Revised Plans December 8, 2023

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	1	103

Kansas Turnpike Authority

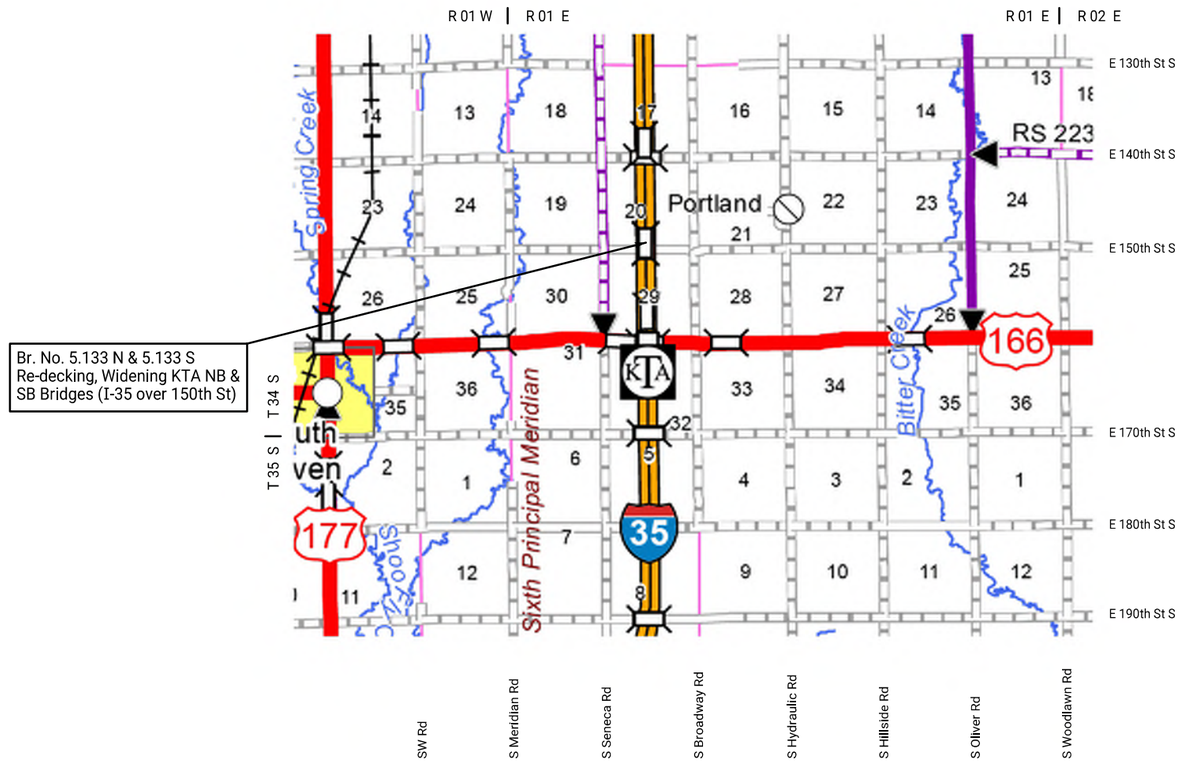
Contract No. 8008

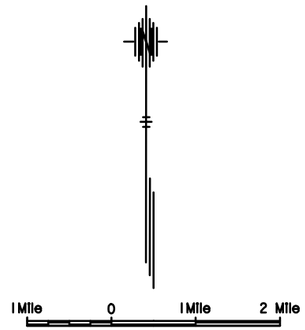
Sumner County, Kansas

BR. NO. 5.133 N & 5.133 S

GRADING & SURFACING (ASPHALT)
BRIDGE REPAIR
FENCING
SEEDING
PAVEMENT MARKING

INDEX OF SHEETS

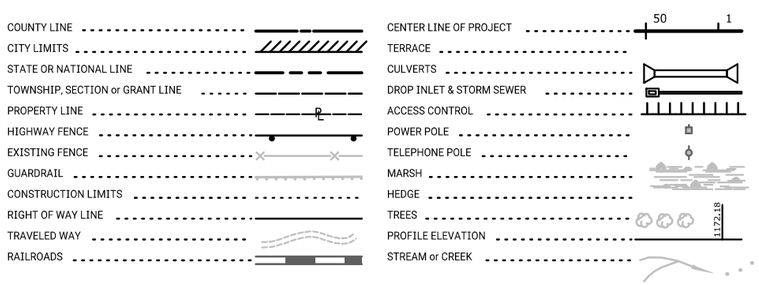




DESIGN DESIGNATION

ADT	=	15,900 VPD (2020)
ADT DESIGN	=	17,600 VPD (2040)
DESIGN SPEED	=	75 MPH (FINAL)
T	=	30%
C OF A	=	FULL
CLEAR ZONE	=	38'
D	=	-

CONVENTIONAL SIGNS



GROSS LENGTH OF PROJECT	1698.73	FT.		
EXCEPTIONS	_	FT.		
ADDITIONS	-	FT.		
NET LENGTH OF PROJECT	1698.73	FT.	0.322	MILES
NET LENGTH OF BRIDGES	220	FT.	0.042	MILES
NET LENGTH OF ROAD	1478.73	FT.	0.280	MILES

PREPARED & SUBMITTED BY

wsp

ABDEL HAMADA LICENSED 14148 KANSAS PROFESSIONAL ENGINEER
11/07/2023

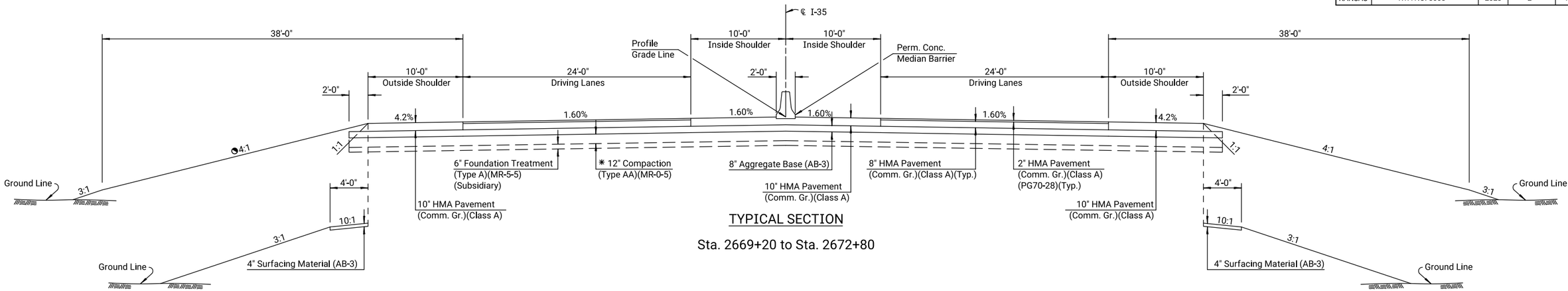
LAYLA MCDANIEL LICENSED 28341 11/7/2023 KANSAS PROFESSIONAL ENGINEER

David E. Jacobson, P.E.
Director of Engineering
Kansas Turnpike Authority

12/8/2023
Date

DATE | BY | SURVEYED | PLOTTED | INKED | DESIGNED | SQUAD

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	2	103

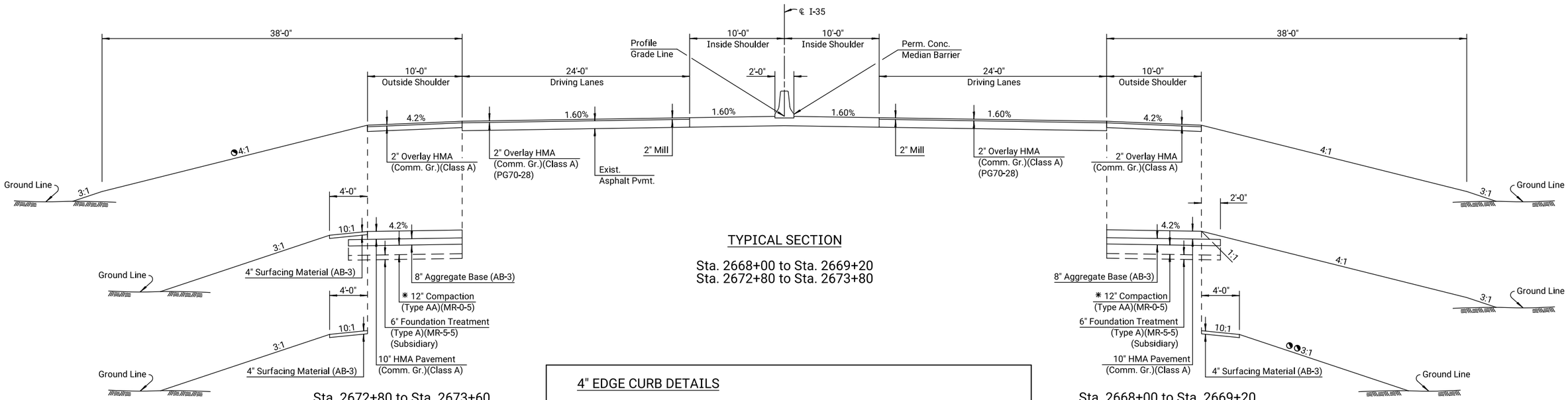


TYPICAL SECTION

Sta. 2669+20 to Sta. 2672+80

Sta. 2672+25.57 to Sta. 2672+80

Sta. 2669+20 to Sta. 2669+78.47



TYPICAL SECTION

Sta. 2668+00 to Sta. 2669+20
Sta. 2672+80 to Sta. 2673+80

Sta. 2673+60 to Sta. 2673+80

Sta. 2672+80 to Sta. 2673+60

Sta. 2668+00 to Sta. 2669+20
Sta. 2672+80 to Sta. 2673+00

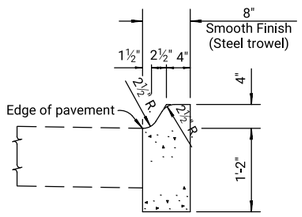
Sta. 2668+00 to Sta. 2669+20

◔ Foreslope Transition from 3:1 at Sta. 2669+20 to 4:1 at Sta. 2669+50
Foreslope Transition from 3:1 at Sta. 2676+96.75 to 6:1 at Sta. 2677+46.75
6:1 from Sta. 2677+46.75 to Sta. 2679+01.75
Foreslope Transitions from 6:1 at Sta. 2679+01.75 to 3:1 at Sta. 2681+01.75

◔◔ Foreslope Transitions from 3:1 at Sta. 2664+03.02 to 6:1 at Sta. 2666+03.02
6:1 from Sta. 2666+03.02 to Sta. 2667+58.02
Foreslope Transitions from 6:1 at Sta. 2667+58.02 to 3:1 at Sta. 2668+08.02

✱ Excavation thru Cuts not Subgraded

4" EDGE CURB DETAILS



(8" WIDTH)

GENERAL NOTE

Edge Curb shall be constructed of Concrete Grade 3.0 (AE).
Place a 1" Preformed Expansion Joint Filler (Type B) cut to the dimensions of the edge curb. Planes of weakness shall be constructed at 10'-0" intervals.
For Expansion joint treatment where the edge curb abuts a bridge wing on a U-type abutment see bridge drawings.
See Guardrail details for location.

Notes:
Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.
Intersection of all slope lines shall be softened and rounded for pleasing appearance.

Kansas Turnpike Authority

TYPICAL SECTIONS

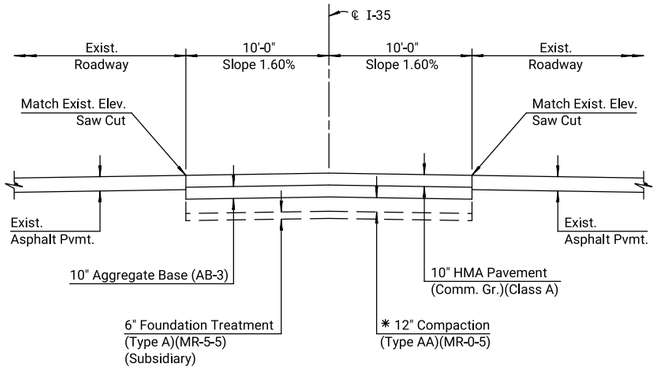
Sh. No. 2

DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 309026401rts01.dgn

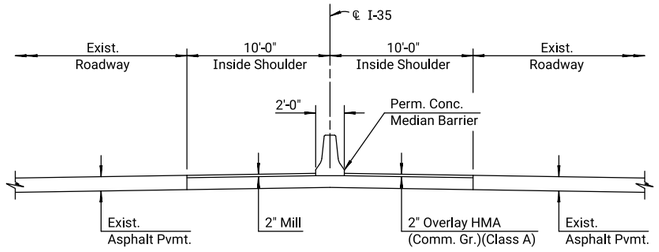
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	3	103

DATE	BY	REFERENCES NOTED / REFERENCES CHECKED



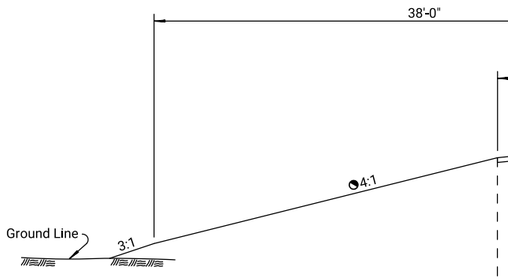
FULL MEDIAN BUILD UP TYPICAL SECTION

Sta. 2642+55 to Sta. 2648+08.33
Sta. 2689+95 to Sta. 2695+48.33

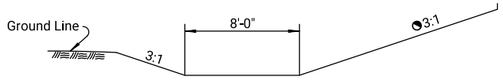


CENTERLINE BARRIER TYPICAL SECTION

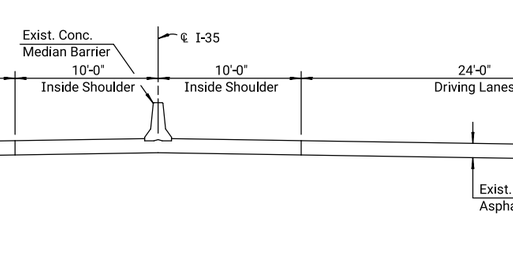
Sta. 2641+60 to Sta. 2649+00
Sta. 2689+00 to Sta. 2696+40



Sta. 2673+80 to Sta. 2676+00
Sta. 2678+00 to Sta. 2679+01.75

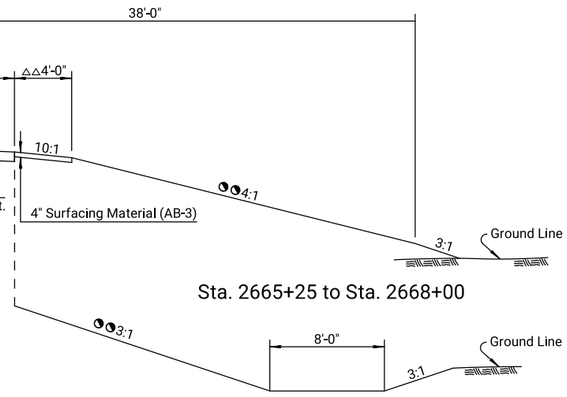


Sta. 2676+00 to Sta. 2678+00



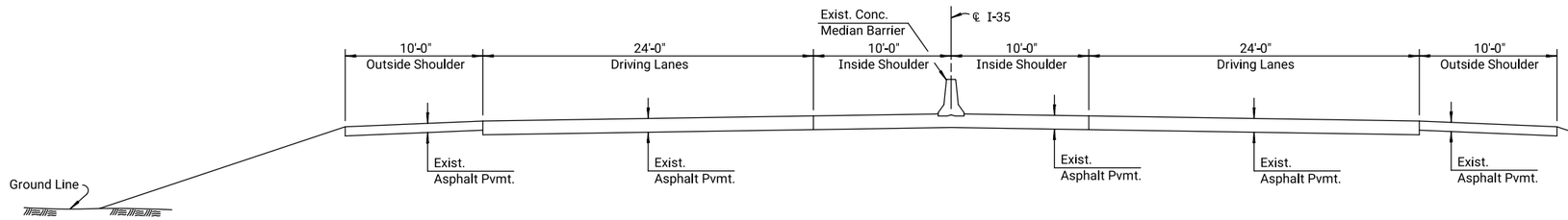
TYPICAL SECTION

Sta. 2664+03.02 to Sta. 2668+00
Sta. 2673+80 to Sta. 2681+01.75



Sta. 2665+25 to Sta. 2668+00

Sta. 2664+03.02 to Sta. 2665+25



EXISTING TYPICAL SECTION

◔ Foreslope Transition from 3:1 at Sta. 2669+20 to 4:1 at Sta. 2669+50
Foreslope Transition from 3:1 at Sta. 2676+96.75 to 6:1 at Sta. 2677+46.75
6:1 from Sta. 2677+46.75 to Sta. 2679+01.75
Foreslope Transitions from 6:1 at Sta. 2679+01.75 to 3:1 at Sta. 2681+01.75

◔◔ Foreslope Transitions from 3:1 at Sta. 2664+03.02 to 6:1 at Sta. 2666+03.02
6:1 from Sta. 2666+03.02 to Sta. 2667+58.02
Foreslope Transitions from 6:1 at Sta. 2667+58.02 to 3:1 at Sta. 2668+08.02

△ 0'-0" from 2679+01.75 to 2681+01.75

△△ 0'-0" from 2664+03.02 to 2666+03.02

✳ Excavation thru Cuts not Subgraded

Notes:
Dimensions and slopes for standard ditches and fills. See plan and cross-sections for variations.
Intersection of all slope lines shall be softened and rounded for pleasing appearance.

Kansas Turnpike Authority

TYPICAL SECTIONS

Sh. No. 3

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 3090264Orts01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	4	103

GENERAL NOTES

THE FIELD SURVEY INFORMATION SHOWN ON THE PLANS REPRESENTS THE EXISTING TOPOGRAPHIC CONDITIONS AS BEST AS COULD BE DETERMINED.

UTILITY SERVICE LINES, POLES, VALVE BOXES, METERS, ETC. ARE TO BE ADJUSTED AS NECESSARY BY THE OTHERS PRIOR TO CONSTRUCTION UNLESS OTHERWISE SHOWN ON THE PLANS.

EXISTING UTILITIES AND THEIR LOCATION, AS SHOWN ON THE PLANS, REPRESENT THE BEST AS COULD BE DETERMINED. THE CONTRACTOR SHALL BE REQUIRED TO WORK AROUND ANY EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WHICH DO NOT CONFLICT WITH THE PROPOSED CONSTRUCTION.

THE CONTRACTOR SHALL BE AWARE THAT HE/SHE WILL BE WORKING IN CLOSE PROXIMITY OF EXISTING UTILITIES. ANY CONFLICTS WITH SUCH UTILITIES SHALL BE REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL COORDINATE THE CONSTRUCTION OF THE PROJECT WITH THE RELOCATION OF ANY EXISTING UTILITIES BY THE UTILITY COMPANY.

THE CONTRACTOR WILL BE RESPONSIBLE TO COORDINATE WITH THE UTILITY OWNER TO LOCATE AND FLAG ALL UNDERGROUND UTILITIES PRIOR TO EXCAVATION TO AVOID DAMAGING UTILITIES. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE A MINIMUM ADVANCE NOTICE OF 72 HOURS TO UTILITY COMPANIES PRIOR TO EXCAVATION OR WORKING ADJACENT TO UTILITIES.

ALL BORROW TO BE OBTAINED FROM AREAS PROVIDED BY THE CONTRACTOR SHALL BE APPROVED BY THE ENGINEER, BOTH AS TO THE 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.

A GROSE VMF OF 0.87 FOR THE SOIL MANTLE HAS BEEN COMPUTED TO INCLUDE QUANTITIES FOR INITIAL CONSOLIDATION AND SETTLEMENT.

EXCAVATION SHOWN TO BE WASTED SHALL BE WASTED ON SITES PROVIDED BY THE CONTRACTOR. THE 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 CONSTRUCITON LIMITS AND RIGHT-OF-WAY LINE SHALL BE REMOVED UNLESS DIRECTED BY THE ENGINEER TO BE SPARED. ALL TREES WITHIN THE APPROPRIATE CLEAR ZONE SHALL BE REMOVED.

UNLESS OTHERWISE NOTED TO BE MILLED, REMOVAL OF EXISTING SURFACE WILL BE PAID FOR UNDER THE BID ITEM "ROCK EXCAVATION" STANDARD SPECIFICATIONS.

MISCELLANEOUS REMOVALS, INCLUDING ROCK EXCAVATION, REQUIRED FOR THE PLACEMENT OF PAVING, TEMPORARY BARRIER AND TEMPORARY GUARDRAIL SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO OTHER REMOVAL "BID ITEMS".

ALL SAWCUTS SHALL BE FULL DEPTH AND SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO OTHER PAVEMENT "BID ITEMS".

ALL MATERIAL FROM MILLING IS TO BECOME THE PROPERTY OF THE CONTRACTOR.

EXISTING GUARDRAIL WHICH IS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

EXISTING CONCRETE SAFETY BARRIER WHICH IS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

TEMPORARY CONCRETE SAFETY BARRIER SHALL BE PROVIDED BY THE KTA. THE CONTRACTOR SHALL COORDINATE WITH THE KTA FOR THE DELIVERY AND USE OF TEMPORARY CONCRETE SAFETY BARRIER FROM THE WELLINGTON MM 19 AND K-15 MM 45 STOCKPILE SITES.

THE CONTRACTOR SHALL COORDINATE TRAFFIC CONTROL WITH OTHER CONSTRUCTION AND MAINTENANCE PROJECTS WITHIN THE AREA.

THE CONTRACTOR SHALL PROVIDE, ERECT, AND MAINTAIN TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AS SHOWN ON THE TRAFFIC CONTROL PLANS AND SUBJECT TO THE ENGINEER'S APPROVAL. ACCESS TO RESIDENCES AND PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.

PRIOR TO BIDDING, EACH BIDDER SHALL VISIT THE SITE AND SATISFY THEMSELVES OF SURFACE & SUBSURFACE CONDITIONS. EACH BIDDER SHALL ALSO FULLY INFORM THEMSELVES AS TO THE EXTENT OF THE SCOPE OF WORK TO BE PERFORMED.

THE EXISTING GRANULAR BASE MATERIAL SHALL BE REMOVED AND PAID FOR AS "COMMON EXCAVATION." THIS MATERIAL MAY BE USED IN THE EMBANKMENTS, BUT SHALL NOT BE WITHIN THE TOP 18" UNDER PAVEMENT OR THE TOP 6" OF GRADING SLOPES TO BE SEEDED.

THE CONTRACTOR SHALL COORDINATE WITH THE KTA FOR THE REMOVAL AND RELOCATION OF BRIDGE DECK SENSORS.

UTILITIES

Communication₁
Chickasaw Telecommunications
(Indian Nation Fiber Optics)
Attn. Keith Merrill
PH: 1-405-533-2211 (O)
PH: 1-405-269-1532 (C)

Communication₂
Kansas Turnpike Authority
9401 E. Kellog
Wichita, KS 67207
PH: 1-316-682-4537

Water₁
Sumner Co. RWD #4
Attn. Briant Osborne
4766 US 166
Arkansas City, KS 67005
PH: 1-620-441-7683

P.I. ℄ Sta. 2595+01.85
N 152,216.273 E 18,547,189.850

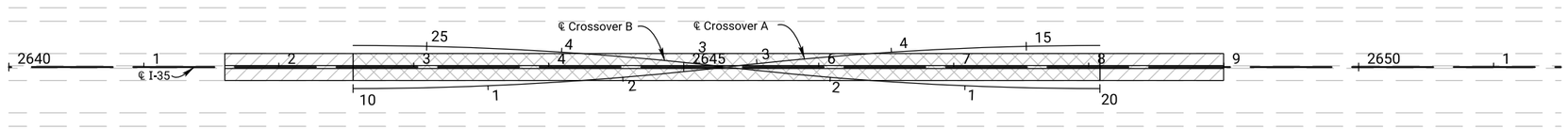
PROJECT SURVEY CONTROL

Horizontal and Vertical project control is based on OPUS solutions. Two control points were set along the project area. Each point was observed twice on different days for a minimum of four hours.

Hor. Datum: KRCS Zone 18 Arkansas City
Vert. Datum: NAVD 1988

Datum Bench Mark #10: "T" Post 0.2' Below Ground
49.12' Rt. at Sta. 2661+76.69
Elev. 1166.02 NAVD 1988

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



LEGEND
Remove Pavement
Mill & Overlay

UTILITIES
Communication₁ Indian Nation Fiber Optics
Communication₂ Kansas Turnpike Authority

Kansas Turnpike Authority

PLAN SHEET

STA. 2640+00 TO STA. 2651+00

Sh. No. 4

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rpl01_50 Scale.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	5	103

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

SCALE: 1"=50'

NW ¼ Sec. 29, T34S, R1E

Clear and grub area. Final grading and seeding by others.

Const. Limits

Exist. R/W & A/C

gravel

1 2 3 4 2655 6 7 8 9 2660 1 2 3 4 2665 6

℄ I-35

CP# 100

BM# 10

gravel

Const. Limits

INDIAN_NATIONS_FIBER

Exist. R/W & A/C

NE ¼ Sec. 29, T34S, R1E

LEGEND

Remove Pavement

Mill & Overlay

UTILITIES

Communication$_1$ Indian Nation Fiber Optics
Communication$_2$ Kansas Turnpike Authority

Kansas Turnpike Authority

PLAN SHEET

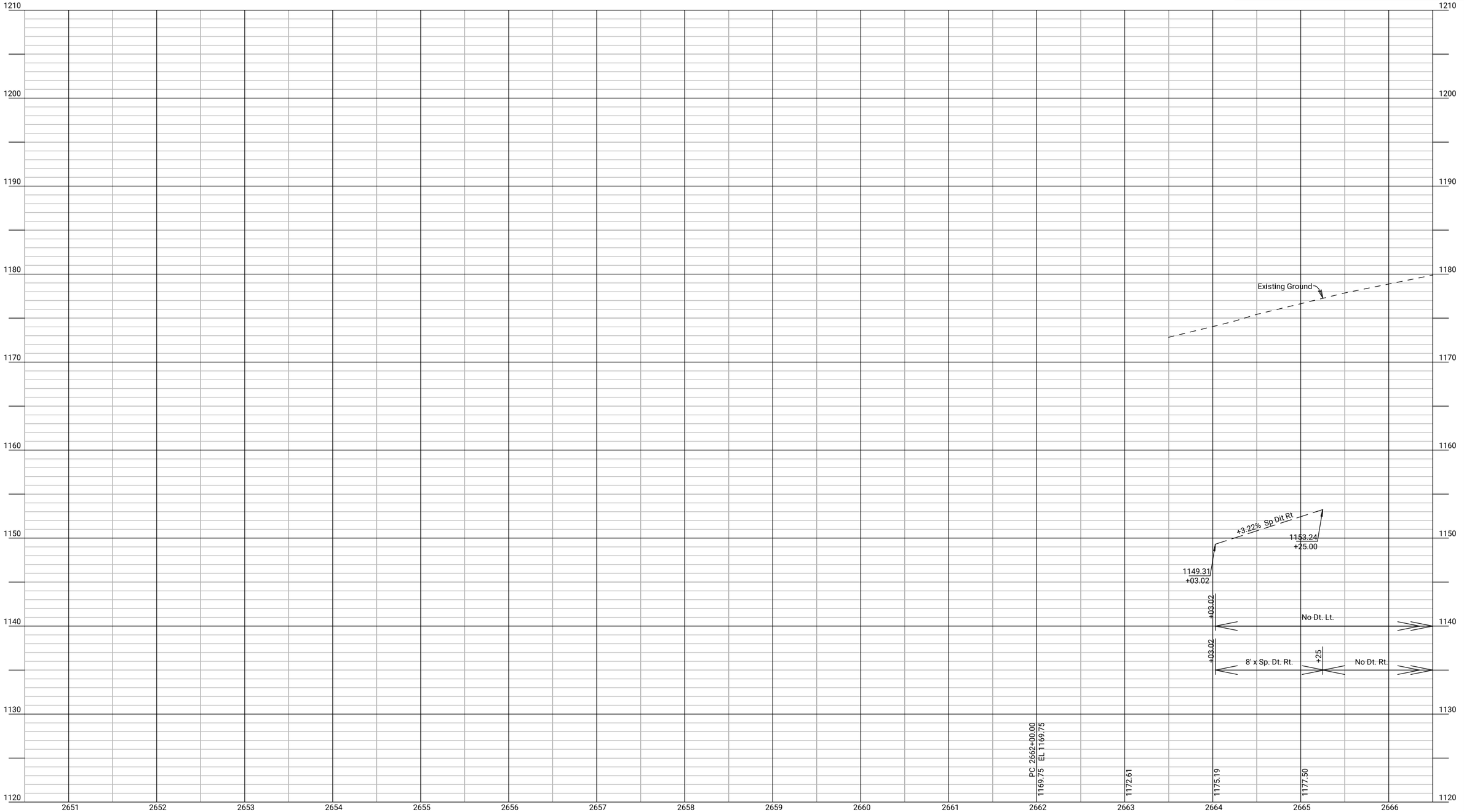
STA. 2651+00 TO STA. 2666+00

Sh. No. 5

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 3090264 0rpl01_50 Scale.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	6	103

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



Kansas Turnpike Authority

PROFILE SHEET

STA. 2651+00 TO STA. 2666+00

Sh. No. 6

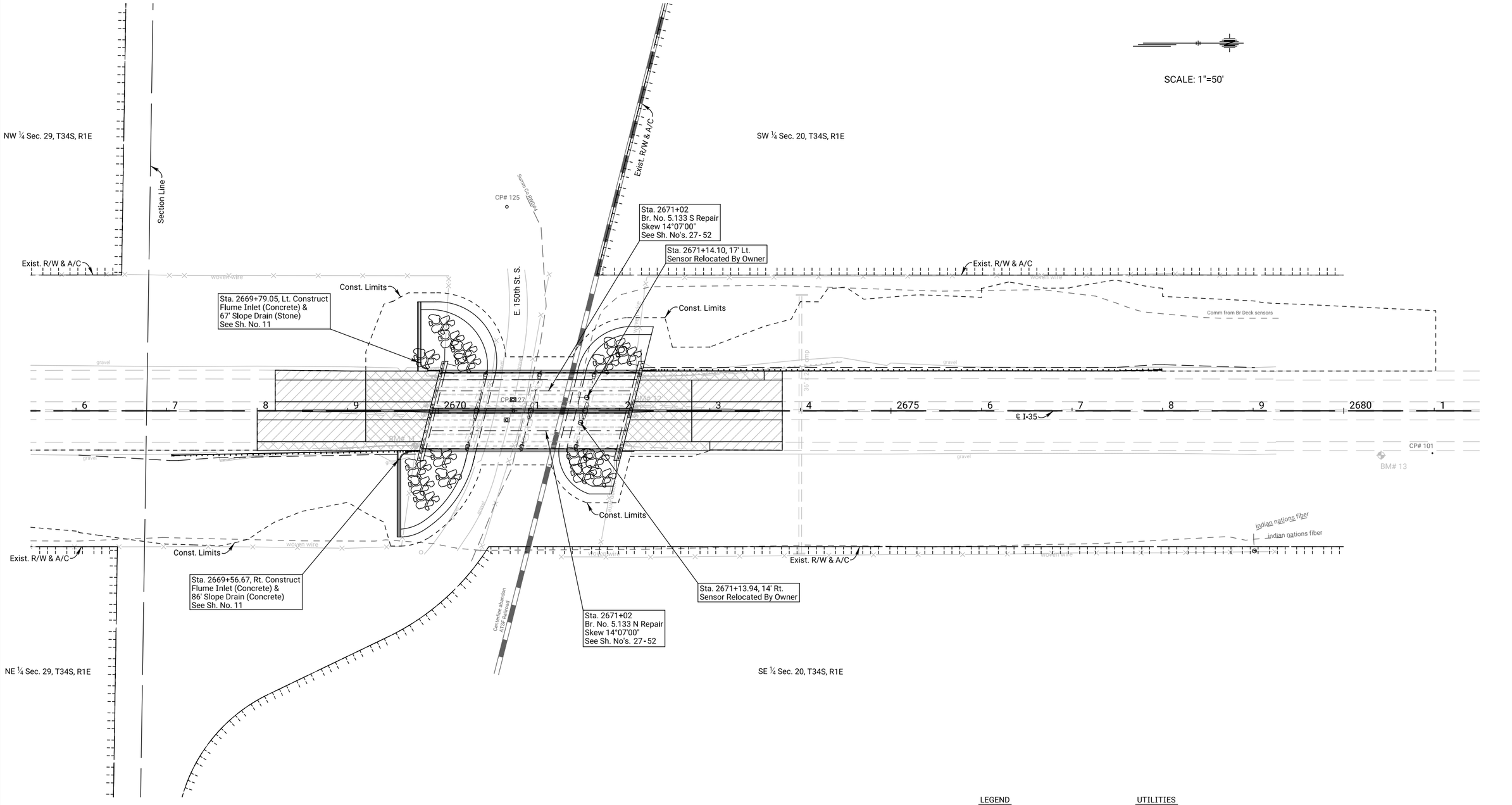
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rpr01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	7	103

P.O.T ℄ Sta. 2668+00.00
N 159,514.232 E 18,547,136.866

P.O.T ℄ Sta. 2674+00.00
N 160,114.216 E 18,547,132.511

SCALE: 1"=50'



N ¼ Cor. Sec. 20, T34S, R1E
1. Found 1/2" Square Rebar (0.3' deep)

2. Spike and Shiner on top of guardfence post	13.30'	NE
3. Spike and Shiner on top of guardfence post	16.20'	SE
4. Chisled "+" cut, 1' West of the east EWS	53.00'	W
5. Spike and KDOT washer on top of guardfence post	23.40'	SW
6. Rivet and KDOT washer on top of NE abutment hubguard	46.30'	WNW

W ¼ Cor. Sec. 21, T34S, R1E
1. Found 1/2" Rebar

2. Base of 6" pipe brace post SW. side	15.35'	ENE
3. Base of 6" pipe corner post NW. side	15.00'	ESE
4. Base of 6" pipe N. gate post NW. side	18.60'	SE

NW Cor. Sec. 21, T34S, R1E
1. Found 1/2" Rebar on N & S side of Stone (0.7' deep)

2. Mag nail S. side PP	39.10'	NE
3. Mag nail W/PSD in guy pole	34.70'	SE
4. Nail and cap in tele. ped. post NE. side	54.00'	NW
5. CTR. of water meter cover	49.00'	SW

B.M. #10 - "T" Post 0.2' Below Ground
49.12' Rt. ℄ Sta. 2661+76.69 El. 1166.02

B.M. #11 - "D" Cut on Top Corral Rail
38.93' Rt. ℄ Sta. 2669+74.17 El. 1186.51

B.M. #12 - "D" Cut on Top Corral Rail
5.15' Lt. ℄ Sta. 2672+16.01 El. 1188.18

B.M. #13 - "T" Post 0.2' Below Ground
49.03' Rt. ℄ Sta. 2680+41.29 El. 1175.54

LEGEND
- Remove Pavement
- Mill & Overlay

UTILITIES

Communication₁	Indian Nation Fiber Optics
Communication₂	Kansas Turnpike Authority
Water₁	Sumner Co. RWD #4

Kansas Turnpike Authority

PLAN SHEET

STA. 2666+00 TO STA. 2681+00

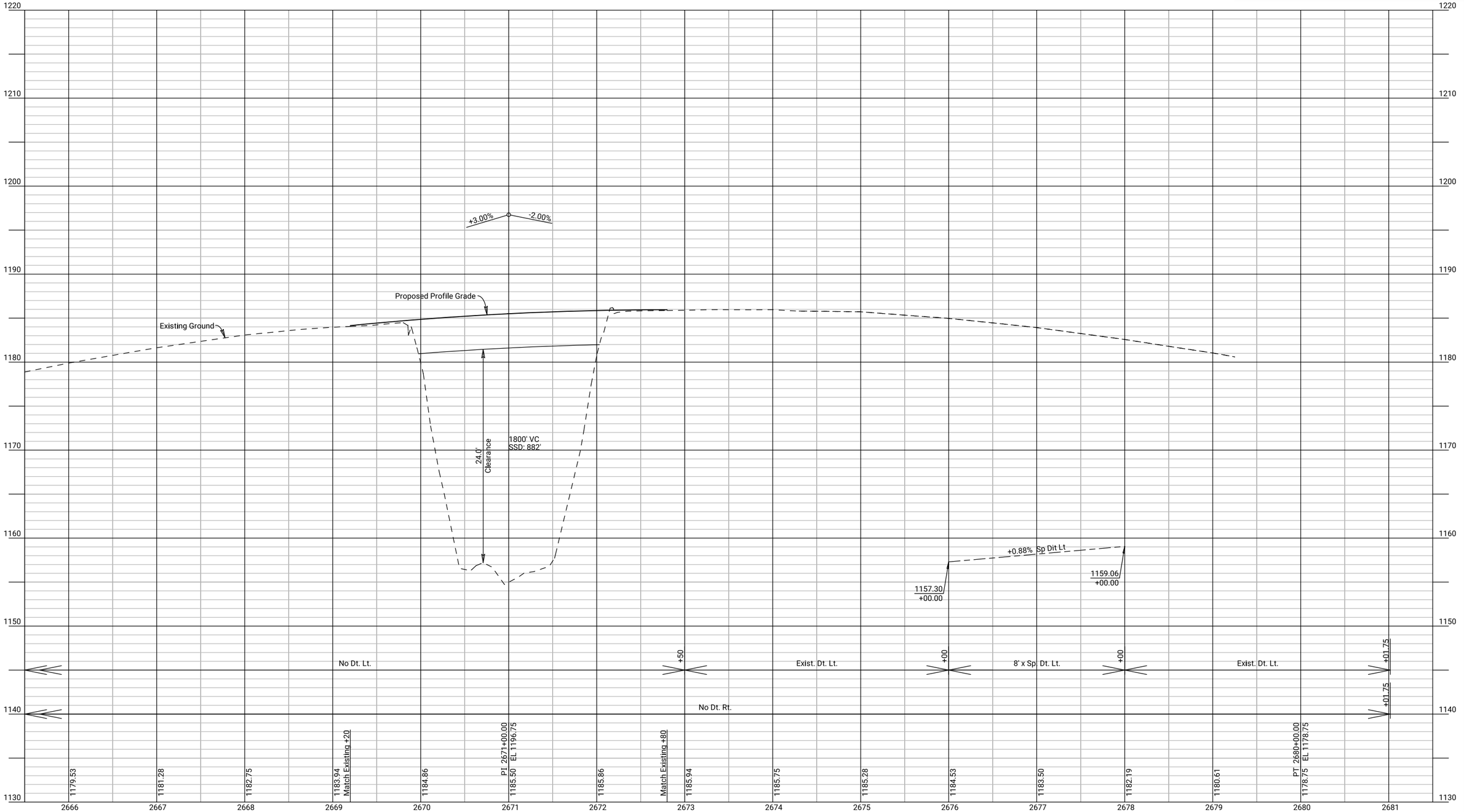
Sh. No. 7

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rpl01_50 Scale.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	8	103

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



Kansas Turnpike Authority

PROFILE SHEET

STA. 2666+00 TO STA. 2681+00

Sh. No. 8

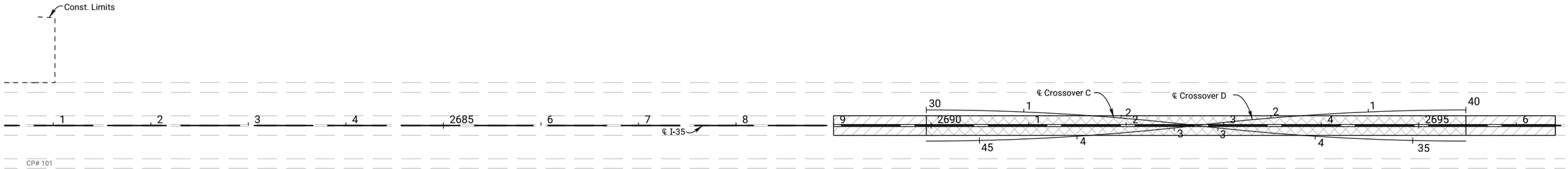
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rpr01.dgn

P.I. ℄ Sta. 2717+99.84
N 164,513.942 E 18,547,100.829

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	9	103

SCALE: 1"=50'

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



CP# 101

LEGEND

Remove Pavement

Mill & Overlay

UTILITIES

Communication$_1$ Indian Nation Fiber Optics
Communication$_2$ Kansas Turnpike Authority

Kansas Turnpike Authority

PLAN SHEET

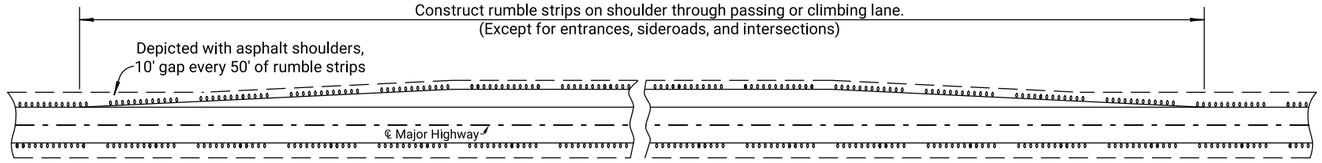
STA. 2681+00 TO STA. 2696+00

Sh. No. 9

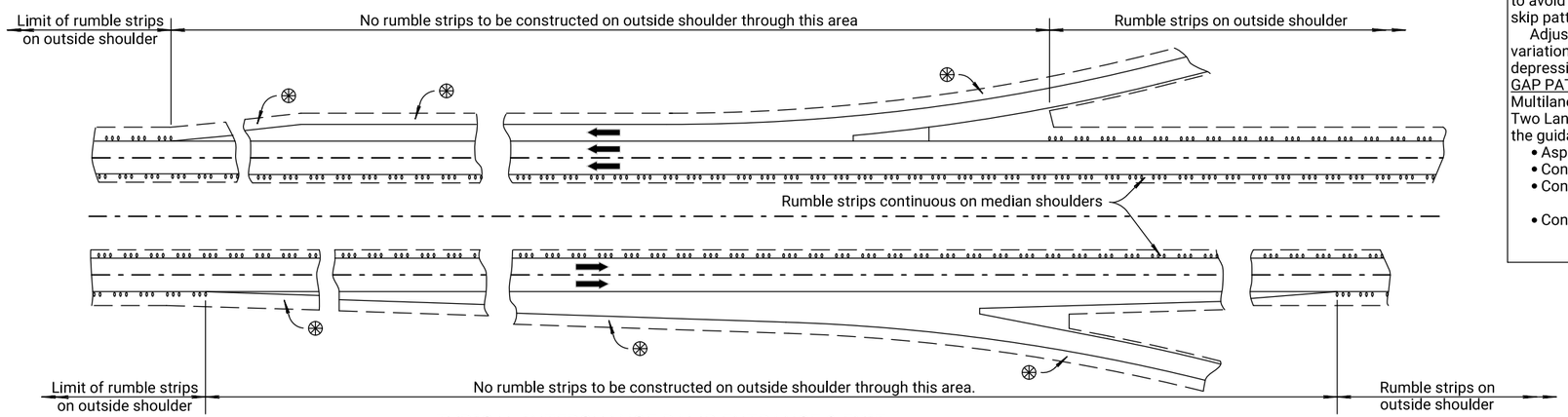
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rpl01_50 Scale.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	10	103

Note to Designer: Construct rumble strips on high speed and/or high traffic volume ramps on directional type interchanges.
Include this KDOT Standard Drawing when rumble strips are part of the project.



TYPICAL PASSING OR CLIMBING LANES



TYPICAL INTERCHANGE RAMP ENTRANCE & EXIT

GENERAL NOTES:

All work and materials required for construction of rumble strips in asphalt or concrete pavement are paid under the bid item "Rumble Strips (Milled)".

See typical sections for other surfacing and shoulder details.

Do not omit rumble strip installations through field entrances, house entrances, or low volume, unpaved business entrances.

Do not construct rumble strips on bridges or concrete bridge approaches.

⊛ Construct rumble strips on directional ramps and tapers.

Either rumble strip shape is acceptable with no mixing of shapes on a project unless approved by the engineer.

SKIP PATTERN:

Rumble strips on asphalt will not have a skip pattern. Rumble strips on concrete shoulders will have a skip pattern to avoid joints. See Rumble Strip Layouts. For asphalt overlays, where the joints will be sawed and sealed, utilize a skip pattern approved by the Engineer.

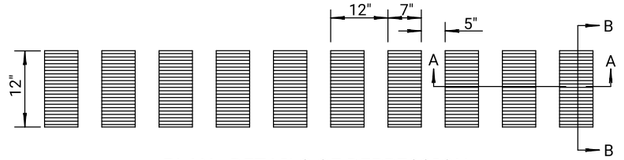
Adjust the number of depressions when concrete pavement contraction joint spacing is less than 15'-0". No variation in spacing between depressions is permitted. Clearance is 2'-0" (min.) to 3'-0" (max.) between the edge of depression and contraction joint. Center each group of depressions between contraction joints.

GAP PATTERN:

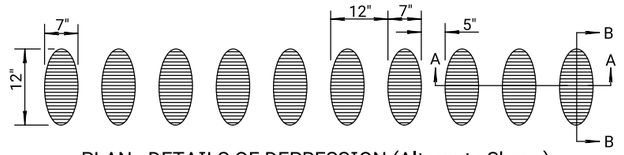
Multilane Divided Higways: Rumble strips will not have a gap pattern.

Two Lane Highways: Rumble strips will have a gap pattern for roadways with 3' or wider paved shoulder. Following the guidance below.

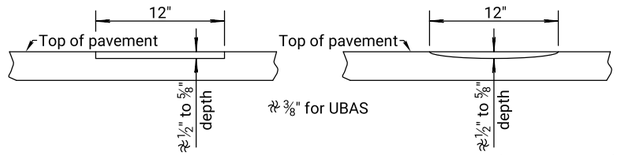
- Asphalt Shoulder: 10' gap provided every 50' of rumble strips
- Concrete Shoulder with 15' Joint Spacing: Omit the first 5 depressions in every fourth panel
- Concrete Shoulder with 6' Joint Spacing: Omit all the depressions in the 9th panel and the first 2 depressions in the 10th panel.
- Concrete Shoulder with other joint spacings or asphalt overlays: A gap pattern providing gaps of 10' to 12' every 40' to 60' of rumble strips should be developed and approved by the Engineer.



PLAN - DETAILS OF DEPRESSION

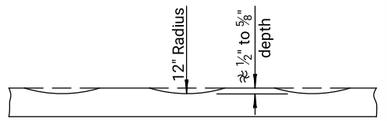


PLAN - DETAILS OF DEPRESSION (Alternate Shape)

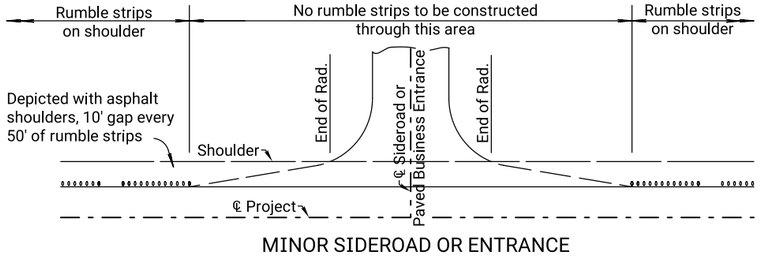


SECTION B-B

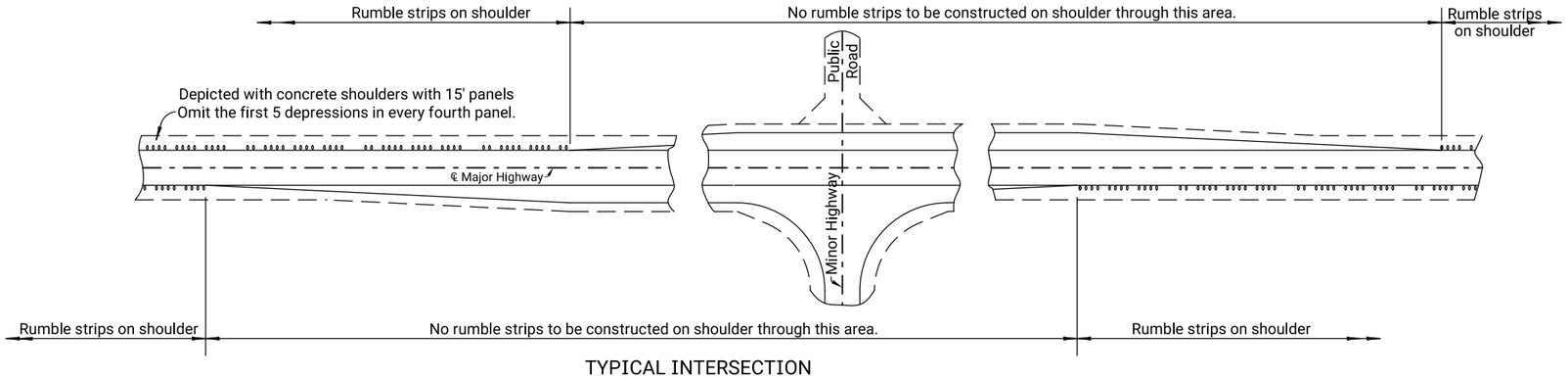
SECTION B-B (ALT. SHAPE)



SECTION A-A
(Typical for both shapes)

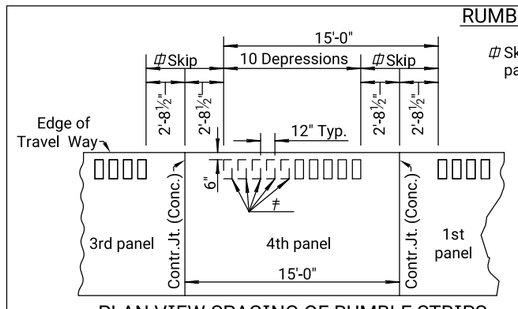


MINOR SIDEROAD OR ENTRANCE



TYPICAL INTERSECTION

RUMBLE STRIP LAYOUTS

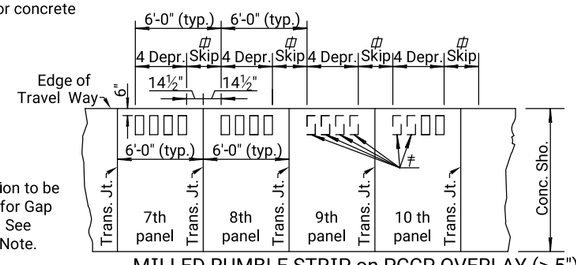


PLAN VIEW-SPACING OF RUMBLE STRIPS

♯See General Note for gap information for bicyclists accomodations.

Skip pattern for concrete pavement.

Depression to be omitted for Gap Pattern. See General Note.



MILLED RUMBLE STRIP on PCCP OVERLAY (≥ 5")

♯See General Note for gap information for bicyclists accomodations.

NO.	DATE	REVISIONS	BY	APP'D
08	03-17-21	Gap patterns to accommodate bicyclists	A.L.R.	S.W.K.
07	07-17-17	Revised notes & new sdrd. label	A.L.R.	S.W.K.
06	11-08-12	Revised Detail, Rumble Strip Dim.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

MILLED RUMBLE STRIPS (CONCRETE/ASPHALT SHOULDER) SHOULDER WIDTH ≥ 2'-0"

RD707

FHWA APPROVAL	04-05-21	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 10

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640RD707.dgn

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	11	103

PLAN

SECTION A-A

SECTION B-B

SECTION C-C

SECTION F-F

SECTION F-F

SLOPE DRAIN STONE

SLOPE DRAIN CONCRETE

SIDE ELEVATION

END ELEVATION

SLOPE DRAIN & TOE WALL DETAILS

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

DIAGRAM of FLUME INLET at PRESSURE RELIEF JOINT

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

SECTION G-G

Bending Diagram
(Bend one bar each length)

METHOD of CONNECTING GUIDE VANE to FLUME INLET

PARTIAL PLAN with GUIDE VANE

SECTION D-D
(Guide Vane formed monolithic)

SECTION E-E
(Typical both ends of vane)

GENERAL NOTE

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

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

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

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

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

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

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

Joints will not extend into the Slope Drain.

All exposed edges shall be finished with an edging tool.

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

No adjustment of guardrail post spacing will be permitted.

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

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

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

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

QUANTITIES (For information only)

SLOPE DRAIN (CONCRETE)

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

SLOPE DRAIN (STONE)

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

⊛ Does not include guide vanes.

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

KANSAS DEPARTMENT OF TRANSPORTATION

FLUME INLET and SLOPE DRAIN (CONCRETE/STONE)

RD628

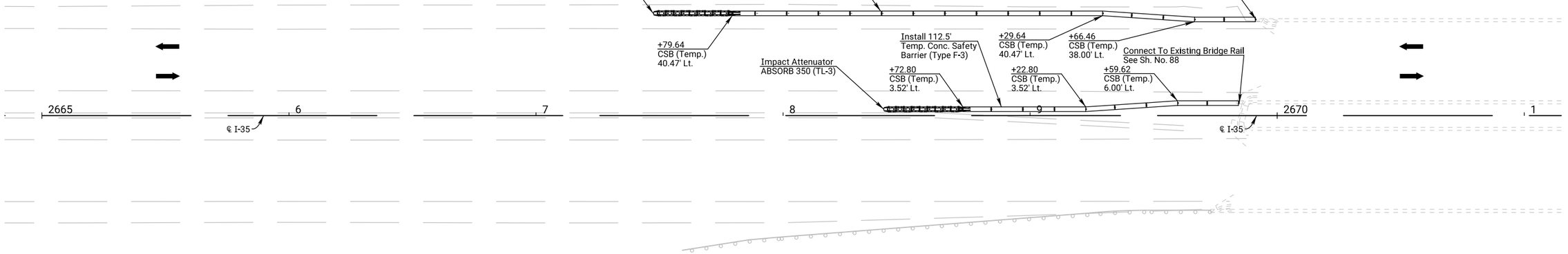
FHWA APPROVAL	02-01-16	APP'D.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 11

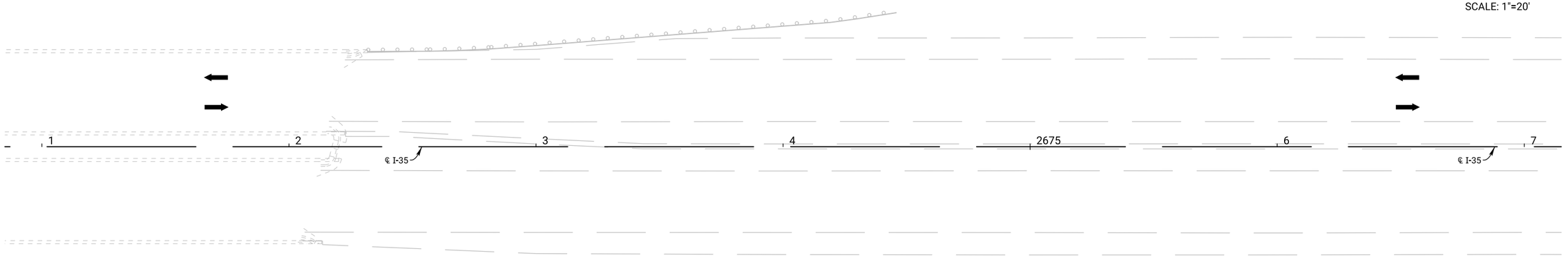
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:58
File : 30902640RD628.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	12	103

SCALE: 1"=20'



SCALE: 1"=20'



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

See Sh. No's. 84-88 for Temp. F3 Barrier Details

See Sh. No. 89 for Attenuator Details.

LEGEND

Traffic Direction

Kansas Turnpike Authority

TEMP. CSB LAYOUT

PHASE 1

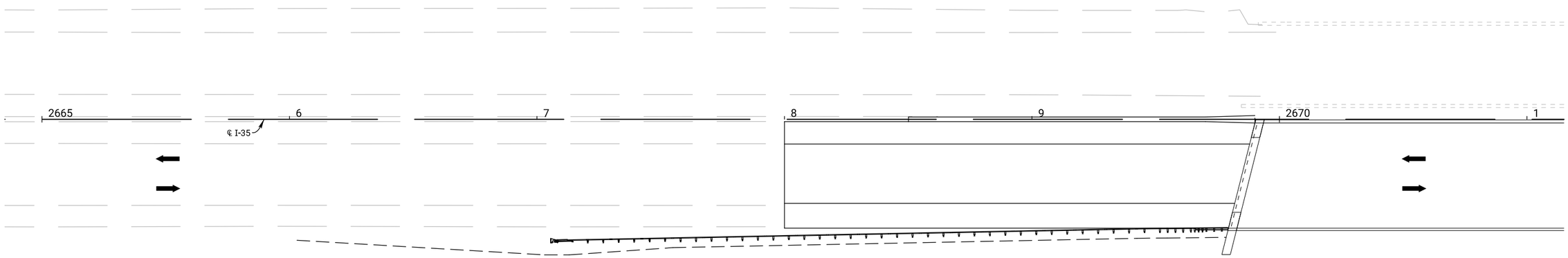
Sh. No. 12

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

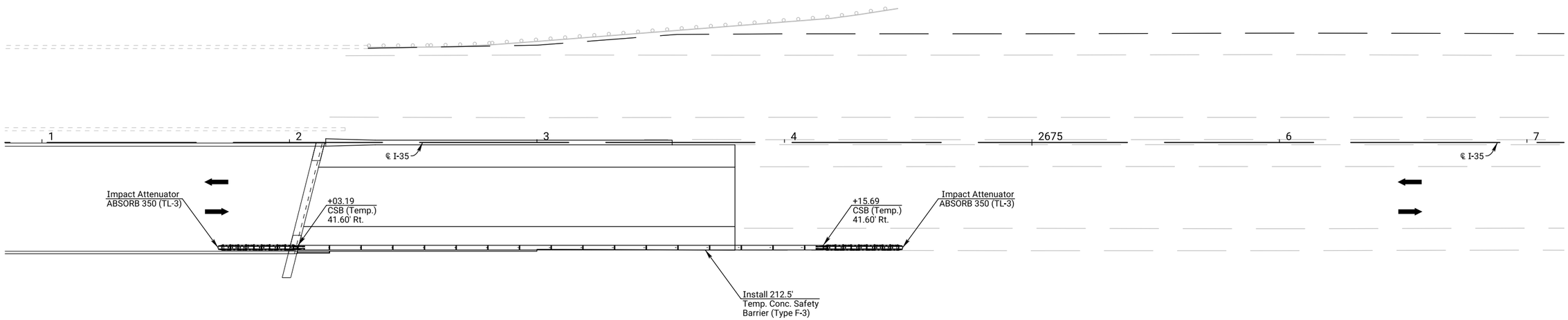
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rgr02.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	13	103

SCALE: 1"=20'



SCALE: 1"=20'



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

See Sh. No's. 84-88 for Temp. F3 Barrier Details

See Sh. No. 89 for Attenuator Details.

LEGEND

Traffic Direction

Permanent Guardrail

Kansas Turnpike Authority

TEMP. CSB LAYOUT

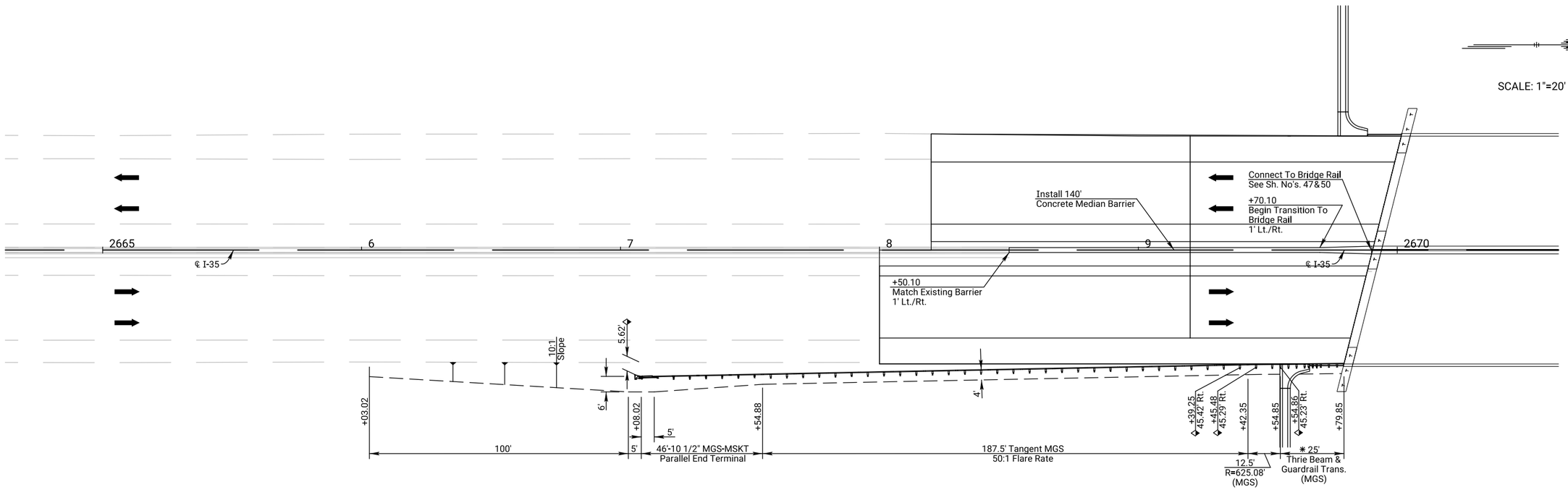
PHASE 2

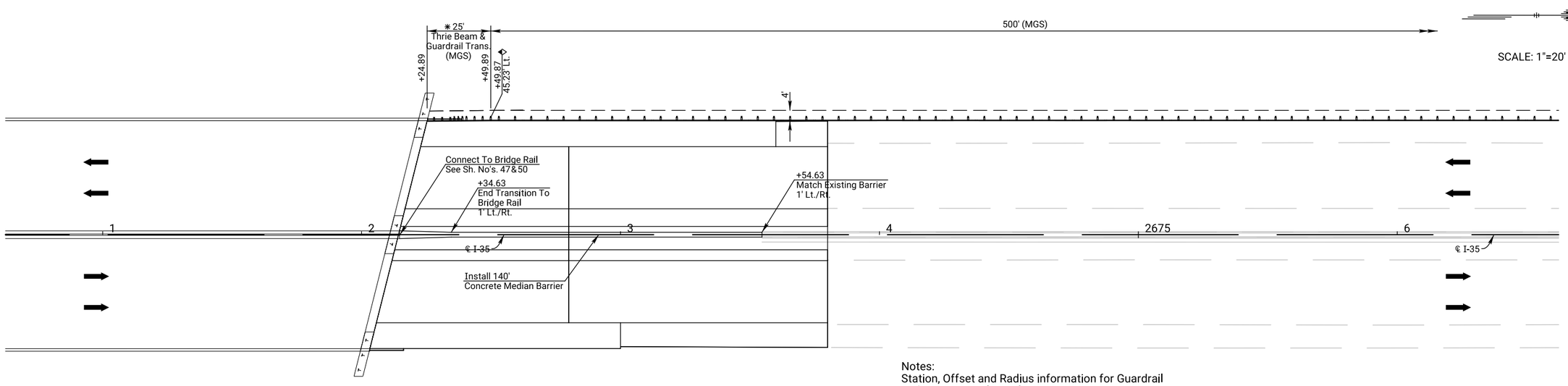
Sh. No. 13

DATE	BY	REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rgr03.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	14	103





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

See Sh. No's. 23-26 for Concrete Median Barrier Details.

See Sh. No's. 16-22 for Guardrail Details.

Unless otherwise noted, post spacing is 6'-3" on ctrs.

✳ For post spacing and nesting details. See Sh. No. 22

⧫ Station and Offset shown to the Face of Post.

LEGEND

Traffic Direction

Permanent Guardrail

Kansas Turnpike Authority

PERM. BARRIER &
GUARDRAIL LAYOUT

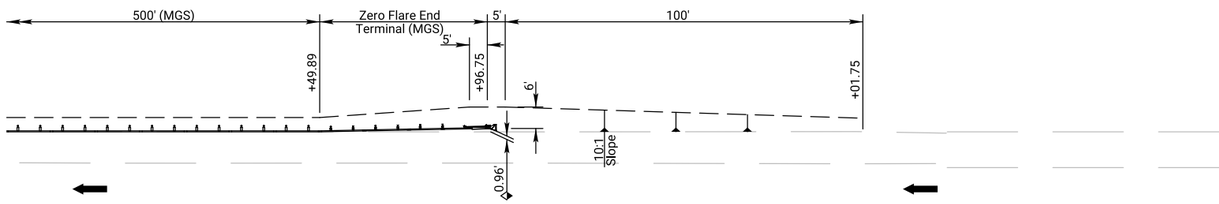
Sh. No. 14

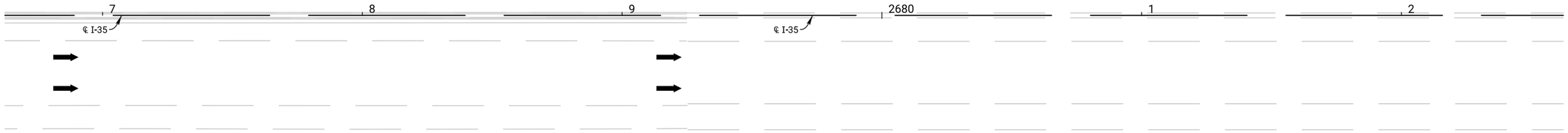
DATE
BY
REFERENCES NOTED
REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rgr01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	15	103

SCALE: 1"=20'





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

See Sh. No's. 23-26 for Concrete Median Barrier Details.

See Sh. No's. 16-22 for Guardrail Details.

Unless otherwise noted, post spacing is 6'-3" on ctrs.

✳ For post spacing and nesting details. See Sh. No. 22

⬨ Station and Offset shown to the Face of Post.

LEGEND

Traffic Direction

Permanent Guardrail

Kansas Turnpike Authority

PERM. BARRIER & GUARDRAIL LAYOUT

Sh. No. 15

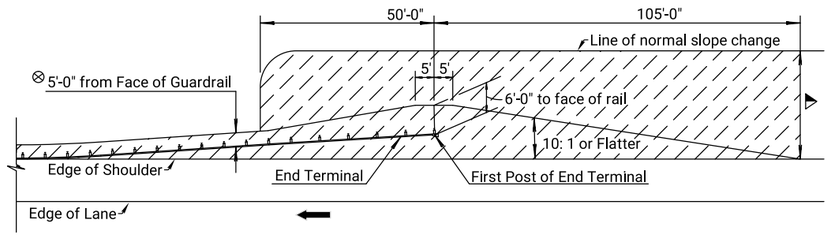
DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rgr01.dgn

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

GUARDRAIL CLEAR AREA

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



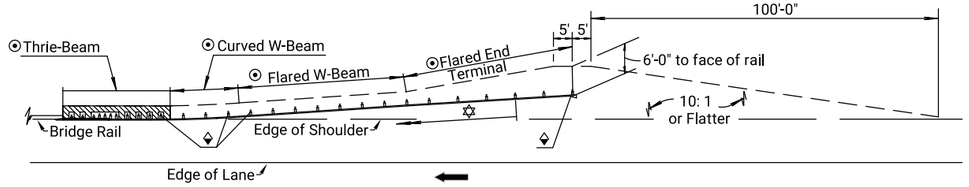
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet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

Normal Project Side Slope.

Deflection Distance for Normal Post Spacing

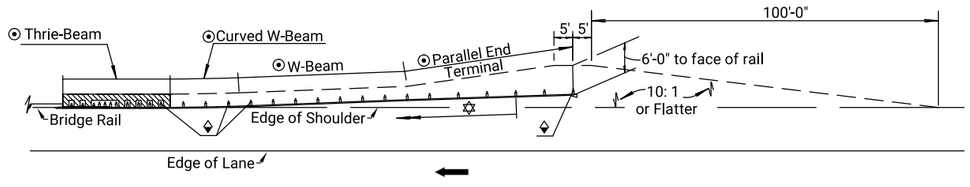
FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



PARALLEL GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



See Guardrail Layout Sheets for Details

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

Length of Need (Begins at Post 3)

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	16	103

GENERAL NOTES

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

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

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

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

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

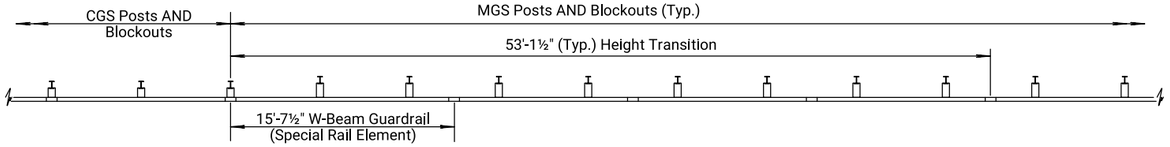
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even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

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

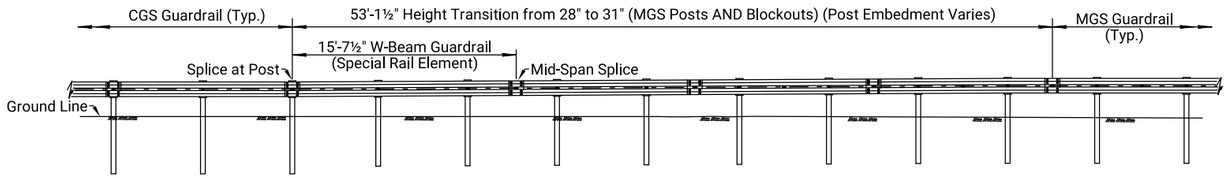
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered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

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

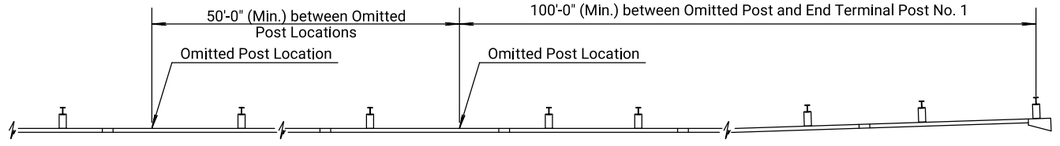
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



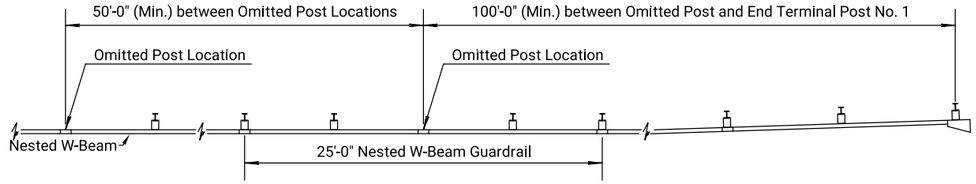
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) END TERMINALS

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

CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS

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

NO.	DATE	REVISIONS	BY	APP'D
02	09-05-18	ADD. OMITTED POST AND TRANS. DETAILS	A.L.R.	T.T.R.
01	06-05-18	INITIAL RELEASE	A.L.R.	T.T.R.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL AUXILIARY DETAILS

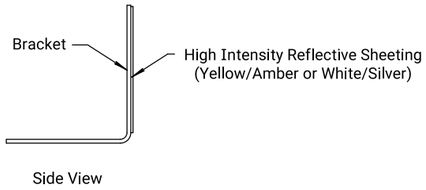
RD606

FHWA APPROVAL	09-25-18	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

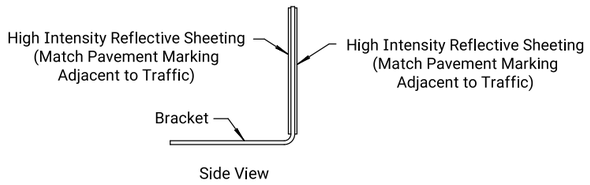
Sh. No. 16

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:57
File : 30902640RD606.dgn

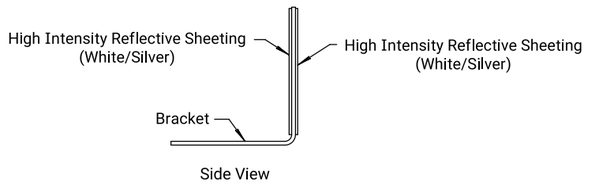
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	17	103



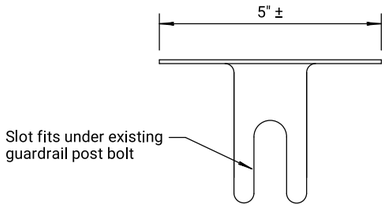
Flexible Marker
One-Way Traffic

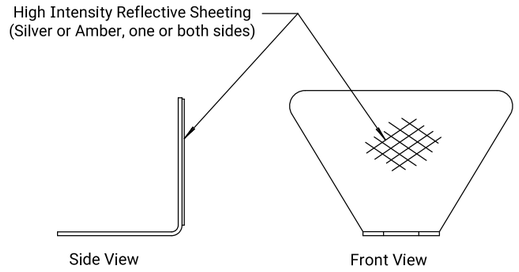


Flexible Marker
Median Locations



Flexible Marker
Two-Way Traffic





Flexible Guardrail Marker

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

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.

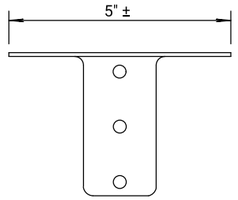
For guardrail located on one-way or divided roadways, use flexible markers with reflective sheeting installed on the approach traffic side of the bracket only. For bridge rail or concrete safety barrier located on the outside edge of one-way or divided roadways, use flexible markers with reflective sheeting 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.

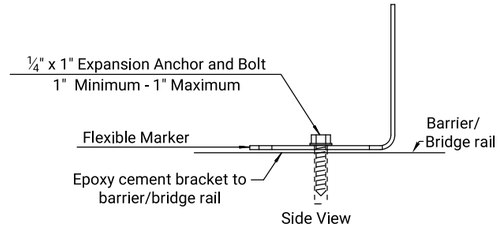
Use zinc or cadmium plated fasteners that comply with Standard Specifications.

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.

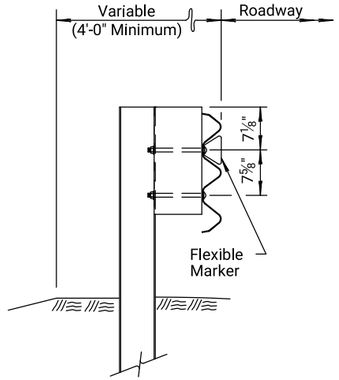
Install flexible markers for the final (permanent) traffic configuration.



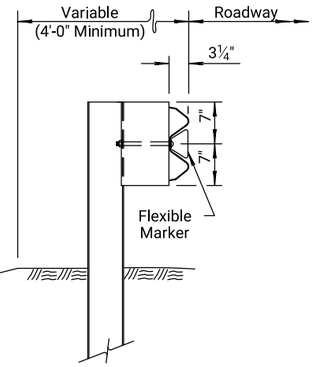
Barrier/Bridge Rail



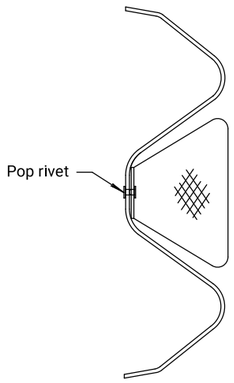
Method of Attaching Flexible
Marker to Barrier/Bridge Rail



THRIE-BEAM GUARDRAIL

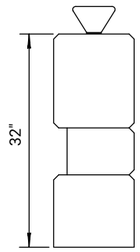


W-BEAM GUARDRAIL

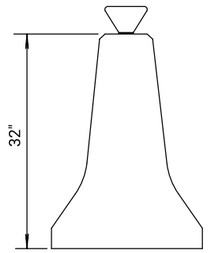


Typical Mounting on W-Beam

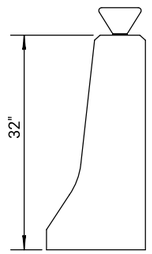
Pop rivet attachment to Guardrail when necessary.



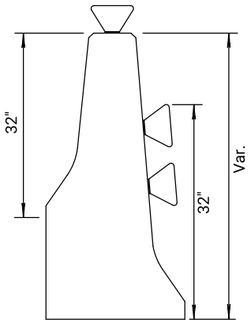
CORRAL RAIL



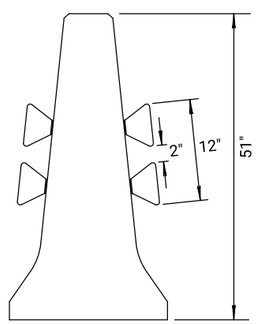
TYPE I CSB



TYPE II CSB or
F-SHAPED BRIDGE RAIL



TYPE III CSB



TYPE IV CSB

TYPICAL BARRIER/BRIDGE RAIL MOUNTING DETAILS

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

KANSAS DEPARTMENT OF TRANSPORTATION

MARKER DETAILS FOR GUARDRAIL, BARRIER, AND BRIDGE RAILS

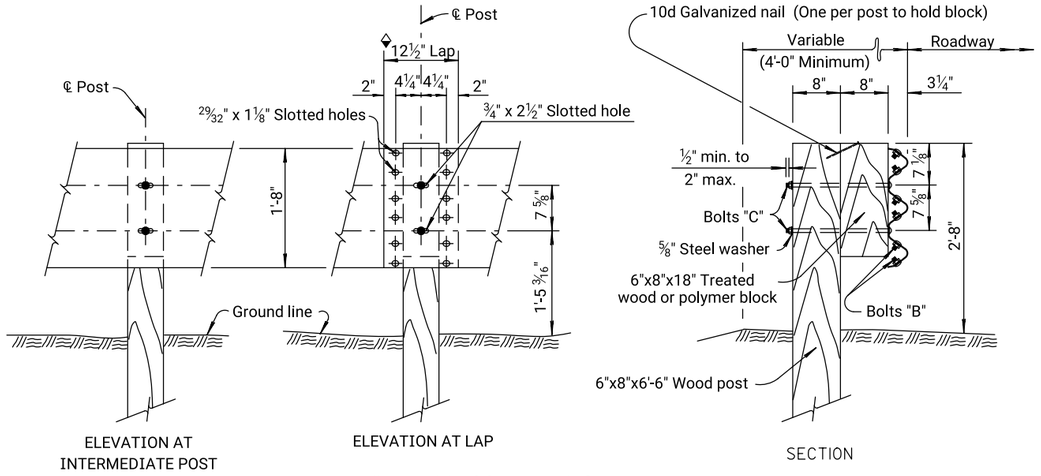
RD610

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

Sh. No. 17

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:57
File : 3090264ORD610.dgn

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.



THRIE BEAM POST DETAILS

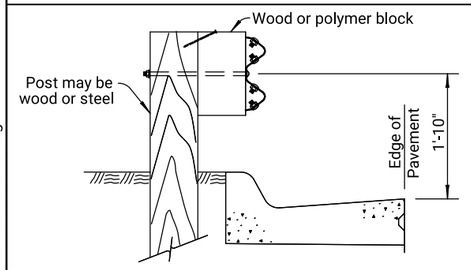
W-BEAM POST DETAILS

♦ 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.

WOOD POSTS

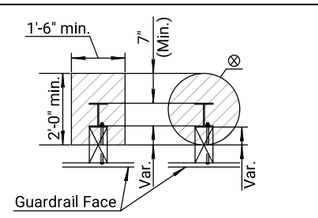
GENERAL NOTES (Wood Posts)

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. Use S4S rectangular posts and wood blocks, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the the guardrail end terminals. 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 and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6". Approved polymer blockouts may be substituted for wood blockouts. Only one type of blockout is permitted on each guardrail installation. This excludes the guardrail end terminals unless certified by the manufacturer. 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. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



DETAIL OF PLACEMENT AT CURB

Note: When face of guardrail is aligned with the face of a curb, measure the height of rail from the pavement surface at the curb/pavement joint as shown. Use a laydown type curb where the face of the guardrail is not located at the face of the curb.

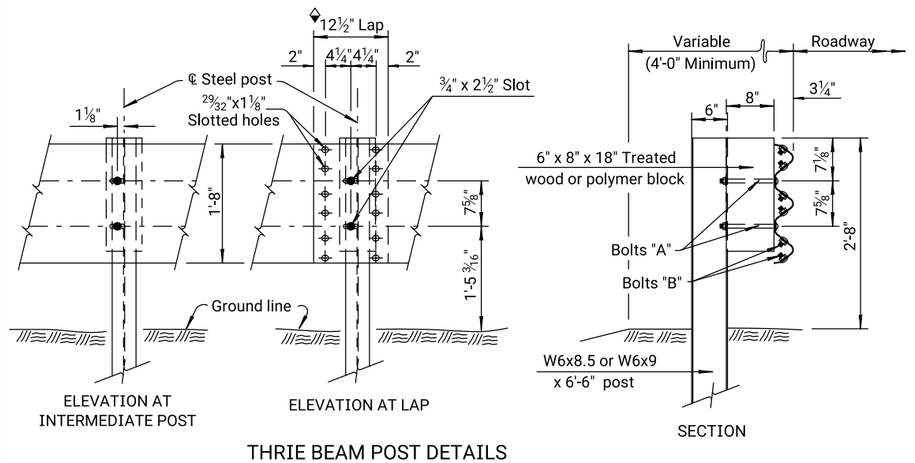


POSTS IN PAVEMENT PLAN
(ALTERNATE GEOMETRIES)
Applies to All Wood and All Steel Posts
(Steel Posts Shown)

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

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

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.



THRIE BEAM POST DETAILS

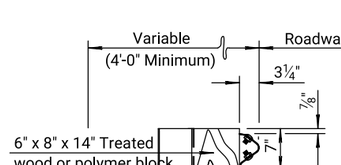
♦ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

W-BEAM POST DETAILS

STEEL POSTS

GENERAL NOTES (Steel Posts)

Use grade of steel for steel posts that meets the requirements of the standard specifications. Hot dip galvanize the posts after fabrication, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the guardrail end terminals. For wood/polymer blockout requriements see standard specifications. Approved polymer blockouts may be substituted for wood blockouts. Only one type of blockout is permitted on each guardrail installation. This excludes the guardrail end terminals. 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 and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6" except as allowed on Standard Drawing RD617. 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. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



BOLT & NUT DETAILS

BOLT SIZE SCHEDULE	
Bolt	L
A	8 ½"
B	1 ¼"
C	18"

Galvanize all bolts, nuts, and washers in accordance with the KDOT's Standard Specifications.

NO.	DATE	REVISIONS	BY	APP'D
13	09-05-18	Added Det., Post In Pavement	A.L.R.	T.T.R.
12	12-14-10	Revised notes, 28" w-be	S.W.K.	J.O.B.
11	06-30-04	Remove steel blockout and notes	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST DETAILS

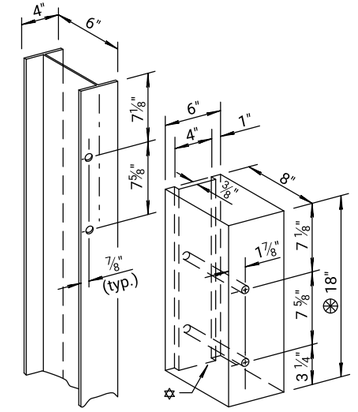
RD611

FHWA APPROVAL	09-25-18	APP'D.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 18

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	18	103

⊛ See Standard Drawing RD613 for Thrie-Beam Transition Section Details.



Note: All holes 13⁄16" dia.

THRIE BEAM
HOLE PUNCHING DETAILS

Note: All holes 13⁄16" dia.

✡ Non-Metallic (Polymer) or Treated Wood Block

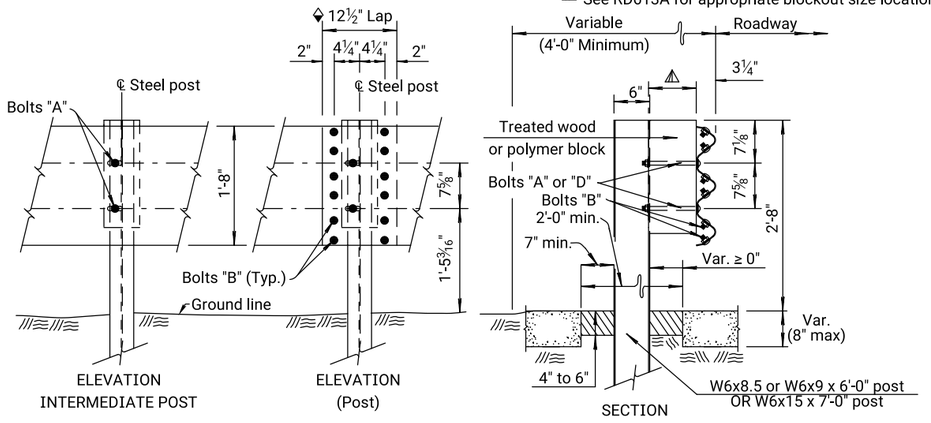
"W" BEAM
HOLE PUNCHING DETAILS

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640RD611.dgn

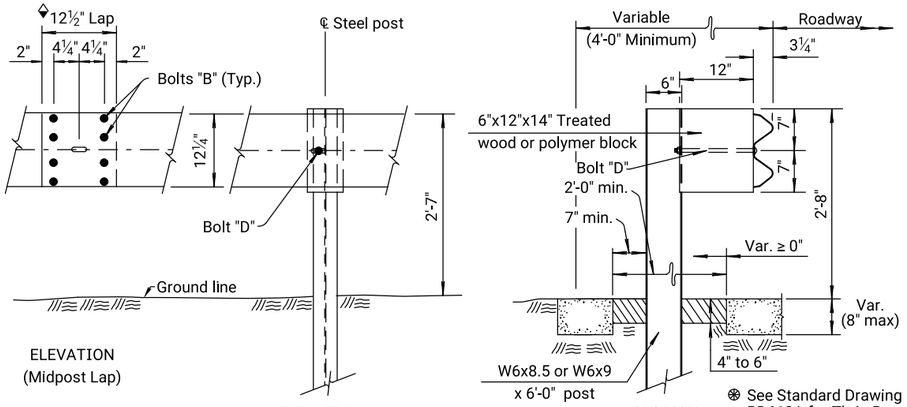
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	19	103

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

⚠ See RD613A for appropriate blockout size location.



THRIE BEAM POST DETAILS/POSTS IN PAVEMENT

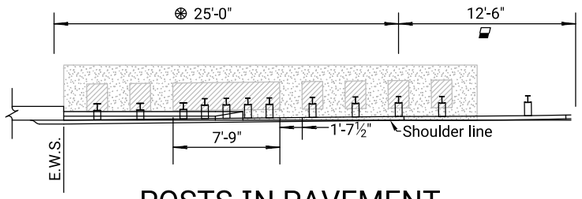


✻ See Standard Drawing RD613A for Thrie-Beam Transition Section Blockout hole pattern.

✡ Non-Metallic (Polymer) or Treated Wood Block

▱ See Guardrail Layout Sheets for Details.

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



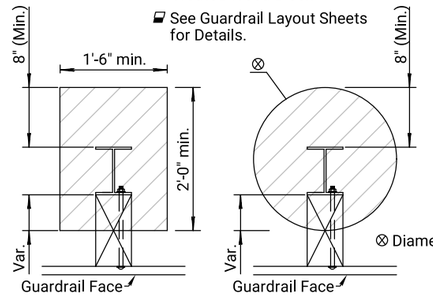
POSTS IN PAVEMENT

(Not to Scale)

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

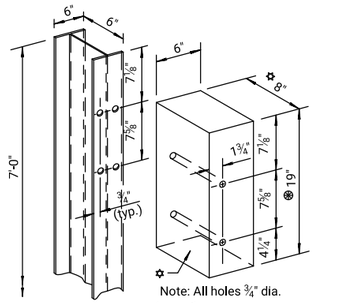
▨ Pavement (Concrete or Asphalt)

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

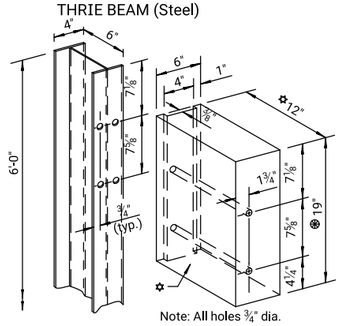


⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

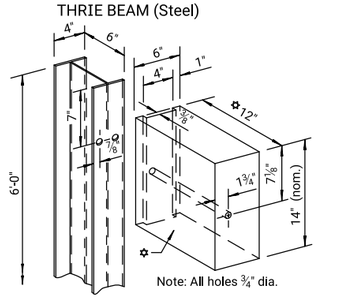
PLAN
(ALTERNATE GEOMETRIES)



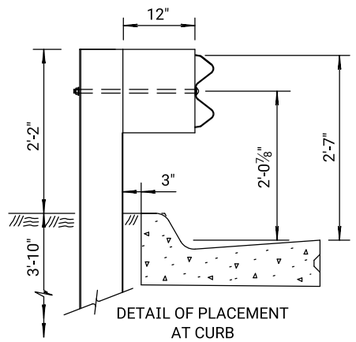
THRIE BEAM (Steel)



THRIE BEAM (Steel)



"W" BEAM (Steel)



DETAIL OF PLACEMENT
AT CURB

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

GENERAL NOTES (Steel Posts)

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

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

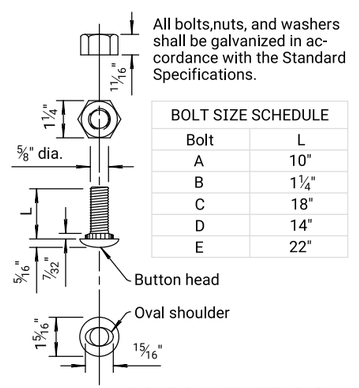
Wood blockouts may be used through the 25'-0" thrie-beam section with wood or polymer blockouts used throughout the remainder of the w-beam installation. The blockout size and material used in the guardrail end terminal may be independent from the remainder of the installation. For wood/polymer blockout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

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

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

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

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



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

BOLT & NUT DETAILS

NO.	DATE	REVISIONS	BY	APP'D
05	09-24-15	Separated Steel/Wood Post Details	S.W.K.	S.W.K.
04	11-08-12	Revised Detail, Posts in Pavement	S.W.K.	J.O.B.
03	08-01-12	Revised Note to Designer	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (STEEL) (MGS) DETAILS

RD611A

FHWA APPROVAL	01-29-16	APP'D.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

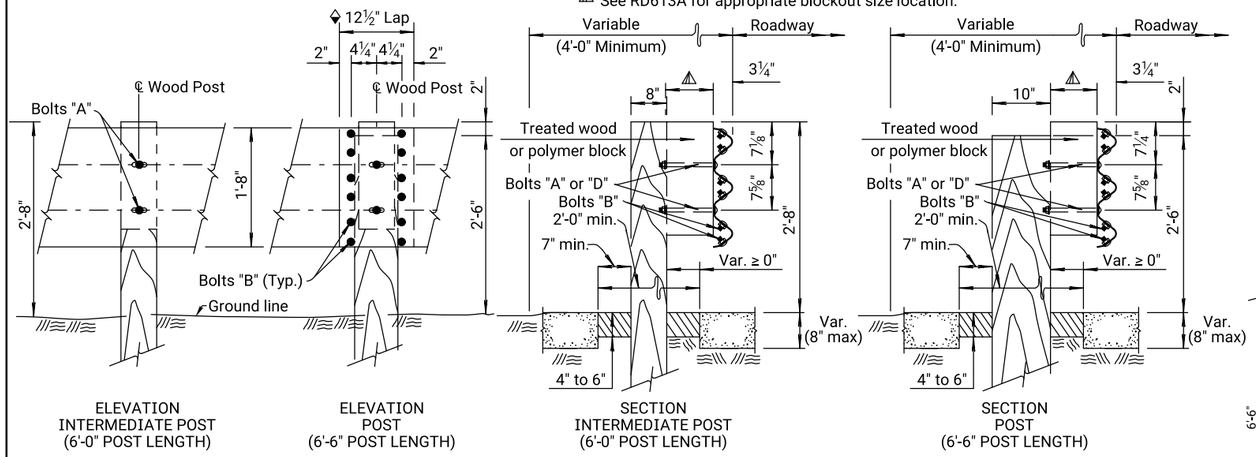
Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:57
File : 30902640RD611A.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	20	103

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

⚠ See RD613A for appropriate blockout size location.



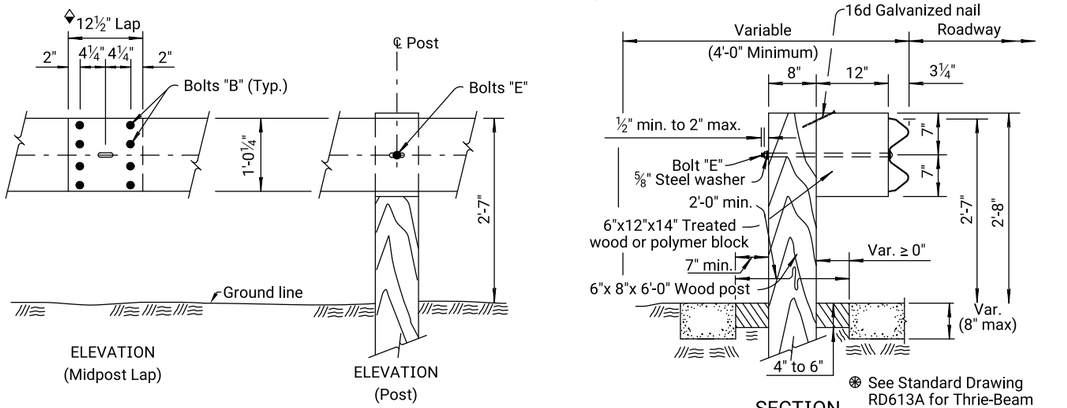
ELEVATION INTERMEDIATE POST (6'-0" POST LENGTH)

ELEVATION POST (6'-6" POST LENGTH)

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

SECTION POST (6'-6" POST LENGTH)

THRIE BEAM POST DETAILS/POSTS IN PAVEMENT



ELEVATION (Midpost Lap)

ELEVATION (Post)

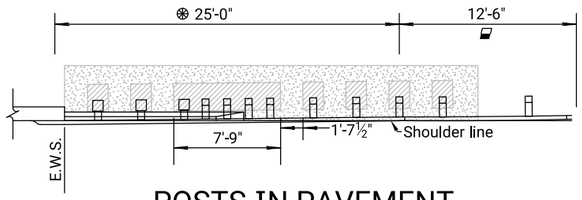
SECTION

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

✡ Non-Metallic (Polymer) or Treated Wood Block

See Guardrail Layout Sheets for Details.

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



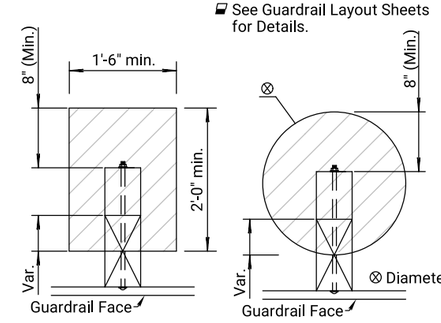
POSTS IN PAVEMENT

(Not to Scale)

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

▭ Pavement (Concrete or Asphalt)

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

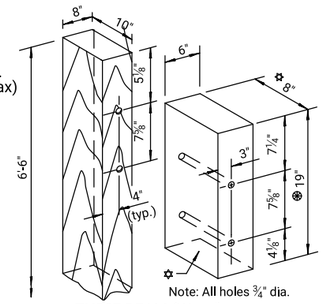


RECTANGULAR GEOMETRY

CIRCULAR GEOMETRY

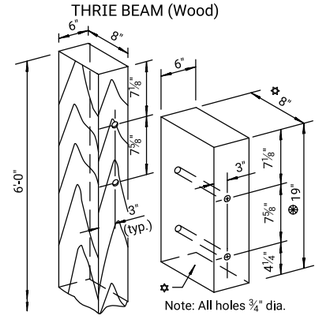
⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

PLAN (ALTERNATE GEOMETRIES)



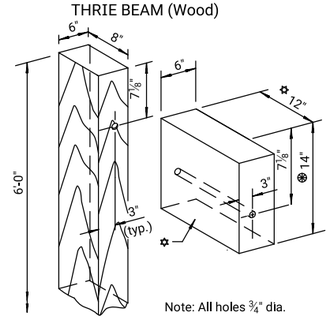
Note: All holes ¾" dia.

THRIE BEAM (Wood)



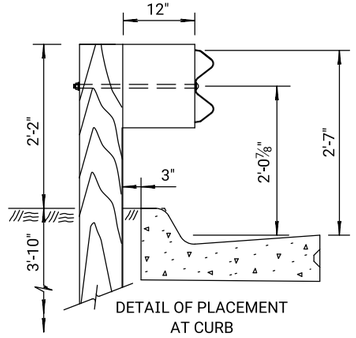
Note: All holes ¾" dia.

THRIE BEAM (Wood)



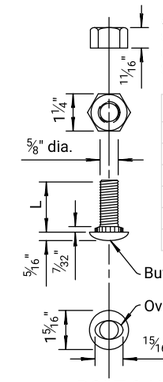
Note: All holes ¾" dia.

"W" BEAM (Wood)



DETAIL OF PLACEMENT AT CURB

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



All bolts,nuts, and washers shall be galvanized in accordance with the Standard Specifications.

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

BOLT & NUT DETAILS

GENERAL NOTES (Wood Posts)

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

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

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

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

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

All dimensions are nominal and are subject to manufacturing tolerances.

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

NO.	DATE	REVISIONS	BY	APP'D
04	09-24-15	Initial Release	T.T.R.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST (WOOD) (MGS) DETAILS

RD611B

FHWA APPROVAL		01-29-16	APP'D.	Scott W. King
DESIGNED	DETAILED		QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK.

Sh. No. 20

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.

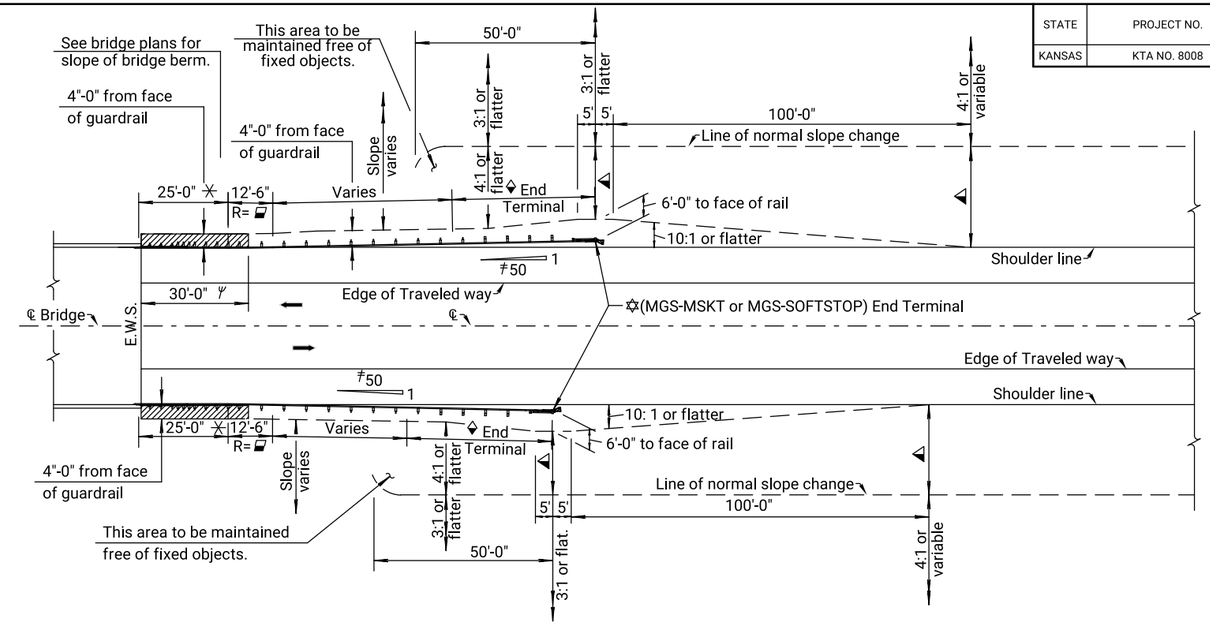
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640RD611B.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	21	103

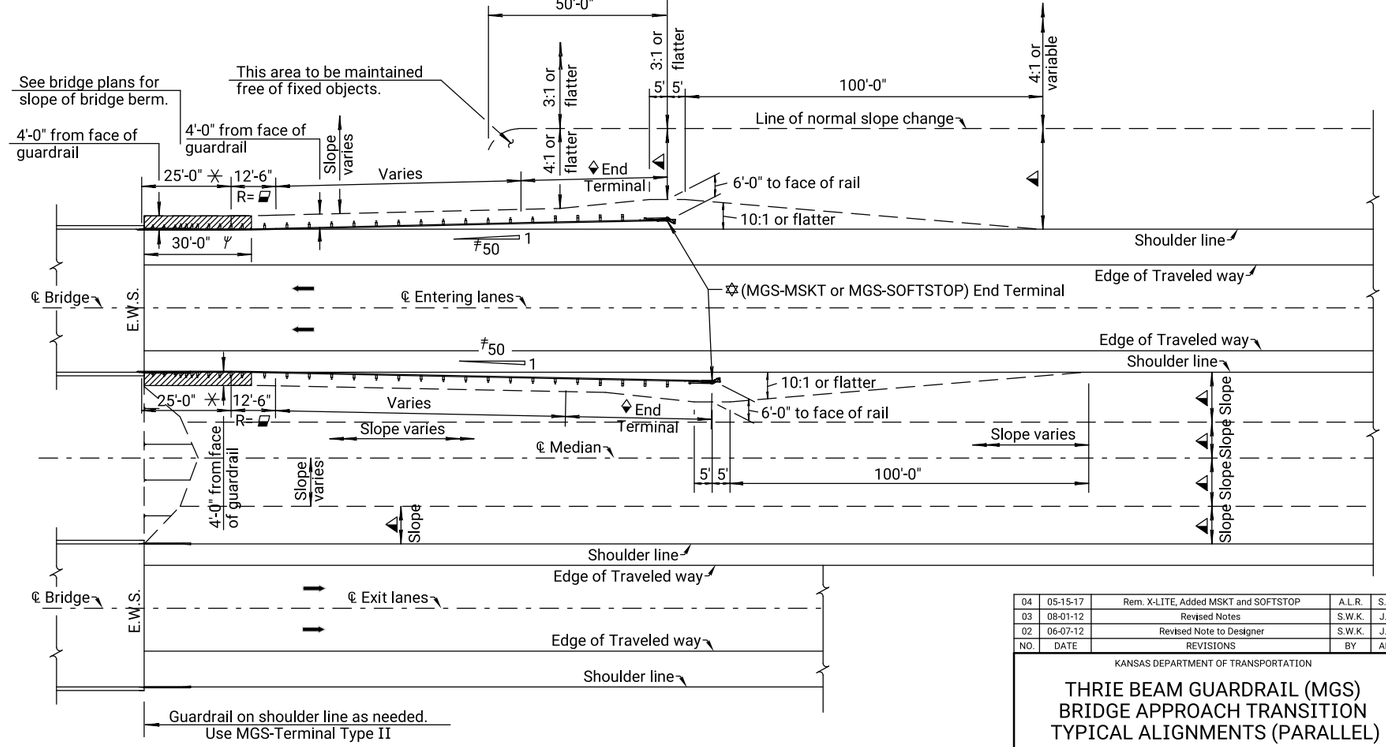
Notes to Designer: Determine the guardrail length of need using either KDOT's Length of Need Equation or a graphic design approach with an L_r distance measured from the edge of the area of concern to the P.I. of the curved guardrail section. Combine material for asphalt widening in the plan quantities.

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

- 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)

NO.	DATE	REVISIONS	BY	APP'D
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.

KANSAS DEPARTMENT OF TRANSPORTATION

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

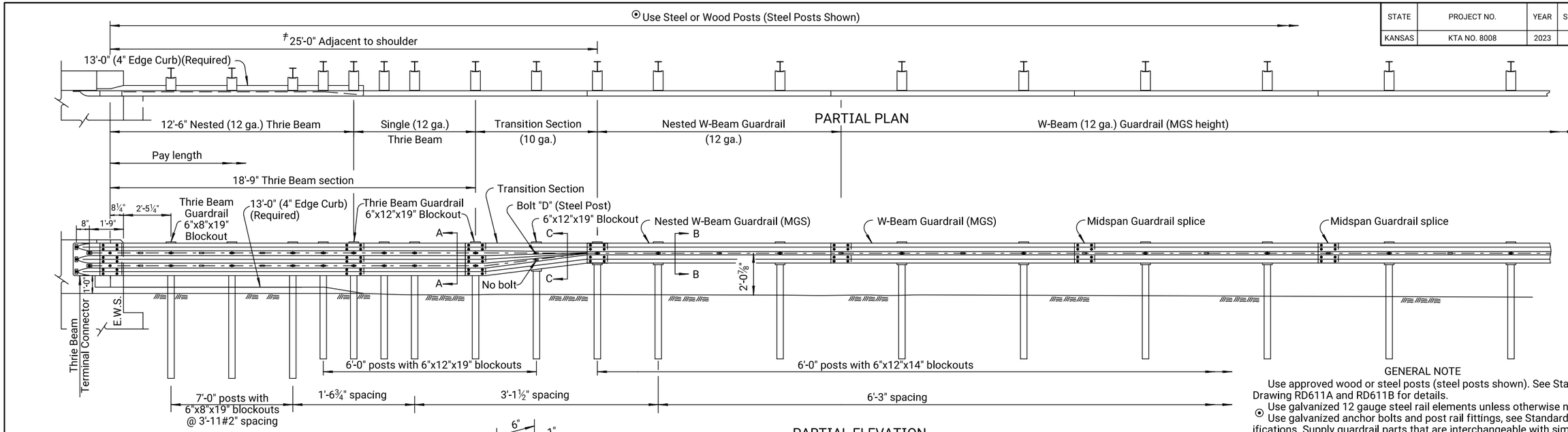
RD612B

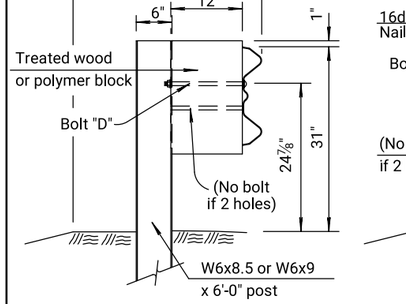
FHWA APPROVAL	10-12-17	APP'D.	Scott. W. King
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 21

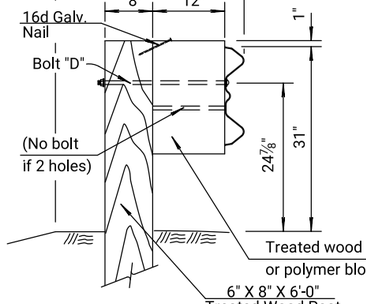
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:55
File : 30902640RD612B.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	22	103

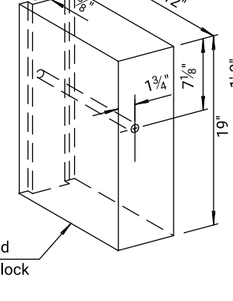




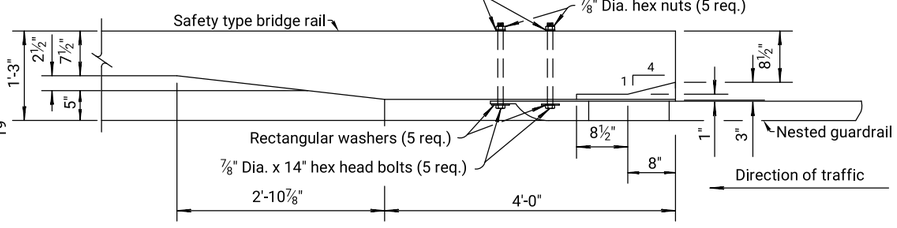
⊙ SECTION C-C (STEEL POST)



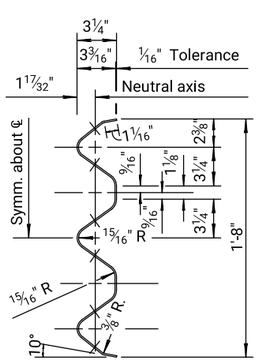
⊙ SECTION C-C (WOOD POST)



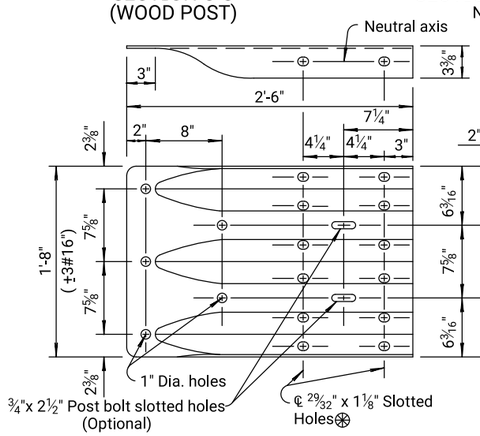
SECTION C-C (BLOCKOUTS)
Note: All holes ¾" dia.



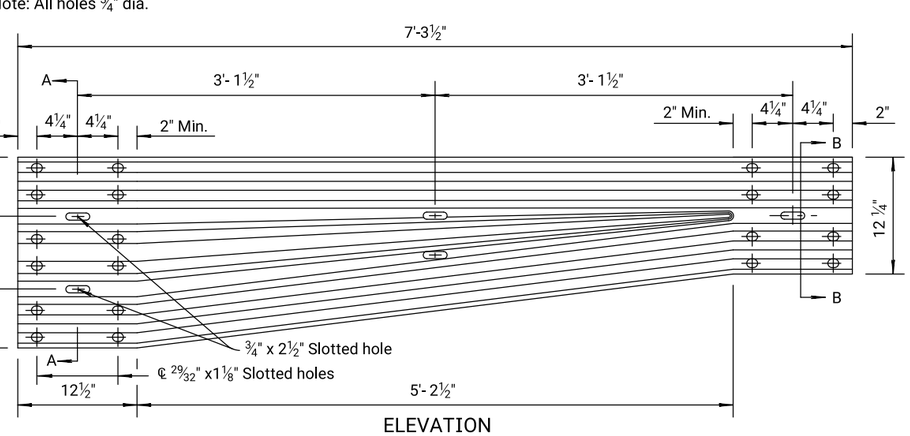
PLAN VIEW
GUARDRAIL ATTACHMENT
TO SAFETY SHAPE BRIDGE RAIL



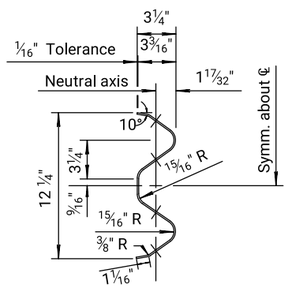
SECTION A-A
THRU RAIL ELEMENT
TYPICAL THRIE BEAM



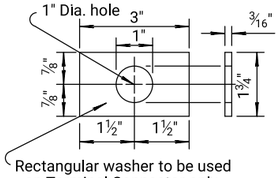
TERMINAL CONNECTOR
⊛ Optional 29/32" x 1¾" Slotted holes Rotated 50° (Typical) (12 req'd.)



ELEVATION
ASYMMETRICAL TRANSITION SECTION
(From Thrie Beam to W-Beam rail)



SECTION B-B
THRU RAIL ELEMENT
TYPICAL W-BEAM



RECTANGULAR WASHER
(Other approved washer may be used.)

GENERAL NOTE

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

⊙ Use galvanized 12 gauge steel rail elements unless otherwise noted.

Use galvanized anchor bolts and post rail fittings, see Standard Specifications. Supply guardrail parts that are interchangeable with similar parts regardless of source or manufacturer.

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

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

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

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

DETAILS OF THRIE BEAM to (MGS) GUARDRAIL TRANSITION

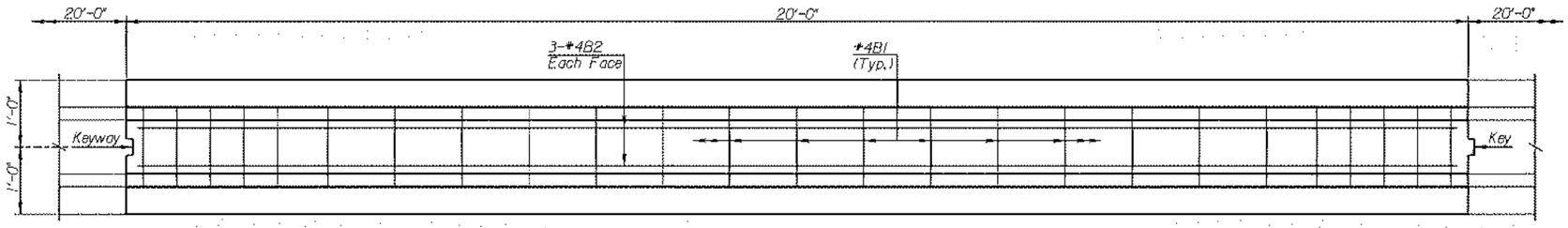
RD613A

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

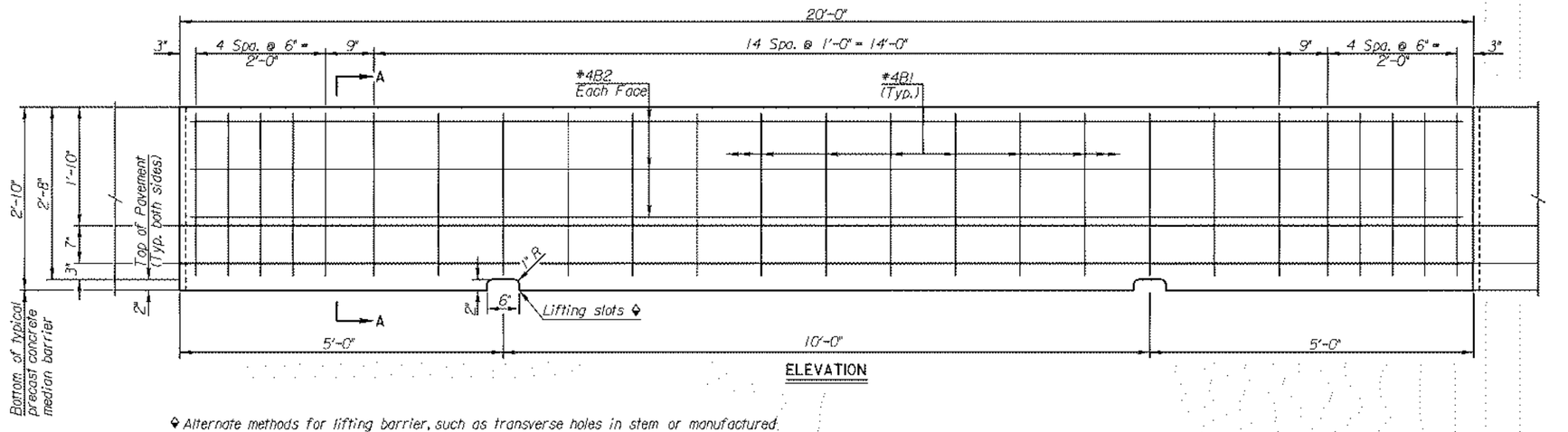
Sh. No. 22

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 3090264ORD613A.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	23	103



PLAN



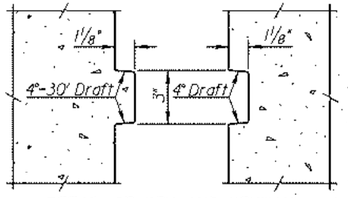
ELEVATION

◆ Alternate methods for lifting barrier, such as transverse holes in stem or manufactured lifting devices may be substituted for lifting slots with prior approval of the engineer. If an alternate method is used, lifting slots shown may be eliminated.

B1

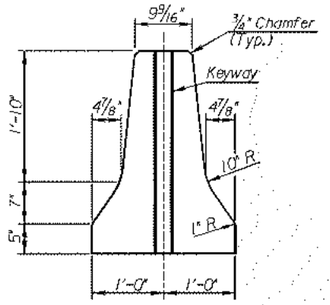
BENDING DIAGRAM

(All dimensions are out to out of bars)

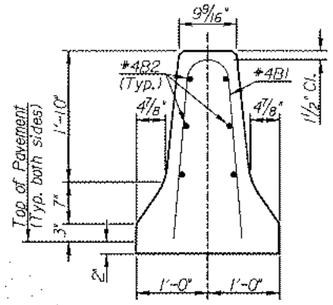


DETAIL OF KEY AND KEYWAY

BILL OF REINFORCING STEEL Grade 60 (Epoxy Coated)							
Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
B2	4	6	19'-8"	B1	4	25	5'-6"



END VIEW



SECTION A-A

GENERAL NOTES

Use Concrete Grade 3.0 (AE) ($f'_c \geq 3000$ psi)

No. 4 reinforcing bars shall be Grade 60 (Epoxy Coated).

Payment for all bars, median barrier filler material, reflectors and supporting materials, associated work, etc., shall be subsidiary.

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

DELINEATION

See Standard Drawing RD624 for details of barrier delineation.

Note: Double form for the concrete median barrier is available and will need to be reconditioned by the contractor prior to use. The forms are located at KTA Plaza 45 (K-15), contact Mark Roberts (316) 644-8143 to gain entry to the storage yard for viewing or pickup. The forms are to be returned to Plaza 45 in good condition after the barrier for the project has been produced. Transportation of forms and work necessary to recondition forms shall be subsidiary to bid item "Permanent Precast Concrete Median Barrier (Type 1F)". Payment for all work and materials to construct and install barrier will be bid as "Permanent Precast Concrete Safety Barrier (Type 1F)" paid for by the linear foot.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

I-35 KTA MM5

PERMANENT PRECAST CONCRETE BARRIER

$STRUCTURE-NO1$

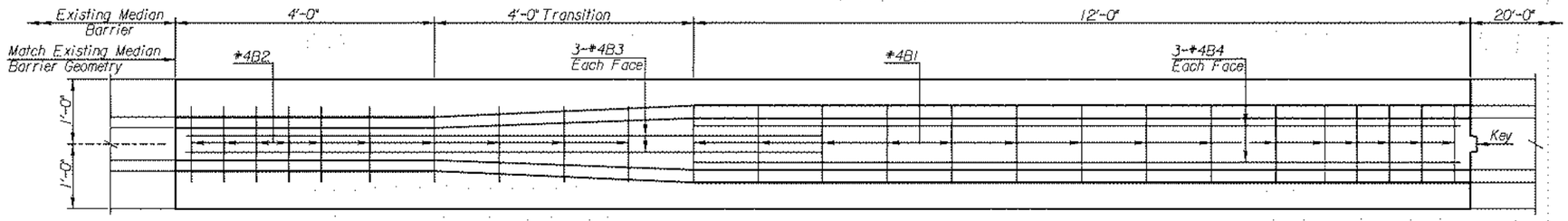
DESIGNED	DETAILED	QUANTITIES	
DESIGN CK.	DETAIL CK.	QUAN. CK.	APP'D

Sh. No. 23

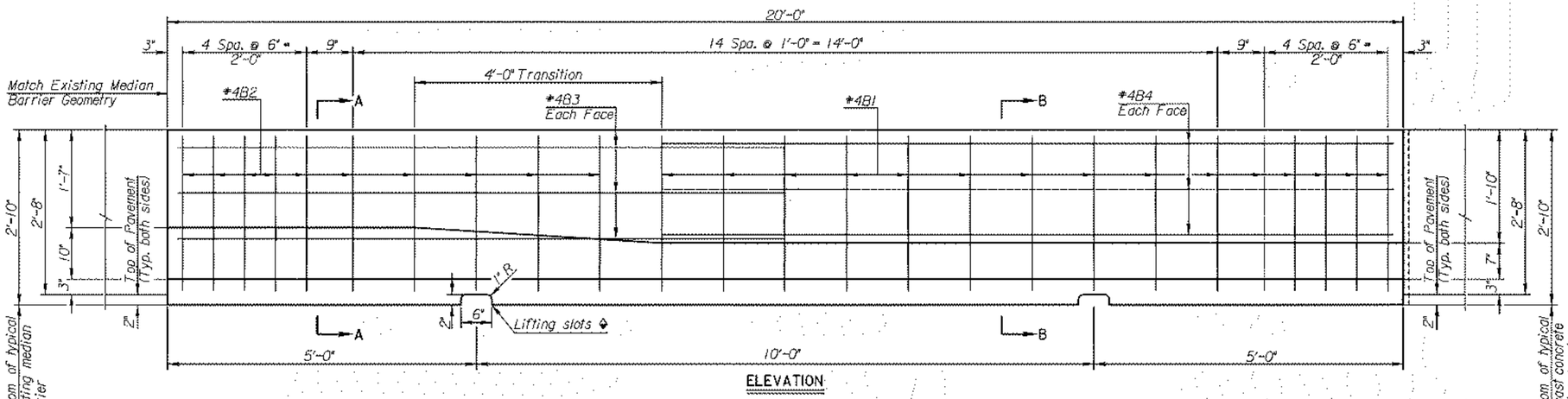
DATE		
BY	Drawn By	Drawn Date
	Checked By	Checked Date
REFERENCES NOTED		
REFERENCES CHECKED		

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640RDPPCMB1.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	24	103

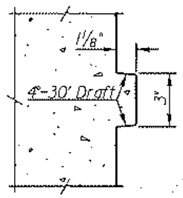


PLAN

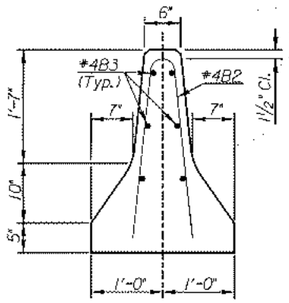


ELEVATION

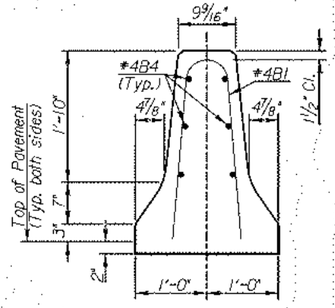
◆ Alternate methods for lifting barrier, such as transverse holes in stem or manufactured lifting devices may be substituted for lifting slots with prior approval of the engineer. If an alternate method is used, lifting slots shown may be eliminated.



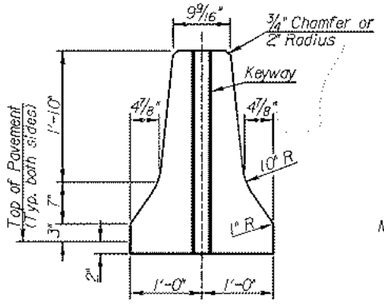
KEY



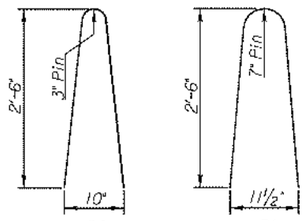
SECTION A-A



SECTION B-B



END VIEW



BENDING DIAGRAM

(All dimensions are out to out of bars)

BILL OF REINFORCING STEEL
Grade 60 (Epoxy Coated)

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
B3	4	6	9'-10"	B1	4	15	5'-6"
B4	4	6	11'-10"	B2	4	10	5'-3"

GENERAL NOTES

Use Concrete Grade 3.0 (AE) (f'c ≥ 3000 psi)

No. 4 reinforcing bars shall be Grade 60 (Epoxy Coated).

Payment for all bars, median barrier filler material, reflectors and supporting materials, associated work, etc., shall be subsidiary.

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

DELINEATION

See Standard Drawing RD624 for details of barrier delineation.

Note: Form for the concrete median barrier transition is available and will need to be reconditioned by the contractor prior to use. The forms are located at KTA Plaza 45 (K-15), contact Mark Roberts (316) 644-8143 to gain entry to the storage yard for viewing or pickup. The forms are to be returned to Plaza 45 in good condition after the barrier for the project has been produced. Transportation of forms and work necessary to recondition forms shall be subsidiary to bid item "Permanent Precast Concrete Median Barrier (Type 1F)". Payment for all work and materials to construct and install barrier will be bid as "Permanent Precast Concrete Safety Barrier (Type 1F)" paid for by the linear foot.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

I-35 KTA MM5

PERMANENT PRECAST CONCRETE MEDIAN BARRIER

$STRUCTURE-NO1$

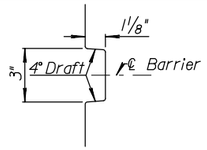
DESIGNED	DETAILED	QUANTITIES	
DESIGN CK.	DETAIL CK.	QUAN. CK.	APP'D

Sh. No. 24

BY	DATE
Drawn By	Drawn Date
Checked By	Checked Date
REFERENCES NOTED	
REFERENCES CHECKED	

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:58
File : 3090264ORDPPCMB2.dgn

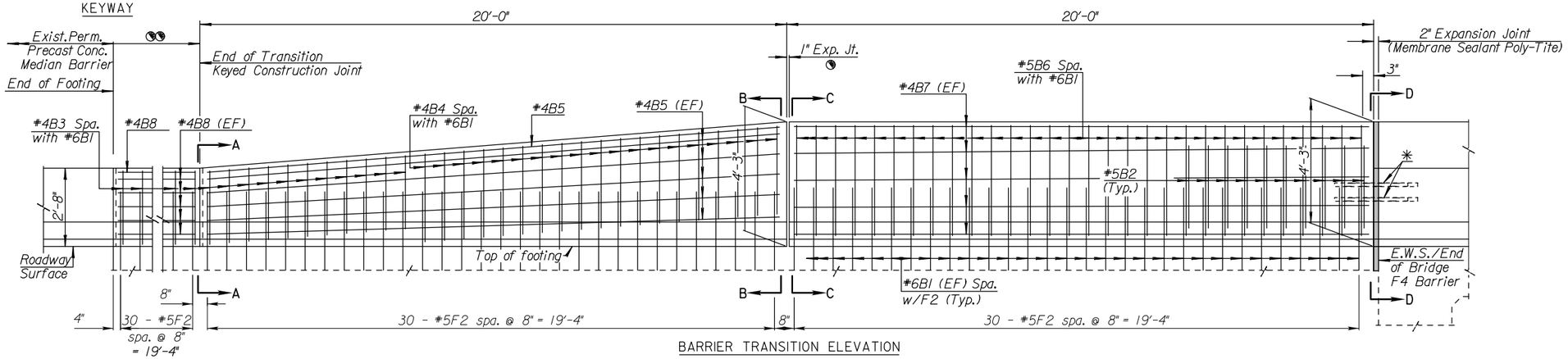
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	25	103



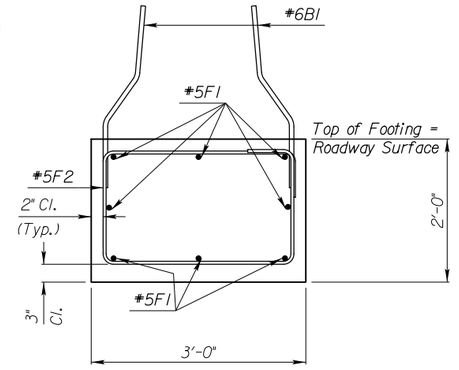
KEYWAY

A variable length section is required (with footing) to make up odd lengths remaining after removal of existing Precast Concrete Median Barrier. Typical geometry shall match that as shown in Section A-A. All work and materials required for construction and installation of the variable length section shall be paid for by the bid items "Concrete Safety Barrier (Special)". The values shown for these two bid items in the Summary of Quantities Table as well as Bill of Reinforcing assumes 20'-0" sections are required both Upstation and Downstation. Measure in the field to determine actual length of section required.

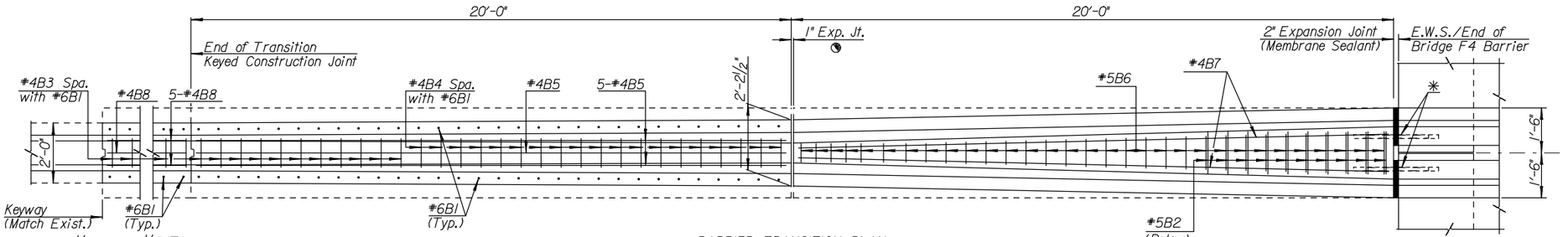
With Type B Expansion Joint Material.



BARRIER TRANSITION ELEVATION



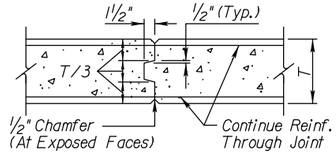
FOOTING @ SECTION D-D



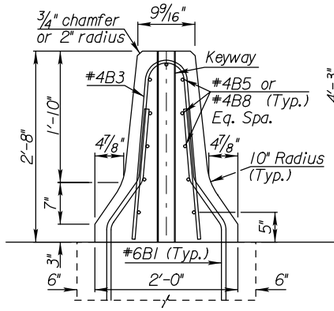
BARRIER TRANSITION PLAN

* 1½"ø I.D. PVC Pipes x 1'-4" with 1¼"ø x 2'-2" Smooth Dowel Bars (4 Required)

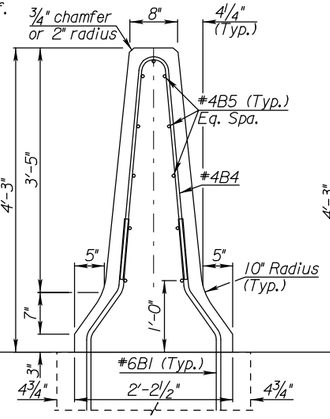
FOOTING @ SECTIONS A-A, B-B & C-C



TYPICAL CONSTRUCTION JOINT DETAIL

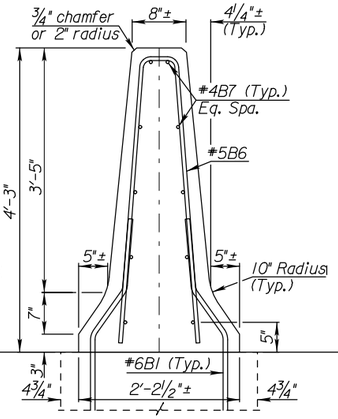


SECTION A-A



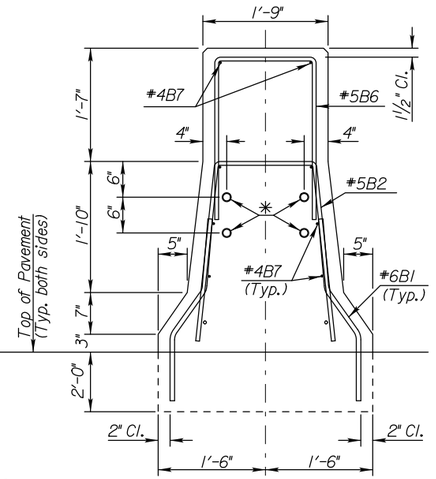
SECTION B-B

(Permanent Concrete Safety Barrier Type IV)



SECTION C-C

Note: Slight field bending of #5B6 bars may be required so they can be attached to #6B1 bars.



SECTION D-D

NOTES

Permanent concrete barriers are cast in place construction only.

Precast barriers are not permitted.

Minimum clearance to the outside face of concrete for all reinforcing shall be 1½", unless noted otherwise.

Bevel all exposed edges with a ¾" triangular molding.

Payment for joint filler, expansion joint material, reflectors and supporting materials, associated work, etc., shall be subsidiary to the bid item "Concrete Safety Barrier (Special)".

CONSTRUCTION JOINTS

All barriers require a formed joint as the end of day construction joint. See detail for dimensions.

EXPANSION JOINTS

Place 1" Expansion Joint Material (Type B), capped with silicone between 20' Transition sections.

Place 2" Membrane Sealant at Bridge E.W.S.

The width of the membrane sealant is 2" (nominal). Install the joint material only after the concrete has cured for a of 7 days.

Prepare concrete surfaces according to the requirements of section 719 of the KDOT Standard Specifications.

See KDOT Standard Specifications for Membrane Sealant, Bonding Adhesive and Splice Adhesive.

All work and materials for the preparation, construction, and installation of the Joint will be subsidiary to the Concrete Safety Barrier (Special).

LEGEND

EF = Each Face

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

I-35 KTA MM5

CONCRETE MEDIAN BARRIER TRANSITION DETAILS

$STRUCTURE-NO1$

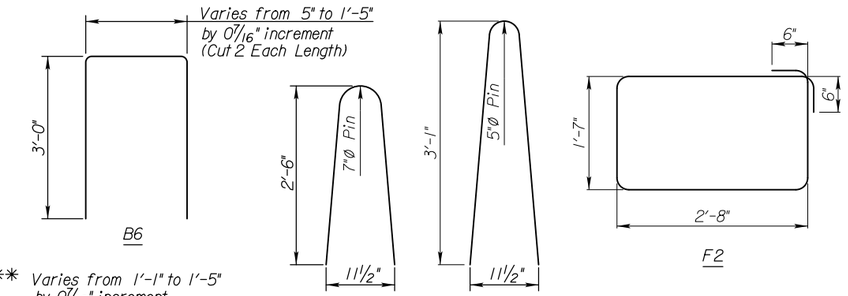
DESIGNED	DETAILED	QUANTITIES	
DESIGN CK.	DETAIL CK.	QUAN. CK.	APP'D

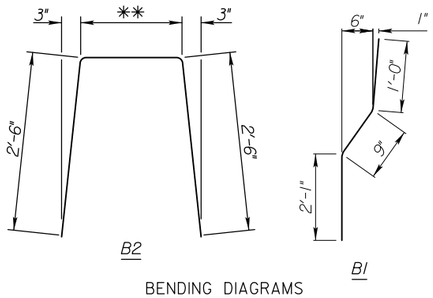
Sh. No. 25

DATE
BY Drawn By Checked By
Drawn Date Checked Date
REFERENCES NOTED
REFERENCES CHECKED

Plotted by: Imad.Atra@wsp.com 29-OCT-2023 16:57
File : 30902640RDPPCMB3.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	26	103





BENDING DIAGRAMS

(All dimensions are out to out of bars)

BILL OF REINFORCING STEEL
Epoxy Coated - Grade 60

	Straight Bars				* Bent Bars			
	Mark	Size	Number	Length	Mark	Size	Number	Length
Barrier	F1	#5	16	59'-8"	B1	#6	360	3'-10"
					B2	#5	20	†
	B5	#4	22	19'-8"	B6	#5	60	†
	B7	#4	20	19'-8"	F2	#5	180	9'-6"
	B8	#4	22	19'-8"				
					B3	#4	82	5'-4"
					B4	#4	38	6'-5"

* See Bending Diagram
† Varies Bar - See Bending Diagram

Note: All work and materials required for construction and installation of the Concrete Median Barrier Transition will be paid for by lin. ft. of Concrete Safety Barrier (Special).

DATE	BY	REFERENCES NOTED
Drawn Date	Drawn By	REFERENCES CHECKED
Checked Date	Checked By	

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

I-35 KTA MM5

BILL OF REINFORCING CONCRETE MEDIAN BARRIER TRANSITION

$STRUCTURE-NO1$

DESIGNED	DETAILED	QUANTITIES	
DESIGN CK.	DETAIL CK.	QUAN. CK.	APP'D

Sh. No. 26

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	27	103

Revised Plans

SUMMARY OF QUANTITIES (NORTHBOUND I-35 BRIDGE OVER E 150th St S)

Item / Location	Excavation Class III (Cu. Yds.)	Concrete (Gr. 4.0) (AE) (Cu. Yds.)	Concrete (Gr. 4.0) (AE)(SA) (Cu. Yds.)	Reinforcing Steel (Gr. 60) (Lbs.)	Reinforcing Steel (Gr. 60) (Epoxy Coated) (Lbs.)	Drilling and Grouting (Repair) (Set Price)	Piles (Steel) (HP12X53) (Lin. Ft.)	Abutment Strip Drain (Sq. Yds.)	Bridge Backwall Protection System (Sq. Yds.)	Structural Steel (Erection) (Lump Sum)	Falsework Inspection (Lump Sum)	Temporary Shoring (Lump Sum)	Bridge Painting (Organic Zinc with Acrylic System) (Lump Sum)	Welded Stud Shear Connectors (Each)	Bridge Deck Grooving (Sq. Yds.)	Slope Protection (12" Aggregate) (Cu. Yds.)	Drilled Shaft (60") (Cased) (Lin. Ft.)	⚠ Sonic Test (Drilled Shaft) (Set Price) (Each)	⚠ Core Hole (Investigative) (Lin. Ft.)	⚠ Flowable Fill (High Strength) (Cu. Yds.)
Abutment 1	121	13	-	1140	-	-	204	-	-	-	-	-	-	-	-	535 ⚠	-	-	-	91.6
Pier 1	✱19	✱ 26.1	-	✱ 8457	-	-	-	-	-	-	-	-	-	-	-	-	✱46.33	-	33.0	-
Pier 2	✱19	✱ 26.1	-	✱ 8457	-	-	-	-	-	-	-	-	-	-	-	-	✱51.00	-	33.0	-
Pier 3	✱19	✱ 22.1	-	✱ 7530	-	-	-	-	-	-	-	-	-	-	-	-	✱59.50	-	37.0	-
Abutment 2	121	13	-	1140	-	-	228	-	-	-	-	-	-	-	-	205 ⚠	-	-	-	91.7
Substr. Total	-	100.3	-	-	97110	-	432	82.9	94.7	-	-	-	-	-	-	740 ⚠	156.83	1	103.0	-
Superstr. Total	-	-	374.8 ⚠	26722	-	1.0	-	-	-	1.0	1.0	1.0	1.0	2544	957.5	-	-	-	-	183.3
Total	299	100.3	374.8 ⚠	26722	97110	1.0	ǂ 432	82.9	94.7	1.0	1.0	1.0	1.0	2544	957.5	740 ⚠	157	1	103	183

SUMMARY OF QUANTITIES (SOUTHBOUND I-35 BRIDGE OVER E 150th St S)

Item / Location	Excavation Class III (Cu. Yds.)	Concrete (Gr. 4.0) (AE) (Cu. Yds.)	Concrete (Gr. 4.0) (AE)(SA) (Cu. Yds.)	Reinforcing Steel (Gr. 60) (Lbs.)	Reinforcing Steel (Gr. 60) (Epoxy Coated) (Lbs.)	Drilling and Grouting (Repair) (Set Price)	Piles (Steel) (HP12X53) (Lin. Ft.)	Abutment Strip Drain (Sq. Yds.)	Bridge Backwall Protection System (Sq. Yds.)	Structural Steel (Erection) (Lump Sum)	Falsework Inspection (Lump Sum)	Temporary Shoring (Lump Sum)	Bridge Painting (Organic Zinc with Acrylic System) (Lump Sum)	Welded Stud Shear Connectors (Each)	Bridge Deck Grooving (Sq. Yds.)	Slope Protection (12" Aggregate) (Cu. Yds.)	Drilled Shaft (60") (Cased) (Lin. Ft.)	⚠ Sonic Test (Drilled Shaft) (Set Price) (Each)	⚠ Core Hole (Investigative) (Lin. Ft.)	⚠ Flowable Fill (High Strength) (Cu. Yds.)
Abutment 1	121	13	-	1140	-	-	204	-	-	-	-	-	-	-	-	535 ⚠	-	-	-	91.6
Pier 1	9	10.8	-	3791	-	-	-	-	-	-	-	-	-	-	-	-	23.17	-	33.0	-
Pier 2	9	10.8	-	3791	-	-	-	-	-	-	-	-	-	-	-	-	25.50	-	33.0	-
Pier 3	9	10.8	-	3328	-	-	-	-	-	-	-	-	-	-	-	-	29.75	-	37.0	-
Abutment 2	121	13	-	1140	-	-	228	-	-	-	-	-	-	-	-	205 ⚠	-	-	-	91.7
Substr. Total	-	58.4	-	-	97110	-	432	82.9	94.7	-	-	-	-	-	-	740 ⚠	78.42	1	103.0	-
Superstr. Total	-	-	374.8 ⚠	13189	-	1.0	-	-	-	1.0	1.0	1.0	1.0	2544	957.5	-	-	-	-	183.3
Total	269	58.4	374.8 ⚠	13189	97110	1.0	ǂǂ 432	82.9	94.7	1.0	1.0	1.0	1.0	2544	957.5	740 ⚠	79	1	103	183

GENERAL NOTES

EXISTING STRUCTURE: Plans of the existing structure are on file and available for inspection by qualified bidders at the Kansas Turnpike Authority, 9401 E. Kellogg, Wichita, KS 67207

REMOVAL OF EXISTING STRUCTURE: Remove the existing structures to the limits shown on the plans. Removal of existing structures is included in the bid item, "Removal of Existing Structures", Lump Sum. All materials removed from the existing structures shall become the property of the Contractor. Remove this material from the site. Clearly mark the location of the bridge that is to remain during construction. Mark the entire length of the bridge before sawing or removing any concrete. Concrete sawing shall be limited to as shown on the plans for the deck. Saw cut to neat lines all exposed surfaces of the concrete. Limit depth of cut to 1". Do not cut through reinforcement. Do not use drop-type pavement breakers on the structure that will remain. Do not use a hoe ram within 2' of a construction joint. Use a jackhammer no heavier than 15 lbs. to remove concrete within 2' of a construction joint and no heavier than 50 lbs, beyond 2' of the construction joint in a manner not to damage the deck that will remain during construction. Damage to the existing structural steel caused by procedures not conforming to the above recommendations shall be repaired as directed by the Engineer at the Contractor's expense (no cost to the KTA). Any costs incurred for testing or Engineering evaluations will be included in the Contractor's expense for repair.

DECK PROTECTIVE SYSTEM: Epoxy coat all reinforcing steel in the deck slab, rails and abutment.

ABUTMENT STRIP DRAIN: See the General Notes on the "Abutment Strip Drain" sheet. Place the abutment strip drain, including associated drainage pipes, behind both the newly constructed abutment diaphragm & beam seat and the existing abutment beam seat.

BRIDGE BACKWALL PROTECTION SYSTEM: See the General Notes on the "Abutment Aggregate Drain" sheet. Place the backwall protection system onto both the newly constructed abutment diaphragm & beam seat and the existing abutment beam seat.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

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

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

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

BACKFILL COMPACTION: Compact backfill at the abutments.

DESIGN DATA

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

DESIGN LOADING:
HL-93
Design Dead Load includes an allowance of 15 psf for a future wearing surface.

UNIT STRESSES:

Concrete (Grade 4.0)	f'c = 4.0 ksi
Concrete (Grade 4.0)(AE)	f'c = 4.0 ksi
Reinforcing Steel (Grade 60)	Fy = 60 ksi
Structural Steel for H-Pile (A572, Grade 50)	Fy = 50 ksi
Structural Steel (Grade 50)	Fy = 50 ksi

ORIGINAL DESIGN SPECIFICATIONS:
AASHTO Standard Specifications, 6th Edition, 1953 Edition, Load Factor Design.

ORIGINAL DESIGN LOADING:
H20-S16

INDEX TO BRIDGE DRAWINGS	
Sheet No.	Drawing
27	Summary of Quantities
28	General Notes
29	Construction Layout
30	Engeneering Geology
31	Substructure Demolition
32	Superstructure Demolition
33	Abutment Details I
34	Abutment Details II
35	Abutment Strip Drain
36	Pier Details I
37	Pier Details II
38	Framing Plan
39	Girder Elevation I
40	Girder Elevation II
41	Girder Elevation III
42	Diaphragm Details
43	Field Splice Details
44	Bearing Details
45	Deck Details I
46	Deck Details II
47	Barrier Geometric Details
48	32" Kansas Corral Barrier Details I
49	32" Kansas Corral Barrier Details II
50	51" F-Shape Barrier Details II
51	Bar List
52	Bending Diagrams

ǂ SUMMARY OF PILING	
S. Abutment	4 @ 57 Ft. (Vert.)
N. Abutment	4 @ 51 Ft. (Vert.)

ǂǂ SUMMARY OF PILING	
S. Abutment	4 @ 57 Ft. (Vert.)
N. Abutment	4 @ 51 Ft. (Vert.)

LRFR RATING FACTORS		
Design Load / Rating Level	Inventory	Operating
HL-93 Loading	2.10	2.73
2018 Manual for Bridge Evaluation, 2019 Interim		

LFD RATING FACTORS		
Truck / Rating Level	Inventory	Operating
HS-20 (36T)	2.36	3.94
HET (110T)		1.76
2002 LFD Rating, 17th Edition AASHTO		

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

NOTE: See Sh. # 29 for quantities not listed.

✱ Quantities of the interior pier are included in this Pier quantity.

NO.	DATE	REVISIONS	BY	APP'D
⚠	12/08/23	Add Flow Fill & D.S. qtys, revise Slope Prot & Conc qtys	SB	AH

Kansas Turnpike Authority

Br. No. 5.133 S
Br. No. 5.133 N

SUMMARY OF QUANTITES

Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 27

Plotted by : Scott.Bernhardt@wsp.com 8-DEC-2023 16:17
File : 30902640brr007-020.dgn

Revised Plans	STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
	KANSAS	KTA NO. 8008	2023	28	103

GENERAL NOTES

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

Abutments	No. 1 & 2	60 Tons
Piers	No. 1 & 2 & 3	220 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 will follow the "Standard Pile Details" Sheet (BR110).

BRIDGE EXCAVATION: All excavation shall be Class III. See the "Bridge Excavation" sheet for the limits of pay excavation. Excavation quantity shown includes material behind existing abutment structure (for the construction of the abutment drainage system), including all excavation required for the trenching of the drainage pipes as shown on the "Abutment Aggregate Drain" sheet. Excavation quantity excludes the front of the abutment as well as the concrete limits of the abutment (quantity includes the work behind the existing concrete). The Excavation bid item includes backfilling and compaction after completion of other work. See KDOT Specifications.

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

EXISTING DIMENSION VERIFICATION: Dimensions of the existing structure are based on old plans. Verify, by field measurement, the as-built dimensions of the existing structure and submit such verification in writing to the Engineer. The verification will include sketches, drawings, photographs and descriptions as needed to clearly define the as-built dimensions that will be incorporated in the new construction.

DRILLING AND GROUTING (REPAIR): This item shall consist of grouting reinforcing steel, anchor bolts, tie bars, or dowel bars into the existing concrete, where required by the Engineer, with an epoxy grout. Follow KDOT Specifications 842 and any associated Special Provisions. Follow the manufacturer's directions for mixing, application and curing. Embedment length to be determined by Engineer & Manufacturer specifications, depending on location. The tools, materials, labor and incidentals necessary to complete the work shall be paid for per each by the bid item "Drilling and Grouting (Repair) (Set Price)".

CONCRETE PLACING SEQUENCE: The sequence of placing concrete in the slab and curbs shall be as shown, or the review. Submit the alternate placing sequence to the Contractor may submit an alternate placing sequence for 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)". Approval of the Contractor's alternate sequence is required prior to placement of concrete in the deck.

CONTRACTOR CONSTRUCTION STAKING: All survey work to ensure the abutment diaphragms and approach pavement return to their original elevations and grades is included in the "Contractor Construction Staking" bid item.

⚠ 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.

STURCTURAL STEEL: All W36x150 rolled girders, abutment, Splice plates & bent plate diaphragms, stiffeners shall meet AASHTO M270 (Grade 50W T3) requirements except as noted. All other structural steel shall meet ASTM A709 (Grade 50W), unless noted otherwise. Field Splices shall be made only where shown in these Contract Plans as a "splice". Elimination of any "splice" may be requested.

PAINTING: The shop coats applied to Structural Steel shall conform to an inorganic zinc primer with a waterborne acrylic finish coat. The finish coat will be Kansas (Color), this color will match Federal Standard # (24097).

Blast clean to meet SSPC-SP10 Specifications and prime coat the embedded portion of the girders, including the abutment diaphragms; the top flanges, including the shear studs in accordance with KDOT Specifications.

Touch Up: Prepare and paint all bolts, nuts, studs, and other small areas of damaged paint (1 yd2 or less), requiring touch up, with an approved organic zinc primer.

All labor and material for painting of the structural steel and concrete surface will be subsidiary to other bid items.

TEMPORARY CONSTRUCTION LOADS: The Contractor will not stock pile construction materials, debris/rubble or place equipment weighing more than 20 tons or greater than bridge posted load limits on the bridge without prior written approval by the KTA Engineer. For bridges with highway traffic on or under the bridge the Contractor will provide plans showing the location, quantity and weight of the proposed materials, debris or equipment weighing more than 20 tons or greater than bridge posted load limit. These plans will bear the Seal of the Contractor's Engineer before approval is granted. The Contractor's Engineer will use AASHTO Specifications for limitations on structural capacities, as the structure is found in the field.

BEARING (Bearing Type Steel Reinforced Elastomeric)(Method A): Bearing devices at piers 1, 2 & 3 shall be fabricated with an elastomer satisfying:

- Shore A Durometer Hardness of 60
- Low Temperature Grade 3 Requirements
- Type A certification for elastomeric bearing device acceptance is required
- Include design method and all material properties on shop details

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

Secondary Member Connections: Use $\frac{7}{8}$" diameter heavy hex structural bolts for the secondary member connections. Use $\frac{15}{16}$" diameter bolt holes. Oversized and/or slotted holes, as specified in the KDOT Specifications, may be used in only one of the two members connected and must be shown in the approved shop drawings. Oversized and/or slotted holes may require additional standard hardened washers or plate washers. Report to the Engineer prior to any required field reaming that will remove more than $\frac{1}{4}$" of material from one ply of the connected parts.

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

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 items "Drilled Shaft (5 ft) (Cased)" . In no case shall the bottom of the drilled shaft be placed higher than the elevation shown.

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

Backfill the annular space between the temporary casing and the permanent casing, as defined in the 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.

⚠ INVESTIGATIVE CORE HOLES: Contact KTA Personnel when the schedule for the investigative core holes have been established so that a member of the staff may be on site when the work is being performed.

ERECTION ELEVATION CHECKS: Following removal of the deck concrete and proposed girder erection, the Contractor shall take a profile of each girder line at $\frac{1}{10}$th points. Adjust the depth of the concrete fillets over the girders so that the finished slab is constructed to match the top of existing pavement elevation. The Contractor shall send calculated fillet depths to the Engineer for approval.

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.

WELDED STUD SHEAR CONNECTORS : Weld Shear Stud Connectors with automatically timed stud welding equipment connected to a suitable power source. All stud welding shall conform to KDOT Specifications. Blast clean the tops of the top flanges before the studs are applied.

FILLETS: Camber the steel girders for the total dead load deflection and the vertical curvature, if necessary. The ordinates shown for concrete dead load deflection represent the amount of camber that should be in the girders after they are erected and bolted but prior to placing the floor forms. After the structural steel is completely erected and the falsework bents are removed, measure the camber in the field by taking a profile of each girder. Correct any variation between the actual camber and the concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the girders so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the girder shall be 9 inches not including the fillet.

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. See the KDOT Bridge Design Manual, Section 16.1 "Review and Approval of Falsework Plans", for a listing of items to be included on the falsework plan. Submit electronic plans conforming to Section 105 of the Standard Specification with details in compliance with KDOT Specifications to the Field Engineer for review.

FALSEWORK INSPECTION: This project has falsework plan requirements which are considered "Category 1" by KDOT specifications. The falsework designer of record will conduct an inspection of the as-built falsework. The bid item, "Falsework Inspection" is full compensation for all materials, labor and equipment. See KDOT specifications.

TEMPORARY SHORING: The bid item "Temporary Shoring" includes all labor and material necessary to furnish shoring at the abutments for the removal of rocker bearings and support of superstructure until the replacement of bearing devices is complete. Maintain the temporary shoring until the Engineer authorizes its removal. Remove temporary shoring prior to concrete pour for abutment diaphragm. The temporary shoring plans are to be designed and sealed by a registered Professional Engineer. Submit design calculations and shoring plans to the Field Engineer for review 6 weeks before work is scheduled to begin. Work shall not begin until the Engineer grants approval. Temporary Shoring shall not hinder the long-term capacity for longitudinal movement of the superstructure. Any incidental temporary shoring required for the construction of the abutment diaphragms and wingwalls shall be included in the "Temporary Shoring" bid item.

REPAIR OF EPOXY COATED REINFORCING STEEL: Replace any epoxy coating that is removed from the reinforcing steel during the concrete removal process. Thoroughly clean damaged areas with a stiff wire brush to remove dirt and damaged coating. Apply an approved patching material in accordance with the manufacturer's recommendations. Avoid dripping any patching material onto existing concrete that will have new concrete placed against it. See KDOT Specifications.

MULTI-LAYER POLYMER CONCRETE OVERLAY: Apply the polymer overlay to the new bridge deck limits. See KDOT Specification Section 729 for more information.

BOLTS: All bolts, nuts and hardened flat washers shall conform to the heavy hex structural requirements of ASTM F3125 Grade A325, Type 1, and KDOT Specifications unless otherwise noted. Direct Tension Indicators (DTIs) are to comply with the requirements of the latest edition of ASTM F959. No allowance will be made for high strength bolts used for permanent or temporary connections. This work is subsidiary to the bid item, "Structural Steel". The number of bolts is shown for the convenience of the Contractor.

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

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

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0)(AE). Bevel all exposed edges of all concrete with a ¾" 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.

NO.	DATE	REVISIONS	BY	APP'D
⚠	12/08/23	Added Sonic Testing & Investigative Core Holes notes.	SB	AH

Kansas Turnpike Authority

Br. No. 5.133 S
Br. No. 5.133 N

GENERAL NOTES

Proj. KTA NO. 8008 Sumner Co.

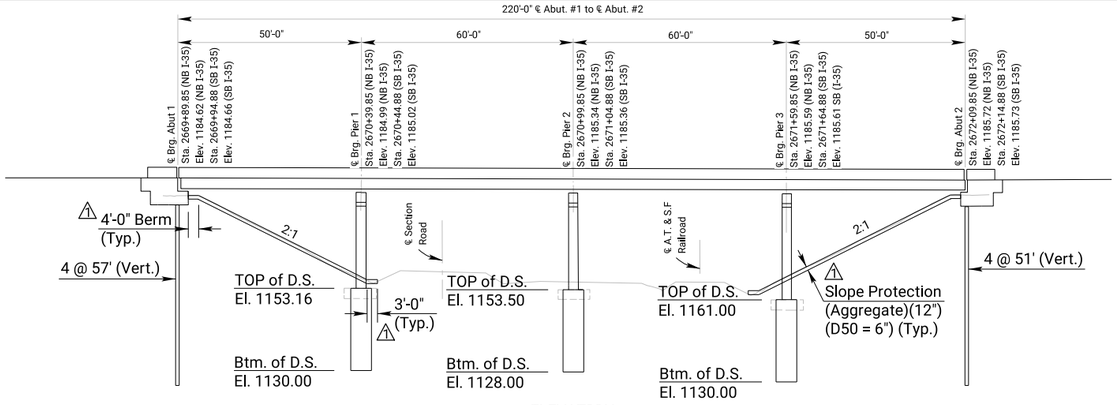
DESIGNED	X.X.X.	DETAILED	X.X.X.	QUANTITIES	X.X.X.	CADD	X.X.X.
DESIGN CK.	X.X.X.	DETAIL CK.	X.X.X.	QUAN.CK.	X.X.X.	CADD CK.	X.X.X.

Sh. No. 28

Plotted by : Scott.Bernhardt@wsp.com 8-DEC-2023 16:17
File : 30902640brr007-023.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	29	103

Revised Plans

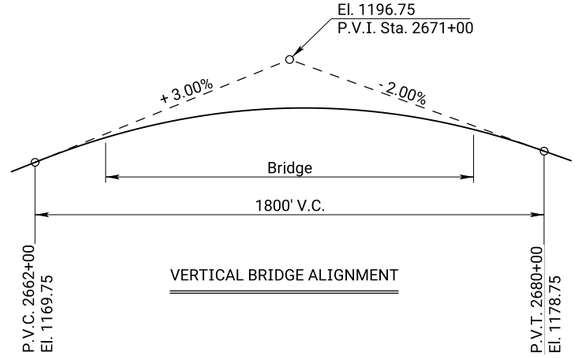


ELEVATION

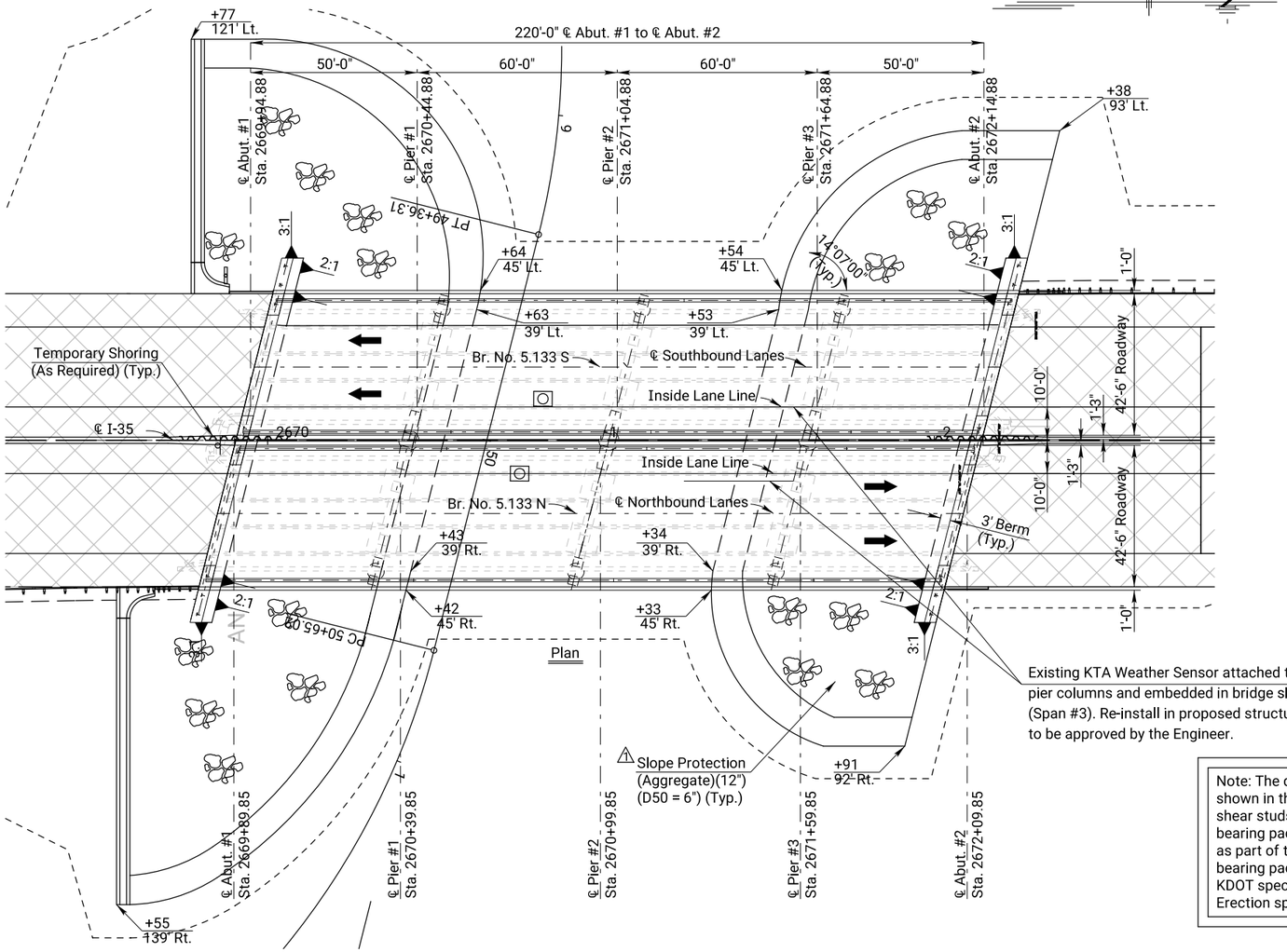
The information shown is taken from Existing Plans.

Elevations Shown for NB I-35 & SB I-35 Bridges are along their respective Inside Lane Lines. Stations are projected normal to the Profile Grade Line = ℄ I-35

Note: All elevations referenced from the Existing Plan are based off of the NGVD29 Vertical Datum. All elevations shown in the plans are based on actual survey utilizing the NAVD88 Vertical Datum. The Contractor shall verify and submit to the Engineer for approval prior to the start of construction, the Top of Slab Elevations at the Inside Lane Line at all Support Lines for verification.

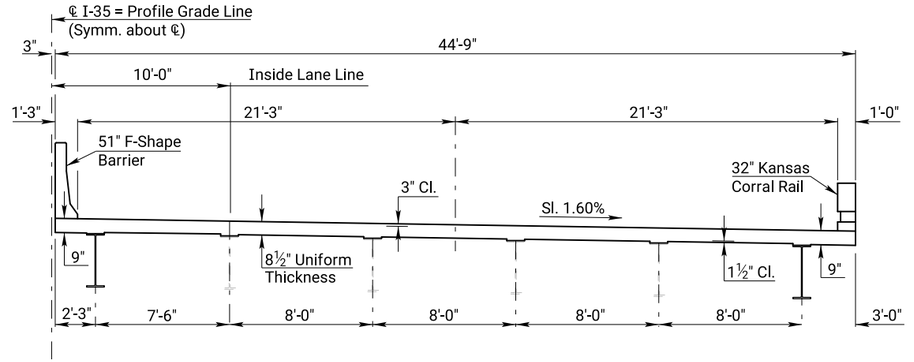


VERTICAL BRIDGE ALIGNMENT



Plan

Existing KTA Weather Sensor attached to existing pier columns and embedded in bridge slab (Span #3). Re-install in proposed structure. Method to be approved by the Engineer.



TYPICAL PROPOSED SECTION

Section shown is for NB I-35 structure, SB I-35 structure similar and is looking Upstation.

SUMMARY OF QUANTITIES

Item / Location	Structural Steel AASHTO M270 (Gr. 50) (Lbs.)	Structural Steel AASHTO M270 (Gr. 50W T3)(Lbs.)	Bearing (Steel Reinforced Elastomeric) (Each)	Welded Stud Shear Connectors (Each) (Field)	Welded Stud Shear Connectors (Each) (Shop)
Br. No. 5.133 N	391	76,865	6	2,544	1,272
Br. No. 5.133 S	391	76,865	6	2,544	1,272
Total	782	153,730	12	5,088	2,544

Note: The quantities for structural steel, Bearing Pads and Welded Shear Connectors shown in the table above have been procured by the KTA except for the Field welded shear studs. The Fabricator will be responsible for delivering the structural steel and bearing pads to the site and the Contractor will be responsible for unloading the steel as part of the "Structural Steel (Erection)" bid item. Placement and installation of the bearing pads shall be included with the "Structural Steel (Erection)"bid item. See KDOT specifications for the Welded Shear Studs Connector and Structural Steel Erection specifications.

NO.	DATE	REVISIONS	BY	APP'D
1	12/08/23	Added Slope Protection dimensions & callouts	SB	AH

Kansas Turnpike Authority

Br. No. 5.133 S
Br. No. 5.133 N

CONSTRUCTION LAYOUT

Proj. KTA NO. 8008 Sumner Co.

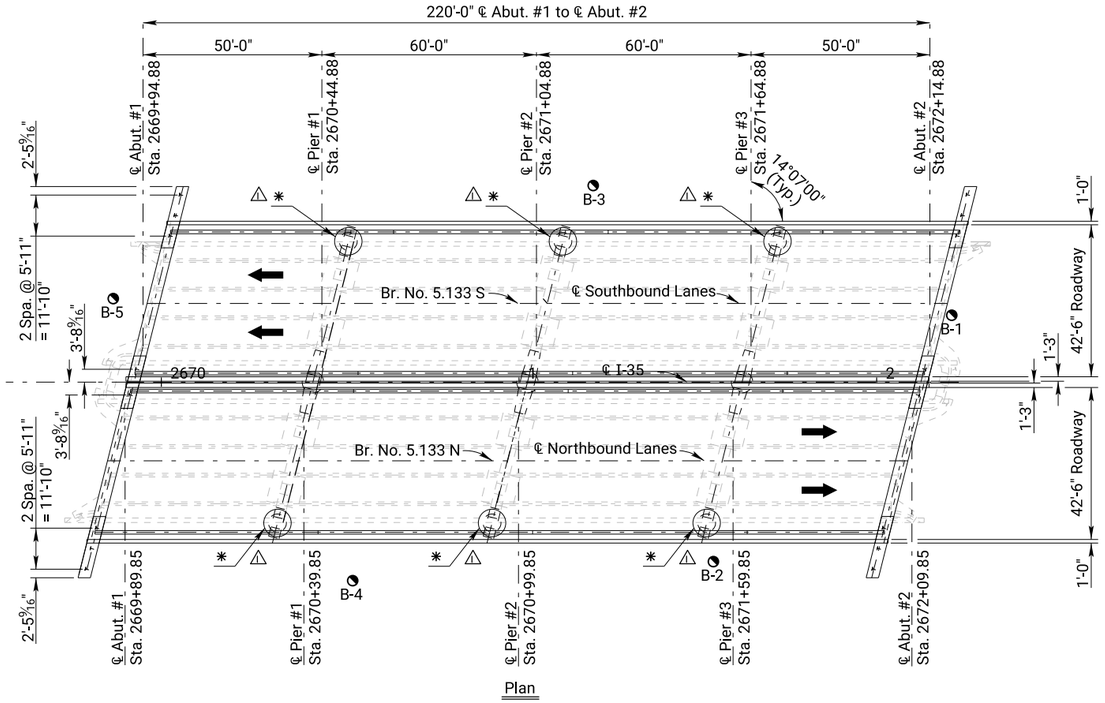
DESIGNED	X.X.X.	DETAILED	X.X.X.	QUANTITIES	X.X.X.	CADD	X.X.X.
DESIGN CK.	X.X.X.	DETAIL CK.	X.X.X.	QUAN.CK.	X.X.X.	CADD CK.	X.X.X.

Sh. No. 29

Plotted by : Scott.Bernhardt@wsp.com 8-DEC-2023 16:17
File : 30902640brr007-025.dgn

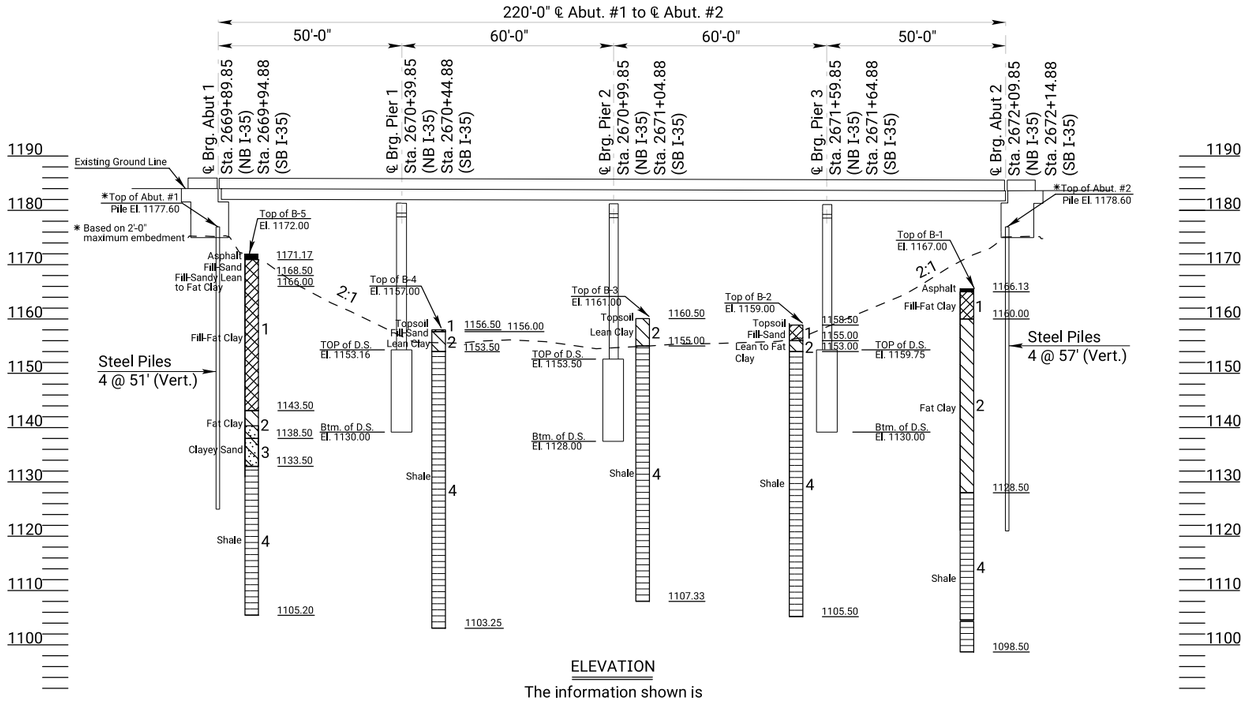
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	30	103

Revised Plans



Plan

△ * Investigative Core Hole Required



ELEVATION

The information shown is taken from Existing Plans.

Note: Use only steel HP 12x53 piles in the abutments. The lengths shown are for bidding purposes only. Actual lengths shall be determined by the Engineer based on Test Pile Driving results.

NO.	DATE	REVISIONS	BY	APP'D
△1	12/08/23	Added Investigative Core Hole locations & note	SB	AH

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

ENGINEERING GEOLOGY

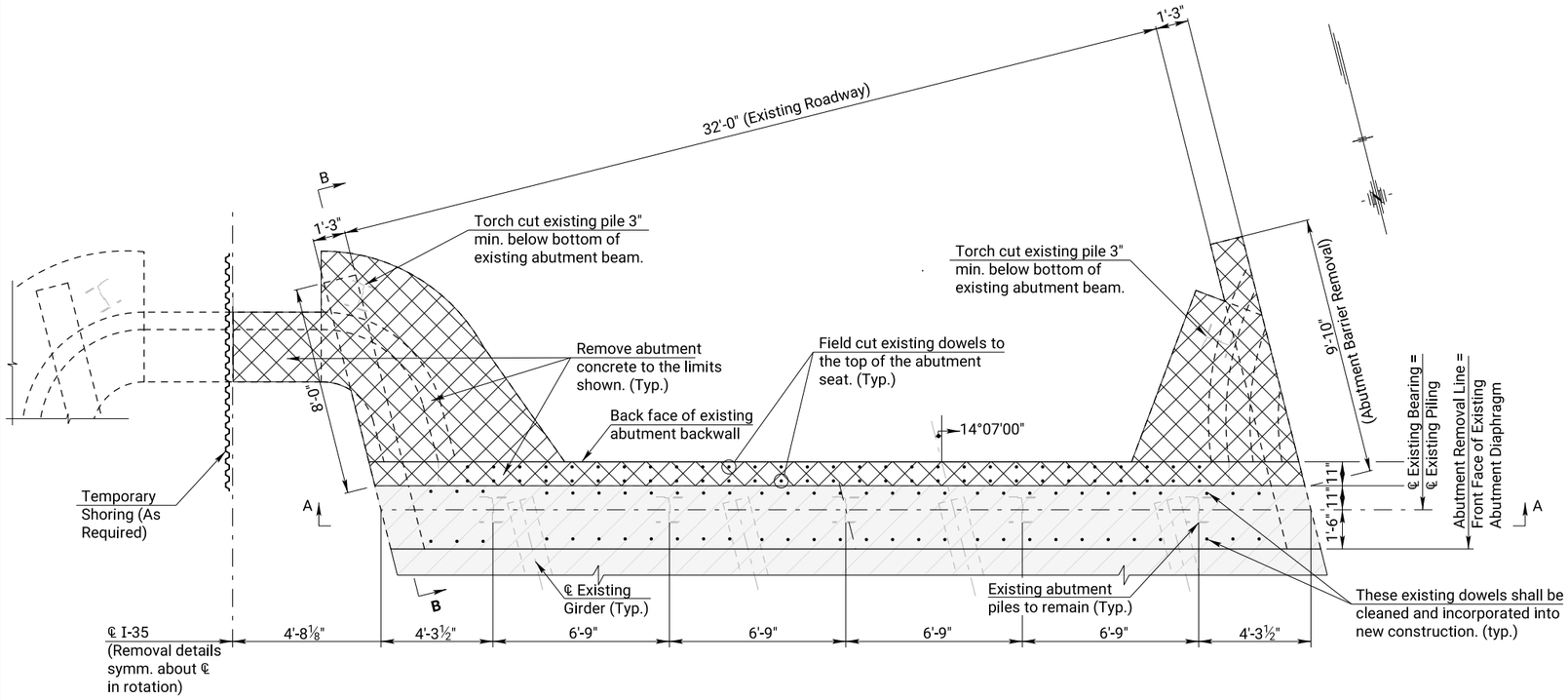
Proj. KTA NO. 8008 Sumner Co.

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

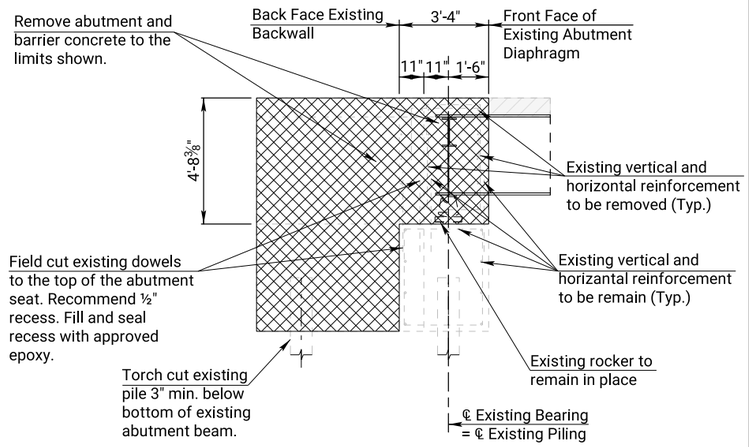
Sh. No. 30

Plotted by : Scott.Bernhardt@wsp.com 8-DEC-2023 16:17
File : 309026 40br007-026.dgn

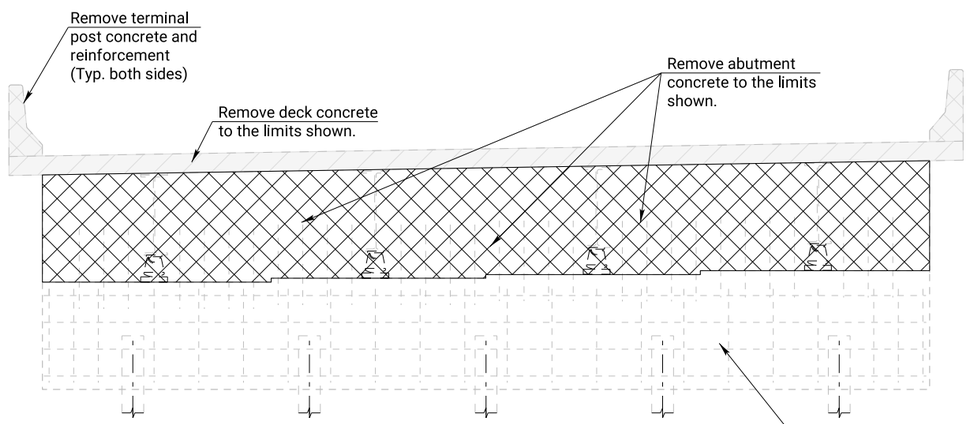
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	31	103



PLAN OF ABUTMENT
(Abutment #1 show, Abutment #2 similar.)



SECTION THRU WINGWALL & BEAM
(Developed Section B-B)
(Terminal Post and wingwall reinforcing steel not shown for clarity, but shall be removed to the Abutment Removal Line.)



ELEVATION OF ABUTMENT
(Section A-A)
(Backwall reinforcement not shown for clarity.)

NOTE: All existing dowel bars, that are not shown, that interfere with new construction shall be field cut to the top of the abutment seat or completely removed.

NOTE: Details shown on this sheet are for the South Abutment on the Southbound I-35 structure. All other abutments on both the Northbound I-35 and the Southbound I-35 structure are similar in concept.

NOTE: Do not damage the girders and cross-bracing with the removal of materials from the existing bridge. Method of protection must be approved by the Engineer prior to beginning work.

NOTE: The limits of removal and demolition along with any dimensions shown in these plans are based upon the existing plans. The Contractor is responsible for confirming all dimensions, details, or other items as shown on the plans or specified. All demolition and concrete removal shall be paid for under the bid item "Removal of Existing Structure".

LEGEND

Abutment Removal

Deck Removal

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

SUBSTRUCTURE DEMOLITION

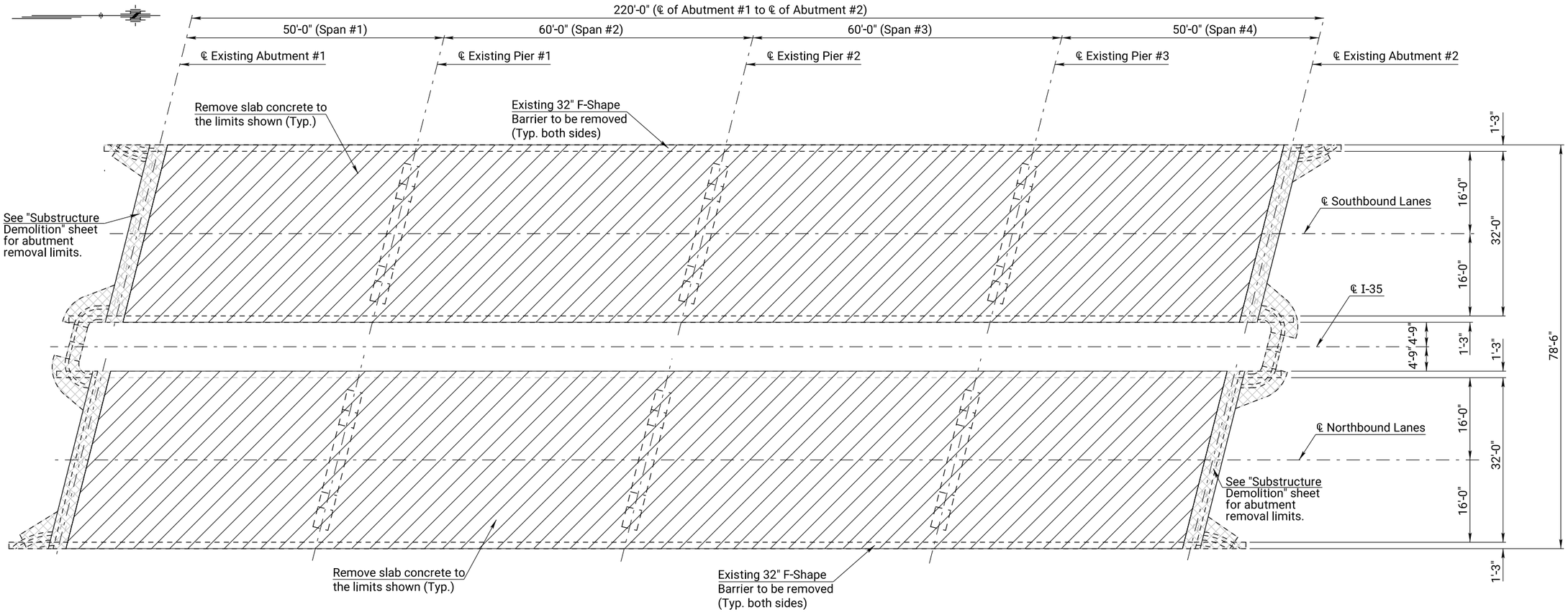
Proj. KTA NO. 8008 Sumner Co.

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

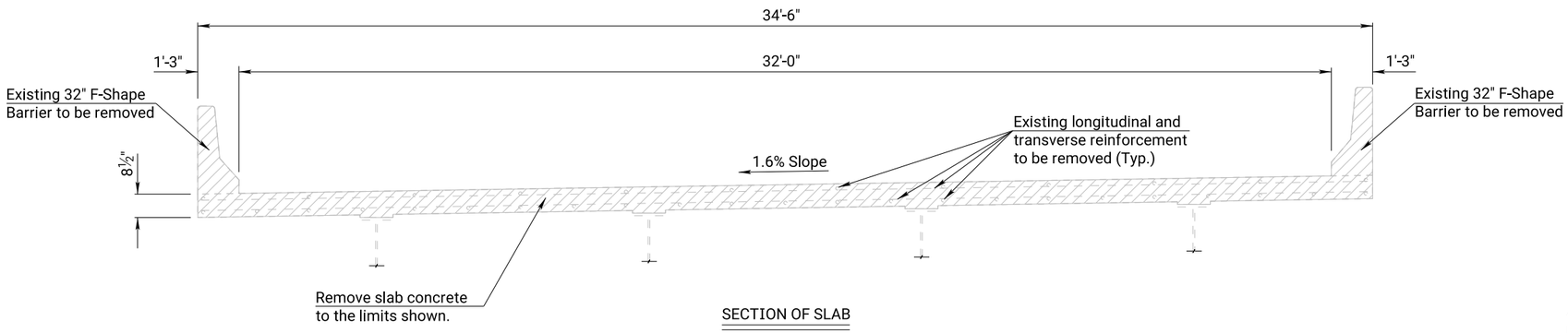
Sh. No. 31

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:54
File : 30902640brr007-027.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	32	103



PLAN OF SLAB



SECTION OF SLAB

NOTE: Do not damage the girders and cross-bracing with the removal of materials from the existing bridge. Method of protection must be approved by the Engineer prior to beginning work.

LEGEND

Abutment Removal

Deck Removal

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S
Br. No. 5.133 N

SUPERSTRUCTURE DEMOLITION

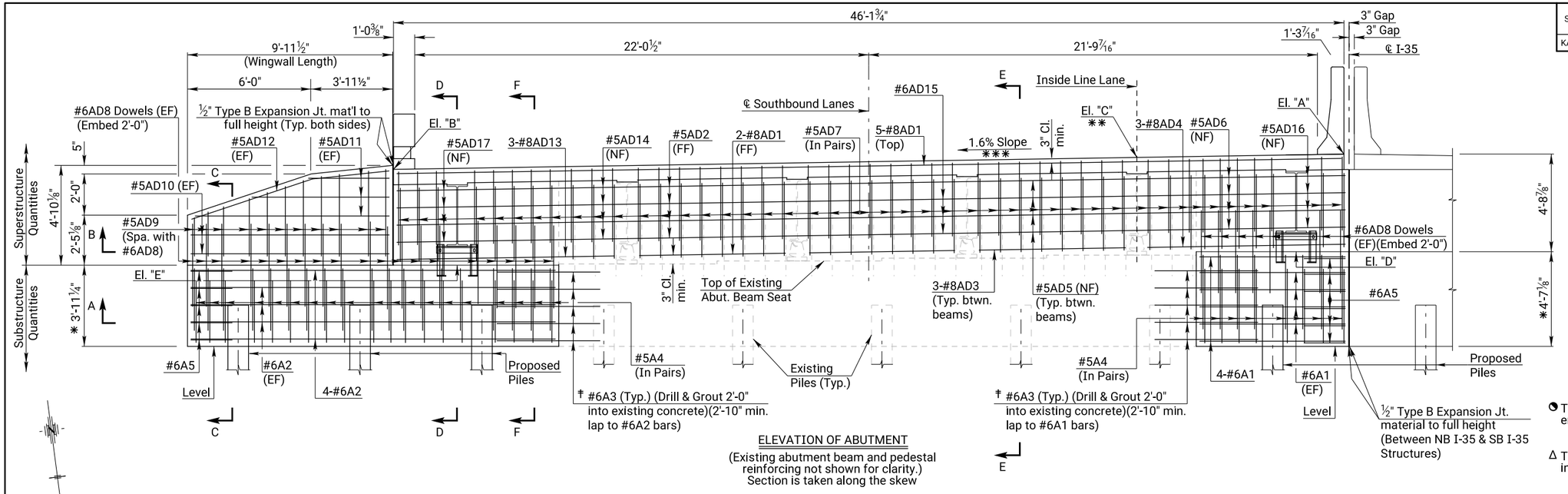
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 32

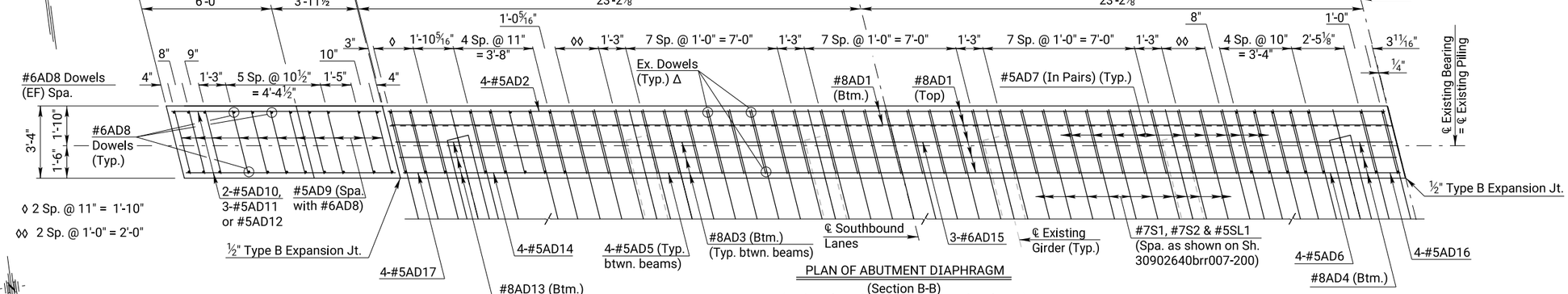
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:54
File : 309026640br007-030.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	33	103



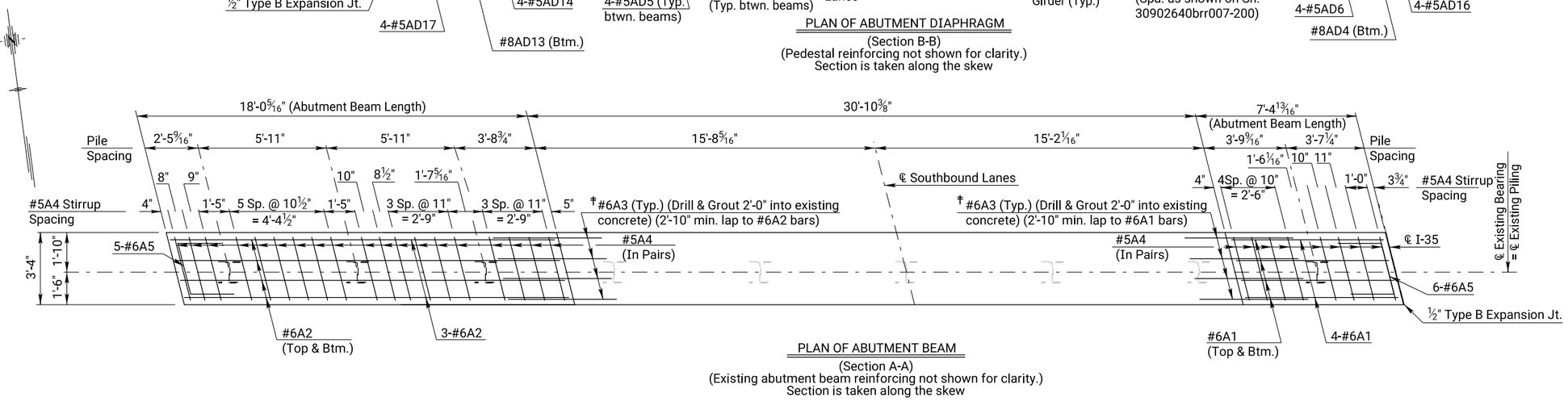
ELEVATION OF ABUTMENT

(Existing abutment beam and pedestal reinforcing not shown for clarity.)
Section is taken along the skew



PLAN OF ABUTMENT DIAPHRAGM

(Section B-B)
(Pedestal reinforcing not shown for clarity.)
Section is taken along the skew



PLAN OF ABUTMENT BEAM

(Section A-A)
(Existing abutment beam reinforcing not shown for clarity.)
Section is taken along the skew

LEGEND

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

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

Δ These existing dowels shall be cleaned and incorporated into new construction.

† Use a pachometer prior to Drilling & Grouting of #6A3 bars to accurately locate existing abutment reinforcement and adjust location of #6A3 bars as needed to avoid conflicts.

* Dimension shown is approximate and is based on Existing Plans. Actual dimension may vary based on field conditions.

** Contractor to survey these locations prior to construction and maintain these elevations following construction.

*** Slope 1.60% Normal to ℄ Roadway.

NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structures are similar.

NOTE: All Drilling and Grouting of #6A3 bars into the existing abutment shall be included in the bid Item "Reinforcing Steel (GR. 60)(Epoxy Coated)". Typical for both Abutments.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

ABUTMENT DETAILS I

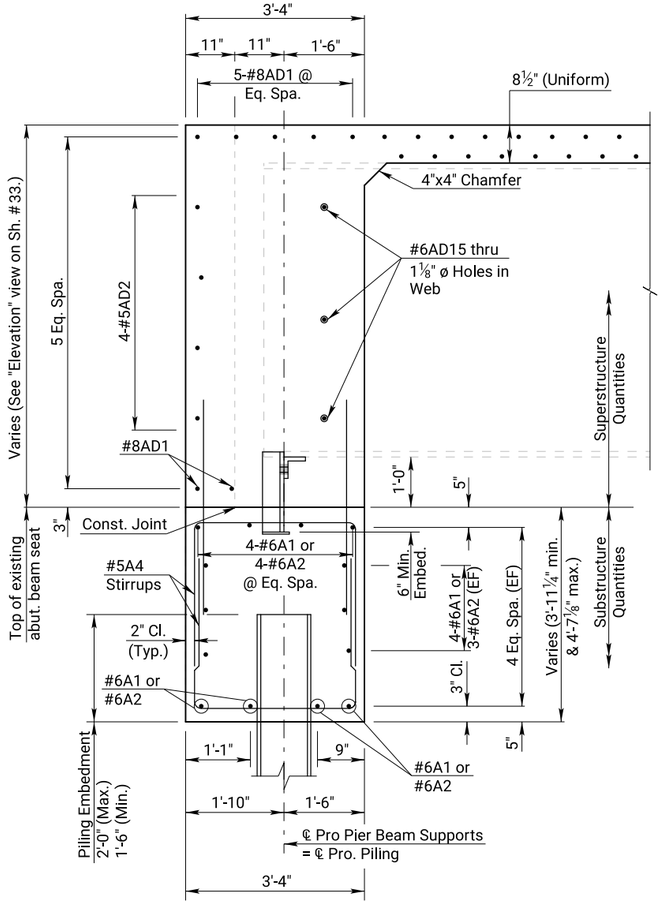
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 33

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:54
File : 30902640brr007-100.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	34	103



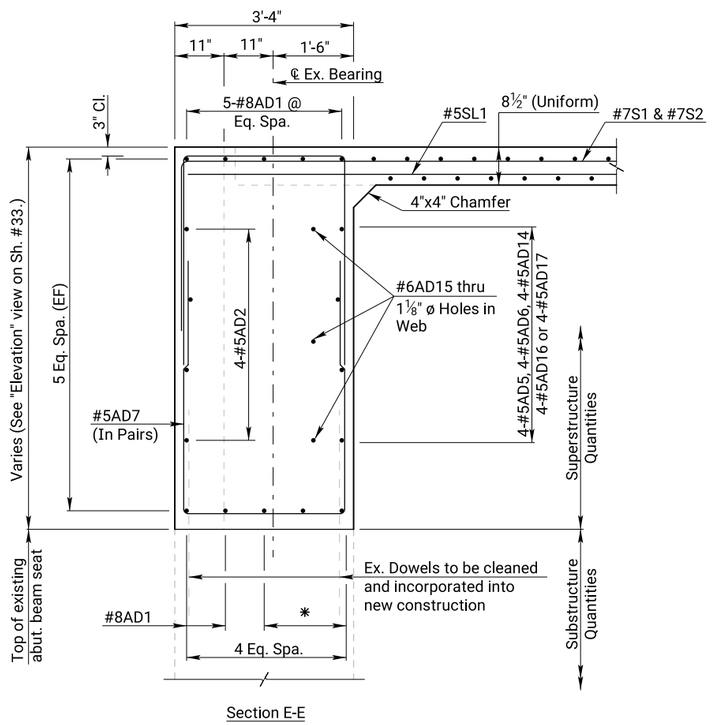
Section D-D

* 3-#8AD3, 3-#8AD4 or 3-#8AD13

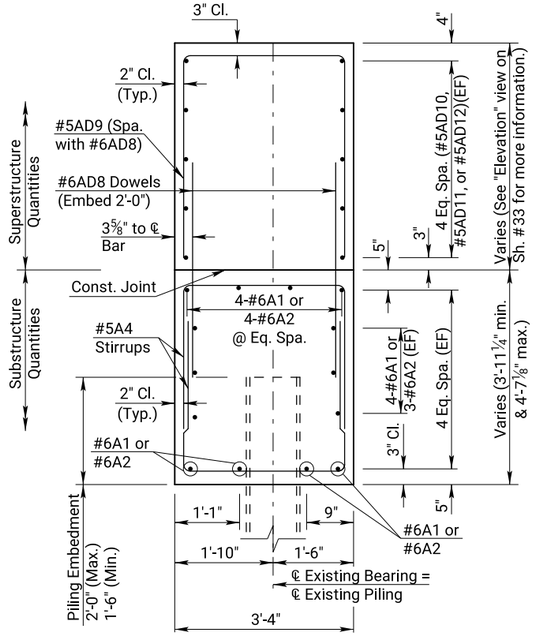
NOTE: Details shown on this sheet are shown for the Southbound I-35 structure. Northbound I-35 structures are similar.

NOTE: For holes thru web for #6 bars, place black mastic or expansion joint material around bars to prevent concrete intrusion.

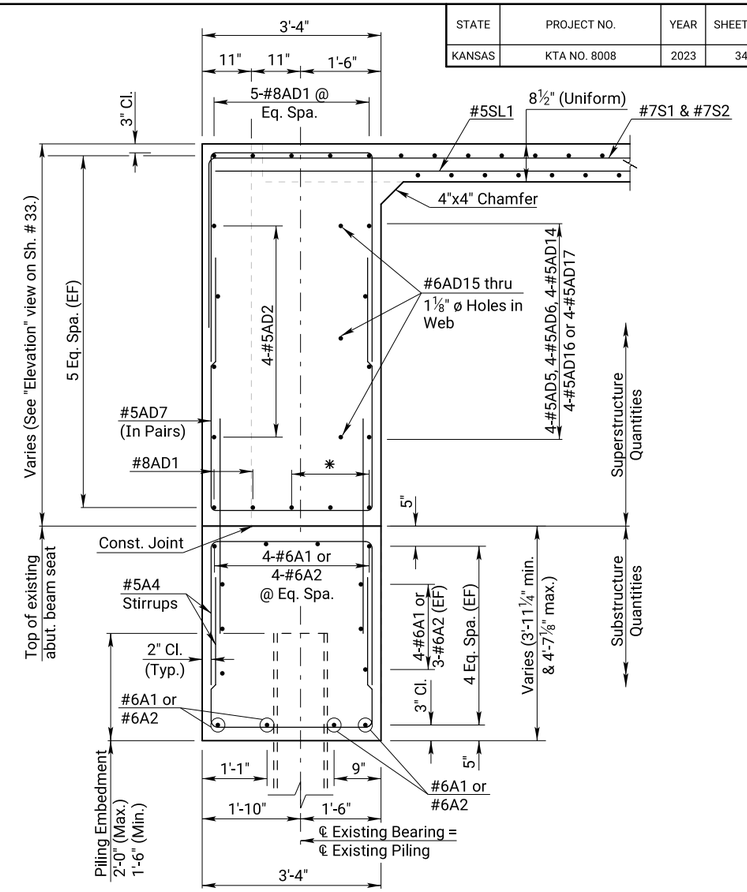
See Sh. #33 for location of Section C-C, D-D, E-E and F-F.



Section E-E



SECTION THRU WINGWALL
(Section C-C)



Section F-F

TABLE OF ELEVATIONS		
Pier	Abut. #1	Abut. #2
"A"	1184.82	1185.89
"B"	1184.19	1185.19
"C"	1184.68	1185.74
"D"	1180.09	1181.16
"E"	1179.54	1180.54
"F"	1177.60	1178.60
"G"	1175.60	1176.60

LEGEND
EF = Each Face

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S

ABUTMENT DETAILS II

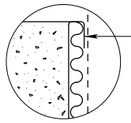
Proj. KTA NO. 8008 Sumner Co.

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

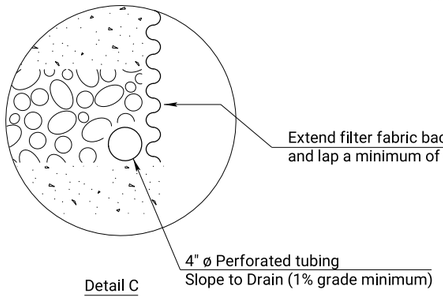
Sh. No. 34

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 17:00
File : 309026640brr007-105.dgn

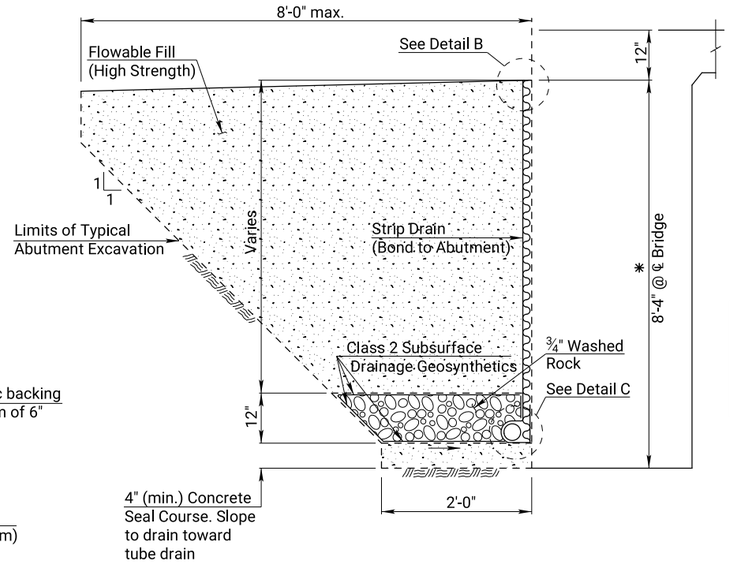
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	35	103



Detail B



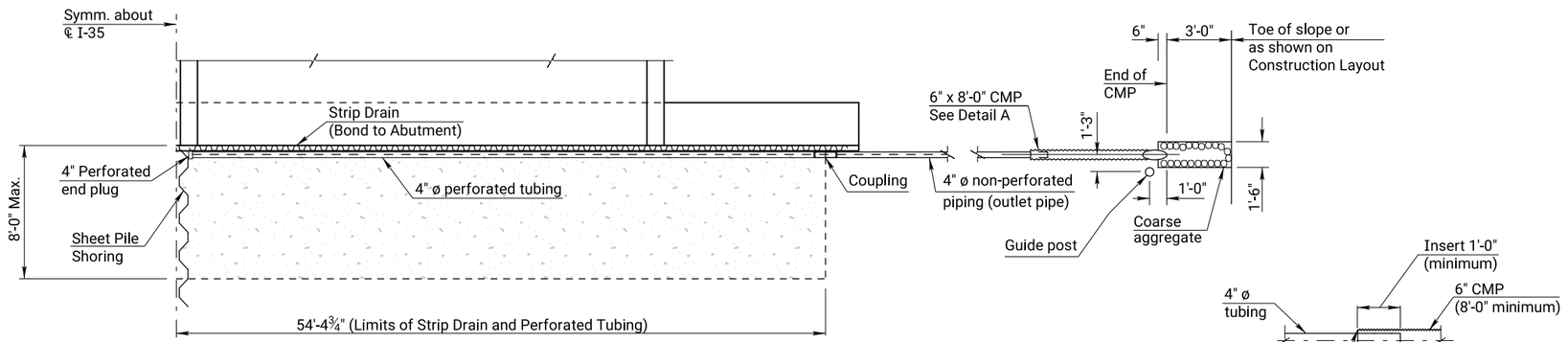
Detail C



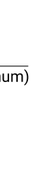
SECTION A-A

* Limits of Bridge Backwall Protection System (by Bridge Contractor)

NOTE: Details shown on this sheet are for the North Abutment on the Southbound I-35 structure. All other abutments on both the Southbound I-35 structure and Northbound I-35 structure similar. Quantities shown on this sheet are for the Southbound I-35 structure, Northbound I-35 structure similar.

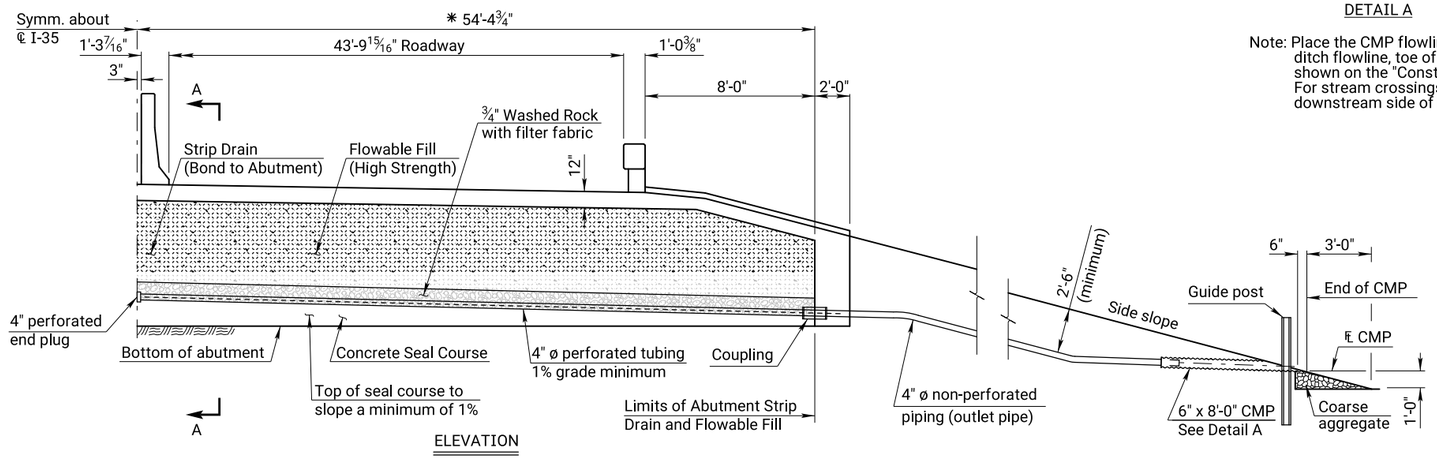


PLAN



DETAIL A

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



ELEVATION

GENERAL NOTES

ABUTMENT STRIP DRAIN: The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation sheet, grade the bottom of the backfill area, construct the concrete course, place the strip drain, and place the perforated pipe, the outlet pipe, the CMP, and the backfill.

BRIDGE BACKWALL PROTECTION SYSTEM: Apply a Bridge Backwall Protective System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Prior to backfilling, repair any damage done to the system at no charge to the KTA.

Place perforated pipe next to the strip drain. Use non-perforated pipe outside the limits of the strip drain. Enclose the perforated pipe with the extension of the filter fabric.

Compact the abutment backfill. See the KDOT Specifications.

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

Fit the CMP end section with ¼" galvanized mesh screen to prevent the entrance of rodents. Seal the joint between the outlet pipe and the end section with a joint sealer. Place Coarse aggregate at the outlet end as shown.

Grade the bottom surface of the excavated area to drain. Construct the concrete seal course and slope to drain. Materials and labor shall be subsidiary to Abutment Strip Drain.

Place the outlet pipe as shown or noted (See the "Construction Layout" sheet).

GEOSYNTHETICS: Use material that complies with KDOT Specification Section 1710 Class 2 subsurface drainage fabric. Place the Class 2 subsurface drainage fabric on the concrete seal course as shown. Allow for enough material so that the top can be overlapped and the end folded to completely enclose the aggregate drain. Place the perforated drain pipe and couple to non-perforated pipe as shown. Allow the non-perforated pipe to pass through a hole carefully cut in fabric. Place aggregate within fabric to just leave the top of the pipe visible. Verify the slope of the pipe, that it is not damaged or displaced and that the couplers are firmly coupled. Continue to backfill to the elevation and shape shown. Lap the top of the fabric a minimum of 1'-6", fold and wrap the ends to enclose the drainage materials. Secure the folds and wraps by sewing or approved methods.

SUMMARY OF QUANTITIES (North & South Abutments)	
Abutment Strip Drain	82.9 Sq. Yds.
Bridge Backwall Protection System	94.7 Sq. Yds.
Flowable Fill (High Strength)	183.3 Cu. Yds.
Items subsidiary to Abutment Strip Drain	
4" ø Perforated Pipe	109 Lin. Ft.
4" ø Outlet Pipe	101 Lin. Ft.
6" ø CMP	16 Lin. Ft.
Guide Post	2 Each
Items subsidiary to Flowable Fill (High Strength)	
Geosynthetics (Class 2 Subsurface Drainage)	96.2 Sq. Yds.
¾" Washed Rock	10.1 Cu. Yds.
Seal Course Concrete	7.9 Cu. Yds.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 N

ABUTMENT STRIP DRAIN

Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 35

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:57
File : 30902640brr007-460.dgn

Revised Plans

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	36	103

Superstructure Quantities

Substructure Quantities

℄ Pier

8'-4"

2'-8" 3'-0" 2'-8"

4'-2"

3¾16"

3'-8"

2'-6"

1'-2"

✱6-#7PB8

#5PB7 (Typ.)

6-#9PB1

#6PB4

#6PB3

#5PB5 or #5PB6 (In Pairs)

Roughened Const. Joint

6-#7PB2

✱✱ #6PB18 (Typ.) Drill & Grout 2'0" into existing concrete)(2'-10" min. lap to #5PB7 & #5PB16 bars)

℄ I-35

17'-10½"

7'-5¼" 3'-0" 7'-5¼"

El. "B"

3'-6" 3'-6"

✱6-#7PB15

#5PB16 (Typ.)

#5PB13 or #5PB14 (In Pairs)

#6PB12

6-#7PB10

#6PB17

#6PB11

6-#9PB9

6¾16"

El. "D"

2'-10½"

4'-0½"

3"

1'-2"

A

A

12" Spa. #4PC4 or #4PC5 (Typ.)(In Pairs)

1'-0" 3'-0" 1'-0"

20 - #9PC1 or #9PC2 (Typ.)

20 - #9 PC3 (Typ.)

Approx. Ground El. "F"

5'-8" Min. Lap (#9PC3)

Top of Rock El. "H"

Top of Rock Socket El. "I"

11'-6" Min. Uncased Rock Socket

Top of Shaft El "G"

23'-2" (Typ.) (Pier #1)
25'-6" (Typ.) (Pier #2)
29'-9" (Typ.) (Pier #3)

22'-8" #4DS1 (Typ.) (Pier #1)
25'-0" #4DS2 (Typ.) (Pier #2)
29'-3" #4DS3 (Typ.) (Pier #3)

5'-8" Min. Lap (#9PC3)

32 - #9DC1 (Typ.) (Pier #1)
32 - #9DC2 (Typ.) (Pier #2)
32 - #9DC3 (Typ.) (Pier #3)

Btm. of Drilled Shaft El. "J"

ELEVATION OF PIER
EXTERIOR PIER

ELEVATION OF PIER
INTERIOR PIER

℄ Pier

8'-4"

2'-8" 3'-0" 2'-8"

4'-2"

El. "C"

El. "A"

3¾16"

2'-6"

3'-8"

3"

1'-2"

✱6-#7PB8

#5PB7 (Typ.)

#5PB5 or #5PB6 (In Pairs)

6-#7PB2

#6PB3

6-#9PB1

#6PB4

Bottom of Pier Beam El. "E"

22'-6" #4PC4 (Typ.) (Pier #1 & #2)
16'-6" #4PC5 (Typ.) (Pier #3)

23'-0" (Typ.) (Pier #1 & #2)
17'-0" (Typ.) (Pier #3)

1'-0" 3'-0" 1'-0"

Roughened Const. Joint

5'-8" #9PC3 (Typ.)

B

B

#4PC4 or #4PC5 (Typ.)(In Pairs)

⚠ Permanent Steel Casing (½" Smooth Wall) (60" Min. ø) (Typ.)

ELEVATION OF PIER
EXTERIOR PIER

Elevations Shown for NB I-35 & SB I-35 Bridges are along their respective Inside Lane Lines. Stations are projected normal to the Profile Grade Line = ℄ I-35

NOTE: All Drilling and Grouting of #6PB18 bars into the existing pier cap shall be included in the bid item "Reinforcing Steel (GR. 60)(Epoxy Coated)". Typical for all Piers.

✱ Field bend to match bottom of concrete (Typ.)

✱✱ Use a pachometer prior to drilling & Grouting of #6PB18 bars to accurately locate existing pier cap reinforcement and adjust location of #6PB18 bars as needed to avoid conflict.

NO.	DATE	REVISIONS	BY	APP'D
⚠1	12/08/23	Removed Temp Casing details & updated Perm Casing info	SB	AH

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

PIER DETAILS I

Proj. KTA NO. 8008 Sumner Co.

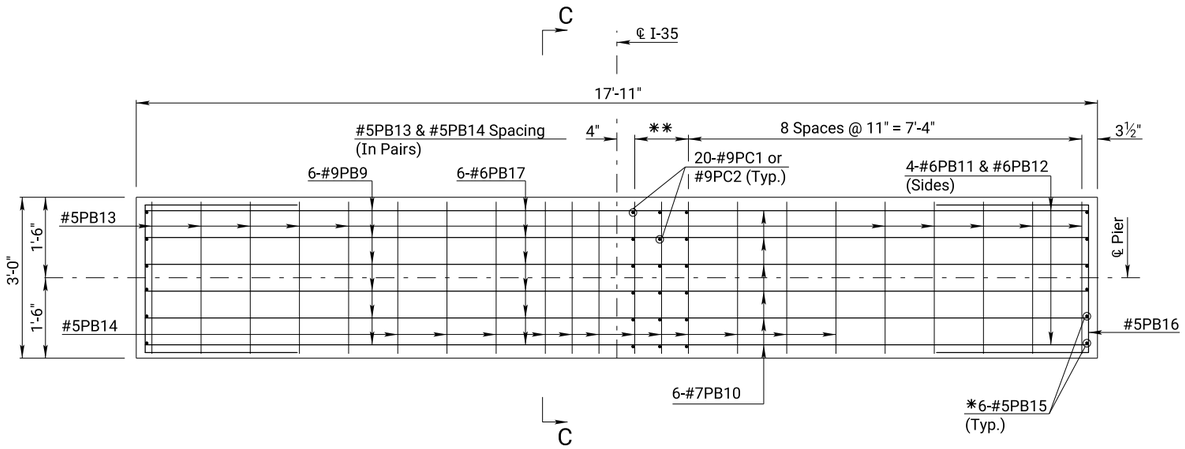
DESIGNED	X.X.X.	DETAILED	X.X.X.	QUANTITIES	X.X.X.	CADD	X.X.X.
DESIGN CK.	X.X.X.	DETAIL CK.	X.X.X.	QUAN.CK.	X.X.X.	CADD CK.	X.X.X.

Sh. No. 36

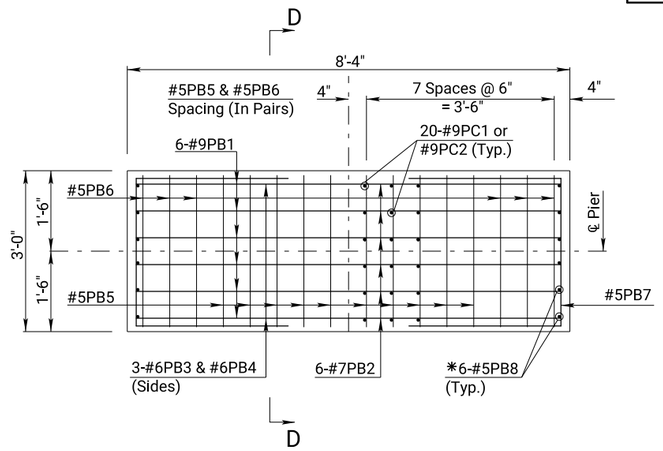
Plotted by : Scott.Bernhardt@wsp.com 8-DEC-2023 16:17
File : 30902640br007-350.dgn

Revised Plans

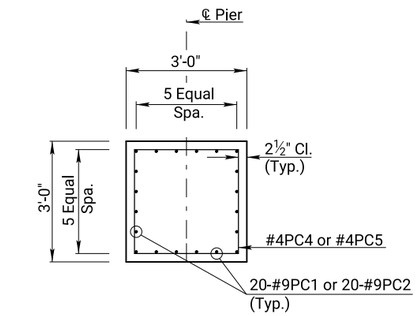
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	37	103



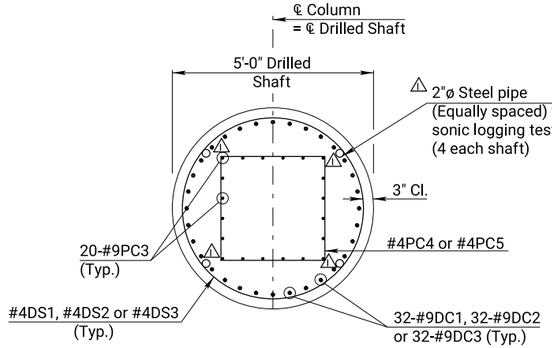
PLAN
INTERIOR PIER



PLAN
EXTERIOR PIER

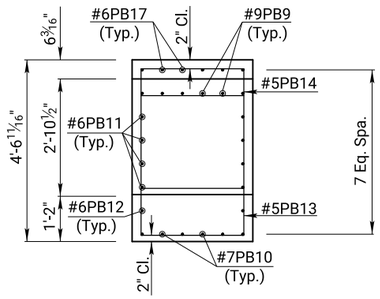


Section A-A

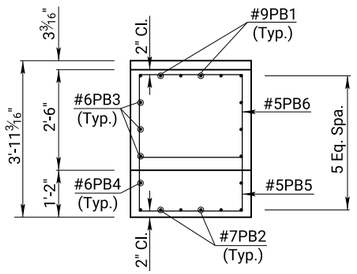


Section B-B

TABLE OF ELEVATIONS			
Pier / Loc.	Pier #1	Pier #2	Pier #3
"A"	1180.15	1180.48	1180.70
"B"	1180.72	1181.06	1181.30
"C"	1179.89	1180.21	1180.44
"D"	1180.21	1180.54	1180.79
"E"	1176.16	1176.50	1176.74
"F"	1157.00	1155.00	1161.00
"G"	1153.16	1153.50	1159.75
"H"	1151.00	1151.00	1151.00
"I"	1145.00	1143.00	1145.00
"J"	1130.00	1128.00	1130.00



Section C-C



Section D-D

* Field bend to match bottom of concrete (Typ.)

** 2 Spaces @ 6" = 1'-0"

See Sh. # 36 for Location of Section A-A & B-B

NO.	DATE	REVISIONS	BY	APP'D
1	12/08/23	Added Sonic Testing details & callouts	SB	AH

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

PIER DETAILS II

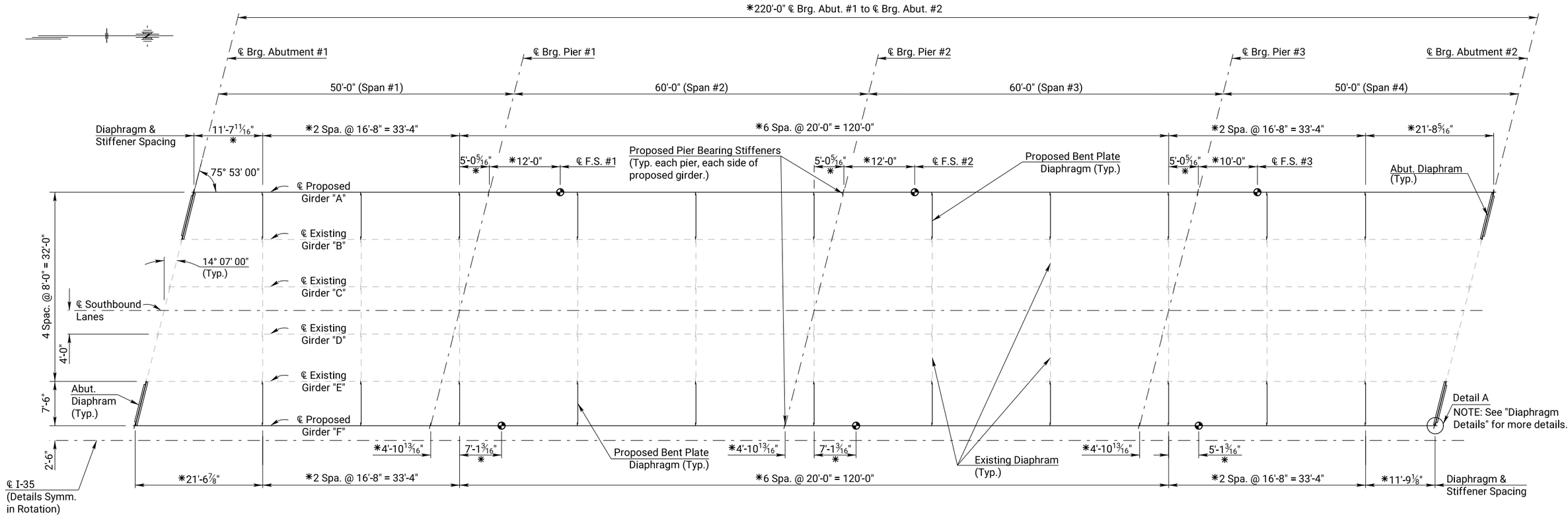
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 37

Plotted by : Scott.Bernhardt@wsp.com 8-DEC-2023 16:17
File : 309026640br007-355.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	38	103



FRAMING PLAN

Details shown are shown for the Southbound I-35 structure, Northbound I-35 structure similar.

GENERAL NOTES

STURCTURAL STEEL: All W36x150 rolled girders, abutment, Field Splice & bent plate diaphragms, stiffeners shall meet AASHTO M270 (Grade 50W T3) requirements except as noted. All other structural steel shall meet ASTM A709 (Grade 50W), unless noted otherwise. Field Splices shall be made only where shown in these Contract Plans as a "splice". Elimination of any "splice" may be requested.

PAINTING: The shop coats applied to Structural Steel shall conform to an inorganic zinc primer.

Blast clean to meet SSPC-SP10 Specifications and prime coat the embedded portion of the girders, including the abutment diaphragms; the top flanges, including the shear studs in accordance with KDOT Specifications.

Touch Up: Prepare and paint all bolts, nuts, studs, and other small areas of damaged paint (1 yd2 or less), requiring touch up, with an approved organic zinc primer.

All labor and material for painting of the structural steel and concrete surface will be subsidiary to other bid items.

WELDING: Material, Fabrication and Construction shall conform to KDOT Specifications. On the shop drawings, show a code or symbol in the tail of the weld symbol that refers to an approved, pre-qualified weld procedure.

FILLETS: Construct the finished deck to plan grade by varying the depth of the fillet over the beam to provide for beam profile, concrete dead load deflection and, if necessary, vertical curvature. After the beams are completely erected and the falsework bents are removed, profile each beam. Correct any variation between the actual profile and the concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the beams so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the beam shall be 9" inches.

BOLTS: All bolts, nuts and hardened flat washers shall conform to the heavy hex structural requirements of ASTM F3125 Grade A325, Type 3, and KDOT Specifications unless otherwise noted. Direct Tension Indicators (DTIs) are to comply with the requirements of the latest edition of ASTM F959. No allowance will be made for high strength bolts used for permanent or temporary connections. This work is subsidiary to the bid item, "Structural Steel". The number of bolts is shown for the convenience of the Contractor.

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

NOTE: Shop Drawings shall be submitted to the Engineer for approval prior to fabrication for the proposed rolled beam segments, all diaphragm assemblies and pier beam support assemblies.

STRUCTURAL STEEL SUMMARY		
Girder Components	M270 Gr. 50W T3, Lbs.	M270 Gr. 50W Lbs.
W 36 x 150 Girder	66,225	-
Abutment Diaphragm Assemblies	1,043	-
Bent Plate Diaphragm Assemblies	5,154	-
Stiffeners (Pier Bearing & Diaphragm)	2,049	-
Field Splice Plates	2,394	-
Pier Beam Support Assemblies	-	391
Total Structural Steel	76,865	391

Note: Quantities shown are listed for Northbound I-35 (5.133 N) structure ONLY, Southbound I-35 (5.133 S) structure the same.

352 - 7/8" ø A325 Bolts Required
252 For Abutment and Bent Plate Diaphragms.
100 For Field Splices.

*Dimensions shown are based on Existing Plans. Actual dimension may vary based on field conditions.

LEGEND

——— Proposed Structural Steel

– – – Existing Structural Steel

F.S. = Field Splice

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

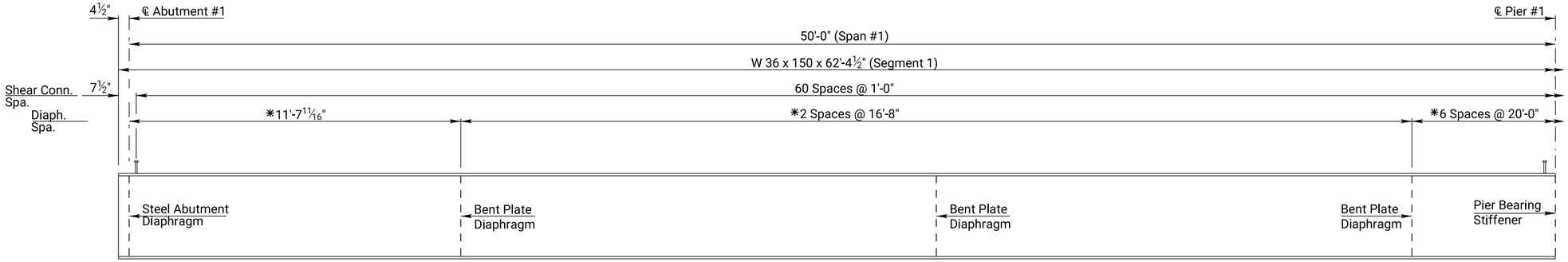
FRAMING PLAN

Proj. KTA NO. 8008 Sumner Co.

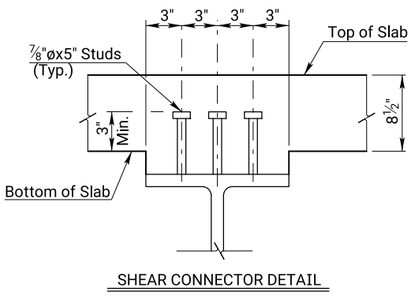
DESIGNED	X.X.X.	DETAILED	X.X.X.	QUANTITIES	X.X.X.	CADD	X.X.X.
DESIGN CK.	X.X.X.	DETAIL CK.	X.X.X.	QUAN.CK.	X.X.X.	CADD CK.	X.X.X.

Sh. No. 38

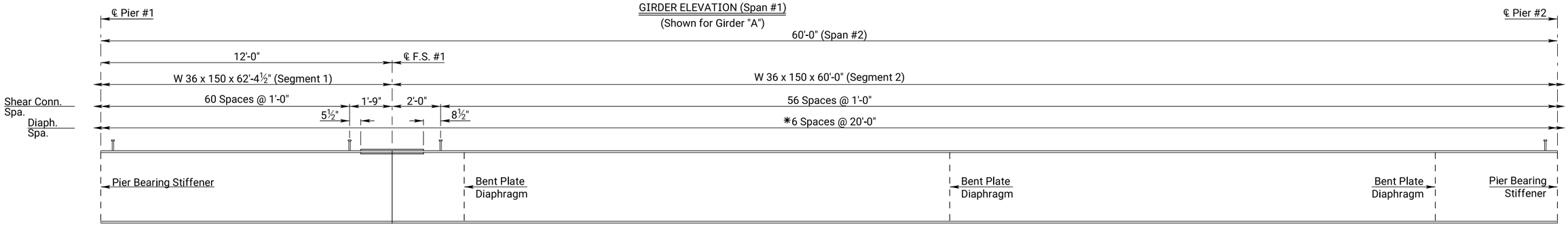
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	39	103



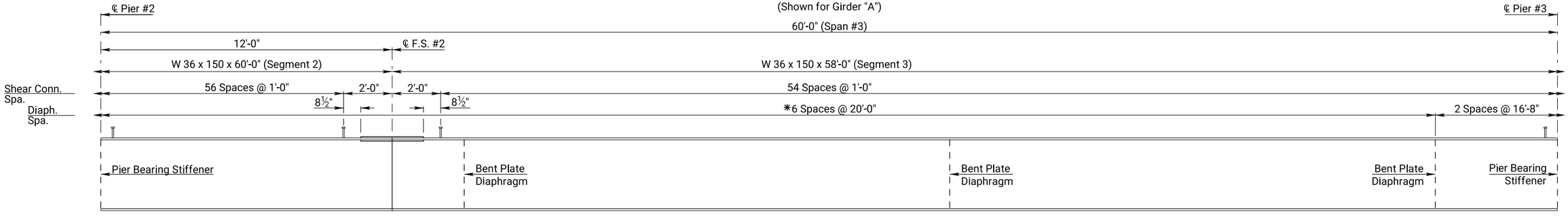
GIRDER ELEVATION (Span #1)
(Shown for Girder "A")



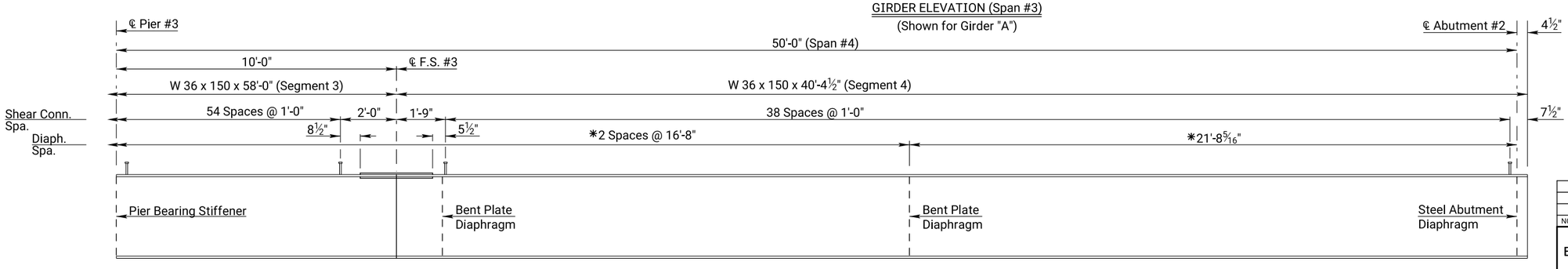
SHEAR CONNECTOR DETAIL



GIRDER ELEVATION (Span #2)
(Shown for Girder "A")



GIRDER ELEVATION (Span #3)
(Shown for Girder "A")



GIRDER ELEVATION (Span #4)
(Shown for Girder "A")

Note:
Length shown for studs is proposed. The actual length shall satisfy stud penetration requirements after beam erection.

NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similar.

F.S. = Field Splice

* Dimensions shown are based on Existing Plans. Actual dimension may vary based on field conditions.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

GIRDER ELEVATION I

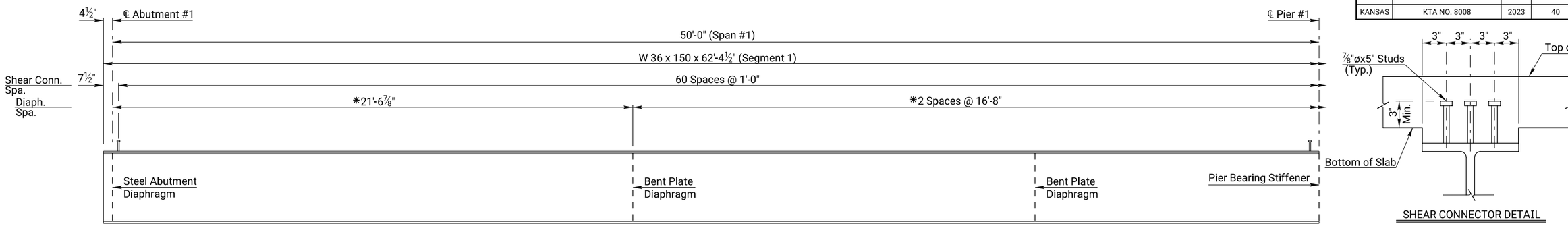
Proj. KTA NO. 8008 — Sumner Co.

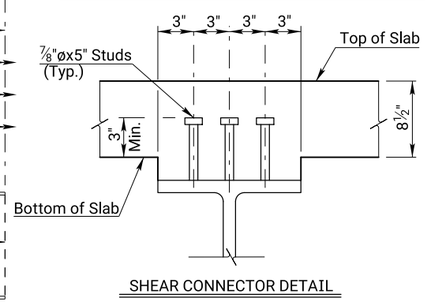
DESIGNED	X.X.X.	DETAILED	X.X.X.	QUANTITIES	X.X.X.	CADD	X.X.X.
DESIGN CK.	X.X.X.	DETAIL CK.	X.X.X.	QUAN.CK.	X.X.X.	CADD CK.	X.X.X.

Sh. No. 39

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 3090264Obrr007-405.dgn

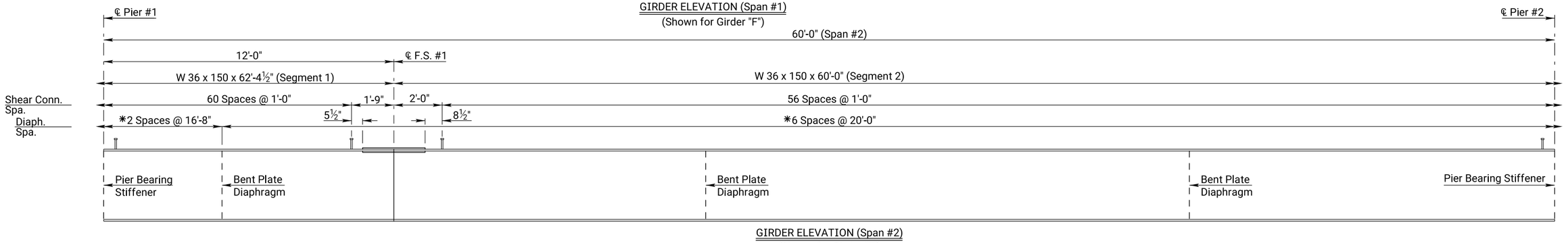
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	40	103



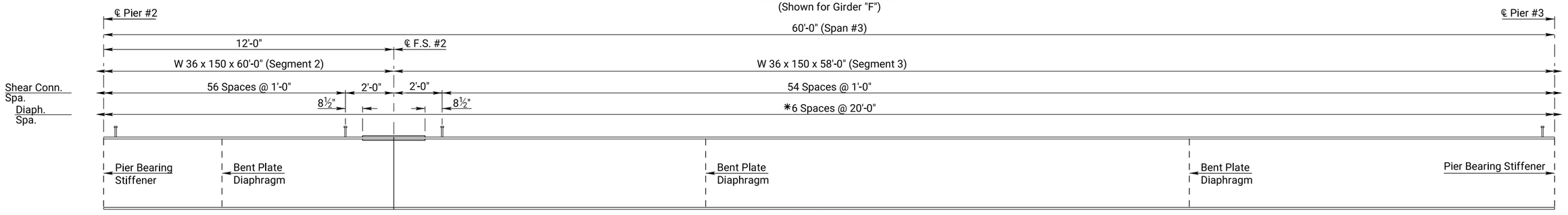


SHEAR CONNECTOR DETAIL

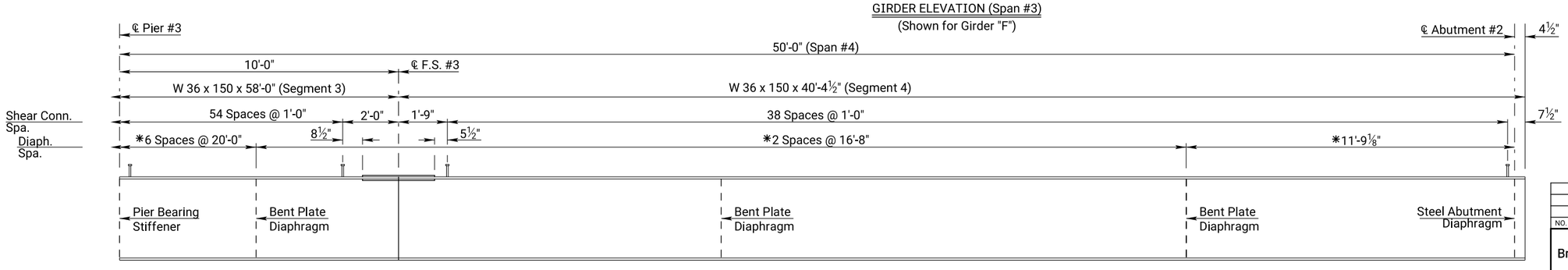
GIRDER ELEVATION (Span #1)
(Shown for Girder "F")



GIRDER ELEVATION (Span #2)
(Shown for Girder "F")



GIRDER ELEVATION (Span #3)
(Shown for Girder "F")



GIRDER ELEVATION (Span #4)
(Shown for Girder "F")

F.S. = Field Splice

Note:
Length shown for studs is proposed. The actual length shall satisfy stud penetration requirements after beam erection.

NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similar.

* Dimensions shown are based on Existing Plans. Actual dimension may vary based on field conditions.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

GIRDER ELEVATION II

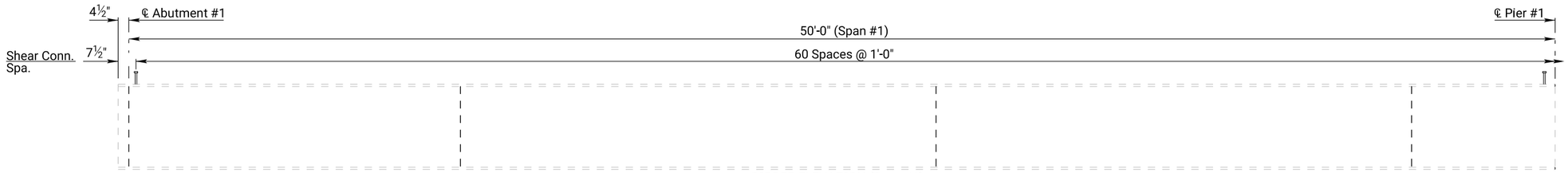
Proj. KTA NO. 8008 Sumner Co.

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

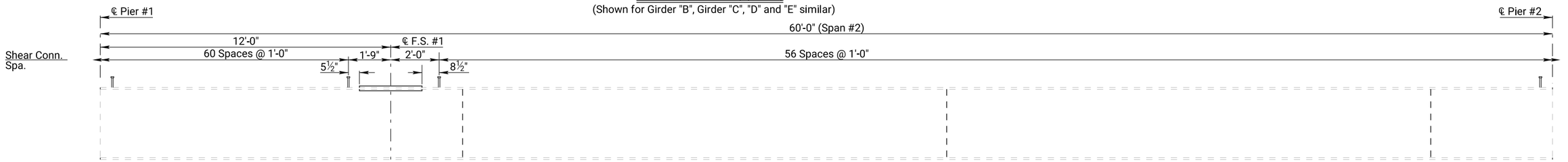
Sh. No. 40

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	41	103

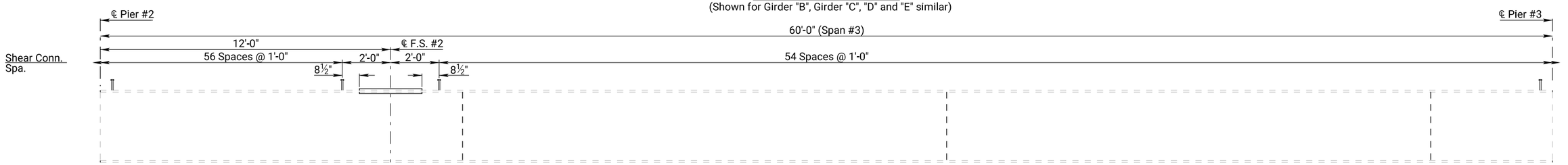
NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similar.



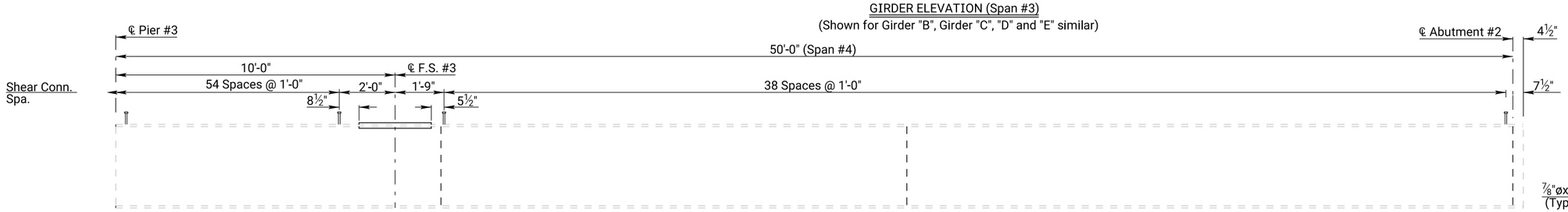
GIRDER ELEVATION (Span #1)
(Shown for Girder "B", Girder "C", "D" and "E" similar)



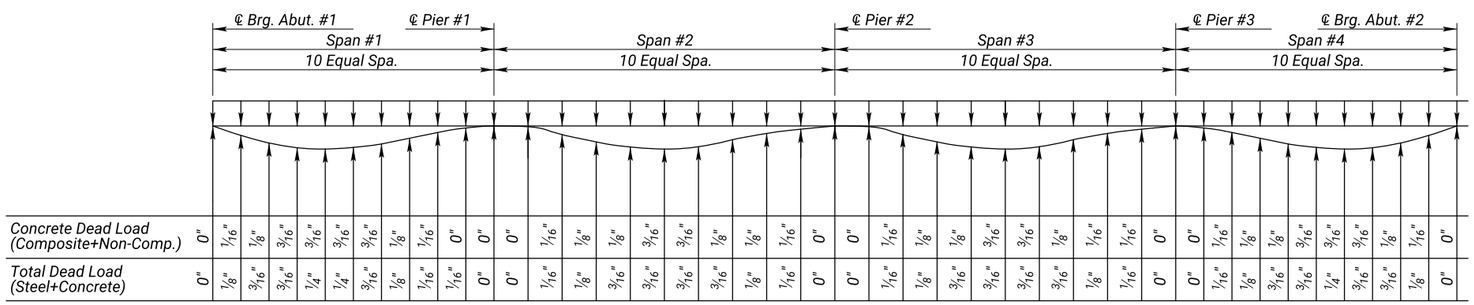
GIRDER ELEVATION (Span #2)
(Shown for Girder "B", Girder "C", "D" and "E" similar)



GIRDER ELEVATION (Span #3)
(Shown for Girder "B", Girder "C", "D" and "E" similar)



GIRDER ELEVATION (Span #4)
(Shown for Girder "B", Girder "C", "D" and "E" similar)

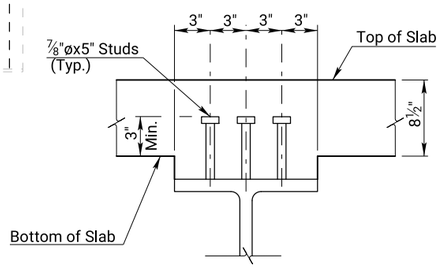


DEAD LOAD DEFLECTION DIAGRAM AT TENTH POINTS
(Ordinates are in inches) (Es = 29,000 ksi)

DEAD LOAD DEFLECTIONS AT FIELD SPLICES (in.)		
	Conc.	*Total*
F.S. #1	1/16"	1/16"
F.S. #2	1/16"	1/16"
F.S. #3	1/16"	1/16"

Note:
Length shown for studs is proposed. The actual length shall satisfy stud penetration requirements after beam erection.

F.S. = Field Splice



SHEAR CONNECTOR DETAIL

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

GIRDER ELEVATION III

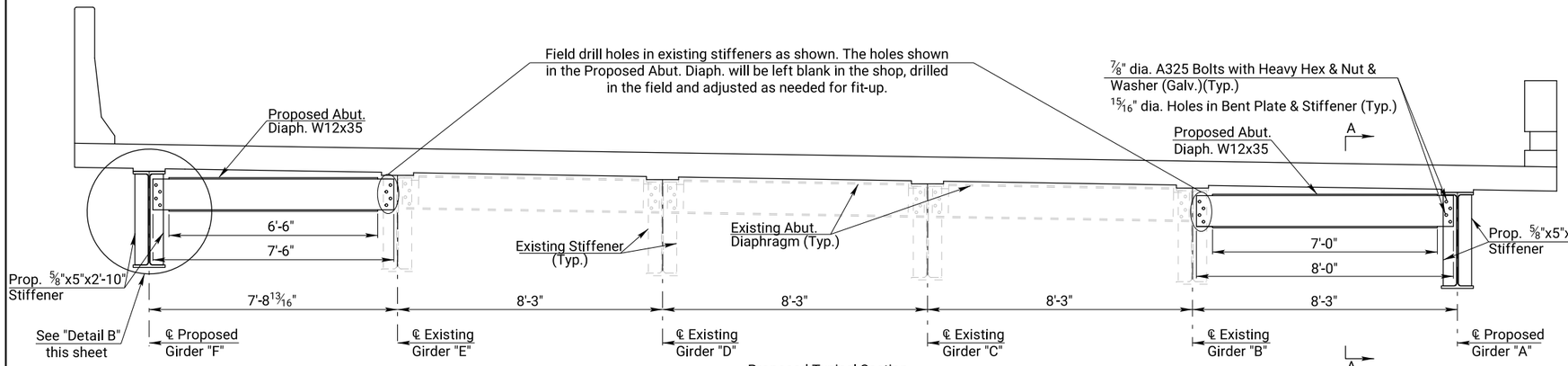
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 41

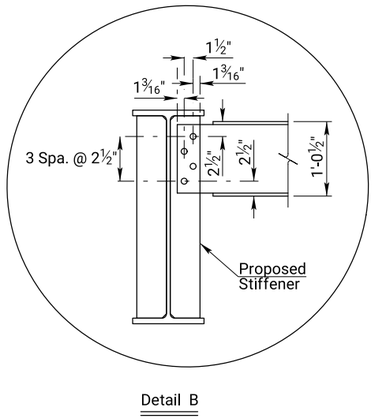
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640brr007-411.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	42	103

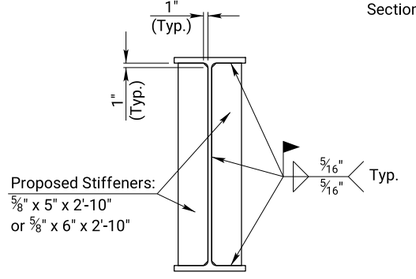


Proposed Typical Section

(Section taken along Skew)
Showing New and Existing Abutment Diaghragm
Section is looking Backstation.



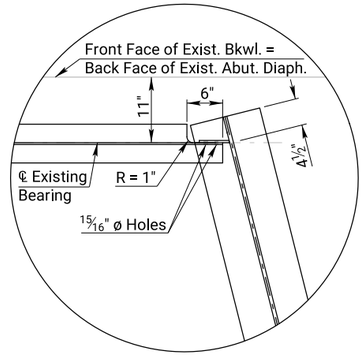
Detail B



PROPOSED STIFFENER DETAILS

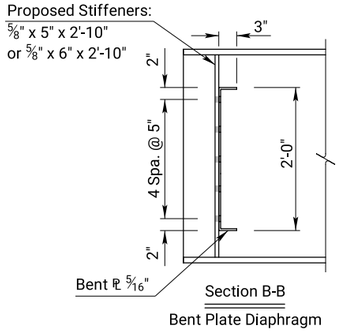
(Details shown apply for Abutment Diaphragm, Pier Bearing & Bent Plate Diaphragm assemblies.
Note: Bent Plate Diaphragm assemblies only have stiffener on one side.)
(Do not reweld existing stiffeners).

NOTE: Shop Drawings shall be submitted to the Engineer for approval prior to fabrication for the proposed rolled beam segments and all diaphragm assemblies.

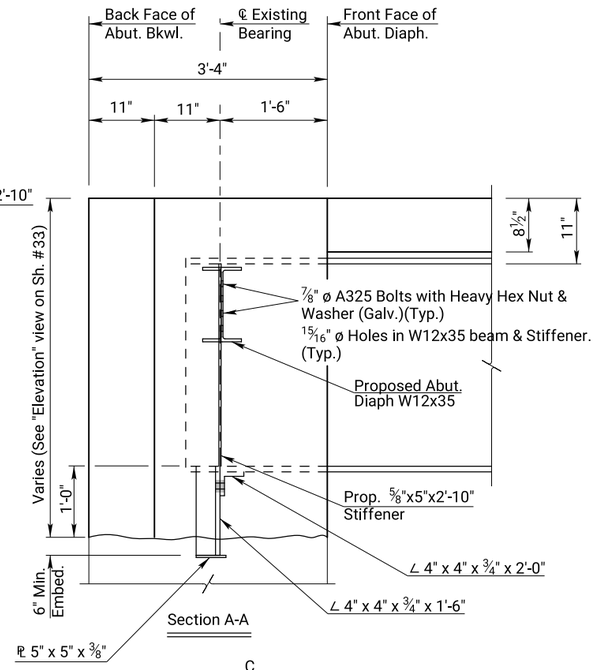


Detail A

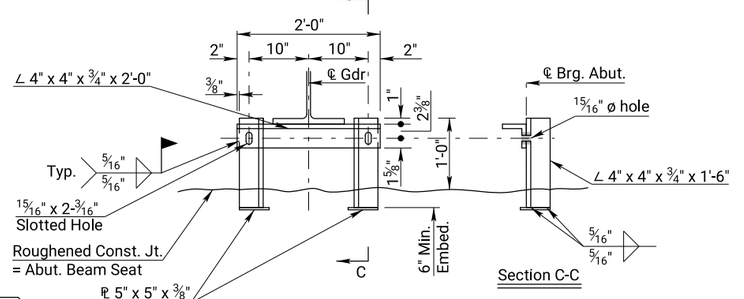
(Showing clip in top & btm flanges of W12x35, both ends. Clip is based off Existing Plans, adjustments may be needed given field condition.)



Section B-B
Bent Plate Diaphragm



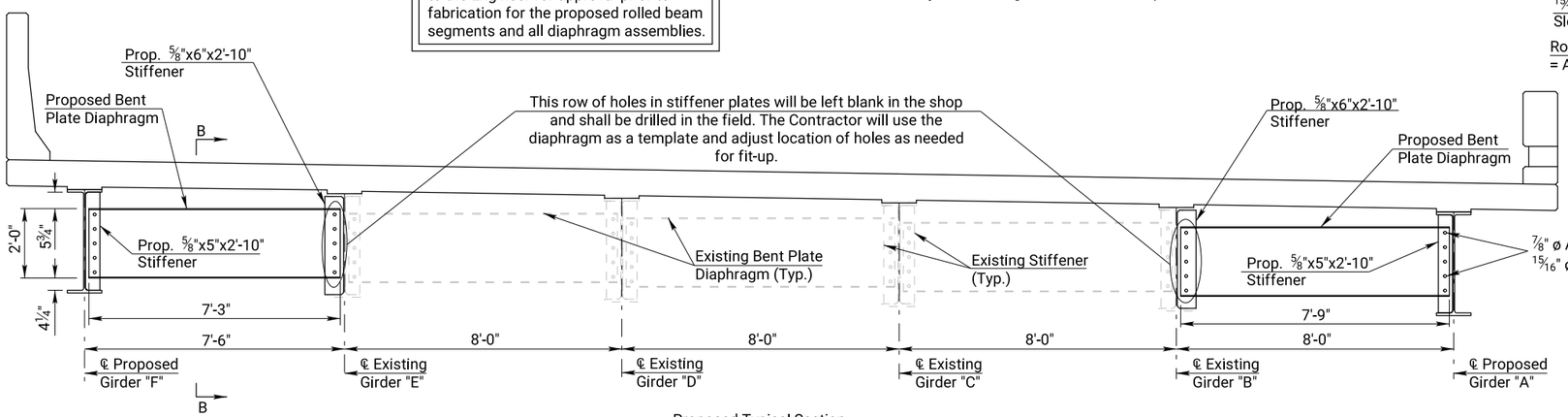
Section A-A



Section C-C

Abutment Beam Supports

(4 Total Required, 2 per Abutment)



Proposed Typical Section

(Section taken Normal to ℄ Roadway)
Showing New and Existing Bent Plate Diaphragms.
Section is looking Backstation.

For Information Only, 252 - 7/8" ø A325 Bolts required for Abutment and Bent Plate Diaphragms.

NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similar.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

DIAPHRAGM DETAILS

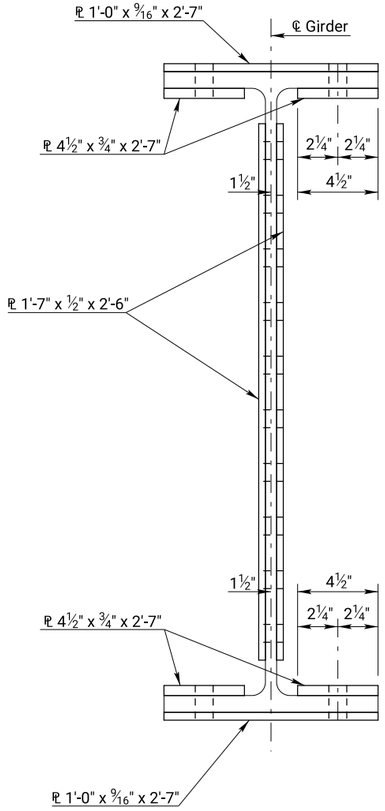
Proj. KTA NO. 8008 Sumner Co.

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

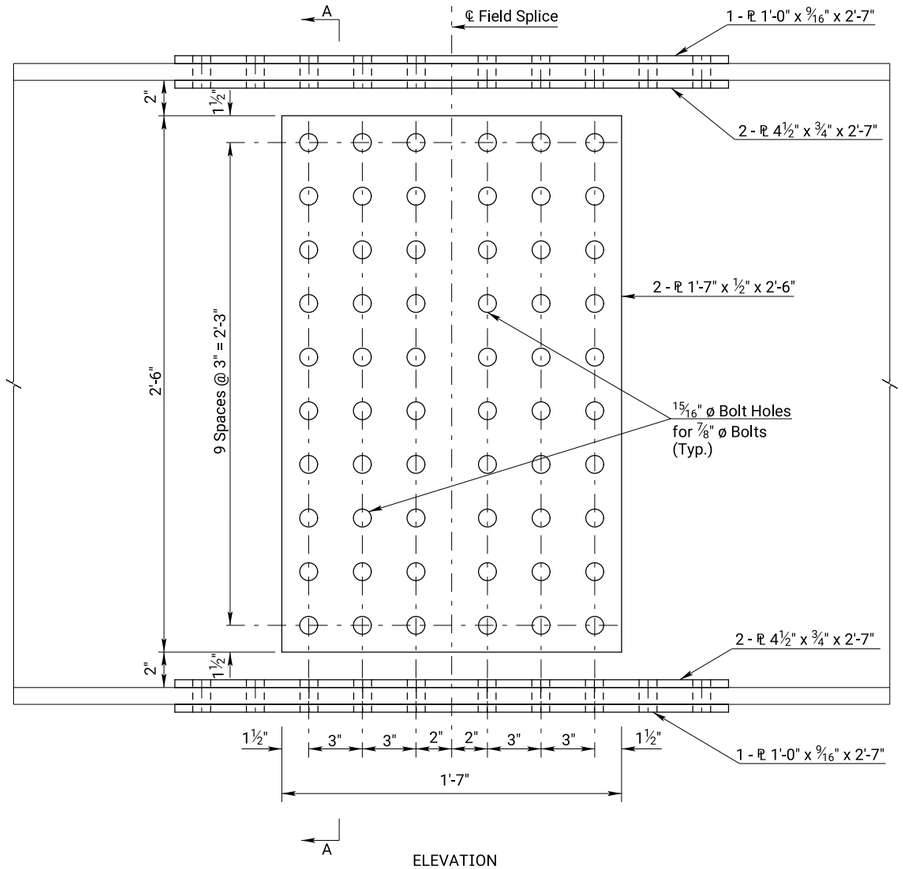
Sh. No. 42

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640brr007-415.dgn

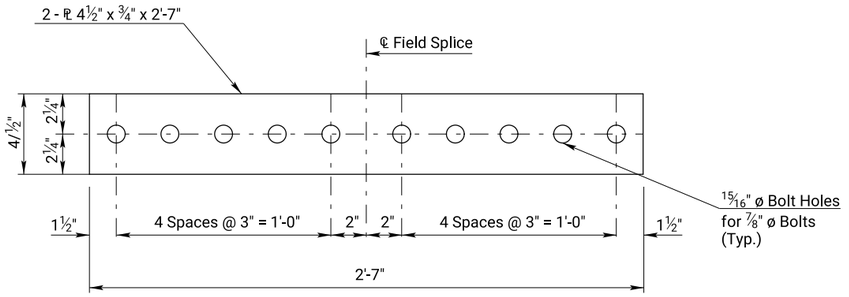
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	43	103



SECTION A-A



ELEVATION



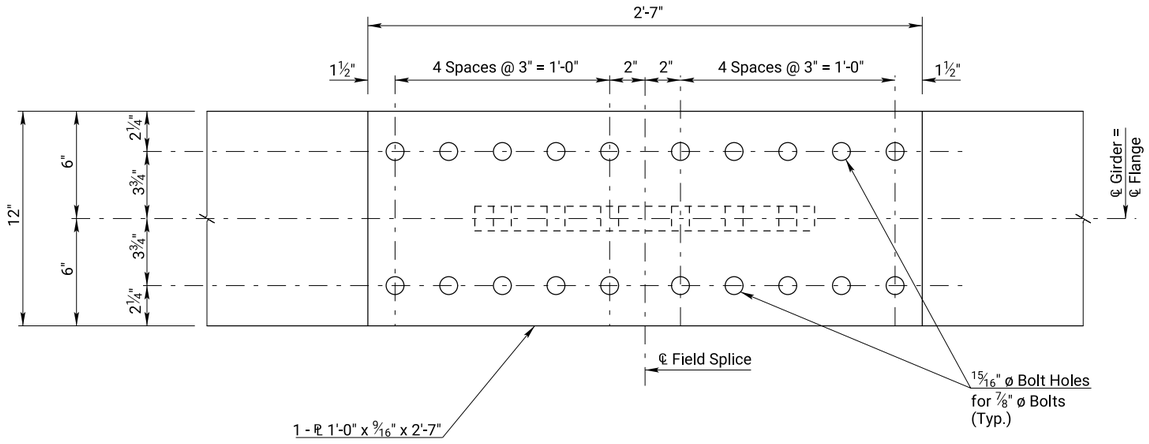
Inside Flange Splice Plates
For Top and Bottom Flanges

NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similar.

100 - 7/8" ø A325 Bolts required per splice.
6 Such Splices required.

FIELD SPLICE NOTES:
All flange and web splice plates shall be AASHTO M270 (Gr. 50W T3) .

Fasteners shall be ASTM A325, Type 3, bolts.



Outside Flange Splice Plates
For Top and Bottom Flanges

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

FIELD SPLICE DETAILS

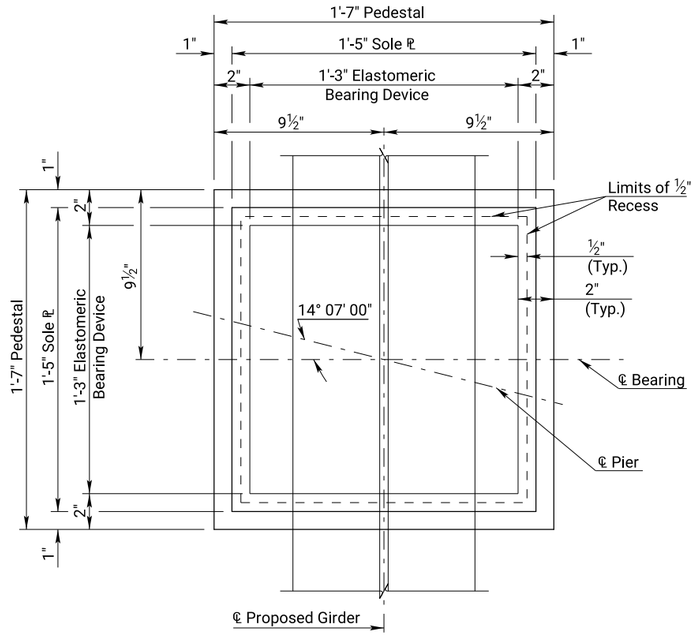
Proj. KTA NO. 8008 Sumner Co.

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

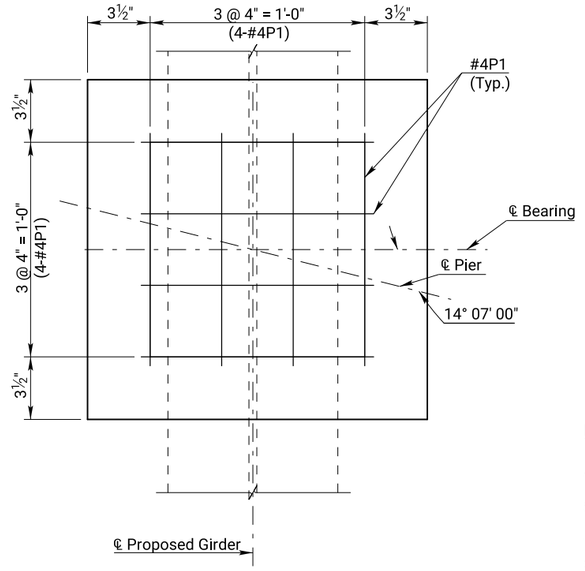
Sh. No. 43

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:55
File : 30902640brr007-425.dgn

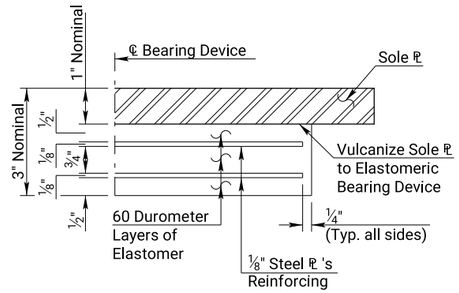
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	44	103



PLAN OF BEARING DEVICE



PLAN OF PEDESTAL REINFORCING



ELASTOMERIC BEARING PAD AND SOLE ℄

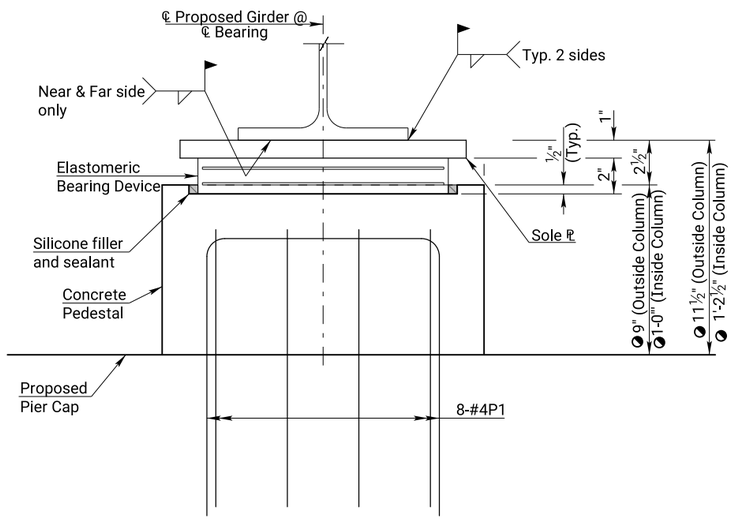
(2 Bearings required at each Pier;
6 Bearings required total.)

NOTES:

All welds shall be $\frac{5}{16}$" unless otherwise shown.

Submit Shop Drawings of Bearing Device assemblies for approval prior to fabrication.

The bid item "Bearing (Steel Reinforced Elastomeric)" includes the Sole ℄ and reinforced elastomeric bearing pad. Sandblast and paint all steel as per KDOT Specifications and latest special provisions for primer and polyurethane finish coat. All steel shall be ASTM A36.



ELEVATION OF BEARING DEVICE

NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similar.

◔ Dimension shown is approximate and is based on Existing Plans. Actual dimension may vary based on field conditions.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.133 S

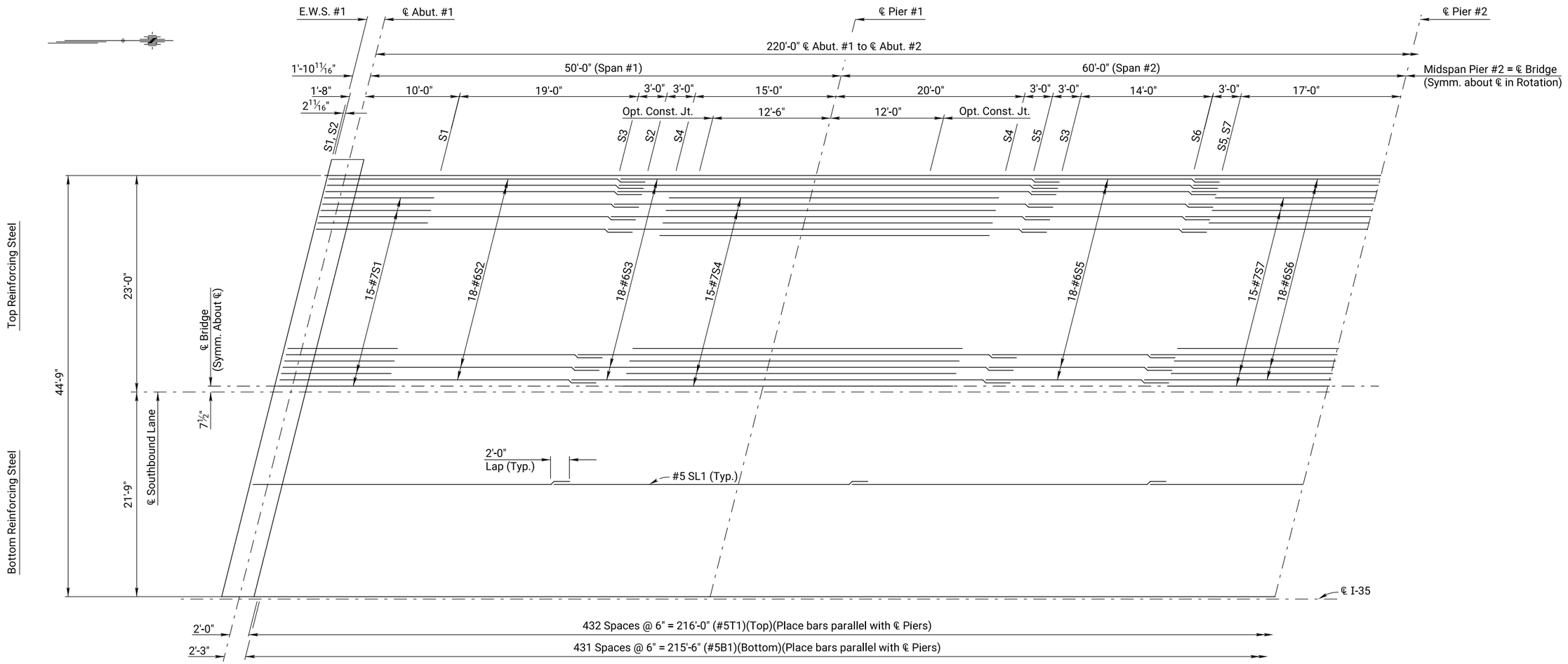
BEARING DETAILS

Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 44

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	45	103



HALF PLAN VIEW SHOWING REINFORCEMENT IN DECK

NOTE: Details are shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similer.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S

DECK DETAILS I

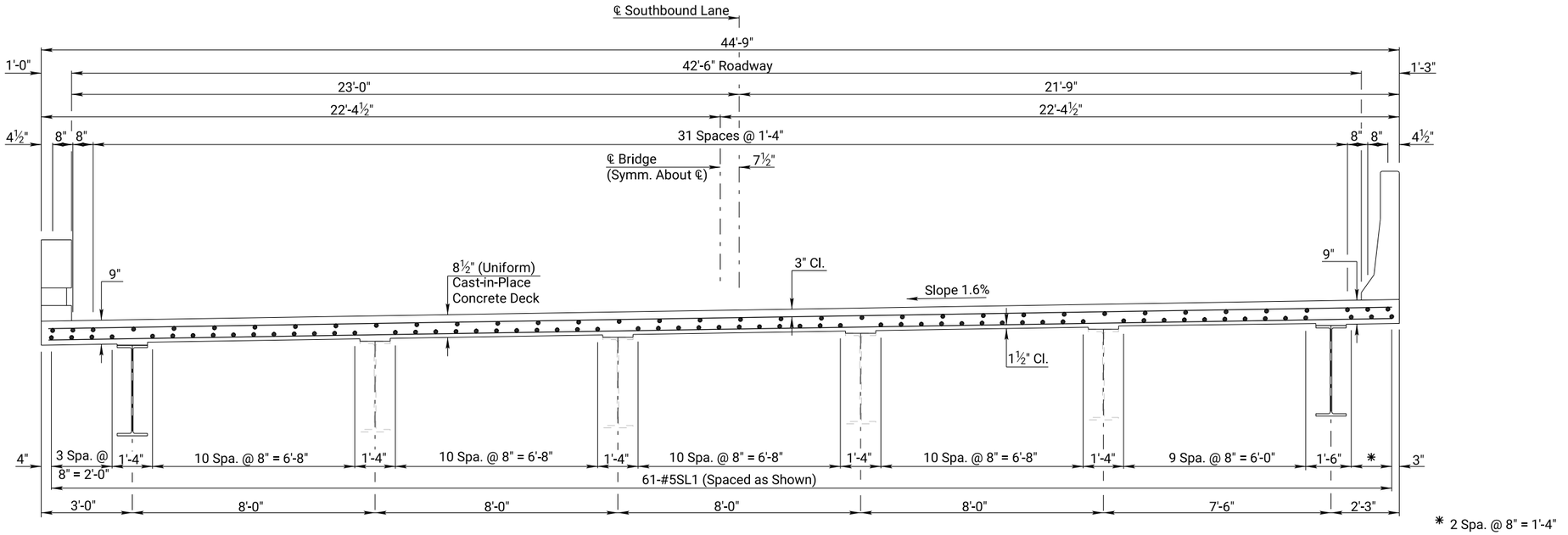
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 45

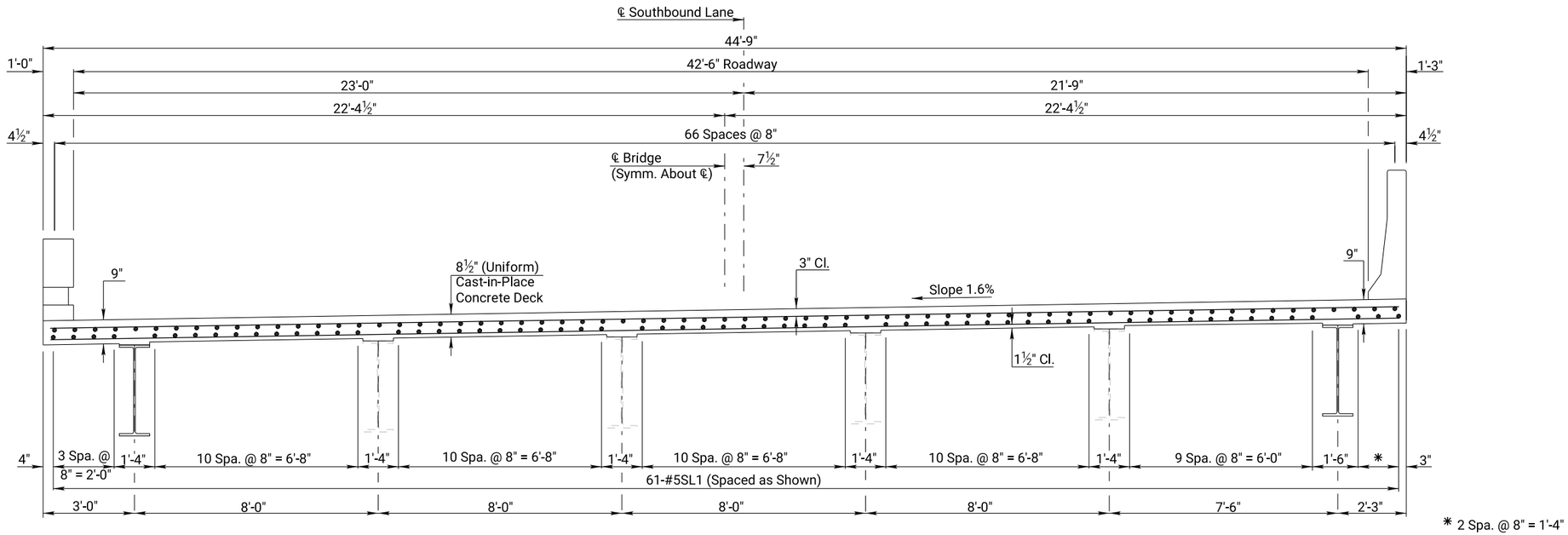
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:55
File : 30902640brr007-200.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	46	103



* 2 Spa. @ 8" = 1'-4"

Section Near Supports
(Section Looking Upstation)



* 2 Spa. @ 8" = 1'-4"

Section Near Mid-Span
(Section Looking Upstation)

NOTE: Details shown on this sheet are shown for the Southbound I-35 structure, Northbound I-35 structure similar.

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S

DECK DETAILS II

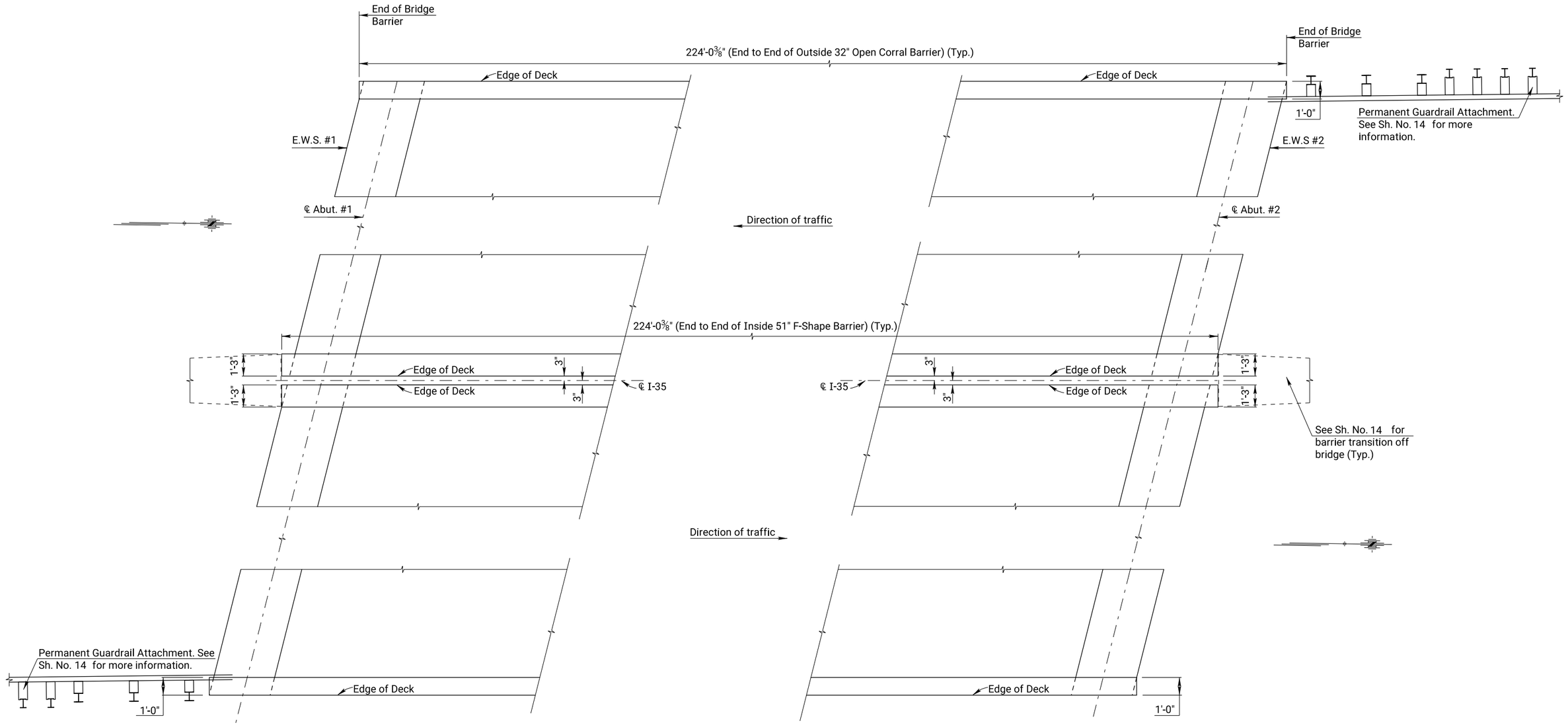
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 46

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:54
File : 30902640br007-205.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	47	103



PLAN OF ABUTMENT #1

PLAN OF ABUTMENT #2

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

BARRIER GEOMETRIC DETAILS

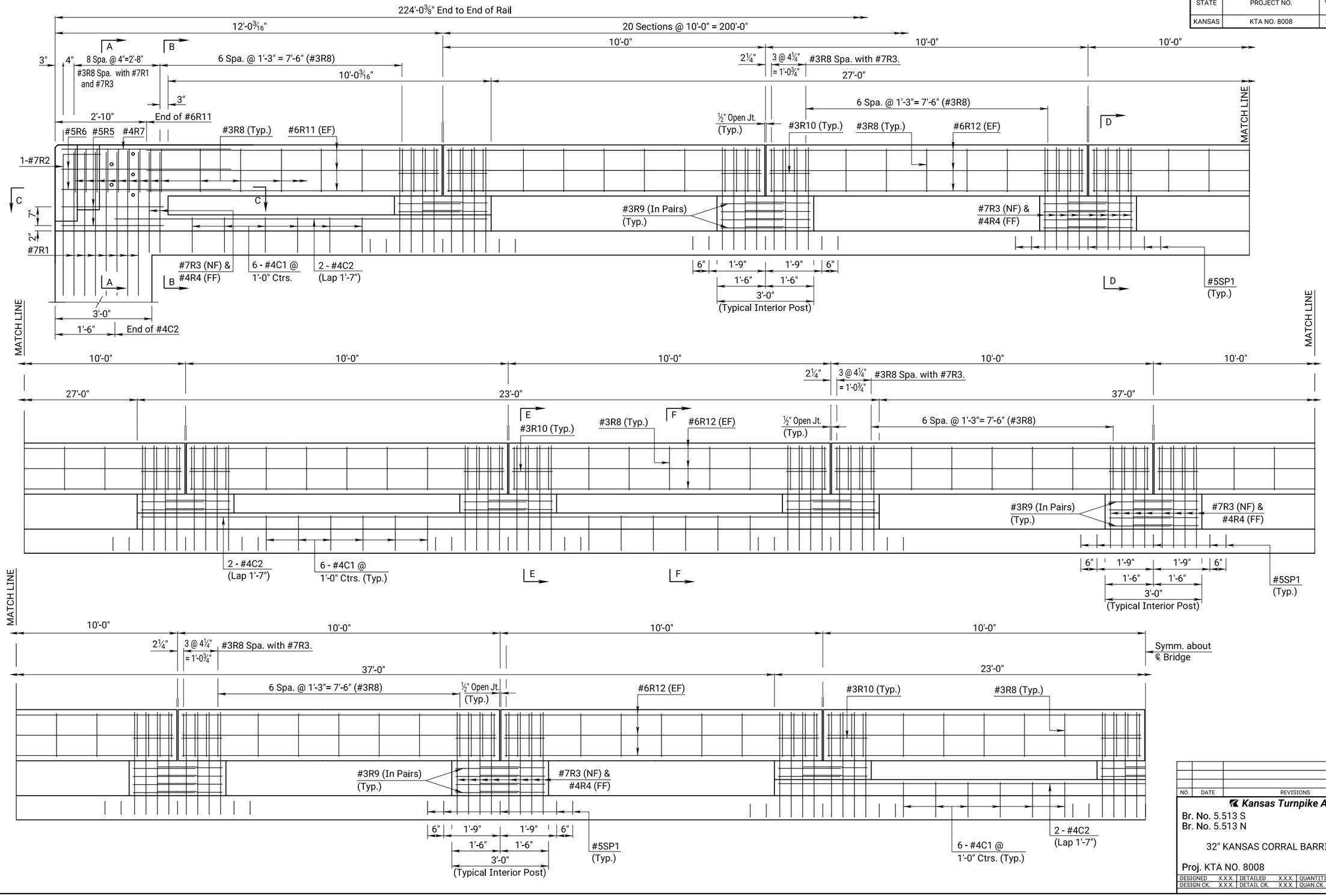
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 47

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:54
File : 30902640brr007-300.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	48	103



NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

32" KANSAS CORRAL BARRIER DETAILS I

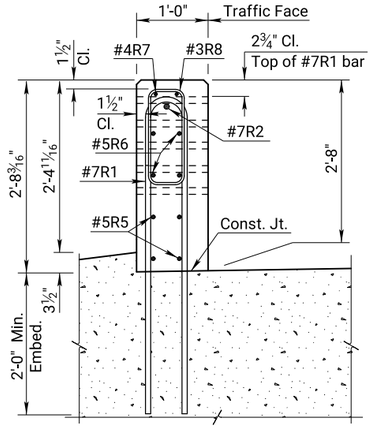
Proj. KTA NO. 8008 Sumner Co.

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

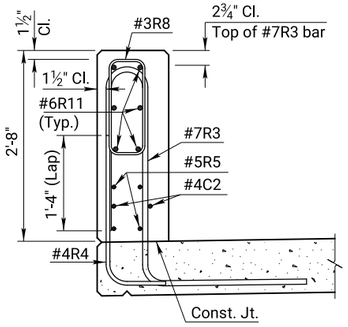
Sh. No. 48

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:55
File : 30902640brr007-305.dgn

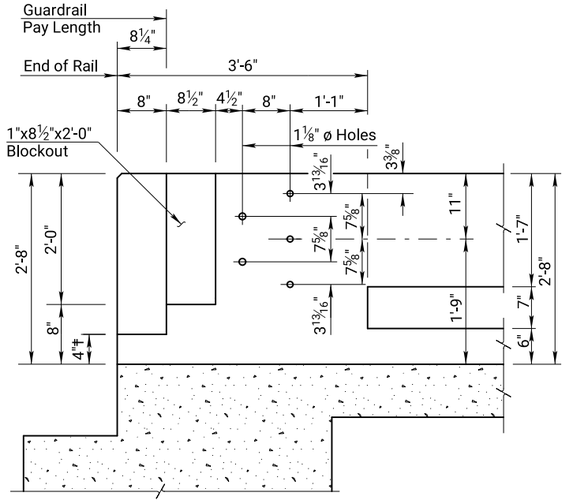
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	49	103



SECTION A-A

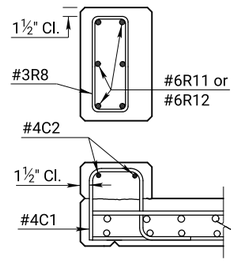


SECTION B-B

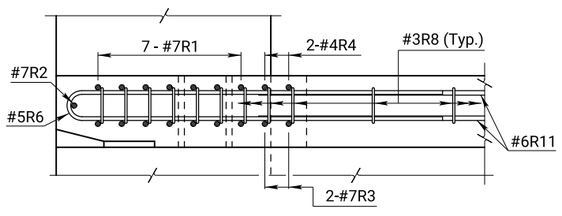


†Extend the 12:3 taper to the top of the approach slab curb.

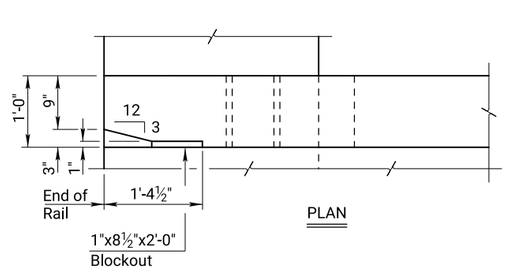
ELEVATION
(Dimensions at traffic face of rail.)



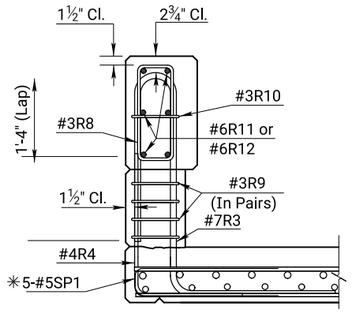
SECTION F-F



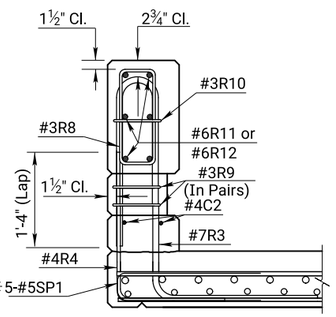
SECTION C-C



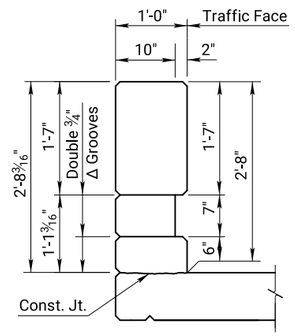
PLAN



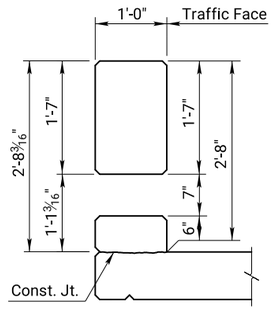
SECTION D-D



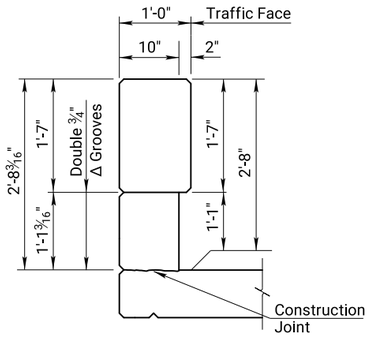
SECTION E-E



TYPICAL "WITH CURB" INTERIOR POST



TYPICAL "WITH CURB" SECTION BETWEEN POSTS



TYPICAL "WITHOUT CURB" INTERIOR POST

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

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

32" KANSAS CORRAL BARRIER DETAILS II

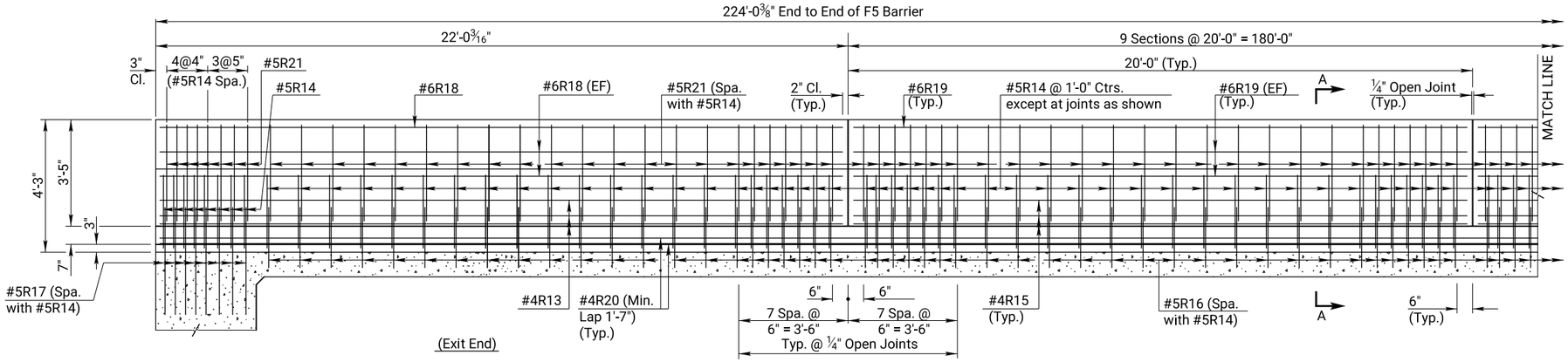
Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 49

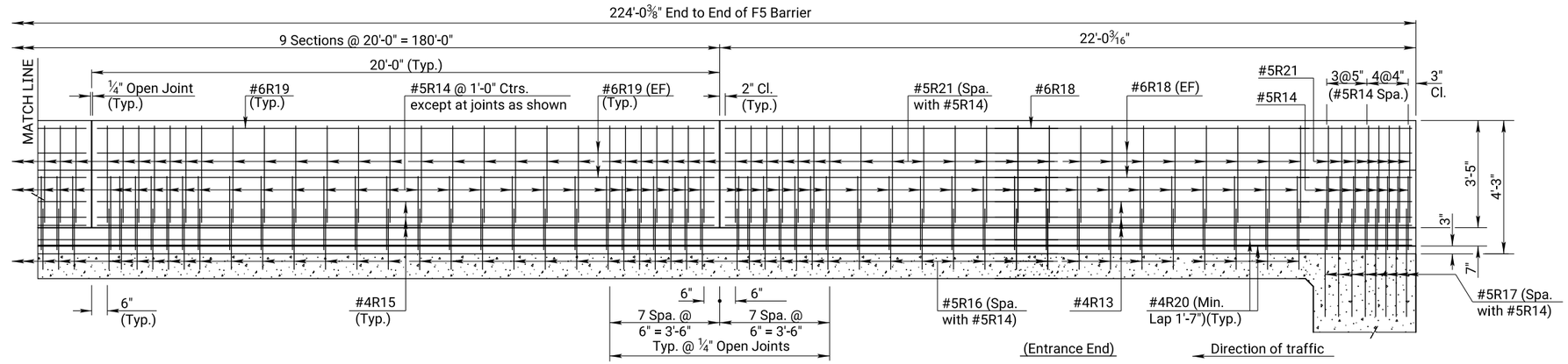
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:55
File : 30902640brr007-310.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	50	103



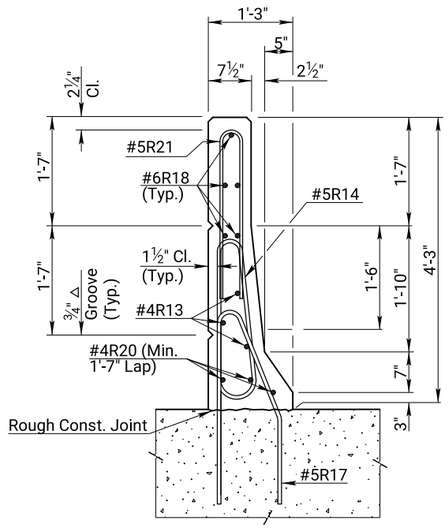
ELEVATION OF CONCRETE BARRIER

Horizontal dimensions along back face of barrier.



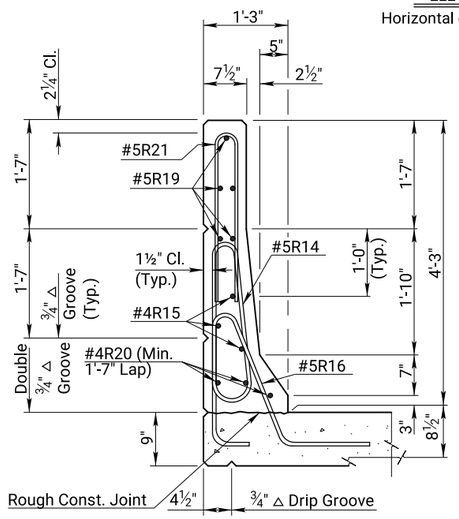
ELEVATION OF CONCRETE BARRIER

Horizontal dimensions along back face of barrier.



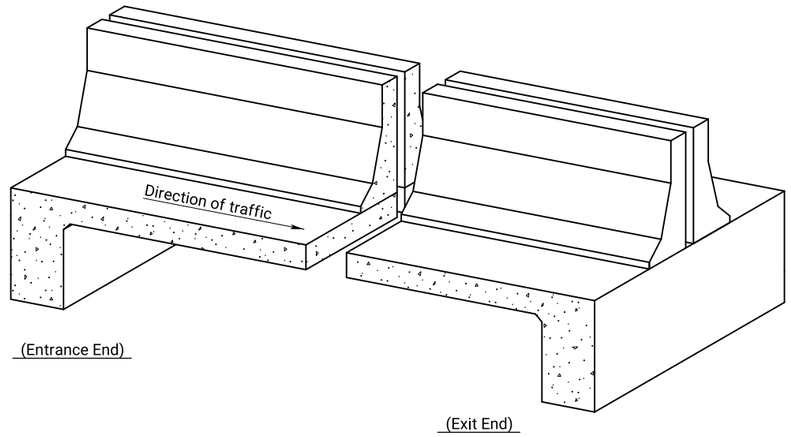
SECTION THRU BARRIER

(At abutment)



SECTION THRU BARRIER

(Section A-A)



CONCRETE BARRIER

(Southbound Barrier shown. Northbound Barrier similar)

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

51" F-SHAPE BARRIER DETAILS

Proj. KTA NO. 8008 Sumner Co.

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

Sh. No. 50

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:54
File : 309026 40brr007-315.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	51	103

BILL OF REINFORCING STEEL
EPOXY COATED - GRADE 60
(LISTED FOR SOUTHBOUND I-35 STRUCTURE
NORTHBOUND I-35 STRUCTURE IDENTICAL)

		Straight Bars				Bent Bars			
		Mark	Size	Number	Length	Mark	Size	Number	Length
SUPERSTRUCTURE	Abutment Diaphragm	AD1	#8	14	45'-9"	AD7	#5	90	9'-7"
		AD3	#8	18	7'-0"	AD9	#5	22	⊗
		AD4	#8	6	9'-3"	AD11	#5	12	⊗
		AD13	#8	6	10'-6"	AD12	#5	4	9'-10"
		AD8	#6	32	4'-0"				
		AD15	#6	28	46'-0"				
		AD2	#5	8	46'-0"				
		AD5	#5	24	7'-11"				
		AD6	#5	8	7'-4"				
		AD10	#5	8	9'-7"				
		AD14	#5	8	7"-11"				
		AD16	#5	8	2'-2"				
		AD17	#5	8	2'-9"				
	Rail	R11	#6	12	9'-0"	R1	#7	14	9'-3"
		R12	#6	120	9'-8"	R2	#7	2	5'-7"
		R18	#6	10	21'-6"	R3	#7	172	7'-8"
		R19	#6	45	19'-7"				
						R5	#5	4	6'-6"
		C2	#4	32	7'-8"	R6	#5	4	10'-8"
		R13	#4	4	21'-6"	SP1	#5	105	4'-4"
		R15	#4	18	19'-7"	R14	#5	294	6'-6"
		R20	#4	24	38'-10"	R16	#5	278	6'-0"
						R17	#5	16	5'-11"
						R21	#5	294	5'-0"
						R4	#4	172	4'-8"
						R7	#4	2	10'-8"
						C1	#4	48	3'-3"
						R8	#3	296	4'-4"
						R9	#3	62	4'-6"
						R10	#3	42	4'-6"
	Deck	S4	#7	58	35'-0"	S1	#7	58	14'-2"
		S7	#7	29	34'-0"				
		S2	#6	72	33'-8"				
		S3	#6	72	47'-0"				
		S5	#6	72	20'-0"				
		S6	#6	36	40'-0"				
		SL1	#5	427	33'-11"				
		T1	#5	433	45'-7"				
		B1	#5	432	45'-7"				

⊗ See Bending Diagrams.

BILL OF REINFORCING STEEL
NON-EPOXY COATED - GRADE 60
(LISTED FOR SOUTHBOUND I-35 STRUCTURE
NORTHBOUND I-35 STRUCTURE IDENTICAL)

		Straight Bars				Bent Bars			
		Mark	Size	Number	Length	Mark	Size	Number	Length
SUB-STRUCTURE	Abutment Beam	A1	#6	60	6'-10"	A5	#6	22	7'-1"
		A2	#6	52	17'-8"				
		A3	#6	6	4'-10"	A4	#5	54	9'-5"

⊗ See Bending Diagrams.

∗ BILL OF REINFORCING STEEL
NON-EPOXY COATED - GRADE 60
(LISTED FOR NORTHBOUND I-35 STRUCTURE)

		Straight Bars				Bent Bars			
		Mark	Size	Number	Length	Mark	Size	Number	Length
SUBSTRUCTURE	Pier Beam	PB1	#9	18	8'-0"	PB8	#7	36	6'-0"
		PB9	#9	18	17'-7"	PB15	#7	36	10'-10"
		PB2	#7	18	3'-0"	PB5	#5	60	8'-0"
		PB10	#7	18	3'-0"	PB6	#5	36	7'-6"
						PB7	#5	30	7'-10"
		PB3	#6	18	8'-0"	PB13	#5	60	7'-10"
		PB4	#6	6	5'-10"	PB14	#5	72	8'-10"
		PB11	#6	24	17'-7"	PB16	#5	36	11'-8"
		PB12	#6	6	11'-0"				
		PB17	#6	18	9'-8"	P1	#4	48	5'-3"
		PB18	#6	108	4'-10"				
	Pier & Drill Shaft	PC1	#9	80	26'-3"	PC4	#4	228	6'-11"
		PC2	#9	40	20'-3"	PC5	#4	90	6'-11"
		PC3	#9	120	11'-10"	△DS1	#4	2	⊗
		△DC1	#9	64	22'-10"	△DS2	#4	2	⊗
		△DC2	#9	64	25'-2"	△DS3	#4	2	⊗
		△DC3	#9	64	29'-5"				

⊗ See Bending Diagrams.

∗∗ BILL OF REINFORCING STEEL
NON-EPOXY COATED - GRADE 60
(LISTED FOR SOUTHBOUND I-35 STRUCTURE)

		Straight Bars				Bent Bars			
		Mark	Size	Number	Length	Mark	Size	Number	Length
SUBSTRUCTURE	Pier Beam	PB1	#9	18	8'-0"	PB8	#7	36	6'-0"
		PB2	#7	18	3'-0"	PB5	#5	60	8'-0"
						PB6	#5	36	7'-6"
		PB3	#6	18	8'-0"	PB7	#5	30	7'-10"
		PB4	#6	6	5'-10"				
		PB18	#6	54	4'-10"	P1	#4	24	5'-3"
	Pier & Drill Shaft	PC1	#9	40	26'-3"	PC4	#4	114	6'-11"
		PC2	#9	20	20'-3"	PC5	#4	45	6'-11"
		PC3	#9	60	11'-10"	△DS1	#4	1	⊗
		△DC1	#9	32	22'-10"	△DS2	#4	1	⊗
		△DC2	#9	32	25'-2"	△DS3	#4	1	⊗
		△DC3	#9	32	29'-5"				

⊗ See Bending Diagrams.

∗ All NB Exterior Pier bars and all shared Interior Pier bars are included

∗∗ All SB Exterior Pier bars are included

△ All Drilled Shaft reinforcing steel shall be subsidiary to the bid item "Drilled Shaft (60")(Cased)"

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S

BAR LIST

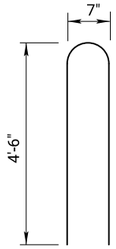
Proj. KTA NO. 8008 Sumner Co.

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

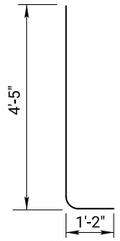
Sh. No. 51

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:55
File : 30902640brr007-450.dgn

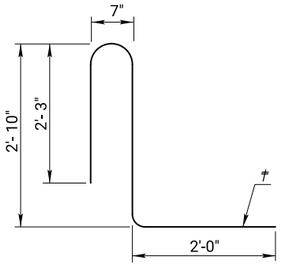
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	52	103



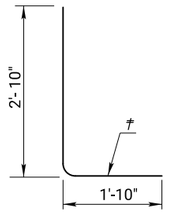
R1



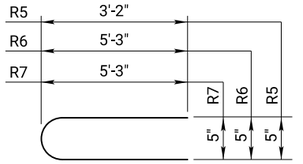
R2



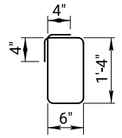
R3



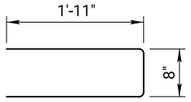
R4
(Lap 1'-4" with R3)



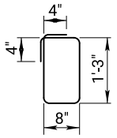
R5, R6, R7



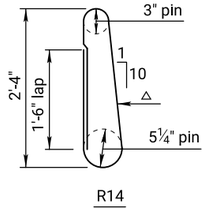
R8



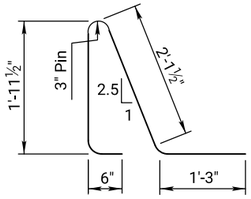
R9



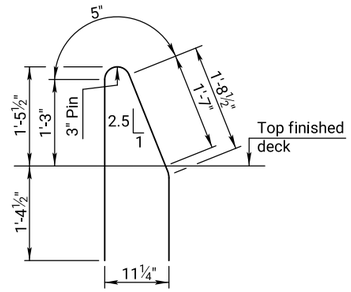
R10



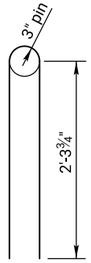
R14



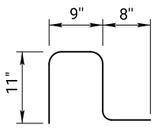
R16



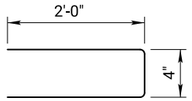
R17



R21

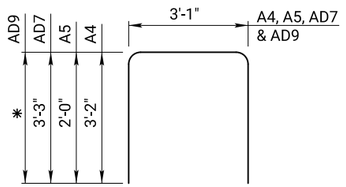


C1



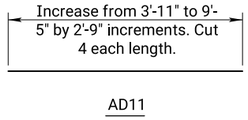
SP1

S1

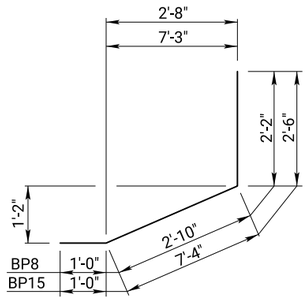


A4, A5, AD7 & AD9

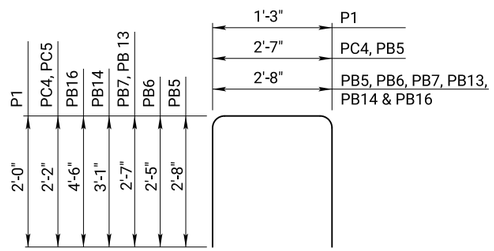
* Increase from 2'-0" to 4'-5" by 2½" increments. Cut 2 each length.



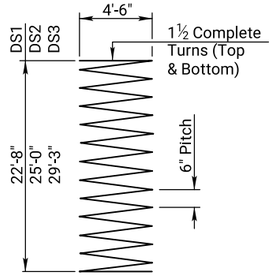
AD11



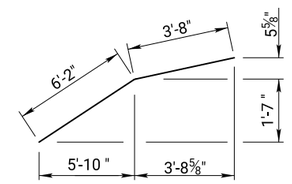
PB8 & PB15



PB5, PB6, PB7, PB13, PB14, PB16 & P1



DS1



AD12

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

BENDING DIAGRAMS

All dimensions are out to out of bars.

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

Spiral Spacer Bars:

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

NO.	DATE	REVISIONS	BY	APP'D

Kansas Turnpike Authority

Br. No. 5.513 S
Br. No. 5.513 N

BENDING DIAGRAMS

Proj. KTA NO. 8008 Sumner Co.

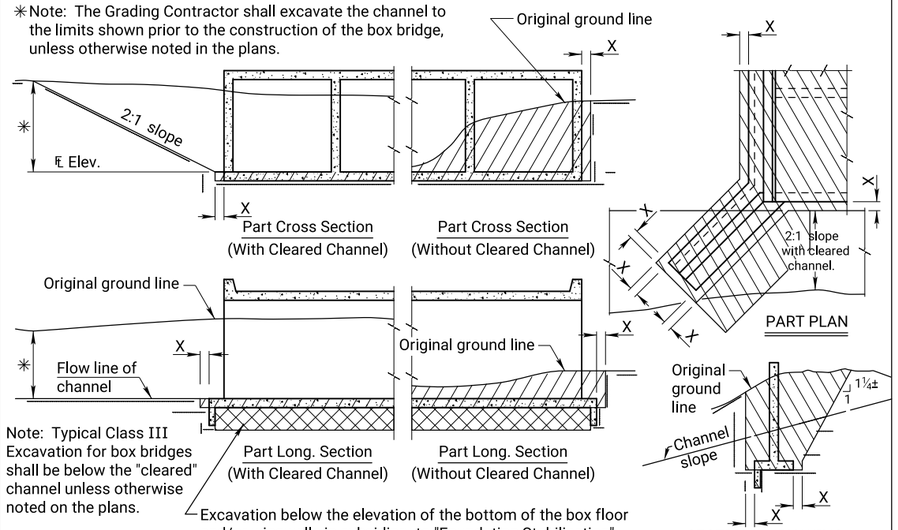
DESIGNED	X.X.X.	DETAILED	X.X.X.	QUANTITIES	X.X.X.	CADD	X.X.X.
DESIGN CK.	X.X.X.	DETAIL CK.	X.X.X.	QUAN.CK.	X.X.X.	CADD CK.	X.X.X.

Sh. No. 52

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640brr007-455.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	53	103

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

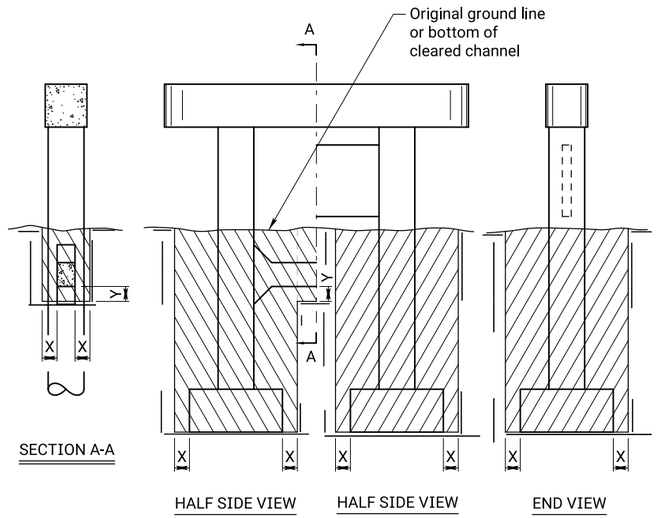


Note: Typical Class III Excavation for box bridges shall be below the "cleared" channel unless otherwise noted on the plans.

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

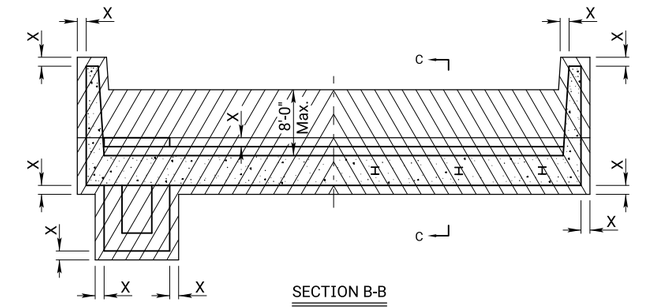
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

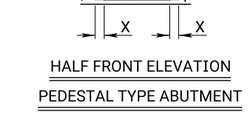
Note: Excavation for culverts less than bridge length and the additional excavation for "Embedded Structures" shall not be paid for as Class III Excavation, but shall be subsidiary to Grade 4.0 Concrete.



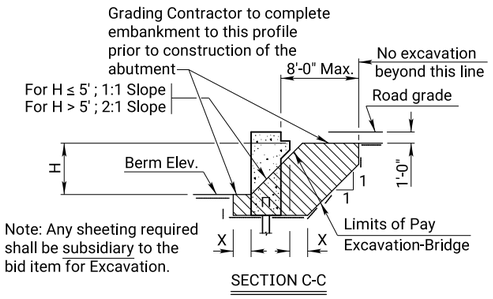
EXCAVATION DETAILS FOR TYPICAL PIERS

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





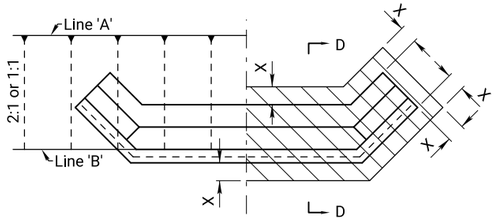
Note: Bridge Contractor shall finish the embankment and berms after the construction of the abutment and dispose of any excess material as approved by the Engineer.

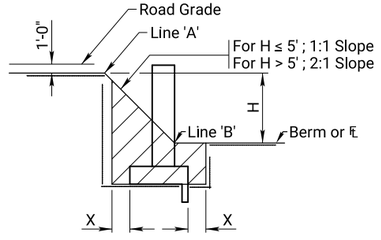


Note: Any sheeting required shall be subsidiary to the bid item for Excavation.

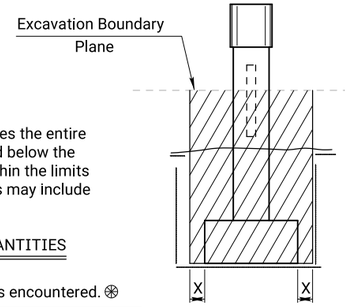
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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





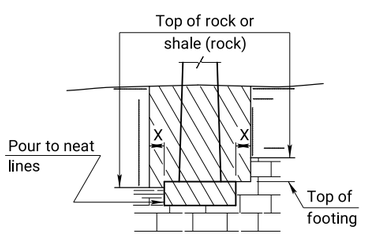
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS



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

CLASS II EXCAVATION QUANTITIES

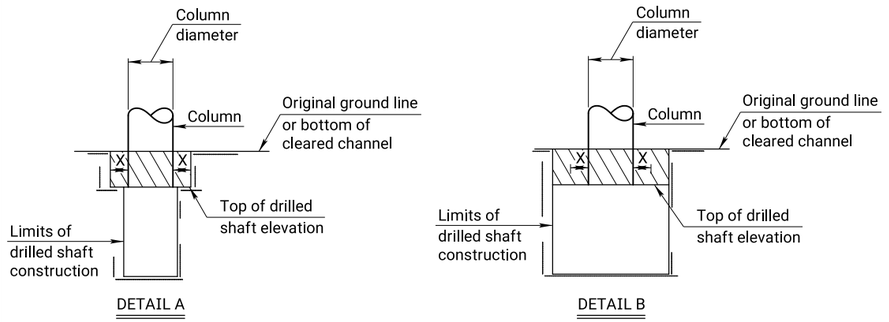
See detail when rock or shale (rock) is encountered. ❋



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

(Piers and Abutments)

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



DRILLED SHAFT DETAILS

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

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

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
06	08-15-12	Embedment Excavation Subsidiary	J.P.J.	T.L.F.
05	05-15-12	Revised Wing Excavation	J.P.J.	T.L.F.
04	03-03-10	Revised Wing Excavation	J.P.J.	T.L.F.

KANSAS DEPARTMENT OF TRANSPORTATION

BRIDGE EXCAVATION (LRFD)

BR100B

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

Sh. No. 53

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 18:11
File : 3090264Obss100b.dgn

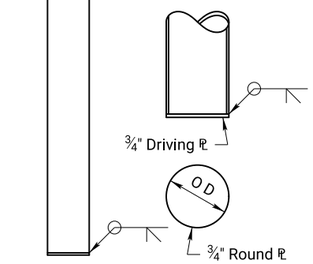
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	54	103

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

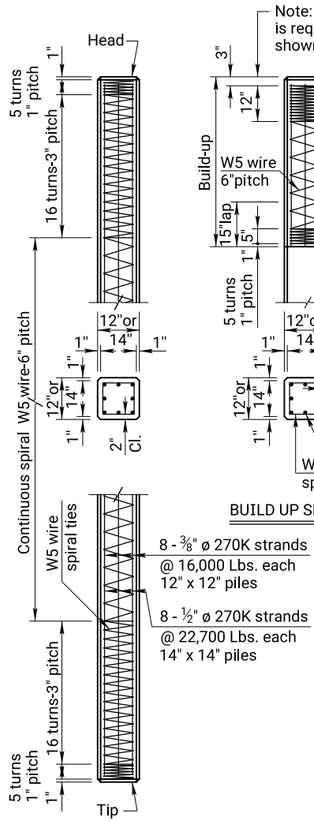
†† See the Geology Report or "Summary of Quanities" for Pipe Pile wall thickness

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

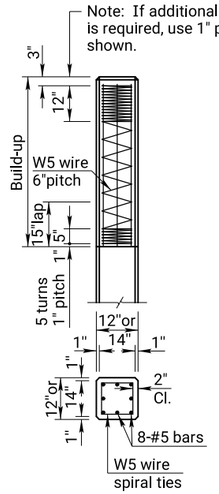
Note:
Pile pipe may be spiral welded, longitudinal welded, or seamless steel pipe.



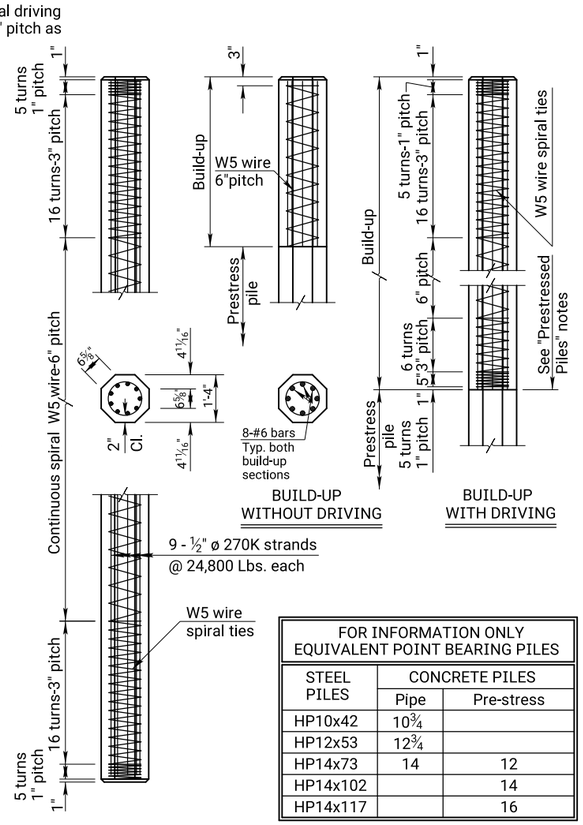
PLAIN ROUND
CAST-IN-PLACE CONCRETE PILES



12" OR 14"
PRESTRESSED
CONCRETE PILES



BUILD UP SECTION

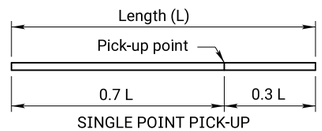


16" PRESTRESSED
CONCRETE PILES

BUILD-UP
WITHOUT DRIVING

BUILD-UP
WITH DRIVING

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



PICK-UP POINTS FOR PRESTRESSED PILING

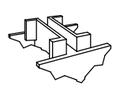
Max. length - 55' single point pick-up
Max. length - 80' double point pick-up

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.

Weld Symbology Definition

Use grinder to bevel edges of splice as shown in weld symbology and drawing. In addition to bevels, produce clean, bare, and shiny surfaces at and around the splice welding location.

Lay full penetration root weld from beveled side of splice.

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

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

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

GENERAL NOTES

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

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

ALTERNATE METHODS: Method of attachment of a pile to build-up may be by any of the following methods:

1. Cut off at least 2'-0" of pile and expose a minimum of 2'-0" of strands.
2. Cast 8-#6, or 8-#5 bars (equally spaced) into pile head. All bars shall extend into pile head and project from pile head a minimum of 2'-0".
3. Drill 8 holes in pile head (equally spaced) for installation of 8 grouted dowel bars of same size and length as in 2.
4. Provide cored holes for bars as in 3.

No bars or strands are to extend from head of pile or build-up into footing or pile cap unless approved by the Engineer.

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

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

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

REINFORCEMENT: Use reinforcing steel conforming to ASTM A615, Grade 60. Hoops and spirals may be either plain or deformed bars.

PRESTRESSING STEEL: Use uncoated seven-wire low relaxation prestressing strand conforming to ASTM A416, Gr. 270.

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

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

SPECIFICATIONS: Standard Specifications for State Road and Bridge Construction as currently used by the Kansas Department of Transportation.

CONCRETE: Concrete for cast-in-place shall be f'c = 3,500 PSI. Concrete for prestressed shall be f'c = 5,000 PSI.

WELDING: All field welding shall meet the requirements of the Standard Specifications.

Use only Shielded Metal Arch Welding SMAW (stick welding) for pile splices.

Use only low hydrogen E7018, 7016, or 7015 series welding rod (electrode) for all welding applications during pile splicing.

New electrodes are to be purchased for each KDOT project. The electrodes shall arrive on the project in factory hermetically sealed containers, opened and labeled with indelible ink in front of the engineer. The label shall include the current date and the project number. If the container seal is questionable or shows signs of damage the electrode is to be dried in an oven at least one hour at a temperature of 700°F to 800°F.

Upon removal from intact hermetically sealed factory packaging or the drying oven the electrode is to be placed in a storage oven with a minimum temperature of 250°F.

When electrodes are removed from the hermetically sealed container or storage oven and exposed to the atmosphere for less than 4 hours place into the storage oven for at least 4 hours before removing for use.

If electrode is exposed to the atmosphere for 4 hours or more (or 9 hours for moisture resistant electrodes designated with an R in their labeling) then electrode can be dried in a drying oven at a temperature of 450°F to 550°F.

If the electrode is exposed to the atmosphere for 4 hours or more a second time or the rod becomes wet discard rod.

CAST-IN-PLACE SHELLS: Steel shells for cast-in-place concrete piles shall conform to the requirements of the Standard Specifications.

All piles driven without a mandrel shall be of the minimum thicknesses shown. Piles driven with a mandrel shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after the mandrel is removed.

Remove, replace or correct to the satisfaction of the Engineer improperly driven, broken or otherwise defective pipe piles. Otherwise drive an additional pile at no extra cost.

The Contractor shall maintain a light suitable for visual inspection of the pile on the job at all times prior to and during the filling of the pipe.

PAINT: All paint shall comply with the Standard Specifications, or as specified on the plans.

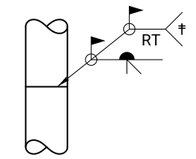
MILL TEST REPORTS: Steel piles test reports and steel shell test reports shall comply with the Standard Specifications.

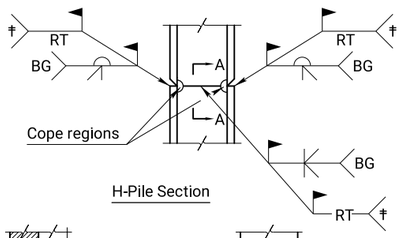
SPLICES: Splices for steel piles and shell piling shall be in accordance with details shown on this sheet and the Standard Specifications.

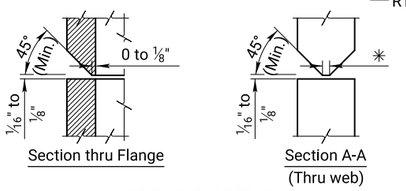
For integral pile bent abutments and piers, if a pile splice is required, do not locate the pile splice within a region extending 2'-0" above and 10'-0" below the bottom of the concrete web wall. For abutments, locate the pile splice at least 10'-0" below top of fill.

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

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







✳ Minimum as required by welding process.

BG = Backgouge

PILE SPLICE DETAILS

NO.	DATE	REVISIONS	BY	APP'D
04	08-16-18	Add splice web section, clarify note	M.L.L.	J.P.J.
03	09-15-15	Clarify Notes	J.P.J.	C.E.R.
02	06-18-12	Clarify f'c, rod type, use and weld	J.P.J.	T.L.F.

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PILE DETAILS

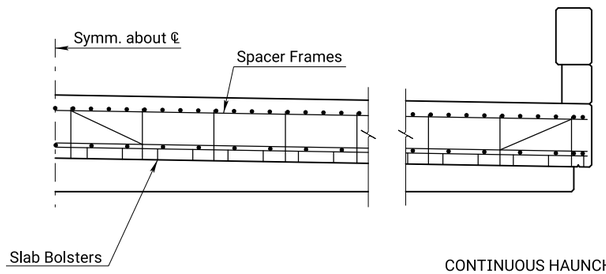
BR110

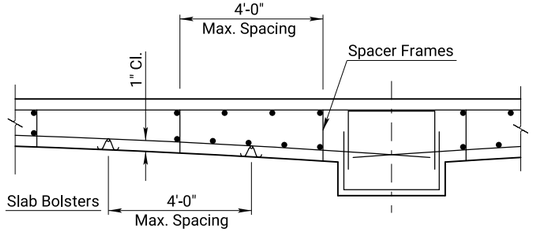
FHWA APPROVAL		10-04-12	APP'D.	Terry L. Fleck
DESIGNED	J.P.J.	DETAILED	QUANTITIES	TRACED R.A.A.
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 54

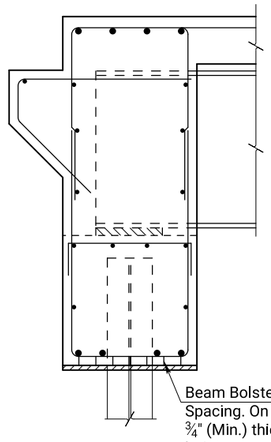
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 18:11
File : 30902640bss110.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	55	103



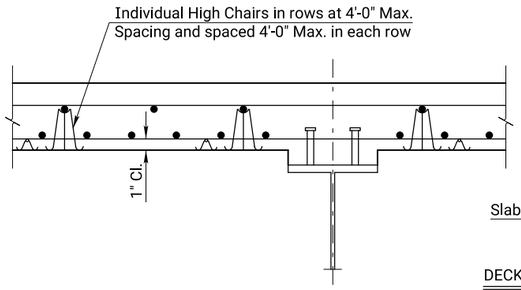


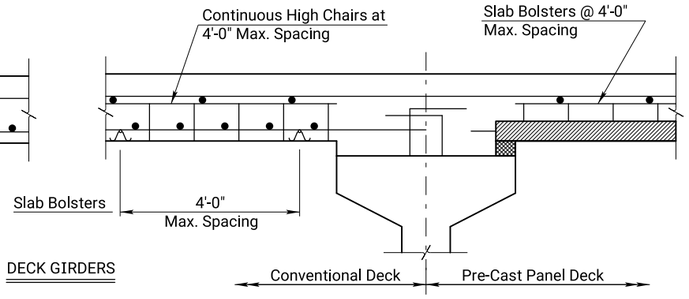
CONTINUOUS HAUNCHED SLAB



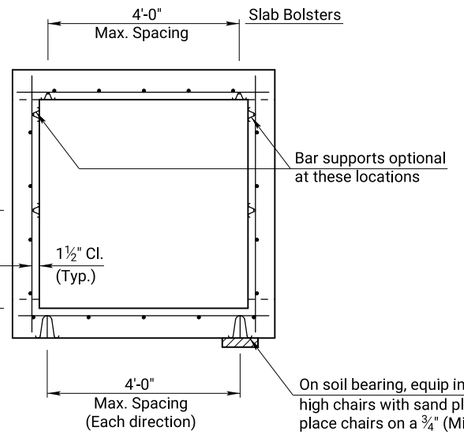
Beam Bolster at 4'-0" Max. Spacing. On soil bearing, place a ¾" (Min.) thick board under bolster.

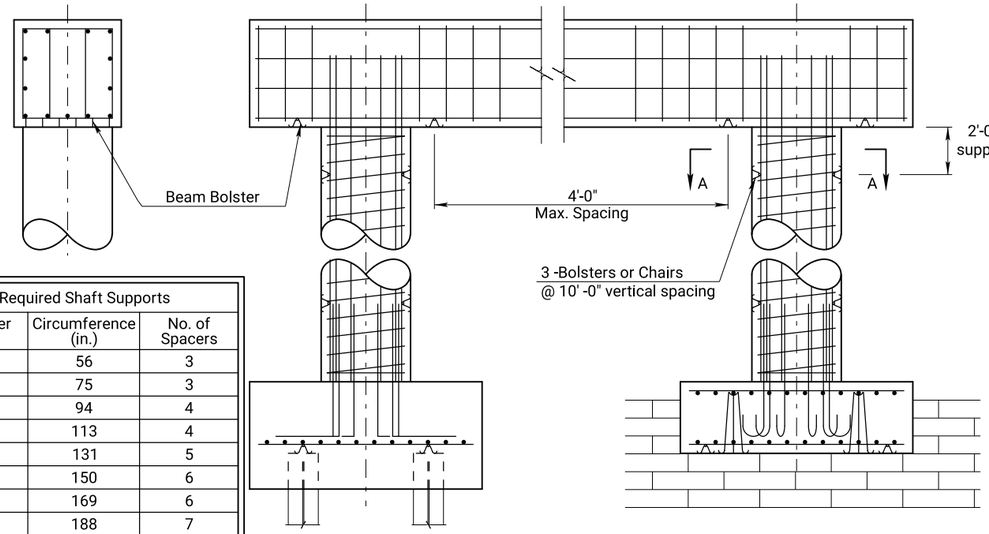
ABUTMENT





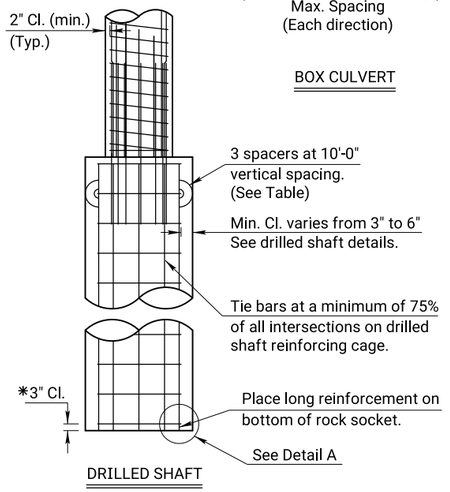
DECK GIRDERS





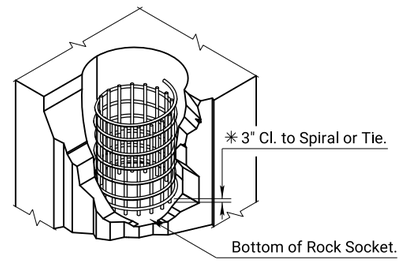
PIER

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



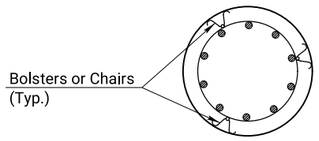
BOX CULVERT

DRILLED SHAFT



DETAIL A

✳ Note: Longitudinal reinforcing steel is placed on the bottom of the rock socket. Maintain 3" clearance from the bottom of rock socket to the first spiral or tie bar.



SECTION A-A

GENERAL NOTES

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

Use only the following types of bar supports:

1) Wire Bar Supports:

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

2) Plastic Bar Supports

3) Supplementary bars

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

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

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

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

Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within ¼" of that indicated on the plans.

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
05	11-10-10	Column Bar Supports Required	J.P.J.	T.L.F.
04	12-01-05	Drilled Shaft Spiral Steel Placement	J.P.J.	K.F.H.
03	08-21-00	Added Pre-Cast Panel Detail	R.A.M.	K.F.H.

KANSAS DEPARTMENT OF TRANSPORTATION

SUPPORTS AND SPACERS FOR REINFORCING STEEL

BR120

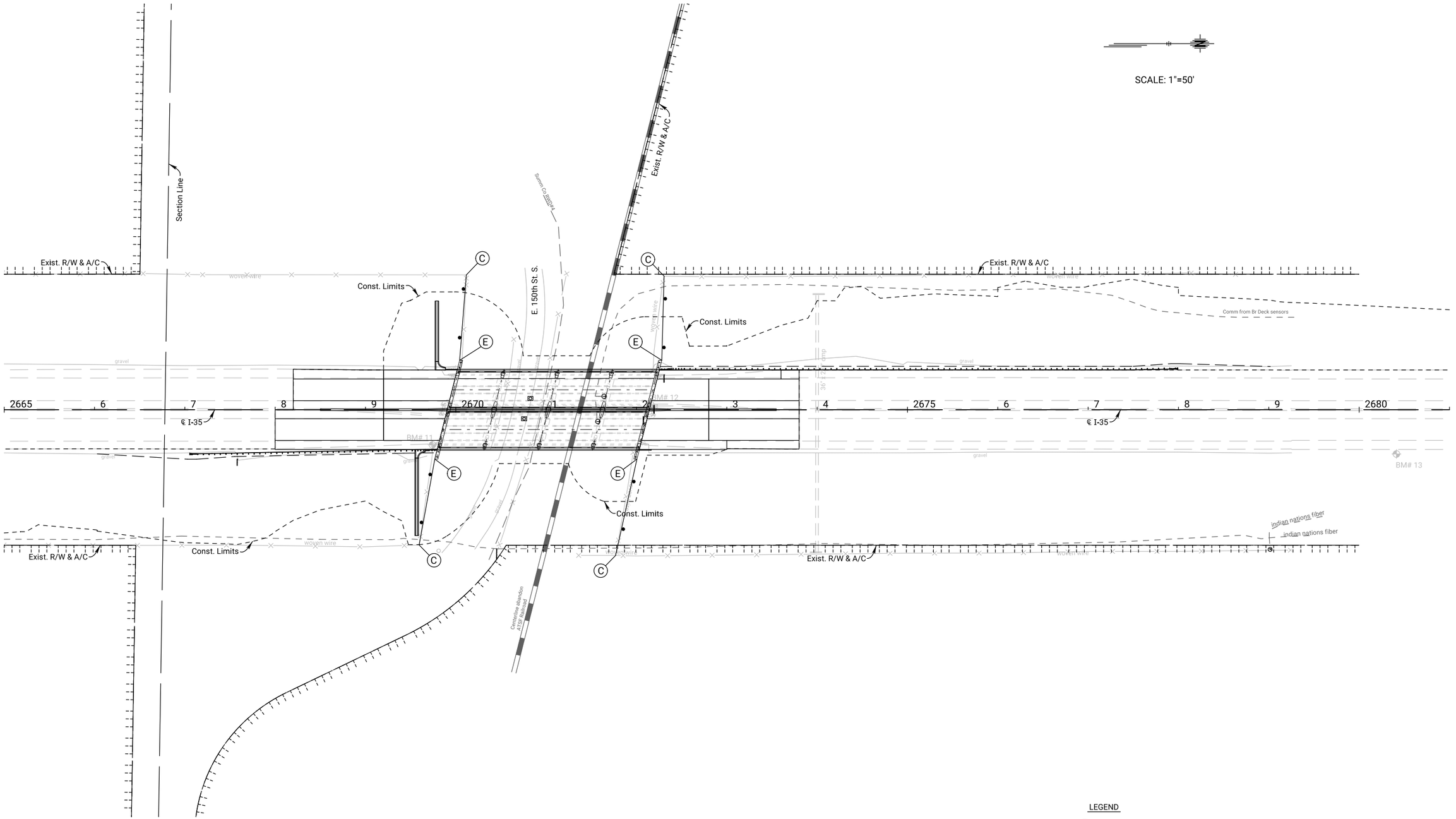
FHWA APPROVAL		11-17-10	APP'D.		Terry L. Fleck
DESIGNED	R.A.M.	DETAILED	R.A.A.	QUANTITIES	TRACED R.A.A.
DESIGN CK.	L.R.R.	DETAIL CK.	R.A.M.	QUAN.CK.	TRACE CK. R.A.M.

Sh. No. 55

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 18:11
File : 30902640bss120.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	56	103

SCALE: 1"=50'



Kansas Turnpike Authority

FENCING PLAN

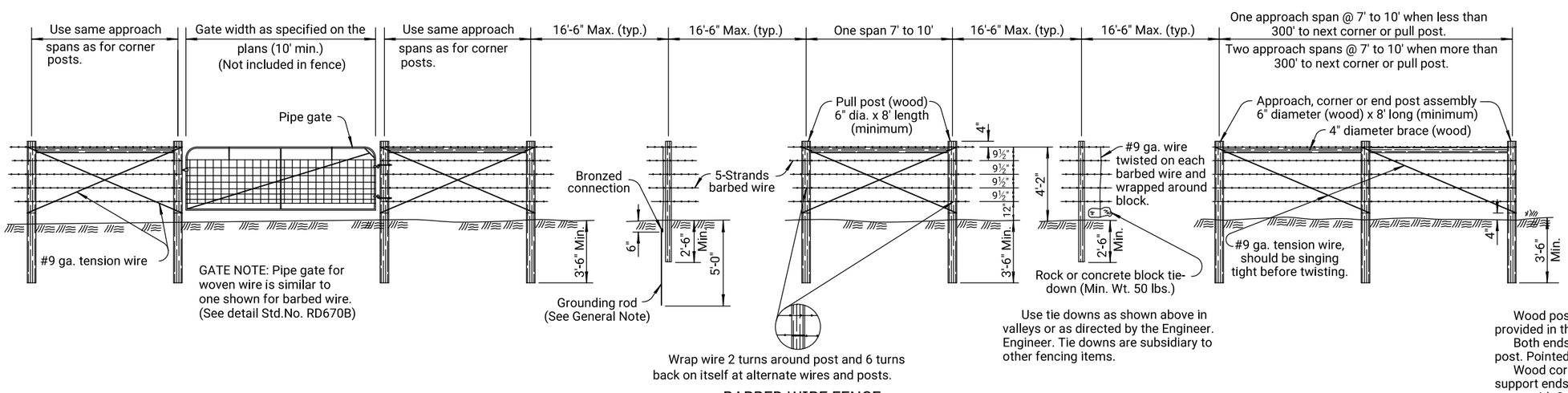
STA. 2665+00 TO STA. 2680+00

Sh. No. 56

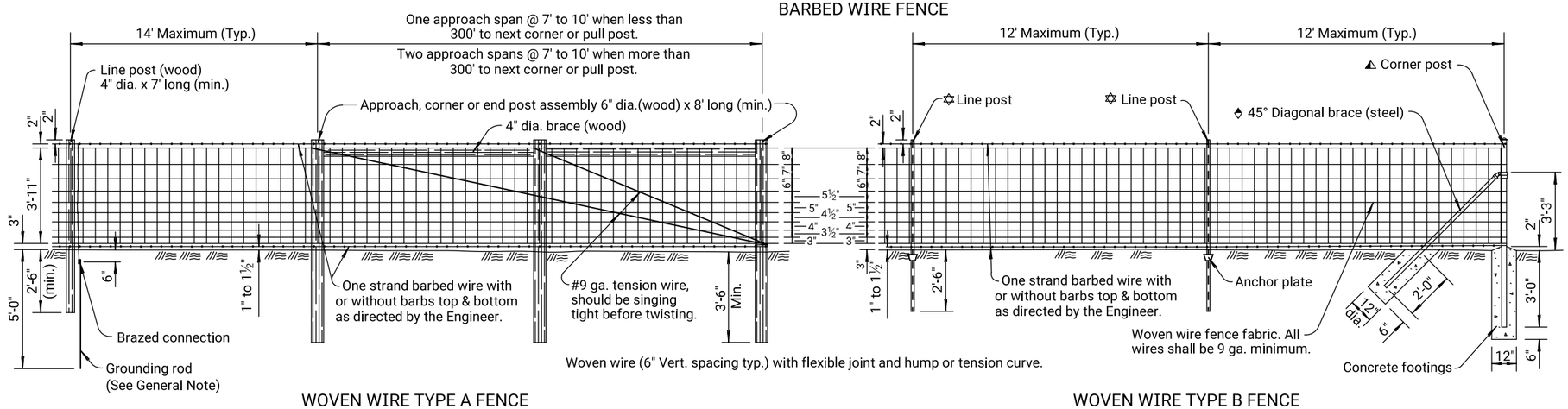
DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 30902640rfc01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	57	103



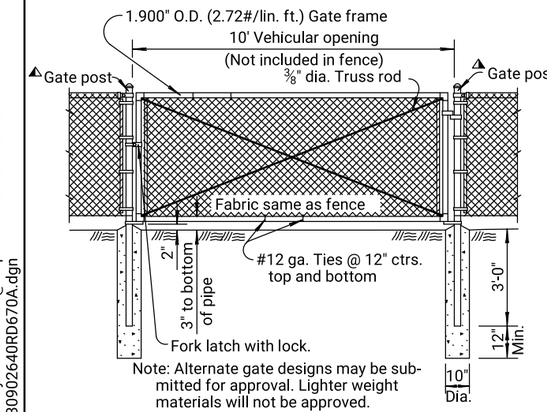
BARBED WIRE FENCE



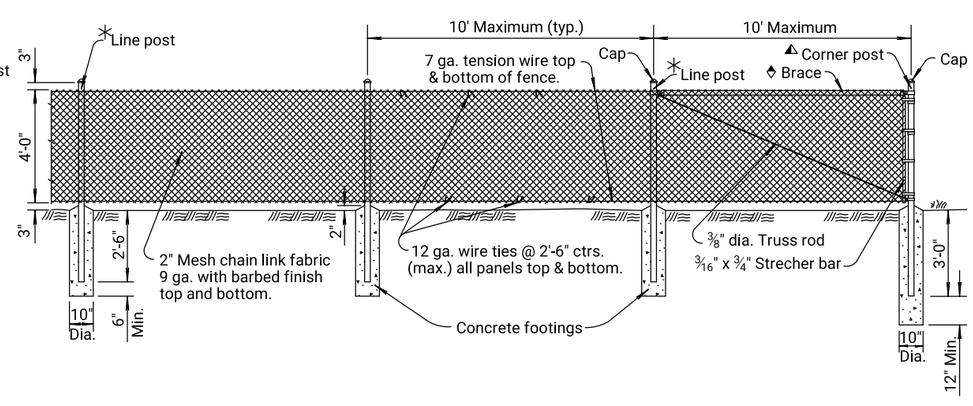
WOVEN WIRE TYPE A FENCE

Pull post assembly for woven wire with wood posts is similar to barbed wire pull post assembly detail.

WOVEN WIRE TYPE B FENCE



DETAIL of GATE, HINGE & SPECIFICATIONS



CHAIN LINK FENCE

(STEEL)

✡ Steel line post 7'-0" length
Studded T (1.33#/lin. ft.)
U (1.33#/lin. ft.)
H (2.27#/lin. ft.)

♦ Brace
1.660" O.D., 0.111" Th. (1.84#/lin. ft.) pipe (Group 1C) or
1.660" O.D., 0.140" Th. (2.27#/lin. ft.) pipe (Group 1A) or
1⅝"x1¼" Brace rail (See Alt. Details)

✳ Line post 7'-0" length.
2.375" O.D., 0.154" Th. (3.65#/lin. ft.) pipe (Group 1A) or
2.375" O.D., 0.130" Th. (3.12#/lin. ft.) pipe (Group 1C) or
1⅝"x1⅞" C Post (2.283/lin. ft.)

▲ End, corner, gate, or pull post 7'-6" length.
(A120) 2.875" O.D., 0.203" Th. (5.79#/lin. ft.) pipe (Group 1A)
or 2.875" O.D., 0.160" Th. (4.64#/lin.ft.) pipe (Group 1C)

GENERAL NOTE

Wood posts and braces shall be given a preservative treatment as provided in the KDOT Standard Specifications.

Both ends of all wood posts shall be cut normal to the axis of the post. Pointed posts will not be permitted.

Wood corner, end, pull and approach posts shall be notched to support ends of wood braces. Wood braces shall be toenailed to the posts with 2-10d nails in each end of the brace.

When wood posts are used, both ends of all tension wires shall be wrapped around the posts twice and stapled in place.

When wood posts are used the fence shall be grounded by a ⅝" diameter galvanized or copper coated rod five feet long, driven vertically until the top is six inches below the ground surface. A #6 solid copper conductor shall be securely fastened to each element of the fence by use of clamps or other suitable device. Grounding rod shall be installed at intervals of 175' maximum.

In lieu of using the galvanized or copper coated rod as described above the contractor may, at his option, use a steel line post at intervals not to exceed each eighth post.

The galvanized or copper coated rod shall be used where power lines pass over the fence.

All steel posts, braces, fittings, and gate frames shall be galvanized and/or coated in accordance with the Standard Specifications.

Steel posts shall be provided with fasteners prevent slippage of the wire strands.

Outside diameters shown for tubular steel posts, bracing and gate frames are nominal. Weight tolerances shall be as shown in the KDOT Standard Specifications.

Posts may be set by driving or digging. If by digging, the posts shall be set in the center of the hole and the soil tamped securely on all sides.

Pull post assembly shall be used at sharp breaks in vertical grade or at approximately 330' centers (Woven & Chain link) or 1320' centers (Barbed wire) on straight runs or as directed by the Engineer.

Concrete used in fence installation shall conform to the requirements of the KDOT Standard Specifications.

Woven wire, chain link fabric, barbed wire and tension wire shall be either zinc coated (galvanized) or aluminum coated.

Minimum strength of barbed wire and tension wire shall be as provided in the KDOT Standard Specifications.

Use #9 gauge galvanized staples 1½" to 1¾" long, or #9 guage galvanized Ring-shank staples 1½" to 1¾" long.

Alternate gate designs may be submitted for approval. Lighter weight materials will not be approved.

Padlocks for gates shall be furnished by the State.

No Wood Posts are allowed for new or reconstruction fence installations on the State Highway System. Shop drawings for steel gate post assembly designs are to be submitted to the State Road Office, Bureau of Design for approval prior to construction

NO.	DATE	REVISIONS	BY	APP'D
09	11-30-09	Rev. post listing,wood po. restrict.	S.W.K.	J.O.B.
08	11-08-05	Revised brace dimension	S.W.K.	J.O.B.
07	11-02-04	Added assembly to end post label	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

HIGHWAY FENCE BARBED, WOVEN, & CHAIN LINK

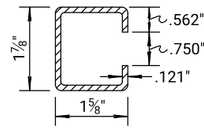
RD670A

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

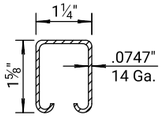
Sh. No. 57

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:58
File : 3090264ORD670A.dgn

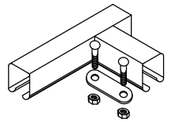
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	58	103



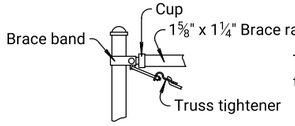
LINE POST (C)
2.28#/Lin. Ft.



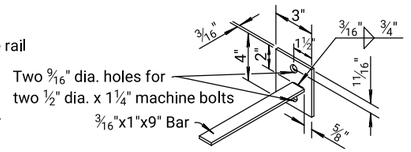
BRACE RAIL SECTION



CORNER CONNECTOR
for BRACE RAILS



BRACE & TRUSS CONNECTION
at BRACE POST



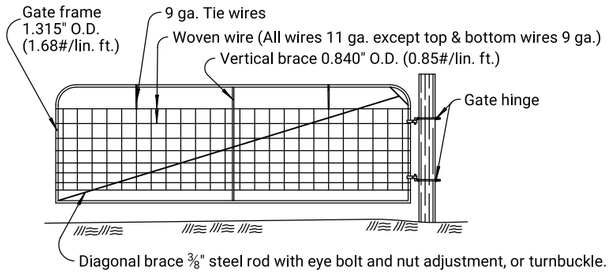
END POST TORQUE BAR

ALTERNATE CHAIN LINK DETAILS

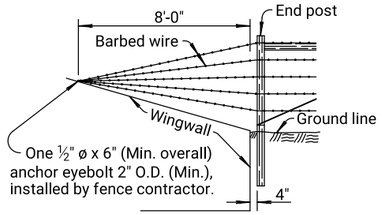
GENERAL NOTE

A line post shall be used in the KDOT fence at each private cross fence, and the contractor shall make a temporary connection. This work shall be subsidiary to other bid items.

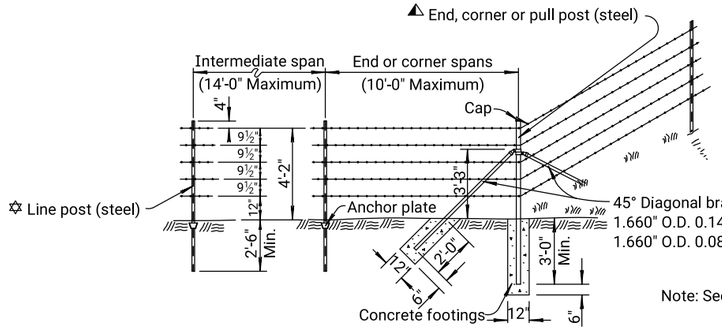
In general, where needed, use small channel crossing as shown, Type I and Type II Floodgates will be used very seldom.



DETAIL of GATE, HINGE & SPECIFICATIONS
(for Barbed & Woven Fence)

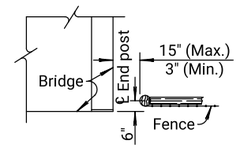


FENCE DETAILS
AT DRAINAGE STRUCTURES
(Type A, B, or Barbed wire fence.)

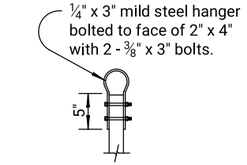


BARBED WIRE FENCE
STEEL POST (ALTERNATE)
Steel posts may be used in lieu of wood posts as shown above.

Note: See Standard Drawing RD670A for steel post requirements.

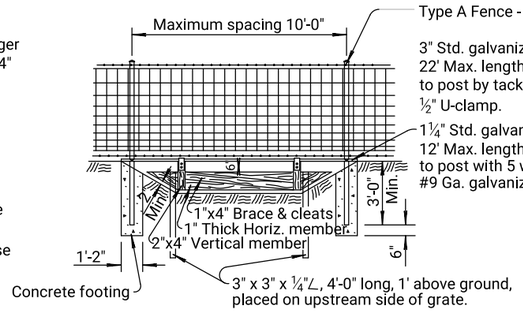


FENCE DETAILS
AT BRIDGE ABUTMENTS
(Use appropriate post and brace for fence type, dimensions are common for all fence types.)

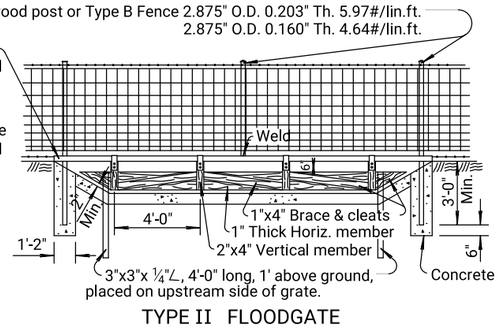


Type I bend hanger for loose fit on 1¼" dia. std. galv. pipe.
Type II bend hanger for loose fit on 3" dia. std. galv. pipe.

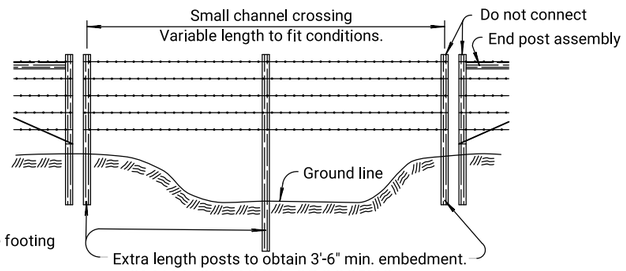
FLOODGATE
HANGER DETAIL



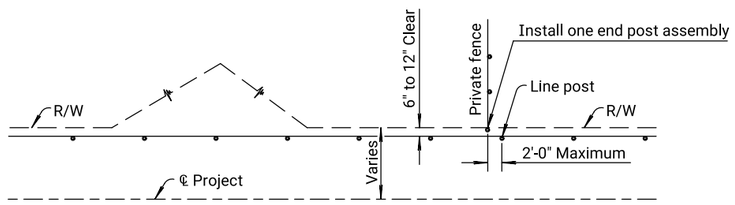
TYPE I FLOODGATE



TYPE II FLOODGATE
(Grouted stone or concrete lined ditch.)

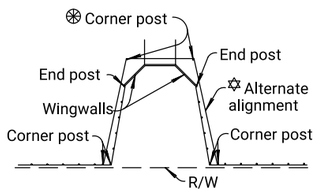


SMALL CHANNEL CROSSING
The above sketch is typical only and can be varied to fit existing conditions. Small channel crossings shall be included in lin. ft. of fence. All extra materials and labor within the small channel crossing shall be subsidiary to lin. ft. of fence.



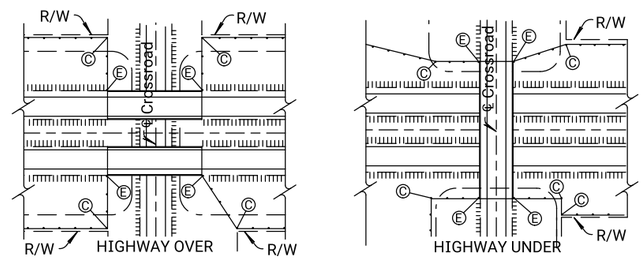
TYPICAL INSTALLATION DIAGRAM

Note: Right of Way fence shall generally be set parallel to and 6" to 12" clear from the Right of Way line.
The alignment layouts as shown are typical, but are not representative of all situations that may occur. Construction may be varied, as required to meet field conditions and/or as directed by the Engineer.
The access control fence shall be attached to the private fence end post assembly using leader wires or staples.



FENCE ALIGNMENT
AT UNDERPASS OR
BOX DRAINAGE STRUCTURE

✡ Alternate alignment may be used at deep under-fill culverts, as directed by the Engineer.



FENCE ALIGNMENT AT BRIDGE ABUTMENTS

✡ Where fence installation over a drainage structure is located within the clear zone, horizontal bracing at the corner posts will not be permitted. An alternate design utilizing diagonal bracing shall be provided.

NO.	DATE	REVISIONS	BY	APP'D
07	07-28-09	Revised Steel size listing	S.W.K.	J.O.B.
06	11-02-04	Revised General Note	S.W.K.	J.O.B.
05	05-30-02	Removed KDOT ownership sign.	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAILS
BARBED, WOVEN, & CHAIN LINK

RD670B

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	59	103

EARTHWORK

STATION to STATION		EXCAVATION						COMP.	THRU CUTS NOT SUBGRADED	
		COMMON		⁎ ROCK		CONTRACTOR FURNISHED		TYPE B MR-90	COMMON EXC.	TYPE AA MR-0-5
		CU. YDS.	VMF	CU. YDS.	VMF	CU. YDS.	VMF	CU. YDS.	CU. YDS.	CU. YDS.
I-35 Phase 1 (Northbound Lanes)										
2664+03.02	2673+80	446	0.87	201	1.00	3,444	0.87	3,384	274	274
I-35 Phase 2 (Southbound Lanes)										
2668+20	2681+20	890	0.87	190	1.00	3,361	0.87	3,698	252	252
I-35 South Crossover										
2641+60	2649+00								342	342
I-35 North Crossover										
2689+00	2696+40								342	342
TOTALS		1,336		391		6,805		7,082	1,210	1,210

⁎ All rock excavation is existing pavement removal assumed 10" thick and is to be wasted.

⁎ REMOVAL OF EXISTING STRUCTURES (FOR INFORMATION ONLY)

STATION to STATION		SIDE	REMARKS
2641+60.00	2649+00.00	℄	740.00' Existing Median Barrier
2667+59.22	2669+73.12	Rt.	214.69' Existing Guardrail
2668+50.10	2669+82.18	℄	Existing Median Barrier
2669+29.87		Rt.	Concrete Flume
2669+60.61		Lt.	Concrete Flume
2669+59.39	2669+74.95	Rt.	111.40' Fence
2670+06.16	2670+11.61	Lt.	102.07' Fence
2670+38.39	2670+64.46	℄	127.55' Fence
2671+76.91	2671+96.83	Rt.	118.36' Fence
2672+18.07	2672+30.55	Lt.	109.01' Fence
2672+22.91	2673+54.63	℄	Existing Median Barrier
2672+31.77	2674+45.85	Lt.	214.79' Existing Guardrail
2689+00.00	2696+40.00	℄	740.00' Existing Median Barrier

⁎ The listing shown may not be complete.

FLUME INLET & SLOPE DRAIN

STATION	SIDE	FLUME INLET EACH	SLOPE DRAIN (STONE) LIN. FT.
2669+57.00	Rt.	1	86.0
2669+79.00	Lt.	1	67.0
TOTALS		2	153.0

GUARDRAIL

STATION to STATION		SIDE	STEEL PLATE (MGS)		REMARKS
			LIN. FT.	MGS-MSKT	
Br. No. 5.5.133 NB					
2667+08.02	2669+79.85	Rt.	225.00	1	Parallel
Br. No. 5.5.133 SB					
2672+24.89	2667+96.75	Lt.	525.00	1	Zero Flare
TOTALS			750.00	2	

PERMANENT PRECAST CONCRETE MEDIAN BARRIER (TYPE 1F)

STATION to STATION		SIDE	NUMBER OF UNITS	LIN. FT.	REMARKS
2641+60.00	2649+00.00	℄	37	740.0	
2668+50.10	2669+90.10	℄	7	140.0	
2672+14.63	2673+54.63	℄	7	140.0	
2689+00.00	2696+40.00	℄	37	740.0	
TOTAL				1760.0	

Cast New Barrier using details on Sh. No's. 23 - 26.
Field Verify and adjust station ranges to match existing barrier joints.

IMPACT ATTENUATOR ABSORB 350 (TL-3) (TEMPORARY)

STATION	SIDE	EACH	REMARKS
2641+60.00	℄	1	Phase 1
2641+60.00	℄		Phase 2
2649+00.00	℄	1	Phase 1
2649+00.00	℄		Phase 2
2667+79.64	Lt.	1	Phase 1
2672+03.19	Rt.		Phase 1
2668+72.80	Lt.	1	Phase 2
2674+15.69	Rt.		Phase 2
2689+00.00	℄	1	Phase 1
2689+00.00	℄		Phase 2
2696+40.00	℄	1	Phase 1
2696+40.00	℄		Phase 2
TOTAL		6	

RUMBLE STRIPS (MILLED) (ASPHALT)

STATION to STATION		STATION			
		NORTHBOUND		SOUTHBOUND	
		INSIDE	OUTSIDE	INSIDE	OUTSIDE
2641+60.00	2649+00.00	7.4		7.4	
2668+00.00	2669+90.48	1.9	1.8	1.7	1.8
2672+14.26	2673+80.00	1.7	1.8	1.6	1.6
2689+00.00	2696+40.00	7.4		7.4	
TOTALS		18.4	3.6	18.1	3.4

FENCE

STATION to STATION		SIDE	WOVEN WIRE FENCE		
			LIN. FT.	CORNER POST EACH	END POST EACH
2669+59.39	2669+76.72	Rt.	96.6	1	1
2670+04.23	2670+11.61	Lt.	94.8	1	1
2671+76.91	2672+00.50	Rt.	109.2	1	1
2672+28.01	2672+30.55	Lt.	93.3	1	1
TOTALS			393.9	4	4

RECAPITULATION OF BRIDGE QUANTITIES

BRIDGE NUMBER	STATION	SEE SHEET NO.
5.5.133 NB	2671+02	27
5.5.133 SB	2671+02	27

RECAPITULATION OF ROAD QUANTITIES

ITEM	QUANTITY	UNIT
Contractor Construction Staking	1	Lump Sum
Mobilization	1	Lump Sum
Removal of Existing Structures	1	Lump Sum
Clearing and Grubbing	1	Lump Sum
Common Excavation	2,546	Cu. Yd.
Common Excavation (Contractor Furnished)	6,805	Cu. Yd.
Rock Excavation	391	Cu. Yd.
Compaction of Earthwork (Type AA)(MR-0-5)	1,210	Cu. Yd.
Compaction of Earthwork (Type B)(MR-90)	7,082	Cu. Yd.
Water (Grading)(Set Price)	1	M. Gal.
Guardrail, Steel Plate (MGS)	750.00	Lin. Ft.
Guardrail End Terminal (MGS-MSKT)	2	Each
Curb, Edge (4.0")(AE)	52	Lin. Ft.
Slope Drain (Stone)	153	Lin. Ft.
Flume Inlet (Concrete)	2	Each
Impact Attenuator (TL-3) (Temporary)	6	Each
Replacement Modules (Impact Attenuator)	5	Each
Concrete Safety Barrier (Special)	1	Lin. Ft.
Permanent Precast Concrete Median Barrier (Type 1F)	1,760	Lin. Ft.
Concrete Safety Barrier (Type F3)(Temporary)	325	Lin. Ft.
Concrete Safety Barrier (Type F3)(Temporary-Relocate)	213	Lin. Ft.
Concrete Safety Barrier (Type F3) (Temporary - Install Only)	1,760	Lin. Ft.
Rumble Strips (Milled)(Asphalt)	43.5	Sta.
Fence (Woven Wire)	393.9	Lin. Ft.
Posts (Corner)(Woven Wire)	4	Each
Posts (End)(Woven Wire)	4	Each

For Surfacing Quantities, See Sheet No. 60
For Erosion Control Quantities, See Sheet No. 63
For Seeding Quantities, See Sheet No. 68
For Pavement Marking Quantities, See Sheet No. 70
For Traffic Control Quantities, See Sheet No. 83
For Temp. Conc. Safety Barrier Quantities, See Sheet No. 84

NO.	DATE	REVISIONS	BY	APP'D
02	01-14-08	Rem. Drainage Structure summary	S.W.K.	J.O.B.
01	01-09-91	Detailed on CADD	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

RD050

FHWA APPROVAL	05-28-08	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK. S.W.K.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	60	103

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-)".

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

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

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

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

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

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

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

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

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

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

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

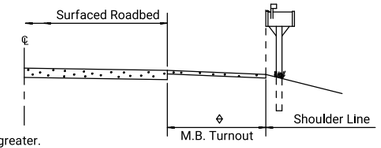
Asphalt Material quantities are calculated on the basis of 8.328 lbs. per gal.

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

SUMMARY OF QUANTITIES

ITEM	COMM. GR. (CLASS A) (2")	COMM. GR. (CLASS A) (2")(70-28)	COMM. GR. (CLASS A) (8")	COMM. GR. (CLASS A) (10")	SURF. MAT. (AB-3) (4")	AGG. BASE (AB-3) (8")	AGG. BASE (AB-3) (10")	MILLING (2")
	TONS	TONS	TONS	TONS	TONS	SQ. YD.	SQ. YD.	SQ. YD.
NB Lanes								
Sta. 2668+00 - 2669+20	14.20	✳38.10						333.5
Sta. 2669+20 - 2669+90.48		27.20	108.80	113.75		490.7		
Sta. 2672+14.26 - 2672+80	20.25	28.80	115.10	60.20		392.3		
Sta. 2672+80 - 2673+80		✳31.45						275.1
SB Lanes								
Sta. 2668+20 - 2669+20	23.35	✳31.90						279.2
Sta. 2669+20 - 2669+90.48		30.75	122.85	50.75		389.8		
Sta. 2672+14.26 - 2672+80	14.25	25.30	101.05	84.20		413.1		
Sta. 2672+80 - 2673+80		✳32.10						280.8
Crossovers A & B								
Sta. 2641+60 - 2649+00	247.10			668.65			1,229.6	2,020.3
Crossovers C & D								
Sta. 2689+00 - 2696+40	247.10			668.65			1,229.6	2,020.3
GR Surfacing NB Lanes								
Sta. 2666+03.03 - 2669+79.41					✳72.90			
GR Surfacing SB Lanes								
Sta. 2672+25.32 - 2679+01.75					✳79.35			
TOTALS	566.25	245.60	447.80	1,646.20	152.25	1,685.9	2,459.2	5,209.2

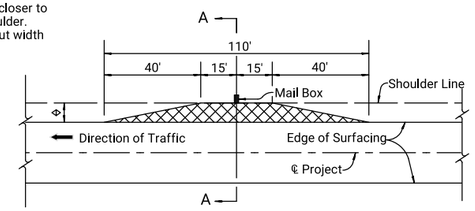
✳ Quantity has been increased 5% for Contingency.



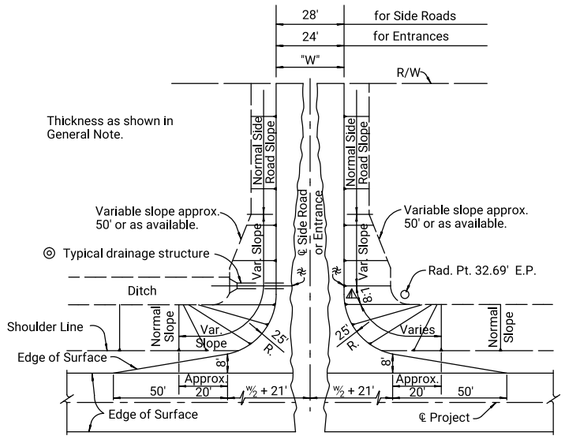
◊ Width shall be 8' or shoulder width, whichever is greater.

SECTION A-A

Note: The face of Mail Box should be no closer to the roadway than the edge of the shoulder. Align with edge of turnout when turnout width is greater than shoulder width.

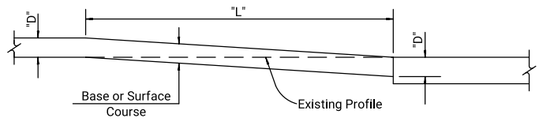


DETAIL FOR SURFACING OF MAIL BOX TURNOUTS



WITH DRAINAGE STRUCTURE MOUND ENTRANCE OR SIDE ROAD

DETAIL FOR SURFACING OF SIDE ROADS & HOUSE ENTRANCES



TYPICAL PROFILE AT GRADE CONTROL POINTS

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

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

TABLE OF DIMENSIONS

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

RATES OF APPLICATION

RATE	UNIT	ITEM
145	lb/cu ft	HMA Commercial Grade (Class A)
156	lb/cu ft	Aggregate Base (AB-3)

† Computed at the rate of

†† Computed at the rate of

RECAPITULATION OF QUANTITIES

ITEM	TOTAL	UNIT
HMA Commercial Grade (Class A)	2,660	Tons
HMA Commercial Grade (Class A)(70-28)	246	Tons
Surfacing Material (AB-3)	153	Tons
Aggregate Base (AB-3)(8")	1,686	Sq. Yds.
Aggregate Base (AB-3)(10")	2,460	Sq. Yds.
Water (Aggregate Base)(Set Price)	1	M. Gal.
Milling	5,210	Sq. Yds.

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

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

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

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

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES (Surfacing)

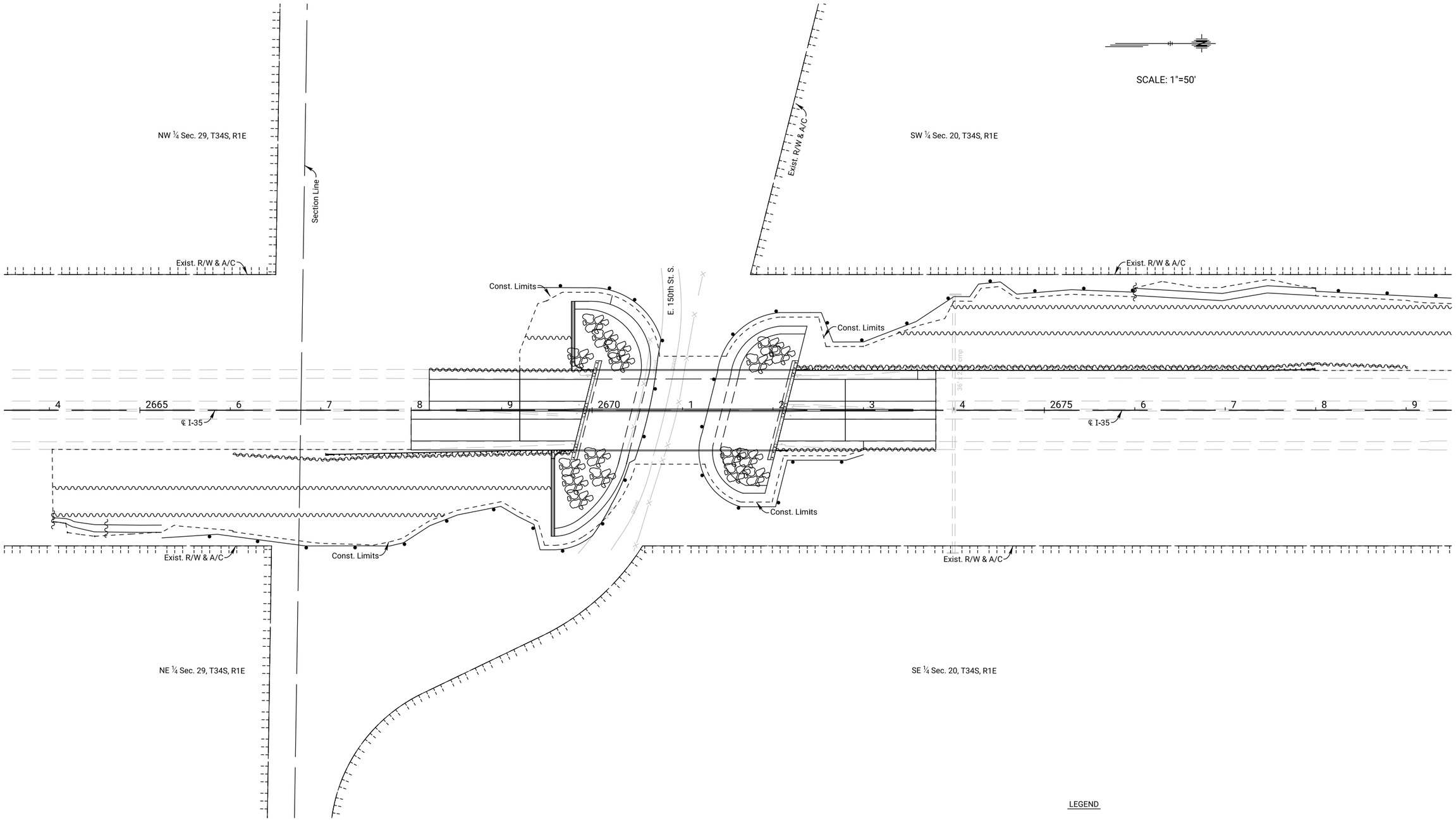
RD051

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

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	61	103

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED

SCALE: 1"=50'



LEGEND

8" Straw Wattle

Silt Fence

Kansas Turnpike Authority

TEMP. EROSION CONTROL PLAN

STA. 2664+00 TO STA. 2679+00

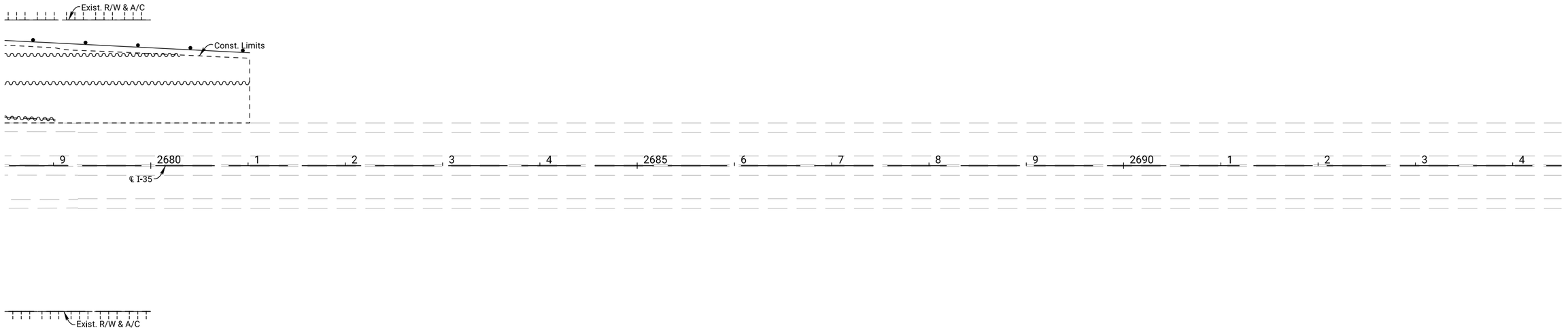
Sh. No. 61

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:53
File : 3090264dewp01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	62	103

SCALE: 1"=50'

DATE	BY	
		REFERENCES NOTED
		REFERENCES CHECKED



LEGEND

8" Straw Wattle

Silt Fence

Kansas Turnpike Authority

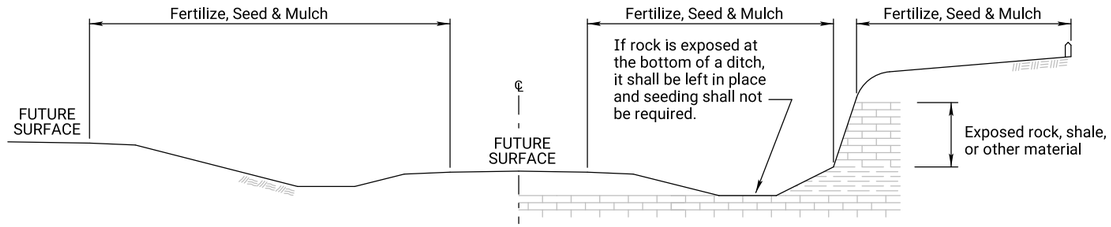
TEMP. EROSION CONTROL PLAN

STA. 2679+00 TO STA. 2694+00

Sh. No. 62

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:54
File : 30902640ewp01.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	63	103



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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

Seed, fertilizer and mulch quantities for information only. Items to be paid as Temp Seeding - LSUM

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

P.L.S. RATE/ ACRE		ACRES		BID ITEM	QUANTITY	UNIT
CLT	SL/CH	CLT	SL/CH			
150		2.6		Temporary Fertilizer (16-20-0)	390.0	LB
80		2.6		Temporary Fertilizer (15-30-15)	208.0	LB
45		2.6		Temporary Seed (Grain Oats)	117.0	LB
45		2.6		Temporary Seed (Sterile Wheatgrass)	117.0	LB
				Soil Erosion Mix		LB
				Erosion Control (Class 1, Type C)		SQ YD
				Erosion Control (Class 2, Type E)		SQ YD
				Sediment Removal (Set Price)	1	CU YD
				Synthetic Sediment Barrier		LF
				Temporary Berm (Set Price)	1	LF
				Temporary Ditch Check (Rock)		CU YD
				Temporary Inlet Sediment Barrier		EACH
				Temporary Sediment Basin		CU YD
				Temporary Slope Drain		LF
				Temporary Stream Crossing		EACH
				Biodegradable Log (9")		LF
				Biodegradable Log (12")		LF
				Biodegradable Log (20")		LF
				Straw Wattle (8")	3,842	LF
				Filter Sock (12")		LF
				Filter Sock (18")		LF
				Geotextile (Erosion Control)		SQ YD
				Silt Fence	2,107	LF
				SWPPP Design	~~Lump Sum~~	LS
				SWPPP Inspection	~~1~~	EACH
				Water Pollution Control Manager	~~1~~	EACH
900 lbs / acre		2.6		Mulch Tacking Slurry	~~2,340~~	LB
2 tons / acre		2.6		Mulching	7.8	TON
				Water (Erosion Control) (Set Price)	1	MGAL

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

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

Regreen and Quick Guard are the approved sterile wheatgrass products.

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

**** List size of material.

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

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

SOIL EROSION MIX

PLS RATE	NAME	QTY (lb)
	Total (lb)	

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

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

NO.	DATE	REVISIONS	BY	APP'D
03	08-03-20	Added Note	M.R.D.	M.L.
02	12-01-17	Revised Standard	M.R.D.	S.H.S.
01	06-01-17	Revised Standard	M.R.D.	S.H.S.

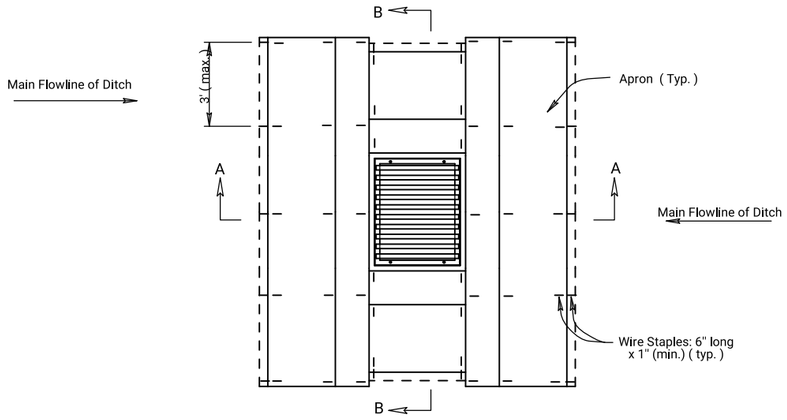
KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL

LA852A

FHWA APPROVAL		01-26-18	APP'D.	Scott H. Shields	
DESIGNED	M.R.D.	DETAILED	M.R.D.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK.

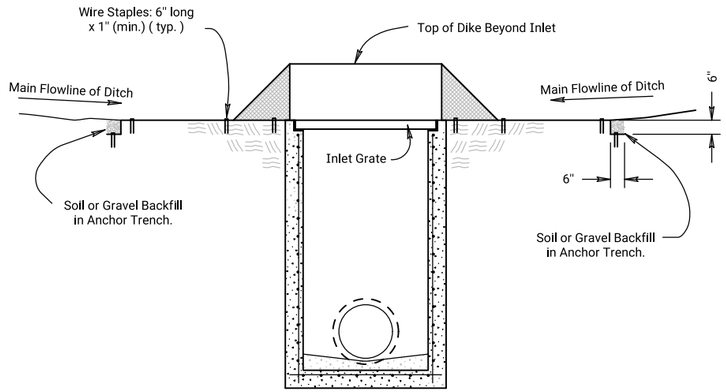
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	64	103



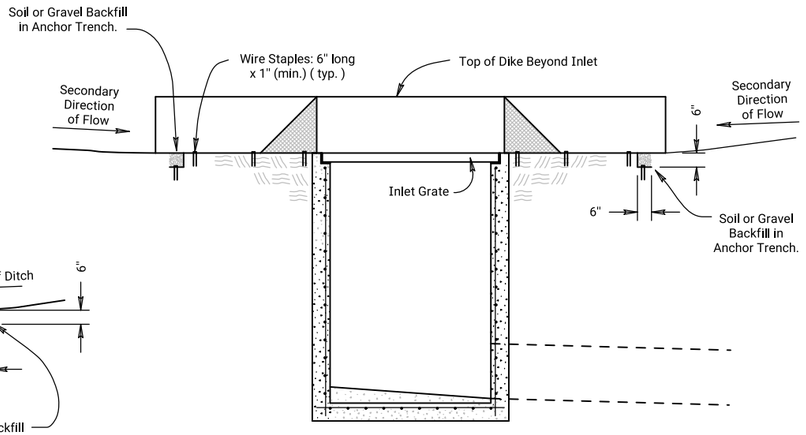
PLAN

TEMPORARY I NLET SEDI MENT BARRI ER
(TRI ANGULAR SI LT DI KE METHOD)

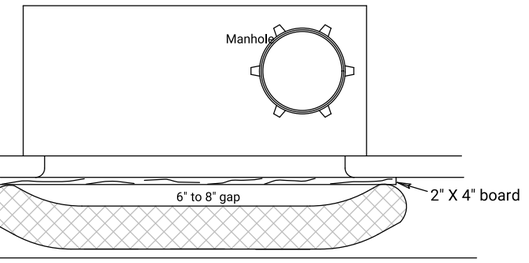
NO SCALE



SECTION A - A



SECTION B - B

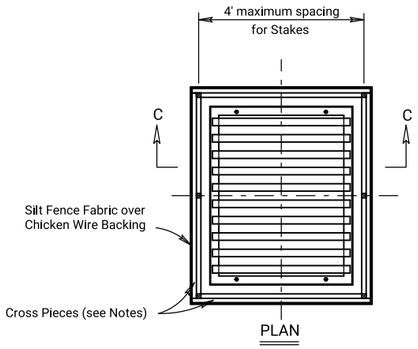


Bags = synthetic net (3mm mesh) or burlap bags

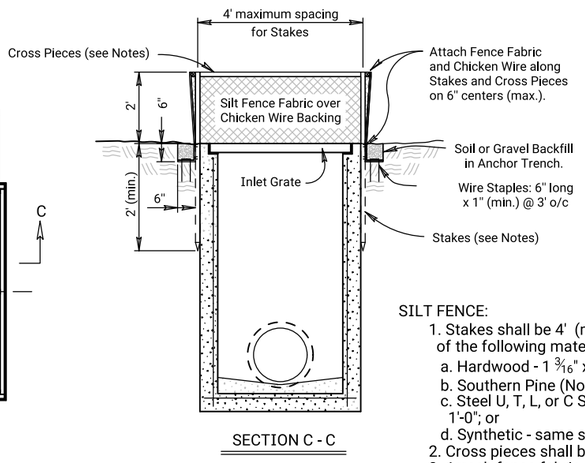
Rock = approximately 1" to 2" diameter

CURB INLET PROTECTION

1. If multiple gravel bags are required, place them in such a way that no gaps are evident.
2. Height of bags (8" minimum diameter) must not be above top of curb.
3. Alternative products may be used other than gravel bags such as the "Gutter Buddy". Products must be approved by the Engineer.
4. Curb inlet protection will be measured and paid for as Filter Sock.



PLAN



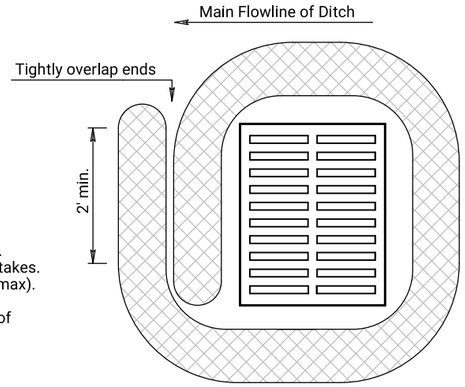
SECTION C - C

TEMPORARY I NLET SEDI MENT BARRI ER
(SI LT FENCE METHOD)

NO SCALE

SILT FENCE:

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



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

BIODEGRADABLE LOG/FILTER SOCK
DROP INLET PROTECTION

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

Stake every 4'

Material Requirements
Use 100% shredded mulch or other non-compost biodegradable material as fill for logs.
No compost or fines.
No hay or straw.
Do not use material which prohibits water infiltration.
Log Mesh: Use mesh with ¼" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

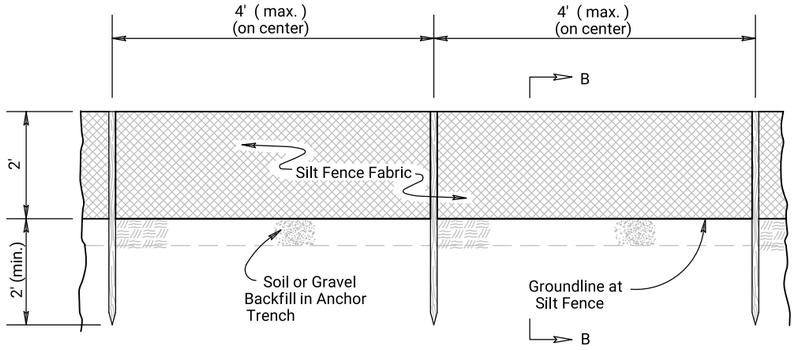
NO.	DATE	REVISIONS	BY	APP'D
03	09-26-19	Changed Direction of Main Flowline of Ditch Arrow	M.R.D.	S.H.S.
02	03-10-15	Revised Standard	R.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL, TEMPORARY INLET SEDIMENT BARRIER (SILT FENCE)
TEMP. INLET SEDIMENT BARRIER (T.S.D.)
LA852C

FHWA APPROVAL		03-10-15	APP'D.	Scott H. Shields	
DESIGNED	R.A.	DETAILED	R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.	TRACE CK.

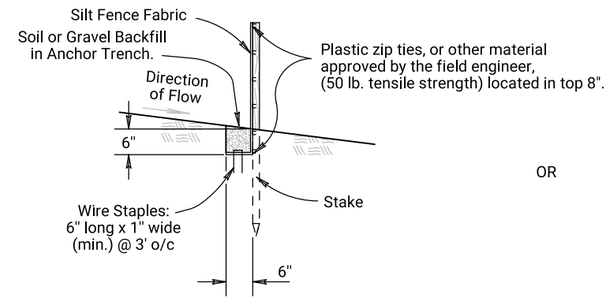
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	65	103



TYPICAL ELEVATION

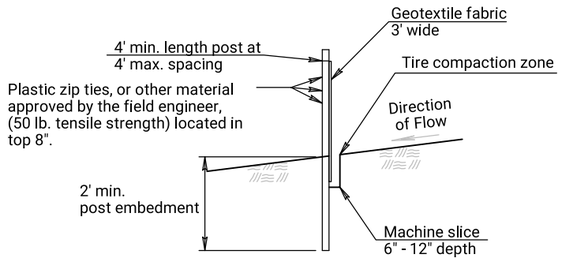
SILT FENCE BARRIER

NO SCALE

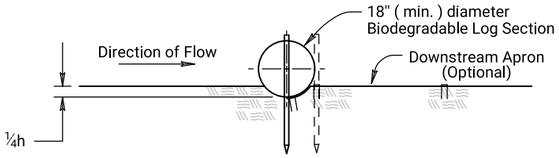


SECTION B-B

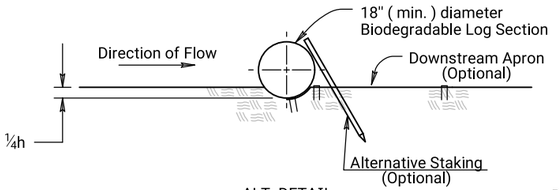
OR



SECTION B-B

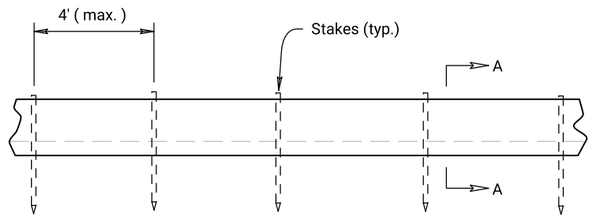


SECTION A - A



ALT. DETAIL

OPTIONAL



TYPICAL ELEVATION

BIODEGRADABLE LOG SLOPE INTERRUPTIONS

OR Filter Sock

INSTALLATION NOTES

SILT FENCE:

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

BIODEGRADABLE LOG OR FILTER SOCK

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

Biodegradable Log or Filter Sock Slope Interruptions

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

Deviations should be approved by the Field Engineer.

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

GENERAL NOTES

1) Slope interruptions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
2) The maximum length of the slope interruptions shall not exceed 250 feet, and the barrier ends need to be staggered.
3) Interruptions damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor at no additional cost to KDOT.
4) Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

NO.	DATE	REVISIONS	BY	APP'D
03	06-28-16	Revised Standard	R.A.	S.H.S.
02	03-01-15	Revised Standard	R.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND POLLUTION CONTROL SLOPE INTERRUPTIONS BIODEGRADABLE LOG / SILT FENCE

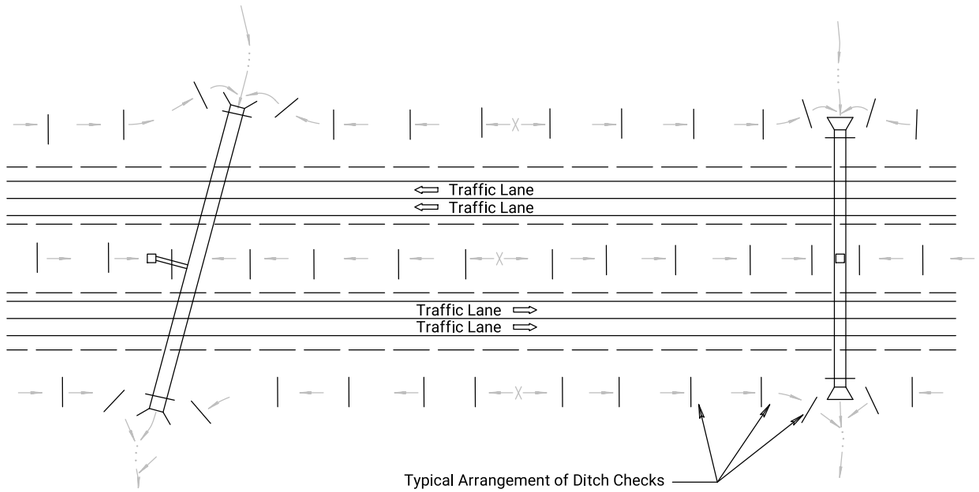
LA852D

FHWA APPROVAL		09-14-16	APP'D.	Scott H. Shields
DESIGNED	S.H.S.	DETAILED R.A.	QUANTITIES	TRACED
DESIGN CK.	S.H.S.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 65

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640LA852D.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	66	103



TYPICAL DITCH CHECK LAYOUT PLAN
NO SCALE

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

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

GENERAL NOTES

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

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

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

NO.	DATE	REVISIONS	BY	APP'D
03	08-10-16	Revised Standard	R.A.A.	S.H.S.
02	06-28-16	Revised Standard	R.A.A.	S.H.S.
01	06-01-13	Revised Standard	M.R.M.	S.H.S.

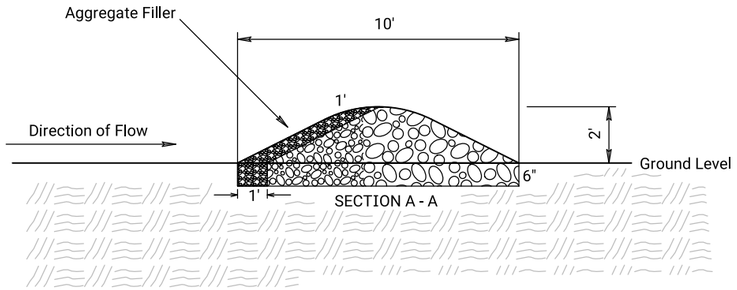
KANSAS DEPARTMENT OF TRANSPORTATION

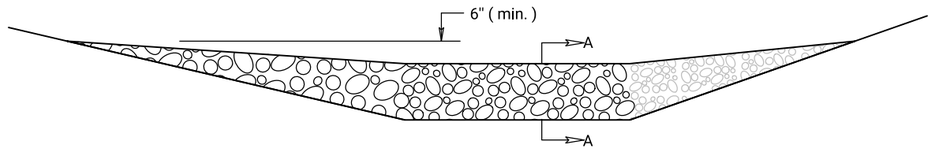
TEMPORARY EROSION AND POLLUTION CONTROL DITCH CHECKS

LA852E

FHWA APPROVAL			09-14-16	APP'D.	Scott H. Shields		
DESIGNED	S.H.S.	DETAILED	R.A.A.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	S.H.S.	DETAIL CK.	S.H.S.	QUAN.CK.		TRACE CK.	S.H.S.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	67	103





TYPICAL ELEVATION

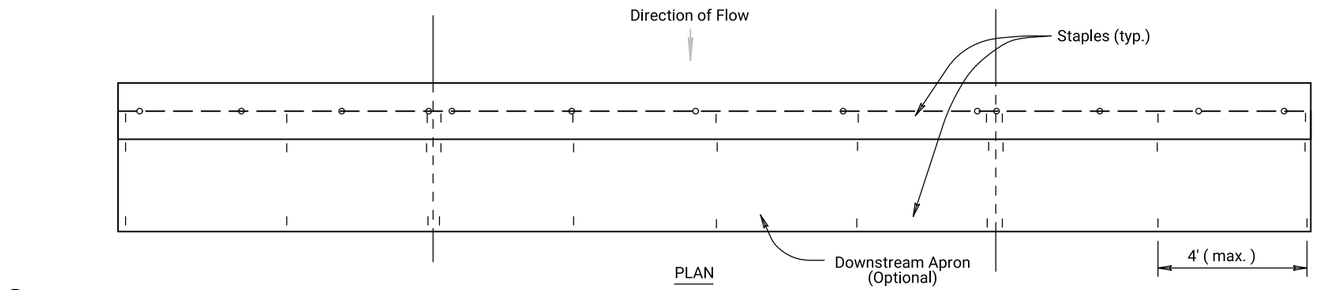
ROCK DITCH CHECK

NO SCALE

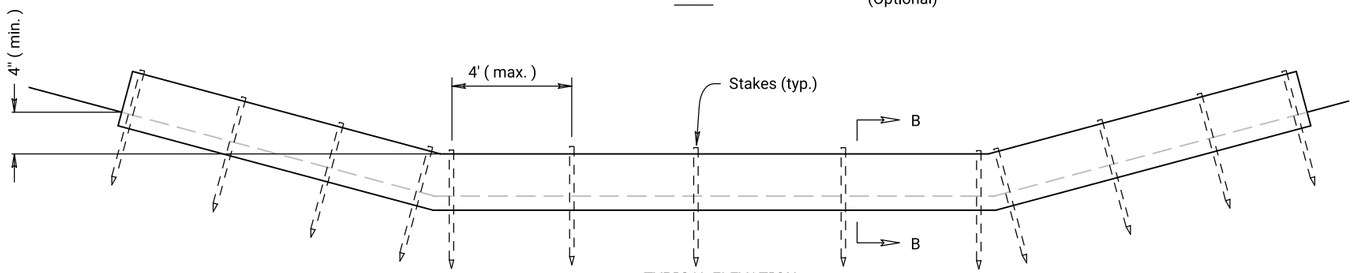
TEMPORARY ROCK DITCH CHECK SPACING	
DITCH ℄ SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
NOTE: Use this spacing for Rock Ditch Checks only.	

ROCK DITCH CHECK NOTES

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



PLAN

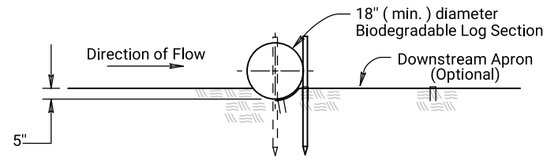


TYPICAL ELEVATION

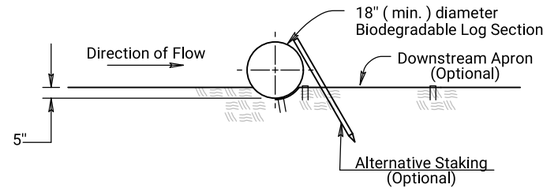
BIODEGRADABLE LOG DITCH CHECK

OR Filter Sock Ditch Check

NO SCALE



SECTION B - B



ALT. DETAIL OPTIONAL

BIODEGRADABLE LOG DITCH CHECK NOTES

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

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

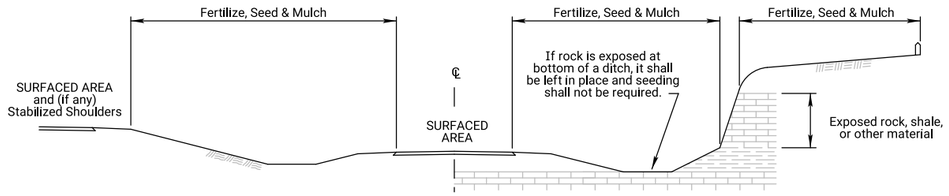
KANSAS DEPARTMENT OF TRANSPORTATION

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

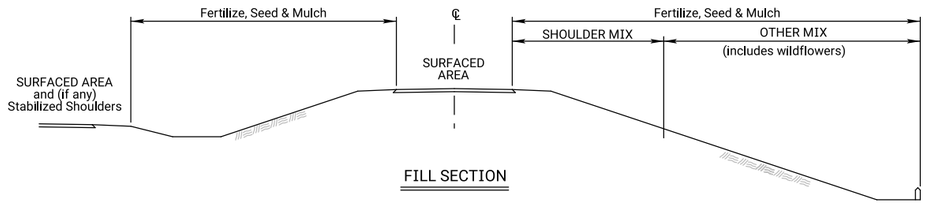
LA852G

FHWA APPROVAL			11-19-20	APP'D.			Mervin Lare
DESIGNED	M.L.	DETAILED	D.K.	QUANTITIES		TRACED	R.A.A.
DESIGN CK.	M.L.	DETAIL CK.	M.L.	QUAN.CK.		TRACE CK.	R.A.A.

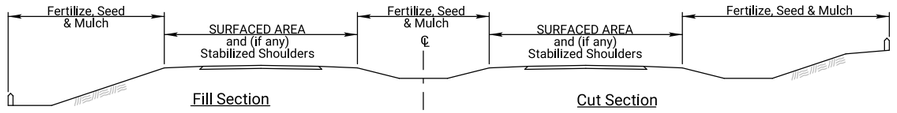
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	68	103



CUT SECTION



FILL SECTION



TYPICAL SECTION - DUAL PAVEMENT

GRASS & WILDFLOWER SEEDING SEASONS

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

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

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

SODDING SEASONS

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

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

GENERAL NOTES

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

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

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

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

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

$1\frac{3}{4}$ - $2\frac{1}{4}$ Tons per Acre = $1\frac{1}{2}$" 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.

Seed and fertilizer quantities for information only. Items to be paid as Seeding - LSUM

SUMMARY OF SEEDING QUANTITIES

P.L.S. RATE/ACRE				ACRES				BID ITEM	QUANTITY	UNIT
SHLDR	OTHER			SHLDR	OTHER					
250				0.9				Fertilizer (13-13-13)	225.0	lb
0.5				0.9				Seed (Blue Grama Grass) (Lovington)	0.5	lb
4.5				0.9				Seed (Buffalo Grass) (Treated)	4.1	lb
0.5				0.9				Seed (Sand Dropseed Grass)	0.5	lb
7				0.9				Seed (Side Oats Grama Seeds) (El Reno)	6.3	lb
45				0.9				Seed (Tall Fescue) (Endphyte Free)	40.5	lb
6				0.9				Seed (Western Wheatgrass) (Barton)	5.4	lb
								Mulching *		

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

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

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

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

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

NATIVE WILDFLOWER MIX 1

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

NATIVE WILDFLOWER MIX 2

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

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower mix. Place the grass seed (except Tall Drop Seed) in the large seed box and drill (cover) seed ⅛" -¼". Place the wildflower seed in a separate seed box and drill (cover) seed $\frac{1}{16}$" maximum. Place the Tall Drop Seed in a separate (third) seed box and place the seed (using the seed drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

NO.	DATE	REVISIONS	BY	APP'D
02	11-25-20	Updated Seeding / Sodding Periods Charts	M.R.D.	M.L.
01	08-03-20	Revised Standard	M.R.D.	S.H.S.

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING
SUMMARY OF SEEDING QUANTITIES

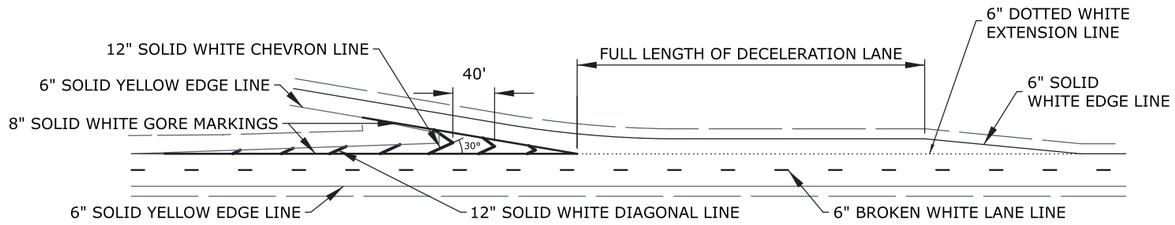
LA850

FHWA APPROVAL	05-06-19	APP'D.	Mervin Lare
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

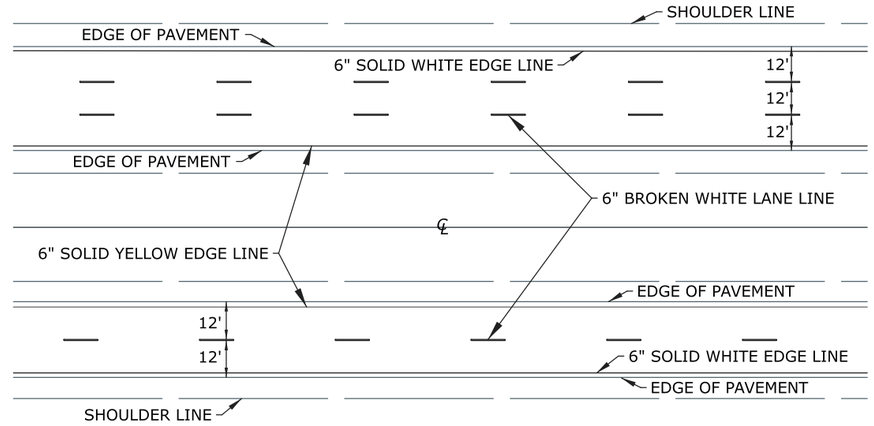
Sh. No. 68

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640LA850.dgn

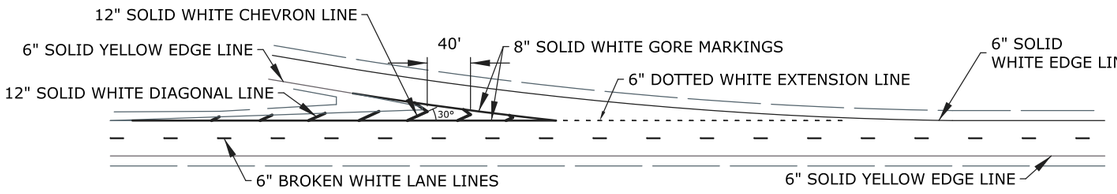
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	69	103



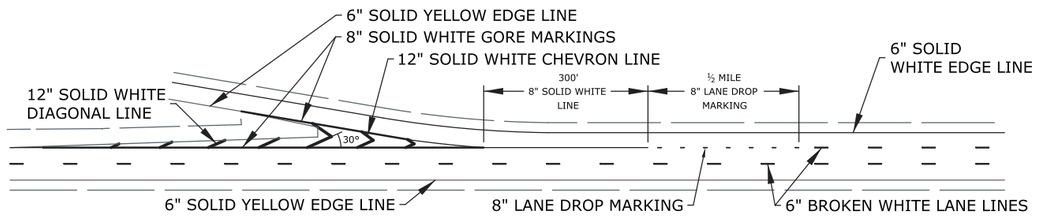
TYPICAL DECELERATION EXIT RAMP



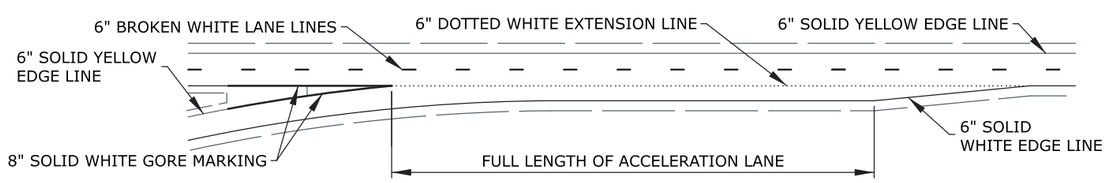
TYPICAL LANE LINE AND EDGE LINE MARKINGS FOR FOUR LANE AND SIX LANE DIVIDED HIGHWAYS



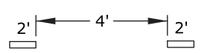
TYPICAL TAPERED EXIT RAMP



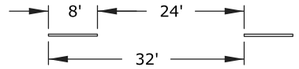
TYPICAL LANE DROP



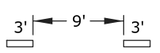
TYPICAL ACCELERATION RAMP



TYPICAL SPACING FOR DOTTED EXTENSION LINES, UNLESS OTHERWISE NOTED ON PLANS.



TYPICAL SPACING FOR BROKEN LINES UNLESS OTHERWISE NOTED ON PLANS.



TYPICAL SPACING FOR LANE DROP. UNLESS OTHERWISE NOTED ON PLANS.

NOTE:
LONGITUDINAL PAVEMENT MARKING LINES SHALL BE OFFSET A MINIMUM OF 2" FROM LONGITUDINAL PAVEMENT JOINTS.

NOTE:
AT RAMP TERMINALS WITH CROSS-ROADS, WRAP 6" EDGE LINES AROUND RADII.

NOTE:
ON NON I, US, AND K ROUTES, 4" EDGE LINES MAY BE INSTALLED. 6" EDGE LINES ARE NOT REQUIRED ON NON I, US, AND K ROUTES.

NO.	DATE	REVISIONS	BY	APP'D
2	5/25/12	Dotted Extension Lines and Lane Drop Lines	B.A.H.	B.D.G.
1	7/26/05	New FHWA Approval Date	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

TYPICAL PAVEMENT MARKING DETAILS FOR MULTI-LANE DIVIDED ROADWAYS

TE307

FHWA APPROVAL				5/25/2012	APP'D	Brian D. Gower	
DESIGNED	J.F.F.	DETAILED	J.F.F.		QUANTITIES		TRACED
DESIGN CK.	B.D.G.	DETAIL CK.	B.D.G.		QUAN. CK.		TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	70	103

SUMMARY OF PAVEMENT MARKINGS

LOCATION	4" Solid WHITE Edge Line	6" Solid WHITE Edge Line	6" Broken WHITE Lane Line	6" Broken WHITE Lane Line (PCP)	6" Dotted WHITE Extension Line	6" Broken WHITE Lane Drop Line	6" Solid WHITE Lane Line	8" Broken WHITE Lane Drop Line	8" Solid WHITE Gore Line	8" Dotted WHITE Extension Line	12" Solid WHITE Diagonal Line	12" Solid WHITE Chevron Line	12" Solid WHITE Type I Crosswalk Line	24" Solid WHITE Type II Crosswalk Line	24" Solid WHITE Stop Line	4" Solid YELLOW Edge Line	4" Solid YELLOW Double Line	4" Solid YELLOW Line	4" Broken YELLOW Line	6" Solid YELLOW Edge Line	12" Solid YELLOW Diagonal Line
NB I-35																					
2614+05 - 2695+48.33			8,143																	8,143	
2668+00 - 2673+80		580																			
SB I-35																					
2642+55 - 2717+05			7,450																	7,450	
2668+20 - 2673+80		560																			
TOTALS		1,140	3,899																	15,593	

RECAPITULATION OF QUANTITIES

ITEMS	TOTAL	UNITS
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(4")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(6")	5,039	FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(8")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(WHITE)(12")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(4")		FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(6")	15,593	FT
PAVEMENT MARKING (MULTI-COMPONENT)(YELLOW)(12")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(4")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(6")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(8")		FT
PAVEMENT MARKING (THERMOPLASTIC)(WHITE)(12")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(4")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(6")		FT
PAVEMENT MARKING (THERMOPLASTIC)(YELLOW)(12")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(4")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(6")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(8")		FT
PAVEMENT MARKING (EPOXY)(WHITE)(12")		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(4")		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(6")		FT
PAVEMENT MARKING (EPOXY)(YELLOW)(12")		FT
PAVEMENT MARKING (INTERSECTION GRADE)(WHITE)(12")		FT
PAVEMENT MARKING (INTERSECTION GRADE)(WHITE)(24")		FT
PAVEMENT MARKING (INTERSECTION GRADE)(YELLOW)(12")		FT
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(WHITE)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(US-SHIELD)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(K-SHIELD)( )		EACH
PAVEMENT MARKING SYMBOL (INTERSECTION GRADE)(I-SHIELD)( )		EACH
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(6")		FT
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(8")		FT
PAVEMENT MARKING (PATTERNED COLD PLASTIC)(WHITE)(12")		FT
PAVEMENT MARKING REMOVAL		FT

SUMMARY OF WORD & SYMBOL MARKINGS

LOCATION	STOP	ONLY	X-ING	SCHOOL	70	435	24	400	18
TOTALS									

NOTE: FOR SPECIFIC PAVEMENT MARKING DETAILS AND DIMENSIONS SEE PLAN SHEETS

NOTE: ALL TOTALS REFLECT ACTUAL QUANTITY OF PAVEMENT MARKING MATERIALS REQUIRED.

NOTE:
WORDS & SYMBOLS SHALL CONFORM TO THE LATEST EDITION OF "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" PRINTED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.

PRIOR TO COMMENCEMENT OF PAVEMENT MARKING WORK THE ENGINEER WILL ESTABLISH THE LIMITS FOR "NO PASSING" ZONES. THESE LIMITS SHALL BE USED FOR THE LOCATION OF "NO PASSING" LINES AND FOR THE COMPUTATION OF ACTUAL MARKING QUANTITIES FOR THIS LINE TYPE.

NO.	DATE	REVISIONS	BY	APPD
2	5/25/12	Added Line Types, Symbols, and Shields	B.A.H.	B.D.G.
1	7/26/05	New FHWA Approval Date	J.F.F.	B.D.G.

KANSAS DEPARTMENT OF TRANSPORTATION

SUMMARY AND RECAPITULATION OF PAVEMENT MARKING QUANTITIES

TE311

FHWA APPROVAL		5/25/2012	APP'D	Brian D. Gower	
DESIGNED	J.F.F.	DETAILED	J.F.F.	QUANTITIES	TRACED
DESIGN CK.	B.D.G.	DETAIL CK.	B.D.G.	QUAN. CK.	TRACE CK.

Sh. No. 70

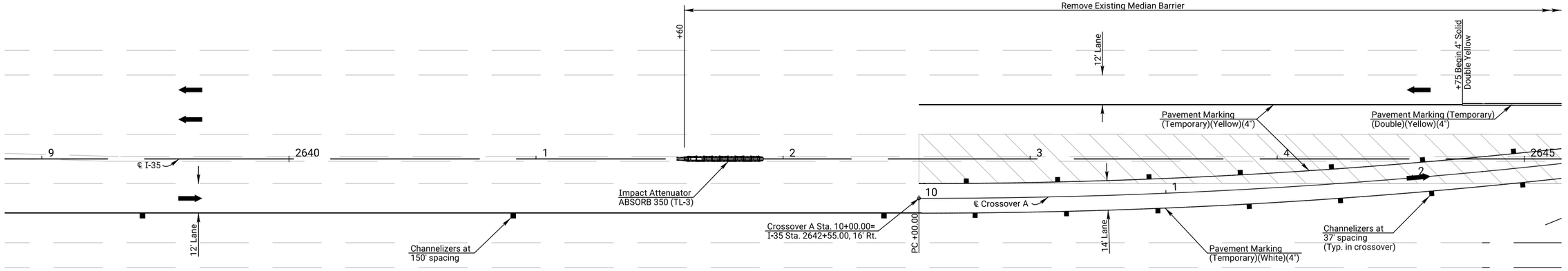
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	71	103

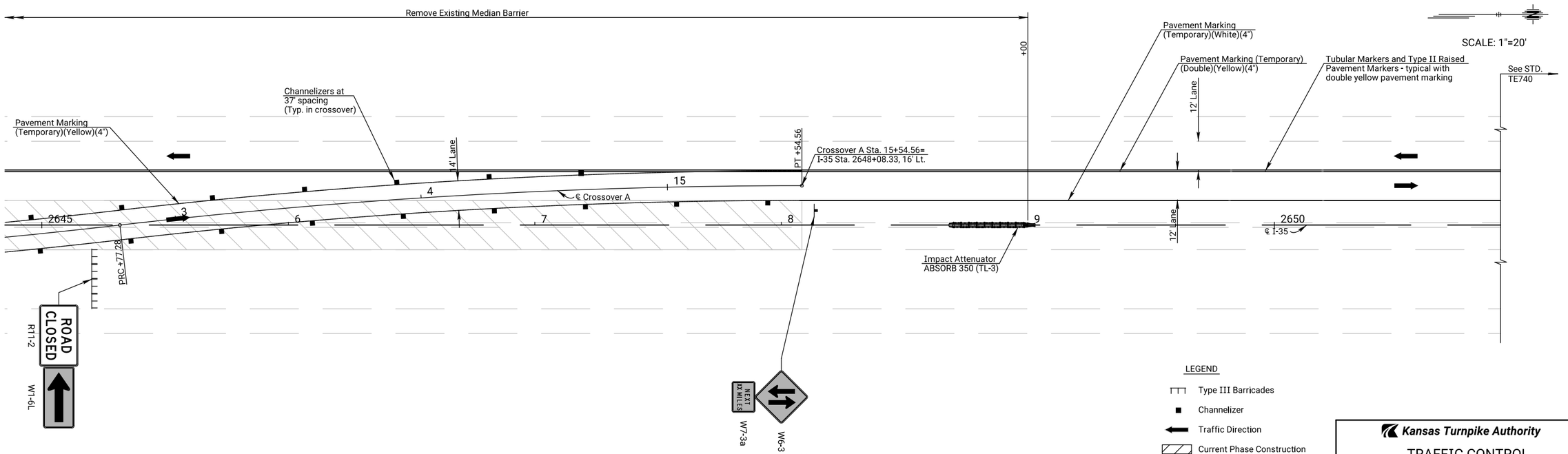
℄ Crossover "A" Curve Data

Curve 1
P.I. Sta. 11+38.80 (Bk.)
△ = 6° 37' 11" (LT)
R = 2,400.00'
T = 138.80'
L = 277.28'
E = 4.01'

Curve 2
P.I. Sta. 14+16.08 (Bk.)
△ = 6° 37' 11" (RT)
R = 2,400.00'
T = 138.80'
L = 277.28'
E = 4.01'

SCALE: 1"=20'





SCALE: 1"=20'

LEGEND
- Type III Barricades
- Channelizer
- Traffic Direction
- Current Phase Construction
- Previous Phase Construction

Notes:
See STD. TE740 for Signing, Advance Signing, and Pavement Marking
Coordinate with US-166 Bridge 4 project during 2024 season

Kansas Turnpike Authority

TRAFFIC CONTROL

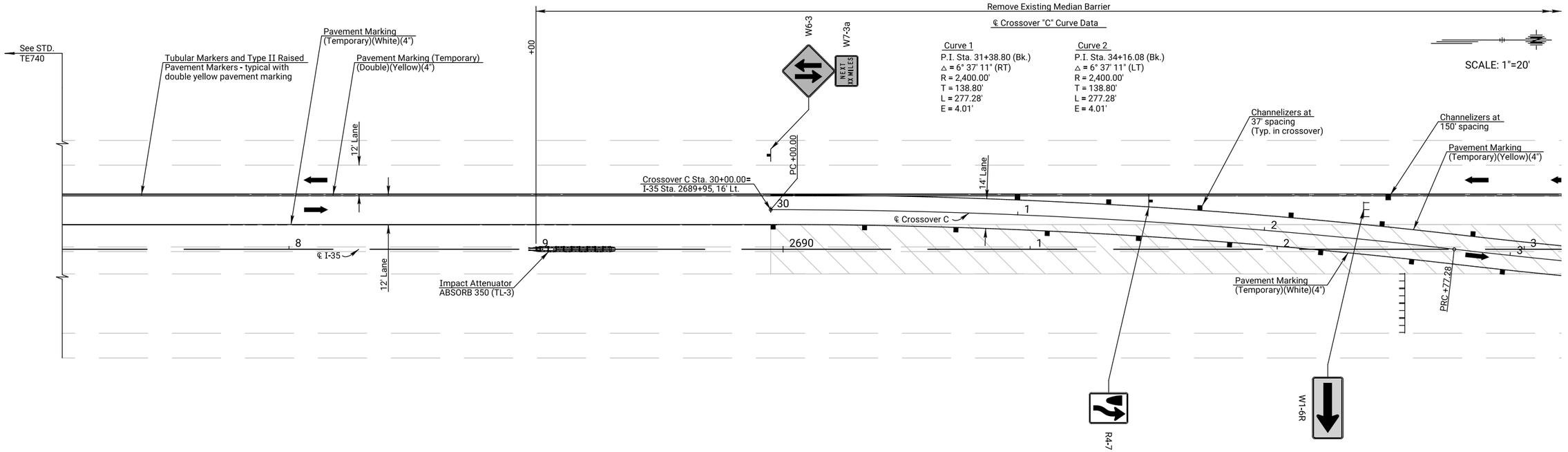
PHASE 1 (CROSSOVER A)

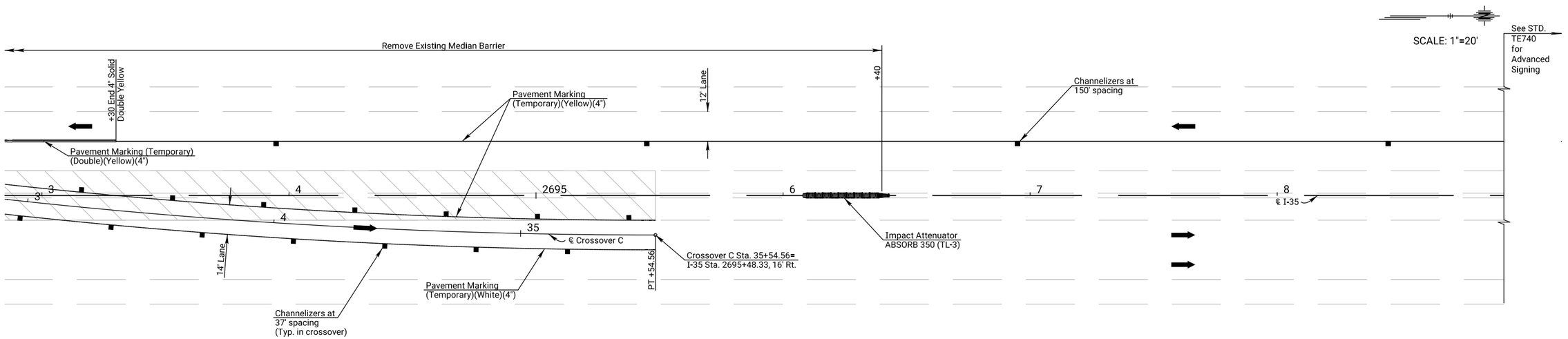
Sh. No. 71

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640tcp01.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	72	103





LEGEND

- Type III Barricades
- Channelizer
- Traffic Direction
- Current Phase Construction
- Previous Phase Construction

Notes:
See STD. TE740 for Signing, Advance Signing, and Pavement Marking
Coordinate with US-166 Bridge 4 project during 2024 season

Kansas Turnpike Authority

TRAFFIC CONTROL

PHASE 1 (CROSSOVER C)

Sh. No. 72

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640tcp01.dgn

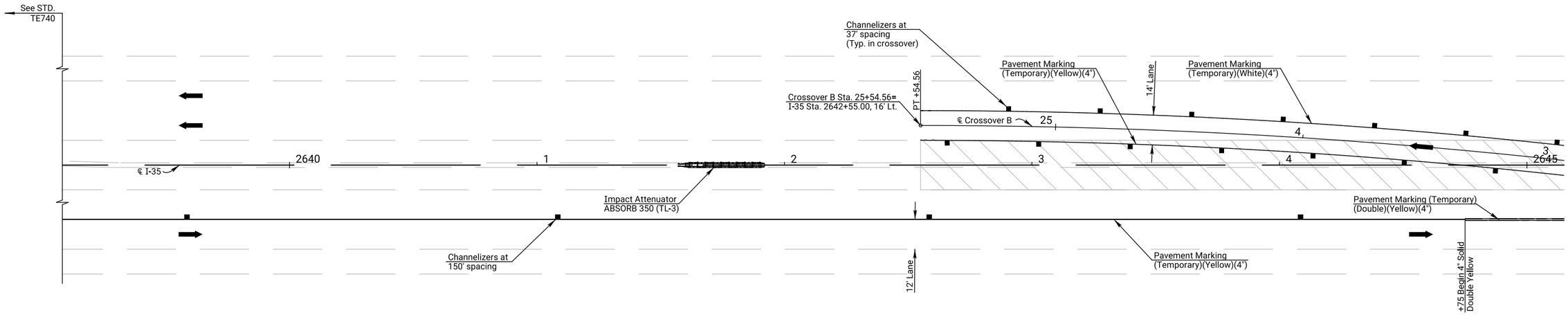
STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	73	103

℄ Crossover "B" Curve Data

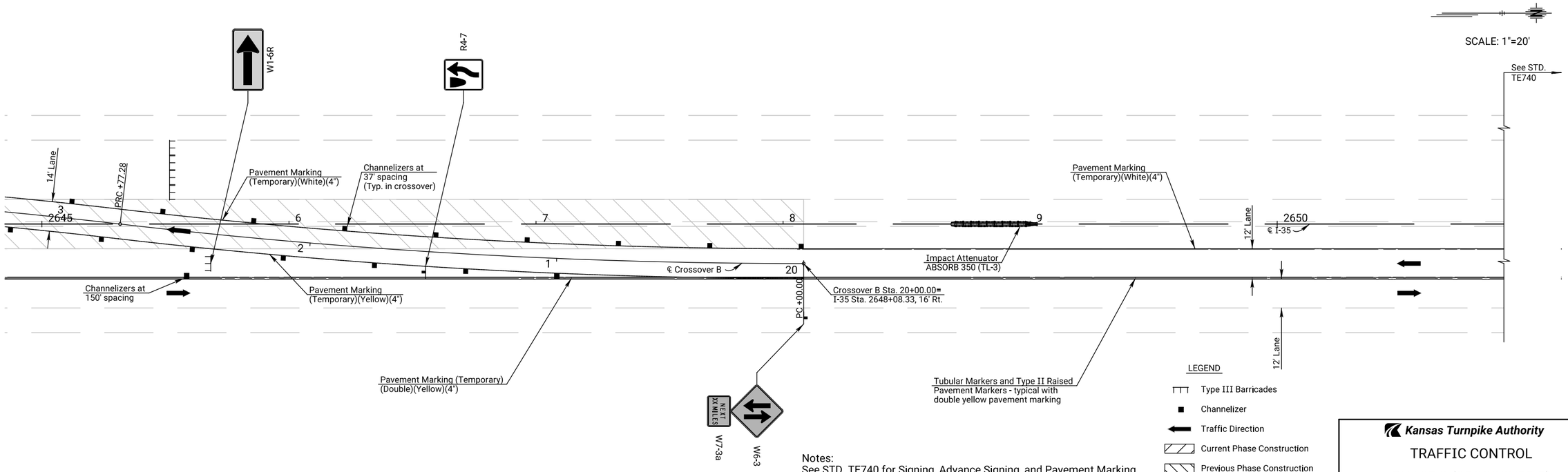
Curve 1
P.I. Sta. 21+38.80 (Bk.)
△ = 6° 37' 11" (RT)
R = 2,400.00'
T = 138.80'
L = 277.28'
E = 4.01'

Curve 2
P.I. Sta. 24+16.08 (Bk.)
△ = 6° 37' 11" (LT)
R = 2,400.00'
T = 138.80'
L = 277.28'
E = 4.01'

SCALE: 1"=20'



SCALE: 1"=20'



LEGEND
- Type III Barricades
- Channelizer
- Traffic Direction
- Current Phase Construction
- Previous Phase Construction

Notes:
See STD. TE740 for Signing, Advance Signing, and Pavement Marking

Kansas Turnpike Authority

TRAFFIC CONTROL

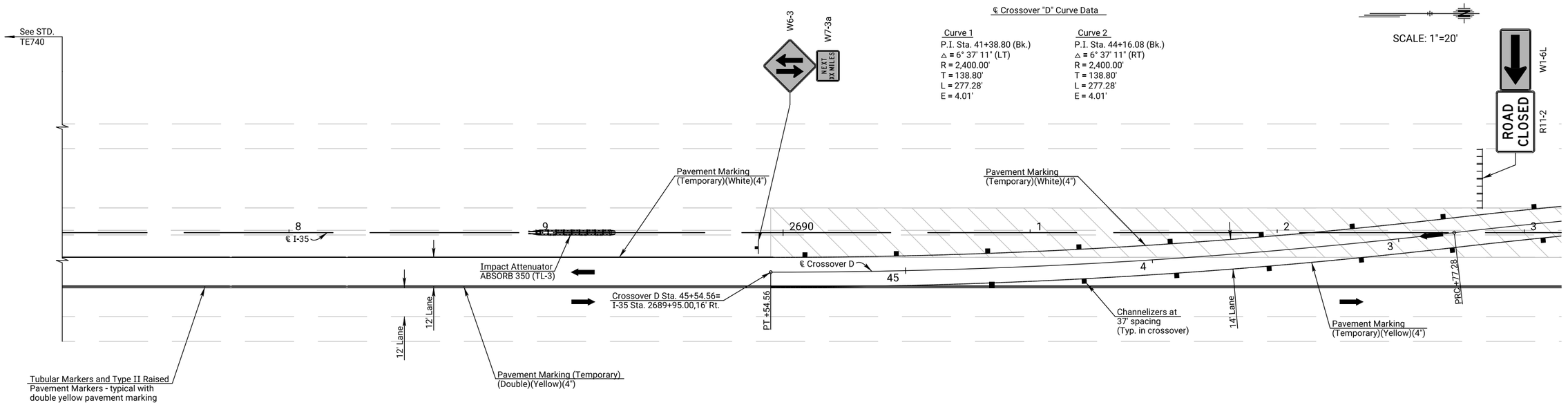
PHASE 2 (CROSSOVER B)

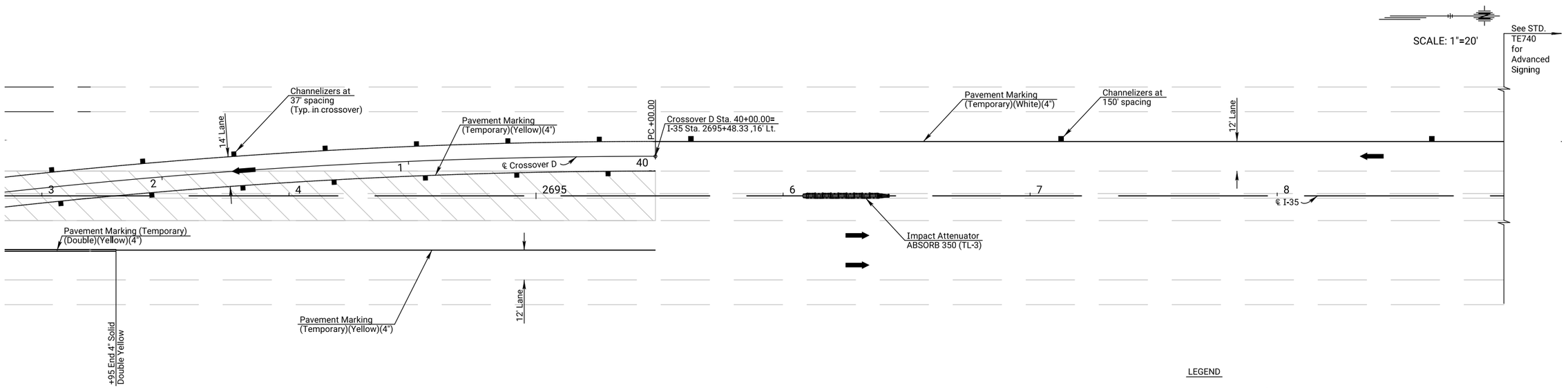
Sh. No. 73

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 17:43
File : 30902640tcp02.dgn

STATE	PROJECT N0.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	74	103





LEGEND

- Type III Barricades
- Channelizer
- Traffic Direction
- Current Phase Construction
- Previous Phase Construction

Notes:
See STD. TE740 for Signing, Advance Signing, and Pavement Marking

Kansas Turnpike Authority

TRAFFIC CONTROL

PHASE 2 (CROSSOVER D)

Sh. No. 74

DATE | BY | REFERENCES NOTED | REFERENCES CHECKED

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 17:43
File : 30902640tcp02.dgn

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

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

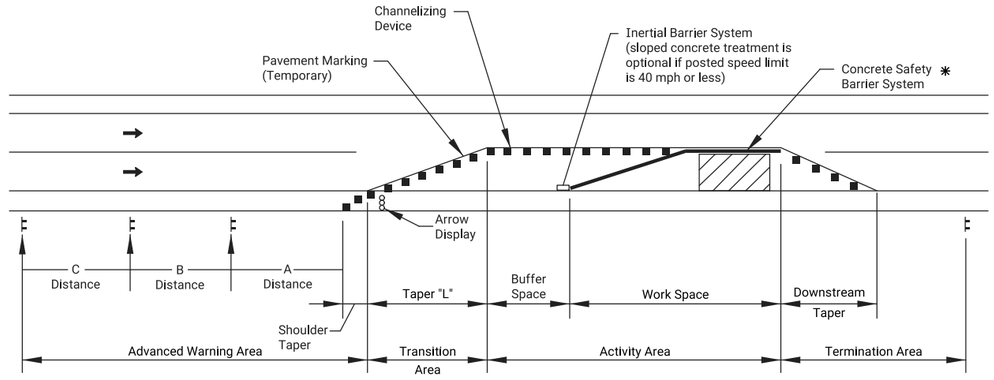
3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that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

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

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

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	75	103



TYPICAL WORK ZONE COMPONENTS

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

Minimum advance warning sign spacing (in feet):

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

✳ Posted speed prior to work starting

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

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

Taper Formulas:

L = WS for speeds of 45 MPH or more

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

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

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

Channelizer Placement:

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

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

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

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

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

Buffer Space

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

✳ Posted speed prior to work starting

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

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

NO.	DATE	REVISIONS	BY	APP'D
02	03-13-18	W8-15p usage changed to Shall	R.W.B.	E.K.G.
01	08-18-15	Channelizer spacing info	R.W.B.	K.E.

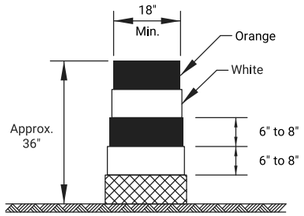
KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

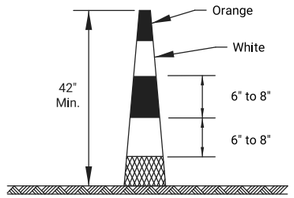
TE700

FHWA APPROVAL	03-13-18	APP'D.	Eric Kocher
DESIGNED B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

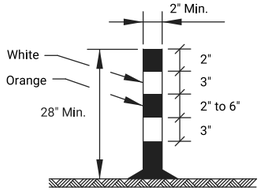
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	76	103



DRUM

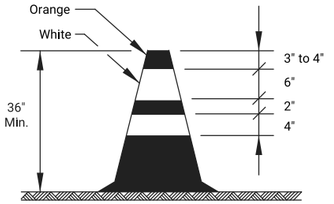


CONICAL DELINEATOR

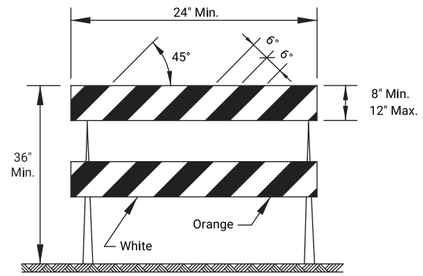


TUBULAR MARKER

Striping as shown for up to 42".

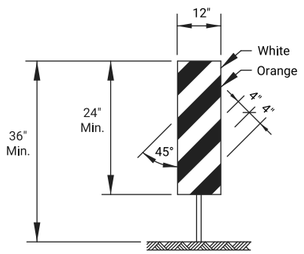


TRAFFIC CONE



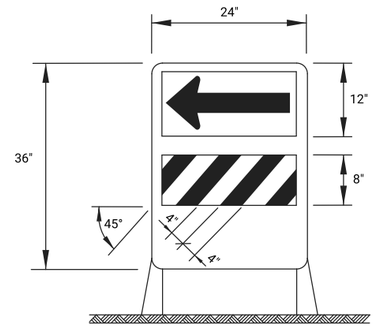
TYPE 2 BARRICADE

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



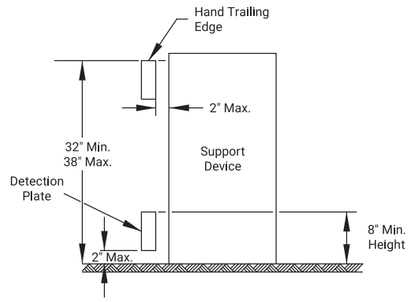
VERTICAL PANEL

The stripes shall slope downward to the traffic side for channelization.



DIRECTION INDICATOR BARRICADE

The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.



PEDESTRIAN CHANNELIZER

1. Support device shall not project beyond the detection plate into the pathway.
2. Hand trailing edges and detection plates are optional for continuous walls.
3. Interconnect pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
4. Alternate pathways shall be firm, stable, and slip resistant.
5. Treat height differentials > 1/2" in the surfaces of alternate paths with a firm, stable, and slip resistant temporary ramp having a slope of 12:1 or flatter and having a width equal to the alternate path.
6. Use alternating orange/white on interconnected devices.

Item	Location	Cross-overs	Shoofly Diversions	Tangents	Tapers	Ramps	Head to Head	Object Identifier	Lead-in Devices	Gores
Portable										
	Drums	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Conical Delineators	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Vertical Panels	(2)	(2)	(2)	(2)	(2)	(1,2)	Yes	(2)	(2)
	Direction Indicator Barricade	No	No	No	Yes	No	No	No	No	No
	Type 2 Barricade	(2)	(2)	(2)	(2)	No	No	Yes	No	No
	Traffic Cones	No	No	(4)	(4)	(4)	No	(4)	(4)	(4)
Fixed										
	Tubular Markers	(3)	(3)	(3)	No	(3)	Yes	No	Yes	Yes
	Vertical Panels	(3)	(3)	(3)	(3)	(3)	(3)	Yes	(2,3)	(2)

(1) Not allowed on centerline delineation along freeways or expressways.
(2) The stripes shall slope downward to the traffic side for channelization.
(3) May be used upon the approval of the engineer.
(4) Daytime operations only.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

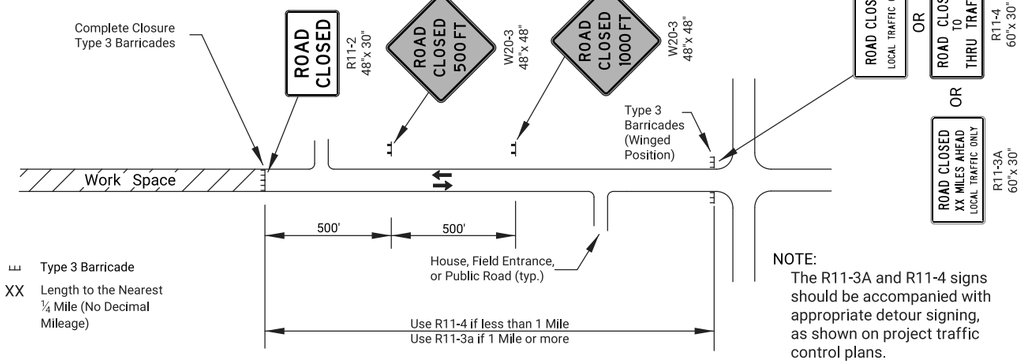
TRAFFIC CONTROL CHANNELIZING DEVICES

TE702

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	77	103

Note: Signs shown for one approach to work zone.



NOTE:
The R11-3A and R11-4 signs should be accompanied with appropriate detour signing, as shown on project traffic control plans.

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

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

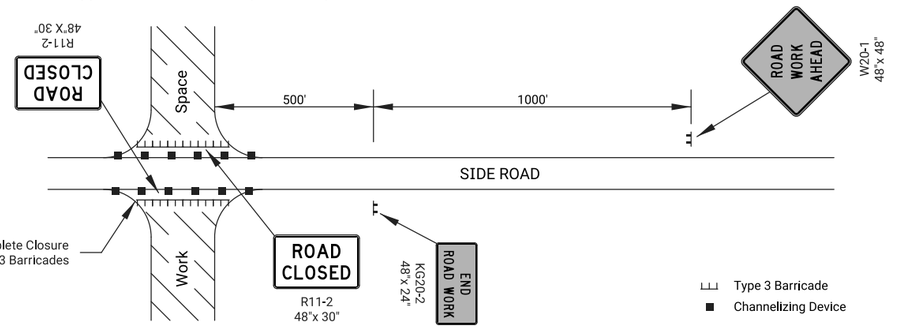


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

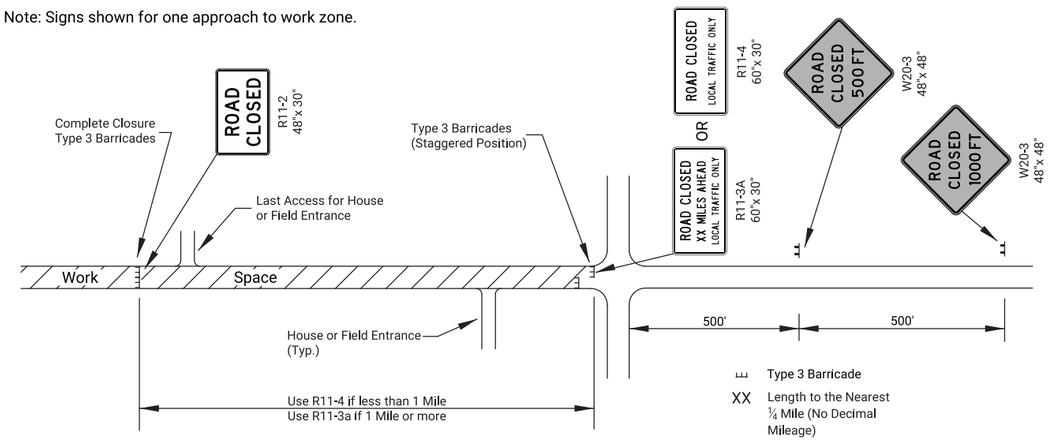


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

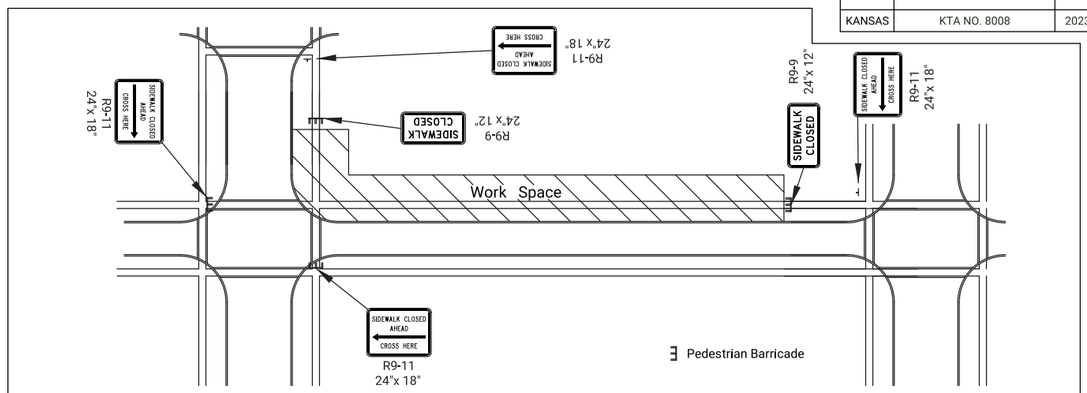
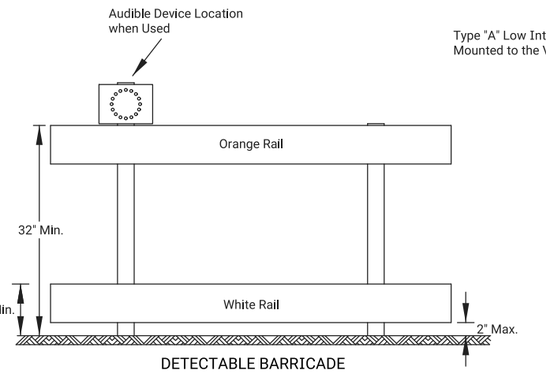
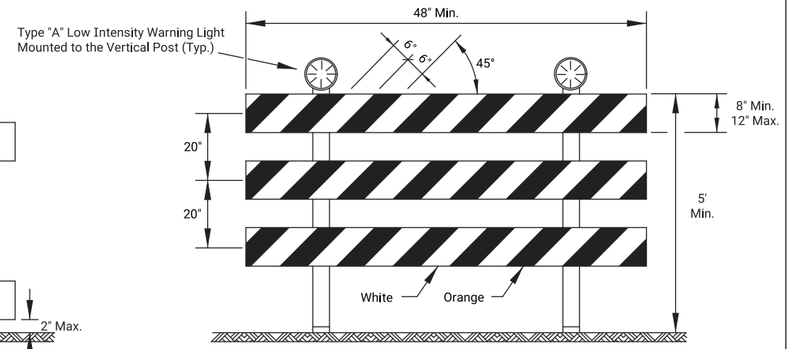


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE



DETECTABLE BARRICADE

1. Support device shall not project beyond the detection plate into the pathway.
2. Barricades shall be used to close the entire width of the pathway.
3. Do not use warning lights on pedestrian barricades.
4. Do not use warning lights on audible devices.



TYPE 3 BARRICADE WITH LIGHTS

Approved signs mounted on Type 3 barricades should not cover more than 50% of the top two rails or 33% of the total area of the three rails.

When barricades are placed end-to-end or staggered, a Type "A" low intensity warning light shall be mounted to the vertical post near each outside corner of the end barricades.

ROAD CLOSED GENERAL NOTES

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

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be longitudinally staggered to maintain the appearance of a closed roadway. A second line of end-to-end Type 3 barricades shall be placed just beyond the last access point in the work zone, to completely close the roadway.

The R11-4 (ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is less than 1 mile.

The R11-3a (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is 1 mile or greater.

The words "BRIDGE OUT" (or BRIDGE CLOSED) may be substituted for the words "ROAD CLOSED" on the R11-3a or R11-4 sign where applicable.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL CLOSURES

TE704

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	78	103

SIGN LAYOUT INFORMATION

KG20-2

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

KG20-5

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

KM4-20

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

W7-3a

Mileage to be Determined by the Engineer.

W8-15

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

W8-7

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

W8-15p

Std. Size Expwy/Freeway
30"x 24"

W8-17

Std. Size Expwy/Freeway
48"x 48"

W8-11

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

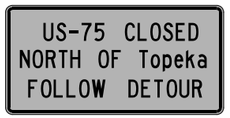
W8-17P
(Optional)

Std. Size Expwy/Freeway
30"x 24"

SP-01
(Special Sign)

Std. Size
6" C

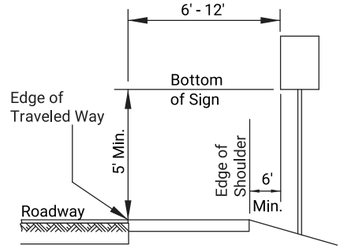
Expwy/Freeway
10" D



SP-02
(Special Sign)

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

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

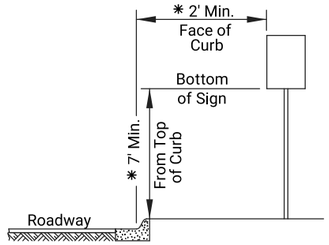


RURAL

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

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

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



URBAN

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

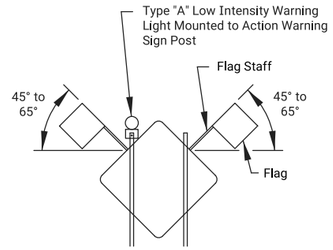
2) Neither portable nor permanent sign supports should be located on sidewalks or areas designated for pedestrian or bicycle traffic.

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

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

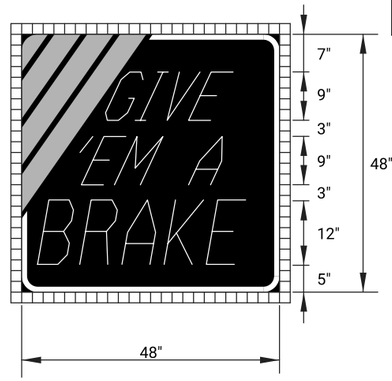
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7' above the ground.

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



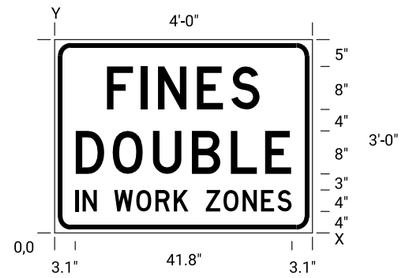
When the sign width is equal to or greater than 9', three or more wood posts may be used with a minimum of 4' between the centerline of each post. All signs less than 9' in width shall use a maximum of two wood posts.

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



KI-104a

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



KI-105a

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

Dimensions in inches — Spacings are to start of next letter

Y FONT	LETTER SPACINGS															HT LEN
23.0 D	X	F	I	N	E	S	X									8.0
	9.7	6.4	3.2	7.3	6.4	5.4	9.7									28.6
11.0 D	X	D	O	U	B	L	E	X								8.0
	3.9	6.9	7.5	7.3	7.3	6.4	4.9	3.9								40.3
4.0 D	X	I	N	X	W	O	R	K	X	Z	O	N	E	S	X	4.0
	3.1	1.6	2.7	3.2	4.3	3.8	3.6	2.8	3.2	3.4	3.8	3.6	3.2	2.7	3.1	41.8

Notes:

Typically, there are two sets of informational signs installed per project: one for each direction of traffic.

Install signs a minimum of 500' in advance of the road work ahead sign. The engineer may designate a more appropriate location if conditions dictate.

The informational signs are not to interfere with the traffic control signs for the project.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

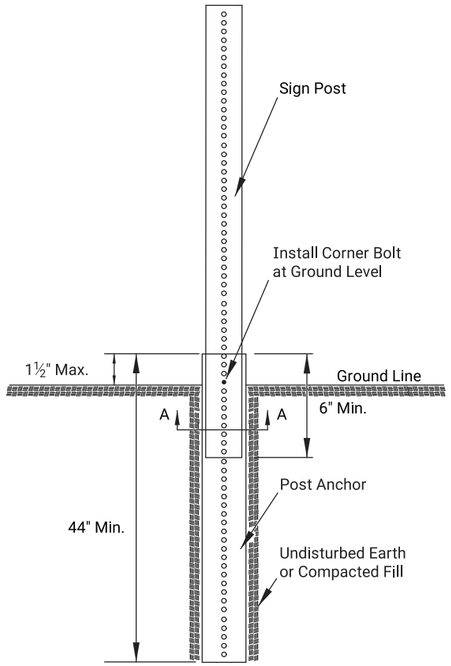
TRAFFIC CONTROL SIGN INFORMATION

TE710

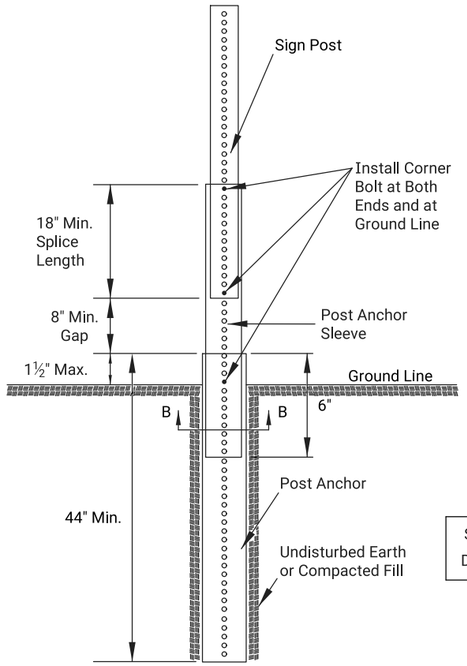
FHWA APPROVAL		06-01-15	APP'D.	Kristina Ericksen	
DESIGNED	R.W.B.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN.CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	79	103

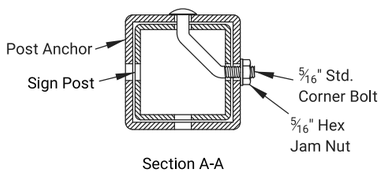
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



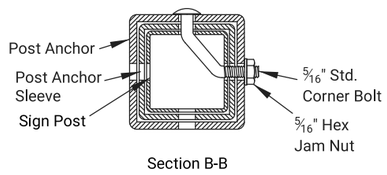
P.S.S.T. Detail



Telescoping P.S.S.T. Detail



Section A-A

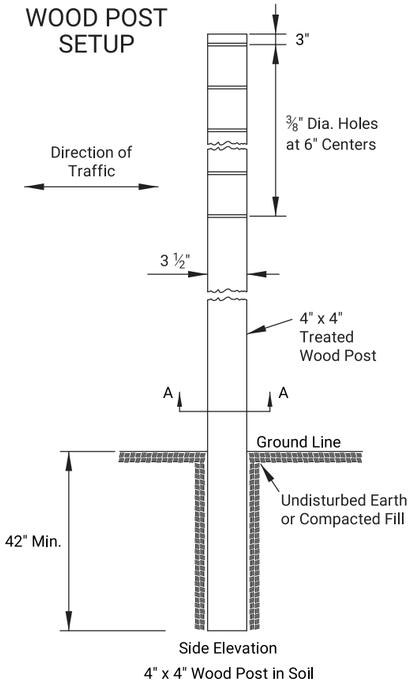


Section B-B

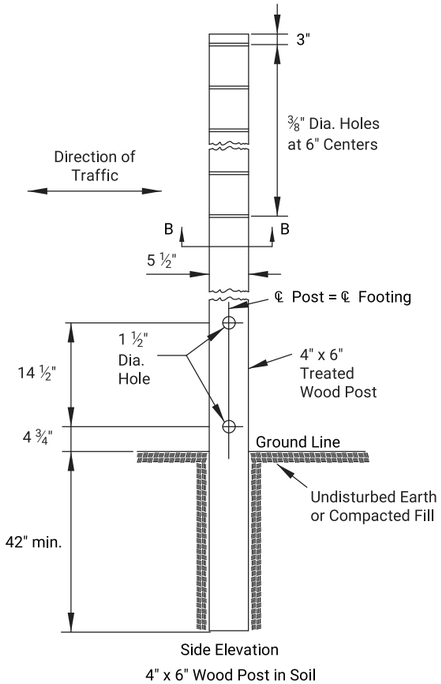
Details for 2", 2 ¼", or 2 ½" sign posts

Place bolts in the same corner along each sign post.

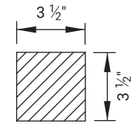
WOOD POST SETUP



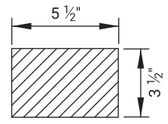
Side Elevation
4" x 4" Wood Post in Soil



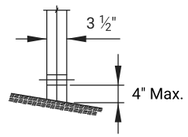
Side Elevation
4" x 6" Wood Post in Soil



Section A-A



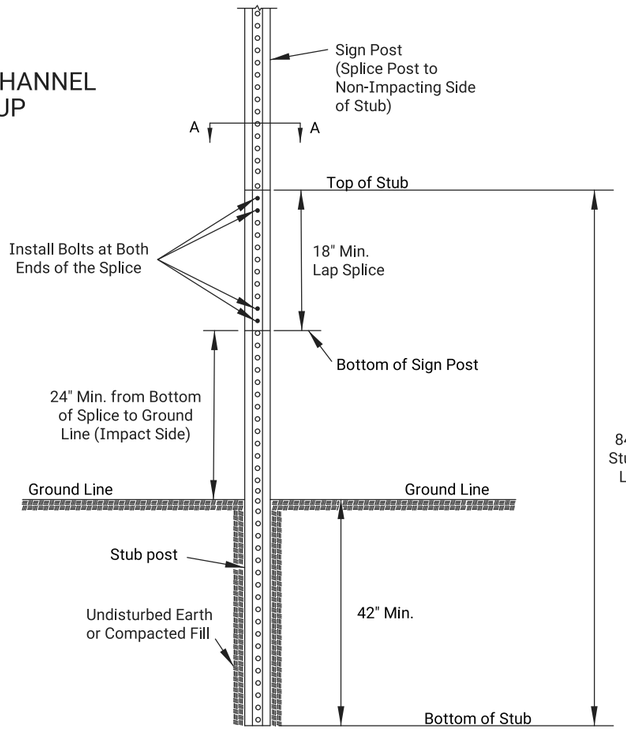
Section B-B



Front Elevation

See TE710 for Additional Details and Requirements

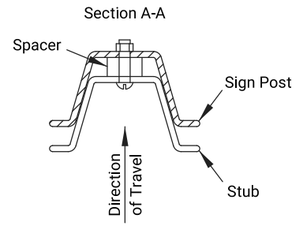
3 LB/F U-CHANNEL SETUP



Notes:

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

Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.



NO.	DATE	REVISIONS	BY	APP'D

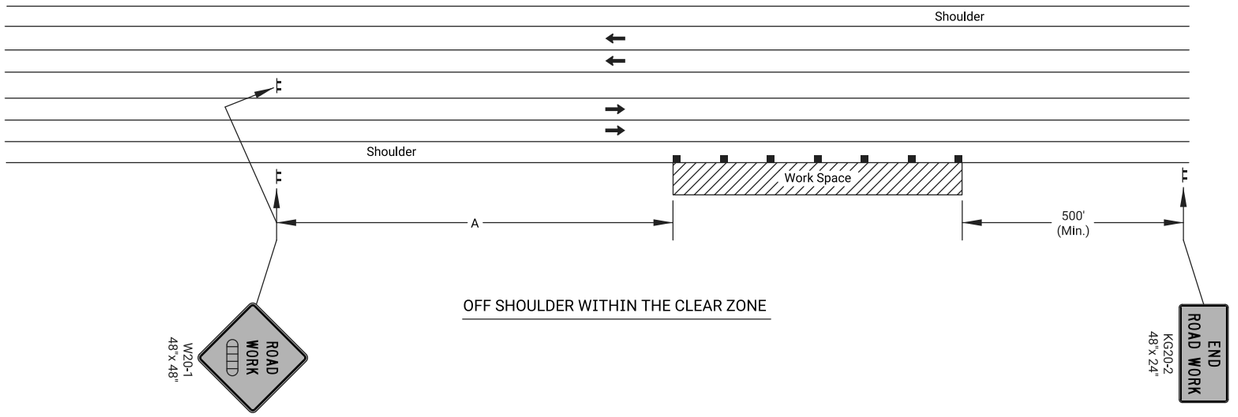
KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN POSTS

TE712

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	80	103



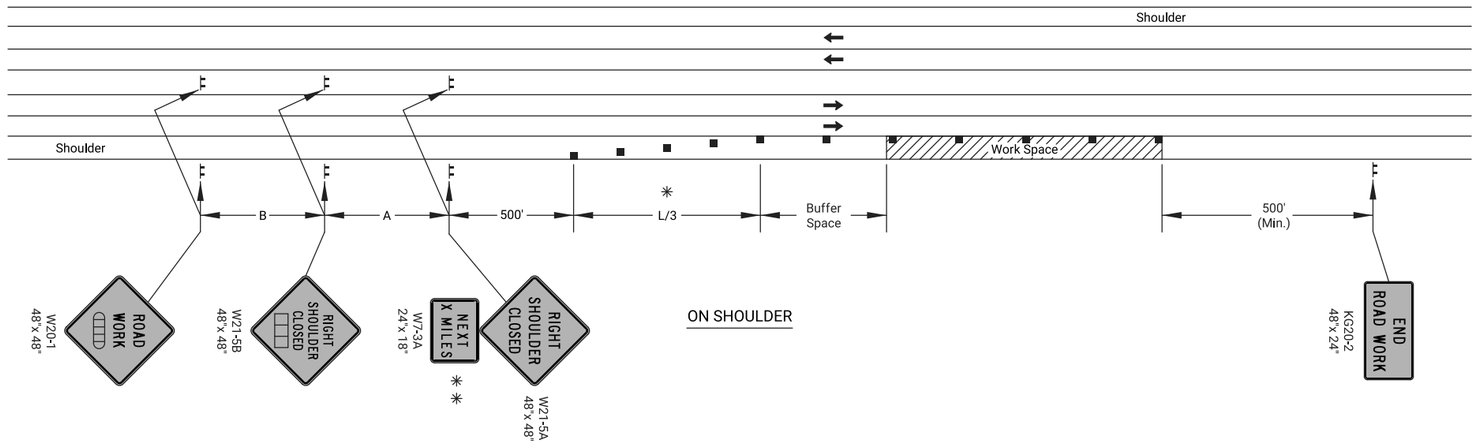
OFF SHOULDER WITHIN THE CLEAR ZONE

Notes:

For work in the median, install signs and channelizing devices for each direction of traffic according to the applicable typical drawing.

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 a high-intensity rotating, flashing, oscillating, or strobe light is used.



ON SHOULDER

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

✳✳ Eliminate W7-3a if shoulder is closed for less than 2 miles.

X Length to the Nearest Whole Mile
■ Channelizing Device
Ahead, 1500 ft, or 1 Mile
Ahead, 1000 ft, 1500 ft or ½ Mile

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

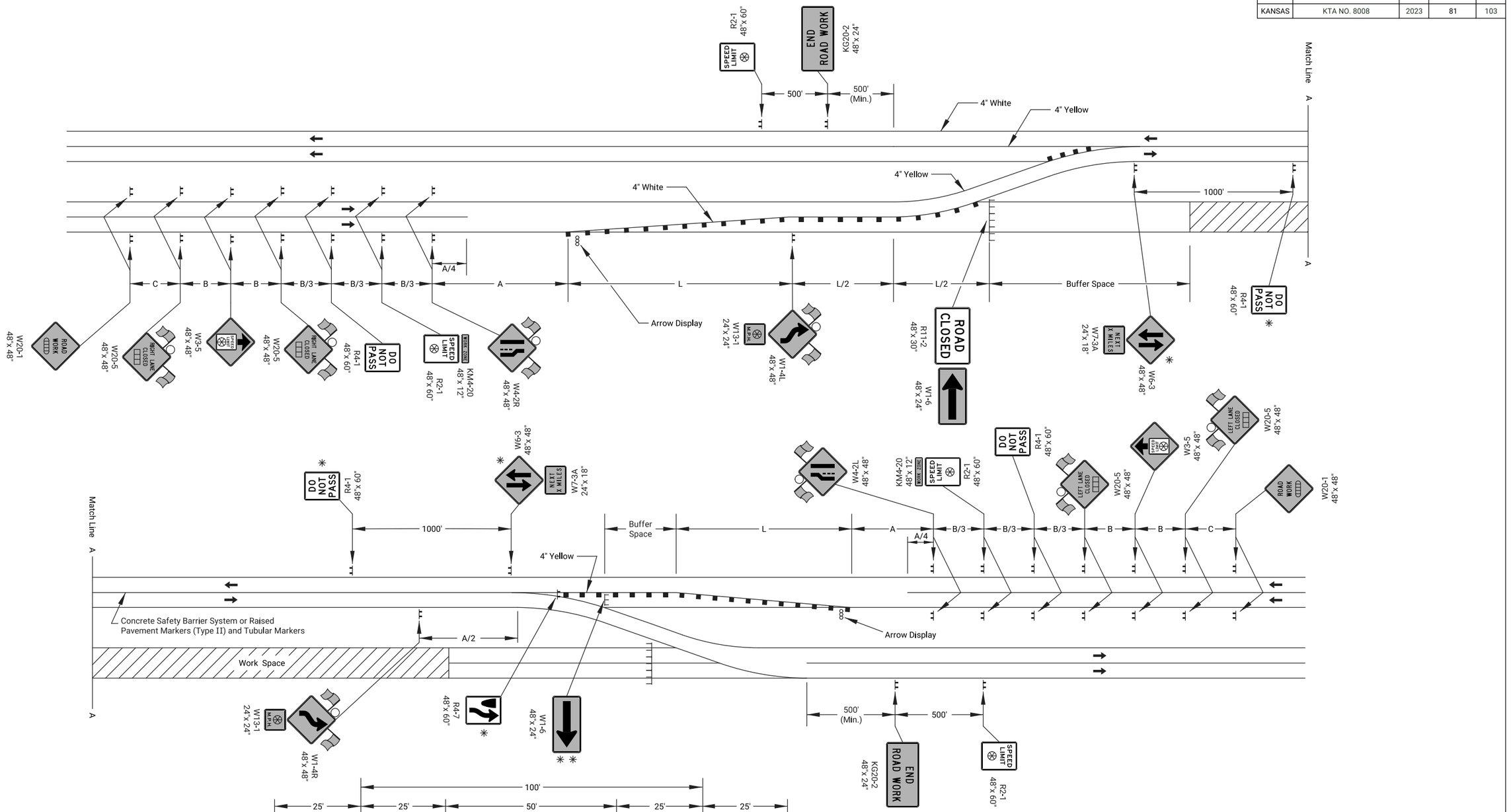
TRAFFIC CONTROL SHOULDER WORK DIVIDED ROADWAY

TE722

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

Sh. No. 80

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	81	103



- Type 3 Barricades
- X Length to the Nearest Whole Mile
- ■ Channelizing Device
- Ahead, 1500 ft, or 1 mile
- Ahead, 1000 ft, 1500 ft, or ½ mile
- Speed to be determined by the Engineer
- ○ Type "A" Low Intensity Warning Light

Centerline treatment for two-lane, two-way traffic on normally divided roadways.
Tubular markers and temporary raised pavement markers (Type II).

The W6-3 & R4-1 sign combination may be required at additional locations along the project. The spacing between these locations shall be a maximum of 1 mile. The W7-3A sign should be mounted with the W6-3 sign at 2 mile increments on a project of 4 miles or longer.

✳ Sign to be eliminated if concrete safety barrier system is used.

✳✳ Barricade to be eliminated and sign W1-6 to be mounted on skids if concrete safety barrier system is used.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DIVIDED HIGHWAY CROSSOVER FROM LEFT LANE

TE740

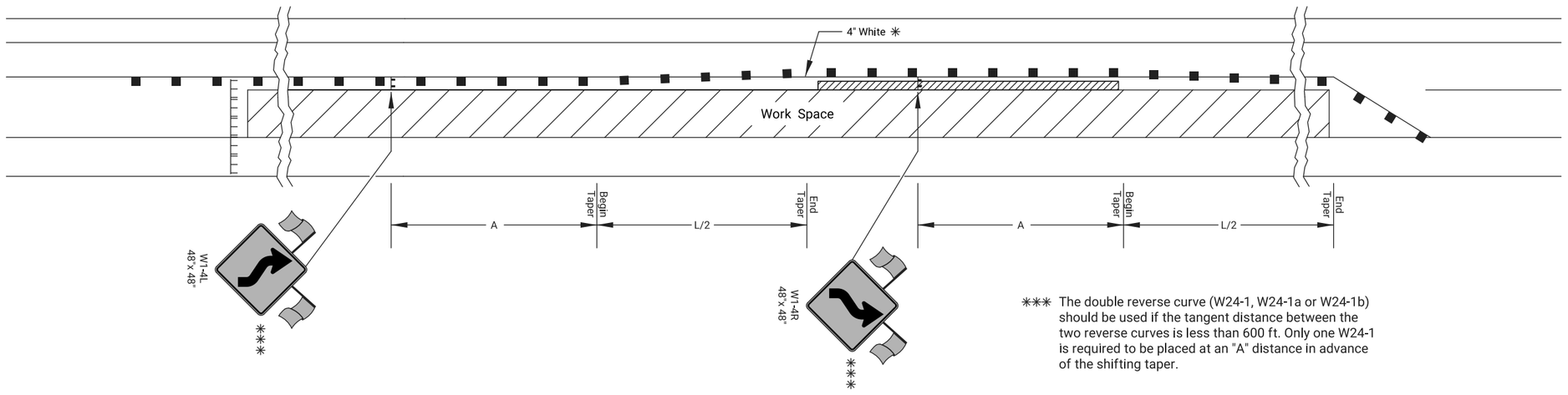
FHWA APPROVAL		06-01-15	APP'D.	Kristina Ericksen	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 17:03
File : 309026401E740.dgn

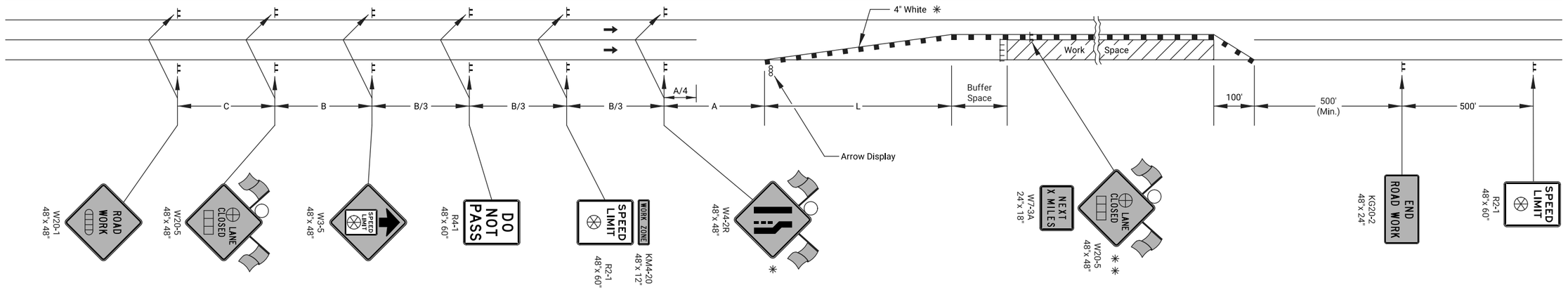
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	82	103

SHIFTING TAPER DETAIL

Add signs and devices as shown for work inside a closed lane that extends near to (or into) the open traffic lane.



✳✳✳ The double reverse curve (W24-1, W24-1a or W24-1b) should be used if the tangent distance between the two reverse curves is less than 600 ft. Only one W24-1 is required to be placed at an "A" distance in advance of the shifting taper.



- Type 3 Barricades
- X Length to the Nearest Whole Mile
- ■ Channelizing Device
- Ahead, 1500 ft, or 1 mile
- Ahead, 1000 ft, 1500 ft, or ½ mile
- ⊕ Right or Left
- ⊗ Speed to be determined by the Engineer
- ○ Type "A" Low Intensity Warning Light

✳ For left lane closures use W4-2L and yellow edge line along channelizing devices.

✳✳ The W20-5 (⊕Lane Closed) and W7-3A (Next X Miles) signs should be placed at 2 mile increments on a project of 4 miles or longer.

Left-side signs shall be omitted for a four-lane undivided highway.

One flagger should be stationed within each multi-lane roadway activity area where work is in a closed lane adjacent to traffic and not separated by a concrete safety barrier system.

NO.	DATE	REVISIONS	BY	APP'D
01	03-13-18	W24-1 usage changed to Should	R.W.B.	E.G.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL LANE CLOSURE ON MULTILANE HWY

TE744

FHWA APPROVAL		03-13-18	APP'D.	Eric Kocher	
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

Sh. No. 82

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:59
File : 30902640TE744.dgn

Revised Plans

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	83	103

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

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

Temporary Pavement Marking					
	Item	Unit	Phase		Total
			Phase 1	Phase 2	
✳✳	4" Solid White (Type I)	Lin. Ft.	8146	6646	14792
✳✳	4" Solid Yellow (Type I)	Lin. Ft.	2954	2954	5908
✳✳	4" Solid Double Yellow (Type I)	Lin. Ft.	9710	9710	19420
	Temp. Raised Pvmt. Marker (Type II)	Each	86	86	172

✳✳ Paid for as Pavement Marking (Temporary) 4" Solid (Type I)

1 General Note:
For the 2024 construction season, coordinate traffic control for NB approach and lane closure with KTA Contract 8011 Bridge Raising at MM 4. This may be accomplished by omitting, covering and/or removing approach signing for the northbound closure and continuing the NB lane closure from MM 4 thru this project. Omit/remove/cover SB End Road Work sign as appropriate during this same time period.

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

✳ Quantity most used on the project at any one time

Work Zone Signs ✳			
Sign No.	Size - Sq.Ft.		
	0-9.25	9.26-16.25	16.26 & Over
W20-7		2	
KG20-2	2		
KM4-20	4		
R2-1			6
R4-1			6
R4-7			1
R11-2		1	
W1-4L		1	
W1-4R		1	
W1-6	2		
W3-5		4	
W4-2L		2	
W4-2R		2	
W6-3		2	
W7-3A	2		
W13-1	2		
W20-1		4	
W20-5		8	
W21-5A		1	
W21-5B		1	

Barricades ✳		Channelizing Devices ✳		
Type 3 (4' to 12')	Pedestrian	Fixed	Portable	Pedestrian
9		43	115	

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	32
Work Zone Warning Light (Red Type "B" High Intensity)	
Arrow Display	2
Portable Changeable Message Sign	2

Recapitulation of Quantities		
Item	Quantity	Unit
Work Zone Signs (0 to 9.25 Sq.Ft.)		Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)		Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')		Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)		Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)		Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)		Each Per Day
Arrow Display		Each Per Day
Portable Changeable Message Sign		Each Per Day
Pavement Marking (Temporary)		
4" Solid (Type I)	401	Sta./Line
4" Solid (Type II)		Sta./Line
4" Broken (8.0') (Type I)		Sta./Line
4" Broken (8.0') (Type II)		Sta./Line
4" Broken (3.0') (Type I)		Sta./Line
4" Broken (3.0') (Type II)		Sta./Line
4" Dotted Extension (Type I)		Sta./Line
4" Dotted Extension (Type II)		Sta./Line
Solid (Line Masking Tape)		Sta./Line
Broken (Line Masking Tape)		Sta./Line
Symbol (Type I)		Each
Symbol (Type II)		Each
Flexible Raised Pavement Marker (4" Broken (8.0'))		Sta./Line
Flexible Raised Pavement Marker (4" Broken (3.0'))		Sta./Line
Pavement Marking Removal	30,100	Lin. Ft.
Work Zone Sign (Special) (16.25 Sq. Ft. & Less)		Each
Work Zone Sign (Special) (16.26 Sq. Ft. & More)		Each
Rigid Raised Pavement Marker (Type I)		Each
Rigid Raised Pavement Marker (Type II)	172	Each
Traffic Signal Installation (Temporary)		Lump Sum
Traffic Control (Initial Set Up)		Lump Sum
Traffic Control	Lump Sum	Lump Sum
Flagger (Set Price)	1	Hour

1 12-1-23 Revised PCMS Quantity. Added Note.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
SUMMARY OF DEVICES
RECAPITULATIONS OF QUANTITIES

TE795

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

Sh. No. 83

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:58
File : 30902640TE795.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	84	103

Note to Designer: Report the quantity for temporary concrete safety barrier in linear feet.
The quantity is calculated by multiplying the number of barrier units by 12'-6".

SUMMARY OF QUANTITIES

			⊙ CONCRETE SAFETY BARRIER (TYPE F3)					
LOCATION (ROUTE)	STATION (OR STATION RANGE)	SIDE	FLARE RATE (WHERE APPLICABLE)	TEMPORARY	TEMPORARY-RELOCATE	TEMPORARY-INSTALL ONLY	UNIT	COMMENTS
I-35	2667+79.64 - 2669+91.46	Lt.	15:1	212.5'			17	Phase 1
I-35	2668+72.80 - 2669+84.62	Lt.	15:1	112.5'			9	Phase 1
I-35	2672+03.19 - 2674+15.69	Rt.			212.5'		17	Phase 2
South Crossover	2641+60.00 - 2649+00.00	℄				740.0	59	Provided by KTA for winter shutdown
North Crossover	2689+00.00 - 2696+40.00	℄				740.0	59	Provided by KTA for winter shutdown
South of Bridge Medians	2668+50.10 - 2669+90.10	℄				140.0	11	Provided by KTA for winter shutdown
North of Bridge Medians	2672+14.63 - 2673+74.63	℄				140.0	11	Provided by KTA for winter shutdown
TOTALS				325.0	212.5	1760.0		

⊙ The quantity reported does not include the $3\frac{5}{8}$" gap between 12'-6" sections of barrier. The $3\frac{5}{8}$" gap will not be included in the pay length for Concrete Safety Barrier (Type F3) (Temporary).
See the Summary of Quantities on Sheet No. XX for Recap of Temporary Concrete Safety Barrier and End Treatments.

Design Parameters	
Design Speed (mph)	Flare Rate (a:b)
70	15:1
60	14:1
55	12:1
50	11:1
45	10:1
40	8:1
30	7:1

Note: The flare rates listed here apply only to temporary concrete safety barrier installations. See temporary concrete safety barrier layouts included in the plans for variations. Typical alternate flare rates may be used as approved by the Engineer.

NO.	DATE	REVISIONS	BY	APP'D
01	02-11-15	Initial Release	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

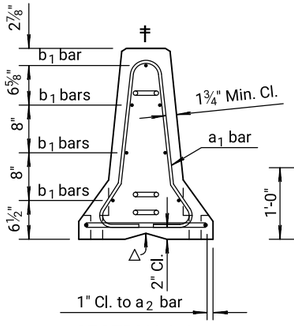
SUMMARY OF QUANTITIES
TEMPORARY CONCRETE SAFETY
BARRIER AND END TREATMENTS

RD052

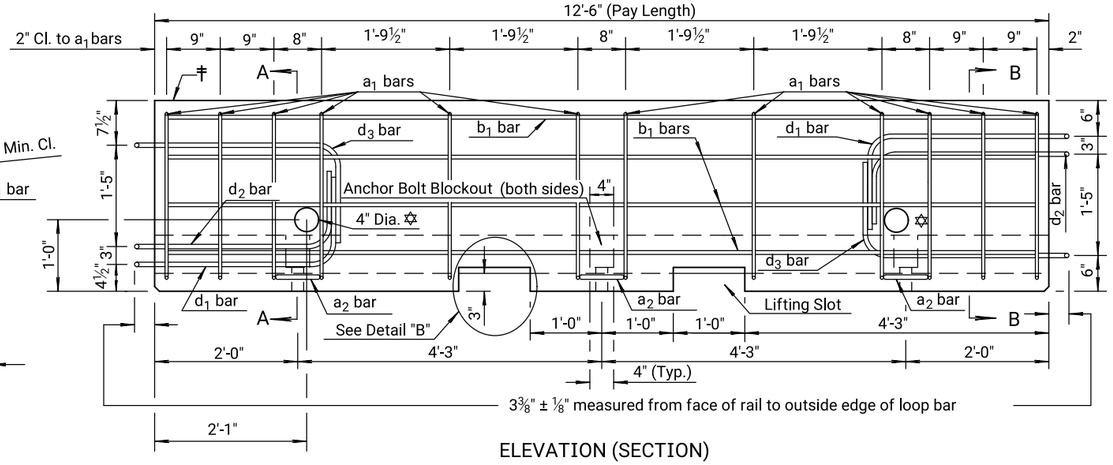
FHWA APPROVAL	09-16-15	APP'D.	James O. Brewer
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:58
File : 3090264ORD0052.dgn

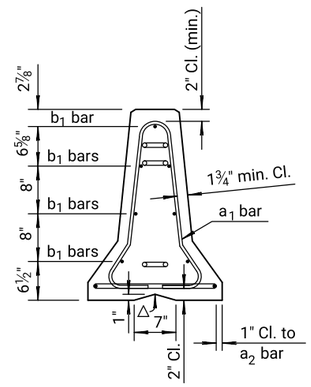
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	85	103



SECTION A-A
TYPICAL SECTION
(Stirrup Placement)

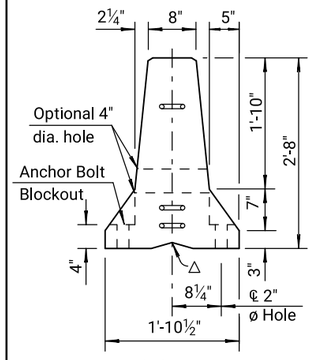


ELEVATION (SECTION)

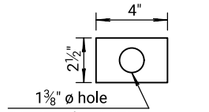


SECTION B-B
TYPICAL SECTION
(Stirrup Placement)

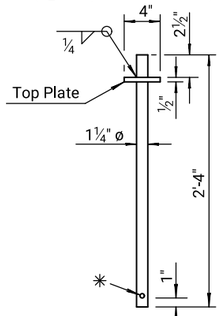
✝ Marked End
✡ 4" diameter - 11 gauge steel round mechanical tubing sleeve. These holes are optional.
△ V Notch is optional



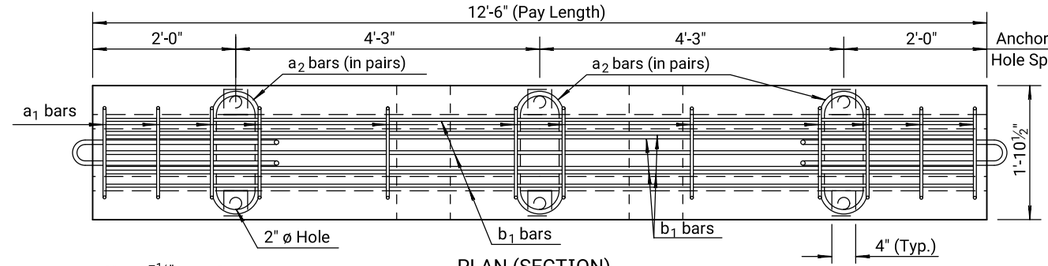
END VIEW



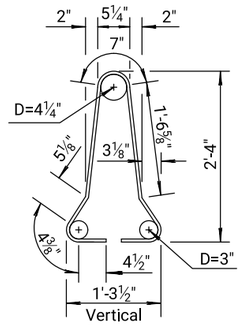
(½" Top Plate Detail)

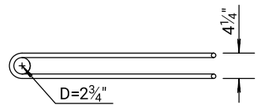


DETAIL A
CONNECTION PIN
(A36 Steel) 10.9 lbs. each
✳ ⅝" ø hole for retainer bolt. The retainer bolt & nut are installed at Contractor's option.
Note: Retainer bolt & nut required with Tie Down Strap.

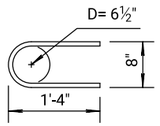


PLAN (SECTION)

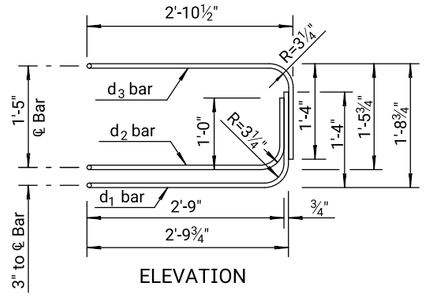




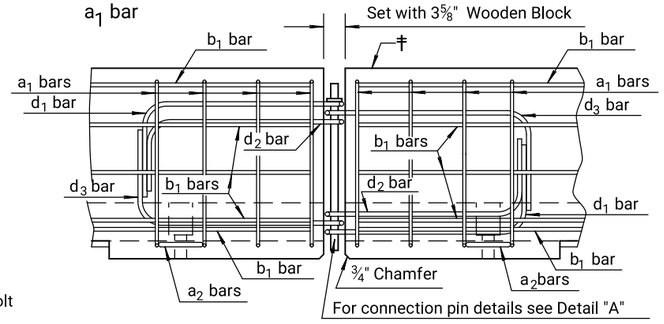
PLAN
LOOP BAR ASSEMBLY
(Marked end shown, invert for other end)
(Material as stated in General Notes)



a2 bar



ELEVATION



DETAILS OF BARRIER CONNECTION

Per 12'-6" Barrier Section

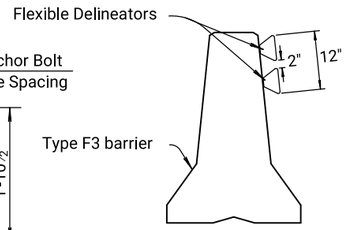
REINFORCING A615 Gr. 60

Bar	Bar Size	Shape	No. of Bars	Length Ft.	Weight Lbs.
a_1	#4		12	6'-0"	48.1
a_2	#6		6	2'-11"	26.3
b_1	#5		7	12'-2"	88.8

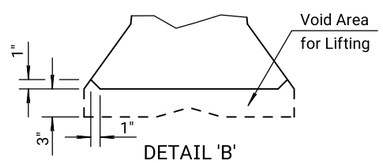
LOOP ASSEMBLY

d_1	#6		2	8'-5"	25.3
d_2	#6		2	7'-7"	22.8
d_3	#6		2	8'-6"	25.5

Concrete Quantity = 1.3 C.Y.
(Dimensions are out to out of bars unless otherwise noted.)



DELINEATOR DETAILS



DETAIL 'B'
LIFTING SLOT DETAIL
(1" Chamfer to prevent spalling)

NOTE: At no time shall the barriers be lifted, moved, etc. by use of the loop bars: d_1, d_2 or d_3.

GENERAL NOTES:

MATERIAL: Use ASTM A615, Grade 60 reinforcing bars, except for the loop bars (d_1, d_2 and d_3). The loop bars (d_1, d_2 and d_3) shall be ¾" smooth steel bars with a minimum yield of 60 ksi, a tensile strength of not less than 1.25 times the yield strength but a minimum of 80 ksi, a minimum 14% elongation in 8 inches, and passing a 180 degree bend test using a 3.5 D pin bend diameter. The loops shall be installed within ⅛" of the plan dimensions.

Use air-entrained concrete with f'c = 5,000 p.s.i.

SECTION: The section furnished must generally comply with dimensions shown. Requests for minor variations in section geometry and attachments may be submitted to the Engineer for approval.

LIFTING SLOTS: Lifting slots shall be constructed where specified on the plans to facilitate the drainage of water after installation on the roadway.

TEMPORARY CONCRETE SAFETY BARRIER: Furnishing and placing of all materials when required and all labor and equipment required to position the temporary barrier shall be included in the Contract unit price bid for "Concrete Safety Barrier (Type F3)(Temporary)". Any relocation of the barrier required for the project shall be paid in accordance with the Special Provisions under the bid item "Concrete Safety Barrier (Type F3) (Temporary-Relocate)". Unless otherwise noted on the Plans, the Temporary Concrete Safety Barrier shall become the property of the Contractor and shall be removed from the site upon acceptance of the completed project.

Approximate weight of one unit equals 2.7 tons.

PLACEMENT: Barrier shall be placed on a paved surface. All loose dirt and sand shall be removed from the roadway surface just prior to placement of the barrier.

After the barrier is placed and the connection pin is inserted, tension or pull the barrier such that the installation is taut and the connection pin cannot freely move vertically. If the connection pin or loop bar assembly are damaged during the tensioning process, it is the responsibility of the Contractor to repair the damaged area or replace the temporary barrier section.

MARKING: The left end (✝) of each barrier shall be permanently marked by stamping or forming into the barrier the following information:

- Type F3
- Manufacturer code (as specified by KDOT Bureau of Const. & Maint.)
- Date manufactured (month and year)

DELINEATION: Delineators shall be spaced on 50' centers, except through curves where they shall be spaced on 25' centers. See Standard Drawing RD610 for additional details.

The delineation shall be mounted on the side of the Temporary Concrete Safety Barrier with two delineators at each location. Each delineator shall have a minimum height-to-width ratio of 1.75, and a minimum reflective surface area of 7 sq. in.. The delineators shall be affixed to the Temporary Concrete Safety Barrier as recommended by the manufacturer.

Delineators shall be attached to bridge rail or other structures in construction zones when roadway is narrowed and traffic is adjacent to the structure. The method and location of placement shall be similar to permanent barrier delineation.

When traffic flow is in one direction, the delineators shall be yellow when used on the left, white when used on the right. When traffic flow is in both directions delineators shall be placed back-to-back, and shall correspond to the color of the edge line.

The work and materials required for the installation of delineators as mentioned shall be subsidiary to the bid item "Concrete Safety Barrier (Type F3) (Temporary).

If necessary, include Standard Drawing RD622A for Taper Section, Standard drawing RD622B for anchor and tie down details, Standard Drawing RD622C for Bridges with thermal expansion of 1½" or greater and Standard Drawing RD622D for Barrier Layouts.

The Contractor shall be responsible for maintaining a clear area, shown as dimension "A" on Standard Drawing RD622B. The clear area is located behind the Temporary Concrete Safety Barrier and shall be kept free of any equipment, material stockpiles or other obstacles. For non-anchored roadway applications, dimension "A" shall be a minimum of 2'-0".

NO.	DATE	REVISIONS	BY	APP'D
07	09-11-17	Revised Markers	A.L.R.	S.W.K.
06	07-17-17	Revised General Note	A.L.R.	S.W.K.
05	08-27-15	Added Note, Pay Length	K.E.K.	S.W.K.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3

RD622

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

Sh. No. 85

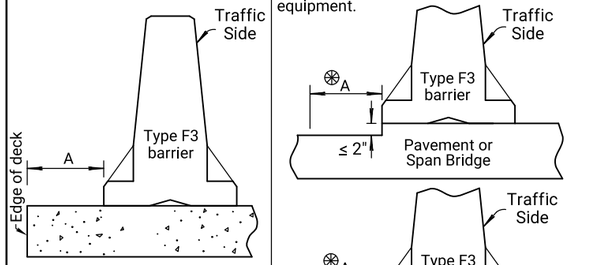
Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:57
File : 30902640RD622.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	86	103

GENERAL NOTES:
INSTALLATION: Holes into the pavement to anchor the concrete safety barrier may be drilled after positioning barrier. When anchoring with 3 bolts on traffic side, install barrier with through anchor bolt where possible, use grouted anchor bolts where through bolt can't be used. Do not drill into or otherwise damage support beams, girders, or expansion joints. All work & materials required for the installation of the anchors are subsidiary to the bid item "Concrete Safety Barrier".
UTILITIES & STRUCTURES (Stakes): Verify buried utilities & structures within stake depth. If conflicts between stake & buried elements exist, up to 2 stakes maximum in a single barrier may be omitted if adjacent barriers have 3 stakes each.

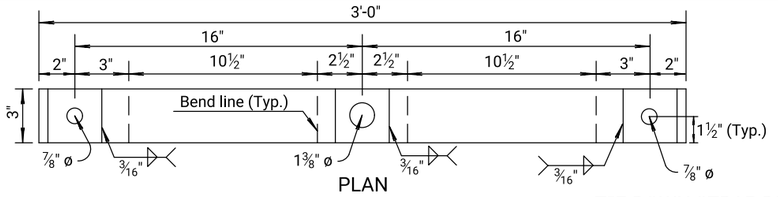
ANCHORAGE: Use galvanized grouted anchor bolts, through anchor bolts, nuts & washers that meet standard specifications. Install 3 anchor bolts or asphalt pins per barrier on the traffic side except on transition barrier as shown.
BARRIER REMOVAL: Completely remove all anchor systems. Remove grouted or drop-in anchor system by drilling the anchor with a core barrel 2x the diameter of the insert. Core to a depth equal to the installed depth & remove the core, prepare the hole by removing dust & debris. Fill hole with material that meets KDOT Pre-qualified "Non-shrink grouts for grouting anchor bolts & reinforcing into previously poured concrete". Follow the manufacturer's procedures for mixing, hole preparation & curing. To fill through bolt anchor or screw-in anchor system, remove & completely fill the hole using instructions for drop-in anchors except no coring is required.
For removed or relocated barrier on flexible pavement, fill stake holes completely with hot or cold asphalt patch material. Work & materials required to remove & patch anchor holes are subsidiary to the bid item "Concrete Safety Barrier".
TEMPORARY BARRIERS: Temporary Barriers shown in the details of this drawing are not allowed for permanent installations.
See KDOT Standard Drawing "Temporary Concrete Safety Barrier Type F3 Transition Layouts" for transition details between anchored & free-standing barriers. See KDOT Standard Drawing "Temporary Concrete Safety Barrier Type F3" for details & quantities not shown on this sheet.
SIGNING: For sign spacing, traffic control device details & reference notes, see Index of Sheets.

A ≥ 4'	A ≥ 2'
Span Bridge	⊛ Box Culverts Roadways - Flexible or Rigid Pvmnt.

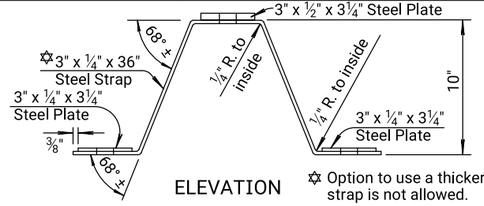


⊛Applies on span bridges when the action creates a height differential of ≤ 2". Measured from the toe of the barrier, the "A" distance should be free of obstacles and equipment.

BARRIER LOCATION NEAR HEIGHT DIFFERENTIAL



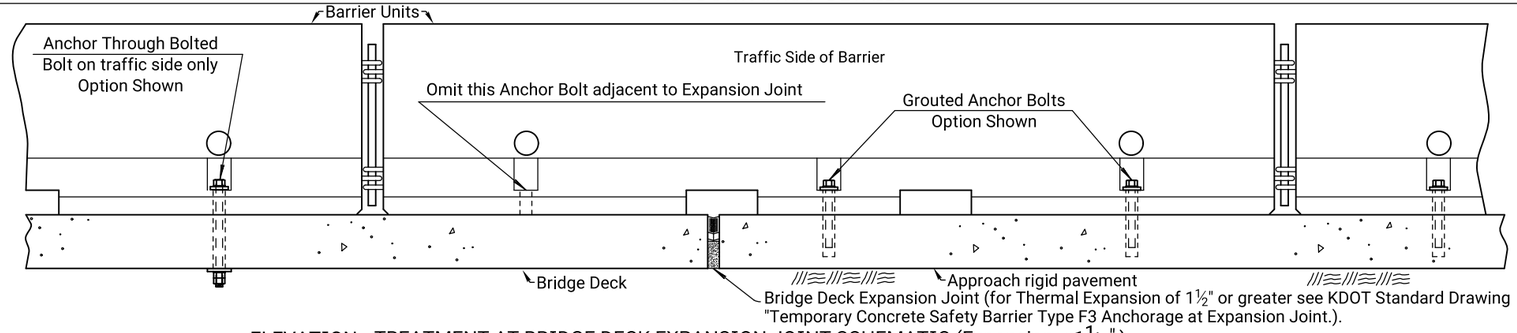
PLAN



ELEVATION

✡ Option to use a thicker steel strap is not allowed.

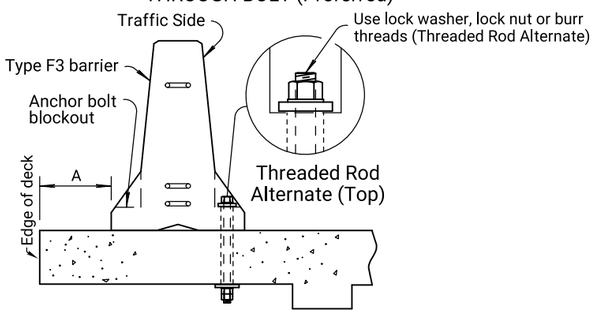
TIE-DOWN STRAP DETAILS

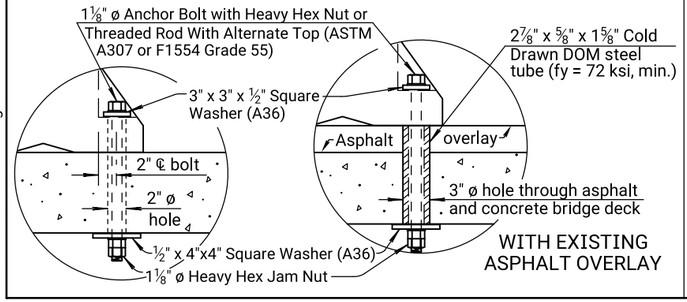


ELEVATION - TREATMENT AT BRIDGE DECK EXPANSION JOINT SCHEMATIC (Expansion < $1\frac{1}{2}$")

0' ≤ A < 2'	0' ≤ A < 2'		△ 2' ≤ A < 4'	6" ≤ A < 2'	6" ≤ A < 2'
Span Bridge	Span Bridge	Box Culverts Roadways - RIGID Pavement	Span Bridge	Box Culverts Roadways - RIGID Pavement	Box Culverts (ceiling below stake depth) Roadways - FLEXIBLE Pavement

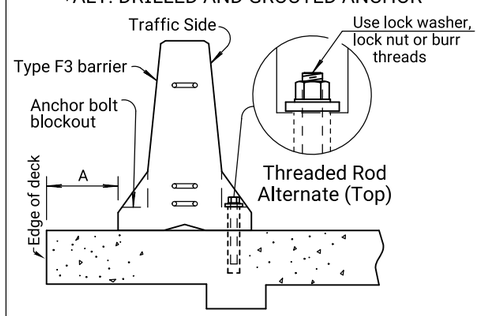
THROUGH BOLT (Preferred)



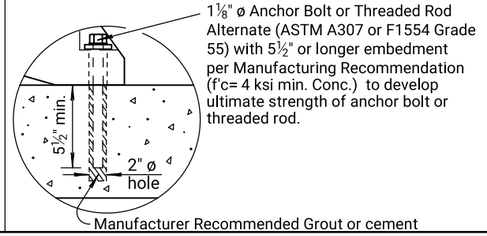


WITH EXISTING ASPHALT OVERLAY

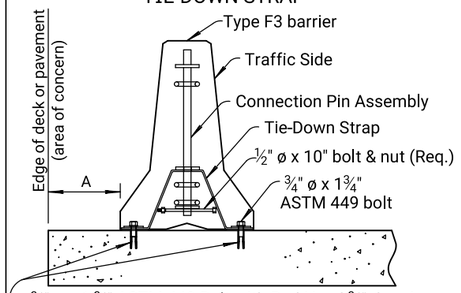
✧ALT. DRILLED AND GROUTED ANCHOR



✧Note: Alternate Drilled and Grouted Anchor installation avoids damage to the support beams, girders or expansion joint. The State Bridge Office shall approve the use of the Alternate Drilled and Grouted Anchor installation for bridge applications.

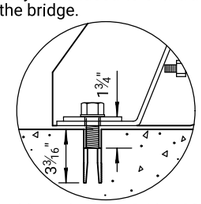


TIE-DOWN STRAP



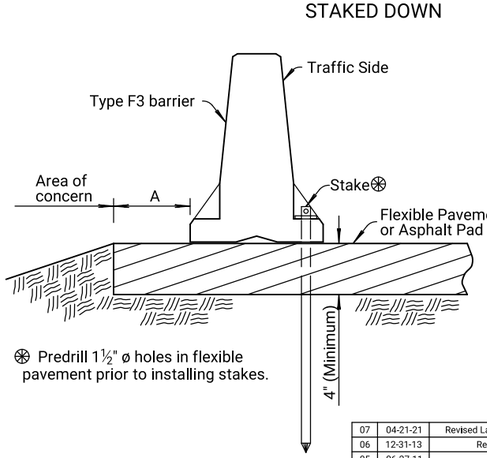
¾" ø x 1 ¾" ASTM 449 Bolt with Red Head ¾" drop in anchor, Red Head large diameter Tapcon (LDT) ¾" ø x 4 ½" long, or Simpson Titen HD ¾" ø x 5" long

△"A" distance may be reduced to 6" if traffic does not travel under the bridge.

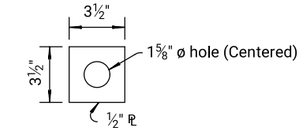


With prior approval from the State Bridge Office, anchoring the barrier with 3 bolts (Through Bolt OR Drilled & Grouted Anchor oprtions) on the traffic side may be used in lieu of tie-down straps.

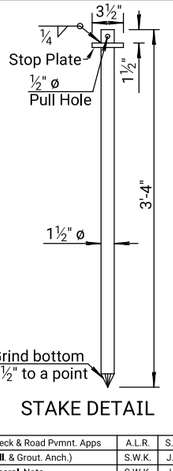
STAKED DOWN



⊛ Predrill 1½" ø holes in flexible pavement prior to installing stakes.



STOP PLATE DETAIL



STAKE DETAIL

NO.	DATE	REVISIONS	BY	APP'D
07	04-21-21	Revised Layouts for Br. Deck & Road Pvmnt. Apps	A.L.R.	S.W.K.
06	12-31-13	Rev. Note (Alt. Drill. & Grout. Anch.)	S.W.K.	J.O.B.
05	06-27-11	Revised General Note	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 ANCHORAGE

RD622B

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

Sh. No. 86

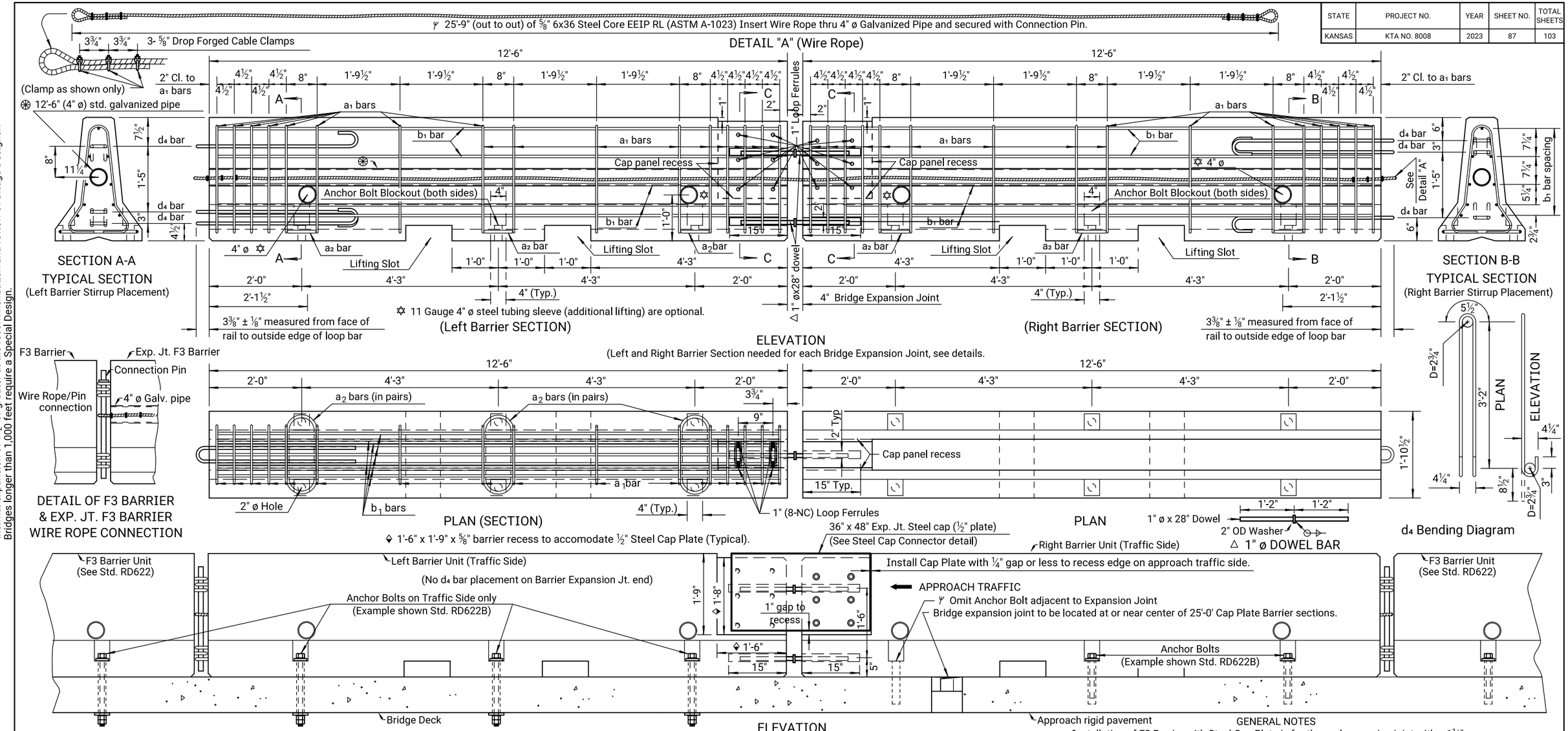
Note to Designer: For use on Haunched slab bridges, the Road Designer shall coordinate with the Bridge Designer for "corridor in the reinforcing steel layout to accommodate barrier anchoring."
Road Designer shall coordinate barrier layout with Bridge Designer to accomodate for expansion during construction.

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 17:40
File : 3090640RD622B.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	87	103

Note to Designer: This F3 Barrier Anchorage at Expansion Joint is only for use on bridges with thermal expansion of 1½" or greater at the recommendation and review of Bridge Designer. Bridges longer than 1,000 feet require a Special Design.

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:56
File : 30902640RD622C.dgn

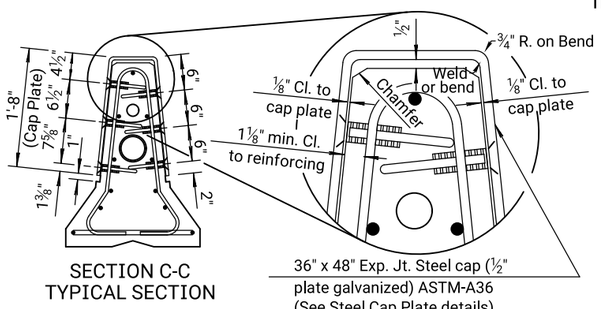


Per 12'-6" Barrier Section

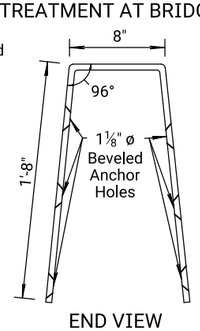
REINFORCING A615 Gr. 60

Bar	Bar Size	Shape	No.of Bars	Length Ft.	Weight Lbs.
a1	#4		16	6'-0"	64.1
a2	#6		6	2'-11"	26.3
b1	#5		9	12'-2"	114.2
LOOP ASSEMBLY					
d4	#6		3	8'-2"	36.8
½" Structural Steel Cap Plate					201.3

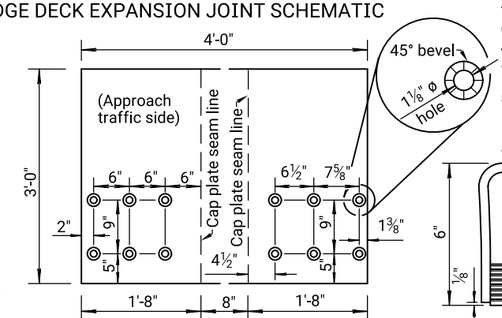
Concrete Quantity = 1.3 C.Y.
(Dimensions are out to out of bars unless otherwise noted.)
Reinf., Struct. and Concrete quantities are for "Information Only".



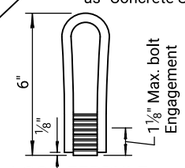
SECTION C-C
TYPICAL SECTION



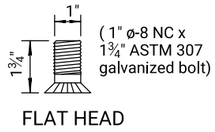
END VIEW
STEEL CAP PLATE



PLAN (STEEL CAP PLATE)



LOOP FERRULE
(1" Galvanized)



FLAT HEAD SOCKET CAP SCREW-Coarse

GENERAL NOTES

Installation of F3 Barrier with Steel Cap Plate is for thermal expansion joint with ≥ 1½". This two barrier system (25'-0") is reversible to match with regular F3 Barrier layout. The Cap Plate sections are installed with no greater than 4" gap and pinned as shown in Expansion Jt. schematic. Install Cap Plate flush to recess on Traffic Approach side and bolt in place front and back of barrier with attachment types shown.

See Standard Drawing RD622 for reinforcing bending diagrams and additional details not shown on this sheet.

The State Bridge Office will review shop details before fabrication begins.

All materials, labor and equiptment needed for (Type F3) (25' Expansion Joint Unit) shall be bid as "Concrete Safety Barrier (Type F3) (Temporary)".

NO.	DATE	REVISIONS	BY	APP'D
03	07-26-07	Chg. flat head screw & ferrul to 1" ø	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

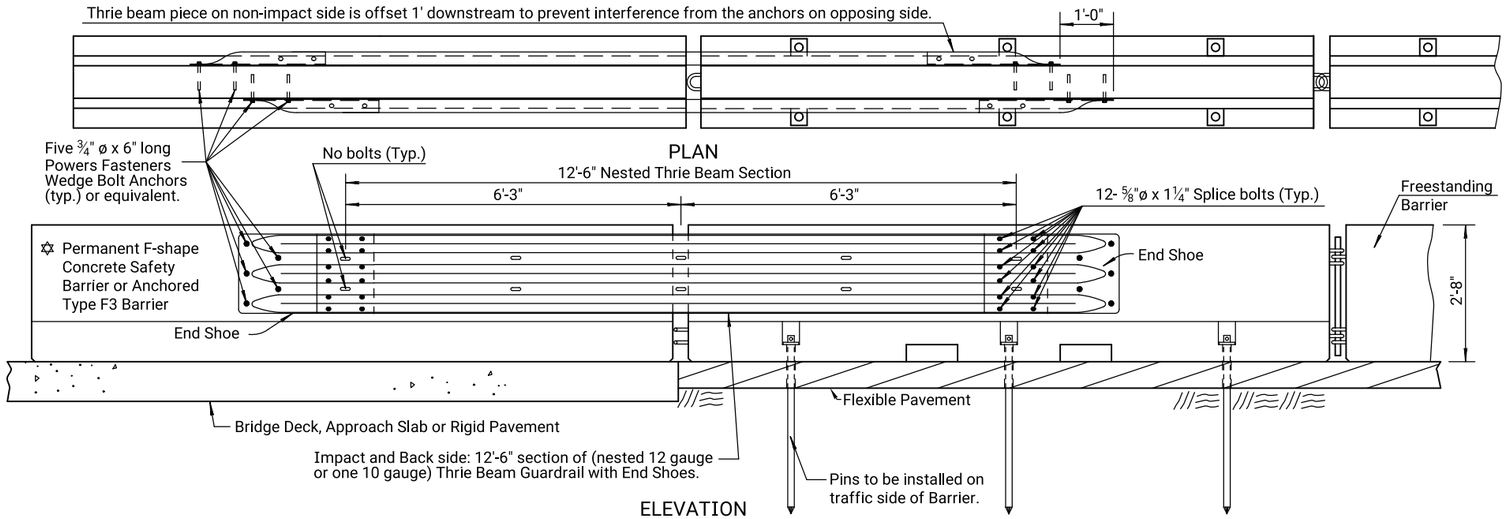
TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 ANCHORAGE at EXPANSION JT.

RD622C

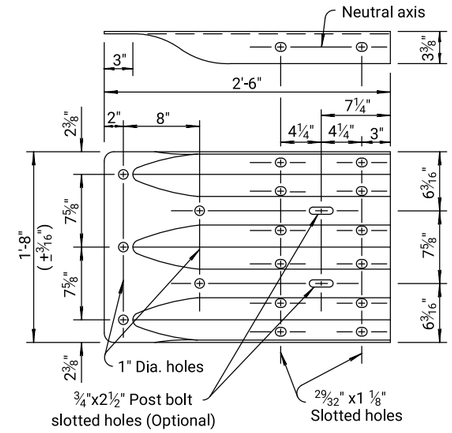
FHWA APPROVAL		10-05-07	APP'D.	James O. Brewer
DESIGNED	DETAILED		QUANTITIES	TRACED B.N.B.
DESIGN CK.	DETAIL CK.		QUAN.CK.	TRACE CK. S.W.K.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	88	103

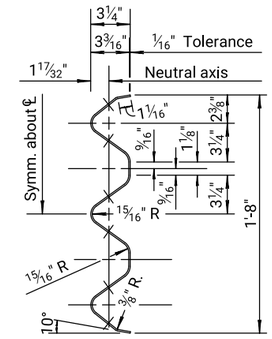
GENERAL NOTES:
The work and materials required for the installation & removal of the guardrail connection and barrier anchors as shown on this sheet shall be subsidiary to the "Concrete Safety Barrier" bid item.



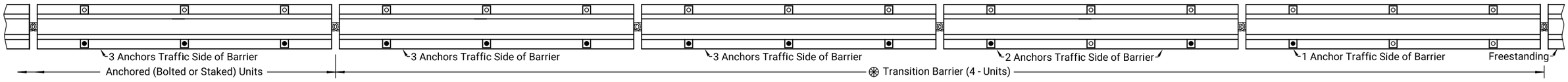
✡GUARDRAIL CONNECTION–ANCHORED/RIGID BARRIER TO FREESTANDING BARRIER



TERMINAL CONNECTOR

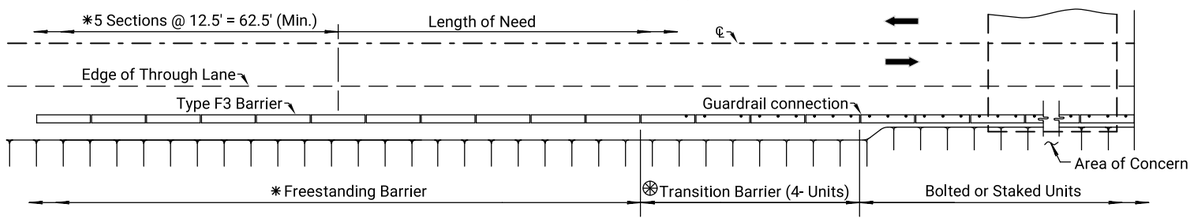


THRU RAIL ELEMENT
TYPICAL THRIE BEAM

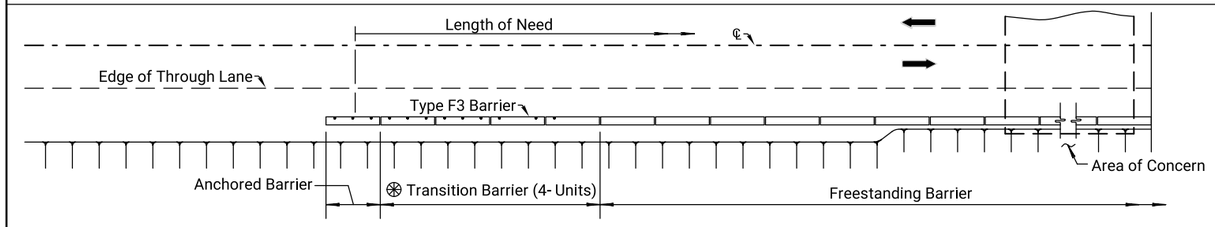


PLAN - TRANSITION BARRIER ✡

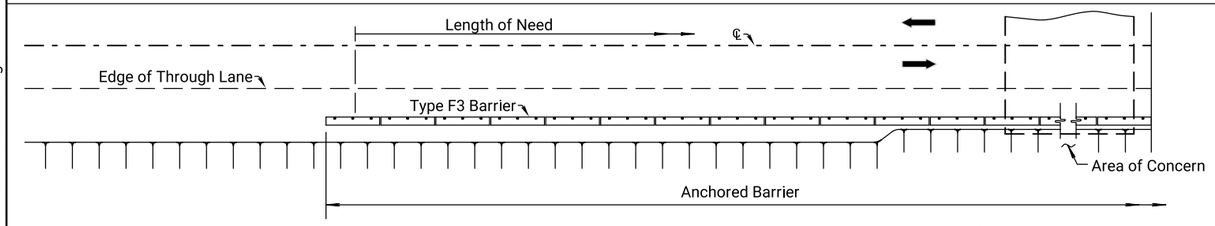
LENGTH OF NEED (LON)



LENGTH OF NEED WITH FREESTANDING TYPE F-3 CONCRETE BARRIER ENDING

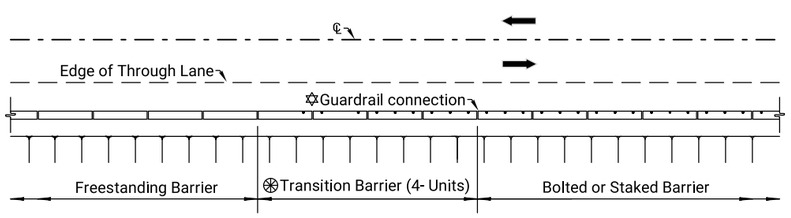


REDUCED LENGTH OF NEED WITH ALTERNATE END ANCHORAGE (FREESTANDING)



REDUCED LENGTH OF NEED WITH ALTERNATE END ANCHORAGE (ANCHORED)

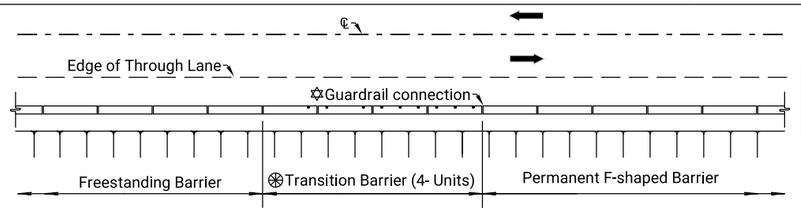
TRANSITION LAYOUTS



TRANSITION "From/To"	✡	✡
Transition from a Freestanding Barrier to a Type F3 Barrier anchored to a rigid pavement with bolted connection or bolted to a bridge deck.	YES	YES
Transition from a Freestanding Barrier to a Type F3 Barrier pinned/staked to asphalt pavement.	NO	YES

✡ Guardrail Connection ✡ Transition Barrier

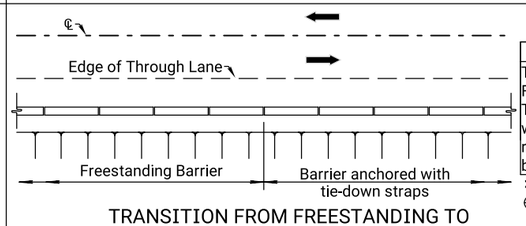
TRANSITION FROM FREESTANDING TO AN ANCHORED (BOLTED OR STAKED) TYPE F-3 BARRIER



TRANSITION "From/To"	✡	✡
Transition from a Freestanding Barrier to a Permanent F-Shape Barrier.	YES	YES

✡ Guardrail Connection ✡ Transition Barrier

TRANSITION FROM FREESTANDING TO PERMANENT F-SHAPED BARRIER



TRANSITION "From/To"	✡	✡
Transition from a Freestanding Barrier to a Type F3 Barrier anchored with tie-down straps on a rigid pavement or a bridge deck.	NO	NO

✡ Guardrail Connection ✡ Transition Barrier

TRANSITION FROM FREESTANDING TO TYPE F3 BARRIER ANCHORED WITH STRAPS

NO.	DATE	REVISIONS	BY	APP'D
02	07-19-19	Added LON & Transition Layouts	A.L.R.	T.T.R.
01	01-30-07	Rem. temp. details from perm. barrier	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE SAFETY BARRIER TYPE F3 TRANSITION LAYOUTS

RD622D

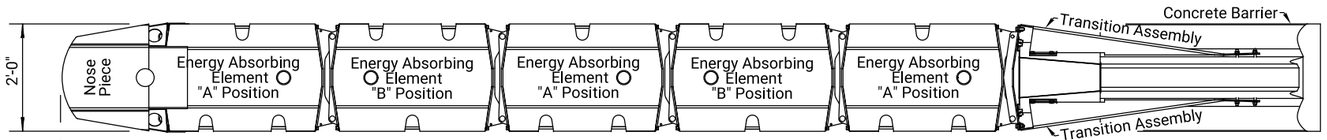
FHWA APPROVAL	08-07-19	APP'D.	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 88

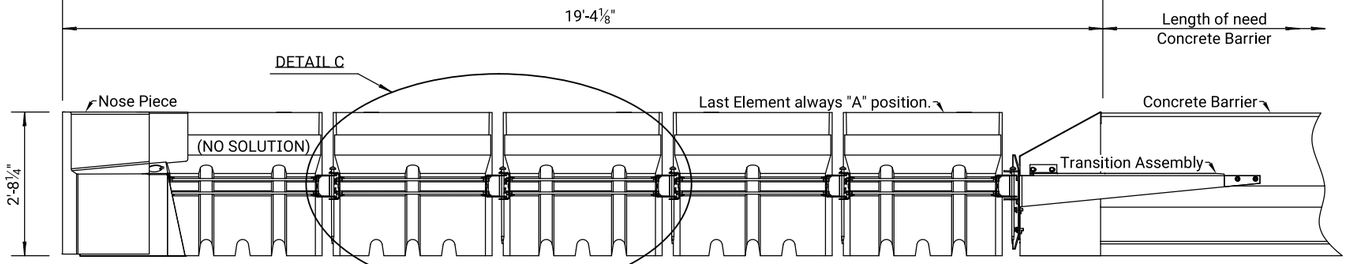
* Note to Designer: The minimum length for Freestanding Temporary Concrete Safey Barrier (TCSB) Installations is 11 sections @ 12.5' = 137.5'. In a Freestanding TCSB installation, if both ends are anchored, fewer than 11 sections of Freestanding TCSB may be used.
The 5 sections of Freestanding TCSB beyond the length of need may be reduced to 3 sections if the barrier is located on the exit end and traffic is traveling in a single direction.

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 16:59
File : 30902640RD622D.dgn

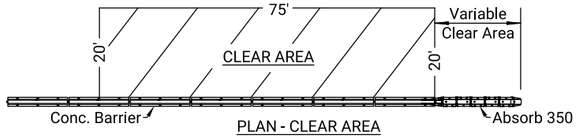
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KTA NO. 8008	2023	89	103



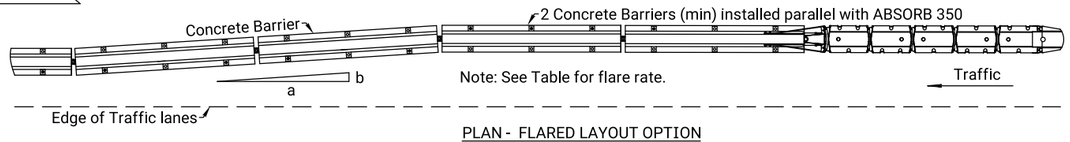
PLAN - ABSORB 350 (TL2 ≤ 45 mph)



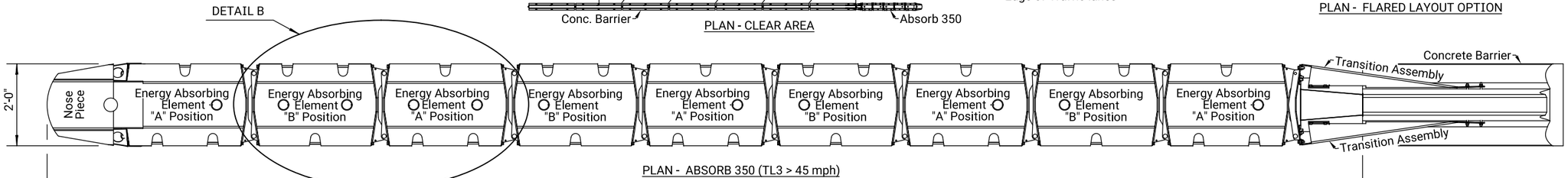
ELEVATION - ABSORB 350 (TL2 ≤ 45 mph)



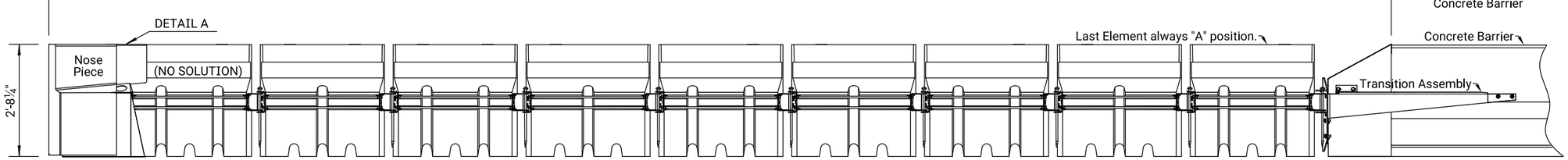
PLAN - CLEAR AREA



PLAN - FLARED LAYOUT OPTION

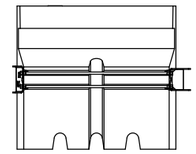


PLAN - ABSORB 350 (TL3 > 45 mph)



ELEVATION - ABSORB 350 (TL3 > 45mph)

Design Parameters	
Design Speed (mph)	Flare Rate (a:b)
70	15:1
60	14:1
55	12:1
50	11:1
45	10:1
40	8:1



ELEVATION

Replacement Module ("B" Position shown)

GENERAL NOTES

ABSORB 350 (TL2 or TL3) details shown are for "Information Only" and may not be an exact detail of ABSORB 350. See Engineer's copy of ABSORB 350 (TL2 or TL3) Installation Manual for component details, installation procedure and maintenance.

ABSORB 350 (TL2 or TL3) installation in Kansas requires an antifreeze solution regardless of the time of year. Use an antifreeze solution of Calcium Chloride (CaCl2) 25% by weight, Calcium Magnesium Acetate (CMA) 32% by weight or Potassium Acetate (KAc) 32% by weight. Fill elements within 2" of the top with anti-freeze solution, inspect elements regularly to insure adequate fill levels.

Do not fill FIRST ELEMENT behind the NOSE PIECE with solution but leave empty.

Transport, reused or dispose of antifreeze solution properly when emptying Absorb 350 elements.

The ABSORB 350 can connect to permanent or temporary F-Shape Barrier. Units shown this sheet abuts barrier up to 24" wide with a Transition Assembly.

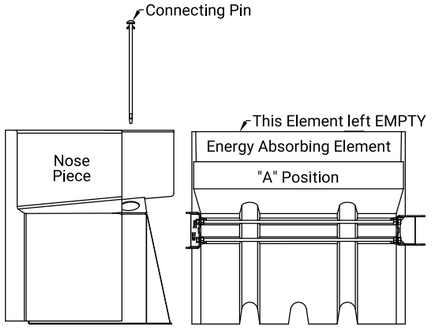
Install ABSORB 350 Impact Attenuator on a paved surface with a cross slope of 8% or less.

Maintain a clear area free of obstructions behind ABSORB 350 Terminal Assembly. Keep an additional Clear Area 20' parallel from the back of barrier for a distance of 75' behind ABSORB 350 Terminal Assembly.

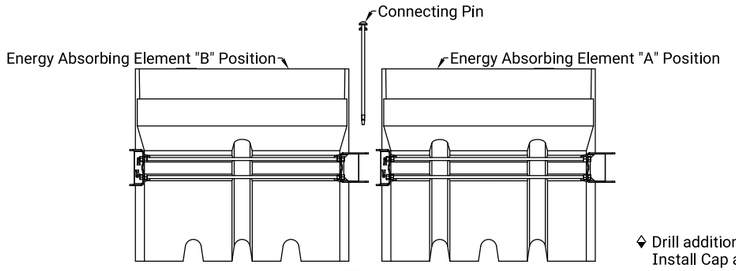
Do not install Absorb 350 Impact Attenuator in Narrow Medians, on Elevated Structures or where Clear Area can't be achieved.

All work and material required for installation of this Impact Attenuator to be paid under the bid item "Impact Attenuator (Temporary)".

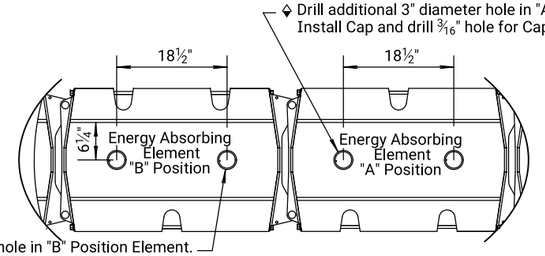
♦ Additional holes required on some higher speed configurations. See ABSORB 350 System Configuration Chart for location of additional vent holes.



DETAIL A



DETAIL C



♦ Drill additional 3" diameter hole in "B" Position Element. Install Cap and drill 3/16" hole for Cap Tether.

DETAIL B (TL3)

NO.	DATE	REVISIONS	BY	APP'D
02	10-05-10	Rev. notes & flared layout opt.	S.W.K.	J.O.B.
01	11-16-09	Revised Temporary Bid Item	S.W.K.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

IMPACT ATTENUATOR ABSORB 350 (TL2 OR TL3) (for Temporary Installation)

RD627B

FHWA APPROVAL	05-26-11	APP'D.	James O. Brewer
DESIGNED	DETAILED R.G.C.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

Sh. No. 89

Note to Designer: Where the chance of high angle, high speed impacts are low, Consider using a redirective crash cushion when these types of impacts are likely to occur.

Plotted by : Imad.Atra@wsp.com 29-OCT-2023 17:02
File : 30902640RD627B.dgn