

JEFFERSON COUNTY MISSOURI

UTILITIES

AMEREN UE
WILLIAM ROSENER
6450 HIGHWAY MM
HOUSE SPRINGS, MO 63051
636-671-6182 PHONE

AT&T
GLENN HOENMILLER
122 N. 2ND ST.
FESTUS, MO 63028
636-931-7525 PHONE

CHARTER COMMUNICATIONS
DARYL STEFFEN
815 CHARTER COMMONS DR.
TOWN & COUNTRY, MO 63017
636-387-6663 PHONE

LACLEDE GAS COMPANY
BRIAN LANGENBACHER
4118 SHREWSBURY AVE.
SHREWSBURY, MO 63119
314-768-7767 PHONE

PUBLIC WATER SUPPLY DISTRICT 3
1469 OLD HIGHWAY 21
ARNOLD, MO 63026
636-296-7053 PHONE

NORTHEAST PUBLIC SEWER DISTRICT
1041 GRAVOIS RD.
FENTON, MO 63026
636-343-5090 PHONE

BRIDGE REPLACEMENT BRIDGE NO. 06900011 FEDERAL PROJECT NO. BRM-5403(663)

KONERT ROAD BRIDGE OVER ROMAINE CREEK CONSTRUCTION PLANS

LENGTH OF PROJECT

BEGINNING STATION	12+00.00
ENDING STATION	17+10.00
APPARENT LENGTH	510.00 FEET
EQUATIONS AND EXCEPTIONS	NONE
TOTAL CORRECTIONS	NONE
NET LENGTH OF PROJECT	510.00 FEET 0.096 MILES

DESIGN DESIGNATION

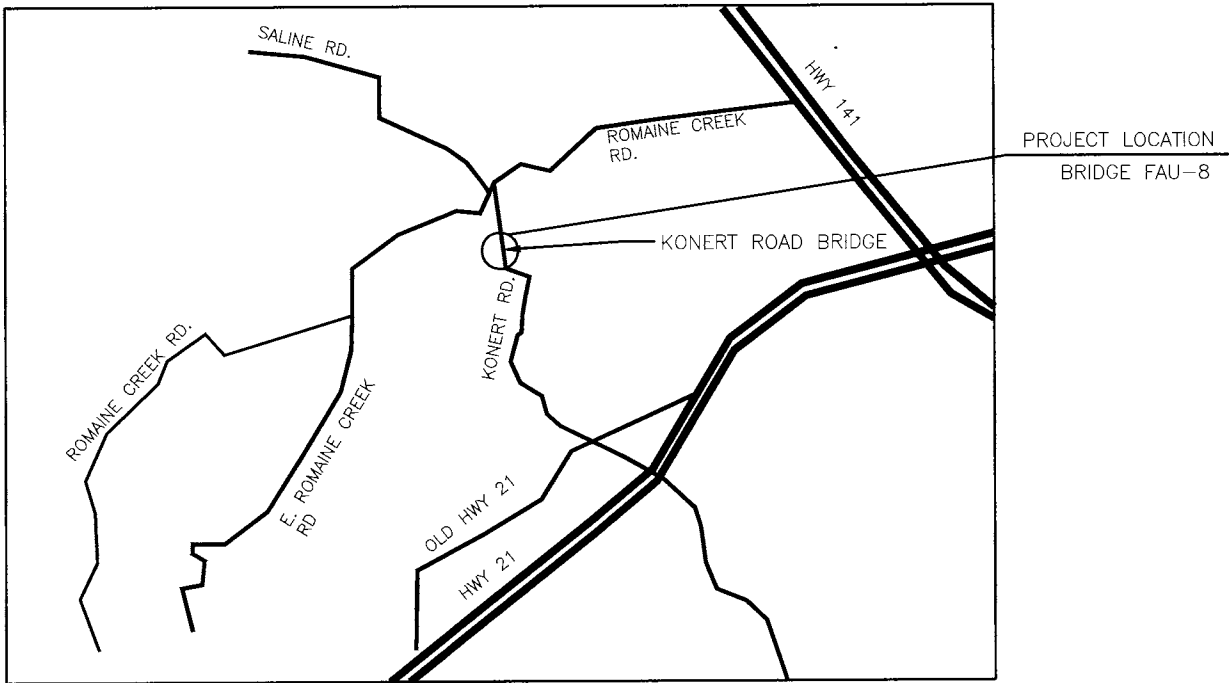
DESIGN SPEED	30 MPH
FUNCTIONAL CLASSIFICATION	COLLECTOR
CURRENT POSTED SPEED	30 MPH
CURRENT ADT	2527
FUTURE ADT (20134)	3755
TRUCK VOLUME	7%

INDEX OF DRAWINGS

TITLE	NO.
COVER SHEET	1
TBM & CONTROL POINT SHEET	2
PLAN SHEET	3
PROFILES SHEET	4
ROADWAY DETAILS AND TRAFFIC CONTROL	5
ROADWAY CROSS SECTIONS	6-9
PRIVATE DRIVE CROSS SECTIONS	10
CREEK CROSS SECTIONS	11-12
BRIDGE PLAN AND ELEVATION	13
GENERAL NOTES AND ESTIMATED QUANTITIES	14
END BENT 1 PLAN AND ELEVATION	15
END BENT 1 DETAILS	16
END BENT 2 PLAN AND ELEVATION	17
END BENT 2 DETAILS	18
VERTICAL DRAIN AT END BENTS	19
PRECAST PRESTRESSED CONCRETE I-GIRDERS	20
FRAMING PLAN AND STEEL INT. DIAPHRAGMS	21
SLAB PLAN	22
PRECAST PRESTRESSED PANELS	23
SAFETY BARRIER CURB ELEVATION AND DETAILS	24
SAFETY BARRIER CURB SLIP-FORM OPTION	25
BARRIER CURB AT END BENT 1	26
BARRIER CURB AT END BENT 2	27
BARRIER CURB AT END BENT DETAILS	28
BRIDGE APPROACH SLAB AT END BENT 1	29
BRIDGE APPROACH SLAB AT END BENT 2	30
BILL OF REINFORCING	31
BILL OF REINFORCING	32
AS-BUILT PILE DATA	33

LEGEND

---	EXIST. EDGE ROADWAY
-x-	FENCE LINE
---	FLOW LINE
---	EXISTING R/W
---	NEW R/W
TCE	TEMP. CONST. EASEMENT
PL	PROPERTY LINES
OE	OVERHEAD ELECTRIC
---	CONSTRUCTION LIMITS
---	TREE LINE
---	POWER POLE
---	POWER POLE GUY WIRE
---	SIGN
D.N.D.	DO NOT DISTURB
T.B.R.	TO BE REMOVED
T.B.R. & R.	TO BE REMOVED AND REPLACED
T.B.R. & REL.	TO BE REMOVED AND RELOCATED

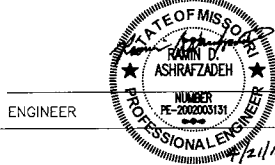


LOCATION MAP
NOT TO SCALE

SECTION 17, TOWNSHIP 43 NORTH, RANGE 5 EAST

PREPARED
JANUARY 14, 2015

SUBMITTED BY:
HORNER & SHIFRIN INC.



ENGINEER

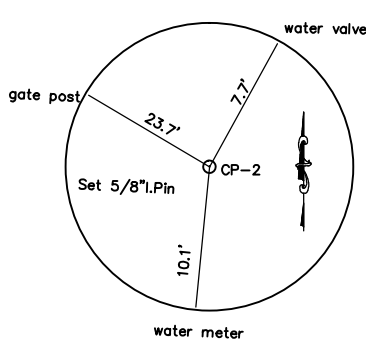
DATE

APPROVED BY:
JEFFERSON COUNTY

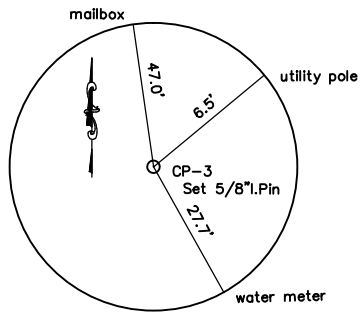
DIRECTOR OF PUBLIC WORKS

4/22/15
DATE





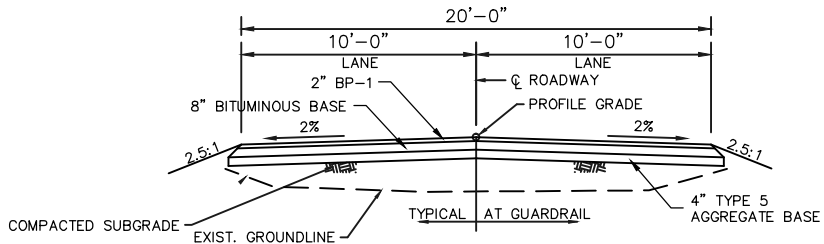
CONTROL PT. NO. 2
5/8" I. PIN
STA 14+83.04 42.31 RT.
N 5249.5769 E 4576.7109
Elev. 472.60'



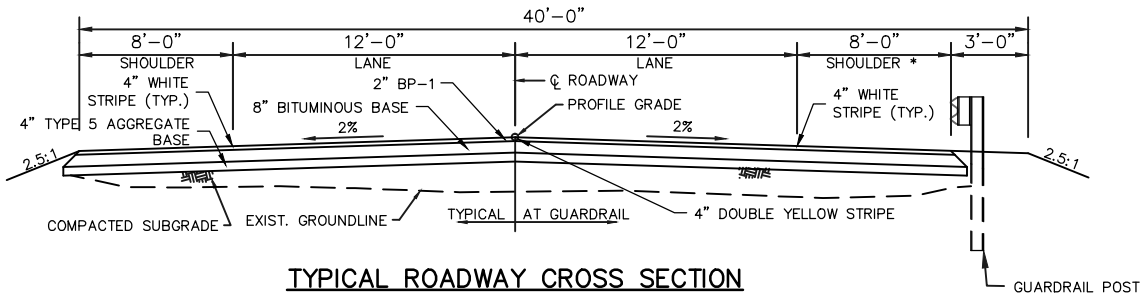
CONTROL PT. NO. 3
5/8" I. PIN
STA 10+79.83 12.78 LT.
N 5657.9048 E 4489.3572
Elev. 475.83'

KONERT ROAD REFERENCE TIES

ESTIMATED QUANTITIES			
ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
ROADWAY ITEMS			
2013000	CLEARING & GRUBBING	ACRE	1.1
2022010	REMOVAL OF IMPROVEMENTS	L.S.	1
2031000	CLASS A EXCAVATION	CU. YD.	770
2035500	EMBANKMENT IN PLACE	CU. YD.	3512
2036000	COMPACTING EMBANKMENT	CU. YD.	186
2051010	MODIFIED SUBGRADE	SQ. YD.	100
3040504	TYPE 5 AGGREGATE FOR BASE (4 IN THICK)	SQ. YD.	2206
3101003	GRAVEL (A) (6 IN THICK)	SQ. YD.	157
4011209	BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-1)	TONS	172
4013000	BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BASE)	TONS	621
4071005	TACK COAT	GAL	245
5041000	CONCRETE APPROACH PAVEMENT	SQ. YD.	386
6042010	ADJUSTING MANHOLE	EACH	2
6061010	GUARDRAIL TYPE A	L.F.	93
6062300	TRANSITION SECTION	EACH	4
6062400	BRIDGE ANCHOR SECTION (THRIE BEAM)	EACH	4
6063015	TYPE A CRASHWORTHY END TERMINAL	EACH	2
6096030A	FURNISHING TYPE 3 ROCK DITCH LINER	CU. YD.	17
6096043	PLACING TYPE 3 ROCK DITCH LINER	CU. YD.	17
6097000	ROCK LINING	CU. YD.	2
6113020	FURNISHING TYPE 2 ROCK BLANKET	CU. YD.	398
6113040	PLACING TYPE 2 ROCK BLANKET	CU. YD.	398
6161099	TRAFFIC CONTROL	L.S.	1
6181000	MOBILIZATION	L.S.	1
6205900	4" WHITE HIGH BUILD ACRYLIC WATERBORNE PVT. MARK. PAINT	L.F.	1020
6205901	4" YELLOW HIGH BLD. ACRYLIC WATERBORNE PVT. MARK. PAINT	L.F.	1020
7250318A	18 IN. CORRUGATED OR SPEC. EQUIV. SMOOTH PIPE GR. B	L.F.	88
7320018A	18 IN. OR ALL. SUBSTITUTE GROUP B FLARED END SECTION	EACH	2
8051099	SEEDING	ACRE	0.5
8061019	SILT FENCE	L.F.	835
8061021	TYPE 1 DITCH CHECK	EACH	3
BRIDGE ITEMS			
2061000	CLASS 1 EXCAVATION	CU. YD.	105
5031010	BRIDGE APPROACH SLAB	SQ. YD.	243
7021014	STRUCTURAL STEEL PILES (14 IN.)	L.F.	438
7027000	PILE POINT REINFORCEMENT	EACH	12
7032003	CLASS B CONCRETE (SUBSTRUCTURE)	CU. YD.	52.4
7034213	SLAB ON CONCRETE I-GIRDER	SQ. YD.	341
7034215	SAFETY BARRIER CURB	L.F.	180
7056001	TYPE 3 (39 IN.), PRESTRESSED CONCRETE GIRDER	L.F.	384
7071000	CONDUIT SYSTEM ON STRUCTURE	L.S.	1
7123301	STEEL INTERMEDIATE DIAPHRAGM FOR P/S CONCRETE GIRDERS	EACH	5
7151001	VERTICAL DRAIN AT END BENTS	EACH	2
7161000	PLAIN NEOPRENE BEARING PAD	EACH	6
7161003	LAMINATED NEOPRENE BEARING PAD (TAPERED)	EACH	6

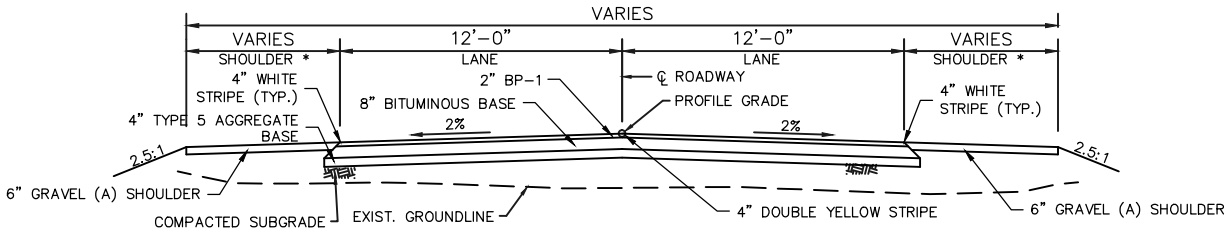


TYPICAL ROADWAY CROSS SECTION
SANDRA DRIVE



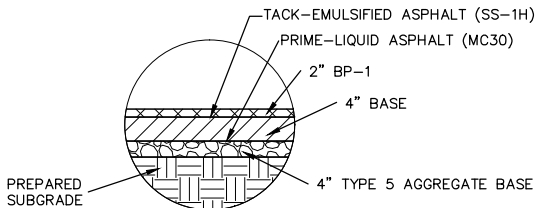
TYPICAL ROADWAY CROSS SECTION
KONERT ROAD
STA 12+00.00 TO STA 16+00.00

* RIGHT SHOULDER TAPERS FROM 4.5' AT 12+00 TO 8' AT 12+25.00

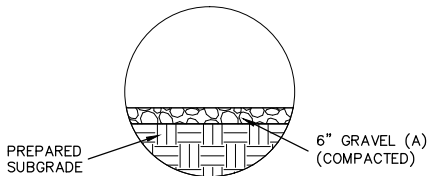


TYPICAL ROADWAY CROSS SECTION
KONERT ROAD
STA 16+00.00 TO STA 17+10.00

* LEFT SHOULDER TAPERS FROM 8' AT 16+50 TO 0' AT 17+10
RIGHT SHOULDER TAPERS FROM 8' AT 16+00 TO 0' AT 17+10

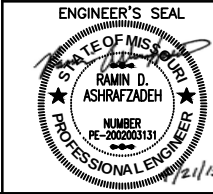


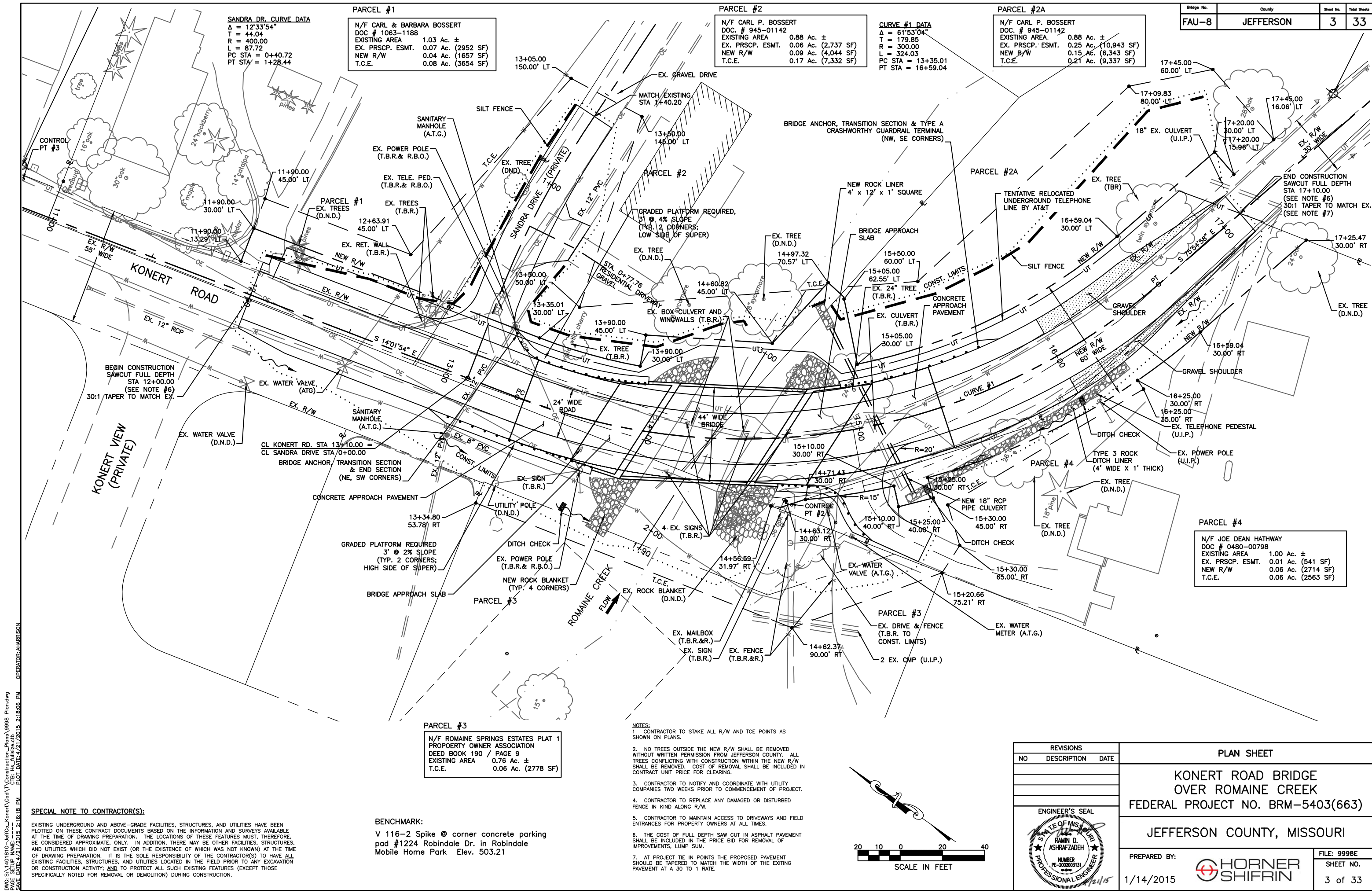
TYPICAL ASPHALT ENTRANCE
SEE PLANS FOR LOCATIONS
NOT TO SCALE



GRAVEL DRIVEWAY
SEE PLANS FOR LOCATION
NOT TO SCALE

REVISIONS			TBM & CONTROL POINT SHEET	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	FILE: 9998E
			1/14/2015	SHEET NO.
				2 of 33





DWG: S:\1401810-JeffCo-Konert\Construction_Plans\9998_Plan.dwg
PAGE SETUP NAME: 1401810-JeffCo-Konert\Construction_Plans\9998_Plan.dwg
SAVE DATE: 4/21/2015 2:16:18 PM
PLOT DATE: 4/21/2015 2:16:06 PM
OPERATOR: AMARRISON

SPECIAL NOTE TO CONTRACTOR(S):
EXISTING UNDERGROUND AND ABOVE-GRADE FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED ON THESE CONTRACT DOCUMENTS BASED ON THE INFORMATION AND SURVEYS AVAILABLE AT THE TIME OF DRAWING PREPARATION. THE LOCATIONS OF THESE FEATURES MUST, THEREFORE, BE CONSIDERED APPROXIMATE, ONLY. IN ADDITION, THERE MAY BE OTHER FACILITIES, STRUCTURES, AND UTILITIES WHICH DID NOT EXIST (OR THE EXISTENCE OF WHICH WAS NOT KNOWN) AT THE TIME OF DRAWING PREPARATION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S) TO HAVE ALL EXISTING FACILITIES, STRUCTURES, AND UTILITIES LOCATED IN THE FIELD PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITY, AND TO PROTECT ALL SUCH EXISTING FEATURES (EXCEPT THOSE SPECIFICALLY NOTED FOR REMOVAL OR DEMOLITION) DURING CONSTRUCTION.

BENCHMARK:
V 116-2 Spike @ corner concrete parking
pad #1224 Robindale Dr. in Robindale
Mobile Home Park Elev. 503.21

- NOTES:**
- CONTRACTOR TO STAKE ALL R/W AND TCE POINTS AS SHOWN ON PLANS.
 - NO TREES OUTSIDE THE NEW R/W SHALL BE REMOVED WITHOUT WRITTEN PERMISSION FROM JEFFERSON COUNTY. ALL TREES CONFLICTING WITH CONSTRUCTION WITHIN THE NEW R/W SHALL BE REMOVED. COST OF REMOVAL SHALL BE INCLUDED IN CONTRACT UNIT PRICE FOR CLEARING.
 - CONTRACTOR TO NOTIFY AND COORDINATE WITH UTILITY COMPANIES TWO WEEKS PRIOR TO COMMENCEMENT OF PROJECT.
 - CONTRACTOR TO REPLACE ANY DAMAGED OR DISTURBED FENCE IN KIND ALONG R/W.
 - CONTRACTOR TO MAINTAIN ACCESS TO DRIVEWAYS AND FIELD ENTRANCES FOR PROPERTY OWNERS AT ALL TIMES.
 - THE COST OF FULL DEPTH SAW CUT IN ASPHALT PAVEMENT SHALL BE INCLUDED IN THE PRICE BID FOR REMOVAL OF IMPROVEMENTS, LUMP SUM.
 - AT PROJECT TIE IN POINTS THE PROPOSED PAVEMENT SHOULD BE TAPERED TO MATCH THE WIDTH OF THE EXISTING PAVEMENT AT A 30 TO 1 RATE.

REVISIONS			PLAN SHEET	
NO	DESCRIPTION	DATE		

ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFAZADEH

NUMBER PE-2002003131

PROFESSIONAL ENGINEER

**KONERT ROAD BRIDGE
OVER ROMAINE CREEK**

FEDERAL PROJECT NO. BRM-5403(663)

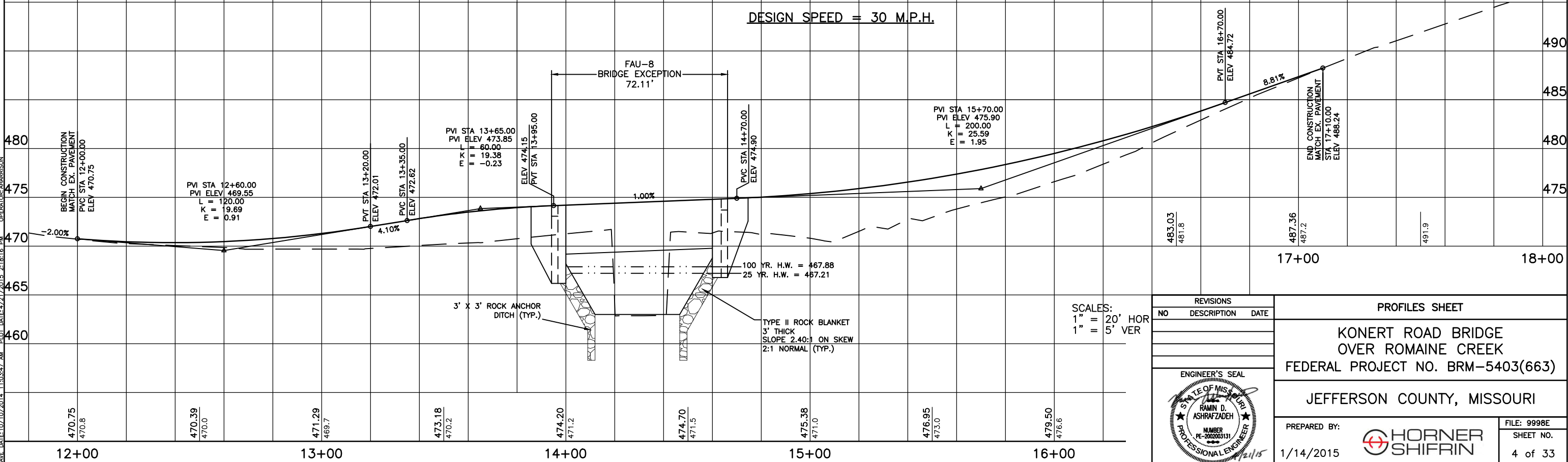
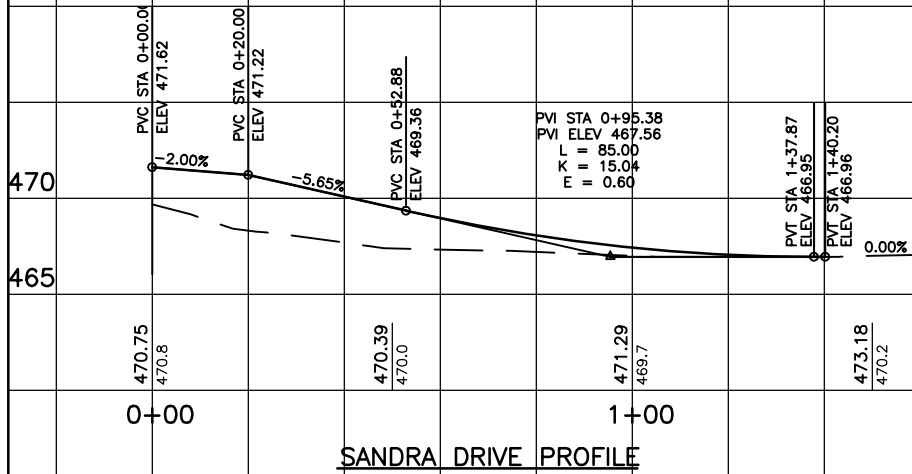
JEFFERSON COUNTY, MISSOURI

PREPARED BY: **HORNER SHIFFRIN**

1/14/2015

FILE: 9998E

SHEET NO. 3 of 33



BENCHMARK:
V 116-2 Spike @ corner concrete parking pad #1224 Robindale Dr. in Robindale Mobile Home Park Elev. 503.21

REVISIONS			PROFILES SHEET	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	FILE: 9998E SHEET NO. 4 of 33
			1/14/2015	

ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFAZADEH

NUMBER PE-2002003131

PROFESSIONAL ENGINEER

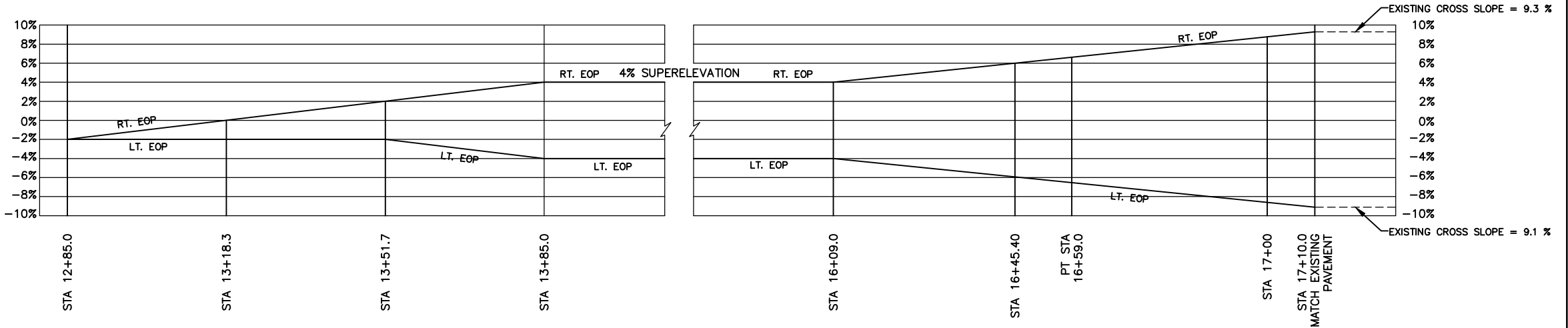
1/21/15

SCHEDULE OF QUANTITIES

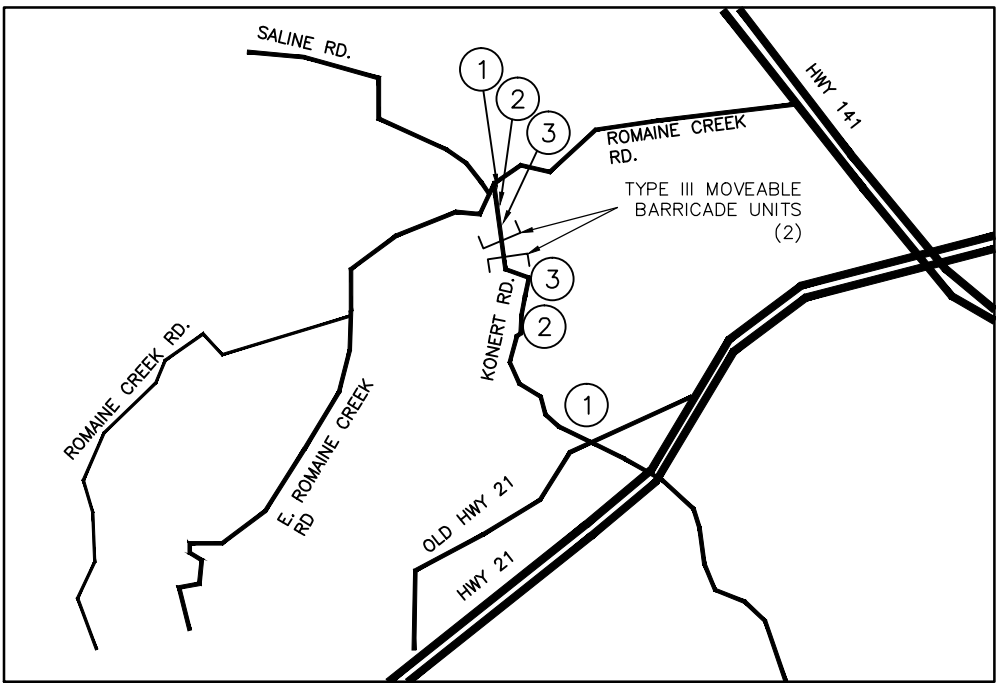
CLEARING & GRUBBING

STA 12+00 TO STA 17+10 = 1.1 ACRES

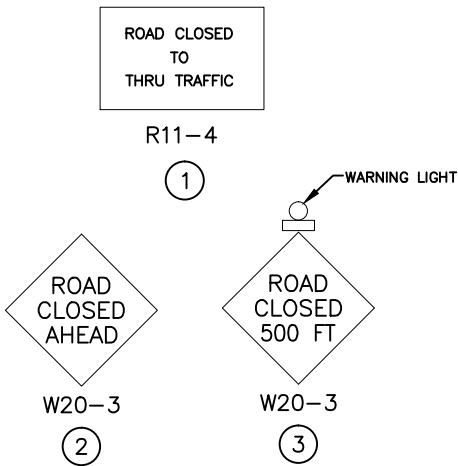
EARTHWORK QUANTITIES		
ROADWAY	CUT (CY)	FILL(CY)
DRIVEWAY	0	35
CREEK (UNSUITABLE)	551	25
TOTAL EXCAVATION		
770		
SUB-TOTAL SUITABLE		
219		
15% SHRINKAGE		
186		
TOTAL		
770		
EMBANKMENT IN PLACE		
3512		



SUPERELEVATION DIAGRAM FOR KONERT ROAD

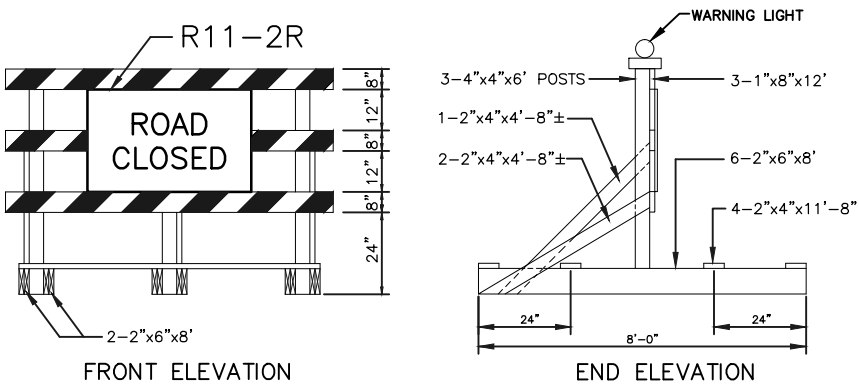


TRAFFIC CONTROL PLAN



TRAFFIC CONTROL

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.



STRIPES ARE 6" WIDE ALTERNATING REFLECTORIZED ORANGE AND REFLECTORIZED WHITE OR SILVER. ALL REFLECTORIZED SURFACES SHALL BE TYPE 1 SHEETING. NO DIRECT PAYMENT WILL BE MADE FOR RELOCATION OF BARRICADES. STRIPES SHALL SLOPE DOWNWARD TOWARD THE SIDE TRAFFIC IS TO PASS.

TYPE III MOVABLE BARRICADE UNIT

TYPE 2 ROCK BLANKET

CREEK = 398 C.Y.

18" CORRUGATED OR SPECIFIED EQUIVALENT SMOOTH INTERIOR GROUP B PIPE

STA 15+09.491 = 88 LIN. FT.
TOTAL = 88 LIN. FT.

18 IN. OR ALLOWED SUBSTITUTE GROUP B FLARED END SECTION

STA 15+09.49 = 2 EACH
TOTAL = 2 EACH

ROCK LINING

STA 14+94.36 = 2.0 CY
TOTAL = 2.0 CY

SEEDING

STA 12+00 TO 17+10 = 0.5 ACRE

SOLID WHITE STRIPING

STA 12+00.00 TO STA 17+10.00 = 1020 LF

SOLID YELLOW STRIPING

STA 12+00.00 TO STA 17+10.00 = 1020 LF

ADJUSTING MANHOLE

STA 13+10.55, 28.6' RT = 1 EACH
STA 13+22.22, 31.0' LT = 1 EACH
TOTAL = 2 EACH

MODIFIED SUBGRADE

STA. 12+00 TO 13+00 RT., STA. 17+00 RT. = 100 SQ. YD.*

* - TO BE PLACED AS DIRECTED BY THE COUNTY.

TYPE 3 ROCK DITCH LINER

STA. 15+18.43 TO STA. 16+25.00 RT. = 17 CY

DITCH CHECKS

STA 12+00.00 TO 15+09.49 = 3 EACH

SILT FENCE

STA 12+00 TO 17+10 = 835 LIN. FT.

2" BP-1

STA 12+00 TO 17+10 = 150 TONS
DRIVEWAY = 11 TONS
SANDRA DR. = 31 TONS
TOTAL = 172 TONS

4" BITUMINOUS BASE

DRIVEWAY = 21 TONS
SANDRA DR. = 63 TONS
TOTAL = 84 TONS

8" BITUMINOUS BASE

STA 12+00 TO 17+10 = 537 TONS

4" TYPE 5 AGGREGATE BASE

STA 12+00 TO 17+10 = 1409 S.Y.
STA 13+38.59 TO 13+74.05 = 176 S.Y.
STA 14+90.92 TO 15+40.06 = 244 S.Y.
DRIVEWAY = 95 S.Y.
SANDRA DR. = 282 S.Y.
TOTAL = 2206 S.Y.

TACK COAT

STA 12+00 TO 17+10 = 69 GAL
X 3 LIFTS = 207 GAL

SANDRA DRIVE & DRIVEWAY

= 19 GAL
X 2 LIFTS = 38 GAL
TOTAL = 245 GAL

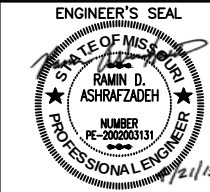
APPROACH PAVEMENT

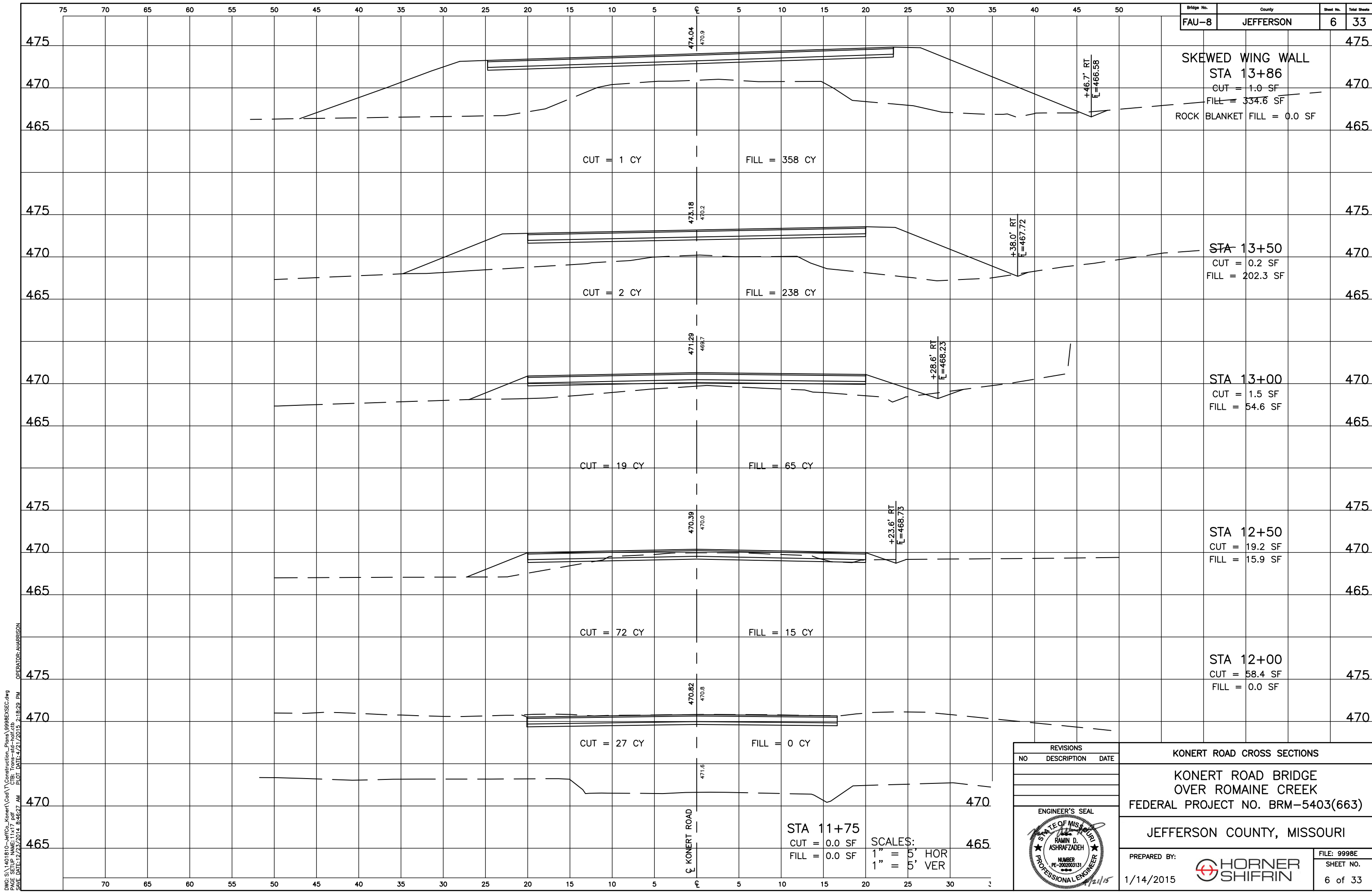
STA 13+38.59 TO 13+74.05 = 164 S.Y.
STA 14+90.92 TO 15+40.06 = 222 S.Y.
TOTAL = 386 S.Y.

6" GRAVEL (A)

STA 16+00 TO 17+10 = 118 S.Y.
DRIVEWAY = 39 S.Y.
TOTAL = 157 S.Y.

REVISIONS			SUPERELEVATION, TRAFFIC CONTROL & ROADWAY DETAILS	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMANE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY: 1/14/2015	FILE: 9998E SHEET NO. 5 of 33





DWG: S:\1401810-JeffCo-Konert\Constr\9998\SEC.dwg
PAGE SETUP NAME: 11x17.pdf
SAVE DATE: 12/23/2018 8:46:27 AM
PLOT DATE: 4/21/2015 2:18:29 PM
OPERATOR: AMARRISON

REVISIONS		
NO	DESCRIPTION	DATE

ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFAZADEH

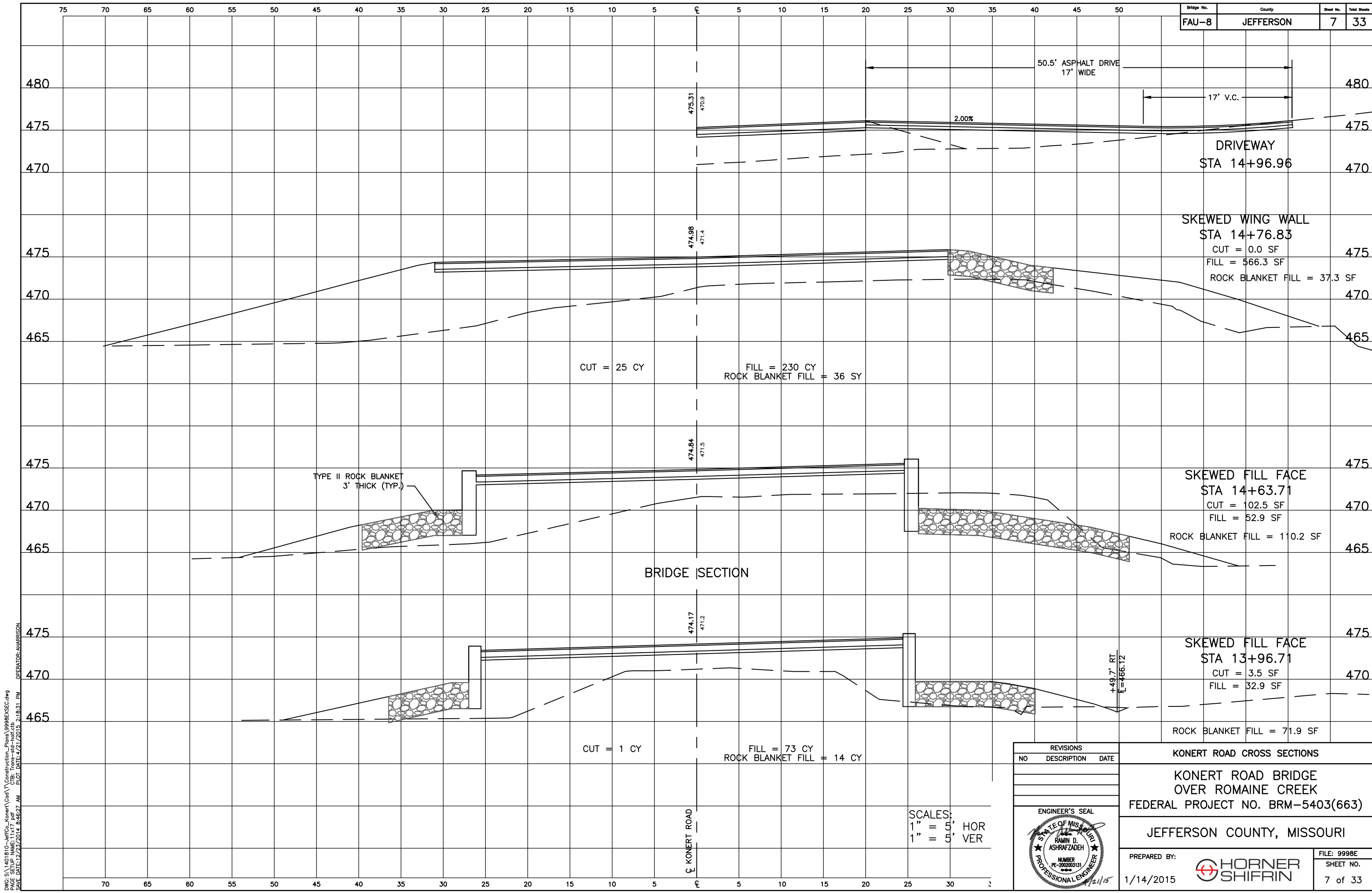
NUMBER PE-2002003131

PROFESSIONAL ENGINEER

4/21/15

KONERT ROAD CROSS SECTIONS	
KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
JEFFERSON COUNTY, MISSOURI	
PREPARED BY: 1/14/2015	FILE: 9998E SHEET NO. 6 of 33





Bridge No.	County	Sheet No.	Total Sheets
FAU-8	JEFFERSON	7	33

REVISIONS		
NO	DESCRIPTION	DATE

ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFI-ZADEH

NUMBER PE-2002003131

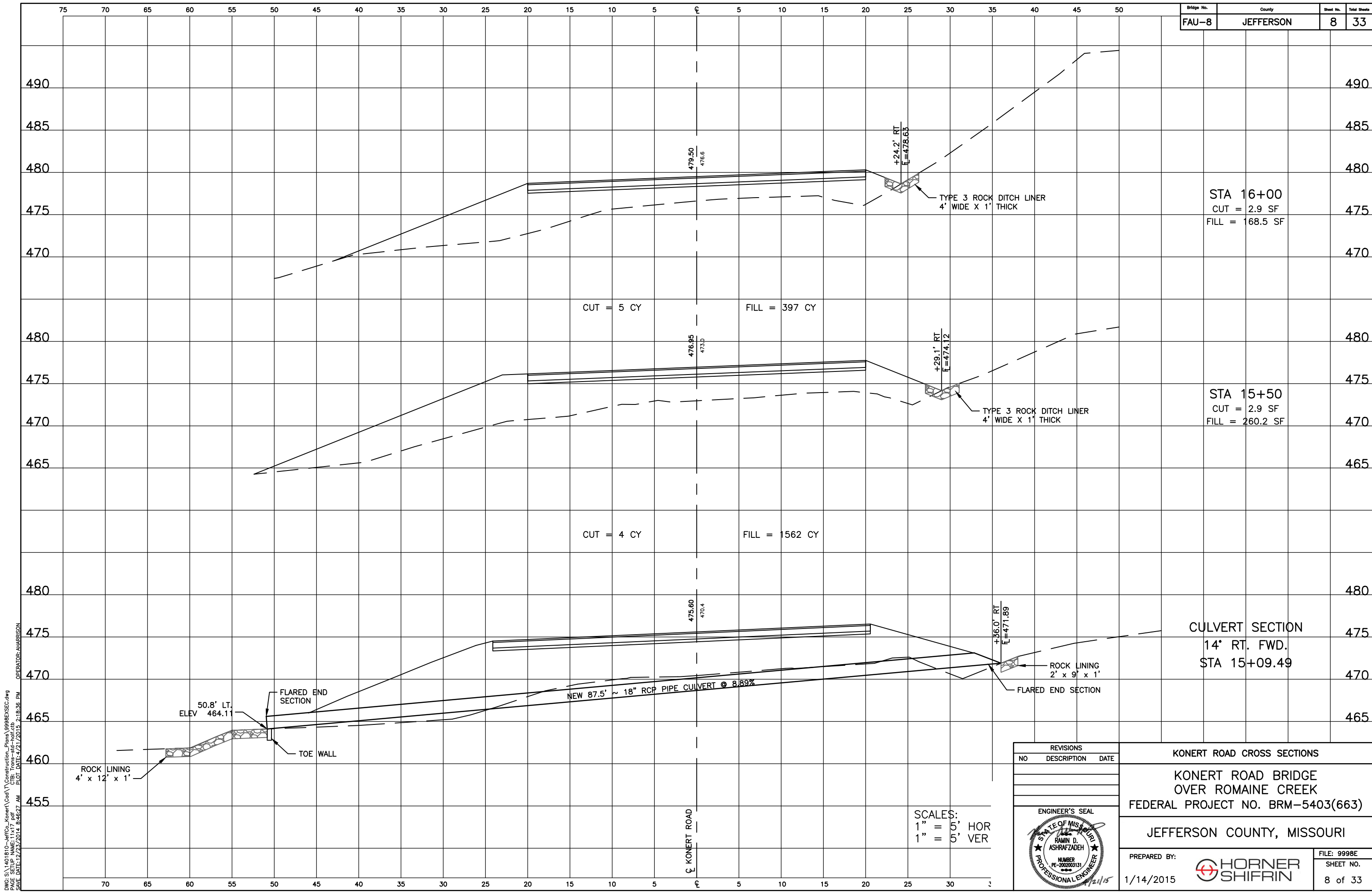
PROFESSIONAL ENGINEER

12/1/15

KONERT ROAD CROSS SECTIONS	
KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
JEFFERSON COUNTY, MISSOURI	
PREPARED BY: 1/14/2015	FILE: 9998E SHEET NO. 7 of 33



DWG: S:\1401810-JeffCo-Konert\Constr\9998E\SEC.dwg
PAGE SETUP NAME: 11x17.pdf
SAVE DATE: 12/23/2014 8:46:27 AM
PLOT DATE: 4/21/2015 2:18:31 PM
OPERATOR: AMARISON



DWG: S:\1401810-Konert\Konert\Construction_Plans\9998\EXEC.dwg
PAGE SETUP NAME: 11x17.pdf
SAVE DATE: 12/23/2014 8:46:27 AM
PLOT DATE: 4/21/2015 2:18:36 PM
OPERATOR: AMARISSON

SCALES:
1" = 5' HOR
1" = 5' VER

REVISIONS		
NO	DESCRIPTION	DATE

ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFAZADEH

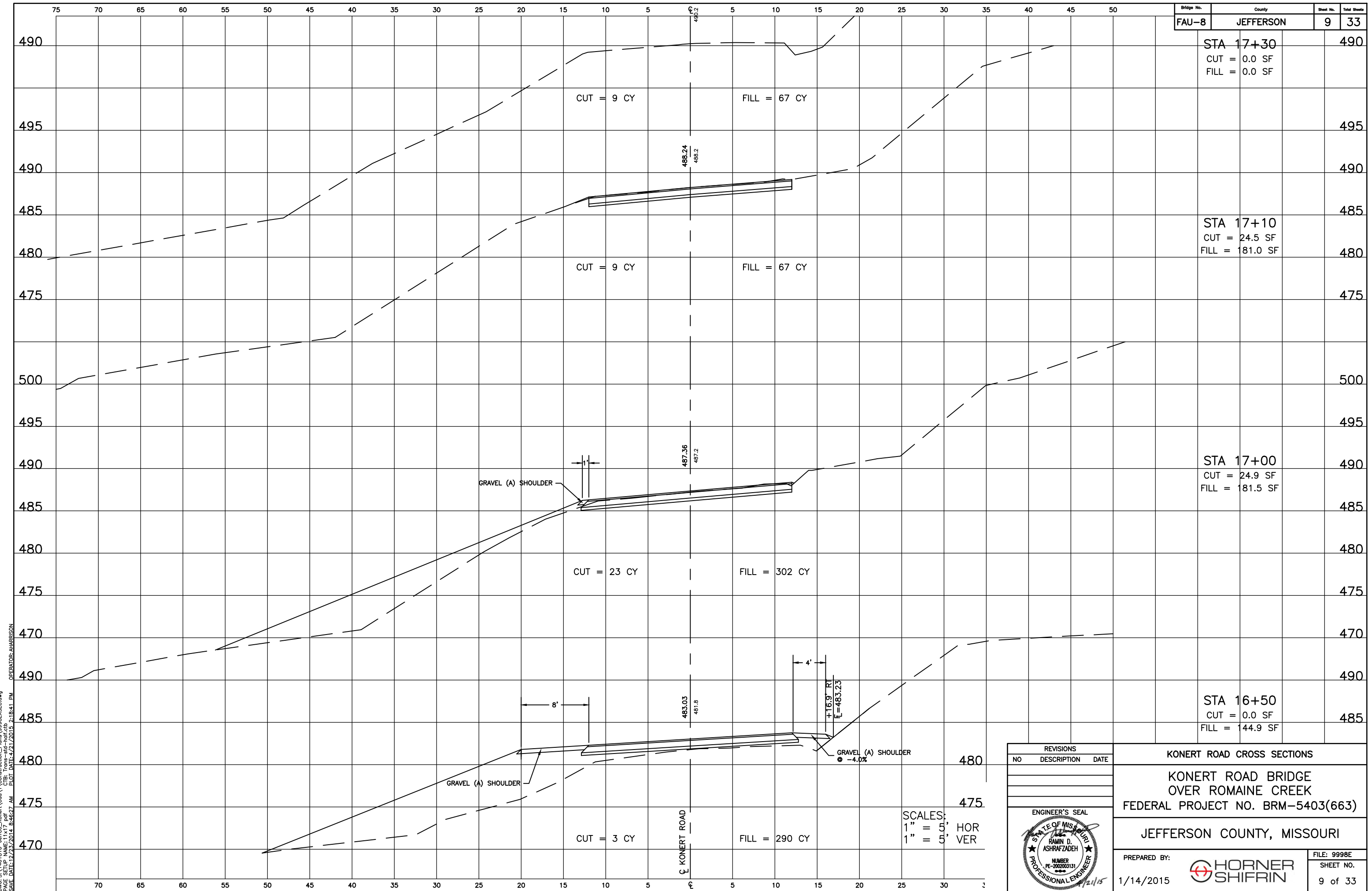
NUMBER PE-2002003131

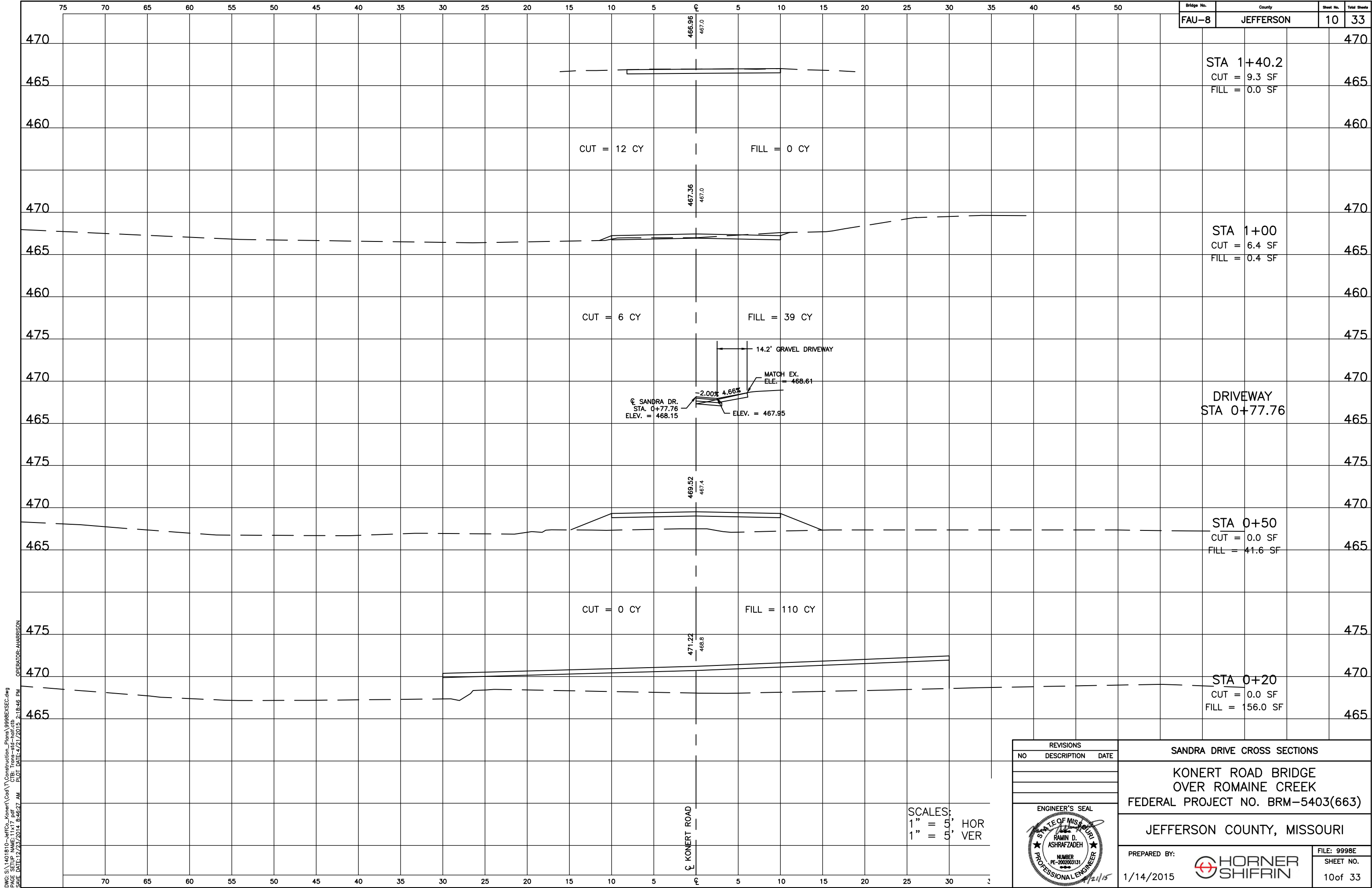
PROFESSIONAL ENGINEER

4/21/15

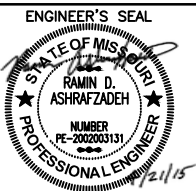
KONERT ROAD CROSS SECTIONS	
KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
JEFFERSON COUNTY, MISSOURI	
PREPARED BY: 1/14/2015	FILE: 9998E SHEET NO. 8 of 33

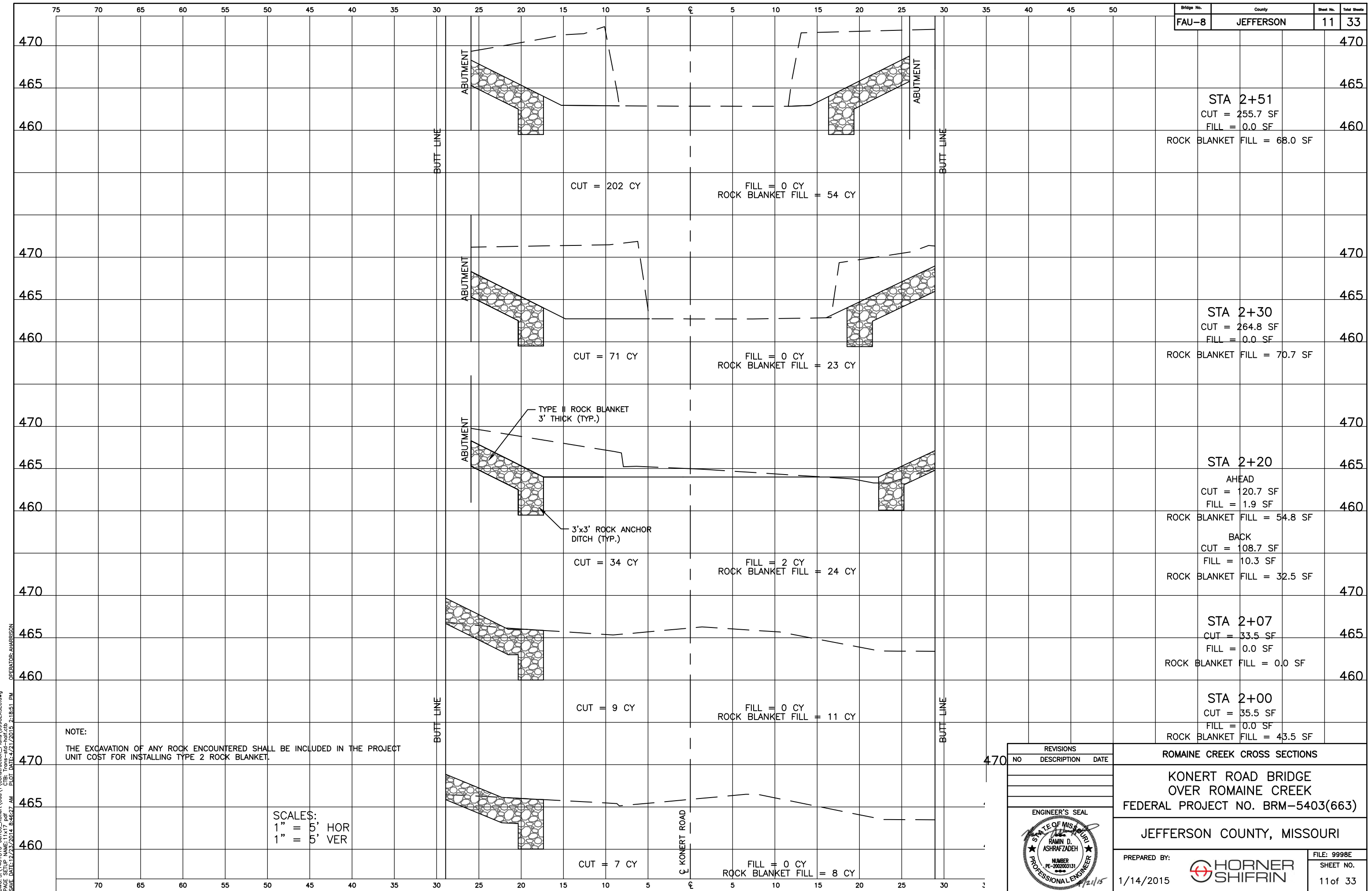


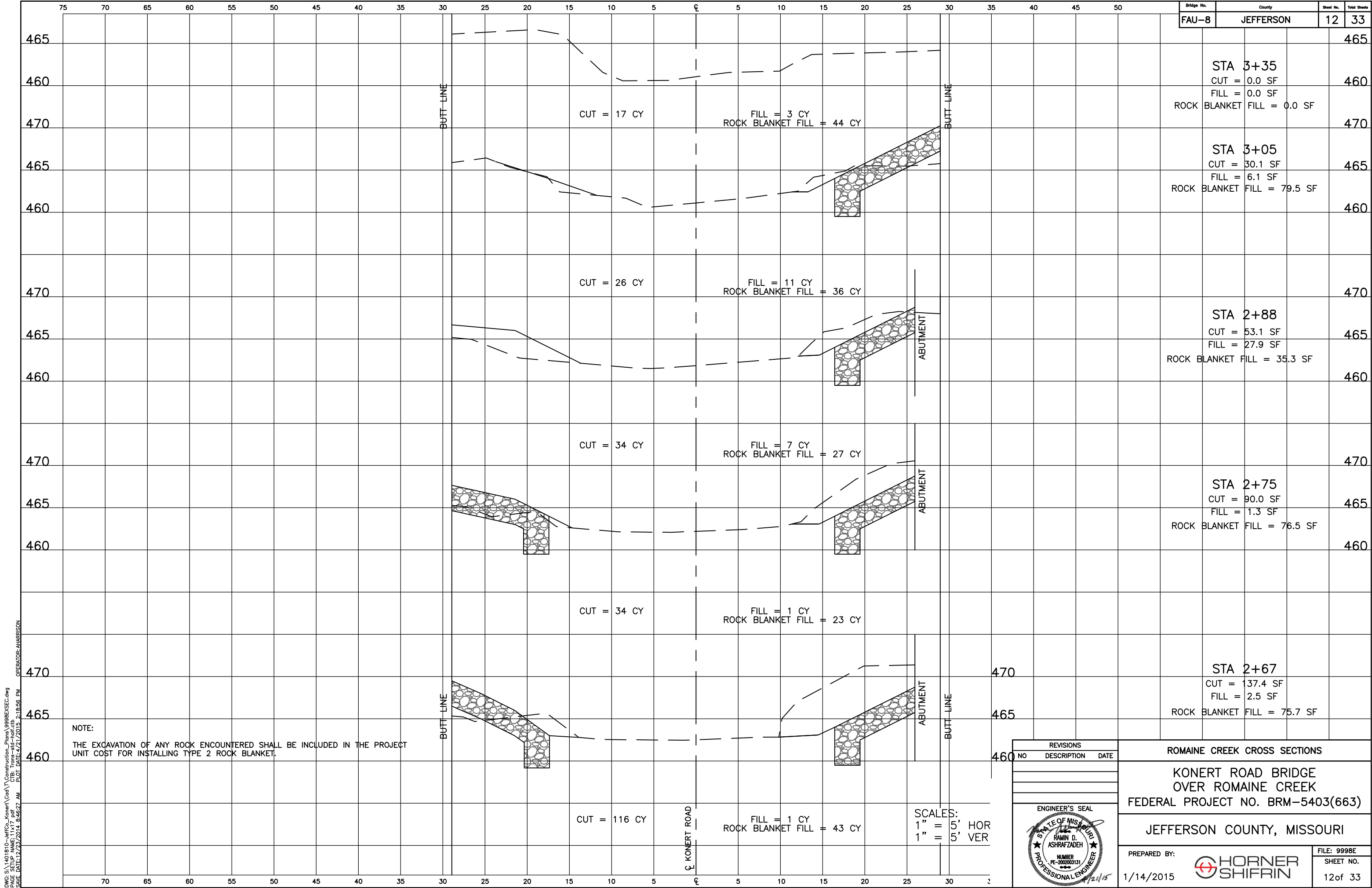




Bridge No.	County	Sheet No.	Total Sheets
FAU-8	JEFFERSON	10	33

REVISIONS			SANDRA DRIVE CROSS SECTIONS	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
PREPARED BY:				FILE: 9998E
1/14/2015				SHEET NO. 10 of 33





DWG: S:\1401810-JeffCo-Konert\Constr\Plans\9998E\SEC.dwg
PAGE SETUP NAME: 11x17.pdf
SAVE DATE: 12/23/2014 8:46:27 AM
CTB: Trans-std-hdr.ctb
PLOT DATE: 4/21/2015 2:18:56 PM



NOTE:
Roadway fill shall be completed to the final roadway section and shall be up to the elevation of the bottom of the concrete beam seat within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before piles are driven.

REVISIONS NO DESCRIPTION DATE			GENERAL PLAN AND ELEVATION		
			KONERT ROAD BRIDGE		
			OVER ROMAINE CREEK		
			FEDERAL PROJECT NO. BRM-5403(663)		
ENGINEER'S SEAL			JEFFERSON COUNTY, MISSOURI		
			PREPARED BY:  HORNER SHIFFRIN		JOB: 1401810 SHEET NO. 13 of 33
			1/5/2015		

 Indicates boring locations.
For boring data, see Specifications

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS

...*Cd*5fina1Plans*13_gpe.dgn 4:05:24 PM kaklues

Designed By: KPH
Drawn By: JDG
Checked By: NJM

2002 - AASHTO 17th Edition
Load Factor Design.
Seismic Performance Category B
Acceleration coefficient = 0.12
Site coefficient = 1.5

HS20-44 35 lbs./sq. ft. future wearing surface
Earth 120 lbs./cu. ft.
Equivalent fluid pressure = 45 lbs./cu. ft.
Superstructure: Simply Supported, non-composite for dead load.
Composite for live load.

Class B Concrete (Substructure)	$f'c = 3,000$ psi
Class B-2 Concrete (Superstructure, except Prestressed Girders)	$f'c = 4,000$ psi
Reinforcing Steel (Grade 60)	$f_y = 60,000$ psi
Steel Pile (ASTM A709 Grade 36)	$f_b = 9,000$ psi $f_y = 36,000$ psi
For Precast Prestressed Panel Stresses, see Precast Prestressed Panels Sheet.	
For Prestressed Girder Stresses, see Precast Prestressed Concrete I-Girders Sheet.	

Bearings shall be 60 durometer neoprene pads.

All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Minimum clearance to reinforcing steel shall be 1 1/2" unless otherwise shown.

Mechanical tying devices shall not be used.

All reinforcement shall be tied 100%.

The Bridge Deck shall be sealed with a Class 2 Penetrating Concrete Sealer.

The 2011 edition of the Missouri Highway Department of Transportation's "Missouri Standard Specifications for Highway construction" and supplemental "Interim Specification Revisions, and the job special provisions shall govern.

Double wide box culvert. (Existing structure to be removed, see Rdwy. Drawings).

Beginning Station 13+96.71, Elevation 474.15, single span 62'-9 5/8" @ bearing to @ bearing, 46'-8" wide out to out, prestressed concrete I-girder. Bridge is skewed 30° left advanced.

Minimum energy requirement of hammer is based on plan length and design bearing value of piles.

All piles shall be driven to practical refusal.

Manufactured pile point reinforcement shall be used on all piles in this structure.

[illegible]

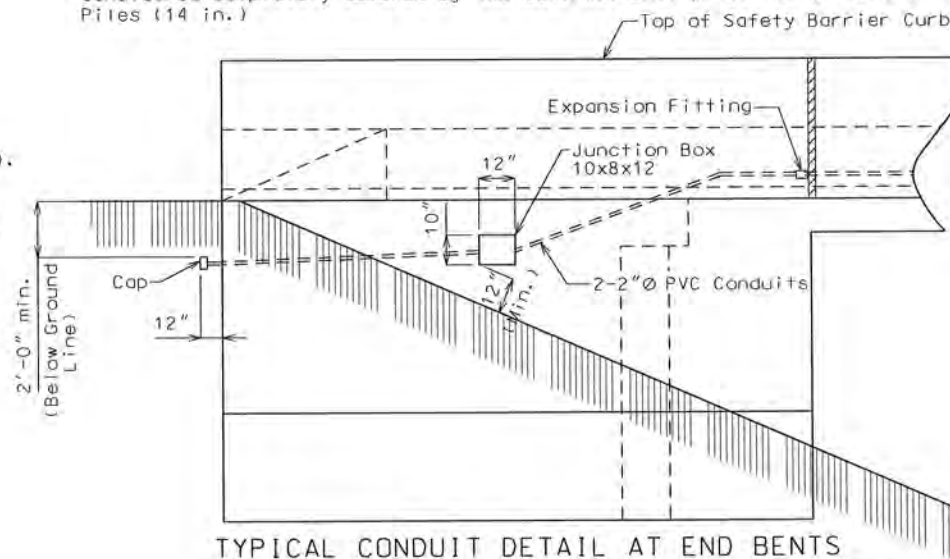
* Safety Barrier Curb shall be cast-in-place option or slip form option.

All concrete above the construction joint in the end bents is included in the estimated quantities for Slab on Concrete I-Girder.

All reinforcement in the end bents is included in the estimated quantities for Slab on Concrete I-Girder.

Plain and Laminated Neoprene Bearing Pads shall be in accordance with Sec 716.

Cost of channel shear connectors C4 x 5.4 (ASTM A709 Grade 36) in place will be considered completely covered by the contract unit price for Structural Steel Piles (14 in.)



All conduits shall be rigid non-metallic schedule 40 heavy wall polyvinyl chloride (PVC) (except as noted) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters Laboratories (UL) label.

Shift reinforcing steel in field where necessary to clear conduit.

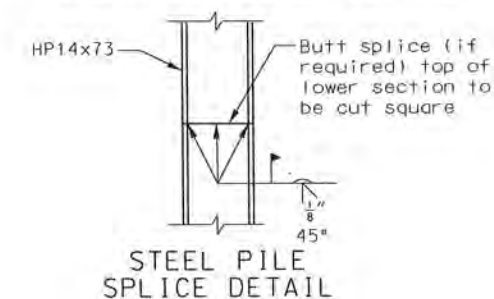
Expansion fittings shall be placed as shown and set in accordance with the manufacturer's requirements and based on the air temperature at the time of setting given an estimated total expansion movement of 1" at filled joints using a maximum temperature range of 120° F and a maximum temperature of 110° F.

Minimum clearance preferred between conduits placed in barrier curb shall be 1".

Drainage shall be provided at low points and other critical locations of all conduits and all junction boxes in accordance with Sec. 707. All conduits shall be sloped to drain where possible.

Payment for furnishing and installing Conduit System, complete in place, will be considered completely covered by the contract lump sum price for Conduit System on Structure.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS



Item	Total
Class B-2 Concrete	cu. yard 111.9
Reinforcing Steel	pound 12,300
Reinforcing Steel (Epoxy Coated)	pound 14,830

The table of Estimated Quantities for Slab on Concrete I-Girder represents the quantities used by the designer in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard with the horizontal dimensions as shown on the plan of slab. Payment for prestressed panels, conventional forms, all concrete, and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in these estimated quantities, but these variations cannot be used for an adjustment in the contract unit price.

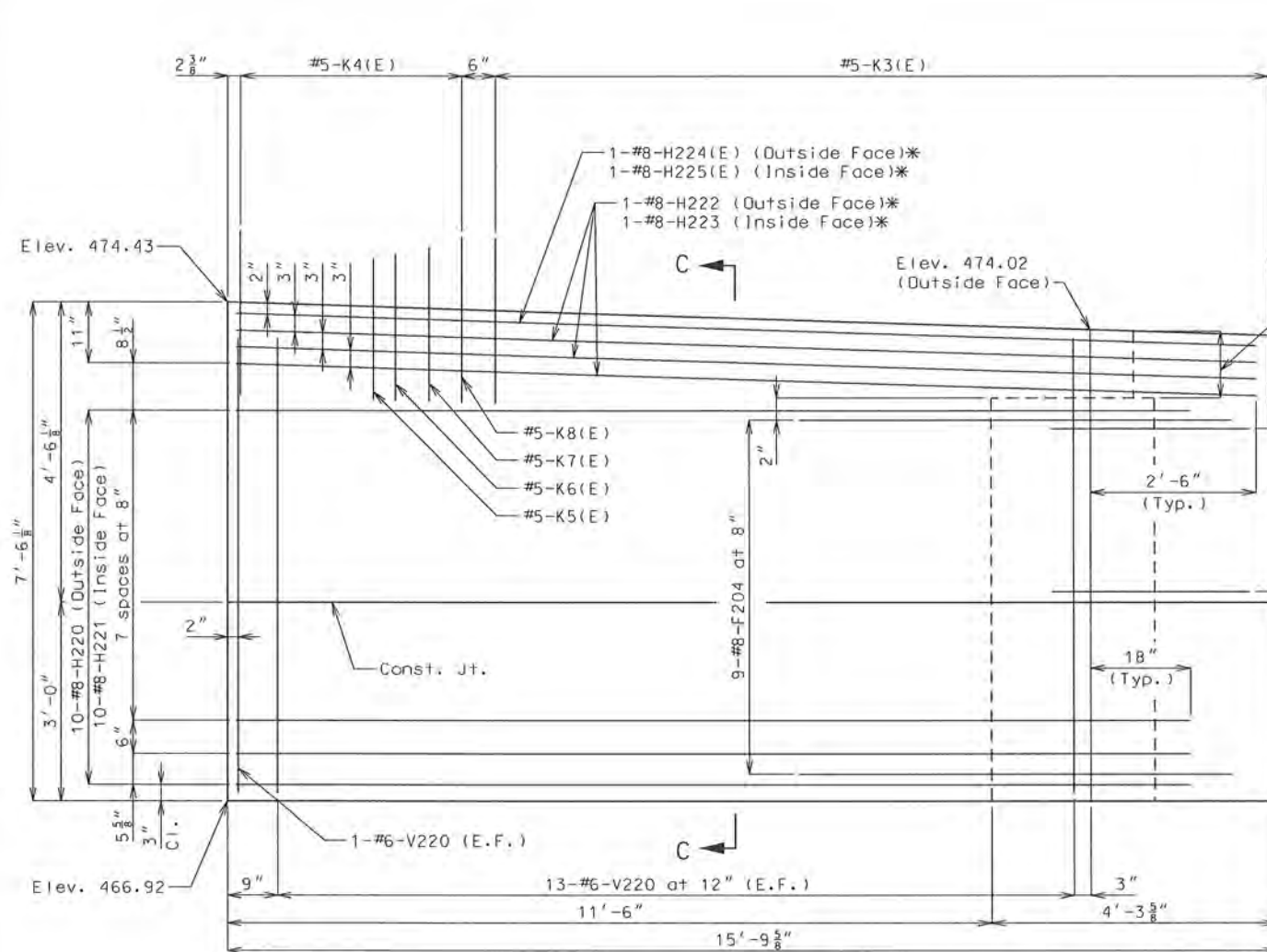
Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness Class SC 4 and a finish Type I, II, or III.

The Estimated Quantities for Slab on Concrete I-Girder are based on skewed precast prestressed end panels.

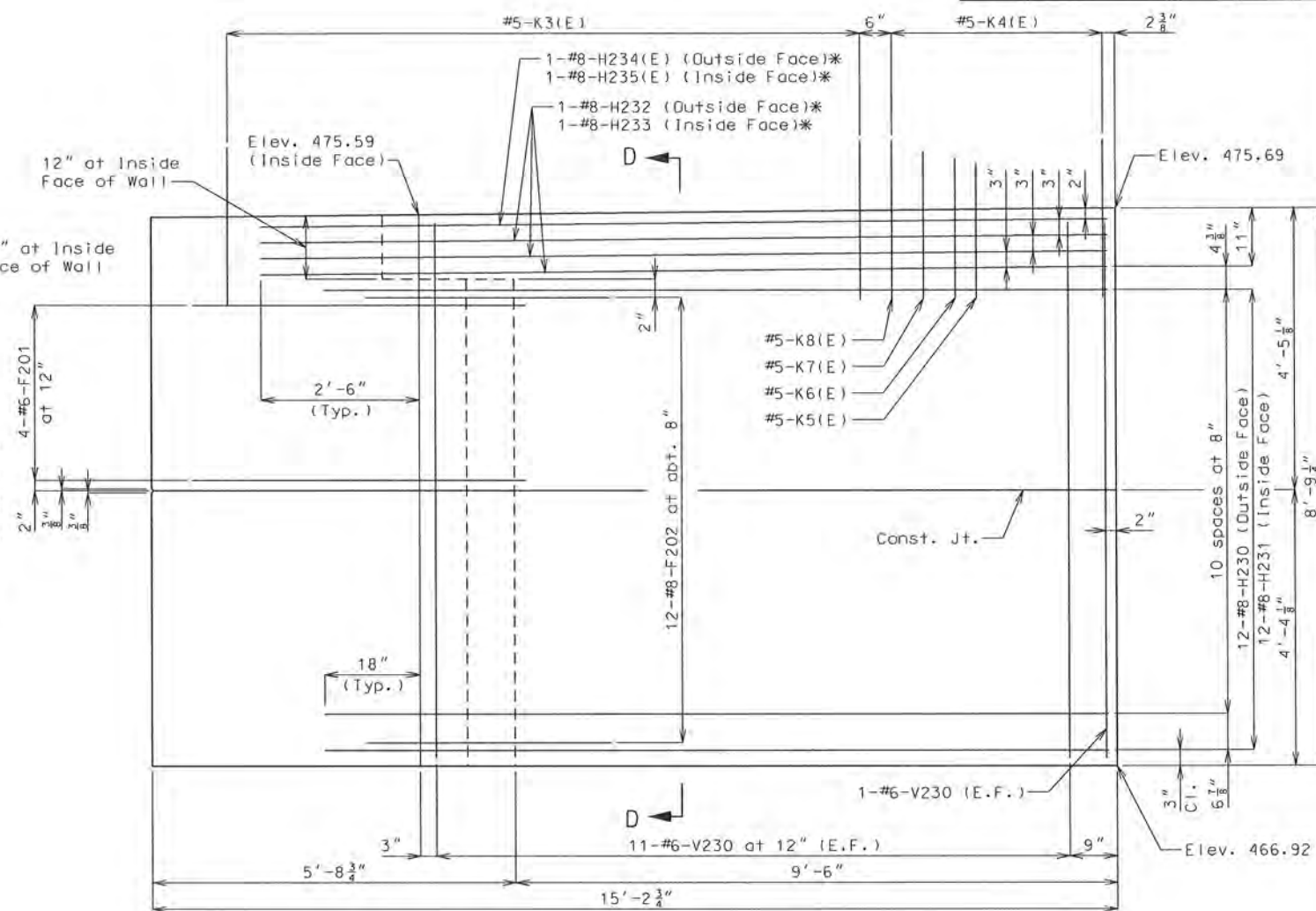
Class B-2 concrete quantity based on minimum top flange thickness and minimum joint filler thickness.

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete I-Girder.

REVISIONS NO DESCRIPTION DATE			GENERAL NOTES AND ESTIMATED QUANTITIES	
			KONERT ROAD BRIDGE	
			OVER ROMAINE CREEK	
			FEDERAL PROJECT NO. BRM-5403(663)	
ENGINEER'S SEAL			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	JOB: 140181
			HORNER SHIFRIN	SHEET NO.
1/6/2015				14 of 30

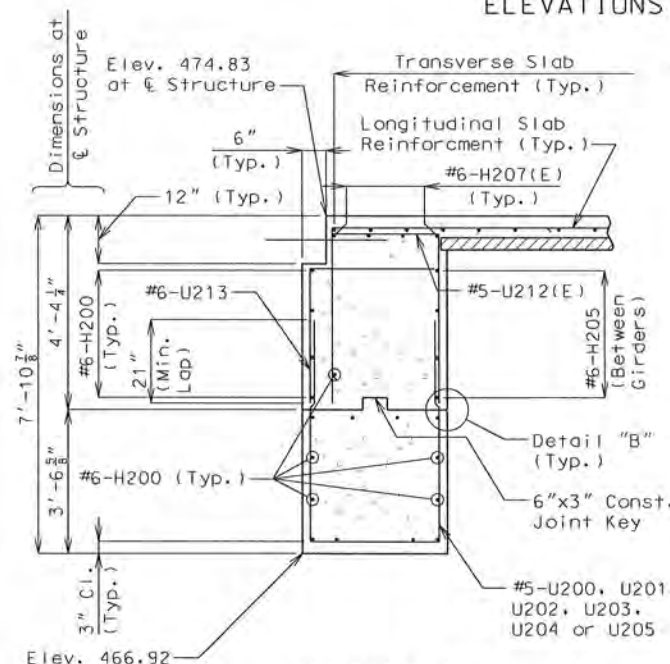


ELEVATIONS OF EAST WINGWALL

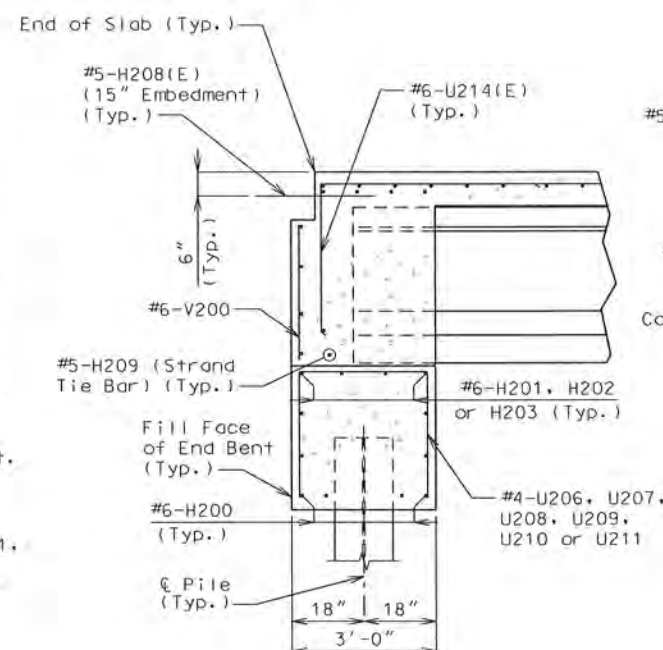


ELEVATION OF WEST WINGWALL

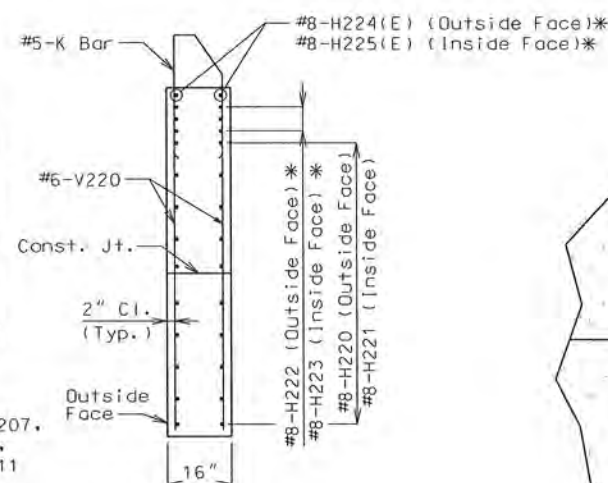
* Placed with grade



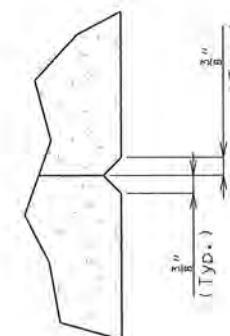
SECTION A-A
(Typ. btwn. Piles)



SECTION B-B
(Typ. at Piles)



SECTION C-C
Section D-D similar.
(Reinforcing Varies)

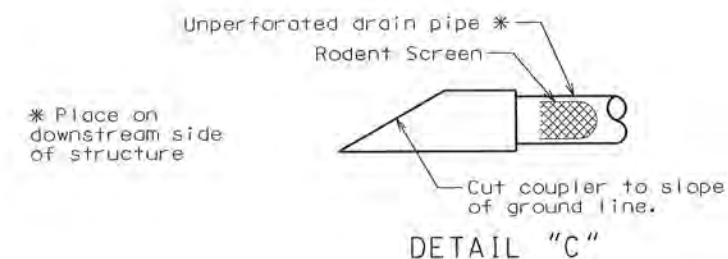
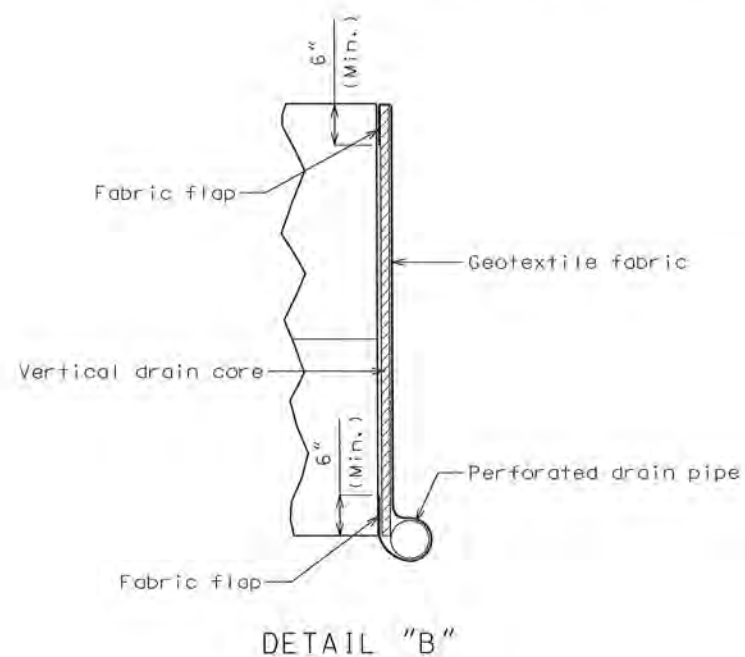
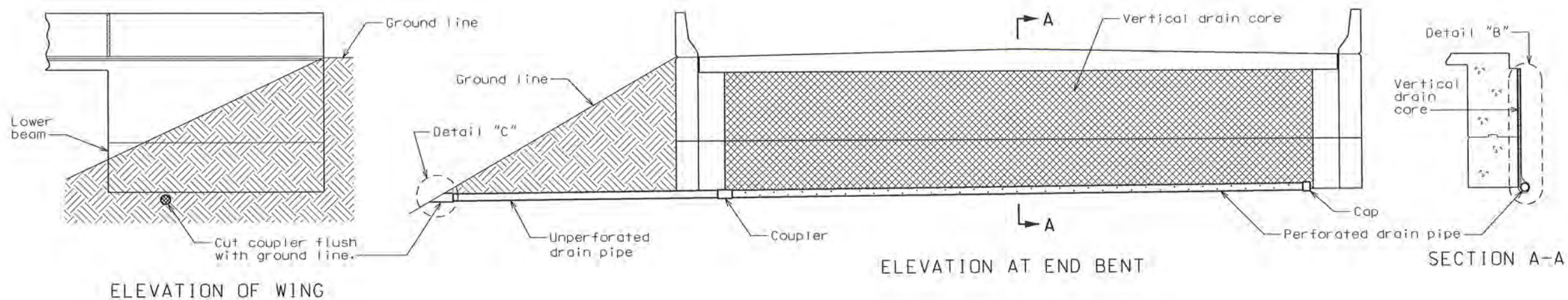


DETAIL "B"

NOTE:

For spacing of K3 and K4 bars, see Barrier Curb at End Bent 2 sheet.

REVISIONS			END BENT 2 DETAILS	
NO	DESCRIPTION	DATE		
ENGINEER'S SEAL			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
JEFFERSON COUNTY, MISSOURI				
PREPARED BY: HORNER SHIFRIN			JOB: 1401810 SHEET NO. 18 of 33	
1/5/2015				



Note:
 Drain pipe may be either 6" diameter corrugated metallic-coated steel pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1 1/2". (See elevation at end bent.)

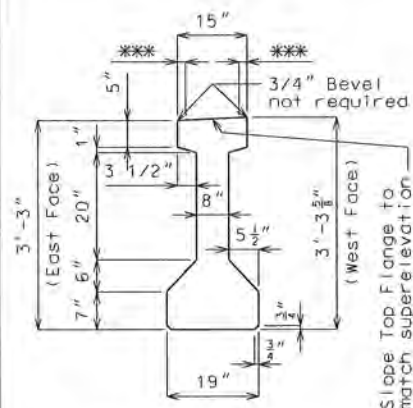
Perforated pipe shall be placed at fill face side at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

REVISIONS			VERTICAL DRAIN AT END BENTS	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY: HORNER SHIFRIN	JOB: 1401810
			1/5/2015	SHEET NO. 19 of 33

4:07:55 PM koklues
 ...*Cadd\$Final Plans*19_vdt.dgn

Designed By: KPH
 Drawn By: JDC
 Checked By: NJM

NOTE: DO NOT SCALE THIS DRAWING, FOLLOW DIMENSIONS



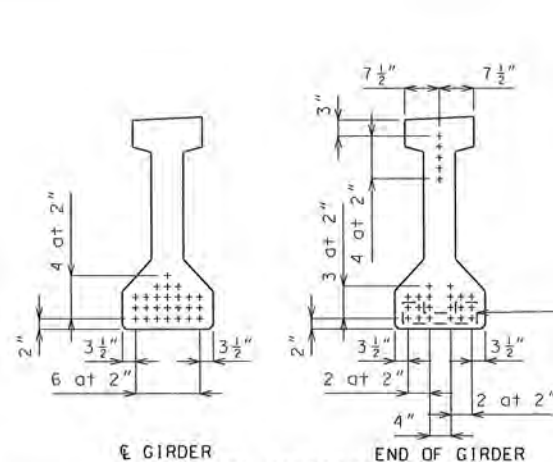
GIRDER DIMENSIONS

Concrete for prestressed girders shall be Class A-1 with $f'c = 6000$ psi and $f'ci = 5500$ psi.

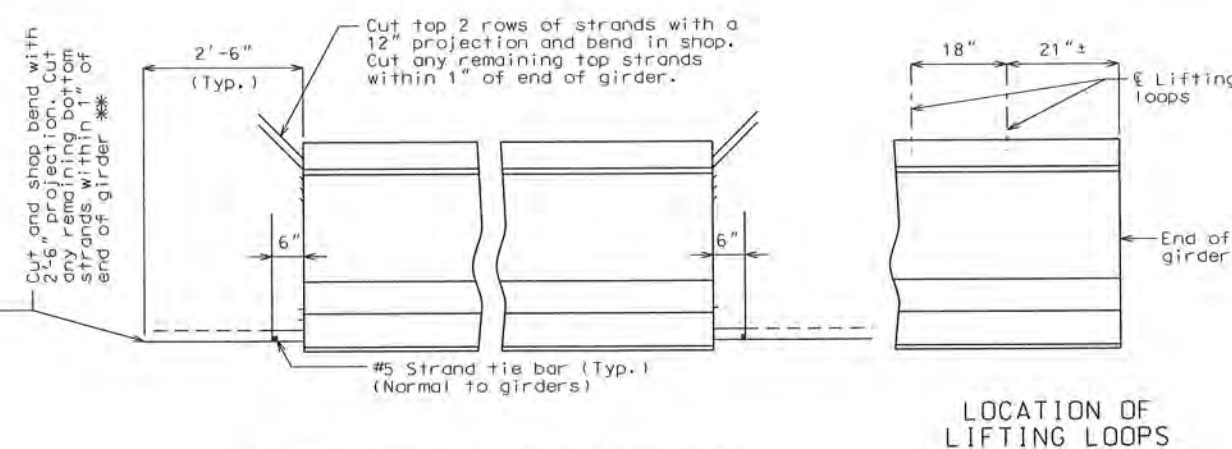
(+) indicates prestressing strand.

Use 25 strands with an initial prestress force of 775 kips.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 1/2 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.



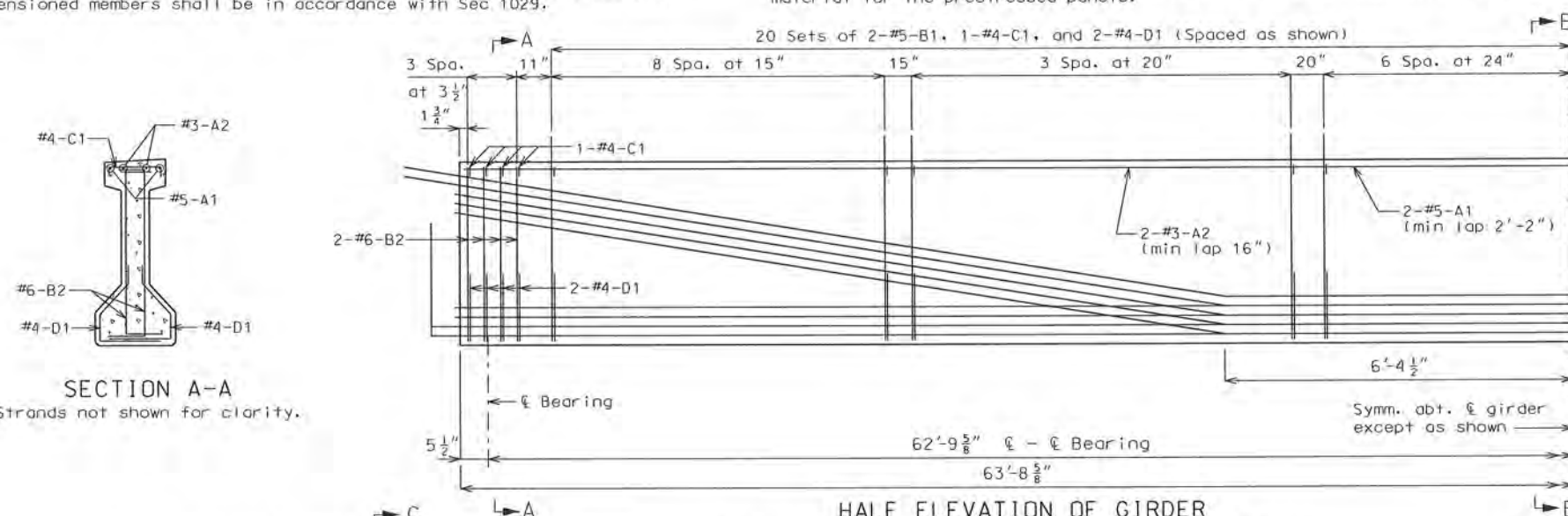




STRAND DETAILS AT GIRDER ENDS

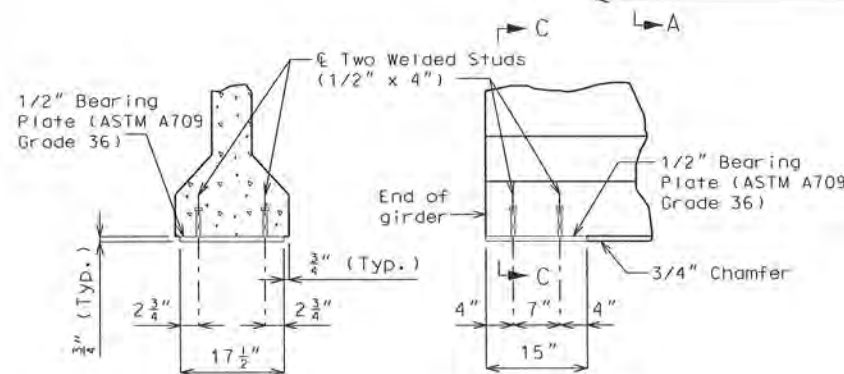
*** At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

*** At contractor's option a 1 1/2" to 1 3/4" smooth finish strip is permitted to facilitate placement of preformed fiber expansion joint material or expanded or extruded polystyrene bedding material for the prestressed panels.



HALF ELEVATION OF GIRDER

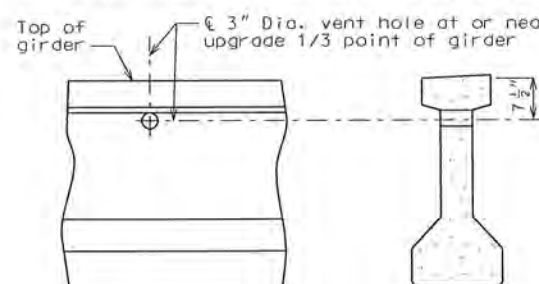
Exterior and interior girders are the same, except for coil ties, and holes for steel intermediate diaphragms.



SECTION C-C
BEARING PLATE DETAILS

Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete I-girder per each.

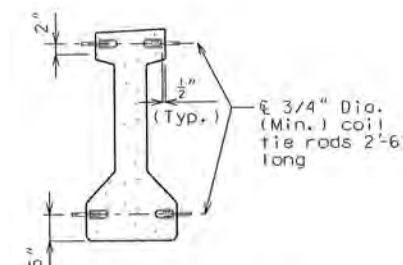


PART ELEVATION
OF GIRDER

Place vent holes at or near upgrade 1/3 point of girders and clear reinforcing steel or strands by 1 1/2" minimum and steel intermediate diaphragm bolt connections by 6" minimum.



PART SECTION
NEAR VENT HOLE



DETAILS OF COIL TIES

BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
4	5 A1	32'-5"	20	
4	3 A2	32'-0"	20	
78	5 B1	4'-8 ³ / ₈ "	11	
16	6 B2	4'-1"	11	
47	4 C1	15"	10	
94	4 D1	2'-7"	9	

All dimensions are out to out.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

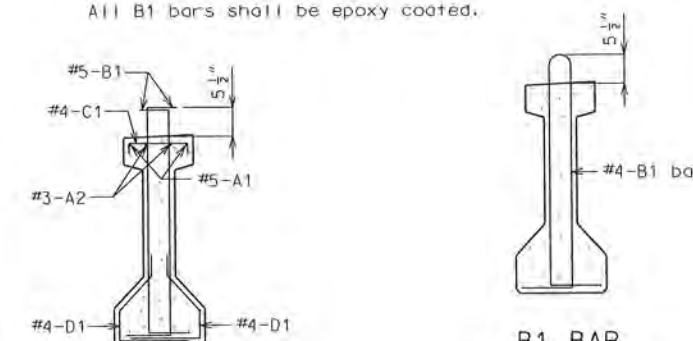
Actual lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1".

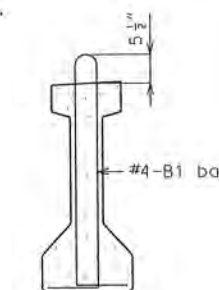
All reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.



SECTION B-B
Strands not shown for clarity.



B1 BAR
PERMISSIBLE
ALTERNATE
SHAPE

Cost of 3/4" Dia. coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete I-Girder.

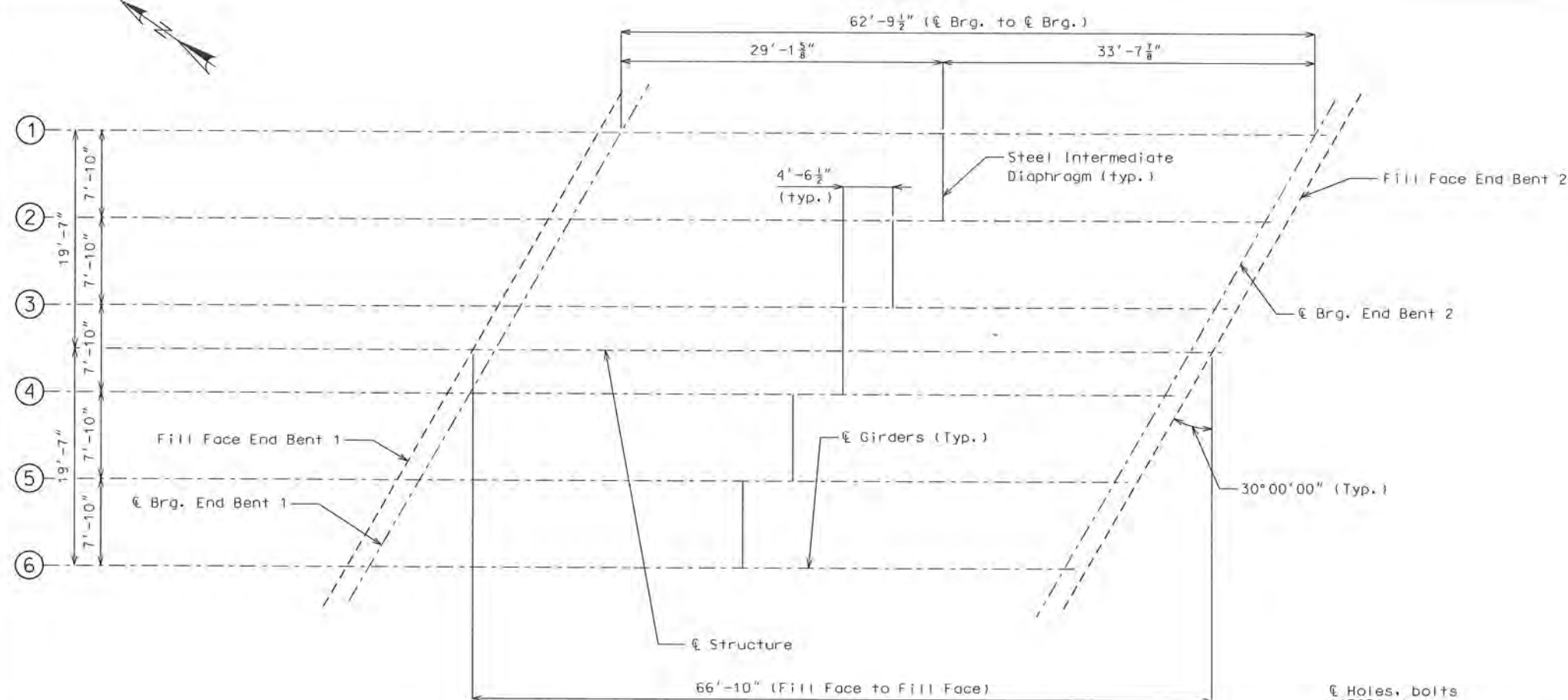
Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting through forms. Studs are to be left in place or replaced with temporary plugs until girders are erected, then replaced by coil tie rods.

For location of coil ties, see sheets no. 15 & 17.

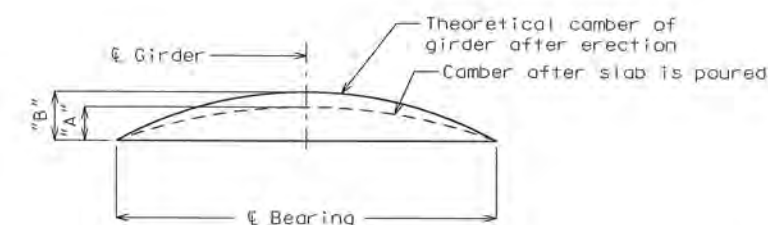
The 1 1/2" Dia. holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed.

For details of diaphragms and Girder Camber Diagram, see Framing Plan and Steel Intermediate Diaphragm sheet.

REVISIONS NO DESCRIPTION DATE			PRECAST PRESTRESSED CONCRETE I-GIRDERS	
			KONERT ROAD BRIDGE OVER ROMAINE CREEK	
			FEDERAL PROJECT NO. BRM-5403(663)	
ENGINEER'S SEAL 			JEFFERSON COUNTY, MISSOURI	
PREPARED BY: 1/5/2015			JOB: 1401810 SHEET NO. 20 of 33	



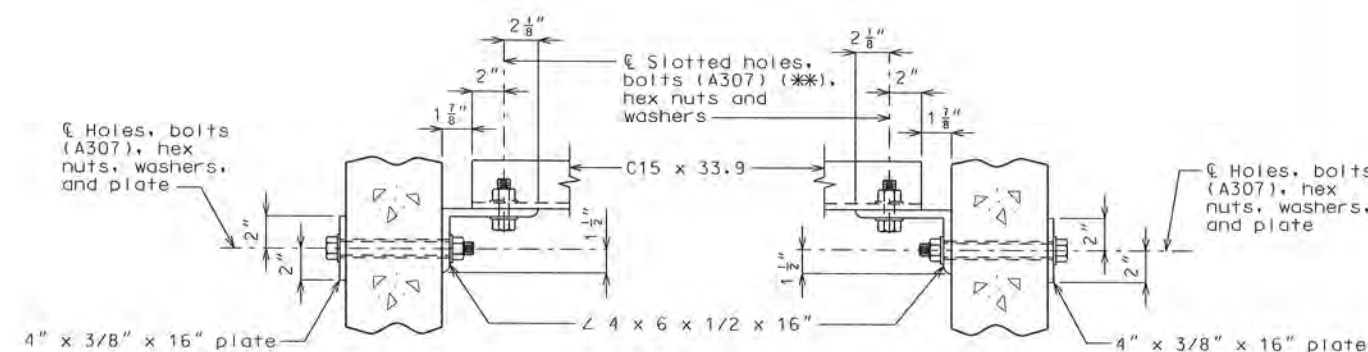
PLAN SHOWING LOCATION OF INTERMEDIATE DIAPHRAGMS
Note: All dimensions are horizontal.



	"A"	"B"
Ext. Girders	1 3/16"	2 3/16"
Int. Girders	1 1/16"	2 3/16"

Conversion factors for girder camber:
0.25 pt. = 0.7125 x 0.5 pt.

GIRDER CAMBER DIAGRAM



SECTION C-C

SECTION D-D

STEEL DIAPHRAGM NOTES:

(*) In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16" Dia. holes and one hardened washer per bolt.

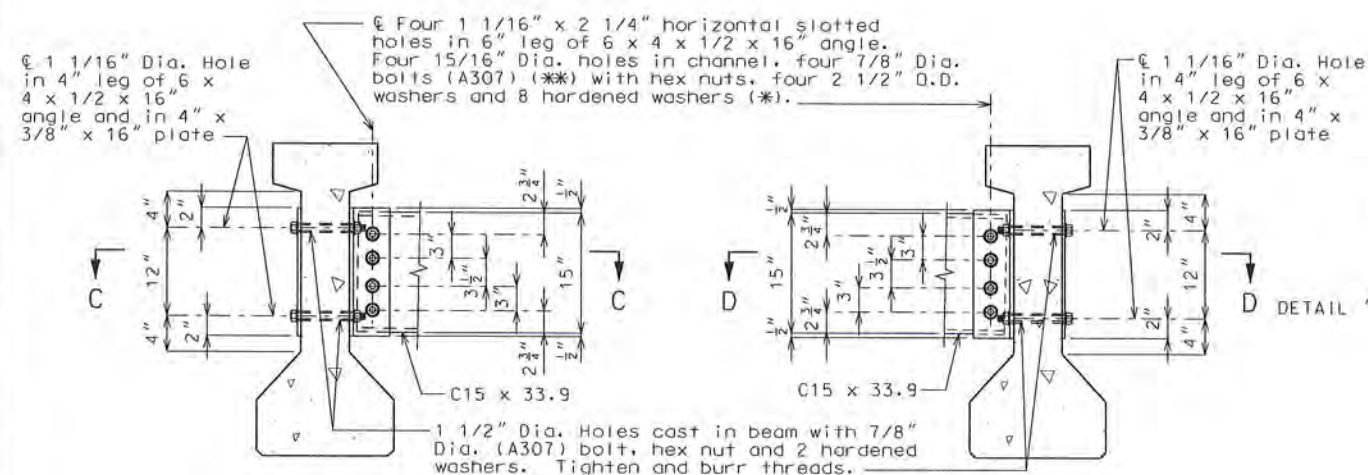
(**) Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. A325 bolts may be substituted for and installed in accordance with the requirements for the specified A307 bolts.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

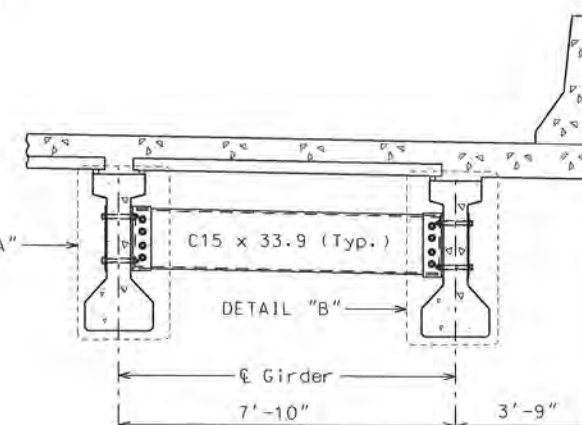
Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

Shop drawings will not be required for steel intermediate diaphragms and angle connections.



DETAIL "A"

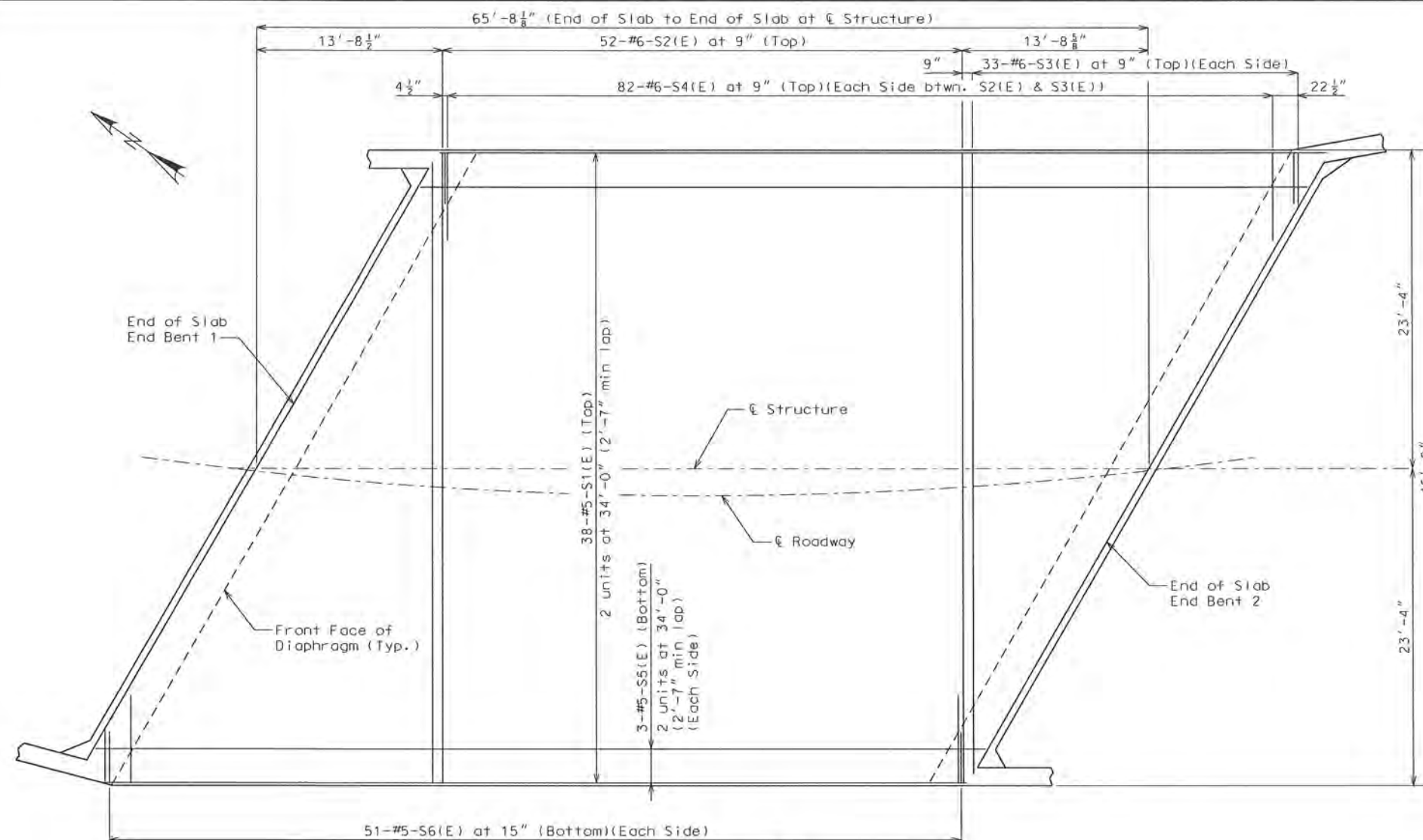
DETAIL "B"



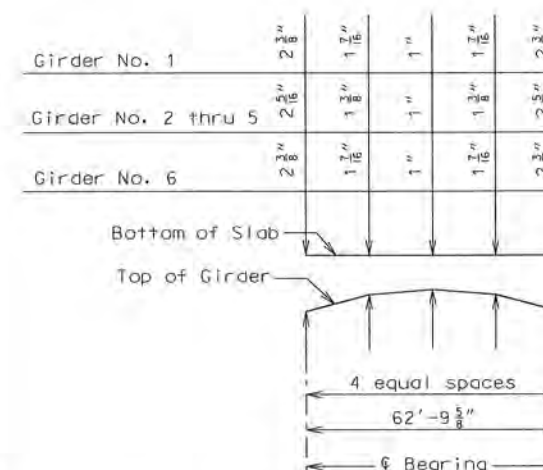
PART SECTION SHOWING INTERMEDIATE DIAPHRAGM

NOTE: DO NOT SCALE THIS DRAWING, FOLLOW DIMENSIONS

REVISIONS			FRAMING PLAN AND STEEL INT. DIAPHRAGMS	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
ENGINEER'S SEAL STATE OF MISSOURI A. B. BENDER NUMBER E-26839 REGISTERED PROFESSIONAL ENGINEER			PREPARED BY: 1/5/2015	JOB: 1401810 SHEET NO. 21 of 33



PLAN OF SLAB SHOWING REINFORCEMENT



THEORETICAL SLAB HAUNCHING DIAGRAM
Measured along ℓ Girder, adjusted for grade

	THEORETICAL BOTTOM OF SLAB ELEVATIONS AT ℓ OF GIRDER (PRIOR TO FORMING FOR SLAB) **				
	(62'-9 5/8" ℓ brg. - ℓ brg.)				
	ℓ brg.	.25	.50	.75	ℓ brg.
Girder No. 1	472.81	473.02	473.19	473.33	473.44
Girder No. 2	473.08	473.28	473.46	473.60	473.71
Girder No. 3	473.35	473.55	473.73	473.87	473.98
Girder No. 4	473.61	473.82	474.00	474.14	474.24
Girder No. 5	473.88	474.09	474.27	474.40	474.51
Girder No. 6	474.15	474.36	474.53	474.67	474.78

**Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier curb.

NOTES:

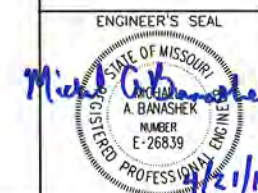
The contractor shall pour and satisfactorily finish the roadway slab at a rate of not less than 25 cubic yards per hour.

Retarder, if used, shall be an approved type.

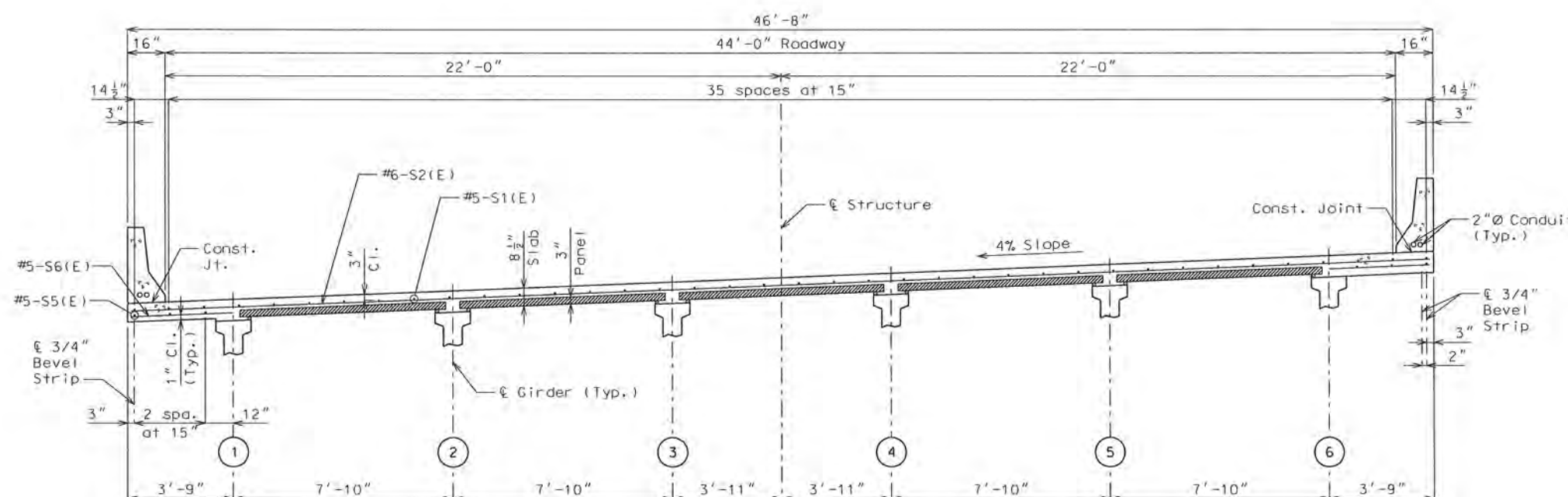
After pouring the concrete diaphragms for the end bents, allow 30 minutes and no more than 2 hours before slab is poured.

For details of precast panels, see Precast Prestressed Panels Sheet.

REVISIONS			SLAB PLAN	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY: HORNER SHIFRIN	JOB: 1401810 SHEET NO. 22 of 33



SECTION OF SLAB



NOTE: DO NOT SCALE THIS DRAWING, FOLLOW DIMENSIONS

Bridge No.	County	Sheet No.	Total Sheets
FAU-8	JEFFERSON	23	33

GENERAL NOTES:

PRESTRESSED PANELS:

Concrete for prestressed panels shall be Class A-1 with $f'c = 6,000$ psi, $f'ci = 3,500$ psi.

The top surface of all panels shall receive a scored finish with a depth of scoring of $1/8"$ perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength uncoated seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = $3/8"$ and nominal area = 0.085 sq. in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When square end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached $3,000$ psi compressive strength.

Minimum preformed fiber expansion joint material or polystyrene bedding material thickness shall be $3/4$ inch. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances. No more than 2 inches total thickness shall be used.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be $1/4$ inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Slab thickness over prestressed panels varies due to girder camber.

At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

REINFORCING STEEL:

All dimensions are out to out.

Minimum clearance to reinforcing steel shall be $1\ 1/2"$, unless otherwise shown.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest inch.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Welded wire fabric or welded deformed bar mats providing a minimum area of reinforcing perpendicular to strands of 0.22 sq. in./ft., with spacing parallel to strands sufficient to insure proper handling, may be used in lieu of the #3-P2 bars shown. Wire or bar diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The reinforcing steel shall be tied securely to the $3/8"$ dia. strands with the following maximum spacing in each direction: #3-P2 bars at 16 inches.

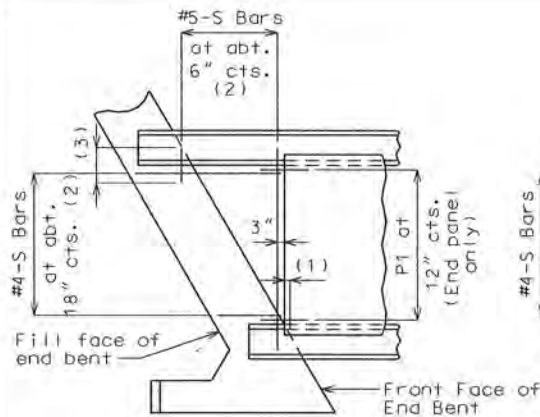
Welded wire fabric or welded deformed bar mats at $2'-0"$.

Tie the #3-U1 bars to the #3-P2 bars, to the welded wire fabric or the welded deformed bar mats at about $3'-0"$ centers.

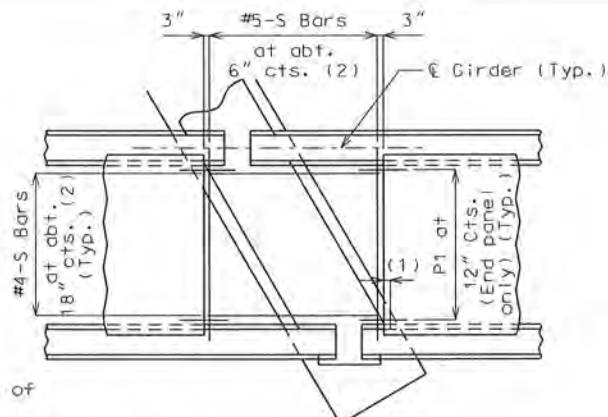
All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

REVISIONS			PRECAST PRESTRESSED PANELS	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	JOB: 1401810
			1/5/2015	SHEET NO.
			HORNER SHIFRIN	23 of 33

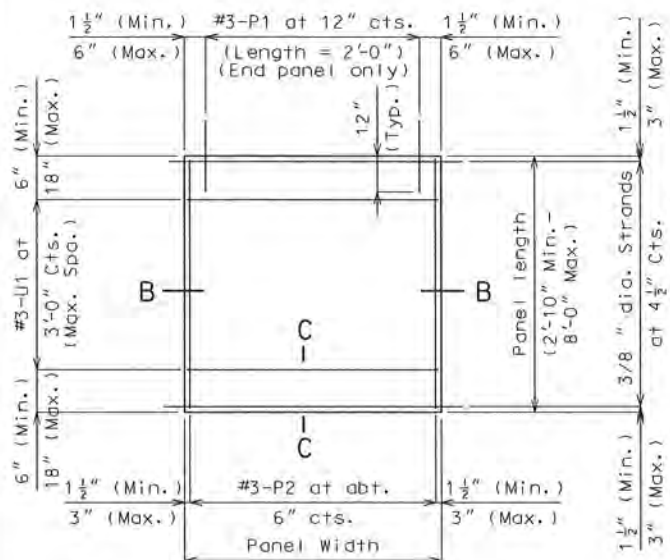


PANELS-SQUARED ENDS

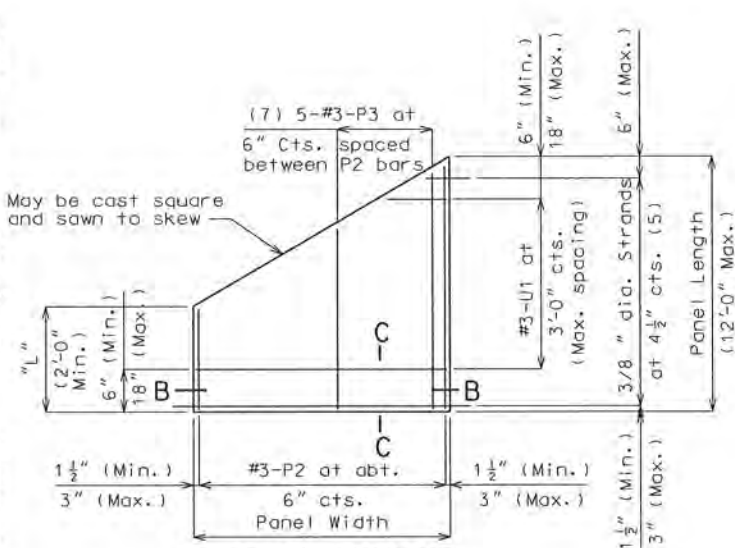


PANELS-SKEWED ENDS

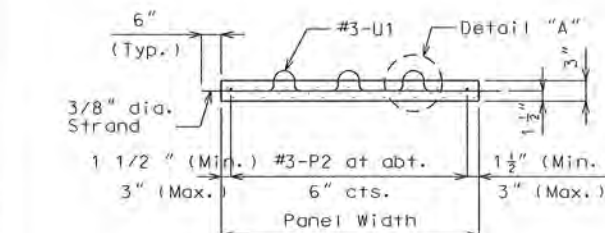
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



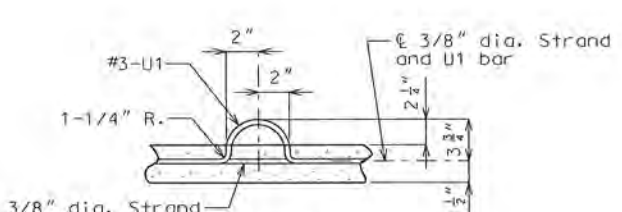
PLAN OF PRECAST PRESTRESSED PANEL



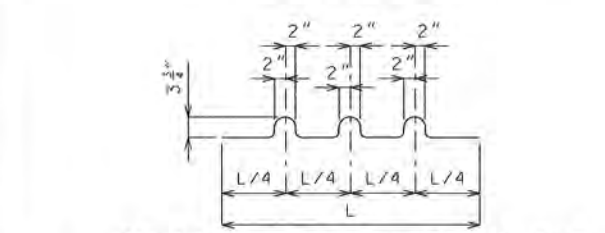
PLAN OF PRECAST PRESTRESSED PANEL (SKEWED END-OPTIONAL)



SECTION B-B

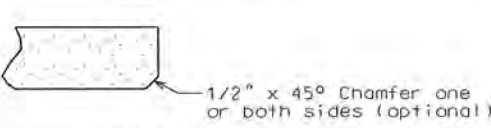


DETAIL "A"



BENDING DIAGRAM FOR U1 BAR

(U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars).



SECTION C-C

NOTES:

Cost of S-bars will be considered completely covered by the contract unit price for the slab

S-bars are not listed in the bill of reinforcing.

(1) End panels shall be dimensioned $1"$ min. to $1\ 1/2"$ max. from the inside face of diaphragm.

(2) S-bars shown are bottom steel in slab between panels and used with squared end panels only.

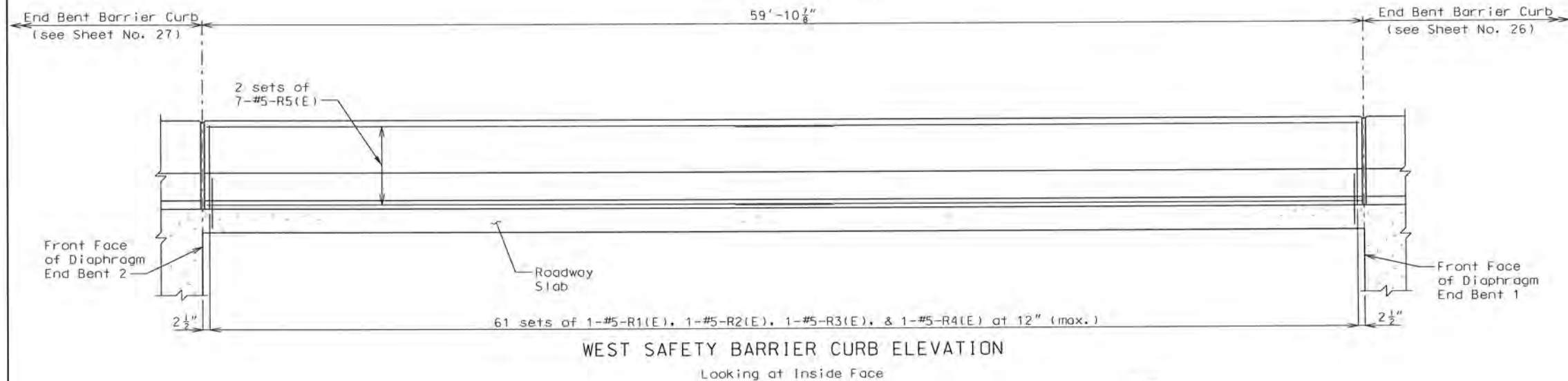
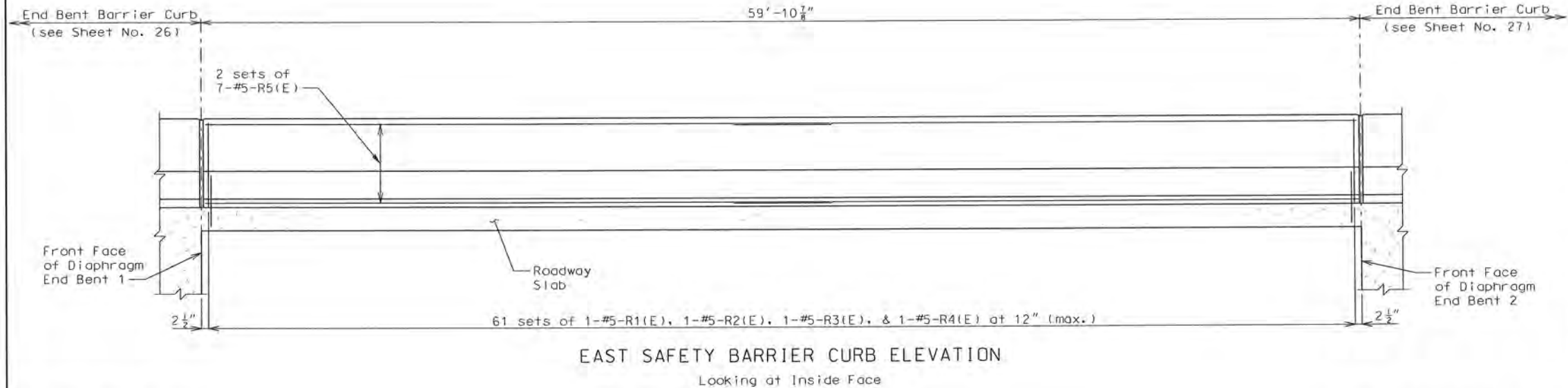
(3) Extend S-bars 18 inches beyond the front face of end bents only.

(4) In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(5) Any strand $2'-0"$ or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands $2'-0"$ or shorter may then be deboned at the fabricator's option.

(6) All panel support pads shall be glued to the girder. When support thickness exceeds $1\ 1/2$ inches, the pads shall be glued top and bottom. The glue used shall be the type recommended by the panel support pads manufacturer.

(7) Use #3-P3 bars if panel is skewed 45° or greater.



NOTES:

Top of safety barrier curb shall be built parallel to grade with safety barrier curb joints (except at end bents) normal to grade.

All exposed edges of safety barrier curb shall have either a 1/2" radius or a 3/8" bevel, unless otherwise noted.

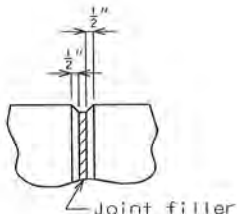
Payment for all concrete and reinforcement, complete-in-place, will be considered completely covered by the contract unit price for safety barrier curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

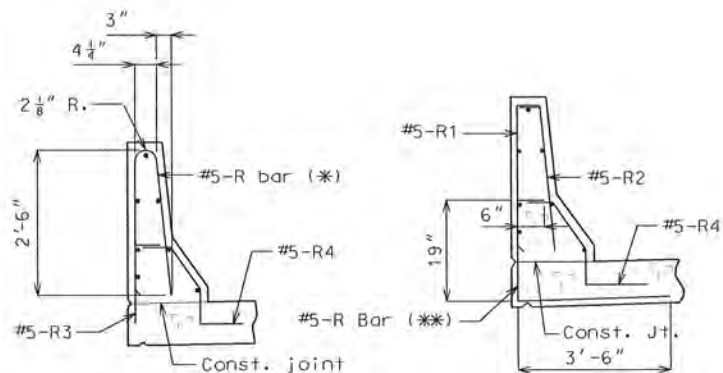
Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

Longitudinal dimensions are measured horizontally.



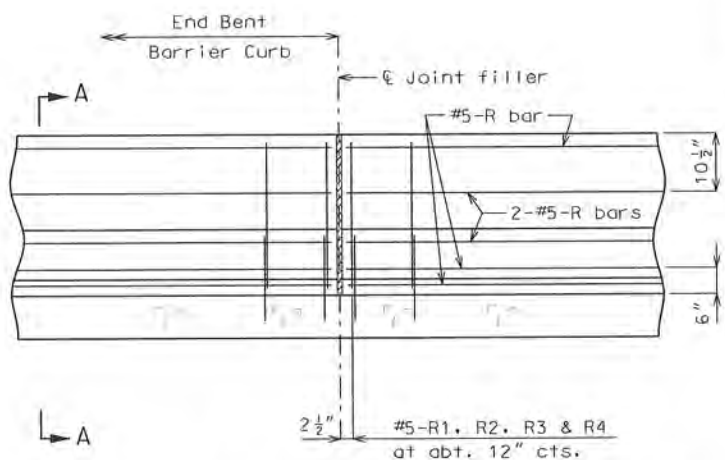
FILLED JOINT DETAIL



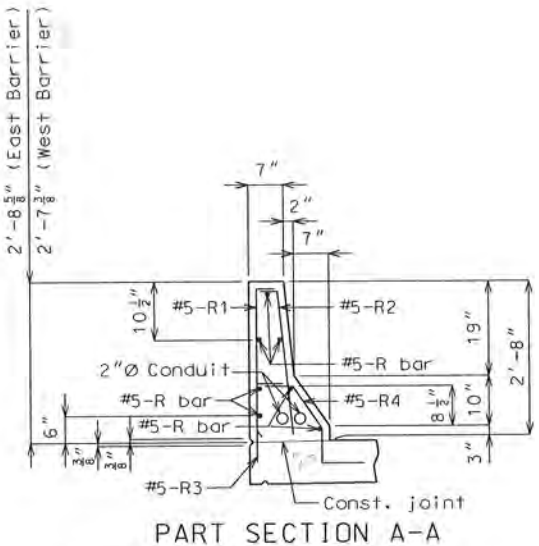
R-BAR PERMISSIBLE ALTERNATE SHAPE

(*) The R1 and R2 bar combination may be furnished as one bar, as shown, at the contractor's option. (All dimensions are out to out.)

(**) The R3 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



PART SECTION OF EAST SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



PART SECTION A-A

Notes:

Use a minimum lap of 2'-11" for #5 horizontal safety barrier curb bars.

The cross-sectional area above the slab = 2.28 sq. ft.

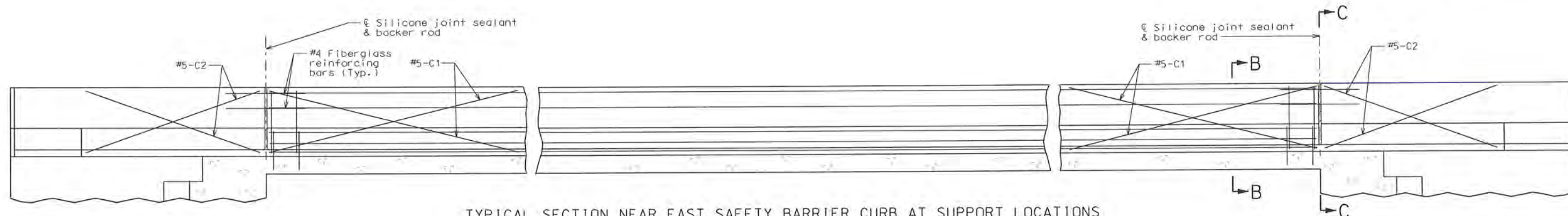
REVISIONS			SAFETY BARRIER CURB ELEVATION AND DETAILS	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY: HORNER SHIFRIN	JOB: 1401810
			1/6/2015	SHEET NO. 24 of 33



1:40:59 PM koki.les
C:\Users\koki\Documents\Plans\24_sbc.dgn

Designed By: KPH
Drawn By: KPH
Checked By: NJM

NOTE: DO NOT SCALE THIS DRAWING, FOLLOW DIMENSIONS



TYPICAL SECTION NEAR EAST SAFETY BARRIER CURB AT SUPPORT LOCATIONS
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)
(West Safety Barrier Curb similar.)

Notes:

Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

Payment for all concrete and reinforcement, complete-in-place, will be considered completely covered by the contract unit price for safety barrier curb per linear foot.

Concrete in the safety barrier curb shall be Class B-1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

The curb shall be cured by application of Type 1-0 or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 will not be permitted.

Notes:

Joint sealant and backer rods shall be used on all slip-form barrier curbs instead of joint filler and shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

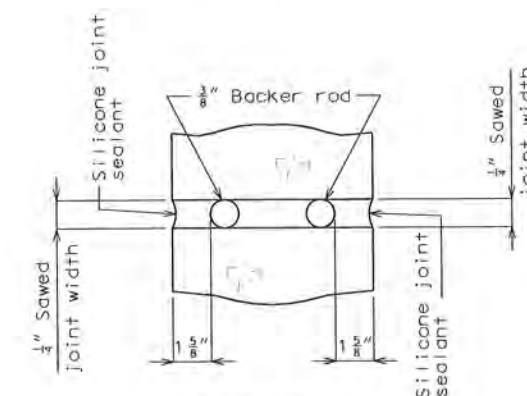
Plastic waterstop shall not be used with slip-form option.

C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

For Slip-Form option, all sides of the safety barrier curb shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

Cost of silicone joint sealant and backer rod complete in place to be included on the contract unit price for Safety Barrier Curb.

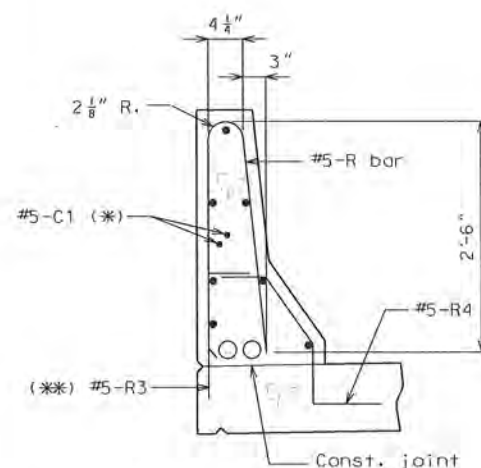
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



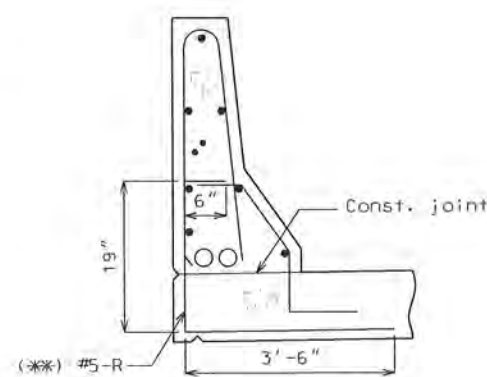
SECTION A-A

Note:

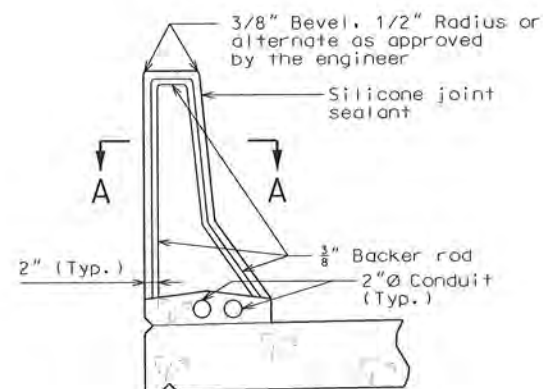
Cost of silicone joint sealant and backer rod complete-in-place will be considered completely covered by the contract unit price for Safety Barrier Curb.



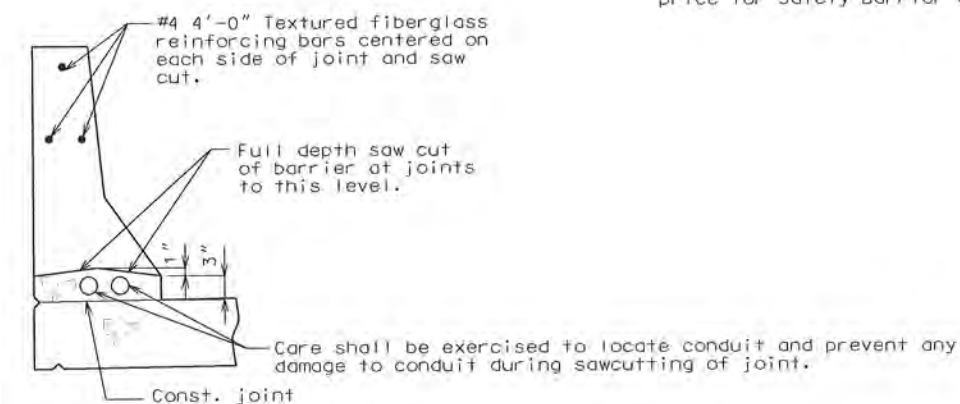
PART SECTION B-B



PART SECTION B-B
(Optional #5-R bar shown)



SECTION THRU JOINT



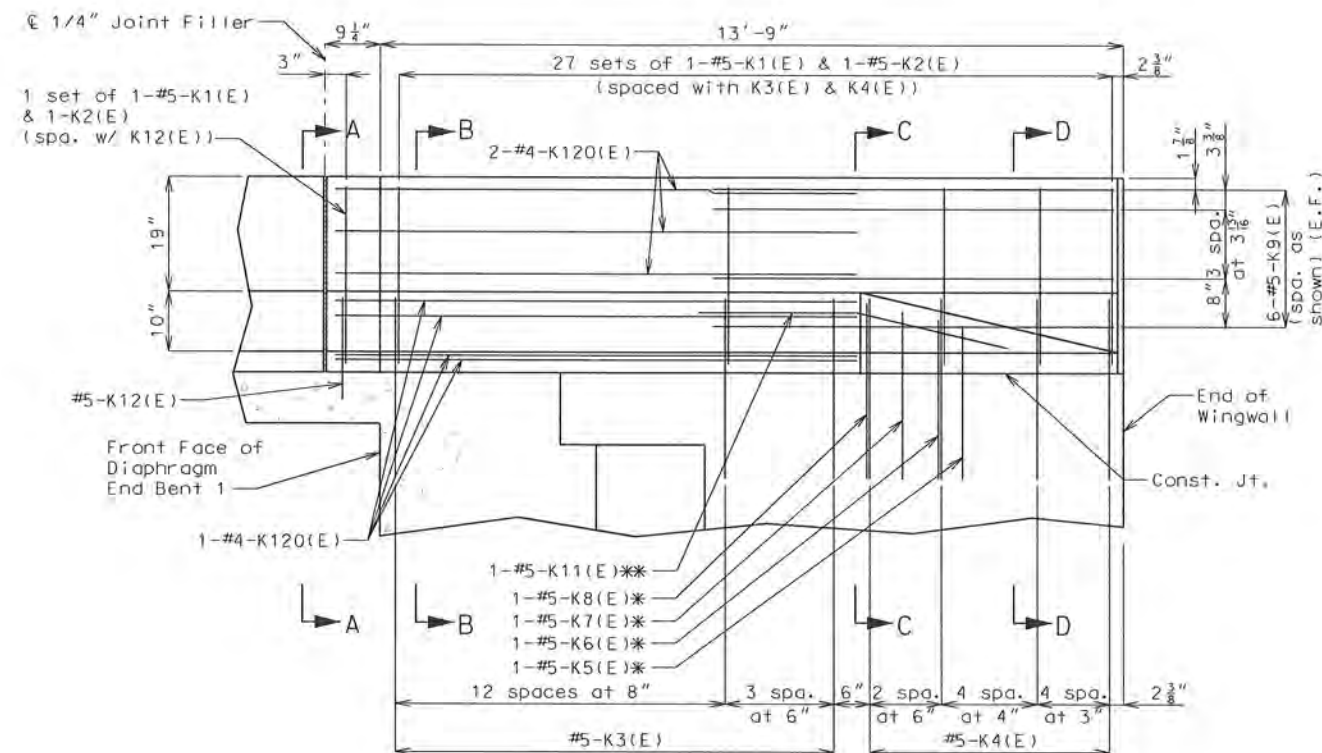
PART SECTION C-C

Notes:

(*) Each side of joint location.

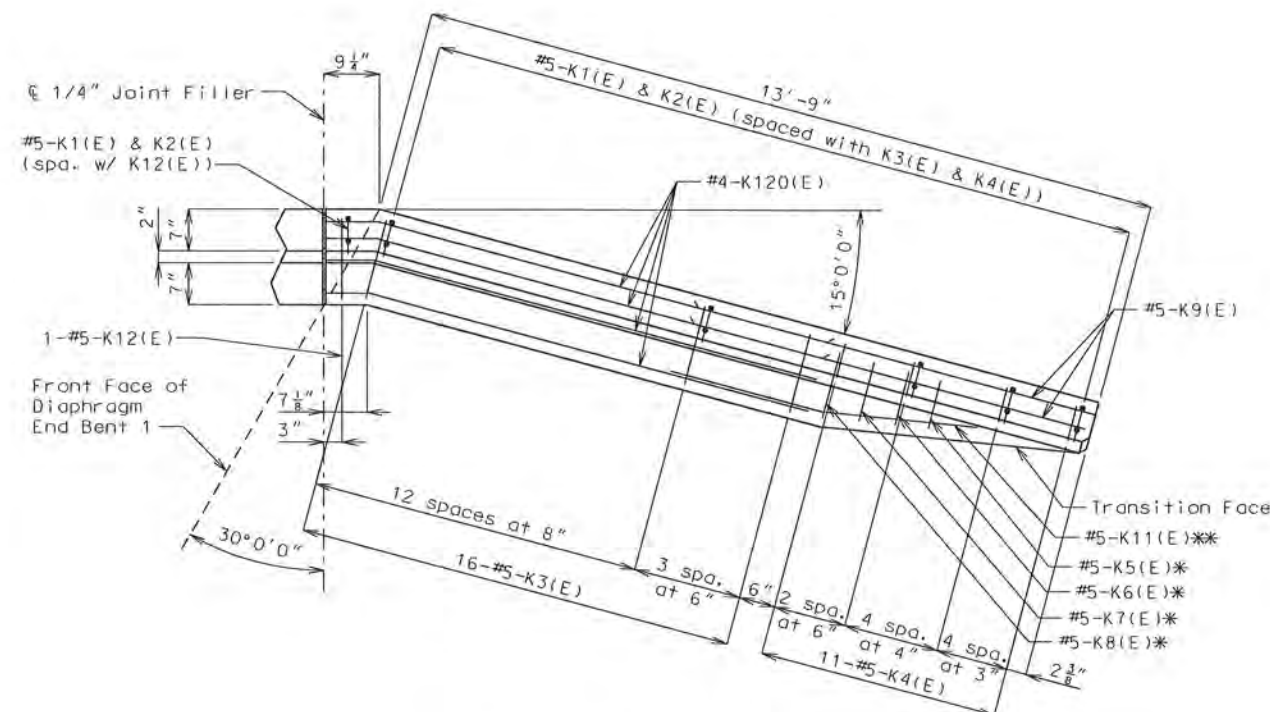
(**) The R3 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar at the contractor's option.

<table><tr><th colspan="3">REVISIONS</th></tr><tr><th>NO</th><th>DESCRIPTION</th><th>DATE</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>			REVISIONS			NO	DESCRIPTION	DATE													SAFETY BARRIER CURB SLIP-FORM OPTION	
REVISIONS																						
NO	DESCRIPTION	DATE																				
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)																			
ENGINEER'S SEAL			JEFFERSON COUNTY, MISSOURI																			
			PREPARED BY:  HORNER SHIFRIN																			
			JOB: 1401810 SHEET NO. 25 of 33																			



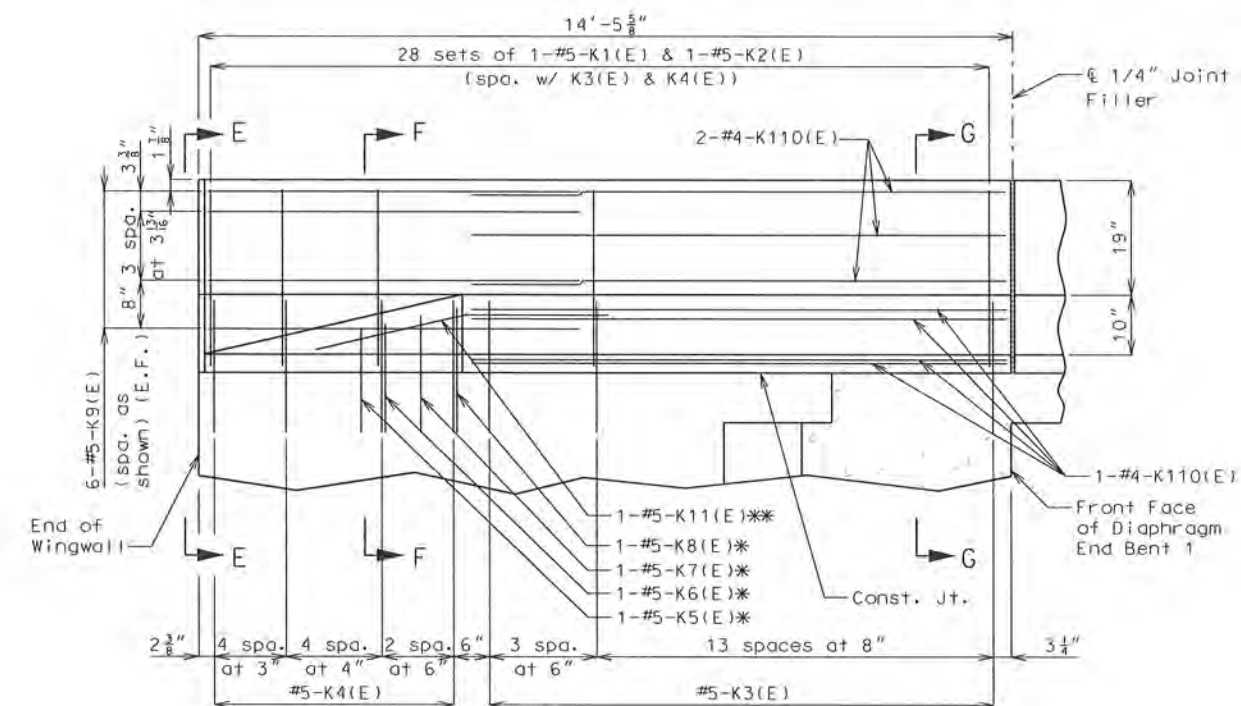
ELEVATION OF WEST SAFETY BARRIER CURB

Note: Horizontal dimensions given along outside face of Safety Barrier Curb.



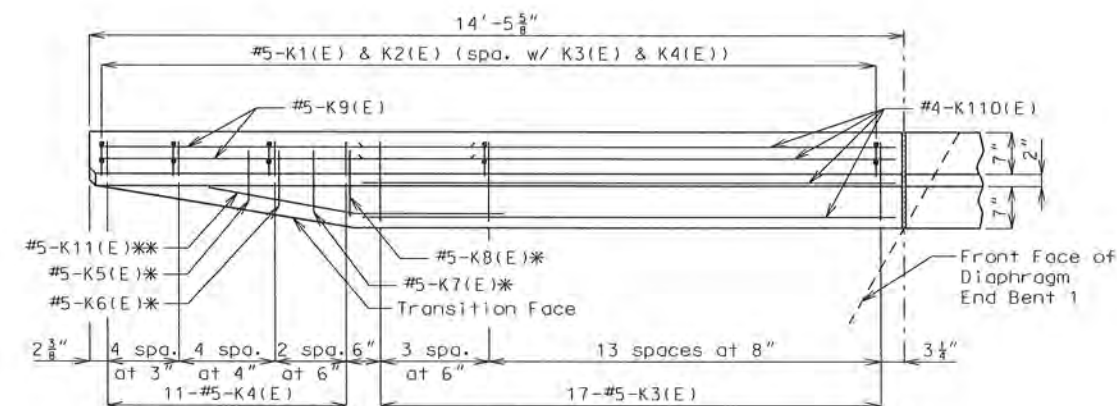
PLAN OF WEST SAFETY BARRIER CURB

Note: Use a minimum lap of 2'-0" between K9 bars and K120 bars.



ELEVATION OF EAST SAFETY BARRIER CURB

Note: Horizontal dimensions given along inside face of Safety Barrier Curb.



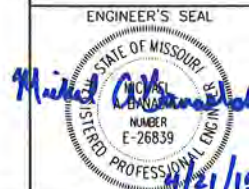
PLAN OF EAST SAFETY BARRIER CURB

Note: Use a minimum lap of 2'-0" between K9 and K110 bars.

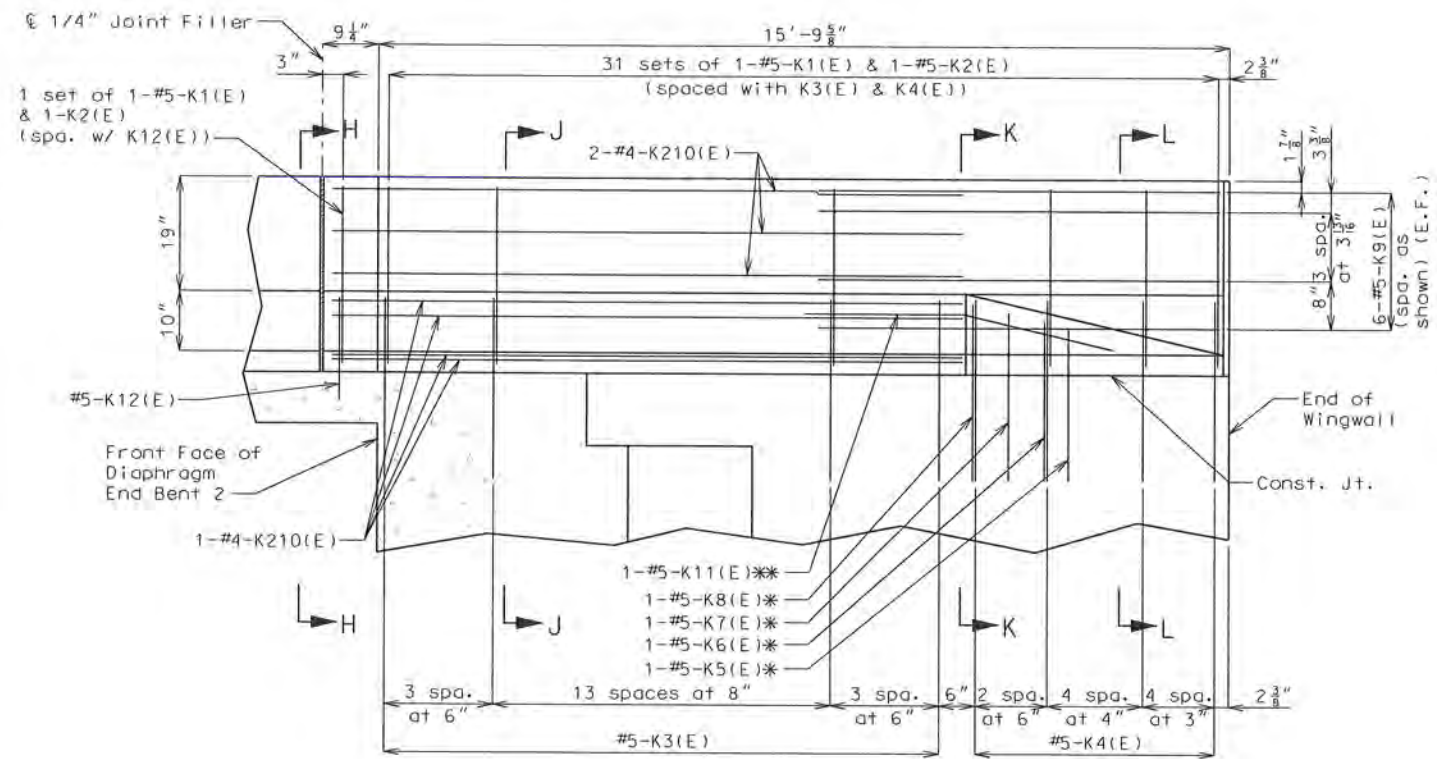
NOTES:

- Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb."
 - For section views, see Barrier Curb at End Bent Details Sheet.
 - For details of guard rail attachment, see Barrier Curb at End Bent Details Sheet.
 - For K-Bar alternate shapes, see Barrier Curb at End Bent Details Sheet.
- * Space with #5-K4(E) bars.
- ** Fit bar to follow transition face of curb.

REVISIONS			BARRIER CURB AT END BENT 1	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMANE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	JOB: 1401810
			1/5/2015	SHEET NO.
				26 of 33

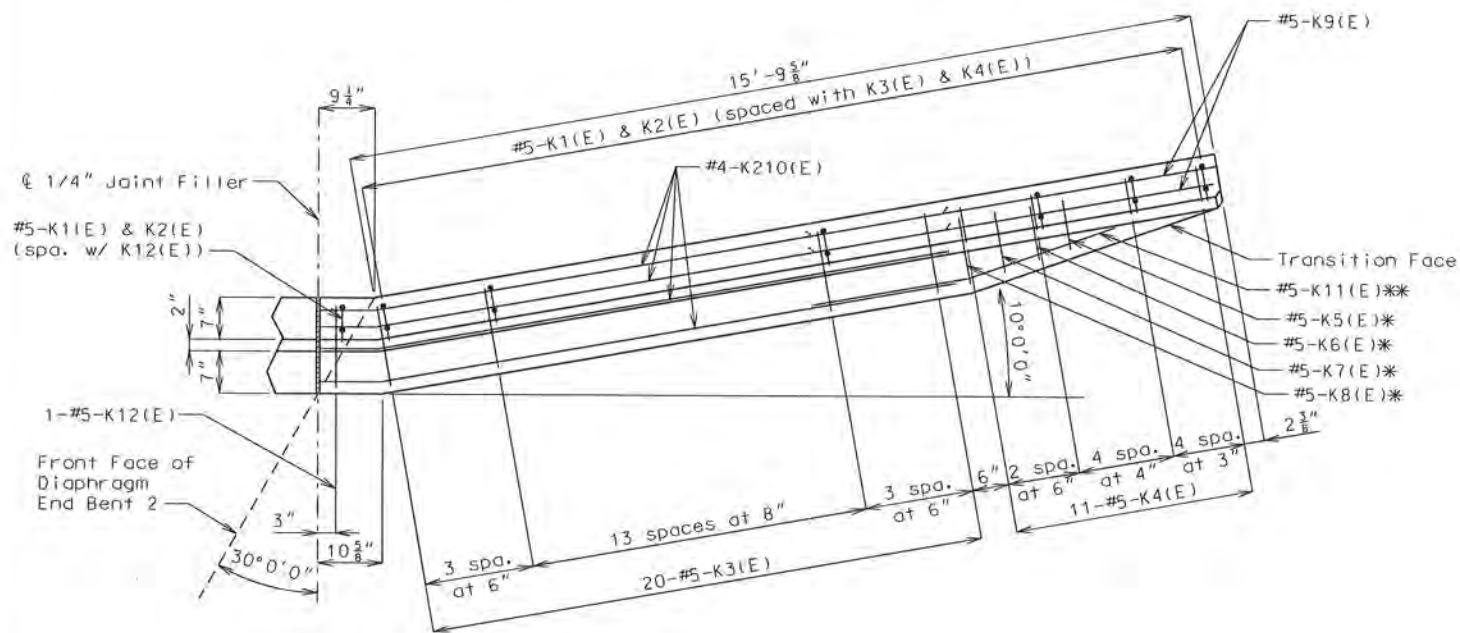


HORNER
SHIFRIN



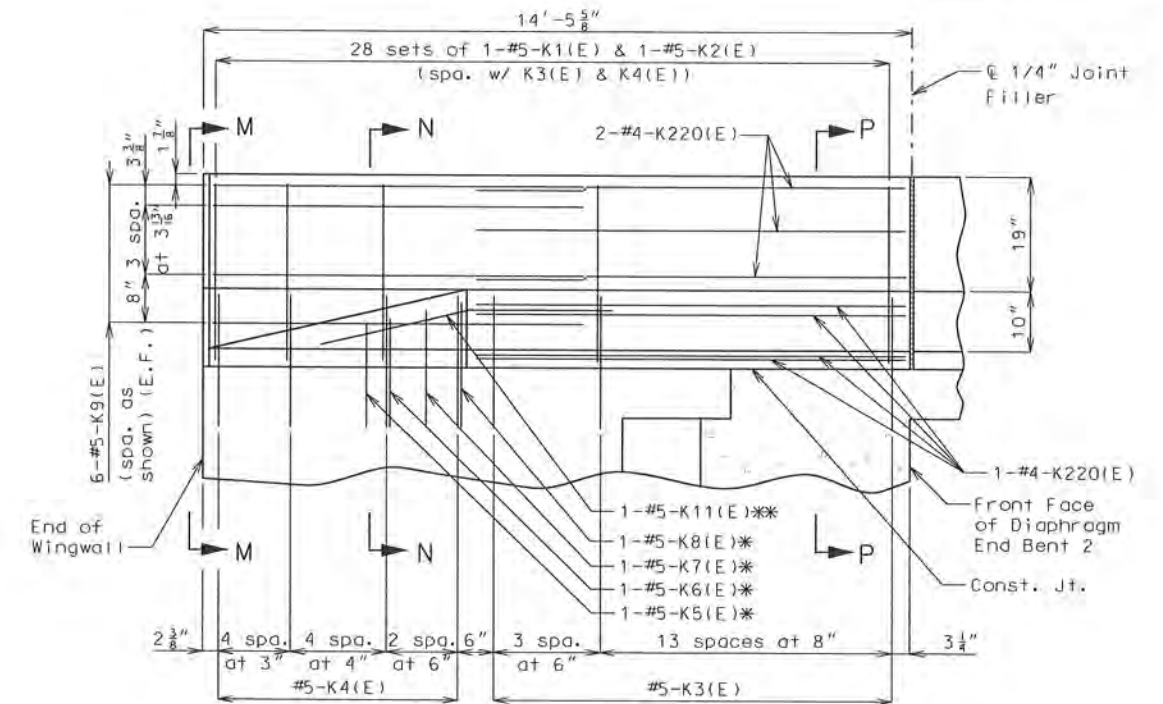
ELEVATION OF EAST SAFETY BARRIER CURB

Note: Horizontal dimensions given along outside face of Safety Barrier Curb.



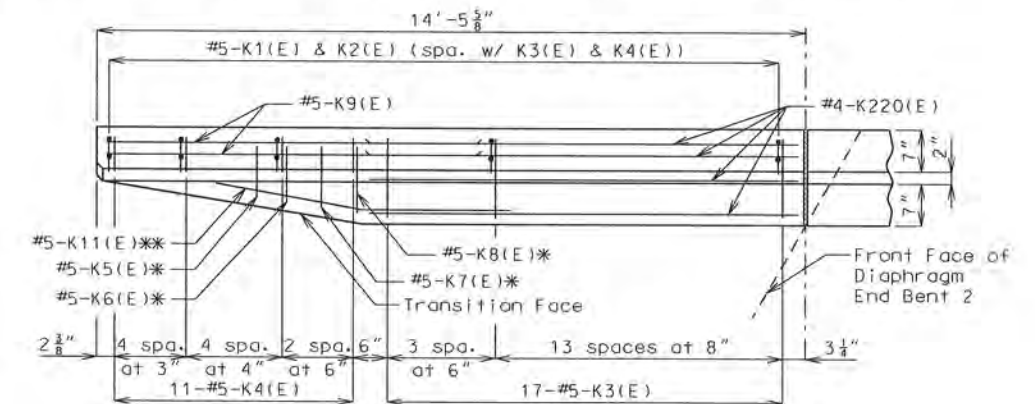
PLAN OF EAST SAFETY BARRIER CURB

Note: Use a minimum lap of 2'-0" between K9 bars and K210 bars.



ELEVATION OF WEST SAFETY BARRIER CURB

Note: Horizontal dimensions given along inside face of Safety Barrier Curb.



PLAN OF WEST SAFETY BARRIER CURB

Note: Use a minimum lap of 2'-0" between K9 and K220 bars.

NOTES:

- Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb."
- For section views, see Barrier Curb at End Bent Details Sheet.
- For details of guard rail attachment, see Barrier Curb at End Bent Details Sheet.
- For K-Bar alternate shapes, see Barrier Curb at End Bent Details Sheet.
- * Space with #5-K4(E) bars.
- ** Fit bar to follow transition face of curb.

REVISIONS			BARRIER CURB AT END BENT 2	
NO.	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMANE CREEK	
			FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	JOB: 1401810
			1/5/2015	SHEET NO.
				27 of 33



GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 ($f'c = 4,000$ psi).

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler, except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with $F_y = 60,000$ psi.

Minimum clearance to reinforcing steel shall be $1\frac{1}{2}"$, unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 & #6 bars 18" and 2'-2", respectively.

Mechanical bar splices will be in accordance with Sec 706.

(*) Seal joint between vertical face of approach slab and wing with "Silicone Joint Sealant for Saw Cut and Formed Joints" in accordance with Sec 717.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge or semi-deep slab before pouring the bridge approach slabs.

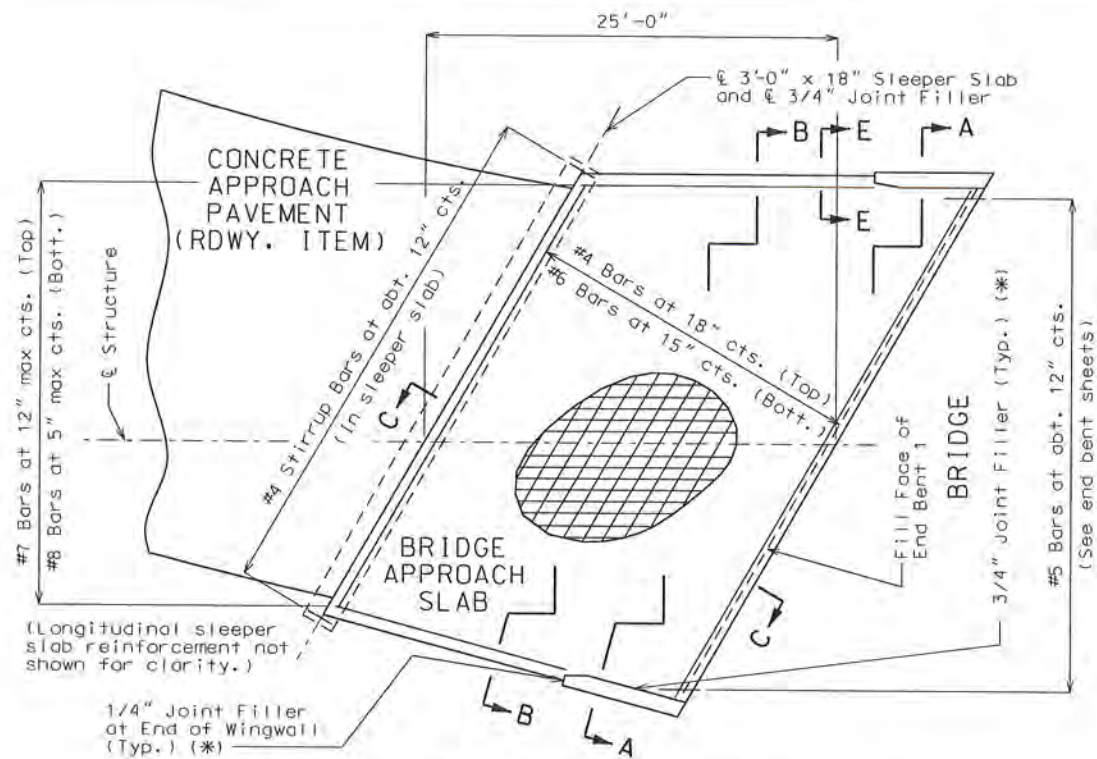
Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Bridge) per square yard.

For Concrete Approach Pavement details, see roadway plans.

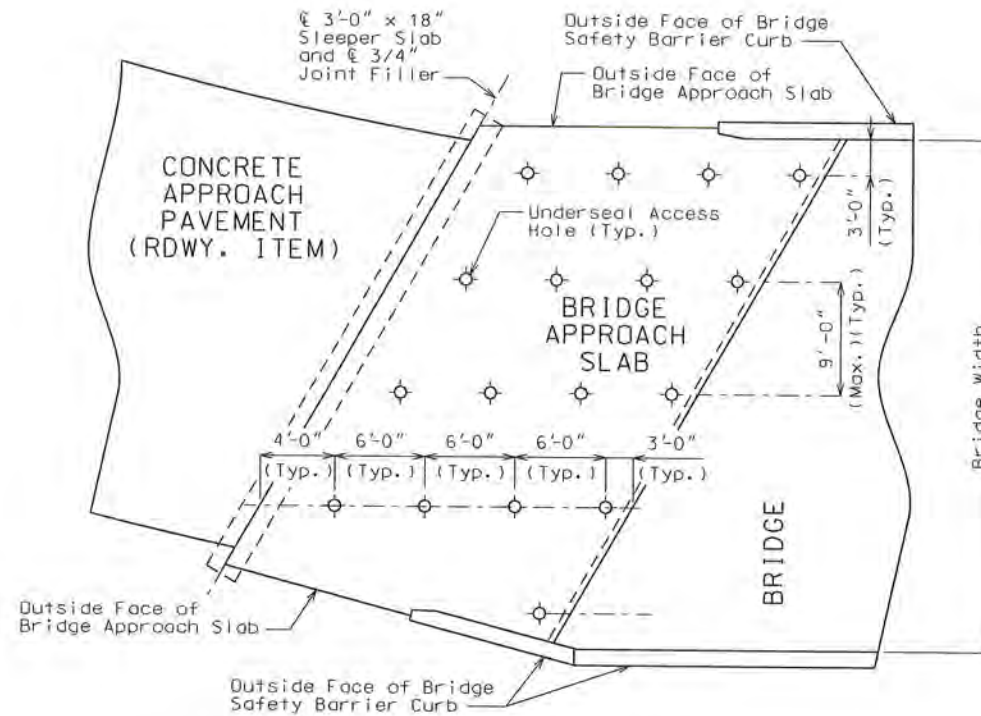
At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired in accordance with Sec 710.

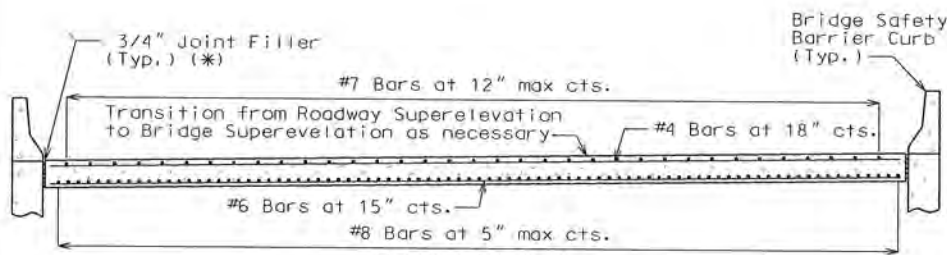
Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.



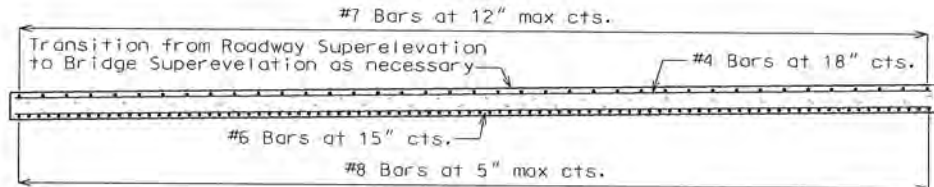
PART PLAN SHOWING REINFORCEMENT



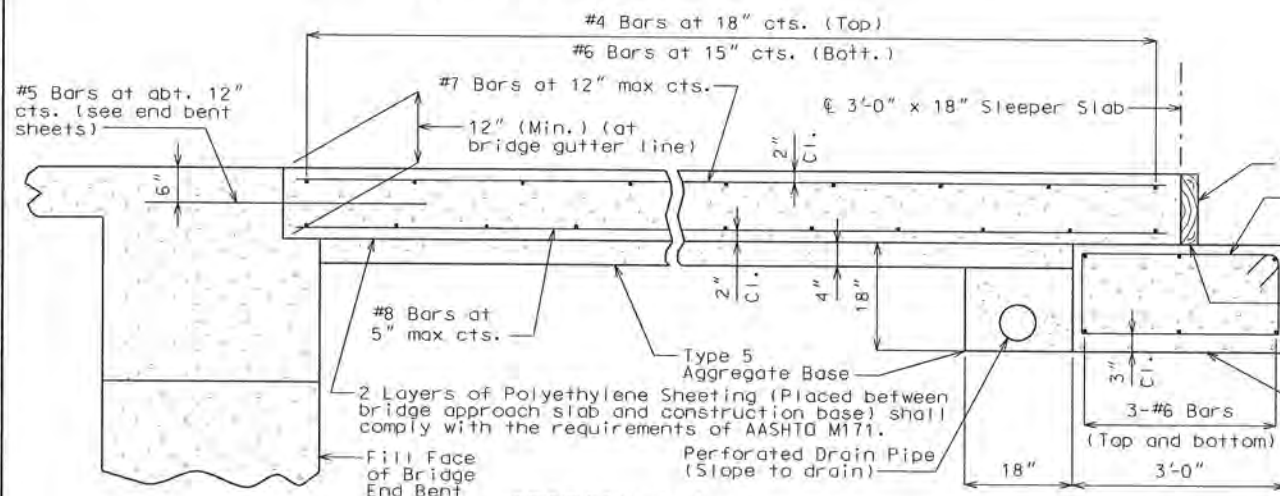
PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



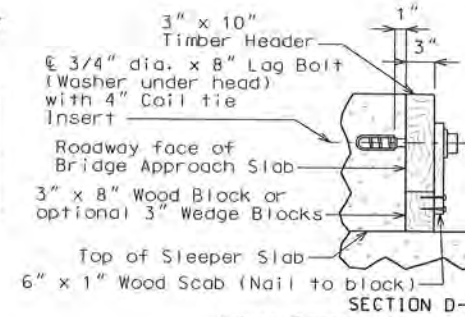
SECTION A-A



SECTION B-B

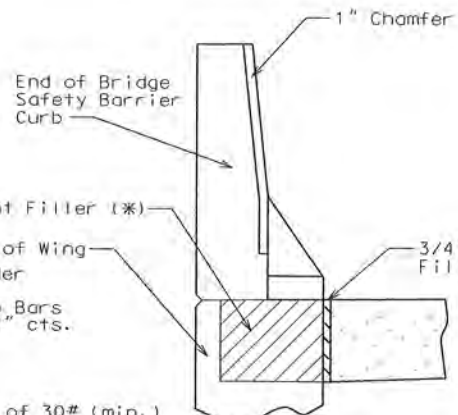


SECTION C-C

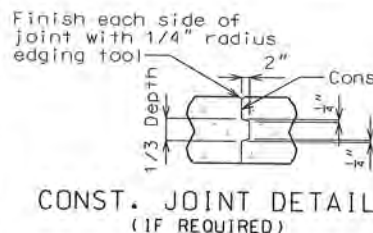


SECTION D-D

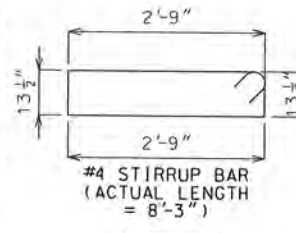
DETAILS OF TIMBER HEADER



SECTION E-E (BETWEEN END OF WINGWALL AND APPROACH SLAB)

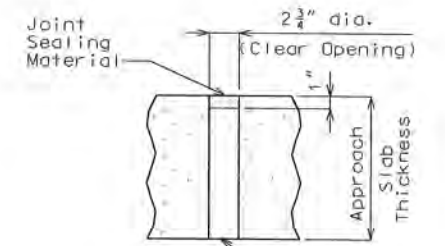


CONST. JOINT DETAIL (IF REQUIRED)



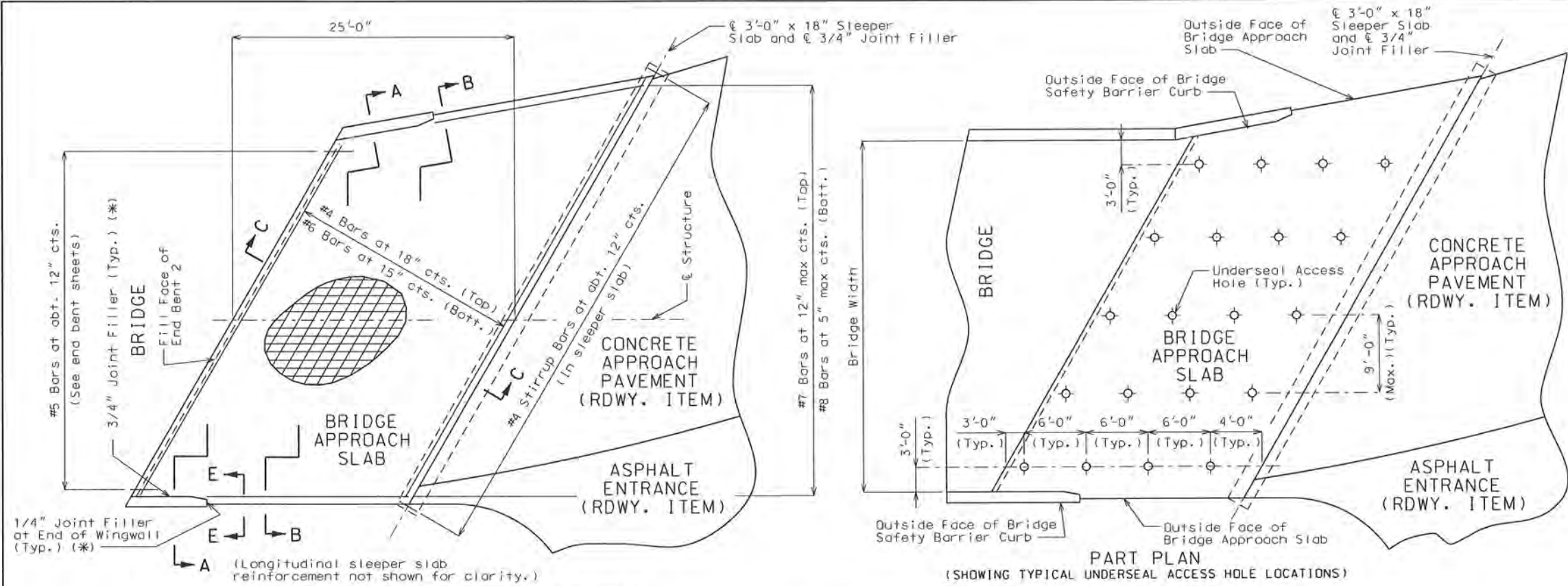
TYPICAL 135° STIRRUP BAR HOOK DIMENSIONS BENDING DIAGRAM

Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).



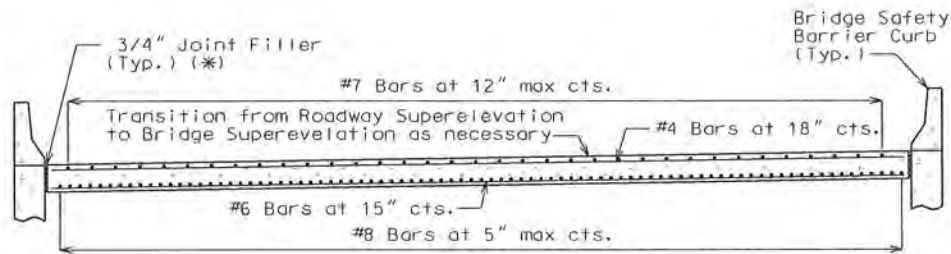
TYPICAL UNDERSEAL ACCESS HOLE DETAIL

REVISIONS			BRIDGE APPROACH SLAB AT END BENT 1	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	JOB: 1401810
			1/5/2015	SHEET NO.
			HORNER SHIFRIN	29 of 33

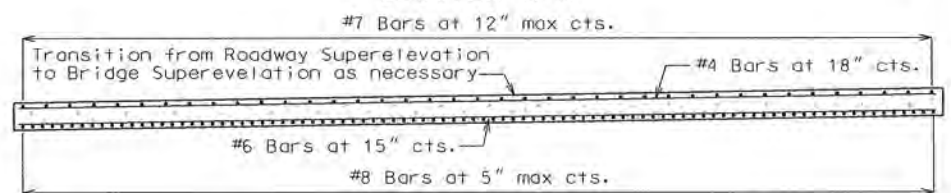


PART PLAN SHOWING REINFORCEMENT

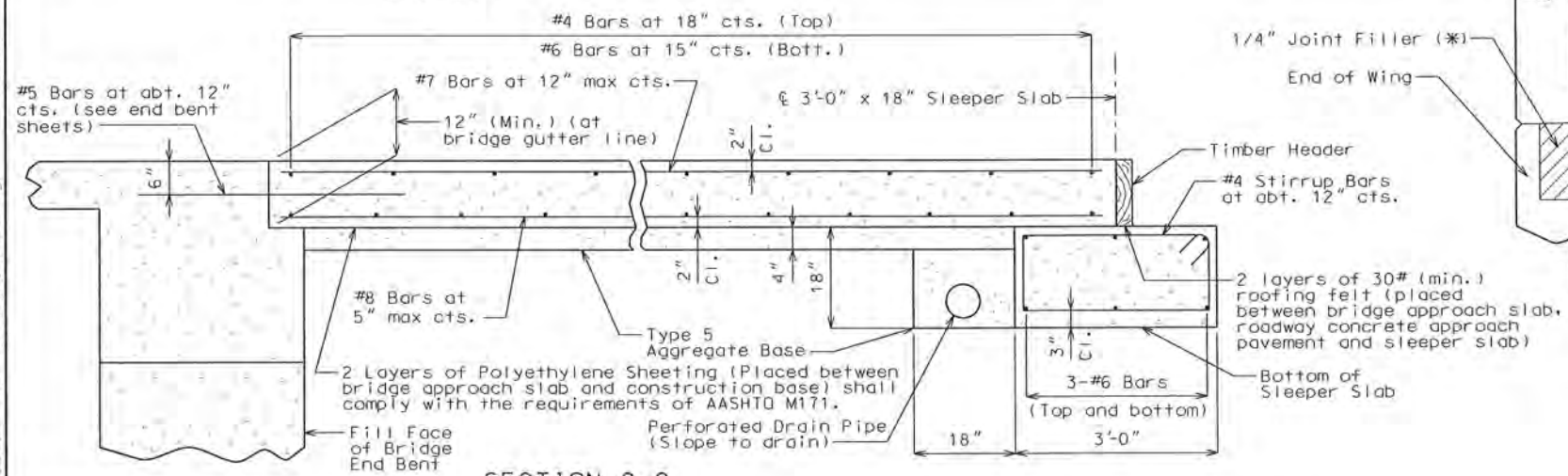
PART PLAN (SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



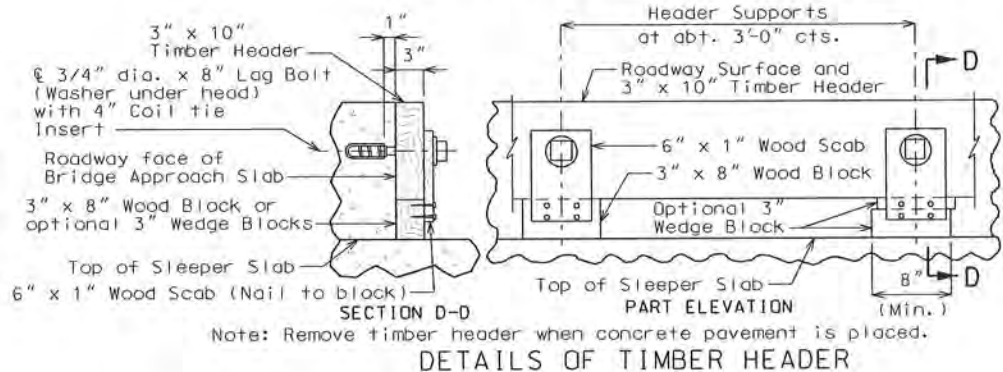
SECTION A-A



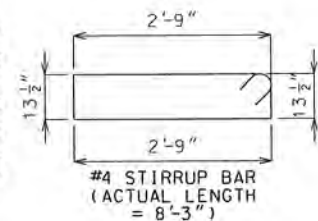
SECTION B-B



SECTION C-C

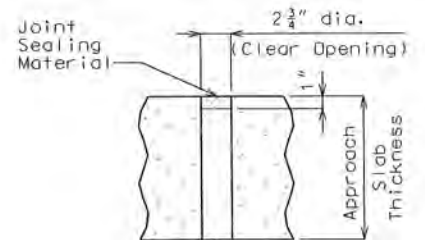


DETAILS OF TIMBER HEADER

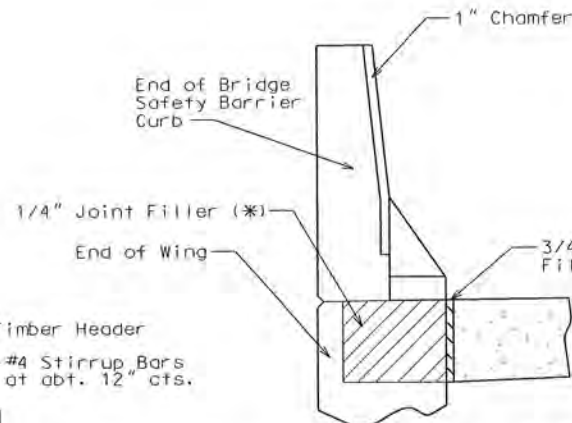


TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

Note: Nominal lengths are based on out to out dimensions shown in bending diagram and are listed for fabricators use (nearest inch).



TYPICAL UNDERSEAL ACCESS HOLE DETAIL



SECTION E-E (BETWEEN END OF WINGWALL AND APPROACH SLAB)

CONST. JOINT DETAIL (IF REQUIRED)

GENERAL NOTES:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 (f'c = 4,000 psi).

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler, except as noted.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with Fy = 60,000 psi.

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 & #6 bars 18" and 2'-2", respectively.

Mechanical bar splices will be in accordance with Sec 706.

(*) Seal joint between vertical face of approach slab and wing with "Silicone Joint Sealant for Saw Cut and Formed Joints" in accordance with Sec 717.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

The contractor shall pour and satisfactorily finish the bridge or semi-deep slab before pouring the bridge approach slabs.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, sleeper slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Bridge) per square yard.

For Concrete Approach Pavement details, see roadway plans.

At the contractor's option, Grade 40 reinforcement may be substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment. No additional payment will be made for this substitution.

When Grade 40 reinforcement is substituted for the Grade 60 #5 dowel bars connecting the bridge approach slab to the bridge abutment, the reinforcement may be bent up to 90 degrees with a 2" minimum radius near the abutment to allow compaction of the backfill material near the abutment. Damage to epoxy coating shall be repaired in accordance with Sec 710.

Drain pipe may be either 6" diameter corrugated metallic-coated pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

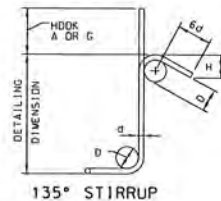
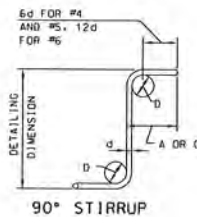
REVISIONS			BRIDGE APPROACH SLAB AT END BENT 2	
NO	DESCRIPTION	DATE		
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY: HORNER SHIFRIN	JOB: 1401810 SHEET NO. 30 of 33
			1/5/2015	

4:12:16 PM KokiJules

...Kad\$M\$Inal Plans\$31_br1.dgn

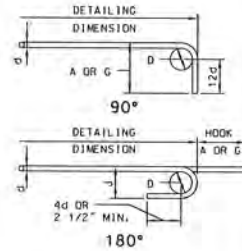
BILL OF REINFORCING STEEL																												
NO. RECD.	MARK NO.	MARK	LOCATION	EPOXY	SHAPE NO.	STIRRUP	SUBSTR.	VARIES	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
										B		C		D		E		F		H					K			
										FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN				FT	IN		
END BENT 1																												
4	6	F101	DIAPHRAGM		14					3	2.125	5	3.250			4	6.750	2	7.625	8	5	8	5	51				
9	8	F102	BEAM & DIAPH		23					1	2.000	3	7.875	1	2.000	1	0.125	0	7.000	1	0.125	0	7.000	6	0	5	10	140
4	6	F103	DIAPHRAGM		21					5	9.750	2	10.125						5	7.375	1	6.000	8	8	8	5	19	
12	8	F104	BEAM & DIAPH		23					1	2.000	5	1.500	1	2.000	0	8.500	0	11.125	0	8.500	0	11.125	7	6	7	5	230
26	6	H100	BEAM & DIAPH		20					21	9.000												27	9	21	9	108	
4	6	H101	BEAM		20			V	1	5	8.000												5	8	5	8	36	
			INC. = 3.000"							6	5.000												6	5	6	5	36	
16	6	H102	BEAM		20					12	1.000												12	1	12	1	290	
4	6	H103	BEAM		20					15	1.000												15	1	15	1	9	
4	6	H104	DIAPHRAGM		20					3	2.000												3	2	3	2	19	
20	6	H105	DIAPHRAGM		20					6	11.000												6	11	6	11	208	
4	6	H106	DIAPHRAGM		20					3	2.000												3	2	3	2	19	
8	6	H107	DIAPHRAGM	E	20			V	2	27	10.000												27	10	27	10	336	
			INC. = 1.500"							28	2.000												28	2	28	2	112	
43	5	H108	DIAPHRAGM	E	20					2	6.000												2	6	2	6	36	
6	5	H109	STRAND TIE		23					1	3.000	1	7.000	1	3.000	0	7.500	1	1.000	0	7.500	1	1.000	4	1	4	1	76
12	8	H120	WING		20					12	5.000												12	5	12	5	398	
12	8	H121	WING		19					12	5.000	1	4.000										13	9	13	7	435	
3	8	H122	WING		20					13	5.000												13	5	13	5	107	
3	8	H123	WING		19					13	5.000	1	4.000										14	9	14	7	117	
1	8	H124	WING	E	20					13	5.000												13	5	13	5	36	
1	8	H125	WING	E	19					13	5.000	1	4.000										14	9	14	7	39	
10	8	H130	WING		20					12	5.000												12	5	12	5	332	
10	8	H131	WING		19					12	5.000	1	4.000										13	9	13	7	363	
3	8	H132	WING		20					13	5.000												13	5	13	5	107	
3	8	H133	WING		19					13	5.000	1	4.000										14	9	14	7	117	
3	8	H134	WING	E	20					13	5.000												13	5	13	5	107	
1	8	H135	WING	E	19					13	5.000	1	4.000										14	9	14	7	39	
3	5	U100	BEAM		10	S				6	2.000	3	2.000										15	6	15	3	48	
7	5	U101	BEAM		10	S				6	0.000	3	2.000										15	2	14	11	109	
7	5	U102	BEAM		10	S				5	9.000	3	2.000										14	8	14	5	105	
7	5	U103	BEAM		10	S				5	5.500	3	2.000										14	1	13	10	101	
7	5	U104	BEAM		10	S				5	2.500	3	2.000										13	7	13	4	91	
11	5	U105	BEAM		10	S				4	11.500	3	2.000										13	1	12	10	147	
5	4	U106	BEAM		10	S				3	11.500	3	2.000										11	1	10	11	36	
5	4	U107	BEAM		10	S				3	8.000	3	2.000										10	6	10	4	35	
5	4	U108	BEAM		10	S				3	5.000	3	2.000										10	0	9	10	33	
5	4	U109	BEAM		10	S				3	2.000	3	2.000										9	6	9	4	31	
5	4	U110	BEAM		10	S				2	10.500	3	2.000										8	11	8	9	29	
5	4	U111	BEAM		10	S				2	7.500	3	2.000										8	5	8	3	28	
42	5	U112	DIAPHRAGM	E	10	S				3	8.500	2	6.000										9	11	9	8	423	
42	6	U113	DIAPHRAGM	E	19	S				2	11.500	3	2.000										6	2	6	0	379	
60	6	U114	DIAPHRAGM	E	19	S				3	1.000	4	10.000										7	11	7	9	698	
18	6	V100	DIAPHRAGM		20					2	11.000												2	11	2	11	79	
24	6	V120	WING		20					7	11.000												7	11	7	11	285	
24	6	V130	WING		20					6	8.000												6	8	6	8	240	

TWO ADDITIONAL #4-K220, #5-S1, #6-S2 & #8-H134 ARE INCLUDED IN THE BAR BILL FOR TESTING.



STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	APPROX. H
#4	2"	A-1/2"	A OR G	3"
#5	2-1/2"	6"	A OR G	3-3/4"
#6	4-1/2"	12"	B"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR

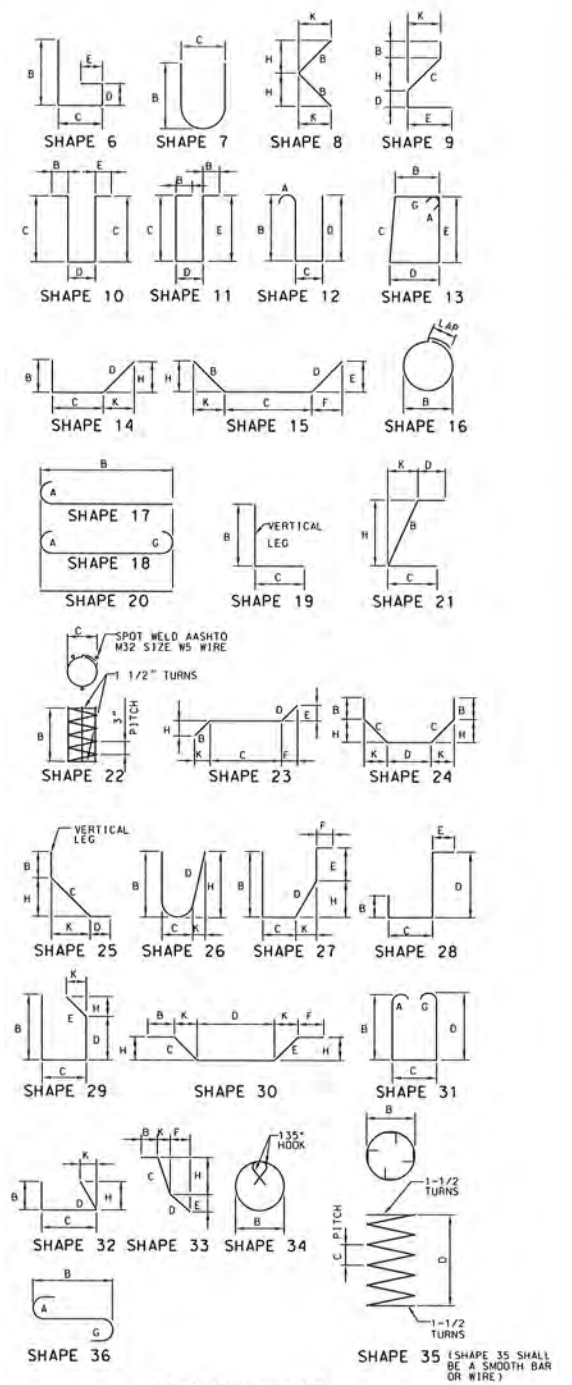


END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS	90° HOOKS	
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11-3/4"	19"
#10	10 3/4"	17"	13-1/4"	22"
#11	12"	19"	14-3/4"	2'-0"
#14	18 1/4"	2'-3"	21-3/4"	2'-7"

NOTE: DO NOT SCALE THIS DRAWING, FOLLOW DIMENSIONS

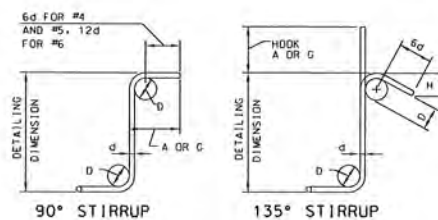
BILL OF REINFORCING STEEL																															
NO. RECD.	MARK NO.	MARK	LOCATION	EPOXY	TE	SHAPE NO.	STIRRUP	TS	SUBSTR.	TX	TV	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
													B		C		D		E		F		H					K			
													FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN				FT	IN	FT	IN
END BENT 2																															
4	6	F201	DIAPHRAGM			15							5	3.000	2	2.000	1	10.500	1	1.000						7	5	7	4	4	
12	8	F202	BEAM & DIAPH.			23							1	2.000	3	8.000	1	2.000	1	0.125	0	7.000	1	0.125	0	7.000	6	0	5	10	187
4	6	F203	DIAPHRAGM			21							7	5.000	2	2.000					5	8.250	4	9.125	9	7	9	0		51	
9	8	F204	BEAM & DIAPH.			23							1	2.000	7	2.500	1	2.000	0	6.000	1	0.625	0	6.000	1	0.625	9	6	9	6	228
26	6	H200	BEAM & DIAPH.			20							28	3.000												28	3	28	3	1103	
4	6	H201	BEAM			20							16	0.000												16	0	16	0	96	
16	6	H202	BEAM			20							12	1.000												12	1	12	1	290	
4	6	H203	BEAM			20						V 1	5	4.000												5	4	5	4		37
			INC. = 6.500"										6	11.500												7	0	7	0		37
4	6	H204	DIAPHRAGM			20							3	1.000												3	1	3	1		19
20	6	H205	DIAPHRAGM			20							6	11.000												6	11	6	11		208
4	6	H206	DIAPHRAGM			20							3	1.000												3	1	3	1		19
8	6	H207	DIAPHRAGM			E 20						V 2	28	2.000												28	2	28	2		341
			INC. = 1.500"										28	7.000												28	7	28	7		112
43	5	H208	DIAPHRAGM			E 20							2	6.000												2	6	2	6		26
6	5	H209	STRAND TIE			23							1	3.000	1	7.000	1	3.000	0	7.500	1	1.000	0	7.500	1	1.000	4	1	4	1	76
10	8	H220	WING			20							14	5.000												14	5	14	5		385
10	8	H221	WING			19							1	4.000												15	9	15	7		416
3	8	H222	WING			20							15	5.000												15	5	15	5		123
3	8	H223	WING			19							15	5.000	1	4.000										16	9	16	7		133
1	8	H224	WING			E 20							15	5.000												15	5	15	5		47
1	8	H225	WING			E 19							15	5.000	1	4.000										16	9	16	7		47
12	8	H230	WING			20							12	5.000												12	5	12	5		396
12	8	H231	WING			19							12	5.000	1	4.000										13	9	13	7		435
3	8	H232	WING			20							13	5.000												13	5	13	5		107
3	8	H233	WING			19							13	5.000	1	4.000										14	9	14	7		117
1	8	H234	WING			E 20							13	5.000												13	5	13	5		36
1	8	H235	WING			E 19							13	5.000	1	4.000										14	9	14	7		35
11	5	U200	BEAM			10	S						4	10.000	3	2.000										12	10	12	7		144
7	5	U201	BEAM			10	S						5	2.000	3	2.000										13	6	13	3		97
7	5	U202	BEAM			10	S						5	5.000	3	2.000										14	0	13	9		106
7	5	U203	BEAM			10	S						5	8.000	3	2.000										14	6	14	3		104
7	5	U204	BEAM			10	S						6	2.000	3	2.000										15	6	15	3		111
4	5	U205	BEAM			10	S						6	2.000	3	2.000										15	6	15	3		64
5	4	U206	BEAM			10	S						2	7.000	3	2.000										8	4	8	2		27
5	4	U207	BEAM			10	S						2	11.000	3	2.000										9	0	8	10		30
5	4	U208	BEAM			10	S						3	2.000	3	2.000										9	6	9	4		31
5	4	U209	BEAM			10	S						3	5.000	3	2.000										10	0	9	10		33
5	4	U210	BEAM			10	S						3	8.000	3	2.000										10	6	10	4		35
5	4	U211	BEAM			10	S						3	11.000	3	2.000										11	0	10	10		36
43	5	U212	DIAPHRAGM			E 10	S						3	9.000	2	6.000										10	0	9	9		437
43	6	U213	DIAPHRAGM			19	S						3	0.600	3	2.000										6	2	6	0		388
60	6	U214	DIAPHRAGM			E 19	S						3	1.000	4	10.000										7	11	7	9		698
18	6	V200	DIAPHRAGM			20							3	0.000												3	0	3	0		87
28	6	V220	WING			20							6	9.000												6	9	6	9		284
24	6	V230	WING			20							8	3.000												8	3	8	3		297

Bridge No.	County	Sheet No.	Total Sheets
FAU-8	JEFFERSON	32	33

[illegible][illegible]

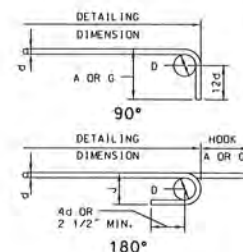
BENDING DIAGRAMS

TWO ADDITIONAL #4-K220, #5-S1, #6-S2 & #8-H134 ARE INCLUDED IN THE BAR BILL FOR TESTING.



STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	APPROX. H
		HOOK A OR G	HOOK A OR G	
#4	2"	4-1/2"	4-1/2"	3"
#5	2-1/2"	6"	5-1/2"	3-3/4"
#6	4-1/2"	12"	8"	4-1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° A OR G	HOOKS H	90° A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11-3/4"	19"
#10	10 3/4"	17"	13-1/4"	22"
#11	12"	19"	14-3/4"	24-0"
#14	18 1/4"	27-3"	21-3/4"	27-7"

NOTES:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180° TO BE BENT WITH THE SAME PROCEDURE AS FOR 90° STD. HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE.
(NEAREST INCH) ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
WEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN.
SPIRAL SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACER DO NOT INCLUDE SPLICES OR SPACERS
REINFORCING STEEL (GRADE 60) = FY 60,000 PSI.
DO NOT INCLUDE SPLICES OR SPACERS REINFORCING STEEL (GRADE 60) = FY 60,000 PSI.

REVISIONS NO DESCRIPTION DATE			BILL OF REINFORCING	
			KONERT ROAD BRIDGE OVER ROMAINE CREEK FEDERAL PROJECT NO. BRM-5403(663)	
ENGINEER'S SEAL			JEFFERSON COUNTY, MISSOURI	
			PREPARED BY:	JOB: 1401810
				SHEET NO.
1/5/2015				32 of 33

