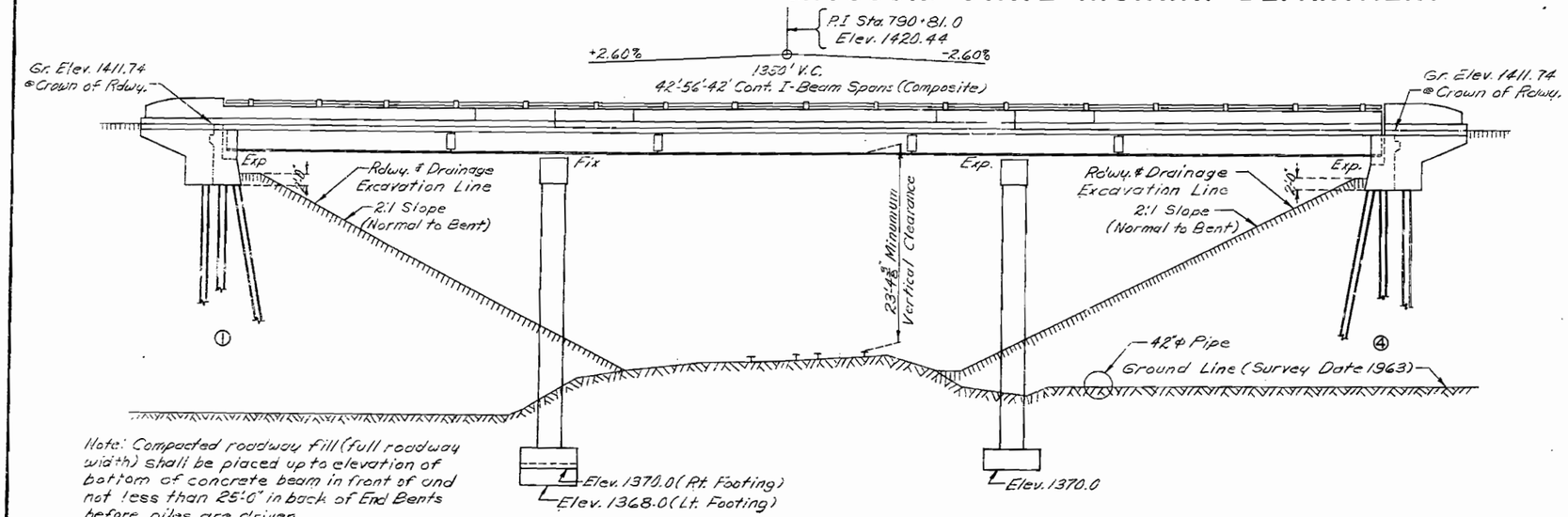
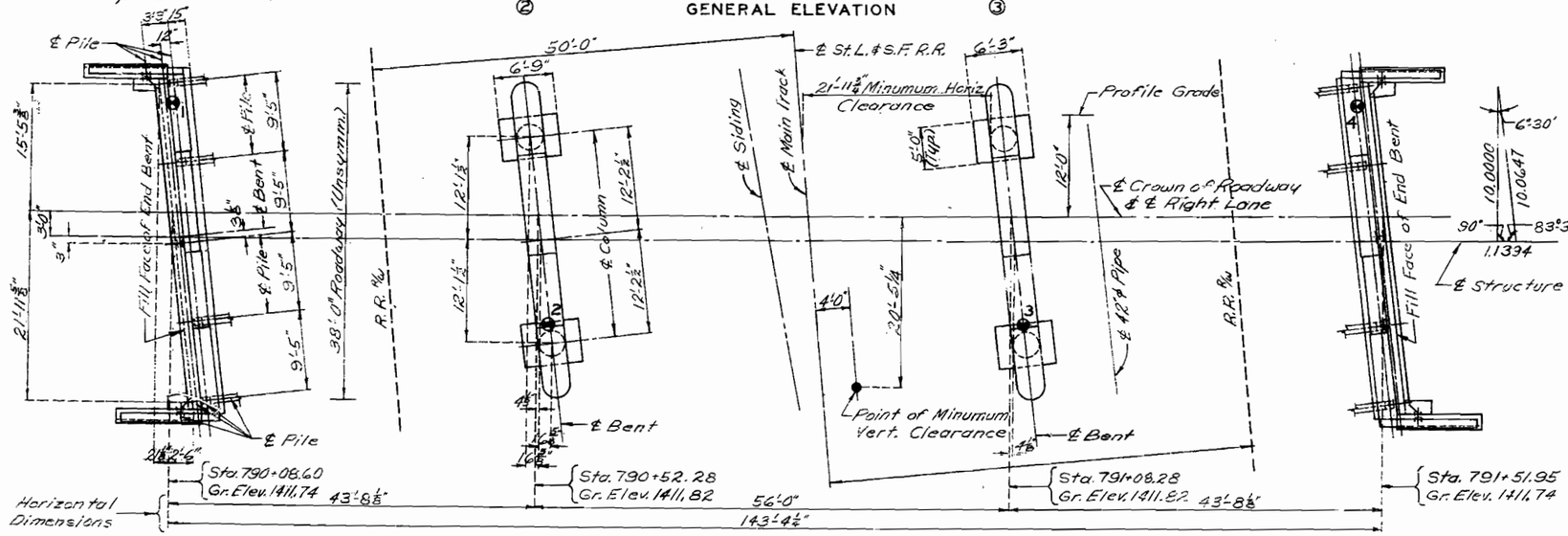
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	54	

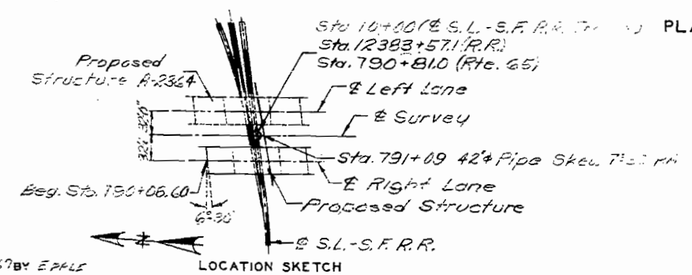


Note: Compacted roadway fill (full roadway width) shall be placed up to elevation of bottom of concrete beam in front of and not less than 25'-0" in back of End Bents before piles are driven.

GENERAL ELEVATION



PLAN



LOCATION SKETCH

Note: For Boring Data see Sheet 2 of 9
"⊕" Indicates location of Borings.

GENERAL NOTES:

Design Specifications: A.A.S.H.O. - 1965

Design Loading:
HS 20-44 15#/sq. ft. Future Wearing Surface
Earth 120# Equivalent Fluid Pressure 30#
Fatigue Stress Case I

Design Unit Stresses:
Class B Concrete (substructure) f_c = 1,200 psi
Class B1 Concrete (superstructure) f_c = 1,600 psi
Reinforcing Steel f_s = 20,000 psi
Structural Steel (A.S.T.M A36-66) f_s = 20,000 psi
Steel Pile (A.S.T.M. A36-66) f_b = 9,000 psi

Surface Seal:
Superstructure deck to be surface sealed.

Fabricated Steel:
Field connections, High Strength Bolts 3/4"ϕ, holes 13/16"ϕ except as noted.

Paint: Shop, none: Field, by contractor in accordance with Std. Spec. 55.4.16

Construction Clearance:
A minimum vertical clearance of 21'-6" from top of rails, and a minimum lateral clearance of 12'-6" centered on tracks shall be maintained during construction.

PILE & FOOTING DATA

	BENT NO.	1	2	3	4
BEARING PILE	Pile Type and Size	10BP42	—	—	10BP42
	Number	7	—	—	7
	Approximate Length Ft.	37	—	—	42
	Design Bearing Tons	29	—	—	29
	Hammer Energy req'd. Ft.Lbs.	7,100	—	—	7,100
SPREAD FOOTINGS	Foundation Material	—	Rock	Rock	—
	Design Bearing Tons/Sq.Ft.	—	6.0	6.0	—

Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor (W+w)/2W when the weight of the ram (W) is less than the weight of the pile (w).
All pile shall be driven to practical refusal.

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation For Structure	Cu. Yd.	120	—	120
Steel Piles in Place (10")	Lin. Ft.	553	—	553
Class B Concrete	Cu. Yd.	129.0	—	129.0
Class B1 Concrete	Cu. Yd.	—	169.2	169.2
Reinforcing Steel	Lb.	18,910	51,530	70,440
Painting	Ton	—	48.8	48.8
Fabricated Structural Carbon Steel	Lb.	—	98,710	98,710
Bridge Rail (Single Tube Type)	Lin. Ft.	—	282	282

No payment for excavation will be allowed at End Bents.
All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.
B.M. Elev. 1381.93 on ℄ So. Rdw'll R.R. Culv't 120' Rt. Sta. 790+95 (U.S.G.S. Datum)

BRIDGE OVER ST. L.-S.F. RAILROAD

STATE ROAD FROM I-44 SOUTH TO SOUTH OF CHERRY ST. IN SPRINGFIELD

PROJECT NO. U-UG-65-2 (10)(RTE. 65) **STA.** 790+08.6 (SOUTHBOUND LANE)

GREENE COUNTY

SUBMITTED BY L. F. Sandy BRIDGE ENGINEER DATE Feb. 13, 1968

APPROVED BY [illegible] CHIEF ENGINEER DATE Feb. 13, 1968

STD. 54.00

A-1649

DESIGNED Sept 19 67 BY EPPLE
DETAILED OCT. 1967 BY MAYES, KLIETHERMES, WEIMHOLT
CHECKED DEC. 1967 BY BAIG

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

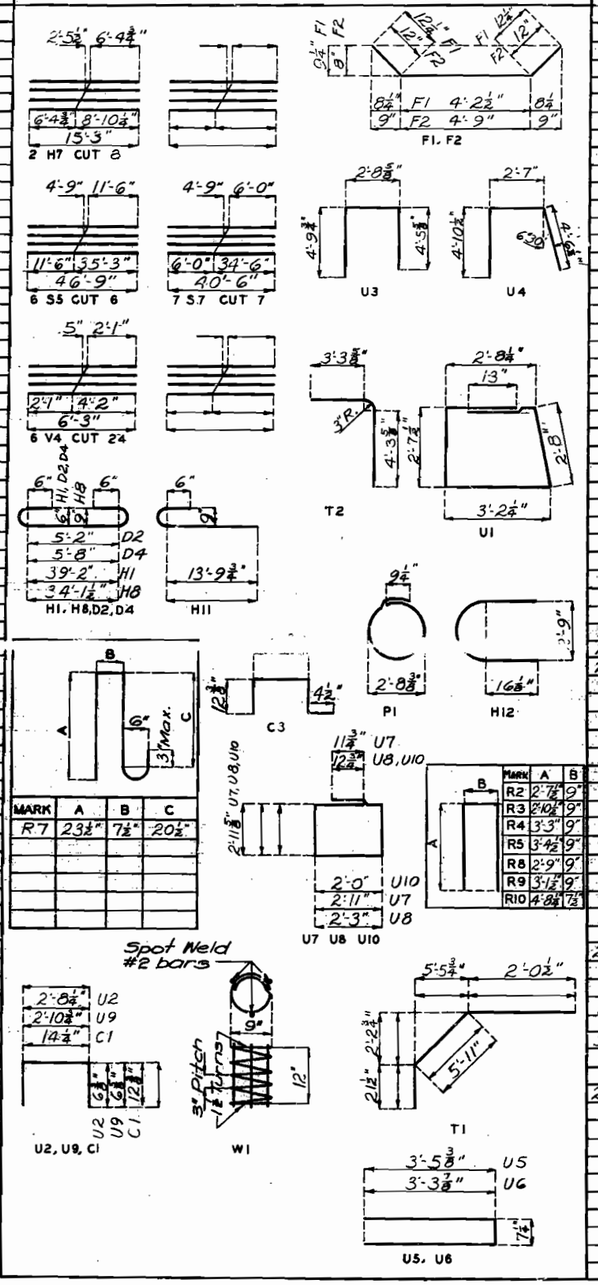
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	55	

COMPLETE BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	LOCATION
		END BENT NO. 1		
8	#8	41'-9"	H1	Beam
2	#6	39'-9"	H2	"
2	#6	39'-9"	H3	Bk. Wall
4	#4	20'-9"	H4	"
4	#6	9'-9"	H6	Wing
4	#6	15'-3"	H7	Wing
3	#6	6'-3"	F1	Beam
3	#6	6'-9"	F2	"
4	#6	9'-9"	T1	Wing
4	#6	8'-0"	T2	Wing
38	#4	12'-3"	U1	Beam
15	#4	3'-9"	U2	"
5	#7	12'-0"	U3	"
5	#7	12'-0"	U4	"
3	#4	7'-6"	U5	Wing
3	#4	7'-3"	U6	"
78	#5	4'-3"	V1	Bk. Wall
4	#6	2'-9"	V2	Wing
16	#4	5'-6"	V3	"
12	#4	6'-3"	V4	"
4	#4	4'-0"	V5	"
10	#2	19'-9"	W1	A.B. Wells
		INT. BENT NO. 2		
16	#10	5'-0"	D1	Footing
10	#6	8'-3"	D4	"
5	#9	37'-6"	H8	Beam
2	#6	34'-6"	H9	"
9	#11	34'-6"	H10	"
8	#8	15'-6"	H11	"
8	#7	7'-0"	H12	"
66	#3	9'-3"	P1	Column
27	#5	12'-9"	U7	Beam
2	#5	11'-6"	U8	"
6	#4	4'-0"	U9	"
28	#5	11'-0"	U10	"
8	#10	36'-6"	V6	Column
8	#10	34'-6"	V7	"
10	#2	19'-9"	W1	A.B. Wells
		INT. BENT NO. 3		
16	#10	5'-0"	D1	Footing
10	#6	7'-9"	D2	"
12	#5	4'-9"	D3	"
5	#9	37'-6"	H8	Beam
2	#6	34'-6"	H9	"
9	#11	34'-6"	H10	"
8	#8	15'-6"	H11	"
8	#7	7'-0"	H12	"
62	#3	9'-3"	P1	Column
27	#5	12'-9"	U7	Beam
2	#5	11'-6"	U8	"
6	#4	4'-0"	U9	"
28	#5	11'-0"	U10	"
16	#10	34'-0"	V8	Column
10	#2	19'-9"	W1	A.B. Wells

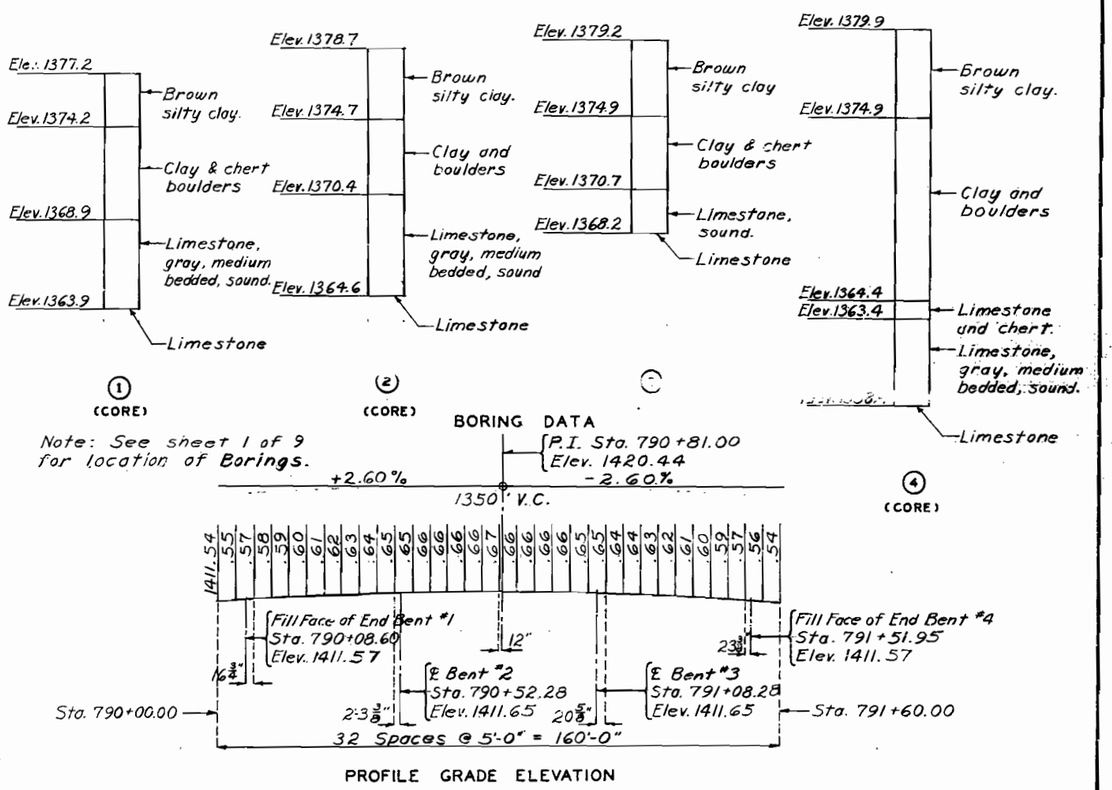
BENDING SKETCHES & CUTTING DIAGRAMS



MARK	A	B	C
R7	23½"	7½"	20½"

MARK	A	B
R2	2'-7½"	9"
R3	2'-10½"	9"
R4	3'-3"	9"
R5	3'-4½"	9"
R8	2'-9"	9"
R9	3'-1½"	9"
R10	4'-8½"	7½"

NO.	SIZE	LENGTH	MARK	LOCATION
		END BENT NO. 4		
3	#6	6'-3"	F1	Beam
3	#6	6'-9"	F2	"
8	#8	41'-9"	H1	Beam
2	#6	39'-9"	H2	"
8	#4	20'-9"	H4	Bk. Wall
2	#6	40'-6"	H5	"
4	#6	9'-9"	H6	Wing
4	#6	15'-3"	H7	"
4	#6	9'-9"	T1	Wing
4	#6	8'-0"	T2	Wing
38	#4	12'-3"	U1	Beam
15	#4	3'-9"	U2	"
5	#7	12'-0"	U3	"
5	#7	12'-0"	U4	"
3	#4	7'-6"	U5	Wing
3	#4	7'-3"	U6	"
4	#6	2'-9"	V2	Wing
16	#4	5'-6"	V3	"
12	#4	6'-3"	V4	"
4	#4	4'-0	V5	"
78	#5	5'-6"	V6	Bk. Wall
10	#2	19'-9"	W1	A.B. Wells
		SUPERSTRUCTURE		
506	#6	40'-6"	S1	Slab
205	#4	29'-3"	S2	"
210	#6	29'-9"	S3	"
80	#4	16'-0"	S4	"
6	#6	46'-9"	S5	"
2	#6	4'-6"	S6	"
7	#6	40'-6"	S7	"
2	#4	19'-6"	S8	"
4	#6	39'-0"	S9	"
8	#5	9'-3"	R1	End Post
4	#5	6'-0"	R2	"
4	#5	6'-6"	R3	"
4	#5	7'-3"	R4	"
28	#5	7'-6"	R5	"
16	#5	5'-6"	R6	"
284	#5	5'-3"	R7	Parapet
4	#5	6'-3"	R8	End Post
4	#5	7'-0"	R9	"
16	#6	10'-0"	R10	"
8	#5	32'-3"	R11	Parapet
32	#5	9'-9"	R12	"
44	#5	3'-3"	C1	Curb
8	#6	9'-9"	C2	"
284	#5	3'-6"	C3	"
16	#5	22'-0"	C4	"
8	#5	28'-9"	C5	"
8	#5	35'-9"	R13	Parapet
8	#5	32'-0"	R14	"



Note: See sheet 1 of 9 for location of Borings.

PROFILE GRADE ELEVATION

BRIDGE ST. L. - S. F. RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST.

IN SPRINGFIELD

PROJECT NO. U-UG-65-2(10) (RTE. 65) **STA.** 790+08.6 (SOUTHBOUND LANE)

GREENE **COUNTY**

A-1649

No. 20.3 June 1961 | Revised Dec. 1964

DETAILED OCT. 1967 BY WEIMHOLT

CHECKED Dec. 1967 BY Rhodes & Poig

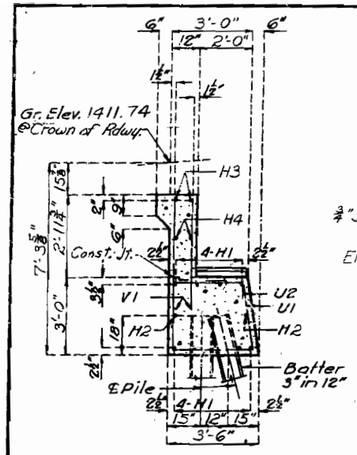
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 2 of 9.

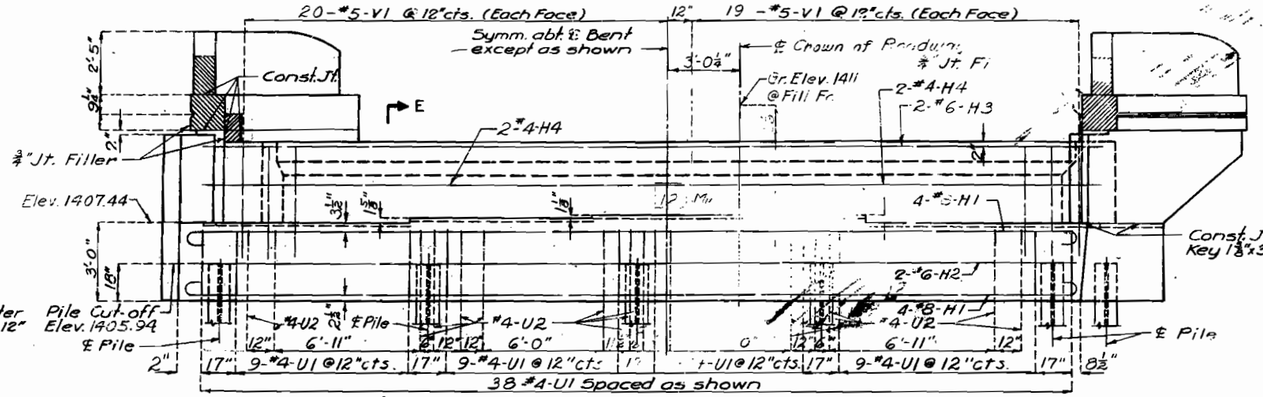
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	56	

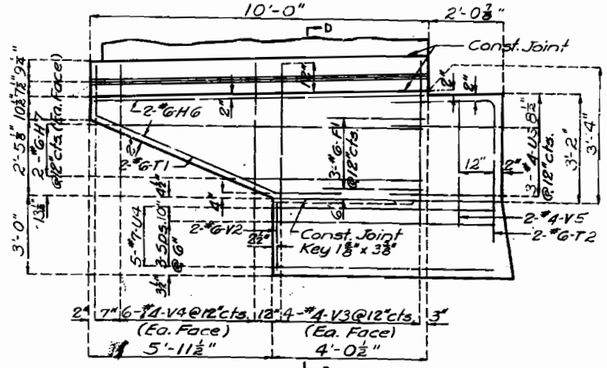
Note: L-bars to be bent in field to slope of wing if necessary.
See handrail sheet for reinforcement of end posts, parapets and curbs.



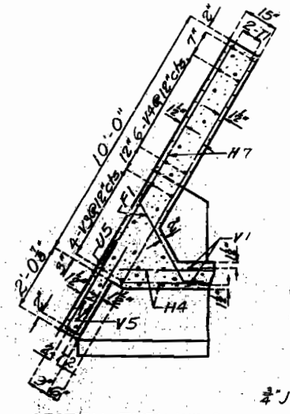
SECTION E-E



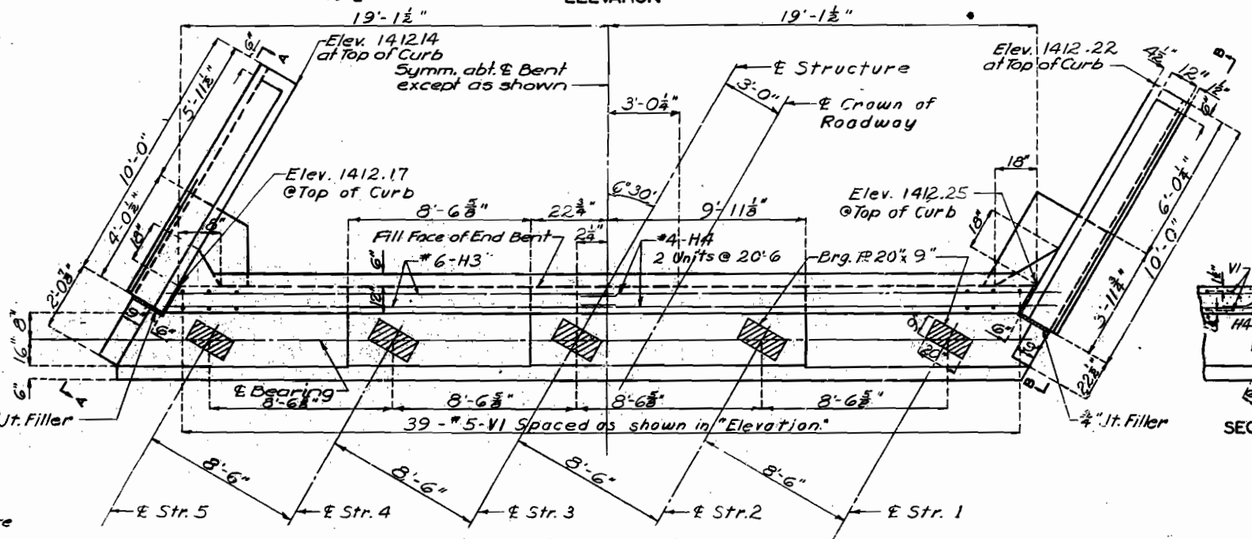
ELEVATION



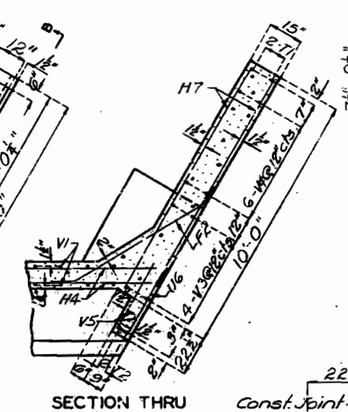
ELEVATION A-A



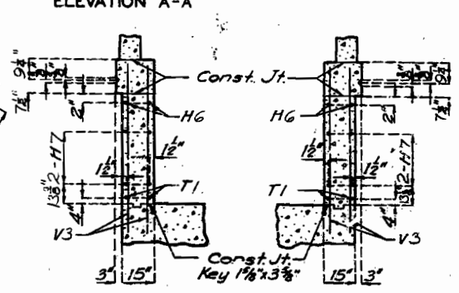
SECTION THRU WING



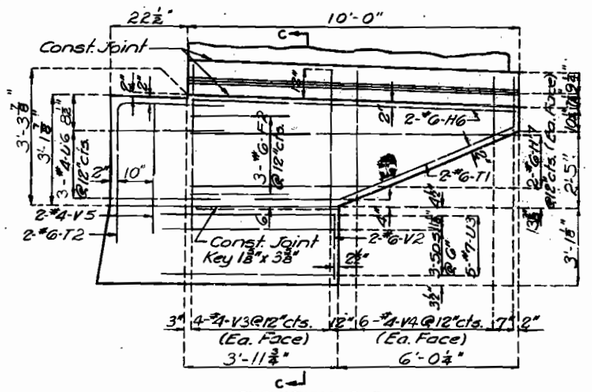
PLAN



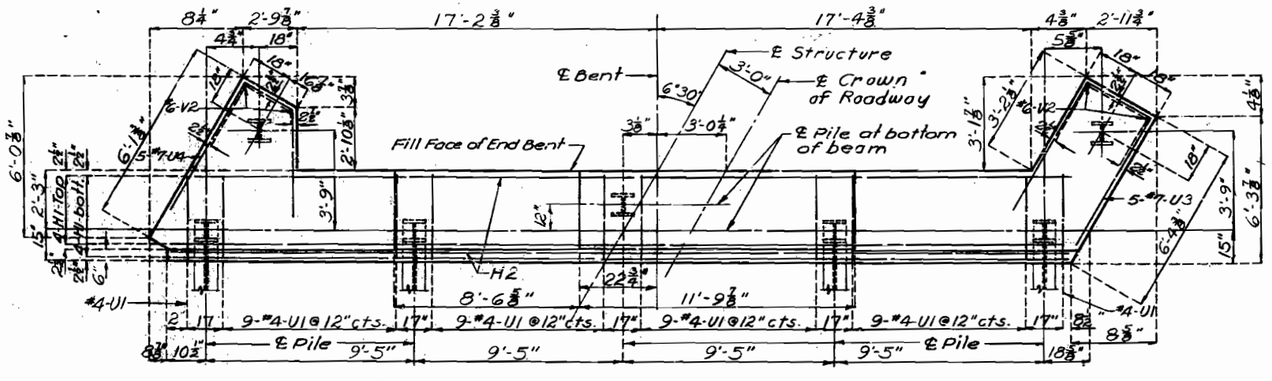
SECTION THRU WING



PART SECTION C-C PART SECTION D-D

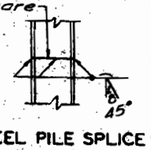


ELEVATION B-B



PLAN OF BEAM

Built splice (if required) Top of lower section to be cut square



STEEL PILE SPLICE

DETAILS OF END BENT NO. 1

Note: Fill at end bent No. 1 shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

STD. 12.2	REVISED	FEB. 1967
	APRIL 1965	

DETAILED SEPT. 1967 BY WEIMHOLT
CHECKED Dec. 1967 BY Rhodes

BRIDGE ST. L. - S.F. RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST. IN SPRINGFIELD

PROJECT NO. U-UG-65-2(10)(RTE. 65) **STA.** 790+08.6 (SOUTHBOUND LANE)

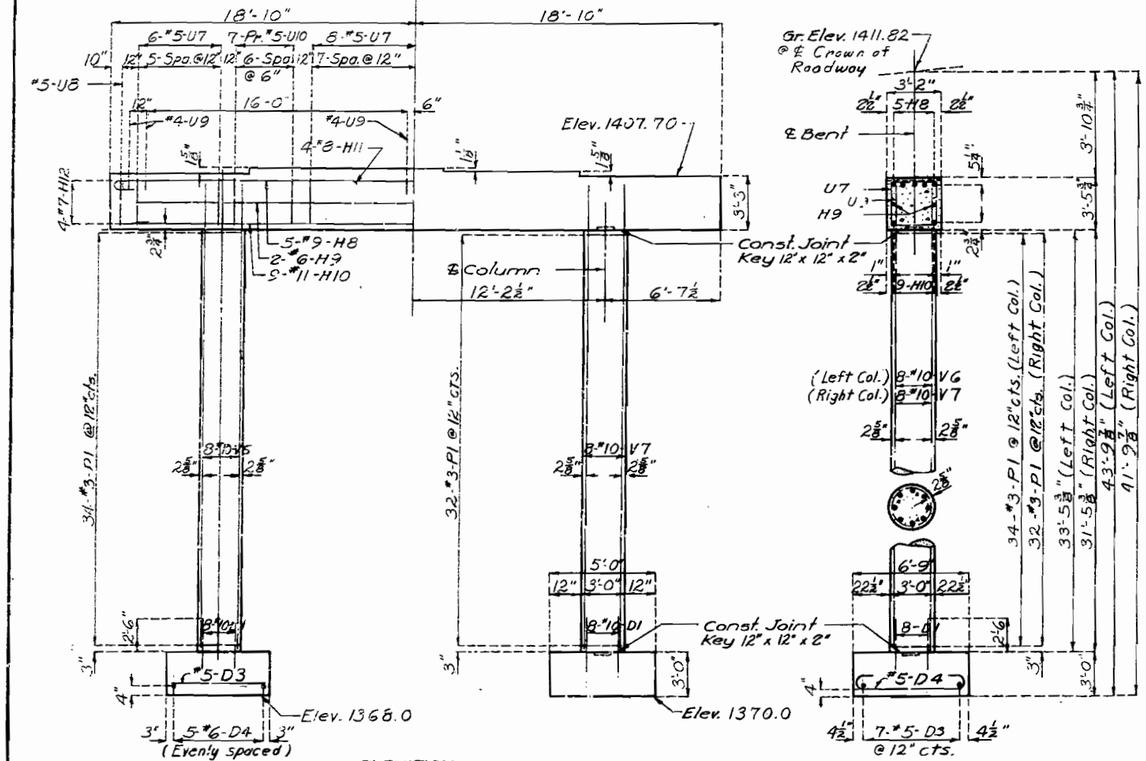
GREENE **COUNTY**

A-1649

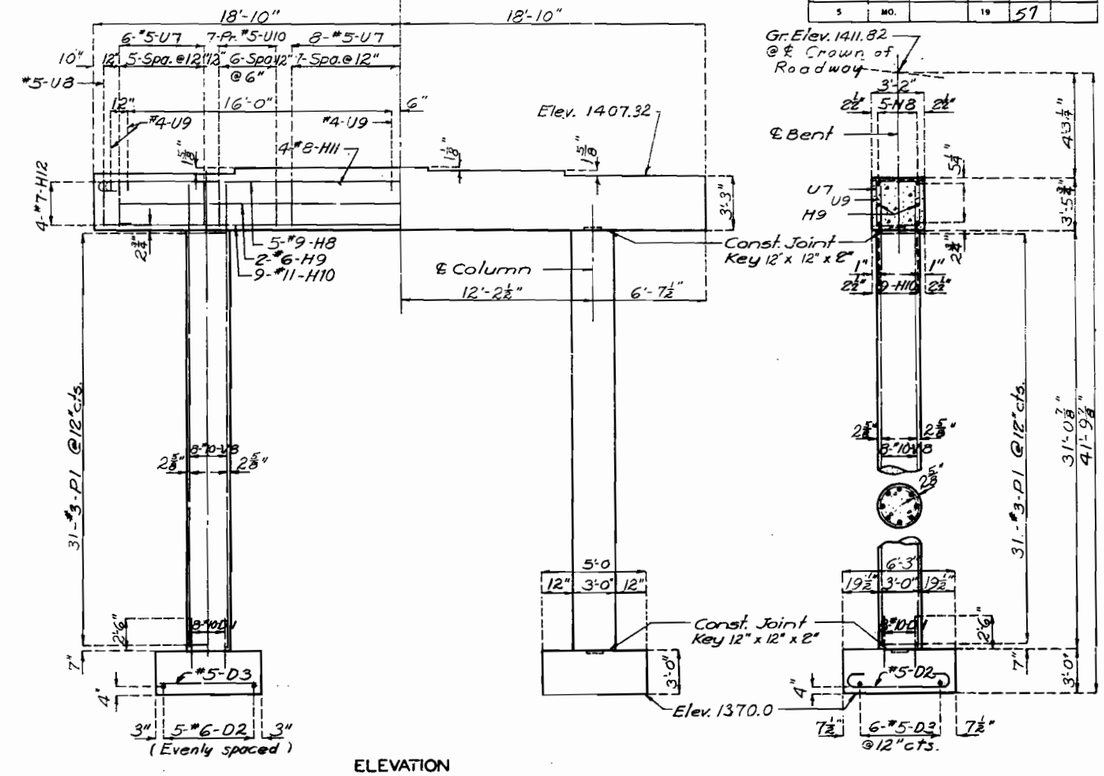
Note: This drawing is not to scale. Follow dimensions.

MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST. NO	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	57	

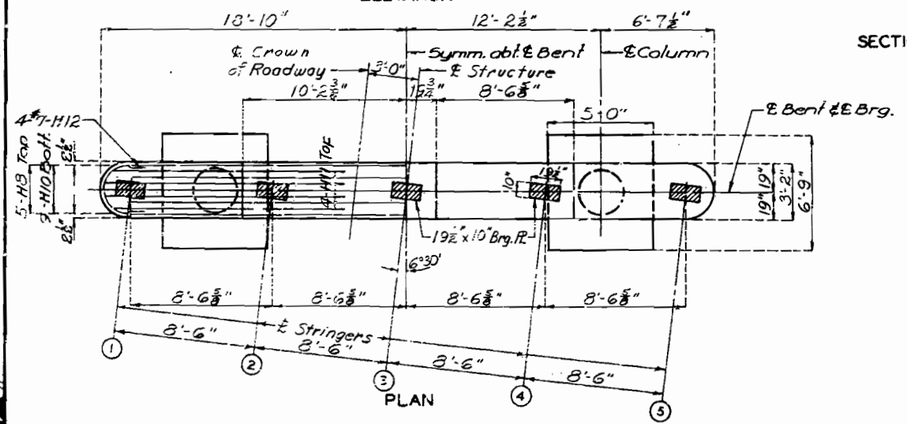


ELEVATION

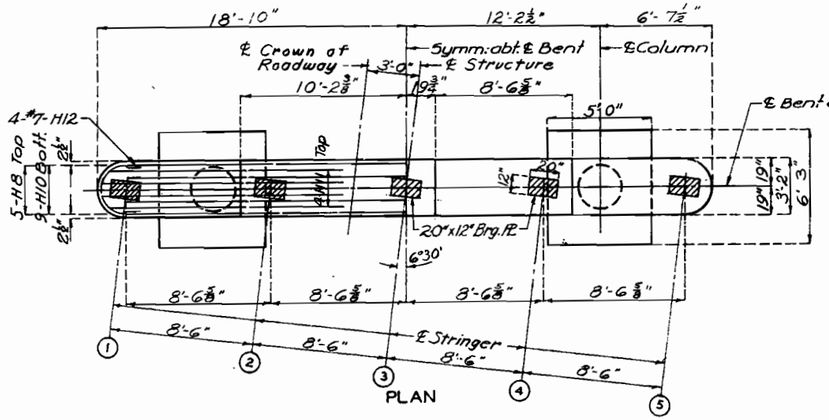


ELEVATION

SECTION AT ℄ ROADWAY



DETAILS OF INTERMEDIATE BENT NO. 2



DETAILS OF INTERMEDIATE BENT NO. 3

BRIDGE ST. L. – S.F RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST.

IN SPRINGFIELD

PROJECT NO. U-UG-65-2 (10) (RTE. 65) **STA.** 790 + 08.6 (SOUTHBOUND LANE)

GREENE **COUNTY**

A-1649

NO.	
19.2	Revised
Mar. 1964	Jan. 1965

DETAILED SEPT. 1967 BY WEIMHOLT

CHECKED Dec. 1967 BY Boig

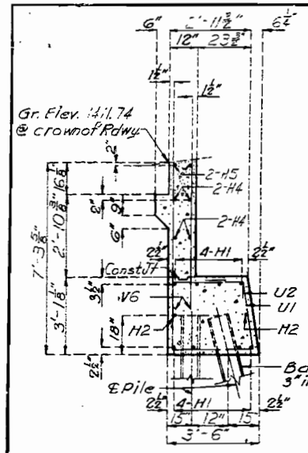
Note: This drawing is not to scale. Follow dimensions.

SEE FINAL PLANS FOR FINAL LINES

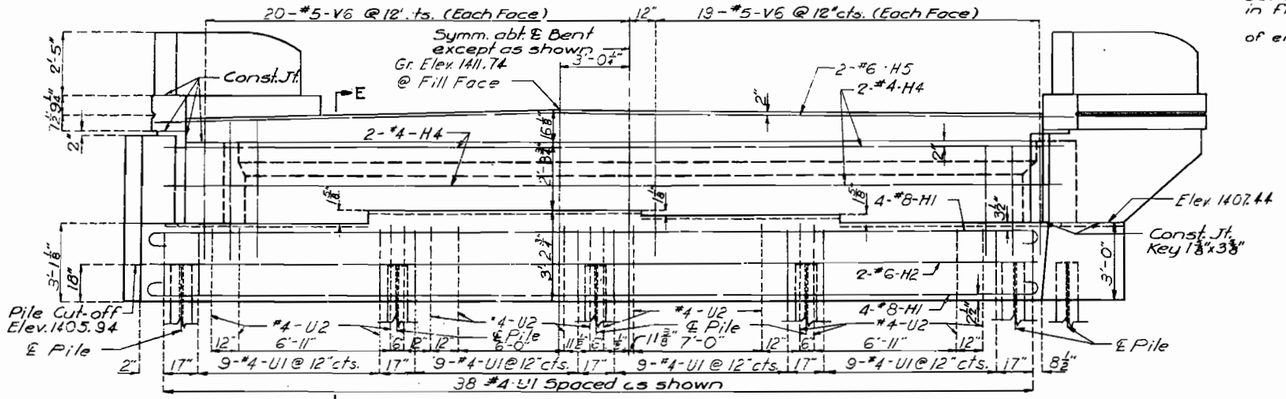
MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST. NO.	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	58	

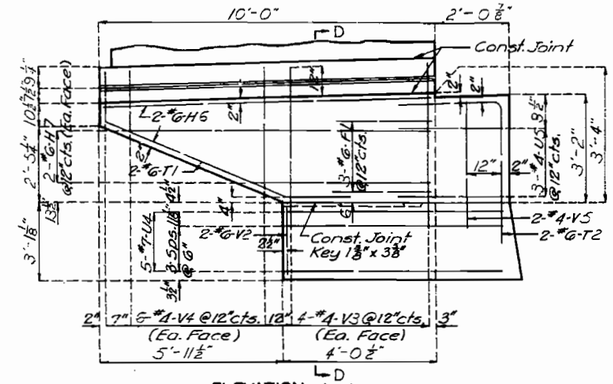
Note: #6-H5 bars in backwall with Exp. device and #12 bars in wing to be bent in field if necessary.
See handrail sheet for reinforcement of end posts, parapets and curbs.



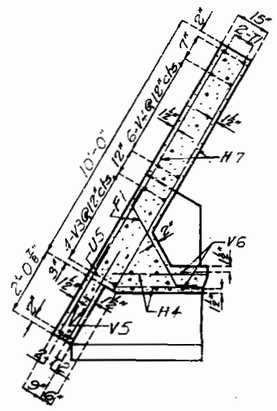
SECTION E-E



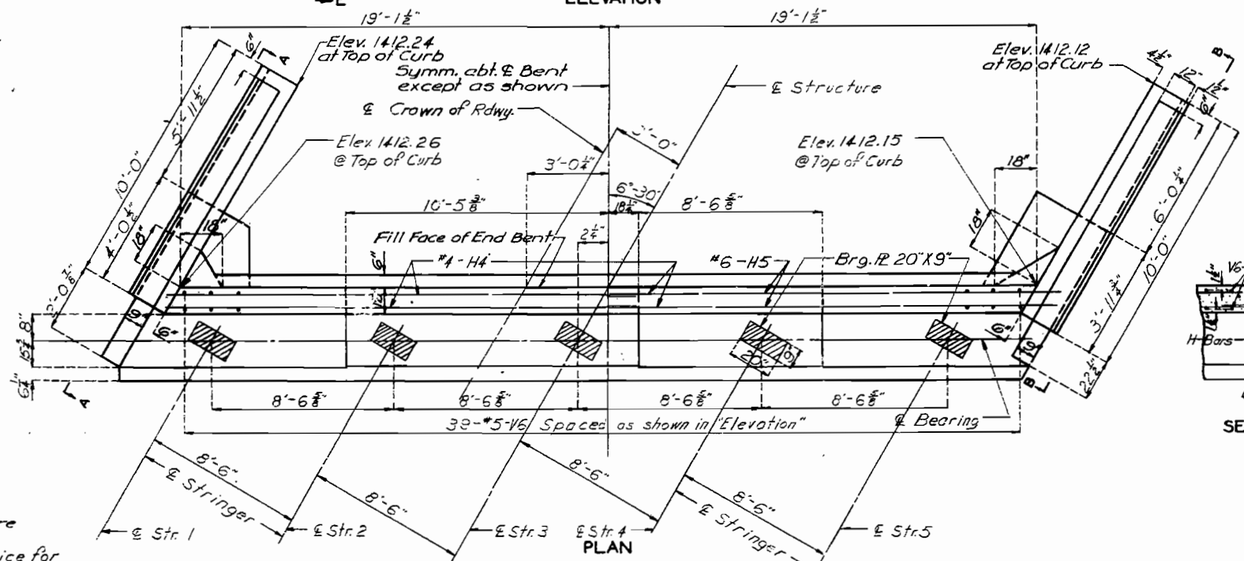
ELEVATION



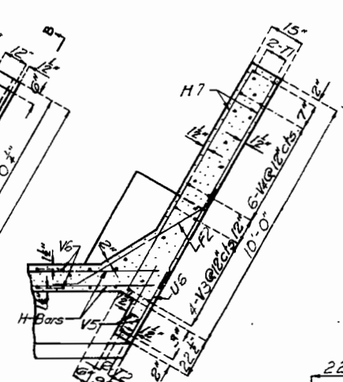
ELEVATION A-A



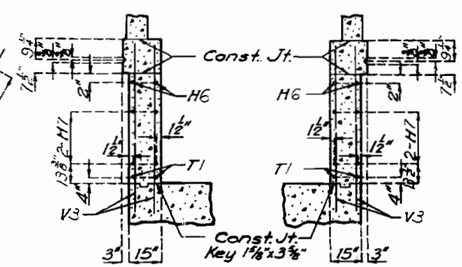
SECTION THRU WING



PLAN

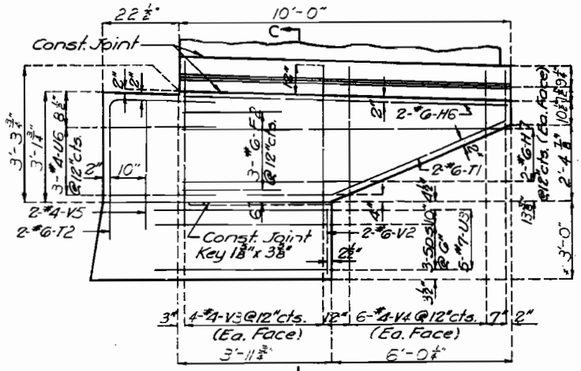


SECTION THRU WING

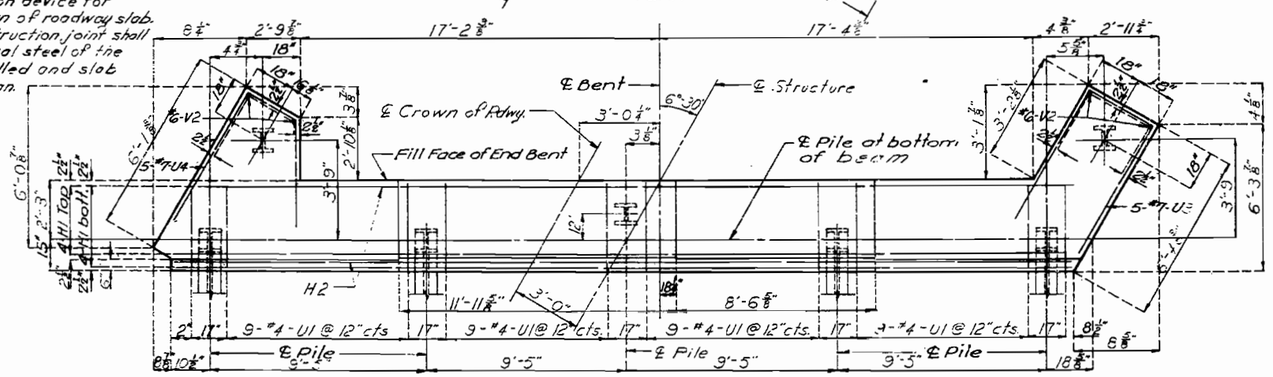


PART SECTION C-C

PART SECTION D-D



ELEVATION B-B

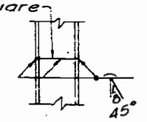


PLAN OF BEAM

Note: Fill at end bent No. 4 shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

Note: Top of backwall and expansion device for End Bent No. 4 to conform to crown of roadway slab. Backwall above upper construction joint shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in adjacent span.

Butt splice (if required) Top of lower section to be cut square.



STEEL PILE SPLICE

DETAILED SEPT. 1967 BY KLIETHERMES
CHECKED Dec 1967 BY RRhodes

STD. 12.2	REVISED
APRIL 1965	FEB. 1967

DETAILS OF END BENT NO. 4

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

Sheet No. 5 of 9.

BRIDGE ST. L.-S.F. RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST. IN SPRINGFIELD

PROJECT NO. U-UG-65-2-(10) (RTE. 65) **STA.** 790+08.6 (SOUTHBOUND LANE)

GREENE **COUNTY**

A-1649

90

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	59	

120 Shear Connector Units Spaced as shown (Each Stringer)

6" | 8-Spa. @ 6" | 17-Spa. @ 9" | 7-Spa. @ 18" | 2'-6" | 4-Spa. @ 12" | 7'-9" | 7'-9" | 4-Spa. @ 12" | 2'-6" | 33 Spaces @ 10" | 2'-6" | 4-Spa. @ 12" | 7'-9" | 7'-9" | 4-Spa. @ 12" | 2'-6" | 7-Spa. @ 18" | 17-Spa. @ 9" | 8-Spa. @ 6" | 6"

℄ Stiff. Pl. ℄ Stiff. Pl. ℄ Stiff. Pl. ℄ Stiff. Pl.

Outside face of Curb

30"WF @ 99# | 30"WF @ 132# | 30"WF @ 99# | 30"WF @ 132# | 30"WF @ 99#

Fill face of End Bent

Exposed Face of 8" Pl.

do | Int. Diaph. | Cross Frame | 12"I @ 20.7#

℄ Crown of Roadway

℄ Structure

Fill face of End Bent

Outside face of Curb

℄ Splice | ℄ Splice | ℄ Splice | ℄ Splice

13'-0" | 13'-0" | 13'-0" | 13'-0"

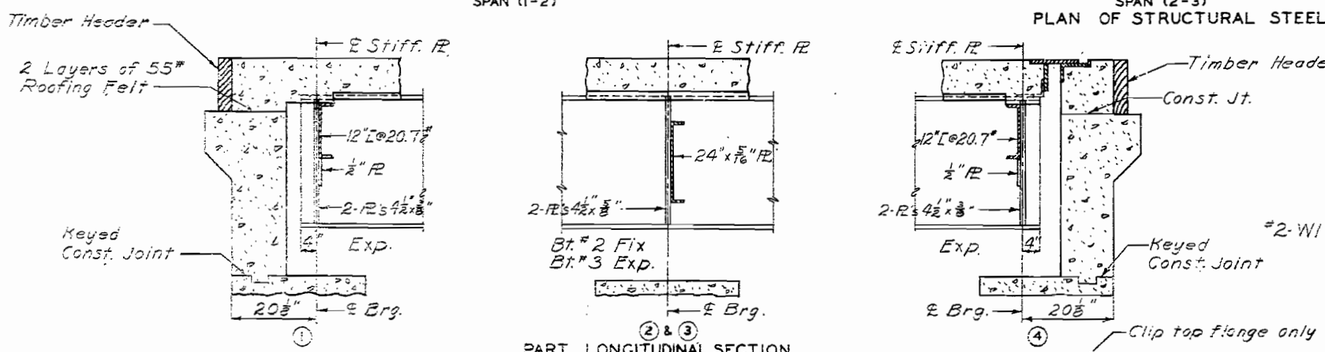
21'-0" | 21'-0" | 13'-8" | 18'-8" | 18'-8" | 21'-0" | 21'-0"

20⅝" | 42'-0" | 56'-0" | 42'-0" | 20⅝"

143'-4½"

SPAN (1-2) SPAN (2-3) SPAN (3-4)

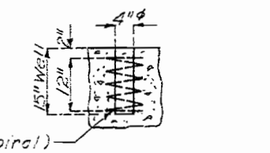
PLAN OF STRUCTURAL STEEL



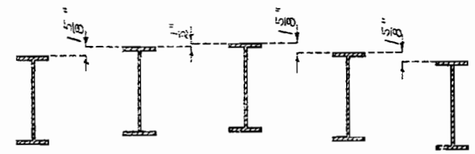
PART LONGITUDINAL SECTION

PART ANCHOR BOLT PLAN

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



DETAIL OF ANCHOR BOLT WELLS



SECTION THRU STRINGERS (NORMAL TO ℄ ROADWAY)

DETAILED SEPT. 1967 BY WEIMHOLT

CHECKED Dec 1967 BY Borg

BRIDGE OVER ST. L. - S.F. RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST.

IN SPRINGFIELD

PROJECT NO. U-UG-65-2 (10) (RTE. 65) **STA.** 790+08.6 (SOUTHBOUND LANE)

GREENE COUNTY

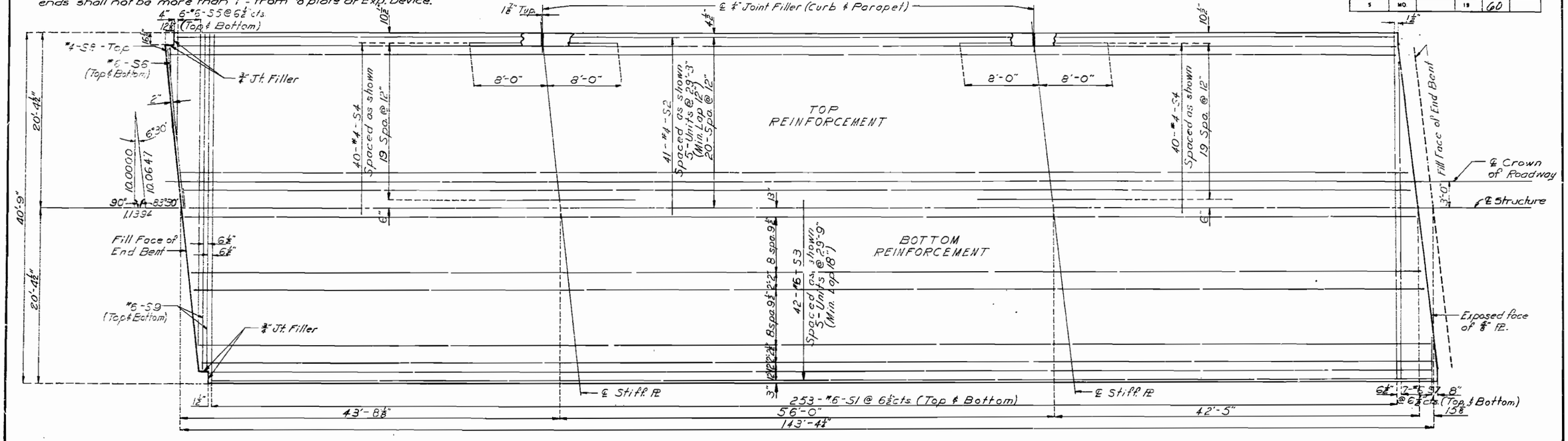
Sheet No. 6 of 9.

A-1649

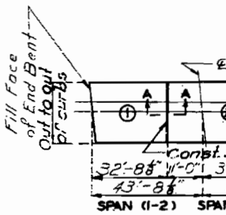
MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO.		19	60	

Note: Longitudinal Reinforcing steel shall be placed so that ends shall not be more than 1" from "B" plate at Exp. Device.



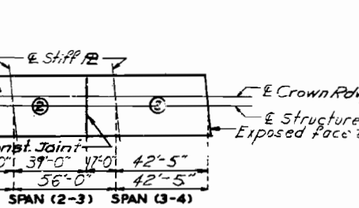
PLAN OF SLAB SHOWING REINFORCEMENT



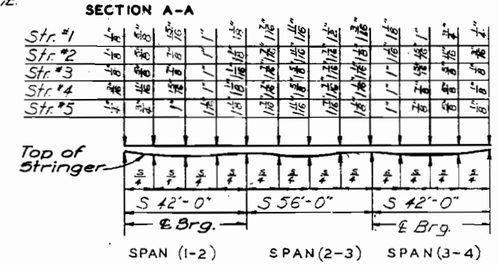
	Sequence of Pours Direction		
	1	2	3
Basic Sequence	End to 2	1 to 3	2 to End
Alternate "A" Pours	1+2		3
	End to 3		2 to End
Alternate "B" Pours	1+2+3		
	End to End		

Note: The contractor shall use an approved oscillating screed type, self-propelled mechanical finishing machine and shall pour and satisfactorily finish the slab pours at a rate of not less than 27 cubic yards per hour unless he elects to use an approved retarder at his own expense to retard the set of the concrete to 2.5 hours, in which case he may reduce his pouring and finishing rate to not less than 25 cubic yards per hour. The contractor shall observe the basic pouring sequence unless he can demonstrate to the engineer that he can pour and satisfactorily finish one of the longer alternate pours. Finishing machine loads will not be permitted on concrete less than 48 hours old.

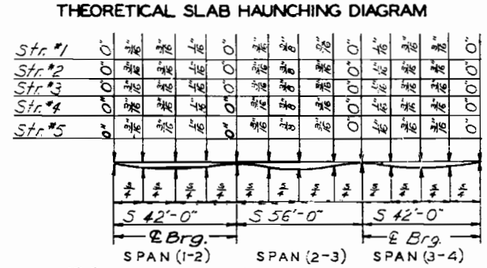
SLAB POURING SEQUENCE



SECTION A-A

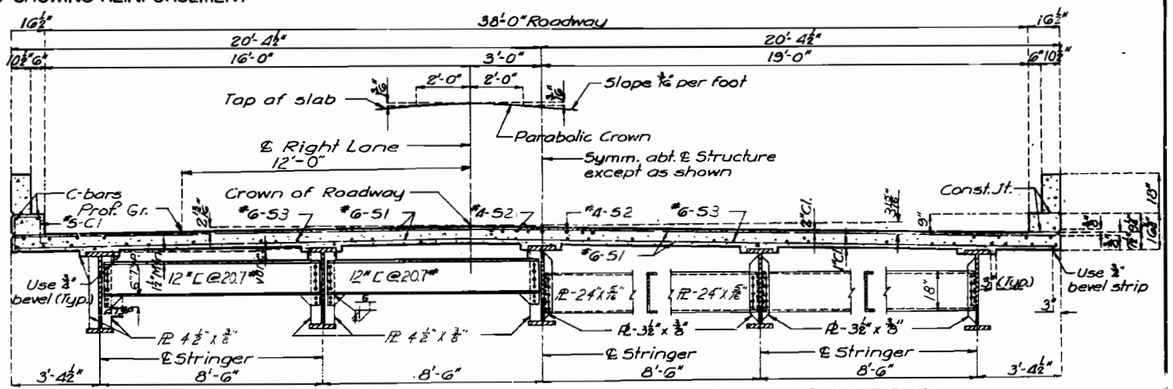


THEORETICAL SLAB HAUNCHING DIAGRAM



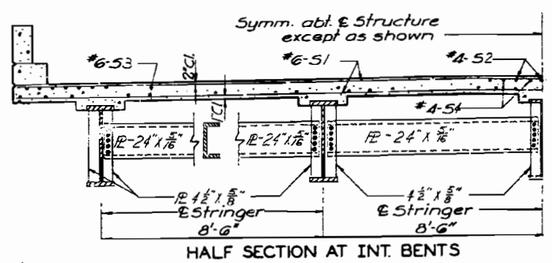
10.9 % Structural Steel

DEAD LOAD DEFLECTION



HALF SECTION NEAR END DIAPH.

HALF SECTION NEAR INT. DIAPH.



HALF SECTION AT INT. BENTS

Note: For details and reinforcement of curb and parapet not shown see sheet No. 9 of 9.

BRIDGE OVER ST. L.-S.F. RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST. IN SPRINGFIELD

PROJECT NO. U-UG-65-2(10) RTE. 65 STA. 790+08.6

GREENE COUNTY SOUTHBOUND LANE

A-1649

92

STD. 41.38.2A	REVISED
DEC. 1964	JUNE 1967

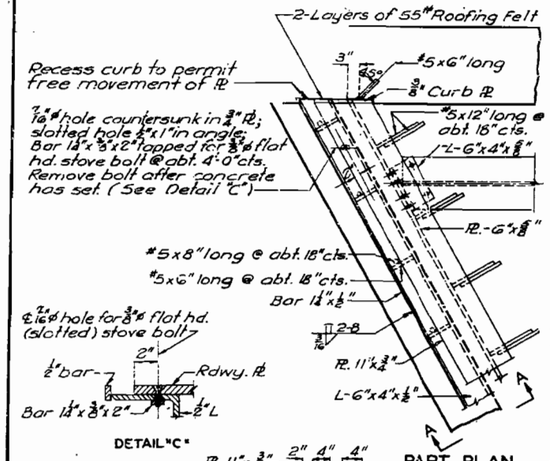
DETAILED SEPT. 1967 BY KLIETHERMES

CHECKED Dec. 1967 BY Bag

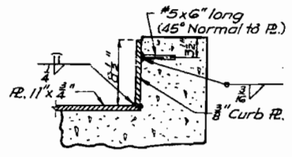
Note: This drawing is not to scale. Follow dimensions.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	61	



EXPANSION DEVICE AT END BENT NO. 4



SECTION THRU CURB

Note: Expansion Device shall be fabricated in one section except that when the length is over 50 feet, splicing is permissible. The expansion device shall be bent to conform to crown and grade of roadway.

No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown.

Use 2 Layers of 55# Roofing Felt between the sliding contact surface of curb plate and concrete curb.

NOTES: TYPE "D" BEARINGS

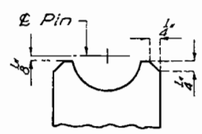
Lead plates under bearings shall be approximately 1/8" thickness and weigh 8#/sq. ft. Cost of lead plates shall be included in price bid for other items.

"Estimated weight" does not include weight of anchor bolts.

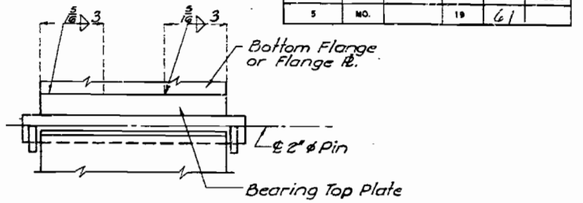
Rockers and pedestals shall be machined after welding.

Where flat surface is indicated, tolerance shall be .003 in/in in any direction.

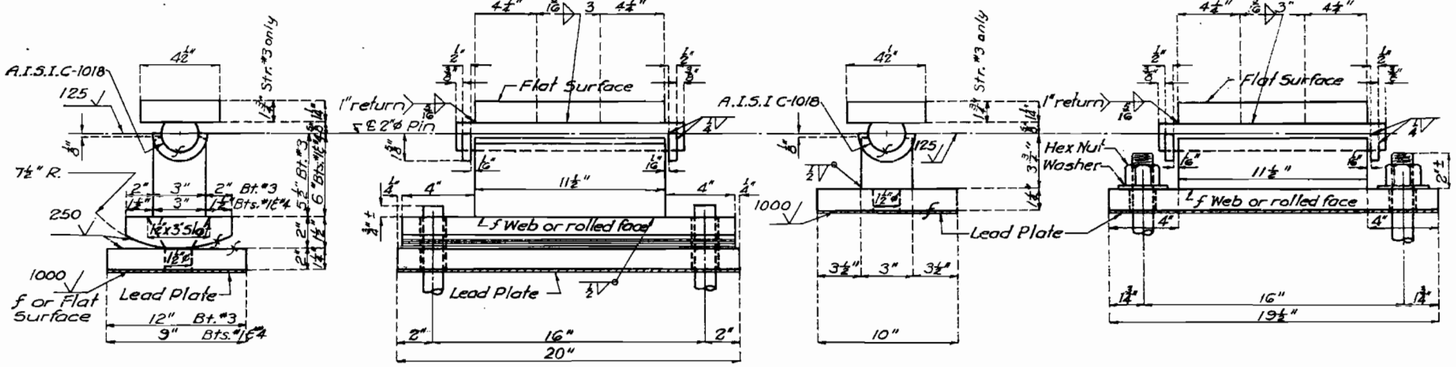
Anchor Bolts for Type "D" Bearings shall be 1 1/4" ø swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.



END VIEW OF WEB EXPANSION BEARING



WELDING DETAILS



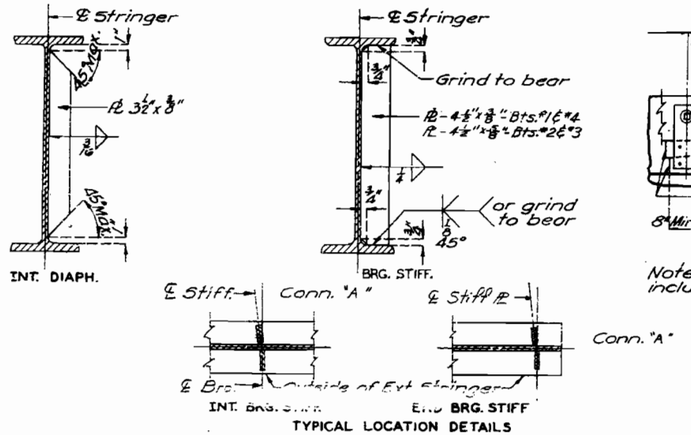
EXPANSION

Required: 5-for Bt. #1
5-for Bt. #3
5-for Bt. #4

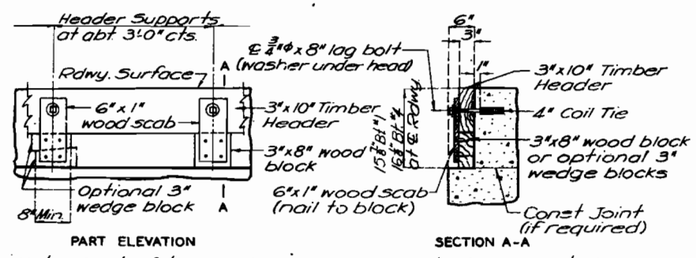
FIXED

Required: 5-for Bt. #2

TYPE "D" BEARINGS
(Estimated Weight 3869#)

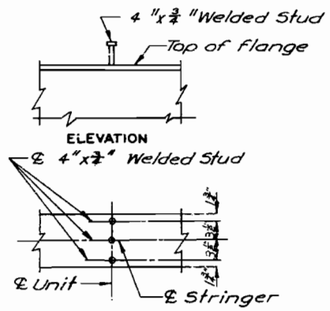


TYPICAL LOCATION DETAILS

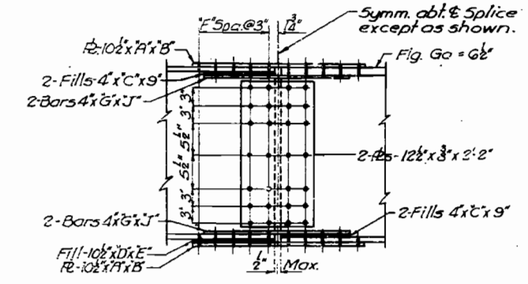


Note: Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER



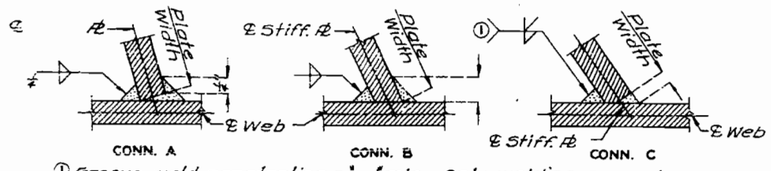
DETAILS OF SHEAR CONNECTORS



WF SIZES	"A"	"B"	"C"	"D"	"E"	"F" SPA.	"G"	"J"
30" WF 99 to 132	7/16"	2'-0 1/2"	5/16"	1/16"	12"	3	1/2"	18 1/2"

Note: 15/16" ø reamed holes for 7/8" ø high strength bolts.

DETAIL OF 30" WF BEAM SPLICE



① Groove weld penetration - " "min. Only welding procedures having good penetration will be permitted on groove welds.

WELDING DETAILS

BRIDGE OVER ST. L. - S.F. RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST. IN SPRINGFIELD

PROJECT NO. U-UG-65-2(10) (RTE. 65) **STA.** 730+08.6 (SOUTHBOUND LANE)

GREENE **COUNTY**

A-1649

93

DETAILED SEPT. 1967 BY SHAEFER & KLIETHERMES
CHECKED Dec. 1967 BY Boig

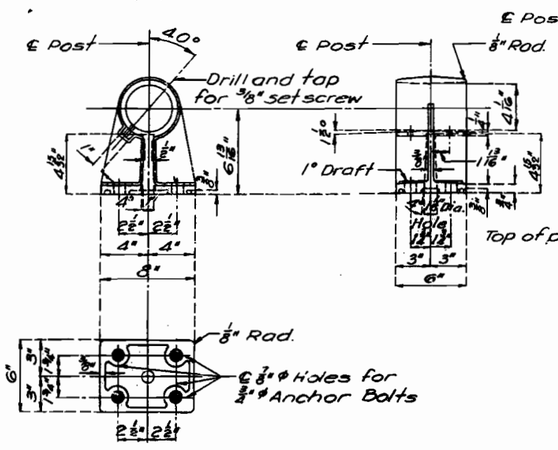
Note: This drawing is not to scale. Follow dimensions.

MISSOURI STATE HIGHWAY DEPARTMENT

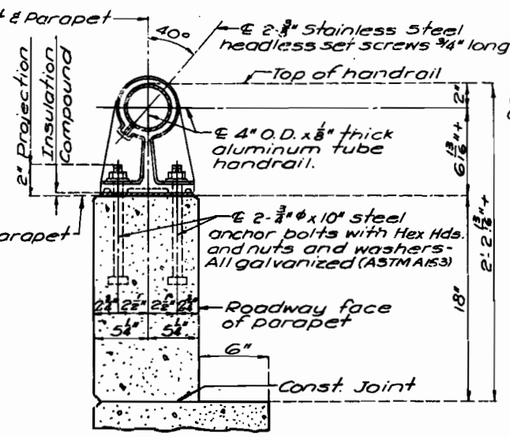
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	62	

GENERAL HANDRAIL NOTES:

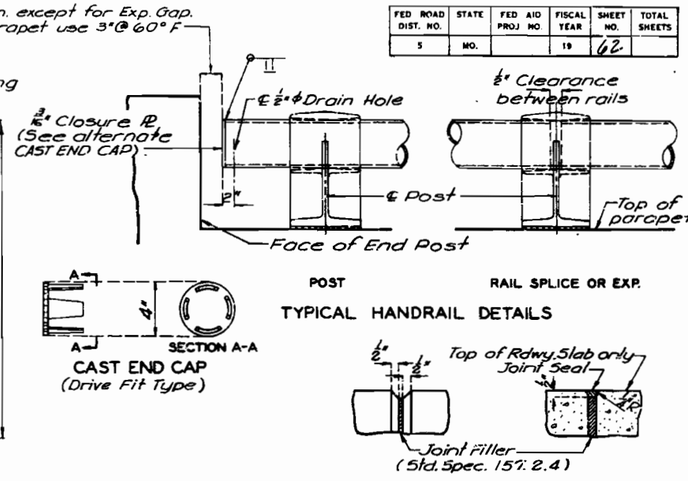
All handrail posts shall be set normal to grade.
Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet.
Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/8". Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.
All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.
The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.
All fillets 1/4" except as noted.
All drafts 3° except as noted.
Pipe rail to be fabricated in a minimum of 2 panel lengths.
Omit set screw on side adjacent to filled joint in parapet and curb at all expansion posts.
Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end posts) normal to grade.
Concrete end posts to be vertical.
All exposed edges of end posts shall have 1/2" bevel. All exposed edges of curbs and parapets shall have 1/2" radius or 3/8" bevel unless otherwise noted.
If the contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates.
Integrally cast test coupons and a coat of clear lacquer specified in Std. Spec. 56.2.4 and 56.3.5 respectively will not be required for these rail posts.



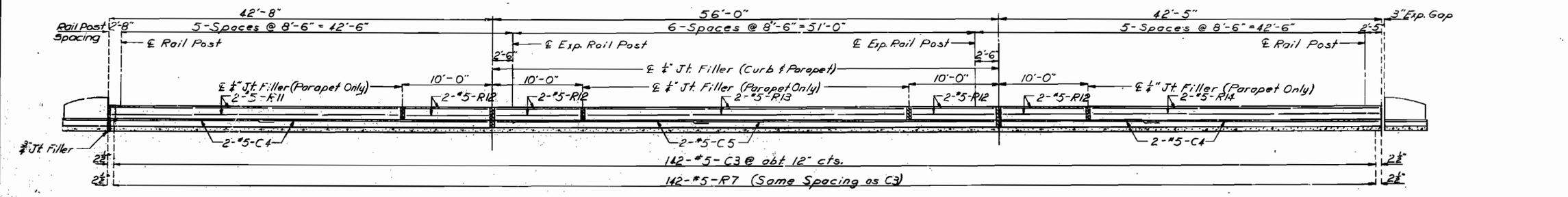
POST DETAILS



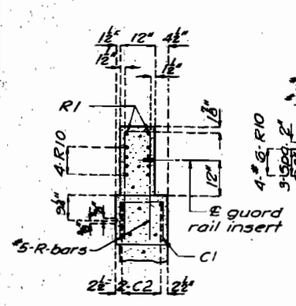
SECTION THRU HANDRAIL



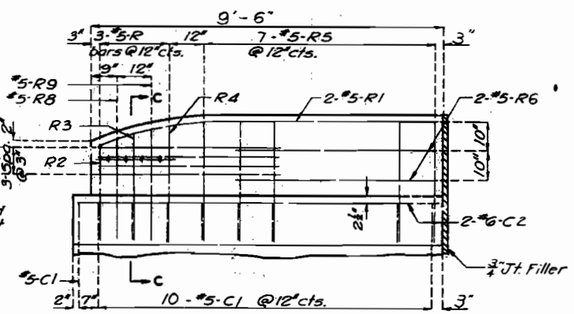
SINGLE TUBE ALUMINUM RAILING



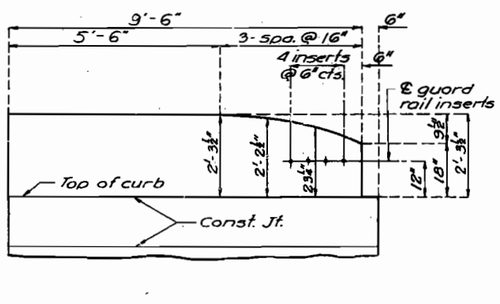
SECTION NEAR LEFT CURB AND PARAPET

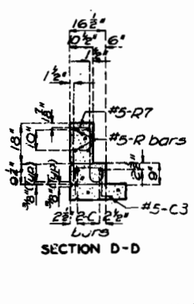


SECTION C-C

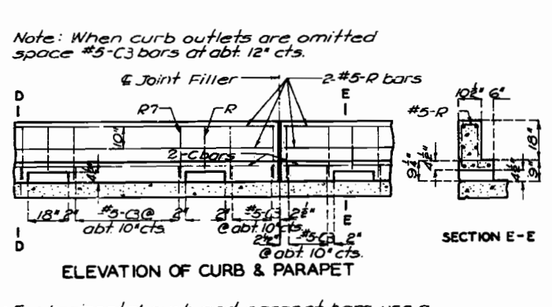


ELEVATION OF END POSTS





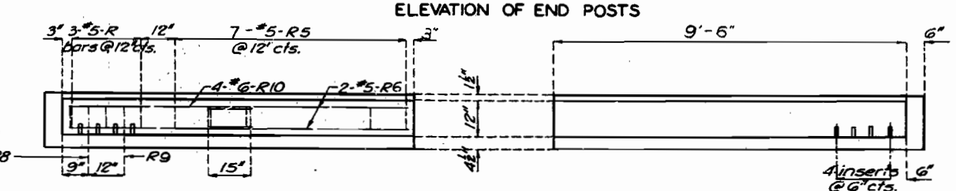
Note: When curb outlets are omitted space #5-C3 bars at abt. 12" cts.



ELEVATION OF CURB & PARAPET

Note: For horizontal curb and parapet bars use a minimum lap of 15" for #5 and 18" for #6

Note: Anchors for attaching guard rail shall be 3/4" threaded malleable iron (Galv.) inserts having a Min. depth of 3½" and filled with a plastic closing plug. Cost for furnishing & installing inserts & plugs will be included in price bid for other items.



PLAN OF END POSTS

DETAILED DEC. 1967 BY KLIETHERMES
CHECKED Dec. 1967 BY Baig

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

Sheet No. 9 of 9.

BRIDGE OVER ST. L.-S.F. RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST. IN SPRINGFIELD

PROJECT NO. U-UG-65-2 (10) RTE. 65 **STA.** 790+08.6 SOUTHBOUND LANE

GREENE **COUNTY**

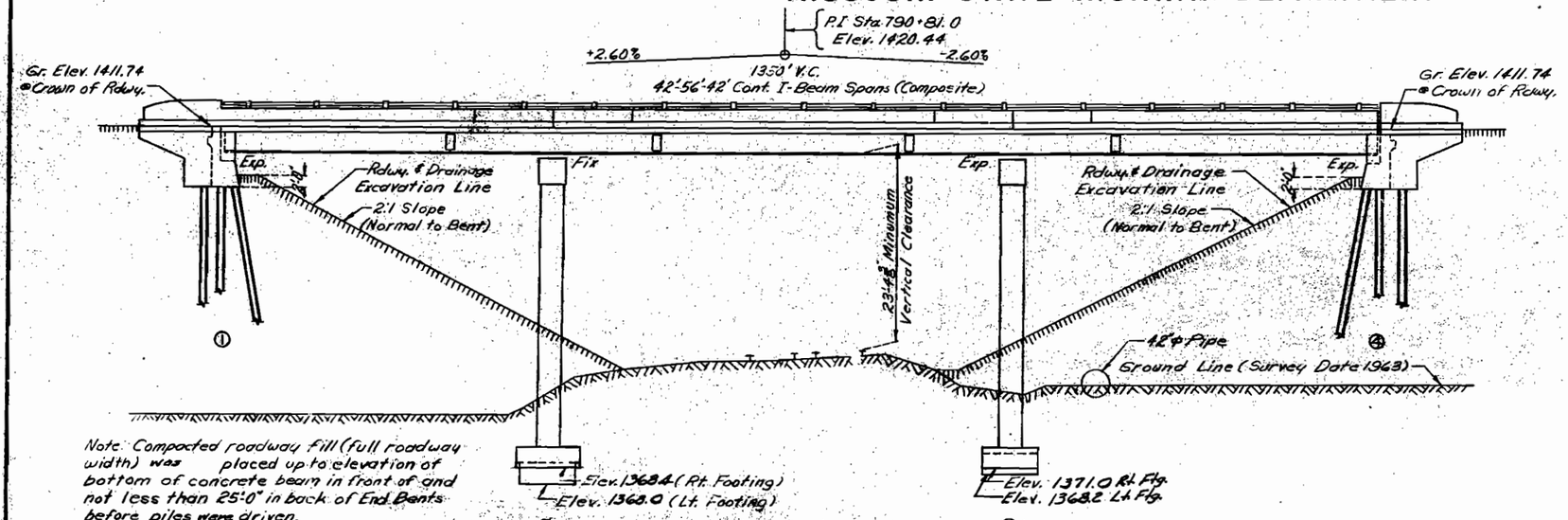
A-1649

STD 1.5.2 | REVISED JAN. 1967 | MAR. 1964

94

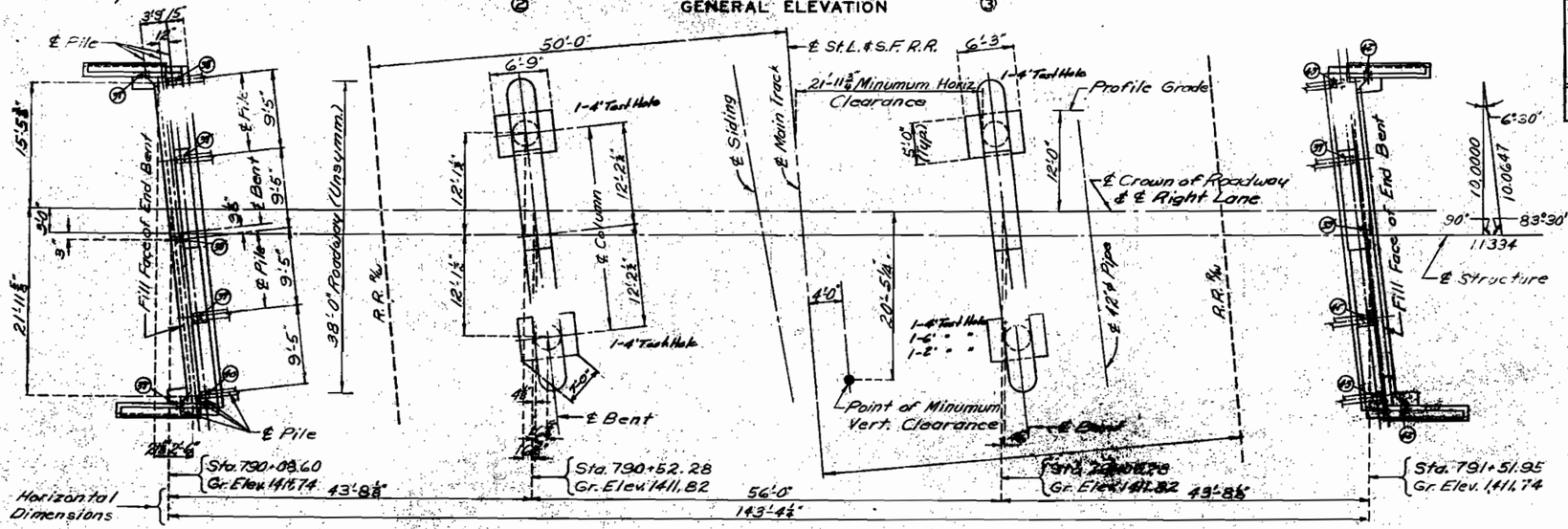
MISSOURI STATE HIGHWAY DEPARTMENT

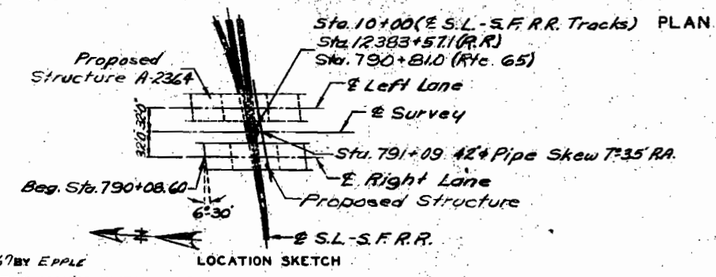
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	54	



Note: Compacted roadway fill (full roadway width) was placed up to elevation of bottom of concrete beam in front of and not less than 25'0" in back of End Bents before piles were driven.

GENERAL ELEVATION





LOCATION SKETCH PLAN

DESIGNED Sept 1967 BY EPPLE
DETAILED OCT. 1967 BY MAYES, KLIETHERMES, WEIMHOLT
CHECKED DEC. 1967 BY BAIG

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

GENERAL NOTES:

Design Specifications: A.A.S.H.O. - 1965

Design Loading:
HS 20-44 15 #/sq. ft. Future Wearing Surface
Earth 120# Equivalent Fluid Pressure 30#
Fatigue Stress Case I

Design Unit Stresses:
Class B Concrete (substructure) f_c = 1,200 psi
Class B1 Concrete (superstructure) f_c = 1,600 psi
Reinforcing Steel f_s = 20,000 psi
Structural Steel (A.S.T.M. A36-66) f_s = 20,000 psi
Steel Pile (A.S.T.M. A36-66) f_b = 9,000 psi

Surface Seal:
Superstructure deck . surface sealed.

Fabricated Steel:
Field connections, High Strength Bolts ¾"ϕ, holes 13/16"ϕ except as noted.

Paint: Shop, none: Field, by contractor in accordance with Std. Spec. 55.4.10

Construction Clearance:
A minimum vertical clearance of 21'-6" from top of rails, and a minimum lateral clearance of 12'6" centered on tracks was maintained during construction.

PILE & FOOTING DATA

	BENT NO.	1	2	3	4
BEARING PILE	Pile Type and Size	10BP42	—	—	10BP42
	Number	7	—	—	7
	Approximate Length Ft.	37	—	—	22
	Design Bearing Tons	29	—	—	29
	Hammer Energy reqd. Ft.Lbs.	7,100	—	—	7,100
SPREAD FOOTINGS	Foundation Material	—	Rock	Rock	—
	Design Bearing Tons / Sq. Ft.	—	6.0	6.0	—

Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor (W+w)/2W when the weight of the ram (W) is less than the weight of the pile (w).
All pile was driven to practical refusal.

QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation For Structure	Cu. Yd.	103	—	103
Steel Piles in Place (10")	Lin. Ft.	559	—	559
Class B Concrete	Cu. Yd.	130.1	—	130.1
Class B1 Concrete	Cu. Yd.	—	169.2	169.2
Reinforcing Steel	Lb.	59910	31530	91440
Painting	Ton	—	48.9	48.9
Fabricated Structural Carbon Steel	Lb.	—	38,960	38,960
Bridge Rail (Single Tube Type)	Lin. Ft.	—	282	282
Contingent Items				
Class 1 Excavation for Structure +25%	Cu. Yd.	115		115
Grouting Concrete	Cu. Yd.	20		20
Test Holes	Lin. Ft.	24		24

No payment for excavation was allowed at End Bents.
All concrete and reinforcement in end parks, and parapets, and curbs is included with superstructure quantities.
B.M. Elev. 1412.20 a N.E. Con. curb 16' Lt. & Med. Sta. 789+835

ISSUED

BRIDGE OVER ST. L.-S.F. RAILROAD

STATE ROAD FROM I-44 SOUTH TO SOUTH OF CHERRY ST.
IN SPRINGFIELD
PROJECT NO. U-UG-65-2 (10)(RTE. 65) STA. 790+08.6 (SOUTHBOUND LANE)
GREENE COUNTY

SUBMITTED BY ..... BRIDGE ENGINEER ..... DATE Feb. 19 1968
APPROVED BY ..... CHIEF ENGINEER ..... DATE Feb. 13, 1968

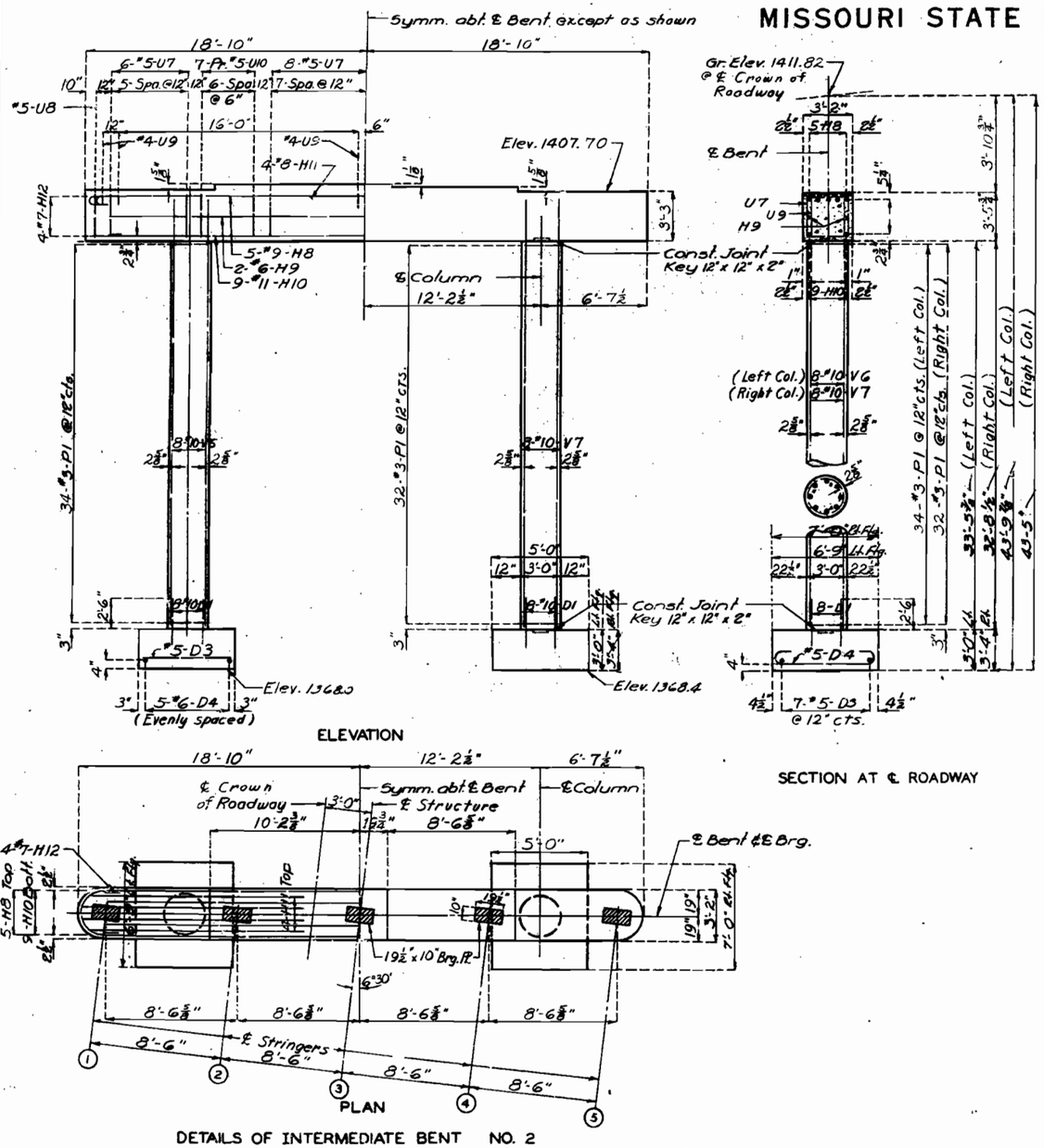
STD. 54.00
A-1649

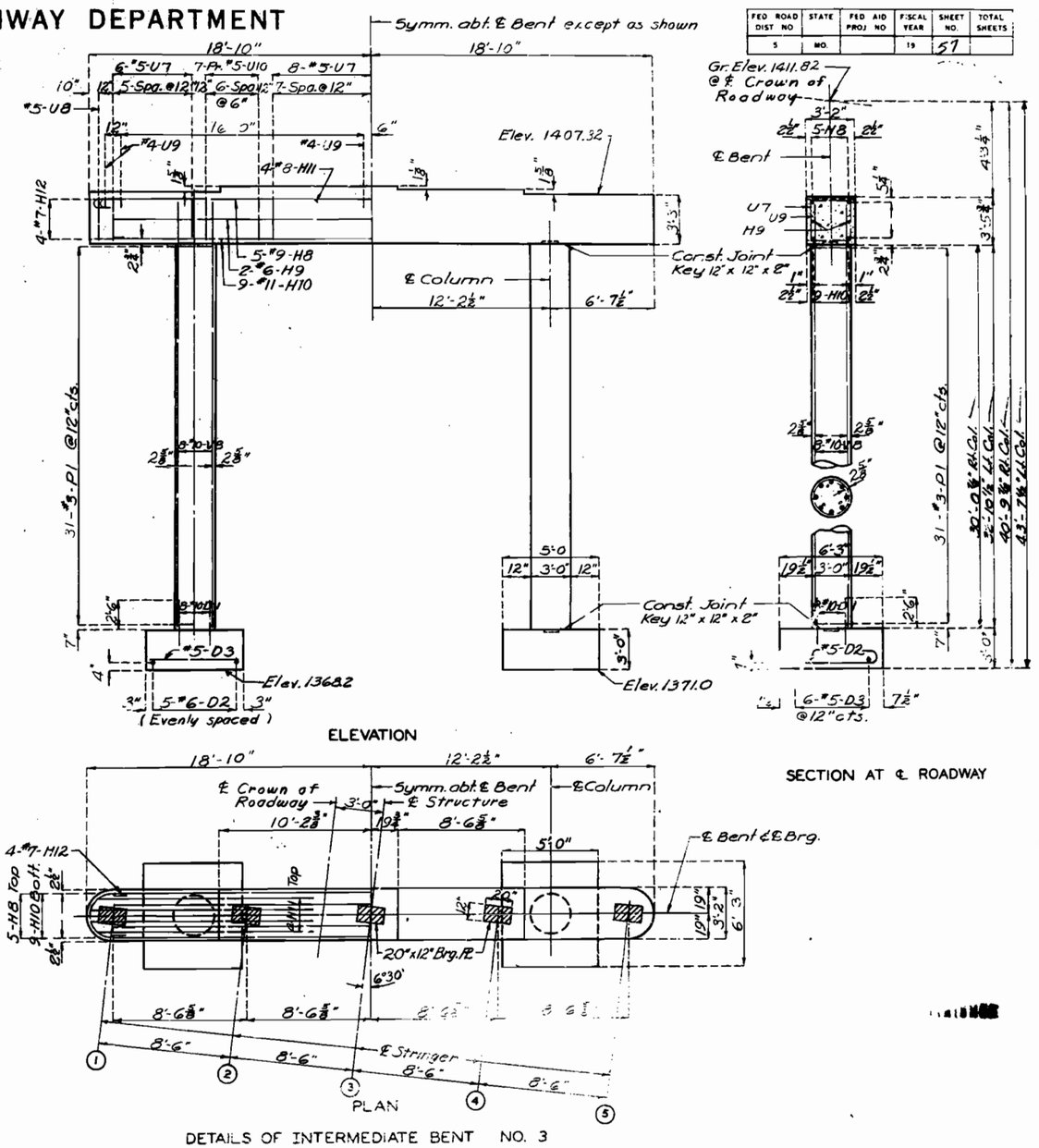
Sheet No. 1A of 2

FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	57	





96

NO.	DATE	REVISED
19.2	Mar. 1964	Jan 1965

DETAILED SEPT. 1967 BY WEIMHOLT
CHECKED Dec. 1967 BY Boig

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

BRIDGE ST. L. - S.F RAILROAD

STATE ROAD FROM RTE. I-44 SOUTH TO SOUTH OF CHERRY ST.

IN SPRINGFIELD

PROJECT NO. U-UG-65-2 (10) (RTE. 65) STA. 790 + 08.6 (SOUTHBOUND LANE)

GREENE COUNTY

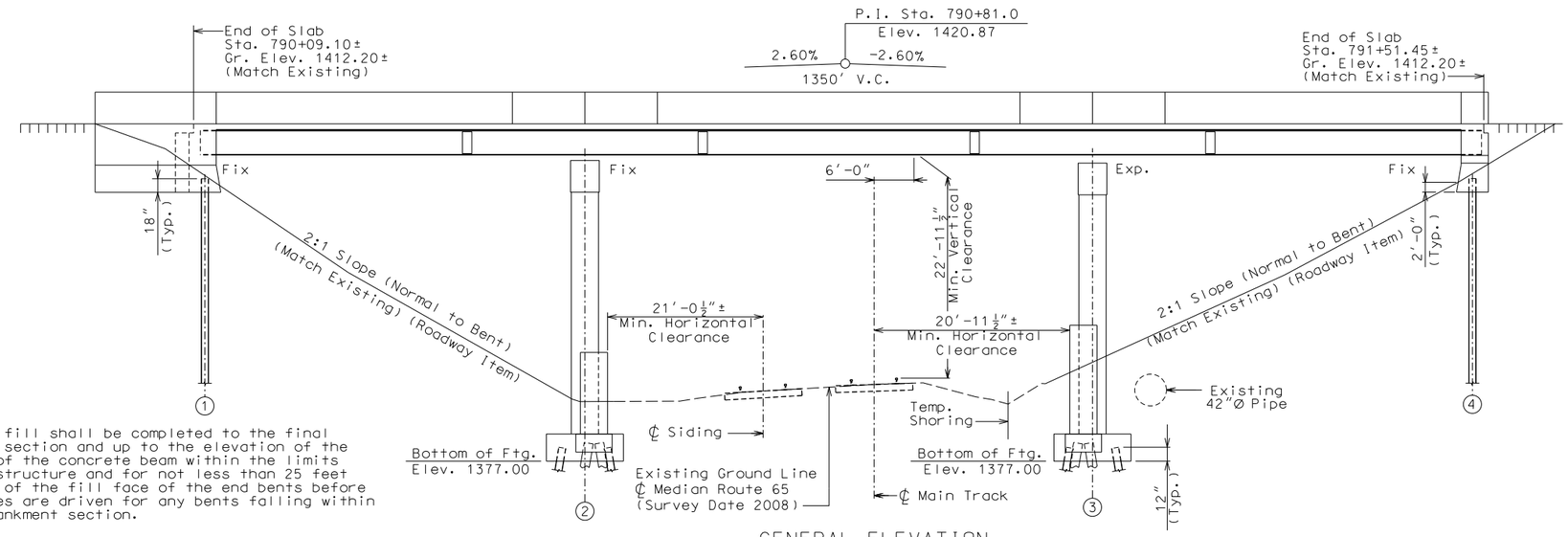
Sheet No. 4A of 2

A-1649

FINAL PLANS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

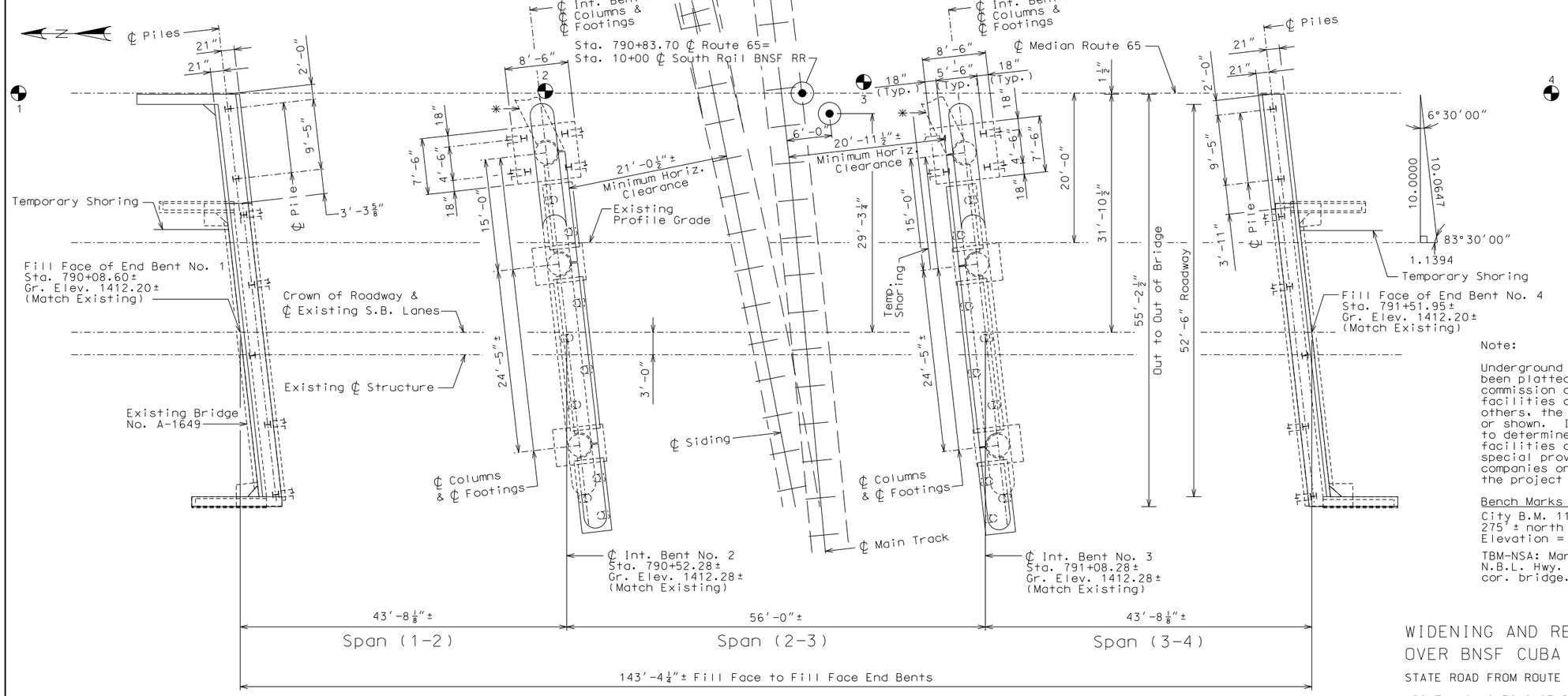
U.I.P., WIDEN AND REDECK (42'-56'-42') CONTINUOUS COMPOSITE I-BEAM SPANS



Note:

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.

GENERAL ELEVATION



PLAN

✳ Note: See plans for Bridge No. A23641 for details of crashwall.

"⊕" Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet for this structure. Boring data for the numbered locations is shown on Sheet No. 5. 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.

Notice and Disclaimer Regarding Pinnacled Rock:

The State of Missouri and, in particular, the area that encompasses this project is known to have, at least in part, bedrock that exhibits karst conditions. One karst condition is sometimes referred to as pinnacle or pinnacled rock. The nature of this condition makes graphical representations of this pinnacled zone difficult to classify and excavate. It is incumbent upon the bidder to investigate above surface warnings of this rock formation (road cuts, quarry sites and any other exposed faces) and be aware that the same is a regularly ocurring phenomenon and is not to be regarded as a differing site condition or result in changes in the work, regardless of what any actual boring or lines on the plans may or may not tend to indicate.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

For General Notes, Location Sketch, Foundation Data, Estimated Quantities, and Estimated Quantities for Slab on Steel, see Sheet No. 2.

All bents are parallel.

All longitudinal dimensions are horizontal.

All elevations and dimensions are based on the existing plans while using the 1988 NAVD datum. The existing plans used the 1927 USGS datum; which is, on average, 0.43 ft. lower than the 1988 NAVD datum. The contractor shall field verify prior to construction.

Note:

Underground facilities, structures and utilities have been platted from available surveys and records. The commission does not warrant the locations of these facilities as precise. It is possible there may be others, the existence of which is presently not known or shown. It shall be the contractor's responsibility to determine the existence and precise location of all facilities and to avoid damage to them. See the job special provisions (Roadway) for a list of utility companies on or within the vicinity of the project limits.

Bench Marks (NAVD 88 Datum)

City B.M. 115: Alum. disk in conc. (City B.M. #115) 275'± north of railroad, west side S.B.L. Rte. 65, Elevation = 1407.00

TBM-NSA: Marked "L" in conc. base of ret. wall for N.B.L. Hwy. 65 bridge over R.R. tracks at S.W. cor. bridge. (Set by EFK Moen)

SEC/SUR 9 TWP 29N RGE 21W

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:36:59 -05'00'

DATE PREPARED	05/18/09
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	1
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Project Engineer
PE-2004000786

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

WIDENING AND REDECKING OF BRIDGE OVER BNSF CUBA SUB.

STATE ROAD FROM ROUTE I-44 TO BUSINESS ROUTE 65

ABOUT 1.2 MILES S OF ROUTE I-44

STA. 790+08.60±

STD. 606.22
STD. 609.00
STD. 609.70
STD. 617.10
STD. 617.20
STD. 706.35

Estimated Quantities

	Item		Substr.	Superstr.	Total
	Class 1 Excavation	cu. yard	275	-	275
	Temporary Shoring	lump sum	1	-	1
	Protective Shield System	lump sum	1	-	1
	Removal and Storage of Existing Bridge Rails	linear foot	-	282	282
*	Removal of Existing Bridge Decks	sq. foot	-	5843	5843
	Partial Removal of Substructure Concrete	lump sum	-	1	1
	Bridge Approach Slab (Bridge)	sq. yard	-	362	362
	Structural Steel Piles (10 in.)	linear foot	246	-	246
	Pre-bore for Piling	linear foot	80	-	80
	Pile Point Reinforcement	each	12	-	12
	Micropiles	each	18	-	18
	Class B Concrete (Substructure)	cu. yard	58.3	-	58.3
	Class B Concrete (Retaining Walls)	cu. yard	128.7	-	128.7
	Slab on Steel	sq. yard	-	873	873
**	Safety Barrier Curb	linear foot	-	162	162
**	Barrier Curb (Type D)	linear foot	-	153	153
	Median Barrier Curb Transition (Type C)	linear foot	-	49	49
	Reinforcing Steel (Retaining Wall)	pound	5690	-	5690
	Reinforcing Steel (Bridges)	pound	6920	-	6920
	Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound	-	35720	35720
	Slab Drain	each	-	14	14
	Drainage System (On Structure)	lump sum	-	1	1
	Surface Preparation for Overcoating Structural Steel	sq. foot	-	5300	5300
	Calcium Sulfonate Rust Penetrating Sealer	lump sum	-	1	1
	Calcium Sulfonate Primer	sq. foot	-	5300	5300
	Calcium Sulfonate Topcoat	sq. foot	-	5300	5300
	Vertical Drain at End Bents	each	-	2	2
	Plain Neoprene Bearing Pad	each	-	4	4
	Laminated Neoprene Bearing Pad Assembly	each	-	4	4

All concrete between the upper and lower construction joints and above the top of the existing beam in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the end bents (except resin anchor systems) is included in the Estimated Quantities for Slab on Steel.

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

* Includes removal and disposal of slab, curbs, shear studs, end posts, and expansion devices.

** Safety barrier curb and barrier curb (Type D) shall be cast-in-place option or slip-form option.

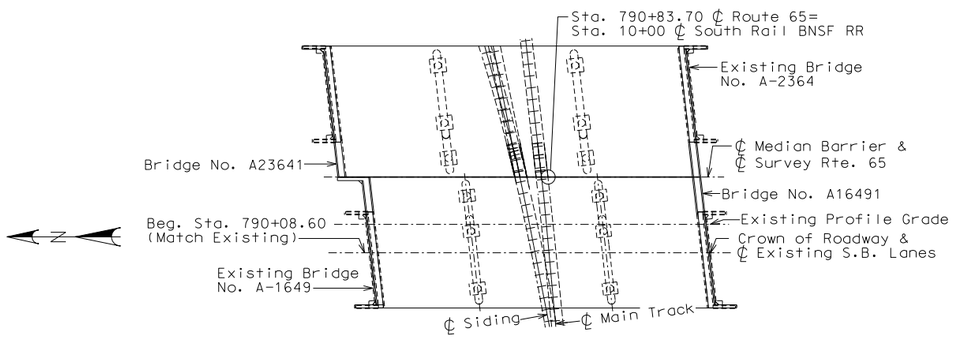
Estimated Quantities for Slab on Steel

Item		Total
Class B-2 Concrete	cu. yard	233.0
Reinforcing Steel	pound	5860
Reinforcing Steel (Epoxy Coated)	pound	70930

The table of Estimated Quantities for Slab on Steel 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 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.

Slab shall be cast-in-place. Precast prestressed panels will not be permitted.



LOCATION SKETCH

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

General Notes:

Design Specifications:

2002 - AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A

Design Loading:

HS20-44
35#/sq. ft. Future Wearing Surface
Earth 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress-Case I

Design Unit Stresses:

Class B Concrete (Substructure)		f'c = 3,000 psi
Class B Concrete (Retaining Walls)		f'c = 3,000 psi
Class B-1 Concrete (Safety Barrier Curb & Barrier Curb (Type D) & Median Barrier Curb Transition (Type C))		f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Safety Barrier Curb, Barrier Curb (Type D) & Median Barrier Curb Transition (Type C))		f'c = 4,000 psi
Reinforcing Steel (Grade 60)		fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50)		fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36)	fb = 9,000 psi	fy = 36,000 psi

Neoprene Bearing Pads:

Bearings shall be 60 durometer neoprene pads.

Fabricated Steel Connections:

Field connections shall be made with $\frac{3}{4}$" diameter high strength bolts and $\frac{13}{16}$" diameter holes, except as noted.

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 $1\frac{1}{2}$", unless otherwise shown.

New Structural Steel Protective Coatings:

Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The prime coat shall be applied in the fabrication shop. The cost of the prime coat will be considered completely covered by the contract unit price for the Fabricated Structural Steel.

No intermediate or finish field coats to be applied.

Existing Structural Steel Protective Coatings:

Protective Coating: Calcium Sulfonate System in accordance with Sec 1081.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Overcoating of Structural Steel (Calcium Sulfonate System)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Overcoating Structural Steel".

Rust Penetrating Sealer: The rust penetrating sealer shall be applied to the surfaces of all bearings, overlapping steel plates, pin connections, pin and hanger connections and other locations where rust bleeding, pack rust and layered rust is occurring. The cost of the rust penetrating sealer will be considered completely covered by the contract lump sum price for "Calcium Sulfonate Rust Penetrating Sealer".

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Calcium Sulfonate Primer".

Topcoat: The cost of the topcoat will be considered completely covered by the contract unit price per sq. foot for "Calcium Sulfonate Topcoat".

Traffic Control:

Traffic over the existing structures and new structure to be maintained during construction in accordance with the traffic control plans. See Stage Construction Details on Sheet Nos. 3 and 4 for traffic staging on bridge.

Miscellaneous:

A minimum vertical clearance of 22'-11$\frac{1}{2}$" from top of rail and a minimum lateral clearance of 12'-0" from the ℄ track shall be maintained during construction.

The cost of the protective shield system will be considered completely covered by the contract lump sum price for Protective Shield System. For the limits of the protective shield system over the tracks, see the Special Provisions (Bridge) for the BNSF Demolition Frame Protection Details.

The contractor shall follow the requirements of the BNSF Demolition Frame Protection Details. For additional requirements regarding the BNSF Railroad, see Special Provisions (Bridge).

High Strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106 and Field Section (FS-712) from Materials Manual.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering new material.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars, unless otherwise noted.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

The existing bridge rails and posts shall be stored at a location as designated by the engineer on the MoDOT Maintenance Lot at the facility at 2455 Mayfair in Springfield. Contractor shall notify Maintenance Superintendent to schedule delivery at least 48 hours prior to the delivery.

Resin Anchors:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Class B Concrete (Substructure).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #6 Grade 60 reinforcing bar 3'-6" long, unless noted on the plans, shall be substituted for the $\frac{3}{4}$"Ø threaded rod.

Foundation Data

Bent No.		1	2	3	4
Driven Pile	Type	Foundation	Foundation	Foundation	Foundation
	Pile Type and Size	HP10 X 42	HP10 X 42	HP10 X 42	HP10 X 42
	Number	2	4	4	2
	Approximate Length foot	38	11	11	41
	Pile Driving Varification Method	Modified Gates Formula	Modified Gates Formula	Modified Gates Formula	Modified Gates Formula
	Design Bearing kip	112.0	112.0	112.0	112.0
	Minimum Tip Penetration	Elev. 1368.00	Elev. 1367.00	Elev. 1367.00	Elev. 1365.00
	Criteria for Minimum Tip Penetration	Minimum embedment into natural ground	Minimum embedment into natural ground	Minimum embedment into natural ground	Minimum embedment into natural ground
	Hammer Energy Required foot-pound	12,600	12,600	12,600	12,600

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

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

All piles shall be driven to practical refusal.

Prebore for piles at Bent Nos. 2 & 3 to elevation 1367.00.

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:01 -05'00'

DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

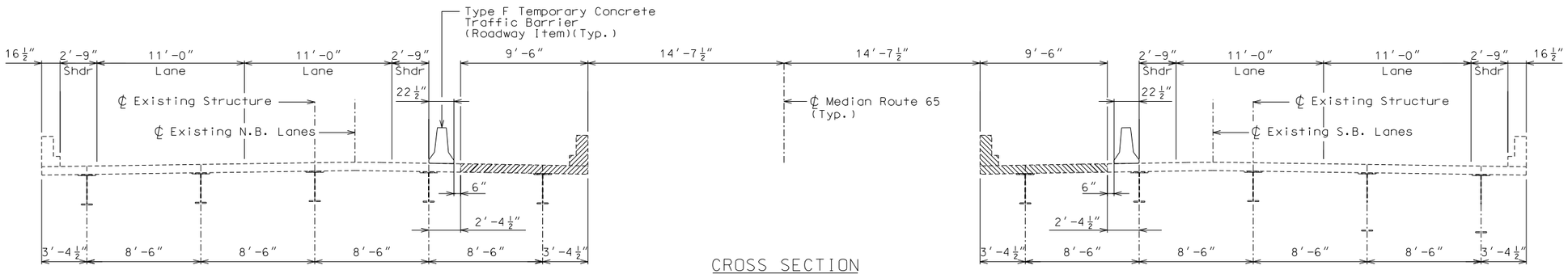
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

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

© Copyright Hanson Professional Services Inc. 2008

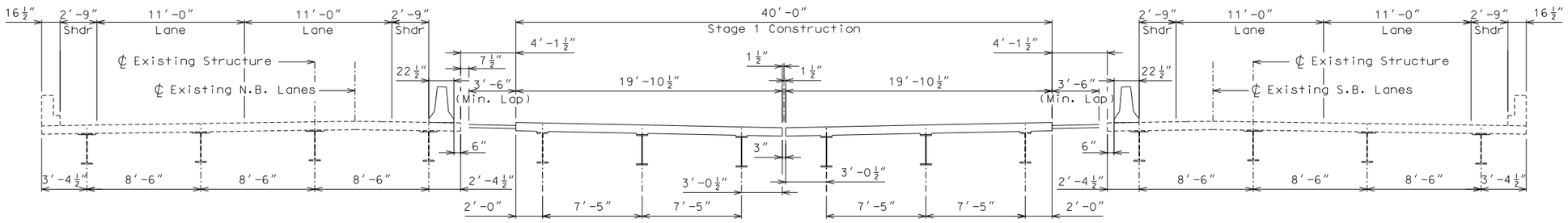
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Project Engineer
PE-2004000786



Bridge No. A-2364

Bridge No. A-1649

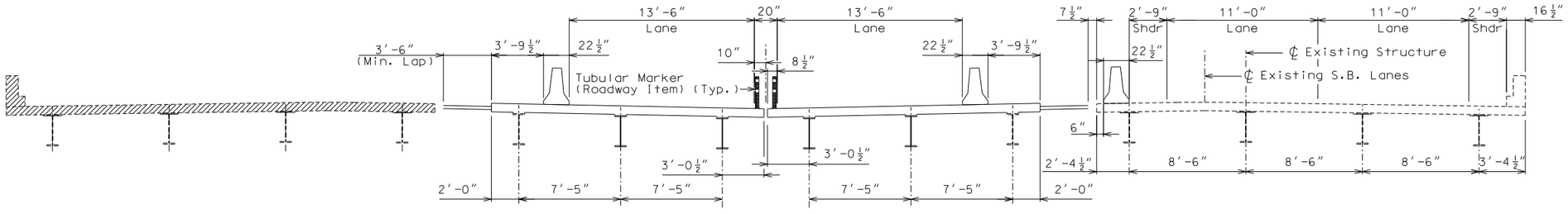
CROSS SECTION STAGE 1 REMOVAL



Bridge No. A23641

Bridge No. A16491

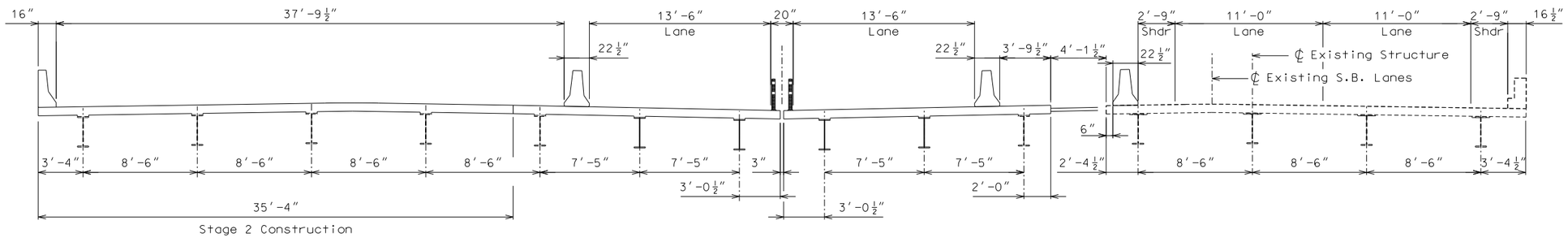
CROSS SECTION STAGE 1 CONSTRUCTION



Bridge No. A23641

Bridge No. A16491

CROSS SECTION STAGE 2 REMOVAL



Bridge No. A23641

Bridge No. A16491

CROSS SECTION STAGE 2 CONSTRUCTION

Notes:

Stage construction details shown above are within bridge spans.

The temporary barrier shall be attached to the existing bridge deck.

The temporary barrier shall not be attached to the new bridge deck.

Outline of old work is indicated by light dashed lines.
Heavy lines indicate new work.

DETAILS SHOWING STAGED CONSTRUCTION

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:04 -05'00'

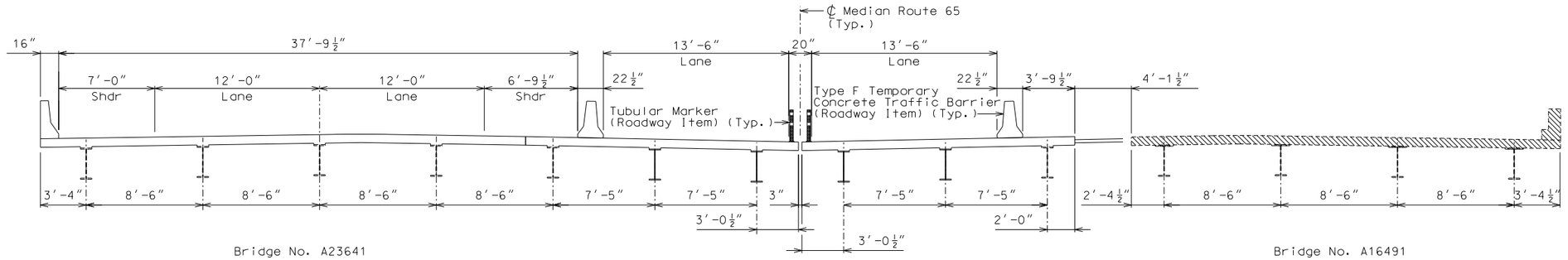
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

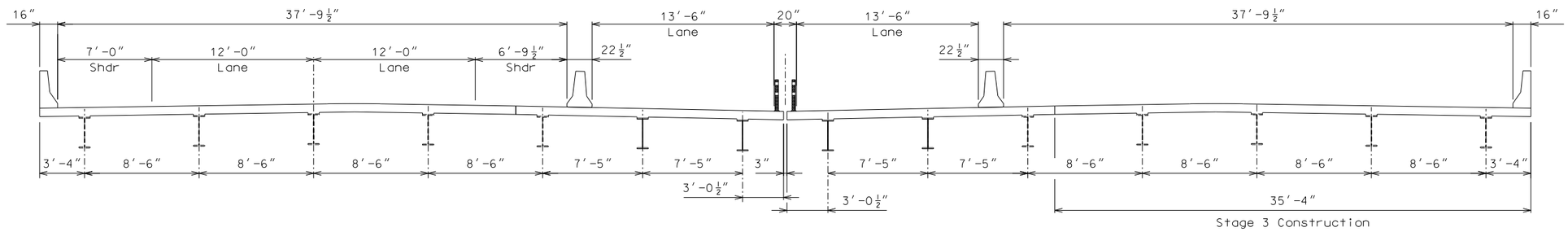
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

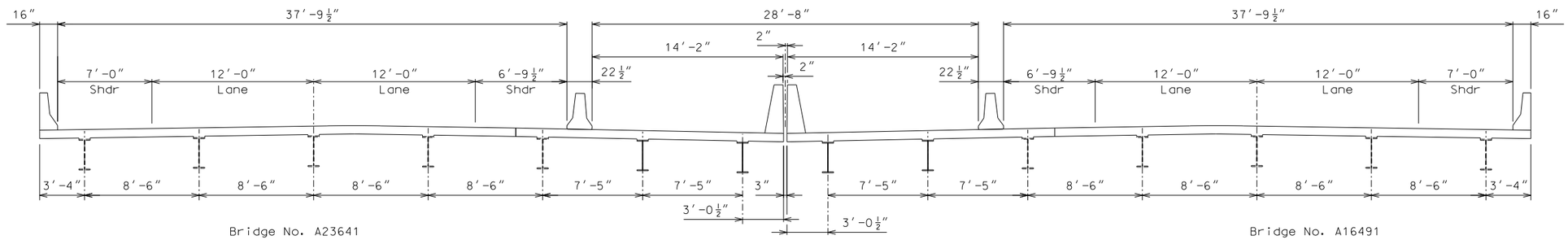
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard.Gotschall@hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



CROSS SECTION
STAGE 3 REMOVAL



CROSS SECTION
STAGE 3 CONSTRUCTION



CROSS SECTION
STAGE 4 CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION

Notes:

Stage construction details shown above are within bridge spans.

The temporary barrier shall not be attached to the new bridge deck.

Outline of old work is indicated by light dashed lines.
Heavy lines indicate new work.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:05 -05'00'

DATE PREPARED: 05/18/09
ROUTE: 65 | STATE: MO
DISTRICT: BR | SHEET NO.: 4
COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hansonpro.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.	
			1409.9 ← Brown, lean clay (CL), with limestone pieces (FILL).
2.5	6-50/4"	--	1407.9
5.5	11-48-15	--	← Reddish-brown, fat clay (CH), with limestone pieces (FILL).
8.0	5-4-5	1.50	1402.9
10.5	4-4-10	1.50	
13.0	5-13-8	--	
15.5	8-6-5	1.25	← Reddish-brown, fat clay (CH), with limestone and chert pieces. -trace chert and limestone pieces below 9.5 ft. -with limestone and chert pieces below 12.0 ft. -trace limestone and chert below 19.5 ft.
18.0	5-6-7	2.50	
20.5	3-4-6	2.25	
25.5	11-11-12	--	1385.9
30.5	6-8-9	3.00	← Gray, lean clay (CL), trace limestone and chert pieces.
35.5	4-7-9	2.25	1375.9
40.5	3-6-12	2.75	← Gray, fat clay (CH). -brown and gray below 35.5 ft. -cobbles below 38.0 ft. -trace chert below 39.0 ft.
			1367.4 Auger refusal at 42.5 ft.

① Sta. 789+57 Centerline

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.	
			1383.2 ← Dark brown, lean clay, trace sand and chert pieces (FILL).
3.5	4-4-3	--	
6.0	3-2-3	1.00	1376.7 ← Dark brown, lean clay (CL), with sand, limestone pieces, cobbles and chert fragments.
8.5	8-20-16	--	
11.0	2-2-22	--	1372.2
			1371.5 ← Weathered Limestone (8.5")
			← Limestone, gray to white, slightly weathered, finely crystalline, thick bedded. -fractured zone from 13.6 to 13.8 ft. with weathered joints -weathered joints at 14.8 ft.
			1361.5

② Sta. 790+49 Centerline Core

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.	
			1383.4 ← Dark brown, lean clay, trace sand, chert pieces (FILL).
3.5	4-2-2	--	
6.0	WH-WH-WH	1.00	1376.4
8.5	1-2-3	1.00	← Dark reddish-brown, fat clay (CH), trace chert and limestone pieces.
			1373.9
11.5	3-2-3	1.50	← Dark reddish-brown, fat clay (CH), with limestone and chert fragments -cobbles from 9.5 to 11.0 ft.
16.0	WH-WH-4	--	1367.1
			1366.9 ← Weathered limestone (2").
			← Limestone, gray to white, slightly weathered, finely crystalline, thick bedded.
			1356.9

③ Sta. 790+92 Centerline Core

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.	
			1410.2 ← Reddish-brown, fat clay (CH) with chert and limestone (FILL).
3.5	3-2-4	1.25	
5.5	5-5-6	--	
8.0	3-4-3	1.50	1403.2 ← Reddish-brown fat clay (CH), trace limestone and chert pieces. -with chert pieces -gray and brown below 14.5 ft. -reddish-brown below 15.0 ft. -rough drilling below 16.0 ft., probable limestone seams.
10.5	2-5-8	1.50	
13.0	7-8-6	3.50	
15.5	4-9-6	1.50	
18.0	6-8-11	1.50	1392.7
20.5	8-40-45	1.50	← Gray and brown, fat clay (CH) -rough drilling at 19.0, 24.0 and 26.0 ft., probable limestone seams. -cherty limestone seam at 20.5 ft.
25.5	5-6-6	1.50	
30.5	5-5-6	2.50	1380.2 ← Gray, lean clay (CL) -brown and gray below 34.5 ft.
35.5	3-3-4	1.00	
40.5	3-2-2	0.75	1371.2 ← Brown and gray, fat clay (CH), trace limestone pieces.
			1366.2
			1365.4 ← Weathered limestone (5"). Auger refusal at 44.8 ft.

④ Sta. 791+84 Centerline

BORING DATA

Notes:

For location of borings, see Sheet No. 1.

For Notice of Disclosure Regarding Boring Log Data, see Sheet No. 1

PP = Pocket Penetrometer

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:06 -05'00'

DATE PREPARED 05/18/09

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	5

COUNTY GREENE

JOB NO. J8P0605E

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A16491

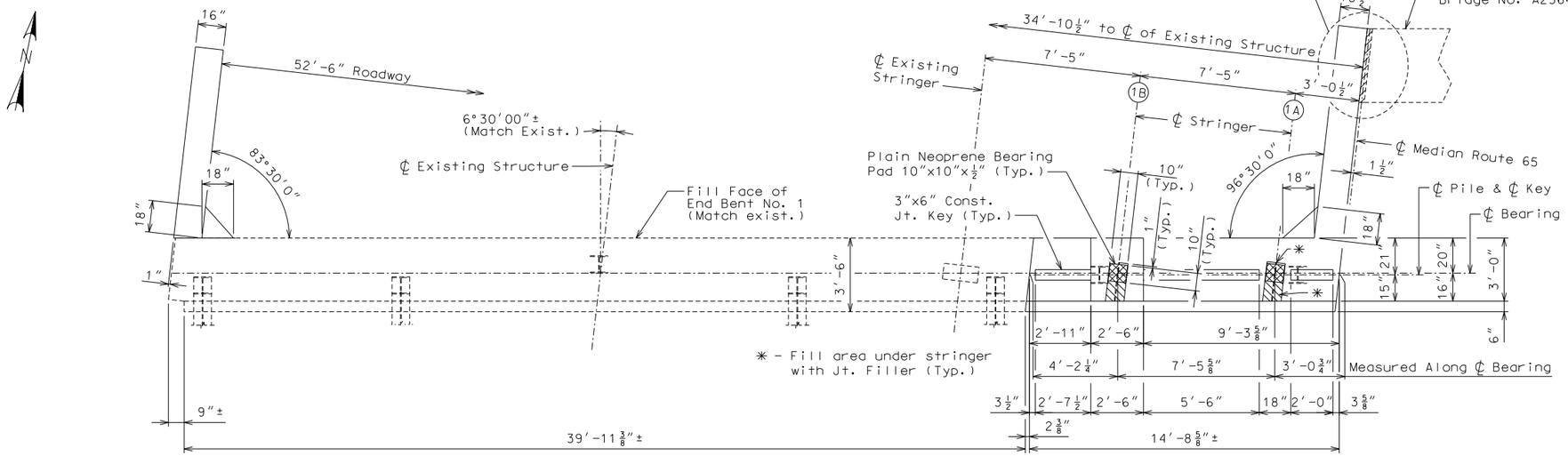
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

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

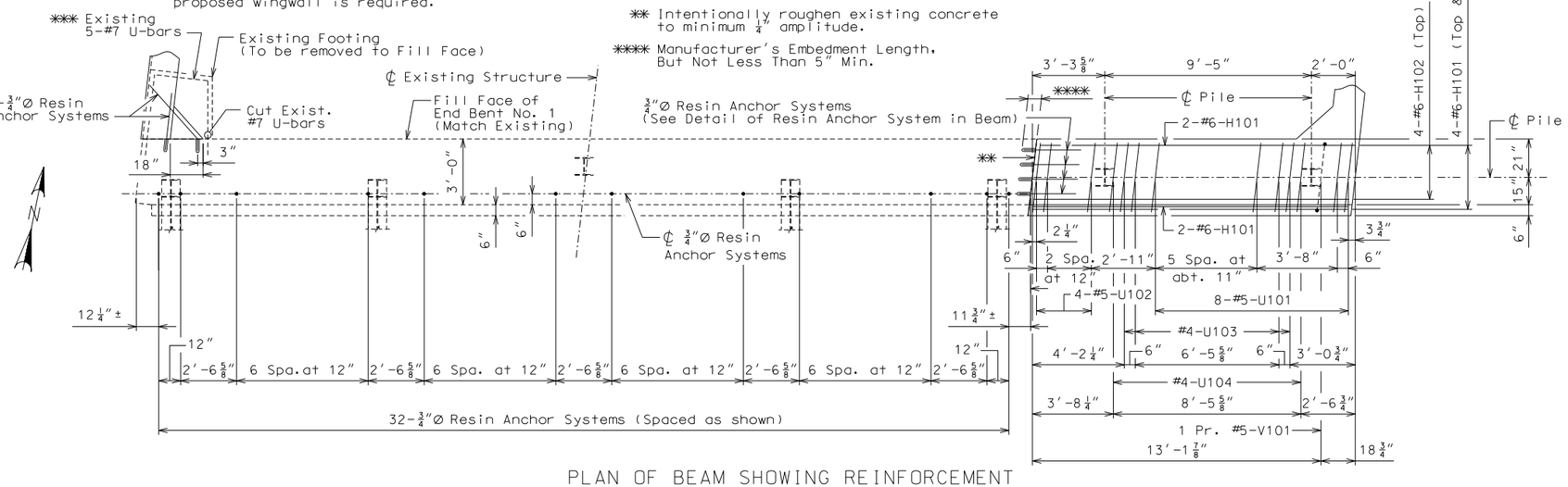
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0487
Howard N. Gotschall II
Professional Engineer
PE-2004000786

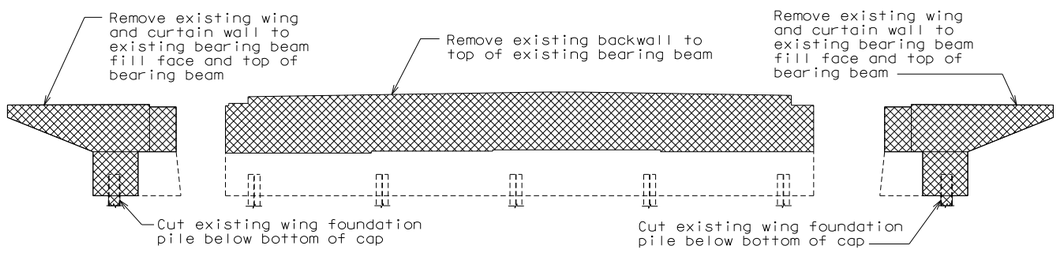


PLAN OF BEAM SHOWING DIMENSIONS

*** Existing #7 U-bars to remain embedded in the existing beam at the outside face of wingwall. The bars shall be cut near the point indicated, straightened and embedded in the proposed wingwall. A minimum of 40" embedment into the proposed wingwall is required.



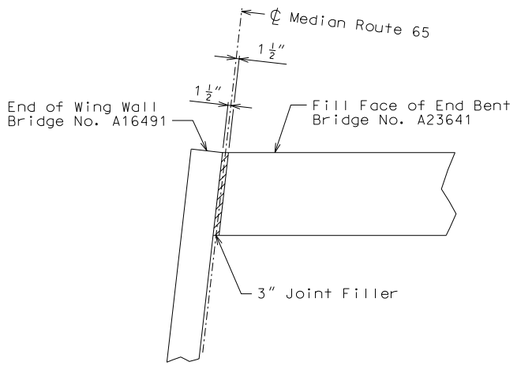
PLAN OF BEAM SHOWING REINFORCEMENT



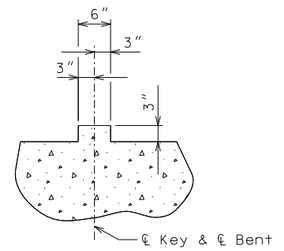
WEST WING ELEVATION ELEVATION OF END BENT EAST WING ELEVATION

DETAILS OF CONCRETE REMOVAL AT END BENT NO. 1

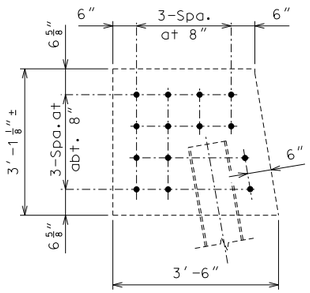
Note: The cost of all concrete removal shown will be considered completely covered by the contract lump sum price for Partial Removal of Substructure Concrete.



DETAIL "A"



TYPICAL SECTION THRU KEY



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

14-3/4"Ø Resin Anchor Systems to be spaced as shown.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 1, see Sheet Nos. 7 & 8.

For Substructure Quantity Table, see Sheet No. 8.

For details of Vertical Drain at end bents, see Sheet No. 9.

For details of the Safety Barrier Curb, see Sheet Nos. 27, 28, 29, 30, 31, and 32.

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

All U-bars and Pr. V-bars in end bent are to be placed parallel to ℄ Route 65.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

Where existing bars are to extend from remaining portions of existing concrete into new construction, concrete shall be removed so as to leave bars clean and undamaged. Newly exposed construction concrete and reinforcement bars shall be blast-cleaned.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF END BENT NO. 1

Note: This drawing is not to scale. Follow dimensions. Sheet No. 6 of 37

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:07 -05'00'

DATE PREPARED	
05/18/09	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	6
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

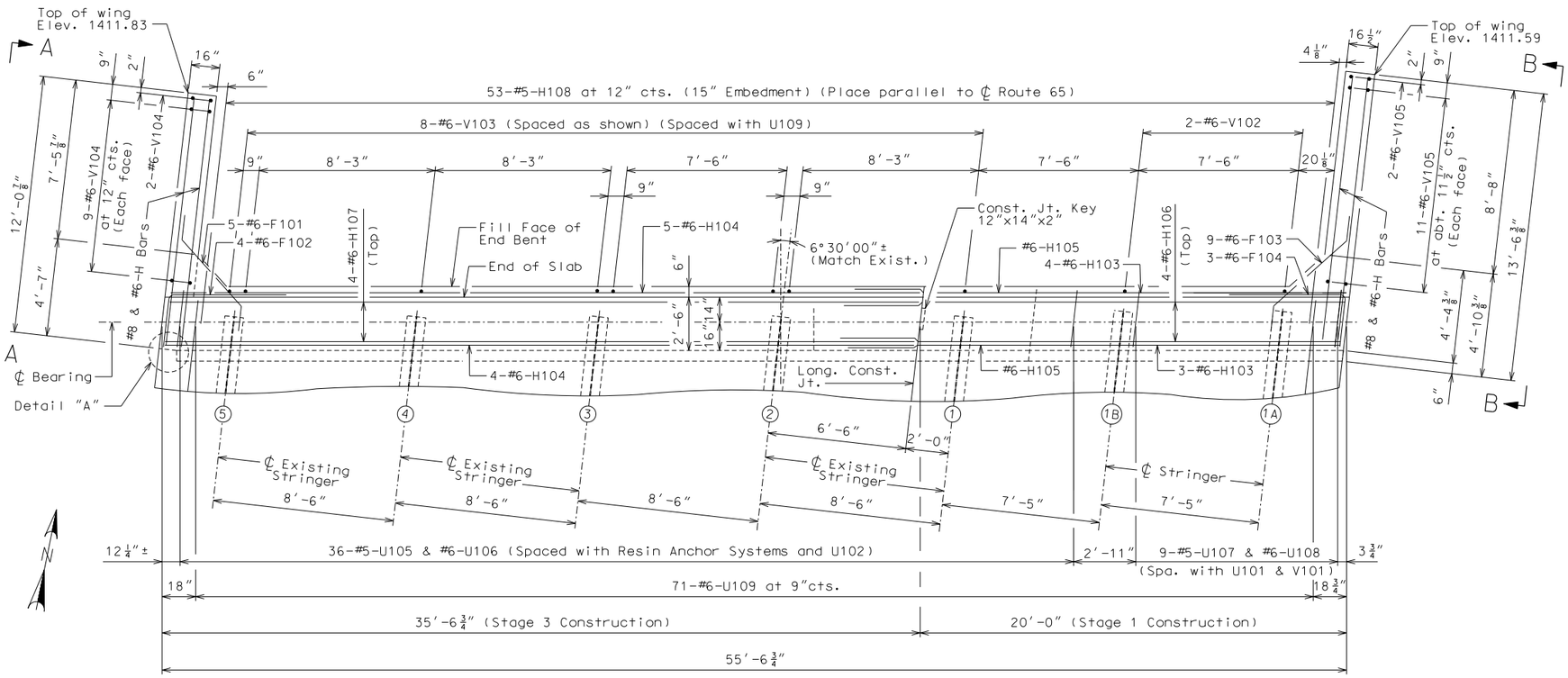
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

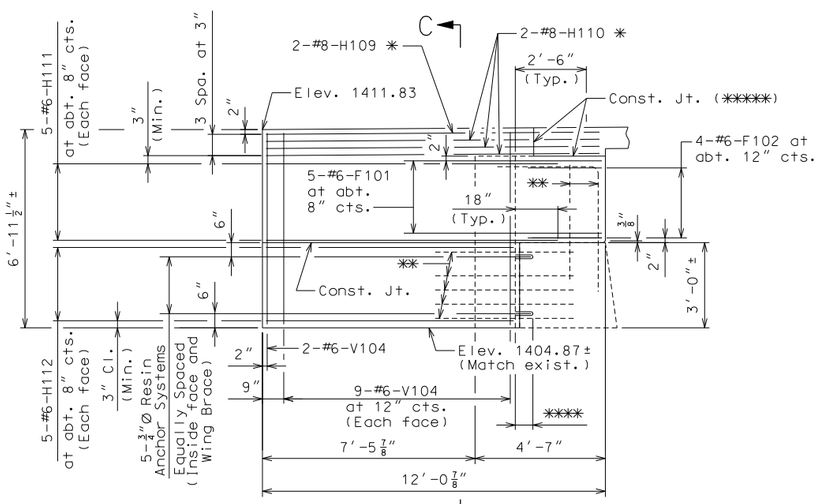
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.HansonEngineers.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786

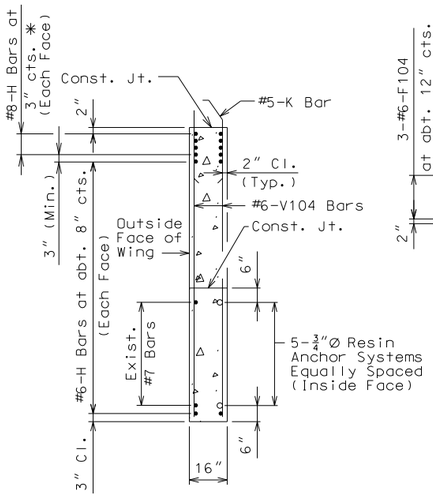


PLAN SHOWING REINFORCING

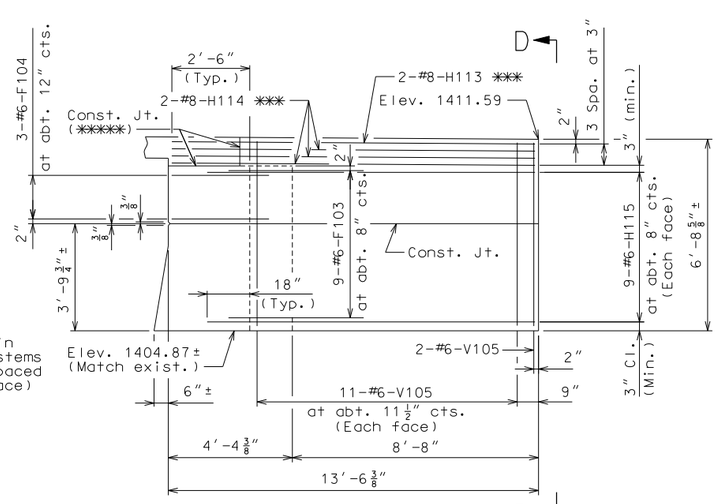


ELEVATION A-A

✳ Note: Place H109 and H110 parallel to grade.

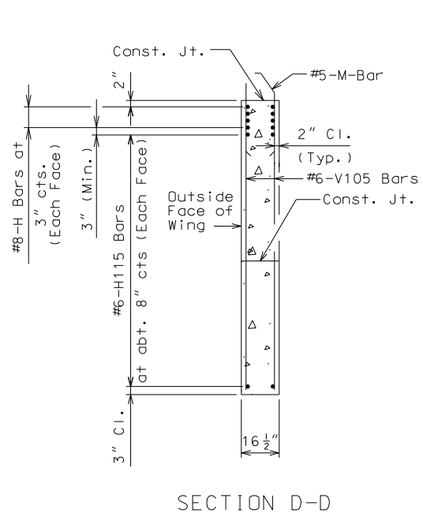


SECTION C-C

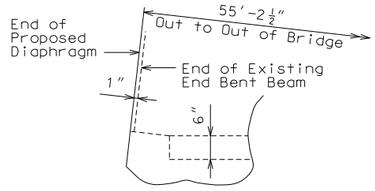


ELEVATION B-B

✳✳✳ Note: Place H113 and H114 parallel to grade.



SECTION D-D



DETAIL "A"

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Concrete diaphragms at the integral end bents shall be poured a minumum of 12 hours before the slab is poured.

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 1, see Sheet Nos. 6 & 8.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

U and Pr. V bars shall be placed parallel to ℄ Route 65.

For reinforcement of the Safety Barrier Curb, see Sheet Nos. 27 thru 32.

For details of Vertical Drain at End Bent, see Sheet No. 9.

Bend #6-F101 & F103 bars in field to clear stringers.

For details of Bridge Approach Slab, see Sheet No. 33.

✳✳ Existing wing and curtain wall reinforcement to be used in place. Damaged bars shall be replaced by the contractor with no additional payment.

✳✳✳✳ Manufacturer's embedment length, but not less than 5" min.

(✳✳✳✳✳) Upper construction joint shall be formed on slope in order to maintain a 1½" (min.) clearance to #6-H103 or H104 reinforcing bars in diaphragm. (Also shown in Section near End Bent)

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF END BENT NO. 1

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:09 -05'00'

DATE PREPARED	
05/18/09	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	7
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

NO.	DESCRIPTION	DATE

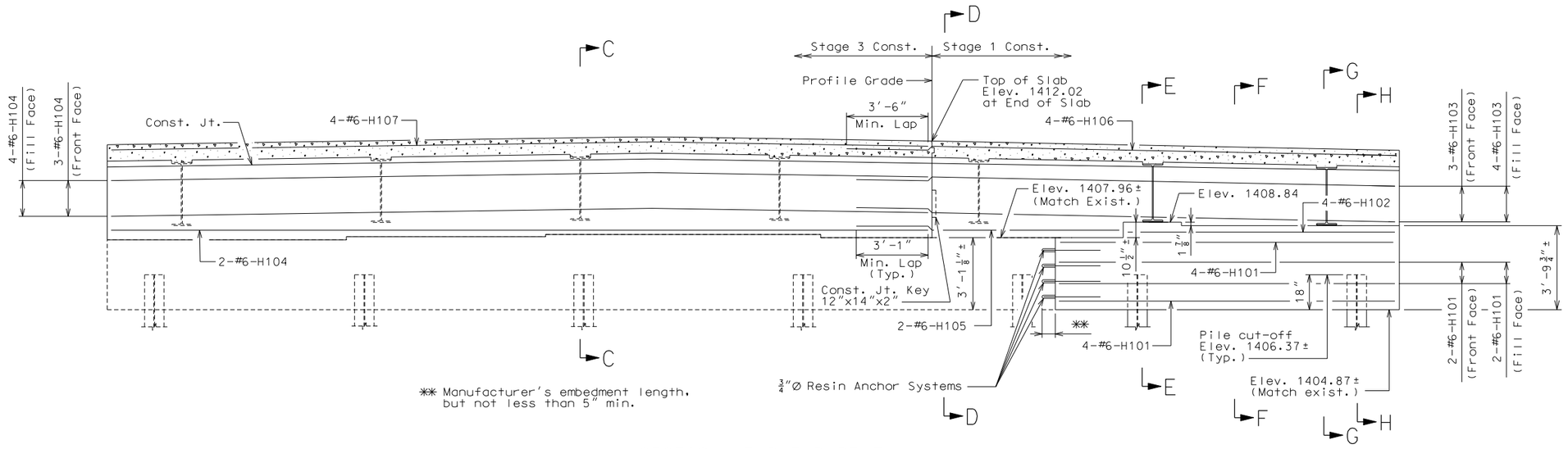
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

MoDOT

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



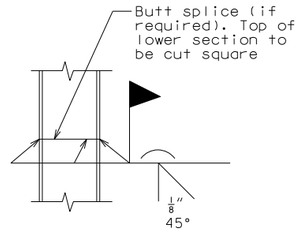
SECTION NEAR END BENT

Notes:

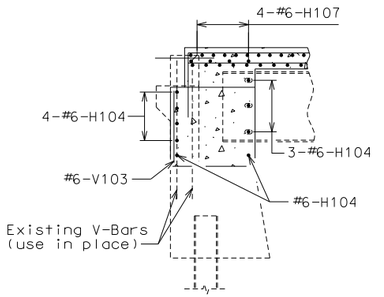
Existing steel diaphragms not shown for clarity (leave in place).

U-bars and resin anchor systems in diaphragm not shown for clarity.

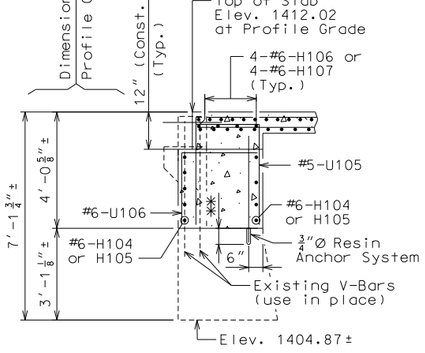
For additional details of End Bent No. 1, see Sheet Nos. 6 & 7.



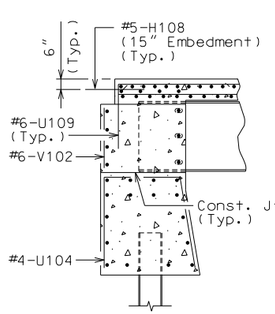
STEEL PILE SPLICE



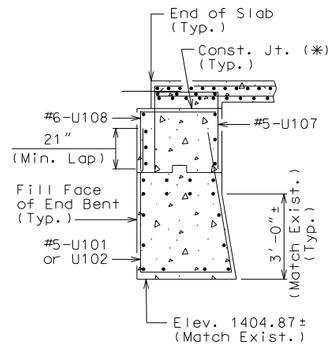
SECTION C-C



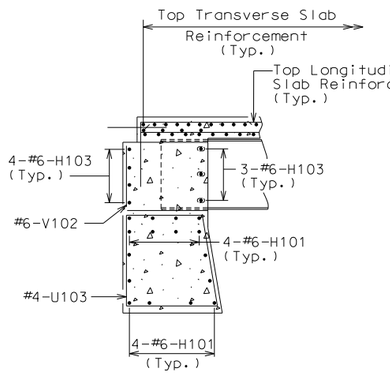
SECTION D-D



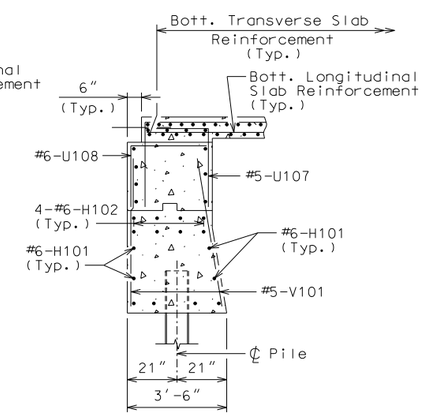
SECTION E-E



SECTION F-F



SECTION G-G



SECTION H-H

Note: Existing V-bars in backwall to be used in place. The contractor shall cut the bars as required.

(*) Upper construction joint shall be formed on slope in order to maintain 1½" (min.) clearance to #6-H103 and H104 reinforcing bars in diaphragm. (Also shown in Section Near End Bent)

Substructure Quantity Table for Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	50
Structural Steel Piles (10 in.)	linear foot	76
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	10.0

Note: These quantities are included in the estimated quantities table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF END BENT NO. 1

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:10 -05'00'

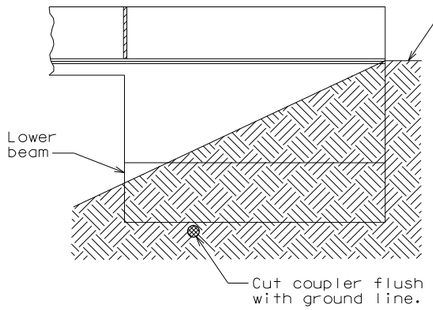
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

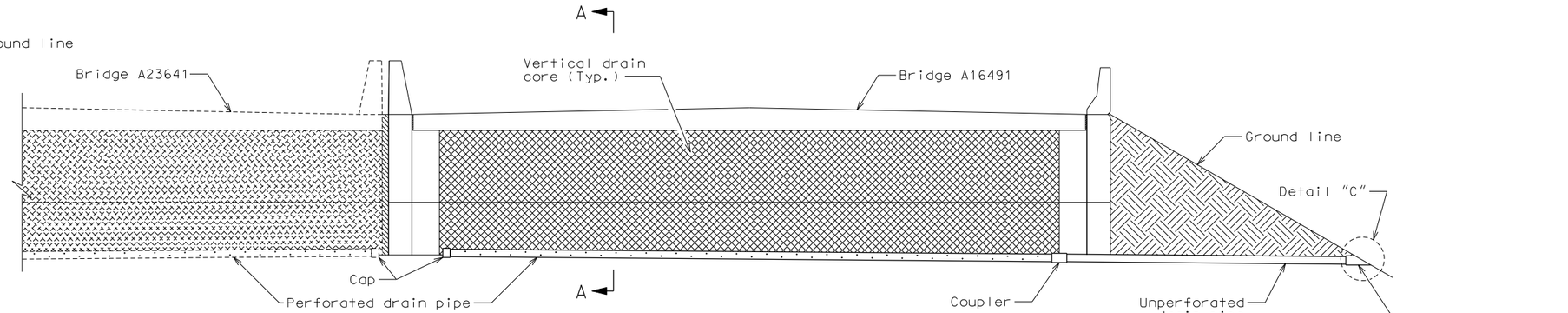
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

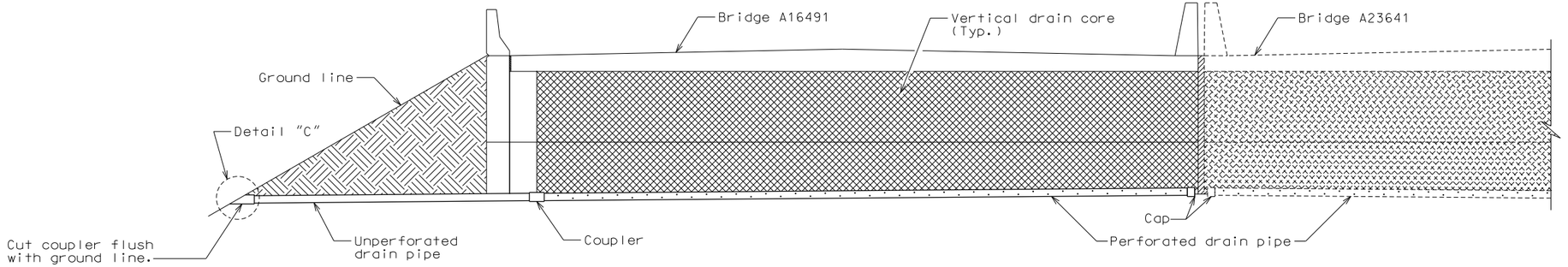
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



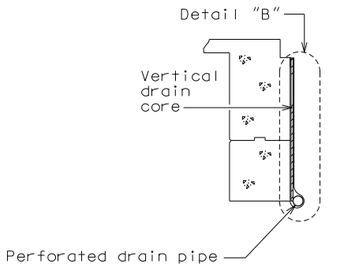
ELEVATION OF WING



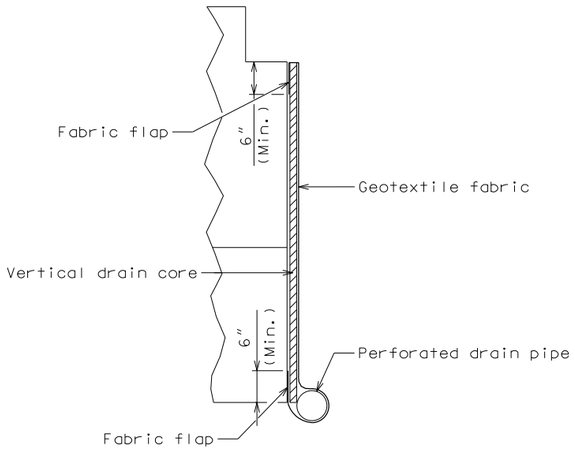
ELEVATION AT END BENT 1



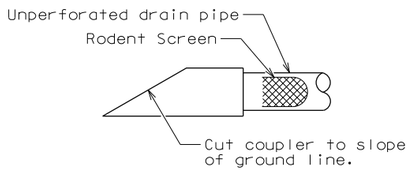
ELEVATION AT END BENT 4



SECTION A-A



DETAIL "B"



DETAIL "C"

Notes:

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

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1½". (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

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:11 -05'00'

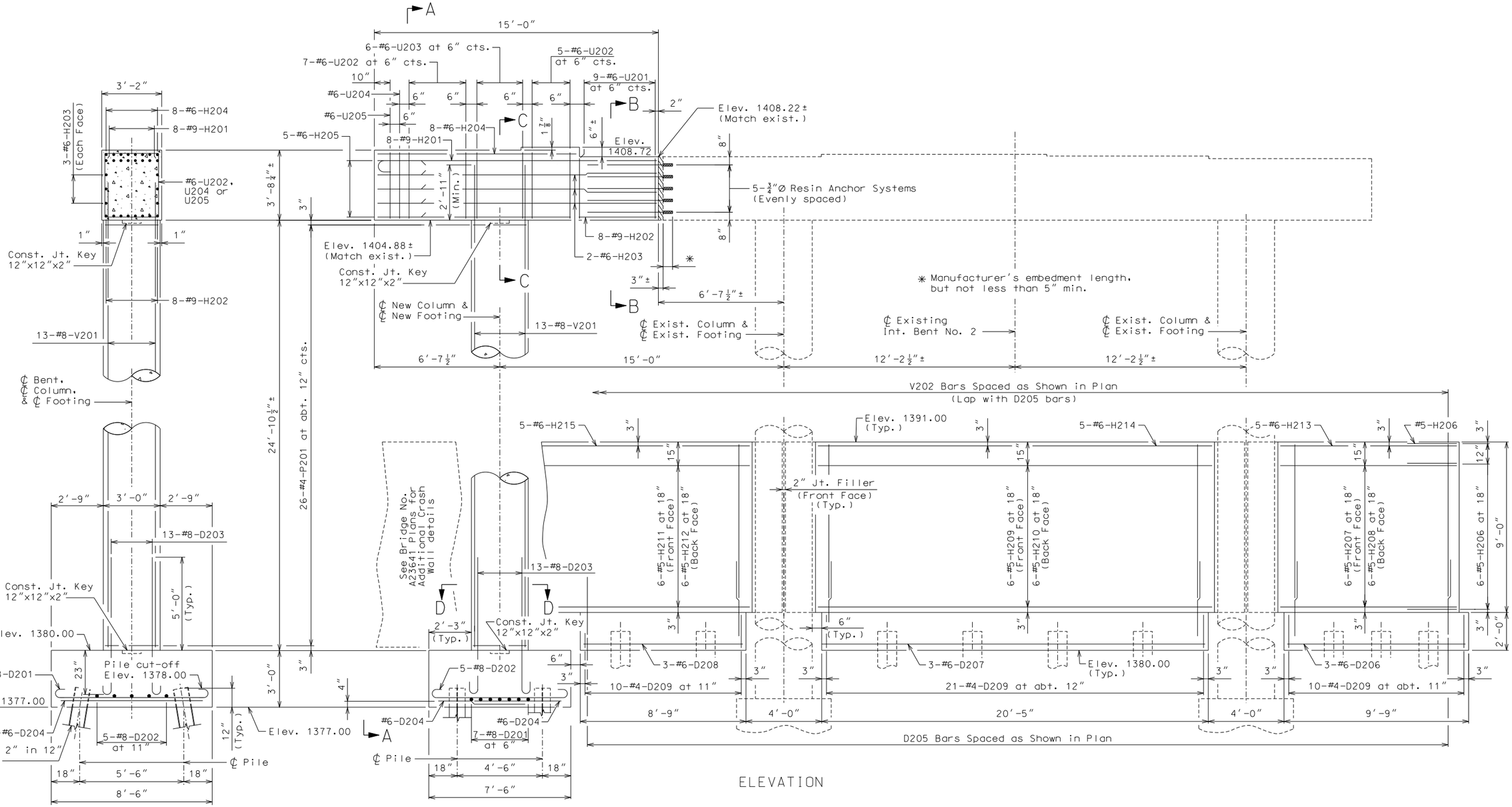
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard.Gotschall@hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



Notes:

For details of Intermediate Bent No. 2 not shown, see Sheet No. 11.

For details of Crash Wall not shown, see Sheet No. 11.

For Substructure Quantity Table, see Sheet No. 11.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF INTERMEDIATE BENT NO. 2

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:12 -05'00'

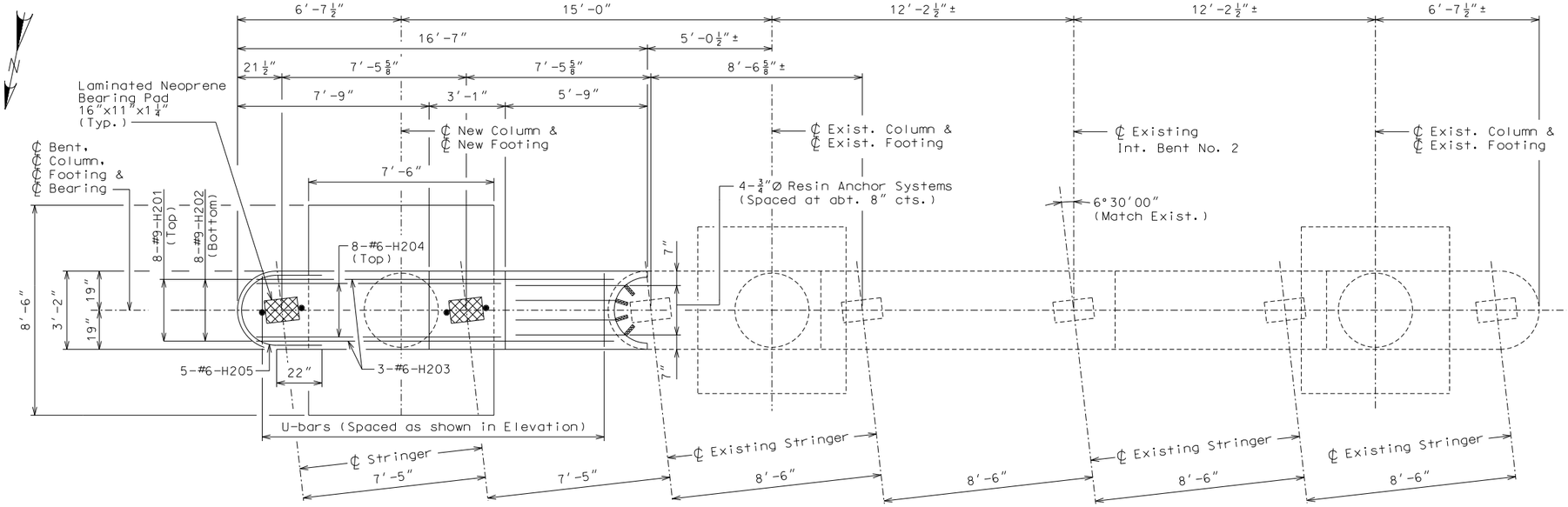
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

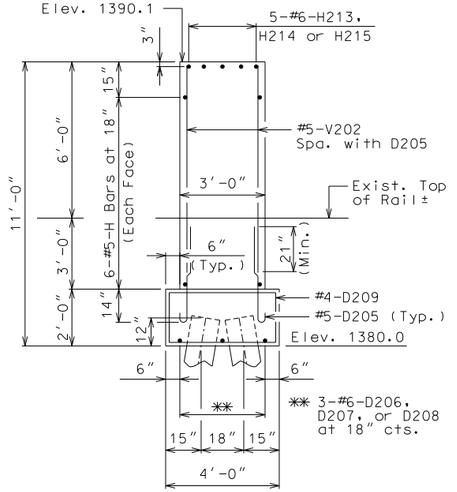
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.

* ℄ Existing Column & ℄ 2″ Joint Filler



TYPICAL SECTION THRU CRASH WALL

Notes:

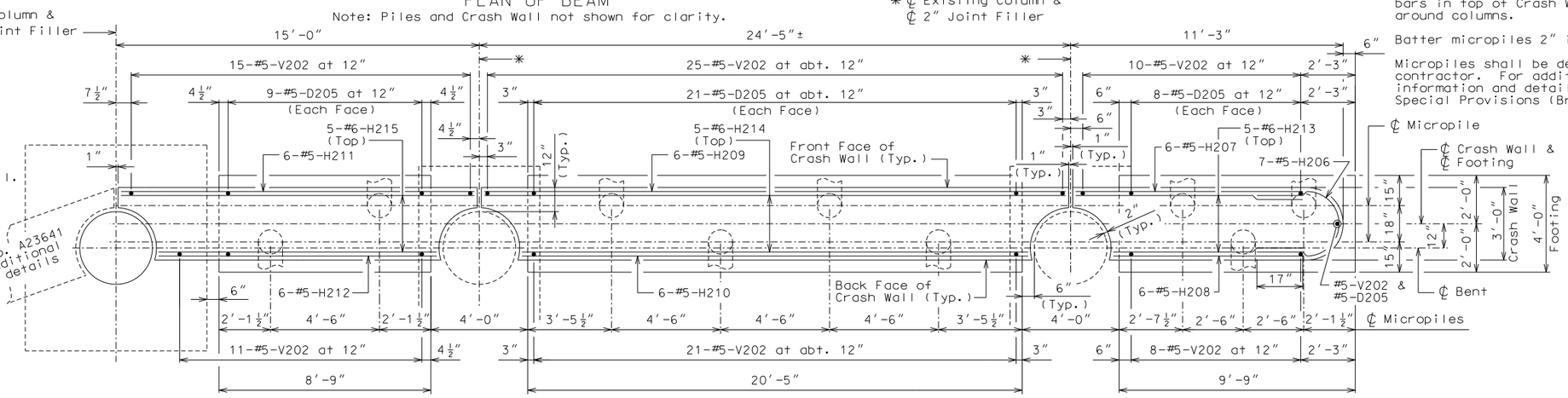
Field cut #6-H213, H214 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2″ in 12″.

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½″.

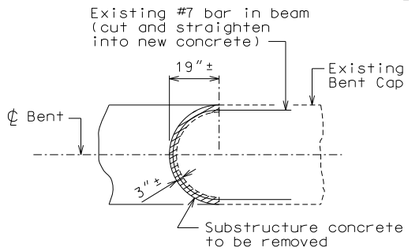
All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½″.

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2″ clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 2 not shown, see Sheet No. 10.

For details of Crash Wall not shown, see Sheet No. 10.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

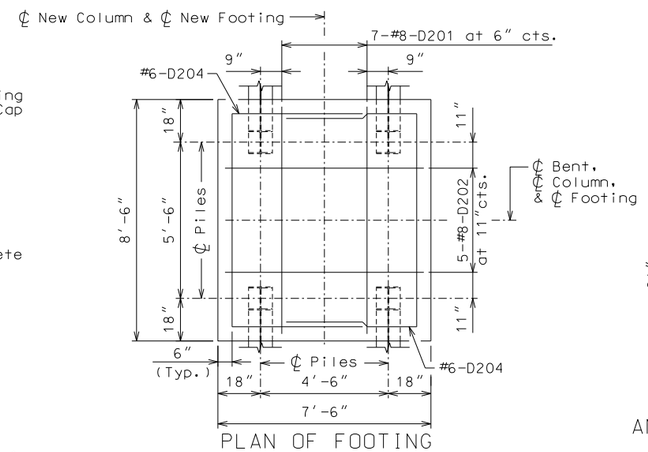


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

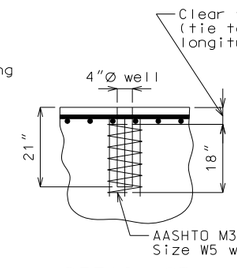
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

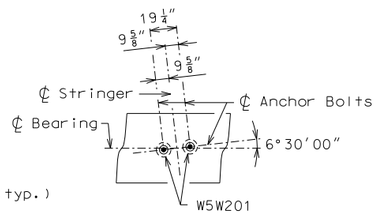


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	100
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	56.8
Class B Concrete (Substructure)	cu. yard	20.0
Reinforcing Steel (Bridges)	pound	3463
Reinforcing Steel (Retaining Wall)	pound	2603

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF INTERMEDIATE BENT NO. 2

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:13 -05'00'

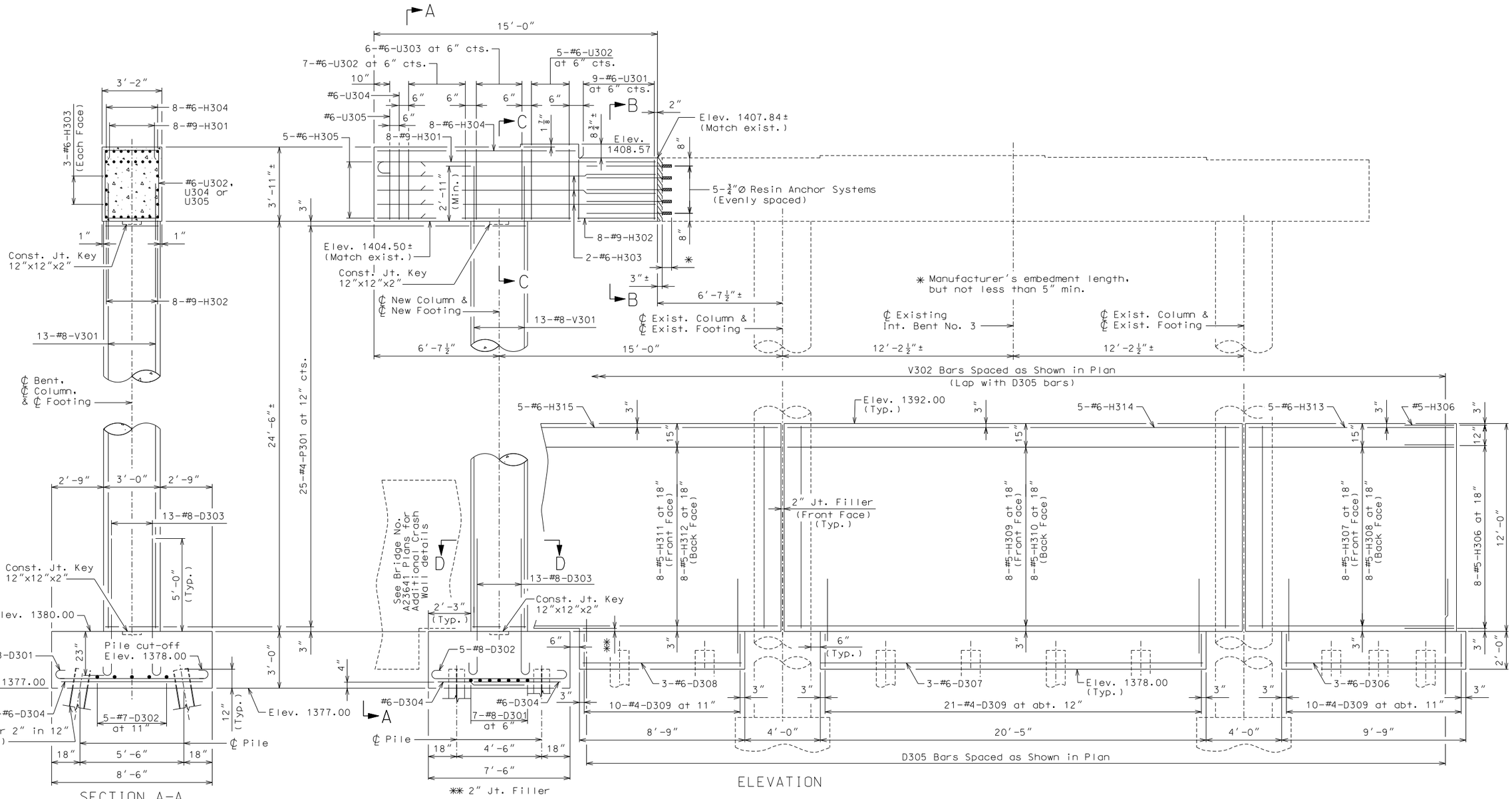
DATE PREPARED	
05/18/09	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	11
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

DESCRIPTION	DATE

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

© Copyright Hanson Professional Services Inc. 2008

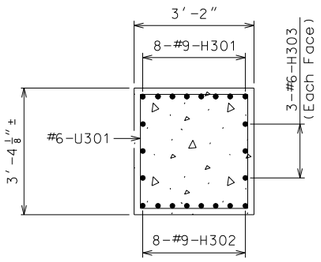
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
2009.05.18 08:37:13 -05'00'
PE-2004000786



SECTION A-A

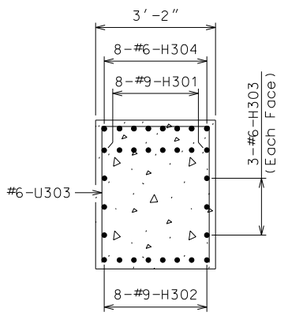
Note: Crash Wall not shown for clarity.

ELEVATION

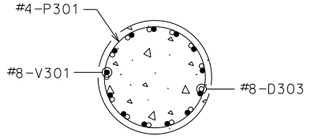


SECTION B-B

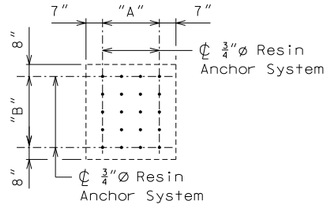
Note: Resin anchor system not shown for clarity.



SECTION C-C



SECTION D-D



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

"A" 4-¾″Ø Resin Anchor Systems at 8″ cts.
"B" 5-¾″Ø Resin Anchor Systems at abt. 6″ cts.

Notes:

For details of Intermediate Bent No. 3 not shown, see Sheet No. 13.

For details of Crash Wall not shown, see Sheet No. 13.

For Substructure Quantity Table, see Sheet No. 13.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF INTERMEDIATE BENT NO. 3

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:15 -05'00'

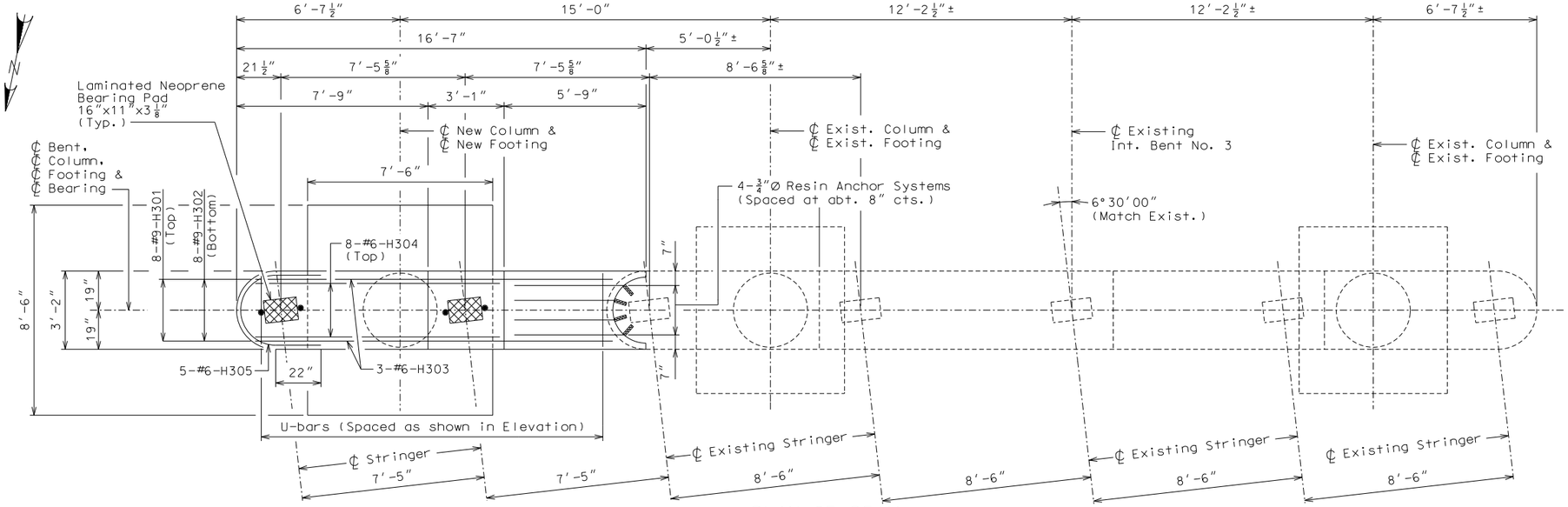
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 12
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

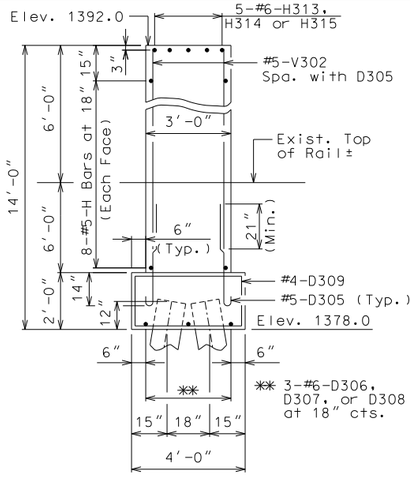
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hansonpro.com
314.770.0467
Howard N. Gotschall II
Project Engineer
PE-2004000786



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



TYPICAL SECTION THRU CRASH WALL

Notes:

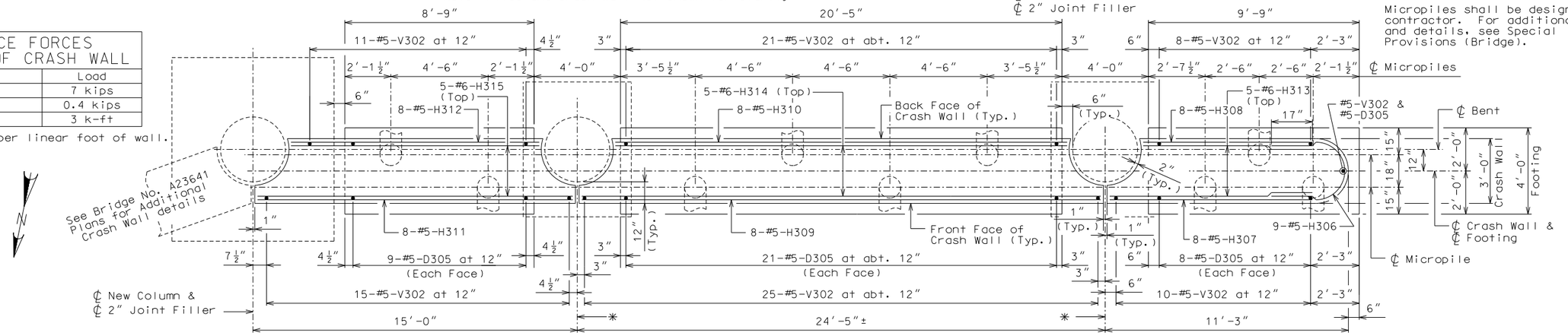
Field cut #6-H313, H314 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2″ in 12″.

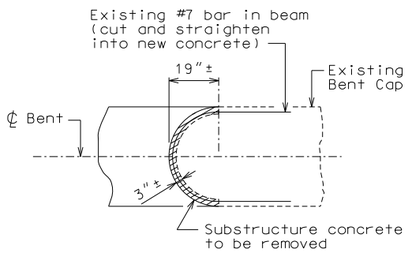
Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

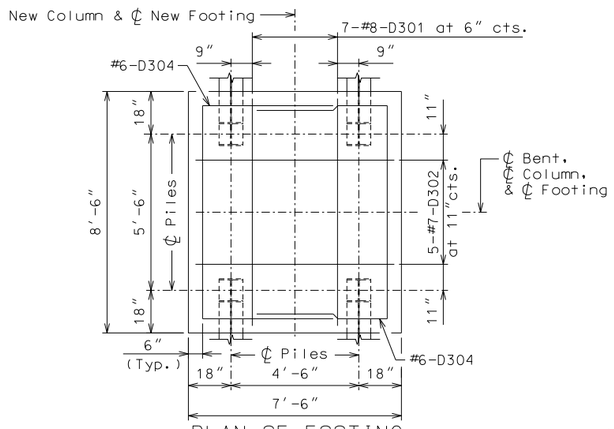


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

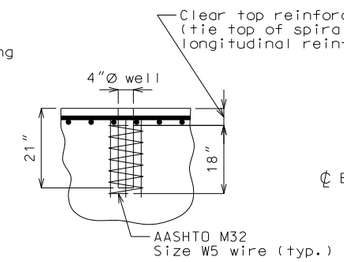
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

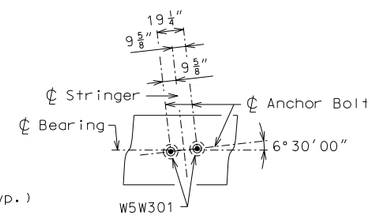


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½″.

All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½″.

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2″ clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 3 not shown, see Sheet No. 12.

For details of Crash Wall not shown, see Sheet No. 12.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation	cu. yard	100
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	71.9
Class B Concrete (Substructure)	cu. yard	20.2
Reinforcing Steel (Bridges)	pound	3457
Reinforcing Steel (Retaining Wall)	pound	3085

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

DETAILS OF INTERMEDIATE BENT NO. 3

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:16 -05'00'

DATE PREPARED	
05/18/09	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	13
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

DESCRIPTION

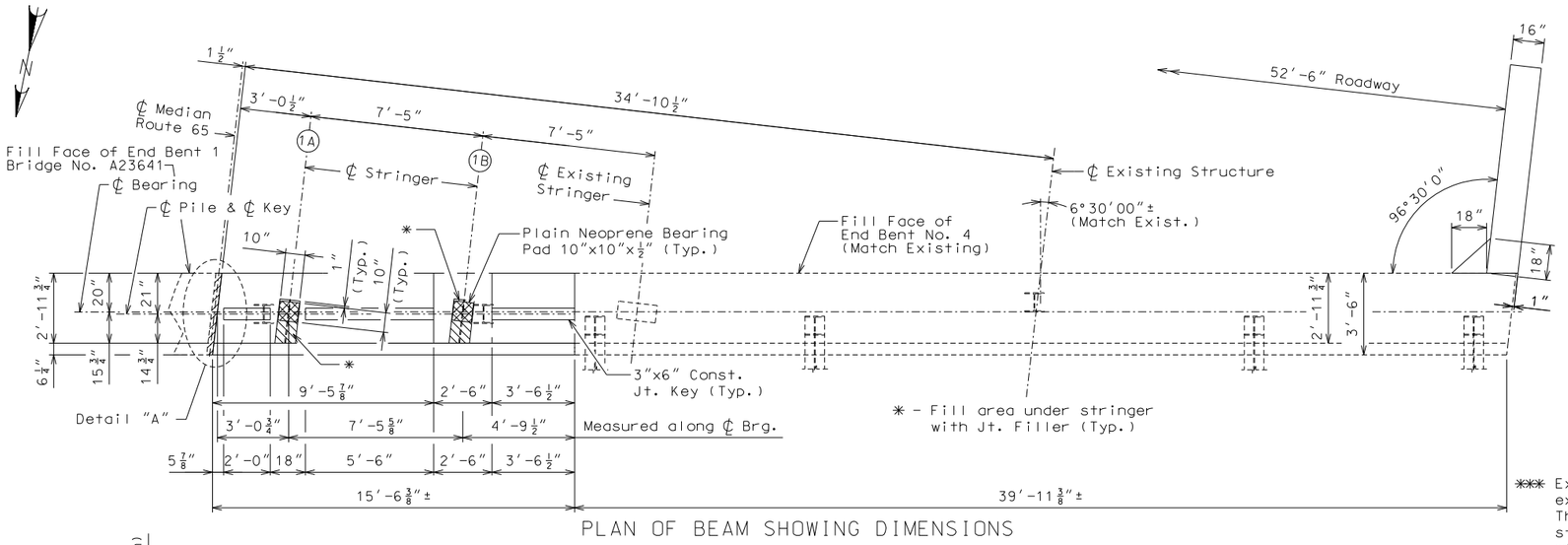
DATE

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

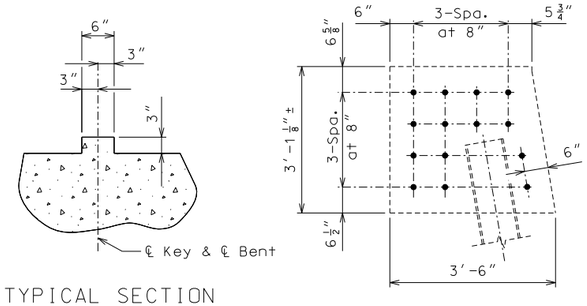
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Project Manager
PE-2004000786



PLAN OF BEAM SHOWING DIMENSIONS

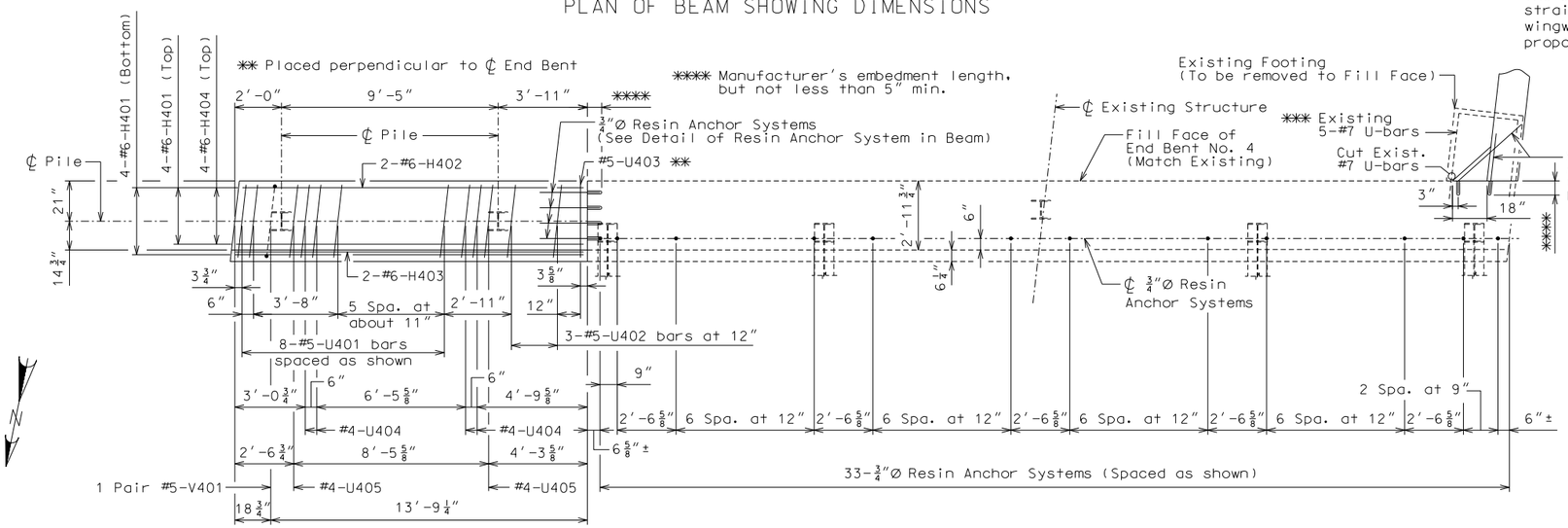


TYPICAL SECTION THRU KEY

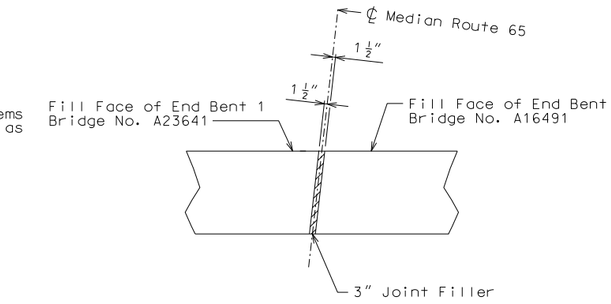
DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

14-¾"Ø Resin Anchor Systems to be spaced as shown.

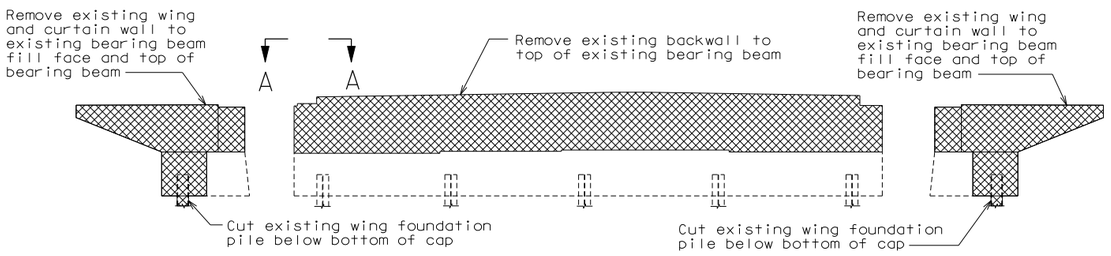
*** Existing #7 U-bars to remain embedded in the existing beam at the outside face of wingwall. The bars shall be cut near the point indicated, straightened and embedded in the proposed wingwall. A minimum of 40" embedment into the proposed wingwall is required.



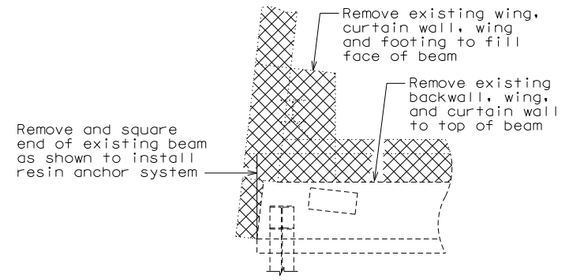
PLAN OF BEAM SHOWING REINFORCEMENT



DETAIL "A"



EAST WING ELEVATION ELEVATION OF END BENT WEST WING ELEVATION



PART PLAN A-A

DETAILS OF CONCRETE REMOVAL AT END BENT NO. 4

Note: The cost of all concrete removal shown will be considered completely covered by the contract lump sum price for Partial Removal of Substructure Concrete.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 4, see Sheet Nos. 15 & 16.

For Substructure Quantity Table, see Sheet No. 16.

For details of Vertical Drain at end bents, see Sheet No. 9.

For details of the Safety Barrier Curb, see Sheet Nos. 27, 28, 29, 30, 31, and 32.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

All U-bars and Pr. V-bars in end bent are to be placed parallel to ℄ Route 65, except as noted.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

Where existing bars are to extend from remaining portions of existing concrete into new construction, concrete shall be removed so as to leave bars clean and undamaged. Newly exposed construction concrete and reinforcement bars shall be blast-cleaned.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF END BENT NO. 4

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:18 -05'00'

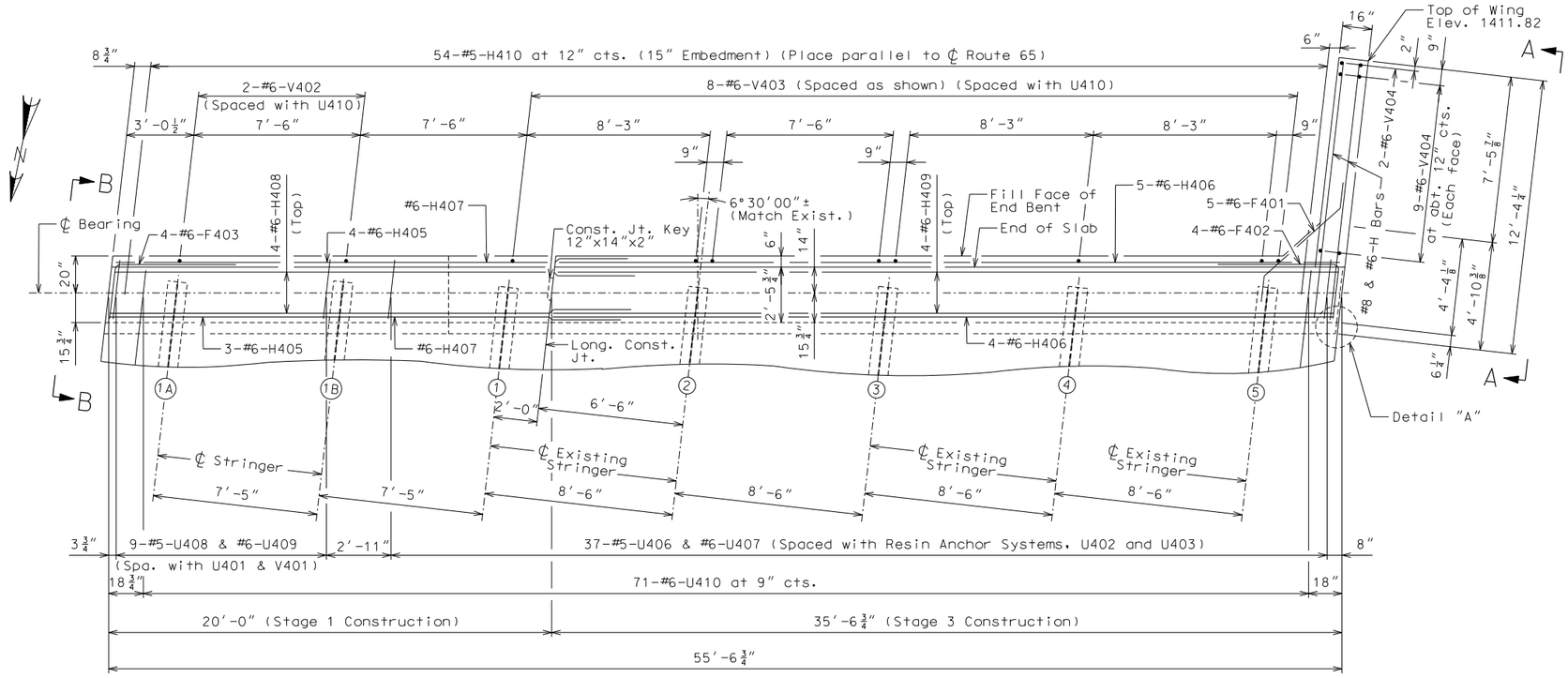
DATE PREPARED	
05/18/09	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	14
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

DESCRIPTION	DATE

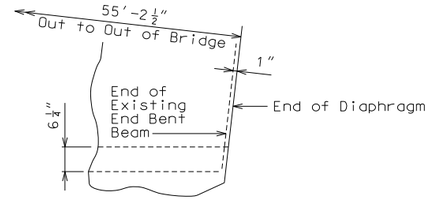
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

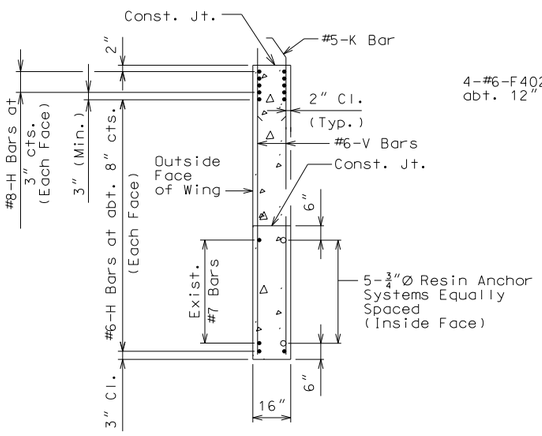
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Engineer
PE-2004000786



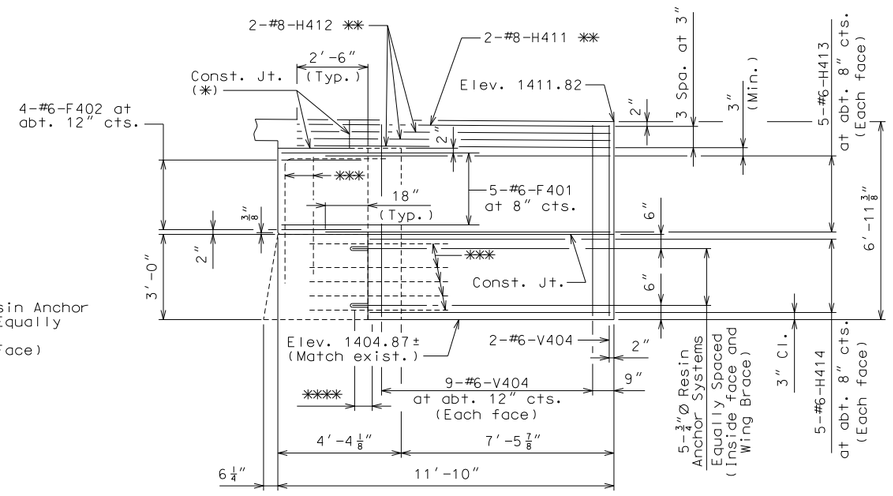
PLAN SHOWING REINFORCING



DETAIL "A"

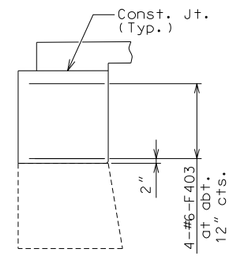


TYPICAL SECTION THRU WING



ELEVATION A-A

** Note: Place H411 and H412 bars parallel to grade.



ELEVATION B-B

(*) Upper construction joint shall be formed on slope in order to maintain a 1½" (min.) clearance to #6-H405 or H406 reinforcing bars in diaphragm. (Also shown in Section near End Bent)

*** Existing wing and curtain wall reinforcement to be used in place. Damaged bars shall be replaced by the contractor with no additional payment.

**** Manufacturer's embedment length, but not less than 5" min.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Concrete diaphragms at the integral end bents shall be poured a minumum of 12 hours before the slab is poured.

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 4, see Sheet Nos. 14 & 16.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

U & V bars shall be placed parallel to ℄ Route 65, except as noted.

For reinforcement of the Safety Barrier Curb, see Sheet Nos. 29 & 30.

For details of Vertical Drain at End Bent, see Sheet No. 9.

Bend #6-F401 bars in field to clear stringers.

For details of the Neoprene Bearings, see Sheet No. 17.

For details of Bridge Approach Slab, see Sheet No. 33.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF END BENT NO. 4

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:19 -05'00'

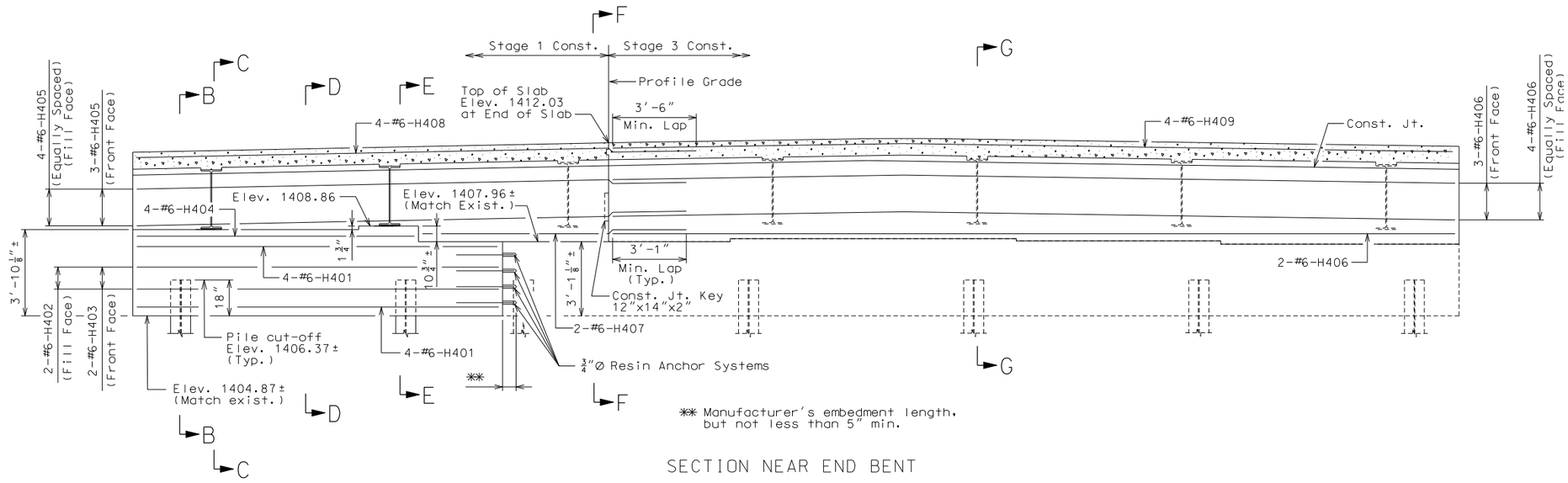
DATE PREPARED	
05/18/09	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	15
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Project Engineer
PE-2004000786



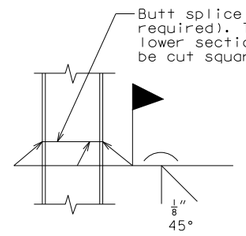
** Manufacturer's embedment length, but not less than 5" min.

SECTION NEAR END BENT

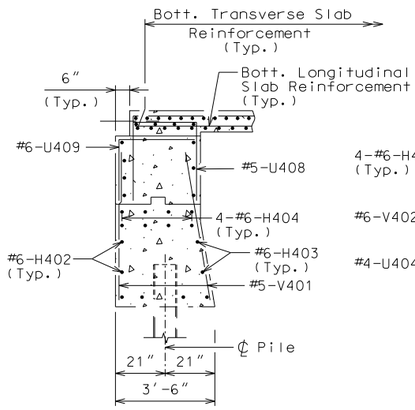
Notes:

Existing steel diaphragms not shown for clarity (leave in place).

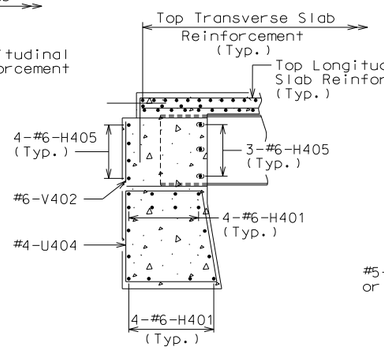
U-bars and resin anchor systems in diaphragm not shown for clarity.



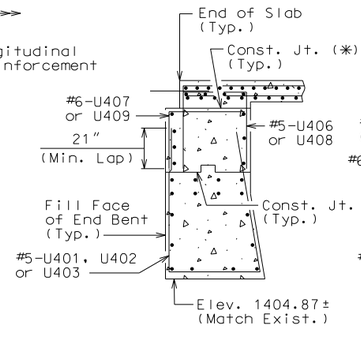
STEEL PILE SPLICE



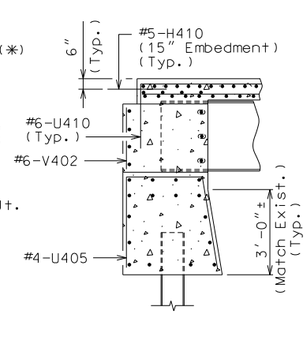
SECTION B-B



SECTION C-C



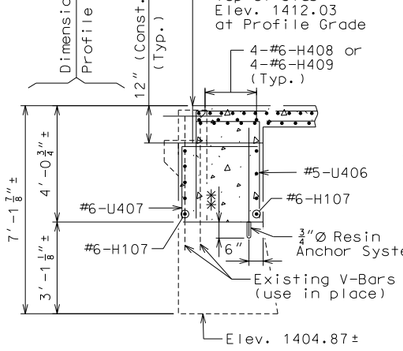
SECTION D-D



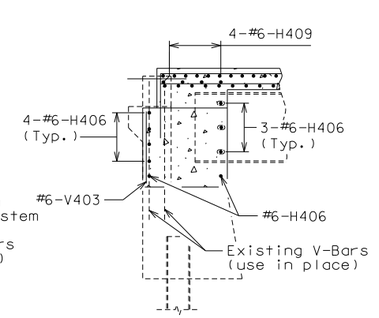
SECTION E-E

Notes: Existing V-bars in backwall to be used in place. The contractor shall cut the bars as required.

(*) Upper construction joint shall be formed on slope in order to maintain 1½" (min.) clearance to #6-H405 and H406 reinforcing bars in diaphragm. (Also shown in Section Near End Bent)



SECTION F-F



SECTION G-G

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Class 1 Excavation	cu. yard	25
Structural Steel Piles (10 in.)	linear foot	82
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	8.1

Note: These quantities are included in the estimated quantities table on Sheet No. 2.

For details of End Bent No. 4 not shown, see Sheet Nos. 14 & 15.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF END BENT NO. 4

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:20 -05'00'

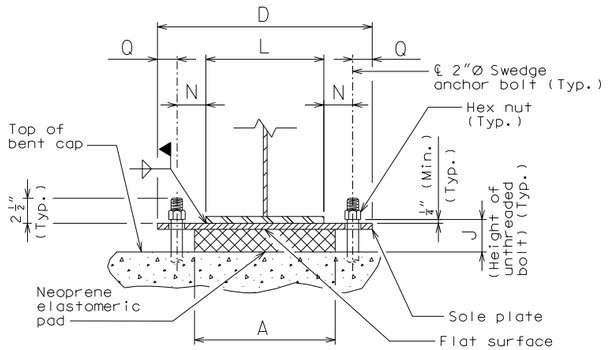
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

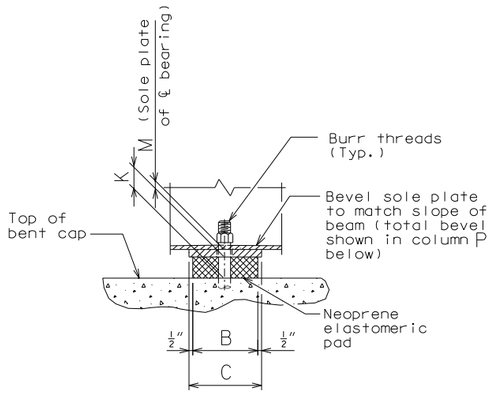
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

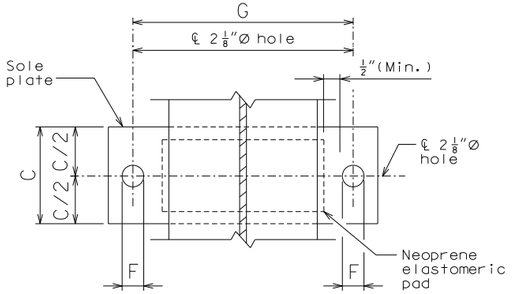
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard N. Gotschall II
314.770.0467 Professional Engineer
PE-2004000786



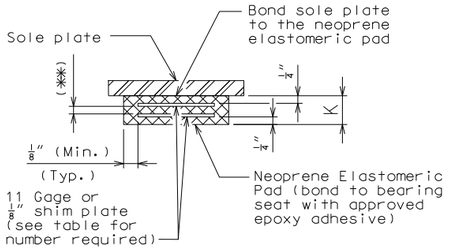
END VIEW



SIDE VIEW



PART PLAN



(**) Layers of 1/2" elastomer alternating with 11 gage or 1/8" shim plate

NEOPRENE ELASTOMERIC PAD

LAMINATED NEOPRENE FIXED BEARING PAD ASSEMBLY

FIXED BEARINGS														
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	16"	11"	12"	25 1/4"	2 1/8"	19 1/4"	3"	1 1/4"	10"	1 1/2"	4 5/8"	0"	3"	2	2
														TOTAL BEARINGS	2

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

GENERAL NOTES:

Anchor rods shall be 2"Ø ASTM F1554 Grade 55 swedged rods and shall extend 18" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

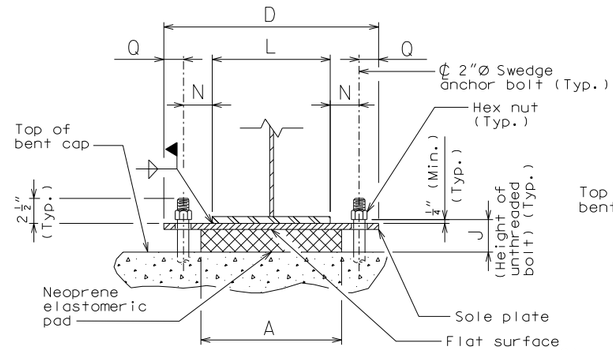
Anchor rod shall be at the ℄ of slotted hole at 60°F. Bearing position shall be adjusted R for each 10° fall or rise in temperature at installation.

All structural steel for the anchor rods and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

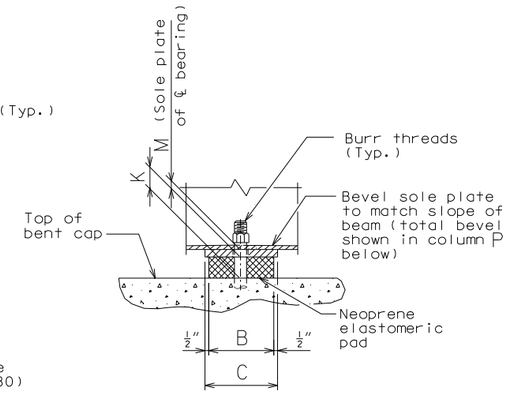
Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

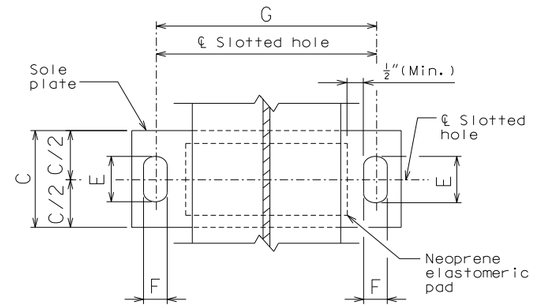
Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.



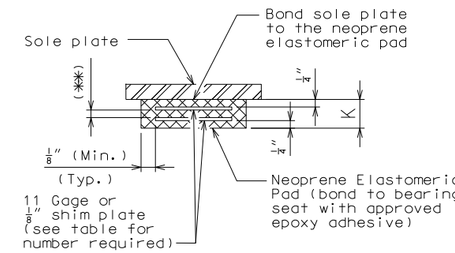
END VIEW



SIDE VIEW



PART PLAN



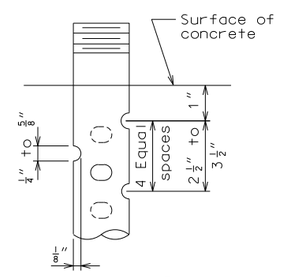
(**) Layers of 1/2" elastomer alternating with 11 gage or 1/8" shim plate

NEOPRENE ELASTOMERIC PAD

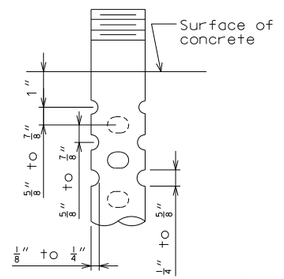
LAMINATED NEOPRENE EXPANSION BEARING PAD ASSEMBLY

EXPANSION BEARINGS																	
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
3	16"	11"	12"	25 1/4"	4 3/8"	2 1/8"	19 1/4"	4 7/8"	3 1/8"	10"	1 1/2"	4 5/8"	0"	3"	1/16"	5	2
																TOTAL BEARINGS	2

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.



DETAIL FOR 3/8"Ø THRU 2 1/2"Ø ANCHOR BOLTS



OPTIONAL DETAIL FOR 1 3/8"Ø THRU 2 1/2"Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:22 -05'00'

DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 17
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

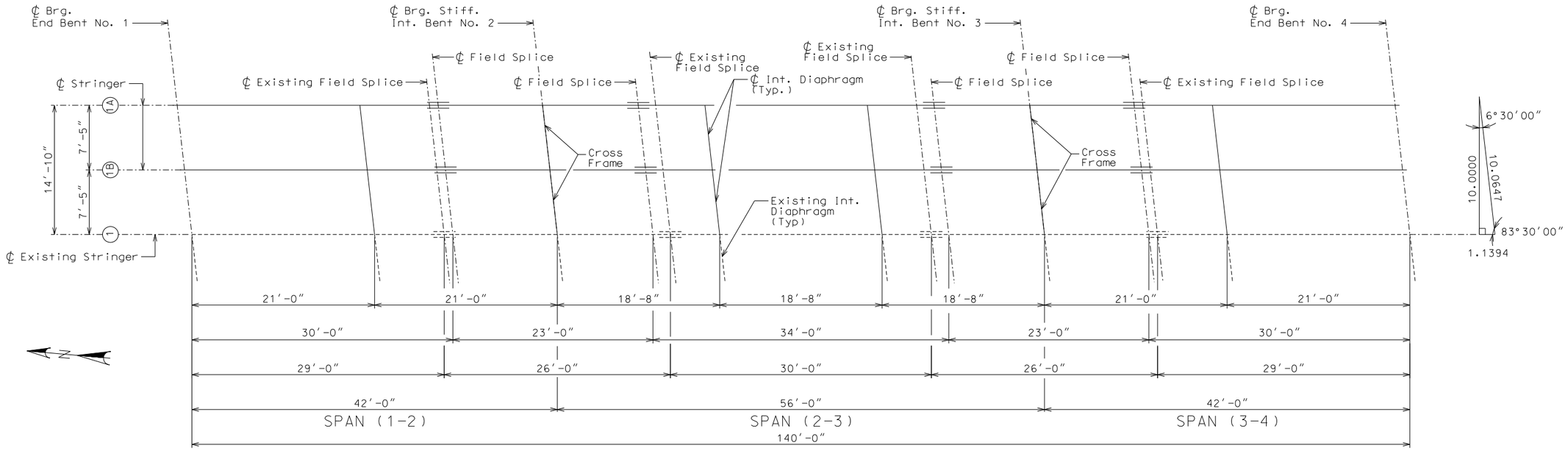
DESCRIPTION	DATE

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

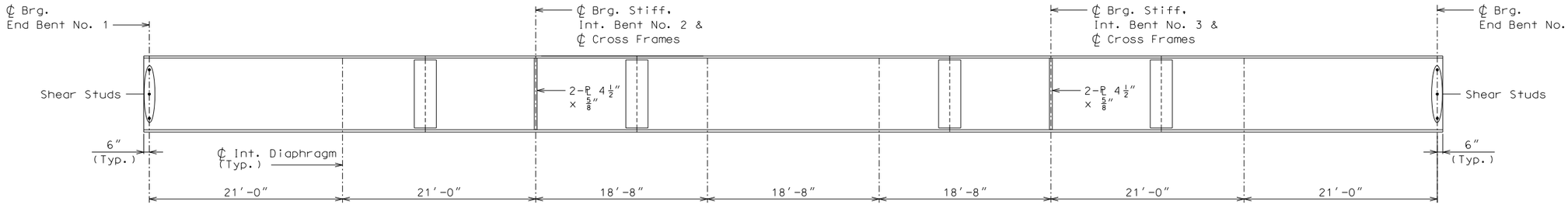
© Copyright Hanson Professional Services Inc. 2006

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467

Howard N. Gotschall II
Professional Engineer
PE-2004000786



PLAN OF STRUCTURAL STEEL



CROSS FRAME AND DIAPHRAGM LAYOUT

Notes:

For details of bearing stiffeners and intermediate diaphragms, see Sheet No. 22.

For details of web holes at end bents, see Sheet No. 20.

For Elevation of Stringer, see Sheet No. 19.

For details of bolted field splices, see Sheet No. 20.

For details of shear connectors, see Sheet No. 19.

Fabricated Structural Steel shall be ASTM A709 Grade 50.

Notes:

For details of intermediate diaphragms, see Sheet No. 22.

Contractor shall not field drill holes in existing stringer web or bearing stiffeners to attach diaphragms until Stringers 1A and 1B are erected.

Prior to drilling holes in existing stringer web for the diaphragm connection plates, the contractor shall verify that location of the holes will allow diaphragms to be installed to the shop welded diaphragm connection plates on Stringer 1B.

Bolts on intermediate diaphragms that connect stringers under different construction stage slab pours shall be installed snug tight, then tightened after both adjacent slab pours are completed.

Bolts on existing intermediate diaphragms that connect existing stringers under different construction stage slab pours shall be loosened to snug tight, then tightened after both adjacent slab pours are completed.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:23 -05'00'

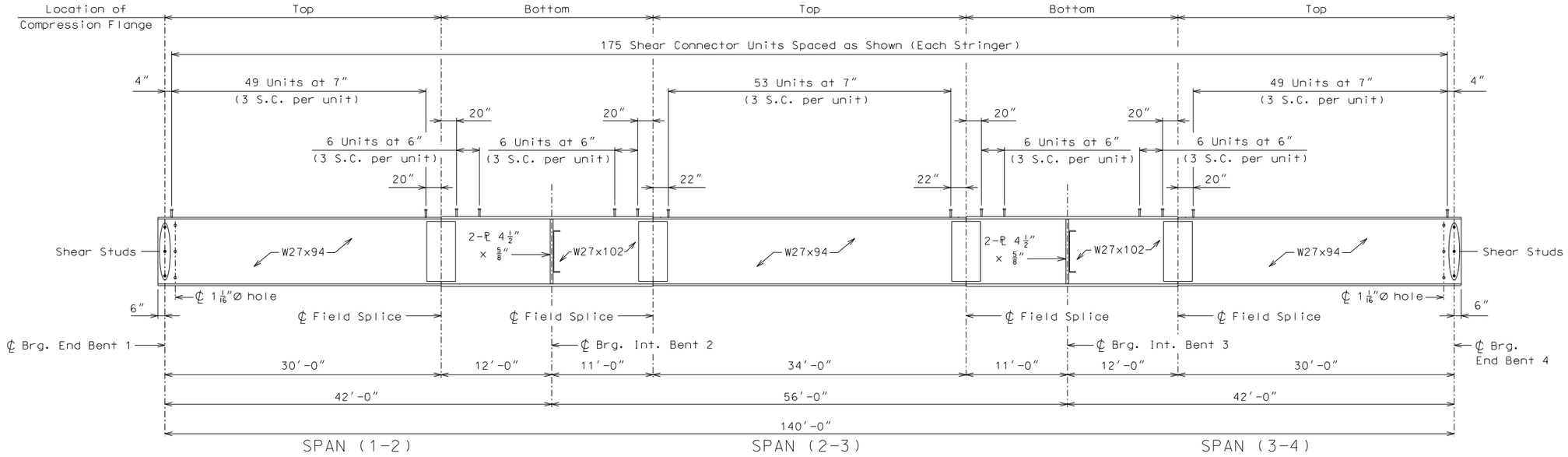
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 18
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

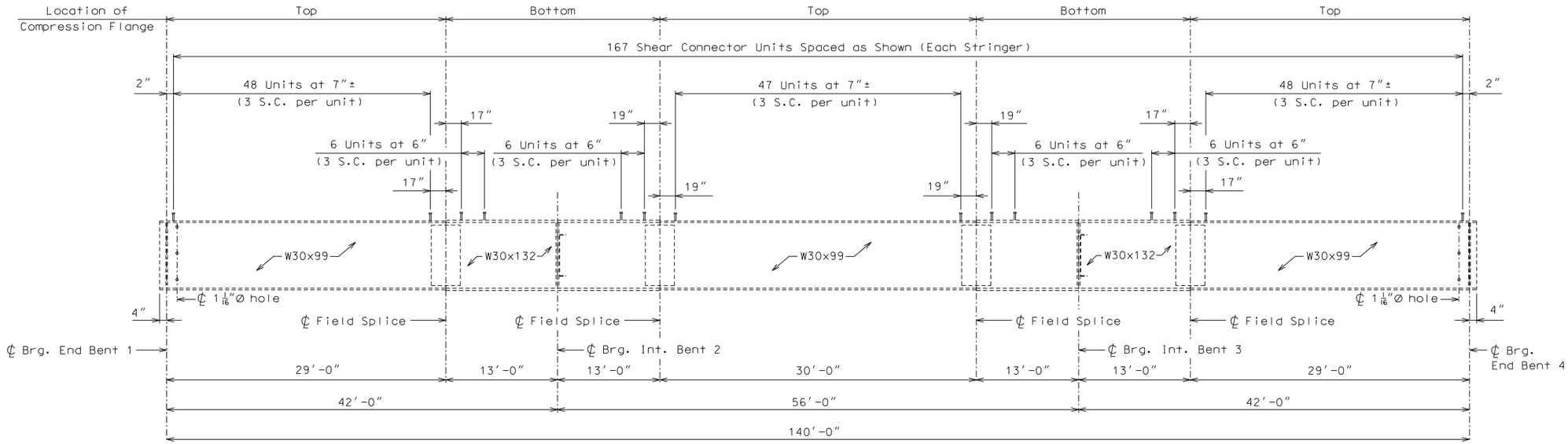
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard N. Gotschall II Professional Engineer PE-2004000786
314.770.0467

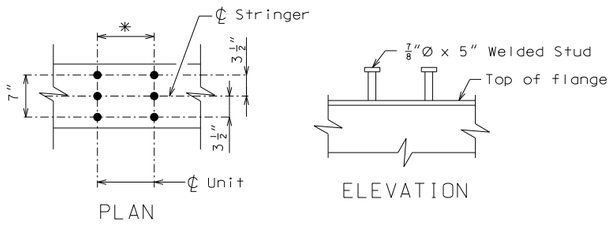


ELEVATION OF NEW STRINGERS



ELEVATION OF EXISTING STRINGERS

Note: Contractor shall adjust shear connector unit locations as required to facilitate connection of new shear connectors to existing stringers.



PLAN

ELEVATION

TYPICAL SHEAR STUD UNIT DETAIL

* Space as shown in elevation of beam.

Notes:

Weight of 3507 pounds of shear connectors is included in the weight of Fabricated Structural Low Alloy Steel. Weight includes studs attached to the webs of new stringers at end bents.

Shear connectors shall be in accordance with Sec 712, 1037 and 1080.

Notch toughness is required for all wide flange beams.

Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

For locations of bearing stiffeners, cross frames and intermediate diaphragms, see Sheet No. 18.

For details of intermediate connection plates and bearing stiffeners, see Sheet No. 22.

For details of diaphragms, see Sheet No. 22.

For plan of structural steel, see Sheet No. 18.

Cost of field drilling holes in existing stringer will be considered completely covered by the contract unit price for Slab on Steel.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:24 -05'00'

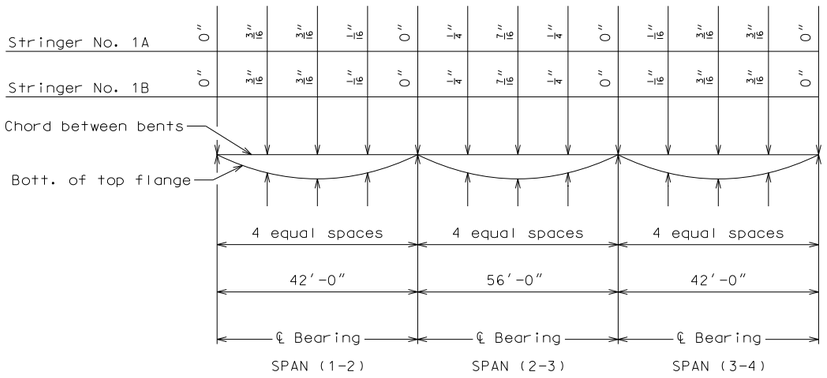
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 19
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



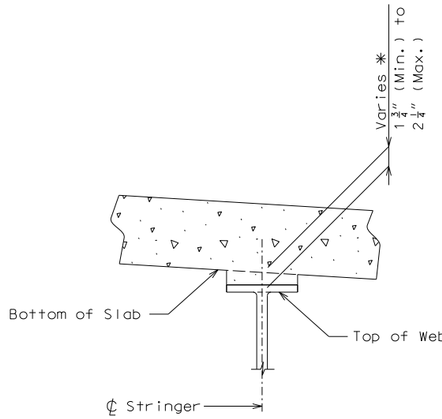
DEAD LOAD DEFLECTION

Notes:

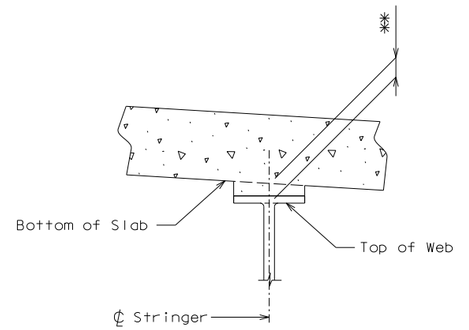
13% of dead load deflection of Stringer 1A is due to the weight of structural steel.

12% of dead load deflection of Stringer 1B is due to the weight of structural steel.

Dead load deflection includes weight of structural steel, concrete slab and barrier curbs.



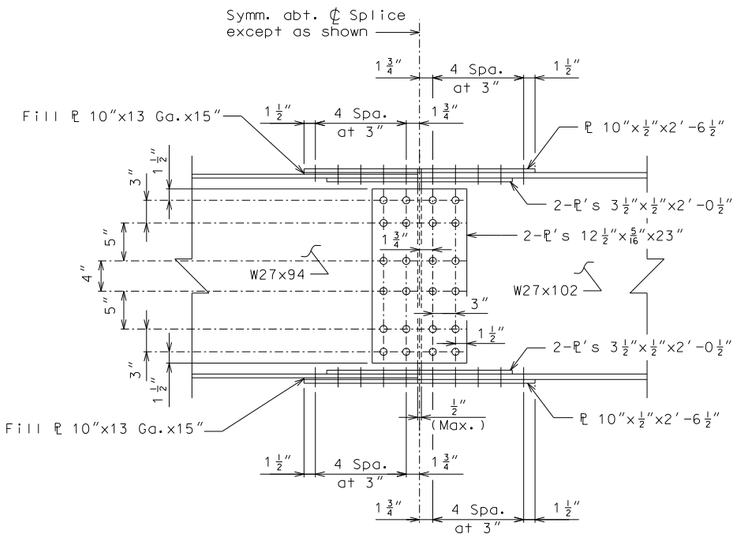
THEORETICAL SLAB HAUNCH FOR NEW STRINGERS NOS. 1A & 1B



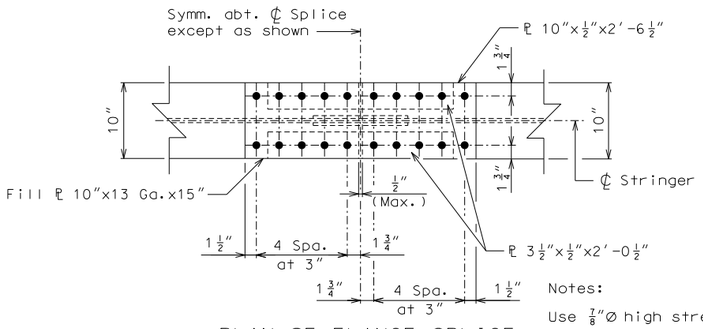
THEORETICAL SLAB HAUNCH FOR EXIST. STRINGERS NOS. 1, 2, 3, 4, & 5

✱✱ Dimensions may vary if the stringer dead load deflection after erection differs from plan dead load deflection by more or less than the % of dead load deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

✱✱ Haunch at supports ≥ 0". Haunch at intermediate points in span to be calculated in field.



DETAIL OF BOLTED FIELD SPLICE



PLAN OF FLANGE SPLICE

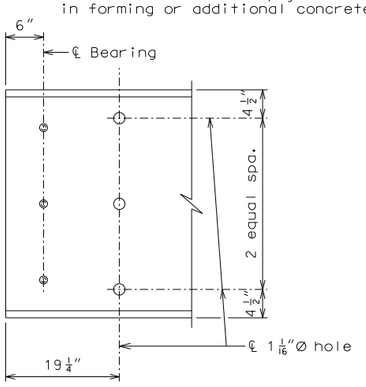
(Top and bottom flanges similar.)

Notes:

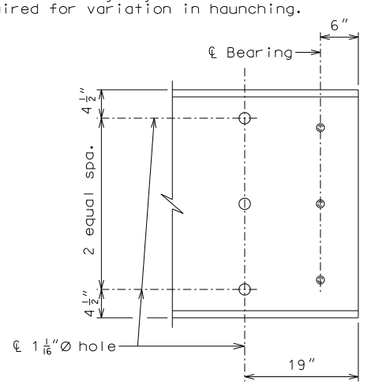
Use 7/8"Ø high strength bolts with 15/16"Ø holes.

Contact surfaces shall be in accordance with Sec 1081 for surface preparation.

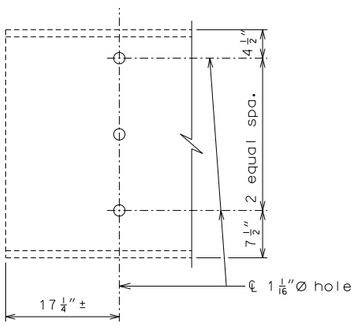
The flange and web splice plates shall be subject to notch toughness requirements, top notch toughness is required for flange on both sides of the splice.



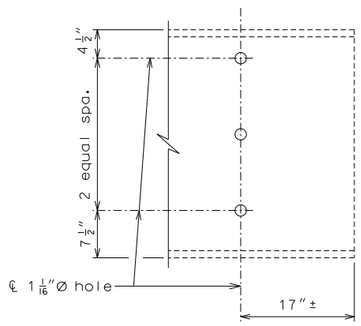
DETAIL OF WEB HOLES AT END BENT NO. 1 (NEW STRINGERS)



DETAIL OF WEB HOLES AT END BENT NO. 4 (NEW STRINGERS)

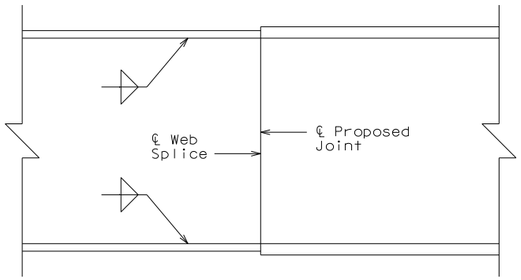


DETAIL OF WEB HOLES AT END BENT NO. 1 (EXISTING STRINGERS)



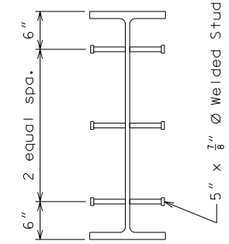
DETAIL OF WEB HOLES AT END BENT NO. 4 (EXISTING STRINGERS)

Note: Cost of field drilling holes in existing stringers will be considered completely covered by the contract unit price for Slab on Steel.



WELDED SHOP WEB SPLICE

Note: Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



SECTION AT ℄ BEARING (NEW STRINGERS)

Note: Weight of 5" x 7/8"Ø studs at end bents is included in the weight of shear connectors.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:25 -05'00'

DATE PREPARED: 05/18/09
ROUTE: 65 | STATE: MO
DISTRICT: BR | SHEET NO.: 20
COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A16491

DESCRIPTION | DATE

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

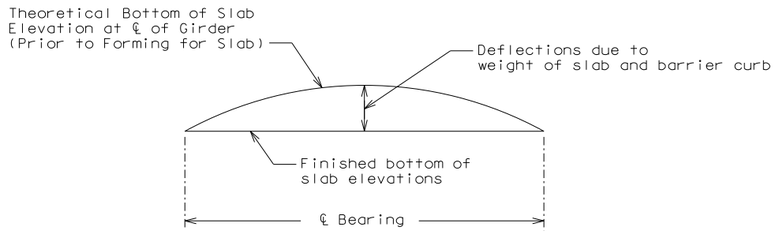
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hansonpro.com
314.770.0467
Howard N. Gotschall II
Project Engineer
PE-2004000786

Theoretical Bottom of Slab Elevations at CL of Stringer (Prior to Forming for Slab) ✳✳

	Span (1-2) (42'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.06	1411.10	1411.12	1411.14	1411.14
Stringer No. 1B	1411.21	1411.25	1411.28	1411.29	1411.29
Stringer No. 1	1411.36	1411.40	1411.42	1411.43	1411.44
Stringer No. 2	1411.50	1411.55	1411.57	1411.58	1411.59
Stringer No. 3	1411.55	1411.59	1411.61	1411.62	1411.63
Stringer No. 4	1411.42	1411.46	1411.48	1411.49	1411.49
Stringer No. 5	1411.29	1411.33	1411.35	1411.35	1411.36
	Span (2-3) (56'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.14	1411.18	1411.20	1411.18	1411.15
Stringer No. 1B	1411.29	1411.33	1411.35	1411.33	1411.30
Stringer No. 1	1411.44	1411.47	1411.49	1411.47	1411.45
Stringer No. 2	1411.59	1411.61	1411.63	1411.61	1411.59
Stringer No. 3	1411.63	1411.65	1411.67	1411.65	1411.63
Stringer No. 4	1411.49	1411.52	1411.54	1411.52	1411.49
Stringer No. 5	1411.36	1411.39	1411.40	1411.39	1411.36
	Span (3-4) (42'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.15	1411.15	1411.14	1411.12	1411.08
Stringer No. 1B	1411.30	1411.29	1411.29	1411.26	1411.23
Stringer No. 1	1411.45	1411.44	1411.43	1411.41	1411.37
Stringer No. 2	1411.59	1411.58	1411.57	1411.55	1411.51
Stringer No. 3	1411.63	1411.62	1411.61	1411.59	1411.55
Stringer No. 4	1411.49	1411.48	1411.48	1411.45	1411.41
Stringer No. 5	1411.36	1411.35	1411.34	1411.32	1411.28

✳✳ Elevations are based on a constant slab thickness of 7½" and include allowance for theoretical dead load deflections due to weight of slab & barrier curb.



TYPICAL SLAB ELEVATIONS DIAGRAM

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:27 -05'00'

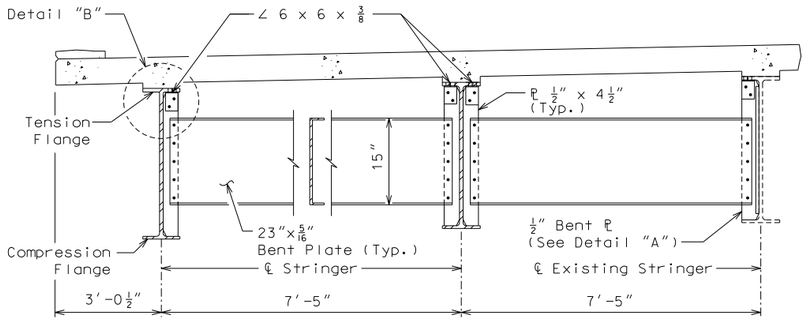
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

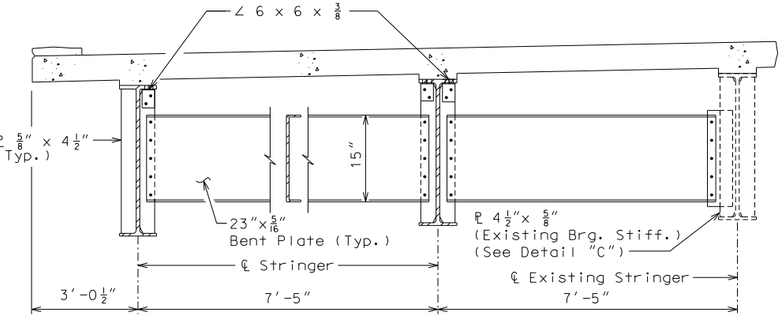
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

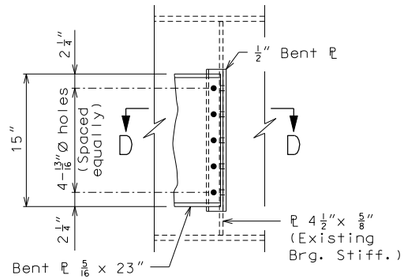
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



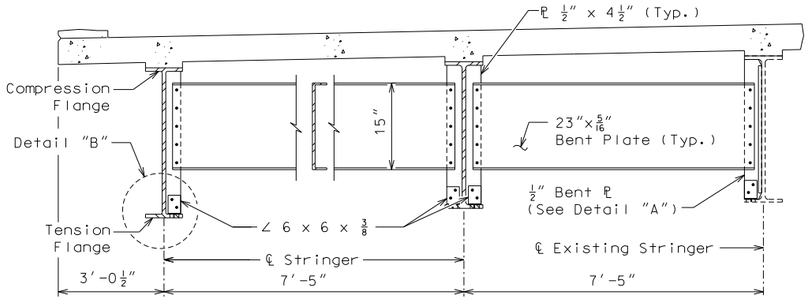
TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS TOP FLANGE IN TENSION



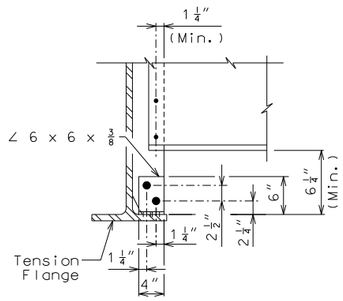
TYPICAL PART SECTION SHOWING CROSS FRAMES



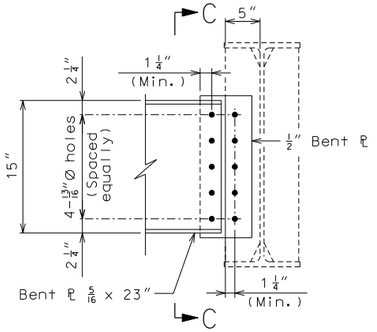
SECTION C-C



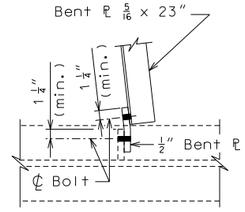
TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS BOTTOM FLANGE IN TENSION



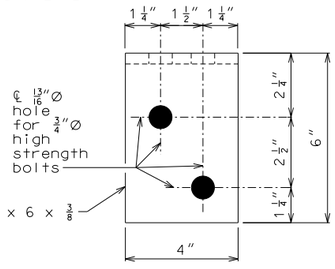
DETAIL "B"



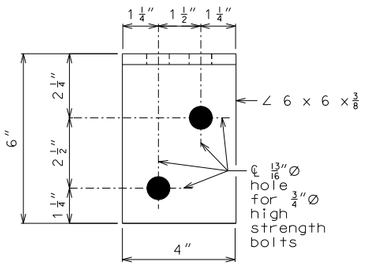
DETAIL "C"



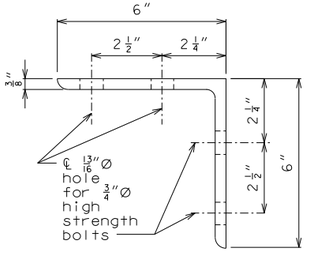
SECTION D-D



PLAN

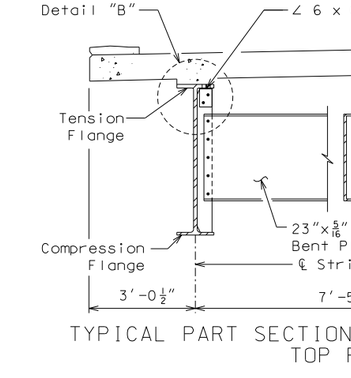


FRONT ELEVATION

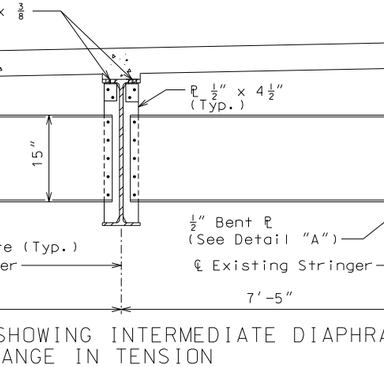


SIDE VIEW

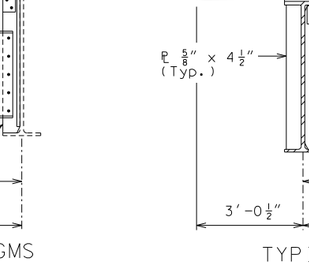
DETAIL OF FLANGE CONNECTION ANGLE



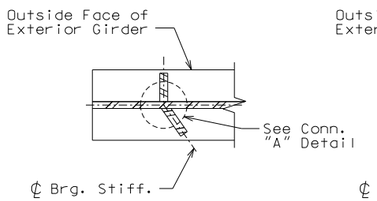
DETAIL "A"



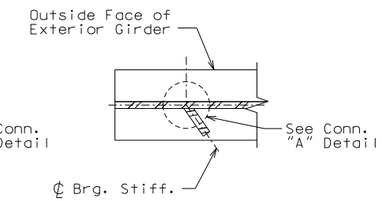
SECTION A-A



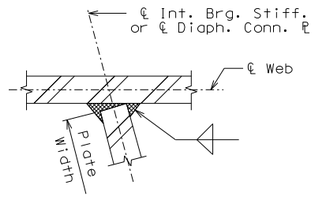
SECTION B-B



INT. BRG. STIFF.



DIAPH. CONN. PLATE



CONN. "A"

TYPICAL LOCATION DETAILS

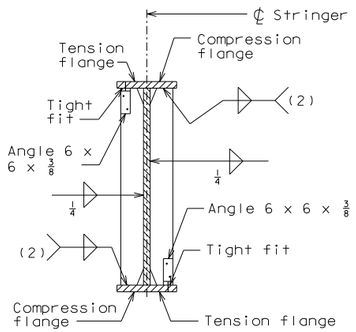
WELDING DETAILS

Notes:

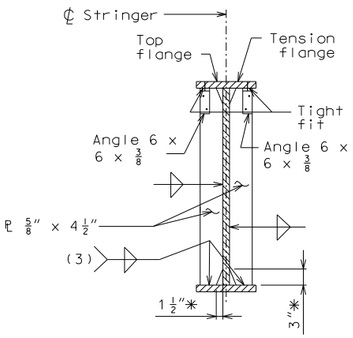
The two 3/4"Ø H.S. bolts that connect the 6 x 6 x 3/8 angle to the top flange shall be placed so the nut is on the inside of flange (toward the web).

At the contractor's option, holes in the diaphragm plate of non slab bearing diaphragms may be made 1/16" larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the stringer diaphragm connection plate or transverse web stiffener shall be standard size.

For location of intermediate diaphragms and cross frames, see Sheet No. 18.



INT. DIAPH. CONN. PLATE



INT. BRG. STIFF.

(2) Weld to compression flange as located on elevation of stringer.

(3) Grind or mill to bear.

* Typical for all int. diaph. conn. pl. and brg. stiff.

WELDING DETAILS

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:27 -05'00'

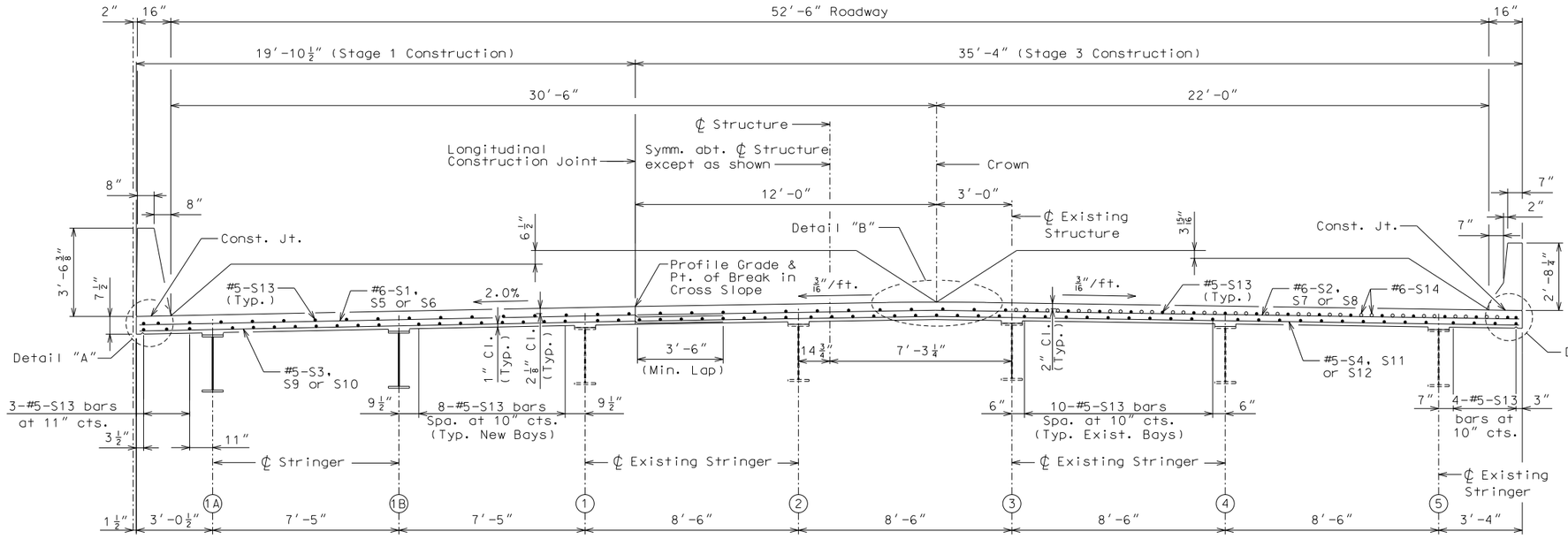
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 22
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

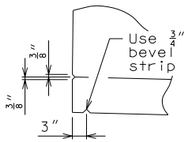
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



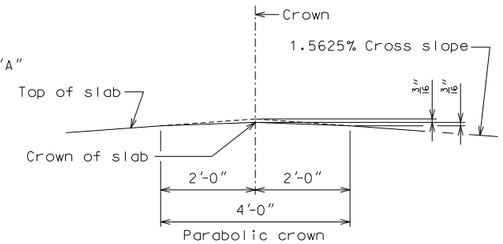
HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INT. BENTS

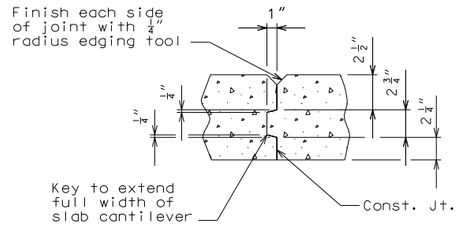
SECTION THRU SLAB TYPICAL SECTION NEAR ℄ SPAN



DETAIL "A"



DETAIL "B"



SLAB CONSTRUCTION JOINT DETAIL

Notes:

For plan of slab showing top reinforcement, see Sheet No. 24.

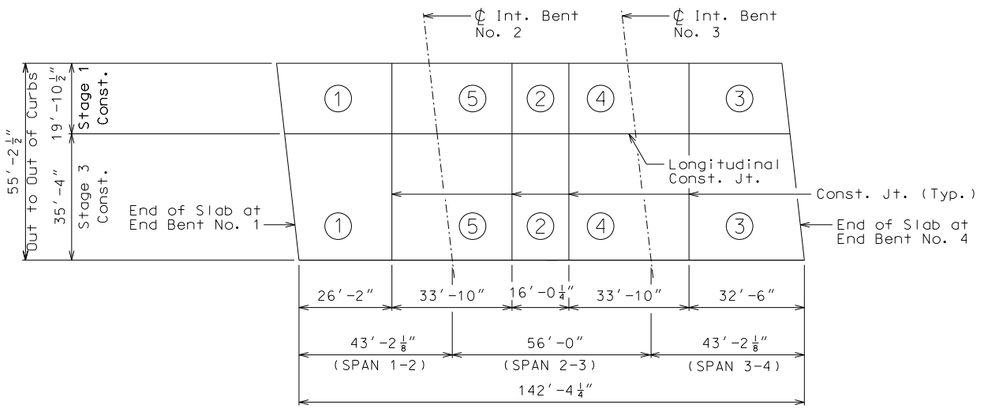
For plan of slab showing bottom reinforcement, see Sheet No. 25.

For details of staged construction, see Sheet Nos. 3 and 4.

For details and reinforcement of barriers, see Sheet Nos. 27 thru 32.

For theoretical bottom of slab elevations, see Sheet No. 21.

For theoretical slab haunch details and dead load deflection diagram, see Sheet No. 20.



SLAB POUR PLAN

Note: Longitudinal dimensions are horizontal.

	Sequence of Pours					Min. rate of pour cu. yds./hr.	
	Direction					With retarder	No retarder
Basic sequence	1	2	3	4	5	25	25
	Either direction						
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.							
Alternate "A" pours	1		5 + 2		4 + 3	25	25
	End to 5		1 to 4		2 to end		
Alternate "B" pours	1 + 5 + 2			4 + 3		25	25
	End to 4			2 to end			
Alternate "C" pours	1 + 5 + 2 + 4 + 3					25	25
	End to end						

Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:29 -05'00'

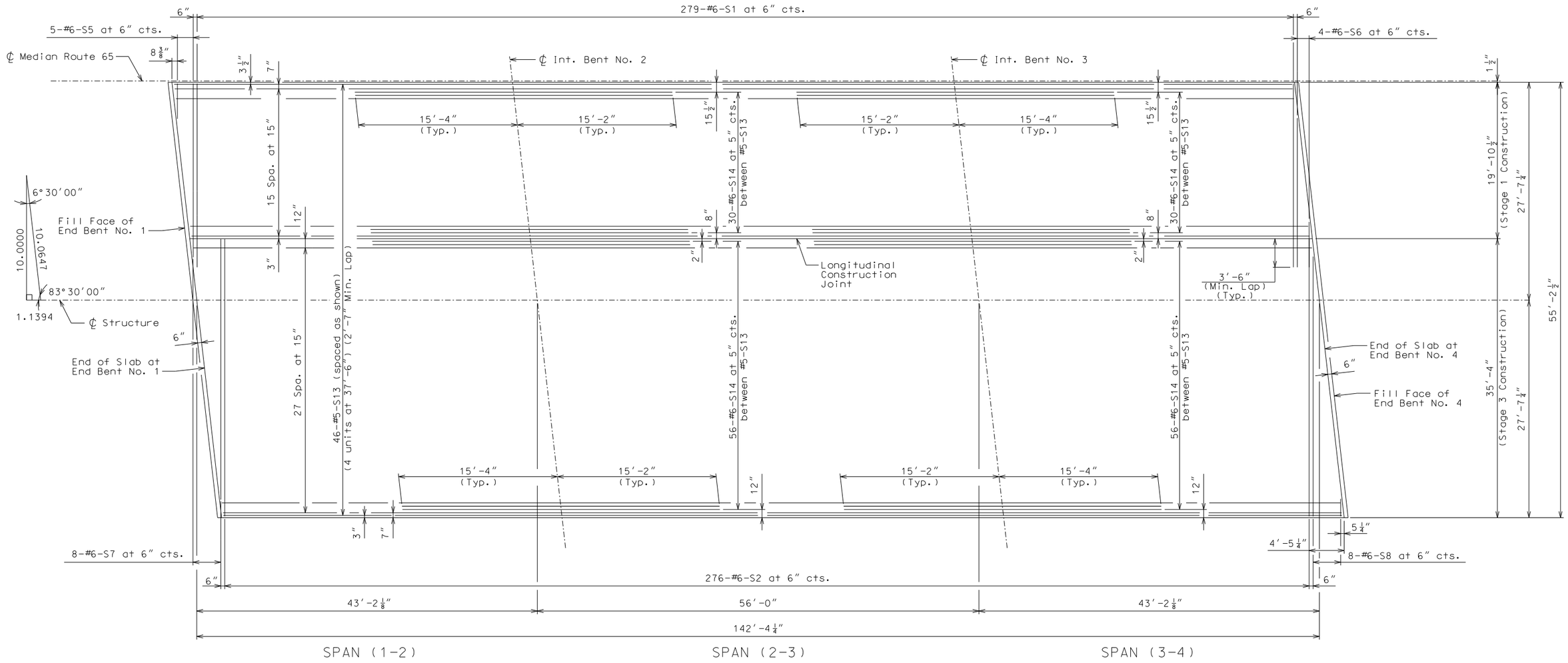
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 23
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Project Manager
PE-2004000786



PLAN OF SLAB SHOWING TOP REINFORCEMENT

Notes:

Longitudinal dimensions shown are horizontal.

For Plan of Slab Showing Bottom Reinforcement, see Sheet No. 25.

For Theoretical Bottom of Slab Elevations, see Sheet No. 21.

For Section Thru Slab, see Sheet No. 23.

For Slab Pouring Sequence, see Sheet No. 23.

For details and reinforcement of Safety Barrier Curbs, see Sheets No. 27 thru 32.

For details and locations of Slab Drains, see Sheet No. 26.

For details of staged construction, see Sheet Nos. 3 and 4.

For theoretical slab haunch details and dead load deflection, see Sheet No. 20.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:30 -05'00'

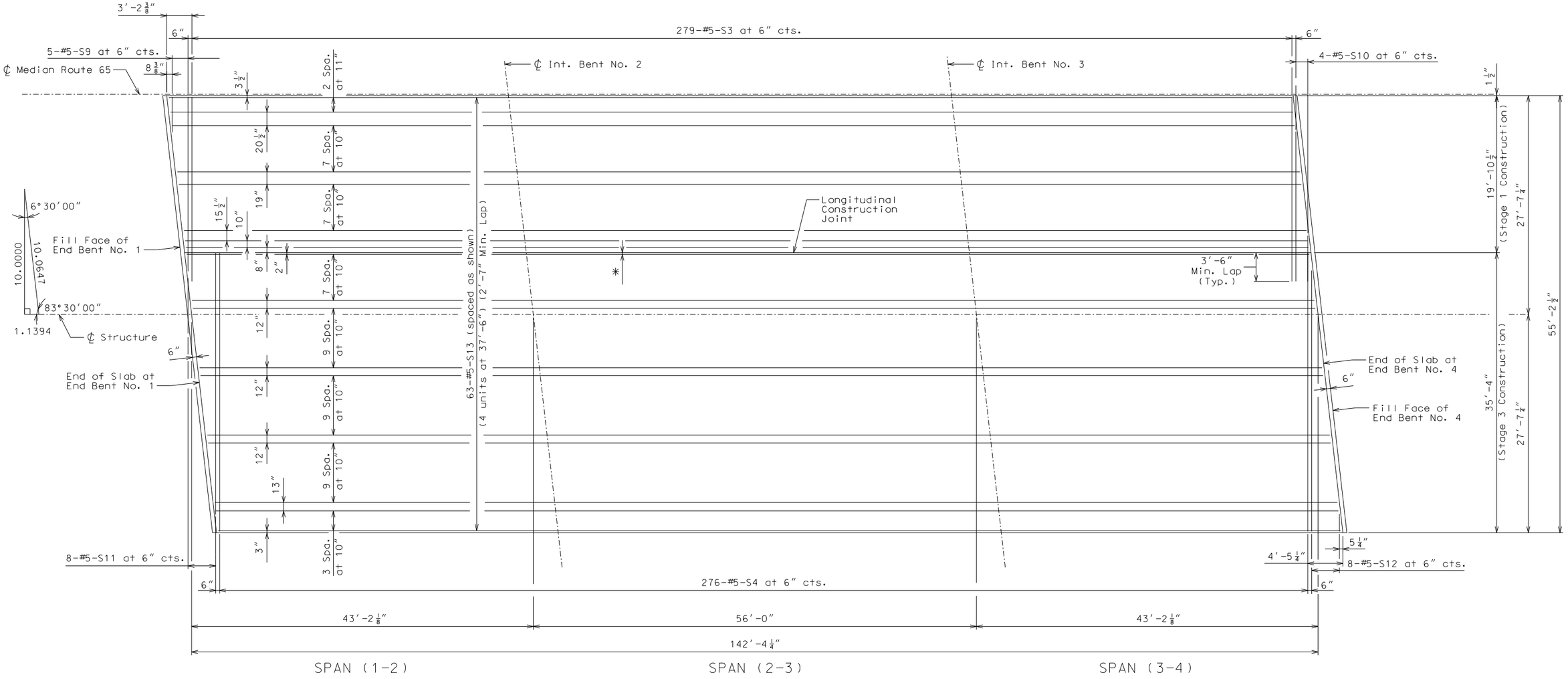
DATE PREPARED	05/18/09
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	24
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Notes:

Longitudinal dimensions shown are horizontal.

For Plan of Slab Showing Top Reinforcement, see Sheet No. 24.

For Theoretical Bottom of Slab Elevations, see Sheet No. 21.

For Section Thru Slab, see Sheet No. 23.

For Slab Pouring Sequence, see Sheet No. 23.

For details and reinforcement of Safety Barrier Curbs, see Sheets No. 27 thru 32.

For details and locations of Slab Drains, see Sheet No. 26.

For details of staged construction, see Sheet Nos. 3 and 4.

For theoretical slab haunch details and dead load deflection, see Sheet No. 20.

* - Contractor shall adjust reinforcement at all longitudinal construction joints as needed to maintain 1 1/2″ clear.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:31 -05'00'

DATE PREPARED 05/18/09

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	25

COUNTY GREENE

JOB NO. J8P0605E

CONTRACT ID.

PROJECT NO.

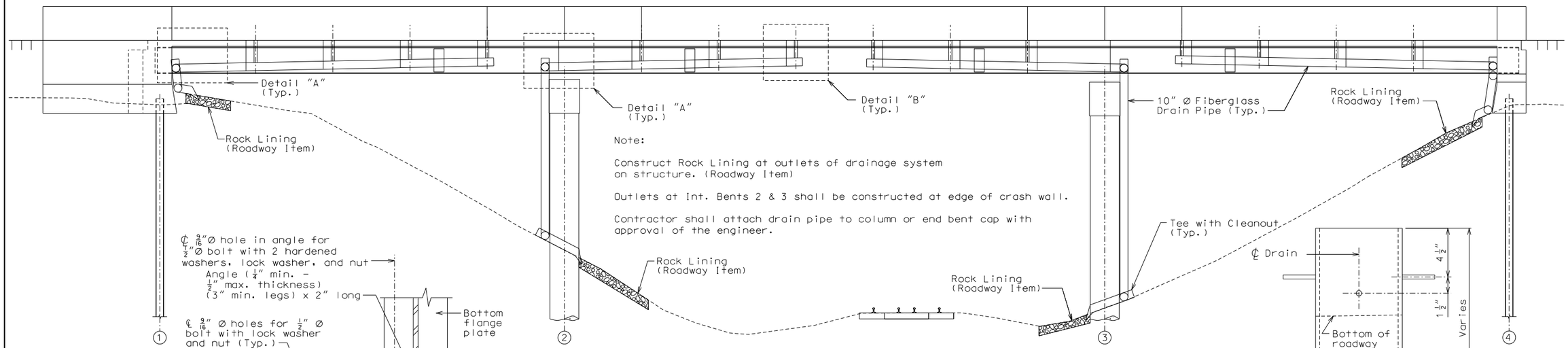
BRIDGE NO. A16491

DATE	DESCRIPTION

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



ELEVATION

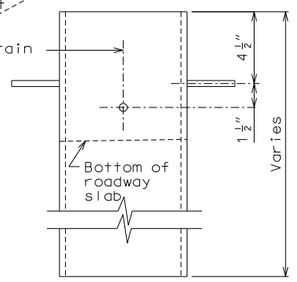
Note: Crash Wall not shown for clarity.

Note:

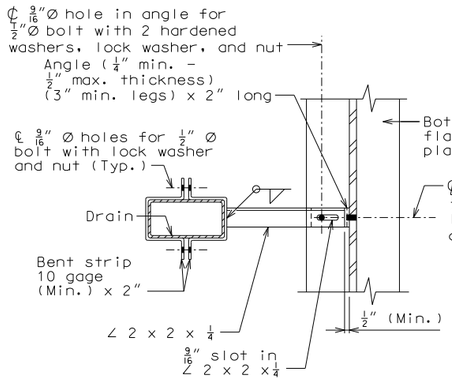
Construct Rock Lining at outlets of drainage system on structure. (Roadway Item)

Outlets at Int. Bents 2 & 3 shall be constructed at edge of crash wall.

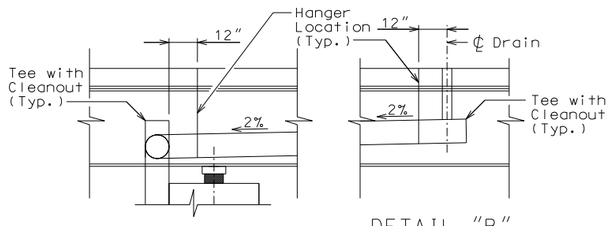
Contractor shall attach drain pipe to column or end bent cap with approval of the engineer.



ELEVATION OF DRAIN

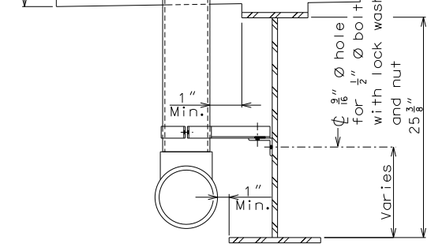


PART SECTION SHOWING BRACKET ASSEMBLY

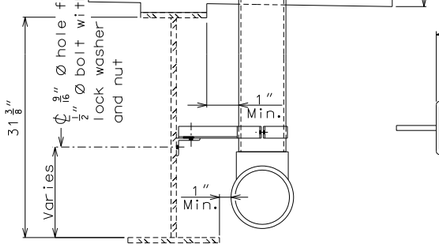


DETAIL "A"

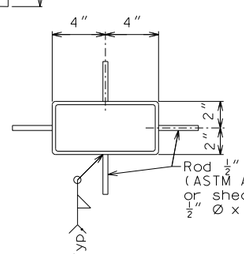
DETAIL "B"



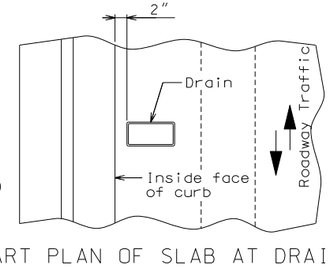
PART SECTION NEAR DRAIN (EAST SIDE)



PART SECTION NEAR DRAIN (WEST SIDE)



PLAN OF DRAIN



PART PLAN OF SLAB AT DRAIN

Notes:

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.

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

Outside dimensions of drains are 8" x 4".

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

Shift reinforcing steel in field where necessary to clear drains.

The drains 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 bolt hole for the bracket assembly attachment shall be located on the Stringer shop drawings.

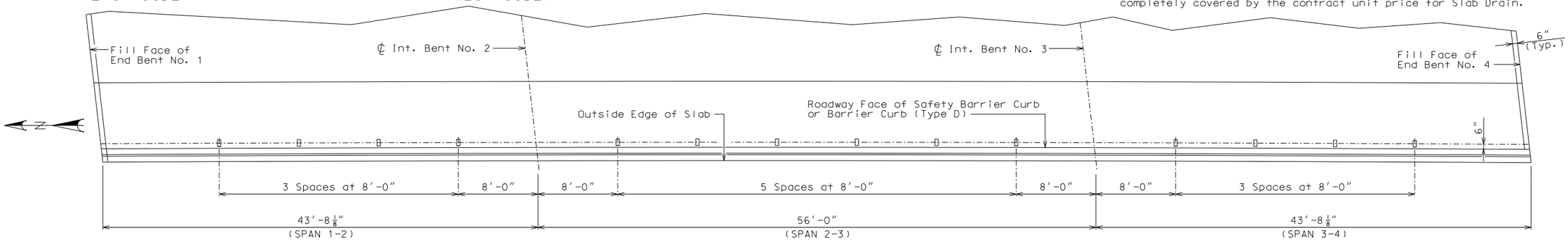
Coil inserts for attaching Drain System hangers to slab shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

The bolts required to attach the slab drain bracket assembly to the stringer shall be supplied by the girder fabricator.

Cost of slab drains and slab drain bracket assemblies for the Slab Drains is included in the contract unit price for Slab Drain.

Cost of brackets, pipes, hangers, and connectors for the Drainage System is included in the contract lump sum price for Drainage System (On Structure).

Cost of field drilling holes in existing stringer webs will be considered completely covered by the contract unit price for Slab Drain.



PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

Note: All longitudinal dimensions along outside edge of slab. (West side shown, east side similar.)

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

Sheet No. 26 of 37

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:32 -05'00'

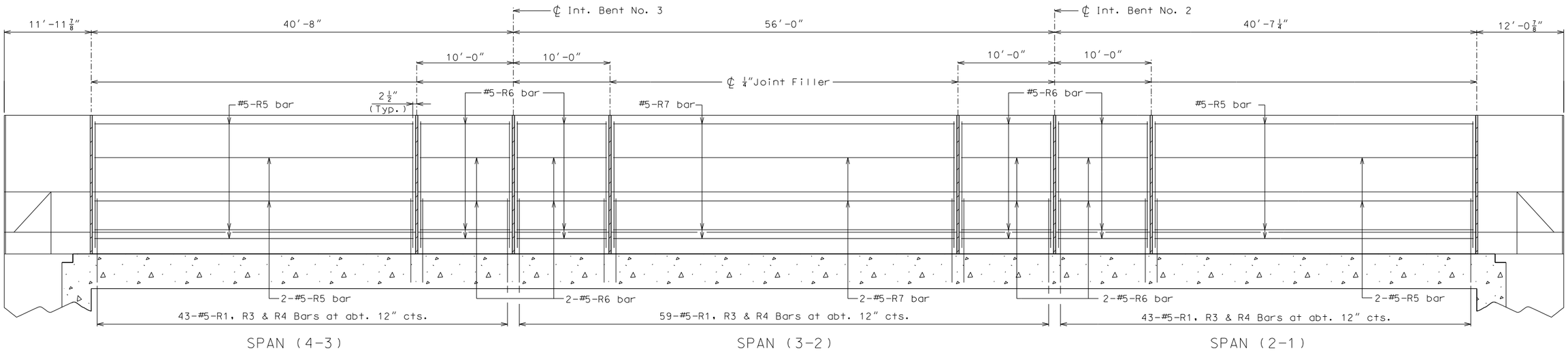
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 26
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

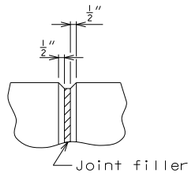
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Project Engineer
PE-2004000786

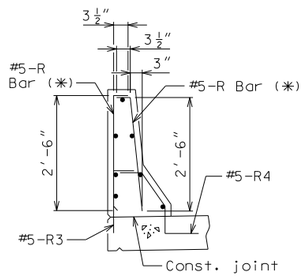


ELEVATION OF RIGHT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.

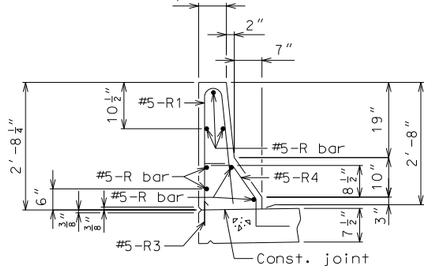


FILLED JOINT DETAIL



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.)

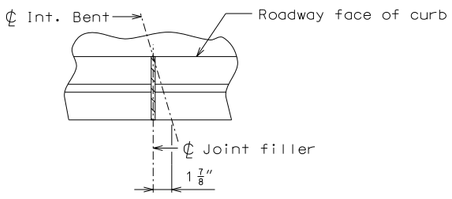


PART SECTION A-A

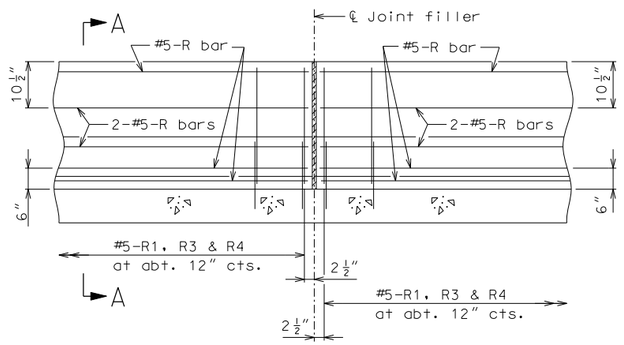
Notes:

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

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



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION NEAR RIGHT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

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″ radius or a 3/4″ bevel, unless otherwise noted.

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

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:33 -05'00'

DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 27
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

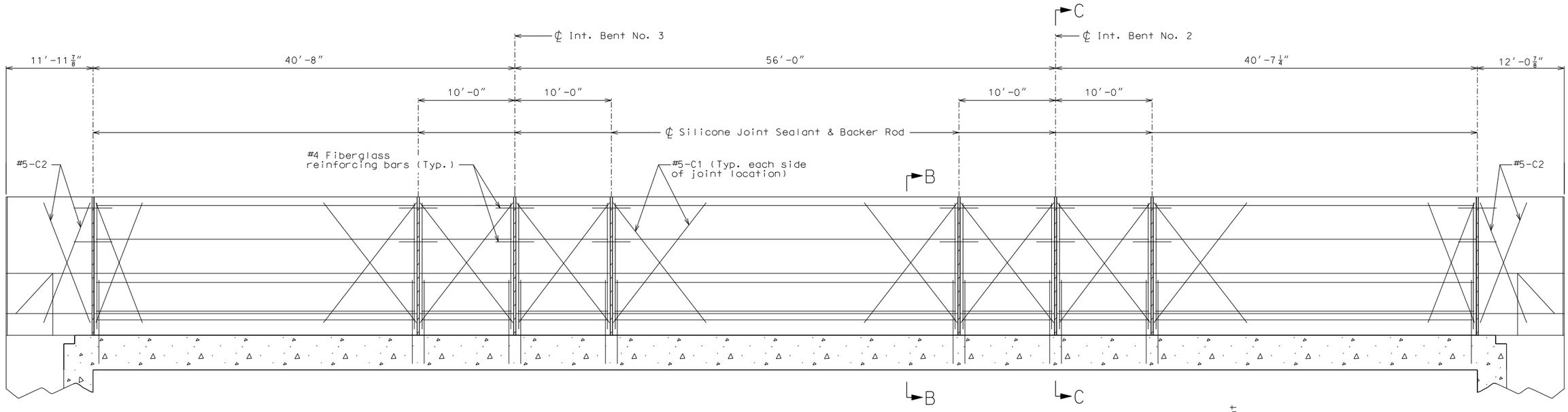
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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



ELEVATION OF RIGHT BARRIER (ROADWAY FACE)
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note: Longitudinal dimensions are horizontal.

Notes:

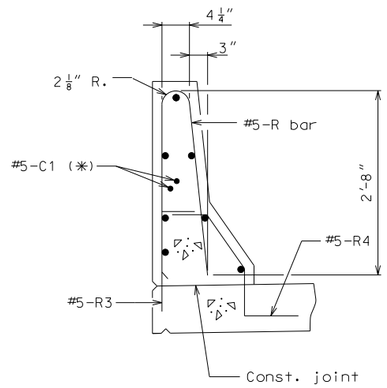
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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

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

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

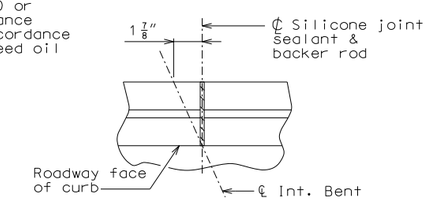
The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.



PART SECTION B-B

Note:

(*) Each side of joint location.



PART PLAN SHOWING
SAFETY BARRIER CURB JOINT

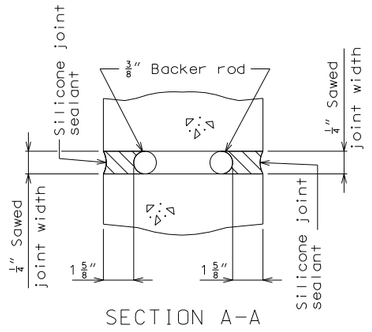
Notes:

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

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

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

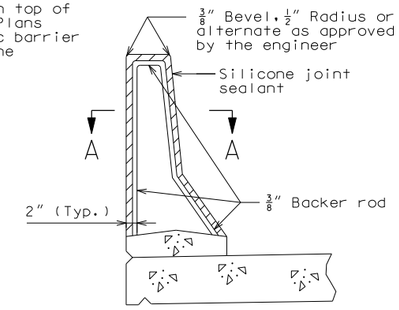
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



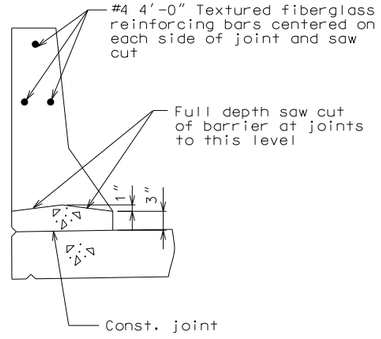
SECTION A-A

Note:

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



SECTION THRU JOINT



PART SECTION C-C

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

(Right barrier curb shown.)

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:34 -05'00'

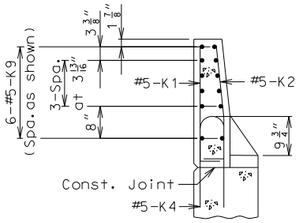
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 28
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

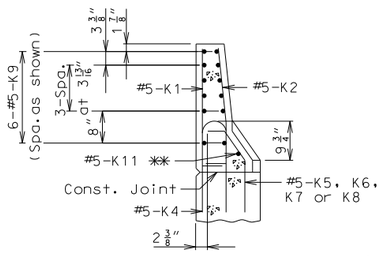
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

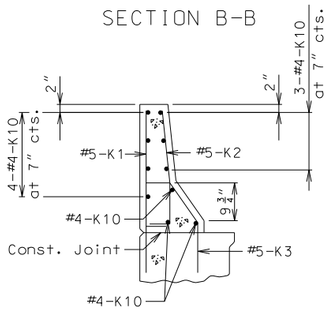
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard.Gotschall@hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



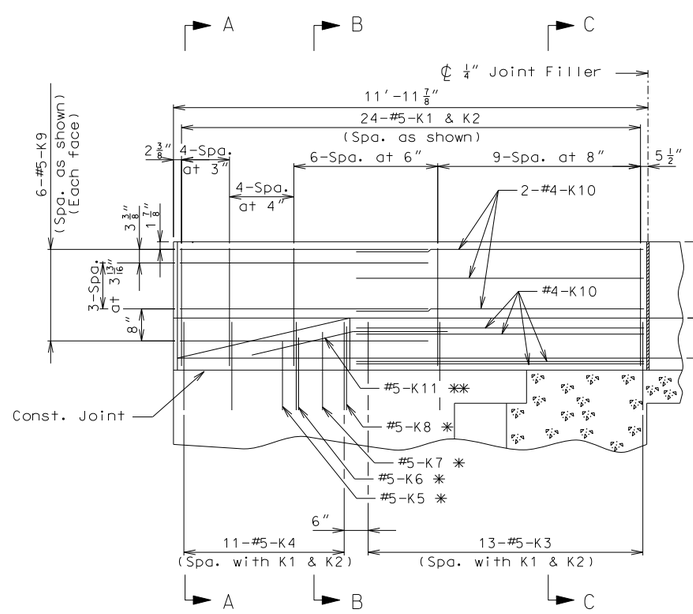
SECTION A-A



SECTION B-B



SECTION C-C

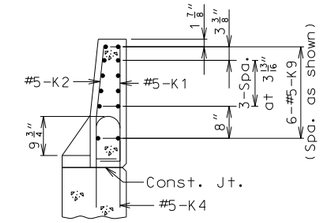


END BENT 4 ELEVATION

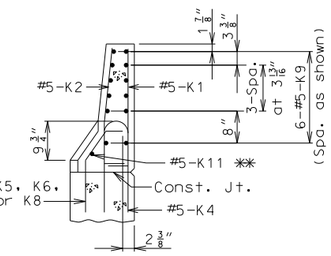
END BENT 1 ELEVATION

* Spaced with #5-K4 bars.

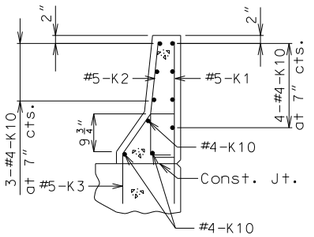
** Fit bar to follow transition face of curb.



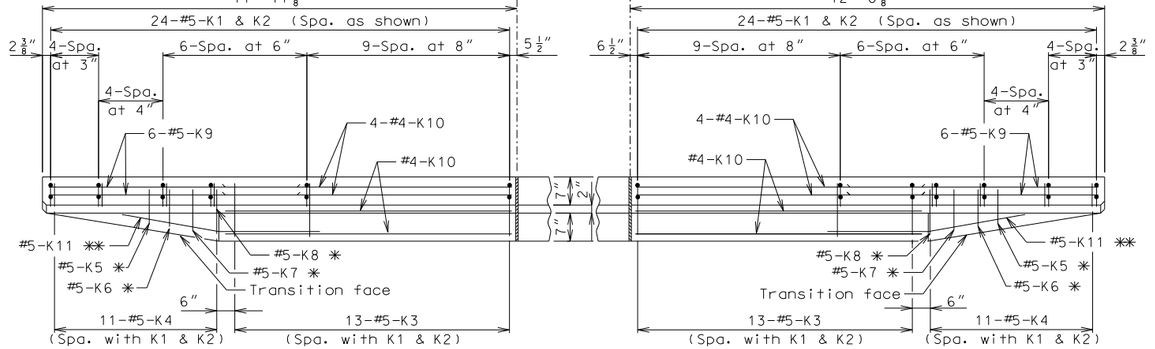
SECTION D-D



SECTION E-E

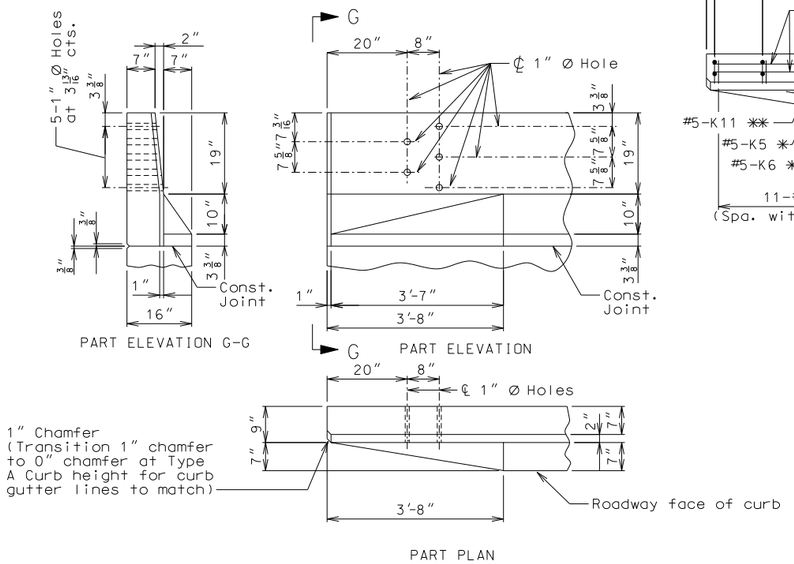


SECTION F-F



END BENT 4 PLAN

END BENT 1 PLAN



DETAILS OF GUARD RAIL ATTACHMENT

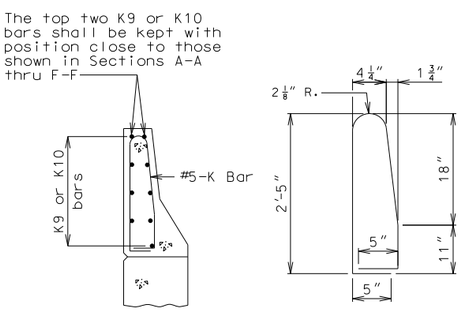
Notes: Use a minimum lap of 2'-0" between K9 and K10 bars.

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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

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

DETAILS OF SAFETY BARRIER CURB AT END BENTS

(Right barrier curb shown)



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

K1-K2 BAR PERMISSIBLE ALTERNATE SHAPE (***)

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

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:36 -05'00'

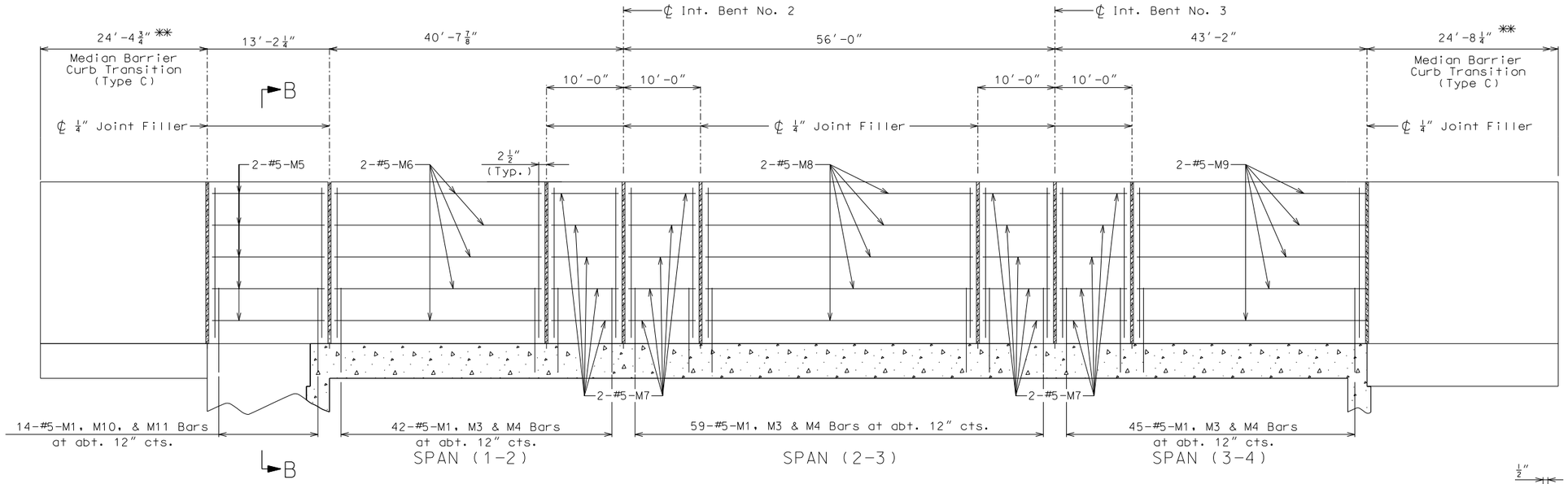
DATE PREPARED	
05/18/09	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	29
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

DESCRIPTION	DATE

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

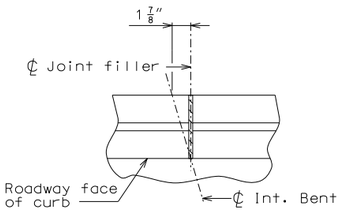
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786

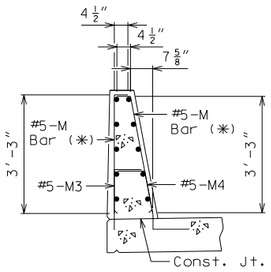


ELEVATION OF LEFT BARRIER (ROADWAY FACE)

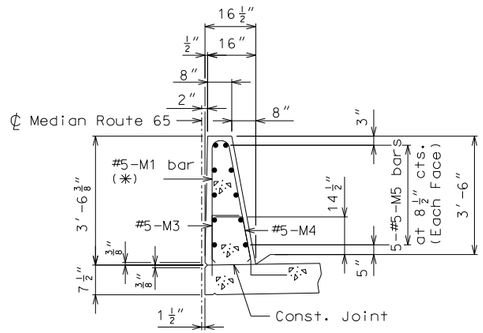
Note: Longitudinal dimensions are horizontal.



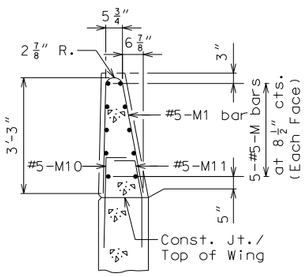
PART PLAN SHOWING SAFETY BARRIER CURB JOINT



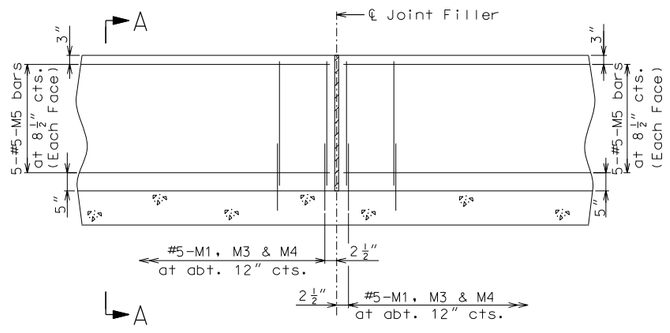
M-BAR PERMISSIBLE ALTERNATE SHAPE



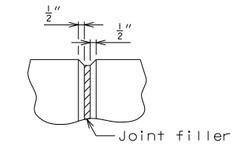
PART SECTION A-A



PART SECTION B-B



PART ELEVATION
(CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



FILLED JOINT DETAIL

Notes:

Concrete in the barrier curb (Type D) shall be Class B-1.

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

All exposed edges of Barrier Curb (Type D) shall have either a 1/2″ radius or a 3/8″ bevel, unless otherwise noted.

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

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

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

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

Notes:

Use a minimum lap of 2′-11″ for #5 horizontal median barrier curb (Type D) bars.

The cross-sectional area above the slab = 3.49 sq. ft.

(*) The M1 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.)

** For details of the median barrier curb transition (Type C), see Sheet No. 32.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:37 -05'00'

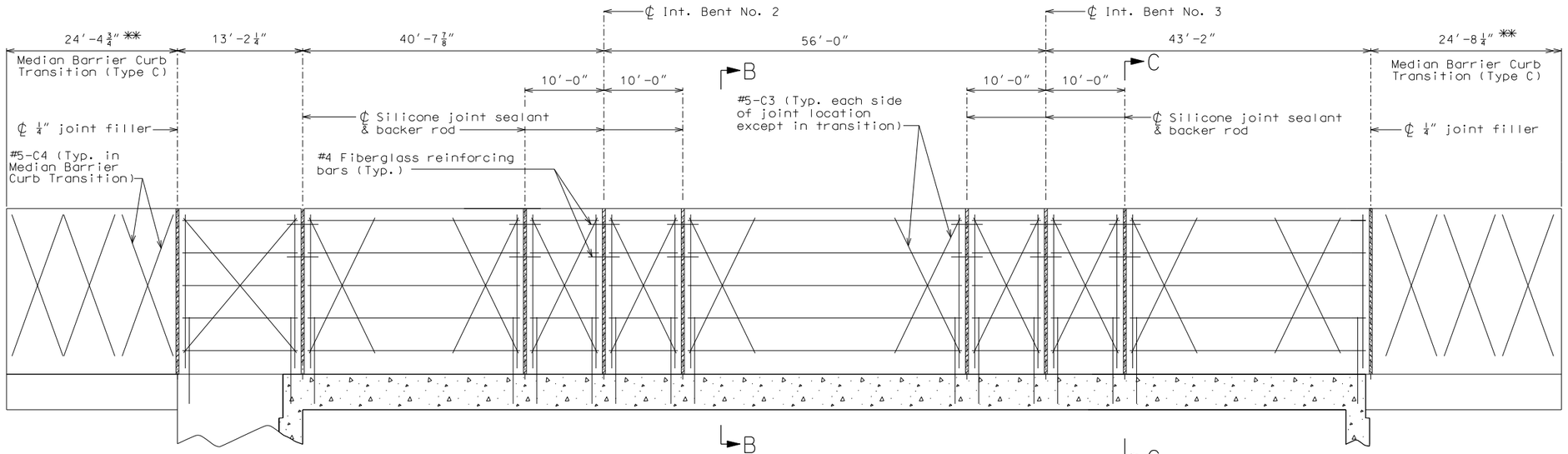
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 30
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DATE	DESCRIPTION

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

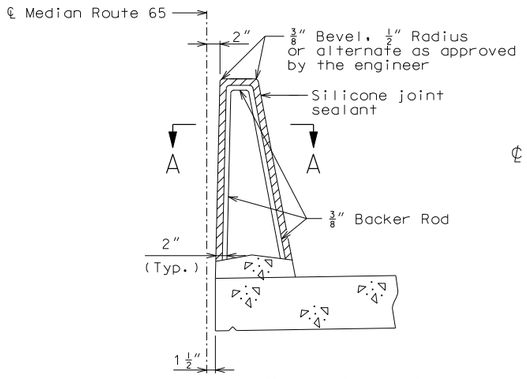
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hansonpros.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786

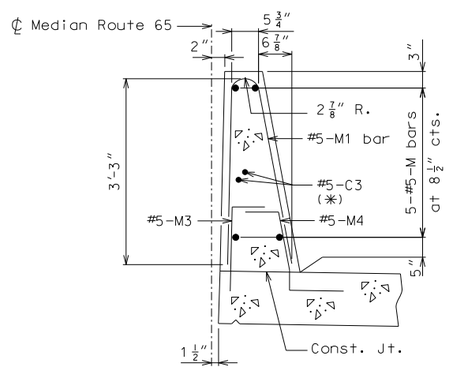


ELEVATION OF LEFT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.



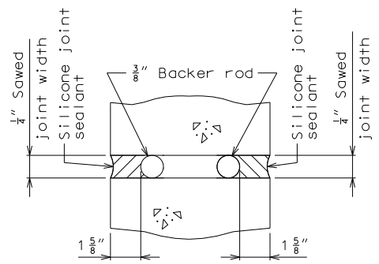
PART SECTION C-C



PART SECTION B-B

Note:

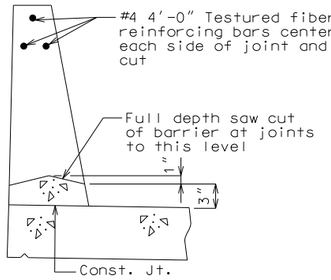
(*) Each side of joint location, (except in transition).



SECTION A-A

Note:

Cost of silicone joint sealant and backer rod, complete-in-place, will be considered completely covered by the contract unit price for barrier curb (Type D).



SECTION C-C

Notes:

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

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

For Slip-Form Option, all sides of the barrier curb (Type D) shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

Concrete in the Barrier Curb (Type D) shall be Class B-1.

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

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

** For details of median barrier curb transition (Type C), see Sheet No. 32.

OPTIONAL SLIP-FORM BARRIER CURB (TYPE D)

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:38 -05'00'

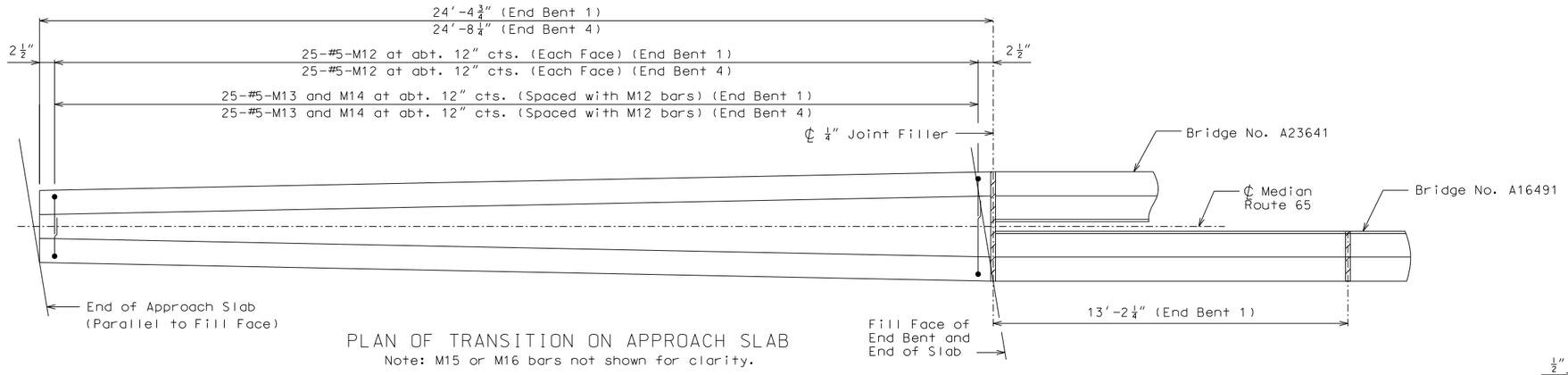
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 31
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION	DATE

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

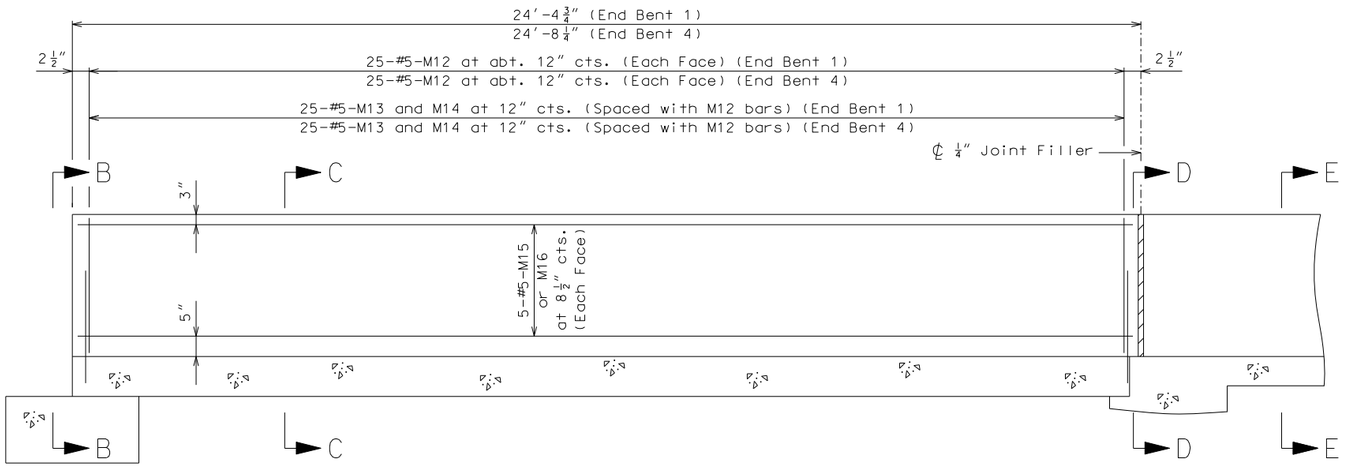
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.HansonInc.com
314.770.0487
Howard N. Gotschall II
Professional Engineer
PE-2004000786

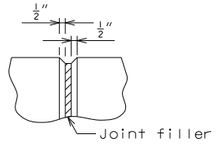


PLAN OF TRANSITION ON APPROACH SLAB

Note: M15 or M16 bars not shown for clarity.



ELEVATION OF TRANSITION ON APPROACH SLAB



FILLED JOINT DETAIL

Notes:

Concrete in the median barrier curb transition (Type C) shall be Class B-1.

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

All exposed edges of median barrier curb transition (Type C) shall have either a ½″ radius or a ⅝″ bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete-in-place will be completely covered by the contract unit price for median barrier curb transition (Type C) per linear foot.

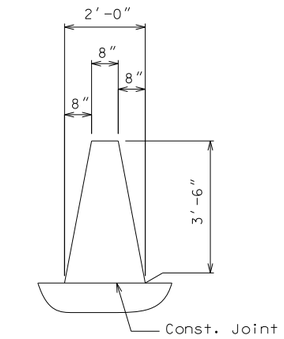
Measurement of median barrier curb transition (Type C) is to the nearest linear foot for each structure, measured along the outside top of slab from end of transition to end of transition.

Concrete traffic barrier delineators shall be placed on top of the median barrier curb transition (Type C) as shown on Missouri Standard Plans delineators will be considered completely covered by the contract unit price for "Median Barrier Curb Transition (Type C)".

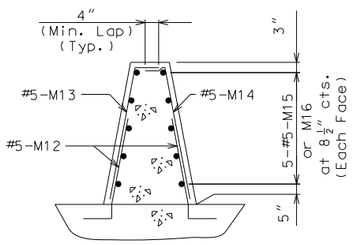
The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing concrete in accordance with Sec 703 will not be permitted.

For details of the approach slab, see Sheet No. 33.

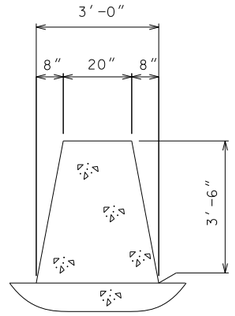
For details of the barrier curb (Type D), see Sheet Nos. 30 and 31.



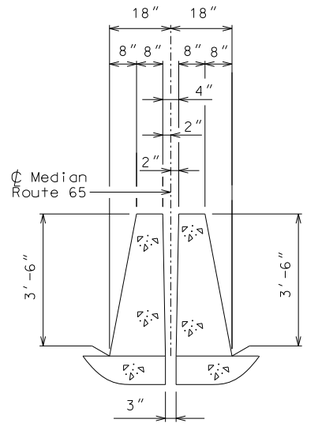
ELEVATION B-B



SECTION C-C



SECTION D-D



SECTION E-E

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

DETAILS OF MEDIAN BARRIER CURB TRANSITION (TYPE C)

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:40 -05'00'

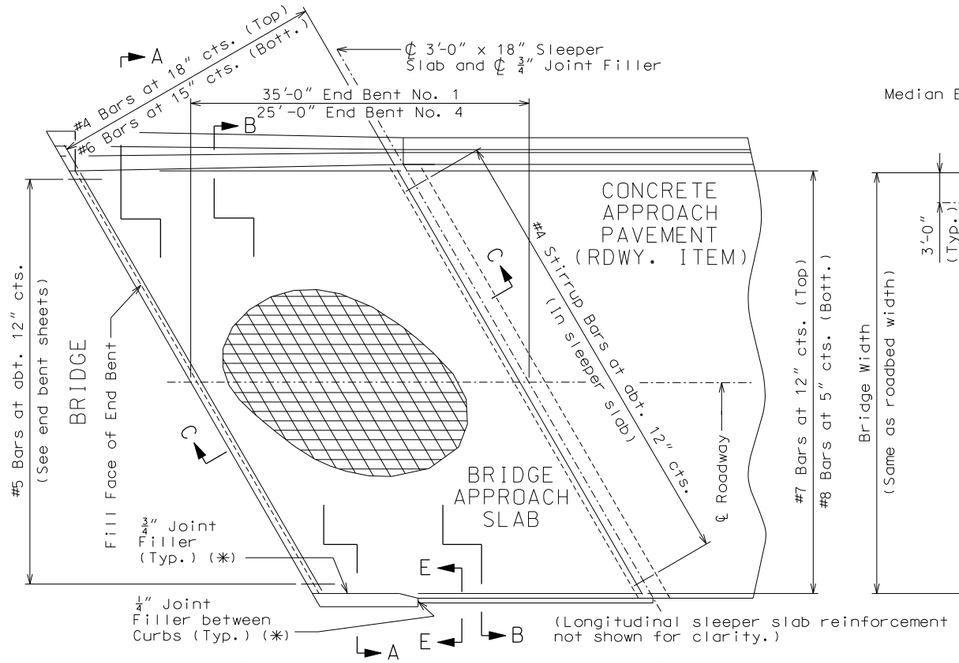
DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 32
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DATE	DESCRIPTION

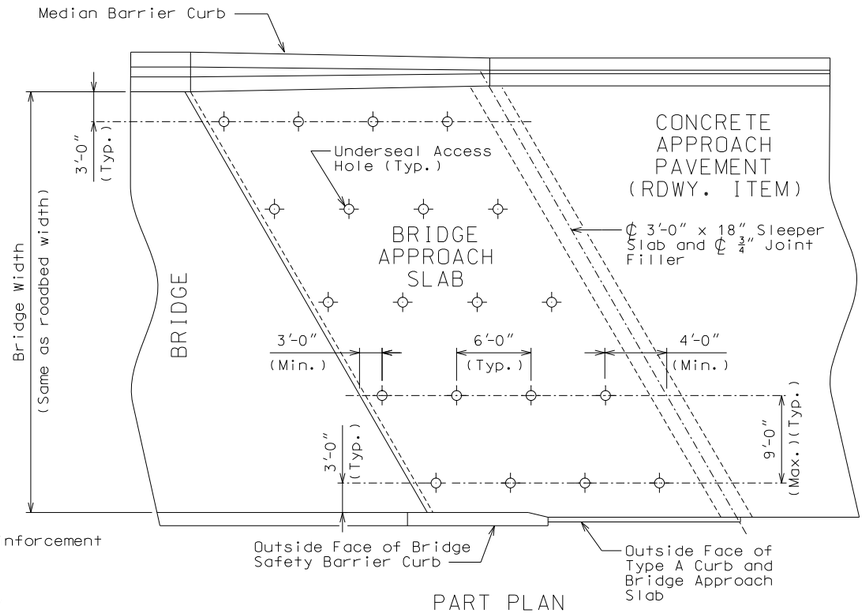
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

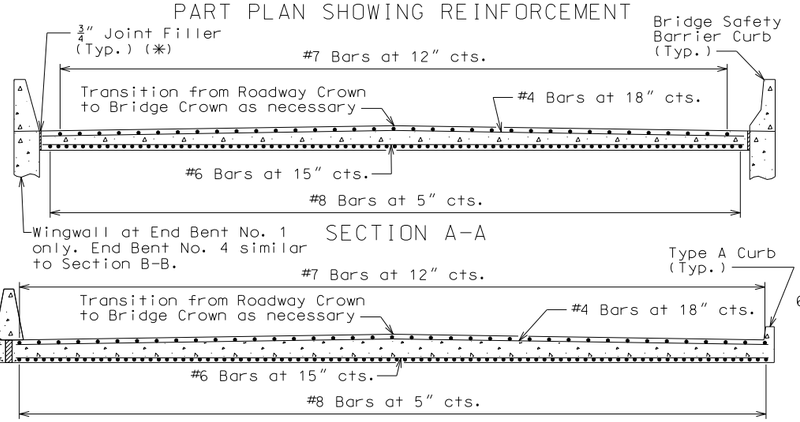
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard N. Gotschall II
314.770.0467 Professional Engineer
PE-2004000786



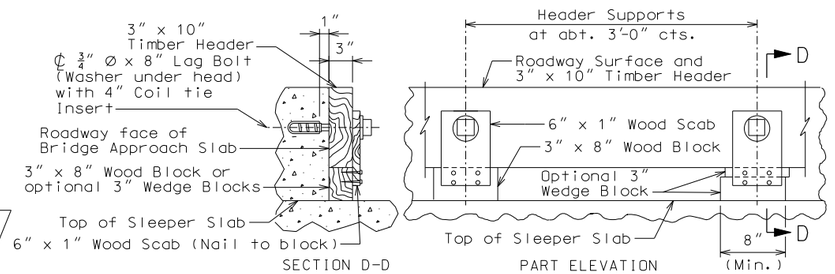
PART PLAN SHOWING REINFORCEMENT



PART PLAN
(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

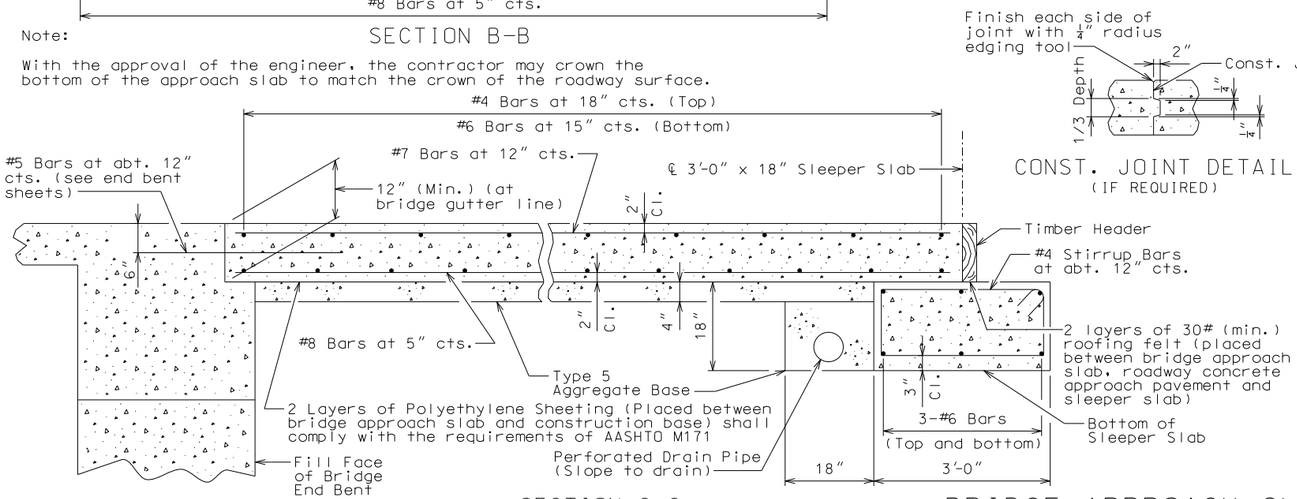


Note:
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.

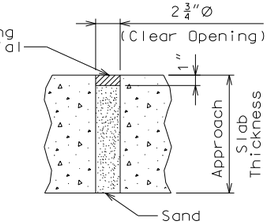


Note: Remove timber header when concrete pavement is placed.

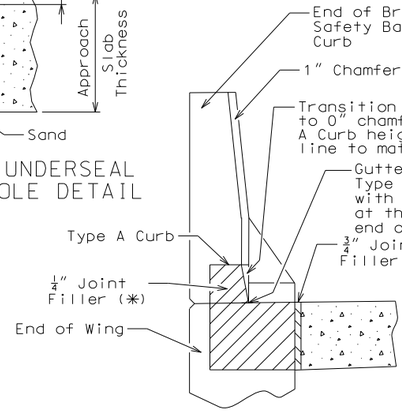
DETAILS OF TIMBER HEADER

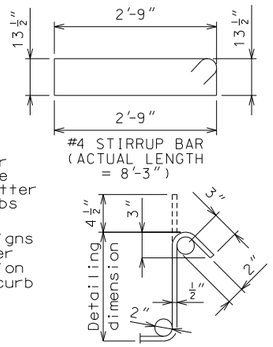


CONST. JOINT DETAIL
(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL





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

GENERAL NOTES:

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

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

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

Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

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

Mechanical bar splices shall be in accordance with Sec 706.

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

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

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

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge or semi-deep slab.

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

For Concrete Approach Pavement details, see roadway plans.

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

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

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

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

BRIDGE APPROACH SLAB

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:41 -05'00'

DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 33
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

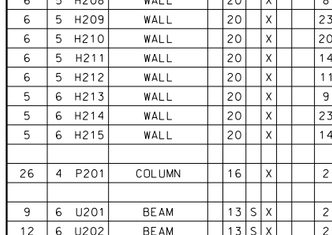
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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 BT NO 2																
7	8	D201	FOOTING		18		X			8 0.000							9 10	9 10	184
5	8	D202	FOOTING		18		X			7 0.000							8 10	8 10	118
13	8	D203	FOOTING		17		X			6 11.000							7 10	7 10	272
2	6	D204	FOOTING		10		X			———	4 4.000	7 6.000	———				16 2	15 10	48
77	5	D205	WALL		17		X			3 7.000							4 2	4 2	335
3	6	D206	WALL		20		X			9 5.000							9 5	9 5	42
3	6	D207	WALL		20		X			20 1.000							20 1	20 1	90
3	6	D208	WALL		20		X			8 5.000							8 5	8 5	38
41	4	D209	WALL		13	S	X			3 9.000	21.000	3 9.000	21.000				11 9	11 6	315
8	9	H201	BEAM		17		X			14 8.000							15 11	15 11	433
8	9	H202	BEAM		20		X			14 8.000							14 8	14 8	399
6	6	H203	BEAM		20		X			14 8.000							14 8	14 8	132
8	6	H204	BEAM		20		X			9 11.000							9 11	9 11	119
5	6	H205	BEAM		7		X			3 7.000	2 11.000						8 10	8 10	66
7	5	H206	WALL		7		X			3 2.000	2 9.000						7 11	7 11	58
6	5	H207	WALL		20		X			9 5.000							9 5	9 5	59
6	5	H208	WALL		20		X			8 0.000							8 0	8 0	50
6	5	H209	WALL		20		X			23 11.000							23 11	23 11	150
6	5	H210	WALL		20		X			20 10.000							20 10	20 10	130
6	5	H211	WALL		20		X			14 6.000							14 6	14 6	91
6	5	H212	WALL		20		X			11 5.000							11 5	11 5	71
5	6	H213	WALL		20		X			9 5.000							9 5	9 5	71
5	6	H214	WALL		20		X			23 11.000							23 11	23 11	180
5	6	H215	WALL		20		X			14 6.000							14 6	14 6	109
26	4	P201	COLUMN		16		X			2 9.000							9 8	9 8	168
9	6	U201	BEAM		13	S	X			2 11.000	3 1.000	2 11.000	3 1.000				13 4	12 10	173
12	6	U202	BEAM		13	S	X			2 11.000	3 5.000	2 11.000	3 5.000				14 0	13 6	243
6	6	U203	BEAM		10	S	X			———	3 5.000	2 11.000	———				9 9	9 5	85
1	6	U204	BEAM		13	S	X			2 9.000	3 5.000	2 9.000	3 5.000				13 8	13 2	20
1	6	U205	BEAM		13	S	X			2 5.000	3 5.000	2 5.000	3 5.000				13 0	12 6	19
13	8	V201	COLUMN		20		X			27 10.000							27 10	27 10	966
90	5	V202	WALL		20		X			8 8.000							8 8	8 8	814
4	W5	W201	BEAM		22		X			1 6.000	9.125						26 1	26 1	18

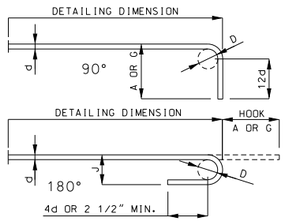
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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 BT NO 3																
7	8	D301	FOOTING		18		X			8 0.000							9 10	9 10	184
5	8	D302	FOOTING		18		X			7 0.000							8 10	8 10	118
13	8	D303	FOOTING		17		X			6 11.000							7 10	7 10	272
2	6	D304	FOOTING		10		X			———	4 4.000	7 6.000	———				16 2	15 10	48
77	5	D305	WALL		17		X			3 7.000							4 2	4 2	335
3	6	D306	WALL		20		X			9 5.000							9 5	9 5	42
3	6	D307	WALL		20		X			20 1.000							20 1	20 1	90
3	6	D308	WALL		20		X			8 5.000							8 5	8 5	38
41	4	D309	WALL		13	S	X			3 9.000	21.000	3 9.000	21.000				11 9	11 6	315
8	9	H301	BEAM		17		X			14 8.000							15 11	15 11	433
8	9	H302	BEAM		20		X			14 8.000							14 8	14 8	399
6	6	H303	BEAM		20		X			14 8.000							14 8	14 8	132
8	6	H304	BEAM		20		X			9 11.000							9 11	9 11	119
5	6	H305	BEAM		7		X			3 7.000	2 11.000						8 10	8 10	66
9	5	H306	WALL		7		X			3 2.000	2 9.000						7 11	7 11	74
8	5	H307	WALL		20		X			9 5.000							9 5	9 5	79
8	5	H308	WALL		20		X			8 0.000							8 0	8 0	67
8	5	H309	WALL		20		X			23 11.000							23 11	23 11	200
8	5	H310	WALL		20		X			20 10.000							20 10	20 10	174
8	5	H311	WALL		20		X			14 6.000							14 6	14 6	121
8	5	H312	WALL		20		X			11 5.000							11 5	11 5	95
5	6	H313	WALL		20		X			9 5.000							9 5	9 5	71
5	6	H314	WALL		20		X			23 11.000							23 11	23 11	180
5	6	H315	WALL		20		X			14 6.000							14 6	14 6	109
25	4	P301	COLUMN		16		X			2 9.000							9 8	9 8	161
9	6	U301	BEAM		13	S	X			2 11.000	3 1.000	2 11.000	3 1.000				13 4	12 10	173
12	6	U302	BEAM		13	S	X			2 11.000	3 8.000	2 11.000	3 8.000				14 6	14 0	252
6	6	U303	BEAM		10	S	X				3 8.000	2 11.000					10 3	9 11	89
1	6	U304	BEAM		13	S	X			2 9.000	3 8.000	2 9.000	3 8.000				14 2	13 8	21
1	6	U305	BEAM		13	S	X			2 5.000	3 8.000	2 5.000	3 8.000				13 6	13 0	20
13	8	V301	COLUMN		20		X			27 5.000							27 5	27 5	952
90	5	V302	WALL		20		X			11 8.000							11 8	11 8	1095
4	W5	W301	BEAM		22		X			1 6.000	9.125						26 1	26 1	18



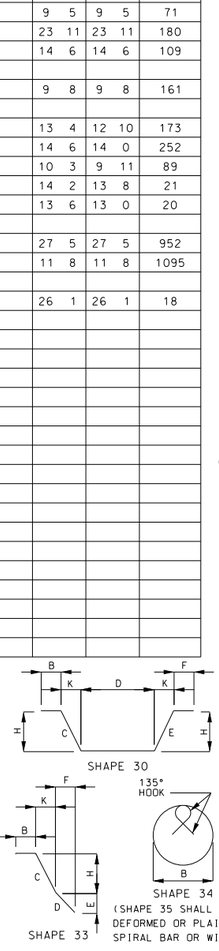
STIRRUP HOOK DIMENSIONS			
GRADES 40 - 50 - 60 KSI			
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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

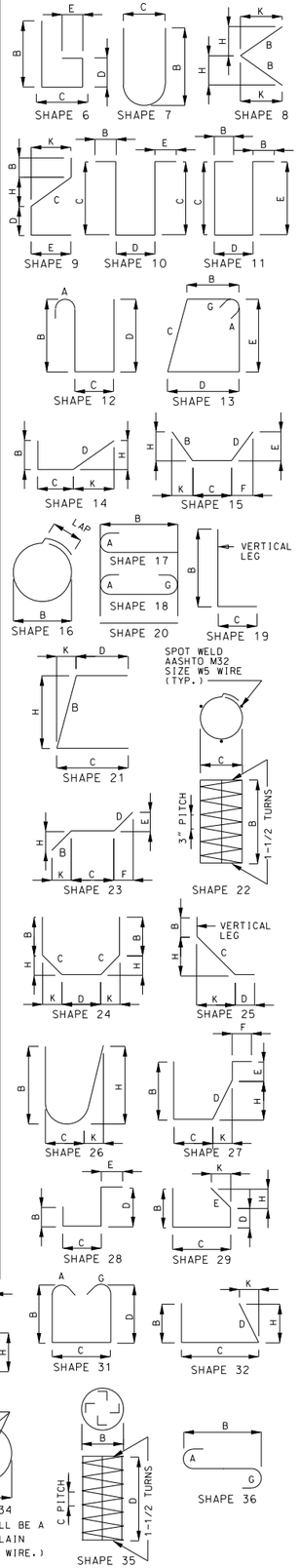


END HOOK DIMENSIONS				
		ALL GRADES		
BAR SIZE	D (IN.)	180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18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



STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:43 -05'00'

DATE PREPARED	
05/18/09	
ROUTE 65	STATE MO
DISTRICT BR	SHEET NO. 34

COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A16491

DESCRIPTION	DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467

Howard N. Gotschall II
Professional Engineer
PE-2004000786

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

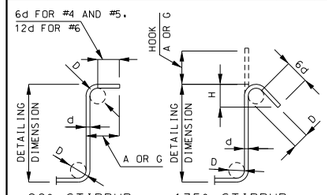
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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.
			SUPERSTRUCTURE																
			END BT NO 1																
5	6	F101	WING BRACE		23					14.000	4 11.000	14.000	10.500	9.375	10.500	9.375	7 3	7 2	54
4	6	F102	DIAPHRAGM		21					2 7.000	———	4 9.000			2 6.750	3.500	7 4	7 2	43
9	6	F103	WING BRACE		23					14.000	5 5.000	14.000	9.375	10.500	9.375	10.500	7 9	7 8	104
3	6	F104	DIAPHRAGM		21					2 8.000	4 9.000	———			2 7.750	3.625	7 5	7 3	33
12	6	H101	BEAM		20					14 4.000							14 4	14 4	258
4	6	H102	BEAM		20			V	1	11 8.500							11 9	11 9	
			INCREMENT=							11 5.000							11 5	11 5	70
			1.125 INCH																
7	6	H103	DIAPHRAGM		20					23 1.000							23 1	23 1	243
9	6	H104	DIAPHRAGM		20					35 3.000							35 3	35 3	477
2	6	H105	DIAPHRAGM		20					11 4.000							11 4	11 4	34
4	6	H106	DIAPHRAGM	E	20					23 6.000							23 6	23 6	141
4	6	H107	DIAPHRAGM	E	20					35 3.000							35 3	35 3	212
53	5	H108	DIAPHRAGM	E	20					2 6.000							2 6	2 6	138
4	8	H109	WING	E	20					11 6.000							11 6	11 6	123
6	8	H110	WING		20					11 6.000							11 6	11 6	184
10	6	H111	WING		20					10 6.000							10 6	10 6	158
10	6	H112	WING		20					8 10.000							8 10	8 10	133
2	8	H113	WING	E	20					12 6.000							12 6	12 6	67
6	8	H114	WING		20					12 6.000							12 6	12 6	200
18	6	H115	WING		20					11 6.000							11 6	11 6	311
8	5	U101	BEAM		32	S				5 9.000	3 3.000	5 10.125			5 9.000	12.625	14 10	14 8	122
4	5	U102	BEAM		32	S				4 10.000	3 3.000	4 11.000			4 10.000	10.625	13 0	12 10	54
4	4	U103	BEAM		13	S				2 7.000	3 8.000	3 3.000	3 7.000				13 10	13 7	36
2	4	U104	BEAM		9	S				———	3 8.000	2 7.000	3 7.000		7.875	3 7.000	9 10	9 8	13
36	5	U105	DIAPHRAGM	E	10	S				———	3 7.000	2 3.000	———				9 5	9 2	344
36	6	U106	DIAPHRAGM		19	S				2 7.000	2 9.000						5 4	5 2	279
9	5	U107	DIAPHRAGM	E	10	S				———	2 6.000	2 3.000	———				7 3	7 0	66
9	6	U108	DIAPHRAGM		19	S				1 6.000	2 9.000						4 3	4 1	55
71	6	U109	DIAPHRAGM	E	19	S				3 1.000	4 6.000						7 7	7 5	791
2	5	V101	BEAM		20					5 11.000							5 11	5 11	12
2	6	V102	DIAPHRAGM		20					1 6.000							1 6	1 6	5
8	6	V103	DIAPHRAGM		20					2 7.000							2 7	2 7	31
20	6	V104	WING		20					6 8.000							6 8	6 8	200
24	6	V105	WING		20					6 5.000							6 5	6 5	231
			SUPERSTRUCTURE																
			END BT NO 4																
5	6	F401	WING BRACE		23					14.000	5 5.000	14.000	9.375	10.500	9.375	10.500	7 9	7 8	58
4	6	F402	DIAPHRAGM		21					2 8.000	4 9.000	———			2 7.750	3.625	7 5	7 3	44
4	6	F403	DIAPHRAGM		21					2 8.000	———	4 6.000			2 7.750	3.625	7 2	7 0	42
8	6	H401	BEAM		20			V	2	15 2.000							15 2	15 2	
			INCREMENT=							14 10.500							14 11	14 11	181
			1.125 INCH																
2	6	H402	BEAM		20					14 10.000							14 10	14 10	45
2	6	H403	BEAM		20					15 2.000							15 2	15 2	46
4	6	H404	BEAM		20			V	1	11 7.500							11 8	11 8	
			INCREMENT=							11 4.000							11 4	11 4	69
			1.125 INCH																

BILL OF REINFORCING STEEL

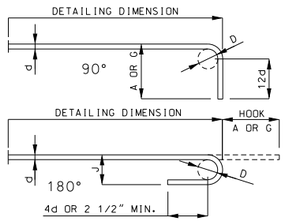
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
7	6	H405	DIAPHRAGM		20					23 1.000							23 1	23 1	243
9	6	H406	DIAPHRAGM		20					35 3.000							35 3	35 3	477
2	6	H407	DIAPHRAGM		20					11 1.000							11 1	11 1	33
4	6	H408	DIAPHRAGM	E	20					23 6.000							23 6	23 6	141
4	6	H409	DIAPHRAGM	E	20					35 3.000							35 3	35 3	212
54	5	H410	DIAPHRAGM	E	20					2 6.000							2 6	2 6	141
2	8	H411	WING	E	20					11 4.000							11 4	11 4	61
6	8	H412	WING		20					11 4.000							11 4	11 4	182
10	6	H413	WING		20					10 4.000							10 4	10 4	155
10	6	H414	WING		20					8 8.000							8 8	8 8	130
8	5	U401	BEAM		32	S				5 9.000	3 3.000	5 10.125			5 9.000	12.625	14 10	14 8	122
3	5	U402	BEAM		32	S				4 10.000	3 3.000	4 11.000			4 10.000	10.625	13 0	12 10	40
1	5	U403	BEAM		32	S				4 10.000	3 2.750	4 10.875			4 10.000	10.125	13 0	12 9	13
4	4	U404	BEAM		13	S				2 7.000	3 8.000	3 3.000	3 7.000				13 10	13 7	36
2	4	U405	BEAM		9	S				———	3 8.000	2 7.000	3 7.000		7.875	3 7.000	9 10	9 8	13
37	5	U406	DIAPHRAGM	E	10	S				———	3 7.000	2 3.000	———				9 5	9 2	354
37	6	U407	DIAPHRAGM		19	S				2 7.000	2 9.000						5 4	5 2	287
9	5	U408	DIAPHRAGM	E	10	S				———	2 6.000	2 3.000	———				7 3	7 0	66
9	6	U409	DIAPHRAGM		19	S				1 6.000	2 9.000						4 3	4 1	55
71	6	U410	DIAPHRAGM	E	19	S				3 1.000	4 6.000						7 7	7 5	791
2	5	V401	BEAM		20					5 11.000							5 11	5 11	12
2	6	V402	DIAPHRAGM		20					1 6.000							1 6	1 6	5
8	6	V403	DIAPHRAGM		20					2 7.000							2 7	2 7	31
20	6	V404	WING		20					6 8.000							6 8	6 8	200
			SLAB																
281	6	S1	SLAB	E	20					23 4.000							23 4	23 4	9848
276	6	S2	SLAB	E	20					35 2.000							35 2	35 2	14578
279	5	S3	SLAB	E	20					23 4.000							23 4	23 4	6790
276	5	S4	SLAB	E	20					35 2.000							35 2	35 2	10123
5	6	S5	SLAB	E	20			V	1	4 5.875							4 6	4 6	
			INCREMENT=							22 0.375							22 1	22 1	100
			4′-4 3/8″																
4	6	S6	SLAB	E	20			V	1	5 9.625							5 10	5 10	
			INCREMENT=							18 11.500							19 0	19 0	75
			4′-4 3/8″																
8	6	S7	SLAB	E	20			V	1	2 2.375							2 3	2 3	
			INCREMENT=							32 10.750							32 11	32 11	211
			4′-4 3/8″																
8	6	S8	SLAB	E	20			V	1	2 3.625							2 4	2 4	
			INCREMENT=							33 0.000							33 0	33 0	212
			4′-4 3/8″																
5	5	S9	SLAB	E	20			V	1	4 5.875							4 6	4 6	
			INCREMENT=							22 0.375							22 1	22 1	69
			4′-4 3/8″																
4	5	S10	SLAB	E	20			V	1	5 9.625							5 10	5 10	
			INCREMENT=							18 11.500							19 0	19 0	52
			4′-4 3/8″																
8	5	S11	SLAB	E	20			V	1	2 2.375							2 3	2 3	
			INCREMENT=							32 10.750							32 11	32 11	147
			4′-4 3/8″																
8	5	S12	SLAB	E	20			V	1	2 3.625							2 4	2 4	
			INCREMENT=							33 0.000							33 0	33 0	147
			4′-4 3/8″																
436	5	S13	SLAB	E	20					37 6.000							37 6	37 6	17053
172	6	S14	SLAB	E	20					30 6.000							30 6	30 6	7879

TWO ADDITIONAL #6-S1 & #8-H109 ARE INCLUDED IN THE BAR BILL FOR TESTING.



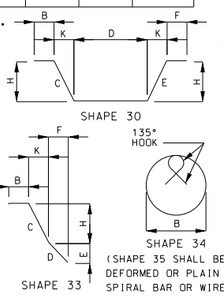
STIRRUP HOOK DIMENSIONS			
GRADES 40 - 50 - 60 KSI			
BAR SIZE	D (IN.)	90° HOOK	135° HOOK
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2″	4 1/2″	4 1/2″	3″
#5	2 1/2″	6″	5 1/2″	3 3/4″
#6	4 1/2″	12″	8″	4 1/2″

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

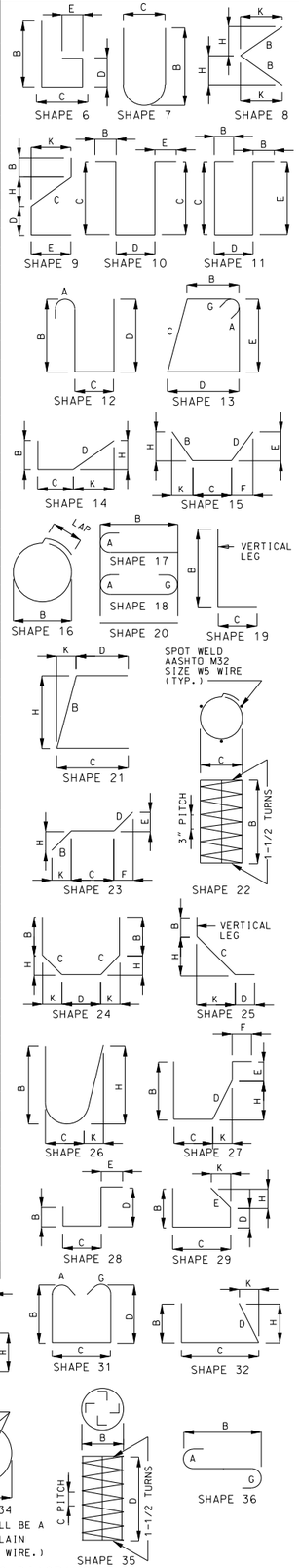


END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4″	5″	3″	6″
#4	3″	6″	4″	8″
#5	3 3/4″	7″	5″	10″
#6	4 1/2″	8″	6″	12″
#7	5 1/4″	10″	7″	14″
#8	6″	11″	8″	16″
#9	9 1/2″	15″	11 3/4″	19″
#10	10 3/4″	17″	13 1/4″	22″
#11	12″	19″	14 3/4″	2′-0″
#14	18 1/4″	2′-3″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



Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:44 -05'00'

DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 35
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION	DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467

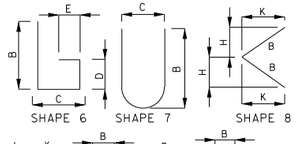
Howard N. Gotschall II
Professional Engineer
PE-2004000786

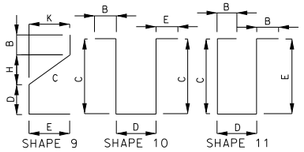
BILL OF REINFORCING STEEL

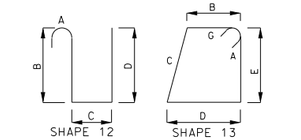
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B	C	D	E	F	H	K	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			BARRIER CURB																
48	5	K1	BARRIER CURB	E	19	S				2 5.000	5.125						2 10	2 9	138
48	5	K2	BARRIER CURB	E	14	S				5.125	11.125	18.000			2.000	17.875	2 10	2 9	138
26	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	174
22	5	K4	BARRIER CURB	E	7					3 0.000	6.000						6 3	6 3	143
2	5	K5	BARRIER CURB	E	25	S				2 6.500	6.750	4.375			5.500	4.000	3 6	3 5	7
2	5	K6	BARRIER CURB	E	25	S				2 5.500	7.875	4.375			6.500	4.500	3 6	3 5	7
2	5	K7	BARRIER CURB	E	25	S				2 4.125	9.625	4.375			7.875	5.500	3 6	3 5	7
2	5	K8	BARRIER CURB	E	25	S				2 2.750	11.250	4.375			9.250	6.500	3 6	3 6	7
24	5	K9	BARRIER CURB	E	20					5 7.000							5 7	5 7	140
22	4	K10	BARRIER CURB	E	20					8 4.000							8 4	8 4	122
2	5	K11	BARRIER CURB	E	8					2 2.125					2 2.000	2.375	4 4	4 4	9
145	5	R1	BARRIER CURB	E	26	S				2 6.000	4.250				2 6.000	3.000	5 3	5 3	794
145	5	R3	BARRIER CURB	E	19	S				17.000	6.000						1 11	1 10	277
145	5	R4	BARRIER CURB	E	27	S				———	6.000	11.250	7.000	12.000	9.250	6.375	3 0	2 10	428
14	5	R5	BARRIER CURB	E	20					30 3.000							30 3	30 3	442
30	5	R6	BARRIER CURB	E	20					9 8.000							9 8	9 8	302
7	5	R7	BARRIER CURB	E	20					35 8.000							35 8	35 8	260
20	5	C1	SLIP FORM	E	20					10 0.000							10 0	10 0	209
4	5	C2	SLIP FORM	E	20					8 0.000							8 0	8 0	33
160	5	M1	MED BARRIER	E	26	S				3 3.000	5.750				3 3.000	6.875	6 10	6 10	1140
146	5	M3	MED BARRIER	E	19	S				20.000	10.000						2 6	2 5	368
146	5	M4	MED BARRIER	E	27	S				———	10.000	14.250	5.500	12.000	14.000	2.625	3 6	3 3	495
10	5	M5	MED BARRIER	E	20					12 10.000							12 10	12 10	134
10	5	M6	MED BARRIER	E	20					30 4.000							30 4	30 4	316
40	5	M7	MED BARRIER	E	20					9 8.000							9 8	9 8	403
10	5	M8	MED BARRIER	E	20					35 8.000							35 8	35 8	372
10	5	M9	MED BARRIER	E	20					32 10.000							32 10	32 10	342
14	5	M10	MED BARRIER	E	19	S				3 6.000	10.000						4 4	4 3	62
14	5	M11	MED BARRIER	E	27	S				———	10.000	14.250	2 1.000	———	14.000	2.625	4 1	4 0	58
100	5	M12	MED BARRIER	E	27	S				———	———	2 0.375	7.000	12.000	2 0.000	4.500	3 7	3 6	365
50	5	M13	MED BARRIER	E	15	S				3 2.625	4.500	———	———	———	3 2.000	7.250	3 7	3 6	183
50	5	M14	MED BARRIER	E	15	S	V	2		3 2.625	4.500	———	———	———	3 2.000	7.250	3 7	3 6	
			INCREMENT=$\frac{1}{2}$"							3 2.625	16.500	———	———	———	3 2.000	7.250	4 7	4 6	209
10	5	M15	MED BARRIER	E	20					24 1.000							24 1	24 1	251
10	5	M16	MED BARRIER	E	20					24 4.000							24 4	24 4	254
22	5	C3	SLIP FORM	E	20					10 0.000							10 0	10 0	229
12	5	C4	SLIP FORM	E	20					8 0.000							8 0	8 0	100

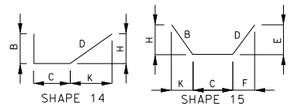
BILL OF REINFORCING STEEL

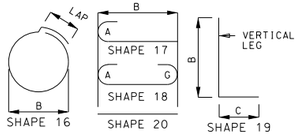
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B	C	D	E	F	H	K	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			TOTALS																
	4																		1057
	5																		4373
	5			E															35490
	6																		7705
	6			E															35191
	8																		3632
	8			E															251
	9																		1664
	W5																		36
			TOTAL																18467
			TOTAL	E															70932
			SLAB ON STEEL																
	4																		98
	5																		375
	5			E															35490
	6																		4820
	6			E															35191
	8																		566
	8			E															251
			TOTAL																5859
			TOTAL	E															70932
			REINFORCING STEEL (RETAINING WALL)																
	4																		630
	5																		3998
	6																		1060
			TOTAL																5688
			REINFORCING STEEL (BRIDGES)																
	4																		329
	6																		1825
	8																		3066
	9																		1664
	W5																		36
			TOTAL																6920
			SAFETY BARRIER CURB																
	4			E															122
	5			E															3273
			TOTAL	E															3395
			BARRIER CURB (TYPE D)																
	5			E															4952
			TOTAL	E															4952
			SLIP FORM																
	5			E															571
			TOTAL	E															571

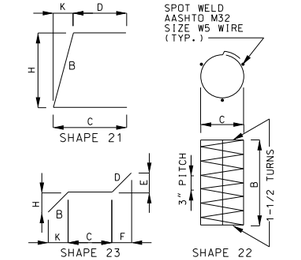


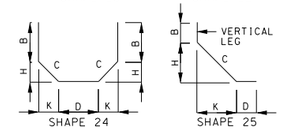


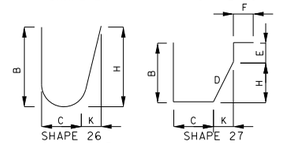


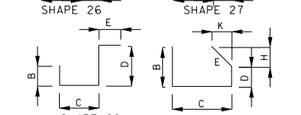


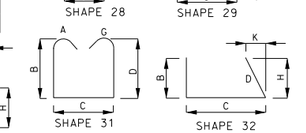


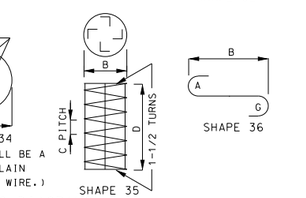




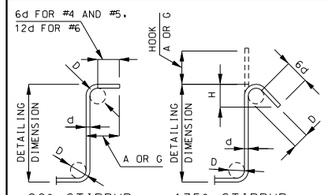








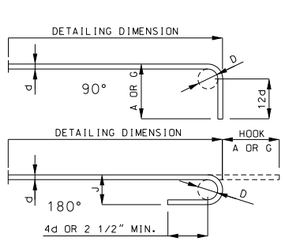
BENDING DIAGRAMS



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

		HOOK A OR G	APPROX. H
#4	2"	4 1/2"	3"
#5	2 1/2"	6"	3 3/4"
#6	4 1/2"	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		90° HOOKS
		A OR G	J	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"

TWO ADDITIONAL #4-K10 & #5-R6 ARE INCLUDED IN THE BAR BILL FOR TESTING.

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.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2009.05.18 08:37:45 -05'00'

DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 36
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

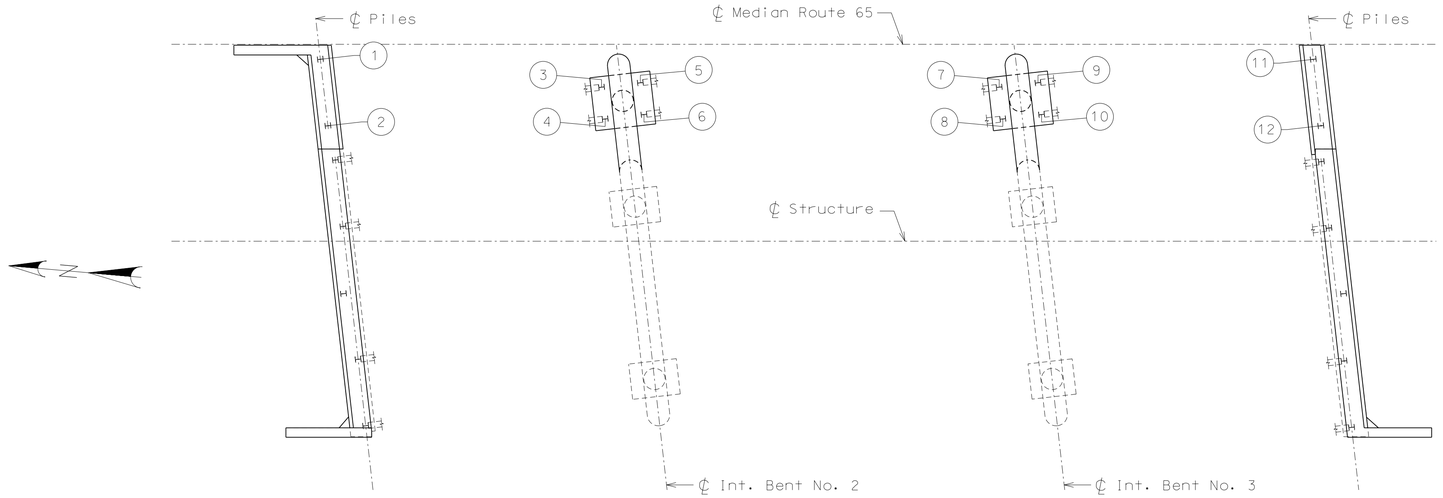
DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467

Howard N. Gotschall II
Professional Engineer
PE-2004000786



End Bent No. 1 Int. Bent No. 2 Int. Bent No. 3 End Bent No. 4

PLAN SHOWING PILE NUMBERING FOR RECORDING "AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			End Bent No. 1
1			
2			
			Int. Bent No. 2
3			
4			
5			
6			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			Int. Bent No. 3
7			
8			
9			
10			
			End. Bent No. 4
11			
12			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS

NOTE: INDICATE IN REMARKS COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

NOTE: THIS SHEET TO BE COMPLETED BY MoDOT CONSTRUCTION PERSONNEL.

Designed: BWC 04/24/09
Detailed: MEY 05/18/09
Checked: HNG 05/18/09

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

DATE PREPARED 05/18/09
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 37
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION | DATE

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

© Copyright Hanson Professional Services Inc. 2008

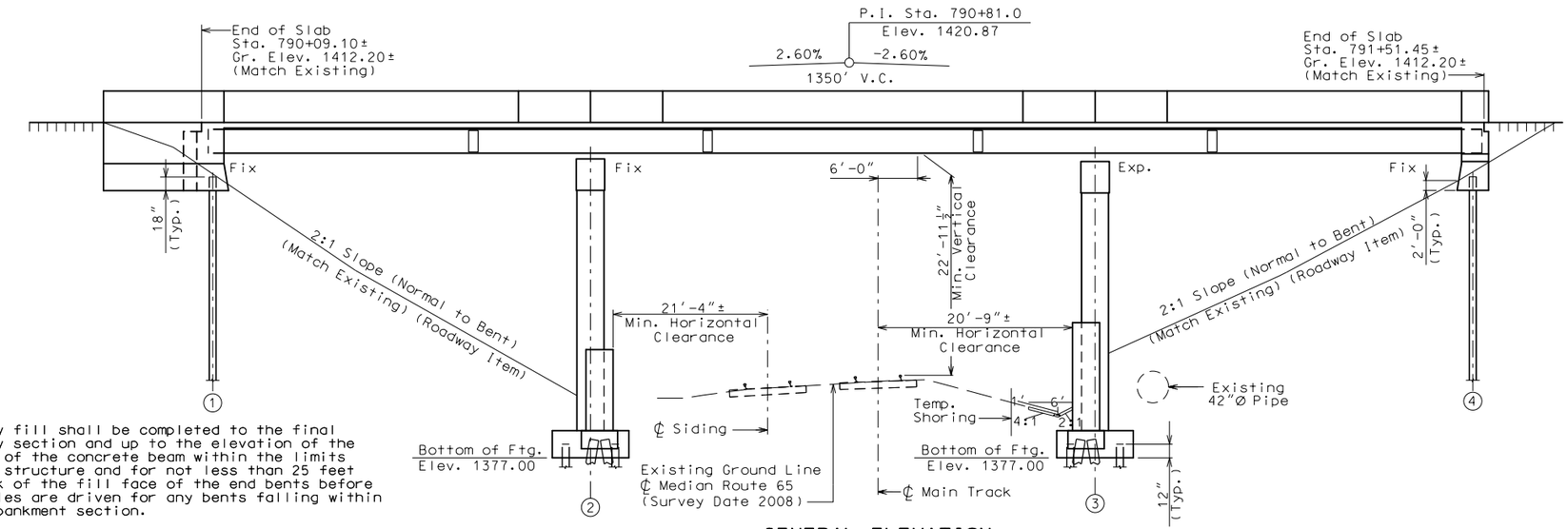
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Project Engineer
PE-2004000786

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P., WIDEN AND REDECK (42'-56'-42') CONTINUOUS COMPOSITE I-BEAM SPANS

FINAL PLANS

SEC/SUR 9 TWP 29N RGE 21W

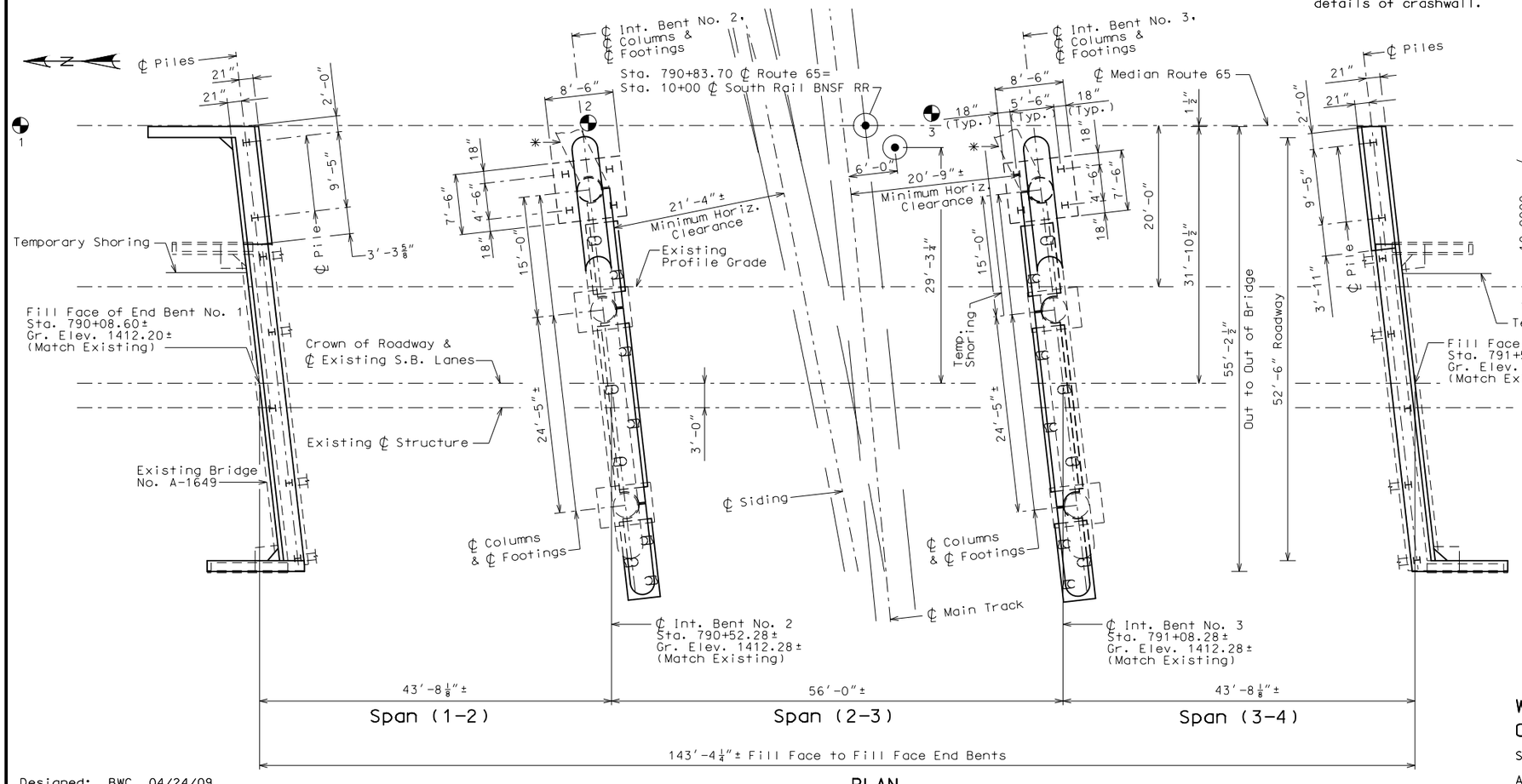


Note:

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.

GENERAL ELEVATION

✱ Note: See plans for Bridge No. A23641 for details of crashwall.



PLAN

"⊕" Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet for this structure. Boring data for the numbered locations is shown on Sheet No. 5. 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.

Notice and Disclaimer Regarding Pinnacled Rock:

The State of Missouri and, in particular, the area that encompasses this project is known to have, at least in part, bedrock that exhibits karst conditions. One karst condition is sometimes referred to as pinnacle or pinnacled rock. The nature of this condition makes graphical representations of this pinnacled zone difficult to classify and excavate. It is incumbent upon the bidder to investigate above surface warnings of this rock formation (road cuts, quarry sites and any other exposed faces) and be aware that the same is a regularly ocurring phenomenon and is not to be regarded as a differing site condition or result in changes in the work, regardless of what any actual boring or lines on the plans may or may not tend to indicate.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

4 For General Notes, Location Sketch, Foundation Data, Estimated Quantities, and Estimated Quantities for Slab on Steel, see Sheet No. 2.

All bents are parallel.

All longitudinal dimensions are horizontal.

All elevations and dimensions are based on the existing plans while using the 1988 NAVD datum. The existing plans used the 1927 USGS datum: which is, on average, 0.43 ft. lower than the 1988 NAVD datum. The contractor shall field verify prior to construction.

Note:

Underground facilities, structures and utilities have been platted from available surveys and records. The commission does not warrant the locations of these facilities as precise. It is possible there may be others, the existence of which is presently not known or shown. It shall be the contractor's responsibility to determine the existence and precise location of all facilities and to avoid damage to them. See the job special provisions (Roadway) for a list of utility companies on or within the vicinity of the project limits.

Bench Marks (NAVD 88 Datum)

City B.M. 115: Alum. disk in conc. (City B.M. #115) 275'± north of railroad, west side S.B.L. Rte. 65, Elevation = 1407.00
Bolt Head In Northwest Corner Of Safety Barrier Wall = 1414.68
Bolt Head In Southwest Corner Of Safety Barrier Wall = 1414.65

DATE	DESCRIPTION
05/18/10	1 Int. Bent pile batter removed.
10/06/10	2 Revised min. horizontal clear.

DATE PREPARED 10/06/10

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	1

COUNTY GREENE

JOB NO. J8P0605E

CONTRACT ID. 090626-802

PROJECT NO. FAF-65-2(65)

BRIDGE NO. A16491

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

WIDENING AND REDECKING OF BRIDGE OVER BNSF CUBA SUB.

STATE ROAD FROM ROUTE I-44 TO BUSINESS ROUTE 65

ABOUT 1.2 MILES S OF ROUTE I-44

STA. 790+08.60±

STD. 606.22
STD. 609.00
STD. 609.70
STD. 617.10
STD. 617.20
STD. 706.35

FINAL PLANS

Final Quantities

	Item		Substr.	Superstr.	Total
	Class 1 Excavation	cu. yard	311	-	311 ✓
	Temporary Shoring	lump sum	1	-	1 ✓
	Protective Shield System	lump sum	1	-	1 ✓
	Removal and Storage of Existing Bridge Rails	linear foot	-	282	282 ✓
*	Removal of Existing Bridge Decks	sq. foot	-	5843	5843 ✓
	Partial Removal of Substructure Concrete	lump sum	-	1	1 ✓
	Bridge Approach Slab (Bridge)	sq. yard	-	362	362 ✓
	Structural Steel Piles (10 in.)	linear foot	239	-	239 ✓
	Pre-bore for Piling	linear foot	80	-	80 ✓
	Pile Point Reinforcement	each	12	-	12 ✓
	Micropiles	each	18	-	18 ✓
	Class B Concrete (Substructure)	cu. yard	58.3	-	58.3 ✓
	Class B Concrete (Retaining Walls)	cu. yard	128.7	-	128.7 ✓
	Slab on Steel	sq. yard	-	873	873 ✓
**	Safety Barrier Curb	linear foot	-	162	162 ✓
**	Barrier Curb (Type D)	linear foot	-	153	153 ✓
	Median Barrier Curb Transition (Type C)	linear foot	-	49	49 ✓
	Reinforcing Steel (Retaining Wall)	pound	5690	-	5690 ✓
	Reinforcing Steel (Bridges)	pound	6920	-	6920 ✓
	Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound	-	35720	35720 ✓
	Slab Drain	each	-	28	28 ✓
	Drainage System (On Structure)	lump sum	-	1	1 ✓
	Surface Preparation for Overcoating Structural Steel	sq. foot	-	5300	5300 ✓
	Calcium Sulfonate Rust Penetrating Sealer	lump sum	-	1	1 ✓
	Calcium Sulfonate Primer	sq. foot	-	5300	5300 ✓
	Calcium Sulfonate Topcoat	sq. foot	-	5300	5300 ✓
	Vertical Drain at End Bents	each	-	2	2 ✓
	Plain Neoprene Bearing Pad	each	-	4	4 ✓
	Laminated Neoprene Bearing Pad Assembly	each	-	4	4 ✓

All concrete between the upper and lower construction joints and above the top of the existing beam in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the end bents (except resin anchor systems) is included in the Estimated Quantities for Slab on Steel.

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

* Includes removal and disposal of slab, curbs, shear studs, end posts, and expansion devices.

** Safety barrier curb and barrier curb (Type D) shall be cast-in-place option or slip-form option.

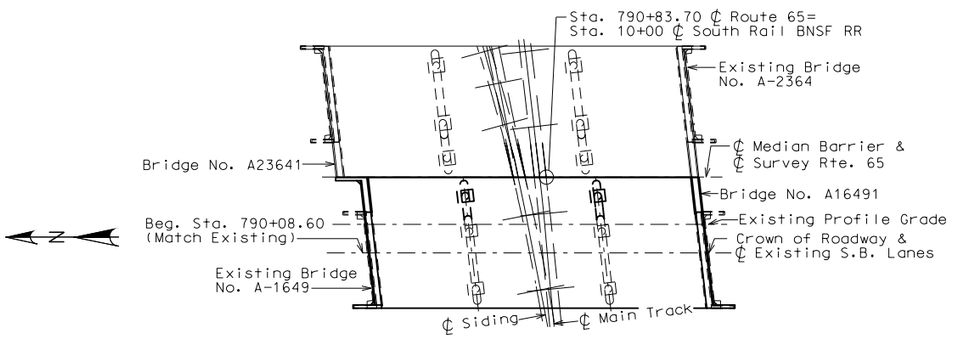
Quantities for Slab on Steel

Item		Total
Class B-2 Concrete	cu. yard	233.0
Reinforcing Steel	pound	5860
Reinforcing Steel (Epoxy Coated)	pound	70930

The table of Estimated Quantities for Slab on Steel 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 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.

Slab shall be cast-in-place. Precast prestressed panels will not be permitted.



LOCATION SKETCH

General Notes:

Design Specifications:

2002 - AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A

Design Loading:

HS20-44
35#/sq. ft. Future Wearing Surface
Earth 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress-Case I

Design Unit Stresses:

Class B Concrete (Substructure)		f'c = 3,000 psi
Class B Concrete (Retaining Walls)		f'c = 3,000 psi
Class B-1 Concrete (Safety Barrier Curb & Barrier Curb (Type D) & Median Barrier Curb Transition (Type C))		f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Safety Barrier Curb, Barrier Curb (Type D) & Median Barrier Curb Transition (Type C))		f'c = 4,000 psi
Reinforcing Steel (Grade 60)		fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50)		fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36)	fb = 9,000 psi	fy = 36,000 psi

Neoprene Bearing Pads:

Bearings shall be 60 durometer neoprene pads.

Fabricated Steel Connections:

Field connections shall be made with $\frac{3}{4}$" diameter high strength bolts and $\frac{13}{16}$" diameter holes, except as noted.

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$\frac{1}{2}$", unless otherwise shown.

New Structural Steel Protective Coatings:

Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The prime coat shall be applied in the fabrication shop. The cost of the prime coat will be considered completely covered by the contract unit price for the Fabricated Structural Steel.

No intermediate or finish field coats to be applied.

Existing Structural Steel Protective Coatings:

Protective Coating: Calcium Sulfonate System in accordance with Sec 1081.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Overcoating of Structural Steel (Calcium Sulfonate System)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Overcoating Structural Steel".

Rust Penetrating Sealer: The rust penetrating sealer shall be applied to the surfaces of all bearings, overlapping steel plates, pin connections, pin and hanger connections and other locations where rust bleeding, pack rust and layered rust is occurring. The cost of the rust penetrating sealer will be considered completely covered by the contract lump sum price for "Calcium Sulfonate Rust Penetrating Sealer".

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Calcium Sulfonate Primer".

Topcoat: The cost of the topcoat will be considered completely covered by the contract unit price per sq. foot for "Calcium Sulfonate Topcoat".

Traffic Control:

Traffic over the existing structures and new structure to be maintained during construction in accordance with the traffic control plans. See Stage Construction Details on Sheet Nos. 3 and 4 for traffic staging on bridge.

Miscellaneous:

A minimum vertical clearance of 22'-11$\frac{1}{2}$" from top of rail and a minimum lateral clearance of 12'-0" from the ℄ track shall be maintained during construction.

The cost of the protective shield system will be considered completely covered by the contract lump sum price for Protective Shield System. For the limits of the protective shield system over the tracks, see the Special Provisions (Bridge) for the BNSF Demolition Frame Protection Details.

The contractor shall follow the requirements of the BNSF Demolition Frame Protection Details. For additional requirements regarding the BNSF Railroad, see Special Provisions (Bridge).

High Strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106 and Field Section (FS-712) from Materials Manual.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering new material.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars, unless otherwise noted.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

The existing bridge rails and posts shall be stored at a location as designated by the engineer on the MoDOT Maintenance Lot at the facility at 2455 Mayfair in Springfield. Contractor shall notify Maintenance Superintendent to schedule delivery at least 48 hours prior to the delivery.

Resin Anchors:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Class B Concrete (Substructure).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #6 Grade 60 reinforcing bar 3'-6" long, unless noted on the plans, shall be substituted for the $\frac{3}{4}$"Ø threaded rod.

Foundation Data

Bent No.		1	2	3	4
Driven Pile	Type	Foundation	Foundation	Foundation	Foundation
	Pile Type and Size	HP10 X 42	HP10 X 42	HP10 X 42	HP10 X 42
	Number	2	4	4	2
	Approximate Length foot	38	11	11	41
	Pile Driving Varification Method	Modified Gates Formula	Modified Gates Formula	Modified Gates Formula	Modified Gates Formula
	Design Bearing kip	112.0	112.0	112.0	112.0
	Minimum Tip Penetration	Elev. 1368.00	Elev. 1367.00	Elev. 1367.00	Elev. 1365.00
	Criteria for Minimum Tip Penetration	Minimum embedment into natural ground	Minimum embedment into natural ground	Minimum embedment into natural ground	Minimum embedment into natural ground
	Hammer Energy Required foot-pound	12,600	12,600	12,600	12,600

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

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

All piles shall be driven to practical refusal.

Prebore for piles at Bent Nos. 2 & 3 to elevation 1367.00.

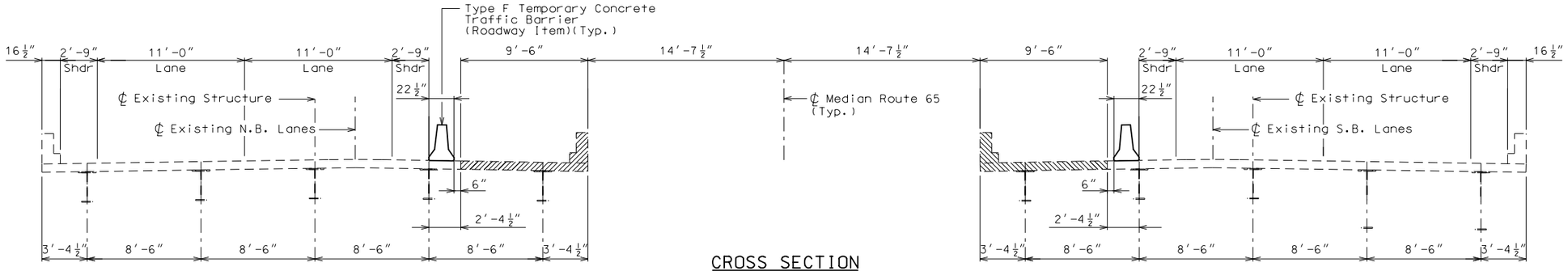
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 09/15/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

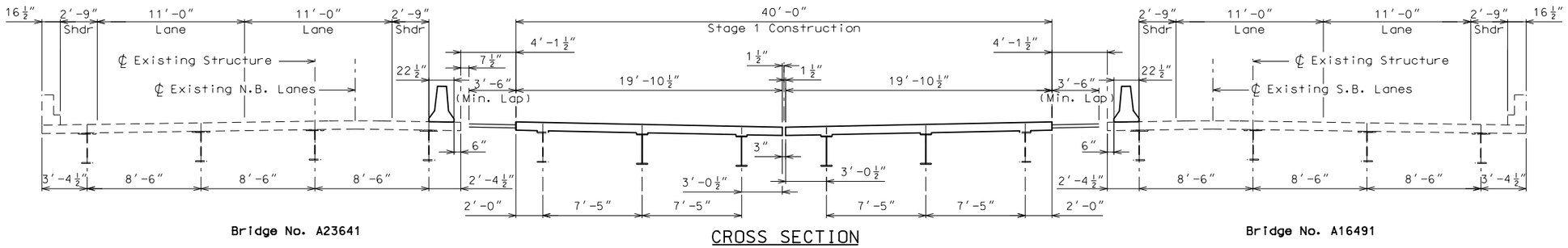
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



Bridge No. A-2364

Bridge No. A-1649

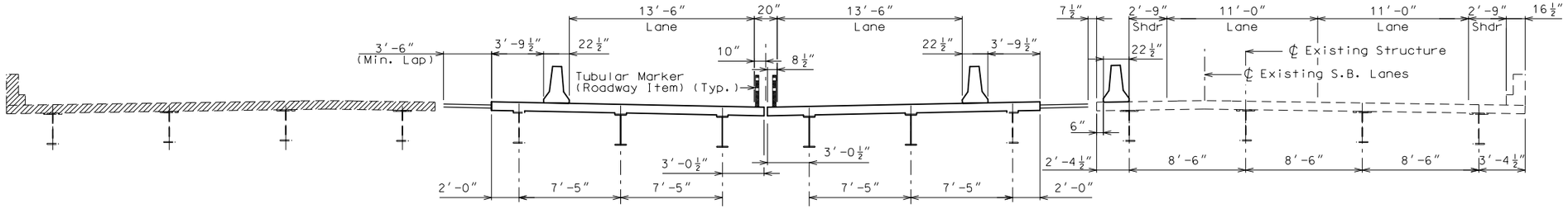
CROSS SECTION
STAGE 1 REMOVAL



Bridge No. A23641

Bridge No. A16491

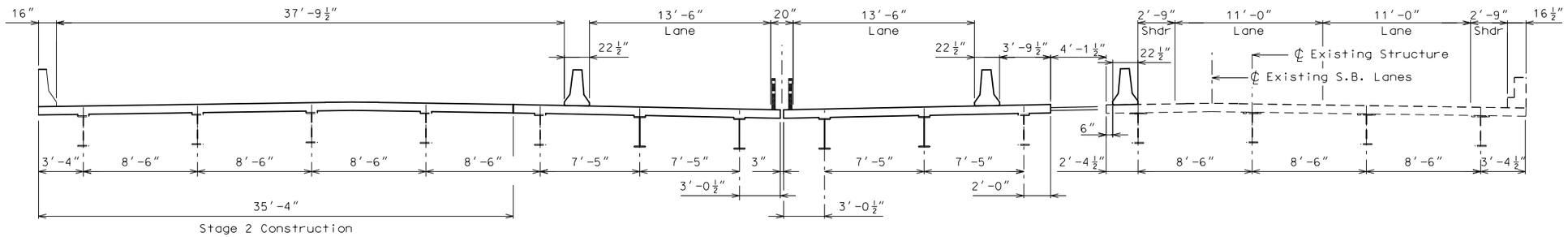
CROSS SECTION
STAGE 1 CONSTRUCTION



Bridge No. A23641

Bridge No. A16491

CROSS SECTION
STAGE 2 REMOVAL



Bridge No. A23641

Bridge No. A16491

CROSS SECTION
STAGE 2 CONSTRUCTION

Notes:

Stage construction details shown above are within bridge spans.

The temporary barrier shall be attached to the existing bridge deck.

The temporary barrier shall not be attached to the new bridge deck.

Outline of old work is indicated by light dashed lines.
Heavy lines indicate new work.

DETAILS SHOWING STAGED CONSTRUCTION

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

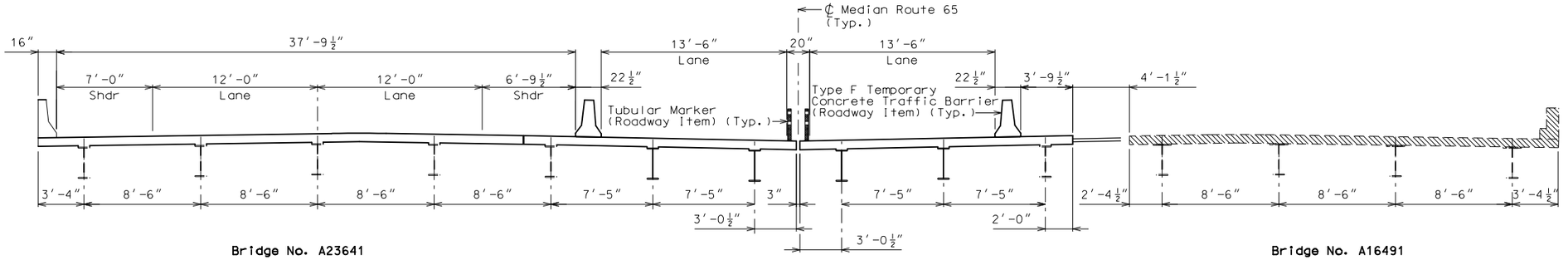
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

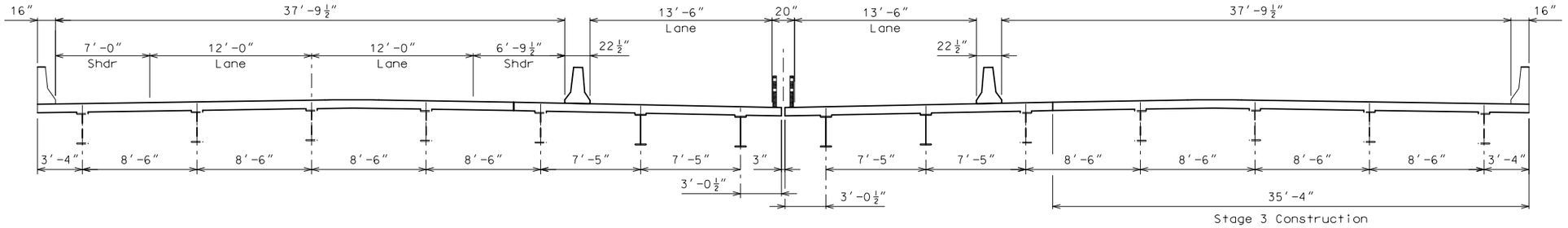
DESCRIPTION | DATE

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

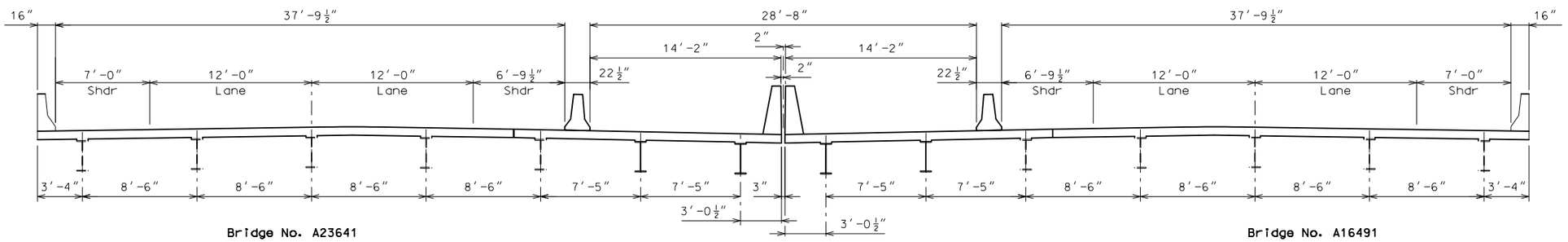
FINAL PLANS



CROSS SECTION
STAGE 3 REMOVAL



CROSS SECTION
STAGE 3 CONSTRUCTION



CROSS SECTION
STAGE 4 CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION

Notes:

Stage construction details shown above are within bridge spans.

The temporary barrier shall not be attached to the new bridge deck.

Outline of old work is indicated by light dashed lines.
Heavy lines indicate new work.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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

① Sta. 789+57 Centerline

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.
2.5	6-50/4"	--
5.5	11-48-15	--
8.0	5-4-5	1.50
10.5	4-4-10	1.50
13.0	5-13-8	--
15.5	8-6-5	1.25
18.0	5-6-7	2.50
20.5	3-4-6	2.25
25.5	11-11-12	--
30.5	6-8-9	3.00
35.5	4-7-9	2.25
40.5	3-6-12	2.75

1409.9 ← Brown, lean clay (CL), with limestone pieces (FILL).

1407.9

← Reddish-brown, fat clay (CH), with limestone pieces (FILL).

1402.9

← Reddish-brown, fat clay (CH), with limestone and chert pieces.
-trace chert and limestone pieces below 9.5 ft.
-with limestone and chert pieces below 12.0 ft.
-trace limestone and chert below 19.5 ft.

1385.9

← Gray, lean clay (CL), trace limestone and chert pieces.

1375.9

← Gray, fat clay (CH).
-brown and gray below 35.5 ft.
-cobbles below 38.0 ft.
-trace chert below 39.0 ft.

1367.4

Auger refusal at 42.5 ft.

② Sta. 790+49 Centerline Core

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.
3.5	4-4-3	--
6.0	3-2-3	1.00
8.5	8-20-16	--
11.0	2-2-22	--

1383.2 ← Dark brown, lean clay, trace sand and chert pieces (FILL).

1376.7

← Dark brown, lean clay (CL), with sand, limestone pieces, cobbles and chert fragments.

1372.2

1371.5 ← Weathered Limestone (8.5")

← Limestone, gray to white, slightly weathered, finely crystalline, thick bedded.
-fractured zone from 13.6 to 13.8 ft. with weathered joints
-weathered joints at 14.8 ft.

1361.5

③ Sta. 790+92 Centerline Core

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.
3.5	4-2-2	--
6.0	WH-WH-WH	1.00
8.5	1-2-3	1.00
11.5	3-2-3	1.50
16.0	WH-WH-4	--

1383.4 ← Dark brown, lean clay, trace sand, chert pieces (FILL).

1376.4

← Dark reddish-brown, fat clay (CH), trace chert and limestone pieces.

1373.9

← Dark reddish-brown, fat clay (CH), with limestone and chert fragments
-cobbles from 9.5 to 11.0 ft.

1367.1

1366.9 ← Weathered limestone (2").

← Limestone, gray to white, slightly weathered, finely crystalline, thick bedded.

1356.9

④ Sta. 791+84 Centerline

STANDARD PENETRATION TEST

Depth, ft.	Blows/6"	PP, tsf.
3.5	3-2-4	1.25
5.5	5-5-6	--
8.0	3-4-3	1.50
10.5	2-5-8	1.50
13.0	7-8-6	3.50
15.5	4-9-6	1.50
18.0	6-8-11	1.50
20.5	8-40-45	1.50
25.5	5-6-6	1.50
30.5	5-5-6	2.50
35.5	3-3-4	1.00
40.5	3-2-2	0.75

1410.2 ← Reddish-brown, fat clay (CH) with chert and limestone (FILL).

1403.2

← Reddish-brown fat clay (CH), trace limestone and chert pieces.
-with chert pieces
-gray and brown below 14.5 ft.
-reddish-brown below 15.0 ft.
-rough drilling below 16.0 ft., probable limestone seams.

1392.7

← Gray and brown, fat clay (CH)
-rough drilling at 19.0, 24.0 and 26.0 ft., probable limestone seams.
-cherty limestone seam at 20.5 ft.

1380.2

← Gray, lean clay (CL)
-brown and gray below 34.5 ft.

1371.2

← Brown and gray, fat clay (CH), trace limestone pieces.

1366.2

1365.4 ← Weathered limestone (5").

Auger refusal at 44.8 ft.

BORING DATA

Notes:

For location of borings, see Sheet No. 1.

For Notice of Disclosure Regarding Boring Log Data, see Sheet No. 1

PP = Pocket Penetrometer

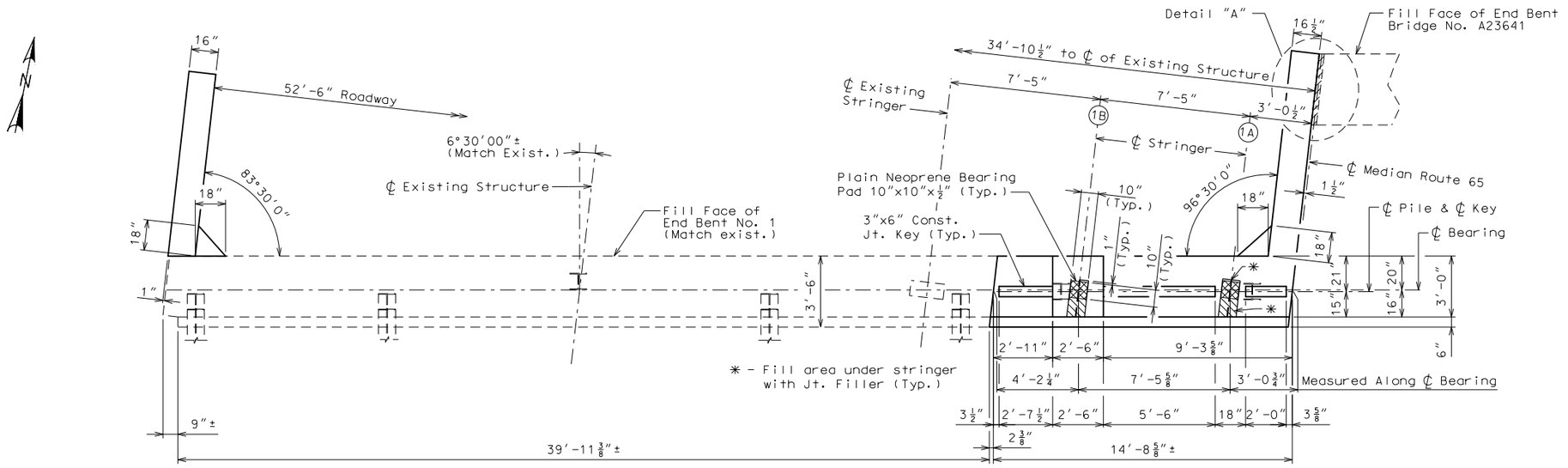
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 5
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

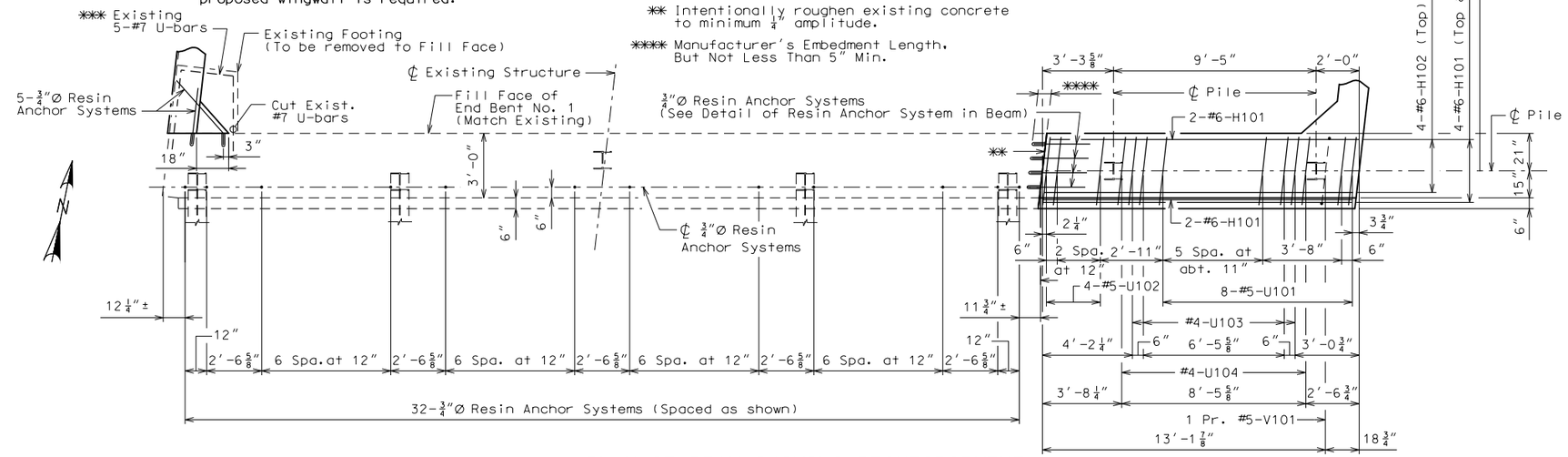
DESCRIPTION | DATE

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

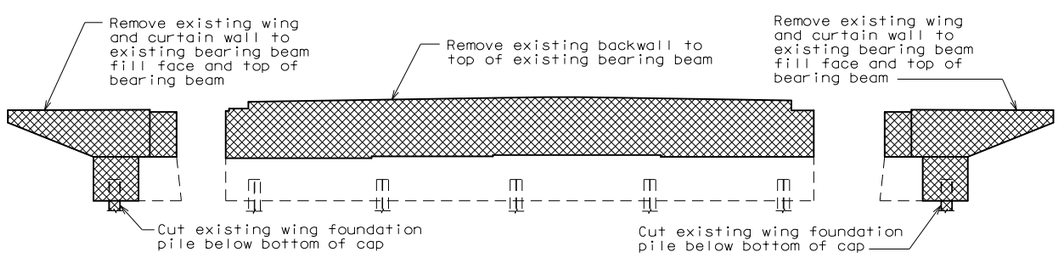


PLAN OF BEAM SHOWING DIMENSIONS

*** Existing #7 U-bars to remain embedded in the existing beam at the outside face of wingwall. The bars shall be cut near the point indicated, straightened and embedded in the proposed wingwall. A minimum of 40" embedment into the proposed wingwall is required.



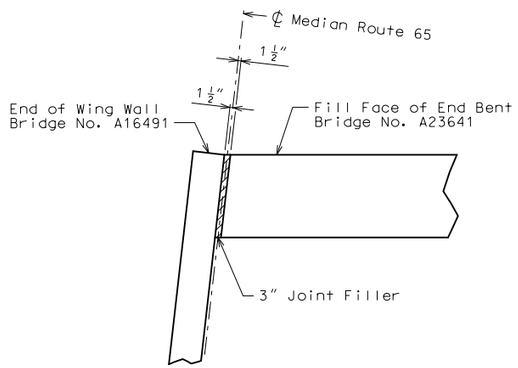
PLAN OF BEAM SHOWING REINFORCEMENT



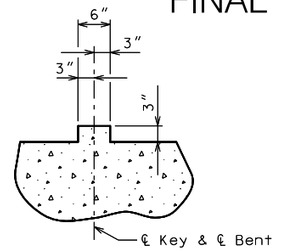
WEST WING ELEVATION ELEVATION OF END BENT EAST WING ELEVATION

DETAILS OF CONCRETE REMOVAL AT END BENT NO. 1

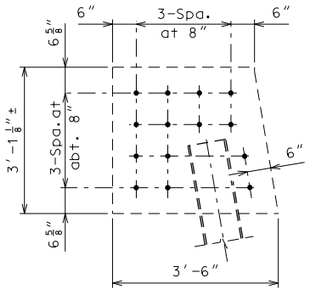
Note: The cost of all concrete removal shown will be considered completely covered by the contract lump sum price for Partial Removal of Substructure Concrete.



DETAIL "A"



TYPICAL SECTION THRU KEY



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

14-¾"Ø Resin Anchor Systems to be spaced as shown.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 1, see Sheet Nos. 7 & 8.

For Substructure Quantity Table, see Sheet No. 8.

For details of Vertical Drain at end bents, see Sheet No. 9.

For details of the Safety Barrier Curb, see Sheet Nos. 27, 28, 29, 30, 31, and 32.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

All U-bars and Pr. V-bars in end bent are to be placed parallel to ℄ Route 65.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

Where existing bars are to extend from remaining portions of existing concrete into new construction, concrete shall be removed so as to leave bars clean and undamaged. Newly exposed construction concrete and reinforcement bars shall be blast-cleaned.

DATE PREPARED	10/06/10
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	6
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

DESCRIPTION

DATE

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF END BENT NO. 1

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

FINAL PLANS

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Concrete diaphragms at the integral end bents shall be poured a minumum of 12 hours before the slab is poured.

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 1, see Sheet Nos. 6 & 8.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

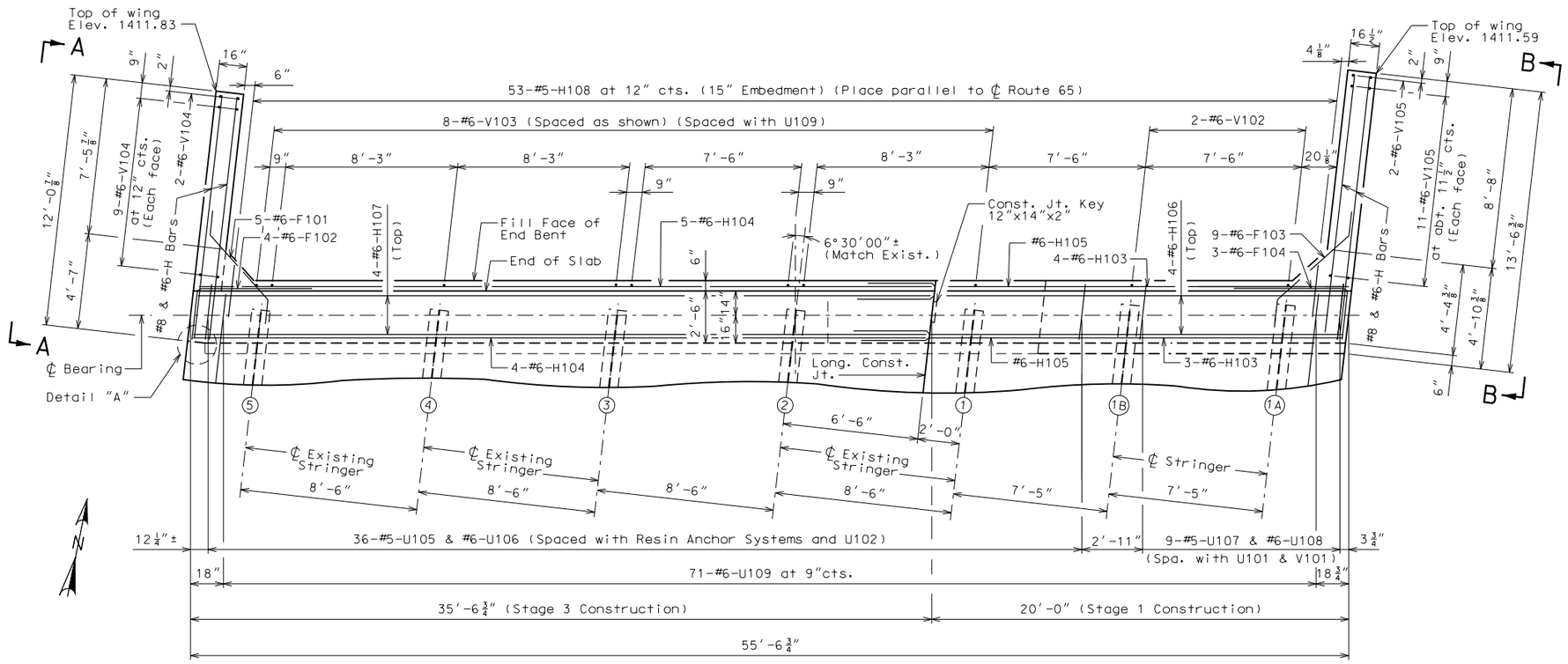
U and Pr. V bars shall be placed parallel to ℄ Route 65.

For reinforcement of the Safety Barrier Curb, see Sheet Nos. 27 thru 32.

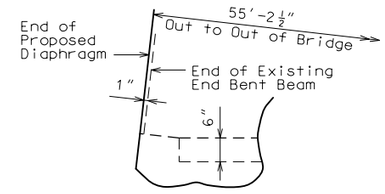
For details of Vertical Drain at End Bent, see Sheet No. 9.

Bend #6-F101 & F103 bars in field to clear stringers.

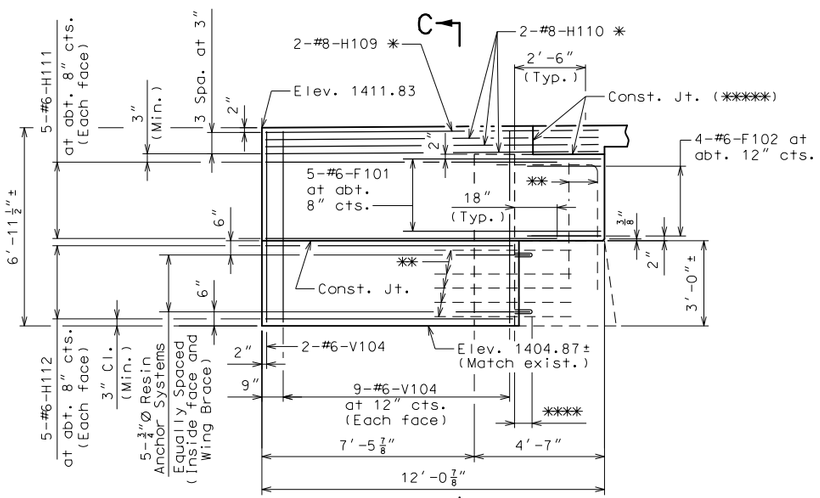
For details of Bridge Approach Slab, see Sheet No. 33.



PLAN SHOWING REINFORCING

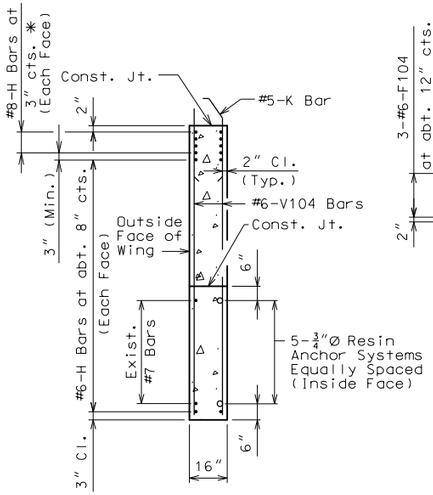


DETAIL "A"

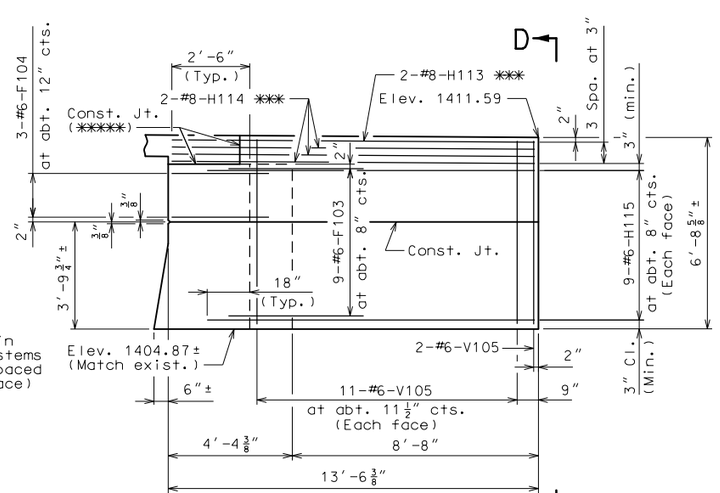


ELEVATION A-A

✳ Note: Place H109 and H110 parallel to grade.

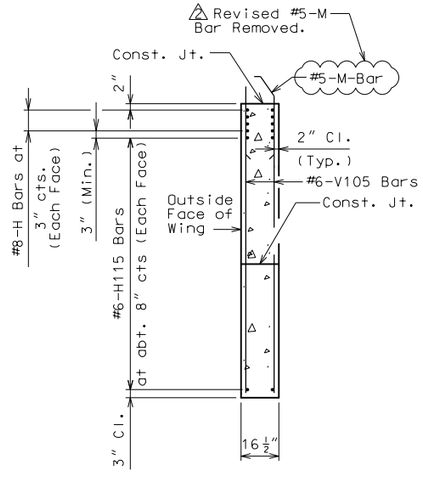


SECTION C-C



ELEVATION B-B

✳✳✳ Note: Place H113 and H114 parallel to grade.



SECTION D-D

✳✳ Existing wing and curtain wall reinforcement to be used in place. Damaged bars shall be replaced by the contractor with no additional payment.

✳✳✳✳ Manufacturer's embedment length, but not less than 5" min.

(✳✳✳✳✳) Upper construction joint shall be formed on slope in order to maintain a 1½" (min.) clearance to #6-H103 or H104 reinforcing bars in diaphragm. (Also shown in Section near End Bent)

DETAILS OF END BENT NO. 1

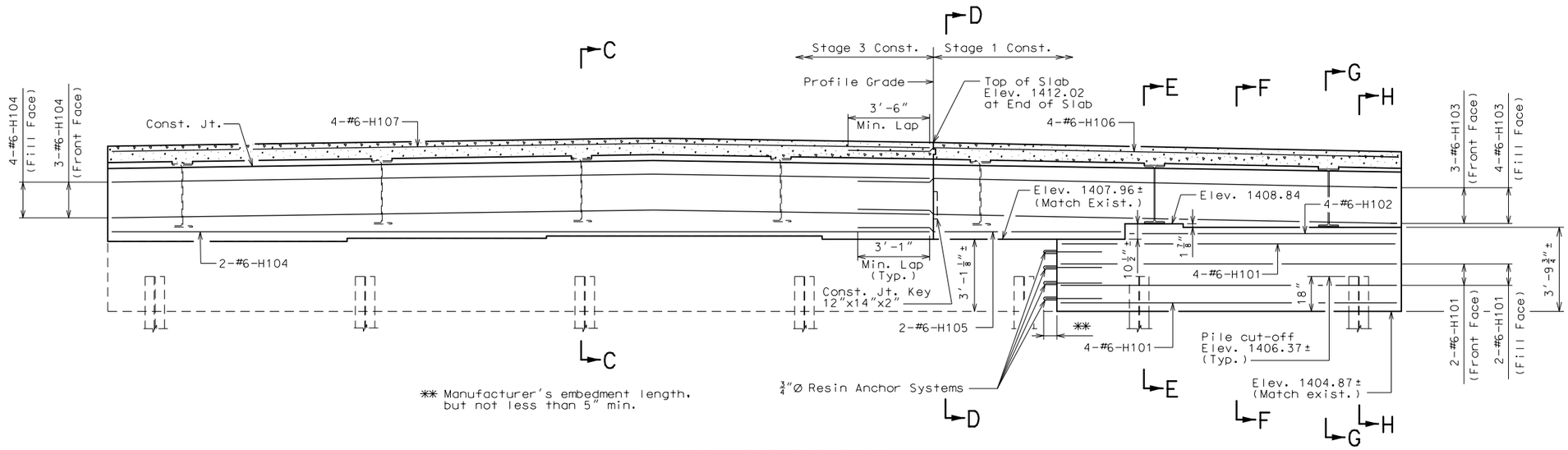
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	7
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
090626-802	
PROJECT NO.	
FAF-65-2(65)	
BRIDGE NO.	
A16491	

DATE	DESCRIPTION
09/15/10	⚠3 Sec D-D M Bar Removed

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



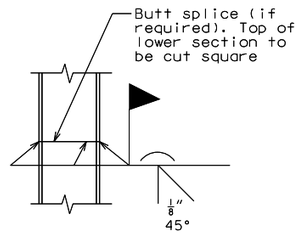
SECTION NEAR END BENT

Notes:

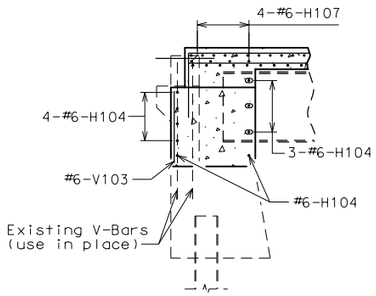
Existing steel diaphragms not shown for clarity (leave in place).

U-bars and resin anchor systems in diaphragm not shown for clarity.

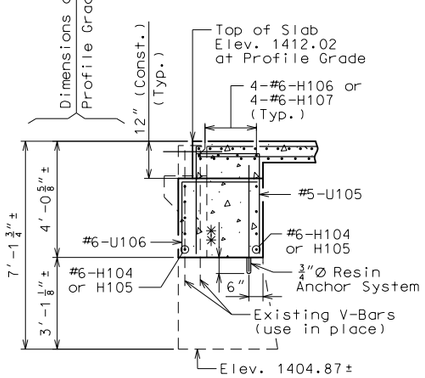
For additional details of End Bent No. 1, see Sheet Nos. 6 & 7.



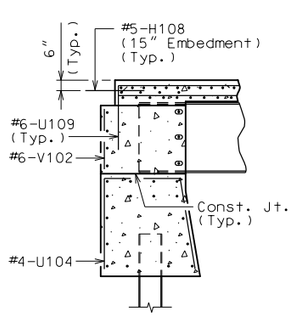
STEEL PILE SPLICE



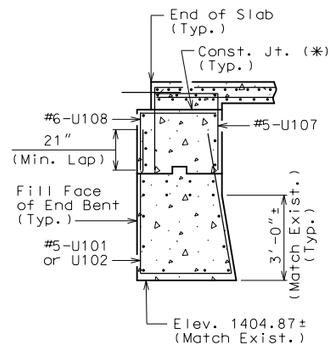
SECTION C-C



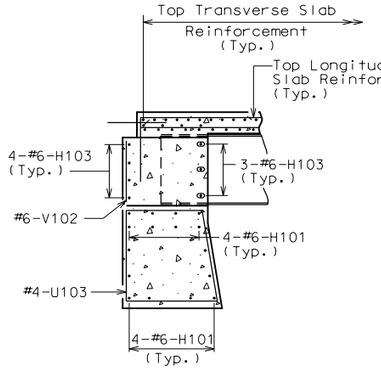
SECTION D-D



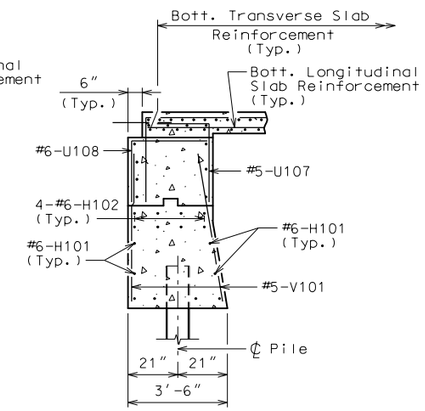
SECTION E-E



SECTION F-F



SECTION G-G



SECTION H-H

Note: Existing V-bars in backwall to be used in place. The contractor shall cut the bars as required.

(*) Upper construction joint shall be formed on slope in order to maintain 1½″ (min.) clearance to #6-H103 and H104 reinforcing bars in diaphragm. (Also shown in Section Near End Bent)

Substructure Quantity Table for Bent No. 1

Item		Quantity
Class 1 Excavation	cu. yard	33.3
Structural Steel Piles (10 in.)	linear foot	72
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	10.0

Note: These quantities are included in the quantities table on Sheet No. 2.

DETAILS OF END BENT NO. 1

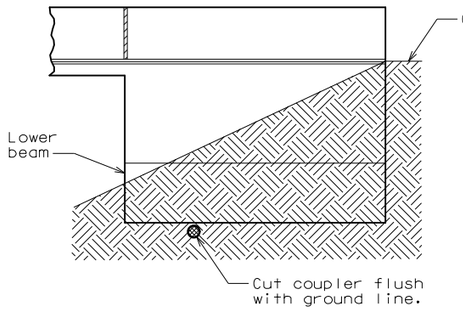
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

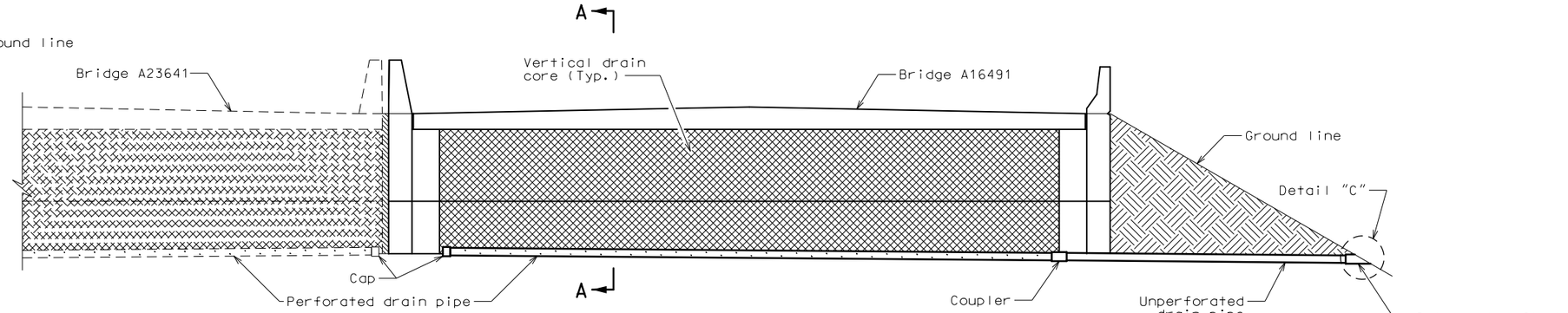
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

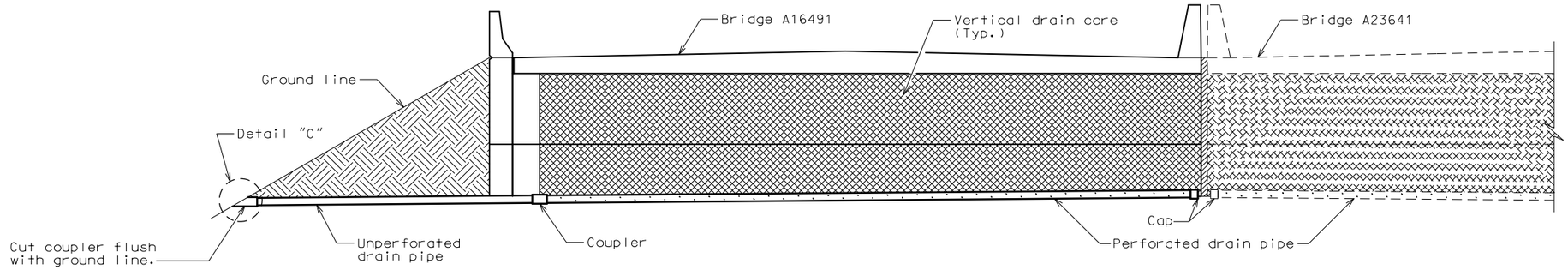
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



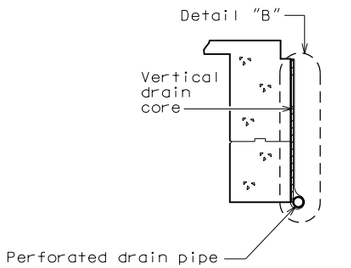
ELEVATION OF WING



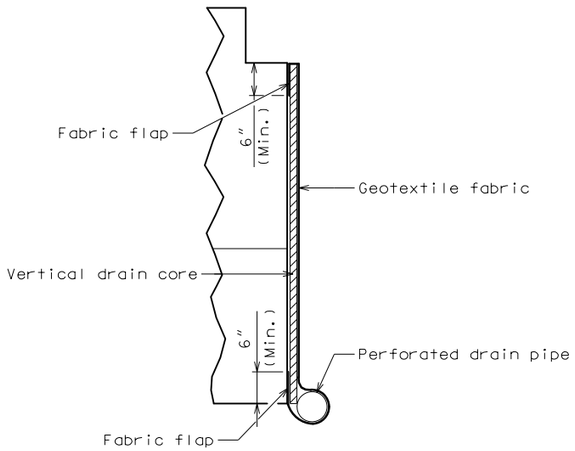
ELEVATION AT END BENT 1



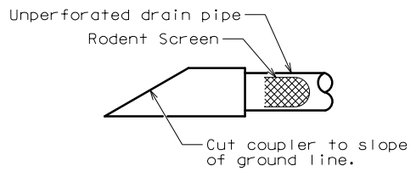
ELEVATION AT END BENT 4



SECTION A-A



DETAIL "B"



DETAIL "C"

Notes:

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

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1½". (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

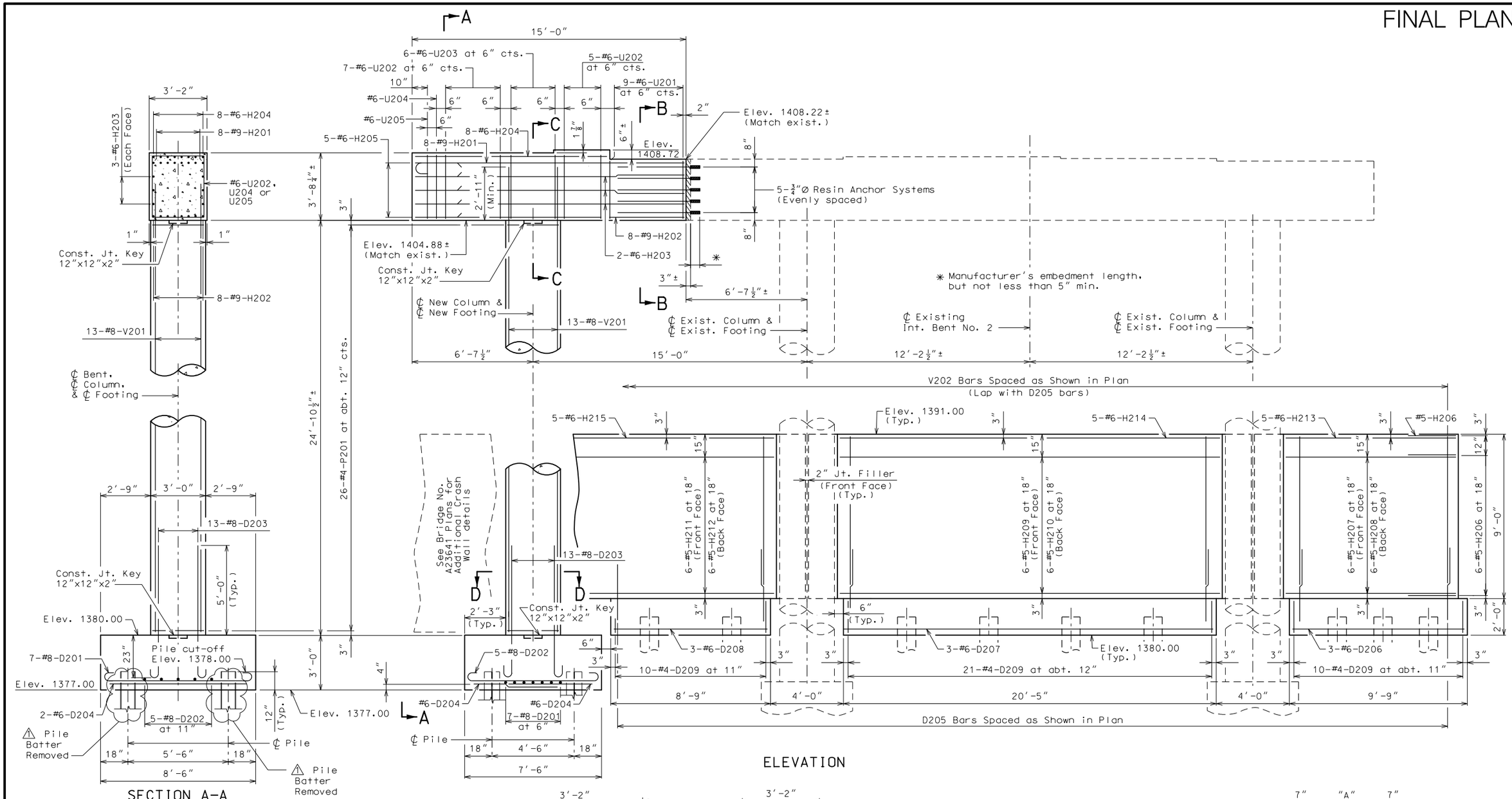
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

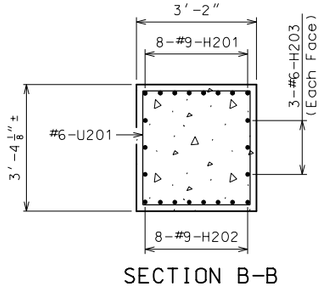
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

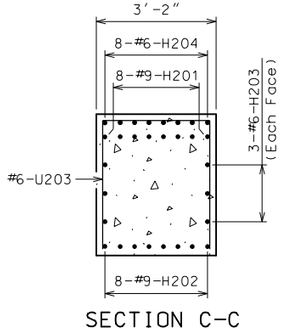
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



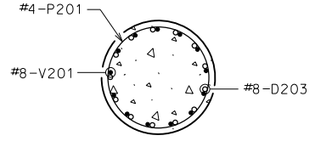


SECTION B-B

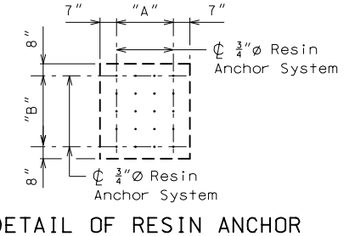
Note: Resin anchor system not shown for clarity.



SECTION C-C



SECTION D-D



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

"A" 4-¾"Ø Resin Anchor Systems at 8″ cts.
"B" 5-¾"Ø Resin Anchor Systems at abt. 6″ cts.

Notes:

For details of Intermediate Bent No. 2 not shown, see Sheet No. 11.

For details of Crash Wall not shown, see Sheet No. 11.

For Substructure Quantity Table, see Sheet No. 11.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

DETAILS OF INTERMEDIATE BENT NO. 2

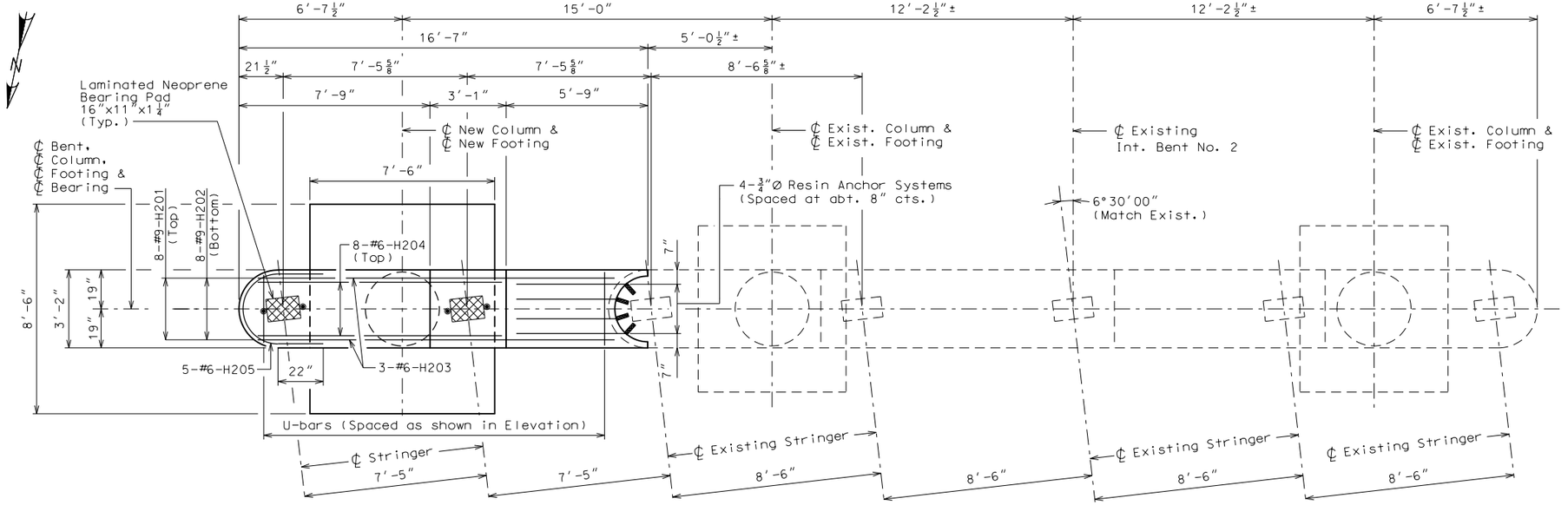
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	1 Int. Bent pile batter removed.

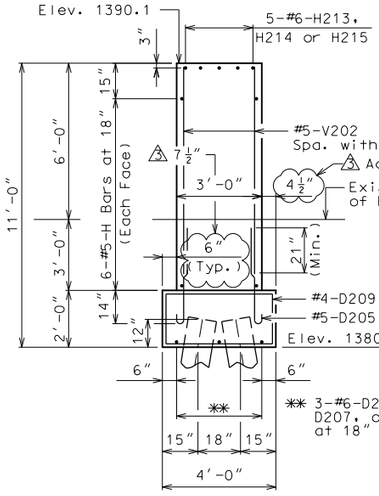
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.

* ℄ Existing Column & ℄ 2″ Joint Filler



TYPICAL SECTION THRU CRASH WALL

Notes:

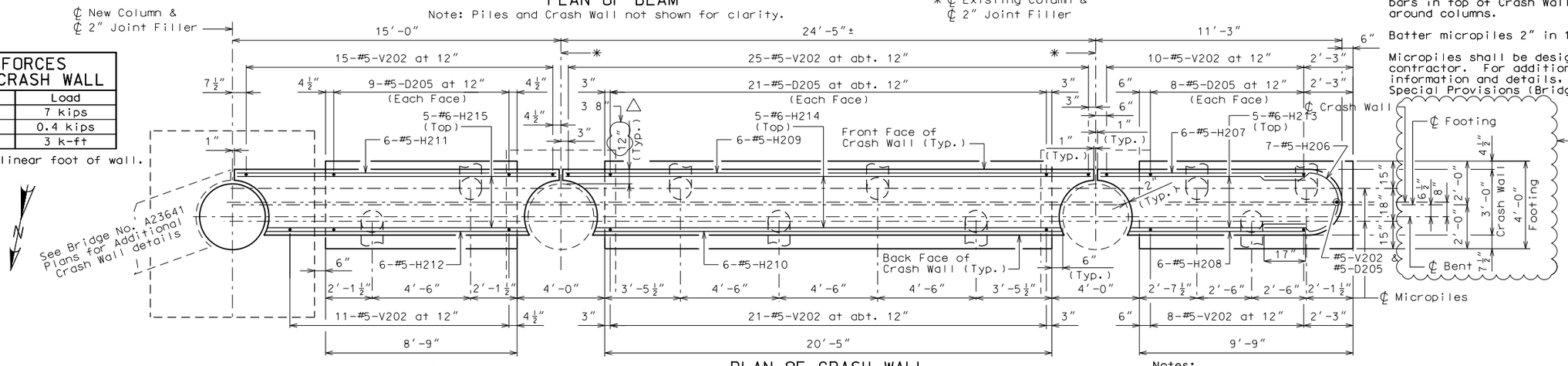
Field cut #6-H213, H214 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2″ in 12″.

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½″.

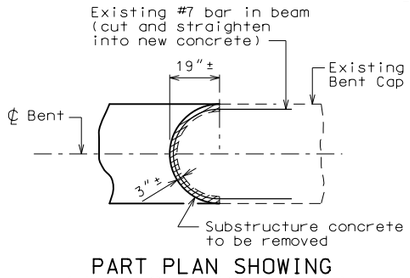
All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½″.

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2″ clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 2 not shown, see Sheet No. 10.

For details of Crash Wall not shown, see Sheet No. 10.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

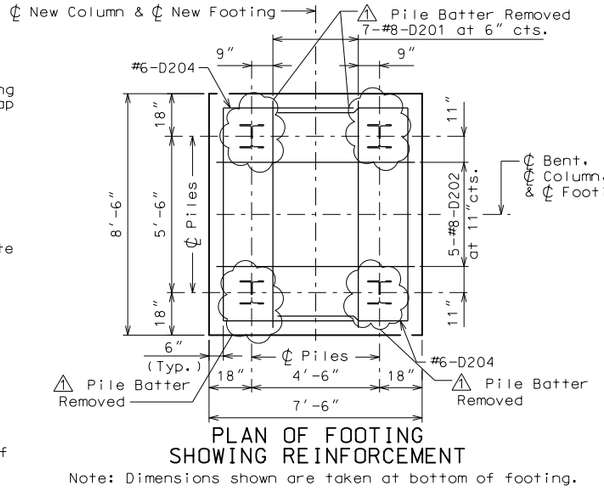


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

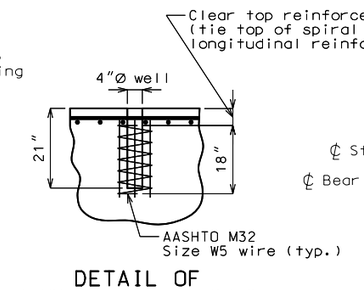
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

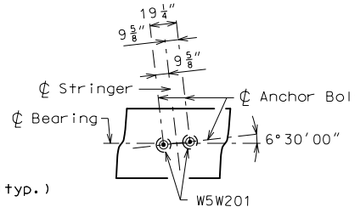


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	114.4
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	56.8
Class B Concrete (Substructure)	cu. yard	20.0
Reinforcing Steel (Bridges)	pound	3463
Reinforcing Steel (Retaining Wall)	pound	2603

Note: These quantities are included in the Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF INTERMEDIATE BENT NO. 2

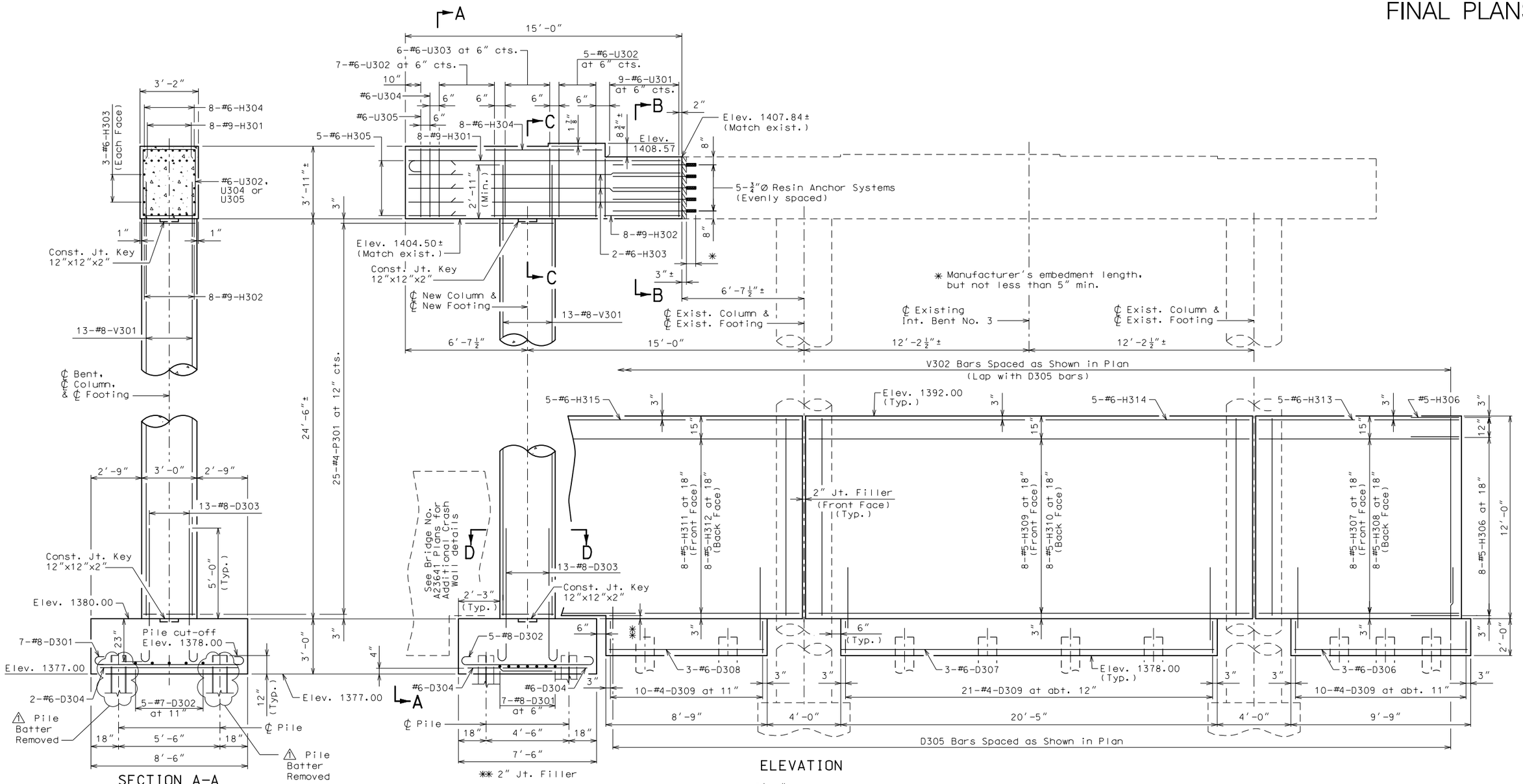
Note: This drawing is not to scale. Follow dimensions.

FINAL PLANS

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 11
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	⚠1 Int. Bent pile batter removed.
10/06/10	⚠2 Revised Footings and Crash Walls.

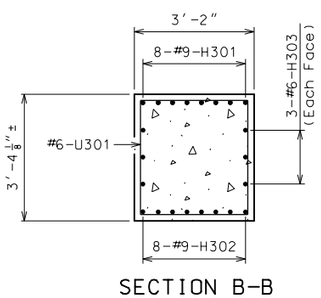
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION A-A

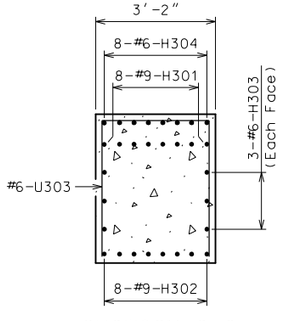
Note: Crash Wall not shown for clarity.

ELEVATION

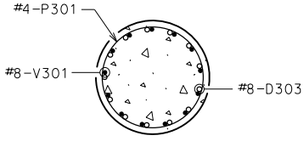


SECTION B-B

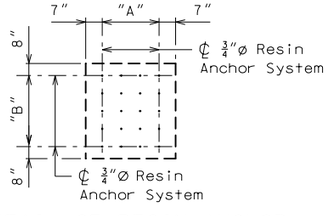
Note: Resin anchor system not shown for clarity.



SECTION C-C



SECTION D-D



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

"A" 4-¾″Ø Resin Anchor Systems at 8″ cts.
"B" 5-¾″Ø Resin Anchor Systems at abt. 6″ cts.

Notes:

For details of Intermediate Bent No. 3 not shown, see Sheet No. 13.

For details of Crash Wall not shown, see Sheet No. 13.

For Substructure Quantity Table, see Sheet No. 13.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

DETAILS OF INTERMEDIATE BENT NO. 3

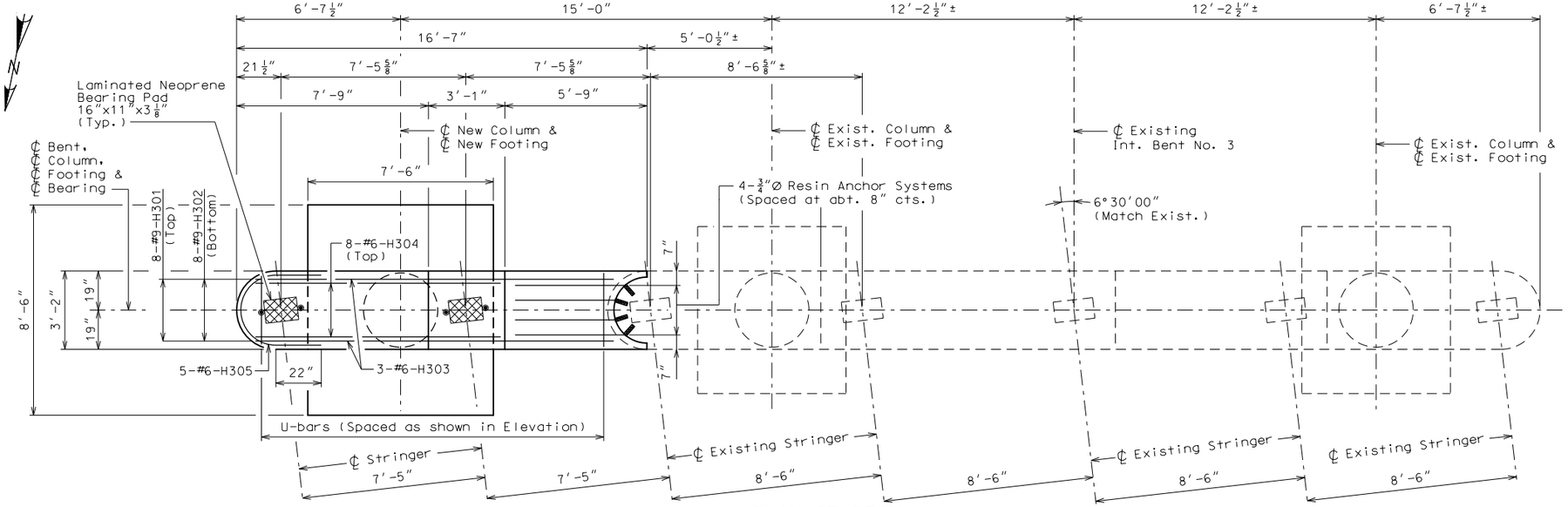
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 12
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

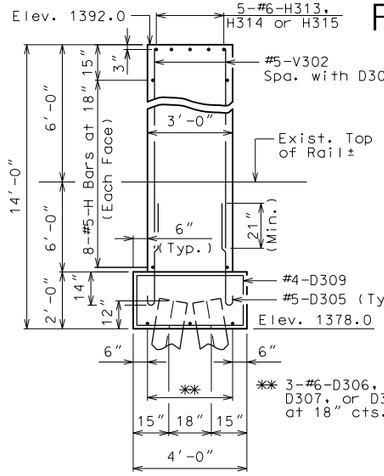
DATE	DESCRIPTION
05/18/10	⚠1 Int. Bent pile batter removed.

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



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



TYPICAL SECTION THRU CRASH WALL

Notes:

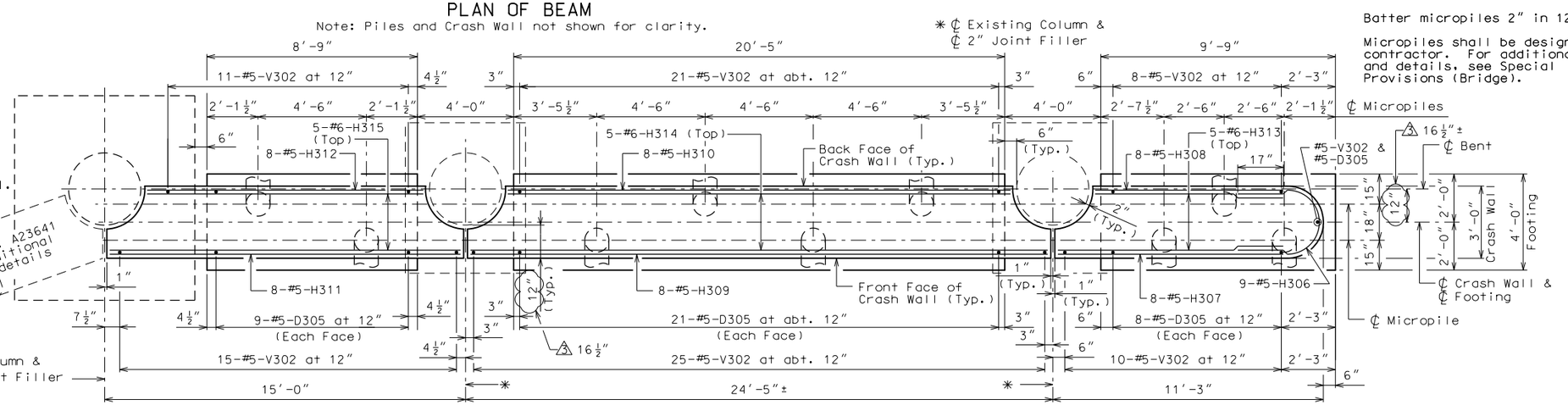
Field cut #6-H313, H314 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2" in 12".

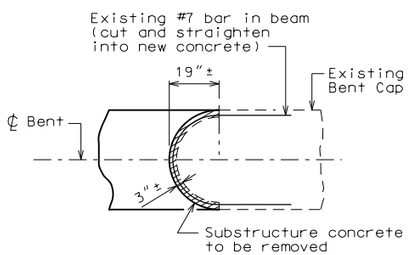
Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

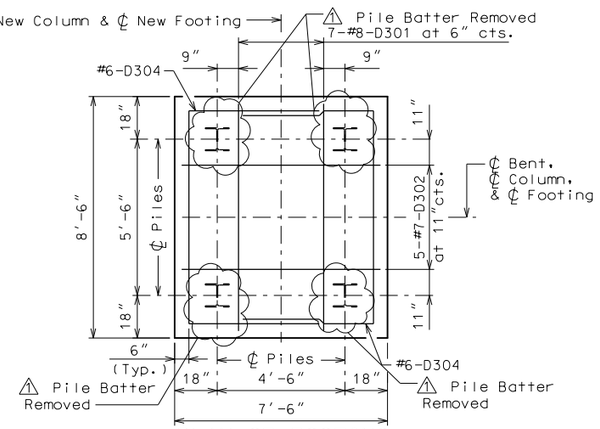


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

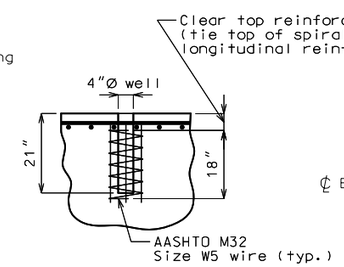
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

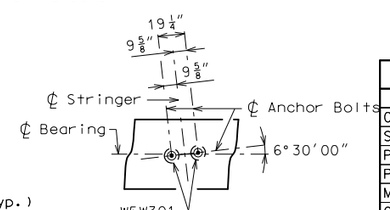


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".

All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½".

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2" clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 3 not shown, see Sheet No. 12.

For details of Crash Wall not shown, see Sheet No. 12.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation	cu. yard	128.6
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	71.9
Class B Concrete (Substructure)	cu. yard	20.2
Reinforcing Steel (Bridges)	pound	3457
Reinforcing Steel (Retaining Wall)	pound	3085

Note: These quantities are included in the Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF INTERMEDIATE BENT NO. 3

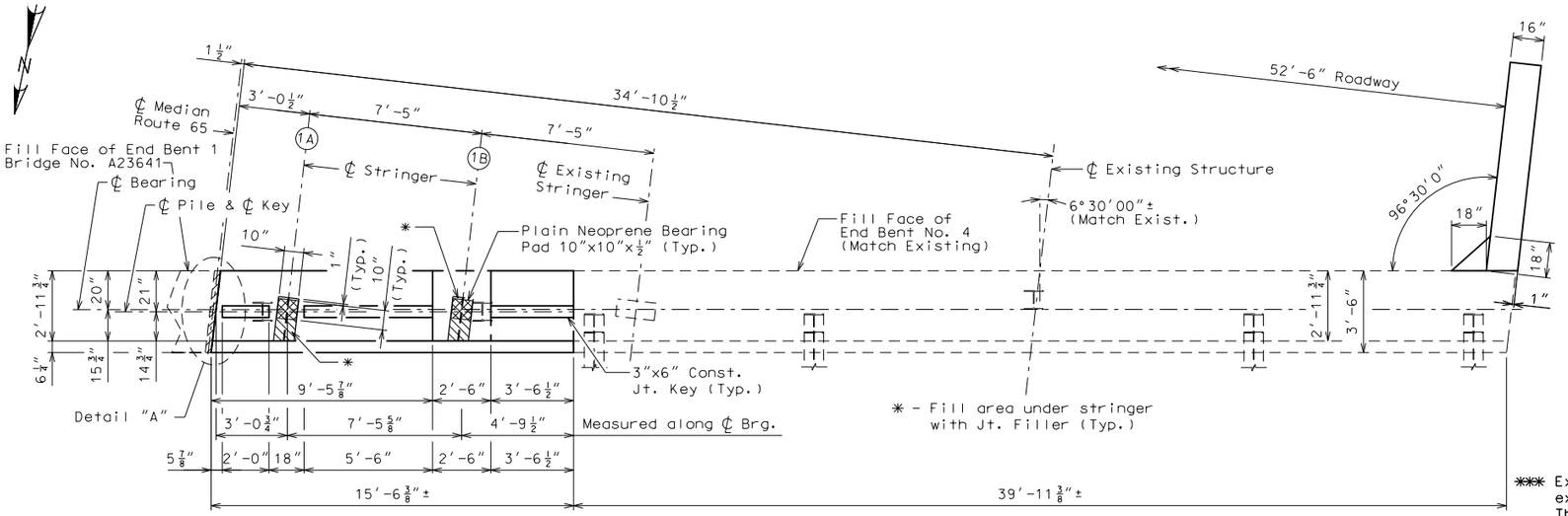
Note: This drawing is not to scale. Follow dimensions.

FINAL PLANS

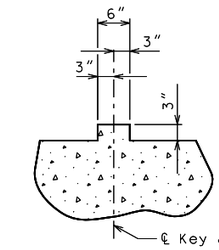
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	⚠1 Int. Bent pile batter removed.
10/06/10	⚠2 Revised Footings and Crash Walls.

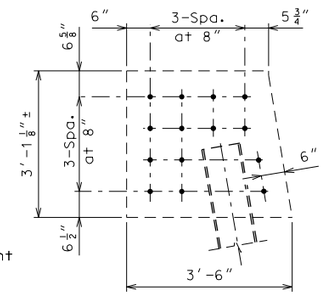
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



PLAN OF BEAM SHOWING DIMENSIONS



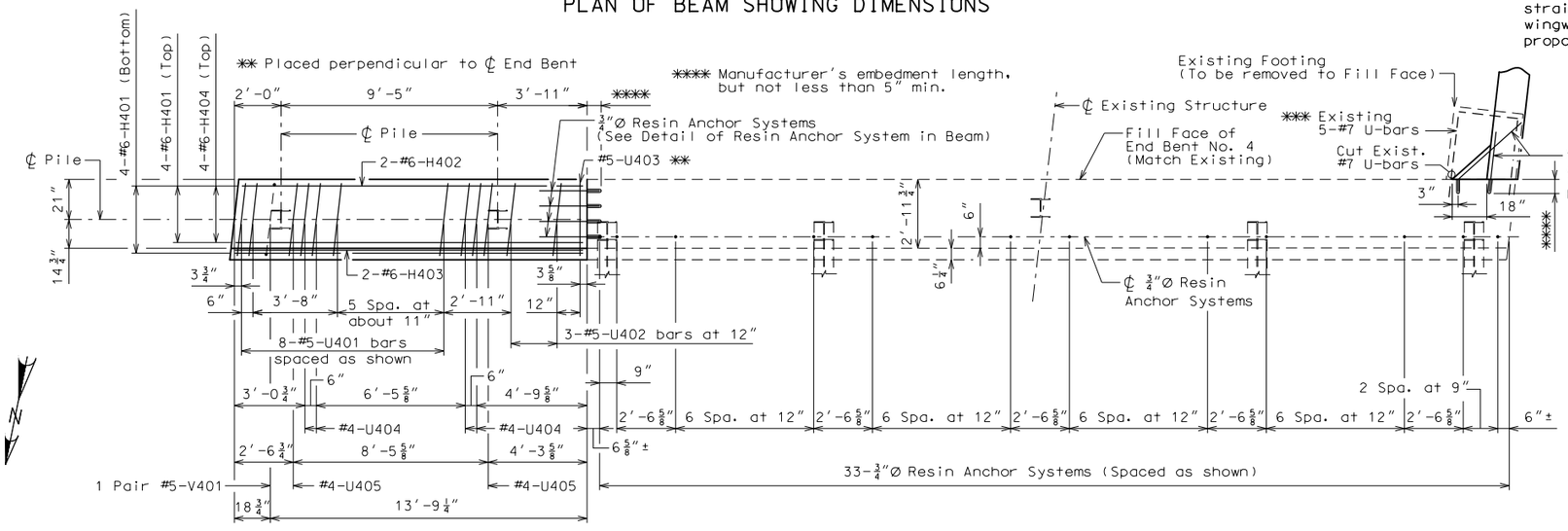
TYPICAL SECTION THRU KEY



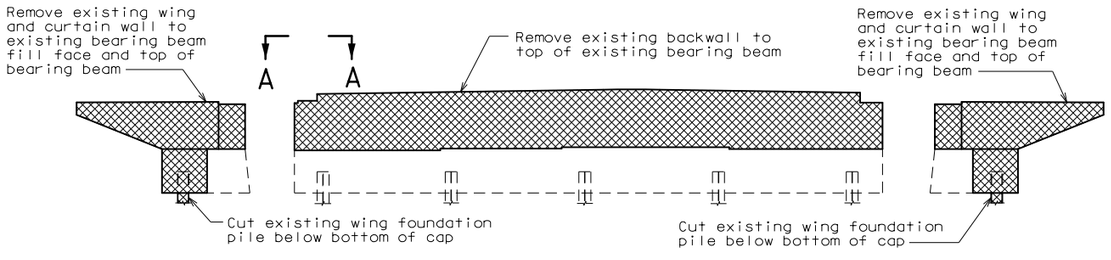
DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

14-¾"Ø Resin Anchor Systems to be spaced as shown.

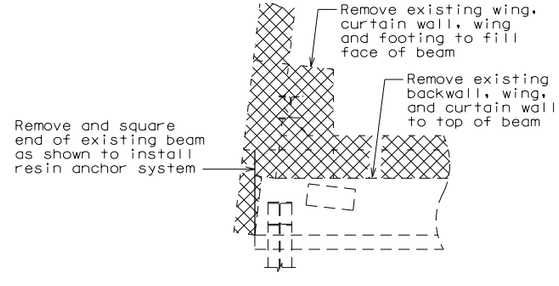
*** Existing #7 U-bars to remain embedded in the existing beam at the outside face of wingwall. The bars shall be cut near the point indicated, straightened and embedded in the proposed wingwall. A minimum of 40" embedment into the proposed wingwall is required.



PLAN OF BEAM SHOWING REINFORCEMENT



EAST WING ELEVATION ELEVATION OF END BENT WEST WING ELEVATION



PART PLAN A-A

DETAILS OF CONCRETE REMOVAL AT END BENT NO. 4

Note: The cost of all concrete removal shown will be considered completely covered by the contract lump sum price for Partial Removal of Substructure Concrete.

DETAIL "A"

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 4, see Sheet Nos. 15 & 16.

For Substructure Quantity Table, see Sheet No. 16.

For details of Vertical Drain at end bents, see Sheet No. 9.

For details of the Safety Barrier Curb, see Sheet Nos. 27, 28, 29, 30, 31, and 32.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

All U-bars and Pr. V-bars in end bent are to be placed parallel to ℄ Route 65, except as noted.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

Where existing bars are to extend from remaining portions of existing concrete into new construction, concrete shall be removed so as to leave bars clean and undamaged. Newly exposed construction concrete and reinforcement bars shall be blast-cleaned.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

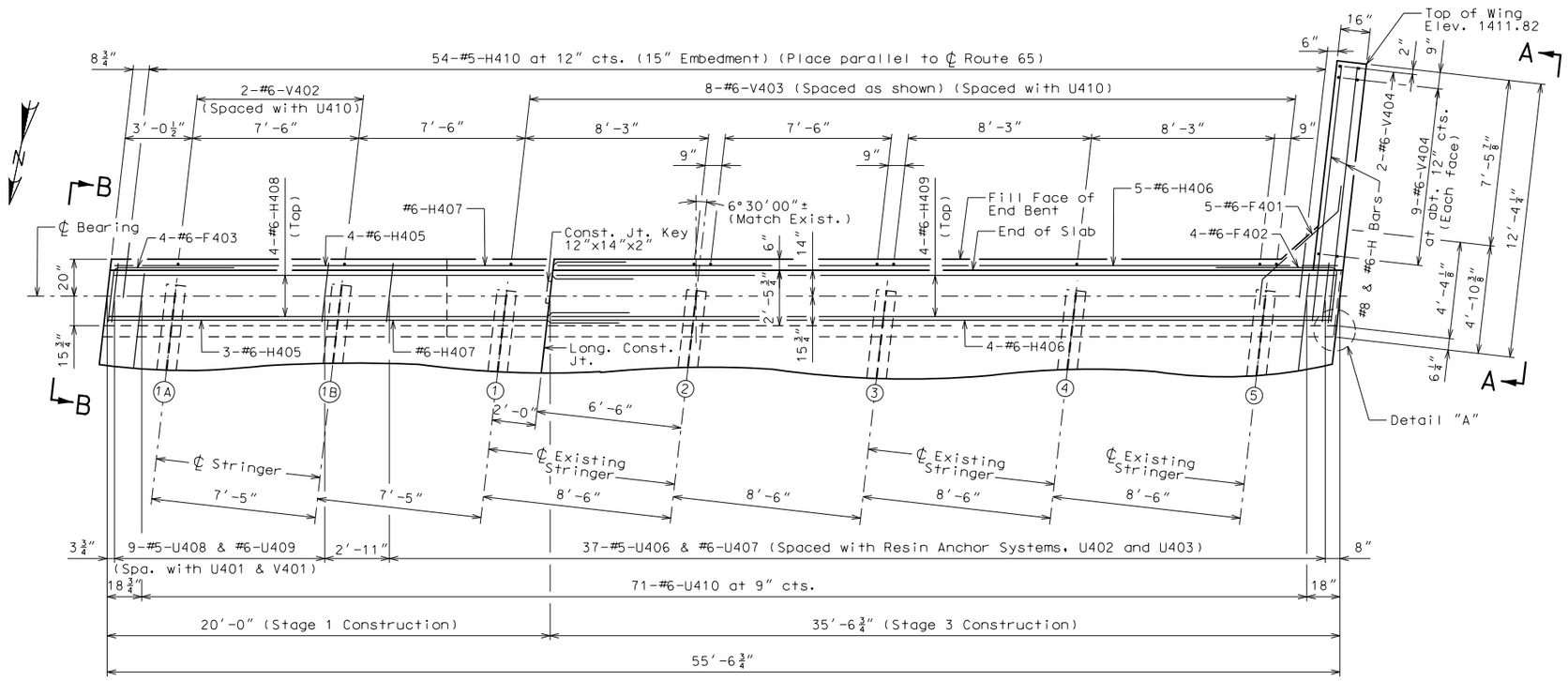
DETAILS OF END BENT NO. 4

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

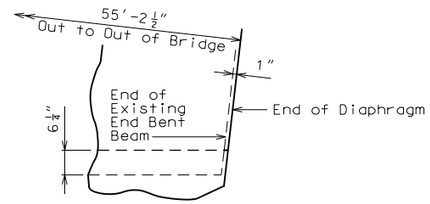
DATE PREPARED	10/06/10
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	14
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

DESCRIPTION | DATE

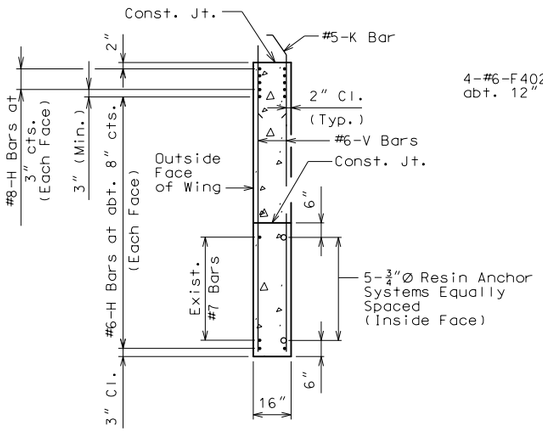
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



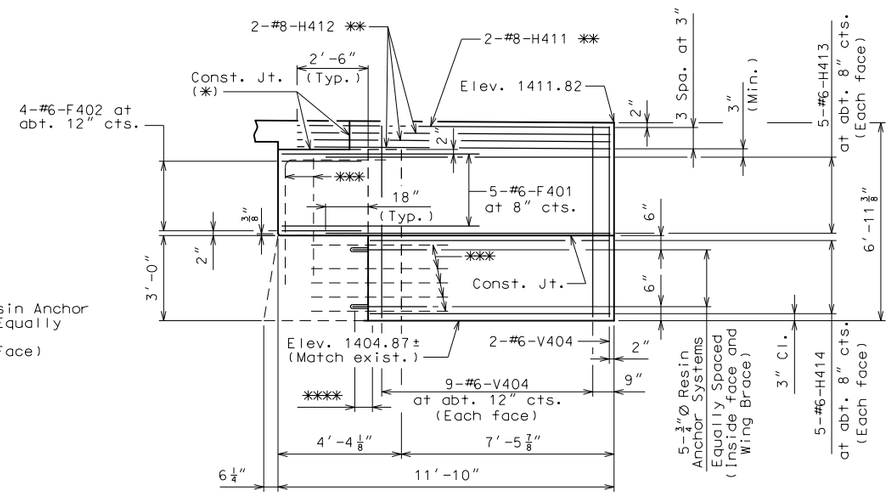
PLAN SHOWING REINFORCING



DETAIL "A"

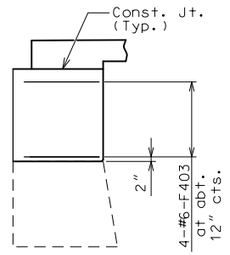


TYPICAL SECTION THRU WING



ELEVATION A-A

** Note: Place H411 and H412 bars parallel to grade.



ELEVATION B-B

(*) Upper construction joint shall be formed on slope in order to maintain a 1½" (min.) clearance to #6-H405 or H406 reinforcing bars in diaphragm. (Also shown in Section near End Bent)

*** Existing wing and curtain wall reinforcement to be used in place. Damaged bars shall be replaced by the contractor with no additional payment.

**** Manufacturer's embedment length, but not less than 5" min.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Concrete diaphragms at the integral end bents shall be poured a minumum of 12 hours before the slab is poured.

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 4, see Sheet Nos. 14 & 16.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

U & V bars shall be placed parallel to ℄ Route 65, except as noted.

For reinforcement of the Safety Barrier Curb, see Sheet Nos. 29 & 30.

For details of Vertical Drain at End Bent, see Sheet No. 9.

Bend #6-F401 bars in field to clear stringers.

For details of the Neoprene Bearings, see Sheet No. 17.

For details of Bridge Approach Slab, see Sheet No. 33.

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 15
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

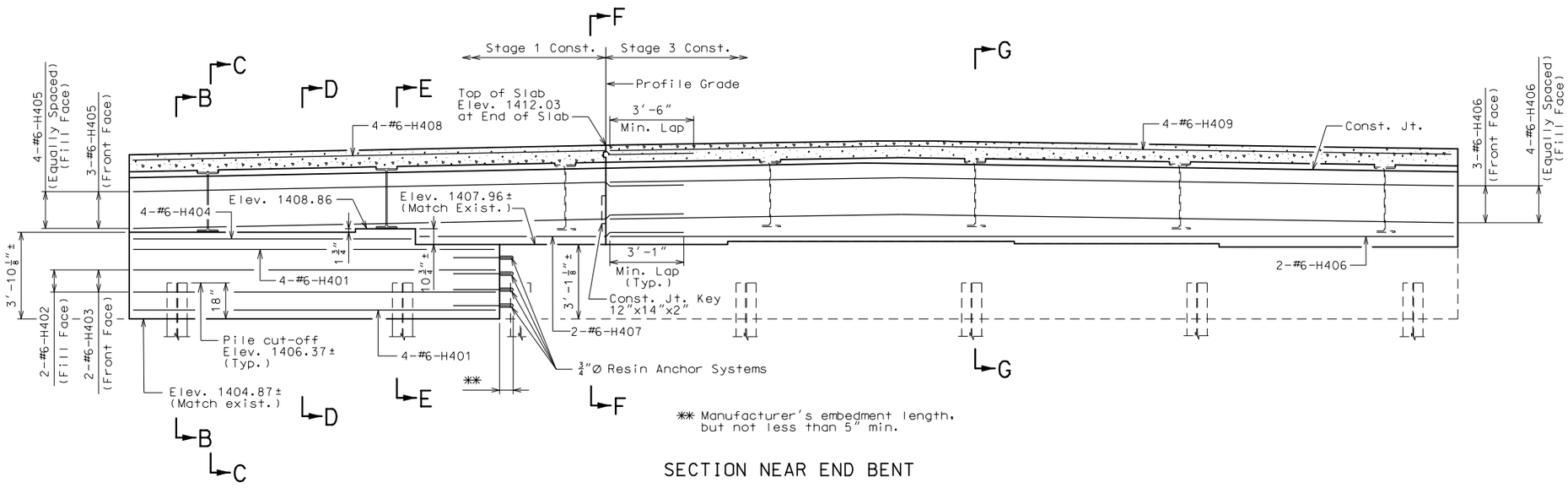
DESCRIPTION | DATE

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF END BENT NO. 4

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



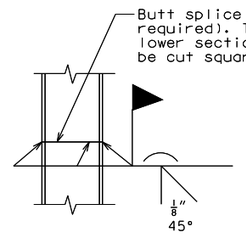
** Manufacturer's embedment length, but not less than 5" min.

SECTION NEAR END BENT

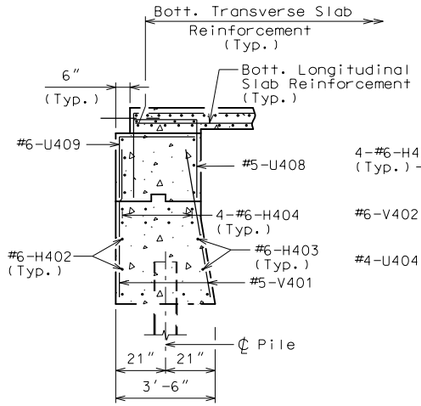
Notes:

Existing steel diaphragms not shown for clarity (leave in place).

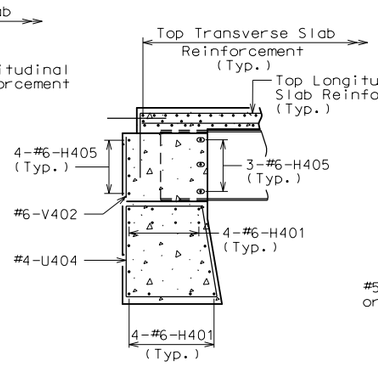
U-bars and resin anchor systems in diaphragm not shown for clarity.



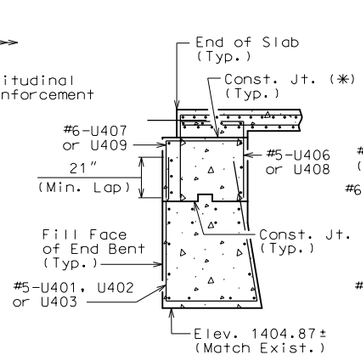
STEEL PILE SPLICE



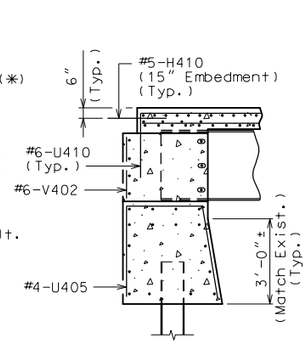
SECTION B-B



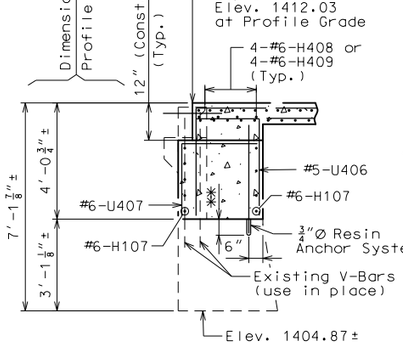
SECTION C-C



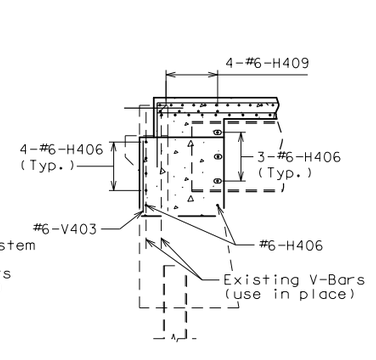
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

Notes: Existing V-bars in backwall to be used in place. The contractor shall cut the bars as required.

(*) Upper construction joint shall be formed on slope in order to maintain 1½" (min.) clearance to #6-H405 and H406 reinforcing bars in diaphragm. (Also shown in Section Near End Bent)

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Class 1 Excavation	cu. yard	34.7
Structural Steel Piles (10 in.)	linear foot	79
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	8.1

Note: These quantities are included in the quantities table on Sheet No. 2.

For details of End Bent No. 4 not shown, see Sheet Nos. 14 & 15.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

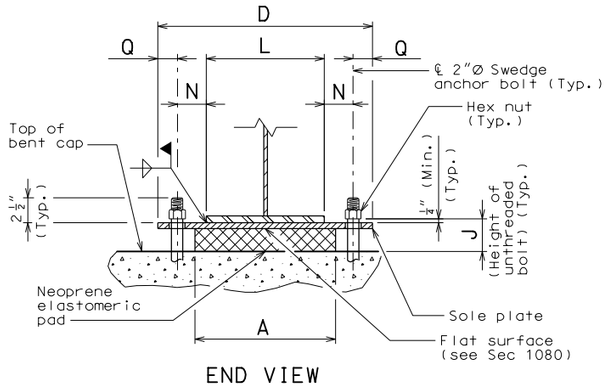
DETAILS OF END BENT NO. 4

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

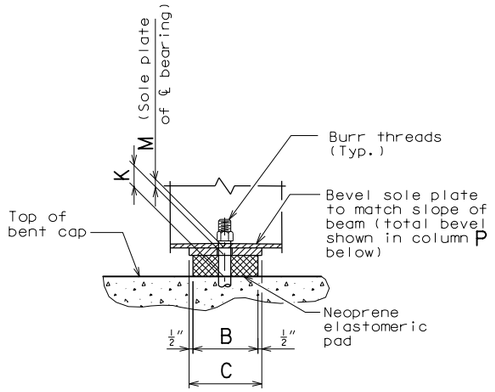
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

NO.	DESCRIPTION	DATE

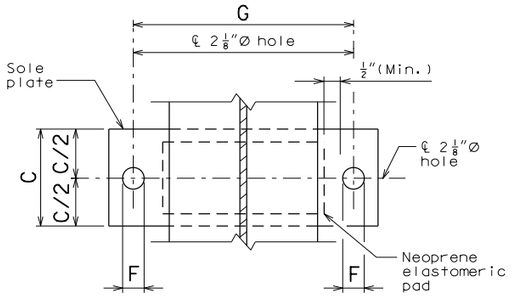
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



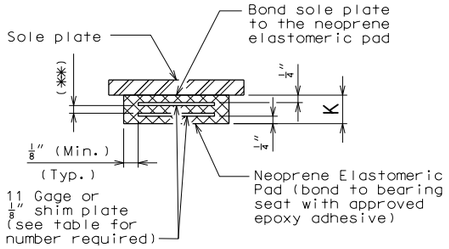
END VIEW



SIDE VIEW



PART PLAN



(**) Layers of ½" elastomer alternating with 11 gage or ⅛" shim plate

NEOPRENE ELASTOMERIC PAD

LAMINATED NEOPRENE FIXED BEARING PAD ASSEMBLY

FIXED BEARINGS															
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	16"	11"	12"	25¼"	2⅛"	19¼"	3"	1¼"	10"	1½"	4⅝"	0"	3"	2	2
														TOTAL BEARINGS	2

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

GENERAL NOTES:

Anchor rods shall be 2"Ø ASTM F1554 Grade 55 swedged rods and shall extend 18" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

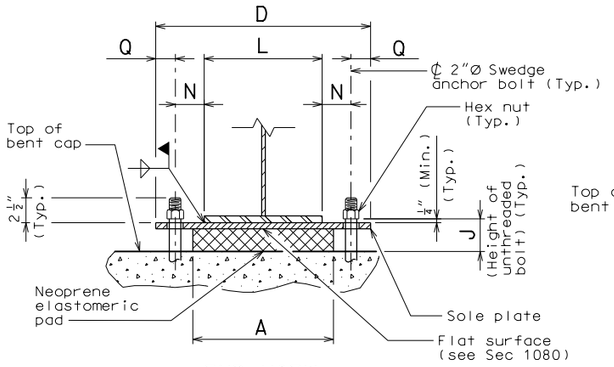
Anchor rod shall be at the ℄ of slotted hole at 60°F. Bearing position shall be adjusted R for each 10° fall or rise in temperature at installation.

All structural steel for the anchor rods and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

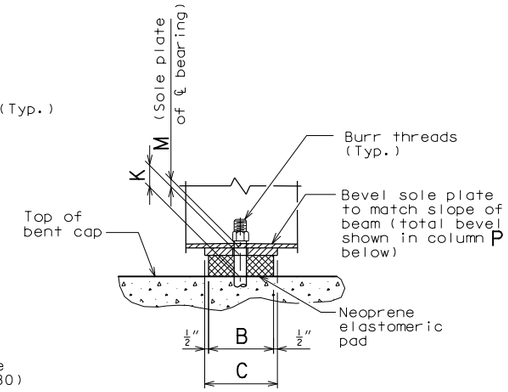
Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

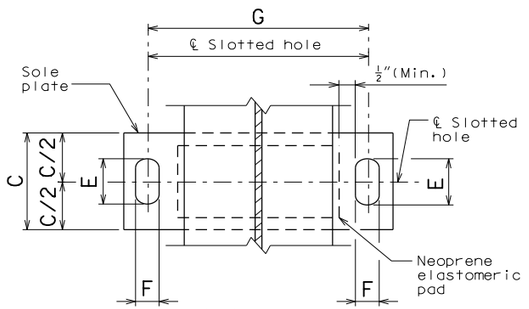
Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.



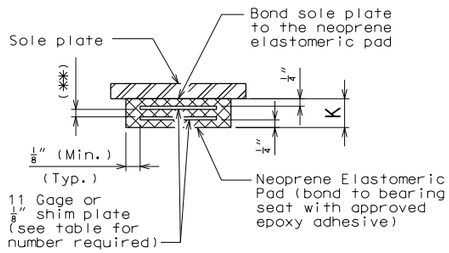
END VIEW



SIDE VIEW



PART PLAN



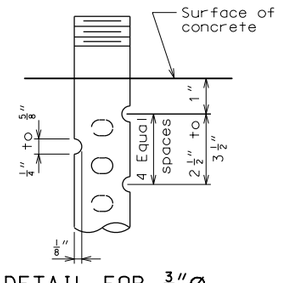
(**) Layers of ½" elastomer alternating with 11 gage or ⅛" shim plate

NEOPRENE ELASTOMERIC PAD

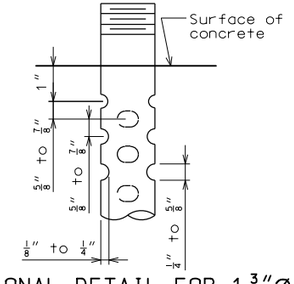
LAMINATED NEOPRENE EXPANSION BEARING PAD ASSEMBLY

EXPANSION BEARINGS																	
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
3	16"	11"	12"	25¼"	4⅜"	2⅛"	19¼"	4⅞"	3⅛"	10"	1½"	4⅝"	0"	3"	1/16"	5	2
																TOTAL BEARINGS	2

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.



DETAIL FOR ⅜"Ø THRU 2½"Ø ANCHOR BOLTS



OPTIONAL DETAIL FOR 1⅜"Ø THRU 2½"Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

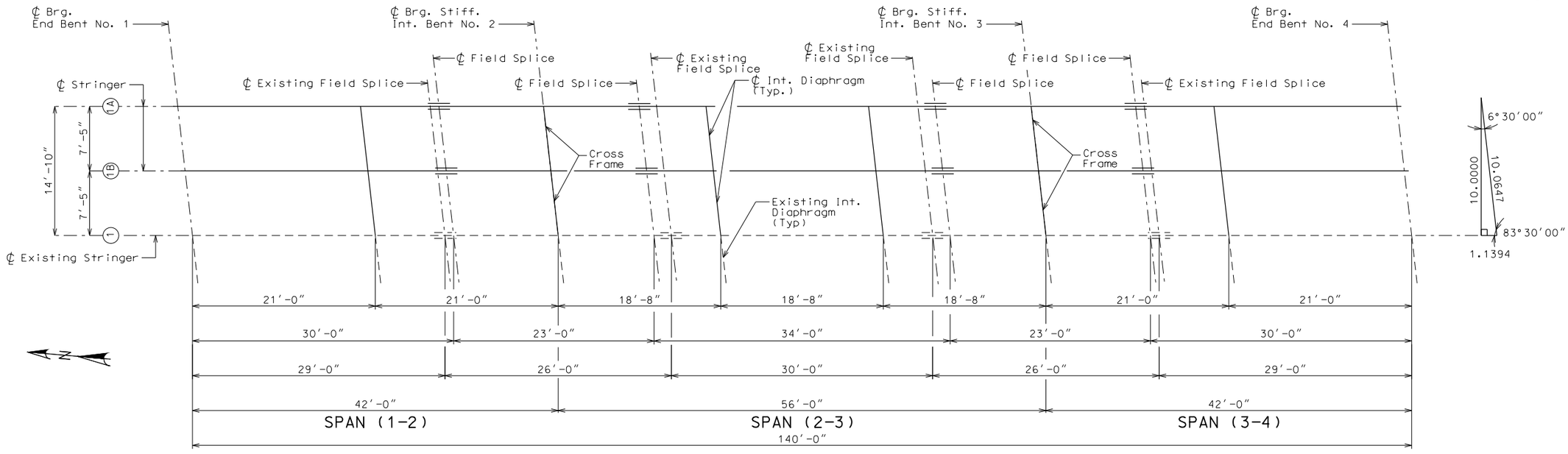
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

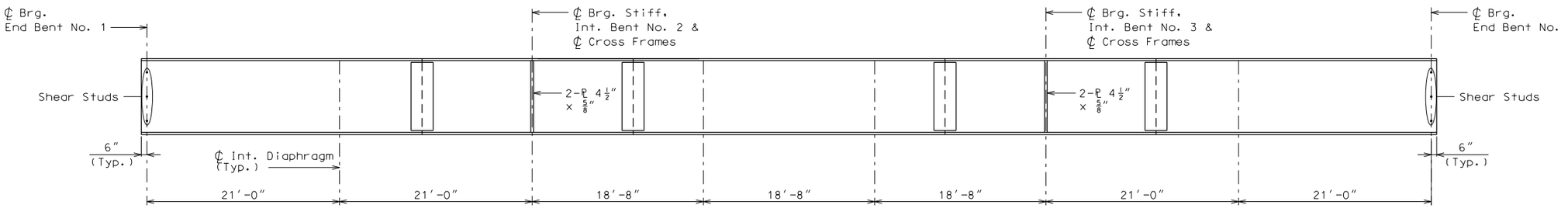
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 17
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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



PLAN OF STRUCTURAL STEEL



CROSS FRAME AND DIAPHRAGM LAYOUT

Notes:

For details of bearing stiffeners and intermediate diaphragms, see Sheet No. 22.

For details of web holes at end bents, see Sheet No. 20.

For Elevation of Stringer, see Sheet No. 19.

For details of bolted field splices, see Sheet No. 20.

For details of shear connectors, see Sheet No. 19.

Fabricated Structural Steel shall be ASTM A709 Grade 50.

Notes:

For details of intermediate diaphragms, see Sheet No. 22.

Contractor shall not field drill holes in existing stringer web or bearing stiffeners to attach diaphragms until Stringers 1A and 1B are erected.

Prior to drilling holes in existing stringer web for the diaphragm connection plates, the contractor shall verify that location of the holes will allow diaphragms to be installed to the shop welded diaphragm connection plates on Stringer 1B.

Bolts on intermediate diaphragms that connect stringers under different construction stage slab pours shall be installed snug tight, then tightened after both adjacent slab pours are completed.

Bolts on existing intermediate diaphragms that connect existing stringers under different construction stage slab pours shall be loosened to snug tight, then tightened after both adjacent slab pours are completed.

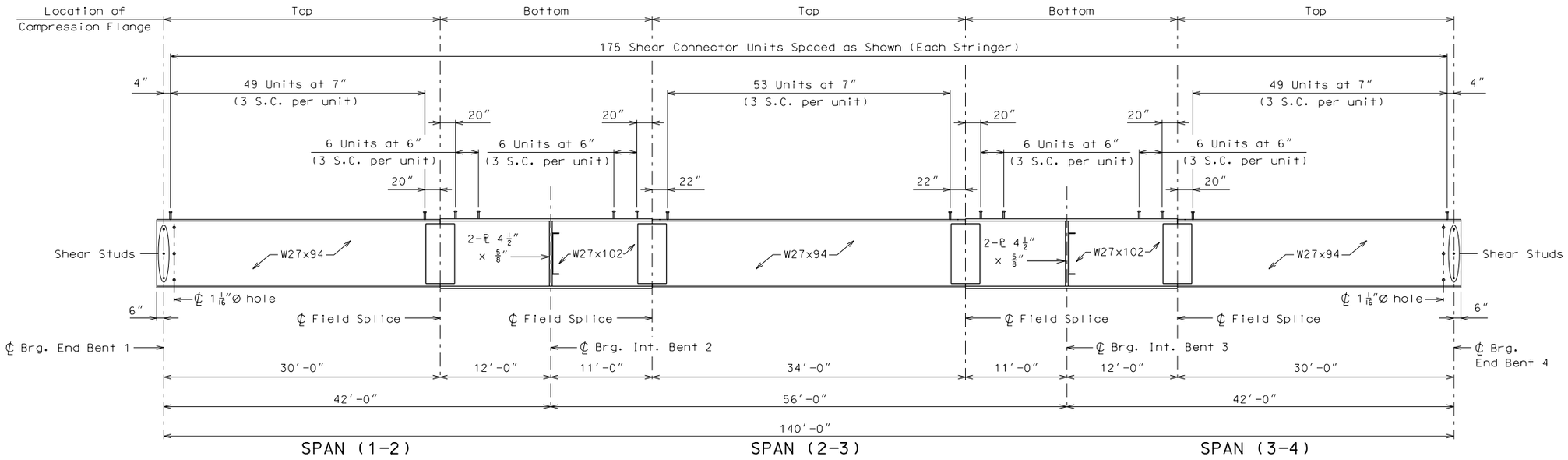
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

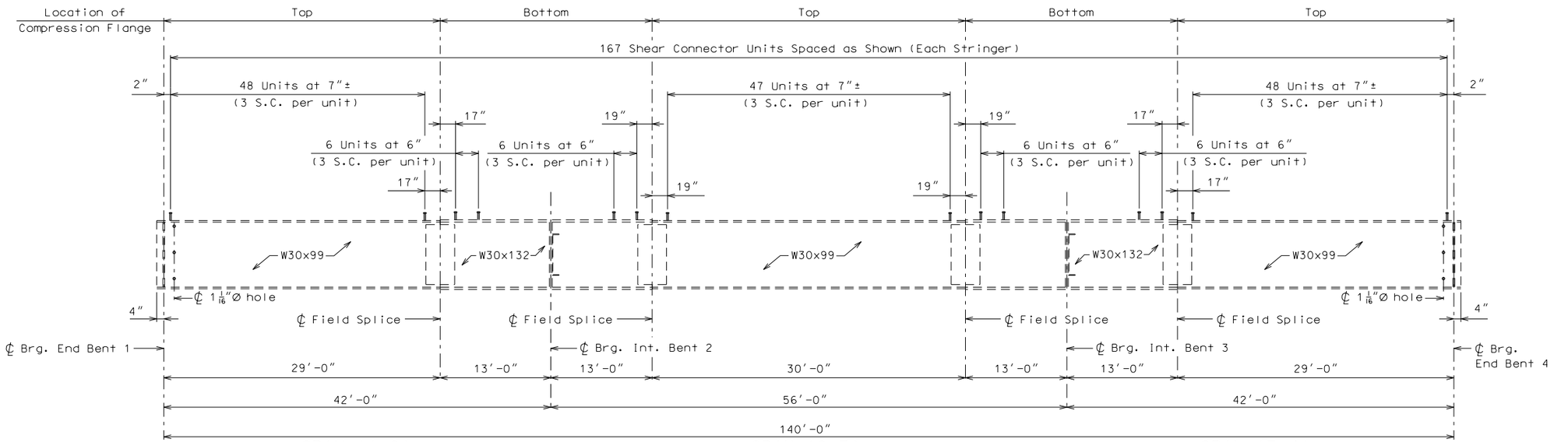
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 18
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

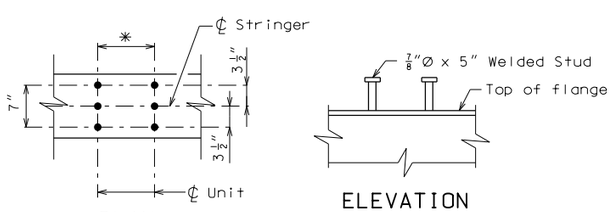
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



ELEVATION OF NEW STRINGERS



ELEVATION OF EXISTING STRINGERS



PLAN

ELEVATION

TYPICAL SHEAR STUD UNIT DETAIL

* Space as shown in elevation of beam.

Note: Contractor shall adjust shear connector unit locations as required to facilitate connection of new shear connectors to existing stringers.

Notes:

Weight of 3507 pounds of shear connectors is included in the weight of Fabricated Structural Low Alloy Steel. Weight includes studs attached to the webs of new stringers at end bents.

Shear connectors shall be in accordance with Sec 712, 1037 and 1080.

Notch toughness is required for all wide flange beams.

Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

For locations of bearing stiffeners, cross frames and intermediate diaphragms, see Sheet No. 18.

For details of intermediate connection plates and bearing stiffeners, see Sheet No. 22.

For details of diaphragms, see Sheet No. 22.

For plan of structural steel, see Sheet No. 18.

Cost of field drilling holes in existing stringer will be considered completely covered by the contract unit price for Slab on Steel.

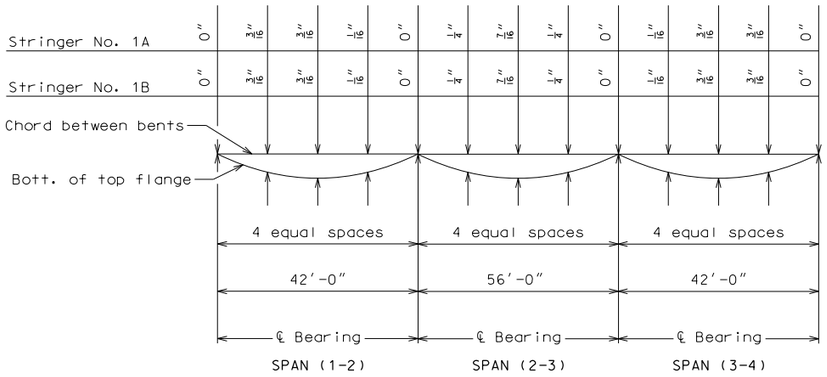
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 19
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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



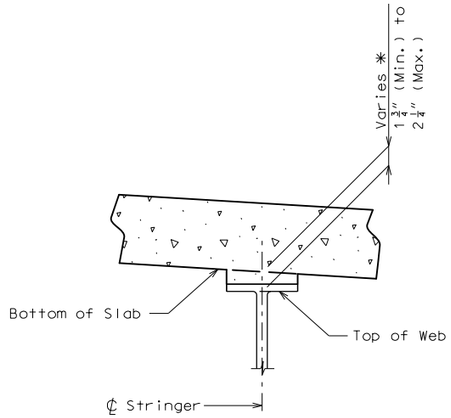
DEAD LOAD DEFLECTION

Notes:

13% of dead load deflection of Stringer 1A is due to the weight of structural steel.

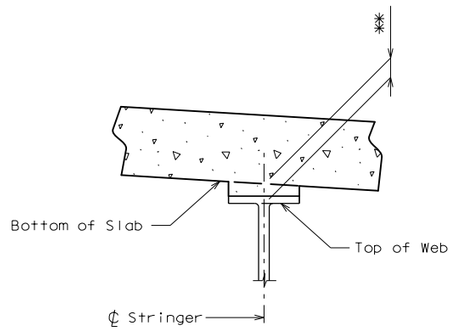
12% of dead load deflection of Stringer 1B is due to the weight of structural steel.

Dead load deflection includes weight of structural steel, concrete slab and barrier curbs.



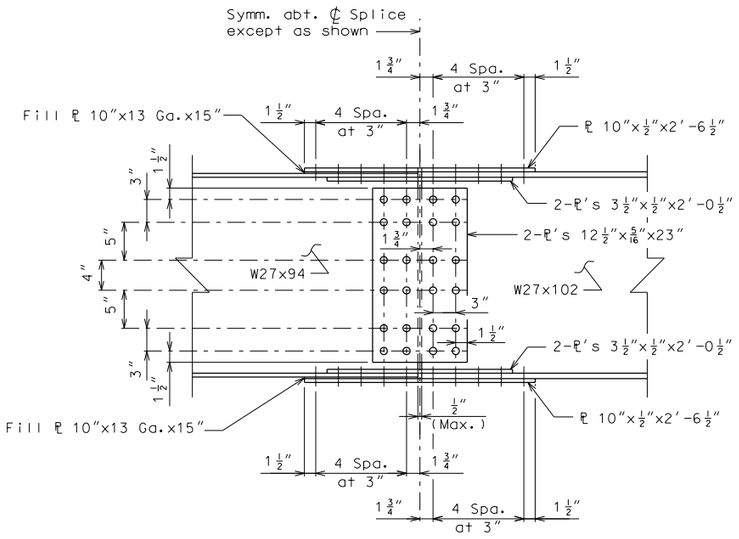
THEORETICAL SLAB HAUNCH FOR NEW STRINGERS NOS. 1A & 1B

✳✳ Dimensions may vary if the stringer dead load deflection after erection differs from plan dead load deflection by more or less than the % of dead load deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

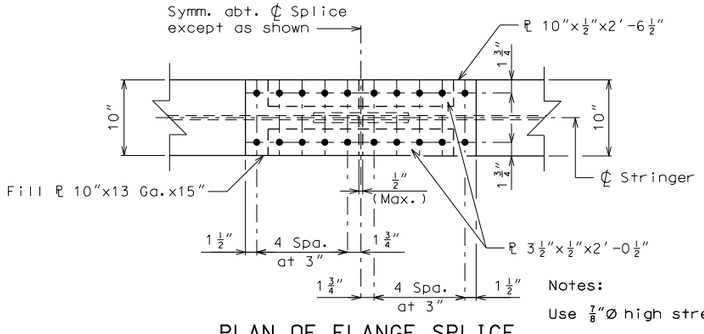


THEORETICAL SLAB HAUNCH FOR EXIST. STRINGERS NOS. 1, 2, 3, 4, & 5

✳✳ Haunch at supports ≥ 0″. Haunch at intermediate points in span to be calculated in field.



DETAIL OF BOLTED FIELD SPLICE



PLAN OF FLANGE SPLICE

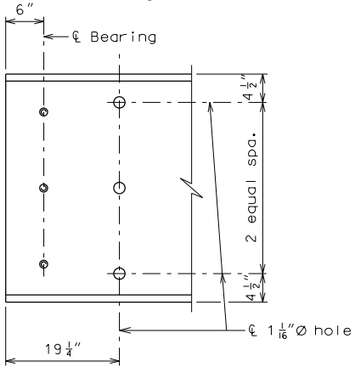
(Top and bottom flanges similar.)

Notes:

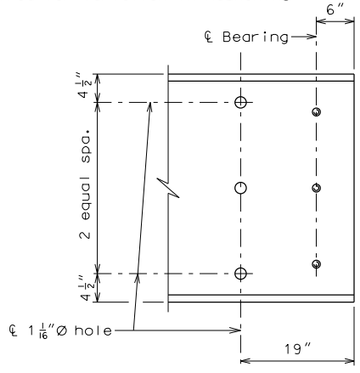
Use 7/8″Ø high strength bolts with 15/16″Ø holes.

Contact surfaces shall be in accordance with Sec 1081 for surface preparation.

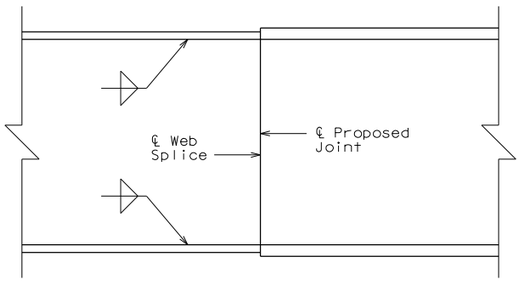
The flange and web splice plates shall be subject to notch toughness requirements, top notch toughness is required for flange on both sides of the splice.



DETAIL OF WEB HOLES AT END BENT NO. 1 (NEW STRINGERS)

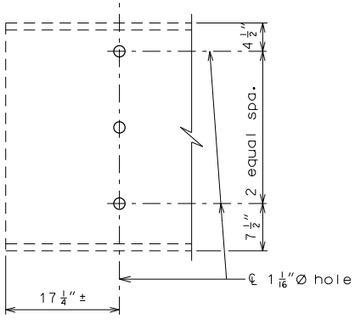


DETAIL OF WEB HOLES AT END BENT NO. 4 (NEW STRINGERS)

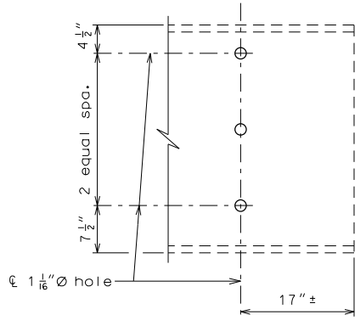


WELDED SHOP WEB SPLICE

Note: Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.

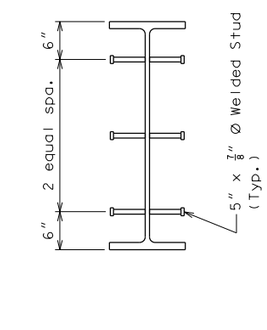


DETAIL OF WEB HOLES AT END BENT NO. 1 (EXISTING STRINGERS)



DETAIL OF WEB HOLES AT END BENT NO. 4 (EXISTING STRINGERS)

Note: Cost of field drilling holes in existing stringers will be considered completely covered by the contract unit price for Slab on Steel.



SECTION AT ℄ BEARING (NEW STRINGERS)

Note: Weight of 5″ x 7/8″Ø studs at end bents is included in the weight of shear connectors.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

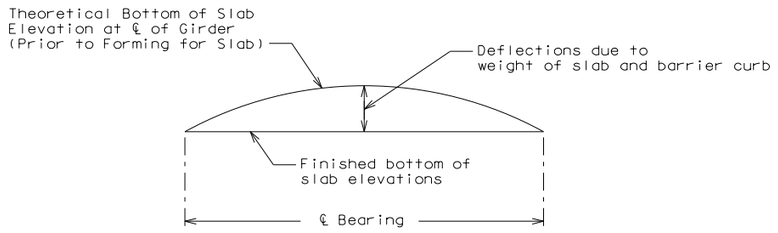
DESCRIPTION | DATE

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

Theoretical Bottom of Slab Elevations at CL of Stringer (Prior to Forming for Slab) ✱✱

	Span (1-2) (42'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.06	1411.10	1411.12	1411.14	1411.14
Stringer No. 1B	1411.21	1411.25	1411.28	1411.29	1411.29
Stringer No. 1	1411.36	1411.40	1411.42	1411.43	1411.44
Stringer No. 2	1411.50	1411.55	1411.57	1411.58	1411.59
Stringer No. 3	1411.55	1411.59	1411.61	1411.62	1411.63
Stringer No. 4	1411.42	1411.46	1411.48	1411.49	1411.49
Stringer No. 5	1411.29	1411.33	1411.35	1411.35	1411.36
	Span (2-3) (56'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.14	1411.18	1411.20	1411.18	1411.15
Stringer No. 1B	1411.29	1411.33	1411.35	1411.33	1411.30
Stringer No. 1	1411.44	1411.47	1411.49	1411.47	1411.45
Stringer No. 2	1411.59	1411.61	1411.63	1411.61	1411.59
Stringer No. 3	1411.63	1411.65	1411.67	1411.65	1411.63
Stringer No. 4	1411.49	1411.52	1411.54	1411.52	1411.49
Stringer No. 5	1411.36	1411.39	1411.40	1411.39	1411.36
	Span (3-4) (42'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.15	1411.15	1411.14	1411.12	1411.08
Stringer No. 1B	1411.30	1411.29	1411.29	1411.26	1411.23
Stringer No. 1	1411.45	1411.44	1411.43	1411.41	1411.37
Stringer No. 2	1411.59	1411.58	1411.57	1411.55	1411.51
Stringer No. 3	1411.63	1411.62	1411.61	1411.59	1411.55
Stringer No. 4	1411.49	1411.48	1411.48	1411.45	1411.41
Stringer No. 5	1411.36	1411.35	1411.34	1411.32	1411.28

✱✱ Elevations are based on a constant slab thickness of 7½" and include allowance for theoretical dead load deflections due to weight of slab & barrier curb.



TYPICAL SLAB ELEVATIONS DIAGRAM

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

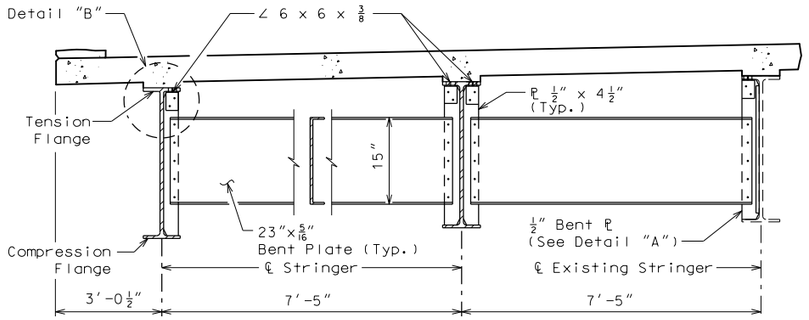
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

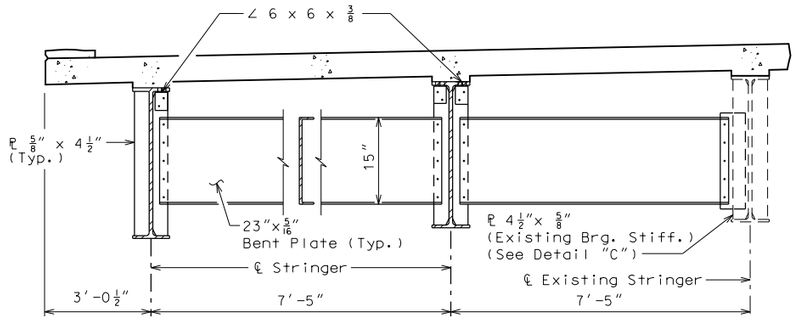
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

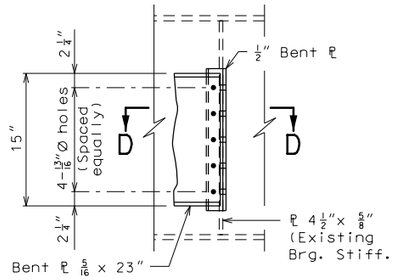
Note: This drawing is not to scale. Follow dimensions.



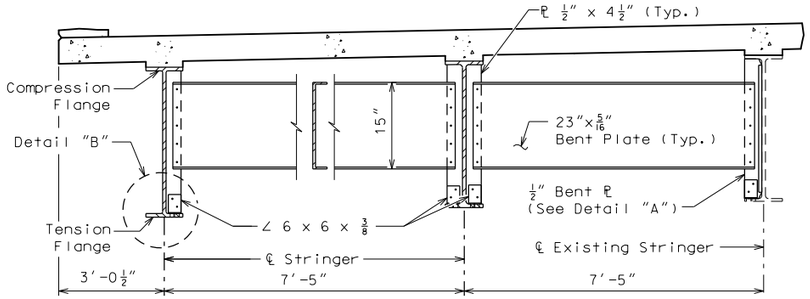
TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS TOP FLANGE IN TENSION



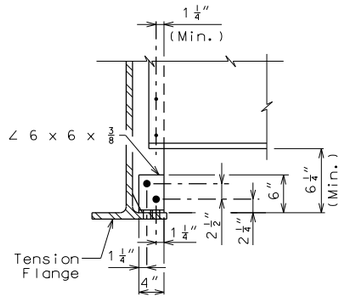
TYPICAL PART SECTION SHOWING CROSS FRAMES



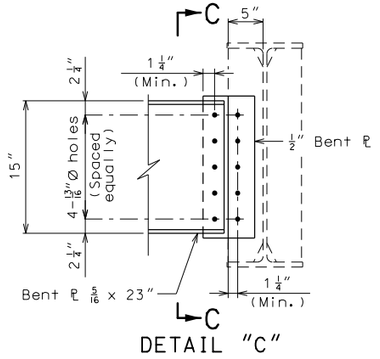
SECTION C-C



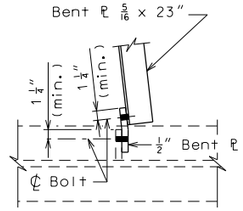
TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS BOTTOM FLANGE IN TENSION



DETAIL "B"



DETAIL "C"



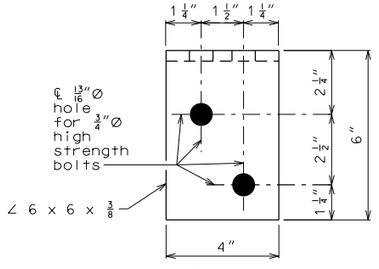
SECTION D-D

Notes:

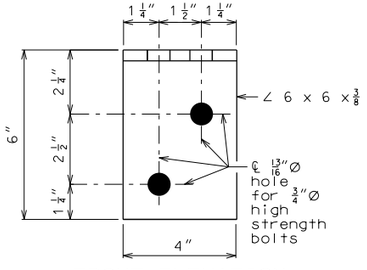
The two 3/4"Ø H.S. bolts that connect the 6 x 6 x 3/8 angle to the top flange shall be placed so the nut is on the inside of flange (toward the web).

At the contractor's option, holes in the diaphragm plate of non slab bearing diaphragms may be made 3/16" larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the stringer diaphragm connection plate or transverse web stiffener shall be standard size.

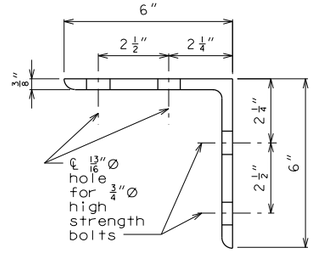
For location of intermediate diaphragms and cross frames, see Sheet No. 18.



PLAN

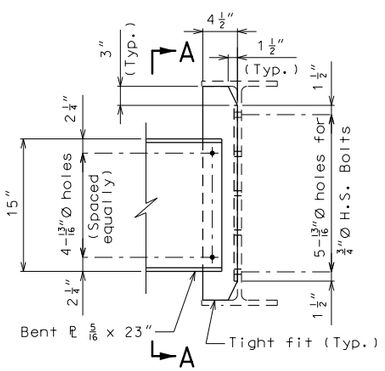


FRONT ELEVATION

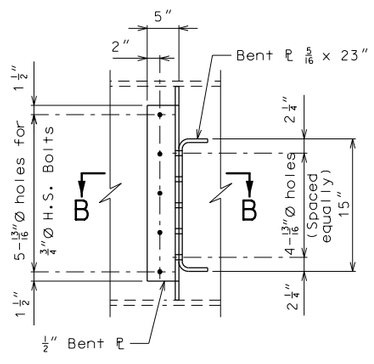


SIDE VIEW

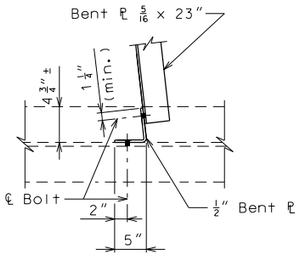
DETAIL OF FLANGE CONNECTION ANGLE



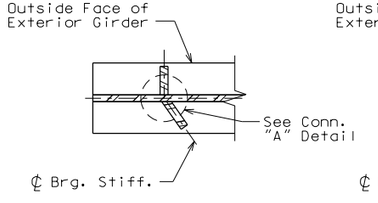
DETAIL "A"



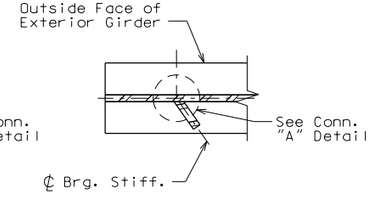
SECTION A-A



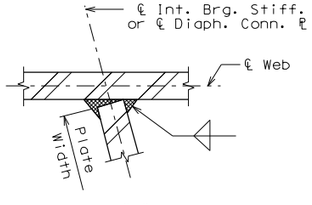
SECTION B-B



INT. BRG. STIFF.



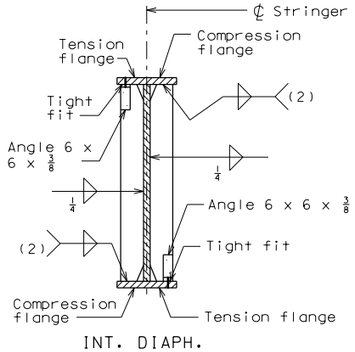
DIAPH. CONN. PLATE



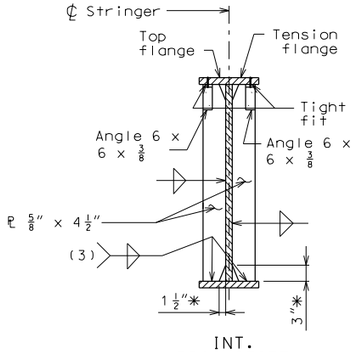
CONN. "A"

TYPICAL LOCATION DETAILS

WELDING DETAILS



INT. DIAPH. CONN. PLATE



INT. BRG. STIFF.

(2) Weld to compression flange as located on elevation of stringer.

(3) Grind or mill to bear.

* Typical for all int. diaph. conn. pl. and brg. stiff.

WELDING DETAILS

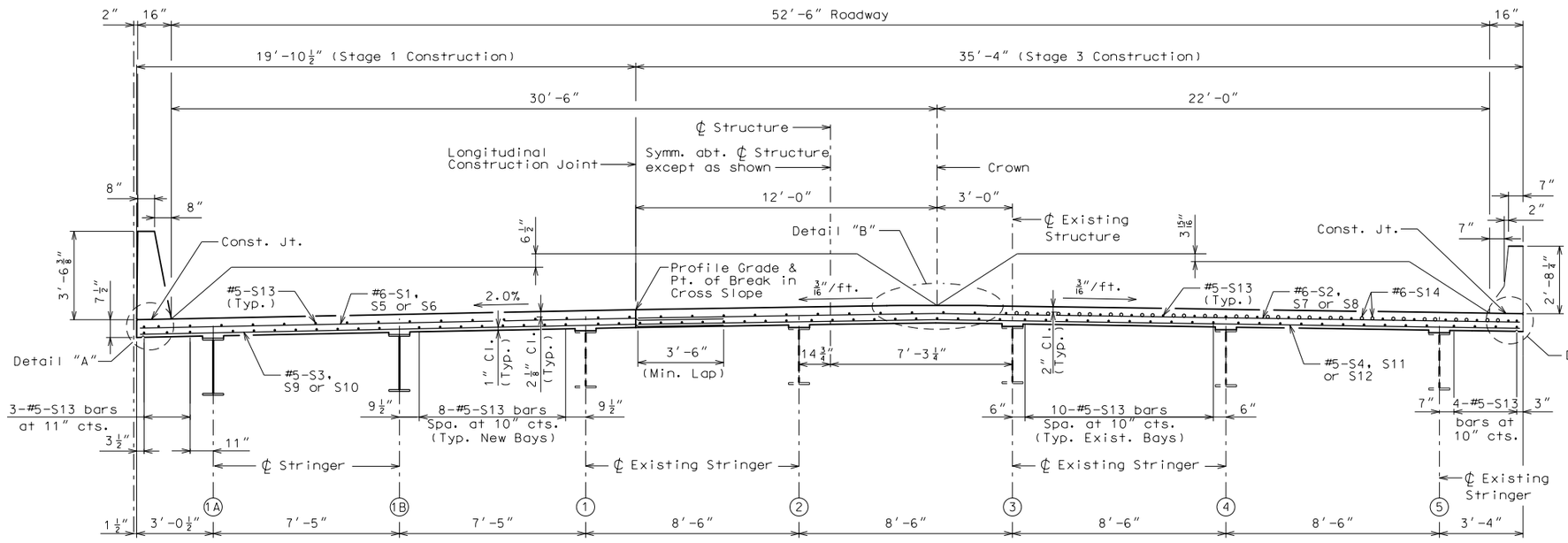
Designed:	BWC	04/24/09
Detailed:	SAS	10/06/10
Checked:	HNG	10/06/10

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

DATE PREPARED	10/06/10
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	22
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

DESCRIPTION | DATE

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



HALF SECTION NEAR MIDSPAN HALF SECTION NEAR INT. BENTS

SECTION THRU SLAB
TYPICAL SECTION NEAR ℄ SPAN

Notes:

For plan of slab showing top reinforcement, see Sheet No. 24.

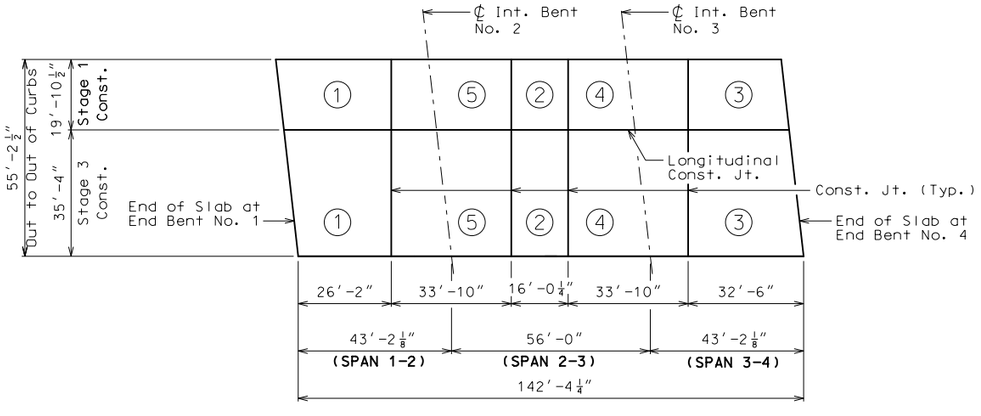
For plan of slab showing bottom reinforcement, see Sheet No. 25.

For details of staged construction, see Sheet Nos. 3 and 4.

For details and reinforcement of barriers, see Sheet Nos. 27 thru 32.

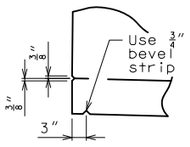
For theoretical bottom of slab elevations, see Sheet No. 21.

For theoretical slab haunch details and dead load deflection diagram, see Sheet No. 20.

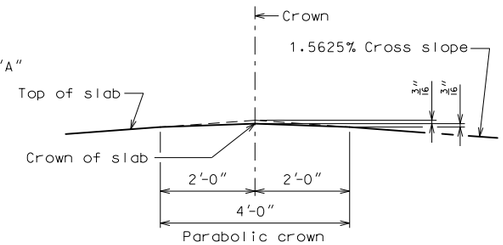


SLAB POUR PLAN

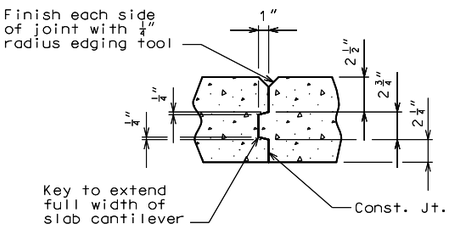
Note: Longitudinal dimensions are horizontal.



DETAIL "A"



DETAIL "B"



SLAB CONSTRUCTION JOINT DETAIL

	Sequence of Pours	Min. rate of pour cu. yds./hr.	
	Direction	With retarder	No retarder
Alternate "C" pours	1 + 5 + 2 + 4 + 3	25	25
	End to end		

Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE

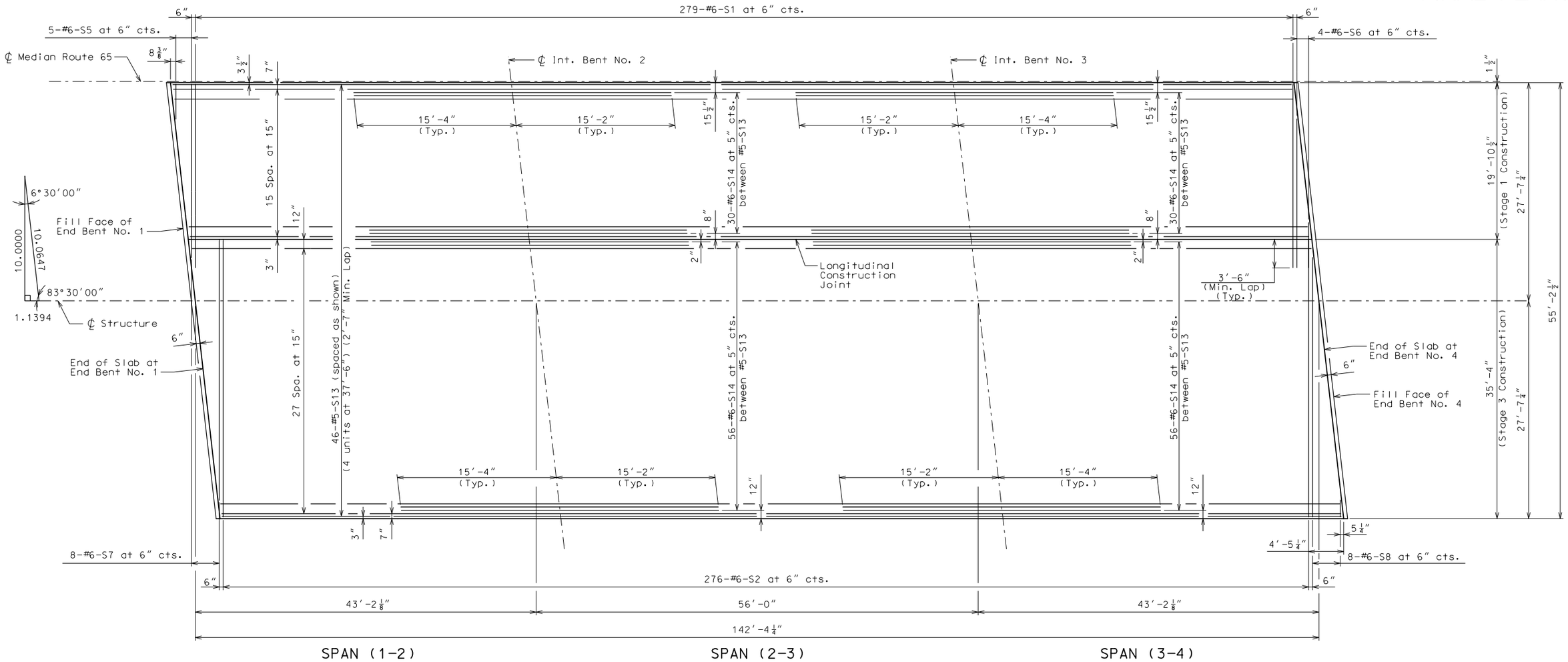
DATE PREPARED	10/06/10
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	23
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

DESCRIPTION | DATE

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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



PLAN OF SLAB SHOWING TOP REINFORCEMENT

Notes:

Longitudinal dimensions shown are horizontal.

For Plan of Slab Showing Bottom Reinforcement, see Sheet No. 25.

For Theoretical Bottom of Slab Elevations, see Sheet No. 21.

For Section Thru Slab, see Sheet No. 23.

For Slab Pouring Sequence, see Sheet No. 23.

For details and reinforcement of Safety Barrier Curbs, see Sheets No. 27 thru 32.

For details and locations of Slab Drains, see Sheet No. 26.

For details of staged construction, see Sheet Nos. 3 and 4.

For theoretical slab haunch details and dead load deflection, see Sheet No. 20.

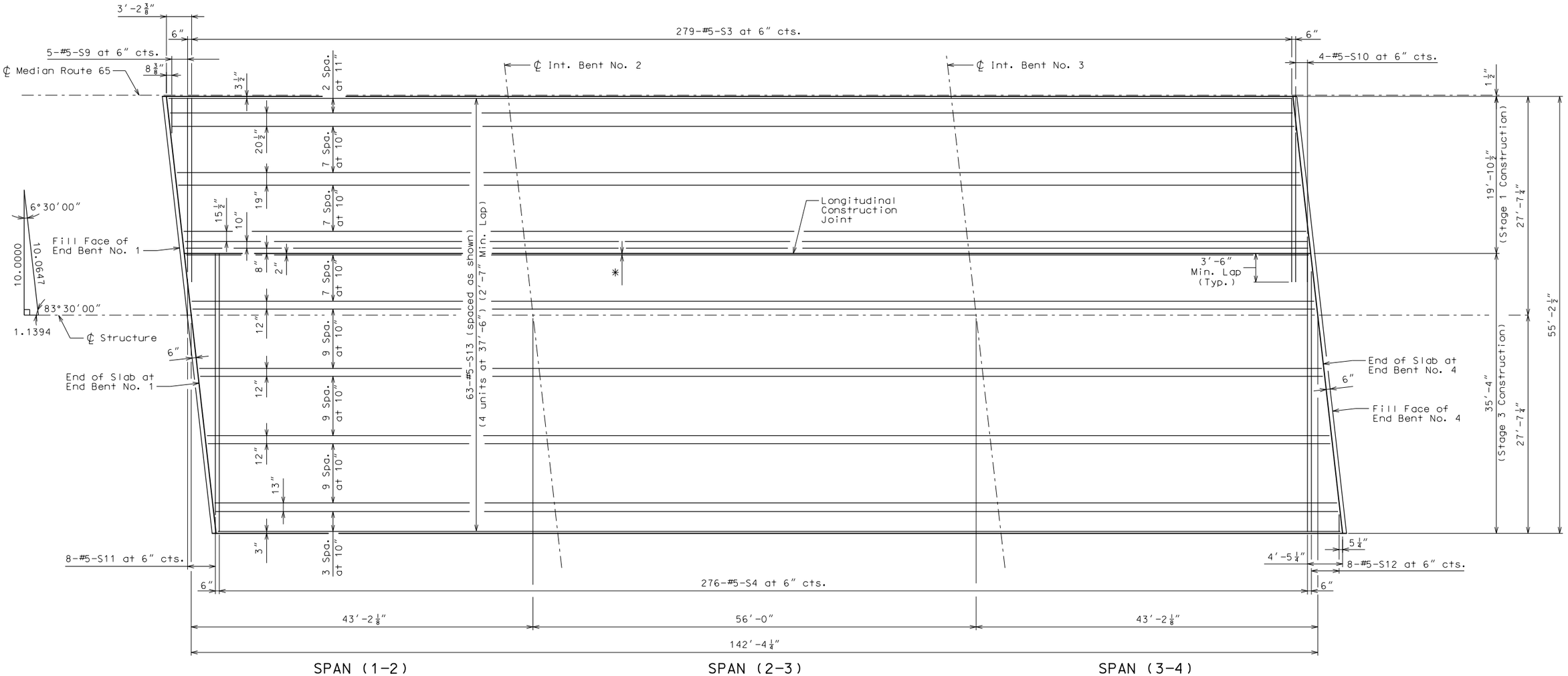
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 24
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Notes:

Longitudinal dimensions shown are horizontal.

For Plan of Slab Showing Top Reinforcement, see Sheet No. 24.

For Theoretical Bottom of Slab Elevations, see Sheet No. 21.

For Section Thru Slab, see Sheet No. 23.

For Slab Pouring Sequence, see Sheet No. 23.

For details and reinforcement of Safety Barrier Curbs, see Sheets No. 27 thru 32.

For details and locations of Slab Drains, see Sheet No. 26.

For details of staged construction, see Sheet Nos. 3 and 4.

For theoretical slab haunch details and dead load deflection, see Sheet No. 20.

* - Contractor shall adjust reinforcement at all longitudinal construction joints as needed to maintain 1½″ clear.

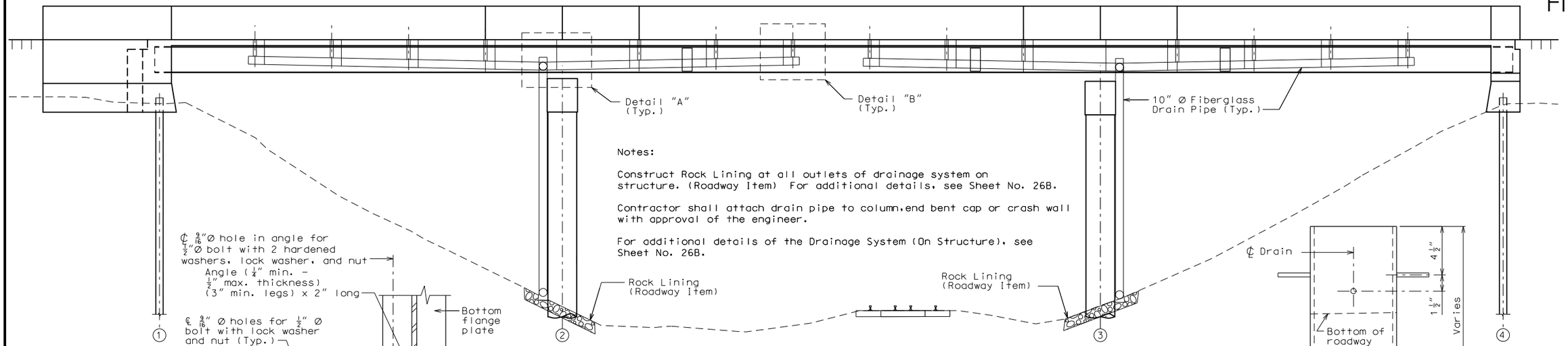
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 25
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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



ELEVATION

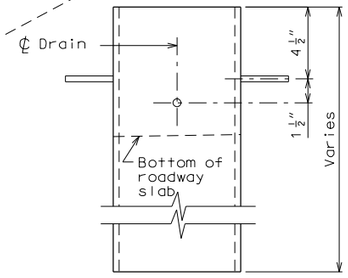
Note: Crash Wall not shown for clarity.

Notes:

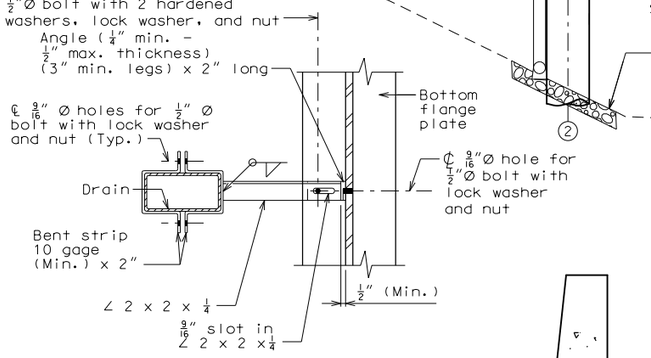
Construct Rock Lining at all outlets of drainage system on structure. (Roadway Item) For additional details, see Sheet No. 26B.

Contractor shall attach drain pipe to column, end bent cap or crash wall with approval of the engineer.

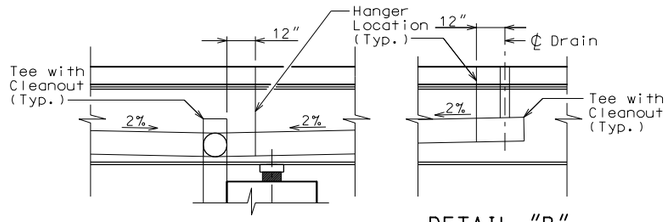
For additional details of the Drainage System (On Structure), see Sheet No. 26B.



ELEVATION OF DRAIN



PART SECTION SHOWING BRACKET ASSEMBLY



DETAIL "A"

DETAIL "B"

Notes:

Slab drains may be fabricated of either ¼" welded sheets of ASTM A709 Grade 36 steel or from ¼" structural steel tubing ASTM A500 or A501.

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

Outside dimensions of drains are 8" x 4".

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

Shift reinforcing steel in field where necessary to clear drains.

The drains 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 bolt hole for the bracket assembly attachment shall be located on the Stringer shop drawings.

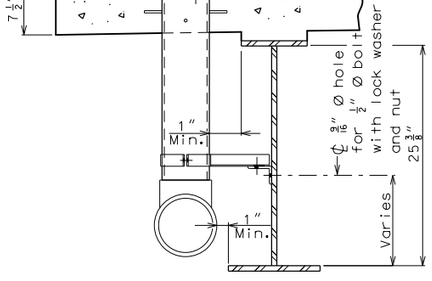
Coil inserts for attaching Drain System hangers to slab shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

The bolts required to attach the slab drain bracket assembly to the stringer shall be supplied by the girder fabricator.

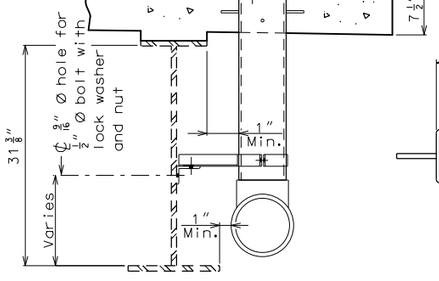
Cost of slab drains and slab drain bracket assemblies for the Slab Drains is included in the contract unit price for Slab Drain.

Cost of brackets, pipes, hangers, and connectors for the Drainage System is included in the contract lump sum price for Drainage System (On Structure).

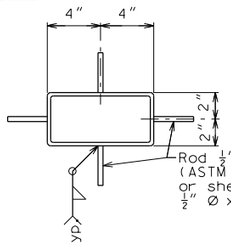
Cost of field drilling holes in existing stringer webs will be considered completely covered by the contract unit price for Slab Drain.



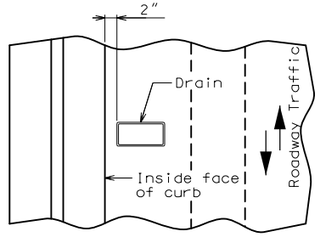
PART SECTION NEAR DRAIN (EAST SIDE)



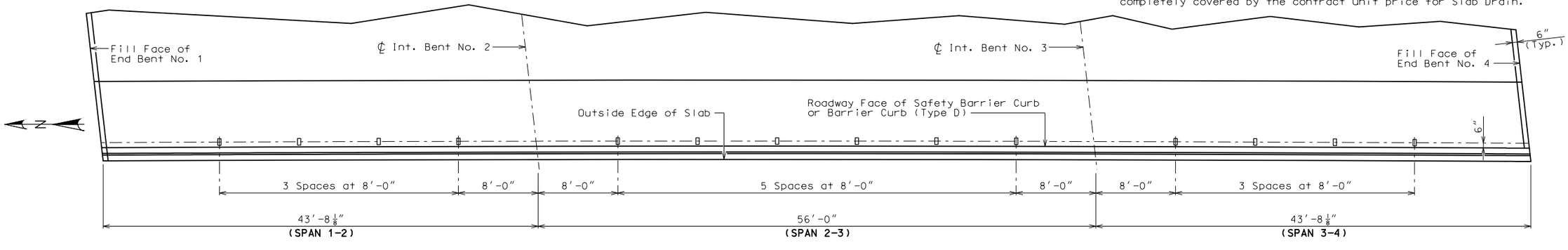
PART SECTION NEAR DRAIN (WEST SIDE)



PLAN OF DRAIN



PART PLAN OF SLAB AT DRAIN



PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

Note: All longitudinal dimensions along outside edge of slab. (West side shown, east side similar.)

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

DATE PREPARED 08/09/11

ROUTE 65 | STATE MO

DISTRICT BR | SHEET NO. 26A

COUNTY GREENE

JOB NO. J8P0605E

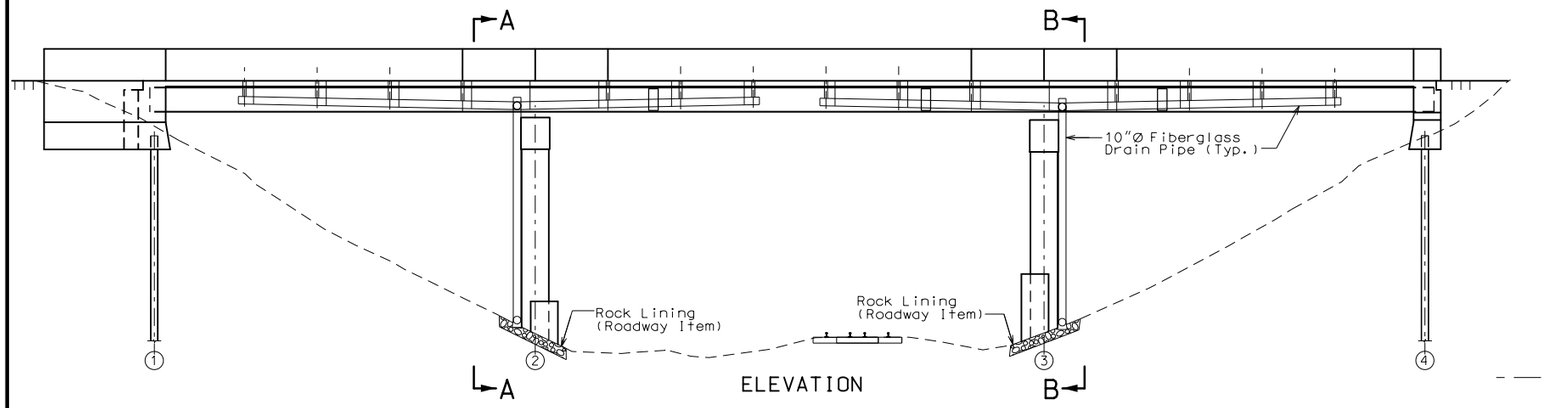
CONTRACT ID. 090626-802

PROJECT NO. FAF-65-2(65)

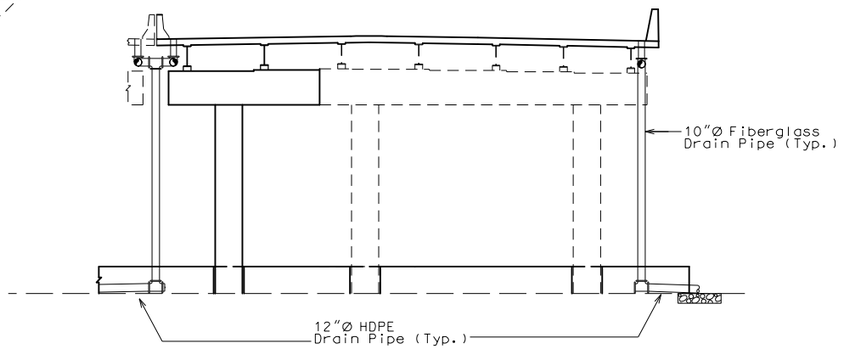
BRIDGE NO. A16491

DATE	DESCRIPTION
08/09/11	1 New Sheet

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

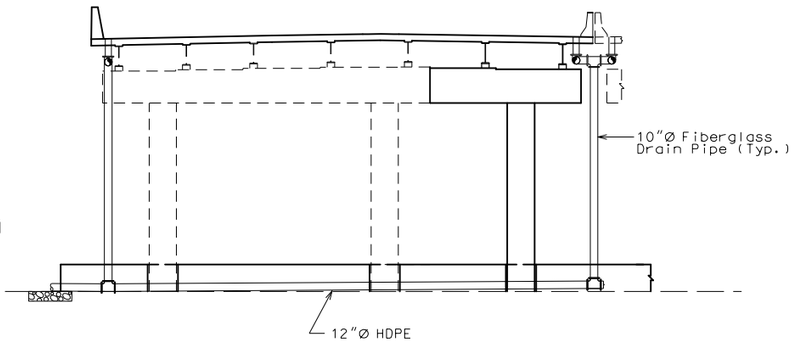


ELEVATION



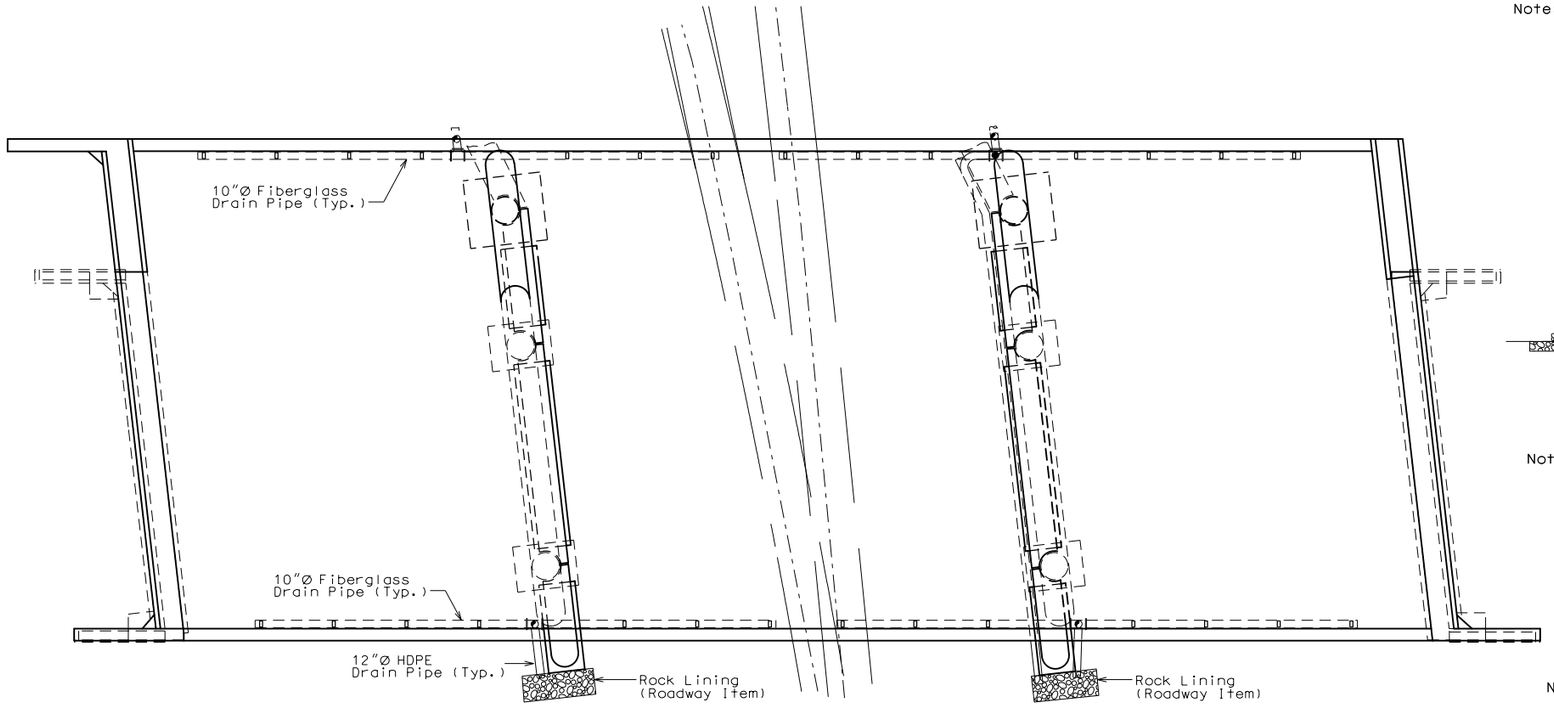
SECTION A-A

Note: Contractor shall attach drain pipe to columns, bent cap or crash wall with approval of the engineer.



SECTION B-B

Note: Contractor shall attach drain pipe to columns, bent cap or crash wall with approval of the engineer.



PLAN

Notes:

Construct Rock Lining at outlets of drainage system on structure. (Roadway Item)

Contractor shall attach drain pipe to columns, bent caps or crash walls with approval of the engineer.

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

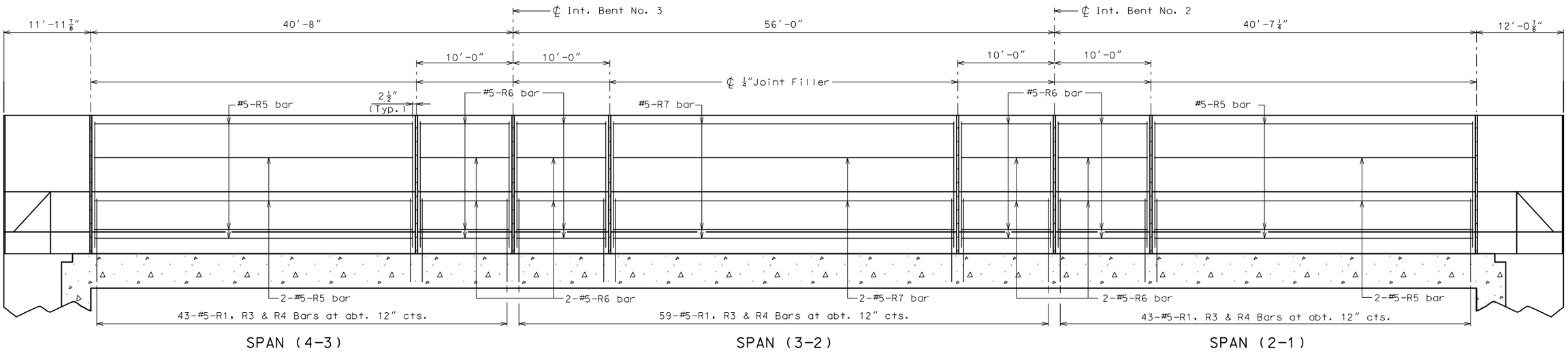
Coil inserts for attaching Drain System hangers to slab shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

Cost of brackets, pipes, hangers, and connectors for the Drainage System is included in the contract lump sum price for Drainage System (On Structure).

DATE PREPARED 08/09/11
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 26B
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

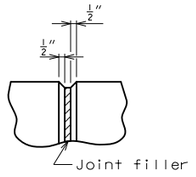
DATE	DESCRIPTION
08/09/11	1 New Sheet

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

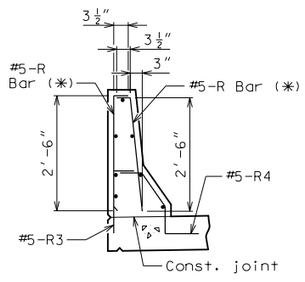


ELEVATION OF RIGHT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.

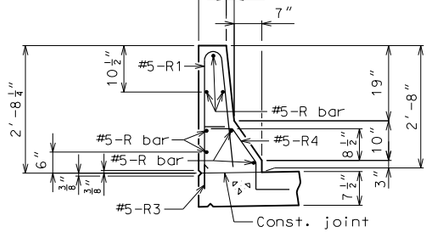


FILLED JOINT DETAIL



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.)

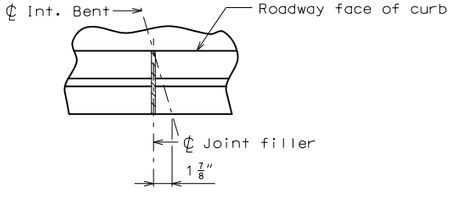


PART SECTION A-A

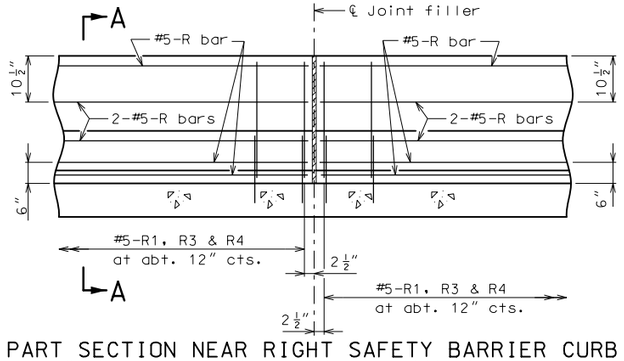
Notes:

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

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



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION NEAR RIGHT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

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″ radius or a 3/4″ bevel, unless otherwise noted.

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

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

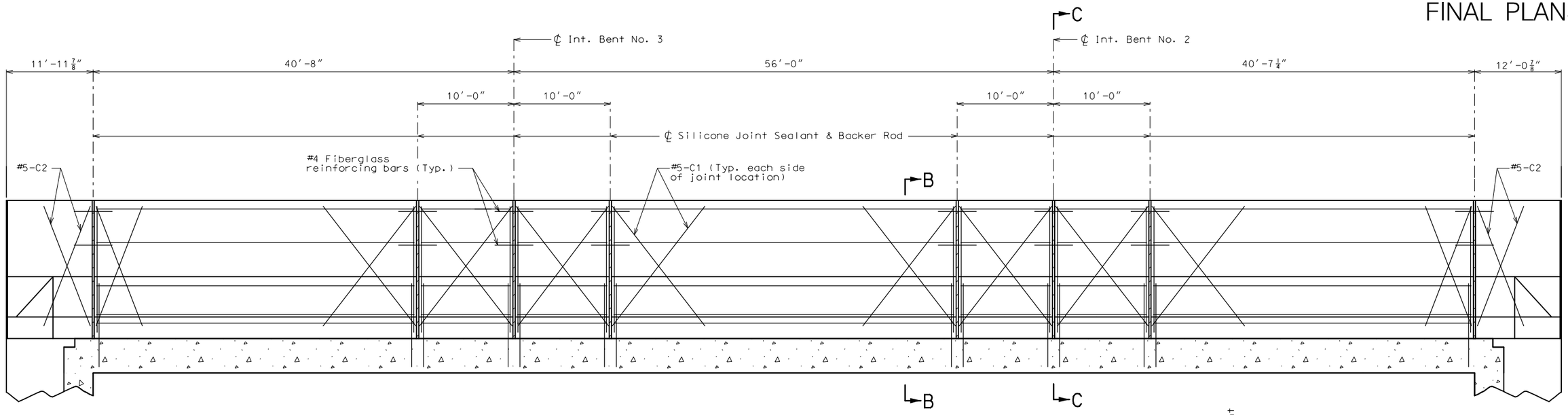
Designed:	BWC	04/24/09
Detailed:	SAS	10/06/10
Checked:	HNG	10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 27
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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



ELEVATION OF RIGHT BARRIER (ROADWAY FACE)
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note: Longitudinal dimensions are horizontal.

Notes:

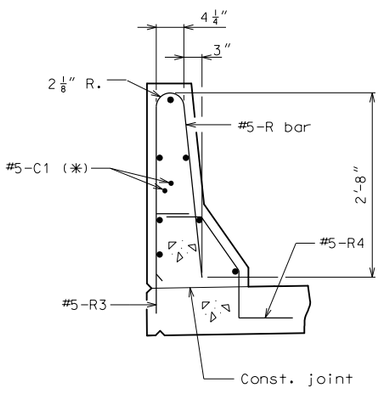
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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

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

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

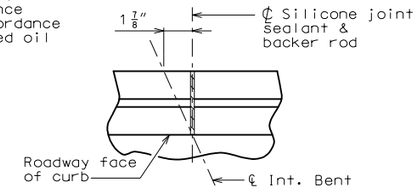
The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.



PART SECTION B-B

Note:

(✳) Each side of joint location.



PART PLAN SHOWING
SAFETY BARRIER CURB JOINT

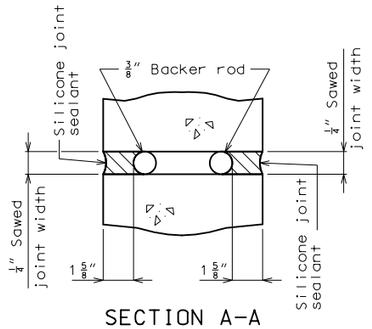
Notes:

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

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

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

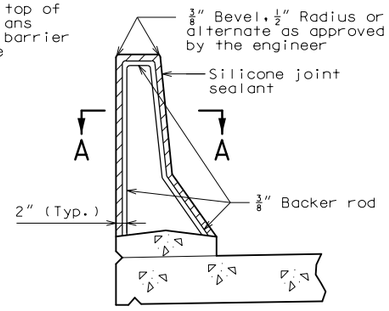
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



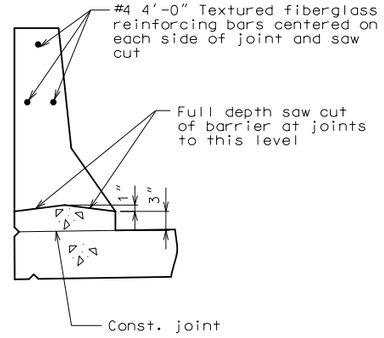
SECTION A-A

Note:

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



SECTION THRU JOINT



PART SECTION C-C

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

(Right barrier curb shown.)

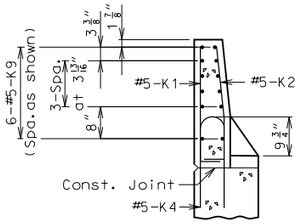
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

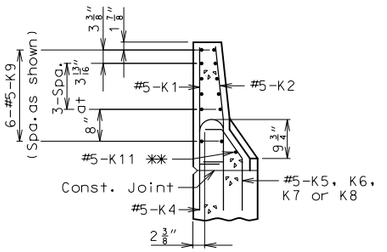
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 28
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

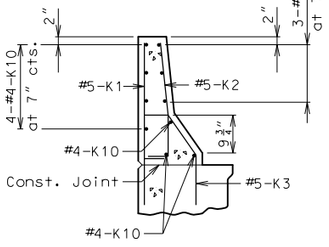
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



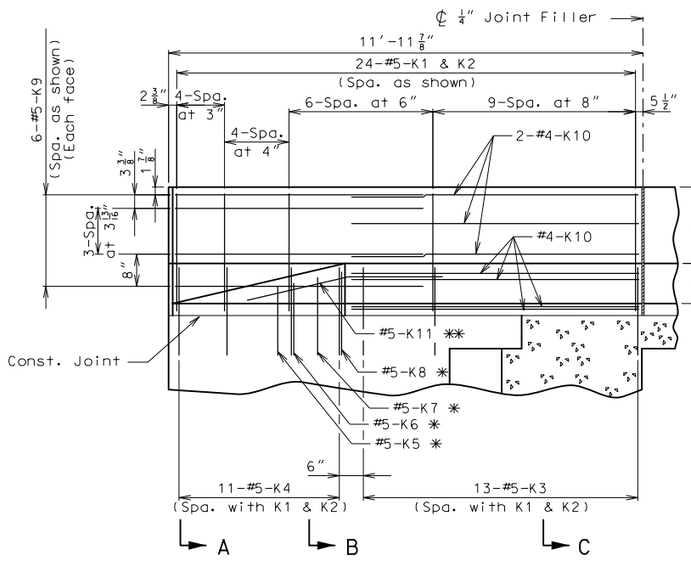
SECTION A-A



SECTION B-B



SECTION C-C

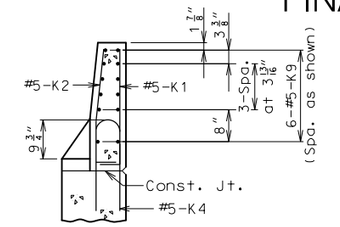


END BENT 4 ELEVATION

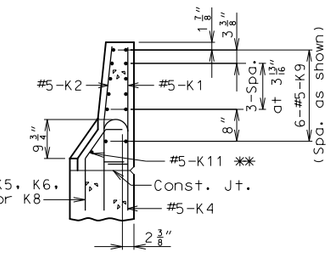
END BENT 1 ELEVATION

* Spaced with #5-K4 bars.

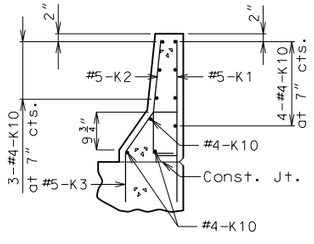
** Fit bar to follow transition face of curb.



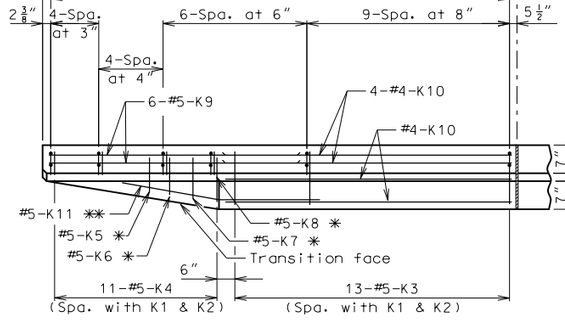
SECTION D-D



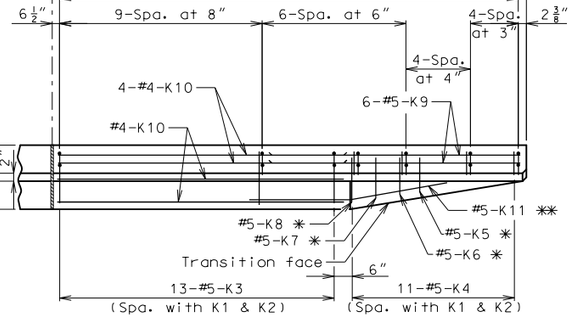
SECTION E-E



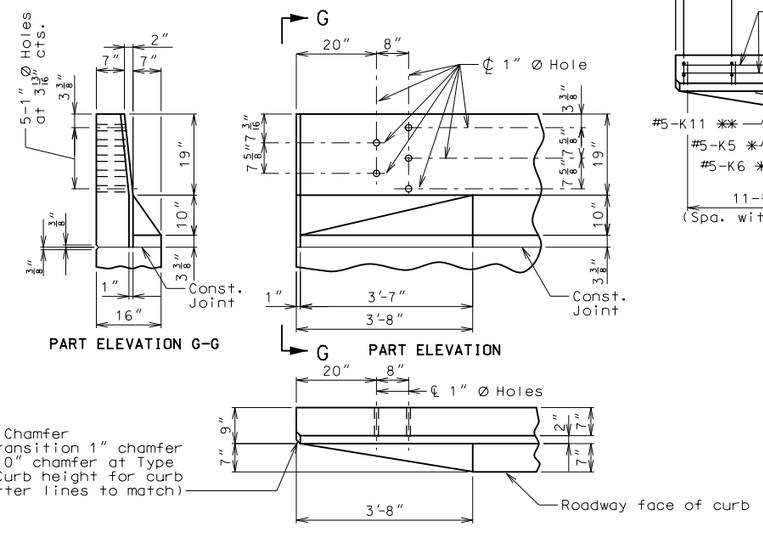
SECTION F-F



END BENT 4 PLAN



END BENT 1 PLAN



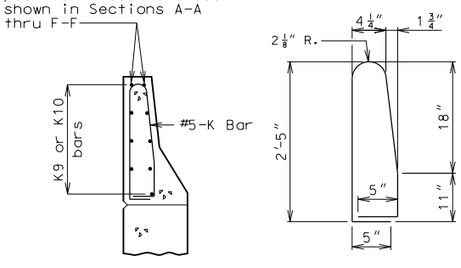
DETAILS OF GUARD RAIL ATTACHMENT

Notes: Use a minimum lap of 2'-0" between K9 and K10 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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

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

The top two K9 or K10 bars shall be kept with position close to those shown in Sections A-A thru F-F



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

K1-K2 BAR PERMISSIBLE ALTERNATE SHAPE (***)

(***) 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

(Right barrier curb shown)

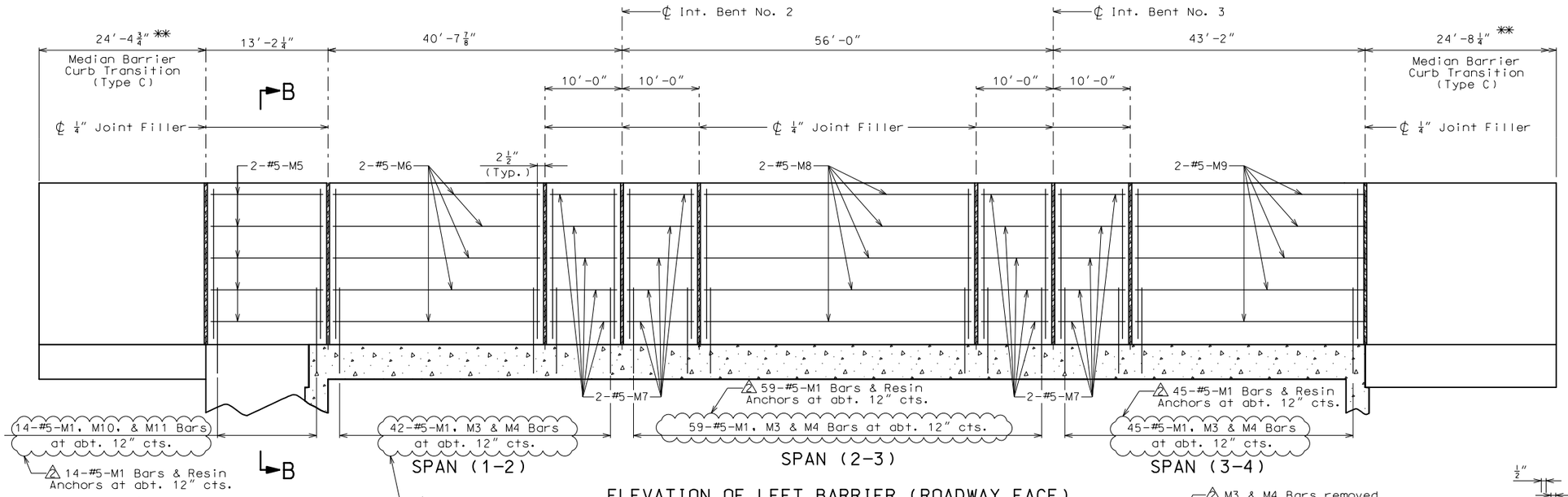
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 29
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

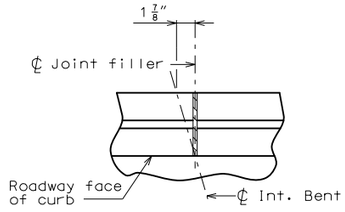
DESCRIPTION | DATE

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

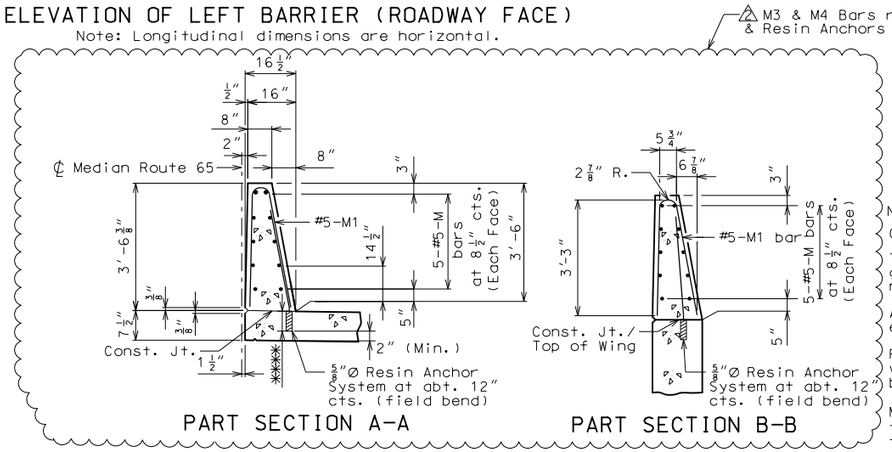


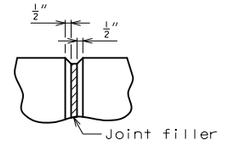
ELEVATION OF LEFT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.

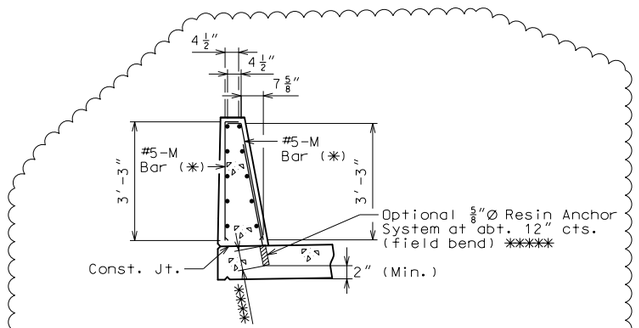


PART PLAN SHOWING
SAFETY BARRIER CURB JOINT





FILLED JOINT DETAIL



M-BAR PERMISSIBLE ALTERNATE SHAPE
& OPTIONAL ANCHORING SYSTEM

△ M3 & M4 Bars removed & Resin Anchors added.

Notes:

Use a minimum lap of 2′-11″ for #5 horizontal median barrier curb (Type D) bars.

The cross-sectional area above the slab = 3.49 sq. ft.

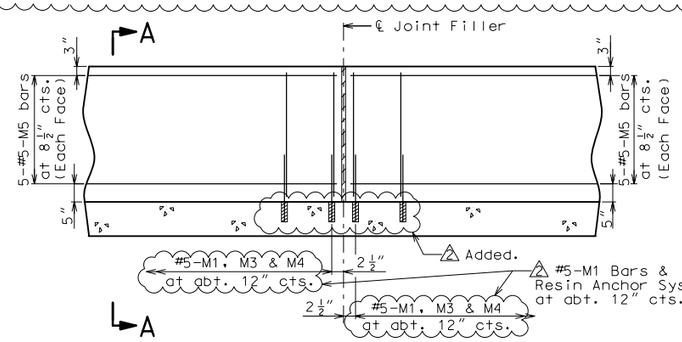
(*) The M1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

** For details of the median barrier curb transition (Type C), see Sheet No. 32.

(****) Manufacturer's embedment length, but not less than 5½″ min.

(*****) The resin anchoring system may be replaced with the optional anchoring system as shown, at the contractor's option.

△ Added.



PART ELEVATION
(CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

Notes:

Concrete in the barrier curb (Type D) shall be Class B-1.

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

All exposed edges of Barrier Curb (Type D) shall have either a ½″ radius or a ⅜″ bevel, unless otherwise noted.

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

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

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

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

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Barrier Curb (Type D).

The minimum embedment depth in concrete with f′c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5½″.

An epoxy coated #5 Grade 60 reinforcing bar 3′-0″ long shall be substituted for the ⅝″Ø threaded rod.

△ Added.

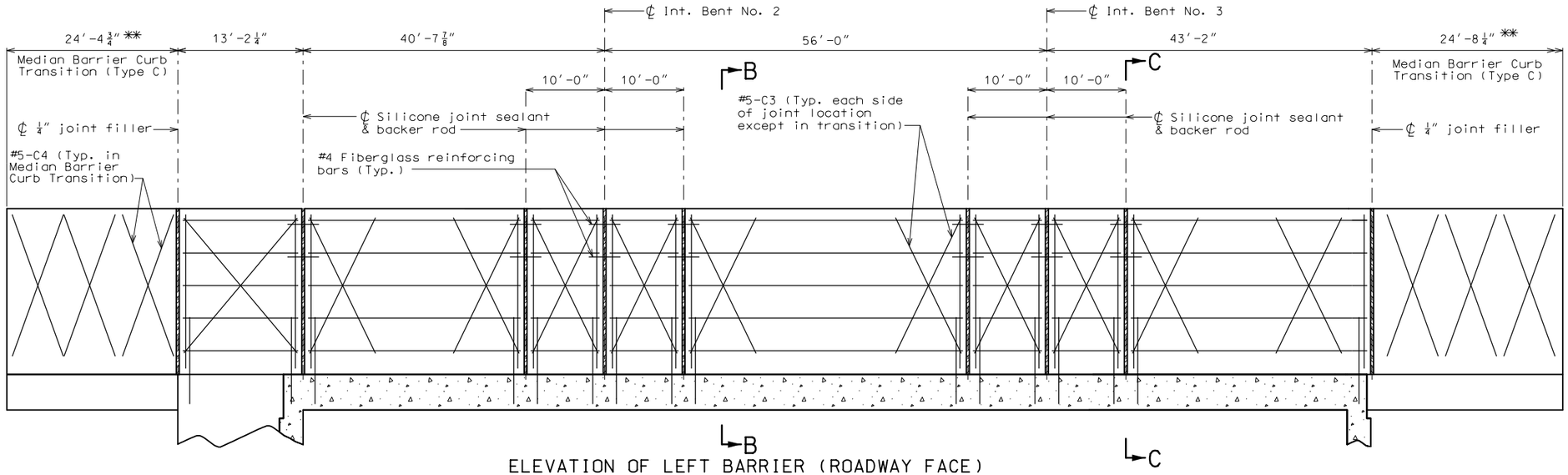
Designed:	BWC	04/24/09
Detailed:	SAS	10/06/10
Checked:	HNG	10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 30
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

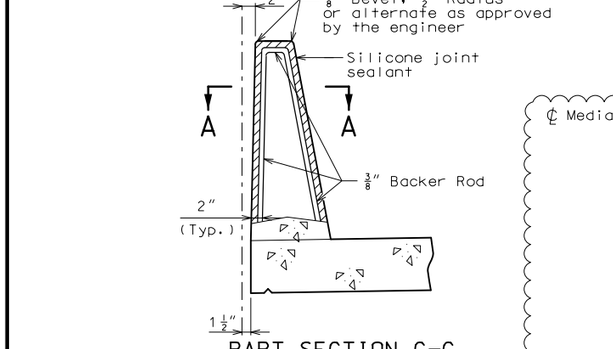
DATE	DESCRIPTION
09/15/10 △	M bars changed to Resin Anchors.

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

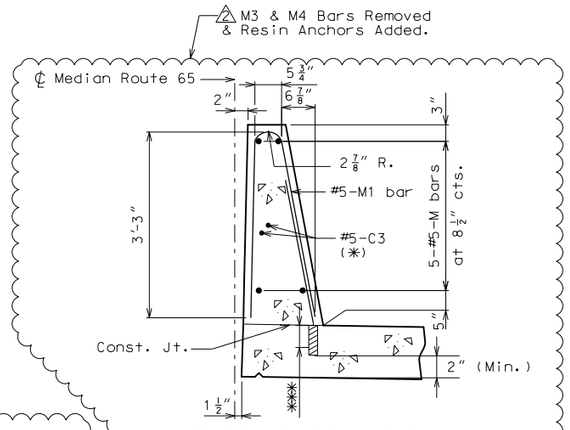


ELEVATION OF LEFT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.



PART SECTION C-C



PART SECTION B-B

Note:

(*) Each side of joint location, (except in transition).

(***) Manufacturer's embedment length but not less than 5½″ min.

Added.

Notes:

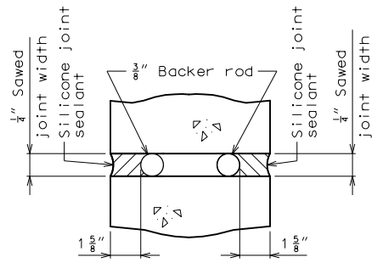
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Barrier Curb (Type D).

The minimum embedment depth in concrete with f′c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5½″.

An epoxy coated #5 Grade 60 reinforcing bar 3′-0″ long shall be substituted for the ⅝″Ø threaded rod.

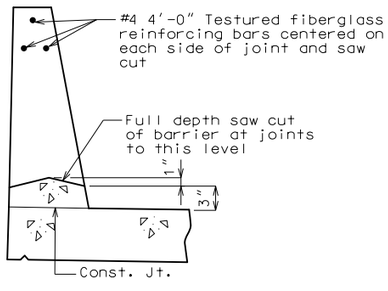
Added.



SECTION A-A

Note:

Cost of silicone joint sealant and backer rod, complete-in-place, will be considered completely covered by the contract unit price for barrier curb (Type D).



SECTION C-C

Notes:

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

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

For Slip-Form Option, all sides of the barrier curb (Type D) shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

Concrete in the Barrier Curb (Type D) shall be Class B-1.

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

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

** For details of median barrier curb transition (Type C), see Sheet No. 32.

OPTIONAL SLIP-FORM BARRIER CURB (TYPE D)

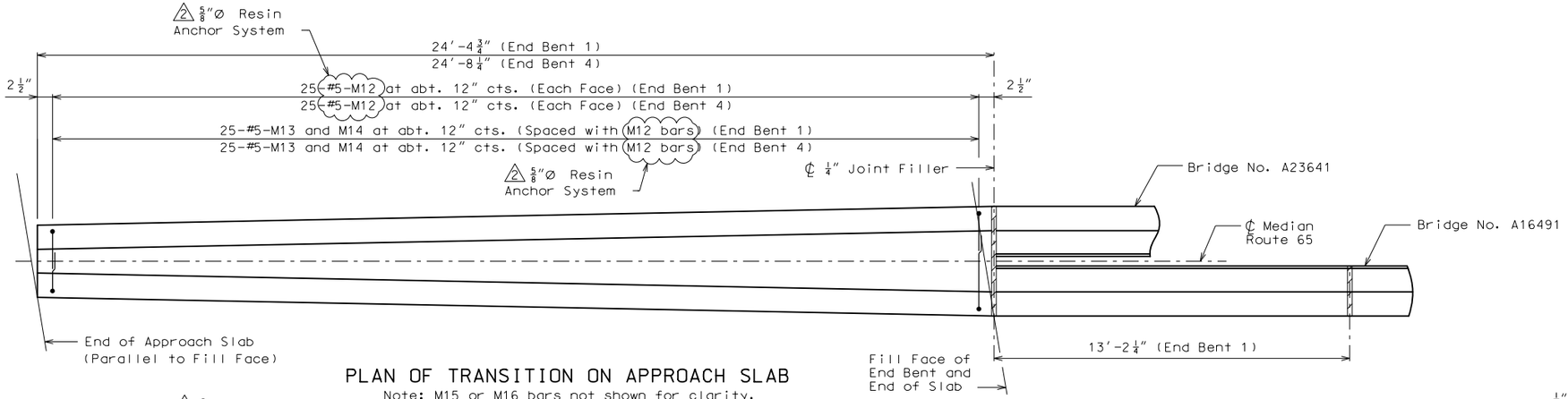
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 31
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

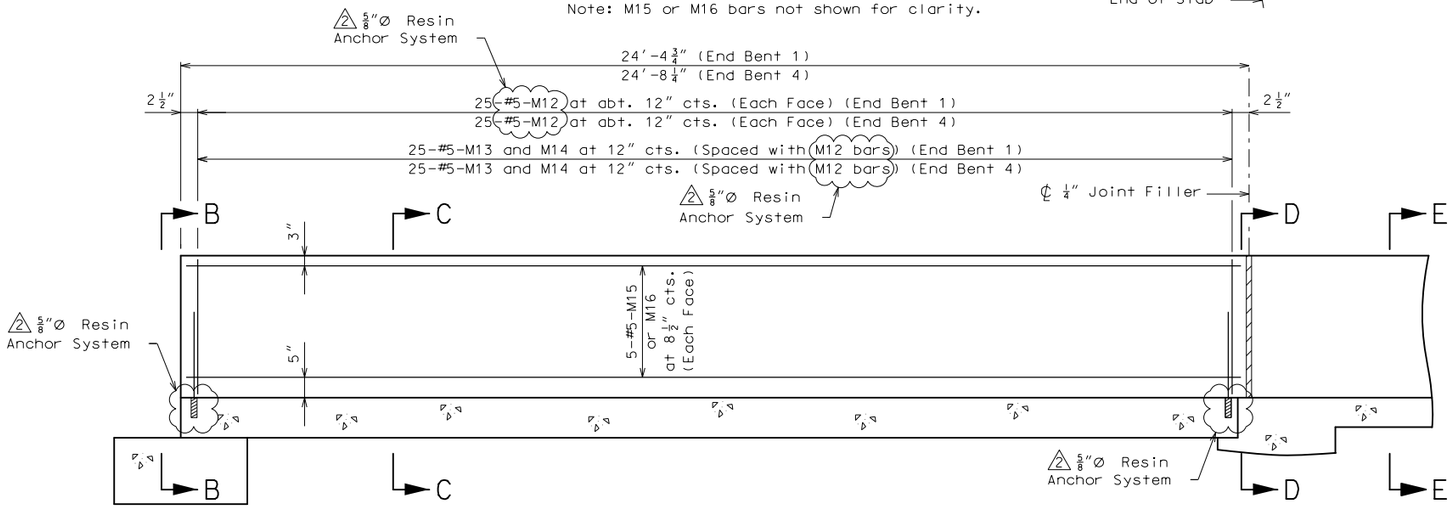
DATE	DESCRIPTION
09/15/10	2 M bars changed to Resin Anchors.

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

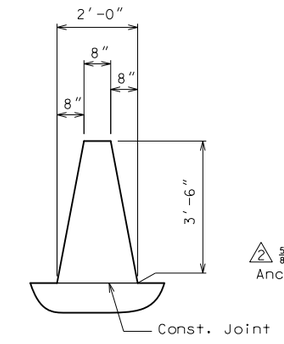


PLAN OF TRANSITION ON APPROACH SLAB

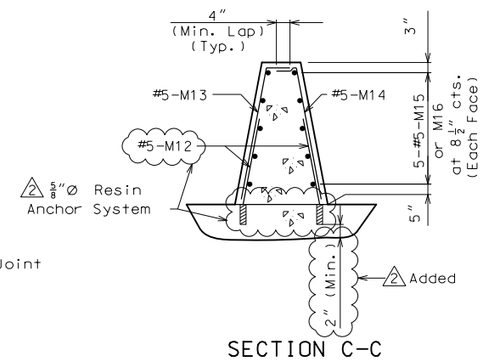
Note: M15 or M16 bars not shown for clarity.



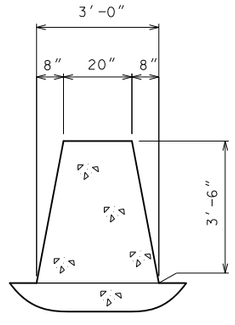
ELEVATION OF TRANSITION ON APPROACH SLAB



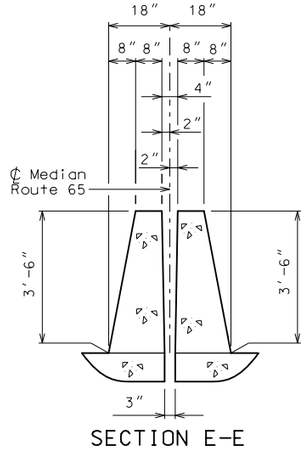
ELEVATION B-B



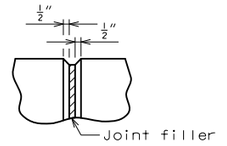
SECTION C-C



SECTION D-D



SECTION E-E



FILLED JOINT DETAIL

Notes:

Concrete in the median barrier curb transition (Type C) shall be Class B-1.

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

All exposed edges of median barrier curb transition (Type C) shall have either a 1/2" radius or a 3/4" bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete-in-place will be completely covered by the contract unit price for median barrier curb transition (Type C) per linear foot.

Measurement of median barrier curb transition (Type C) is to the nearest linear foot for each structure, measured along the outside top of slab from end of transition to end of transition.

Concrete traffic barrier delineators shall be placed on top of the median barrier curb transition (Type C) as shown on Missouri Standard Plans delineators will be considered completely covered by the contract unit price for "Median Barrier Curb Transition (Type C)".

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

For details of the approach slab, see Sheet No. 33.

For details of the barrier curb (Type D), see Sheet Nos. 30 and 31.

2 Added

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be completely covered by the contract unit price bid for Median Barrier Curb Transition (Type C).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #5 Grade 60 reinforcing bar 3'-0" long shall be substituted for the 5/8" Ø threaded rod.

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 32
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
09/15/10	2 M12 bars changed to Resin Anchors.

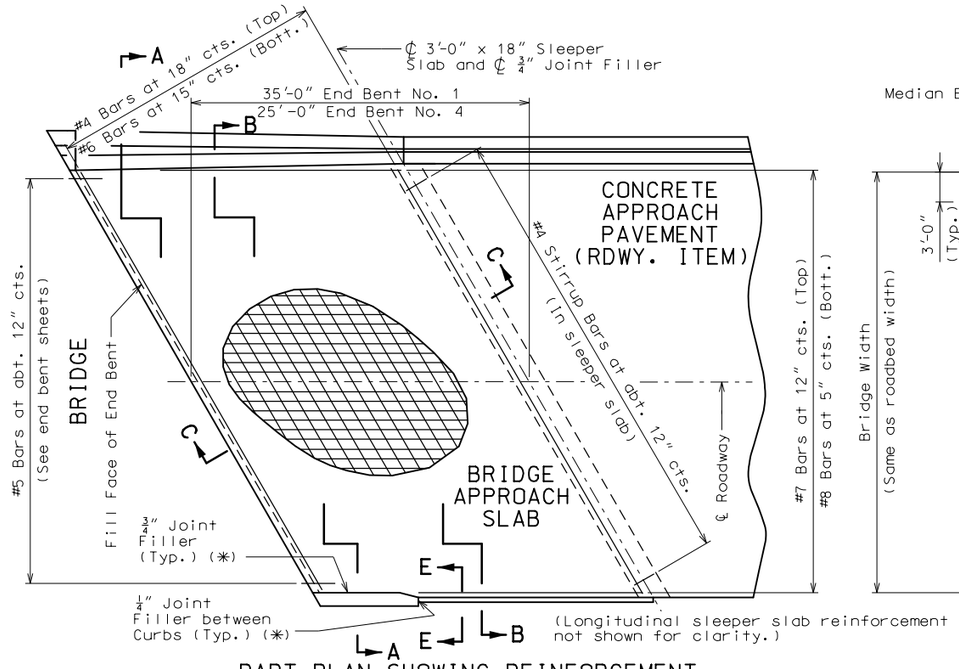
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

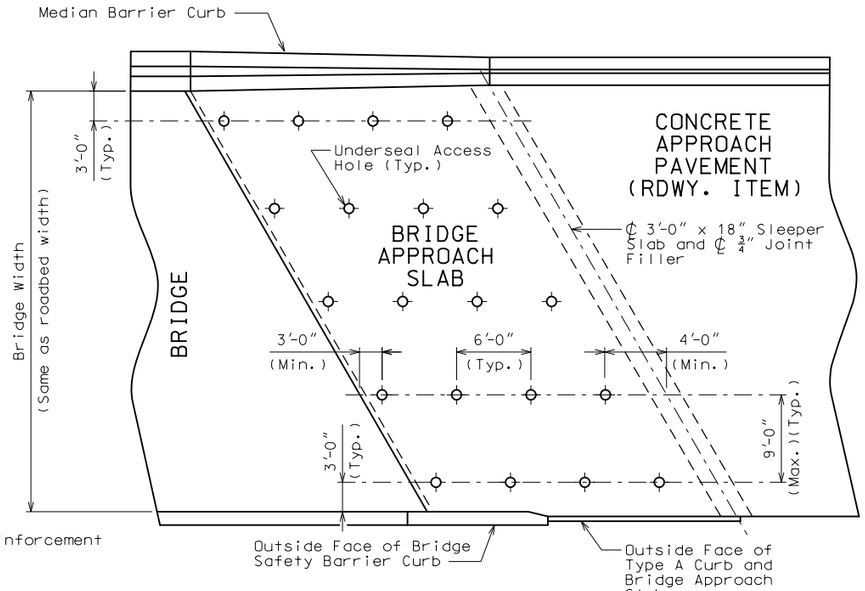
DETAILS OF MEDIAN BARRIER CURB TRANSITION (TYPE C)

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

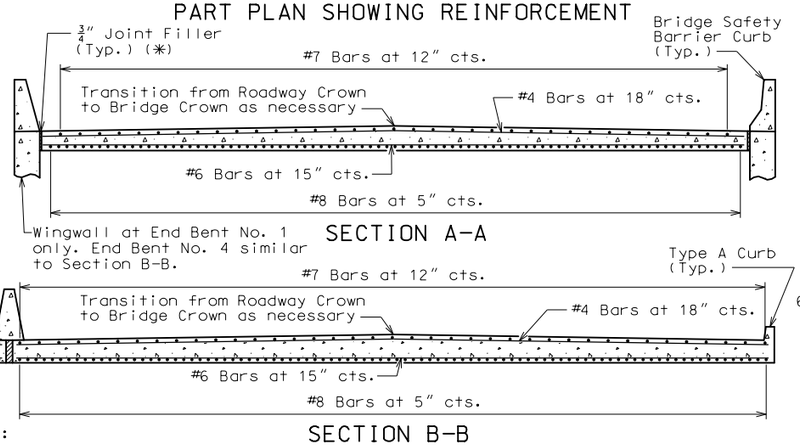
FINAL PLANS



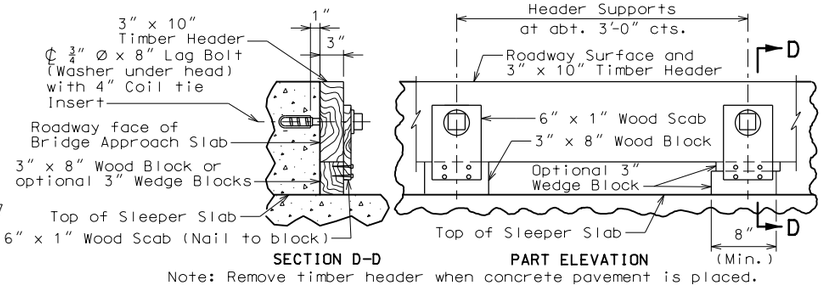
PART PLAN SHOWING REINFORCEMENT



PART PLAN
(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)

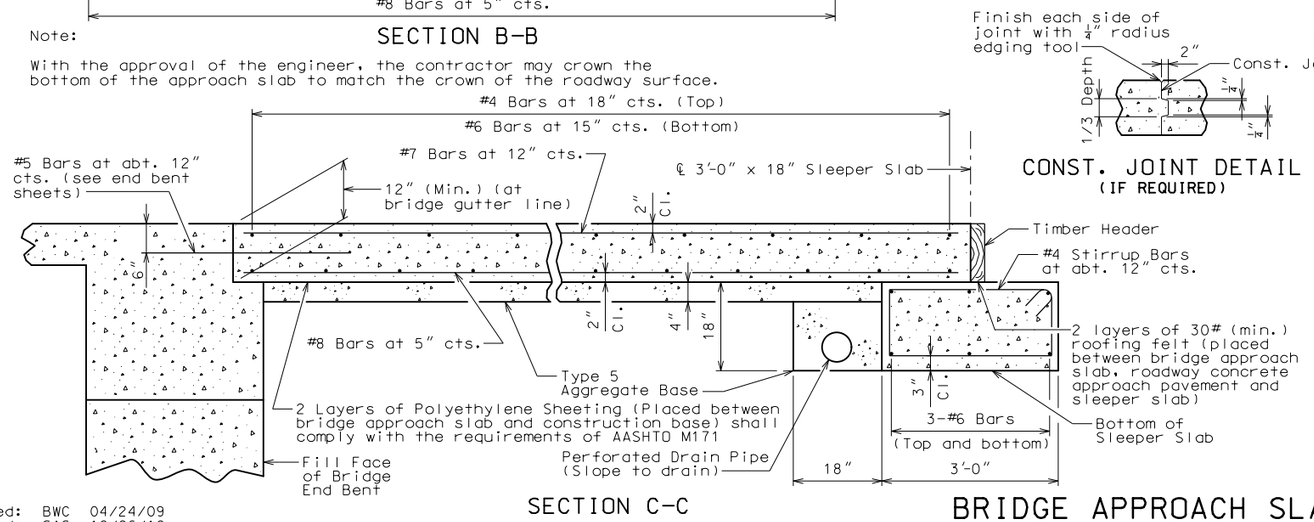


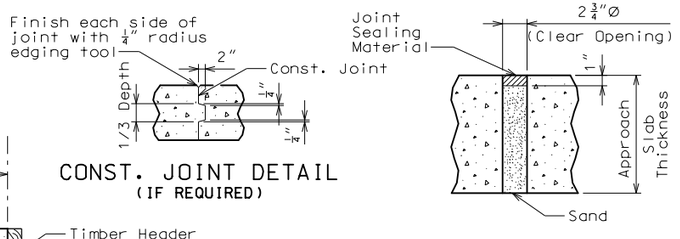
Note:
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.

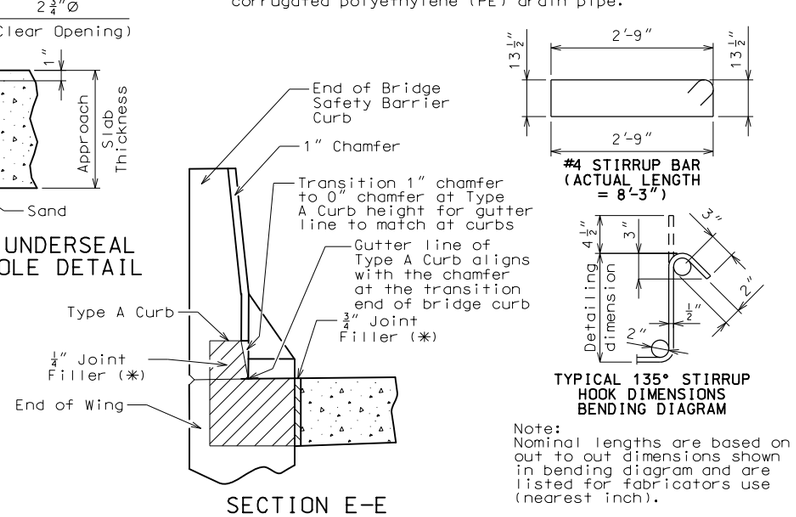


Note: Remove timber header when concrete pavement is placed.

DETAILS OF TIMBER HEADER







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

BRIDGE APPROACH SLAB

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

GENERAL NOTES:

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

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

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

Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

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

Mechanical bar splices shall be in accordance with Sec 706.

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

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

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

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge or semi-deep slab.

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

For Concrete Approach Pavement details, see roadway plans.

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

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

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

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

DATE PREPARED	10/06/10
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	33
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

DESCRIPTION | DATE

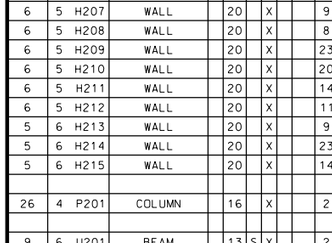
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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 BT NO 2																
7	8	D201	FOOTING		18		X			8 0.000							9 10	9 10	184
5	8	D202	FOOTING		18		X			7 0.000							8 10	8 10	118
13	8	D203	FOOTING		17		X			6 11.000							7 10	7 10	272
2	6	D204	FOOTING		10		X			———	4 4.000	7 6.000	———				16 2	15 10	48
77	5	D205	WALL		17		X			3 7.000							4 2	4 2	335
3	6	D206	WALL		20		X			9 5.000							9 5	9 5	42
3	6	D207	WALL		20		X			20 1.000							20 1	20 1	90
3	6	D208	WALL		20		X			8 5.000							8 5	8 5	38
41	4	D209	WALL		13	S	X			3 9.000	21.000	3 9.000	21.000				11 9	11 6	315
8	9	H201	BEAM		17		X			14 8.000							15 11	15 11	433
8	9	H202	BEAM		20		X			14 8.000							14 8	14 8	399
6	6	H203	BEAM		20		X			14 8.000							14 8	14 8	132
8	6	H204	BEAM		20		X			9 11.000							9 11	9 11	119
5	6	H205	BEAM		7		X			3 7.000	2 11.000						8 10	8 10	66
7	5	H206	WALL		7		X			3 2.000	2 9.000						7 11	7 11	58
6	5	H207	WALL		20		X			9 5.000							9 5	9 5	59
6	5	H208	WALL		20		X			8 0.000							8 0	8 0	50
6	5	H209	WALL		20		X			23 11.000							23 11	23 11	150
6	5	H210	WALL		20		X			20 10.000							20 10	20 10	130
6	5	H211	WALL		20		X			14 6.000							14 6	14 6	91
6	5	H212	WALL		20		X			11 5.000							11 5	11 5	71
5	6	H213	WALL		20		X			9 5.000							9 5	9 5	71
5	6	H214	WALL		20		X			23 11.000							23 11	23 11	180
5	6	H215	WALL		20		X			14 6.000							14 6	14 6	109
26	4	P201	COLUMN		16		X			2 9.000							9 8	9 8	168
9	6	U201	BEAM		13	S	X			2 11.000	3 1.000	2 11.000	3 1.000				13 4	12 10	173
12	6	U202	BEAM		13	S	X			2 11.000	3 5.000	2 11.000	3 5.000				14 0	13 6	243
6	6	U203	BEAM		10	S	X			———	3 5.000	2 11.000	———				9 9	9 5	85
1	6	U204	BEAM		13	S	X			2 9.000	3 5.000	2 9.000	3 5.000				13 8	13 2	20
1	6	U205	BEAM		13	S	X			2 5.000	3 5.000	2 5.000	3 5.000				13 0	12 6	19
13	8	V201	COLUMN		20		X			27 10.000							27 10	27 10	966
90	5	V202	WALL		20		X			8 8.000							8 8	8 8	814
4	W5	W201	BEAM		22		X			1 6.000	9.125						26 1	26 1	18

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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 BT NO 3																
7	8	D301	FOOTING		18		X			8 0.000							9 10	9 10	184
5	8	D302	FOOTING		18		X			7 0.000							8 10	8 10	118
13	8	D303	FOOTING		17		X			6 11.000							7 10	7 10	272
2	6	D304	FOOTING		10		X			———	4 4.000	7 6.000	———				16 2	15 10	48
77	5	D305	WALL		17		X			3 7.000							4 2	4 2	335
3	6	D306	WALL		20		X			9 5.000							9 5	9 5	42
3	6	D307	WALL		20		X			20 1.000							20 1	20 1	90
3	6	D308	WALL		20		X			8 5.000							8 5	8 5	38
41	4	D309	WALL		13	S	X			3 9.000	21.000	3 9.000	21.000				11 9	11 6	315
8	9	H301	BEAM		17		X			14 8.000							15 11	15 11	433
8	9	H302	BEAM		20		X			14 8.000							14 8	14 8	399
6	6	H303	BEAM		20		X			14 8.000							14 8	14 8	132
8	6	H304	BEAM		20		X			9 11.000							9 11	9 11	119
5	6	H305	BEAM		7		X			3 7.000	2 11.000						8 10	8 10	66
9	5	H306	WALL		7		X			3 2.000	2 9.000						7 11	7 11	74
8	5	H307	WALL		20		X			9 5.000							9 5	9 5	79
8	5	H308	WALL		20		X			8 0.000							8 0	8 0	67
8	5	H309	WALL		20		X			23 11.000							23 11	23 11	200
8	5	H310	WALL		20		X			20 10.000							20 10	20 10	174
8	5	H311	WALL		20		X			14 6.000							14 6	14 6	121
8	5	H312	WALL		20		X			11 5.000							11 5	11 5	95
5	6	H313	WALL		20		X			9 5.000							9 5	9 5	71
5	6	H314	WALL		20		X			23 11.000							23 11	23 11	180
5	6	H315	WALL		20		X			14 6.000							14 6	14 6	109
25	4	P301	COLUMN		16		X			2 9.000							9 8	9 8	161
9	6	U301	BEAM		13	S	X			2 11.000	3 1.000	2 11.000	3 1.000				13 4	12 10	173
12	6	U302	BEAM		13	S	X			2 11.000	3 8.000	2 11.000	3 8.000				14 6	14 0	252
6	6	U303	BEAM		10	S	X				3 8.000	2 11.000					10 3	9 11	89
1	6	U304	BEAM		13	S	X			2 9.000	3 8.000	2 9.000	3 8.000				14 2	13 8	21
1	6	U305	BEAM		13	S	X			2 5.000	3 8.000	2 5.000	3 8.000				13 6	13 0	20
13	8	V301	COLUMN		20		X			27 5.000							27 5	27 5	952
90	5	V302	WALL		20		X			11 8.000							11 8	11 8	1095
4	W5	W301	BEAM		22		X			1 6.000	9.125						26 1	26 1	18

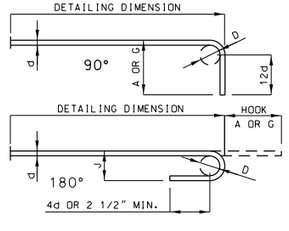


STIRRUP HOOK DIMENSIONS

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"

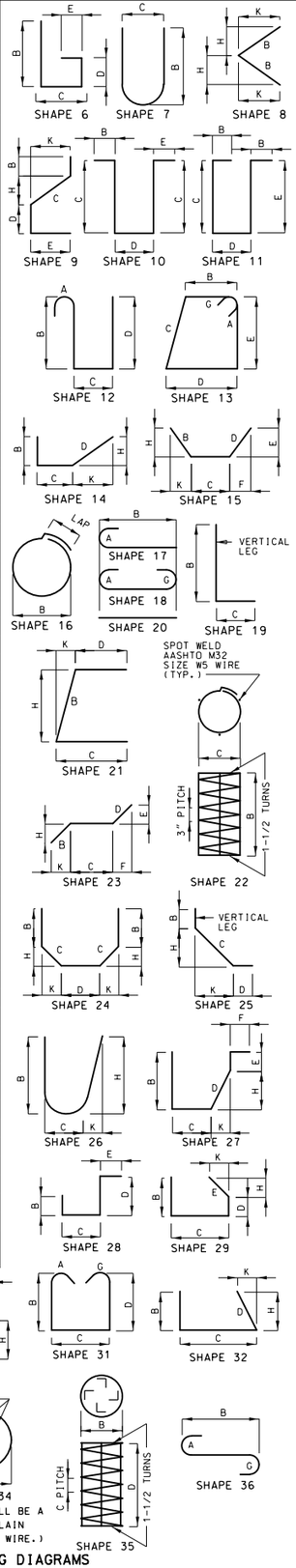
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS

BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS A OR G	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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

FINAL PLANS

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 34
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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

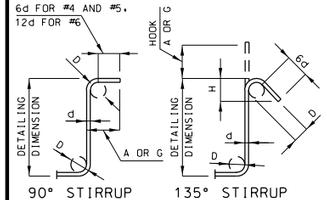
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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.
			SUPERSTRUCTURE																
			END BT NO 1																
5	6	F101	WING BRACE		23					14.000	4 11.000	14.000	10.500	9.375	10.500	9.375	7 3	7 2	54
4	6	F102	DIAPHRAGM		21					2 7.000	———	4 9.000			2 6.750	3.500	7 4	7 2	43
9	6	F103	WING BRACE		23					14.000	5 5.000	14.000	9.375	10.500	9.375	10.500	7 9	7 8	104
3	6	F104	DIAPHRAGM		21					2 8.000	4 9.000	———			2 7.750	3.625	7 5	7 3	33
12	6	H101	BEAM		20					14 4.000							14 4	14 4	258
4	6	H102	BEAM		20			V	1	11 8.500							11 9	11 9	
			INCREMENT=							11 5.000							11 5	11 5	70
			1.125 INCH																
7	6	H103	DIAPHRAGM		20					23 1.000							23 1	23 1	243
9	6	H104	DIAPHRAGM		20					35 3.000							35 3	35 3	477
2	6	H105	DIAPHRAGM		20					11 4.000							11 4	11 4	34
4	6	H106	DIAPHRAGM	E	20					23 6.000							23 6	23 6	141
4	6	H107	DIAPHRAGM	E	20					35 3.000							35 3	35 3	212
53	5	H108	DIAPHRAGM	E	20					2 6.000							2 6	2 6	138
4	8	H109	WING	E	20					11 6.000							11 6	11 6	123
6	8	H110	WING		20					11 6.000							11 6	11 6	184
10	6	H111	WING		20					10 6.000							10 6	10 6	158
10	6	H112	WING		20					8 10.000							8 10	8 10	133
2	8	H113	WING	E	20					12 6.000							12 6	12 6	67
6	8	H114	WING		20					12 6.000							12 6	12 6	200
18	6	H115	WING		20					11 6.000							11 6	11 6	311
8	5	U101	BEAM		32	S				5 9.000	3 3.000	5 10.125			5 9.000	12.625	14 10	14 8	122
4	5	U102	BEAM		32	S				4 10.000	3 3.000	4 11.000			4 10.000	10.625	13 0	12 10	54
4	4	U103	BEAM		13	S				2 7.000	3 8.000	3 3.000	3 7.000				13 10	13 7	36
2	4	U104	BEAM		9	S				———	3 8.000	2 7.000	3 7.000		7.875	3 7.000	9 10	9 8	13
36	5	U105	DIAPHRAGM	E	10	S				———	3 7.000	2 3.000	———				9 5	9 2	344
36	6	U106	DIAPHRAGM		19	S				2 7.000	2 9.000						5 4	5 2	279
9	5	U107	DIAPHRAGM	E	10	S				———	2 6.000	2 3.000	———				7 3	7 0	66
9	6	U108	DIAPHRAGM		19	S				1 6.000	2 9.000						4 3	4 1	55
71	6	U109	DIAPHRAGM	E	19	S				3 1.000	4 6.000						7 7	7 5	791
2	5	V101	BEAM		20					5 11.000							5 11	5 11	12
2	6	V102	DIAPHRAGM		20					1 6.000							1 6	1 6	5
8	6	V103	DIAPHRAGM		20					2 7.000							2 7	2 7	31
20	6	V104	WING		20					6 8.000							6 8	6 8	200
24	6	V105	WING		20					6 5.000							6 5	6 5	231
			SUPERSTRUCTURE																
			END BT NO 4																
5	6	F401	WING BRACE		23					14.000	5 5.000	14.000	9.375	10.500	9.375	10.500	7 9	7 8	58
4	6	F402	DIAPHRAGM		21					2 8.000	4 9.000	———			2 7.750	3.625	7 5	7 3	44
4	6	F403	DIAPHRAGM		21					2 8.000	———	4 6.000			2 7.750	3.625	7 2	7 0	42
8	6	H401	BEAM		20			V	2	15 2.000							15 2	15 2	
			INCREMENT=							14 10.500							14 11	14 11	181
			1.125 INCH																
2	6	H402	BEAM		20					14 10.000							14 10	14 10	45
2	6	H403	BEAM		20					15 2.000							15 2	15 2	46
4	6	H404	BEAM		20			V	1	11 7.500							11 8	11 8	
			INCREMENT=							11 4.000							11 4	11 4	69
			1.125 INCH																

BILL OF REINFORCING STEEL

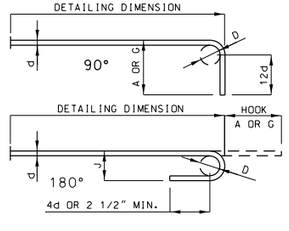
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
7	6	H405	DIAPHRAGM		20					23 1.000							23 1	23 1	243
9	6	H406	DIAPHRAGM		20					35 3.000							35 3	35 3	477
2	6	H407	DIAPHRAGM		20					11 1.000							11 1	11 1	33
4	6	H408	DIAPHRAGM	E	20					23 6.000							23 6	23 6	141
4	6	H409	DIAPHRAGM	E	20					35 3.000							35 3	35 3	212
54	5	H410	DIAPHRAGM	E	20					2 6.000							2 6	2 6	141
2	8	H411	WING	E	20					11 4.000							11 4	11 4	61
6	8	H412	WING		20					11 4.000							11 4	11 4	182
10	6	H413	WING		20					10 4.000							10 4	10 4	155
10	6	H414	WING		20					8 8.000							8 8	8 8	130
8	5	U401	BEAM		32	S				5 9.000	3 3.000	5 10.125			5 9.000	12.625	14 10	14 8	122
3	5	U402	BEAM		32	S				4 10.000	3 3.000	4 11.000			4 10.000	10.625	13 0	12 10	40
1	5	U403	BEAM		32	S				4 10.000	3 2.750	4 10.875			4 10.000	10.125	13 0	12 9	13
4	4	U404	BEAM		13	S				2 7.000	3 8.000	3 3.000	3 7.000				13 10	13 7	36
2	4	U405	BEAM		9	S				———	3 8.000	2 7.000	3 7.000		7.875	3 7.000	9 10	9 8	13
37	5	U406	DIAPHRAGM	E	10	S				———	3 7.000	2 3.000	———				9 5	9 2	354
37	6	U407	DIAPHRAGM		19	S				2 7.000	2 9.000						5 4	5 2	287
9	5	U408	DIAPHRAGM	E	10	S				———	2 6.000	2 3.000	———				7 3	7 0	66
9	6	U409	DIAPHRAGM		19	S				1 6.000	2 9.000						4 3	4 1	55
71	6	U410	DIAPHRAGM	E	19	S				3 1.000	4 6.000						7 7	7 5	791
2	5	V401	BEAM		20					5 11.000							5 11	5 11	12
2	6	V402	DIAPHRAGM		20					1 6.000							1 6	1 6	5
8	6	V403	DIAPHRAGM		20					2 7.000							2 7	2 7	31
20	6	V404	WING		20					6 8.000							6 8	6 8	200
			SLAB																
281	6	S1	SLAB	E	20					23 4.000							23 4	23 4	9848
276	6	S2	SLAB	E	20					35 2.000							35 2	35 2	14578
279	5	S3	SLAB	E	20					23 4.000							23 4	23 4	6790
276	5	S4	SLAB	E	20					35 2.000							35 2	35 2	10123
5	6	S5	SLAB	E	20			V	1	4 5.875							4 6	4 6	
			INCREMENT=							22 0.375							22 1	22 1	100
			4'-4⅝"																
4	6	S6	SLAB	E	20			V	1	5 9.625							5 10	5 10	
			INCREMENT=							18 11.500							19 0	19 0	75
			4'-4⅝"																
8	6	S7	SLAB	E	20			V	1	2 2.375							2 3	2 3	
			INCREMENT=							32 10.750							32 11	32 11	211
			4'-4⅝"																
8	6	S8	SLAB	E	20			V	1	2 3.625							2 4	2 4	
			INCREMENT=							33 0.000							33 0	33 0	212
			4'-4⅝"																
5	5	S9	SLAB	E	20			V	1	4 5.875							4 6	4 6	
			INCREMENT=							22 0.375							22 1	22 1	69
			4'-4⅝"																
4	5	S10	SLAB	E	20			V	1	5 9.625							5 10	5 10	
			INCREMENT=							18 11.500							19 0	19 0	52
			4'-4⅝"																
8	5	S11	SLAB	E	20			V	1	2 2.375							2 3	2 3	
			INCREMENT=							32 10.750							32 11	32 11	147
			4'-4⅝"																
8	5	S12	SLAB	E	20			V	1	2 3.625							2 4	2 4	
			INCREMENT=							33 0.000							33 0	33 0	147
			4'-4⅝"																
436	5	S13	SLAB	E	20					37 6.000							37 6	37 6	17053
172	6	S14	SLAB	E	20					30 6.000							30 6	30 6	7879

TWO ADDITIONAL #6-S1 & #8-H109 ARE INCLUDED IN THE BAR BILL FOR TESTING.



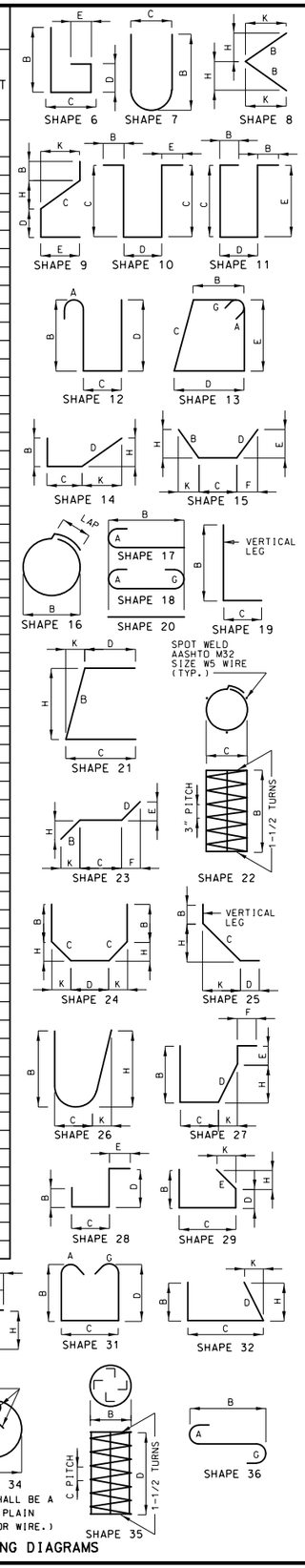
STIRRUP HOOK DIMENSIONS GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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		90° HOOKS	
		A OR G	J	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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

FINAL PLANS

DESCRIPTION	DATE

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 35
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

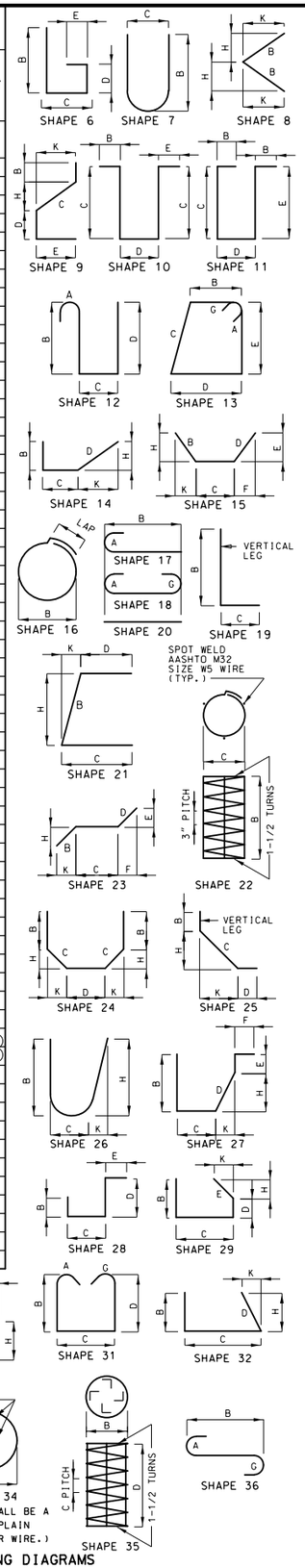
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

BILL OF REINFORCING STEEL

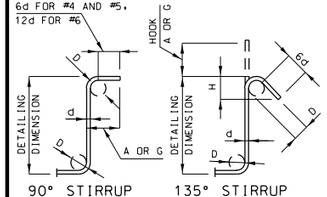
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			BARRIER CURB																
48	5	K1	BARRIER CURB	E	19	S				2 5.000	5.125						2 10	2 9	138
48	5	K2	BARRIER CURB	E	14	S				5.125	11.125	18.000			2.000	17.875	2 10	2 9	138
26	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	174
22	5	K4	BARRIER CURB	E	7					3 0.000	6.000						6 3	6 3	143
2	5	K5	BARRIER CURB	E	25	S				2 6.500	6.750	4.375			5.500	4.000	3 6	3 5	7
2	5	K6	BARRIER CURB	E	25	S				2 5.500	7.875	4.375			6.500	4.500	3 6	3 5	7
2	5	K7	BARRIER CURB	E	25	S				2 4.125	9.625	4.375			7.875	5.500	3 6	3 5	7
2	5	K8	BARRIER CURB	E	25	S				2 2.750	11.250	4.375			9.250	6.500	3 6	3 6	7
24	5	K9	BARRIER CURB	E	20					5 7.000							5 7	5 7	140
22	4	K10	BARRIER CURB	E	20					8 4.000							8 4	8 4	122
2	5	K11	BARRIER CURB	E	8					2 2.125					2 2.000	2.375	4 4	4 4	9
145	5	R1	BARRIER CURB	E	26	S				2 6.000	4.250				2 6.000	3.000	5 3	5 3	794
145	5	R3	BARRIER CURB	E	19	S				17.000	6.000						1 11	1 10	277
145	5	R4	BARRIER CURB	E	27	S				———	6.000	11.250	7.000	12.000	9.250	6.375	3 0	2 10	428
14	5	R5	BARRIER CURB	E	20					30 3.000							30 3	30 3	442
30	5	R6	BARRIER CURB	E	20					9 8.000							9 8	9 8	302
7	5	R7	BARRIER CURB	E	20					35 8.000							35 8	35 8	260
20	5	C1	SLIP FORM	E	20					10 0.000							10 0	10 0	209
4	5	C2	SLIP FORM	E	20					8 0.000							8 0	8 0	33
160	5	M1	MED BARRIER	E	26	S				3 3.000	5.750				3 3.000	6.875	6 10	6 10	1140
146	5	M3	MED BARRIER	E	19	S				20.000	10.000						2 6	2 5	368
146	5	M4	MED BARRIER	E	27	S				———	10.000	14.250	5.500	12.000	14.000	2.625	3 6	3 3	495
10	5	M5	MED BARRIER	E	20					12 10.000							12 10	12 10	134
10	5	M6	MED BARRIER	E	20					30 4.000							30 4	30 4	316
40	5	M7	MED BARRIER	E	20					9 8.000							9 8	9 8	403
10	5	M8	MED BARRIER	E	20					35 8.000							35 8	35 8	372
10	5	M9	MED BARRIER	E	20					32 10.000							32 10	32 10	342
14	5	M10	MED BARRIER	E	19	S				3 6.000	10.000						4 4	4 3	62
14	5	M11	MED BARRIER	E	27	S				———	10.000	14.250	2 1.000	———	14.000	2.625	4 1	4 0	58
100	5	M12	MED BARRIER	E	27	S				———	———	2 0.375	7.000	12.000	2 0.000	4.500	3 7	3 6	365
50	5	M13	MED BARRIER	E	15	S				3 2.625	4.500	———	———	———	3 2.000	7.250	3 7	3 6	183
50	5	M14	MED BARRIER	E	15	S	V	2		3 2.625	4.500	———	———	———	3 2.000	7.250	3 7	3 6	
		0	INCREMENT=½"							3 2.625	16.500	———	———	———	3 2.000	7.250	4 7	4 6	209
10	5	M15	MED BARRIER	E	20					24 1.000							24 1	24 1	251
10	5	M16	MED BARRIER	E	20					24 4.000							24 4	24 4	254
22	5	C3	SLIP FORM	E	20					10 0.000							10 0	10 0	229
12	5	C4	SLIP FORM	E	20					8 0.000							8 0	8 0	100

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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.
			TOTALS																
	4																		1057
	5																		4373
	5			E															35490
	6																		7705
	6			E															35191
	8																		3632
	8			E															251
	9																		1664
	W5																		36
			TOTAL																18467
			TOTAL	E															70932
			SLAB ON STEEL																
	4																		98
	5																		375
	5			E															35490
	6																		4820
	6			E															35191
	8																		566
	8			E															251
			TOTAL																5859
			TOTAL	E															70932
0			REINFORCING STEEL																
			(RETAINING WALL)																
	4																		630
	5																		3998
	6																		1060
			TOTAL																5688
0			REINFORCING STEEL																
			(BRIDGES)																
	4																		329
	6																		1825
	8																		3066
	9																		1664
	W5																		36
			TOTAL																6920
			SAFETY BARRIER CURB																
	4			E															122
	5			E															3273
			TOTAL	E															3395
			BARRIER CURB																
			(TYPE D)																
3604																			
	5			E															4952
			TOTAL	E															4952
			SLIP FORM																
	5			E															571
			TOTAL	E															571

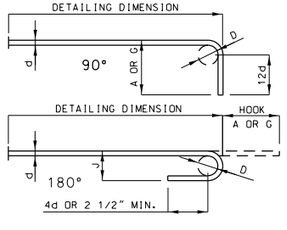


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS			
GRADES 40 - 50 - 60 KSI			
BAR SIZE	D (IN.)	90° HOOK	135° HOOK
		HOOK A OR G	HOOK A OR G	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		90° HOOKS
		A OR G	J	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"

TWO ADDITIONAL #4-K10 & #5-R6 ARE INCLUDED IN THE BAR BILL FOR TESTING.

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.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

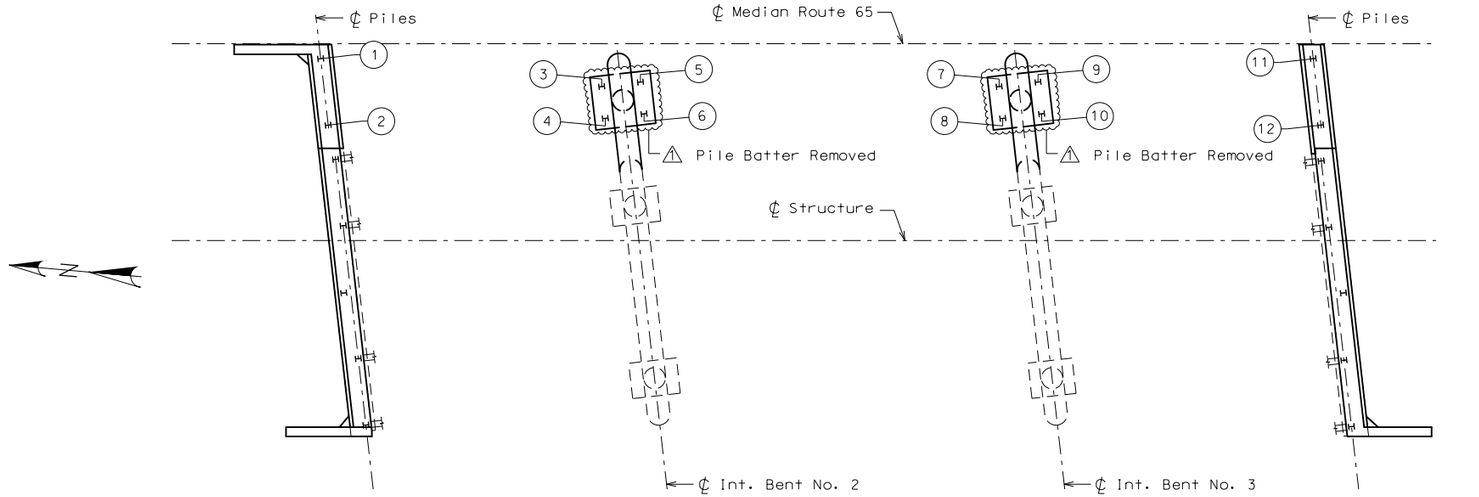
Note: This drawing is not to scale. Follow dimensions.

FINAL PLANS

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 36
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
09/15/10	2 Revised Median Barrier Bars

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



End Bent No. 1 Int. Bent No. 2 Int. Bent No. 3 End Bent No. 4

PLAN SHOWING PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			End Bent No. 1
1	37′ 5″		Practical Refusal - Heat #34257 - 10″ Structural Steel Piles - No Batter
2	35′ 5″		Practical Refusal - Heat #342577 - 10″ Structural Steel Piles - No Batter
			Int. Bent No. 2
3	11′ 3″		Practical Refusal - Heat #347945 - 10″ Structural Steel Piles - No Batter
4	11′ 0″		Practical Refusal - Heat #347952 - 10″ Structural Steel Piles - No Batter
5	11′ 0″		Practica Refusal - Heat #347952 - 10″ Structural Steel Piles - No Batter
6	11′ 1″		Practical Refusal - Heat #347952 - 10″ Structural Steel Piles - No Batter
			Int. Bent No. 3
7	11′ 4″		Practical Refusal - Heat #347952 - 10″ Structural Steel Piles - No Batter
8	11′ 3″		Practical Refusal - Heat #347948 - 10″ Structural Steel Piles - No Batter
9	11′ 0″		Practical Refusal - Heat #347952 - 10″ Structural Steel Piles - No Batter
10	11′ 4″		Practical Refusal - Heat #347945 - 10″ Structural Steel Piles - No Batter
			End. Bent No. 4
11	39′ 3″		Practical Refusal - Heat #342542 - 10″ Structural Steel Piles - No Batter
12	39′ 9″		Practical Refusal - Heat #342590 - 10″ Structural Steel Piles - No Batter

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 37
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	⚠ Int. Bent pile batter removed.

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

MEMORANDUM

Missouri Department of Transportation
Bridge Division
Central Office

TO: Gayle Davis–8 (Project Office)

CC/ATT: Kirk Juranas - 8
Dave Ahlvers - cm
John Gahagan - br
Chad Daniel - br
Dean Franke - br
Kent Nelson - br (2)

FROM: Joyce Foster JF
Structural Liaison Engineer

DATE: May 19, 2010

SUBJECT: Greene County, Route 65
Structure A16491, A23641
Job No. J8P0605E
Letting Date 6/26/2009
Construction Plan Changes

Enclosed are six half-size copies of the following plan sheets:

Bridge A16491 – Sheets 1, 10, 11, 12, 13, and 37
Bridge A23641 - Sheets 1, 10, 11, 12, 13, and 36

This change order was required because of the contractor's request to make all piles vertical.

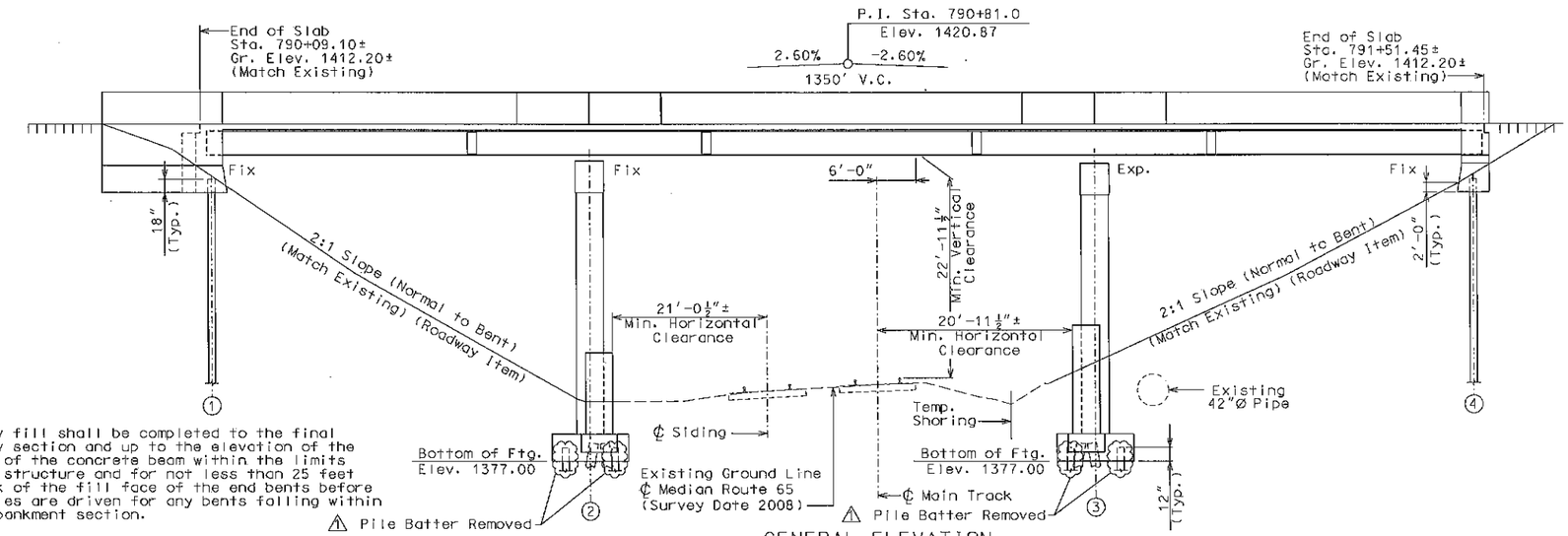
Change requested by your office.

If you have questions or comments, please call me at (573) 751-3707.

J:/fostej/construction change 8

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P., WIDEN AND REDECK (42'-56'-42') CONTINUOUS COMPOSITE I-BEAM SPANS

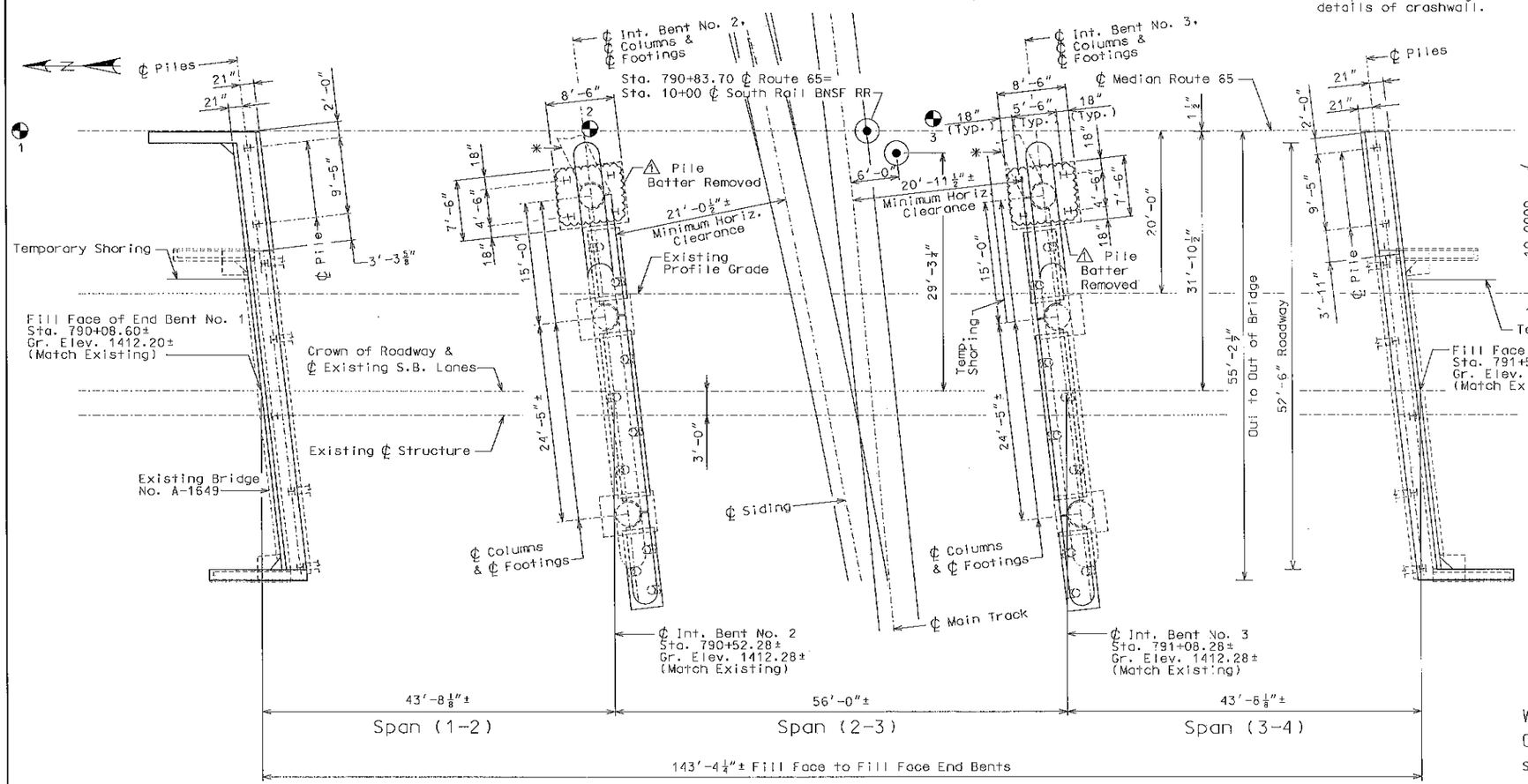


Note:

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.

GENERAL ELEVATION

* Note: See plans for Bridge No. A23641 for details of crashwall.



PLAN

Designed: BWC 04/24/09
Detailed: BWC 05/18/10
Checked: HNG 05/18/10

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

Sheet No. 1 of 37

SEC/SUR 9 TWP 29N RGE 21W

"⊕" Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet for this structure. Boring data for the numbered locations is shown on Sheet No. 5. 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.

Notice and Disclaimer Regarding Pinnacled Rock:

The State of Missouri and, in particular, the area that encompasses this project is known to have, at least in part, bedrock that exhibits karst conditions. One karst condition is sometimes referred to as pinnacle or pinnacled rock. The nature of this condition makes graphical representations of this pinnacled zone difficult to classify and excavate. It is incumbent upon the bidder to investigate above surface warnings of this rock formation (road cuts, quarry sites and any other exposed faces) and be aware that the same is a regularly ocurring phenomenon and is not to be regarded as a differing site condition or result in changes in the work, regardless of what any actual boring or lines on the plans may or may not tend to indicate.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

For General Notes, Location Sketch, Foundation Data, Estimated Quantities, and Estimated Quantities for Slab on Steel, see Sheet No. 2.

All bents are parallel.

All longitudinal dimensions are horizontal.

All elevations and dimensions are based on the existing plans while using the 1988 NAVD datum. The existing plans used the 1927 USGS datum; which is, on average, 0.43 ft. lower than the 1988 NAVD datum. The contractor shall field verify prior to construction.

Note:

Underground facilities, structures and utilities have been plotted from available surveys and records. The commission does not warrant the locations of these facilities as precise. It is possible there may be others, the existence of which is presently not known or shown. It shall be the contractor's responsibility to determine the existence and precise location of all facilities and to avoid damage to them. See the job special provisions (Roadway) for a list of utility companies on or within the vicinity of the project limits.

Bench Marks (NAVD 88 Datum)

City B.M. 115: Alum. disk in conc. (City B.M. #115) 275'± north of railroad, west side S.B.L. Rte. 65, Elevation = 1407.00

TBM-NSA: Marked "L" in conc. base of ret. wall for N.B.L. Hwy. 65 bridge over R.R. tracks at S.W. cor. bridge. (Set by EFK Moen)

WIDENING AND REDECKING OF BRIDGE OVER BNSF CUBA SUB.

STATE ROAD FROM ROUTE I-44 TO BUSINESS ROUTE 65

ABOUT 1.2 MILES S OF ROUTE I-44

STA. 790+08.60±

STD. 606.22
STD. 609.00
STD. 609.70
STD. 617.10
STD. 617.20
STD. 706.35

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.05.18 13:58:26 -05'00'

DATE PREPARED	
05/18/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	1
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

DATE	DESCRIPTION
05/18/10	⚠ Int. Bent pile batter removed.

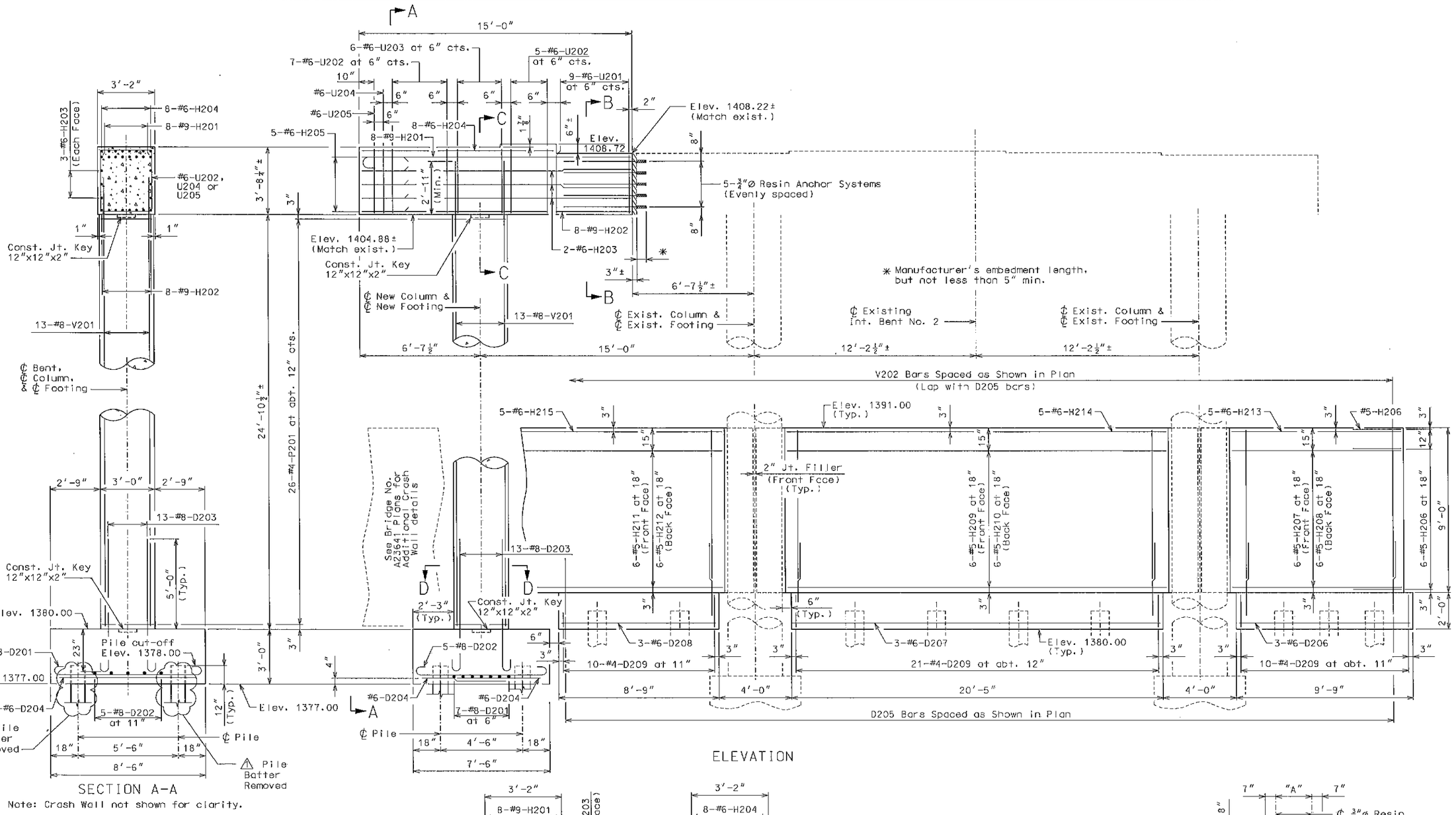
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

© Copyright Hanson Professional Services Inc. 2009

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineering Services
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



Notes:

For details of Intermediate Bent No. 2 not shown, see Sheet No. 11.

For details of Crash Wall not shown, see Sheet No. 11.

For Substructure Quantity Table, see Sheet No. 11.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

Designed: BWC 04/24/09
Detailed: BWC 05/18/10
Checked: HNG 05/18/10

DETAILS OF INTERMEDIATE BENT NO. 2

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.05.18 13:58:50 -05'00'

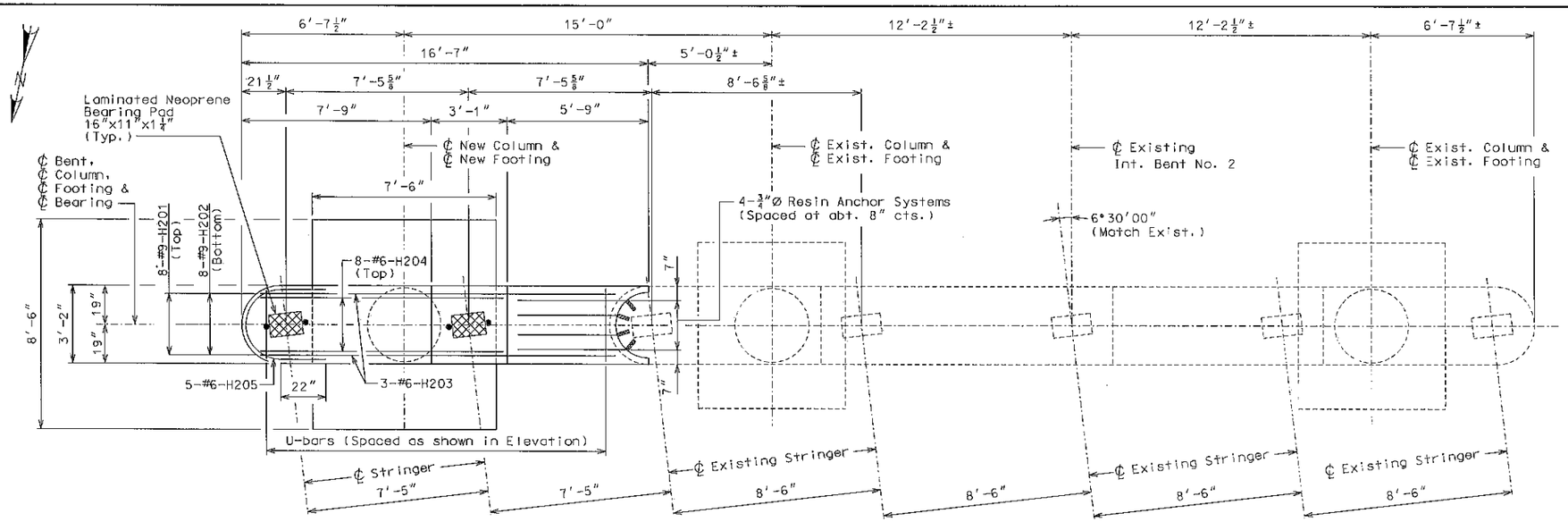
DATE PREPARED 05/18/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	⚠ Int. Bent pile batter removed.

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

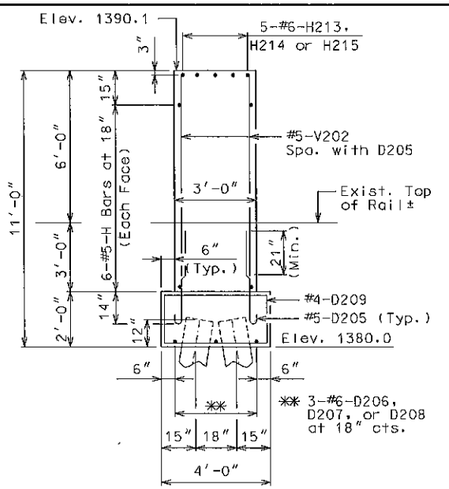
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0447
Howard N. Gotschall II
Project Manager
PE-2004000786



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



TYPICAL SECTION THRU CRASH WALL

Notes:

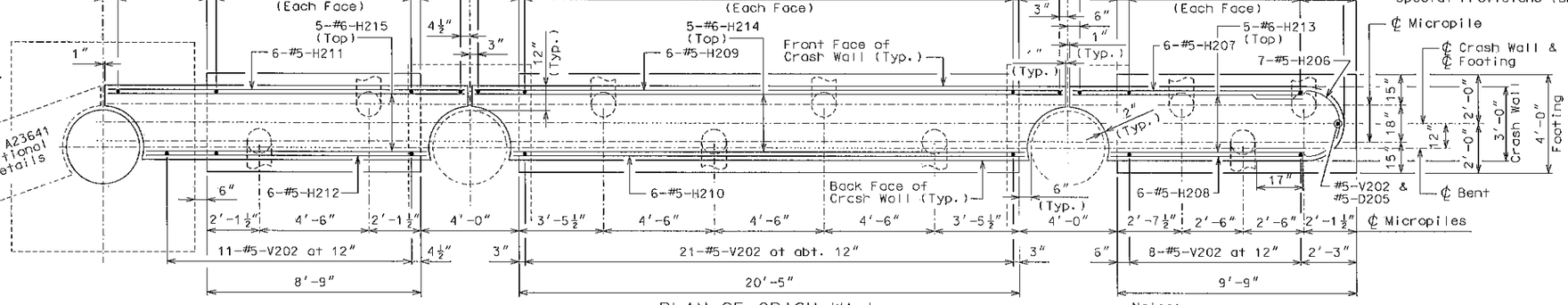
Field cut #6-H213, H214 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2" in 12".

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".

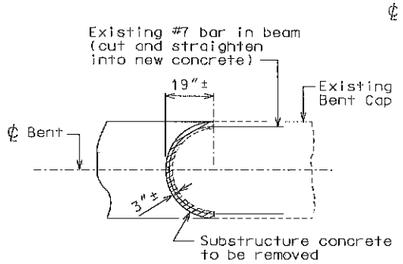
All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½".

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2" clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 2 not shown, see Sheet No. 10.

For details of Crash Wall not shown, see Sheet No. 10.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

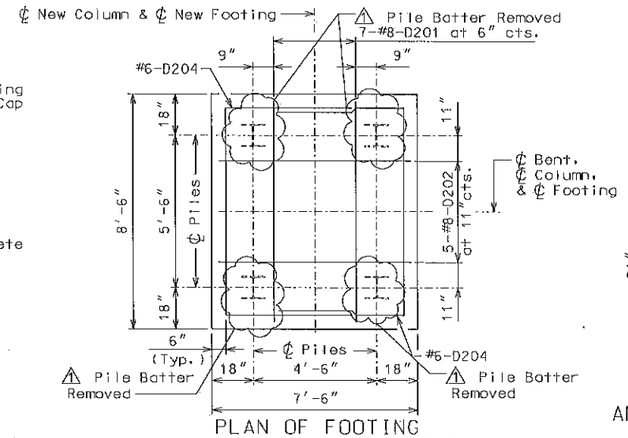


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

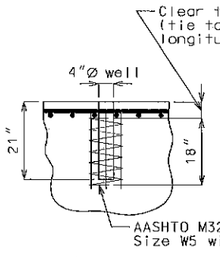
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

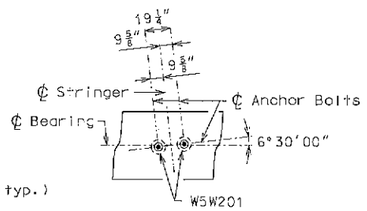


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	100
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	56.8
Class B Concrete (Substructure)	cu. yard	20.0
Reinforcing Steel (Bridges)	pound	3463
Reinforcing Steel (Retaining Wall)	pound	2603

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: BWC 05/18/10
Checked: HNG 05/18/10

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

DETAILS OF INTERMEDIATE BENT NO. 2

STATE OF MISSOURI HOWARD NELSON GOTSCHALL II NUMBER PE-2004006706 PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.05.18 13:59:22 -05'00'

DATE PREPARED 05/18/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 11
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

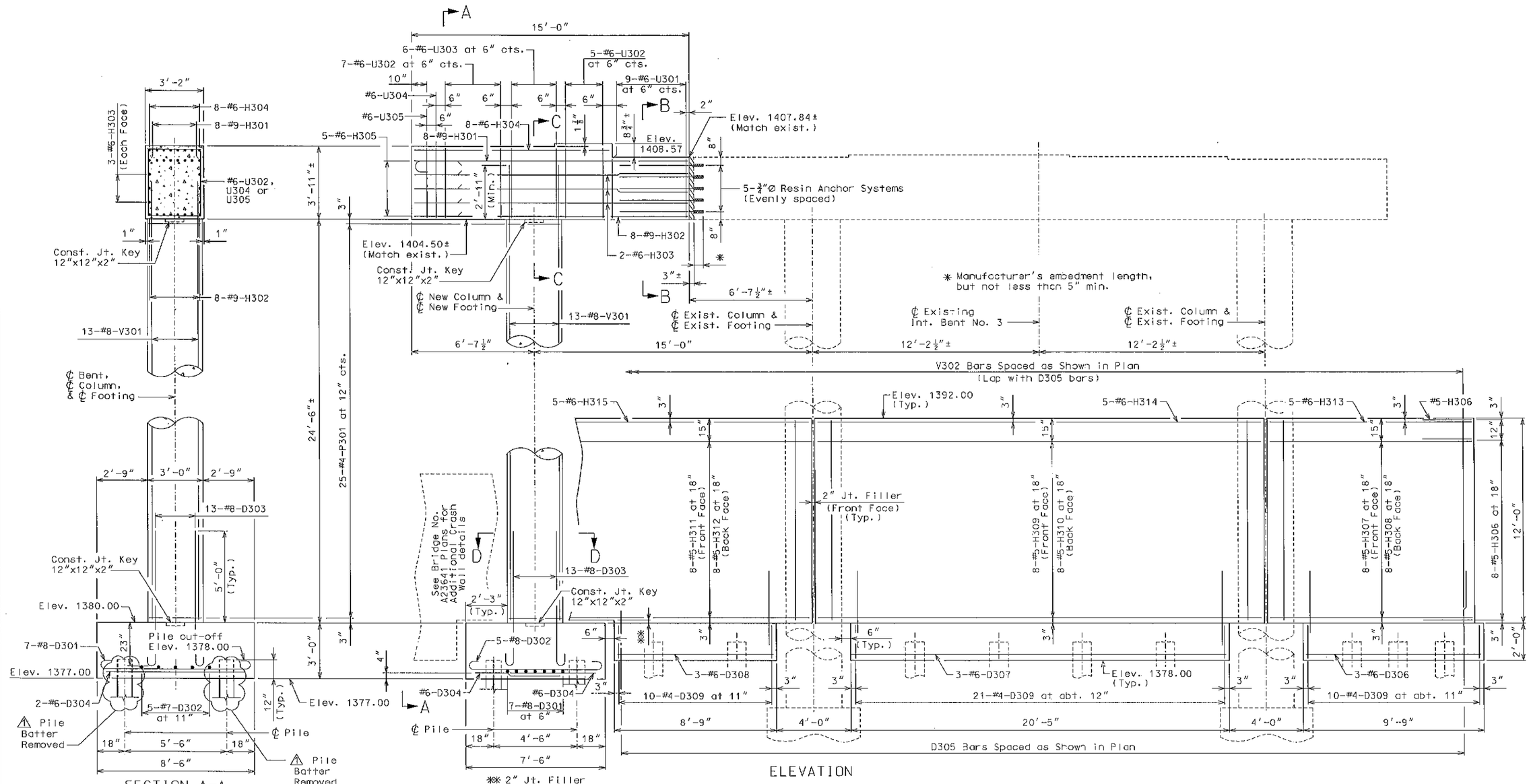
DATE	DESCRIPTION
05/18/10	⚠1 Int. Bent pile batter removed.

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

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

© Copyright Hanson Professional Services Inc. 2009

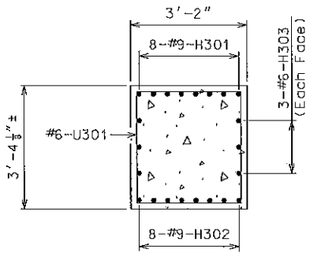
HANSON
Hanson Professional Services Inc.
1360 Regency Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0487
Howard N. Gotschall II
Professional Engineer
PE-2004006706



SECTION A-A

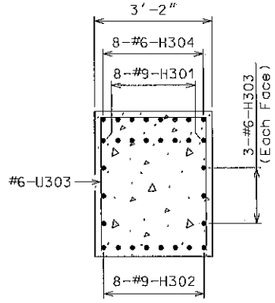
Note: Crash Wall not shown for clarity.

ELEVATION

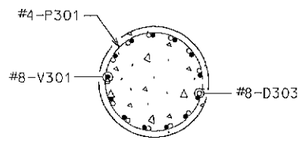


SECTION B-B

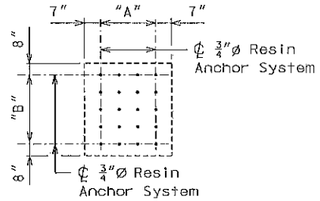
Note: Resin anchor system not shown for clarity.



SECTION C-C



SECTION D-D



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

"A" 4-¾"Ø Resin Anchor Systems at 8" cts.
"B" 5-¾"Ø Resin Anchor Systems at abt. 6" cts.

Notes:

For details of Intermediate Bent No. 3 not shown, see Sheet No. 13.

For details of Crash Wall not shown, see Sheet No. 13.

For Substructure Quantity Table, see Sheet No. 13.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

Designed: BWC 04/24/09
Detailed: BWC 05/18/10
Checked: HNG 05/18/10

DETAILS OF INTERMEDIATE BENT NO. 3

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.05.18 13:59:47 -05'00'

DATE PREPARED 05/18/10

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	12

COUNTY GREENE

JOB NO. J8P0605E

CONTRACT ID.

PROJECT NO.

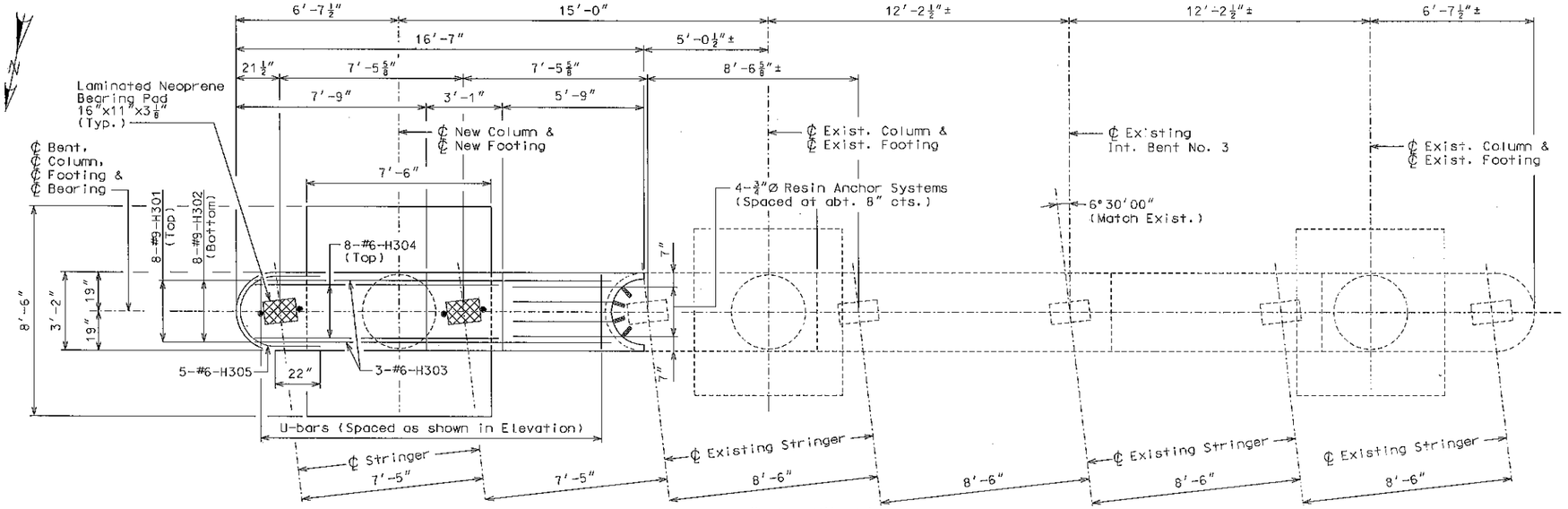
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	Int. Bent pile batter removed.

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

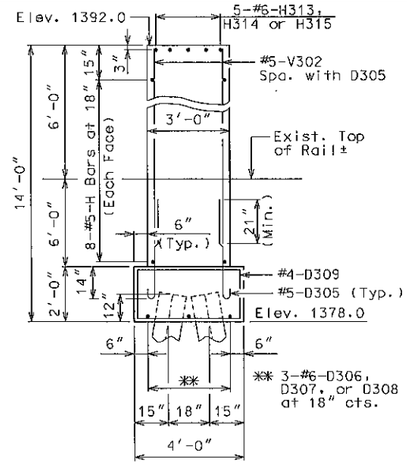
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineering Firm #2012
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



TYPICAL SECTION THRU CRASH WALL

Notes:

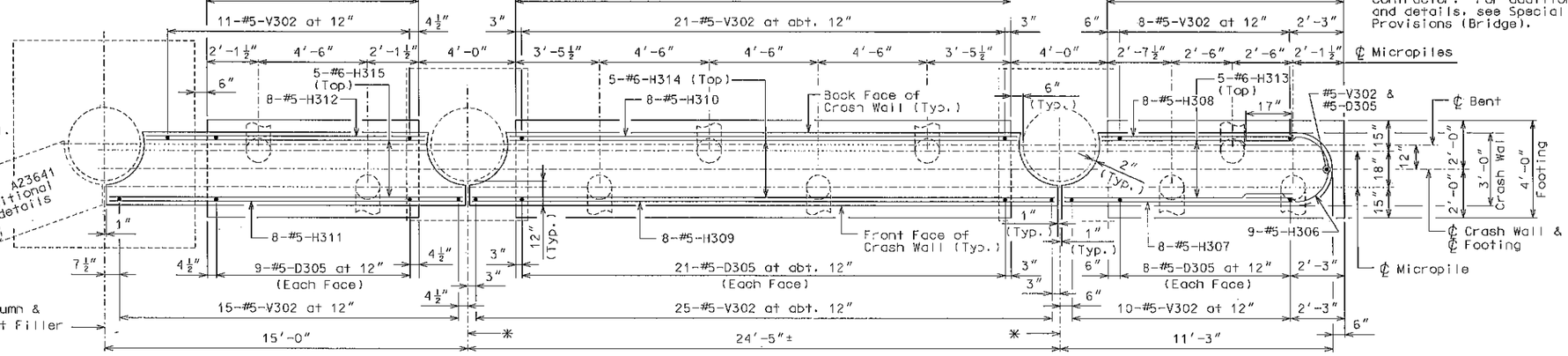
Field cut #6-H313, H314 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2" in 12".

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

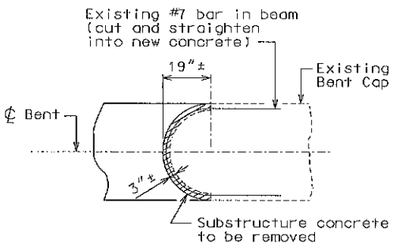
SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



* ℄ Existing Column & ℄ 2" Joint Filler

PLAN OF CRASH WALL

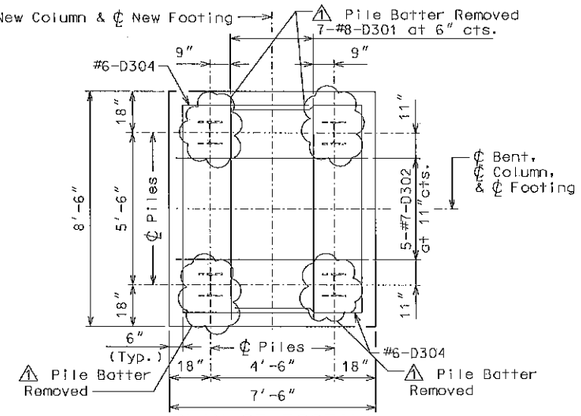


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

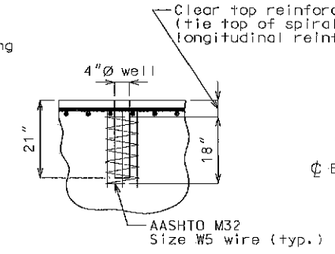
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

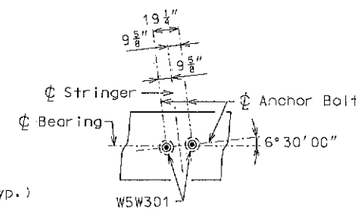


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1½".

All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½".

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2" clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 3 not shown, see Sheet No. 12.

For details of Crash Wall not shown, see Sheet No. 12.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation	cu. yard	100
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	71.9
Class B Concrete (Substructure)	cu. yard	20.2
Reinforcing Steel (Bridges)	pound	3457
Reinforcing Steel (Retaining Wall)	pound	3085

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: BWC 05/18/10
Checked: HNG 05/18/10

DETAILS OF INTERMEDIATE BENT NO. 3

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

STATE OF MISSOURI HOWARD NELSON GOTSCHALL II NUMBER PE-2004000786 PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.05.18 14:00:13 -05'00'

DATE PREPARED	
05/18/10	
ROUTE 65	STATE MO
DISTRICT BR	SHEET NO. 13
COUNTY GREENE	
JOB NO. J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A16491	

DATE	DESCRIPTION
05/18/10	△ Int. Bent pile batter removed.

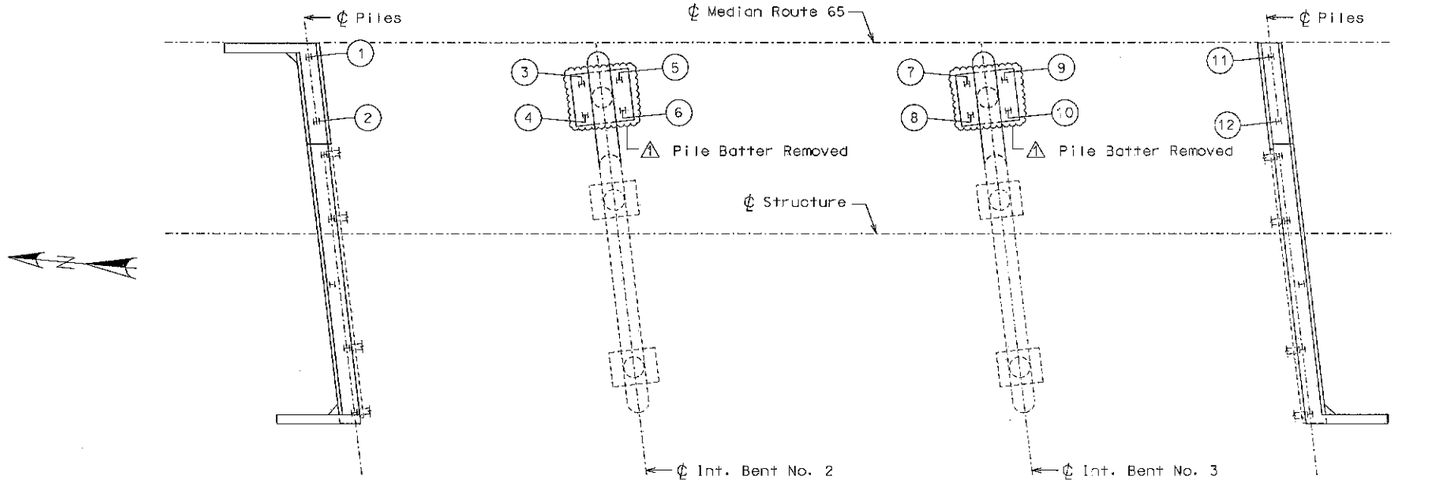
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

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

© Copyright Hanson Professional Services Inc. 2005

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 2004000786
www.hanson-inc.com
314.770.0487

Howard N. Gotschall II
Professional Engineer
PE-2004000786



End Bent No. 1 Int. Bent No. 2 Int. Bent No. 3 End Bent No. 4

PLAN SHOWING PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			End Bent No. 1
1			
2			
			Int. Bent No. 2
3			
4			
5			
6			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			Int. Bent No. 3
7			
8			
9			
10			
			End. Bent No. 4
11			
12			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS

NOTE: INDICATE IN REMARKS COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

NOTE: THIS SHEET TO BE COMPLETED BY MODOT CONSTRUCTION PERSONNEL.

Designed: BWC 04/24/09
Detailed: BWC 05/18/10
Checked: HNG 05/18/10

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.05.18 14:00:39 -05'00'

DATE PREPARED 05/18/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 37
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	⚠ Int. Bent pile batter removed.

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

© Copyright Hanson Professional Services Inc. 2006

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hansonpros.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000786

MEMORANDUM

Missouri Department of Transportation
Bridge Division
Central Office

TO: Gayle Davis–8 (Project Office)

CC/ATT: Kirk Juranas - 8
Dave Ahlvers - cm
John Gahagan - br
Chad Daniel - br
Dean Franke - br
Kent Nelson - br (2)

FROM: Joyce Foster JF
Structural Liaison Engineer

DATE: September 16, 2010

SUBJECT: Greene County, Route 65
Structure A16491, A23641
Job No. J8P0605E
Letting Date 6/26/2009
Construction Plan Changes

Enclosed are six half-size copies of the following plan sheets:

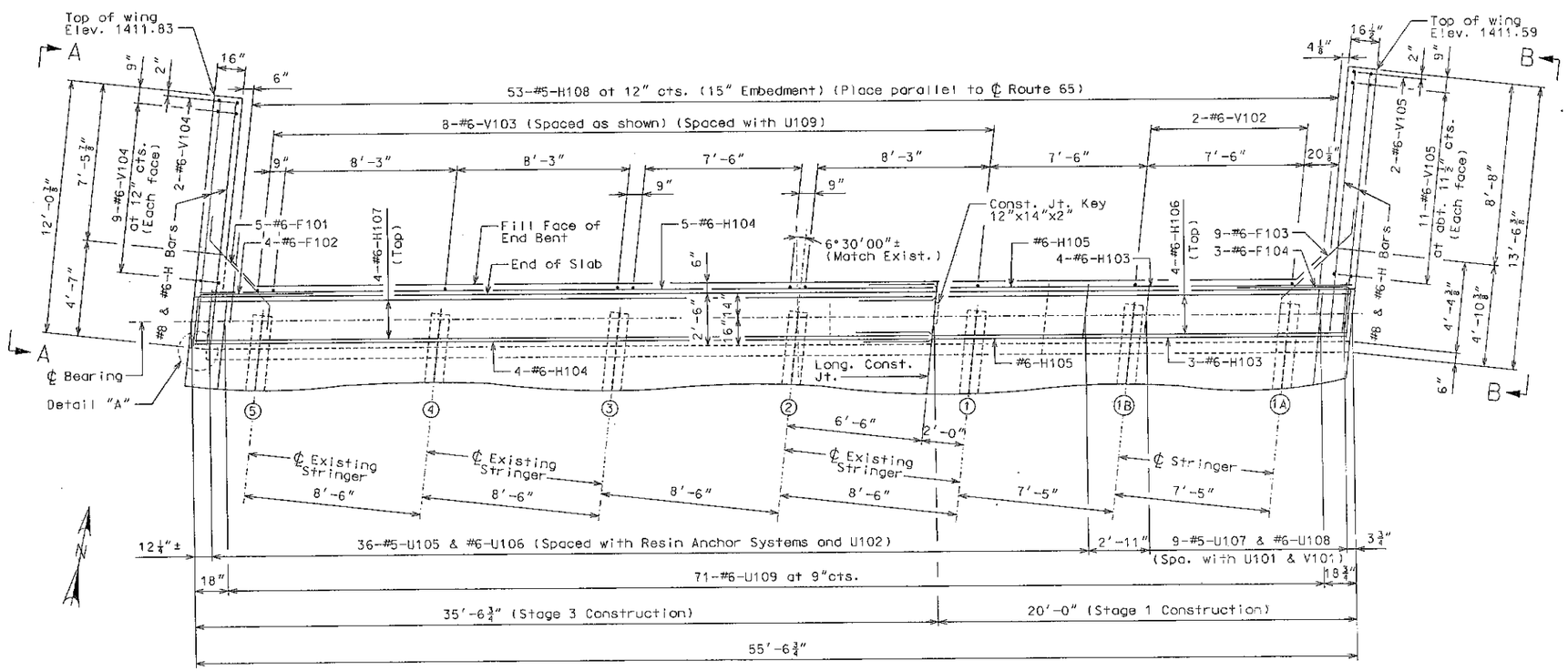
Bridge A16491 – Sheets 7, 30, 31, 32, and 36
Bridge A23641 - Sheets 30, 31, and 35

This change order was required because of the contractor's request to use resin anchors.

Change requested by your office.

If you have questions or comments, please call me at (573) 751-3707.

J:/fostej/construction change 8



PLAN SHOWING REINFORCING

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Concrete diaphragms at the integral end bents shall be poured a minumum of 12 hours before the slab is poured.

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 1, see Sheet Nos. 6 & 8.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

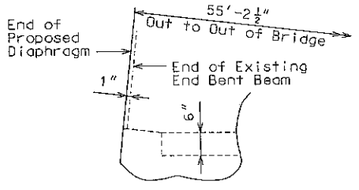
U and Pr. V bars shall be placed parallel to ℄ Route 65.

For reinforcement of the Safety Barrier Curb, see Sheet Nos. 27 thru 32.

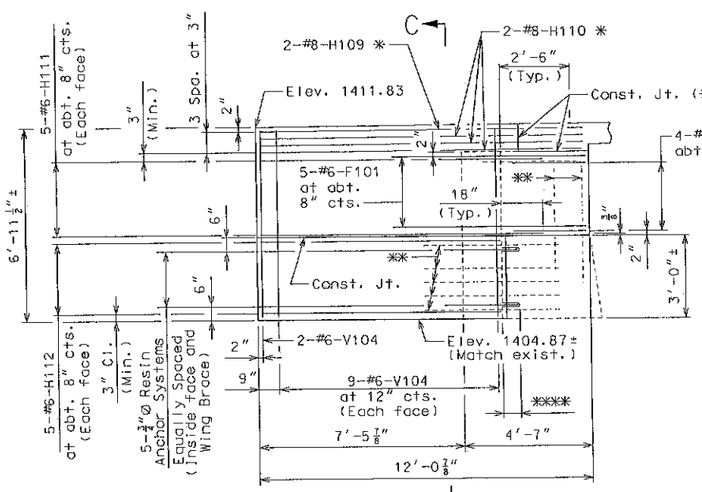
For details of Vertical Drain at End Bent, see Sheet No. 9.

Bend #6-F101 & F103 bars in field to clear stringers.

For details of Bridge Approach Slab, see Sheet No. 33.

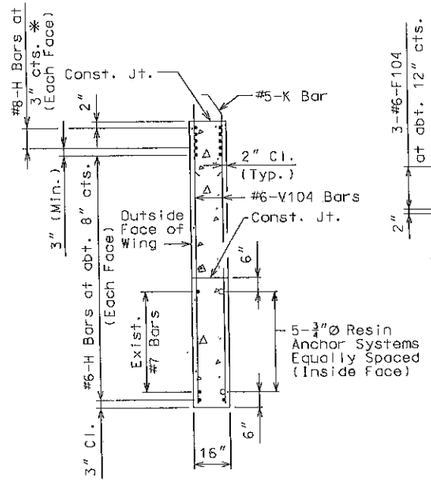


DETAIL "A"

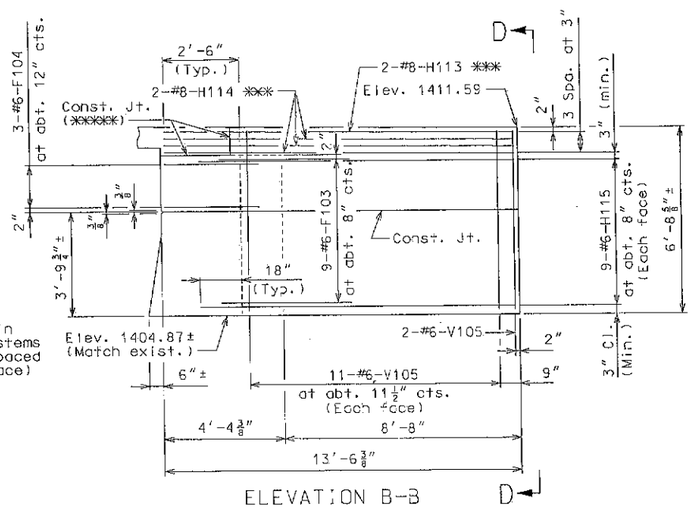


ELEVATION A-A

* Note: Place H109 and H110 parallel to grade.

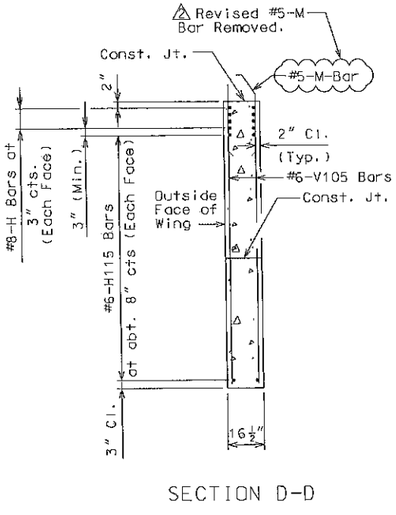


SECTION C-C



ELEVATION B-B

*** Note: Place H113 and H114 parallel to grade.



SECTION D-D

** Existing wing and curtain wall reinforcement to be used in place. Damaged bars shall be replaced by the contractor with no additional payment.

**** Manufacturer's embedment length, but not less than 5" min.

(*****) Upper construction joint shall be formed on slope in order to maintain a 1½" (min.) clearance to #6-H103 or H104 reinforcing bars in diaphragm. (Also shown in Section near End Bent)

Howard N. Gotschall II
2010.09.15 15:49:05 -05'00'

DATE PREPARED	09/15/10
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	7
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A16491

DATE	DESCRIPTION
09/15/10	Sec D-D M Bar Removed

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

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

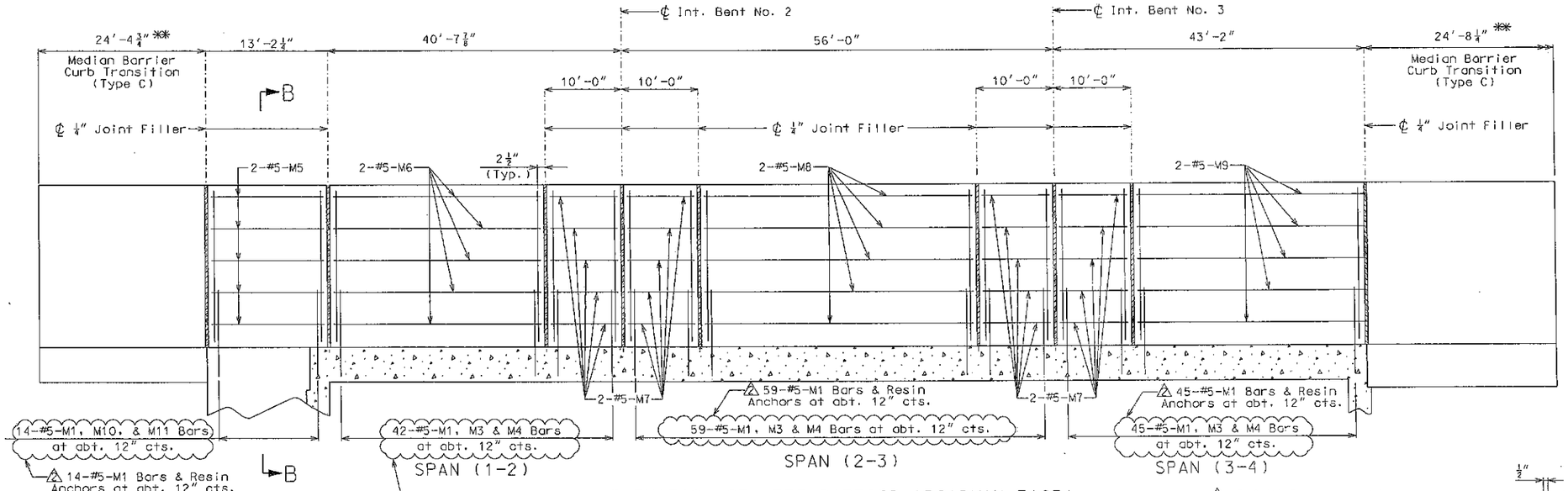
© Copyright Hanson Professional Services Inc. 2006

HANSON
Hanson Professional Services Inc.
1301 Riverplace, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Printed 09/15/2010
PE-2004000786

Designed: BWC 04/24/09
Detailed: SAS 09/15/10
Checked: HNG 09/15/10

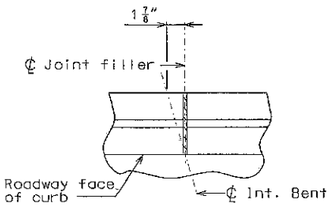
DETAILS OF END BENT NO. 1

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

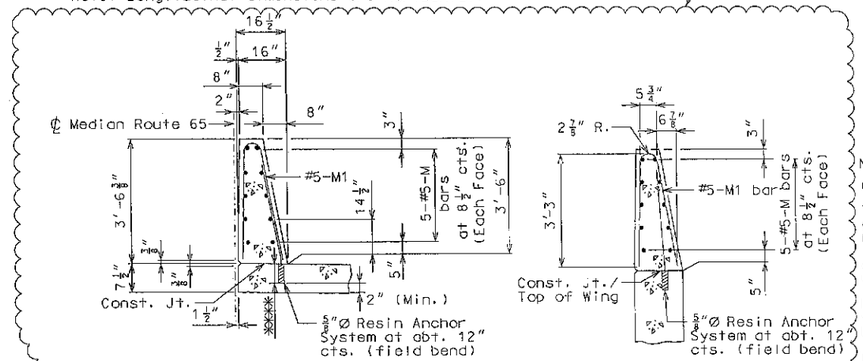


ELEVATION OF LEFT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.



PART PLAN SHOWING
SAFETY BARRIER CURB JOINT



M-BAR PERMISSIBLE ALTERNATE SHAPE
& OPTIONAL ANCHORING SYSTEM

Notes:

Use a minimum lap of 2'-11" for #5 horizontal median barrier curb (Type D) bars.

The cross-sectional area above the slab = 3.49 sq. ft.

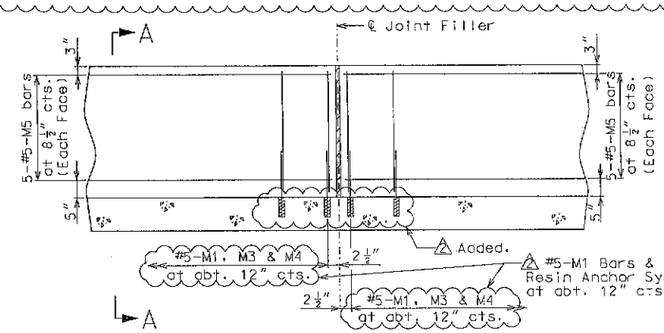
(*) The M1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

** For details of the median barrier curb transition (Type C), see Sheet No. 32.

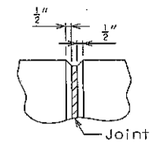
(*****) Manufacturer's embedment length, but not less than 5½" min.

(******) The resin anchoring system may be replaced with the optional anchoring system as shown, at the contractor's option.

Added.



PART ELEVATION
(CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



FILLED JOINT DETAIL

Notes:

Concrete in the barrier curb (Type D) shall be Class B-1.

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

All exposed edges of Barrier Curb (Type D) shall have either a ½" radius or a ⅜" bevel, unless otherwise noted.

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

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

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

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

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Barrier Curb (Type D).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5½".

An epoxy coated #5 Grade 60 reinforcing bar 3'-0" long shall be substituted for the ⅝"Ø threaded rod.

Added.

Designed: BWC 04/24/09
Detailed: SAS 09/15/10
Checked: HNG 09/15/10

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.09.15 15:49:43 -05'00'

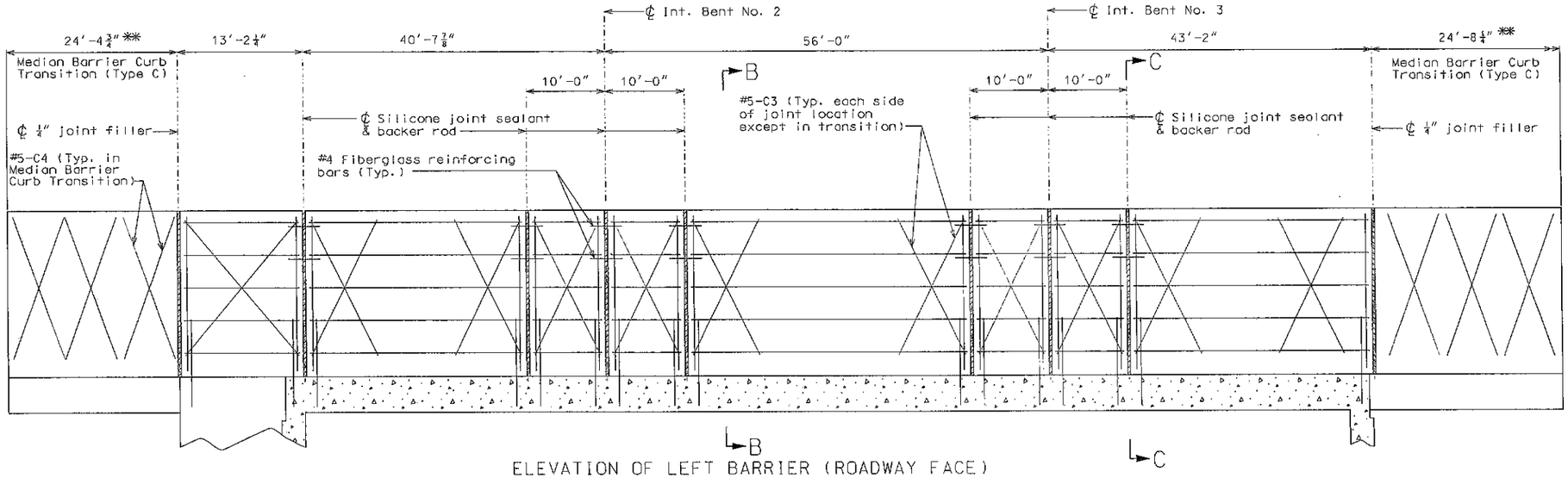
DATE PREPARED 09/15/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 30
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DATE	DESCRIPTION
09/15/10 △	M bars changed to Resin Anchors.

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

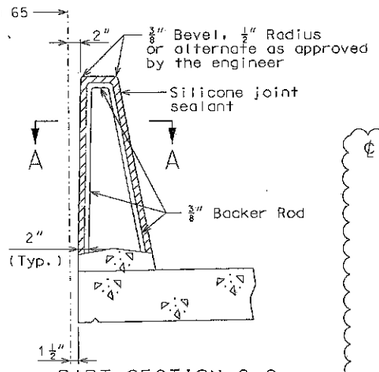
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
1360 Regency Level Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard N. Gotschall II
314.770.0487 PE-2004000786

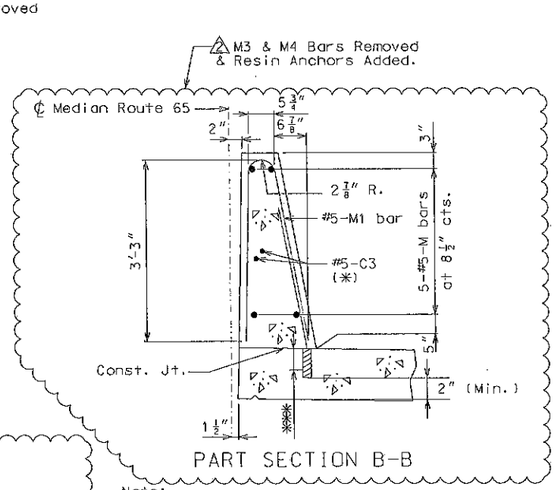


ELEVATION OF LEFT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.



PART SECTION C-C



PART SECTION B-B

Note:

(*) Each side of joint location, (except in transition).

(***) Manufacturer's embedment length but not less than 5½" min.

Added.

Added.

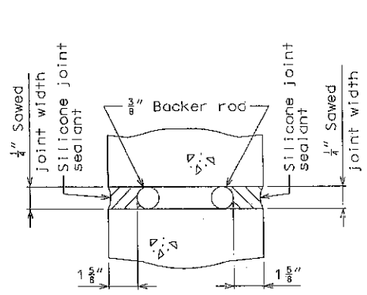
Notes:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Barrier Curb (Type D).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5½".

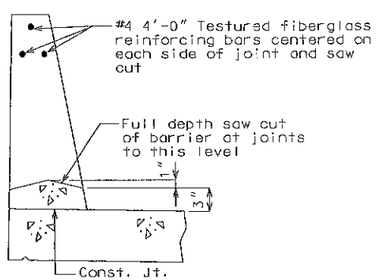
An epoxy coated #5 Grade 60 reinforcing bar 3'-0" long shall be substituted for the ⅝"Ø threaded rod.



SECTION A-A

Note:

Cost of silicone joint sealant and backer rod, complete-in-place, will be considered completely covered by the contract unit price for barrier curb (Type D).



SECTION C-C

Notes:

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

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

For Slip-Form Option, all sides of the barrier curb (Type D) shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

Concrete in the Barrier Curb (Type D) shall be Class B-1.

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

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

** For details of median barrier curb transition (Type C), see Sheet No. 32.

OPTIONAL SLIP-FORM BARRIER CURB (TYPE D)

Designed: BWC 04/24/09
Detailed: SAS 09/15/10
Checked: HNG 09/15/10

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2009009756
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.09.15 15:50:28 -05'00'

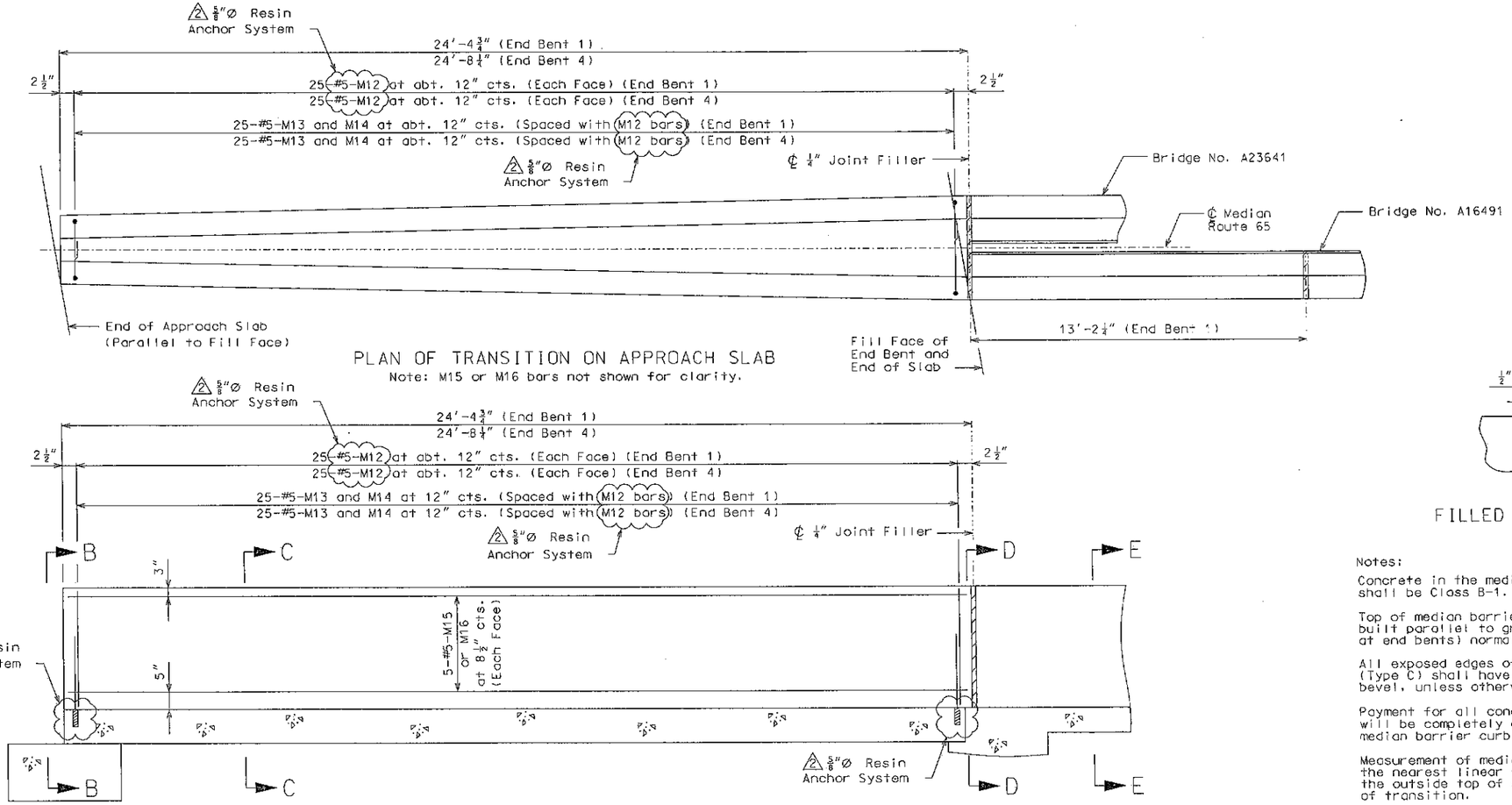
DATE PREPARED: 09/15/10
ROUTE: 65 | STATE: MO
DISTRICT: BR | SHEET NO.: 31
COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A16491

DESCRIPTION	DATE
⚠ M bars changed to Resin Anchors.	09/15/10

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

© Copyright Hanson Professional Services Inc. 2008

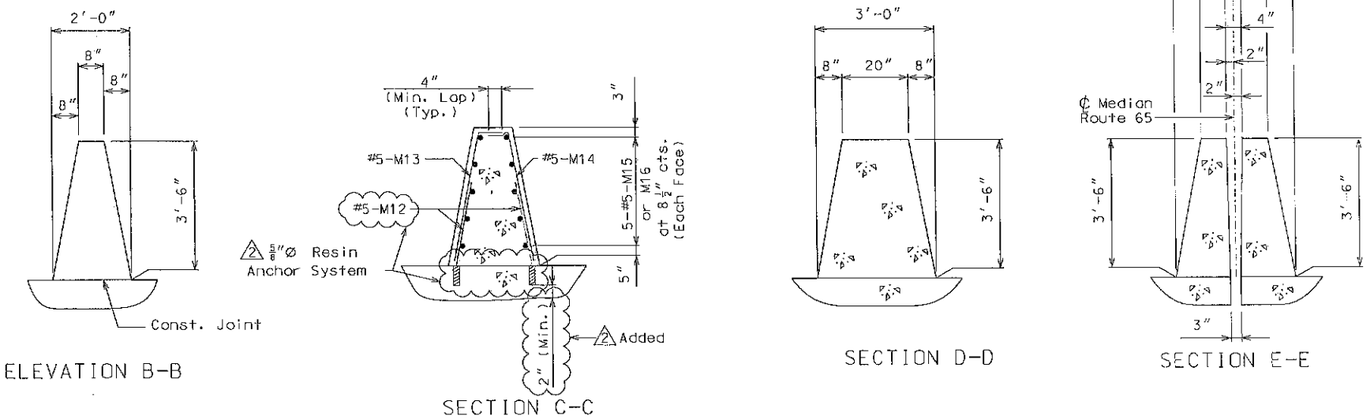
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2009009756

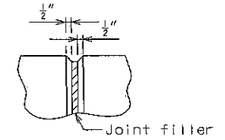


PLAN OF TRANSITION ON APPROACH SLAB

Note: M15 or M16 bars not shown for clarity.

ELEVATION OF TRANSITION ON APPROACH SLAB





FILLED JOINT DETAIL

Notes:

Concrete in the median barrier curb transition (Type C) shall be Class B-1.

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

All exposed edges of median barrier curb transition (Type C) shall have either a 1/2" radius or a 5/8" bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete-in-place will be completely covered by the contract unit price for median barrier curb transition (Type C) per linear foot.

Measurement of median barrier curb transition (Type C) is to the nearest linear foot for each structure, measured along the outside top of slab from end of transition to end of transition.

Concrete traffic barrier delineators shall be placed on top of the median barrier curb transition (Type C) as shown on Missouri Standard Plans delineators will be considered completely covered by the contract unit price for "Median Barrier Curb Transition (Type C)".

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

For details of the approach slab, see Sheet No. 33.

For details of the barrier curb (Type D), see Sheet Nos. 30 and 31.

2 Added

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be completely covered by the contract unit price bid for Median Barrier Curb Transition (Type C).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #5 Grade 60 reinforcing bar 3'-0" long shall be substituted for the 5/8" Ø threaded rod.

Designed: BWC 04/24/09
Detailed: SAS 09/15/10
Checked: HNG 09/15/10

DETAILS OF MEDIAN BARRIER CURB TRANSITION (TYPE C)

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000784
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.09.15 15:50:59 -05'00'

DATE PREPARED: 09/15/10

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	32

COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A16491

DATE	DESCRIPTION
09/15/10	2 M12 bars changed to Resin Anchors

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

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
Maryland Heights, MO 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004000784

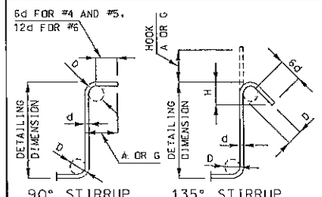
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS 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.
			BARRIER CURB																
48	5	K1	BARRIER CURB	E	19	S				2 5.000	5.125						2 10	2 9	138
48	5	K2	BARRIER CURB	E	14	S				5.125	11.125	18.000			2.000	17.875	2 10	2 9	138
26	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	174
22	5	K4	BARRIER CURB	E	7					3 0.000	6.000						6 3	6 3	143
2	5	K5	BARRIER CURB	E	25	S				2 6.500	6.750	4.375			5.500	4.000	3 6	3 5	7
2	5	K6	BARRIER CURB	E	25	S				2 5.500	7.875	4.375			6.500	4.500	3 6	3 5	7
2	5	K7	BARRIER CURB	E	25	S				2 4.125	9.625	4.375			7.875	5.500	3 6	3 5	7
2	5	K8	BARRIER CURB	E	25	S				2 2.750	11.250	4.375			9.250	6.500	3 6	3 6	7
24	5	K9	BARRIER CURB	E	20					5 7.000							5 7	5 7	140
22	4	K10	BARRIER CURB	E	20					8 4.000							8 4	8 4	122
2	5	K11	BARRIER CURB	E	8					2 2.125					2 2.000	2.375	4 4	4 4	9
145	5	R1	BARRIER CURB	E	26	S				2 6.000	4.250				2 6.000	3.000	5 3	5 3	794
145	5	R3	BARRIER CURB	E	19	S				17.000	6.000						1 11	1 10	277
145	5	R4	BARRIER CURB	E	27	S				———	6.000	11.250	7.000	12.000	9.250	6.375	3 0	2 10	428
14	5	R5	BARRIER CURB	E	20					30 3.000							30 3	30 3	442
30	5	R6	BARRIER CURB	E	20					9 8.000							9 8	9 8	302
7	5	R7	BARRIER CURB	E	20					35 8.000							35 8	35 8	260
20	5	C1	SLIP FORM	E	20					10 0.000							10 0	10 0	209
4	5	C2	SLIP FORM	E	20					8 0.000							8 0	8 0	33
△0																			
160	5	M1	MED BARRIER	E	26	S				3 3.000	5.750				3 3.000	6.875	6 10	6 10	1140
146	5	M3	MED BARRIER	E	19	S				20.000	10.000						2 6	2 5	368
146	5	M4	MED BARRIER	E	27	S				———	10.000	14.250	5.500	12.000	14.000	2.625	3 6	3 3	495
10	5	M5	MED BARRIER	E	20					12 10.000							12 10	12 10	134
10	5	M6	MED BARRIER	E	20					30 4.000							30 4	30 4	316
40	5	M7	MED BARRIER	E	20					9 8.000							9 8	9 8	403
10	5	M8	MED BARRIER	E	20					35 8.000							35 8	35 8	372
10	5	M9	MED BARRIER	E	20					32 10.000							32 10	32 10	342
14	5	M10	MED BARRIER	E	19	S				3 6.000	10.000						4 4	4 3	62
14	5	M11	MED BARRIER	E	27	S				———	10.000	14.250	2 1.000	———	14.000	2.625	4 1	4 0	58
100	5	M12	MED BARRIER	E	27	S				———	———	2 0.375	7.000	12.000	2 0.000	4.500	3 7	3 6	365
50	5	M13	MED BARRIER	E	15	S				3 2.625	4.500	———	———	———	3 2.000	7.250	3 7	3 6	183
50	5	M14	MED BARRIER	E	15	S	V	2		3 2.625	4.500	———	———	———	3 2.000	7.250	3 7	3 6	
△0			INCREMENT=½"							3 2.625	16.500	———	———	———	3 2.000	7.250	4 7	4 6	209
10	5	M15	MED BARRIER	E	20					24 1.000							24 1	24 1	251
10	5	M16	MED BARRIER	E	20					24 4.000							24 4	24 4	254
22	5	C3	SLIP FORM	E	20					10 0.000							10 0	10 0	229
12	5	C4	SLIP FORM	E	20					8 0.000							8 0	8 0	100

BILL OF REINFORCING STEEL

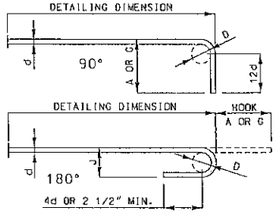
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			TOTALS																
	4																		1057
	5																		4373
	5			E															35490
	6																		7705
	6			E															35191
	8																		3632
	8			E															251
	9																		1664
	W5																		36
			TOTAL																18467
			TOTAL	E															70932
			SLAB ON STEEL																
	4																		98
	5																		375
	5			E															35490
	6																		4820
	6			E															35191
	8																		566
	8			E															251
			TOTAL																5859
			TOTAL	E															70932
△0			REINFORCING STEEL (RETAINING WALL)																
	4																		630
	5																		3998
	6																		1060
			TOTAL																5688
△0			REINFORCING STEEL (BRIDGES)																
	4																		329
	6																		1825
	8																		3066
	9																		1664
	W5																		36
			TOTAL																6920
			SAFETY BARRIER CURB																
	4			E															122
	5			E															3273
			TOTAL	E															3395
			BARRIER CURB (TYPE D)																△3604
	5			E															4952
			TOTAL	E															4952
			SLIP FORM																
	5			E															571
			TOTAL	E															571

TWO ADDITIONAL #4-K10 & #5-R6 ARE INCLUDED IN THE BAR BILL FOR TESTING.



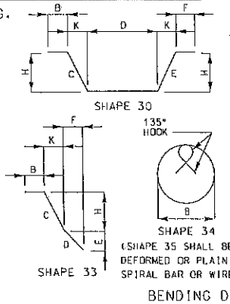
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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

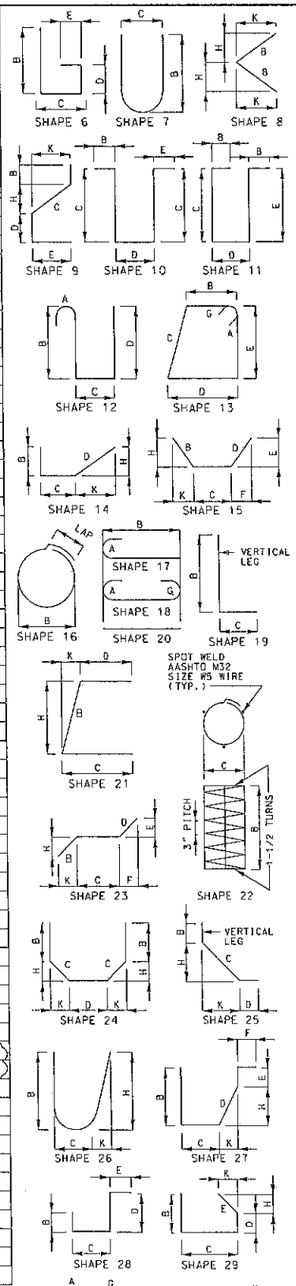


END HOOK DIMENSIONS					
		ALL GRADES			
BAR SIZE	D (IN.)	180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G	
#3	2 1/4"	5"	3"	6"	
#4	3"	6"	4"	8"	
#5	3 3/4"	7"	5"	10"	
#6	4 1/2"	8"	6"	12"	
#7	5 1/4"	10"	7"	14"	
#8	6"	11"	8"	16"	
#9	9 1/2"	15"	11 3/4"	19"	
#10	10 3/4"	17"	13 1/4"	22"	
#11	12"	19"	14 3/4"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



Designed: BWC 04/24/09
Detailed: SAS 09/15/10
Checked: HNG 09/15/10

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

Sheet No. 36 of 37

© Copyright Hanson Professional Services Inc. 2009

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com Howard N. Gotschall II
hgotschall@hanson-inc.com PE-2004000786
314.770.0557

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.09.15 15:51:29 -05'00'

DATE PREPARED 09/15/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 36
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DESCRIPTION	DATE
△1 Revised Median Barrier Bars	09/15/10

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

MEMORANDUM

Missouri Department of Transportation
Bridge Division
Central Office

TO: Gayle Davis–8 (Project Office)

CC/ATT: Kirk Juranas - 8
Dave Ahlvers - cm
John Gahagan - br
Chad Daniel - br
Dean Franke - br
Kent Nelson - br (2)

FROM: Joyce Foster JF
Structural Liaison Engineer

DATE: October 6, 2010

SUBJECT: Greene County, Route 65
Structure A16491, A23641
Job No. J8P0605E
Letting Date 6/26/2009
Construction Plan Changes

You were e-mailed an adobe acrobat file of the following plan sheets. Enclosed is one half-size copies of these plan sheets:

Bridge A16491 – Sheets 1, 11 and 13
Bridge A23641 - Sheets 1, 11 and 13

This change order was required because the micropiles were driven in the wrong location, which required changes to the crash wall and crash wall footing.

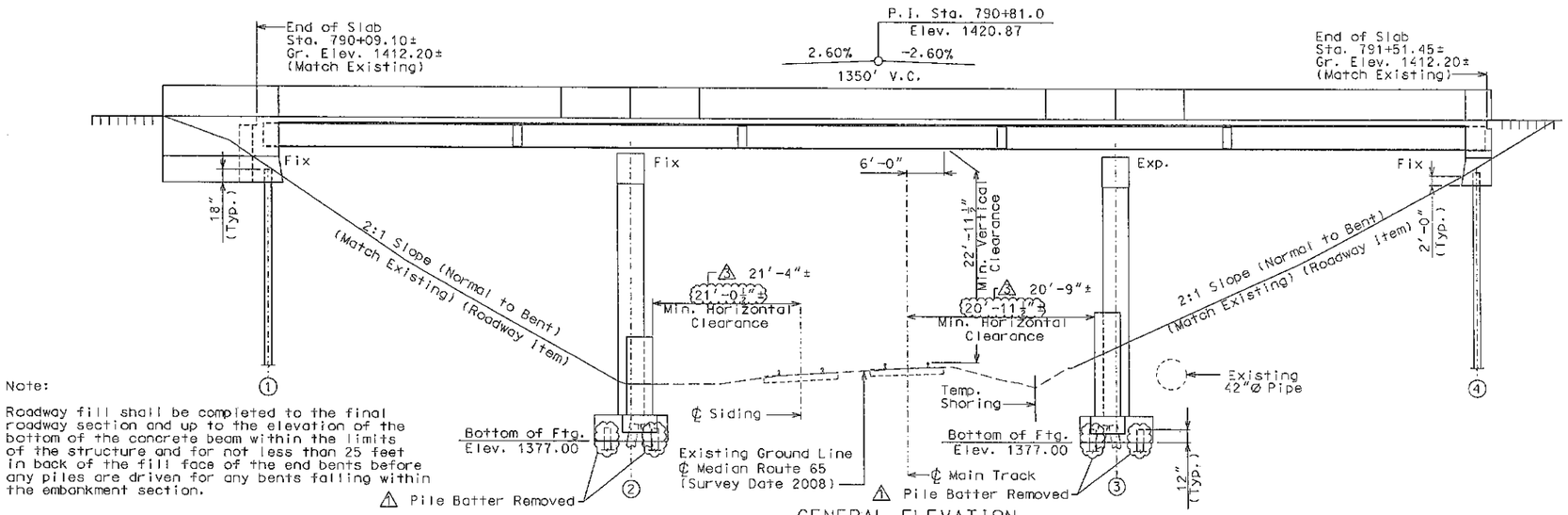
Change requested by your office.

If you have questions or comments, please call me at (573) 751-3707.

J:/fostej/construction change 8

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P., WIDEN AND REDECK (42'-56'-42') CONTINUOUS COMPOSITE I-BEAM SPANS

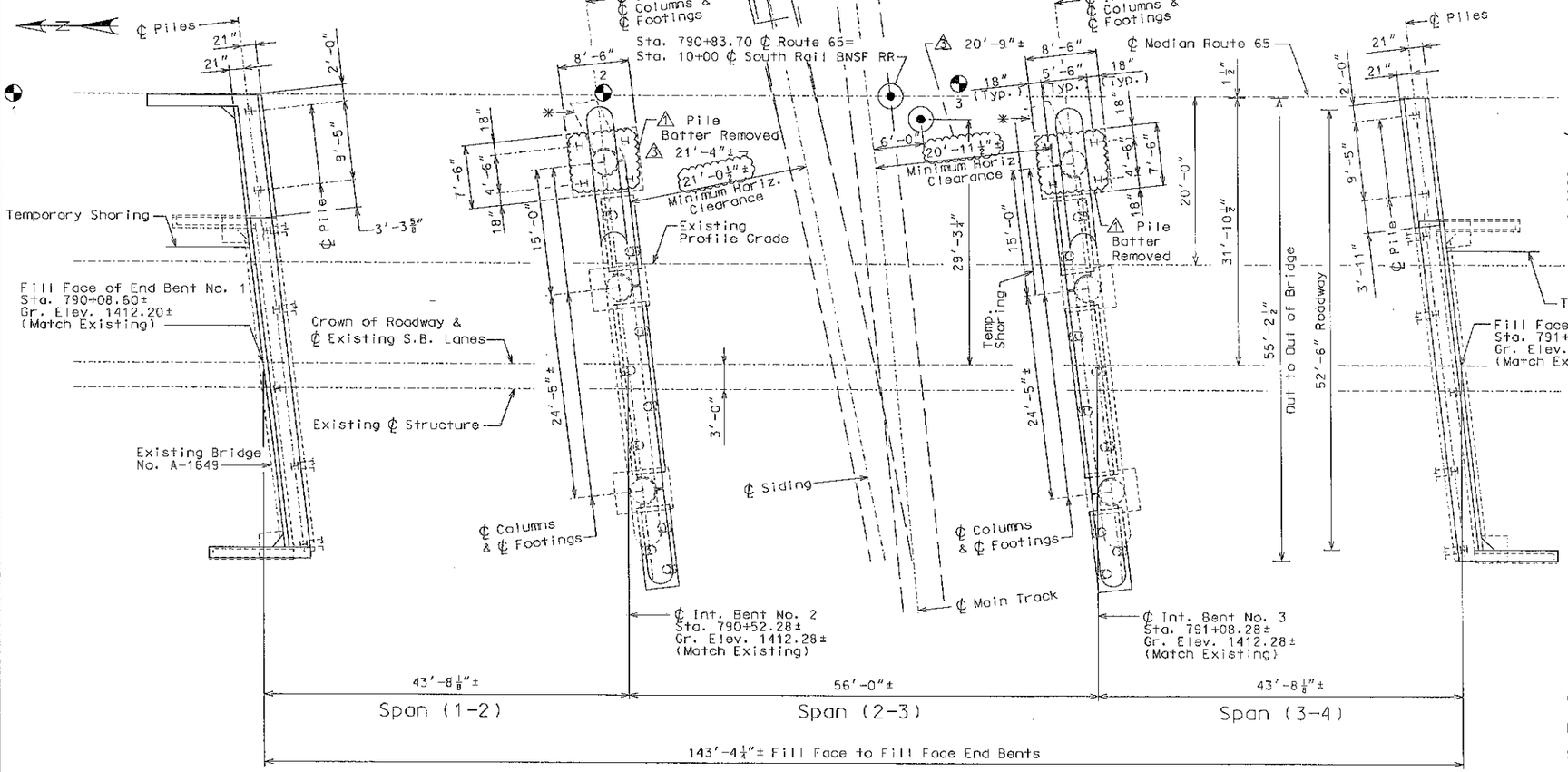


Note:

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.

GENERAL ELEVATION

* Note: See plans for Bridge No. A23641 for details of crashwall.



PLAN

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

Sheet No. 1 of 37

SEC/SUR 9 TWP 29N RGE 21W

"⊕" Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet for this structure. Boring data for the numbered locations is shown on Sheet No. 5. 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.

Notice and Disclaimer Regarding Pinnacled Rock:

The State of Missouri and, in particular, the area that encompasses this project is known to have, at least in part, bedrock that exhibits karst conditions. One karst condition is sometimes referred to as pinnacle or pinnacled rock. The nature of this condition makes graphical representations of this pinnacled zone difficult to classify and excavate. It is incumbent upon the bidder to investigate above surface warnings of this rock formation (road cuts, quarry sites and any other exposed faces) and be aware that the same is a regularly ocurring phenomenon and is not to be regarded as a differing site condition or result in changes in the work, regardless of what any actual boring or lines on the plans may or may not tend to indicate.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

4 For General Notes, Location Sketch, Foundation Data, Estimated Quantities, and Estimated Quantities for Slab on Steel, see Sheet No. 2.

All bents are parallel.

All longitudinal dimensions are horizontal.

All elevations and dimensions are based on the existing plans while using the 1988 NAVD datum. The existing plans used the 1927 USGS datum; which is, on average, 0.43 ft. lower than the 1988 NAVD datum. The contractor shall field verify prior to construction.

Note:

Underground facilities, structures and utilities have been platted from available surveys and records. The commission does not warrant the locations of these facilities as precise. It is possible there may be others, the existence of which is presently not known or shown. It shall be the contractor's responsibility to determine the existence and precise location of all facilities and to avoid damage to them. See the job special provisions (Roadway) for a list of utility companies on or within the vicinity of the project limits.

Bench Marks (NAVD 88 Datum)

City B.M. 115: Alum. disk in conc. (City B.M. #115) 275'± north of railroad, west side S.B.L. Rte. 65. Elevation = 1407.00

TBM-NSA: Marked "L" in conc. base of ret. wall for N.B.L. Hwy. 65 bridge over R.R. tracks at S.W. cor. bridge. (Set by EFK Moen)

WIDENING AND REDECKING OF BRIDGE OVER BNSF CUBA SUB.

STATE ROAD FROM ROUTE I-44 TO BUSINESS ROUTE 65

ABOUT 1.2 MILES S OF ROUTE I-44

STA. 790+08.60±

STD. 606.22
STD. 609.00
STD. 609.70
STD. 617.10
STD. 617.20
STD. 706.35

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004006736
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.10.06 11:50:53 -05'00'

DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	1
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A16491	

DATE	DESCRIPTION
05/18/10	⚠1 Int. Bent pile batter removed.
10/06/10	⚠2 Revised min. horizontal clear.

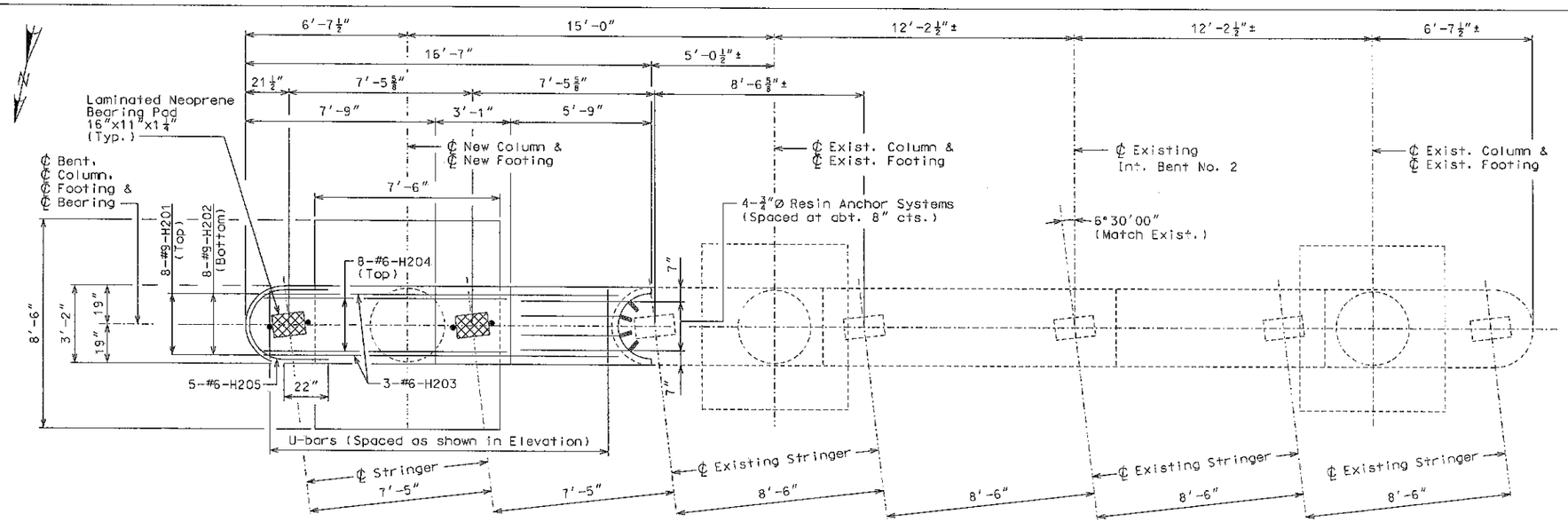
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

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

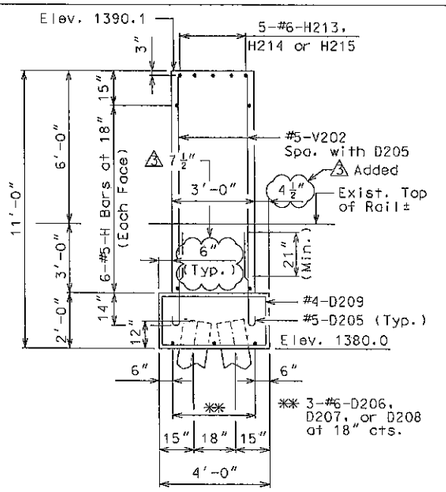
© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
13360 Manchester Road, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001632
www.hanson-inc.com
Howard N. Gotschall II
Professional Engineer
314.770.0487



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



TYPICAL SECTION THRU CRASH WALL

Notes:

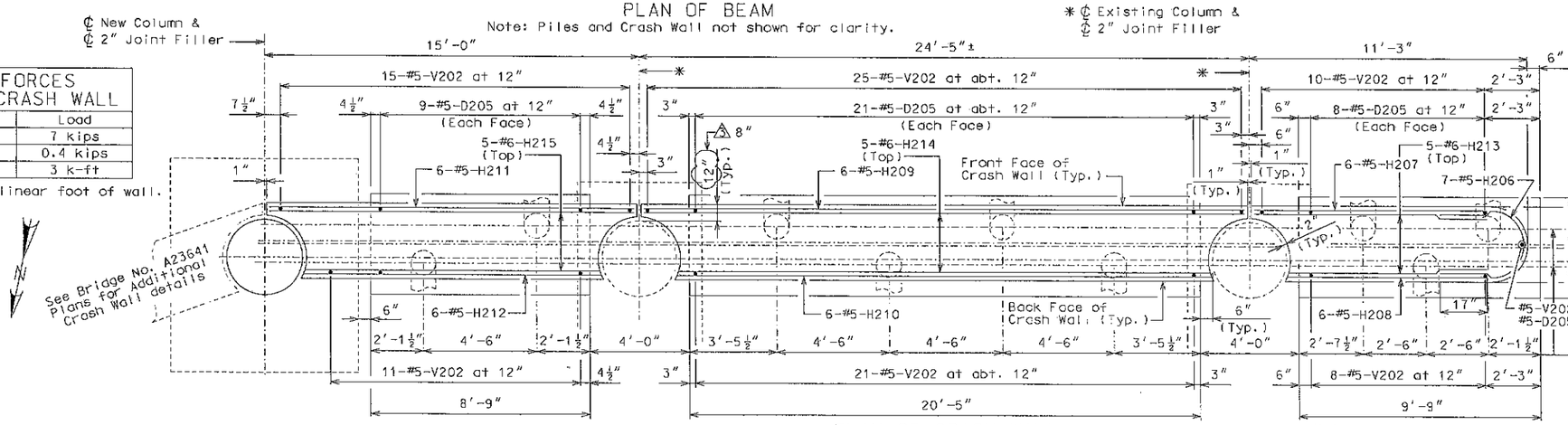
Field cut #6-H213, H214 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2" in 12".

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".

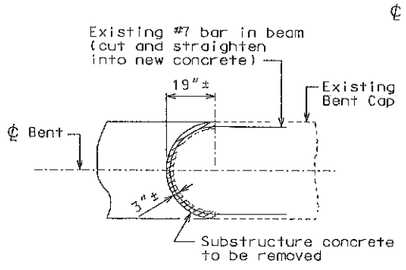
All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½".

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2" clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 2 not shown, see Sheet No. 10.

For details of Crash Wall not shown, see Sheet No. 10.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

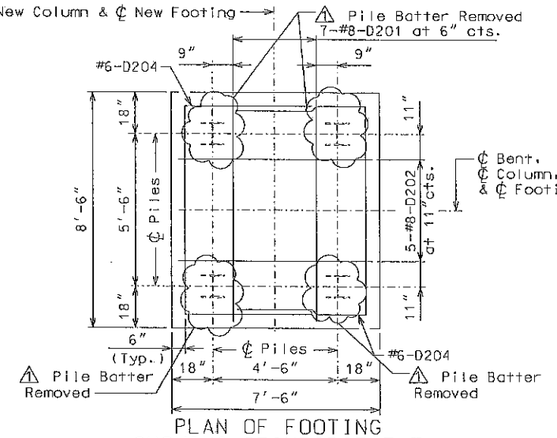


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

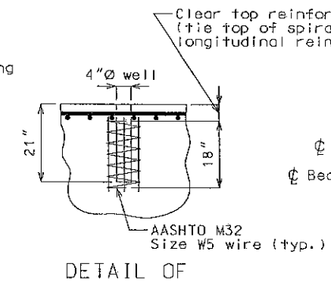
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

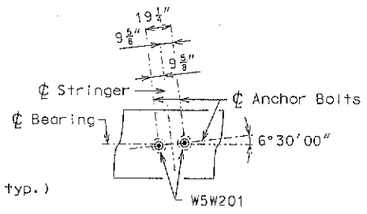


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	100
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	56.8
Class B Concrete (Substructure)	cu. yard	20.0
Reinforcing Steel (Bridges)	pound	3463
Reinforcing Steel (Retaining Wall)	pound	2603

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DETAILS OF INTERMEDIATE BENT NO. 2

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004006764
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.10.06 11:51:30 -05'00'

DATE PREPARED 10/06/10

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	11

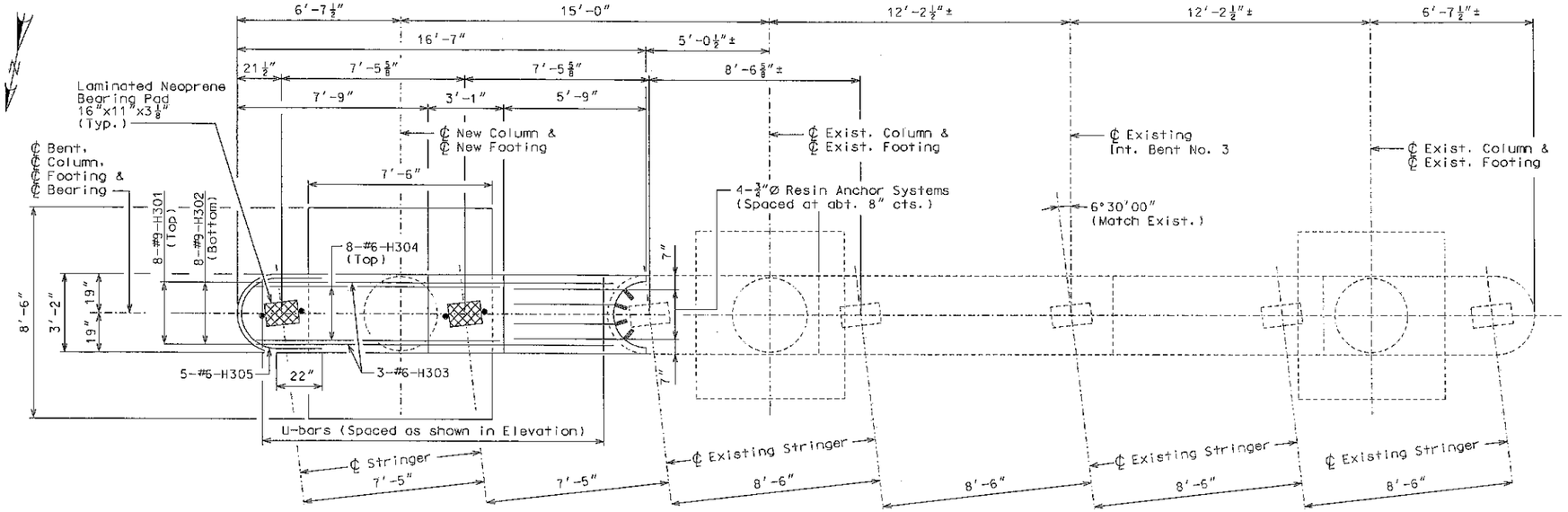
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	⚠1 Int. Bent pile batter removed.
10/06/10	⚠2 Revised Footings and Crash Walls.

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

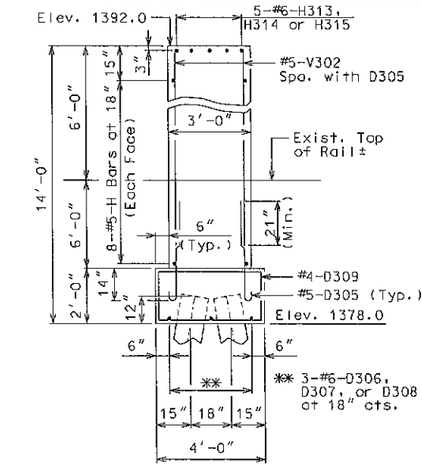
© Copyright Hanson Professional Services Inc. 2009

HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
Maryland Heights, MO 63043
Professional Engineer 001632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004006764



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



TYPICAL SECTION THRU CRASH WALL

Notes:

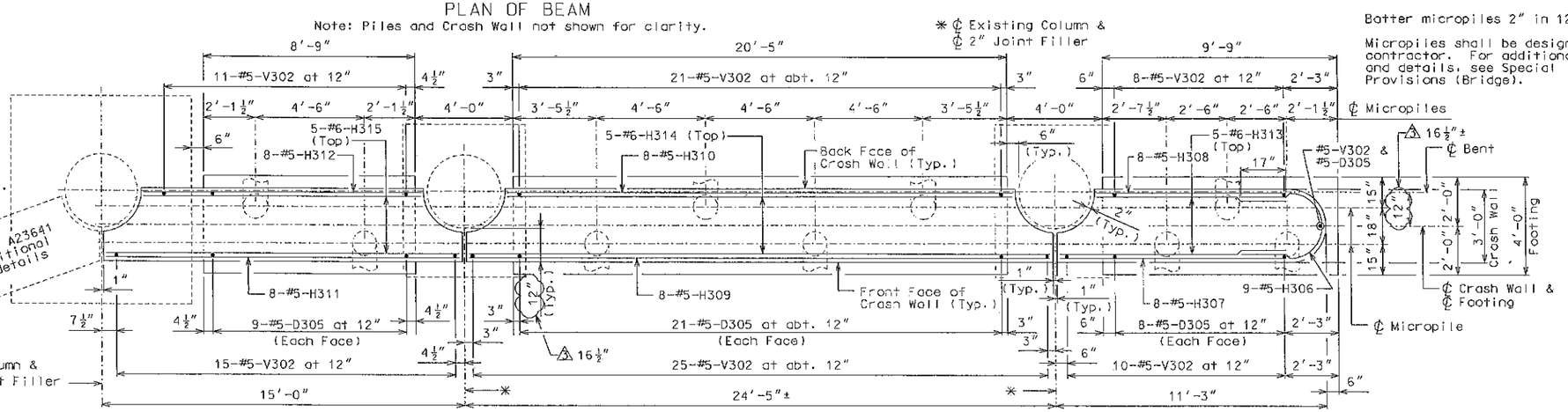
Field cut #6-H313, H314 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2" in 12".

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".

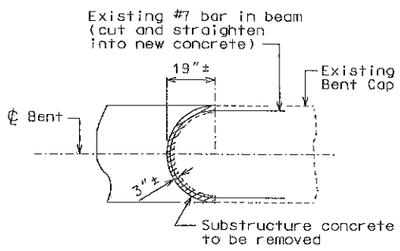
All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½".

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2" clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 3 not shown, see Sheet No. 12.

For details of Crash Wall not shown, see Sheet No. 12.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

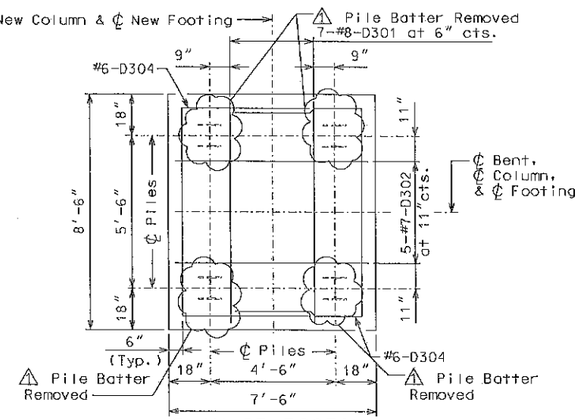


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

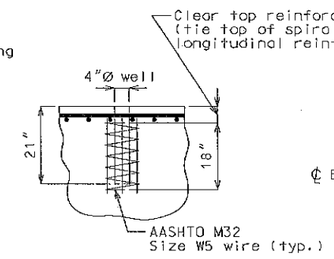
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

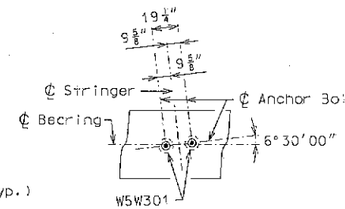


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation	cu. yard	100
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	71.9
Class B Concrete (Substructure)	cu. yard	20.2
Reinforcing Steel (Bridges)	pound	3457
Reinforcing Steel (Retaining Wall)	pound	3085

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DETAILS OF INTERMEDIATE BENT NO. 3

STATE OF MISSOURI HOWARD NELSON GOTSCHALL II NUMBER PE-2004008786 PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.10.06 11:52:34 -05'00'

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	1 Int. Bent pile batter removed.
10/06/10	2 Revised Footings and Crash Walls.

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

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

© Copyright Hanson Professional Services Inc. 2008

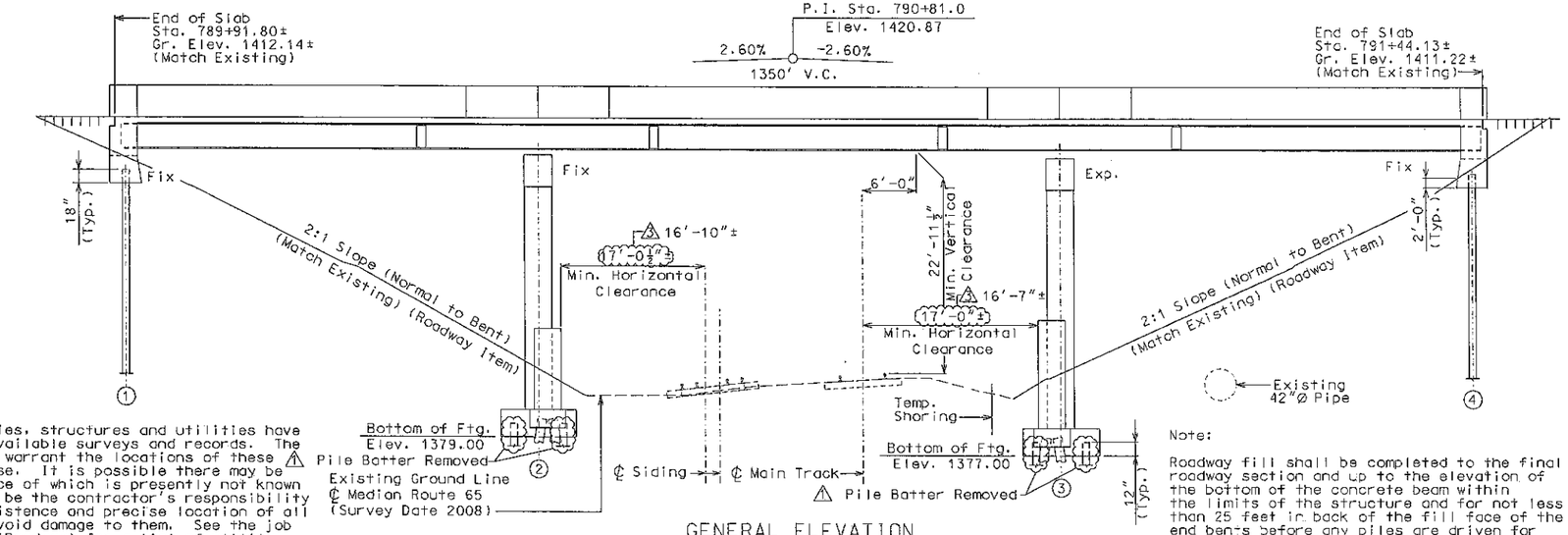
HANSON
Hanson Professional Services Inc.
13801 Riverport Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineers 61562
www.hansonpro.com
314.770.0467

Howard N. Gotschall II
Professional Engineer
PE-2004008786

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P., WIDEN AND REDECK (46'-58'-46') CONTINUOUS COMPOSITE I-BEAM SPANS

SEC/SUR 9 TWP 29N RGE 21W



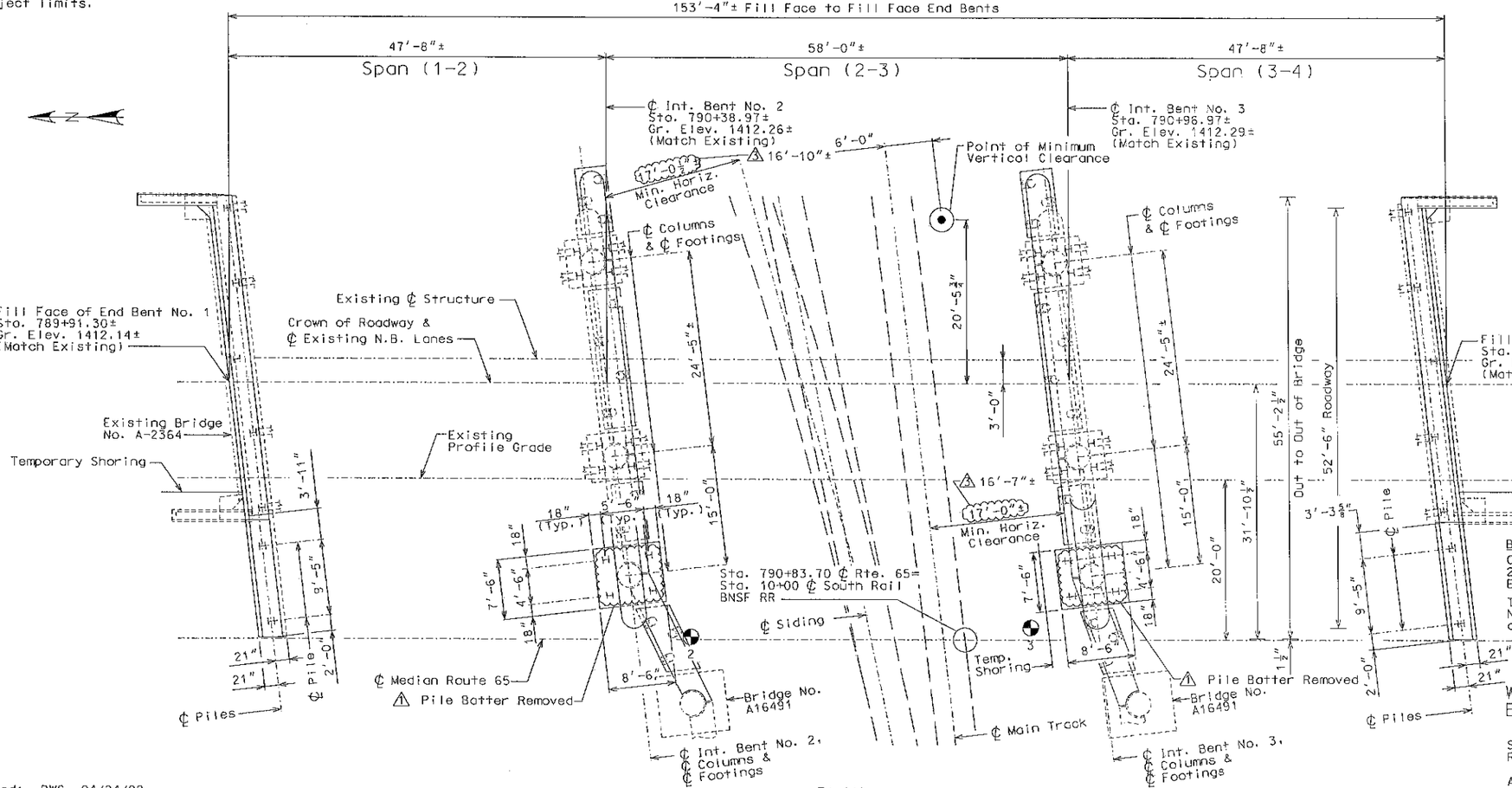
GENERAL ELEVATION

Note:

Underground facilities, structures and utilities have been plotted from available surveys and records. The commission does not warrant the locations of these facilities as precise. It is possible there may be others, the existence of which is presently not known or shown. It shall be the contractor's responsibility to determine the existence and precise location of all facilities and to avoid damage to them. See the job special provisions (Roadway) for a list of utility companies on or within the vicinity of the project limits.

Note:

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.



PLAN

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

Sheet No. 1 of 36

"◔" Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet for this structure. Boring data for the numbered locations is shown on Sheet No. 5. 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.

Notice and Disclaimer Regarding Pinnacled Rock:

The State of Missouri and, in particular, the area that encompasses this project is known to have, at least in part, bedrock that exhibits karst conditions. One karst condition is sometimes referred to as pinnacle or pinnacled rock. The nature of this condition makes graphical representations of this pinnacled zone difficult to classify and excavate. It is incumbent upon the bidder to investigate above surface warnings of this rock formation (road cuts, quarry sites and any other exposed faces) and be aware that the same is a regularly occurring phenomenon and is not to be regarded as a differing site condition or result in changes in the work, regardless of what any actual boring or lines on the plans may or may not tend to indicate.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

For General Notes, Location Sketch, Foundation Data, Estimated Quantities, and Estimated Quantities for Slab on Steel, see Sheet No. 2.

All bents are parallel.

All longitudinal dimensions are horizontal.

All elevations and dimensions are based on the existing plans while using the 1988 NAVD datum. The existing plans used the 1927 USGS datum which is, on average, 0.43 ft. lower than the 1988 NAVD datum. The contractor shall field verify prior to construction.

WIDENING AND REDECKING OF BRIDGE OVER BNSF CUBA SUB.

STATE ROAD FROM ROUTE I-44 TO BUSINESS ROUTE 65

ABOUT 1.2 MILES SOUTH OF ROUTE I-44

STA. 789+91.30±

STD. 606.22
STD. 609.70
STD. 617.10
STD. 617.20
STD. 706.35

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004007786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.10.06 11:45:32 -05'00'

DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	1
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A23641	

DESCRIPTION	DATE
Bent pile batter removed.	05/18/10
Int. Revised min. horizontal clear.	10/06/10

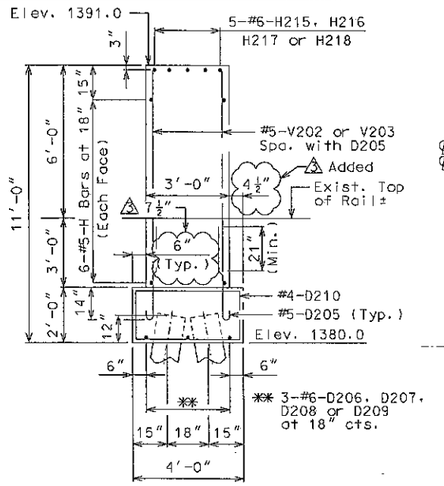
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

MoDOT

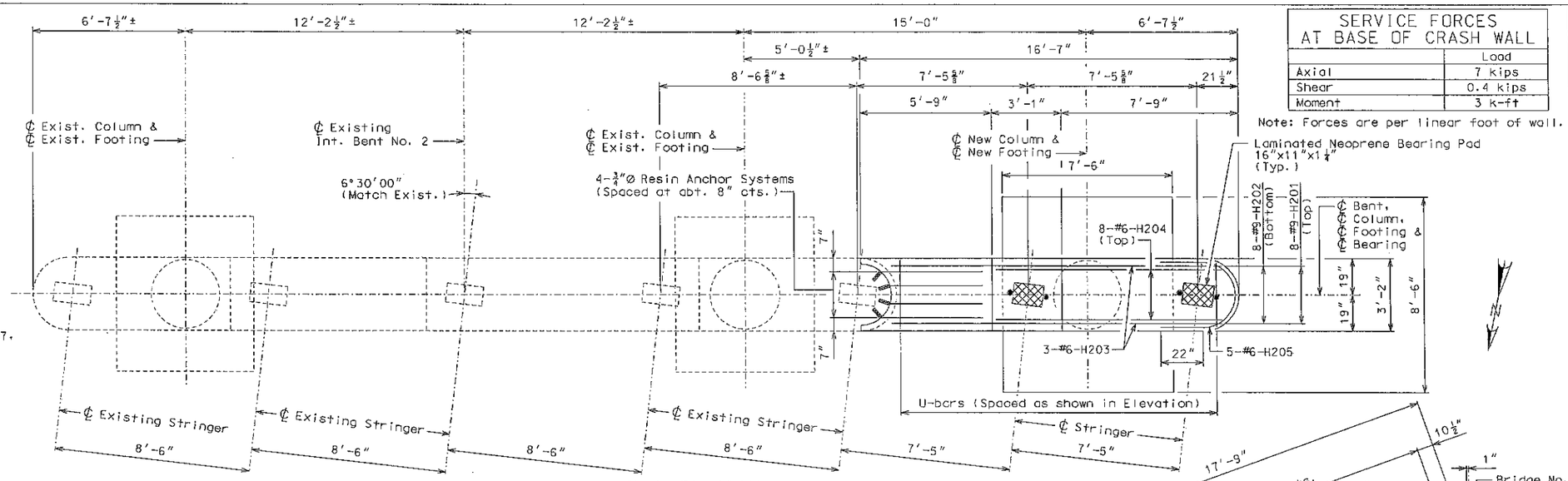
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

© Copyright Hanson Professional Services Inc. 2008

HANSON
Hanson Professional Services Inc.
1301 River Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004007786



TYPICAL SECTION THRU CRASH WALL



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

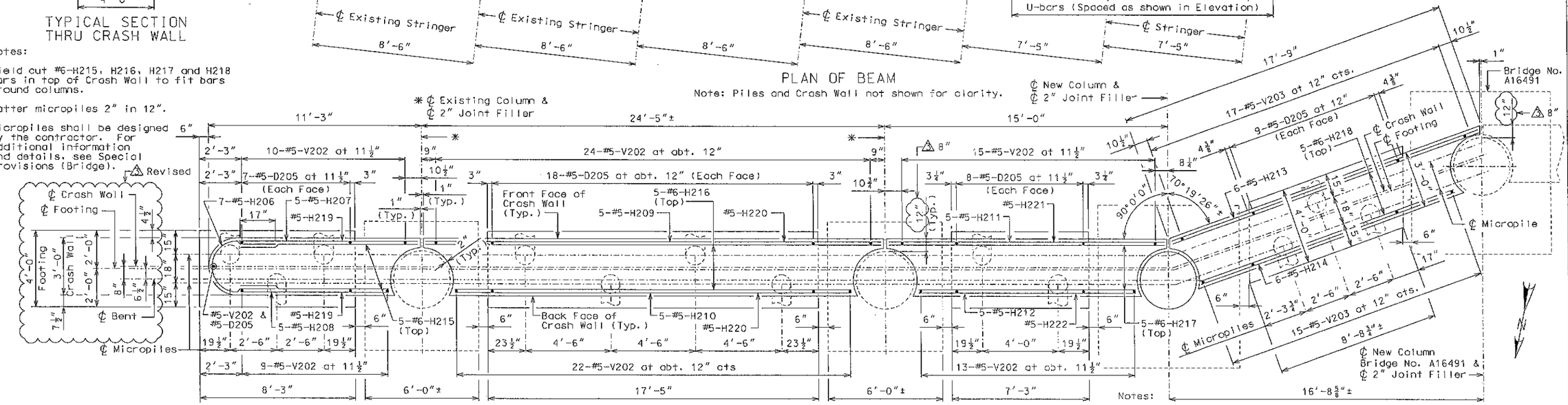
Note: Forces are per linear foot of wall.

Notes:

Field cut #6-H215, H216, H217 and H218 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2" in 12".

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½".

All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½".

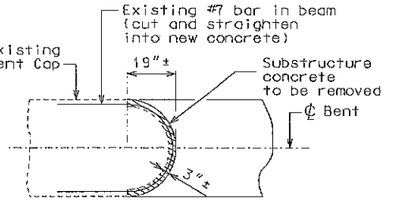
The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2" clear distance from the Crash Wall to all columns and footings is required.

The D205 bars shall be placed with the hook perpendicular to the ℄ Int. Bent.

For details of Intermediate Bent No. 2 not shown, see Sheet No. 10.

For details of Crash Wall not shown, see Sheet No. 10.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

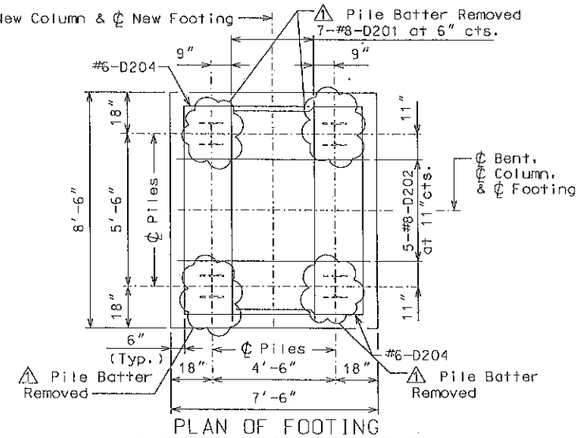


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

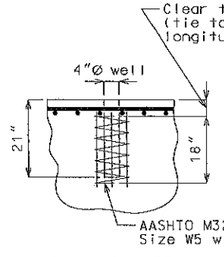
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

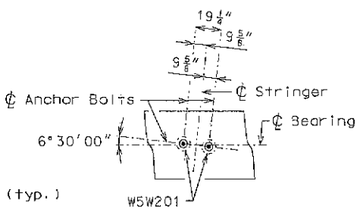


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	70
Structural Steel Pile (10 in.)	linear foot	56
Pre-bore for Piling	linear foot	40
Pile Point Reinforcement	each	4
Micropiles	each	12
Class B Concrete (Substructure)	cu. yard	19.5
Class B Concrete (Retaining Walls)	cu. yard	71.9
Reinforcing Steel (Retaining Wall)	pound	3243
Reinforcing Steel (Bridges)	pound	3366

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF INTERMEDIATE BENT NO. 2

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

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004000786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.10.06 11:46:31 -05'00'

DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	11
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A23641	

DATE	DESCRIPTION
05/18/10	Int. Bent pile batter removed.
10/06/10	Revised Footings and Crash Walls.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

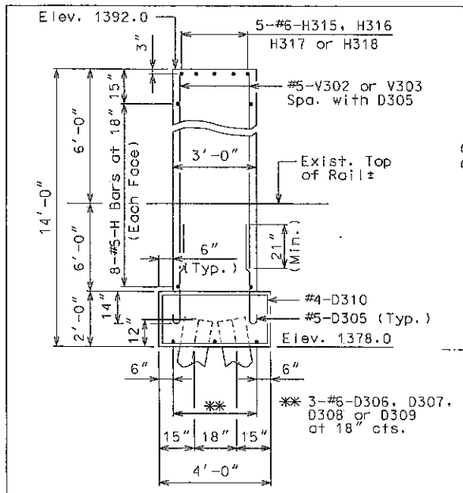
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

MoDOT

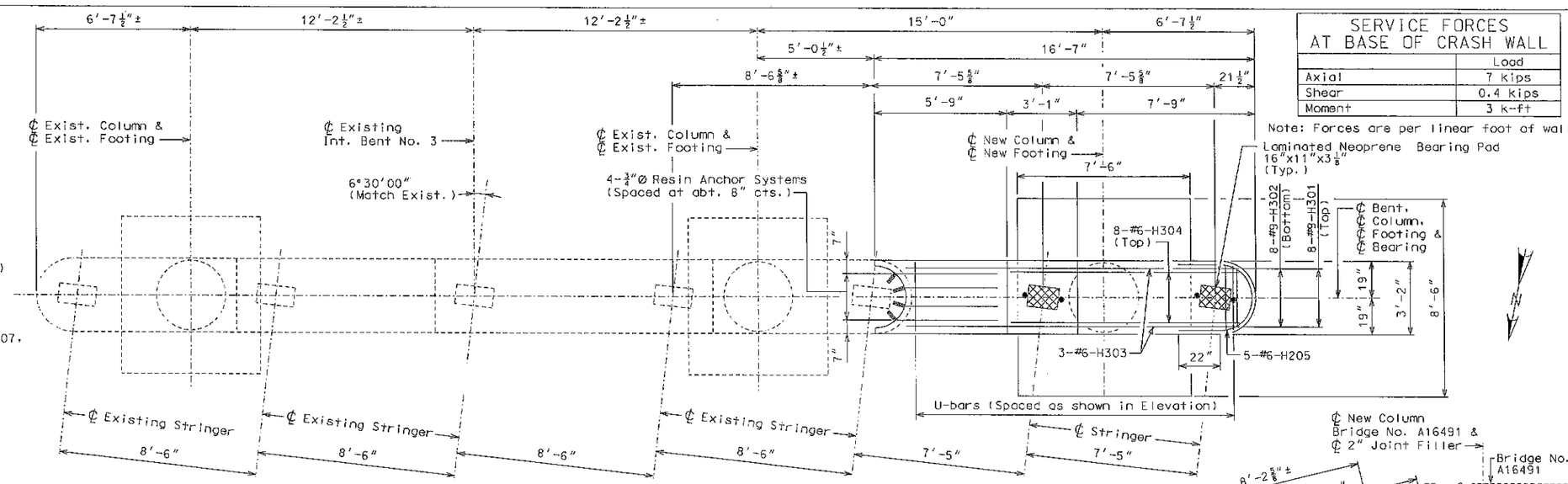
© Copyright Hanson Professional Services Inc. 2009

HANSON

Hanson Professional Services Inc.
1360 Regency Drive, Suite 300
St. Louis, Missouri 63043
Professional Engineer 0016632
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
PE-2004000786



TYPICAL SECTION
THRU CRASH WALL



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 Kips
Shear	0.4 kips
Moment	3 k-ft

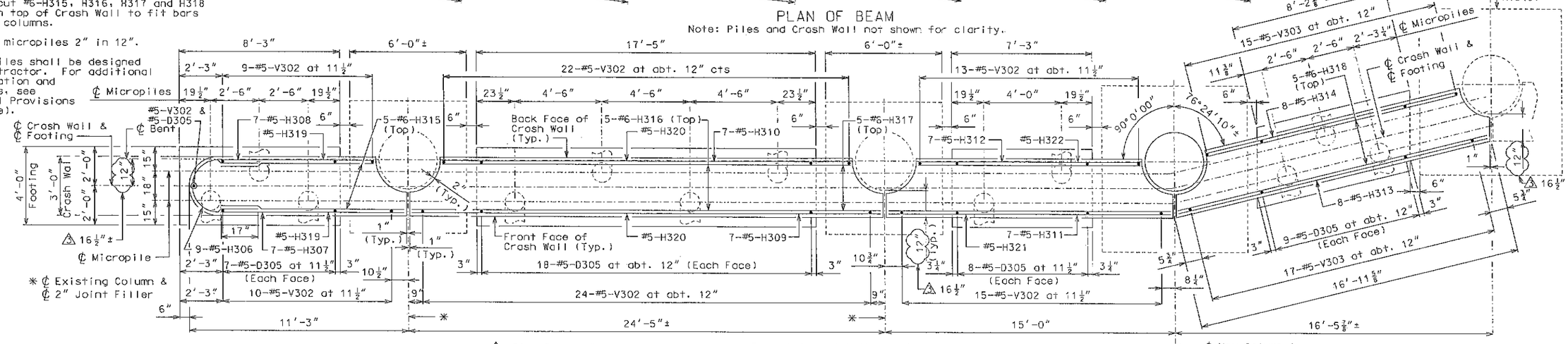
Note: Forces are per linear foot of wall.

Notes:

Field cut #6-H315, H316, H317 and H318 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2" in 12".

Micropiles shall be designed by contractor. For additional information and details, see Special Provisions (Bridge).



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least 1½".

All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½".

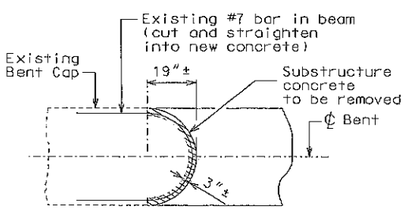
The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2" clear distance from the Crash Wall to all columns and footings is required.

The D305 bars shall be placed with the hook perpendicular to the ℄ Int. Bent.

For details of Intermediate Bent No. 3 not shown, see Sheet No. 12.

For details of Crash Wall not shown, see Sheet No. 12.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

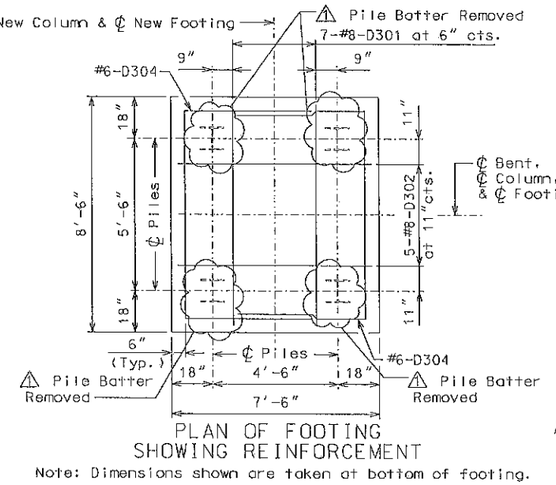


PART PLAN SHOWING
AREAS OF SUBSTRUCTURE
CONCRETE TO BE REMOVED

Notes:

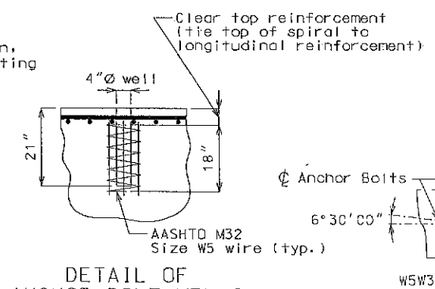
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

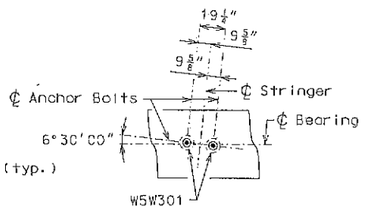


PLAN OF FOOTING
SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF
ANCHOR BOLT WELLS



DETAIL OF
ANCHOR BOLTS

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation	cu. yard	95
Structural Steel Pile (10 in.)	linear foot	64
Pre-bore for Piling	linear foot	40
Pile Point Reinforcement	each	4
Micropiles	each	12
Class B Concrete (Substructure)	cu. yard	20.2
Class B Concrete (Retaining Walls)	cu. yard	91.0
Reinforcing Steel (Retaining Wall)	pound	3881
Reinforcing Steel (Bridges)	pound	3454

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF INTERMEDIATE BENT NO. 3

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

Sheet No. 13 of 36

STATE OF MISSOURI
HOWARD NELSON GOTSCHALL II
NUMBER PE-2004006786
PROFESSIONAL ENGINEER

Howard N. Gotschall II
2010.10.06 11:47:07 -05'00'

DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	13
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A23641	

DESCRIPTION	DATE
Int. Bent pile batter removed.	05/18/10
Revised Footings and Crash Walls.	10/06/10

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

MoDOT

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

© Copyright Hanson Professional Services Inc. 2009

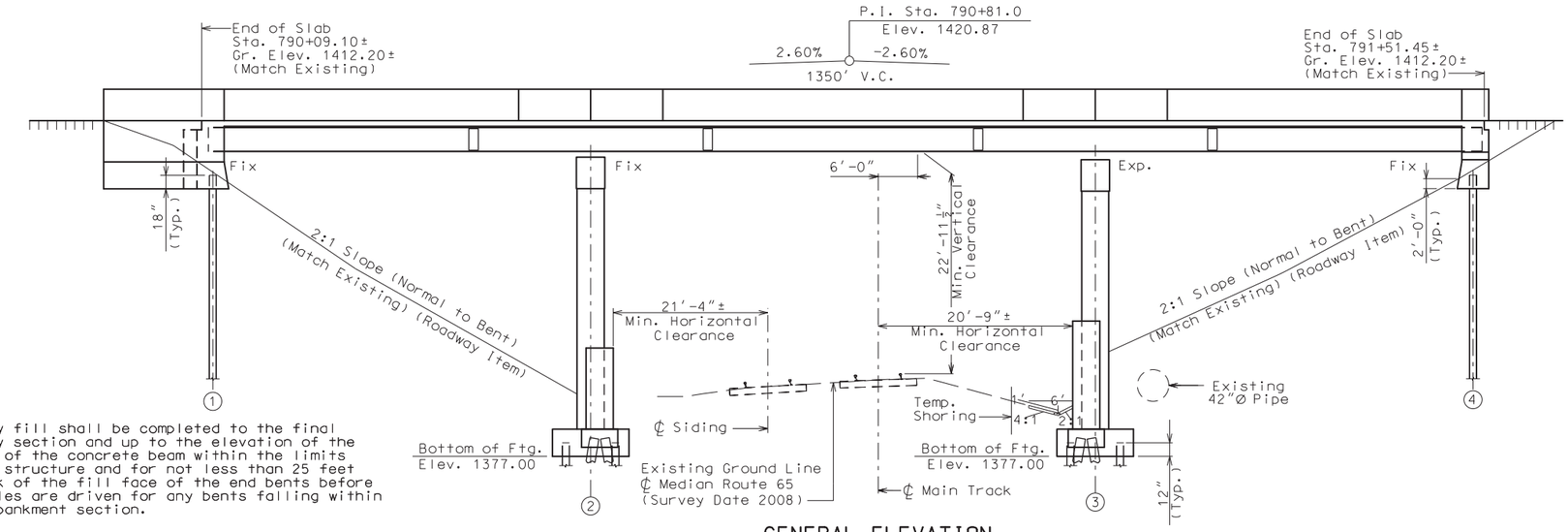
HANSON
Hanson Professional Services Inc.
Missouri Certificate of Authority #2003043
13801 Riverport Drive, Suite 300
Maryland Heights, MO 63043
Professional Engineer 001832
www.hanson-inc.com
314.770.0467
Howard N. Gotschall II
Professional Engineer
PE-2004006786

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

U.I.P., WIDEN AND REDECK (42′-56′-42′) CONTINUOUS COMPOSITE I-BEAM SPANS

FINAL PLANS

SEC/SUR 9 TWP 29N RGE 21W

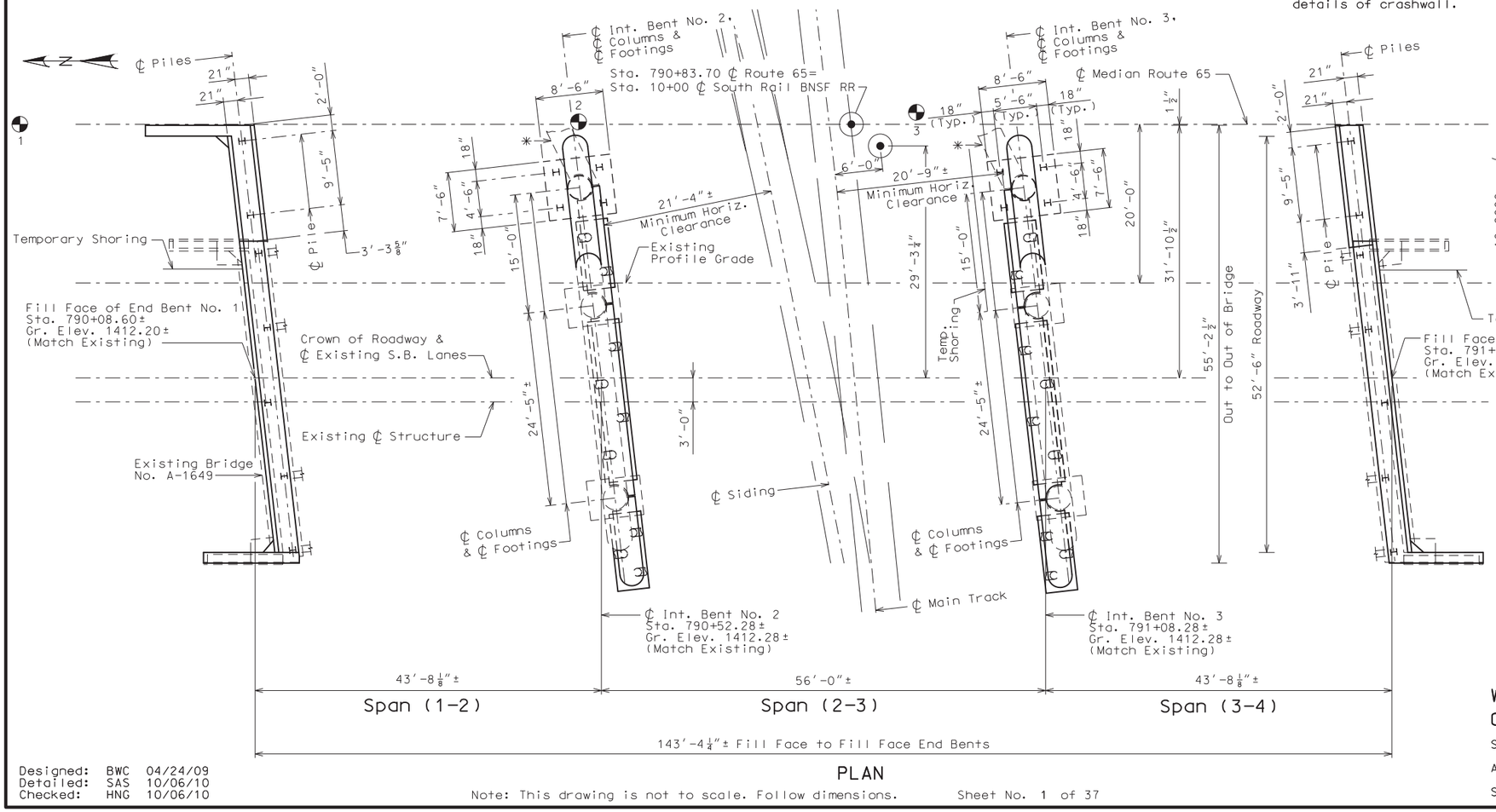


GENERAL ELEVATION

Note:

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: See plans for Bridge No. A23641 for details of crashwall.



PLAN

"⌖" Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the bridge plan sheet for this structure. Boring data for the numbered locations is shown on Sheet No. 5. 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.

Notice and Disclaimer Regarding Pinnacled Rock:

The State of Missouri and, in particular, the area that encompasses this project is known to have, at least in part, bedrock that exhibits karst conditions. One karst condition is sometimes referred to as pinnacle or pinnacled rock. The nature of this condition makes graphical representations of this pinnacled zone difficult to classify and excavate. It is incumbent upon the bidder to investigate above surface warnings of this rock formation (road cuts, quarry sites and any other exposed faces) and be aware that the same is a regularly ocurring phenomenon and is not to be regarded as a differing site condition or result in changes in the work, regardless of what any actual boring or lines on the plans may or may not tend to indicate.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

For General Notes, Location Sketch, Foundation Data, Estimated Quantities, and Estimated Quantities for Slab on Steel, see Sheet No. 2.

All bents are parallel.

All longitudinal dimensions are horizontal.

All elevations and dimensions are based on the existing plans while using the 1988 NAVD datum. The existing plans used the 1927 USGS datum: which is, on average, 0.43 ft. lower than the 1988 NAVD datum. The contractor shall field verify prior to construction.

Note:

Underground facilities, structures and utilities have been platted from available surveys and records. The commission does not warrant the locations of these facilities as precise. It is possible there may be others, the existence of which is presently not known or shown. It shall be the contractor's responsibility to determine the existence and precise location of all facilities and to avoid damage to them. See the job special provisions (Roadway) for a list of utility companies on or within the vicinity of the project limits.

Bench Marks (NAVD 88 Datum)

City B.M. 115: Alum. disk in conc. (City B.M. #115) 275′± north of railroad, west side S.B.L. Rte. 65, Elevation = 1407.00
Bolt Head In Northwest Corner Of Safety Barrier Wall = 1414.68
Bolt Head In Southwest Corner Of Safety Barrier Wall = 1414.65

WIDENING AND REDECKING OF BRIDGE OVER BNSF CUBA SUB.

STATE ROAD FROM ROUTE I-44 TO BUSINESS ROUTE 65

ABOUT 1.2 MILES S OF ROUTE I-44

STA. 790+08.60±

STD. 606.22
STD. 609.00
STD. 609.70
STD. 617.10
STD. 617.20
STD. 706.35

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	Δ1 Int. Bent pile batter removed.
10/06/10	Δ2 Revised min. horizontal clear.

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

Final Quantities

	Item		Substr.	Superstr.	Total
	Class 1 Excavation	cu. yard	311	-	311 ✓
	Temporary Shoring	lump sum	1	-	1 ✓
	Protective Shield System	lump sum	1	-	1 ✓
	Removal and Storage of Existing Bridge Rails	linear foot	-	282	282 ✓
*	Removal of Existing Bridge Decks	sq. foot	-	5843	5843 ✓
	Partial Removal of Substructure Concrete	lump sum	-	1	1 ✓
	Bridge Approach Slab (Bridge)	sq. yard	-	362	362 ✓
	Structural Steel Piles (10 in.)	linear foot	239	-	239 ✓
	Pre-bore for Piling	linear foot	80	-	80 ✓
	Pile Point Reinforcement	each	12	-	12 ✓
	Micropiles	each	18	-	18 ✓
	Class B Concrete (Substructure)	cu. yard	58.3	-	58.3 ✓
	Class B Concrete (Retaining Walls)	cu. yard	128.7	-	128.7 ✓
	Slab on Steel	sq. yard	-	873	873 ✓
**	Safety Barrier Curb	linear foot	-	162	162 ✓
**	Barrier Curb (Type D)	linear foot	-	153	153 ✓
	Median Barrier Curb Transition (Type C)	linear foot	-	49	49 ✓
	Reinforcing Steel (Retaining Wall)	pound	5690	-	5690 ✓
	Reinforcing Steel (Bridges)	pound	6920	-	6920 ✓
	Fabricated Structural Low Alloy Steel (I-Beam) A709, Grade 50	pound	-	35720	35720 ✓
	Slab Drain	each	-	28	28 ✓
	Drainage System (On Structure)	lump sum	-	1	1 ✓
	Surface Preparation for Overcoating Structural Steel	sq. foot	-	5300	5300 ✓
	Calcium Sulfonate Rust Penetrating Sealer	lump sum	-	1	1 ✓
	Calcium Sulfonate Primer	sq. foot	-	5300	5300 ✓
	Calcium Sulfonate Topcoat	sq. foot	-	5300	5300 ✓
	Vertical Drain at End Bents	each	-	2	2 ✓
	Plain Neoprene Bearing Pad	each	-	4	4 ✓
	Laminated Neoprene Bearing Pad Assembly	each	-	4	4 ✓

All concrete between the upper and lower construction joints and above the top of the existing beam in the end bents is included in the Estimated Quantities for Slab on Steel.

All reinforcement in the end bents (except resin anchor systems) is included in the Estimated Quantities for Slab on Steel.

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

* Includes removal and disposal of slab, curbs, shear studs, end posts, and expansion devices.

** Safety barrier curb and barrier curb (Type D) shall be cast-in-place option or slip-form option.

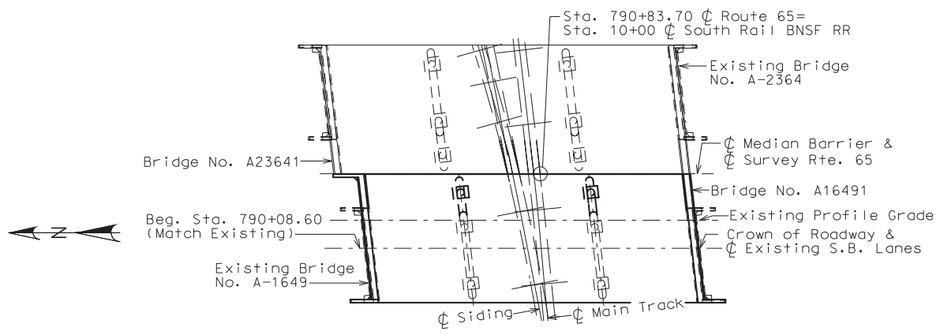
Quantities for Slab on Steel

Item		Total
Class B-2 Concrete	cu. yard	233.0
Reinforcing Steel	pound	5860
Reinforcing Steel (Epoxy Coated)	pound	70930

The table of Estimated Quantities for Slab on Steel 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 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.

Slab shall be cast-in-place. Precast prestressed panels will not be permitted.



LOCATION SKETCH

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

General Notes:

Design Specifications:

2002 - AASHTO 17th Edition
Load Factor Design
Seismic Performance Category A

Design Loading:

HS20-44
35#/sq. ft. Future Wearing Surface
Earth 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Fatigue Stress-Case I

Design Unit Stresses:

Class B Concrete (Substructure)		f'c = 3,000 psi
Class B Concrete (Retaining Walls)		f'c = 3,000 psi
Class B-1 Concrete (Safety Barrier Curb & Barrier Curb (Type D) & Median Barrier Curb Transition (Type C))		f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Safety Barrier Curb, Barrier Curb (Type D) & Median Barrier Curb Transition (Type C))		f'c = 4,000 psi
Reinforcing Steel (Grade 60)		fy = 60,000 psi
Structural Steel (ASTM A709 Grade 50)		fy = 50,000 psi
Steel Pile (ASTM A709 Grade 36)	fb = 9,000 psi	fy = 36,000 psi

Neoprene Bearing Pads:

Bearings shall be 60 durometer neoprene pads.

Fabricated Steel Connections:

Field connections shall be made with $\frac{3}{4}$" diameter high strength bolts and $\frac{13}{16}$" diameter holes, except as noted.

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 $\frac{1}{2}$", unless otherwise shown.

New Structural Steel Protective Coatings:

Protective Coating: System G in accordance with Sec 1081.

Prime Coat: The prime coat shall be applied in the fabrication shop. The cost of the prime coat will be considered completely covered by the contract unit price for the Fabricated Structural Steel.

No intermediate or finish field coats to be applied.

Existing Structural Steel Protective Coatings:

Protective Coating: Calcium Sulfonate System in accordance with Sec 1081.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for "Overcoating of Structural Steel (Calcium Sulfonate System)". The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for "Surface Preparation for Overcoating Structural Steel".

Rust Penetrating Sealer: The rust penetrating sealer shall be applied to the surfaces of all bearings, overlapping steel plates, pin connections, pin and hanger connections and other locations where rust bleeding, pack rust and layered rust is occurring. The cost of the rust penetrating sealer will be considered completely covered by the contract lump sum price for "Calcium Sulfonate Rust Penetrating Sealer".

Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price per sq. foot for "Calcium Sulfonate Primer".

Topcoat: The cost of the topcoat will be considered completely covered by the contract unit price per sq. foot for "Calcium Sulfonate Topcoat".

FINAL PLANS

Traffic Control:

Traffic over the existing structures and new structure to be maintained during construction in accordance with the traffic control plans. See Stage Construction Details on Sheet Nos. 3 and 4 for traffic staging on bridge.

Miscellaneous:

A minimum vertical clearance of 22'-11 $\frac{1}{2}$" from top of rail and a minimum lateral clearance of 12'-0" from the ℄ track shall be maintained during construction.

The cost of the protective shield system will be considered completely covered by the contract lump sum price for Protective Shield System. For the limits of the protective shield system over the tracks, see the Special Provisions (Bridge) for the BNSF Demolition Frame Protection Details.

The contractor shall follow the requirements of the BNSF Demolition Frame Protection Details. For additional requirements regarding the BNSF Railroad, see Special Provisions (Bridge).

High Strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106 and Field Section (FS-712) from Materials Manual.

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering new material.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, old bars shall extend into new concrete at least 40 diameters for smooth bars and 30 diameters for deformed bars, unless otherwise noted.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-2 surface preparation before concrete is poured. Payment for cleaning steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

The existing bridge rails and posts shall be stored at a location as designated by the engineer on the MoDOT Maintenance Lot at the facility at 2455 Mayfair in Springfield. Contractor shall notify Maintenance Superintendent to schedule delivery at least 48 hours prior to the delivery.

Resin Anchors:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Class B Concrete (Substructure).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #6 Grade 60 reinforcing bar 3'-6" long, unless noted on the plans, shall be substituted for the $\frac{3}{4}$"Ø threaded rod.

Foundation Data

Bent No.		1	2	3	4
Driven Pile	Type	Foundation	Foundation	Foundation	Foundation
	Pile Type and Size	HP10 X 42	HP10 X 42	HP10 X 42	HP10 X 42
	Number	2	4	4	2
	Approximate Length foot	38	11	11	41
	Pile Driving Varification Method	Modified Gates Formula	Modified Gates Formula	Modified Gates Formula	Modified Gates Formula
	Design Bearing kip	112.0	112.0	112.0	112.0
	Minimum Tip Penetration	Elev. 1368.00	Elev. 1367.00	Elev. 1367.00	Elev. 1365.00
	Criteria for Minimum Tip Penetration	Minimum embedment into natural ground	Minimum embedment into natural ground	Minimum embedment into natural ground	Minimum embedment into natural ground
	Hammer Energy Required foot-pound	12,600	12,600	12,600	12,600

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

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

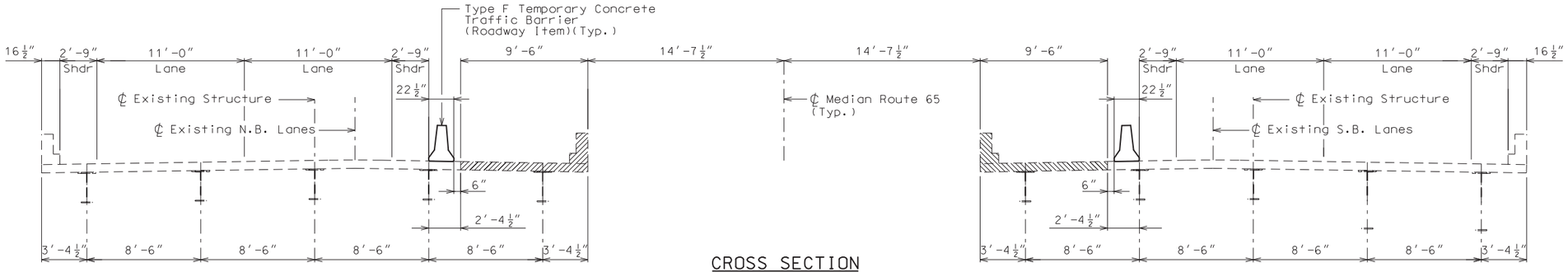
All piles shall be driven to practical refusal.

Prebore for piles at Bent Nos. 2 & 3 to elevation 1367.00.

DATE PREPARED 09/15/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION	DATE

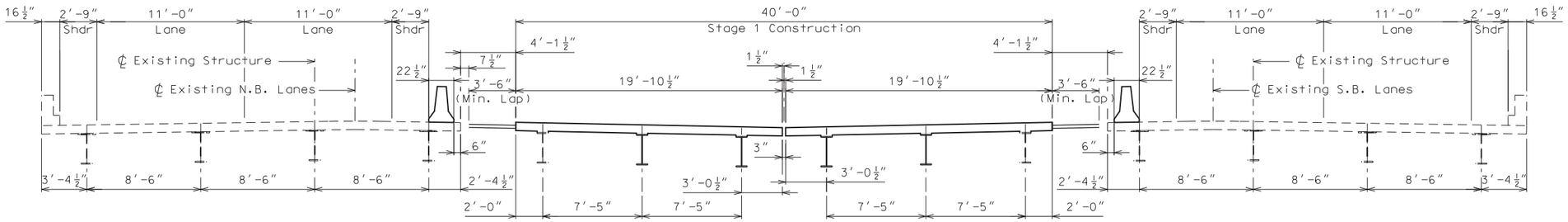
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



Bridge No. A-2364

Bridge No. A-1649

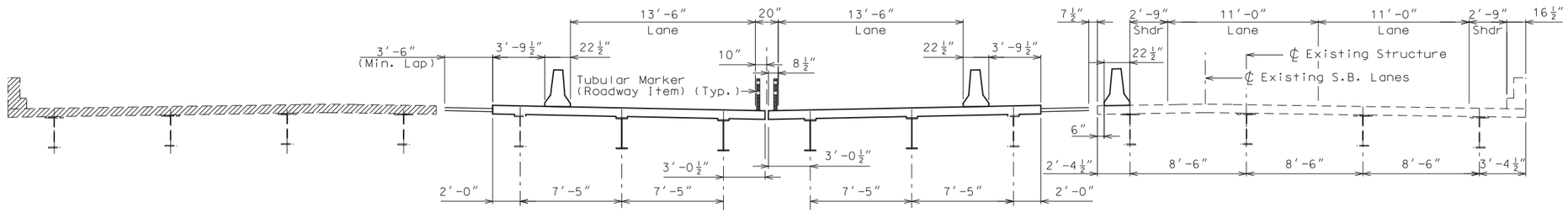
CROSS SECTION STAGE 1 REMOVAL



Bridge No. A23641

Bridge No. A16491

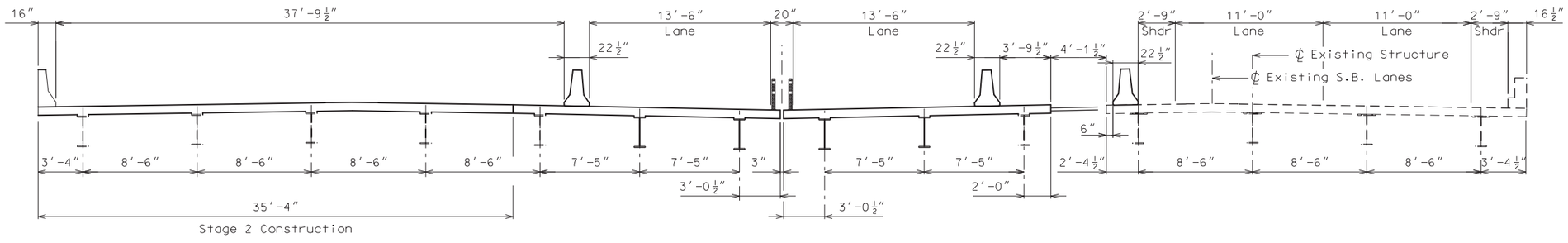
CROSS SECTION STAGE 1 CONSTRUCTION



Bridge No. A23641

Bridge No. A16491

CROSS SECTION STAGE 2 REMOVAL



Bridge No. A23641

Bridge No. A16491

CROSS SECTION STAGE 2 CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION

Notes:

Stage construction details shown above are within bridge spans.

The temporary barrier shall be attached to the existing bridge deck.

The temporary barrier shall not be attached to the new bridge deck.

Outline of old work is indicated by light dashed lines.
Heavy lines indicate new work.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

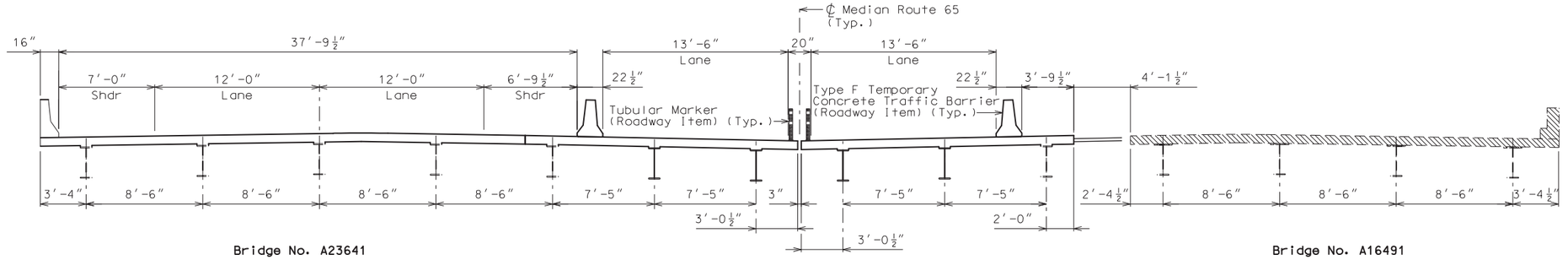
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION

DATE

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

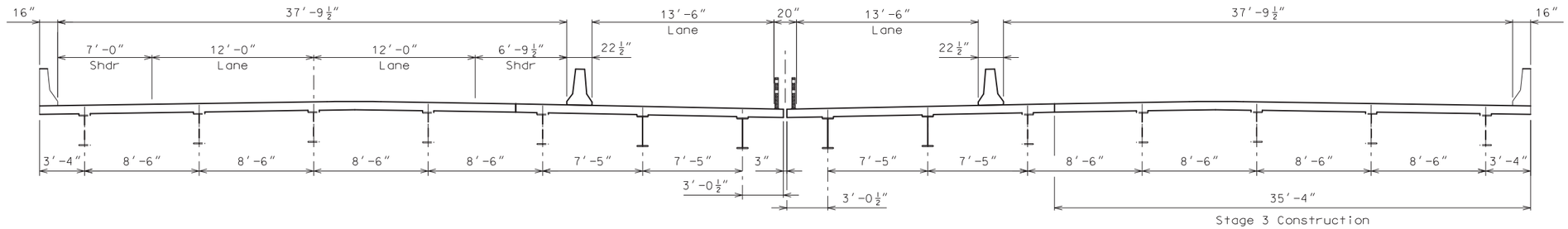
FINAL PLANS



Bridge No. A23641

Bridge No. A16491

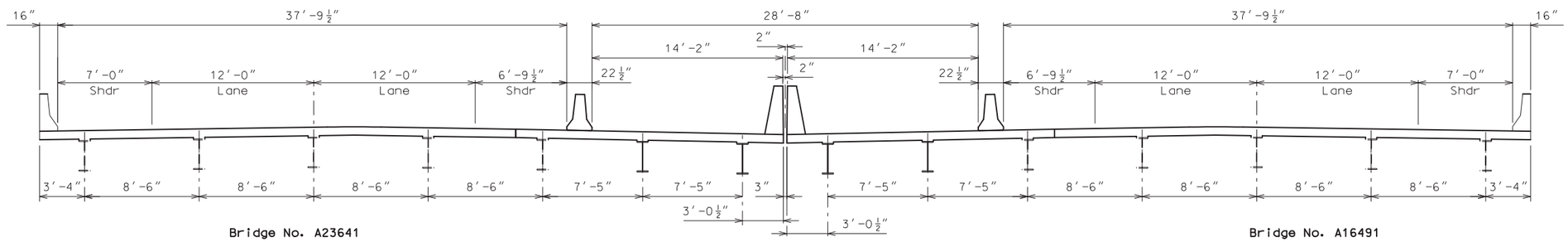
CROSS SECTION
STAGE 3 REMOVAL



Bridge No. A23641

Bridge No. A16491

CROSS SECTION
STAGE 3 CONSTRUCTION



Bridge No. A23641

Bridge No. A16491

CROSS SECTION
STAGE 4 CONSTRUCTION

DETAILS SHOWING STAGED CONSTRUCTION

Notes:

Stage construction details shown above are within bridge spans.

The temporary barrier shall not be attached to the new bridge deck.

Outline of old work is indicated by light dashed lines.
Heavy lines indicate new work.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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

① Sta. 789+57 Centerline

Depth, ft.	Blows/6"	PP, tsf.
2.5	6-50/4"	--
5.5	11-48-15	--
8.0	5-4-5	1.50
10.5	4-4-10	1.50
13.0	5-13-8	--
15.5	8-6-5	1.25
18.0	5-6-7	2.50
20.5	3-4-6	2.25
25.5	11-11-12	--
30.5	6-8-9	3.00
35.5	4-7-9	2.25
40.5	3-6-12	2.75

1409.9 — Brown, lean clay (CL), with limestone pieces (FILL).

1407.9 — Reddish-brown, fat clay (CH), with limestone pieces (FILL).

1402.9 — Reddish-brown, fat clay (CH), with limestone and chert pieces.
-trace chert and limestone pieces below 9.5 ft.
-with limestone and chert pieces below 12.0 ft.
-trace limestone and chert below 19.5 ft.

1385.9 — Gray, lean clay (CL), trace limestone and chert pieces.

1375.9 — Gray, fat clay (CH).
-brown and gray below 35.5 ft.
-cobbles below 38.0 ft.
-trace chert below 39.0 ft.

1367.4 — Auger refusal at 42.5 ft.

② Sta. 790+49 Centerline Core

Depth, ft.	Blows/6"	PP, tsf.
3.5	4-4-3	--
6.0	3-2-3	1.00
8.5	8-20-16	--
11.0	2-2-22	--

1383.2 — Dark brown, lean clay, trace sand and chert pieces (FILL).

1376.7 — Dark brown, lean clay (CL), with sand, limestone pieces, cobbles and chert fragments.

1372.2 — Weathered Limestone (8.5")

1371.5 — Limestone, gray to white, slightly weathered, finely crystalline, thick bedded.
-fractured zone from 13.6 to 13.8 ft. with weathered joints
-weathered joints at 14.8 ft.

1361.5

③ Sta. 790+92 Centerline Core

Depth, ft.	Blows/6"	PP, tsf.
3.5	4-2-2	--
6.0	WH-WH-WH	1.00
8.5	1-2-3	1.00
11.5	3-2-3	1.50
16.0	WH-WH-4	--

1383.4 — Dark brown, lean clay, trace sand, chert pieces (FILL).

1376.4 — Dark reddish-brown, fat clay (CH), trace chert and limestone pieces.

1373.9 — Dark reddish-brown, fat clay (CH), with limestone and chert fragments
-cobbles from 9.5 to 11.0 ft.

1367.1 — Weathered limestone (2").

1366.9 — Limestone, gray to white, slightly weathered, finely crystalline, thick bedded.

1356.9

④ Sta. 791+84 Centerline

Depth, ft.	Blows/6"	PP, tsf.
3.5	3-2-4	1.25
5.5	5-5-6	--
8.0	3-4-3	1.50
10.5	2-5-8	1.50
13.0	7-8-6	3.50
15.5	4-9-6	1.50
18.0	6-8-11	1.50
20.5	8-40-45	1.50
25.5	5-6-6	1.50
30.5	5-5-6	2.50
35.5	3-3-4	1.00
40.5	3-2-2	0.75

1410.2 — Reddish-brown, fat clay (CH) with chert and limestone (FILL).

1403.2 — Reddish-brown fat clay (CH), trace limestone and chert pieces.
-with chert pieces
-gray and brown below 14.5 ft.
-reddish-brown below 15.0 ft.
-rough drilling below 16.0 ft., probable limestone seams.

1392.7 — Gray and brown, fat clay (CH)
-rough drilling at 19.0, 24.0 and 26.0 ft., probable limestone seams.
-cherty limestone seam at 20.5 ft.

1380.2 — Gray, lean clay (CL)
-brown and gray below 34.5 ft.

1371.2 — Brown and gray, fat clay (CH), trace limestone pieces.

1366.2

1365.4 — Weathered limestone (5").
Auger refusal at 44.8 ft.

BORING DATA

Notes:

For location of borings, see Sheet No. 1.

For Notice of Disclosure Regarding Boring Log Data, see Sheet No. 1

PP = Pocket Penetrometer

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

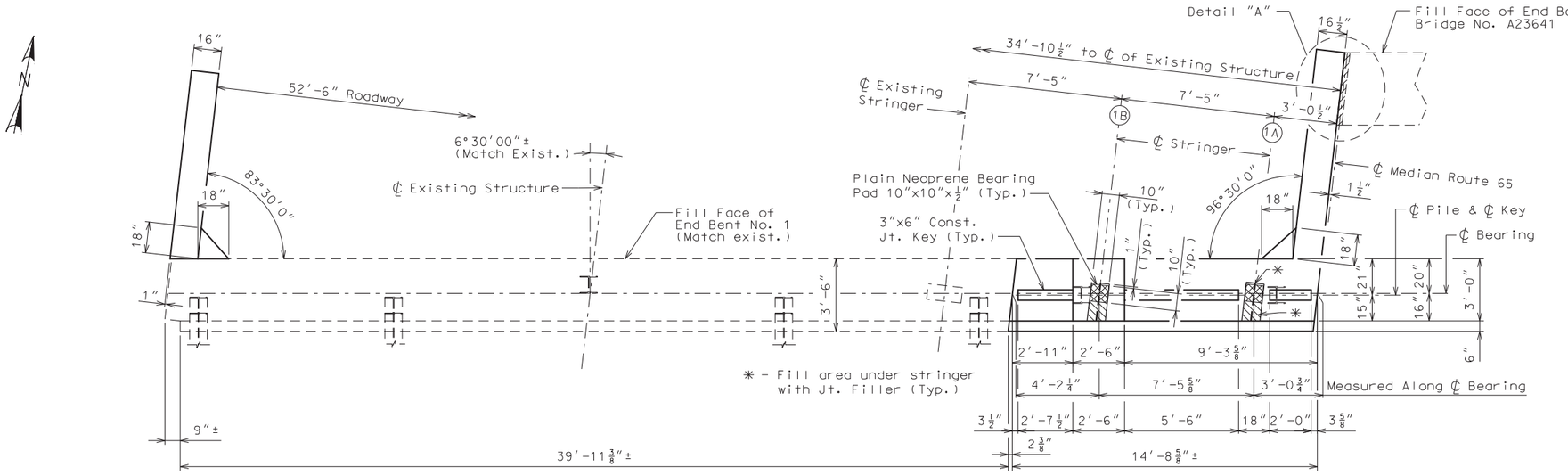
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 5
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

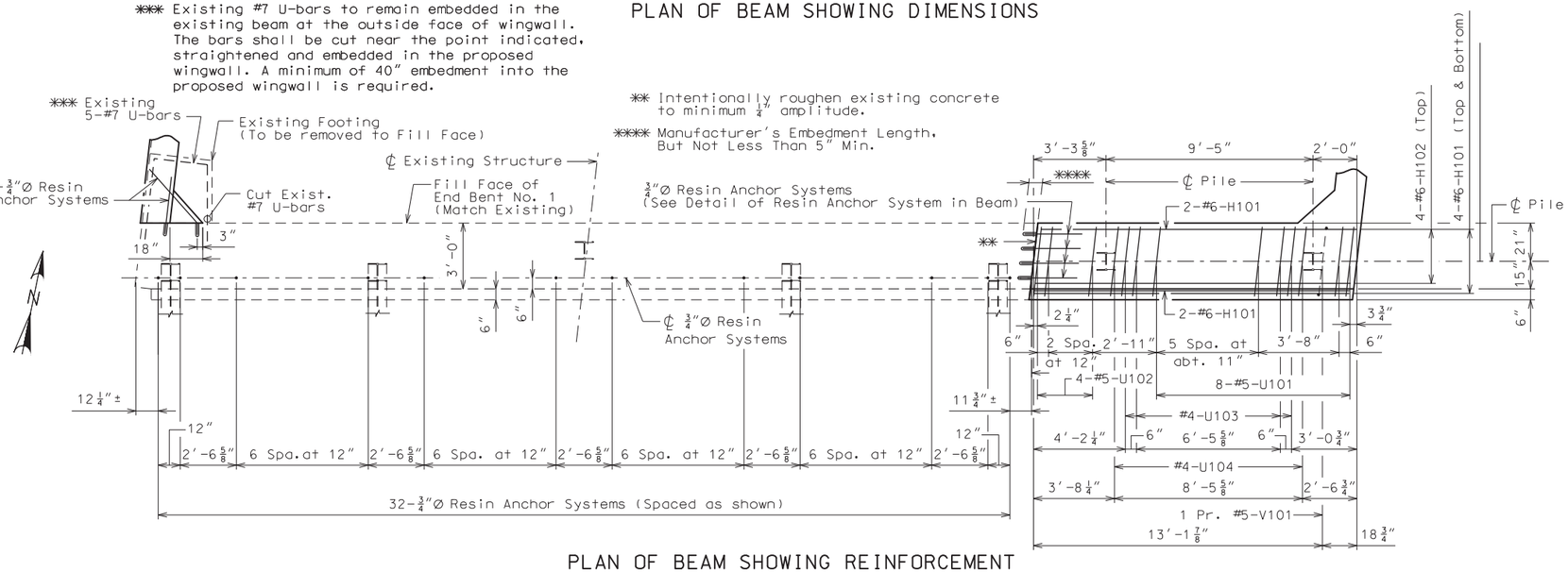
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

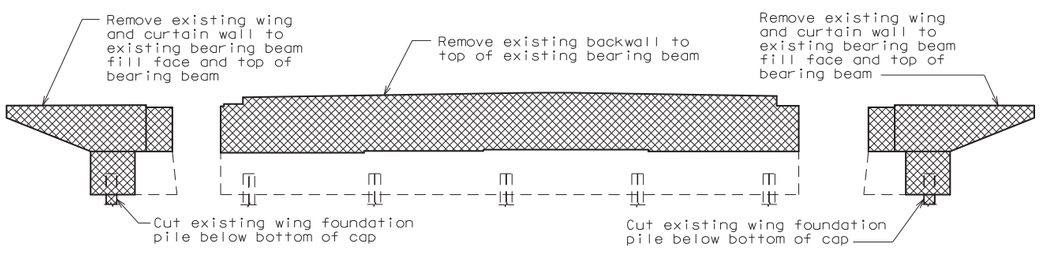


*** Existing #7 U-bars to remain embedded in the existing beam at the outside face of wingwall. The bars shall be cut near the point indicated, straightened and embedded in the proposed wingwall. A minimum of 40" embedment into the proposed wingwall is required.

PLAN OF BEAM SHOWING DIMENSIONS



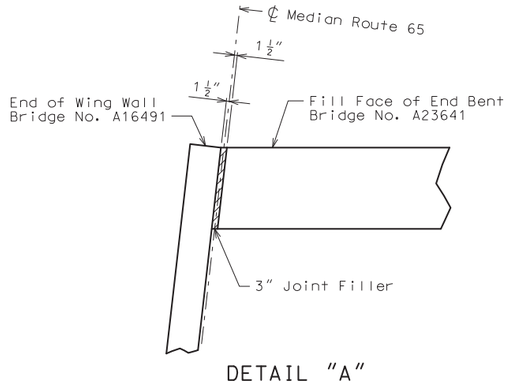
PLAN OF BEAM SHOWING REINFORCEMENT



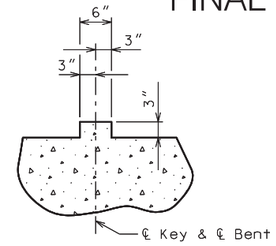
WEST WING ELEVATION ELEVATION OF END BENT EAST WING ELEVATION

DETAILS OF CONCRETE REMOVAL AT END BENT NO. 1

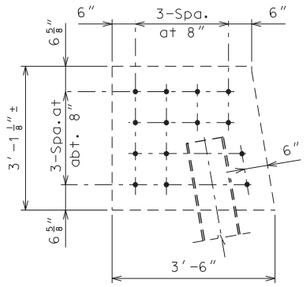
Note: The cost of all concrete removal shown will be considered completely covered by the contract lump sum price for Partial Removal of Substructure Concrete.



DETAIL "A"



TYPICAL SECTION THRU KEY



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

14-3/4"Ø Resin Anchor Systems to be spaced as shown.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 1, see Sheet Nos. 7 & 8.

For Substructure Quantity Table, see Sheet No. 8.

For details of Vertical Drain at end bents, see Sheet No. 9.

For details of the Safety Barrier Curb, see Sheet Nos. 27, 28, 29, 30, 31, and 32.

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

All U-bars and Pr. V-bars in end bent are to be placed parallel to ℄ Route 65.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

Where existing bars are to extend from remaining portions of existing concrete into new construction, concrete shall be removed so as to leave bars clean and undamaged. Newly exposed construction concrete and reinforcement bars shall be blast-cleaned.

DETAILS OF END BENT NO. 1

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

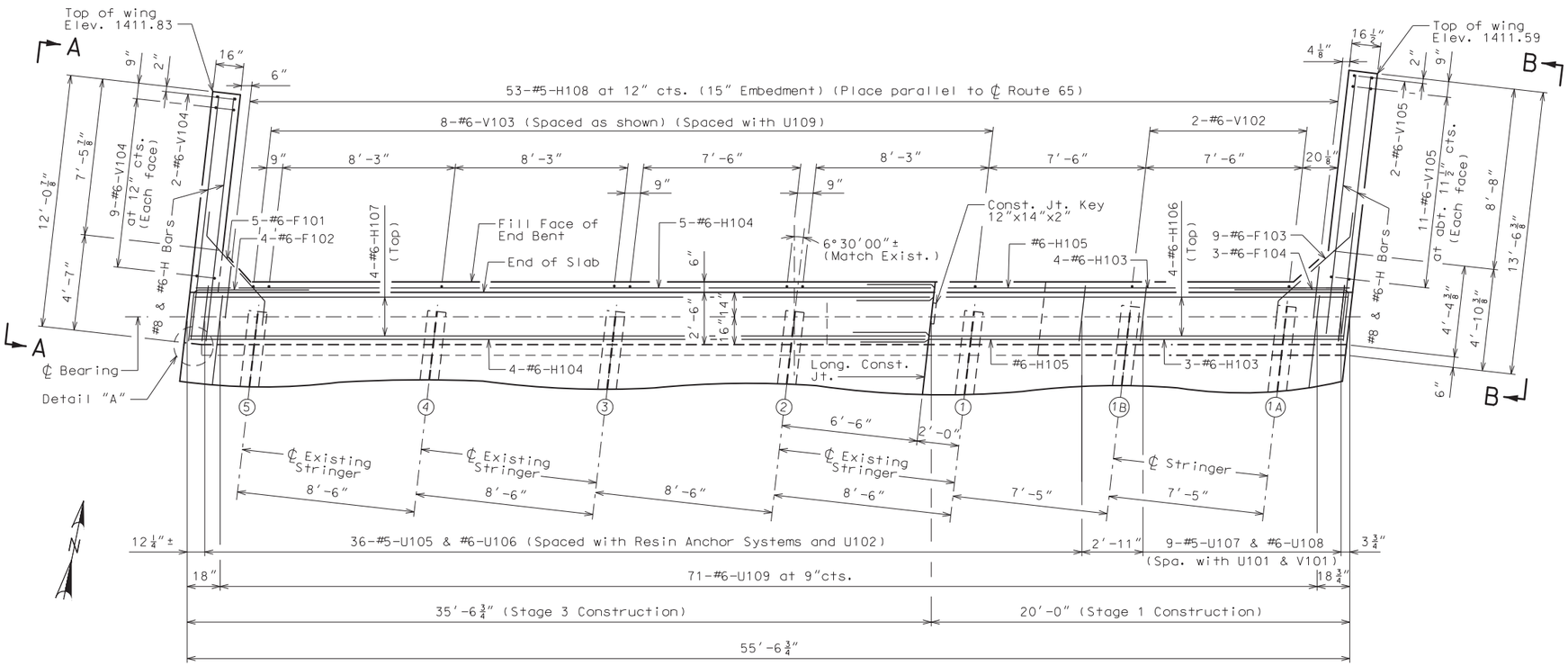
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	6
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
090626-802	
PROJECT NO.	
FAF-65-2(65)	
BRIDGE NO.	
A16491	

DESCRIPTION	DATE

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

FINAL PLANS



PLAN SHOWING REINFORCING

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Concrete diaphragms at the integral end bents shall be poured a minumum of 12 hours before the slab is poured.

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 1, see Sheet Nos. 6 & 8.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

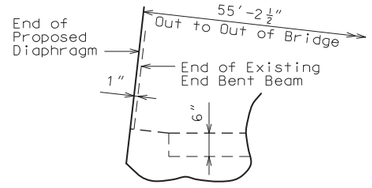
U and Pr. V bars shall be placed parallel to ℄ Route 65.

For reinforcement of the Safety Barrier Curb, see Sheet Nos. 27 thru 32.

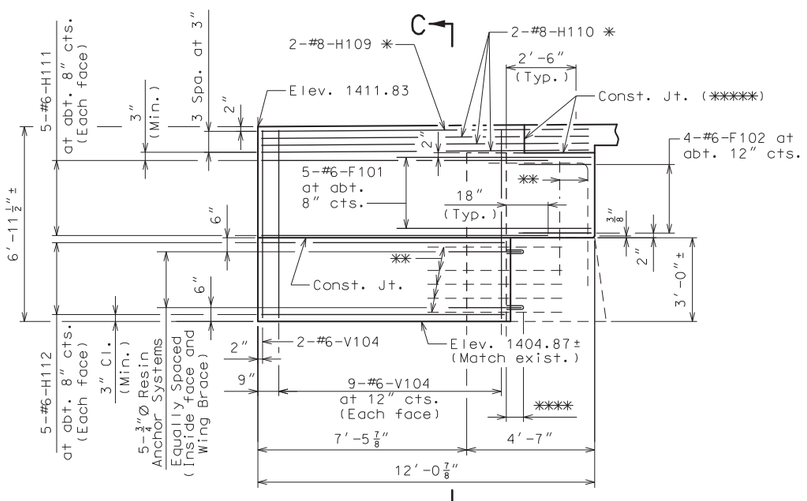
For details of Vertical Drain at End Bent, see Sheet No. 9.

Bend #6-F101 & F103 bars in field to clear stringers.

For details of Bridge Approach Slab, see Sheet No. 33.

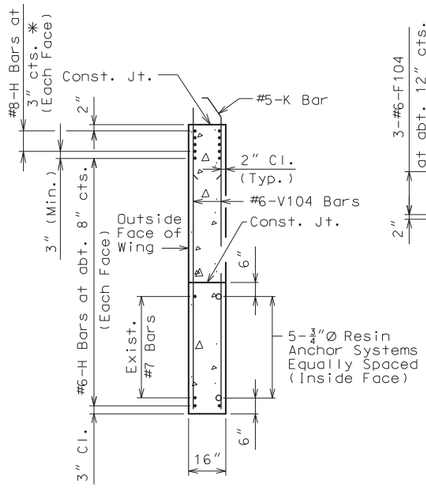


DETAIL "A"

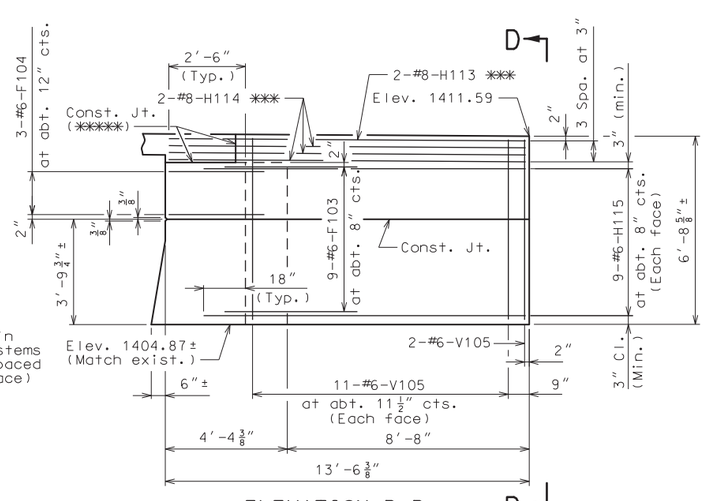


ELEVATION A-A

✳ Note: Place H109 and H110 parallel to grade.

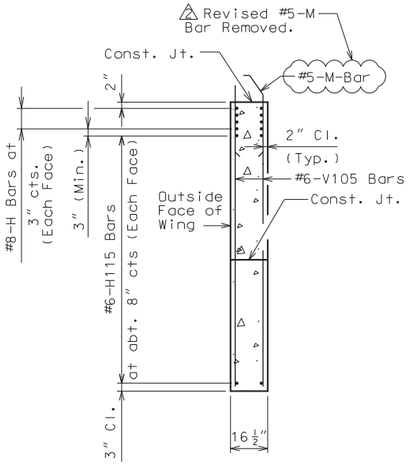


SECTION C-C



ELEVATION B-B

*** Note: Place H113 and H114 parallel to grade.



SECTION D-D

✳✳ Existing wing and curtain wall reinforcement to be used in place. Damaged bars shall be replaced by the contractor with no additional payment.

✳✳✳✳ Manufacturer's embedment length, but not less than 5" min.

(*****) Upper construction joint shall be formed on slope in order to maintain a 1½" (min.) clearance to #6-H103 or H104 reinforcing bars in diaphragm. (Also shown in Section near End Bent)

DETAILS OF END BENT NO. 1

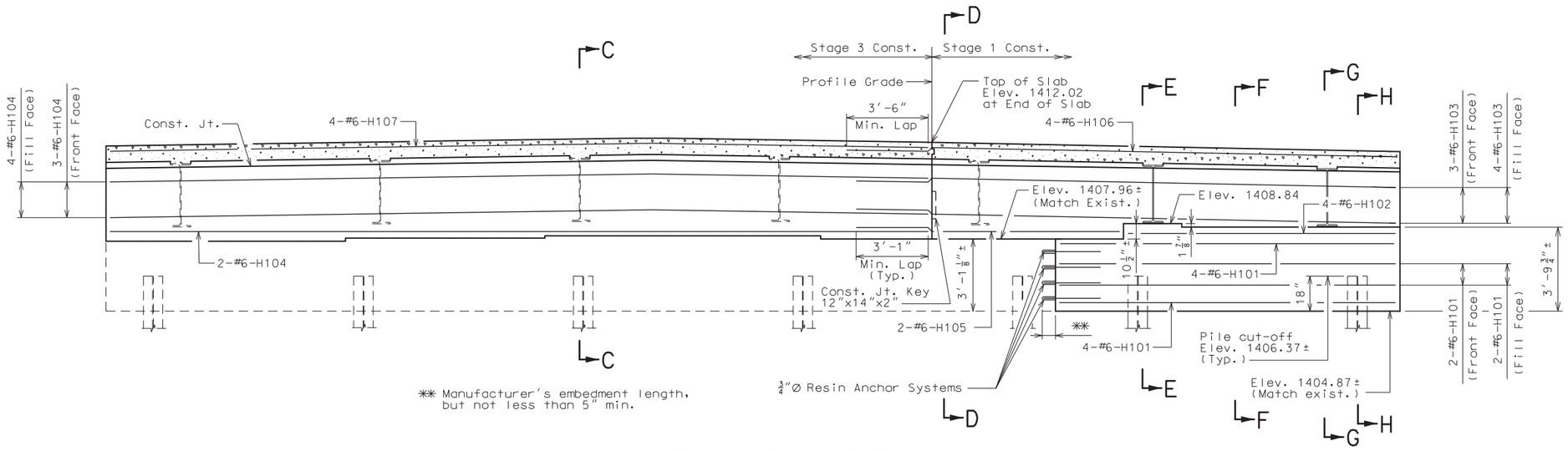
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 7
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
09/15/10	△ Sec D-D M Bar Removed

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



✻✻ Manufacturer's embedment length, but not less than 5" min.

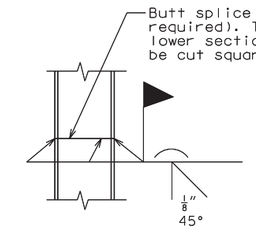
SECTION NEAR END BENT

Notes:

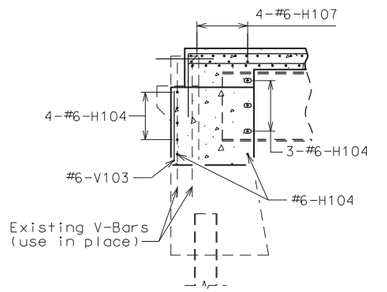
Existing steel diaphragms not shown for clarity (leave in place).

U-bars and resin anchor systems in diaphragm not shown for clarity.

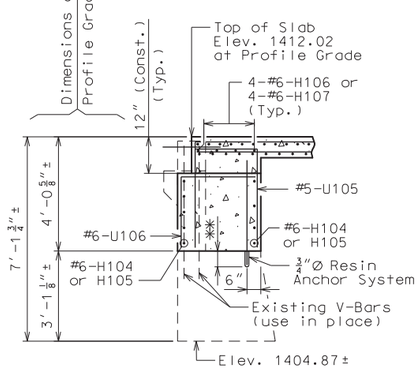
For additional details of End Bent No. 1, see Sheet Nos. 6 & 7.



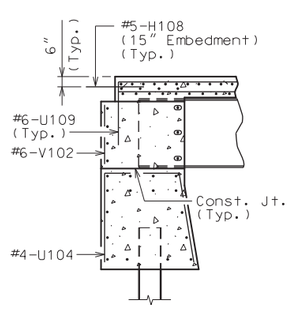
STEEL PILE SPLICE



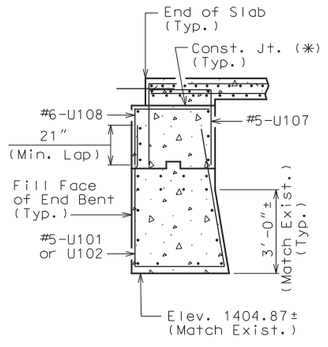
SECTION C-C



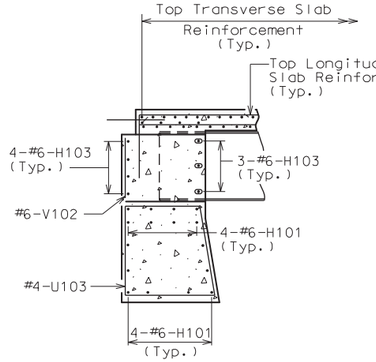
SECTION D-D



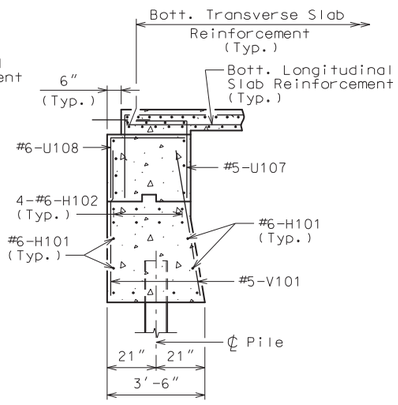
SECTION E-E



SECTION F-F



SECTION G-G



SECTION H-H

Note: Existing V-bars in backwall to be used in place. The contractor shall cut the bars as required.

(✻) Upper construction joint shall be formed on slope in order to maintain 1½" (min.) clearance to #6-H103 and H104 reinforcing bars in diaphragm. (Also shown in Section Near End Bent)

Substructure Quantity Table for Bent No. 1

Item		Quantity
Class 1 Excavation	cu. yard	33.3
Structural Steel Piles (10 in.)	linear foot	72
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	10.0

Note: These quantities are included in the quantities table on Sheet No. 2.

DETAILS OF END BENT NO. 1

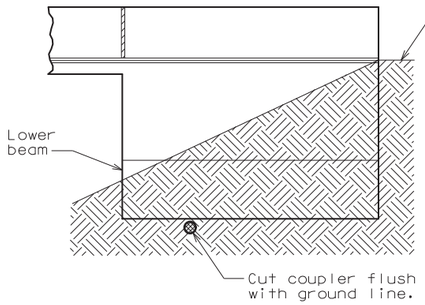
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

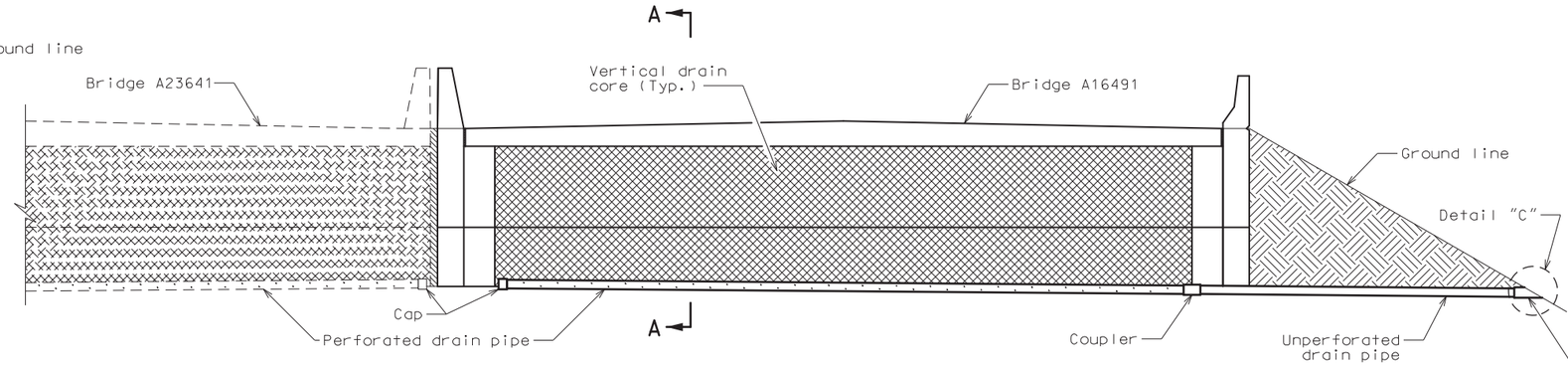
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

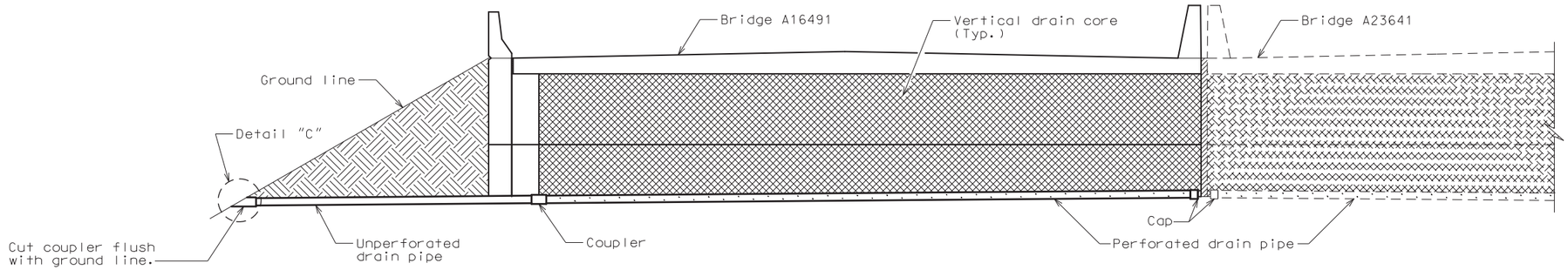
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



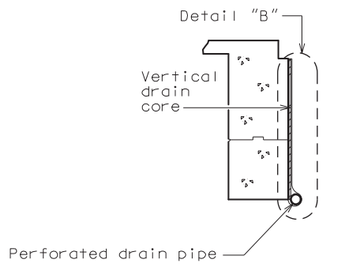
ELEVATION OF WING



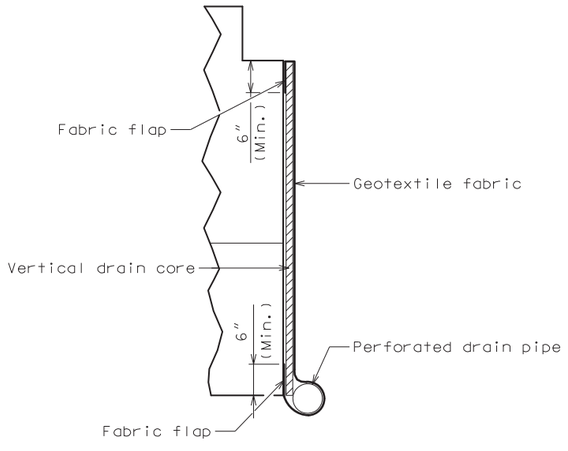
ELEVATION AT END BENT 1



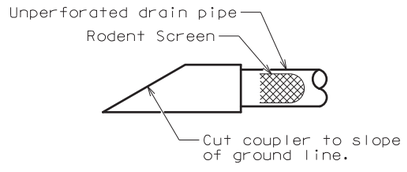
ELEVATION AT END BENT 4



SECTION A–A



DETAIL "B"



DETAIL "C"

Notes:

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

Place drain pipe at fill face of end bent and slope to lowest grade of ground line, also missing the lower beam of end bent by 1½". (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

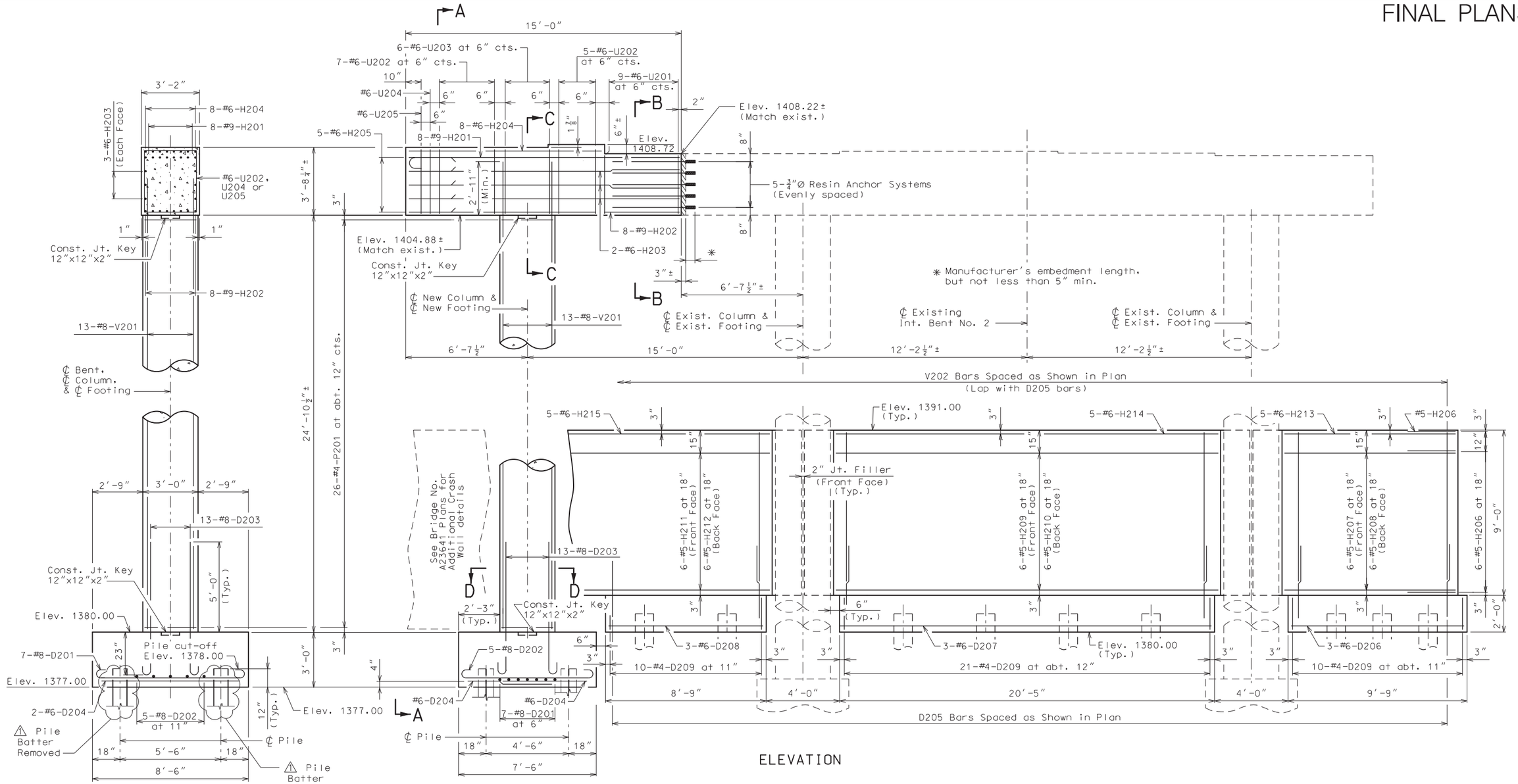
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

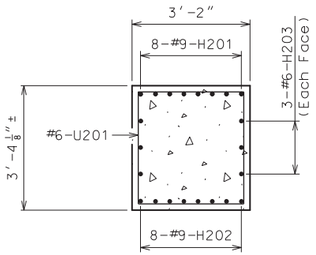
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

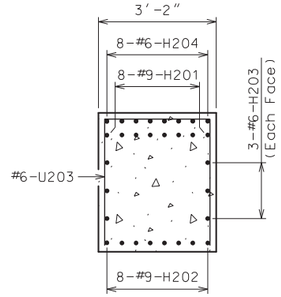
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



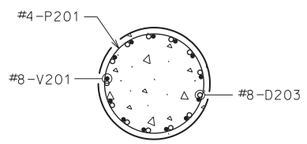


SECTION B-B

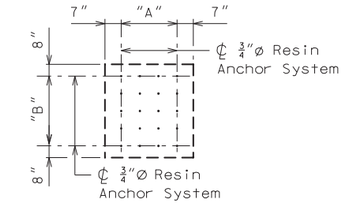
Note: Resin anchor system not shown for clarity.



SECTION C-C



SECTION D-D



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

"A" 4-¾″Ø Resin Anchor Systems at 8″ cts.
"B" 5-¾″Ø Resin Anchor Systems at abt. 6″ cts.

Notes:

For details of Intermediate Bent No. 2 not shown, see Sheet No. 11.

For details of Crash Wall not shown, see Sheet No. 11.

For Substructure Quantity Table, see Sheet No. 11.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

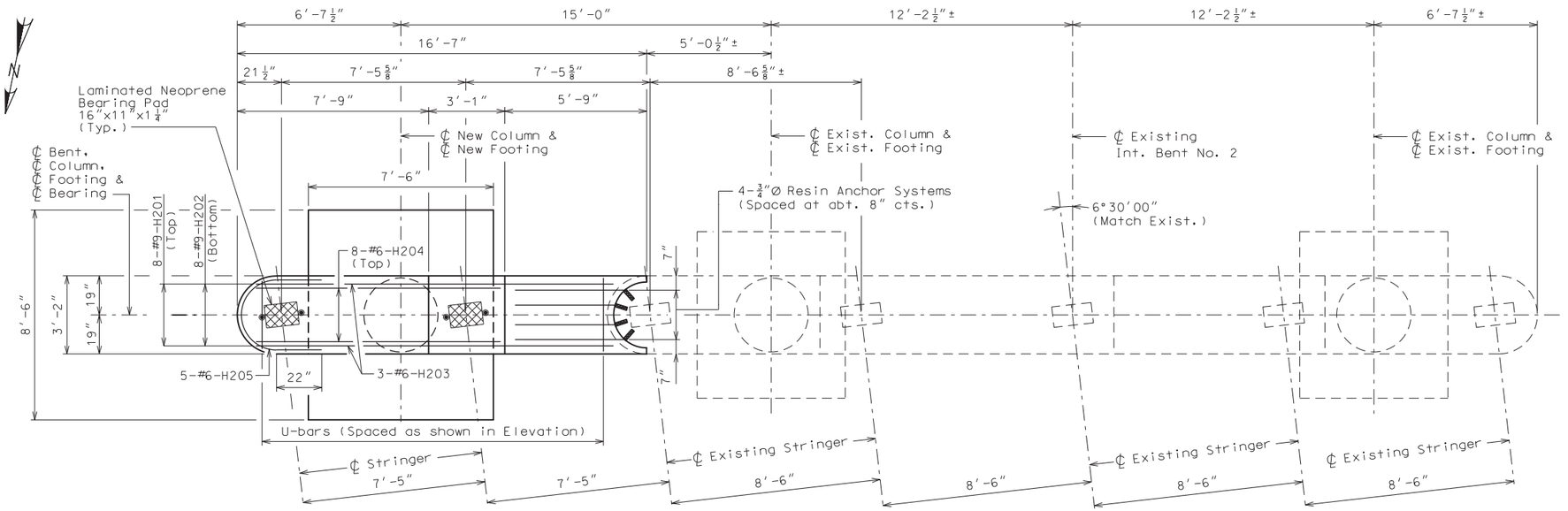
DETAILS OF INTERMEDIATE BENT NO. 2

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

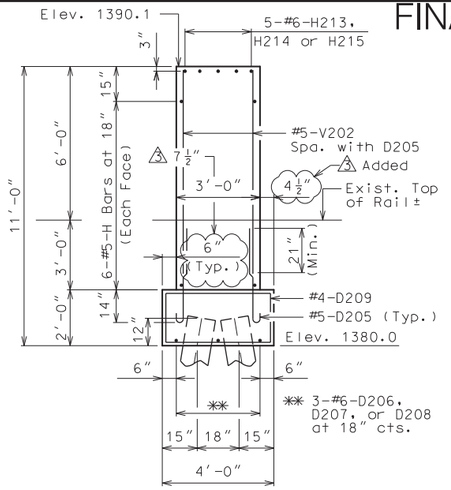
DATE	DESCRIPTION
05/18/10	Int. Bent pile batter removed.

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



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



TYPICAL SECTION THRU CRASH WALL

Notes:

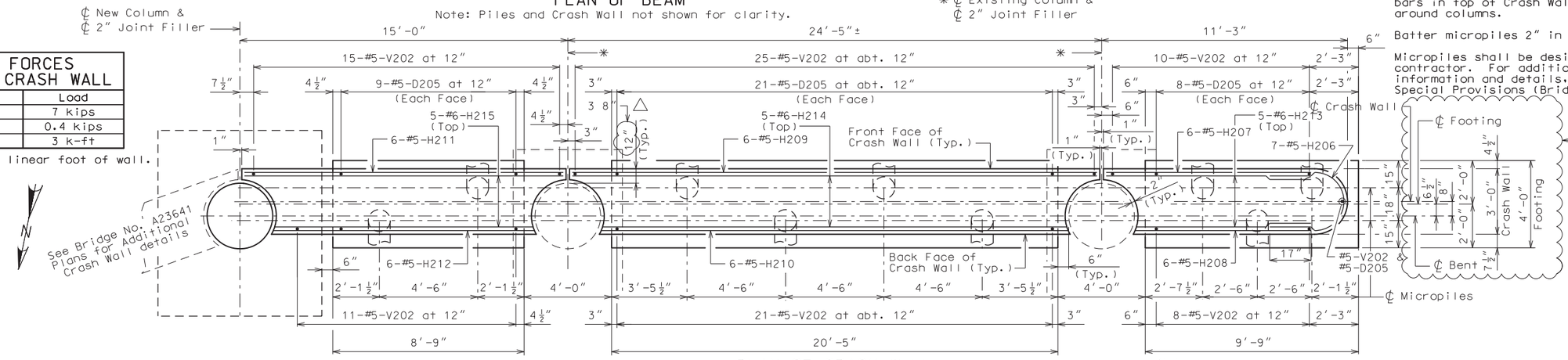
Field cut #6-H213, H214 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2″ in 12″.

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.



PLAN OF CRASH WALL

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½″.

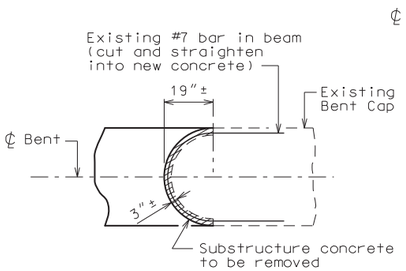
All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½″.

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2″ clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 2 not shown, see Sheet No. 10.

For details of Crash Wall not shown, see Sheet No. 10.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

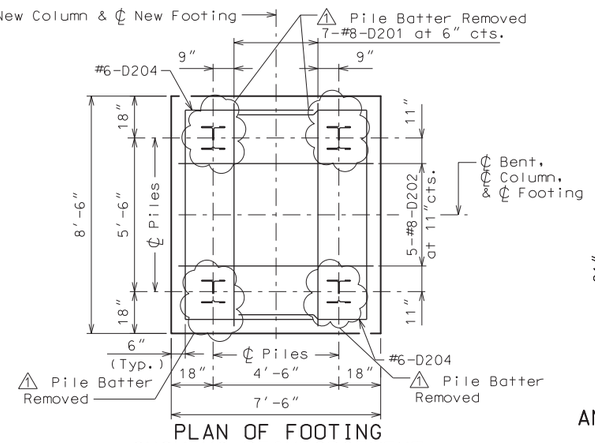


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

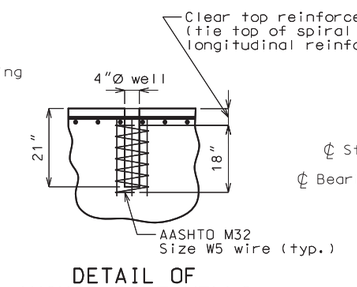
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

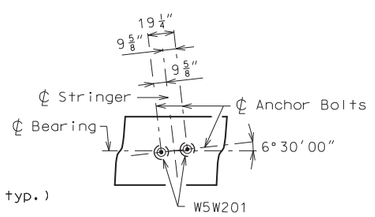


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.



DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

Substructure Quantity Table for Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	114.4
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	56.8
Class B Concrete (Substructure)	cu. yard	20.0
Reinforcing Steel (Bridges)	pound	3463
Reinforcing Steel (Retaining Wall)	pound	2603

Note: These quantities are included in the Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF INTERMEDIATE BENT NO. 2

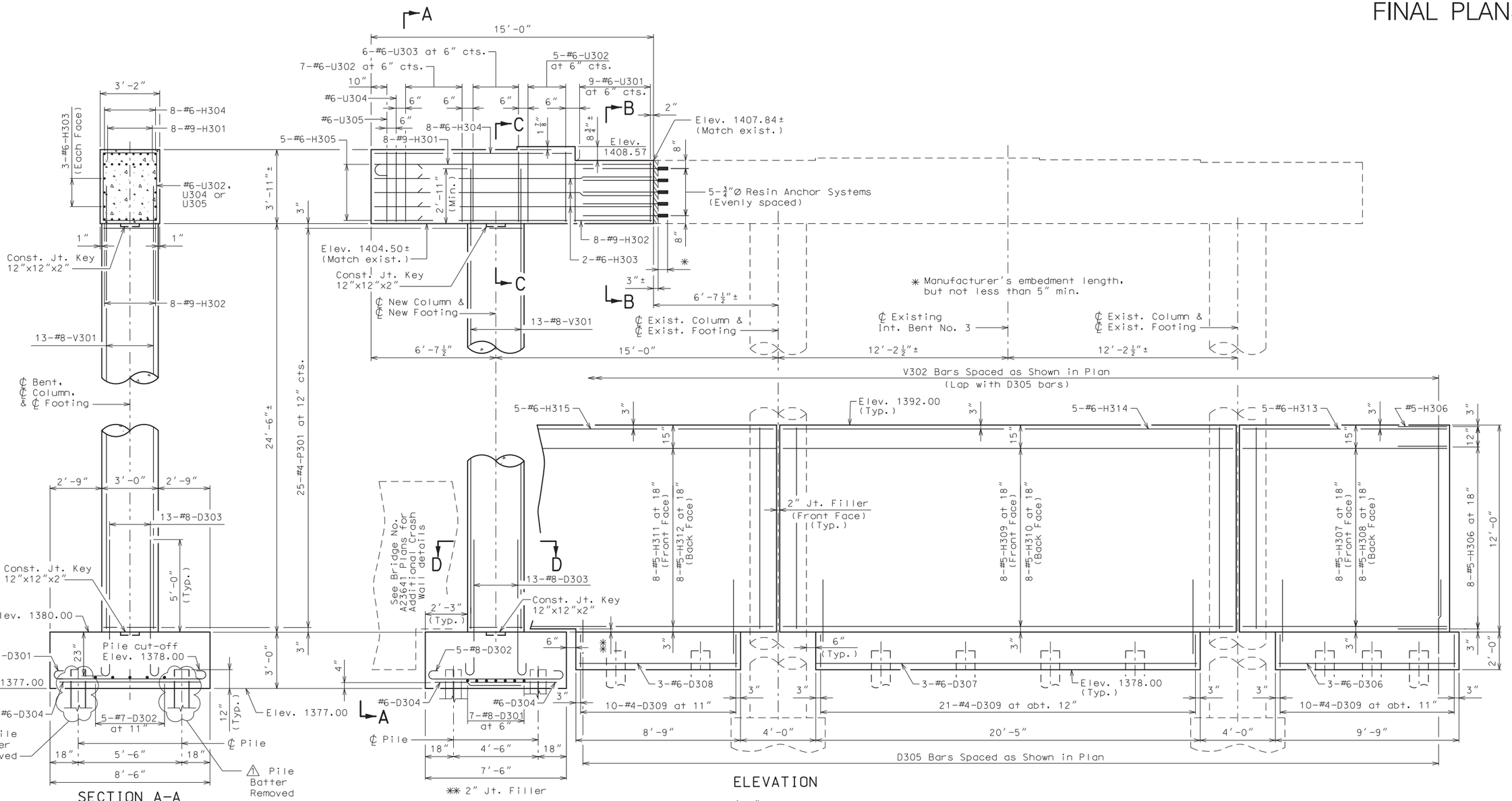
Note: This drawing is not to scale. Follow dimensions.

FINAL PLANS

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 11
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	1 Int. Bent pile batter removed.
10/06/10	2 Revised Footings and Crash Walls.

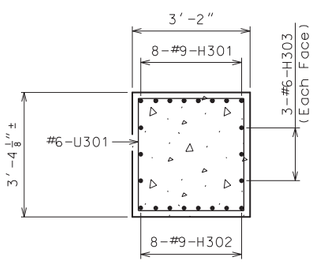
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



SECTION A-A

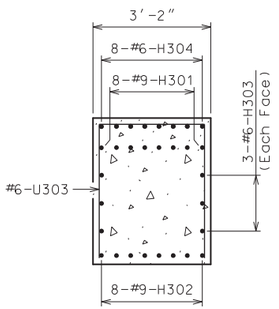
Note: Crash Wall not shown for clarity.

ELEVATION

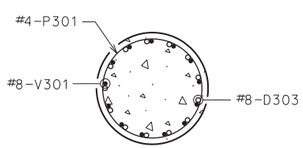


SECTION B-B

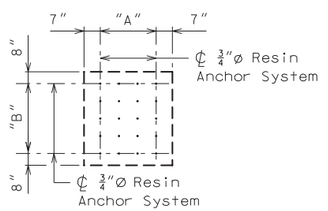
Note: Resin anchor system not shown for clarity.



SECTION C-C



SECTION D-D



DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

"A" 4-¾″Ø Resin Anchor Systems at 8″ cts.
"B" 5-¾″Ø Resin Anchor Systems at abt. 6″ cts.

Notes:

For details of Intermediate Bent No. 3 not shown, see Sheet No. 13.

For details of Crash Wall not shown, see Sheet No. 13.

For Substructure Quantity Table, see Sheet No. 13.

The contractor shall field verify and locate all existing footings and utilities prior to construction.

The contractor shall verify all dimensions in field before ordering new material.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

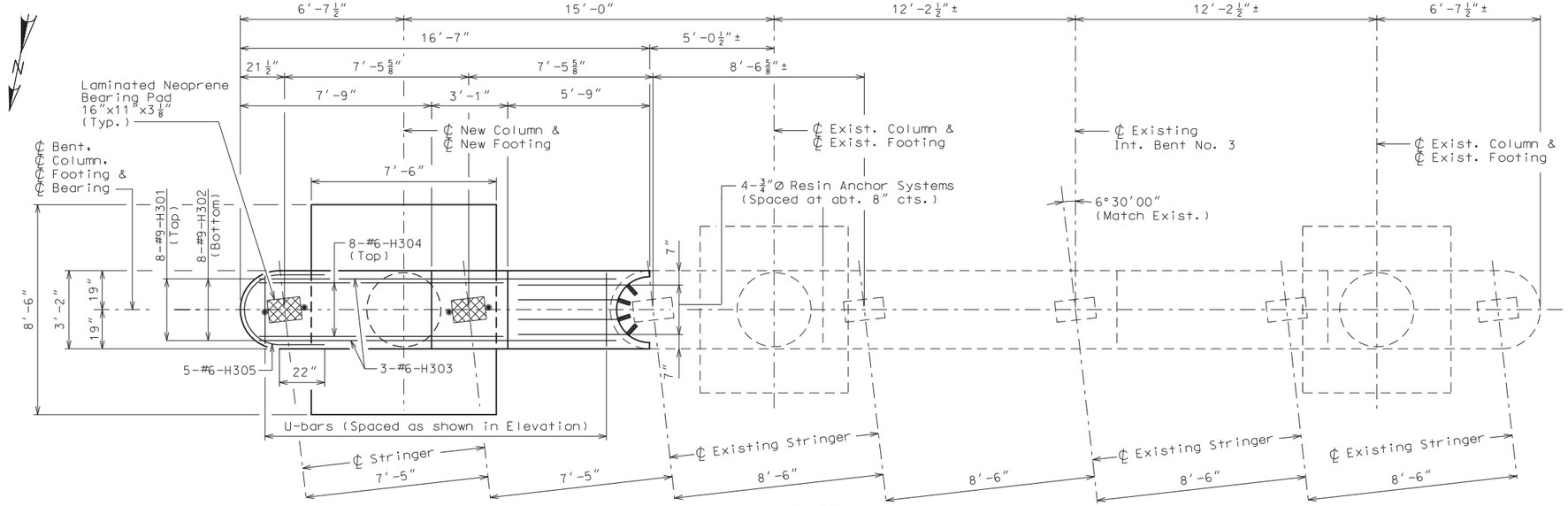
DETAILS OF INTERMEDIATE BENT NO. 3

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

DATE PREPARED: 10/06/10
ROUTE: 65 | STATE: MO
DISTRICT: BR | SHEET NO.: 12
COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.: 090626-802
PROJECT NO.: FAF-65-2(65)
BRIDGE NO.: A16491

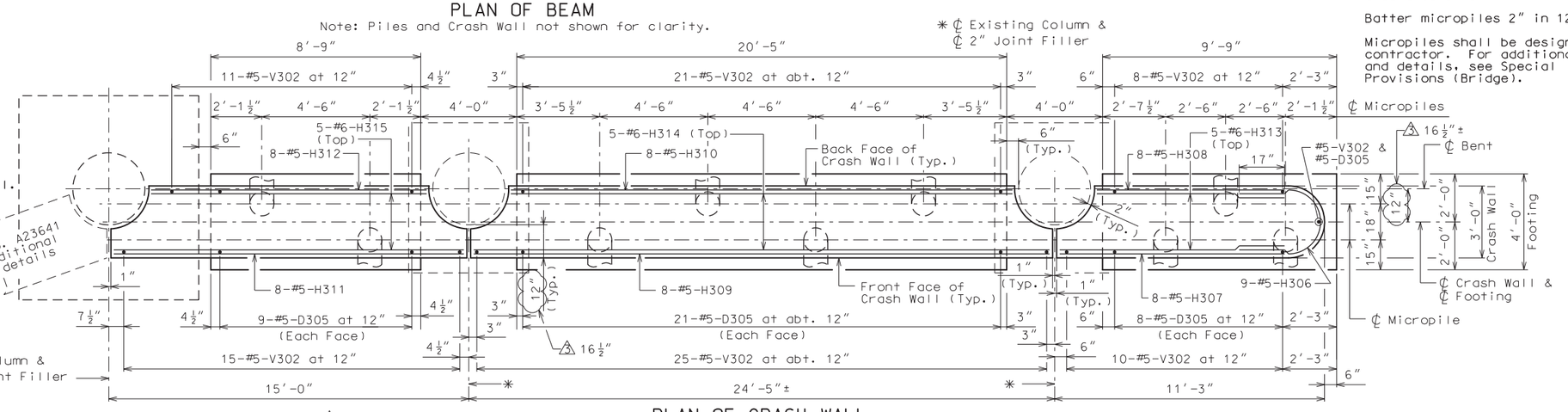
DATE	DESCRIPTION
05/18/10	1 Int. Bent pile batter removed.

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



PLAN OF BEAM

Note: Piles and Crash Wall not shown for clarity.



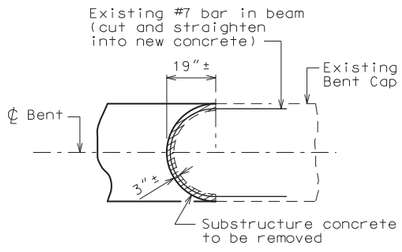
PLAN OF CRASH WALL

* ℄ Existing Column & ℄ 2″ Joint Filler

See Bridge No. A23641 Plans for Additional Crash Wall details

SERVICE FORCES AT BASE OF CRASH WALL	
	Load
Axial	7 kips
Shear	0.4 kips
Moment	3 k-ft

Note: Forces are per linear foot of wall.

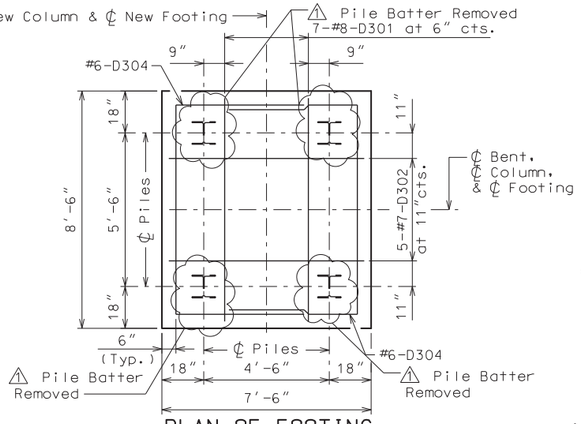


PART PLAN SHOWING AREAS OF SUBSTRUCTURE CONCRETE TO BE REMOVED

Notes:

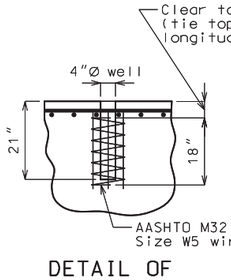
Hatch area ▨ indicates existing concrete removal around existing U shaped bars at end of beam cap.

Concrete removal shown shall be considered incidental to the cost of Class B Concrete (Substructure).

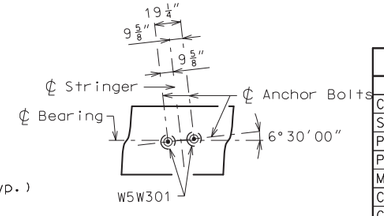


PLAN OF FOOTING SHOWING REINFORCEMENT

Note: Dimensions shown are taken at bottom of footing.

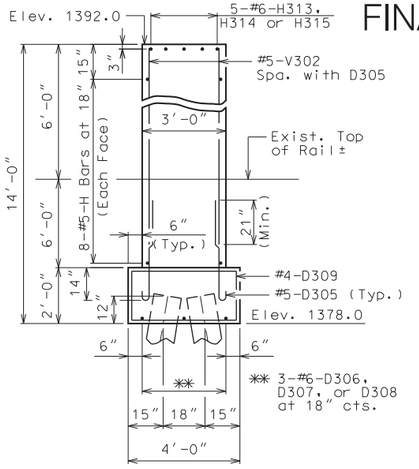


DETAIL OF ANCHOR BOLT WELLS



DETAIL OF ANCHOR BOLTS

TYPICAL SECTION THRU CRASH WALL



Notes:

Field cut #6-H313, H314 and H215 bars in top of Crash Wall to fit bars around columns.

Batter micropiles 2″ in 12″.

Micropiles shall be designed by the contractor. For additional information and details, see Special Provisions (Bridge).

Notes:

All reinforcing bars in the tops of substructure beams or caps shall be spaced to clear anchor bolt wells for bearings by at least ½″.

All reinforcement shall be field adjusted to clear piles and micropiles by at least 1½″.

The Crash Wall shall not bear on the existing or new footings or columns. A minimum of 2″ clear distance from the Crash Wall to all columns and footings is required.

For details of Intermediate Bent No. 3 not shown, see Sheet No. 12.

For details of Crash Wall not shown, see Sheet No. 12.

For details of Laminated Neoprene Bearings, see Sheet No. 17.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation	cu. yard	128.6
Structural Steel Pile (10 in.)	linear foot	44
Pile Point Reinforcement	each	4
Pre-bore for Piling	linear foot	40
Micropiles	each	9
Class B Concrete (Retaining Walls)	cu. yard	71.9
Class B Concrete (Substructure)	cu. yard	20.2
Reinforcing Steel (Bridges)	pound	3457
Reinforcing Steel (Retaining Wall)	pound	3085

Note: These quantities are included in the Quantities Table on Sheet No. 2.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF INTERMEDIATE BENT NO. 3

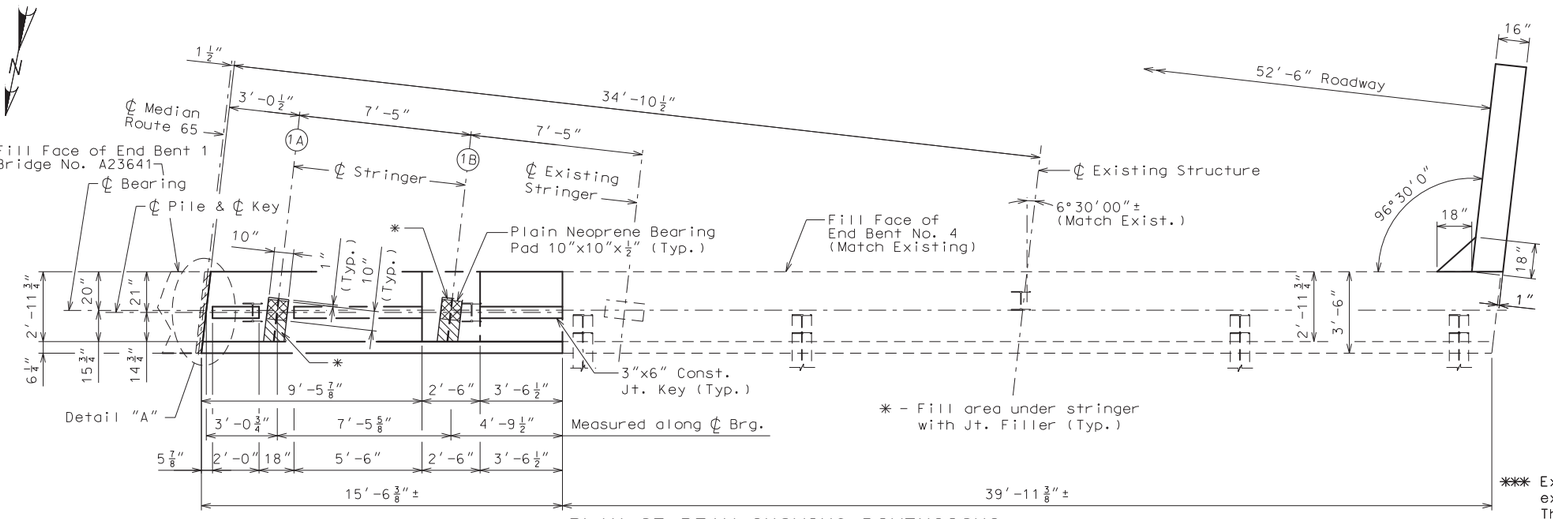
Note: This drawing is not to scale. Follow dimensions.

FINAL PLANS

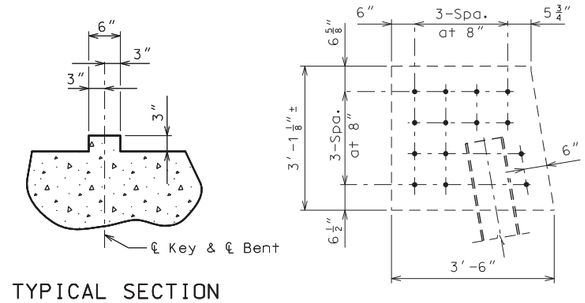
DATE PREPARED: 10/06/10
ROUTE: 65 | STATE: MO
DISTRICT: BR | SHEET NO.: 13
COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.: 090626-802
PROJECT NO.: FAF-65-2(65)
BRIDGE NO.: A16491

DATE	DESCRIPTION
05/18/10	⚠1 Int. Bent pile batter removed.
10/06/10	⚠2 Revised Footings and Crash Walls.

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



PLAN OF BEAM SHOWING DIMENSIONS

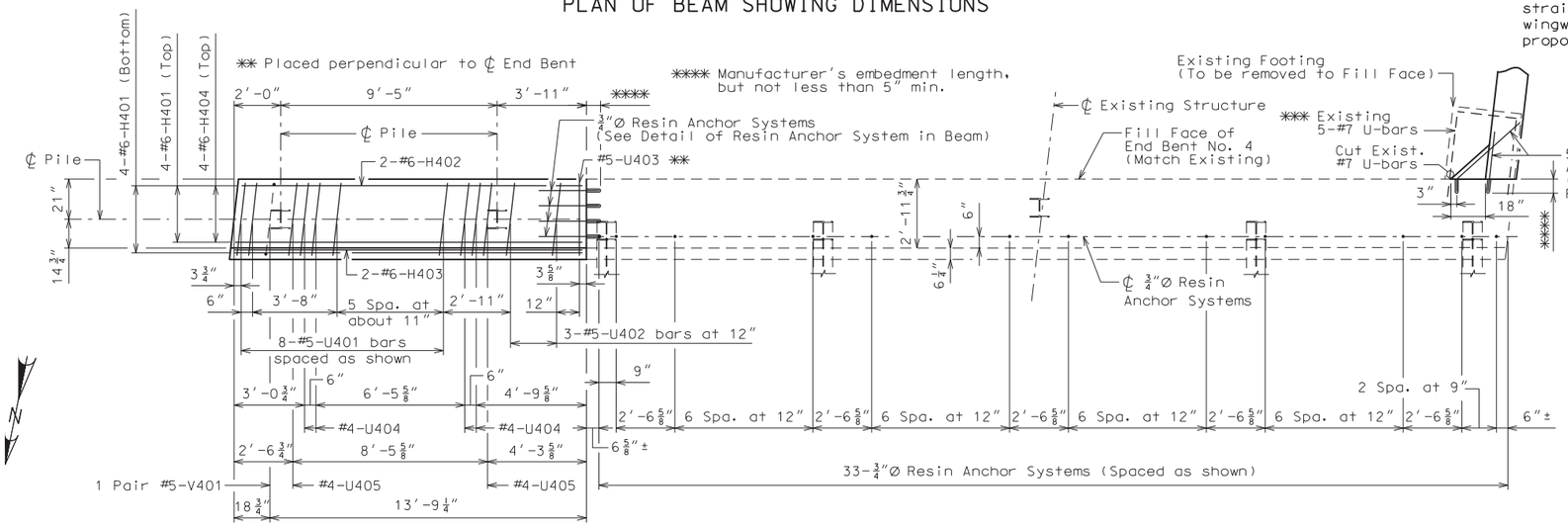


TYPICAL SECTION THRU KEY

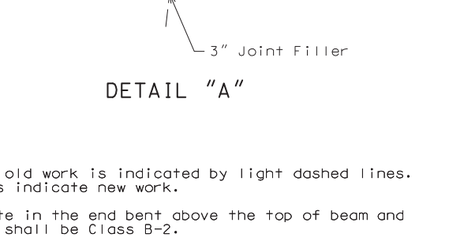
DETAIL OF RESIN ANCHOR SYSTEM IN BEAM

14-¾"Ø Resin Anchor Systems to be spaced as shown.

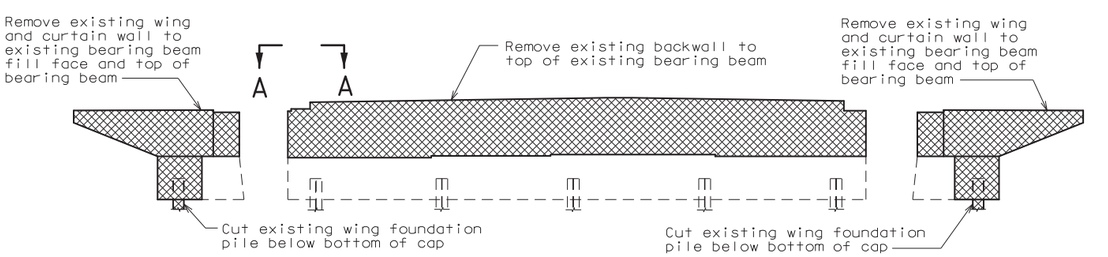
*** Existing #7 U-bars to remain embedded in the existing beam at the outside face of wingwall. The bars shall be cut near the point indicated, straightened and embedded in the proposed wingwall. A minimum of 40" embedment into the proposed wingwall is required.



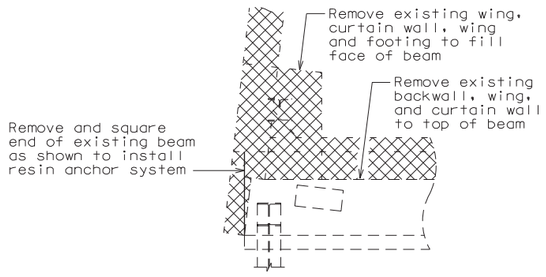
PLAN OF BEAM SHOWING REINFORCEMENT



DETAIL "A"



EAST WING ELEVATION ELEVATION OF END BENT WEST WING ELEVATION



PART PLAN A-A

DETAILS OF CONCRETE REMOVAL AT END BENT NO. 4

Note: The cost of all concrete removal shown will be considered completely covered by the contract lump sum price for Partial Removal of Substructure Concrete.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

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

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 4, see Sheet Nos. 15 & 16.

For Substructure Quantity Table, see Sheet No. 16.

For details of Vertical Drain at end bents, see Sheet No. 9.

For details of the Safety Barrier Curb, see Sheet Nos. 27, 28, 29, 30, 31, and 32.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

All U-bars and Pr. V-bars in end bent are to be placed parallel to ℄ Route 65, except as noted.

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

Where existing bars are to extend from remaining portions of existing concrete into new construction, concrete shall be removed so as to leave bars clean and undamaged. Newly exposed construction concrete and reinforcement bars shall be blast-cleaned.

DATE PREPARED	10/06/10
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	14
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

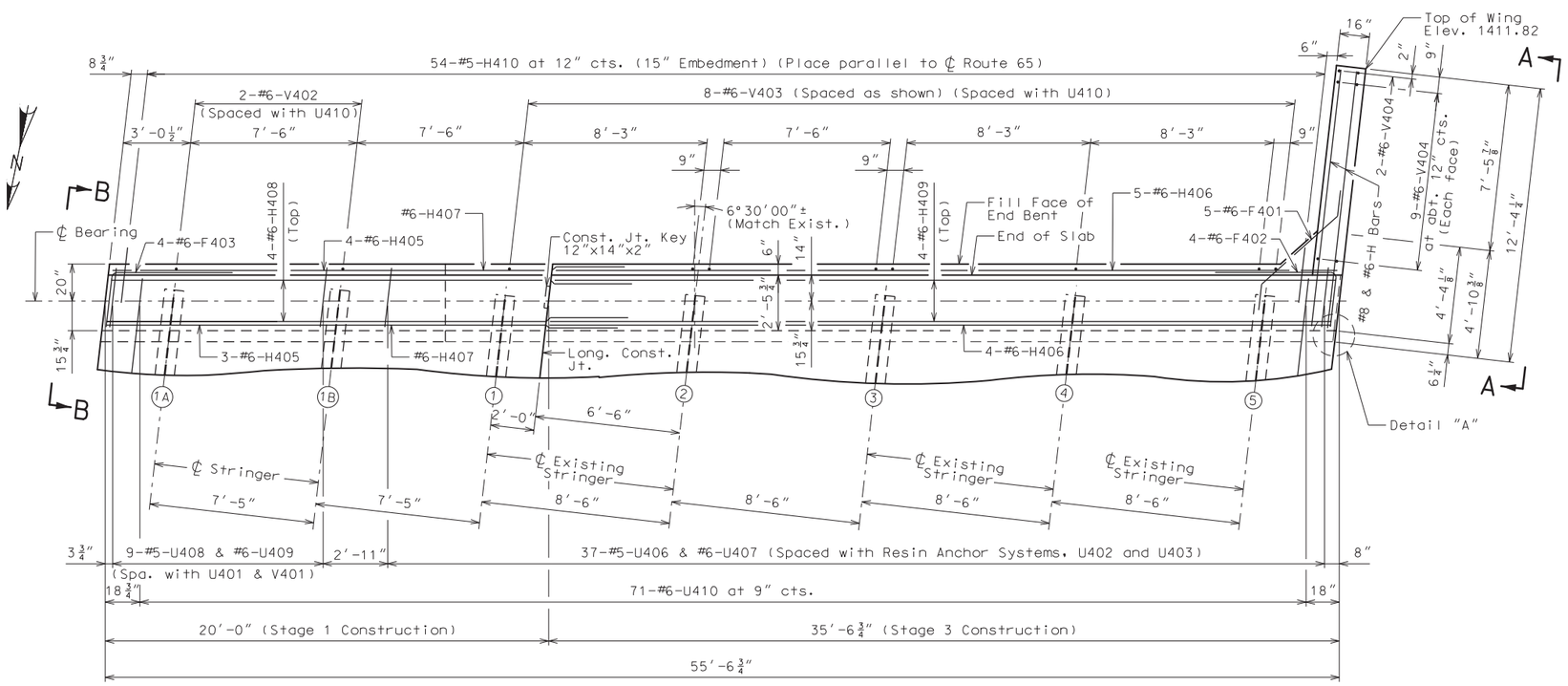
DESCRIPTION | DATE

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

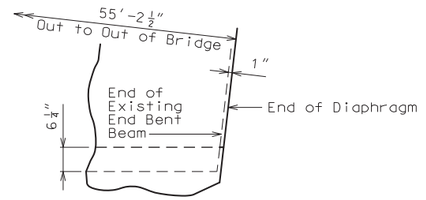
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF END BENT NO. 4

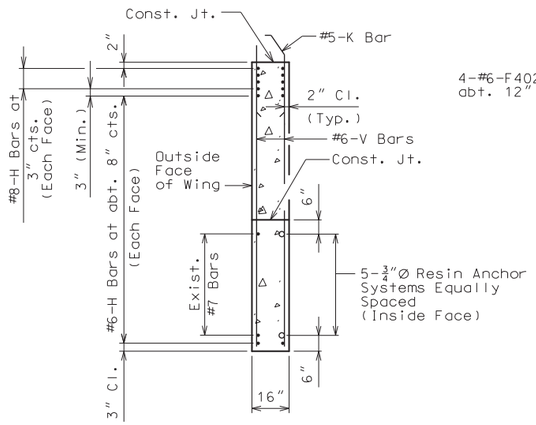
Note: This drawing is not to scale. Follow dimensions.



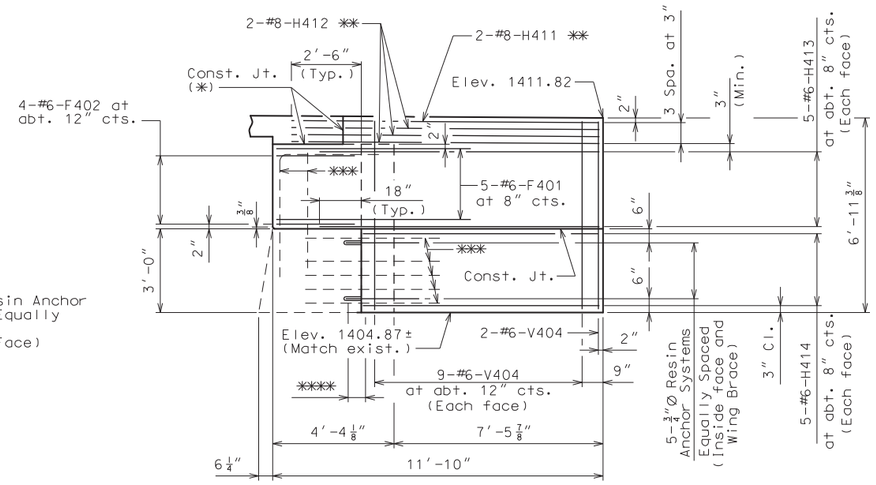
PLAN SHOWING REINFORCING



DETAIL "A"

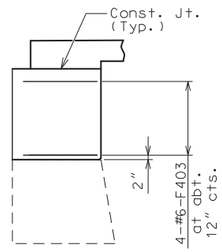


TYPICAL SECTION THRU WING



ELEVATION A-A

** Note: Place H411 and H412 bars parallel to grade.



ELEVATION B-B

(*) Upper construction joint shall be formed on slope in order to maintain a 1½" (min.) clearance to #6-H405 or H406 reinforcing bars in diaphragm. (Also shown in Section near End Bent)

*** Existing wing and curtain wall reinforcement to be used in place. Damaged bars shall be replaced by the contractor with no additional payment.

**** Manufacturer's embedment length, but not less than 5" min.

Notes:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

Concrete diaphragms at the integral end bents shall be poured a minumum of 12 hours before the slab is poured.

Contractor shall verify all dimensions in field prior before ordering new material.

For additional details of End Bent No. 4, see Sheet Nos. 14 & 16.

All vertical reinforcing in substructure beams or caps shall be field adjusted to clear piles by at least 1½".

U & V bars shall be placed parallel to ℄ Route 65, except as noted.

For reinforcement of the Safety Barrier Curb, see Sheet Nos. 29 & 30.

For details of Vertical Drain at End Bent, see Sheet No. 9.

Bend #6-F401 bars in field to clear stringers.

For details of the Neoprene Bearings, see Sheet No. 17.

For details of Bridge Approach Slab, see Sheet No. 33.

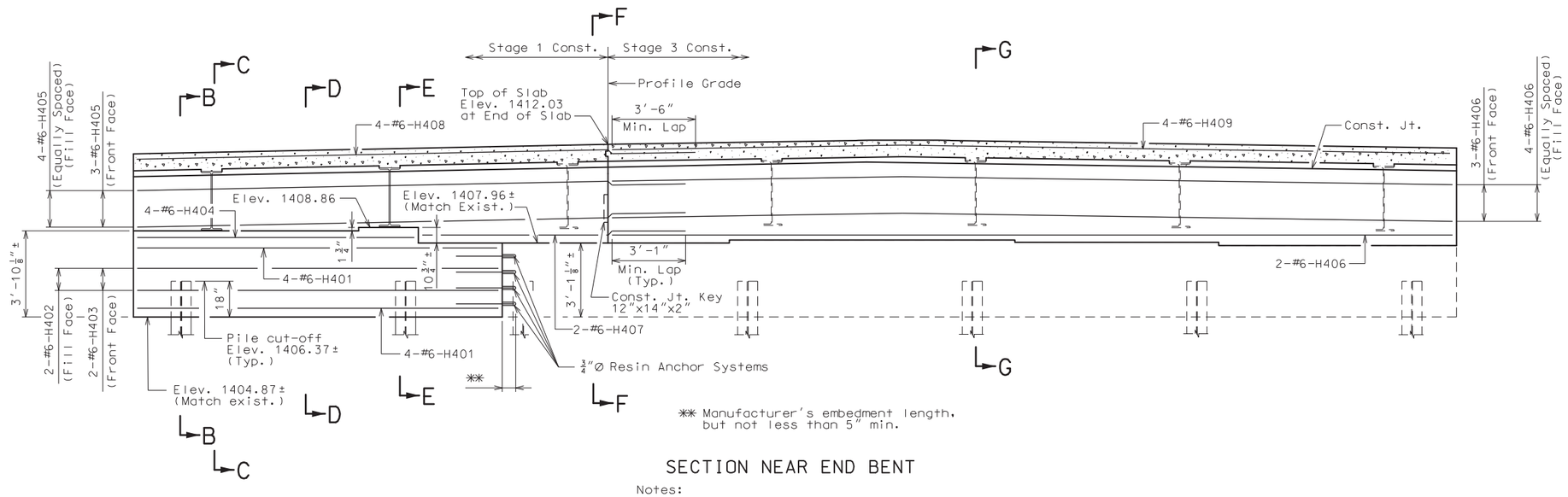
DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	15
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
090626-802	
PROJECT NO.	
FAF-65-2(65)	
BRIDGE NO.	
A16491	

DESCRIPTION | DATE

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

DETAILS OF END BENT NO. 4



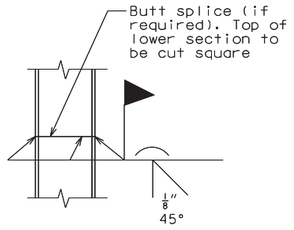
** Manufacturer's embedment length, but not less than 5" min.

SECTION NEAR END BENT

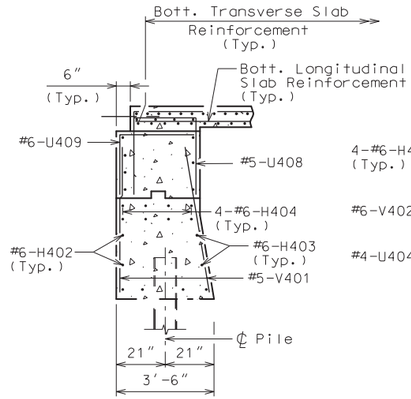
Notes:

Existing steel diaphragms not shown for clarity (leave in place).

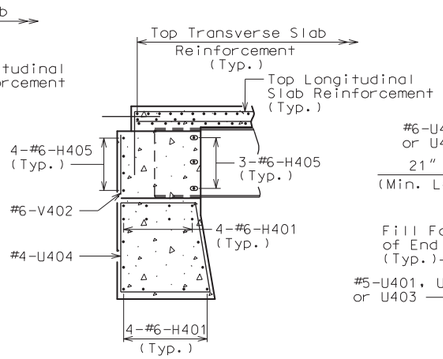
U-bars and resin anchor systems in diaphragm not shown for clarity.



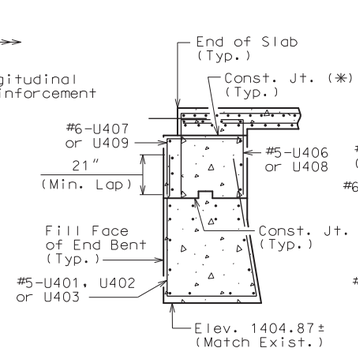
STEEL PILE SPLICE



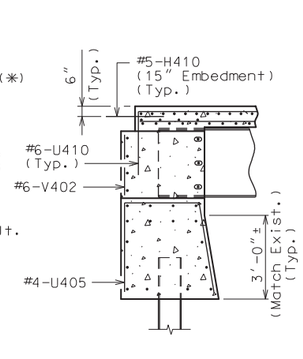
SECTION B-B



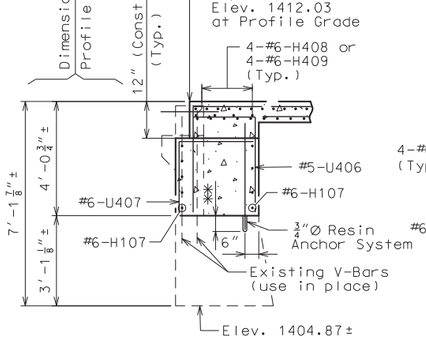
SECTION C-C



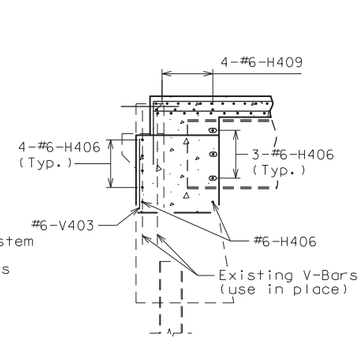
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

Notes: Existing V-bars in backwall to be used in place. The contractor shall cut the bars as required.

(*) Upper construction joint shall be formed on slope in order to maintain 1½" (min.) clearance to #6-H405 and H406 reinforcing bars in diaphragm. (Also shown in Section Near End Bent)

Substructure Quantity Table for Bent No. 4		
Item		Quantity
Class 1 Excavation	cu. yard	34.7
Structural Steel Piles (10 in.)	linear foot	79
Pile Point Reinforcement	each	2
Class B Concrete (Substructure)	cu. yard	8.1

Note: These quantities are included in the quantities table on Sheet No. 2.

For details of End Bent No. 4 not shown, see Sheet Nos. 14 & 15.

DETAILS OF END BENT NO. 4

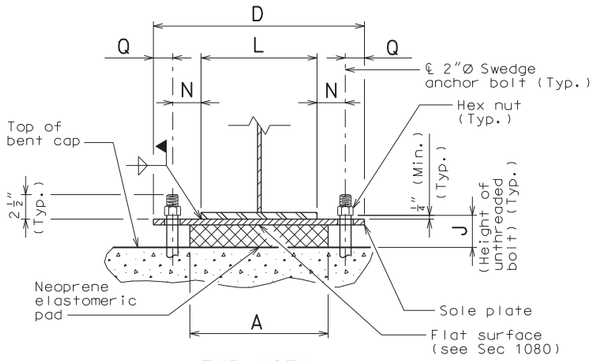
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

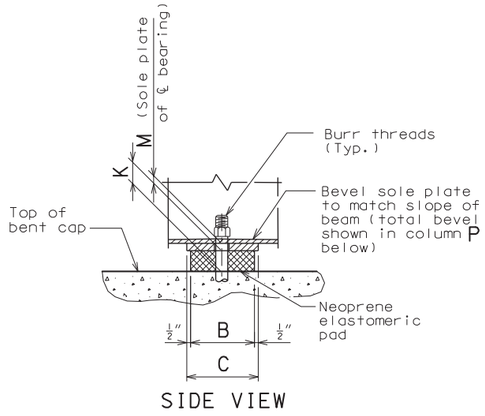
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

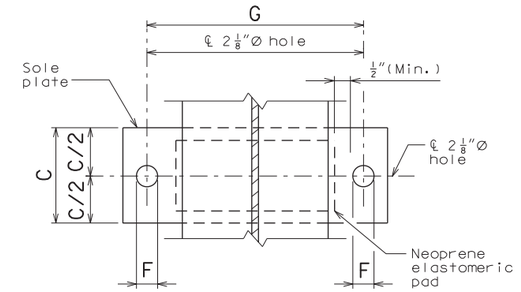
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



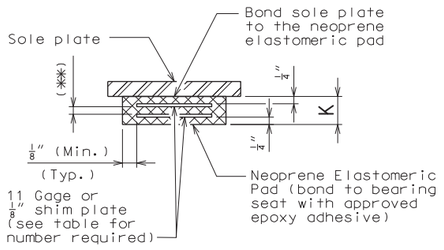
END VIEW



SIDE VIEW



PART PLAN



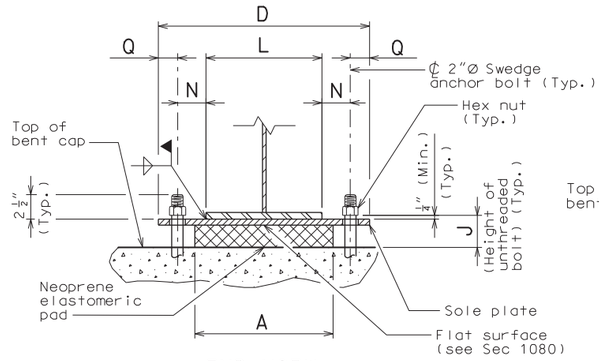
(**) Layers of ½" elastomer alternating with 11 gage or ⅛" shim plate

NEOPRENE ELASTOMERIC PAD

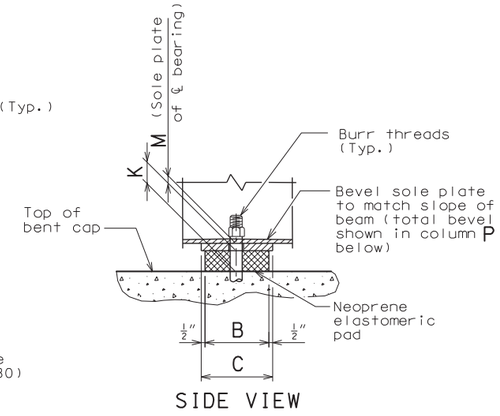
LAMINATED NEOPRENE FIXED BEARING PAD ASSEMBLY

FIXED BEARINGS															
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
2	16"	11"	12"	25¼"	2⅛"	19¼"	3"	1¼"	10"	1½"	4⅝"	0"	3"	2	2
														TOTAL BEARINGS	2

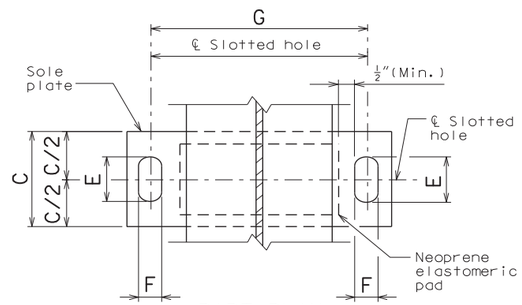
(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.



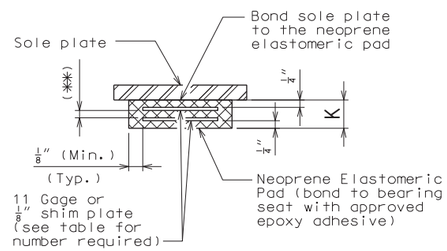
END VIEW



SIDE VIEW



PART PLAN



(**) Layers of ½" elastomer alternating with 11 gage or ⅛" shim plate

NEOPRENE ELASTOMERIC PAD

LAMINATED NEOPRENE EXPANSION BEARING PAD ASSEMBLY

EXPANSION BEARINGS																	
BENT NO.	A	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	NUMBER OF SHIM PLATES(*)	NUMBER REQUIRED
3	16"	11"	12"	25¼"	4⅝"	2⅛"	19¼"	4⅞"	3⅛"	10"	1½"	4⅝"	0"	3"	1/16"	5	2
																TOTAL BEARINGS	2

(*) The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

GENERAL NOTES:

Anchor rods shall be 2"Ø ASTM F1554 Grade 55 swedged rods and shall extend 18" into the concrete with AASHTO M291 (ASTM A563) Grade A Hex or Heavy Hex nuts. Actual manufacturer's certified mill test reports (chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

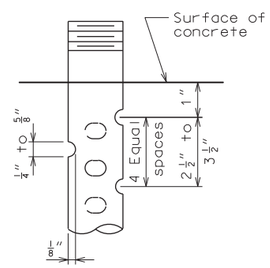
Anchor rod shall be at the ℄ of slotted hole at 60°F. Bearing position shall be adjusted R for each 10° fall or rise in temperature at installation.

All structural steel for the anchor rods and heavy hexagon nuts shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

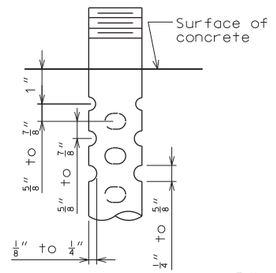
Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of inorganic zinc primer (5 mils minimum).

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.



DETAIL FOR ⅜"Ø THRU 2½"Ø ANCHOR BOLTS



OPTIONAL DETAIL FOR 1⅜"Ø THRU 2½"Ø ANCHOR BOLTS

SWEDGE ANCHOR BOLT DETAILS

DETAILS OF LAMINATED NEOPRENE BEARING PAD ASSEMBLY

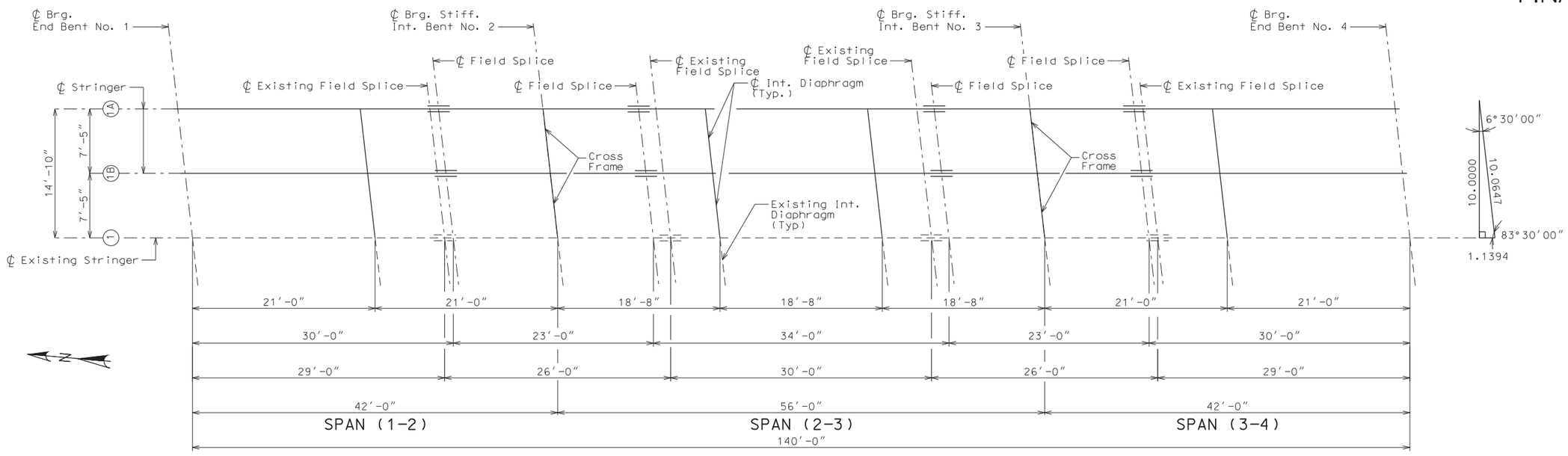
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

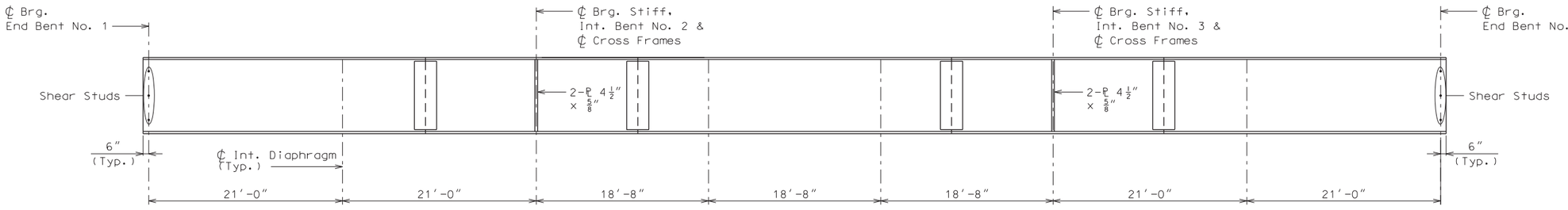
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 17
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION	DATE

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



PLAN OF STRUCTURAL STEEL



CROSS FRAME AND DIAPHRAGM LAYOUT

Notes:

For details of bearing stiffeners and intermediate diaphragms, see Sheet No. 22.

For details of web holes at end bents, see Sheet No. 20.

For Elevation of Stringer, see Sheet No. 19.

For details of bolted field splices, see Sheet No. 20.

For details of shear connectors, see Sheet No. 19.

Fabricated Structural Steel shall be ASTM A709 Grade 50.

Notes:

For details of intermediate diaphragms, see Sheet No. 22.

Contractor shall not field drill holes in existing stringer web or bearing stiffeners to attach diaphragms until Stringers 1A and 1B are erected.

Prior to drilling holes in existing stringer web for the diaphragm connection plates, the contractor shall verify that location of the holes will allow diaphragms to be installed to the shop welded diaphragm connection plates on Stringer 1B.

Bolts on intermediate diaphragms that connect stringers under different construction stage slab pours shall be installed snug tight, then tightened after both adjacent slab pours are completed.

Bolts on existing intermediate diaphragms that connect existing stringers under different construction stage slab pours shall be loosened to snug tight, then tightened after both adjacent slab pours are completed.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

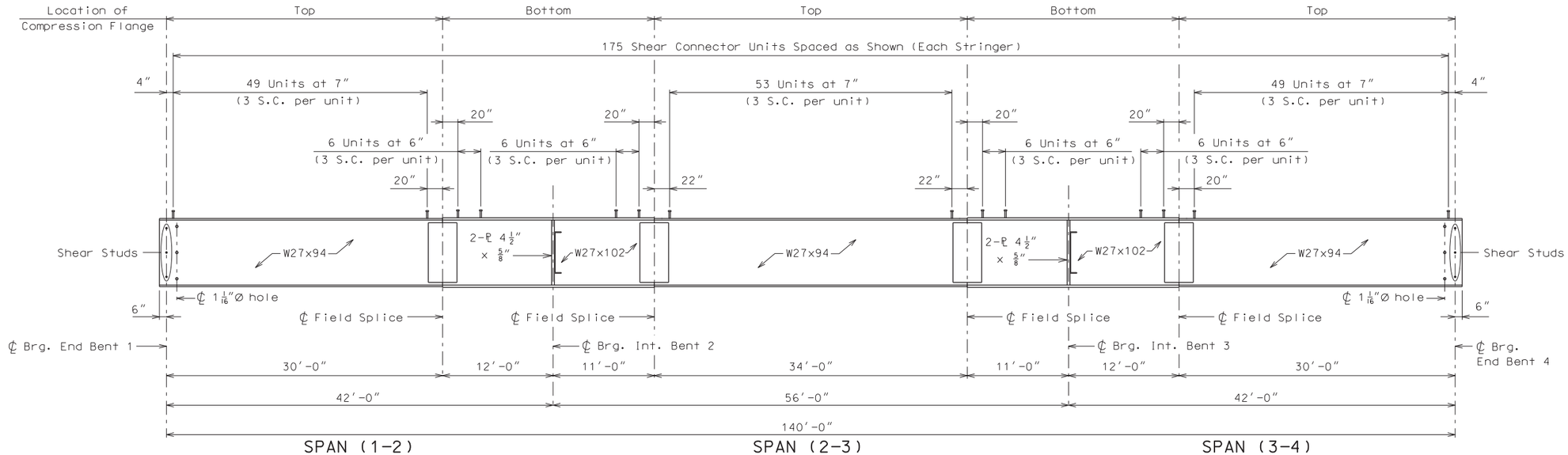
Note: This drawing is not to scale. Follow dimensions.

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 18
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

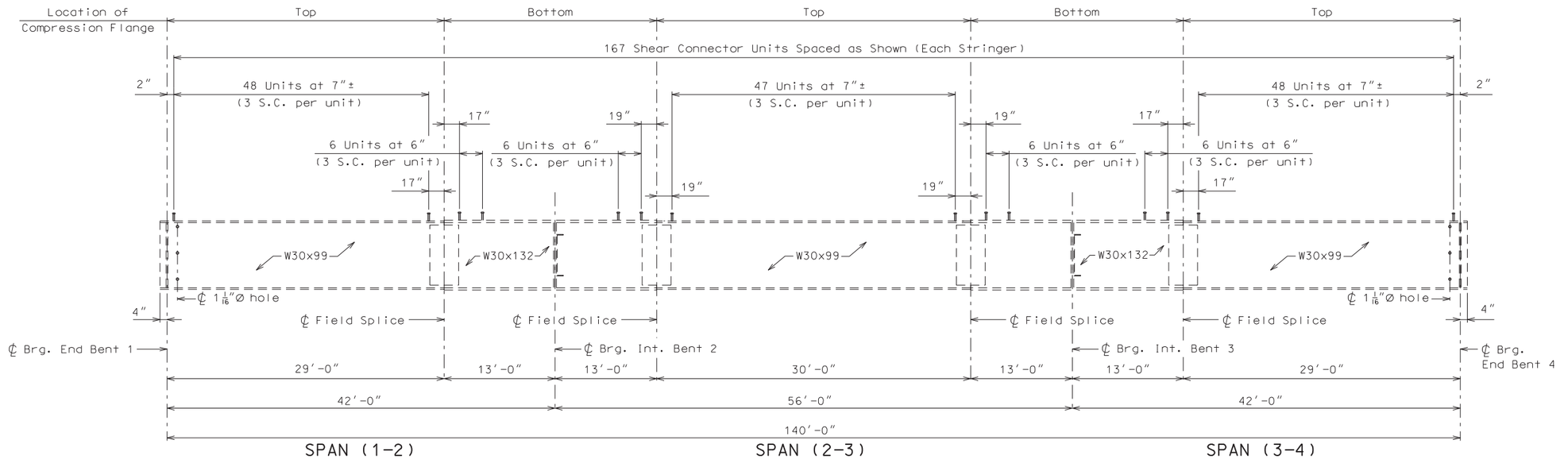
DESCRIPTION | DATE

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

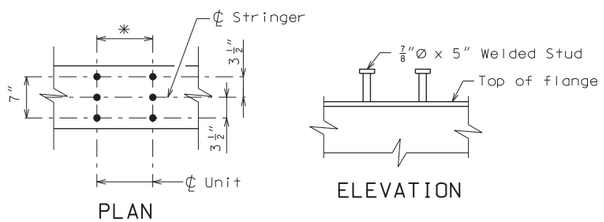
FINAL PLANS



ELEVATION OF NEW STRINGERS



ELEVATION OF EXISTING STRINGERS



PLAN

ELEVATION

TYPICAL SHEAR STUD UNIT DETAIL

* Space as shown in elevation of beam.

Note: Contractor shall adjust shear connector unit locations as required to facilitate connection of new shear connectors to existing stringers.

Notes:

Weight of 3507 pounds of shear connectors is included in the weight of Fabricated Structural Low Alloy Steel. Weight includes studs attached to the webs of new stringers at end bents.

Shear connectors shall be in accordance with Sec 712, 1037 and 1080.

Notch toughness is required for all wide flange beams.

Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

For locations of bearing stiffeners, cross frames and intermediate diaphragms, see Sheet No. 18.

For details of intermediate connection plates and bearing stiffeners, see Sheet No. 22.

For details of diaphragms, see Sheet No. 22.

For plan of structural steel, see Sheet No. 18.

Cost of field drilling holes in existing stringer will be considered completely covered by the contract unit price for Slab on Steel.

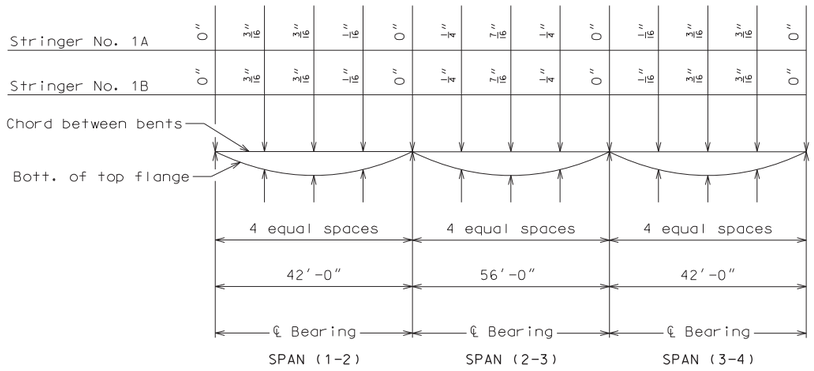
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 19
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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



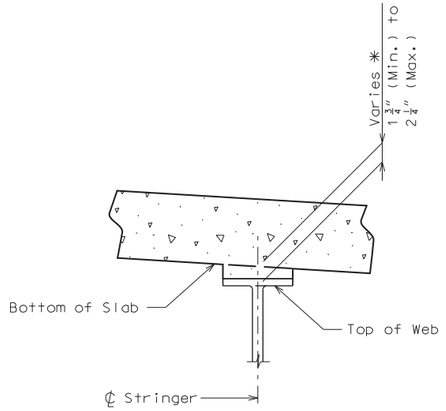
DEAD LOAD DEFLECTION

Notes:

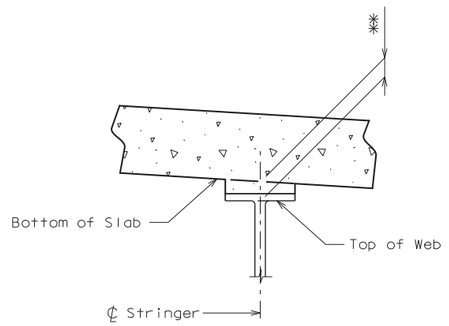
13% of dead load deflection of Stringer 1A is due to the weight of structural steel.

12% of dead load deflection of Stringer 1B is due to the weight of structural steel.

Dead load deflection includes weight of structural steel, concrete slab and barrier curbs.



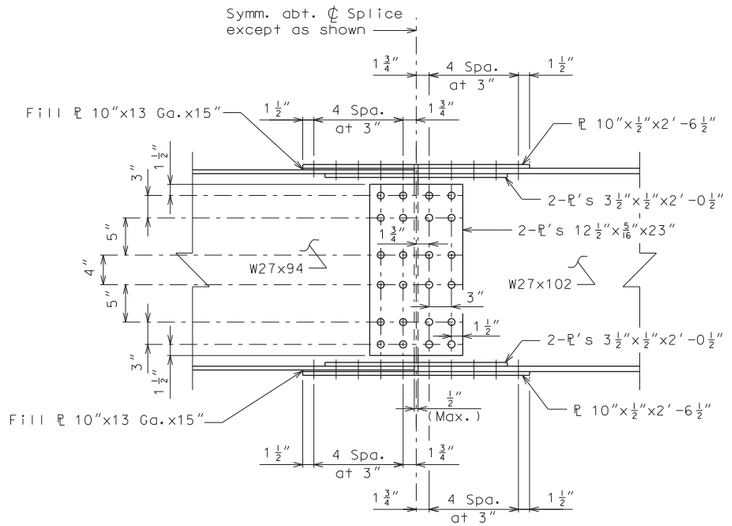
THEORETICAL SLAB HAUNCH FOR NEW STRINGERS NOS. 1A & 1B



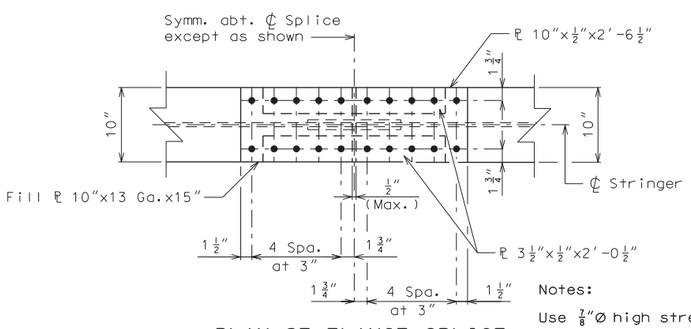
THEORETICAL SLAB HAUNCH FOR EXIST. STRINGERS NOS. 1, 2, 3, 4, & 5

✱✱ Dimensions may vary if the stringer dead load deflection after erection differs from plan dead load deflection by more or less than the % of dead load deflection due to weight of structural steel. No payment will be made for any adjustment in forming or additional concrete required for variation in haunching.

✱✱ Haunch at supports ≥ 0″. Haunch at intermediate points in span to be calculated in field.

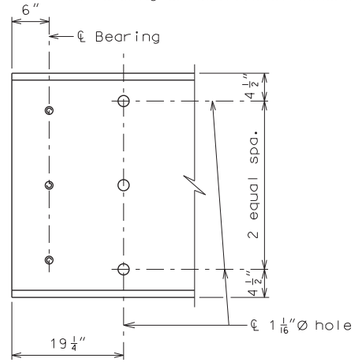


DETAIL OF BOLTED FIELD SPLICE

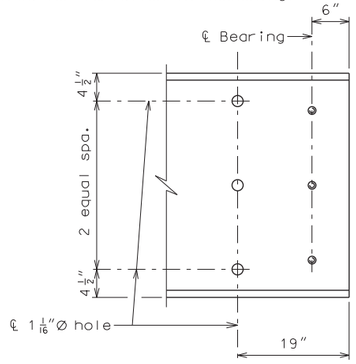


PLAN OF FLANGE SPLICE

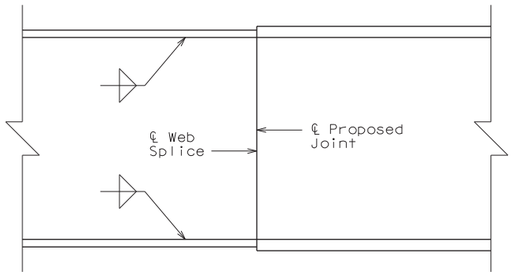
(Top and bottom flanges similar.)



DETAIL OF WEB HOLES AT END BENT NO. 1 (NEW STRINGERS)

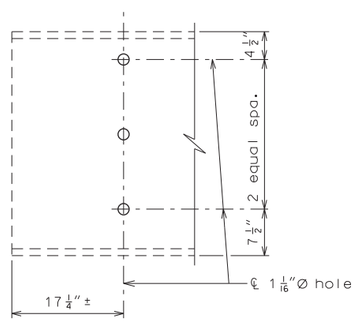


DETAIL OF WEB HOLES AT END BENT NO. 4 (NEW STRINGERS)

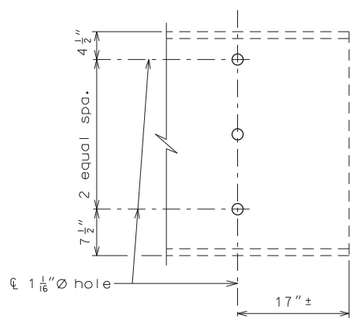


WELDED SHOP WEB SPLICE

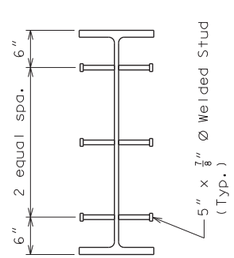
Note: Welded shop web and flange splices may be permitted when detailed on the shop drawings and approved by the engineer. No additional payment will be made for optional welded shop web and flange splices.



DETAIL OF WEB HOLES AT END BENT NO. 1 (EXISTING STRINGERS)



DETAIL OF WEB HOLES AT END BENT NO. 4 (EXISTING STRINGERS)



SECTION AT ℄ BEARING (NEW STRINGERS)

Note: Weight of 5″ x 7/8″Ø studs at end bents is included in the weight of shear connectors.

Notes:

Use 7/8″Ø high strength bolts with 15/16″Ø holes.

Contact surfaces shall be in accordance with Sec 1081 for surface preparation.

The flange and web splice plates shall be subject to notch toughness requirements. top notch toughness is required for flange on both sides of the splice.

Note: Cost of field drilling holes in existing stringers will be considered completely covered by the contract unit price for Slab on Steel.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DESCRIPTION	DATE

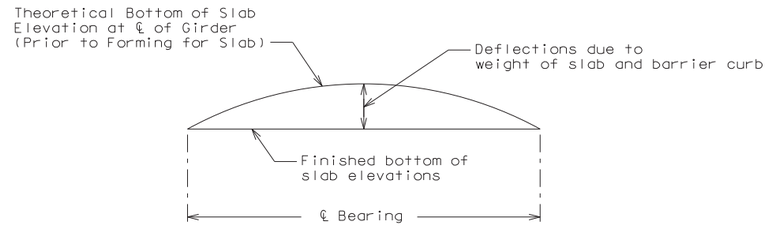
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

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

Theoretical Bottom of Slab Elevations at CL of Stringer (Prior to Forming for Slab) * *

	Span (1-2) (42'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.06	1411.10	1411.12	1411.14	1411.14
Stringer No. 1B	1411.21	1411.25	1411.28	1411.29	1411.29
Stringer No. 1	1411.36	1411.40	1411.42	1411.43	1411.44
Stringer No. 2	1411.50	1411.55	1411.57	1411.58	1411.59
Stringer No. 3	1411.55	1411.59	1411.61	1411.62	1411.63
Stringer No. 4	1411.42	1411.46	1411.48	1411.49	1411.49
Stringer No. 5	1411.29	1411.33	1411.35	1411.35	1411.36
	Span (2-3) (56'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.14	1411.18	1411.20	1411.18	1411.15
Stringer No. 1B	1411.29	1411.33	1411.35	1411.33	1411.30
Stringer No. 1	1411.44	1411.47	1411.49	1411.47	1411.45
Stringer No. 2	1411.59	1411.61	1411.63	1411.61	1411.59
Stringer No. 3	1411.63	1411.65	1411.67	1411.65	1411.63
Stringer No. 4	1411.49	1411.52	1411.54	1411.52	1411.49
Stringer No. 5	1411.36	1411.39	1411.40	1411.39	1411.36
	Span (3-4) (42'-0" ℄ brg - ℄ brg.)				
	℄ brg.	.25	.50	.75	℄ brg.
Stringer No. 1A	1411.15	1411.15	1411.14	1411.12	1411.08
Stringer No. 1B	1411.30	1411.29	1411.29	1411.26	1411.23
Stringer No. 1	1411.45	1411.44	1411.43	1411.41	1411.37
Stringer No. 2	1411.59	1411.58	1411.57	1411.55	1411.51
Stringer No. 3	1411.63	1411.62	1411.61	1411.59	1411.55
Stringer No. 4	1411.49	1411.48	1411.48	1411.45	1411.41
Stringer No. 5	1411.36	1411.35	1411.34	1411.32	1411.28

* * Elevations are based on a constant slab thickness of 7½" and include allowance for theoretical dead load deflections due to weight of slab & barrier curb.



TYPICAL SLAB ELEVATIONS DIAGRAM

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

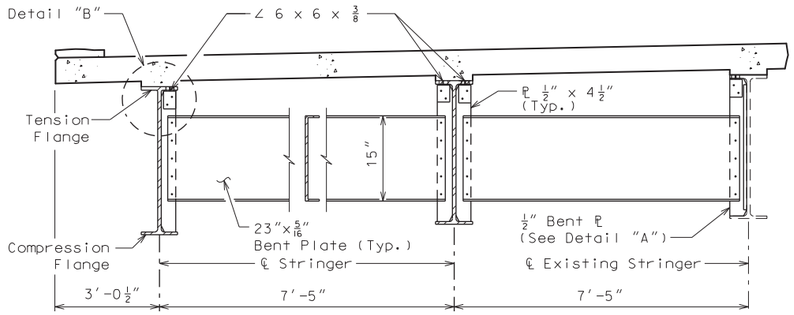
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

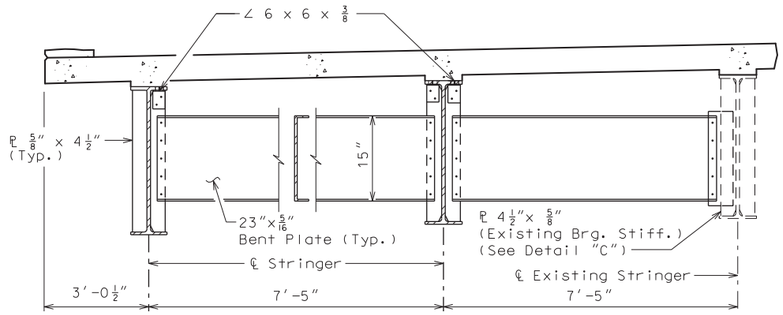
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

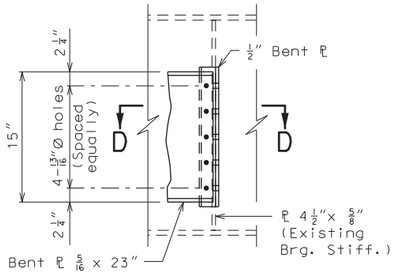
Note: This drawing is not to scale. Follow dimensions.



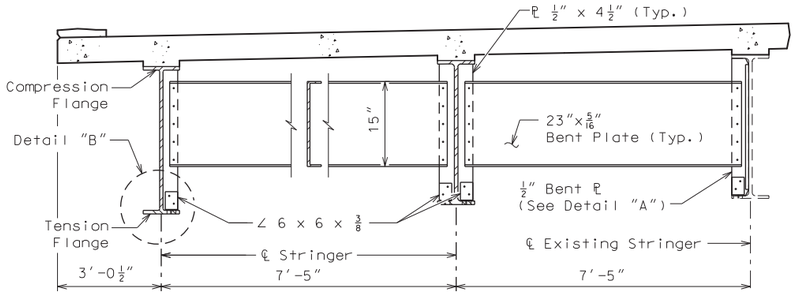
TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS TOP FLANGE IN TENSION



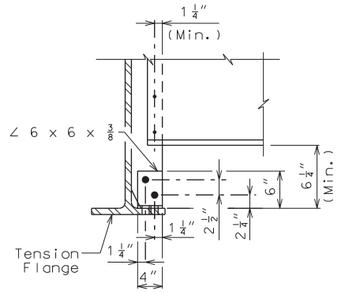
TYPICAL PART SECTION SHOWING CROSS FRAMES



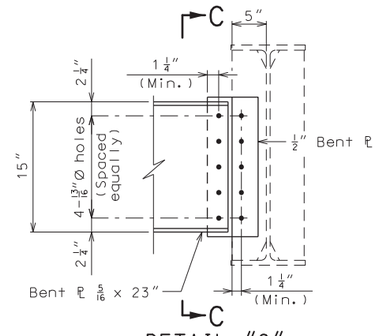
SECTION C-C



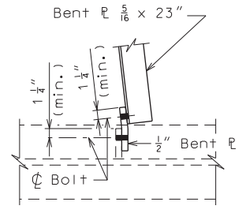
TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS BOTTOM FLANGE IN TENSION



DETAIL "B"



DETAIL "C"



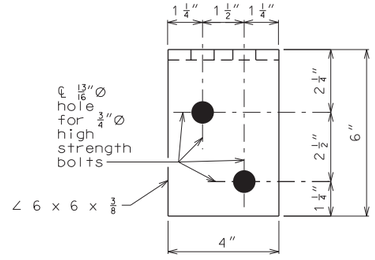
SECTION D-D

Notes:

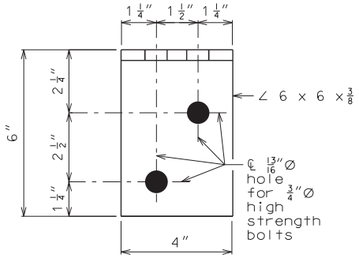
The two 3/4"Ø H.S. bolts that connect the 6 x 6 x 3/8 angle to the top flange shall be placed so the nut is on the inside of flange (toward the web).

At the contractor's option, holes in the diaphragm plate of non slab bearing diaphragms may be made 3/16" larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the stringer diaphragm connection plate or transverse web stiffener shall be standard size.

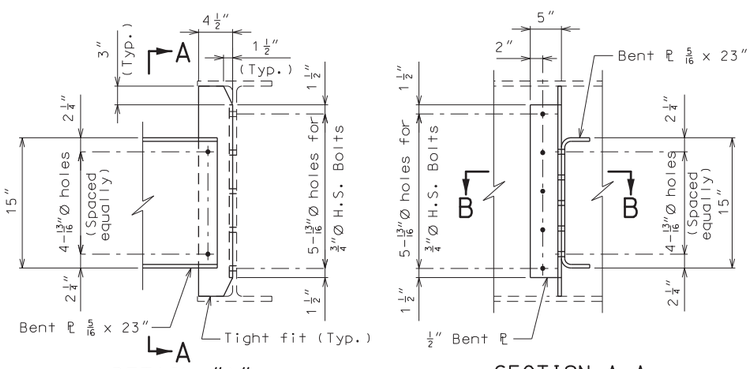
For location of intermediate diaphragms and cross frames, see Sheet No. 18.



PLAN

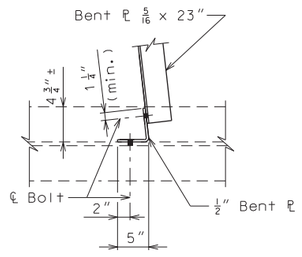


FRONT ELEVATION

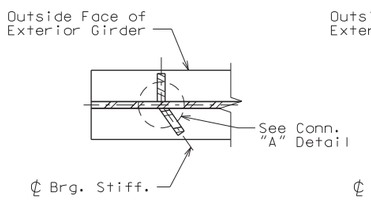


DETAIL "A"

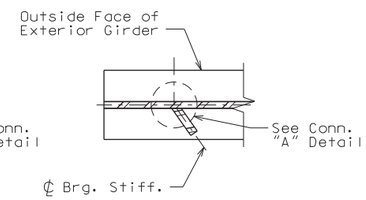
SECTION A-A



SECTION B-B

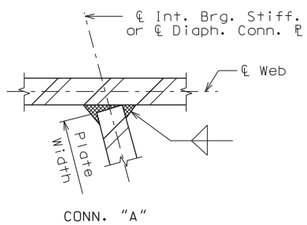


INT. BRG. STIFF.



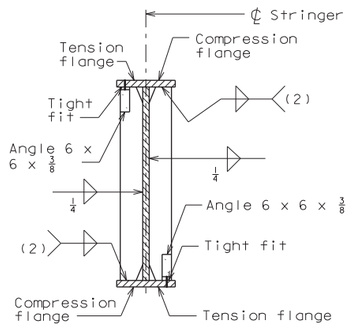
DIAPH. CONN. PLATE

TYPICAL LOCATION DETAILS

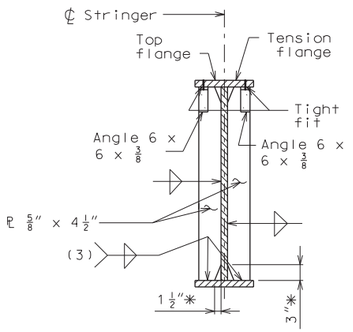


CONN. "A"

WELDING DETAILS



INT. DIAPH. CONN. PLATE



INT. BRG. STIFF.

(2) Weld to compression flange as located on elevation of stringer.

(3) Grind or mill to bear.

* Typical for all int. diaph. conn. pl. and brg. stiff.

WELDING DETAILS

SIDE VIEW

DETAIL OF FLANGE CONNECTION ANGLE

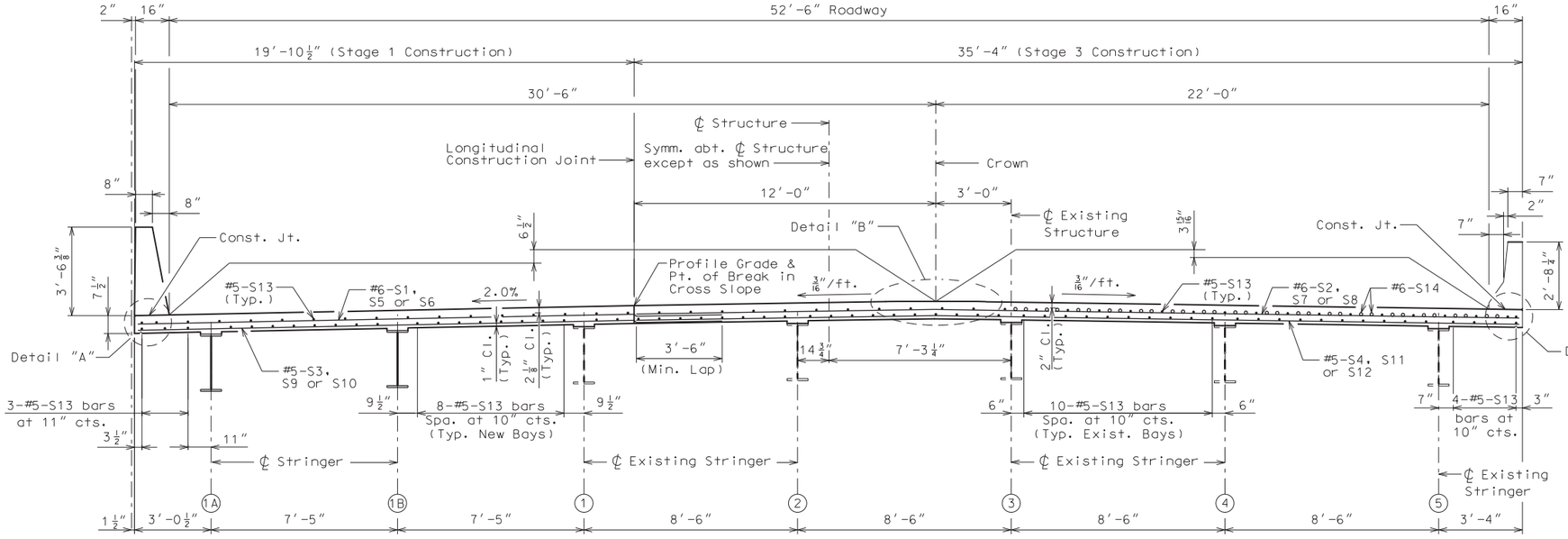
DATE PREPARED	
10/06/10	
ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	22
COUNTY	
GREENE	
JOB NO.	
J8P0605E	
CONTRACT ID.	
090626-802	
PROJECT NO.	
FAF-65-2(65)	
BRIDGE NO.	
A16491	

DESCRIPTION | DATE

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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



HALF SECTION NEAR MIDSPAN

HALF SECTION NEAR INT. BENTS

SECTION THRU SLAB
TYPICAL SECTION NEAR ℄ SPAN

Notes:

For plan of slab showing top reinforcement, see Sheet No. 24.

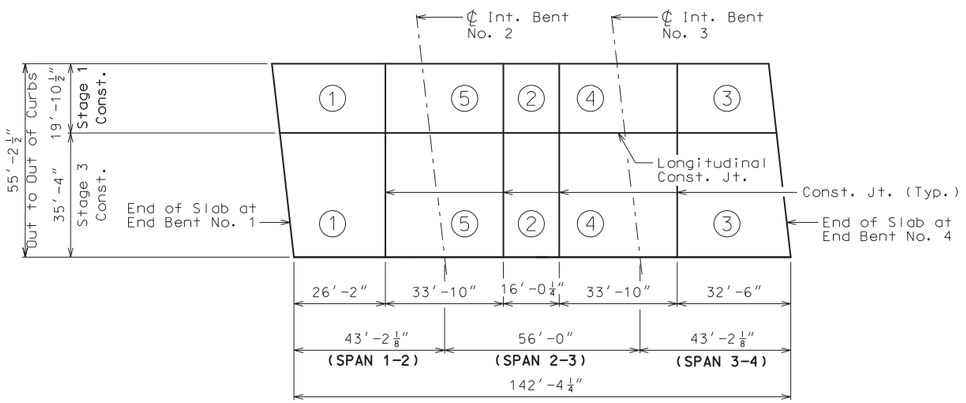
For plan of slab showing bottom reinforcement, see Sheet No. 25.

For details of staged construction, see Sheet Nos. 3 and 4.

For details and reinforcement of barriers, see Sheet Nos. 27 thru 32.

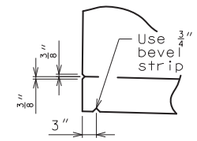
For theoretical bottom of slab elevations, see Sheet No. 21.

For theoretical slab haunch details and dead load deflection diagram, see Sheet No. 20.

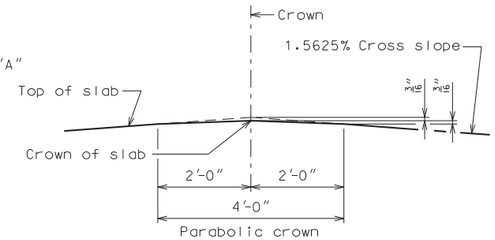


SLAB POUR PLAN

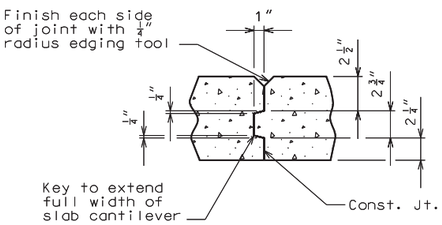
Note: Longitudinal dimensions are horizontal.



DETAIL "A"



DETAIL "B"



SLAB CONSTRUCTION JOINT DETAIL

	Sequence of Pours	Min. rate of pour cu. yds./hr.	
	Direction	With retarder	No retarder
Alternate "C" pours	1 + 5 + 2 + 4 + 3	25	25
	End to end		

Note: The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE

DATE PREPARED	10/06/10
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	23
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

DESCRIPTION

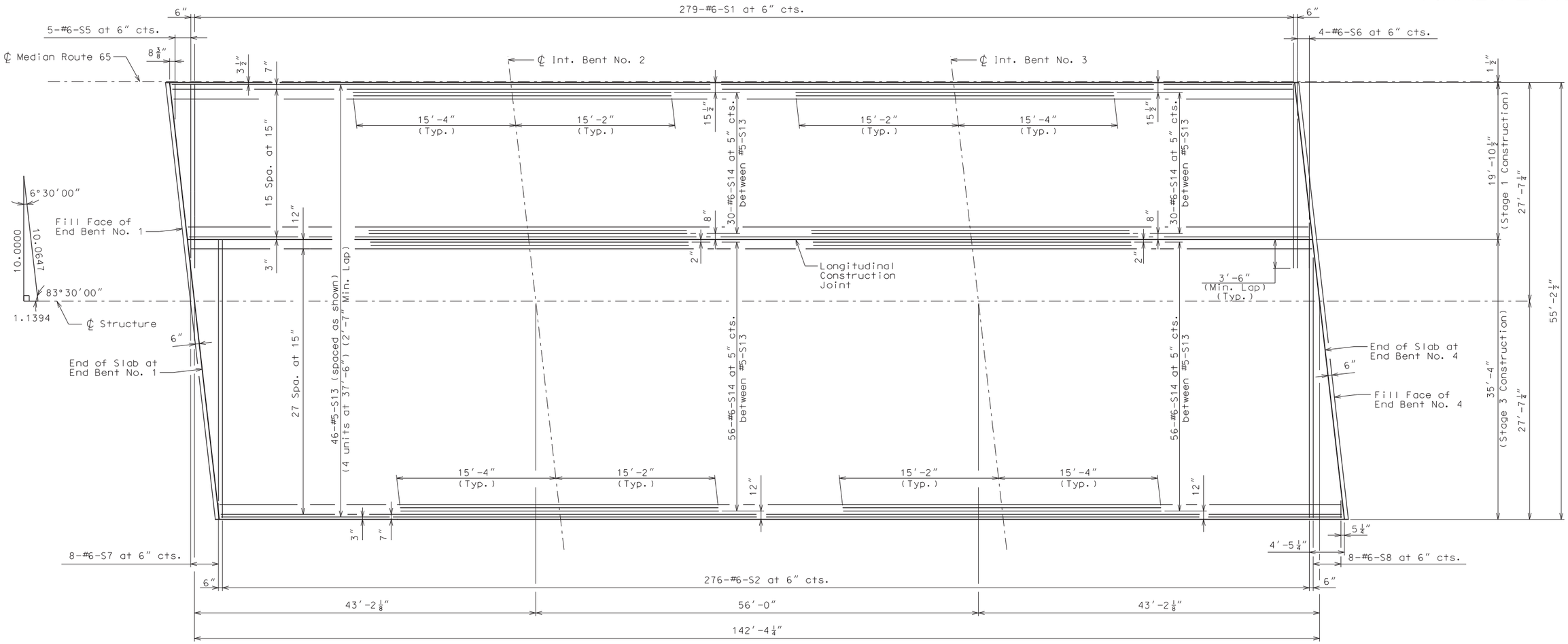
DATE

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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



PLAN OF SLAB SHOWING TOP REINFORCEMENT

Notes:

Longitudinal dimensions shown are horizontal.

For Plan of Slab Showing Bottom Reinforcement, see Sheet No. 25.

For Theoretical Bottom of Slab Elevations, see Sheet No. 21.

For Section Thru Slab, see Sheet No. 23.

For Slab Pouring Sequence, see Sheet No. 23.

For details and reinforcement of Safety Barrier Curbs, see Sheets No. 27 thru 32.

For details and locations of Slab Drains, see Sheet No. 26.

For details of staged construction, see Sheet Nos. 3 and 4.

For theoretical slab haunch details and dead load deflection, see Sheet No. 20.

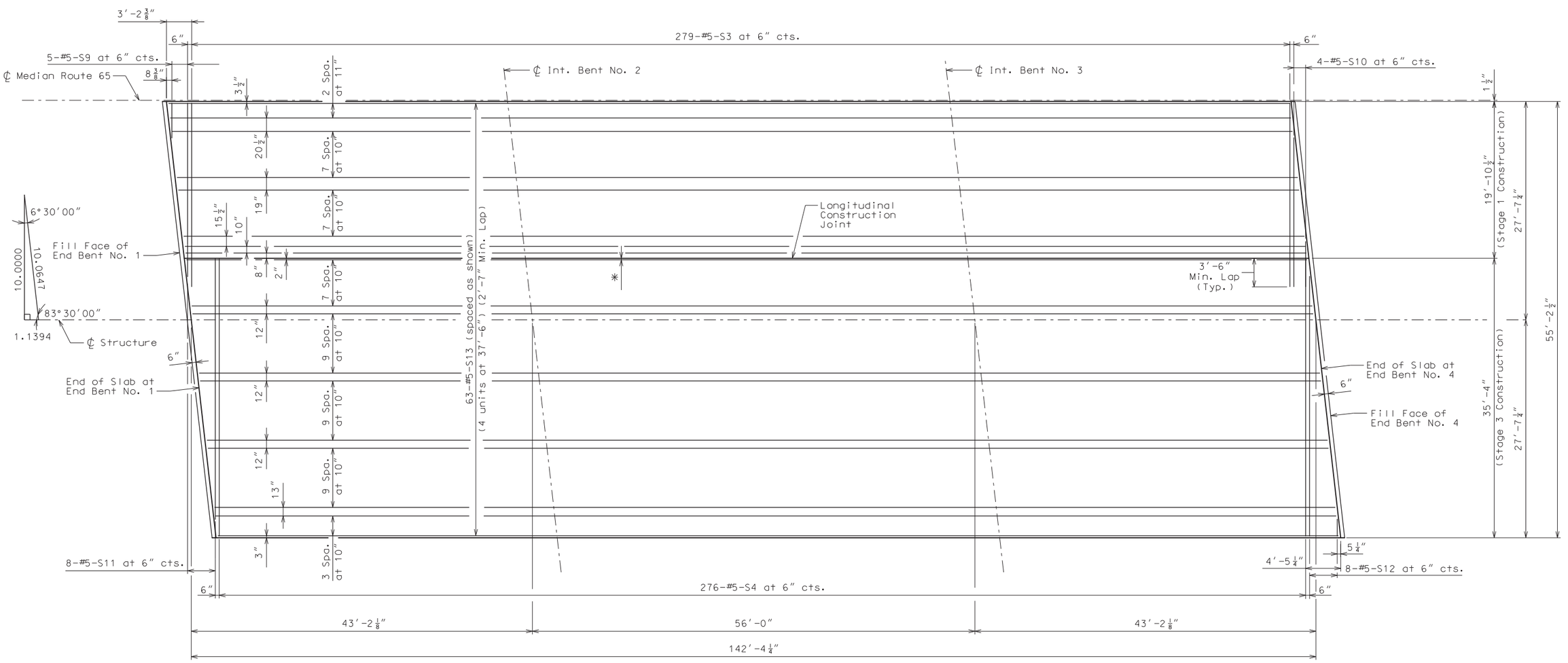
DATE PREPARED	
10/06/10	
ROUTE 65	STATE MO
DISTRICT BR	SHEET NO. 24
COUNTY GREENE	
JOB NO. J8P0605E	
CONTRACT ID. 090626-802	
PROJECT NO. FAF-65-2(65)	
BRIDGE NO. A16491	

DATE	DESCRIPTION

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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



PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Notes:

Longitudinal dimensions shown are horizontal.

For Plan of Slab Showing Top Reinforcement, see Sheet No. 24.

For Theoretical Bottom of Slab Elevations, see Sheet No. 21.

For Section Thru Slab, see Sheet No. 23.

For Slab Pouring Sequence, see Sheet No. 23.

For details and reinforcement of Safety Barrier Curbs, see Sheets No. 27 thru 32.

For details and locations of Slab Drains, see Sheet No. 26.

For details of staged construction, see Sheet Nos. 3 and 4.

For theoretical slab haunch details and dead load deflection, see Sheet No. 20.

* - Contractor shall adjust reinforcement at all longitudinal construction joints as needed to maintain 1½″ clear.

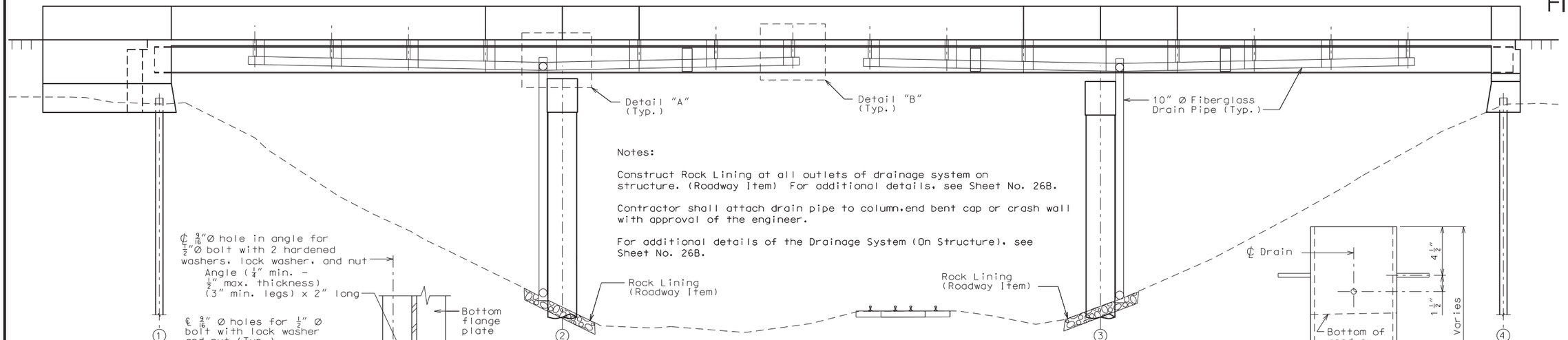
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED	
10/06/10	
ROUTE 65	STATE MO
DISTRICT BR	SHEET NO. 25
COUNTY GREENE	
JOB NO. J8P0605E	
CONTRACT ID. 090626-802	
PROJECT NO. FAF-65-2(65)	
BRIDGE NO. A16491	

DATE	DESCRIPTION

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



ELEVATION

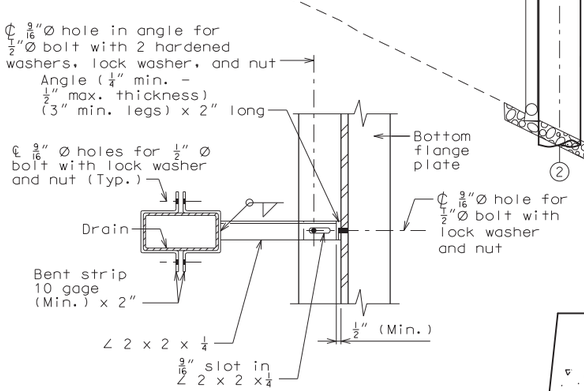
Note: Crash Wall not shown for clarity.

Notes:

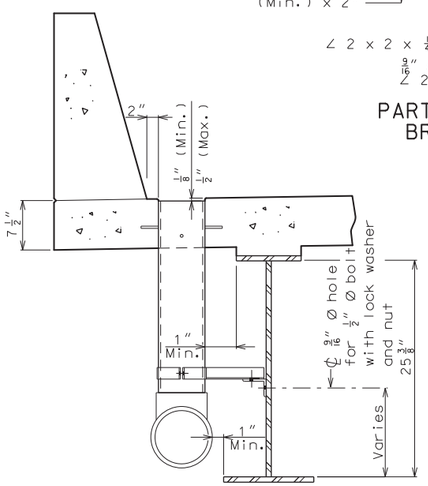
Construct Rock Lining at all outlets of drainage system on structure. (Roadway Item) For additional details, see Sheet No. 26B.

Contractor shall attach drain pipe to column,end bent cap or crash wall with approval of the engineer.

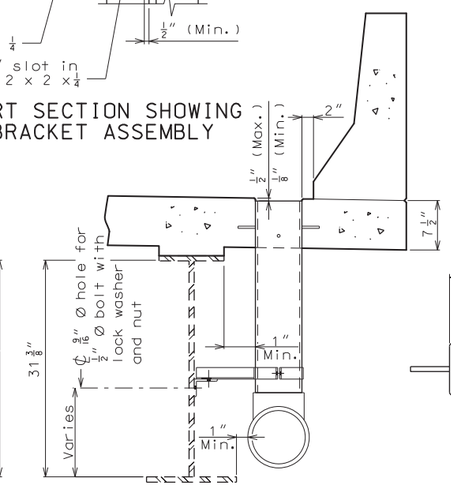
For additional details of the Drainage System (On Structure), see Sheet No. 26B.



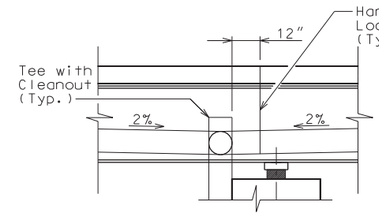
PART SECTION SHOWING BRACKET ASSEMBLY



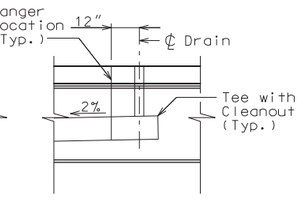
PART SECTION NEAR DRAIN (EAST SIDE)



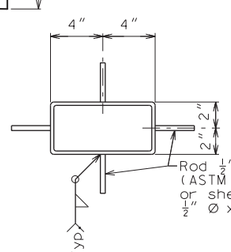
PART SECTION NEAR DRAIN (WEST SIDE)



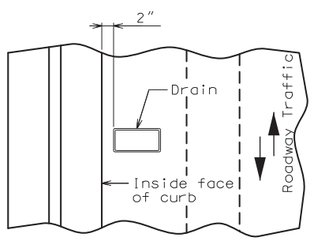
DETAIL "A"



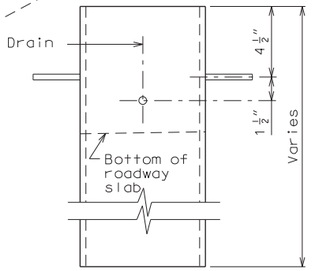
DETAIL "B"



PLAN OF DRAIN



PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN

Notes:

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.

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

Outside dimensions of drains are 8" x 4".

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

Shift reinforcing steel in field where necessary to clear drains.

The drains 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 bolt hole for the bracket assembly attachment shall be located on the Stringer shop drawings.

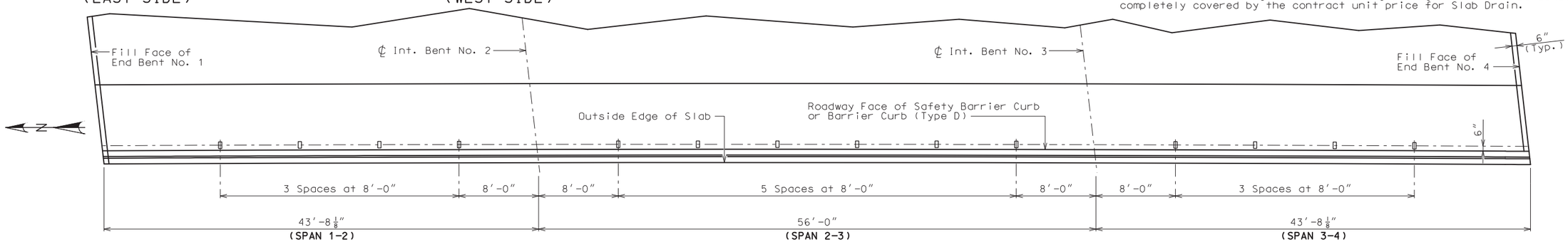
Coil inserts for attaching Drain System hangers to slab shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

The bolts required to attach the slab drain bracket assembly to the stringer shall be supplied by the girder fabricator.

Cost of slab drains and slab drain bracket assemblies for the Slab Drains is included in the contract unit price for Slab Drain.

Cost of brackets, pipes, hangers, and connectors for the Drainage System is included in the contract lump sum price for Drainage System (On Structure).

Cost of field drilling holes in existing stringer webs will be considered completely covered by the contract unit price for Slab Drain.



PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

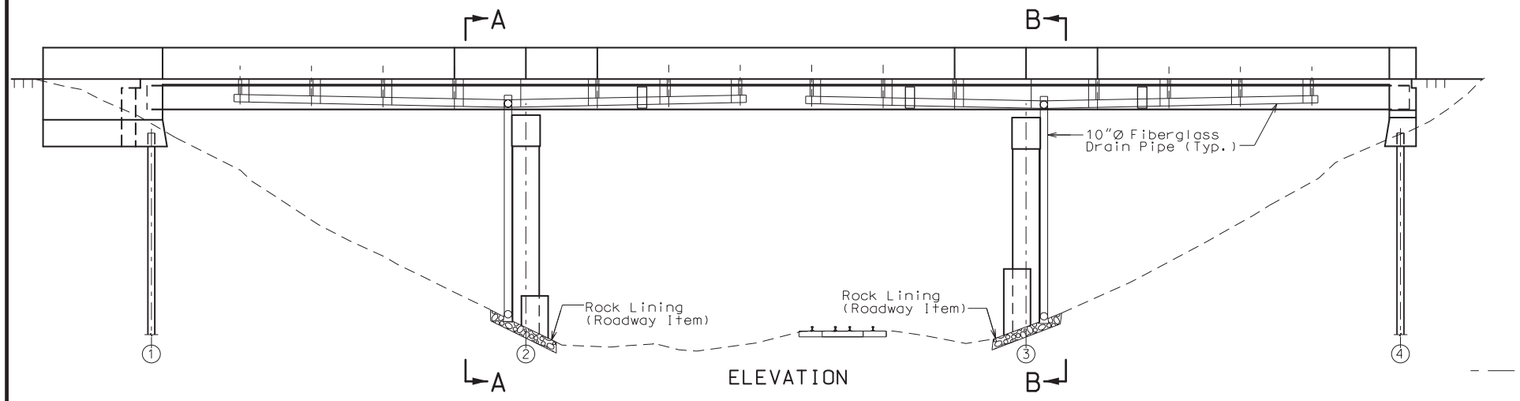
Note: All longitudinal dimensions along outside edge of slab. (West side shown, east side similar.)

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

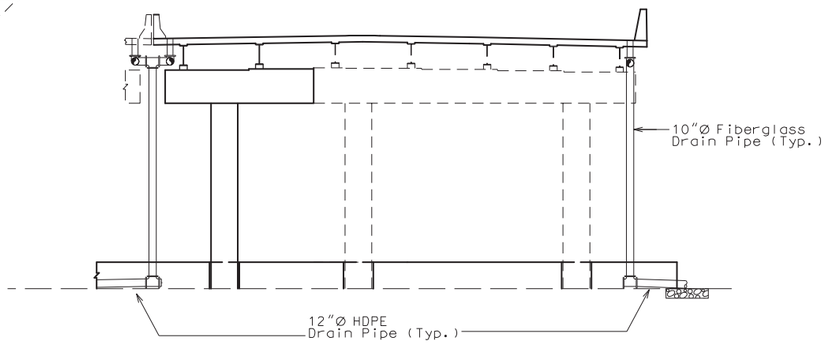
DATE PREPARED 08/09/11
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 26A
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION: New Sheet
DATE: 08/09/11

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

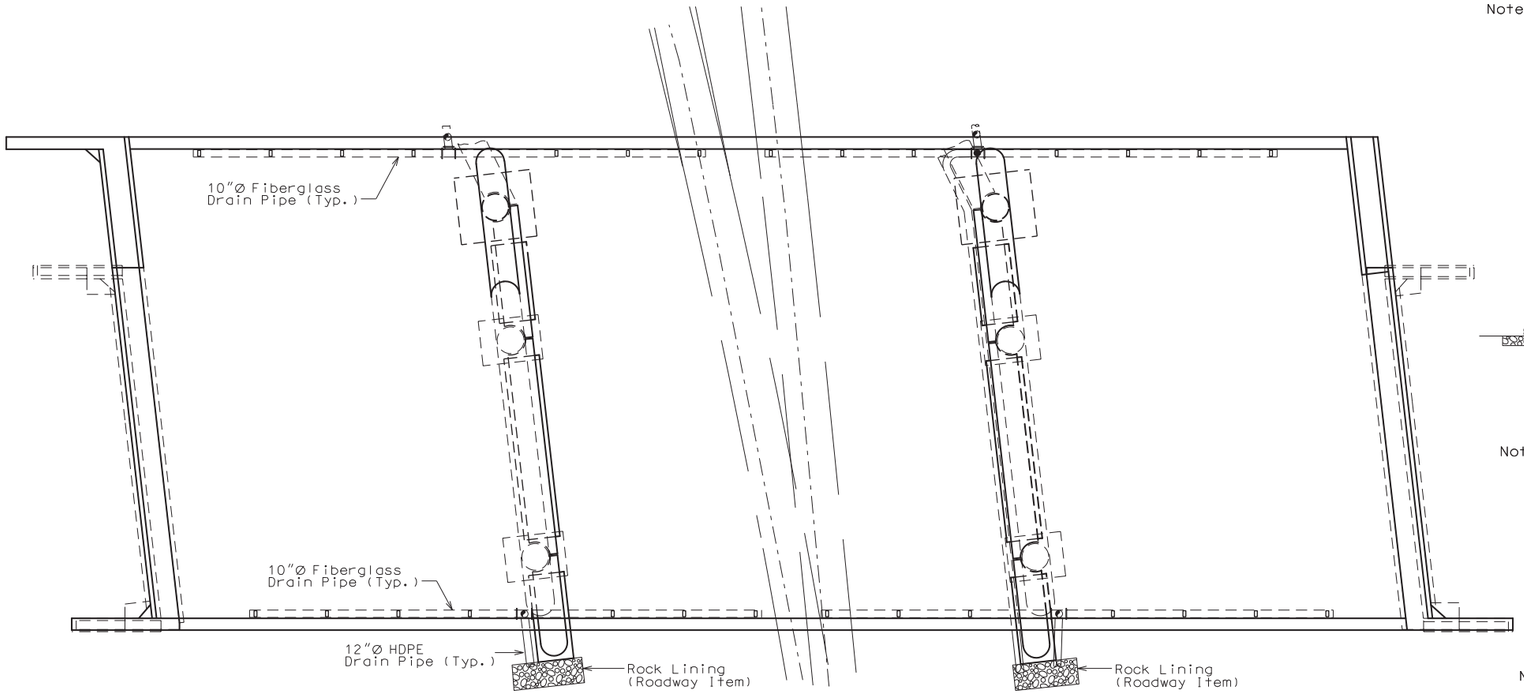


ELEVATION

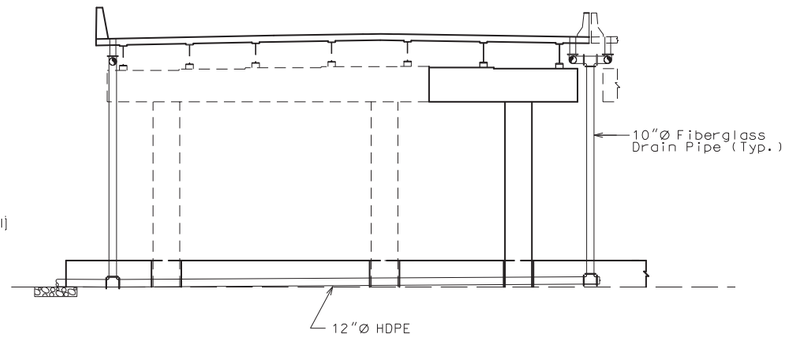


SECTION A-A

Note: Contractor shall attach drain pipe to columns, bent cap or crash wall with approval of the engineer.



PLAN



SECTION B-B

Note: Contractor shall attach drain pipe to columns, bent cap or crash wall with approval of the engineer.

Notes:

Construct Rock Lining at outlets of drainage system on structure. (Roadway Item)

Contractor shall attach drain pipe to columns, bent caps or crash walls with approval of the engineer.

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

Coil inserts for attaching Drain System hangers to slab shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

Cost of brackets, pipes, hangers, and connectors for the Drainage System is included in the contract lump sum price for Drainage System (On Structure).

DATE PREPARED
08/09/11

ROUTE	STATE
65	MO
DISTRICT	SHEET NO.
BR	26B

COUNTY
GREENE

JOB NO.
J8P0605E

CONTRACT ID.
090626-802

PROJECT NO.
FAF-65-2(65)

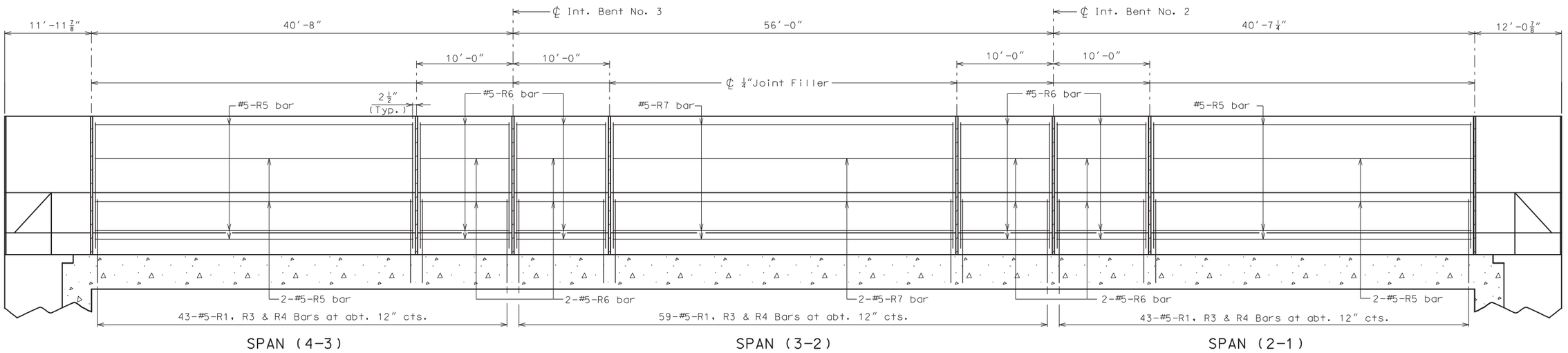
BRIDGE NO.
A16491

DATE	DESCRIPTION
08/09/11	1 New Sheet

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

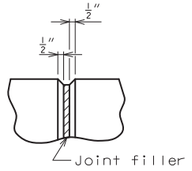
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

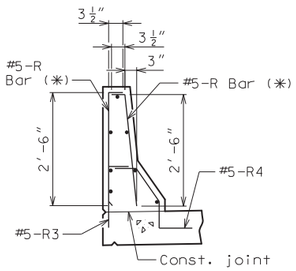


ELEVATION OF RIGHT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.

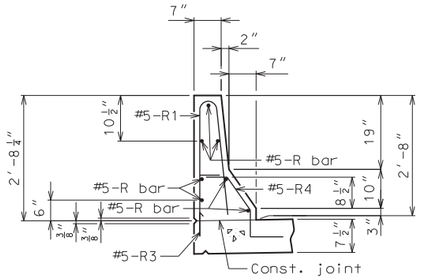


FILLED JOINT DETAIL



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.)

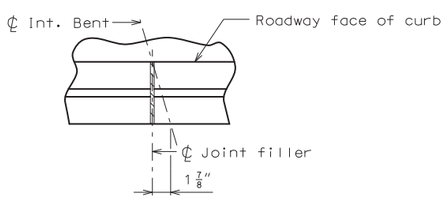


PART SECTION A-A

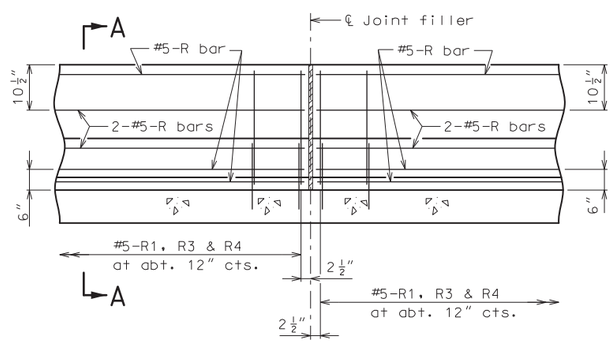
Notes:

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

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



PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION NEAR RIGHT SAFETY BARRIER CURB (CAST-IN-PLACE CONVENTIONAL FORMING OPTION)

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″ radius or a 3/4″ bevel, unless otherwise noted.

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

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

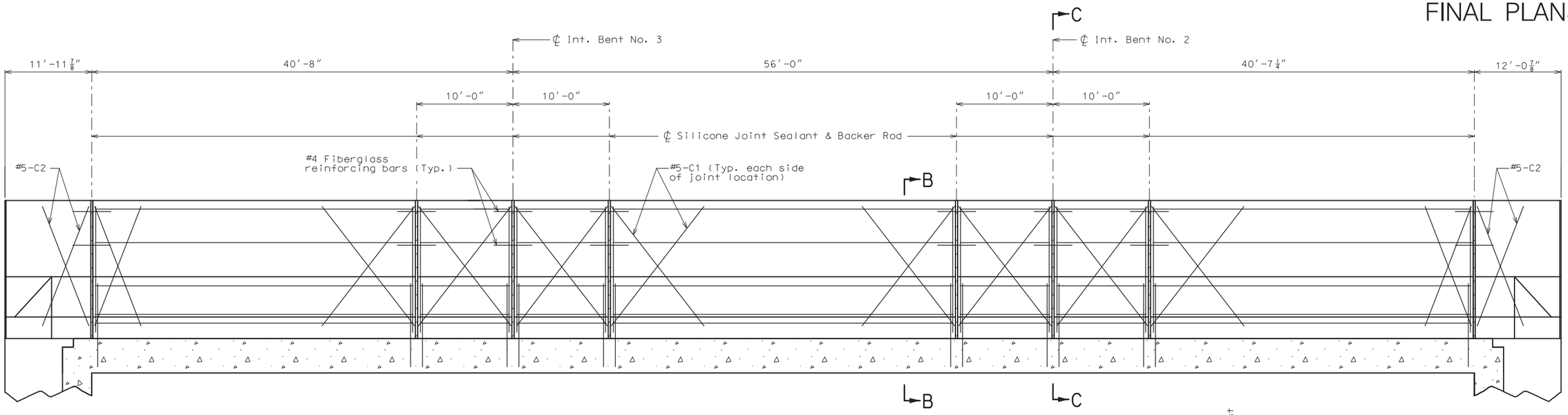
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 27
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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

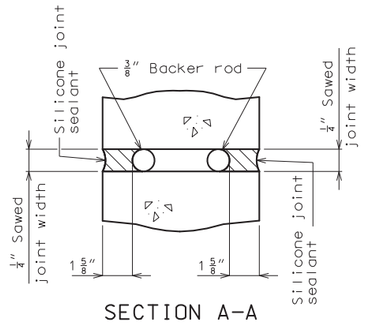
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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



ELEVATION OF RIGHT BARRIER (ROADWAY FACE)
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note: Longitudinal dimensions are horizontal.



SECTION A-A

Note:

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

Notes:

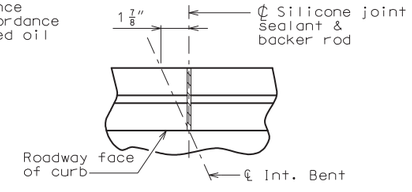
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.



PART PLAN SHOWING
SAFETY BARRIER CURB JOINT

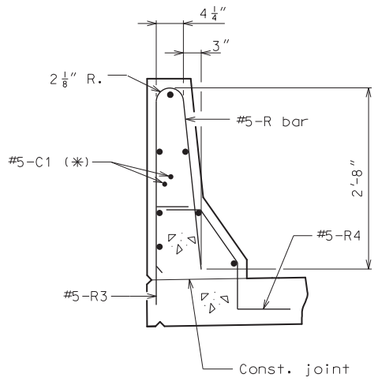
Notes:

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

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

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

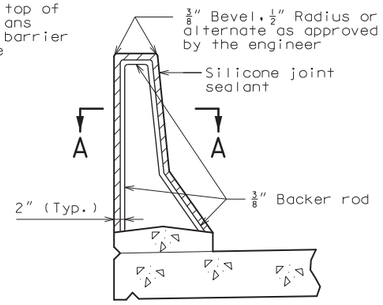
Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".



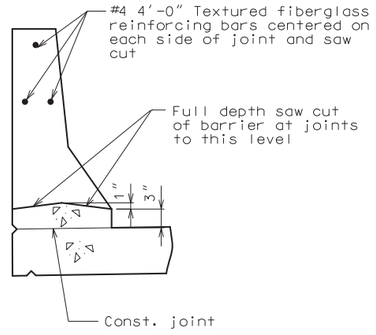
PART SECTION B-B

Note:

(*) Each each side of joint location.



SECTION THRU JOINT



PART SECTION C-C

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

(Right barrier curb shown.)

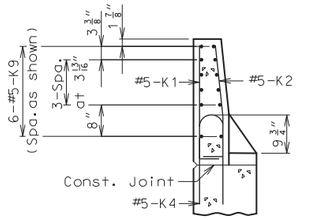
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

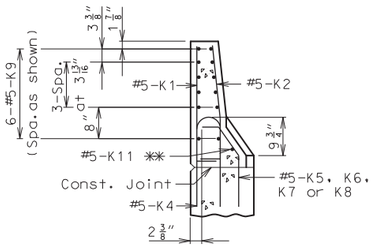
DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 28
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

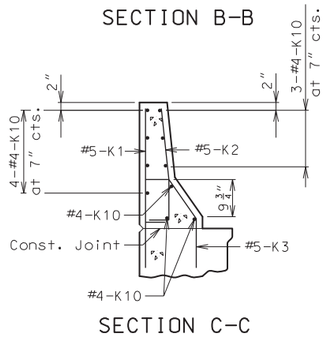
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



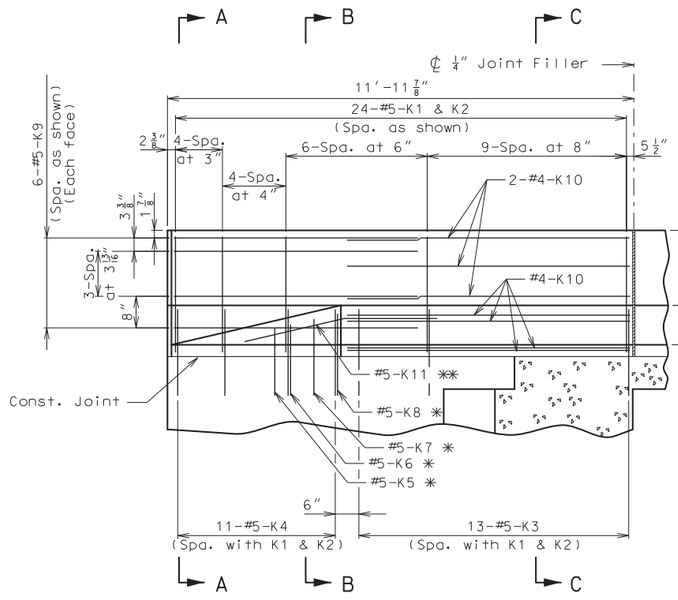
SECTION A-A



SECTION B-B

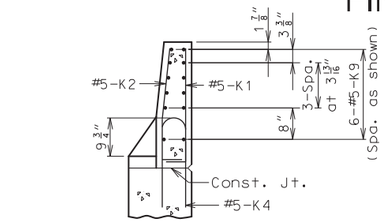


SECTION C-C

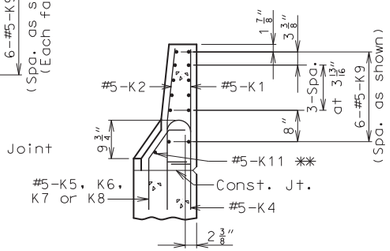


END BENT 4 ELEVATION

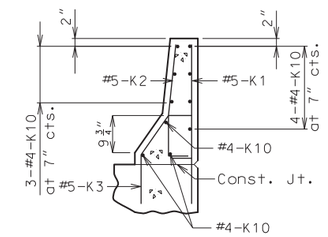
END BENT 1 ELEVATION



SECTION D-D



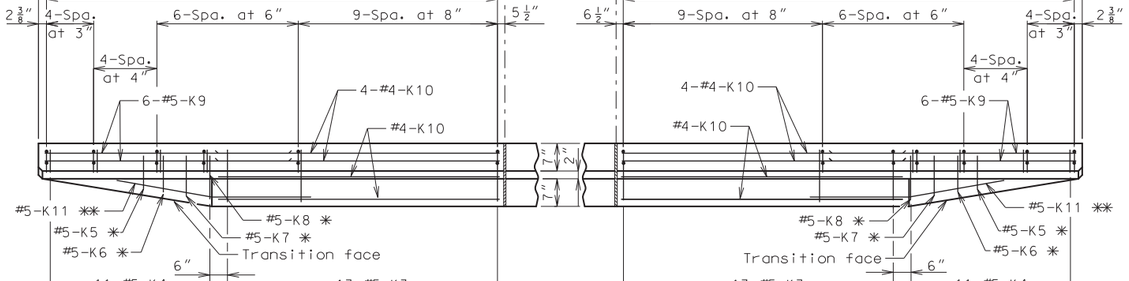
SECTION E-E



SECTION F-F

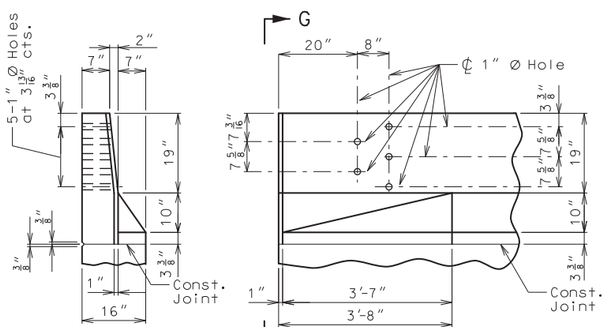
✳ Spaced with #5-K4 bars.

✳✳ Fit bar to follow transition face of curb.



END BENT 4 PLAN

END BENT 1 PLAN



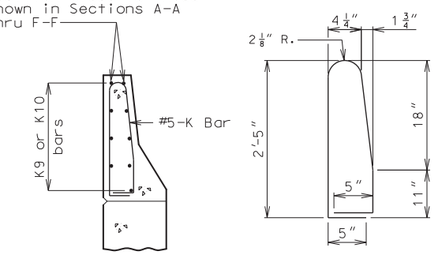
DETAILS OF GUARD RAIL ATTACHMENT

Notes: Use a minimum lap of 2'-0" between K9 and K10 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. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for "Safety Barrier Curb".

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

The top two K9 or K10 bars shall be kept with position close to those shown in Sections A-A thru F-F



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

K1-K2 BAR PERMISSIBLE ALTERNATE SHAPE (✳✳✳)

(✳✳✳) 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

(Right barrier curb shown)

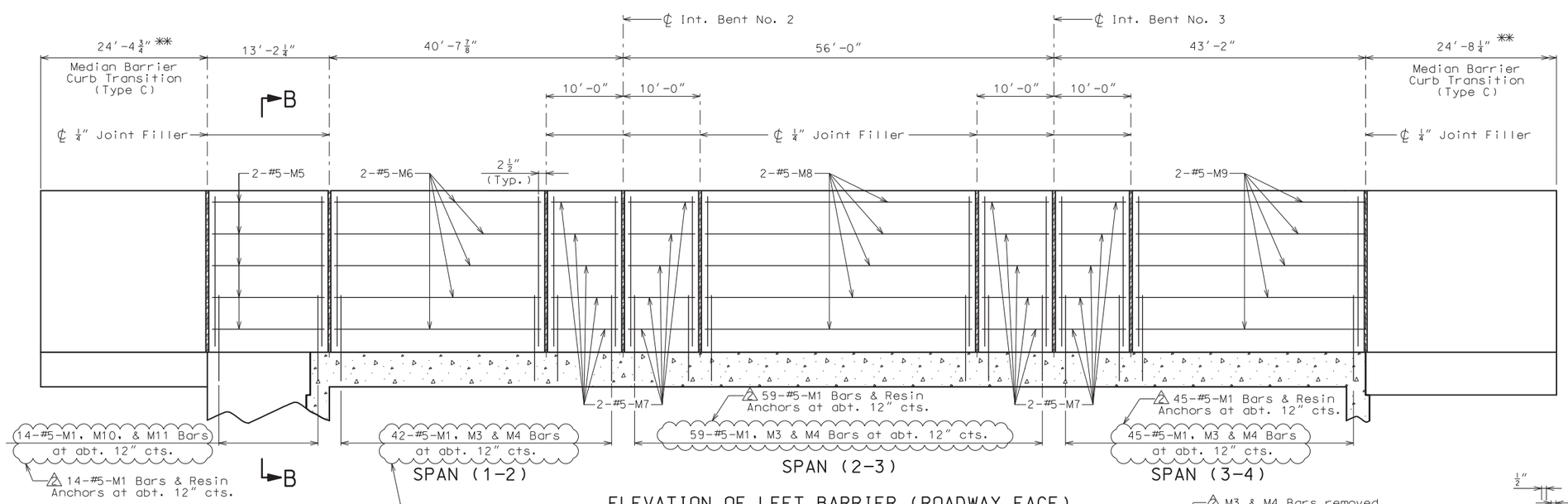
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 29
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

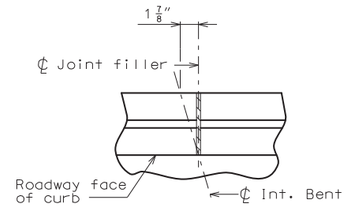
DESCRIPTION | DATE

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

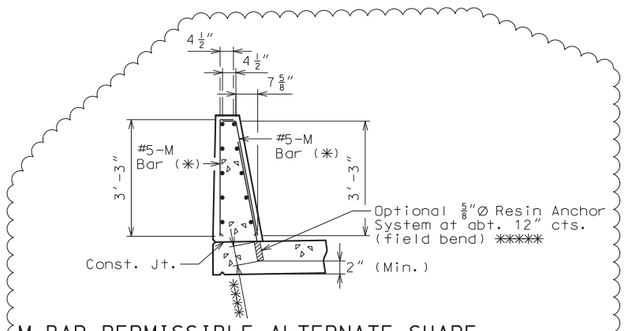


ELEVATION OF LEFT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.



PART PLAN SHOWING
SAFETY BARRIER CURB JOINT



M-BAR PERMISSIBLE ALTERNATE SHAPE
& OPTIONAL ANCHORING SYSTEM

△2 M3 & M4 Bars removed & Resin Anchors added.

Notes:

Use a minimum lap of 2′-11″ for #5 horizontal median barrier curb (Type D) bars.

The cross-sectional area above the slab = 3.49 sq. ft.

(*) The M1 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.)

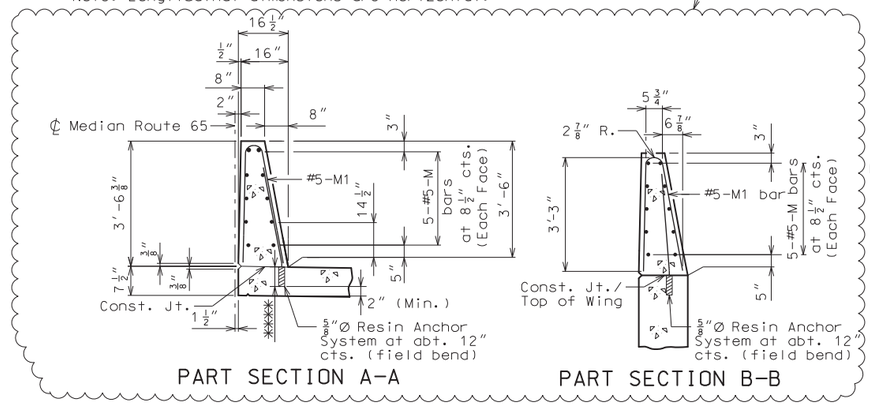
** For details of the median barrier curb transition (Type C), see Sheet No. 32.

(****) Manufacturer's embedment length, but not less than 5½″ min.

(*****) The resin anchoring system may be replaced with the optional anchoring system as shown, at the contractor's option.

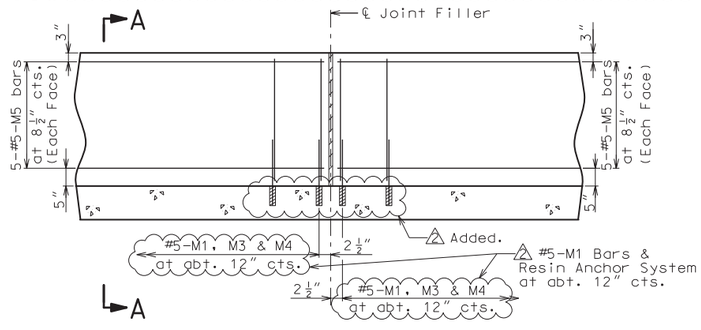
△2 Added.

△2 M3 & M4 Bars removed & Resin Anchors added.

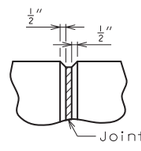


PART SECTION A-A

PART SECTION B-B



PART ELEVATION
(CAST-IN-PLACE CONVENTIONAL FORMING OPTION)



FILLED JOINT DETAIL

Notes:

Concrete in the barrier curb (Type D) shall be Class B-1.

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

All exposed edges of Barrier Curb (Type D) shall have either a ½″ radius or a ⅜″ bevel, unless otherwise noted.

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

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

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

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

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Barrier Curb (Type D).

The minimum embedment depth in concrete with f′c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5½″.

An epoxy coated #5 Grade 60 reinforcing bar 3′-0″ long shall be substituted for the ⅝″Ø threaded rod.

△2 Added.

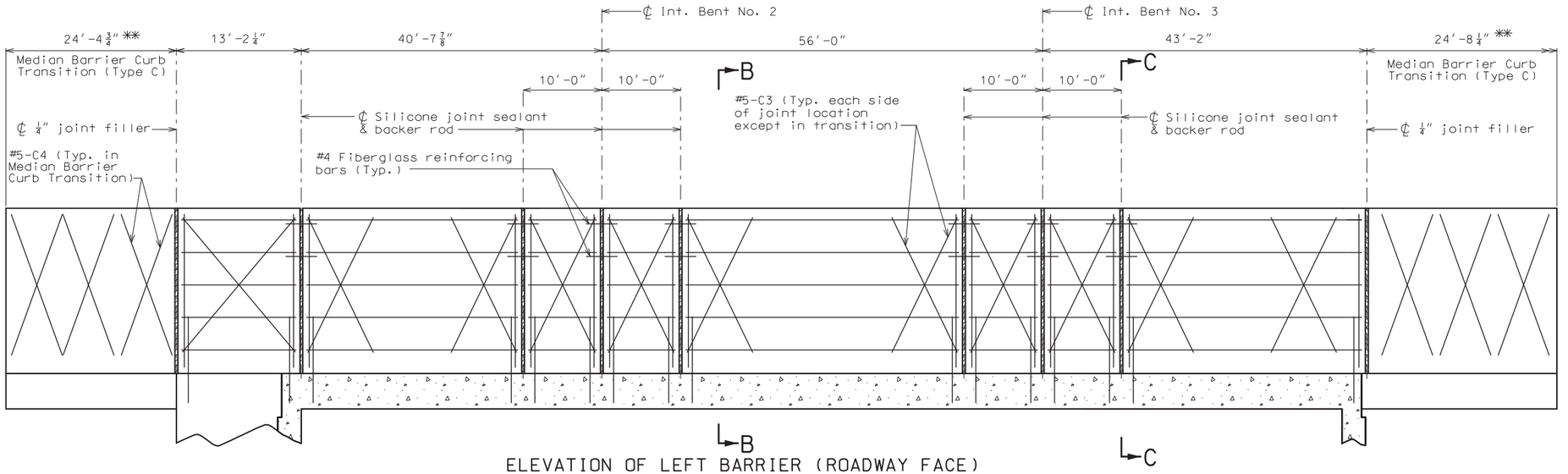
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 30
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

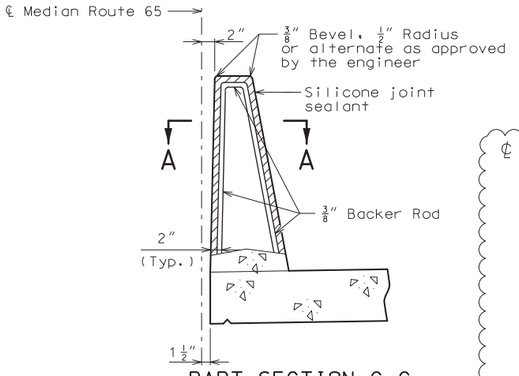
DATE	DESCRIPTION
09/15/10	△2 M bars changed to Resin Anchors.

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

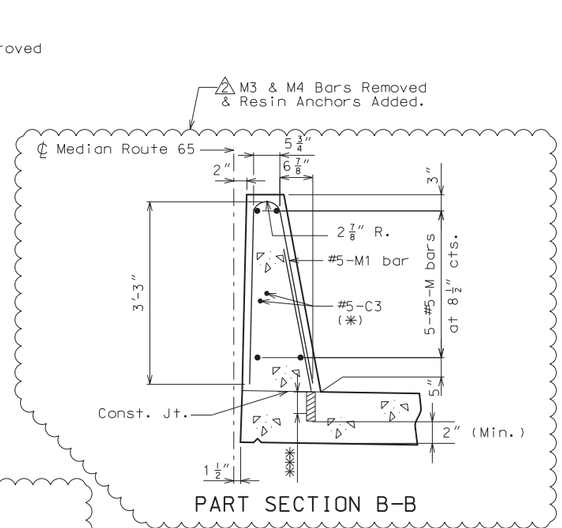


ELEVATION OF LEFT BARRIER (ROADWAY FACE)

Note: Longitudinal dimensions are horizontal.



PART SECTION C-C



PART SECTION B-B

△Added.

Notes:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be considered completely covered by the contract unit price for Barrier Curb (Type D).

The minimum embedment depth in concrete with f′c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5½″.

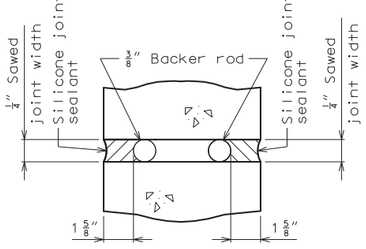
An epoxy coated #5 Grade 60 reinforcing bar 3′-0″ long shall be substituted for the ⅝″Ø threaded rod.

Note:

(*) Each side of joint location, (except in transition).

(***) Manufacturer's embedment length but not less than 5½″ min.

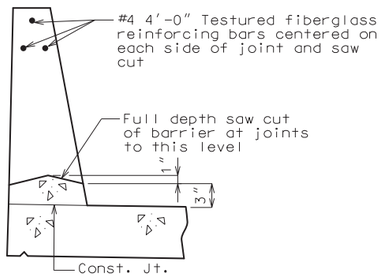
△Added.



SECTION A-A

Note:

Cost of silicone joint sealant and backer rod, complete-in-place, will be considered completely covered by the contract unit price for barrier curb (Type D).



SECTION C-C

Notes:

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

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

For Slip-Form Option, all sides of the barrier curb (Type D) shall have a vertically broomed finish and the curb top shall have a transversely broomed finish.

Concrete in the Barrier Curb (Type D) shall be Class B-1.

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

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

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

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

The curb shall be cured by application of Type 1-D or Type 2 Liquid Membrane-Forming Compound in accordance with Sec 1055. Surface sealing for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

** For details of median barrier curb transition (Type C), see Sheet No. 32.

OPTIONAL SLIP-FORM BARRIER CURB (TYPE D)

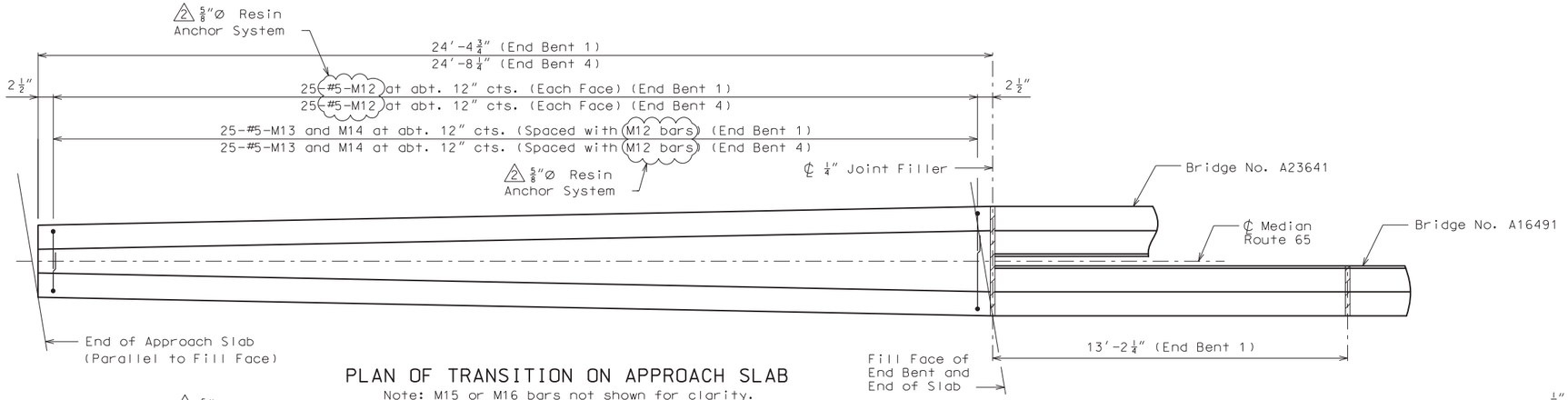
Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 31
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

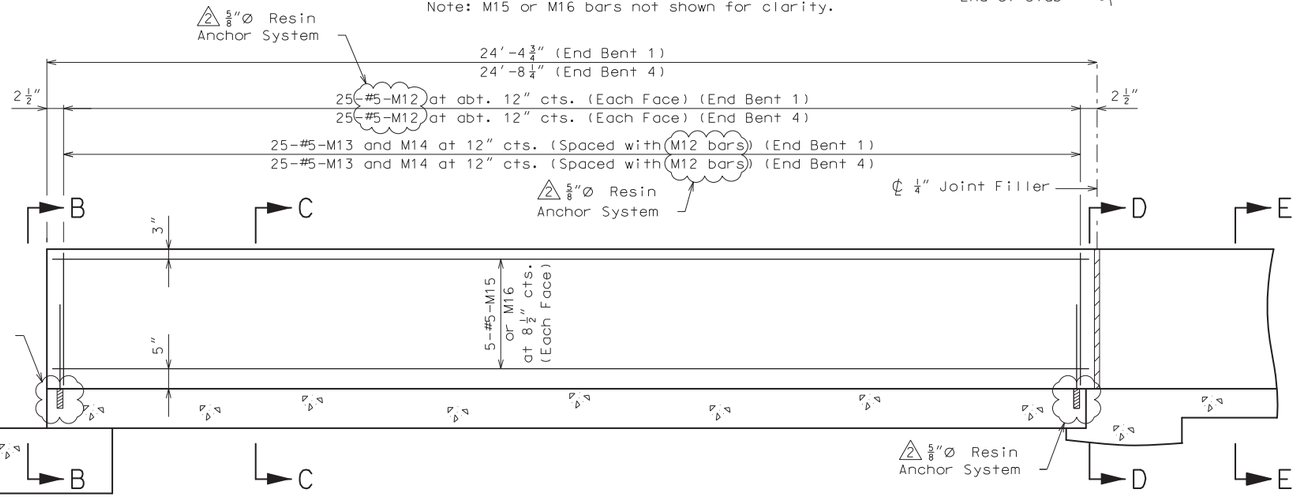
DATE	DESCRIPTION
△09/15/10	M bars changed to Resin Anchors.

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

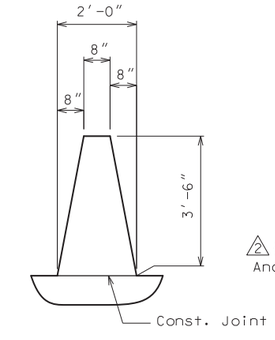


PLAN OF TRANSITION ON APPROACH SLAB

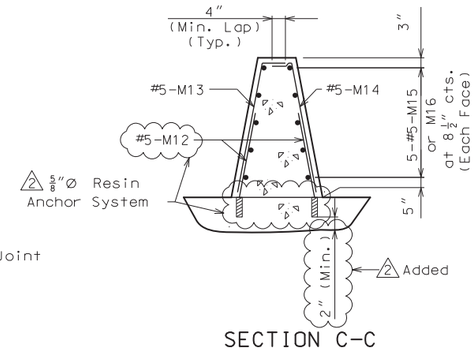
Note: M15 or M16 bars not shown for clarity.



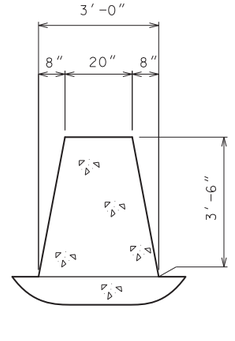
ELEVATION OF TRANSITION ON APPROACH SLAB



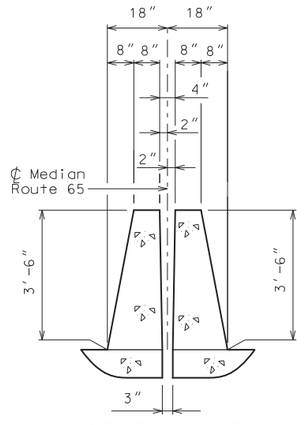
ELEVATION B-B



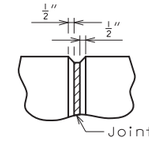
SECTION C-C



SECTION D-D



SECTION E-E



FILLED JOINT DETAIL

Notes:

Concrete in the median barrier curb transition (Type C) shall be Class B-1.

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

All exposed edges of median barrier curb transition (Type C) shall have either a 1/2" radius or a 3/8" bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete-in-place will be completely covered by the contract unit price for median barrier curb transition (Type C) per linear foot.

Measurement of median barrier curb transition (Type C) is to the nearest linear foot for each structure, measured along the outside top of slab from end of transition to end of transition.

Concrete traffic barrier delineators shall be placed on top of the median barrier curb transition (Type C) as shown on Missouri Standard Plans delineators will be considered completely covered by the contract unit price for "Median Barrier Curb Transition (Type C)".

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

For details of the approach slab, see Sheet No. 33.

For details of the barrier curb (Type D), see Sheet Nos. 30 and 31.

⚠2 Added

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor system complete-in-place will be completely covered by the contract unit price bid for Median Barrier Curb Transition (Type C).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor system shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #5 Grade 60 reinforcing bar 3'-0" long shall be substituted for the 5/8" Ø threaded rod.

DATE PREPARED: 10/06/10
ROUTE: 65 | STATE: MO
DISTRICT: BR | SHEET NO.: 32
COUNTY: GREENE
JOB NO.: J8P0605E
CONTRACT ID.: 090626-802
PROJECT NO.: FAF-65-2(65)
BRIDGE NO.: A16491

DATE	DESCRIPTION
09/15/10	⚠2 M12 bars changed to Resin Anchors.

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION

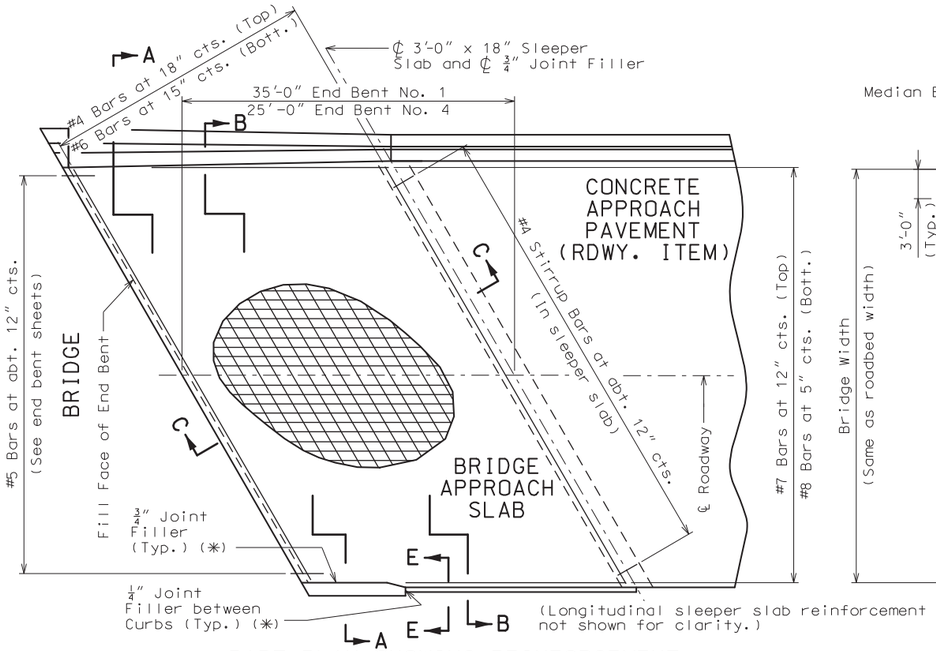
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

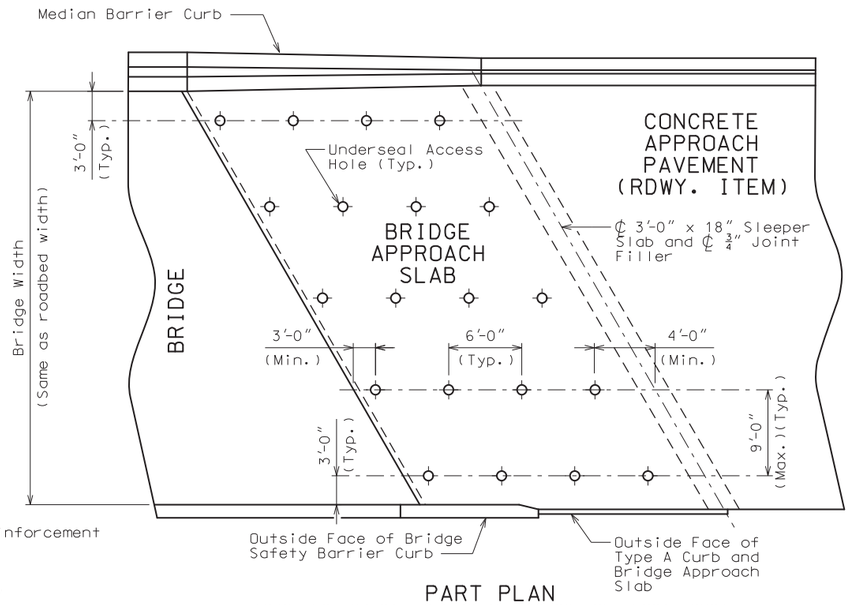
DETAILS OF MEDIAN BARRIER CURB TRANSITION (TYPE C)

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

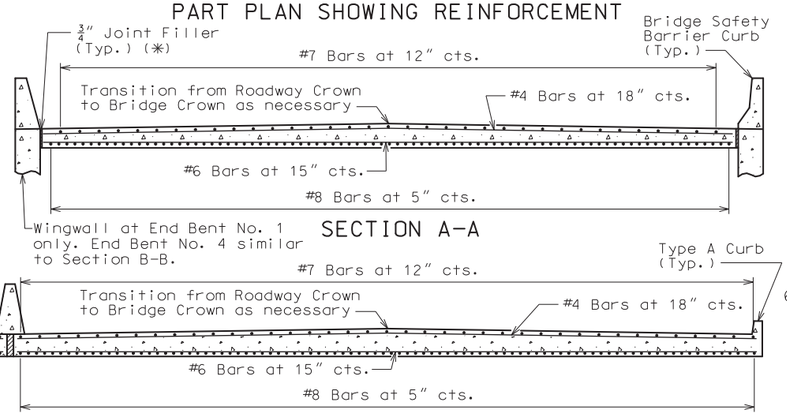
FINAL PLANS



PART PLAN SHOWING REINFORCEMENT



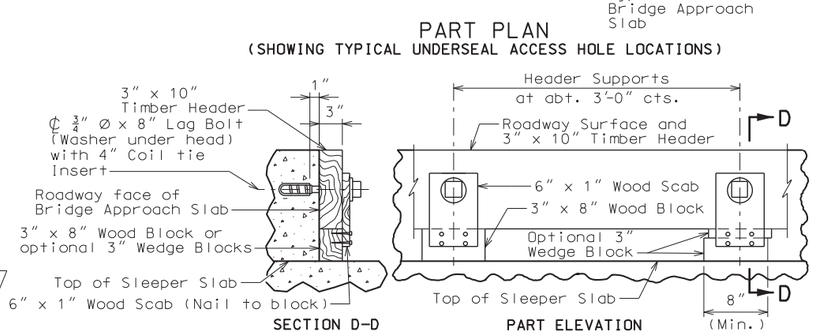
PART PLAN
(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



SECTION A-A

SECTION B-B

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

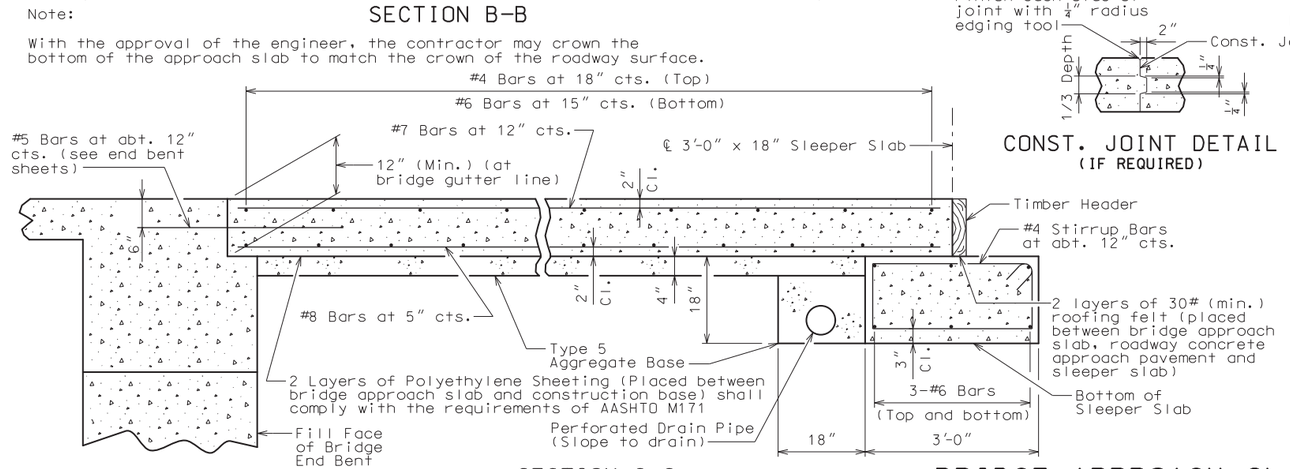


SECTION D-D

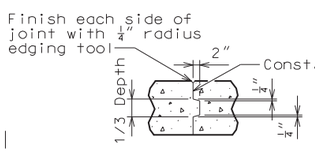
PART ELEVATION

Note: Remove timber header when concrete pavement is placed.

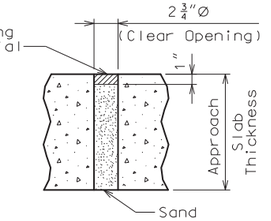
DETAILS OF TIMBER HEADER



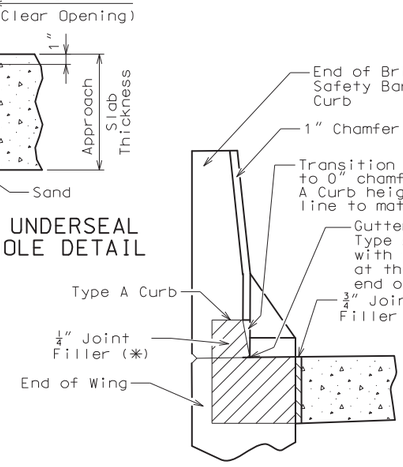
SECTION C-C



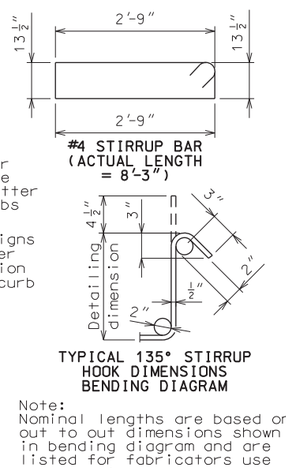
CONST. JOINT DETAIL
(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL



SECTION E-E
(BETWEEN CURBS)



TYPICAL 135° STIRRUP HOOK DIMENSIONS BENDING DIAGRAM

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

GENERAL NOTES:

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

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

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

Minimum clearance to reinforcing steel shall be 1½", unless otherwise shown.

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

Mechanical bar splices shall be in accordance with Sec 706.

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

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

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

Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge or semi-deep slab.

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

For Concrete Approach Pavement details, see roadway plans.

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

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

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

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

DATE PREPARED	10/06/10
ROUTE	65
STATE	MO
DISTRICT	BR
SHEET NO.	33
COUNTY	GREENE
JOB NO.	J8P0605E
CONTRACT ID.	090626-802
PROJECT NO.	FAF-65-2(65)
BRIDGE NO.	A16491

DESCRIPTION | DATE

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

BRIDGE APPROACH SLAB

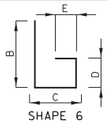
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUBSTRUCTURE																									
			INT BT NO 2																									
7	8	D201	FOOTING		18		X			8	0.000													9	10	9	10	184
5	8	D202	FOOTING		18		X			7	0.000													8	10	8	10	118
13	8	D203	FOOTING		17		X			6	11.000													7	10	7	10	272
2	6	D204	FOOTING		10		X			———		4	4.000	7	6.000	———								16	2	15	10	48
77	5	D205	WALL		17		X			3	7.000													4	2	4	2	335
3	6	D206	WALL		20		X			9	5.000													9	5	9	5	42
3	6	D207	WALL		20		X			20	1.000													20	1	20	1	90
3	6	D208	WALL		20		X			8	5.000													8	5	8	5	38
41	4	D209	WALL		13	S	X			3	9.000	21	000	3	9.000	21	000							11	9	11	6	315
8	9	H201	BEAM		17		X			14	8.000													15	11	15	11	433
8	9	H202	BEAM		20		X			14	8.000													14	8	14	8	399
6	6	H203	BEAM		20		X			14	8.000													14	8	14	8	132
8	6	H204	BEAM		20		X			9	11.000													9	11	9	11	119
5	6	H205	BEAM		7		X			3	7.000	2	11.000											8	10	8	10	66
7	5	H206	WALL		7		X			3	2.000	2	9.000											7	11	7	11	58
6	5	H207	WALL		20		X			9	5.000													9	5	9	5	59
6	5	H208	WALL		20		X			8	0.000													8	0	8	0	50
6	5	H209	WALL		20		X			23	11.000													23	11	23	11	150
6	5	H210	WALL		20		X			20	10.000													20	10	20	10	130
6	5	H211	WALL		20		X			14	6.000													14	6	14	6	91
6	5	H212	WALL		20		X			11	5.000													11	5	11	5	71
5	6	H213	WALL		20		X			9	5.000													9	5	9	5	71
5	6	H214	WALL		20		X			23	11.000													23	11	23	11	180
5	6	H215	WALL		20		X			14	6.000													14	6	14	6	109
26	4	P201	COLUMN		16		X			2	9.000													9	8	9	8	168
9	6	U201	BEAM		13	S	X			2	11.000	3	1.000	2	11.000	3	1.000							13	4	12	10	173
12	6	U202	BEAM		13	S	X			2	11.000	3	5.000	2	11.000	3	5.000							14	0	13	6	243
6	6	U203	BEAM		10	S	X			———		3	5.000	2	11.000	———								9	9	9	5	85
1	6	U204	BEAM		13	S	X			2	9.000	3	5.000	2	9.000	3	5.000							13	8	13	2	20
1	6	U205	BEAM		13	S	X			2	5.000	3	5.000	2	5.000	3	5.000							13	0	12	6	19
13	8	V201	COLUMN		20		X			27	10.000													27	10	27	10	966
90	5	V202	WALL		20		X			8	8.000													8	8	8	8	814
4	W5	W201	BEAM		22		X			1	6.000	9	125											26	1	26	1	18

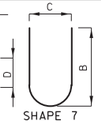
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUBSTRUCTURE																									
			INT BT NO 3																									
7	8	D301	FOOTING		18		X			8	0.000													9	10	9	10	184
5	8	D302	FOOTING		18		X			7	0.000													8	10	8	10	118
13	8	D303	FOOTING		17		X			6	11.000													7	10	7	10	272
2	6	D304	FOOTING		10		X			———		4	4.000	7	6.000	———								16	2	15	10	48
77	5	D305	WALL		17		X			3	7.000													4	2	4	2	335
3	6	D306	WALL		20		X			9	5.000													9	5	9	5	42
3	6	D307	WALL		20		X			20	1.000													20	1	20	1	90
3	6	D308	WALL		20		X			8	5.000													8	5	8	5	38
41	4	D309	WALL		13	S	X			3	9.000	21	000	3	9.000	21	000							11	9	11	6	315
8	9	H301	BEAM		17		X			14	8.000													15	11	15	11	433
8	9	H302	BEAM		20		X			14	8.000													14	8	14	8	399
6	6	H303	BEAM		20		X			14	8.000													14	8	14	8	132
8	6	H304	BEAM		20		X			9	11.000													9	11	9	11	119
5	6	H305	BEAM		7		X			3	7.000	2	11.000											8	10	8	10	66
9	5	H306	WALL		7		X			3	2.000	2	9.000											7	11	7	11	74
8	5	H307	WALL		20		X			9	5.000													9	5	9	5	79
8	5	H308	WALL		20		X			8	0.000													8	0	8	0	67
8	5	H309	WALL		20		X			23	11.000													23	11	23	11	200
8	5	H310	WALL		20		X			20	10.000													20	10	20	10	174
8	5	H311	WALL		20		X			14	6.000													14	6	14	6	121
8	5	H312	WALL		20		X			11	5.000													11	5	11	5	95
5	6	H313	WALL		20		X			9	5.000													9	5	9	5	71
5	6	H314	WALL		20		X			23	11.000													23	11	23	11	180
5	6	H315	WALL		20		X			14	6.000													14	6	14	6	109
25	4	P301	COLUMN		16		X			2	9.000													9	8	9	8	161
9	6	U301	BEAM		13	S	X			2	11.000	3	1.000	2	11.000	3	1.000							13	4	12	10	173
12	6	U302	BEAM		13	S	X			2	11.000	3	8.000	2	11.000	3	8.000							14	6	14	0	252
6	6	U303	BEAM		10	S	X					3	8.000	2	11.000									10	3	9	11	89
1	6	U304	BEAM		13	S	X			2	9.000	3	8.000	2	9.000	3	8.000							14	2	13	8	21
1	6	U305	BEAM		13	S	X			2	5.000	3	8.000	2	5.000	3	8.000							13	6	13	0	20
13	8	V301	COLUMN		20		X			27	5.000													27	5	27	5	952
90	5	V302	WALL		20		X			11	8.000													11	8	11	8	1095
4	W5	W301	BEAM		22		X			1	6.000	9	125											26	1	26	1	18

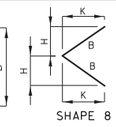
SHAPE 6



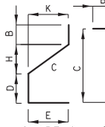
SHAPE 7



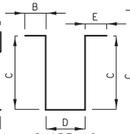
SHAPE 8



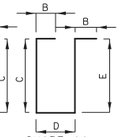
SHAPE 9



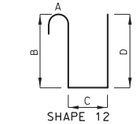
SHAPE 10



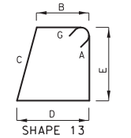
SHAPE 11



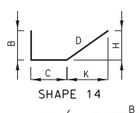
SHAPE 12



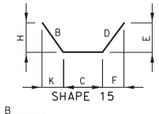
SHAPE 13



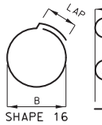
SHAPE 14



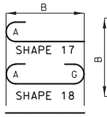
SHAPE 15



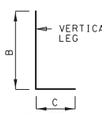
SHAPE 16



SHAPE 17



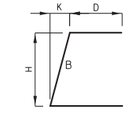
SHAPE 18



SHAPE 19

SHAPE 20

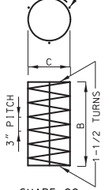
SHAPE 21



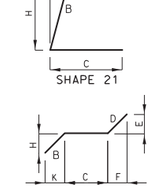
SPOT WELD AASHTO M32 SIZE W5 WIRE (TYP.)



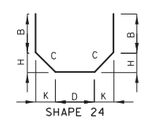
SHAPE 22



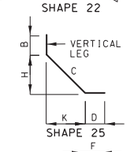
SHAPE 23



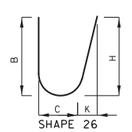
SHAPE 24



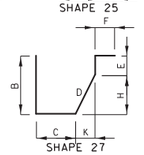
SHAPE 25



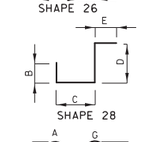
SHAPE 26



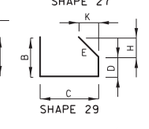
SHAPE 27



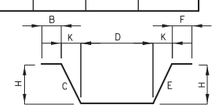
SHAPE 28



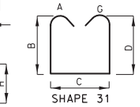
SHAPE 29



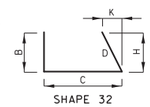
SHAPE 30



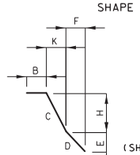
SHAPE 31



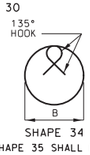
SHAPE 32



SHAPE 33

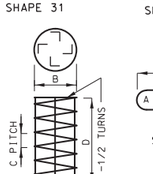


SHAPE 34

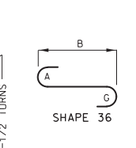


(SHAPE 35 SHALL BE A DEFORMED OR PLAIN SPIRAL BAR OR WIRE.)

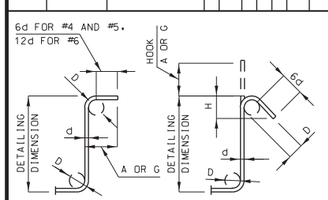
SHAPE 35



SHAPE 36

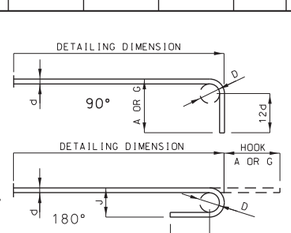


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° 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		90° HOOKS
		A OR G	J	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.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

FINAL PLANS

DATE PREPARED 10/06/10

ROUTE 65 | STATE MO

DISTRICT BR | SHEET NO. 34

COUNTY GREENE

JOB NO. J8P0605E

CONTRACT ID. 090626-802

PROJECT NO. FAF-65-2(65)

BRIDGE NO. A16491

DESCRIPTION	DATE

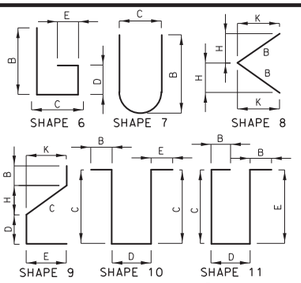
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

BILL OF REINFORCING STEEL

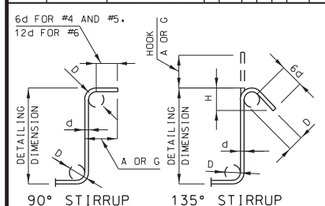
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	B IN.	C FT. IN.	C IN.	D FT. IN.	D IN.	E FT. IN.	E IN.	F FT. IN.	F IN.	H FT. IN.	H IN.	K FT. IN.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUPERSTRUCTURE																									
			END BT NO 1																									
5	6	F101	WING BRACE		23					14.000		4 11.000		14.000		10.500		9.375		10.500		9.375		7	3	7	2	54
4	6	F102	DIAPHRAGM		21					2 7.000		———		4 9.000						2 6.750		3.500		7	4	7	2	43
9	6	F103	WING BRACE		23					14.000		5 5.000		14.000		9.375		10.500		9.375		10.500		7	9	7	8	104
3	6	F104	DIAPHRAGM		21					2 8.000		4 9.000		———						2 7.750		3.625		7	5	7	3	33
12	6	H101	BEAM		20					14 4.000														14	4	14	4	258
4	6	H102	BEAM		20			V	1	11 8.500														11	9	11	9	
			INCREMENT=							11 5.000														11	5	11	5	70
			1.125 INCH																									
7	6	H103	DIAPHRAGM		20					23 1.000														23	1	23	1	243
9	6	H104	DIAPHRAGM		20					35 3.000														35	3	35	3	477
2	6	H105	DIAPHRAGM		20					11 4.000														11	4	11	4	34
4	6	H106	DIAPHRAGM	E	20					23 6.000														23	6	23	6	141
4	6	H107	DIAPHRAGM	E	20					35 3.000														35	3	35	3	212
53	5	H108	DIAPHRAGM	E	20					2 6.000														2	6	2	6	138
4	8	H109	WING	E	20					11 6.000														11	6	11	6	123
6	8	H110	WING		20					11 6.000														11	6	11	6	184
10	6	H111	WING		20					10 6.000														10	6	10	6	158
10	6	H112	WING		20					8 10.000														8	10	8	10	133
2	8	H113	WING	E	20					12 6.000														12	6	12	6	67
6	8	H114	WING		20					12 6.000														12	6	12	6	200
18	6	H115	WING		20					11 6.000														11	6	11	6	311
8	5	U101	BEAM		32	S				5 9.000		3 3.000		5 10.125						5 9.000		12.625		14	10	14	8	122
4	5	U102	BEAM		32	S				4 10.000		3 3.000		4 11.000						4 10.000		10.625		13	0	12	10	54
4	4	U103	BEAM		13	S				2 7.000		3 8.000		3 3.000		3 7.000								13	10	13	7	36
2	4	U104	BEAM		9	S				———		3 8.000		2 7.000		3 7.000				7.875		3 7.000		9	10	9	8	13
36	5	U105	DIAPHRAGM	E	10	S				———		3 7.000		2 3.000		———								9	5	9	2	344
36	6	U106	DIAPHRAGM		19	S				2 7.000		2 9.000												5	4	5	2	279
9	5	U107	DIAPHRAGM	E	10	S				———		2 6.000		2 3.000		———								7	3	7	0	66
9	6	U108	DIAPHRAGM		19	S				1 6.000		2 9.000												4	3	4	1	55
71	6	U109	DIAPHRAGM	E	19	S				3 1.000		4 6.000												7	7	7	5	791
2	5	V101	BEAM		20					5 11.000														5	11	5	11	12
2	6	V102	DIAPHRAGM		20					1 6.000														1	6	1	6	5
8	6	V103	DIAPHRAGM		20					2 7.000														2	7	2	7	31
20	6	V104	WING		20					6 8.000														6	8	6	8	200
24	6	V105	WING		20					6 5.000														6	5	6	5	231
			SUPERSTRUCTURE																									
			END BT NO 4																									
5	6	F401	WING BRACE		23					14.000		5 5.000		14.000		9.375		10.500		9.375		10.500		7	9	7	8	58
4	6	F402	DIAPHRAGM		21					2 8.000		4 9.000		———						2 7.750		3.625		7	5	7	3	44
4	6	F403	DIAPHRAGM		21					2 8.000		———		4 6.000						2 7.750		3.625		7	2	7	0	42
8	6	H401	BEAM		20			V	2	15 2.000														15	2	15	2	
			INCREMENT=							14 10.500														14	11	14	11	181
			1.125 INCH																									
2	6	H402	BEAM		20					14 10.000														14	10	14	10	45
2	6	H403	BEAM		20					15 2.000														15	2	15	2	46
4	6	H404	BEAM		20			V	1	11 7.500														11	8	11	8	
			INCREMENT=							11 4.000														11	4	11	4	69
			1.125 INCH																									

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	B IN.	C FT. IN.	C IN.	D FT. IN.	D IN.	E FT. IN.	E IN.	F FT. IN.	F IN.	H FT. IN.	H IN.	K FT. IN.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
7	6	H405	DIAPHRAGM		20					23 1.000														23	1	23	1	243
9	6	H406	DIAPHRAGM		20					35 3.000														35	3	35	3	477
2	6	H407	DIAPHRAGM		20					11 1.000														11	1	11	1	33
4	6	H408	DIAPHRAGM	E	20					23 6.000														23	6	23	6	141
4	6	H409	DIAPHRAGM	E	20					35 3.000														35	3	35	3	212
54	5	H410	DIAPHRAGM	E	20					2 6.000														2	6	2	6	141
2	8	H411	WING	E	20					11 4.000														11	4	11	4	61
6	8	H412	WING		20					11 4.000														11	4	11	4	182
10	6	H413	WING		20					10 4.000														10	4	10	4	155
10	6	H414	WING		20					8 8.000														8	8	8	8	130
8	5	U401	BEAM		32	S				5 9.000		3 3.000		5 10.125						5 9.000		12.625		14	10	14	8	122
3	5	U402	BEAM		32	S				4 10.000		3 3.000		4 11.000						4 10.000		10.625		13	0	12	10	40
1	5	U403	BEAM		32	S				4 10.000		3 2.750		4 10.875						4 10.000		10.125		13	0	12	9	13
4	4	U404	BEAM		13	S				2 7.000		3 8.000		3 3.000		3 7.000								13	10	13	7	36
2	4	U405	BEAM		9	S				———		3 8.000		2 7.000		3 7.000				7.875		3 7.000		9	10	9	8	13
37	5	U406	DIAPHRAGM	E	10	S				———		3 7.000		2 3.000		———								9	5	9	2	354
37	6	U407	DIAPHRAGM		19	S				2 7.000		2 9.000												5	4	5	2	287
9	5	U408	DIAPHRAGM	E	10	S				———		2 6.000		2 3.000		———								7	3	7	0	66
9	6	U409	DIAPHRAGM		19	S				1 6.000		2 9.000												4	3	4	1	55
71	6	U410	DIAPHRAGM	E	19	S				3 1.000		4 6.000												7	7	7	5	791
2	5	V401	BEAM		20					5 11.000														5	11	5	11	12
2	6	V402	DIAPHRAGM		20					1 6.000														1	6	1	6	5
8	6	V403	DIAPHRAGM		20					2 7.000														2	7	2	7	31
20	6	V404	WING		20					6 8.000														6	8	6	8	200
			SLAB																									
281	6	S1	SLAB	E	20					23 4.000														23	4	23	4	9848
276	6	S2	SLAB	E	20					35 2.000														35	2	35	2	14578
279	5	S3	SLAB	E	20					23 4.000														23	4	23	4	6790
276	5	S4	SLAB	E	20					35 2.000														35	2	35	2	10123
5	6	S5	SLAB	E	20			V	1	4 5.875														4	6	4	6	
			INCREMENT=							22 0.375														22	1	22	1	100
			4'-4 3/8"																									
4	6	S6	SLAB	E	20			V	1	5 9.625														5	10	5	10	
			INCREMENT=							18 11.500														19	0	19	0	75
			4'-4 3/8"																									
8	6	S7	SLAB	E	20			V	1	2 2.375														2	3	2	3	
			INCREMENT=							32 10.750														32	11	32	11	211
			4'-4 3/8"																									
8	6	S8	SLAB	E	20			V	1	2 3.625														2	4	2	4	
			INCREMENT=							33 0.000														33	0	33	0	212
			4'-4 3/8"																									
5	5	S9	SLAB	E	20			V	1	4 5.875														4	6	4	6	
			INCREMENT=							22 0.375														22	1	22	1	69
			4'-4 3/8"																									
4	5	S10	SLAB	E	20			V	1	5 9.625														5	10	5	10	
			INCREMENT=							18 11.500														19	0	19	0	52
			4'-4 3/8"																									
8	5	S11	SLAB	E	20			V	1	2 2.375														2	3	2	3	
			INCREMENT=							32 10.750														32	11	32	11	147
			4'-4 3/8"																									
8	5	S12	SLAB	E	20			V	1	2 3.625														2	4	2	4	
			INCREMENT=							33 0.000														33	0	33	0	147
			4'-4 3/8"																									
436	5	S13	SLAB	E	20					37 6.000														37	6	37	6	17053
172	6	S14	SLAB	E	20					30 6.000														30	6	30	6	7879

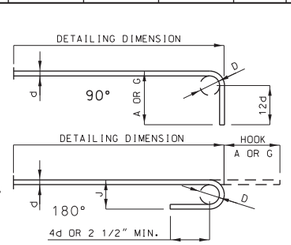


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS — GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	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		90° HOOKS
		A OR G	J	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"

TWO ADDITIONAL #6-S1 & #8-H109 ARE INCLUDED IN THE BAR BILL FOR TESTING.

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.

(SHAPE 35 SHALL BE A DEFORMED OR PLAIN SPIRAL BAR OR WIRE.)

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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

FINAL PLANS

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 35
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DESCRIPTION | DATE

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

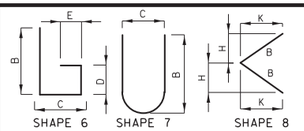
BILL OF REINFORCING STEEL

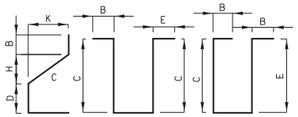
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	B IN.	C FT. IN.	C IN.	D FT. IN.	D IN.	E FT. IN.	E IN.	F FT. IN.	F IN.	H FT. IN.	H IN.	K FT. IN.	K IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			BARRIER CURB																							
48	5	K1	BARRIER CURB	E	19	S				2 5.000		5.125												2 10	2 9	138
48	5	K2	BARRIER CURB	E	14	S				5.125		11.125		18.000						2.000		17.875		2 10	2 9	138
26	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	174
22	5	K4	BARRIER CURB	E	7					3 0.000		6.000												6 3	6 3	143
2	5	K5	BARRIER CURB	E	25	S				2 6.500		6.750		4.375						5.500		4.000		3 6	3 5	7
2	5	K6	BARRIER CURB	E	25	S				2 5.500		7.875		4.375						6.500		4.500		3 6	3 5	7
2	5	K7	BARRIER CURB	E	25	S				2 4.125		9.625		4.375						7.875		5.500		3 6	3 5	7
2	5	K8	BARRIER CURB	E	25	S				2 2.750		11.250		4.375						9.250		6.500		3 6	3 6	7
24	5	K9	BARRIER CURB	E	20					5 7.000														5 7	5 7	140
22	4	K10	BARRIER CURB	E	20					8 4.000														8 4	8 4	122
2	5	K11	BARRIER CURB	E	8					2 2.125										2 2.000		2.375		4 4	4 4	9
145	5	R1	BARRIER CURB	E	26	S				2 6.000		4.250								2 6.000		3.000		5 3	5 3	794
145	5	R3	BARRIER CURB	E	19	S				17.000		6.000												1 11	1 10	277
145	5	R4	BARRIER CURB	E	27	S				———		6.000		11.250		7.000		12.000		9.250		6.375		3 0	2 10	428
14	5	R5	BARRIER CURB	E	20					30 3.000														30 3	30 3	442
30	5	R6	BARRIER CURB	E	20					9 8.000														9 8	9 8	302
7	5	R7	BARRIER CURB	E	20					35 8.000														35 8	35 8	260
20	5	C1	SLIP FORM	E	20					10 0.000														10 0	10 0	209
4	5	C2	SLIP FORM	E	20					8 0.000														8 0	8 0	33
160	5	M1	MED BARRIER	E	26	S				3 3.000		5.750								3 3.000		6.875		6 10	6 10	1140
146	5	M3	MED BARRIER	E	19	S				20.000		10.000												2 6	2 5	368
146	5	M4	MED BARRIER	E	27	S				———		10.000		14.250		5.500		12.000		14.000		2.625		3 6	3 3	495
10	5	M5	MED BARRIER	E	20					12 10.000														12 10	12 10	134
10	5	M6	MED BARRIER	E	20					30 4.000														30 4	30 4	316
40	5	M7	MED BARRIER	E	20					9 8.000														9 8	9 8	403
10	5	M8	MED BARRIER	E	20					35 8.000														35 8	35 8	372
10	5	M9	MED BARRIER	E	20					32 10.000														32 10	32 10	342
14	5	M10	MED BARRIER	E	19	S				3 6.000		10.000												4 4	4 3	62
14	5	M11	MED BARRIER	E	27	S				———		10.000		14.250		2 1.000		———		14.000		2.625		4 1	4 0	58
100	5	M12	MED BARRIER	E	27	S				———		———		2 0.375		7.000		12.000		2 0.000		4.500		3 7	3 6	365
50	5	M13	MED BARRIER	E	15	S				3 2.625		4.500		———		———		———		3 2.000		7.250		3 7	3 6	183
50	5	M14	MED BARRIER	E	15	S	V	2		3 2.625		4.500		———		———		———		3 2.000		7.250		3 7	3 6	
0			INCREMENT=½"							3 2.625		16.500		———		———		———		3 2.000		7.250		4 7	4 6	209
10	5	M15	MED BARRIER	E	20					24 1.000														24 1	24 1	251
10	5	M16	MED BARRIER	E	20					24 4.000														24 4	24 4	254
22	5	C3	SLIP FORM	E	20					10 0.000														10 0	10 0	229
12	5	C4	SLIP FORM	E	20					8 0.000														8 0	8 0	100

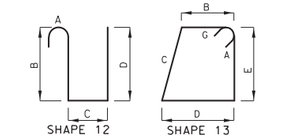
BILL OF REINFORCING STEEL

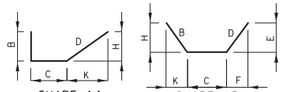
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	B IN.	C FT. IN.	C IN.	D FT. IN.	D IN.	E FT. IN.	E IN.	F FT. IN.	F IN.	H FT. IN.	H IN.	K FT. IN.	K IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			TOTALS																							
	4																									1057
	5																									4373
	5															E										35490
	6																									7705
	6															E										35191
	8																									3632
	8															E										251
	9																									1664
	W5																									36
			TOTAL																							18467
			TOTAL													E										70932
			SLAB ON STEEL																							
	4																									98
	5																									375
	5															E										35490
	6																									4820
	6															E										35191
	8																									566
	8															E										251
			TOTAL																							5859
			TOTAL													E										70932
0			REINFORCING STEEL																							
			(RETAINING WALL)																							
	4																									630
	5																									3998
	6																									1060
			TOTAL																							5688
0			REINFORCING STEEL																							
			(BRIDGES)																							
	4																									329
	6																									1825
	8																									3066
	9																									1664
	W5																									36
			TOTAL																							6920
			SAFETY BARRIER CURB																							
	4															E										122
	5															E										3273
			TOTAL													E										3395
			BARRIER CURB																							
			(TYPE D)																							
3604																										
	5															E										4952
			TOTAL													E										4952
			SLIP FORM																							
	5															E										571
			TOTAL													E										571

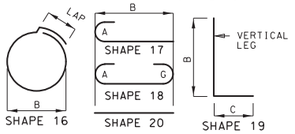
TWO ADDITIONAL #4-K10 & #5-R6 ARE INCLUDED IN THE BAR BILL FOR TESTING.

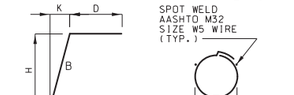


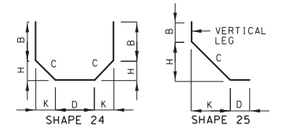


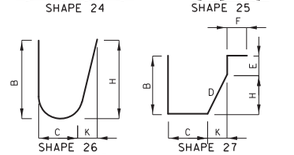


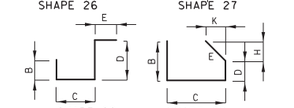


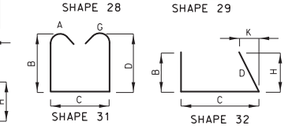


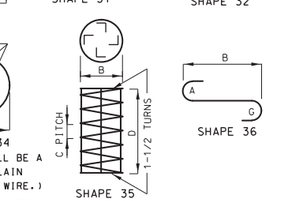






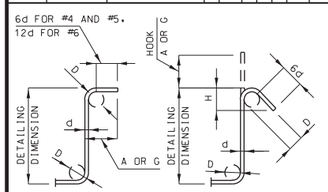






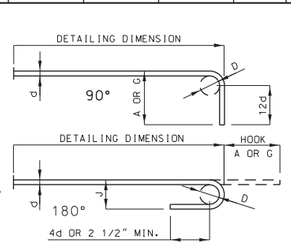
(SHAPE 35 SHALL BE A DEFORMED OR PLAIN SPIRAL BAR OR WIRE.)

BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	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	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.

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

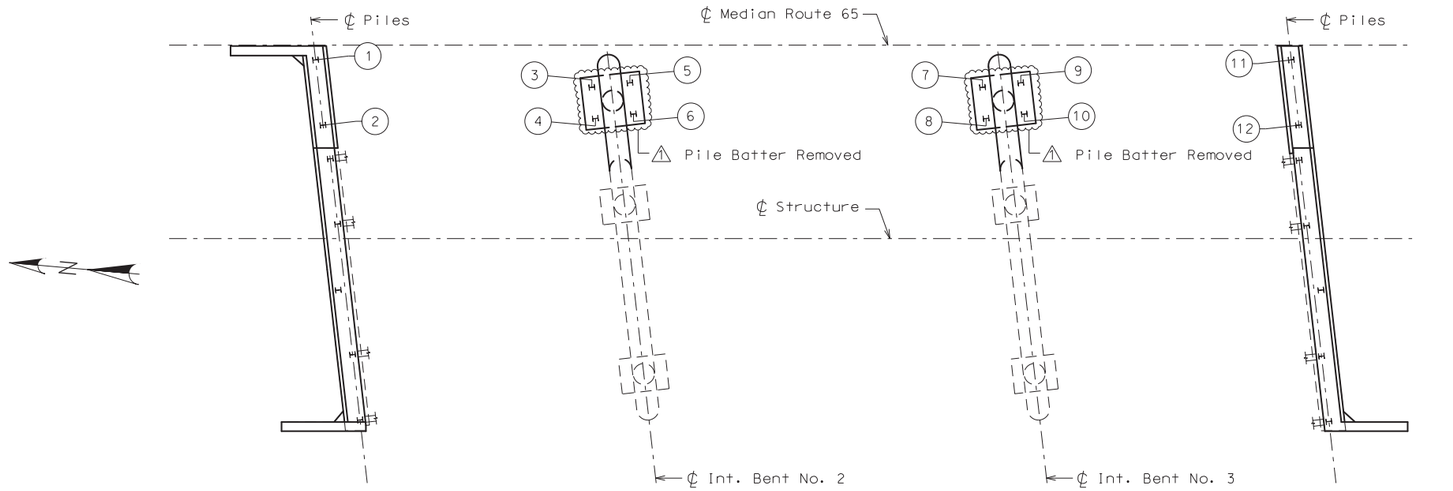
Note: This drawing is not to scale. Follow dimensions.

FINAL PLANS

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 36
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
09/15/10	Revised Median Barrier Bars

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



End Bent No. 1 Int. Bent No. 2 Int. Bent No. 3 End Bent No. 4

PLAN SHOWING PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			End Bent No. 1
1	37' 5"		Practical Refusal - Heat #34257 - 10" Structural Steel Piles - No Batter
2	35' 5"		Practical Refusal - Heat #342577 - 10" Structural Steel Piles - No Batter
			Int. Bent No. 2
3	11' 3"		Practical Refusal - Heat #347945 - 10" Structural Steel Piles - No Batter
4	11' 0"		Practical Refusal - Heat #347952 - 10" Structural Steel Piles - No Batter
5	11' 0"		Practica Refusal - Heat #347952 - 10" Structural Steel Piles - No Batter
6	11' 1"		Practical Refusal - Heat #347952 - 10" Structural Steel Piles - No Batter
			Int. Bent No. 3
7	11' 4"		Practical Refusal - Heat #347952 - 10" Structural Steel Piles - No Batter
8	11' 3"		Practical Refusal - Heat #347948 - 10" Structural Steel Piles - No Batter
9	11' 0"		Practical Refusal - Heat #347952 - 10" Structural Steel Piles - No Batter
10	11' 4"		Practical Refusal - Heat #347945 - 10" Structural Steel Piles - No Batter
			End. Bent No. 4
11	39' 3"		Practical Refusal - Heat #342542 - 10" Structural Steel Piles - No Batter
12	39' 9"		Practical Refusal - Heat #342590 - 10" Structural Steel Piles - No Batter

DATE PREPARED 10/06/10
ROUTE 65 | STATE MO
DISTRICT BR | SHEET NO. 37
COUNTY GREENE
JOB NO. J8P0605E
CONTRACT ID. 090626-802
PROJECT NO. FAF-65-2(65)
BRIDGE NO. A16491

DATE	DESCRIPTION
05/18/10	⚠ Int. Bent pile batter removed.

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

Designed: BWC 04/24/09
Detailed: SAS 10/06/10
Checked: HNG 10/06/10

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