These plans are to serve as an example only. They may not necessarily reflect current standards or practices.

(59'–93'–59') PRESTRESSED CONCRETE I-GIRDER SPANS

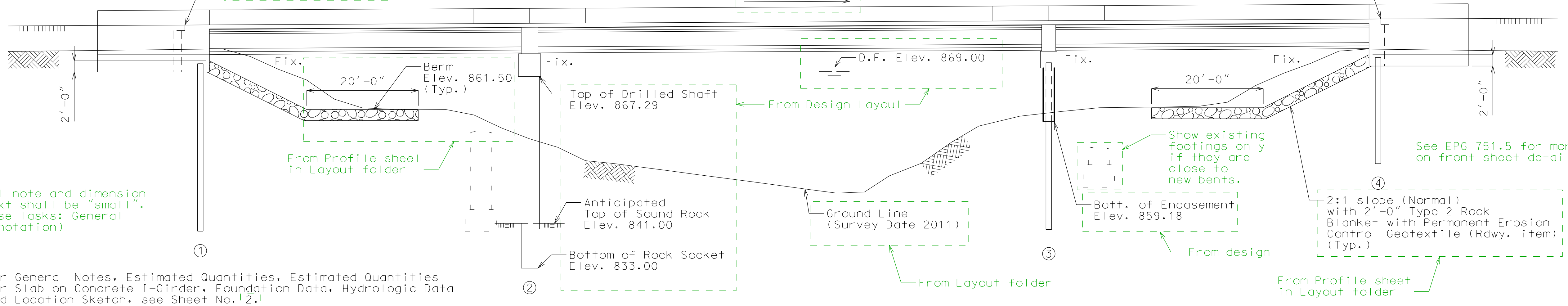
From Design Layout/Bridge Memo

SEC/SUR 26 TWP 34N RGE 29W

From layout folder, Structural Inventory and Appraisal Sheet (Structure Location Information, "Location") or in lower right corner of layout sheets.

This set of example plans is based on several bridge projects. It is intended to be used for reference only, covering a variety of structural components. Some details on the following sheets may not necessarily match what is shown on this front sheet.

Border is attached as a Reference File, using Place Border option under the Bridge pulldown menu.



All note and dimension text shall be "small". (Use Tasks: General Annotation)

For General Notes, Estimated Quantities, Estimated Quantities for Slab on Concrete I-Girder, Foundation Data, Hydrologic Data and Location Sketch, see Sheet No. 2.

Old roadway fill under the ends of the bridge shall be removed as shown. Removal of old roadway fill will be considered completely covered by the contract unit price for roadway excavation.

Note E1.1, EPG 751.50 If required (when specified on Design Layout)

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

Note E1.4, EPG 751.50 if required.

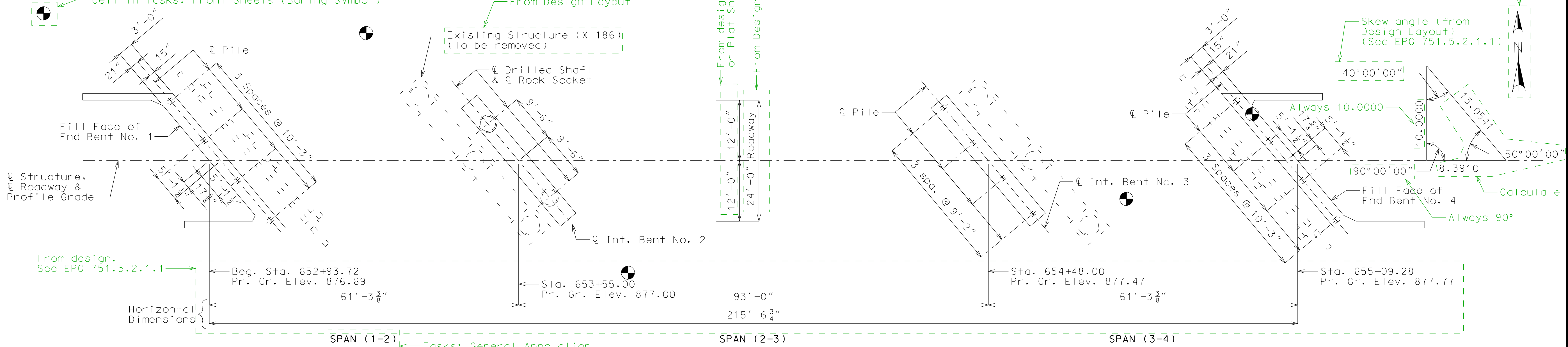
GENERAL ELEVATION

Tasks: General Annotation Medium Text (Titles)

Cell in Tasks: Front Sheets (Boring Symbol)

Boring locations from Layout folder. Show location of all borings.

Cell in Tasks: Front Sheets (North Arrow) If Location Sketch is shown on front sheet, North arrow should be shown there.



Tasks: General Annotation Small Text (Bold)

PLAN

"◐" Indicates location of borings.

Cell in Tasks: Bridge Detailing Notes (E3.2 Notice and Disclaimer). If the note will not fit on this sheet, keep the "Indicates location of borings." portion and add a line stating "For Notice and Disclaimer Regarding Boring Log Data, see Sheet No. X."

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet(s) for this structure. Boring data for all locations is shown on Sheets No. 29 thru 35. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, will be provided in the bridge electronic deliverable file or will be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

From Plat sheet in Layout folder. See EPG 751.5.2.1.3

B.M. 306 = SET "□" SQUARE CUT AT S.E. CORNER OF BRIDGE HEADWALL AT HORSE CREEK BRIDGE ON RTE. B. ELEV. 973.158'

From Bridge Survey Report in Layout folder

BRIDGE: ROUTE B OVER HORSE CREEK

Info from Review Section when they review plans

ROUTE B FROM RTE. 71 TO RTE. 97

ABOUT 2.5 MILES WEST OF RTE. 97

From Design Layout — STA. 652+93.72

MO Std. Plans (See EPG 751.5.2.1.3)

STD. 706.35

Front Sheet Text available as a cell in Tasks: General Annotation

Designed Nov. 2014
Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 30

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 3/20/2015	
ROUTE ✳	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY ✳	
JOB NO. ✳	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. EXAMPLE	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Cell in Tasks: Bridge Detailing Notes (B3.1 "Estimated Quantities" Box)

Estimated Quantities

	Item		Substr.	Superstr.	Total
	Class 1 Excavation	cu. yard	80		80
	Removal of Bridges (X-186)	lump sum			1
	Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	94		94
	Rock Sockets (3 ft. 0 in. Dia.)	linear foot	32		32
	Supplementary Television Camera Inspection	each	4		4
	Foundation Inspection Holes	linear foot	72		72
	Sonic Logging Testing	each	4		4
	Structural Steel Piles (12 in.)	linear foot	196		196
	Pile Point Reinforcement	each	8		8
	Class B Concrete (Substructure)	cu. yard	70.4		70.4
	Slab on Concrete I-Girder	sq. yard		635	635
*	Safety Barrier Curb	linear foot		491	491
	Type 6 (54 in.), Prestressed Concrete I-Girder	linear foot		632	632
	Reinforcing Steel (Bridges)	pound	15,270		15,270
	Steel Intermediate Diaphragm for P/S Concrete Girders	each		6	6
	Slab Drain	each		36	36
	Vertical Drain at End Bents	each			2
	Plain Neoprene Bearing Pad	each		6	6
	Laminated Neoprene Bearing Pad	each		12	12

* 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.

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete I-Girder.

All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Concrete I-Girder.

Notes B, EPG 751.50

Foundation Data

Type	Design Data		Bent Number 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP 12x53	---	---	HP 12x53
	Number	ea	4	---	---	4
	Approximate Length per Each	ft	30	---	---	19
	Pile Driving Verification Method		DF	---	---	DF
	Minimum Nominal Axial Compressive Resistance	kip	505	---	---	505
	Hammer Energy Required	ft-lb	16,200	---	---	16,200
Rock Socket	Number	ea	---	2	2	---
	Layer 1 Foundation Material		---	Rock	Rock	---
	Layer 1 Elevation Range	ft	---	838-835	844-839	---
	Layer 1 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	---	28.6	28.6	---
	Layer 2 Foundation Material		---	Rock	Rock	---
	Layer 2 Elevation Range	ft	---	835-821	839-830	---
	Layer 2 Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	---	28.6	28.6	---
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	---	12.0	12.0	---

DF = FHWA-modified Gates Dynamic Formula

$$\text{Minimum Nominal Axial Compressive Resistance} = \frac{\text{Maximum Factored Loads}}{\text{Resistance Factor}}$$

$$\text{Minimum Nominal Axial Compressive Resistance (Side Resistance + Tip Resistance)} = \frac{\text{Maximum Factored Loads}}{\text{Resistance Factors}}$$

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

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

Notes E2, EPG 751.50

Cell in Tasks: Bridge Detailing Notes (E2.1 Foundation Data) Info from design & Design Layout

General Notes:

Notes A, EPG 751.50

Design Specifications:

2012 AASHTO LRFD Bridge Design Specifications (6th Ed.) and 2013 Interim Revisions
Seismic Design Category A

From Design Layout. If not specified, use "A"

Design Loading:

HL-93

From Design Layout

35 lb/sf Future Wearing Surface
Earth 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Superstructure: Simply-Supported, Non-Composite for dead load. Continuous Composite for live load.

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-1 Concrete (Safety Barrier Curb)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Safety Barrier Curb)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi
Steel Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For precast prestressed panel stresses, see Sheet No. 18.
For prestressed girder stresses, see Sheets No. 14 & 15.

Neoprene Pads:

Plain and Laminated Neoprene Bearing Pads shall be 60 durometer and shall be in accordance with Sec 716.

Joint Filler:

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

Reinforcing Steel:

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

Traffic Handling:

Structure to be closed during construction. Traffic to be maintained on other routes during construction. See roadway plans for traffic control.

From Design Layout (if applicable) (Note A3.8)

Miscellaneous:

MoDOT Construction personnel will indicate the type of joint filler option used under the precast panels for this structure:

Cell in Tasks: Bridge Detailing Notes

☐ Constant Joint Filler
☐ Variable Joint Filler

Cell in Tasks: Front Sheets (Hydrologic Data)
See EPG 751.5.2.1.5
Info from Design Layout for stream crossing only.

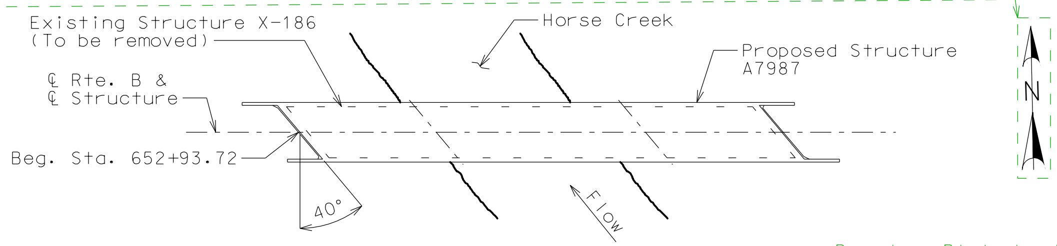
Hydrologic Data

Drainage Area = 18 mi²
Design Flood Frequency = 50 years
Design Flood Discharge = 5,700 cfs
Design Flood (D.F.) Elevation = 354.4
Base Flood (100-year)
Base Flood Elevation = 354.8
Base Flood Discharge = 6,700 cfs
Estimated Backwater = 0.77 ft
Average Velocity thru Opening = 5.7 ft/s
Freeboard (50-year)
Freeboard = 1.7 ft
Roadway Overtopping
Overtopping Flood Discharge = 3,700 cfs
Overtopping Flood Frequency = 10 years
Overtopping Flood Elevation = 354.1

See EPG 751.50 for General Notes and Estimated Quantities notes. Notes marked with [MS Cell] in EPG are available as cells in Tasks: Bridge Detailing Notes.

"Notice and Disclaimer Regarding Boring Log Data" may be placed on this sheet if it would not fit on the front sheet. Add "For locations of borings, see Sheet No. 1"

Cell in Tasks: Front Sheets (North Arrow)



LOCATION SKETCH

Based on Plat sheet in Layout folder. See EPG 751.5.2.1.5

Estimated Quantities for Slab on Concrete I-Girder

Cell in Tasks: Bridge Detailing Notes (B3.21 "Estimated Quantities For")

Item		Total
Class B-2 Concrete	cu. yard	204.0
Reinforcing Steel	pound	10,350
Reinforcing Steel (Epoxy Coated)	pound	39,190

Notes B3c, EPG 751.50

The table of Estimated Quantities for Slab on Concrete I-Girder represents the quantities used by the State 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 the estimated quantities but the 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.

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

Class B-2 Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.

Border text cell in Tasks: General Annotation (Second Sheet Text)

Detailed Nov. 2014
Checked Nov. 2014

GENERAL NOTES AND QUANTITIES

Note: This drawing is not to scale. Follow dimensions.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	3/20/2015
ROUTE B	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

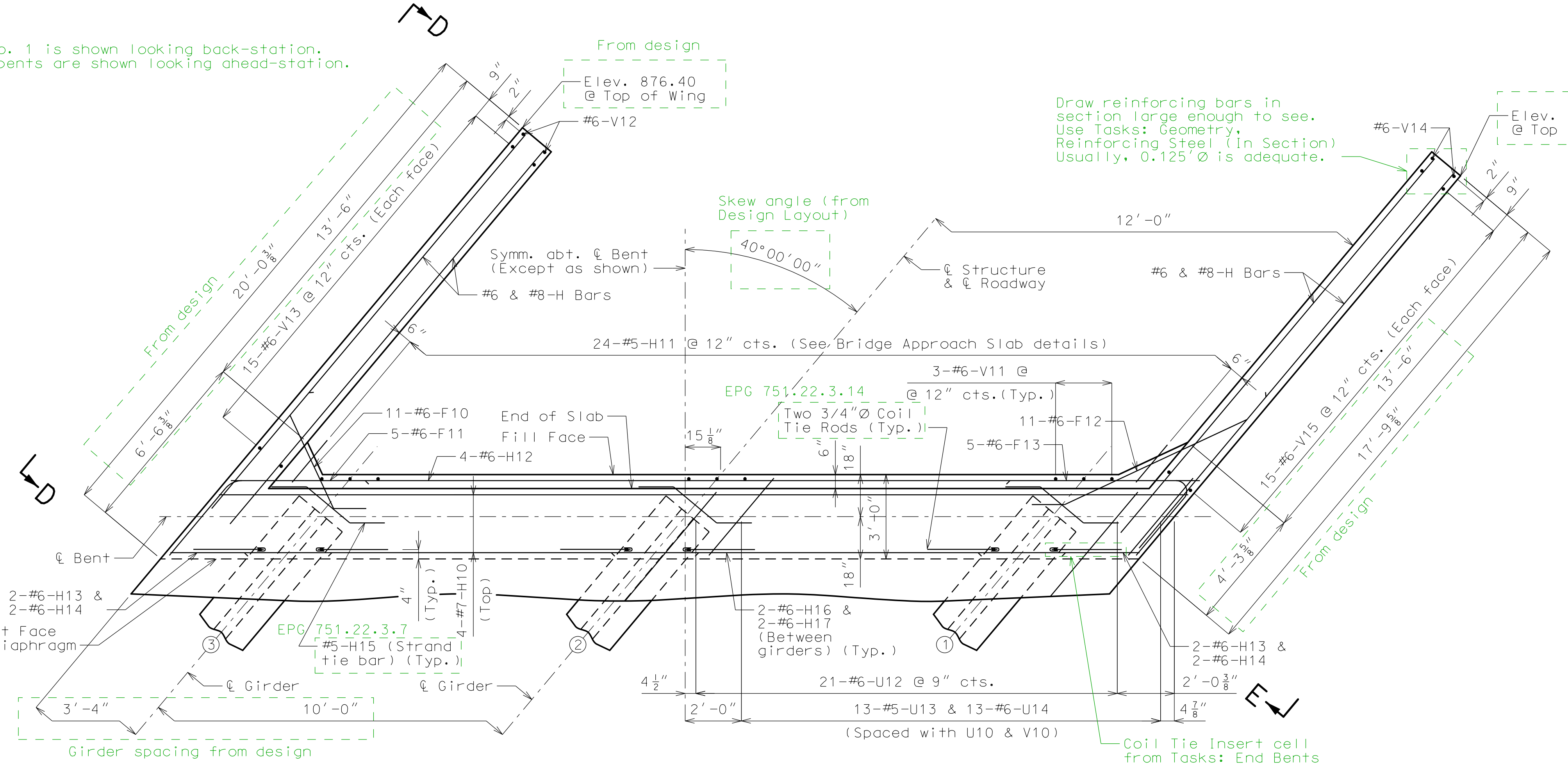
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

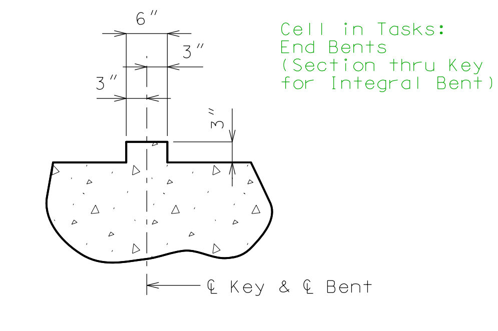
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

EPG 751.35 Concrete Pile Cap Integral End Bents.

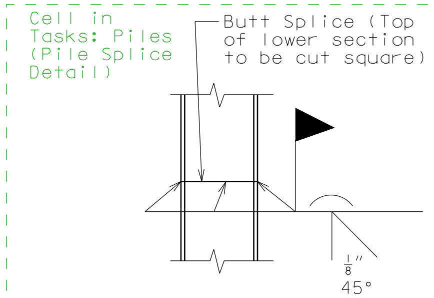
End Bent No. 1 is shown looking back-station.
All other bents are shown looking ahead-station.



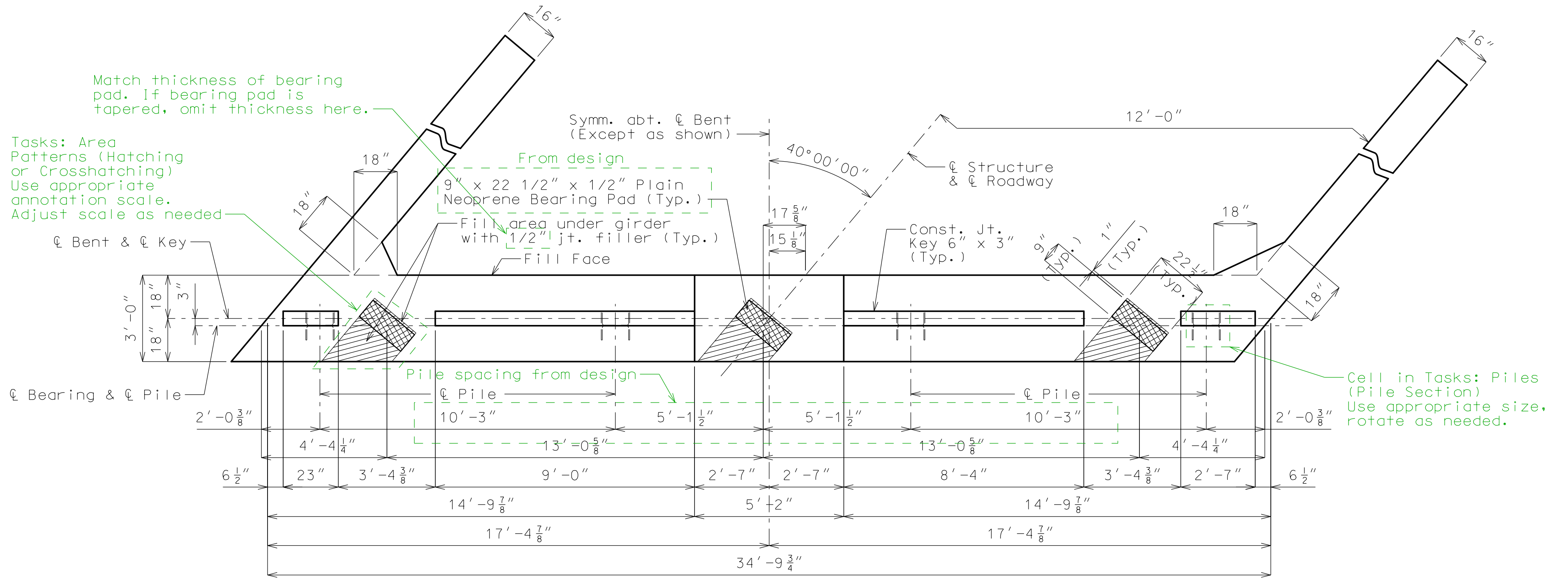
PART PLAN



SECTION THRU KEY



STEEL PILE SPLICE
(If required)



PLAN OF BEAM

Notes G1,
EPG 751.50

General Notes:

For details of End Bent No. 1 not shown, see Sheets No. 4 & 5.

Strands at end of girders shall be field bent or, if necessary, cut in field to maintain 1 1/2″ minimum clearance to fill face of end bent.

The #6-F10 & #6-F12 bars shall be bent in the field to clear girders.

For location of Coil Tie Rods and #5-H15 (Strand Tie Bar), see Sheet No. 14.

For details of Vertical Drain at End Bents, see Sheet No. 6.

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

All U-bars shall be placed parallel to ℄ Roadway.

For Elevations D-D & E-E, see Sheet No. 5.

For reinforcement of the Safety Barrier Curb, see Sheet No. 24.

For details of Bridge Approach Slab, see Sheet No. 26.

Tasks: General Annotation
Large Text (Sheet Titles)

DETAILS OF END BENT NO. 1

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

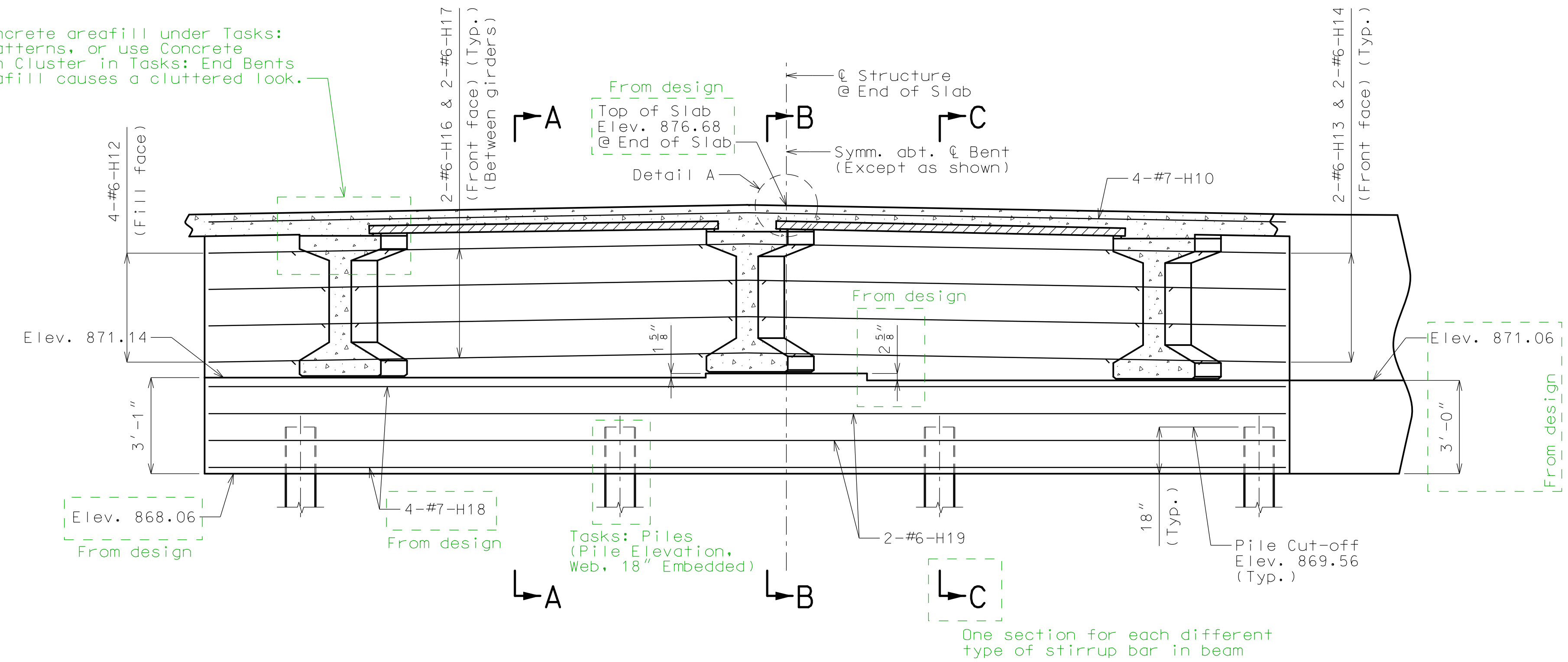
DATE PREPARED	3/19/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	3
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

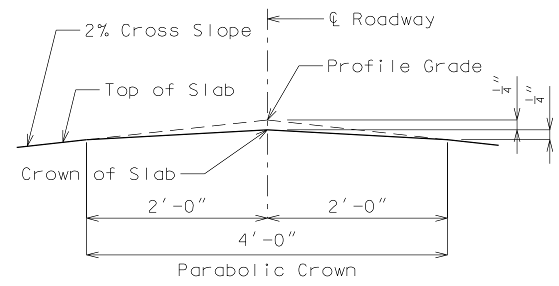
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

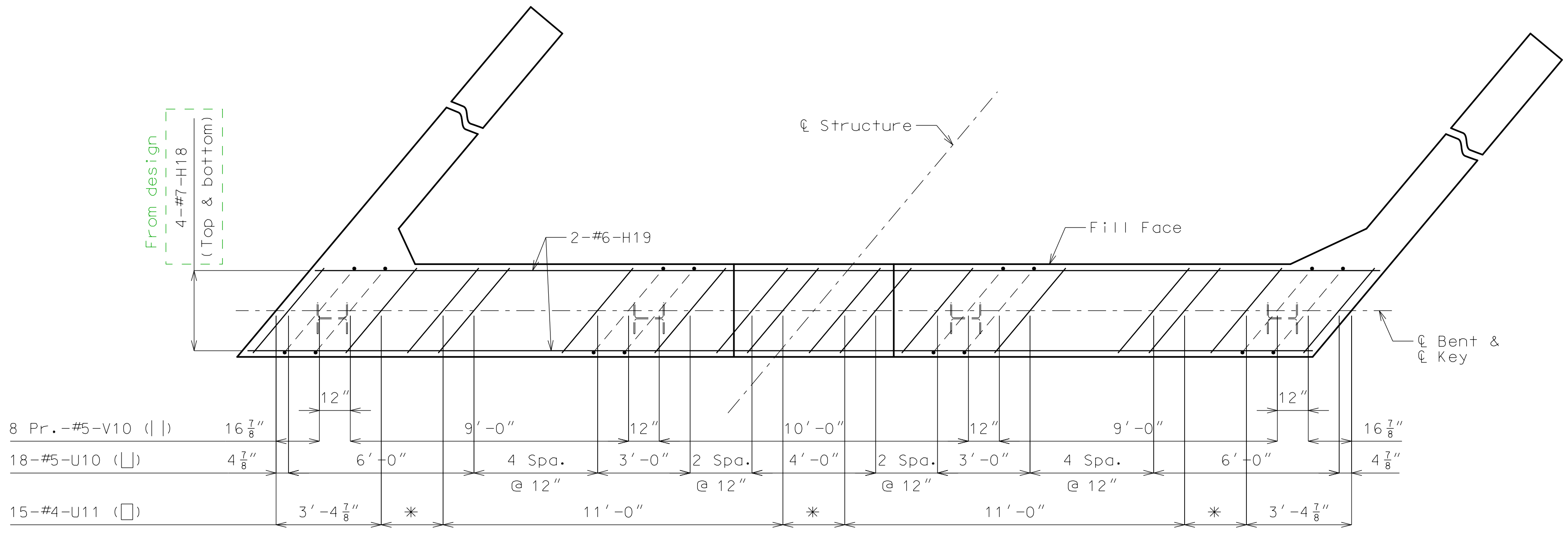


SECTION NEAR END BENT

Tasks: Slab Sheet Details (Parabolic Crown Detail)



DETAIL A



PLAN OF BEAM SHOWING REINFORCEMENT

Keys not shown for clarity.

✳ 4 Spaces @ 6"

Tasks: Bridge Detailing Notes (G4.1, Substructure Quantity)

Substructure Quantity Table for Bent No. 1

Item		Quantity
Class 1 Excavation	cu. yard	40
Structural Steel Piles (12 in.)	linear foot	120
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	16.7

These quantities are included in the Estimated Quantities table on Sheet No. 2.

Note G4.2, EPG 751.50

Notes G1, EPG 751.50

General Notes:

For details of End Bent No. 1 not shown, see Sheets No. 3 & 5.

All U-bars and Pr. V-bars shall be placed parallel to ℄ Roadway.

For details of Vertical Drain at End Bents, see Sheet No. 6.

For Sections A-A, B-B & C-C, see Sheet No. 5.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1 1/2".

DETAILS OF END BENT NO. 1

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

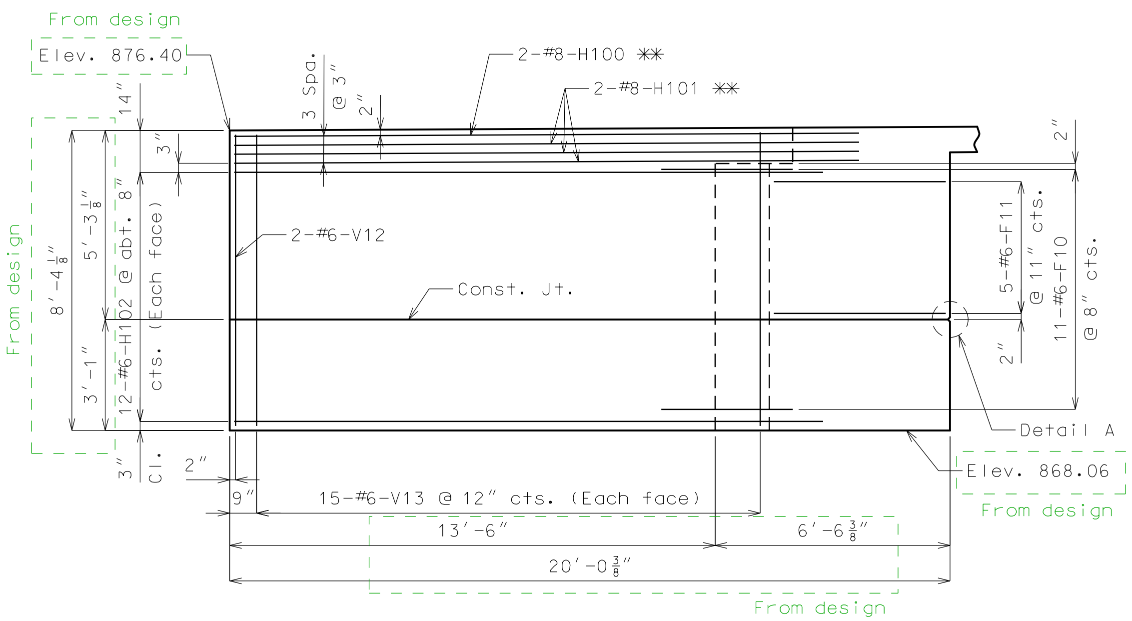
DATE PREPARED	3/19/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	4
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

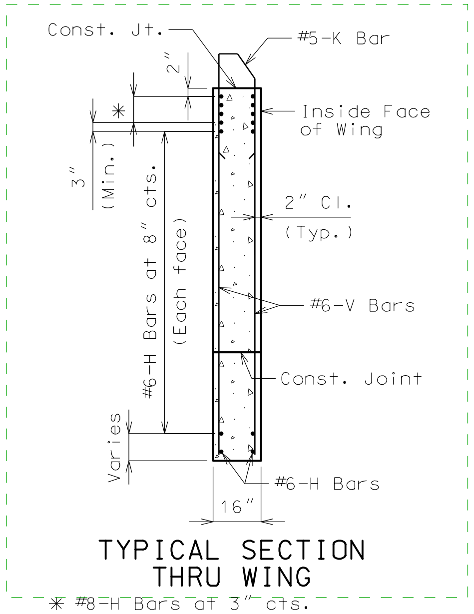
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

EPG 751.35, Concrete Pile Cap Integral End Bents



ELEVATION D-D

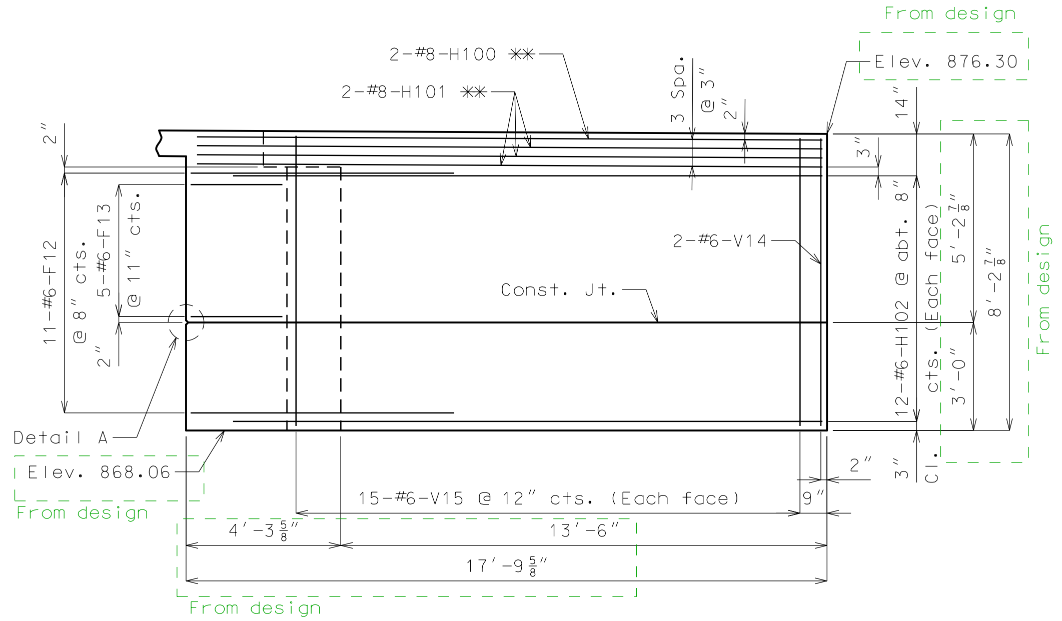
Tasks: End Bents
(Typical Section thru Square Wing)
See EPG 751.35.4.3



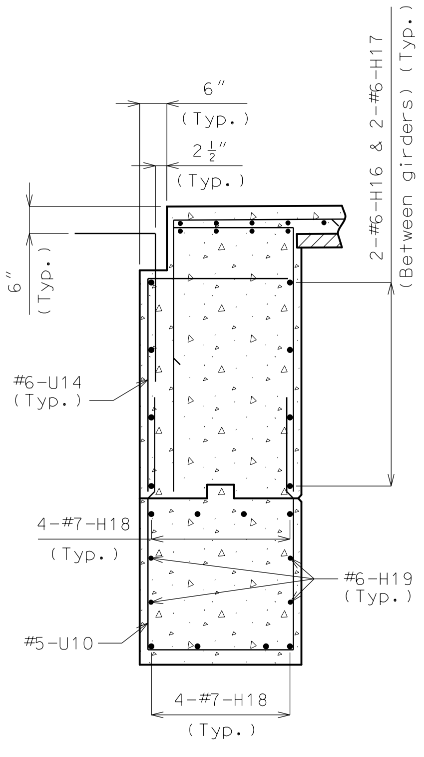
TYPICAL SECTION THRU WING

✱ #8-H Bars at 3″ cts. (Each face)(Place with grade)

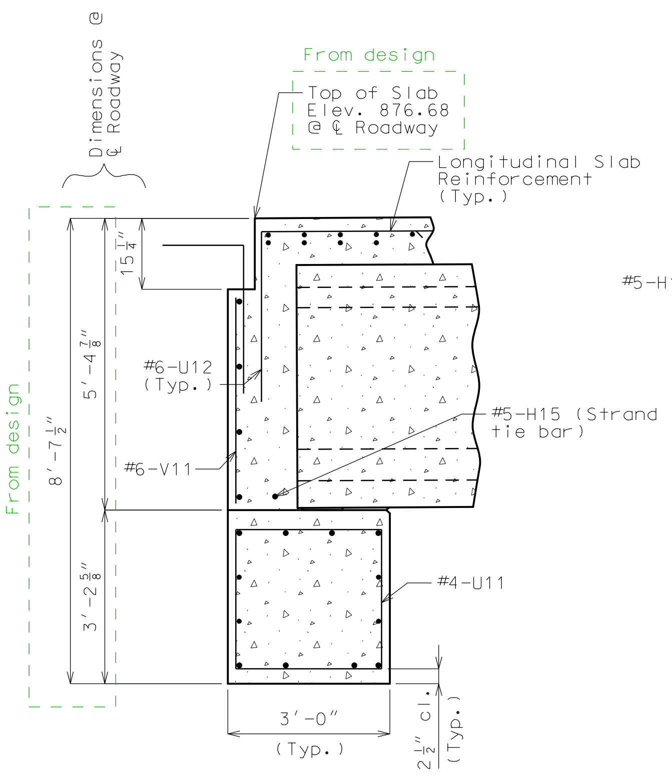
✱✱ Placed with grade



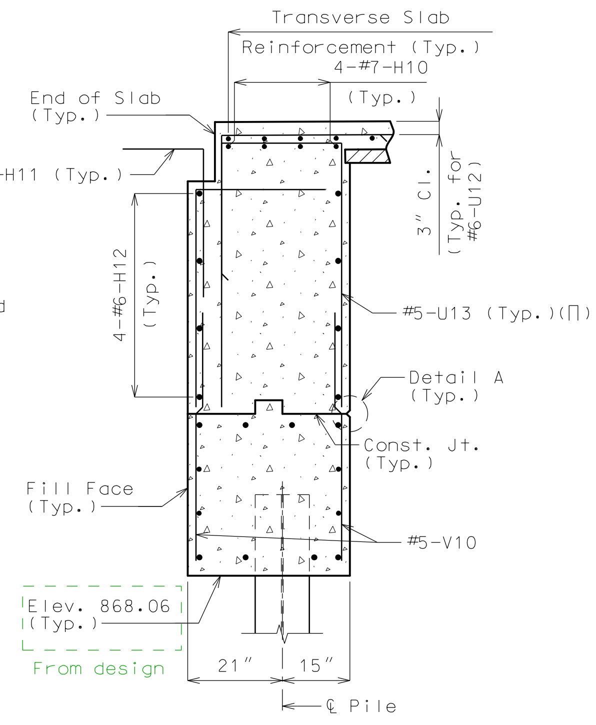
ELEVATION E-E



SECTION A-A

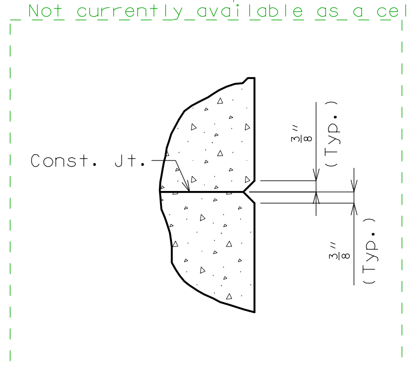


SECTION B-B



SECTION C-C

Can be shown directly on Elevation and Section, if space allows.
Not currently available as a cell.



DETAIL A

General Notes:

For details of End Bent No. 1 not shown, see Sheets No. 3 & 4.

Bend #6-F10 & #6-F12 bars in field to clear girders.

For Details and Reinforcement of the Safety Barrier Curb, see Sheets No. 23 thru 25.

For details of Vertical Drain at End Bents, see Sheet No. 6.

For location of #5-H15 (Strand Tie Bar), see Sheet No. 14.

For location of Elevations D-D & E-E, see Sheet No. 3.

For location of Sections A-A, B-B & C-C, see Sheet No. 4.

For details of Bridge Approach Slab, see Sheet No. 26.

DETAILS OF END BENT NO. 1

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	3/19/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	5
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

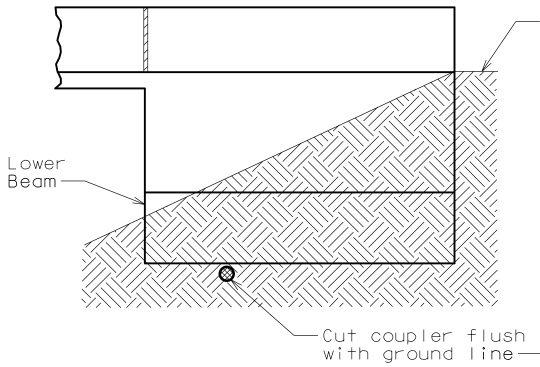
DESCRIPTION

DATE

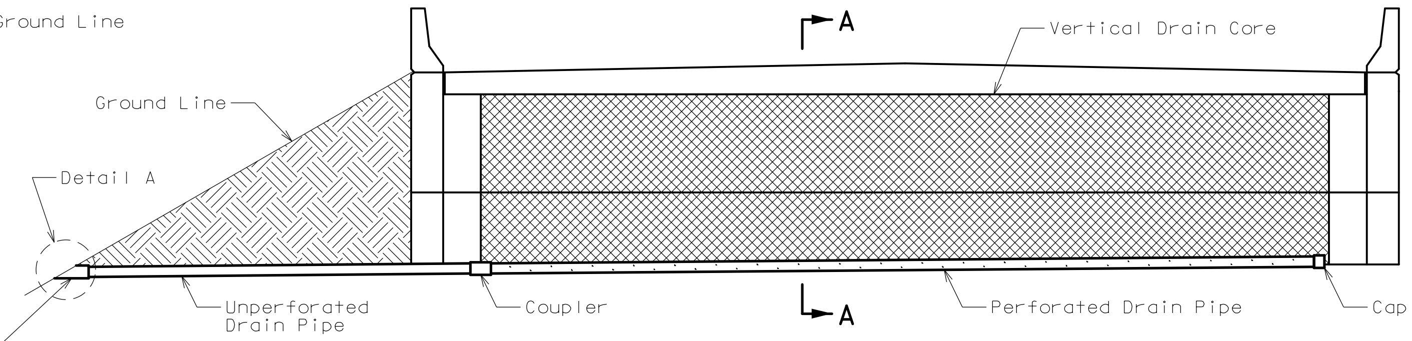
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Use current standard sheet, found in ProjectWise under Bridge/A_Bridge_Standard_Drawings/Drains/Current/ Open Read-only and Save As to your job's folder.

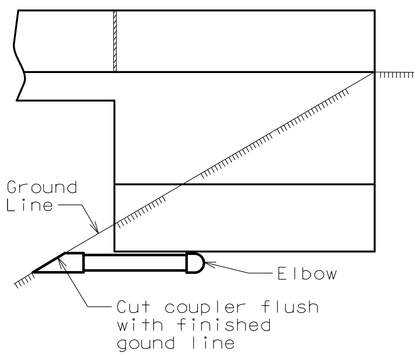
See EPG 751.35.5.2



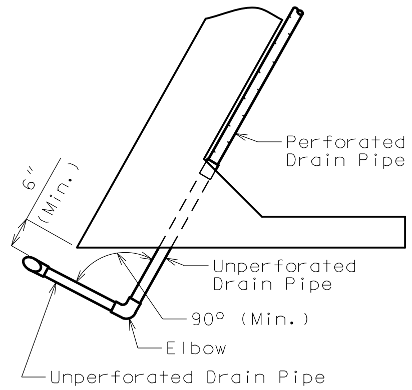
ELEVATION OF WING



ELEVATION AT END BENT



ELEVATION OF WING



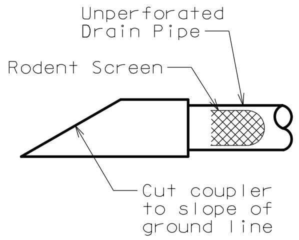
PART PLAN

OPTIONAL TURNED DRAIN

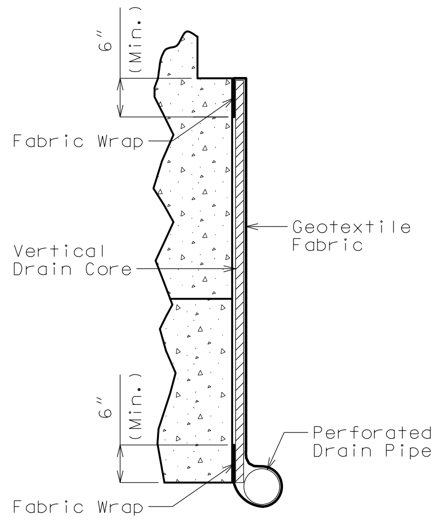
(Only if rock is encountered at outside of wing)

Remove if not applicable

For end bents with intermediate wing, see Bridge Standard Drawings sheet DRAIN03.



DETAIL A



PART SECTION A-A

Note:

Drain pipe may be either 6-inch diameter corrugated metallic-coated steel pipe underdrain, 4-inch diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4-inch 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 inches. (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.

VERTICAL DRAIN AT END BENTS

Detailed
Checked

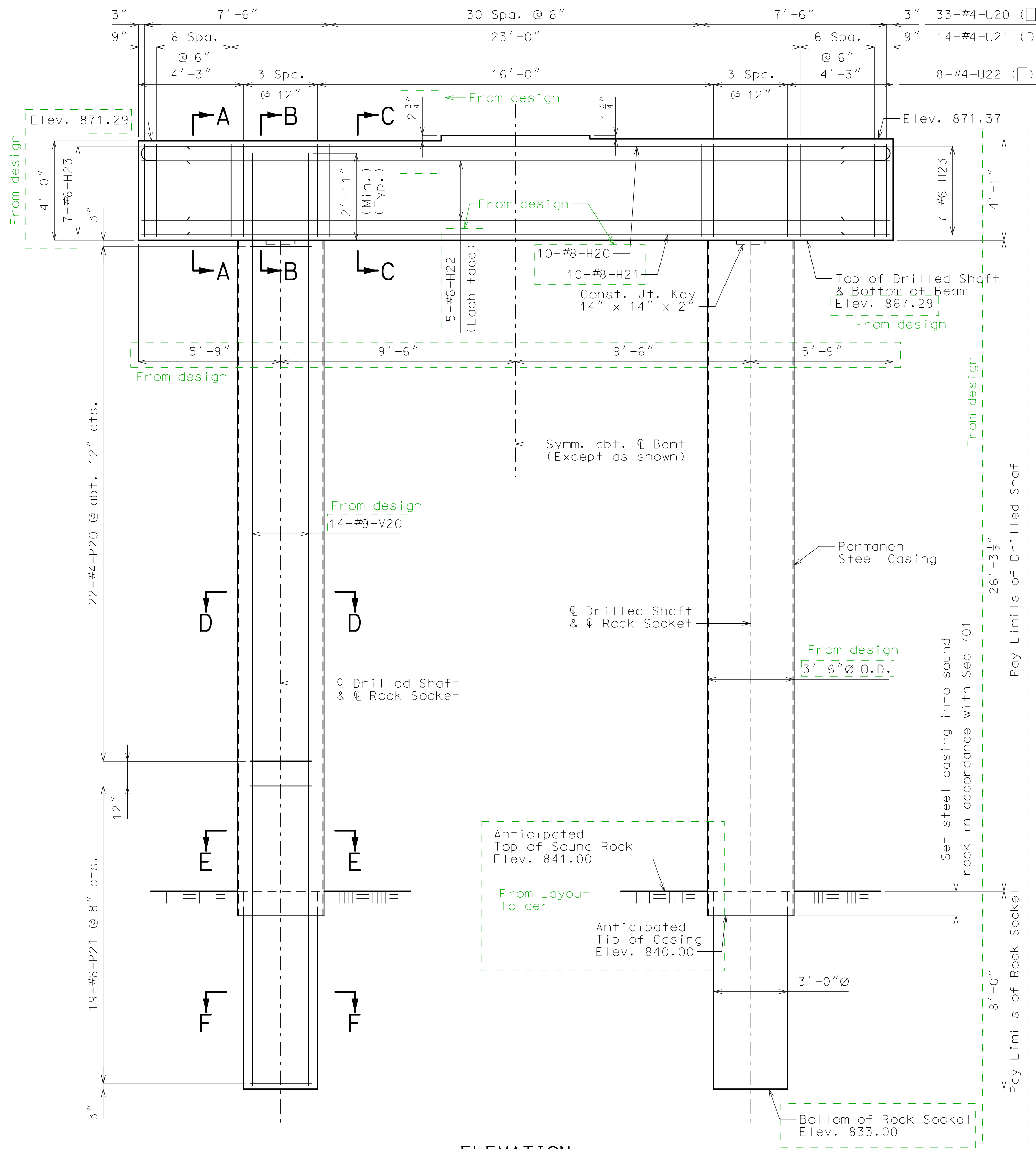
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED	
3/19/2015	
ROUTE: B	STATE: MO
DISTRICT: BR	SHEET NO.: 6
COUNTY: VERNON	
JOB NO.: J7S0546	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: EXAMPLE	

DESCRIPTION

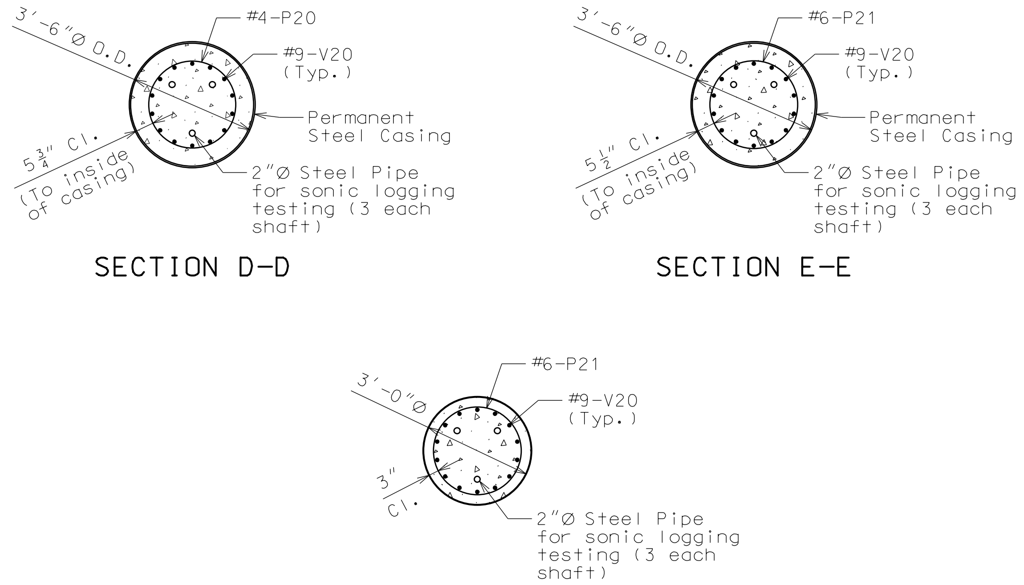
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

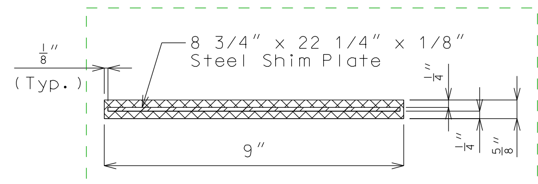


ELEVATION

Beam keys not shown for clarity.



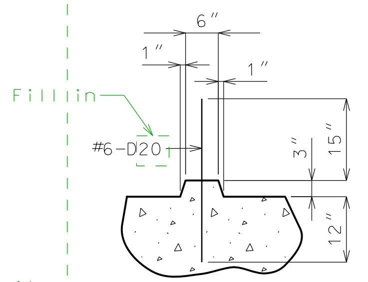
From design
See EPG 751.11



SECTION THRU LAMINATED NEOPRENE BEARING PAD

It is preferred that Key and Bearing Pad details are shown on the same sheet as the Plan of Beam if space allows.

Tasks: Intermediate Bents (Section thru Key)



SECTION THRU KEY

Tasks: Bridge Detailing Notes (G4.1 Substructure Quantity)

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Drilled Shafts (3 ft. 6 in. Dia.)	linear foot	53
Rock Sockets (3 ft. 0 in. Dia.)	linear foot	16
Supplementary Television Camera Inspection	each	2
Foundation Inspection Holes	linear foot	36
Sonic Logging Testing	each	2
Class B Concrete (Substructure)	cu. yard	18.5
Reinforcing Steel (Bridges)	pound	7,820

These quantities are included in the Estimated Quantities table on Sheet No. 2.

Note G4.2, EPG 751.50

General Notes:

An additional 4 feet has been added to V-bar lengths and an additional 12-#6-P21 have been added for possible change in drilled shaft or rock socket depth. The excess V-bar length shall be cut-off or included in the reinforcement lap if not required. The P-bars shall be spaced similarly to that shown in elevation where required or a lesser spacing if not required but not less than 6" cts.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

The thickness of the steel casing shall meet all the requirements of Sec 701 with the minimum thickness being 1/2 inch.

All reinforcement in drilled shafts and rock sockets is included in the Substructure Quantities.

For steps 2" or more, use 2-1/4" x 1/2" joint filler up vertical face. Note G1.40, EPG 751.50

Work this sheet with Sheet No. 8.

DETAILS OF INTERMEDIATE BENT NO. 2

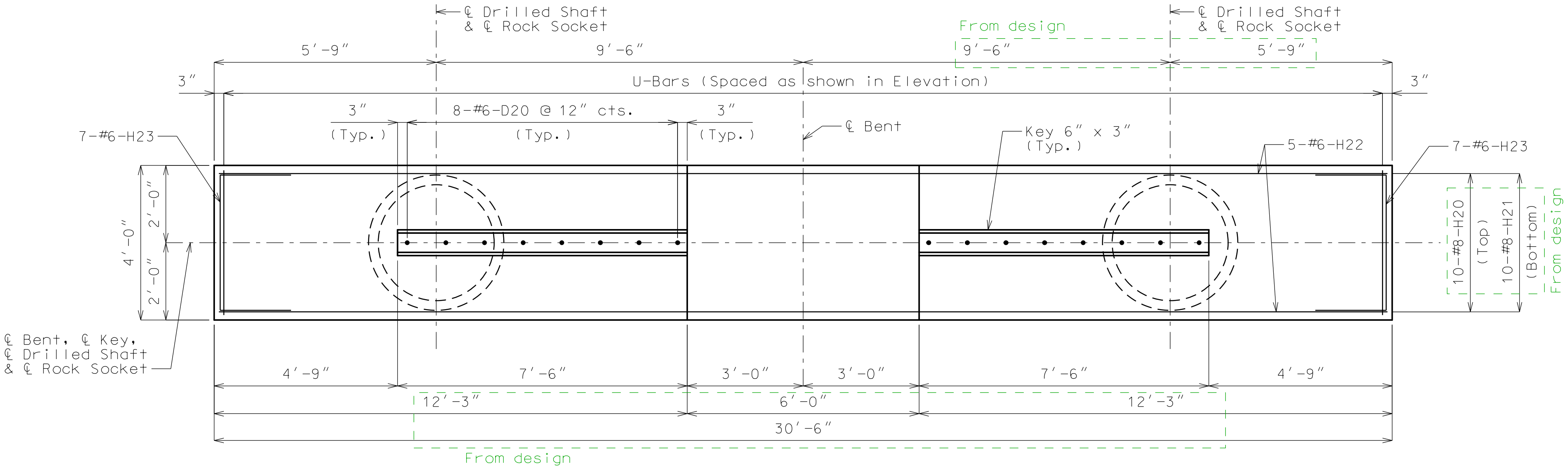
Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

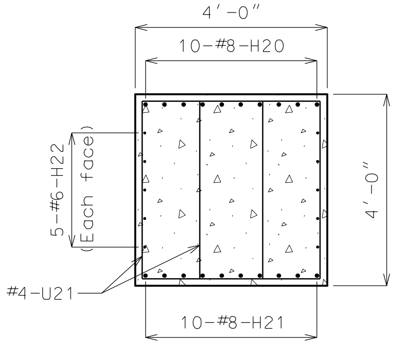
DATE PREPARED	
3/19/2015	
ROUTE B	STATE MO
DISTRICT BR	SHEET NO. 7
COUNTY VERNON	
JOB NO. J7S0546	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. EXAMPLE	

DESCRIPTION
DATE

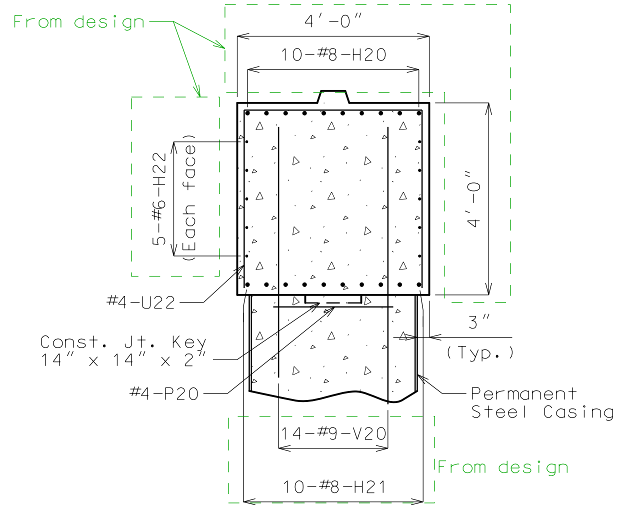
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



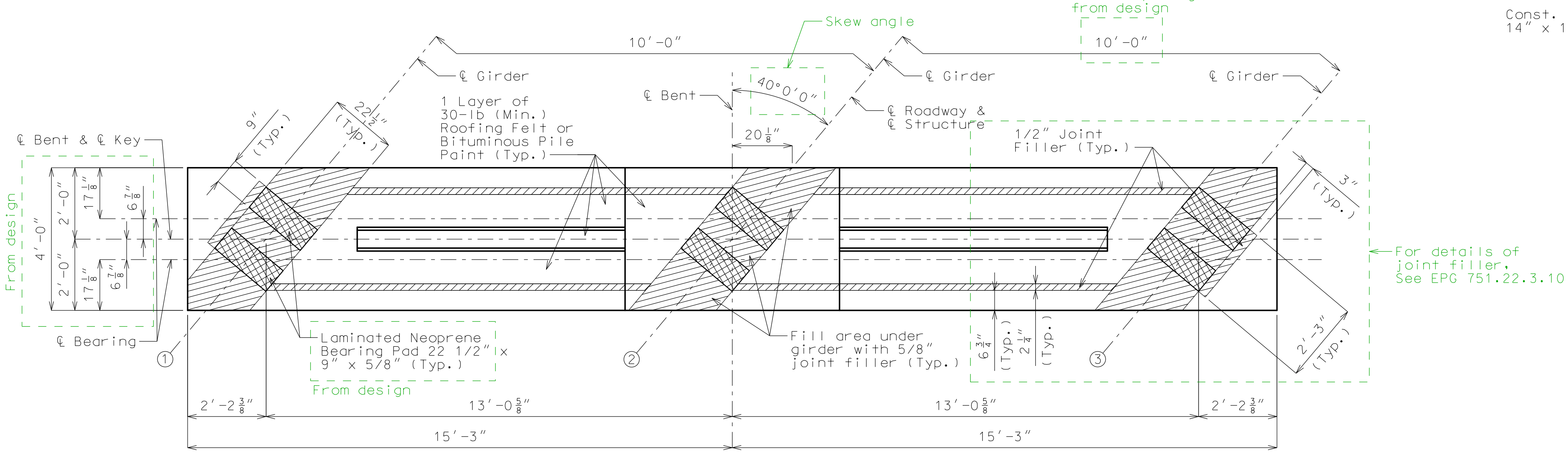
PLAN SHOWING REINFORCEMENT



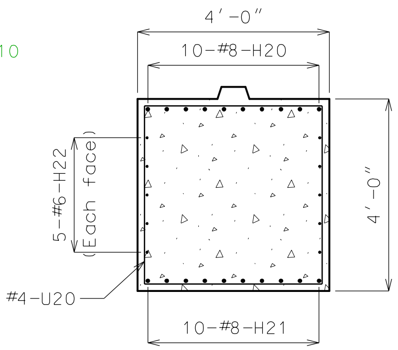
SECTION A-A



SECTION B-B



PLAN OF BEAM



SECTION C-C

General Notes:

Note G1.40. EPG 751.50 For steps 2" or more, use 2 1/4" x 1/2" joint filler up vertical face.

Work this sheet with Sheet No. 7.

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED	3/19/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	8
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

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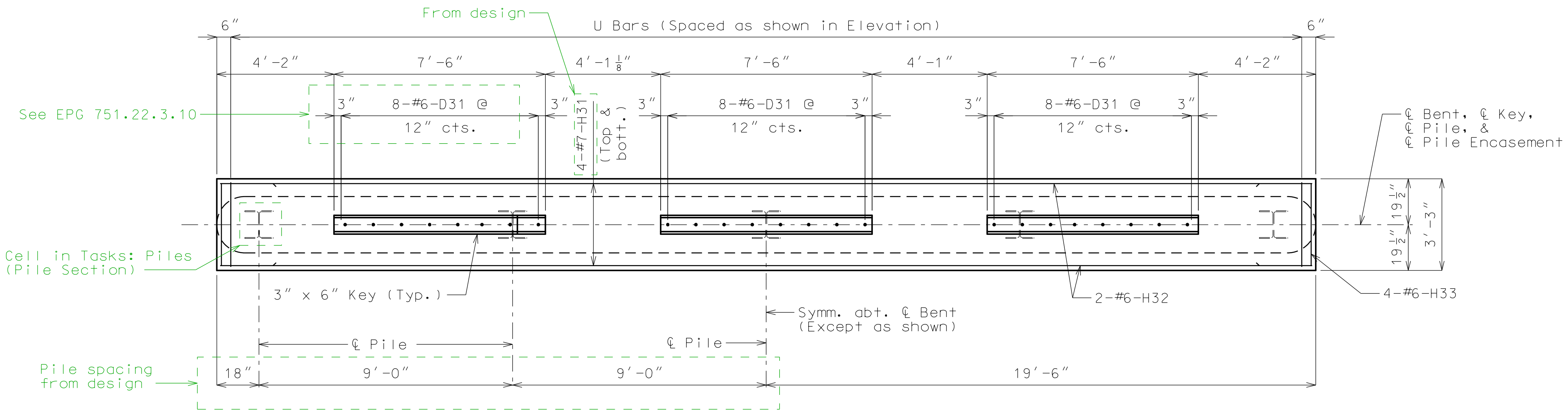
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

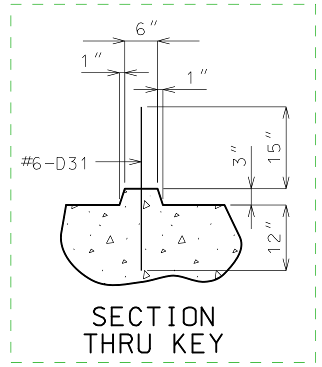
Example plans for Int. Bent No. 3 were taken from a different structure than the rest of the example plans. Therefore, some details may not match information shown on other sheets.

EPG 751.32.3 Concrete Pile Cap Intermediate Bent Details

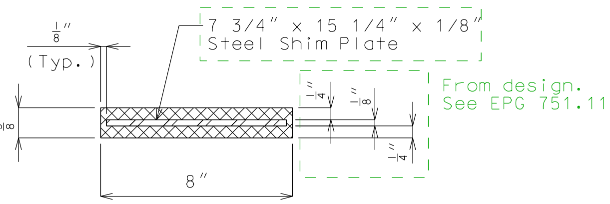


PLAN SHOWING REINFORCEMENT

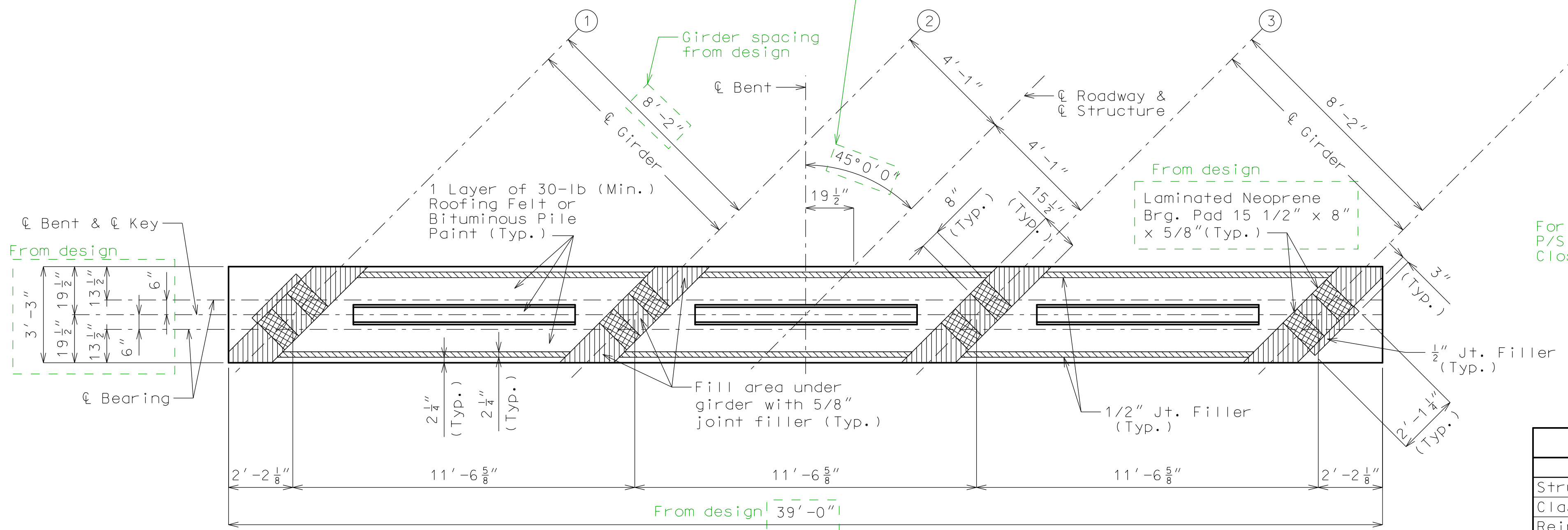
Cell in Tasks: Intermediate Bents (Section thru Key)



SECTION THRU KEY



SECTION THRU LAMINATED NEOPRENE BEARING PAD



PLAN OF BEAM

For details of Intermediate Bent No. 3 not shown, see Sheet No. 10.

For details of joint filler, see EPG 751.22.3.10, P/S Concrete I Girders, Closed Intermediate Bent Diaphragms

Cell in Tasks: Bridge Detailing Notes (G4.1 Substructure Quantity)

Substructure Quantity Table for Bent No. 3

Item		Quantity
Structural Steel Pile (12 in.)	linear foot	x
Class B Concrete (Substructure)	cu. yard	x
Reinforcing Steel (Bridges)	pound	x

Note G4.2, EPG 751.50 These quantities are included in the estimated quantities table on Sheet No. 2.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	3/19/2015
ROUTE P	STATE MO
DISTRICT BR	SHEET NO. *
COUNTY	ST. CHARLES
JOB NO.	J6S2088
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

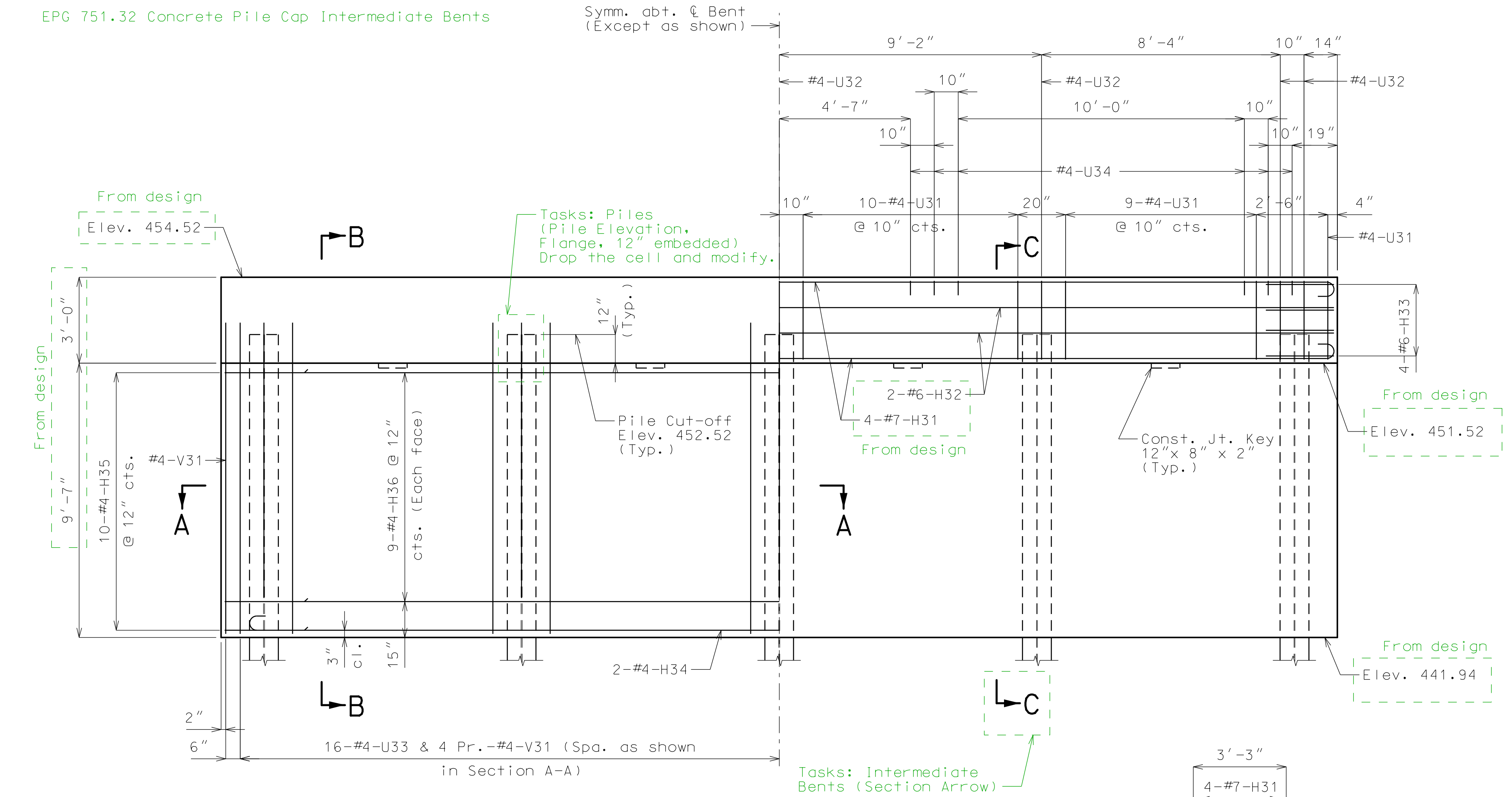
DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

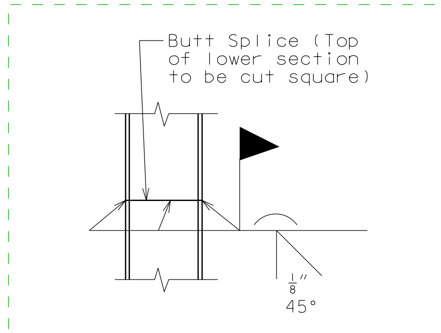
MoDOT

EPG 751.32 Concrete Pile Cap Intermediate Bents

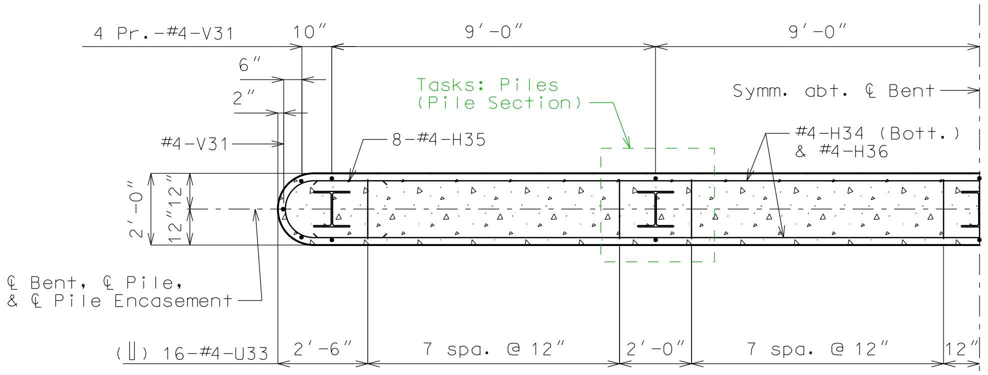


ELEVATION

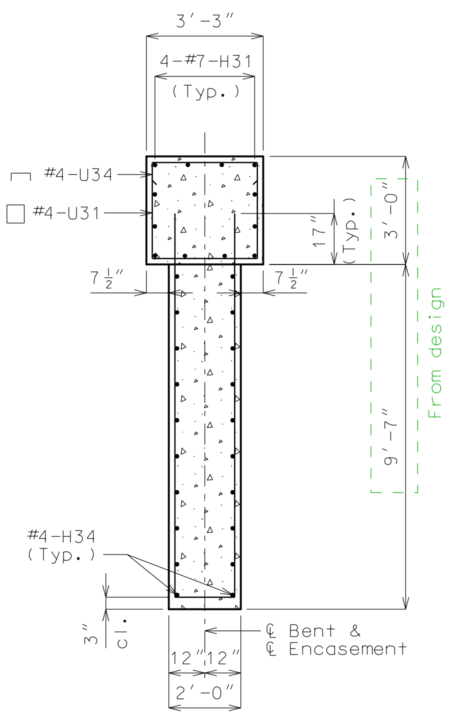
Tasks: Piles (Pile Splice Detail)



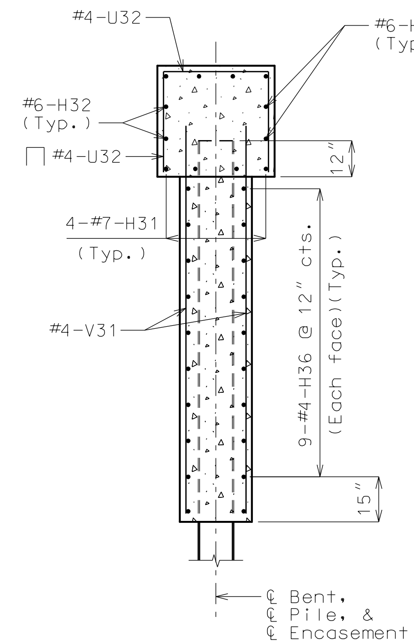
STEEL PILE SPLICE
(If required)



SECTION A-A



SECTION B-B



SECTION C-C

General Notes:

For Plan of Beam and Plan of Beam Showing Reinforcement, see Sheet No. 9.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	3/19/2015
ROUTE	P
STATE	MO
DISTRICT	BR
SHEET NO.	*
COUNTY	ST. CHARLES
JOB NO.	J6S2088
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

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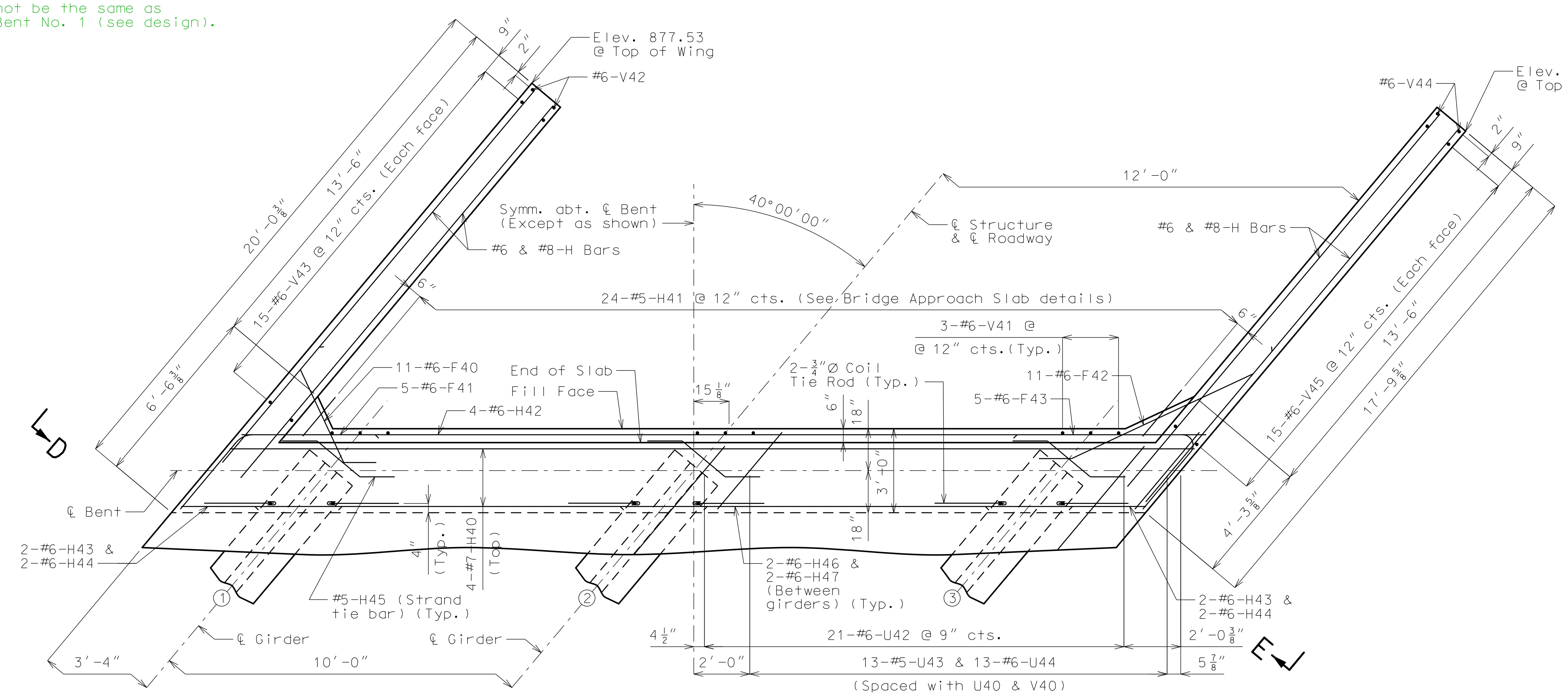
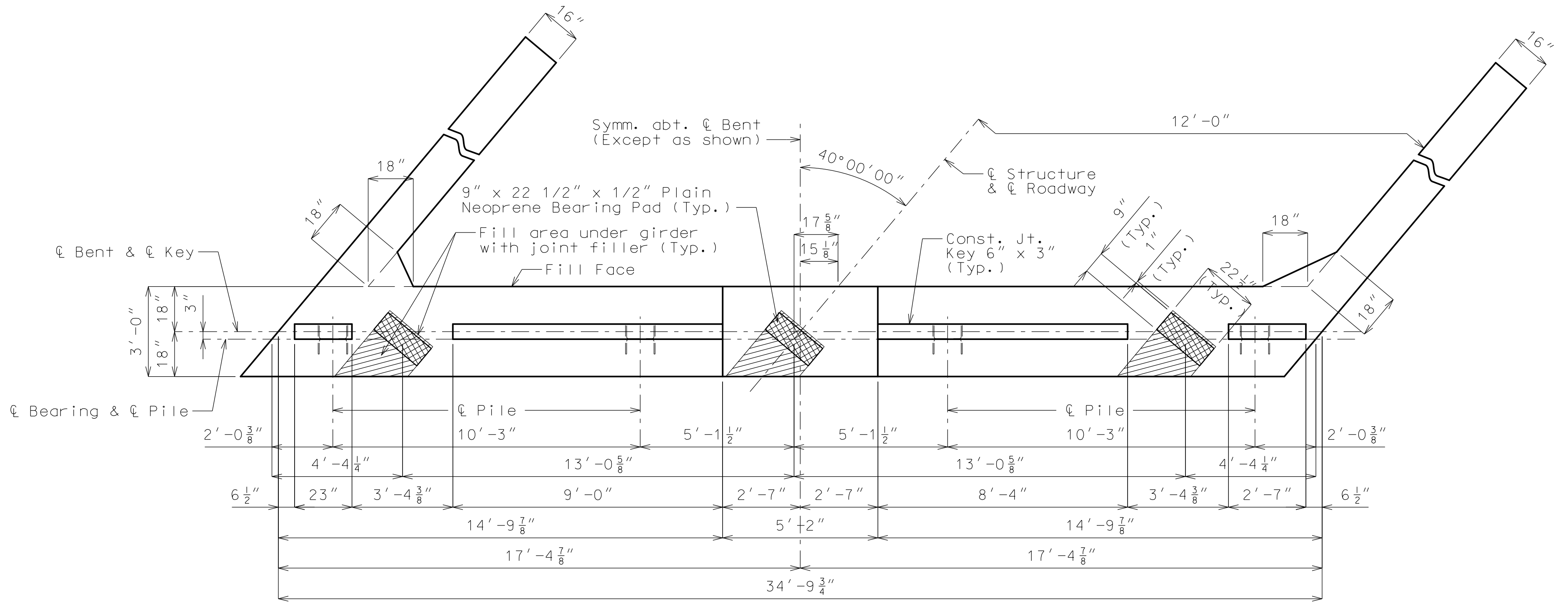
See notations for End Bent No. 1

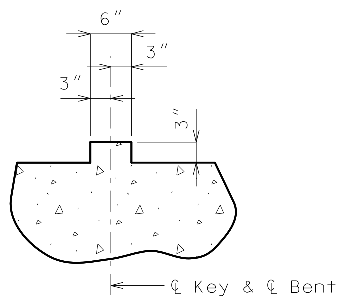
Wing dimensions for End Bent No. 4 may not be the same as End Bent No. 1 (see design).



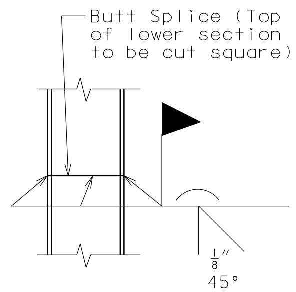
PART PLAN



PLAN OF BEAM



SECTION THRU KEY



STEEL PILE SPLICE
(If required)

General Notes:

For details of End Bent No. 4 not shown, see Sheets No. 12 & 13.

Strands at end of girders shall be field bent or, if necessary, cut in field to maintain 1 1/2" minimum clearance to fill face of end bent.

Bend #6-F40 & #6-F42 bars in field to clear girders.

For location of Coil Tie Rods and #5-H45 (Strand Tie Bar), see Sheet No. 14.

For details of Vertical Drain at End Bents, see Sheet No. 6.

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

All U-bars shall be placed parallel to ℄ Roadway.

For Elevations D-D & E-E, see Sheet No. 13.

For details of Bridge Approach Slab, see Sheet No. 26.

DETAILS OF END BENT NO. 4

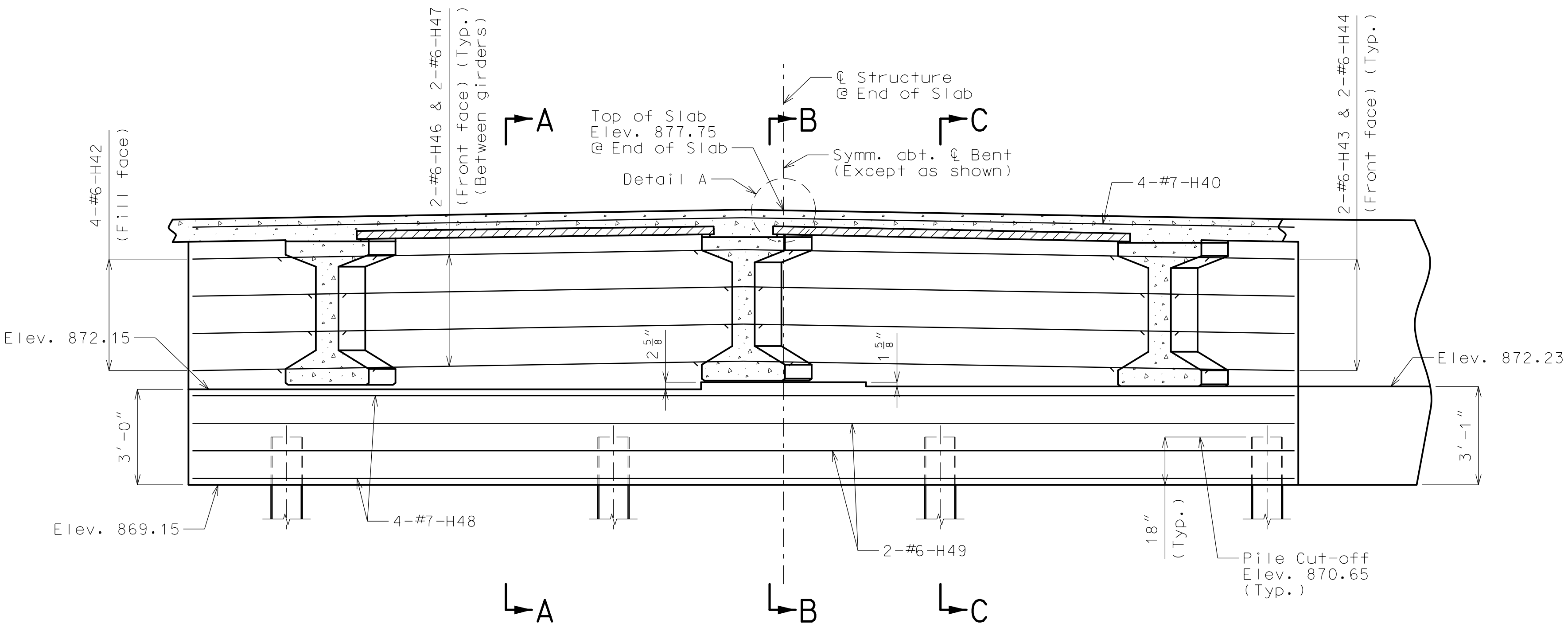
Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

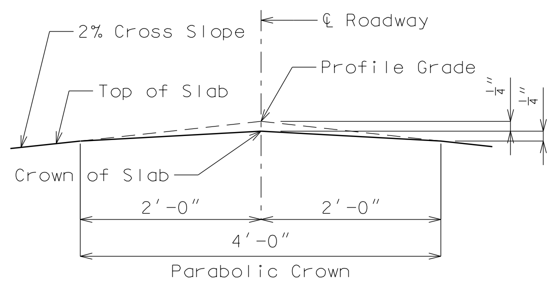
DATE PREPARED	
3/19/2015	
ROUTE: B	STATE: MO
DISTRICT: BR	SHEET NO.: 11
COUNTY: VERNON	
JOB NO.: J7S0546	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: EXAMPLE	

DESCRIPTION | DATE

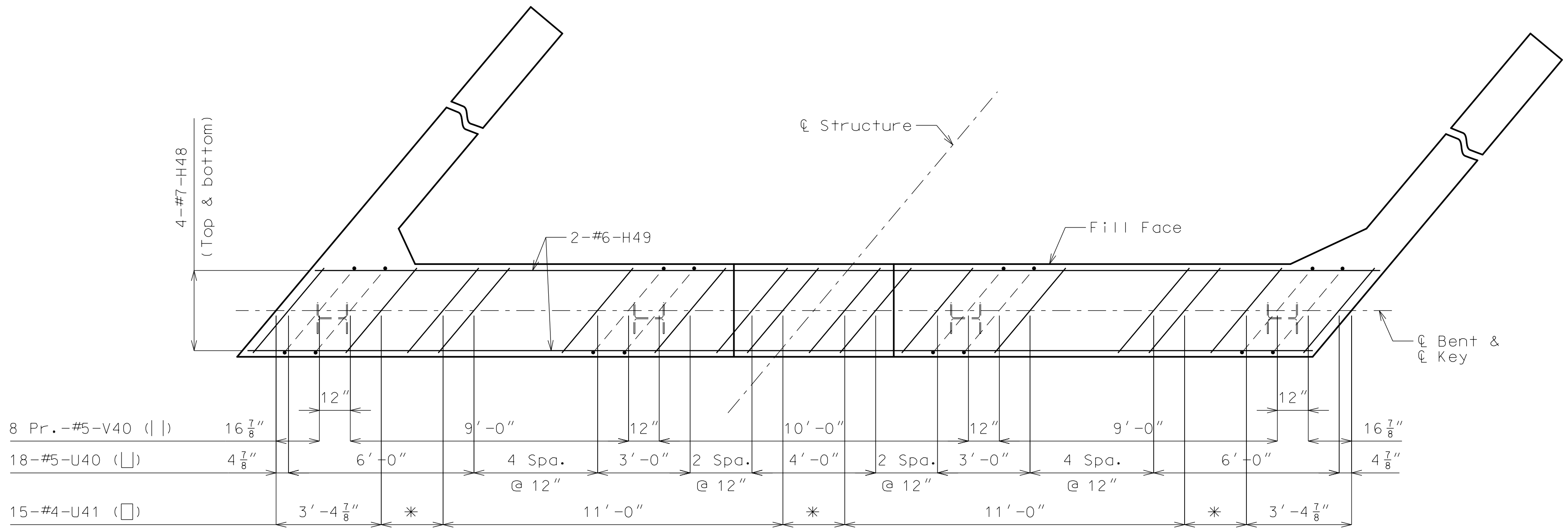
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION NEAR END BENT



DETAIL A



PLAN OF BEAM SHOWING REINFORCEMENT

Keys not shown for clarity

* 4 Spaces @ 6"

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Class 1 Excavation	cu. yard	40
Structural Steel Piles (12 in.)	linear foot	76
Pile Point Reinforcement	each	4
Class B Concrete (Substructure)	cu. yard	16.7

These quantities are included in the Estimated Quantities table on Sheet No. 2.

General Notes:

For details of End Bent No. 4 not shown, see Sheets No. 11 & 13.

All U-bars and Pr. V-bars shall be placed parallel to ℄ Roadway.

For details of Vertical Drain at End Bents, see Sheet No. 6.

For Sections A-A, B-B & C-C, see Sheet No. 13.

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1 1/2".

DETAILS OF END BENT NO. 4

Detailed Nov. 2014
Checked Nov. 2014

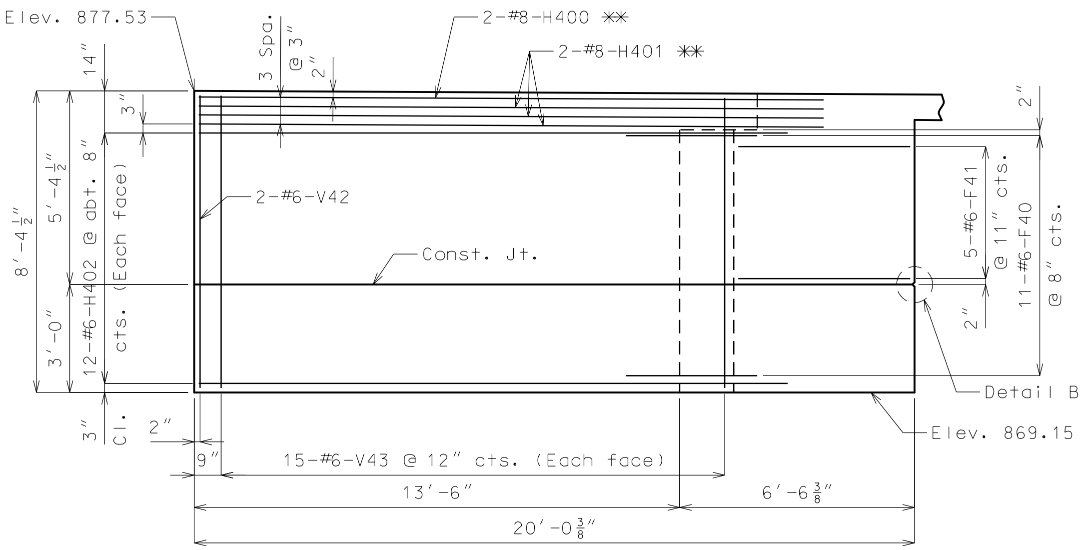
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED	
3/19/2015	
ROUTE B	STATE MO
DISTRICT BR	SHEET NO. 12
COUNTY VERNON	
JOB NO. J7S0546	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. EXAMPLE	

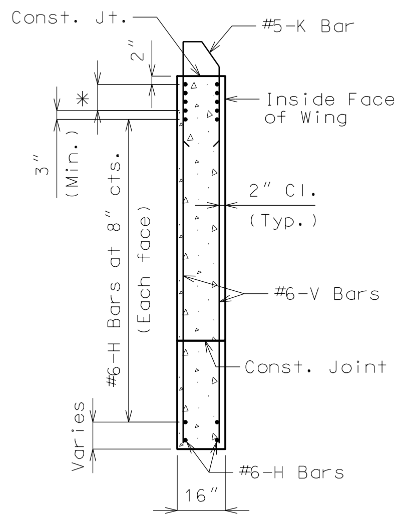
DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



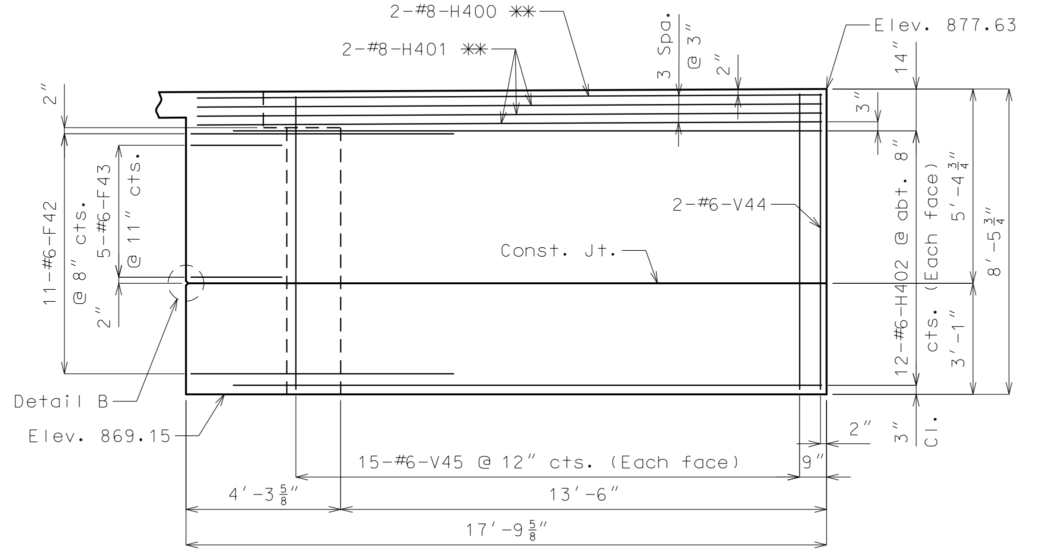
ELEVATION D-D



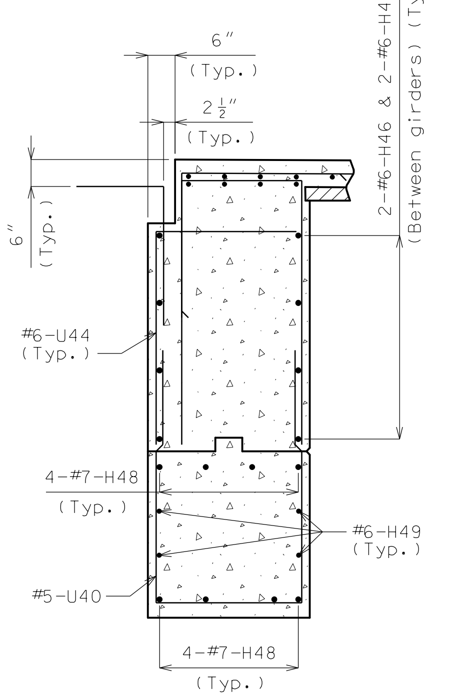
TYPICAL SECTION THRU WING

* #8-H Bars at 3" cts. (Each face)(Place with grade)

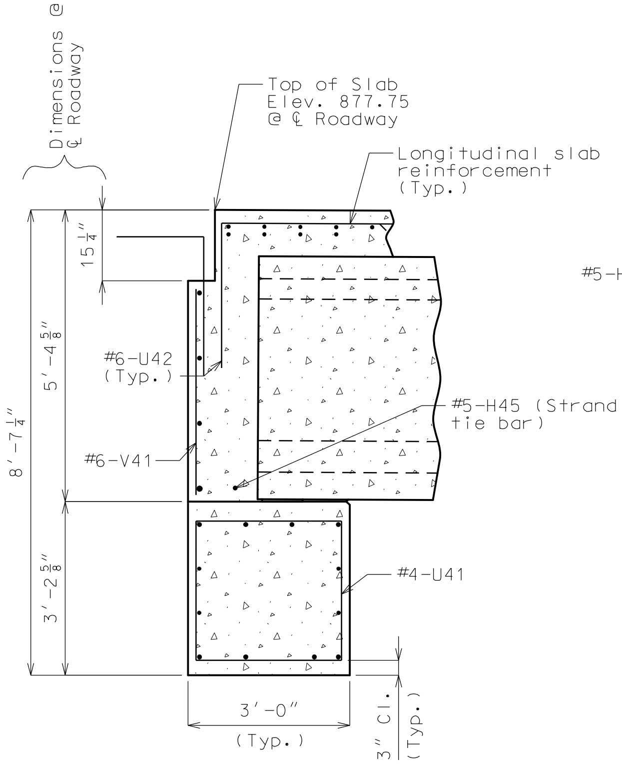
** Placed with grade



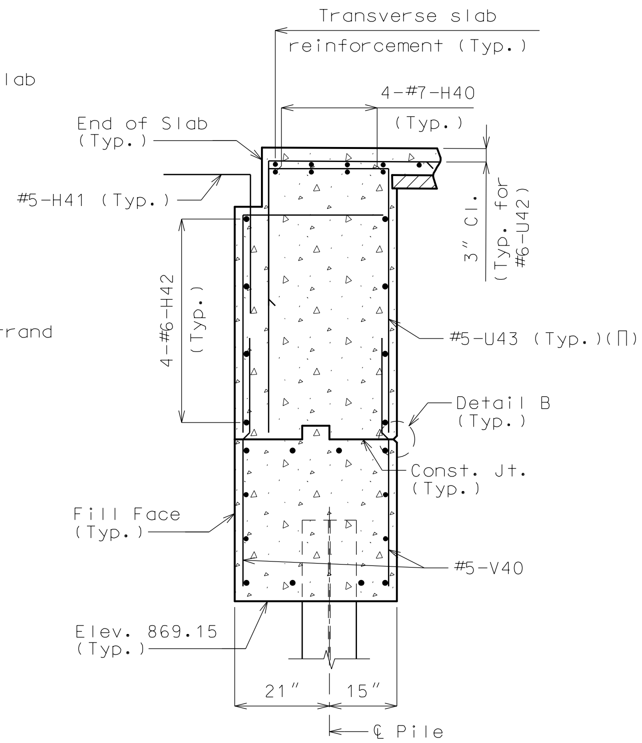
ELEVATION E-E



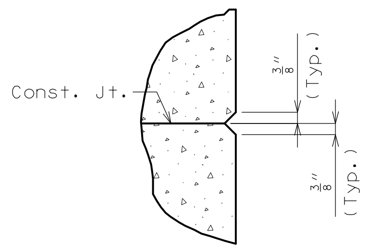
SECTION A-A



SECTION B-B



SECTION C-C



DETAIL B

General Notes:

For details of End Bent No. 4 not shown, see Sheets No. 11 & 12.

All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

Bend #6-F40 & #6-F42 bars in field to clear girders.

For Details and Reinforcement of the Safety Barrier Curb, see Sheets No. 23 thru 25.

For details of Vertical Drain at End Bents, see Sheet No. 6.

For location of #5-H45 (Strand Tie Bar), see Sheet No. 14.

For location of Elevations D-D & E-E, see Sheet No. 11.

For location of Sections A-A, B-B & C-C, see Sheet No. 12.

For details of Bridge Approach Slab, see Sheet No. 26.

DETAILS OF END BENT NO. 4

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED	3/19/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	13
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Concrete for prestressed girders shall be Class A-1 with f'c = 6000 psi and f'ci = 4500 psi. — From design

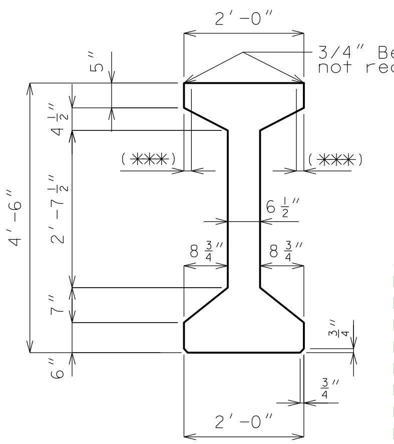
(+) indicates prestressing strand. — 31 kips per strand

Use 18 strands with an initial prestress force of 558 kips.

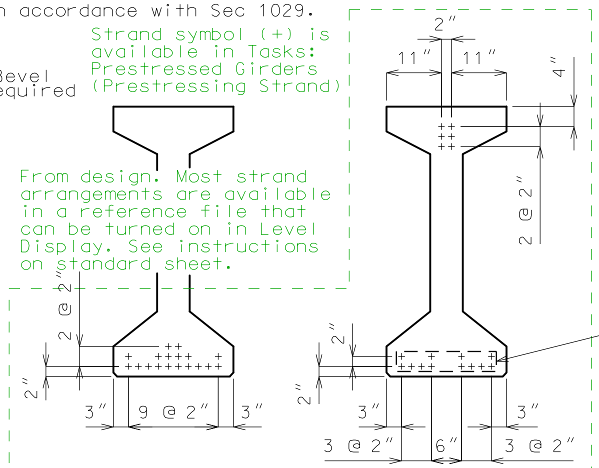
Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 1/2 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.

** 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 3" to 3 1/4" 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.

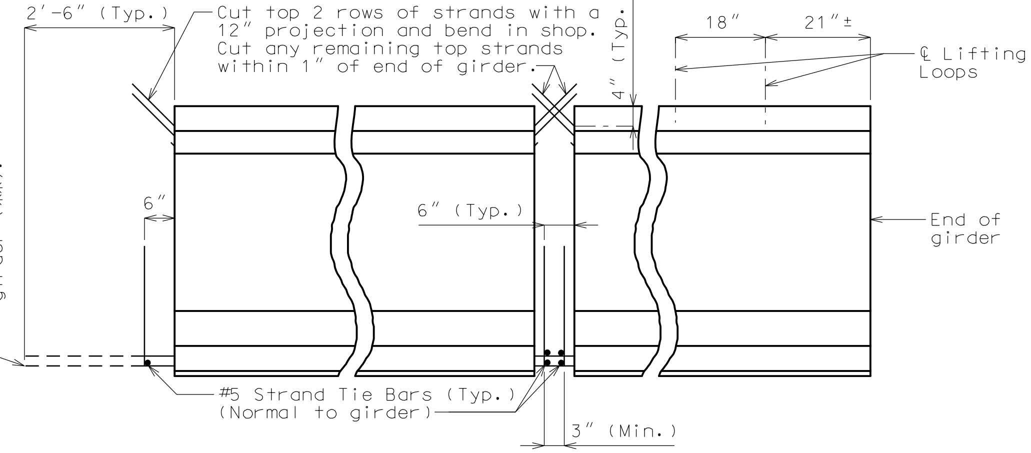


GIRDER DIMENSIONS



℄ GIRDER END OF GIRDER

STRAND ARRANGEMENTS



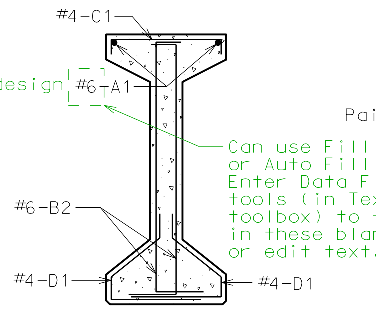
END BENT INTERMEDIATE BENT

STRAND DETAILS AT GIRDER ENDS

LOCATION OF LIFTING LOOPS

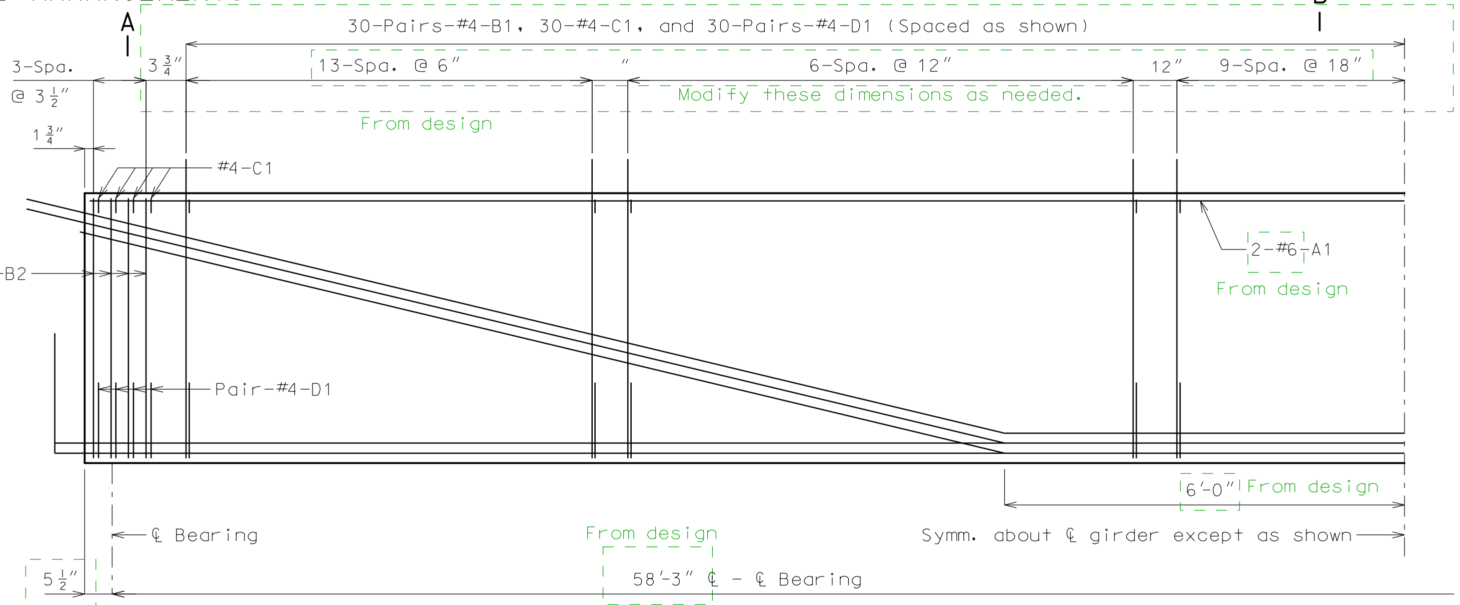
Use current standard sheet, found in ProjectWise under Bridge/A_Bridge_Standard_Drawings/ PSI Girders_PSI/Current/ (use appropriate girder type and size)

EPG 751.22 P/S Concrete I Girders



SECTION A-A

Strands not shown for clarity.

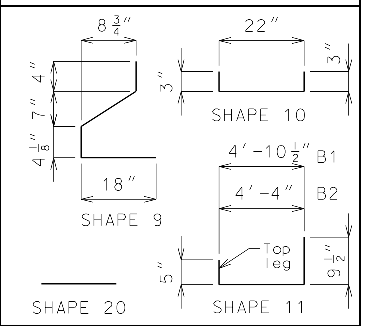


HALF ELEVATION OF GIRDER SPAN (-)

Exterior and interior girders are the same, except for coil ties, and coil inserts for slab drains and holes for steel intermediate diaphragms. — Remove underlined portions that don't apply.

Detailer calculates marked values.

BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
2	6 A1	59'-0"	20	
120	X B1	5'-11"	11	
16	6 B2	5'-4"	11	
68	4 C1	2'-2"	10	
136	4 D1	3'-0"	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.

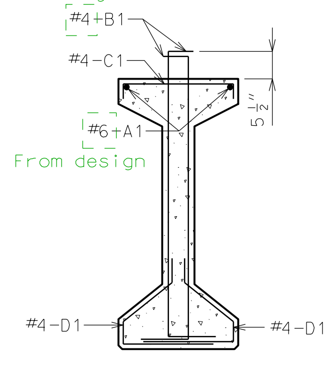
Actual lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1".

All reinforcement shall be Grade 60.

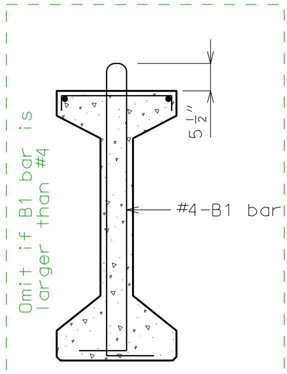
The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

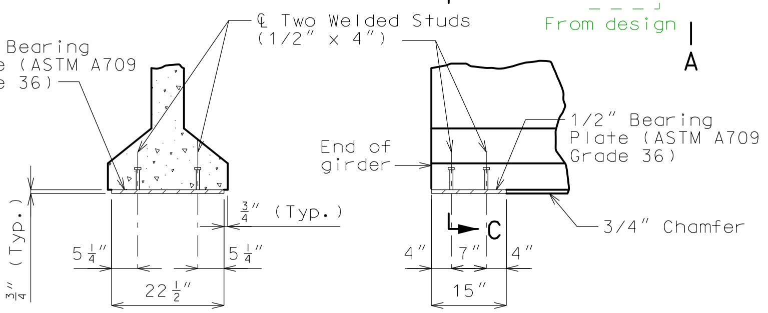


SECTION B-B

Strands not shown for clarity.



B1 BAR PERMISSIBLE ALTERNATE SHAPE



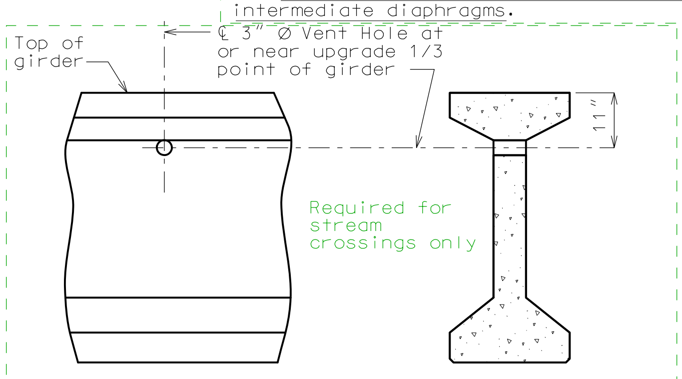
SECTION C-C

PART ELEVATION AT END OF GIRDER

BEARING PLATE DETAILS

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

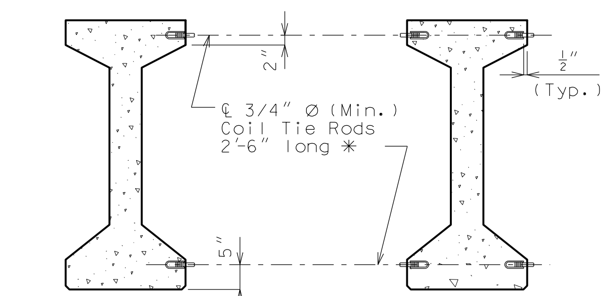
Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete I-Girder.



PART ELEVATION OF GIRDER

PART SECTION NEAR VENT HOLE

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.



EXTERIOR GIRDERS AT INT. BENTS

EXTERIOR GIRDERS AT END BENTS INTERIOR GIRDERS AT ALL BENTS

DETAILS OF COIL TIES

Cost of 3/4" Ø 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 to 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 inserts at slab drains, see Sheet No. .

For location of coil ties, see Sheets No. & .

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

For details of diaphragms, see Sheet No. .

For Girder Camber Diagram, see Sheet No. .

* Length of coil tie rods at exterior girders at end bents = 2'-9".

Omit if length is ≤ 2'-6". See EPG 751.22.3.14 — Detailer calculates

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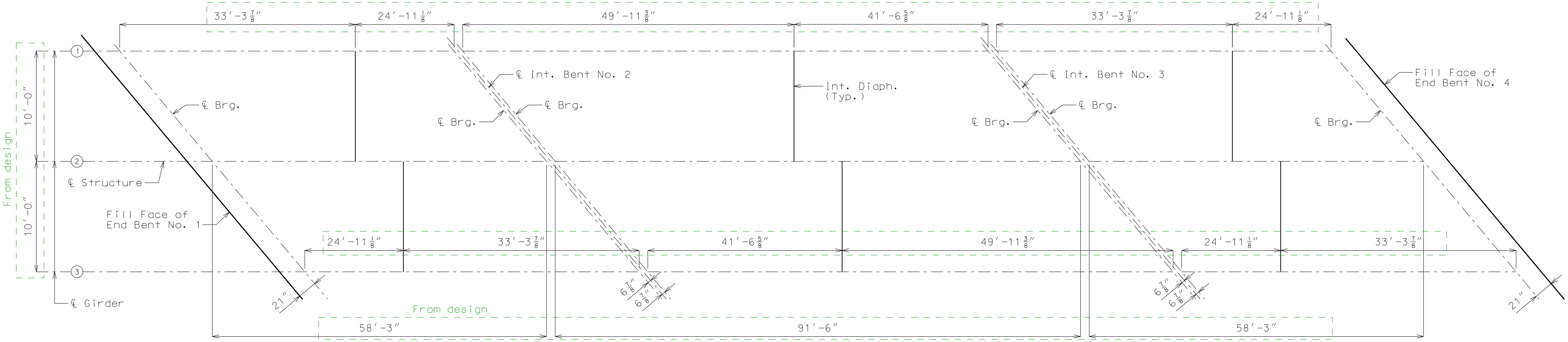
Omitted Sheet No. 15 (Prestressed Girder) because it is similar to this sheet.

Detailed
Checked

Note: This drawing is not to scale. Follow dimensions.

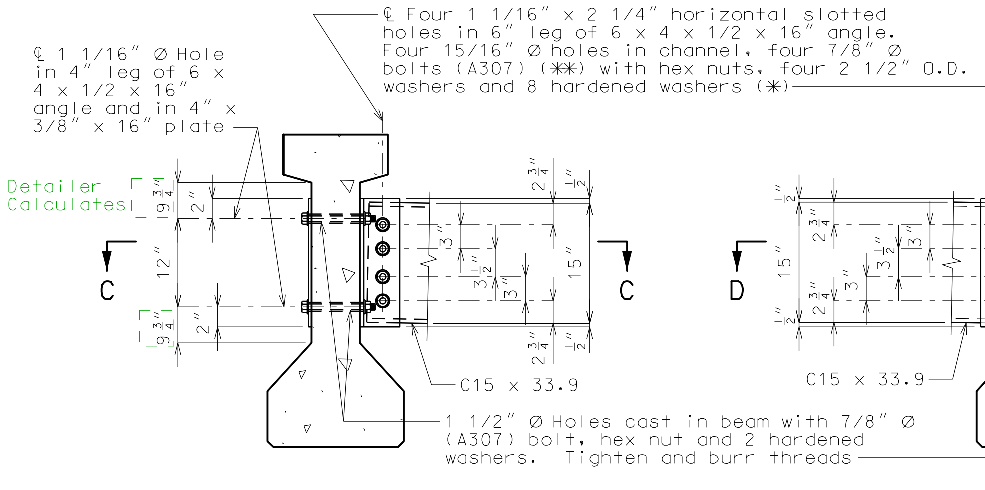
EPG 751.22.3.13 P/S Concrete I-Girders, Intermediate Diaphragms
Steel intermediate diaphragms are used when a span is over 50'.



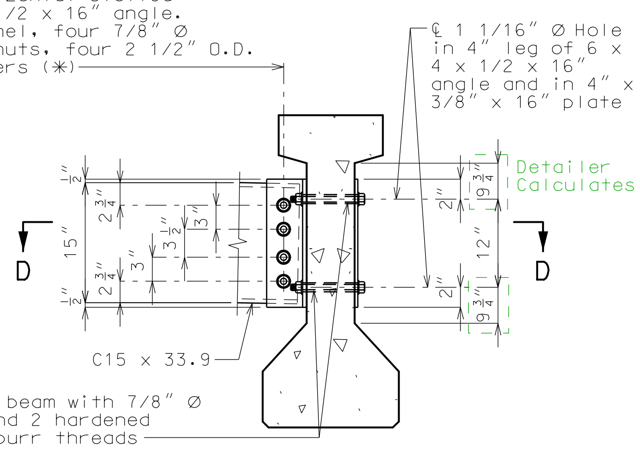
PLAN SHOWING LOCATION OF STEEL INTERMEDIATE DIAPHRAGMS

Longitudinal dimensions are horizontal.

Use current standard sheet, found in ProjectWise under Bridge/A_Bridge_Standard_Drawings/Diaphragms_DIA/ Current/ (Use appropriate version for girder type, skew, precast panels or cast in place slab.)

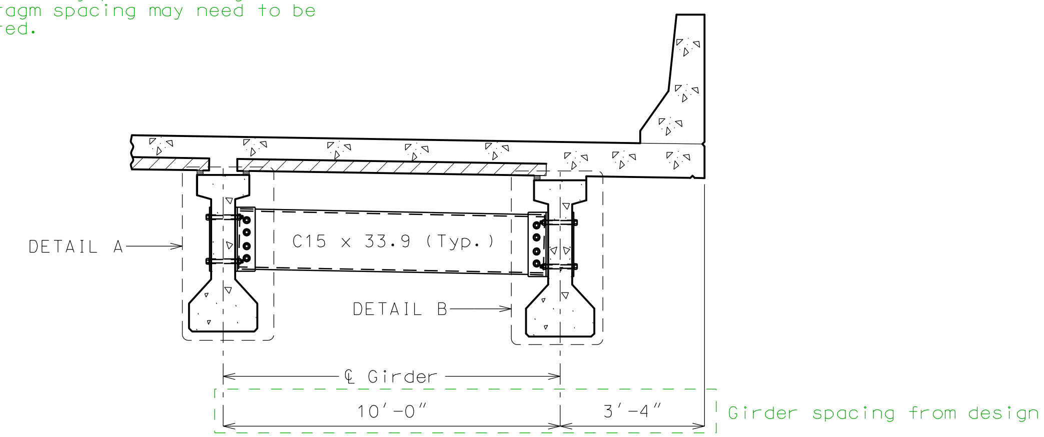


DETAIL A

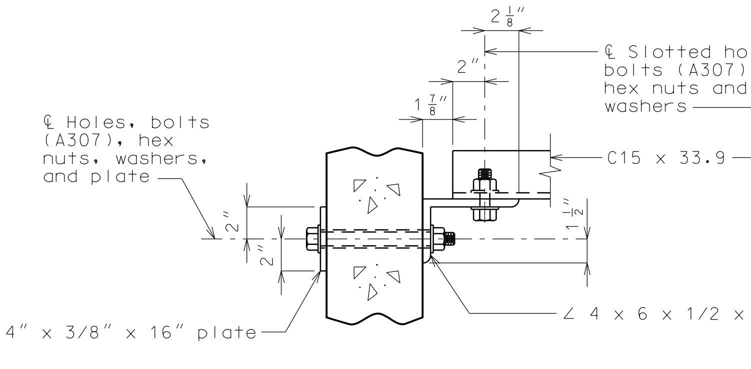


DETAIL B

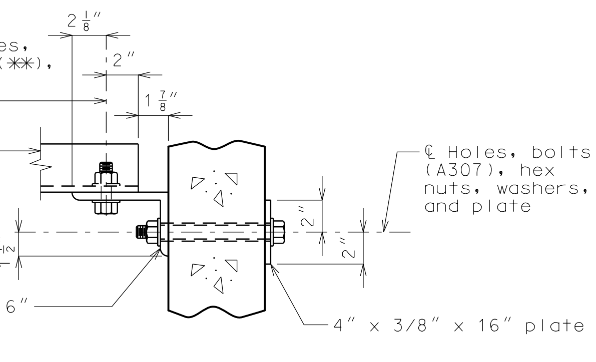
Detailer: Check that the 1 1/2"Ø holes for the diaphragms shown on the plans will provide a minimum clearance of 1 1/2" to any prestressing strands. Diaphragm spacing may need to be adjusted.



PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS



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" Ø 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.

STEEL INTERMEDIATE DIAPHRAGM DETAILS

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

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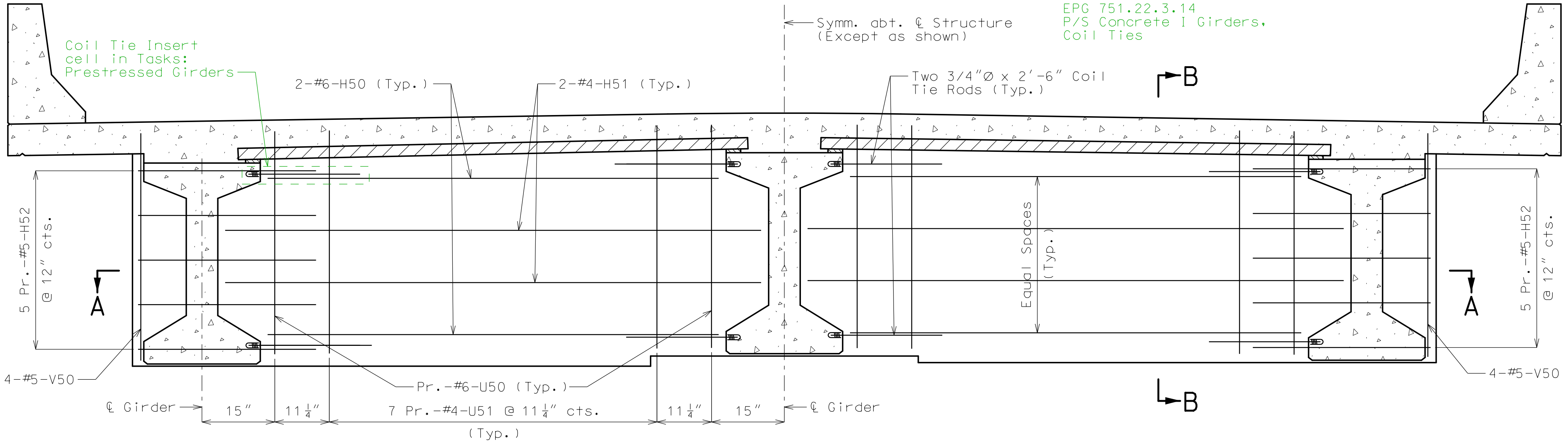
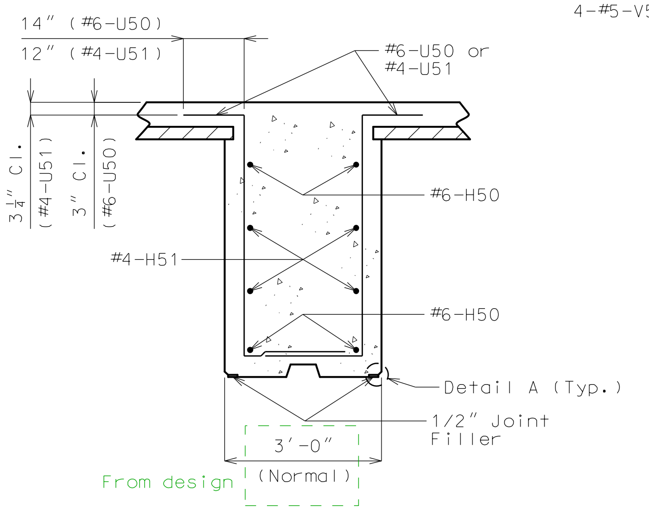
EPG 751.22.3.10 P/S Concrete I Girders,
Closed Intermediate Bent Diaphragms

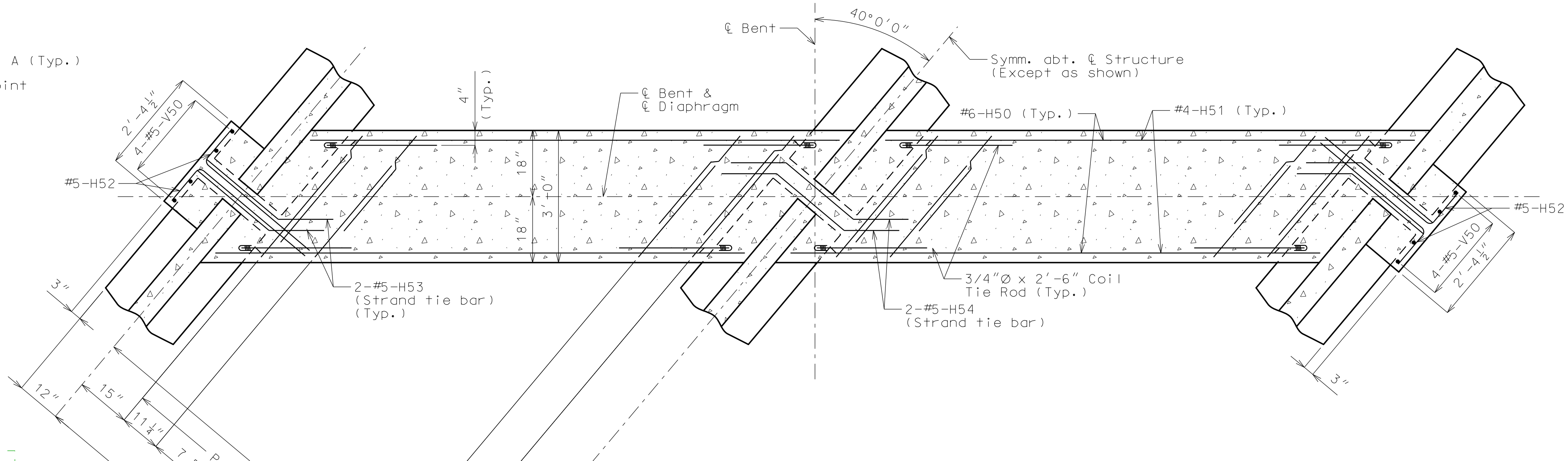


SECTION NEAR INTERMEDIATE BENT

Normal to ℄ Structure

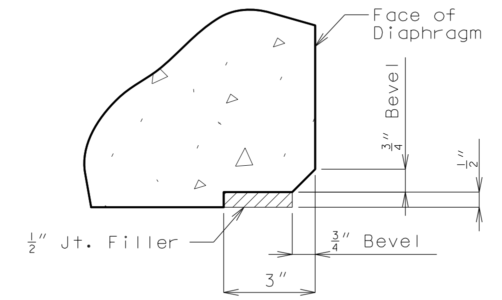


SECTION B-B



SECTION A-A

Cell in Tasks: Intermediate Bents
(Detail A for Diaphragm)



DETAIL A

General Notes:

For location of Strand Tie Bars, see Sheets No. 14 & 15.

For location and details of Coil Tie Rods, see Sheets No. 14 & 15.

Note H2c8.1,
EPG 751.50 → Diaphragms at intermediate bents shall be built vertical.

All U-bars in diaphragms are to be placed parallel to ℄ Roadway.

DETAILS OF CONCRETE DIAPHRAGMS AT INTERMEDIATE BENTS NO. 2 & 3

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

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COUNTY	VERNON
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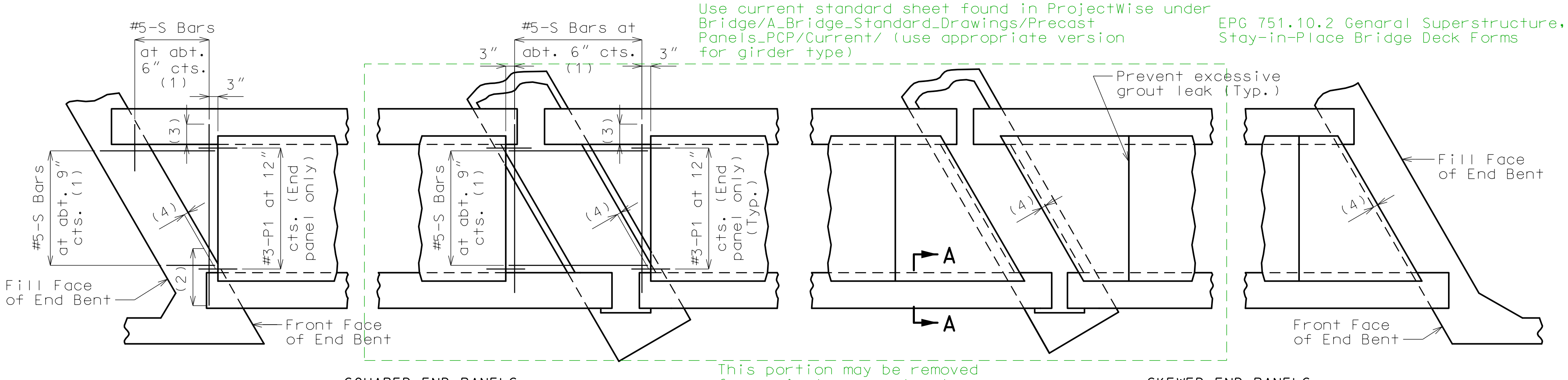
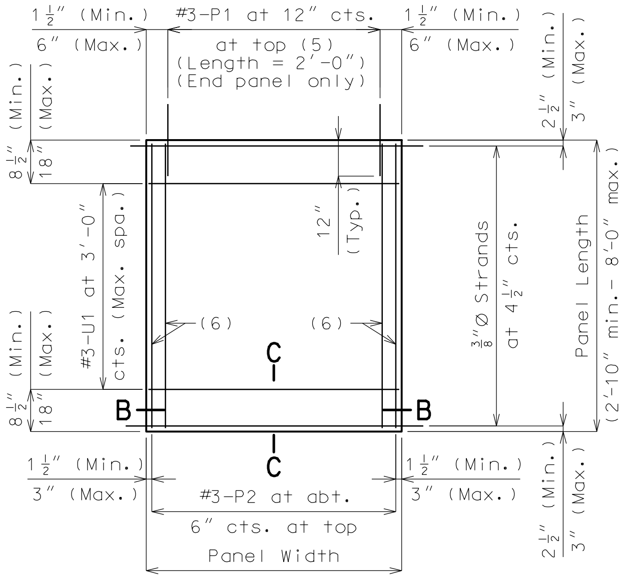
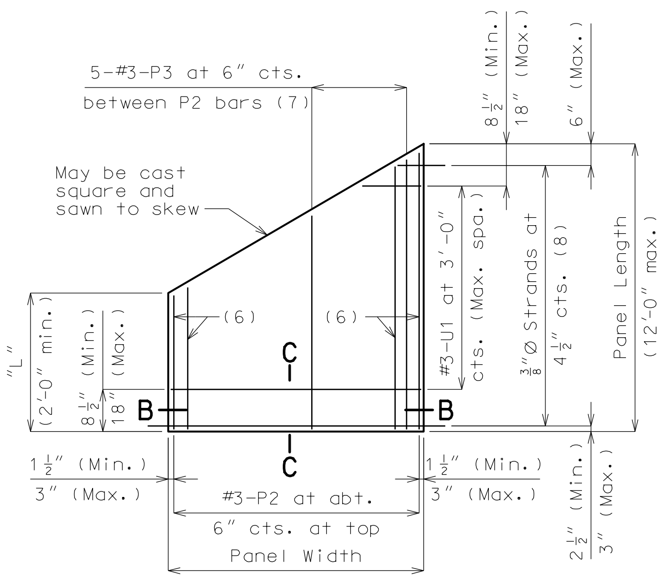


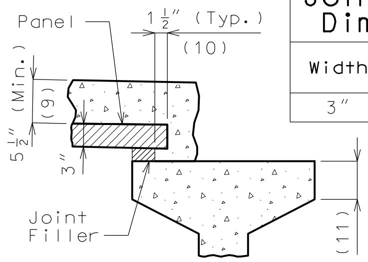
PLAN OF PANEL PLACEMENT



PLAN OF SQUARED PANEL



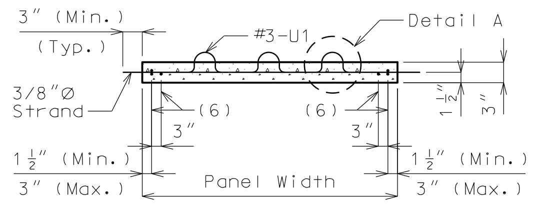
PLAN OF OPTIONAL SKEWED END PANEL



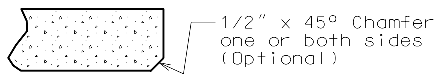
SECTION A-A

Joint Filler Dimensions

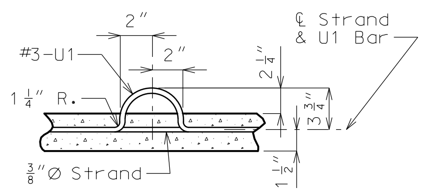
Width	Height Min.	Height Max.
3"	1"	4"



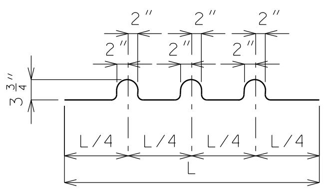
SECTION B-B



SECTION C-C



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.

Reference Notes:

Plan of Panel Placement:

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

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

(3) Extend S-bars 9 inches beyond edge of girder.

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

Plans of Panel:

(5) P1 bars not required for square integral end bents.

(6) #3-P2 bars near edge of panel at bottom (under strands).

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

(8) 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 debonded at the fabricator's option.

Section A-A:

(9) Slab thickness over prestressed panels varies due to girder camber. 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.

(10) Contractor shall ensure proper consolidation under and between panels.

(11) 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.

General Notes:

Prestressed Panels:

Concrete for prestressed panels shall be Class A-1 with f'c = 6,000 psi, f'ci = 4,000 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 squared 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.

Precast panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

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

Reinforcing Steel:

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.

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

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 ensure 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"Ø 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.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

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

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

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

Joint Filler:

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet No. XX for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions. Fill in

Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness to within tolerances.

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.

Joint filler shall be glued to the girder. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

DETAILS OF PRECAST PRESTRESSED PANELS

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

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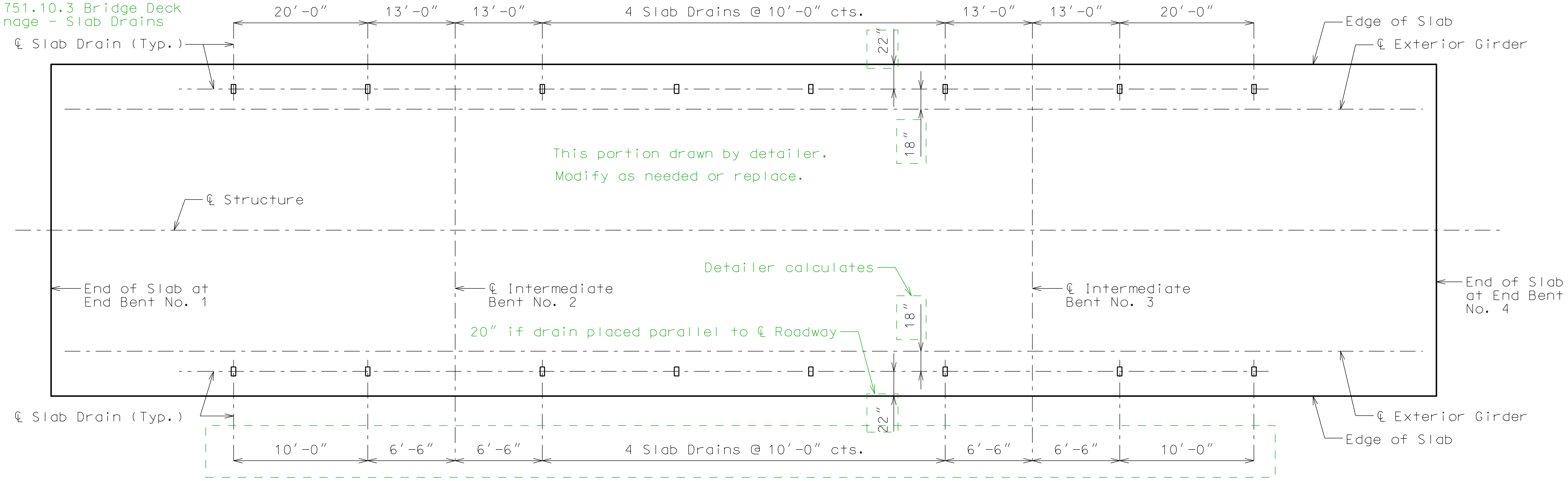
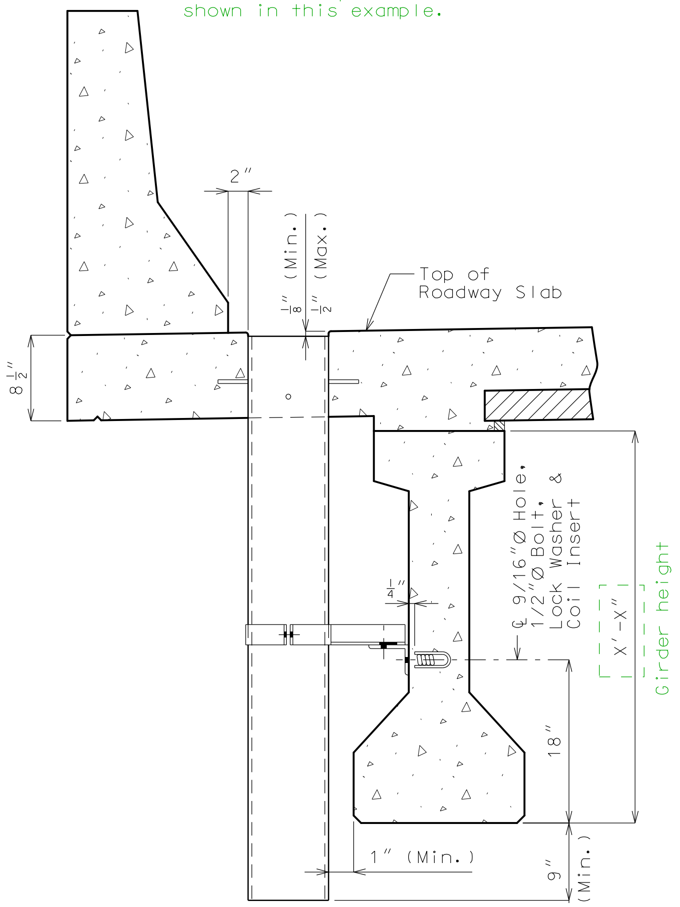
Use current standard sheet found in ProjectWise Bridge/A_Bridge_Standard_Drawings/ Drains_DRA/current/ (use appropriate version for girder type)

EPG 751.10.3 Bridge Deck Drainage - Slab Drains

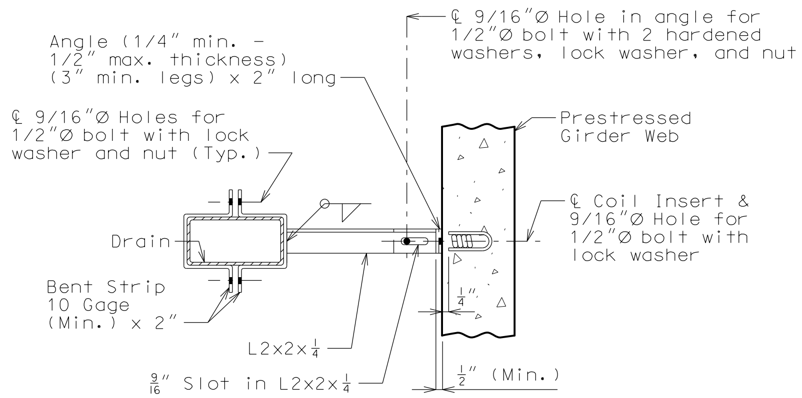


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

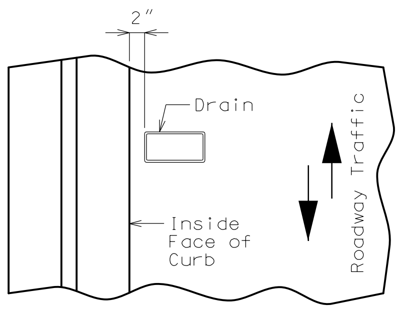
On Standard Drawing, Details of Drains Parallel to Roadway are drawn outside the border. If needed, use those in place of details for transverse drains shown in this example.



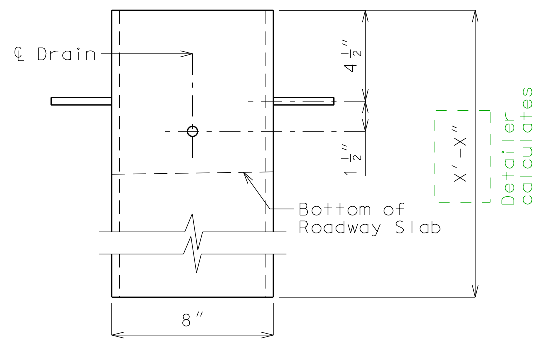
PART SECTION NEAR DRAIN



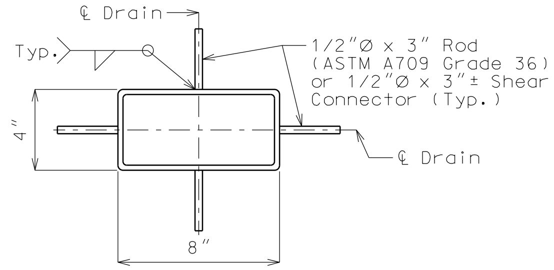
PART SECTION SHOWING BRACKET ASSEMBLY



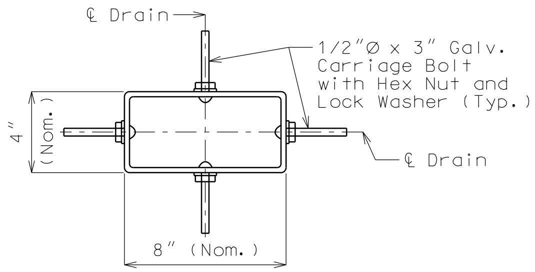
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN



PLAN OF OPTIONAL FRP DRAIN

General Notes:

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Locate drains in slab by dimensions shown in Part Section Near Drain.

Reinforcing steel shall be shifted to clear drains.

The coil inserts and bracket assembly shall be galvanized in accordance with ASTM A123.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.

Shop drawings will not be required for the slab drains and the bracket assembly.

The coil insert required for the bracket assembly attachment shall be located on the prestressed girder shop drawings.

Coil inserts shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

The bolt required to attach the slab drain bracket assembly to the prestressed girder web shall be supplied by the prestressed girder fabricator.

Notes (Steel Drain):

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes (Optional FRP Drain)

Fiberglass Reinforced Polymer (FRP) slab drains may be substituted for steel slab drains as a contractor's option.

Drains shall be machine filament-wound thermosetting resin tubing meeting the requirements of ASTM D2996 with the following exceptions:

Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance.

The color of the slab drain shall be Gray (Federal Standard #26373). The color shall be uniform throughout the resin and any coating used.

The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be recommended by the manufacturer to ensure a smooth, chip free cut.

No additional payment will be made for this substitution.

Include notes and details of FRP drains if option is to be used.

SLAB DRAIN DETAILS

Detailed Mar. 2015
Checked Mar. 2015

Note: This drawing is not to scale. Follow dimensions.

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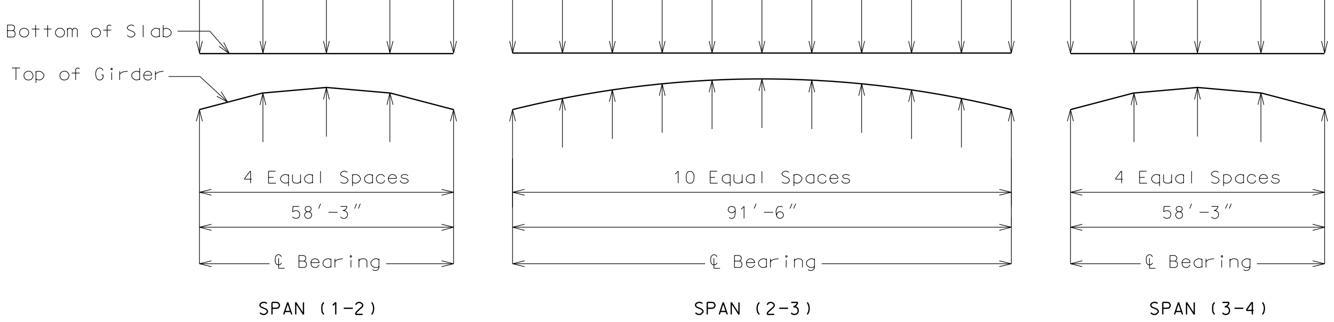
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

Cell in Tasks: Slab Sheet Details (Haunching Diagram - Quarter Pts or Haunching Diagram - Tenth Pts)
Fill in information from design.

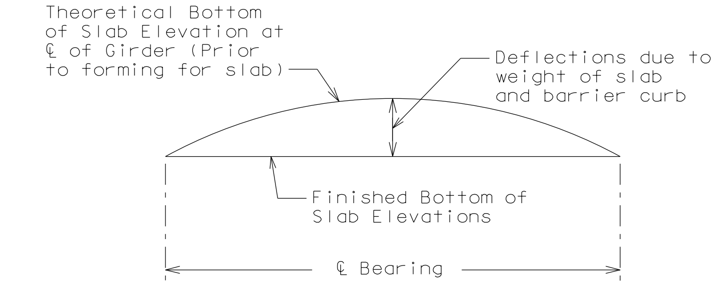
Girder No. 1	1 13/16″	1 3/8″	1 5/16″	1 11/16″	2 7/16″	2 9/16″	2 1/8″	1 3/4″	1 1/2″	1 5/16″	1 5/16″	1 7/16″	1 3/4″	2 1/8″	2 11/16″	3 1/4″	3 5/16″	2 1/4″	1 1/2″	1 1/4″	1 7/16″
Girder No. 2	1 7/8″	1 7/16″	1 5/16″	1 11/16″	2 3/8″	2 7/16″	2 1/8″	1 13/16″	1 9/16″	1 7/16″	1 7/16″	1 5/8″	1 7/8″	2 3/16″	2 5/8″	3 1/8″	3 1/4″	2 3/16″	1 1/2″	1 5/16″	1 7/16″
Girder No. 3	1 13/16″	1 3/8″	1 5/16″	1 11/16″	2 7/16″	2 9/16″	2 1/8″	1 3/4″	1 1/2″	1 5/16″	1 5/16″	1 7/16″	1 3/4″	2 1/8″	2 11/16″	3 1/4″	3 5/16″	2 1/4″	1 1/2″	1 5/16″	1 7/16″



THEORETICAL SLAB HAUNCHING DIAGRAM

Use quarter points for spans less than 75′.
Use tenth points for spans 75′ or more.

Cell in Tasks: Slab Sheet Details (Bottom of Slab Elevation Diagram)



TYPICAL SLAB ELEVATIONS DIAGRAM

Cell in Tasks: Slab Sheet Details (Bottom of Slab Elevations - Quarter Pts or Bottom of Slab Elevations - Tenth Pts)
Fill in information from design.

Theoretical Bottom of Slab Elevations at ℄ of Girder (Prior to forming for slab) **

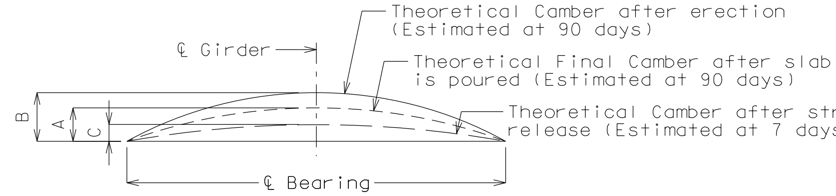
Girder Number	Span (1-2) (58′-3″ ℄ brg. - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
1	875.75	875.84	875.92	875.99	876.05
2	875.98	876.06	876.14	876.21	876.27
3	875.84	875.92	876.00	876.07	876.13

Girder Number	Span (2-3) (91′-6″ ℄ brg. - ℄ brg.)										
	℄ brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ brg.
1	876.05	876.13	876.21	876.28	876.34	876.39	876.43	876.46	876.48	876.50	876.51
2	876.28	876.36	876.44	876.52	876.58	876.63	876.67	876.70	876.72	876.73	876.73
3	876.14	876.22	876.29	876.36	876.42	876.47	876.51	876.55	876.57	876.58	876.59

Girder Number	Span (3-4) (58′-3″ ℄ brg. - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
1	876.52	876.60	876.68	876.75	876.81
2	876.74	876.83	876.91	876.97	877.03
3	876.60	876.69	876.77	876.83	876.89

** 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).

Cell in Tasks: Slab Sheet Details (P/S Girder Camber Diagram)
Fill in information from design.



Girder	Span (1-2)			Span (2-3)			Span (3-4)		
	A	B	C	A	B	C	A	B	C
Exterior	7/8″	1 1/16″	3/4″	1 9/16″	2 7/8″	1 1/4″	7/8″	1 1/16″	3/4″
Interior	13/16″			1 5/16″			13/16″		

GIRDER CAMBER DIAGRAM

If girder camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete I-Girder.

Conversion factors for girder camber (estimated at 90 days)

0.1 pt. = 0.314 x 0.5 pt.
0.2 pt. = 0.593 x 0.5 pt.
0.3 pt. = 0.813 x 0.5 pt.
0.4 pt. = 0.952 x 0.5 pt.

0.25 pt. = 0.7125 x 0.5 pt.

Detailed Nov. 2014
Checked Nov. 2014

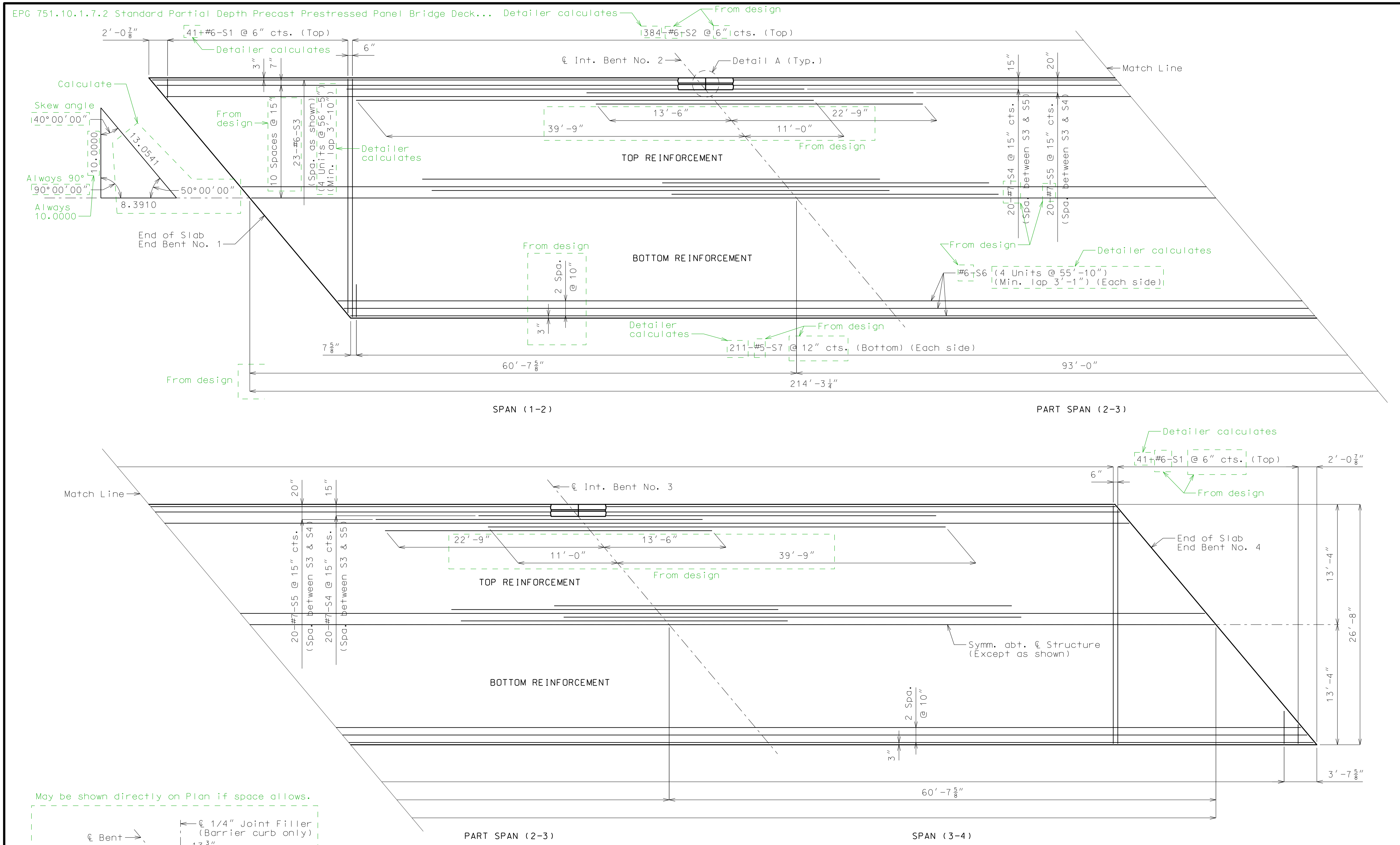
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED	
3/20/2015	
ROUTE: B	STATE: MO
DISTRICT: BR	SHEET NO.: 20
COUNTY: VERNON	
JOB NO.: J7S0546	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: EXAMPLE	

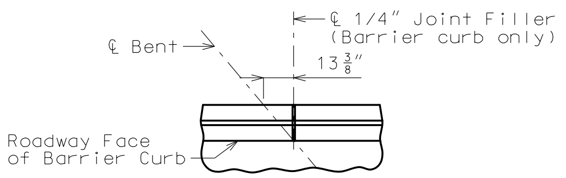
DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



May be shown directly on Plan if space allows.



DETAIL A

General Notes:

Longitudinal dimensions shown are horizontal.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 22.

For Details and Reinforcement of Safety Barrier Curb not shown, see Sheets No. 23, 24 & 25.

For Theoretical Slab Haunching Diagram, see Sheet No. 20.

For Details of Precast Prestressed Panels, see Sheet No. 18.

For Theoretical Bottom of Slab Elevations, see Sheet No. 20.

For details and locations of Slab Drains, see Sheet No. 19.

PLAN OF SLAB SHOWING REINFORCEMENT

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

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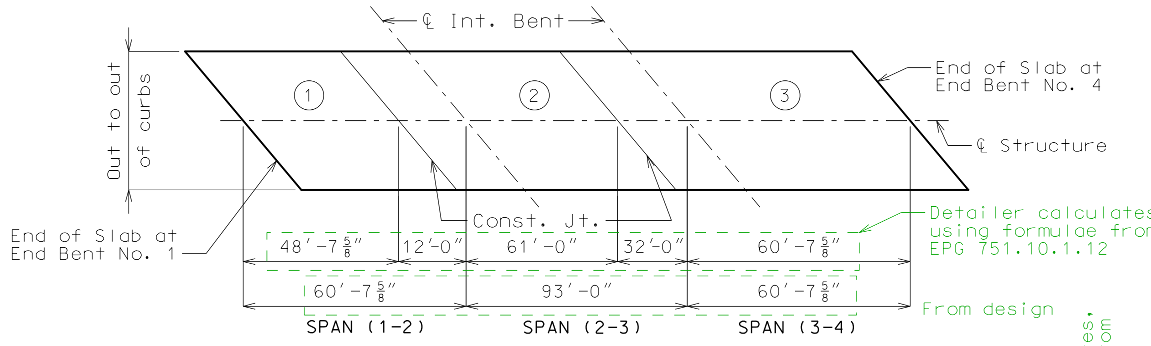
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	21
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



Cell in Tasks: Slab Pouring Sequences (Pouring Sequence)
Use appropriate version for your situation. EPG 751.10.1.12
Adjust detail to the appropriate skew.

	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr.
	Direction			With Retarder
Basic Sequence	1 End to 2	2 1 to 3	3 2 to End	25
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.				
Alternate A Pours	1 + 2 End to 3		3 2 to End	25
Alternate B Pours	1 + 2 + 3 End to End			25

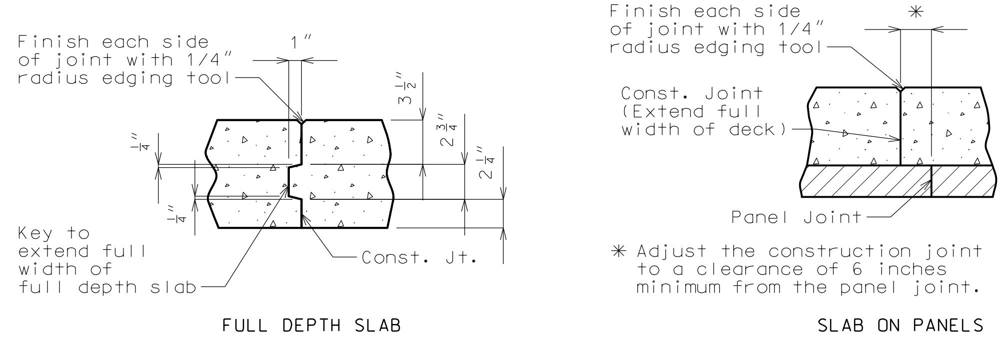
Detailer calculates, using formulae from EPG 751.10.1.12

The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours, and shall pour and satisfactorily finish the slab pours at the rate given.

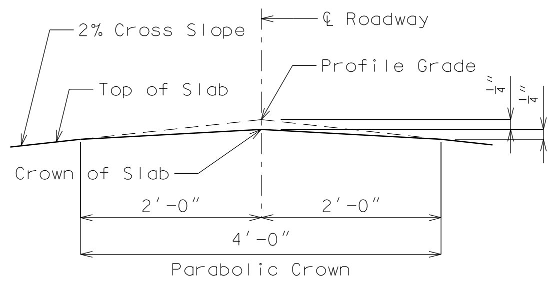
The concrete diaphragm at the intermediate bents and integral end bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.

SLAB POURING SEQUENCE

Cell in Tasks: Slab Pouring Sequences
(Const. Joint Detail - P/C P/S Panel Deck

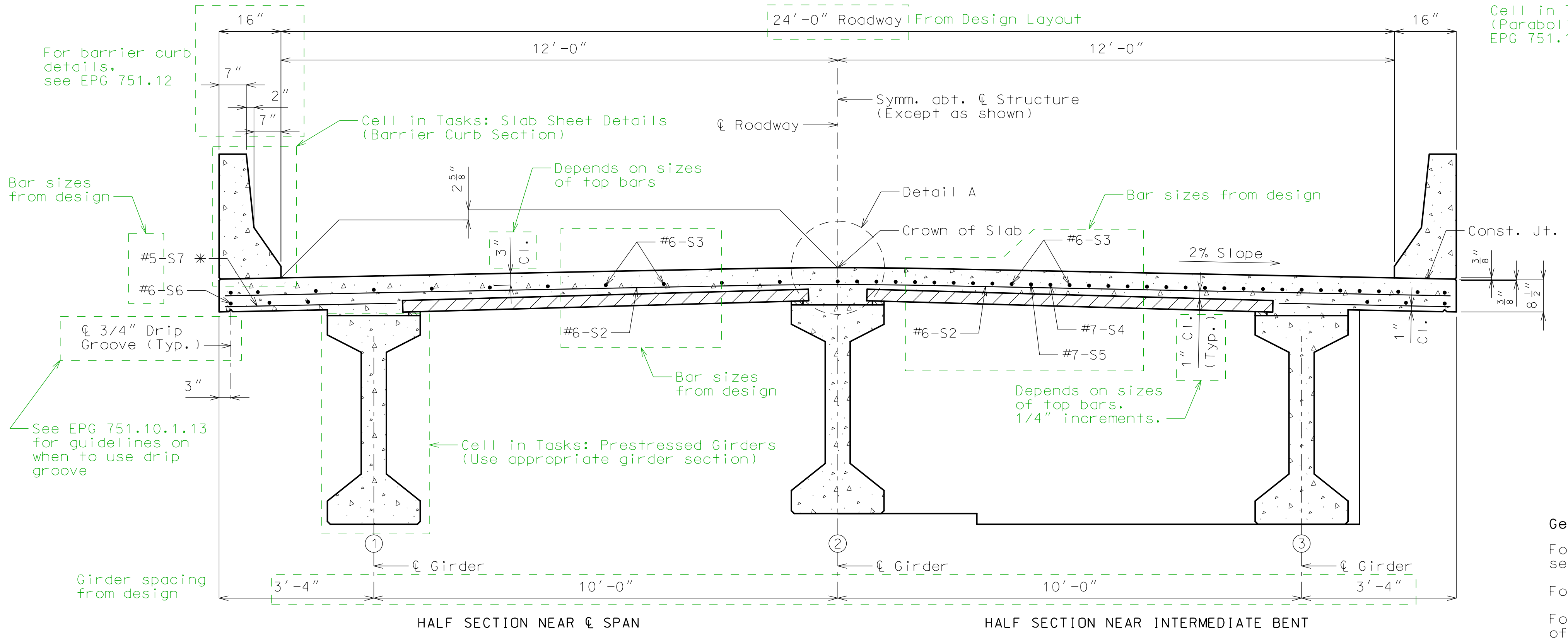


SLAB CONSTRUCTION JOINT



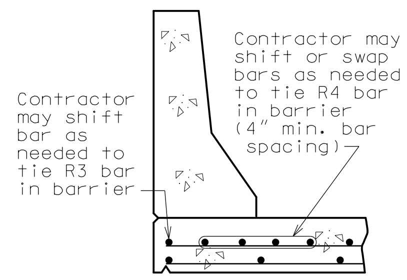
DETAIL A

Cell in Tasks: Slab Sheet Details
(Parabolic Crown Detail)
EPG 751.10.1.9



SECTION THRU SLAB

∗ Alternate bar shape available, see Safety Barrier Curb sheet.



OPTIONAL SHIFTING TOP BARS AT BARRIER

Cell in Tasks: Slab Sheet Details
(Optional Shifting Top Bars at Barrier)
EPG 751.10.1.7

General Notes:

For details and reinforcement of Safety Barrier Curb, see Sheets No. 23 thru 25.

For Plan of Slab Showing Reinforcement, see Sheet No. 21.

For Theoretical Slab Haunching Diagram and Theoretical Bottom of Slab Elevations, see Sheet No. 20.

For Details of Precast Prestressed Panels, see Sheet No. 18.

For details and locations of Slab Drains, see Sheet No. 19.

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DATE PREPARED	3/20/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	22
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

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JEFFERSON CITY, MO 65102
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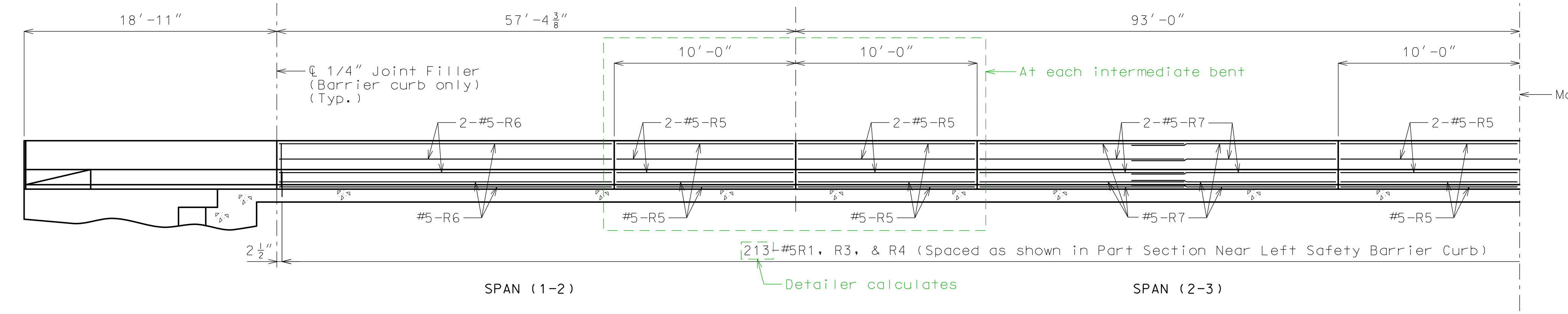
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

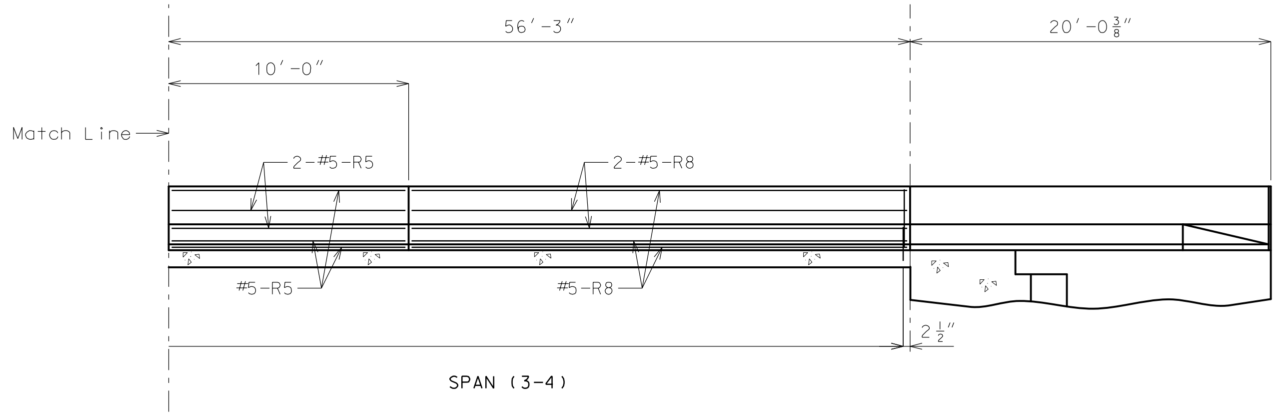
Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

Use current standard sheet found in Projectwise under
Bridge/A_Bridge_Standard_Drawings/Barrier Curbs/BAC_Current/BAC01_elev.dgn.

See EPG 751.12

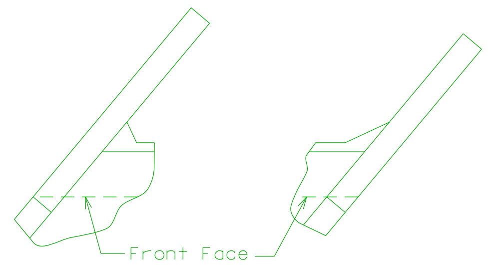




ELEVATION OF SAFETY BARRIER CURB

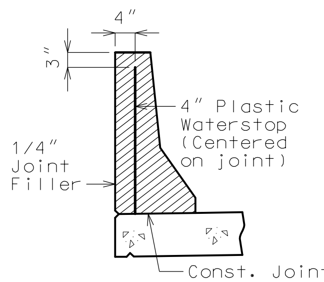
(Left barrier curb shown, right barrier curb similar by 180° rotation)

Longitudinal dimensions are horizontal.



Barrier curb at end bent extends past front face of end bent on skewed structures. May be extended a little farther to make both end bent curbs the same length.

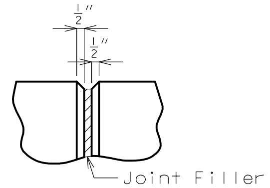
Show for grade separation only.



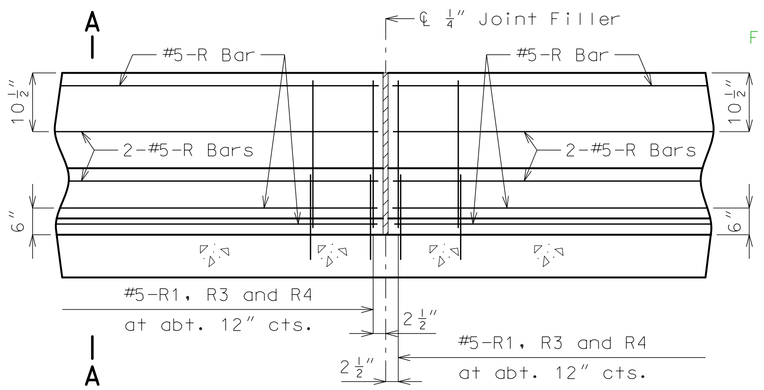
PLASTIC WATERSTOP DETAIL

Plastic waterstop shall be placed in all safety barrier curb filled joints, except structures with superelevation, use on all lower safety barrier curb joints only.

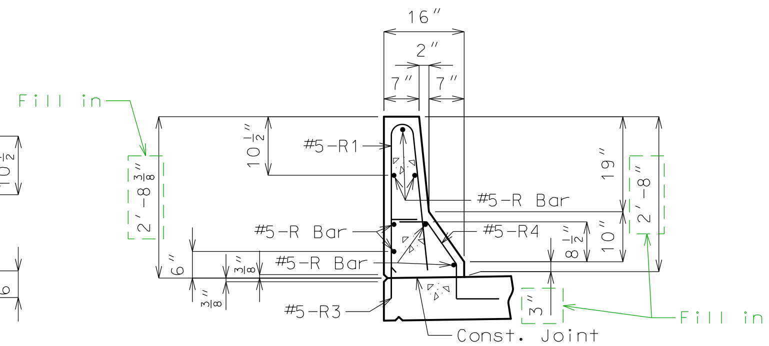
Cost of plastic waterstop, complete in place, will be considered completely covered by the contract unit price for Safety Barrier Curb.



FILLED JOINT DETAIL



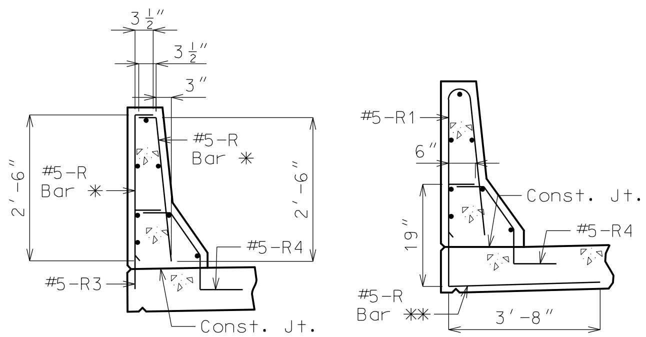
PART ELEVATION OF SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING)



SECTION A-A

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

The cross-sectional area above the slab = 2.27 sq. ft.



R-BAR PERMISSIBLE ALTERNATE SHAPE

✱ The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (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.

General Notes

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

All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch 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. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

DETAILS OF SAFETY BARRIER CURB

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

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DATE PREPARED	3/19/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	23
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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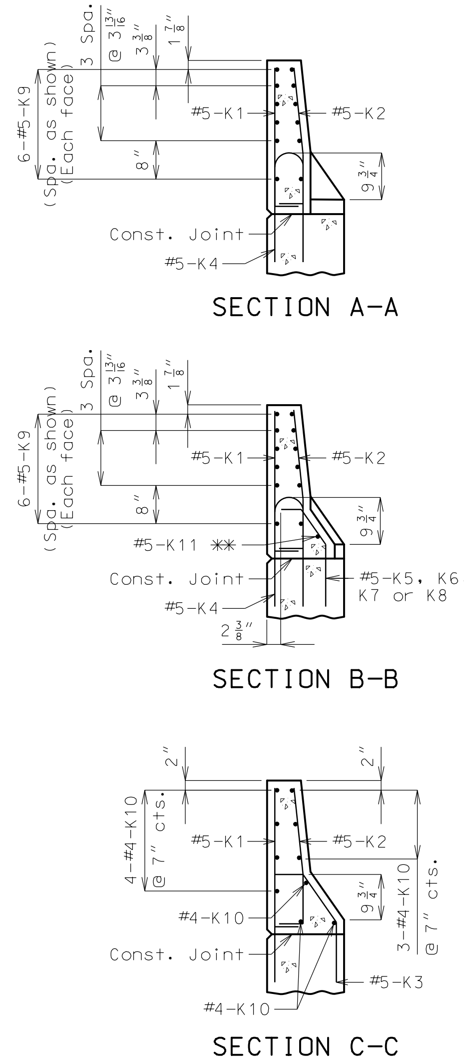
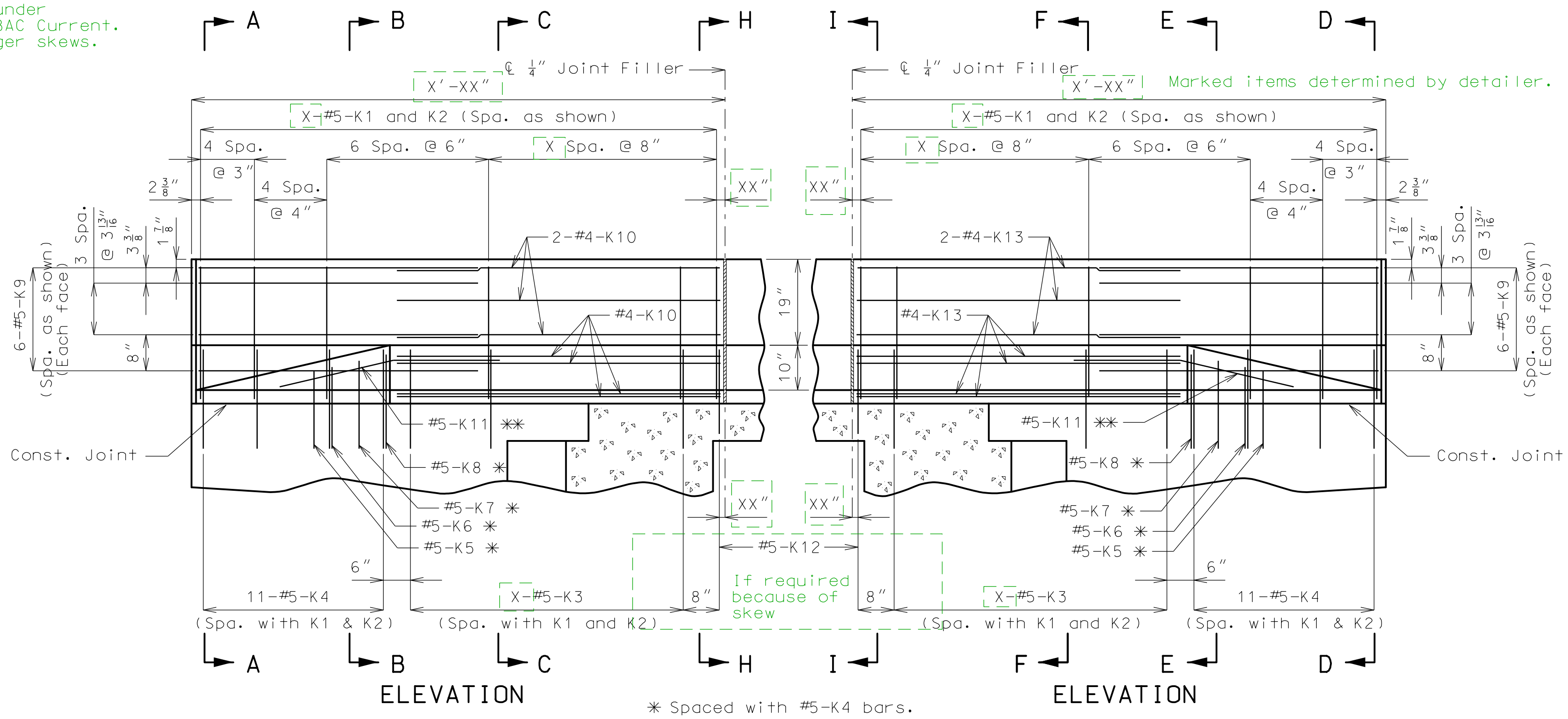
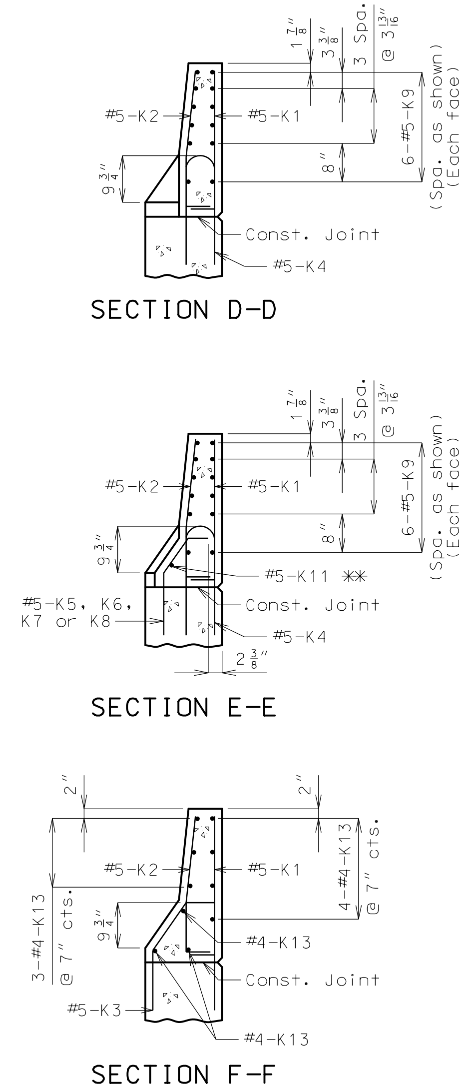
Use current standard sheet found in Projectwise under Bridge/A_Bridge_Standard_Drawings/Barrier Curbs/BAC Current. BAC04 for squared and small skew; BAC04a for larger skews. See EPG 751.12.

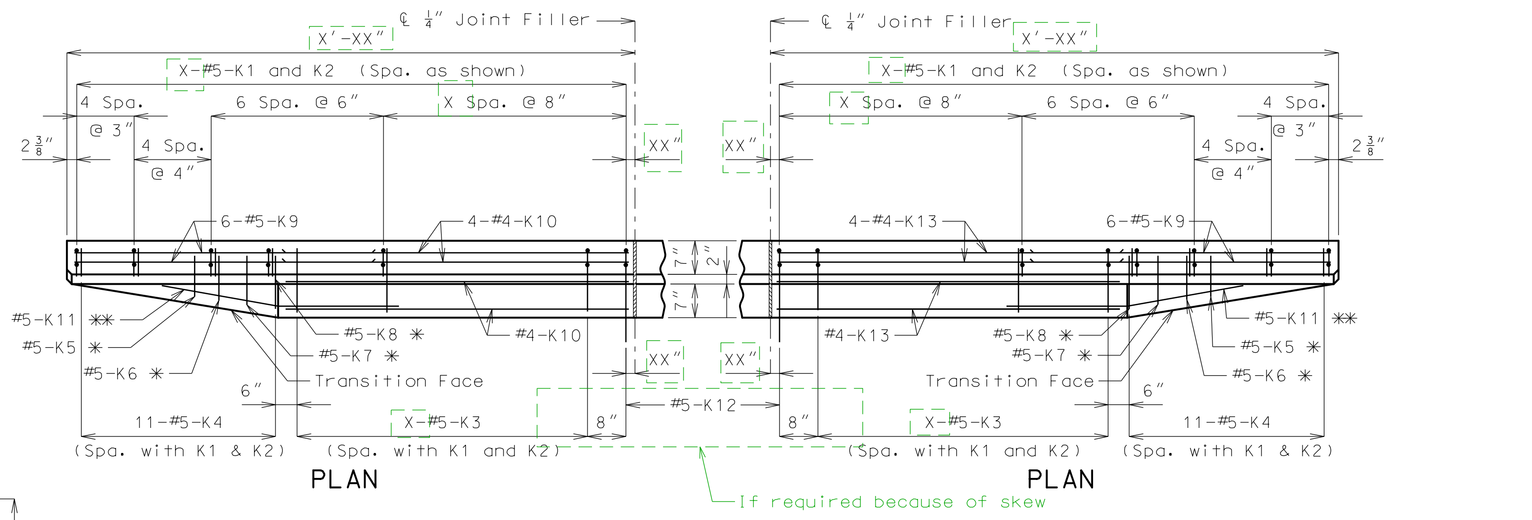


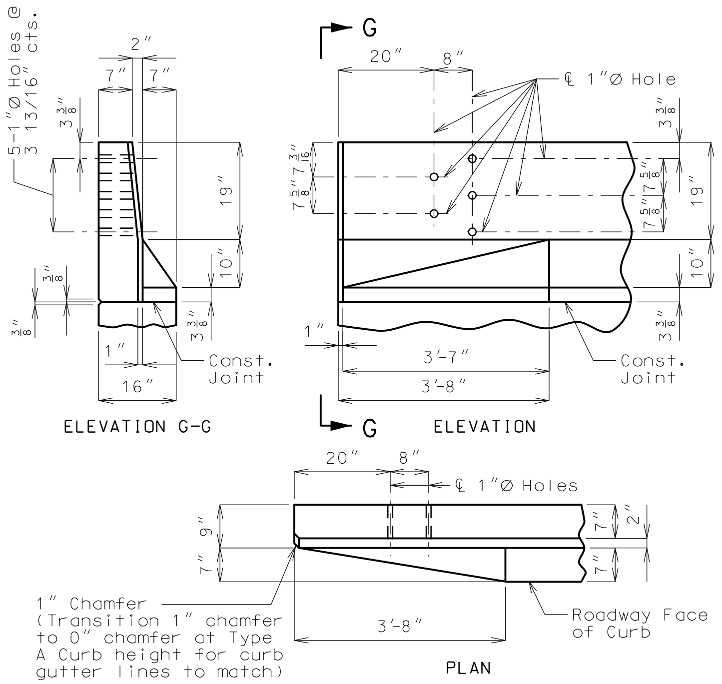


✻ Spaced with #5-K4 bars.

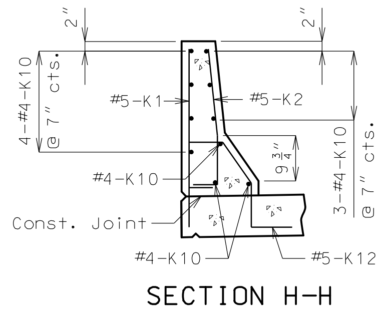
✻✻ Fit bar to follow transition face of curb.

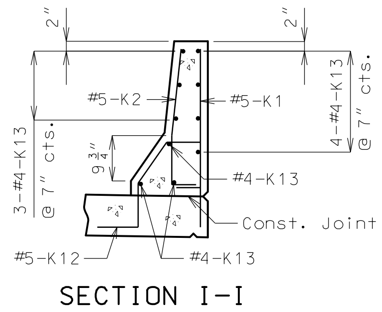






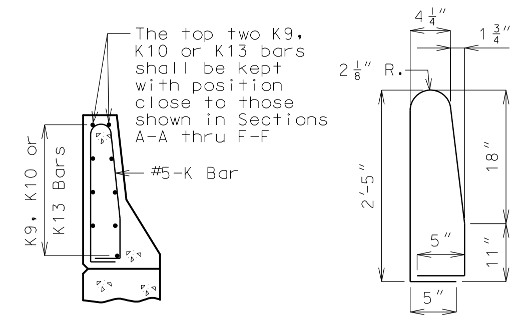
DETAILS OF GUARD RAIL ATTACHMENT





Note: Use a minimum lap of 2'-0" between K9 and K10 or K13 bars.

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. Delineators on bridges with two-lane, two way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.



K1-K2 BAR PERMISSIBLE ALTERNATE SHAPE

(K3 or K4 thru K8 bars not shown for clarity)

The K1 and K2 bar combination may be furnished as one bar as shown, at the contractor's option.

DETAILS OF SAFETY BARRIER CURB AT END BENTS

(Left barrier curb shown, right barrier curb similar)

Detailed Mar. 2015
Checked Mar. 2015

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 24 of 30

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DATE PREPARED	
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ROUTE ✻	STATE MO
DISTRICT BR	SHEET NO. 24
COUNTY ✻	
JOB NO. ✻	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. EXAMPLE	

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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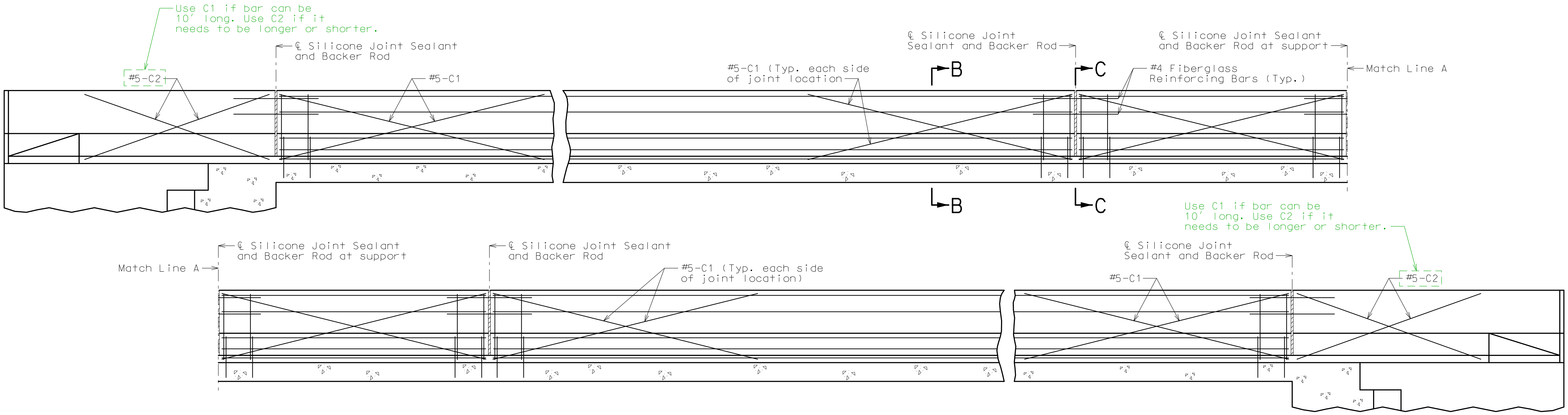
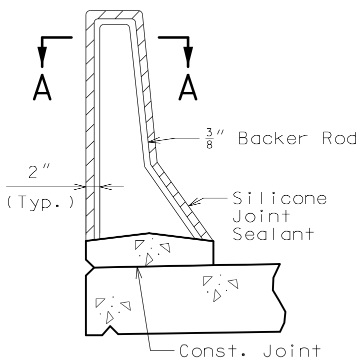
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

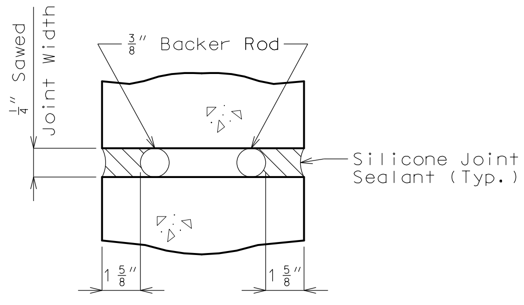
Use current standard sheet found in Projectwise under Bridge/A_Bridge_Standard_Drawings/Barrier Curbs/BAC Current/BAC08_slip_i.dgn. See EPG 751.12.



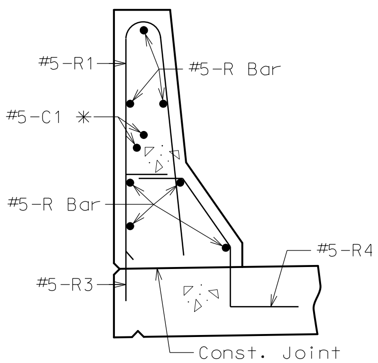
TYPICAL ELEVATION OF SAFETY BARRIER CURB AT SUPPORT LOCATIONS



SECTION THRU JOINT

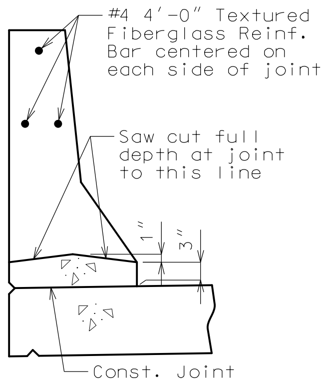


SECTION A-A

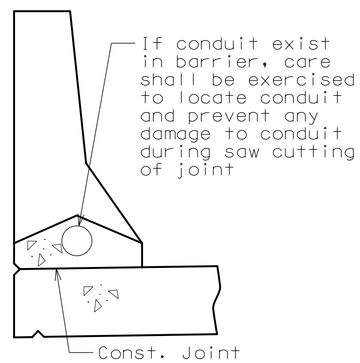


SECTION B-B

✳ Each side of joint location.



SECTION C-C



SECTION C-C

(Use when conduit required)

May be removed if not applicable.

General Notes:

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

All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch 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. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

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.

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.

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

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.

OPTIONAL SLIP-FORM SAFETY BARRIER CURB

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

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3/20/2015	
ROUTE: B	STATE: MO
DISTRICT: BR	SHEET NO.: 25
COUNTY: VERNON	
JOB NO.: J7S0546	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: EXAMPLE	

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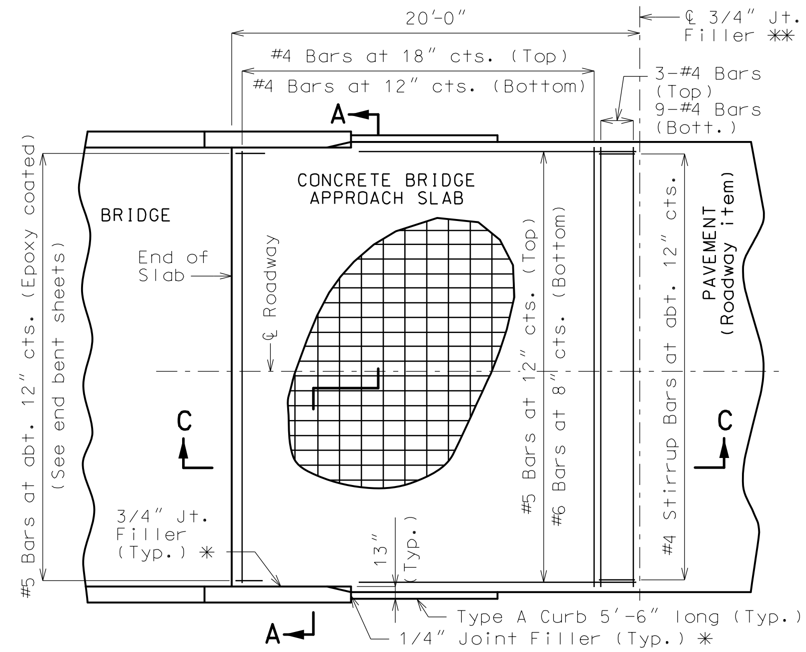
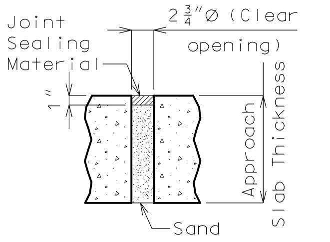
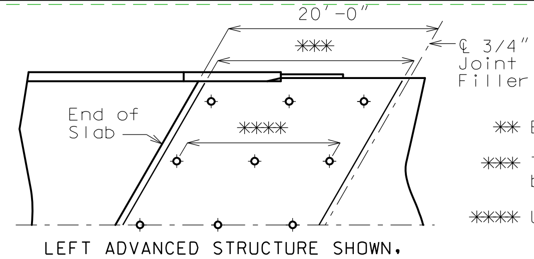


PART PLAN OF SQUARED STRUCTURE



TYPICAL UNDERSEAL ACCESS HOLE DETAIL



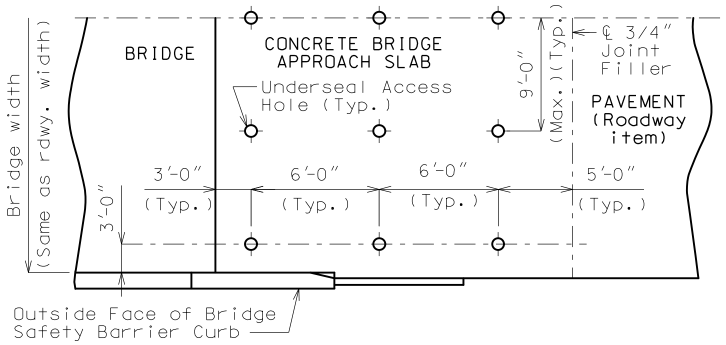
LEFT ADVANCED STRUCTURE SHOWN, RIGHT ADVANCED SIMILAR

PART PLAN OF SKEWED STRUCTURE

** Except not allowed with asphalt pavement.

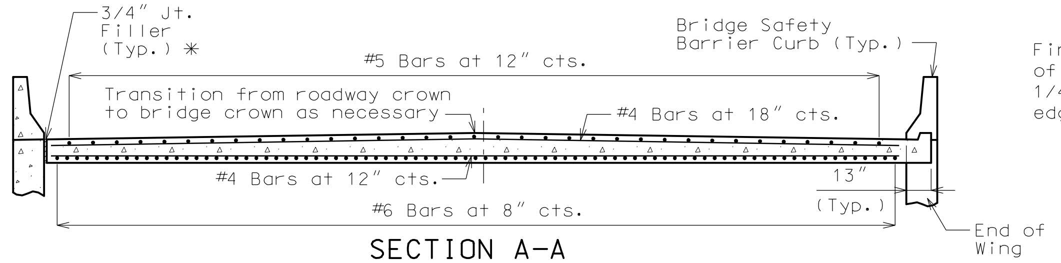
*** Transverse reinforcing bars shall be placed parallel to end bents.

**** Underseal access holes shall be laid out parallel to end bents.



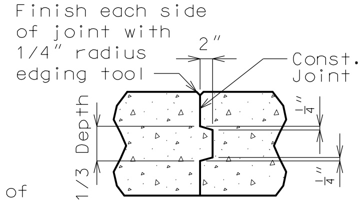
PART PLAN SHOWING UNDERSEAL ACCESS HOLES

(Squared structure shown)



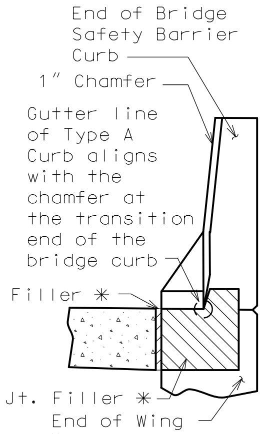
SECTION A-A

With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.

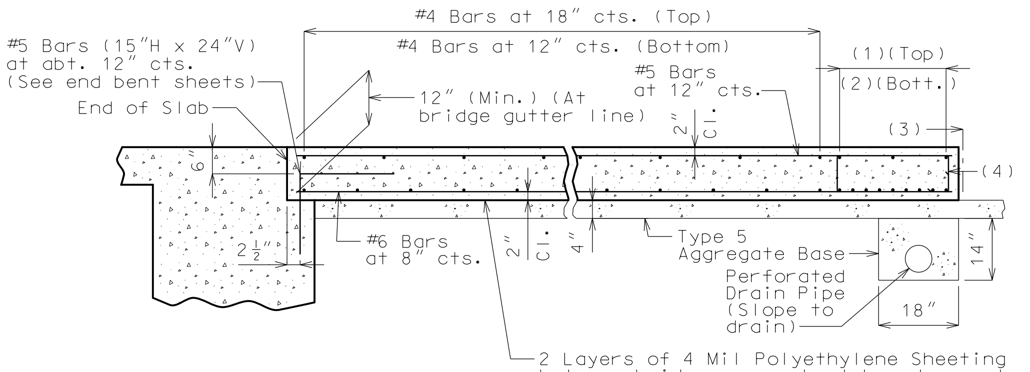


CONCRETE CONST. JOINT DETAIL

(If required)



4" TYPE A CURB



(1) 3-#4 Bars

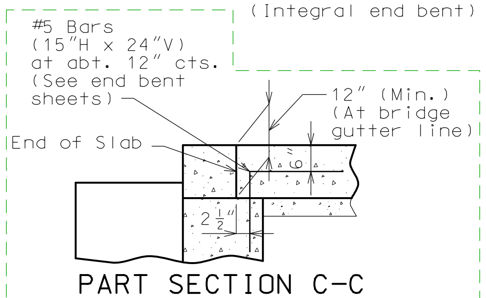
(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler **

(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.

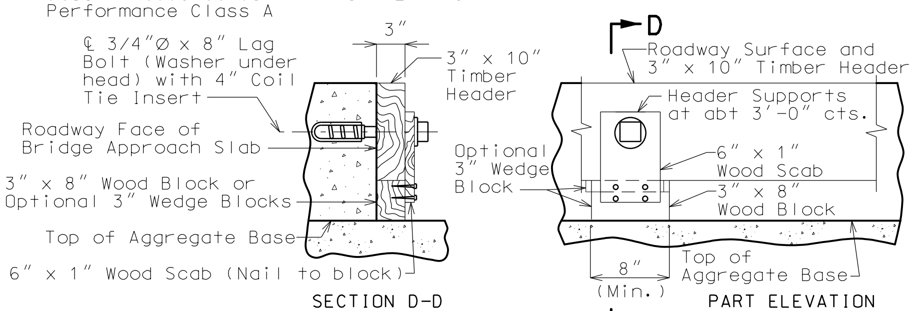
SECTION C-C

(Integral end bent)



PART SECTION C-C

(Non-integral end bent)



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

General Notes:

Contractor shall have the option to construct either slab except as noted.

The contractor shall pour and satisfactorily finish the bridge slab before placing the bridge approach slab.

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.

MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

Notes For Concrete Slab Only:

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

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

Longitudinal construction joints in bridge approach slab shall be aligned with longitudinal construction joints in the bridge.

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 bars 20" min.

Mechanical bar splices shall be in accordance with Sec 706.

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

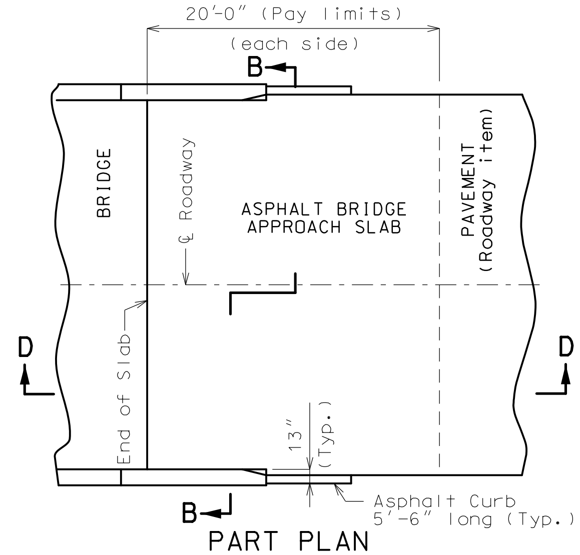
Payment for furnishing all materials, labor and excavation necessary to construct the concrete bridge approach slab, including the timber header, underdrain, Type 5 aggregate base, joint filler, and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered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

See Missouri Standard Plans Drawing 609.00 for details of Type A Curb.

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

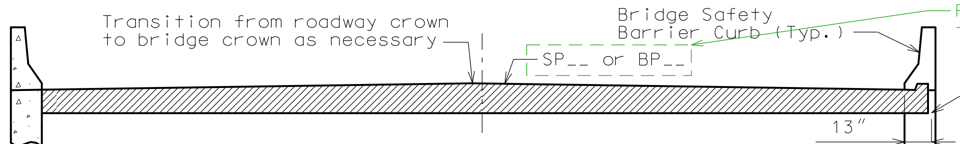
Notes For Asphalt Slab Only:

Payment for furnishing all materials, curb, labor and excavation necessary to construct the asphalt bridge approach, including curb, underdrain and Type 5 aggregate base within the pay limits shown, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Minor Road) per square yard.



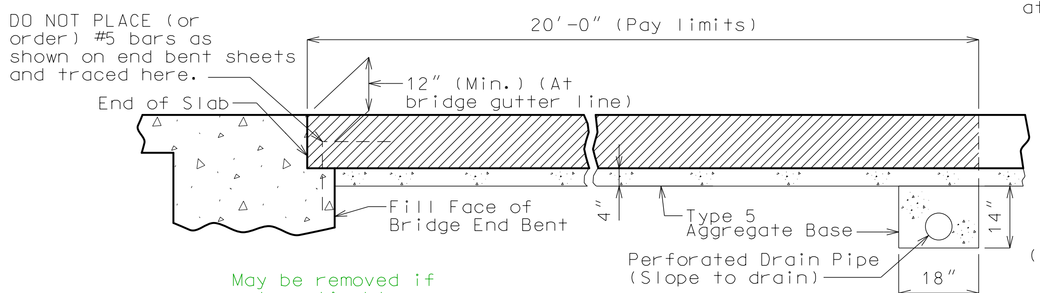
PART PLAN

(Squared structure shown, skewed structure similar)



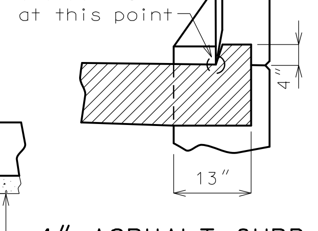
SECTION B-B

With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION D-D

(Integral end bent shown, non-integral end bent similar)



4" ASPHALT CURB

(Match Type A curb shape)

OPTIONAL ASPHALT SLAB (EXCEPT NOT ALLOWED WITH CONCRETE PAVEMENT)

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	
3/19/2015	
ROUTE	STATE
*	MO
DISTRICT	SHEET NO.
BR	*
COUNTY	
*	
JOB NO.	
*	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
EXAMPLE	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DETAILS OF BRIDGE APPROACH SLAB (MINOR ROAD)

Use current standard drawing found in ProjectWise under Bridge/A_Bridge_Standard_Drawings/Bridge Approach Slabs_BAS

Detailed Mar. 2015
Checked Mar. 2015

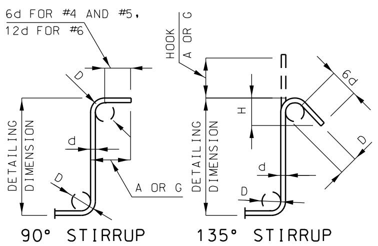
Note: This drawing is not to scale. Follow dimensions.

BILL OF REINFORCING STEEL

NO. REQ'D.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			SUBSTRUCTURE																
			INT. BENT 2																
16	6	D20	KEY		20		X			2 6.000							2 6	2 6	60
10	8	H20	BEAM		18		X			30 3.000							32 1	32 1	857
10	8	H21	BEAM		20		X			30 3.000							30 3	30 3	808
10	6	H22	BEAM		20		X			30 3.000							30 3	30 3	454
14	6	H23	BEAM		10	S	X				22.000	3 8.000					7 4	7 0	147
44	4	P20	SHAFT		16		X			2 5.500							8 7	8 7	252
50	6	P21	SHAFT		16		X			2 6.000							9 2	9 2	688
33	4	U20	BEAM		13	S	X			3 9.000	3 9.000	3 9.000	3 9.000				15 9	15 6	342
28	4	U21	BEAM		13	S	X			2 6.000	3 9.000	2 6.000	3 9.000				13 3	13 0	243
8	4	U22	BEAM		10	S	X				3 9.000	3 9.000					11 3	11 1	59
28	9	V20	SHAFT		20		X			41 1.000							41 1	41 1	3911
			INT. BENT 3																
16	6	D30	KEY		20		X			2 6.000							2 6	2 6	60
10	8	H30	BEAM		18		X			30 3.000							32 1	32 1	857
10	8	H31	BEAM		20		X			30 3.000							30 3	30 3	808
10	6	H32	BEAM		20		X			30 3.000							30 3	30 3	454
14	6	H33	BEAM		10	S	X				22.000	3 8.000					7 4	7 0	147
34	4	P30	SHAFT		16		X			2 5.500							8 7	8 7	195
66	6	P31	SHAFT		16		X			2 6.000							9 2	9 2	909
33	4	U30	BEAM		13	S	X			3 9.000	3 9.000	3 9.000	3 9.000				15 9	15 6	342
28	4	U31	BEAM		13	S	X			2 6.000	3 9.000	2 6.000	3 9.000				13 3	13 0	243
8	4	U32	BEAM		10	S	X				3 9.000	3 9.000					11 3	11 1	59
28	9	V30	SHAFT		20		X			35 6.000							35 6	35 6	3380
			SUPERSTR.																
			END BENT 1																
11	6	F10	WING		15	S				14.000	3 8.000	14.000	12.750	5.875	12.750	5.875	6 0	5 10	96
5	6	F11	DIAPHRAGM		23	S				3 5.625	4 11.000				2 7.875	2 2.750	8 5	8 4	63
11	6	F12	WING		15	S				14.000	7 2.000	14.000	5.875	12.750	5.875	12.750	9 6	9 6	157
5	6	F13	DIAPHRAGM		21	S				6 10.125	3 5.625				5 2.875	4 4.750	10 4	9 9	73
6	7	H10	DIAPHRAGM	E	20					34 5.000							34 5	34 5	422
24	5	H11	DIAPHRAGM	E	20					2 6.000							2 6	2 6	63
4	6	H12	DIAPHRAGM		20					34 5.000							34 5	34 5	207
4	6	H13	DIAPHRAGM		20					2 8.000							2 8	2 8	16
4	6	H14	DIAPHRAGM		20					3 8.000							3 8	3 8	22
3	5	H15	STRAND TIE		23	S				15.000	2 0.000	15.000	9.625	11.500	9.625	11.500	4 6	4 5	14
4	6	H16	DIAPHRAGM		20					10 1.000							10 1	10 1	61
4	6	H17	DIAPHRAGM		20					12 0.000							12 0	12 0	72
8	7	H18	BEAM		20					34 5.000							34 5	34 5	563
4	6	H19	BEAM		20					34 5.000							34 5	34 5	207
6	8	H100	WING	E	20					17 5.000							17 5	17 5	279

BILL OF REINFORCING STEEL

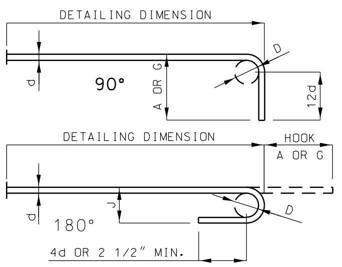
NO. REQ'D.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
12	8	H101	WING		20					17 5.000							17 5	17 5	558
48	6	H102	WING		20					16 5.000							16 5	16 5	1184
18	5	U10	BEAM		10	S					4 11.000	3 7.000					13 5	13 3	249
15	4	U11	BEAM		13	S				3 7.000	2 7.500	3 7.000	2 7.500				13 2	12 11	129
42	6	U12	DIAPHRAGM	E	19	S				2 11.000	5 6.000						8 5	8 3	520
26	5	U13	DIAPHRAGM	E	10	S					4 9.500	2 11.000					12 6	12 4	334
26	6	U14	DIAPHRAGM		19	S				3 10.500	3 7.000						7 6	7 4	286
16	5	V10	BEAM		20					4 11.000							4 11	4 11	82
9	6	V11	DIAPHRAGM		20					3 10.000							3 10	3 10	52
2	6	V12	WING		20					8 1.000							8 1	8 1	24
30	6	V13	WING		20					8 1.000							8 1	8 1	364
2	6	V14	WING		20					7 11.000							7 11	7 11	24
30	6	V15	WING		20					7 11.000							7 11	7 11	357
			END BENT 4																
11	6	F40	WING		15	S				14.000	3 8.000	14.000	12.750	5.875	12.750	5.875	6 0	5 10	96
5	6	F41	DIAPHRAGM		23	S				3 5.625	4 11.000				2 7.875	2 2.750	8 5	8 4	63
11	6	F42	WING		15	S				14.000	7 2.000	14.000	5.875	12.750	5.875	12.750	9 6	9 6	157
5	6	F43	DIAPHRAGM		21	S				6 10.125	3 5.625				5 2.875	4 4.750	10 4	9 9	73
4	7	H40	DIAPHRAGM	E	20					34 5.000							34 5	34 5	281
24	5	H41	DIAPHRAGM	E	20					2 6.000							2 6	2 6	63
4	6	H42	DIAPHRAGM		20					34 5.000							34 5	34 5	207
4	6	H43	DIAPHRAGM		20					2 8.000							2 8	2 8	16
4	6	H44	DIAPHRAGM		20					3 8.000							3 8	3 8	22
3	5	H45	STRAND TIE		23	S				15.000	2 0.000	15.000	9.625	11.500	9.625	11.500	4 6	4 5	14
4	6	H46	DIAPHRAGM		20					10 1.000							10 1	10 1	61
4	6	H47	DIAPHRAGM		20					12 0.000							12 0	12 0	72
8	7	H48	BEAM		20					34 5.000							34 5	34 5	563
4	6	H49	BEAM		20					34 5.000							34 5	34 5	207
4	8	H400	WING	E	20					17 5.000							17 5	17 5	186
12	8	H401	WING		20					17 5.000							17 5	17 5	558
48	6	H402	WING		20					16 5.000							16 5	16 5	1184
18	5	U40	BEAM		10	S					4 11.000	3 7.000					13 5	13 3	249
15	4	U41	BEAM		13	S				3 7.000	2 7.500	3 7.000	2 7.500				13 2	12 11	129
42	6	U42	DIAPHRAGM	E	19	S				2 11.000	5 6.000						8 5	8 3	520
26	5	U43	DIAPHRAGM	E	10	S					4 9.250	2 11.000					12 6	12 3	332
26	6	U44	DIAPHRAGM		19	S				3 10.250	3 7.000						7 5	7 3	283
16	5	V40	BEAM		20					4 11.000							4 11	4 11	82
9	6	V41	DIAPHRAGM		20					3 10.000							3 10	3 10	52
2	6	V42	WING		20					8 1.000							8 1	8 1	24
30	6	V43	WING		20					8 0.000							8 0	8 0	360
2	6	V44	WING		20					8 2.000							8 2	8 2	25
30	6	V45	WING		20					8 1.000							8 1	8 1	364
			DIAPH. AT INT. BENTS																
16	6	H50	DIAPHRAGM		20					10 1.000							10 1	10 1	242
16	4	H51	DIAPHRAGM		20					12 0.000							12 0	12 0	128
40	5	H52	DIAPHRAGM		19	S				10.750	3 1.500						4 0	3 11	163
16	5	H53	STRAND TIE		23	S				15.000	2 1.500				9.625	11.500	3 5	3 4	56
8	5	H54	STRAND TIE		23	S				15.000	2 0.000	15.000	9.625	11.500	9.625	11.500	4 6	4 5	37
16	6	U50	DIAPHRAGM	E	28	S					3 1.000	4 11.000	14.000				9 2	8 10	212



90° STIRRUP   135° STIRRUP

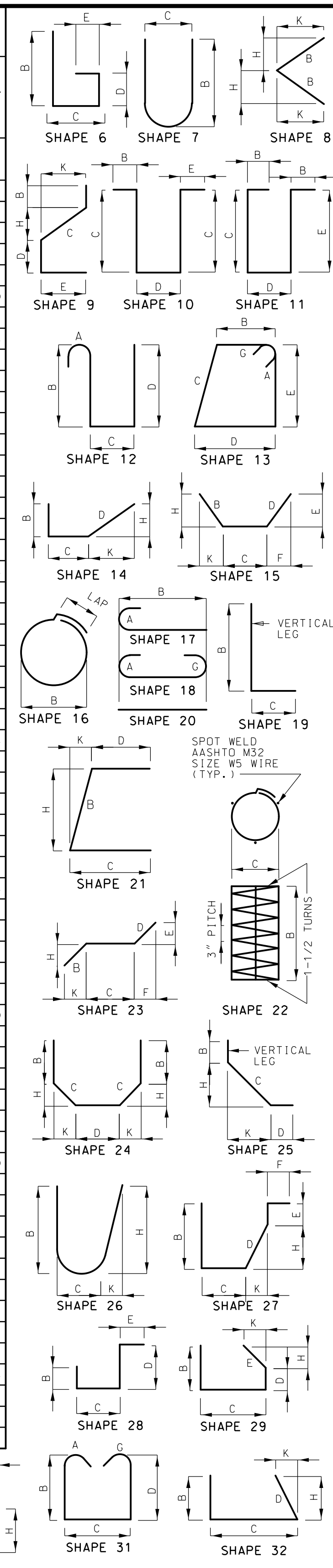
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK: HOOK A OR G	135° HOOK: HOOK A OR G	135° HOOK: APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

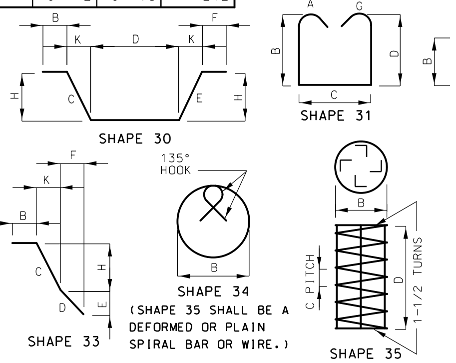
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
		ALL GRADES		
BAR SIZE	D (IN.)	180° HOOKS: A OR G	180° HOOKS: J	90° HOOKS: 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"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
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.
PAYWEIGHTS 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 SPACERS.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.





BENDING DIAGRAMS

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	
3/19/2015	
ROUTE: B	STATE: MO
DISTRICT: BR	SHEET NO.: 27
COUNTY: VERNON	
JOB NO.: J7S0546	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: EXAMPLE	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

This sheet is created by the Barbill program after the Barbill information is successfully entered and run by the detailer.

Detailed Nov. 2014
Checked Nov. 2014

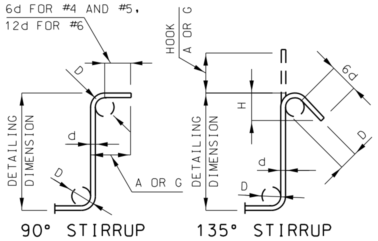
Note: This drawing is not to scale. Follow dimensions.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
56	4	U51	DIAPHRAGM	E	28	S					2 9.000	4 11.000	12.000				8	8	8	6	318
16	5	V50	DIAPHRAGM	E	20					5 0.000							5	0	5	0	83
			SLAB																		
82	6	S1	SLAB	E	20			V	2	2 1.000							2	1	2	1	
			INCREMENT =							25 11.000							25	11	25	11	1724
			7.125 INCH																		
386	6	S2	SLAB	E	20					26 5.000							26	5	26	5	15316
92	6	S3	SLAB	E	20					56 5.000							56	5	56	5	7796
40	7	S4	SLAB	E	20					50 9.000							50	9	50	9	4149
40	7	S5	SLAB	E	20					36 3.000							36	3	36	3	2964
24	6	S6	SLAB	E	20					55 10.000							55	10	55	10	2013
422	5	S7	SLAB	E	20					3 8.000							3	8	3	8	1614
			BARRIER CURB																		
146	5	K1	BARRIER CURB	E	19	S				2 5.000	5.125						2	10	2	9	419
146	5	K2	BARRIER CURB	E	14	S				5.125	11.125	18.000			2.000	17.875	2	10	2	9	419
94	5	K3	BARRIER CURB	E	27	S				3 0.000	5.125	12.000	2 2.125		9.875	6.875	6	7	6	5	629
44	5	K4	BARRIER CURB	E	7					3 0.000	6.000						6	2	6	2	283
4	5	K5	BARRIER CURB	E	25	S				2 6.500	6.750	4.375			5.500	4.000	3	6	3	5	14
4	5	K6	BARRIER CURB	E	25	S				2 5.500	7.875	4.375			6.500	4.500	3	6	3	5	14
4	5	K7	BARRIER CURB	E	25	S				2 4.125	9.625	4.375			7.875	5.500	3	6	3	5	14
4	5	K8	BARRIER CURB	E	25	S				2 2.750	11.250	4.375			9.250	6.500	3	6	3	6	15
48	5	K9	BARRIER CURB	E	20					5 7.000							5	7	5	7	280
22	4	K10	BARRIER CURB	E	20					15 1.000							15	1	15	1	222
4	5	K11	BARRIER CURB	E	8					2 2.125					2 2.000	2.375	4	4	4	4	18
8	5	K12	BARRIER CURB	E	27	S				17.000	5.125	12.000	7.125	12.000	9.875	6.875	4	5	4	2	35
20	4	K13	BARRIER CURB	E	20					16 3.000							16	3	16	3	217
426	5	R1	BARRIER CURB	E	26					2 6.000	4.250	2 6.125			2 6.000	3.000	5	2	5	2	2296
426	5	R3	BARRIER CURB	E	19	S				17.000	6.000						0	23	0	22	815
426	5	R4	BARRIER CURB	E	27	S					6.000	11.250	7.000	12.000	9.250	6.375	3	0	2	10	1259
58	5	R5	BARRIER CURB	E	20					9 9.000							9	9	9	9	590
14	5	R6	BARRIER CURB	E	20					47 1.000							47	1	47	1	688
28	5	R7	BARRIER CURB	E	20					37 10.000							37	10	37	10	1105
14	5	R8	BARRIER CURB	E	20					46 0.000							46	0	46	0	672
			SLIP FORM																		
			BARRIER CURB																		
40	5	C1	SLIP FORM	E	20					10 0.000							10	0	10	0	417
8	5	C2	SLIP FORM	E	20					15 2.000							15	2	15	2	127
			TOTALS																		
	4																				2121
	4			E																	757
	5																				946
	5			E																	12598
	6																				9692
	6			E																	28101
	7																				1126

BILL OF REINFORCING STEEL

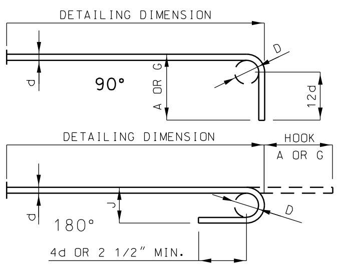
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
	7			E																	7816
	8																				4446
	8			E																	465
	9																				7291
			TOTAL																		25622
			TOTAL	E																	49737
			Slab on																		
			Girder																		
	4																				386
	4			E																	318
	5																				946
	5			E																	2489
	6																				6773
	6			E																	28101
	7																				1126
	7			E																	7816
	8																				1116
	8			E																	465
			TOTAL																		49536
			Reinforcing																		
			Steel																		
			(Bridges)																		
	4																				1735
	6																				2919
	8																				3330
	9																				7291
			TOTAL																		15275
			Safety																		
			Barrier																		
			Curb																		
	4			E																	439
	5			E																	9565
			TOTAL																		10004
			Slip Form																		
			Option																		
	5			E																	544
			TOTAL																		544



STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK: HOOK A OR G	135° HOOK: HOOK A OR G	135° HOOK: APPROX. H
#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"

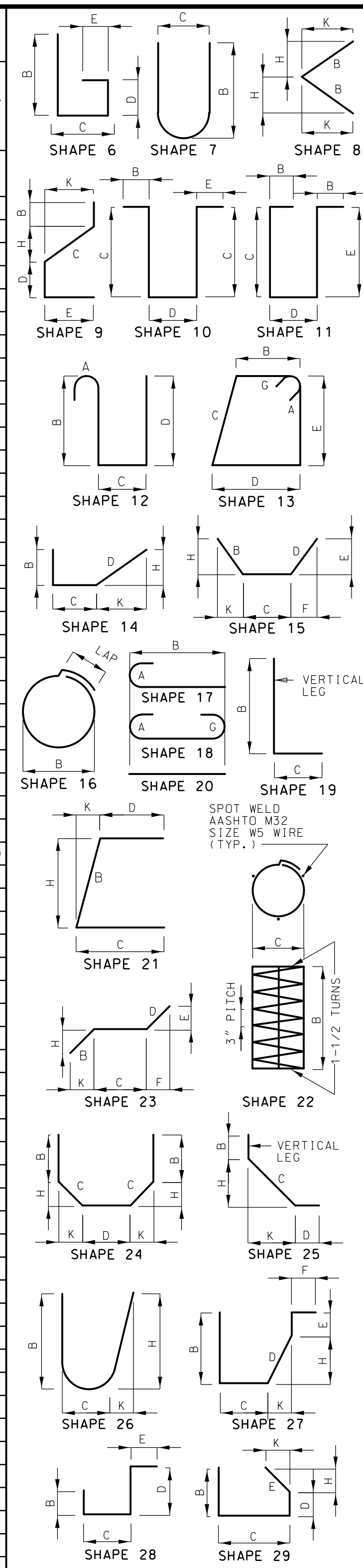
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.

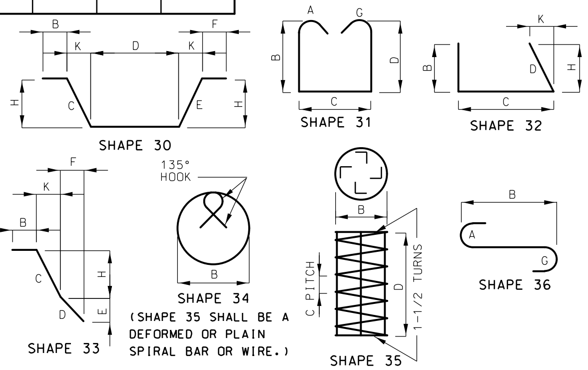


END HOOK DIMENSIONS

BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS A OR G	ALL GRADES 180° HOOKS J	ALL GRADES 90° HOOKS 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"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
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.
PAYWEIGHTS 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 SPACERS.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.





BENDING DIAGRAMS

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	3/19/2015
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	28
COUNTY	VERNON
JOB NO.	J7S0546
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	EXAMPLE

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

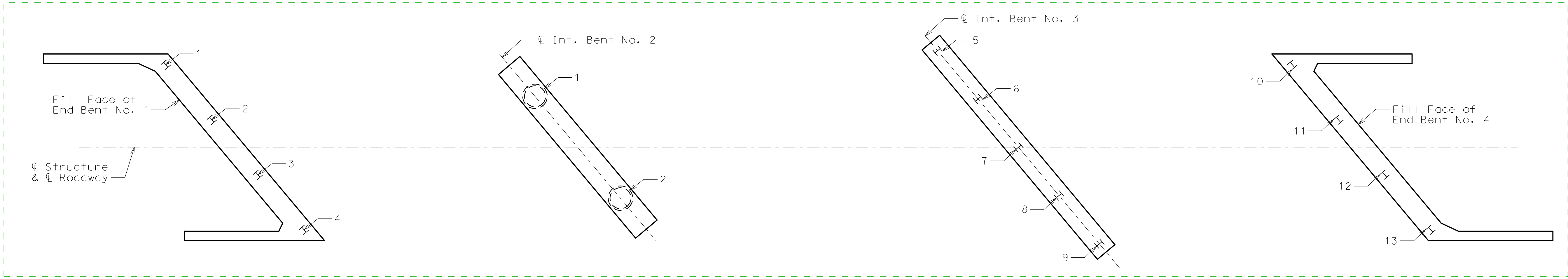
This sheet is created by the Barbill program after the barbill information is successfully entered and run by the detailer.

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

Standard sheet found in ProjectWise under Bridge/A_Bridge_Standard_Drawings/PILE_PILE/Current/PILE02_dynamic_formula_as_built_pile_data.dgn

As Built Drilled Shaft Data standard drawing can be found in ProjectWise under Bridge/A_Bridge_Standard_Drawings/Drilled Shaft with Socket_DSS/Current/DSS_02_as_built_dshaft.dgn



This portion drawn by detailer

PART PLAN SHOWING PILE & DRILLED SHAFT NUMBERING FOR RECORDING AS-BUILT PILE DATA & AS-BUILT DRILLED SHAFT DATA

Modify tables as needed

As-Built Pile Data

Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
1			
2			
3			
4			
			Intermediate Bent No. 3
5			
6			
7			
8			
9			
			End Bent No. 4
10			
11			
12			
13			

As-Built Drilled Shaft Data

Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Intermediate Bent No. 2
1				
2				

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal

This sheet to be completed by MoDOT construction personnel.

AS-BUILT PILE AND DRILLED SHAFT DATA

Detailed Nov. 2014
Checked Nov. 2014

Note: This drawing is not to scale. Follow dimensions.

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 3/19/2015	
ROUTE *	STATE MO
DISTRICT BR	SHEET NO. 29
COUNTY *	
JOB NO. *	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. EXAMPLE	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Missouri Department of Transportation
Construction and Materials
Boring Data

Job No.: J6S2088	**County:** St. Charles	**Route:** P
Design: A7836	**Skew:** 45 deg. RA	**Location:** About 4.5 miles N. of Wentzville
Bent: 1	**Logged By:** Ricardo Todd	**Operator:** Raymond Murray
Station: 118+94.8	**Northing:** 1103519.5	**Date of Work:** 08/13/13-08/13/13
Offset: 6.6 L	**Easting:** 726036.7	**Depth to Water:**
Elevation: 455.8	**Requested Northing:** 1103517.0	**Depth Hole Open:**
Requested Station: 118+94.8	**Requested Easting:** 726042.3	**Time Change:**
Requested Offset: 12.7 L	**Equipment:** Acker Soil XLS , Continuous Flight Auger	
Requested Elevation: 454.9	**Location Note:** Offset due to guardrail	

Depth (ft)	Graphic	Description	Elevation (ft)
0		0-1.3' ASPHALT, and base material	
		1.3-6.7' Gray, GRAVELLY LEAN CLAY scattered sand, stiff, moist	450
10		6.7-17.4' Grayish brown, SAND scattered gravel, loose, moist, coarse grained, poorly graded	440
20		17.4-18' Limestone, medium hard	
		Bottom of borehole at 18.0 feet.	430
30			

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri East **Coordinate Proj. Factor:** 1.000078
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

Missouri Department of Transportation
Construction and Materials

BORING NO. O-13-80

Job No.: J6S2088	**County:** St. Charles	**Route:** P
Design: A7836	**Skew:** 45 deg. RA	**Location:** About 4.5 miles N. of Wentzville
Bent: 1	**Logged By:** Ricardo Todd	**Operator:** Chad Abbott
Station: 119+20.3	**Northing:** 1103499.8	**Date of Work:** 08/07/13-08/07/13
Offset: 19.2 R	**Easting:** 726081.1	**Depth to Water:** 13
Elevation: 455	**Requested Northing:** 1103502.4	**Depth Hole Open:**
Requested Station: 119+20.3	**Requested Easting:** 726075.2	**Time Change:**
Requested Offset: 12.7 R	**Equipment:** Acker Soil XLS ,Split-Spoon Sampler, NQ	
Requested Elevation: 455.6	**Location Note:** Offset due to guardrail	
Drill No.: G-9462	**Hammer Efficiency:** 69%	**Drilling Method:** Hollow Stem Auger

Depth (ft)	Graphic	Description	Elevation (ft)	Sample Type	REC % (RQD %)	Blow Counts (N_{60})	Shear Strength Data	Field Tests	Index Tests
0		0-2.5' Brown, GRAVELLY LEAN CLAY trace sand, stiff, moist	455						
		2.5-4.5' Gray, GRAVELLY LEAN CLAY trace cobbles, stiff, moist							
5		4.5-6.8' Brown, GRAVELLY LEAN CLAY with cobbles, scattered sand, very stiff, moist	450		67	8-16-12 (32)			LL = 30 PL = 19
		6.8-14.5' Brown, SAND trace gravel, medium dense, moist, coarse grained, poorly graded							
10			445		73	1-10-11 (24)			
15		14.5-15.2' Limestone, highly weathered	440		300	44/0.2'			
		15.2-25.2' Cherty Limestone, gray, thin bedded, moderately hard, slightly weathered, fine grained			98 (24)		Qu Test Results UCS = 854.6 ksf MC = 0% γ_{moist} = 165.6 pcf		
20			435		100 (90)		Qu Test Results UCS = 1057.8 ksf MC = 0% γ_{moist} = 164.6 pcf		
25		Bottom of borehole at 25.2 feet.	430						

LETTER BOREHOLE - MODOT_07-29-11.GDT - 10/10/13 15:24 - J:\SG\GINT\PROJECT FILES\J6S2088-A7836.GPJ

N_{60} = (Em/60)Nm N_{60} - Corrected N value for standard 60% SPT efficiency; Em - Measured hammer efficiency in percent; Nm - Observed N-value
(1) = Assumed, (2) = Actual

Coordinate System: Modified U.S. State Plane 1983 **Coordinate Zone:** Missouri East **Coordinate Proj. Factor:** 1.000078
Coordinate Datum: NAD 83 (CONUS) **Coordinate Units:** U.S. Survey Feet

* Persons using this information are cautioned that the materials shown are determined by the equipment noted and accuracy of the "log of materials" is limited thereby and by judgement of the operator. THIS INFORMATION IS FOR DESIGN PURPOSES ONLY.

Standard sheet found in ProjectWise under Bridge/A_Bridge_Standard_Drawings/Boring Template/ boring_sht_portrait.dgn

See EPG 751.5.8.4. for Instructions for Attaching Boring Log PDFs to Final Plans

Showing only one boring sheet in this example, but normally there are several.

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Note: This drawing is not to scale. Follow dimensions.

Detailed Nov. 2014
Checked Nov. 2014

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DATE PREPARED 3/20/2015	
ROUTE P	STATE MO
DISTRICT BR	SHEET NO. 30
COUNTY ST. CHARLES	
JOB NO. J6S2088	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. EXAMPLE	

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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