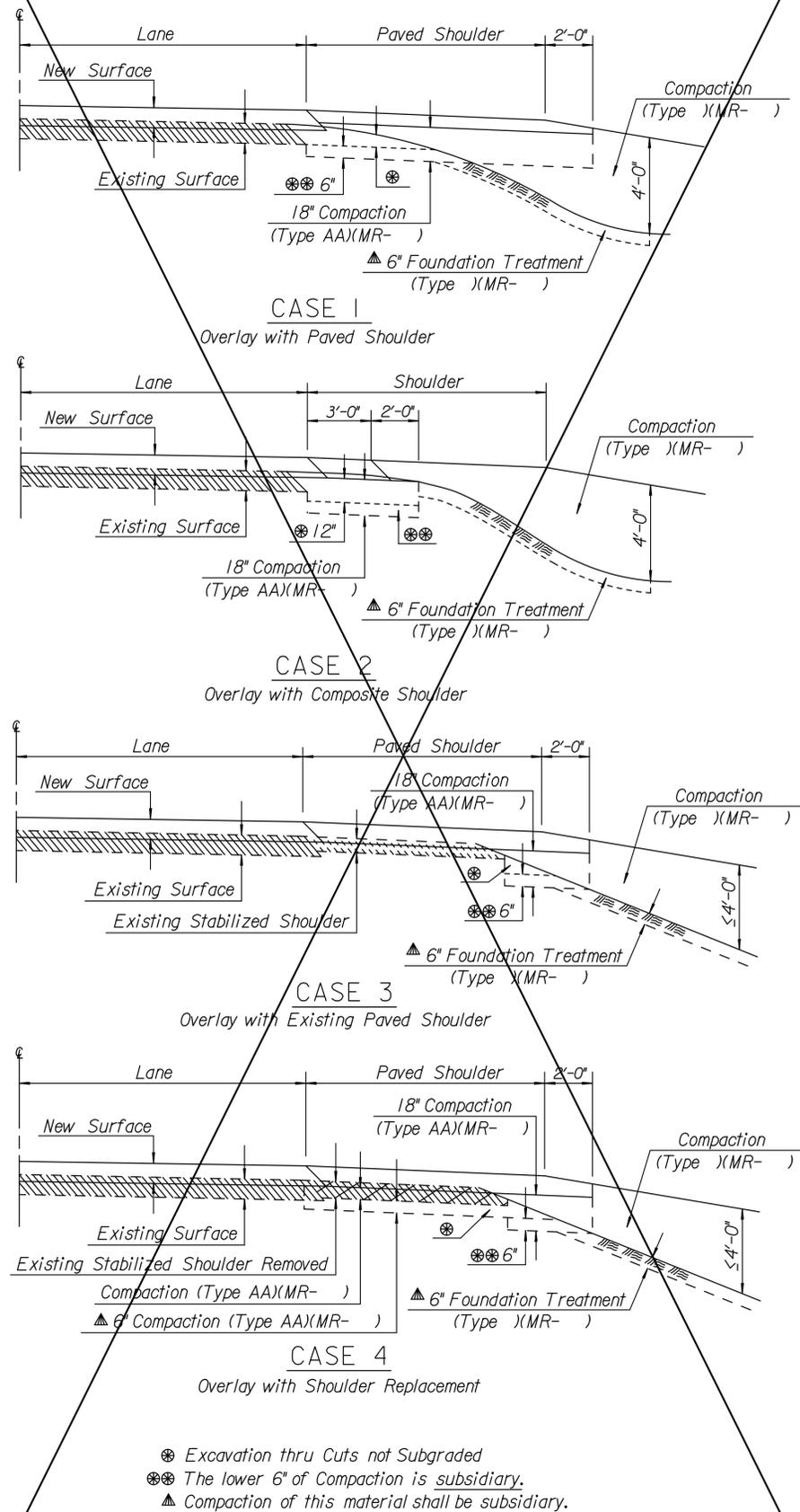
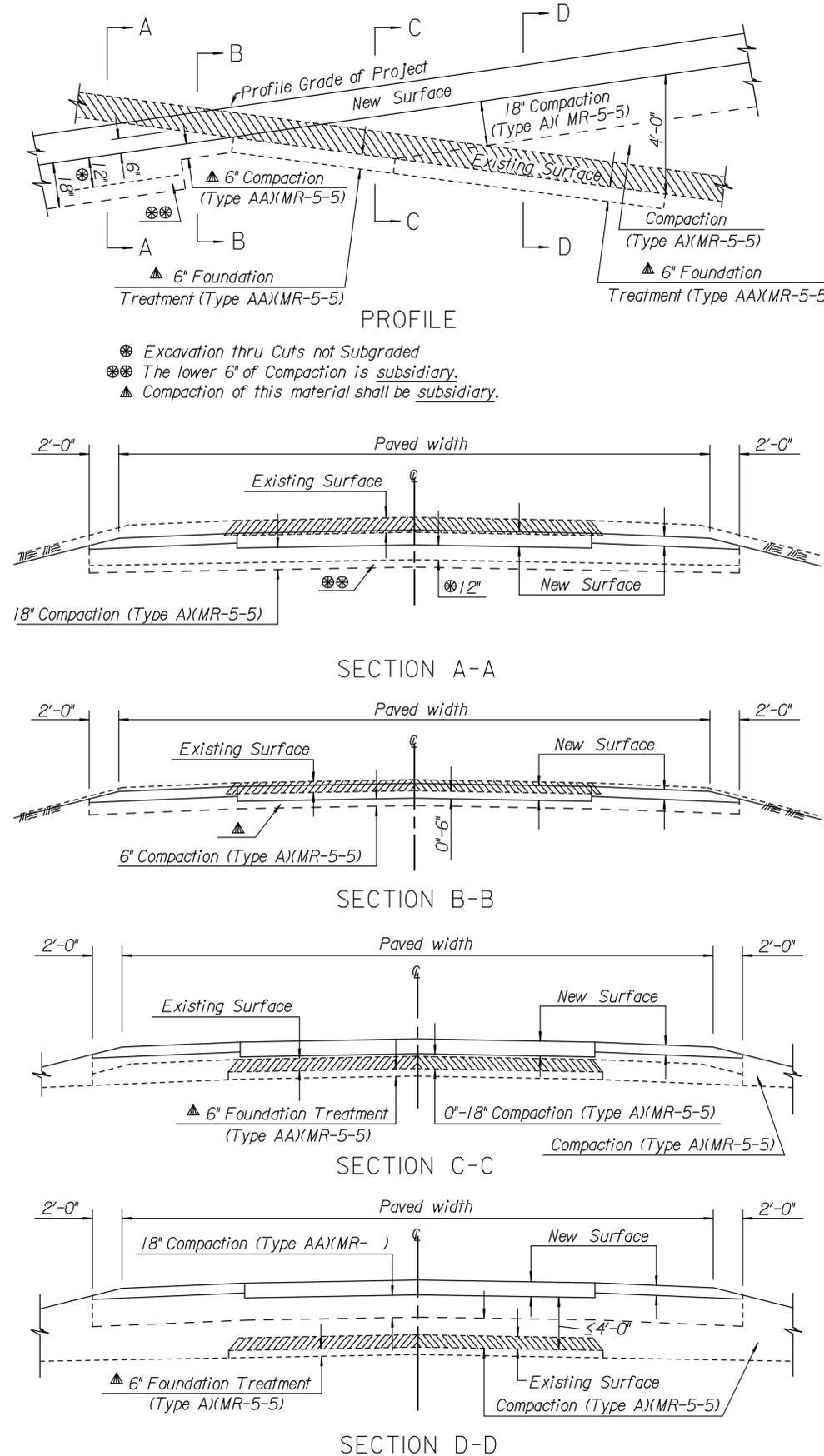


STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	3	60

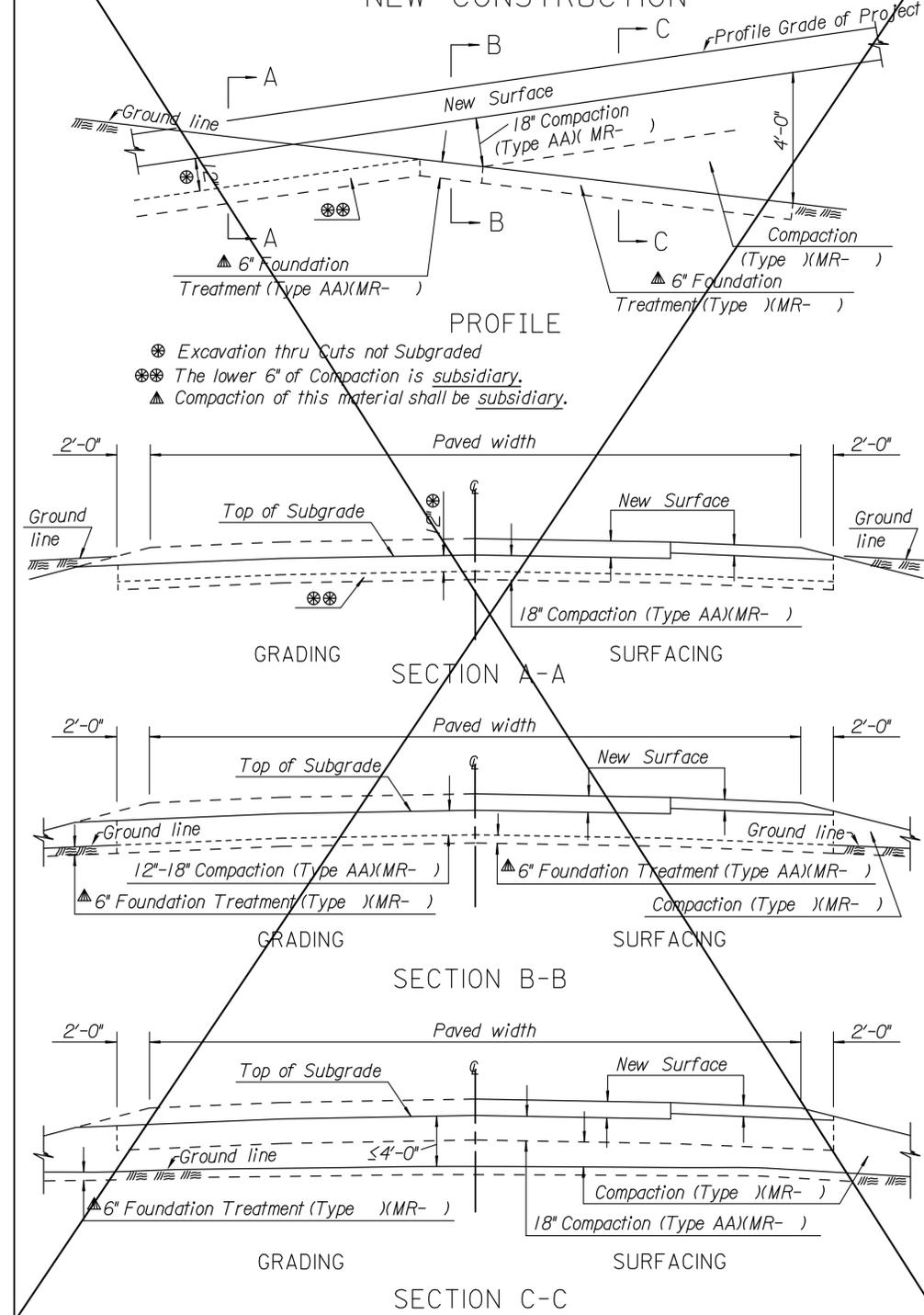
REHABILITATION



RECONSTRUCTION



NEW CONSTRUCTION



General Note
For materials designated to be subgraded, compaction of soils, including shales, designated for backfill refer to Standard Drawing RD605A for details.
Unless otherwise noted on the Plans, compact all embankment, including side roads and entrances.

NO.	DATE	REVISIONS	BY	APP'D
5	10-17-11	Revised General Note	S.W.K.	J.O.B.
4	1-05-10	Added additional subsidiary comp.	S.W.K.	J.O.B.
3	2-16-05	Redrawn, Rev. Recon. Sec. C-C & D-D	S.W.K.	J.O.B.
2	5-29-98	Revised Reconstruction Section B-B	R.J.S.	J.O.B.

KANSAS DEPARTMENT OF TRANSPORTATION

FOUNDATION TREATMENT & COMPACTION OF EARTHWORK
RD605

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

Drawn By : jpetersen
 File : A32_rdb05_rts-02.dgn
 Plotted : 20-JAN-2014 17:30

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	4	60

Modifications made to proposed Temporary and Permanent Easements by Alfred Benesch July 16, 2014.

GENERAL NOTE

THE GEOLOGICAL INFORMATION SHOWN ON THESE PLANS IS FROM STUDIES MADE IN THE FIELD AND REPRESENTS THE BEST INFORMATION AVAILABLE TO LEAVENWORTH COUNTY.

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

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

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

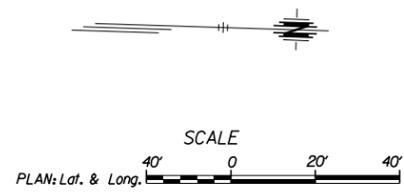
EXCAVATION REQUIRED FOR PLACING SELECT SOIL IS INCLUDED IN THE COMMON EXCAVATION QUANTITIES.

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

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

ALL SIGNS SHALL BE REMOVED AND STORED BY CONTRACTOR, AND SHALL BE INSTALLED UPON COMPLETION OF ROAD CONSTRUCTION.

DATE	BY



PROJECT SURVEY CONTROL

US State Plane Coord., Kansas North (1501)
Horizontal Datum: North American Datum of 1983 (2011KEPOCH:2010.0000)

Project Horizontal Control:

No.1: Set #5 RBR, E.I.= 882.36
N 357,001.31 E 2,129,040.37

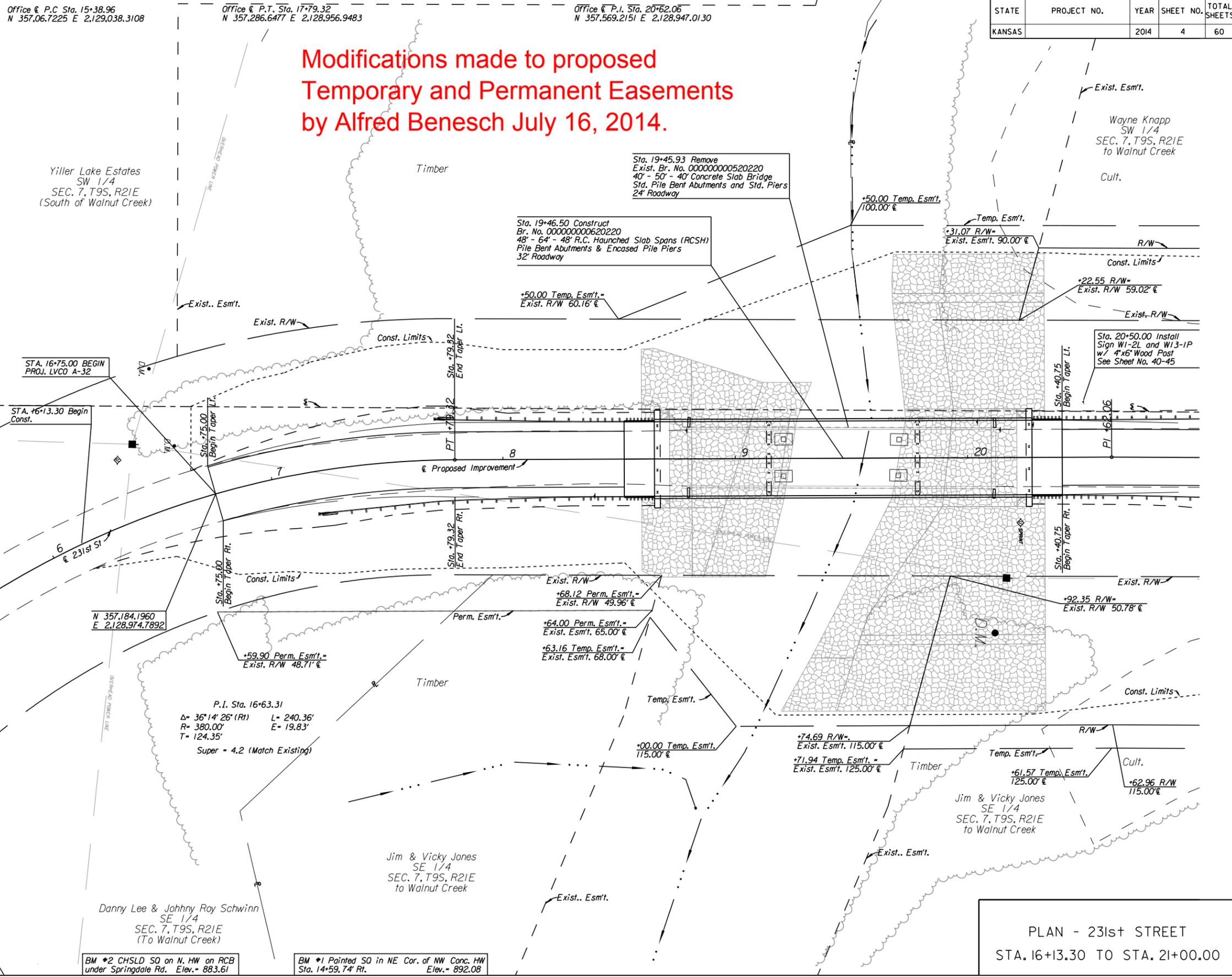
No.2: Set #5 RBR, E.I.=889.85
N 357,336.68 E 2,128,974.24

Vert. Datum: Sea Level Datum of NAVD 1988
Information Obtained From the NGS Control System

UTILITY OWNERS

Rural Water District No. 5, Leavenworth County
PO Box 287
Leavenworth, KS 66048
913-758-0488

Leavenworth Jefferson Electric Cooperative
507 N. Union (PO Box 70)
McLouth, KS 66054
(888)796-6111

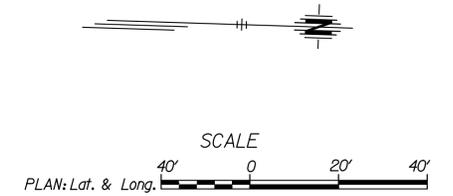


Drawn By : \$\$\$USERNAME\$\$\$ Plotted : \$\$\$SYTIME\$\$\$
File : \$\$\$DGN\$SPEC\$

PLAN - 231st STREET
STA. 16+13.30 TO STA. 21+00.00

Office & P.O.T. Sta. 26+70.51
 N 358,177.4400 E 2,128,930.4100

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	5	60



Wayne Knapp
 SW 1/4
 SEC. 7, T9S, R21E
 to Walnut Creek

+63.43 Temp. Esm't.
 100.00'±

Temp. Esm't.

+63.43 Temp. Esm't. =
 R/W 90.00'±

STA. 22+04.00 END
 PROJ. LVCO A-32

STA. 22+63.43 End
 Const.

Const. Limits

R/W

Cult.

+63.43 R/W =
 Exist. R/W 59.02'±

Exist. R/W

Sta. +90.85
 End Taper Lt.
 Match Exist. Pvm't.

Proposed Improvement

231st St

POT +70.51

Sta. +90.85
 End Taper Rt.
 Match Exist. Pvm't.

Exist. R/W

+50.00 R/W =
 Exist. R/W 51.00'±

OVERHEAD POWER LINE

Cult.

Const. Limits

R/W

N 357,711.1041
 E 2,128,943.1398

Jim & Vicky Jones
 SE 1/4
 SEC. 7, T9S, R21E
 to Walnut Creek

+00.00 Temp. Esm't. =
 R/W 115.00'±

Temp. Esm't.

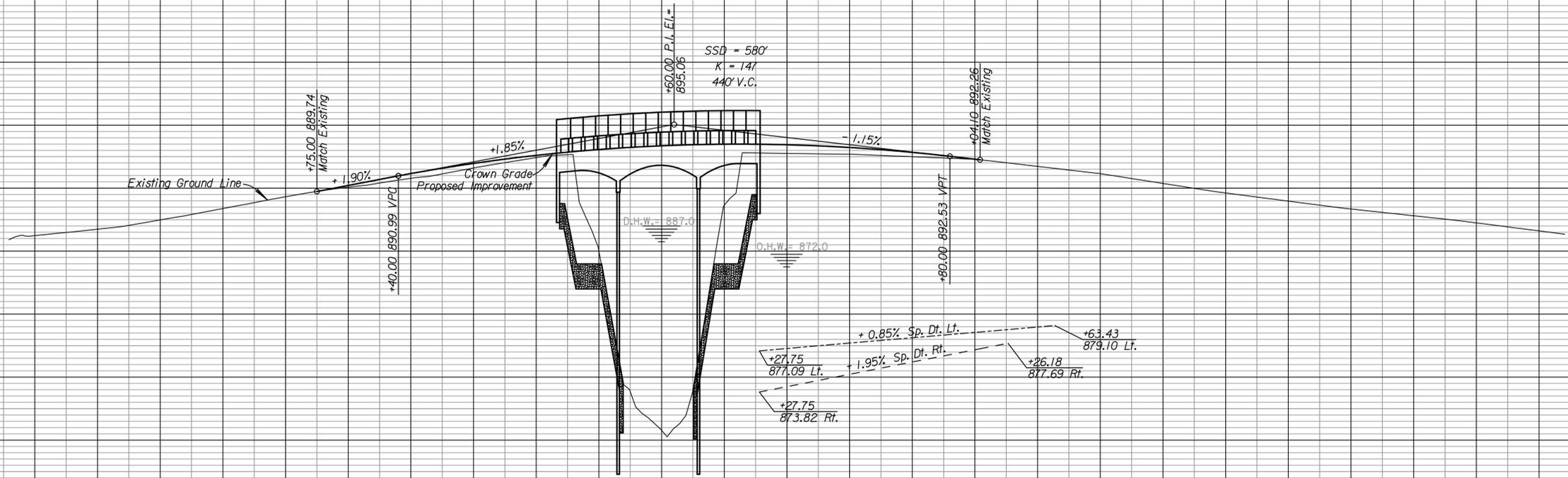
+00.01 Temp. Esm't.
 125.00'±

DATE	BY	REFERENCES NOTED	REFERENCES CHECKED

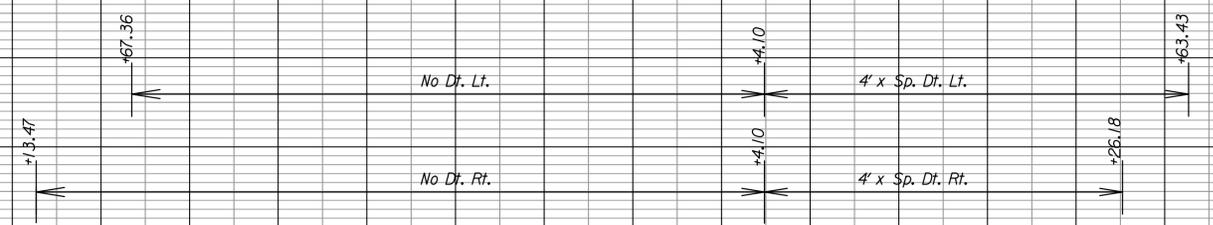
Plotted : 20-JAN-2014 17:30

Drawn By : jpetersen
 File : xx_plan02.dgn

PLAN - 231st STREET
 STA. 21+00.00 TO STA. 22+63.43



Project Earthwork
 2373 cu.yds. Common Excavation (Assumed VMF=0.80)
 * 231 cu.yds. Rock Excavation (Pavement Removal)
 1865 cu.yds. Common Excavation (Contractor Furnished)(VMF=0.80)
 3390 cu.yds. Embankment
 * Includes 231 cu.yds. (pavement removal) to be wasted on sites provided by the contractor.



Drawn By: jpetersen
 File: xx_profile01.dgn
 Plotted: 20-JAN-2014 17:30

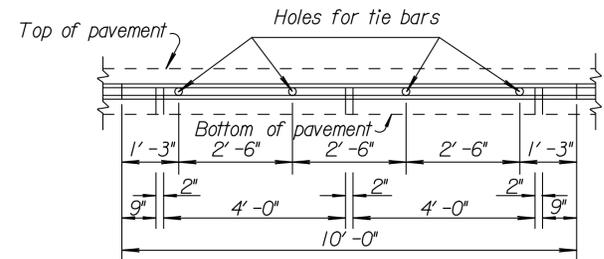
6

PROFILE - 231st STREET
 STA. 16+75.00 TO STA. 22+04.00

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	7	60

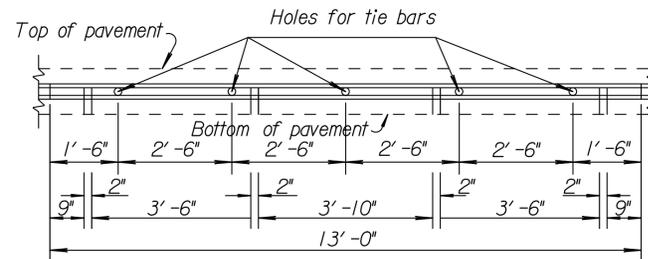
GENERAL NOTES

All work shall be done in conformity with the Standard Specifications applicable to the project.
 The cost of all bars and joint material shown on this sheet is to be included in the bid price for Concrete Pavement.
 At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.
 All sawed joints on this project shall be filled with sealant in accordance with Standard Specifications.
 The 4 inch edge curb shall be constructed integral with the approach slab shoulder.
 All materials and work required for this construction shall be Subsidiary to the concrete approach slab.
 Tie bars shall be evenly spaced along the length of the slab and no tie bars shall be within 12" of contraction joint.



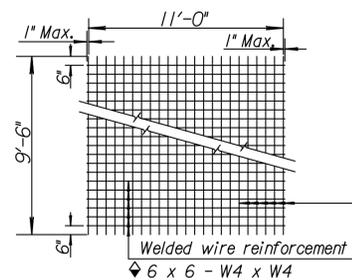
To be used only against forms. Shall not extend through contraction joints.

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



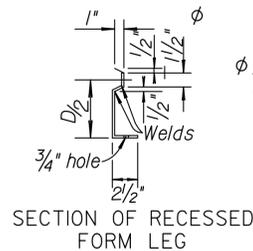
To be used only against forms. Shall not extend through contraction joints.

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



TYPICAL SHEET OF WELDED WIRE REINFORCEMENT FOR SPECIAL BRIDGE APPROACH PAVEMENT

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



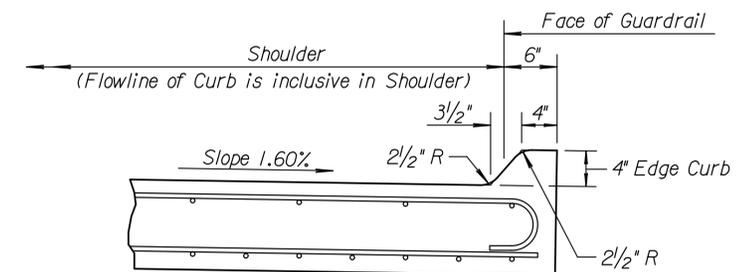
SECTION OF RECESSED FORM LEG

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

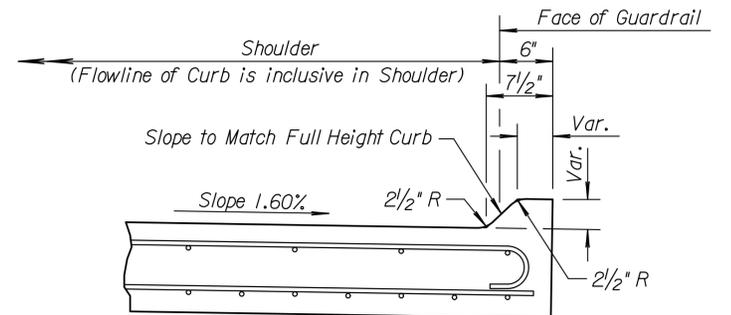


DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

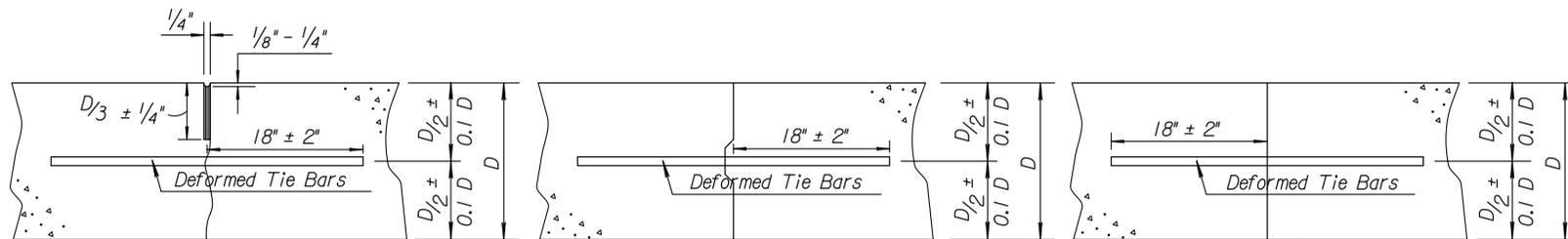
The lap shall extend beyond the first transverse or bag wire of each sheet.
 The sheet shall be wired securely at the edges and at intervals not to exceed 2'-6" for the full width of the sheet. Approximate weight of welded wire reinforcement = 58 lbs. per 100 sq. ft. Other methods for fastening the sheets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



SECTION A-A



SECTION B-B



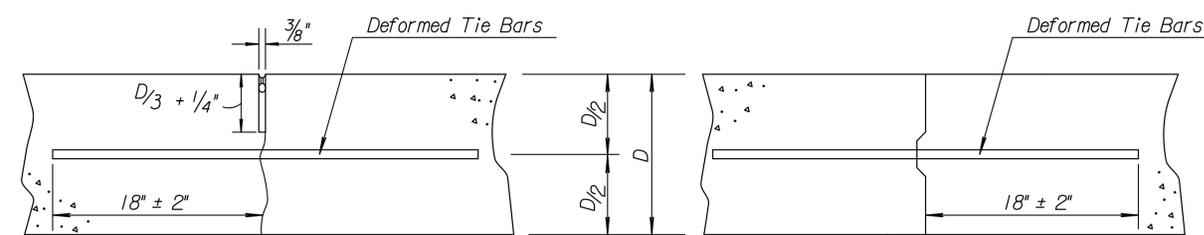
Tied Non-Keyed

Tied Keyed Construction

Tied Butt Construction

LONGITUDINAL JOINTS

Note: For longitudinal construction joints the contractor has the option of using either the keyed or butt type.



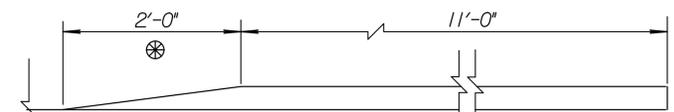
Monolithic Pour

Construction Joint

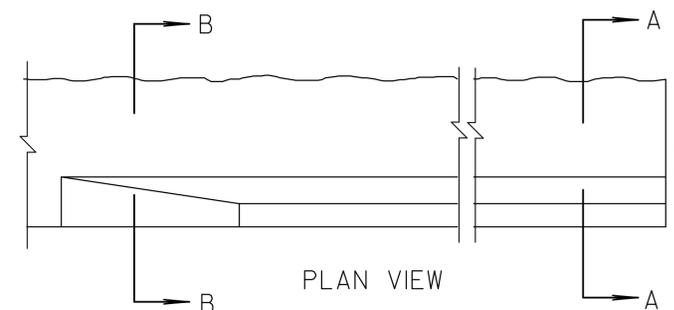
TRANSVERSE JOINTS

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

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



ELEVATION



PLAN VIEW

4" EDGE CURB DETAIL

NO.	DATE	REVISIONS	BY	APP'D
12	5-14-09	Pres. Relief Jt. to R0712/tie bar lab.	S.W.K.	J.O.B.
11	10-23-08	Revised Sec. A-A and Sec. B-B	S.W.K.	J.O.B.
10	10-3-07	Add. manufacturer Jt. size recom'd.	S.W.K.	J.O.B.

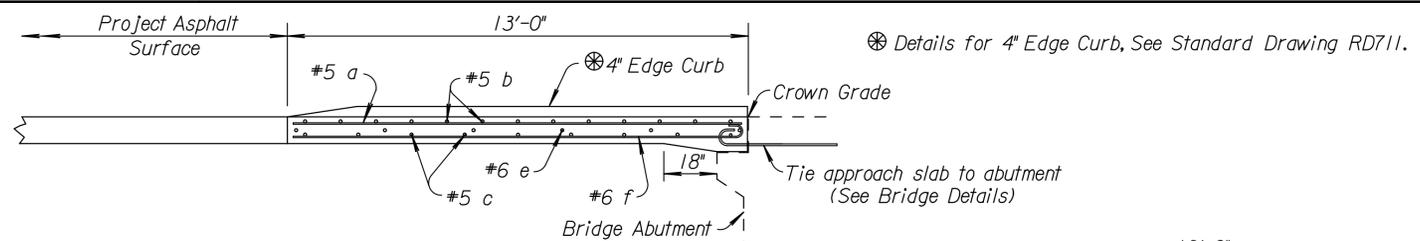
KANSAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS DETAILS FOR CONCRETE BRIDGE APPROACH PAVEMENT

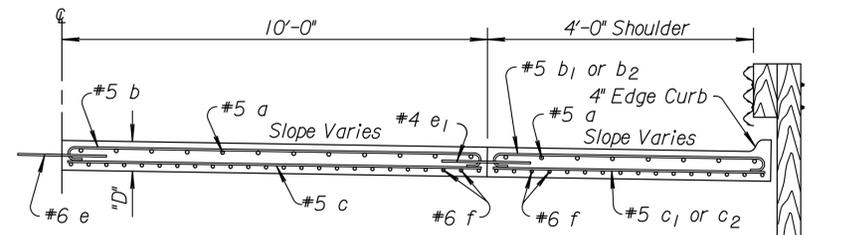
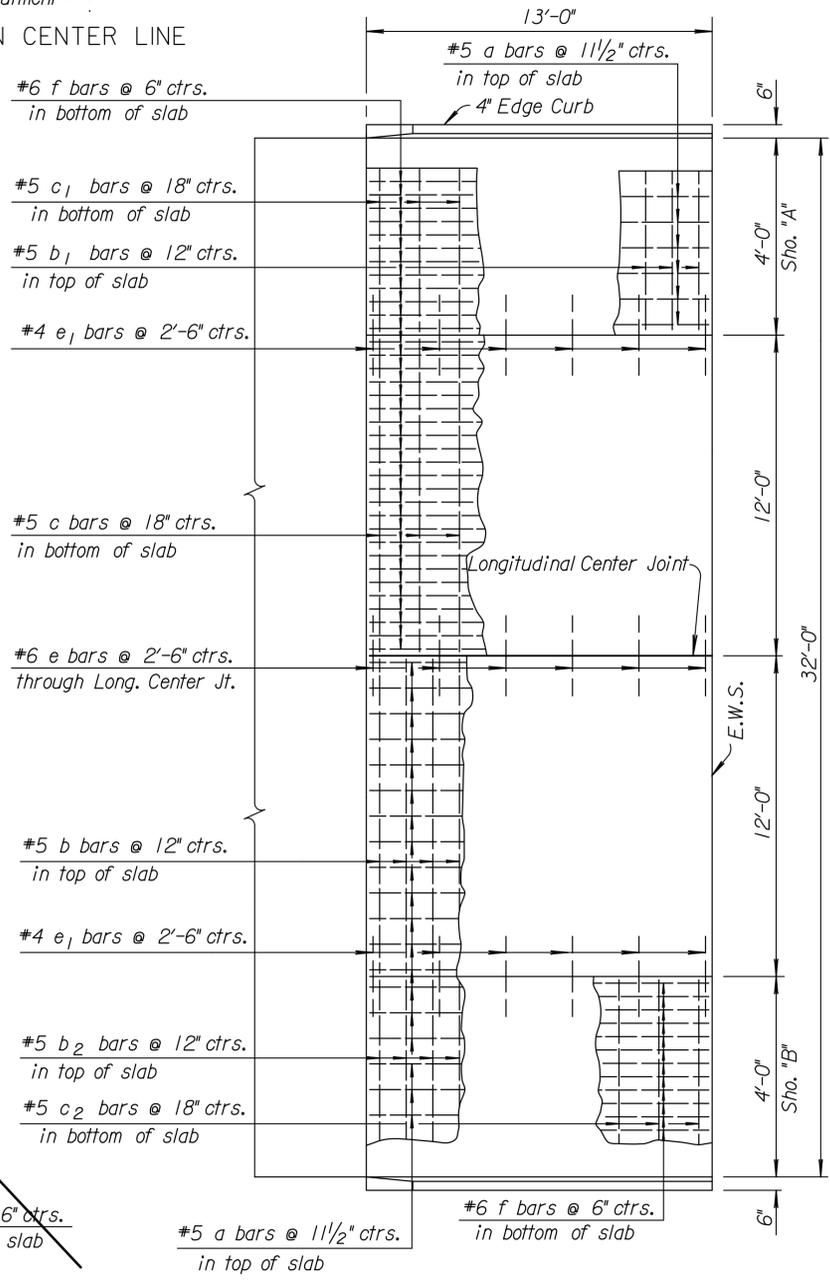
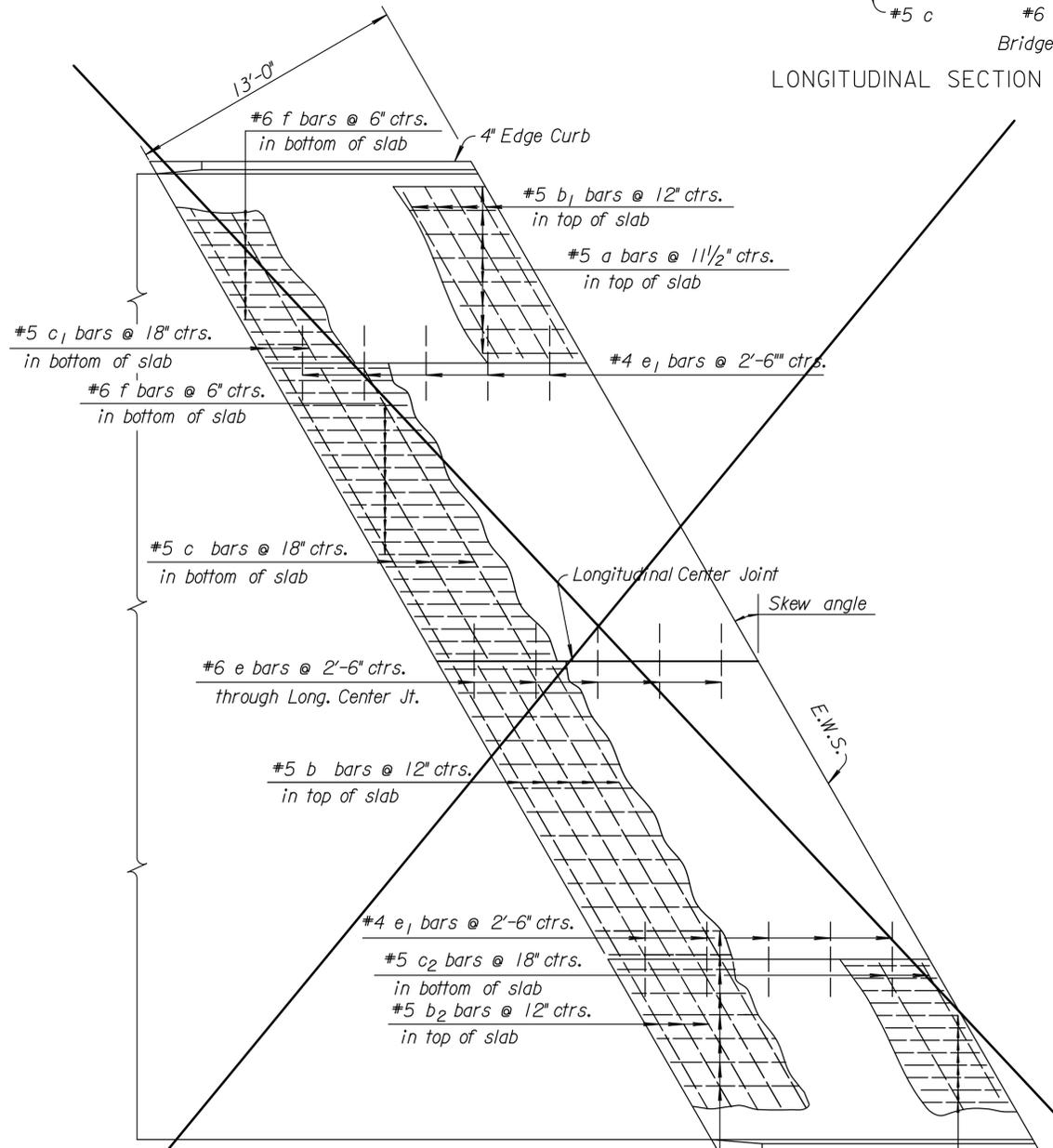
DESIGNED	DATE	APP'D.	QUANTITIES
DESIGN CK.	6-9-09	James O. Brewer	TRACED Bowser
DETAIL CK.			TRACE CK. King

Plotted By: jpeterson
 File: \$FILE\$
 Plot Date: \$DATE\$ \$TIME\$

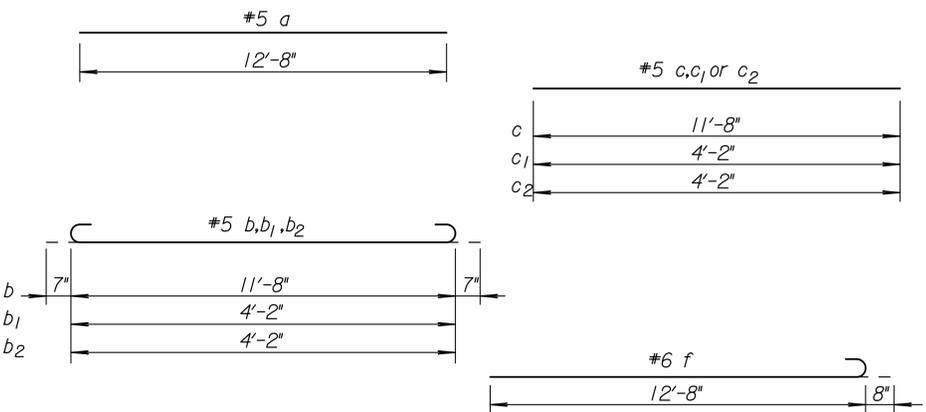
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	8	60



GENERAL NOTE
 Special Concrete Bridge Approach shall be paid for as Sq. Yds. of Concrete Pavement (10" Unif.)(AE) and includes all work and materials required to construct the approach slab as shown on this sheet.
 All work and materials required for installation of Joint material shall be subsidiary to this bid item.
 At the Contractor's option #4x3'-0" tie bars @ 15" centers may be substituted for the #6 e bars at 2'-6" centers.
 All reinforcing steel shall be epoxy coated.
 See Standard Drawing RD711 for details of joints and edge curb.
 Clearance from the face of concrete for all reinforcing steel shall be 2 inches.
 Standard reinforcing bar hooks in accordance with the latest ACI specifications shall be used throughout.



Taper slope from 4.0% at edge of gravel roadway to 1.6% at End of Wearing Surface of bridge.
TYPICAL HALF SECTION (NORTH END)
 (No Scale)
 Note: For south end, see superelevation diagram on Sheet No. 2 for approach slab transition.



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

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

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

PLAN FOR SKEWED APPROACH (SKEW ≤ 5°)
(No Scale)

PLAN FOR NORMAL APPROACH
(No Scale)

BENDING DIAGRAMS

BILL OF MATERIALS

BAR SCHEDULE

NORMAL APPROACH											--°SKEW										--°SKEW										
Bar	a	b	b ₁	b ₂	c	c ₁	c ₂	e	e ₁	f	a	b	b ₁	b ₂	c	c ₁	c ₂	e	e ₁	f	a	b	b ₁	b ₂	c	c ₁	c ₂	e	e ₁	f	
No.	38	26	13	13	18	9	9	6	12	6	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	#5	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6
Size	#5	#5	#5	#5	#5	#5	#5	#6	#6	#6	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	#5	#5	#5	#5	#5	#5	#5	#6	#4	#6	
Length	12'-8"	12'-10"	5'-4"	5'-4"	11'-8"	4'-2"	4'-2"	3'-0"	3'-0"	13'-4"								3'-0"	3'-0"												
Reinforcing Steel (Grade 60) (Epoxy Coated)	2,670 lbs.										lbs.										lbs.										
Concrete Pavement (10" Unif.)(AE)	47.7 Sq. Yds.										Sq. Yds.										Sq. Yds.										

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

9	9-09-09	Revised Reinforcing Steel Listing	S.W.K.	J.O.B.
8	5-14-09	Revised General Note	S.W.K.	J.O.B.
7	10-30-08	Added guardrail post detail at curb	S.W.K.	J.O.B.
6	11-07-07	Revised pavement slope to percent	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE APPROACH PAVEMENT ADJACENT TO ASPHALT SURFACE

RD715

DESIGNED	6-9-09	APP'D	James O. Brewer
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED
		QUAN.CK.	CK. King

Plotted By: Jpeterson
 File: \$FILES\$
 Plot Date: \$DATE\$ \$TIME\$

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	9	60

NOTE: For flared design use the Slotted Rail Terminal Std. Drawing No: RD621A, or the Flared Energy Absorbing Terminal Std. Drawing No: RD606B.

For parallel design use the Extruder Terminal Std. Drawing No: RD606, or the Sequential Kinking Terminal Std. Drawing No: RD606C.

* Parallel design shown here may be either ET PLUS or SKT system. See Standard Drawing RD606 for ET PLUS details and Standard Drawing RD606C for SKT details.

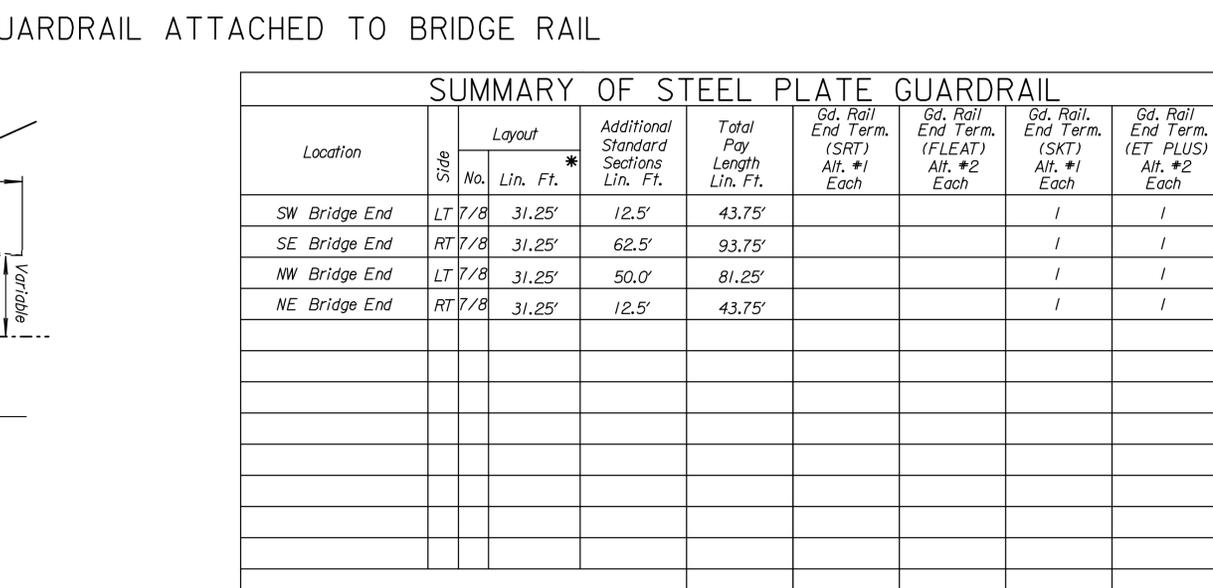
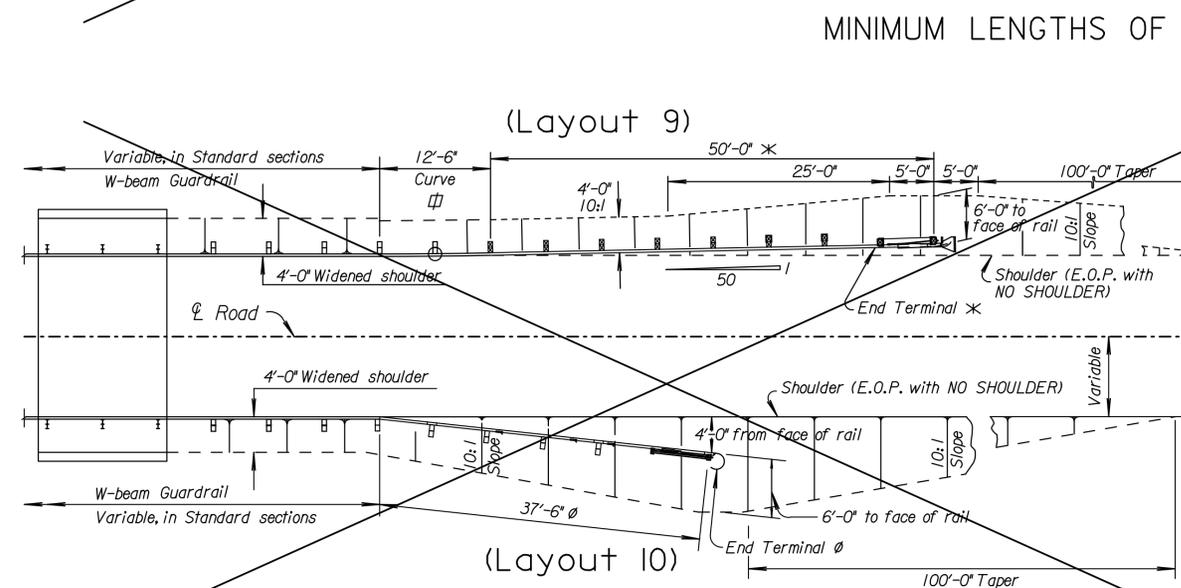
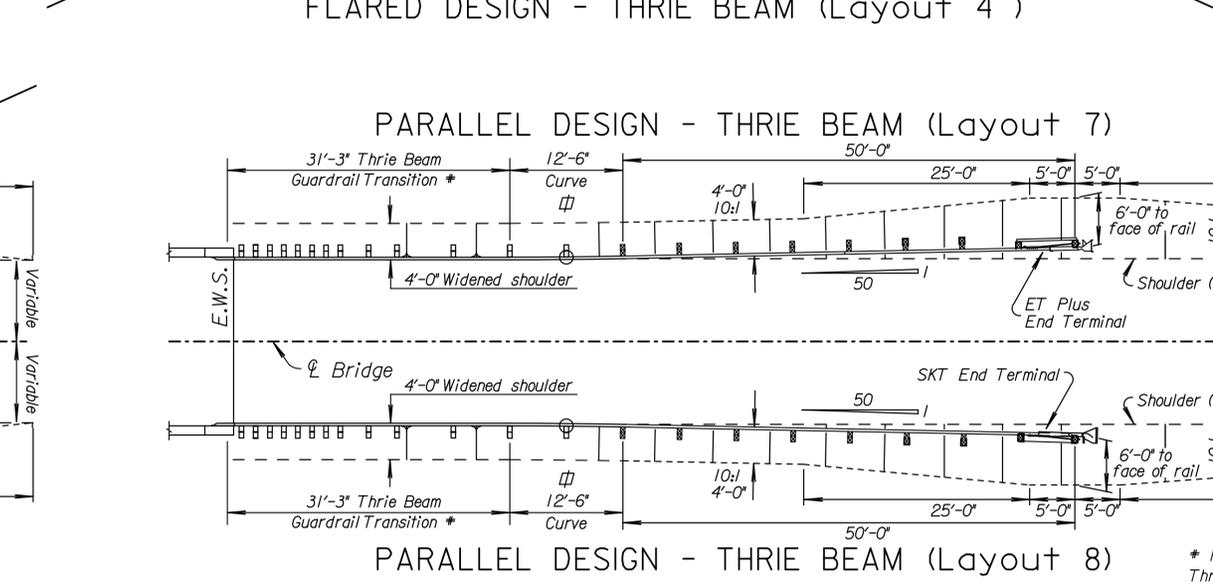
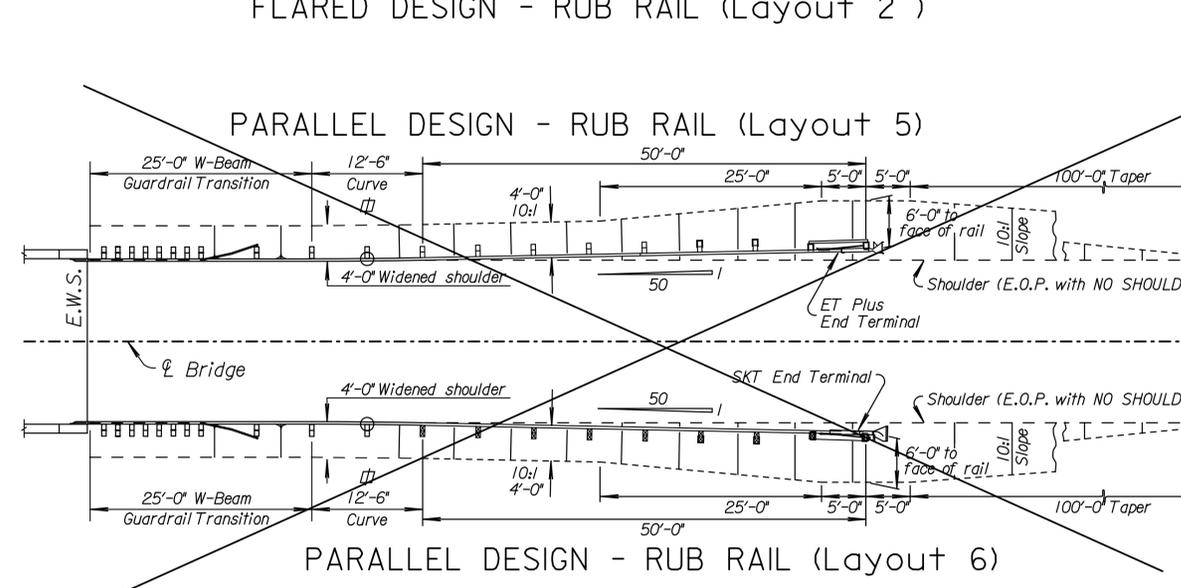
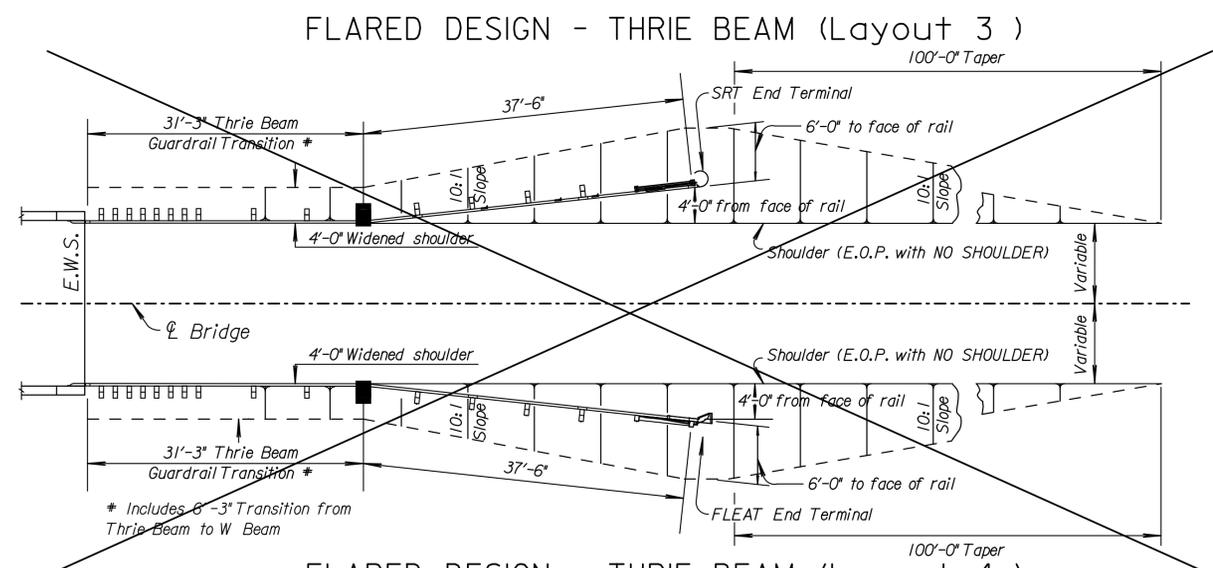
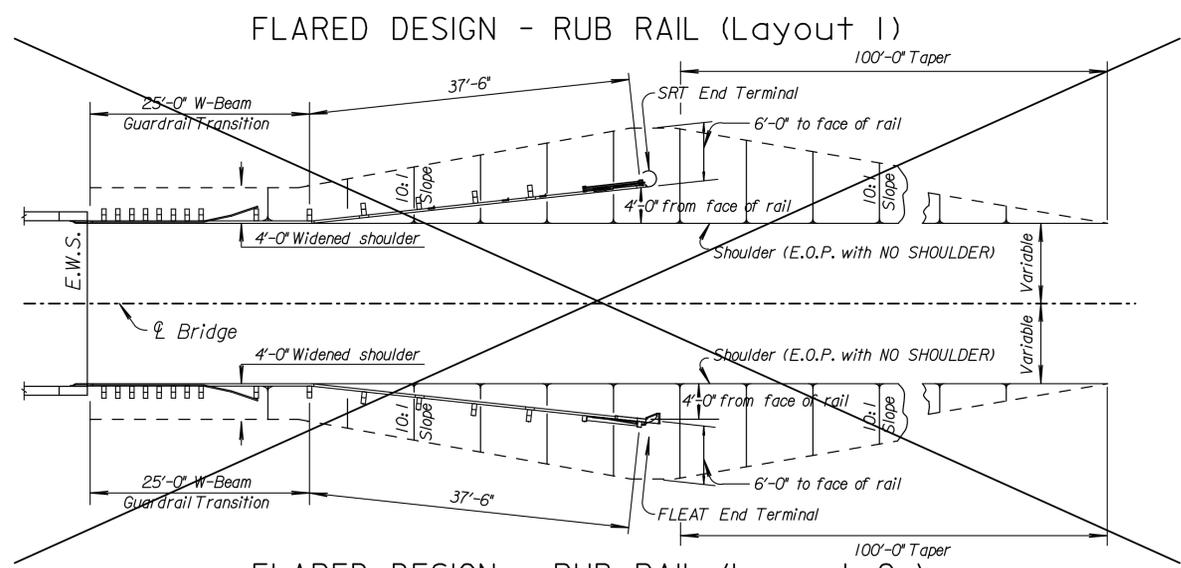
∅ Flared design shown here may be either SRT or FLEAT system. See Standard Drawing RD621A for SRT details and Standard Drawing RD606B for FLEAT details.

When using Rubrail, attach Std. Drawings No. RD611, RD616 and RD615 or RD615A.

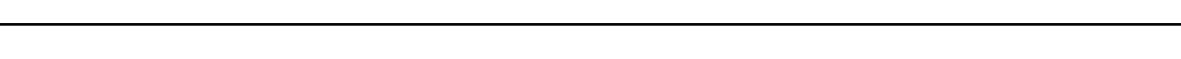
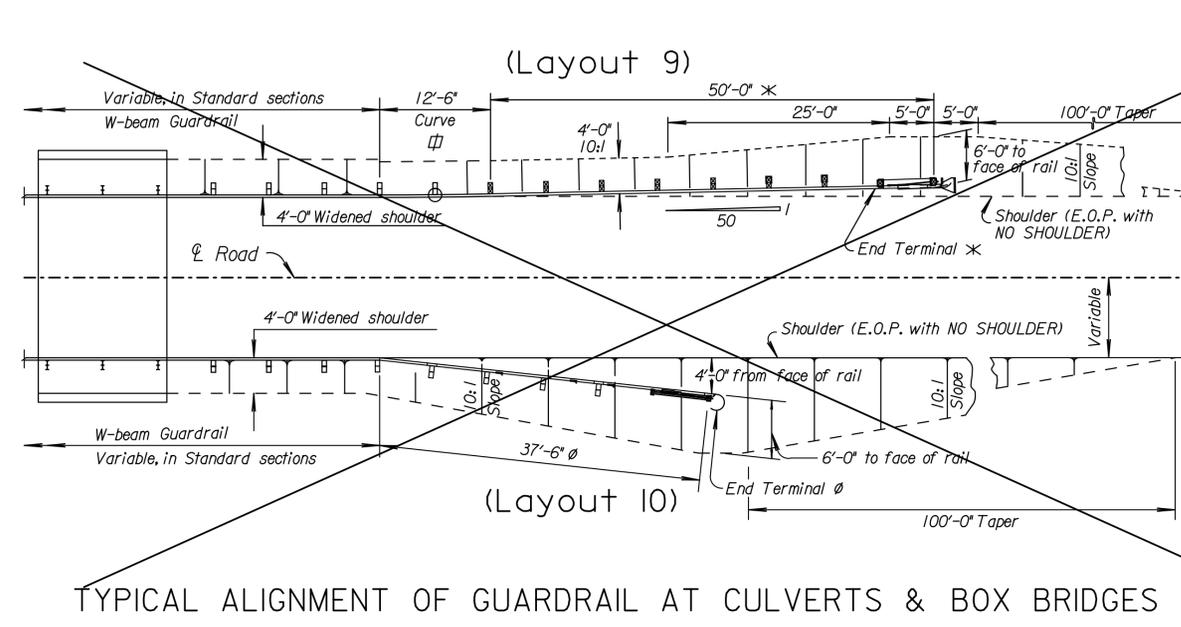
When using Thrie beam, attach Std. Drawings no. RD611 and RD608 or RD613.

Attach Std. Drawing No. RD617 or RD 617A for post over box less than full depth.

∅ Radius = 625.08'



MINIMUM LENGTHS OF GUARDRAIL ATTACHED TO BRIDGE RAIL



SUMMARY OF STEEL PLATE GUARDRAIL									
Location	Side	Layout		Additional Standard Sections Lin. Ft.	Total Pay Length Lin. Ft.	Gd. Rail End Term. (SRT) Alt. #1 Each	Gd. Rail End Term. (FLEAT) Alt. #2 Each	Gd. Rail End Term. (SKT) Alt. #1 Each	Gd. Rail End Term. (ET PLUS) Alt. #2 Each
		No.	Lin. Ft. *						
SW Bridge End	LT	7/8	31.25'	12.5'	43.75'			1	1
SE Bridge End	RT	7/8	31.25'	62.5'	93.75'			1	1
NW Bridge End	LT	7/8	31.25'	50.0'	81.25'			1	1
NE Bridge End	RT	7/8	31.25'	12.5'	43.75'			1	1
TOTAL LENGTH					262.5'			4	4

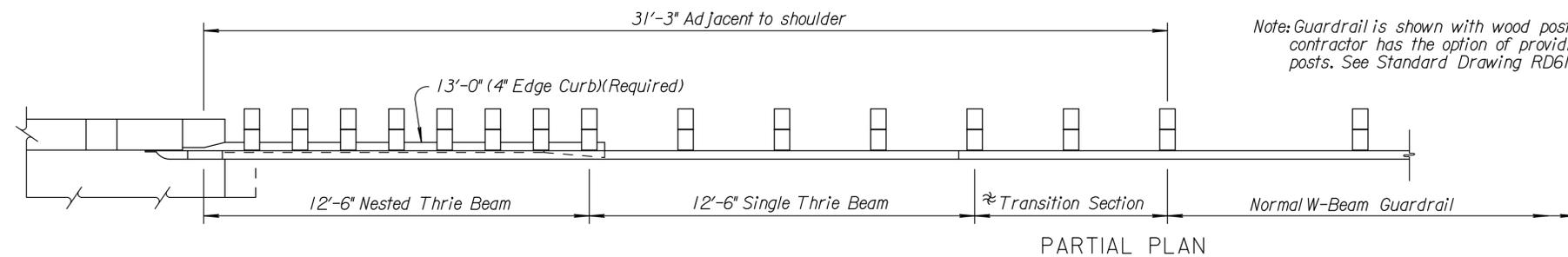
* See Gd. Rail Terminal Standard Drawings for Measurement Details. Does Not Include End Terminal.

9	11-9-05	Added length for Thrie Beam transition			
NO.	DATE	REVISIONS	DMK	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION					
TYPICAL ALIGNMENT OF GUARDRAIL INSTALLATIONS					
LP620					
DESIGNED	12-2-05	APP'D	RJS		
DESIGN CK.	DETAIL CK.	DMK	QUANTITIES	TRACED	
		RJS	QUAN. CK.	TRACE CK.	

DATE	
BY	
REFERENCES NOTED	
REFERENCES CHECKED	

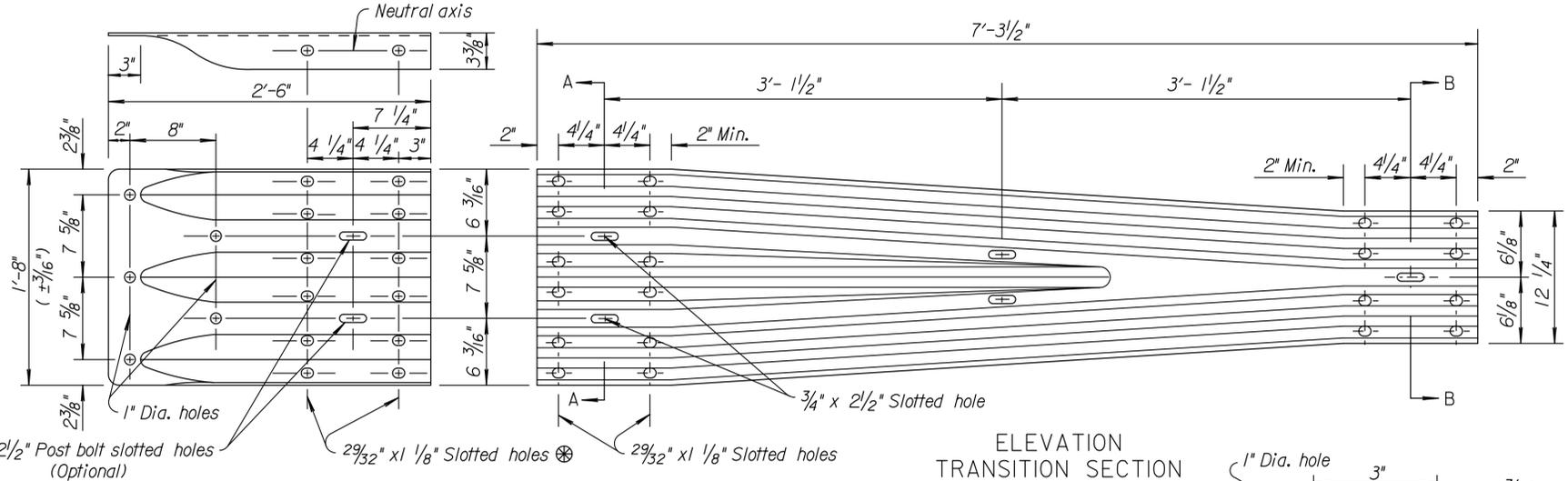
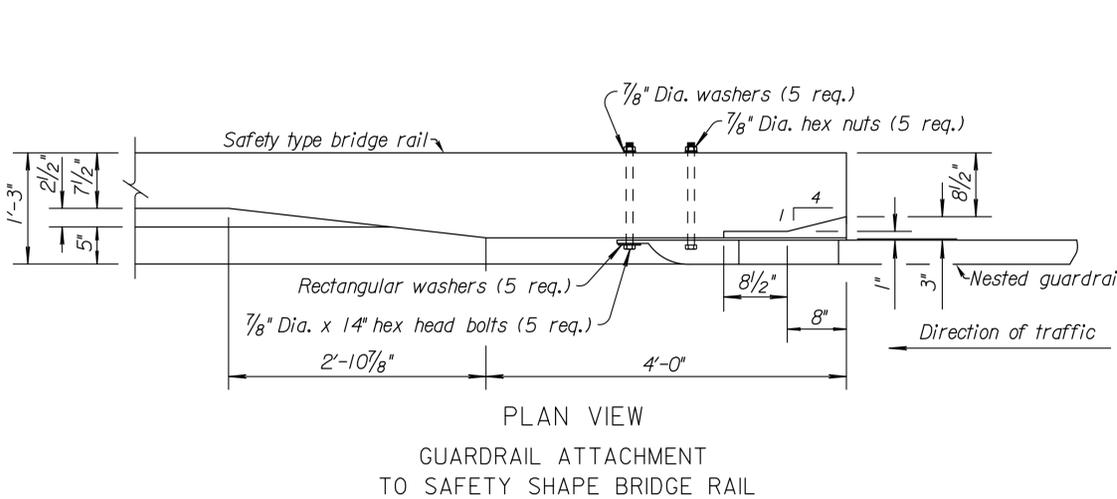
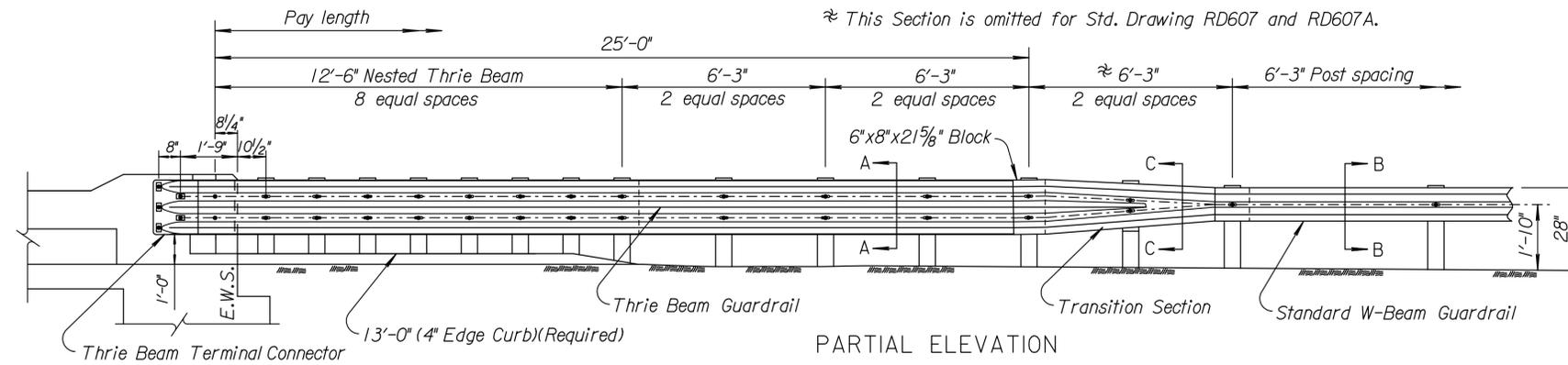
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	10	60

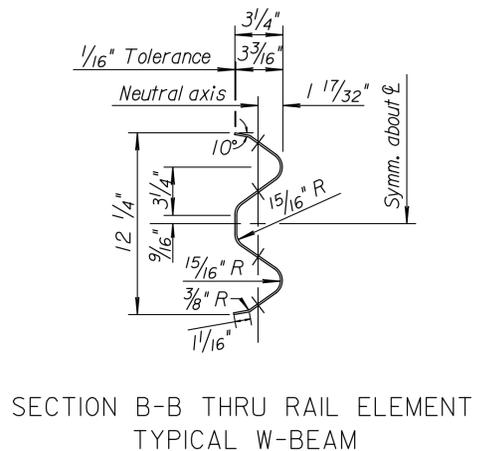
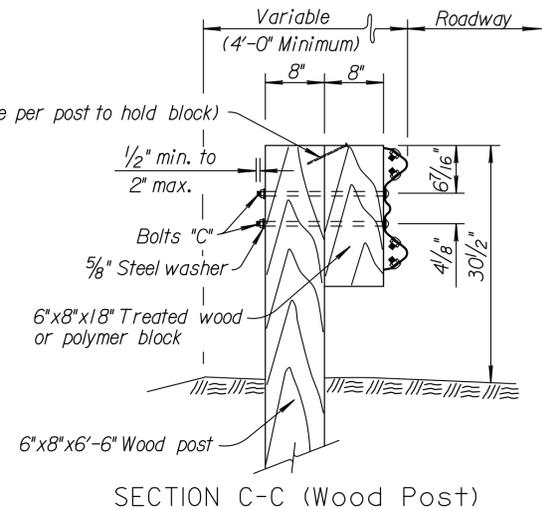
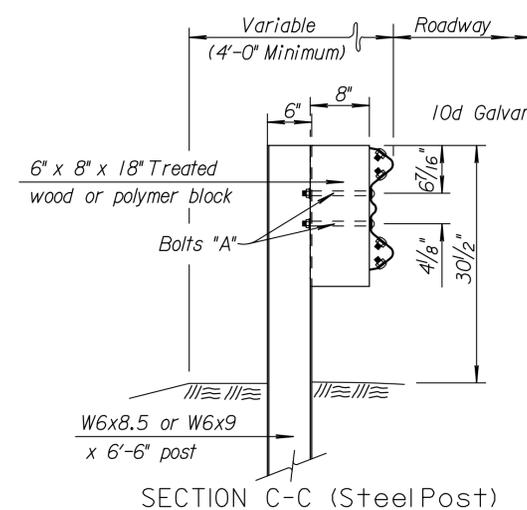
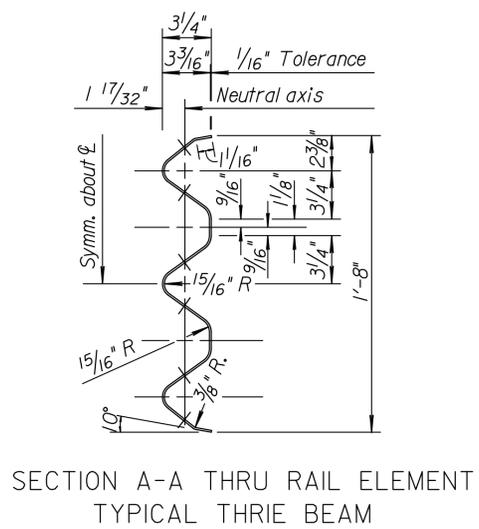
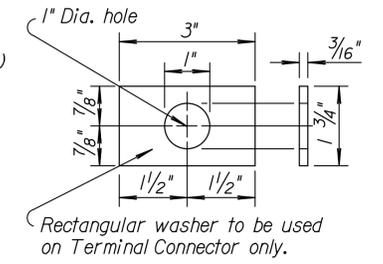


Note: Guardrail is shown with wood posts. However the contractor has the option of providing wood or steel posts. See Standard Drawing RD611 for details.

GENERAL NOTE
 Use galvanized 12 gauge steel rail elements unless otherwise noted. Use galvanized anchor bolts and post rail fittings, see Standard Specifications. Supply guard rail parts that are interchangeable with similar parts regardless of source or manufacturer. 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 "Steel Plate Guardrail". Shop 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- 25'-0" Thrie beam with 1- 12'-6" Thrie beam section nested in back of 25'-0" section (see layout), & 1- Thrie beam to W-beam Asymmetrical transition section. Use associated hardware with post spacing shown. Use w-beam guardrail with 6'-3" post spacing with rail furnished in 12'-6" or 25'-0" sections. All material and work required for this installation are paid under the bid item "Steel Plate Guardrail".



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



NO.	DATE	REVISIONS	BY	APP'D
13	12-06-10	Rev. Sec. C-C, notes & 28' rail height	S.W.K.	J.O.B.
12	07-02-09	Rev. Safety Shape Br. Rail detail	S.W.K.	J.O.B.
11	01-05-04	Added 4' Edge Curb, revised note	S.W.K.	J.O.B.

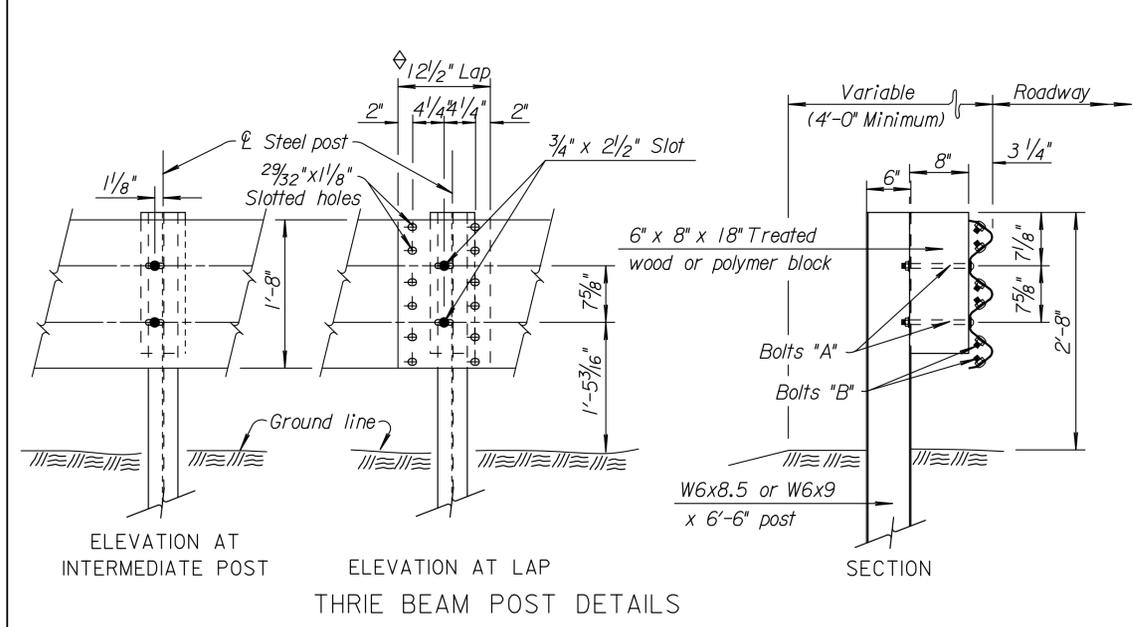
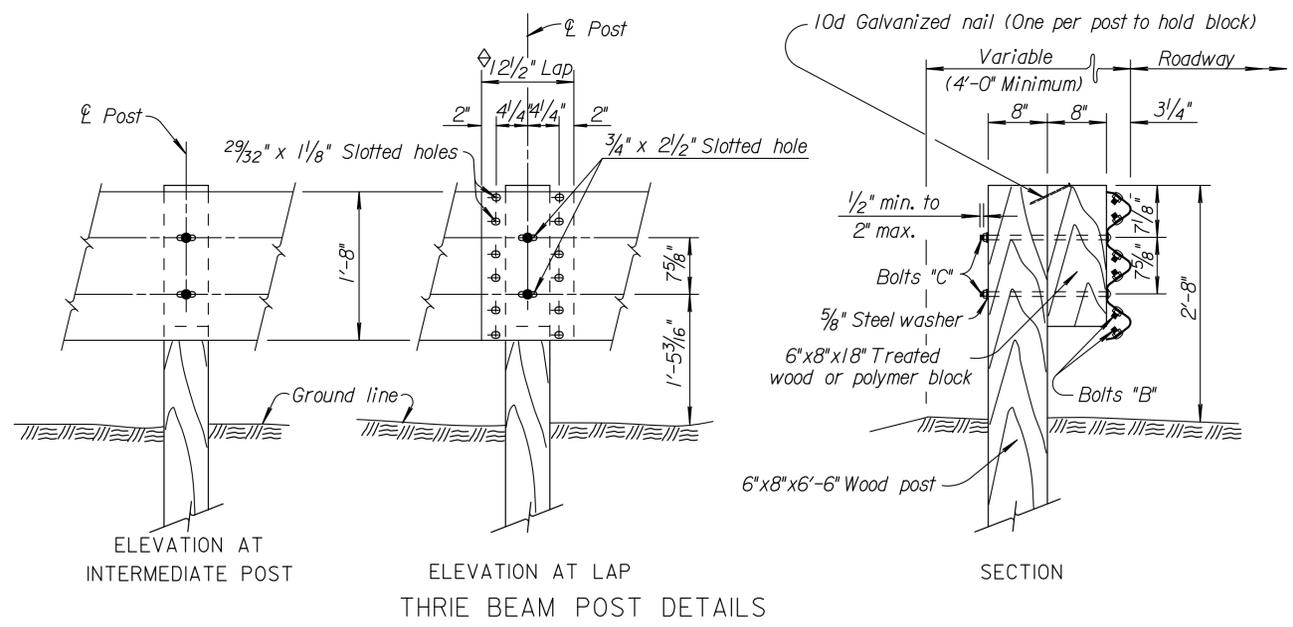
KANSAS DEPARTMENT OF TRANSPORTATION

RD613
 DETAILS OF THRIE BEAM GUARDRAIL TRANSITION

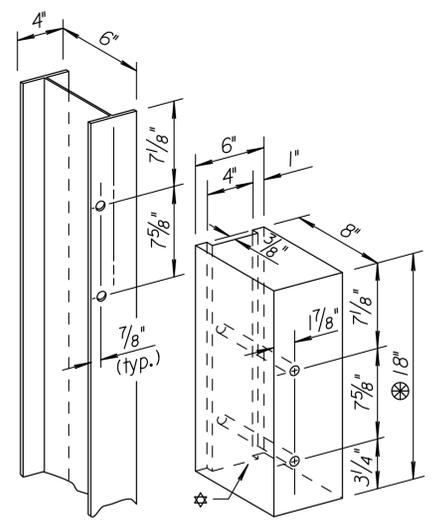
DESIGNED	DATE	APP'D.	James O. Brewer
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED Bowser
		QUAN. CK.	TRACE CK. King

Plotted : 20-JAN-2014 17:30
 Drawn By : jpetersen
 File : rd613.dgn

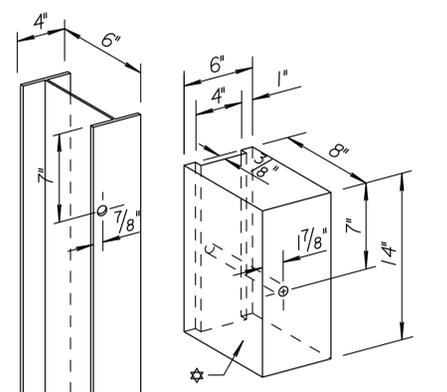
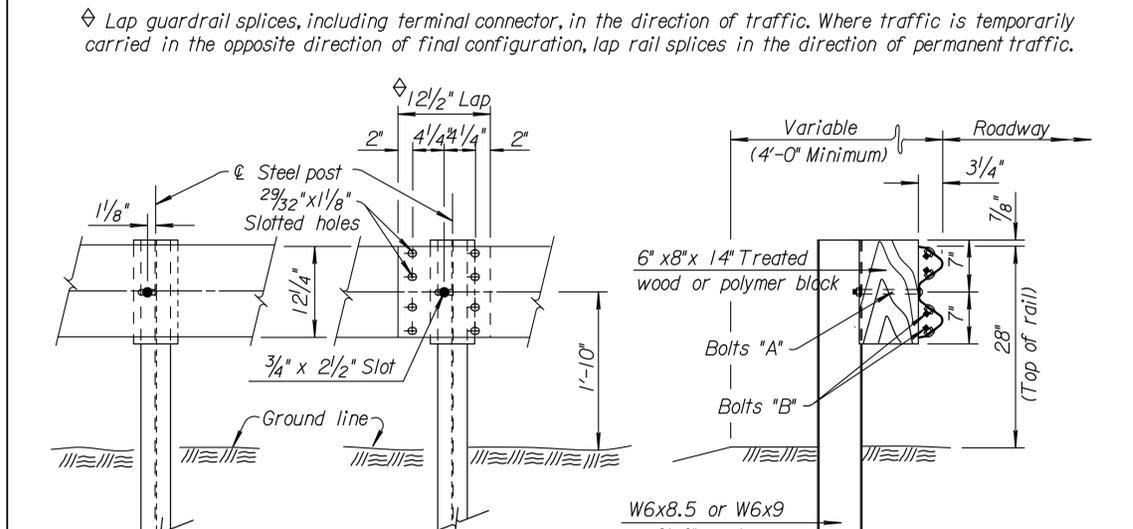
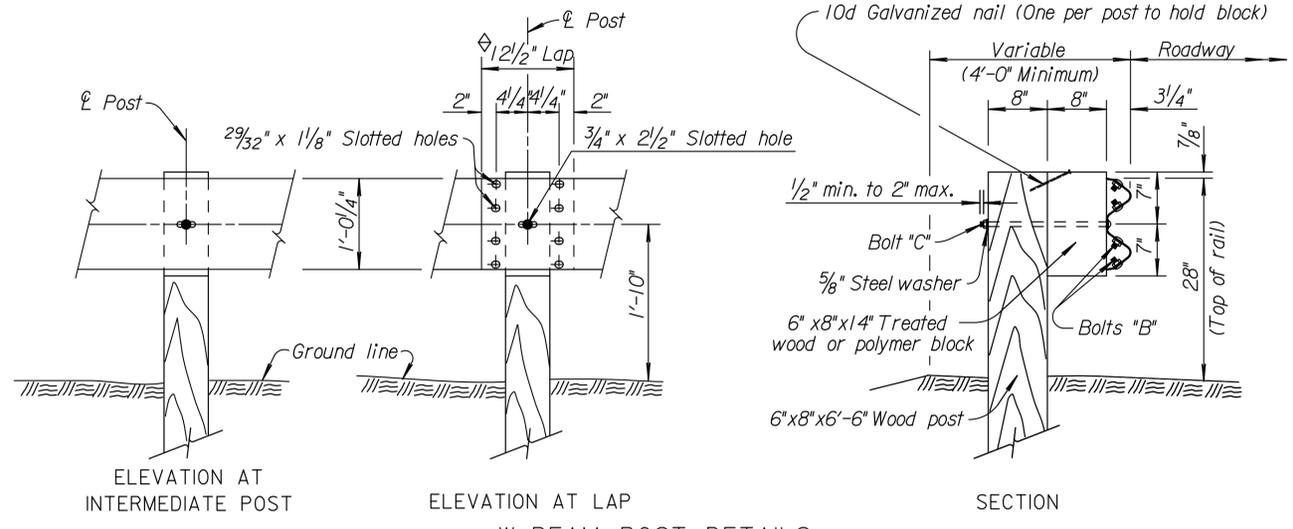
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	11	60



See Standard Drawing RD613 for Thrie Beam Transition Section Blockout hole pattern.



Note: All holes 1 3/16" dia.



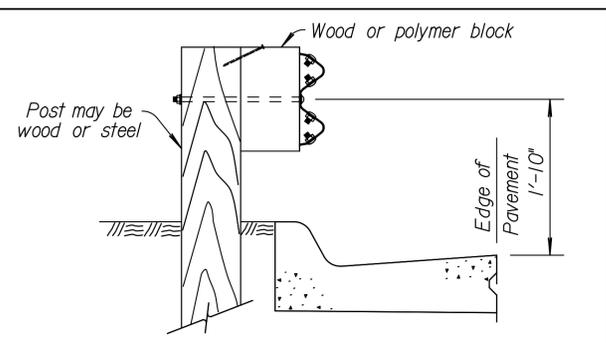
Note: All holes 1 3/16" dia.

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.

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

STEEL POSTS

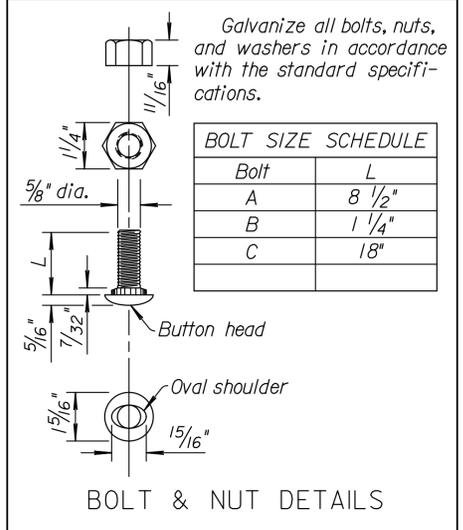


Note: When face of guardrail is aligned with the face of a curb, measure the height of rail from the pavement surface at the curb/pavement joint as shown. Use a laydown type curb where the face of the guardrail is not located at the face of the curb.

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 man-made 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.

Galvanize all bolts, nuts, and washers in accordance with the standard specifications.

BOLT SIZE SCHEDULE	
Bolt	L
A	8 1/2"
B	1 1/4"
C	18"



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 requirements 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 man-made 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.

NON-METALLIC (POLYMER) or TREATED WOOD BLOCK

NO.	DATE	REVISIONS	BY	APP'D
12	12-14-10	Revised notes, 28' w-beam rail height	S.W.K.	J.O.B.
11	6-30-04	Remove steelblockout and notes	S.W.K.	J.O.B.
10	7-15-02	Add polymer block-out alternate	S.W.K.	J.O.B.

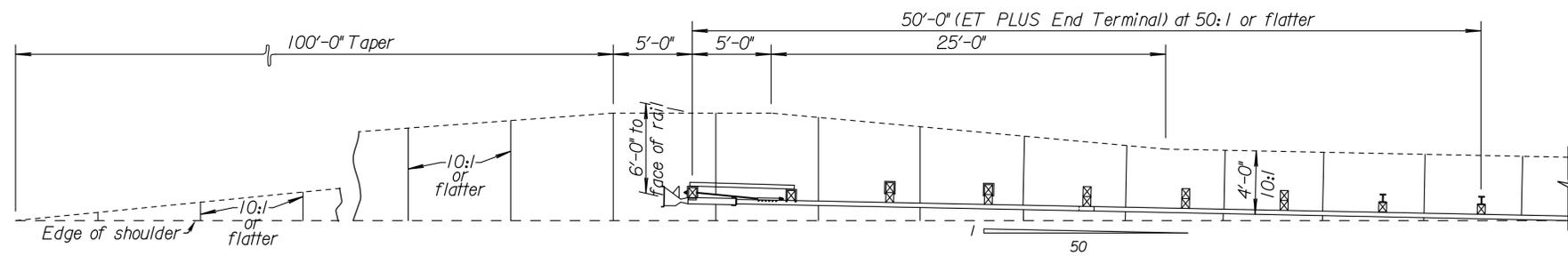
KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL POST DETAILS

RD611

DESIGNED	I-1-11	APP'D.	James O. Brewer
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED
		QUAN.CK.	TRACE CK. King

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	12	60



GENERAL NOTE

Use approved wood (shown & described) or steel posts ① through ⑦ on the (ET PLUS) provided by the manufacturer. Terminal post type used is independent of post type used on the remainder of the installation. No mixing of post types allowed in guard fence run.

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.

The steel tubes may be driven with an approved driving head. Do not drive steel soil tubes with wood post in the tube. Backfill and satisfactorily compact around steel soil tubes placed in drilled holes to prevent tube settlement.

Apply retroreflective sheeting as shown on the face of the extruder prior to installation. Thoroughly clean and dry extruder prior to applying sheeting.

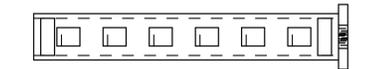
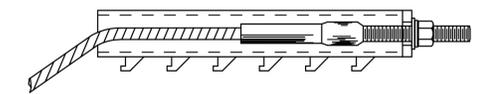
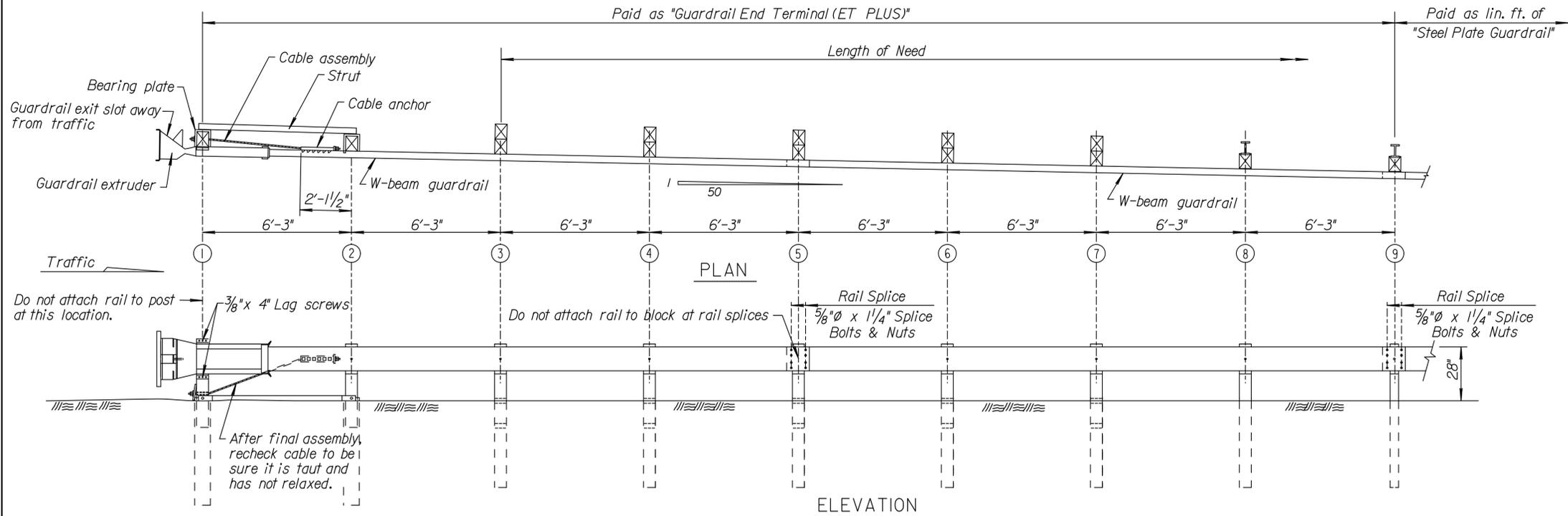
Galvanize all steel parts after fabrication.

The cable anchor assembly must be taut. Use a locking device, (vice grips or channel lock pliers) to prevent the cable from twisting when tightening the nuts.

When rock is encountered during installation, see standard specifications for procedure.

All work and materials required for installation of this terminal are paid under the bid item "Guardrail End Terminal (ET PLUS)".

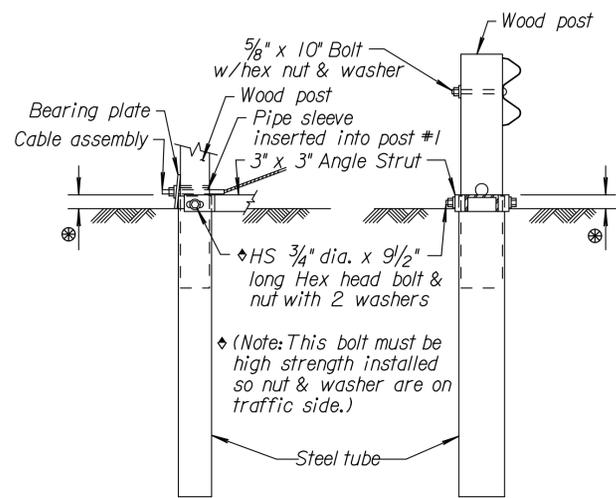
End Terminal (ET-PLUS) details shown on this sheet are for "Information Only" and may not be an exact detail. See Manufacturer's Installation Manual (furnished to Engineer) for component details and installation instructions. See RD611 & RD613 for details of guardrail not shown.



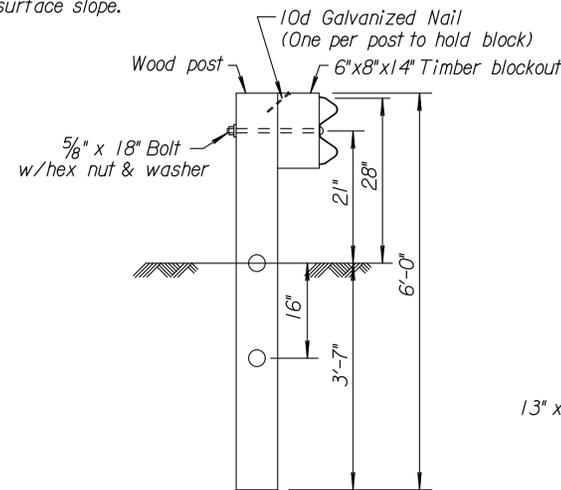
CABLE ANCHOR ASSEMBLY

Note: Installation of 12'-6" rail elements (Contractor's option) instead of 25'-0" long rail elements are acceptable.

⊗ 4" maximum projection of the steel tube above the 10:1 or flatter surface slope.

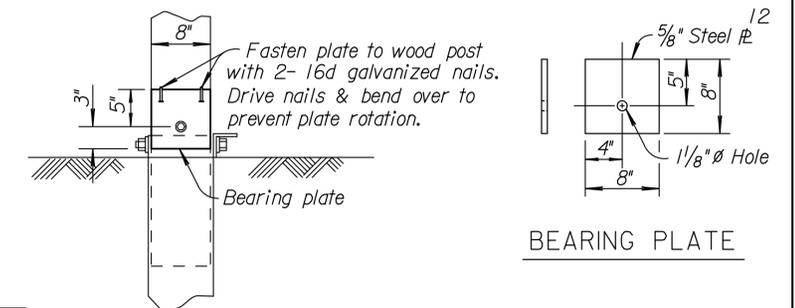


PARTIAL VIEW OF POST #1



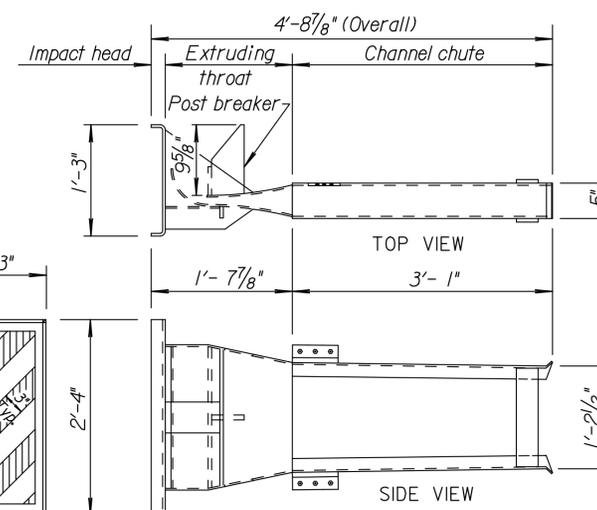
Post #5 similar except rail is not attached.

DETAIL OF POSTS #3 through #7



BEARING PLATE

Orient bearing plate as shown with the hole 5" from the top.



ET PLUS HEAD



END VIEW

Plotted : 20-JAN-2014 17:30
 Drawn By : jpetersen
 File : rd606.dgn

NO.	DATE	REVISIONS	BY	APP'D
11	12-08-10	Revised notes, 28" rail height	S.W.K.	J.O.B.
10	5-10-04	Rev. term. from (LET to ET PLUS)	S.W.K.	J.O.B.
9	8-24-00	Added note Long Rail Element	R.J.S.	J.O.B.

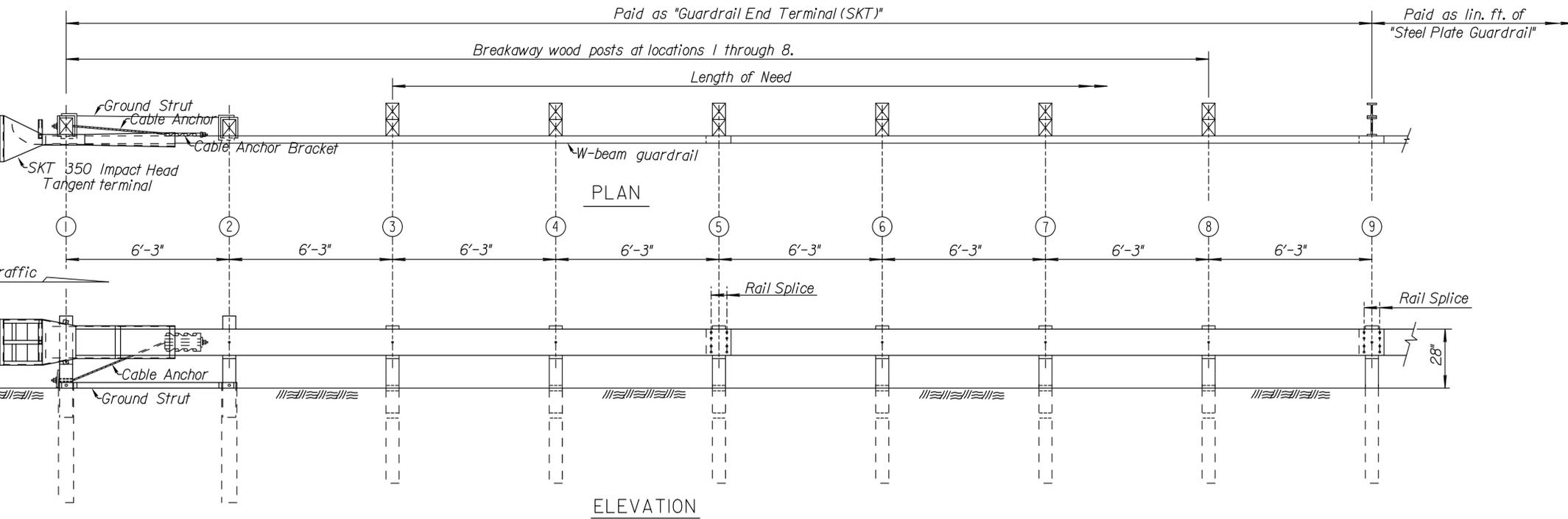
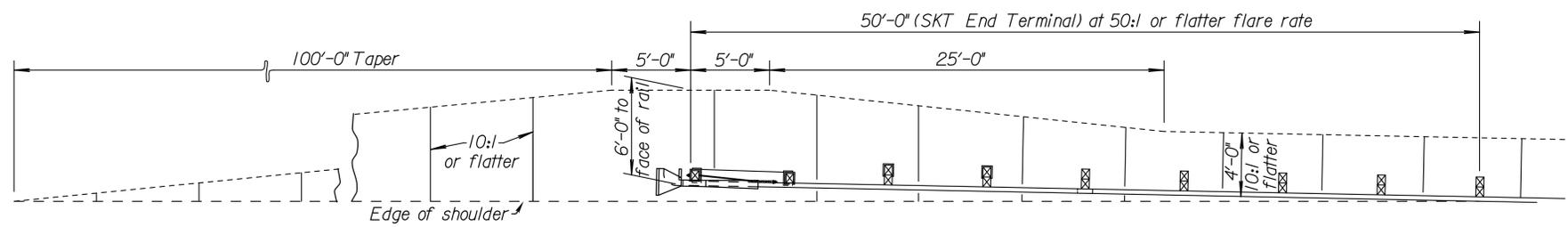
KANSAS DEPARTMENT OF TRANSPORTATION

GUARDRAIL END TERMINAL (ET PLUS)

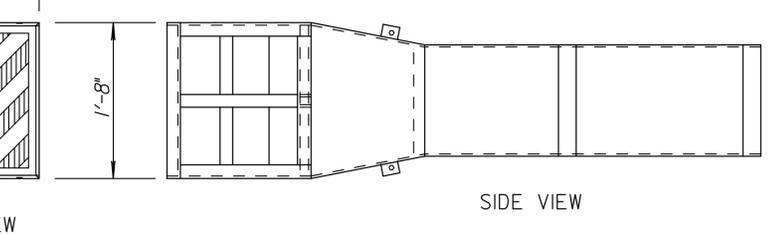
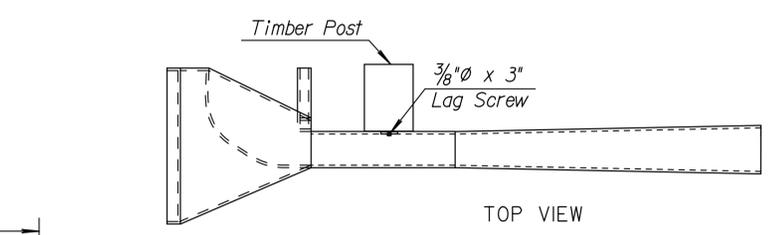
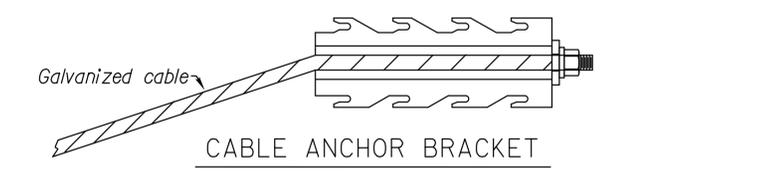
RD606

DESIGNED	QUANTITIES	APP'D.	James O. Brewer
DETAIL CK.	TRACE	TRACED	Bowser
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK. King

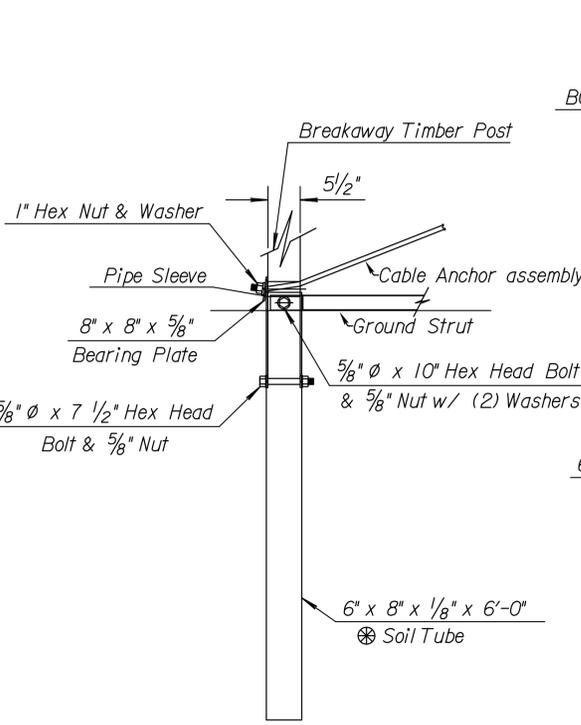
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	13	60



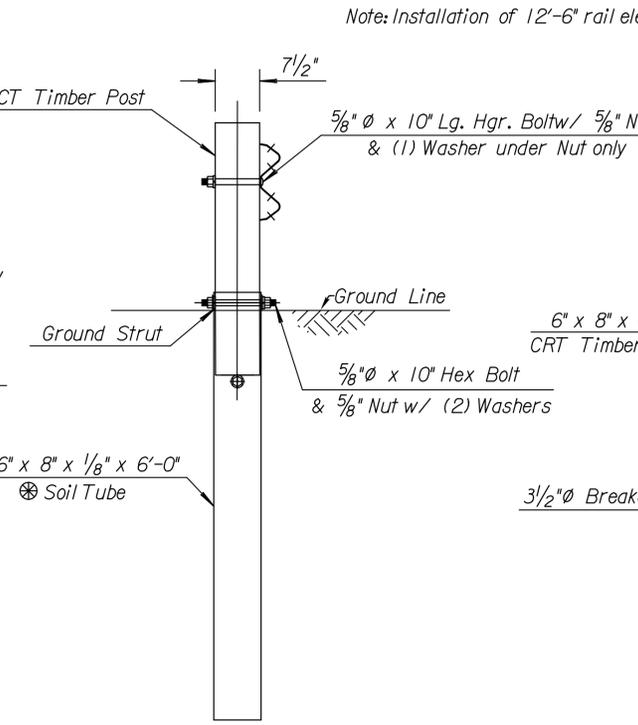
GENERAL NOTE
 Use approved wood (shown & described) or steel posts ① through ⑧ on the (SKT) provided by the manufacturer. Terminal post type used is independent of post type used on the remainder of the installation. No mixing of post types allowed in guard fence run.
 Lap guardrail splices, including 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.
 All steel parts shall be galvanized after fabrication.
 Install retroreflective sheeting as shown on the face of the extruder prior to installations. Thoroughly clean and dry extruder prior to applying sheeting. The cable anchor assembly must be taut. Use a locking device, (vice grips or channel lock pliers) to prevent the cable from twisting when tightening the nuts.
 The soil tubes should not protrude more than 4" above ground (measured along a 5'-0" cord). Site grading may be necessary to meet this requirement.
 The steel tubes may be driven with an approved driving head. Do not drive steel tubes with wood post in the tube. Backfill and satisfactorily compact around steel tubes placed in drilled holes to prevent tube settlement.
 When rock is encountered during installation, see standard specifications for procedure.
 All work and materials required for installation of this terminal shall be paid under the bid item "Guardrail End Terminal (SKT)".
 End Terminal (SKT) details shown on this sheet are for "Information Only" and may not be an exact detail. See Manufacturer's Installation Manual (furnished to Engineer) for component details and installation instructions.
 See RD611 & RD613 for details of guardrail not shown.



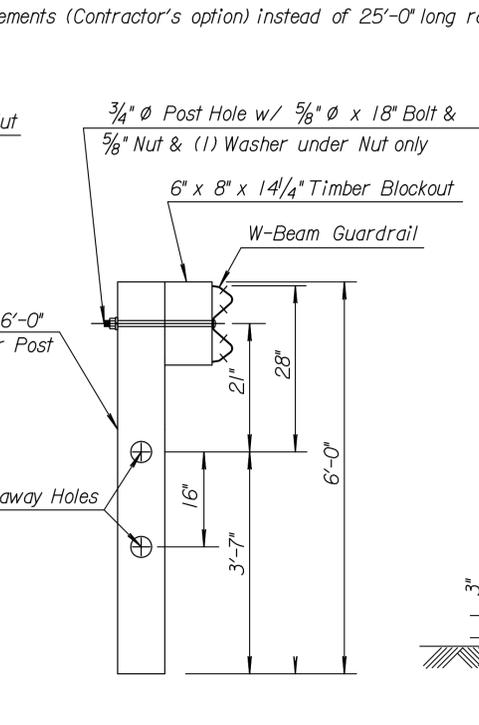
DETAILS OF IMPACT HEAD



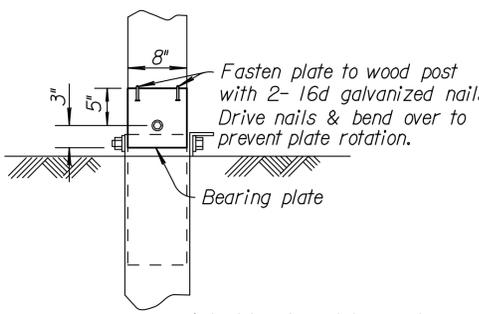
PARTIAL VIEW OF POST #1



DETAIL OF POST #2



DETAIL OF POSTS (#3 through #8)



BEARING PLATE

Note: Installation of 12'-6" rail elements (Contractor's option) instead of 25'-0" long rail elements are acceptable.

⊗ Optional 4'-6" or 5'-0" tube w/soil plate may be used as per the manufacturer's specifications.

KANSAS DEPARTMENT OF TRANSPORTATION				
NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1	12-14-10	Revised notes, 28" rail height	S.W.K.	J.O.B.
			TRACED	Bowser
			TRACE	CK. King

GUARDRAIL END TERMINAL (SKT)
 RD606C

FHWA APPROVAL	I-1-11	APP'D.	James O. Brewer
DESIGNED	QUANTITIES	TRACED	Bowser
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK. King

Plotted: 20-JAN-2014 17:30
 Drawn By: jpetersen
 File: rd606c.dgn

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	14	60

Item Location	SUMMARY OF QUANTITIES										
	Excavation		Concrete		Reinforcing Steel		Piles (Steel)	Piles (Steel)	Abutment Aggregate Drain	Bridge Backwall	Slope Protection
	Class I Cu. Yds.	Class II Cu. Yds.	(Grade 4.0) (AE) Cu. Yds.	(Grade 4.0) (AE)(SA) Cu. Yds.	(Grade 60) (Epoxy Coated) Lbs.	(Grade 60) Lbs.	(HP10x42) Ft.	(HP12x53) Ft.	Cu. Yds.	Prof. System Sq. Yds.	(Riprap Stone) Cu. Yds.
Abutment No. 1	55	--	--	**	**	--	264	--	15	22	470
Pier No. 1	--	44	55.1	--	--	1,670	--	544	--	--	--
Pier No. 2	--	44	55.1	--	--	1,670	--	544	--	--	--
Abutment No. 2	55	--	--	**	**	--	268	--	15	22	970
Substr. Total	110	88	110.2	--	--	3,340*	532	1,088	30	44	1,440
*** Superstr. Total	--	--	--	443.5	113,000	--	--	--	--	--	--
Total	110	88	110.2	443.5	113,000	3,340*	532	1,088	30	44	1,440

TRAFFIC DATA	
AADT (2006)	263
T	11%

INDEX TO BRIDGE DRAWINGS	
Sheet No.	Drawing
14	General Notes and Quantities
15	Contour Map
16	Construction Layout
17	Abutment Details
18	Abutment Aggregate Drain
19	Details of Pier No. 1 and No. 2
20 & 21	Superstructure Details
22	27* Kansas Corral Rail
23	Bill of Reinforcing and Bending Diagram
24	Slab Elevations
Standards	
25	Bridge Berm and Slope Protection
26	Standard Pile Details
27	Reinforcing Supports and Spacers
28	Bridge Excavation
29	Boring Logs

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

* Pier Web Wall
 ** Quantities are included in the Superstr. Total Quantity.
 *** Abutment, Slab, Corral Rail, Pier Beam and Spacer Frames

† Summary of Piling
 Abutment No. 1 - 4 @ 66'
 Pier No. 1 - - 8 @ 68'
 Pier No. 2 - - 8 @ 68'
 Abutment No. 2 - 4 @ 67'

* NOTE: Abut. No's 1 & 2 - Use HP10x42
 Pier No's 1 & 2 - Use HP12x53

GENERAL NOTES

EXISTING STRUCTURE: Plans of the existing structure are on file and available for inspection by qualified bidders at the Leavenworth County Courthouse office at 300 Walnut Ste. 007, Leavenworth, KS 66048.

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

BRIDGE EXCAVATION: Elevation 873.50 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

BACKFILL COMPACTION: Compact backfill at the abutments.

PILING: Drive all piling to penetrate or bear upon the Shale Bedrock Formation a minimum elevation of 823.5. Driving shall stop when in the opinion of the Engineer additional driving may damage the piling. Drive all piling to the Pile Driving Formula Load of:

Abutment No. 1	70 Tons
Pier No. 1	93 Tons
Pier No. 2	93 Tons
Abutment No. 2	70 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 No. 1 & 2 and Piers No. 1 & 2 will follow the "Standard Pile Details" Sheet (BR110).

CORRAL RAIL: Build the corral rail after the falsework is struck.

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

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

BRIDGE DECK GROOVING: After the bridge deck has cured, transversely groove the deck in accordance with KDOT Specifications. For phased construction groove each completed phase before opening to traffic. Align the grooves from each adjacent phase across the bridge deck without jogs or discontinuities. For skewed bridges all grooving will be perpendicular to the centerline of the bridge.

PIER BEAM CONSTRUCTION: Cure the pier wall as required by the KDOT Specifications before beginning the pier beam construction (placing resteel or formwork). Do not drill and grout bolts or other devices into the pier wall used for falsework support unless approved by the Engineer. Cure the pier wall as required by the KDOT Specifications before beginning to place the superstructure concrete.

REMOVAL OF EXISTING STRUCTURE: Removal of existing structure is included in the bid item, "Removal of Existing Structure", Lump Sum. All materials removed from the existing structure shall become the property of the Contractor except for guardrail, signs and object markers. Place the salvaged material in the R/W area to be picked up by the County. Remove all other material from the site.

SLOPE PROTECTION: Place Slope Protection (Riprap Stone) to the limits and thicknesses shown on the plans or as directed by the Engineer. Use (Light 24") as described in Section 1114 placed to the limits shown on the plans. Place geotextile fabric under full extent of slope protection at both abutment embankments. See Abutment Aggregate Drain Sheet.

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0)(AE)(SA). Substructure concrete is bid as Concrete (Grade 4.0)(AE). Bevel all exposed edges of all concrete with a 3/4" triangular molding, except as otherwise noted on the plans. Construction Joints are optional with the Contractor, but if used, place only at locations shown, or at locations approved by the Engineer.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel 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.

CAMBER: Provide camber as shown on the Camber Diagram unless the Contractor uses either long span steel beam falsework (concrete dead load deflection greater than 1/4") or timber falsework with greater than 12'-0" clear span. If either case exists, submit falsework plans that show the additional required camber.

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. See the Bridge Design Manual, Section 5.1 "Review and Approval of Falsework Plans", for a listing of items to be included on the falsework plan. Submit three sets of details in compliance with KDOT Specifications to the Owner's designated Engineer for review and distribution.

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

FALSEWORK: Leave the falsework in place for the entire unit until 15 days after the last concrete pour for the unit or longer as directed by the Engineer.

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

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

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.

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

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

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

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

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

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

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

DESIGN DATA

DESIGN SPECIFICATIONS: AASHTO Specifications, 2012 Edition and latest Interim Specifications. Load and Resistance Factor Design

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

UNIT STRESSES:

Concrete (Grade 4.0)	f'c = 4 ksi
Concrete (Grade 4.0)(AE)	f'c = 4 ksi
Concrete (Grade 4.0)(AE)(SA)	f'c = 4 ksi
Reinforcing Steel (Grade 60)	fy = 60 ksi
Steel Piles	fy = 50 ksi

LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength	Service	Phi
Abutments 1 & 2	70	50	0.5
Piers 1 & 2	93	73	0.5

LFD & LFR RATING FACTORS		
Rating Level	Inventory	Operating
Truck		
HS-20 (36T)	1.59	2.65
Type HET (110T)		1.63
2002 LFD Rating, 17th Edition AASHTO		
HL-93 Loading	1.29	1.67
2008 Manual for Bridge Evaluation		

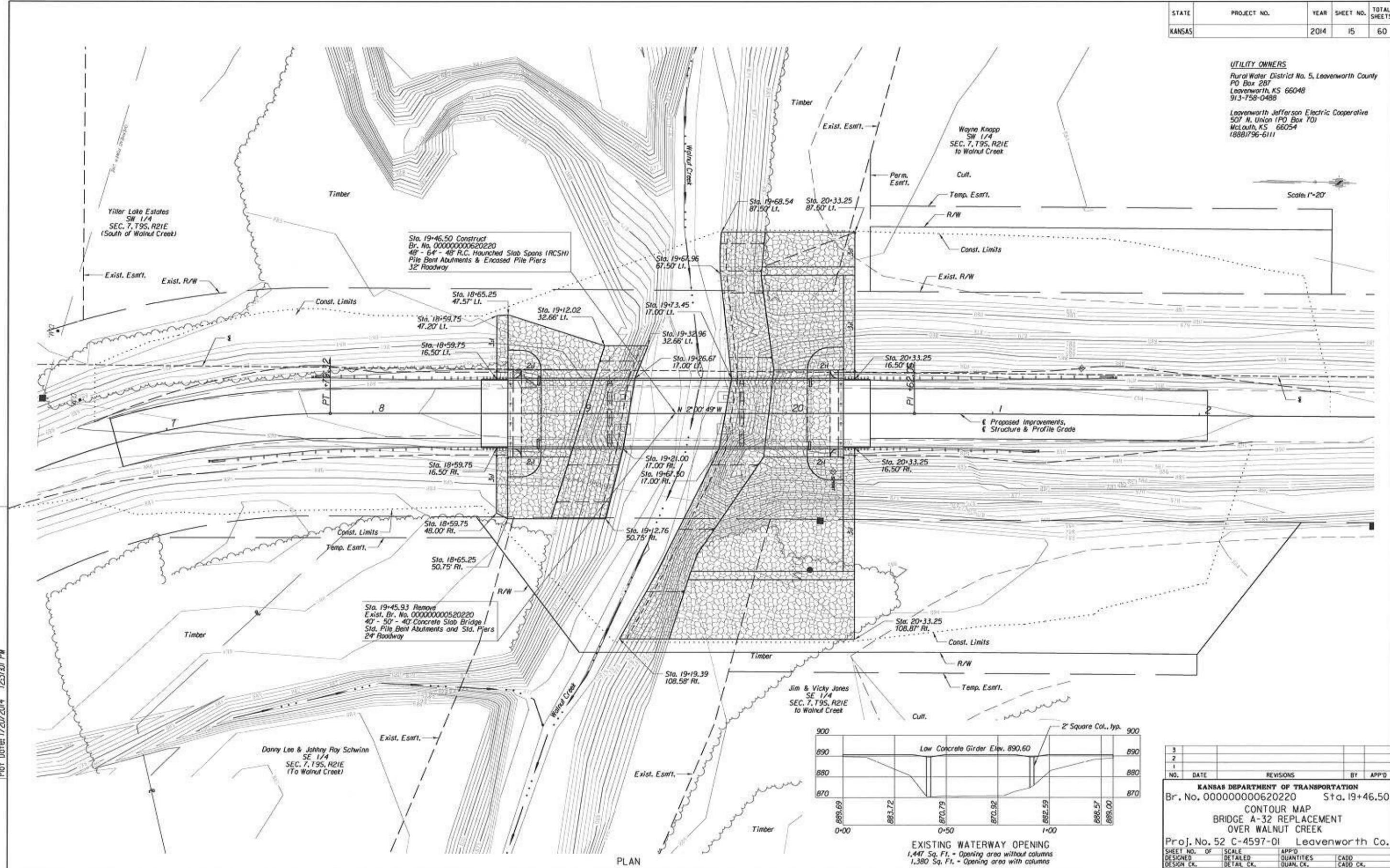
3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION Br. No. 00000000620220 Sta. 19+46.50 GENERAL NOTES AND QUANTITIES BRIDGE A-32 REPLACEMENT OVER WALNUT CREEK Proj. No. 52 C-4597-01 Leavenworth Co.				
SHEET NO. OF	SCALE	APP'D		
DESIGNED	x	DETAILED	x	QUANTITIES
DESIGN CK.	x	DETAL CK.	x	QUAN. CK.
			x	CADD
			x	CADD CK.

Plotted By: \$\$(USER\$NAME\$\$)
 File: P:\V\02\Drawings\Sheets\Bridges\A-32 gen-notes.dgn
 Plot Date: 1/20/2014 5:45:18 PM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	15	60

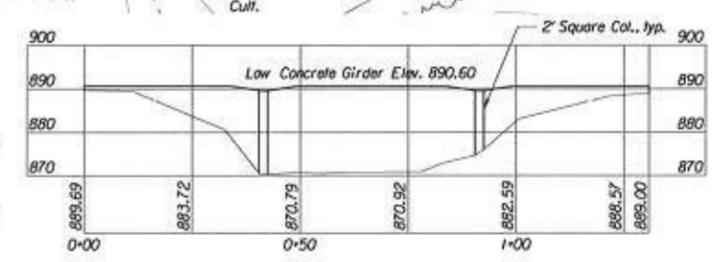
UTILITY OWNERS
 Rural Water District No. 5, Leavenworth County
 PO Box 287
 Leavenworth, KS 66048
 913-758-0488

Leavenworth Jefferson Electric Cooperative
 507 N. Union (PO Box 70)
 McClouth, KS 66054
 18881796-6111



Scale: 1"=20'

Plotted By: s8\USER\MAC\ss Plot Location: s\UNITS
 File: P:\0.052.01\Drawings\Sheets\Bridges\A-32 Contour Map.dgn
 Plot Date: 1/20/2014 12:37:01 PM



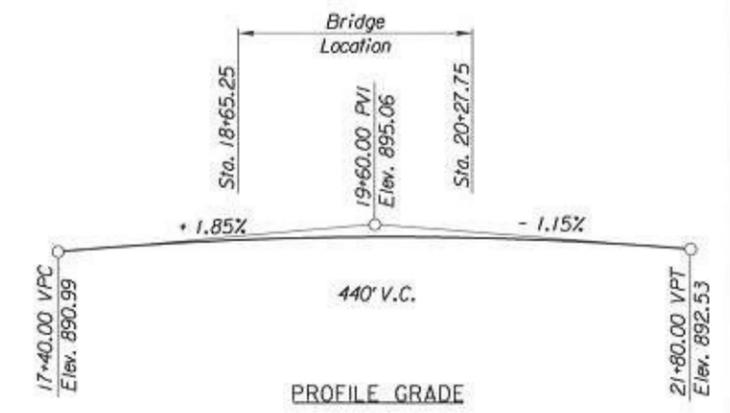
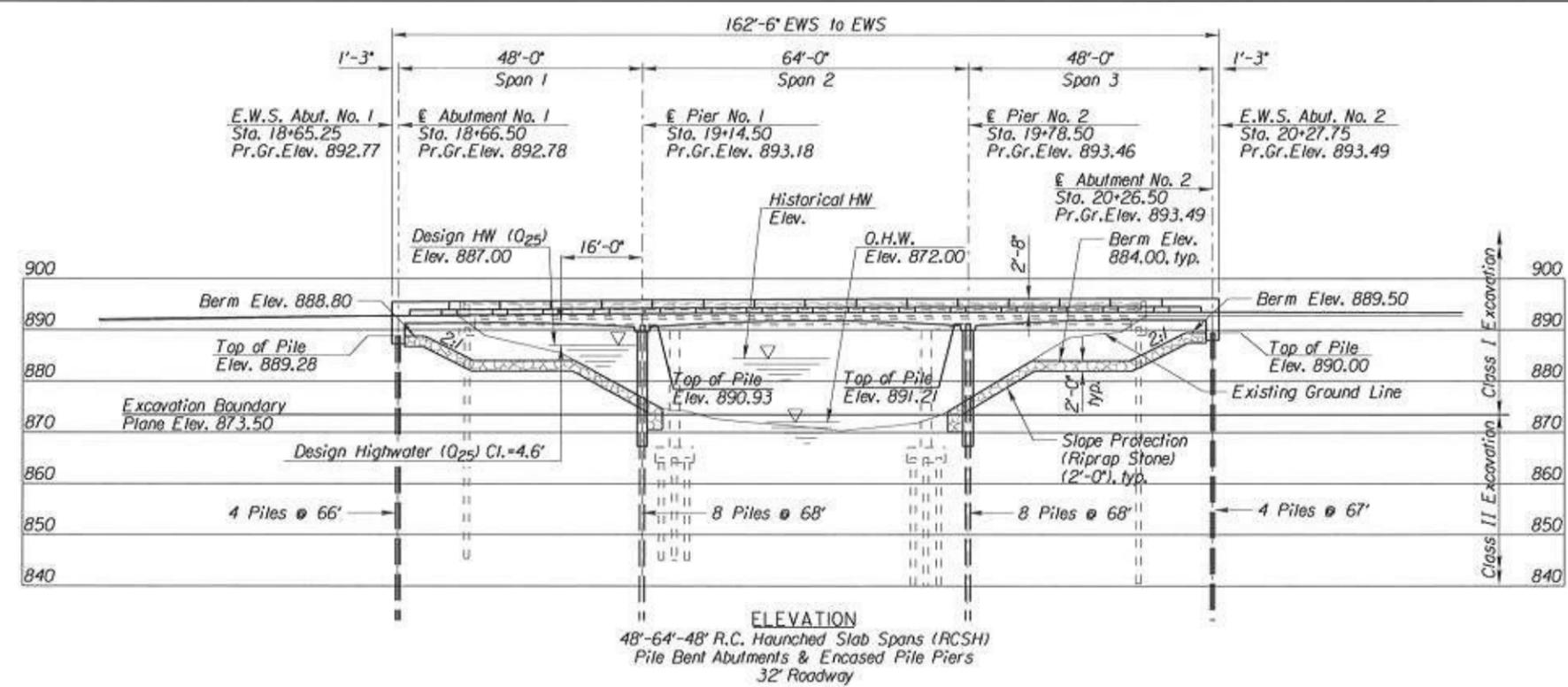
EXISTING WATERWAY OPENING
 1,447 Sq. Ft. - Opening area without columns
 1,380 Sq. Ft. - Opening area with columns

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
 CONTOUR MAP
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

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

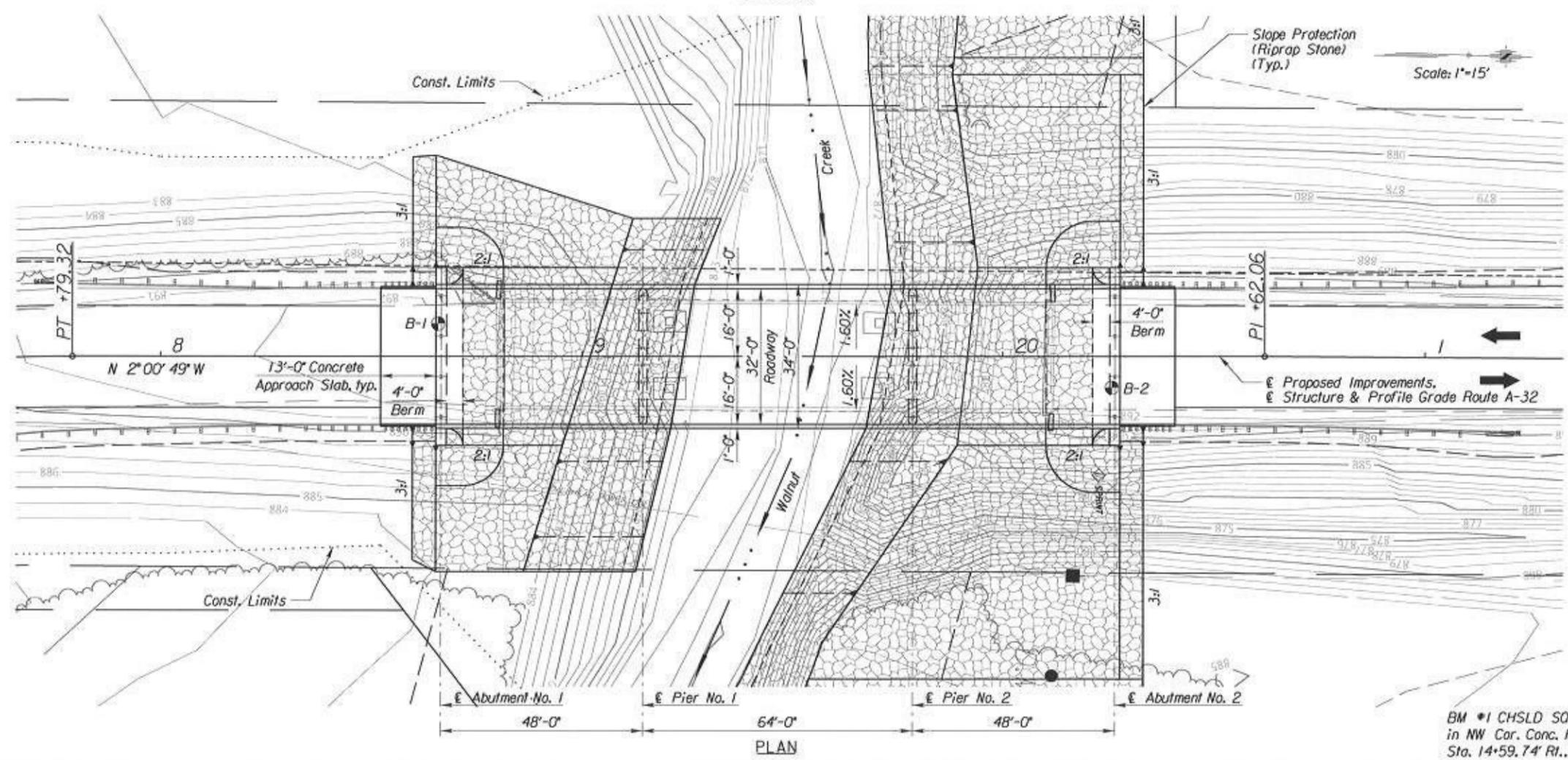
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	16	60



Note:
E.W.S. denotes End of Wearing Surface.
Utilities on the bridge to be relocated by others.
Remove existing bridge piers to 1'-0" minimum below existing ground line.

DRAINAGE DATA

Local Drainage Area	44.3	Sq.Mi.
Design Frequency	25	Yr.
Design Discharge (Q ₂₅)	18,362	cfs
Design Highwater Elevation	887.0	Ft.
Design Backwater	1.4	Ft.
Change in Backwater	0.0	Ft.
Design Backwater Elevation	888.0	Ft.
Overtopping Elevation (N. of Project)	885.0	Ft.
Overtopping Discharge	9,208	cfs
Overtopping Frequency	5	Yr.
Discharge at Q ₁₀₀	26,127	cfs
Backwater at Q ₁₀₀	1.5	Ft.
Change in Backwater at Q ₁₀₀	0.0	Ft.
Backwater Elevation at Q ₁₀₀	888.6	Ft.
Historic Highwater Elevation		Ft.
Ordinary Highwater Elevation	872.0	Ft.
Total Waterway Provided	1,507	Sq.Ft.
Design Waterway Provided (Q ₂₅)	1,003	Sq.Ft.
Estimated Ord. Highwater Discharge		cfs
Average Velocity at Q ₂₅	9.4	fps
Average Velocity at Q ₁₀₀	10.5	fps



BM #1 CHSLD SO
in NW Cor. Conc. HW
Sta. 14+59.74' Rl.. Elev. = 883.57

FEMA Flood Insur. Rate Map Leavenworth County.
8/18/2009 Zone A at Bridge Site, Community
Panel 200186 0125 F Map No. 20103C0125F

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 00000000620220 Sta. 19+46.50
CONSTRUCTION LAYOUT
BRIDGE A-32 REPLACEMENT
OVER WALNUT CREEK
Proj. No. 52 C-4597-01 Leavenworth Co.

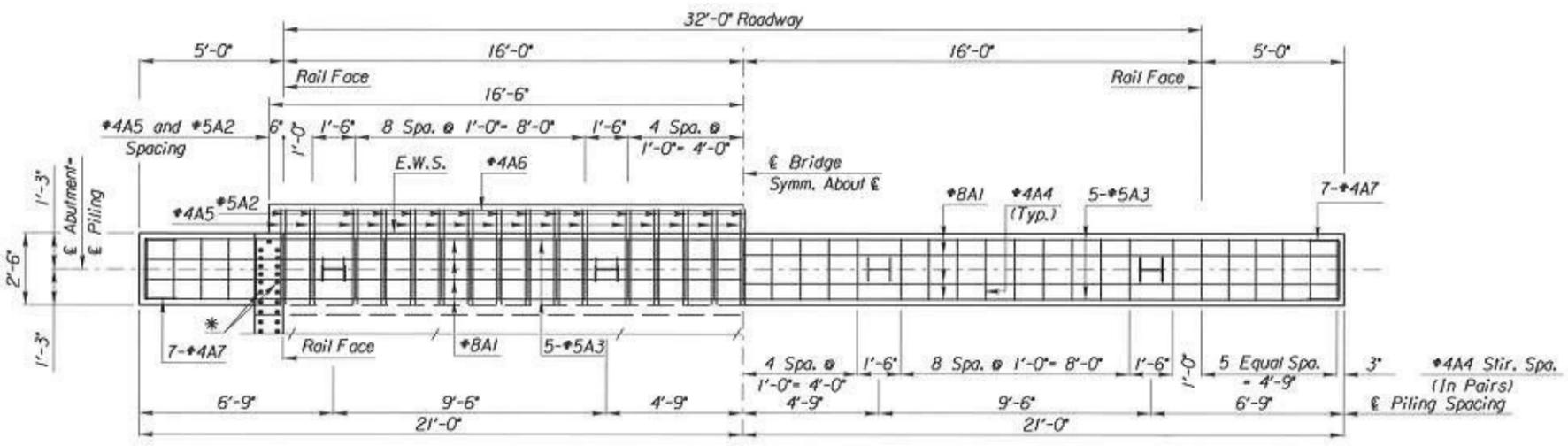
SHEET NO. OF	SCALE	APP'D
DESIGNED	DETAILED	QUANTITIES
DESIGN CR.	DETAIL CR.	QUAN. CR.
		CADD CR.

Plotted By: \$USER\$
Plot Location: \$UNIT\$
File: P:\10.052.01\Drawings\Sheet\Bridges\A-32 Construction Layout.dgn
Plot Date: 1/20/2014 12:37:30 PM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	17	60

kslab-1710-501.dgn
 LRPD
 Roadway Width = 32'-0"
 Skew and Direction = 0
 Number of Piles = 4

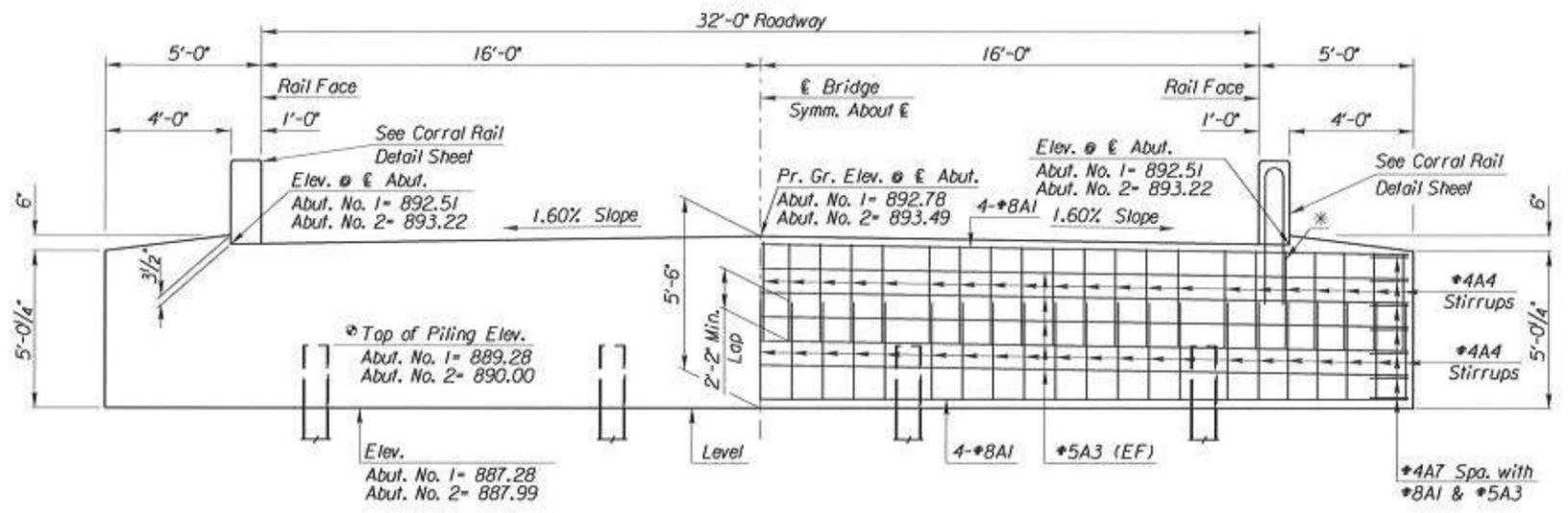
Note to designer: Do not remove this information



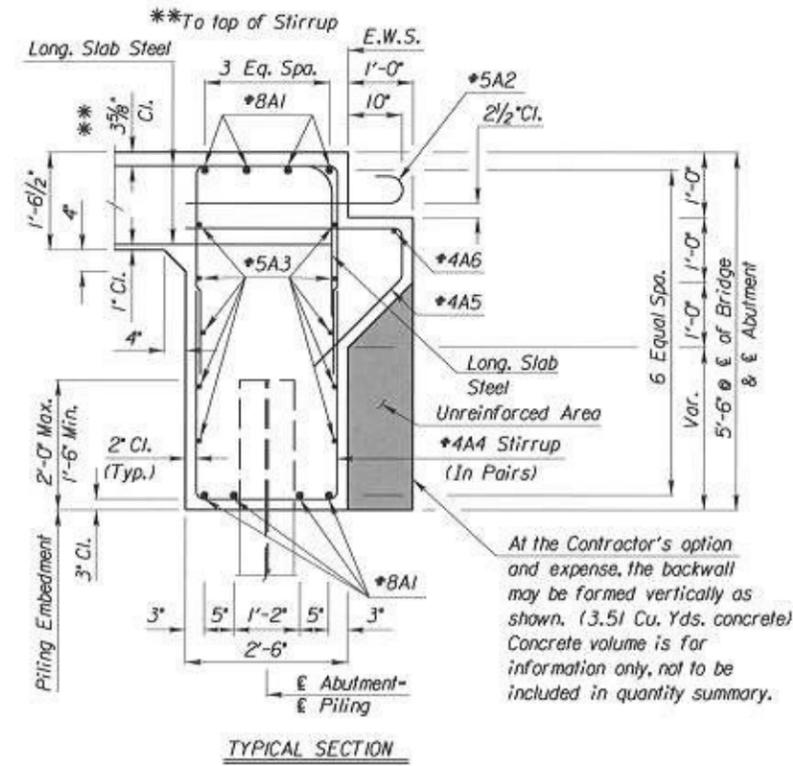
Reinforcing Steel in Top of Abutment

Reinforcing Steel in Bottom of Abutment

PLAN

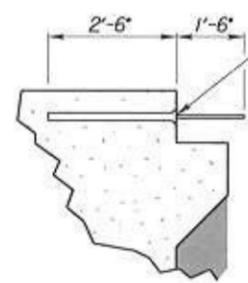


ELEVATION
(Along E Abutment)



TYPICAL SECTION

* Adjust stirrup to avoid conflict with rail bars.



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

Legend
 EF = Each Face

Note: Top of piling elevations are based on 2'-0" maximum embedment.

Plotted By: ssUSE:RVA/C:ss Plot Locations: \$UNIT\$
 File: P:\V0.052.01\Drawings\Sheets\Bridges\A-32 Abutment of 501.dgn
 Plot Date: 1/20/2014 12:36:00 PM

4	7/29/09	Remove Factored Resistance	DRT	KFH
3	03/24/09	Add Factored Resist. to Pile Loading	DRT	KFH
2	3/6/07	correct Abut. Dim. 'A' for 54-72-54	DRT	KFH
1	4/6/06	Adj. Abut. Vol. & DL	DRT	KFH
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
 ABUTMENT DETAILS
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.
 SHEET NO. OF SCALE APP'D
 DESIGNED DRT DETAILED DRT QUANTITIES DRT CADD RCJ
 DESIGN CK. DETAIL CK. QUAN. CK. CADD CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	18	60

GENERAL NOTES

GEOSYNTHETICS: Use material that complies with KDOT Specification Section 1710 Class 2 subsurface drainage fabric. Place the Class 2 subsurface drainage fabric on graded and compacted material shaped as shown. Allow for enough material so that the top can be overlapped and the end folded to completely enclose the aggregate drain. Place the perforated drain pipe and couple to non-perforated pipe as shown. Allow the non-perforated pipe to pass through a hole carefully cut in fabric. Place aggregate within fabric to just leave the top of the pipe visible. Verify the slope of the pipe, that it is not damaged or displaced and that the couplers are firmly coupled. Continue to back fill to the elevation and shape shown. Lap the top of the fabric a minimum of 3'-0". Fold and wrap the ends to enclose the drainage materials. Secure the folds and wraps by sewing or approved methods.

AGGREGATE: Use aggregates that complies with KDOT Specifications for SB-1, SB-2 or SB-3.

BASE COURSE REINFORCEMENT: Use "Base Course Reinforcement" that complies with KDOT Specification Section 1710 or approved material. Place this material in uniform layers without gaps or sags per the manufacturer's recommendations.

GEOFOAM: Use "Geofoam" that complies with KDOT Specification 07-2005 latest revision or approved material. Bond this material to the back wall protection using materials recommended by the manufacturer.

GEOTEXTILE FABRIC: Use "Geotextile Fabric" that conforms with KDOT Specification 1710 and found on the Prequalified Materials List.

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

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

ABUTMENT AGGREGATE DRAIN: The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation Sheet. Backfill, compact & grade the cohesive soil to the limits shown. Place the bridge backwall protection, geofoam, geotextile, perforated pipe, alternating layers of aggregate and base course reinforcement as shown. Place the outlet pipe, the CMP, and the backfill. Guide post and coarse aggregate are subsidiary to this bid item. Guide post and coarse aggregate are not required if the CMP empties onto Slope Protection. Enclose the entire Abutment Aggregate Drain with the geotextile

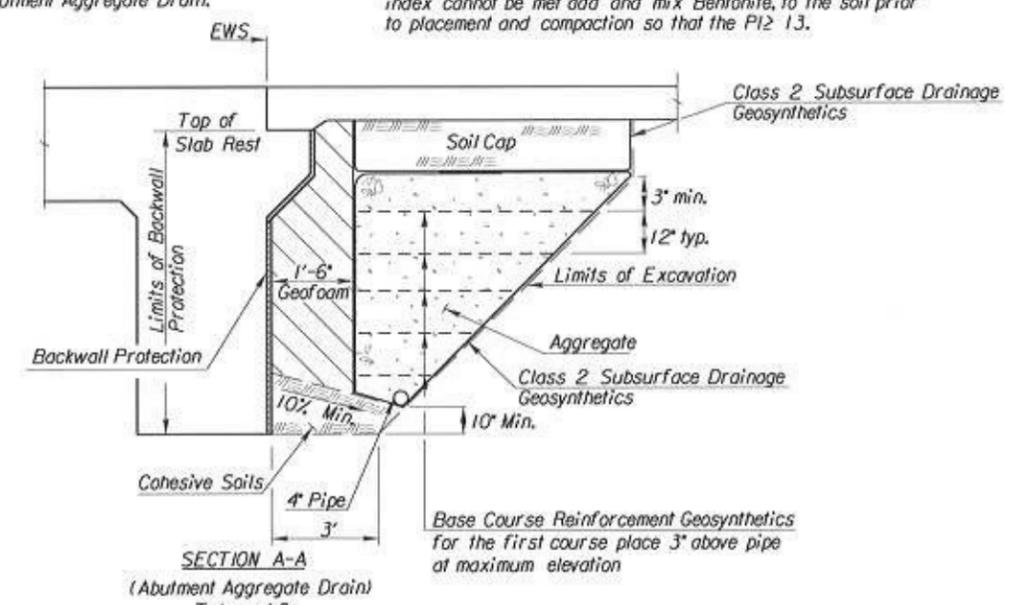
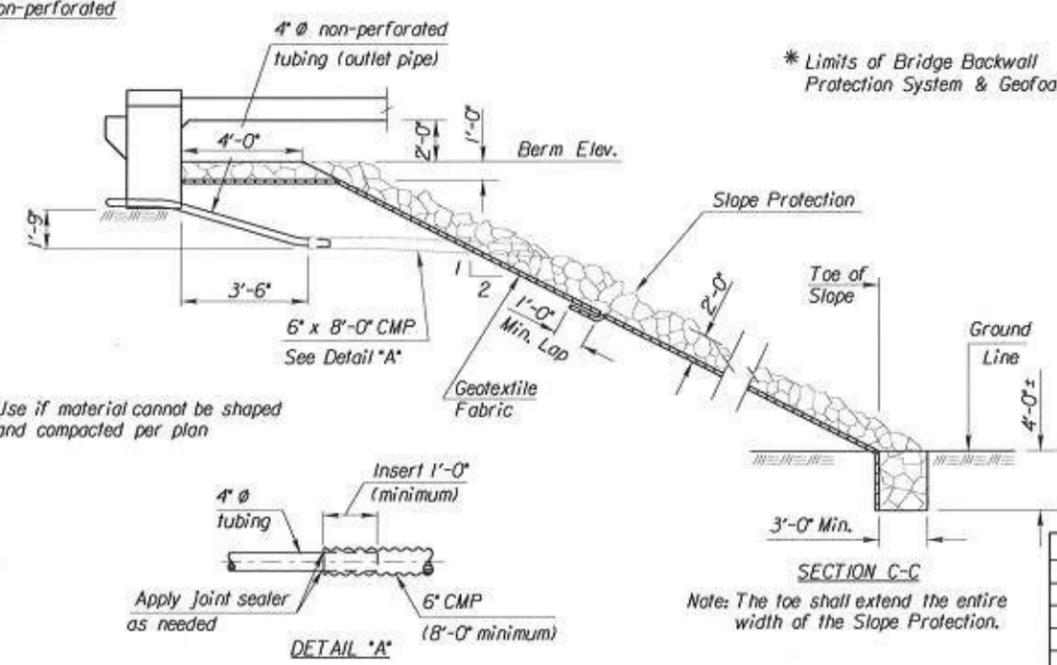
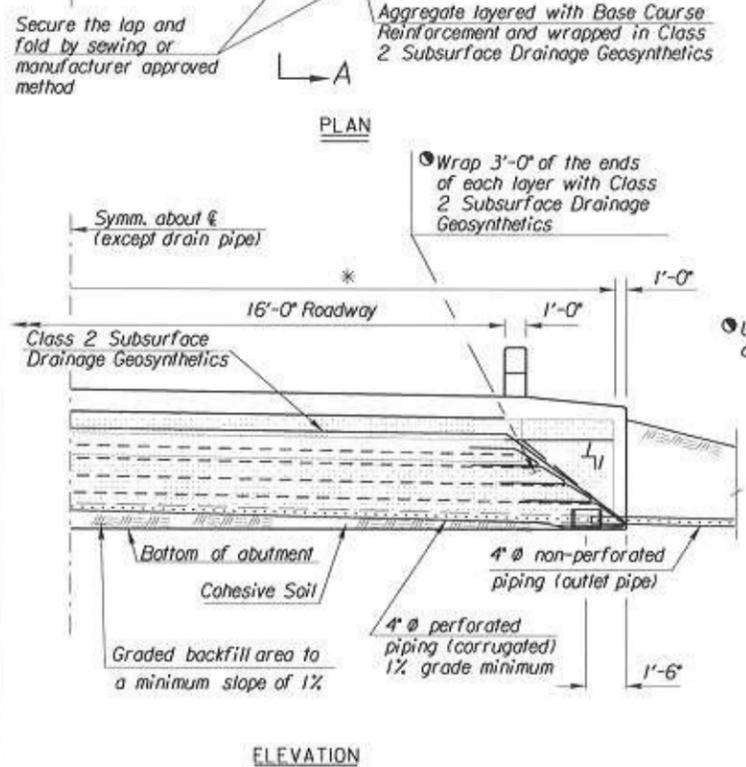
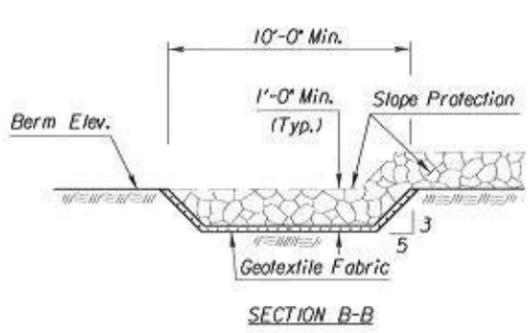
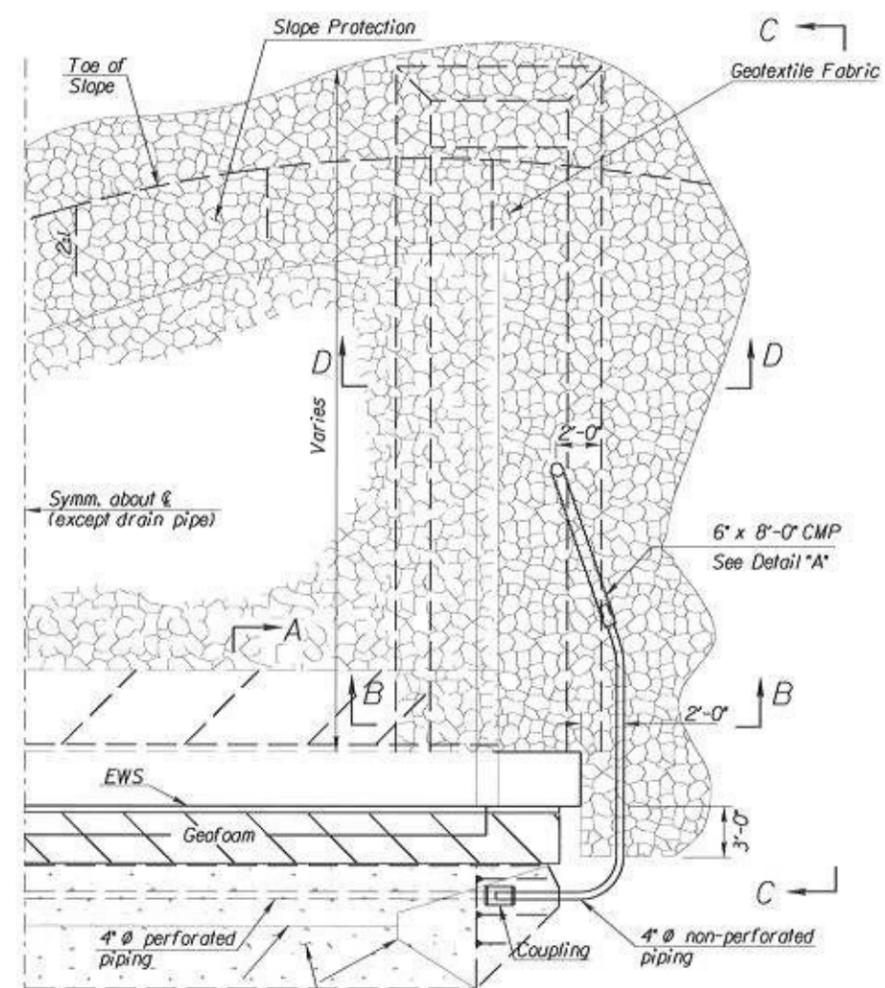
BRIDGE BACKWALL PROTECTION SYSTEM: Apply a non coal-tar Bridge Backwall Protective System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Repair any damage done at no charge to the state.

Compact the abutment backfill. See the KDOT Specifications.

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

Fit the CMP end section with 1/4" galvanized mesh screen to prevent the entrance of rodents. Seal the joint between the outlet pipe and the end section with a joint sealer. Place Coarse aggregate at the outlet end as shown.

COHESIVE SOILS: Grade the bottom surface of the excavated area to drain as shown. Backfill this area with a cohesive type of soil. The soil will have a Unified Soil Classification of CL, CH, ML or MH according to ASTM D2487. Classification System with a minimum plasticity index of 13. Compact the material to Type A, MR-90 specifications. If the plasticity index cannot be met add and mix Bentonite, to the soil prior to placement and compaction so that the PI \geq 13.



SUMMARY OF QUANTITIES (2 Abutments)	
Abutment Aggregate Drain	30 Cu. Yds.
Bridge Backwall Protection System	22 Sq. Yds.
Items subsidiary to Abutment Aggregate Drain	
4" Perforated Pipe	80 Lin. Ft.
4" Outlet Pipe	19.8 Lin. Ft.
6" CMP	16 Lin. Ft.
Soil Cap	16 Cu. Yds.
Geosynthetics (Class 2 Subsurface Drainage)	162 Sq. Yds.
Geosynthetics (Base Course Reinforcement)	90 Sq. Yds.
Geofoam	12 Cu. Yds.
Items subsidiary to Slope Protection	
Geotextile Fabric	1662 Sq. Yds.

NO.	DATE	REVISIONS	BY	APP'D
4	7/23/12	Added Soil Cap to Summary	JPJ	TLF
3	5/17/12	Added Aggregate Drain	JPJ	TLF
2	8/3/10	Geotextile in Drip-line Only	JPJ	TLF
1	7/14/08	Change Type 'C' Compaction to 'B'	JPJ	KFH

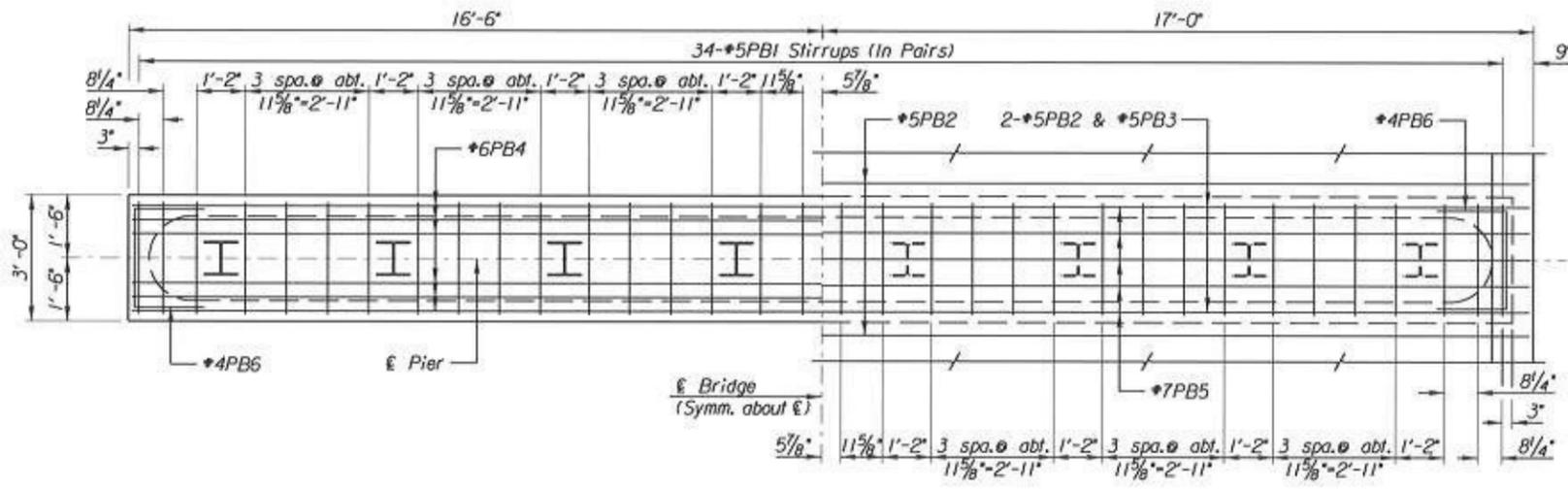
KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
ABUTMENT AGGREGATE DRAIN
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

SHEET NO.	OF	SCALE	APP'D
DESIGNED	JPJ	DETAILED	JPJ
QUANTITIES	QUAN. CK.	CADD	CADD CK.

Std. Base File: br10acc.dgn
 Plotted By: \$BOSCHMAME\$\$
 File: P:\V\052\Drawings\Sheets\Bridges\A-32-aggregate-drain-br10acc.dgn
 Plot Date: 1/20/2014 4:47:33 PM

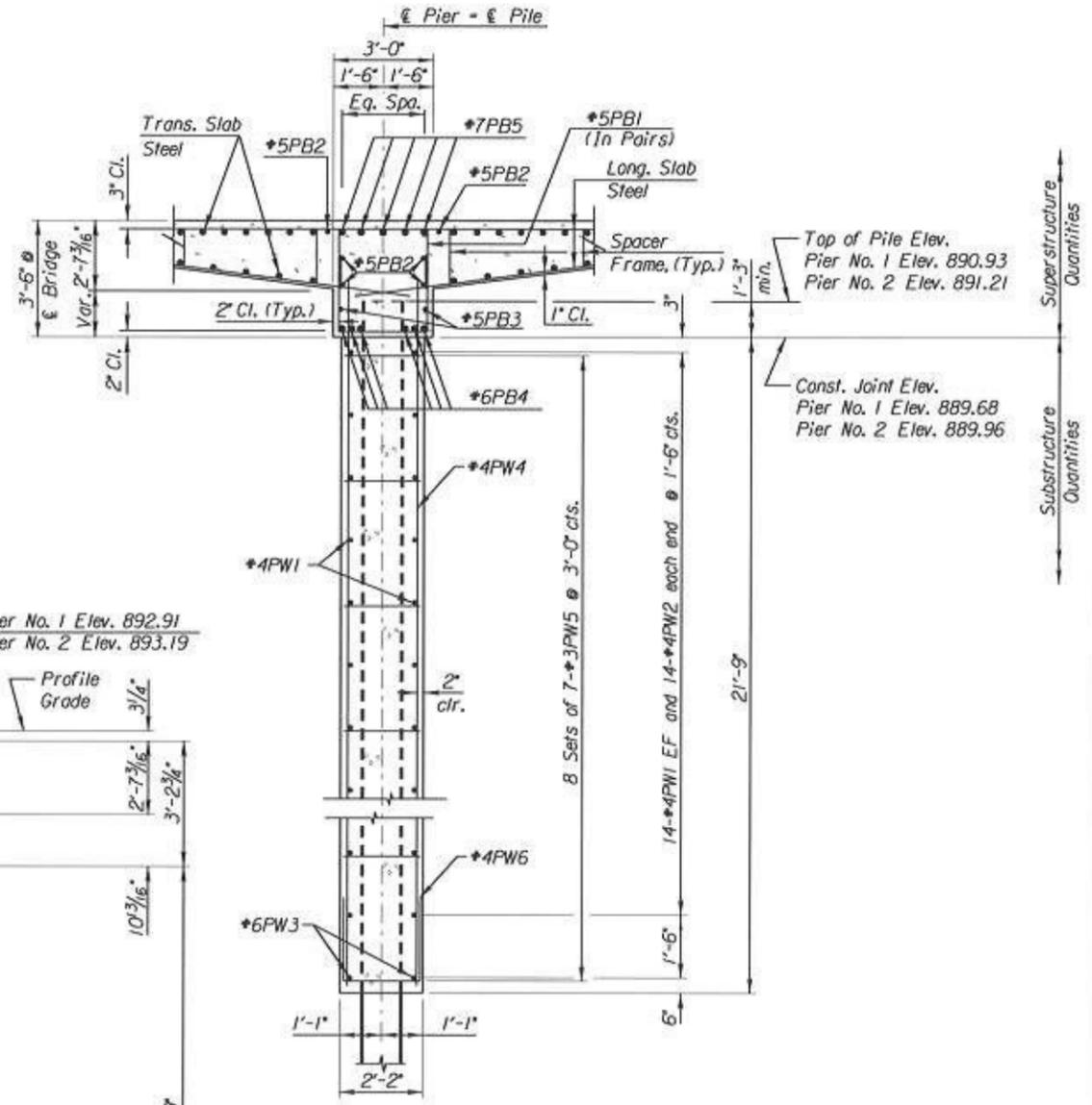
Note: Place the CMP flowline 1'-0" above ditch flowline, toe of sideslope, or as shown on the Construction Layout. For stream crossings place outlet on downstream side of bridge.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	19	60



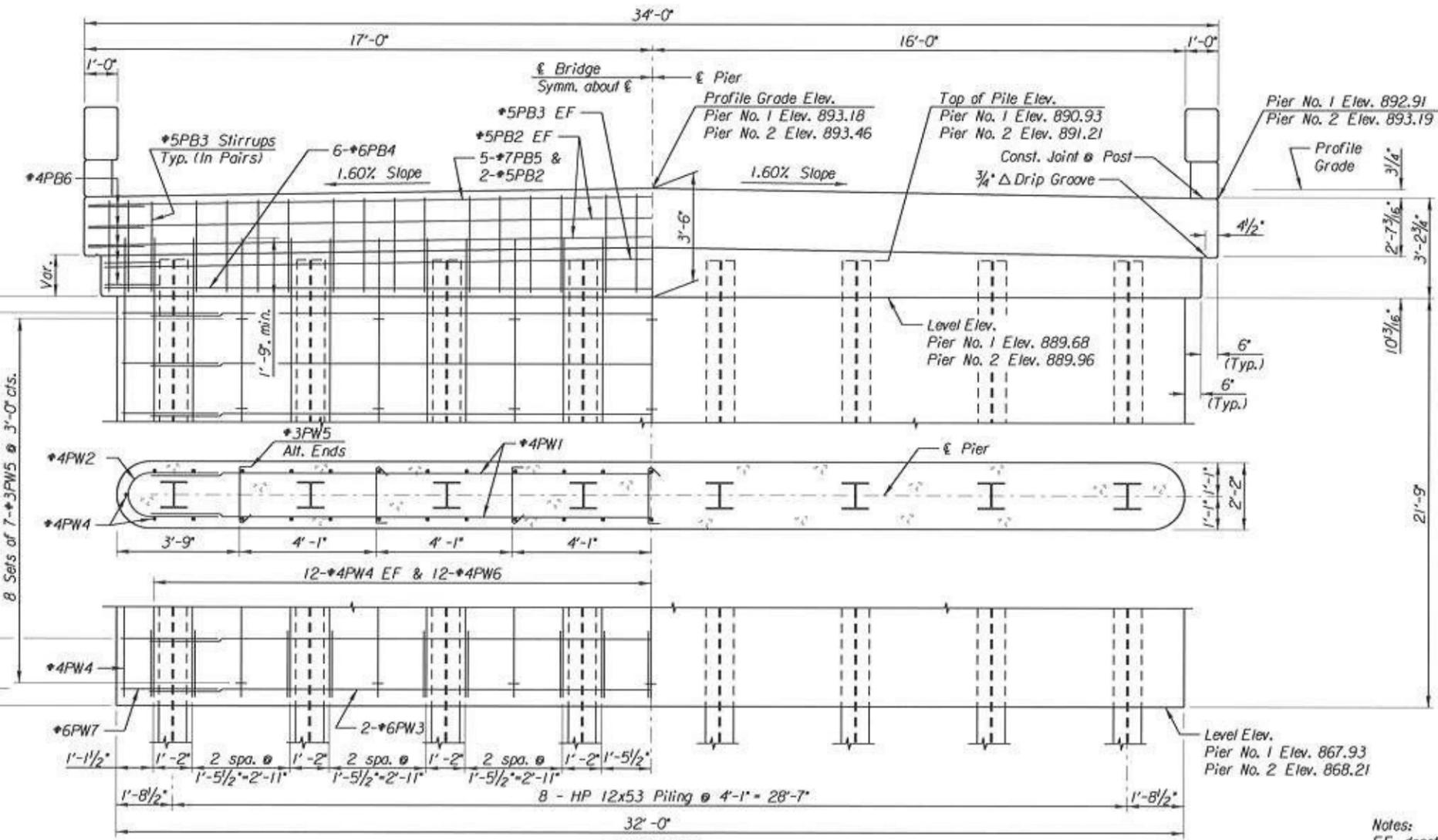
REINFORCING STEEL IN BOTTOM OF PIER BEAM
REINFORCING STEEL IN TOP OF PIER BEAM

PLAN



SECTION THRU PIER BEAM

Superstructure Quantities
Substructure Quantities



ELEVATION

● Face of Pier Beam
Looking Forward with Stationing

PIER PILE LOADING

Design	Allowable
73 Tons/Pile	97 Tons/Pile

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

KANSAS DEPARTMENT OF TRANSPORTATION
Br. No. 00000000620220 Sta. 19+46.50
DETAILS OF PIER NO. 1 AND NO. 2
BRIDGE A-32 REPLACEMENT
OVER WALNUT CREEK
Proj. No. 52 C-4597-01 Leavenworth Co.

Notes:
EF denotes each face.
Details shown for Pier No. 1, Pier No. 2 is similar,
except as noted.

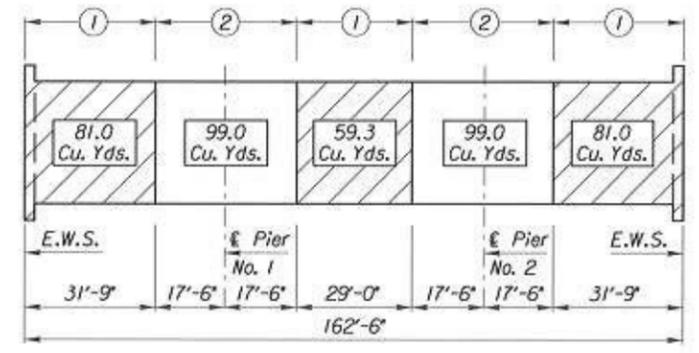
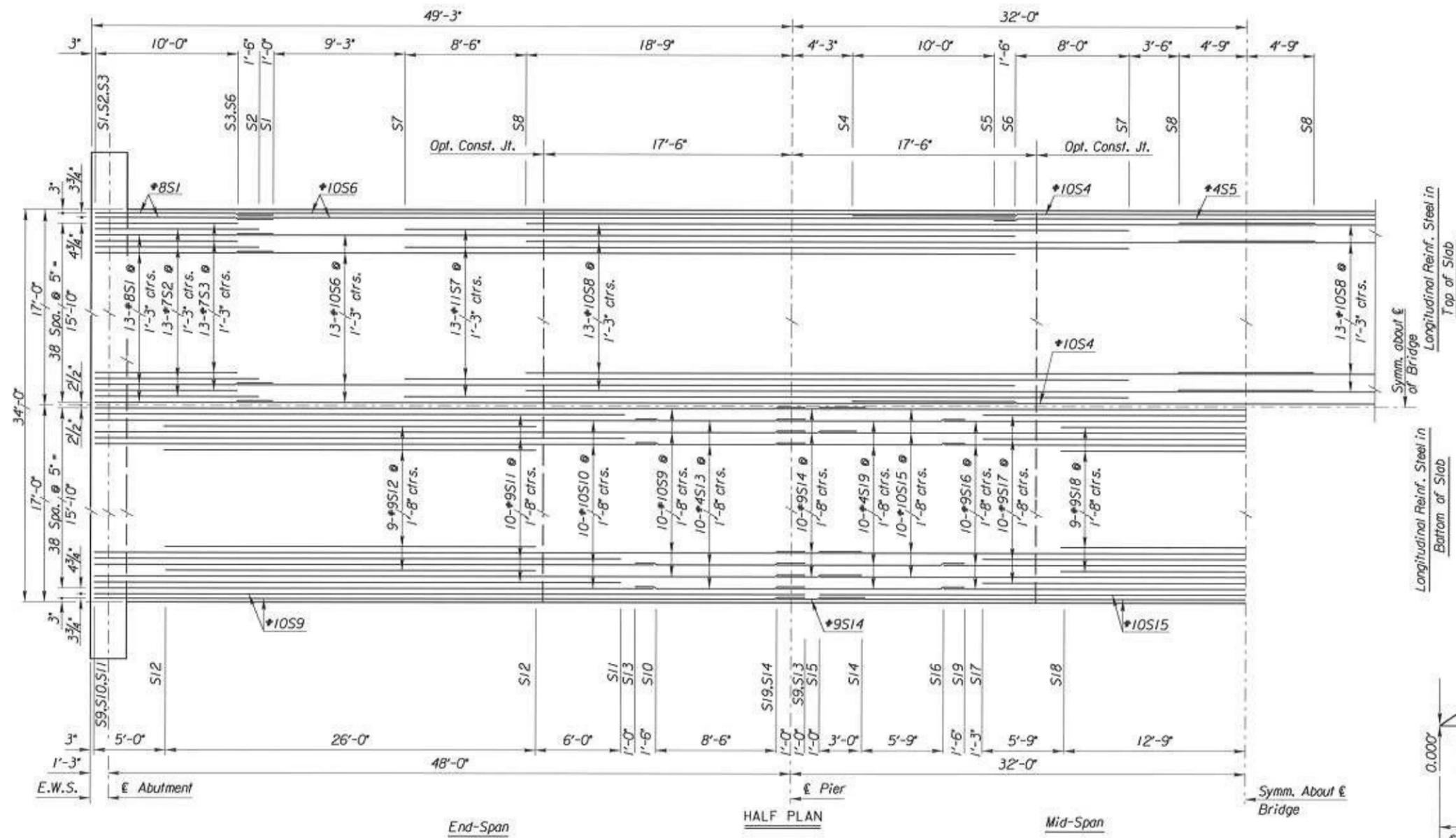
Plotted By: ssUSERNAME\$\$ Plot Locations: sUNIT.s
File: P:\0\052\0\Drawings\Sheets\Bridges\A-32 pier with piles.dgn
Plot Date: 1/20/2014 12:38:57 PM

Plot 2
 irf04527.dgn
 Roadway Width = 32'
 Longest Span Length = 64'
 Skew and Direction = 0
 Total No. of Spans = 3
 Loading = HL-93
 Railing Type = Guard

Dist.	Wt.	Vol.	Surf.
15'-20'	1.53	2.56	1.59
15'-10'	1.25	1.82	1.29
15'-10'	1.53	2.56	1.59
15'-10'	1.25	1.82	1.29

Plotted By: \$USER\$
 Plot Location: \$UNIT\$
 File: P:\V0.052.01\Drawings\Sheets\Bridges\A-32\slab plan-irf04527.dgn
 Plot Date: 1/20/2014 12:39:24 PM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	20	60



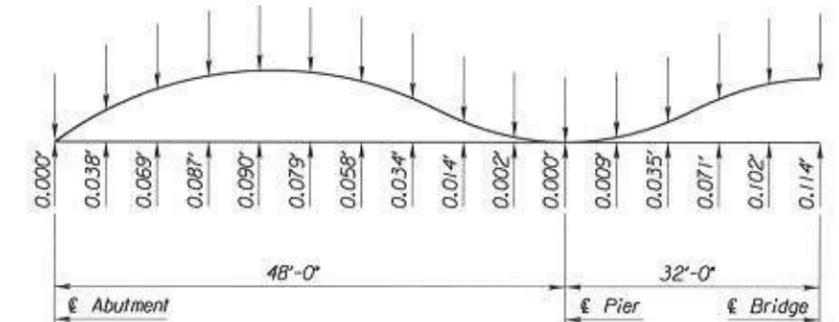
CONCRETE PLACING SEQUENCE DIAGRAM

CONCRETE PLACING SEQUENCE

When long span steel beams having a concrete dead load deflection greater than 1/4" are used or when timber falsework with greater than 12'-0" clear span is used, follow the placing sequence shown. Segmental, combined or continuous pours are allowed, but stop a discontinuous pour at a construction joint short of a pier.

When timber falsework with 12'-0" or less clear span is used, the Contractor, subject to the approval of the Engineer, may use a continuous pour or may discontinue the pour at any construction joint shown.

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



DEAD LOAD CAMBER DIAGRAM AT TENTH POINTS

Long Term Deflections = Initial Deflections x 3.5
 (Initial Deflections Based on $E_c = 3,644 \times 10^6$ p.s.i.)
 (camber values in feet)

Note:
 See longitudinal section for transverse reinforcing steel.

Note: 1.0 & 4.0 pts. are taken at € of Abutments
 2.0 & 3.0 pts. are taken at € of Piers

Top of Form Elevation at 10th Points, (ft.)															
1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5
891.24	891.35	891.42	891.49	891.52	891.49	891.39	891.22	891.04	890.76	890.47	890.96	891.35	891.66	891.86	891.95
2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	
891.92	891.77	891.52	891.19	890.75	891.87	891.40	891.63	891.84	891.98	892.06	892.07	892.05	892.01	891.95	

Note: Elevations are taken at Profile Grade. Note: The change in elevation from Profile Grade to the Edge of Slab is -0.272'

4	03/12/12	ADDED TO Elevation Table	JPU	TLF
3	02/08/11	ADDED QUANTITIES	JPU	TLF
2	04/21/09	Ch'd ST from "10 to "11"	DBI	KEH
1	02/05/09	update LFD RF & Camber	DBI	KEH
NO.	DATE	REVISIONS	BY	APP'D

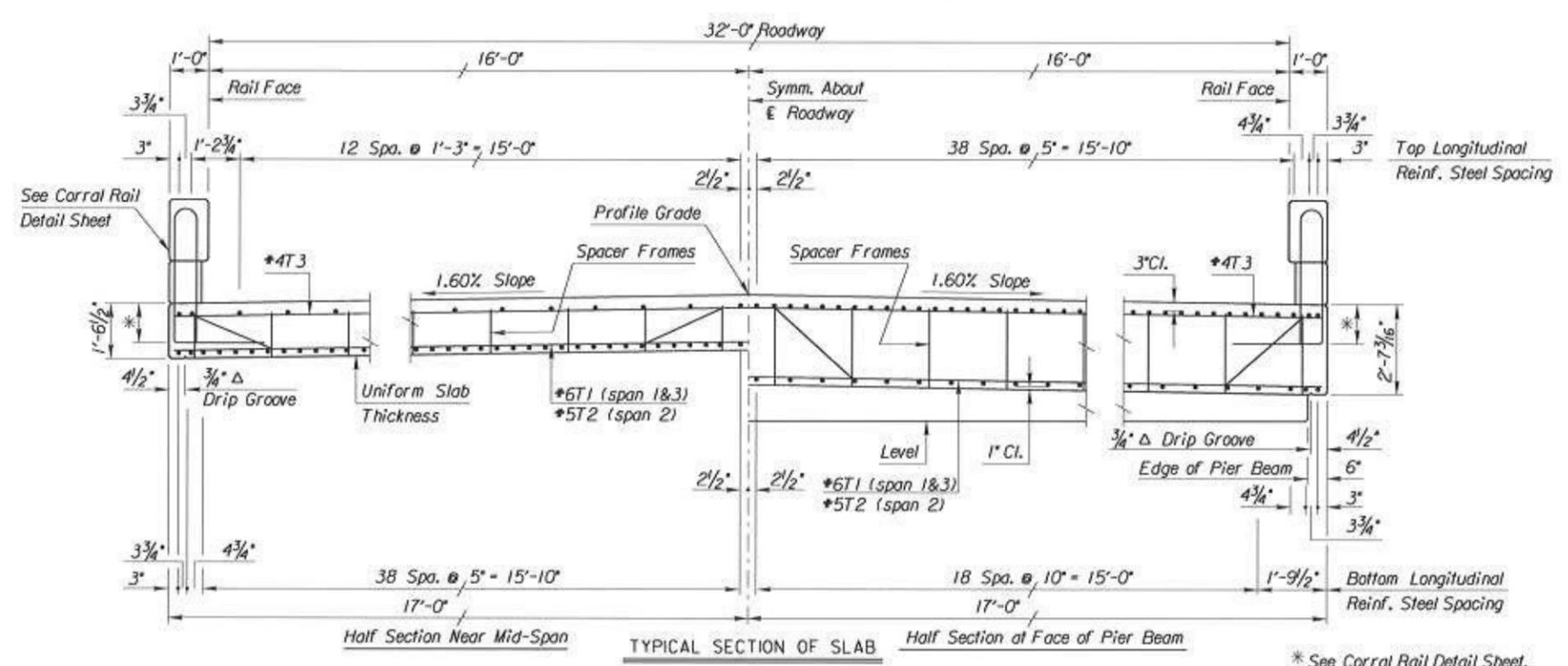
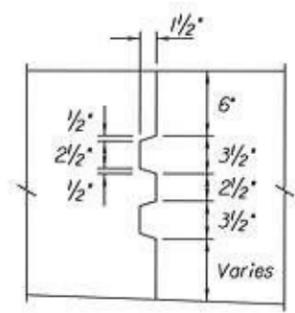
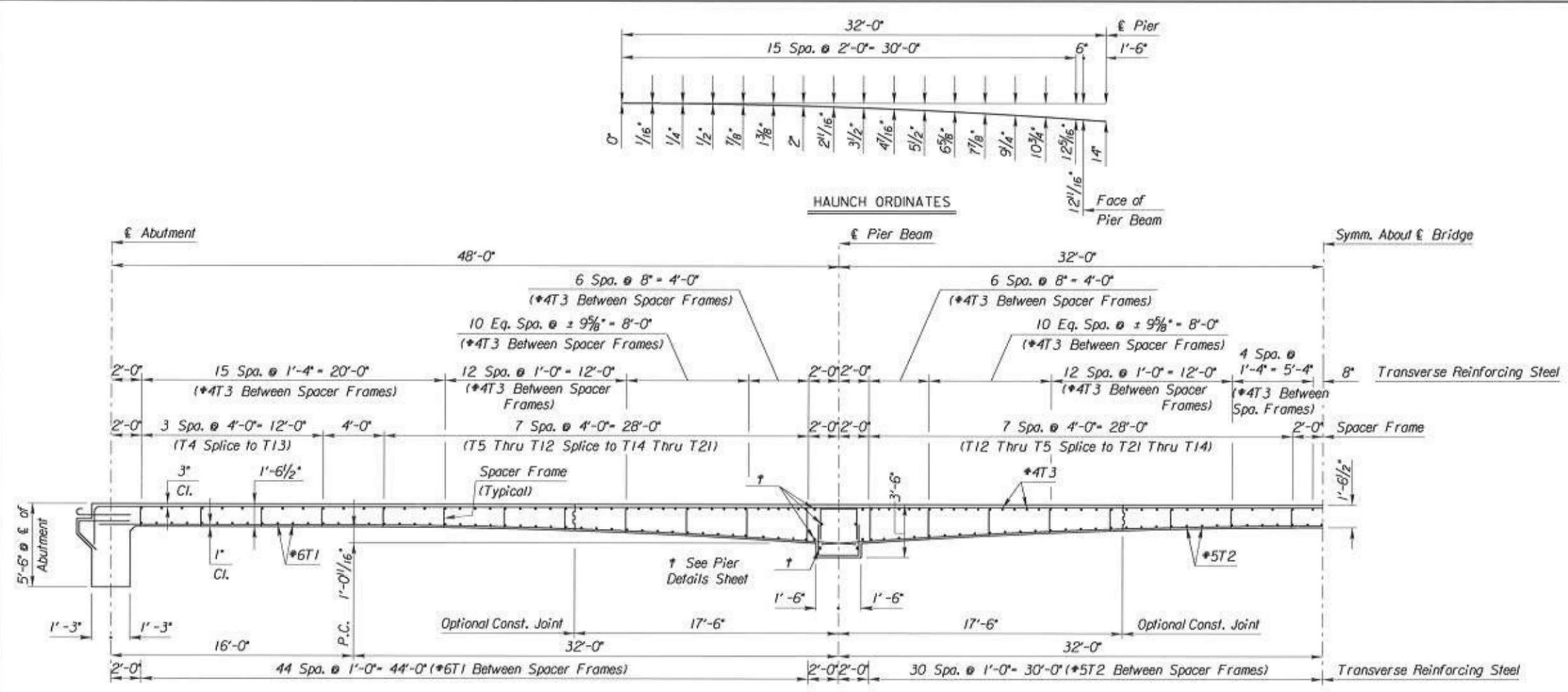
KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
 SUPERSTRUCTURE DETAILS
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

SHEET NO.	OF	SCALE	APP'D
DESIGNED	DRY	DETAILED	DRY
DESIGN CK.	PAK	DETAIL CK.	QUAN. CK.
			BRW
			CADO
			RCJ
			CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	21	60

irf04-527.dgn
 Plot 3
 Roadway Width = 32'
 Longest Span Length = 64'
 Skew and Direction = 0
 Total No. of Spans = 3
 Loading = HL-93
 Rolling Type = Corral

Plotted By: \$\$(USER\$NAME\$\$)
 Plot Location: \$\$(UNIT\$)
 File: P:\10.052.01\Drawings\Sheets\Grades\21_A-32_slab_section-br-527.dgn
 Plot Date: 1/20/2014 12:39:53 PM



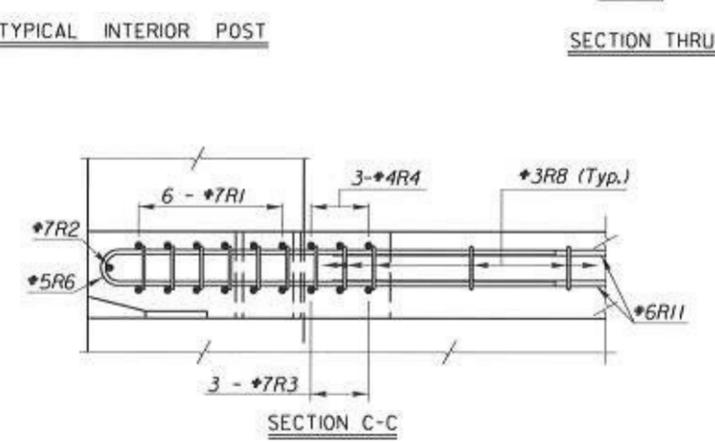
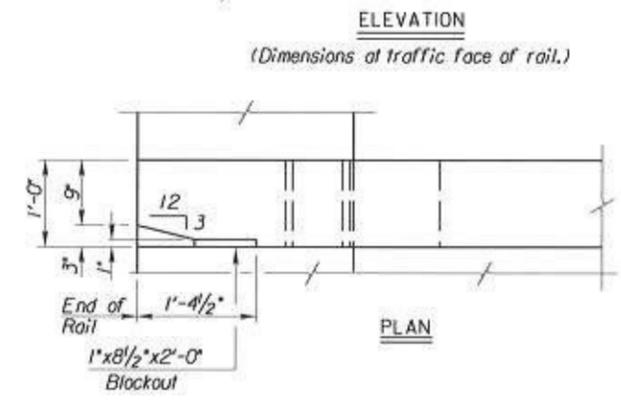
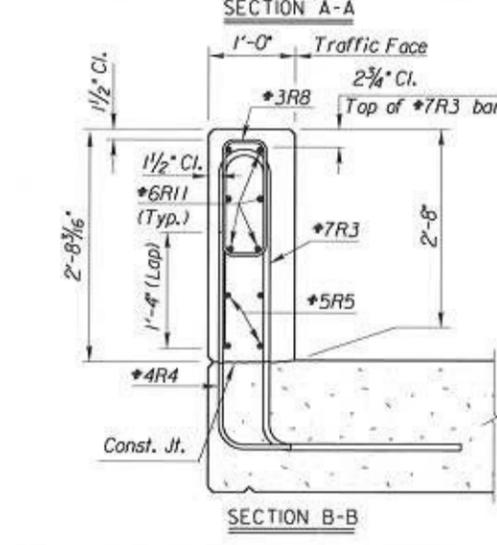
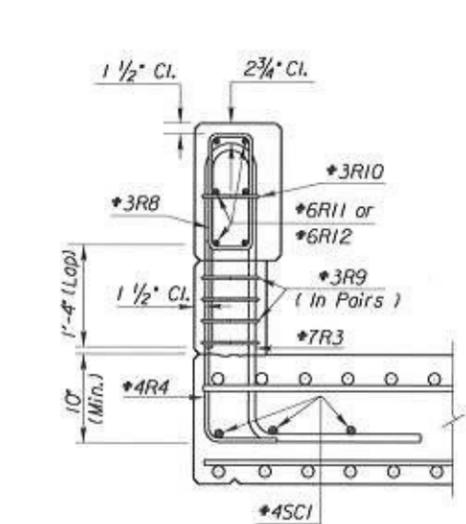
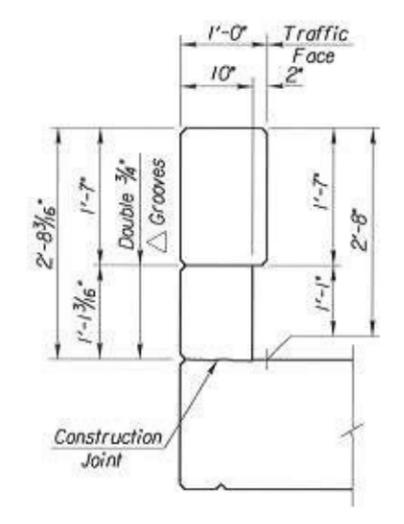
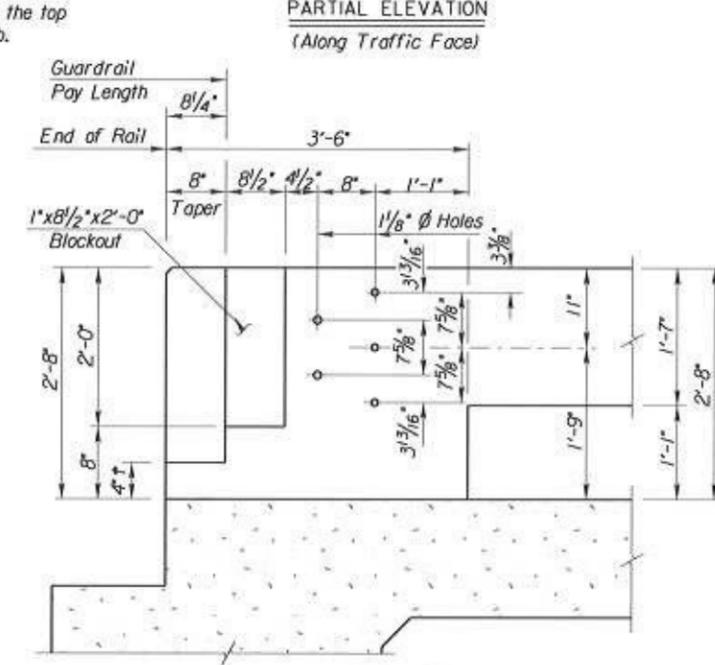
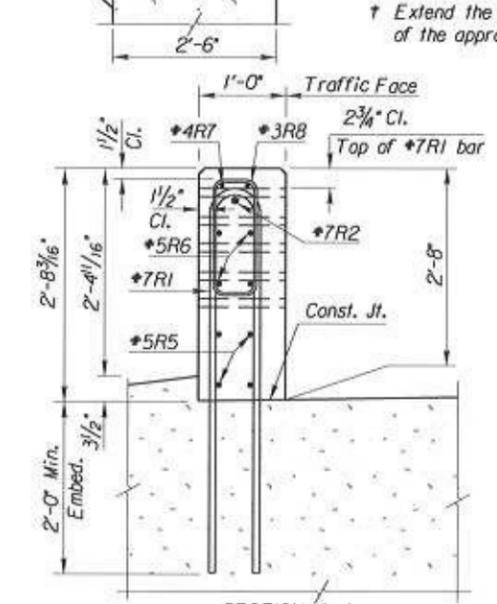
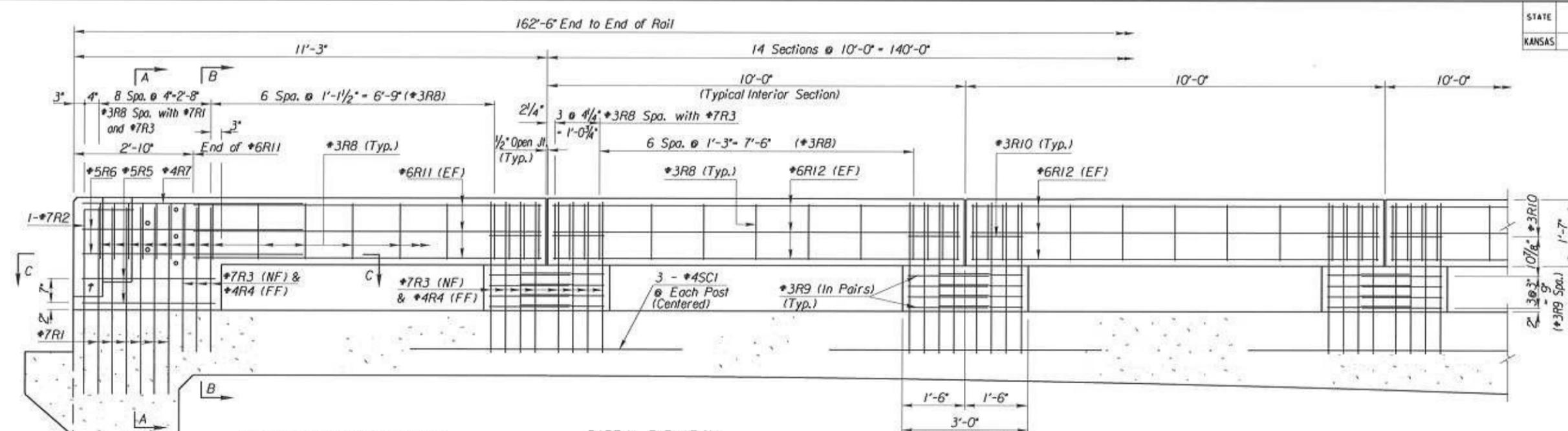
* See Corral Rail Detail Sheet.

NO.	DATE	REVISIONS	BY	APP'D
1	02/05/09	Update LFD RF & Camber	DRT	KFH
2	04/21/09	Ch'd ST from #10 to #9	DRT	KFH

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
 SUPERSTRUCTURE DETAILS
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	22	60

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

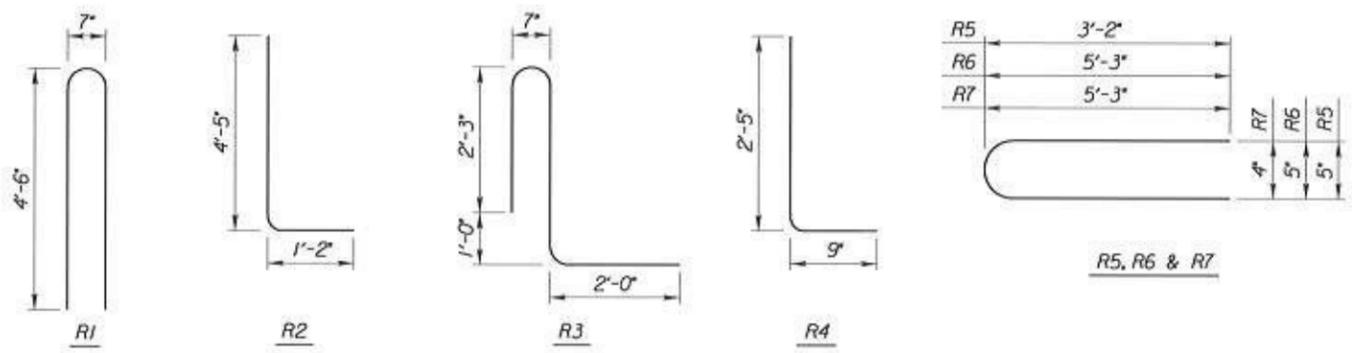


3					
2					
1		6-30-05	Current Release		
NO.	DATE	REVISIONS		BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION Br. No. 00000000620220 Sta. 19+46.50 CORRAL RAIL BRIDGE A-32 REPLACEMENT OVER WALNUT CREEK Proj. No. 52 C-4597-01 Leavenworth Co.					
SHEET NO.	OF	SCALE	APP'D	DESIGNED	SCALE
DESIGN CK.	DETAIL CK.	QUANTITIES	CADD	DESIGN CK.	CADD CK.

Plotted By: s8usernames Plot Location: s8units
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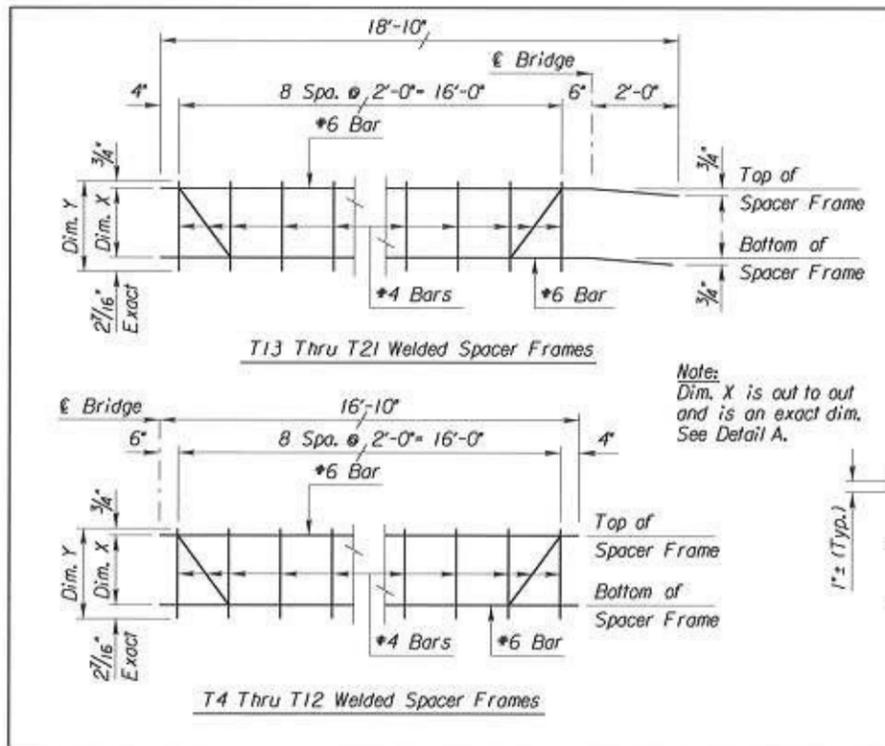
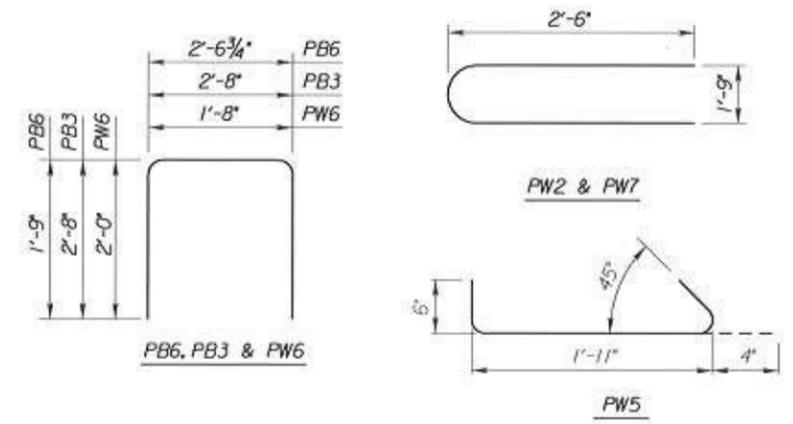
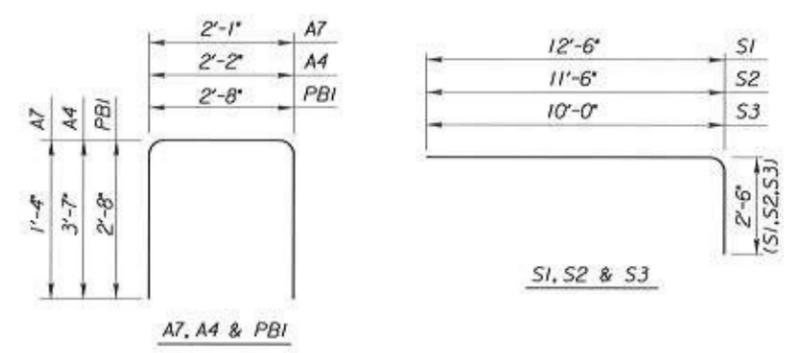
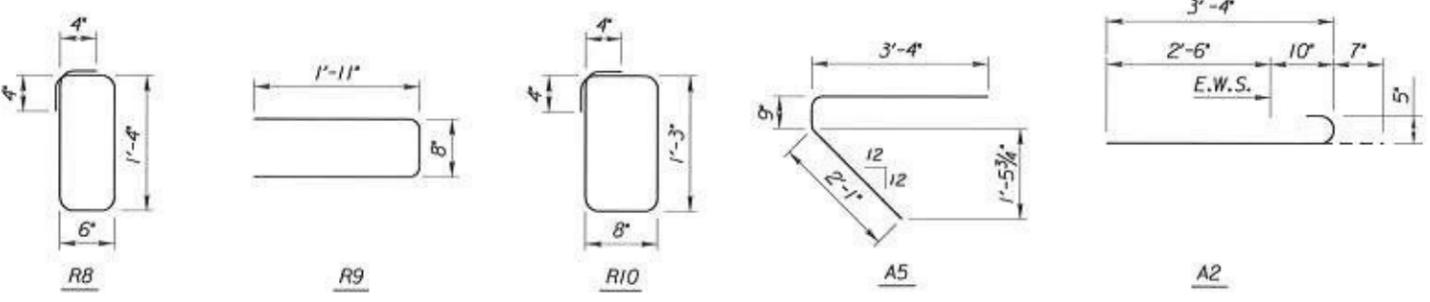
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 Loading = HL-93
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 Plot Date: 1/20/2014 12:40:51 PM



BILL OF REINFORCING STEEL
 Non-Epoxy Coated - Grade 60

Straight Bars				Bent Bars			
Mark	Size	Number	Length	Mark	Size	Number	Length
PW3	#6	4	30'-0"	PW7	#6	4	6'-2"
PW1	#4	56	30'-0"	PW2	#4	56	6'-2"
PW4	#4	96	23'-6"	PW6	#4	46	5'-8"
				PW5	#3	112	2'-9"

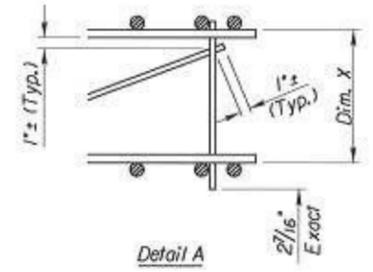


⊗ SPACER FRAMES
 (Epoxy Coated)

Mark	No. Ea.	Dim. X	Dim. Y
T4, T13	8	11 1/16"	1'-2 5/8"
T5, T14	4	11 1/2"	1'-2 1/16"
T6, T15	4	11 5/16"	1'-3 1/8"
T7, T16	4	1'-0 3/16"	1'-4"
T8, T17	4	1'-2 1/8"	1'-5 5/16"
T9, T18	4	1'-3 1/8"	1'-7 1/16"
T10, T19	4	1'-6 1/16"	1'-9 1/4"
T11, T20	4	1'-8 1/16"	1'-11 1/8"
T12, T21	4	1'-11 1/4"	2'-2 5/16"

Weight of spacer frames included in the weight of reinforcing steel.

Note:
 Dim. X is out to out and is an exact dim. See Detail A.



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
S7	#11	52	51'-0"	S1	#8	60	15'-0"
S4	#10	4	55'-6"	R1	#7	24	9'-3"
S6	#10	60	54'-9"	R2	#7	4	5'-7"
S8	#10	52	55'-6"	R3	#7	252	7'-9"
S9	#10	48	50'-0"	S2	#7	52	14'-0"
S10	#10	40	39'-6"	S3	#7	52	12'-6"
S15	#10	24	60'-0"				
				A2	#5	62	3'-11"
S11	#9	40	37'-0"	R5	#5	8	6'-6"
S12	#9	36	26'-0"	R6	#5	8	10'-8"
S14	#9	44	6'-0"				
S16	#9	20	42'-6"	A4	#4	164	9'-4"
S17	#9	20	37'-0"	A5	#4	62	6'-2"
S18	#9	18	25'-6"	A7	#4	28	4'-9"
				R4	#4	252	3'-2"
A1	#8	16	41'-8"	R7	#4	4	10'-8"
R11	#6	24	8'-3"				
R12	#6	168	9'-8"	R8	#3	436	4'-4"
T1	#6	66	33'-8"	R9	#3	240	4'-6"
				R10	#3	60	4'-6"
A3	#5	20	41'-8"				
T2	#5	45	33'-8"	T4-T21			⊗
A6	#4	2	32'-8"				
S5	#4	2	35'-6"				
S13	#4	40	12'-0"				
S19	#4	40	13'-3"				
T3	#4	114	33'-8"				
SC1	#4	90	6'-6"				
PB5	#7	10	33'-8"	PBI	#5	68	8'-0"
PB4	#6	12	32'-8"	PB6	#4	20	6'-1"
PB2	#5	12	33'-8"				
PB3	#5	4	32'-8"				

⊗ See Bending Diagram

4					
3					
2	04/20/09	Ch'd S7 from #10 to #8	DRT	KFH	
1	02/05/09	update LFD RF & Camber	DRT	KFH	
NO.	DATE	REVISIONS	BY	APP'D	

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
BILL OF REINFORCING STEEL AND BENDING DIAGRAMS
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

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

CADconform Certify This File

Plotted By: s80USERNAME\$\$ Plot Location: s80M15
 File: P:\0\02\01\Drawings\Sheets\Bridges\A-32 br 2014\asc.dgn
 Plot Date: 1/20/2014 12:41:19 PM

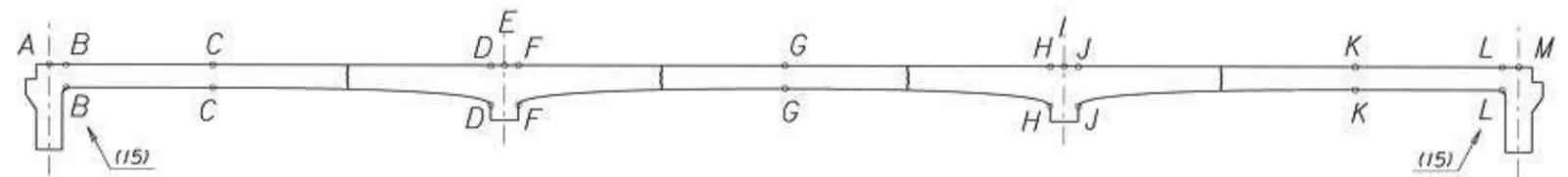
SLAB ELEVATIONS																	
1 Survey	2 Station	3 † Location	4 Transverse Location	5 Formwork				9 Screed			12 Thickness			15 Deck Profile			
				5 Estimated Falsework Crush	6 Target Elevation TOF	7 Actual Elevation TOF	8 TOF Variance (QA/QC)	9 Target Screed El. = TOC El.	10 Actual Bottom of Screed Elevation Prior to Pour	11 Screed Variance (QA/QC)	12 Plan Deck Thickness	13 Measured Deck Thickness	14 Deck Thickness Variance (QA/QC)	15 Plan TOC El.	16 Actual TOC El. Optional Survey		
	(1)(16)	(13)	(13)	(inch) (1)(4)	(1)(16)	(2)	(± inch) (2)(5)	(1)(16)	(2)	(± inch) (2)(7)	(inch) (1)	(inch) (2)(8)	(± inch) (2)(9)	(1)	Date: (3)		
A	18+66.50	‡ Brg. of Abut. #1	Left Fascia						892.51						892.51		
			Crown Gr.							892.78						892.78	
			Right Fascia							892.51						892.51	
B	18+67.75	Interior Face of Abut. #1	Left Fascia		890.98							1.54			892.53		
			Crown Gr.		891.26								1.54			892.80	
			Right Fascia		890.98								1.54			892.53	
C	18+85.70	4/10 Point from Abut. #1	Left Fascia	0.02083	891.25				892.80				1.55		892.69		
			Crown Gr.	0.02083	891.52				893.07				1.55		892.96		
			Right Fascia	0.02083	891.25				892.80				1.55		892.69		
D	19+13.00	Span #1 Face of Pier Beam	Left Fascia	0.02083	890.32							2.60			892.90		
			Crown Gr.	0.02083	890.59								2.60			893.17	
			Right Fascia	0.02083	890.32								2.60			892.90	
E	19+14.50	‡ Brg. of Pier #1	Left Fascia						892.91						892.91		
			Crown Gr.							893.18						893.18	
			Right Fascia							892.91						892.91	
F	19+16.00	Span #2 Face of Pier Beam	Left Fascia	0.02083	890.34							2.60			892.92		
			Crown Gr.	0.02083	890.61								2.60			893.19	
			Right Fascia	0.02083	890.34								2.60			892.92	
G	19+46.50	Midpoint of Span #2	Left Fascia	0.02083	891.68				893.22				1.54		893.08		
			Crown Gr.	0.02083	891.95				893.49				1.54		893.36		
			Right Fascia	0.02083	891.68				893.22				1.54		893.08		
H	19+77.00	Span #2 Face of Pier Beam	Left Fascia	0.02083	890.61							2.60			893.19		
			Crown Gr.	0.02083	890.88								2.60			893.46	
			Right Fascia	0.02083	890.61								2.60			893.19	
I	19+78.50	‡ Brg. of Pier #2	Left Fascia						893.19						893.19		
			Crown Gr.							893.46						893.46	
			Right Fascia							893.19						893.19	
J	19+80.00	Span #3 Face of Pier Beam	Left Fascia	0.02083	890.62							2.60			893.19		
			Crown Gr.	0.02083	890.89								2.60			893.47	
			Right Fascia	0.02083	890.62								2.60			893.19	
K	20+07.30	4/10 Point from Abut. #2	Left Fascia	0.02083	891.78				893.34				1.55		893.23		
			Crown Gr.	0.02083	892.06				893.61				1.55		893.50		
			Right Fascia	0.02083	891.78				893.34				1.55		893.23		
L	20+25.25	Interior Face of Abut. #2	Left Fascia		891.68							1.54			893.22		
			Crown Gr.		891.95							1.54			893.49		
			Right Fascia		891.68							1.54			893.22		
M	20+26.50	‡ Brg. of Abut. #2	Left Fascia						893.22						893.22		
			Crown Gr.							893.49						893.49	
			Right Fascia							893.22						893.22	

† Stationing shown increasing

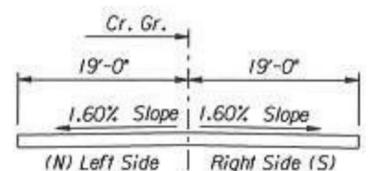
NOTE: The Contractor will turn in a completed copy of this table to the Engineer. The Engineer will submit this table on a half size sheet to the State Bridge Office, KDOT, Bureau of Design, Topeka, KS.

* It is assumed that piling have been driven to design bearing and checked by ENR formula (QA/QC). No allowance for pile settlement is included in crush.

- (1) By the Design Engineer
- (2) By the Contractor
- (3) By Request
- *(4) Based on hardwood shims, assume 6 joints with 1/16" crush (Take Up) per joint. Revise estimate if/when more accurate information becomes available. Ref: "Formwork for Concrete" Fifth Edition, by M.K. Hurd, Chapter 6
- (5) (col 7 - col 6)x12
- (6) Crush (Take Up) and camber must be included
- (7) (col 10 - col 9)x12
- (8) (col 10 - col 7)x12
- (9) (col 13 - col 12)
- (10) If transition falls on the bridge, then enter "Varies" for the % Slope
- (11) From "Construction Layout" sheet
- (12) If bridge is not on the vertical curve, enter Abutment #1 ‡ bearing elevation from the "Construction Layout" sheet. Represent a change in grade with G1 only.
- (13) Looking Up-Station
- (14) Out-to-Out
- (15) Ignore Fillet
- (16) Non-skewed bridges only require ‡ stations.
- (17) Ignore theoretical camber at face of pier beams.



ELEVATION OF SLAB



TYPICAL SECTION (Looking Up-Station)

Legend
 TOF = Top of Formwork
 TOC = Top of Concrete
 QA = Quality Assurance
 QC = Quality Control

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	24	60

Pour Dates (2)	
	Deck
	Left Rail (13)
	Right Rail (13)

Survey Data (1)(11)	
Bench Mark No.	Elevation
1	883.57

Profile Grade Profile (1)(12)	
19+60.00	VPI Station
895.06	VPI Elevation
-1.85%	G1 %
-1.15%	G2 %
440.0	L in Stations

Slab Thickness (1)		Span Data (1)	
18.5	Uniform Depth (inch)	HL-93	Design Loading
12.69	Haunch Depth @ Face of PB (inch)		Span #1 (ft)
.15	Haunch Depth @ 0.4 Point (inch)		Span #2 (ft)
			Clear Cover (inch)

Roadway Data (1)(10)(13)	
34.00	Deck Width (ft) (14)
-1.60	% Slope Left (±)
-1.60	% Slope Right (±)
0	Skew (dd:mm:ss)

Camber (1)(17)	
.090	Span #1 0.4 Point (ft)
.115	Span #2 Midspan (ft)

3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
 SLAB ELEVATIONS
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

SHEET NO. OF	SCALE	APP'D
DESIGNED	DETAILED	QUANTITIES
DESIGN CK.	DETAL. CK.	QUAN. CK.

CADconform Certify This File

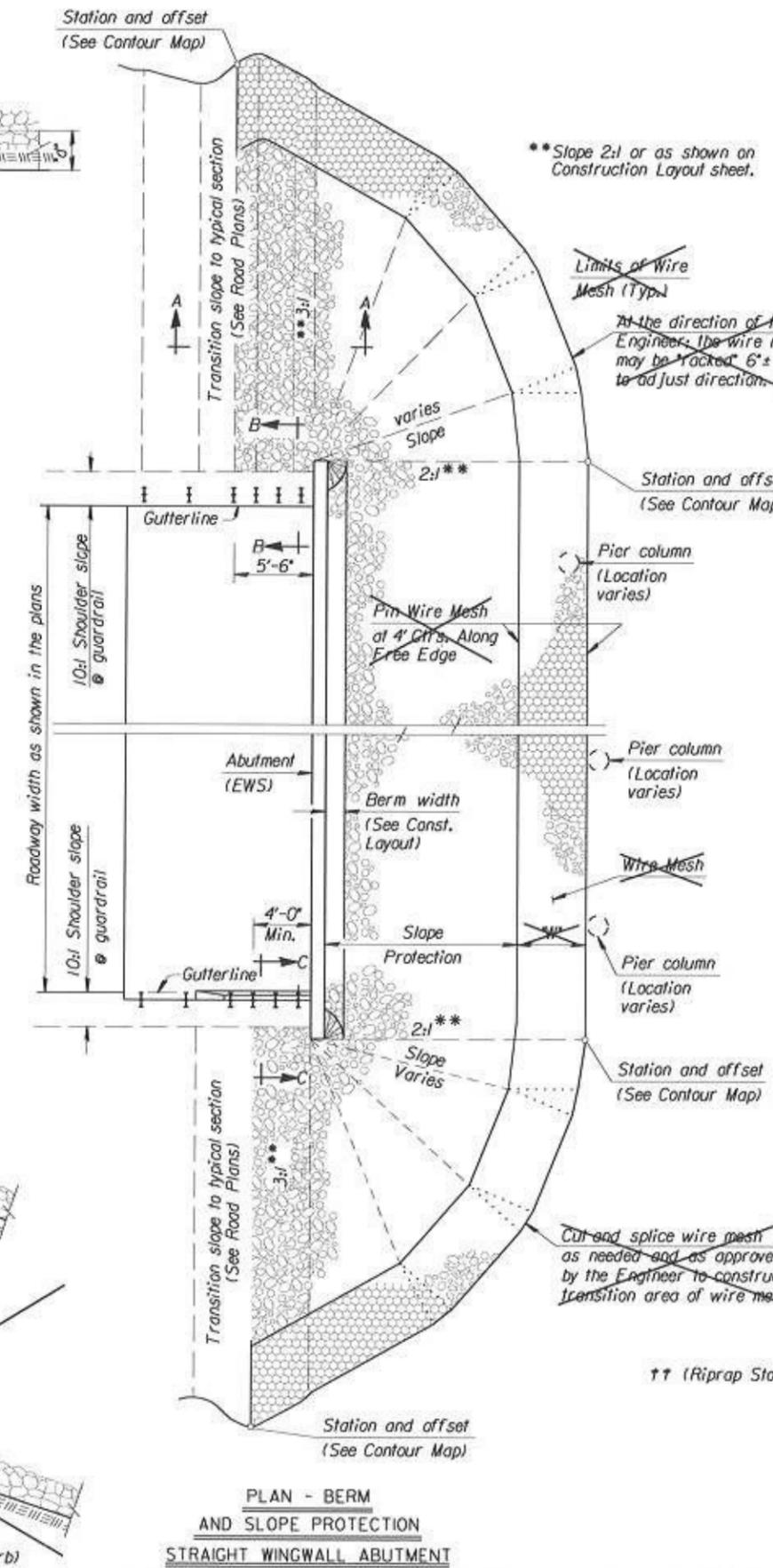
GENERAL NOTES

- Limits of slope protection are shown on the Construction Layout sheet. Limits may be adjusted as needed at the direction of the Engineer to match ground elevations found at the site.
- Gradation and aggregate for the Slope Protection (Riprap Stone) (2'-0") shall meet the requirements of stone for Riprap and have >50% heavier than 200 pounds unless otherwise noted on the Plans.
- Wire mesh shall be PVC coated and have a nominal mesh opening of 2 1/2" x 3 1/4". Wire mesh shall be furnished full width up to widths of 12.0 feet ("W" = 12.0 ft.). When widths greater than 12.0 feet are specified on the plans, the furnished width shall be as recommended by the manufacturer but not less than 6.0 feet. All splices shall be made with PVC coated lacing wire, PVC coated wire ties, or stainless steel fastener clips. The longitudinal edges of the wire mesh shall be securely selvaged to prevent raveling of the mesh. Wire mesh and tie wires shall meet the material requirements for Gabions in the KDOT Specifications. Wire mesh shall not be used unless noted in the Plans and shown in the Table of Quantities. When wire mesh is specified, the bid item shall be "Slope Protection (Special)" and wire mesh shall be subsidiary.
- Excavation and grading for placement of slope protection and all work and material to install geotextile fabric shall be subsidiary to slope protection.
- Slope protection shall be underlain with geotextile fabric. Fabric damaged or displaced during construction shall be replaced at no cost to KDOT. Fabric shall be installed and secured as recommended by the fabric manufacturer. One (1) copy of the fabric manufacturer's installation procedure shall be submitted to the Engineer. The installation procedure shall show details of the splices, overlaps, and pin layout. Minimum overlap of geotextile shall be 1 ft. Fabric shall be anchored along edges and splices at a maximum of 3 foot centers with staples or pins (w/washers). Interior area of fabric shall be pinned or stapled as recommended by the manufacturer but not more than 5 foot centers. Pins or staples shall be a minimum of 12 inches in length. Geotextile fabric shall meet the requirements of KDOT Specifications.
- Unless noted otherwise on the Construction Layout, "d" shall be a minimum of 2'-0", "W" shall be 12.0 ft.
- The Contractor shall place the rock from the bottom to the top of the slope. Place the rock in a manner which produces a reasonably well graded mass of rock without segregation of the material sizes. Placement, measurement, and payment shall conform to KDOT Specifications for Slope Protection.

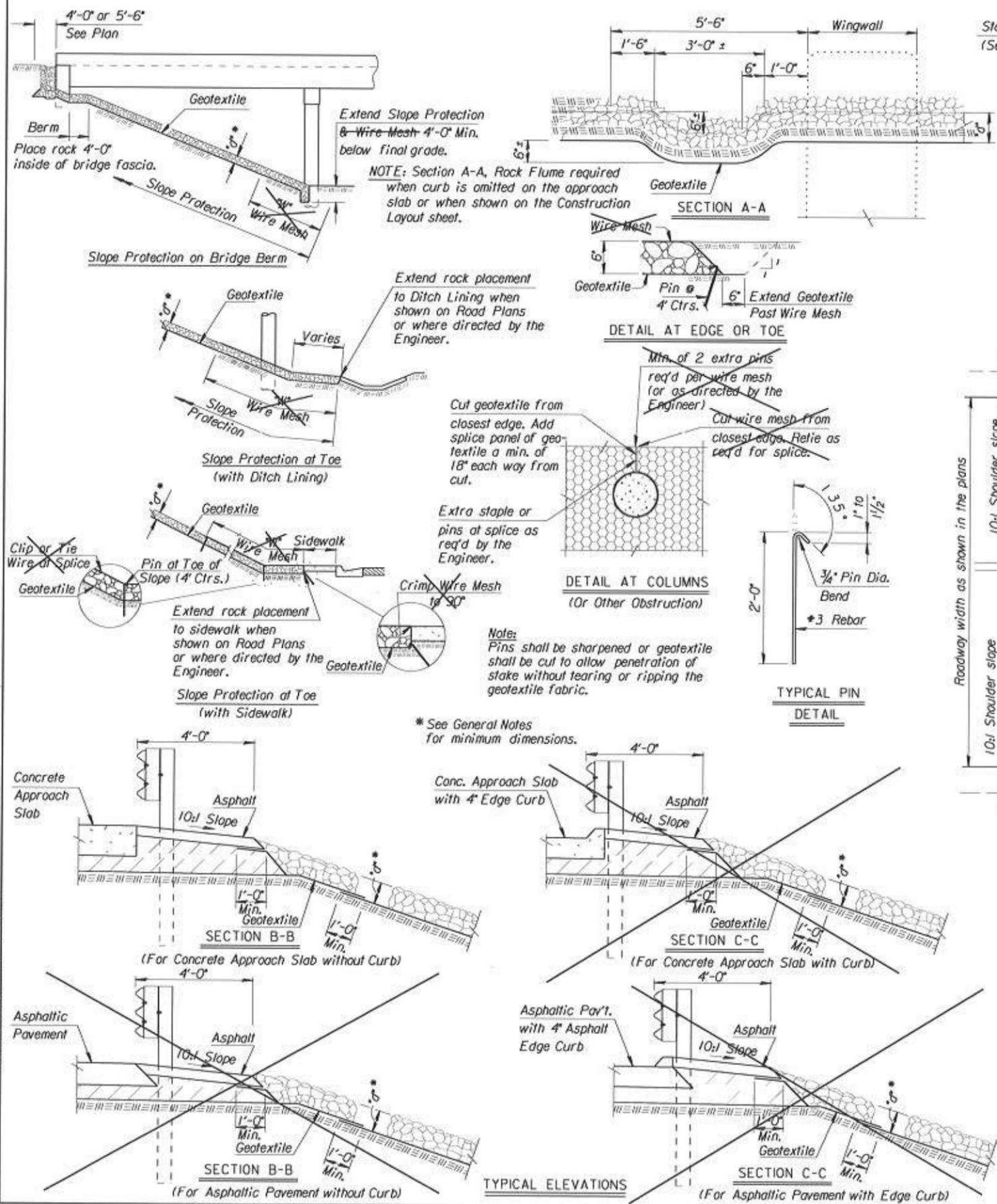
QUANTITIES			
† For Information Only			
Bridge Number	Slope Protection (††) Cu. Yds.	†Geotextile Sq. Yds.	†Wire Mesh Sq. Yds.
00000000620220			
Abut. No. 1	470	659	---
Abut. No. 2	970	1,348	---

3				
2	7/14/04	Changed to guard rail	RAM	KFH
1	5/15/02	Clarified Bid Items	RAM	KFH
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
BRIDGE BERM AND SLOPE PROTECTION
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.
 SHEET NO. OF SCALE 6/4/02 APP'D KENNETH F. HURST
 DESIGNED RRR DETAILED PGF QUANTITIES CADD 5/95 PGF
 DESIGN CK. DETAIL CK, RRR QUAN. CK. CADD CK.



PLAN - BERM AND SLOPE PROTECTION STRAIGHT WINGWALL ABUTMENT



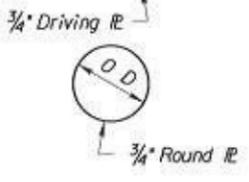
TYPICAL ELEVATIONS

Plotted By: \$\$/SERNAME\$\$ Plot Location: \$/WIT\$
 File: P:\02\052\Drawings\Sheets\Bridges\25-A-32-berm-bri132a.dgn
 Plot Date: 1/20/2014 5:33:33 PM

O D 10 3/4" T. = 0.25"
 O D 12 3/4" T. = 0.25 Min.
 O D 14" T. = 0.25 Min.

Note:
 Pile shall be driven with a steel head having a projecting ring fitting inside the pipe. Clearance between ring and pipe should be 1/4".

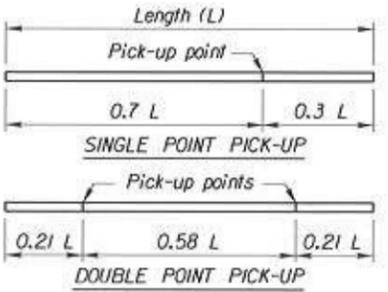
Note:
 Pile pipe may be spiral welded, longitudinal welded, or seamless steel pipe.



PLAIN ROUND CAST-IN-PLACE CONCRETE PILES

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.



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.



PIPE PILE POINT

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.

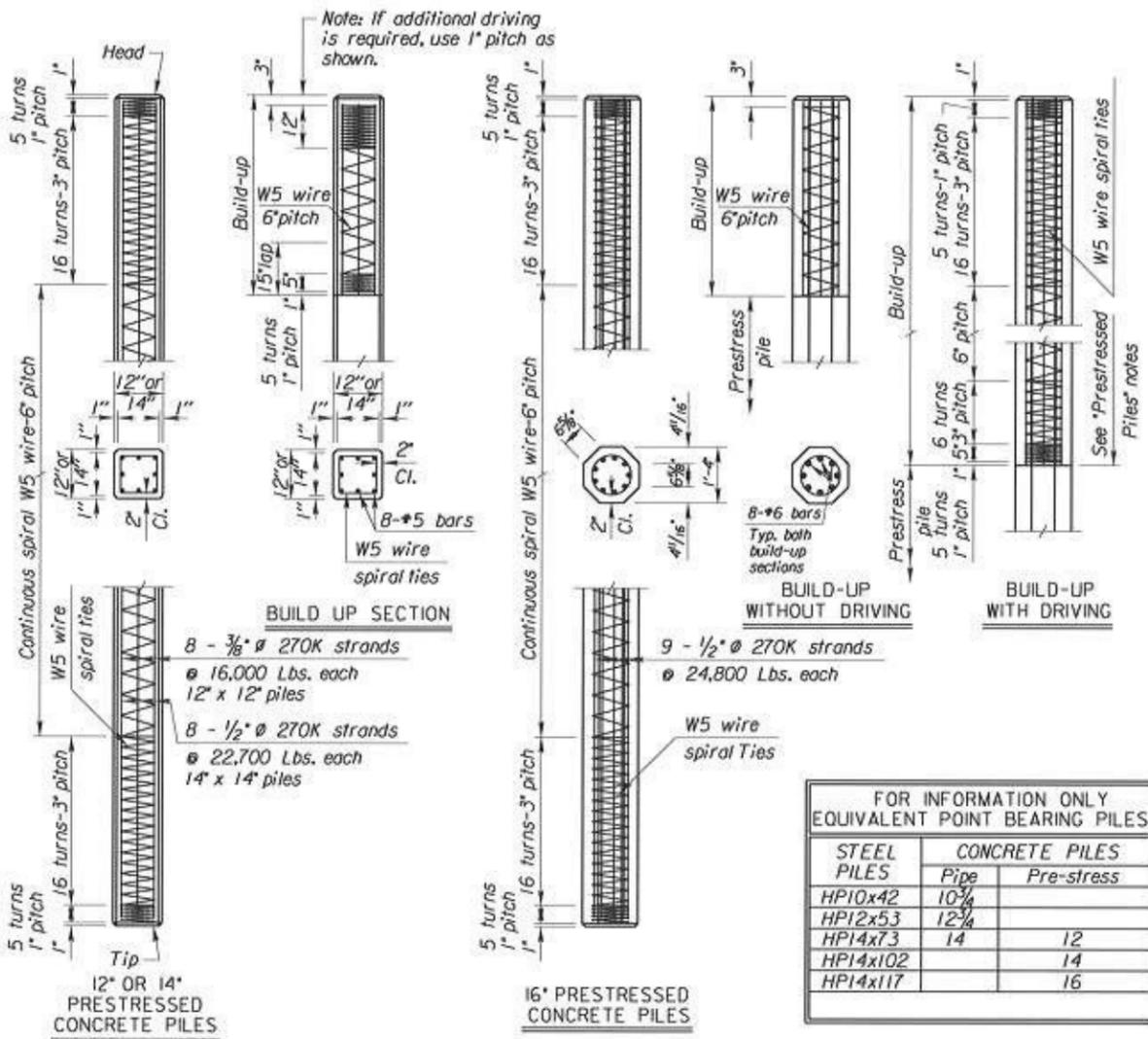
Use E7018, 7016, or 7015 series welding rod (electrode) for all welding applications during pile splicing. See General Notes for proper storage of welding rod.

Lay full penetration root weld from beveled side of splice.

Back gauge 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.



FOR INFORMATION ONLY EQUIVALENT POINT BEARING PILES

STEEL PILES	CONCRETE PILES	
	Pipe	Pre-stress
HP10x42	10 3/4"	
HP12x53	12 3/4"	
HP14x73	14	12
HP14x102		14
HP14x117		16

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 extend into pile head and project from the 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.

The following items are covered in Division 1000 of 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 stress relieved or low relaxation prestressing strand conforming to ASTM A416, Gr. 270.

SPECIFICATIONS: Standard Specifications for State Road and Bridge Construction as currently used by the Kansas Department of Transportation. The following items are covered in Division 700 of the Standard Specifications:

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. See General Notes or proper storage of welding rod, welding filler rod (electrode) for field welding of splices.

New electrode are to be purchased for each KDOT project. The electrode 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 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.

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.

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

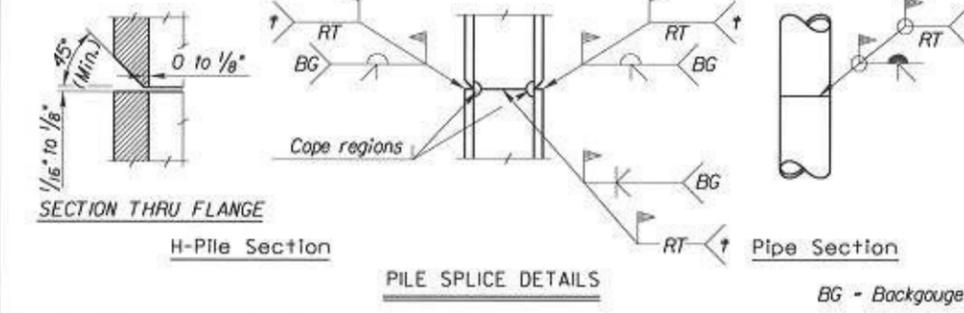
MILL TEST REPORTS: Steel piles test reports and steel shell test reports shall comply with the Standard Specifications.

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 the bottom of concrete.

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 will add a sufficient amount to the bottom of pile, prior to driving, so that the splice is below the regions described above in the completed pile.

† 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".



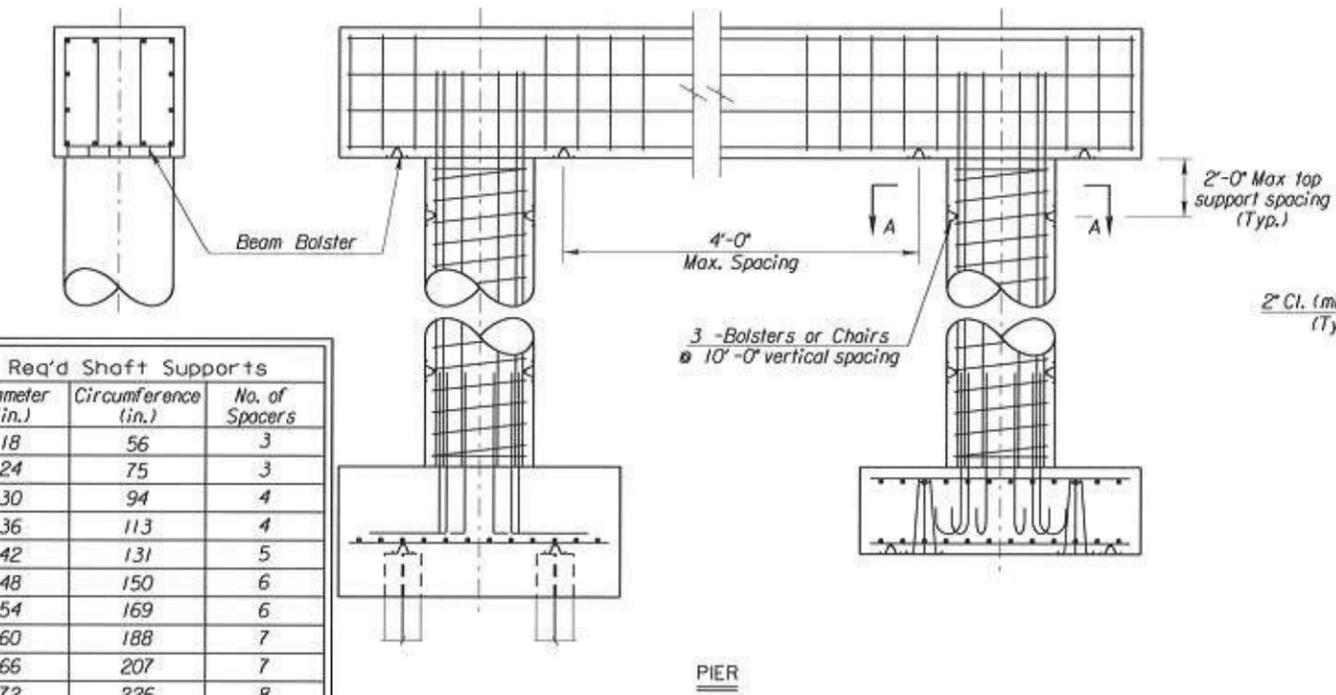
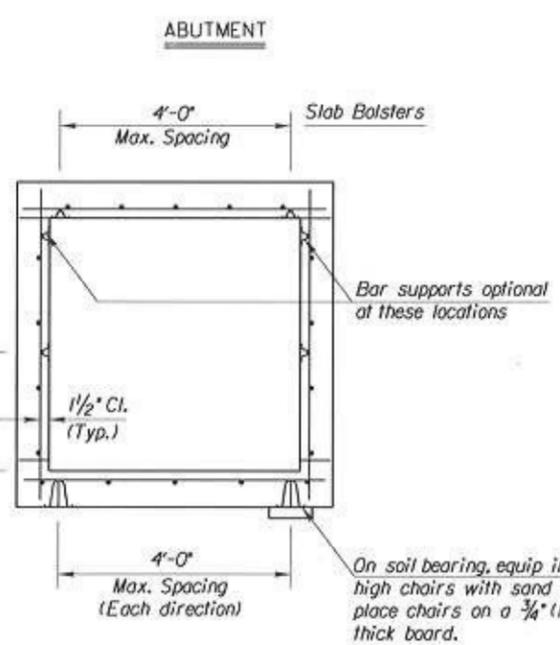
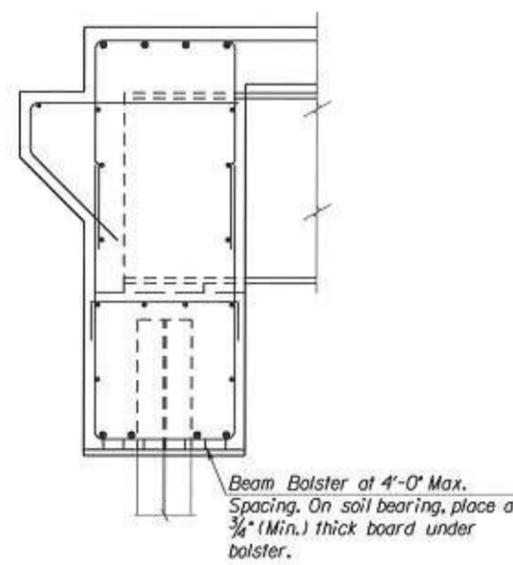
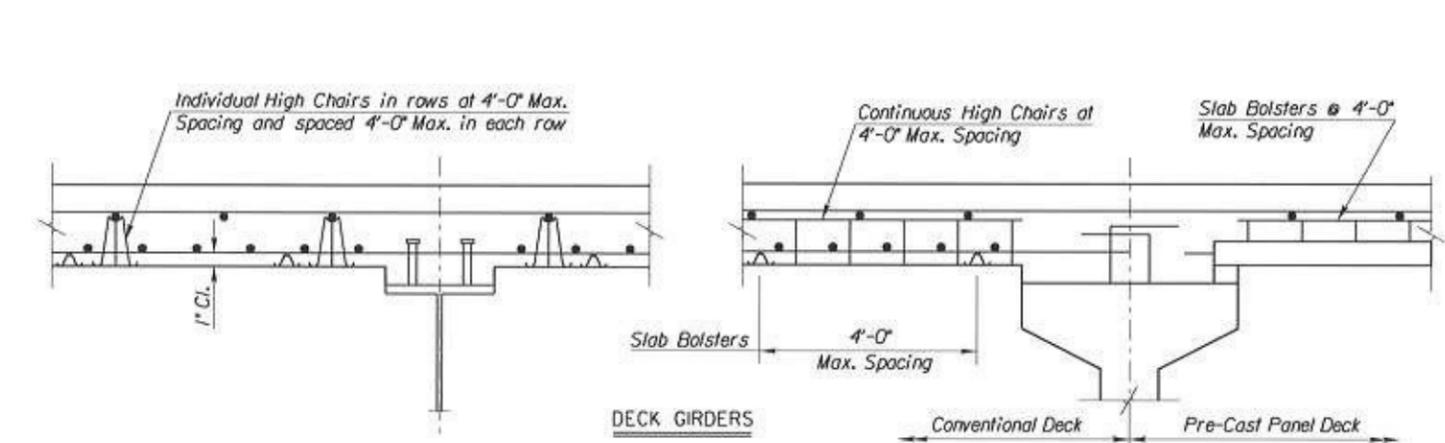
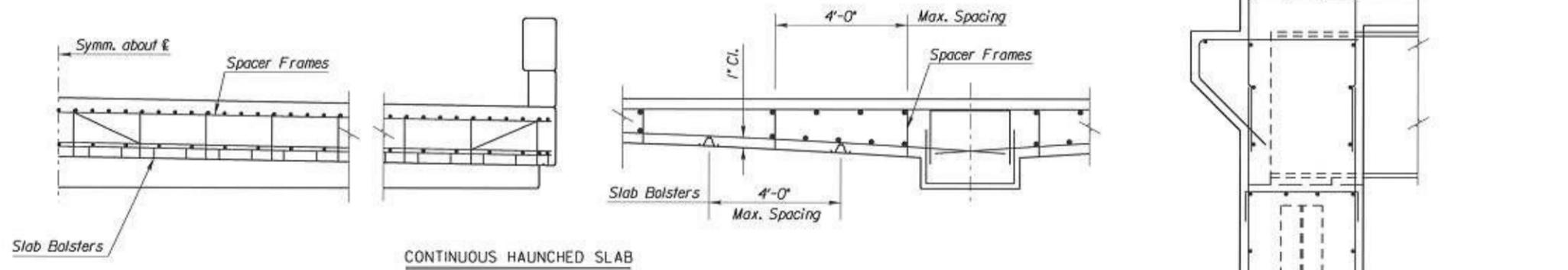
Std. Base File: br110.dgn
 Plotted By: s0USENAMESS
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	26	60

NO.	DATE	REVISIONS	BY	APP'D
4	06-08-02	Clarify fb, rod type, use and weld	JPJ	TLF
3	1-5-09	Pile Splice Location and Weld Test	JPJ	KFH
2	6-14-06	Rev. Pile Splice Note & Reinforcing	JPJ	KFH
1	11-02-03	Revised Notes	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
STANDARD PILE DETAILS
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

DESIGNED	JPJ	DETAIL	QUANTITIES	CADD	RAA
DESIGN CK.		DETAIL CK.	QUAN. CK.	CADD CK.	



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

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:

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

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

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

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

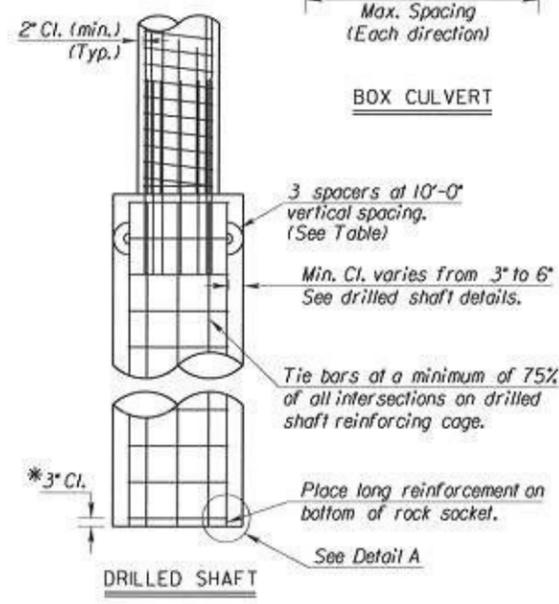
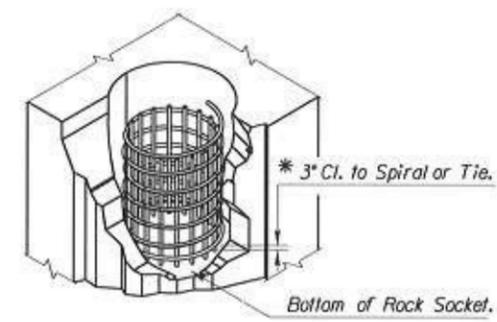
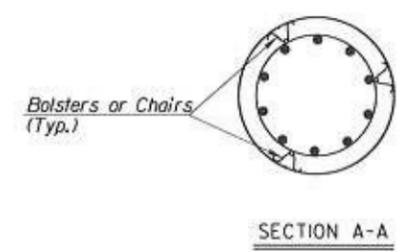
Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

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

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

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

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



* 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.

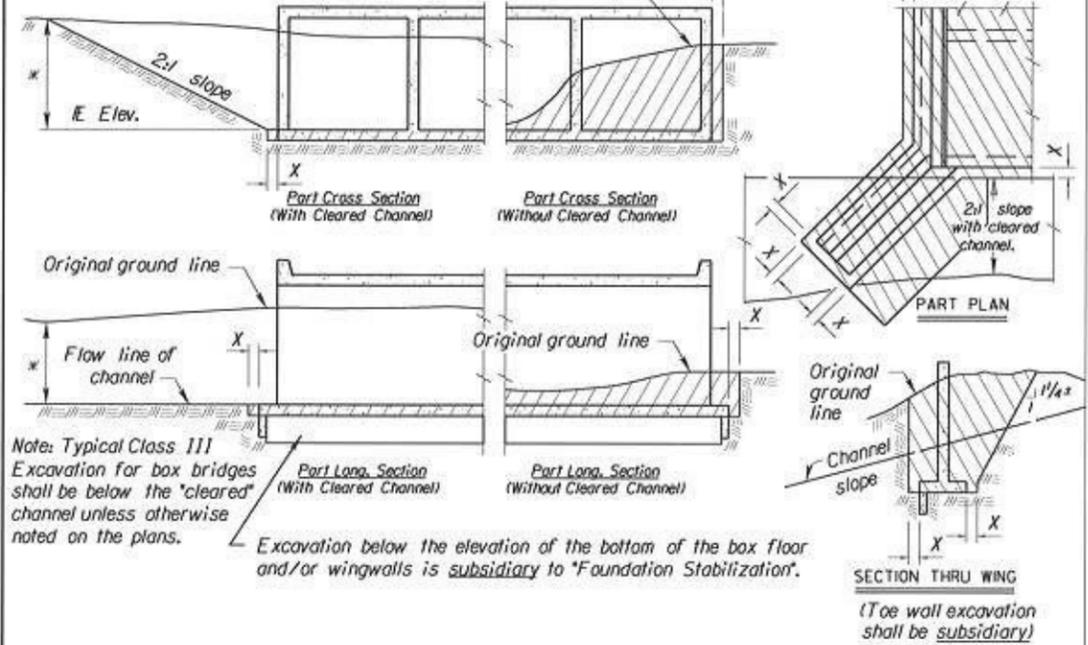
NO.	DATE	REVISIONS	BY	APP'D
5	8-10-10	Column Bar Supports Req'd	JPJ	TLF
4	12-01-05	Drilled Shaft Spiral Steel Placement	JPJ	KFH
3	8-21-00	Added Pre-Cast Panel Detail	RAM	KFH
2	12-20-99	Added Haunched Slab Bolsters	RAM	KFH
1	12-09-99	Revised Drilled Shaft Clearance	RAM	KFH

KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
REINFORCING SUPPORTS AND SPACERS
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

DESIGNED	RAM	DET. CK.	RAM	QUANTITIES	CADD	RAM
DESIGN CK.	LRR	DETAL CK.	RAM	QUAN. CK.	CADD CK.	RAM

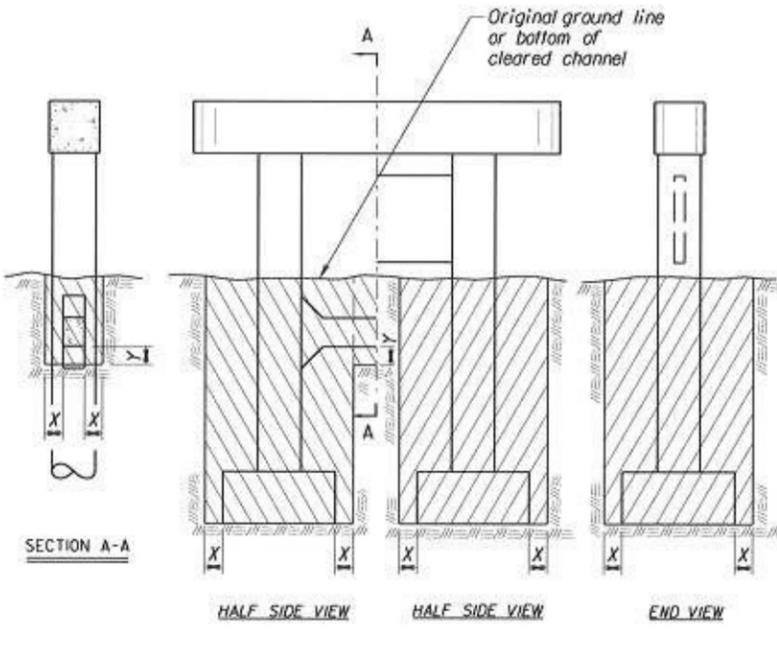
Std. Base File: br120.dgn
 Plotted By: \$\$\$USERAME\$\$\$
 File: \$\$\$SPEC\$\$\$
 Plot Date: \$\$\$SYTIME\$\$\$

* 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.



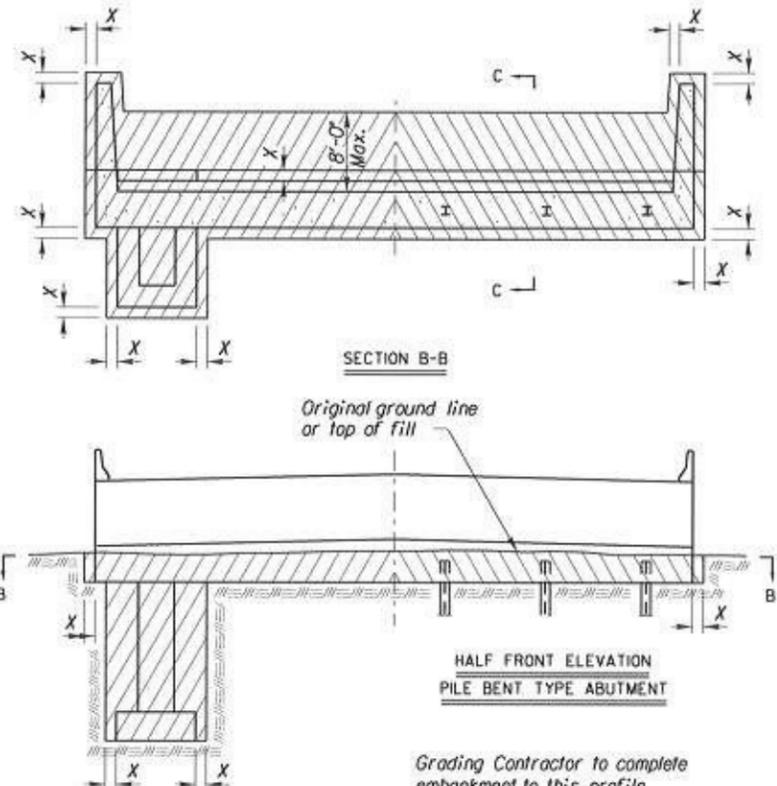
EXCAVATION DETAILS FOR REINFORCED CONCRETE BOX CULVERT

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".



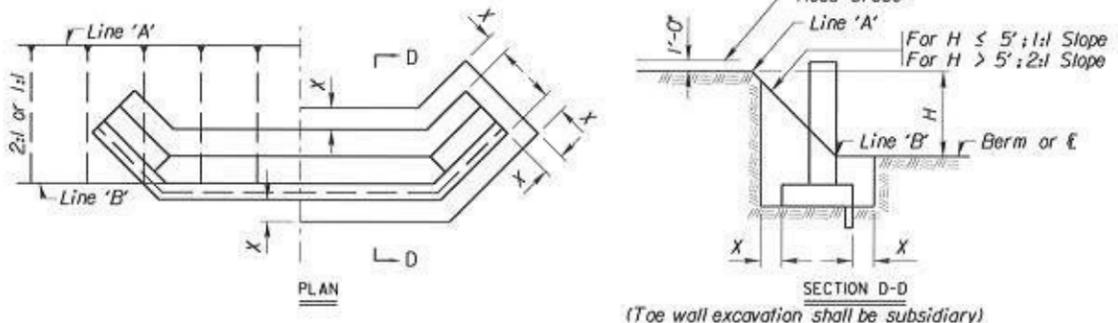
EXCAVATION DETAILS FOR TYPICAL PIERS

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



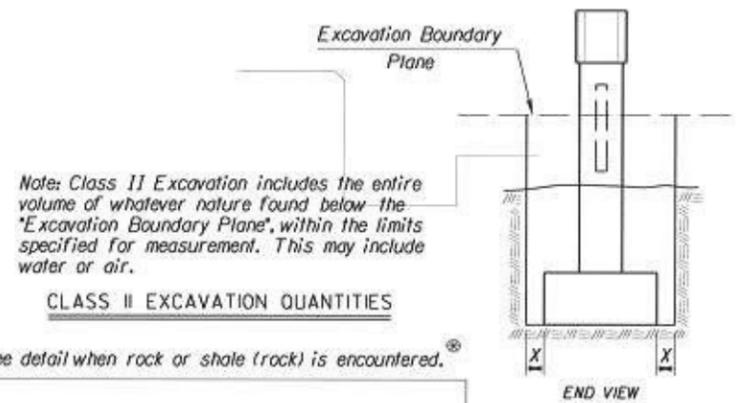
EXCAVATION DETAILS FOR TYPICAL ABUTMENTS

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



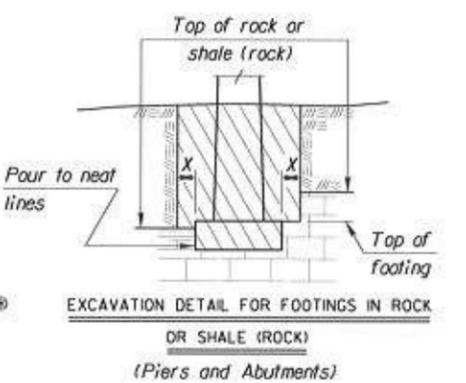
EXCAVATION DETAILS FOR ABUTMENTS WITH FLARED WINGWALLS

(Toe wall excavation shall be subsidiary)



CLASS II EXCAVATION QUANTITIES

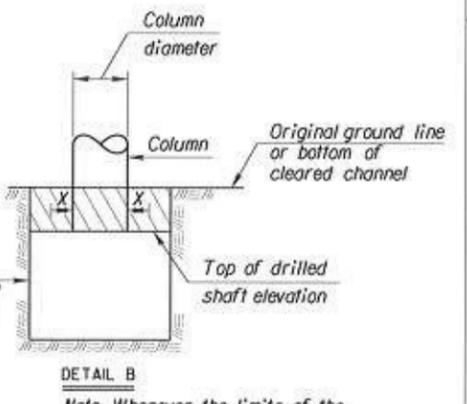
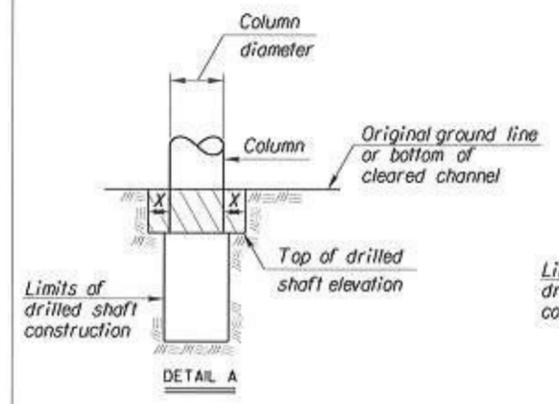
See detail when rock or shale (rock) is encountered.



EXCAVATION DETAIL FOR FOOTINGS IN ROCK OR SHALE (ROCK)

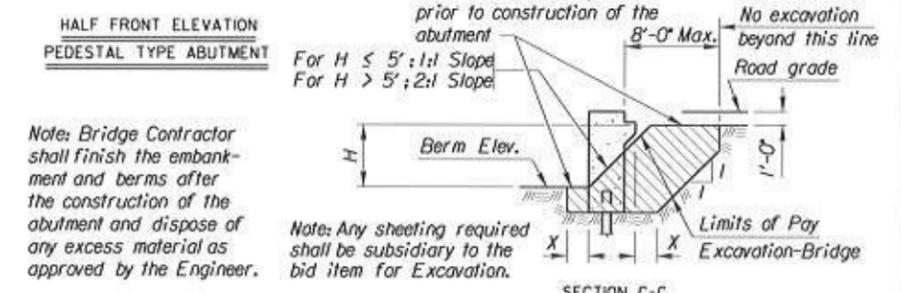
(Piers and Abutments)

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: 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.

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.

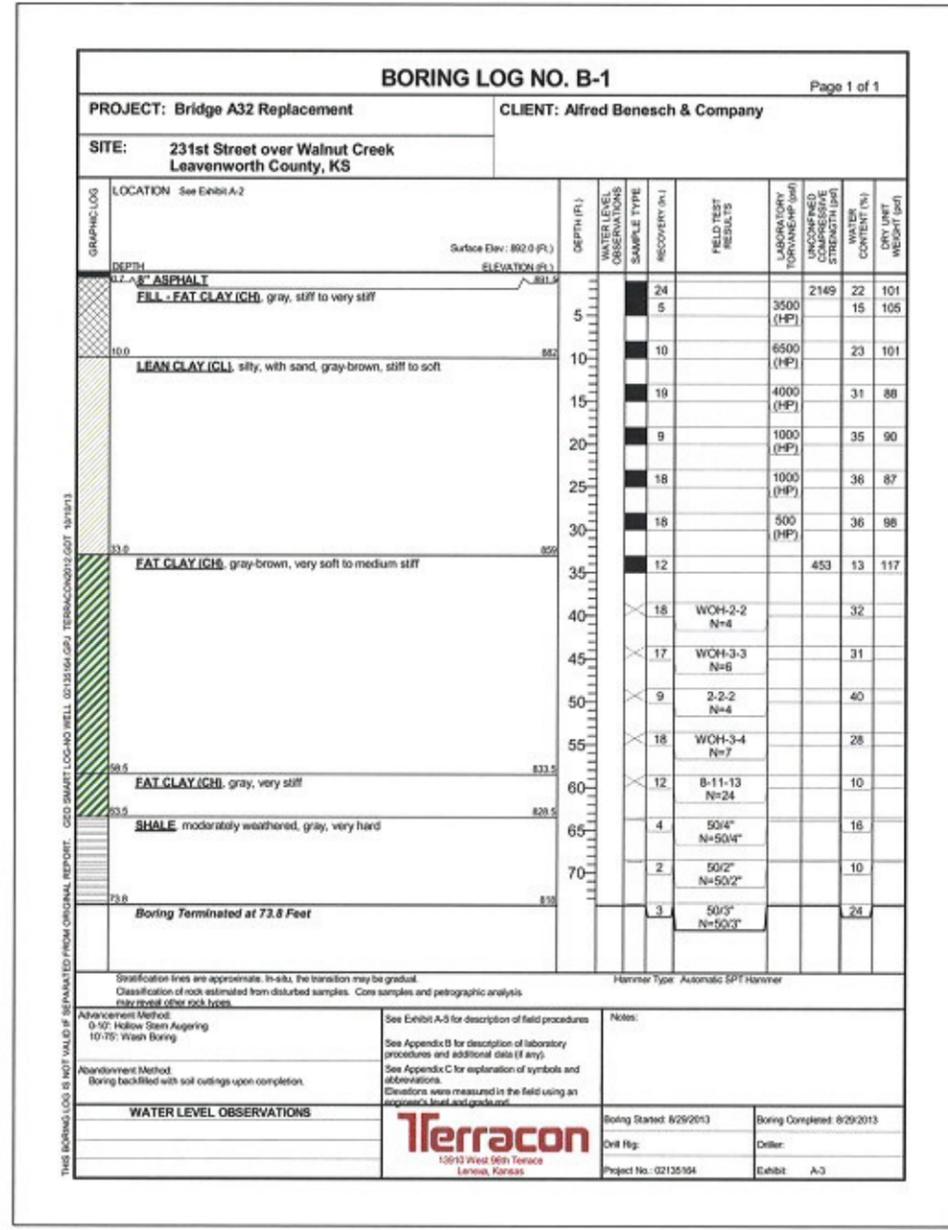
Dimension "X" shall be 2'-0" unless indicated otherwise on the general plans. Dimension "Y" shall be 1'-6" unless indicated otherwise on the general plans.

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

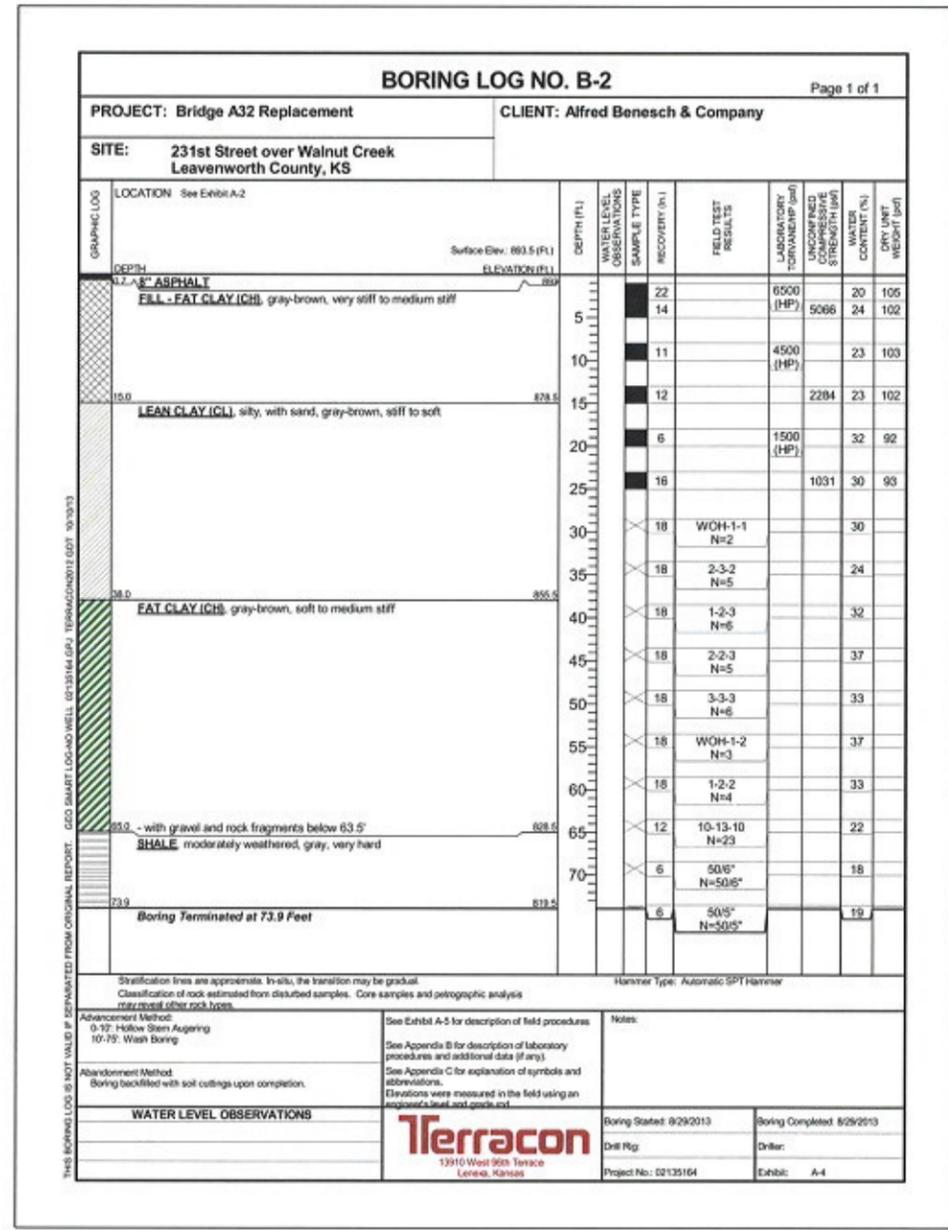
KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
BRIDGE EXCAVATION (LRFD)
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

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

Std. Base File: br100.dgn
 Plotted By: \$SUSERNAME\$\$
 File: \$PLOT\$
 Plot Date: \$DATE\$



BORING DATA AT ABUT. NO. 1



BORING DATA AT ABUT. NO. 2

Note: For locations of borings, see Construction Layout.

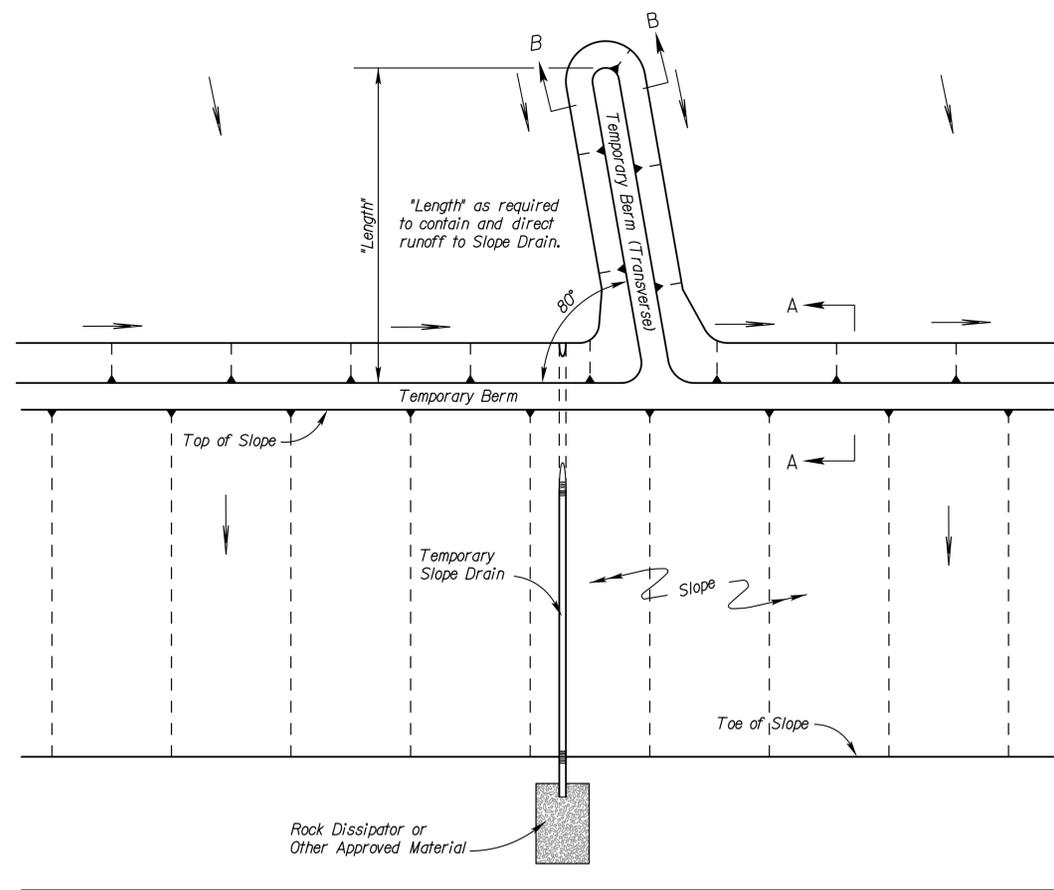
Plotted By: \$USER\$
 File: P:\0.032.0\Drawings\Sheets\Bridges\A-32-boring_logs.dgn
 Plot Date: 1/20/2014 12:43:46 PM

3					
2					
1					
NO.	DATE	REVISIONS	BY	APP'D	

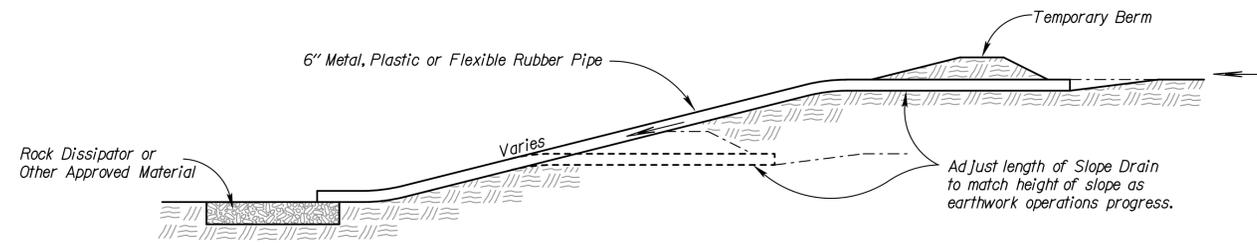
KANSAS DEPARTMENT OF TRANSPORTATION
 Br. No. 00000000620220 Sta. 19+46.50
 BORING LOGS AT ABUTMENT NO. 1 & 2
 BRIDGE A-32 REPLACEMENT
 OVER WALNUT CREEK
 Proj. No. 52 C-4597-01 Leavenworth Co.

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

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	32	60

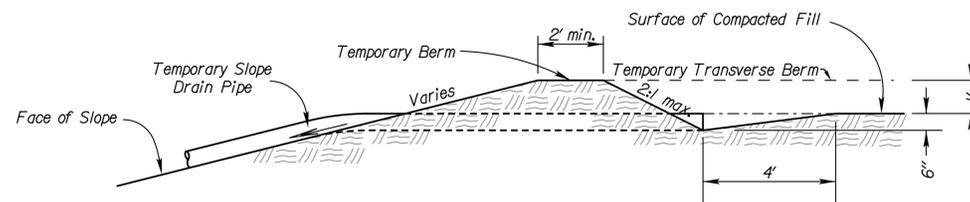


TYPICAL PLAN VIEW OF
TEMPORARY BERM AND
TEMPORARY SLOPE DRAIN
NO SCALE

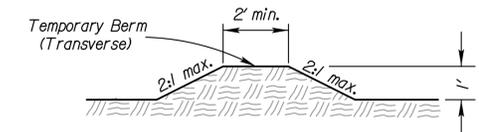


TYPICAL PROFILE OF TEMPORARY SLOPE DRAIN
NO SCALE

- NOTES:
- 1) Temporary Slope Drain and Temporary Berm may be used on either project foreslopes or project backslopes.
 - 2) Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.
 - 3) Pipe shall be secured in place as approved by Engineer.
 - 4) Temporary Berms under 2,000 feet shall be bid by Set Price.

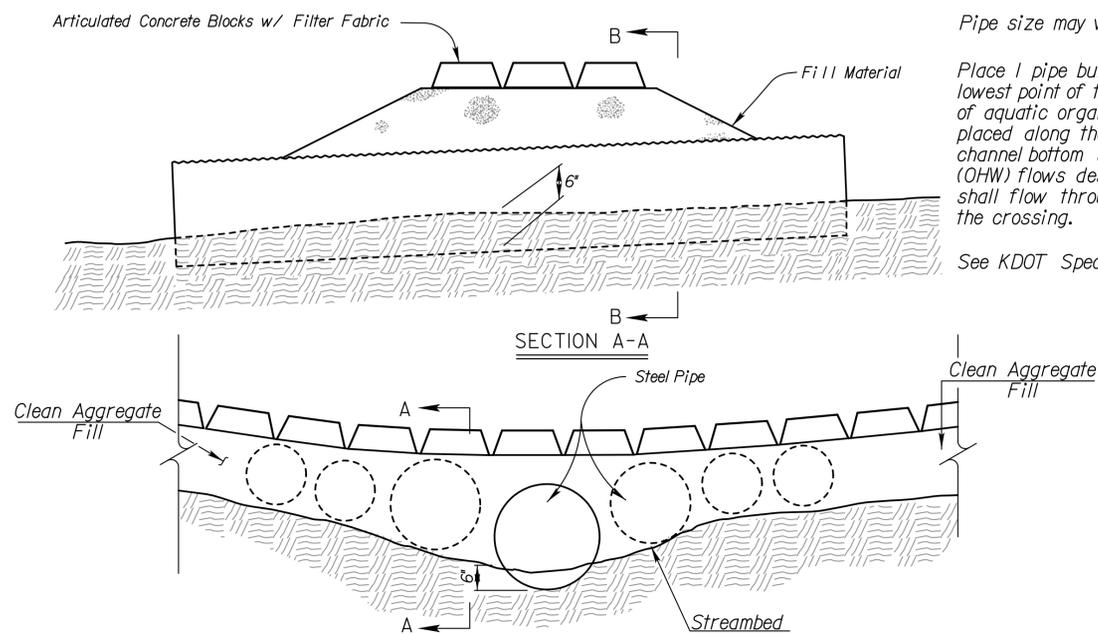


SECTION A-A
NO SCALE



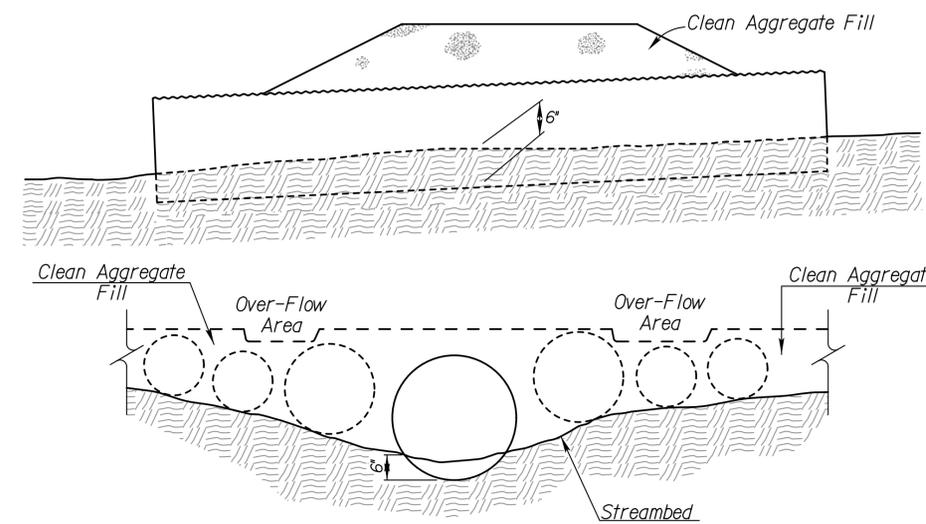
SECTION B-B
NO SCALE

TYPICAL PROFILE OF TEMPORARY BERM
NO SCALE



TEMPORARY STREAM CROSSING (ARTICULATED CONCRETE BLOCKS)
NO SCALE

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



TEMPORARY STREAM CROSSING (AGGREGATE)
NO SCALE

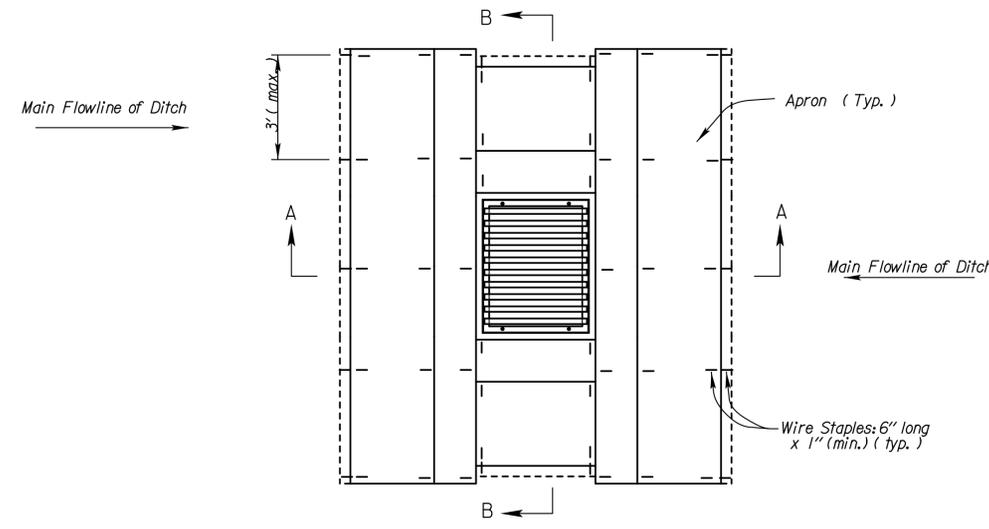
Pipe size may vary
Place 1 pipe buried 6" into stream bottom, in the lowest point of the channel to allow the passage of aquatic organisms, with additional pipes placed along the remainder of the stream channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall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

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

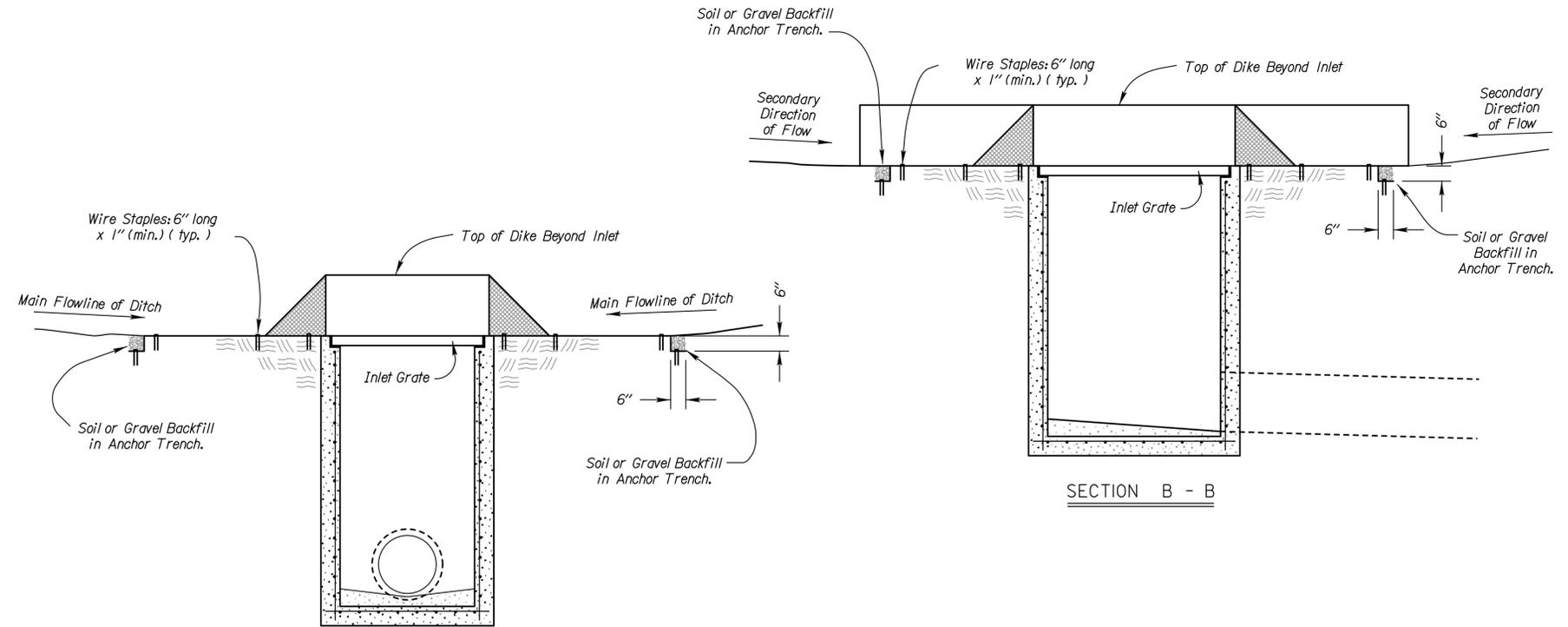
KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION AND POLLUTION CONTROL
TEMPORARY STREAM CROSSING (AGGREGATE)
TEMP. STREAM CROSS. (ARTC. CONC. BLOCKS)
LA852B

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

Std. Base File:
Plotted By: jpeterson
File: la852b.dgn
Plot Date: 20-JAN-2014 17:30
Plot Location:

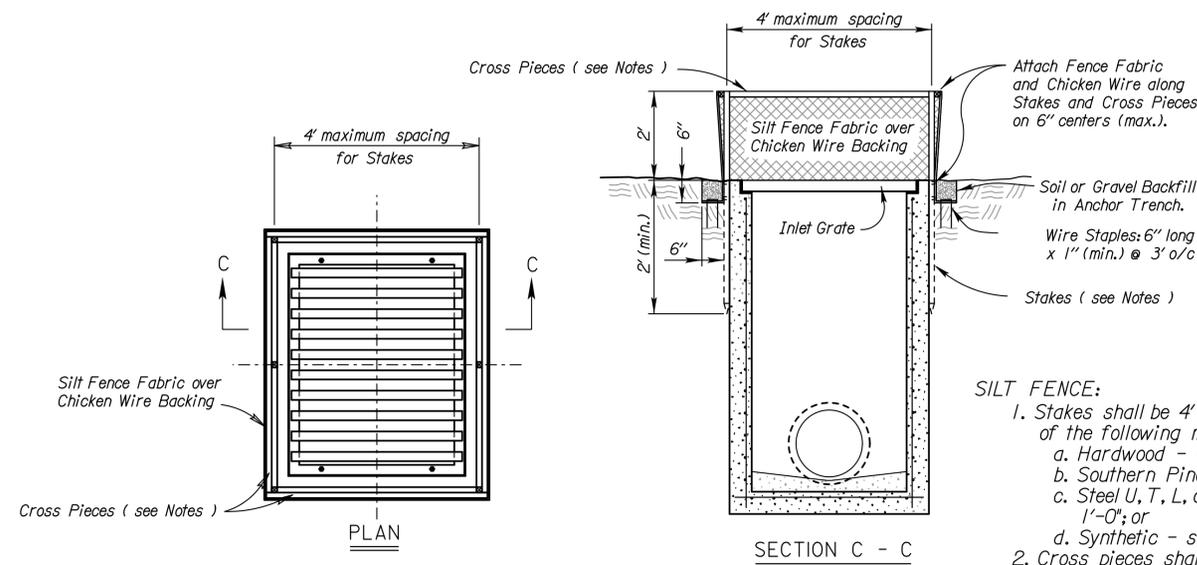


PLAN
TEMPORARY INLET SEDIMENT BARRIER
(TRIANGULAR SILT DIKE METHOD)
 NO SCALE



SECTION A - A

SECTION B - B



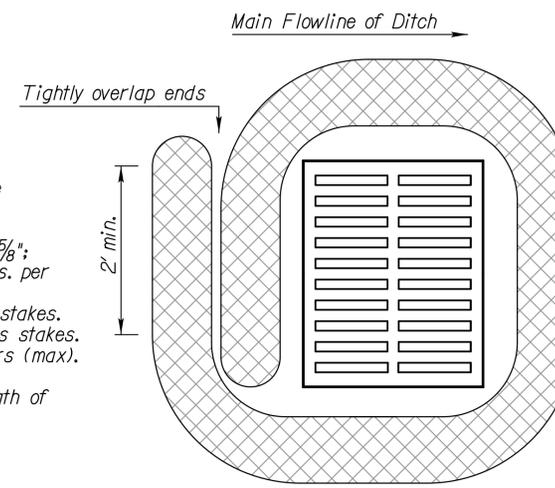
PLAN
TEMPORARY INLET SEDIMENT BARRIER
(SILT FENCE METHOD)
 NO SCALE

SECTION C - C

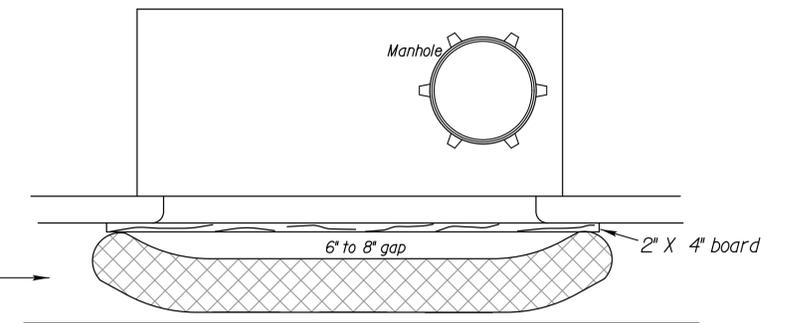
SILT FENCE:

1. Stakes shall be 4' (min.) long and of one of the following materials:
 - a. Hardwood - 1 3/16" x 1 3/16"
 - b. Southern Pine (No. 2) - 2 5/8" x 2 5/8"
 - c. Steel U, T, L, or C Section - 1.25 lbs. per 1'-0"; or
 - d. Synthetic - same strength as wood stakes.
2. Cross pieces shall be of same material as stakes.
3. Attach fence fabric securely on 6" centers (max).
4. Use of high flow material is acceptable.
5. Refer to plan sheets to estimate the length of silt fence required.

Bags = synthetic net (3mm mesh) or burlap bags
 Rock = approximately 1" to 2" diameter



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



CURB INLET PROTECTION

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

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 1/4" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

NO.	DATE	REVISIONS	BY	APP'D
3	6/01/13	Revised Standard	MRM	SHS
2	3/01/13	Revised Standard	MRM	SHS
1	8/01/08	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL				
TEMP. INLET SEDIMENT BARRIER (SILT FENCE)				
TEMP. INLET SEDIMENT BARRIER (T.S.D.)				
CURB INLET PROTECTION				
DROP INLET PROTECTION				
LA852C				
DESIGNED	MRM	DETAILED	MRM	QUANTITIES
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN. CK.
FHWA APPROVAL		5/14/2013		APP'D
				Scott H. Shields
				CADD
				CADD CK.

Std. Base File: _____ Plot Location: _____
 Plotted By: jpeterson
 File: la852c.dgn
 Plot Date: 20-JAN-2014 17:30

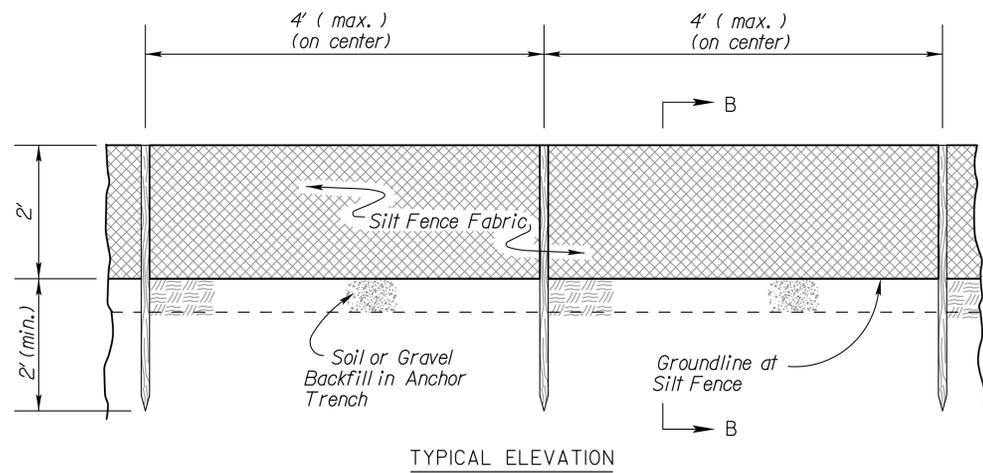
INSTALLATION NOTES

SILT FENCE:

- Stakes shall be 4' (min.) long and of one of the following materials:
 - Hardwood - 1 3/16" x 1 3/16";
 - Southern Pine (No. 2) - 2 5/8" x 2 5/8";
 - Steel U, T, L, or C Section - 1.25 lbs. per 1'-0"; or
 - Synthetic - same strength as wood stakes.
- Cross pieces shall be of same material as stakes.
- Attach fence fabric securely on 6" centers (max.).
- Use of high flow material is acceptable.
- Refer to plan sheets to estimate the length of silt fence required.

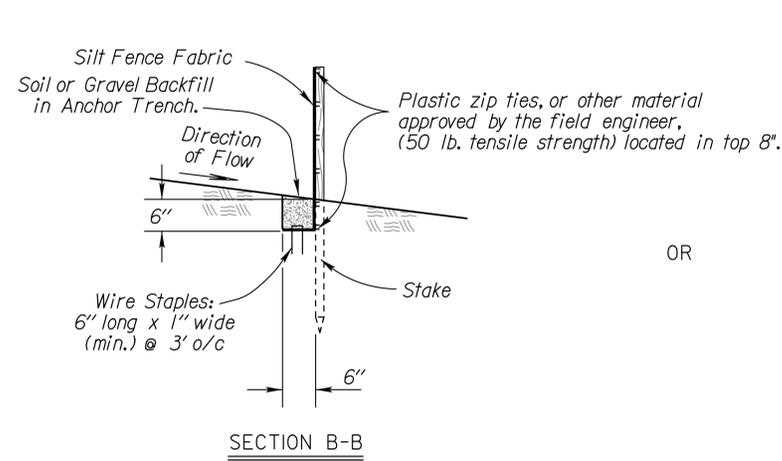
BIODEGRADABLE LOG BARRIERS

- Place biodegradable logs tightly together.
- Wood stakes shall be 2" x 2" (nom.).
- Wire staples shall be 6" long x 1" wide (min.) and placed on 4' (max.) centers.
- Refer to plan sheets to estimate length of biodegradable log barriers required.
- Logs should be keyed into the ground at a minimum of 25% of its height.
- Length of stakes should be 2 times the height of the log at a minimum.



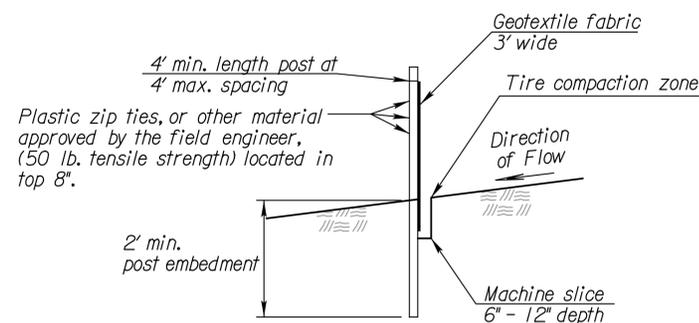
TYPICAL ELEVATION

SILT FENCE SLOPE BARRIER
NO SCALE



SECTION B-B

OR



SECTION B-B

Biodegradable Logs, Straw Wattles & Sediment Logs

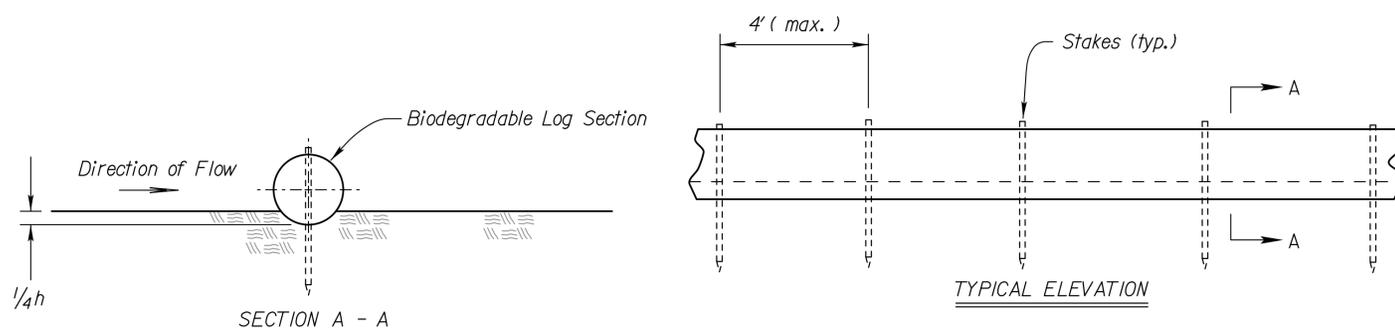
		PRODUCT		
		9" Sediment Log & 9" Straw Wattle (ft)	12" Sediment Log & 12" Straw Wattle (ft)	20" Sediment Log & 20" Straw Wattle (ft)
Slope Gradient	≤4H:1V	40	60	80
	3H:1V	30	45	60
	2H:1V	20	30	40
	1H:1V	10	15	20

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

9" and 12" material should only be used in areas which have been seeded and mulched. 20" material should be used in all other areas. Deviations should be approved by the Field Engineer.

GENERAL NOTES

- The slope barriers shall be placed along contour lines, with a short section turned upgrade at each end of the barrier. The maximum length of the slope barrier shall not exceed 250 feet, and the barrier ends need to be staggered.
- At culverts, the Silt Fence shall be placed over the culvert, not through the streambed flowline.
- Barriers damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor at no additional cost to KDOT.
- Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.



SECTION A - A

TYPICAL ELEVATION

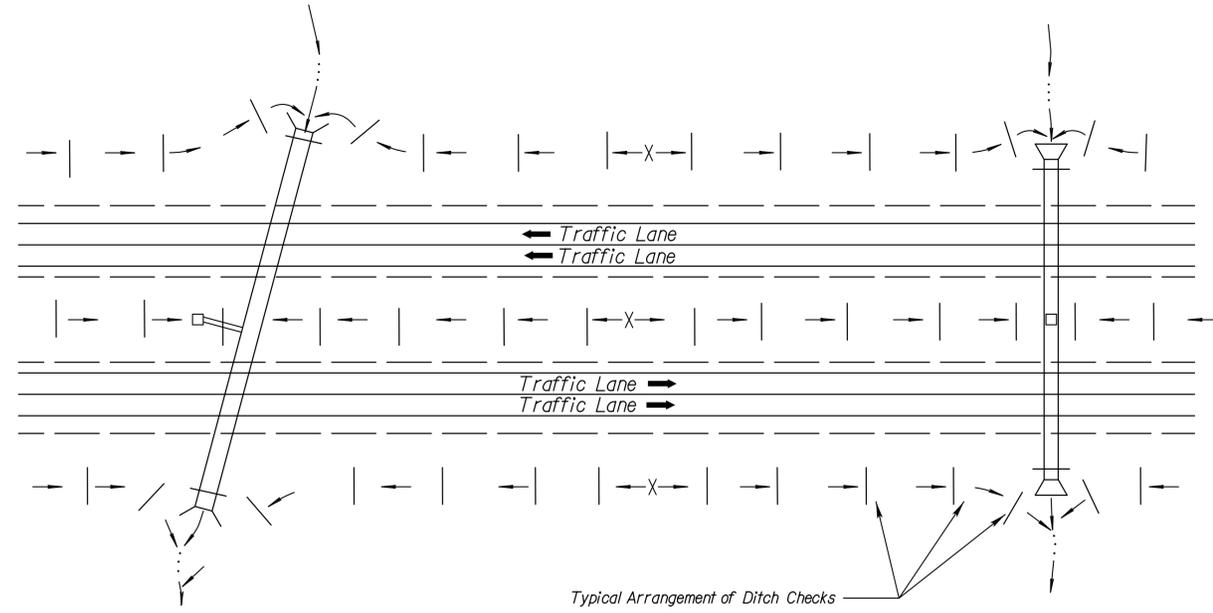
BIODEGRADABLE LOG SLOPE BARRIER
NO SCALE

Std. Base File:
 Plotted By: jpeterson
 File: la852d.dgn
 Plot Date: 20-JAN-2014 17:30
 Plot Location:

NO.	DATE	REVISIONS	BY	APP'D
3	6/01/13	Revised Standard	MRM	SHS
2	3/01/13	Revised Standard	MRM	SHS
1	9/01/10	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION AND POLLUTION CONTROL
SILT FENCE SLOPE BARRIERS
BIODEGRADABLE LOG SLOPE BARRIERS
LA852D

DESIGNED	MRM	5/14/2013	APP'D	Scott H. Shields
DESIGN CK.	SHS	DETAIL CK.	QUAN. CK.	CADD CK.



TYPICAL DITCH CHECK LAYOUT PLAN
NO SCALE

TEMPORARY DITCH CHECK SPACING	
DITCH @ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	33

NOTE: Use this spacing for all except Rock Ditch Checks.

GENERAL NOTES

- 1) Use only rock checks in situations where the ditch slope exceeds 6 percent.
- 2) Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.

Std. Base File: _____
 Plotted By: jpeterson
 File: la852e.dgn
 Plot Date: 20-JAN-2014 17:30

NO.	DATE	REVISIONS	BY	APP'D
3	6/01/13	Revised Standard	MRM	SHS
2	9/10/07	Revised Standard	MRM	SHS
1	6/16/05	Revised Standard	WCL	RDR

KANSAS DEPARTMENT OF TRANSPORTATION
TEMPORARY EROSION AND POLLUTION CONTROL
DITCH CHECKS

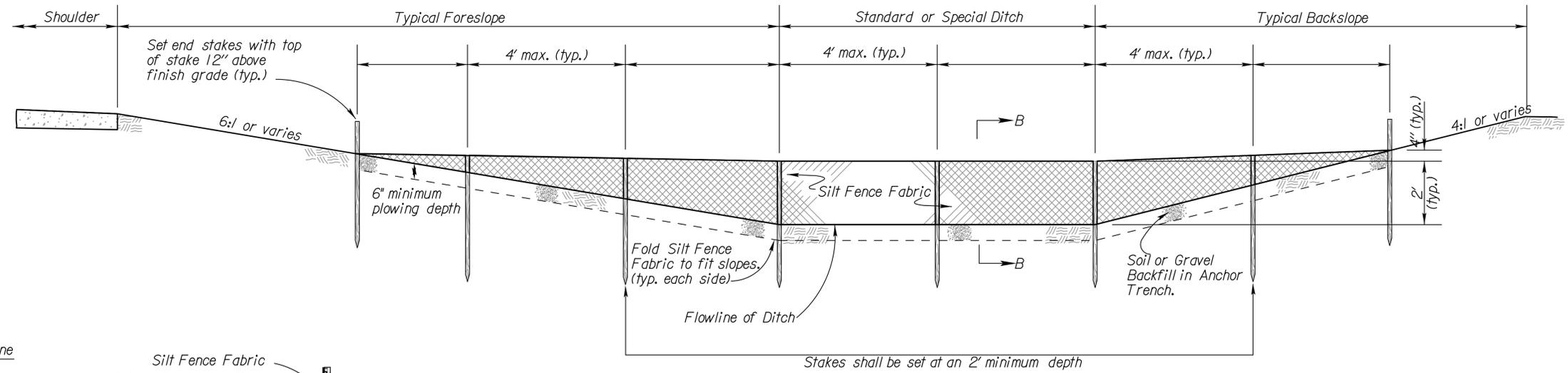
LA852E

DESIGNED	MRM	DETAILED	MRM	QUANTITIES	CADD	MRM
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN. CK.	CADD CK.	SHS

FHWA APPROVAL 5/14/2013 | APP'D Scott H. Shields

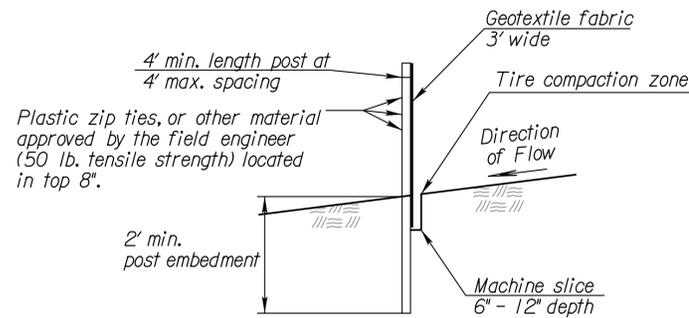
SILT FENCE:

- Stakes shall be 4' (min.) long and one of the following materials:
 - Hardwood - 1 3/16" x 1 3/16";
 - Southern Pine (No. 2) - 2 5/8" x 2 5/8";
 - Steel U, T, L, or C Section - 1.25 lbs. per 1'-0";
 - Synthetic - same strength as wood stakes.
- Cross pieces shall be of same material as stakes.
- Attach fence fabric securely on 6" centers (max.).
- Use of high flow material is acceptable.
- Refer to plan sheets to estimate the length of silt fence required.
- Use support fencing when tributary area is greater than 2.4 acres or when ditch gradient is greater than 2 percent.
- Silt fence plowing is acceptable at a 6" minimum depth. Trenching is acceptable in certain cases.

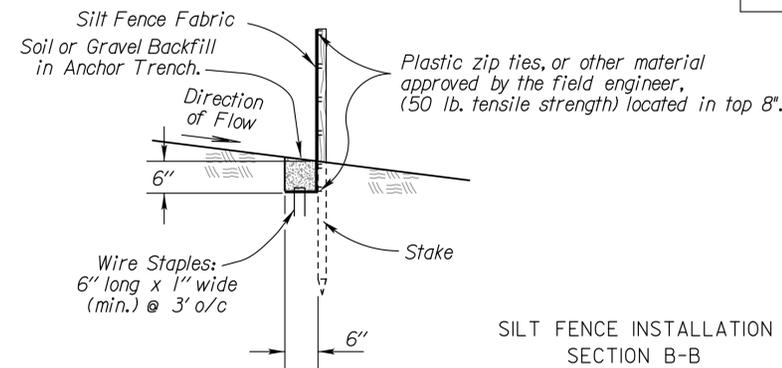


TYPICAL ELEVATION

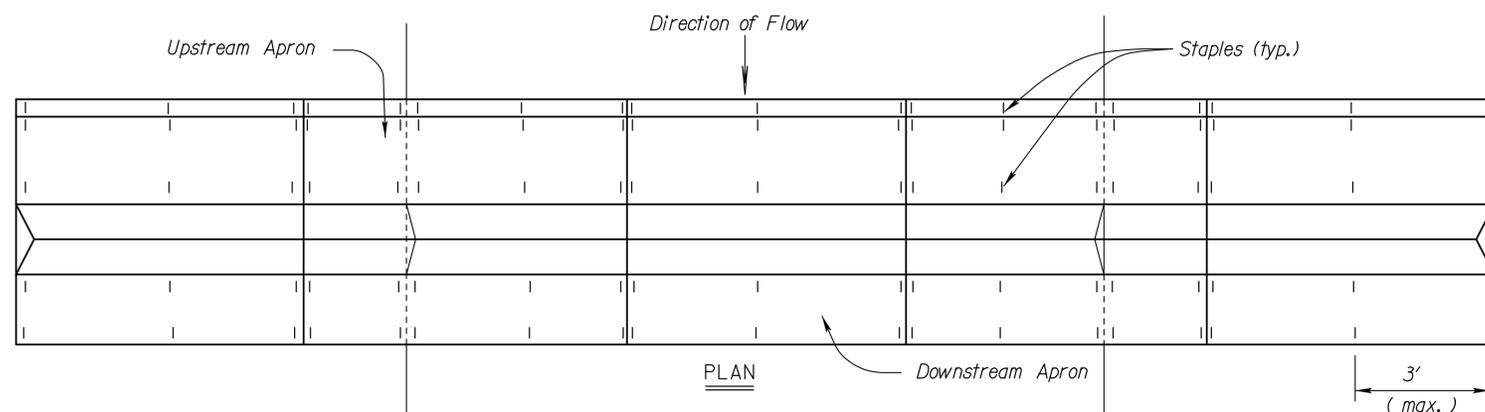
SILT FENCE DITCH CHECK
NO SCALE



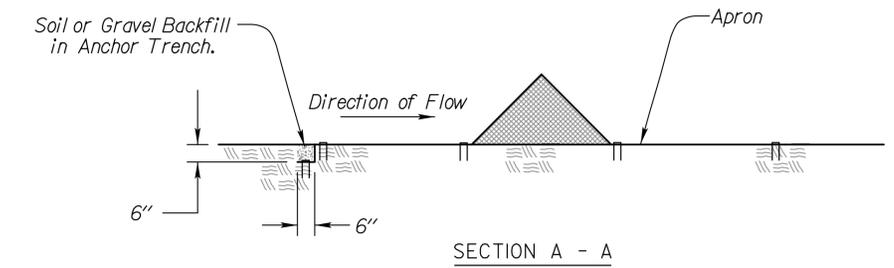
SILT FENCE INSTALLATION
SECTION B-B



SILT FENCE INSTALLATION
SECTION B-B



PLAN



SECTION A - A

TRIANGULAR SILT DIKE:

- Place triangular silt dike sections tightly together with apron material overlapping end-to-end by 6".
- Wire staples shall be 6" long by 1" wide (min.).
- Use as many triangular silt dike sections as necessary to ensure water does not flow around end of ditch check.

TRIANGULAR SILT DIKE DITCH CHECK

NO SCALE

NO.	DATE	REVISIONS	BY	APP'D
3	7/24/13	Revised Standard	MRM	SHS
2	6/01/13	Revised Standard	MRM	SHS
1	3/01/13	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL				
SILT FENCE DITCH CHECKS				
TRIANGULAR SILT DIKE DITCH CHECKS				
LA852F				
DESIGNED	MRM	5/14/2013	APP'D	Scott H. Shields
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN. CK.
				CADD CK.

Std. Base File:
 Plotted By: jpeterson
 File: la852f.dgn
 Plot Date: 20-JAN-2014 17:30

TEMPORARY ROCK DITCH CHECK SPACING	
DITCH Q SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29

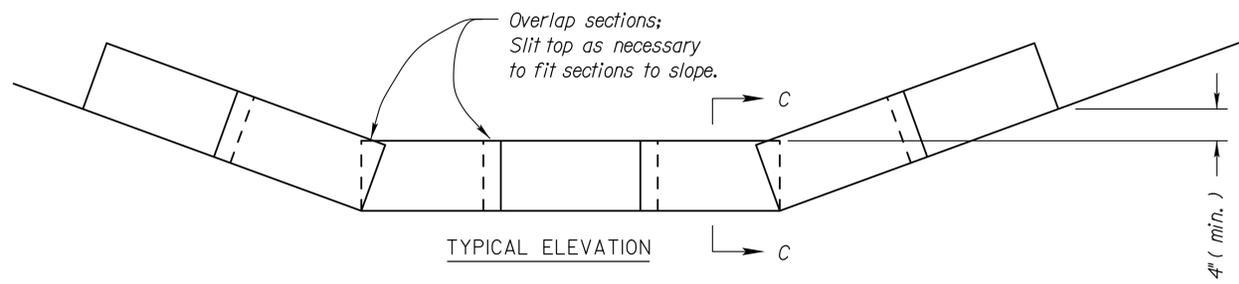
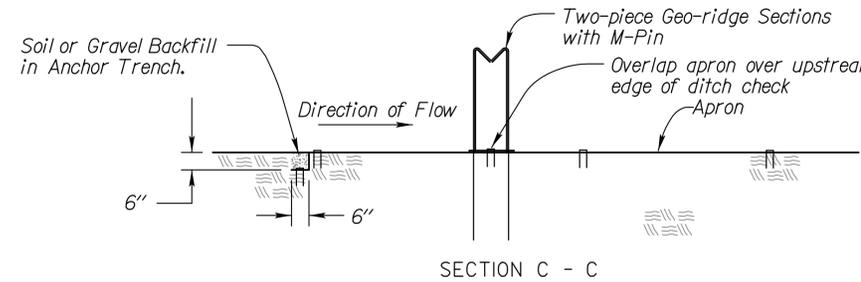
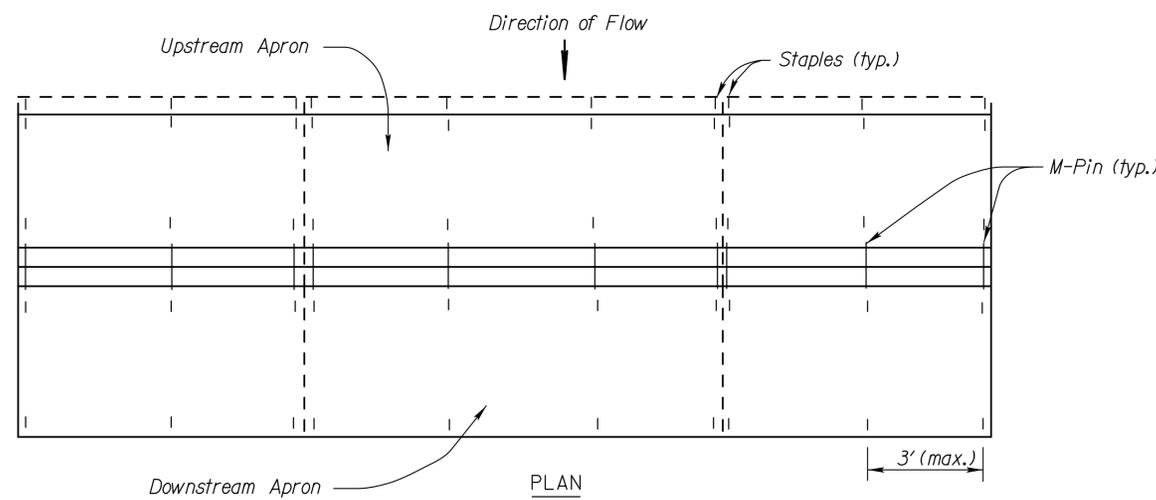
NOTE: Use this spacing only for Rock Ditch Checks.

ROCK DITCH CHECK NOTES

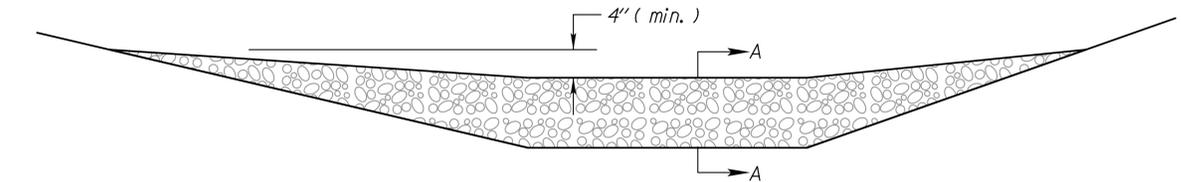
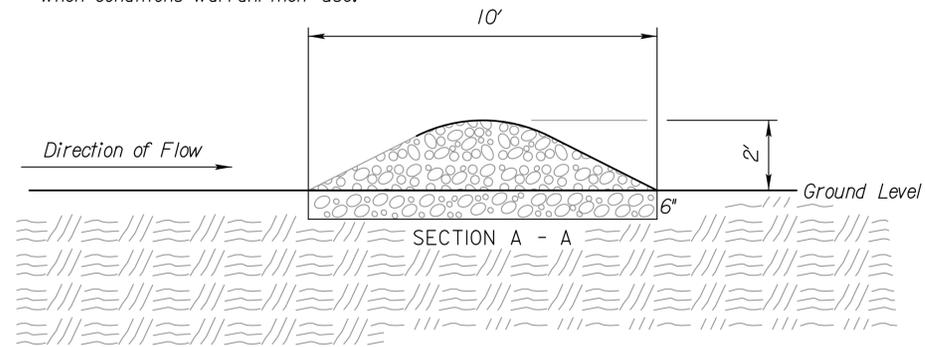
1. Rock shall be clean aggregate, D50 = 6".
2. Place rock in such manner that water will flow over, not around ditch check.
3. Do not use rock ditch checks in clear zone.
4. Excavation: The ditch area shall be reshaped to fill any eroded areas. Prior to placement of the rock, the ditch shall be excavated 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) (Set Price).
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 when conditions warrant their use.

GEO-RIDGE PERMEABLE BERM NOTES

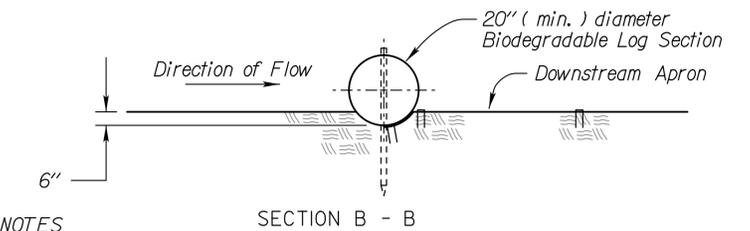
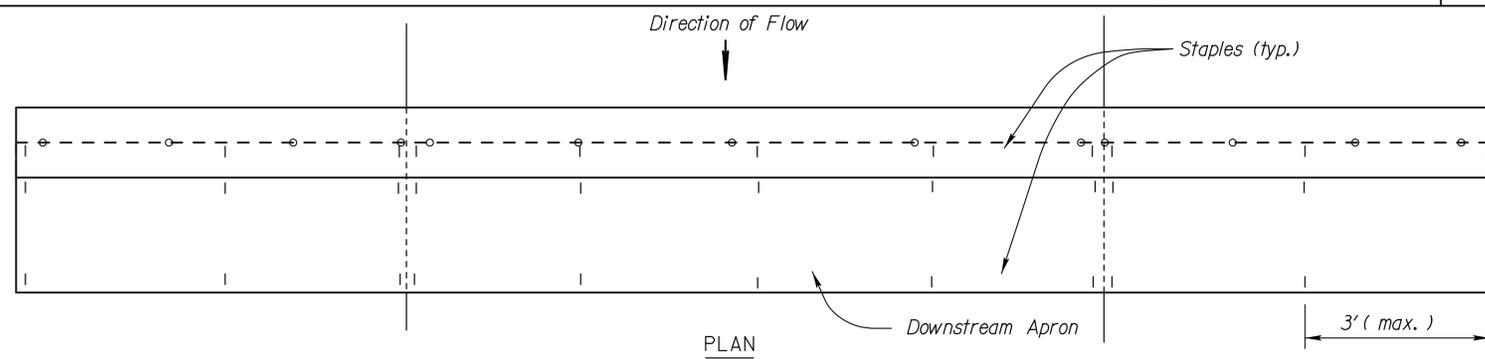
1. Overlap Geo-ridge Berm sections and apron material by 6".
2. Use M-Pins supplied by manufacturer to secure geo-ridge Berm sections.
3. Use as many Geo-ridge Berm sections as necessary to insure water does not flow around end of ditch check.
4. Use silt fence material as the apron to prevent scour above and below the ditch check.
5. Wire Staples shall be 6" long by 1" wide, minimum.



GEO-RIDGE PERMEABLE BERM DITCH CHECK
NO SCALE

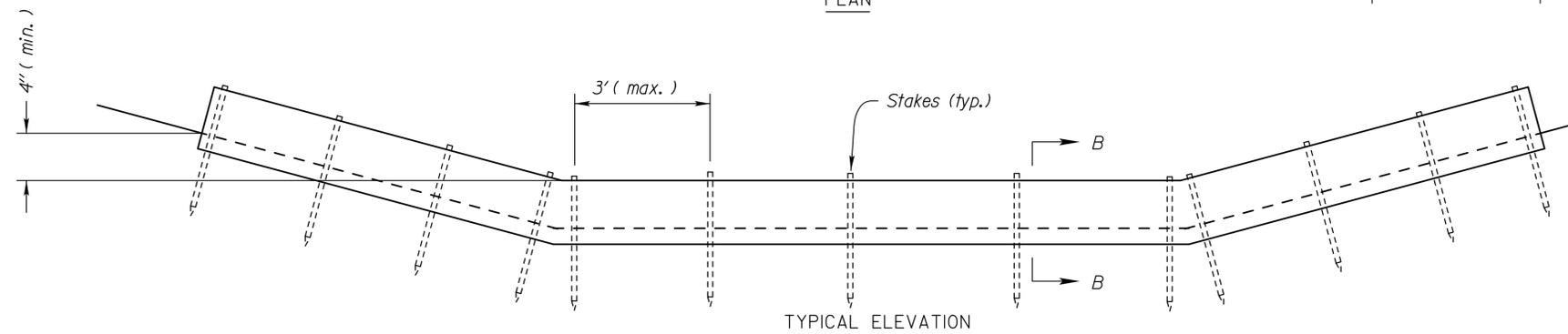


ROCK DITCH CHECK
NO SCALE



BIODEGRADABLE LOG DIKE NOTES

1. Place biodegradable logs tightly together, with apron material overlapping end-to-end by 6".
2. Wire staples shall be 6" long by 1" wide, minimum.
3. Use as many biodegradable log sections as necessary to insure water does not flow around end of ditch check.
4. Wood stakes shall be 2" x 2" (nom.) x 4" (min.) long.
5. Use silt fence material as the downstream apron to prevent scour below the ditch check.



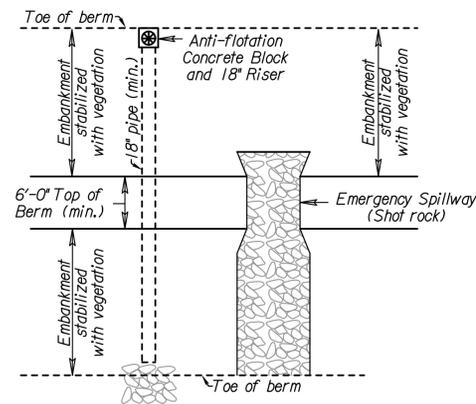
BIODEGRADABLE LOG DITCH CHECK
NO SCALE

Std. Base File: lab52g.dgn
 Plotted By: jpeterson
 File: lab52g.dgn
 Plot Date: 20-JAN-2014 17:30
 Plot Location:

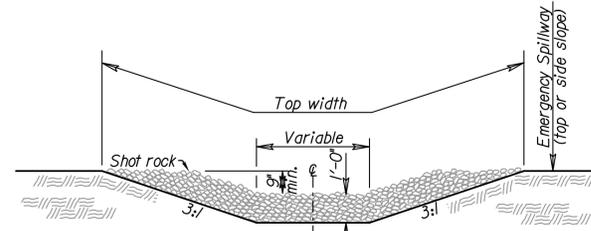
NO.	DATE	REVISIONS	BY	APP'D
2	9/01/10	Revised Standard	MRM	SHS
2	12/31/09	Revised Standard	MRM	SHS
1	5/03/06	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION
 TEMPORARY EROSION AND POLLUTION CONTROL
 ROCK DITCH CHECKS
 BIODEGRADABLE LOG DITCH CHECKS
 GEO-RIDGE PERMEABLE BERM DITCH CHECKS
 LA852G

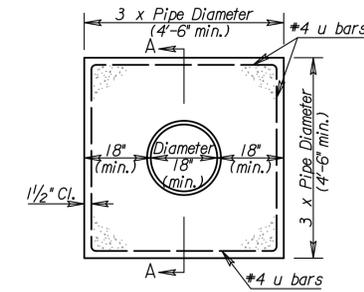
DESIGNED	MRM	DETAILED	MRM	QUANTITIES	CADD	Scott H. Shields
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN. CK.	CADD CK.	



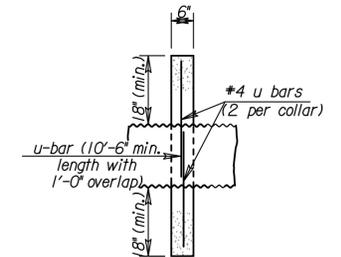
SEDIMENT STORAGE BASIN (PLAN)



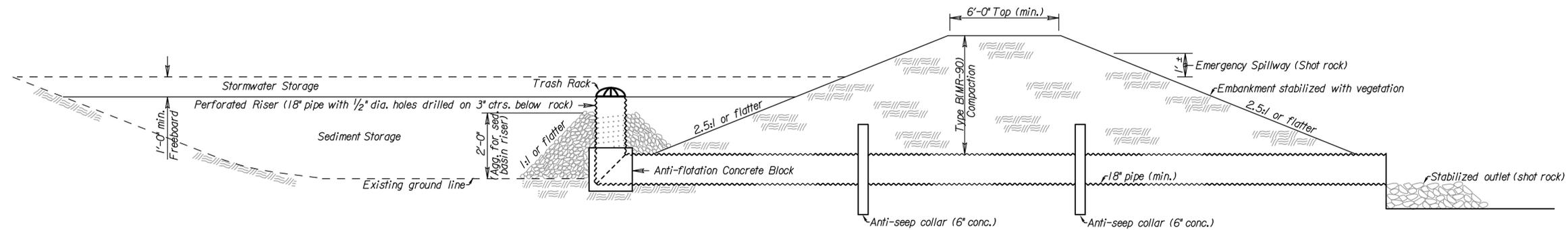
CROSS SECTION (EMERGENCY SPILLWAY)



CONCRETE ANTI-SEEP COLLAR



SECTION A-A



SEDIMENT STORAGE BASIN (ELEVATION)

NOTES:

- 1) Temporary Sediment Basins shall be constructed at locations as directed by the Engineer or as approved in the SWPPP Schedule. All work and materials necessary, including but not limited to, the fill material, compaction, drainage pipes, aggregates and all other incidentals necessary to construct the basin, shall be paid as "Temporary Sediment Basin".
- 2) Lengths and top dimensions shall be determined in the field by the Engineer.

SEDIMENT STORAGE BASIN LOCATIONS		
STATION TO STATION	SIDE	REQUIRED STORAGE CAPACITY

3				
2				
1	7/17/13	Revised Standard	MRM	SHS
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
TEMPORARY EROSION AND POLLUTION CONTROL				
SEDIMENT STORAGE BASIN				
LA852H				
FHWA APPROVAL	03/15/2013	APP'D	Scott H. Shields	
DESIGNED	BB	DETAILED	BB	QUANTITIES
DESIGN CK.	SHS	DETAIL CK.	SHS	QUAN. CK.
			CADD	BY
			CADD	CK.
				SHS

Std. Base File:
 Plotted By: jpeterson
 File: la852h.dgn
 Plot Date: 20-JAN-2014 17:30
 Plot Location:

SEEDING PERIODS

COOL SEASON February 15 to April 20 and August 15 to Sept. 30	WARM SEASON November 15 to June 1
SPECIES	SPECIES
Bluegrasses	Big Bluestem
Brome-grasses	Blue Grama
Canada Wildrye	Buffalograss
Fescues	Eastern Gamagrass
Prairie Junegrass	Indiangrass
Reed Canarygrass	Little Bluestem
Ryegrasses	Sand Bluestem
Sterile Wheatgrass	Sand Dropseed
Tall Dropseed	Sand Lovegrass
Western Wheatgrass	Side Oats Grama
	Switchgrass
	Wildflower Mixes

When "Cool Season" species are mixed with "Warm Season" species, in areas of 1 acre or more, the mixture shall be seeded during the "Warm Season". In areas of less than 1 acre, the mixture of "Cool Season" and "Warm Season" species may be seeded during the "Warm or Cool Seasons".

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.

It shall not be required to till the area to bare ground prior to permanent seeding. 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, P₂O₅, K₂O 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 as follows:

1 3/4 - 2 1/4 Tons per Acre = 1 1/2" loose depth spread uniformly over acre.

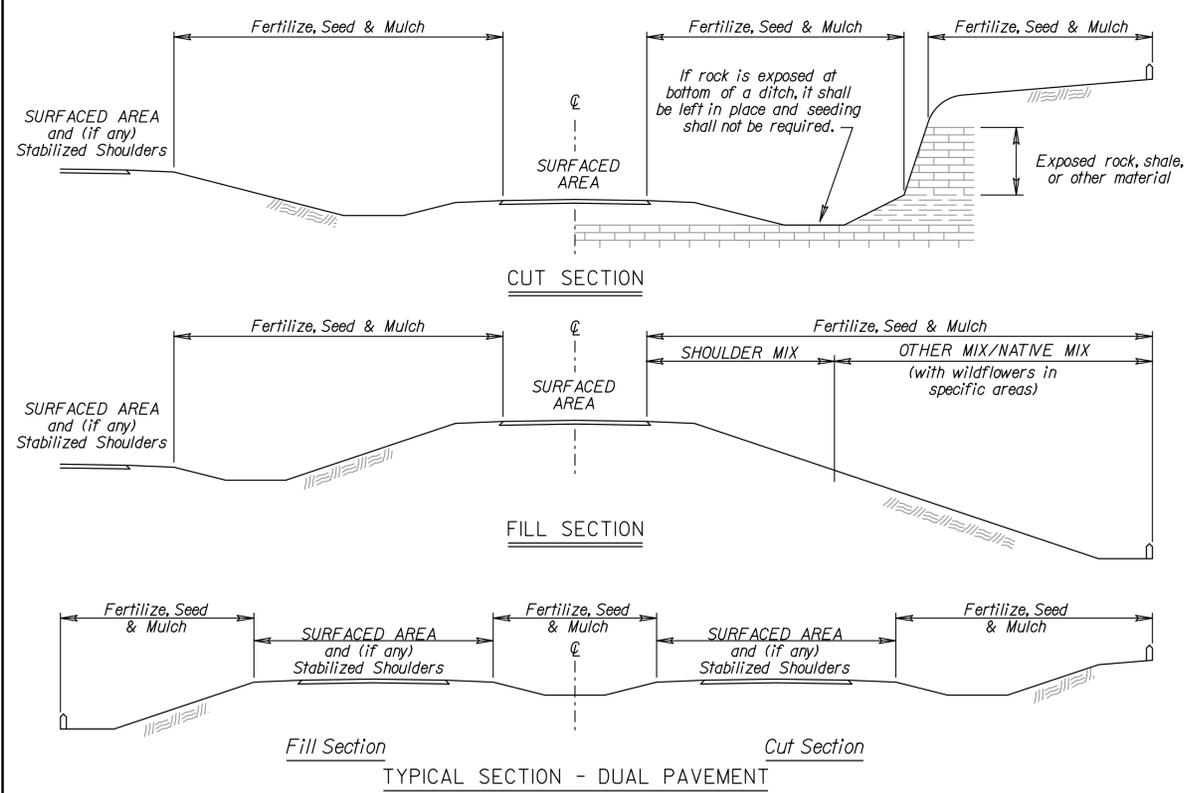
Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards.

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.

The amount of mulch in the quantities is estimated. The total mulch required shall be determined in the field. The bid item for mulching shall be paid for according to Standard Specification Section 904.

SODDING PERIODS
March 1 to April 15 and September 1 to November 15



NATIVE WILDFLOWER MIX 1

PLS RATE	NAME	QTY (lb)
0.1	Black Eyed Susan	0.1
1.8	Illinois Bundleflower	1.8
0.15	Maximilian Sunflower	.15
0.4	Purple Prairie Clover	.4
2.9	Showy Partridge Pea	2.9
0.1	Upright Prairie Coneflower	0.1
0.3	Butterfly Milkweed	.3
0.1	Stiff Goldenrod	0.1
0.05	Pinnate Prairie Coneflower	.05
0.1	Lance-leaf Coreopsis	0.1
0.05	New England Aster	.05
0.2	Pale Purple Coneflower	0.2
0.05	Plains Coreopsis	.05
0.05	Hoary Verbena	.05
0.3	Roundhead Lespedeza	.3
0.4	Thickspike Gayfeather	.4
0.05	Wild Bergamot	.05
0.2	Smooth Oxeye	0.2
0.05	Lemon Mint	.05
7.35	Total (lb)	7.35

NATIVE WILDFLOWER MIX 2

PLS RATE	NAME	QTY (lb)
0.1	Black Eyed Susan	0.1
1.8	Illinois Bundleflower	1.8
0.15	Maximilian Sunflower	.15
0.4	Purple Prairie Clover	.4
2.9	Showy Partridge Pea	2.9
0.1	Upright Prairie Coneflower	0.1
0.3	Butterfly Milkweed	.3
0.4	Dotted Blazing Star	0.4
0.4	Annual Galliardia	0.4
0.05	Stiff Goldenrod	.05
0.05	New England Aster	.05
0.3	Missouri Evening Primrose	0.3
0.05	Plains Coreopsis	.05
0.15	White Prairie Clover	0.15
0.3	Roundhead Lespedeza	0.3
0.05	Lemon Mint	0.05
0.15	Pitcher Sage	0.15
7.65	Total (lb)	7.65

NATIVE WILDFLOWER MIX 3

PLS RATE	NAME	QTY (lb)
0.15	Black Eyed Susan	0.15
1.9	Illinois Bundleflower	1.9
0.15	Maximilian Sunflower	.15
0.05	Western Yarrow	0.05
0.5	Black Sampson Echinacea	0.5
0.05	Upright Prairie Coneflower	0.05
0.3	Butterfly Milkweed	0.3
0.4	Dotted Blazing Star	0.4
0.75	Annual Galliardia	0.75
0.05	Stiff Goldenrod	0.05
0.05	New England Aster	0.05
0.4	Pitcher Sage	0.4
0.01	Plains Coreopsis	0.01
0.15	White Prairie Clover	0.15
0.2	Purple Prairie Clover	0.2
0.4	Leadplant	0.4
0.02	White Heath Aster	0.02
1	Blue Wild Indigo	1
0.05	Lemon Mint	0.05
6.58	Total (lb)	6.58

NATIVE WILDFLOWER MIX 4

PLS RATE	NAME	QTY (lb)
1.9	Illinois Bundleflower	1.9
0.4	Maximilian Sunflower	0.4
0.05	Western Yarrow	0.05
1	Black Sampson Echinacea	1
0.1	Upright Prairie Coneflower	0.1
0.1	Scarlet Globemallow	0.1
0.4	Dotted Blazing Star	0.4
1.1	Annual Galliardia (Firewheel)	1.1
0.1	Hoary Vervain	0.1
0.3	White Prairie Clover	0.3
0.4	Purple Prairie Clover	0.4
0.4	Perennial Galliardia (Blanket Flower)	0.4
0.02	White Heath Aster	0.02
0.05	Lemon Mint	0.05
6.32	Total (lb)	6.32

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

SUMMARY OF SEEDING QUANTITIES

SHLDR	P.L.S. RATE/ACRE		ACRES		BID ITEM	QUANTITY	UNIT
	OTHER		SHLDR	OTHER			
					Fertilizer (12 - 12 - 12)		Lbs
	80			1.0	Fertilizer (15 - 30 - 15)	80	Lbs
	2			1.0	Seed (Big Bluestem Grass Seed (Kaw))	2	Lbs
					Seed (Blue Grama Grass Seed (Lovington))		Lbs
					Seed (Buffalograss Seed (Treated))		Lbs
	10			1.0	Seed (Canada Wildrye Grass Seed)	10	Lbs
	2			1.0	Seed (Indiangrass Seed (Osage))	2	Lbs
	2			1.0	Seed (Little Bluestem Grass Seed (Aldous))	2	Lbs
					Seed (Perennial Ryegrass)		Lbs
					Seed (Prairie Junegrass)		Lbs
	6.3			1.0	Seed (Side Oats Grama Grass Seed (El Reno))	6.3	Lbs
	10			1.0	Seed (Sterile Wheatgrass)	10	Lbs
	0.7			1.0	Seed (Switchgrass Seed (Blackwell))	.7	Lbs
	0.5			1.0	Seed (Tall Dropseed)	.5	Lbs
	4			1.0	Seed (Tall Fescue (Endophyte Free))	4	Lbs
					Seed (Western Wheatgrass Seed (Barton))		Lbs
	7.35			1.0	Seed (Native Wildflower Mix 1)	7.35	Lbs
					Mulching (Permanent) (Set Price)	1	TON

SHLDR = Shoulder Turf Mix: Includes a 30 foot wide strip along the stabilized shoulder on each side of each traveled way, plus all median areas less than 60 feet wide.

OTHER = All other turf areas except Shoulder, Guardrail, and Native areas usually include the Native Wildflower Mix.

NOTE: Projects of 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.

Std. Base File: _____ Plot Location: _____
 Plotted By: J. Petersen
 File: 0650.dgn
 Plot Date: 20-JAN-2014 17:30

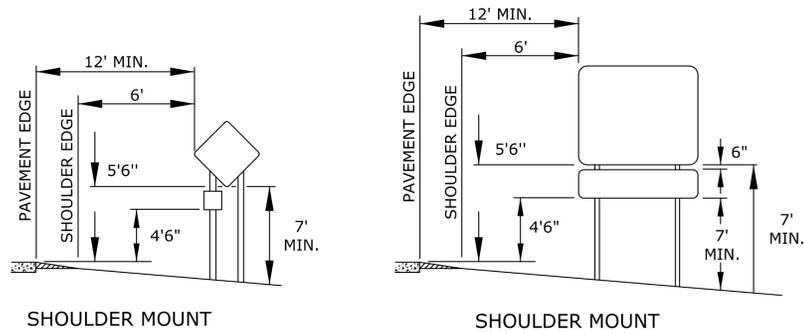
NO.	DATE	REVISIONS	BY	APP'D
4	6/01/13	Revised Standard	MRM	SHS
3	3/01/13	Revised Standard	MRM	SHS
2	2/24/12	Revised Standard	MRM	SHS
1	6/01/10	Revised Standard	MRM	SHS

KANSAS DEPARTMENT OF TRANSPORTATION

PERMANENT SEEDING
SUMMARY OF SEEDING QUANTITIES

LAB50

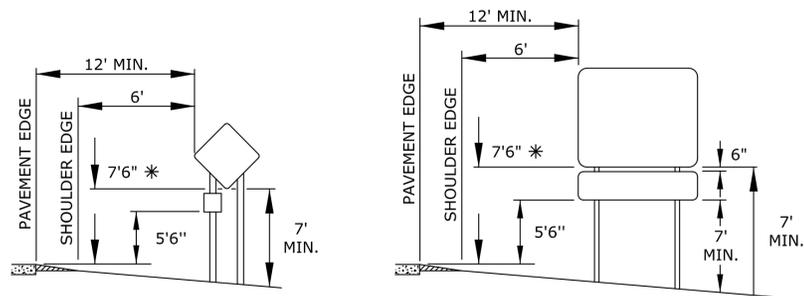
DESIGNED	MRM	DETAILED	MRM	QUANTITIES	MRM	APP'D	Scott H. Shields
DESIGN CK.		DETAIL CK.		QUAN. CK.		CADD	
						CADD	



SHOULDER MOUNT

SHOULDER MOUNT

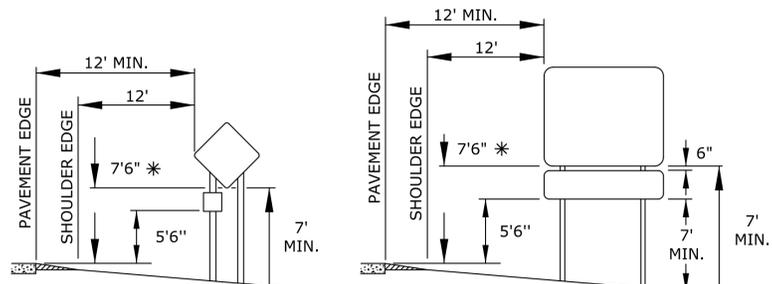
CONVENTIONAL ROADWAY



* - 8'6" WITH SECONDARY SIGN
SHOULDER MOUNT

* - 8'6" WITH SECONDARY SIGN
SHOULDER MOUNT

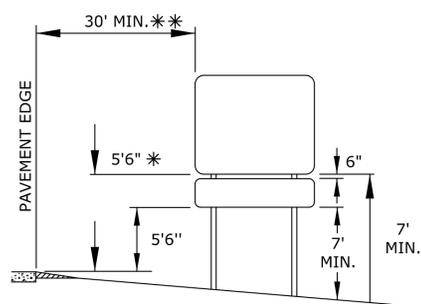
FREEWAY AND EXPRESSWAY ROADWAY
RAMPS AND SIDE ROADS



* - 8'6" WITH SECONDARY SIGN
SHOULDER MOUNT

* - 8'6" WITH SECONDARY SIGN
SHOULDER MOUNT

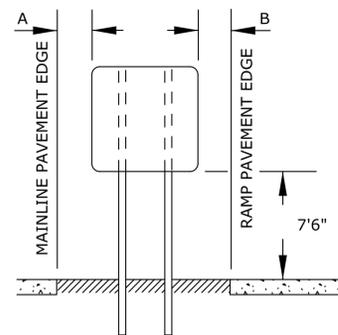
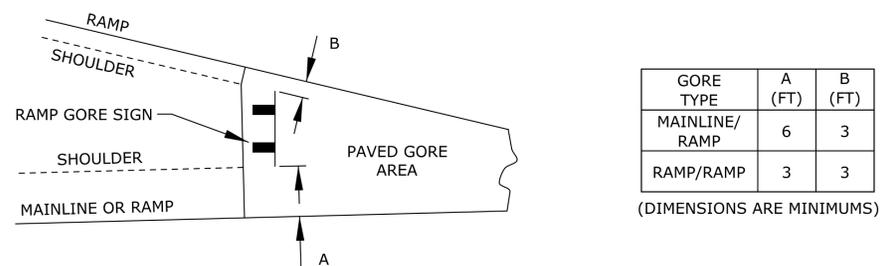
FREEWAY AND EXPRESSWAY ROADWAY



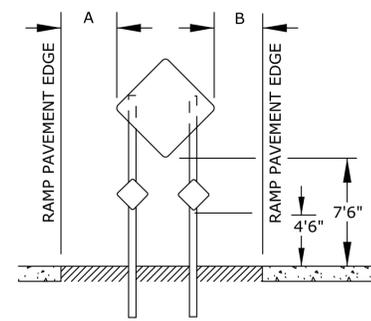
* - 8'6" WITH SECONDARY SIGN
** - 60' MAX.

OFFSET MOUNT

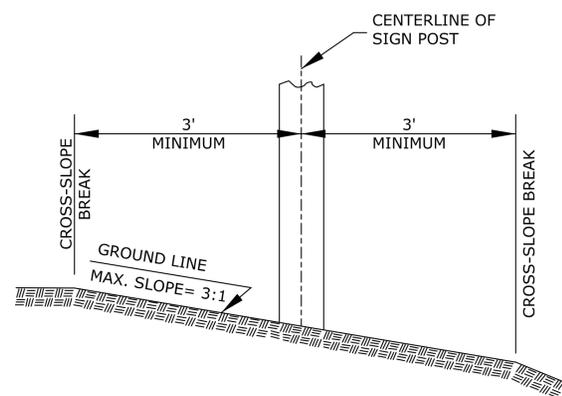
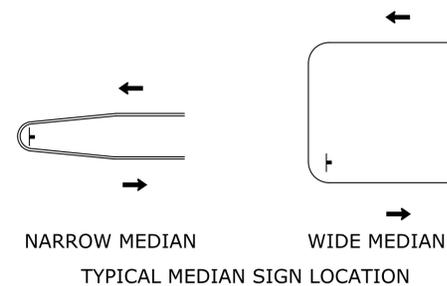
FREEWAY AND EXPRESSWAY ROADWAY



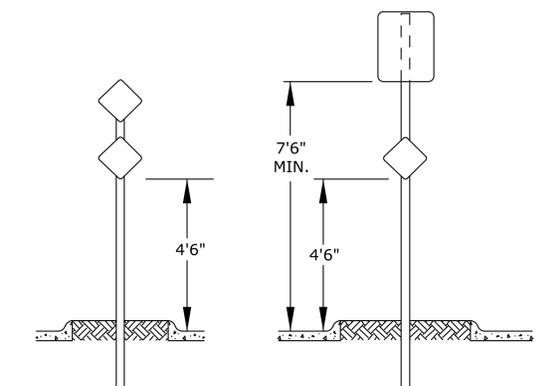
GORE INSTALLED SIGN
(MAINLINE/RAMP)



GORE INSTALLED SIGN
WITH TWO T1/OM'S
(RAMP/RAMP)



POST PLACEMENT CRITERIA
(CROSS-SLOPE BREAK)



ONE OR TWO OM1-3

PRIMARY SIGN WITH OM1-3

NOTES:

THE OUTER EDGE OF THE SIGN, ON EXPRESSWAYS AND FREEWAYS, SHALL BE A MINIMUM OF 10 FEET FROM THE RIGHT OF WAY LINE.

IN BUSINESS, COMMERCIAL, OR RESIDENTIAL DISTRICTS WHERE LATERAL OFFSETS ARE LIMITED, A MINIMUM LATERAL CLEARANCE OF 2 FEET WITH A 7'6" MINIMUM MOUNTING HEIGHT MAY BE USED.

WHEN SIGNS ARE MOUNTED BEHIND GUARD FENCE, THE NEAR EDGE OF THE SIGN SHALL NOT EXTEND BEYOND THE BACK SIDE OF THE GUARD FENCE AND THE NEAREST SIGN POST SHALL BE A MINIMUM OF 5 FEET FROM THE FACE OF THE GUARD FENCE. THERE SHALL NOT BE ANY SHOULDER MOUNTED SIGNS LOCATED BETWEEN 100 FEET IN ADVANCE OF AND 50 FEET BEYOND THE NOSE OF THE GUARD FENCE.

WHEN SIGNS ARE MOUNTED IN A MEDIAN, THE LATERAL PLACEMENT SHOULD BE THE SAME AS A SHOULDER MOUNT. IF THE MEDIAN IS TOO NARROW FOR THIS PLACEMENT THE SIGN MAY BE PLACED A MINIMUM OF 2 FEET FROM THE BACK OF THE CURB, BUT IN NO CASE SHALL THE SIGN EDGE EXTEND BEYOND THE BACK EDGE OF THE CURB. SIGNS LOCATED AT THE MEDIAN NOSE SHOULD BE SET THE SAME DISTANCE FROM THE BACK OF THE CURB AS THE RADIUS OF THE MEDIA NOSE, BUT SHOULD NOT EXCEED THE DISTANCE OF THE SHOULDER MOUNT OR BE CLOSER THAN 2 FEET FROM THE BACK OF THE CURB.

THE GORE SIGN SHALL BE INSTALLED IN THE FOOTING BLOCKOUT IN THE PAVED GORE AREA. IF NO BLOCKOUT IS PROVIDED, THEN LOCATE THE GORE SIGN AT THE PLAN STATION. THE EDGES OF THE GORE SIGN SHALL NOT EXTEND BEYOND THE SHOULDER EDGE. THE MINIMUM DISTANCE FROM THE POST CENTERLINE TO THE BACK EDGE OF THE PAVED GORE AREA IS 3 FEET.

ADJUSTMENTS:

SIGNS MAY BE MOVED Laterally OR LONGITUDINALLY IF IT WILL IMPROVE THE VISIBILITY OF THE SIGN OR OTHER SIGNS AND IF IT WILL PROTECT THE SIGN MORE.

THE MAXIMUM ALLOWABLE LONGITUDINAL ADJUSTMENTS OF SIGNS ARE:

- ADVANCE GUIDE - 1320 FEET
- SUPPLEMENTAL GUIDE - 1320 FEET
- MOTORIST SERVICE - 1320 FEET
- EXIT DIRECTION - 100 FEET
- MILEAGE - 2640 FEET
- MERGE OR ANY SIGNS IN AN INTERCHANGE - 50 FEET
- MILEPOST - 50 FEET

IF ANY SIGN WITH A DISTANCE IS LONGITUDINALLY ADJUSTED, THE DISTANCE TO THE DESTINATION SHALL BE CHECKED AND MODIFIED AS NEEDED.

THE MINIMUM SPACING BETWEEN GUIDE SIGNS ON AN EXPRESSWAY OR FREEWAY IS 800 FEET.

THE MINIMUM SPACING BETWEEN SIGNS ON A RAMP OR CONVENTIONAL ROADWAY IS 100 FEET.

Plotted : 20-JAN-2014 17:30

Drawn By : jpetersen
File : TE406.dgn

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION
DETAILS FOR MOUNTING HEIGHTS
LATERAL OFFSETS
AND LONGITUDINAL ADJUSTMENTS

TE406 7/1/03

FHWA APPROVAL	7/22/2003	APP'D	Steven A. Buckley
DESIGNED	D.D.G.	DETAILED	W.S.B.
DESIGN CK.	S.A.B.	DETAIL CK.	D.D.G.
		QUANTITIES	TRACED
		QUAN. CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	41	60

GENERAL NOTES

DESIGN CONFORMS WITH ASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS 2002". FOUNDATION DESIGN CONFORMS WITH "DESIGN PROCEDURE COMPARED TO FULL-SCALE TESTS OF DRILLED SHAFT FOOTINGS", TEXAS TRANSPORTATION INSTITUTE, FEBRUARY 1970.

THE POST SLEEVE SHALL BE FORMED FROM STEEL SHEET WHICH WAS PRODUCED TO MEET THE REQUIREMENTS OF ASTM A653M AND ZINC COATED TO MEET THE REQUIREMENTS OF COATING DESIGNATION A123. IT IS PERMISSIBLE TO CLOSE THE BOTTOM OF THE SLEEVE WITH A METAL PLATE. BASIS OF ACCEPTANCE SHALL BE VISUAL INSPECTION OF THE FINISHED SLEEVE AND DETERMINATION

OF ZINC THICKNESS BY MAGNETIC GAGE. ALL SIGN MOUNTING HOLES IN THE WOOD POSTS SHALL BE DRILLED PRIOR TO TREATING.

BREAKAWAY HOLES AND FIELD CUTS SHALL BE TREATED IN ACCORDANCE WITH THE PRESERVATIVE TREATMENT SPECIFICATIONS.

PRIOR TO SEALING THE OPENING BETWEEN THE WOOD POST AND THE TOP OF THE CONCRETE FOOTING, PLACE TWO HARDWOOD WEDGES INTO THE OPENING ON TWO ADJACENT SIDES OF POST AND FORCE DOWN TO WITHIN 3/8" OF TOP OF FOOTING.

NOTE TO THE ENGINEER:
THE INTENT OF THE "ROADSIDE DESIGN GUIDE" AND THESE PLANS IS TO HAVE A 4" OR LESS PROJECTION ABOVE THE GROUND LINE AFTER IMPACT.

ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

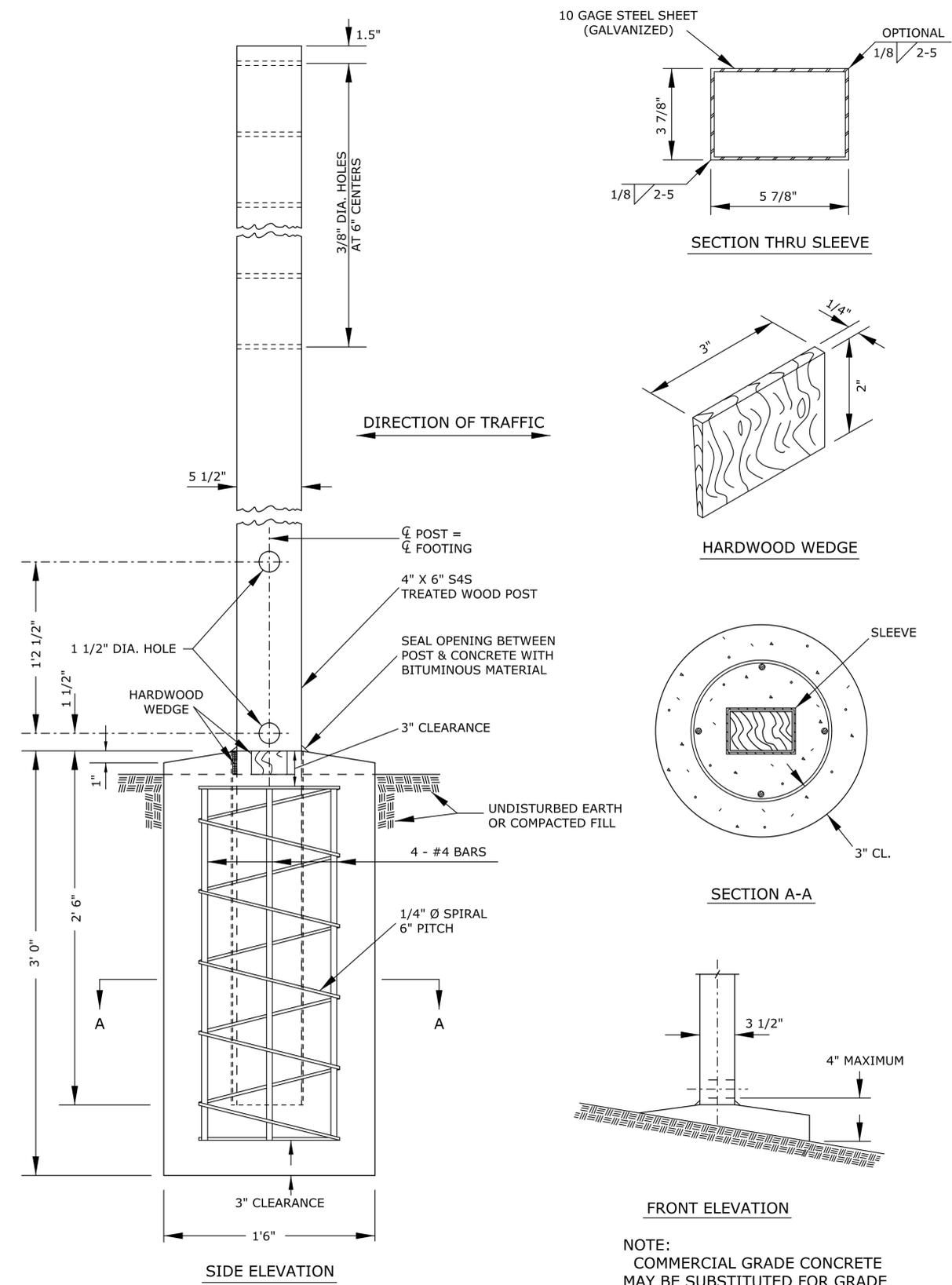
DETAILS FOR WOOD POSTS

TE460	7/22/2003	APP'D	Steven A. Buckley
DESIGNED	D.D.G. DETAILED	A.A.D. QUANTITIES	TRACED
DESIGN CK.	S.A.B. DETAIL CK.	D.D.G. QUAN. CK.	TRACE CK.

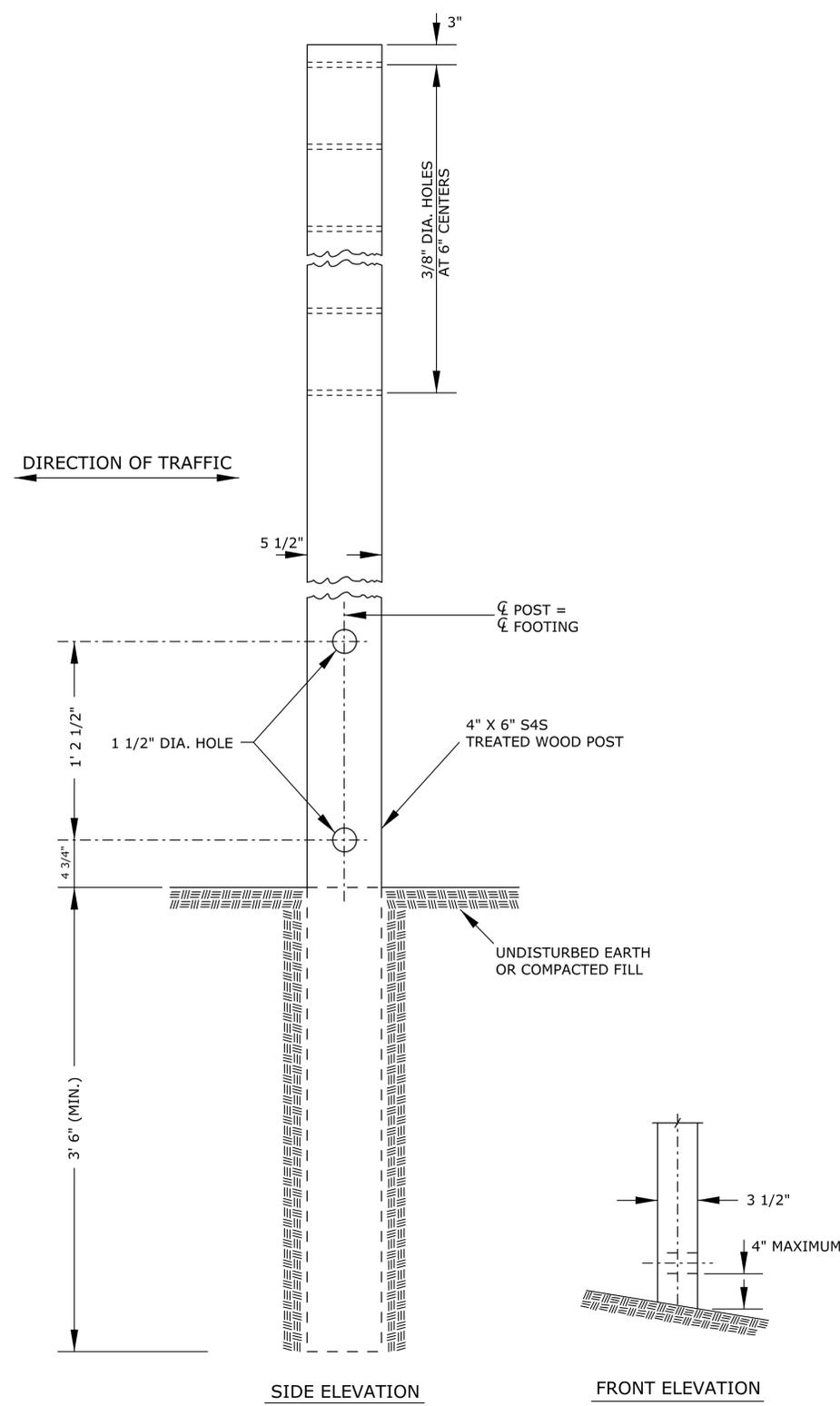
7/1/03

Plotted : 20-JAN-2014 17:30

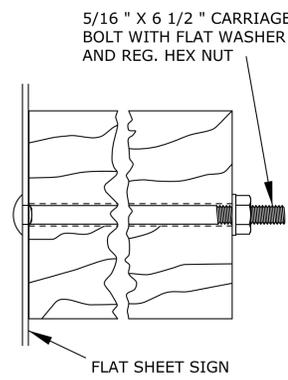
Drawn By : jpetersen
File : TE460.dgn



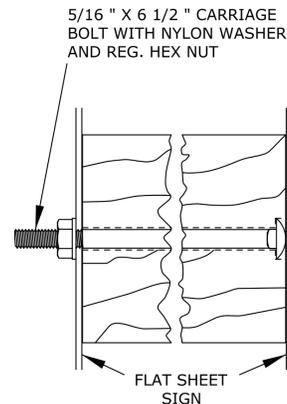
WOOD POST IN CONCRETE FOOTING



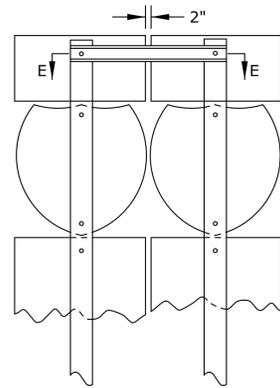
WOOD POST IN SOIL



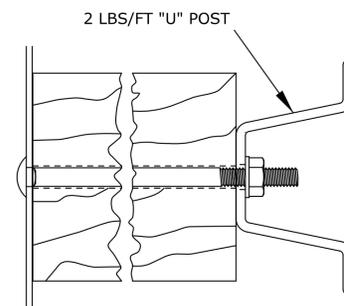
SECTION A-A



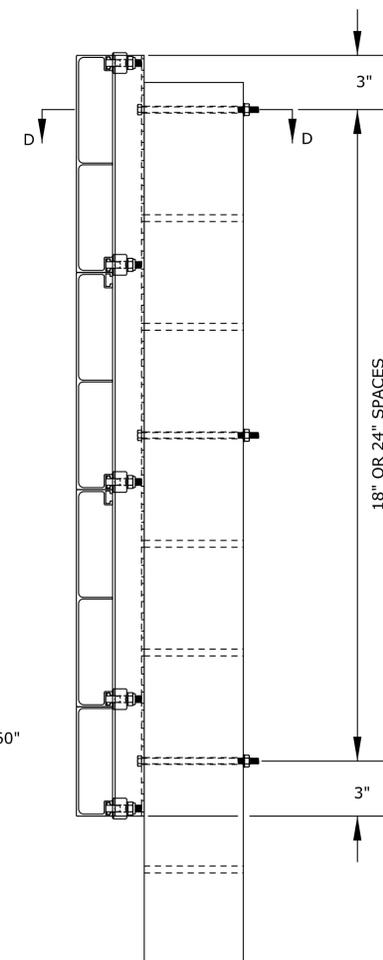
SECTION B-B



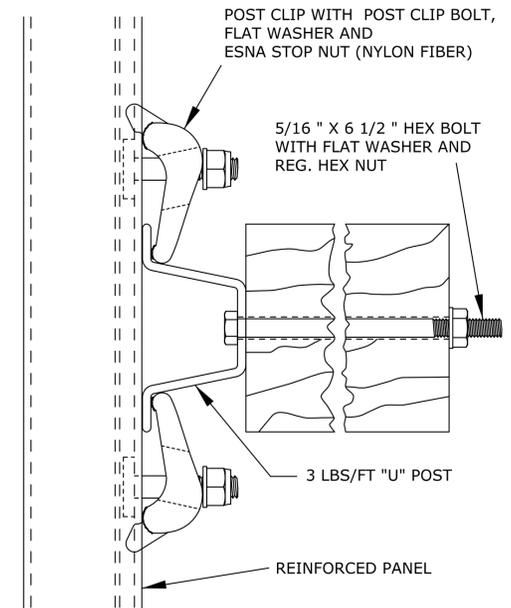
ROUTE MARKER ASSEMBLY ATTACHMENT



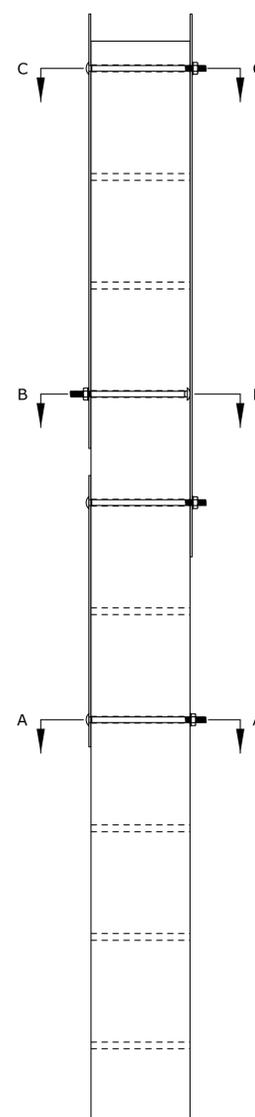
SECTION E-E



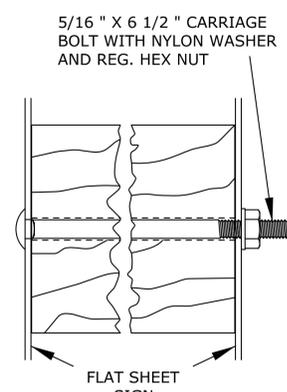
TYPICAL MOUNTING OF REINFORCED PANEL SIGNS



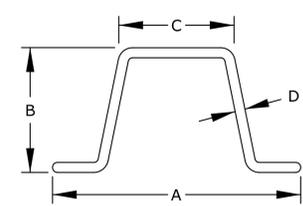
TOP VIEW



TYPICAL MOUNTING OF FLAT SHEET SIGNS



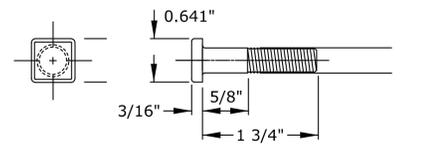
SECTION C-C



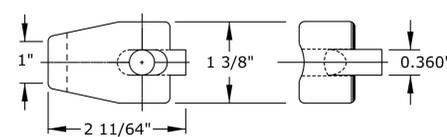
DIM.	2 LBS/FT	3 LBS/FT
A	3 1/8"	3 1/2"
B	1 17/32"	1 3/4"
C	1 1/4"	1 5/8"
D	1/8"	9/64"

(DIMENSIONS ARE NOMINAL)

'U' POST DIMENSION DETAILS



POST CLIP BOLT



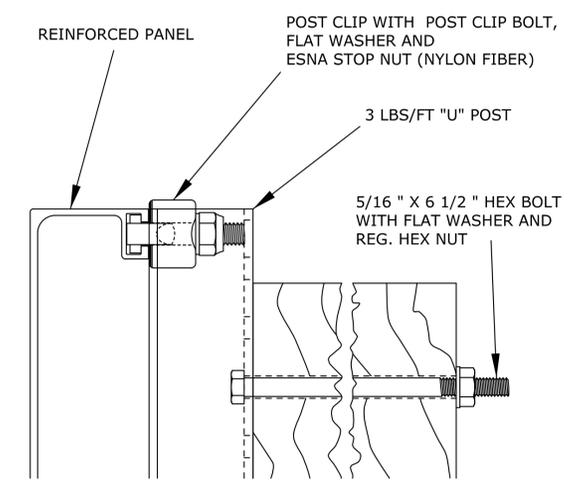
POST CLIP

A NYLON WASHER SHALL BE USED WHEN A NUT IS TO BE TIGHTENED AGAINST THE SIGN FACE.
 WHEN THE 2 LBS/FT STEEL "U" POST IS USED AS A ROUTE MARKER ASSEMBLY ATTACHMENT, IT SHALL BE SUBSIDIARY TO THE BID ITEM '4" X 6" WOOD POST (FLAT SHEET SIGN)'.
 THE POST CLIP BOLT MAY HAVE A RECTANGULAR HEAD, IF THE SMALLER DIMENSION IS EQUAL TO THE SQUARE HEAD DIMENSION.

NOTES:
 THE TOP OF THE POST SHALL NOT EXTEND ABOVE THE TOP OF THE SIGN.
 WHEN SIGNS ARE MOUNTED BACK TO BACK, THE SIGNS SHALL BE MOUNTED AT THEIR PRESCRIBED HEIGHT. IN GENERAL INSTALLATIONS, THE BOTTOM HOLES OF THE SIGNS SHOULD BE ALIGNED. IN ORDER TO PREVENT HAVING TO DRILL HOLES IN THE SIGNS OR POSTS, THE SIGN ON THE BACK SHOULD BE RAISED AND POSITIONED SUCH THAT THE HOLES ARE ALIGNED. WHEN A SIGN IS MOUNTED ON THE BACK OF THE "YIELD" (R1-2) SIGN, THE TOP HOLES OF THE SIGNS SHOULD BE ALIGNED.

WHEN MOUNTED WITH ANOTHER SIGN (PRIMARY SIGN), THE ADVISORY PLATE, TYPE 1 OBJECT MARKER, OR SECONDARY SIGN, SHALL BE MOUNTED AT THEIR PRESCRIBED HEIGHT. THE PRIMARY SIGN SHALL BE MOUNTED AT THEIR PRESCRIBED HEIGHT, BUT UNDER NO CIRCUMSTANCES SHALL THE SIGNS OVERLAP EACH OTHER.

ADDITIONAL MOUNTING HOLES, EITHER THROUGH THE SIGN OR POST, SHALL BE DRILLED BY THE CONTRACTOR. ALL HOLES DRILL IN THE POST SHALL BE TREATED WITH A PRESERVATIVE. ALL HOLES IN THE SIGN SHALL BE FREE OF ANY DEFECTS AND THE SHEETING AROUND THE HOLE SHALL NOT BE DAMAGED.

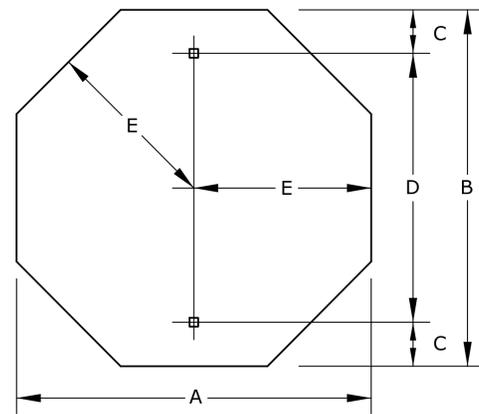


SIDE VIEW

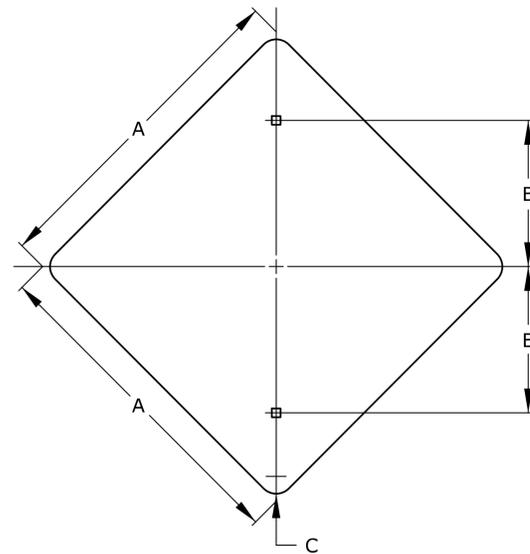
SECTION D-D

ALL DIMENSIONS ARE IN INCHES

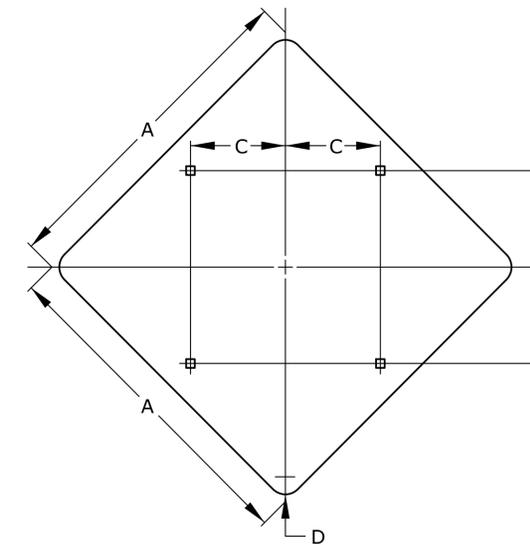
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION DETAILS FOR MOUNTING SIGNS ON WOOD POSTS				
FLAT SHEET AND REINFORCED PANEL TE481				
7/1/03				
FHWA APPROVAL	7-22-2003	APP'D	Steven A. Buckley	
DESIGNED	D.D.G. DETAILED	A.A.D. QUANTITIES	TRACED	
DESIGN CK.	S.A.B. DETAIL CK.	D.D.G. QUAN. CK.	TRACE CK.	



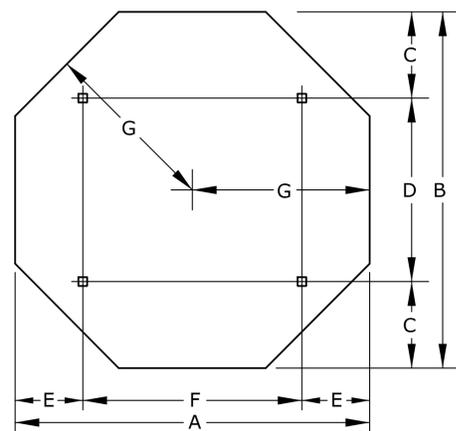
SIGN SIZE	A	B	C	D	E	T	AREA
30 X 30	30	30	3	24	15	0.080	5.18
36 X 36	36	36	6	24	18	0.080	7.46



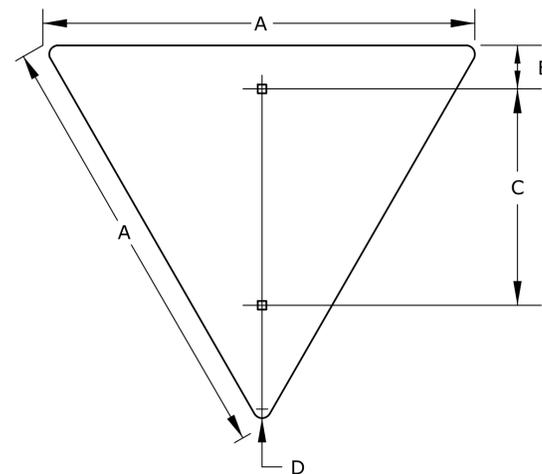
SIGN SIZE	A	B	C	T	AREA
① 5 X 5	5	2 1/2	3/8	0.040	0.17
18 X 18	18	6	1 1/2	0.080	2.25
24 X 24	24	12	1 1/2	0.080	4.00
30 X 30	30	12	1 7/8	0.080	6.25
② 36 X 36	36	18	2 1/4	0.080	9.00



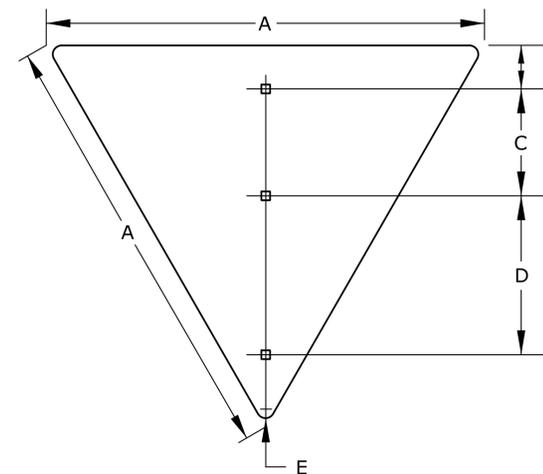
SIGN SIZE	A	B	C	D	T	AREA
48 X 48	48	12	15	3	2 1/2	16.00



SIGN SIZE	A	B	C	D	E	F	G	T	AREA
48 X 48	48	48	12	24	9	30	24	2 1/2	13.25



SIGN SIZE	A	B	C	D	T	AREA
36 X 36	36	3	18	2	0.080	3.90



SIGN SIZE	A	B	C	D	E	T	AREA
48 X 48	48	3	12	18	3	0.080	6.93
60 X 60	60	3	18	18	4	0.100	10.83

NOTE:
ALL HOLES ARE 3/8" SQUARE UNLESS OTHERWISE NOTED.

THE DIMENSION "T" IS THE THICKNESS OF THE ALUMINUM BLANK.

ALL DIMENSIONS ARE IN INCHES.

- ① HOLES SHALL BE 5/16" DIAMETER.
- ② CENTER HOLE IS REQUIRED.

ALL DIMENSIONS ARE IN INCHES.

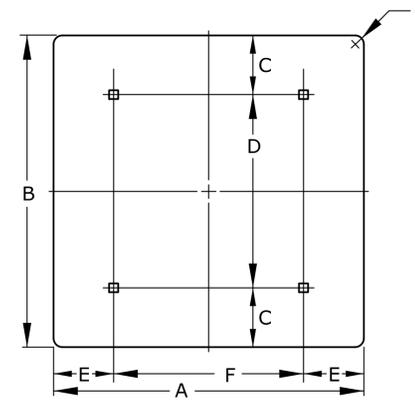
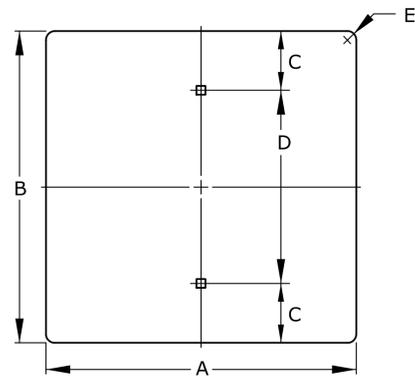
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR
FLAT SHEET SIGNS

TE503 7/1/03

FHWA APPROVAL	7/22/2003	APP'D	Steven A. Buckley
DESIGNED	D.D.G. DETAILED	A.A.D. QUANTITIES	TRACED
DESIGN CK.	S.A.B. DETAIL CK.	D.D.G. QUAN. CK.	TRACE CK.



SIGN SIZE	A	B	C	D	E	T	AREA
① 3 X 8	3	8	1	6	3/8	0.040	0.17
6 X 12	6	12	3	6	3/8	0.040	0.50
12 X 6	12	6	1 1/2	3	3/8	0.063	0.50
12 X 18	12	18	3	12	1 1/2	0.063	1.50
12 X 24	12	24	3	18	1 1/2	0.080	2.00
12 X 36	12	36	6	24	1 1/2	0.080	3.00
12 X 48	12	48	6	36	1 1/2	0.080	4.00
15 X 15	15	15	1 1/2	12	1 1/2	0.063	1.56
18 X 6	18	6	1 1/2	3	1 1/2	0.063	0.75
18 X 12	18	12	3	6	1 1/2	0.063	1.50
18 X 18	18	18	3	12	1 1/2	0.063	2.25
18 X 24	18	24	3	18	1 1/2	0.080	3.00
21 X 15	21	15	1 1/2	12	1 1/2	0.080	2.19
24 X 6	24	6	1 1/2	3	1 1/2	0.080	1.00
24 X 12	24	12	3	6	1 1/2	0.080	2.00
24 X 18	24	18	3	12	1 1/2	0.080	3.00
24 X 24	24	24	3	18	1 1/2	0.080	4.00
24 X 30	24	30	3	24	1 1/2	0.080	5.00
24 X 36	24	36	6	24	1 1/2	0.080	6.00
30 X 15	30	15	1 1/2	12	1 1/2	0.080	3.13
30 X 18	30	18	3	12	1 1/2	0.080	3.75
30 X 24	30	24	3	18	1 1/2	0.080	5.00
30 X 30	30	30	3	24	1 1/2	0.080	6.25
30 X 36	30	36	6	24	1 1/2	0.080	7.50
36 X 12	36	12	3	6	1 1/2	0.080	3.00
36 X 18	36	18	3	12	1 1/2	0.080	4.50
36 X 24	36	24	3	18	1 1/2	0.080	6.00
36 X 30	36	30	3	24	1 1/2	0.080	7.50
36 X 36	36	36	6	24	2	0.080	9.00

SIGN SIZE	A	B	C	D	E	F	G	T	AREA
② 36 X 12	36	12	3	6	6	24	1 1/2	0.080	3.00
36 X 18	36	18	6	12	6	30	1 1/2	0.080	4.50
36 X 24	36	24	6	12	6	24	1 1/2	0.080	6.00
36 X 30	36	30	6	18	6	30	1 1/2	0.080	7.50
36 X 36	36	36	6	24	6	24	1 1/2	0.080	9.00
36 X 42	36	42	6	30	6	30	1 1/2	0.080	10.50
48 X 12	48	12	3	6	9	30	1 1/2	0.080	4.00
48 X 18	48	18	3	12	9	30	1 1/2	0.080	6.00
48 X 24	48	24	6	12	9	30	2	0.080	8.00
48 X 30	48	30	6	18	9	30	0	0.100	10.00
48 X 36	48	36	6	24	9	30	0	0.100	12.00
48 X 42	48	42	6	30	9	30	0	0.100	14.00
48 X 48	48	48	9	30	9	30	0	0.100	16.00
② 48 X 72	48	72	15	42	9	30	0	0.100	24.00
② 48 X 96	48	96	21	54	9	30	0	0.100	32.00
54 X 36	54	36	6	30	12	30	0	0.100	13.50
54 X 42	54	42	6	30	12	30	0	0.100	15.75
60 X 12	60	12	3	6	12	36	0	0.100	5.00
60 X 18	60	18	3	12	12	36	0	0.100	7.50

SIGN SIZE	A	B	C	D	E	F	G	T	AREA
60 X 24	60	24	6	12	12	36	0	0.100	10.00
60 X 30	60	30	6	18	12	36	0	0.100	12.50
60 X 36	60	36	6	24	12	36	0	0.100	15.00
60 X 42	60	42	6	30	12	36	0	0.100	17.50
60 X 48	60	48	9	30	12	36	0	0.100	20.00
60 X 60	60	60	12	36	12	36	0	0.100	25.00
72 X 12	72	12	3	6	15	42	0	0.100	6.00
72 X 18	72	18	3	12	15	42	0	0.100	9.00
72 X 24	72	24	6	12	15	42	0	0.100	12.00
72 X 30	72	30	6	18	15	36	0	0.100	15.00
72 X 36	72	36	6	24	15	42	0	0.100	18.00
72 X 42	72	42	6	30	15	42	0	0.100	21.00
72 X 48	72	48	9	30	15	42	0	0.100	24.00
84 X 18	84	18	6	12	15	48	0	0.100	10.50
84 X 30	84	30	6	18	18	48	0	0.100	17.50
84 X 36	84	36	6	24	18	48	0	0.100	21.00
84 X 42	84	42	6	30	18	48	0	0.100	24.50
84 X 48	84	48	9	30	18	48	0	0.100	28.00

NOTE:
ALL HOLES ARE 3/8 " SQUARE, UNLESS OTHERWISE NOTED.

THE DIMENSION "T" IS THE THICKNESS OF THE ALUMINUM BLANK.

- ① HOLES SHALL BE 5/16 " DIAMETER.
- ② DIMENSION "D" REQUIRES A CENTER HOLE.

ALL DIMENSIONS ARE IN INCHES.

NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

SIGN BLANK DETAILS FOR
FLAT SHEET SIGNS

TE506 7/1/03

FHWA APPROVAL	7/22/2003	APP'D	Steven A. Buckley
DESIGNED	D.D.G. DETAILED	A.A.D. QUANTITIES	TRACED
DESIGN CK.	S.A.B. DETAIL CK.	D.D.G. QUAN. CK.	TRACE CK.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	45	60

DETAILED SPECIFICATIONS FOR FLAT SHEET SIGNS

ALL NEW FLAT SHEET SIGN BLANKS SHALL BE OF THE ALUMINUM ALLOY AND THICKNESS SHOWN ON THE FLAT SHEET BLANK DETAIL SHEETS.

FLAT SHEET BLANKS SHALL BE USED FOR SIGNS THAT ARE LESS THAN OR EQUAL TO 7'-0" IN LENGTH AND/OR LESS THAN OR EQUAL TO 4'-0" IN HEIGHT. FLAT SHEET BLANKS SHALL ALSO BE USED FOR SIGNS THAT ARE 4'-0" IN LENGTH AND LESS THAN OR EQUAL TO 8'-0" IN HEIGHT.

THE DESIGN DETAILS FOR SIGNS (COLOR, LETTER HEIGHT, AND LETTER SERIES) SHALL BE AS SHOWN IN THE 'STANDARD HIGHWAY SIGNS' MANUAL (2004 EDITION), UNLESS OTHER DETAILS ARE SHOWN IN THE PLANS.

ALL SIGN FACES WITH BLUE, GREEN, RED, YELLOW, FLUORESCENT YELLOW GREEN, BROWN, OR WHITE BACKGROUND SHALL BE COVERED WITH TYPE IV HIGH INTENSITY RETROREFLECTIVE SHEETING.

THE TYPE OF ADHESIVE USED FOR RETROREFLECTIVE SHEETING OR LETTERING FILM SHALL BE HEAT ACTIVATED OR PRESSURE SENSITIVE.

THE SIGN FACES SHALL BE DIRECT SCREEN PROCESS, REVERSE SCREEN PROCESS, OR DIRECT APPLIED LEGEND.

DETAILED SPECIFICATIONS FOR STRUCTURAL EXTRUDED PANEL SIGNS

ALL NEW REINFORCED SIGN PANELS SHALL BE OF THE FABRICATION, ALUMINUM ALLOY, AND THICKNESS SHOWN ON THE REINFORCED PANEL DETAIL SHEETS. IF EXTRUSHEET FABRICATED SIGN PANELS ARE USED, THEY SHALL BE OF THE LENGTH, WIDTH AND IN THE POSITION SHOWN. IF EXTRUSHEET FABRICATED PANEL DIMENSIONS ARE NOT SHOWN, A LINE OF LEGEND SHOULD BE PLACED ENTIRELY ON ONE PANEL. IF EXTRUDED FABRICATED SIGN PANELS ARE USED, EITHER 1'-0" OR 6" PANELS SHALL BE USED. THE 1'-0" PANELS SHALL BE USED ONLY AT THE TOP OR BOTTOM OF SIGNS.

REINFORCED PANELS SHALL BE USED FOR SIGNS THAT ARE GREATER THAN 7'-0" IN LENGTH OR GREATER THAN 4'-0" IN HEIGHT.

ALL SIGN FACES SHALL BE COVERED WITH TYPE IV HIGH INTENSITY RETROREFLECTIVE SHEETING.

THE RETROREFLECTIVE SHEETING USED FOR THE DIRECT APPLIED LEGEND, AND DIRECT APPLIED BORDERS SHALL BE TYPE IV HIGH INTENSITY RETROREFLECTIVE SHEETING.

THE TYPE OF ADHESIVE USED FOR RETROREFLECTIVE SHEETING OR LETTERING FILM SHALL BE HEAT ACTIVATED OR PRESSURE SENSITIVE.

LETTERS AND NUMBERS ON REINFORCED PANEL SIGNS ARE MODIFIED SERIES "E" UNLESS OTHERWISE SHOWN.

SPACING TABLE DIMENSIONS ARE IN INCHES.

Plotted : 20-JAN-2014 17:30

Drawn By : jpetersen
File : TE590.dgn

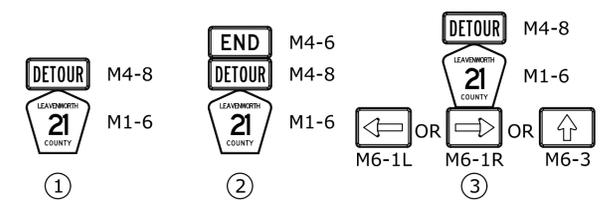
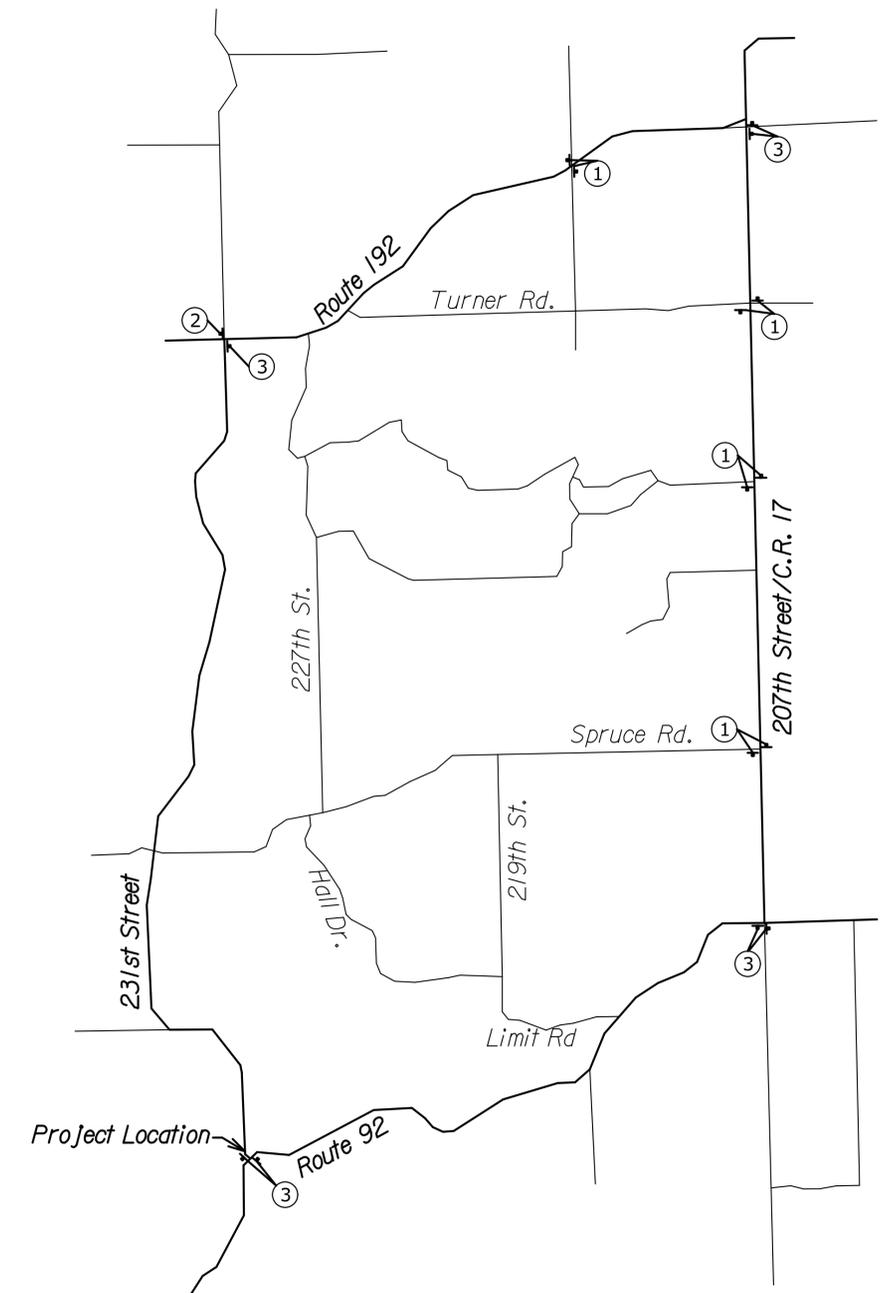
1	7/23/10	Changed Notes and Sheeting Type	D.D.G.	D.B.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION DETAILS SPECIFICATIONS FOR REINFORCED SIGN PANELS AND FLAT SHEET SIGNS				
TE590		7/1/03		
FHWA APPROVAL	7/23/2010	APP'D	Steven A. Buckley	
DESIGNED	D.D.G. DETAILED	K.D.S. QUANTITIES	TRACED	
DESIGN CK.	S.A.B. DETAIL CK.	D.D.G. QUAN. CK.	TRACE CK.	

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	47	60

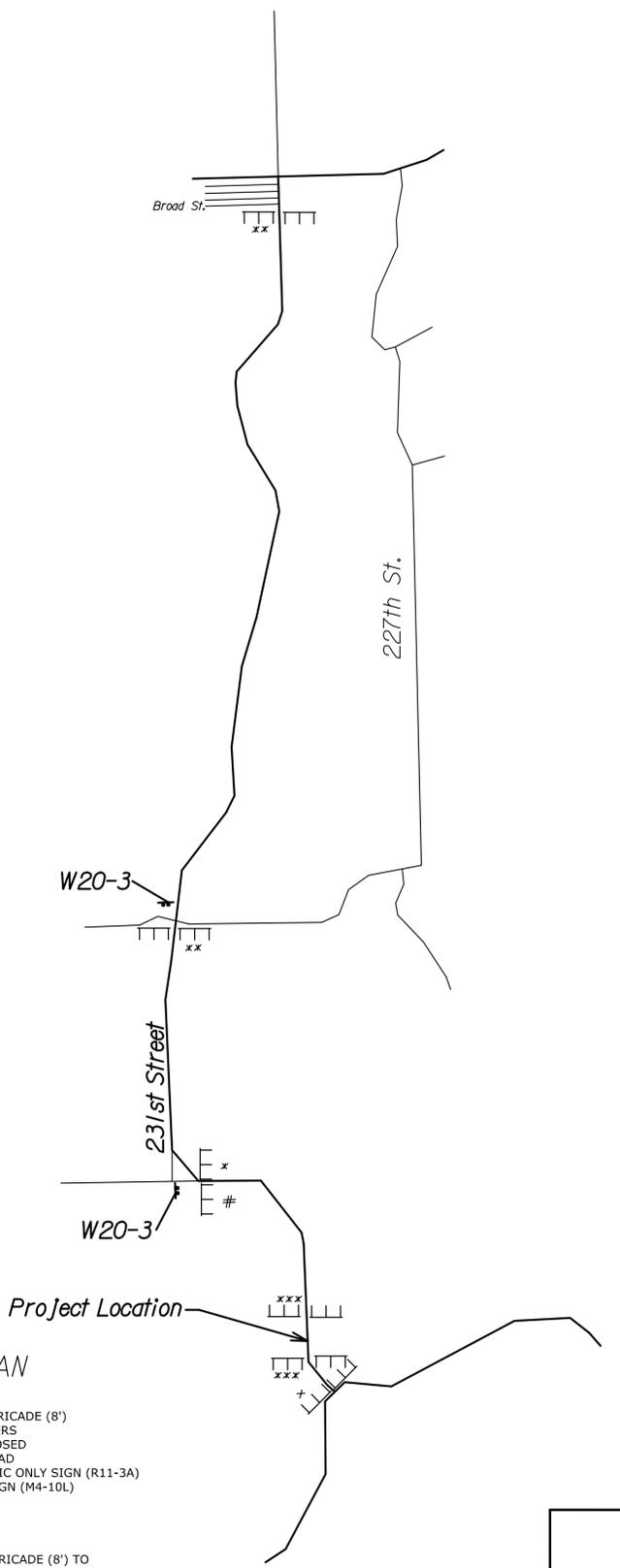
DATE	BY

Plotted : 20-JAN-2014 17:30
 Drawn By : j.petersen
 File : xx_A32_Detour.dgn



TRAFFIC CONTROL PLAN

- * TYPE III BARRICADE (8') WITH FLASHERS W/ ROAD CLOSED LOCAL TRAFFIC ONLY SIGN (R11-4)
- ** TYPE III BARRICADE (8') WITH FLASHERS W/ ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY SIGN (R11-3A)
- *** TYPE III BARRICADES TO SHIELD CHANNEL OR STRUCTURE
- # TYPE III BARRICADE (8') WITH FLASHERS W/ ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY SIGN (R11-3A) & DETOUR SIGN (M4-10L)
- + TYPE III BARRICADE (8') TO SHIELD CHANNEL OR STRUCTURE W/ ROAD CLOSED SIGN (R11-2)



TRAFFIC CONTROL
 DETOUR ROUTE

1. MUTCD COMPLIANCE:

ALL TEMPORARY TRAFFIC CONTROL DEVICES AND THEIR INSTALLATION AND MAINTENANCE SHALL COMPLY WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS WHICH HAS BEEN ADOPTED BY THE SECRETARY OF TRANSPORTATION. WHENEVER THE TEMPORARY TRAFFIC CONTROL STANDARDS CONFLICT WITH THE MUTCD, THE STANDARDS SHALL GOVERN.

2. 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.

3. CLEAR ZONE:

ALL CONSTRUCTION EQUIPMENT (INCLUDING VEHICLES), MATERIALS, AND DEBRIS SHALL BE STORED OUT OF THE CLEAR ZONE. WHERE THIS CANNOT BE ACHIEVED, THE CONTRACTOR SHALL PLACE APPROPRIATE SIGNS, OBJECT IDENTIFIERS, AND/OR BARRICADES AS DESIGNATED BY THE ENGINEER. TEMPORARY TRAFFIC CONTROL DEVICES NEEDED FOR THIS CONDITION SHALL BE CONSIDERED SUBSIDIARY TO OTHER BID ITEMS.

4. MINIMUM LANE WIDTHS:

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.

5. FLAGGER:

A MINIMUM OF ONE FLAGGER SHALL 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.

6. PAVEMENT MARKING:

WHEN THE WORK WILL OCCUPY A LOCATION MORE THAN THREE DAYS, ALL CONFLICTING PAVEMENT MARKINGS SHALL BE REMOVED OR MASKED AND ALL TRANSITION TAPERS, CROSSOVERS, AND EDGE LINES ALONG CHANNELIZING DEVICES SHALL BE MARKED WITH SOLID 4" WIDE PAVEMENT MARKING.

7. FIRST MODULE OF IBS:

THE FIRST MODULE OF EACH INERTIAL BARRIER SYSTEM (IBS) SHALL HAVE A MINIMUM OF 2 SQ. FT. OF FLUORESCENT ORANGE ASTM TYPE IV SHEETING FACING TRAFFIC. EITHER A VERTICAL RECTANGLE OR DIAMOND SHAPE MAY BE USED.

8. PEDESTRIAN / BICYCLE SAFETY:

WORK ZONE SIGNS SHALL NOT INHIBIT PEDESTRIAN AND BICYCLE TRAFFIC ON SIDEWALKS OR OTHER AREAS DESIGNATED FOR PEDESTRIAN OR BICYCLE USE.

CONSIDERATION SHOULD BE MADE TO SEPARATE PEDESTRIAN AND 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 AND BICYCLISTS 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 AND BICYCLISTS ARE NOT CONFRONTED WITH MIDBLOCK WORK SITES THAT WILL INDUCE THEM TO ATTEMPT SKIRTING THE WORK SITE OR MAKING A MIDBLOCK CROSSING.

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.

9. CHANGED STOP CONDITIONS:

ATTACH TWO FLUORESCENT RED-ORANGE FLAGS AND A RED TYPE "B" HIGH INTENSITY WARNING LIGHT TO ANY STOP SIGN THAT CREATES A NEW STOP CONDITION OR MOVES THE STOP CONDITION TO A NEW LOCATION. LEAVE FLAGS AND LIGHTS IN PLACE FOR AT LEAST THE FIRST 30 DAYS. INSTALL W3-1 (SYMBOLIC STOP AHEAD) SIGN IN ADVANCE OF STOP SIGN IF STOP SIGN IS NOT VISIBLE FOR A MINIMUM OF DISTANCE 'A' (SEE CHART ON TE710) OR IF STOP CONDITION IS MOVED TO LESS THAN DISTANCE 'A' FROM AN EXISTING STOP AHEAD SIGN.

10. LUMP SUM BIDDING:

WHEN TRAFFIC CONTROL IS BID LUMP SUM, ADDITIONAL DEVICES WILL BE PAID FOR AS EXTRA WORK.

11. NIGHTTIME LIGHTING:

WHEN NIGHTTIME WORK IS REQUIRED, FLOODLIGHTS SHOULD BE USED TO ILLUMINATE FLAGGER STATIONS, EQUIPMENT CROSSINGS, AND OTHER AREAS WHERE EXISTING LIGHTING IS NOT ADEQUATE FOR THE WORK TO BE PERFORMED SAFELY.

IN NO CASE SHALL FLOODLIGHTS BE PERMITTED TO CREATE A DISABLING GLARE FOR THE DRIVER. THE ADEQUACY OF THE FLOODLIGHT PLACEMENT AND ELIMINATION OF POTENTIAL GLARE SHOULD BE CHECKED BY DRIVING THROUGH THE PROJECT.

12. NCHRP REPORT 350 CRASHWORTHY REQUIREMENTS:

TRAFFIC CONTROL DEVICES SHALL MEET THE EVALUATION CRITERIA IN NCHRP REPORT 350 OR IN MASH REPORT 2009 AS SUPPLEMENTED BY FHWA MEMORANDUM "IDENTIFYING ACCEPTABLE HIGHWAY SAFETY FEATURES," DATED JULY 25, 1997. AVAILABLE ON THE INTERNET AT http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/policy_memo/

ANY DEVICE NOT ADDRESSED BY THE TE STANDARDS MAY BE APPROVED ON A CASE BY CASE BASIS BY THE ENGINEER. THE DEVICE SHALL BE ACCOMPANIED BY AND INSTALLED ACCORDING TO MASH REPORT 2009. ANY DEVICE ACCEPTED PRIOR TO THE ADOPTION OF MASH REPORT 2009 USING CRITERIA FROM NCHRP REPORT 350 MAY REMAIN IN PLACE AND CONTINUE TO BE USED. ANY TRAFFIC CONTROL DEVICE ACCEPTED USING NCHRP REPORT 350 CRITERIA IS NOT REQUIRED TO BE TESTED UNDER MASH REPORT 2009. HOWEVER, NEW TRAFFIC CONTROL DEVICES NOT PREVIOUSLY EVALUATED MUST UTILIZE MASH REPORT 2009 FOR TESTING AND EVALUATION.

THE CONTRACTOR SHALL:

1) PROVIDE TO THE ENGINEER A COPY OF THE MANUFACTURER'S SELF-CERTIFICATION THAT ANY CATEGORY 1 (i.e. - PLASTIC CONICAL DELINEATORS, TUBULAR MARKERS, DRUMS WITHOUT ATTACHMENTS) AND CATEGORY 2 (i.e. - PORTABLE SIGN STANDS (WITH SIGNS), TYPE II AND III BARRICADES, AND VERTICAL PANELS) DEVICES USED ON THE PROJECT ARE NCHRP REPORT 350 OR MASH REPORT 2009 COMPLIANT.

2) PROVIDE TO THE ENGINEER A COPY OF THE ENTIRE FHWA ACCEPTANCE LETTER (WZ-xxx) FOR ANY CATEGORY 2 DEVICE (i.e. - PORTABLE SIGN STANDS (WITH SIGNS), TYPE II AND III BARRICADES, AND VERTICAL PANELS) USED ON THE PROJECT. WORK ZONE FHWA ACCEPTANCE LETTERS (WZ-xxx) ARE AVAILABLE ON THE INTERNET AT: http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/wzd/

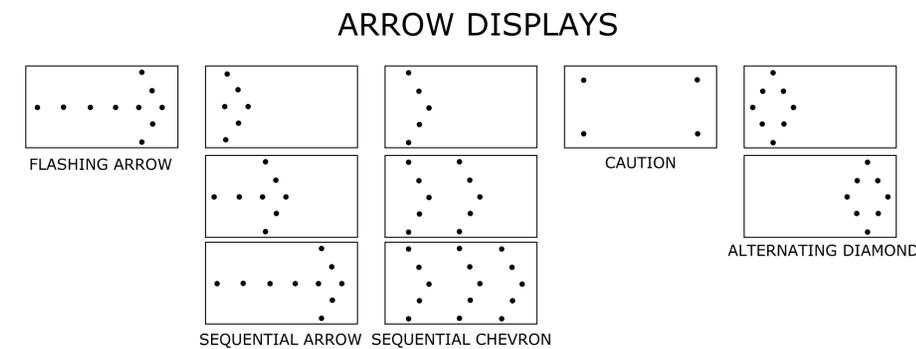
3) CERTIFY THAT THE TRUCK MOUNTED ATTENUATORS (TMA'S) (WHICH ARE DEFINED AS CATEGORY 3 DEVICES BY THE FHWA MEMORANDUM) MEET CURRENT CRASHWORTHY SPECIFICATIONS AS DEFINED ABOVE AND INCLUDE A COPY OF THE ENTIRE FHWA ACCEPTANCE LETTER. ALL CATEGORY 1 & 2 DEVICES SHALL BE NCHRP REPORT 350 OR MASH REPORT 2009 COMPLIANT.

13. LEAD IN CHANNELIZING DEVICES ON CENTERLINE:

TEMPORARY RUMBLE STRIPS MAY BE USED IN LIEU OF LEAD IN CENTERLINE CHANNELIZING DEVICES WHEN THE ROADWAY IS LESS THAN OR EQUAL TO 30' (FEET) INCLUDING PAVED SHOULDERS. WHEN EXTENUATING CIRCUMSTANCES EXIST, THE AREA ENGINEER MAY ELECT TO ELIMINATE BOTH THE LEAD IN CHANNELIZERS AND THE RUMBLE STRIPS.

14. TEMPORARY RUMBLE STRIPS:

ALTERNATIVE TEMPORARY RUMBLE STRIP OPTIONS MAY BE AVAILABLE. PLEASE CONTACT THE TEMPORARY TRAFFIC CONTROL UNIT FOR MORE INFORMATION AT 785-296-0355 OR 785-296-1183.



ARROW DISPLAY ELEMENTS SHALL BE CAPABLE OF A MINIMUM 50 PERCENT DIMMING FROM THEIR FULL-RATED LAMP VOLTAGE. FULL LAMP VOLTAGE SHOULD BE USED DURING THE DAY AND DIMMED MODE SHALL BE USED AT NIGHT. FOR SHOULDER WORK, ROADSIDE WORK NEAR THE SHOULDER, BLOCKING THE SHOULDER, OR FOR TEMPORARY CLOSING ONE LANE ON A TWO-LANE, TWO-WAY ROADWAY, AN ARROW PANEL SHALL BE USED ONLY IN THE CAUTION MODE.

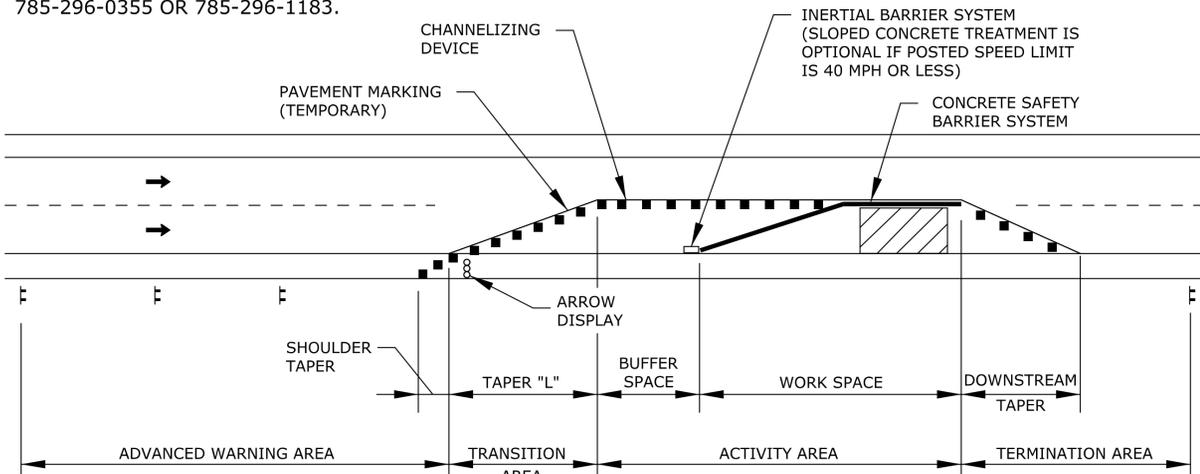
BUFFER SPACE

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.



NOTE:
REFER TO STD. TE702 FOR
TAPER "L" FORMULA.

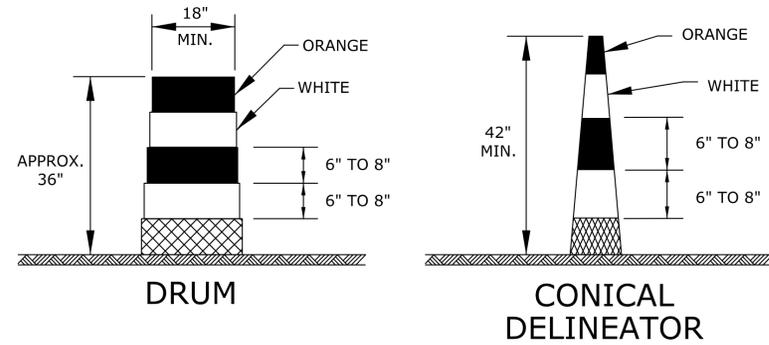
TYPICAL WORK ZONE COMPONENTS

Plotted : 20-JAN-2014 17:30

Drawn By : jpetersen
File : Sht_te700.dgn

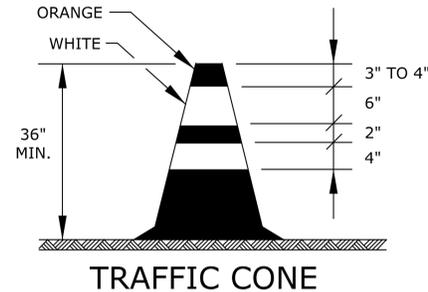
3	10/16/12	Removed Note 13, Added Alternating Diamonds	J.A.M.	K.P.
2	10/4/11	Modified Notes 9,12 & 15, Added Note 15	J.A.M.	K.P.
1	11/30/09	Added Note 14	J.A.M.	A.A.A.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION				
GENERAL TRAFFIC CONTROL				
TE700				
FHWA APPROVAL	10/16/12	APP'D	Krstina Pyle	
DESIGNED	B.A.H.	DETAILED	B.A.H.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	BY	TRACE CK.

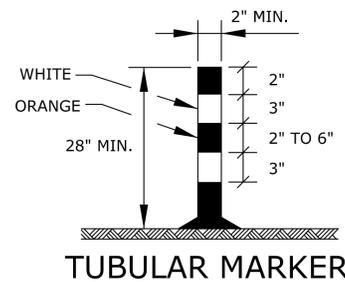


DRUMS AND CONICAL DELINEATORS SHALL HAVE AT LEAST TWO ORANGE AND TWO WHITE 6" TO 8" WIDE RETROREFLECTIVE STRIPES. ADDITIONAL STRIPES MAY BE NON-RETROREFLECTIVE. IF THERE ARE NON-RETROREFLECTIVE SPACES BETWEEN ADJACENT STRIPES, THEY SHALL BE NO MORE THAN 3" WIDE.

ALL RETROREFLECTIVE STRIPES ON DRUMS SHALL BE ASTM TYPE III SHEETING. THE WHITE STRIPES ON CONICAL DELINEATORS SHALL BE ASTM TYPE III SHEETING. ORANGE STRIPES ON ALL CONICAL DELINEATORS SHALL BE FLUORESCENT ORANGE ASTM TYPE IV SHEETING.



TRAFFIC CONES MAY BE USED AS CHANNELIZING DEVICES FOR DAYTIME OPERATIONS ONLY. THEY WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE SUBSIDIARY TO OTHER TRAFFIC CONTROL BID ITEMS. THE ENGINEER MAY REQUIRE THAT TRAFFIC CONES BE SUPPLEMENTED BY OTHER TRAFFIC CONTROL DEVICES IN CERTAIN SITUATIONS.



THE TWO WHITE RETROREFLECTIVE STRIPES SHALL BE ASTM TYPE III SHEETING. STRIPING AS SHOWN FOR UP TO 42".

TAPER FORMULAS:

$$L = WS \text{ FOR SPEEDS OF 45 MPH OR MORE}$$

$$L = WS^2/60 \text{ FOR SPEEDS OF 40 MPH OR LESS}$$

WHERE: L = MINIMUM LENGTH OF TAPER IN FEET
 S = NUMERICAL VALUE OF POSTED SPEED PRIOR TO WORK STARTING IN MPH
 W = WIDTH OF OFFSET IN FEET

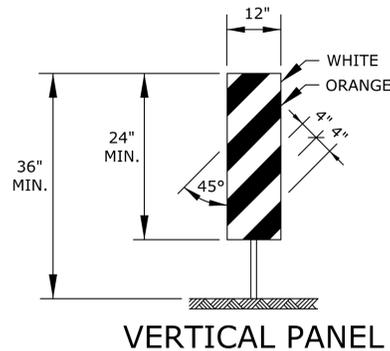
CHANNELIZER PLACEMENT:

(A) 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.

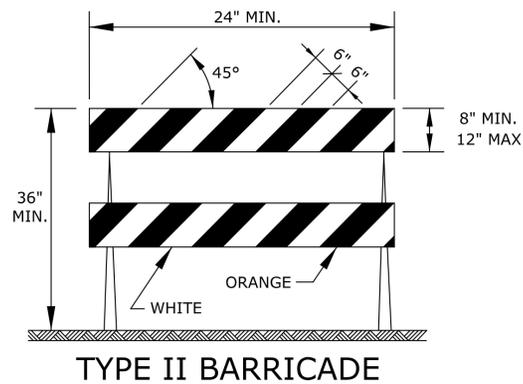
(B) THE SPACING BETWEEN DEVICES IN THE ADVANCED WARNING AREA AND THE ACTIVITY AREA SHOULD NOT EXCEED A DISTANCE IN FEET EQUAL TO TWO TIMES THE POSTED SPEED LIMIT IN MPH PRIOR TO WORK STARTING.

(C) CHANNELIZING DEVICES SHALL BE PLACED FOR OPTIMUM VISIBILITY, NORMALLY AT RIGHT ANGLES TO THE TRAFFIC FLOW.

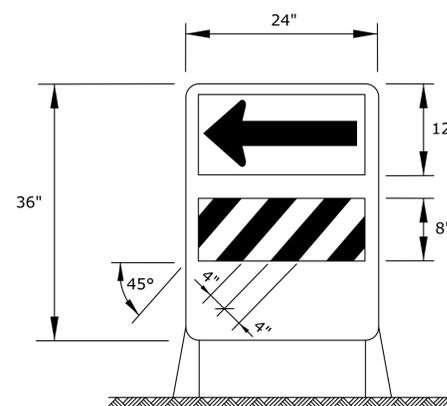
(D) CHANNELIZING DEVICES PLACED ALONG SHOULDER EDGES OR IN DROPOFFS SHALL HAVE A MINIMUM OF 24" FROM THE TOP OF THE CHANNELIZING DEVICE TO THE TOP OF THE PAVEMENT.



THE ENTIRE AREA OF VERTICAL PANELS, BOTH FRONT AND BACK, SHALL HAVE ASTM TYPE III SHEETING. THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED. THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL BE ASTM TYPE III SHEETING. THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.



THE ARROW PANEL SHALL BE BLACK ON FLUORESCENT ORANGE ASTM TYPE IV SHEETING. THE STRIPES SHALL BE ORANGE AND WHITE ASTM TYPE III SHEETING SLOPING 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. THE ARROW PANEL SHOULD NOT BE VISIBLE TO OPPOSING TRAFFIC.

ITEM	LOCATION	CHANNELIZING DEVICES								
		CROSS-OVERS	SHOULDER DIVERSTIONS	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 II BARRICADE	(2)	(2)	(2)	(2)	NO	NO	YES	NO	NO
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.

NO.	DATE	REVISIONS	BY	APP'D
3	10/16/12	Added Lead In Devices Into Matrix Table	J.A.M.	K.P.
2	10/4/11	Added Dimension To Tubular Marker Detail	J.A.M.	K.P.
1	4/20/09	Channelizer Placement & Traffic Cone Detail	J.A.M.	A.A.A.

KANSAS DEPARTMENT OF TRANSPORTATION

CHANNELIZING DEVICES

TE702

DESIGNED	L.E.R.	DETAILED	B.A.H.	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN. CK.	BY	APP'D	TRACE CK.

NOTE: SIGNS SHOWN FOR ONE APPROACH TO WORK ZONE.

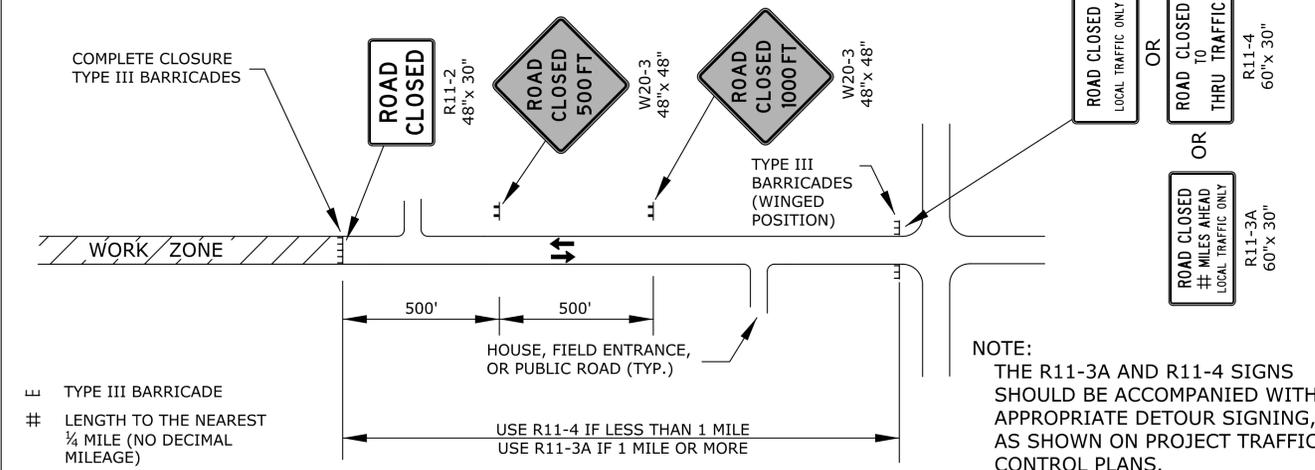


FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE

NOTE: SIGNS SHOWN FOR ONE APPROACH TO WORK ZONE.

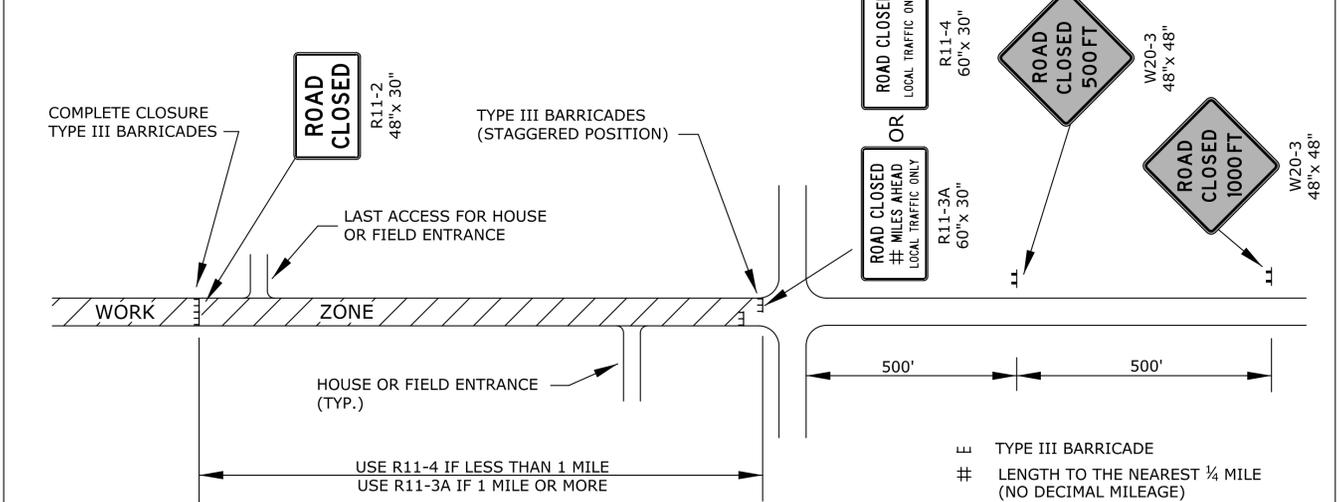


FIGURE 4: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

NOTE: SIGNS SHOWN FOR ONE APPROACH TO INTERSECTION (WORK ZONE).

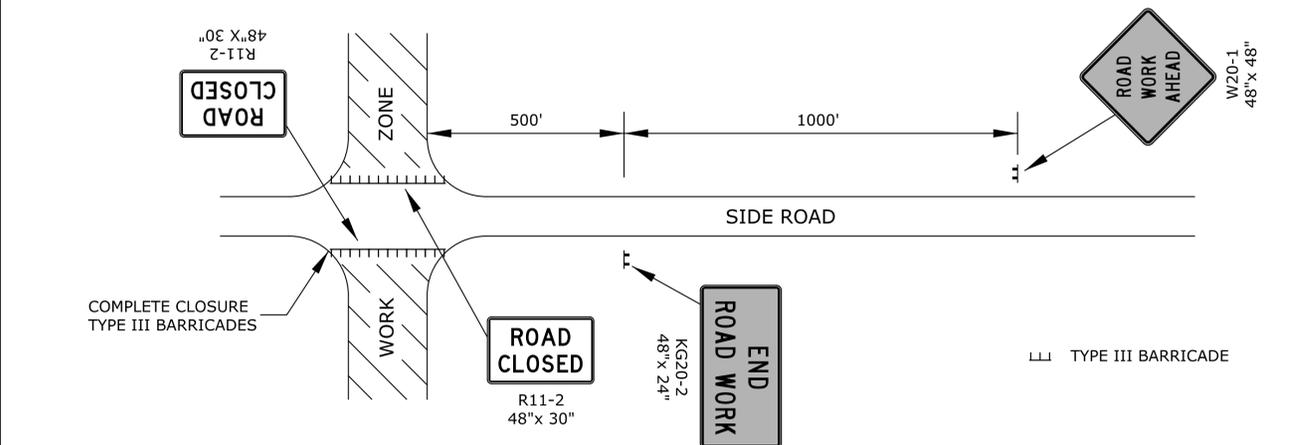


FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

NOTE: SIGNS SHOWN FOR ONE APPROACH TO INTERSECTION (WORK ZONE).

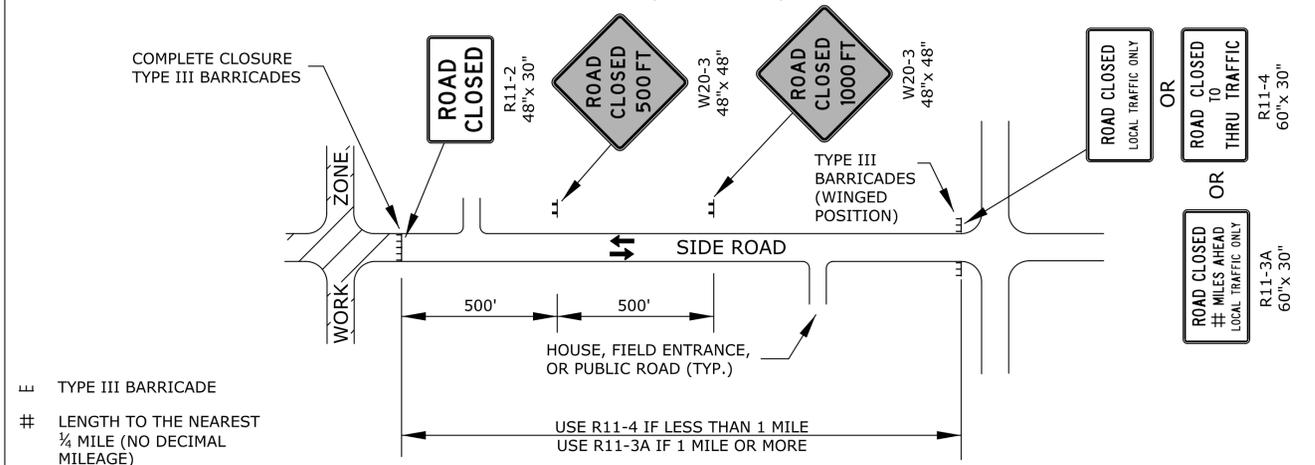


FIGURE 3: TYPICAL SIGNING FOR SIDE ROAD CLOSED

NOTES:

1. SIGNS:

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.

2. BARRICADE PLACEMENT:

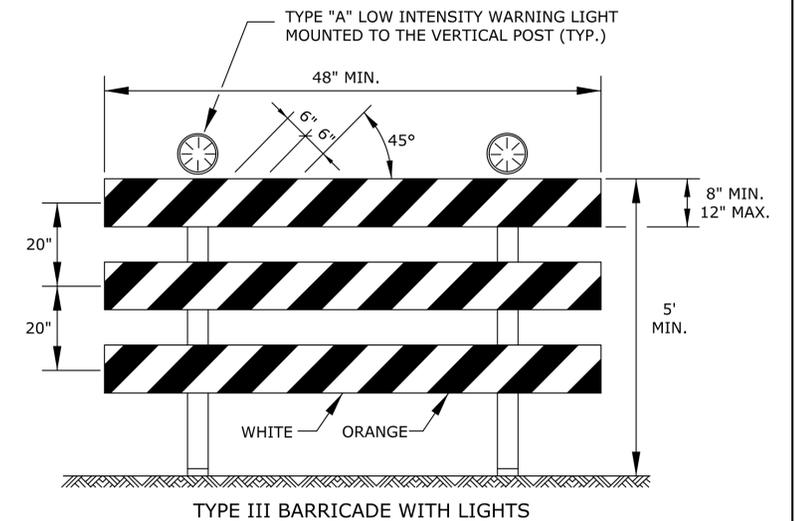
A) COMPLETE ROAD CLOSURE

WHEN A ROADWAY IS CLOSED, TYPE III BARRICADES SHALL BE PLACED END-TO-END TO COMPLETELY COVER THE ROADWAY AND SHOULDERS. WHEN ACCESS MUST BE ALLOWED FOR CONSTRUCTION OR OTHER OFFICIAL/GOVERNMENT VEHICLES, TYPE III BARRICADES SHALL BE LONGITUDINALLY STAGGERED FAR ENOUGH APART FROM ONE ANOTHER TO ALLOW SAFE PASSAGE OF VEHICLES AND MAINTAIN THE APPEARANCE OF A CLOSED ROADWAY. TYPE III BARRICADES SHALL BE REALIGNED AND PLACED END-TO-END TO DENY ANY ACCESS WHEN THE CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY.

B) ROAD CLOSED - LOCAL TRAFFIC

AS SHOWN IN FIGURE 4, WHEN LOCAL TRAFFIC MUST BE ALLOWED ACCESS INTO THE WORK ZONE, TYPE III BARRICADES SHALL BE LONGITUDINALLY STAGGERED TO MAINTAIN THE APPEARANCE OF A CLOSED ROADWAY. A SECOND LINE OF END-TO-END TYPE III BARRICADES SHALL BE PLACED JUST BEYOND THE LAST ACCESS POINT IN THE WORK ZONE, TO COMPLETELY CLOSE THE ROADWAY AS DESCRIBED IN NOTE 2-A.

AS SHOWN IN FIGURE 1 AND FIGURE 3, 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 III BARRICADES (WINGED POSITION), PLACED ON THE SHOULDERS OF ROADWAY.



THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL HAVE ASTM TYPE III SHEETING.

THE STRIPES SHALL SLOPE DOWNWARD TO THE SIDE TRAFFIC IS TO PROCEED OR TOWARD THE CENTER OF THE ROADWAY AT ROAD CLOSURES.

APPROVED SIGNS MOUNTED ON TYPE III 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.

3	10/16/12	Modified Type III Barricade Note	J.A.M.	K.P.
2	8/8/07	Added Position To Type III Barricade	M.B.	A.A.A.
1	12/29/05	Note #1 Modified	M.B.	A.A.A.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION				
TYPICAL TRAFFIC CONTROL ROAD CLOSURES				
TE704				
FHWA APPROVAL	10/16/12	APP'D	Kristina Pyle	
DESIGNED	B.A.H.	DETAILED	B.A.H.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACED	TRACE CK.

SIGN LAYOUT INFORMATION



KG20-2

STD. SIZE
EXPWY/FREEWAY
6" C
48"x 24"



KG20-5

STD. SIZE
EXPWY/FREEWAY
6" C
48"x 24"



KM4-20

STD. SIZE
EXPWY/FREEWAY
3" C
24"x 6"

6" C
48"x 12"



W7-3a

MILEAGE TO BE DETERMINED BY THE ENGINEER.



W8-11

STD. SIZE
EXPWY/FREEWAY
8" D
48"x 48"



W8-17

STD. SIZE
EXPWY/FREEWAY
48"x 48"



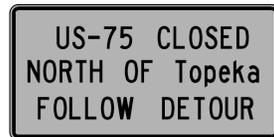
W8-17P
(OPTIONAL)

STD. SIZE
EXPWY/FREEWAY
30"x 24"



SP-01
(SPECIAL SIGN)

STD. SIZE
EXPWY/FREEWAY
6" C
10" D



SP-02
(SPECIAL SIGN)

STD. SIZE
EXPWY/FREEWAY
UPPERCASE: 6" C
LOWER CASE: 4.5" C

UPPERCASE: 10" D
LOWER CASE: 8" D

ALL CITY NAMES AND STREET NAMES ON SPECIAL SIGNS AND DESTINATION SIGNS MUST HAVE UPPER AND LOWER CASE LETTERS.

ALL SIGNS SHALL BE BLACK ON ORANGE RETROREFLECTIVE SHEETING.

GENERAL NOTES

1. MAINTENANCE:

THE CONTRACTOR SHALL MAINTAIN ALL SIGNS AND DEVICES IN AN UPRIGHT POSITION. THE CONTRACTOR SHALL CLEAN OR REPLACE ANY DAMAGED OR ILLEGIBLE SIGN OR DEVICE AS DIRECTED BY THE ENGINEER.

2. EXISTING SIGNS:

IF EXISTING SIGNS THAT ARE TO REMAIN (WHETHER DENOTED ON THE PLANS OR NOT) INTERFERE WITH CONSTRUCTION WORK, THE CONTRACTOR SHALL REMOVE, STORE, AND RESET THE SIGNS. THIS SHALL BE SUBSIDIARY TO OTHER TRAFFIC CONTROL BID ITEMS. SIGNING DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

3. CONFLICTING SIGNS, SIGNS NOT IN USE, AND TRAFFIC SIGNALS:

SIGNS AND TRAFFIC SIGNALS THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN OR DO NOT APPLY TO THE TRAFFIC OPERATIONS SHALL BE IMMEDIATELY REMOVED, TURNED SO NOT VISIBLE TO TRAFFIC FROM ANY DIRECTION, OR COMPLETELY COVERED WITH ADEQUATE OPAQUE BREATHABLE MATERIAL. TAPE SHALL NOT BE APPLIED TO THE FACE OF THE SIGN.

4. PORTABLE AND POST MOUNTED SIGNS:

TEMPORARY TRAFFIC CONTROL SIGNS THAT ARE ANTICIPATED TO REMAIN IN PLACE FOR 3 DAYS OR LESS ARE CONSIDERED "PORTABLE." PORTABLE SIGNS SHALL BE MOUNTED ON AN APPROVED SUPPORT AT A MINIMUM HEIGHT OF 12" ABOVE THE TRAVELED WAY. TRAFFIC CONTROL SIGNS IN PLACE FOR OVER 3 DAYS ARE REQUIRED TO BE MOUNTED ON APPROVED POSTS. A MINIMUM OF 42" OF THE APPROVED POST MUST BE BELOW THE GROUND SURFACE WITH ADEQUATE BACKFILL AND COMPACTION. ALL POSTS AT MINIMUM SHALL EXTEND TO THE TOP EDGE OF THE SIGN AND NO GREATER THAN 6" ABOVE THE SIGN.

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.

"ROLL-UP" SIGNS MAY BE USED FOR PORTABLE WARNING SIGNS. THEY MUST BE FLUORESCENT ORANGE ASTM TYPE IV SIGNS OF OPAQUE MATERIAL. MESH SIGNS ARE NOT ALLOWED.

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.

5. SHEETING:

ALL ORANGE SIGNS SHALL HAVE FLUORESCENT ORANGE ASTM TYPE IV SHEETING. ALL OTHER SIGNS SHALL HAVE ASTM TYPE III SHEETING OF STANDARD COLORS.

6. SIGNS INVOLVING SPEEDS:

THE W3-5 (SPEED REDUCTION) SHOULD BE USED ONLY IF THE ENGINEER DETERMINES THAT A REDUCED SPEED IS REQUIRED ON THE PROJECT.

THE KM4-20 (WORK ZONE) PLAQUE SHALL BE PLACED ABOVE ALL SPEED LIMIT SIGNS, (R2-1), EXISTING AND TEMPORARY. MOUNT THE WORK ZONE PLAQUES TO THE POST. DO NOT OVERLAP THE R2-1 AND KM4-20 SIGNS.

FOR SPEEDS OF 30 MPH OR LESS, THE W1-1(TURN) OR W1-3(REVERSE TURN) SHOULD BE USED. FOR SPEEDS OF 35 MPH OR MORE, THE W1-2(CURVE) OR W1-4(REVERSE CURVE) SHOULD BE USED. THE W13-1(MPH) IS TO BE ELIMINATED IF THE ADVISORY SPEED IS WITHIN 5 MPH OF THE SPEED LIMIT.

7. SIGNS CONTROLLING WORK ZONE:

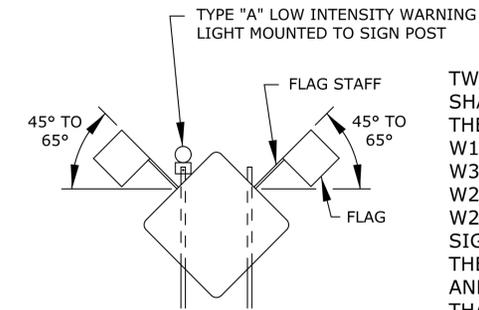
THE KG20-2(END ROAD WORK) SHOULD BE PLACED 500' FROM THE END OF THE ACTUAL WORK SPACE, NOT NECESSARILY AT THE EXTREME LIMITS OF THE PROJECT. THE KG20-2 SHOULD BE MOUNTED ON TWO POSTS. THE KG20-2 MAY BE MOUNTED ON ONE POST IF IN URBAN AREAS WHERE UTILITIES ARE A PROBLEM AND WIND LOADS ARE NOT AN ISSUE.

WHERE TWO WORK ZONES ARE LESS THAN 1 MILE APART IN RURAL AREAS OR ¼ MILE APART IN URBAN AREAS, THE KG20-2(END ROAD WORK) FOR THE FIRST WORK ZONE AND THE W20-1(ROAD WORK) FOR THE SECOND WORK ZONE SHOULD BE ELIMINATED.

8. WARNING LIGHTS ON SIGNS:

A TYPE "A" LOW INTENSITY WARNING LIGHT IS AN L.E.D. BI-DIRECTIONAL FLASHING WORK ZONE WARNING LIGHT. TYPE "A" LOW INTENSITY WARNING LIGHTS SHOULD BE USED WITH ALL CONSTRUCTION ACTION WARNING SIGNS AND SHALL NOT BE USED ON SIGNS MOUNTED LESS THAN 5' HIGH ON TEMPORARY SUPPORTS. ON ALL OTHER CONSTRUCTION WARNING SIGNS, TYPE "A" LOW INTENSITY WARNING LIGHTS ARE TO BE USED AS DIRECTED BY THE ENGINEER.

TYPE "A" LOW INTENSITY WARNING LIGHTS SHALL BE MAINTAINED SO AS TO BE CAPABLE OF BEING VISIBLE ON A CLEAR NIGHT FROM A DISTANCE OF 3000 FT. IF A TYPE "A" LOW INTENSITY WARNING LIGHT HAS A SEPARATE BATTERY CASE, THE BATTERY CASE SHALL BE MOUNTED NO HIGHER THAN 12" ABOVE THE GROUND AND MOUNTED BEHIND THE SIGN POST. A TYPE "A" LOW INTENSITY WARNING LIGHT WHERE THE LENS AND BATTERY ARE ONE UNIT SHALL BE MOUNTED ON THE TEMPORARY SIGN POST NEAREST TO THE TRAVELED WAY. FLAGS SHALL NOT INTERFERE WITH THE VISABILITY OF THE TYPE "A" LOW INTENSITY WARNING LIGHT.



TWO (2) 18" x 18" FLUORESCENT RED-ORANGE FLAGS SHALL BE ATTACHED (IN THE POSITION SHOWN) ON THE W20-2(DETOUR), W1-1(TURN), W1-2(CURVE), W1-3(REVERSE TURN), W1-4(REVERSE CURVE), W3-3(SIGNAL AHEAD), W4-2(LANE REDUCTION), W20-4(ONE LANE ROAD), W20-5(LANE CLOSED), W20-7A(FLAGGER), AND W3-4 (BE PREPARED TO STOP) SIGNS AND ANY OTHER ACTION SIGNS AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. THE FLAGS AND STAFFS ARE TO BE ATTACHED IN SUCH A MANNER THAT THE SIGN WILL NOT BE OBSCURED. THE FLAGS MAY BE EITHER A CLOTH OR VINYL MATERIAL. THE FLAGS SHALL BE SUBSIDIARY TO THE CONSTRUCTION SIGN BID ITEMS.

MINIMUM ADVANCE WARNING SIGN SPACING (IN FEET):

	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

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.

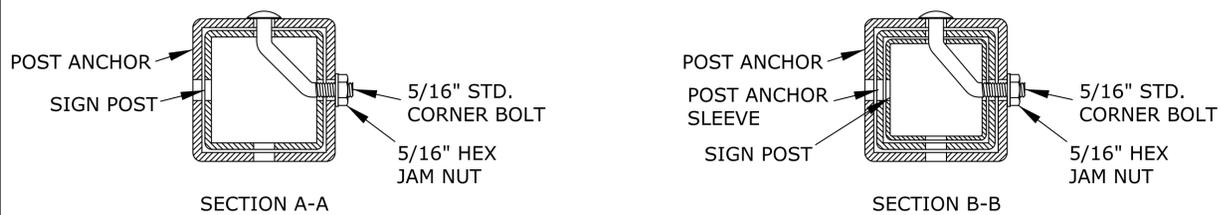
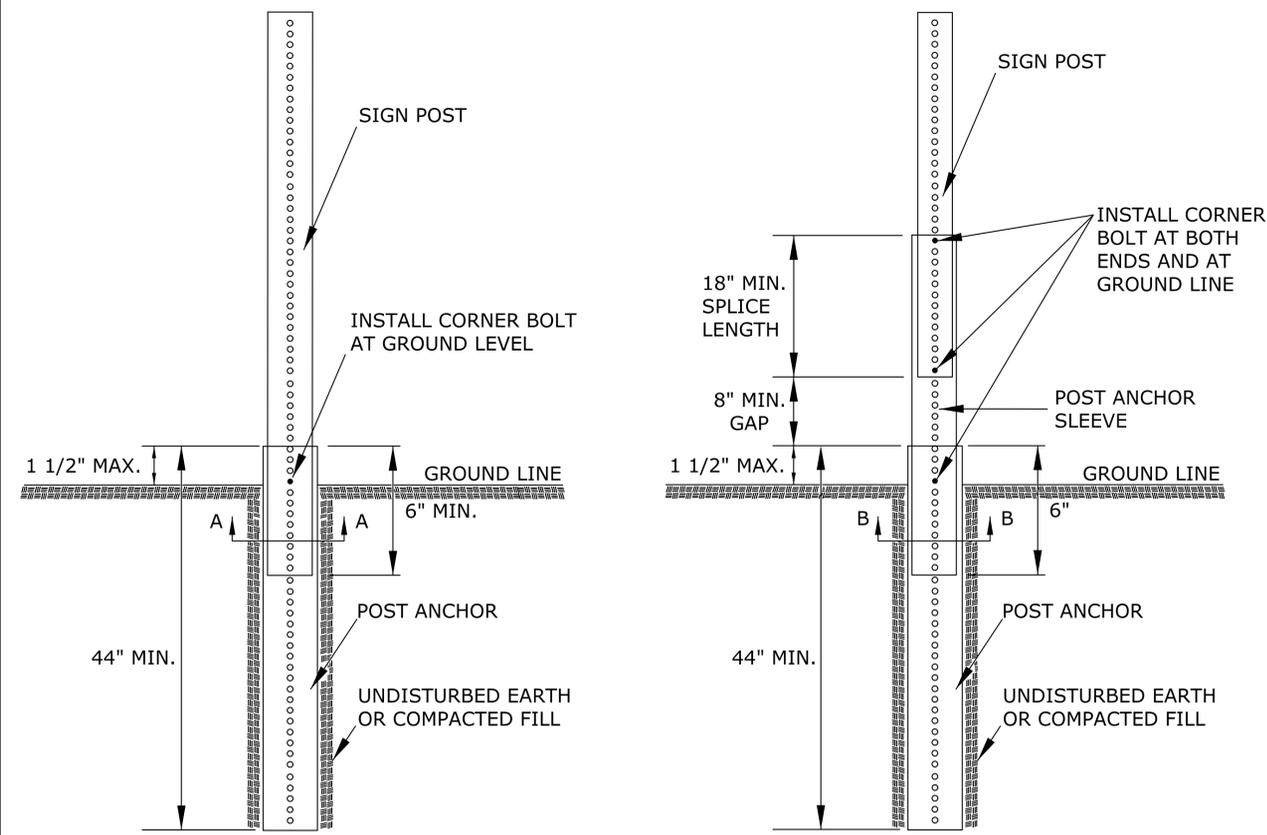
Plotted : 20-JAN-2014 17:30

Drawn By : jpeterson
File : Snt_1e710.dgn

3	10/16/12	Removed Note 9, Modified Sign Layout Detail	J.A.M.	K.P.
2	10/4/11	Modified Note 3	J.A.M.	K.P.
1	2/24/10	Modified AFAD Note	J.A.M.	A.A.A.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION				
TRAFFIC CONTROL SIGNS				
TE710				
FHWA APPROVAL	10/16/12	APP'D	Kristina Pyle	
DESIGNED	B.A.H.	DETAILED	B.A.H.	QUANTITIES
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

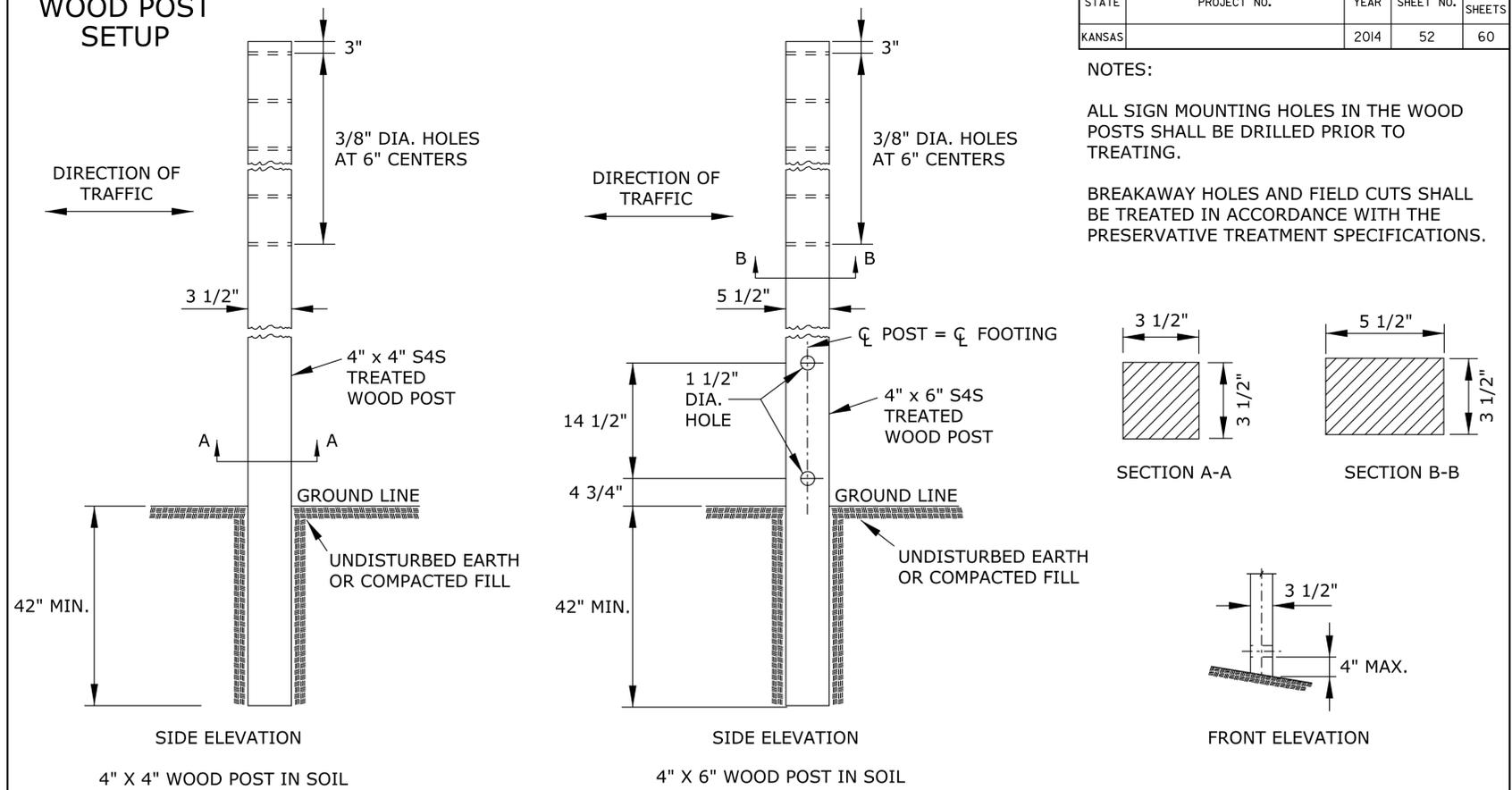
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP



DETAILS FOR 2", 2 1/4", OR 2 1/2" SIGN POST

PLACE BOLTS IN THE SAME CORNER ALONG EACH SIGN POST.

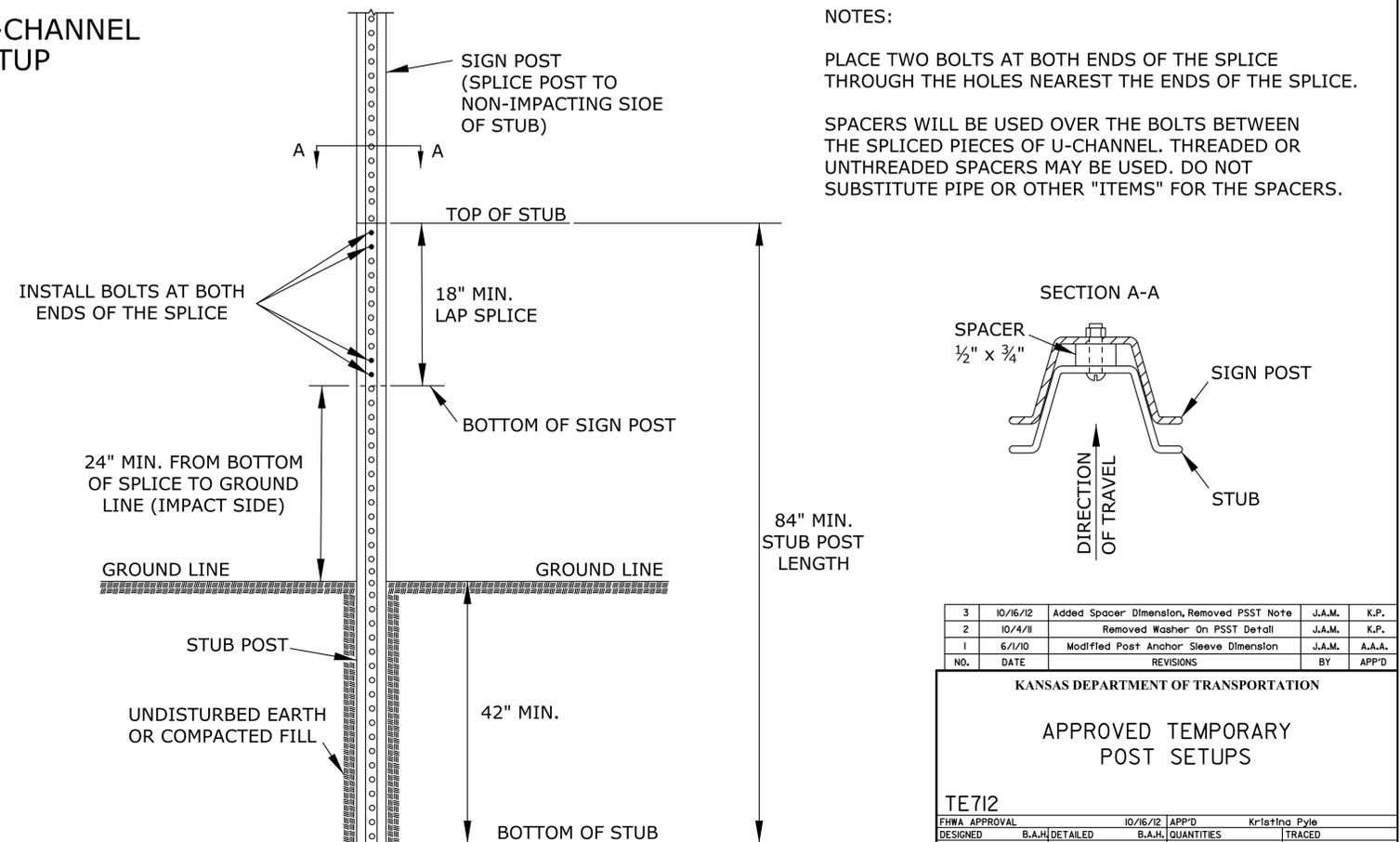
WOOD POST SETUP



STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	52	60

NOTES:
 ALL SIGN MOUNTING HOLES IN THE WOOD POSTS SHALL BE DRILLED PRIOR TO TREATING.
 BREAKAWAY HOLES AND FIELD CUTS SHALL BE TREATED IN ACCORDANCE WITH THE PRESERVATIVE TREATMENT SPECIFICATIONS.

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.
 SPACERS WILL BE USED OVER THE BOLTS BETWEEN THE SPLICED PIECES OF U-CHANNEL. THREADED OR UNTHREADED SPACERS MAY BE USED. DO NOT SUBSTITUTE PIPE OR OTHER "ITEMS" FOR THE SPACERS.

3	10/16/12	Added Spacer Dimension, Removed PSST Note	J.A.M.	K.P.
2	10/4/11	Removed Washer On PSST Detail	J.A.M.	K.P.
1	6/1/10	Modified Post Anchor Sleeve Dimension	J.A.M.	A.A.A.
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

APPROVED TEMPORARY POST SETUPS

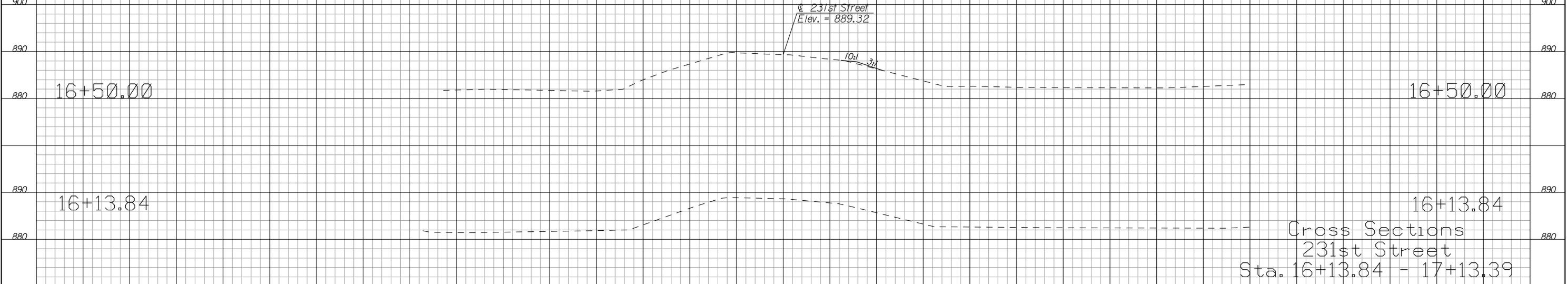
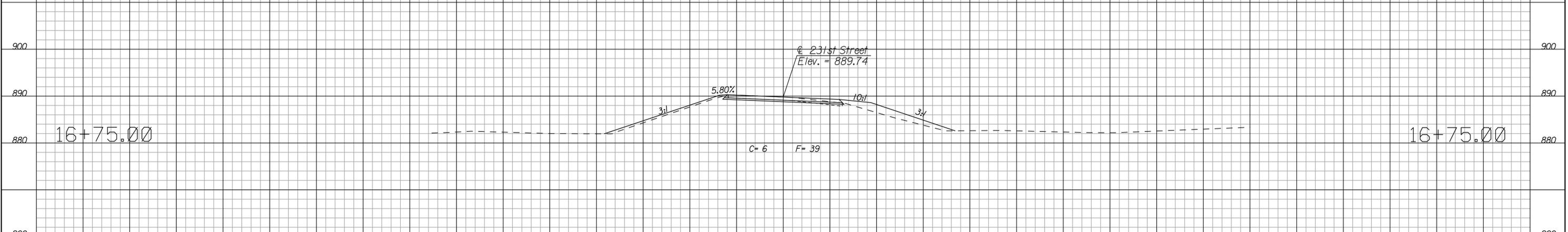
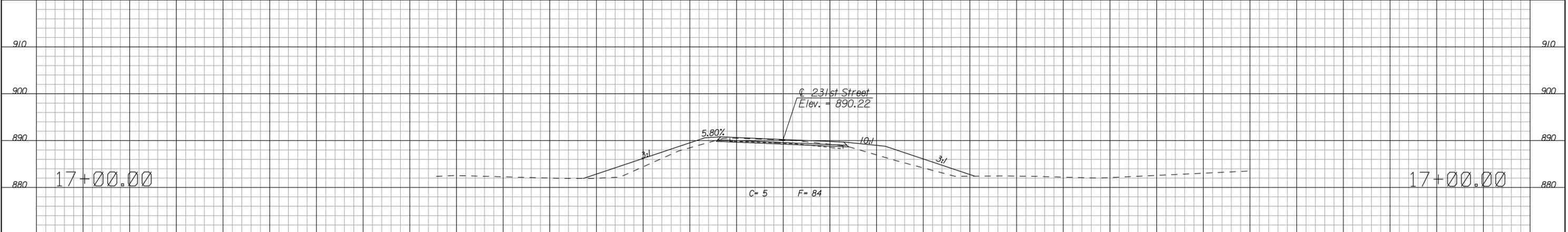
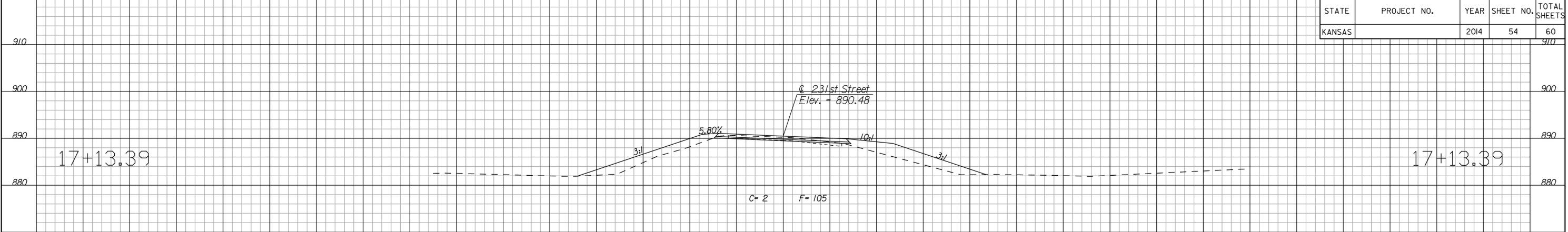
TE712

FHWA APPROVAL	10/16/12	APP'D	Kristina Pyle
DESIGNED	B.A.H.	DETAILED	B.A.H.
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.

Plotted : 20-JAN-2014 17:30

Drawn By : jpetersen
 File : Sht_1e712.dgn

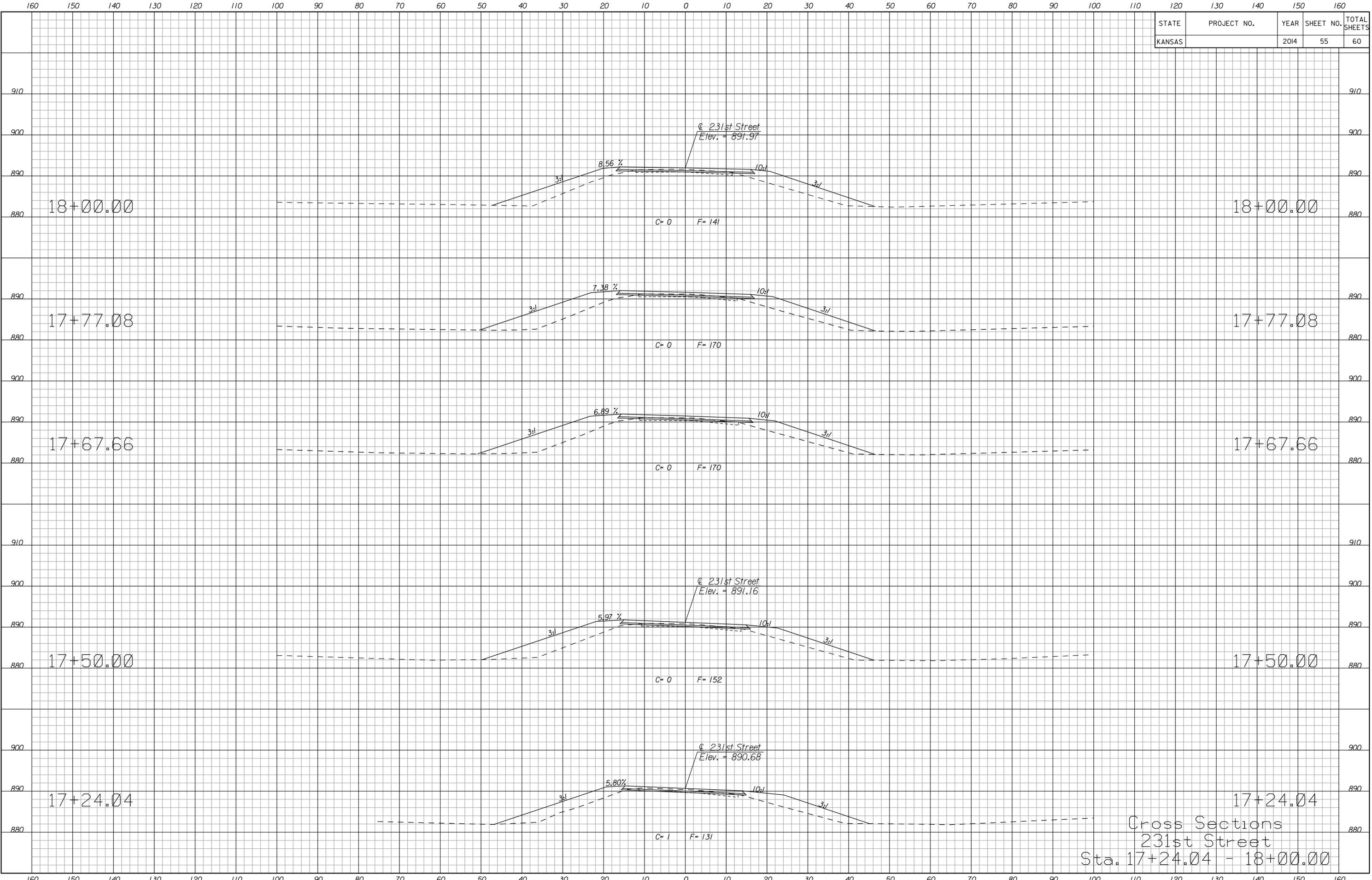
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	54	60



Drawn By : jpetersen
File : xx_cross_section01.dgn
Plotted : 20-JAN-2014 17:30

16+13.84
Cross Sections
231st Street
Sta. 16+13.84 - 17+13.39

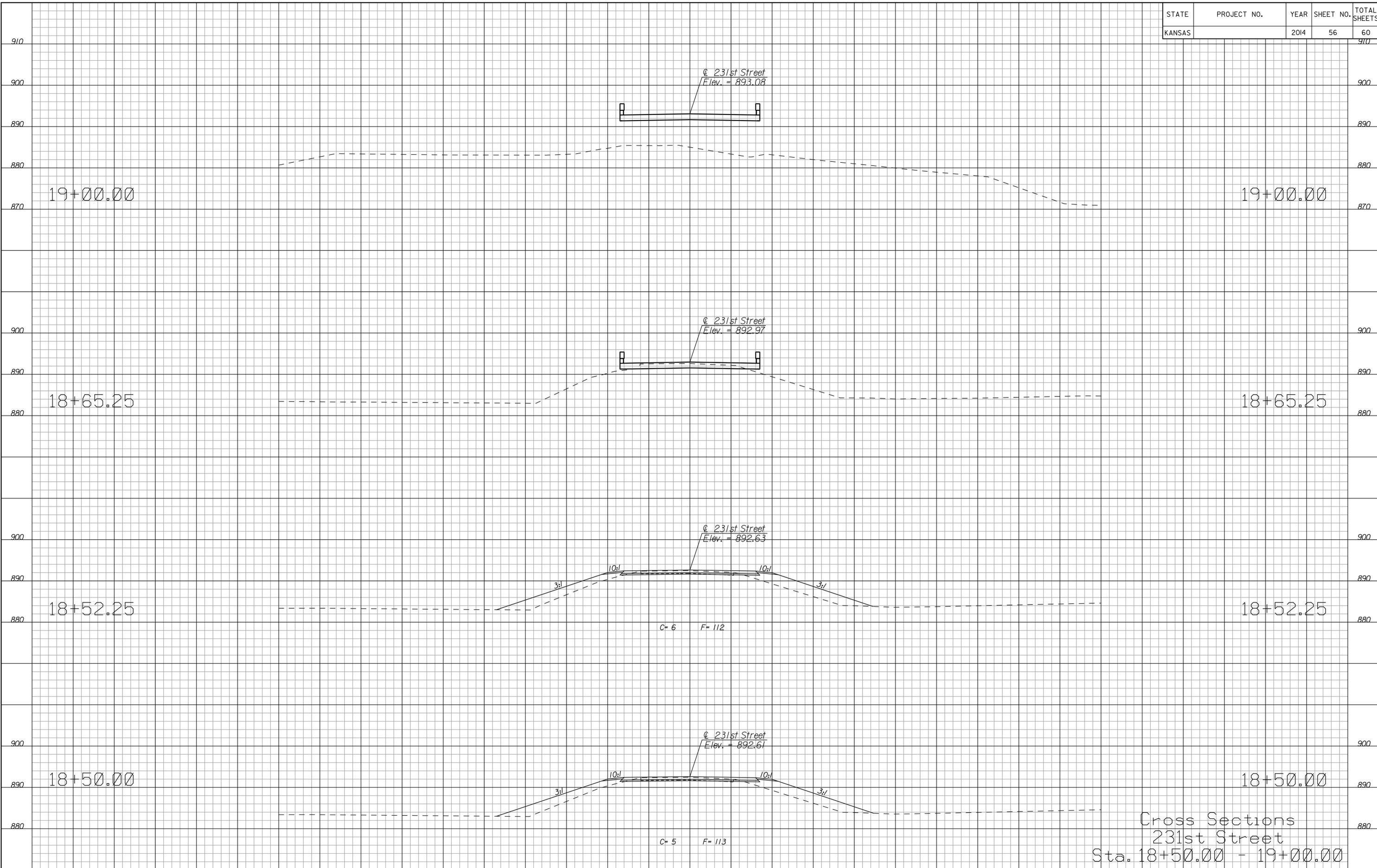
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	55	60



Drawn By : jpetersen
 File : xx_cross_section01.dgn
 Plotted : 20-JAN-2014 17:30

17+24.04
 Cross Sections
 231st Street
 Sta. 17+24.04 - 18+00.00

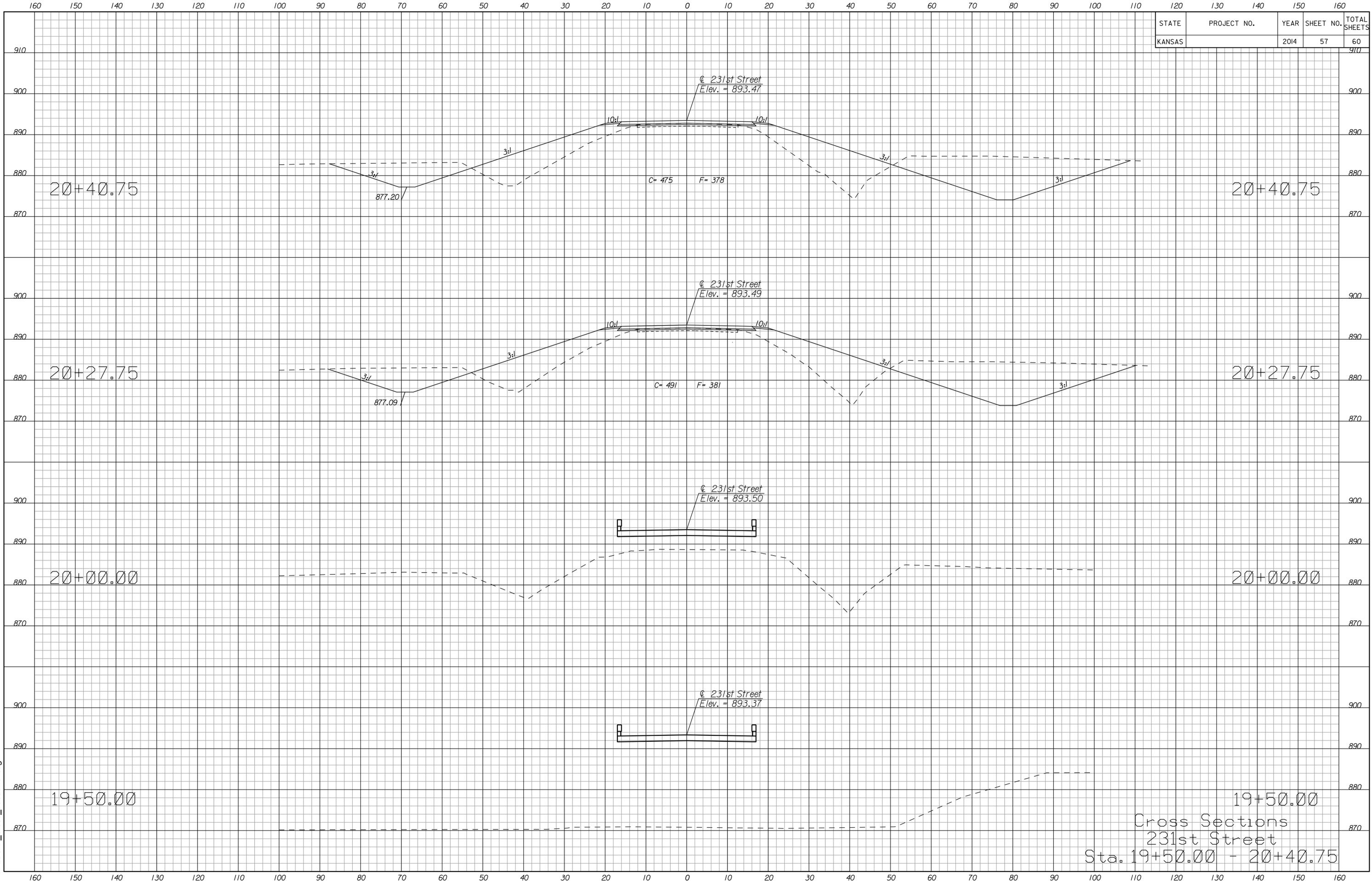
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	56	60



Cross Sections
231st Street
Sta. 18+50.00 - 19+00.00

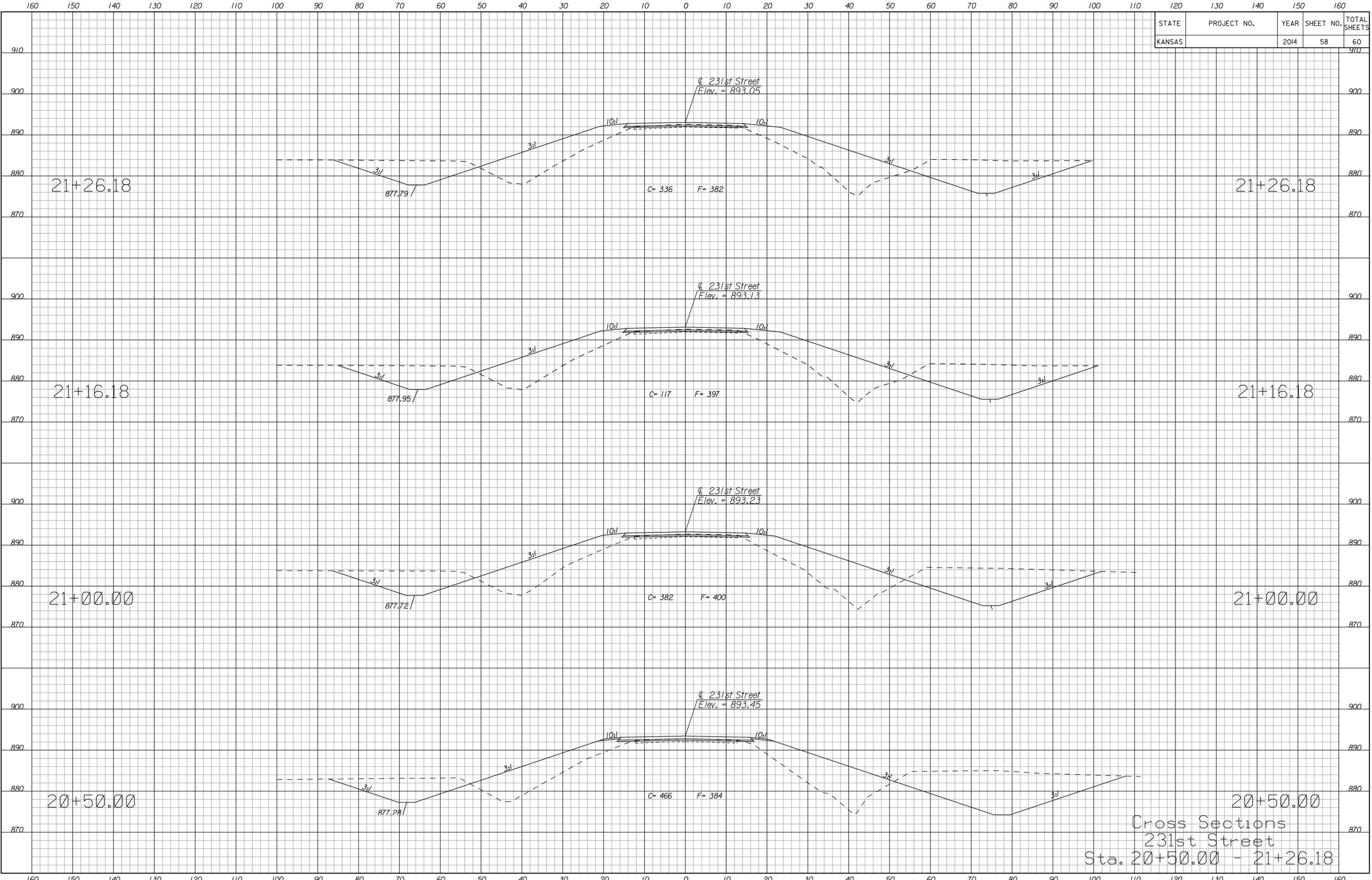
Drawn By : jpetersen
File : xx_cross_section01.dgn
Plotted : 20-JAN-2014 17:30

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	57	60



Drawn By : jpetersen
 File : xx_cross_section01.dgn
 Plotted : 20-JAN-2014 17:30

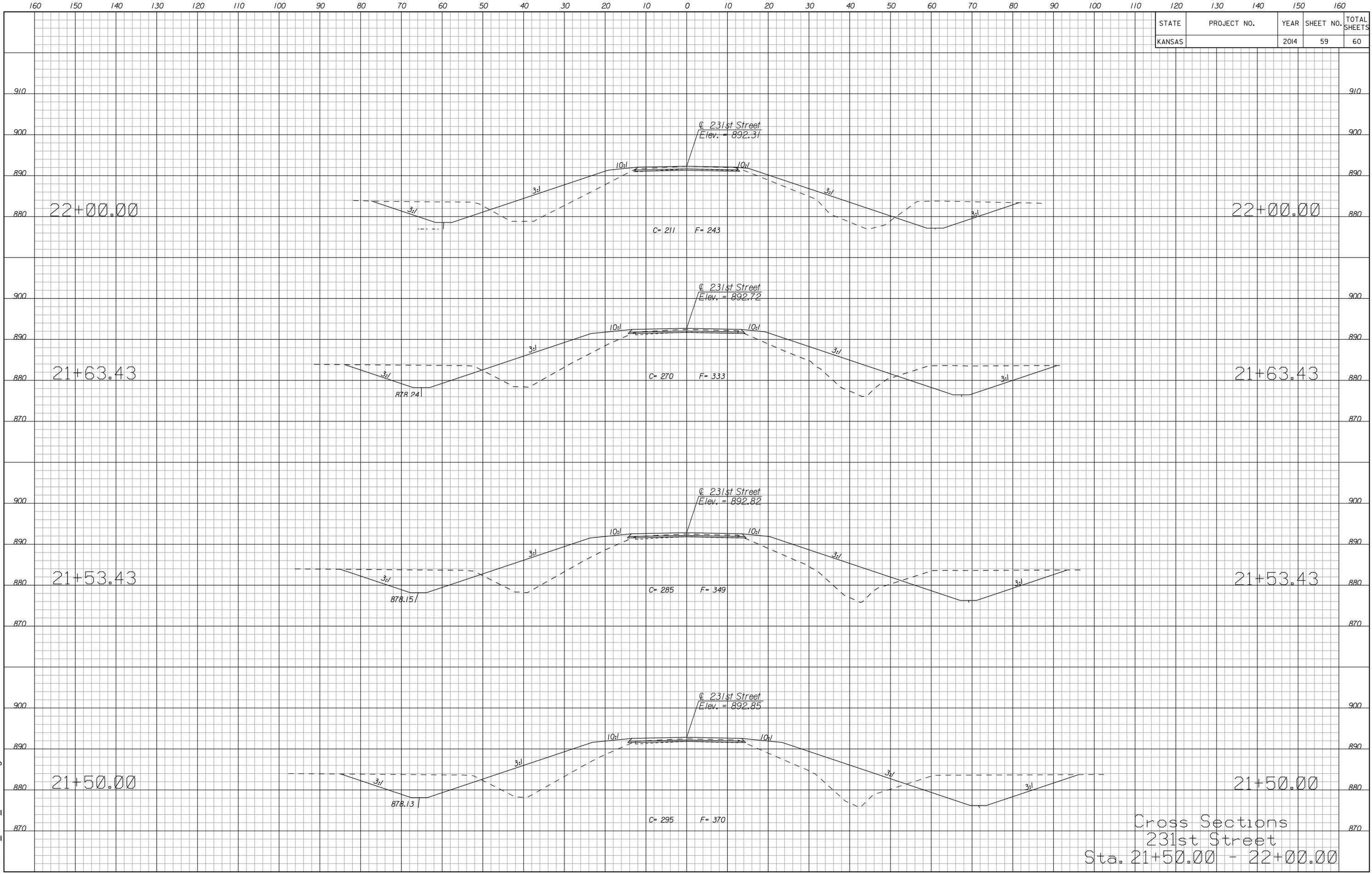
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	58	60



Drawn By : jpetersen
 File : xx_cross_section01.dgn
 Plotted : 20-JAN-2014 17:30

Cross Sections
 231st Street
 Sta. 20+50.00 - 21+26.18

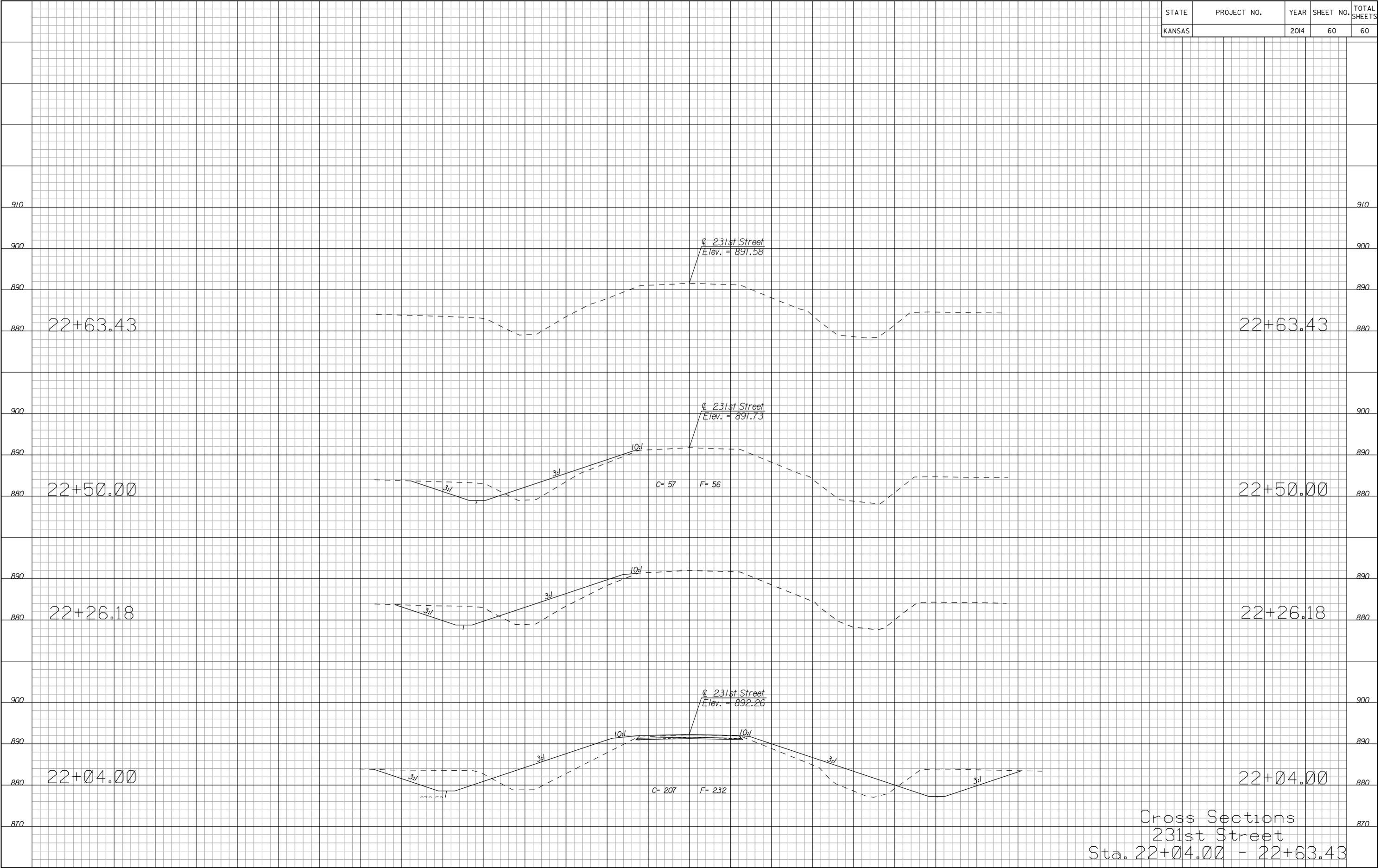
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	59	60



Drawn By : jpetersen
 File : xx_cross_section01.dgn
 Plotted : 20-JAN-2014 17:30

Cross Sections
 231st Street
 Sta. 21+50.00 - 22+00.00

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS		2014	60	60



Drawn By : jpetersen
File : xx_cross_section01.dgn
Plotted : 20-JAN-2014 17:30

Cross Sections
231st Street
Sta. 22+04.00 - 22+63.43