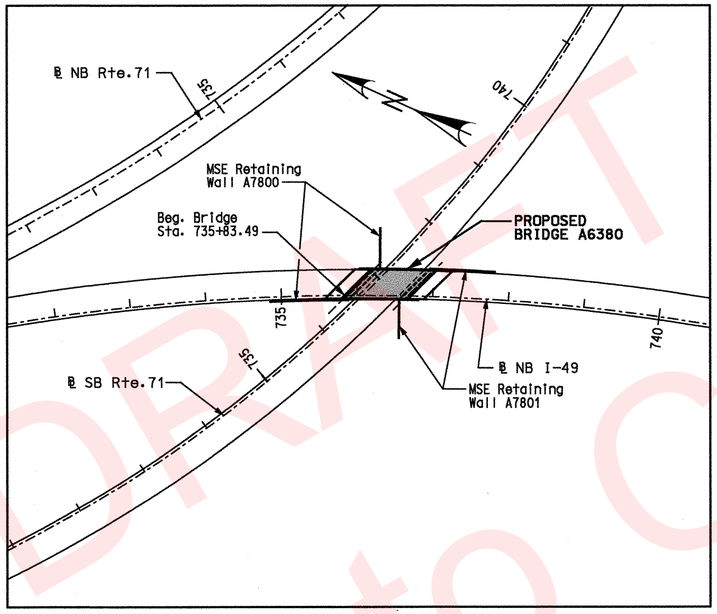
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SEC/SUR 10 TWP 21N RGE 32W



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STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 08/06/09

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	1

COUNTY McDONALD

JOB NO. J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A6380

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DATE	DESCRIPTION

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

BRIDGE: NB RTE. I-49 OVER SB RTE. 71

STATE ROAD FROM RTE. H TO STATE LINE
ABOUT 2.6 MILES NORTH OF RTE. 90
STA. 735+83.49 (RTE. I-49)

STD. 609.00	
STD. 617.10	
STD. 706.35	

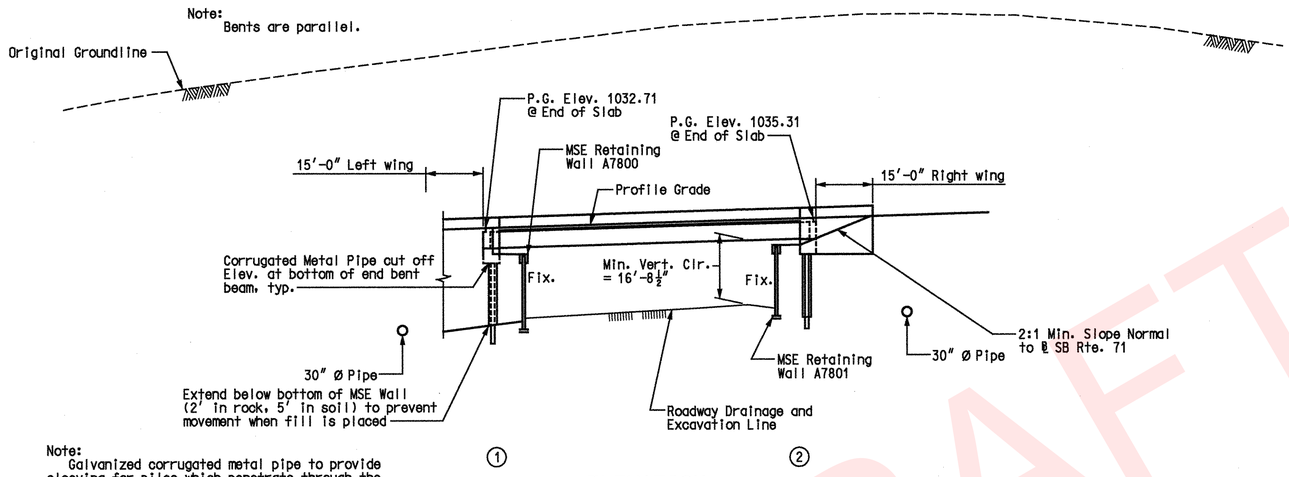
Designed JUL 2009
Detailed AUG 2009
Checked AUG 2009

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

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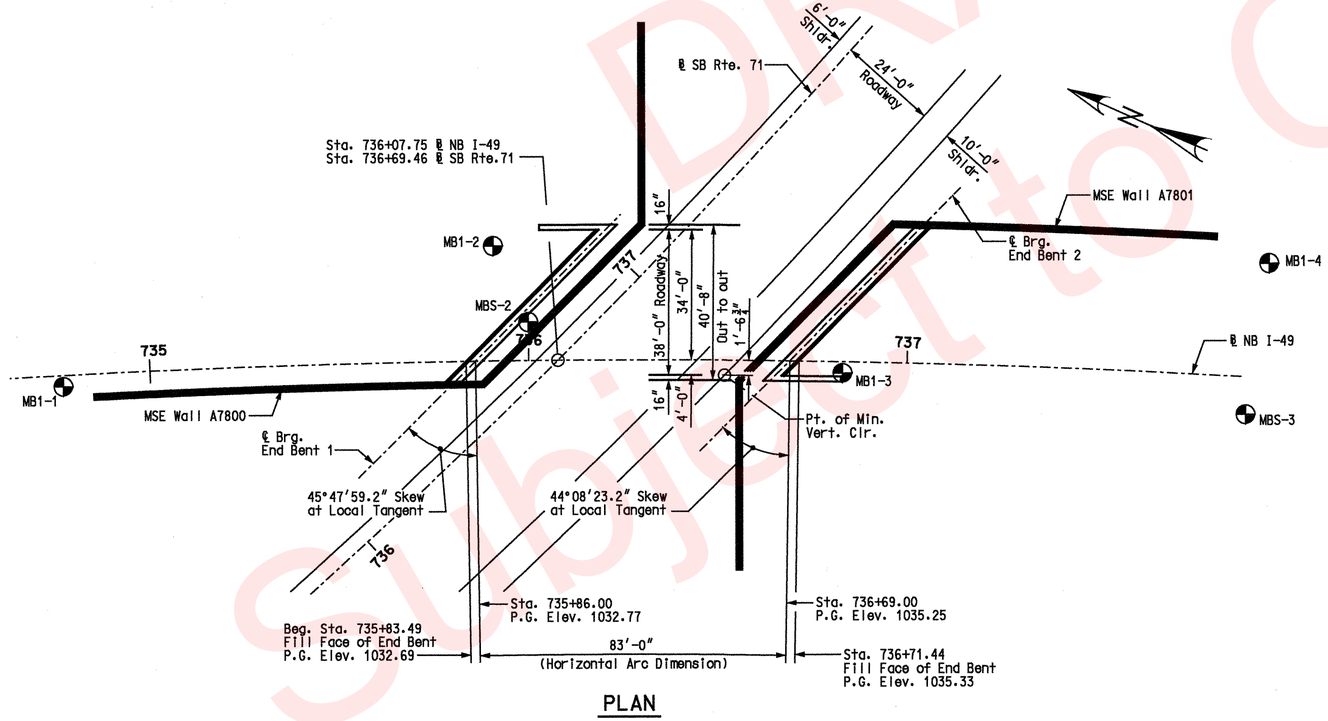
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(83′) SIMPLE SPAN COMPOSITE PRESTRESSED CONCRETE I-GIRDER SPAN

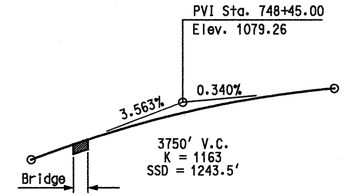


Note:
Galvanized corrugated metal pipe to provide sleeving for piles which penetrate through the mechanically stabilized earth wall fill. See special provisions. Galvanized corrugated metal culvert pipe in accordance with Sec. 1020.

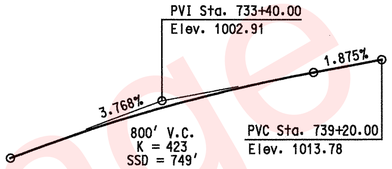
ELEVATION



PLAN



PROFILE GRADE – NB I-49



PROFILE GRADE – SB RTE. 71

CURVE DATA
NB I-49

P.I. Sta. = 739+20.393
△ = 44°43′02″ (Rt.)
D = 2°00′00.0″
L = 2235.86′
T = 1178.36
R = 2864.79′
SE = 6.3%

CURVE DATA
SB RTE. 71

P.I. Sta. = 736+04.58
△ = 66°31′00″ (Lt.)
Lc = 1987.22′
Ts = 1368.30′
R = 1909.86′
D = 3°00′00″
Ls = 230.00′
Θs = 3°27′00″ (Lt.)
Xs = 229.92′
Ys = 4.62′
SE = 7.9%

Notice and disclaimer regarding Boring Log Data:

The locations of all subsurface borings for this structure are shown on the bridge plan sheets for this structure. Boring data for the numbered locations is shown on Sheets No. 4 thru 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.

Notes:
Denotes boring location.
For pile locations, see Sheets No. 7 and 10.

BENCHMARKS

BM-71-99-97 R.R. spike in West face of corner post 0.9 mi. South of Rte. H on county road SW of H-21, East of county road. Elev. 925.19

BM-49-01-01 R.R. spike East of root of 1.2′ wild cherry with blazed "△" West side of county road SW H-21. West of Gardner's chicken houses. BM is 1.475 miles South of Rte. H. Elev. 949.43

GENERAL PLAN AND ELEVATION

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 7/28/09

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	2

COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION | DATE | REV.

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
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CERTIFICATE OF AUTHORITY NO. 001270

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Detailed JUL 2009
Checked JUL 2009

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

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Bridge Approach Slab (Bridge)	sq. yard	——	220	220
Structural Steel Piles (12 in.)	linear foot	456	——	456
Pre-Bore for Piling	linear foot	88	——	88
Class B Concrete (Substructure)	cu. yard	44.7	——	44.7
Slab on Concrete I-Girder	sq. yard	——	391	391
* Safety Barrier Curb	linear foot	——	254	254
Type 6 (54 in.) Prestressed Concrete I-Girder	linear foot	——	413	413
Steel Intermediate Diaphragm for P/S Concrete Girders	each	——	4	4
Vertical Drain at End Bents	each	2	——	2
Laminated Neoprene Bearing Pad (Tapered)	each	——	10	10
Corrugated Metal Pipe Pile Spacers	each	16	——	16

Notes:
The cost of furnishing, fabricating and installing Neoprene Bearing Pads (Tapered), complete-in-place, will be paid for at the contract unit price for Laminated Neoprene Bearing Pad (Tapered) per each.
* Safety barrier curb shall be cast-in-place option or slip-form option.
All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete I-Girder.
All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Concrete I-Girder.

ESTIMATED QUANTITIES FOR SLAB ON CONCRETE I-GIRDER

ITEM		TOTAL
Class B-2 Concrete	cu. yard	144.1
Reinforcing Steel	pound	10,570
Reinforcing Steel (Epoxy Coated)	pound	20,570

Notes:
The table of Estimated Quantities for Slab on Concrete I-Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard with the horizontal dimensions as shown on the plan of slab. Payment for prestressed panels, stay-in-place forms, conventional forms, all concrete and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in these estimated quantities but the variations cannot be used for 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 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.
Class B-2 Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.
The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete I-Girder.
Slab shall be cast-in-place with conventional and precast prestressed panel forming. Stay-in-place corrugated metal forms will not be permitted.

GENERAL NOTES:

DESIGN SPECIFICATIONS:
2007 - AASHTO LRFD 4th Edition (Superstructure)
Load and Resistance Factor Design
Seismic Design Category = A
Seismic Peak Horizontal Ground Acceleration = 0.04

2002 - AASHTO 17th Edition (Substructure)
Load Factor Design
Seismic Performance Category A
Acceleration Coefficient = 0.04

DESIGN LOADINGS:
HL-93 (LRFD Superstructure, LFD Substructure)
35#/Sq. Ft. Future Wearing Surface.
Defense Transporter Erector Loading
Earth 120#/Cu. Ft., Equivalent Fluid Pressure = 45#/Cu. Ft.
Superstructure: Simply-Supported, non-composite for dead load.
Continuous composite for live load.

DESIGN UNIT STRESSES:
Class B Concrete (Substructure) f'c = 3,000 psi.
Class B-1 Concrete (Safety Barrier) f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Safety Barrier) f'c = 4,000 psi.
Reinforcing Steel Grade 60 Fy = 60,000 psi.
Structural Carbon Steel (ASTM A709 Grade 36) fy = 36,000 psi.
Steel Pile (ASTM A709 Grade 50) fb = 9,000 psi fy=50,000 psi.
For precast prestressed panel stresses, see Sheet No. 17.
For prestressed girder stresses, see Sheet No. 15.

NEOPRENE PADS:
Neoprene Elastomeric Pads shall be 60 durometer.
Laminated Neoprene Bearing Pads (Tapered) shall be in accordance with Sec 716.

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

REINFORCING STEEL:
Minimum clearance to the reinforcing steel shall be 1-1/2", unless otherwise shown.

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

PILES:
All piles shall be placed in pre-bored holes. After insertion of pile, pre-bored hole shall be filled with concrete (Class B) up to Elev. 1005.00 for End Bent 1 and Elev. 1010.00 for End Bent 2. Piles shall be driven (seated) into rock prior to concrete set. Corrugated metal pile spacers shall be installed over the pile and backfilled with sand as the MSE Wall backfill is placed. Cost of concrete backfill shall be included in the cost of "Pre-bore For Piling". Cost of sand backfill shall be included in cost of "Corrugated Metal Pipe Pile Spacers."

PILE AND FOOTING DATA

BENT NO.			1	2
Bearing Pile	Type		Foundation	Foundation
	Kind		HP12x53	HP12x53
	Number		8	8
	Approximate Length	Ft.	30	27
	Pile Driving Verification Method		Dynamic Bearing Formula	Dynamic Bearing Formula
	Pre-bore Elevation		1000.0	1005.0
	Design Bearing	Kips	140	140
	Hammer Energy Required	Lb-Ft	15750	15750

Notes:
Minimum energy requirement of hammer is based on plan length and design bearing value of piles.
Prebore to elevations shown in data table.

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 07/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION	DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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GENERAL NOTES AND ESTIMATED QUANTITIES

Detailed JUL 2009
Checked JUL 2009

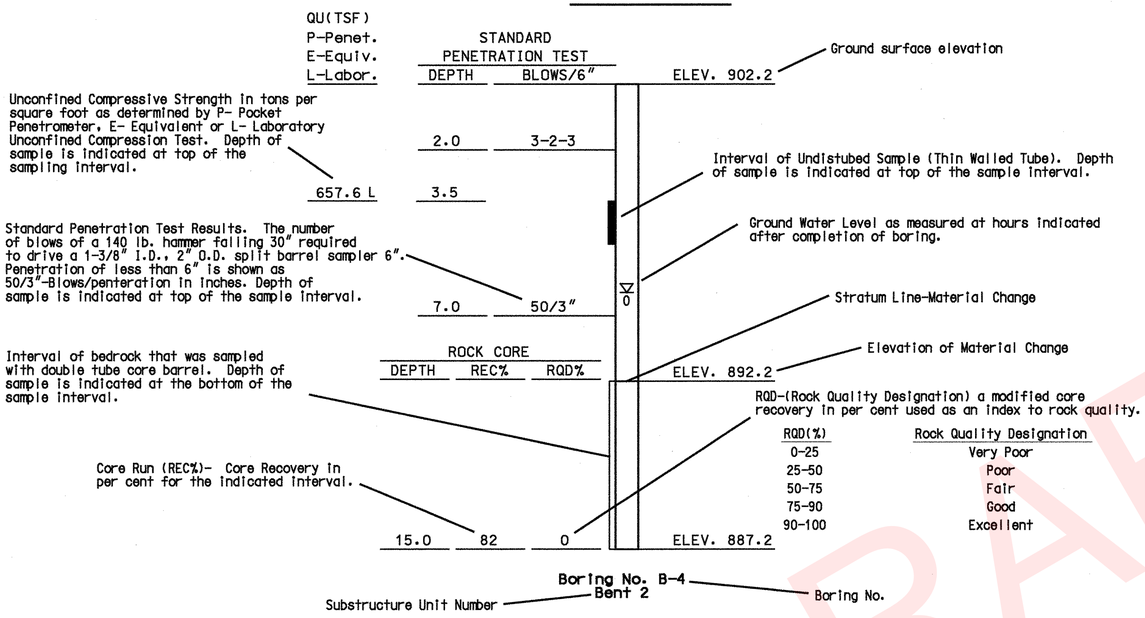
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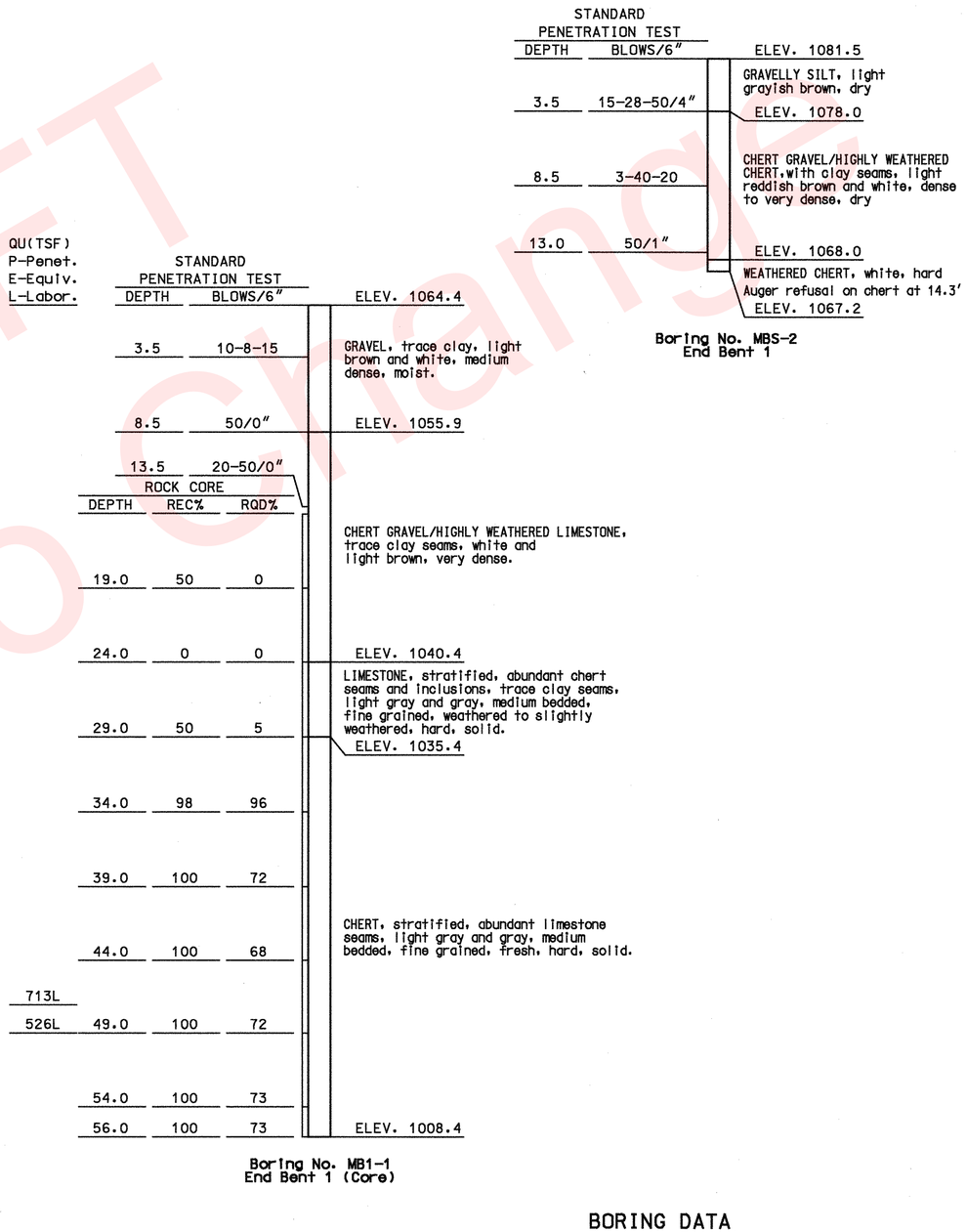
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TYPICAL BORING





GENERAL NOTES:

The borings shown on this drawing were drilled for the Missouri Department of Transportation, on October 14, 2002 and between June 10 and 27, 2006, by Terracon, Inc. under the direction of HNTB.

For boring locations in plan, see Sheet No. 2.

The ground water levels shown were recorded during time of drilling. Porosity of soil strata, weather conditions, seasonal changes, site topography, etc., may cause changes in the water levels reported.

The boring information shown on this drawing is abbreviated. A complete copy of boring logs and test results are available upon request to the Department.

For notice and disclaimer regarding boring log data, see Sheet No. 2.

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BORING DATA

GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 04/13/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION | DATE

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

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715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
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Boring No. MB1-2
End Bent 1 (Core)

QU(TSF) P-Penet. E-Equiv. L-Labor.

STANDARD PENETRATION TEST DEPTH	BLOWS/6"
3.5	18-29-37
8.5	24-36-15

ROCK CORE

DEPTH	REC%	RQD%
16.0	95	100
21.0	100	70
26.0	100	85
31.0	97	45
36.0	100	50
41.0	100	90
46.0	95	70
51.0	100	80
56.0	90	90
61.0	100	90
66.0	100	90
71.0	100	65
76.0	100	100
81.0	100	75
86.0	100	100
91.0	100	65

ELEV. 1080.7

SANDY GRAVEL, trace clay seams, light brown and white, very dense, moist.

ELEV. 1065.7

CHERT, stratified, with limestone seams, trace clay seams, light gray and gray, medium bedded, fine grained, fresh, hard, solid.

ELEV. 1059.7

CHERT, stratified, with limestone seams, light gray and gray, thick bedded, very fine to fine grained, fresh, very hard, solid.

ELEV. 1014.7

LIMESTONE, stratified, abundant chert seams and inclusions, trace shale laminations, light gray, gray and dark gray, medium bedded, very fine grained, fresh, hard, solid.

ELEV. 1004.7

666L
1133L

LIMESTONE, stratified, abundant chert seams and inclusions, with shale laminations, light gray, gray and dark gray, thick bedded, very fine grained, fresh, very hard, solid.

900L
667L

ELEV. 989.7

Boring No. MB1-3
End Bent 2 (Core)

QU(TSF) P-Penet. E-Equiv. L-Labor.

STANDARD PENETRATION TEST DEPTH	BLOWS/6"
3.5	23-11-22
8.5	50/4"

ROCK CORE

DEPTH	REC%	RQD%
15.5	78	73
20.5	90	66
25.5	100	85
31.0	98	67
36.0	100	71
41.0	100	96
46.0	100	85
51.0	100	75
52.5	98	89
60.0	98	33
65.0	90	90
70.0	99	78
75.0	100	82
80.0	100	93
85.0	100	93
90.0	100	70
95.0	100	70
99.0	100	90

ELEV. 1088.5

GRAVEL, with clay seams dark brown to light brown, red and white, dense, moist.

ELEV. 1080.0

SANDY GRAVEL, light brown and white, dense, moist.

ELEV. 1077.5

LIMESTONE, stratified, abundant chert seams and inclusions, light gray and gray, thick bedded, very fine grained, fresh, hard, solid.

ELEV. 1063.0

CHERT, stratified, with limestone seams, light gray and gray, medium bedded, very fine to fine grained, fresh, hard, solid.

ELEV. 1052.5

CHERT, stratified, trace to with limestone seams, light gray and gray, medium to thick bedded, very fine grained, fresh, very hard, solid.

ELEV. 1031.0

830L
444L

LIMESTONE, stratified, abundant chert seams and inclusions, trace clay seams, light gray and gray, medium to thick bedded, very fine grained, fresh to slightly weathered, very hard, solid.

ELEV. 1013.5

CHERT, stratified, trace chert seams and inclusions, abundant shale laminations, light gray, gray and dark gray, thick bedded, fine grained, fresh, very hard, solid.

ELEV. 1003.5

CHERT, stratified, trace limestone seams, light gray and gray, thick bedded, very fine to fine grained, fresh, very hard, solid.

ELEV. 989.5

Boring No. MB1-4
End Bent 2 (Core)

QU(TSF) P-Penet. E-Equiv. L-Labor.

STANDARD PENETRATION TEST DEPTH	BLOWS/6"
3.5	50/6"
8.5	50/3"

ROCK CORE

DEPTH	REC%	RQD%
11.0	90	90
16.0	100	80
21.0	100	41
26.0	100	40
31.0	100	55
36.0	100	73
41.0	100	90
46.0	100	90
51.0	100	43
56.0	100	85
61.0	100	75
63.5	100	100

ELEV. 1081.1

SANDY GRAVEL, trace clay seams, light brown and white, very dense, moist.

ELEV. 1071.1

CHERT, stratified, trace to with limestone seams, light gray, gray, and dark gray, medium to thick bedded, fine to very fine grained, fresh, hard, solid.

ELEV. 1020.1

LIMESTONE, stratified, abundant chert seams and inclusions, light gray and gray, medium bedded, fine grained, fresh, hard, solid.

ELEV. 1017.6

Boring No. MBS-3
End Bent 2

ELEV. 1080.6

PAD FILL-GRAVEL, light grayish brown

ELEV. 1077.1

GRAVELLY LEAN CLAY, with sand, reddish brown, very stiff, dry

ELEV. 1075.6

SANDY GRAVEL/HIGHLY WEATHERED CHERT, light brown, very dense, dry

Auger refusal on chert at 12.3'

ELEV. 1068.3

NOTE:

For Typical Boring and General Notes, see Sheet No. 4.

BORING DATA

Detailed JUL 2009
Checked JUL 2009

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

Sheet No. 5 of 26

REV.

DESCRIPTION | DATE

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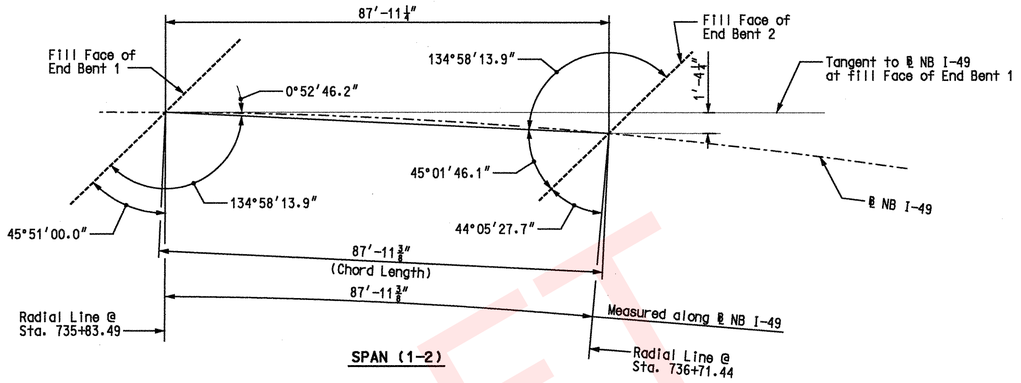
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TELEPHONE (816) 472-1201
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STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 04/13/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 5
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

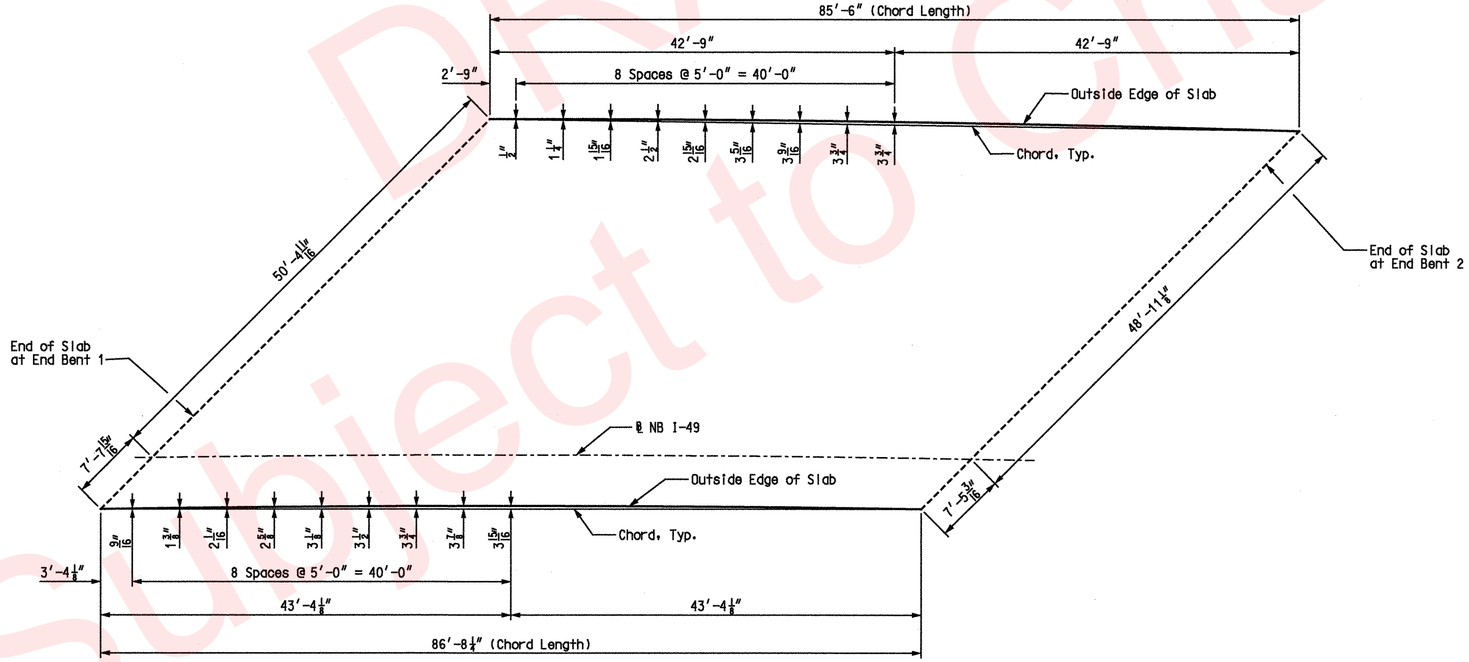
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SPAN (1-2)

SUBSTRUCTURE LAYOUT



SPAN (1-2)

SLAB CURVE ORDINATES

SUBSTRUCTURE LAYOUT AND SLAB CURVE ORDINATES

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GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
7/9/10

DATE PREPARED	07/28/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	6
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A6380

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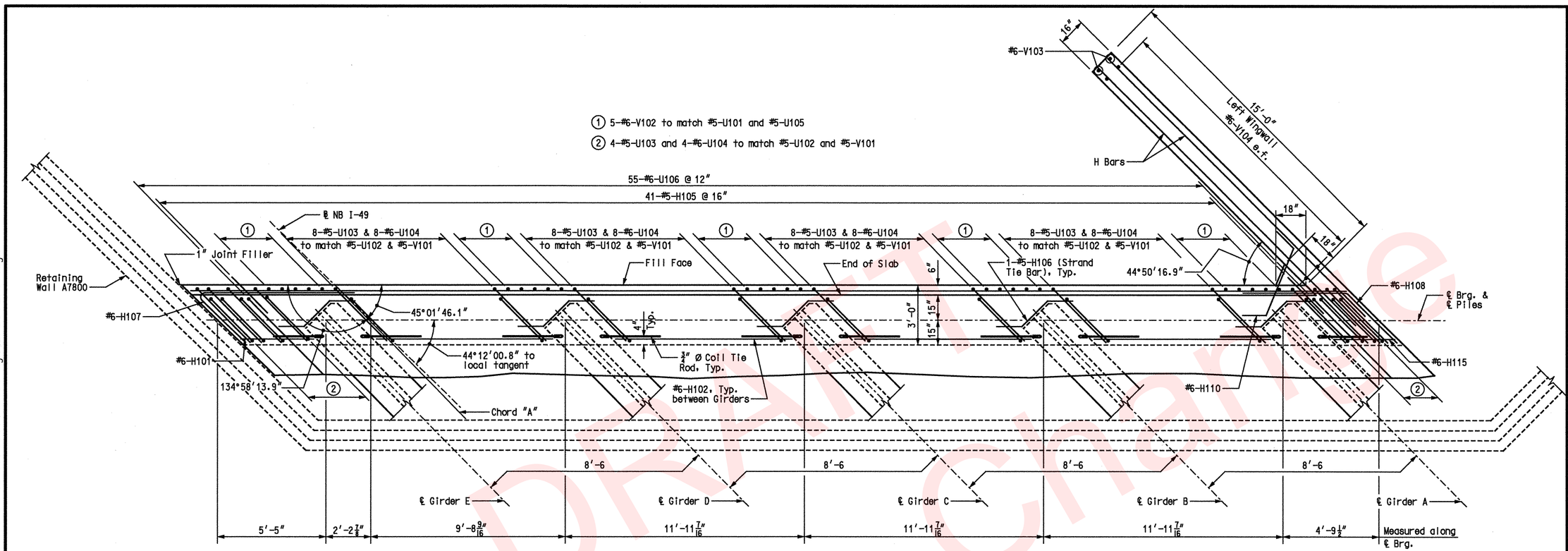
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Detailed JUL 2009
Checked JUL 2009

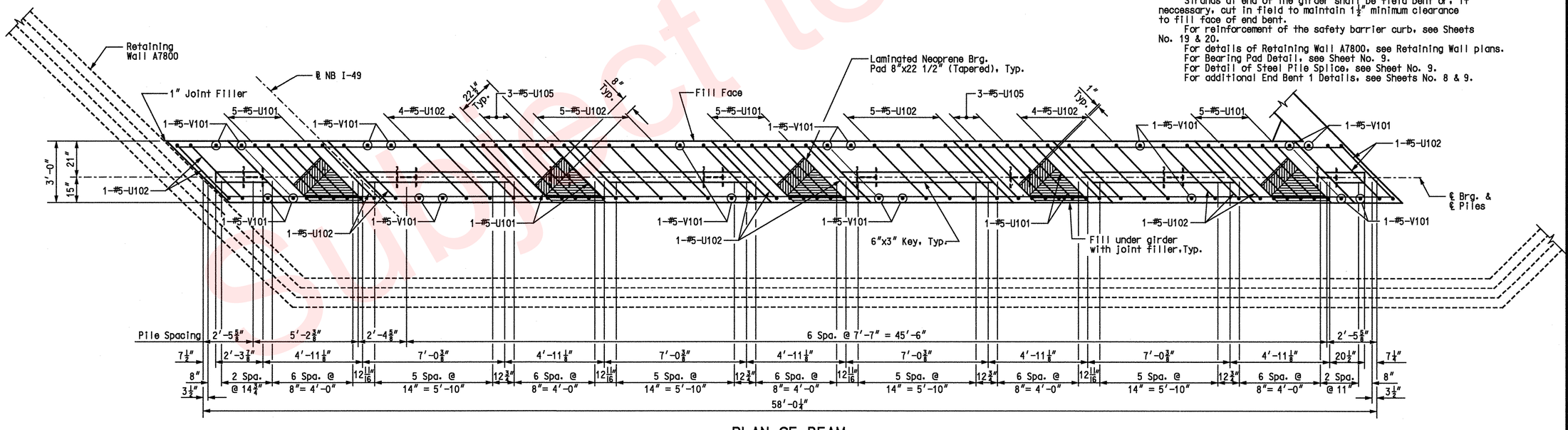
Note: This drawing is not to scale. Follow Dimensions.

Sheet No. 6 of 26



PLAN

Notes:
All piles shall be HP12x53.
e.f. denotes each face.
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
Strands at end of the girder shall be field bent or, if neccessary, cut in field to maintain 1½" minimum clearance to fill face of end bent.
For reinforcement of the safety barrier curb, see Sheets No. 19 & 20.
For details of Retaining Wall A7800, see Retaining Wall plans.
For Bearing Pad Detail, see Sheet No. 9.
For Detail of Steel Pile Splice, see Sheet No. 9.
For additional End Bent 1 Details, see Sheets No. 8 & 9.



PLAN OF BEAM

END BENT 1

Detailed JUL 2009
Checked JUL 2009

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

Sheet No. 7 of 26

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED	
7/24/09	
ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	7
COUNTY	
McDONALD	
JOB NO.	
J7P0601	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A6380	

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

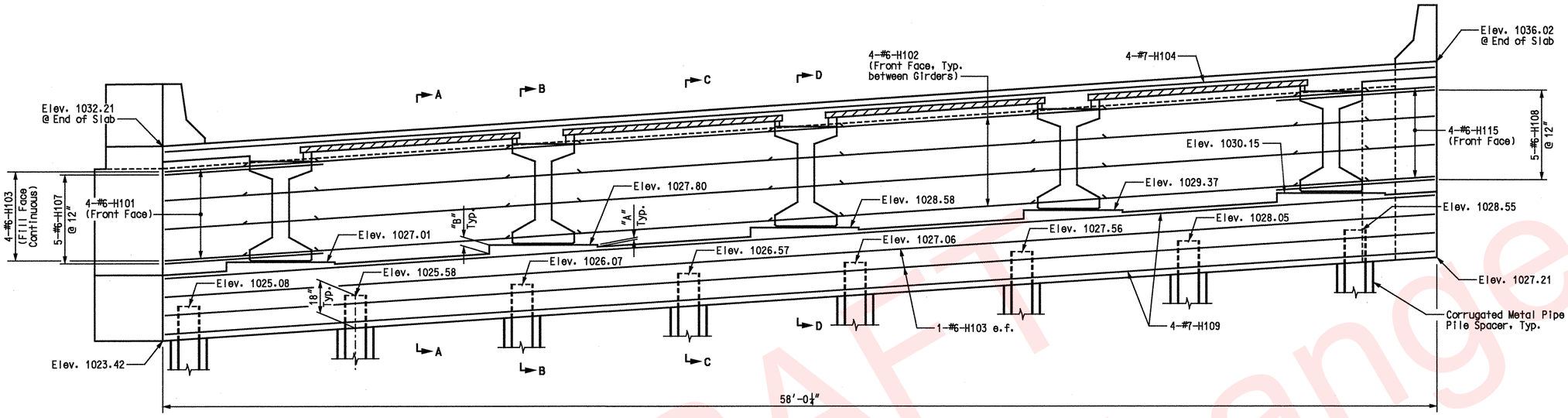
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REV.

DRAFT Subject to Change

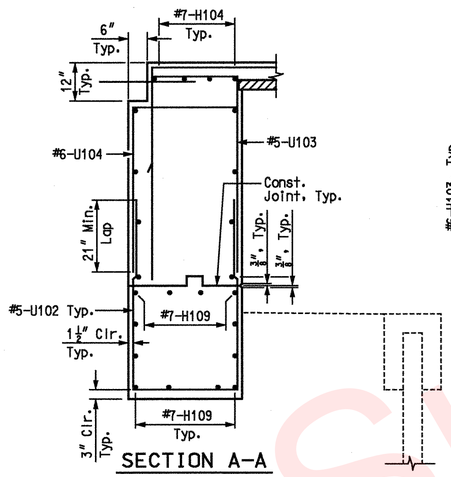
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PLOTTED: 08-MAR-2010 14:59
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\\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA6380_03-05-10\J7P0601\A6380-dgn\ZPLOT_A07.dgn 08-MAR-2010 14:59

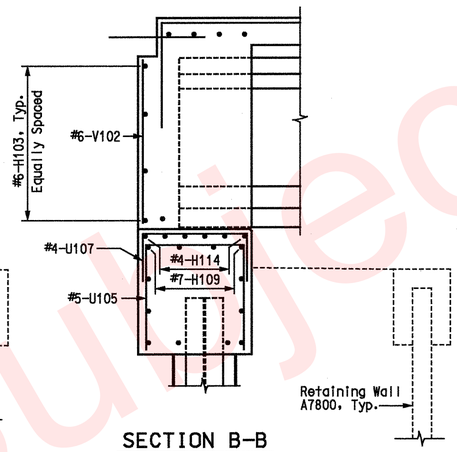


ELEVATION

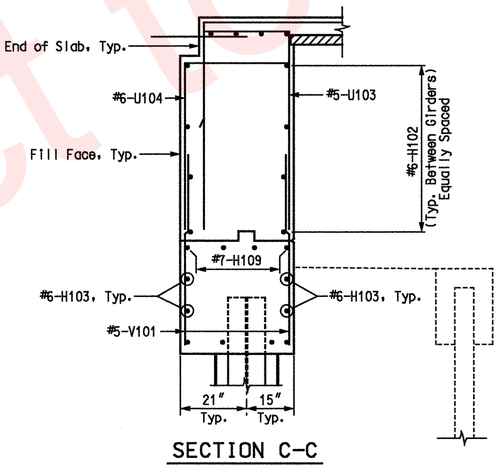
BRG. PAD HEIGHTS		
GIRDER	"A"	"B"
A	1"	4⅞"
B	1⅛"	5"
C	1"	4⅞"
D	1⅛"	5"
E	1"	4⅞"



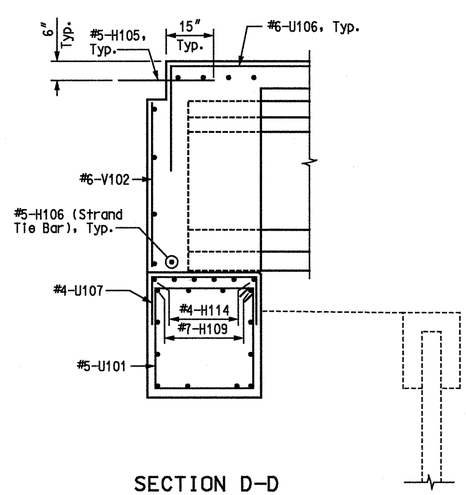
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:
e.f. denotes each face.
For additional notes and details, see Sheets No. 7 and 9.

END BENT 1 DETAILS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED	7/24/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	8
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A6380

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NO.	DESCRIPTION	DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

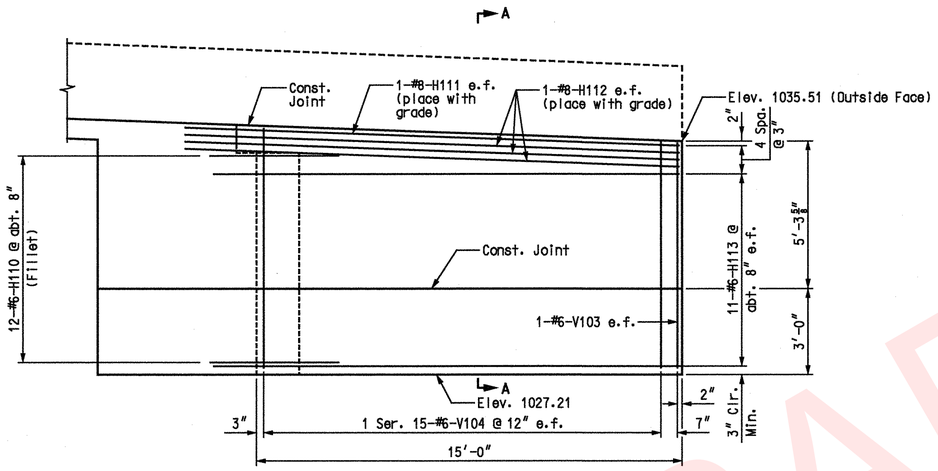
Detailed JUL 2009
Checked JUL 2009

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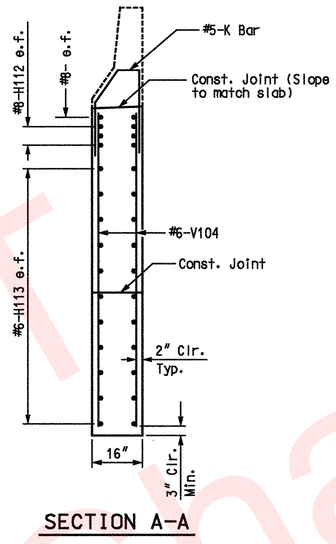
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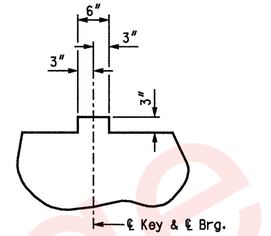
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WINGWALL ELEVATION



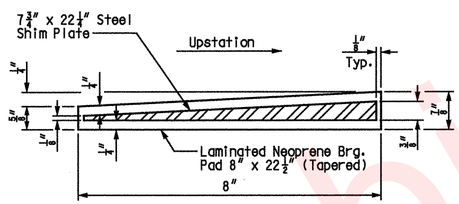
SECTION A-A



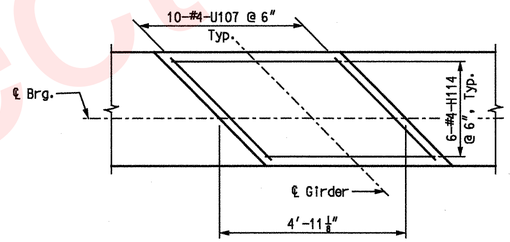
TYPICAL SECTION THRU KEY

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1		
ITEM		QUANTITY
Structural Steel Piles (12 In.)	linear foot	240
Pre-Bore for Piling	linear foot	203
Class B Concrete (Substructure)	cu. yard	22.6
Corrugated Metal Pipe Pile Spacers	each	8

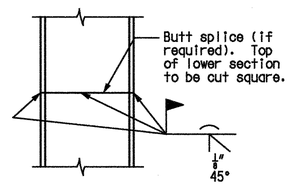
Note:
These quantities are included in the Estimated Quantities table on Sheet No. 3.



DETAIL OF LAMINATED
NEOPRENE BEARING PAD (TAPERED)



BEARING PAD DETAIL



DETAIL OF STEEL
PILE SPLICE

Notes:
e.f. denotes each face.
For additional notes and details, see Sheets No. 7 and 8.

END BENT 1 DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-4-10

DATE PREPARED 7/24/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DATE | DESCRIPTION

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

DRAFT
Subject to Change

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Detailed JUL 2009
Checked JUL 2009

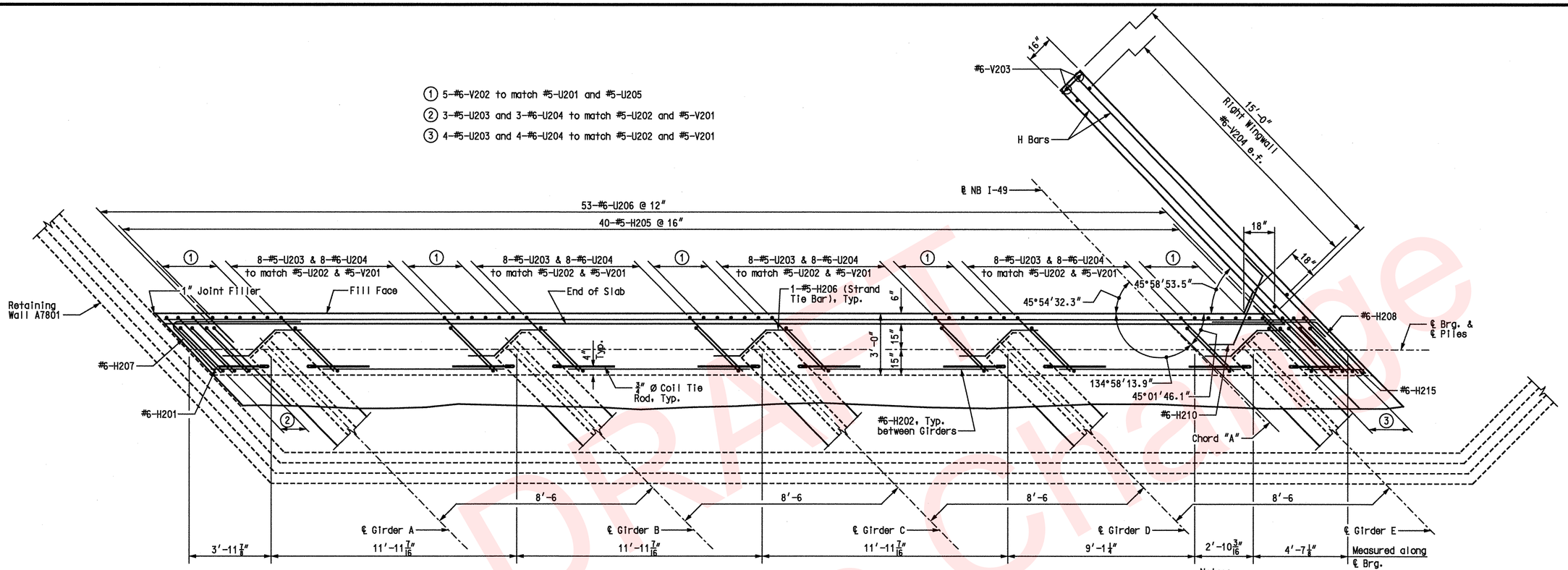
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① 5-#6-V202 to match #5-U201 and #5-U205

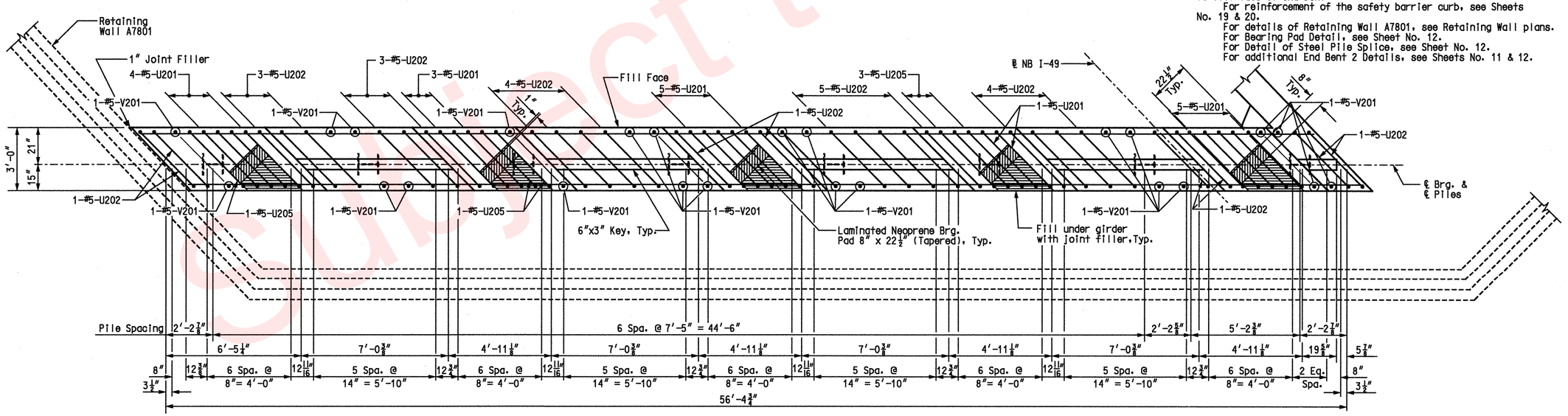
② 3-#5-U203 and 3-#6-U204 to match #5-U202 and #5-V201

③ 4-#5-U203 and 4-#6-U204 to match #5-U202 and #5-V201



PLAN

Notes:
All piles shall be HP12x53.
e.f. denotes each face.
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
Strands at end of the girder shall be field bent or, if neccessary, cut in field to maintain 1½" minimum clearance to fill face of end bent.
For reinforcement of the safety barrier curb, see Sheets No. 19 & 20.
For details of Retaining Wall A7801, see Retaining Wall plans.
For Bearing Pad Detail, see Sheet No. 12.
For Detail of Steel Pile Splice, see Sheet No. 12.
For additional End Bent 2 Details, see Sheets No. 11 & 12.



PLAN OF BEAM

END BENT 2

Detailed JUL 2009
Checked AUG 2009

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

Sheet No. 10 of 26

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED	
7/31/09	
ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	10
COUNTY	
McDONALD	
JOB NO.	
J7P0601	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A6380	

NO.	DESCRIPTION	DATE

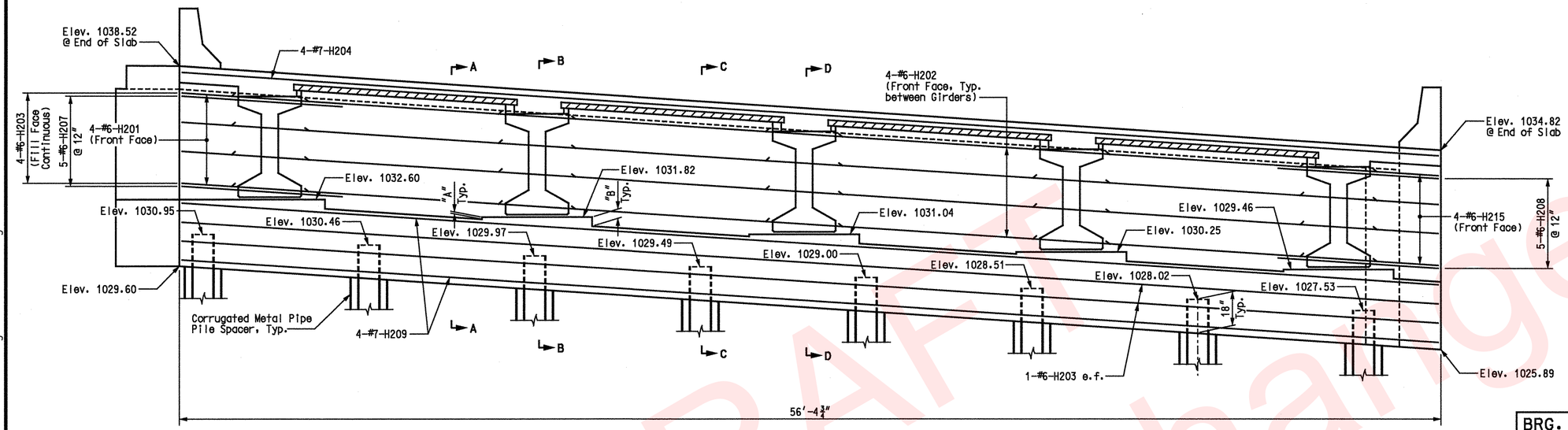
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

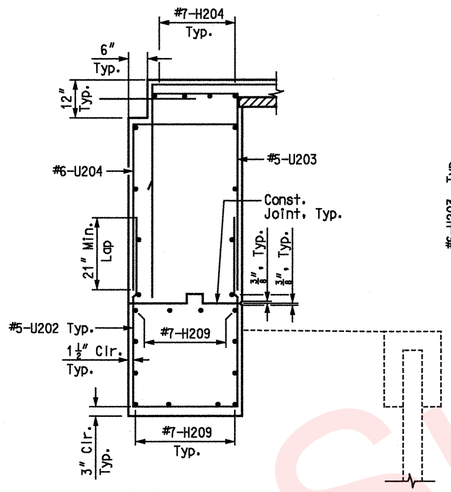
REV.

Subject to Change
DRAFT

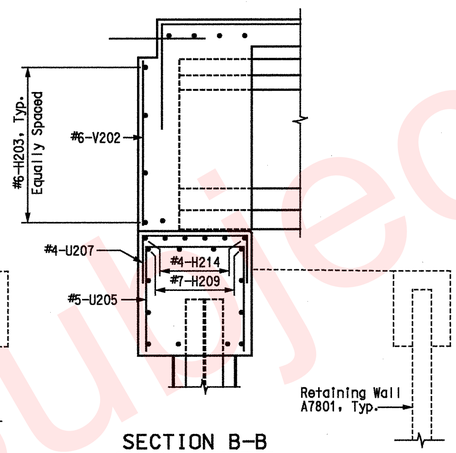


ELEVATION

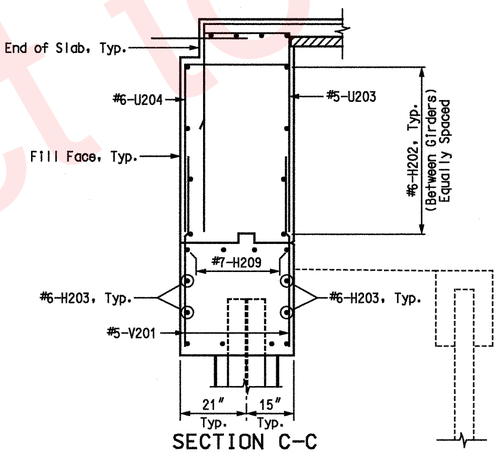
BRG. PAD HEIGHTS		
GIRDER	"A"	"B"
A	—	4⅞"
B	1"	4⅞"
C	1½"	5"
D	1"	4⅞"
E	1"	4⅞"



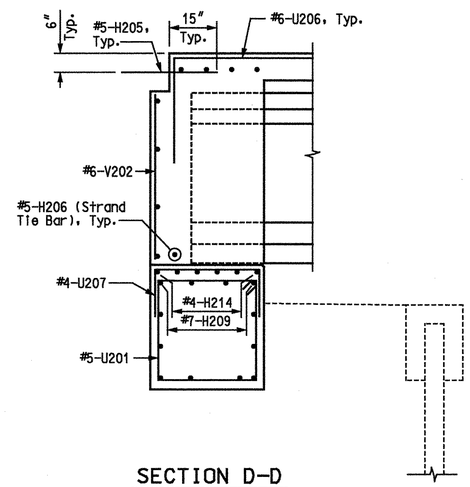
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:
e.f. denotes each face.
For additional notes and details, see Sheets No. 10 and 12.

END BENT 2 DETAILS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
5-4-10

DATE PREPARED 7/31/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 11
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION | DATE

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

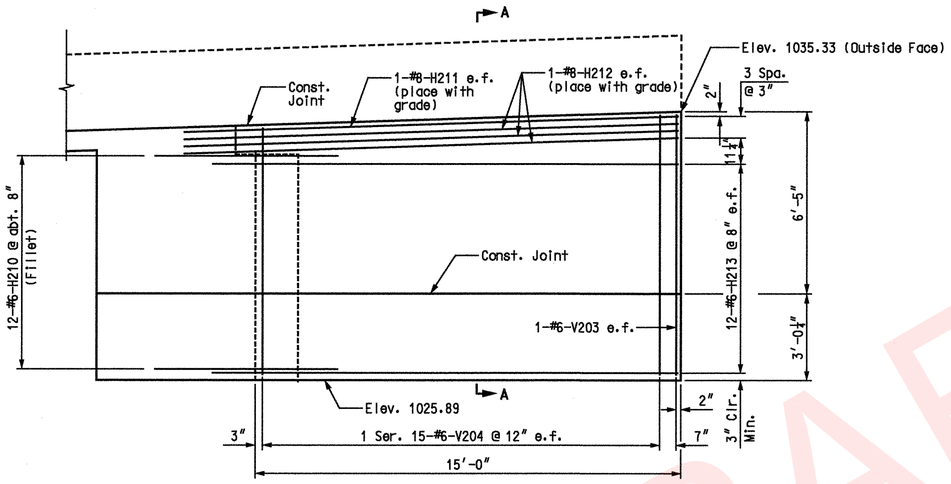
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Detailed JUL 2009
Checked AUG 2009

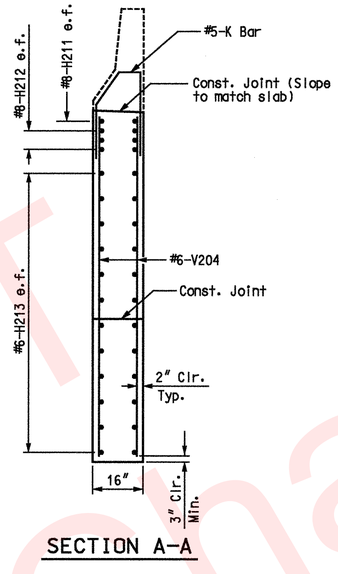
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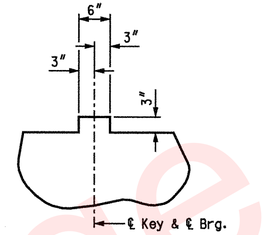
REV.



WINGWALL ELEVATION



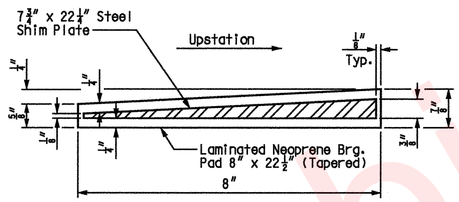
SECTION A-A



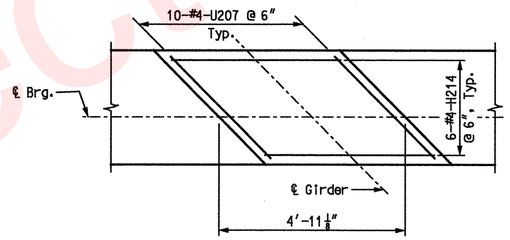
TYPICAL SECTION THRU KEY

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 2		
ITEM		QUANTITY
Structural Steel Piles (12 in.)	linear foot	216
Pre-Bore for Piling	linear foot	182
Class B Concrete (Substructure)	cu. yard	22.1
Corrugated Metal Pipe Pile Spacers	each	8

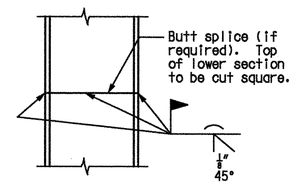
Note:
These quantities are included in the Estimated Quantities table on Sheet No. 3.



DETAIL OF LAMINATED
NEOPRENE BEARING PAD (TAPERED)



BEARING PAD DETAIL



DETAIL OF STEEL
PILE SPLICE

Notes:
e.f. denotes each face.
For additional notes and details, see Sheets No. 10 and 11.

END BENT 2 DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
9-9-10

DATE PREPARED 7/31/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 12
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DATE	DESCRIPTION

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

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

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Subject to Change

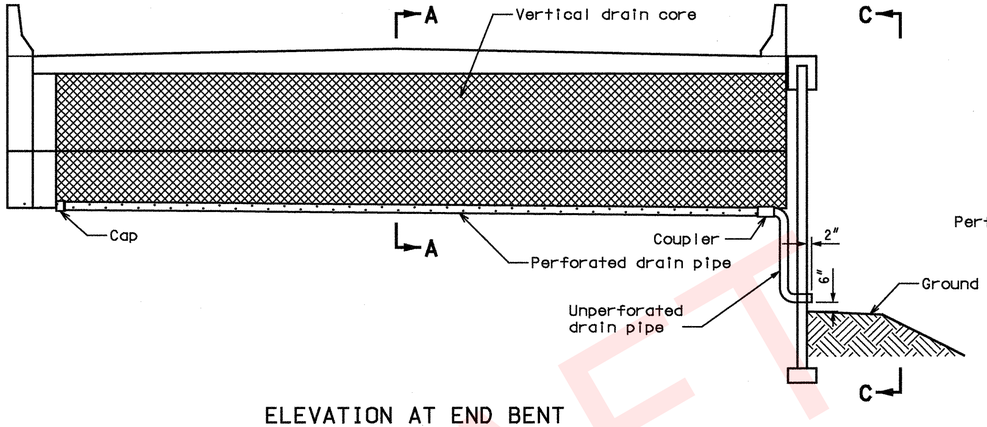
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Detailed JUL 2009
Checked AUG 2009

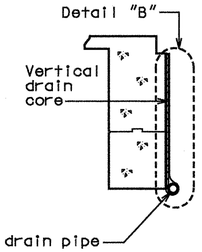
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REV.

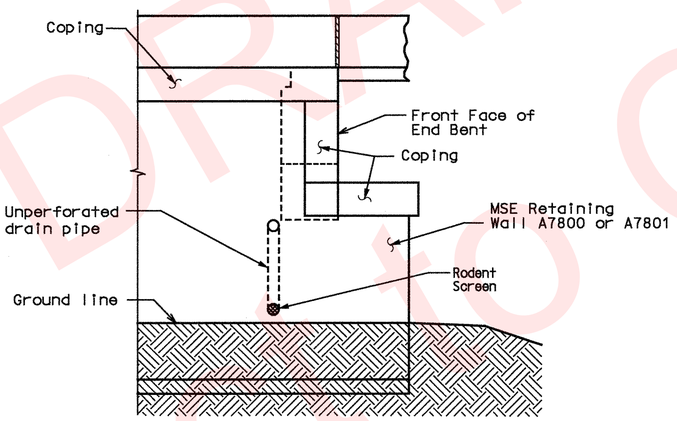
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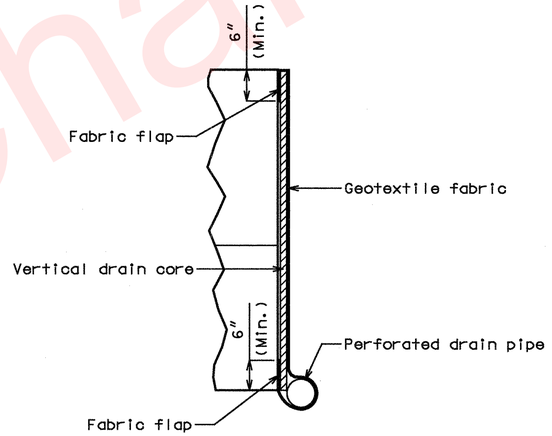
ELEVATION AT END BENT



SECTION A-A



VIEW C-C



DETAIL "B"

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

Place drain pipe at fill face of end bent and slope to exit. (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.

VERTICAL DRAIN AT END BENTS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3/9/10

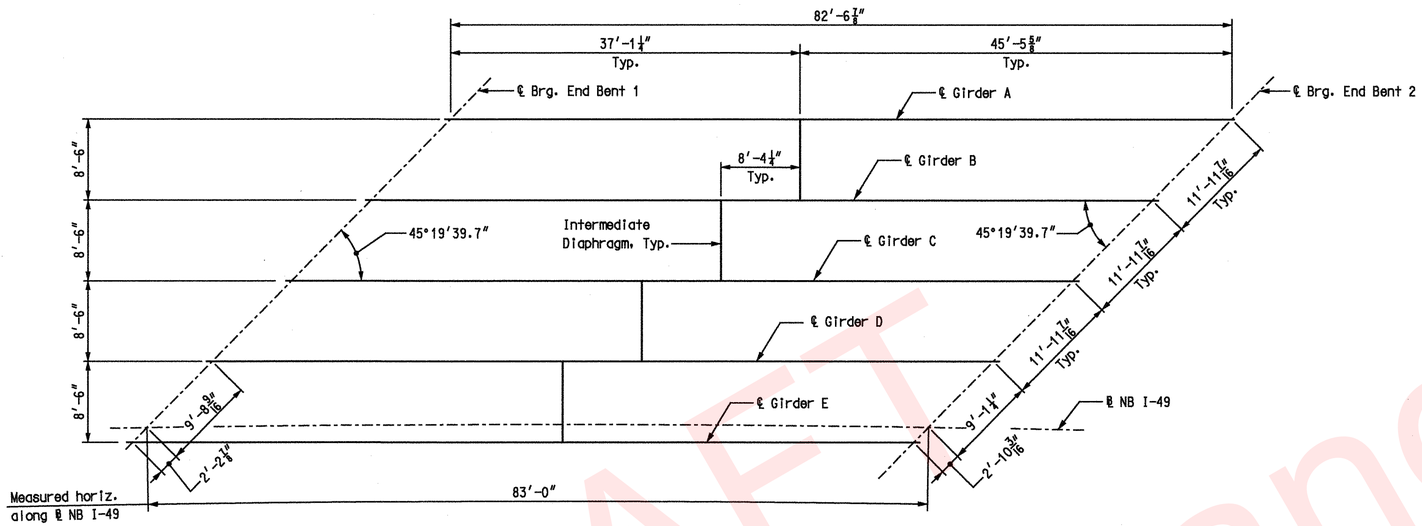
DATE PREPARED 07/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

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DESCRIPTION | DATE | REV.

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

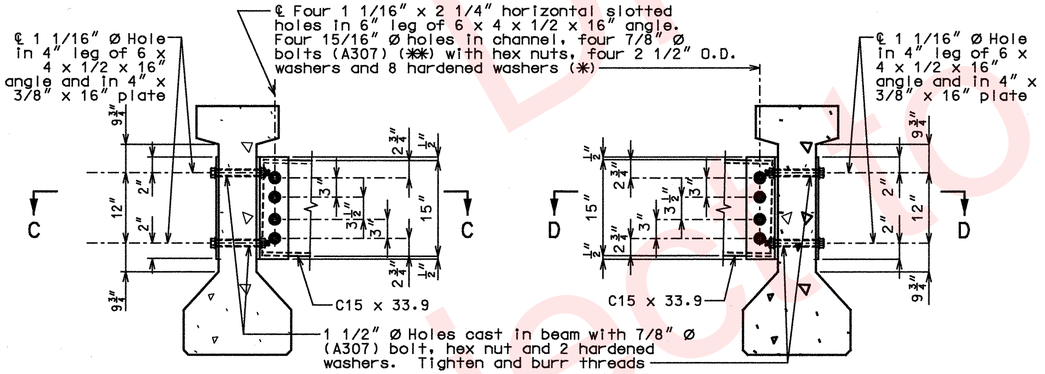
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270



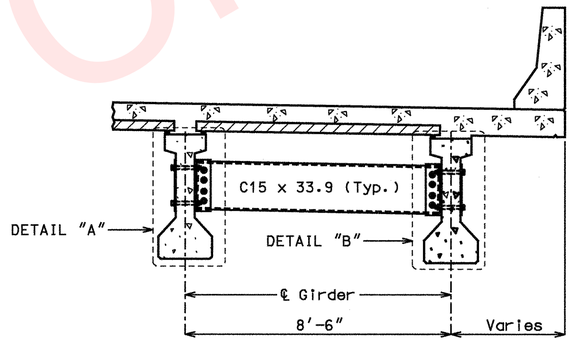
SPAN (1-2)

FRAMING PLAN

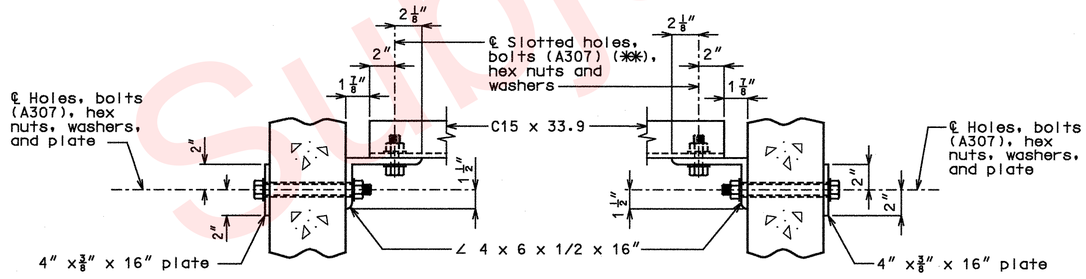
Note: Dimensions shown are horizontal.



DETAIL "A" DETAIL "B"



PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS



SECTION C-C SECTION D-D

STEEL DIAPHRAGM NOTES:

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

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

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

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

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

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

FRAMING PLAN AND STEEL INTERMEDIATE DIAPHRAGM DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
5-9-10

DATE PREPARED	7/16/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	14
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A6380

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TELEPHONE (816) 472-1201
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USER: TThompson
PLOTTED: 08-MAR-2010 15:00 \\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA6380_03-05-10\J7P0601\A6380-dgn\ZPLOT_A14.dgn

Detailed JUL 2009
Checked JUL 2009

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

\\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA6380_03-05-10\J7P0601\A6380-dgn\ZPLOT_A14.dgn 08-MAR-2010 15:00

Concrete for prestressed girders shall be Class A-1 with f'c = 6,000 psi and f'ci = 4,500 psi.

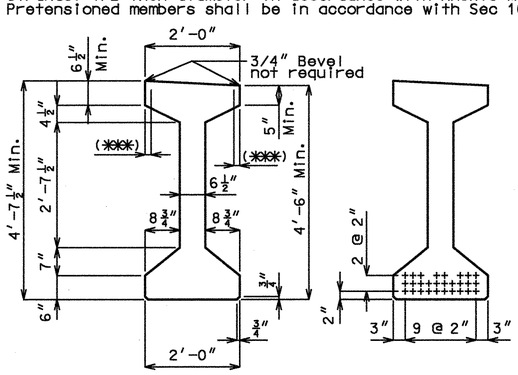
(+) indicates prestressing strand.

Use 28 strands with an initial prestress force of 867.5 kips.

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

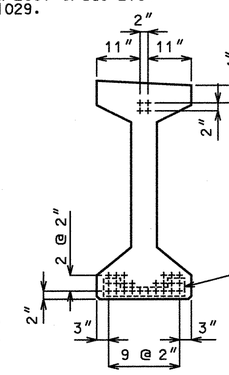
** At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional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

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



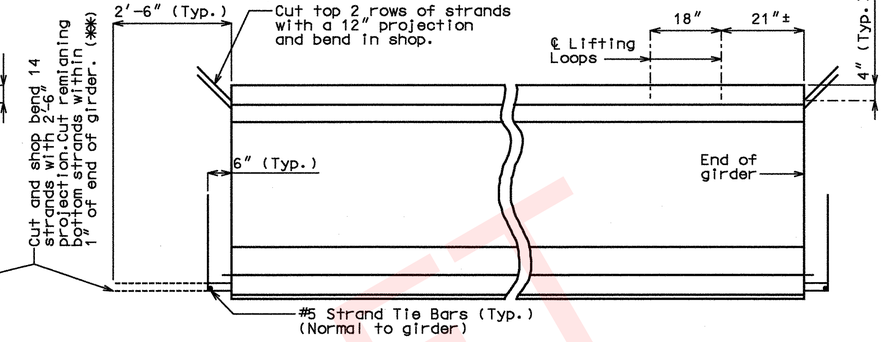
GIRDER DIMENSIONS

℄ GIRDER



END OF GIRDER

STRAND ARRANGEMENTS

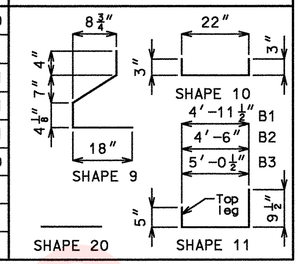


END BENT

LOCATION OF LIFTING LOOPS

BILL OF REINFORCING STEEL - EACH GIRDER

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
4	6 A1	43'-1"	20	
146	4 B1	6'-0"	11	
16	6 B2	5'-6"	11	
80	4 B3	6'-1"	11	
121	4 C1	2'-2"	10	
242	4 D1	3'-0"	9	



All dimensions are out to out.

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

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

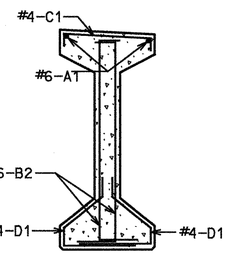
Minimum clearance to reinforcing shall be 1".

All reinforcement shall be Grade 60.

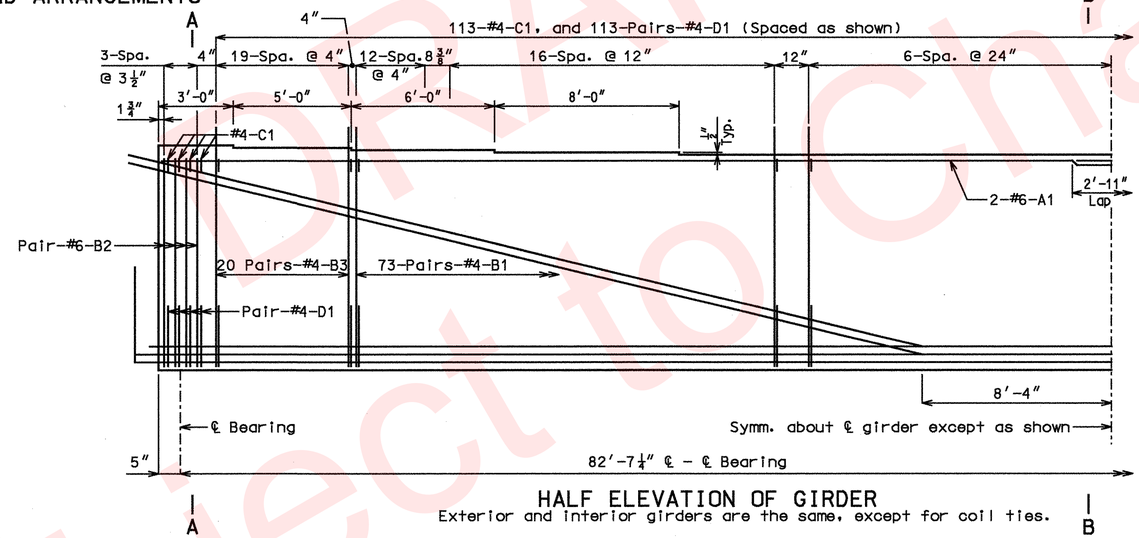
The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

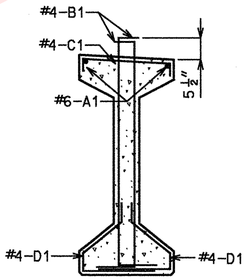
STRAND DETAILS AT GIRDER ENDS



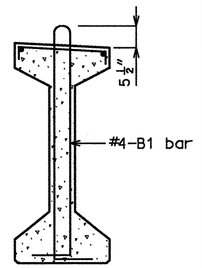
SECTION A-A
Strands not shown for clarity.



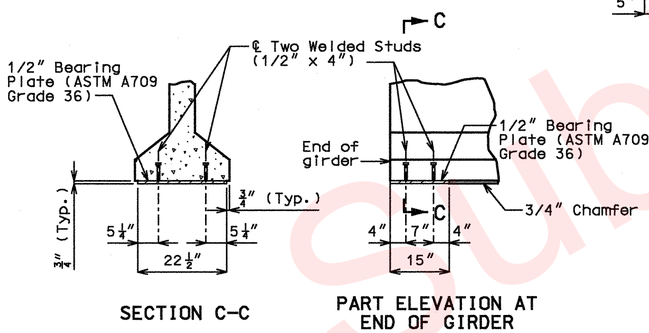
HALF ELEVATION OF GIRDER
Exterior and interior girders are the same, except for coil ties.



SECTION B-B
Strands not shown for clarity.



B1 BAR PERMISSIBLE ALTERNATE SHAPE



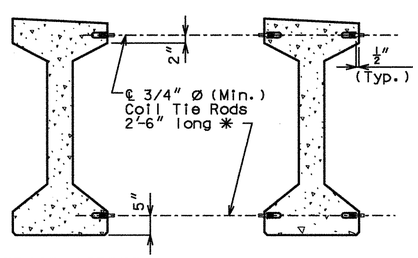
SECTION C-C

PART ELEVATION AT END OF GIRDER

BEARING PLATE DETAILS

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

Cost of furnishing, galvanizing, and installing the ½" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete I-Girder.



EXTERIOR GIRDERS AT INT. BENTS

EXTERIOR GIRDERS AT END BENTS INTERIOR GIRDERS AT ALL BENTS

DETAILS OF COIL TIES

Cost of ¾" Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete I-Girder.

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

For location of coil ties, see Sheets No. 7 & 10.

The 1½" Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed.

For Girder Camber Diagram, see Sheet No. 18.

* Length of coil tie rods at exterior girders at end bents = 2'-0".

GIRDER DETAILS - SPAN (1-2)

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STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

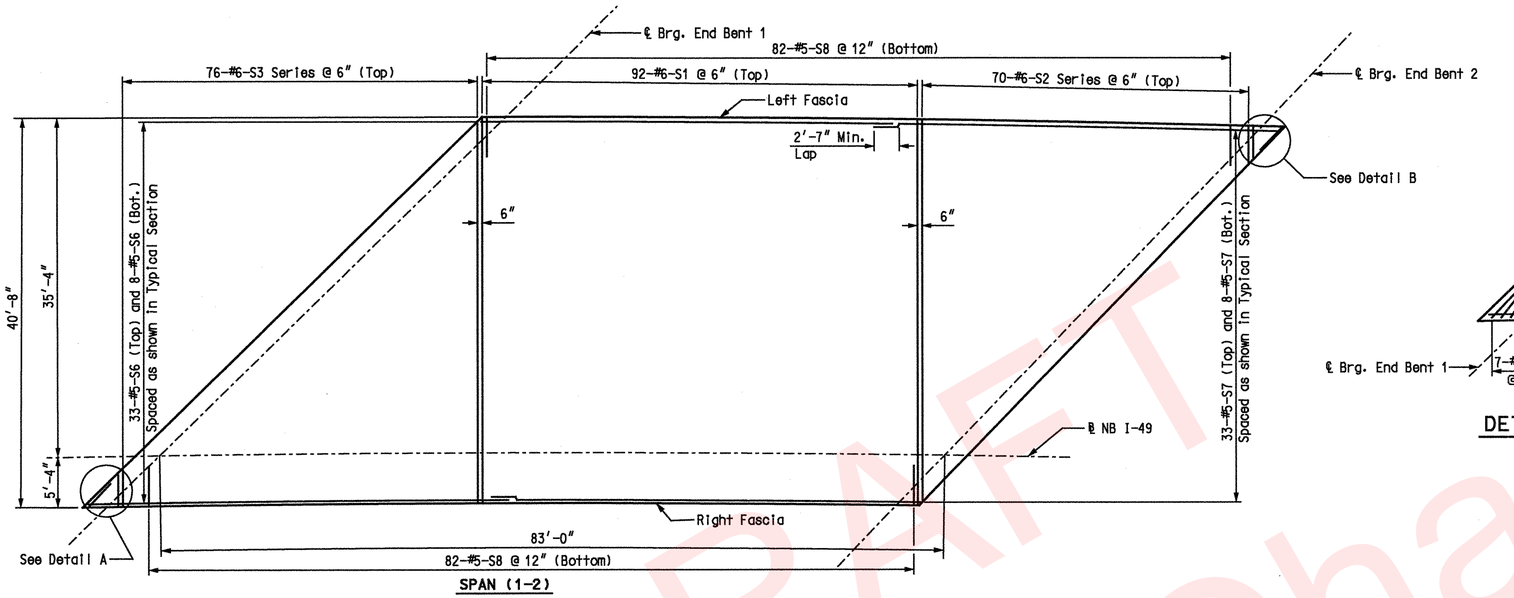
DATE PREPARED 7/21/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 15
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

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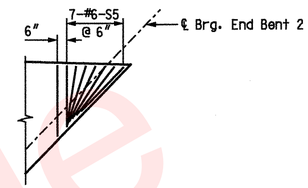
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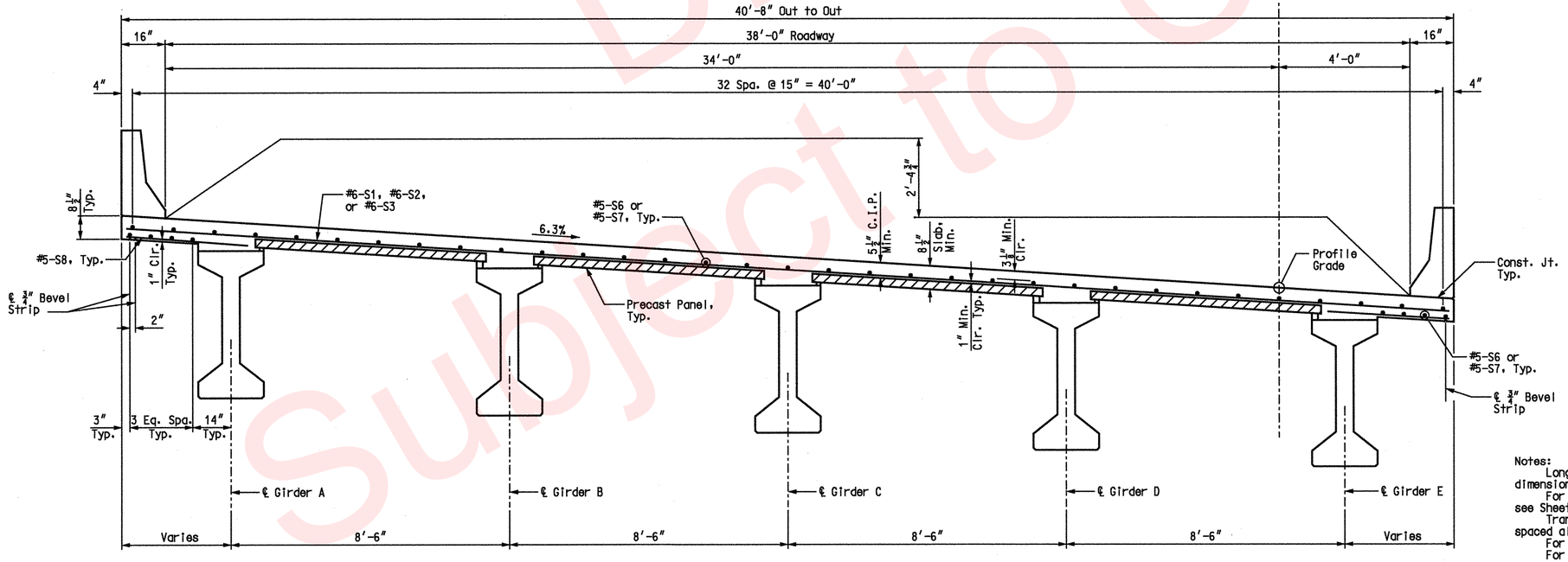


SLAB PLAN

DETAIL A



DETAIL B



TYPICAL SECTION

Notes:
Longitudinal dimensions shown are horizontal arc dimensions along ℄ NB I-49.
For details and reinforcing of Safety Barrier Curbs, see Sheets No. 19 and 20.
Transverse reinforcing shall be placed radial to and spaced along the Left Fascia.
For Framing Plan, see Sheet No. 14.
For Precast Panel Details, see Sheet No. 17.

SLAB PLAN

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
5-9-10

DATE PREPARED 7/16/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 16
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

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CERTIFICATE OF AUTHORITY NO. 001270

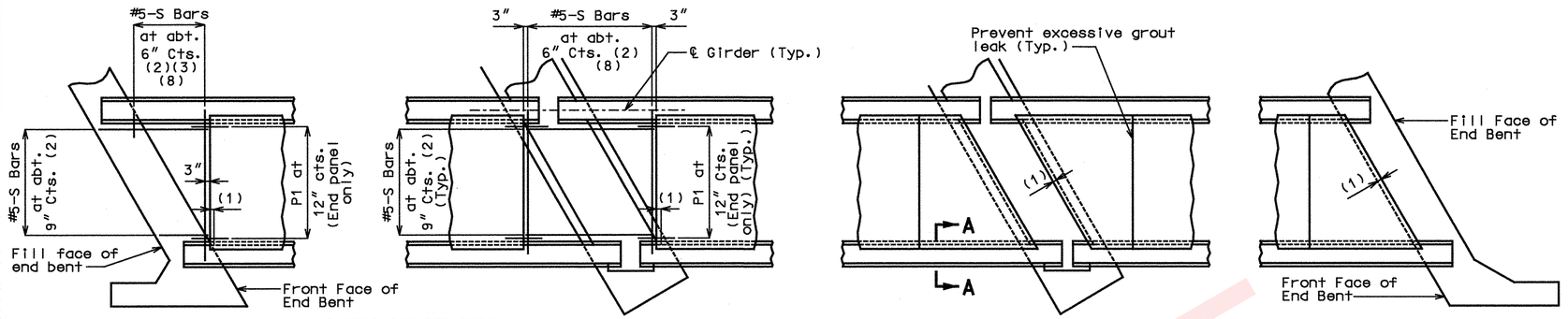
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Detailed JUL 2009
Checked JUL 2009

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

Sheet No. 16 of 26

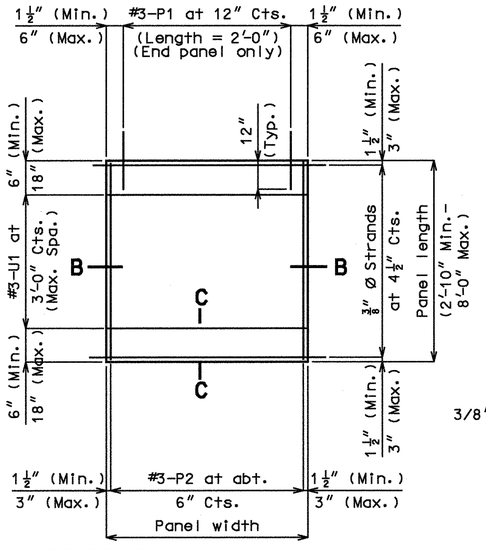
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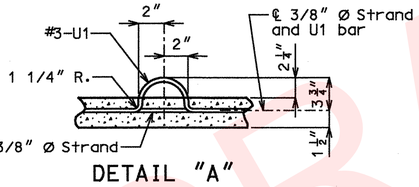
PANELS–SQUARED ENDS

PANELS–SKEWED ENDS

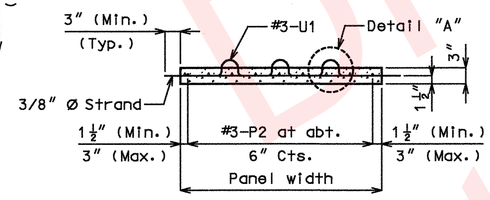
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



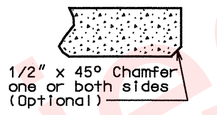
PLAN OF PRECAST PRESTRESSED PANEL



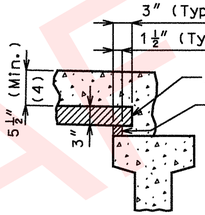
DETAIL "A"



SECTION B–B



SECTION C–C



SECTION A–A

Note: Use slab haunching diagram on Sheet No. 18 for determining thickness of preformed fiber expansion joint material or polystyrene bedding material within the limits noted in general notes.

NOTES:

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

The reinforcing steel shall be tied securely to the 3/8"Ø strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
Welded wire fabric or welded deformed bar mats at 2'-0".

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

All reinforcement other than prestressing strands shall be epoxy coated.

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

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

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

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

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

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

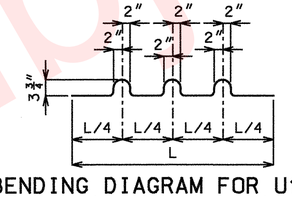
(4) In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

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

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

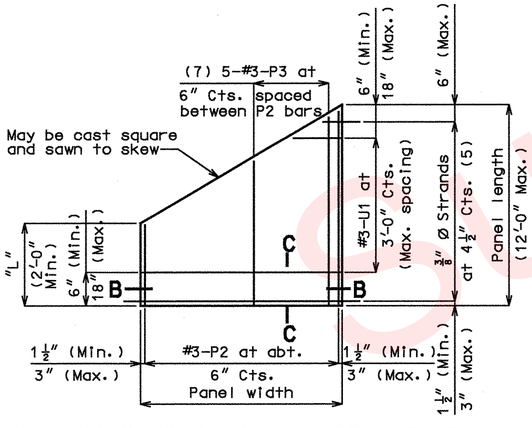
(7) Use #3-P3 bars if panel is skewed 45° or greater.

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



BENDING DIAGRAM FOR U1 BAR

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



PLAN OF PRECAST PRESTRESSED PANEL
(SKEWED END–OPTIONAL)

GENERAL NOTES:

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

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

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

Initial prestressing force = 17.2 kips/strand.

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

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

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

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

Minimum preformed fiber expansion joint material or polystyrene bedding material thickness shall be 1 inch. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness, to within tolerances. No more than 2 inches total thickness shall be used.

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

Slab thickness over prestressed panels varies due to girder camber.

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

REINFORCING STEEL:
All dimensions are out to out.

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

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

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

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

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

DETAILS OF PRECAST PRESTRESSED PANELS

DRAFT Change Subject to

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 2/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 17
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
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BRIDGE NO. A6380

DESCRIPTION | DATE

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TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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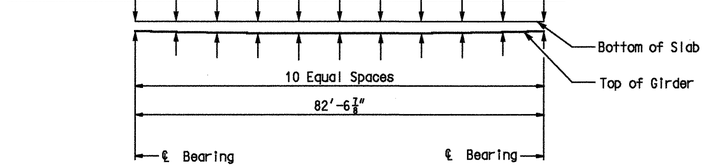
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Note: This drawing is not to scale. Follow Dimensions.

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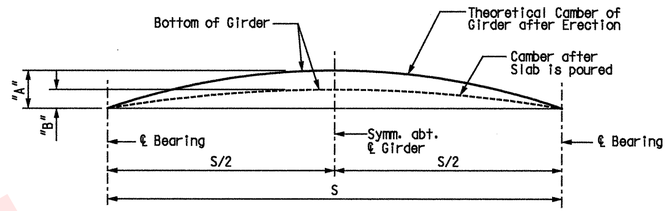
Girder A	$2\frac{1}{16}$	$2\frac{3}{8}$	$2\frac{1}{4}$	$2\frac{1}{4}$	$1\frac{15}{16}$	$1\frac{13}{16}$	$1\frac{15}{16}$	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{16}$
Girder B	2	$2\frac{5}{16}$	$2\frac{3}{16}$	$2\frac{3}{16}$	$1\frac{15}{16}$	$1\frac{13}{16}$	$1\frac{15}{16}$	$2\frac{1}{4}$	$2\frac{3}{16}$	$2\frac{5}{16}$	2
Girder C	2	$2\frac{5}{16}$	$2\frac{3}{16}$	$2\frac{3}{16}$	$1\frac{7}{8}$	$1\frac{13}{16}$	$1\frac{15}{16}$	$2\frac{3}{16}$	$2\frac{3}{16}$	$2\frac{5}{16}$	2
Girder D	2	$2\frac{5}{16}$	$2\frac{3}{16}$	$2\frac{3}{16}$	$1\frac{7}{8}$	$1\frac{13}{16}$	$1\frac{7}{8}$	$2\frac{3}{16}$	$2\frac{3}{16}$	$2\frac{5}{16}$	2
Girder E	$2\frac{1}{16}$	$2\frac{3}{8}$	$2\frac{1}{4}$	$2\frac{1}{4}$	$1\frac{15}{16}$	$1\frac{13}{16}$	$1\frac{15}{16}$	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{16}$



SPAN (1-2)

THEORETICAL SLAB HAUNCHING DIAGRAM

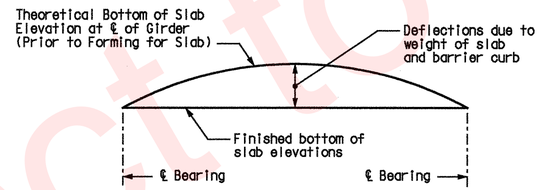
Notes:
If Girder Camber is different from that shown in the Camber Diagram, it shall be necessary to adjust the slab haunches, increase the slab thickness or raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.
Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete I-Girder.
Slab haunching values are given in inches.



GIRDER CAMBER DIAGRAM

Conversion Factors for Girder Camber
0.1 PT.=0.314 x 0.5 PT.
0.2 PT.=0.593 x 0.5 PT.
0.3 PT.=0.813 x 0.5 PT.
0.4 PT.=0.952 x 0.5 PT.

GIRDER	SPAN (1-2)	
	"A"	"B"
A	3"	$2\frac{1}{8}$"
B	3"	$2\frac{1}{16}$"
C	3"	$2\frac{1}{16}$"
D	3"	$2\frac{1}{16}$"
E	3"	$2\frac{1}{8}$"



TYPICAL SLAB ELEVATIONS DIAGRAM

Theoretical Bottom of Slab Elevations at CL of Girder (Prior to Forming for Slab) **

	Span (1-2)										
	℄ brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ brg.
Girder A	1035.05	1035.29	1035.53	1035.77	1036.02	1036.26	1036.51	1036.76	1037.00	1037.25	1037.50
Girder B	1034.26	1034.50	1034.75	1034.99	1035.23	1035.48	1035.73	1035.97	1036.22	1036.47	1036.72
Girder C	1033.48	1033.72	1033.96	1034.21	1034.45	1034.69	1034.94	1035.19	1035.43	1035.68	1035.93
Girder D	1032.70	1032.94	1033.18	1033.42	1033.66	1033.91	1034.15	1034.40	1034.65	1034.90	1035.15
Girder E	1031.91	1032.15	1032.39	1032.64	1032.88	1033.12	1033.37	1033.61	1033.86	1034.11	1034.36

** Elevations are based on a constant slab thickness of $8\frac{1}{2}$" and include allowance for theoretical dead load deflections due to weight of slab and barrier curb.

DRAFT Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-4-10

DATE PREPARED 07/31/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 18
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

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

USER: TThompson
PLOTTED: 08-MAR-2010 15:00 \\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA6380_03-05-10\J7P0601\A6380-dgn\ZPLOT_A15.dgn

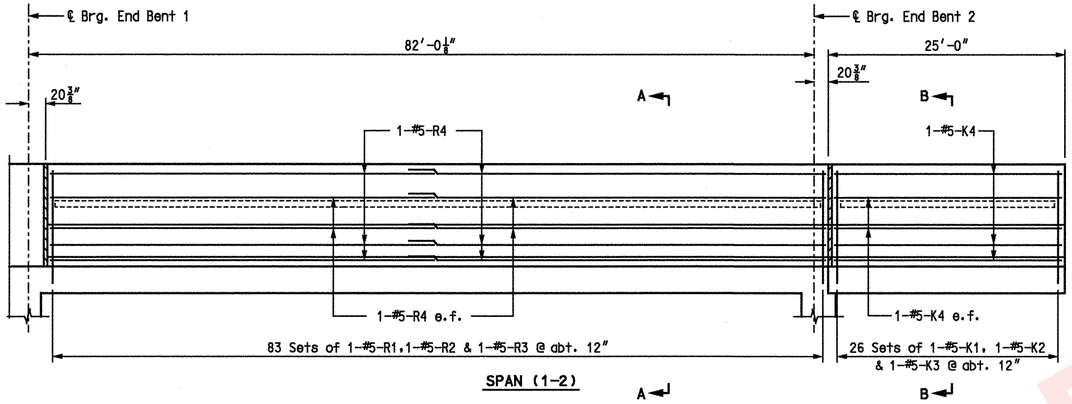
Detailed JUL 2009
Checked AUG 2009

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

Sheet No. 18 of 26

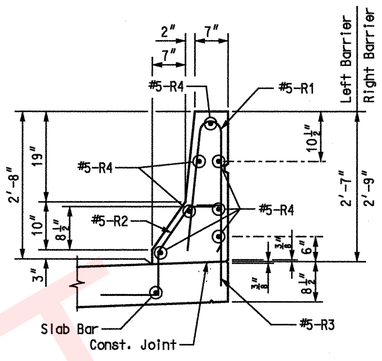
THEORETICAL SLAB HAUNCHING DIAGRAM AND BOTTOM OF SLAB ELEVATIONS

REV.

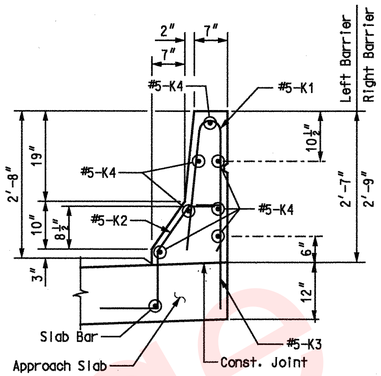


SPAN (1-2)

ELEVATION
(Left Barrier Curb)

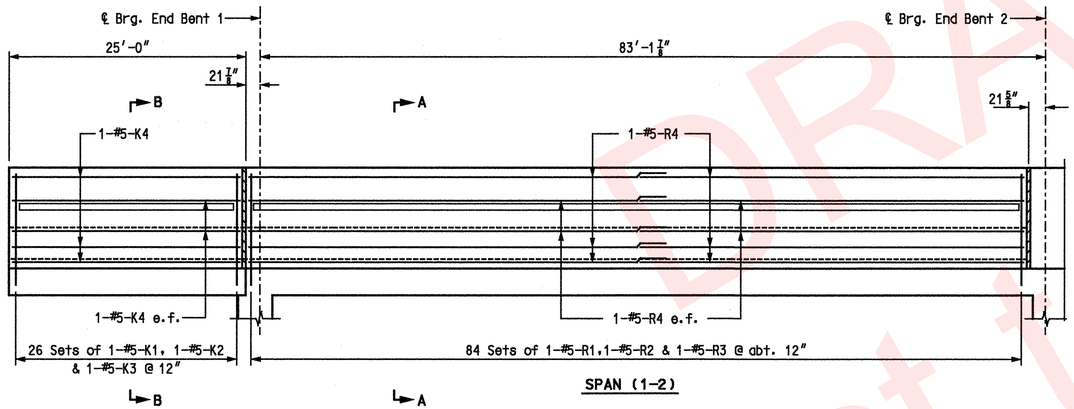


SECTION A-A



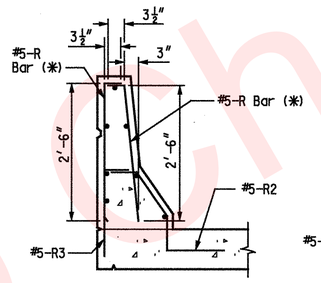
SECTION B-B

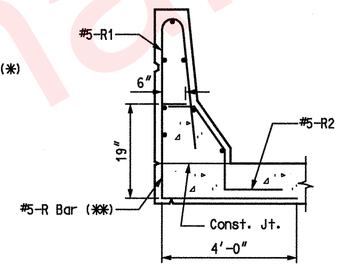
Notes:
The cross sectional area above slab = 2.28 sq. ft. Right Barrier and 2.23 sq. ft. Left Barrier



SPAN (1-2)

ELEVATION
(Right Barrier Curb)

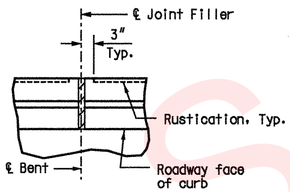




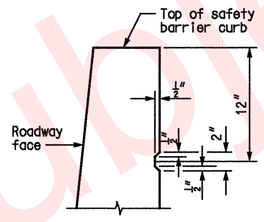
R-BAR PERMISSIBLE ALTERNATE SHAPE

(*) The R1 bar may be seperated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensioins are out to out.)

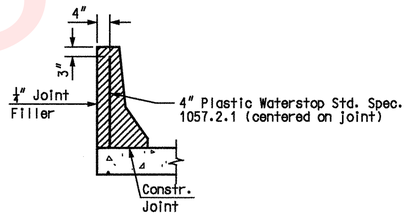
(**) The R3 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

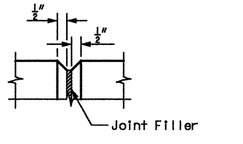


PART SECTION SHOWING RUSTICATION DETAIL



DETAILS OF PLASTIC WATERSTOP

Notes:
Plastic waterstop shall be placed in all safety barrier curb filled joints. (except structures with superelevation, use on all lower safety barrier curb joints only.)
Cost of plastic waterstop complete in place will be considered completely covered by the contract unit price for safety barrier curb.



FILLED JOINT DETAIL

Notes:
e.f. denotes each face.
Use a minimum lap of 2′-11″ for #5 horizontal barrier curb bars.
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 ½″ radius or a ¾″ 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 curb to end of curb.
Concrete traffic barrier delineators shall be placed on top of safety barrier curb (Type C) 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 (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 for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

SAFETY BARRIER CURB DETAILS

DRAFT Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED	07/22/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	19
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A6380

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

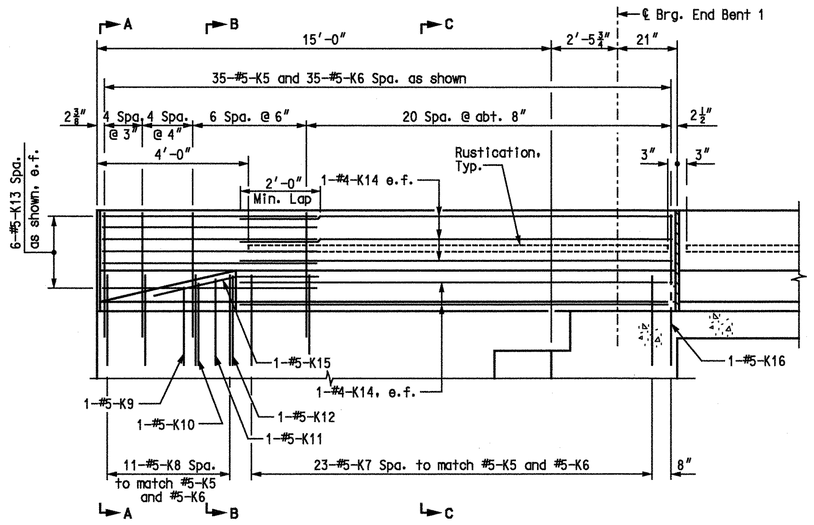
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USER: TThompson
PLOTTED: 08-MAR-2010 15:00 \\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA6380_03-05-10\J7P0601\A6380-dgn\ZPLOT_A22.dgn

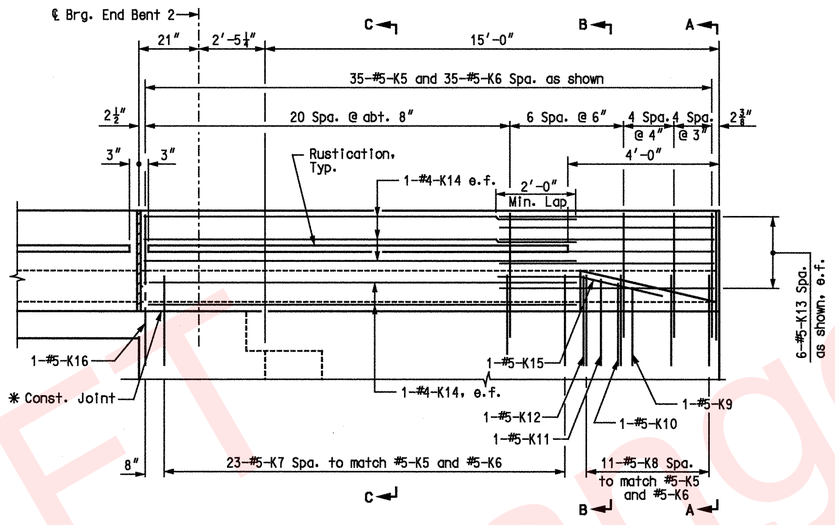
Detailed JUL 2009
Checked JUL 2009

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

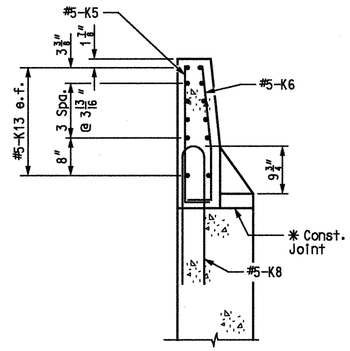
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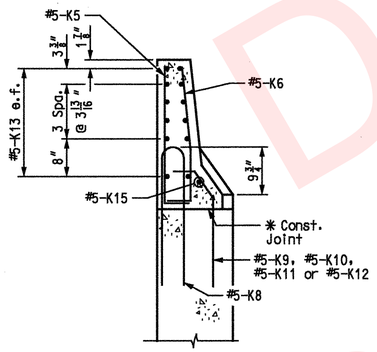
ELEVATION AT END BENT 1
(Left Barrier Curb)



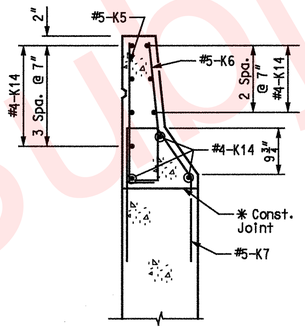
ELEVATION AT END BENT 2
(Right Barrier Curb)



SECTION A–A
Scale: ¾″=1′-0″

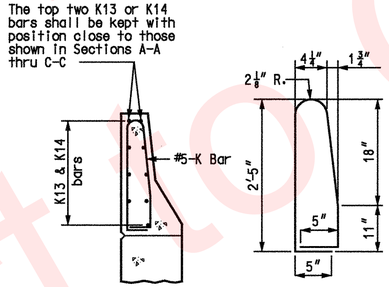


SECTION B–B
Scale: ¾″=1′-0″



SECTION C–C
Scale: ¾″=1′-0″

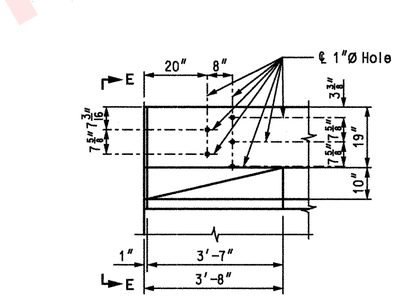
The top two K13 or K14 bars shall be kept with position close to those shown in Sections A-A thru C-C



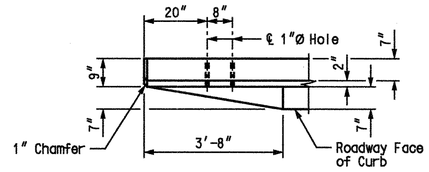
(K7 or K8 thru K12 bars not shown for clarity)

K5–K6 BAR PERMISSIBLE ALTERNATE SHAPE (✱✱✱)

(✱✱✱) The K5 and K6 bar combination may be furnished as one bar as shown, at the contractor's option.

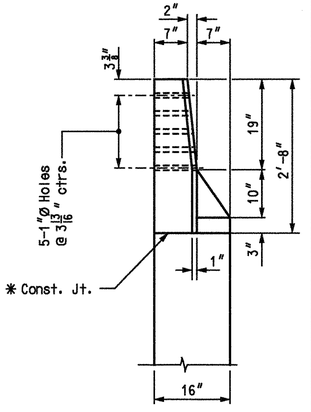


PART ELEVATION



PART PLAN

DETAILS OF GUARD RAIL ATTACHMENT
Scale: ½″=1′-0″



SECTION E–E

Notes:
e.f. denotes each face.
✱ Slope to match slope of roadway.
Sections A-A, B-B and C-C are shown for End Bent 2, End Bent 1 is identical except opposite hand.

SAFETY BARRIER CURB DETAILS

DATE PREPARED	7/22/08
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	20
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A6380

STATE OF MISSOURI — GINA D. HORNER — NUMBER E-30413 — REGISTERED PROFESSIONAL ENGINEER — 5-9-10

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

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

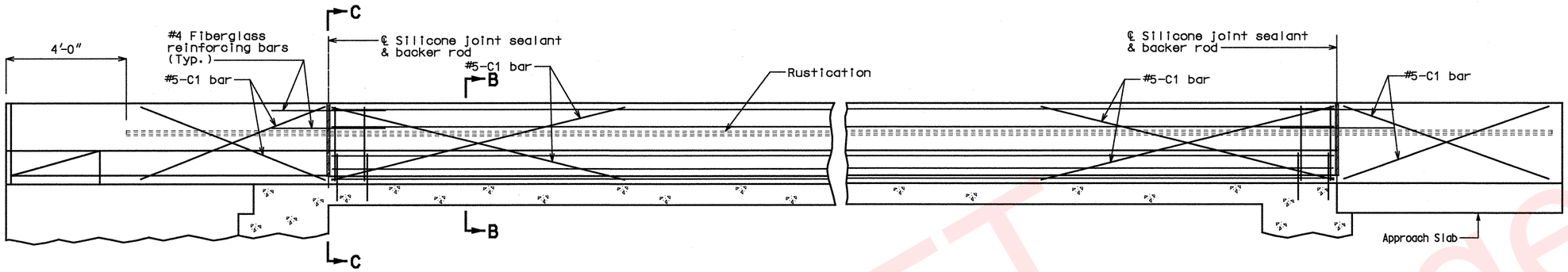
DRAFT Subject to Change

USER: TThompson
PLOTTED: 08-MAR-2010 15:01
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Detailed JUL 2009
Checked JUL 2009

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

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TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS (OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note:
Left barrier curb shown, right barrier curb similar.

Notes:

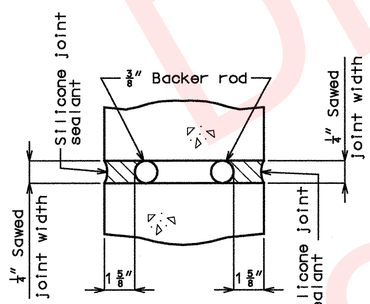
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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

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

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



SECTION A-A

Notes:

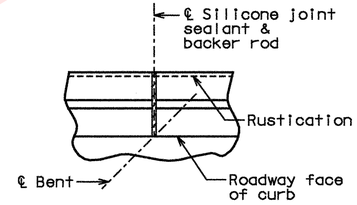
Joint sealant and backer rods shall be used on all slip-form barrier curbs instead of joint filler and shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

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

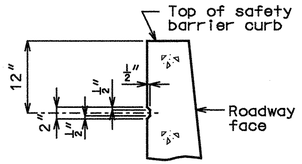
C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

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

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb (Type C) 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 (Type C)".

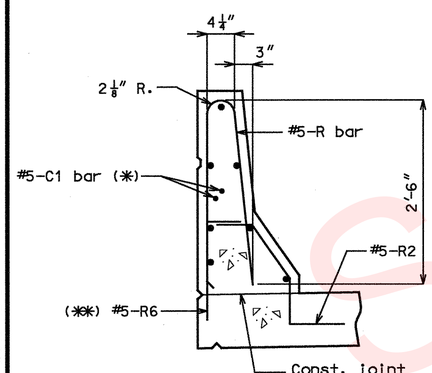


PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL



Notes:

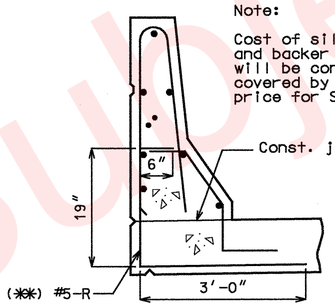
(*) Each side of joint location.

(**) The R6 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar at the contractor's option.

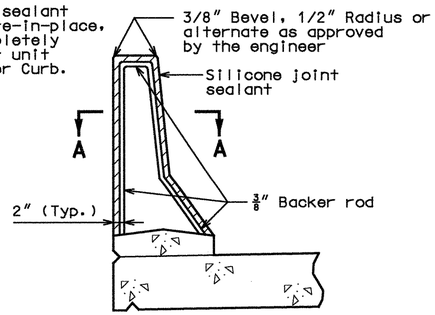
PART SECTION B-B

Note:

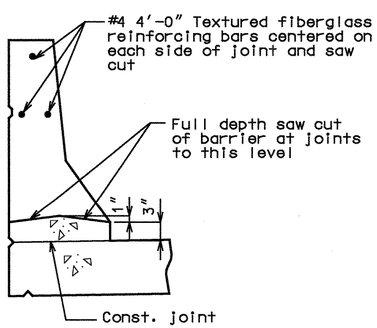
Cost of silicone joint sealant and backer rod, complete-in-place, will be considered completely covered by the contract unit price for Safety Barrier Curb.



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



SECTION THRU JOINT



PART SECTION C-C

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
7/17/09

DATE PREPARED	7/17/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	21
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A6380

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DESCRIPTION | DATE | REV.

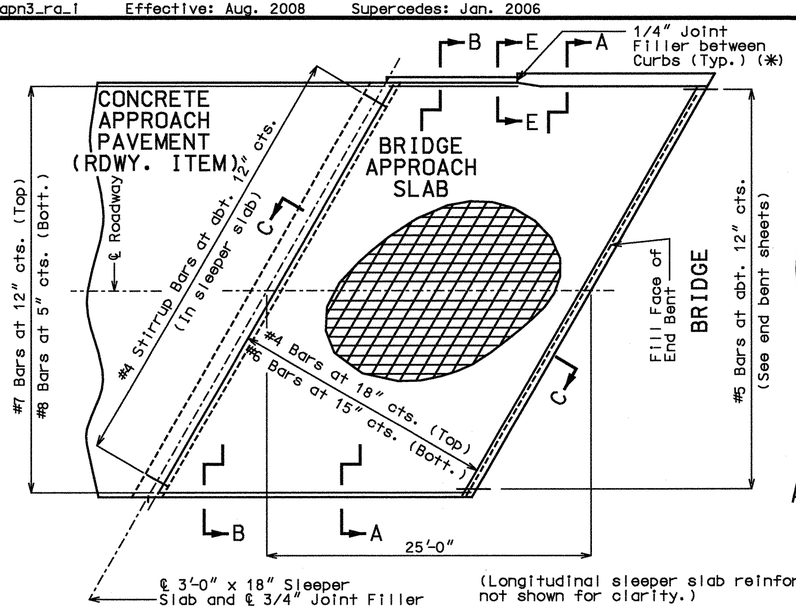
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

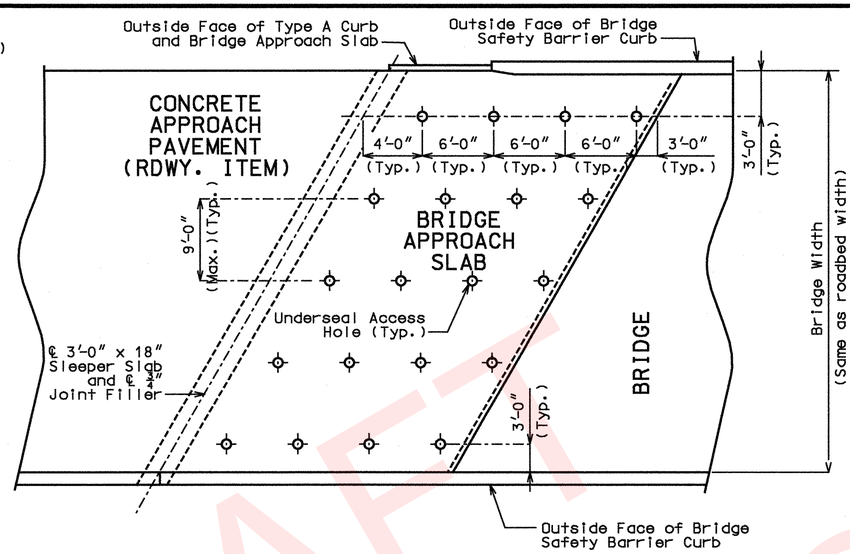
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Detailed JUL 2009
Checked JUL 2009

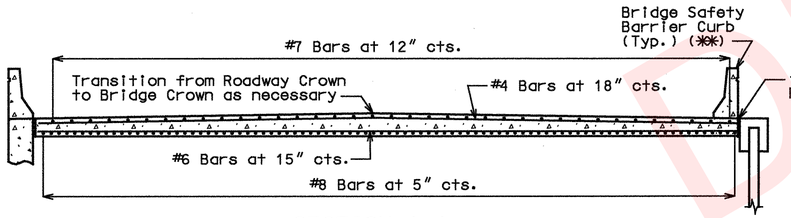
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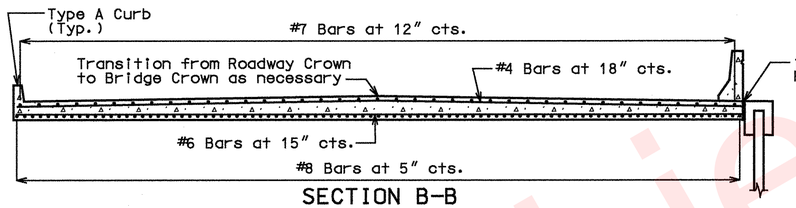
PART PLAN SHOWING REINFORCEMENT



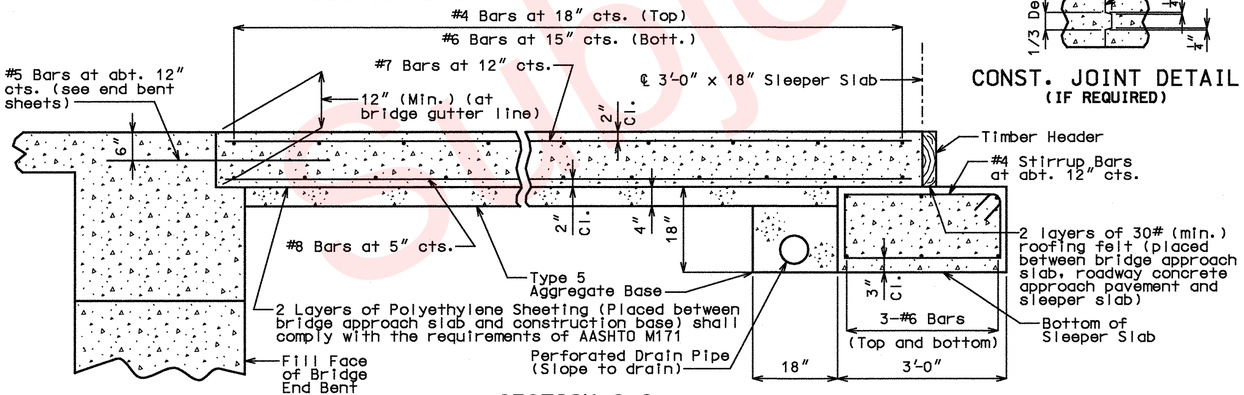
PART PLAN
(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



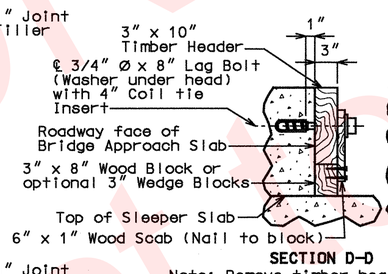
SECTION A-A
(**) For Safety Barrier Curb dimensions and reinforcing, see Sheet No. 19.



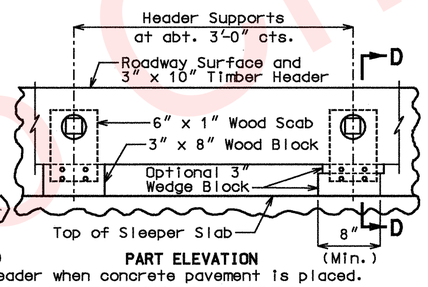
SECTION B-B



SECTION C-C



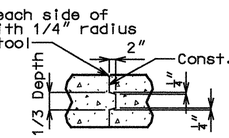
SECTION D-D



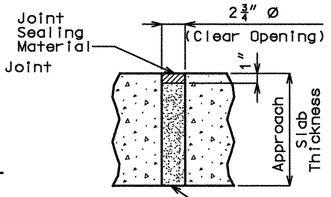
PART ELEVATION

Note: Remove timber header when concrete pavement is placed.

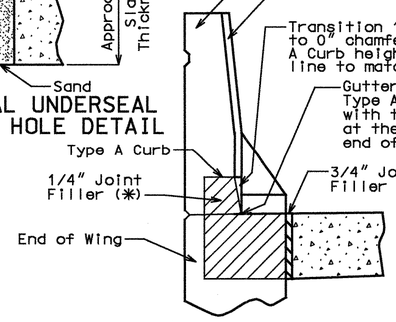
DETAILS OF TIMBER HEADER



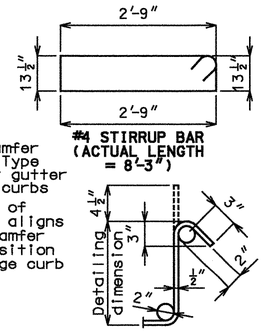
CONST. JOINT DETAIL
(IF REQUIRED)



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 Drawings 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.

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
5/7/10

DATE PREPARED	07/23/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	22
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A6380

DATE | DESCRIPTION

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

BRIDGE APPROACH SLAB - END BENT 1

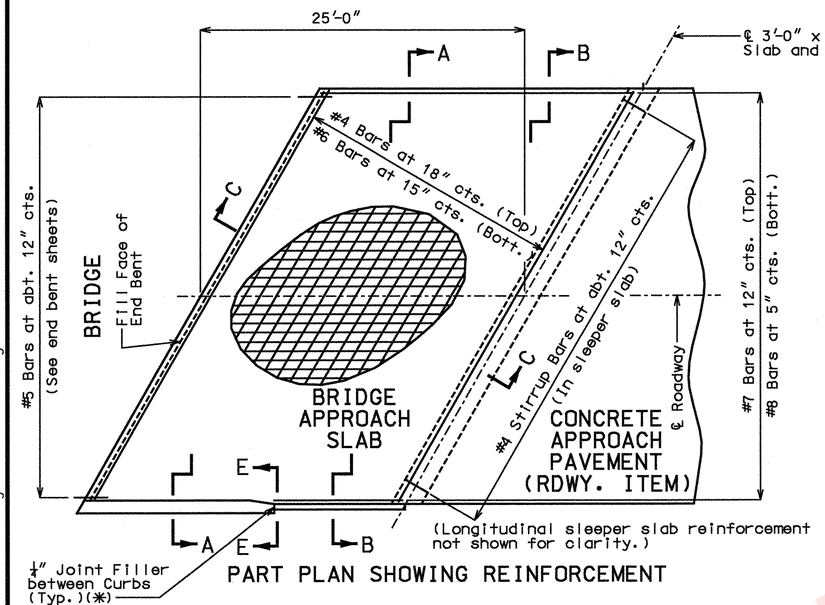
Detailed JUL 2009
Checked JUL 2009

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

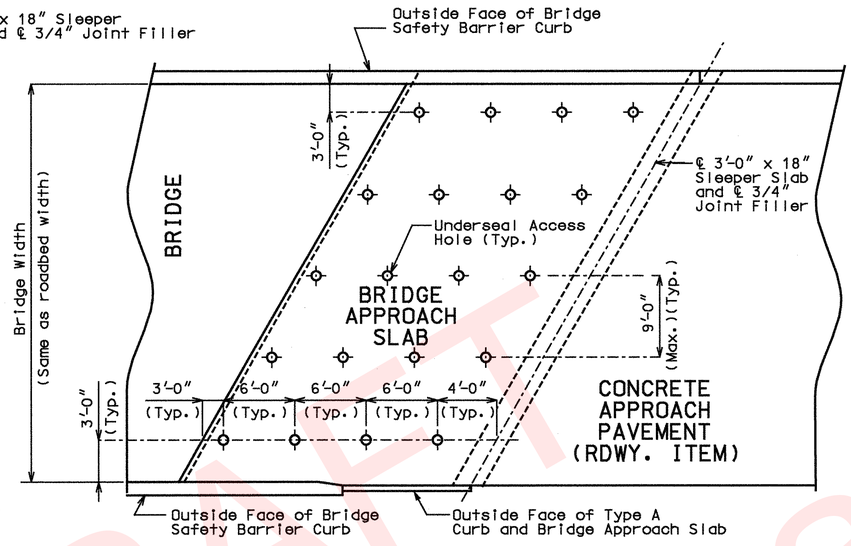
Sheet No. 22 of 26

REV.

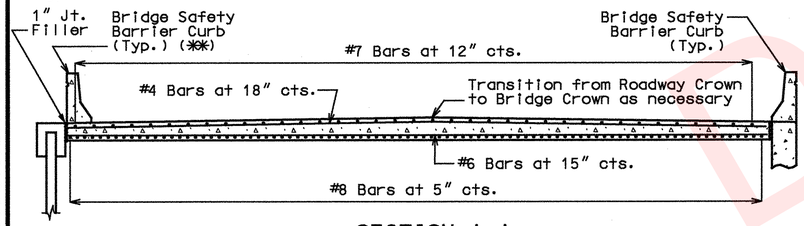
DRAFT Subject to Change



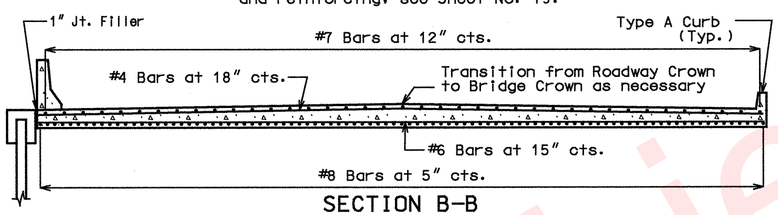
PART PLAN SHOWING REINFORCEMENT



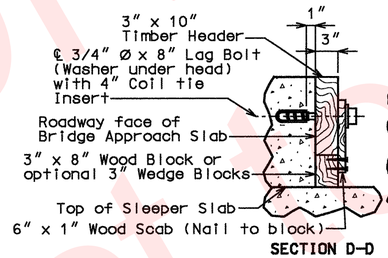
PART PLAN
(SHOWING TYPICAL UNDERSEAL ACCESS HOLE LOCATIONS)



SECTION A-A
(**) For Safety Barrier Curb dimensions and reinforcing, see Sheet No. 19.



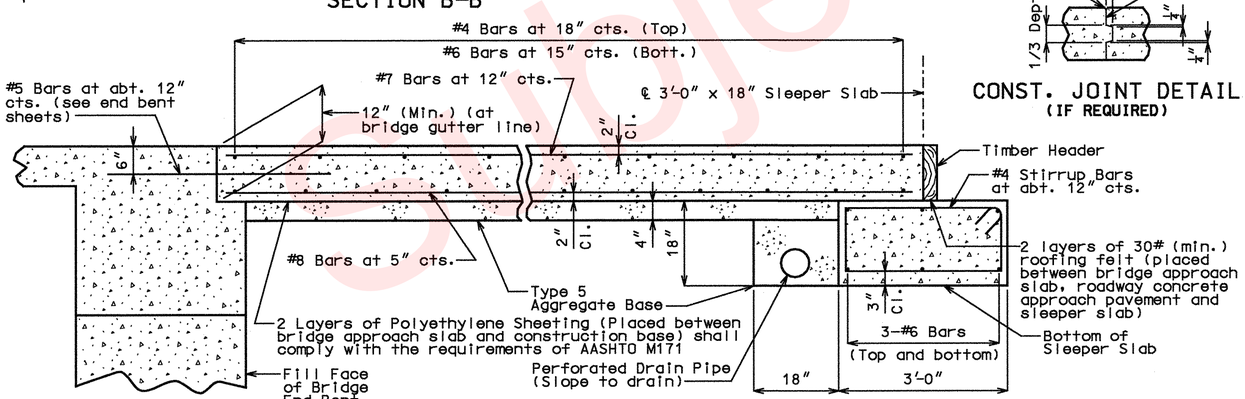
SECTION B-B



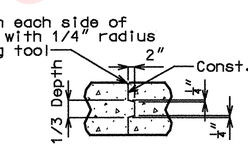
SECTION D-D PART ELEVATION

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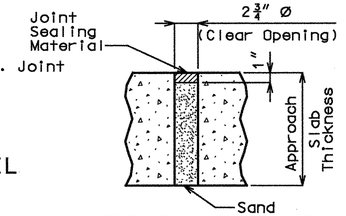
DETAILS OF TIMBER HEADER



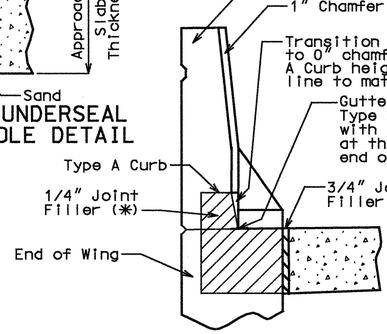
SECTION C-C



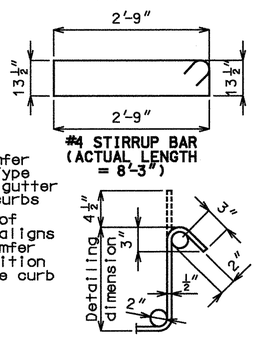
CONST. JOINT DETAIL
(IF REQUIRED)



TYPICAL UNDERSEAL ACCESS HOLE DETAIL



SECTION E-E
(BETWEEN CURBS)



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DRAFT Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
5-7-10

DATE PREPARED 07/23/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 23
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION | DATE | REVISION

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

USER: TThompson
PLOTTED: 08-MAR-2010 15:01
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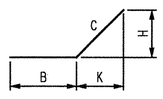
Detailed JUL 2009
Checked JUL 2009

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

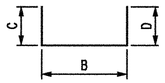
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BILL OF REINFORCING STEEL

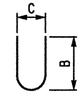
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			SUPERSTRUCTURE																									
			END BENT 1																									
4		6H101	Diaphragm		20					3′	−6″													3′	−6″	3′	−6″	21
16		6H102	Diaphragm		20					8′	−9″													8′	−9″	8′	−9″	210
8		6H103	Diaphragm & Beam		20					57′	−10″													57′	−10″	57′	−10″	695
4		7H104	Diaphragm	E	20					57′	−10″													57′	−10″	57′	−10″	473
41		5H105	Diaphragm	E	20					2′	−6″													2′	−6″	2′	−6″	107
5		5H106	Diaphragm		23	S					15″	2′	−0″	15″		10½″		10¾″		10½″		10¾″		4′	−6″	4′	−6″	23
5		6H107	Diaphragm		38	S				8′	−3″	3′	−10″							2′	−8″	2′	−9″	12′	−1″	12′	−1″	91
5		6H108	Diaphragm		2					5′	−1″	3′	−8″							2′	−7⅛″	2′	−7⅛″	8′	−9″	8′	−9″	66
8		7H109	Beam		20					57′	−10″													57′	−10″	57′	−10″	946
12		6H110	Fillet		15	S				14″		3′	−10″	14″		12⅞″		5⅜″		12⅞″		5⅜″		6′	−2″	6′	−2″	111
2		8H111	Wingwall	E	20					17′	−5″													17′	−5″	17′	−5″	93
6		8H112	Wingwall		20					17′	−5″													17′	−5″	17′	−5″	279
22		6H113	Wingwall		20					16′	−5″													16′	−5″	16′	−5″	542
30		4H114	Bearing Pad		20					4′	−7″													4′	−7″	4′	−7″	92
4		6H115	Diaphragm		20					3′	−0″													3′	−0″	3′	−0″	18
19		5U101	Beam		53	S				3′	−10″	2′	−7″											13′	−9″	13′	−6″	268
30		5U102	Beam		5	S				3′	−10″	4′	−10″	4′	−10″									13′	−6″	13′	−3″	415
40		5U103	Diaphragm	E	5	S				3′	−2″	5′	−4″	5′	−4″									13′	−10″	13′	−7″	567
40		6U104	Diaphragm		19	S				4′	−4″	3′	−10″											8′	−2″	8′	−1″	486
6		5U105	Beam		5	S				3′	−10″	2′	−7″	2′	−7″									9′	−0″	8′	−9″	55
57		6U106	Diaphragm	E	19	S				3′	−0″	14′	−0″											17′	−0″	16′	−11″	1,448
50		4U107	Bearing Pad		5	S				3′	−9″	15″		15″										6′	−3″	6′	−1″	203
20		5V101	Beam		20					4′	−10″													4′	−10″	4′	−10″	101
25		6V102	Diaphragm		20					4′	−4″													4′	−4″	4′	−4″	163
2		6V103	Wingwall		20					7′	−9″													7′	−9″	7′	−9″	23
30		6V104	Wingwall		20			V	2	7′	−10″													7′	−10″	7′	−10″	366
			Increment = ½″							8′	−5″													8′	−5″	8′	−5″	



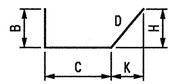
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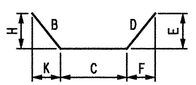
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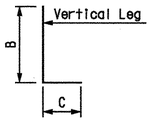
SHAPE 7



SHAPE 14



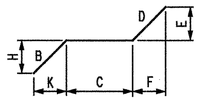
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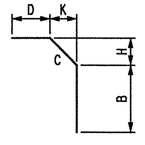
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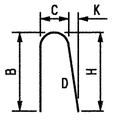
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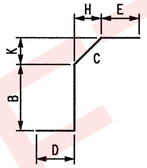
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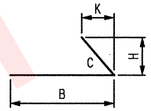
SHAPE 25



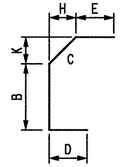
SHAPE 26



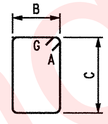
SHAPE 27



SHAPE 38

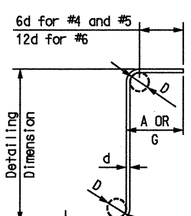


SHAPE 40

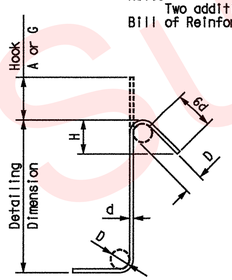


SHAPE 53

Notes:
Two additional #6-U106 are included in the Bill of Reinforcing Steel for testing.



90° STIRRUP

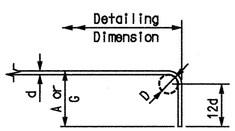


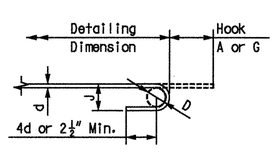
135° STIRRUP

STIRRUP HOOK DIMENSIONS

GRADES 40 − 50 − 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2″	4½″	4½″	3″
#5	2½″	6″	5½″	3¾″
#6	4½″	12″	8″	4½″

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 HOOK A OR G	180° HOOKS J	90° HOOKS HOOK A OR G
#3	2½″	5″	3″	6″
#4	3″	6″	4″	8″
#5	3¾″	7″	5″	10″
#6	4½″	8″	6″	12″
#7	5¼″	10″	7″	14″
#8	6″	11″	8″	16″
#9	9½″	15″	11¾″	19″
#10	10¾″	17″	13¼″	22″
#11	12″	19″	14¾″	2′−0″
#14	18¼″	2′−3″	21¾″	2′−7″

Notes:
All standard hooks and bends other than 180 degree are to be bent with the 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. Each = 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.
Reinforcing Steel (Grade 60) fy = 60,000 psi.

BILL OF REINFORCING STEEL

Detailed AUG 2009
Checked AUG 2009

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

Sheet No. 24 of 26

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 08/08/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 24
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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

REV.

DRAFT Subject to Change

USER: TThompson
PLOTTED: 08-MAR-2010 15:01 \\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA6380_03-05-10\J7P0601\A6380-dgn\ZPLOT_A27.dgn

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.
		END BENT 2																
4	6H201	Diaphragm		20					2′-3″							2′-3″	2′-3″	14
16	6H202	Diaphragm		20					8′-9″							8′-9″	8′-9″	210
8	6H203	Diaphragm & Beam		20					56′-3″							56′-3″	56′-3″	676
6	7H204	Diaphragm	E	20					56′-3″							56′-3″	56′-3″	690
40	5H205	Diaphragm	E	20					2′-6″							2′-6″	2′-6″	104
5	5H206	Diaphragm		23	S				15″	2′-0″	15″	10½″	10¾″	10½″	10¾″	4′-6″	4′-6″	23
5	6H207	Diaphragm		38	S				6′-8″	3′-8″				2′-7⅞″	2′-6¼″	10′-4″	10′-4″	78
5	6H208	Diaphragm		2					4′-10″	3′-8″				2′-7⅛″	2′-7⅛″	8′-6″	8′-6″	64
8	7H209	Beam		20					56′-3″							56′-3″	56′-3″	920
12	6H210	Fillet		15	S				14″	3′-10″	14″	12⅞″	5⅜″	12⅞″	5⅜″	6′-2″	6′-2″	111
4	8H211	Wingwall	E	20					18′-8″							18′-8″	18′-8″	199
6	8H212	Wingwall		20					18′-8″							18′-8″	18′-8″	299
24	6H213	Wingwall		20					16′-5″							16′-5″	16′-5″	592
30	4H214	Bearing Pad		20					4′-7″							4′-7″	4′-7″	92
4	6H215	Diaphragm		20					2′-9″							2′-9″	2′-9″	17
19	5U201	Beam		53	S				3′-10″	2′-7″						13′-9″	13′-6″	268
27	5U202	Beam		5	S				3′-10″	4′-10″	4′-10″					13′-6″	13′-3″	373
39	5U203	Diaphragm	E	5	S				3′-2″	5′-4″	5′-4″					13′-10″	13′-7″	553
39	6U204	Diaphragm		5	S				3′-10″	4′-4″	4′-4″					12′-6″	12′-3″	718
6	5U205	Beam		5	S				3′-10″	2′-7″	2′-7″					9′-0″	8′-9″	55
53	6U206	Diaphragm	E	19	S				14′-0″	3′-0″						17′-0″	16′-11″	1,347
50	4U207	Bearing Pad		5	S				3′-9″	15″	15″					6′-3″	6′-1″	203
24	5V201	Beam		20					4′-10″							4′-10″	4′-10″	121
25	6V202	Diaphragm		20					4′-4″							4′-4″	4′-4″	163
2	6V203	Wingwall		20					9′-0″							9′-0″	9′-0″	27
30	6V204	Wingwall		20			V	2	7′-6″							7′-6″	7′-6″	370
		Increment = 1¼″							8′-11″							8′-11″	8′-11″	
		SLAB																
92	6S1	Slab, Top	E	20					40′-5″							40′-5″	40′-5″	5,585
70	6S2	Slab, Top	E	20			V	1	3′-8″							3′-8″	3′-8″	2,296
		Increment = 6¾″							39′-11¼″							40′-0″	40′-0″	
76	6S3	Slab, Top	E	20			V	1	3′-7¾″							3′-8″	3′-8″	2,483
		Increment = 5¾″							39′-9⅜″							39′-10″	39′-10″	
7	6S4	Slab, Top	E	20					3′-2″							3′-2″	3′-2″	33
7	6S5	Slab, Top	E	20					3′-2″							3′-2″	3′-2″	33
41	5S6	Slab, Top & Bot.	E	20					45′-2″							45′-2″	45′-2″	1,931
41	5S7	Slab, Top & Bot.	E	20					45′-4″							45′-4″	45′-4″	1,939
164	5S8	Slab, Bot.	E	20					4′-0″							4′-0″	4′-0″	684
		BARRIER																
16	5C1	Slip Form Barrier	E	20					10′-0″							10′-0″	10′-0″	167
52	5K1	Barrier	E	26					2′-6″	4¼″	2′-6″			2′-6″	3″	5′-2″	5′-2″	280
52	5K2	Barrier	E	27	S				7″	11″	12″	6″		6⅜″	9¼″	3′-0″	2′-9″	149
52	5K3	Barrier	E	19	S				17″	6″						23″	22″	99
16	5K4	Barrier	E	20					24′-8″							24′-8″	24′-8″	412
70	5K5	Barrier	E	19	S				2′-5″	5″						2′-10″	2′-9″	201
70	5K6	Barrier	E	14	S				5″	11⅛″	18″			2″	17⅞″	2′-11″	2′-9″	201
46	5K7	Barrier	E	40	S				5⅛″	12″	3′-0″	2′-2⅛″		9⅞″	6⅛″	6′-8″	6′-4″	304
22	5K8	Barrier	E	7					3′-0″	6″						6′-3″	6′-3″	143
2	5K9	Barrier	E	25	S				2′-2¾″	11¼″	4⅜″			9¼″	6½″	3′-7″	3′-5″	7
2	5K10	Barrier	E	25	S				2′-4½″	9⅝″	4⅜″			7⅞″	5½″	3′-7″	3′-5″	7
2	5K11	Barrier	E	25	S				2′-5½″	7⅞″	4⅜″			6½″	4½″	3′-6″	3′-5″	7
2	5K12	Barrier	E	25	S				2′-6½″	6¾″	4⅜″			5½″	4″	3′-6″	3′-4″	7
24	5K13	Barrier	E	20					5′-8″							5′-8″	5′-8″	142
22	4K14	Barrier	E	20					14′-9″							14′-9″	14′-9″	217
2	5K15	Barrier	E	2	S				2′-2″	2′-2″				2′-2″	2⅜″	4′-4″	4′-4″	9
2	5K16	Barrier	E	27	S				7″	11″	12″	6″		6⅜″	9¼″	3′-0″	2′-9″	6
167	5R1	Barrier	E	26					2′-6″	4¼″	2′-6″			2′-6″	3″	5′-2″	5′-2″	900
167	5R2	Barrier	E	27	S				7″	11″	12″	6″		6⅜″	9¼″	3′-0″	2′-9″	479
167	5R3	Barrier	E	19	S				17″	6″						23″	22″	319
28	5R4	Barrier	E	20					42′-11″							42′-11″	42′-11″	1,253

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.
		TOTALS																
	4																	590
	4		E															217
	5																	1,702
	5		E															10,977
	6																	5,832
	6		E															13,225
	7																	1,866
	7		E															1,163
	8																	578
	8		E															292
		TOTAL																10,568
		TOTAL E																25,874
		SLAB ON CONCRETE I-GIRDER																
	4																	590
	5																	1,702
	5		E															5,885
	6																	5,832
	6		E															13,225
	7																	1,866
	7		E															1,163
	8																	578
	8		E															292
		TOTAL																10,568
		TOTAL E																20,565
		BARRIER CURB																
	4		E															217
	5		E															4,925
		SLIP FORM OPTION																
	5		E															167

Notes:
For Bar Bending Diagrams, see Sheet 24.
Two additional #7-H204, #8-H211, #5-K4, and #4-K14 are included in the Bill of Reinforcing Steel for testing.

BILL OF REINFORCING STEEL

Detailed AUG 2009
Checked AUG 2009

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

Submitted for Review
Do Not Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
07-10

DATE PREPARED 08/08/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 25
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION	DATE

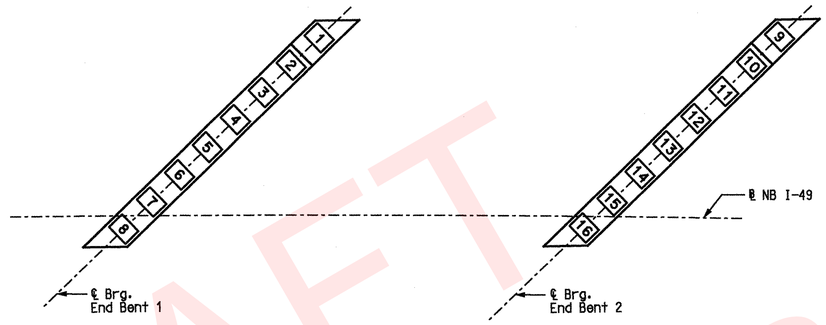
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

REV.

USER: TThompson
PLOTTED: 08-MAR-2010 15:01
\\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA6380_03-05-10\J7P0601\A6380-dgn\ZPLOT_A28.dgn



"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
		END BENT 1	
1			
2			
3			
4			
5			
6			
7			
8			
		END BENT 2	
9			
10			
11			
12			
13			
14			
15			
16			

Notes:
Indicate in the remarks column:
A. If pilings were driven to practical refusal.
B. If pile batter is other than shown on the Bent Detail Sheet.
C. Type of piling used.

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

AS-BUILT PILE DATA

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30424
REGISTERED PROFESSIONAL ENGINEER
9-7-10

DATE PREPARED 07/23/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 26
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A6380

DESCRIPTION	DATE

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

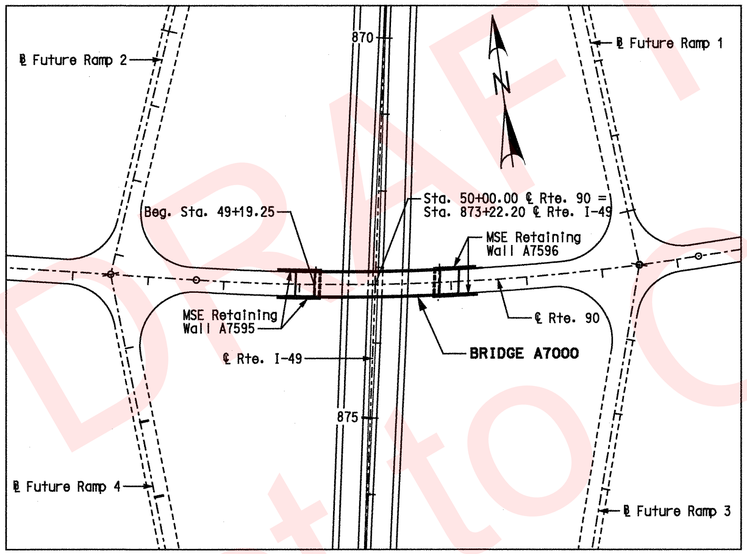
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Detailed JUL 2009
Checked JUL 2009

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

SEC/SUR 22 TWP 21N RGE 32W

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



INDEX OF DRAWINGS

1 Title Sheet
2 General Plan and Elevation
3 General Notes and Estimated Quantities
4 Boring Data
5 Boring Data
6 Substructure Layout
7 End Bent 1
8 End Bent 1 Details
9 Bent 2
10 Bent 2 Details
11 End Bent 3
12 End Bent 3 Details
13 Vertical Drain at End Bents
14 Framing Plan and Steel Intermediate Diaphragm Details
15 Girder Details - Span (1-2)
16 Girder Details - Span (2-3)
17 Bent 2 Diaphragm Details
18 Slab Plan
19 Theoretical Slab Haunching Diagram & Slab Pouring Sequence
20 Details of Precast Prestressed Panels
21 Bottom of Slab Elevations and Slab Curve Ordinates
22 Slab Drain Details
23 Safety Barrier Curb Details
24 Optional Slip-Form Bridge Safety Barrier Curb
25 Bill of Reinforcing Steel
26 Bill of Reinforcing Steel
27 As-Built Pile Data

DRAFT Subject to Change

BRIDGE: RTE. 90 OVER RTE. I-49

STATE ROAD FROM RTE. H TO STATE LINE
ABOUT 8.0 MILES EAST OF RTE. 59
STA. 49+19.25 (RTE. 90)

STD. 609.00
STD. 617.10
STD. 706.35

Designed JUL 2009
Detailed JUL 2009
Checked AUG 2009

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

Sheet No. 1 of 27

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
RECORDED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 07/31/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

NO.	DESCRIPTION	DATE

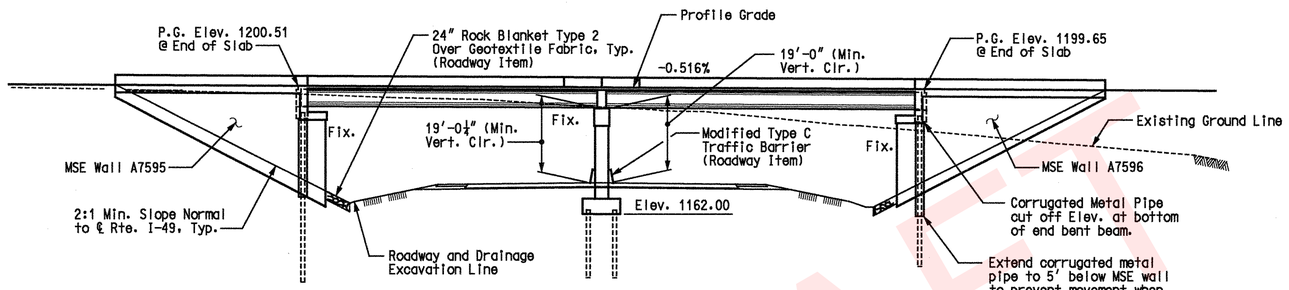
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

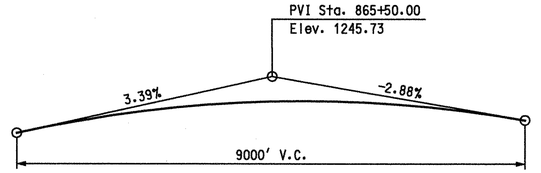
REV.

(79′–84′) PRESTRESSED CONCRETE I–GIRDER SPANS



ELEVATION

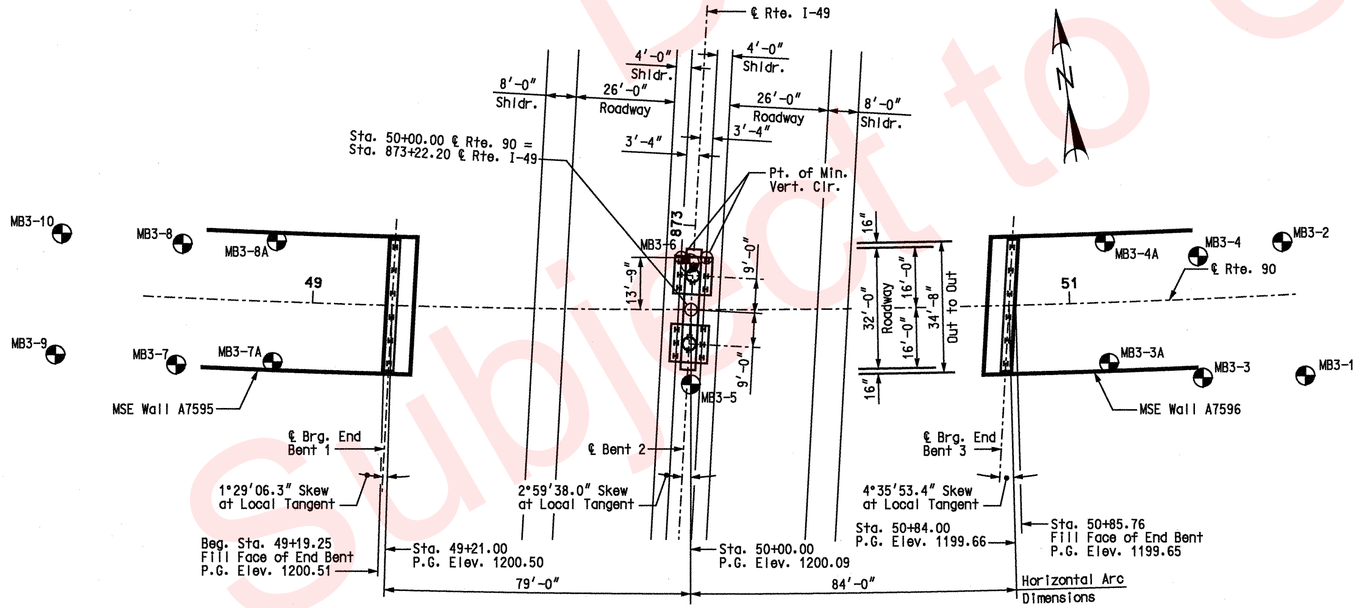
Note:
Galvanized corrugated metal pipe to provide sleeving for piles which penetrate through the mechanically stabilized earth wall fill. See Special Provisions. Galvanized Corrugated Metal Culvert Pipe in accordance with Sec 1020.



PROFILE GRADE – RTE. I-49

Notice and disclaimer regarding Boring Log Data:
The locations of all subsurface borings for this structure are shown on the bridge plan sheets for this structure. Boring data for the numbered locations is shown on Sheets No. 4 thru 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.



PLAN

CURVE DATA – ROUTE 90

P.I. Sta. = 50+97.57
△ = 12°42′24.7″ (Lt.)
D = 1°54′35.5″
L = 665.33′
T = 334.04′
R = 3000.00′
SE = 3.7%

Notes:
◔ Denotes boring location.
For pile locations, see Sheets No. 7, 9 and 11.

BENCHMARKS

BM-49-01-10 R.R. Spike 0.8′ above ground, East side of a 14″ red oak @ the NW quadrant of RTE 90 and SW 90-21 Elev. 1206.10

BM-49-01-11 1½″ Aluminum disk set in concrete, concrete flush with ground, 4.6′ from edge of county road 9′(+/-) south of 16″ black-jack oak, east side of county road SW 90-21, 60′(+/-) south of Don/Fern mail box #102, 0.3 miles(+/-) south of Rt. 90. Elev. 1123.70

GENERAL PLAN AND ELEVATION

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 07/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION	DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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Detailed Jul 2009
Checked Jul 2009

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

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REV.

ESTIMATED QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation	cu. yard	164	——	164
Structural Steel Piles (12 in.)	linear foot	826	——	826
Pre-Bore for Piling	linear foot	176	——	176
Pile Point Reinforcement	each	30	——	30
Class B Concrete (Substructure)	cu. yard	88.4	——	88.4
Slab on Concrete I-Girder	sq. yard	——	637	637
* Safety Barrier Curb	linear foot	——	331	331
Type 6 (54 in.) Prestressed Concrete I-Girder	linear foot	——	652	652
Reinforcing Steel (Bridges)	pound	8,400	——	8,400
Reinforcing Steel (Epoxy Coated)	pound	3,570	——	3,570
Steel Intermediate Diaphragm for P/S Concrete Girders	each	——	6	6
Slab Drain	each	——	6	6
Vertical Drain at End Bents	each	2	——	2
Laminated Neoprene Bearing Pad	each	——	16	16
Corrugated Metal Pipe Pile Spacers	each	14	——	14

Notes:
The cost of furnishing, fabricating and installing Neoprene Bearing Pads , complete-in-place, will be paid for at the contract unit price for Laminated Neoprene Bearing Pad per each.
* Safety barrier curb shall be cast-in-place option or slip-form option.
All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete I-Girder.
All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete I-Girder.
All concrete above the intermediate bent cap is included in the Estimated Quantites for Slab on Concrete I-Girder.
All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Concrete I-Girder.

PILE AND FOOTING DATA

BENT NO.			1	2	3
Bearing Pile	Type		Foundation	Foundation	Foundation
	Kind		HP12x53	HP12x53	HP12x53
	Number		7	16	7
	Approximate Length	Ft.	44	14	42
	Pile Driving Verification Method		Dynamic Bearing Formula	Dynamic Bearing Formula	Dynamic Bearing Formula
	Pre-bore Elevation		——	1151.0	——
	Design Bearing	Kips	124	140	124
	Hammer Energy Required	Lb-Ft	13950	16875	13950

Notes:
Minimum energy requirement of hammer is based on plan length and design bearing value of piles.
Prebore to elevations shown in data table.
Manufactured pile point reinforcement shall be used on all piles in this structure.

ESTIMATED QUANTITIES FOR SLAB ON CONCRETE I-GIRDER

ITEM		TOTAL
Class B-2 Concrete	cu. yard	164.5
Reinforcing Steel	pound	4,180
Reinforcing Steel (Epoxy Coated)	pound	36,230

Notes:
The table of Estimated Quantities for Slab on Concrete I-Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard with the horizontal dimensions as shown on the plan of slab. Payment for prestressed panels, stay-in-place forms, conventional forms, all concrete and coated and uncoated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in these estimated quantities but the variations cannot be used for 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 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.
Class B-2 Concrete quantity is based on minimum top flange thickness and minimum joint material thickness.
The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete I-Girder.
Slab shall be cast-in-place with conventional and precast prestressed panel forming. Stay-in-place corrugated metal forms will not be permitted.

GENERAL NOTES:

DESIGN SPECIFICATIONS:
2007 - AASHTO LRFD 4th Edition (Superstructure)
Load and Resistance Factor Design
Seismic Design Category = A
Seismic Peak Horizontal Ground Acceleration = 0.04

2002 - AASHTO 17th Edition (Substructure)
Load Factor Design
Seismic Performance Category A
Acceleration Coefficient = 0.04

DESIGN LOADINGS:
HL-93 (LRFD Superstructure, LFD Substructure)
35#/Sq. Ft. Future Wearing Surface.
Defense Transporter Erector Loading
Earth 120#/Cu. Ft., Equivalent Fluid Pressure = 45#/Cu. Ft.
Superstructure: Simply-Supported, non-composite for dead load.
Continuous composite for live load.

DESIGN UNIT STRESSES:
Class B Concrete (Substructure) f'c = 3,000 psi.
Class B-1 Concrete (Safety Barrier) f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Girders and Safety Barrier) f'c = 4,000 psi.
Reinforcing Steel Grade 60 Fy = 60,000 psi.
Structural Carbon Steel (ASTM A709 Grade 36) fy = 36,000 psi.
Steel Pile (ASTM A709 Grade 50) fb = 9,000 psi fy=50,000 psi.
For precast prestressed panel stresses, see Sheet No. 20.
For prestressed girder stresses, see Sheets No. 15 & 16.

NEOPRENE PADS:
Neoprene Elastomeric Pads shall be 60 durometer.
Laminated Neoprene Bearing Pads shall be in accordance with Sec 716.

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

REINFORCING STEEL:
Minimum clearance to the reinforcing steel shall be 1-1/2", unless otherwise shown.

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

PILES:
The piles for Bent 2 shall be placed in prebored holes. Driving and backfill shall be in accordance with Section 702.

GINA D. HORNER NUMBER E-30413 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI 3-9-10

DATE PREPARED 7/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DATE	DESCRIPTION

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

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GENERAL NOTES AND ESTIMATED QUANTITIES

Detailed JUL 2009
Checked AUG 2009

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

Sheet No. 3 of 27

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Boring Number MB3-7
End Bent 1 (Core)

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1199.7
1.0P	3.5	6-7-8	LEAN CLAY, with sand and gravel, red, medium stiff, moist
	8.5	20-15-15	ELEV. 1191.2
	13.5	10-9-8	
	18.5	10-8-6	SANDY CHERT GRAVEL, with clay seams, red and white, medium dense, moist
	23.5	6-6-7	
1.0P	28.5	8-4-6	ELEV. 1171.2
0.5P	33.5	2-2-2	LEAN CLAY, with to abundant gravel, red, soft to medium stiff, moist to wet
	38.5	5-2-50/1"	ELEV. 1160.2

ROCK CORE DEPTH	REC%	RQD%	
46.0	90	84	LIMESTONE, stratified, with chert seams and inclusions, light gray and gray, very fine to fine grained, thick bedded, fresh, hard, solid
51.0	100	84	ELEV. 1148.7

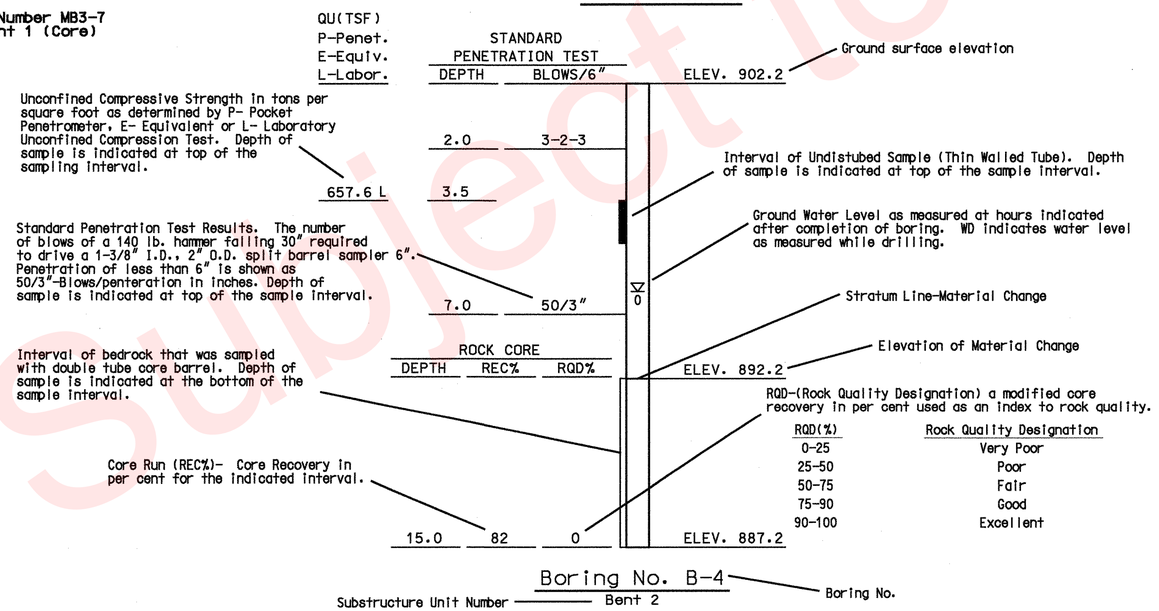
Boring Number MB3-7A
End Bent 1

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1199.3
			LEAN CLAY, with organics, dark brown, moist
4.0P	3	8-13-10	ELEV. 1198.3
4.25+P	8	11-23-40	FAT CLAY, with chert gravel and sand, red, very stiff to hard, moist
2.0P	13	7-11-9	
			ELEV. 1183.8
3.25P	18	15-14-11	LEAN CLAY, with chert gravel, red and white, very stiff to hard, moist
2.5P	23	10-8-7	
3.0P	28	8-9-11	
4.25+P	33	7-21-19	
			ELEV. 1161.3
			Auger refusal on Limestone at 38.0'

Boring Number MB3-8A
End Bent 1

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1198.7
			LEAN CLAY, with organics, dark brown, moist
4.25+P	3	5-7-8	ELEV. 1198.2
			LEAN CLAY, light brown, moist
			ELEV. 1196.2
3.25P	8	49-17-17	FAT CLAY, trace chert gravel, red, hard, moist
			ELEV. 1192.7
1.75P	13.5	11-12-13	LEAN CLAY, with chert gravel and sand, red and white, hard to stiff, moist
			ELEV. 1182.2
	18.5	17-18-12	
	23.5	8-13-14	
	28.5	7-9-13	SANDY CHERT GRAVEL, with clay seams, red and white, dense to medium dense, moist
	33.5	6-11-10	
1.75P	38.5	9-8-6	ELEV. 1161.2
1.25P	43.5	8-21-5	LEAN CLAY, with chert gravel, red, brown, stiff, moist
	48.5	8-50/3"	ELEV. 1149.4
			Auger refusal on apparent Limestone at 49.3'

TYPICAL BORING



RQD(%)	Rock Quality Designation
0-25	Very Poor
25-50	Poor
50-75	Fair
75-90	Good
90-100	Excellent

GENERAL NOTES:

The borings shown on this drawing were drilled for the Missouri Department of Transportation, between May 20 and 30, 2003 and on May 3, 2006, by Terracon, Inc. under the direction of HNTB.

For boring locations in plan, see Sheet No. 2.

The ground water levels shown were recorded during time of drilling. Porosity of soil strata, weather conditions, seasonal changes, site topography, etc., may cause changes in the water levels reported.

The boring information shown on this drawing is abbreviated. A complete copy of boring logs and test results are available upon request to the Department.

For notice and disclaimer regarding boring log data, see Sheet No. 2.

BORING DATA

DRAFT Subject to Change

STATE OF MISSOURI GINA D. HORNER NUMBER E-30413 REGISTERED PROFESSIONAL ENGINEER 3-9-10

DATE PREPARED 04/13/09

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	4

COUNTY McDONALD

JOB NO. J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A7000

DATE	DESCRIPTION

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
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CERTIFICATE OF AUTHORITY NO. 001270

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Sheet No. 4 of 27

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QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1194.6
1.0P	3.5	6-8-12	FAT CLAY, trace chert seams, red, stiff, moist
2.0P	8.5	11-7-12	ELEV. 1186.1
	13.5	21-14-7	LEAN CLAY, trace to abundant chert seams, red and white, very stiff, moist
3.0P	18.5	16-12-45	
3.0P	23.5	12-7-7	ELEV. 1171.1
	28.5	12-14-16	FAT CLAY, abundant chert seams, red, very stiff, moist ELEV. 1166.1
	33.5	6-11-4	SANDY GRAVEL, abundant clay seams, red and white, medium dense, moist
	38.5	50/0"	ELEV. 1154.6 ▽ WD

ROCK CORE DEPTH	REC%	RQD%	
			CHERT, light gray and gray, very fine to fine grained, thick bedded, weathered, hard, trace vugs
			ELEV. 1153.6
45.0	83	53	APPARENT CLAY LAYER, no recovery
			ELEV. 1151.6
50.0	92	89	CHERT, stratified, with limestone seams, light gray and gray, very fine to fine grained, thick bedded, weathered, hard, trace vugs
54.3	100	97	ELEV. 1140.3

Boring Number MB3-5
Bent 2 (Core)

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1195.4
	3.5	12-17-13	GRAVEL, scattered clay seams, red and white, dense, moist
	8.5	35-25-15	
	13.5	20-13-8	ELEV. 1181.9
			FAT CLAY, abundant gravel, red, stiff to very stiff, moist
	18.5	19-18-50	ELEV. 1176.9
			LEAN CLAY, abundant gravel, red, hard, moist
	23.5	12-12-12	ELEV. 1171.9
	28.5	14-13-13	SANDY GRAVEL, with clay, red and white, medium dense to dense, moist
	33.5	18-15-15	
			ELEV. 1157.4

Auger refusal on apparent Chert at 38.0'

Boring Number MB3-6
Bent 2

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1188.7
3.5P	3.5	13-14-15	LEAN CLAY, with organics, dark brown, brown, moist ELEV. 1187.7
2.25P	8.5	10-12-14	
2.5P	13.5	10-11-9	
1.75P	18.5	10-15-14	LEAN CLAY, with chert gravel and sand, red, very stiff to stiff, moist
1.75P	23.5	8-8-8	
1.25P	28.5	8-9-7	
			ELEV. 1156.7
			LEAN CLAY, with chert gravel, red, brown, stiff, moist
			ELEV. 1155.2

Auger refusal on Limestone at 33.5'

Boring Number MB3-4A
End Bent 3

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1185.5
			LEAN CLAY, with organics, dark brown, moist ELEV. 1184.5
3.25P	3.5	11-12-27	LEAN CLAY, with chert gravel and sand, red, very stiff, moist
			ELEV. 1178.5
	8.5	40-34-30	SANDY CHERT GRAVEL, trace clay seams, red and white, very dense, moist
			ELEV. 1173.5
3.25P	13.5	9-12-12	
3.75P	18.5	8-11-9	LEAN CLAY, with chert gravel, red, very stiff to stiff, moist
1.5P	23.5	11-14-16	
1.0P	28.5	4-6-6	▽ WD
			ELEV. 1154.5

Auger refusal on Limestone at 31.0'

Boring Number MB3-3A
End Bent 3

QU(TSF) P-Penet. E-Equiv. L-Labor.	STANDARD PENETRATION TEST DEPTH	BLOWS/6"	
			ELEV. 1186.1
	3.5	12-10-10	LEAN CLAY, abundant sand, with to abundant gravel, red, very stiff, moist
2.0P	8.5	10-12-8	
	13.5	22-16-16	ELEV. 1172.6
	18.5	9-11-11	SANDY GRAVEL, with clay seams, red and white, medium dense to dense, moist
1.0P	23.5	6-8-8	ELEV. 1162.6
	28.5	50/0"	LEAN CLAY, abundant gravel, red and white, medium stiff, moist

ROCK CORE DEPTH	REC%	RQD%	
			ELEV. 1157.1
31.0	91	80	LIMESTONE, stratified, trace chert seams and inclusions, light gray and gray, medium to thick bedded, fine grained, slightly weathered to fresh, hard, solid.
38.5	100	85	
39.0	100	68	ELEV. 1147.1

Boring Number MB3-4
End Bent 3 (Core)

NOTE:
For Typical Boring and General Notes, see Sheet No. 4.

BORING DATA

DRAFT Change Subject to

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 04/13/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 5
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DATE | DESCRIPTION | REV.

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

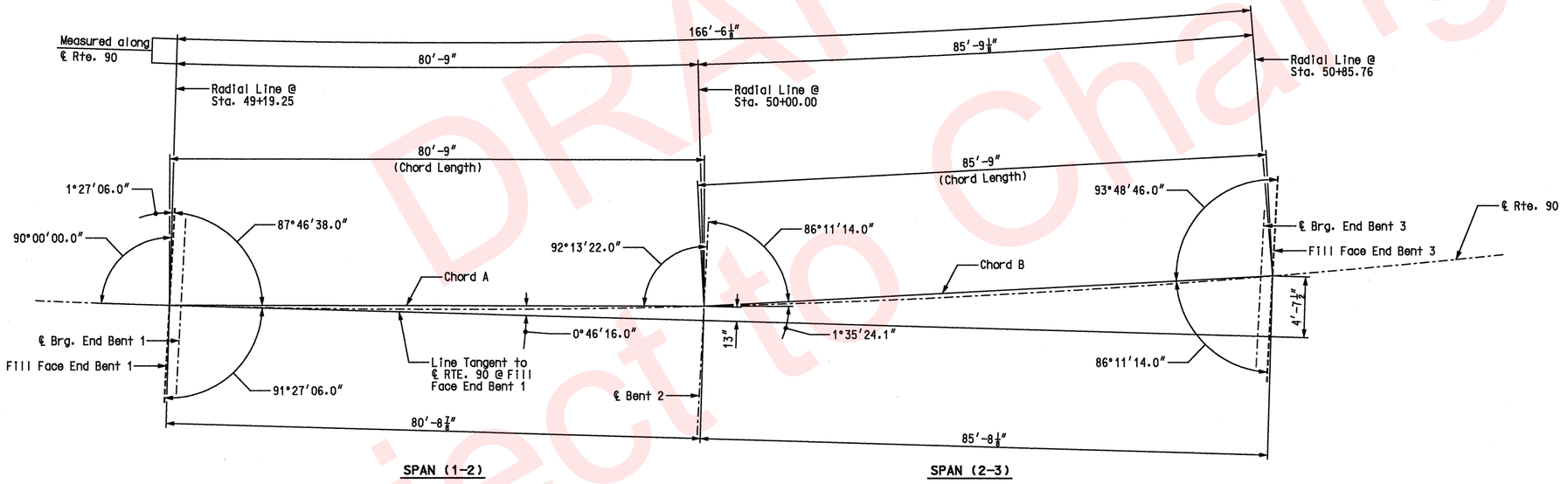
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SUBSTRUCTURE LAYOUT

DATE PREPARED: 4/13/09

ROUTE	STATE
I-49	MO

DISTRICT	SHEET NO.
BR	6

COUNTY: McDONALD

JOB NO.: J7P0601

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A7000

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
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TELEPHONE (816) 472-1201
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NO. 001270

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

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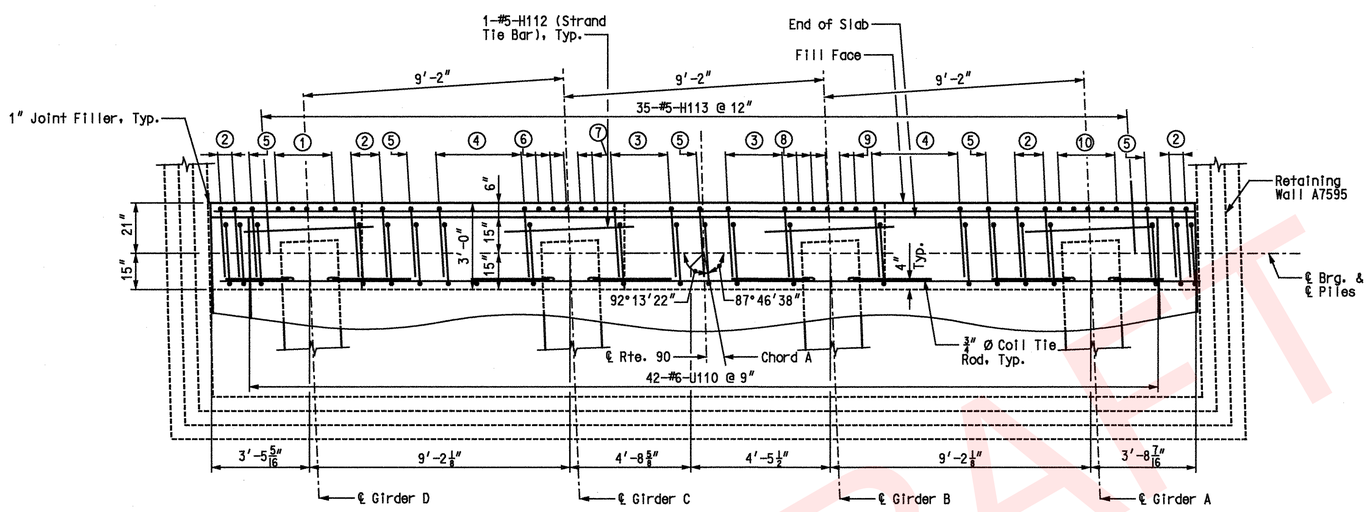
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Sheet No. 6 of 27

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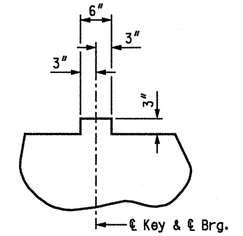
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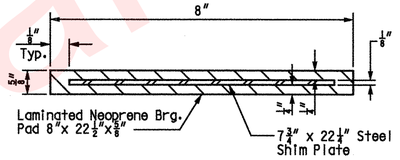


PLAN

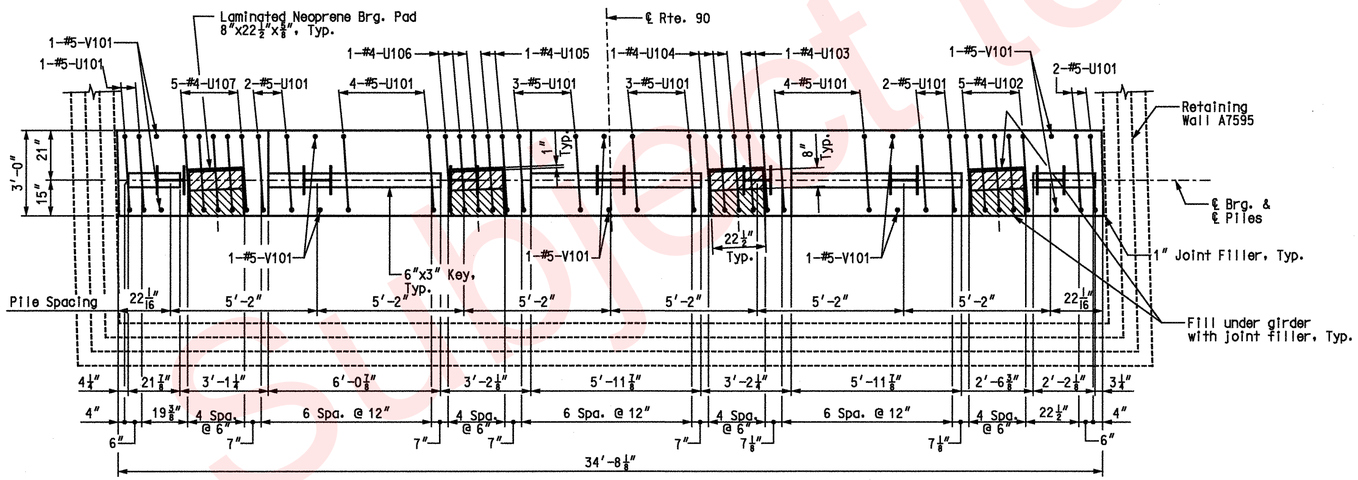
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② 2-#5-U108 & 2-#6-U109 to match #5-U101
③ 3-#5-U108 & 3-#6-U109 to match #5-U101
④ 4-#5-U108 & 4-#6-U109 to match #5-U101
⑤ 1-#5-U108 & 1-#6-U109 to match #5-U101
⑥ 1-#6-V102 to match #4-U106
⑦ 1-#6-V102 to match #4-U105
⑧ 1-#6-V102 to match #4-U104
⑨ 1-#6-V102 to match #4-U103
⑩ 5-#6-V102 to match #4-U102



TYPICAL SECTION THRU KEY



DETAIL OF LAMINATED NEOPRENE BEARING PAD



PLAN OF BEAM

Notes:
All piles shall be HP12x53.
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".
Provide a minimum of 9" Cl. from outside edge of pile to face of beam.
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
For details of Retaining Wall A7595, see Retaining Wall plans.

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 1		
ITEM		QUANTITY
Structural Steel Piles (12 in.)	linear foot	308
Pile Point Reinforcement	each	7
Class B Concrete (Substructure)	cu. yard	13.3
Corrugated Metal Pipe Pile Spacers	each	7

Note:
These quantities are included in the Estimated Quantities table on Sheet No. 3.

END BENT 1

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 07/22/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 7
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DATE | DESCRIPTION

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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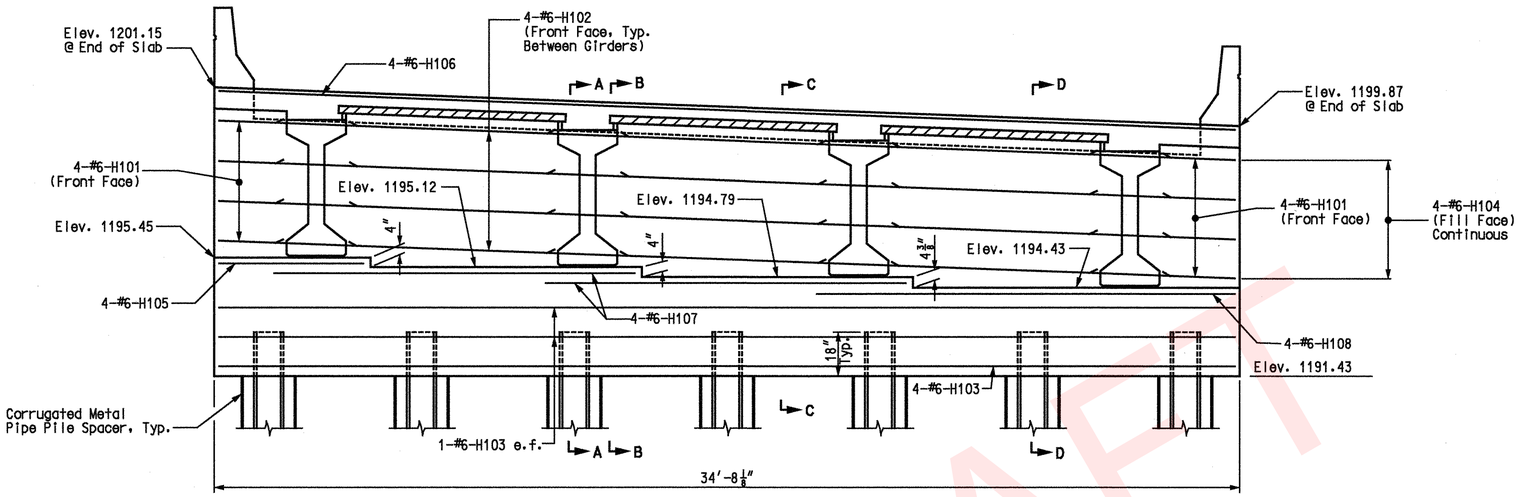
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Detailed JUL 2009
Checked JUL 2009

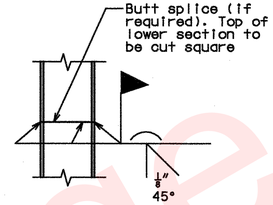
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REV.

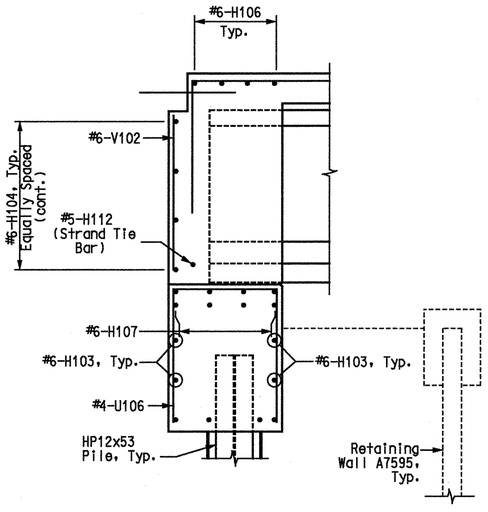
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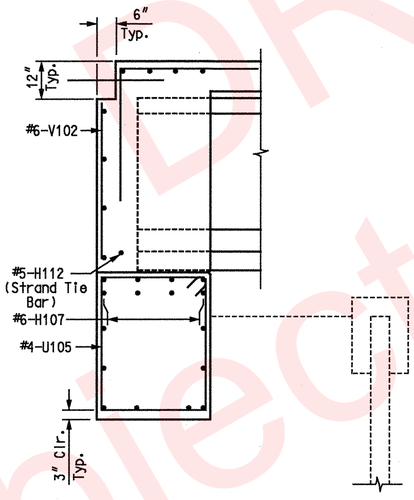
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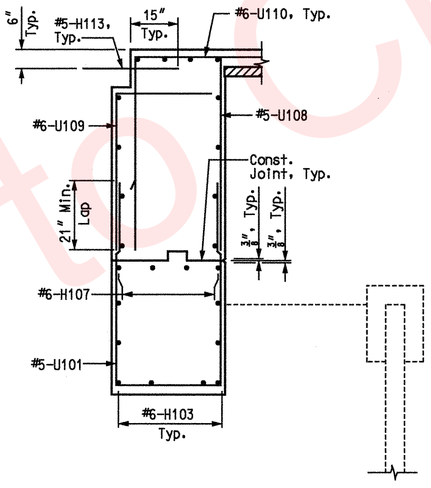
DETAIL OF STEEL
PILE SPLICE



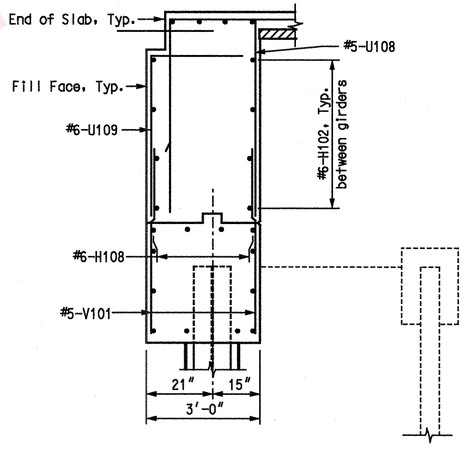
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:
e.f. denotes each face.
For additional notes and details, see Sheet No. 7.

END BENT 1 DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
5-9-10

DATE PREPARED	07/22/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	8
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A7000

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DESCRIPTION | DATE | REV.

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

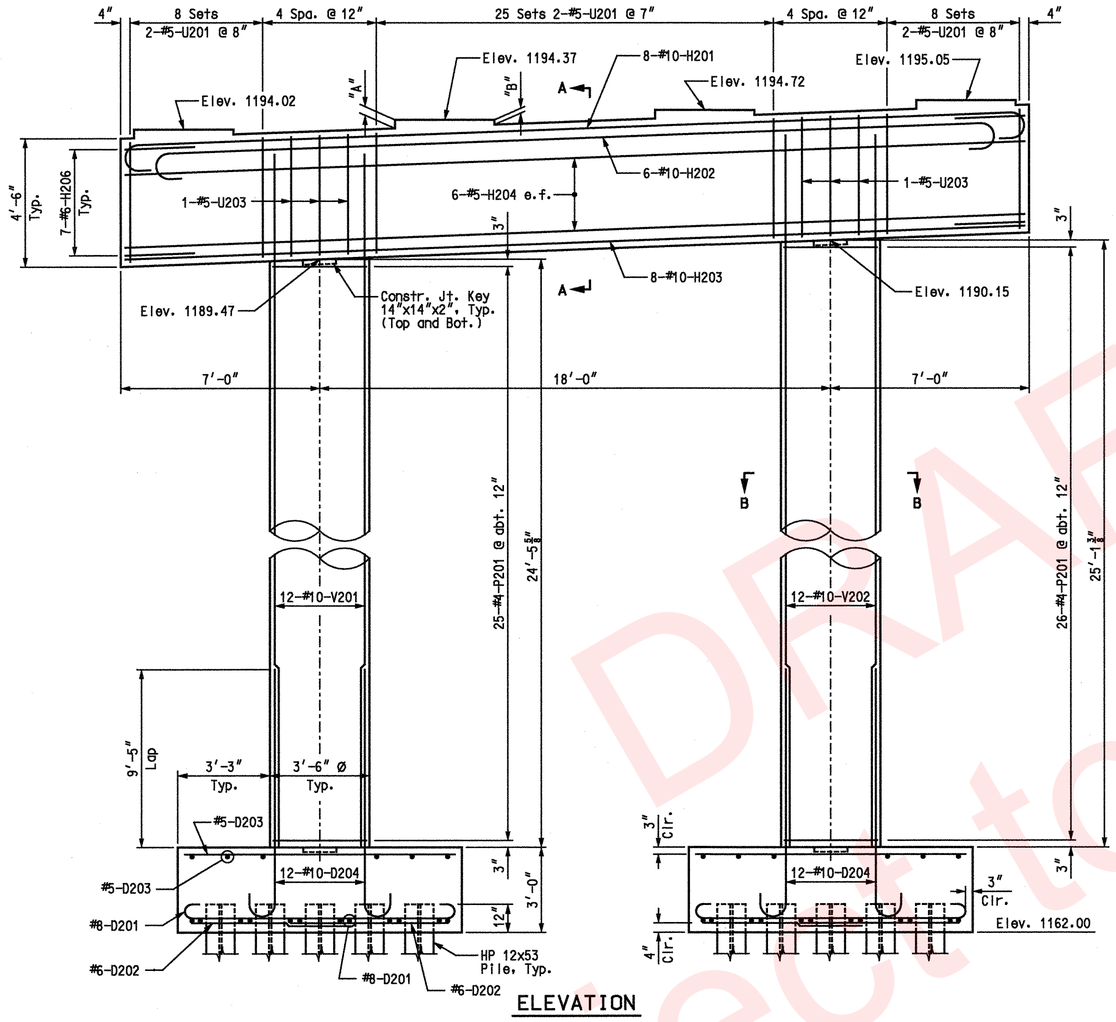
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Detailed JUL 2009
Checked JUL 2009

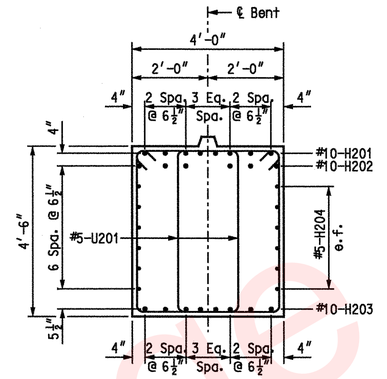
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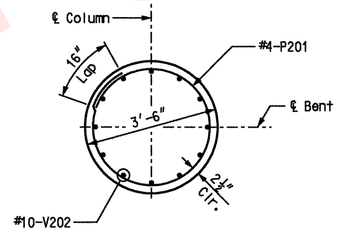


ELEVATION

END VIEW

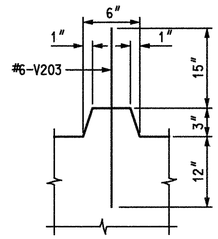


SECTION A-A
Scale: ½"=1'-0"



SECTION B-B
Scale: ½"=1'-0"

BEARING PAD HEIGHT		
GIRDER	DIMENSION	
	"A"	"B"
A	3½"	2"
B	3½"	2"
C	3½"	2"
D	3⅜"	1⅞"



DETAIL OF KEY
Scale: 1½"=1'-0"

Notes:
For details of Laminated Neoprene Bearings, see Sheet No. 10.
For Footing Details, see Sheet No. 10.

BENT 2

DRAFT
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STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 4/17/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

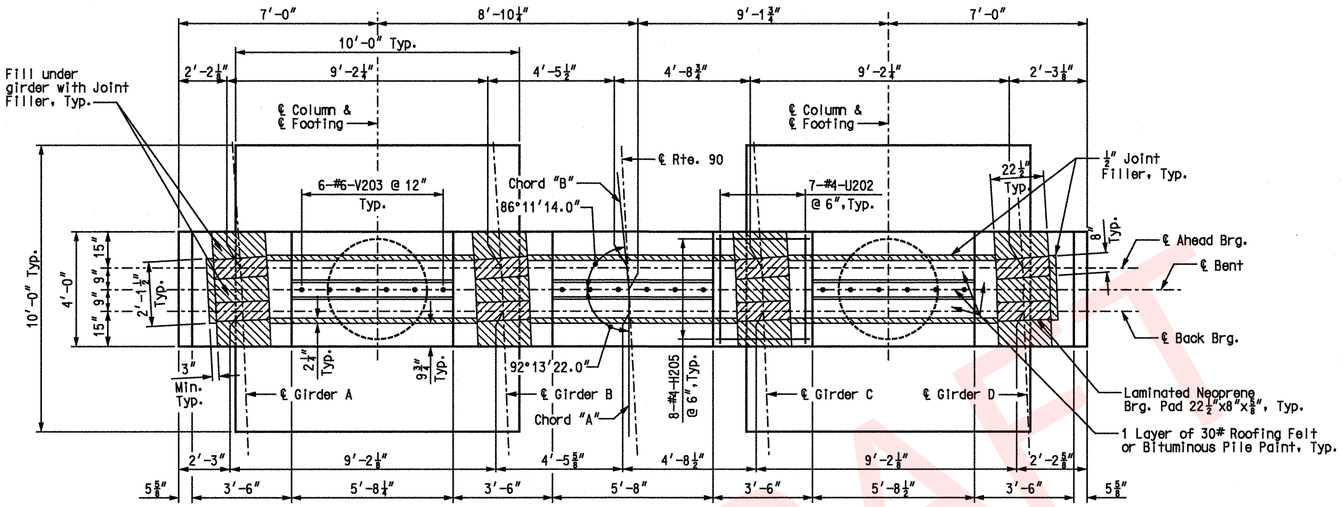
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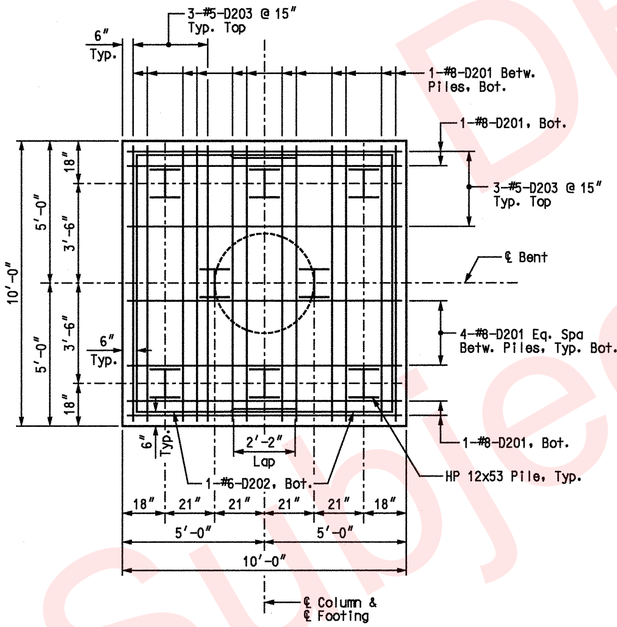
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

HNTB
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KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
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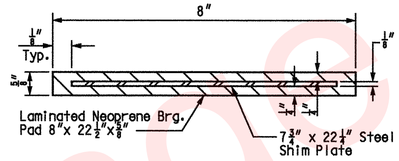
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PLAN



FOOTING PLAN



DETAIL OF LAMINATED NEOPRENE BEARING PAD

SUBSTRUCTURE QUANTITY TABLE FOR BENT 2		
ITEM		QUANTITY
Class 1 Excavation	cu. yard	164
Structural Steel Piles (12 in.)	linear foot	224
Pre-Bore for Piling	linear foot	176
Pile Point Reinforcement	each	16
Class B Concrete (Substructure)	cu. yard	61.8
Reinforcing Steel (Bridges)	pound	8,350
Reinforcing Steel (Epoxy Coated)	pound	3,580

Note:
The Substructure Quantities are included in the Estimated Quantities table on Sheet No. 3.

Notes:
For additional details and notes, see Sheet No. 9.
For detail of steel pile splice, see Sheet No. 8.
For steps 2" or more, use 2¼" x ½" joint filler up vertical face.

BENT 2 DETAILS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 4/21/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

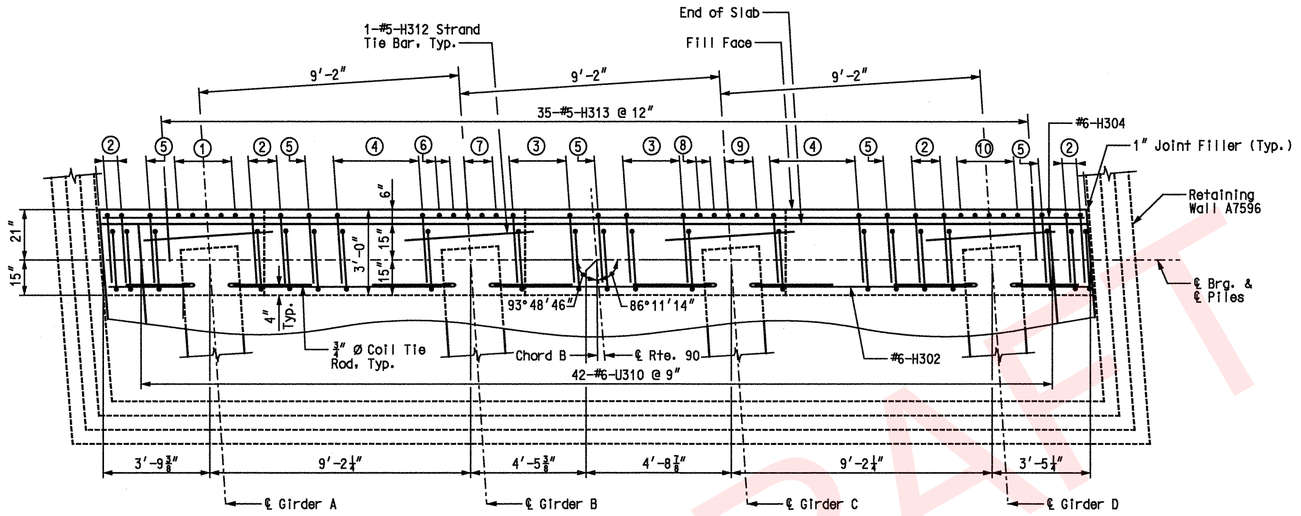
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Detailed APR 2009
Checked APR 2009

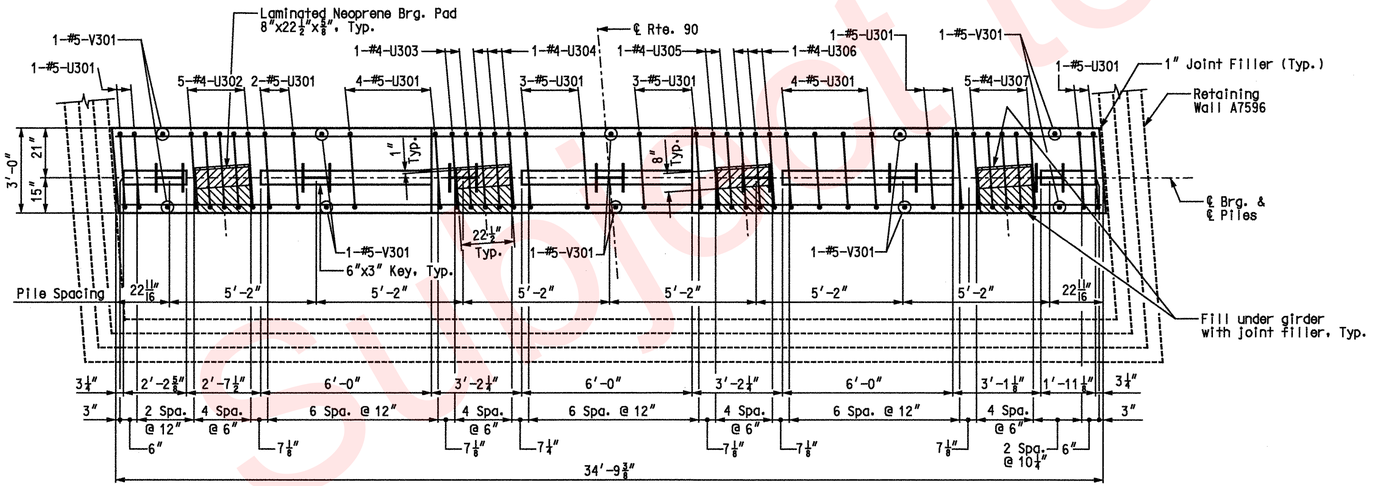
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Sheet No. 10 of 27

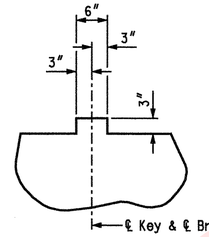


PLAN

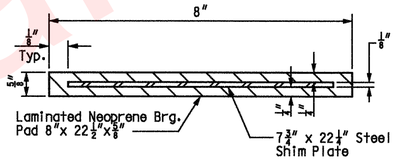
① 5-#6-V302 to match #4-U302
② 2-#5-U308 & 2-#6-U309 to match #5-U301
③ 3-#5-U308 & 3-#6-U309 to match #5-U301
④ 4-#5-U308 & 4-#6-U309 to match #5-U301
⑤ 1-#5-U308 & 1-#6-U309 to match #5-U301
⑥ 1-#6-V302 to match #4-U303
⑦ 3-#6-V302 to match #4-U304
⑧ 1-#6-V302 to match #4-U305
⑨ 3-#6-V302 to match #4-U306
⑩ 5-#6-V302 to match #4-U307



PLAN OF BEAM



TYPICAL SECTION THRU KEY



DETAIL OF LAMINATED NEOPRENE BEARING PAD

Notes:
All piles shall be HP12x53.
All vertical reinforcing bars in the substructure beams or caps shall be field adjusted to clear piles by at least 1½".
Provide a minimum of 9" Cl. from outside edge of pile to face of beam.
All concrete in the end bent above top of slab shall be Class B-2.
For details of Retaining Wall A7596, see Retaining Wall plans.
For detail of steel pile splice, see Sheet No. 8.

SUBSTRUCTURE QUANTITY TABLE FOR END BENT 3

ITEM		QUANTITY
Structural Steel Piles (12 In.)	linear foot	294
Pile Point Reinforcement	each	7
Class B Concrete (Substructure)	cu. yard	13.4
Corrugated Metal Pipe Pile Spacers	each	7

Note:
These quantities are included in the Estimated Quantities table on Sheet No. 3.

END BENT 3

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
5/9/10

DATE PREPARED 07/22/08
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 11
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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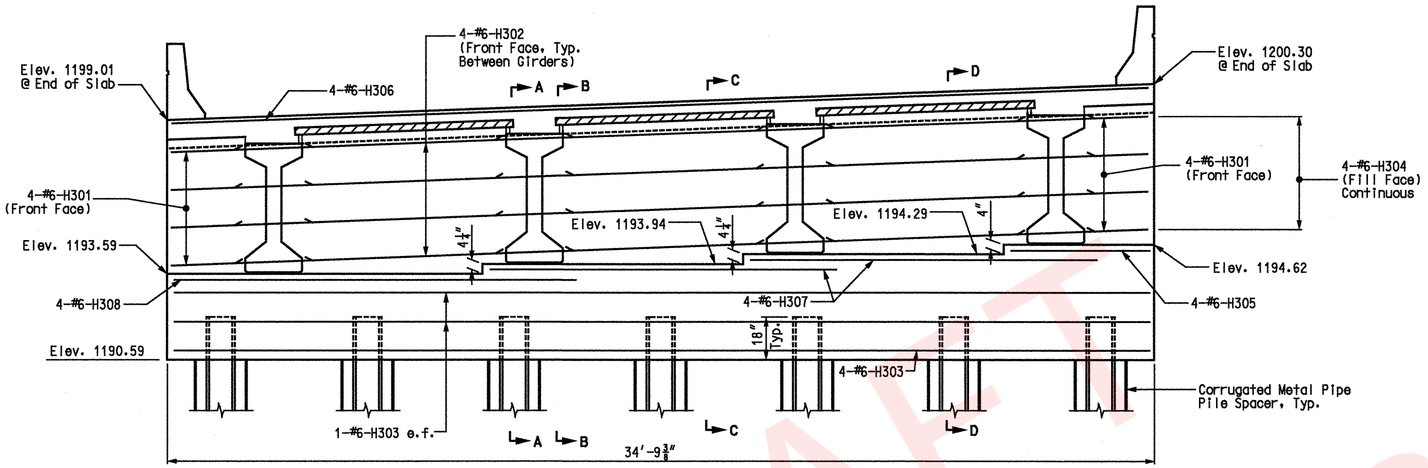
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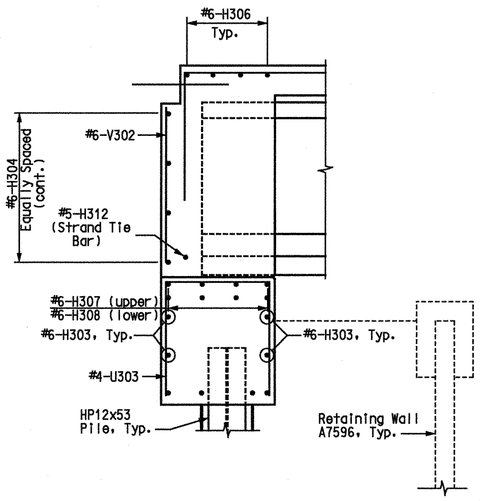
Detailed JUL 2009
Checked JUL 2009

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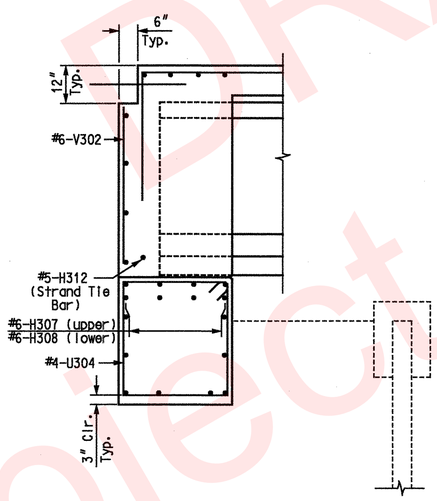
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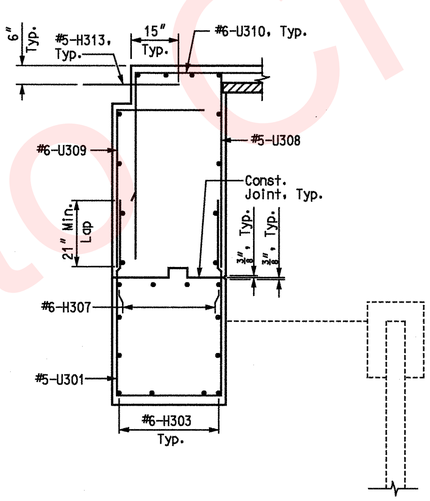
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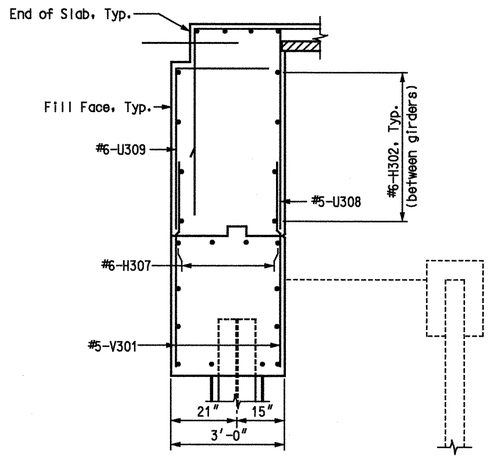
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

Notes:
e.f. denotes each face.
For additional notes and details, see Sheet No. 11.

END BENT 3 DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 07/22/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 12
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
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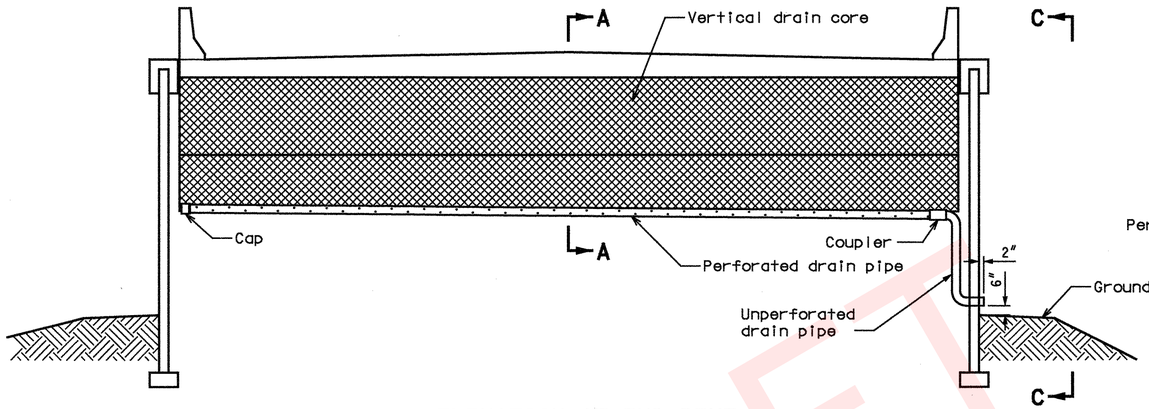
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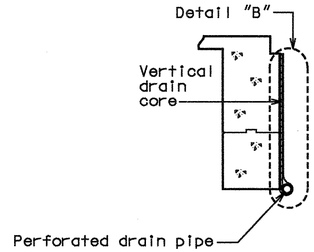
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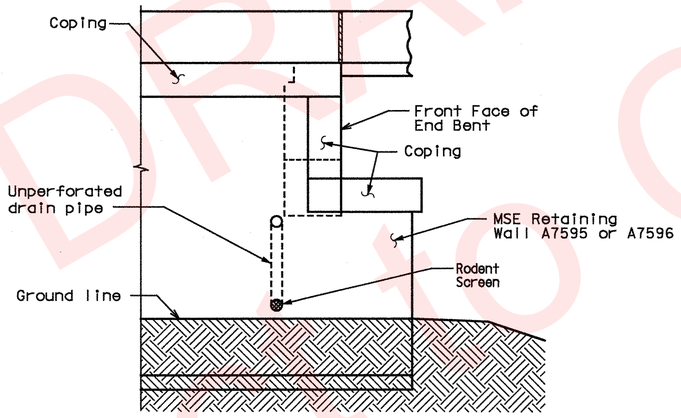
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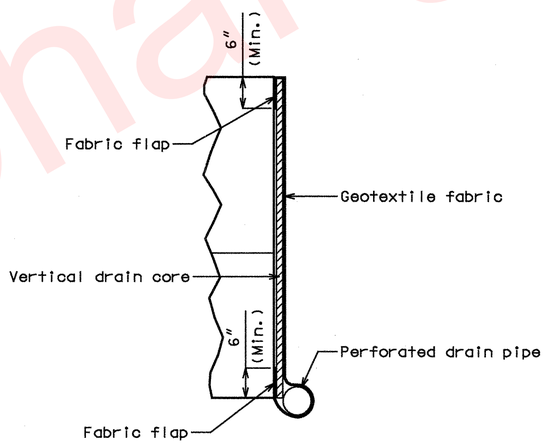
ELEVATION AT END BENT



SECTION A-A



VIEW C-C



DETAIL "B"

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

Place drain pipe at fill face of end bent and slope to lowest grade of ground line. (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.

VERTICAL DRAIN AT END BENTS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 04/23/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION	DATE

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

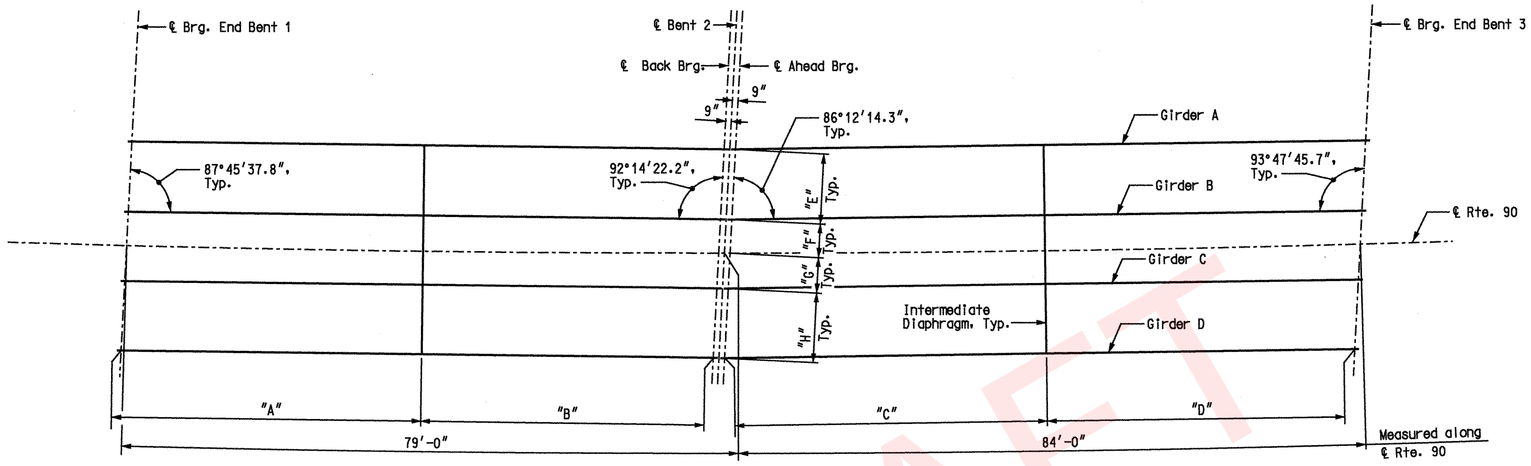
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
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NO. 001270

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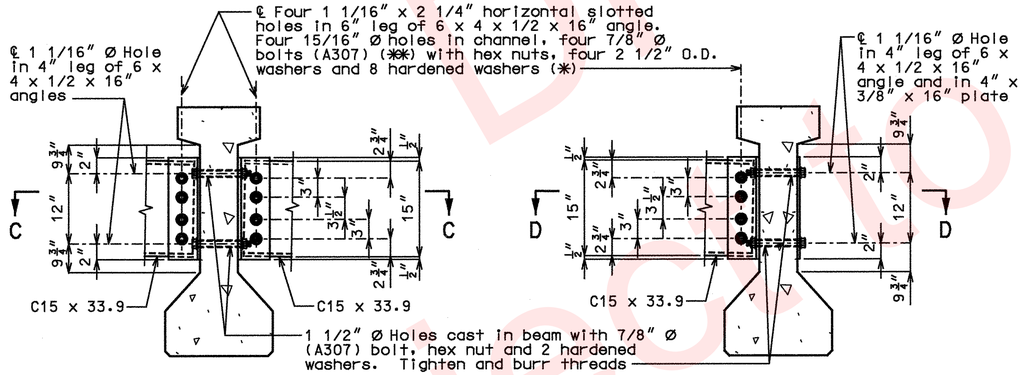


FRAMING PLAN

TABLE OF DIMENSIONS				
DIMENSION	BRG. END BENT 1	BK. BRG. BENT 2	AHD. BRG. BENT 2	BRG. END BENT 3
"E"	9′-2⅛″	9′-2⅛″	9′-2¼″	9′-2¼″
"F"	4′-5½″	4′-5⅝″	4′-5½″	4′-5⅜″
"G"	4′-8⅝″	4′-8½″	4′-8¾″	4′-8⅞″
"H"	9′-2⅛″	9′-2⅛″	9′-2¼″	9′-2¼″

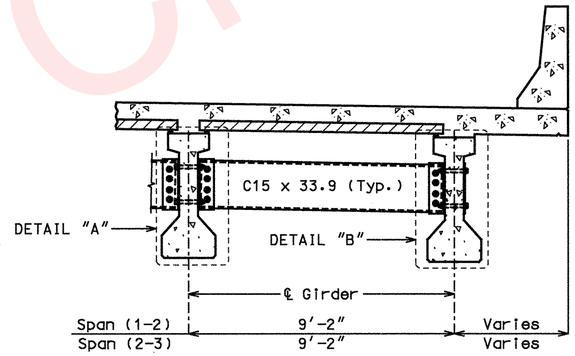
TABLE OF INTERMEDIATE DIAPHRAGM SPACING				
GIRDER	"A"	"B"	"C"	"D"
A	38′-7″	39′-8″	40′-8½″	42′-6½″
B	38′-11⅜″	39′-3⅝″	41′-3⅞″	41′-11⅛″
C	39′-3⅝″	38′-11⅜″	41′-11⅛″	41′-3⅞″
D	39′-8″	38′-7″	42′-6½″	40′-8½″

Notes:
Longitudinal dimensions are horizontal.
For Girder Details, see Sheets No. 15 and 16.

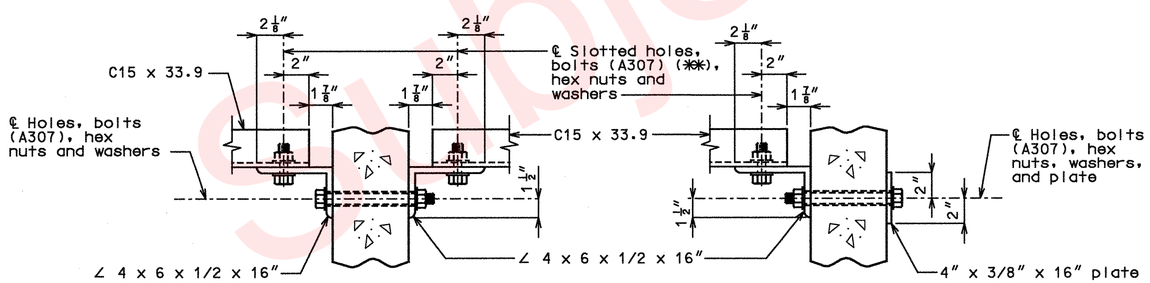


DETAIL "A"

DETAIL "B"



PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS



SECTION C-C

SECTION D-D

STEEL DIAPHRAGM NOTES:

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

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

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

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

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

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

FRAMING PLAN AND
STEEL INTERMEDIATE DIAPHRAGM DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 4/14/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 14
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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

REV.

Detailed APR 2009
Checked APR 2009

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

Sheet No. 14 of 27

DRAFT
Subject to Change

Concrete for prestressed girders shall be Class A-1 with f'c = 6,000 psi and f'ci = 4,500 psi.

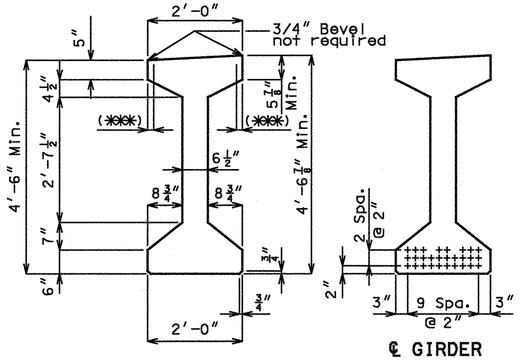
(+) indicates prestressing strand.

Use 28 strands with an initial prestress force of 867.5 kips.

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

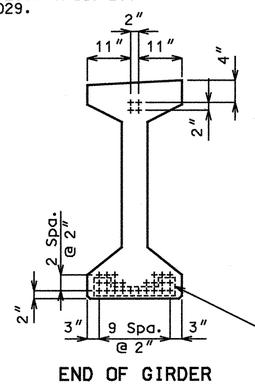
** At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional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

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



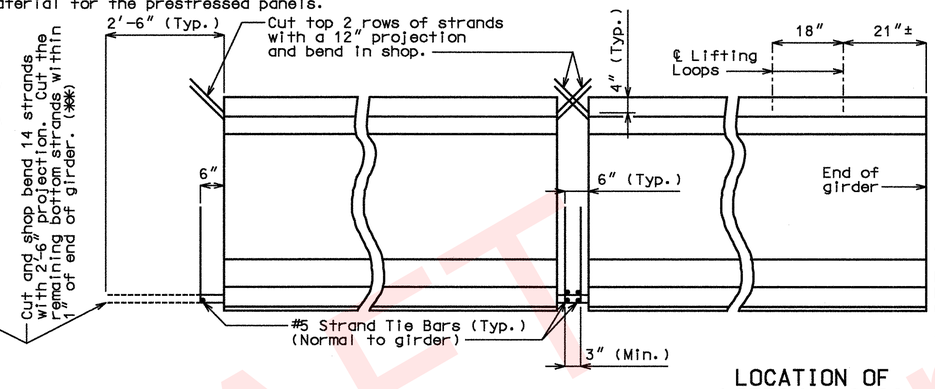
GIRDER DIMENSIONS

℄ GIRDER



END OF GIRDER

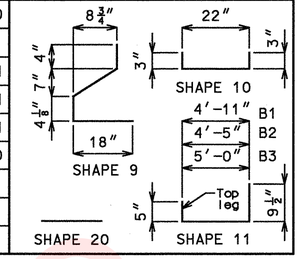
STRAND ARRANGEMENTS



END BENT INTERMEDIATE BENT

LOCATION OF LIFTING LOOPS

BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
4	6 A1	40'-11"	20	
194	4 B1	6'-0"	11	
16	6 B2	5'-5"	11	
20	4 B3	6'-1"	11	
115	4 C1	2'-2"	10	
230	4 D1	3'-0"	9	



All dimensions are out to out.

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

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

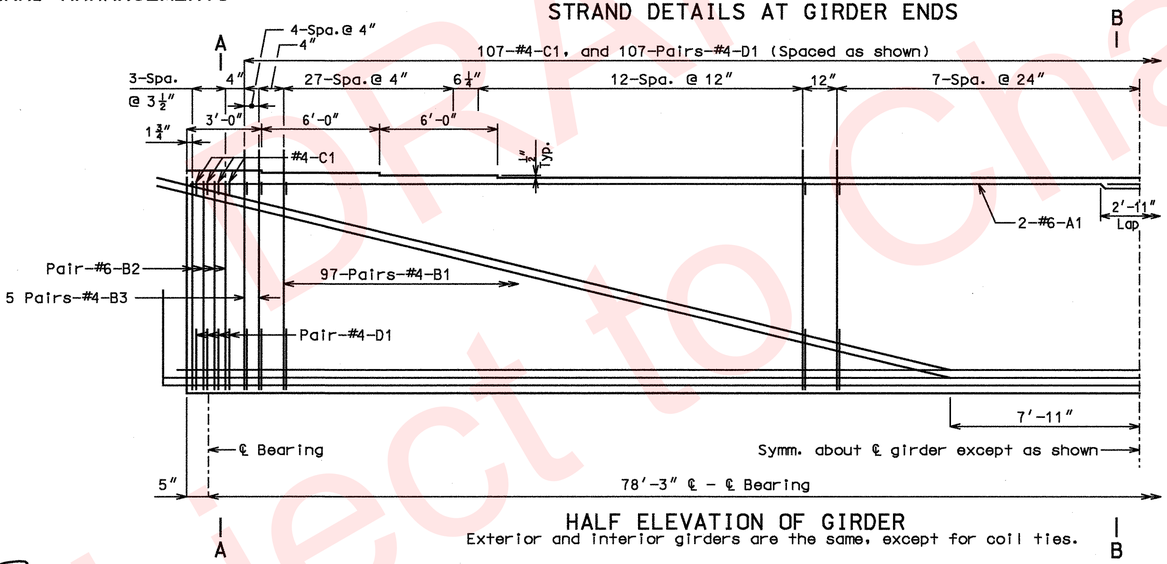
Minimum clearance to reinforcing shall be 1".

All reinforcement shall be Grade 60.

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

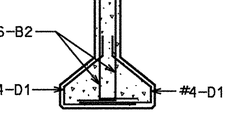
All B1 bars shall be epoxy coated.

STRAND DETAILS AT GIRDER ENDS



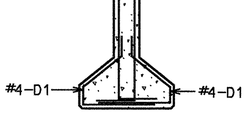
HALF ELEVATION OF GIRDER

Exterior and interior girders are the same, except for coil ties.



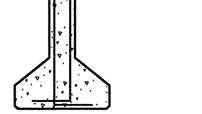
SECTION A-A

Strands not shown for clarity.

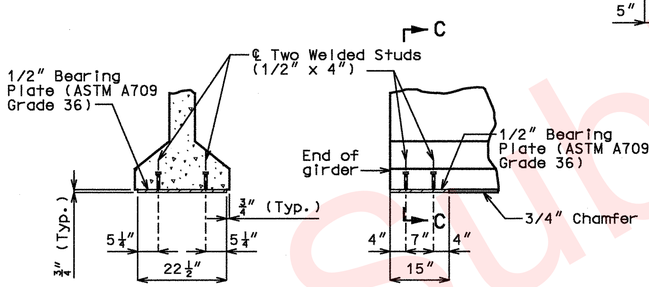


SECTION B-B

Strands not shown for clarity.



B1 BAR PERMISSIBLE ALTERNATE SHAPE



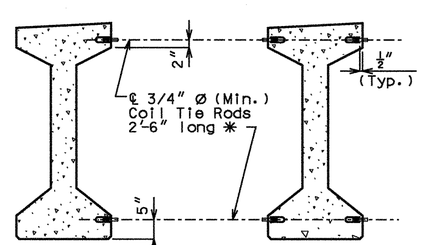
SECTION C-C

PART ELEVATION AT END OF GIRDER

BEARING PLATE DETAILS

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

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



EXTERIOR GIRDERS AT INT. BENTS

EXTERIOR GIRDERS AT END BENTS INTERIOR GIRDERS AT ALL BENTS

DETAILS OF COIL TIES

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

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

For location of coil inserts at slab drains, see Sheet No. 22.

For location of coil ties, see Sheets No. 7 & 17.

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

For details of diaphragms, see Sheets No. 14 & 17.

For Girder Camber Diagram, see Sheet No. 19.

* Length of coil tie rods at exterior girders at end bents = 2'-0".

GIRDER DETAILS - SPAN (1-2)

STATE OF MISSOURI GINA D. HORNER NUMBER E-30413 REGISTERED PROFESSIONAL ENGINEER 3-9-10

DATE PREPARED 7/20/09

ROUTE I-49 | STATE MO

DISTRICT BR | SHEET NO. 15

COUNTY McDONALD

JOB NO. J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A7000

DATE | DESCRIPTION

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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

DRAFT Subject to Change

USER: TThompson
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Detailed JUL 2009
Checked JUL 2009

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

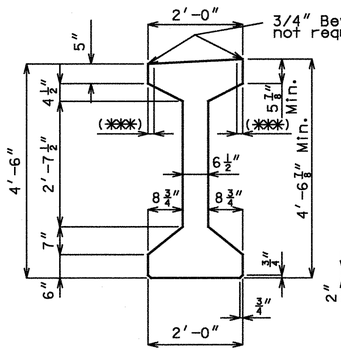
REV.

Concrete for prestressed girders shall be Class A-1 with f'c = 6,000 psi and f'ci = 4,500 psi.

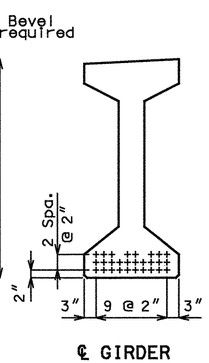
(+) indicates prestressing strand.

Use 28 strands with an initial prestress force of 867.5 kips.

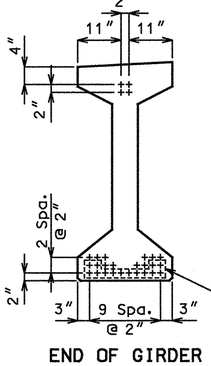
Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 1/2 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.



GIRDER DIMENSIONS



℄ GIRDER

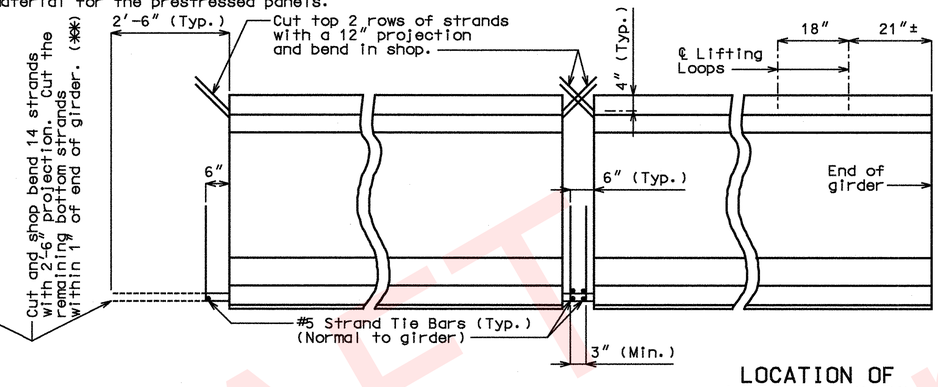


END OF GIRDER

STRAND ARRANGEMENTS

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

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

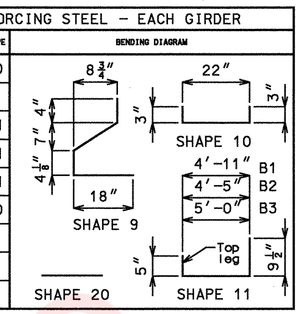


END BENT INTERMEDIATE BENT

LOCATION OF LIFTING LOOPS

BILL OF REINFORCING STEEL - EACH GIRDER

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
4	6 A1	43'-5"	20	
202	4 B1	6'-0"	11	
16	6 B2	5'-5"	11	
20	4 B3	6'-1"	11	
119	4 C1	2'-2"	10	
238	4 D1	3'-0"	9	



All dimensions are out to out.

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

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

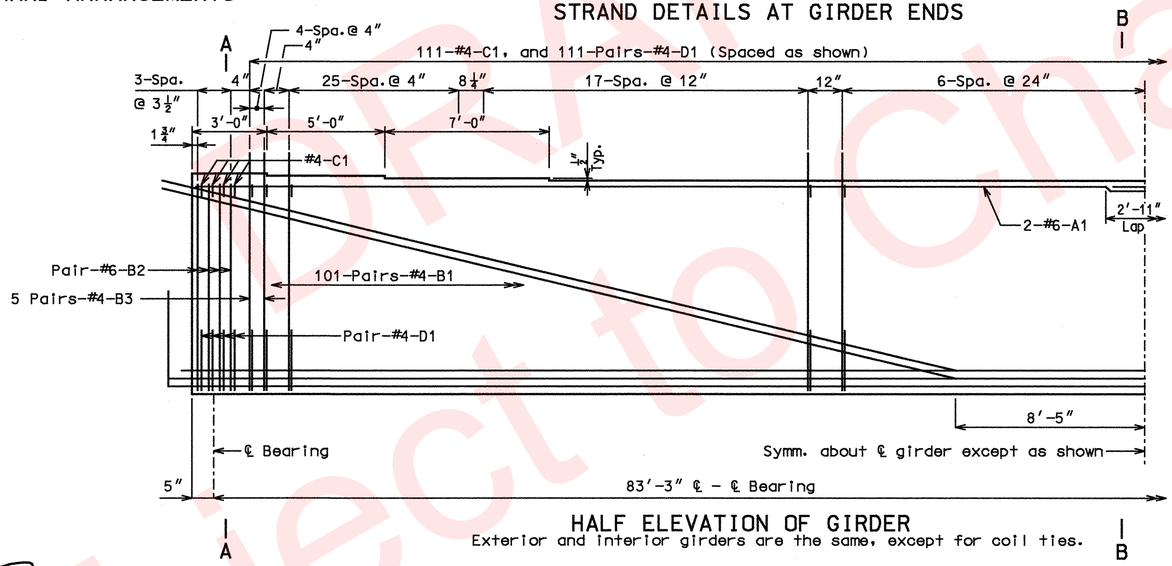
Minimum clearance to reinforcing shall be 1".

All reinforcement shall be Grade 60.

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

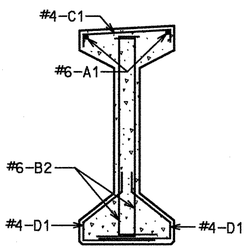
All B1 bars shall be epoxy coated.

STRAND DETAILS AT GIRDER ENDS



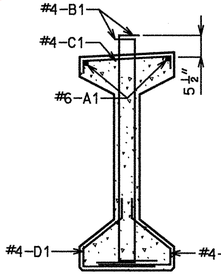
HALF ELEVATION OF GIRDER

Exterior and interior girders are the same, except for coil ties.



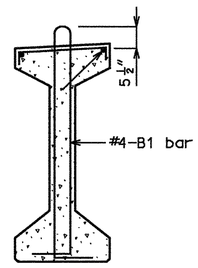
SECTION A-A

Strands not shown for clarity.

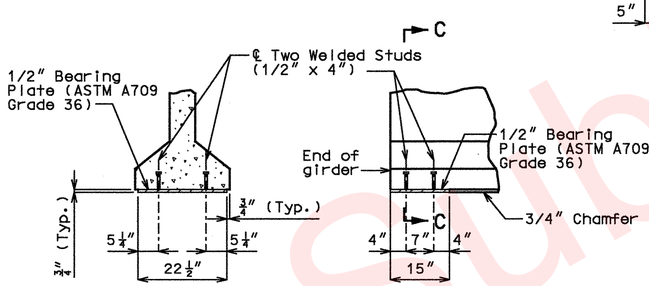


SECTION B-B

Strands not shown for clarity.



B1 BAR PERMISSIBLE ALTERNATE SHAPE



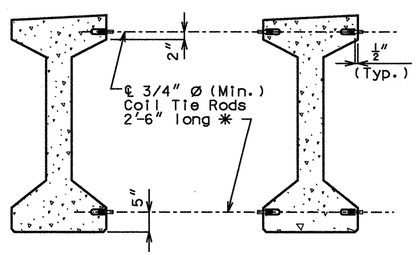
SECTION C-C

PART ELEVATION AT END OF GIRDER

BEARING PLATE DETAILS

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

Cost of furnishing, galvanizing, and installing the ½" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed girder will be considered completely covered by the contract unit price for Prestressed Concrete I-Girder.



EXTERIOR GIRDERS AT INT. BENTS

EXTERIOR GIRDERS AT END BENTS INTERIOR GIRDERS AT ALL BENTS

DETAILS OF COIL TIES

Cost of ¾" Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete I-Girder.

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

For location of coil inserts at slab drains, see Sheet No. 22.

For location of coil ties, see Sheets No. 11 & 17.

The 1½" Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed.

For details of diaphragms, see Sheets No. 14 & 17.

For Girder Camber Diagram, see Sheet No. 19.

✻ Length of coil tie rods at exterior girders at end bents = 2'-0".

GIRDER DETAILS - SPAN (2-3)

STATE OF MISSOURI GINA D. HORNER NUMBER E-30413 REGISTERED PROFESSIONAL ENGINEER 3-9-10

DATE PREPARED 7/20/09

ROUTE I-49 | STATE MO

DISTRICT BR | SHEET NO. 16

COUNTY McDONALD

JOB NO. J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A7000

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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

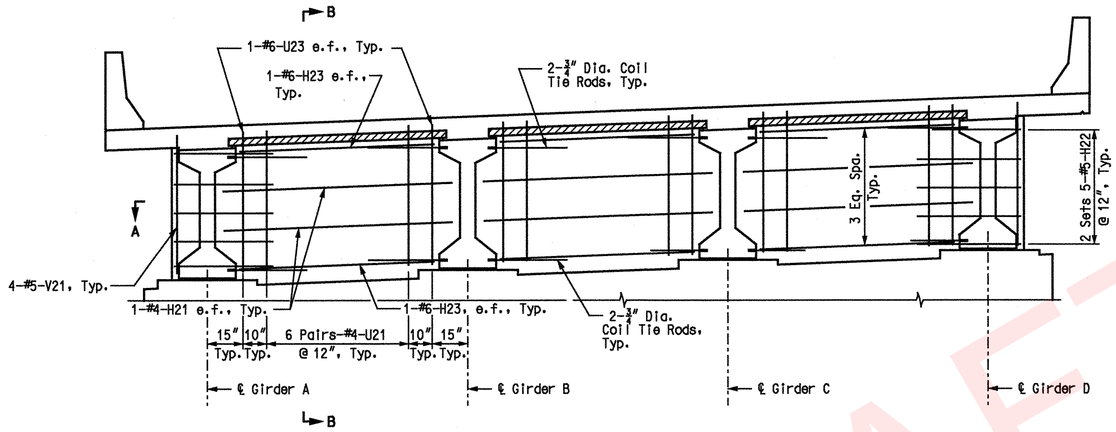
DRAFT Subject to Change

Detailed JUL 2009
Checked JUL 2009

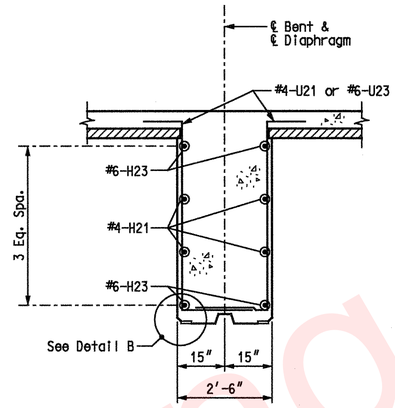
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REV.

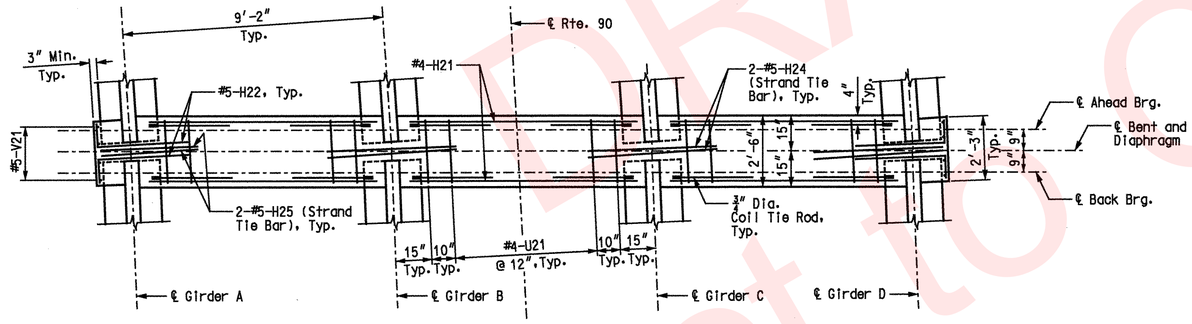
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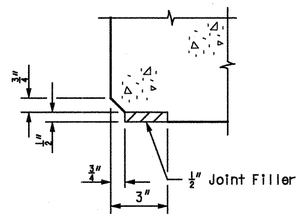
SECTION NEAR INTERMEDIATE BENT



SECTION B-B



SECTION A-A



DETAIL B

Note:
Diaphragm shall be built vertical.

BENT 2 DIAPHRAGM DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED	4/21/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	17
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A7000

DESCRIPTION | DATE | REV.

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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

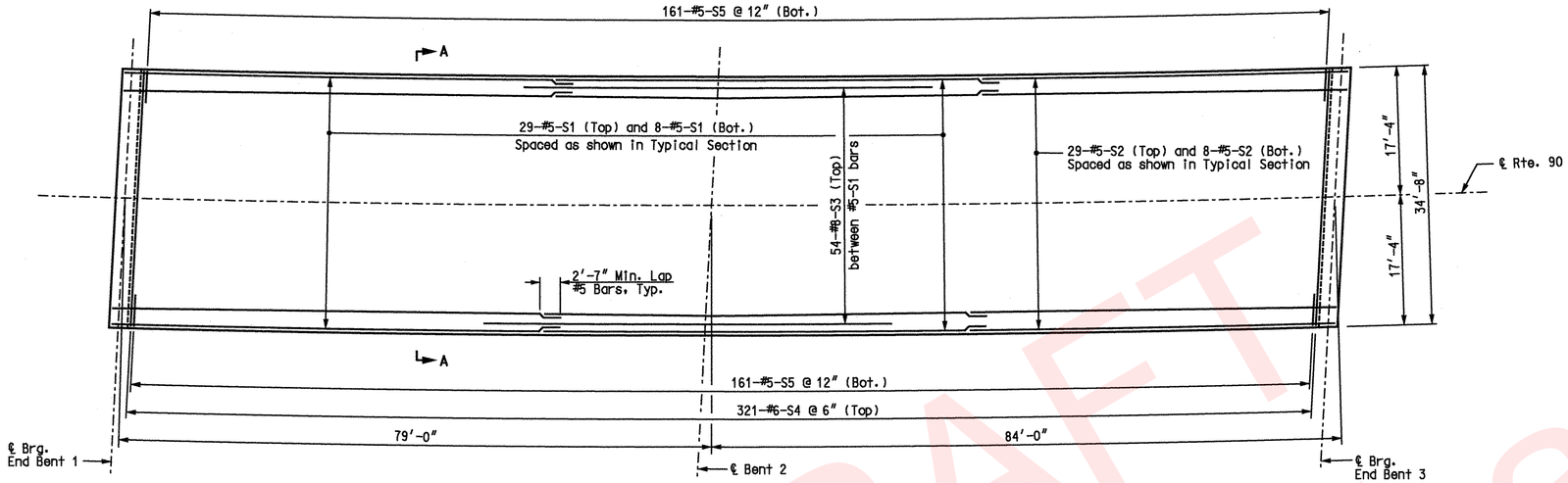
DRAFT
Subject to Change

USER: TThompson
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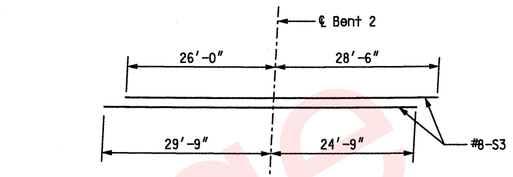
Detailed APR 2009
Checked Jul 2009

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

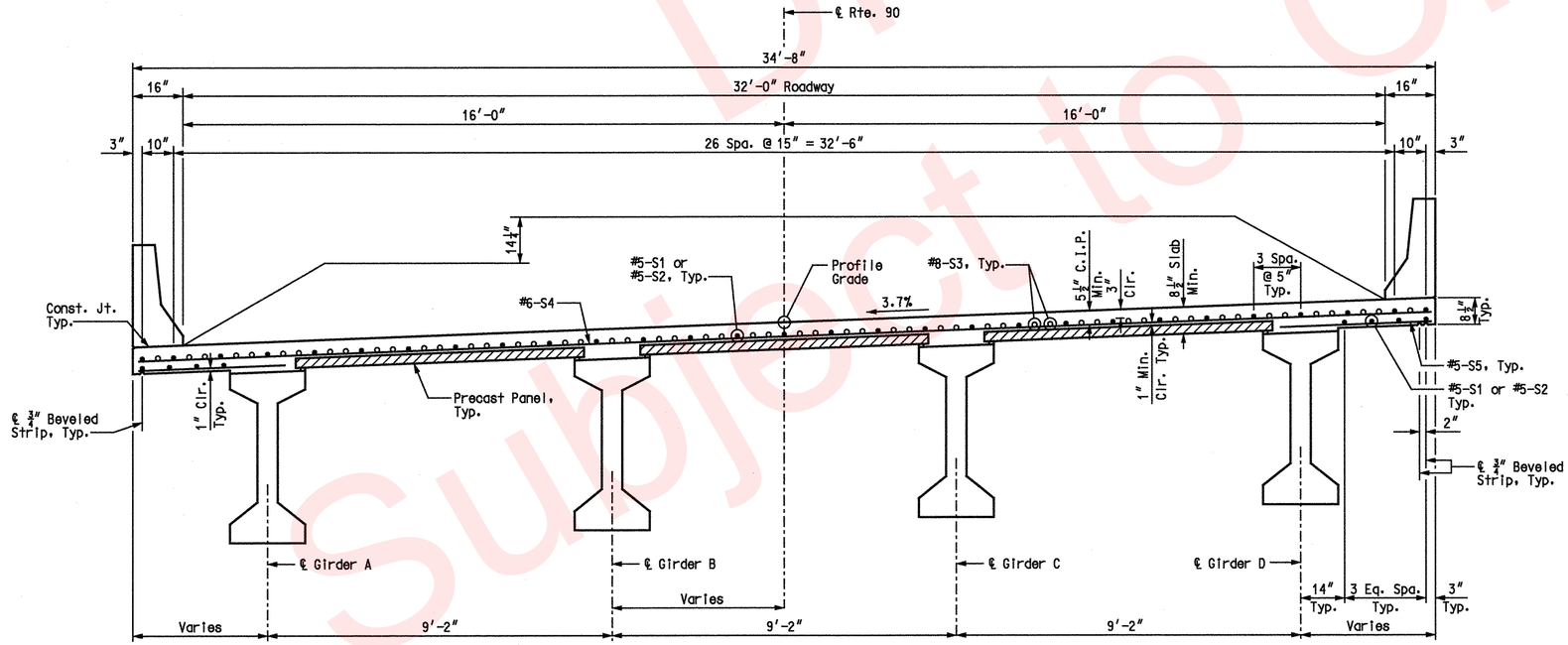
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SLAB PLAN



DETAIL OF NEGATIVE MOMENT STEEL STAGGER



SECTION A-A

Notes:
Longitudinal dimensions shown are horizontal arc dimensions along ℄ Rte. 90.
Transverse reinforcing shall be placed parallel to bents and spaced along the right fascia.
For Location of Slab Drains, see Sheet No. 22.
For details and reinforcing of the Safety Barrier Curbs, see Sheet No. 23 and 24.
For Slab Pouring Sequence and Theoretical Slab Haunching Diagram, see Sheet No. 19.
For Framing Plan, see Sheet No. 14.
For Precast Panel Details, see Sheet No. 20.
For Bottom of Slab Elevations and Slab Curve Ordinates, see Sheet No. 21.

SLAB PLAN

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 4/9/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 18
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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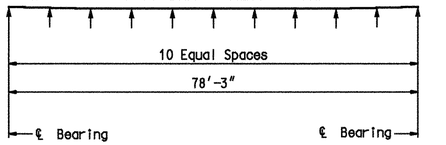
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Detailed APR 2009
Checked APR 2009

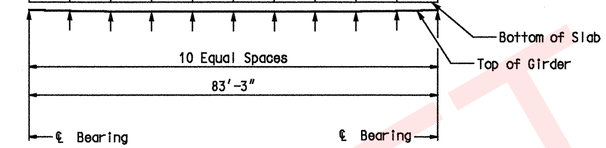
Note: This drawing is not to scale. Follow Dimensions.

Girder A	$2\frac{3}{16}$	2	$2\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{9}{16}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{15}{16}$	$2\frac{7}{16}$	$2\frac{1}{16}$	$2\frac{1}{4}$
Girder B	2	$1\frac{7}{8}$	$2\frac{1}{4}$	$1\frac{13}{16}$	$1\frac{9}{16}$	$1\frac{7}{16}$	$1\frac{9}{16}$	$1\frac{7}{8}$	$2\frac{5}{16}$	$1\frac{5}{16}$	$2\frac{1}{8}$
Girder C	$2\frac{1}{16}$	$1\frac{7}{8}$	$2\frac{5}{16}$	$1\frac{13}{16}$	$1\frac{9}{16}$	$1\frac{7}{16}$	$1\frac{9}{16}$	$1\frac{13}{16}$	$2\frac{5}{16}$	$1\frac{7}{8}$	$2\frac{1}{16}$
Girder D	$2\frac{3}{16}$	$1\frac{15}{16}$	$2\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{9}{16}$	$1\frac{7}{16}$	$1\frac{9}{16}$	$1\frac{7}{8}$	$2\frac{3}{8}$	2	$2\frac{3}{16}$



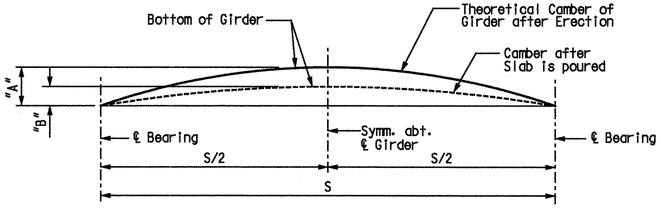
SPAN (1-2)

	$2\frac{1}{8}$	$2\frac{7}{16}$	$2\frac{5}{16}$	$1\frac{13}{16}$	$1\frac{1}{2}$	$1\frac{7}{16}$	$1\frac{9}{16}$	$1\frac{13}{16}$	$2\frac{5}{16}$	$2\frac{7}{16}$	$2\frac{1}{8}$
	$2\frac{1}{16}$	$2\frac{3}{8}$	$2\frac{5}{16}$	$1\frac{7}{8}$	$1\frac{9}{16}$	$1\frac{7}{16}$	$1\frac{9}{16}$	$1\frac{13}{16}$	$2\frac{1}{4}$	$2\frac{3}{8}$	2
	2	$2\frac{3}{8}$	$2\frac{1}{4}$	$1\frac{13}{16}$	$1\frac{9}{16}$	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{13}{16}$	$2\frac{1}{4}$	$2\frac{3}{8}$	2
	$2\frac{1}{8}$	$2\frac{7}{16}$	$2\frac{5}{16}$	$1\frac{13}{16}$	$1\frac{9}{16}$	$1\frac{7}{16}$	$1\frac{1}{2}$	$1\frac{13}{16}$	$2\frac{5}{16}$	$2\frac{7}{16}$	$2\frac{1}{8}$



SPAN (2-3)

THEORETICAL SLAB HAUNCHING DIAGRAM

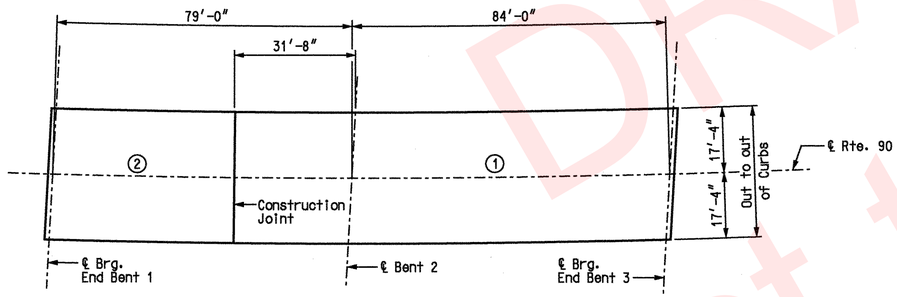


GIRDER CAMBER DIAGRAM

GIRDER	SPAN (1-2)		SPAN (2-3)	
	"A"	"B"	"A"	"B"
A	$2\frac{13}{16}$"	$2\frac{1}{8}$"	3"	$2\frac{1}{16}$"
B	$2\frac{13}{16}$"	2"	1"	$1\frac{15}{16}$"
C	$2\frac{13}{16}$"	2"	1"	$1\frac{15}{16}$"
D	$2\frac{13}{16}$"	$2\frac{1}{8}$"	3"	$2\frac{1}{16}$"

Conversion Factors for Girder Camber
0.1 PT.=0.314 x 0.5 PT.
0.2 PT.=0.593 x 0.5 PT.
0.3 PT.=0.813 x 0.5 PT.
0.4 PT.=0.952 x 0.5 PT.

Notes:
If Girder Camber is different from that shown in the Camber Diagram, it shall be necessary to adjust the slab haunches. Increase the slab thickness or raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.
Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete I-Girder.
Slab haunching values are given in inches.



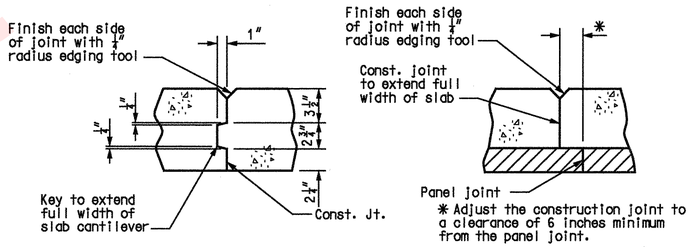
SPAN (1-2) SPAN (2-3)

	Sequence of Pours		Min. rate of pour cu. yds./hr.
	Direction		With retarder
Basic sequence	1	2	25
	End to 2	1 to end	
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Section 703.3.12.4 of Missouri Standard Specifications.			
Alternate "A" pours	1 + 2		34
	End to end		

SLAB POURING SEQUENCE

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

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



SLAB WITHOUT PRECAST PANELS SLAB ON PRECAST PANELS

SLAB CONSTRUCTION JOINT DETAILS

DRAFT Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 7/24/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 19
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

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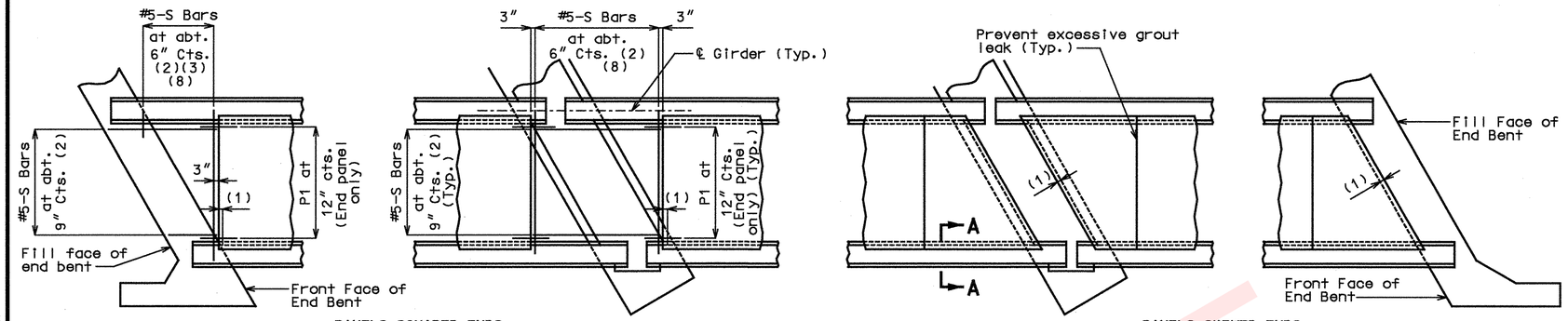
THEORETICAL SLAB HAUNCHING DIAGRAM & SLAB POURING SEQUENCE

Detailed JUL 2009
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Note: This drawing is not to scale. Follow Dimensions.

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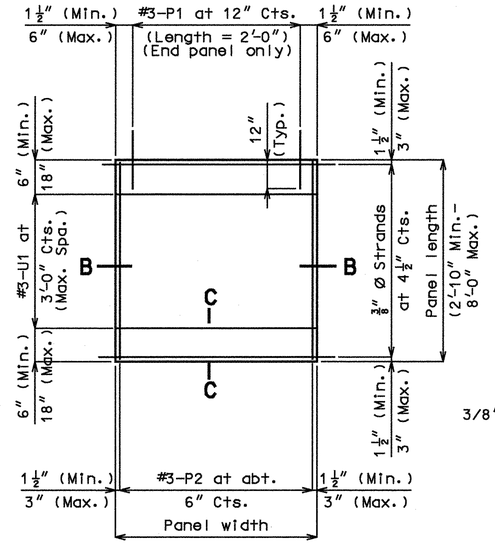
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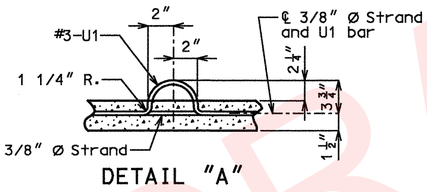
PANELS–SQUARED ENDS

PANELS–SKEWED ENDS

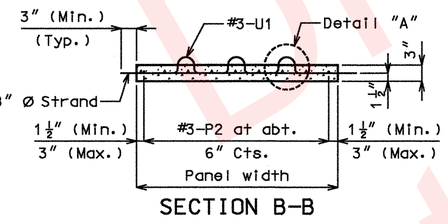
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



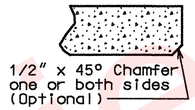
PLAN OF PRECAST PRESTRESSED PANEL



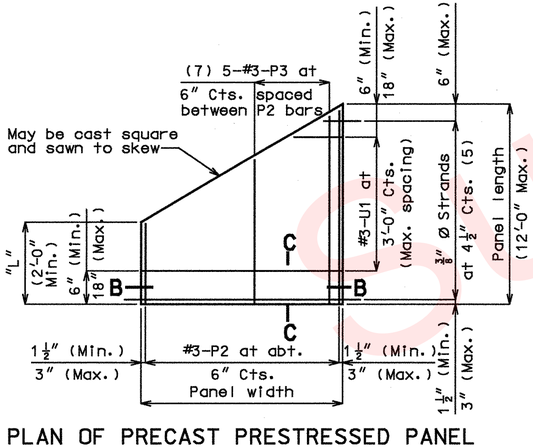
DETAIL "A"



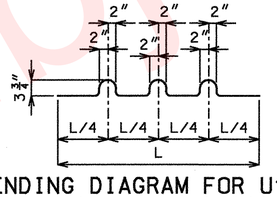
SECTION B–B



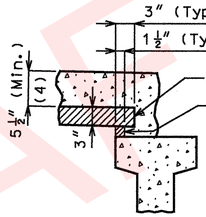
SECTION C–C



PLAN OF PRECAST PRESTRESSED PANEL
(SKEWED END–OPTIONAL)



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



SECTION A–A

Note: Use slab haunching diagram on Sheet No. 19 for determining thickness of preformed fiber expansion joint material or polystyrene bedding material within the limits noted in general notes.

NOTES:

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

The reinforcing steel shall be tied securely to the 3/8"Ø strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
Welded wire fabric or welded deformed bar mats at 2'-0".

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

All reinforcement other than prestressing strands shall be epoxy coated.

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES:

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

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

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

Initial prestressing force = 17.2 kips/strand.

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

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

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

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

Minimum preformed fiber expansion joint material or polystyrene bedding material thickness shall be 1 inch. Thicker material may be used on one or both sides of the girder to reduce cast-in-place concrete thickness, to within tolerances. No more than 2 inches total thickness shall be used.

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

Slab thickness over prestressed panels varies due to girder camber.

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

REINFORCING STEEL:
All dimensions are out to out.

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

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

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

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

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

DETAILS OF PRECAST PRESTRESSED PANELS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
7-9-10

DATE PREPARED 2/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 20
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DATE | DESCRIPTION

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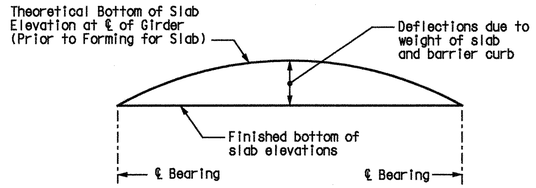
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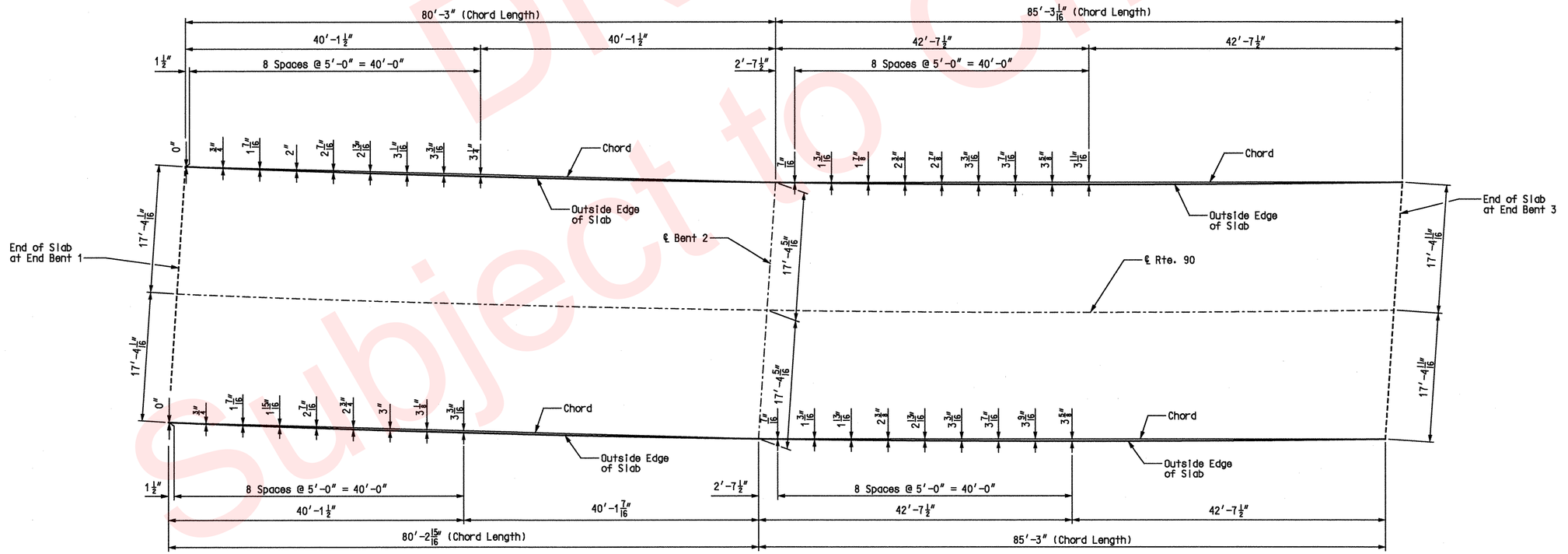


TYPICAL SLAB ELEVATIONS DIAGRAM

Theoretical Bottom of Slab Elevations at CL of Girder (Prior to Forming for Slab) **

	Span (1-2)											Span (2-3)										
	℄ brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ brg.	℄ brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ brg.
Girder A	1199.29	1199.25	1199.20	1199.16	1199.12	1199.08	1199.04	1199.00	1198.96	1198.92	1198.88	1198.88	1198.83	1198.78	1198.74	1198.69	1198.65	1198.61	1198.56	1198.52	1198.48	1198.44
Girder B	1199.63	1199.59	1199.54	1199.50	1199.46	1199.42	1199.38	1199.34	1199.30	1199.26	1199.22	1199.22	1199.17	1199.12	1199.08	1199.04	1198.99	1198.95	1198.91	1198.87	1198.83	1198.79
Girder C	1199.97	1199.93	1199.88	1199.84	1199.80	1199.76	1199.72	1199.68	1199.64	1199.60	1199.57	1199.56	1199.51	1199.47	1199.42	1199.38	1199.33	1199.29	1199.25	1199.21	1199.17	1199.13
Girder D	1200.31	1200.27	1200.22	1200.18	1200.14	1200.10	1200.06	1200.02	1199.98	1199.94	1199.91	1199.90	1199.85	1199.81	1199.76	1199.72	1199.68	1199.63	1199.59	1199.55	1199.51	1199.47

** Elevations are based on a constant slab thickness of 8½" and include allowance for theoretical dead load deflections due to weight of slab and barrier curb.



BOTTOM OF SLAB ELEVATIONS AND SLAB CURVE ORDINATES

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STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 08/04/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 21
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DATE	DESCRIPTION	REV.

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

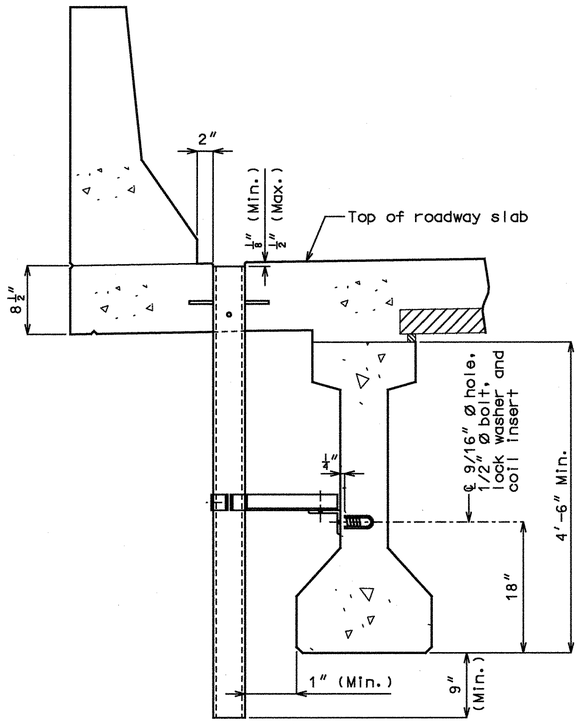
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TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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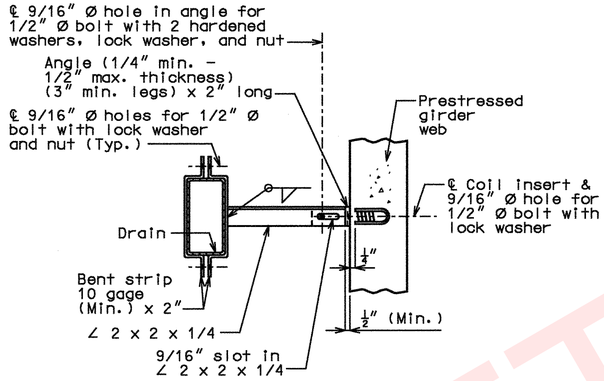
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Detailed JUL 2009
Checked AUG 2009

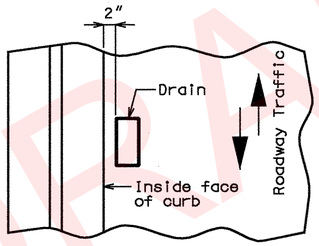
Note: This drawing is not to scale. Follow Dimensions.



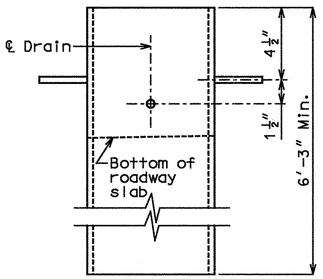
PART SECTION NEAR DRAIN



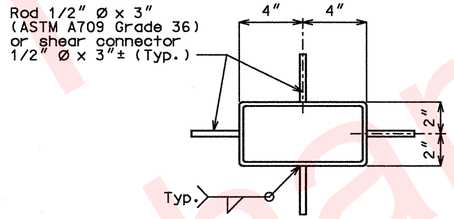
PART SECTION SHOWING BRACKET ASSEMBLY



PART PLAN OF SLAB AT DRAIN

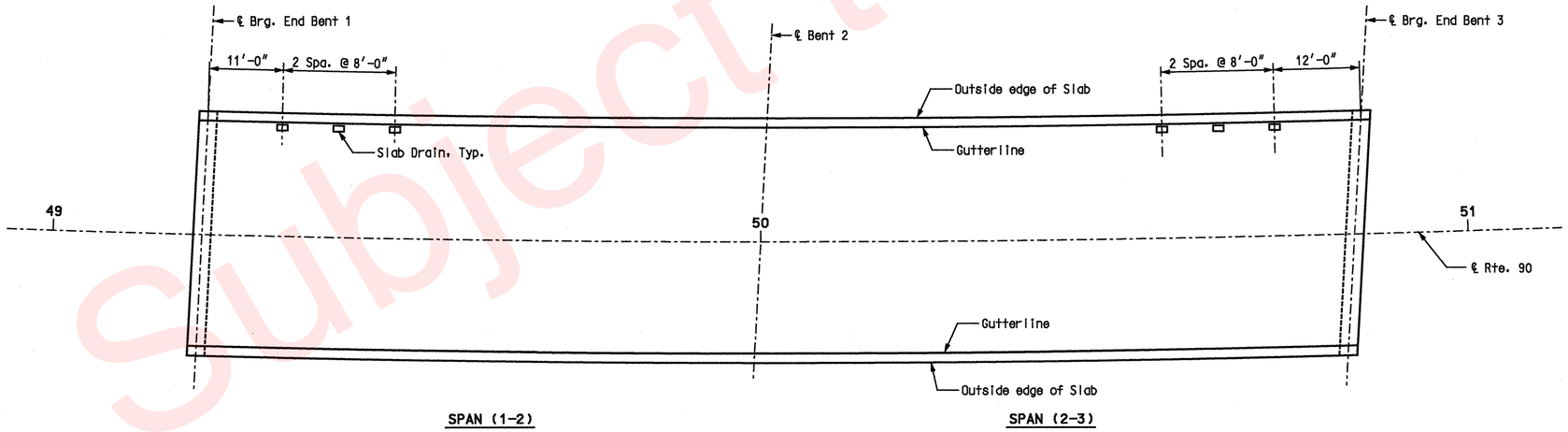


ELEVATION OF DRAIN



PLAN OF DRAIN

DETAILS OF DRAINS PARALLEL TO ROADWAY



PLAN

Notes:
All longitudinal dimensions shown are horizontal arc dimensions along gutterline.

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

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

The coil insert required for the bracket assembly attachment shall be located on the Prestressed I-Girder shop drawings.

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

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

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

SLAB DRAIN DETAILS

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 4/13/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 22
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION | DATE | REV.

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

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

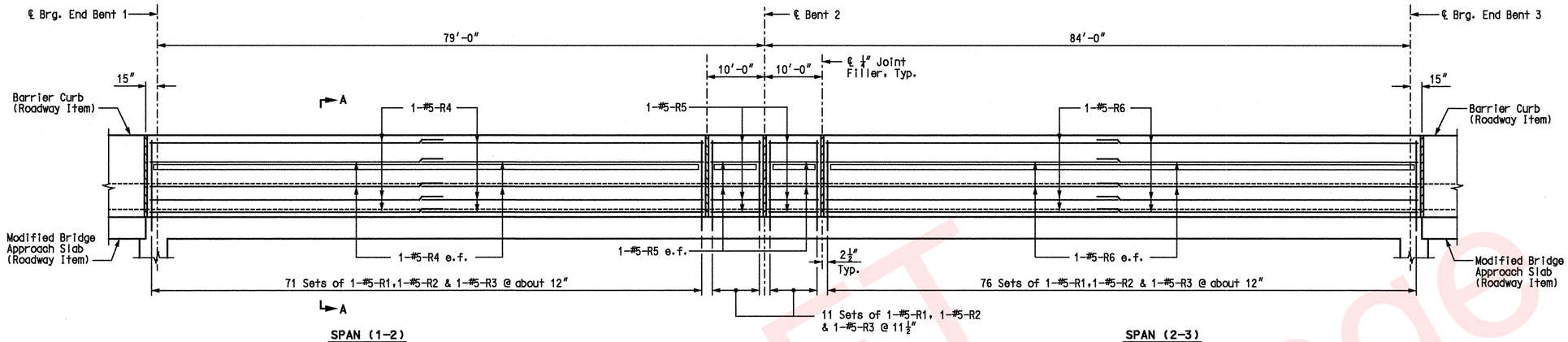
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

DRAFT Subject to Change

USER: TThompson
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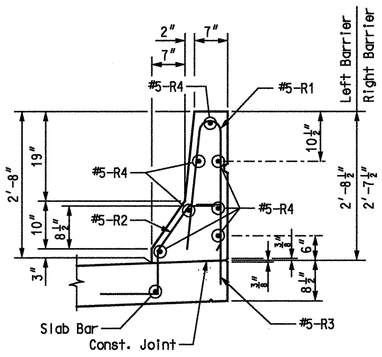
Detailed APR 2009
Checked APR 2009

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



ELEVATION

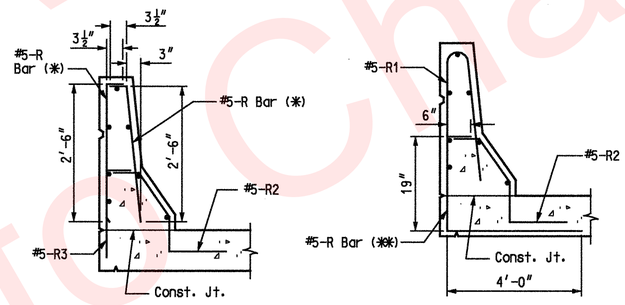
Note:
Right barrier curb shown, left barrier curb similar.



SECTION A-A

Scale: ¾″=1′-0″

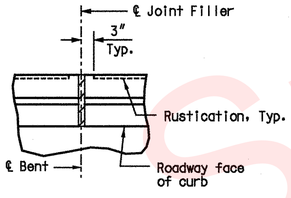
Notes:
The cross sectional area above slab = 2.28 sq. ft. Left Barrier and 2.25 sq. ft. Right Barrier



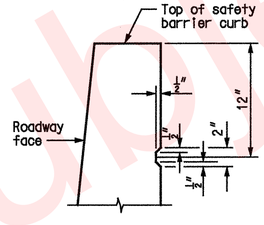
R-BAR PERMISSIBLE ALTERNATE SHAPE

(*) The R1 bar may be seperated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

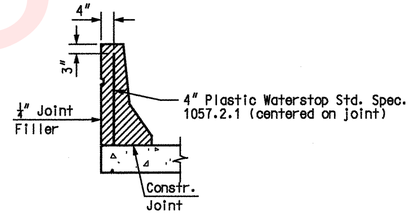
(**) The R3 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar as shown, at the contractor's option.



PART PLAN SHOWING SAFETY BARRIER CURB JOINT

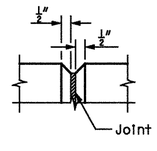


PART SECTION SHOWING RUSTICATION DETAIL



DETAILS OF PLASTIC WATERSTOP

Notes:
Plastic waterstop shall be placed in all safety barrier curb filled joints except structures with superelevation, use on all lower safety barrier curb joints only.
Cost of plastic waterstop complete in place will be considered completely covered by the contract unit price for Safety Barrier Curb.



FILLED JOINT DETAIL

Notes:
e.f. denotes each face.
(L.B.) denotes Left Barrier.
(R.B.) denotes Right Barrier.
Use a minimum lap of 2′-11″ for #5 horizontal barrier curb bars.
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 ½″ radius or a ¾″ 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 curb to end of curb.
Concrete traffic barrier delineators shall be placed on top of 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 (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 for concrete in accordance with Sec 703 is not required. Application of linseed oil at the contractor's expense is permitted.

SAFETY BARRIER CURB DETAILS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
7-9-10

DATE PREPARED 4/13/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 23
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION | DATE | REV.

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

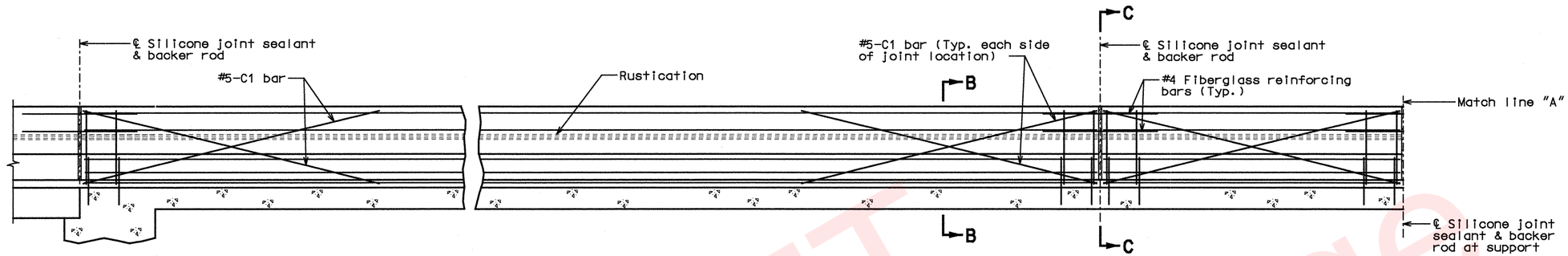
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

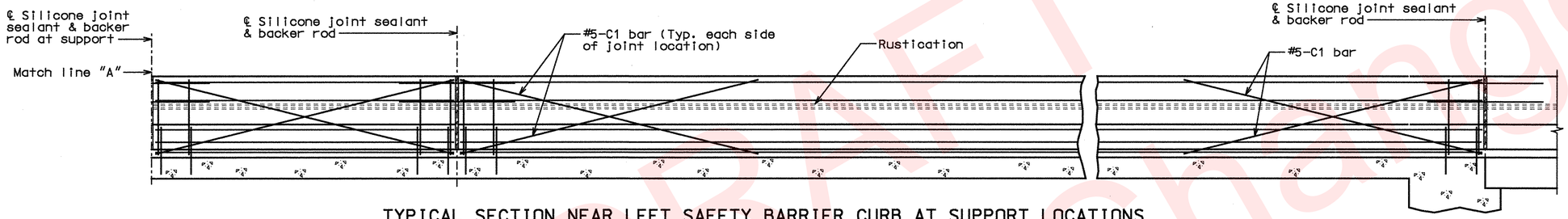
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Detailed APR 2009
Checked APR 2009

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

\\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA7000_03-05-10\J7P0601\A7000-dgn\ZPLOT_B25.dgn 08-MAR-2010 15:15





TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS (OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

Note:
Left barrier curb shown, right barrier curb similar.

Notes:

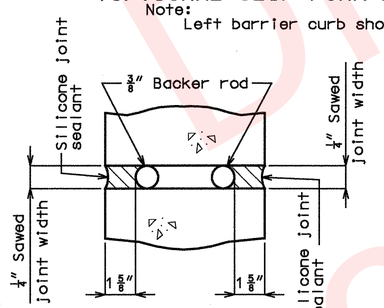
Top of safety barrier curb shall be built parallel to grade with barrier curb joints (except at end bents) normal to grade.

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

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

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



SECTION A-A

Notes:

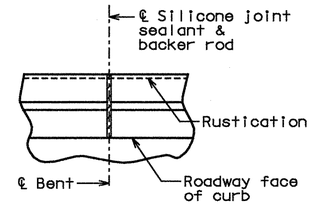
Joint sealant and backer rods shall be used on all slip-form barrier curbs instead of joint filler and shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

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

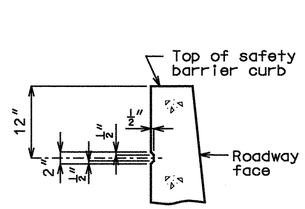
C Bars (Slip-form option only) shall be used in addition to cast-in-place conventional forming reinforcement for bridge safety barrier curb.

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

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb (Type C) 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 (Type C)".

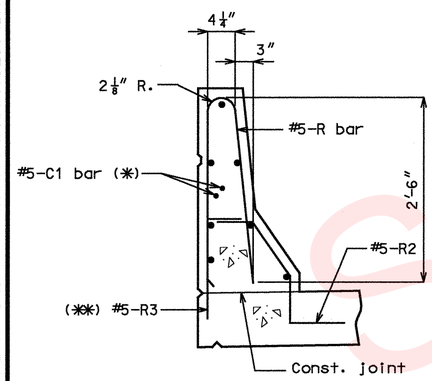


PART PLAN SHOWING SAFETY BARRIER CURB JOINT



PART SECTION SHOWING RUSTICATION DETAILS

RUSTICATION DETAIL

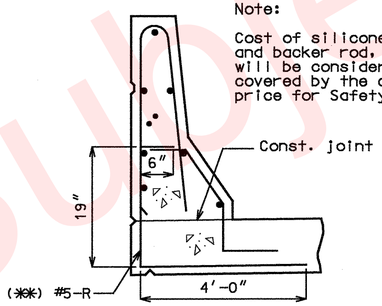


PART SECTION B-B

Notes:

(*) Each side of joint location.

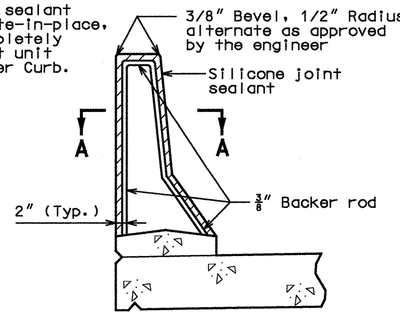
(**) The R3 bar and #5 bottom transverse slab bar in cantilever (P/S panels only) combination may be furnished as one bar at the contractor's option.



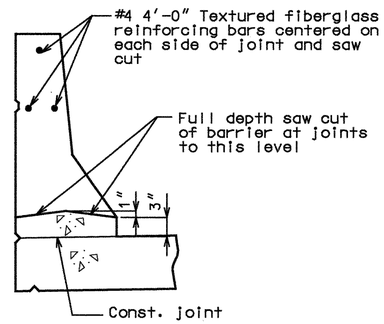
PART SECTION B-B
(Optional #5-R bar shown)

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

Detailed APR 2009
Checked APR 2009

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

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED	4/13/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	24
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A7000

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DESCRIPTION / DATE

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

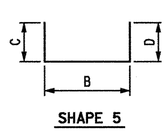
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

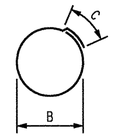
DRAFT Subject to Change

BILL OF REINFORCING STEEL

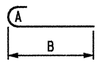
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			SUBSTRUCTURE																									
			BENT 2																									
48	8	D201	Footing		18		X			9′	-6″													11′	-4″	11′	-4″	1,452
4	6	D202	Footing		5		X			9′	-0″	5′	-7″	5′	-7″									20′	-2″	19′	-11″	120
24	5	D203	Footing		20		X			9′	-6″													9′	-6″	9′	-6″	238
24	10	D204	Footing		17		X			11′	-11″													13′	-4″	13′	-4″	1,377
							X																					
8	10	H201	Beam		18		X			31′	-6″													34′	-4″	34′	-4″	1,182
6	10	H202	Beam		18		X			29′	-6″													32′	-4″	32′	-4″	835
8	10	H203	Beam		20		X			31′	-6″													31′	-6″	31′	-6″	1,084
12	5	H204	Beam		20		X			31′	-6″													31′	-6″	31′	-6″	394
32	4	H205	Beam Seat		20		X			3′	-0″													3′	-0″	3′	-0″	64
14	6	H206	Beam		5	S	X			3′	-7″	2′	-5″	2′	-5″									8′	-5″	8′	-2″	172
51	4	P201	Column	E	16		X			3′	-1″		16″											11′	-1″	11′	-1″	378
82	5	U201	Beam		53	S	X			2′	-8″	4′	-3″											14′	-9″	14′	-6″	1,240
28	4	U202	Beam Seat		5	S	X			3′	-6″		12″		12″									5′	-6″	5′	-4″	100
6	5	U203	Beam		5	S	X			3′	-9″	4′	-3″	4′	-3″									12′	-3″	12′	-1″	76
14	10	V201	Column	E	20		X			28′	-3″													28′	-3″	28′	-3″	1,702
12	10	V202	Column	E	20		X			28′	-10″													28′	-10″	28′	-10″	1,489
18	6	V203	Beam		20		X			2′	-6″													2′	-6″	2′	-6″	68
			SUPERSTRUCTURE																									
			END BENT 1																									
8	6	H101	Diaphragm		20					23″														23″		23″		23
12	6	H102	Diaphragm		20					6′	-8″													6′	-8″	6′	-8″	120
8	6	H103	Beam		20					34′	-2″													34′	-2″	34′	-2″	411
4	6	H104	Diaphragm		20					34′	-4″													34′	-4″	34′	-4″	206
4	6	H105	Beam		20					4′	-11″													4′	-11″	4′	-11″	30
4	6	H106	Diaphragm	E	20					34′	-5″													34′	-5″	34′	-5″	207
8	6	H107	Beam		20					12′	-2″													12′	-2″	12′	-2″	146
4	6	H108	Beam		20					14′	-2″													14′	-2″	14′	-2″	85
4	5	H112	Diaphragm		20					4′	-6″													4′	-6″	4′	-6″	19
35	5	H113	Diaphragm	E	20					2′	-6″													2′	-6″	2′	-6″	91
22	5	U101	Beam		5	S				2′	-8″	5′	-1″	5′	-1″									12′	-10″	12′	-7″	289
5	4	U102	Beam		53	S				2′	-8″	2′	-8″											11′	-5″	11′	-2″	37
2	4	U103	Beam		5	S				2′	-8″	3′	-0″	3′	-0″									8′	-8″	8′	-6″	11
3	4	U104	Beam		53	S				2′	-8″	3′	-0″											12′	-1″	11′	-10″	24
2	4	U105	Beam		53	S				2′	-8″	3′	-4″											12′	-9″	12′	-6″	17
3	4	U106	Beam		5	S				2′	-8″	3′	-4″	3′	-4″									9′	-4″	9′	-2″	18
5	4	U107	Beam		53	S				2′	-8″	3′	-8″											13′	-5″	13′	-2″	44
27	5	U108	Diaphragm	E	5	S				2′	-2″	5′	-2″	4′	-11″									12′	-3″	12′	-0″	338
27	6	U109	Diaphragm		19	S				4′	-1″	2′	-4″											6′	-5″	6′	-4″	257
42	6	U110	Diaphragm	E	19	S				3′	-4″	12′	-6″											15′	-10″	15′	-9″	994
10	5	V101	Beam		20					5′	-5″													5′	-5″	5′	-5″	56
20	6	V102	Diaphragm		20					4′	-1″													4′	-1″	4′	-1″	123



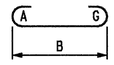
SHAPE 5



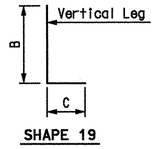
SHAPE 16



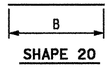
SHAPE 17



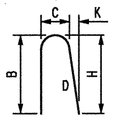
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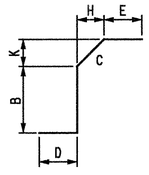
SHAPE 19



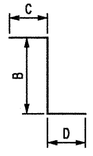
SHAPE 20



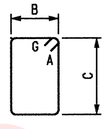
SHAPE 26



SHAPE 27

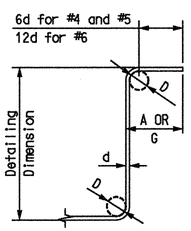


SHAPE 39

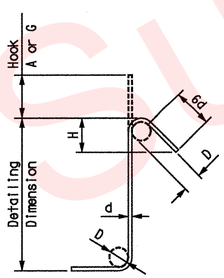


SHAPE 53

Note:
Two additional #10-V201 are included in the Bill of Reinforcing Steel for testing.



90° STIRRUP

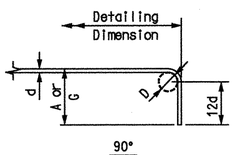


135° STIRRUP

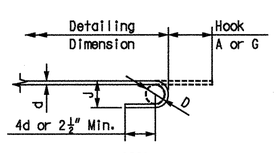
STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2″	4½″	4½″	3″
#5	2½″	6″	5½″	3¾″
#6	4½″	12″	8″	4½″

Note:
Unless otherwise noted, diameter "D" is the same for all bends and hooks on a bar.



90°



180°

END HOOK DIMENSIONS

BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS HOOK A OR G	180° HOOKS J	90° HOOKS HOOK A OR G
#3	2½″	5″	3″	6″
#4	3″	6″	4″	8″
#5	3¾″	7″	5″	10″
#6	4½″	8″	6″	12″
#7	5¼″	10″	7″	14″
#8	6″	11″	8″	16″
#9	9½″	15″	11¾″	19″
#10	10¾″	17″	13¼″	22″
#11	12″	19″	14¾″	2′-0″
#14	18¼″	2′-3″	21¾″	2′-7″

Notes:
All standard hooks and bends other than 180 degree are to be bent with the 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. Each = 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.
Reinforcing Steel (Grade 60) fy = 60,000 psi.

BILL OF REINFORCING STEEL

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	25

COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7000

NO.	DESCRIPTION	DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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

REV.

Detailed AUG 2009
Checked AUG 2009

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

Sheet No. 25 of 27

DRAFT Subject to Change

USER: TThompson
PLOTTED: 08-MAR-2010 15:15
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\\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA7000_03-05-10\J7P0601\A7000-dgn\ZPLOT_B30.dgn 08-MAR-2010 15:15

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.
			END BENT 3																									
8	6H	301	Diaphragm		20					2′	-3″													2′	-3″	2′	-3″	27
12	6H	302	Diaphragm		20					6′	-8″													6′	-8″	6′	-8″	120
8	6H	303	Beam		20					34′	-4″													34′	-4″	34′	-4″	413
4	6H	304	Diaphragm		20					34′	-5″													34′	-5″	34′	-5″	207
4	6H	305	Beam		20					4′	-11″													4′	-11″	4′	-11″	30
4	6H	306	Diaphragm	E	20					34′	-7″													34′	-7″	34′	-7″	208
8	6H	307	Beam		20					12′	-2″													12′	-2″	12′	-2″	146
4	6H	308	Beam		20					14′	-2″													14′	-2″	14′	-2″	85
4	5H	312	Diaphragm		20					4′	-6″													4′	-6″	4′	-6″	19
35	5H	313	Diaphragm	E	20					2′	-6″													2′	-6″	2′	-6″	91
22	5U	301	Beam		5	S				2′	-8″	5′	-2″	5′	-2″									13′	-0″	12′	-9″	293
5	4U	302	Beam		53	S				2′	-8″	2′	-8″											11′	-5″	11′	-2″	37
2	4U	303	Beam		5	S				2′	-8″	3′	-0″	3′	-0″									8′	-8″	8′	-6″	11
3	4U	304	Beam		53	S				2′	-8″	3′	-0″											12′	-1″	11′	-10″	24
2	4U	305	Beam		53	S				2′	-8″	3′	-4″											12′	-9″	12′	-6″	17
3	4U	306	Beam		5	S				2′	-8″	3′	-4″	3′	-4″									9′	-4″	9′	-2″	18
5	4U	307	Beam		53	S				2′	-8″	3′	-8″											13′	-5″	13′	-2″	44
27	5U	308	Diaphragm	E	5	S				2′	-2″	5′	-3″	4′	-11″									12′	-4″	12′	-1″	340
27	6U	309	Diaphragm		19	S				4′	-2″	2′	-4″											6′	-6″	6′	-5″	260
44	6U	310	Diaphragm	E	19	S				3′	-4″	12′	-6″											15′	-10″	15′	-9″	1,041
10	5V	301	Beam		20					5′	-5″													5′	-5″	5′	-5″	56
20	6V	302	Diaphragm		20					4′	-1″													4′	-1″	4′	-1″	123
			BENT 2 DIAPH.																									
12	4H	21	Diaphragm		20					8′	-4″													8′	-4″	8′	-4″	67
20	5H	22	Diaphragm		19	S				3′	-2″	9″												3′	-11″	3′	-10″	80
12	6H	23	Diaphragm		20					6′	-10″													6′	-10″	6′	-10″	123
8	5H	24	Strand Tie Bar		20					4′	-6″													4′	-6″	4′	-6″	38
8	5H	25	Strand Tie Bar		20					3′	-3″													3′	-3″	3′	-3″	27
38	4U	21	Diaphragm	E	39	S				5′	-0″	12″		22″										7′	-10″	7′	-8″	195
12	6U	23	Diaphragm	E	39	S				5′	-0″	18″		22″										8′	-4″	8′	-1″	146
8	5V	21	Diaphragm	E	20					5′	-0″													5′	-0″	5′	-0″	42
			SLAB																									
74	5S	1	Slab, Top & Bot.	E	20					60′	-0″													60′	-0″	60′	-0″	4,631
37	5S	2	Slab, Top & Bot.	E	20					52′	-5″													52′	-5″	52′	-5″	2,023
56	8S	3	Slab, Top	E	20					54′	-6″													54′	-6″	54′	-6″	8,149
321	6S	4	Slab, Top	E	20					34′	-0″													34′	-0″	34′	-0″	16,393
322	5S	5	Slab, Bottom	E	20					4′	-0″													4′	-0″	4′	-0″	1,343
			BARRIER																									
24	5C	1	Slip Form	E	20					10′	-0″													10′	-0″	10′	-0″	250
338	5R	1	Barrier Curb	E	26	S				2′	-6″	4 1/4″		2′	-6 1/8″					2′	-6″	3″		5′	-2″	5′	-2″	1,821
338	5R	2	Barrier Curb	E	27	S				7″		11 1/4″		12″		6″				6 3/8″		9 1/4″		3′	-1″	2′	-9″	969
338	5R	3	Barrier Curb	E	19	S				17″		6″												23″		22″		646
28	5R	4	Barrier Curb	E	20					36′	-6″													36′	-6″	36′	-6″	1,066
30	5R	5	Barrier Curb	E	20					9′	-8″													9′	-8″	9′	-8″	302
28	5R	6	Barrier Curb	E	20					39′	-0″													39′	-0″	39′	-0″	1,139

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.
	4		**TOTALS**																									533
	4			E																								573
	5																											2,825
	5			E																								15,092
	6																											3,295
	6			E																								18,989
	8																											1,452
	8			E																								8,149
	10																											4,478
	10			E																								3,191
			TOTAL																									12,583
			TOTAL E																									45,994
			SLAB ON CONCRETE I-GIRDER																									
	4																											369
	4			E																								195
	5																											877
	5			E																								8,899
	6																											2,935
	6			E																								18,989
	8			E																								8,149
			TOTAL																									4,181
			TOTAL E																									36,232
			REINFORCING STEEL (BRIDGES)																									
	4																											164
	4			E																								378
	5																											1,948
	6																											360
	8																											1,452
	10																											4,478
	10			E																								3,191
			TOTAL																									8,402
			TOTAL E																									3,569
			BARRIER CURB																									
	5			E																								5,943
			SLIP FORM OPTION																									
	5			E																								250

Notes:
For Bar Bending Diagrams, see Sheet 25.
Two additional #4-U21, #5-R5, #6-U310, and #8-S3 are included in the Bill of Reinforcing Steel for testing.

BILL OF REINFORCING STEEL

Detailed AUG 2009
Checked AUG 2009

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

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

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

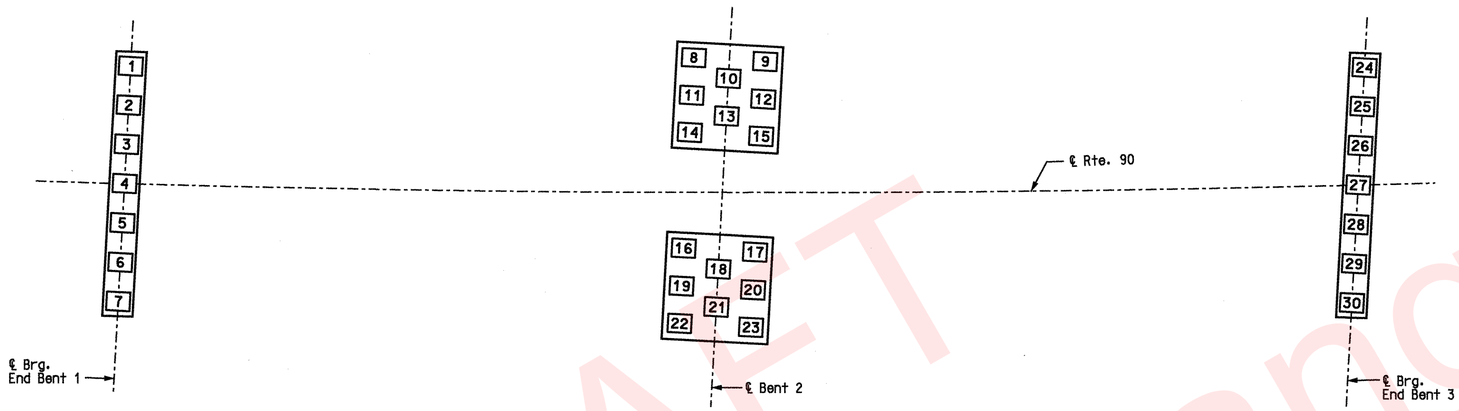
DATE PREPARED 08/06/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 26
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION | DATE | REV.

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

Subject to Change



"AS BUILT PILE" DATA

PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
END BENT 1			
1			
2			
3			
4			
5			
6			
7			
BENT 2			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
END BENT 3			
24			
25			
26			
27			
28			
29			
30			

Notes:
Indicate in the remarks column:
A. If pilings were driven to practical refusal.
B. If pile batter is other than shown on the Bent Detail Sheet.
C. Type of piling used.

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

AS-BUILT PILE DATA

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 4/14/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 27
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7000

DESCRIPTION	DATE

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

USER: TThompson
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Detailed APR 2009
Checked APR 2009

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

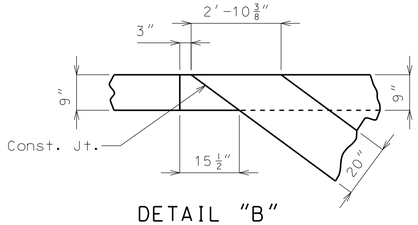
\\kcow00\Jobs\49259\Bridges\Plans\CDtoMoDotA7000_03-05-10\J7P0601\A7000-dgn\ZPLOT_B33.dgn 08-MAR-2010 15:15

CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

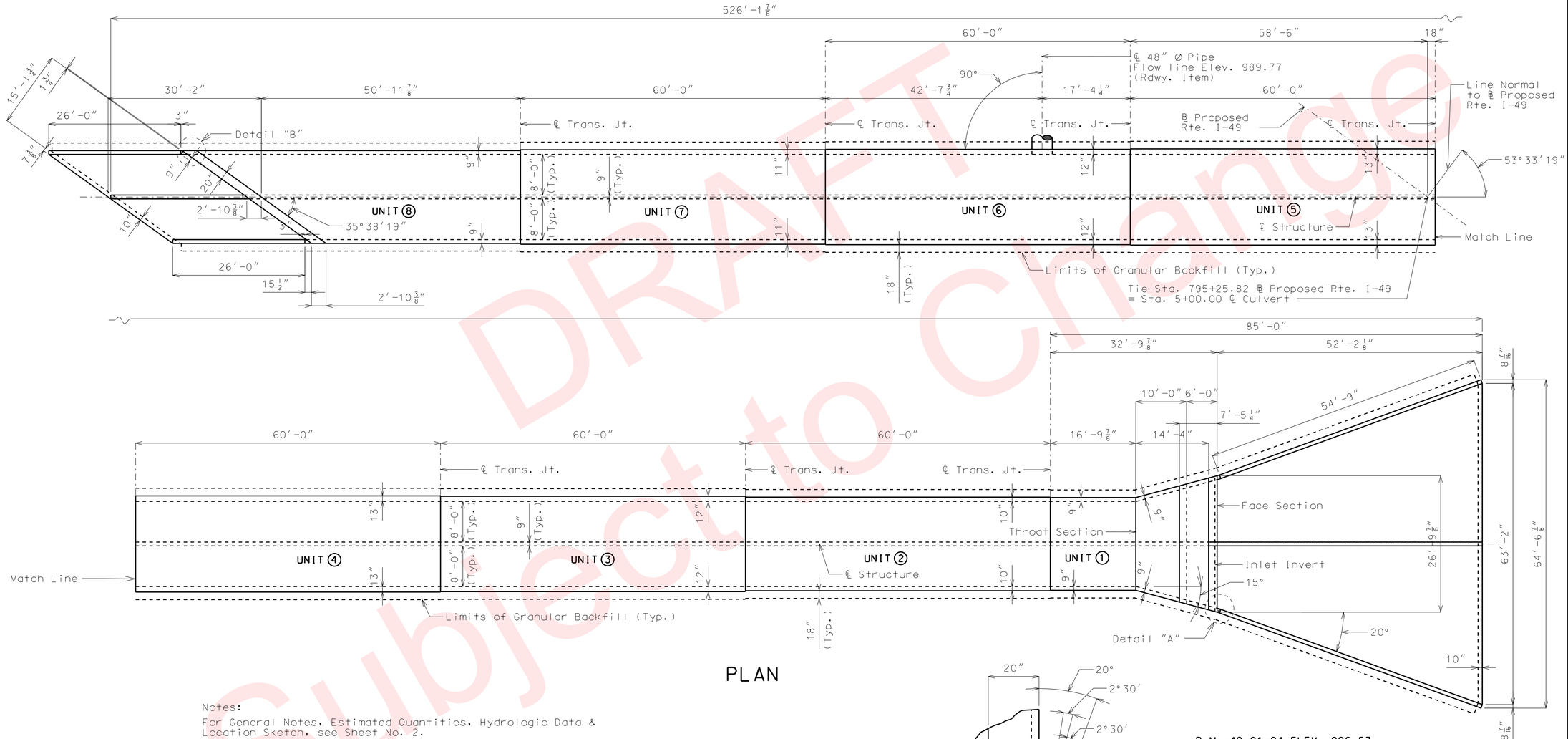
SEC/SUR 15 TWP 21N RGE 32W

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

2 (8' x 8') CONCRETE BOX CULVERT



DETAIL "B"



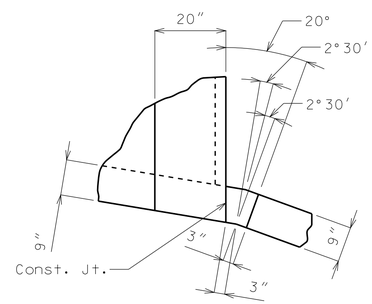
PLAN

Notes:

For General Notes, Estimated Quantities, Hydrologic Data & Location Sketch, see Sheet No. 2.

For Elevation and End Elevation, see Sheet No. 2.

For Typical Section Thru Box, see Sheet No. 3.



DETAIL "A"

B.M.-49-01-04 ELEV. 996.57
N: 140.345.6810 E: 2.822.699.6383
RR SPIKE IN E SIDE OF PP W SIDE OF CO. ROAD. 2' W OF ROAD. SPIKE IS 0.9' ABOVE GROUND 2.2 MILES S OF RTE. H

BRIDGE OVER GOODIN HOLLOW TRIBUTARY

STATE ROAD FROM RTE. H TO STATE LINE

ABOUT 4 MILES NORTH OF STATE LINE

STA. 795+25.82

STD. 703.37
STD. 703.42
STD. 703.44
STD. 703.60
STD. 706.35

Designed Mar. 2009
Detailed Apr. 2009
Checked Jun. 2009

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

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

DATE PREPARED 2/25/2010

ROUTE I-49 | STATE MO

DISTRICT BR | SHEET NO. 1

COUNTY McDONALD

JOB NO. J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A7052

DESCRIPTION | DATE

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

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

DRAFT Change Subject to

CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

HYDROLOGIC DATA
Drainage Area = 1.38 (sq. mi.) (Hilly)
Design High Water (DHW) Elev. = 998.26
Design High Water Frequency = 50 (year)
Design High Water Discharge = 1,298.18 (cfs)
Backwater/Base Flood Data (100 year)
High Water Elev. = 999.23
Design Discharge = 2,188.78 (cfs)
Estimated Backwater = 2.43 (ft)
Outlet Velocity = 21.61 (ft/sec)
Roadway Overtopping
Design Elev. (1' below shoulder) = 1,034.37
Design Discharge ≥ 2,667.86 (cfs)
Design Frequency > 500 (year)

ESTIMATED QUANTITIES			FINAL QUANTITIES
Class 4 Excavation	cu. yard	1,945	
Class B-1 Concrete (Culverts-Bridge)	cu. yard	1,375.0	
Reinforcing Steel (Culverts-Bridge)	pound	124,200	

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design

Design Unit Stresses:
Class B-1 concrete (Box Culvert) f'c = 4,000 psi
Reinforcing steel (Grade 60), fy = 60,000 psi

Design Loading:
HS20 Modified
Military 24,000 # Tandem Axle
Earth 120 #/ft.^{3}
Equivalent fluid pressure
30 #/ft.^{3} (Min.) - 60 #/ft.^{3} (Max.)

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

Miscellaneous:
Provide grading of the channel bottom within the limits of the R/W as needed for culvert flowline elevations and transition of the channel bed to the culvert openings.

Taper channel banks to match end of culvert opening as required. (Roadway Item)

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

Provide an inlet for a 48" Ø pipe on the east wall of structure at ℄ Proposed Rte. I-49 Sta. 794+58.35, offset 36.48' right, Flow line Elev. 989.77. Verify and coordinate location and skew of pipe with roadway plans. For details of Pipe Inlet, see Missouri Standard Plans drawing 703.60.

Traffic Handling:
See Roadway Plans for traffic control.

Precast Option:
The box shown below indicating whether a precast or cip box was used should be checked by MoDOT Construction personnel:

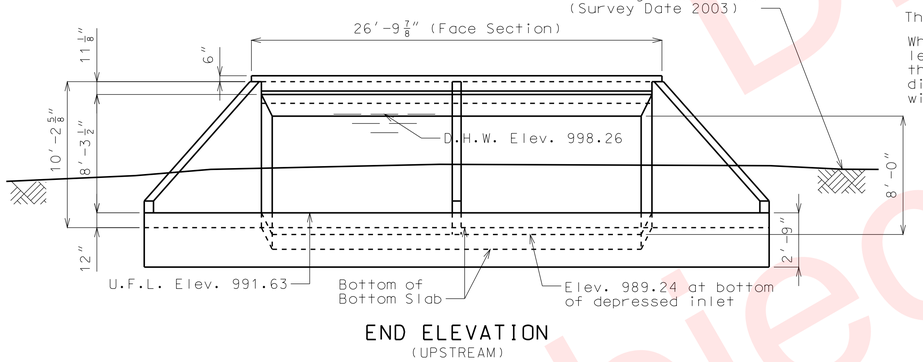
☐ Precast Box used
☐ Cast-in-Place Box used

The use of precast box sections shall not be allowed for Unit 1.

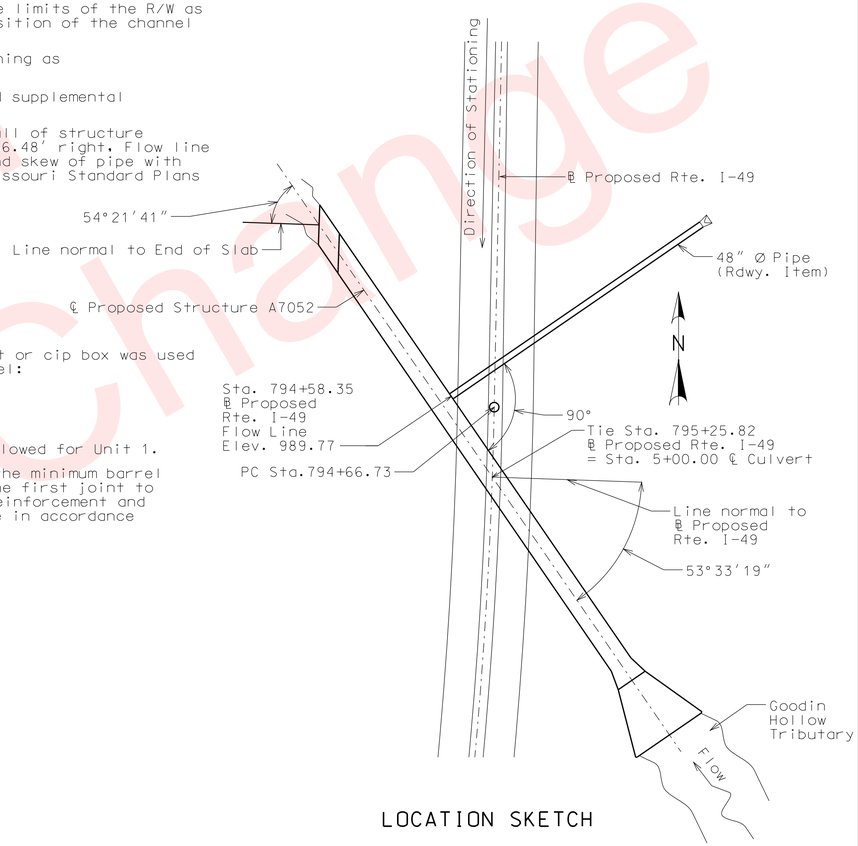
When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 3'-2". Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans drawing.

CURVE DATA

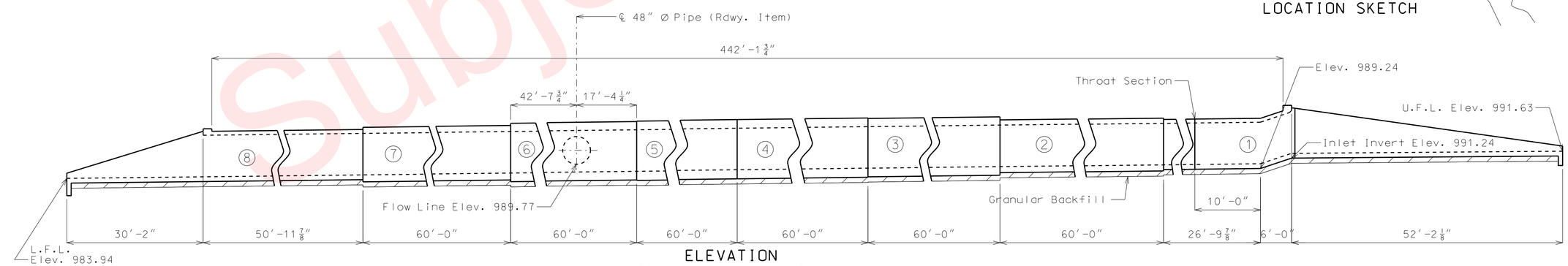
PI	STA. 808+04.90
Δ	35°20'41.50" RT.
D	1°21'51.1"
R	4200.00'
T	1338.16'
L	2590.91'
SE	VARIES
W =	0.0 FT



END ELEVATION
(UPSTREAM)



LOCATION SKETCH



ELEVATION
Note: Dimensions are along ℄ Structure.

Detailed Apr. 2009
Checked Jun. 2009

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

DRAFT
Subject to Change

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

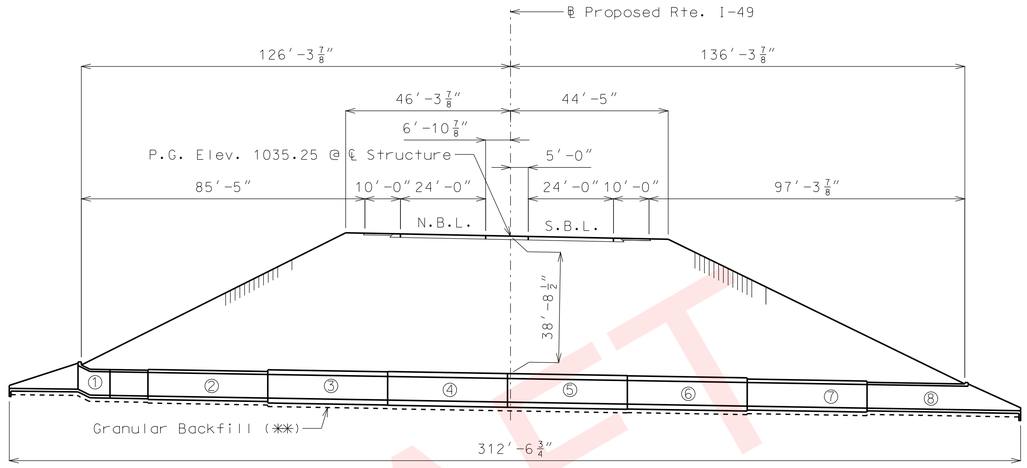
DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7052

DESCRIPTION	DATE

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

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

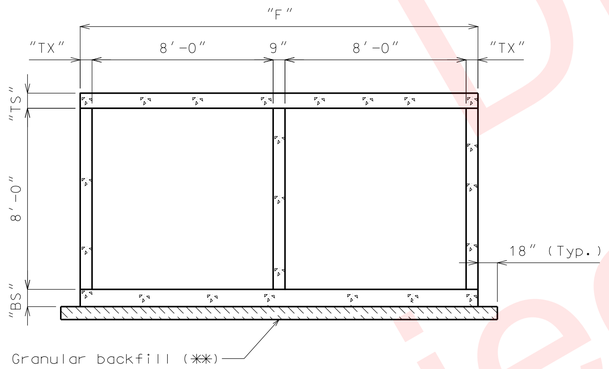
CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet



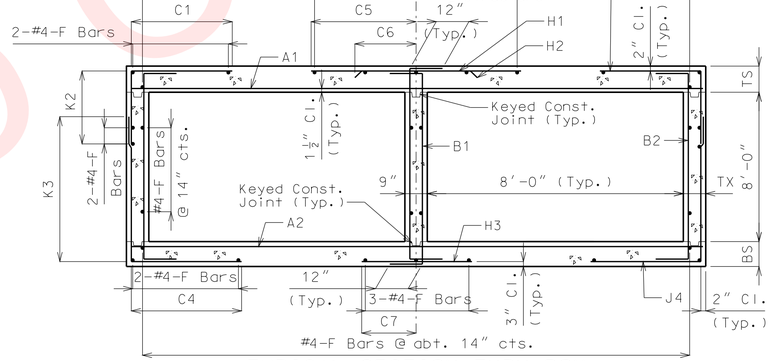
ELEVATION

Note: Dimensions are normal to ℄ Proposed I-49 @ ℄ Structure.

(**) If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.



SECTION THRU BOX (UNITS 2 THRU 8)
(Normal to ℄ Structure)



TYPICAL SECTION THRU BOX (UNITS 2 THRU 8)

UNIT	DESIGN FILL (*)	MEMBER THICKNESS				REINFORCEMENT TABLE																												"C" Multiplier	"K" Multiplier		
						TOP SLAB BARS								BOTTOM SLAB BARS						WALL BARS								COEFFICIENTS (see note)									
						A1 Bars		J3 Bars		H1 Bars		H2 Bars		A2 Bars		J4 Bars		H3 Bars		B1 Bars		B2 Bars		F Bars		J4		H3		J3		H1	H2	S = 8 ft	HT = 8 ft		
		"TS"	"BS"	"TX"	"F"	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	C4	K3	C7	C1	K2	C5	C6					
	(ft-in)	Thick	Thick	Thick																														in	in		
2	23′-6″	13″	15″	10″	18′-5″	4	6.0	5	7.0	5	12.5	5	12.5	4	6.0	5	7.0	5	7.0	5	11.5	5	11.5	4	14.0	0.33	0.91	0.35	0.34	0.30	0.37	0.26		106	119		
3	35′-6″	19″	21″	12″	18′-9″	5	8.0	5	7.5	5	12.0	5	12.0	5	7.0	4	5.5	6	6.0	5	11.5	5	8.5	4	14.0	0.34	0.86	0.41	0.35	0.31	0.37	0.28		107	131		
4	39′-4″	20″	22″	13″	18′-11″	5	7.5	5	7.5	5	12.5	5	12.5	5	6.5	4	6.0	6	6.0	5	11.5	5	8.5	4	14.0	0.35	0.85	0.42	0.36	0.31	0.36	0.29		107	133		
5	39′-4″	20″	22″	13″	18′-11″	5	7.5	5	7.5	5	12.5	5	12.5	5	6.5	4	6.0	6	6.0	5	11.5	5	8.5	4	14.0	0.35	0.85	0.42	0.36	0.31	0.36	0.29		107	133		
6	35′-6″	19″	21″	12″	18′-9″	5	8.0	5	7.5	5	12.0	5	12.0	5	7.0	4	5.5	6	6.0	5	11.5	5	8.5	4	14.0	0.34	0.86	0.41	0.35	0.31	0.37	0.28		107	131		
7	26′-9″	14″	16″	11″	18′-7″	4	6.0	5	7.0	5	12.5	5	12.5	5	9.0	5	7.5	5	6.5	5	11.5	5	11.5	4	14.0	0.34	0.91	0.35	0.34	0.30	0.37	0.25		106	121		
8	13′-11″	10″	12″	9″	18′-3″	4	7.0	5	8.5	5	13.5	5	13.5	4	6.5	5	9.0	5	7.0	5	11.5	5	11.5	4	14.0	0.34	0.93	0.36	0.35	0.29	0.38	0.26		105	113		

(*) Design fill height is the distance from the top of earth fill or roadway to the top of the top slab.

Notes:
For details and reinforcement of Unit No. 1, see Sheets No. 4 thru 7.
Bar dimensions marked with C# or K# are the product of the coefficient and its associated multiplier.

Detailed Apr. 2009
Checked Jun. 2009

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

DRAFT Subject to Change

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

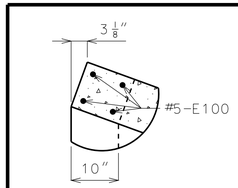
DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7052

DESCRIPTION | DATE

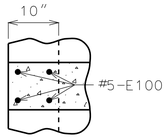
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

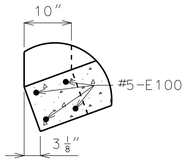
CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet



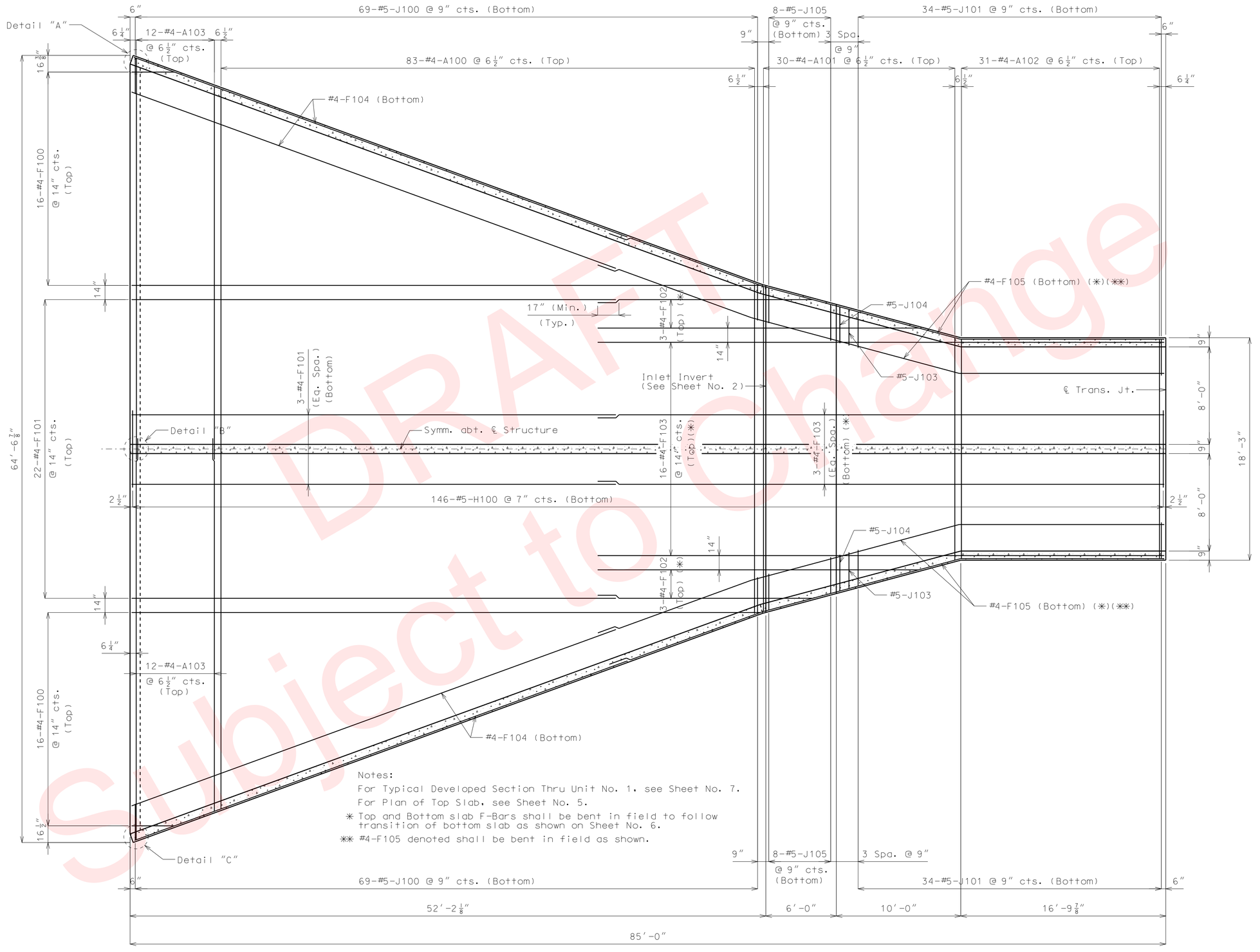
DETAIL "A"



DETAIL "B"



DETAIL "C"



Notes:

For Typical Developed Section Thru Unit No. 1, see Sheet No. 7.

For Plan of Top Slab, see Sheet No. 5.

* Top and Bottom slab F-Bars shall be bent in field to follow transition of bottom slab as shown on Sheet No. 6.

** #4-F105 denoted shall be bent in field as shown.

PLAN OF BOTTOM SLAB

Detailed May 2009
Checked Jun. 2009

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

Sheet No. 4 of 10

DETAILS OF UNIT NO. 1

DRAFT
Subject to Change

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DATE PREPARED: 2/25/2010

ROUTE: I-49 | STATE: MO

DISTRICT: BR | SHEET NO.: 4

COUNTY: McDONALD

JOB NO.: J7P0601

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A7052

DATE	DESCRIPTION

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

CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

Notes:

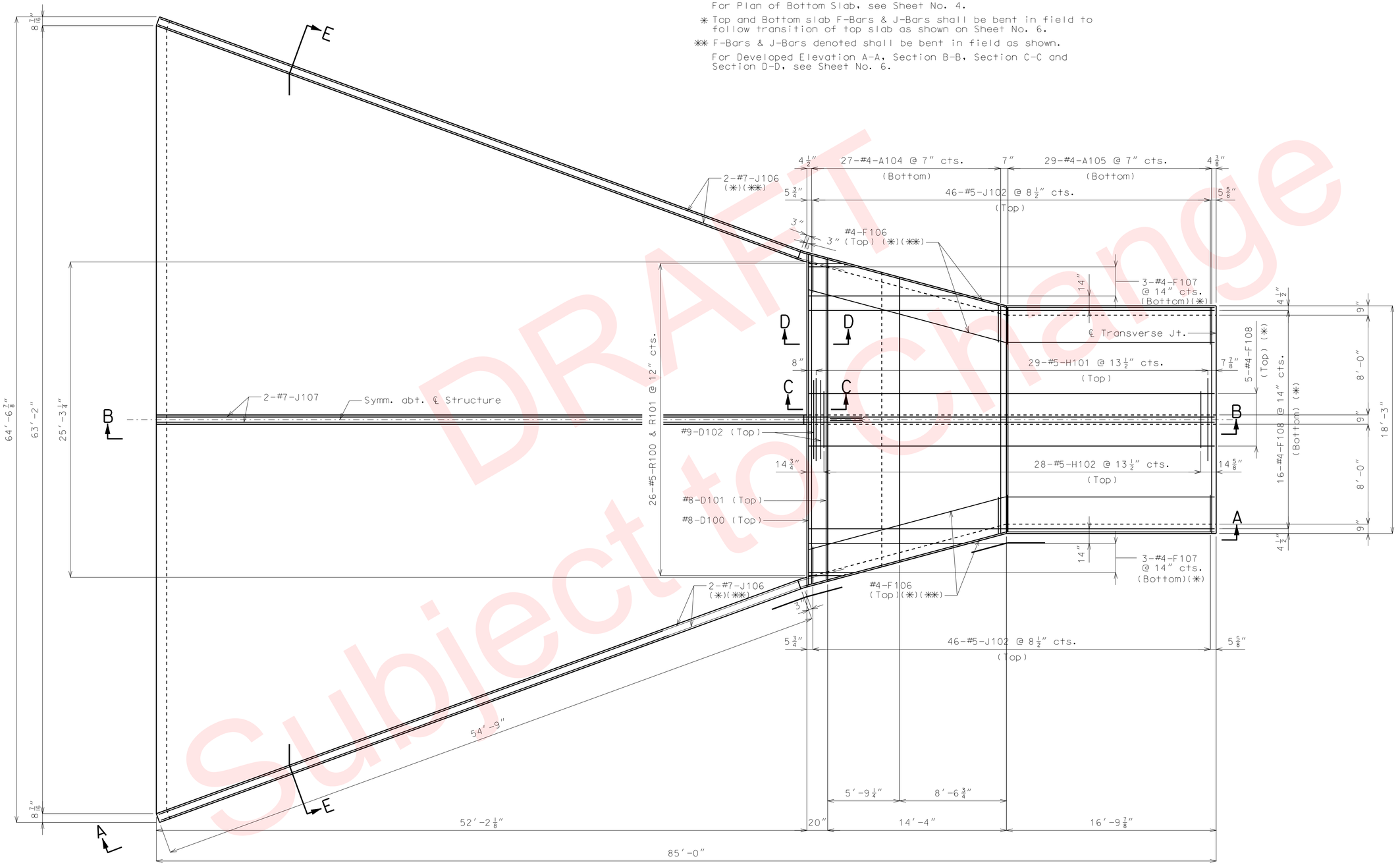
For Typical Developed Section Thru Unit No. 1 and Developed Section E-E, see Sheet No. 7.

For Plan of Bottom Slab, see Sheet No. 4.

* Top and Bottom slab F-Bars & J-Bars shall be bent in field to follow transition of top slab as shown on Sheet No. 6.

** F-Bars & J-Bars denoted shall be bent in field as shown.

For Developed Elevation A-A, Section B-B, Section C-C and Section D-D, see Sheet No. 6.



PLAN OF TOP SLAB

DETAILS OF UNIT NO. 1

Detailed May 2009
Checked Jun. 2009

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

DRAFT Subject to Change

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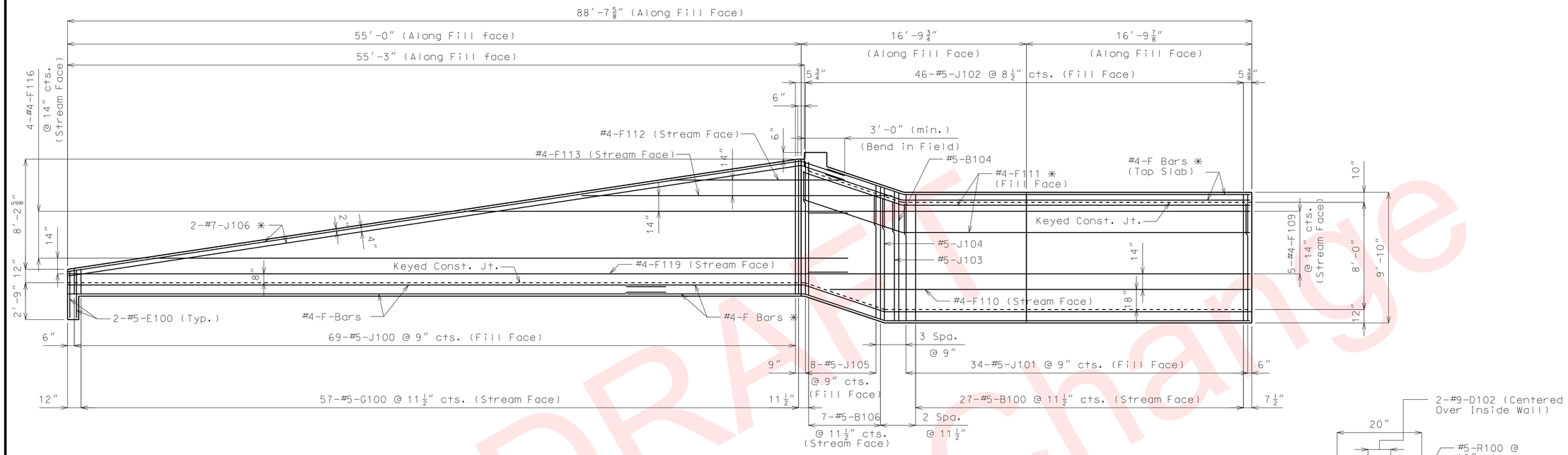
DATE PREPARED: 2/25/2010
ROUTE: I-49 | STATE: MO
DISTRICT: BR | SHEET NO.: 5
COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7052

DESCRIPTION | DATE

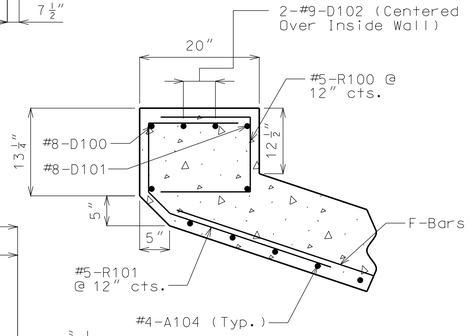
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

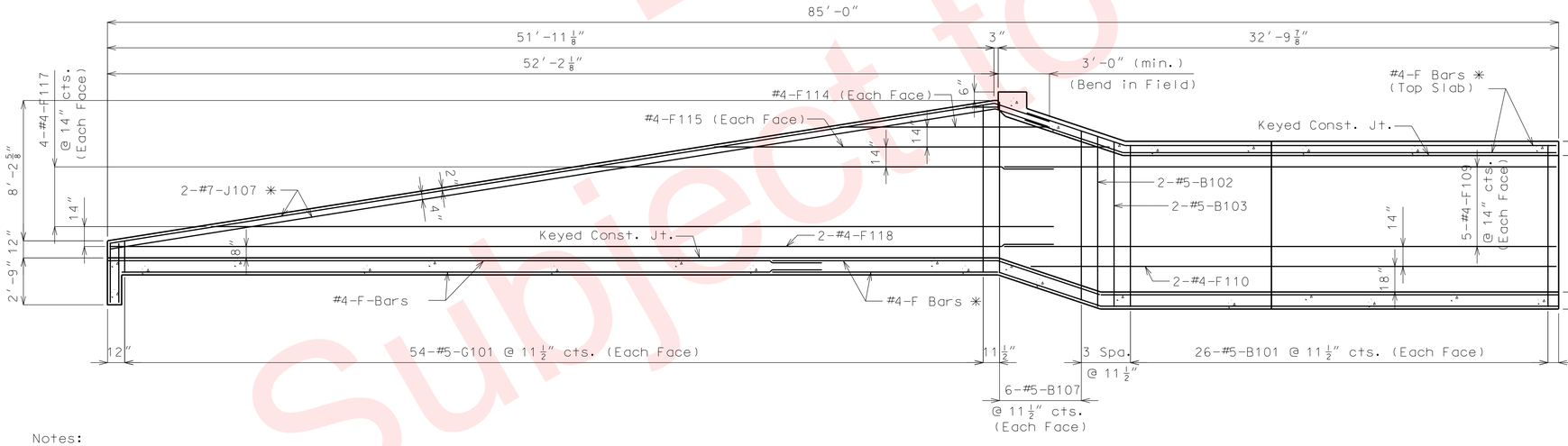
CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet



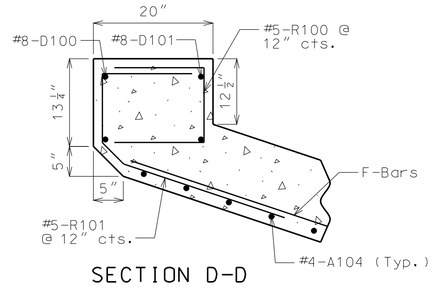
DEVELOPED ELEVATION A-A



SECTION C-C



SECTION B-B



SECTION D-D

Notes:

Spacing for J-Bars is along a line parallel to ℄ Structure (see Plan View).

For location of Developed Elevation A-A and Section B-B, see Sheet No. 5.

For location of Section C-C and Section D-D, see Sheet No. 5.

Keyed Construction Joint not shown for clarity.

✳ F-Bars & J-Bars denoted shall be bent in field as shown.

DETAILS OF UNIT NO. 1

Detailed May 2009
Checked Jun. 2009

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

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

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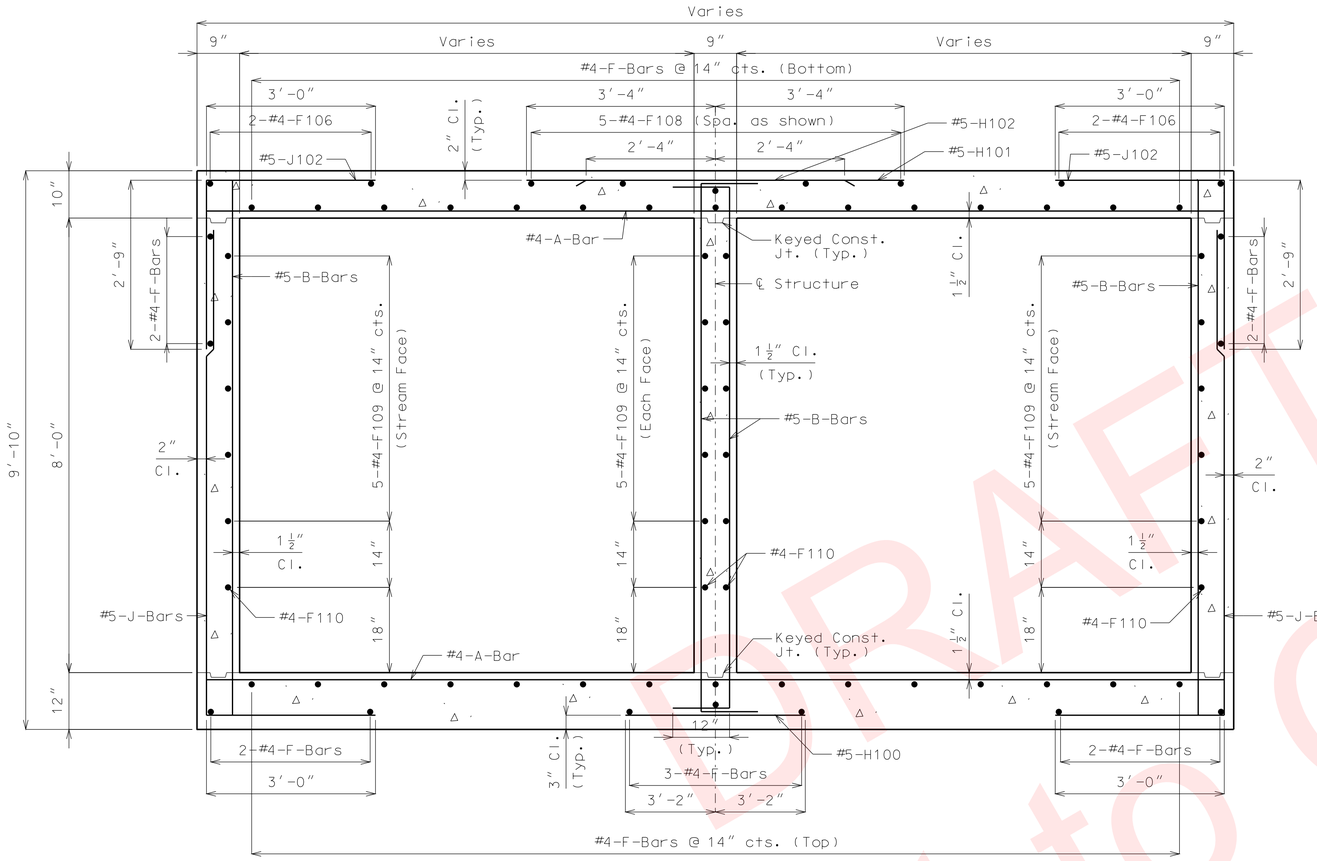
DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 6
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7052

DESCRIPTION | DATE

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

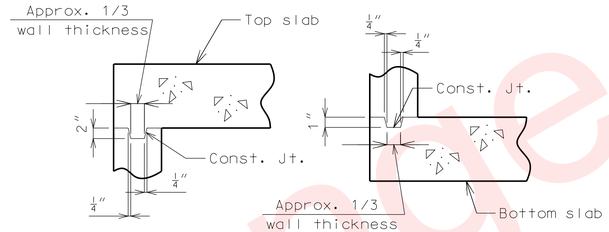
DRAFT
Subject to Change

CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet



TYPICAL DEVELOPED SECTION THRU UNIT NO. 1

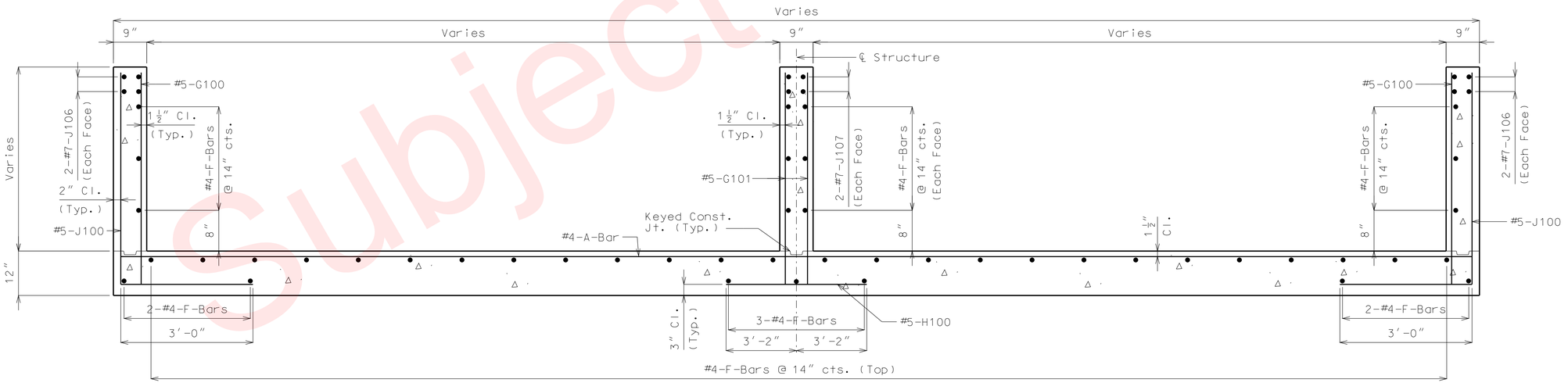
(Normal to ℄ Structure)



DETAILS OF KEYED CONST. JOINT

(Exterior wall shown, interior wall similar)

Notes:
For location of Developed Section E-E, see Sheet No. 5.



DEVELOPED SECTION E-E

DETAILS OF UNIT NO. 1

Detailed May 2009
Checked Jun. 2009

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

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

DATE PREPARED 2/25/2010

ROUTE I-49 | STATE MO

DISTRICT BR | SHEET NO. 7

COUNTY McDONALD

JOB NO. J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A7052

DESCRIPTION | DATE

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

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

DRAFT Subject to Change

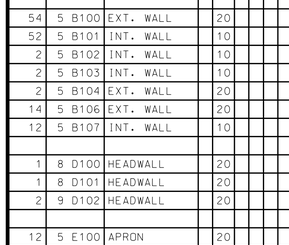
CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

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.	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.
			UPPER END																									
			SECTION																									
			(UNIT 1)																									
83	4	A100	BOTT. SLAB		20			V	1	59	3.000													59	3	59	3	
			INCREMENT =							26	11.000													26	11	26	11	2389
			4.750 INCH																									
30	4	A101	BOTT. SLAB		20			V	1	26	7.000													26	7	26	7	
			INCREMENT =							18	2.000													18	2	18	2	448
			3.500 INCH																									
31	4	A102	BOTT. SLAB		20					17	11.000													17	11	17	11	371
24	4	A103	BOTT. SLAB		20			V	2	33	0.000													33	0	33	0	
			INCREMENT =							30	7.000													30	7	30	7	510
			2.625 INCH																									
27	4	A104	TOP SLAB		20			V	1	26	3.000													26	3	26	3	
			INCREMENT =							18	2.000													18	2	18	2	401
			3.750 INCH																									
29	4	A105	TOP SLAB		20					17	11.000													17	11	17	11	347
54	5	B100	EXT. WALL		20					9	5.000													9	5	9	5	530
52	5	B101	INT. WALL		10							12.000		9	5.000									11	5	11	2	606
2	5	B102	INT. WALL		10							12.000		9	9.000									11	9	11	6	24
2	5	B103	INT. WALL		10							12.000		9	5.000									11	5	11	2	23
2	5	B104	EXT. WALL		20					9	10.000													9	10	9	10	21
14	5	B106	EXT. WALL		20					9	10.000													9	10	9	10	144
12	5	B107	INT. WALL		10							12.000		9	10.000									11	10	11	7	145
1	8	D100	HEADWALL		20					26	4.000													26	4	26	4	70
1	8	D101	HEADWALL		20					25	7.000													25	7	25	7	68
2	9	D102	HEADWALL		20					9	0.000													9	0	9	0	61
12	5	E100	APRON		20					3	5.000													3	5	3	5	43
32	4	F100	BOTT. SLAB		20			V	2	51	5.000													51	5	51	5	
			INCREMENT =							3	4.000													3	4	3	4	585
			38.500 INCH																									
25	4	F101	BOTT. SLAB		20					39	9.000													39	9	39	9	664
6	4	F102	BOTT. SLAB		20			V	2	26	4.000													26	4	26	4	
			INCREMENT =							17	8.000													17	8	17	8	88
			52.000 INCH																									
19	4	F103	BOTT. SLAB		20					46	6.000													46	6	46	6	590
4	4	F104	BOTT. SLAB		20					42	4.000													42	4	42	4	113
4	4	F105	BOTT. SLAB		20					47	4.000													47	4	47	4	126
4	4	F106	TOP SLAB		20					33	1.000													33	1	33	1	88
6	4	F107	TOP SLAB		20			V	2	12	3.000													12	3	12	3	
			INCREMENT =							3	6.000													3	6	3	6	32
			52.500 INCH																									
21	4	F108	TOP SLAB		20					32	6.000													32	6	32	6	456
20	4	F109	WALL		20					33	1.000													33	1	33	1	442
4	4	F110	WALL		20					31	3.000													31	3	31	3	84
4	4	F111	WALL		20					33	4.000													33	4	33	4	89
2	4	F112	WING		20					11	11.000													11	11	11	11	16
2	4	F113	WING		20					23	4.000													23	4	23	4	31
2	4	F114	WING		20					11	2.000													11	2	11	2	15
2	4	F115	WING		20					22	0.000													22	0	22	0	29
8	4	F116	WING		20			V	2	51	7.000													51	7	51	7	
			INCREMENT =							28	5.000													28	5	28	5	214
			92.625 INCH																									

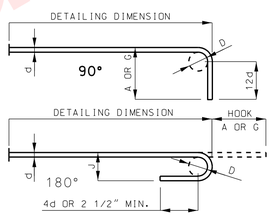
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	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.
8	4	F117	WING		20			V	2	49	1.000													49	1	49	1	
			INCREMENT =							27	1.000													27	1	27	1	204
			88.000 INCH																									
2	4	F118	WING		20					55	0.000													55	0	55	0	73
2	4	F119	WING		20					58	1.000													58	1	58	1	78
114	5	G100	WING		20			V	2	9	10.000													9	10	9	10	
			INCREMENT =							20.000														0	20	0	20	684
			1.750 INCH																									
108	5	G101	WING		20			V	2	9	9.000													9	9	9	9	
			INCREMENT =							21.000														0	21	0	21	648
			1.750 INCH																									
146	5	H100	BOTT. SLAB		20					6	4.000													6	4	6	4	964
29	5	H101	TOP SLAB		20					6	8.000													6	8	6	8	202
28	5	H102	TOP SLAB		20					4	8.000													4	8	4	8	136
138	5	J100	WING		19			V	2	10	0.000	3	0.000											13	0	12	11	
			INCREMENT =							19.750		3	0.000											4	8	4	6	1253
			1.500 INCH																									
68	5	J101	BOTT. SLAB		19					8	7.000	3	0.000											11	7	11	6	816
92	5	J102	TOP SLAB		19					3	0.000	2	9.000											5	9	5	8	544
2	5	J103	BOTT. SLAB		19					8	9.000	3	0.000											11	9	11	8	24
2	5	J104	BOTT. SLAB		19					9	0.000	3	0.000											12	0	11	11	25
16	5	J105	BOTT. SLAB		19					9	0.000	3	0.000											12	0	11	11	199
8	7	J106	WING		20					58	10.000													58	10	58	10	962
4	7	J107	WING		20					55	10.000													55	10	55	10	456
26	5	R100	HEADWALL		10	S							15.000		10.750									3	5	3	2	86
26	5	R101	HEADWALL		50	S																		5	11	5	11	160
			TOTALS																									
	4																											8483
	5																											7277
	7																											1418
	8																											138
	9																											61
			TOTAL																									17377
			TOTAL	E																								0



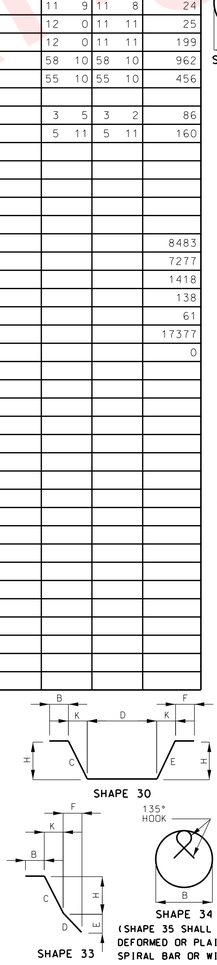
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

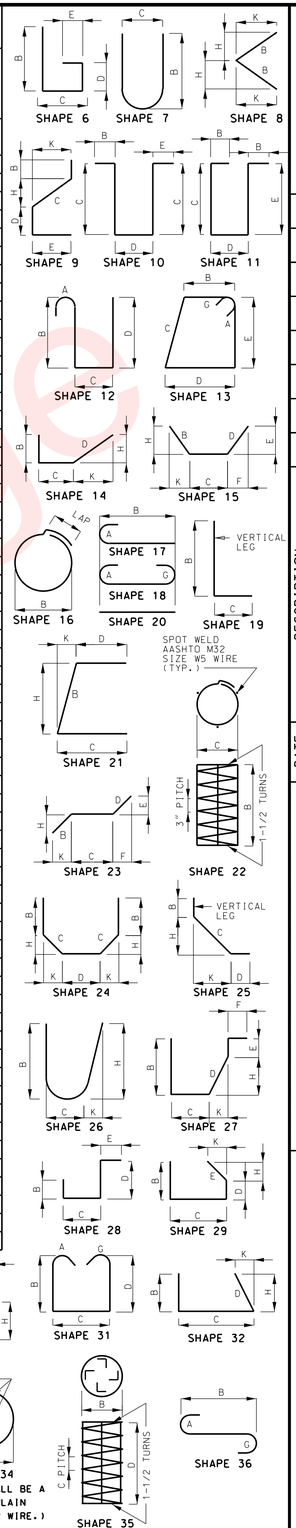
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



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.





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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY MCDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7052

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

Detailed Dec. 2009
Checked Dec. 2009

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

$FILE$ $TIME$ 2/25/2010

CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

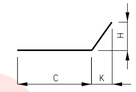
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	C FT.	D or F FT.	E FT.	H FT.	K FT.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			Barrel Section														
			UNIT 2														
121	4	A1	Top Slab	20				1	18.083						18'-1"	18'-1"	1462
121	4	A2	Bottom Slab	20				1	18.083						18'-1"	18'-1"	1462
208	5	J3	Top Corner	19				1	2.975	2.989					5'-12"	5'-10"	1266
208	5	J4	Bottom Corner	19				1	9.024	2.901					11'-11"	11'-9"	2560
128	5	B1	Interior Wall	10				1		1.000	9.917				11'-11"	11'-8"	1556
128	5	B2	Exterior Wall	20				1	9.917						9'-11"	9'-11"	1325
58	5	H1	Top Slab	20				1	6.506						6'-6"	6'-6"	394
58	5	H2	Top Slab	20				1	4.572						4'-7"	4'-7"	277
104	5	H3	Bottom Slab	20				1	6.154						6'-2"	6'-2"	668
76	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
			UNIT 3														
97	5	A1	Top Slab	20				1	18.417						18'-5"	18'-5"	1865
112	5	A2	Bottom Slab	20				1	18.417						18'-5"	18'-5"	2153
194	5	J3	Top Corner	19				1	3.384	3.195					6'-7"	6'-5"	1305
242	4	J4	Bottom Corner	19				1	9.279	3.106					12'-5"	12'-3"	1986
128	5	B1	Interior Wall	10				1		1.000	10.917				12'-11"	12'-8"	1690
128	5	B2	Exterior Wall	20				1	10.917						10'-11"	10'-11"	1459
58	5	H1	Top Slab	20				1	6.390						6'-5"	6'-5"	387
58	5	H2	Top Slab	20				1	5.148						5'-2"	5'-2"	312
121	6	H3	Bottom Slab	20				1	7.455						7'-5"	7'-5"	1356
76	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
			UNIT 4														
97	5	A1	Top Slab	20				1	18.583						18'-7"	18'-7"	1882
112	5	A2	Bottom Slab	20				1	18.583						18'-7"	18'-7"	2173
194	5	J3	Top Corner	19				1	3.436	3.210					6'-8"	6'-6"	1319
242	4	J4	Bottom Corner	19				1	9.421	3.121					12'-7"	12'-5"	2011
128	5	B1	Interior Wall	10				1		1.000	11.083				13'-1"	12'-10"	1712
172	5	B2	Exterior Wall	20				1	11.083						11'-1"	11'-1"	1990
58	5	H1	Top Slab	20				1	6.420						6'-5"	6'-5"	389
58	5	H2	Top Slab	20				1	5.172						5'-2"	5'-2"	313
121	6	H3	Bottom Slab	20				1	7.490						7'-6"	7'-6"	1362
76	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
			UNIT 5														
97	5	A1	Top Slab	20				1	18.583						18'-7"	18'-7"	1882
112	5	A2	Bottom Slab	20				1	18.583						18'-7"	18'-7"	2173
194	5	J3	Top Corner	19				1	3.436	3.210					6'-8"	6'-6"	1319
242	4	J4	Bottom Corner	19				1	9.421	3.121					12'-7"	12'-5"	2011
128	5	B1	Interior Wall	10				1		1.000	11.083				13'-1"	12'-10"	1712
172	5	B2	Exterior Wall	20				1	11.083						11'-1"	11'-1"	1990
58	5	H1	Top Slab	20				1	6.420						6'-5"	6'-5"	389
58	5	H2	Top Slab	20				1	5.172						5'-2"	5'-2"	313
121	6	H3	Bottom Slab	20				1	7.490						7'-6"	7'-6"	1362
76	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
			UNIT 6														
97	5	A1	Top Slab	20				1	18.417						18'-5"	18'-5"	1865
112	5	A2	Bottom Slab	20				1	18.417						18'-5"	18'-5"	2153
194	5	J3	Top Corner	19				1	3.384	3.195					6'-7"	6'-5"	1305
242	4	J4	Bottom Corner	19				1	9.279	3.106					12'-5"	12'-3"	1986
128	5	B1	Interior Wall	10				1		1.000	10.917				12'-11"	12'-8"	1690
128	5	B2	Exterior Wall	20				1	10.917						10'-11"	10'-11"	1459
58	5	H1	Top Slab	20				1	6.390						6'-5"	6'-5"	387
58	5	H2	Top Slab	20				1	5.148						5'-2"	5'-2"	312
121	6	H3	Bottom Slab	20				1	7.455						7'-5"	7'-5"	1356
76	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
			UNIT 7														
121	4	A1	Top Slab	20				1	18.250						18'-3"	18'-3"	1475
81	5	A2	Bottom Slab	20				1	18.250						18'-3"	18'-3"	1543
208	5	J3	Top Corner	19				1	3.025	3.003					6'-0"	5'-11"	1280
194	5	J4	Bottom Corner	19				1	9.176	3.003					12'-2"	12'-1"	2439
128	5	B1	Interior Wall	10				1		1.000	10.083				12'-1"	11'-10"	1578
128	5	B2	Exterior Wall	20				1	10.083						10'-1"	10'-1"	1347
58	5	H1	Top Slab	20				1	6.537						6'-6"	6'-6"	396
58	5	H2	Top Slab	20				1	4.417						4'-5"	4'-5"	267
112	5	H3	Bottom Slab	20				1	6.183						6'-2"	6'-2"	723
76	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034

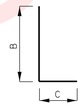
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	C FT.	D or F FT.	E FT.	H FT.	K FT.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			Totals														
	4																30965
	5																56007
	6																5372
	7																0
	8																0
	9																0
	10																0
	11																0
			TOTALS														92340.0

SHAPE 10



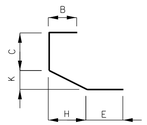
SHAPE 15



SHAPE 19



SHAPE 20

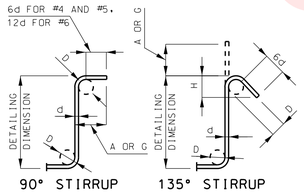


SHAPE 27

SPLICE LENGTH	
BAR SIZE	NON-EPOXY
#4	21 IN.
#5	26 IN.
#6	31 IN.
#7	39 IN.
#8	51 IN.
#9	65 IN.
#10	82 IN.
#11	101 IN.

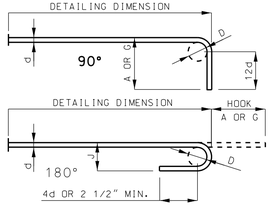
MAX BAR LENGTH	
BAR SIZE	NON-EPOXY
#4	60 FT.
#5	60 FT.
#6	60 FT.
#7	60 FT.
#8	60 FT.
#9	60 FT.
#10	60 FT.
#11	60 FT.

NOTE:
THE BAR LIST IS BASED ON THE MISSOURI STANDARD PLANS.
THIS BAR LIST IS FOR QUANTITY ESTIMATION PURPOSE ONLY AND SHALL BE VERIFIED OR MODIFIED BY THE CONTRACTOR.



STIRRUP HOOK DIMENSIONS				
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.)	GRADE 60		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"

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.
FB = BARS MAY BE BENT IN FIELD TO FIT.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE. A BLANK IN THE SECOND LINE REPRESENTS THE SAME BAR DIMENSION AS THAT IN THE FIRST LINE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADD A SPLICE LENGTH TO A BAR LENGTH WHICH EXCEEDS ITS MAXIMUM ALLOWABLE LENGTH.
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.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7052

DESCRIPTION	DATE

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

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

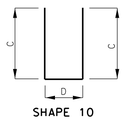
CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

BILL OF REINFORCING STEEL

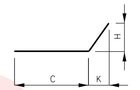
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	C FT.	D or F FT.	E FT.	H FT.	K FT.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			Lower End														
			Section														
			(Unit 8)														
80	4	A1	Top Slab	20				1	17.917						17'-11"	17'-11"	958
85	4	A2	Bottom Slab	20				1	17.917						17'-11"	17'-11"	1018
20	4	A3	Top Slab	20			V	1	17.459		Incr =	9.764	Inches		17'-6"	17'-6"	130
									2.000						2'-0"	2'-0"	
150	5	J3	Top Corner	19				1	2.731	3.062					5'-10"	5'-8"	886
145	5	J4	Bottom Corner	19				1	8.758	2.975					11'-9"	11'-7"	1755
114	5	B1	Interior Walls	10				1		1.000	9.417				11'-5"	11'-2"	1326
113	5	B2	Exterior Walls	20				1	9.417						9'-5"	9'-5"	1111
46	5	H1	Top Slab	20				1	6.650						6'-8"	6'-8"	319
46	5	H2	Top Slab	20				1	4.550						4'-7"	4'-7"	219
90	5	H3	Bottom Slab	20				1	6.300						6'-4"	6'-4"	592
10	4	F60	Temp. Steel	20				1	46.339						46'-4"	46'-4"	310
1	4	F61	Temp. Steel	20				1	48.535						48'-6"	48'-6"	32
1	4	F62	Temp. Steel	20				1	50.378						50'-5"	50'-5"	34
1	4	F63	Temp. Steel	20				1	51.130						51'-2"	51'-2"	34
14	4	F64	Temp. Steel	20				1	52.762						52'-9"	52'-9"	494
1	4	F70	Temp. Steel	20				1	54.393						54'-5"	54'-5"	36
1	4	F71	Temp. Steel	20				1	55.145						55'-2"	55'-2"	37
1	4	F72	Temp. Steel	20				1	56.989						56'-12"	56'-12"	38
10	4	F73	Temp. Steel	20				1	59.184						59'-2"	59'-2"	395
1	4	F74	Temp. Steel	20				1	48.472						48'-6"	48'-6"	32
1	4	F75	Temp. Steel	20				1	50.503						50'-6"	50'-6"	34
1	4	F78	Temp. Steel	20				1	55.020						55'-0"	55'-0"	37
1	4	F79	Temp. Steel	20				1	57.051						57'-1"	57'-1"	38
34	4	F80	Temp. Steel	20			V	2	59.184		Incr =	9.634	Inches		59'-2"	59'-2"	1199
									46.339						46'-4"	46'-4"	
			Lower Wings and Headwall														
39	4	A2	Bottom Slab	20				1	17.917						17'-11"	17'-11"	467
22	4	A10	Bottom Slab	20			V	1	17.866			Incr =	9.066	Inches	17'-10"	17'-10"	146
									2.000						2'-0"	2'-0"	
2	8	D1	Headwall	20				1	22.148						22'-2"	22'-2"	118
12	5	E2	Heel	20				1	4.000						4'-0"	4'-0"	50
24	4	F42	Wings	20			V	4	20.738		Incr =	34.453	Inches		20'-9"	20'-9"	218
									6.383						6'-5"	6'-5"	
7	4	F44	Bottom Slab	20				1	21.969						21'-12"	21'-12"	103
16	4	F45	Bottom Slab	20				1	21.969						21'-12"	21'-12"	235
40	5	G1	Interior Walls	20			V	2	9.399		Incr =	4.673	Inches		9'-5"	9'-5"	238
									2.000						2'-0"	2'-0"	
40	5	G2	Exterior Wings	20			V	2	9.399		Incr =	4.673	Inches		9'-5"	9'-5"	238
									2.000						2'-0"	2'-0"	
35	5	H3	Bottom Slab	20				1	6.300						6'-4"	6'-4"	230
4	8	H10	Headwall	20				1	22.148						22'-2"	22'-2"	237
12	7	J1	Wings	20			FB	1	24.596						24'-7"	24'-7"	604
50	5	J5	Wings	19			V	2	9.314	2.975	Incr =	3.657	Inches		12'-3"	12'-2"	444
									2.000	2.975					4'-12"	4'-10"	
24	5	R3	HeadWall	10	S			1		1.417	1.083				3'-11"	3'-9"	93
			Totals														
	4																6025
	5																7501
	6																0
	7																604
	8																355
	9																0
	10																0
	11																0
			TOTALS														14480.0
			UNIT 1														17376.0
			UNIT 2-7														92340.0
			UNIT 8														14480.0
			TOTALS														124196.0

BILL OF REINFORCING STEEL

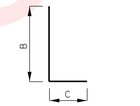
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	C FT.	D or F FT.	E FT.	H FT.	K FT.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.



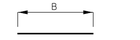
SHAPE 10



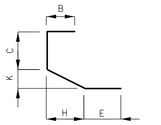
SHAPE 15



SHAPE 19



SHAPE 20

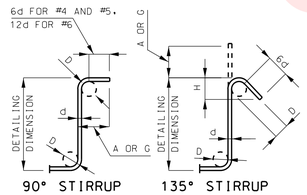


SHAPE 27

SPLICE LENGTH	
BAR SIZE	NON-EPOXY
#4	21 IN.
#5	26 IN.
#6	31 IN.
#7	39 IN.
#8	51 IN.
#9	65 IN.
#10	82 IN.
#11	101 IN.

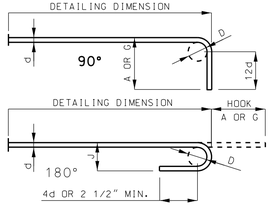
MAX BAR LENGTH	
BAR SIZE	NON-EPOXY
#4	60 FT.
#5	60 FT.
#6	60 FT.
#7	60 FT.
#8	60 FT.
#9	60 FT.
#10	60 FT.
#11	60 FT.

NOTE:
THE BAR LIST IS BASED ON THE MISSOURI STANDARD PLANS.
THIS BAR LIST IS FOR QUANTITY ESTIMATION PURPOSE ONLY AND SHALL BE VERIFIED OR MODIFIED BY THE CONTRACTOR.



STIRRUP HOOK DIMENSIONS				
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.)	GRADE 60		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"

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.
FB = BARS MAY BE BENT IN FIELD TO FIT.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE. A BLANK IN THE SECOND LINE REPRESENTS THE SAME BAR DIMENSION AS THAT IN THE FIRST LINE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADD A SPLICE LENGTH TO A BAR LENGTH WHICH EXCEEDS ITS MAXIMUM ALLOWABLE LENGTH.
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.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 10
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7052

DESCRIPTION | DATE

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

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

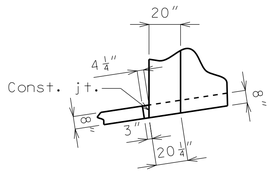
SUBJECT TO CHANGE

CAUTION: Currently being re-designed as a double 9'x 7' with slope-tapered inlet

SEC/SUR 27 TWP 21N RGE 32W

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

2 (9' x 7') CONCRETE BOX CULVERT



DETAIL "B"

PLAN

DETAIL "A"

B.M.-49-01-15 ELEV. 991.40
N: 126,431.1081 E: 2,819,624.3799
20d IN 4" PERSIMMON TREE E OF CREEK CHANNEL ON KELLY PROPERTY SE OF UTILITY SHEDS ON E SIDE OF TREE

CULVERT OVER WHITE OAK HOLLOW CREEK

STATE ROAD FROM RTE. H TO STATE LINE
ABOUT 1.2 MILES NORTH OF STATE LINE
STA. 935+56.97

STD. 703.37
STD. 703.42
STD. 703.44
STD. 706.35

Notes:

For General Notes, Estimated Quantities, Hydrologic Data & Location Sketch, see Sheet No. 2.

For Elevation and End Elevation, see Sheet No. 2.

For Typical Section Thru Box, see Sheet No. 3.

Designed Sept. 2007
Detailed June 2009
Checked July 2009

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

Sheet No. 1 of 4

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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7053

DESCRIPTION | DATE

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

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

$FILE$ $TIME$ 2/25/2010

DRAFT Change Subject to

CAUTION: Currently being re-designed as a double 9'x 7' with slope-tapered inlet

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design

Design Unit Stresses:
Class B-1 concrete (Box Culvert) f'c = 4,000 psi
Reinforcing steel (Grade 60), fy = 60,000 psi

Design Loading:
HS20 Modified
Military 24,000 # Tandem Axle
Earth 120 #/ft.^{3}
Equivalent fluid pressure
30 #/ft.^{3} (Min.) - 60 #/ft.^{3} (Max.)

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

Miscellaneous:
Provide grading of the channel bottom within the limits of the R/W as needed for culvert flowline elevations and transition of the channel bed to the culvert openings.

Taper channel banks to match end of culvert opening as required. (Roadway Item)

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

Traffic Handling:
See Roadway Plans for traffic control.

Precast Option:

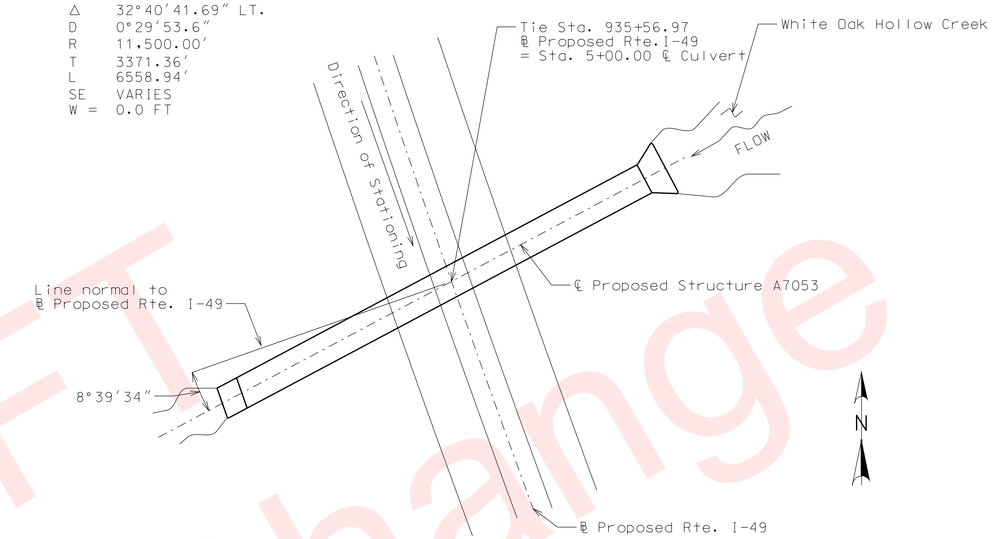
The box shown below indicating whether a precast or cip box was used should be checked by MoDOT Construction personnel:

☐ Precast Box used
☐ Cast-in-Place Box used

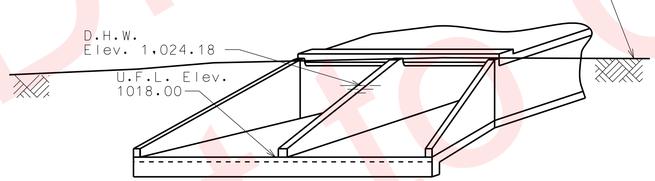
When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 3'-2". Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans drawing.

CURVE DATA

PI	STA. 910+47.28
Δ	32°40'41.69" LT.
D	0°29'53.6"
R	11,500.00'
T	3371.36'
L	6558.94'
SE	VARIES
W =	0.0 FT



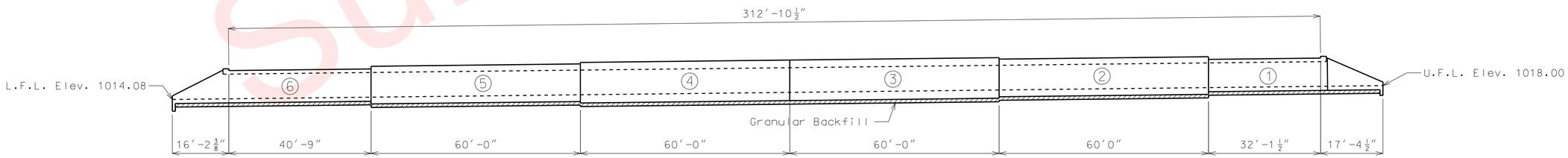
LOCATION SKETCH



END ELEVATION
(UPSTREAM)

HYDROLOGIC DATA
Drainage Area = 0.87 (sq. mi.) (Hilly)
Design High Water (DHW) Elev. = 1,024.18
Design High Water Frequency = 50 (year)
Design High Water Discharge = 866.82 (cfs)
Backwater/Base Flood Data (100 year)
High Water Elev. = 1,025.13
Design Discharge = 1,082.69 (cfs)
Estimated Backwater = 1.32 (ft)
Outlet Velocity = 15.40 (ft/sec)
Roadway Overtopping
Design Elev. (1' below shoulder) = 1,067.00
Design Discharge ≥ 1,840.57 (cfs)
Design Frequency > 500 (year)

ESTIMATED QUANTITIES			FINAL QUANTITIES
Class 4 Excavation	cu. yard	2,540	
Class B-1 Concrete (Culverts)	cu. yard	1,189.6	
Reinforcing Steel (Culverts)	pound	99,450	



ELEVATION
Note: Dimensions are along ℄ Structure.

Detailed June 2009
Checked July 2009

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

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

DATE PREPARED: 2/25/2010
ROUTE: I-49 | STATE: MO
DISTRICT: BR | SHEET NO.: 2
COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7053

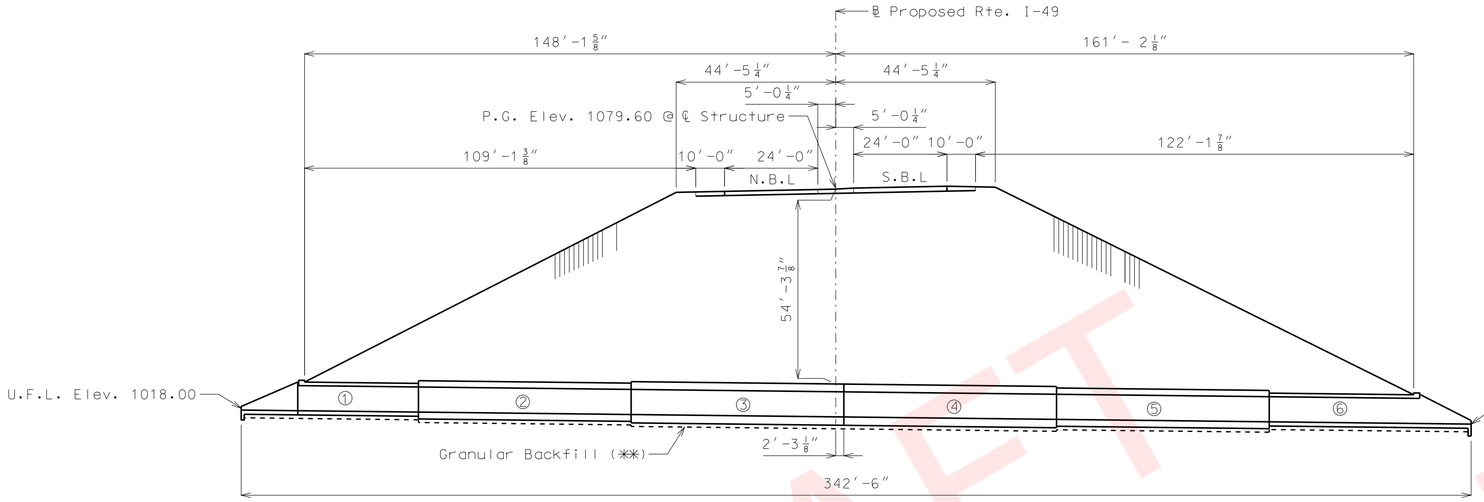
DESCRIPTION | DATE

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

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

DRAFT
Subject to Change

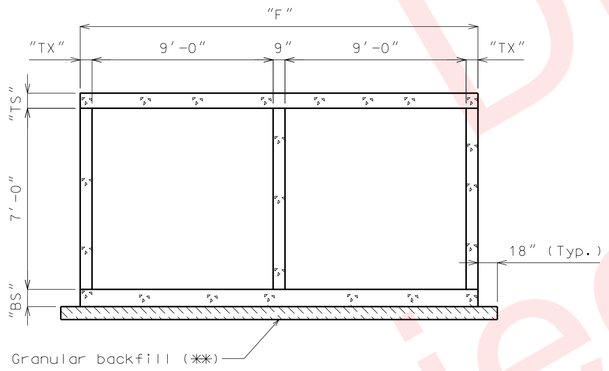
CAUTION: Currently being re-designed as a double 9'x 7' with slope-tapered inlet



ELEVATION

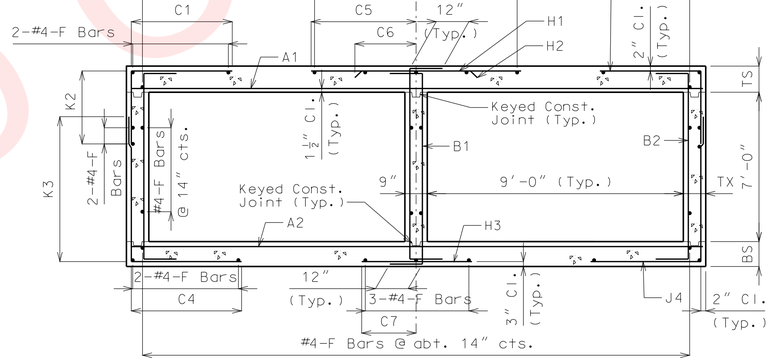
Note: Dimensions are normal to ℄ Proposed Rte. I-49 @ ℄ Structure.

(**) If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.



SECTION THRU BOX

(Normal to ℄ Structure)



TYPICAL SECTION THRU BOX

UNIT	DESIGN FILL (*)	MEMBER THICKNESS				REINFORCEMENT TABLE																												"C" Multiplier	"K" Multiplier		
						TOP SLAB BARS								BOTTOM SLAB BARS						WALL BARS						COEFFICIENTS (see note)											
		"TS"	"BS"	"TX"	"F"	A1 Bars		J3 Bars		H1 Bars		H2 Bars		A2 Bars		J4 Bars		H3 Bars		B1 Bars		B2 Bars		F Bars		J4		H3		J3		H1		H2		S = 9 ft	HT = 7 ft
	(ft-in)	Thick	Thick	Thick		Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	C4	K3	C7	C1	K2	C5	C6					
																																		in	in		
1 & 6	15′-10″	12″	14″	8″	20′-1″	4	5.5	5	7.5	6	12	6	12	4	5	5	8.5	6	5.5	5	11.5	5	11.5	4	14.0	0.22	0.89	0.42	0.24	0.32	0.38	0.22			116.5	105	
2 & 5	41′-9″	21″	24″	13″	20′-11″	5	5.5	5	8	6	12	6	12	5	6	4	6.5	7	6	5	11.5	5	11.5	4	14.0	0.30	0.83	0.43	0.31	0.34	0.39	0.29			119	124	
3 & 4	55′-7″	26″	30″	15″	21′-3″	6	7	5	7	6	14	6	14	6	7	5	10.5	7	6.5	5	11.5	5	9.5	4	14.0	0.36	0.81	0.48	0.37	0.35	0.39	0.31			120	135	

(*) Design fill height is the distance from the top of earth fill or roadway to the top of the top slab.

Notes:

Bar dimensions marked with C# or K# are the product of the coefficient and its associated multiplier.

Detailed June 2009
Checked July 2009

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

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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7053

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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DRAFT Subject to Change

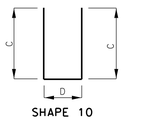
CAUTION: Currently being re-designed as a double 9'x 7' with slope-tapered inlet

BILL OF REINFORCING STEEL

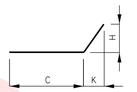
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	C FT.	D or F FT.	E FT.	H FT.	K FT.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			Barrel Section														
			UNIT 2														
132	5	A1	Top Slab	20				1	20.583						20'-7"	20'-7"	2836
121	5	A2	Bottom Slab	20				1	20.583						20'-7"	20'-7"	2600
182	5	J3	Top Corner	19				1	3.513	3.074					6'-7"	6'-5"	1226
224	4	J4	Bottom Corner	19				1	8.577	2.975					11'-7"	11'-5"	1713
128	5	B1	Interior Wall	10				1		1.000	10.333				12'-4"	12'-1"	1612
128	5	B2	Exterior Wall	20				1	10.333						10'-4"	10'-4"	1381
61	6	H1	Top Slab	20				1	7.735						7'-9"	7'-9"	709
60	6	H2	Top Slab	20				1	5.752						5'-9"	5'-9"	519
121	7	H3	Bottom Slab	20				1	8.528						8'-6"	8'-6"	2111
74	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	2954
			UNIT 3														
104	6	A1	Top Slab	20				1	20.917						20'-11"	20'-11"	3270
104	6	A2	Bottom Slab	20				1	20.917						20'-11"	20'-11"	3270
208	5	J3	Top Corner	19				1	3.937	3.700					7'-8"	7'-6"	1629
140	5	J4	Bottom Corner	19				1	9.112	3.600					12'-9"	12'-7"	1838
128	5	B1	Interior Wall	10				1		1.000	11.250				13'-3"	12'-12"	1734
154	5	B2	Exterior Wall	20				1	11.250						11'-3"	11'-3"	1809
52	6	H1	Top Slab	20				1	7.800						7'-10"	7'-10"	610
52	6	H2	Top Slab	20				1	6.200						6'-2"	6'-2"	485
112	7	H3	Bottom Slab	20				1	9.600						9'-7"	9'-7"	2200
74	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	2954
			UNIT 4														
104	6	A1	Top Slab	20				1	20.917						20'-11"	20'-11"	3270
104	6	A2	Bottom Slab	20				1	20.917						20'-11"	20'-11"	3270
208	5	J3	Top Corner	19				1	3.937	3.700					7'-8"	7'-6"	1629
140	5	J4	Bottom Corner	19				1	9.112	3.600					12'-9"	12'-7"	1838
128	5	B1	Interior Wall	10				1		1.000	11.250				13'-3"	12'-12"	1734
154	5	B2	Exterior Wall	20				1	11.250						11'-3"	11'-3"	1809
52	6	H1	Top Slab	20				1	7.800						7'-10"	7'-10"	610
52	6	H2	Top Slab	20				1	6.200						6'-2"	6'-2"	485
112	7	H3	Bottom Slab	20				1	9.600						9'-7"	9'-7"	2200
74	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	2954
			UNIT 5														
132	5	A1	Top Slab	20				1	20.583						20'-7"	20'-7"	2836
121	5	A2	Bottom Slab	20				1	20.583						20'-7"	20'-7"	2600
182	5	J3	Top Corner	19				1	3.513	3.074					6'-7"	6'-5"	1226
224	4	J4	Bottom Corner	19				1	8.577	2.975					11'-7"	11'-5"	1713
128	5	B1	Interior Wall	10				1		1.000	10.333				12'-4"	12'-1"	1612
128	5	B2	Exterior Wall	20				1	10.333						10'-4"	10'-4"	1381
61	6	H1	Top Slab	20				1	7.735						7'-9"	7'-9"	709
60	6	H2	Top Slab	20				1	5.752						5'-9"	5'-9"	519
121	7	H3	Bottom Slab	20				1	8.528						8'-6"	8'-6"	2111
74	4	F1	Temp. Steel	20				1	59.750						59'-9"	59'-9"	2954
			Upper End Section (UNIT 1)														
74	4	A1	Top Slab	20				1	19.750						19'-9"	19'-9"	976
82	4	A2	Bottom Slab	20				1	19.750						19'-9"	19'-9"	1082
108	5	J3	Top Corner	19				1	7.788	2.330					5'-2"	4'-12"	563
100	5	J4	Bottom Corner	19				1	7.788	2.136					9'-11"	9'-9"	1022
72	5	B1	Interior Walls	10				1		1.000	8.750				10'-9"	10'-6"	788
72	5	B2	Exterior Walls	20				1	8.750						8'-9"	8'-9"	658
33	6	H1	Top Slab	20				1	7.378						7'-5"	7'-5"	366
33	6	H2	Top Slab	20				1	4.272						4'-3"	4'-3"	212
75	6	H3	Bottom Slab	20				1	8.155						8'-2"	8'-2"	919
74	4	F10	Temp. Steel	20				1	33.125						33'-2"	33'-2"	1638
			Upper Wings and Headwall														
37	4	A10	Bottom Slab	20			V	1	30.921			Incr =	3.724	inches	30'-11"	30'-11"	626
									19.750						19'-9"	19'-9"	
2	8	D1	Headwall	20				1	19.833						19'-10"	19'-10"	106
12	5	E1	Toe	20				1	3.417						3'-5"	3'-5"	43
10	4	F50	Flared Wings	15			V	2		14.981	Incr =	31.908	1.042	2.863	18'-0"	18'-0"	85
										4.345			1.042	2.863	7'-5"	7'-4"	
10	4	F51	Bottom Slab	20			V	2	14.822		Incr =	38.465	inches		14'-10"	14'-10"	56
									2.000						2'-0"	2'-0"	
10	4	F52	Straight Wings	20			V	2	16.926		Incr =	29.984	inches		16'-11"	16'-11"	80
									6.931						6'-11"	6'-11"	
4	4	F53	Bottom Slab	20		FB		1	18.877						18'-11"	18'-11"	50
3	4	F54	Bottom Slab	20				1	17.996						17'-12"	17'-12"	36
17	4	F55	Bottom Slab	20				1	17.996						17'-12"	17'-12"	204
32	5	G1	Interior Walls	20			V	2	8.929		Incr =	5.370	inches		8'-11"	8'-11"	186
									2.217						2'-3"	2'-3"	
32	5	G2	Exterior Wings	20			V	2	8.496		Incr =	5.046	inches		8'-6"	8'-6"	179
									2.189						2'-2"	2'-2"	
34	6	H3	Bottom Slab	20				1	8.155						8'-2"	8'-2"	417
4	7	J1	Straight Wings	20		FB		1	20.258						20'-3"	20'-3"	166
8	7	J6	Flared Wings	20				1	21.135						21'-2"	21'-2"	346
44	5	J5	Exterior Wings	19			V	2	8.715	2.136	Incr =	3.729	inches		10'-10"	10'-9"	342
									2.189	2.136					4'-4"	4'-2"	

BILL OF REINFORCING STEEL

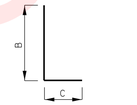
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	C FT.	D or F FT.	E FT.	H FT.	K FT.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
21	5	R1	Headwall	27	S			1	1.417	0.906		2.198	0.344	0.344	5'-0"	4'-11"	107
21	5	R2	Headwall	10	S			1		0.875	1.250				3'-0"	2'-9"	61
			Lower End Section (UNIT 6)														
89	4	A1	Top Slab	20				1	19.750						19'-9"	19'-9"	1174
97	4	A2	Bottom Slab	20				1	19.750						19'-9"	19'-9"	1280
6	4	A3	Top Slab	20			V	1	17.056		Incr =	36.135	inches		17'-1"	17'-1"	38
									2.000						2'-0"	2'-0"	
138	5	J3	Top Corner	19				1	2.800	2.330					5'-2"	4'-12"	720
124	5	J4	Bottom Corner	19				1	7.788	2.136					9'-11"	9'-9"	1267
92	5	B1	Interior Walls	10				1		1.000	8.750				10'-9"	10'-6"	1006
91	5	B2	Exterior Walls	20				1	8.750						8'-9"	8'-9"	831
41	6	H1	Top Slab	20				1	7.378						7'-5"	7'-5"	455
41	6	H2	Top Slab	20				1	4.272						4'-3"	4'-3"	263
92	6	H3	Bottom Slab	20				1	8.155						8'-2"	8'-2"	1128
9	4	F60	Temp. Steel	20				1	40.681						40'-8"	40'-8"	245
1	4	F61	Temp. Steel	20				1	41.036						41'-0"	41'-0"	27
1	4	F62	Temp. Steel	20				1	41.623						41'-7"	41'-7"	28
1	4	F63	Temp. Steel	20				1	41.859						41'-10"	41'-10"	28
12	4	F64	Temp. Steel	20				1	42.184						42'-2"	42'-2"	338
1	4	F70	Temp. Steel	20				1	42.510						42'-6"	42'-6"	28
1	4	F71	Temp. Steel	20				1	42.746						42'-9"	42'-9"	29
1	4	F72	Temp. Steel	20				1	43.333						43'-4"	43'-4"	29
9	4	F73	Temp. Steel	20				1	43.687						43'-8"	43'-8"	263
1	4	F74	Temp. Steel	20				1	41.006						41'-0"	41'-0"	27
1	4	F75	Temp. Steel	20				1	41.564						41'-7"	41'-7"	28
1	4	F78	Temp. Steel	20				1	42.805						42'-10"	42'-10"	29
1	4	F79	Temp. Steel	20				1	43.362						43'-4"	43'-4"	29
36	4	F80	Temp. Steel	20			V	2	43.687		Incr =	2.122	inches		43'-8"	43'-8"	1015
									40.681						40'-8"	40'-8"	
			Lower Wings and Headwall														
37	4	A2	Bottom Slab	20				1	19.750						19'-9"	19'-9"	488
7	4	A11	Bottom Slab	20			V	1	18.425			Incr =	32.850	inches	18'-5"	18'-5"	48
									2.000						2'-0"	2'-0"	
2	8	D3	Headwall	20				1	20.062						20'-1"	20'-1"	107
12	5	E2	Heel	20				1	4.000						4'-0"	4'-0"	50
20	4	F42	Wings	20			V	4	15.378		Incr =	28.322	inches		15'-5"	15'-5"	142
									5.937						5'-11"	5'-11"	
7	4	F44	Bottom Slab	20				1	16.389						16'-5"	16'-5"	77
17	4	F45	Bottom Slab	20				1	16.389						16'-5"	16'-5"	186
30	5	G1	Interior Walls	20			V	2	8.876		Incr =	5.685	inches		8'-11"	8'-11"	174
									2.244						2'-3"	2'-3"	
30	5	G3	Exterior Wings	20			V	2	8.876		Incr =	5.685	inches		8'-11"	8'-11"	174
									2.244						2'-3"	2'-3"	
33	6	H3	Bottom Slab	20				1	8.155						8'-2"	8'-2"	405
4	8	H10	Headwall	20				1	20.062						20'-1"	20'-1"	214
12	7	J1	Wings	20		FB		1	19.148						19'-2"	19'-2"	470
38	5	J7	Wings	19			V	2	8.547	2.136	Incr =	4.202	inches		10'-8"	10'-7"	293
									2.244	2.136					4'-5"	4'-3"	
21	5	R3	Headwall	10	S			1		1.417	1.250				4'-1"	3'-11"	85
			Totals														
	4																25651
	5																41879
	6																21891
	7																9604
	8																427
	9																0
	10																0
	11																0
			TOTALS														99450.0



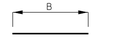
SHAPE 10



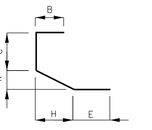
SHAPE 15



SHAPE 19



SHAPE 20

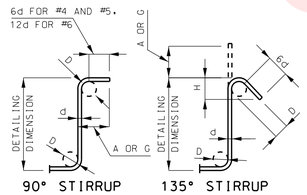


SHAPE 27

SPLICE LENGTH	
BAR SIZE	NON-EPOXY
#4	21 IN.
#5	26 IN.
#6	31 IN.
#7	39 IN.
#8	51 IN.
#9	65 IN.
#10	82 IN.
#11	101 IN.

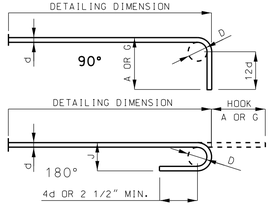
MAX BAR LENGTH	
BAR SIZE	NON-EPOXY
#4	60 FT.
#5	60 FT.
#6	60 FT.
#7	60 FT.
#8	60 FT.
#9	60 FT.
#10	60 FT.
#11	60 FT.

NOTE:
THE BAR LIST IS BASED ON THE MISSOURI STANDARD PLANS.
THIS BAR LIST IS FOR QUANTITY ESTIMATION PURPOSE ONLY AND SHALL BE VERIFIED OR MODIFIED BY THE CONTRACTOR.



STIRRUP HOOK DIMENSIONS					
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.)	GRADE 60		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"

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.
FB = BARS MAY BE BENT IN FIELD TO FIT.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE. A BLANK IN THE SECOND LINE REPRESENTS THE SAME BAR DIMENSION AS THAT IN THE FIRST LINE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADD A SPLICE LENGTH TO A BAR LENGTH WHICH EXCEEDS ITS MAXIMUM ALLOWABLE LENGTH.
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.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7053

DATE	DESCRIPTION

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

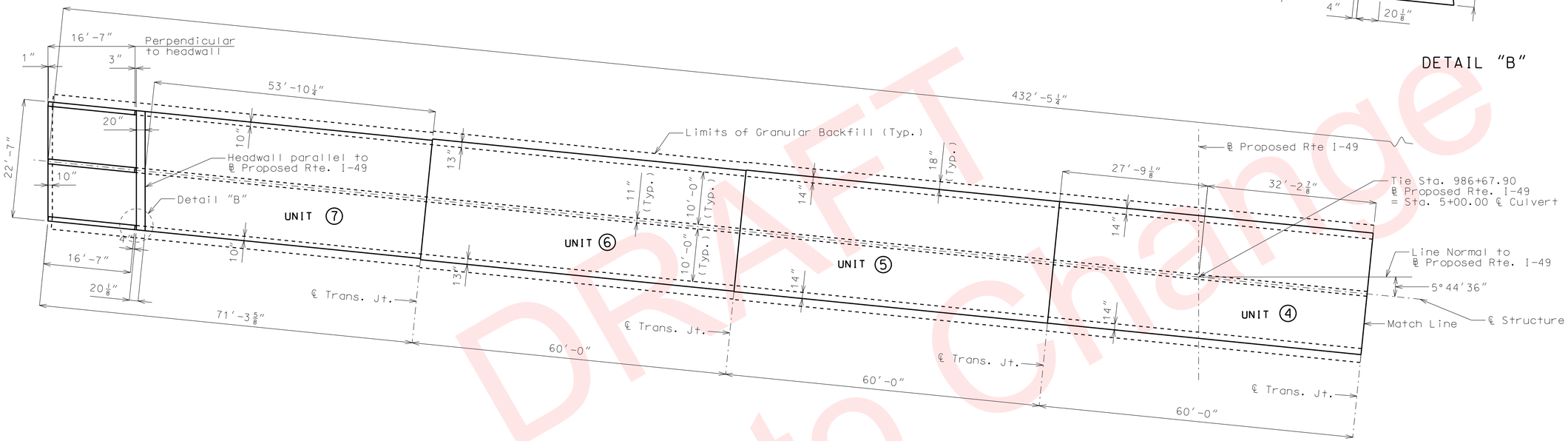
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CAUTION: Currently being re-designed as a double 14'x 8' with baffled inlet

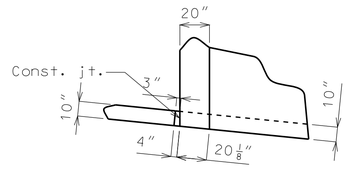
SEC/SUR 34 TWP 21N RGE 32W

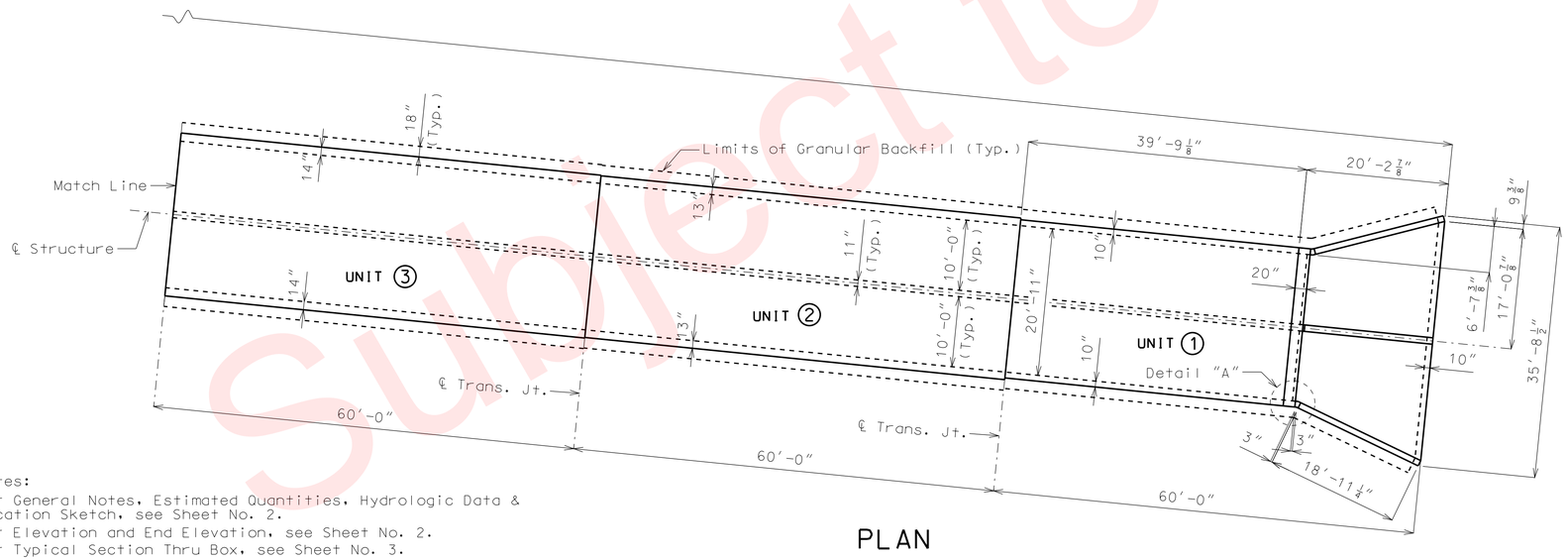
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

2 (10' x 8') CONCRETE BOX CULVERT

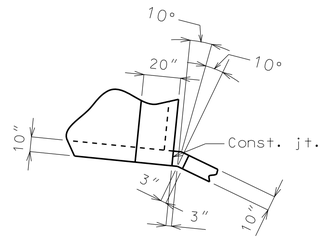


DETAIL "B"





PLAN



DETAIL "A"

Notes:
For General Notes, Estimated Quantities, Hydrologic Data & Location Sketch, see Sheet No. 2.
For Elevation and End Elevation, see Sheet No. 2.
For Typical Section Thru Box, see Sheet No. 3.

B.M.-49-01-17 ELEV. 1038.73
N: 122,910.2783 E: 2,821,845.2573
1.5" ALUM. DISK IN LIMEROCK
OUTCROP ± 150' E/O & 20' S/O TARGET E

BRIDGE OVER RATTLESNAKE HOLLOW CREEK

STATE ROAD FROM RTE. H TO STATE LINE
AT STATE LINE
STA. 986+67.90

STD. 703.37
STD. 703.42
STD. 703.44
STD. 706.35

Designed Sept. 2007
Detailed July 2009
Checked July 2009

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

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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7054

DESCRIPTION | DATE

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

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

DRAFT Subject to Change

CAUTION: Currently being re-designed as a double 14'x 8' with baffled inlet

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition
Load Factor Design

Design Unit Stresses:
Class B-1 concrete (Box Culvert) f'c = 4,000 psi
Reinforcing steel (Grade 60), fy = 60,000 psi

Design Loading:
HS20 Modified
Military 24,000 # Tandem Axle
Earth 120 #/ft.^{3}
Equivalent fluid pressure
30 #/ft.^{3} (Min.) - 60 #/ft.^{3} (Max.)

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

Miscellaneous:
Provide grading of the channel bottom within the limits of the R/W as needed for culvert flowline elevations and transition of the channel bed to the culvert openings.

Taper channel banks to match end of culvert opening as required. (Roadway Item)

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

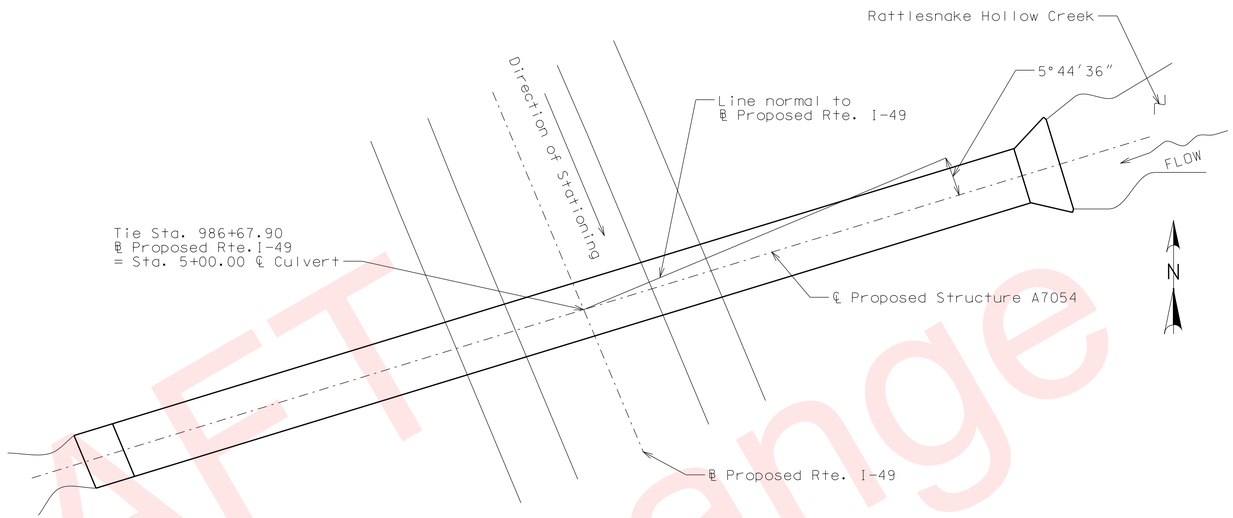
Traffic Handling:
See Roadway Plans for traffic control.

Precast Option:

The box shown below indicating whether a precast or cip box was used should be checked by MoDOT Construction personnel:

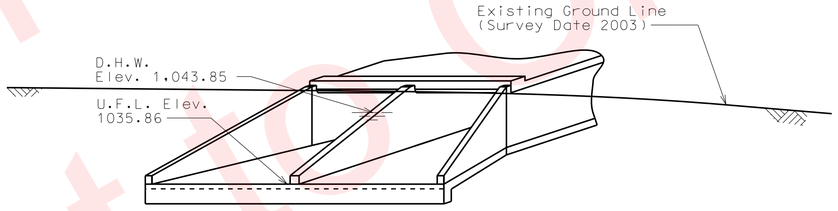
☐ Precast Box used
☐ Cast-in-Place Box used

When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 3'-2". Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans drawing.



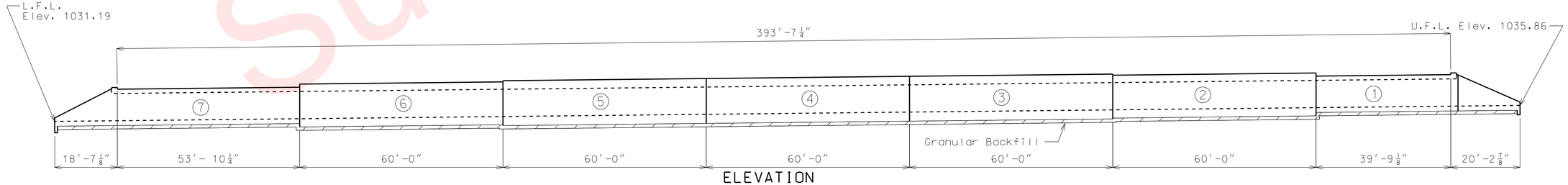
LOCATION SKETCH

HYDROLOGIC DATA
Drainage Area = 2.12 (sq. mi.) (Hilly)
Design High Water (DHW) Elev. = 1,043.85
Design High Water Frequency = 50 (year)
Design High Water Discharge = 1,666.63 (cfs)
Backwater/Base Flood Data (100 year)
High Water Elev. = 1,047.63
Design Discharge = 2,062.42 (cfs)
Estimated Backwater = 1.11 (ft)
Outlet Velocity = 12.89 (ft/sec)
Roadway Overtopping
Design Elev. (1' below shoulder) = 1,109.00
Design Discharge ≥ 3,506.11 (cfs)
Design Frequency > 500 (year)



END ELEVATION (UPSTREAM)

ESTIMATED QUANTITIES			FINAL QUANTITIES
Class 4 Excavation	cu. yard	3,630	
Class B-1 Concrete (Culverts-Bridge)	cu. yard	1,939.4	
Reinforcing Steel (Culverts-Bridge)	pound	163,090	



ELEVATION

Note: Dimensions are along ℄ Structure.

Detailed July 2009
Checked July 2009

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

DRAFT
Subject to Change

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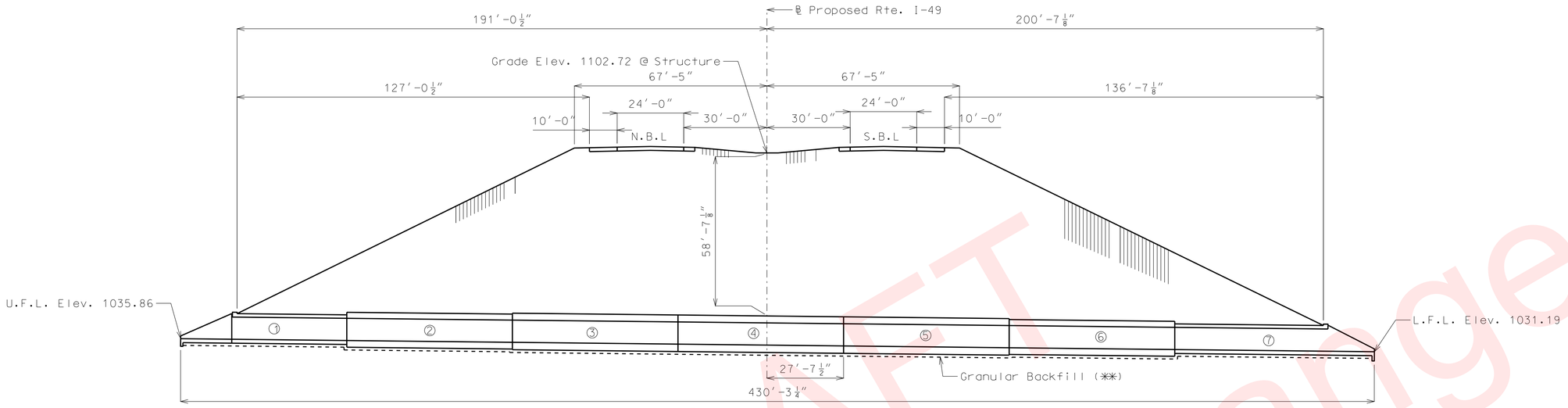
DATE PREPARED: 2/25/2010
ROUTE: I-49 | STATE: MO
DISTRICT: BR | SHEET NO.: 2
COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7054

DESCRIPTION | DATE

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

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

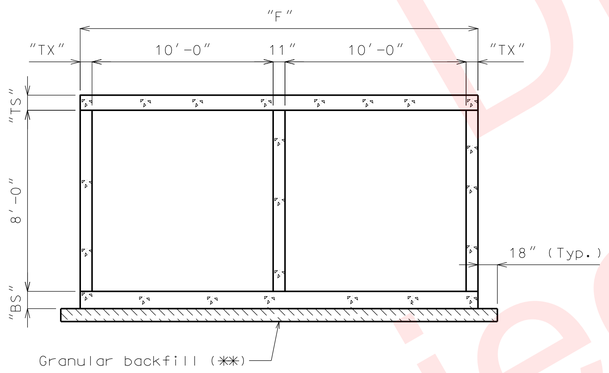
CAUTION: Currently being re-designed as a double 14'x 8' with baffled inlet



ELEVATION

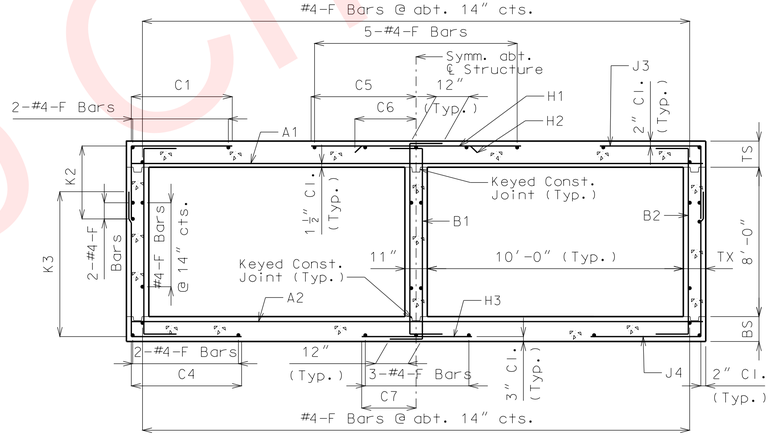
Note: Dimensions are normal to ℄ Proposed Rte. I-49 @ ℄ Structure.

(✻✻) If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.



SECTION THRU BOX

(Normal to ℄ Structure)



TYPICAL SECTION THRU BOX

UNIT	DESIGN FILL (✻)	MEMBER THICKNESS				REINFORCEMENT TABLE																												"C" Multiplier	"K" Multiplier		
						TOP SLAB BARS								BOTTOM SLAB BARS						WALL BARS						COEFFICIENTS (see note)											
		"TS"	"BS"	"TX"	"F"	A1 Bars		J3 Bars		H1 Bars		H2 Bars		A2 Bars		J4 Bars		H3 Bars		B1 Bars		B2 Bars		F Bars		J4		H3		J3		H1		H2			
	(ft-in)	Thick	Thick	Thick		Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	Size	c to c	C4	K3	C7	C1	K2	C5	C6	S = 10 ft	HT = 8 ft			
1 & 7	20′-1″	15″	17″	10″	22′-7″	5	8	5	7	6	14.5	6	14.5	5	7.5	5	7.5	6	7.5	5	11.5	5	11.5	4	14.0	0.26	0.90	0.36	0.31	0.34	0.41	0.29	130	123			
2 & 6	46′-11″	26″	29″	13″	23′-1″	5	5	6	6.5	6	12	6	12	5	5	5	8.5	7	6	5	11.5	5	7	4	14.0	0.32	0.82	0.45	0.32	0.35	0.39	0.31	132	146			
3. 4 & 5	63′-4″	30″	34″	14″	23′-3″	6	6	6	6.5	6	12	6	12	6	6.5	5	8	8	6.5	5	11.5	6	8	4	14.0	0.37	0.80	0.49	0.36	0.36	0.40	0.32	133	155			

(✻) Design fill height is the distance from the top of earth fill or roadway to the top of the top slab.

Notes:

Bar dimensions marked with C# or K# are the product of the coefficient and its associated multiplier.

Detailed July 2009
Checked July 2009

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

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

DATE PREPARED: 2/25/2010
ROUTE: I-49 | STATE: MO
DISTRICT: BR | SHEET NO.: 3
COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7054

DESCRIPTION | DATE

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

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

DRAFT Subject to Change

CAUTION: Currently being re-designed as a double 14'x 8' with baffled inlet

barbill_i Effective: Aug. 2008 Supercedes: Feb. 2006

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.
			BARREL																
			SECTION																
			UNIT 2																
145	5	A1	TOP SLAB		20					22 9.000							22 9	22 9	3441
145	5	A2	BTM SLAB		20					22 9.000							22 9	22 9	3441
224	6	J3	TOP CORNER		19					4 3.125	3 6.250						7 9	7 8	2579
172	5	J4	BTM CORNER		19					9 11.750	3 6.250						13 6	13 5	2407
128	5	B1	INT WALL		10						12.000	12 2.000					14 2	13 11	1858
208	5	B2	EXT WALL		20					12 2.000							12 2	12 2	2639
61	6	H1	TOP SLAB		20					8 7.000							8 7	8 7	786
60	6	H2	TOP SLAB		20					6 10.000							6 10	6 10	616
121	7	H3	BTM SLAB		20					9 11.000							9 11	9 11	2453
82	4	F1	TEMP STEEL		20					59 9.000							59 9	59 9	3273
			UNIT 3																
121	6	A1	TOP SLAB		20					22 11.000							22 11	22 11	4165
121	6	A2	BTM SLAB		20					22 11.000							22 11	22 11	4165
224	6	J3	TOP CORNER		19					4 7.750	4 0.000						8 8	8 6	2860
182	5	J4	BTM CORNER		19					10 4.000	4 1.250						14 5	14 4	2721
128	5	B1	INT WALL		10						12.000	12 11.000					14 11	14 8	1958
182	6	B2	EXT WALL		20					12 11.000							12 11	12 11	3531
61	6	H1	TOP SLAB		20					8 10.000							8 10	8 10	809
60	6	H2	TOP SLAB		20					7 1.000							7 1	7 1	638
112	8	H3	BTM SLAB		20					10 10.000							10 10	10 10	3240
82	4	F1	TEMP STEEL		20					59 9.000							59 9	59 9	3273
			UNIT 4																
121	6	A1	TOP SLAB		20					22 11.000							22 11	22 11	4165
121	6	A2	BTM SLAB		20					22 11.000							22 11	22 11	4165
224	6	J3	TOP CORNER		19					4 7.750	4 0.000						8 8	8 6	2860
182	5	J4	BTM CORNER		19					10 4.000	4 1.250						14 5	14 4	2721
128	5	B1	INT WALL		10						12.000	12 11.000					14 11	14 8	1958
182	6	B2	EXT WALL		20					12 11.000							12 11	12 11	3531
61	6	H1	TOP SLAB		20					8 10.000							8 10	8 10	809
60	6	H2	TOP SLAB		20					7 1.000							7 1	7 1	638
112	8	H3	BTM SLAB		20					10 10.000							10 10	10 10	3240
82	4	F1	TEMP STEEL		20					59 9.000							59 9	59 9	3273
			UNIT 5																
121	6	A1	TOP SLAB		20					22 11.000							22 11	22 11	4165
121	6	A2	BTM SLAB		20					22 11.000							22 11	22 11	4165
224	6	J3	TOP CORNER		19					4 7.750	4 0.000						8 8	8 6	2860
182	5	J4	BTM CORNER		19					10 4.000	4 1.250						14 5	14 4	2721
128	5	B1	INT WALL		10						12.000	12 11.000					14 11	14 8	1958
182	6	B2	EXT WALL		20					12 11.000							12 11	12 11	3531
61	6	H1	TOP SLAB		20					8 10.000							8 10	8 10	809
60	6	H2	TOP SLAB		20					7 1.000							7 1	7 1	638
112	8	H3	BTM SLAB		20					10 10.000							10 10	10 10	3240
82	4	F1	TEMP STEEL		20					59 9.000							59 9	59 9	3273
			UNIT 6																
145	5	A1	TOP SLAB		20					22 9.000							22 9	22 9	3441
145	5	A2	BTM SLAB		20					22 9.000							22 9	22 9	3441
224	6	J3	TOP CORNER		19					4 3.125	3 6.250						7 9	7 8	2579

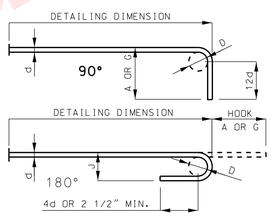
BILL OF REINFORCING STEEL

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.
172	5	J4	BTM CORNER		19					9 11.750	3 6.250						13 6	13 5	2407
128	5	B1	INT WALL		10						12.000	12 2.000					14 2	13 11	1858
208	5	B2	EXT WALL		20					12 2.000							12 2	12 2	2639
61	6	H1	TOP SLAB		20					8 7.000							8 7	8 7	786
60	6	H2	TOP SLAB		20					6 10.000							6 10	6 10	616
121	7	H3	BTM SLAB		20					9 11.000							9 11	9 11	2453
82	4	F1	TEMP STEEL		20					59 9.000							59 9	59 9	3273
			UPPER END																
			SECTION																
			(UNIT 1)																
63	5	A1	TOP SLAB		20					22 3.000							22 3	22 3	1462
67	5	A2	BTM SLAB		20					22 3.000							22 3	22 3	1555
142	6	J3	TOP CORNER		19					3 5.500	3 4.500						6 10	6 8	1422
136	5	J4	BTM CORNER		19					9 2.750	2 10.000						12 1	11 11	1690
88	5	B1	INT WALL		10						12.000	10 3.000					12 3	12 0	1101
88	5	B2	EXT WALL		20					10 3.000							10 3	10 3	941
34	6	H1	TOP SLAB		20					8 11.000							8 11	8 11	455
34	6	H2	TOP SLAB		20					6 4.000							6 4	6 4	323
67	6	H3	BTM SLAB		20					7 10.000							7 10	7 10	788
82	4	F10	TEMP STEEL		20					40 9.000							40 9	40 9	2232
			UPPER WINGS																
			AND HEADWALL																
28	5	A10	BTM SLAB		20			V	1	34 9.000							34 9	34 9	
			INCREMENT =							22 3.000							22 3	22 3	832
			5.500 INCH																
2	8	D1	HEADWALL		20					22 4.000							22 4	22 4	119
2	8	D2	HEADWALL		20					8 0.000							8 0	8 0	43
12	5	E1	TOE		20					3 5.000							3 5	3 5	43
12	4	F50	FLARED WINGS		15			V	2	3 1.250	17 4.500				12.750	2 11.000	20 6	20 6	
			INCREMENT =							3 1.250	4 5.125				12.750	2 11.000	7 6	7 6	112
			31.250 INCH																
12	4	F51	BTM SLAB		20			V	2	18 0.000							18 0	18 0	
			INCREMENT =							2 0.000							2 0	2 0	80
			38.375 INCH																
12	4	F52	STRGHT WINGS		20			V	2	19 1.000							19 1	19 1	
			INCREMENT =							7 0.000							7 0	7 0	105
			29.000 INCH																
4	4	F53	BTM SLAB		20					21 3.000							21 3	21 3	57
3	4	F54	BTM SLAB		20					20 3.000							20 3	20 3	41
19	4	F55	BTM SLAB		20					20 3.000							20 3	20 3	257
36	5	G1	INT WALLS		20			V	2	10 3.000							10 3	10 3	
			INCREMENT =							2 5.000							2 5	2 5	238
			5.500 INCH																
38	5	G2	EXT WALLS		20			V	2	10 2.000							10 2	10 2	
			INCREMENT =							2 5.000							2 5	2 5	249
			5.125 INCH																
29	6	H3	BTM SLAB		20					7 10.000							7 10	7 10	341
4	7	J1	STRGHT WINGS		20					22 10.000							22 10	22 10	187
8	7	J6	FLARED WINGS		20					23 10.000							23 10	23 10	390
56	5	J5	EXT WINGS		19			V	2	10 0.625	2 10.000						12 11	12 9	
			INCREMENT =							2 5.500	2 10.000						5 4	5 2	523
			3.375 INCH																
24	5	R1	HEADWALL		27	S				17.000	13.875	5.875	2 2.375		4.125	4.125	5 3	5 1	127
24	5	R2	HEADWALL		10	S					10.500	18.000					3 3	3 1	77



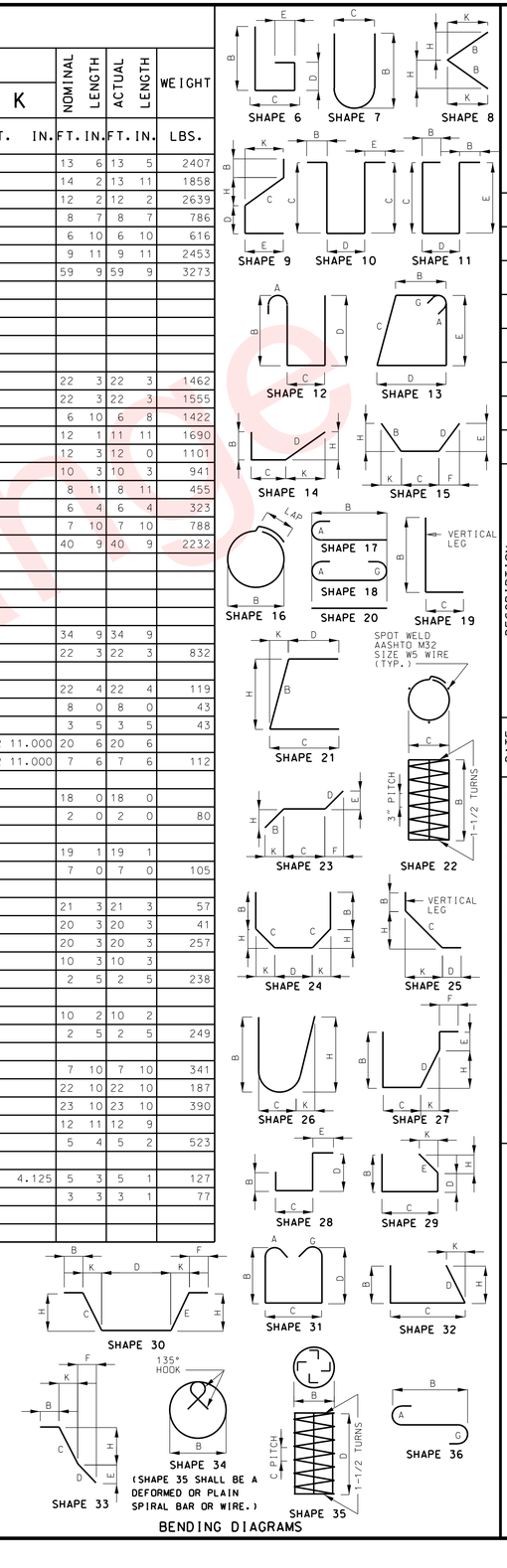
STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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

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

DATE PREPARED 2/25/2010
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7054

DESCRIPTION | DATE

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

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

Detailed Oct. 2009
Checked Oct. 2009

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

CAUTION: Currently being re-designed as a double 14'x 8' with baffled inlet

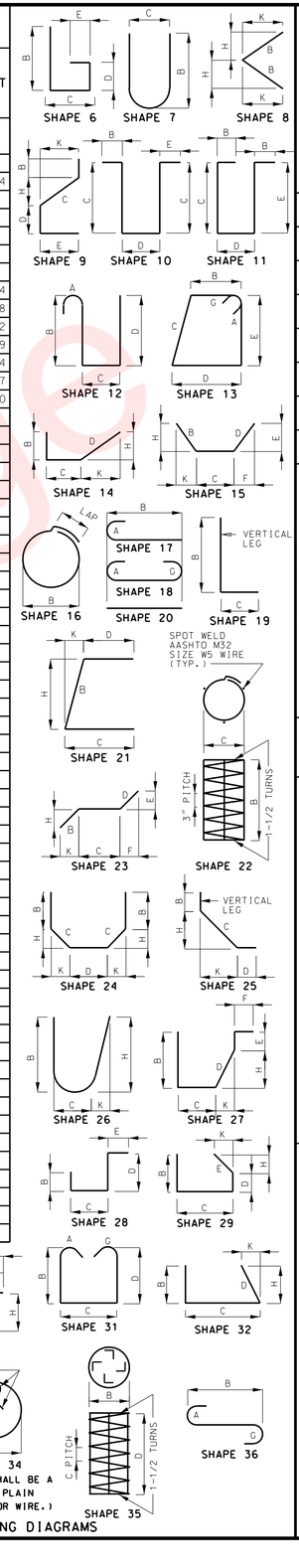
barbill_i Effective: Aug. 2008 Supercedes: Feb. 2006

BILL OF REINFORCING STEEL

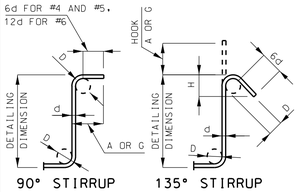
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			LOWER END																									
			SECTION																									
			(UNIT 7)																									
82	5	A1	TOP SLAB		20					22	3.000													22	3	22	3	1903
87	5	A2	BTM SLAB		20					22	3.000													22	3	22	3	2019
3	5	A3	TOP SLAB		20			V	1	15	3.000													15	3	15	3	
			INCREMENT =							2	0.000													2	0	2	0	27
			79.500 INCH																									
192	5	J3	TOP CORNER		19					3	5.875	3	4.500											6	10	6	9	1352
118	5	J4	BTM CORNER		19					9	2.750	2	10.000											12	1	11	11	1467
118	5	B1	INT WALL		10							12	000	10	3.000									12	3	12	0	1477
118	5	B2	INT WALL		20					10	3.000													10	3	10	3	1262
45	6	H1	TOP SLAB		20					8	11.000													8	11	8	11	603
45	6	H2	TOP SLAB		20					6	4.000													6	4	6	4	428
89	6	H3	BTM SLAB		20					7	10.000													7	10	7	10	1047
10	4	F60	TEMP STEEL		20					54	2.000													54	2	54	2	362
1	4	F61	TEMP STEEL		20					54	6.000													54	6	54	6	36
1	4	F62	TEMP STEEL		20					54	10.000													54	10	54	10	37
1	4	F63	TEMP STEEL		20					54	11.000													54	11	54	11	37
14	4	F64	TEMP STEEL		20					55	3.000													55	3	55	3	517
1	4	F70	TEMP STEEL		20					55	7.000													55	7	55	7	37
1	4	F71	TEMP STEEL		20					55	8.000													55	8	55	8	37
1	4	F72	TEMP STEEL		20					56	0.000													56	0	56	0	37
10	4	F73	TEMP STEEL		20					56	4.000													56	4	56	4	376
1	4	F74	TEMP STEEL		20					54	5.000													54	5	54	5	36
1	4	F75	TEMP STEEL		20					54	10.000													54	10	54	10	37
1	4	F78	TEMP STEEL		20					55	8.000													55	8	55	8	37
1	4	F79	TEMP STEEL		20					56	1.000													56	1	56	1	37
40	4	F80	TEMP STEEL		20			V	2	56	4.000													56	4	56	4	
			INCREMENT =							54	2.000													54	2	54	2	1476
			1.375 INCH																									
			LOWER WINGS																									
			AND HEADWALL																									
28	5	A2	BTM SLAB		20					22	3.000													22	3	22	3	650
4	5	A11	BTM SLAB		20			V	1	20	7.000													20	7	20	7	
			INCREMENT =							2	0.000													2	0	2	0	47
			74.375 INCH																									
2	8	D3	HEADWALL		20					22	5.000													22	5	22	5	120
2	8	D4	HEADWALL		20					8	0.000													8	0	8	0	43
12	5	E2	HEEL		20					4	0.000													4	0	4	0	50
24	4	F42	WING		20			V	4	17	9.000													17	9	17	9	
			INCREMENT =							6	0.000													6	0	6	0	190
			28.250 INCH																									
7	4	F44	BTM SLAB		20					18	9.000													18	9	18	9	88
19	4	F45	BTM SLAB		20					18	9.000													18	9	18	9	238
34	5	G1	INT WALLS		20			V	2	10	1.000													10	1	10	1	
			INCREMENT =							2	6.000													2	6	2	6	223
			5.750 INCH																									
34	5	G3	EXT WINGS		20			V	2	10	1.000													10	1	10	1	
			INCREMENT =							2	6.000													2	6	2	6	223
			5.750 INCH																									
28	6	H3	BTM SLAB		20					7	10.000													7	10	7	10	329
4	8	H10	HEADWALL		20					22	5.000													22	5	22	5	239
12	7	J1	WING		20					21	10.000													21	10	21	10	536
50	5	J7	WING		19			V	2	9	11.500	2	10.000											12	10	12	8	
			INCREMENT =							2	6.000	2	10.000											5	4	5	3	467
			3.750 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.	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.
24	5	R3	HEADWALL		10	S						17.000		18.000										4	4	4	2	104
			TOTALS																									
	4																											22864
	5																											61718
	6																											62202
	7																											6019
	8																											10284
			TOTAL																									163087
			TOTAL	E																								0



BENDING DIAGRAMS

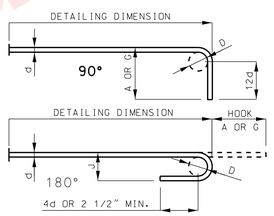


STIRRUP HOOK DIMENSIONS

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.

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

DATE PREPARED 2/25/2010
ROUTE I-49 STATE MO
DISTRICT BR SHEET NO. 5
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7054

DESCRIPTION | DATE

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

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

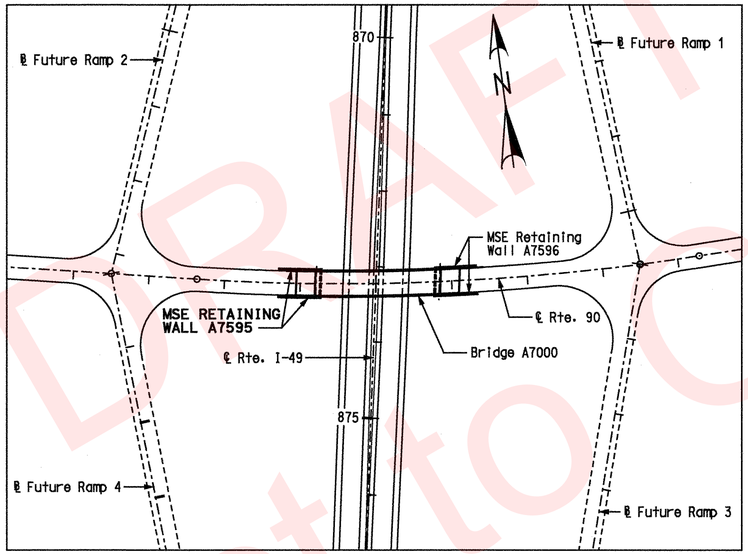
Detailed Oct. 2009
Checked Oct. 2009

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

Obsolete
Do NOT change

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SEC/SUR 22 TWP 21N RGE 32W



INDEX OF DRAWINGS

1 Title Sheet
2 General Plan and Elevation
3 Typical Sections

RETAINING WALL AT END BENT 1 OF BRIDGE A7000

STATE ROAD FROM RTE. H TO STATE LINE
ABOUT 8.0 MILES EAST OF RTE. 59
STA. 48+71.50 (RTE. 90)

STD. 611.60

Designed JUL 2009
Detailed JUL 2009
Checked AUG 2009

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

Sheet No. 1 of 3

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 07/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7595

DESCRIPTION | DATE

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

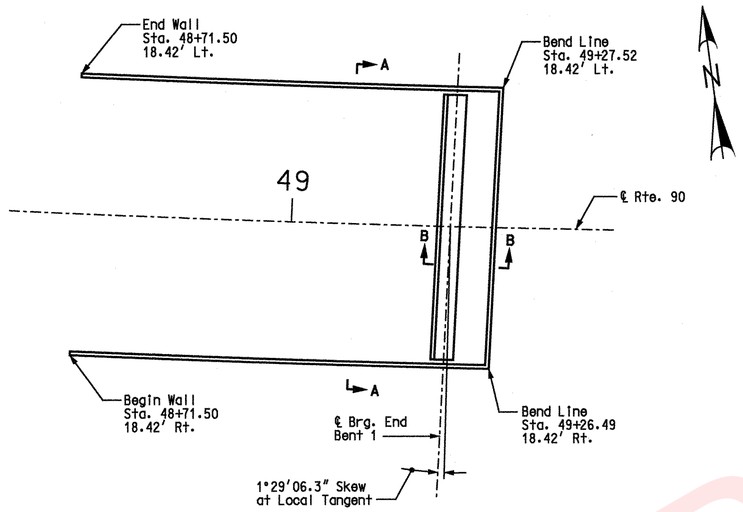
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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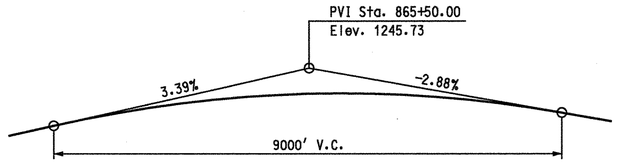
REV.

DRAFT Subject to Change

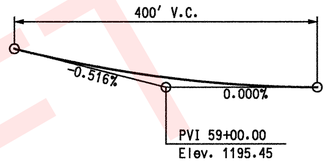
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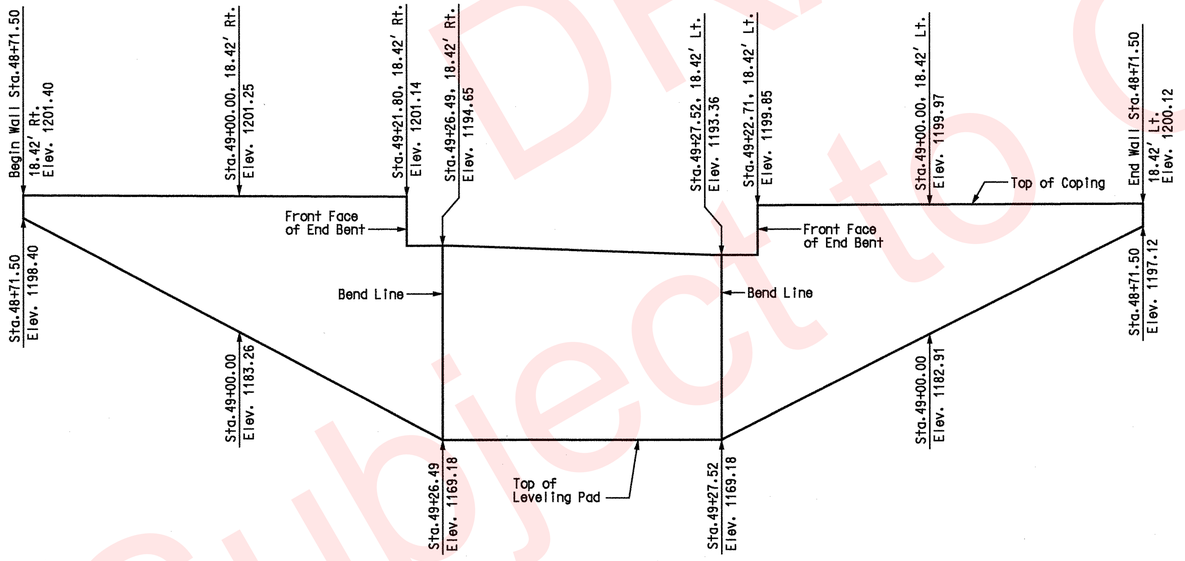
PLAN



PROFILE GRADE – RTE. I-49



PROFILE GRADE – RTE. 90



DEVELOPED ELEVATION

Scale: 1" = 10'-0"

MSE WALL SYSTEMS DATA TABLE					
Proprietary Wall Systems		Combination Wall Systems			
Manufacturer	System	Facing Unit Manufacturer	Facing Unit	Geogrid Manufacturer	Geogrid

MSE Wall Systems Data Table is to be completed by MoDOT construction personnel to record the manufacturer of the proprietary wall system or the manufacturers of the combination wall system that was used for constructing the MSE wall.

ESTIMATED QUANTITIES		
ITEM		QUANTITY
Mechanically Stabilized Earth Wall Systems	Sq. Ft.	2,759

CURVE DATA
RTE. 90

P.I. Sta. = 50+97.57
△ = 12°42'24.7" (Lt.)
D = 1°54'35.5"
L = 665.33'
T = 334.04'
R = 3000.00'
SE = 3.7%

BENCHMARKS

BM-49-01-10 R.R. Spike 0.8' above ground, East side of a 14" red oak @ the NW quadrant of RTE 90 and SW 90-21 Elev. 1206.10

BM-49-01-11 1½" Aluminum disk set in concrete, concrete flush with ground, 4.6' from edge of county road 9'(+/-) south of 16" black-jack oak, east side of county road SW 90-21, 60'(+/-) south of Don/Fern mail box #102, 0.3 miles(+/-) south of Rt. 90. Elev. 1123.70

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition.
Seismic performance category A.
Acceleration coefficient = 0.05

Factor of safety shall be 2.0 for overturning, 1.5 for sliding and 2.0 for bearing.

For seismic design, the factor of safety shall be 1.5 for overturning and 1.1 for sliding.

Ø = 19° for retained fill material to be retained by the mechanically stabilized earth wall.

Ø = 25° for foundation material the wall is to rest on.

Ø = 34° for selected granular backfill.

Maximum allowable bearing pressure is 4000 psf.

Minimum reinforcement length for MSE wall for global stability:
= 0.8 x H for entire length of wall
(where H = Top of wall to bottom of wall)

All concrete for leveling pad and coping shall be Class B or B-1 with f'c = 4,000 psi.

Panel reinforcement shall be epoxy coated.

A filter cloth meeting the requirements for a Separation Geotextile material shall be placed between the select granular backfill for structural systems and the backfill being retained by the mechanically stabilized earth wall system.

Front face of wall shall be vertical.

All stationing is along ℄ Rte. 90.

The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed and placed to avoid damage by pile driving, guardrail post installation, utility and sign foundations. (See Roadway and Bridge plans.)

Coping shall be required on this structure.

The MSE wall system shall be a large block wall system in accordance with Sec 720.

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

The cost of joint filler, complete-in-place, will be considered completely covered by the contract unit price for Concrete Traffic Barrier (Type B). See roadway plans.

Total Length of wall = 147'-10⅜"

Notes:
The boring logs or other factual records of subsurface data and investigations performed by the department for the design of this project are available from the Project Contact upon written request.

For Sections A-A and B-B, see Sheet No. 3.

GENERAL PLAN AND ELEVATION

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
7-9-10

DATE PREPARED 4/1/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7595

DESCRIPTION	DATE

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

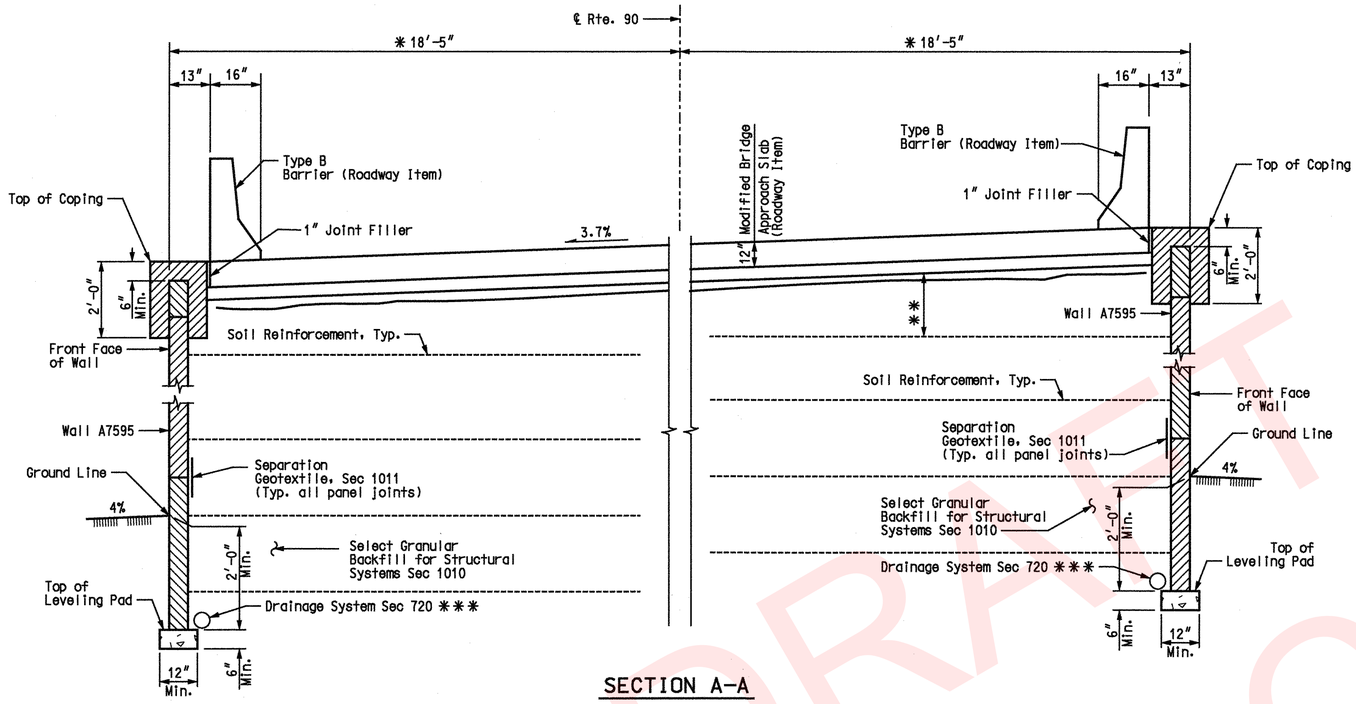
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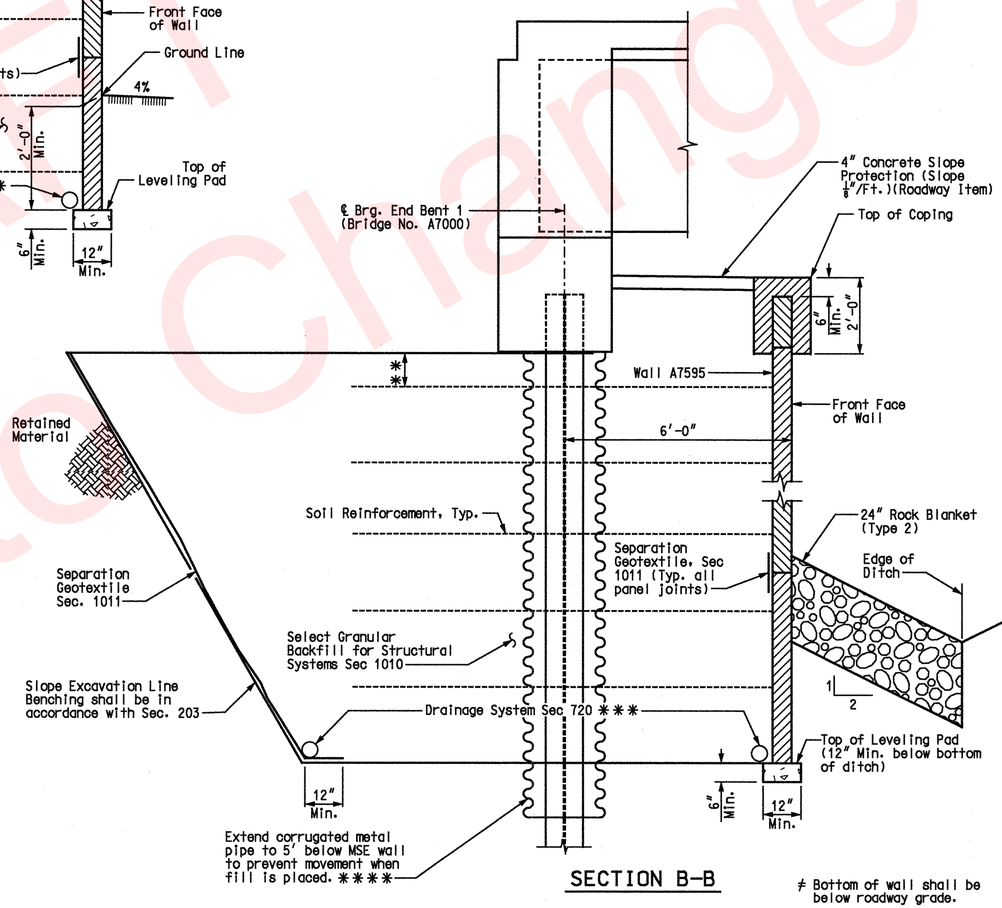
Detailed JUL 2009
Checked AUG 2009

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

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SECTION A-A



SECTION B-B

≠ Bottom of wall shall be below roadway grade.

* Dimensions are radial along curved portion of wall.

** Topmost layer of reinforcement shall be fully covered with select granular backfill for structural systems, as approved by the wall manufacturer, before placement of the Separation Geotextile.

*** Adjustment in the vertical alignment of the drainage pipes from that depicted in the plans may be necessary to ensure positive flow out of the drainage system.

**** Included in work for Bridge No. A7000.

Outlet ends of pipes shall be located to avoid clogging or flow into the drainage system.

Note:
For location of Sections A-A and B-B, see Sheet No. 2.

TYPICAL SECTIONS

DRAFT
Subject to Change

GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
3-9-10

DATE PREPARED

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
McDONALD
JOB NO.
J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A7595

DESCRIPTION	DATE

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

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

REV.

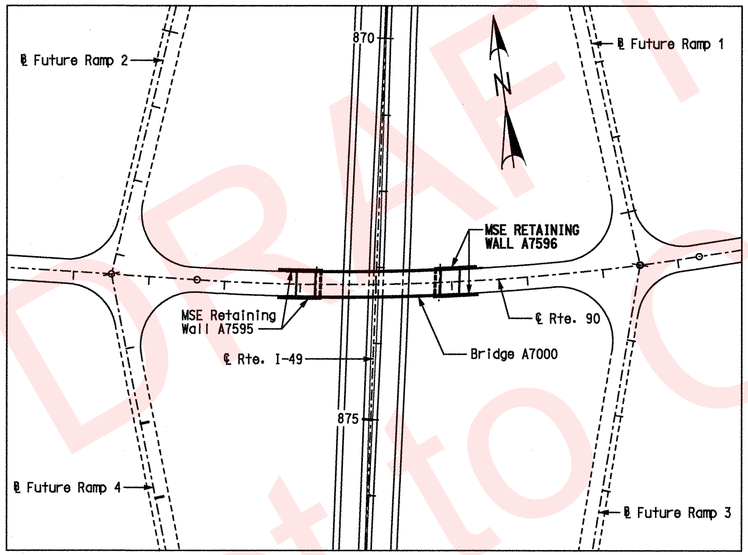
Detailed JUL 2009
Checked AUG 2009

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

Sheet No. 3 of 3

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SEC/SUR 22 TWP 21N RGE 32W



INDEX OF DRAWINGS

1 Title Sheet
2 General Plan and Elevation
3 Typical Sections

RETAINING WALL AT END BENT 3 OF BRIDGE A7000

STATE ROAD FROM RTE. H TO STATE LINE
ABOUT 8.0 MILES EAST OF RTE. 59
STA. 51+33.00 (RTE. 90)

STD. 611.60

Designed JUL 2009
Detailed JUL 2009
Checked AUG 2009

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

Sheet No. 1 of 3

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	1

COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7596

DESCRIPTION	DATE

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

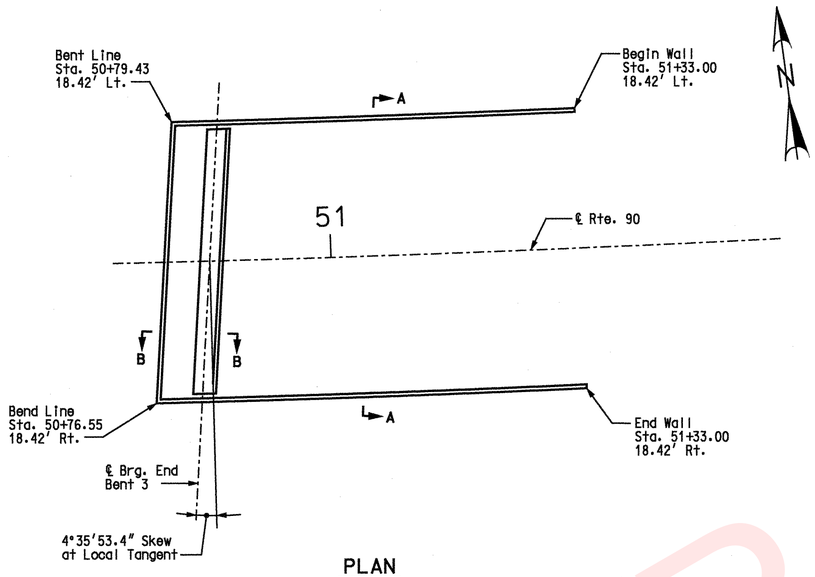
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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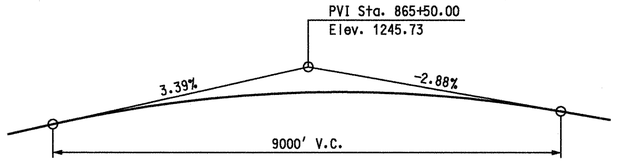
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DRAFT Subject to Change

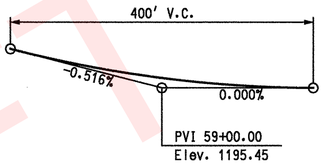
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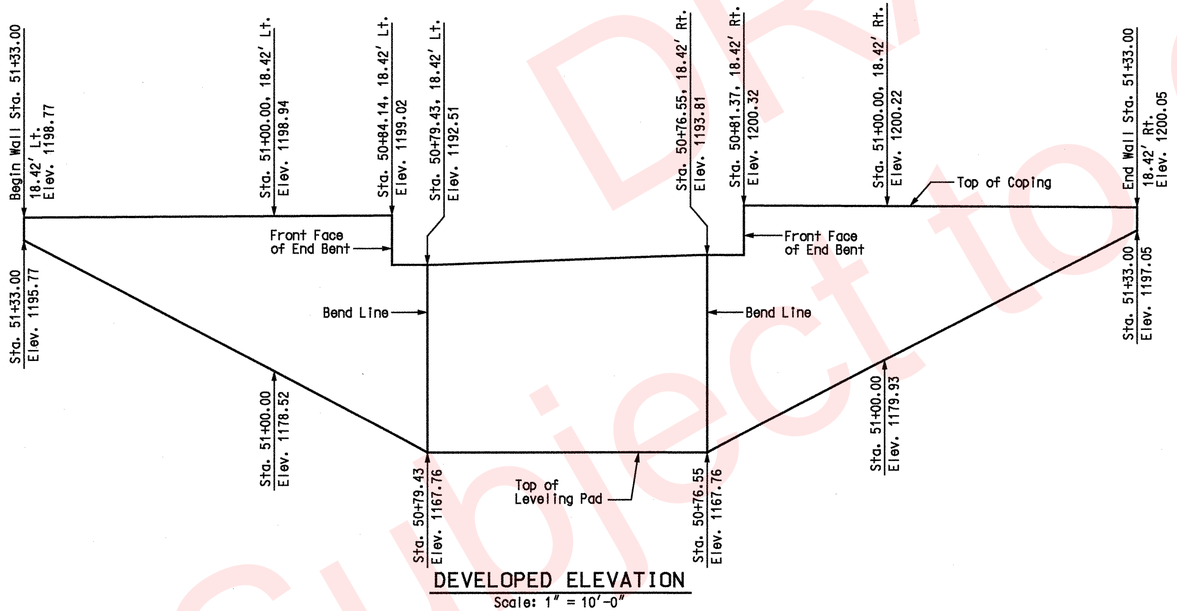
PLAN



PROFILE GRADE – Rte. I-49



PROFILE GRADE – RTE. 90



DEVELOPED ELEVATION
Scale: 1" = 10'-0"

MSE WALL SYSTEMS DATA TABLE

Proprietary Wall Systems		Combination Wall Systems			
Manufacturer	System	Facing Unit Manufacturer	Facing Unit	Geogrid Manufacturer	Geogrid

MSE Wall Systems Data Table is to be completed by MoDOT construction personnel to record the manufacturer of the proprietary wall system or the manufacturers of the combination wall system that was used for constructing the MSE wall.

ESTIMATED QUANTITIES

ITEM		QUANTITY
Mechanically Stabilized Earth Wall Systems	Sq. Ft.	2,800

CURVE DATA
RTE. 90

P.I. Sta. = 50+97.57
△ = 12°42'24.7" (Lt.)
D = 1°54'35.5"
L = 665.33'
T = 334.04'
R = 3000.00'
SE = 3.7%

BENCHMARKS

BM-49-01-10 R.R. Spike 0.8' above ground, East side of a 14" red oak @ the NW quadrant of RTE 90 and SW 90-21 Elev. 1206.10

BM-49-01-11 1½" Aluminum disk set in concrete, concrete flush with ground, 4.6' from edge of county road 9'(+/-) south of 16" black-jack oak, east side of county road SW 90-21, 60'(+/-) south of Don/Fern mail box #102, 0.3 miles(+/-) south of Rt. 90. Elev. 1123.70

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition.
Seismic performance category A.
Acceleration coefficient = 0.05

Factor of safety shall be 2.0 for overturning, 1.5 for sliding and 2.0 for bearing.

For seismic design, the factor of safety shall be 1.5 for overturning and 1.1 for sliding.

Ø = 19° for retained fill material to be retained by the mechanically stabilized earth wall.

Ø = 25° for foundation material the wall is to rest on.

Ø = 34° for selected granular backfill.

Maximum allowable bearing pressure is 4000 psf.

Minimum reinforcement length for MSE Wall for global stability:
= 0.8 x H for entire length of wall
(Where H = Top of wall to bottom of wall)

All concrete for leveling pad and coping shall be Class B or B-1 with f'c = 4,000 psi.

Panel reinforcement shall be epoxy coated.

A filter cloth meeting the requirements for a Separation Geotextile material shall be placed between the select granular backfill for structural systems and the backfill being retained by the mechanically stabilized earth wall system.

Front face of wall shall be vertical.

All stationing is along ℄ Rte. 90.

The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed and placed to avoid damage by pile driving, guardrail post installation, utility and sign foundations. (See Roadway and Bridge plans.)

Coping shall be required on this structure.

The MSE wall system shall be a large block wall system in accordance with Sec 720.

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

The cost of joint filler, complete-in-place, will be considered completely covered by the contract unit price for Concrete Traffic Barrier (Type B). See roadway plans.

Total Length of wall = 146'-11⅝"

Notes:
The boring logs or other factual records of subsurface data and investigations performed by the department for the design of this project is available from the Project Contact upon written request.

For Sections A-A and B-B, see Sheet No. 3.

GENERAL PLAN AND ELEVATION

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
McDONALD

JOB NO.
J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A7596

DESCRIPTION	DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

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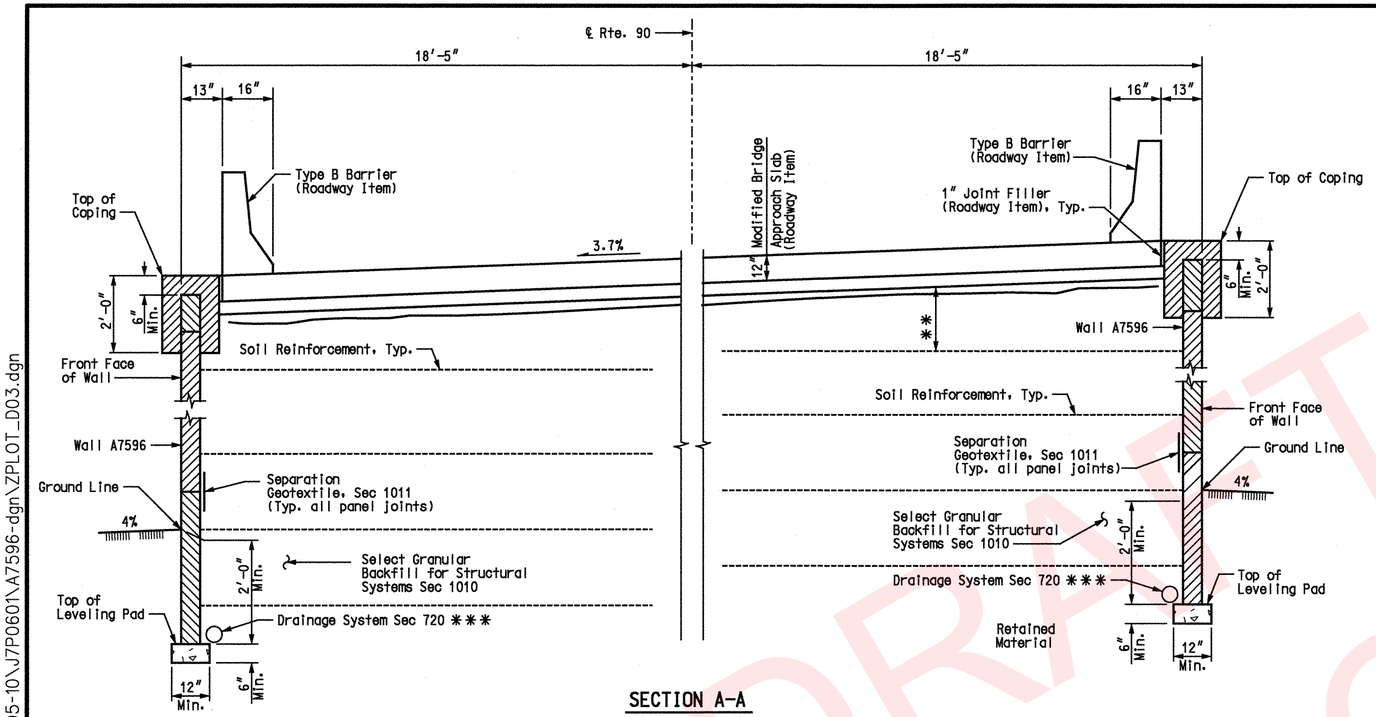
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Detailed JUL 2009
Checked AUG 2009

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

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SECTION A-A

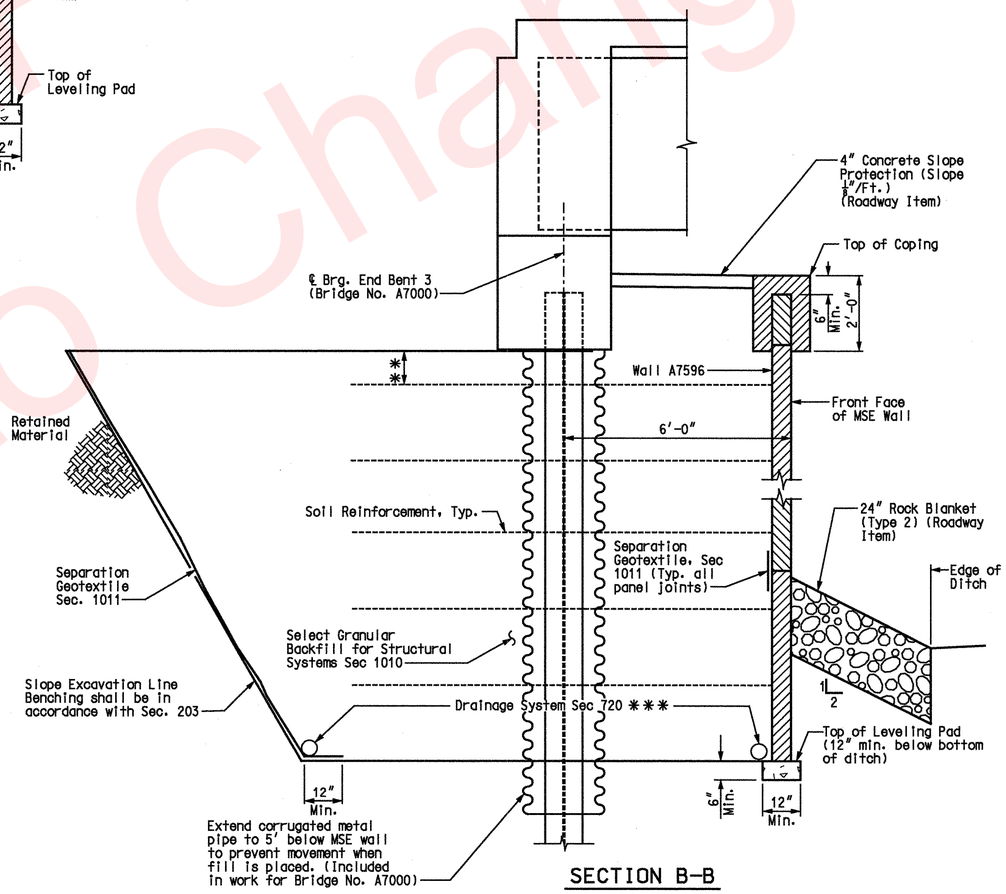
✱ Dimensions are radial along curved portion of wall.

✱✱ Topmost layer of reinforcement shall be fully covered with select granular backfill for structural systems, as approved by the wall manufacturer, before placement of the Separation Geotextile.

✱✱✱ Adjustment in the vertical alignment of the drainage pipes from that depicted in the plans may be necessary to ensure positive flow out of the drainage system.

Outlet ends of pipes shall be located to avoid clogging or flow into the drainage system.

Note:
For location of Sections A-A and B-B, see Sheet No. 2.



SECTION B-B

TYPICAL SECTIONS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
McDONALD

JOB NO.
J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A7596

DESCRIPTION | DATE | REV.

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY
NO. 001270

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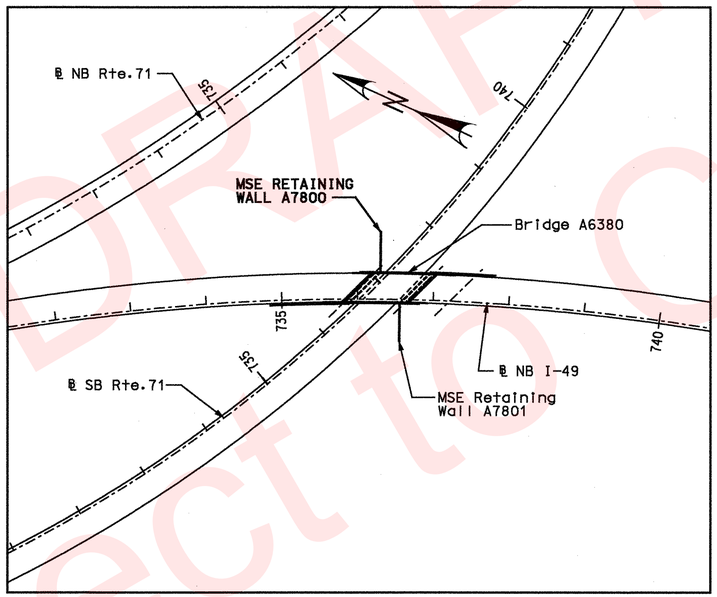
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Detailed JUL 2009
Checked AUG 2009

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SEC/SUR 22 TWP 21N RGE 32W



INDEX OF DRAWINGS

1 Title Sheet
2 General Plan and Elevation
3 Typical Sections

DRAFT
Subject to Change

RETAINING WALL AT END BENT 1 OF BRIDGE A6380

STATE ROAD FROM RTE. H TO STATE LINE
ABOUT 2.6 MILES NORTH OF RTE. 90
STA. 734+85.00 (RTE. I-49)

STD. 611.60

Designed JUL 2009
Detailed JUL 2009
Checked AUG 2009

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

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	1

COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7800

DATE | DESCRIPTION

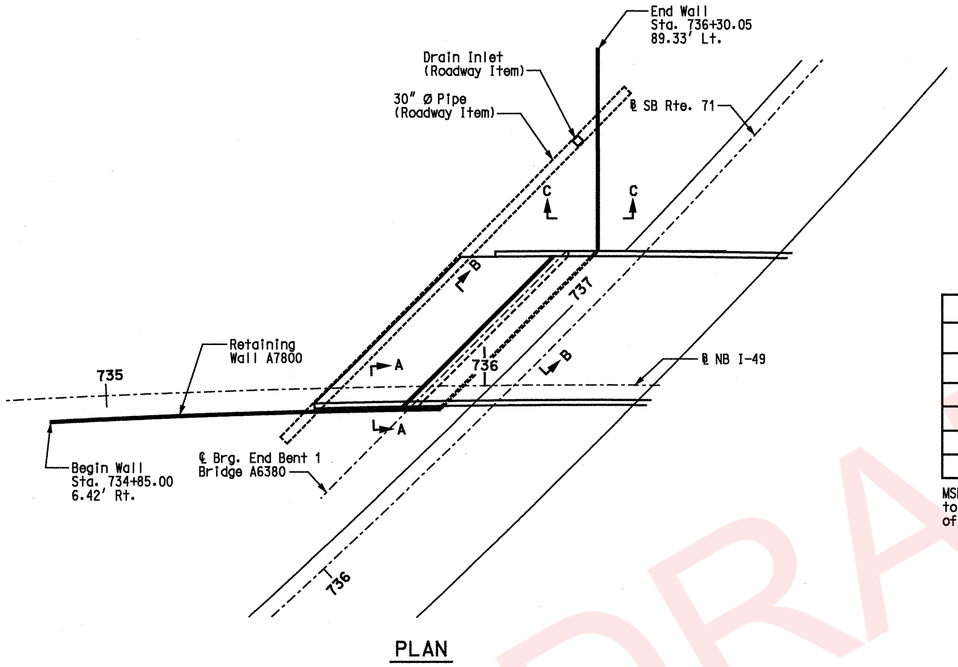
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

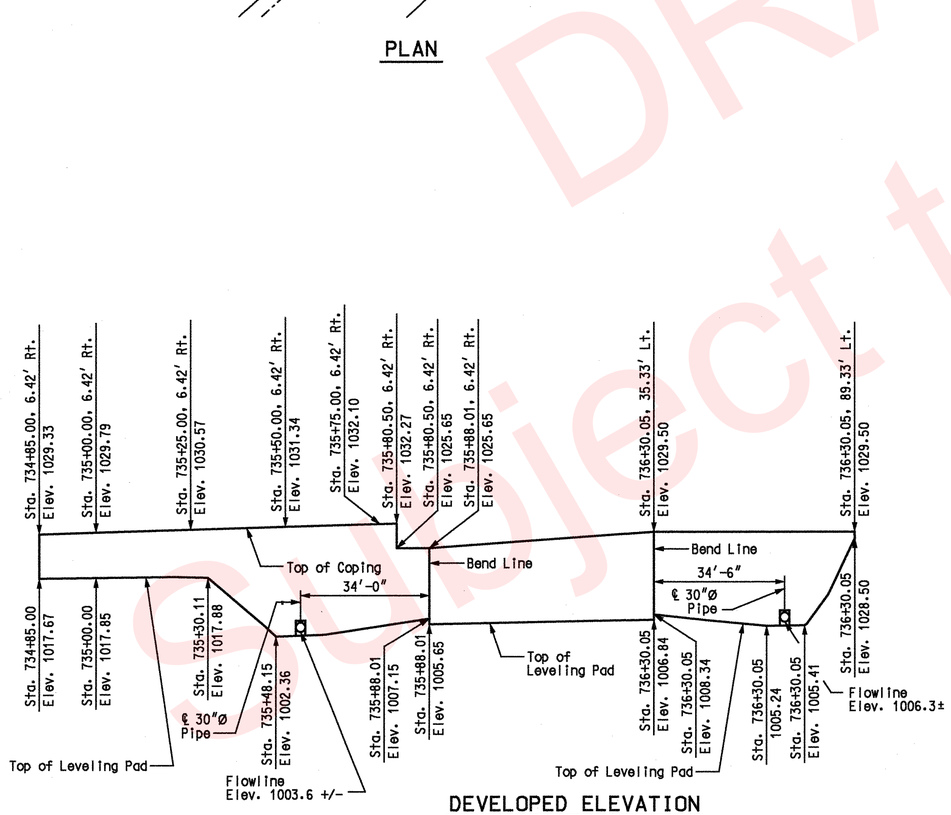
HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

REV.

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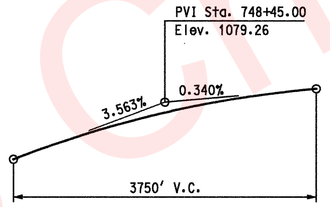
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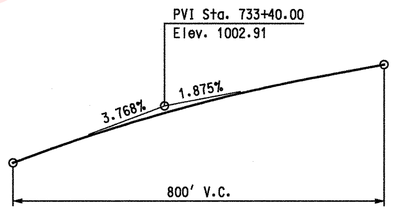
DEVELOPED ELEVATION

MSE WALL SYSTEMS DATA TABLE					
Proprietary Wall Systems		Combination Wall Systems			
Manufacturer	System	Facing Unit Manufacturer	Facing Unit	Geogrid Manufacturer	Geogrid

MSE Wall Systems Data Table is to be completed by MoDOT construction personnel to record the manufacturer of the proprietary wall system or the manufacturers of the combination wall system that was used for constructing the MSE wall.



PROFILE GRADE - NB I-49



PROFILE GRADE - SB RTE. 71

CURVE DATA NB I-49

P.I. Sta. = 739+20.393
△ = 44°43'02" (Rt.)
D = 2°00'00.0"
L = 2235.86'
T = 1178.36
R = 2864.79'
SE = 6.3%

CURVE DATA SB RTE. 71

P.I. Sta. = 736+04.58
△ = 66°31'00" (Lt.)
Lc = 1987.22'
Ts = 1368.30'
R = 1909.86'
D = 3°00'00"
Ls = 230.00'
Θs = 3°27'00" (Lt.)
Xs = 229.92'
Ys = 4.62'
SE = 7.9%

GENERAL NOTES:

Design Specifications:
2002 - AASHTO 17th Edition.
Seismic performance category A.
Acceleration coefficient = 0.05

Factor of safety shall be 2.0 for overturning, 1.5 for sliding and 2.0 for bearing.

For seismic design, the factor of safety shall be 1.5 for overturning and 1.1 for sliding.

Ø = 34° for retained fill material to be retained by the mechanically stabilized earth wall.

Ø = 34° for foundation material the wall is to rest on.

Ø = 34° for selected granular backfill.

All concrete for leveling pad and coping shall be Class B or B-1 with f'c = 4,000 psi.

Panel reinforcement shall be epoxy coated.

A filter cloth meeting the requirements for a Separation Geotextile material shall be placed between the select granular backfill for structural systems and the backfill being retained by the mechanically stabilized earth wall system.

Front face of wall shall be vertical.

All stationing is along ℄ NB I-49.

The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed and placed to avoid damage by pile driving, guardrail post installation, utility and sign foundations. (See Roadway and Bridge plans.)

Coping shall be required on this structure.

The MSE wall system shall be a large block wall system in accordance with Sec 720.

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

The cost of joint filler, complete-in-place, will be considered completely covered by the contract unit price for Concrete Traffic Barrier (Type B). See roadway plans.

Total Length of wall = 216'-3⅛"

ESTIMATED QUANTITIES		
ITEM		QUANTITY
Mechanically Stabilized Earth Wall Systems	Sq. Ft.	4,369

Notes:
The boring logs or other factual records of subsurface data and investigations performed by the department for the design of this project are available from the Project Contact upon written request.

For Section A-A, B-B and C-C, see Sheet No. 3.

BENCHMARKS

BM-71-99-97 R.R. spike in West face of corner post 0.9 mi. South of Rte. H on county road SW of H-21, East of county road.
Elev. 925.19

BM-49-01-01 R.R. spike East of root of 1.2' wild cherry with blazed "△" West side of county road SW H-21. West of Gardner's chicken houses. BM is 1.475 miles South of Rte. H.
Elev. 949.43

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
9-9-10

DATE PREPARED 07/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 2
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7800

DESCRIPTION | DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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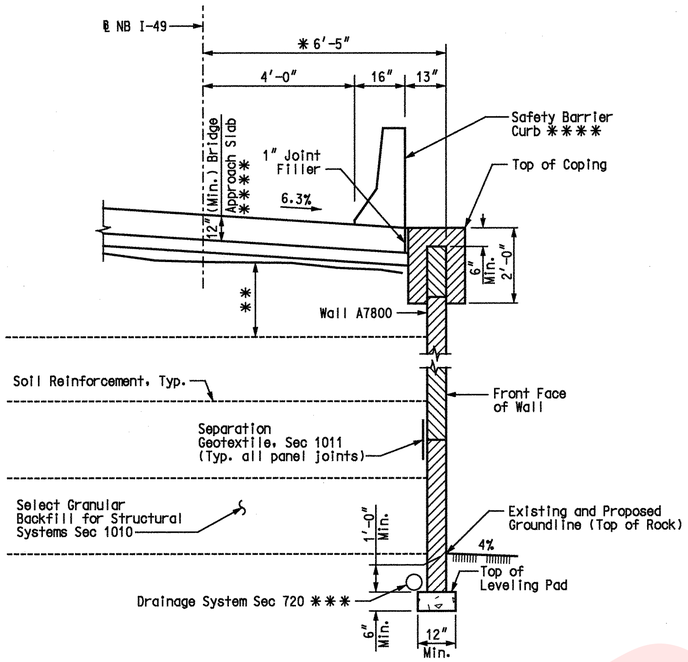
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Detailed JUL 2009
Checked AUG 2009

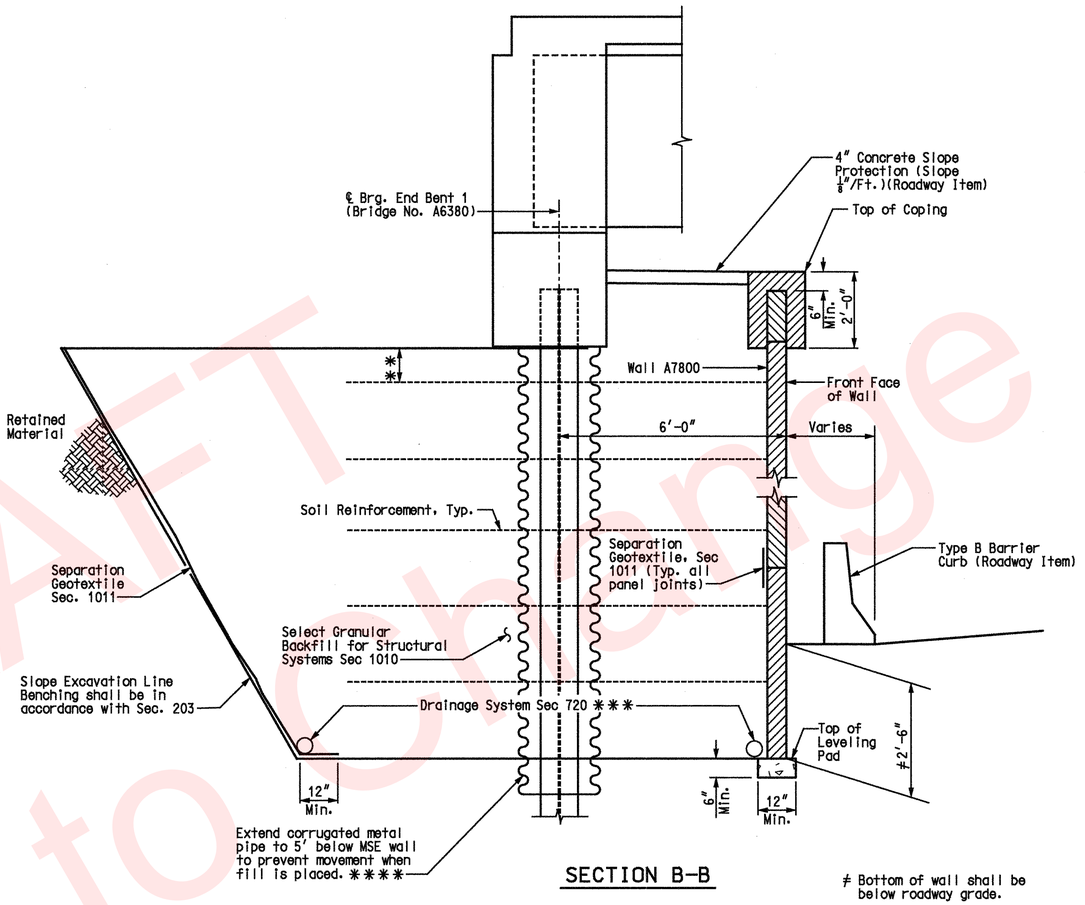
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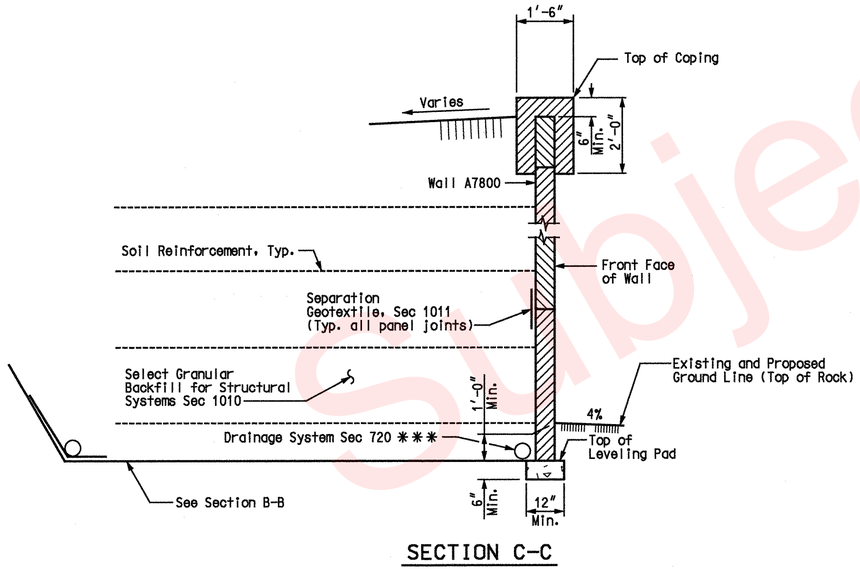


SECTION A-A



SECTION B-B

≠ Bottom of wall shall be below roadway grade.



SECTION C-C

* Dimensions are radial along curved portion of wall.

** Topmost layer of reinforcement shall be fully covered with select granular backfill for structural systems, as approved by the wall manufacturer, before placement of the Separation Geotextile.

*** Adjustment in the vertical alignment of the drainage pipes from that depicted in the plans may be necessary to ensure positive flow out of the drainage system.

**** Included in work for Bridge No. A6380

Outlet ends of pipes shall be located to avoid clogging or flow into the drainage system.

Note:
For location of Sections A-A, B-B and C-C, see Sheet No. 2.

TYPICAL SECTIONS

DRAFT
Subject to Change

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED	07/28/09
ROUTE	I-49
STATE	MO
DISTRICT	BR
SHEET NO.	3
COUNTY	McDONALD
JOB NO.	J7P0601
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A7800

DATE | DESCRIPTION

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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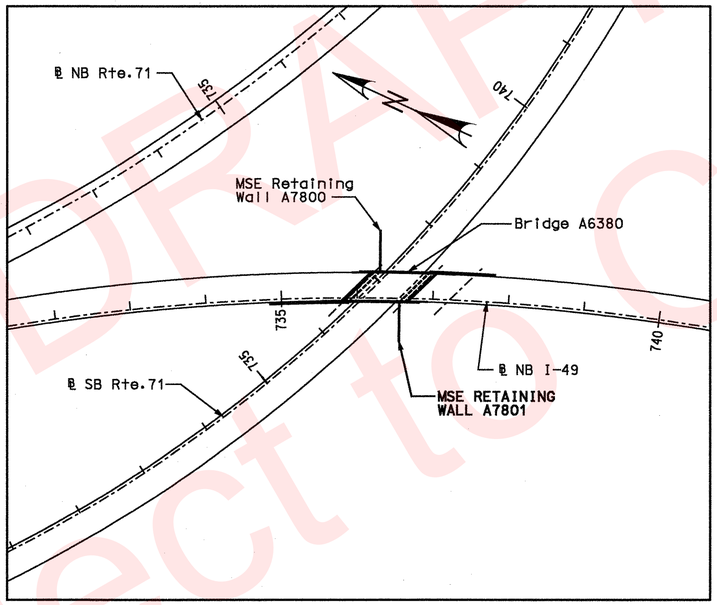
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SEC/SUR 22 TWP 21N RGE 32W



INDEX OF DRAWINGS

1 Title Sheet
2 General Plan and Elevation
3 Typical Sections

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STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
3-9-10

DATE PREPARED 07/28/09

ROUTE	STATE
I-49	MO

DISTRICT	SHEET NO.
BR	1

COUNTY McDONALD

JOB NO. J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A7801

DATE	DESCRIPTION

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

RETAINING WALL AT END BENT 2 OF BRIDGE A6380

STATE ROAD FROM RTE. H TO STATE LINE
ABOUT 2.6 MILES NORTH OF RTE. 90
STA. 736+55.41 (RTE. I-49)

STD. 611.60

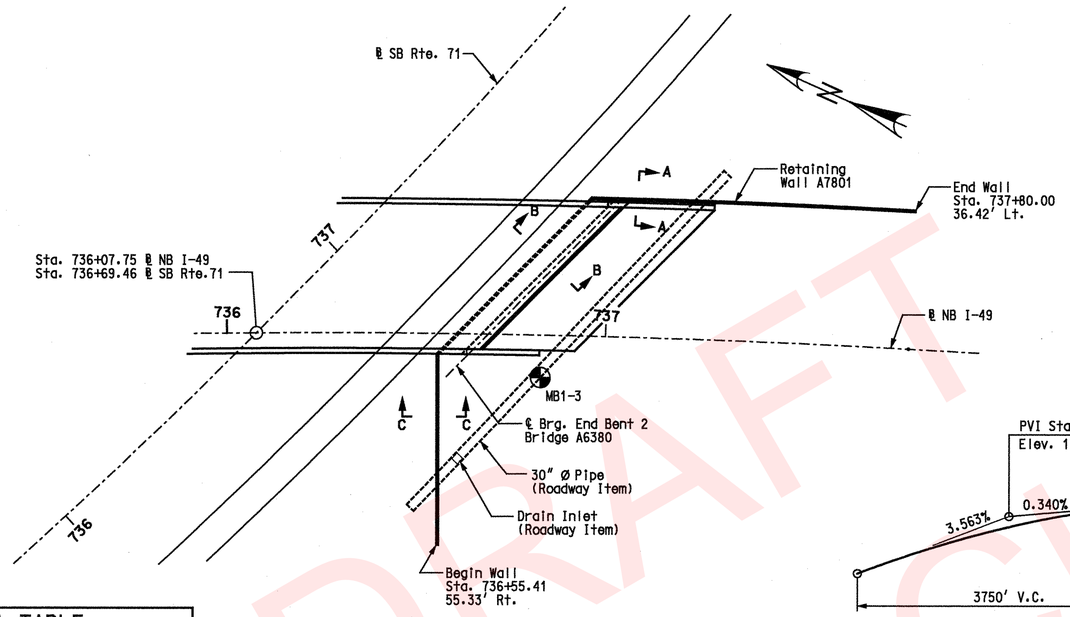
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Detailed JUL 2009
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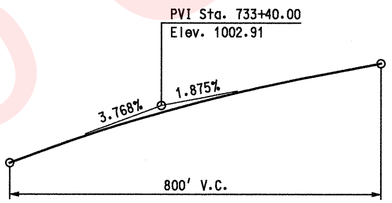
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PLAN

PROFILE GRADE – NB I-49

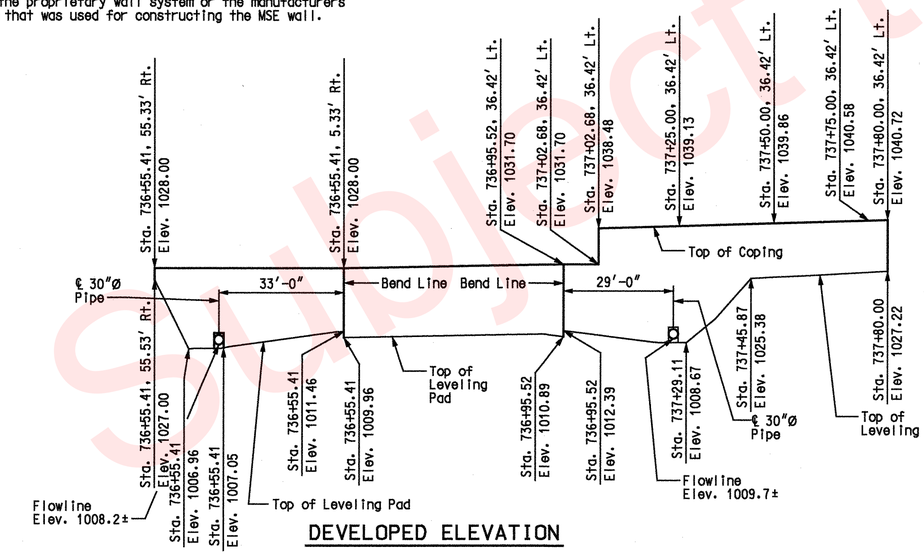


PROFILE GRADE – SB RTE. 71

MSE WALL SYSTEMS DATA TABLE

Proprietary Wall Systems		Combination Wall Systems			
Manufacturer	System	Facing Unit Manufacturer	Facing Unit	Geogrid Manufacturer	Geogrid

MSE Wall Systems Data Table is to be completed by MoDOT construction personnel to record the manufacturer of the proprietary wall system or the manufacturers of the combination wall system that was used for constructing the MSE wall.



DEVELOPED ELEVATION

CURVE DATA NB I-49

P.I. Sta. = 739+20.393
△ = 44°43'02" (Rt.)
D = 2°00'00.0"
L = 2235.86'
T = 1178.36
R = 2864.79'
SE = 6.3%

CURVE DATA SB RTE. 71

P.I. Sta. = 736+04.58
△ = 66°31'00" (Lt.)
Lc = 1987.22'
Ts = 1368.30'
R = 1909.86'
D = 3°00'00"
Ls = 230.00'
Θs = 3°27'00" (Lt.)
Xs = 229.92'
Ys = 4.62'
SE = 7.9%

GENERAL NOTES:

Design Specifications:
2002 – AASHTO 17th Edition.
Seismic performance category A.
Acceleration coefficient = 0.05

Factor of safety shall be 2.0 for overturning, 1.5 for sliding and 2.0 for bearing.

For seismic design, the factor of safety shall be 1.5 for overturning and 1.1 for sliding.

Ø = 34° for retained fill material to be retained by the mechanically stabilized earth wall.

Ø = 34° for foundation material the wall is to rest on.

Ø = 34° for selected granular backfill.

All concrete for leveling pad and coping shall be Class B or B-1 with f'c = 4,000 psi.

Panel reinforcement shall be epoxy coated.

A filter cloth meeting the requirements for a Separation Geotextile material shall be placed between the select granular backfill for structural systems and the backfill being retained by the mechanically stabilized earth wall system.

Front face of wall shall be vertical.

All stationing is along ℄ NB I-49.

The contractor shall be solely responsible to coordinate construction of the wall with bridge and roadway construction and ensure that the bridge and roadway construction, resulting or existing obstructions, shall not impact the construction or performance of the wall. Soil reinforcement shall be designed and placed to avoid damage by pile driving, guardrail post installation, utility and sign foundations. (See Roadway and Bridge plans.)

Coping shall be required on this structure.

The MSE wall system shall be a large block wall system in accordance with Sec 720.

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

The cost of joint filler, complete-in-place, will be considered completely covered by the contract unit price for Concrete Traffic Barrier (Type B). See roadway plans.

Total Length of wall = 192'-4½"

ESTIMATED QUANTITIES

ITEM		QUANTITY
Mechanically Stabilized Earth Wall Systems	Sq. Ft.	3,668

Notes:
The boring logs or other factual records of subsurface data and investigations performed by the department for the design of this project are available from the Project Contact upon written request.

For Section A-A, B-B and C-C, see Sheet No. 3.

Denotes boring location.

BENCHMARKS

BM-71-99-97 R.R. spike in West face of corner post 0.9 mi. South of Rte. H on county road SW of H-21, East of county road. Elev. 925.19

BM-49-01-01 R.R. spike East of root of 1.2' wild cherry with blazed "△" West side of county road SW H-21, West of Gardner's chicken houses. BM is 1.475 miles South of Rte. H. Elev. 949.43

STATE OF MISSOURI
GINA D. HORNER
NUMBER E-30413
REGISTERED PROFESSIONAL ENGINEER
9-9-10

DATE PREPARED

ROUTE	STATE
I-49	MO
DISTRICT	SHEET NO.
BR	2

COUNTY: McDONALD
JOB NO.: J7P0601
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A7801

DESCRIPTION	DATE

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

HNTB
715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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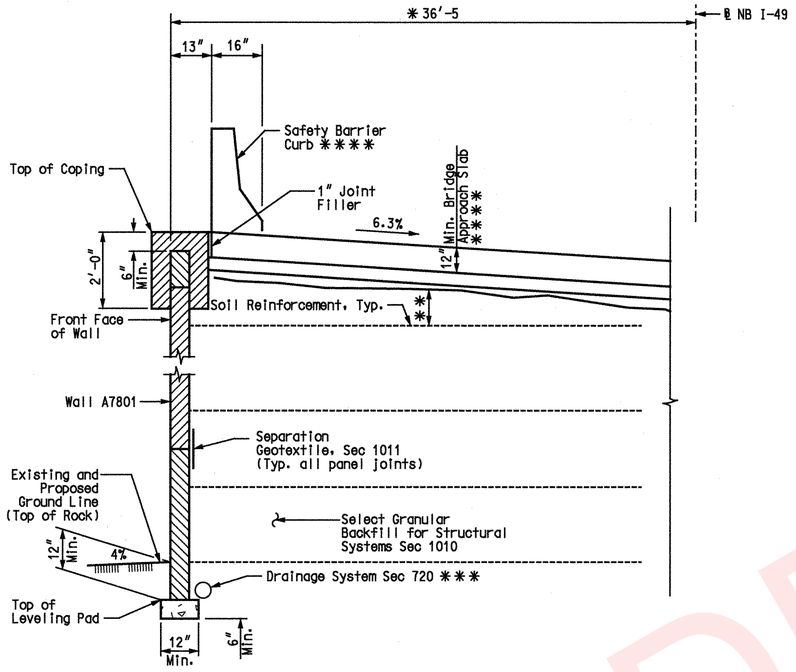
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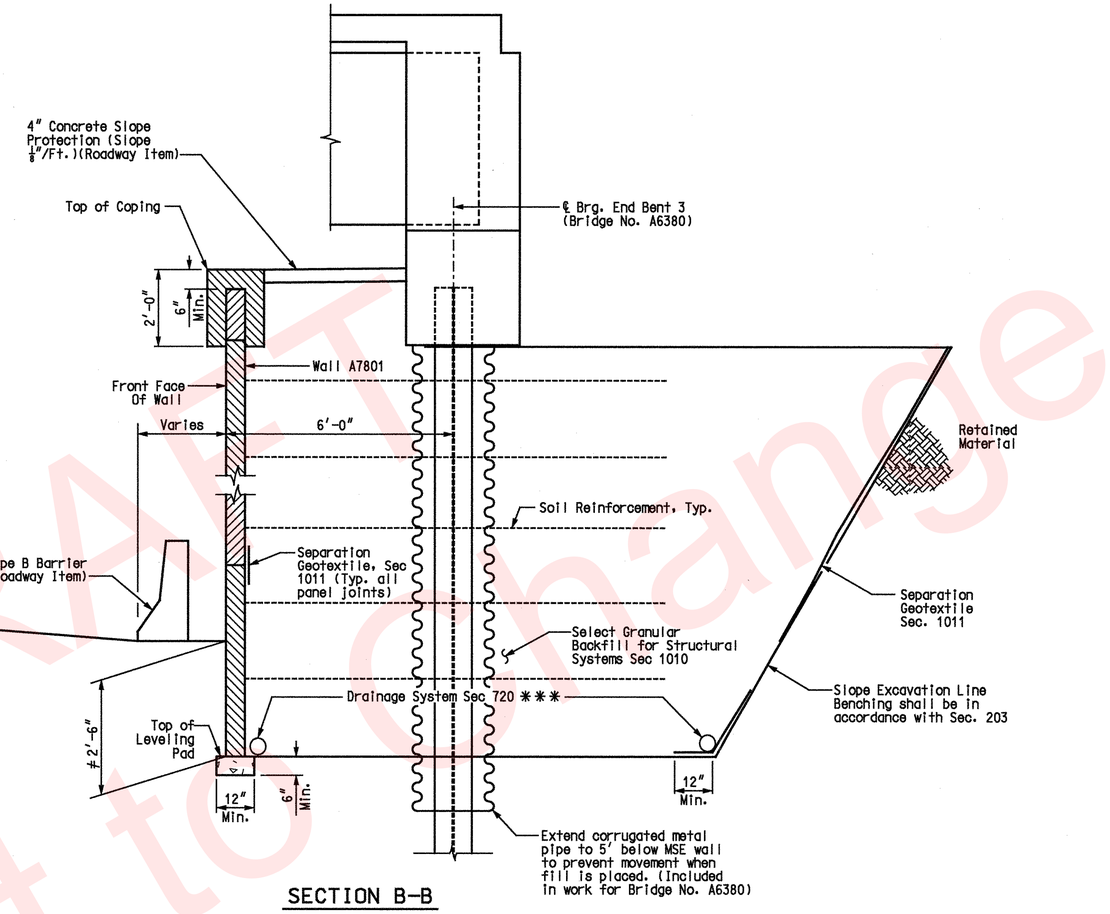
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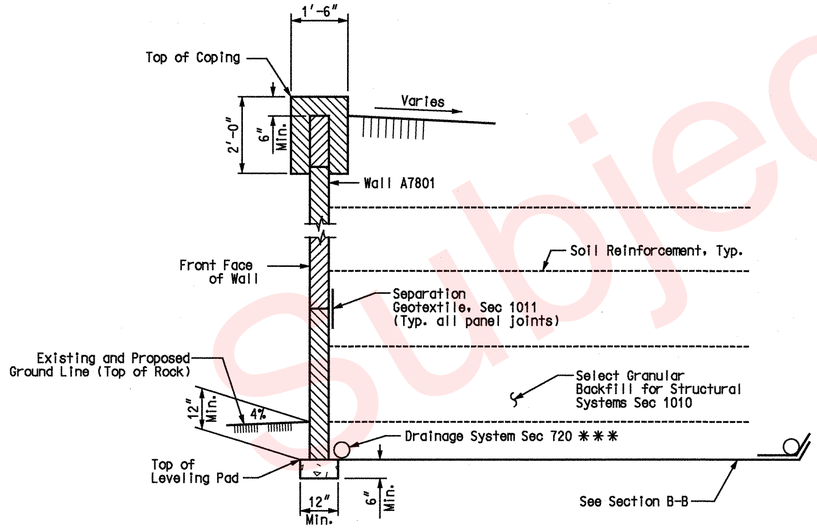


SECTION A-A



SECTION B-B

≠ Bottom of wall shall be below roadway grade.



SECTION C-C

* Dimensions are radial along curved portion of wall.

** Topmost layer of reinforcement shall be fully covered with select granular backfill for structural systems, as approved by the wall manufacturer, before placement of the Separation Geotextile.

*** Adjustment in the vertical alignment of the drainage pipes from that depicted in the plans may be necessary to ensure positive flow out of the drainage system.

**** Included in work for Bridge No. A6380

Outlet ends of pipes shall be located to avoid clogging or flow into the drainage system.

Note:
For location of Sections A-A, B-B and C-C, see Sheet No. 2.

TYPICAL SECTIONS

DRAFT
Subject to Change

GINA D. HORNER NUMBER E-30413 REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI
3-9-10

DATE PREPARED 07/28/09
ROUTE I-49 | STATE MO
DISTRICT BR | SHEET NO. 3
COUNTY McDONALD
JOB NO. J7P0601
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A7801

DATE	DESCRIPTION

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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715 KIRK DRIVE
KANSAS CITY, MO 64105-1310
TELEPHONE (816) 472-1201
CERTIFICATE OF AUTHORITY NO. 001270

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Detailed JUL 2009
Checked AUG 2009

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