. No. 15-21-187.56 (114)				Sta. 251+68.00	
TYPICAL SECTION					
Proj. 15-21 KA-6484-01				Dickinson Co.	
DESIGNED	BDD	DETAILED	BDD	QUANTITIES	BDD
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.	CEM
				CADD CK.	CEM

BILL OF REINFORCING STEEL Grade 60 (Epoxy Coated)								
Straight Bars				Bent Bars				
Mark	Size	Number	Length	Mark	Size	Number	Length	
A1	8	32	35'-4"	A15	8	24	6'-4"	
A7	8	8	58'-4"					
				A3	5	90	15'-7"	
A2	5	16	34'-10"	A4	5	114	8'-1"	
A8	5	16	34'-10"	A5	5	24	12'-6"	
A9	5	4	33'-0"	A6	5	40	8'-1"	
A10	5	20	5'-9"	A16	5	74	10'-9"	
A11	5	30	7'-4"	A17	5	24	6'-11"	
A12	5	4	11'-0"	A18	5	16	9'-1"	
A13	5	12	11'-10"	A19	5	16	9'-1"	
A14	5	4	9'-0"	A21	5	78	4'-7"	
A20	4	4	25'-0"	A22	4	78	7'-9"	
				AS1	4	16	*	
S5	7	60	42'-0"	S2	6	116	25'-6"	
S4	6	110	42'-0"	S1	5	54	12'-6"	
S8	6	4	44'-6"					
				S9	4	126	17'-0"	
S3	5	135	60'-0"					
S6	5	8	36'-9"					
S7	5	8	39'-0"					
S12	5	505	48'-0"					
S13	5	505	48'-0"					
S10	4	126	27'-9"					
S11	4	378	40'-0"					
				R1	7	36	9'-3"	
R11	6	24	8'-0"	R2	7	4	5'-7"	
R12	6	336	9'-8"	R3	7	472	7'-7"	
C2	4	8	32'-8"					
C3	4	4	22'-8"	R5	5	8	6'-6"	
				R6	5	8	10'-8"	
				SP1	5	290	4'-5"	
				C1	4	96	3'-5"	
				R4	4	472	4'-2"	
				R7	4	4	10'-7"	
				R8	3	804	4'-4"	
				R9	3	376	4'-6"	
				R10	3	116	4'-6"	
PD2	5	60	5'-9"	PD4	8	48	6'-4"	
PD3	5	90	7'-4"	PD5	8	24	4'-2"	
				PD1	5	90	13'-10"	
				PD6	5	12	4'-7"	
				PD7	5	18	6'-2"	
				PD8	4	24	4'-10"	

* See Bending Diagram

BILL OF REINFORCING STEEL Grade 60 (Non-Epoxy Coated)								
Straight Bars				Bent Bars				
Mark	Size	Number	Length	Mark	Size	Number	Length	
PC1	9	33	14'-0"	PB3	5	648	8'-6"	
PC2	9	66	22'-0"	PB4	5	36	9'-1"	
				PW5	5	168	4'-8"	
PB1	8	48	48'-2"					
				PB6	4	63	10'-3"	
PB2	6	48	48'-2"					
PB5	6	192	6'-0"	PS1	3/8"Ø	3	*	
PW4	6	12	13'-8"	PS2	3/8"Ø	6	*	
PW1	5	172	4'-2"					
PW2	5	86	7'-4"					
PW3	5	160	13'-8"					
PW6	5	56	8'-2"					
PW7	5	112	16'-2"					

* See Bending Diagram

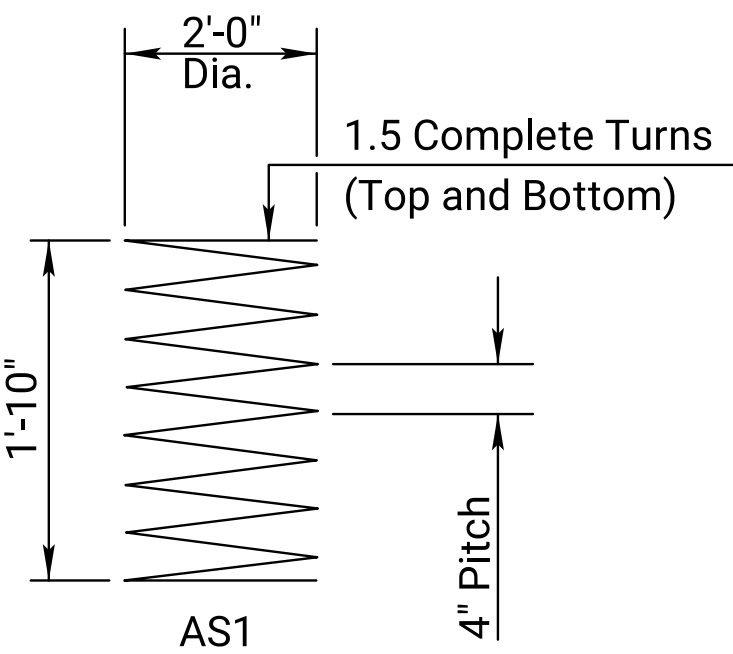
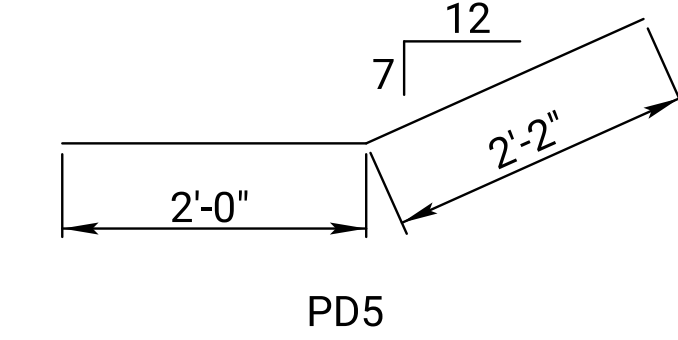
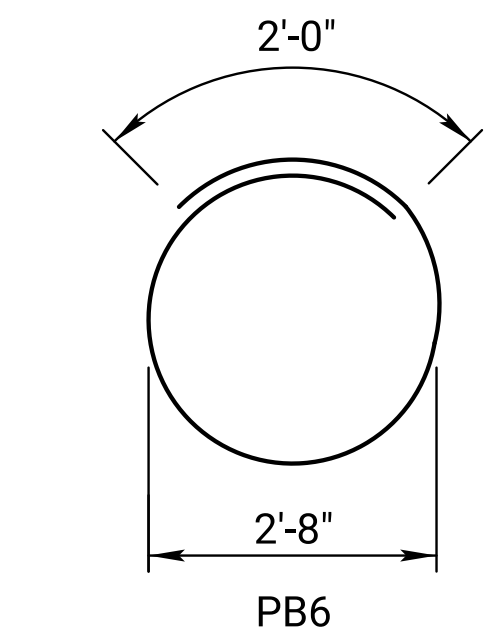


(3/8" Ø smooth or deformed bar)

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

Spiral Spacer Bars:

- Are included in the mass of reinforcing steel.
- Minimum section modulus = 0.030 in.³
- 4 required per spiral.

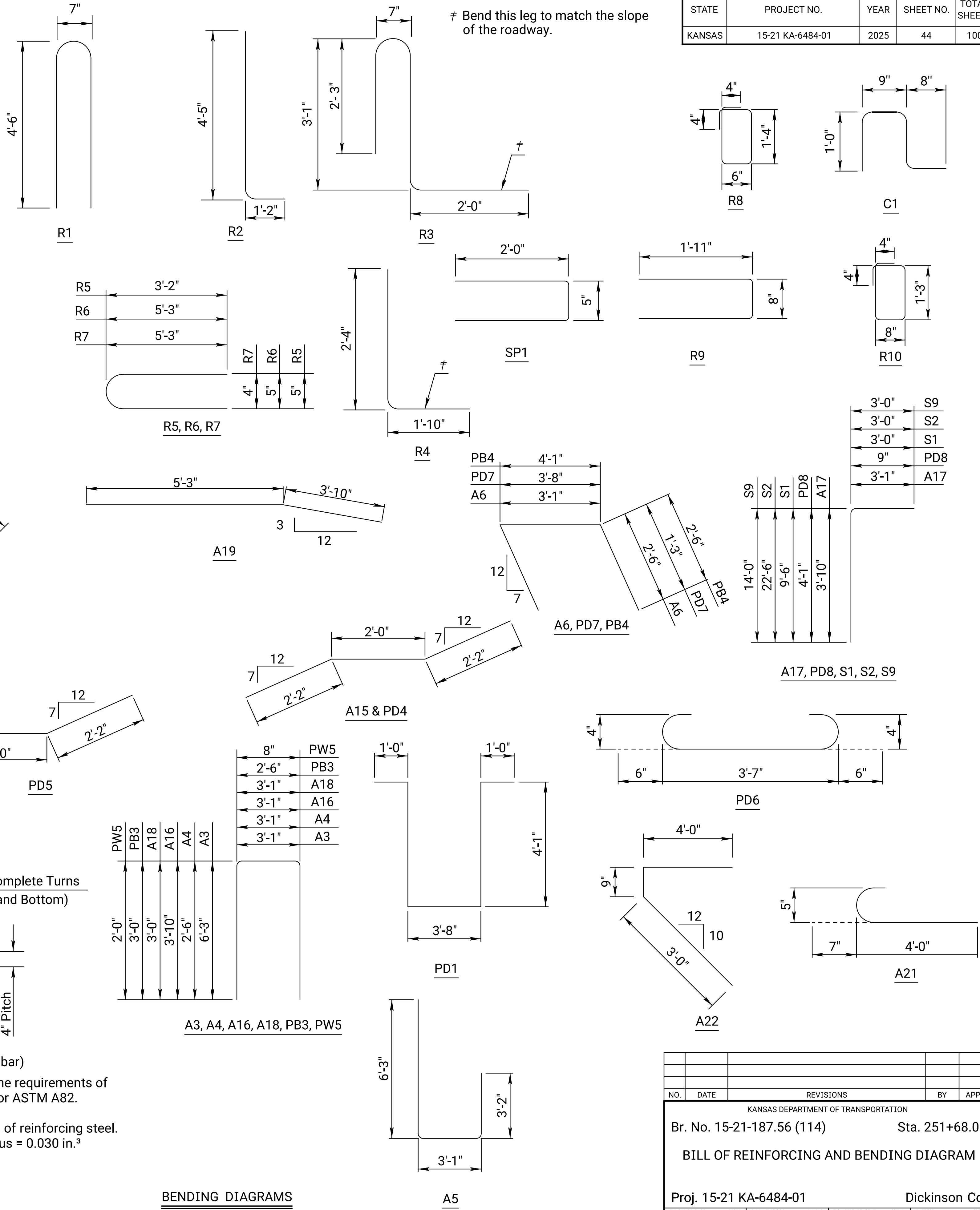


(1/2" Ø smooth or deformed bar)

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

Spiral Spacer Bars:

- Are included in the mass of reinforcing steel.
- Minimum section modulus = 0.030 in.³
- 3 required per spiral.



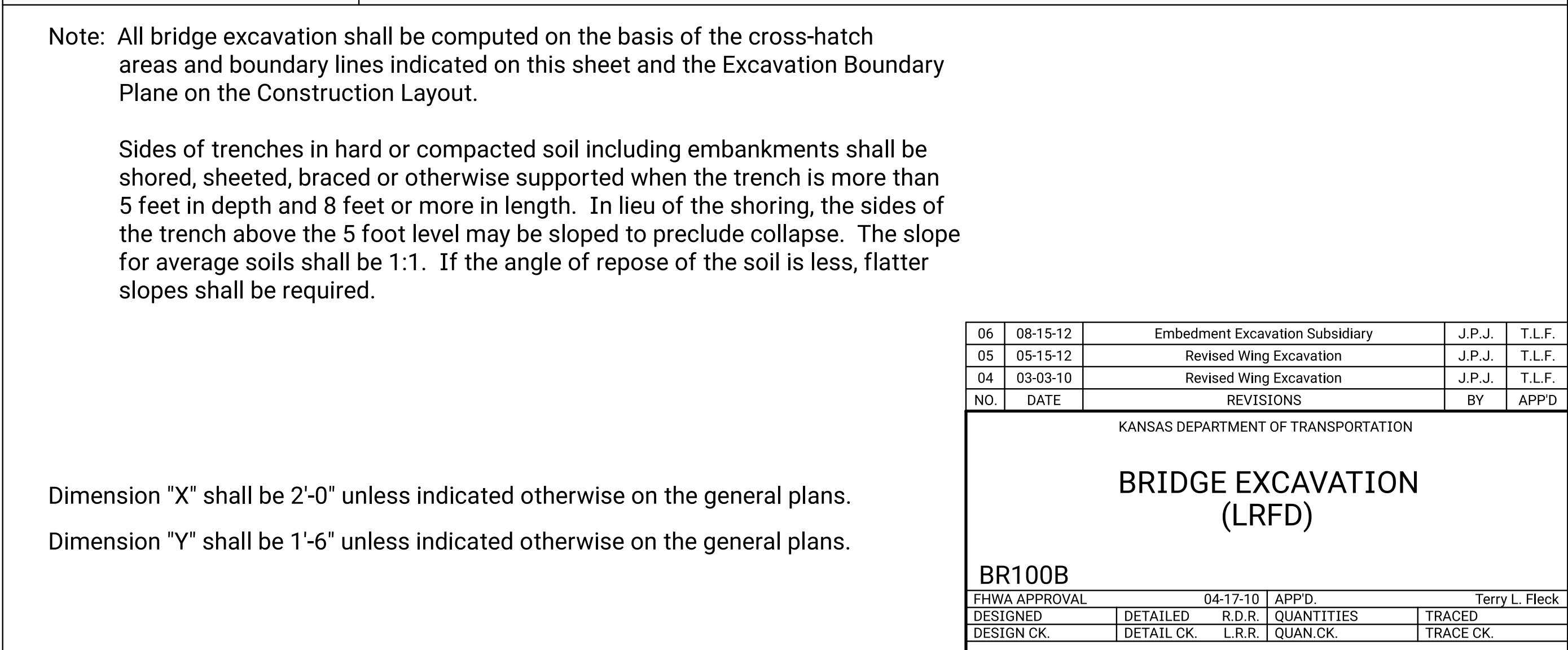
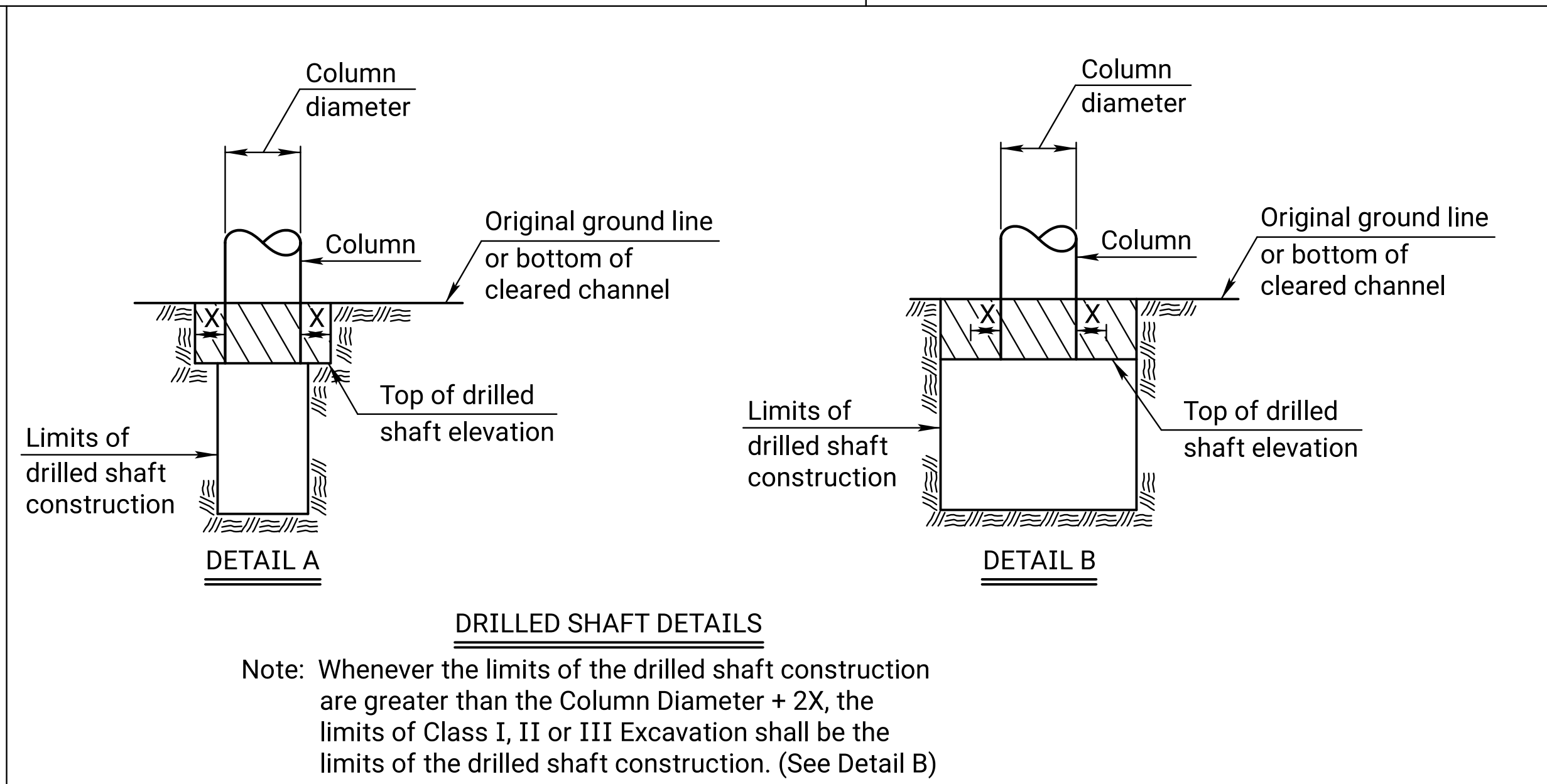
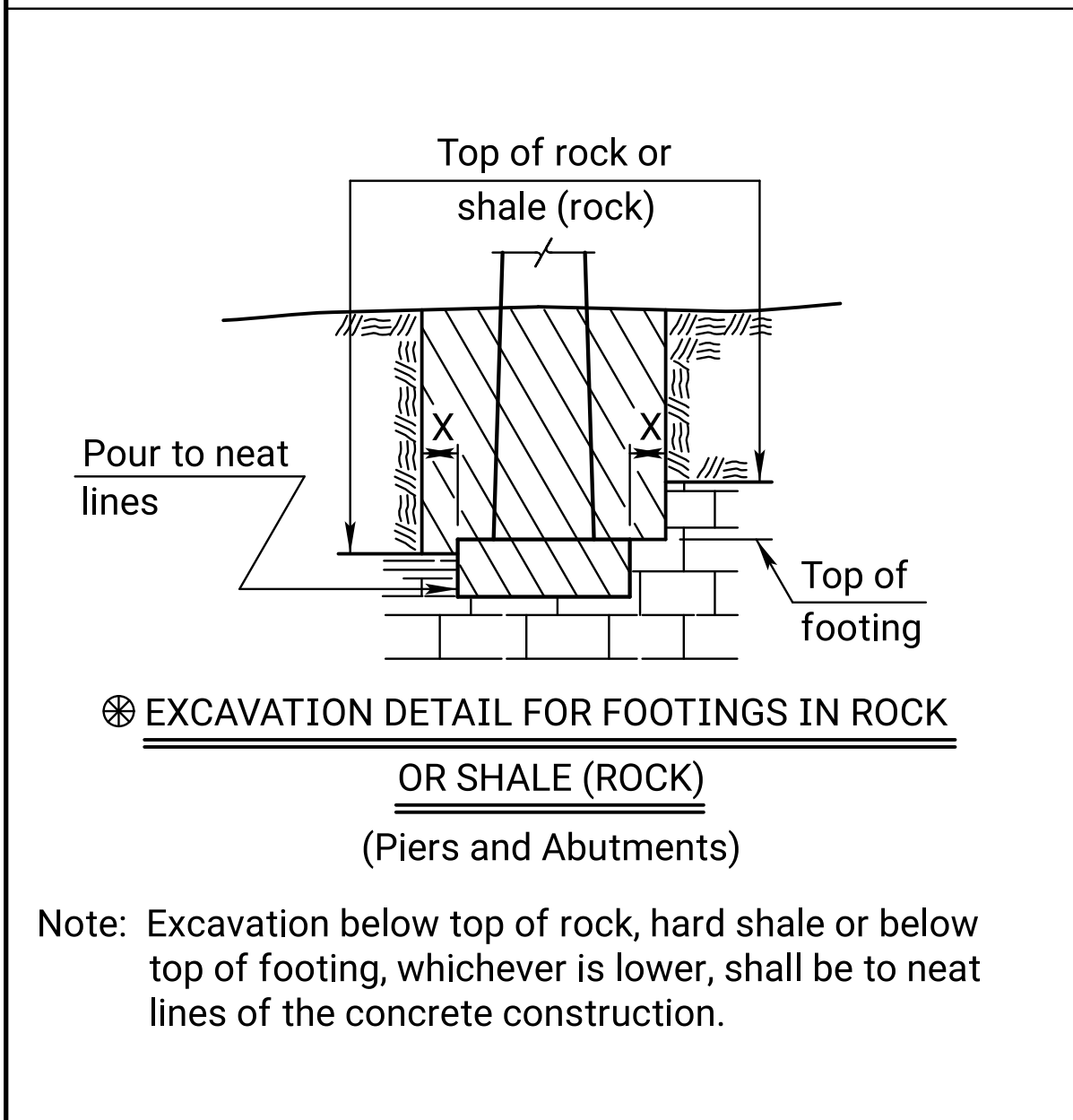
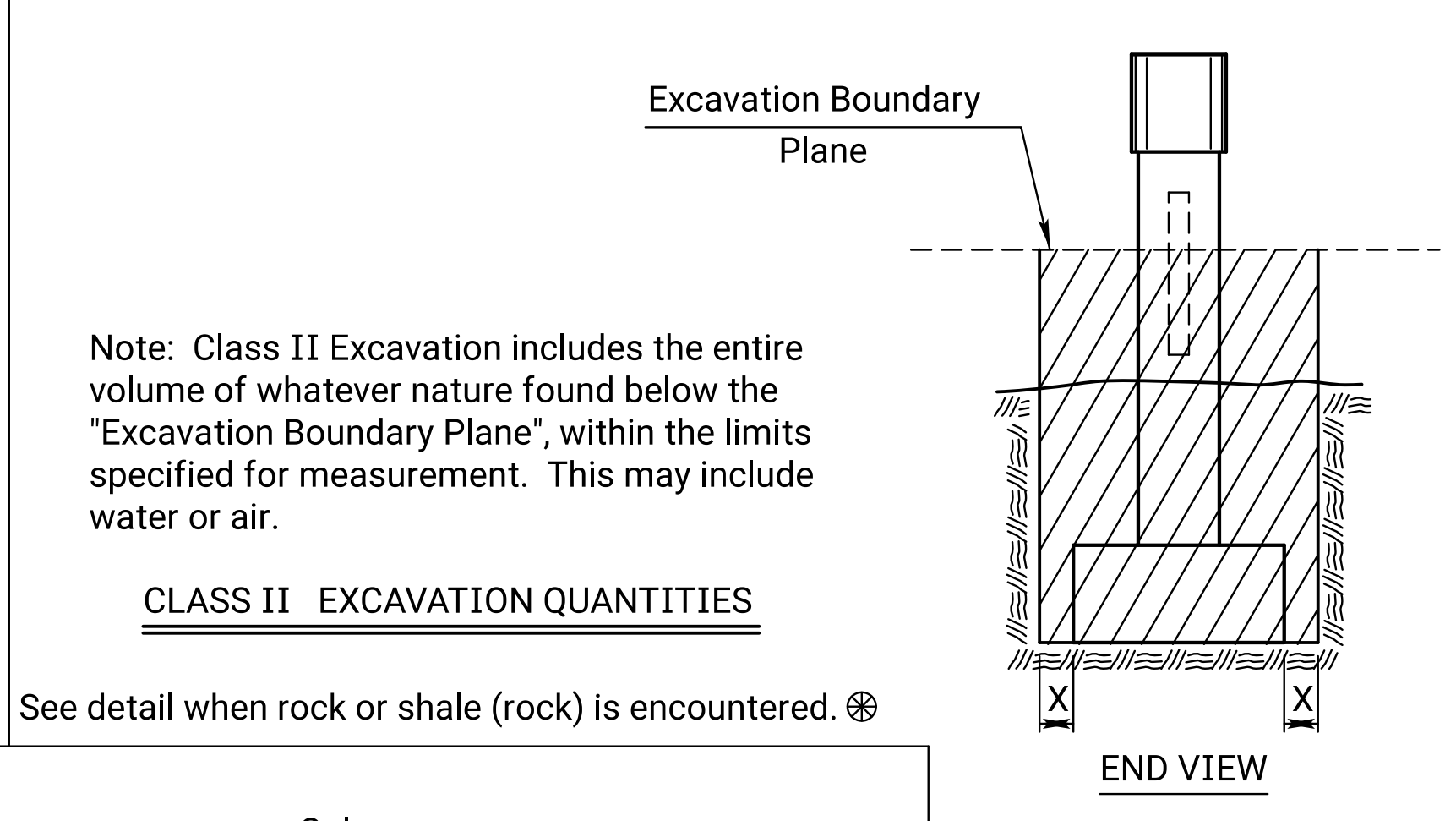
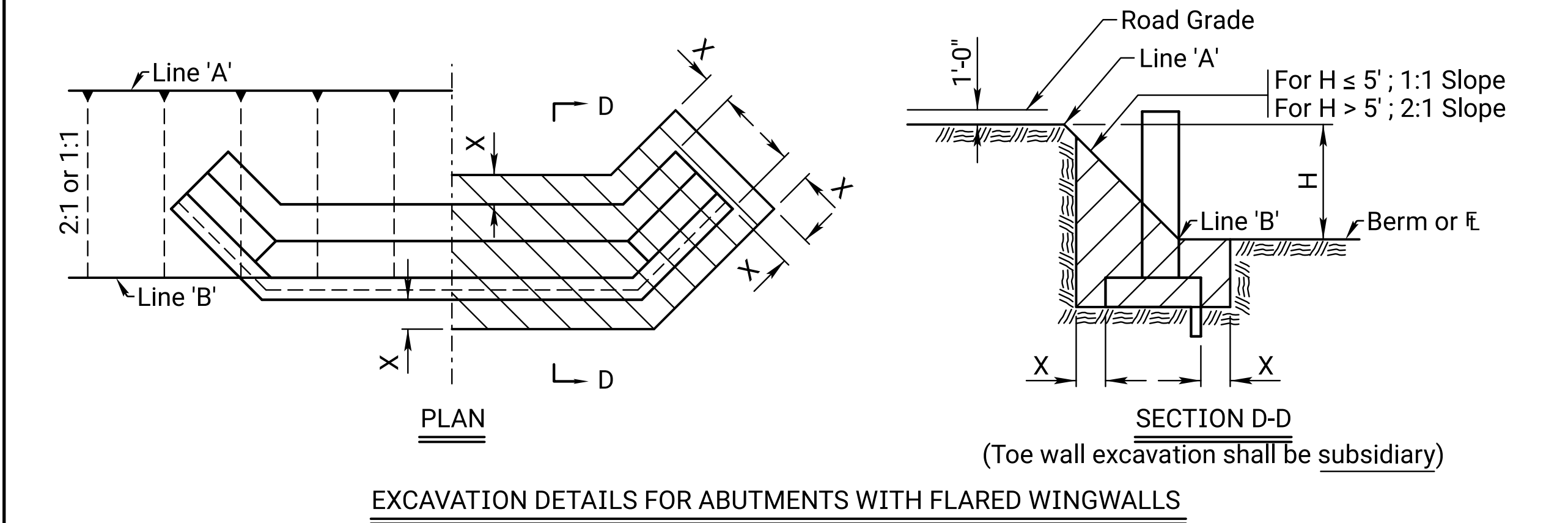
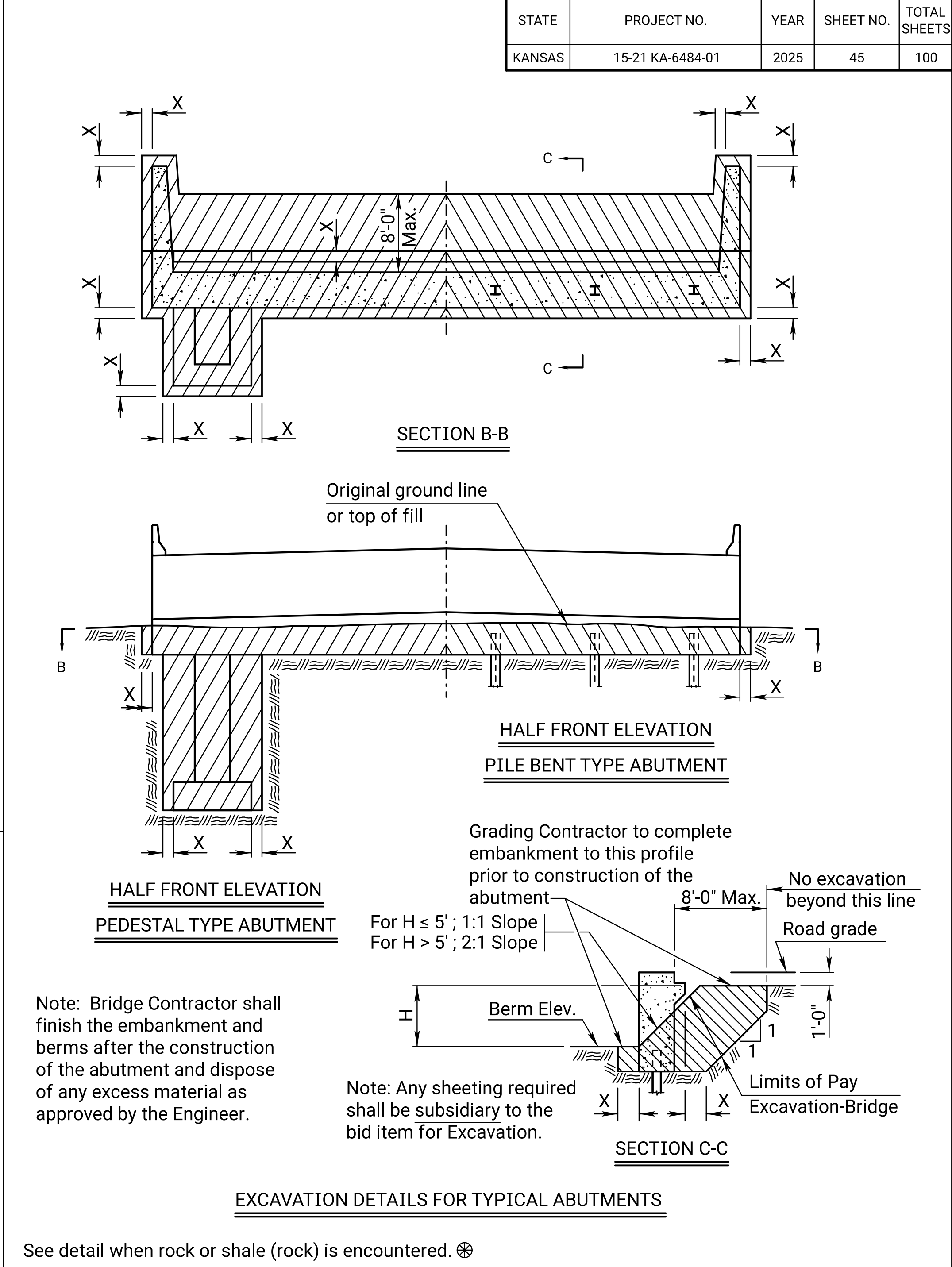
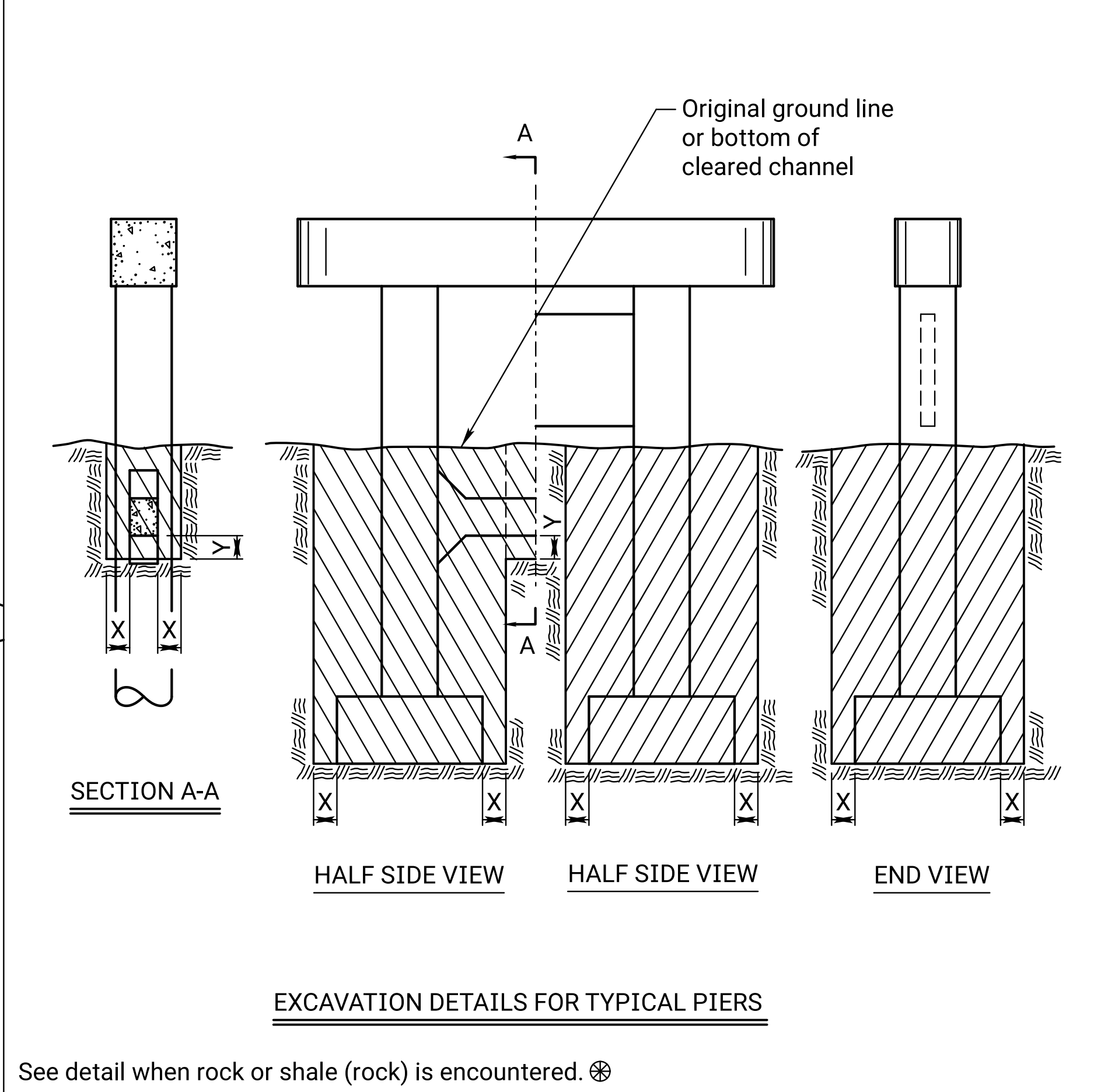
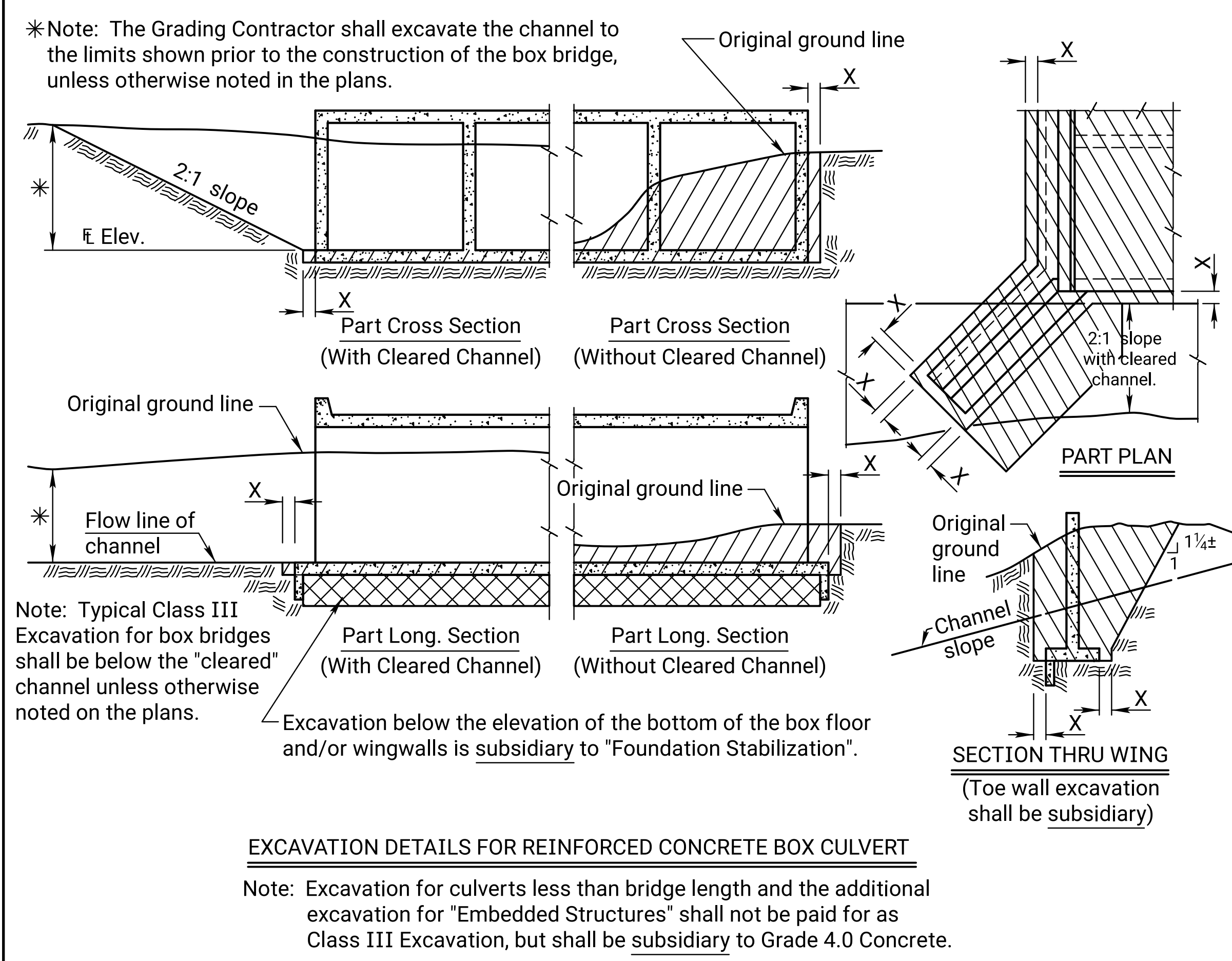
BENDING DIAGRAMS

All dimensions are out to out of bars.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	44	100

NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 15-21-187.56 (114)			Sta. 251+68.00	
BILL OF REINFORCING AND BENDING DIAGRAM				
Proj. 15-21 KA-6484-01			Dickinson Co.	
DESIGNED	BDD	DETAILED	BDD	QUANTITIES
DESIGN CK.	CEM	DETAIL CK.	CEM	QUAN. CK.
			CADD	BDD
			CADD CK.	CEM

Plotted by : Ben.Dyhouse@ks.gov 12-DEC-2025 20:03
File : ka648401bss114-035.dgn



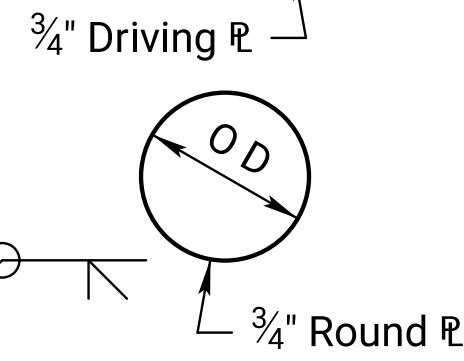
Plotted by : Ben.Dyhouse@ks.gov
File : ka648401bss114-037.dgn
12-DEC-2025 20:03

OD	10 ³ / ₄ "	T. = ‡
OD	12 ³ / ₄ "	T. = ‡
OD	14"	T. = ‡

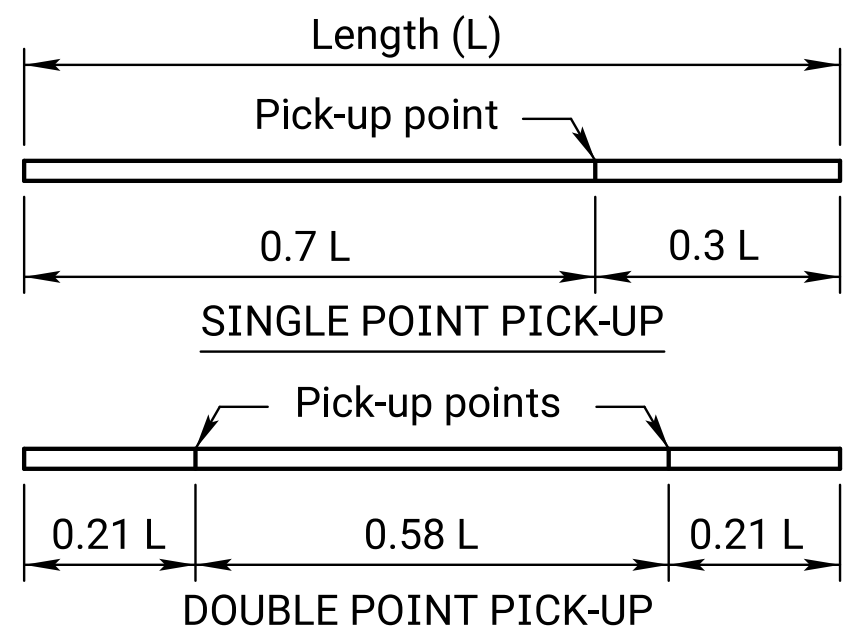
‡ See the Geology Report or "Summary of Quantities" for Pipe Pile wall thickness

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

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



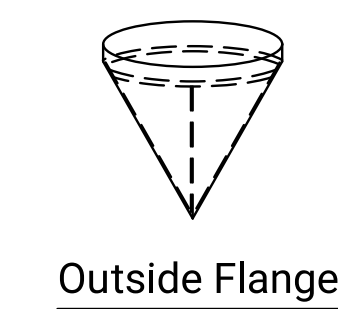
PLAIN ROUND CAST-IN-PLACE CONCRETE PILES



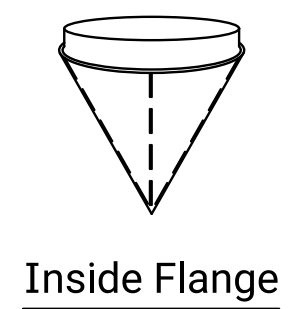
PICK-UP POINTS FOR PRESTRESSED PILING

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.

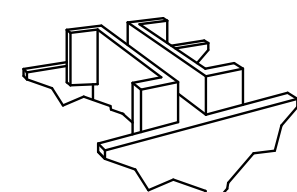


Outside Flange



Inside Flange

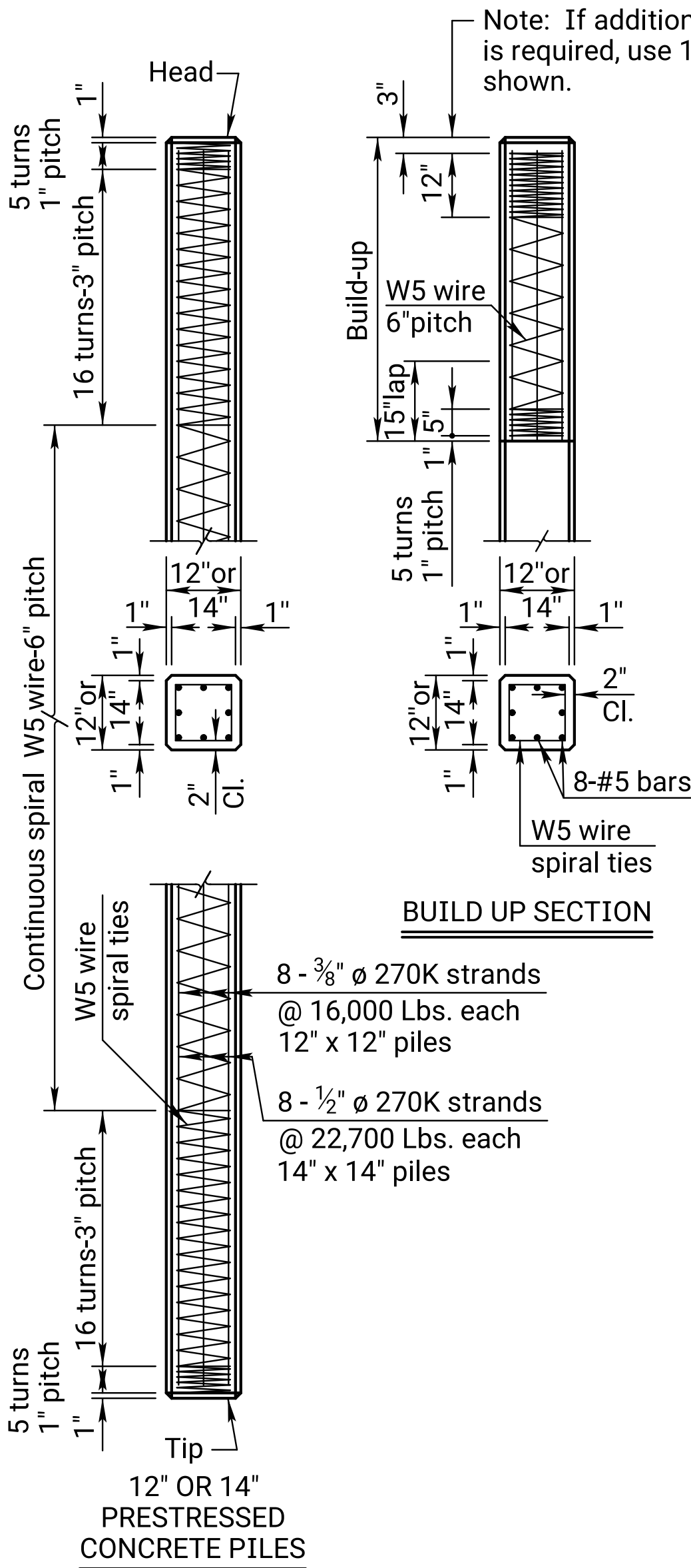
SHELL PILE POINT



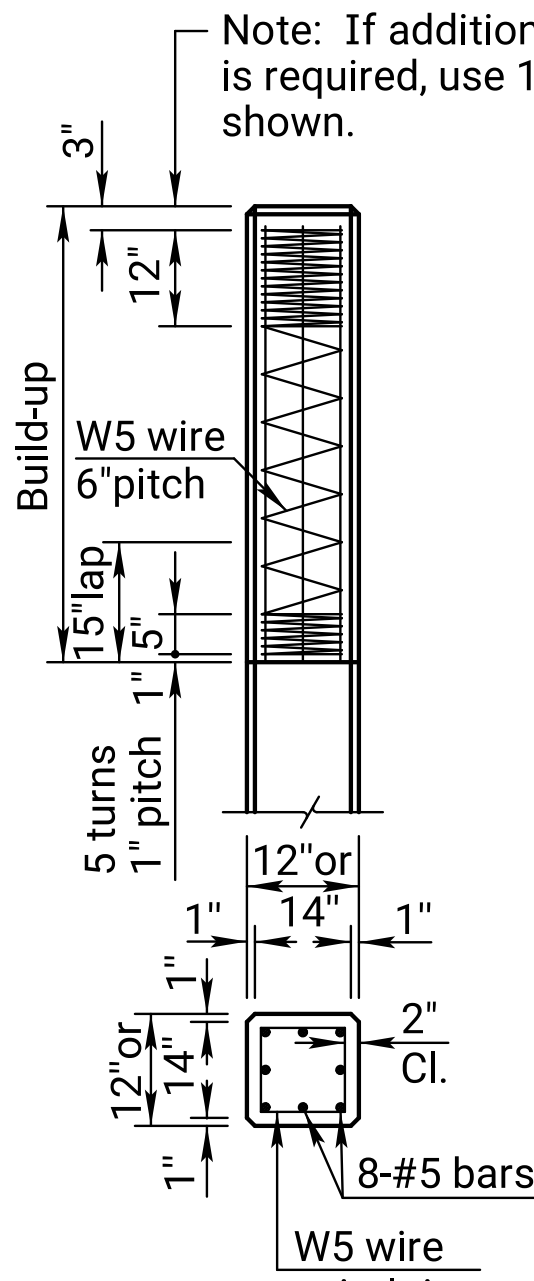
H-Pile Point

CAST STEEL PILE POINT

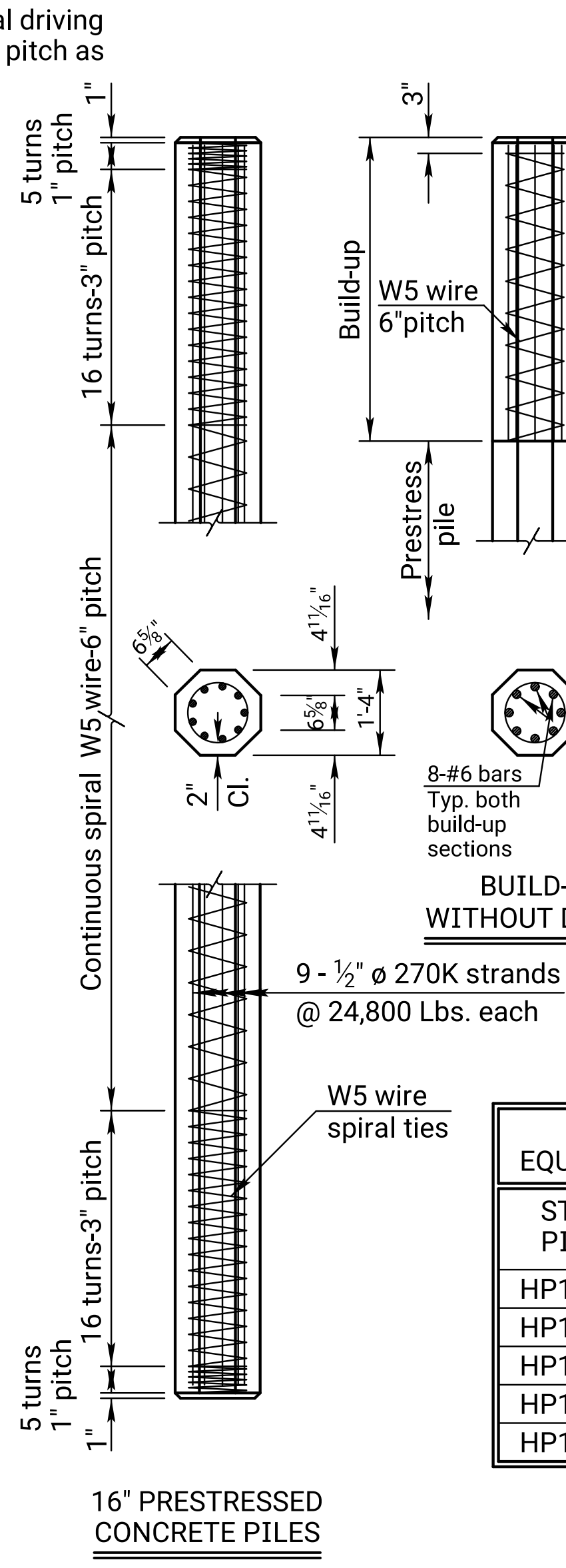
The pile point shall be a one-piece unit of cast steel. Weld pile points in accordance with manufacturer's recommendations to each steel pile before driving.



BUILD UP SECTION



BUILD UP SECTION



FOR INFORMATION ONLY EQUIVALENT POINT BEARING PILES		
STEEL PILES	CONCRETE PILES	
	Pipe	Pre-stress
HP10x42	10 ³ / ₄ "	
HP12x53	12 ³ / ₄ "	
HP14x73	14	12
HP14x102		14
HP14x117		16

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

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

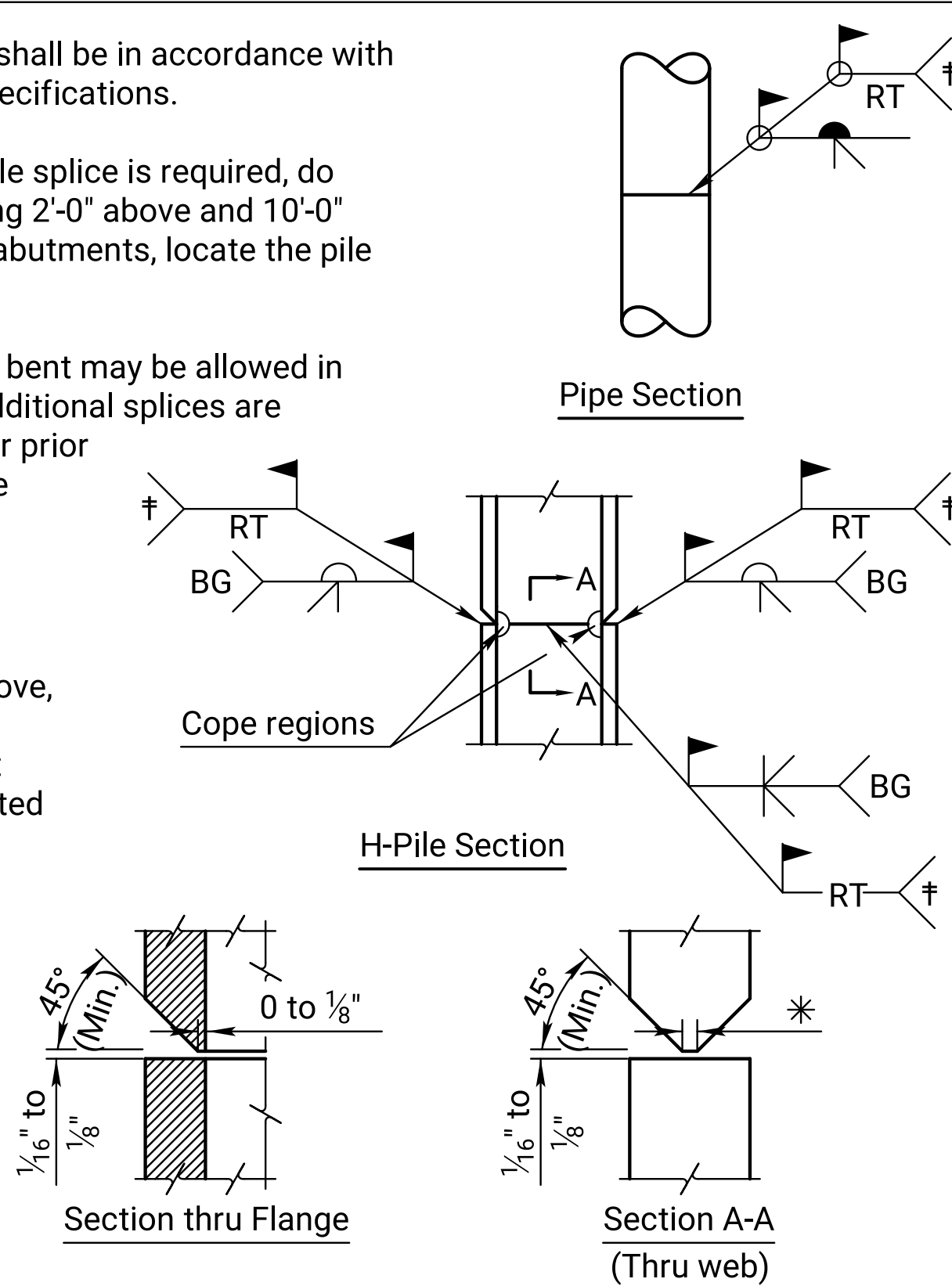
With the approval of the Engineer, one splice per bent may be allowed in the region described above without testing. If additional splices are anticipated, based on the geology, the Contractor prior to driving, will locate the splice so that the splice will not fall within the regions described above.

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

* Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS



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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	46	100

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.

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.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
STANDARD PILE DETAILS				
BR110				
FHWA APPROVAL		10-04-12	APPD.	Terry L. Fleck
DESIGNED	J.P.J.	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	
KDOT Graphics Certified		06-20-2022		Sh. No. 46

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	47	100

GENERAL NOTES

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

Use only the following types of bar supports:

- 1) Wire Bar Supports:
- a) Epoxy coated reinforcing: Class 1 Protection
b) Non-epoxy coated reinforcing: Class 1, 2, or 3 Protection
- 2) Plastic Bar Supports
- 3) Supplementary bars

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

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

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

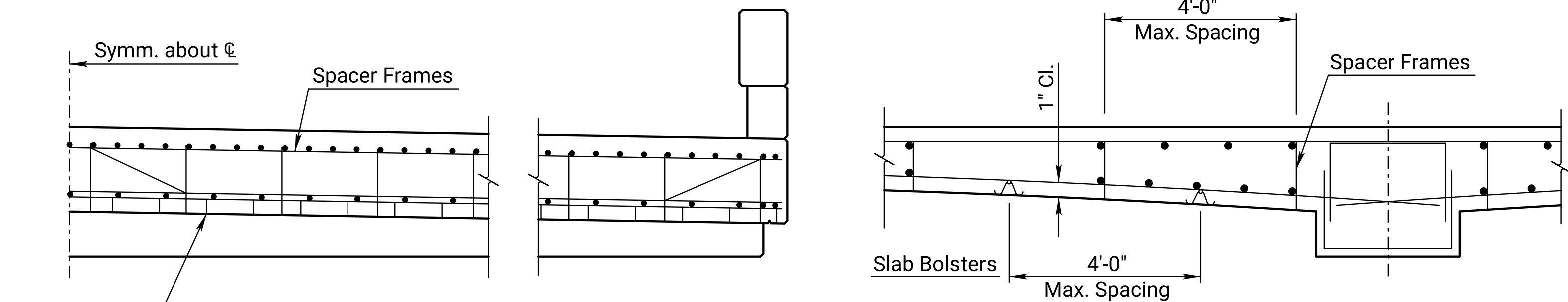
Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

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

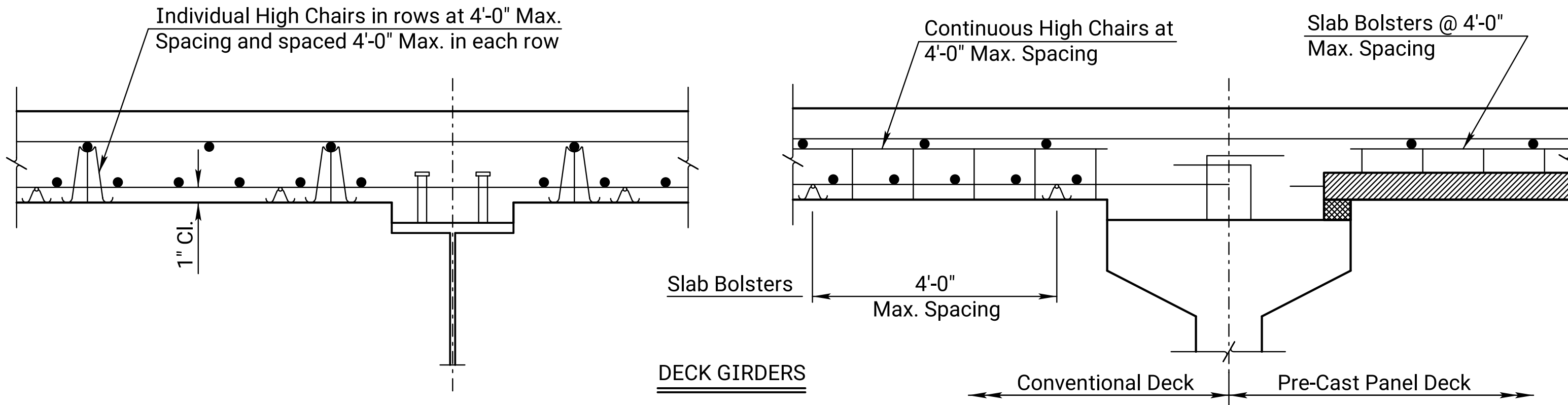
Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

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

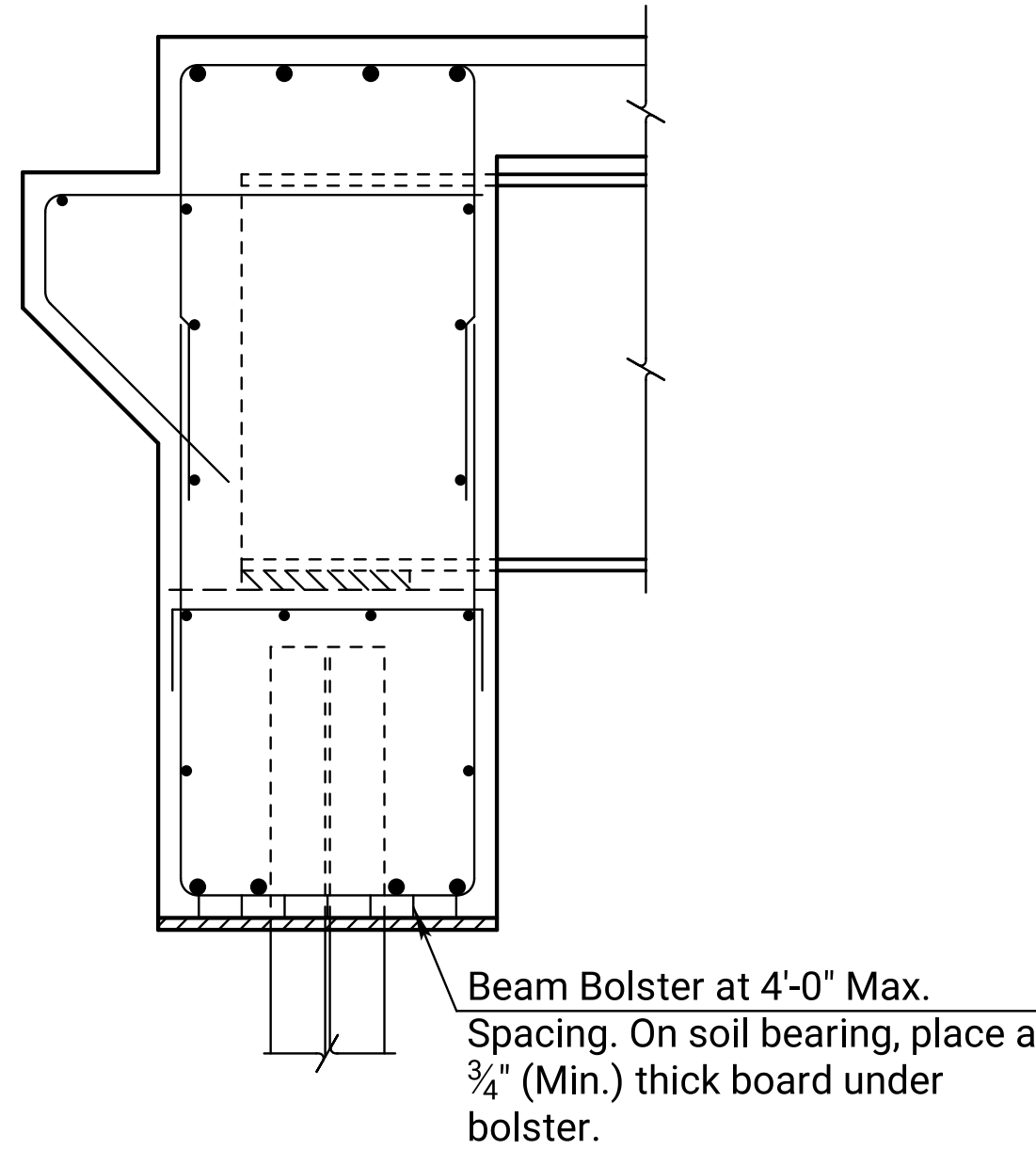
Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.



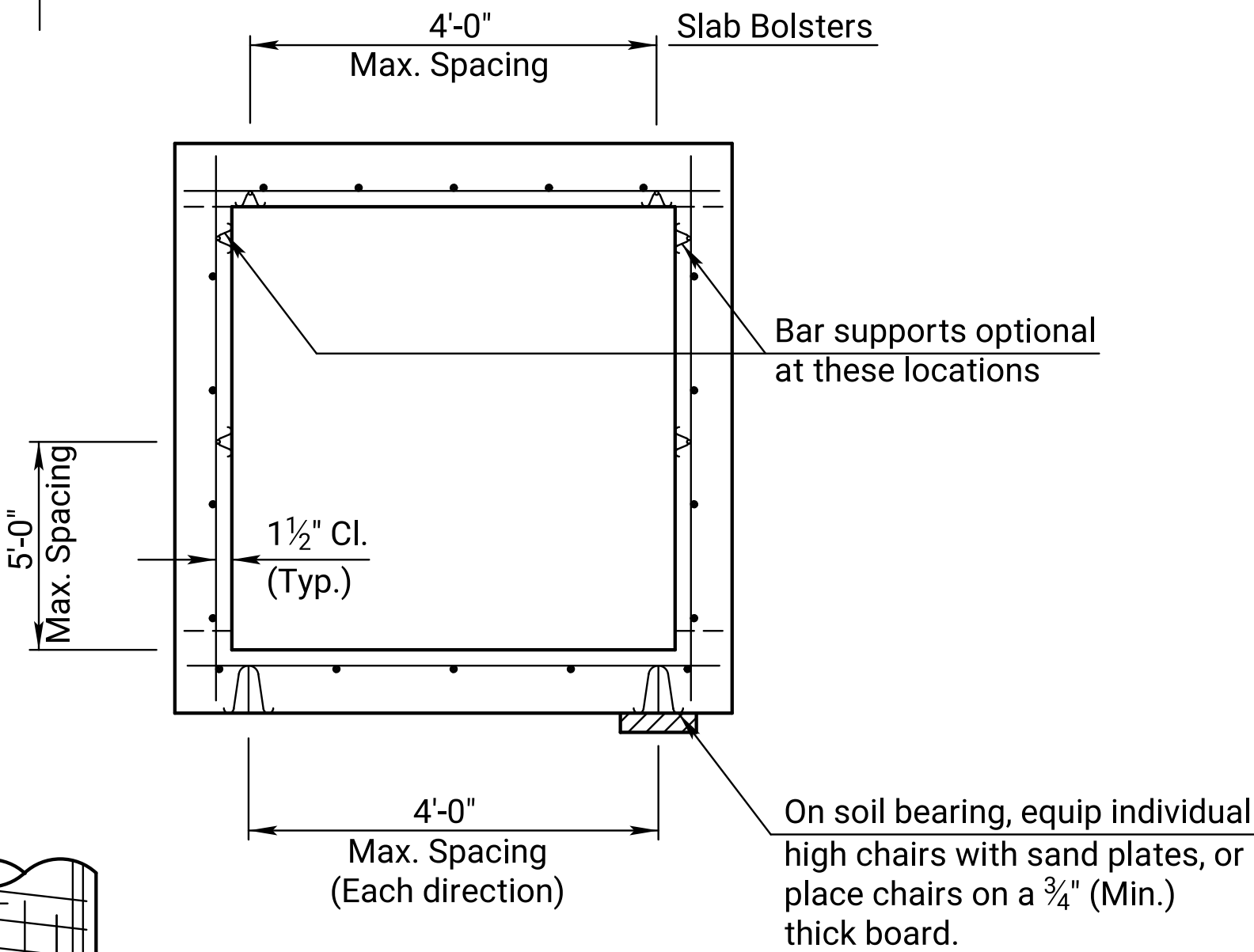
CONTINUOUS HAUNCHED SLAB



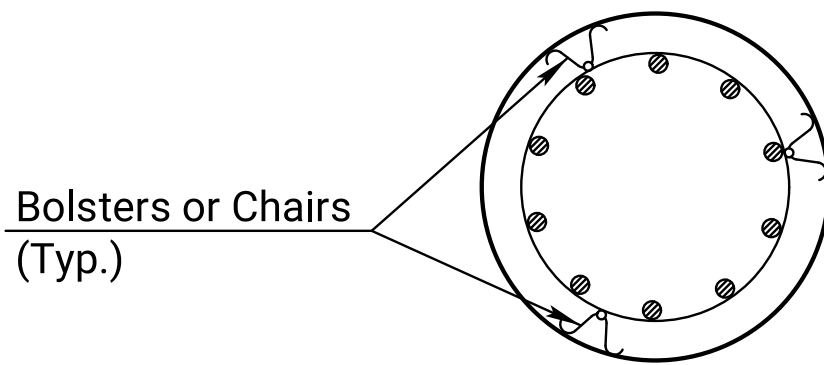
DECK GIRDERS



ABUTMENT

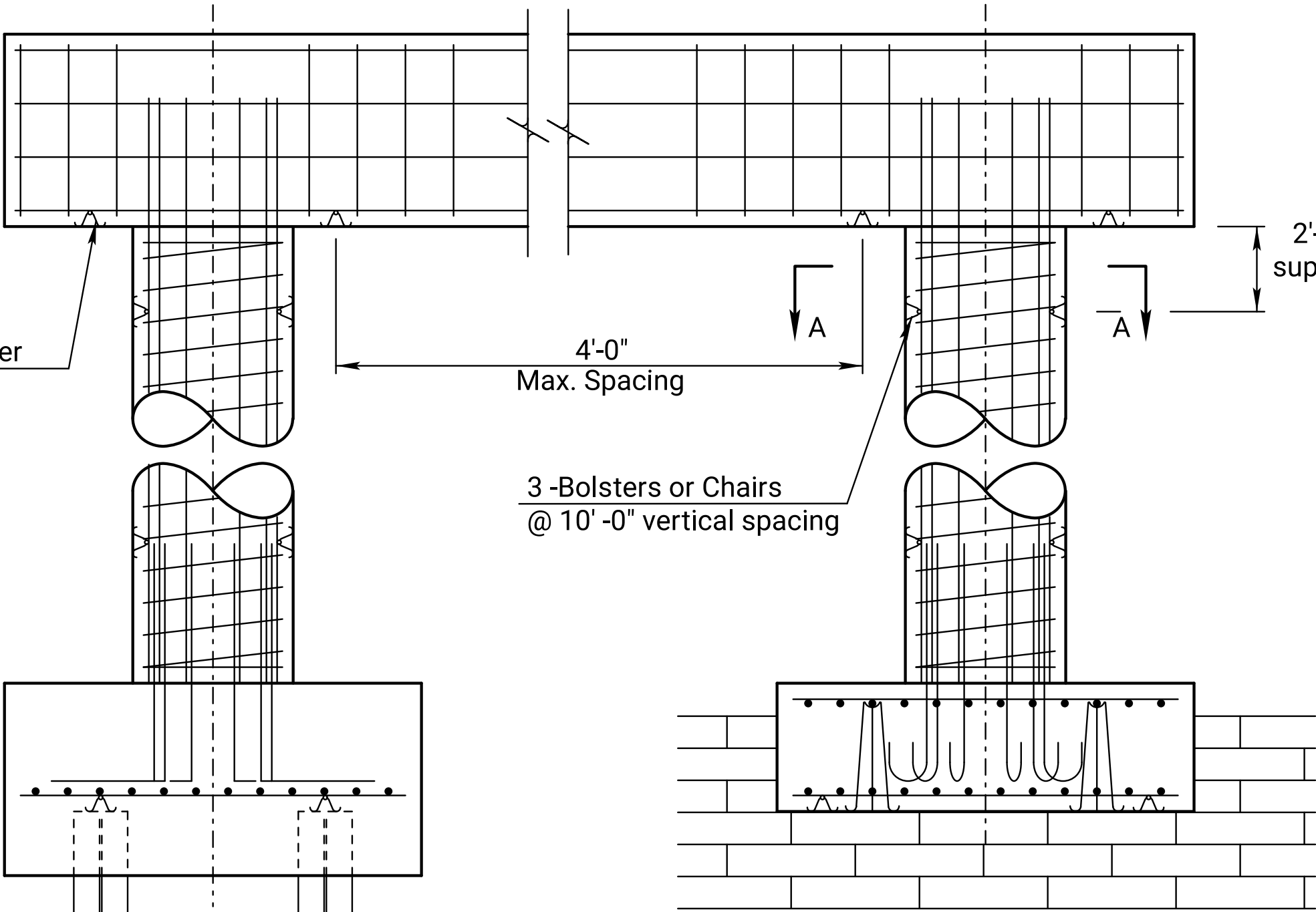


BOX CULVERT

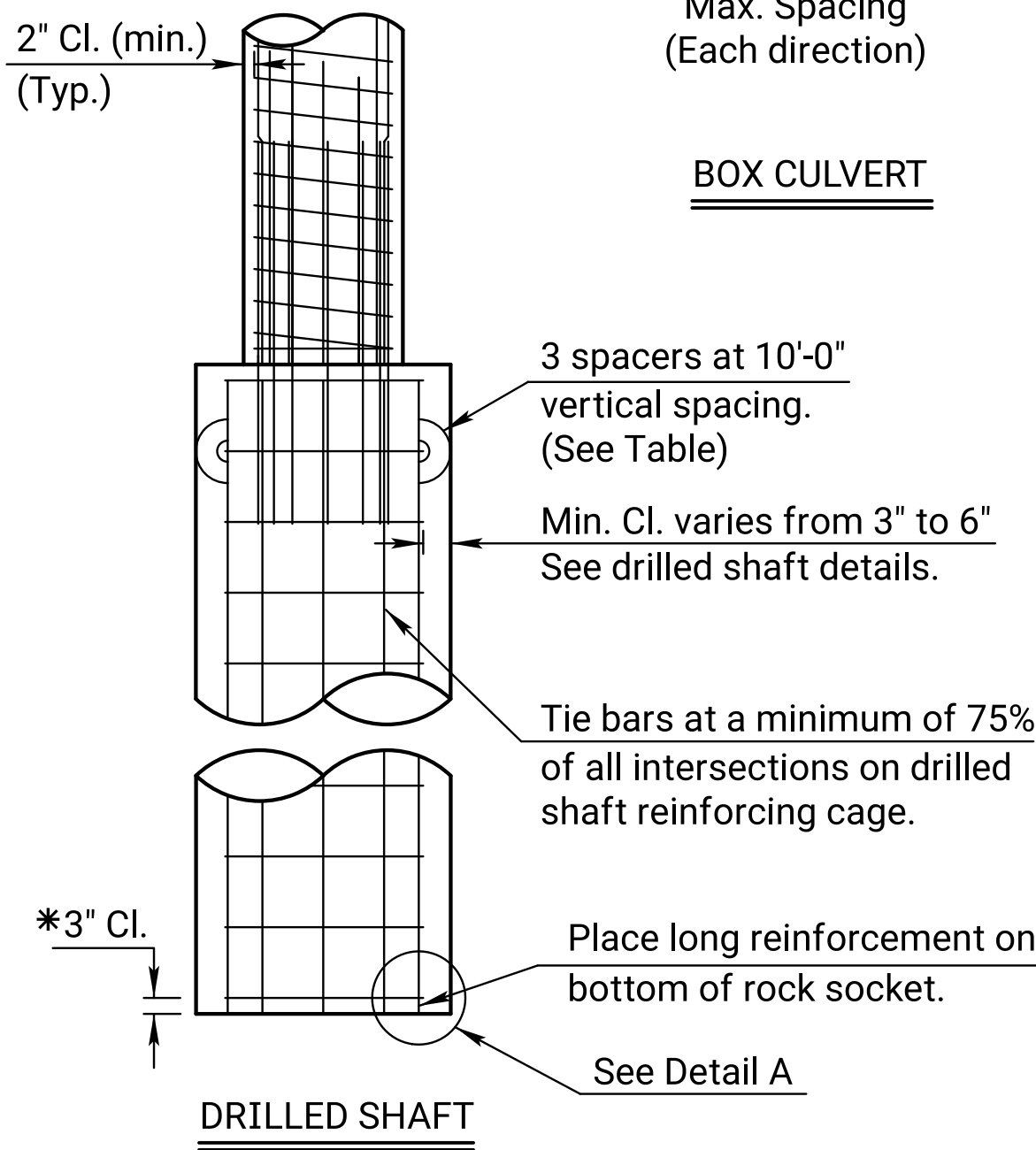


SECTION A-A

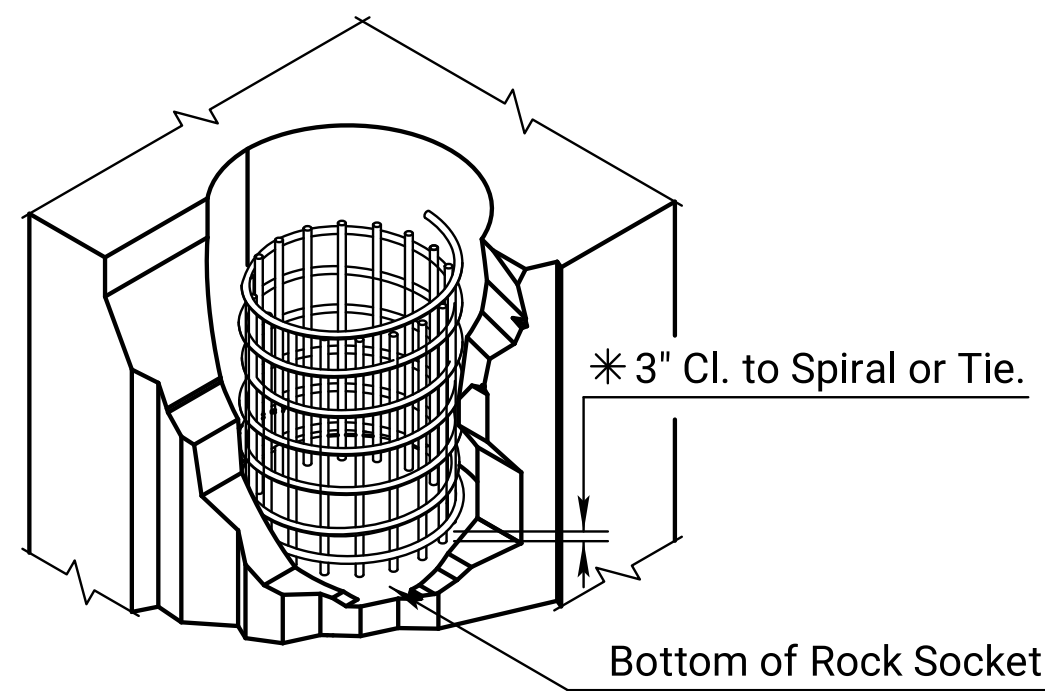
Required Shaft Supports		
Diameter (in.)	Circumference (in.)	No. of Spacers
18	56	3
24	75	3
30	94	4
36	113	4
42	131	5
48	150	6
54	169	6
60	188	7
66	207	7
72	226	8
78	244	9
84	263	9
90	282	10
96	301	11
102	320	11
108	339	12



PIER



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.

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.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION				
SUPPORTS AND SPACERS FOR REINFORCING STEEL				
BR120				
FHWA APPROVAL				
DESIGNED	R.A.M.	DETAILED	R.A.A.	QUANTITIES
DESIGN CK.	L.R.R.	DETAIL CK.	R.A.M.	QUAN. CK.
11-17-10			APPD.	Terry L. Fleck
TRACED			R.A.A.	
TRACE CK.			R.A.M.	

GENERAL NOTE:

On surfacing projects, the 6" of Compaction Type AA, shown for the center portion on the roadbed, is for the purpose of restoring the original Compaction Type AA which may have been lost since grading operations. The exact locations of this Compaction Type AA, which will be required, is to be determined by the Engineer at the time of construction. This work shall be paid under the bid item "Compaction of Earthwork (Type AA)(MR-5-5)".

~~Over all structures, unless otherwise directed by the Engineer, where the top of the hubguard is level with or above the finished shoulder grade, the earth cover over the structure slab shall be removed and backfilled with _____ material as directed by the Engineer. The removal of this material will be subsidiary.~~

~~The _____ material used to backfill over the structure shall be paid for at the prices shown in the contract.~~

~~The earth shoulders shall be compacted full depth (Type MR) except, when ordered by the Engineer, the top 3" shall be left uncompacted for seeding.~~

All side roads and house entrances shall be surfaced with 6" AB-3 under 6" of HMA-Commercial Grade Class A to the R/W line as indicated on the detail. All side roads and house entrances with existing asphalt surface shall be surfaced with 6" HMA-Commercial Grade Class A at least to the R/W line or to the end of construction, as directed by the Engineer. Each mailbox turnout (ON PROJECTS WHERE STABILIZED SHOULDERS ARE NOT SPECIFIED) shall be surfaced with 6" AS-1 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 156 lbs. per cu. ft. Weight/cu. ft. includes moisture allowed by specification.

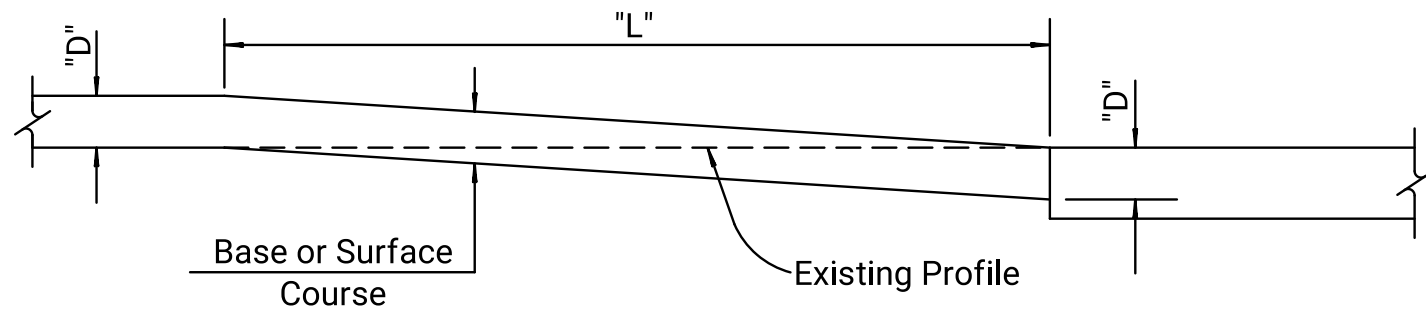
The base course shall be constructed to the plan thickness as shown.

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

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

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

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



TYPICAL PROFILE AT GRADE CONTROL POINTS

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

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

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

SUMMARY OF QUANTITIES

LOCATION	STATION TO STATION	SIDE	* HMA-COMMERCIAL GRADE (CLASS A) (TONS)			AGGREGATE BASE (AB-3) (6") (SQ. YD.)	† AGGREGATE FOR SHOULDERS (AS-1) (TON)
			(4")	(6")	(9.5")		
K-15 Mainline	242+00.00 to 249+70.42	℄	-	-	957	1,853	208
K-15 Mainline	253+65.58 to 259+59.74	℄	-	-	920	1,781	200
Guardrail Pad	247+22.50 to 250+28.53	Lt./Rt.	6	-	-	-	78
Guardrail Pad	253+07.47 to 256+13.88	Lt./Rt.	6	-	-	-	78
House Entrance	246+75.00	Lt.	-	98	-	320	-
Mail Box Turnout	245+86.95 to 246+41.95	Lt.	7	-	-		
Totals			19	98	1877	3,954	564

* Computed at the rate of 145lb/ft³

† Computed at the rate of 135 lb/ft³

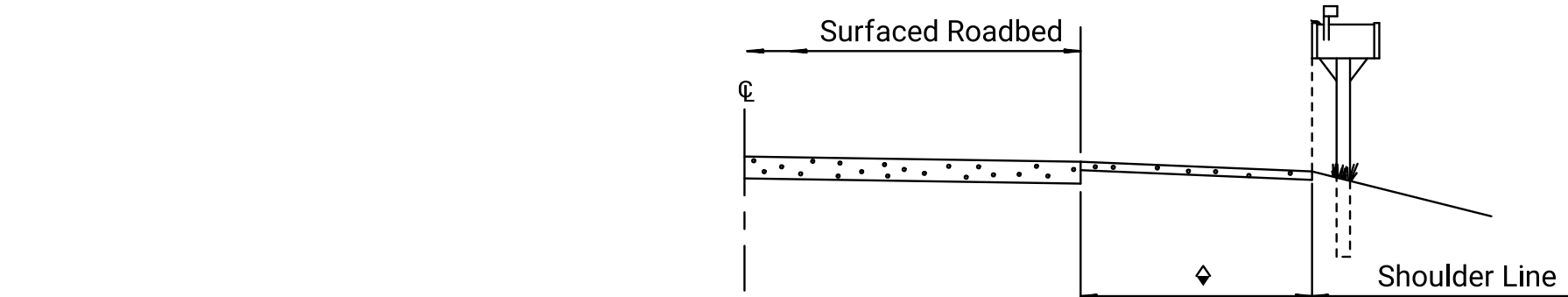
(Total Mix - Aggr. & Asph.)

(Dry Weight)

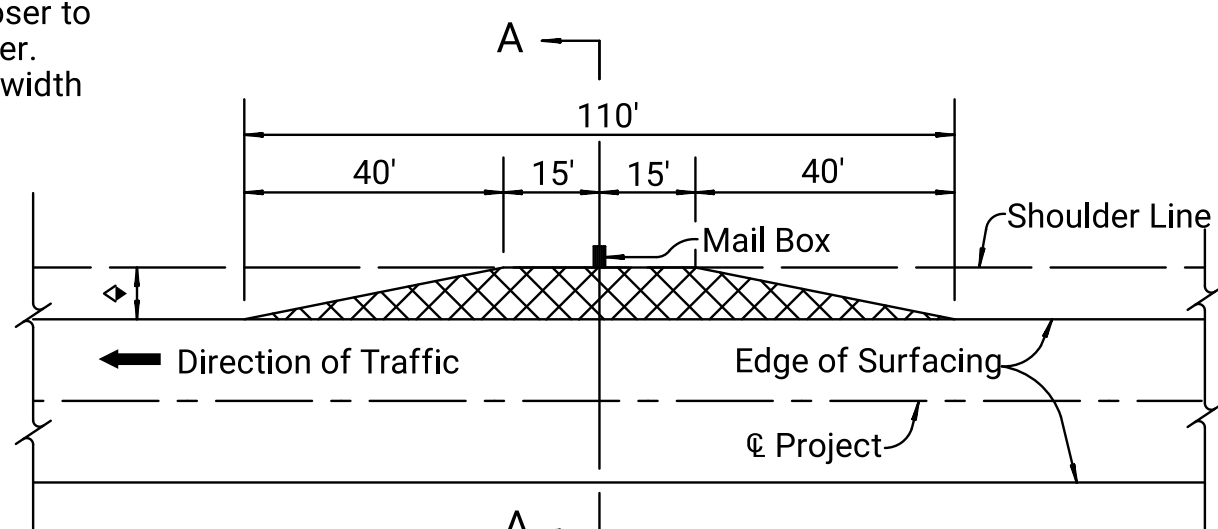
RECAPITULATION OF QUANTITIES

ITEM	TOTAL	UNIT
HMA Commercial Grade (Class A)	1,994	TON
Aggregate Base (AB-3) (6")	3,954	SQ. YD.
Water (Aggregate Shoulder)(Set Price)	1	MGAL
Water (Earthwork Compaction)(Set Price)	1	MGAL
Field Office and Laboratory (Type A)	1	EACH
Aggregate for Shoulders (AS-1)	564	TON
*Calcium Chloride	2	TON

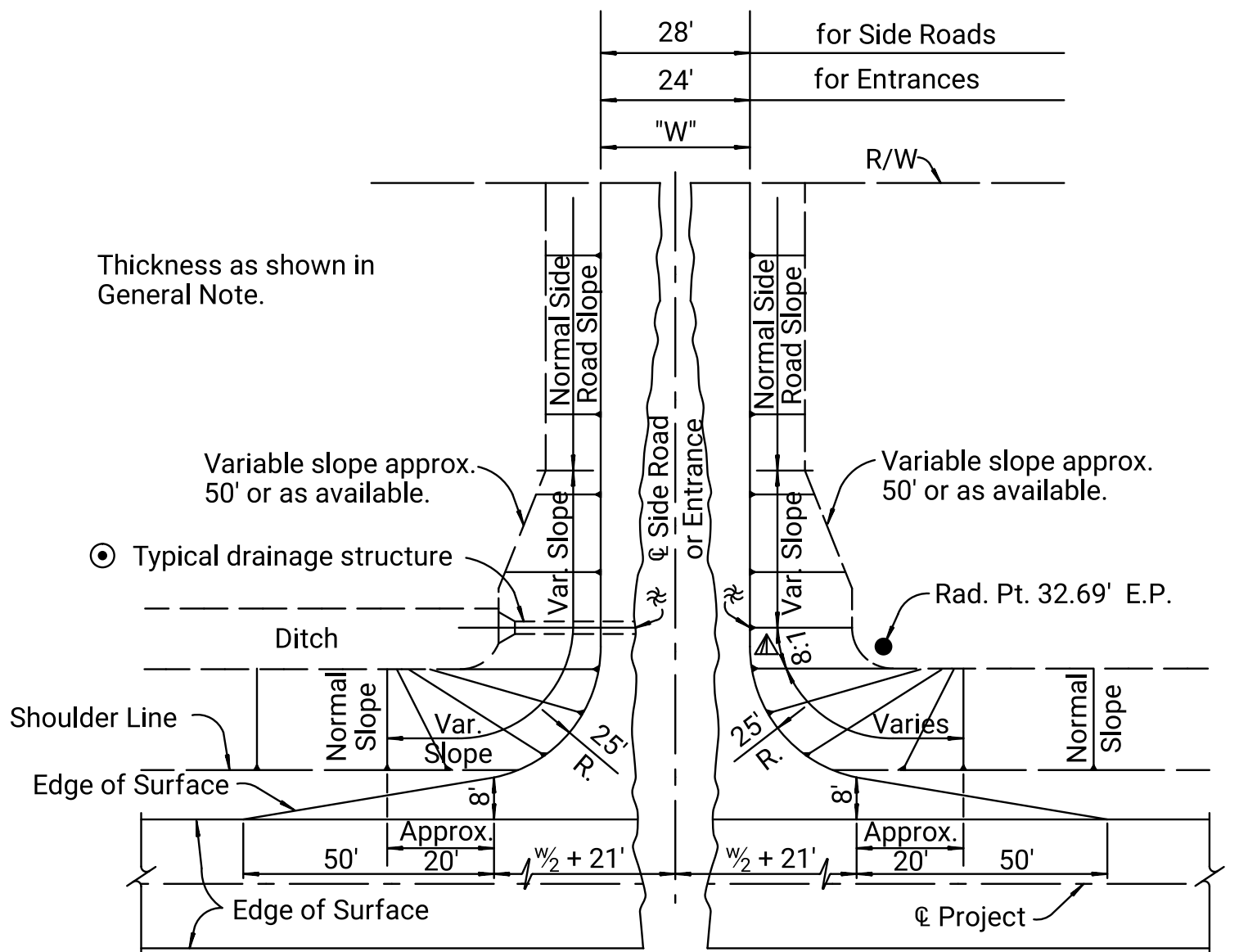
* Computed at the rate of 0.003726 Tons CaCl/Ton AS-1



SECTION A-A



DETAIL FOR SURFACING OF MAIL BOX TURNOUTS



WITH DRAINAGE STRUCTURE

MOUND ENTRANCE OR SIDE ROAD

DETAIL FOR SURFACING OF SIDE ROADS & HOUSE ENTRANCES

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

- ⊙ Normal Slope (but not steeper than 6:1) at approximate $\mathbb{C}$ Structure or appropriate clear zone width.

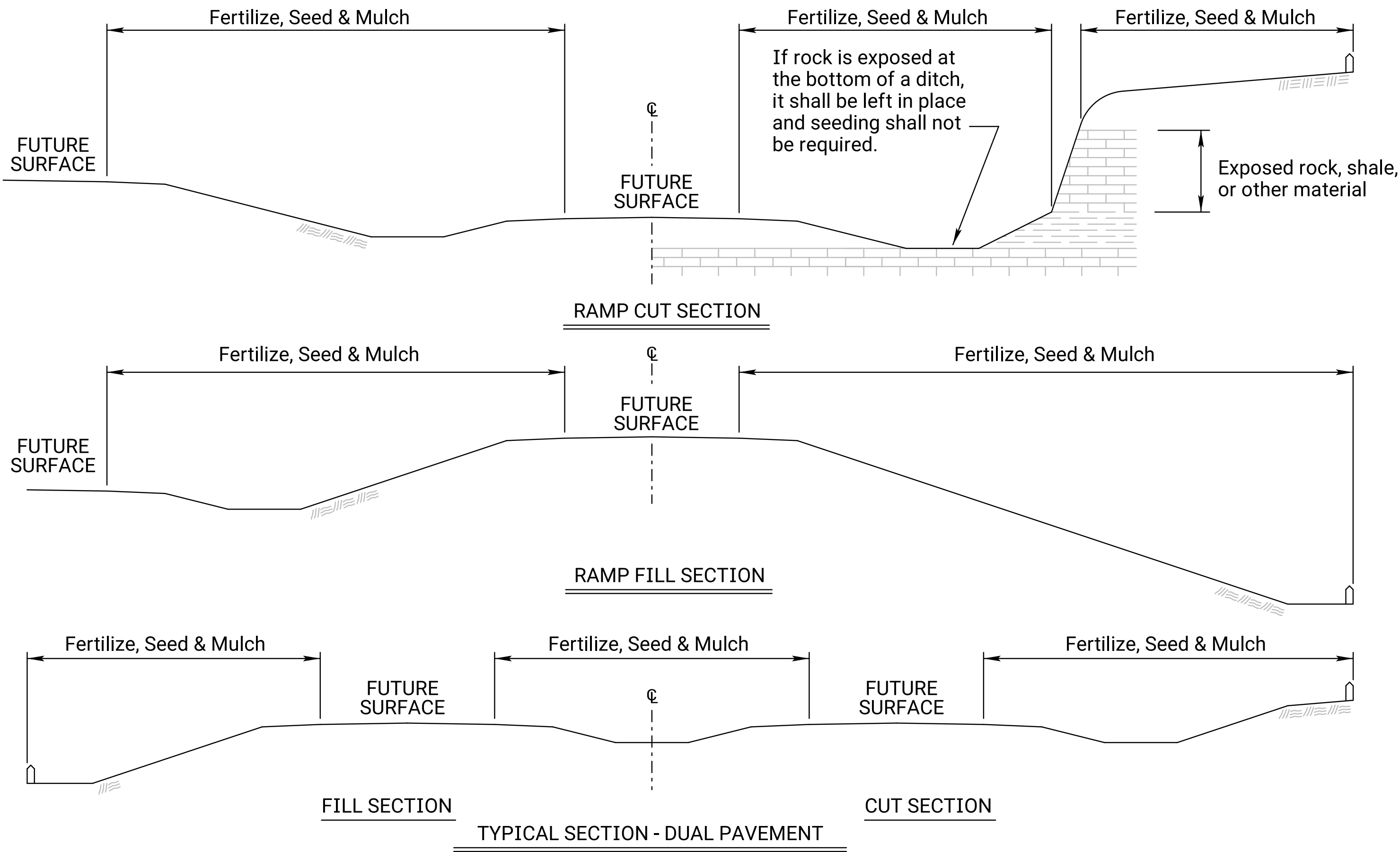
On side roads and entrances which slope toward the highway, a low point approx. 6" deep shall be constructed to divert surface drainage into the highway ditch, unless otherwise shown on the plans.

12	01-10-07	Changed bituminous to asphalt	S.W.K.	J.O.B.
11	08-30-06	Changed tack type/rate	S.W.K.	J.O.B.
10	03-24-05	Revised compaction, tack type/rate	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APP'D

SUMMARY OF QUANTITIES (Surfacing)

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

Plotted by : Chris.Wilkus@ks.gov 15-DEC-2025 14:41
File : LA852A.dgn



FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P₂O₅, K₂O listed in Summary of Quantities will be acceptable.

- * - N = Nitrogen Rate of Application
- ** - P₂O₅ = Phosphorous Rate of Application
- *** - K₂O = 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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	50	100

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150	150	3.86	0.56	Temporary Fertilizer (16 - 20 - 0)	663	LB
110		3.86		Temporary Seed Mix	424.6	LB
	111		0.56	Soil Erosion Mix	62.2	LB
				Erosion Control (Class 1, Type C)	1646	SQ YD
				Erosion Control (Class 2, Type E)	1042	SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)		TON
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Filter Sock (12")		LF
				Geotextile (Erosion Control)	500	SQ YD
				Silt Fence		LF
				SWPPP Design †	1	LS
				SWPPP Inspection †	39	EACH
				Water Pollution Control Manager †	39	EACH
900 lbs / acre		3.86		Mulch Tacking Slurry	5211	LB
2 tons / acre		3.86		Mulching	11.6	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. HECF, Erosion Control (Class I or II) or Hay Mulch may be used at no additional cost to the project.

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.

The amount of mulch in the bid quantities is estimated. (Acres of Seeding X 1.5 X 2 Tons/Acre). The amount of mulch tacking slurry in the bid quantities is estimated. (Acres of Seeding X 1.5 X 900 Lbs/Acre). The estimated quantity includes mulching associated with both temporary and permanent seeding operations. The total mulch and mulch tacking slurry required shall be determined in the field. The bid item for mulching and mulch tacking slurry shall be paid for according to the Standard Specifications.

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

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
0.5	Seed (Blue Grama Grass Seed) (Lovington)	0.21
4.5	Seed (Buffalograss Seed) (Treated)	1.89
45	Seed (Perennial Ryegrass)	18.86
2.6	Seed (Prairie Junegrass)	1.09
6.3	Seed (Side Oats Grama Grass Seed) (El Reno)	2.64
45	Seed (Tall Fescue) (Endophyte Free)	18.86
6	Seed (Western Wheatgrass Seed) (Barton)	2.52
	Total (lb)	46.07

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.

TEMPORARY SEED MIX

PLS RATE	NAME	QTY (lb)
20	Canada Wildrye Grass Seed	77.2
45	Grain Oats	173.7
45	Sterile Wheatgrass	173.7
	Total (lb)	424.6

05	12-02-25	Standard Sheet Update and Simplification	J.D.N.	M.K.L.
04	09-12-24	Added mulch tckng slurry rate & Temp Seed Mix Table	M.R.D.	M.K.L.
03	08-03-20	Added Note	M.R.D.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

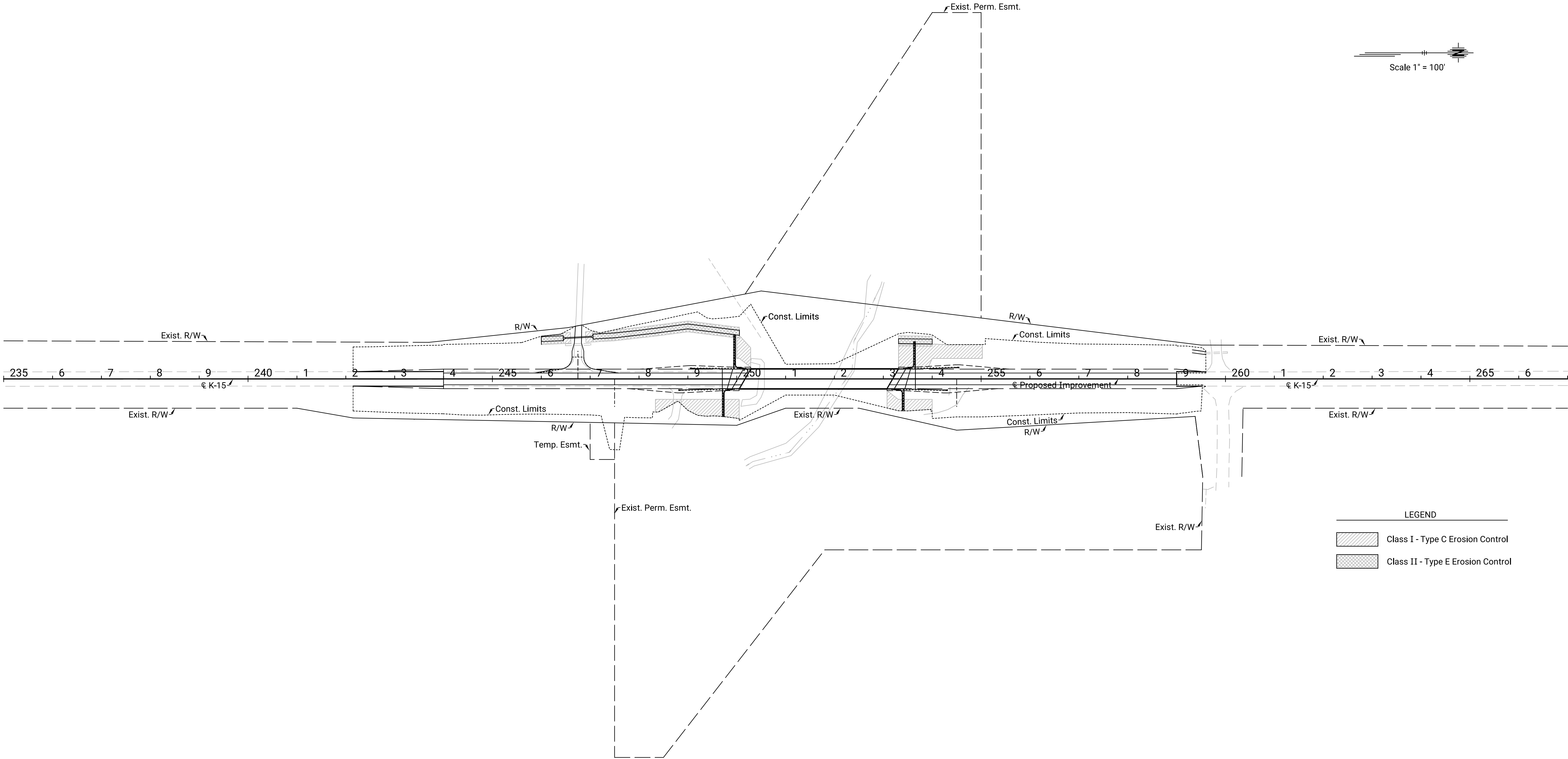
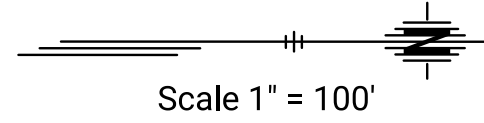
FHWA APPROVAL				12-05-25	APP'D.	Mervin Lare	
DESIGNED	M.R.D.	DETAILED	M.R.D.	QUANTITIES		TRACED	
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	

KDOT Graphics Certified 12-11-2025

Sh. No. 50

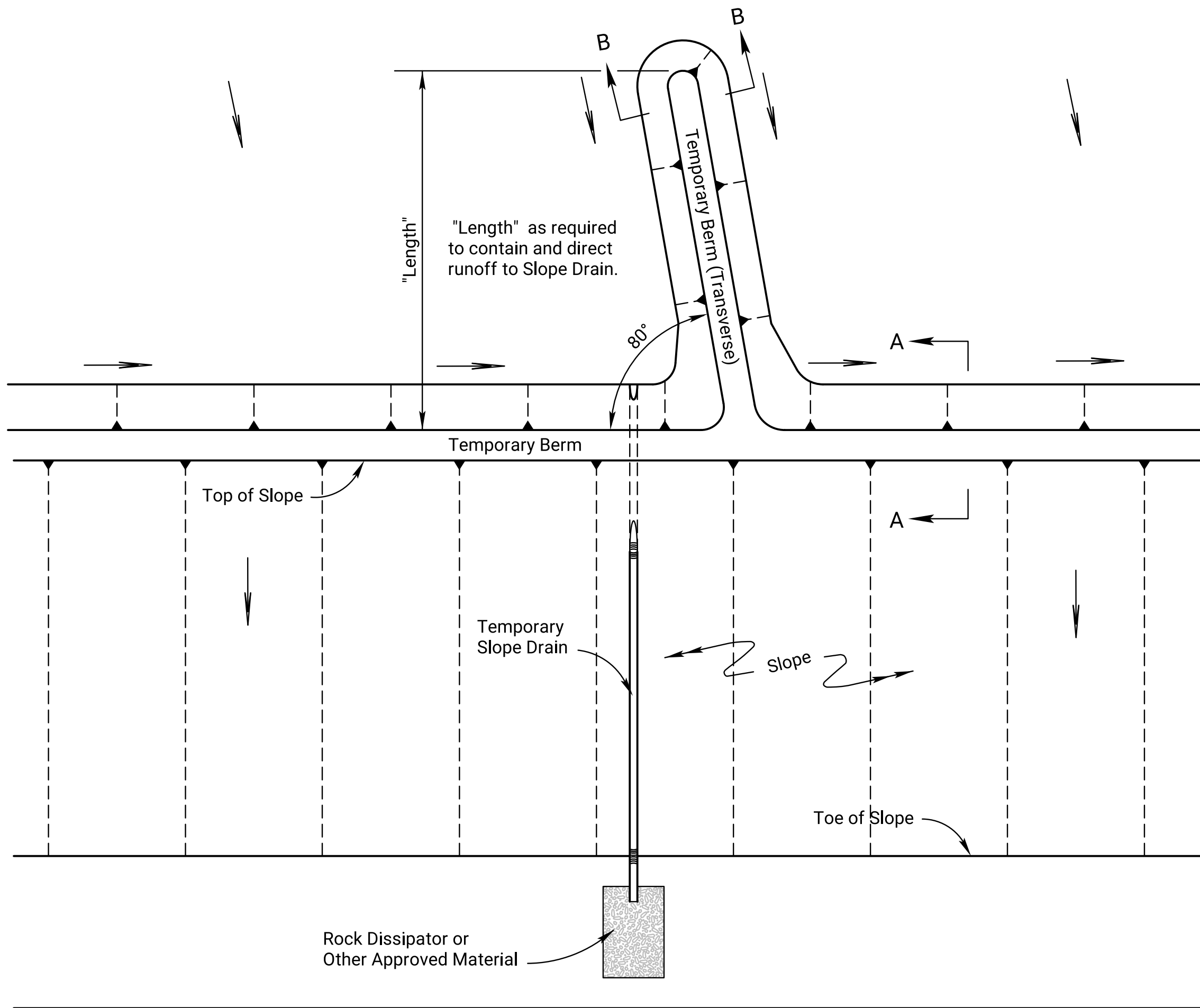
KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	52	100

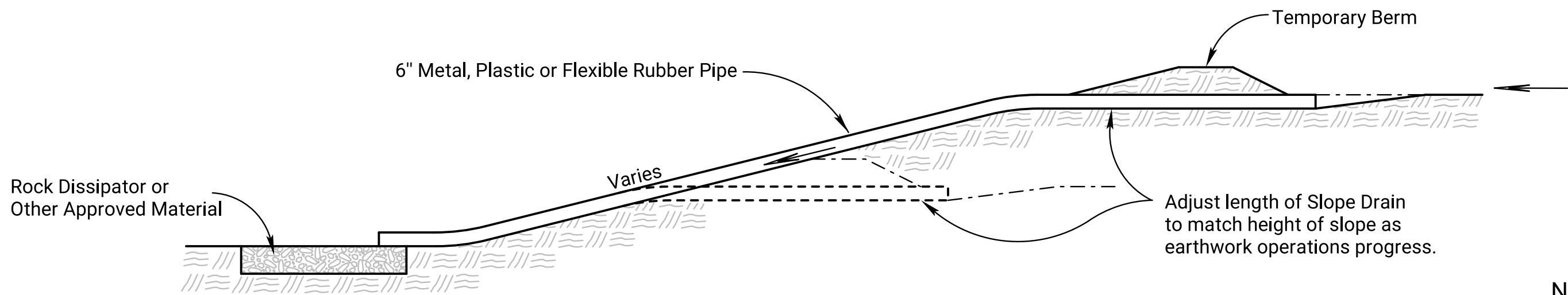


LEGEND	
	Class I - Type C Erosion Control
	Class II - Type E Erosion Control

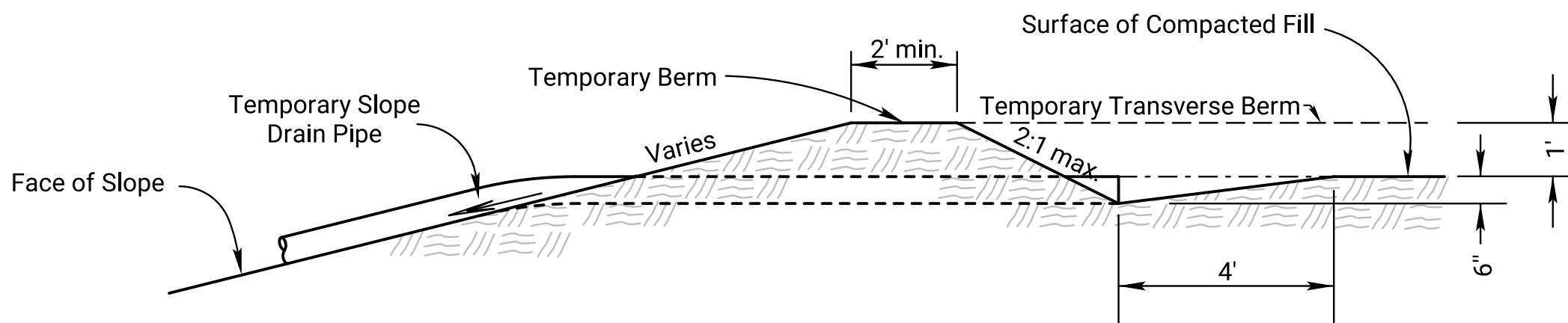
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	53	100



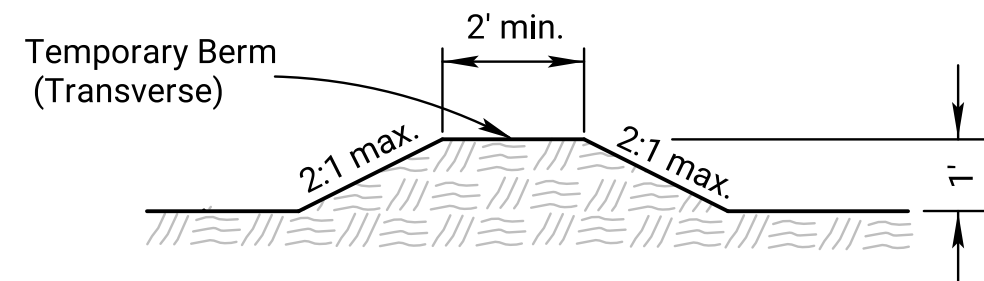
TYPICAL PLAN VIEW OF
TEMPORARY BERM AND
TEMPORARY SLOPE DRAIN
NO SCALE



TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN
NO SCALE

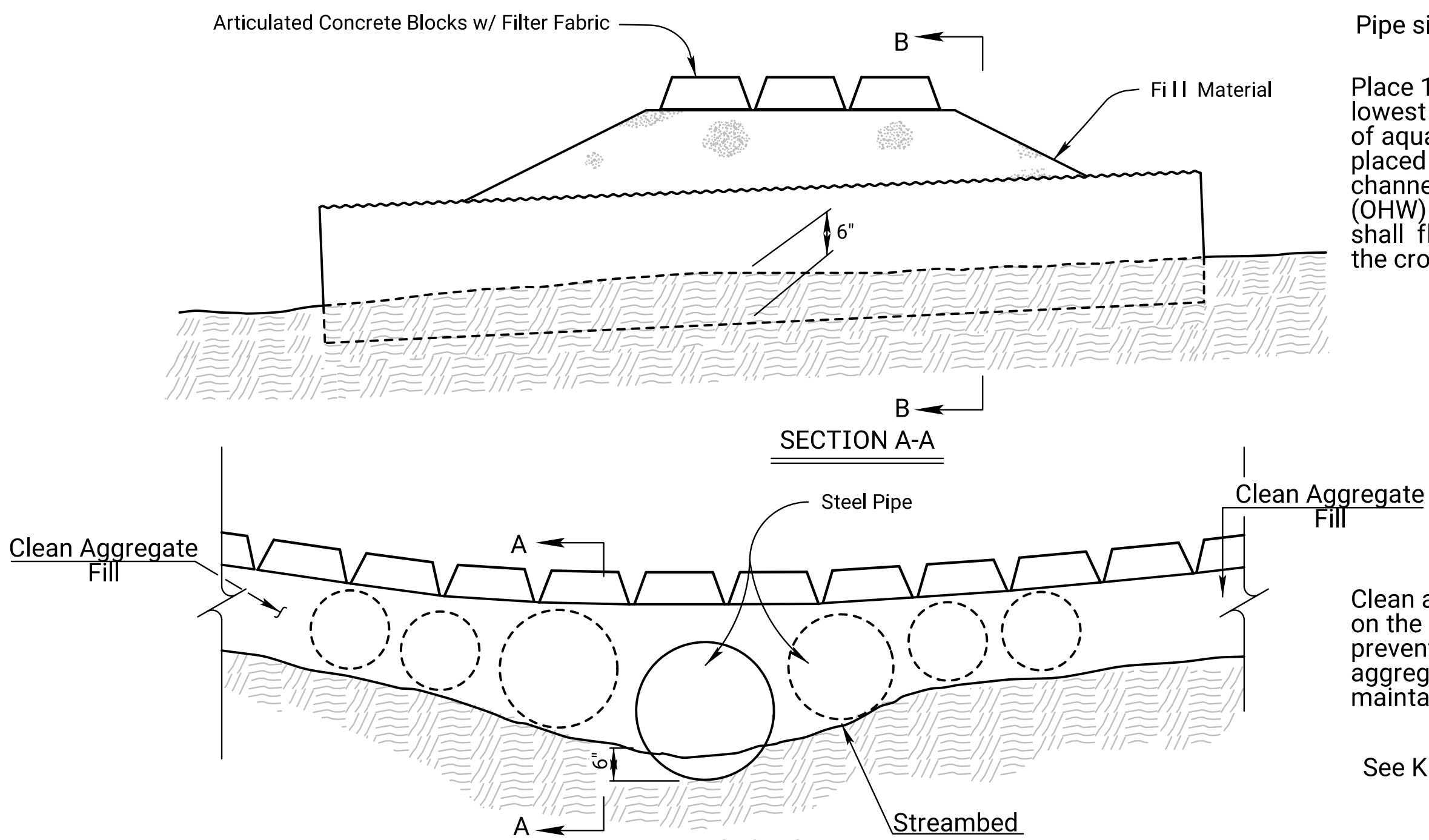


SECTION A-A
NO SCALE



SECTION B-B
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM
NO SCALE



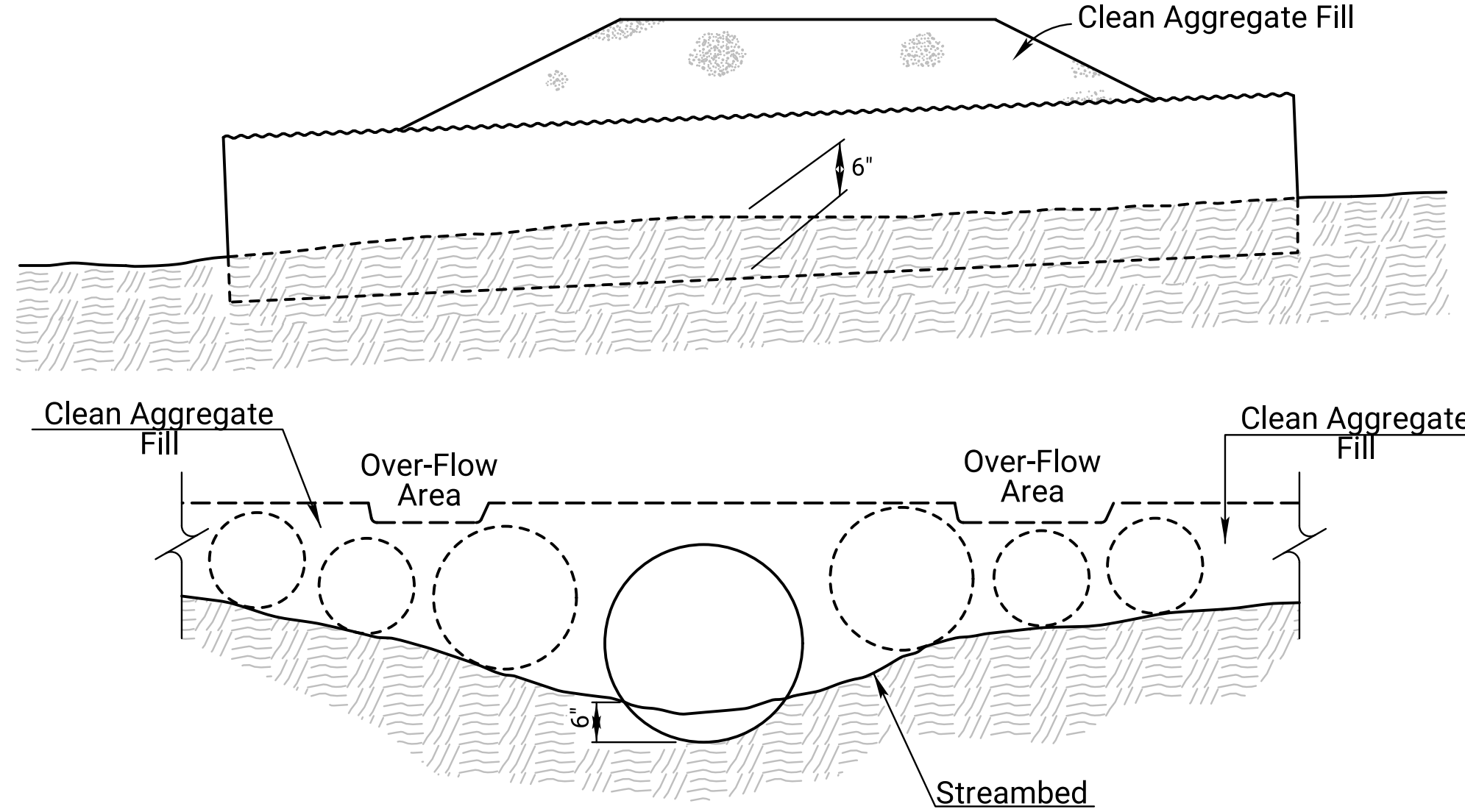
TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)
NO SCALE

Pipe size may vary.

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

Clean aggregate fill will extend a minimum of 50' on the entrance and exit side of the crossing to prevent tracking. The aggregate shall be clean aggregate and a minimum of 6" thick and will be maintained through the use of the crossing.

See KDOT Specifications for more information.



SECTION B-B
TEMPORARY STREAM CROSSING (AGGREGATE)
NO SCALE

Pipe size may vary.

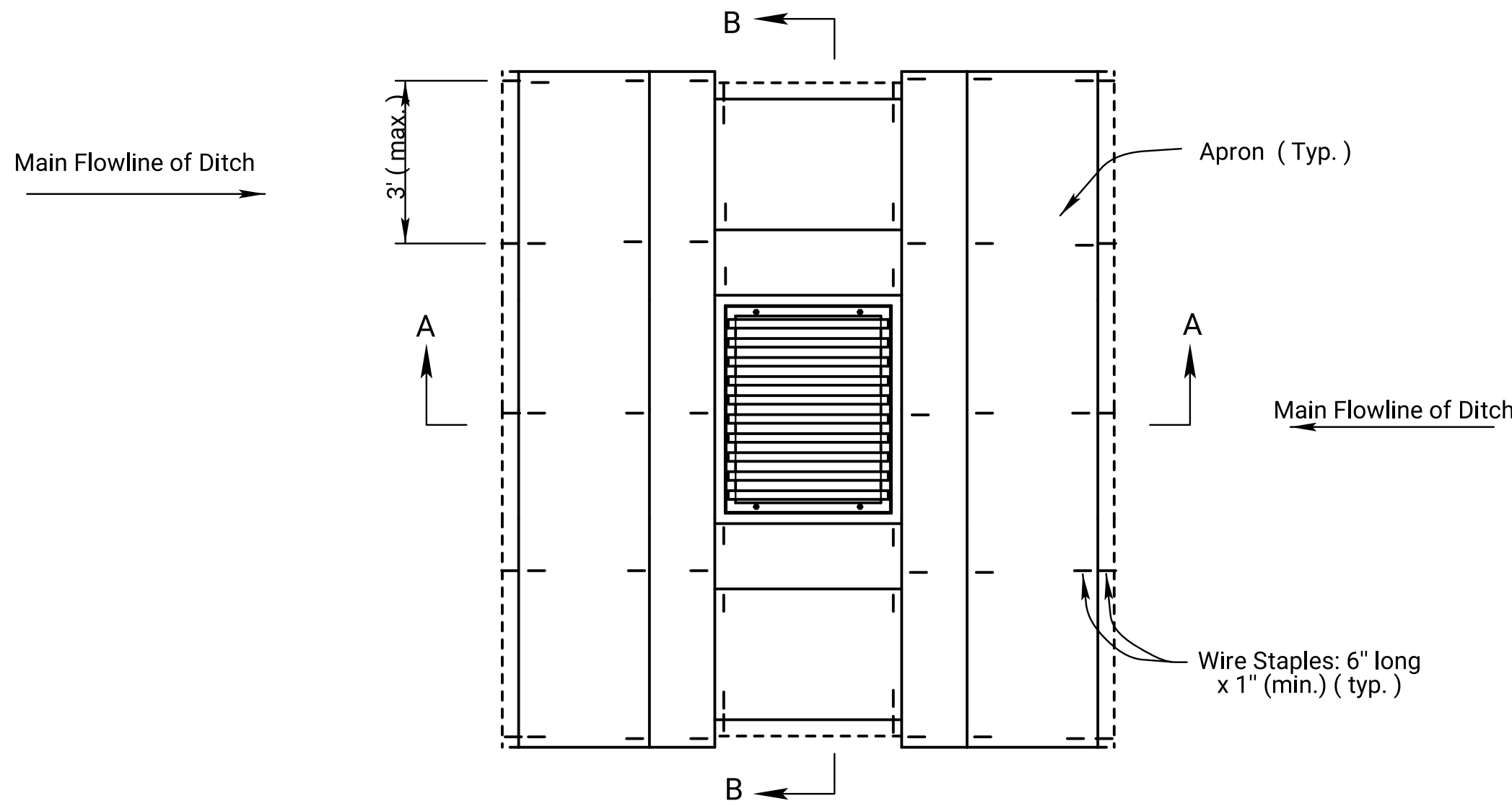
Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall flow through the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

Clean aggregate fill will extend a minimum of 50' on the entrance and exit side of the crossing to prevent tracking. The aggregate shall be clean aggregate and a minimum of 6" thick and will be maintained through the use of the crossing.

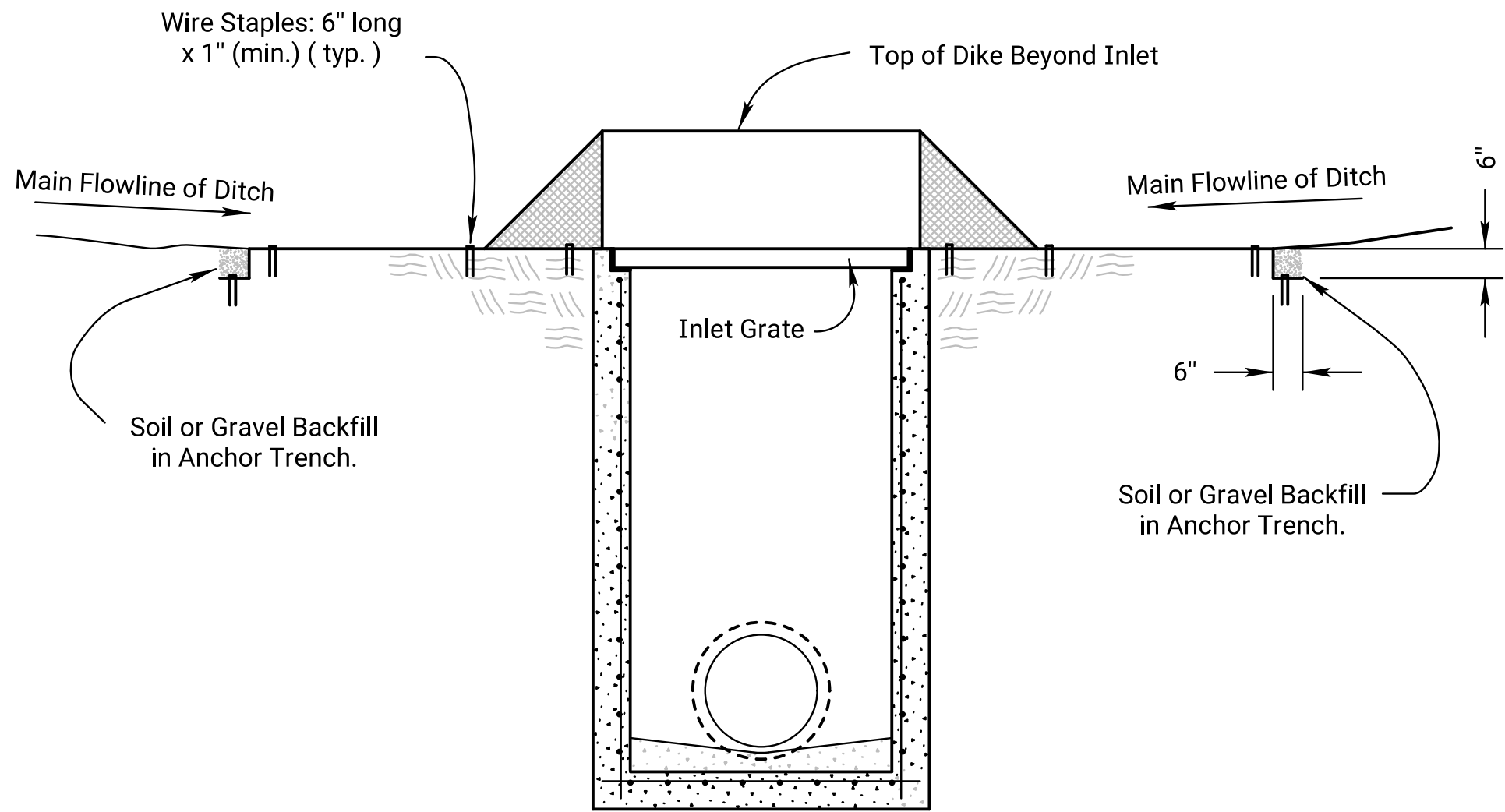
See KDOT Specifications for more information.

KANSAS DEPARTMENT OF TRANSPORTATION					
TEMPORARY EROSION AND POLLUTION CONTROL					
TEMPORARY SLOPE DRAIN, TEMPORARY STREAM CROSSING (AGGREGATE)					
LA852B					
FHWA APPROVAL		01-21-22		APPD.	
DESIGNED	DETAIL	QUANTITIES	TRACED	Mervin Lare	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.		

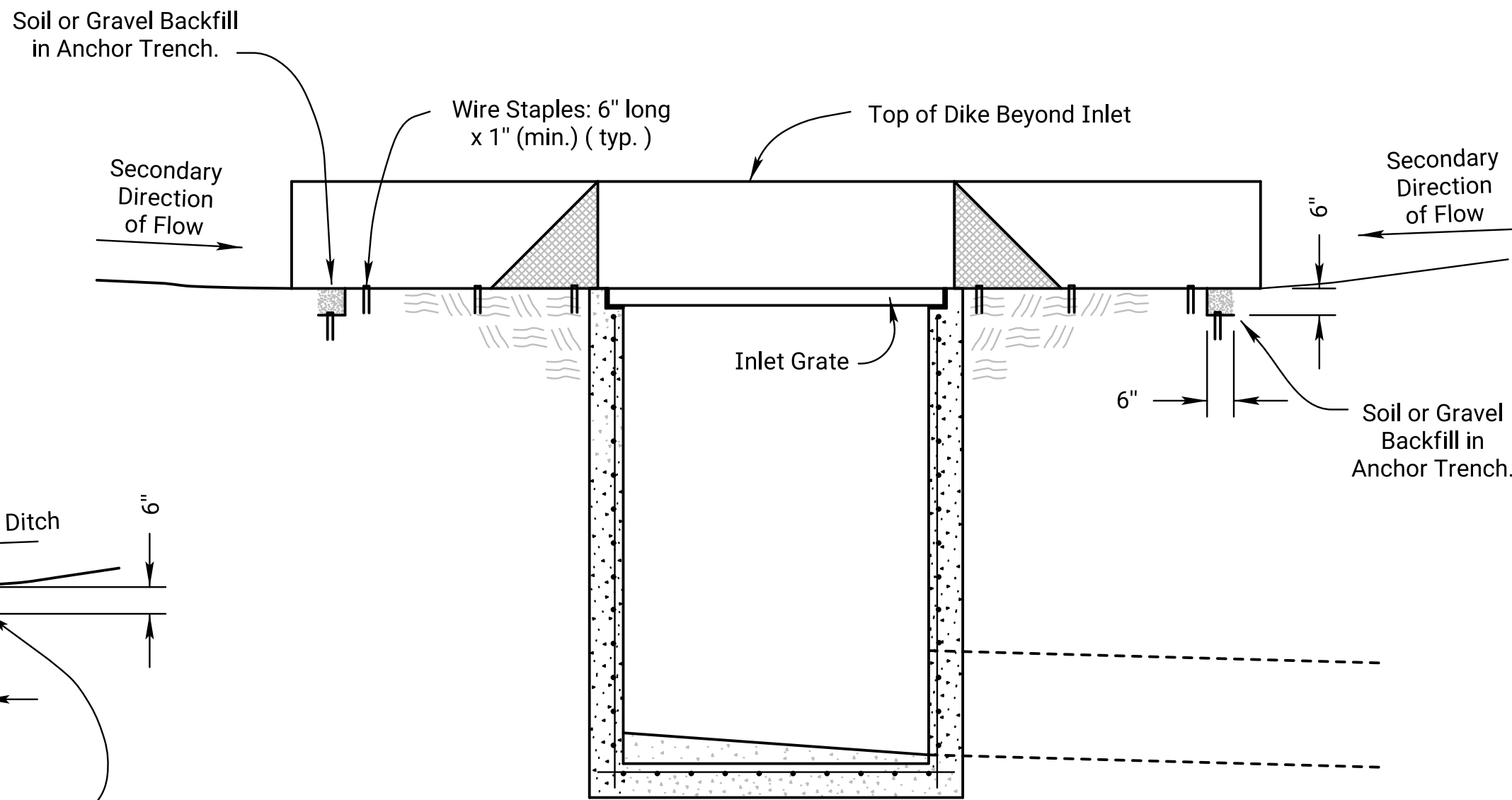
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	54	100



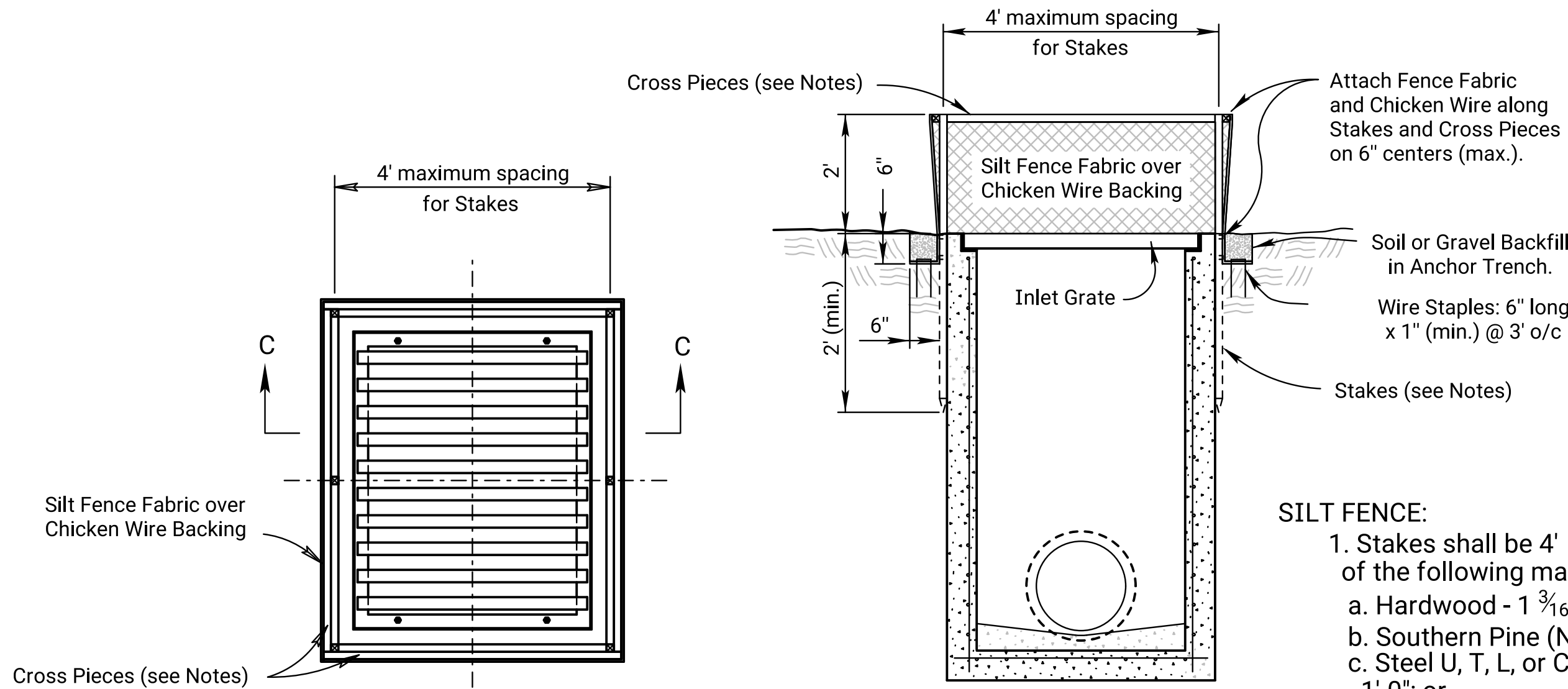
PLAN
TEMPORARY I NLET SEDI MENT BARRI ER
(TRI ANGULAR SI LT DI KE METHOD)
NO SCALE



SECTION A - A



SECTION B - B



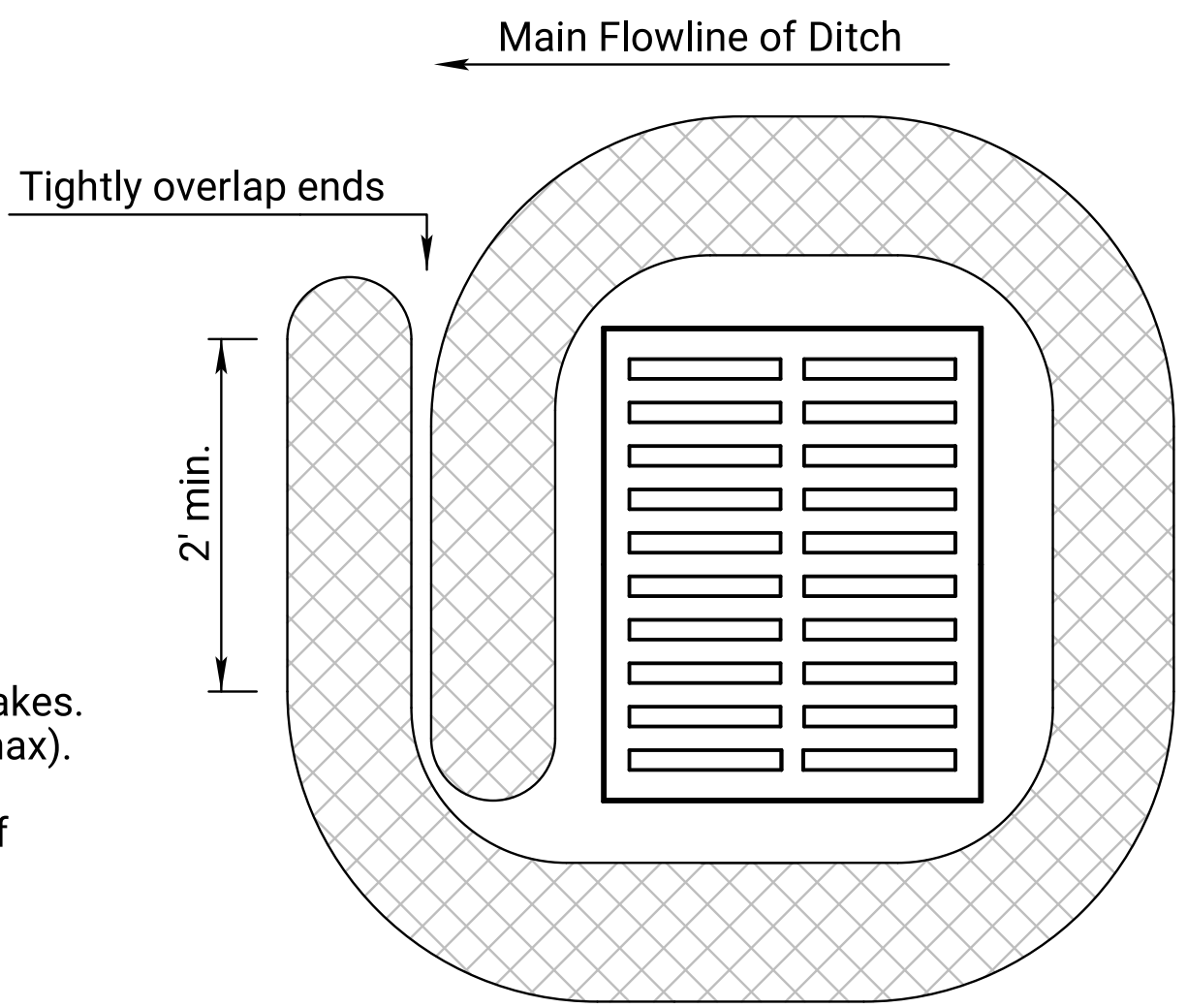
PLAN
TEMPORARY I NLET SEDI MENT BARRI ER
(SI LT FENCE METHOD)
NO SCALE

SECTION C - C

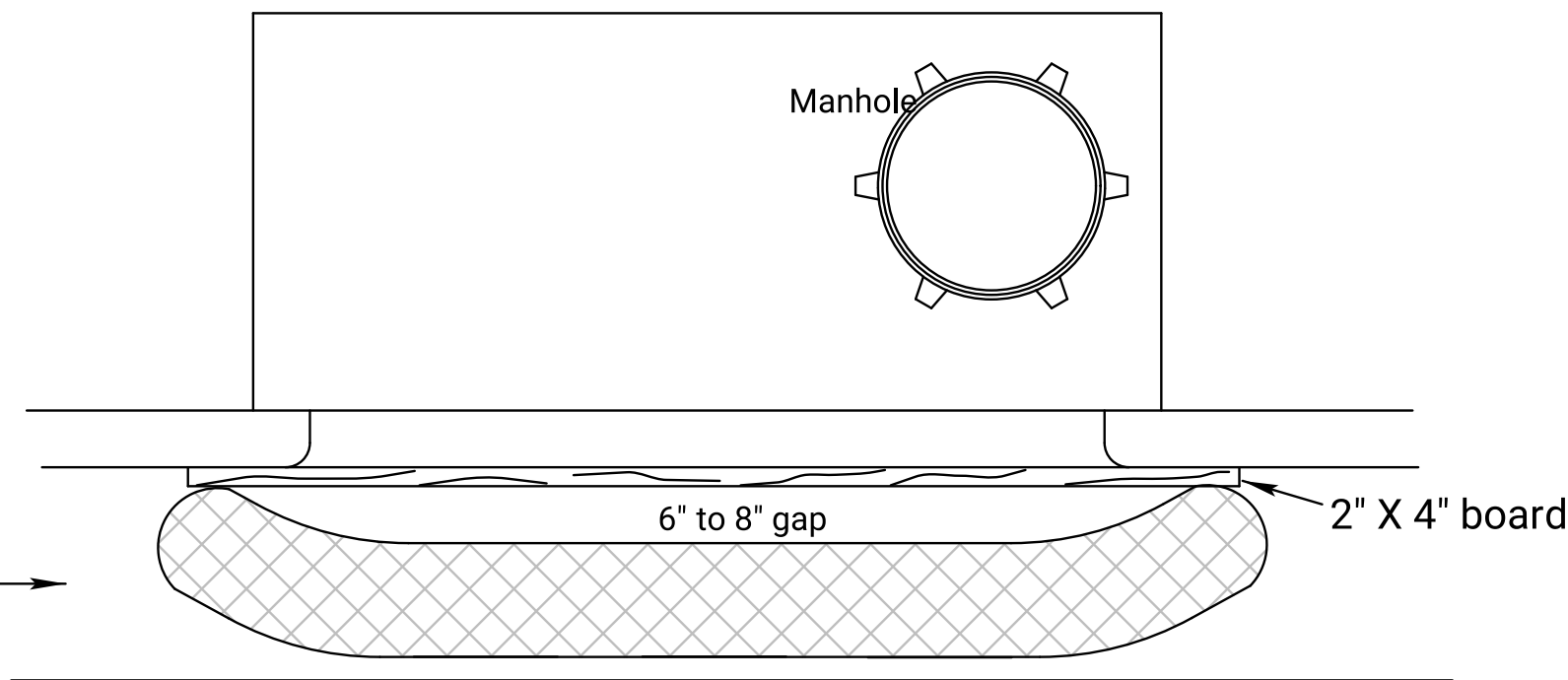
- SILT FENCE:
1. Stakes shall be 4' (min.) long and of one of the following materials:
 - a. Hardwood - 1 3/16" x 1 3/16";
 - b. Southern Pine (No. 2) - 2 5/8" x 2 5/8";
 - c. Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
 - d. Synthetic - same strength as wood stakes.
 2. Cross pieces shall be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

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

Rock = approximately 1" to 2" diameter



Drop inlet use
1'-6" TO 1'-8" diameter log
BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION



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.

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

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.
NO.	DATE	REVISIONS	BY	APPD

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	APPD.	Scott H. Shields
DESIGNED	R.A.	DETAILED	R.A.	QUANTITIES
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN. CK.

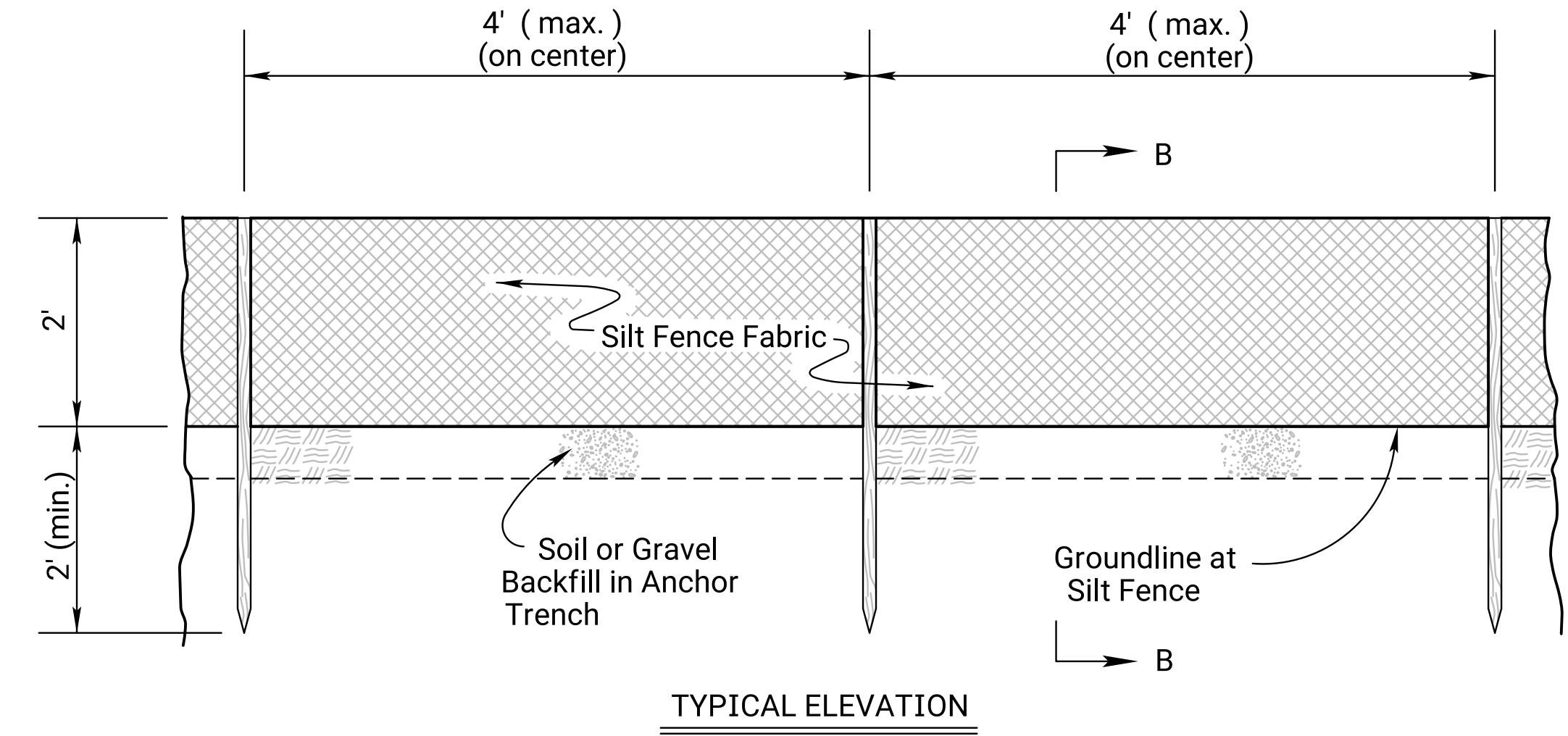
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	55	100

INSTALLATION NOTES

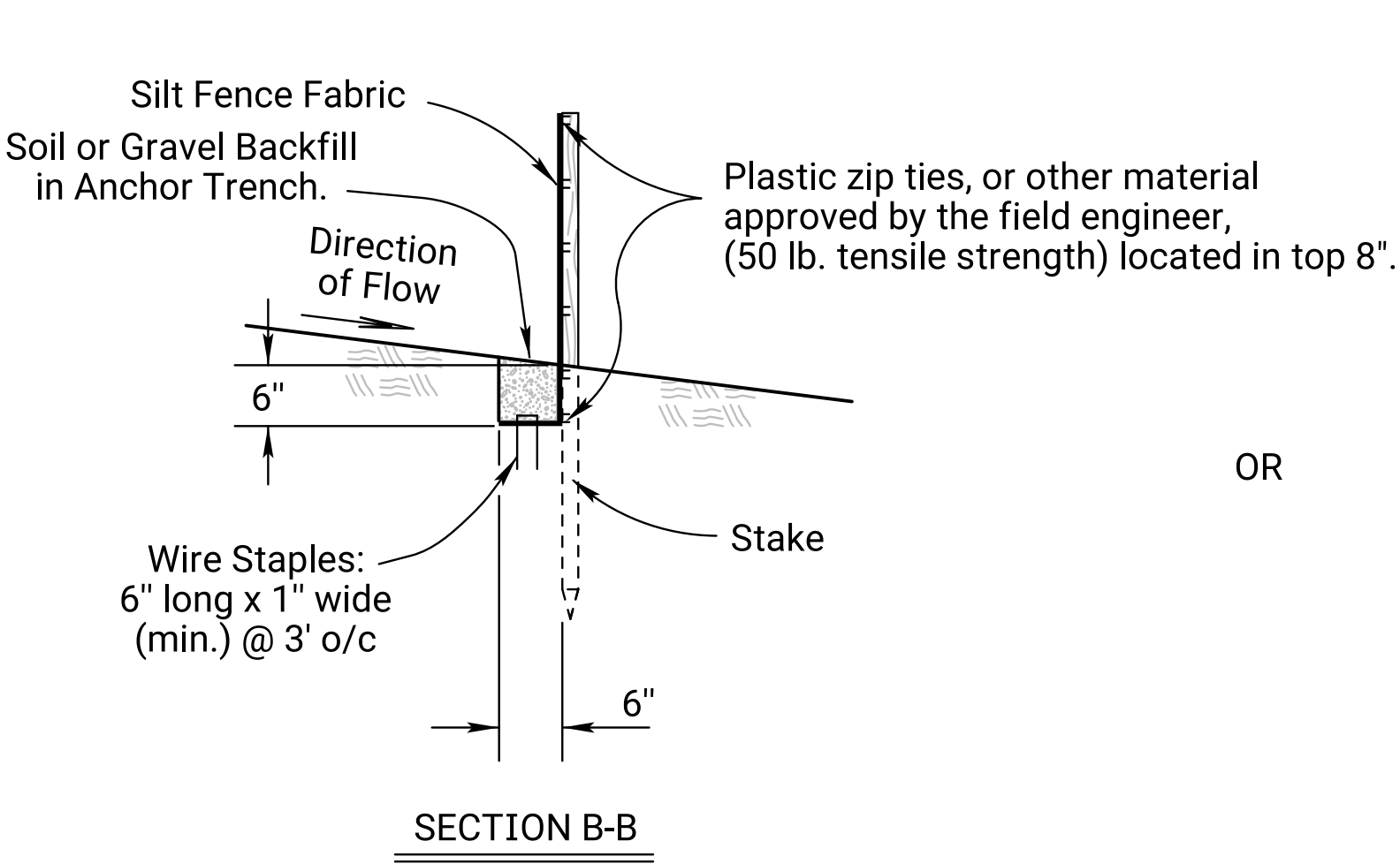
- SILT FENCE:
- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 $\frac{3}{16}$ " x 1 $\frac{3}{16}$ ";
 - Southern Pine (No. 2) - 2 $\frac{5}{8}$ " x 2 $\frac{5}{8}$ ";
 - Steel U, T, L, or C Section - .95 lbs. per 1'-0"; or
 - Synthetic - same strength as wood stakes.
 - 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.
 - Use of high flow material is acceptable.
 - Refer to plan sheets to estimate the length of silt fence required.

BIODEGRADABLE LOG OR FILTER SOCK

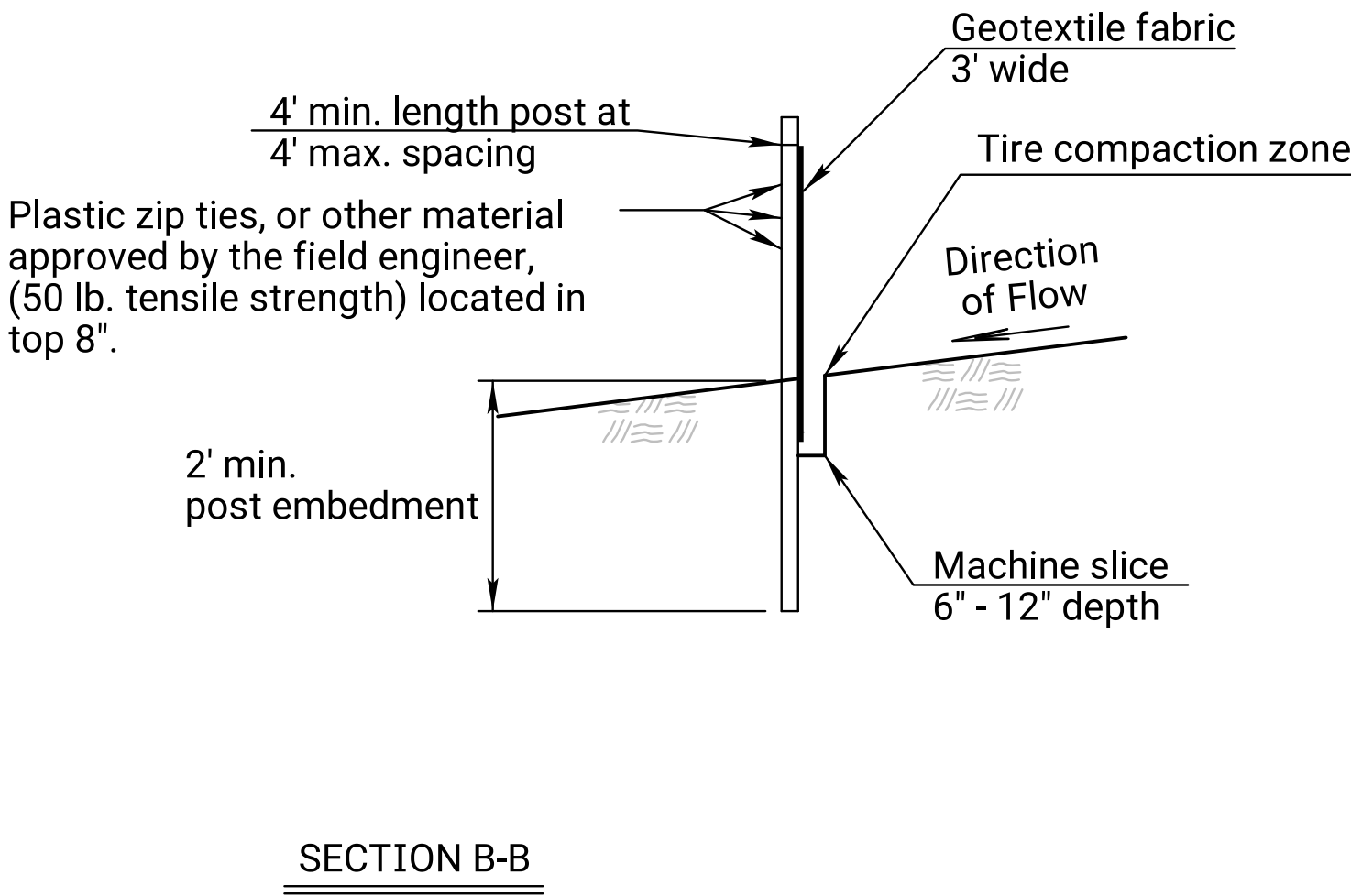
- Place biodegradable logs or filter sock tightly together minimum overlap of 18".
- Wood stakes shall be 2" x 2" (nom.).
- Refer to plan sheets to estimate length of biodegradable log and filter sock required.
- Each log or sock (except compost filter socks) should be keyed into the ground at a minimum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



SILT FENCE BARRIER
NO SCALE



OR



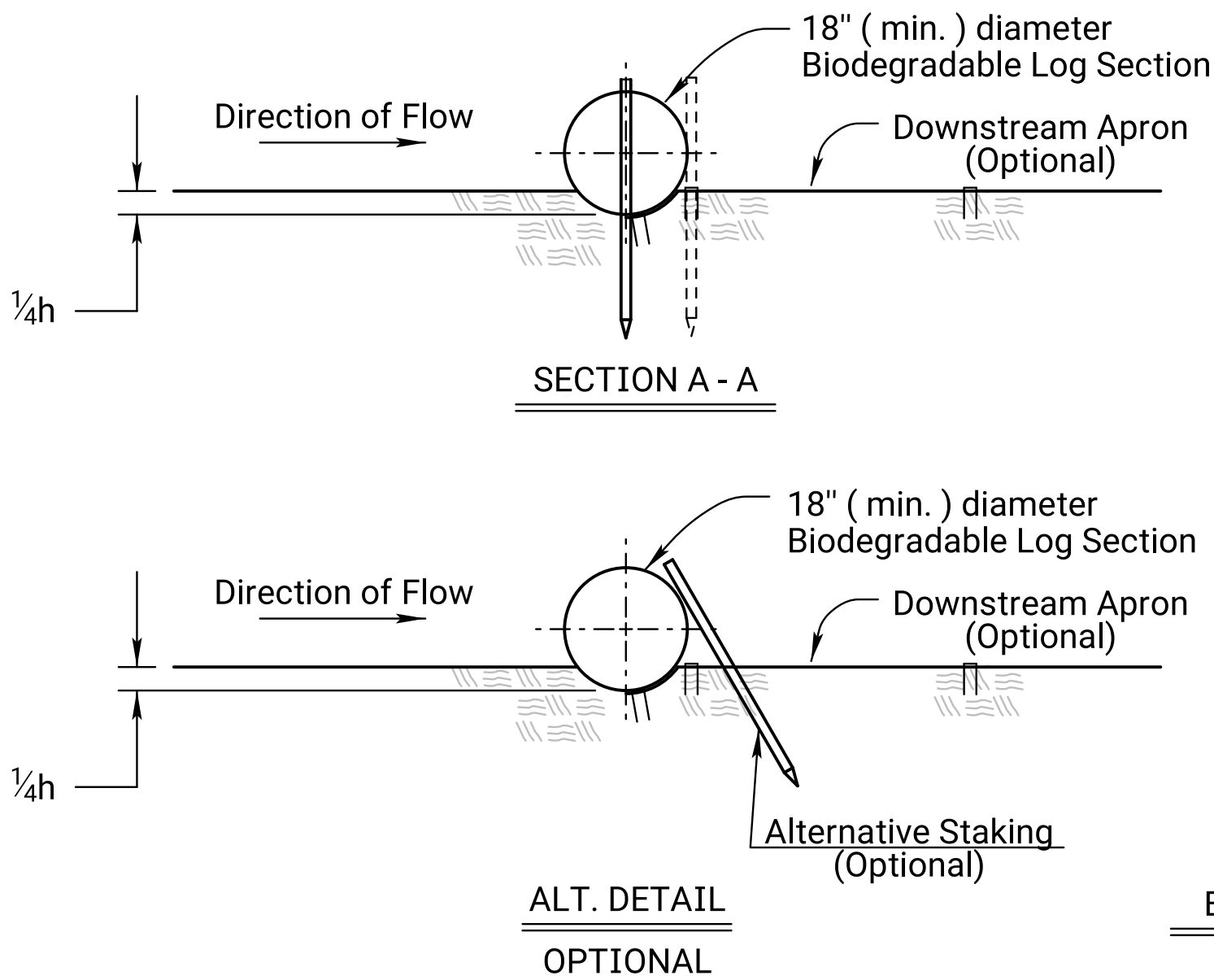
SECTION B-B

Biodegradable Log or Filter Sock Slope Interruptions

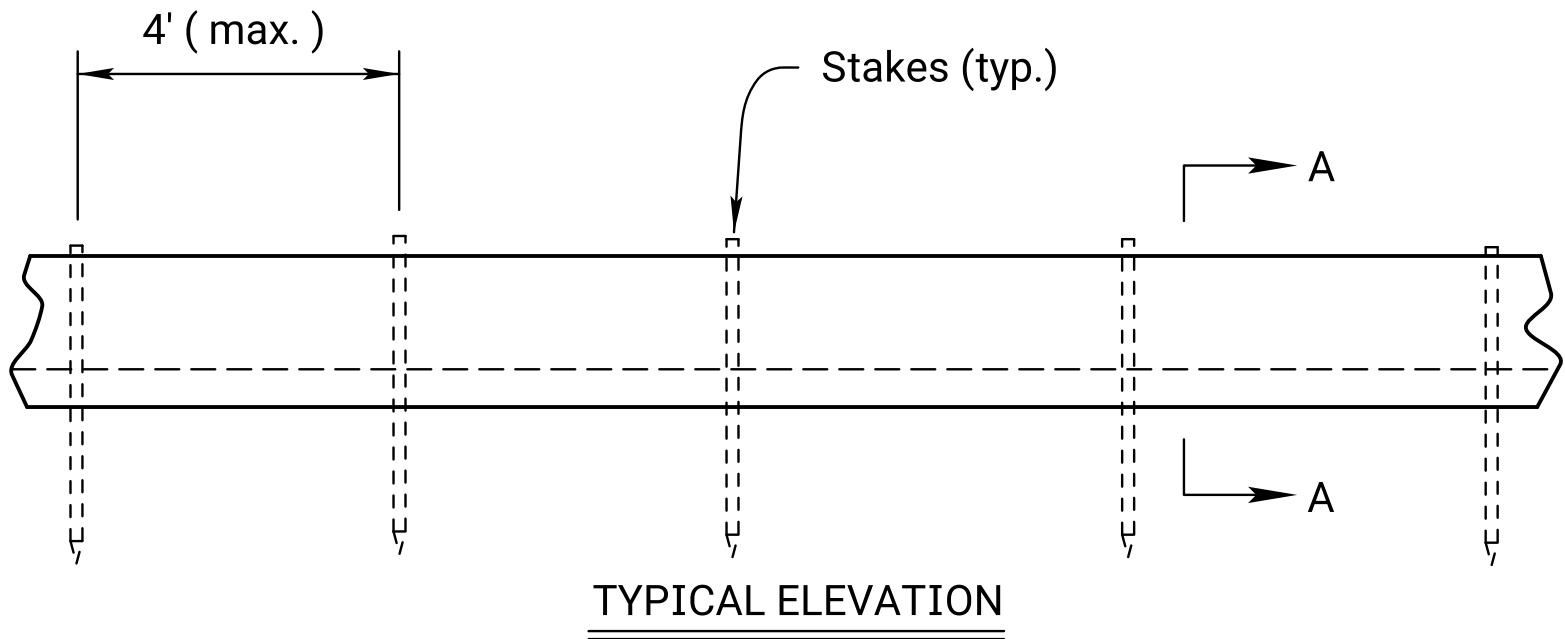
		PRODUCT		
		9" Sediment Log or 8" Filter Sock (ft)	12" Sediment Log or 12" Filter Sock (ft)	20" Sediment Log or 18" Filter Sock (ft)
Slope Gradient	≤4H:1V	40	60	80
	3H:1V	30	45	60

Deviations should be approved by the Field Engineer.

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



ALT. DETAIL
OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS
OR Filter Sock

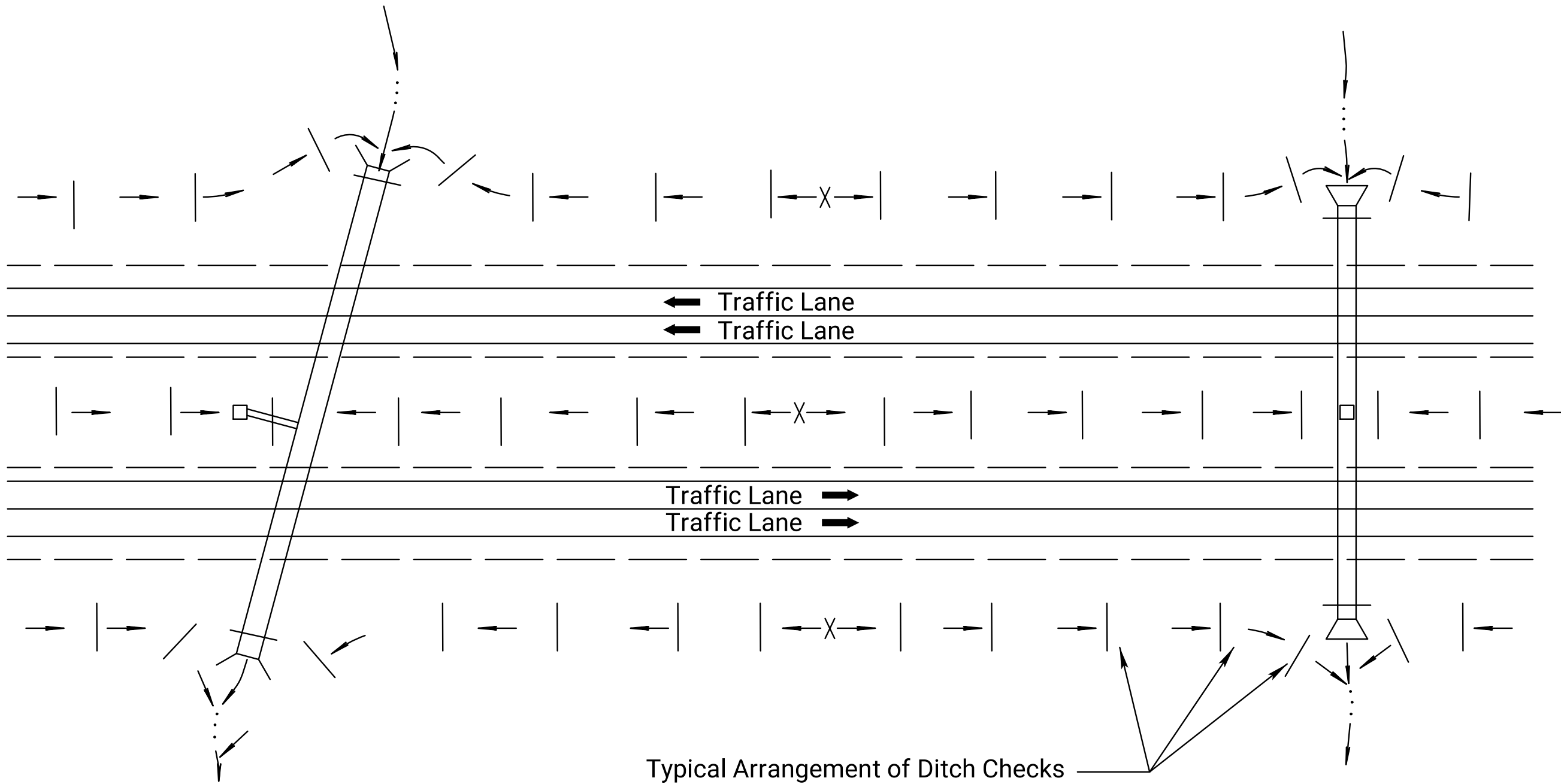
GENERAL NOTES

- Slope interruptions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
- The maximum length of the slope interruptions shall not exceed 250 feet, and the barrier ends need to be staggered.
- 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.
- 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.

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.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE LA852D				
DESIGNED	S.H.S.	09-14-16	APPD.	Scott H. Shields
DETAIL CK.	S.H.S.	DETAIL CK.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN.CK.	TRACE CK.

Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 17:06
File : la852e.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	56	100



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.	

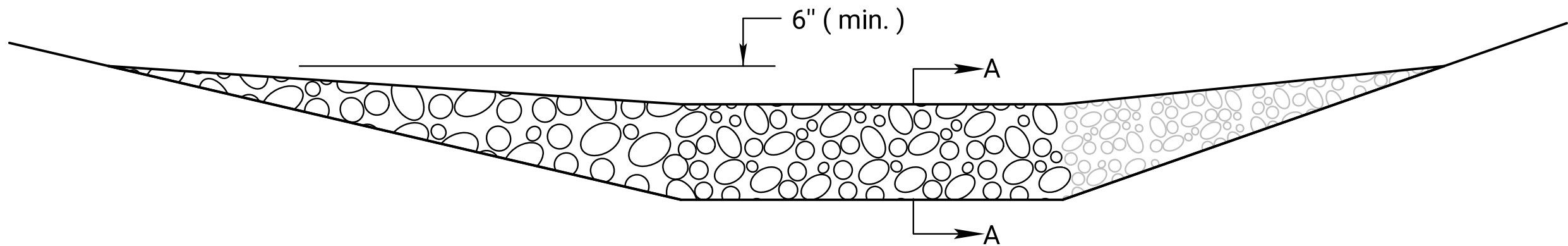
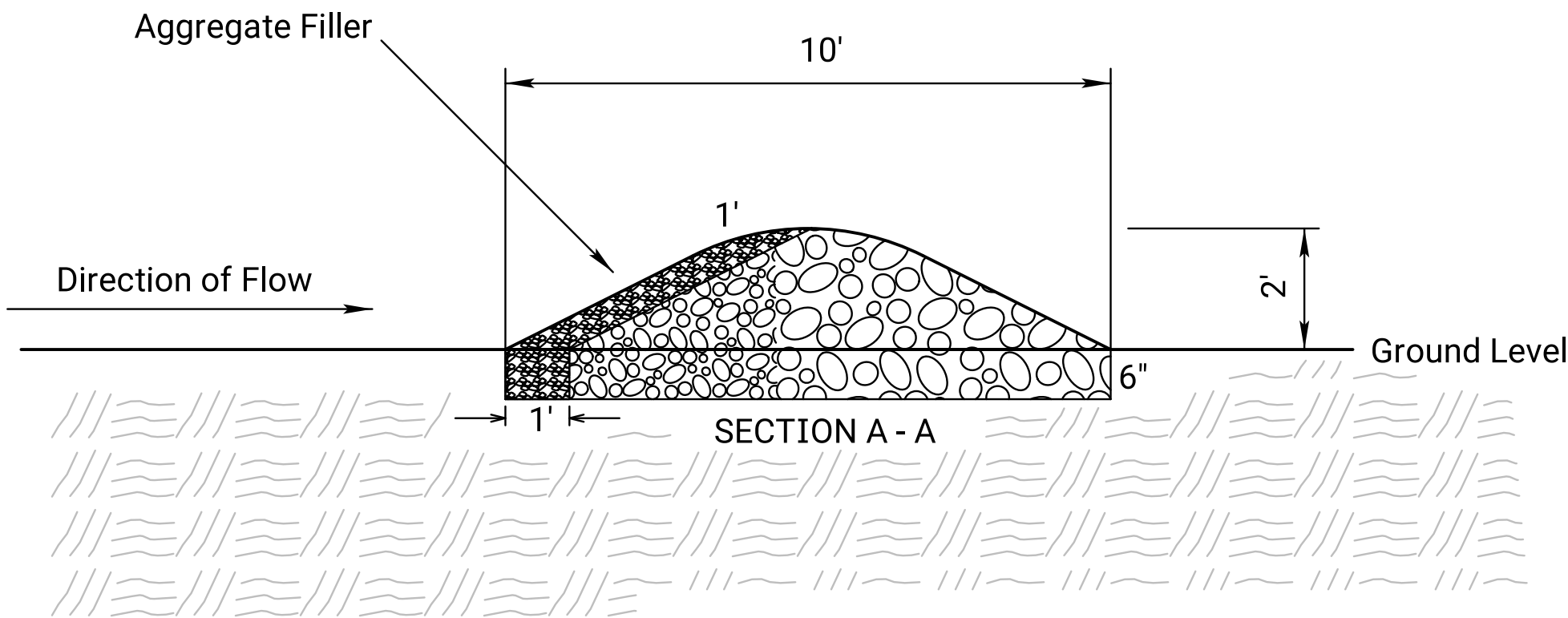
18" FILTER SOCK CHECK SPACING	
DITCH @ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	110
2.0	55
3.0	35
4.0	25
5.0	20
NOTE: Use this spacing for all except Rock Ditch Checks.	

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.

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.
NO.	DATE	REVISIONS			BY	APP'D
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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	57	100



TYPICAL ELEVATION

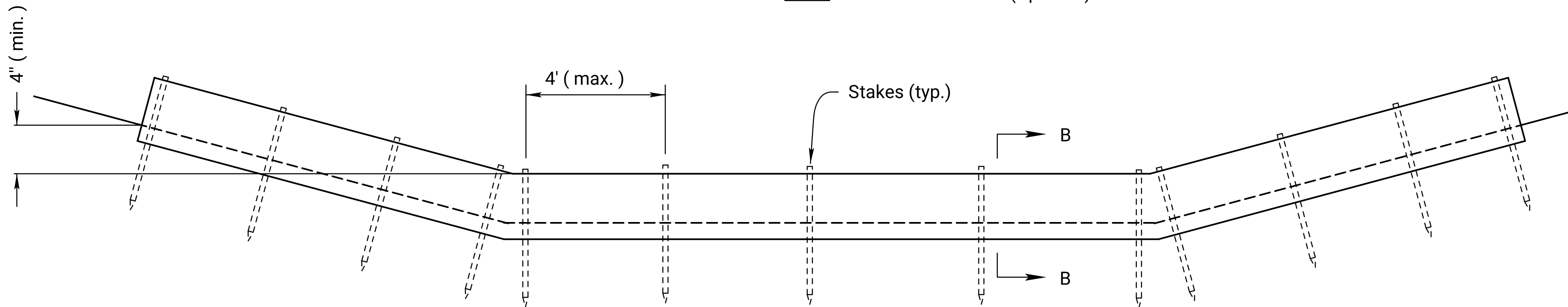
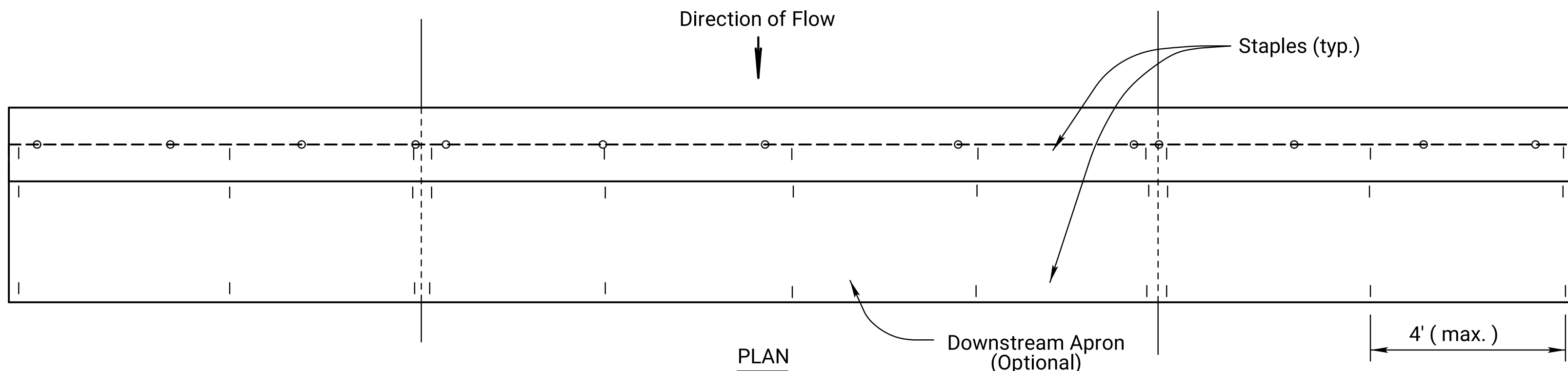
ROCK DITCH CHECK

NO SCALE

TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ϕ 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

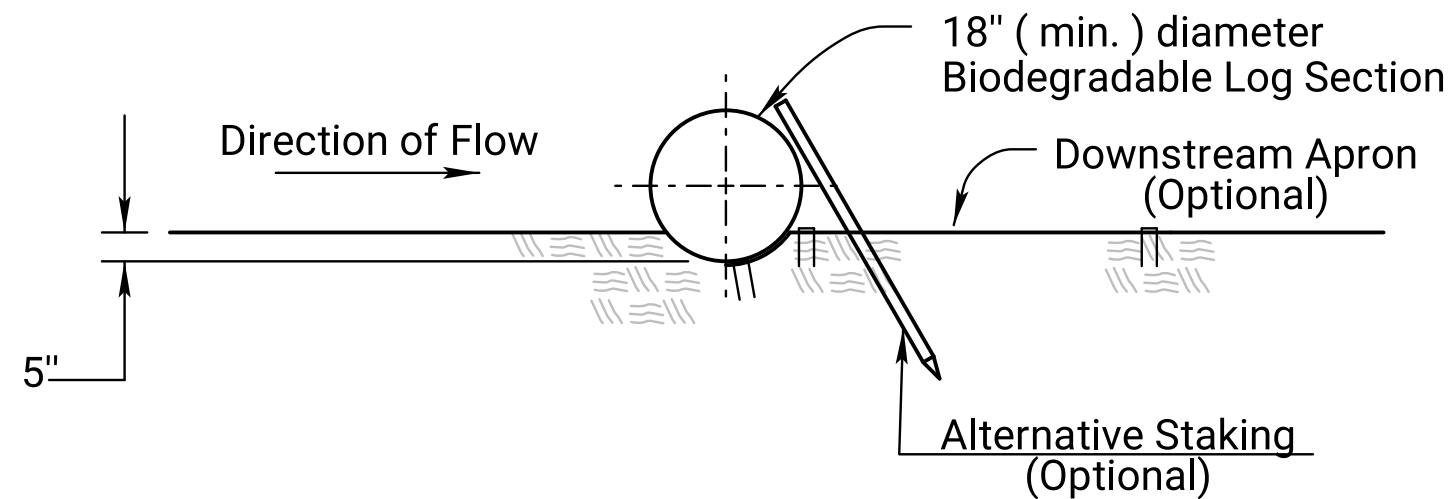
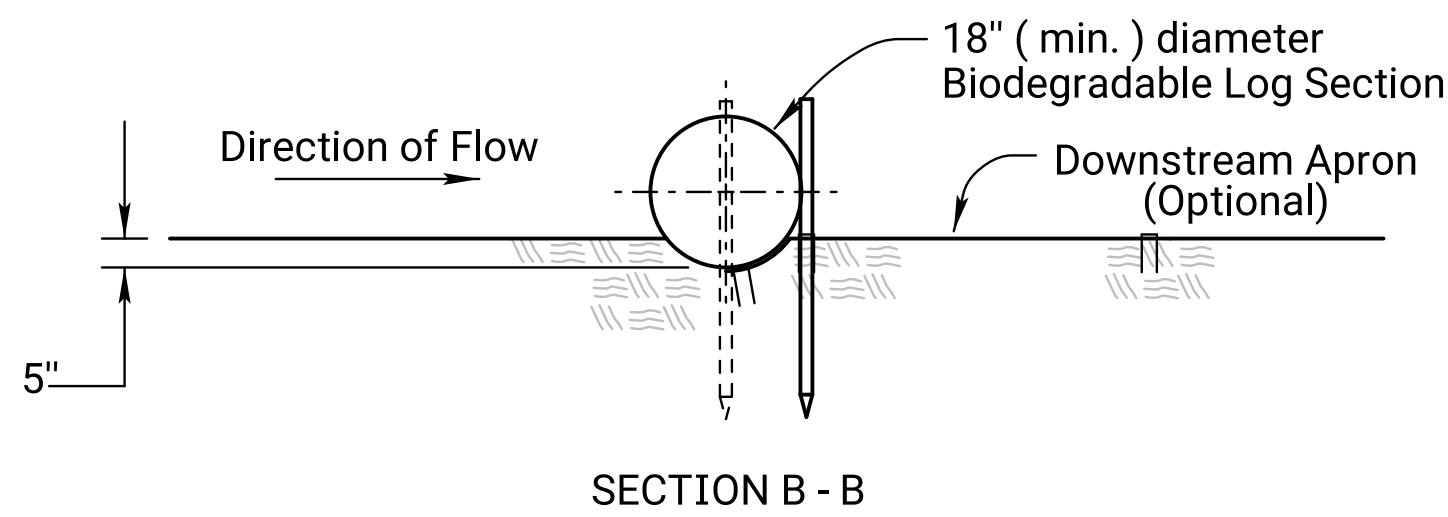
1. Rock shall be clean aggregate, D50-6" and aggregate filler.
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch 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.



TYPICAL ELEVATION

BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check
NO SCALE



ALT. DETAIL
OPTIONAL

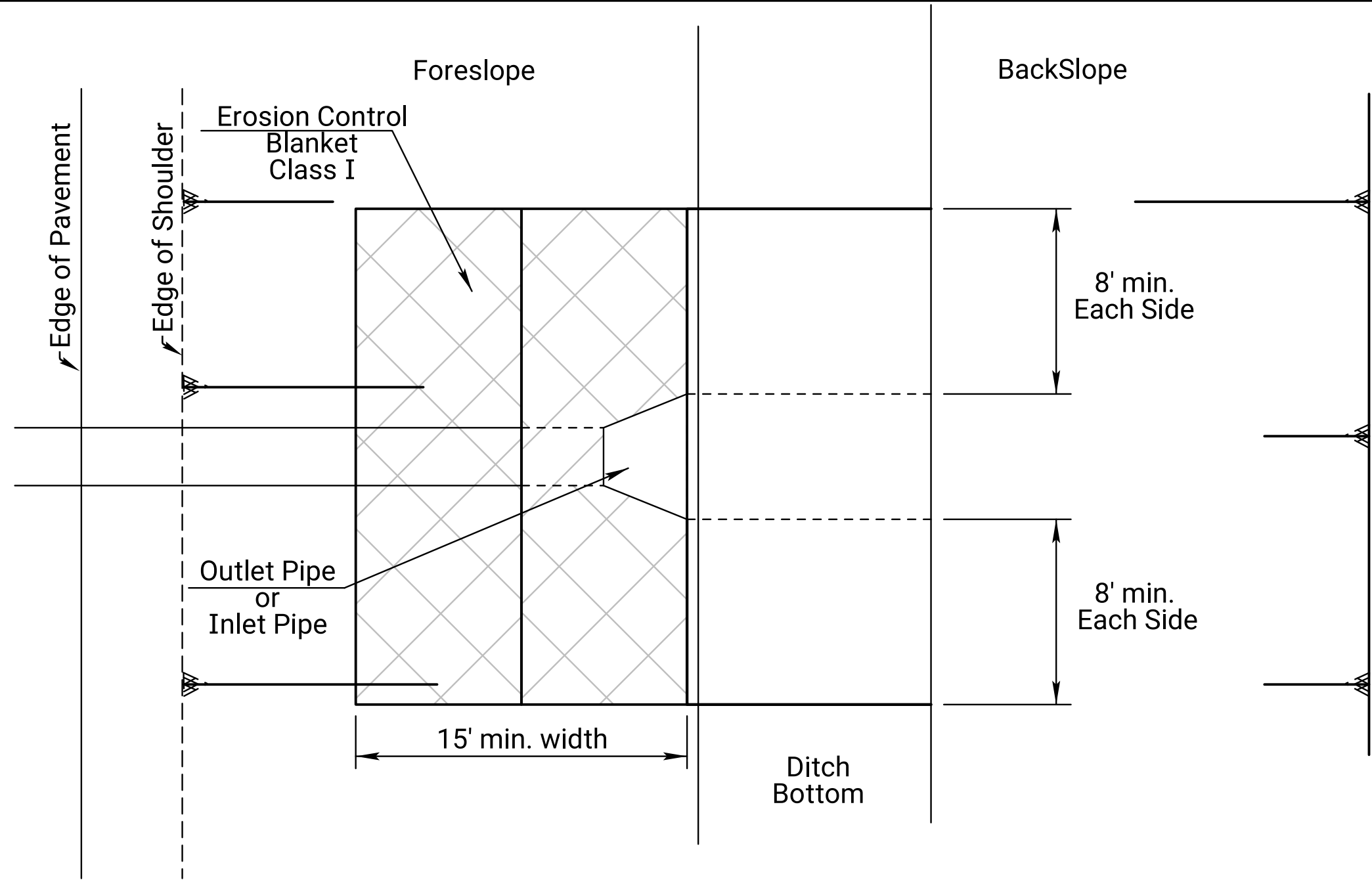
BIODEGRADABLE LOG DITCH CHECK NOTES

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

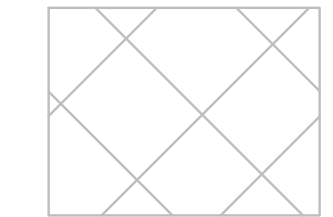
03	11-19-20	Revised Standard	M.R.D.	M.L.
02	08-10-16	Revised Standard	R.A.A.	S.H.S.
01	10-21-15	Revised Standard	R.A.A.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION					
TEMPORARY EROSION AND POLLUTION CONTROL					
ROCK DITCH CHECKS					
BIODEGRADABLE LOG DITCH CHECKS					
LA852G					
FHWA APPROVAL		11-19-20	APPD.	Mervin Lare	
DESIGNED	M.L.	DETAILED	D.K.	QUANTITIES	TRACED
DESIGN CK.	M.L.	DETAIL CK.	M.L.	QUAN. CK.	TRACE CK.

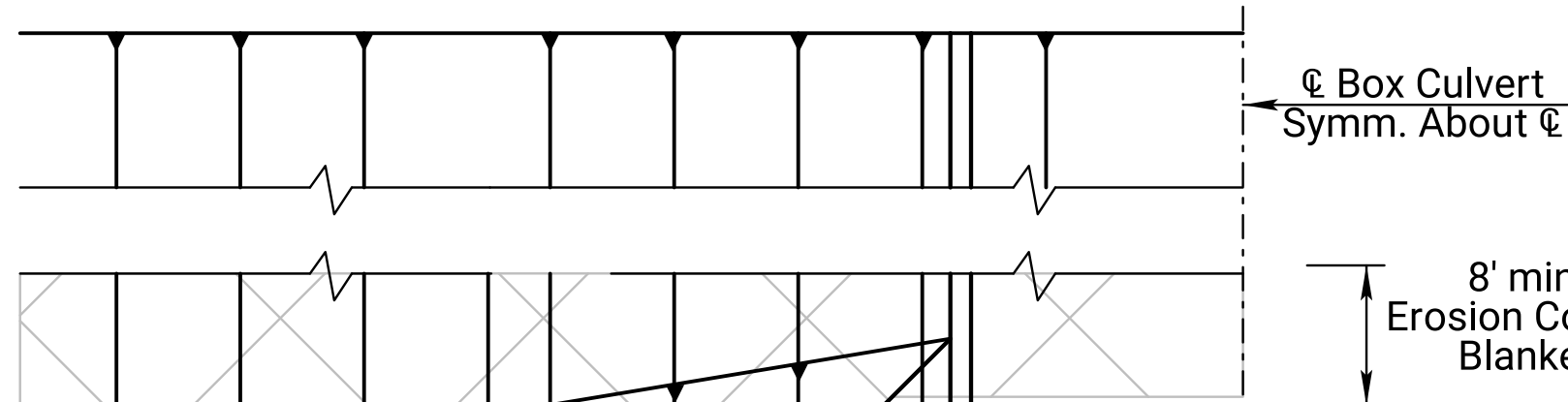
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	58	100



PARTIAL PLAN PIPE



Limits of Erosion Control Blanket



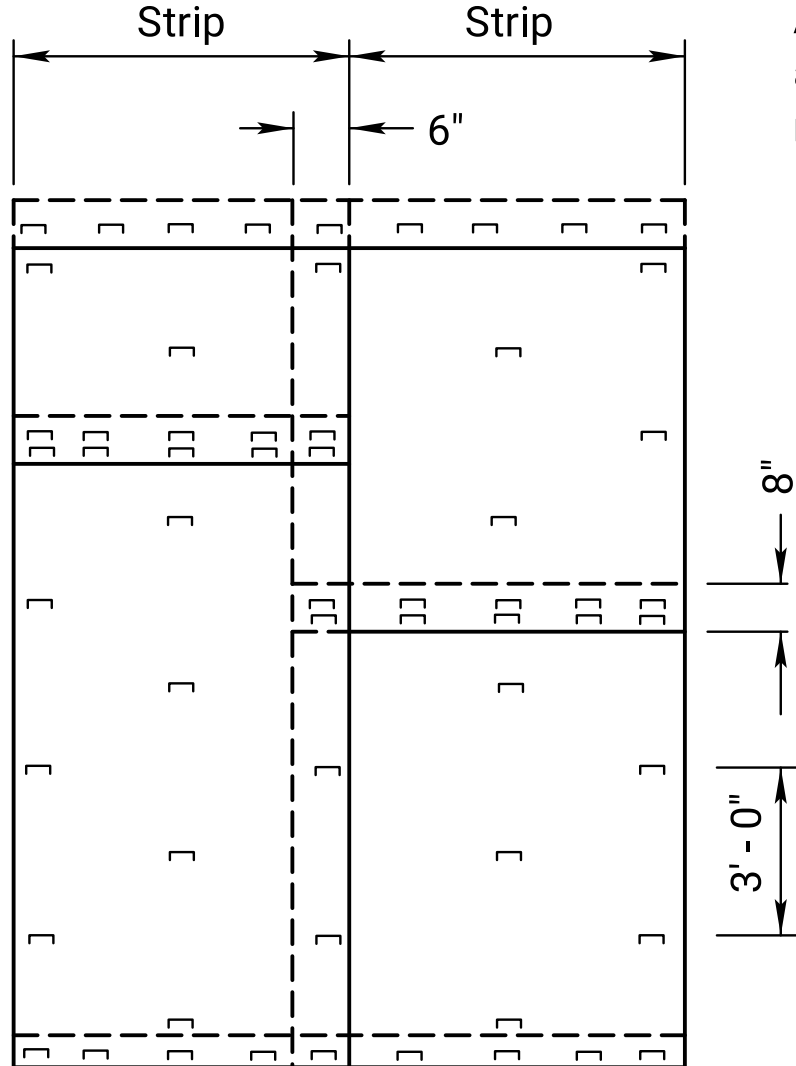
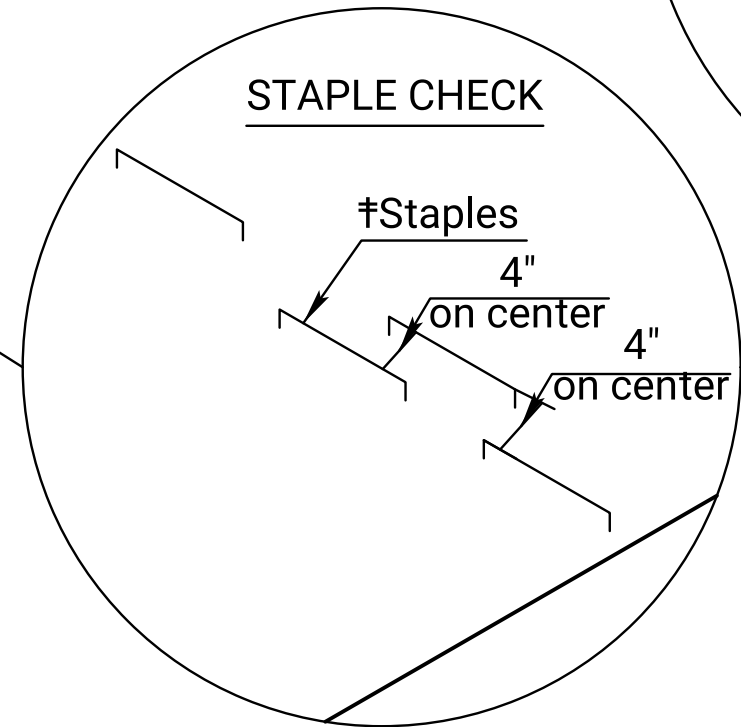
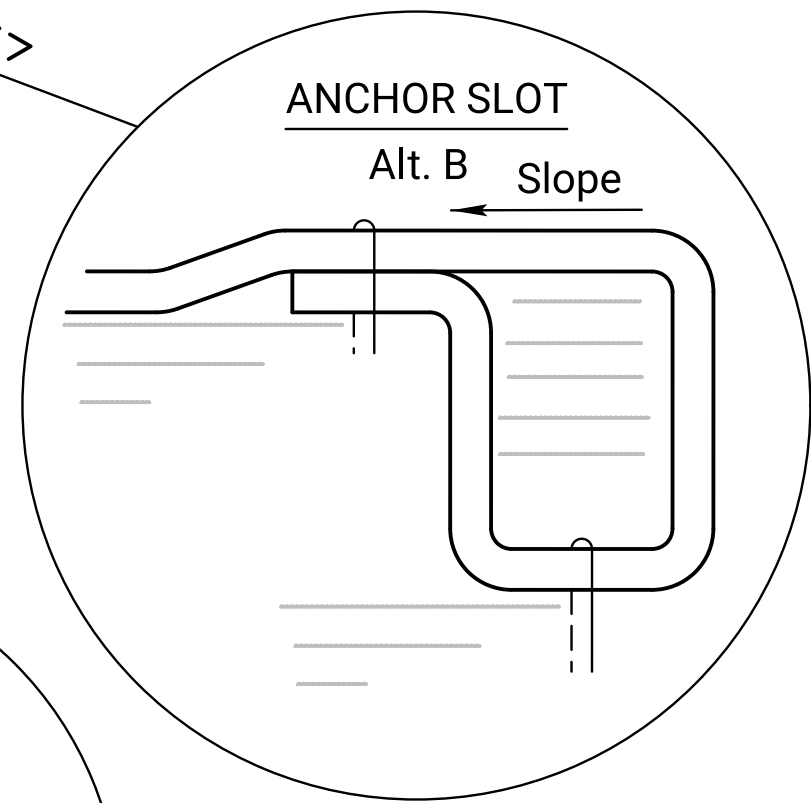
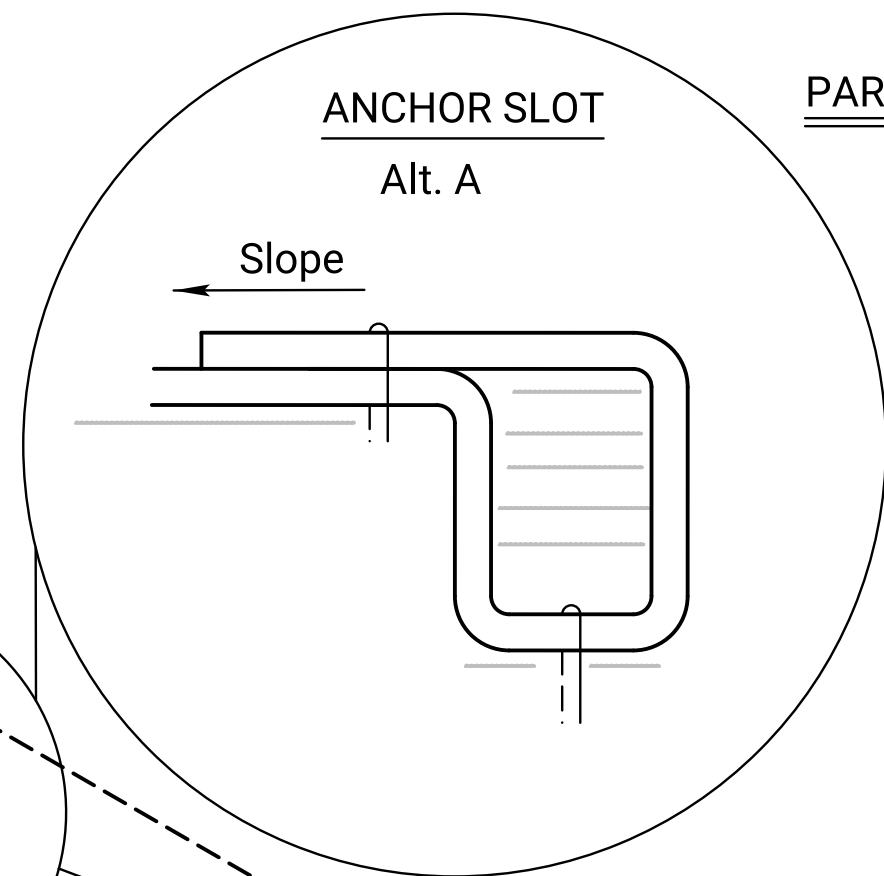
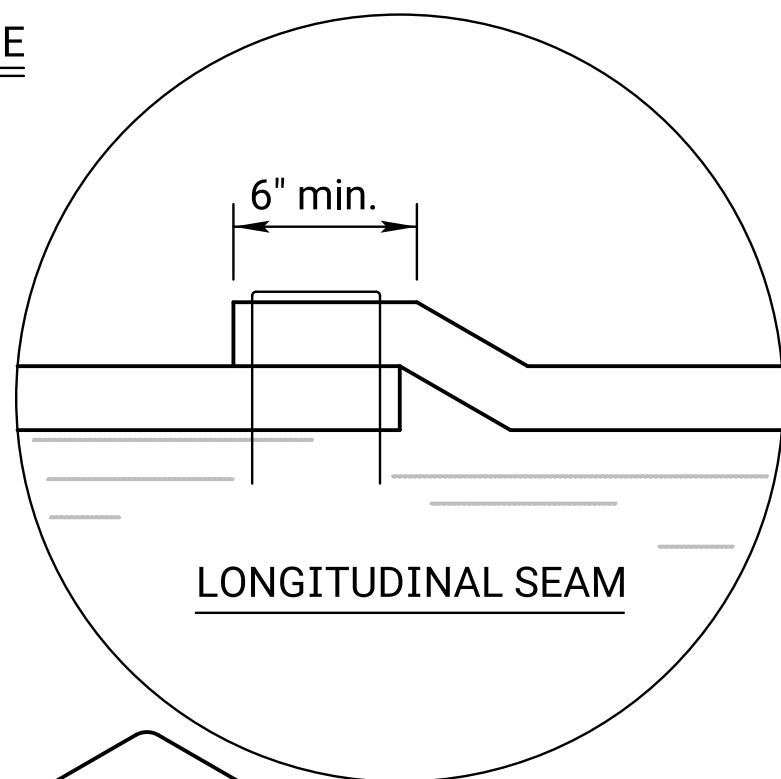
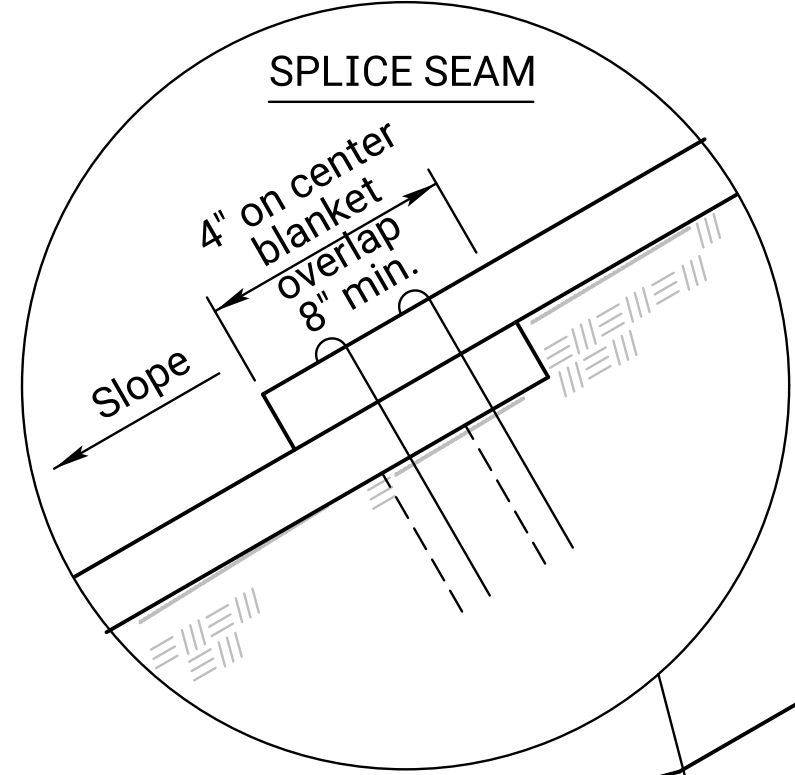
PARTIAL PLAN BOX CULVERT

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.

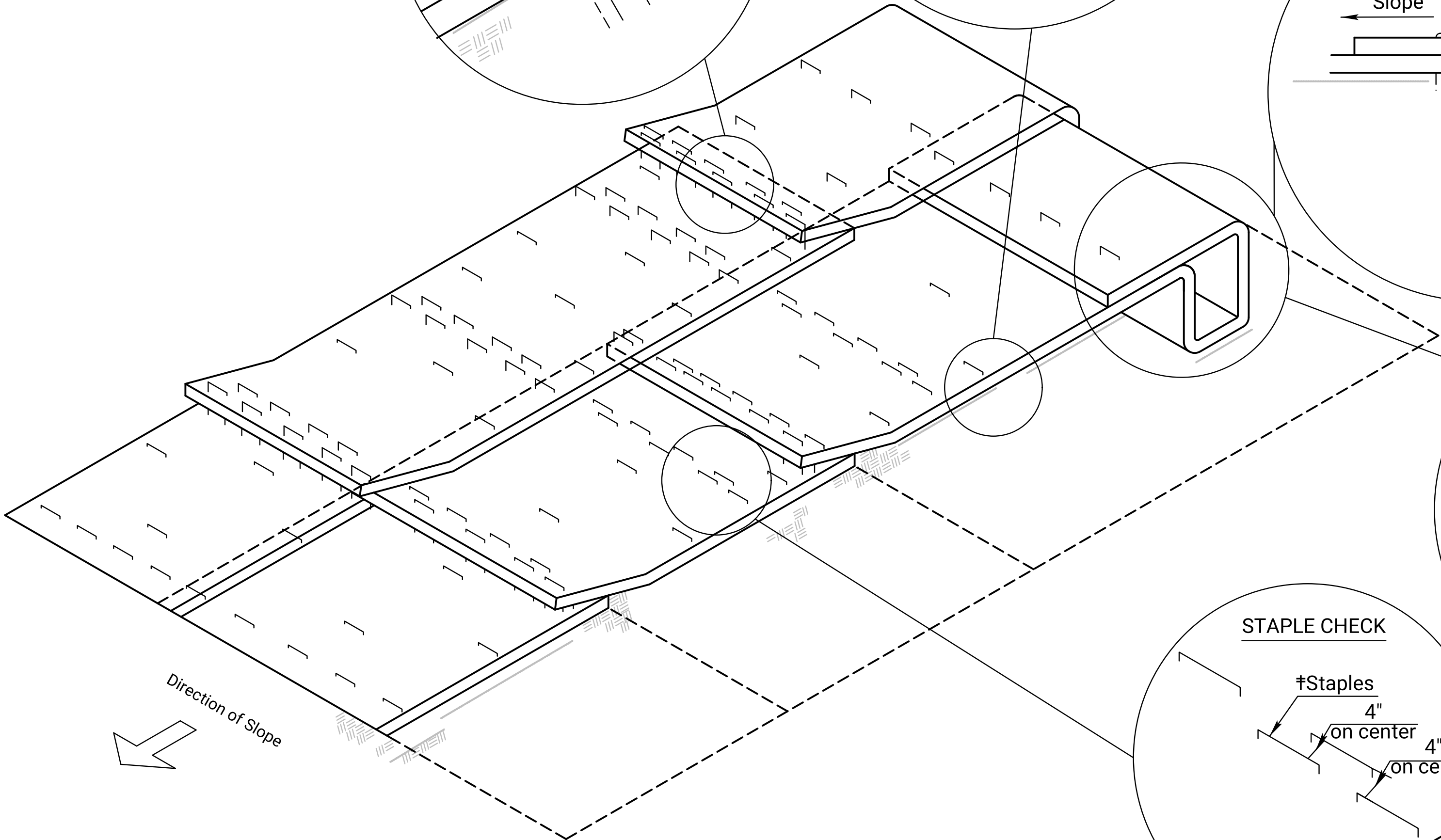
- ANCHOR SLOTS:** The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
- LONGITUDINAL SEAMS:** The edges of the blanket should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.
- SPLICE SEAM:** When splices are necessary, overlap end a minimum of 8 inches in direction of water flow. Stagger splice seams.
- 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.
- TYPICAL ANCHORS:** Anchor design shall be as recommended by the manufacturer.
- STAPLE CHECK:** Establish Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.

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



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.



ISOMETRIC VIEW

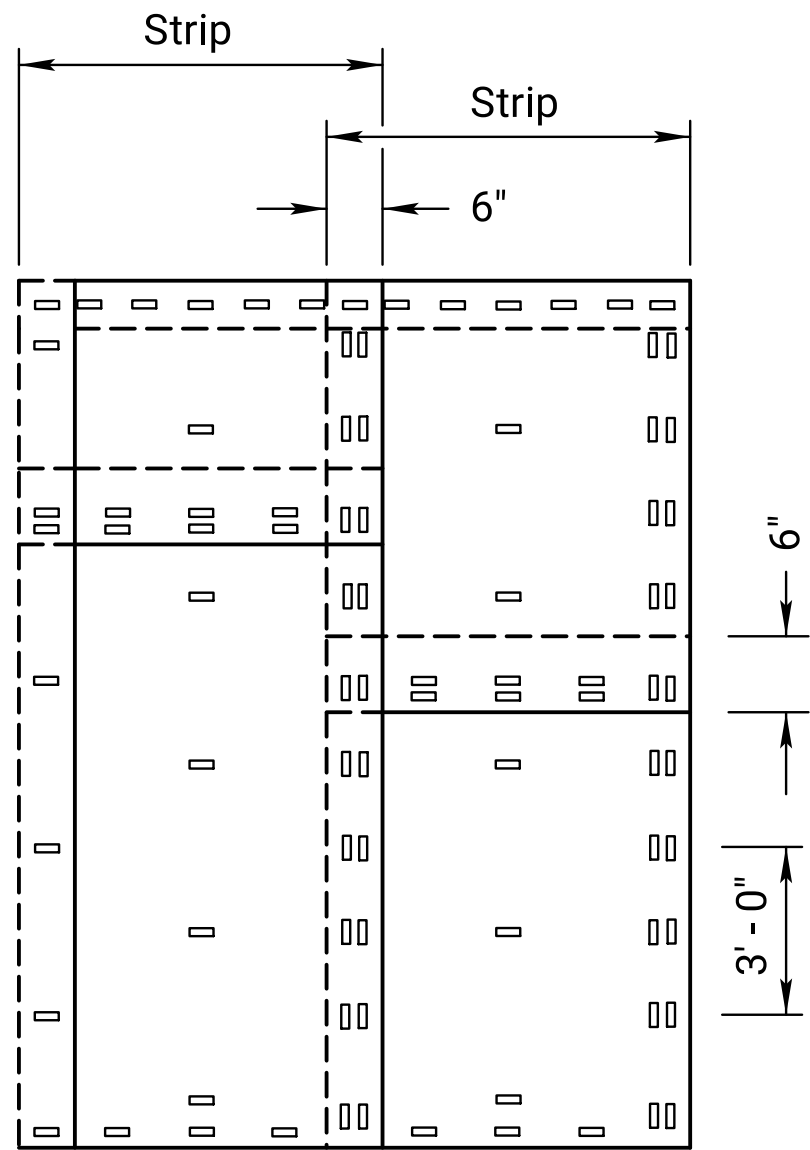
04	03-01-15	Revised Standard	R.A.A.	S.H.S.
03	02-23-15	Revised Standard	R.A.A.	S.H.S.
02	09-15-14	Revised Standard	M.R.M.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
INSTALLATION DETAIL EROSION CONTROL CLASS 1 SLOPE PROTECTION				
LA855				
FHWA APPROVAL		03-10-15	APPD.	Scott H. Shields
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	R.A.A.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	59	100

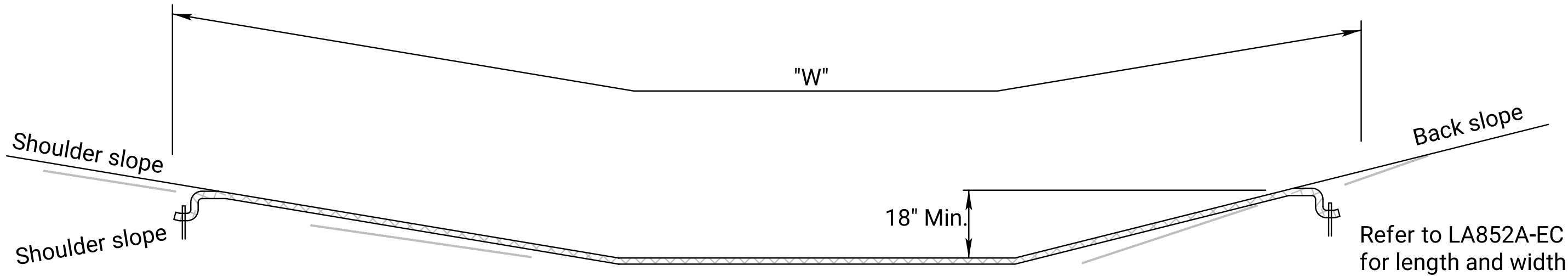
INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

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.

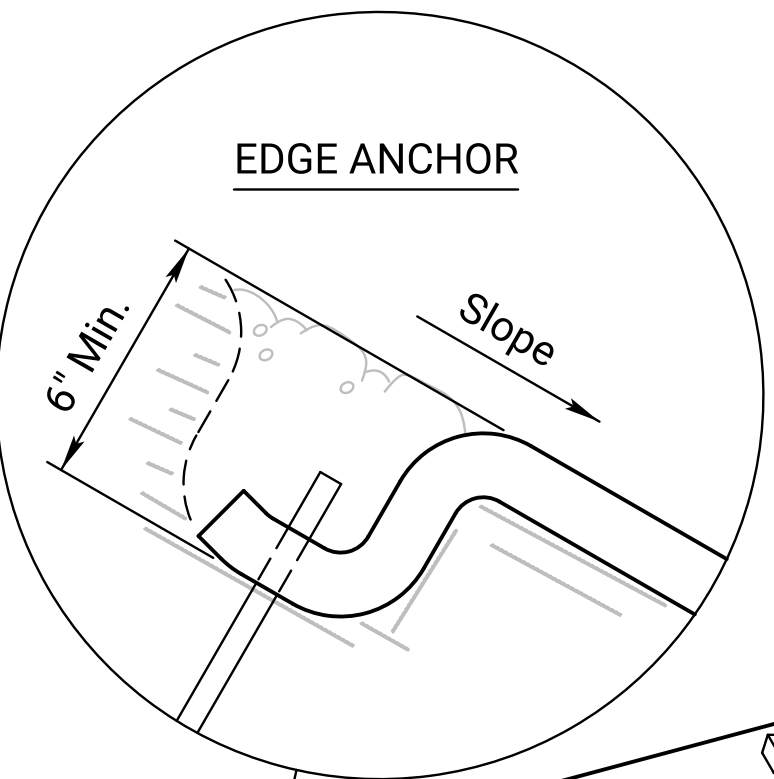
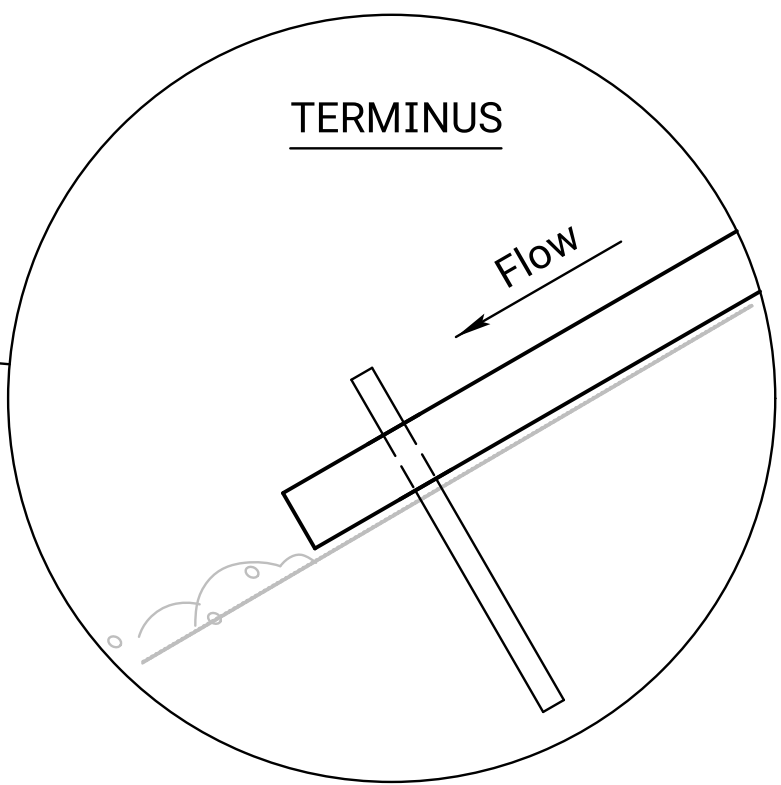
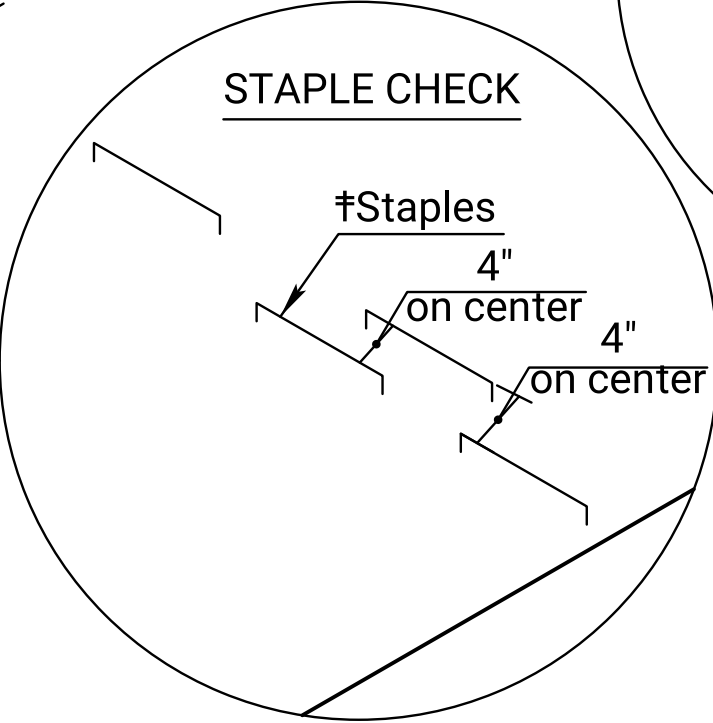
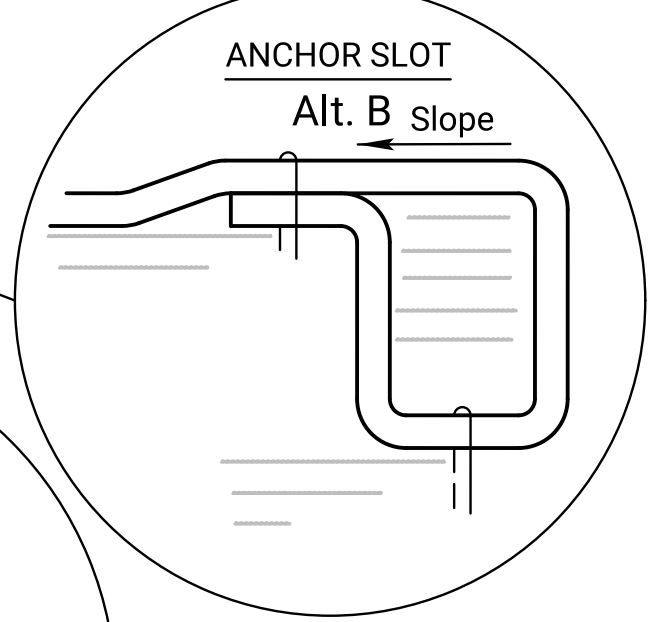
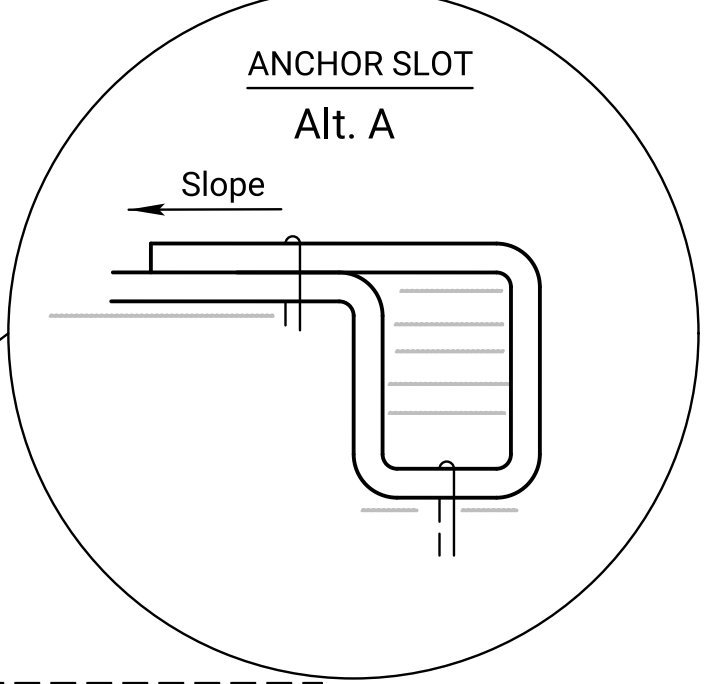
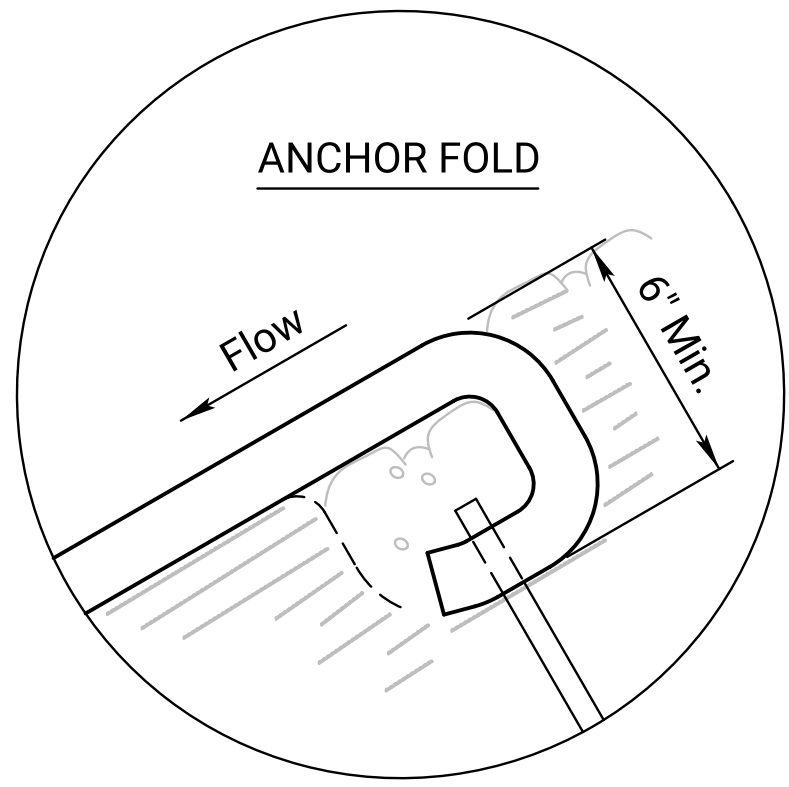
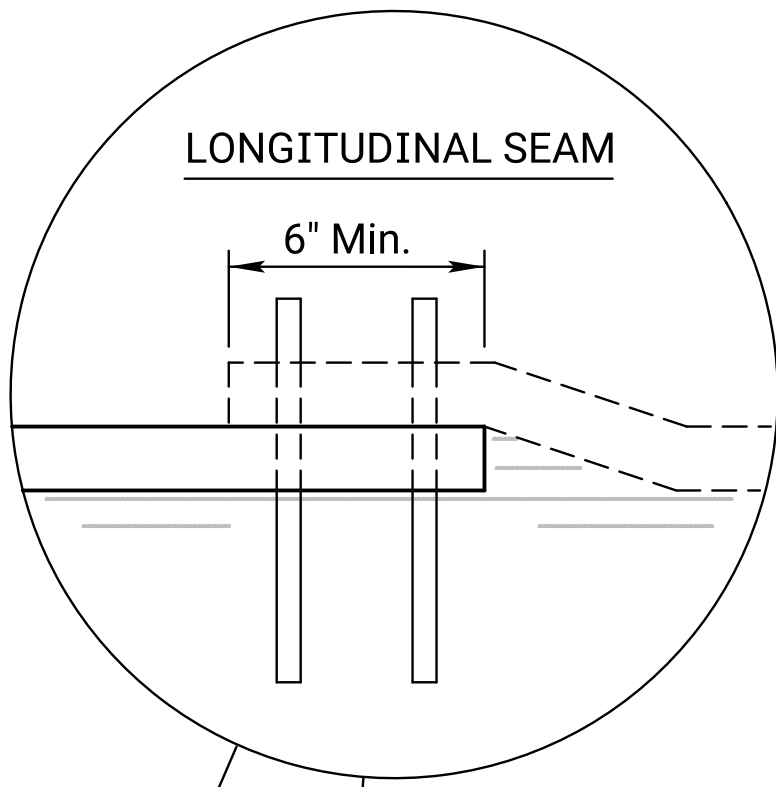
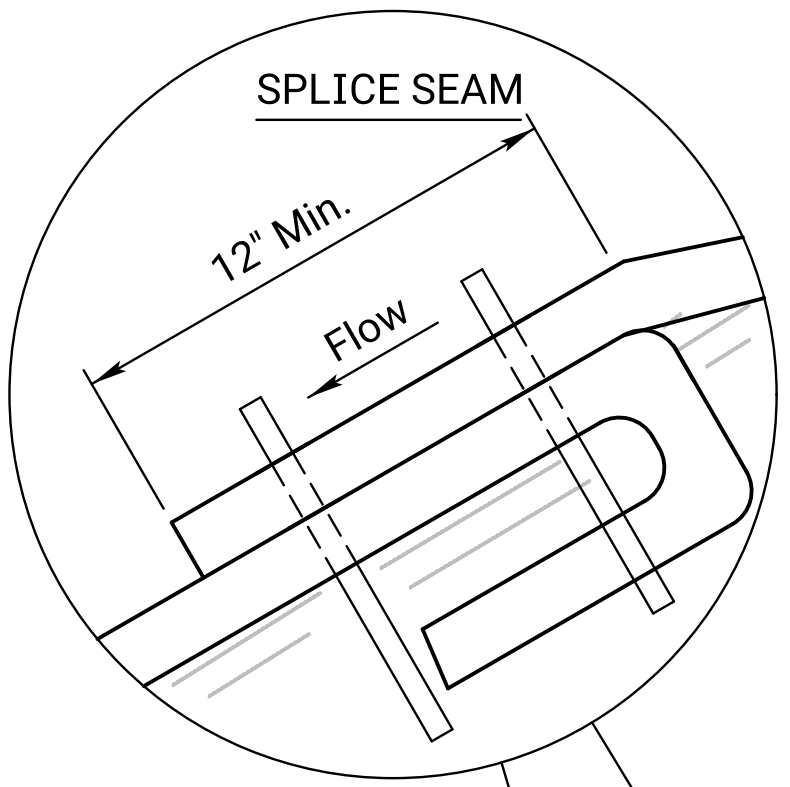
- ANCHOR FOLD: The top of the mat should be folded under, buried and secured with approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot, 6 inches wide x 6 inches deep; anchored in the bottom of the slot, backfilled, and the mat folded over the top as shown in detail.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



PLAN VIEW - ANCHORING DIAGRAM



CROSS SECTION (Ditch Lining)



Direction of Water Flow

ISOMETRIC VIEW

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.

NO.	DATE	REVISIONS	BY	APPD
-----	------	-----------	----	------

KANSAS DEPARTMENT OF TRANSPORTATION				
INSTALLATION DETAIL EROSION CONTROL CLASS 2 FLEXIBLE CHANNEL LINER				
LA856				
FHWA APPROVAL		11-02-15	APPD.	Scott H. Shields
DESIGNED	R.A.A.	DETAILED	R.A.A.	QUANTITIES
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN. CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	60	100

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.

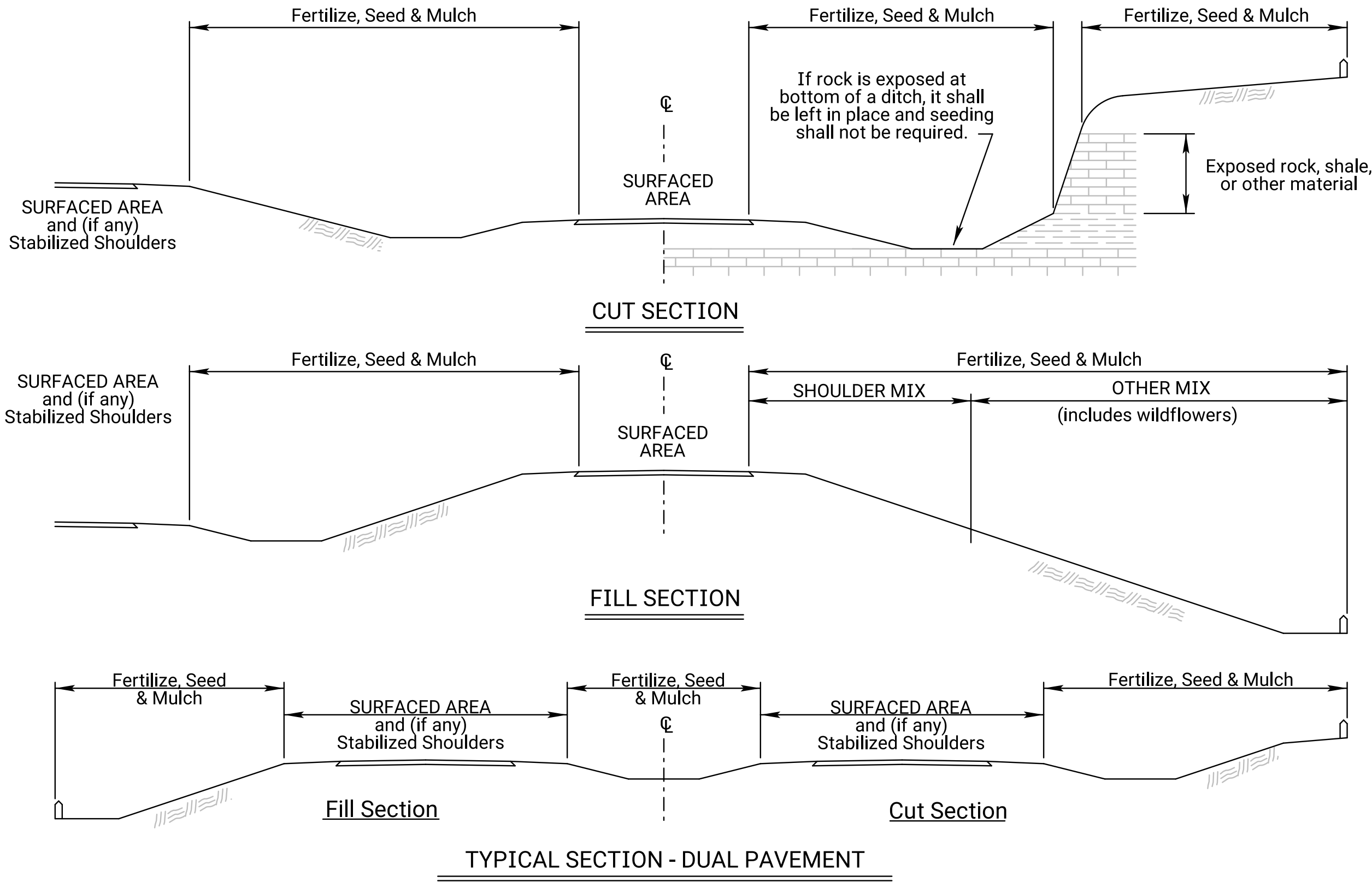
KDOT District Shoulder mix is typically placed 15 feet for 2-lane roads and 30 feet for 4-lane roads. Includes outside roadsides, turfed potions of shoulders, and turfed portion of the median.

KDOT District "Other" mix is 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 KDOT Standard Specifications, Division 900, Section 905 "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 KDOT Standard Specifications.



SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE	ACRES	BID ITEM	QUANTITY	UNIT
250	0.97	Fertilizer (13 - 13 - 13)	242.5	LB
80	2.89	Fertilizer (15 - 30 - 15)	231.2	LB
111.1	0.97	Seed (District Two/Five Shoulder Mix)	107.9	LB
46.1	2.89	Seed (District Two/Five Other Mix)	157.2	LB
10.3	2.89	Seed (Native Wildflower Mix 1)	29.8	LB

District One/Four

District One/Four Shoulder Mix

P.L.S. RATE	Name	QTY (lb)
0.5	Blue Grama Grass Seed (Lovington)	
4.5	Buffalograss Seed (Treated)	
45	Perennial Ryegrass	
2.6	Prairie Junegrass	
6.3	Side Oats Grama Grass Seed (El Reno)	
45	Tall Fescue (Endophyte Free)	
6	Western Wheatgrass Seed (Barton)	
109.9	TOTAL (lb)	

District One/Four Other Mix

P.L.S. RATE	Name	QTY (lb)
2	Big Bluestem Grass Seed (Kaw)	
10	Canada Wildrye Grass Seed	
2	Indiangrass Seed (Osage)	
2	Little Bluestem Grass Seed (Aldous)	
6.3	Side Oats Grama Grass Seed (El Reno)	
10	Sterile Wheatgrass (Regreen/Quick Guard)	
0.7	Switchgrass Seed (Blackwell)	
0.5	Tall Dropseed	
4	Western Wheatgrass Seed (Barton)	
37.5	TOTAL (lb)	

District Two/Five

District Two/Five Shoulder Mix

P.L.S. RATE	Name	QTY (lb)
0.5	Blue Grama Grass Seed (Lovington)	0.5
4.5	Buffalograss Seed (Treated)	4.4
45	Perennial Ryegrass	43.7
2.6	Prairie Junegrass	2.5
7	Side Oats Grama Grass Seed (El Reno)	6.8
45	Tall Fescue (Endophyte Free)	43.7
6	Western Wheatgrass Seed (Barton)	5.8
0.5	Sand Dropseed Grass Seed	0.5
111.1	TOTAL (lb)	107.9

District Two/Five Other Mix

P.L.S. RATE	Name	QTY (lb)
2	Big Bluestem Grass Seed (Kaw)	5.8
10	Canada Wildrye Grass Seed	28.9
2	Indiangrass Seed (Osage)	5.8
2	Little Bluestem Grass Seed (Aldous)	5.8
5.1	Sand Bluestem Seed	14.7
0.5	Sand Dropseed Grass Seed	1.4
2	Sand Lovegrass Seed	5.8
7	Side Oats Grama Grass Seed (El Reno)	20.2
10	Sterile Wheatgrass (Regreen/Quick Guard)	28.9
1	Switchgrass Seed (Blackwell)	2.9
0.5	Tall Dropseed Seed	1.4
4	Western Wheatgrass Seed (Barton)	11.6
56.4	TOTAL (lb)	157.2

District Three/Six

District Three/Six Shoulder Mix

P.L.S. RATE	Name	QTY (lb)
1	Blue Grama Grass Seed (Lovington)	
24.5	Buffalograss Seed (Treated)	
1	Sand Dropseed Grass Seed	
6.3	Side Oats Grama Grass Seed (El Reno)	
10	Sterile Wheatgrass (Regreen/Quick Guard)	
6	Western Wheatgrass Seed (Barton)	
48.8	TOTAL (lb)	

District Three/Six Other Mix

P.L.S. RATE	Name	QTY (lb)
2	Big Bluestem Grass Seed (Kaw)	
1	Blue Grama Grass Seed (Lovington)	
8.8	Buffalograss Seed (Treated)	
2	Indiangrass Seed (Osage)	
2.5	Little Bluestem Grass Seed (Aldous)	
5.1	Sand Bluestem Grass Seed (Garden)	
1	Sand Dropseed Grass Seed	
6.3	Side Oats Grama Grass Seed (El Reno)	
10	Sterile Wheatgrass (Regreen/Quick Guard)	
1	Switchgrass Seed (Blackwell)	
4	Western Wheatgrass Seed (Barton)	
43.7	TOTAL (lb)	

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.	

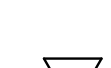
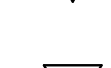
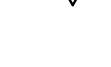
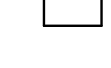
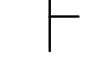
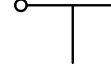
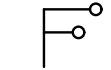
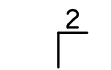
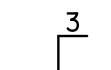
03	09-12-24	Addition of tables for District Seed Mix	M.E.C.	M.L.
02	11-25-20	Updated Seeding / Sodding Periods Charts	M.R.D.	M.L.
01	08-03-20	Revised Standard	M.R.D.	S.H.S.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION				
PERMANENT SEEDING SUMMARY OF SEEDING QUANTITIES				
LA850				
FHWA APPROVAL		03-27-25	APPD.	Mervin Lane
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

Plotted by : Jake.Comstock@ks.gov 11-DEC-2025 14:00
File : KA648401pss402-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	61	100

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.

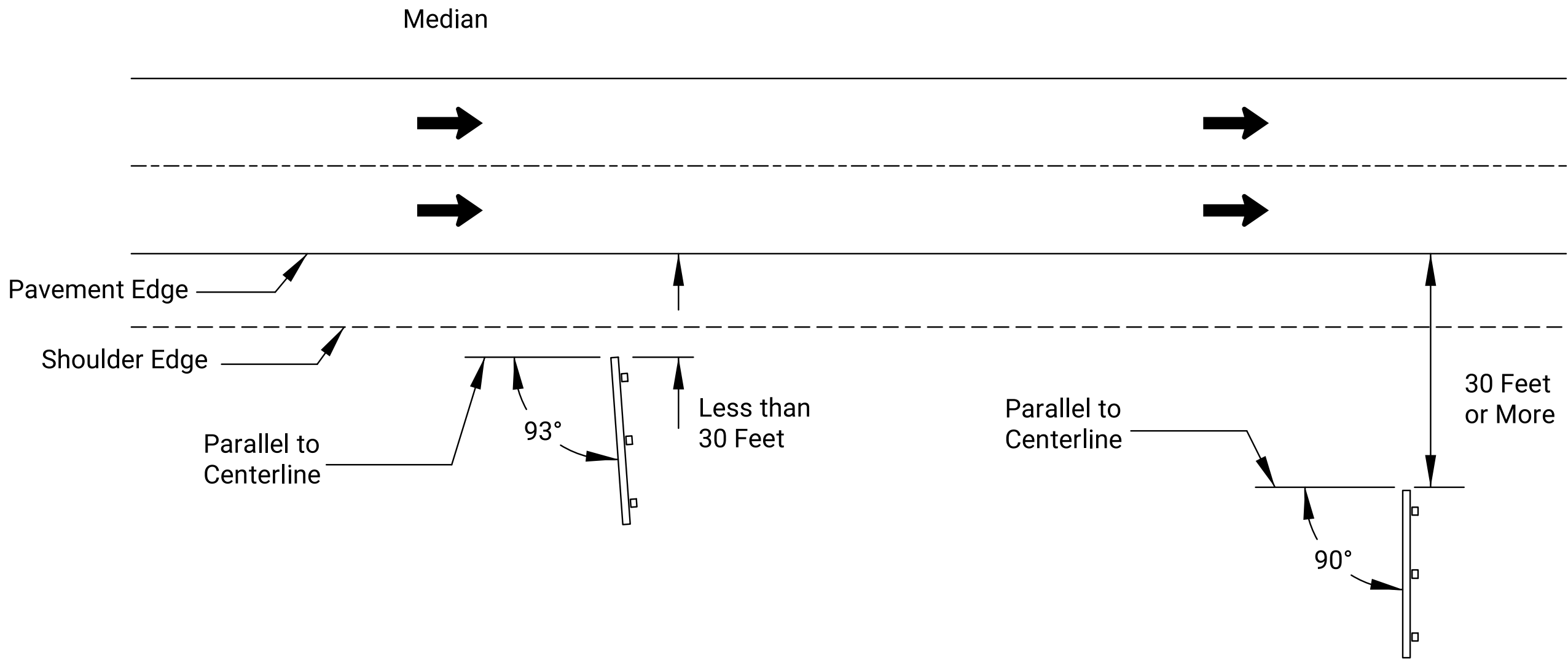
INDEX OF SHEETS

- 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

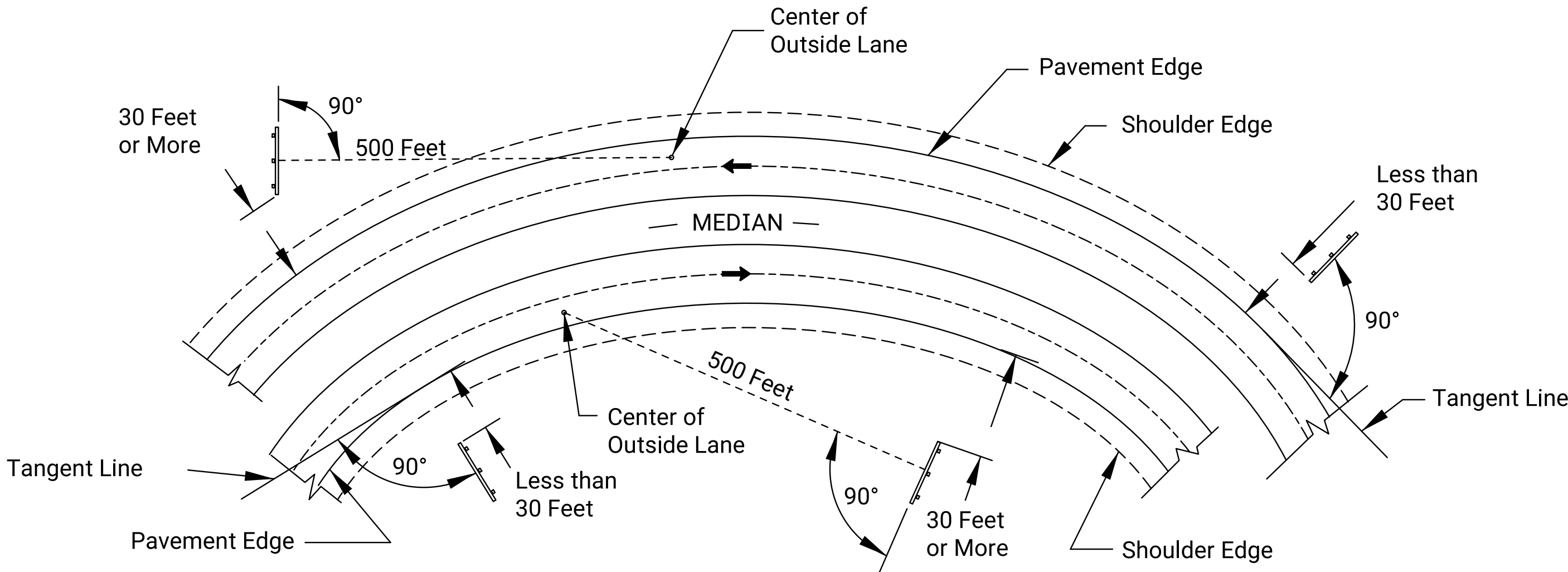
02	10-01-19	Changed symbol, notes, & Index		D.D.G.	E.W.N.
01	07-23-10	Changed General Notes and Spec Book Date		D.D.G.	D.B.
NO.	DATE	REVISIONS		BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION					
SIGNING SYMBOL KEY GENERAL NOTES AND INDEX					
TE402				07-01-03	
FHWA APPROVAL		10-01-19	APPD.		Steven A. 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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	62	100

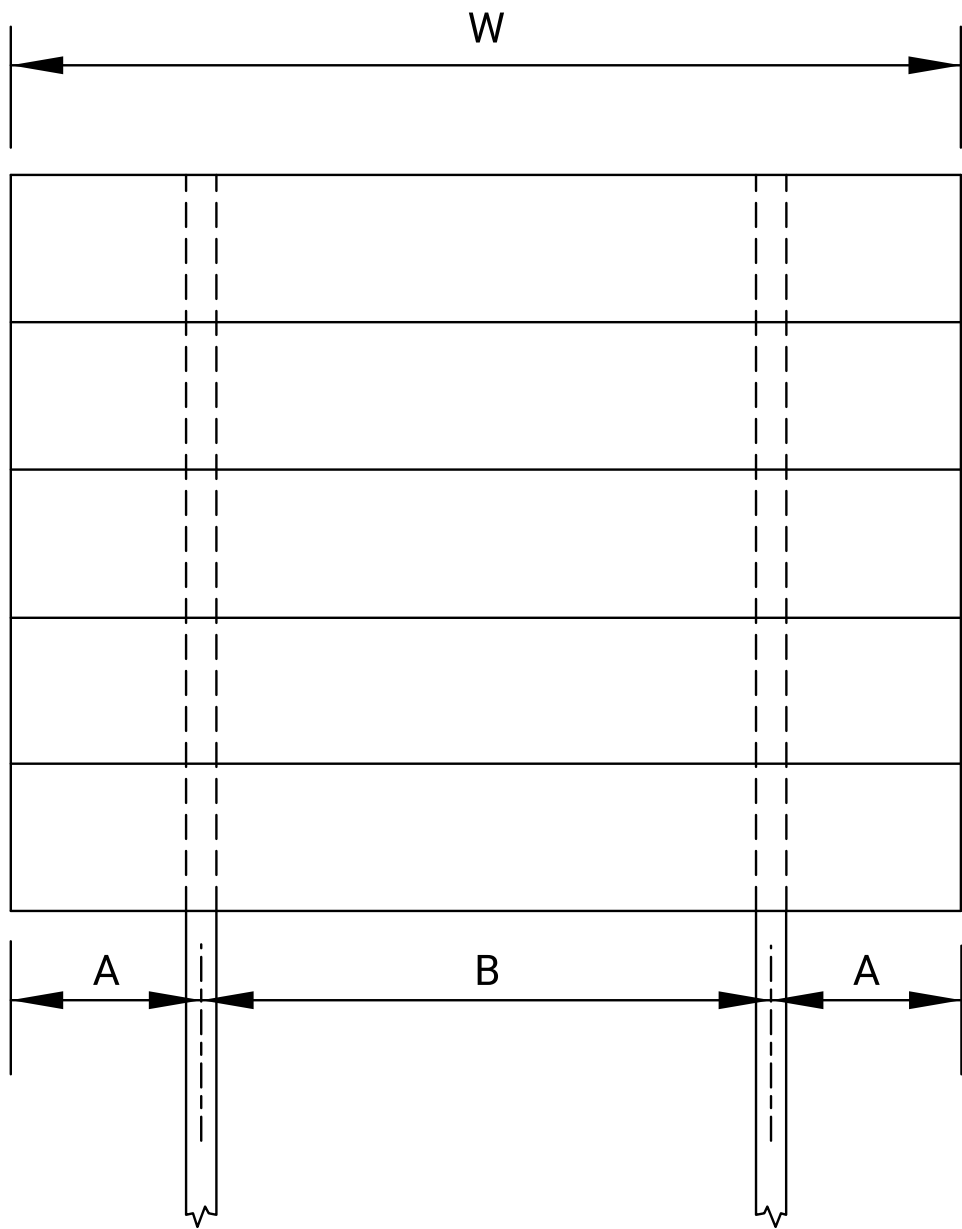


ANGLE OF SIGNS ERECTED ON STRAIGHT ROADWAY



ANGLE OF SIGNS ERECTED ON CURVED ROADWAY

GENERAL NOTE:
Gore and median signs shall normally be erected such that the sign face is truly vertical and rotated 93 degrees away from the center of the lane which the sign serves. All angles are measured to the face of the sign.



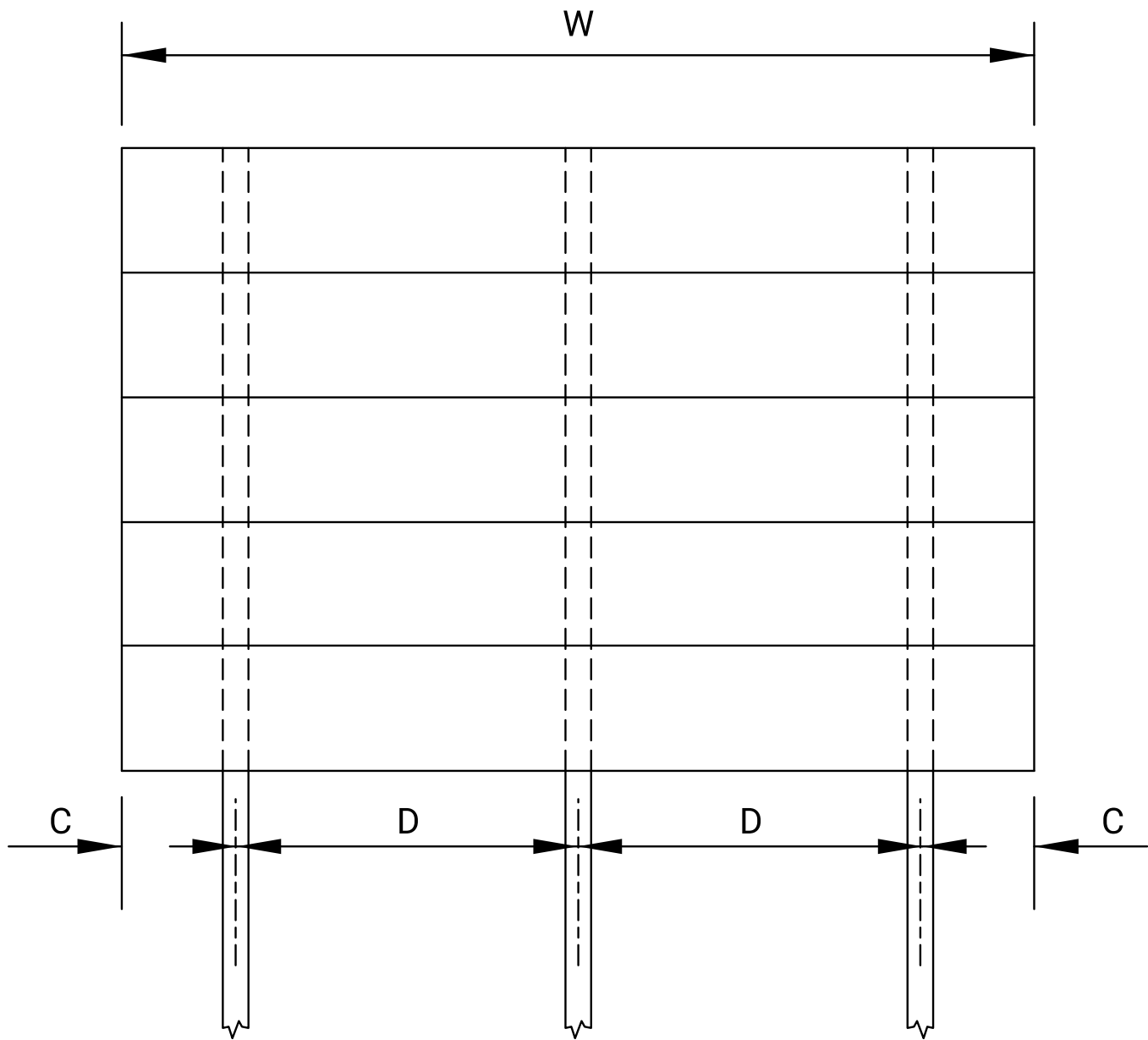
TWO POST SPACING

Wood Post		
A	B	W
6" (Min.)	$\frac{3}{5}$ W (Min.)	NA

Steel Beam Post (Width less than or equal to 13'-0")		
A	B	W
12" (Min.)	8'	10'-0" (Min.)

Steel Beam Post (Width greater than 13'-0")		
A	B	W
32" (Min.)	8' (Min.)	13'-6" (Min.)

Spacing Pattern: A+B+A
W= Sign Width
A= $\frac{1}{5}$ W
B= $\frac{3}{5}$ W



THREE POST SPACING

Wood Post		
C	D	W
6" (Min.)	4' (Min.)	9'-0" (Min.)

Steel Beam Post (Width less than or equal to 21'-0")		
C	D	W
12" (Min.)	8'	18'-0" (Min.)

Steel Beam Post (Width greater than 21'-0")		
C	D	W
32" (Min.)	8' (Min.)	21'-6" (Min.)

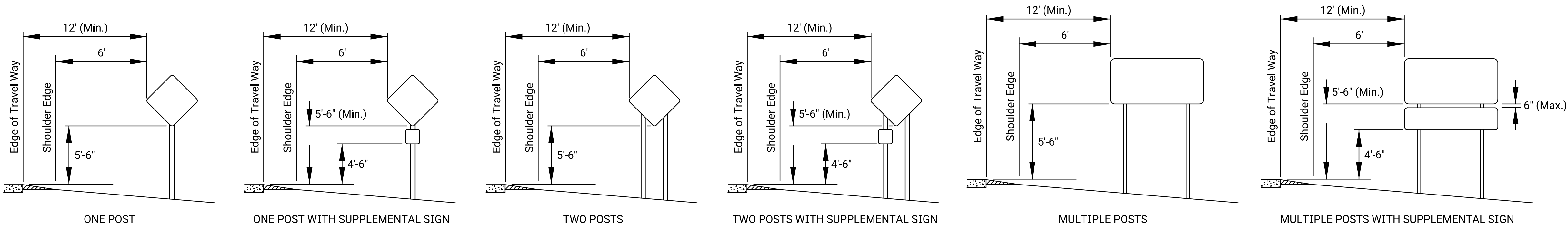
Spacing Pattern: C+D+D+C
W= Sign Width
C= $\frac{1}{5}$ W
D= $\frac{3}{5}$ W

NOTE: All spacing dimensions are measured to the centerline of the posts.

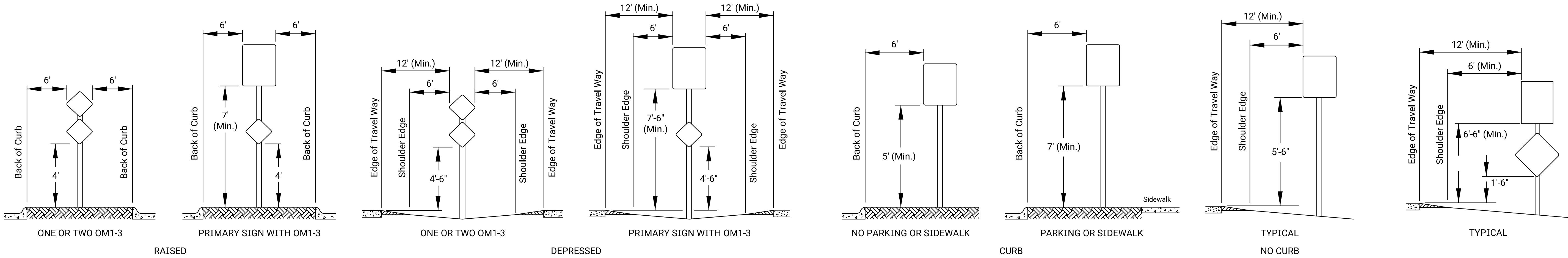
POST SPACING FOR REINFORCED PANEL SIGNS

01	10-01-19	Changed the post spacing tables and notes	D.D.G.	E.W.N.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
POST SPACING FOR REINFORCED PANEL SIGNS AND ANGLE OF SIGNS				
TE404			07-01-03	
FHWA APPROVAL		10-01-19	APPD.	Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	W.S.B.	QUANTITIES
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN. CK.

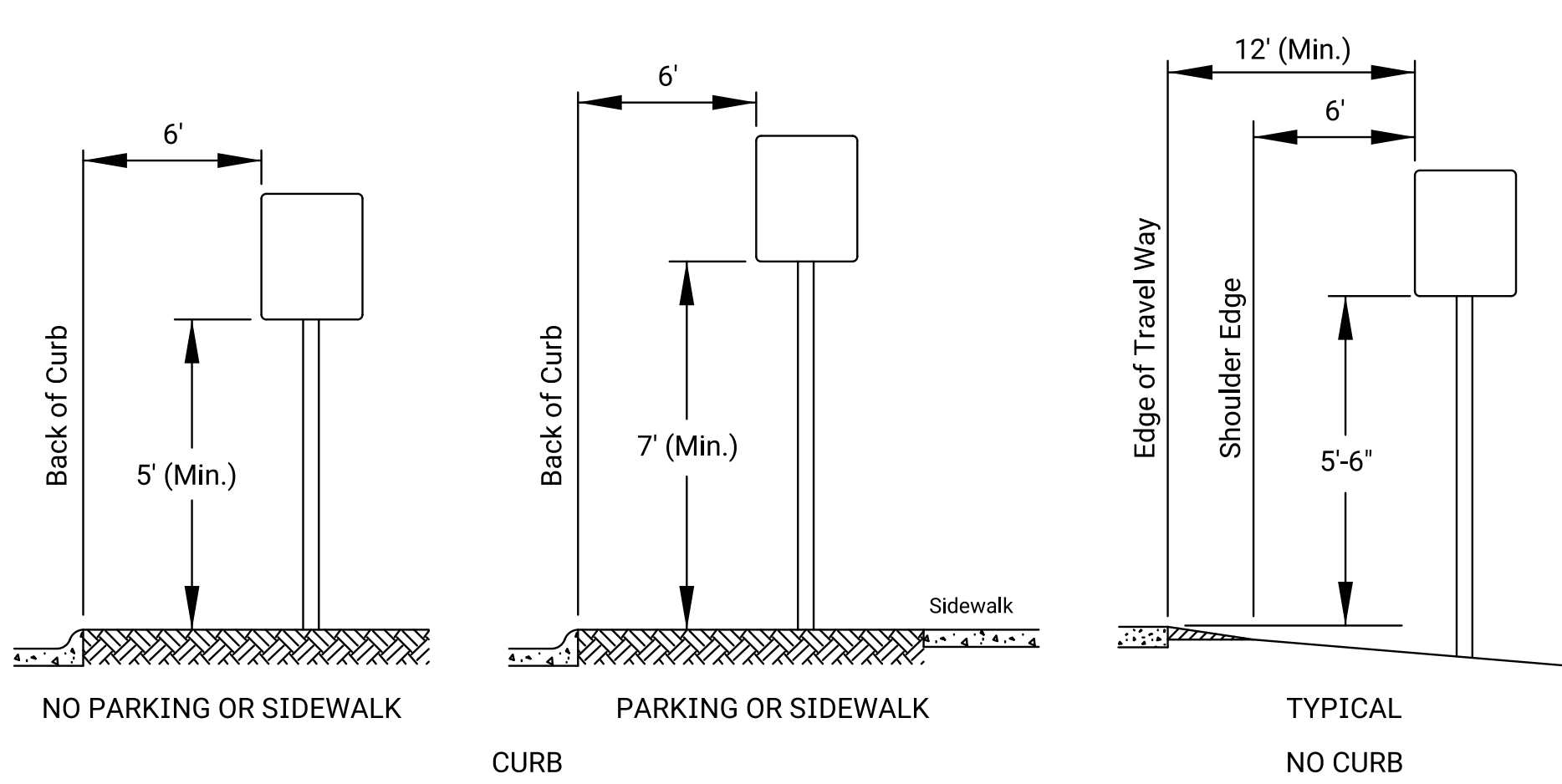
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	63	100



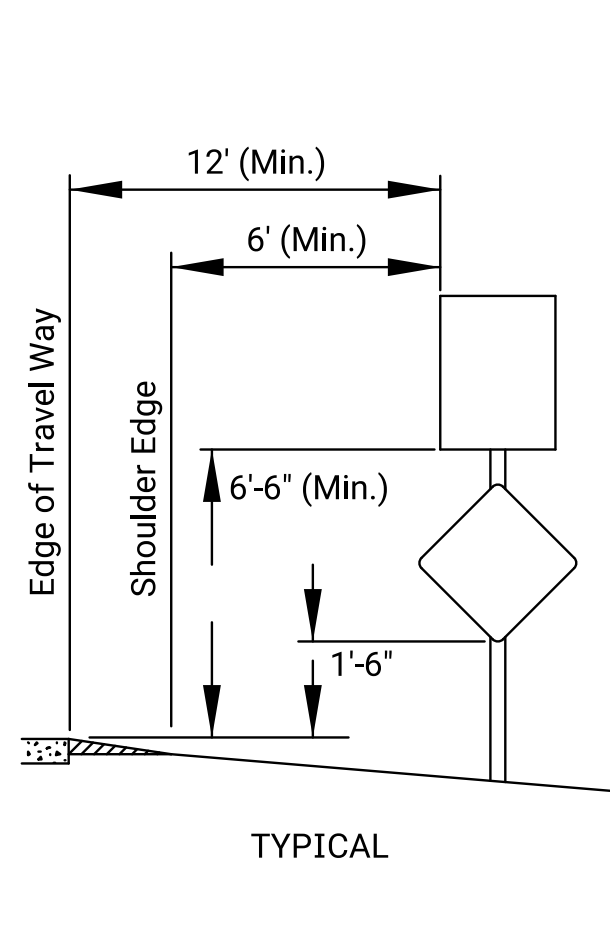
CONVENTIONAL HIGHWAY AND SIDE ROADS



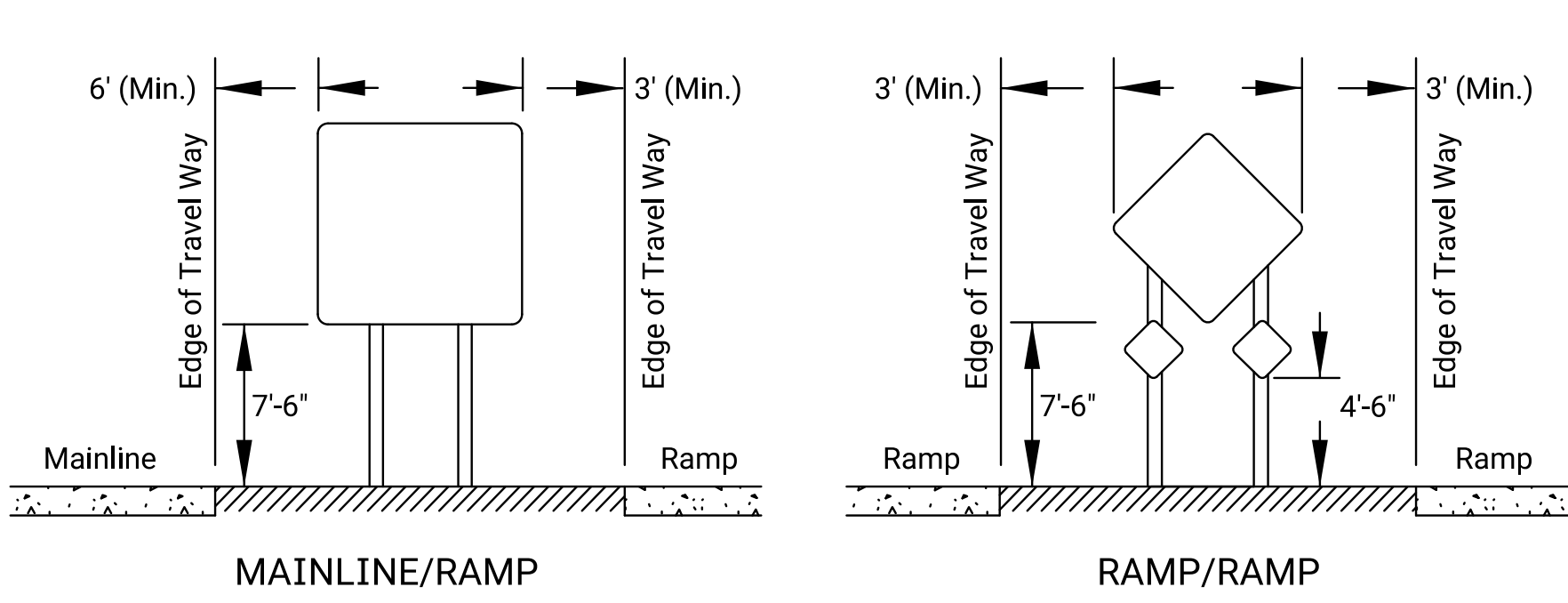
MEDIANS AND ISLANDS



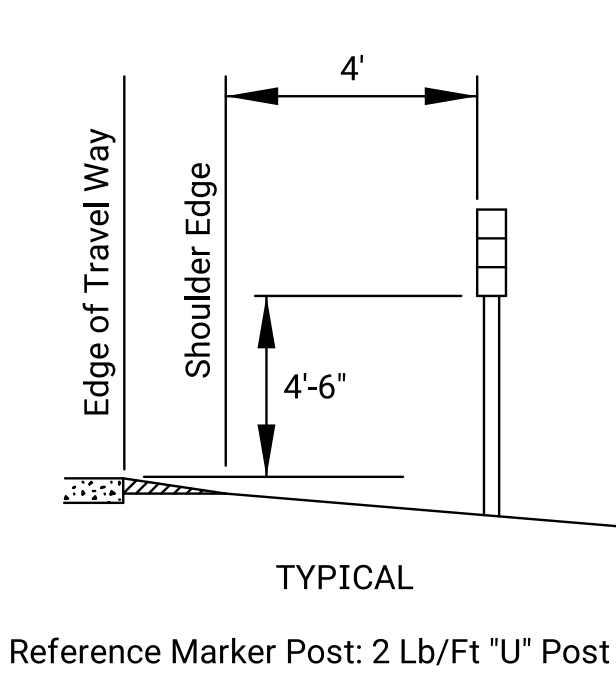
URBAN ROADWAYS



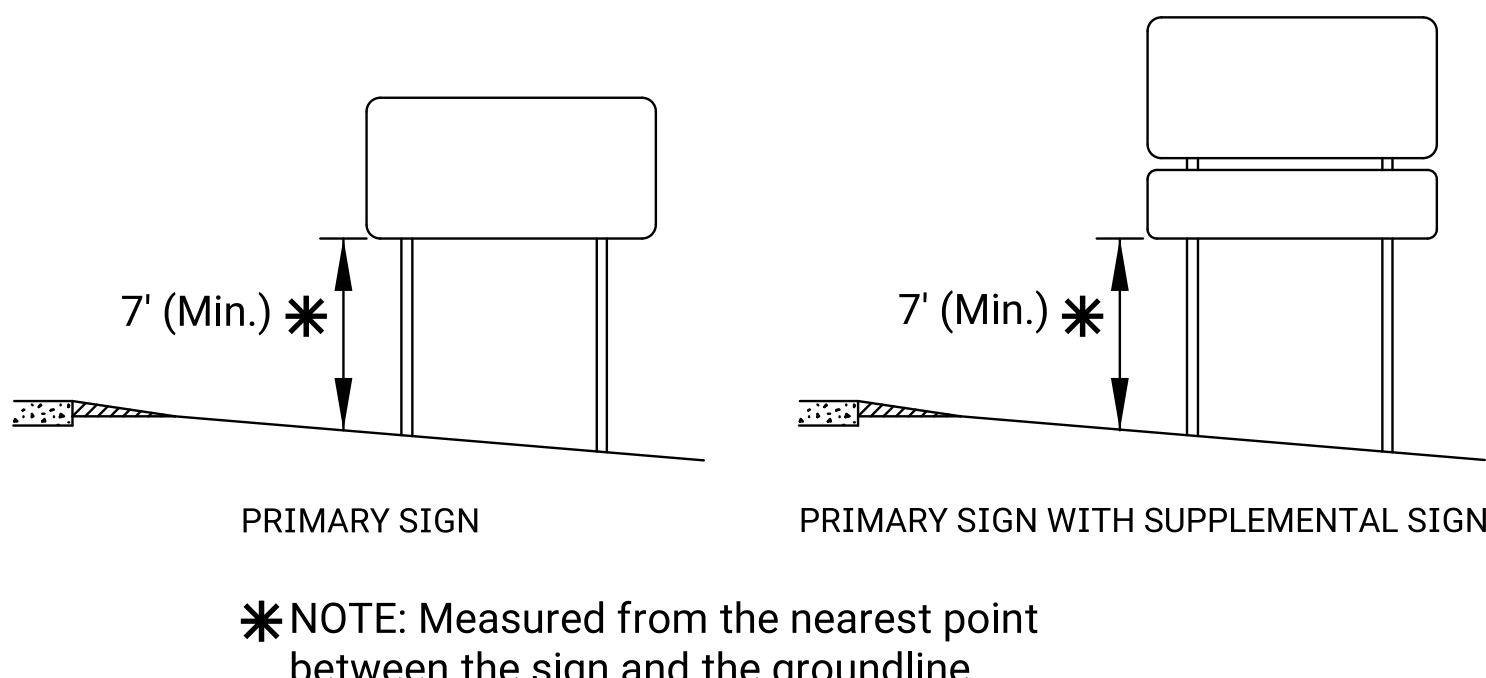
ADOPT A HIGHWAY



HIGHWAY GORES



REFERENCE MARKERS



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'.

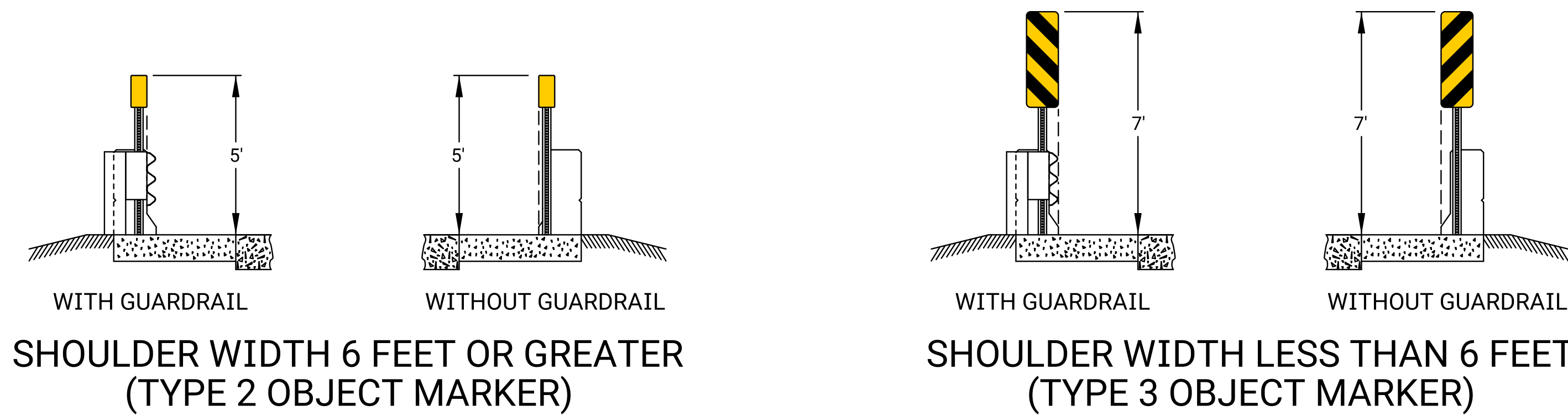
Signs may be moved laterally or longitudinally if it will improve visibility of the sign or other signs or if it will protect the sign more. The maximum allowable longitudinal adjustment is 100', with the exception of the reference marker which is 50'.

The minimum spacing between signs, excluding reference markers is 100'.

✱ NOTE: Measured from the nearest point between the sign and the groundline.

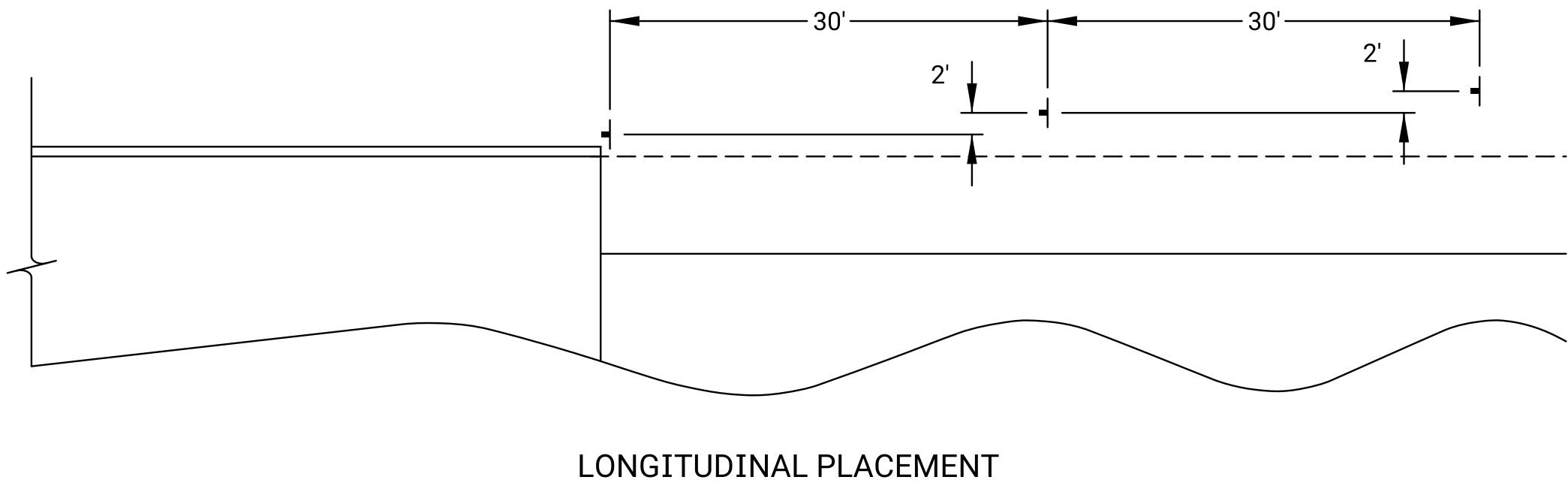
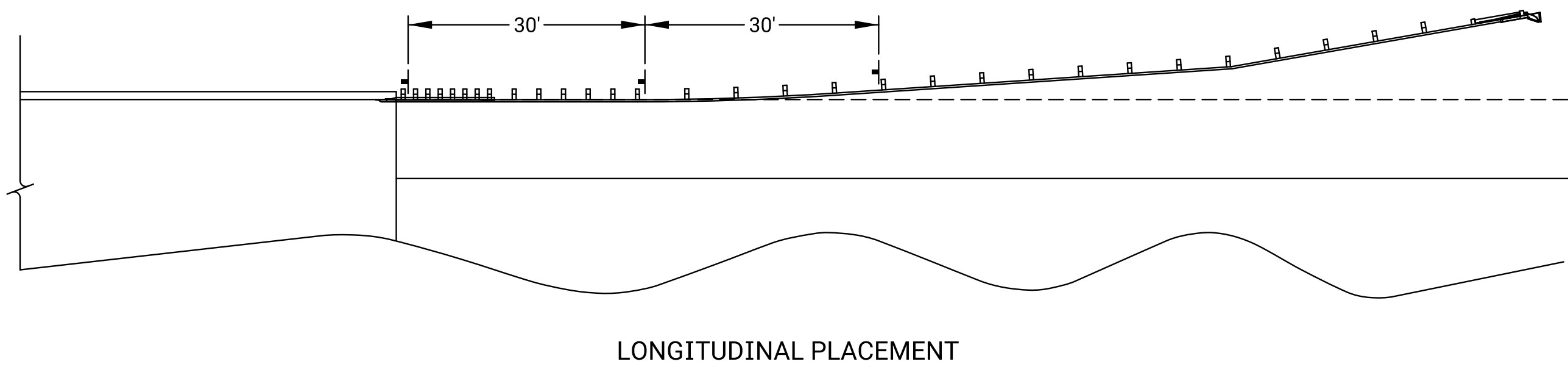
NO.	DATE	REVISIONS	BY	APPD	
KANSAS DEPARTMENT OF TRANSPORTATION					
MOUNTING HEIGHT & LATERAL OFFSET					
FOR CONVENTIONAL HIGHWAYS,					
SIDE ROADS, MEDIANS, ISLANDS,					
GORES, AND URBAN ROADWAYS					
TE407				10-01-19	
FHWA APPROVAL		10-01-19	APPD.		Eric W. Nichol
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES	TRACED
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN. CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	64	100

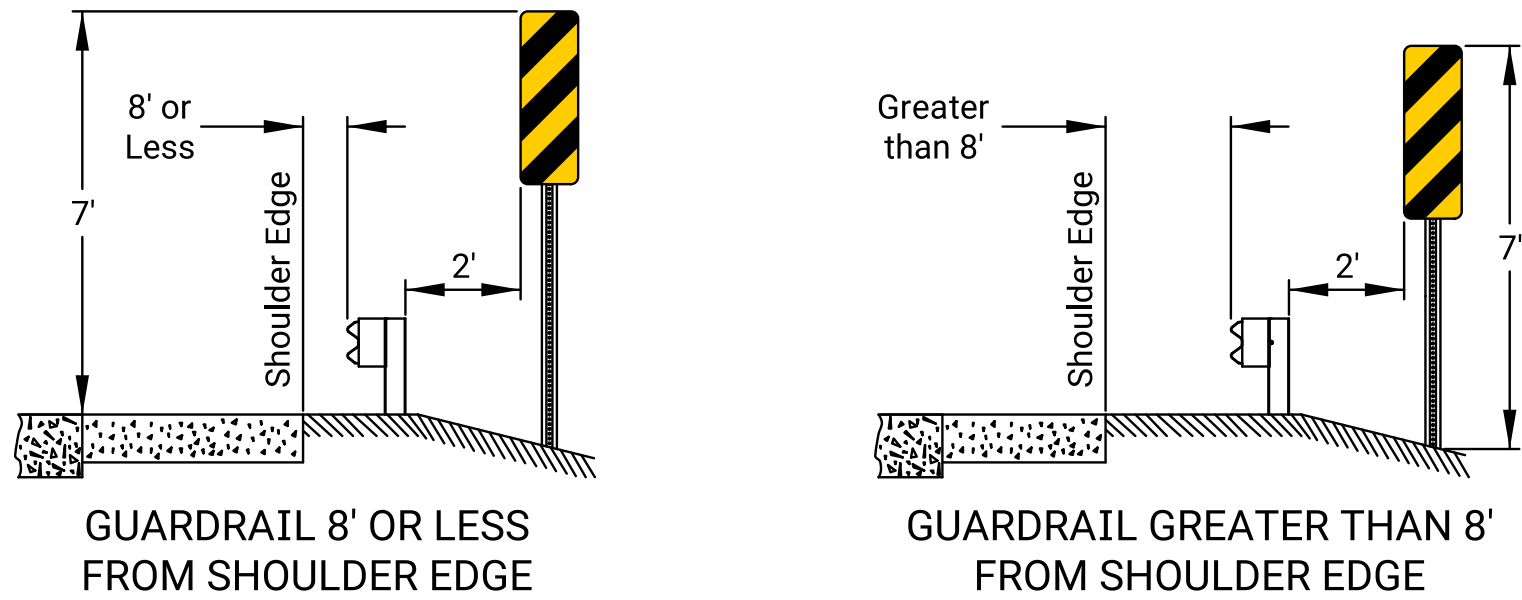


NOTE:
The longitudinal location of the object markers from the structure end shall be a maximum spacing of 42".

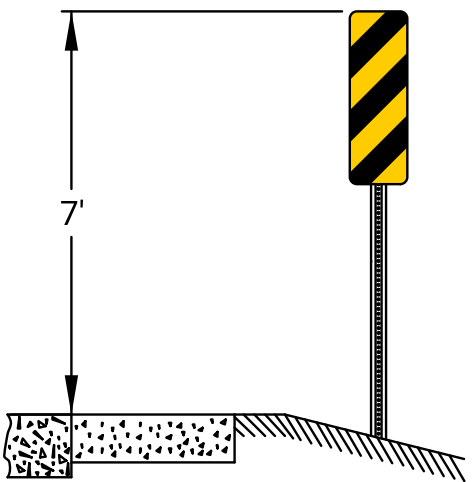
END OF STRUCTURE



NOTE:
The lateral offset is measured from the centerline of the object markers.



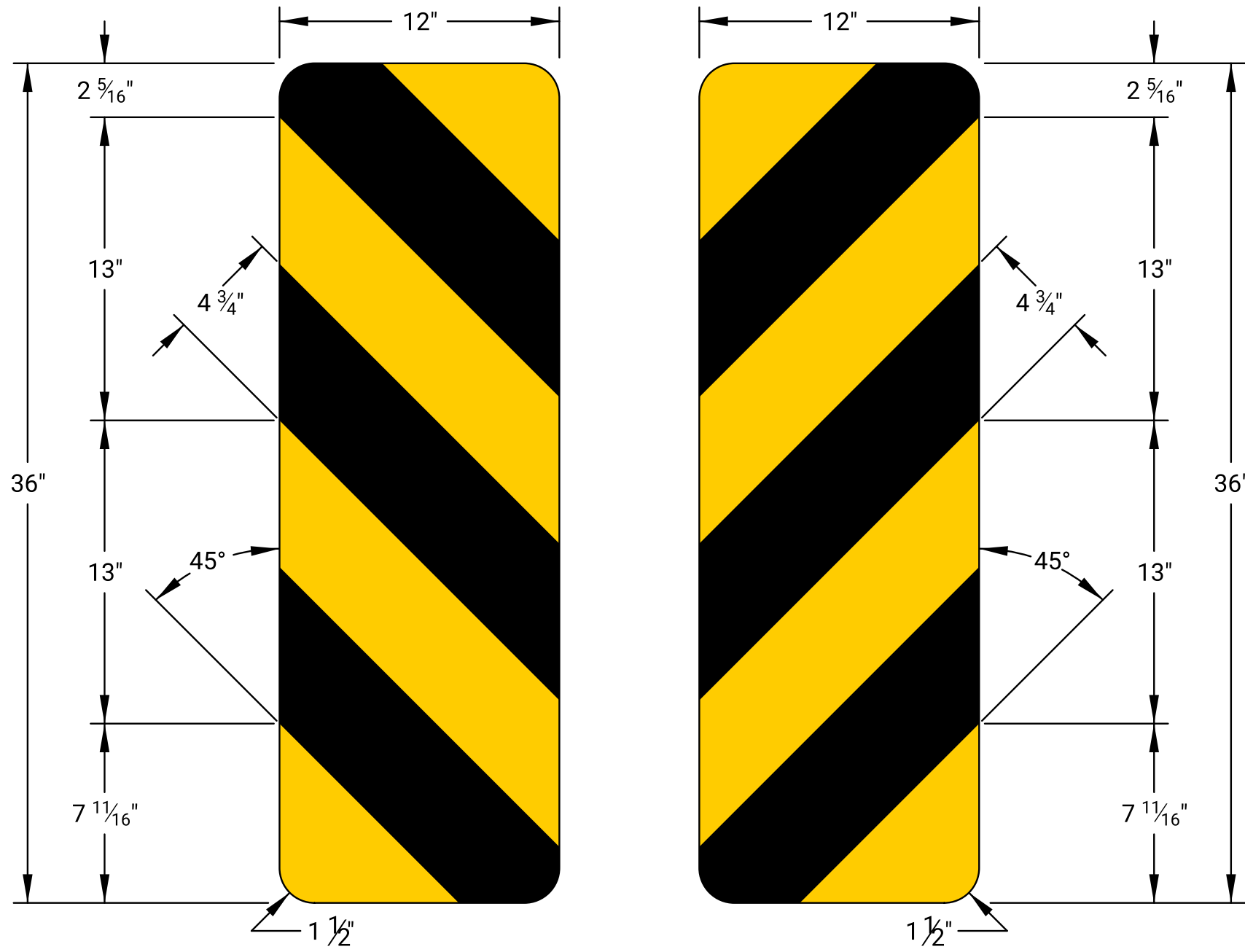
STRUCTURE APPROACH
GUARDRAIL WITHOUT MARKERS



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.	
DESIGNED	D.D.G.	DETAILED	D.D.G.	QUANTITIES	TRACED
DESIGN CK.	E.W.N.	DETAIL CK.	E.W.N.	QUAN. CK.	TRACE CK.

Plotted by : Jake.Comstock@ks.gov 11-DEC-2025 14:01
File : KA648401pss416-01.dgn

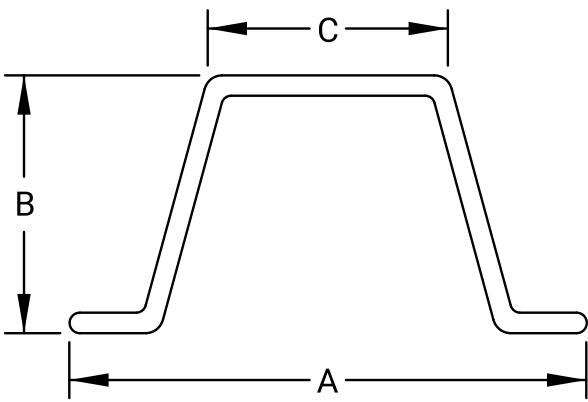
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	65	100



OM3-L

OM3-R

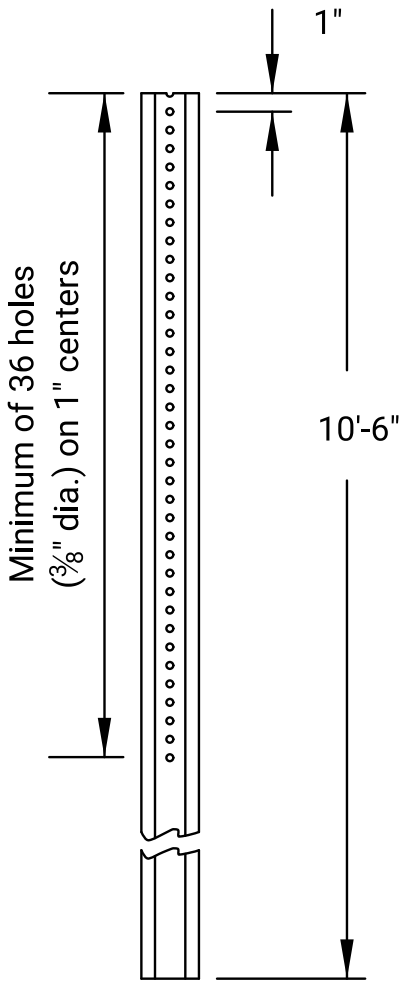
COLORS:
Yellow Background (Reflective)
Black Stripes (Non-reflective)



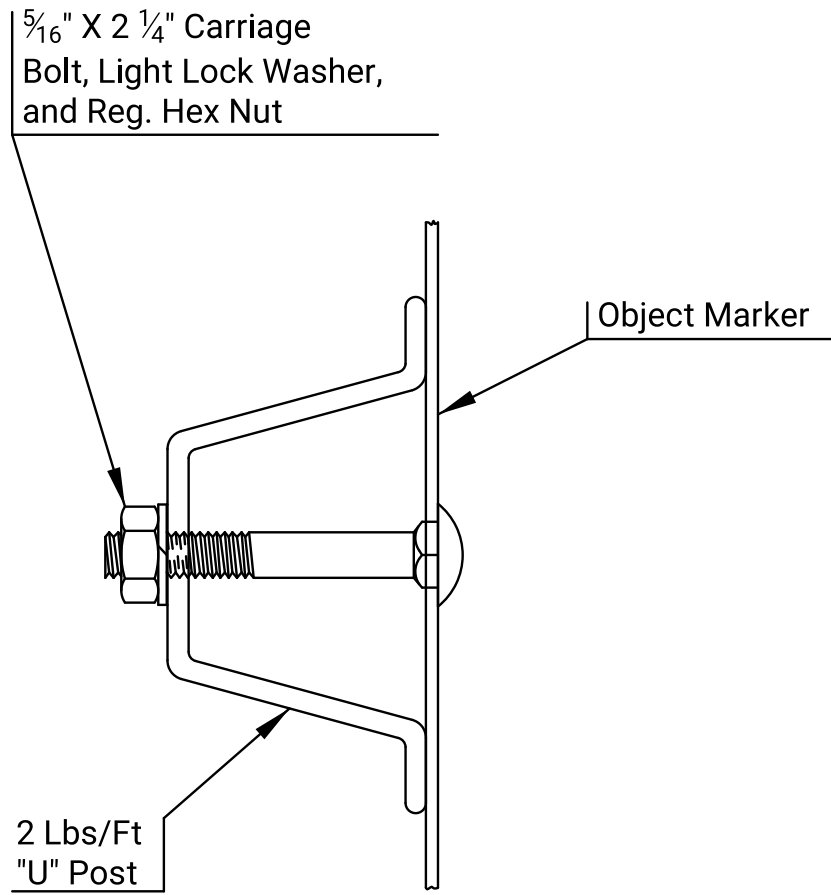
DIMENSIONS	
A	3 1/8
B	1 17/32
C	1 1/4

(Dimensions are nominal)

2 lb/ft "U" POST



PUNCHING DETAILS

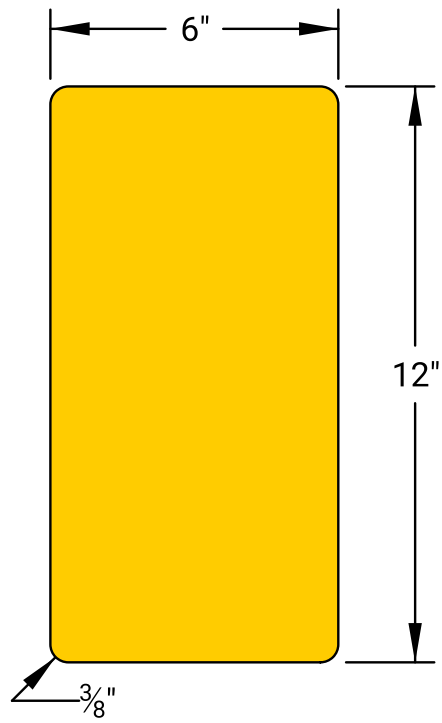


MOUNTING DETAILS

TYPE 3 OBJECT MARKER

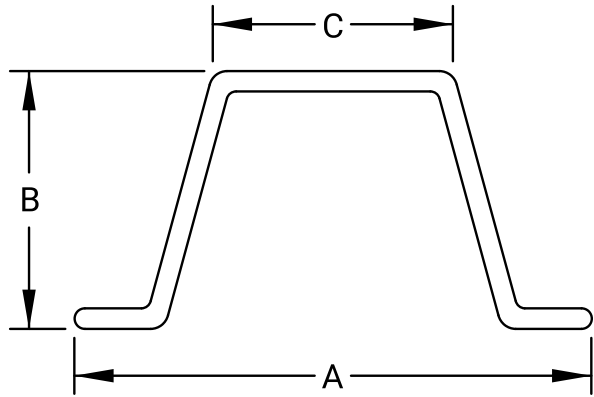
GENERAL NOTE:
See flat sheet sign blank standard sheets for the 6" x 12" and 12" x 36" sign blank details.

The object markers shall be covered with Type XI High Intensity yellow retroreflective sheeting.



OM2

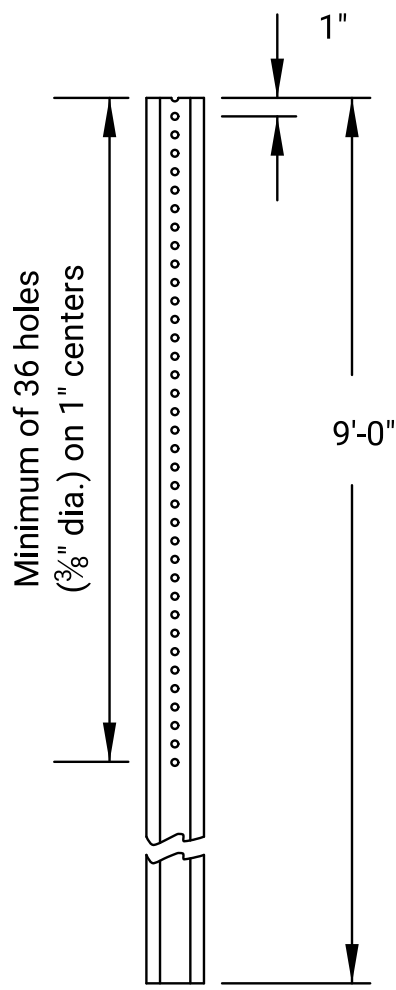
COLOR:
Yellow Background (Reflective)



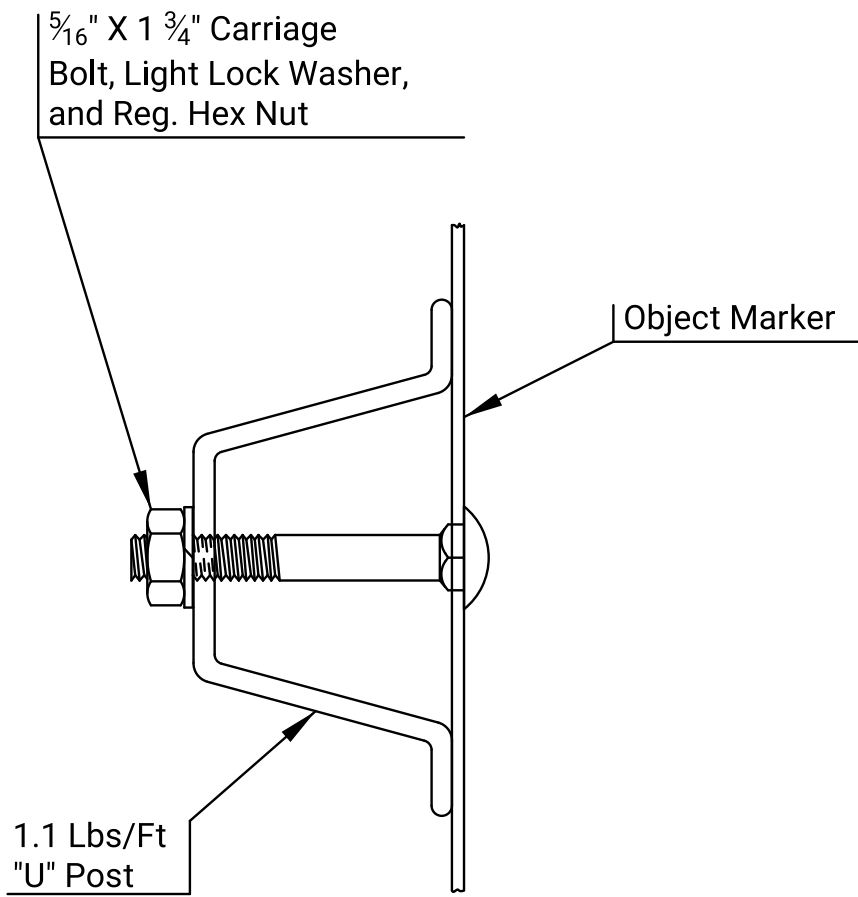
DIMENSIONS	
A	2 1/16
B	7/8
C	1 3/16

(Dimensions are nominal)

DELINEATOR POST
(1.1 lb/ft "U" Post)



PUNCHING DETAILS



MOUNTING DETAILS

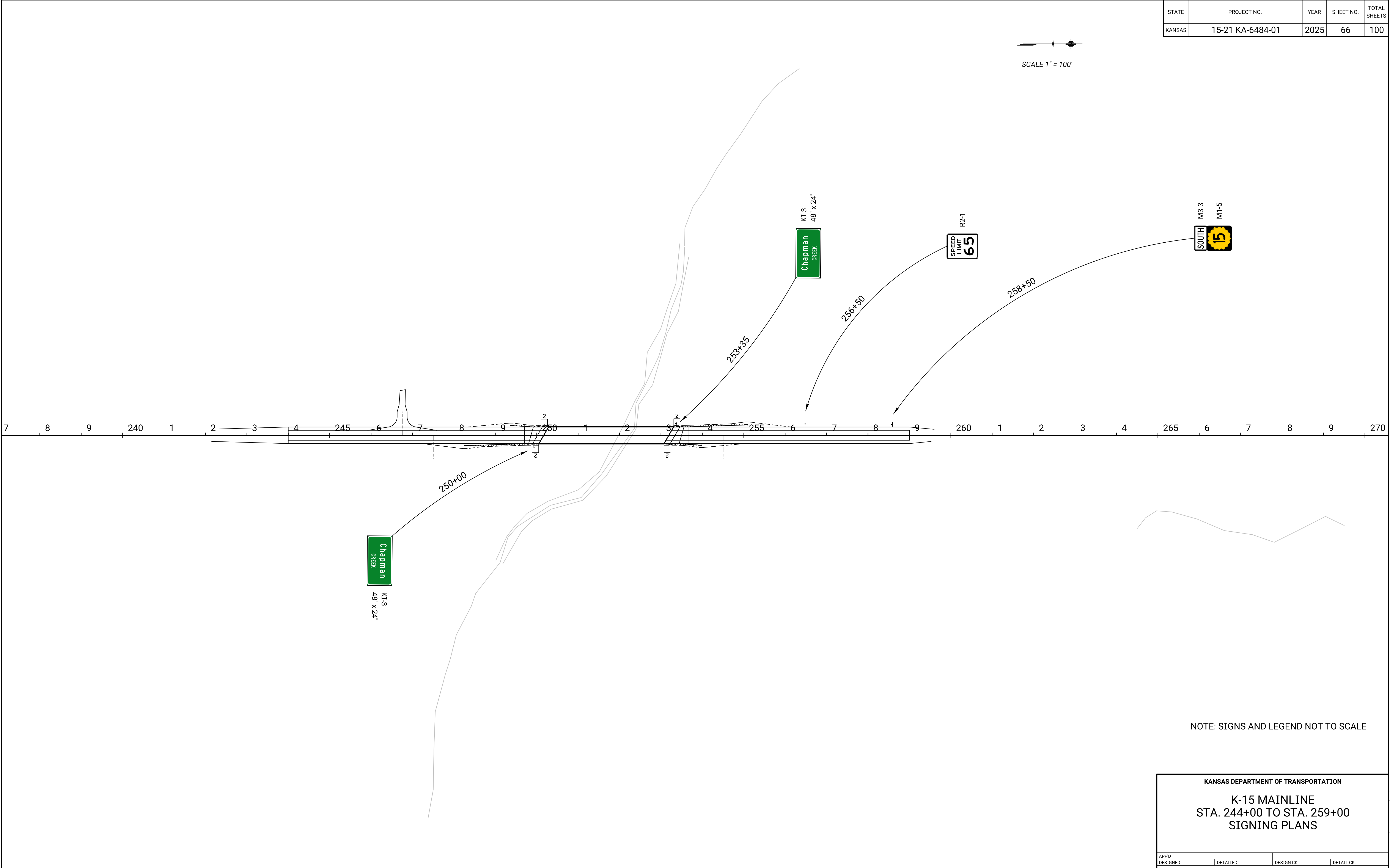
TYPE 2 OBJECT MARKER

All dimensions are in inches unless otherwise noted.
See standard plan sheet TE590 for detailed specifications.

NO.	DATE	REVISIONS		BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION					
DESIGN DETAILS FOR OBJECT MARKERS TYPE 2 AND TYPE 3					
TE416				10-01-19	
FHWA APPROVAL		10-01-19	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.

Plotted by : Jake.Comstock@ks.gov 11-DEC-2025 14:00
File : KA648401ppl-01.dgn

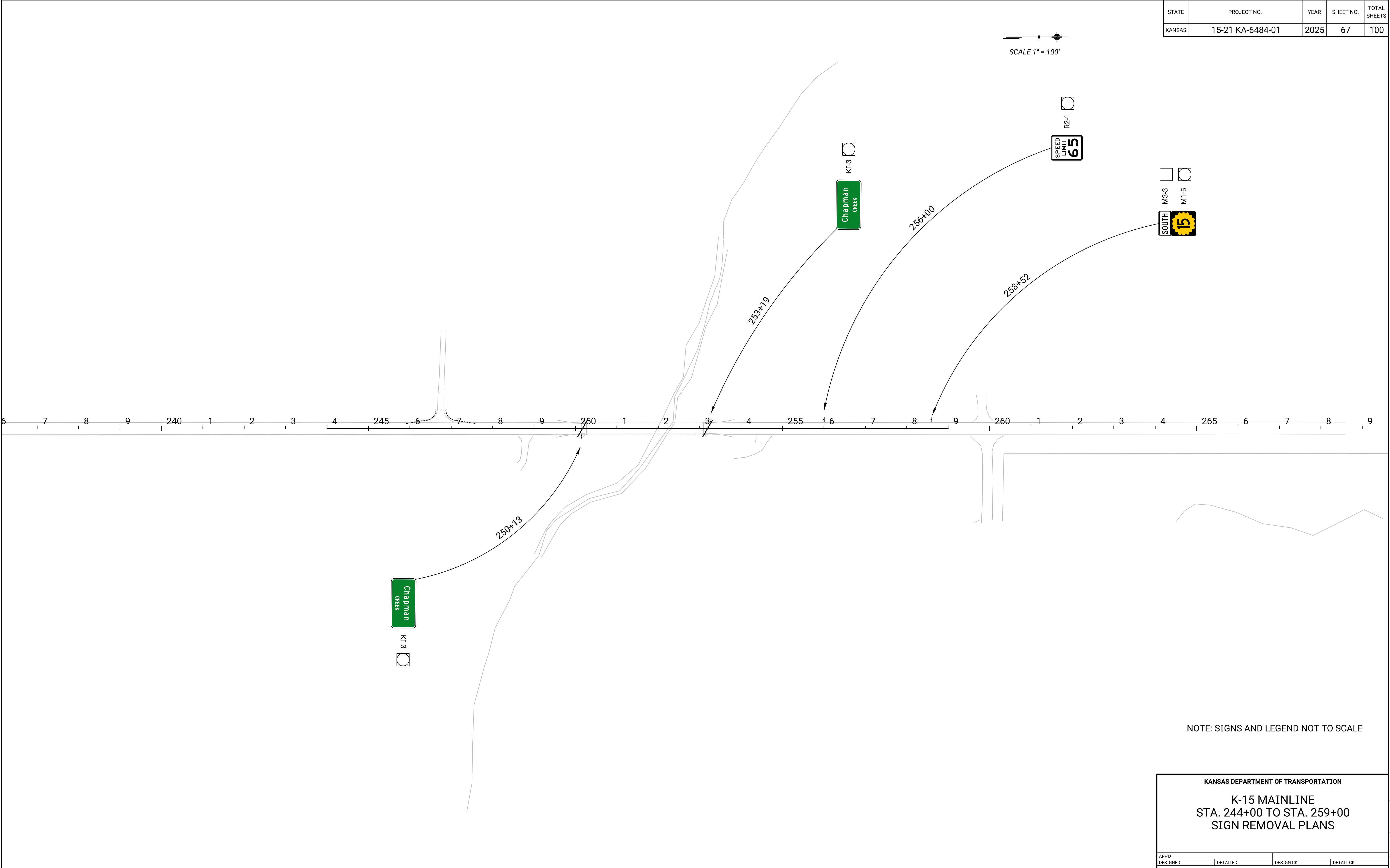
Traffic



KDOT Graphics Certified

Plotted by : Jake.Comstock@ks.gov 11-DEC-2025 14:00
File : KA648401prn-01.dgn

Traffic



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	67	100

QUANTITIES SHEET

SIGNS, POSTS, & FOOTINGS TO BE INSTALLED ON PROJECT

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	68	100

[illegible]

CENTERLINE LOCATION
 L or LL - Left of Centerline
 R or RR - Right of Centerline
 C - On the Centerline

INSTALL POSITION

S - Shoulder Mount	M - Median Mount
O - Offset Mount	OH - Overhead Mount
G - Gore Mount	

NOTE: See standard plan sheet TE590
for detailed specifications.

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.
NO.	DATE	REVISIONS	BY	APP'D

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

DELINEATORS AND OBJECT MARKERS

01	10-09-21	Added delineator & object marker types		D.D.G.	E.W.N.
NO.	DATE	REVISIONS		BY	APP'D
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.	TRAC CK.

KDOT Graphics Certified 11-06-2025 Sh. No. 69

Plotted by : Jake.Comstock@ks.gov 11-DEC-2025 14:00
File : KA648401pss439-01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	70	100

SUMMARY OF QUANTITIES

SIGNS		
TYPE	NUMBER	SQUARE FEET
FLAT SHEET	5	27.0
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)			

NUMBER & LENGTHS OF POSTS & ALUMINUM BEAMS (INFORMATION ONLY)																
LENGTH OF POST OR BEAM	4" x 6" POST			312.25 ALUMINUM BEAM	"U" POST		GALVANIZED STEEL BEAM POST						PERFORATED SQUARE STEEL TUBE (PSST)			
	WOOD		STEEL				W6x9		W10x12		W10x22					
	FLAT SHEET SIGN	REINFORCED PANEL SIGN	STRUCTURAL TUBING		2 LBS/FT	3 LBS/FT	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	1-3/4"	2"	2-1/4"	2-1/2"
2.1' - 4'																
4.1' - 6'																
6.1' - 8'																
8.1' - 10'																
10.1' - 12'																
12.1' - 14'																
14.1' - 16'	6															
16.1' - 18'																
18.1' - 20'																
20.1' - 22'																
22.1' - 24'																
24.1' - 26'																
26.1' - 28'																
28.1' - 30'																
30.1' - 32'																

POSTS AND ALUMINUM BEAMS																
	4" x 6" POST			312.25 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	6															
FEET	87.5															

POST FOOTINGS AND BRACKETS											
	CONCRETE FOOTING (DIA.)					PERFORATED SQUARE STEEL					
	WOOD	A36 STEEL		A572 STEEL (ALT)		TUBE FOOTING				BRACKET	
	18"	24"	30"	24"	30"	1-3/4"	2"	2-1/4"	2-1/2"	1-3/4"	2"
NUMBER											
FEET											

BASE PLATES AND STUB POSTS						
	W6x9		W10x12		W10x22	
	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)	A36 STEEL	A572 STEEL (ALT)
BREAKAWAY BASES						
BASE PLATE (TOP)						
STUB POST WITH BASE PLATE						
NON-BREAKAWAY BASES						
BASE PLATE						

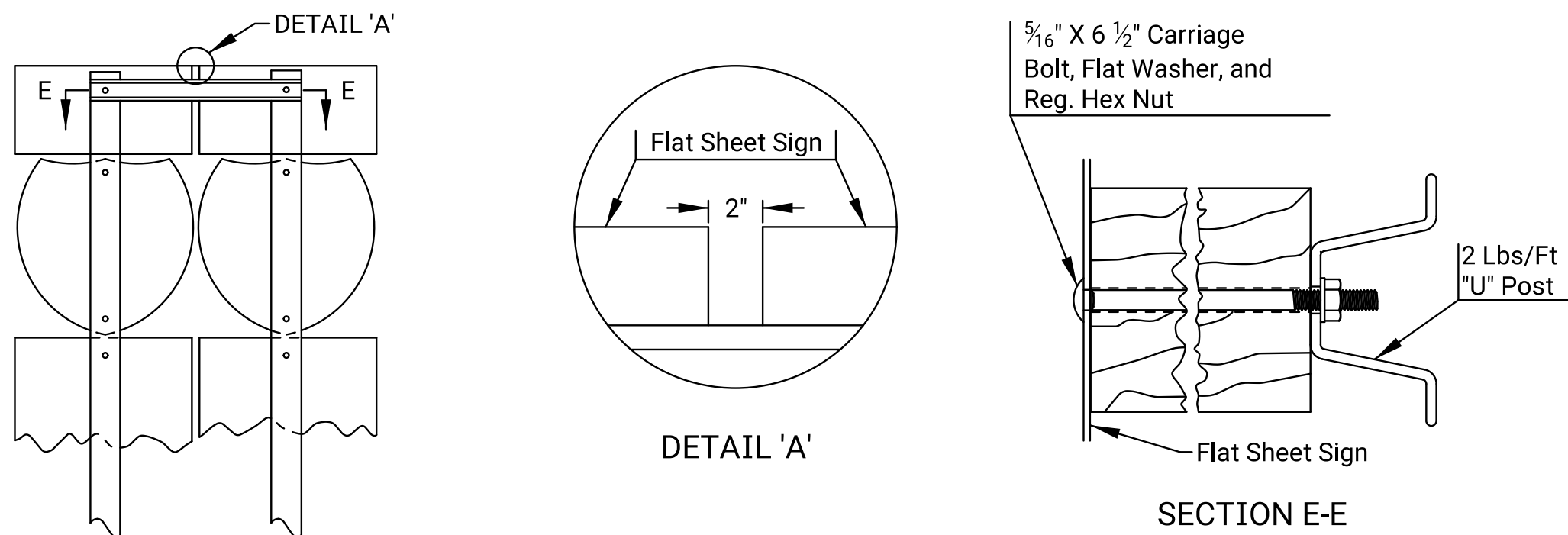
REMOVALS	
TYPE	NUMBER
SIGNS	5
POSTS	6
FOOTINGS	
SIGN STRUCTURES	

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				

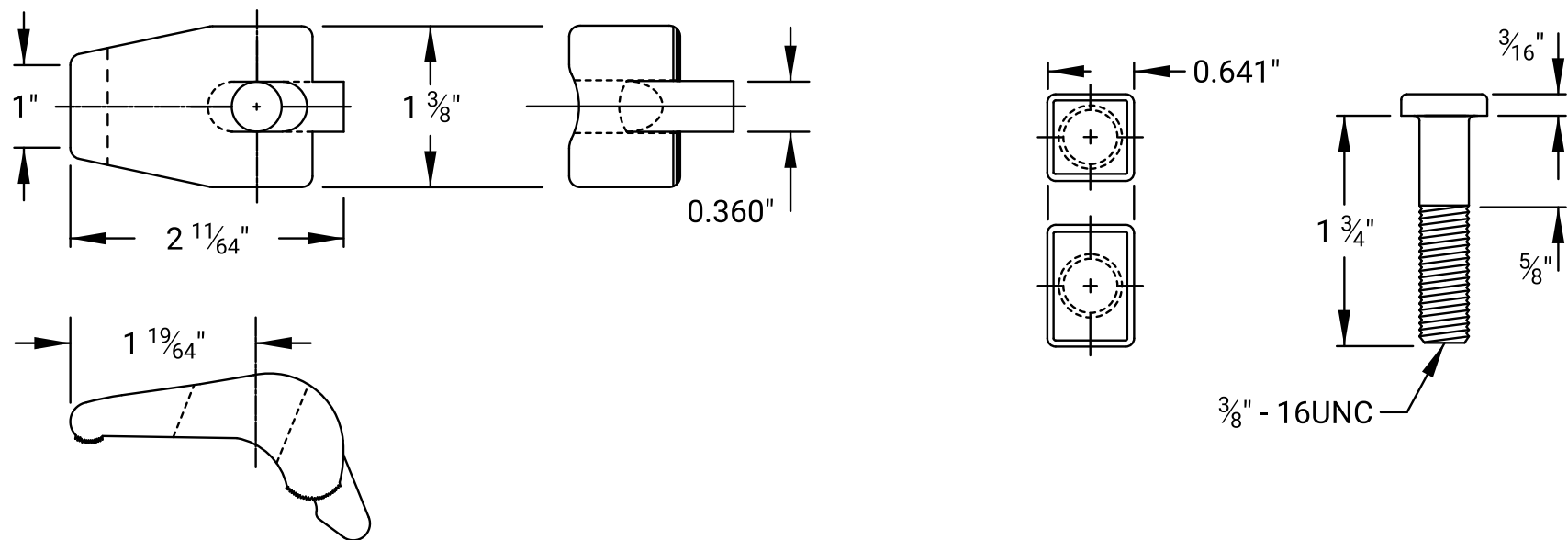
02	10-01-19	Revised Tables		D.D.G.	E.W.N.
01	07-23-10	Revised Tables		D.D.G.	D.B.
NO.	DATE	REVISIONS			BY APP'D
KANSAS DEPARTMENT OF TRANSPORTATION					
SUMMARY OF QUANTITIES FOR INSTALLATIONS AND REMOVALS					
TE439				07-01-03	
FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley	
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

KDOT Graphics Certified

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	73	100



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.

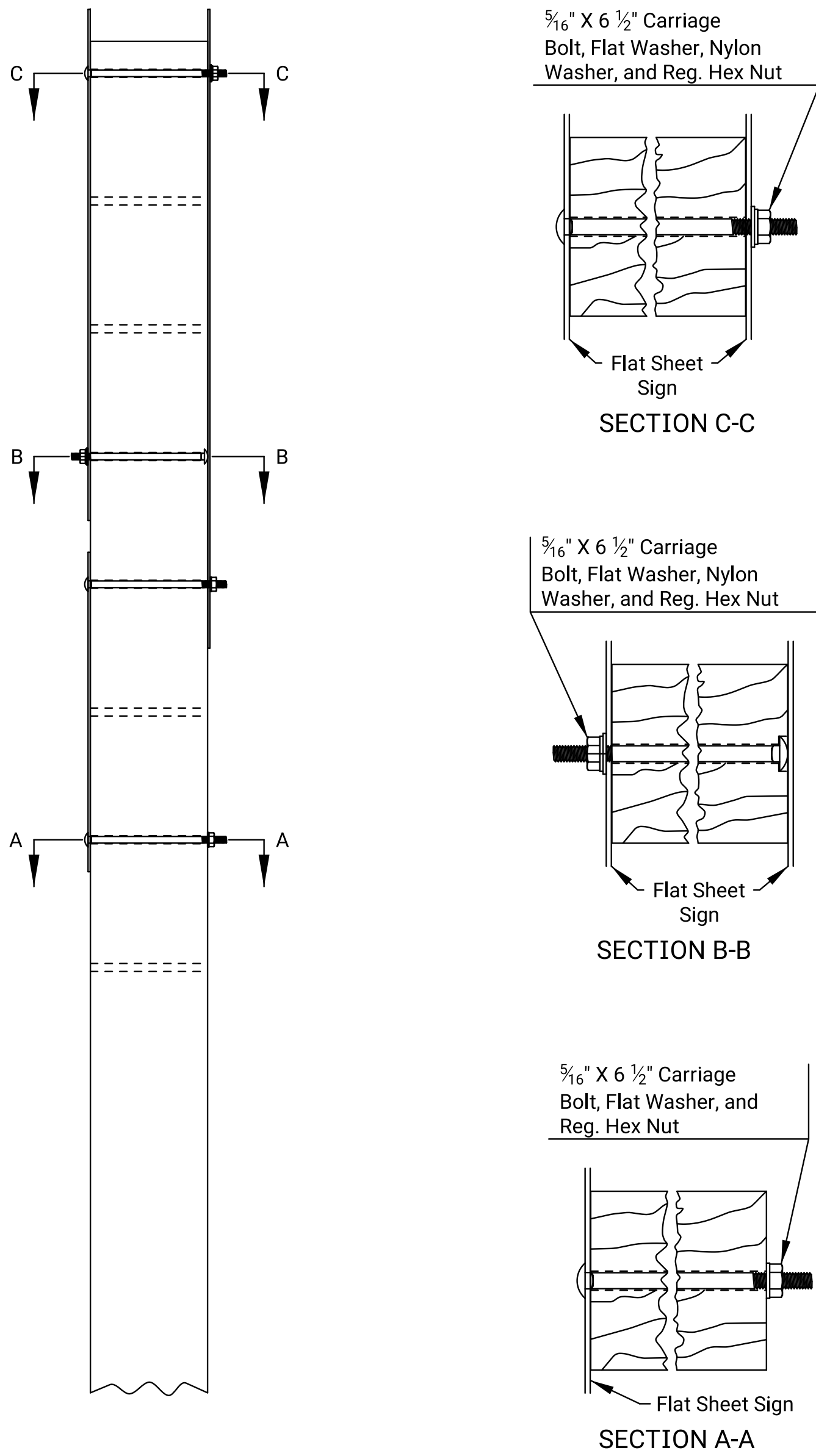
Any additional mounting holes, either through the sign or post, shall be drilled by the contractor. All holes drilled in the post shall be treated with a perservative. All holes drilled in the sign shall be free of any defects and the sheeting around the hole shall not be damaged.

A nylon washer shall be placed against the sheeting when a nut is to be tightened against the sign face.

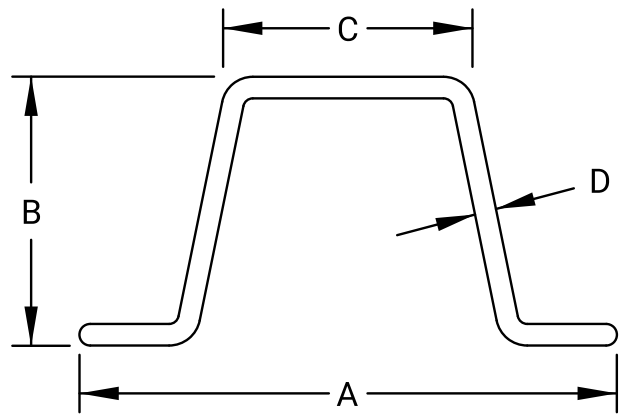
The 3 lb/ft steel "U" post used for reinforced panel sign installations is to be included in the bid item 'SIGN POST (4" x 6" WOOD) (REINFORCED PANEL SIGN)'.

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.



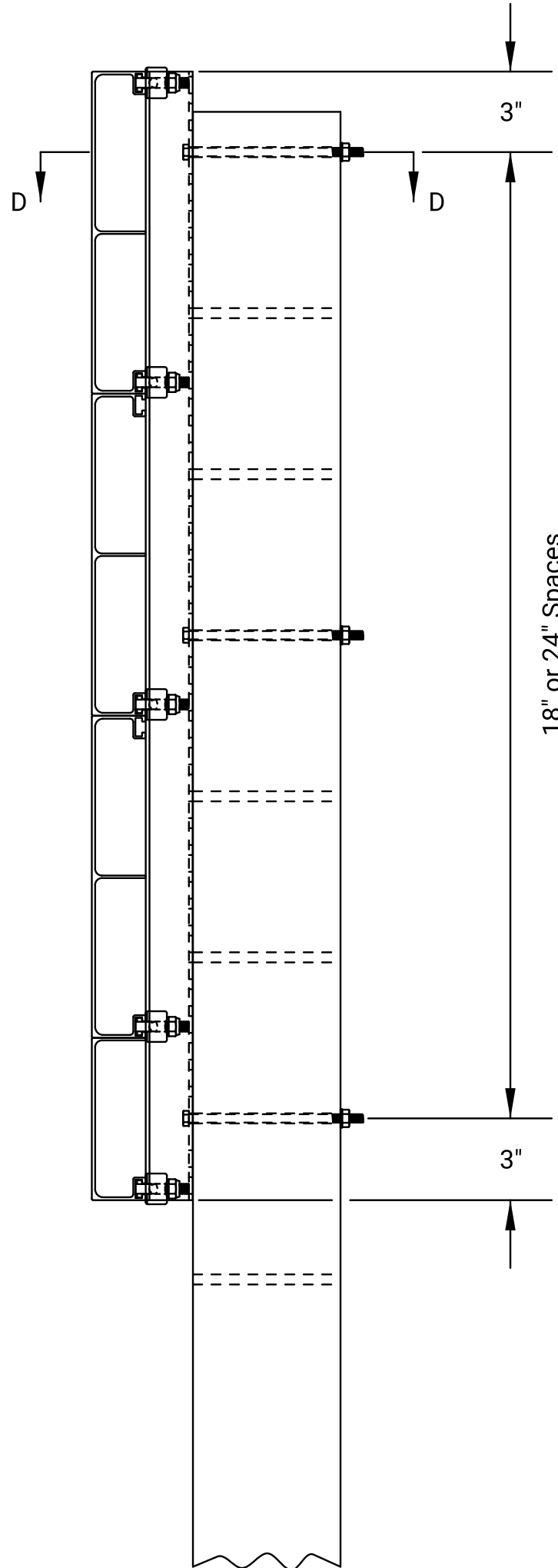
TYPICAL MOUNTING OF FLAT SHEET SIGNS



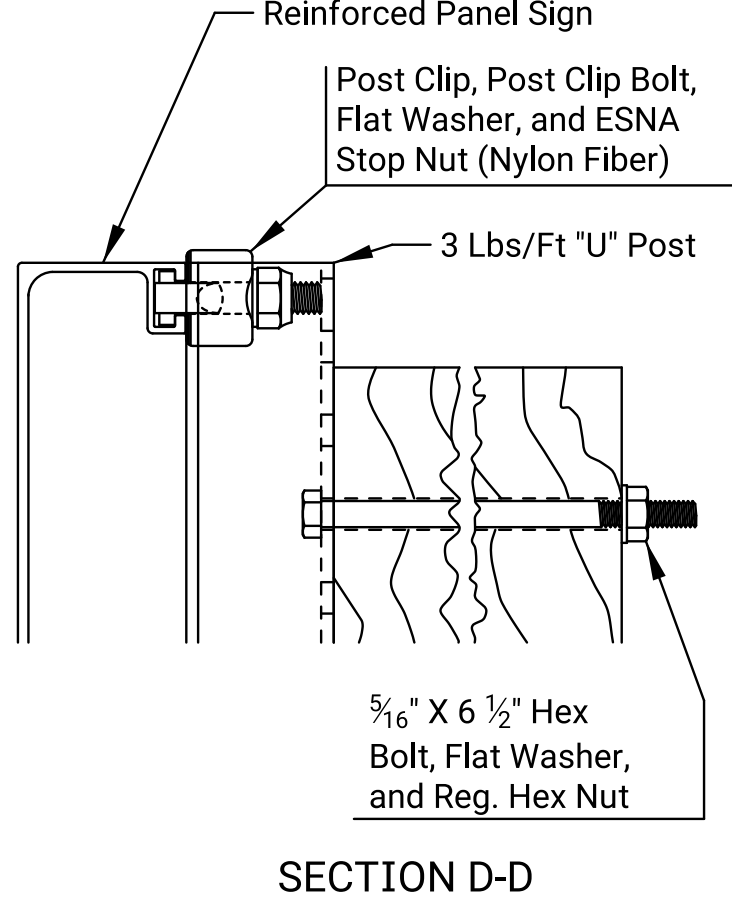
DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8 "	3 1/2 "
B	1 17/32 "	1 3/4 "
C	1 1/4 "	1 5/8 "
D	1/8 "	9/64 "

(DIMENSIONS ARE NOMINAL)

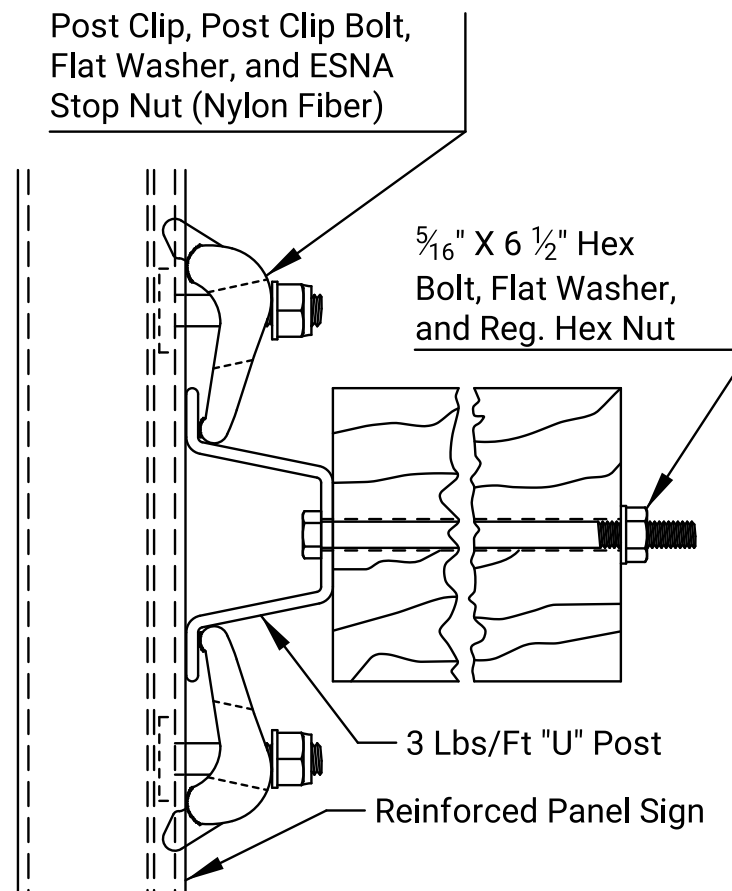
"U" POST



TYPICAL MOUNTING OF REINFORCED PANEL SIGNS



SECTION D-D

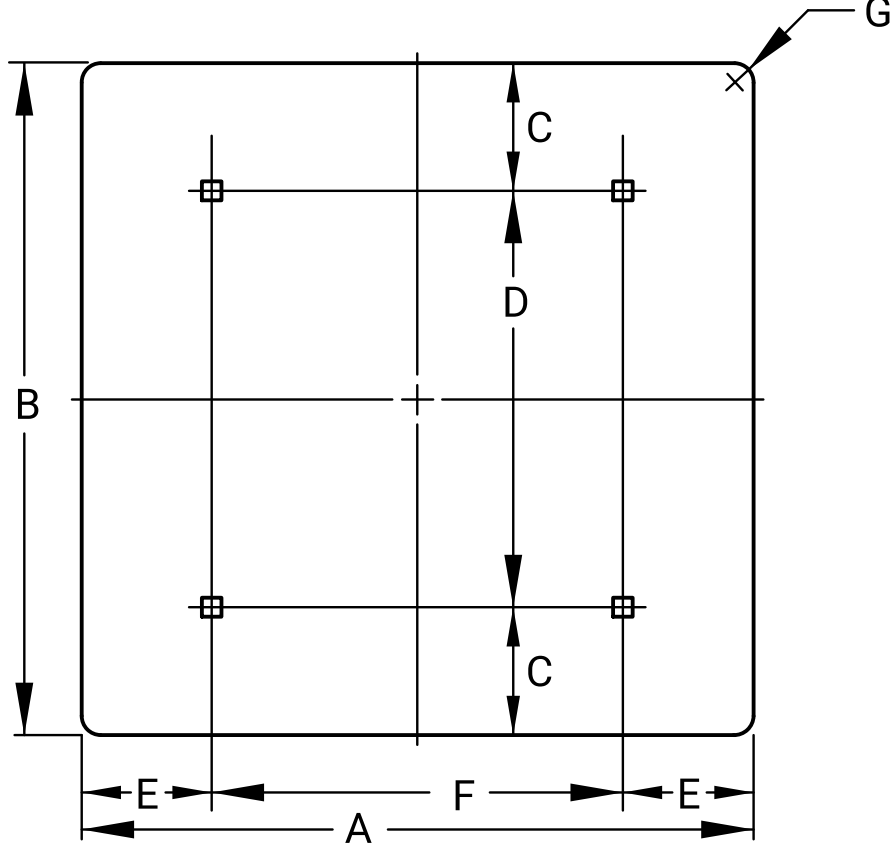
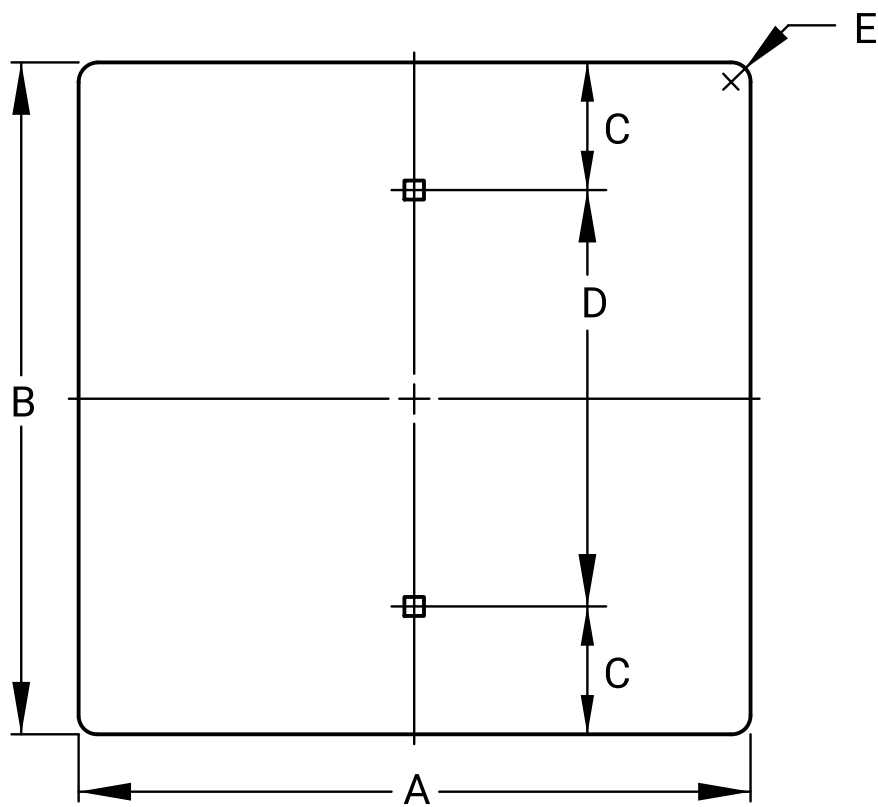


TOP VIEW

All dimensions are in inches

01	10-01-19	Revised drawings and notes		D.D.G. E.W.N.	
NO.	DATE	REVISIONS		BY APP'D	
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.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	74	100



	SIGN SIZE	A	B	C	D	E	T	AREA
①	3 X 8	3	8	1	6	$\frac{3}{8}$	0.040	0.17
①	6 X 12	6	12	3	6	$\frac{3}{8}$	0.063	0.50
	12 X 6	12	6	$1\frac{1}{2}$	3	$\frac{3}{4}$	0.063	0.50
	12 X 9	12	9	$1\frac{1}{2}$	6	$1\frac{1}{2}$	0.063	0.75
	12 X 18	12	18	3	12	$1\frac{1}{2}$	0.063	1.50
	12 X 24	12	24	3	18	$1\frac{1}{2}$	0.080	2.00
	12 X 36	12	36	6	24	$1\frac{1}{2}$	0.080	3.00
	12 X 48	12	48	6	36	$1\frac{1}{2}$	0.080	4.00
	18 X 6	18	6	$1\frac{1}{2}$	3	$1\frac{1}{2}$	0.063	0.75
	18 X 18	18	18	3	12	$1\frac{1}{2}$	0.063	2.25
	18 X 30	18	24	3	24	$1\frac{1}{2}$	0.080	3.75
	18 X 36	18	24	6	24	$1\frac{1}{2}$	0.080	4.50
	18 X 42	18	24	6	30	$1\frac{1}{2}$	0.080	5.25
	18 X 48	18	24	6	36	$1\frac{1}{2}$	0.080	6.00
	21 X 15	21	15	$1\frac{1}{2}$	12	$1\frac{1}{2}$	0.080	2.19
	24 X 6	24	6	$1\frac{1}{2}$	3	$1\frac{1}{2}$	0.080	1.00
	24 X 12	24	12	3	6	$1\frac{1}{2}$	0.080	2.00
	24 X 18	24	18	3	12	$1\frac{1}{2}$	0.080	3.00
	24 X 24	24	24	3	18	$1\frac{1}{2}$	0.080	4.00
	24 X 30	24	30	3	24	$1\frac{1}{2}$	0.080	5.00
	24 X 36	24	36	6	24	$1\frac{1}{2}$	0.080	6.00
	30 X 12	30	12	3	6	$1\frac{7}{8}$	0.080	2.50
	30 X 15	30	15	$1\frac{1}{2}$	12	$1\frac{7}{8}$	0.080	3.13
	30 X 18	30	18	3	12	$1\frac{7}{8}$	0.080	3.75
	30 X 21	30	21	$1\frac{1}{2}$	18	$1\frac{1}{2}$	0.080	4.38
	30 X 24	30	24	3	18	$1\frac{7}{8}$	0.080	5.00
	30 X 30	30	30	3	24	$1\frac{7}{8}$	0.080	6.25
	30 X 36	30	36	6	24	$1\frac{7}{8}$	0.080	7.50
	36 X 12	36	12	3	6	$1\frac{1}{2}$	0.080	3.00
	36 X 18	36	18	3	12	$1\frac{1}{2}$	0.080	4.50
	36 X 24	36	24	3	18	$1\frac{1}{2}$	0.080	6.00
	36 X 30	36	30	3	24	$2\frac{1}{4}$	0.080	7.50
	36 X 36	36	36	6	24	$2\frac{1}{4}$	0.080	9.00
③	45 X 36	45	36	3	30	$2\frac{1}{4}$	0.100	11.25

	SIGN SIZE	A	B	C	D	E	F	G	T	AREA
	36 X 12	36	12	3	6	3	30	$1\frac{1}{2}$	0.080	3.00
	36 X 30	36	30	3	24	3	30	$2\frac{1}{4}$	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	$1\frac{1}{2}$	0.080	3.50
	42 X 18	48	18	3	12	6	30	$1\frac{1}{2}$	0.080	5.25
	42 X 24	48	24	6	12	6	30	$1\frac{7}{8}$	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	$1\frac{1}{2}$	0.080	4.00
	48 X 18	48	18	3	12	9	30	$1\frac{1}{2}$	0.080	6.00
	48 X 24	48	24	6	12	9	30	$1\frac{7}{8}$	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
②	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 $\frac{3}{8}$ " square, unless otherwise noted.

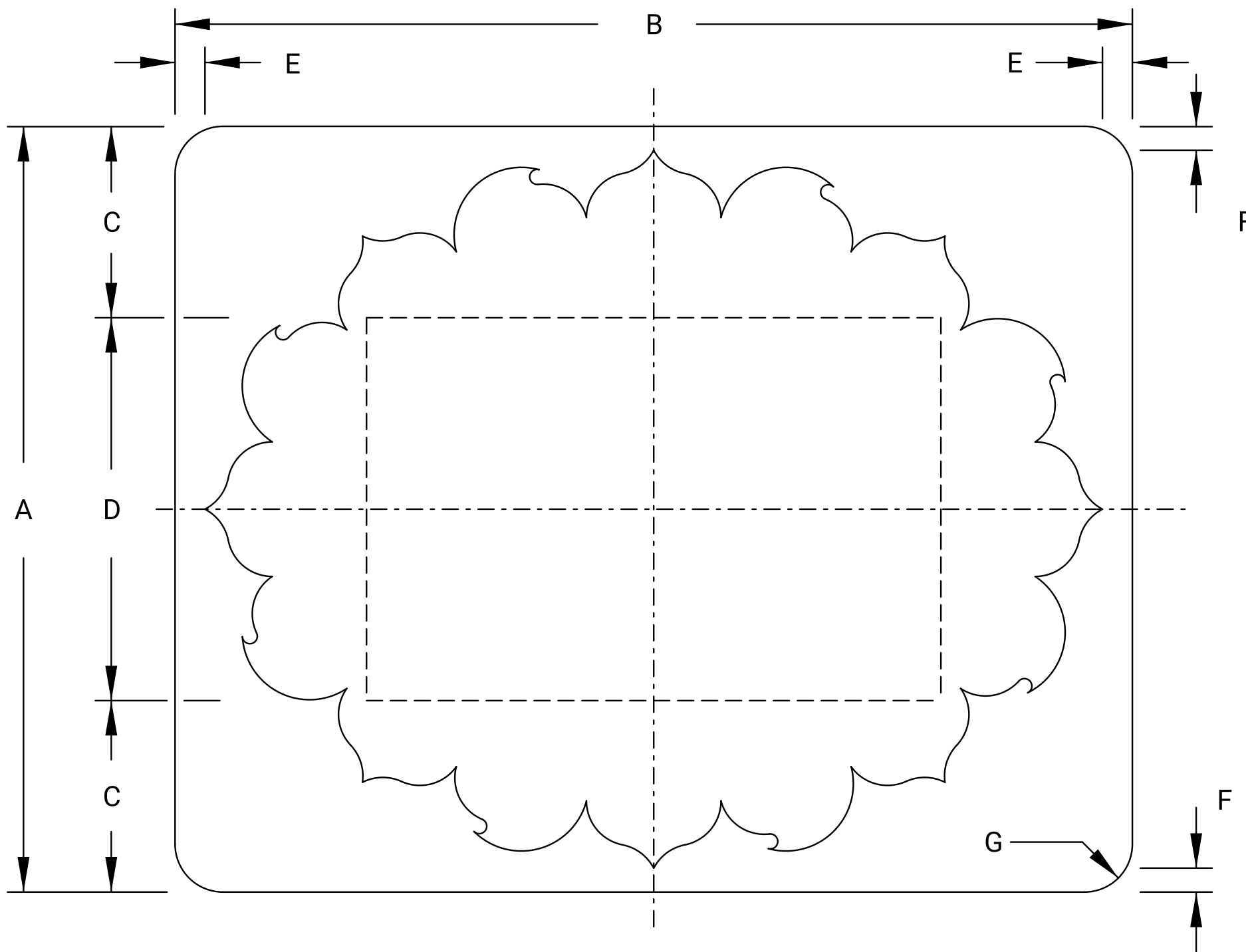
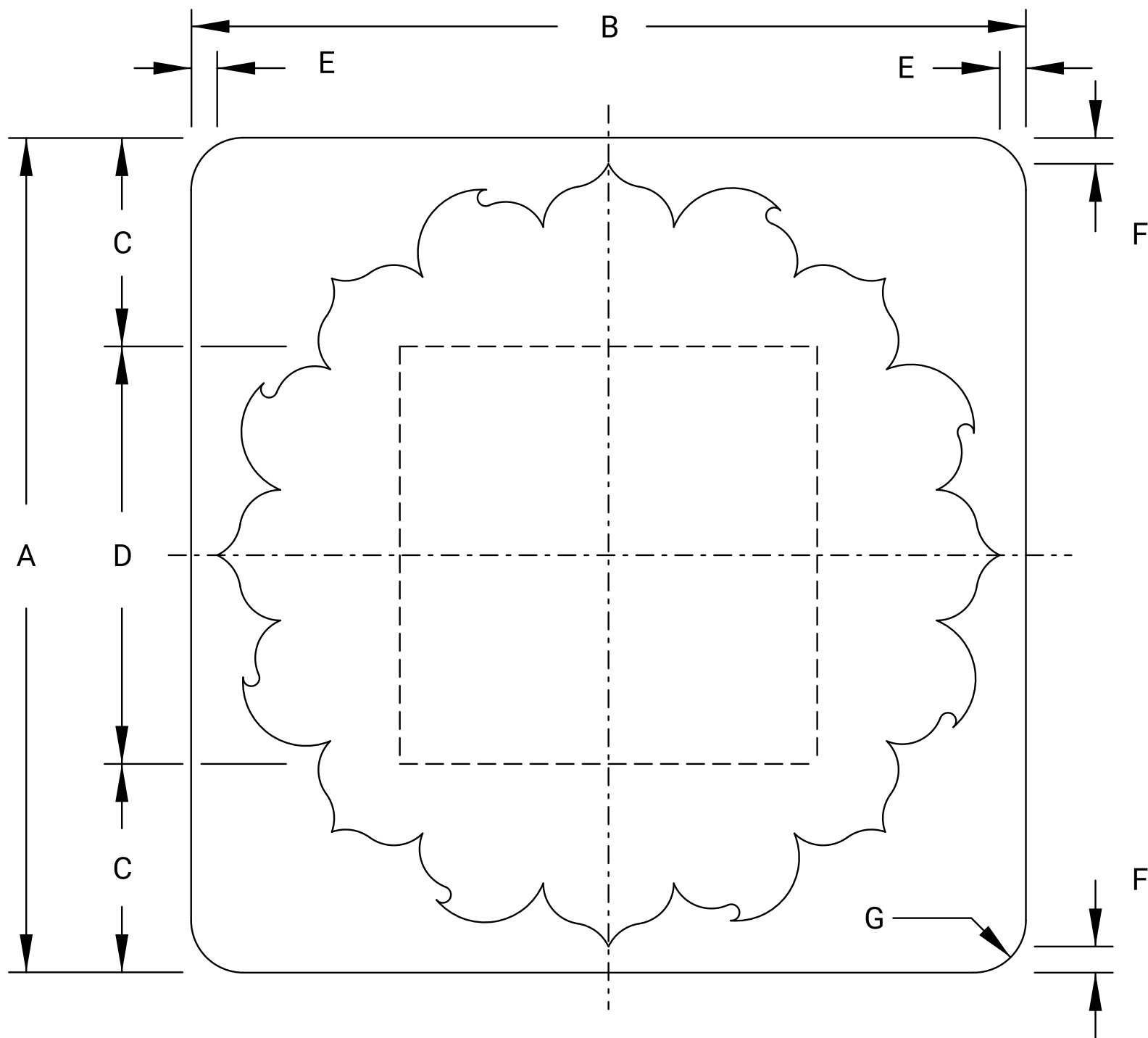
The dimension "T" is the thickness of the aluminum blank.

- ① Holes shall be $\frac{5}{16}$ " diameter.
- ② Dimension "D" requires a center hole.
- ③ Additional hole 12" below top hole.

All dimensions are in inches.

01	10-01-19	Updated sign blank details and dimensions			D.D.G. E.W.N.
NO.	DATE	REVISIONS			BY APP'D
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.

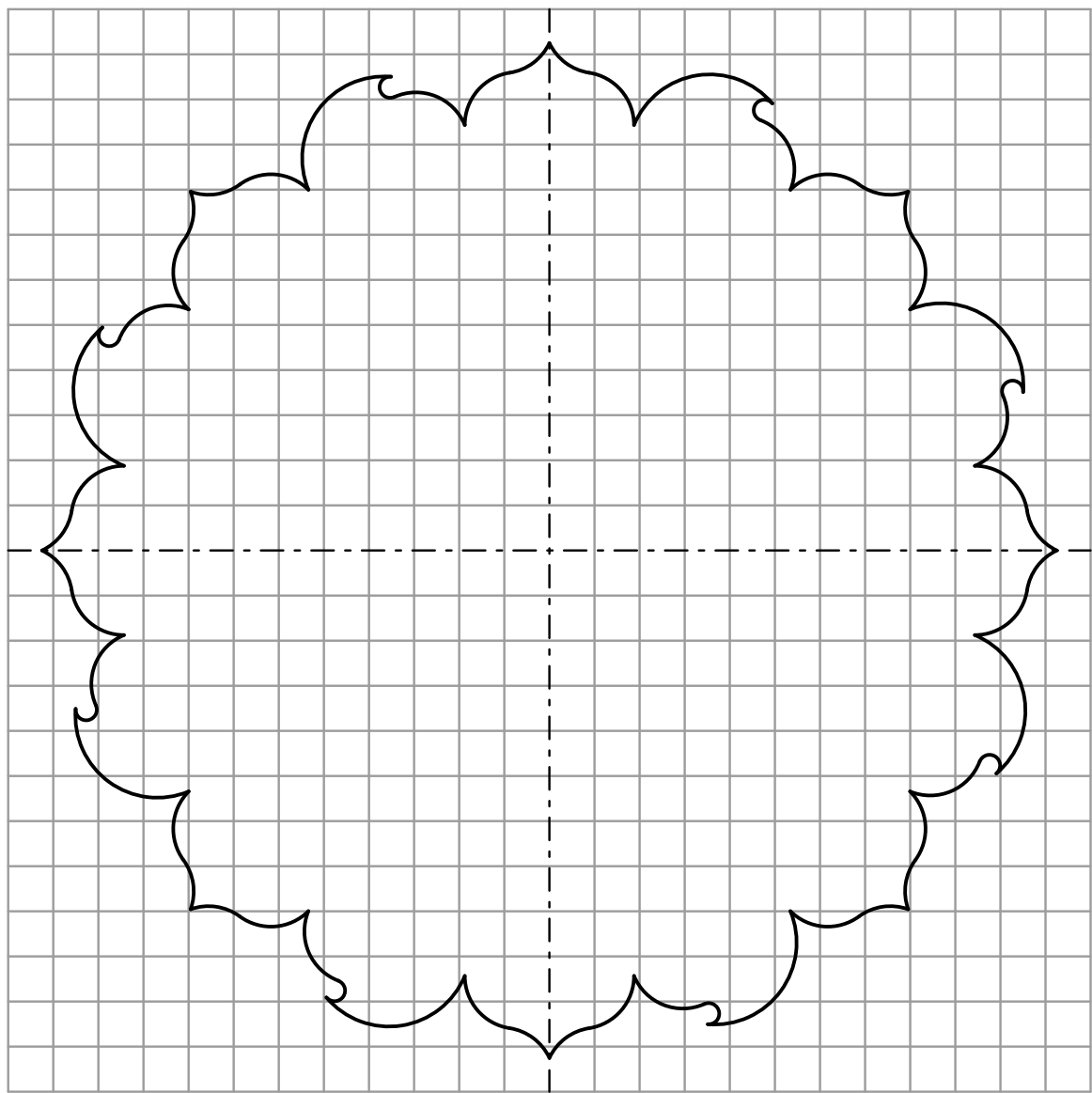
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	75	100



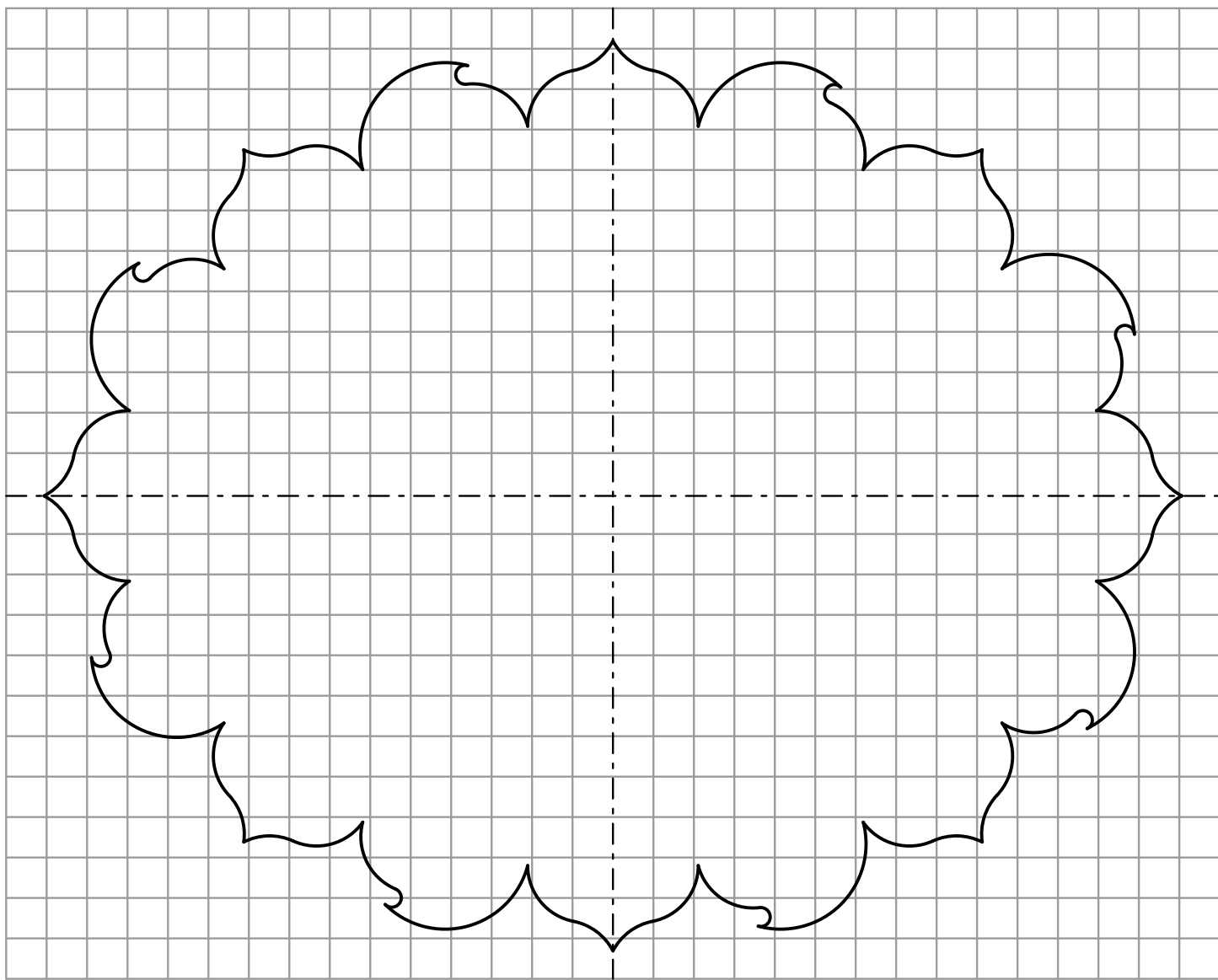
COLORS:
Background around sunflower - Black
Sunflower - Yellow
Numerals - Black

NOTE:
See plan, quantity, or sign design layout sheets for numerals to be used. The numerals shall be Series "D" legend. The numerals are to be optically spaced about the vertical centerline.

See standard plan sheet TE590 for detailed specifications.



1 OR 2 DIGITS

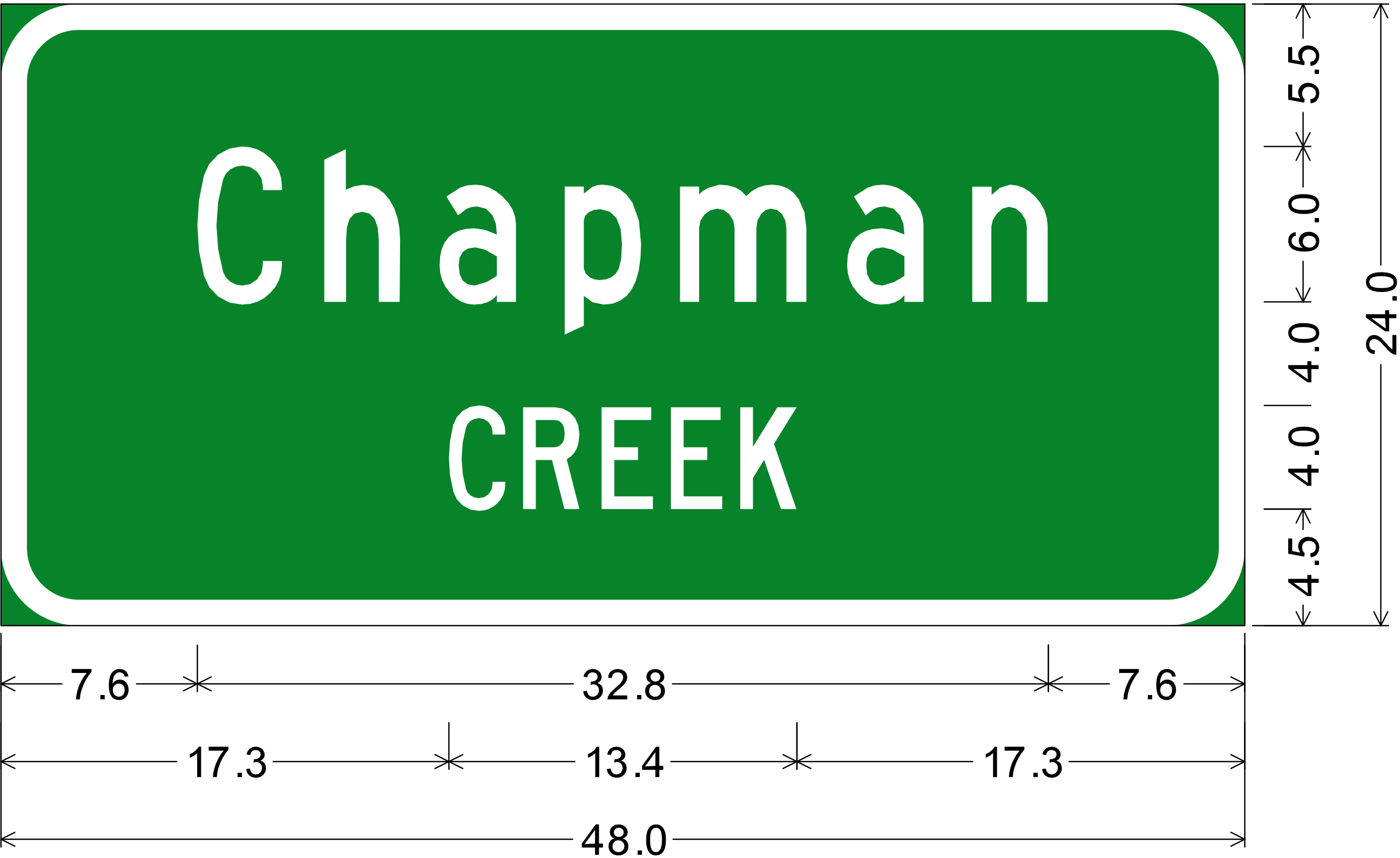


3 DIGITS

SIZE	A	B	C	D	E	F	G
24 X 24	24	24	6	12	$\frac{3}{4}$	$\frac{3}{4}$	$1 \frac{1}{2}$
30 X 24	24	30	6	12	1	$\frac{3}{4}$	$1 \frac{1}{2}$
36 X 36	36	36	9	18	$1 \frac{1}{8}$	$1 \frac{1}{8}$	$2 \frac{1}{4}$
45 X 36	36	45	9	18	$1 \frac{1}{2}$	$1 \frac{1}{8}$	$2 \frac{1}{4}$

All dimensions in inches.

01	10-01-19	Added 36" route shields.		D.D.G. E.W.N.
NO.	DATE	REVISIONS		BY APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
PROCESSED SIGN DETAILS KANSAS ROUTE MARKERS				
TE515			07-01-03	
FHWA APPROVAL		10-01-19	APP'D.	Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	B.A.H.	QUANTITIES
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.
				TRACED
				TRACE CK.



3.0" Radius, 1.0" Border, White on Green;
"Chapman", C; "CREEK", C;
Table of distances between letter and object lefts

	C	h	a	p	m	a	n	
7.6	4.9	4.4	4.9	4.4	6.5	4.8	2.9	7.6
	C	R	E	E	K			
17.3	2.8	3.1	2.7	2.6	2.2	17.3		

Plotted by : Jake.Comstock@ks.gov 11-DEC-2025 14:00
File : KA648401pss590-01.dgn

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 (Current version or any 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.

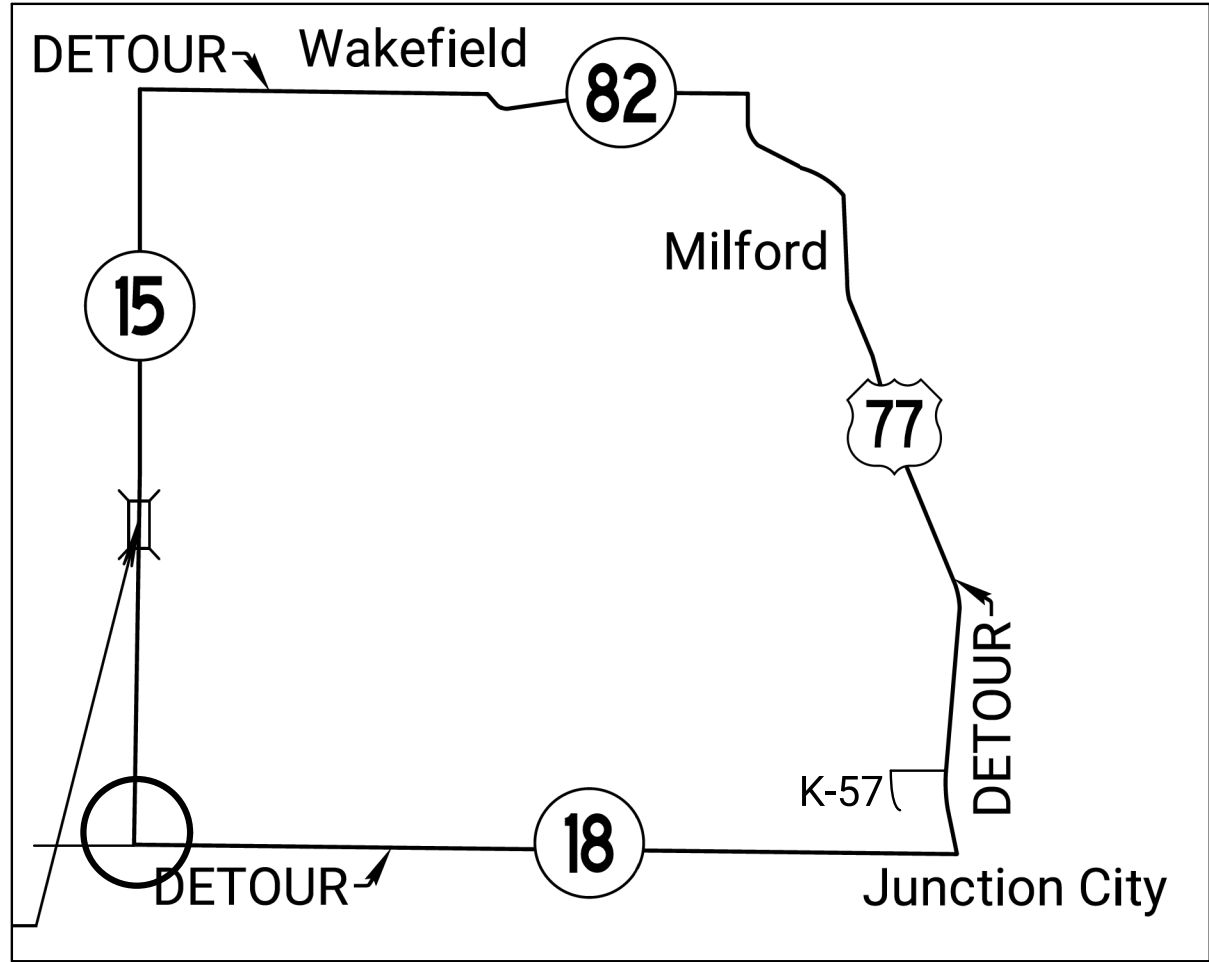
Letters and numbers on reinforced panel signs are modified Series "E" unless otherwise shown.

Spacing table dimensions are in inches.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	77	100

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.	
NO.	DATE	REVISIONS	BY	APPD	
KANSAS DEPARTMENT OF TRANSPORTATION					
DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS					
TE590			07-01-03		
FHWA APPROVAL		10-01-19	APPD.		Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	K.D.S.	QUANTITIES	TRACED
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.	QUAN.CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	78	100



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 conjunction 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.

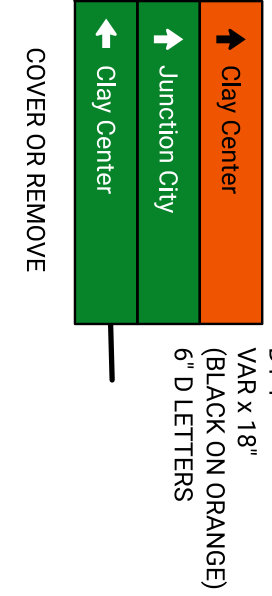
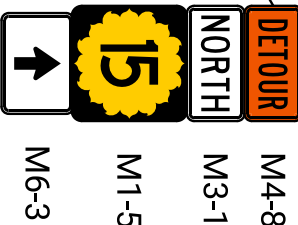
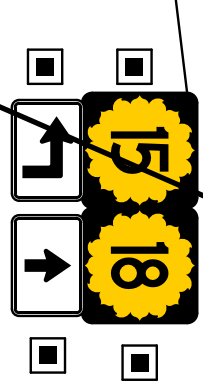
D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.



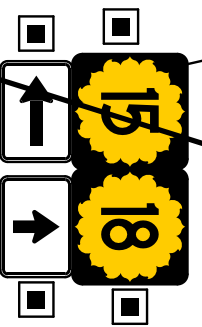
K-18/K15



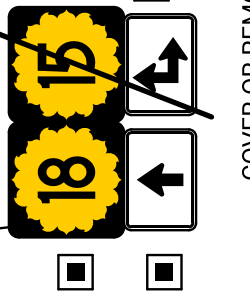
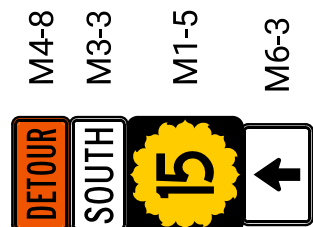
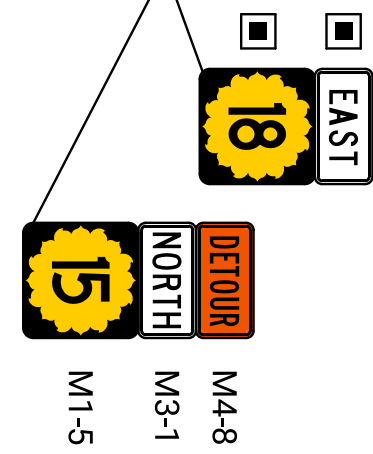
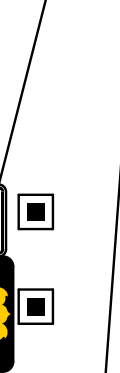
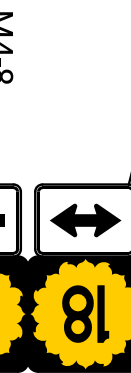
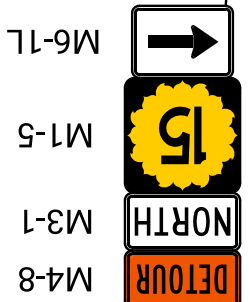
COVER OR REMOVE



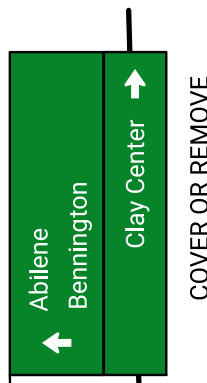
COVER OR REMOVE



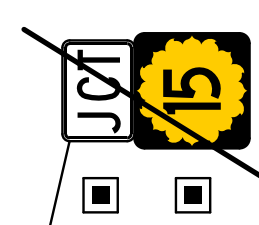
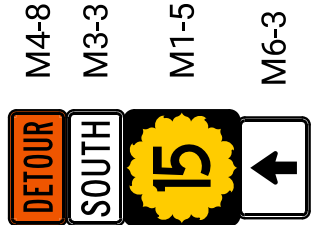
Side Road



COVER OR REMOVE



COVER OR REMOVE



COVER OR REMOVE

K-18 (K-15 Detour)

NOT TO SCALE

- Type "A" Low Intensity Warning Light
- Type III Barricades
- Existing

SHEET 1 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION			
K-15/K-18 Intersection (Detour K-15)			
APPD DESIGNED	Detailed	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 04-08-2025

Sh. No. 78

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	79	100

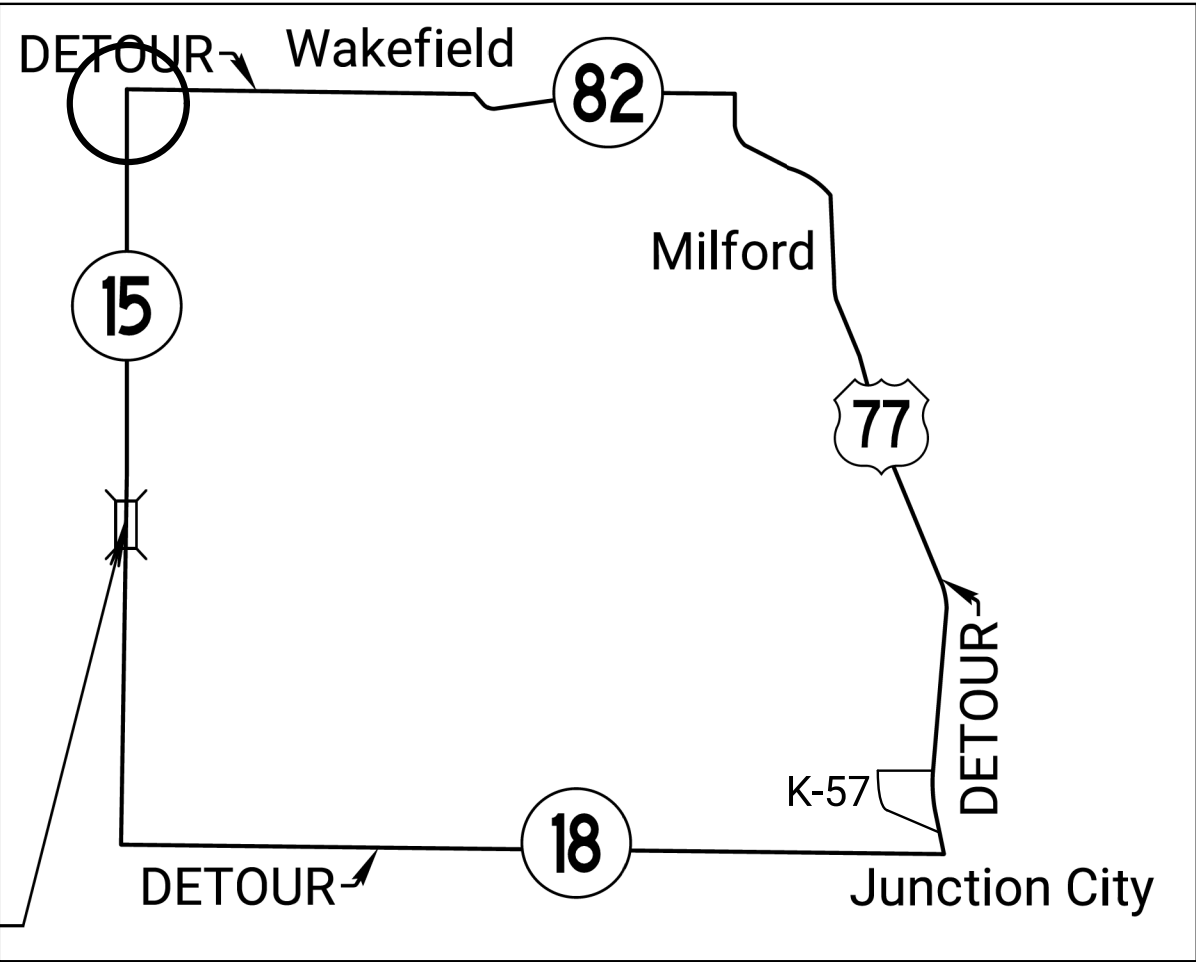
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

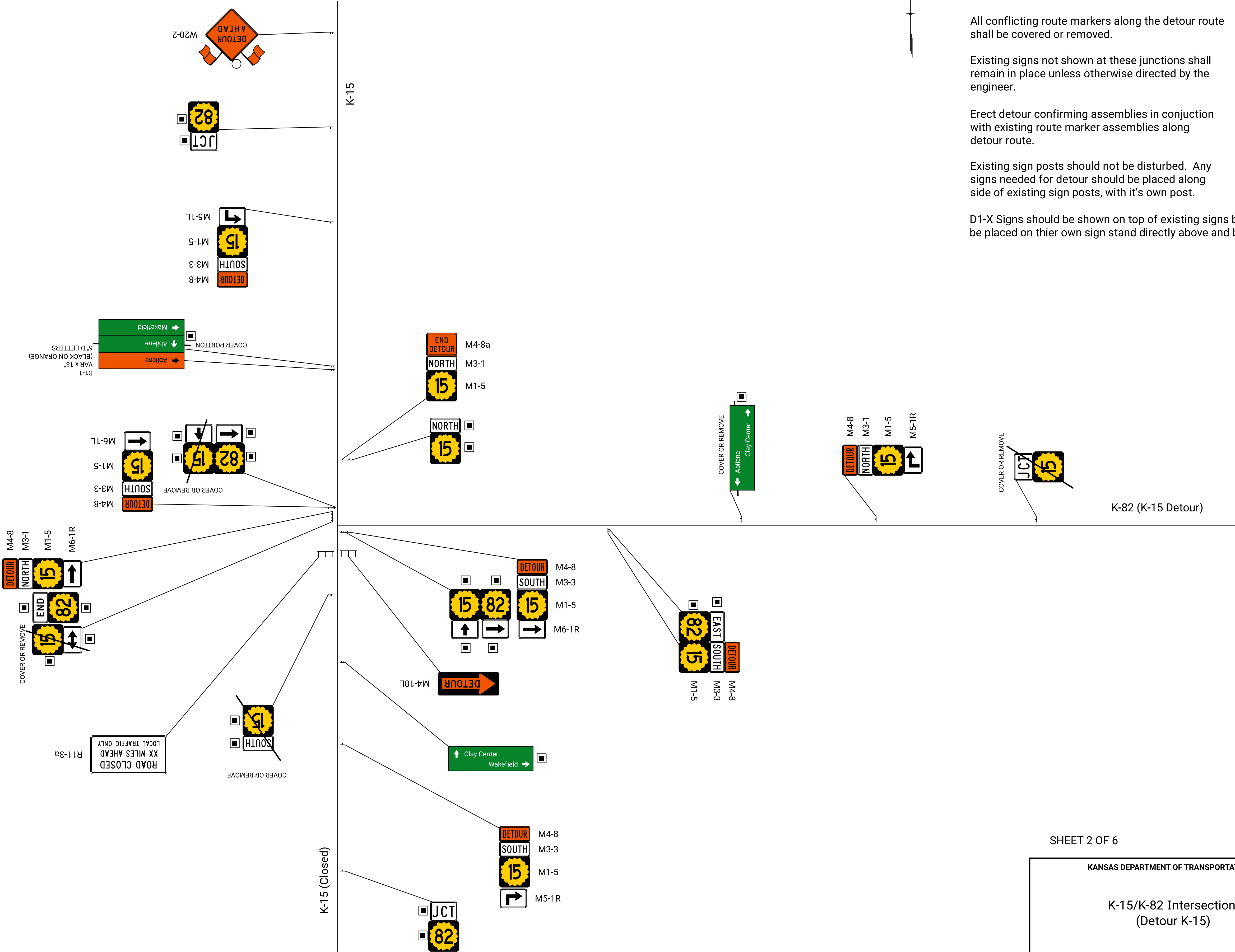
Erect detour confirming assemblies in conjunction with existing route marker assemblies along detour route.

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.



NOTE: Circle on map denotes location of detour.



SHEET 2 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION			
K-15/K-82 Intersection (Detour K-15)			
APPD DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 04-08-2025

Sh. No. 79

NOT TO SCALE

- Type "A" Low Intensity Warning Light
- Type III Barricades
- Existing

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	80	100

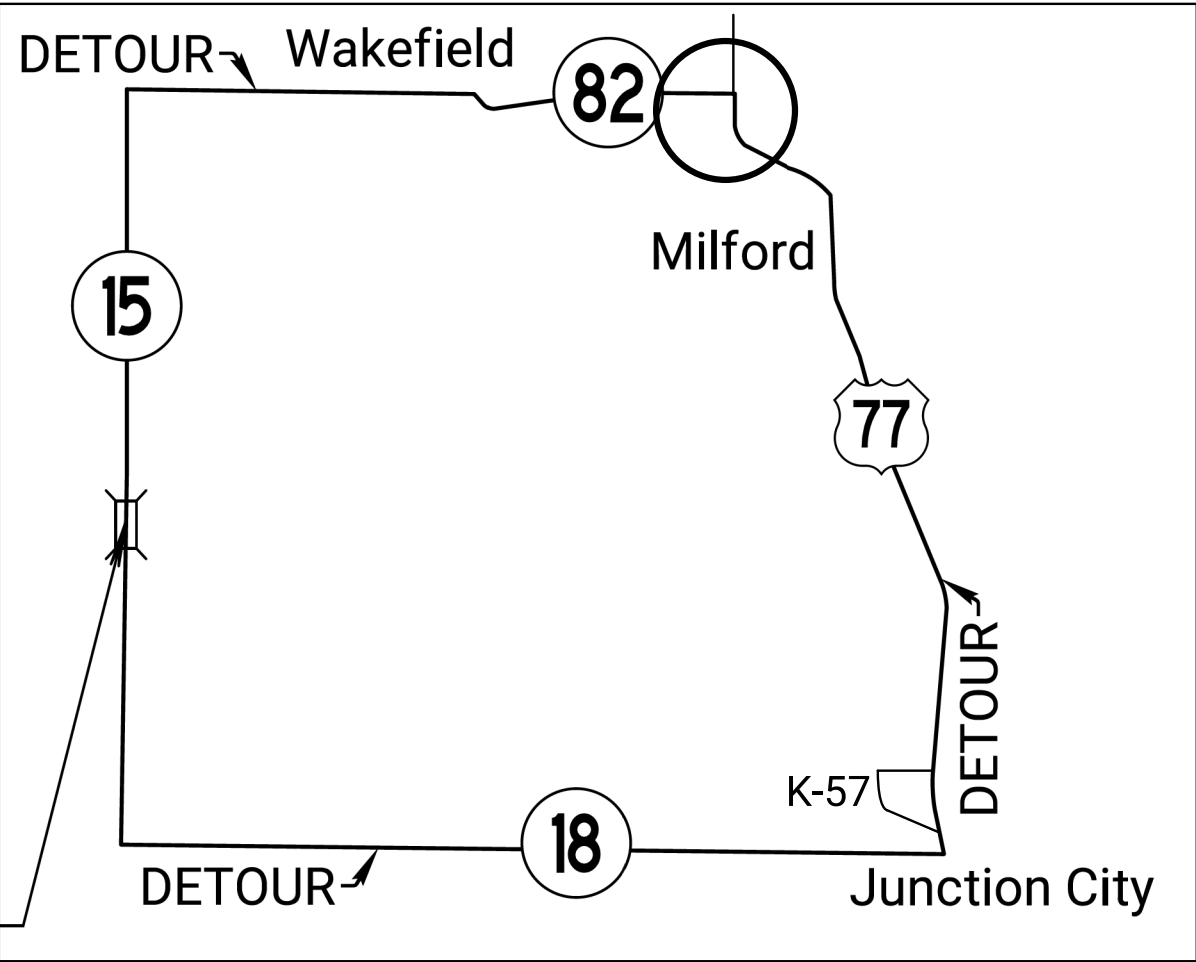
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

Erect detour confirming assemblies in conjunction with existing route marker assemblies along detour route.

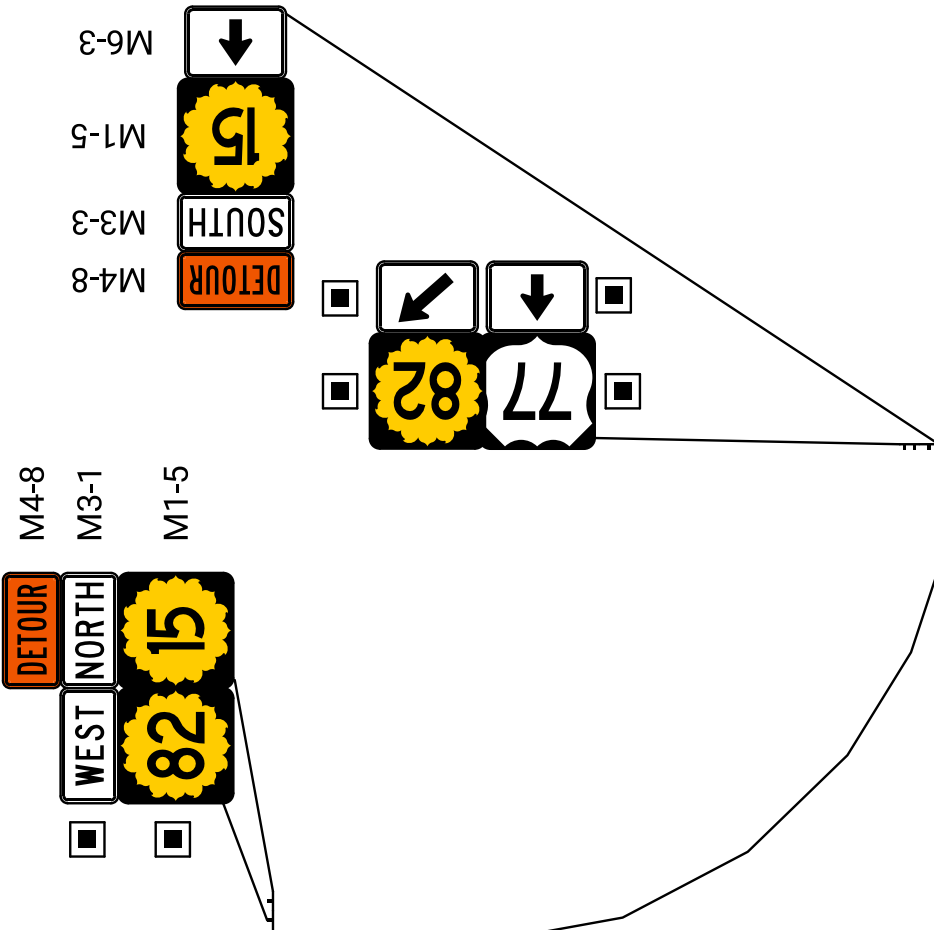
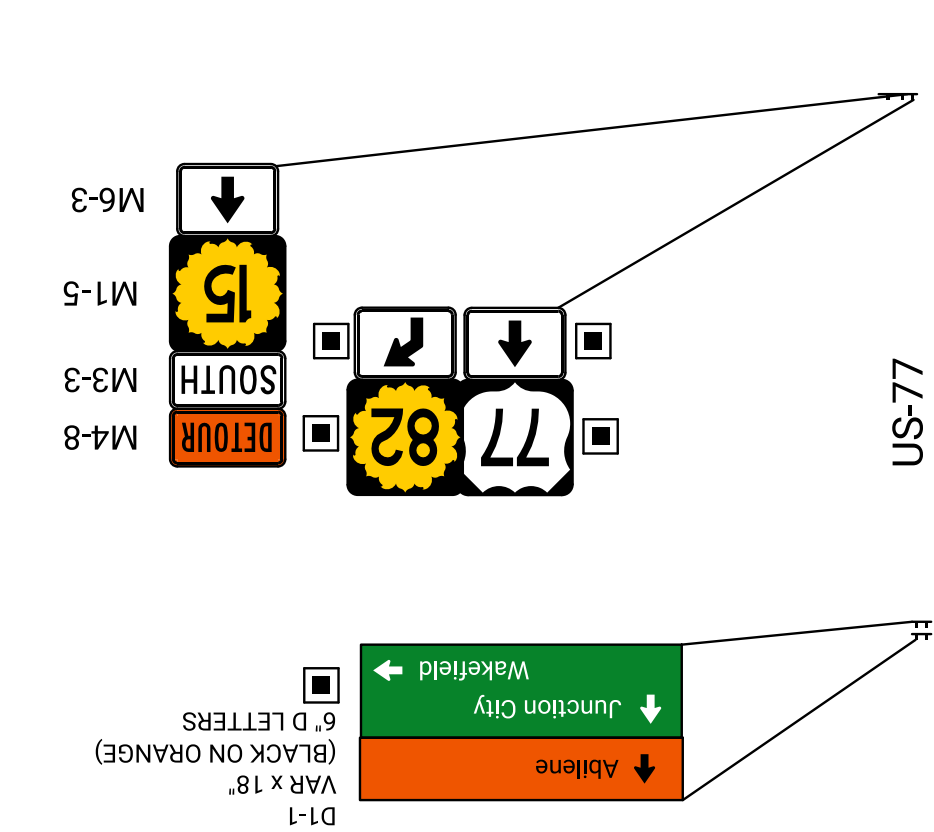
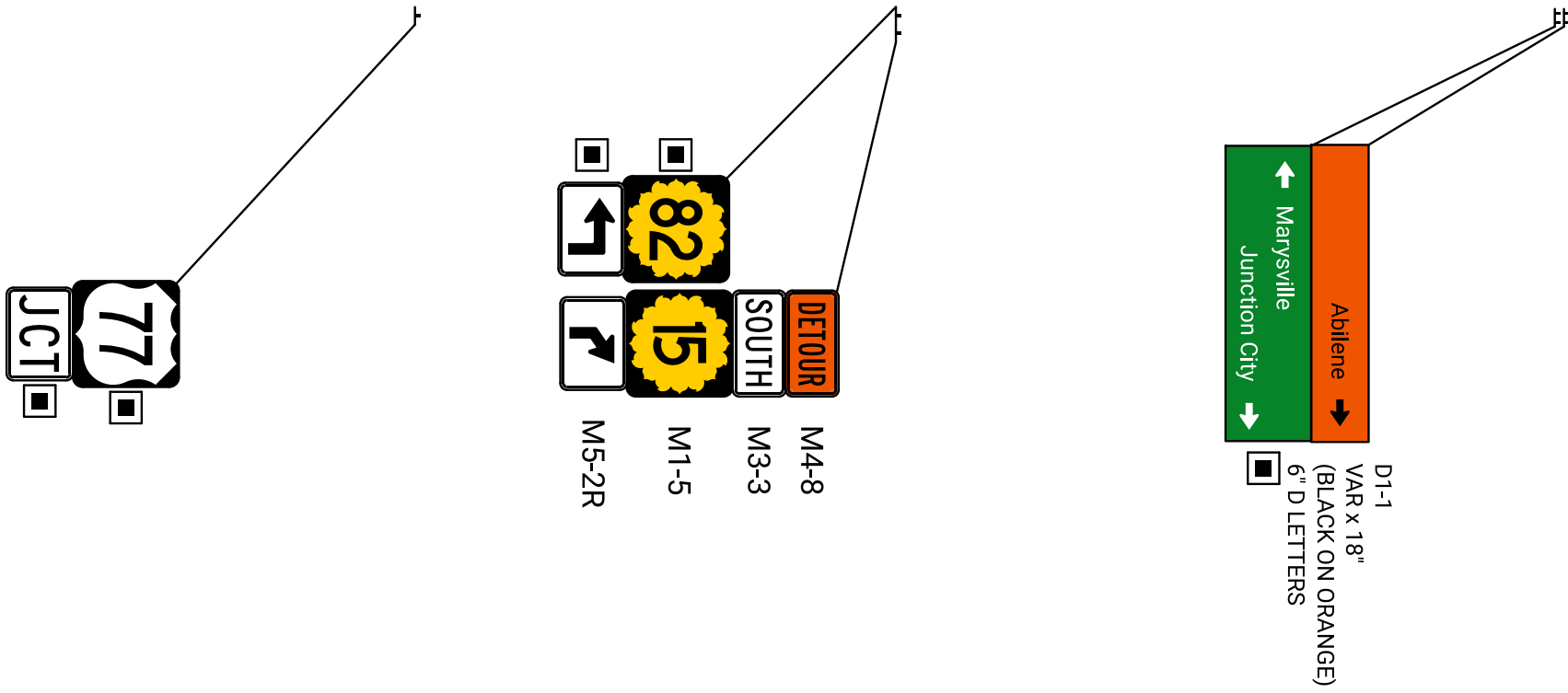
Existing sign posts should not be disturbed. Any signs needed for detour should be placed along side of existing sign posts, with it's own post.

D1-X Signs should be shown on top of existing signs but, be placed on thier own sign stand directly above and behind.

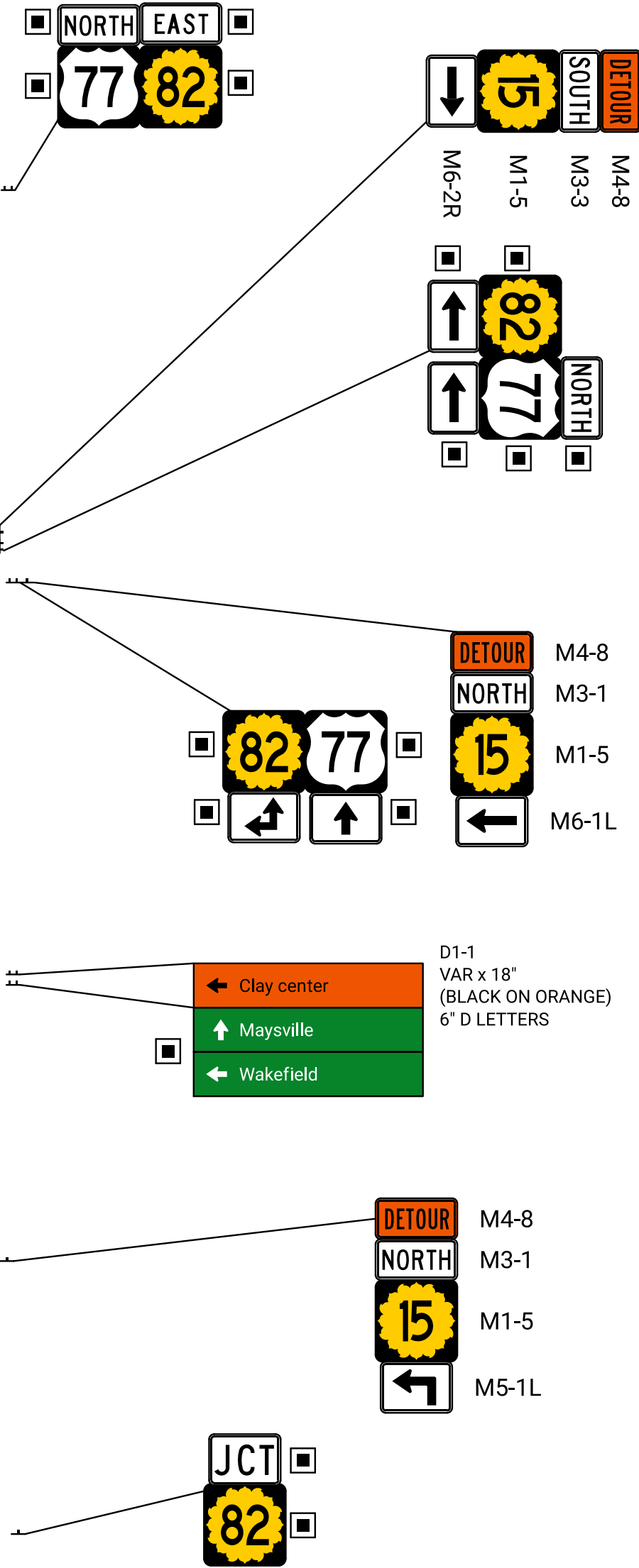


NOTE: Circle on map denotes location of detour.

K-82 (K-15 Detour)



US-77 (K-15 Detour)



NOT TO SCALE

- Type "A" Low Intensity Warning Light
- Type III Barricades
- Existing

SHEET 3 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

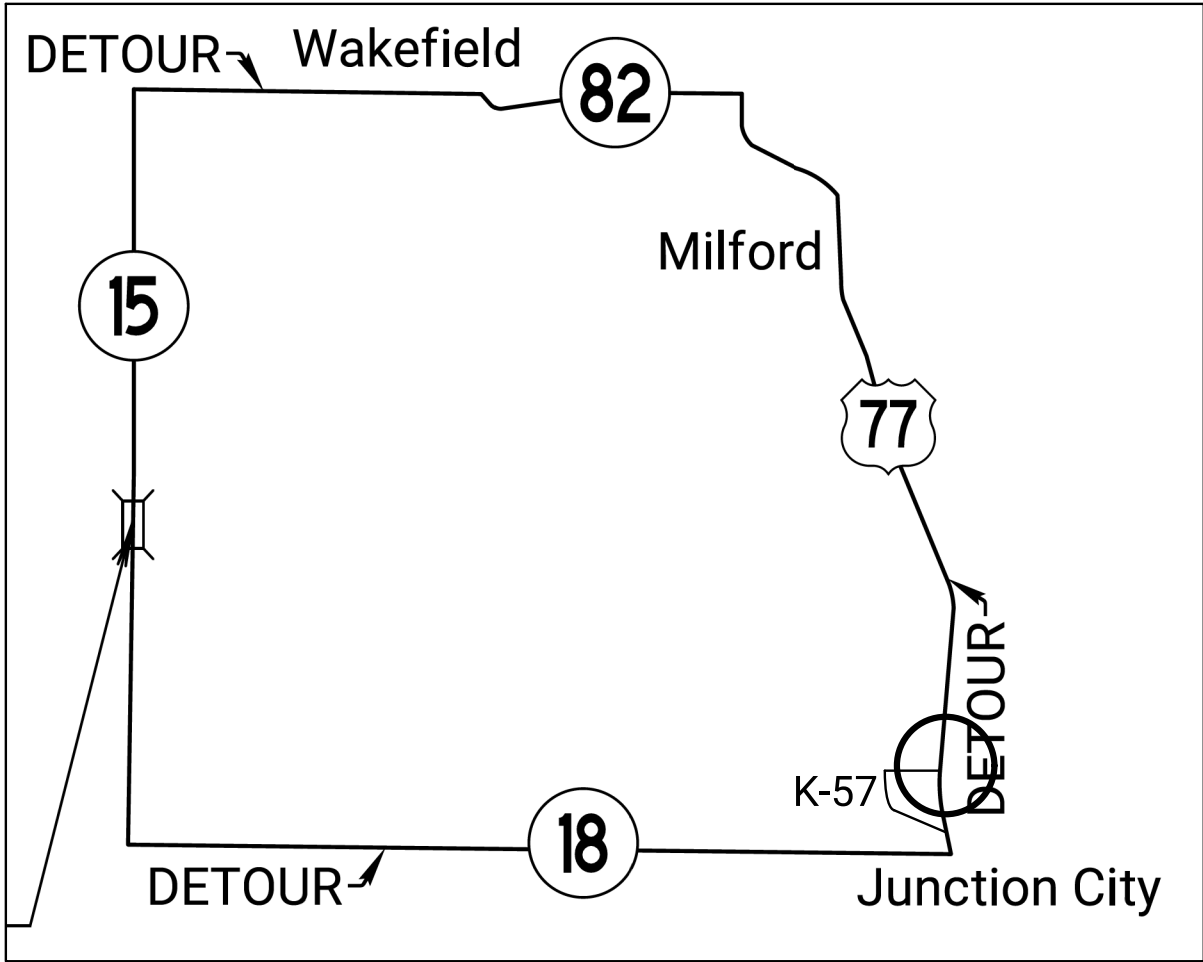
K-82/US-77 Intersection
(Detour K-15)

APPD DESIGNED	DESIGNED	DESIGNED CK.	DESIGNED CK.
------------------	----------	--------------	--------------

KDOT Graphics Certified 04-08-2025

Sh. No. 80

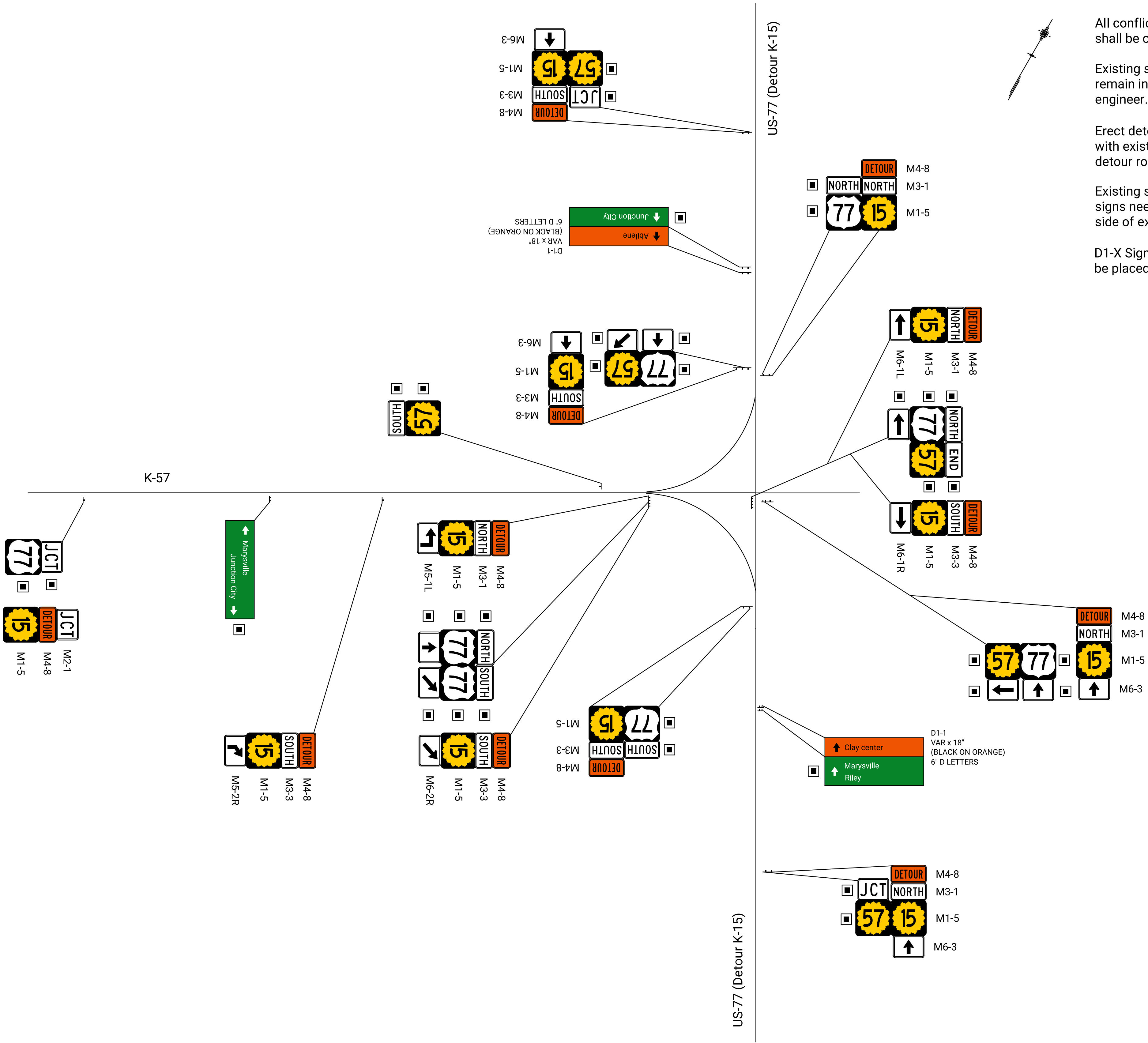
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	81	100



NOTE: Circle on map denotes location of detour.

NOT TO SCALE

- Type "A" Low Intensity Warning Light
- Type III Barricades
- Existing



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 conjunction 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.

SHEET 4 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION

K-57/US-77 North Intersection
(Detour K-15)

APPD DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.
------------------	----------	------------	------------

KDOT Graphics Certified 04-08-2025

Sh. No. 81

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	82	100

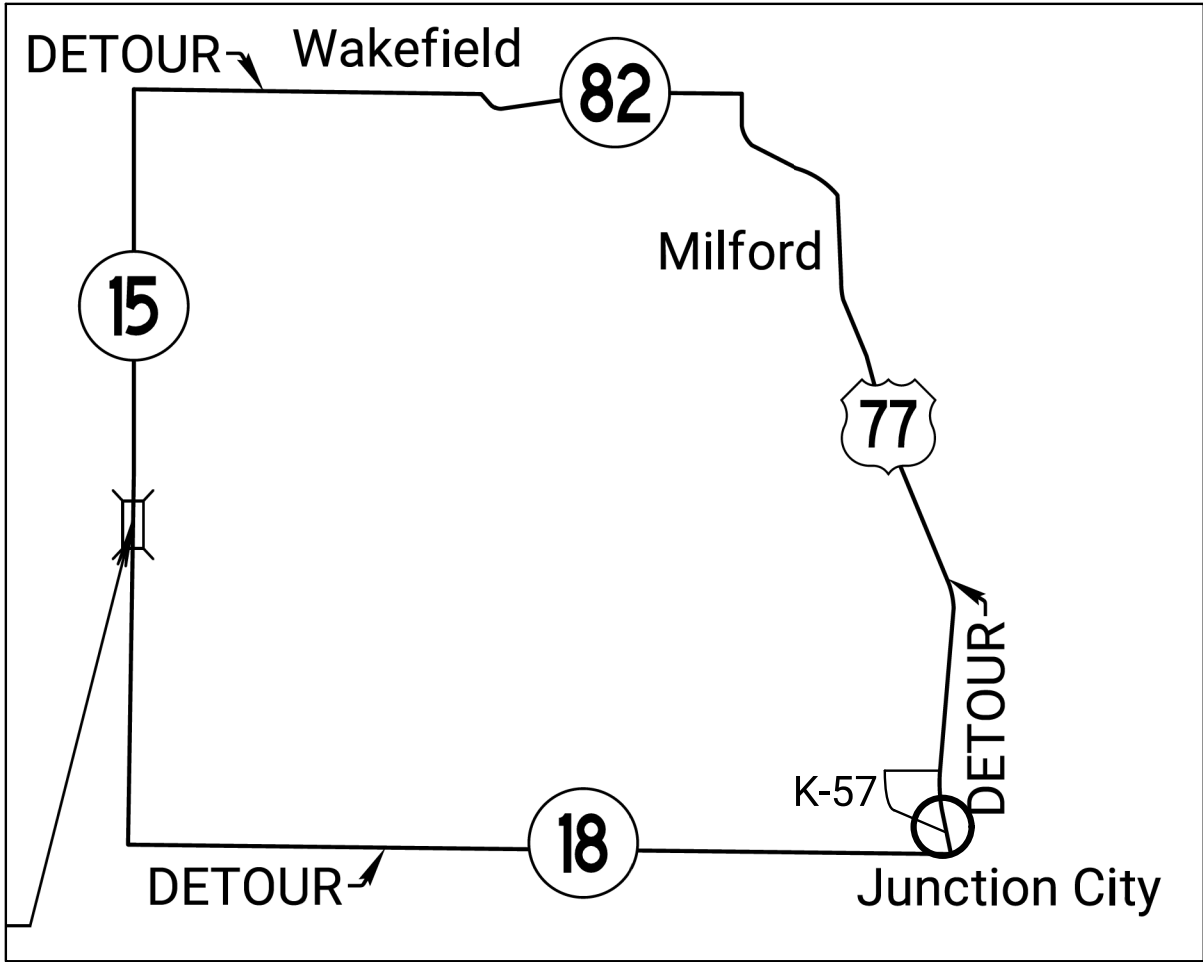
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

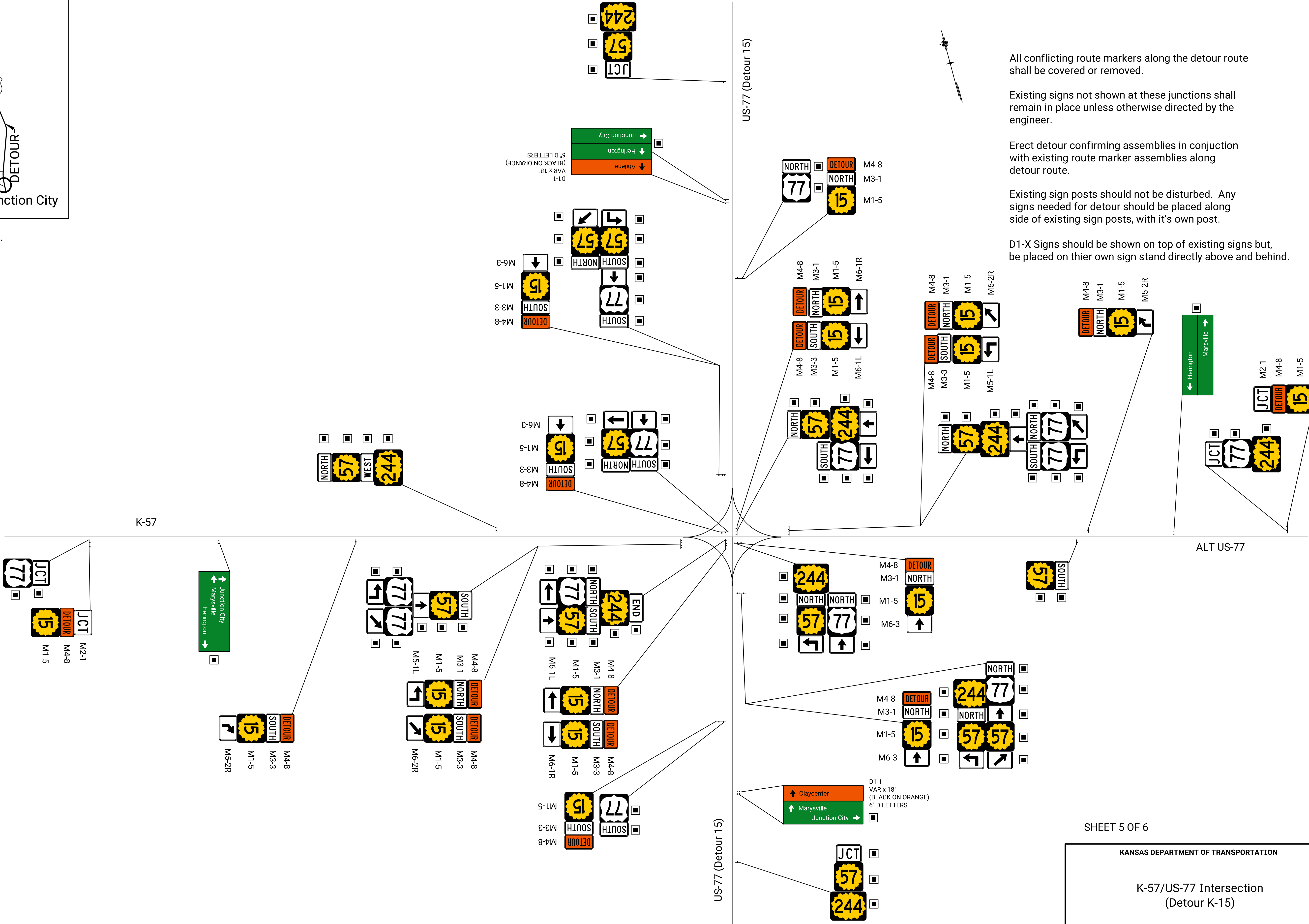
Erect detour confirming assemblies in conjunction with existing route marker assemblies along detour route.

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.



NOTE: Circle on map denotes location of detour.



SHEET 5 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION			
K-57/US-77 Intersection (Detour K-15)			
APPD DESIGNED	DESIGNED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 03-26-2025

Sh. No. 82

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	83	100

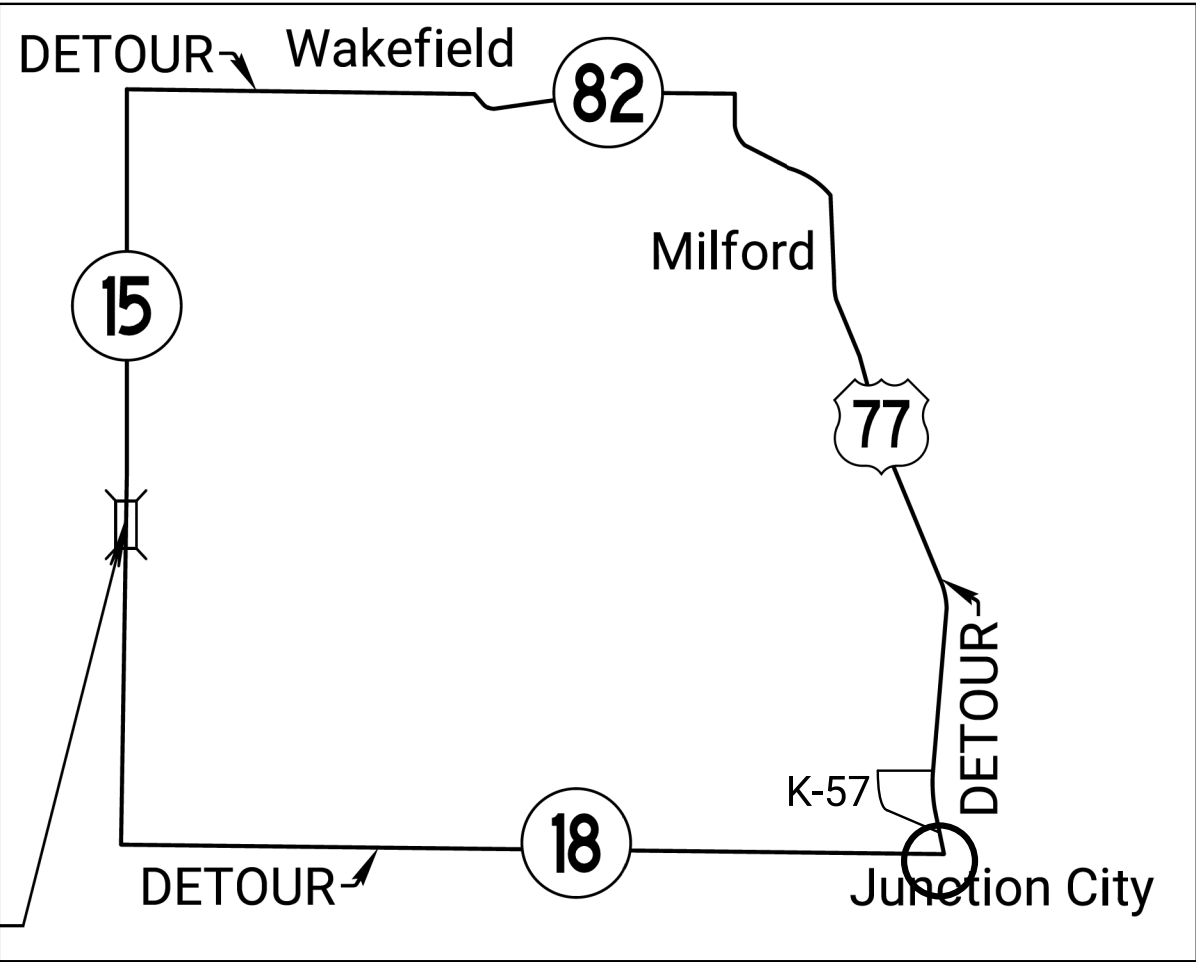
All conflicting route markers along the detour route shall be covered or removed.

Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.

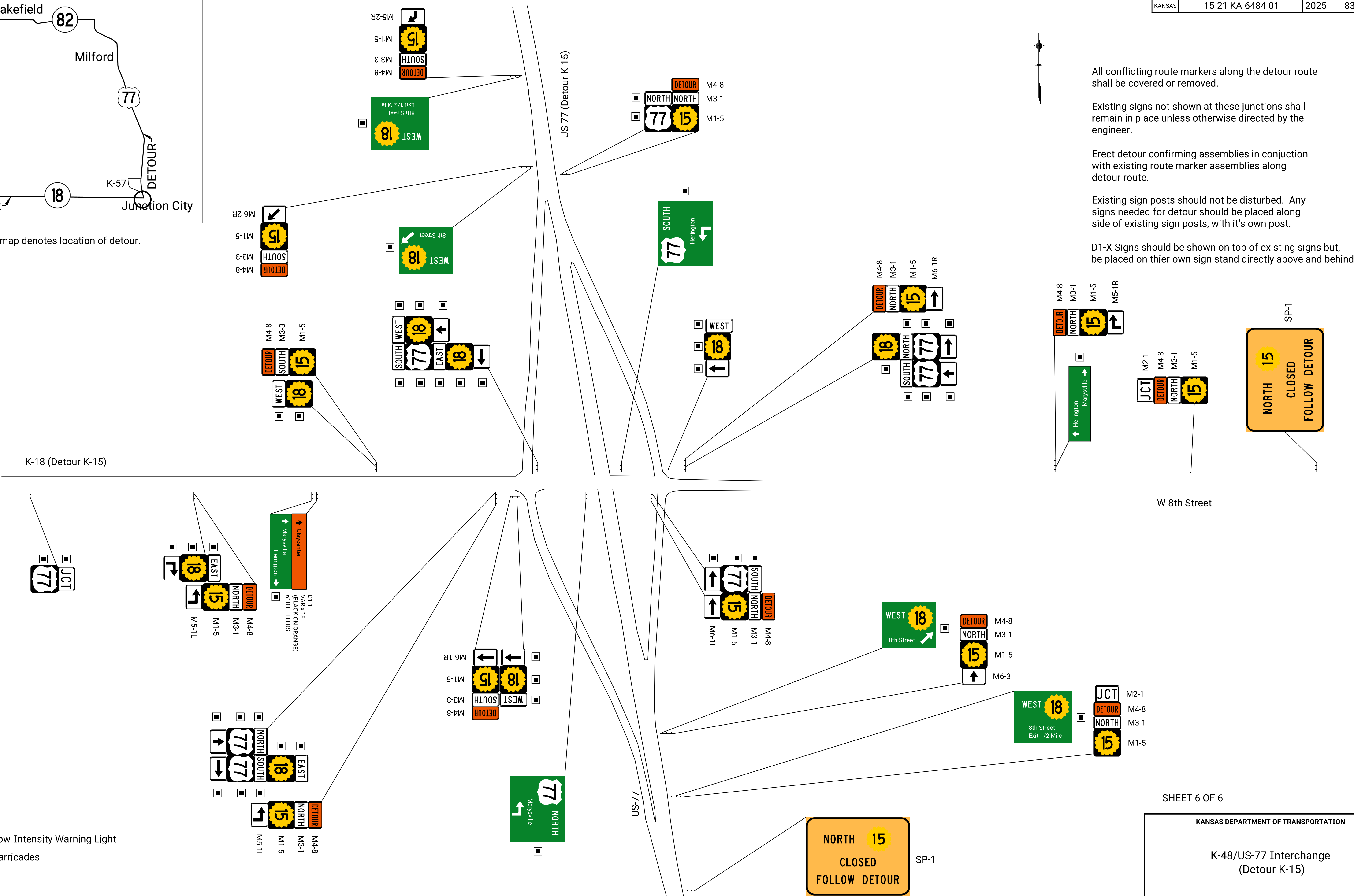
Erect detour confirming assemblies in conjunction with existing route marker assemblies along detour route.

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.



NOTE: Circle on map denotes location of detour.



SHEET 6 OF 6

KANSAS DEPARTMENT OF TRANSPORTATION			
K-48/US-77 Interchange (Detour K-15)			
APPD DESIGNED	DETAILED	DESIGN CK.	DETAIL CK.

KDOT Graphics Certified 04-08-2025

Sh. No. 83

NOT TO SCALE

- Type "A" Low Intensity Warning Light
- Type III Barricades
- Existing

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	84	100

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 (centerline, edge line and lane line) or as directed by the engineer. A lane width less than 10' should be closed according to the currently adopted MUTCD. Lane widths that fall between 11' and 10' should include restricted roadway signing (W5-1, W5-2, W5-4)

3) TTC plans should include bicyclists and pedestrians, including those with disabilities, and should be provided with acceses and passage through the TTC zone.

3a) Adequate warning, delineation, and channelization should be provided to assist in guiding road users in advance of and through the TTC zone with information in a usable format for pedestrians with vision disabilities. Provisions for effective continuity of accessible circulation paths for pedestrians should be incorporated into the TTC plan.

3b) When existing pedestrian facilities including transit are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. A pedestrian channelizing device that is detectable by a person with a vision disability traveling with the aid of a long cane shall be placed across the full width of the closed pedestrian facility. Pedestrian and bicycles are not allowed on Interstate.

3c) SIDEWALK CLOSED CROSS HERE signs shall include audible information devices to provide adequate communication to pedestrians with vision disabilities.

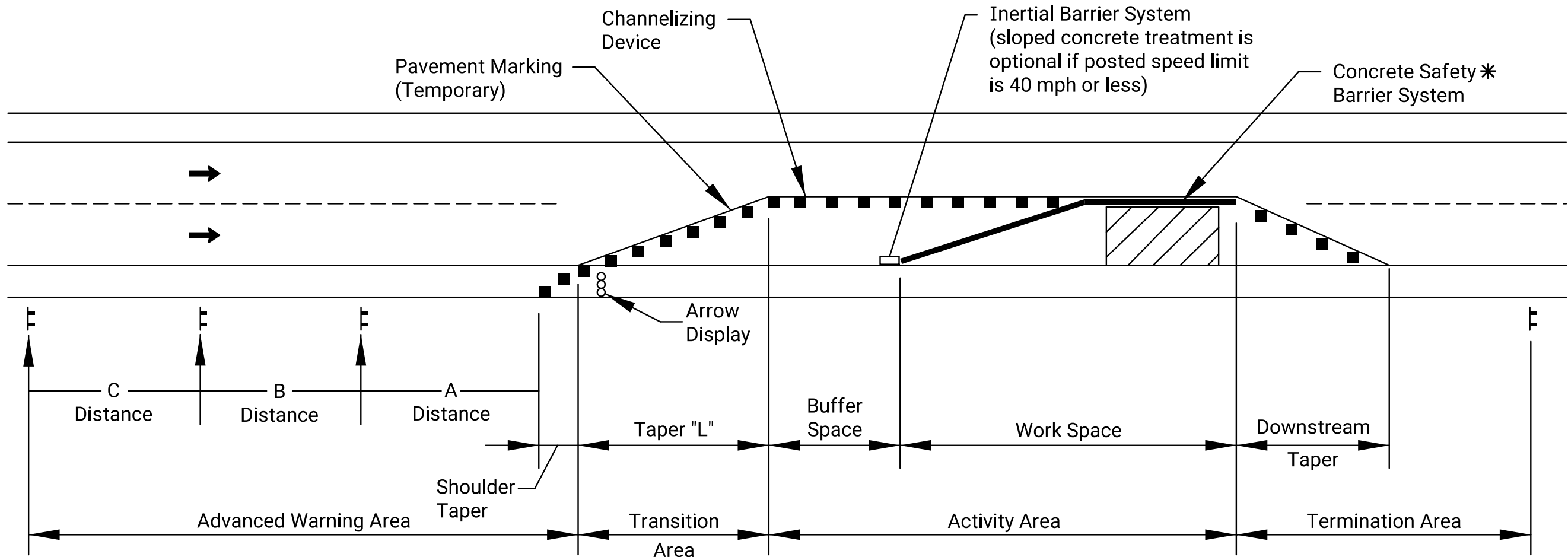
4) When the driving surface open to traffic is milled, or is a temporary surface made of loose material, or when directed by the engineer, a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed a "C" distance after the W20-1 (Road Work 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.

5) Alternative temporary rumble strip options may be available. Please contact the Temporary Traffic Control Unit for more information at 785-296-3618

6) When detour routes impact railroad grade crossings, verify that there is no potential to cause queing , if so, install "DO NOT STOP ON TRACKS" (R8-8).

7) When Temporary Traffic Control plans impact a railroad grade crossing, a temporary traffic signal will need to be approved by KDOT Traffic engineering and the affected railroad company.

8) Temporary traffic control signs shall not restrict the motorist visiblity to railroad devices.



TYPICAL WORK ZONE COMPONENTS

Taper Length (L)

** Posted speed prior to work starting

Speed** (MPH)	Width of Offset (ft)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
20	7	13	20	27	33	40	47	53	60	67	73	80	87
25	10	21	31	42	52	63	73	83	94	104	115	125	135
30	15	30	45	60	75	90	105	120	135	150	165	180	195
35	20	41	61	82	102	123	143	163	184	204	225	245	265
40	27	53	80	107	133	160	187	213	240	267	293	320	347
45	45	90	135	180	225	270	315	360	405	450	495	540	585
50	50	100	150	200	250	300	350	400	450	500	550	600	650
55	55	110	165	220	275	330	385	440	495	550	605	660	715
60	60	120	180	240	300	360	420	480	540	600	660	720	780
65	65	130	195	260	325	390	455	520	585	650	715	780	845
70	70	140	210	280	350	420	490	560	630	700	770	840	910
75	75	150	225	300	375	450	525	600	675	750	825	900	975

Advance Warning Sign Spacing

** Posted speed prior to work starting

SPEED (MPH)**	A	B	C
URBAN (40MPH 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

Minimum advance wannring sign spacing (in feet)

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.

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

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 = Numerical value of posted speed prior to work starting in MPH
 W = Width in offset feet

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

A distance of at least 2L should seperate merging and shifting tapers

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 Spacing

** Posted speed prior to work starting

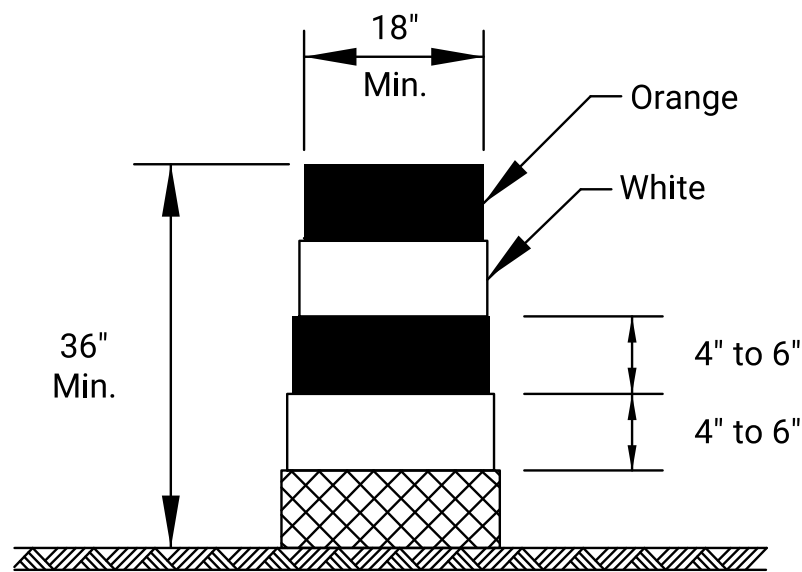
SPEED (MPH) **	20	25	30	35	40	45	50	55	60	65	70	75
LENGTH (ft)	115	155	200	250	305	360	425	495	570	645	730	820

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.

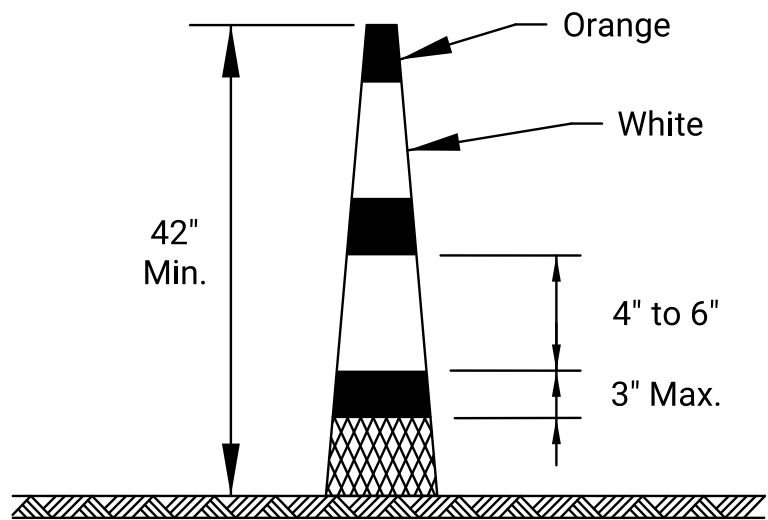
If temporary concrete safety barrier system is used to separate approaching traffic from the work space, the barrier system shall be considered part of the activity area. A full lane width should be available throughout the length of the buffer space. See typical work zone components above.

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.	
NO.	DATE	REVISIONS	BY	APPD	
KANSAS DEPARTMENT OF TRANSPORTATION					
TRAFFIC CONTROL GENERAL NOTES					
TE700					
FHWA APPROVAL		03-13-18	APPD.	Eric Kocher	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN.CK.	TRACE CK.

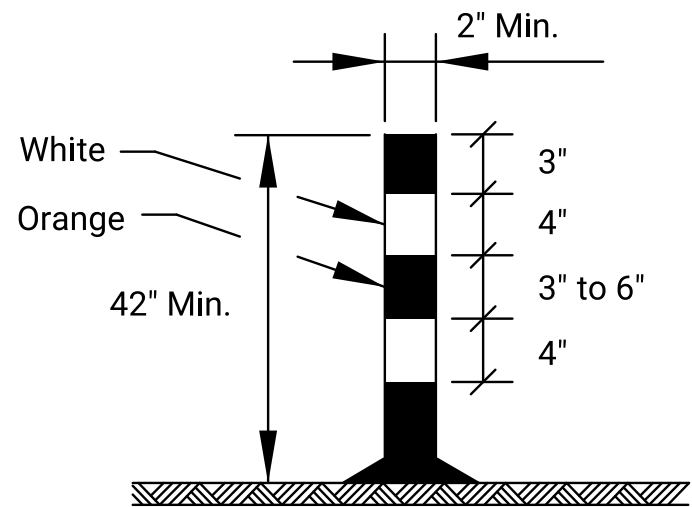
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	85	100



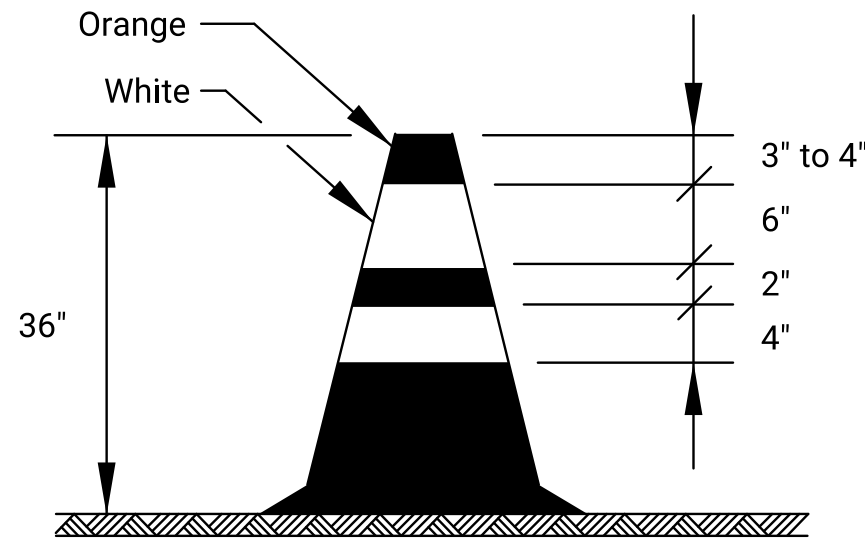
DRUM



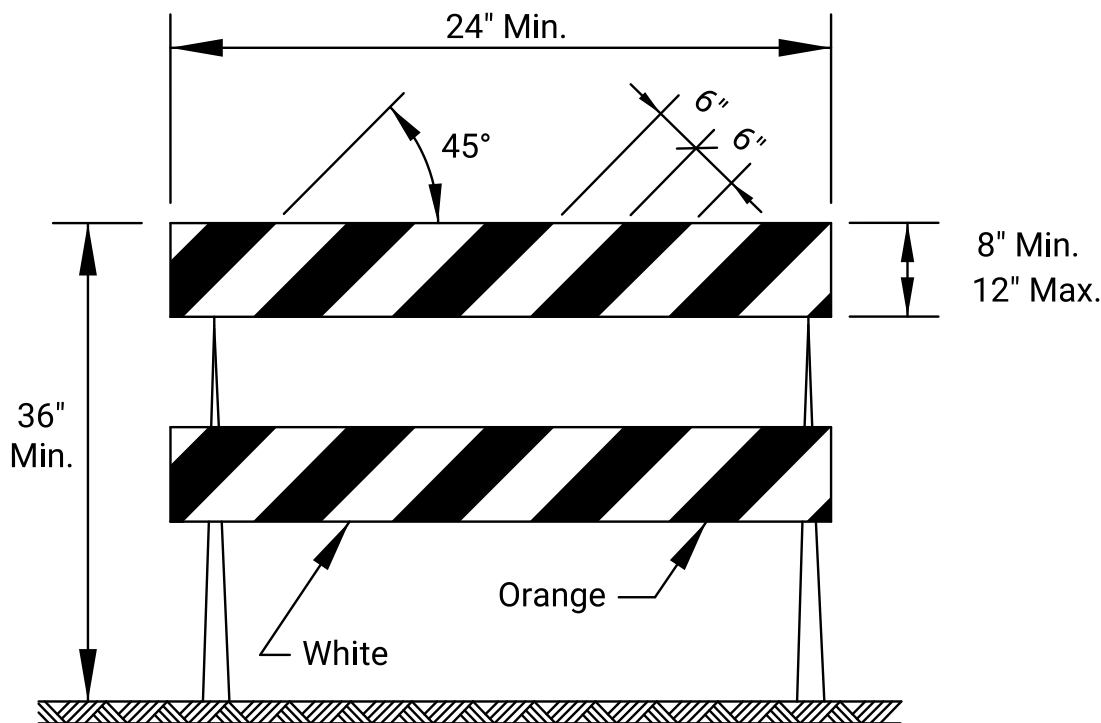
CONICAL
DELINEATOR



TUBULAR MARKER

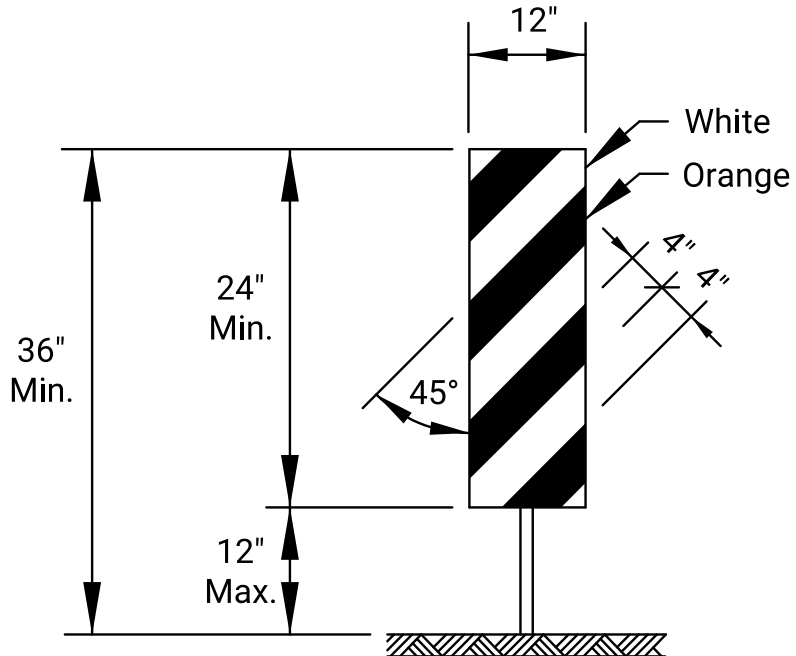


TRAFFIC CONE



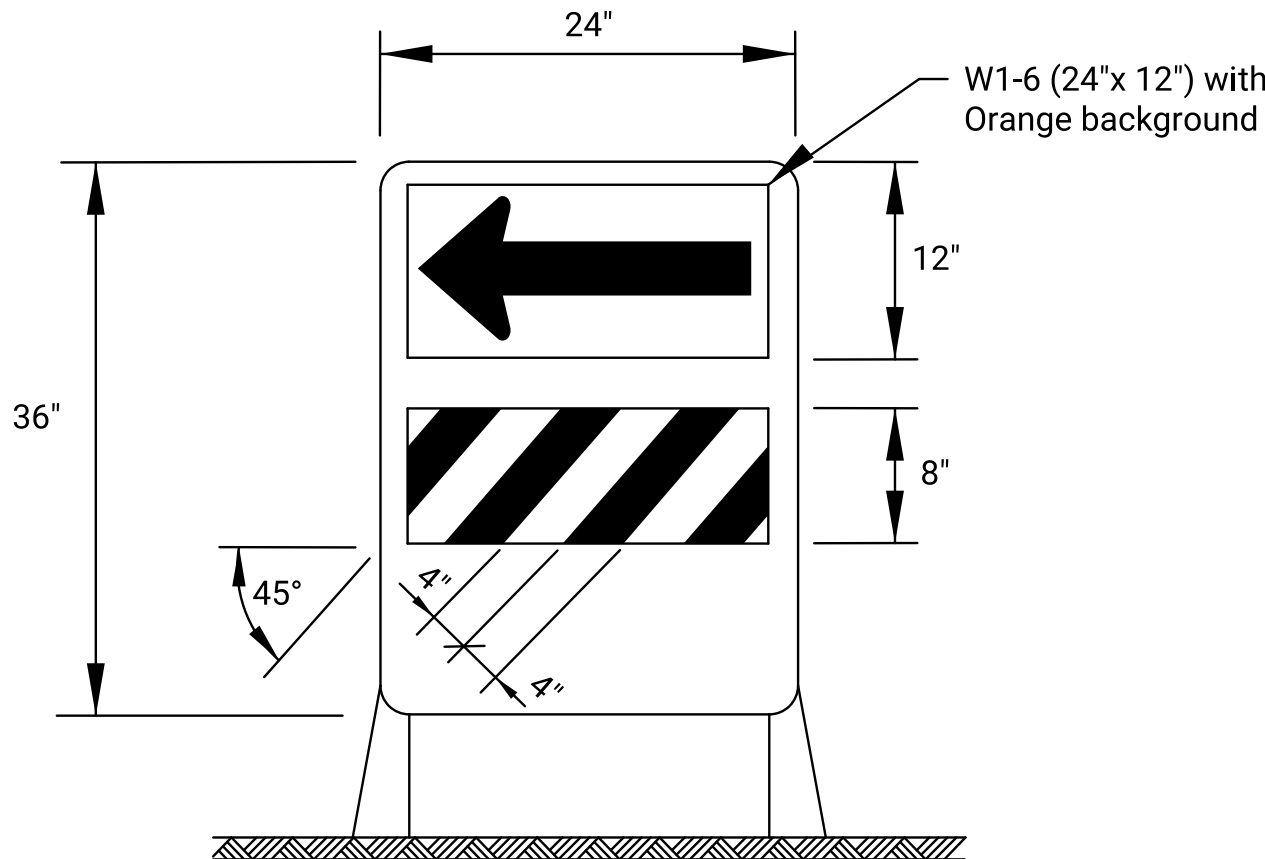
TYPE 2 BARRICADE

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



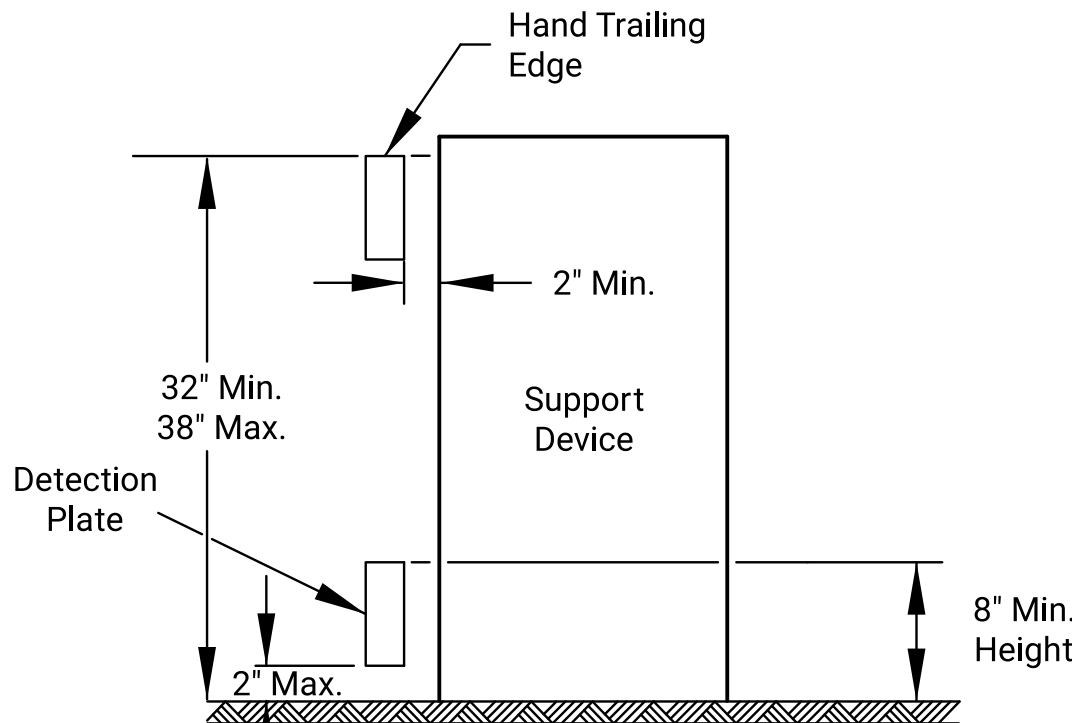
VERTICAL PANEL

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.

Location		Cross-overs	Shoofly Divisions	Tangents	Tapers	Ramps	Head to Head	Object Identifier	Lead-in Devices	Gores
Item										
Portable	Drums	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Conical Delineators	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Vertical Panels	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Direction Indicator Barricade	No	No	No	Yes	No	No	No	No	No
	Type 2 Barricade	Yes	Yes	Yes	Yes	No	No	Yes	No	No
	Traffic Cones	No	No	(3)	(3)	(3)	No	(3)	(3)	(3)
Fixed										
	Tubular Markers	(2)	(2)	(2)	No	(2)	Yes	No	Yes	Yes
	Vertical Panels	(2)	(2)	(2)	(2)	(2)	(2)	Yes	(2)	Yes

- (1) Not allowed on centerline delineation along freeways or expressways.
- (2) May be used upon the approval of the engineer.
- (3) Daytime operations only.

NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL CHANNELIZING DEVICES				
TE702				
FHWA APPROVAL 06-01-15 APPD. Kristina Ericksen				
DESIGNED	L.E.R.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	86	100

Note: Signs shown for one approach to work zone.

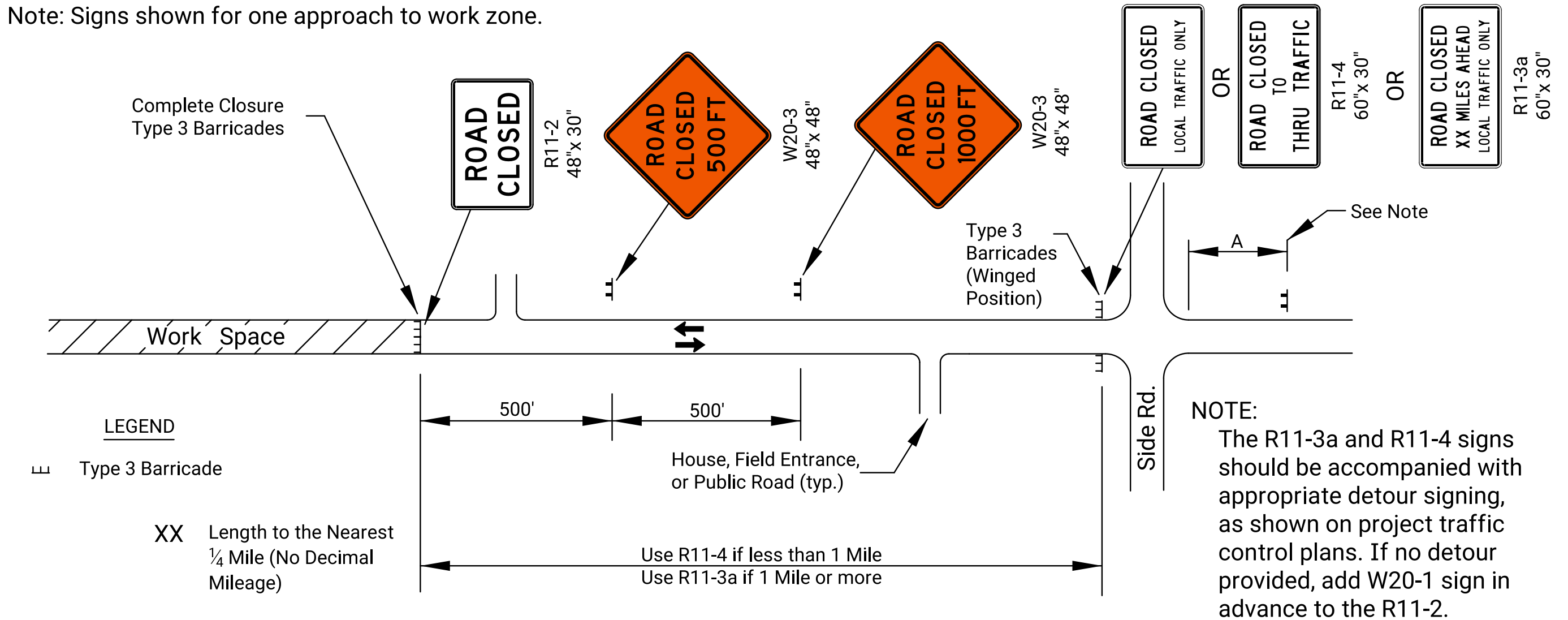


FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE (MAINLINE OR SIDE ROAD)

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

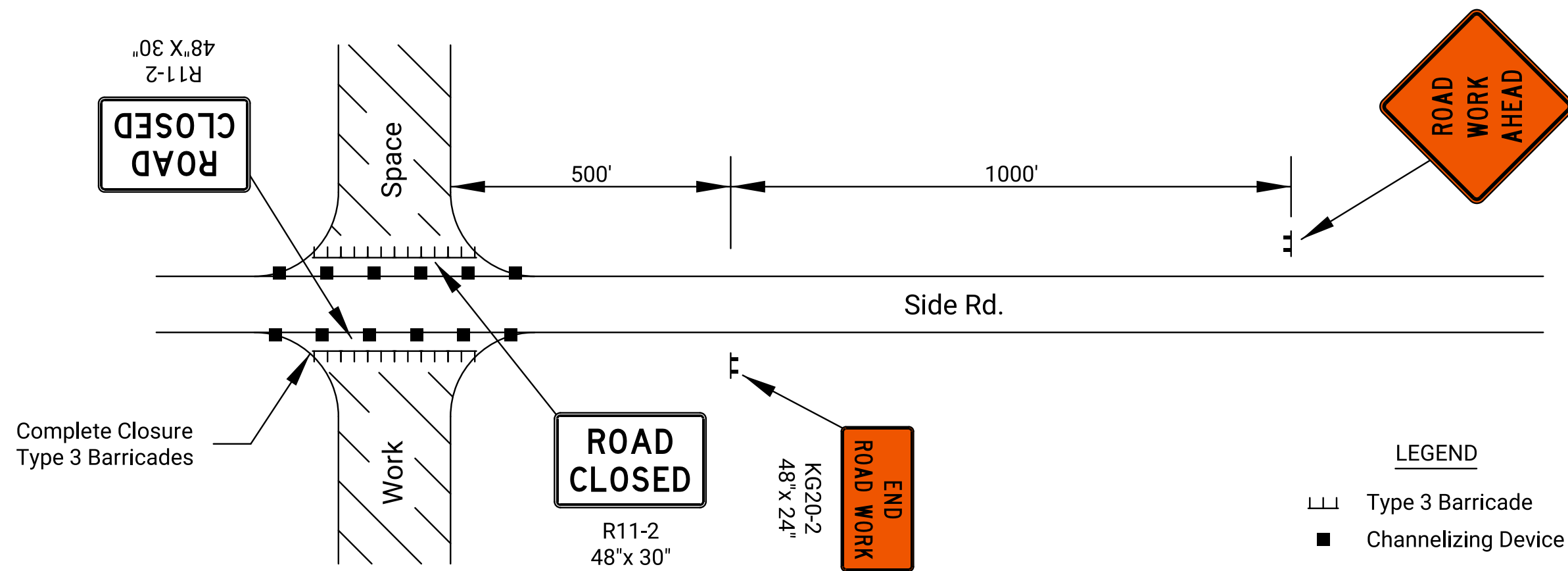


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

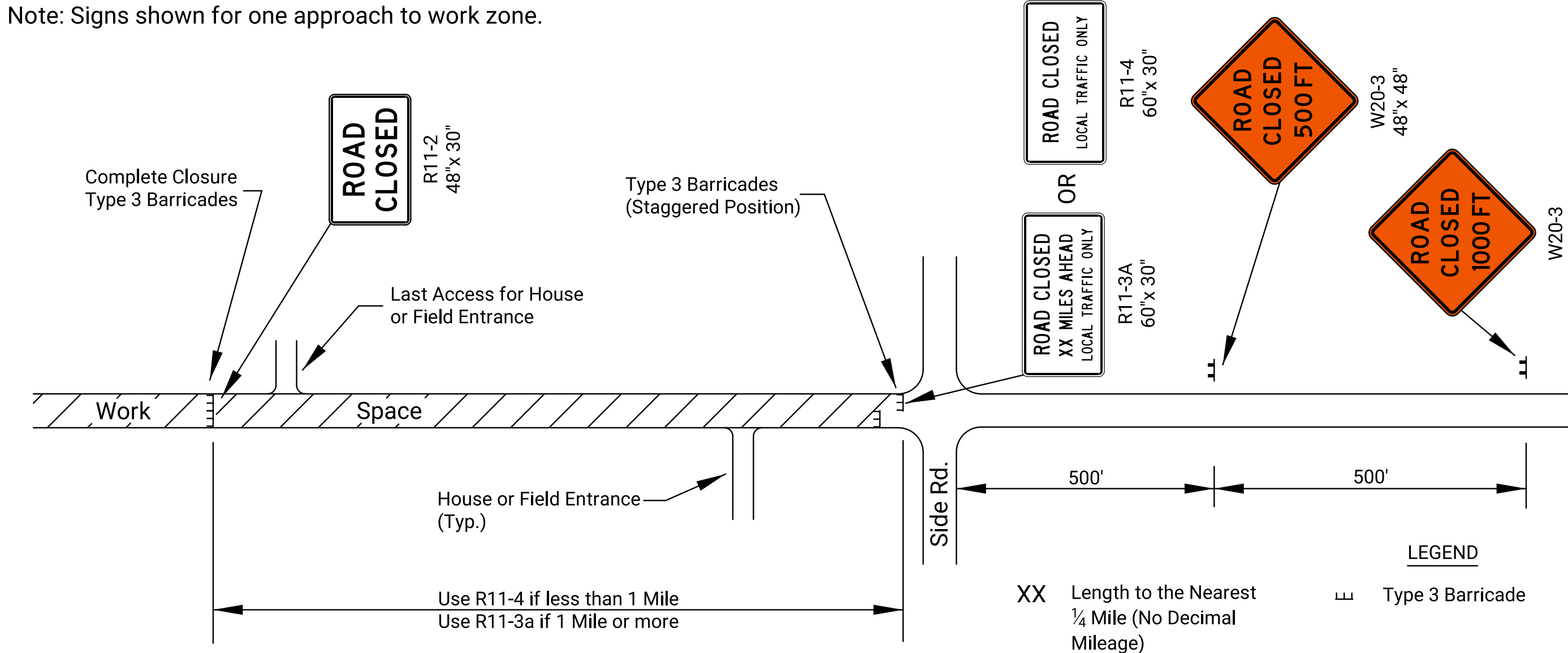


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

ROAD CLOSED GENERAL NOTES

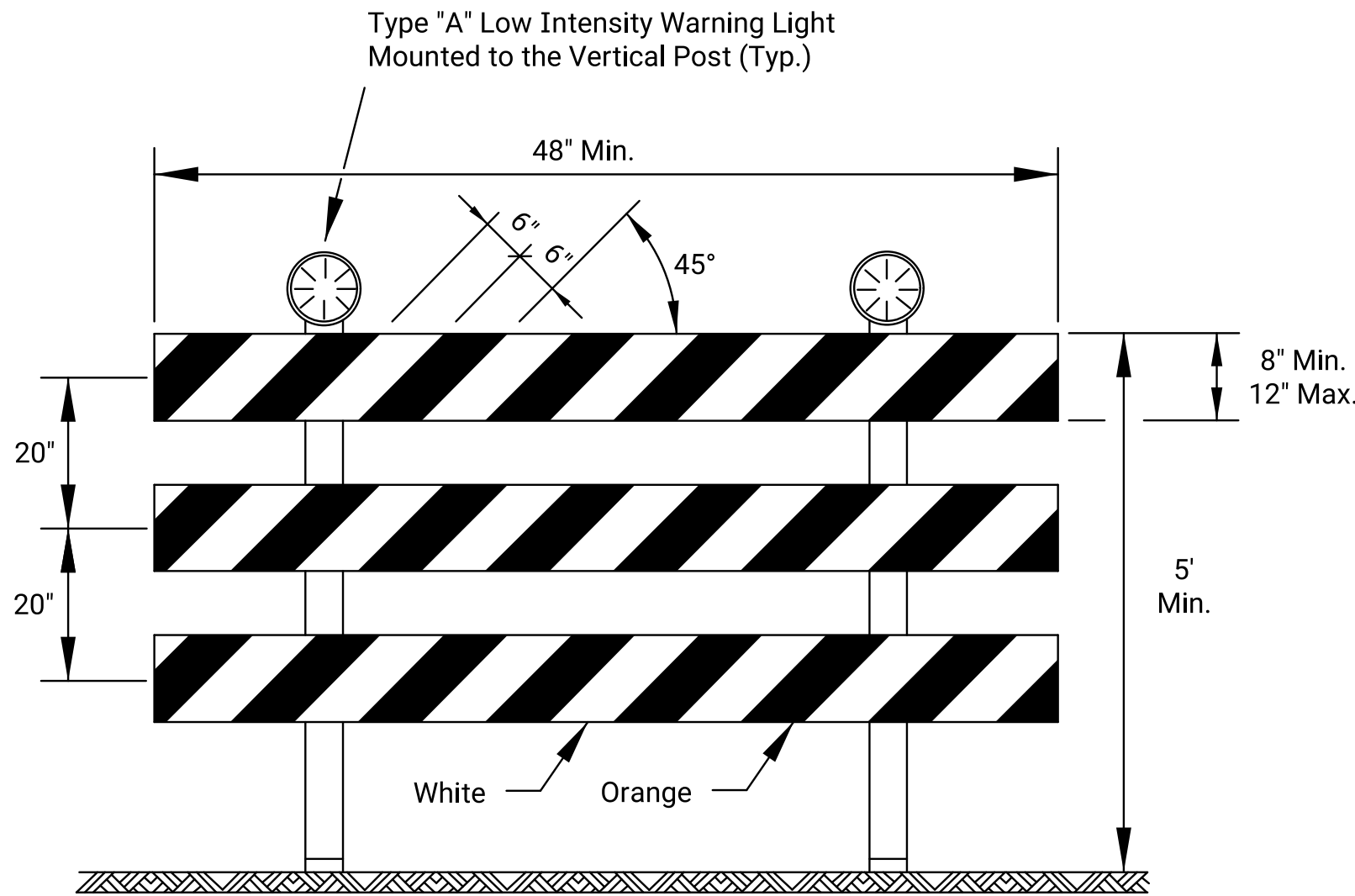
As shown in Figure 1, at the point where thru traffic must detour and local traffic can proceed to the location where the roadway is completely closed, the R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) or R11-4 (ROAD CLOSED LOCAL TRAFFIC ONLY or ROAD CLOSED TO THRU TRAFFIC) sign shall be used 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.



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.

NO.	DATE	REVISIONS	BY	APPD	
KANSAS DEPARTMENT OF TRANSPORTATION					
TRAFFIC CONTROL CLOSURES					
TE704					
FHWA APPROVAL		06-01-15	APPD.	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.			TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	87	100

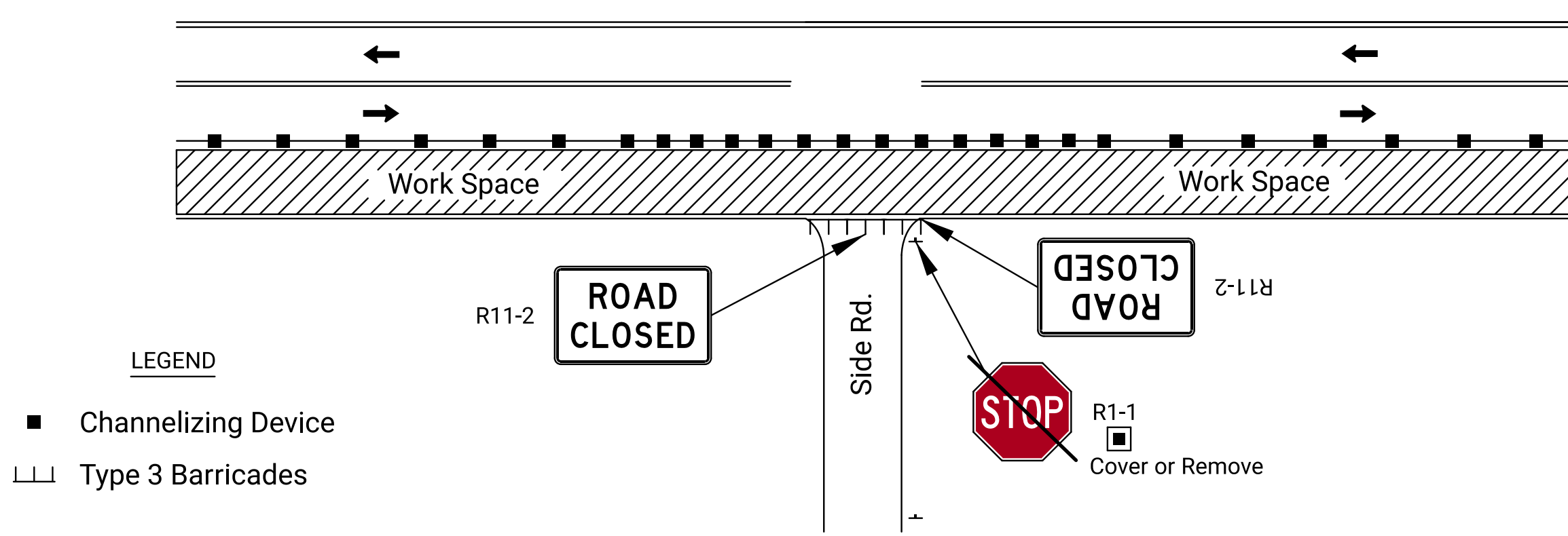


FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

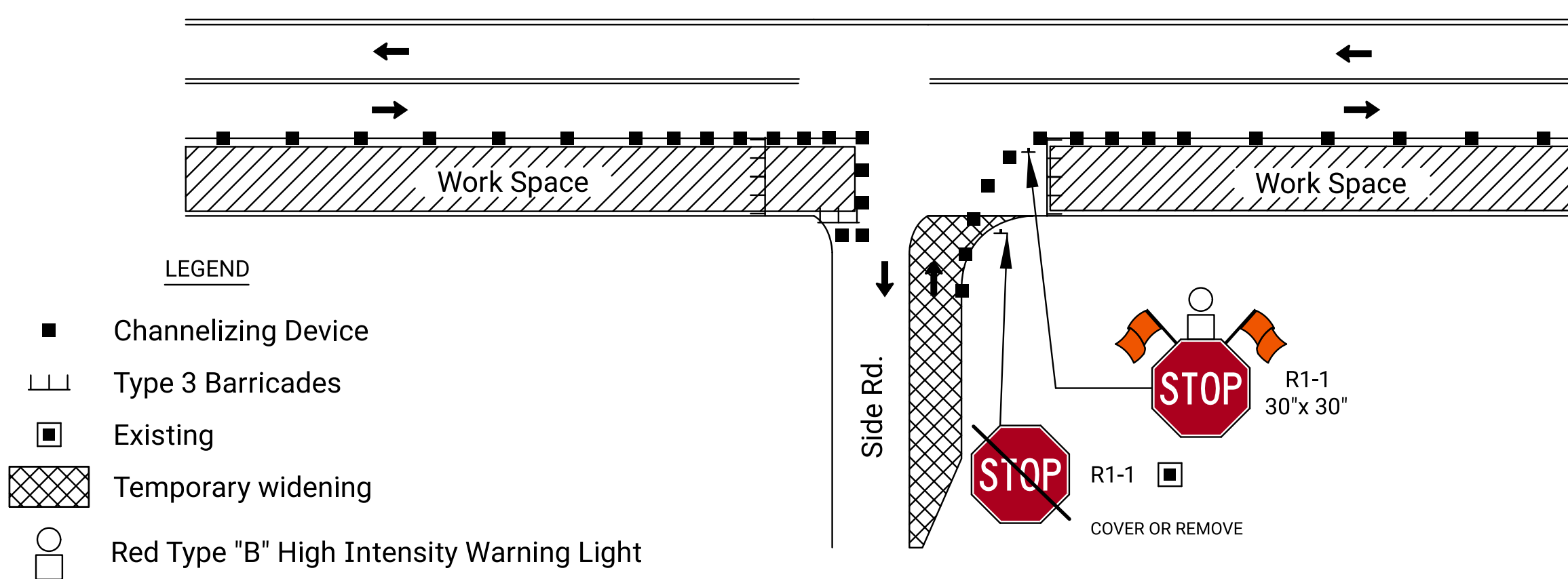


FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME:
TWO WAY TRAFFIC REQUIRED

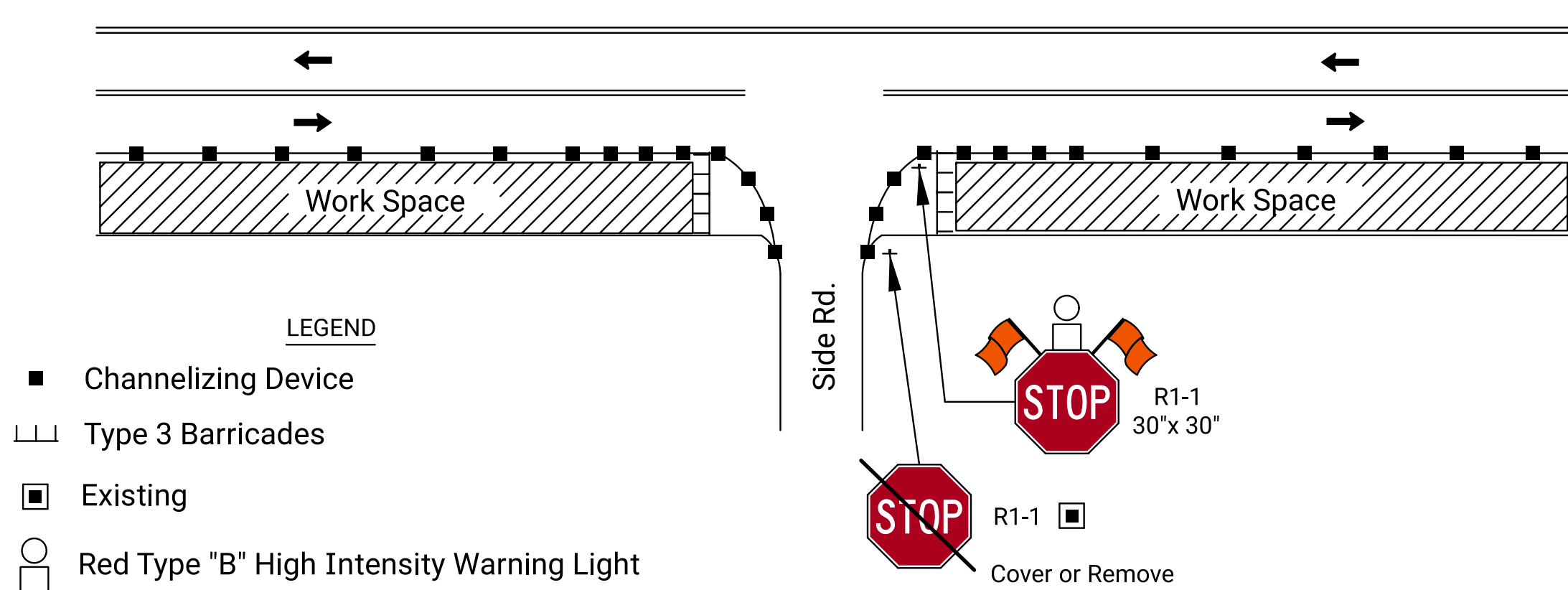


FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

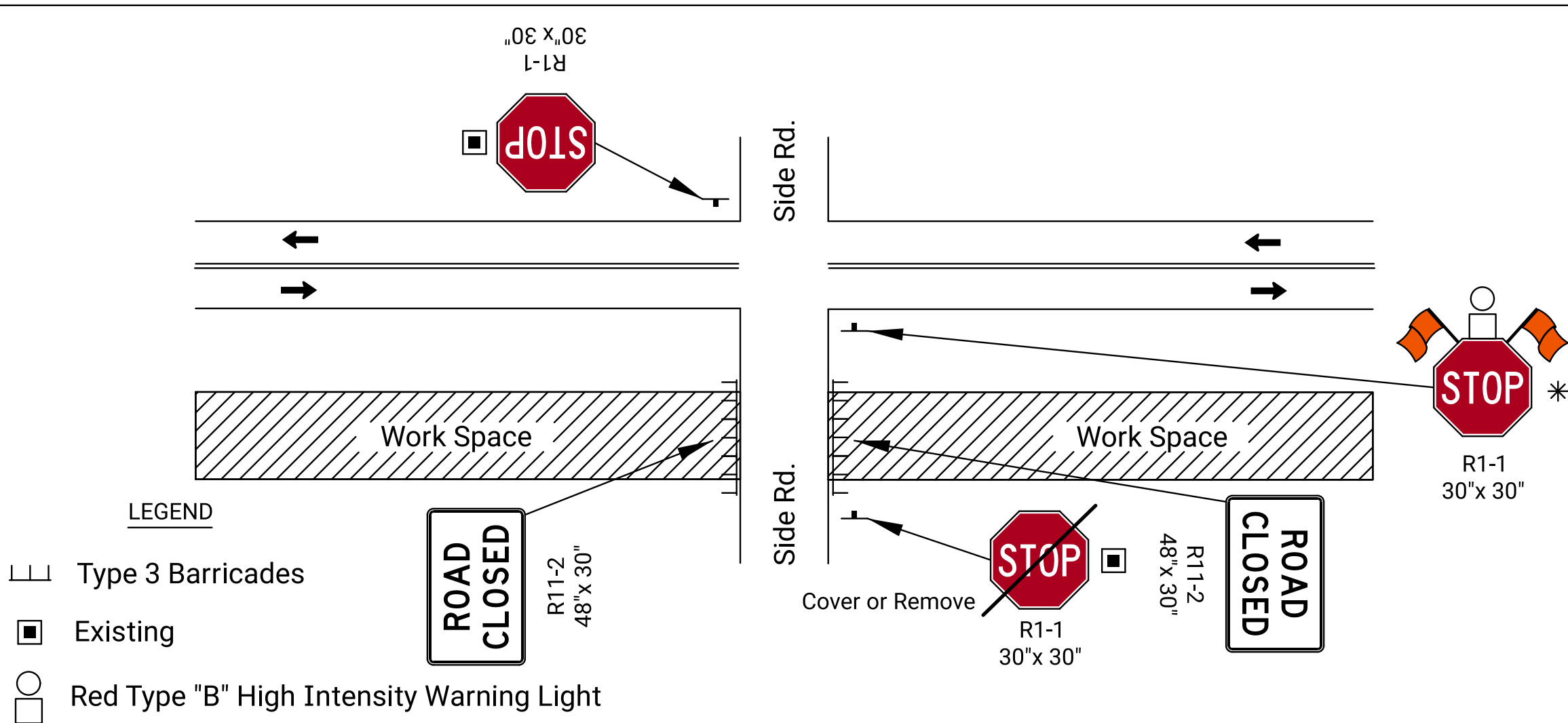


FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY

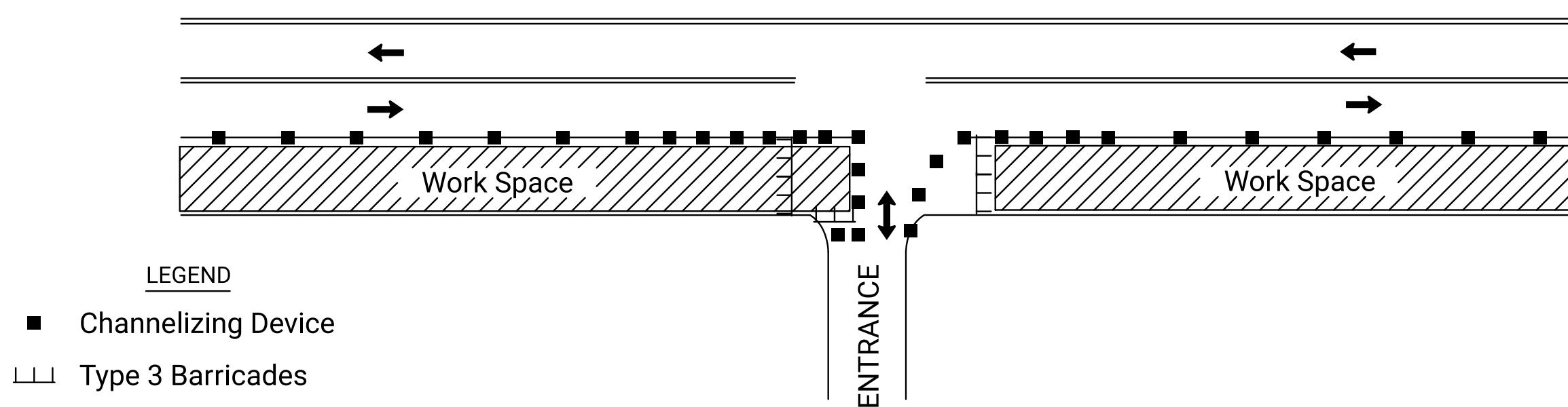


FIGURE 3: LOW VOLUME ENTRANCE CONSTRUCTED HALF AT A TIME

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

Note: Yield signs shall be treated as
Stop signs shown in the figures above

NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL ACCESS THROUGH THE WORK AREA				
TE705				
DESIGNED	R.W.B.	06-01-15	APP'D.	Kristina Erickson
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACED	TRACE CK.

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"



KM4-20P

Std. Size
3" C
24"x 6"

Expwy/Freeway
6" C
48"x 12"



KR2-6

Std. Size
Expwy/Freeway
8" D
48"x 36"



KR2-11

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

KR2-11 sign shall be used whenever KR2-6 sign is used in a Work Zone.



KW21-25

Std. Size
Expwy/Freeway
7" C
48"x 48"



KW21-26

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



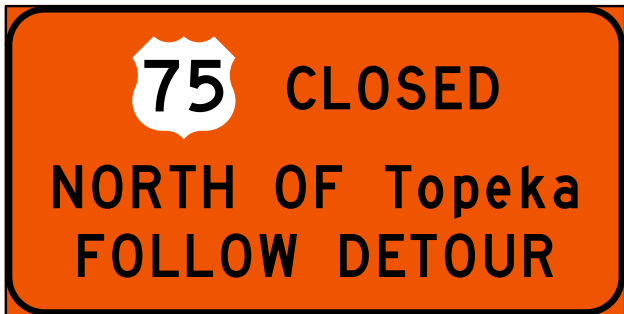
KE5-25P

Std. Size
Expwy/Freeway
12" D
96" x 30"



SP-01
(Special Sign)

Std. Size
6" C
18" Shield
Expwy/Freeway
10" D
36" Shield

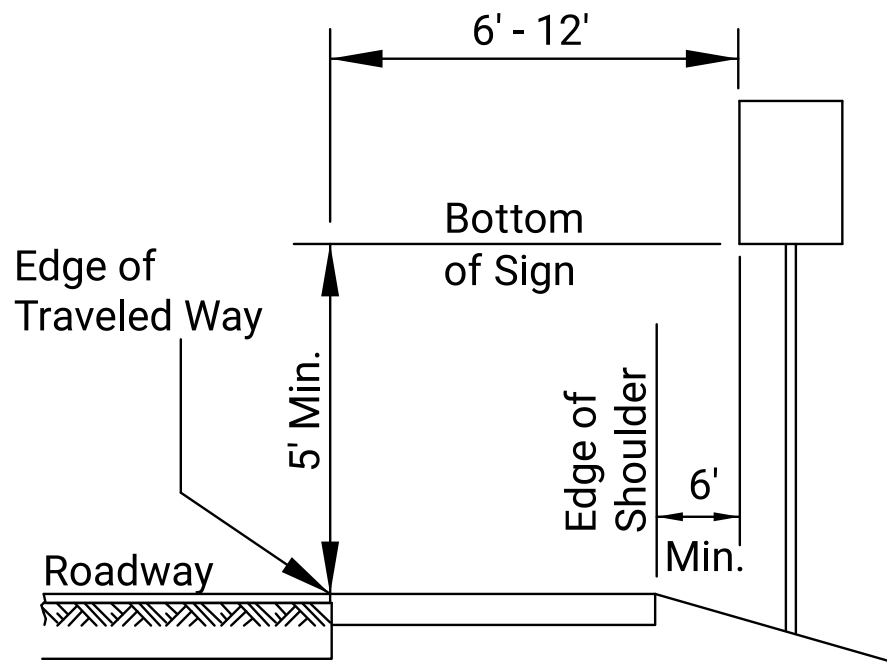


SP-02
(Special Sign)

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

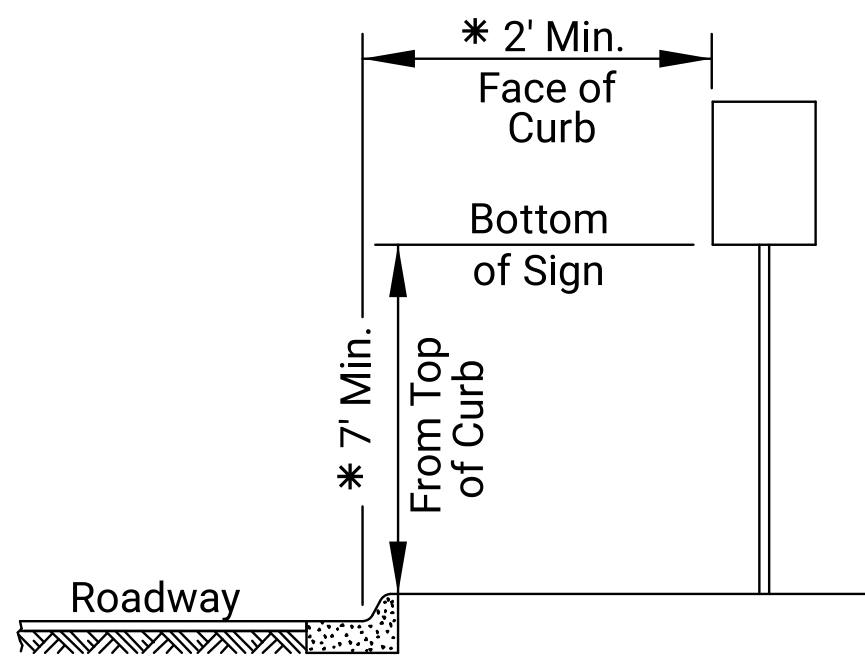
All city names and street names on special signs and destination signs must have upper and lower case letters.

Routes need to be shown using correct Shield on all Special signs.



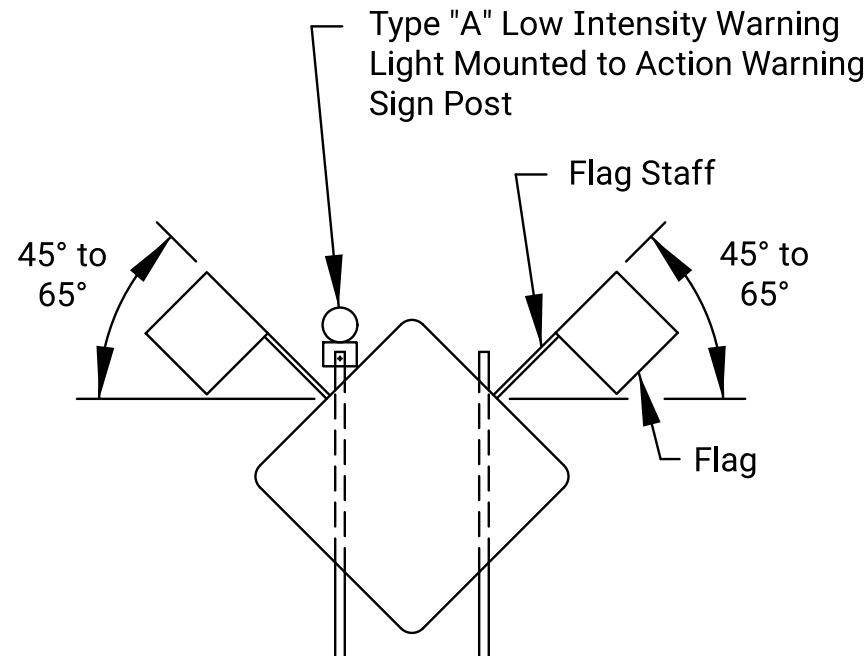
RURAL

- 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.

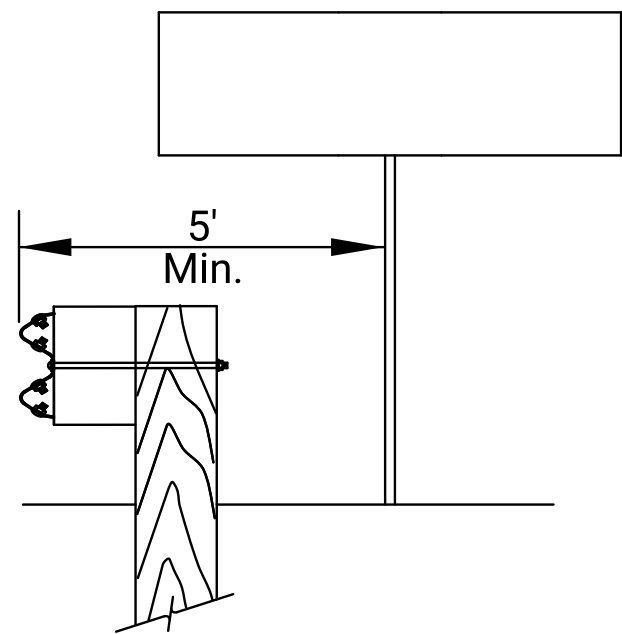


URBAN

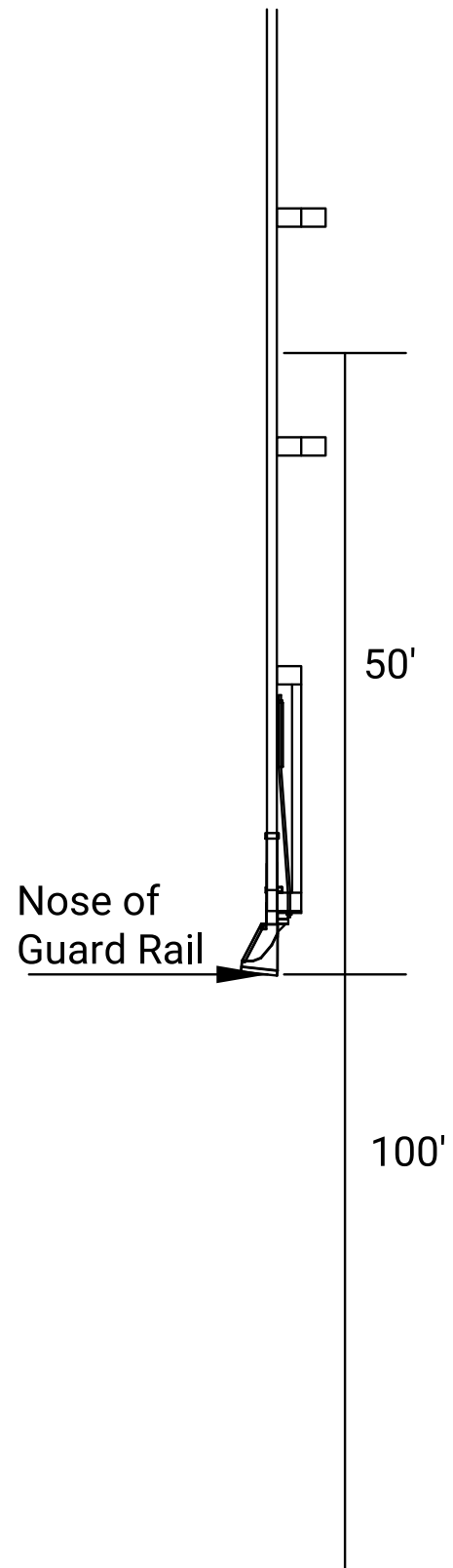
- 1) Signs shall be mounted at a minimum height of 7' measured from the bottom of sign to the near edge of the pavement.
- 2) Neither portable nor permanent sign supports shall be located on sidewalks or areas designated for pedestrian or bicycle traffic.
- 3) Signs mounted lower than 7' should not project 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.



- 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.



- 1) The edge of the sign is not to extend beyond the back side of the guard rail. The sign post shall not be located within 5' of the guard rail.
- 2) The mounting height for signs behind the gaurd rail shall be the same as the mounting height for shoulder mounted signs.

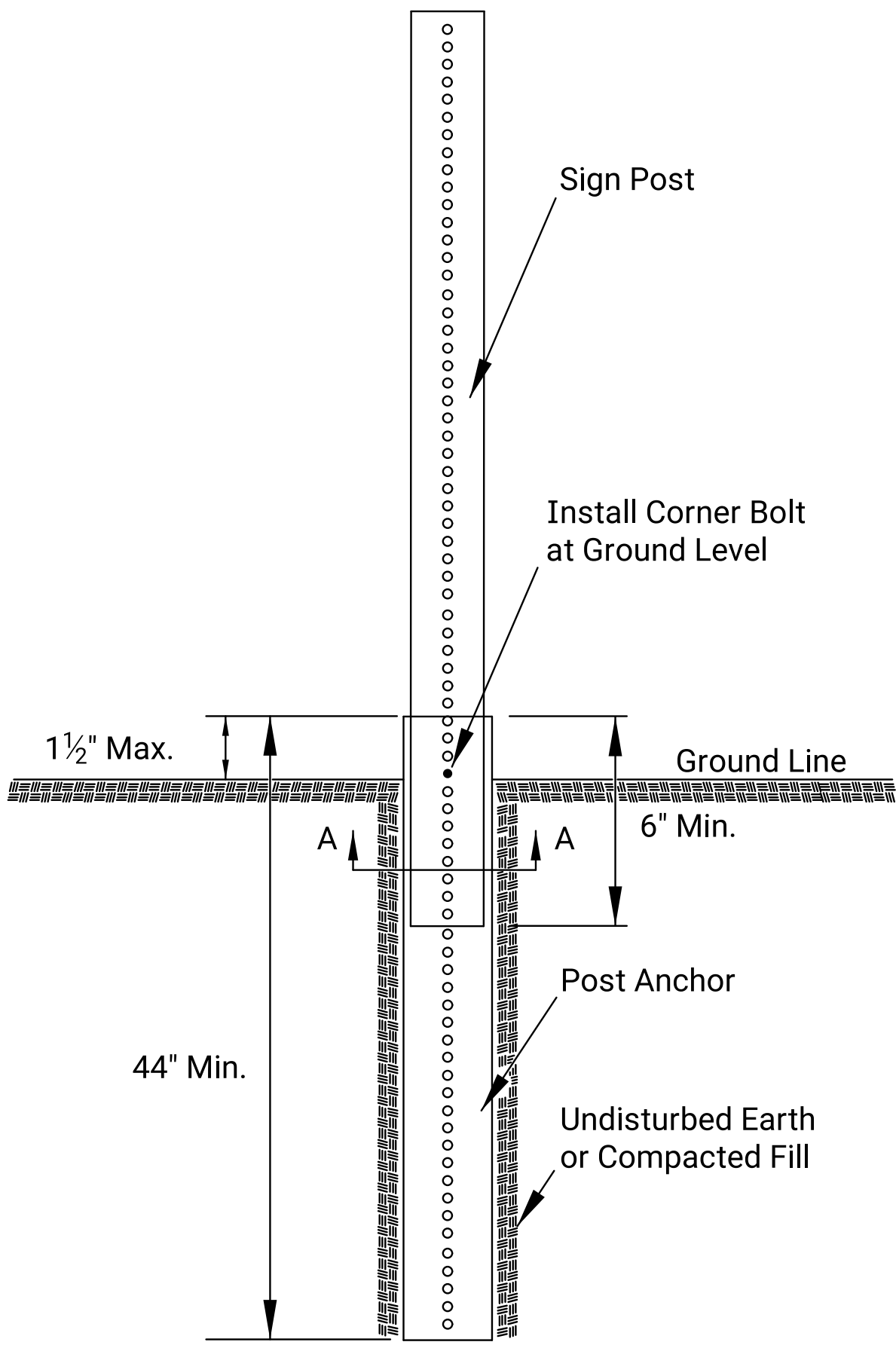


NO SIGN PLACEMENT AREA

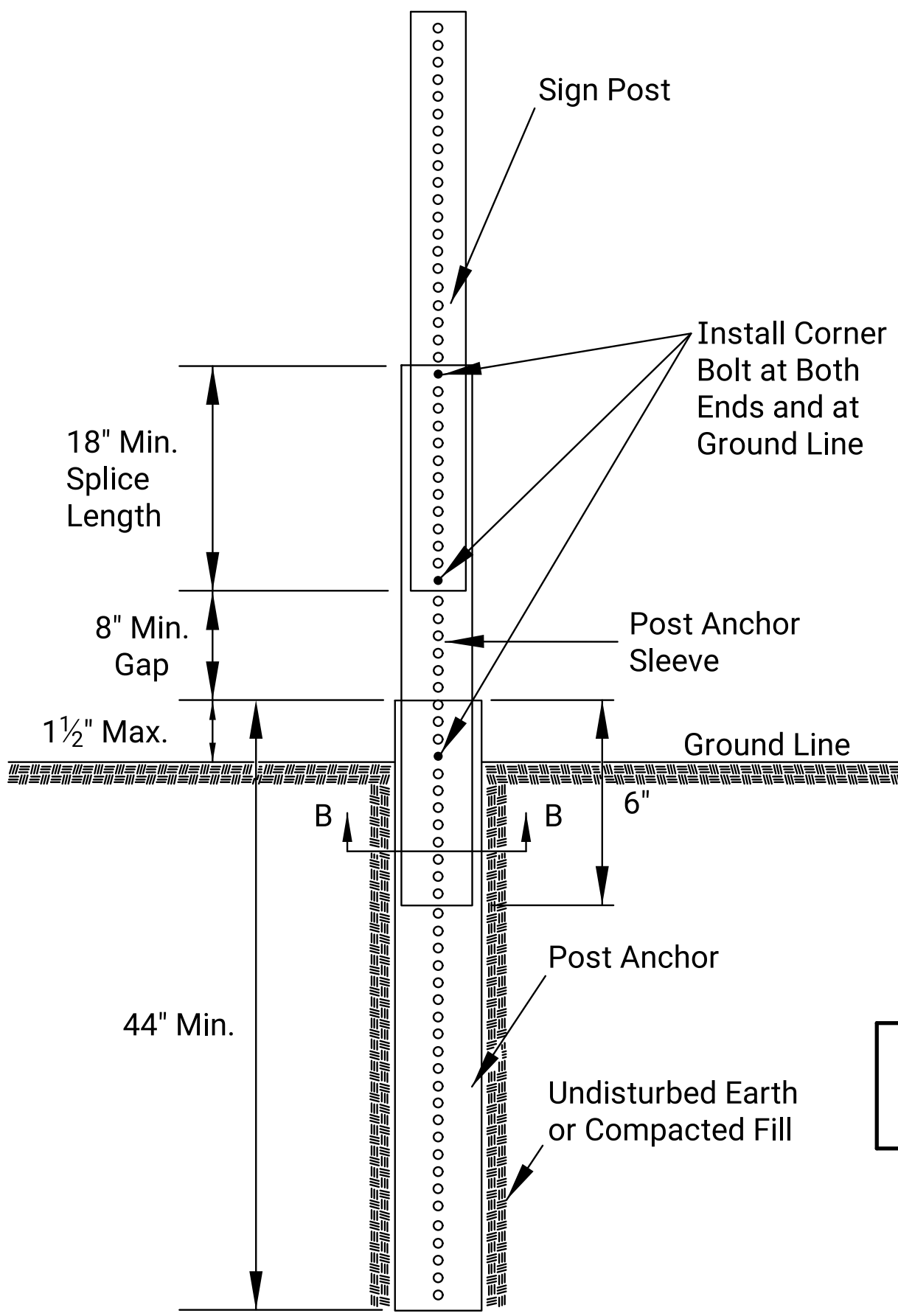
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	88	100

NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL SIGN INFORMATION				
TE710-				
FHWA APPROVAL		06-01-15	APPD.	Kristina Ericksen
DESIGNED	R.W.B.	DETAILED	R.W.B.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE	CK.

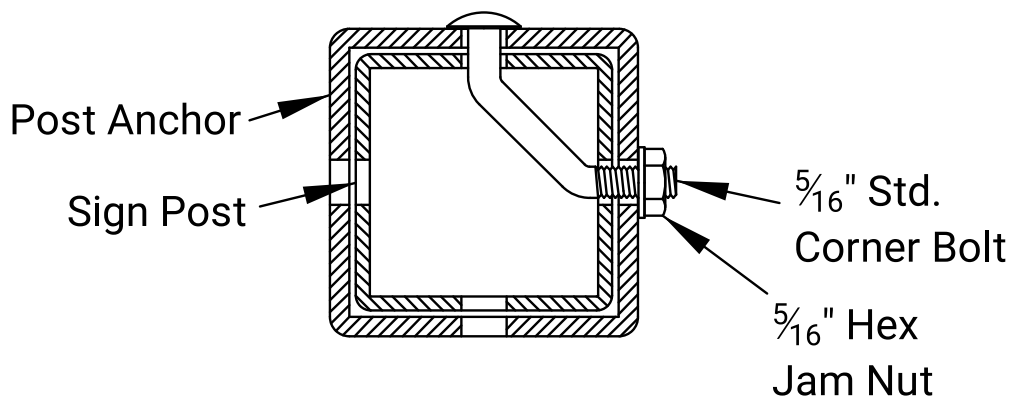
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



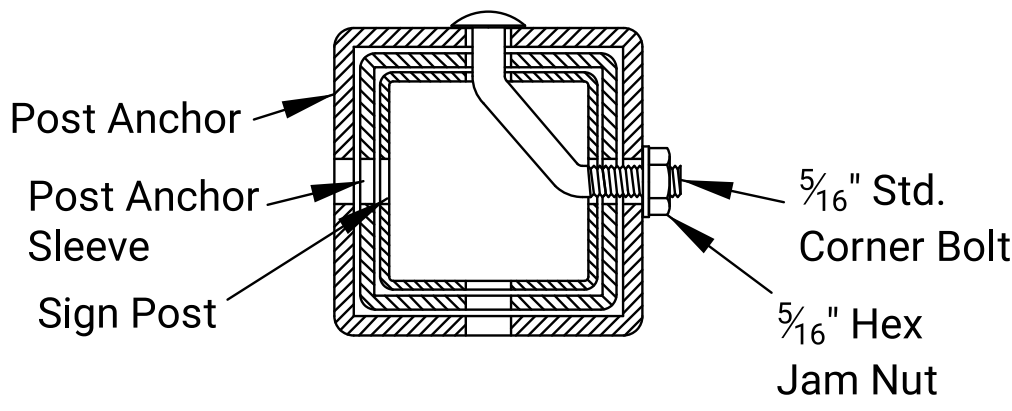
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

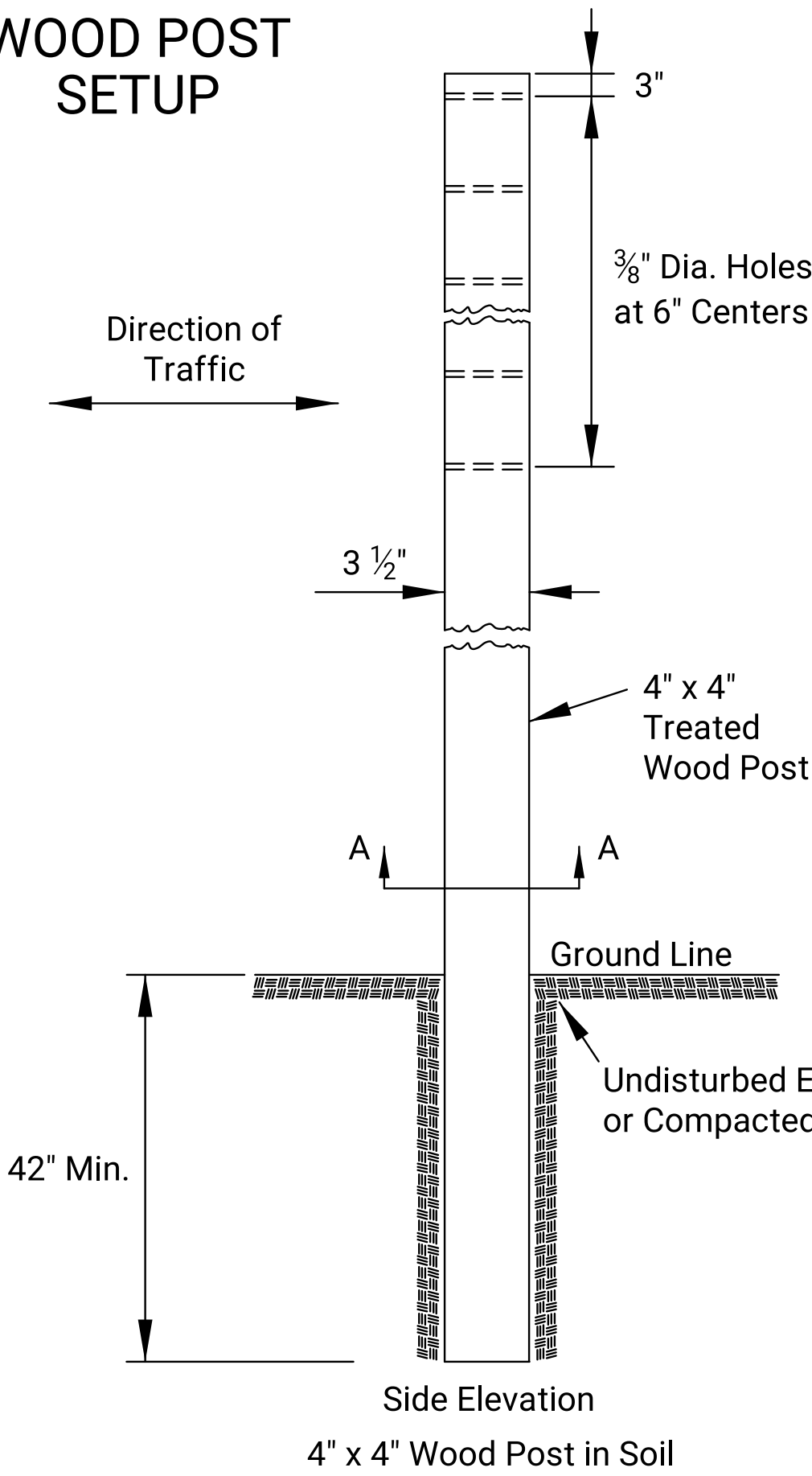


Section B-B

Details for 2", 2 1/4", or 2 1/2" sign posts

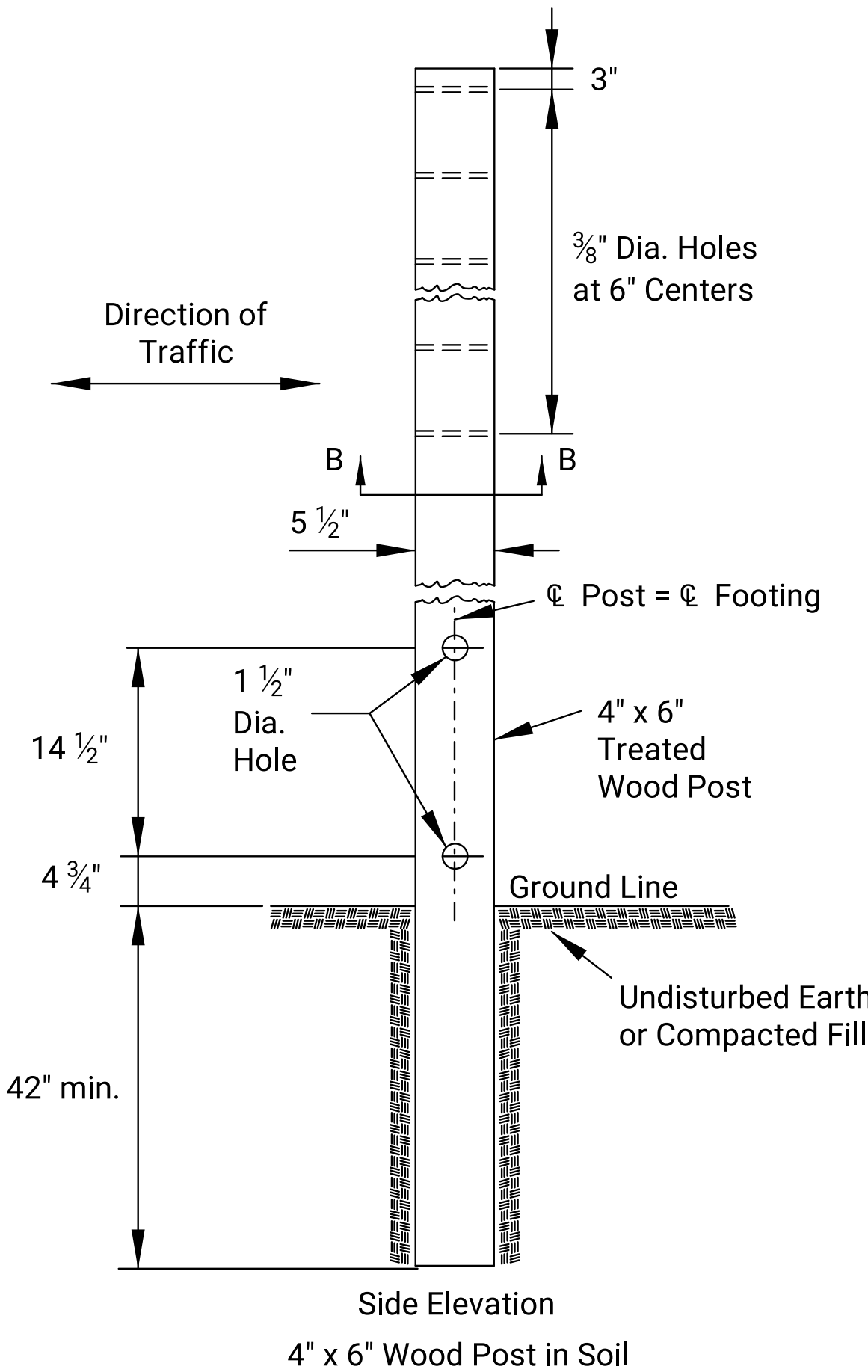
Place bolts in the same corner along each sign post.

WOOD POST SETUP



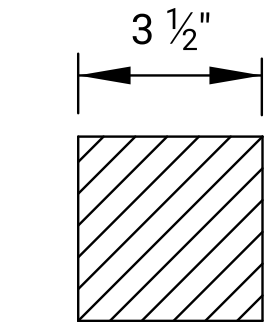
Side Elevation

4" x 4" Wood Post in Soil

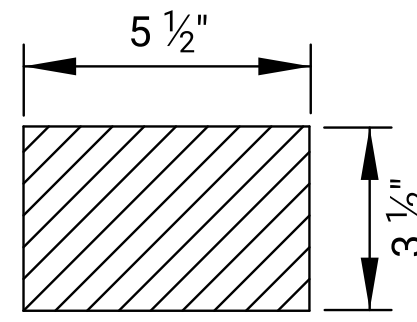


Side Elevation

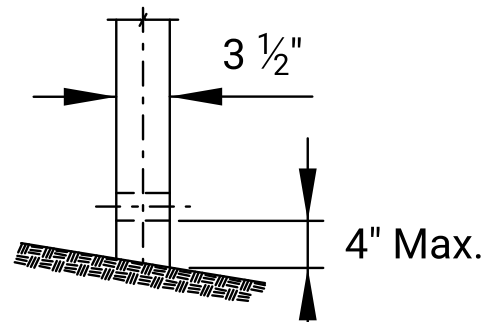
4" x 6" Wood Post in Soil



Section A-A



Section B-B



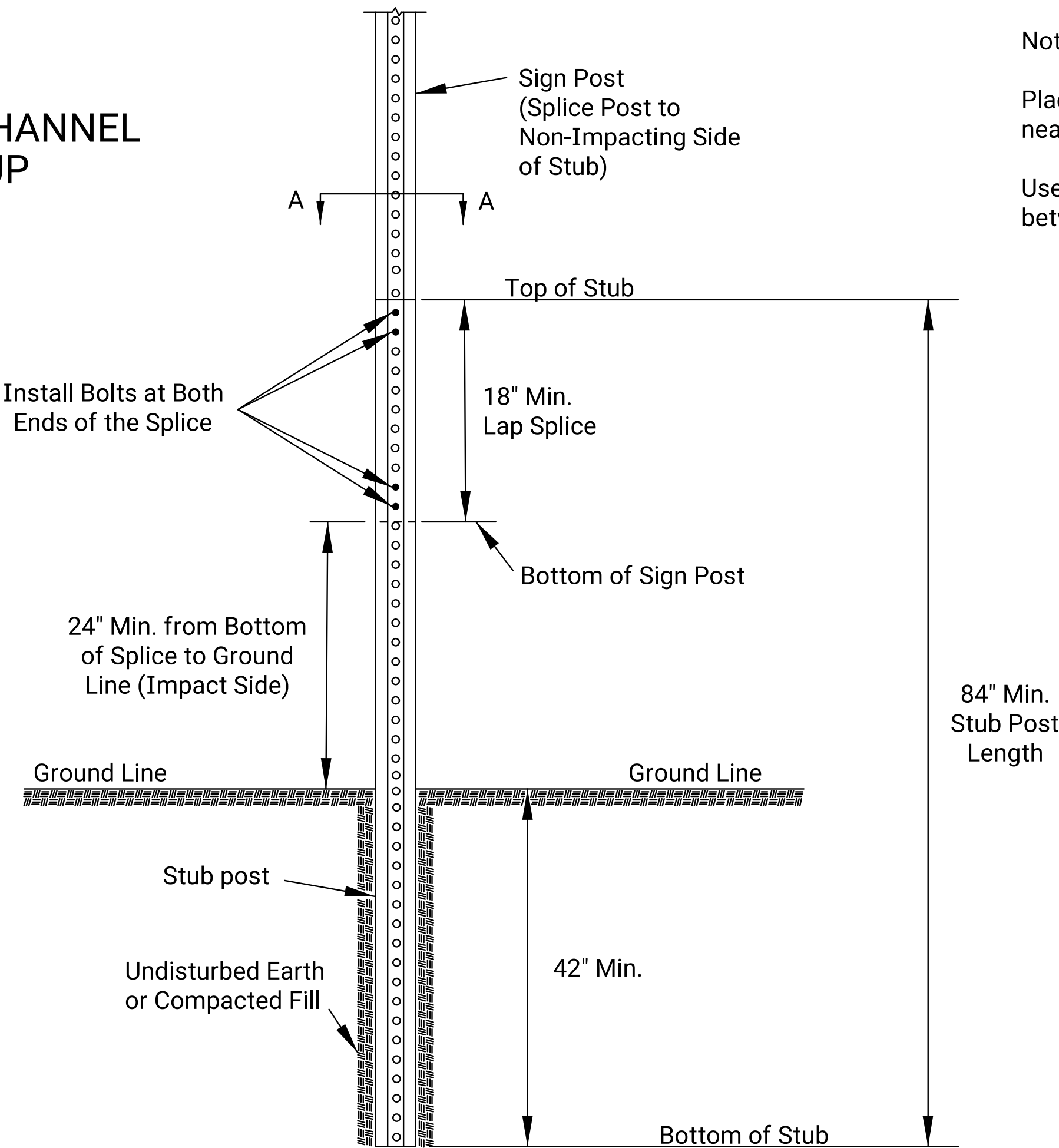
Front Elevation

When the sign width is equal to or greater than 9', three or more wood posts should 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.

All Special signs larger than 16 sq. ft. shall be installed on wood posts.

See TE710 for Additional Details and Requirements

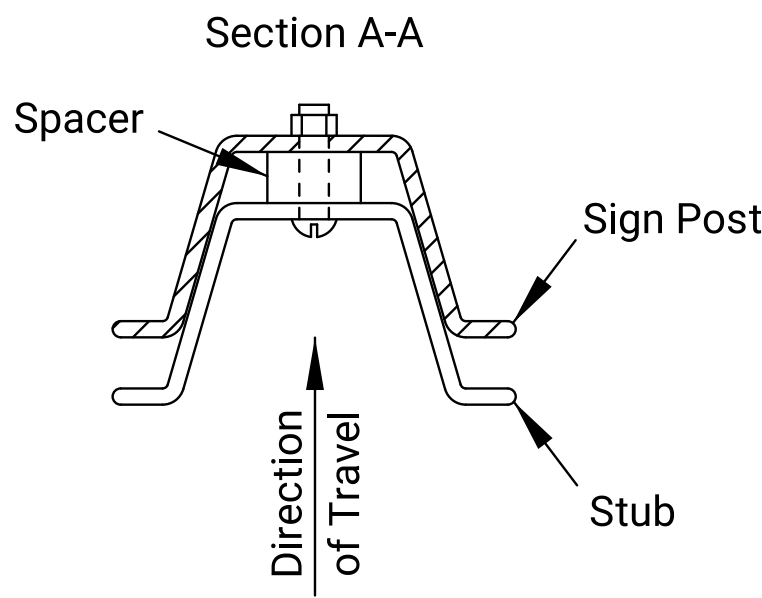
3 LB/F U-CHANNEL SETUP



Notes:

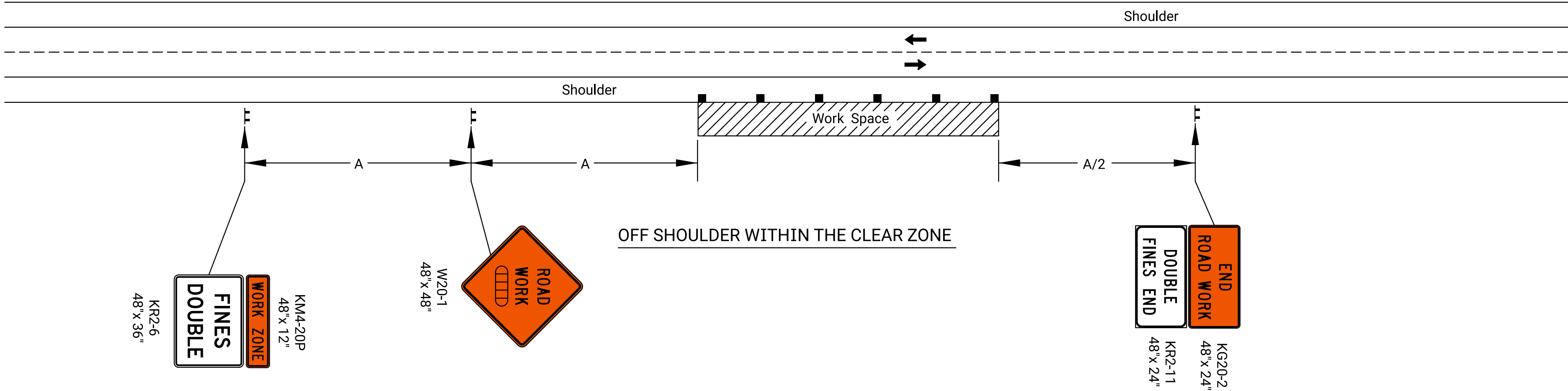
Place two bolts at both ends of the splice through the holes nearest the ends of the splice.

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.	
DESIGNED B.A.H.		DETAILED R.W.B.		QUANTITIES	
DESIGN CK.		DETAIL CK.		QUAN.CK.	
				Kristina Ericksen	
				TRACED	
				TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	90	100



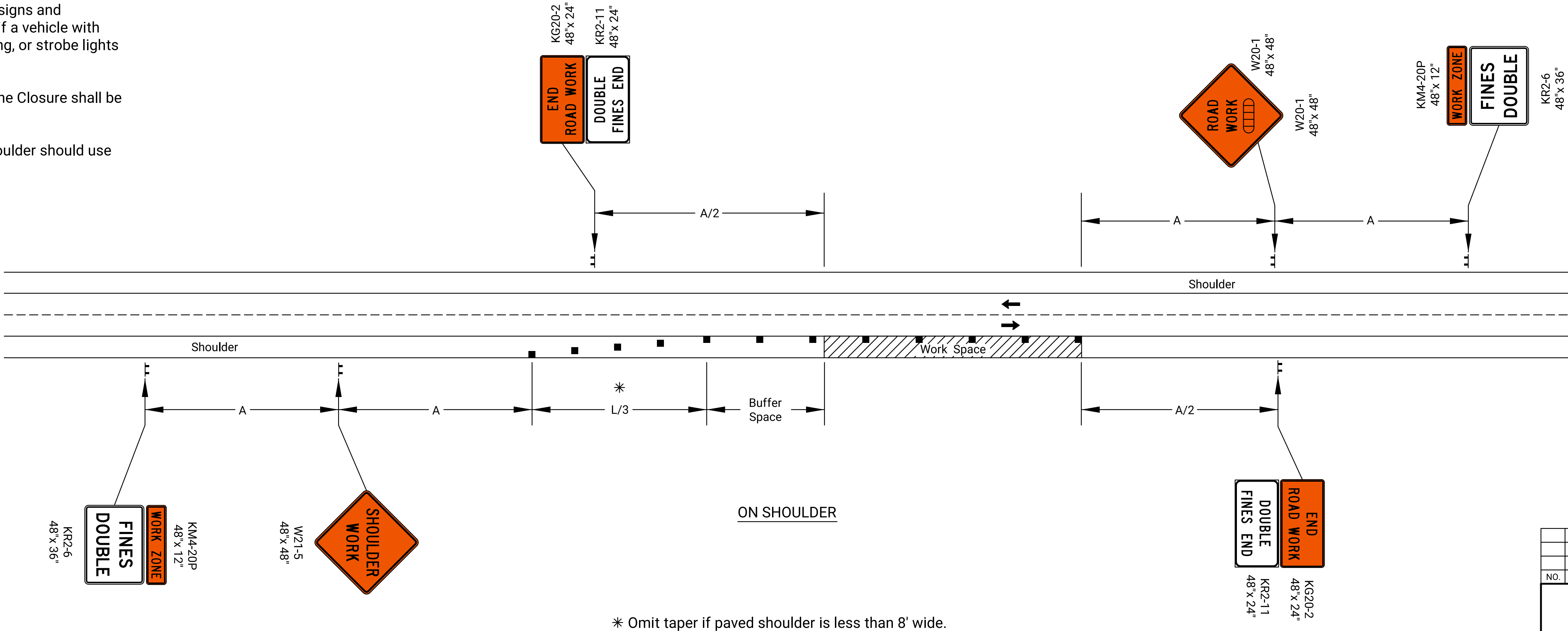
Notes:

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.

If traveled lane is encroached upon a Lane Closure shall be required.

If work vehicles or equipment on the shoulder should use the ON SHOULDER detail.



* Omit taper if paved shoulder is less than 8' wide.

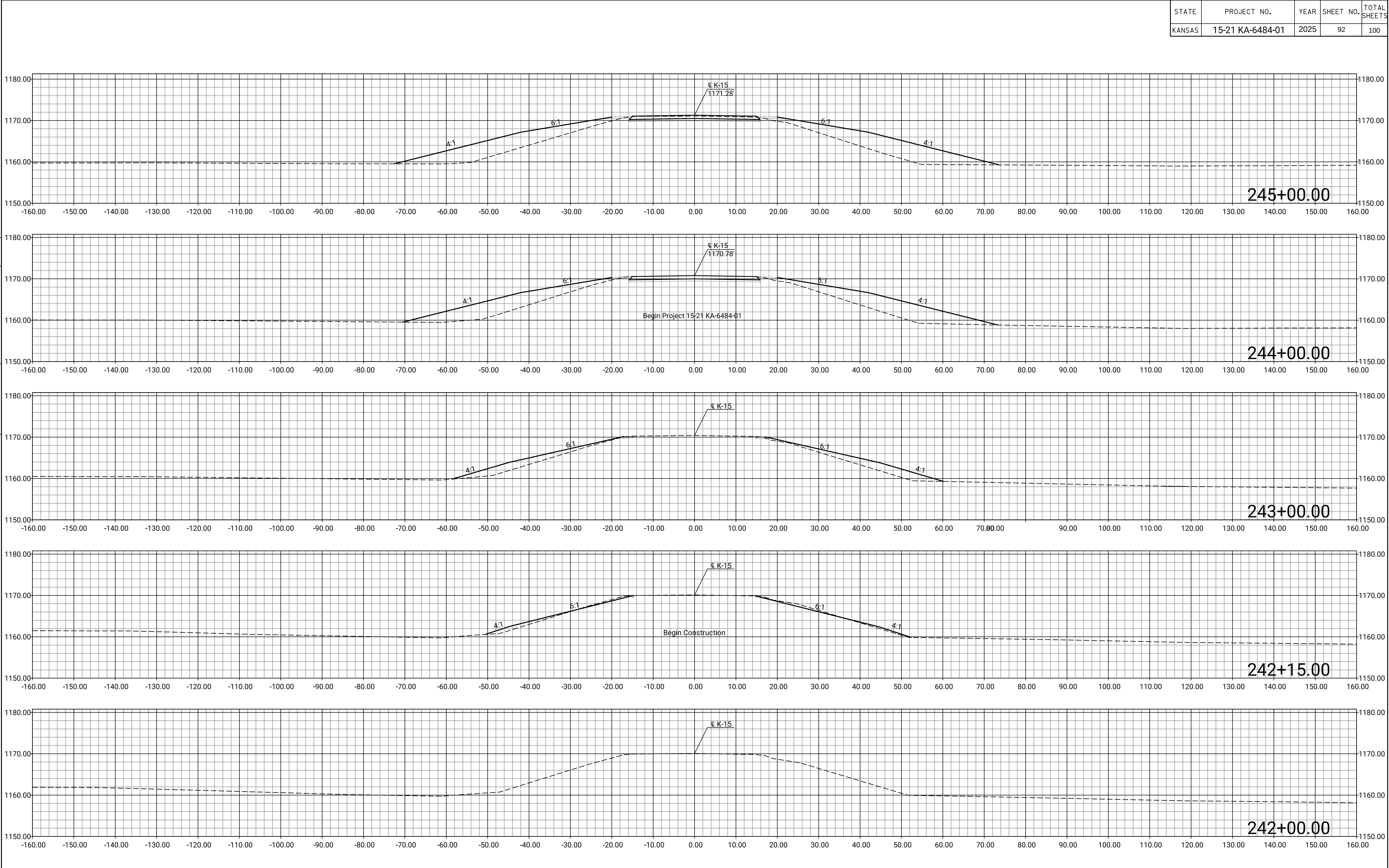
- Channelizing Device
- Ahead, 1500 ft, or 1 Mile

NO.	DATE	REVISIONS	BY	APPD	
KANSAS DEPARTMENT OF TRANSPORTATION					
TRAFFIC CONTROL SHOULDER WORK UNDIVIDED ROADWAY					
TE720					
FHWA APPROVAL		06-01-15	APPD.	Kristina Erickson	
DESIGNED	L.E.R.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN.CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	92	100

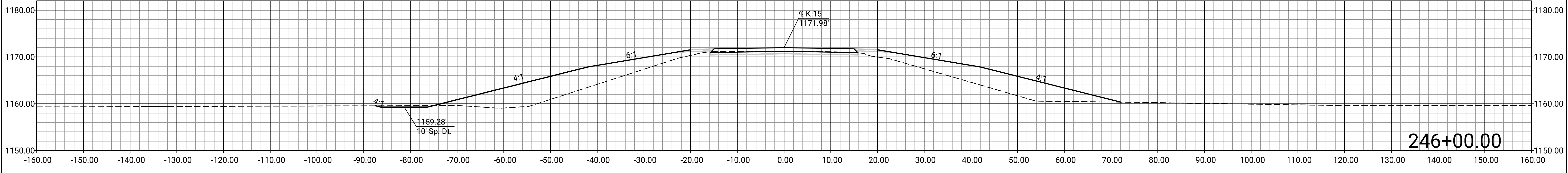
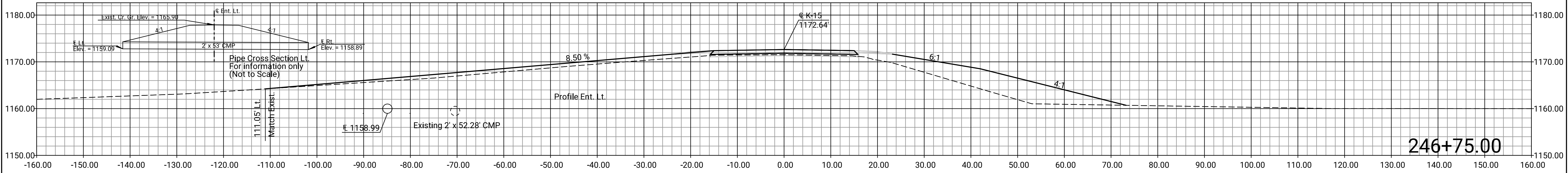
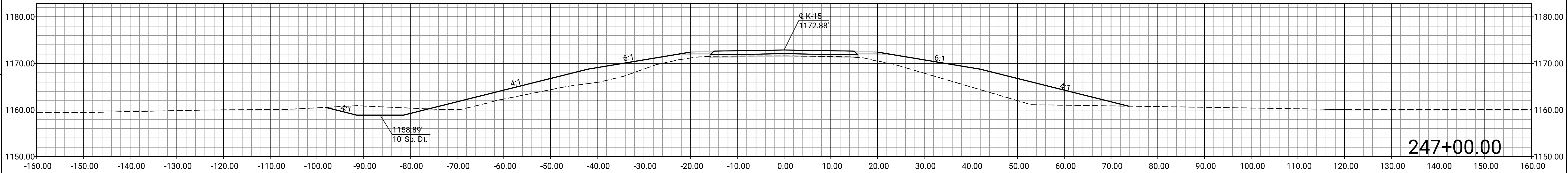
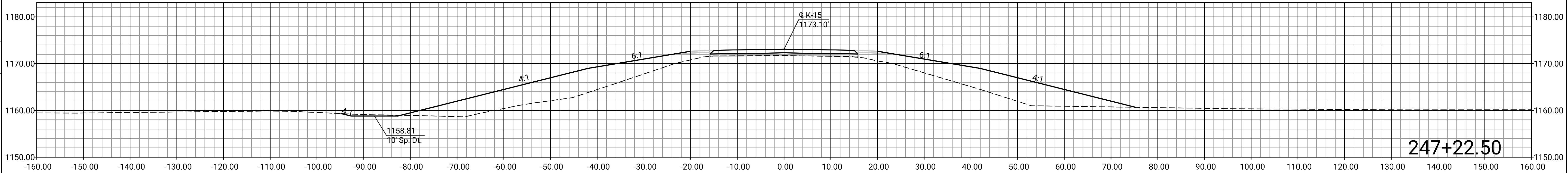
DATE	
BY	
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rxs-05.dgn
16-SEP-2025 17:57



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	93	100

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



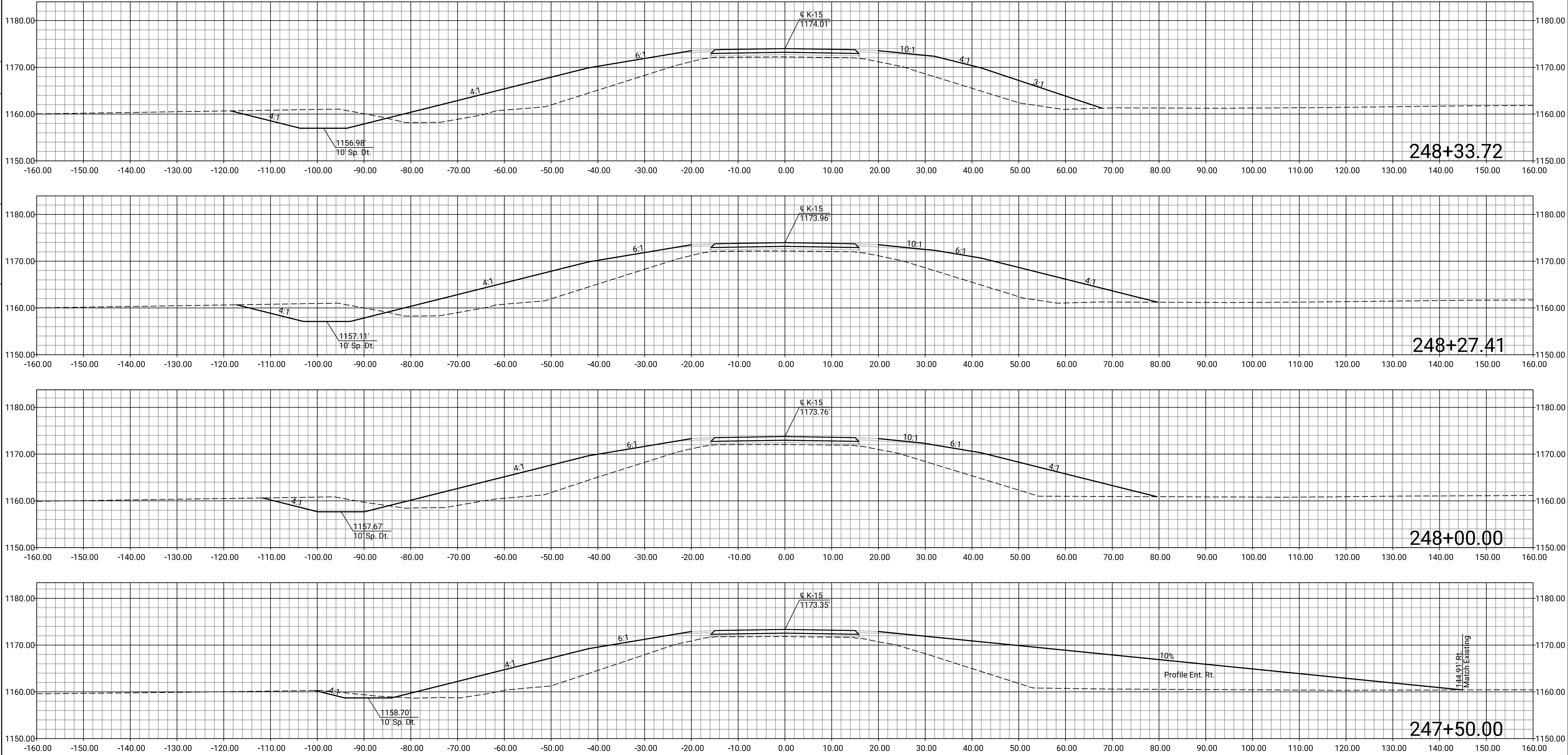
Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rs-05.dgn

16-SEP-2025 17:57

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	94	100

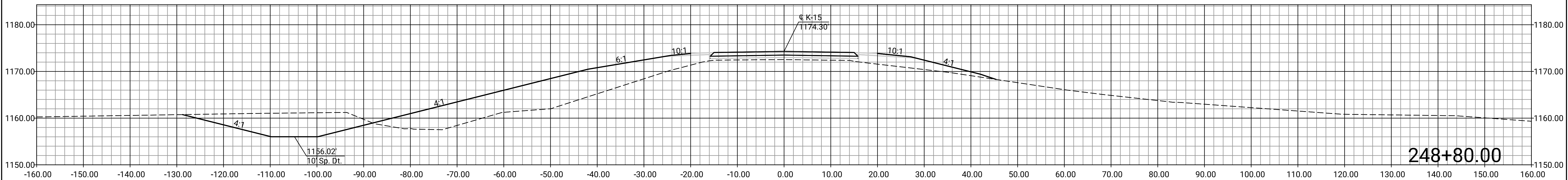
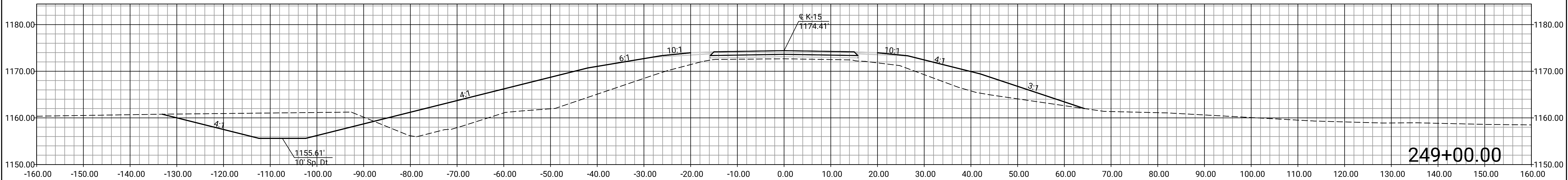
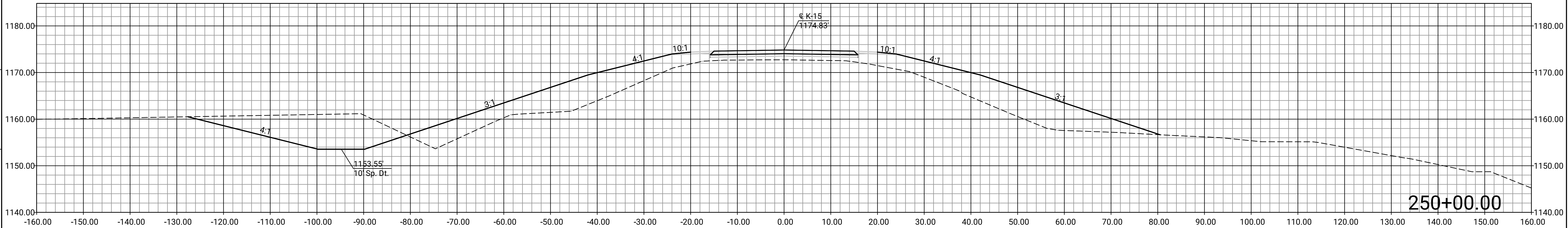
DATE	
BY	
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rs-05.dgn
16-SEP-2025 17:57



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	95	100

DATE	
BY	
REFERENCES NOTED	
REFERENCES CHECKED	

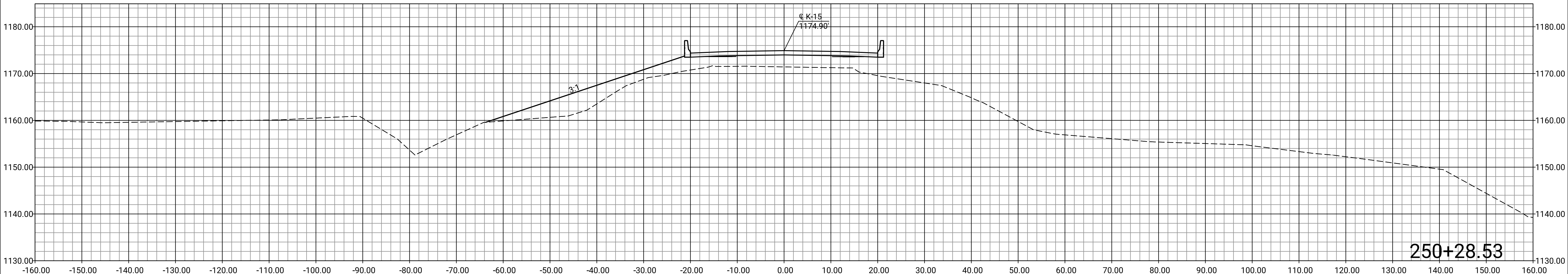
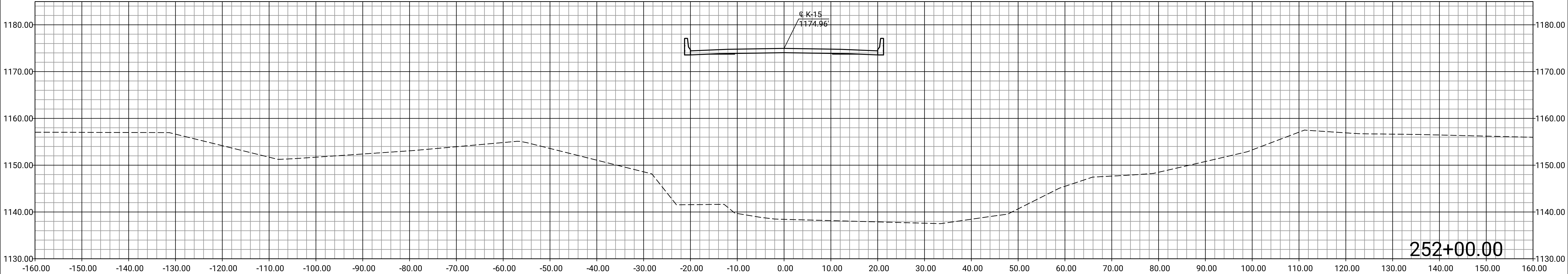


Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rxs-05.dgn

16-SEP-2025 17:57

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	96	100

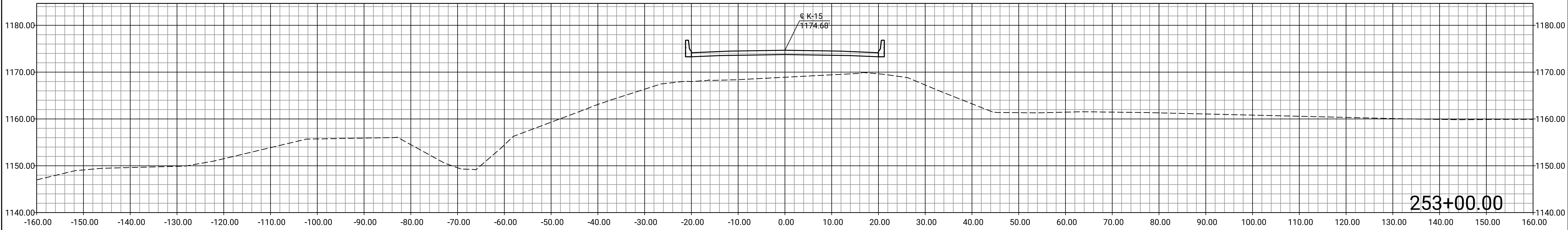
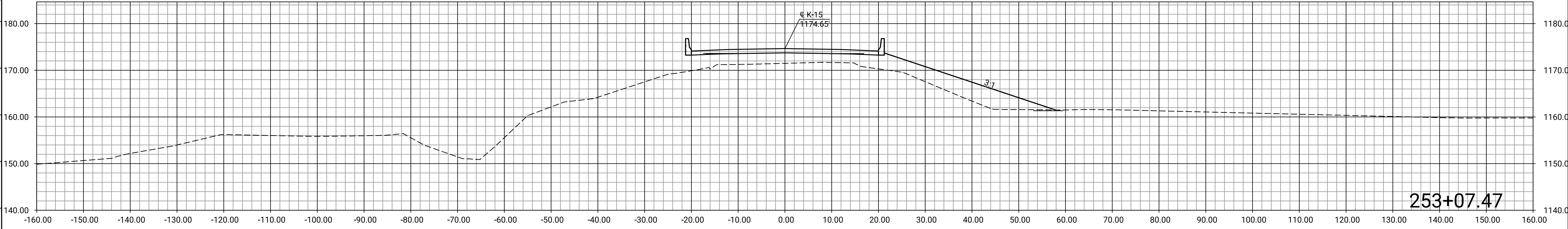
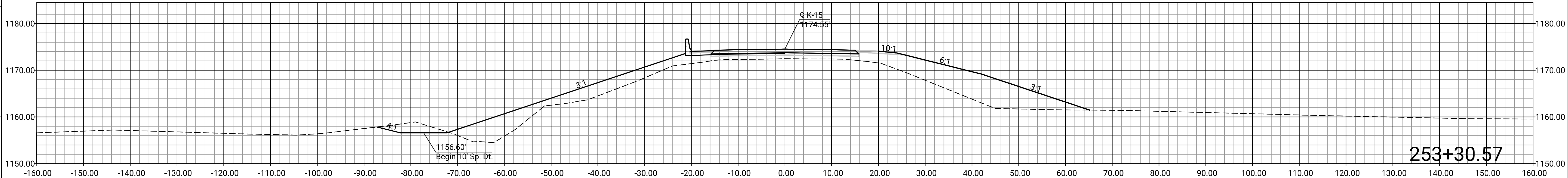
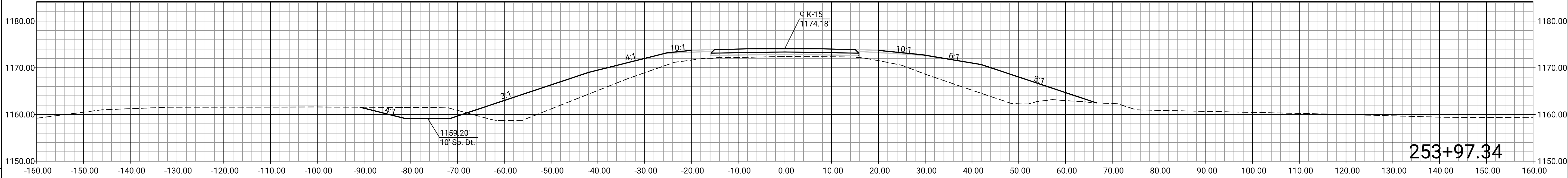
DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



Plotted by : Chris.Wilkus@ks.gov 16-SEP-2025 17:57
File : KA-6484-01rs-05.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	97	100

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

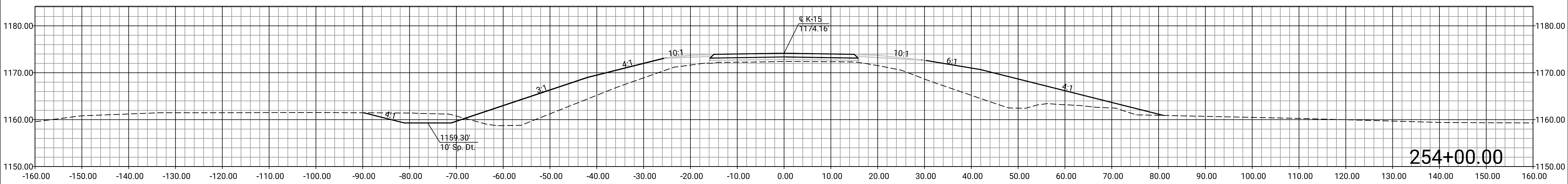
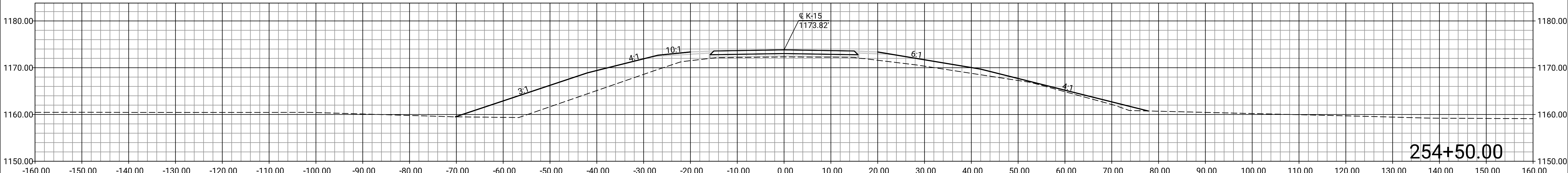
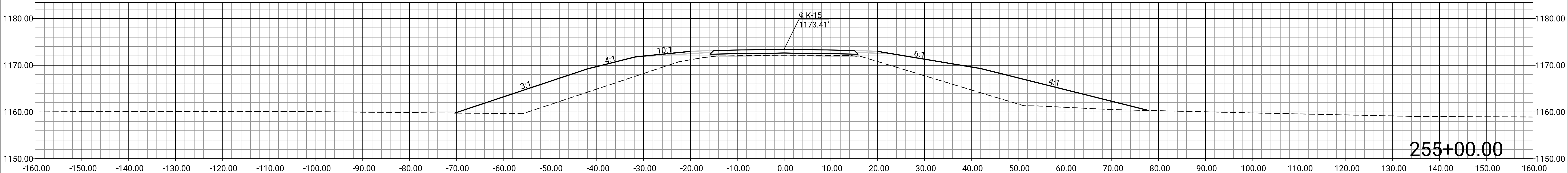
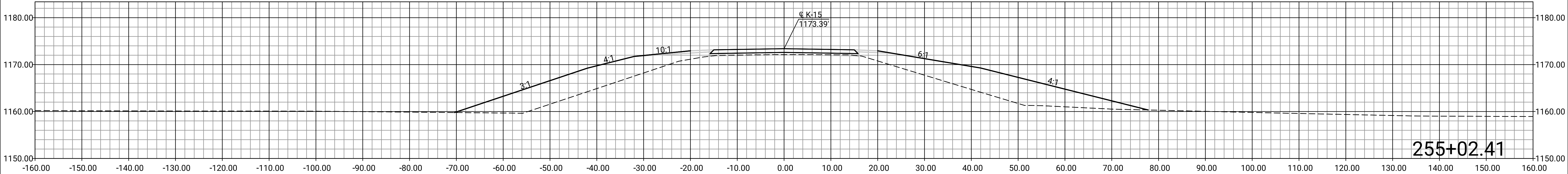


Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rxs-05.dgn

16-SEP-2025 17:57

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	98	100

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



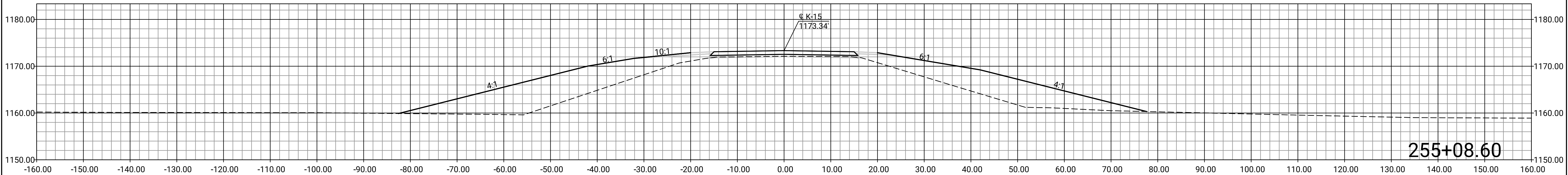
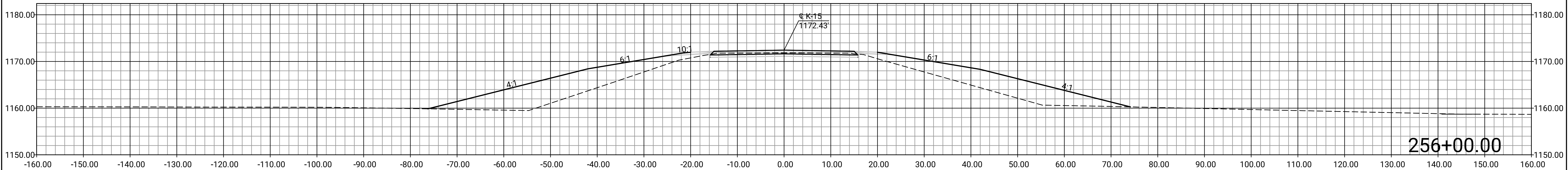
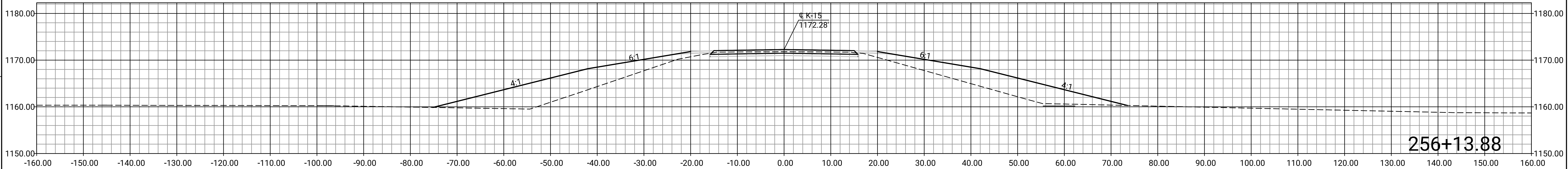
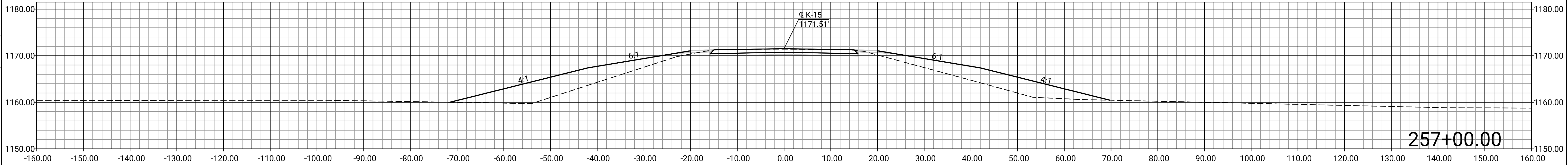
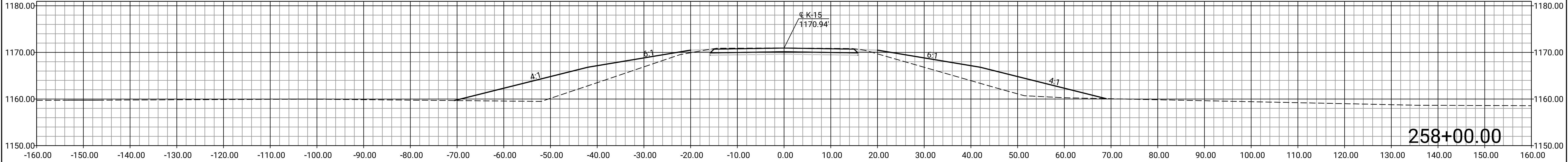
Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rxs-05.dgn

16-SEP-2025 17:57

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

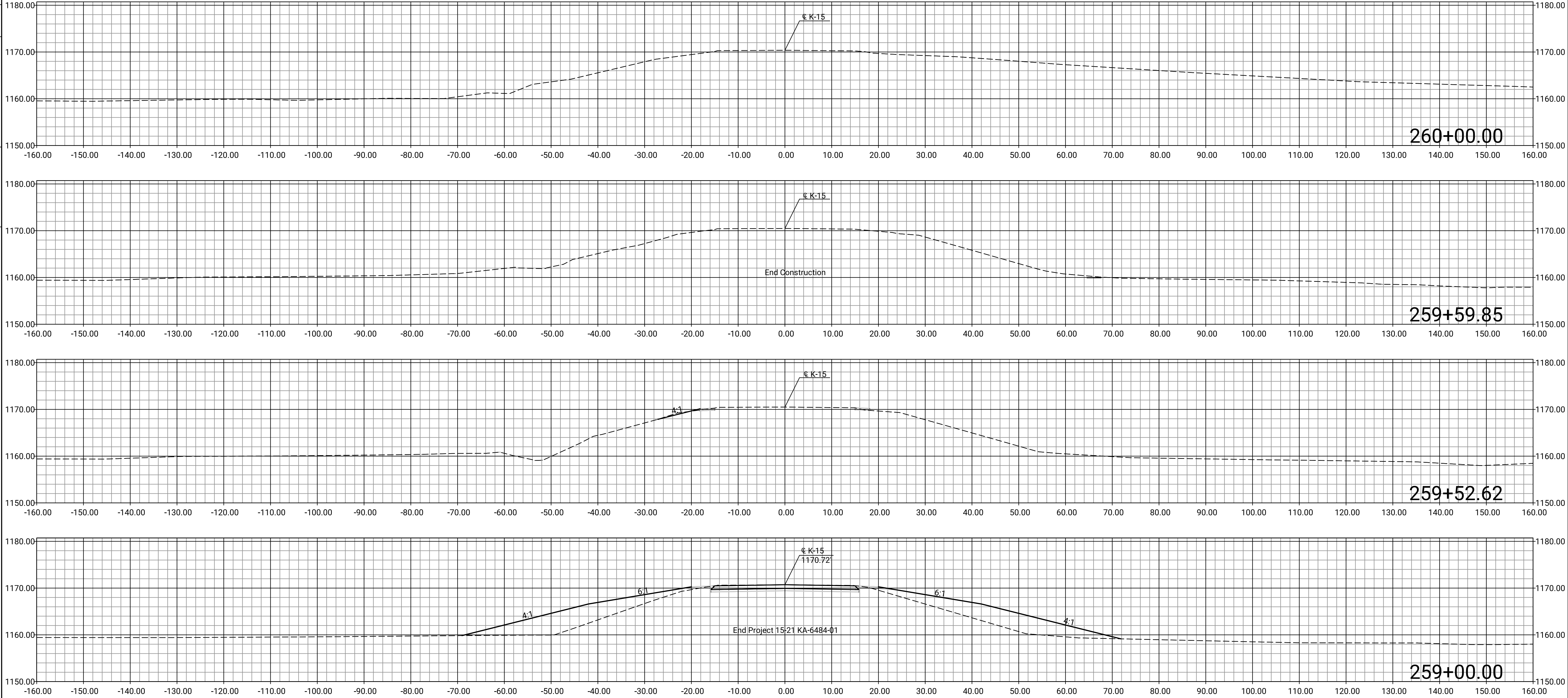
Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rxs-05.dgn
16-SEP-2025 17:57

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	99	100



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	15-21 KA-6484-01	2025	100	100

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED



Plotted by : Chris.Wilkus@ks.gov
File : KA-6484-01rs-05.dgn

16-SEP-2025 17:57