

A.A.D.T. - 2014 = 1179
A.A.D.T. - 2029 = 1700
D.H.V. = 10%
T = 25%
V = 40 M.P.H.
D = 50%

FUNCTIONAL CLASSIFICATION- RURAL MAJOR COLLECTOR

TELEPHONE - AT&T
GLENN HOGENMILLER
122 N. 2ND ST.
FESTUS, MO 63028

ELECTRIC - AMEREN
WILLIAM ROSENER
6450 HWY MM
HOUSE SPRINGS, MO 63051

GAS - LACLEDE GAS
BRIAN LANGENBACHER
4118 SHREWSBURY AVE
SHREWSBURY, MO 63119

C1 - WATER
PUBLIC WATER SUPPLY DISTRICT C1
P.O. BOX 430
BARNHART, MO 63012

CABLE - CHARTER
DARYL STEFFEN
815 CHARTER COMMONS DRIVE
TOWN & COUNTRY, MO 63017

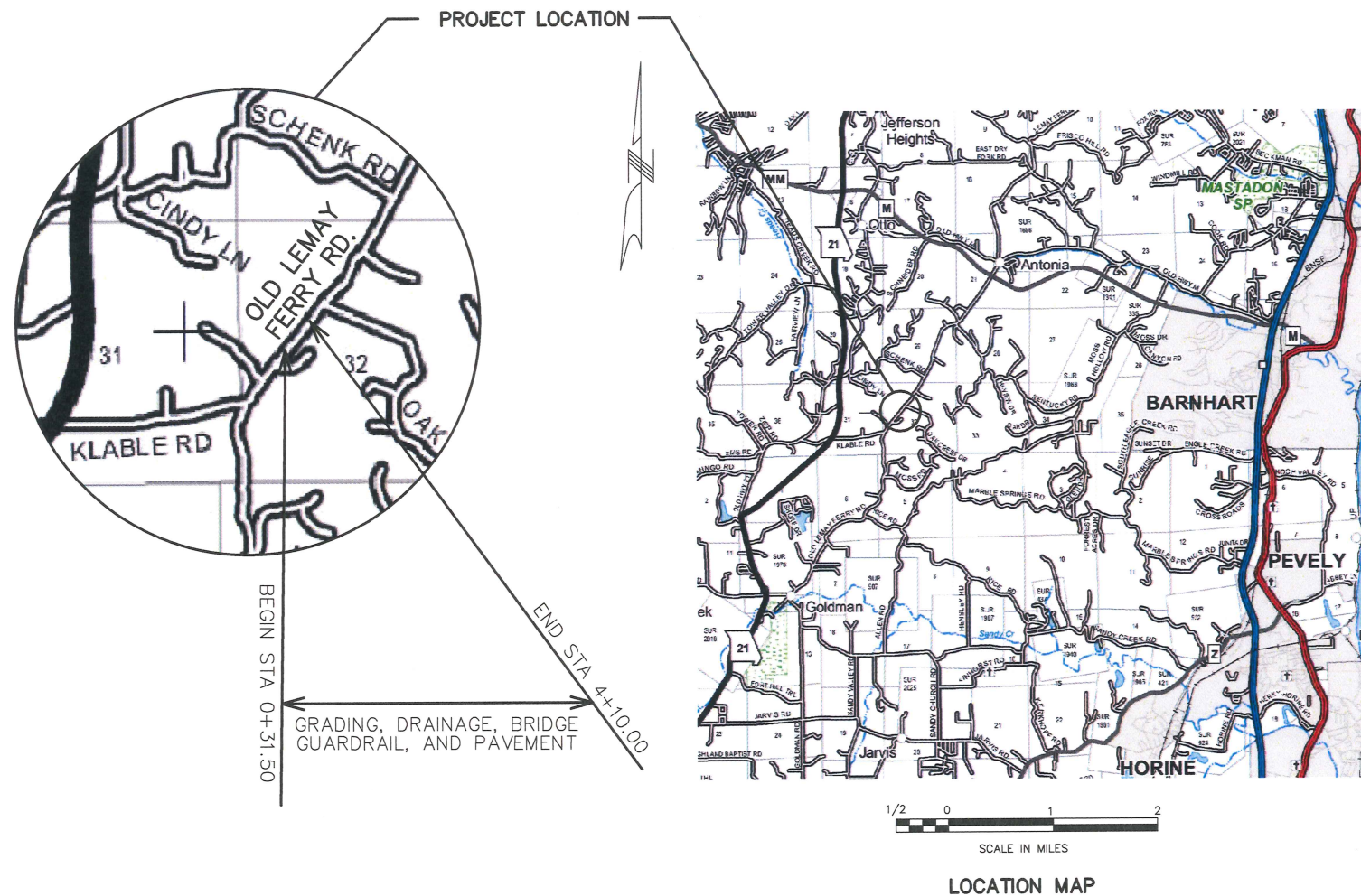
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	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
PROPERTY LINE		
UTILITIES		
FIBER OPTICS		
OVERHEAD TELEPHONE		
UNDERGROUND TELEPHONE		
OVERHEAD POWER		
UNDERGROUND POWER		
OVERHEAD POWER & TELEPHONE		
GAS		
WATER		
MANHOLE		
FIRE HYDRANT		
WATER VALVE		
WATER METER		
DROP INLET		
DITCH BLOCK		
GROUND MOUNTED SIGN		
LIGHT POLE		
H-FRAME POWER POLE		
TELEPHONE PEDESTAL		
FENCE		
CHAIN LINK		
WOVEN WIRE		
GATE POST		
BENCHMARK		

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

FINAL PLANS
APRIL, 2015

SECTION 32, TOWNSHIP 42 NORTH, RANGE 5 EAST
JEFFERSON COUNTY, MISSOURI



BENCHMARK INFORMATION:
Elevations on this plot were derived from observations taken on September 15th, 2011 using the Missouri Highway and Transportation Commission Global Navigation System Real Time Network.

Temporary Benchmark - TBM 'A'
TBM 'A' is an "L" cut on the East end of the Southern Headwall for Culvert #0113-45805-005 as shown below.

Sta. 1+97.27, 16.1' Rt. Elevation=654.97'

APPROVED FOR SUBMITTAL

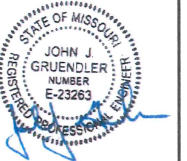
JASON JONAS, P.E. DIRECTOR OF PUBLIC WORKS

DESCRIPTION	NUMBER
TITLE SHEET -----	1
TYPICAL SECTIONS (TS) (1 SHEET) -----	2
QUANTITIES (QU) (1 SHEET) -----	2B
PLAN—PROFILE (PP) -----	3
CONTROL POINTS -----	4
DETOUR PLAN -----	5
TRAFFIC CONTROL/EROSION CONTROL PLAN —	6
PAVEMENT MARKING PLAN (PM) -----	7
ROCK BLANKET PLAN -----	8
BRIDGE DRAWINGS (B) -----	9–26
CROSS SECTIONS (XS) -----	27–31

DO NOT DISTURB	DND
TYPICAL	TYP
USE IN PLACE	UIP
SANITARY	SAN
MANHOLE	MH
OFFSET	OFF.
ELEVATION	EL. OR ELEV
RIGHT-OF-WAY	R/W
BASELINE	BL
CENTERLINE	CL
PROFILE GRADE	P.G.
POLYVINYL CHLORIDE	PVC
CORRUGATED METAL PIPE	CMP
EXISTING	EXIST OR EX
STATION	STA
DOUBLE SOLID YELLOW STRIPING	DSY
SOLID WHITE STRIPING	SW
FLOWLINE	FL
TANGENT LENGTH	T
REMOVE OR RADIUS	R
NORTH	N
EAST	E
POINT OF CURVATURE	PC
POINT OF REVERSE CURVATURE	PRC
POINT OF INTERSECTION	PI
POINT OF TANGENT	PT
VERTICAL POINT OF INTERSECTION	VPI
VERTICAL POINT OF CURVATURE	VPC
VERTICAL POINT OF TANGENT	VPT
TO BE REMOVED	TBR
TO BE REMOVED AND REPLACED BY OTHERS	TBR&RBO
CURVE LENGTH	L
TRIBUTARY	TRIB
DRIVEWAY	DWY
RIGHT	RT
LEFT	LT
REMAINING	REM
PROPOSED	PROP.
CONTROL POINT	CP#1
AGGREGATE	AGG
SHOULDER	SHLDR
ADJUST TO GRADE	ATG
NUMBER	NO.
EDGE OF PAVEMENT	EOP
BEGIN PROJECT	BP
END PROJECT	EP

BEGINNING OF PROJECT	STA.	0+31.50	
END OF PROJECT	STA.	4+10.00	
APPARENT LENGTH		378.50	FEET
EQUATIONS AND EXCEPTIONS:		NONE	
TOTAL CORRECTIONS		0.00	FEET
NET LENGTH OF PROJECT		378.50	FEET

COUNTY ROAD: OLD LEMAY FERRY ROAD



DATE	
4/30/2015	
DATE PREPARED	
4/30/2015	
ROUTE	STATE
	MO
DISTRICT	SHEET NO.
SL	1
COUNTY	
JEFFERSON	
JOB NO.	
CONTRACT ID.	
PROJECT NO.	
PW15113BXC	
BRIDGE NO.	
1970087	

[illegible]

P.O. BOX 100
HILLSBORO, MO
(636-797-5340) PHONE
(636-797-5565) FAX



STRUCTURES, INC.
A STRUCTURAL ENGINEERING FIRM
Gravois Road St. Louis MO 63123 314.838.6650
CERT. OF AUTHORITY: E-2006035000

REMOVAL OF IMPROVEMENTS (202-20.10)						
BEGIN STATION	END STATION	ROADWAY	LOCATION	DESCRIPTION	QUANTITY	UNITS
0+31.50		OLD LEMAY FERRY ROAD	LT & RT	SAWCUT	26	LF
0+31.50	4+10	OLD LEMAY FERRY ROAD	LT & RT	PAVEMENT REMOVAL	1074	SY
1+35		OLD LEMAY FERRY ROAD	RT	SIGN REMOVAL	1	EA
1+78		OLD LEMAY FERRY ROAD	LT	SIGN REMOVAL	1	EA
1+81		OLD LEMAY FERRY ROAD	RT	SIGN REMOVAL	1	EA
1+78	1+98	OLD LEMAY FERRY ROAD	RT	RIPRAP	24	SY
1+99		OLD LEMAY FERRY ROAD	RT	SIGN REMOVAL	1	EA
2+05	2+42	OLD LEMAY FERRY ROAD	RT	GRAVEL DRIVE	82	SY
2+27		OLD LEMAY FERRY ROAD	LT	SIGN REMOVAL	1	EA
2+50		OLD LEMAY FERRY ROAD	RT	MAILBOX RELOCATION	1	EA
2+63		OLD LEMAY FERRY ROAD	LT	SIGN REMOVAL	1	EA
2+83	3+00	OLD LEMAY FERRY ROAD	LT	RIPRAP	11	SY
4+10		OLD LEMAY FERRY ROAD	LT & RT	SAWCUT	25	LF
TOTAL (202-20.10)					1	LS

GRADING AND REMOVALS								REMARKS
BEGIN STATION	END STATION	ROADWAY	LOCATION	CLEARING AND GRUBBING ACRE 201-30.00	REMOVAL OF IMPROVEMENTS LS 202-20.10	UNCLASSIFIED EXCAVATION CU YD 203-50.00	COMPACTING EMBANKMENT CU YD 203-60.00	
0+31.50	4+10	OLD LEMAY FERRY ROAD	LT & RT	0.7	1	199	338	
1+76	2+16	CREEK	LT & RT			154		
TOTAL				0.7	1	353	338	EXCESS MATERIAL TO BE DISPOSED OF OFF SITE AT A LOCATION PROVIDED BY CONTRACTOR

BASES AND AGGREGATE SURFACES						
BEGIN STATION	END STATION	ROADWAY	LOCATION	TYPE 5 AGGREGATE FOR BASE (4 in. THICK) SQ YD 304-05.04	GRAVEL (TYPE A) (8 in. THICK) SQ YD 310-10.03	REMARKS
0+31.50	1+50.98	OLD LEMAY FERRY ROAD	LT & RT	422		
2+40.62	4+10	OLD LEMAY FERRY ROAD	LT & RT	605		
2+76.69		OLD LEMAY FERRY ROAD	RT	23		TYPE I DRIVEWAY APPROACH
2+00	2+83	OLD LEMAY FERRY ROAD	RT		117	GRAVEL DRIVEWAY
TOTAL				1050	117	

FLEXIBLE PAVEMENTS						
BEGIN STATION	END STATION	ROADWAY	LOCATION	BITUMINOUS PAVEMENT MIXTURE PG4-22 (BP-1) TONS 401-12.09	BITUMINOUS PAVEMENT MIXTURE PG4-22 (BASE) TONS 401-30.00	REMARKS
0+31.50	1+50.98	OLD LEMAY FERRY ROAD	LT & RT	47.7	193.3	
2+40.62	4+10	OLD LEMAY FERRY ROAD	LT & RT	70.3	284.5	
2+76.69		OLD LEMAY FERRY ROAD	RT	2.7	10.5	TYPE I DRIVEWAY APPROACH
TOTAL				120.7	488.3	

INCIDENTAL CONSTRUCTION																		
BEGIN STATION	END STATION	ROADWAY	LOCATION	GUARDRAIL TYPE A LF 606-10.00	TRANSITION SECTION, 6.5 FT. POSTS EA 606-23.00A	BRIDGE ANCHOR SECTION (THRIE BEAM) EA 606-24.00	TYPE A CRASHWORTHY END TERMINAL EA 606-30.15	FURNISHING TYPE 2 ROCK BLANKET CU YD 611-30.20	PLACING TYPE 2 ROCK BLANKET CU YD 611-30.40	CONSTRUCTION SIGNS SQ.FT 616-10.05	TYPE III MOVEABLE BARRICADE WITH LIGHT EA 616-10.31	CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED, CONTRACTOR RETAINED EA 616-10.98	MOBILIZATION LS 618-10.00	4 IN. WHITE ACRYLIC WATERBORNE PAVEMENT MARKING PAINT LF 620-60.00B	4 IN. YELLOW ACRYLIC WATERBORNE PAVEMENT MARKING PAINT LF 620-60.01B	PERMANENT EROSION CONTROL GEOTEXTILE SY 624-01.03A	CONTRACTOR FURNISHED SURVEYING AND STAKING LS 627-40.00	REMARKS
0+31.50	4+10	OLD LEMAY FERRY ROAD	LT & RT								6				777			
0+31.50	4+10	OLD LEMAY FERRY ROAD	LT											385				
0+31.50	4+10	OLD LEMAY FERRY ROAD	RT											392				
1+14	1+64	OLD LEMAY FERRY ROAD	RT		1	1	1											25'-LONG CRASHWORTHY TERMINAL
1+33	1+83	OLD LEMAY FERRY ROAD	LT		1	1	1											25'-LONG CRASHWORTHY TERMINAL
2+08	2+57	OLD LEMAY FERRY ROAD	RT		1	1	1											25'-LONG CRASHWORTHY TERMINAL
2+27	2+52	OLD LEMAY FERRY ROAD	LT		1	1												
2+52	3+81	OLD LEMAY FERRY ROAD	LT	125														
3+81	4+06	OLD LEMAY FERRY ROAD	LT				1											25'-LONG CRASHWORTHY TERMINAL
1+42	1+96	OLD LEMAY FERRY ROAD	RT					73	73							167		
1+66	1+96	OLD LEMAY FERRY ROAD	LT					60	60							125		
1+96	2+14	OLD LEMAY FERRY ROAD	RT					52	52							124		
1+96	3+00	OLD LEMAY FERRY ROAD	LT					115	115							275		
TOTAL				125	4	4	4	300	300	220	6	2	1	777	777	691	1	

ROADSIDE DEVELOPMENT							
BEGIN STATION	END STATION	ROADWAY	LOCATION	SEEDING - COOL SEASON MIXTURES ACRE 805-10.00A	TEMPORARY SEEDING AND MULCHING ACRE 806-10.17	SILT FENCE LF 806-10.19	TYPE I DITCH CHECK EA 806-10.22
0+31.50	1+84	OLD LEMAY FERRY ROAD	LT	0.031	0.031		
0+31.50	1+65	OLD LEMAY FERRY ROAD	RT	0.042	0.042		2
2+06	4+10	OLD LEMAY FERRY ROAD	RT	0.026	0.026		1
2+27	4+10	OLD LEMAY FERRY ROAD	LT	0.176	0.176		
0+31.50	1+42	OLD LEMAY FERRY ROAD	LT			111	
2+10	3+20	OLD LEMAY FERRY ROAD	RT			125	
1+67	2+00	CREEK	LT & RT			100	
1+94	2+82	CREEK	LT & RT			120	
TOTAL				0.3	0.3	456	3

QUANTITIES
Old Lemay Ferry Road over
Tributary to Glaize Creek



DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE STATE
MO

DISTRICT SHEET NO.
SL 2B

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

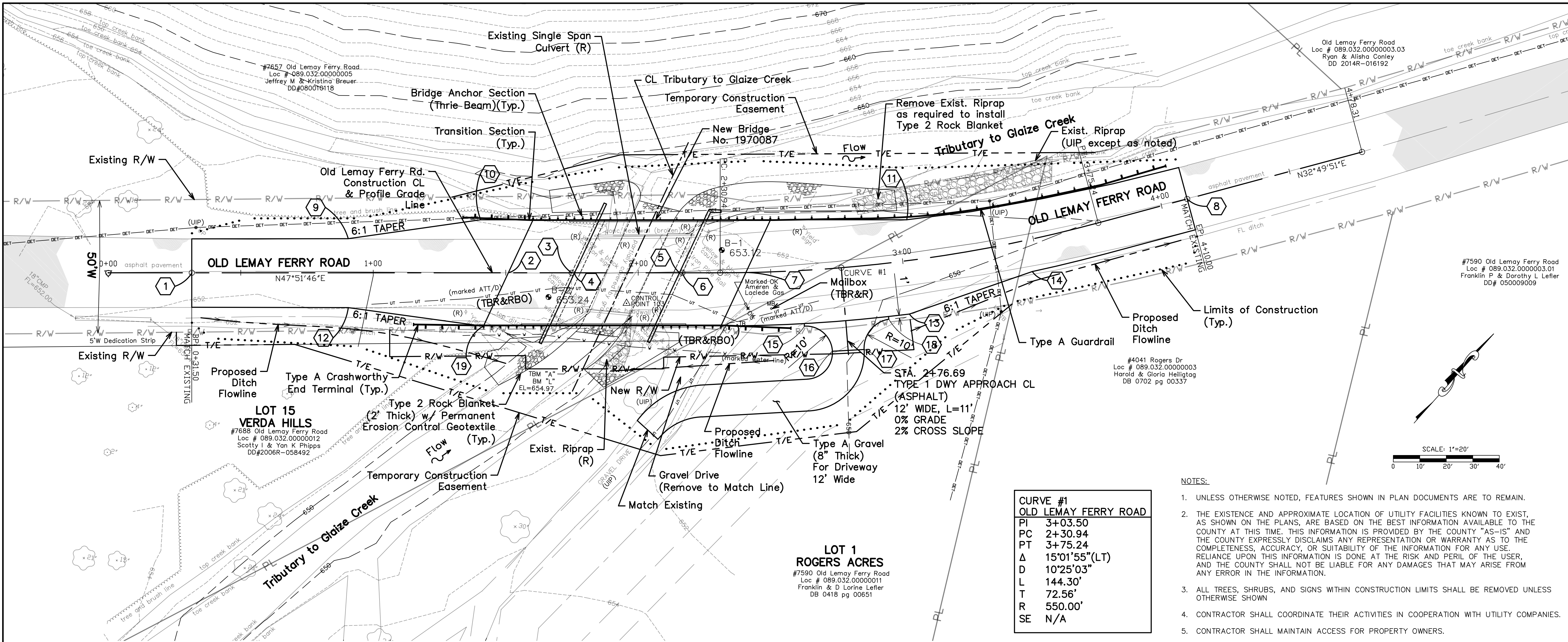
BRIDGE NO.
1970087

DESCRIPTION																		
DATE																		

JEFFERSON COUNTY PUBLIC
WORKS DEPARTMENT

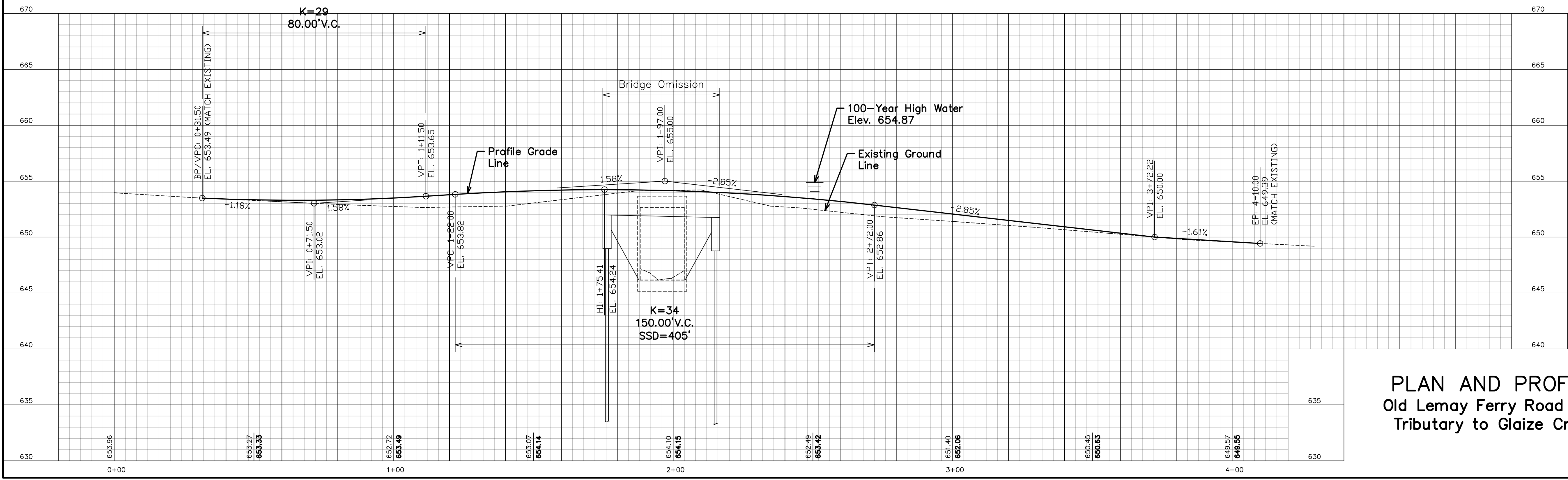


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CERT. OF AUTHORITY: E-2006035000



CURVE #1 OLD LEMAY FERRY ROAD	
PI	3+03.50
PC	2+30.94
PT	3+75.24
Δ	15°01'55"(LT)
D	10°25'03"
L	144.30'
T	72.56'
R	550.00'
SE	N/A

- NOTES:
- UNLESS OTHERWISE NOTED, FEATURES SHOWN IN PLAN DOCUMENTS ARE TO REMAIN.
 - THE EXISTENCE AND APPROXIMATE LOCATION OF UTILITY FACILITIES KNOWN TO EXIST, AS SHOWN ON THE PLANS, ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COUNTY AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COUNTY "AS-IS" AND THE COUNTY EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE. RELIANCE UPON THIS INFORMATION IS DONE AT THE RISK AND PERIL OF THE USER, AND THE COUNTY SHALL NOT BE LIABLE FOR ANY DAMAGES THAT MAY ARISE FROM ANY ERROR IN THE INFORMATION.
 - ALL TREES, SHRUBS, AND SIGNS WITHIN CONSTRUCTION LIMITS SHALL BE REMOVED UNLESS OTHERWISE SHOWN.
 - CONTRACTOR SHALL COORDINATE THEIR ACTIVITIES IN COOPERATION WITH UTILITY COMPANIES.
 - CONTRACTOR SHALL MAINTAIN ACCESS FOR PROPERTY OWNERS.



PLAN AND PROFILE
Old Lemay Ferry Road over
Tributary to Glaize Creek

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
JOHN J. GRUENDLER
NUMBER E-23263

DATE
4/30/2015
DATE PREPARED
4/30/2015
ROUTE
SL
DISTRICT
JEFFERSON
COUNTY
JOB NO.
CONTRACT ID.
PROJECT NO.
PW15113BXC
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1970087

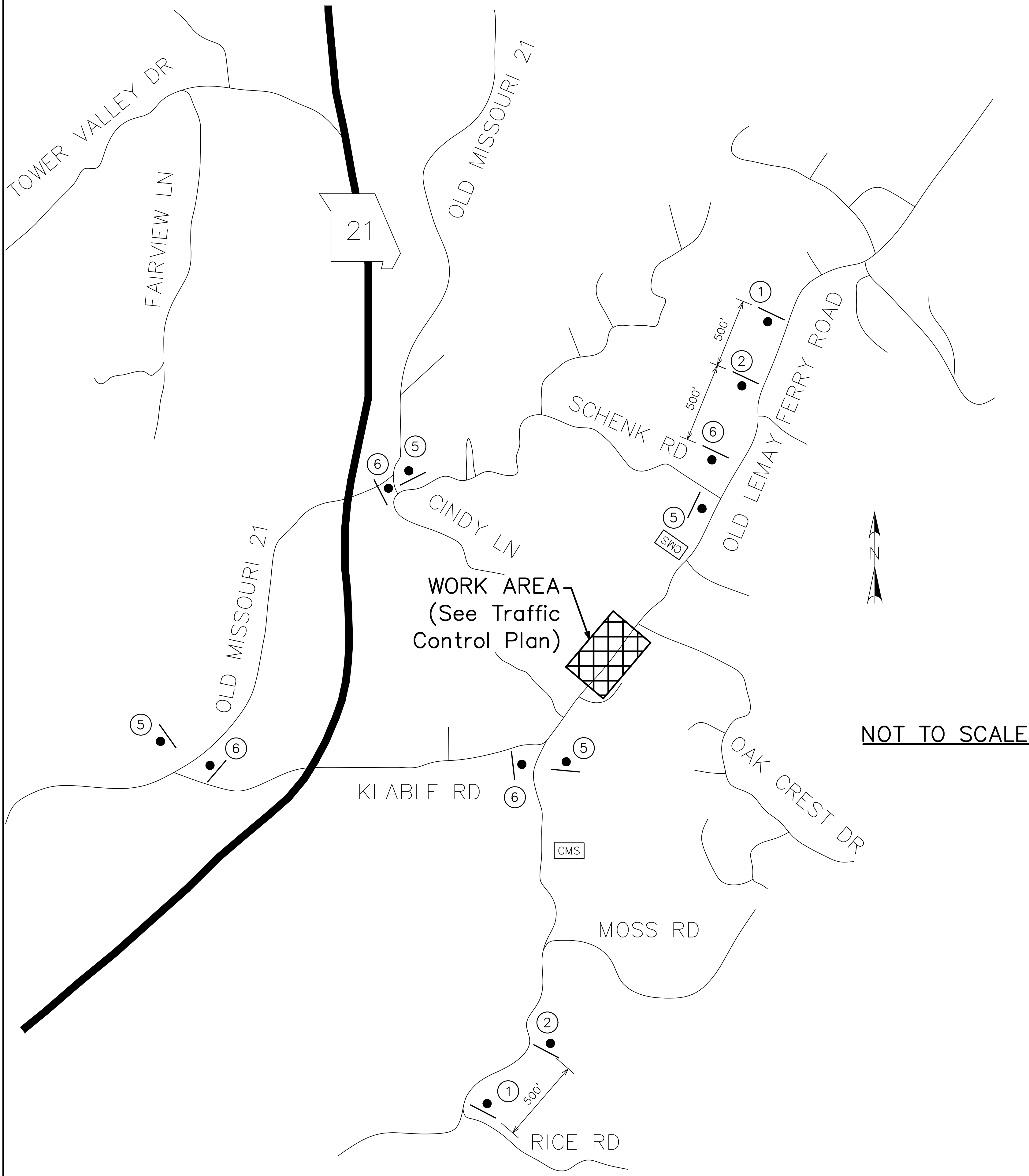
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DATE

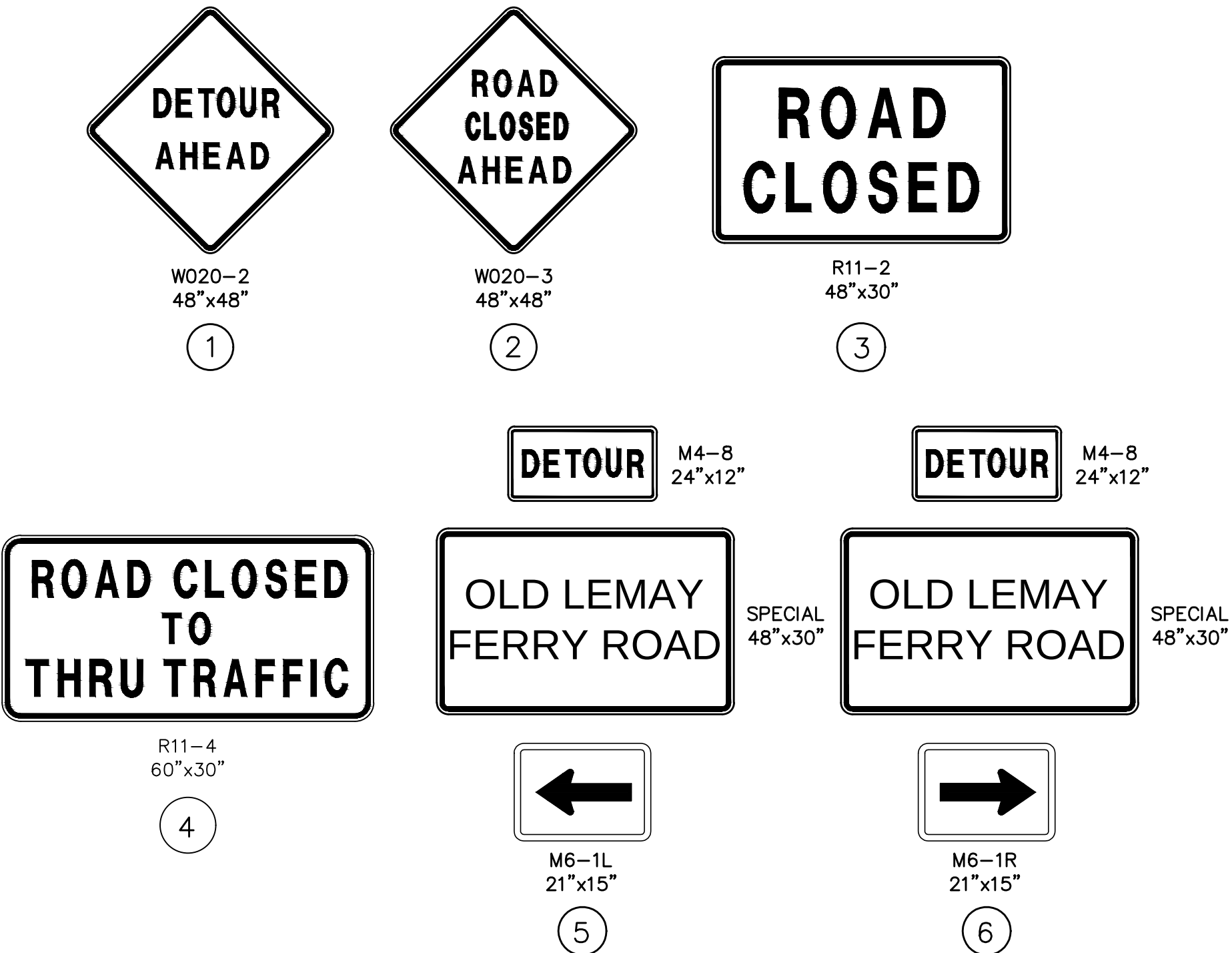
JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT
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CERT. OF AUTHORITY: E-2006035000



TRAFFIC CONTROL SIGNAGE



SIGN	SIZE (IN)	AREA (SQ.FT)	COLOR		QTY	TOTAL AREA (SQ.FT)	DESCRIPTION
			SYM., LET., BRDR.	BACK GROUND			
WARNING SIGNS							
W020-2	48x48	16.00	BK	FL. OR	2	32	DETOUR AHEAD
W020-3	48x48	16.00	BK	FL. OR	2	32	ROAD CLOSED AHEAD
GUIDE SIGNS							
M4-8	24X12	2.00	BK	FL. OR	8	16	DETOUR (PLAQUE)
M6-1L	21X15	2.19	BK	FL. OR	4	8.76	DIRECTIONAL ARROW (LEFT)
M6-1R	21X15	2.19	BK	FL. OR	4	8.76	DIRECTIONAL ARROW (RIGHT)
SPECIAL	48X30	10.00	BK	FL. OR	8	80	"OLD LEMAY FERRY ROAD"
REGULATORY SIGNS							
R11-2	48X30	10.00	BK	FL. OR	3	30	ROAD CLOSED
R11-4	60X30	12.50	BK	FL. OR	1	12.5	ROAD CLOSED TO THRU TRAFFIC
616-10.05 CONSTRUCTION SIGNS TOTAL						220	

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- SIGN (DOUBLE SIDED)
- FLAGGER
- CONE
- CHANNELIZER
- TYPE II MOVEABLE BARRICADE W/ LIGHTS
- CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED, CONTRACTOR RETAINED

TRAFFIC CONTROL NOTES:

- Traffic Control shall be furnished, installed, and maintained in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and MoDOT Standard Plan 616.10 for Traffic Control Devices.
- Contractor is responsible for utility locates prior to placing sign posts. Contractor shall contact Missouri One Call (Dig-Rite) prior to installing signs.
- Contractor shall follow dimensions shown for sign spacing. Do not scale drawing.
- Sign placement may be modified in the field by the Engineer as needed for greater visibility.
- Install all traffic control devices and signs prior to closing road. Contractor shall cover all existing signs that conflict with the Detour/Traffic Control Plan.
- Contractor shall maintain access to private properties adjacent to work area at all times. Driveways shall be constructed one-half at a time to allow traffic access if necessary.
- Contractor shall coordinate message displayed on Changeable Message Sign with Engineer.

DETOUR PLAN
Old Lemay Ferry Road over
Tributary to Glaize Creek

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE	STATE
SL	MO
DISTRICT	SHEET NO.
SL	5

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

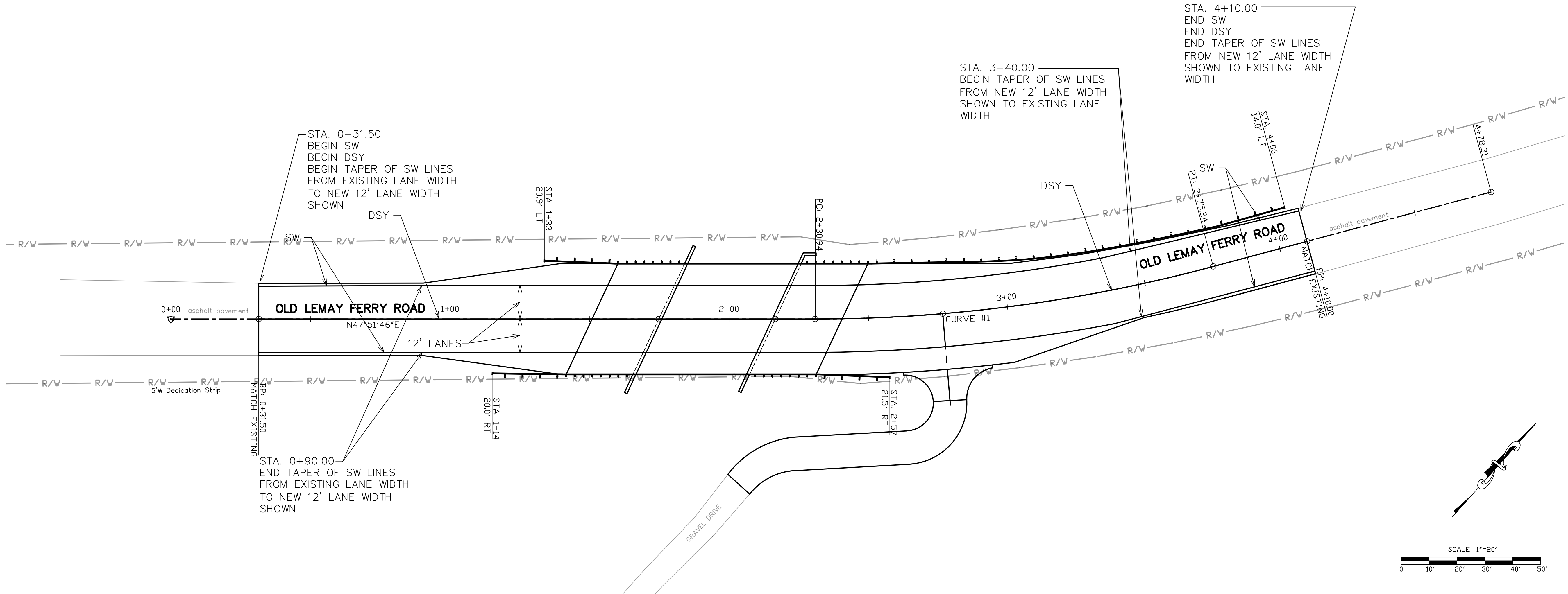
DESCRIPTION									
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DATE									
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JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

P.O. BOX 100
HILLSBORO, MO
(636-797-5340) PHONE
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STRUCTURES, INC.
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8815 Gravois Road - St. Louis, MO 63123 - 314.638.6650
CERT. OF AUTHORITY: E-2006035000



ABBREVIATIONS:

DSY - 4" DOUBLE SOLID YELLOW LINE

SW - 4" SOLID WHITE LINE

- NOTES:
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND MISSOURI STANDARD PLANS FOR HIGHWAY CONSTRUCTION.
 - REFER TO M&DOT STANDARD PLAN 903.02 FOR SIGN CONSTRUCTION DETAILS AND STANDARD PLAN 903.03 FOR MOUNTING AND INSTALLATION DETAILS.
 - PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
 - EXISTING PAVEMENT MARKINGS WHICH CONFLICT WITH THE PROPOSED STRIPING SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
 - ALL PAVEMENT MARKING MATERIAL SHALL BE ACRYLIC WATERBORNE PAINT.
 - REFER TO PLAN SHEET FOR ADDITIONAL DIMENSIONS.
 - END OF GUARDRAIL LOCATIONS SHOWN ARE APPROXIMATE. AFTER BRIDGE GUARD RAIL (THRIE BEAM) IS ERECTED, CONTRACTOR SHALL INSTALL GUARDRAIL SECTIONS BEGINNING WITH BRIDGE ANCHOR SECTIONS (THRIE BEAM) AND CONTINUE WORKING AWAY FROM BRIDGE.

DISCLAIMER

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PAVEMENT MARKINGS PLAN

Old Lemay Ferry Road over

Tributary to Glaize Creek

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
JOHN J. GRUENDLER
NUMBER E-23263

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE
SL

STATE
MO

DISTRICT
SL

SHEET NO.
7

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

DESCRIPTION

DATE

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

P.O. BOX 100
HILLSBORO, MO
(636-797-5340) PHONE
(636-797-5565) FAX

MISSOURI
DIVISION OF
TRANSPORTATION

4848

STRUCTURES, INC.
A STRUCTURAL ENGINEERING FIRM

8615 Gravois Road - St. Louis, MO 63123 - 314.638.6660

CERT. OF AUTHORITY: E-2006035000

8615 Gravois Road · St Louis, MO 63123 · 314.638.6650

CERT. OF AUTHORITY: E-2006035000

Estimated Quantities				
Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	110		110
Removal of Bridges	lump sum			1
Bridge Approach Slab (Bridge)	sq. yard		222	222
Structural Steel Piles (12 in.)	linear foot	282		282
Pile Point Reinforcement	each	12		12
Class B Concrete (Substructure)	cu. yard	35.2		35.2
Reinforced Concrete Slab Overlay	sq. yard		176	176
17" Prestressed Concrete Adjacent Box Beam	linear foot		396	396
Reinforcing Steel (Epoxy Coated)	pound	6450		6450
Penetrating Sealer	sq. yard		22	22
Bridge Guardrail (Thrie Beam)	linear foot		88	88
Vertical Drain at End Bents	each		2	2
Plain Neoprene Bearing Pad	each		22	22

All concrete and reinforcement in the Reinforced Concrete Slab Overlay is included in the Estimated Quantities for Reinforced Concrete Slab Overlay.

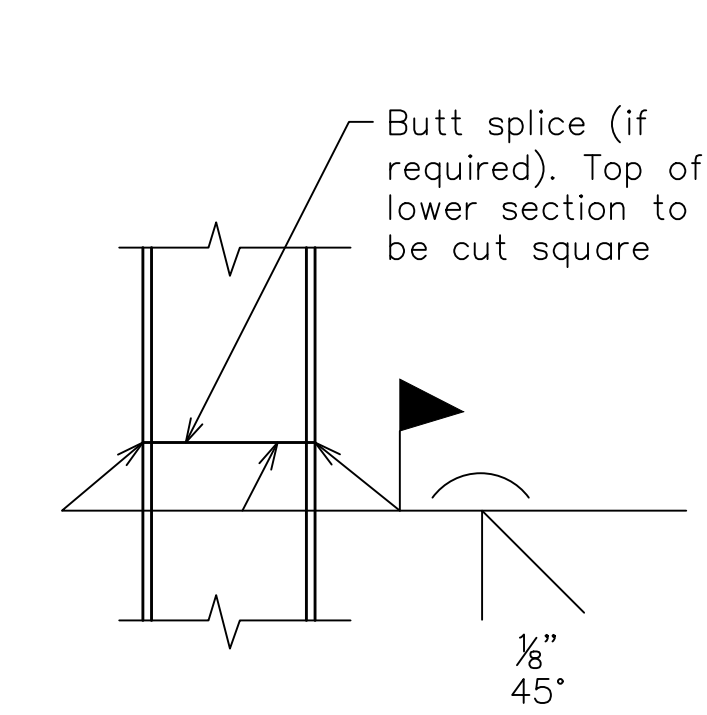
Plain Neoprene Bearing Pads shall be in accordance with Sec 716.

Cost of channel shear connectors C4 x 5.4 (ASTM A709 Grade 36) in place will be considered completely covered by the contract unit price for Structural Steel Piles (12 in.)

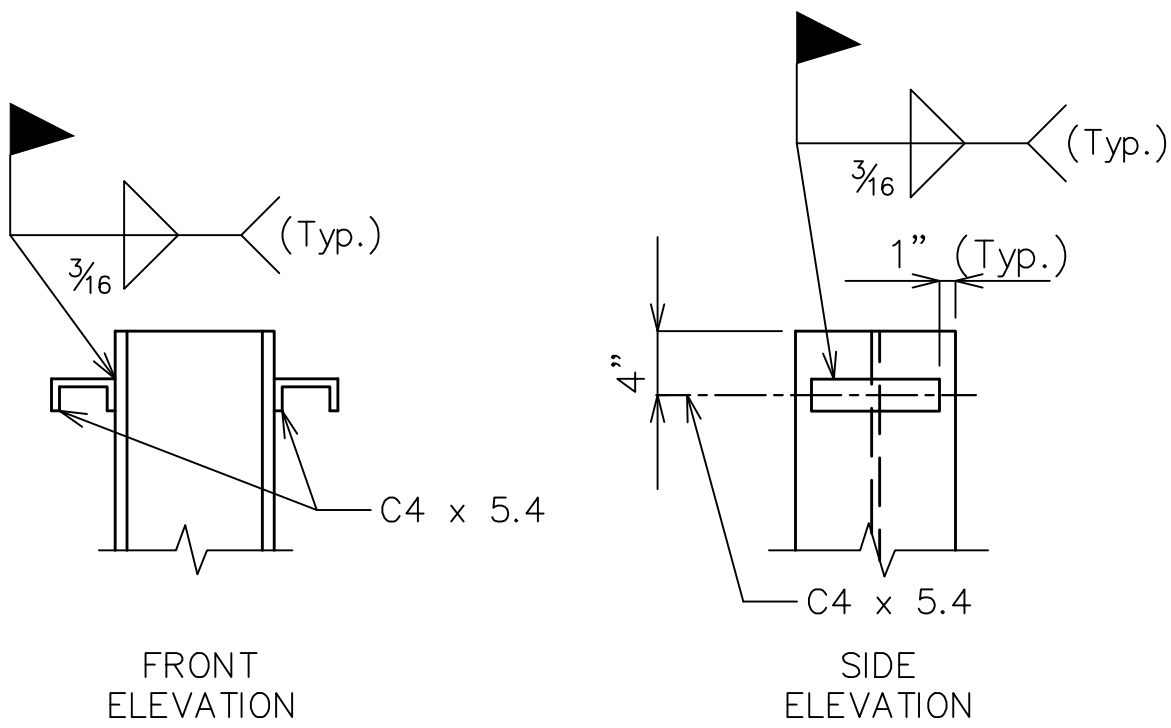
Estimated Quantities for Reinforced Concrete Slab Overlay		
Item		Total
Class B-2 Concrete	cu. yard	25.7
Reinforcing Steel (Epoxy Coated)	pound	2320

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

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



STEEL PILE SPLICE



DETAILS OF PILE ANCHORS

Foundation Data		
Bent No.	1	2
Pile Type and Size	HP12 X 53	HP12 X 53
Number	6	6
Approximate Length per Each	foot 23	24
Pile Driving Verification Method	DF	DF
Minimum Nominal Axial Compressive Resistance	kip 500	500
Minimum Tip Penetration	628	627
Criteria for Minimum Tip Penetration	Refusal	Refusal
Hammer Energy Required	ft-lbs 16,000	16,000

DF = FHWA-Modified Gates Dynamic Formula
Minimum Nominal Axial Compressive Resistance = Maximum Factored Loads/Resistance Factor

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

HYDROLOGIC DATA	
Drainage Area	= 1.6 sq. miles
Discharge	= 2,550 cu. ft./sec. (100 years)
H.W. Elev.	= 654.87 feet (100 years)
Estimated Backwater	= 0.0 feet

GENERAL NOTES:

Design Specifications:
2012 – AASHTO LRFD Bridge Design Specifications (6th Edition) and 2013 Interim Revisions
Seismic Performance Category B
Seismic Acceleration Coefficient = 0.10

Standard Specifications:
Missouri Standard Specifications for Highway Construction, 2011 Edition, and Supplemental Specifications, Latest Edition

Design Loading:
HL-93 (LRFD Superstructure, LRFD Substructure)
35#/Sq. Ft. Future Wearing Surface
Earth – 120 #/Cu. Ft., Equivalent Fluid Pressure: Active 50 pcf
At-Rest 70 pcf
 $\phi = 25^\circ$
Superstructure: Simply-supported, non-composite for dead and live load.

Design Unit Stresses:
Class B Concrete (Substructure) $f'c = 3,000$ psi
Class B-2 Concrete (Superstructure, except Prestressed Girders) $f'c = 5,000$ psi
Reinforcing Steel (Grade 60) $fy = 60,000$ psi
Steel Pile (ASTM A709 Grade 36) $fy = 36,000$ psi
For prestressed box beam stresses, see sheet no. 8 of 18.

Neoprene Pads:
Bearings shall be 60 durometer neoprene pads.

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

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

Miscellaneous:
Structure to be closed during construction.

"Sec" refers to sections in the Standard and Supplemental Specifications unless noted otherwise.

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

ESTIMATED QUANTITIES &
GENERAL NOTES
Old Lemay Ferry Road over
Tributary to Glaize Creek

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
JOHN J. GRUENDLER
NUMBER E-23263

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE
STATE
MO

DISTRICT
BR
SHEET NO.
10

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

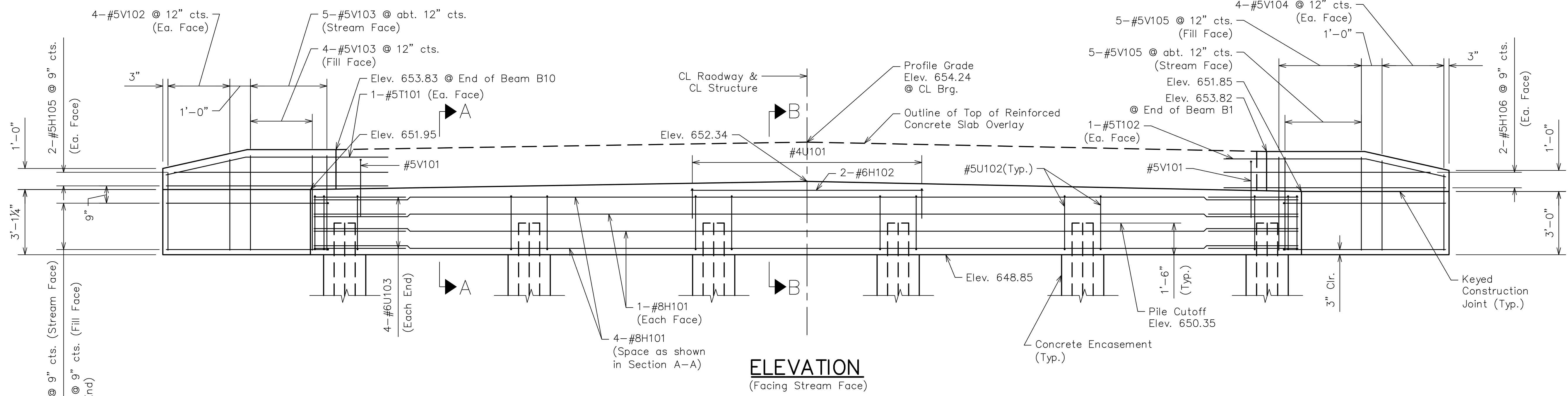
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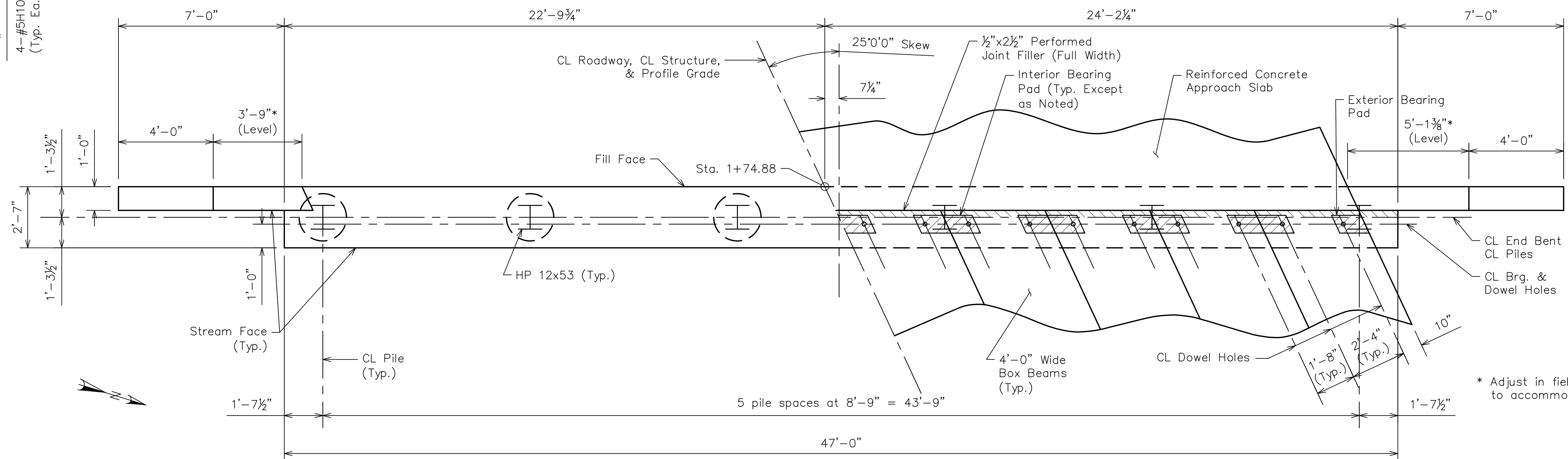
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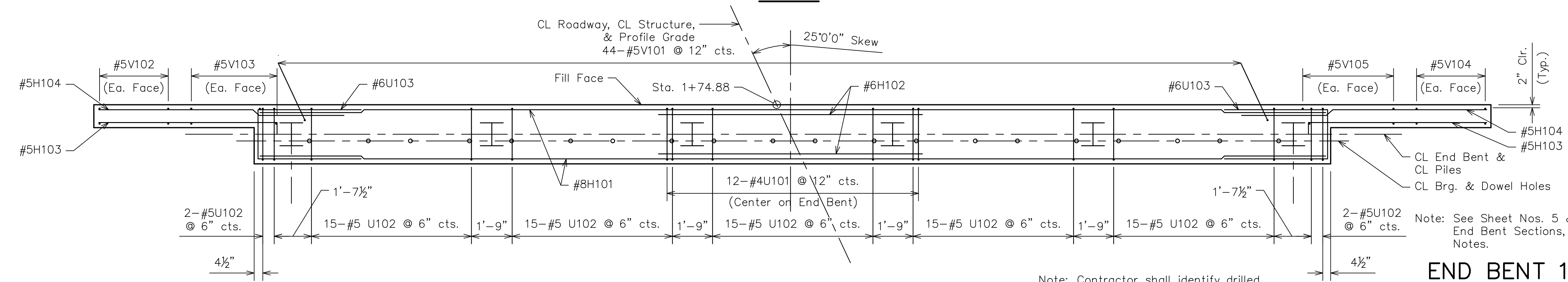
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ELEVATION
(Facing Stream Face)



PLAN



PLAN
(Showing Reinforcement)

Note: Contractor shall identify drilled hole locations to avoid conflicts with reinforcing steel.

END BENT 1
Old Lemay Ferry Road over
Tributary to Glaize Creek

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

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DATE
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DATE PREPARED
4/30/2015

ROUTE
BR

DISTRICT
BR

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

DESCRIPTION

DATE

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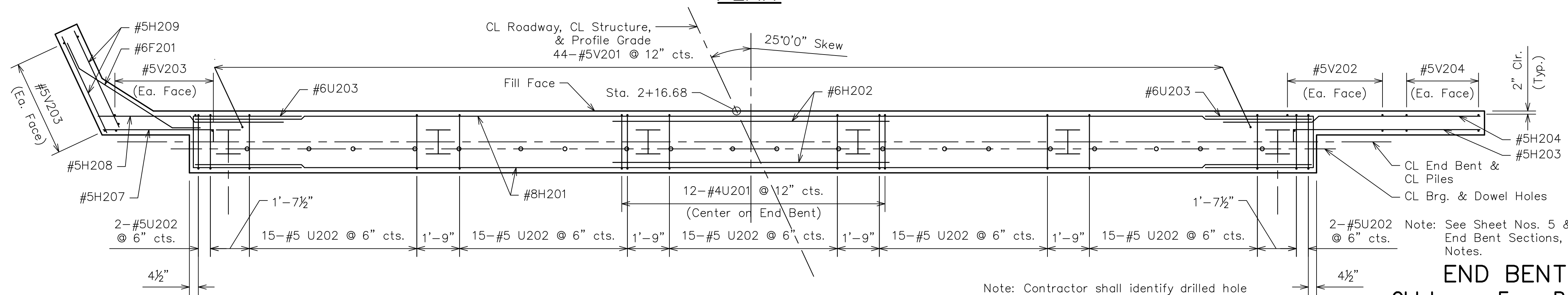
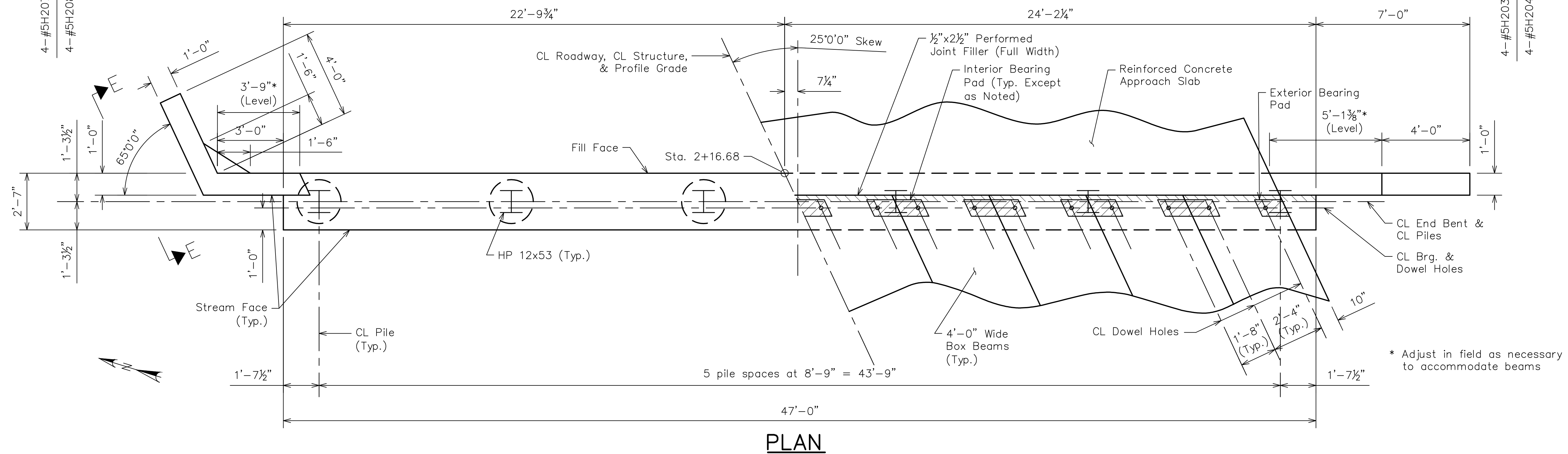
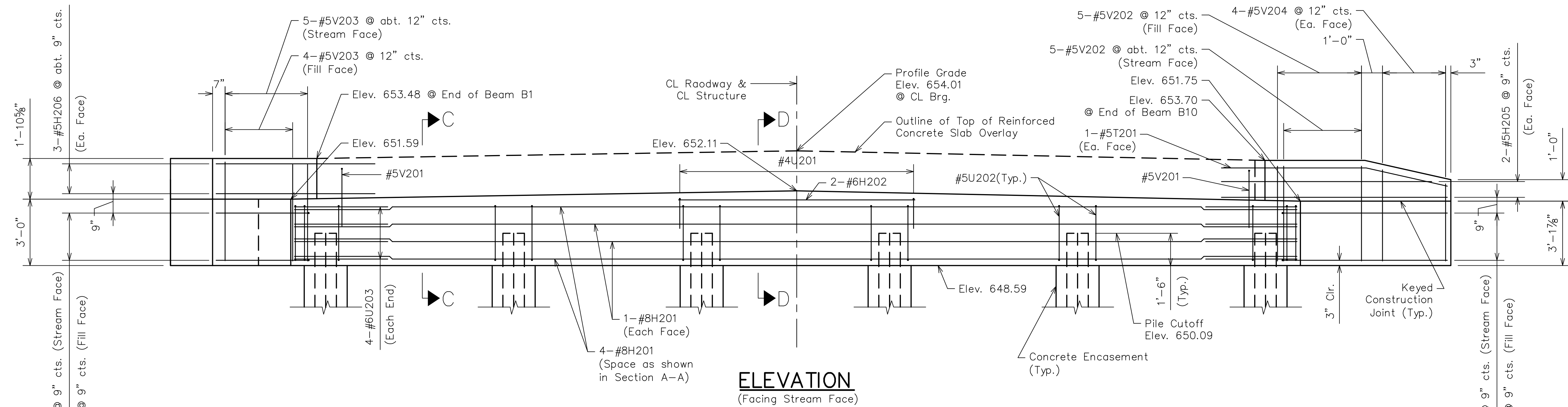
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CL End Bent & CL Piles
CL Brg. & Dowel Holes

Note: See Sheet Nos. 5 & 6 of 18 for End Bent Sections, Details, and Notes.



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

Note: Contractor shall identify drilled hole locations to avoid conflicts with reinforcing steel.

02 Note: See Sheet Nos. 5 & 6 of 18 for
ts. End Bent Sections, Details, and
Notes.

END BENT 2
Old Lemay Ferry Road over
Tributary to Glaize Creek



DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE	STATE MO
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DISTRICT BR	SHEET NO. 12
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COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

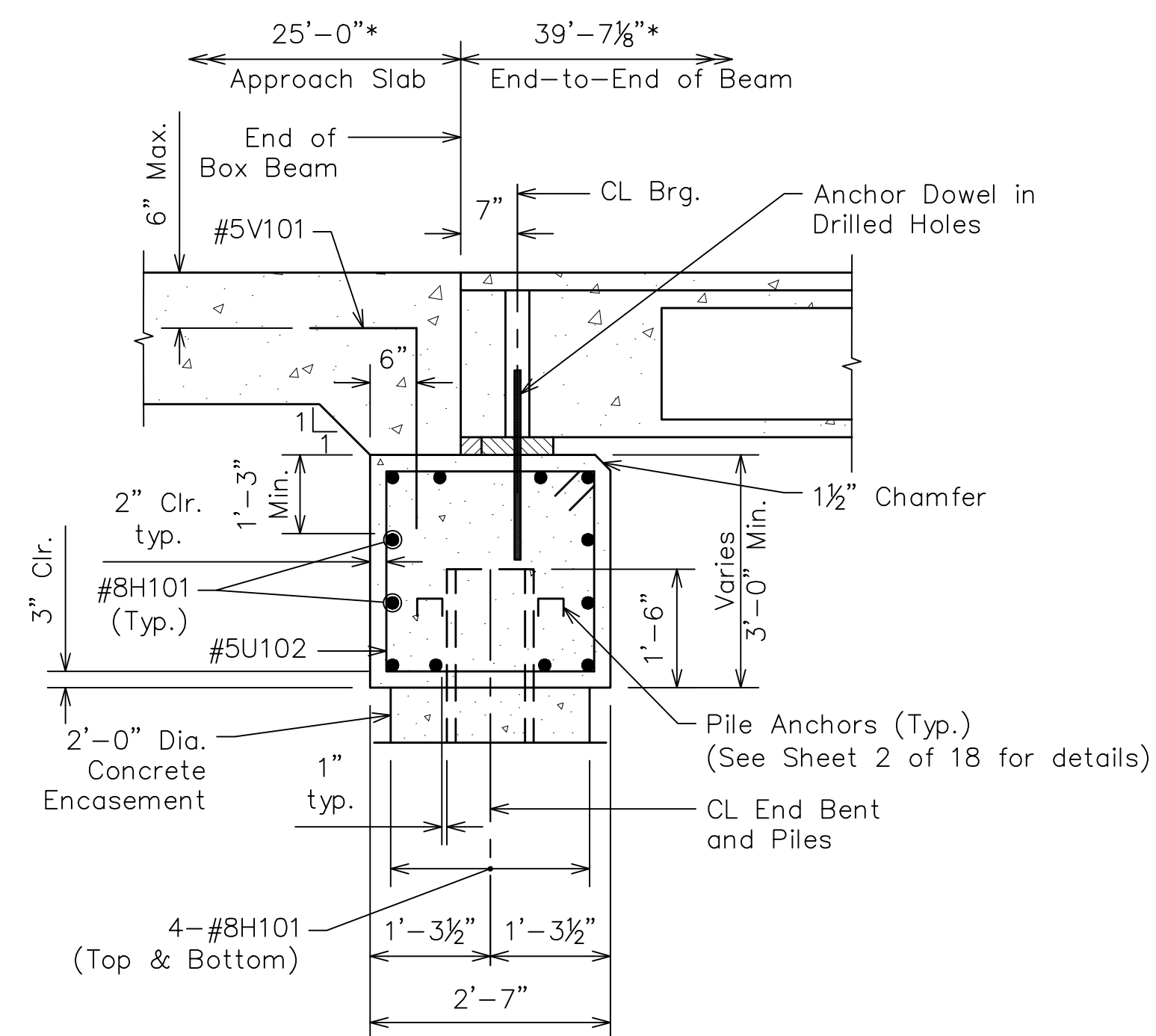
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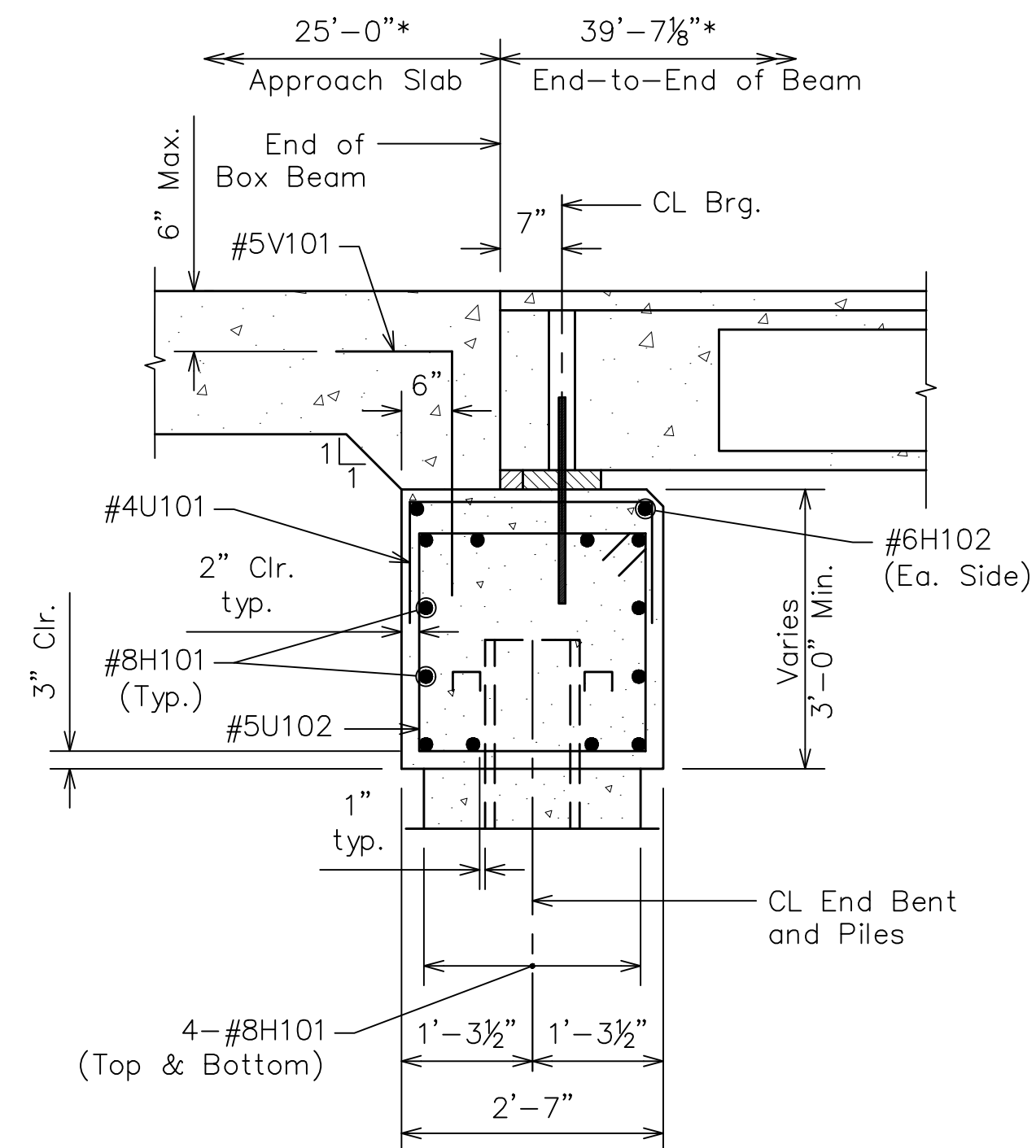


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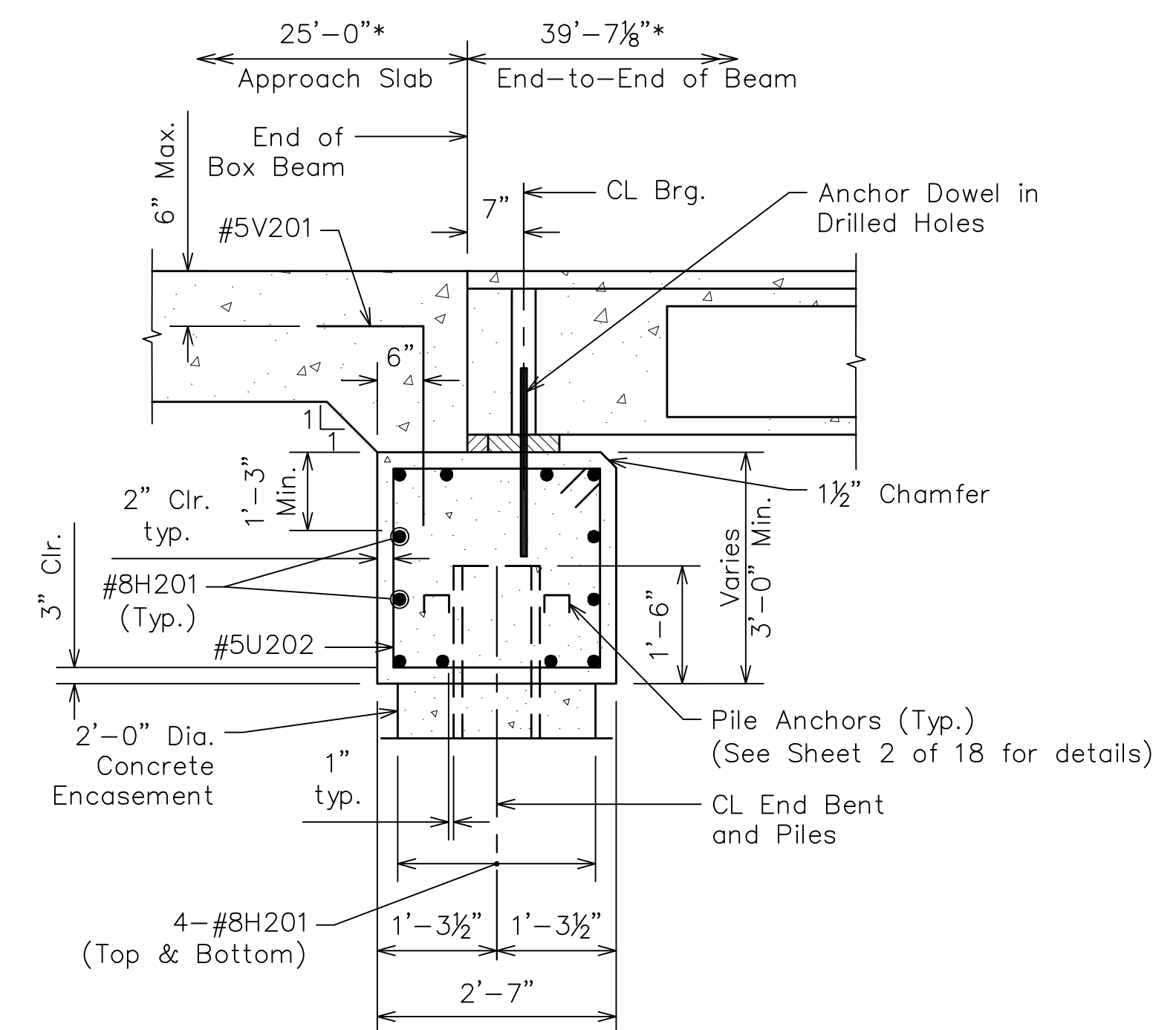
SECTION A-A

(Dimensions are at Rt. L's
unless otherwise noted)



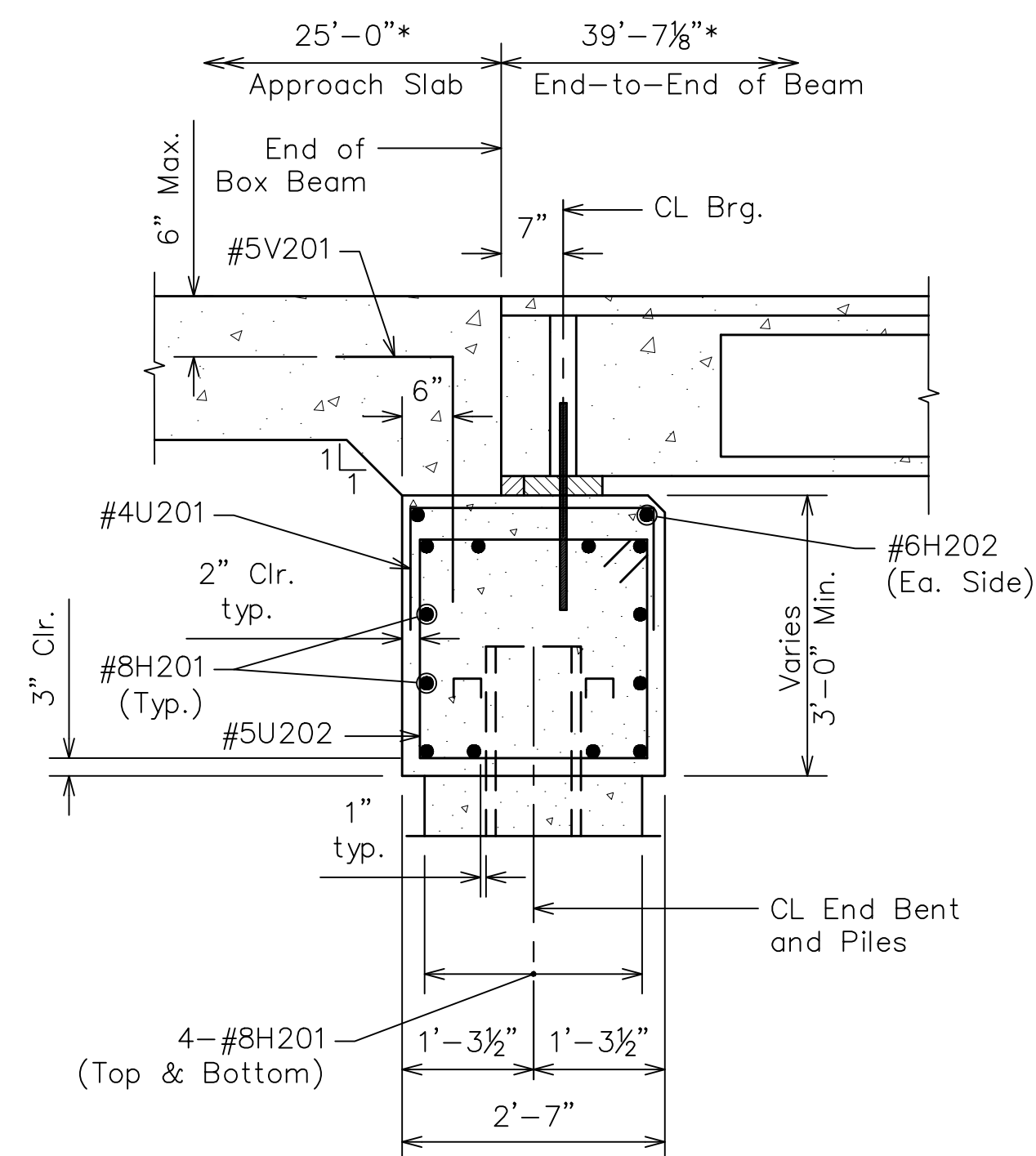
SECTION B-B

(Dimensions are at Rt. L's
unless otherwise noted)



SECTION C-C

(Dimensions are at Rt. L's
unless otherwise noted)



SECTION D-D

(Dimensions are at Rt. L's
unless otherwise noted)

NOTES: After girders have been erected, holes shall be drilled into substructure and anchor dowels placed. Adjust end bent reinforcement to avoid drilled hole locations. Dowel holes shall be filled with non-shrink grout to top of girder and allowed to cure min. 24 hours prior to grouting the shear keys.

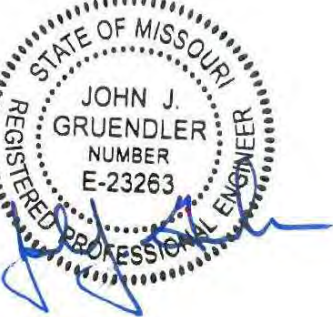
All V-bars or U-bars in the substructure beam shall be adjusted to clear piles by at least 1".

The approach slab and the portion of the wing walls above the construction joint shall be cast against the in-place beam.

* Measured along CL Roadway

Sheet 5 of 18

END BENT DETAILS
Old Lemay Ferry Road over
Tributary to Glaize Creek



DATE
4 / 30 / 2015

DATE PREPARED
4/30/2015

ROUTE	STATE
	MO

DISTRICT	SHEET NO.
BR	13

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

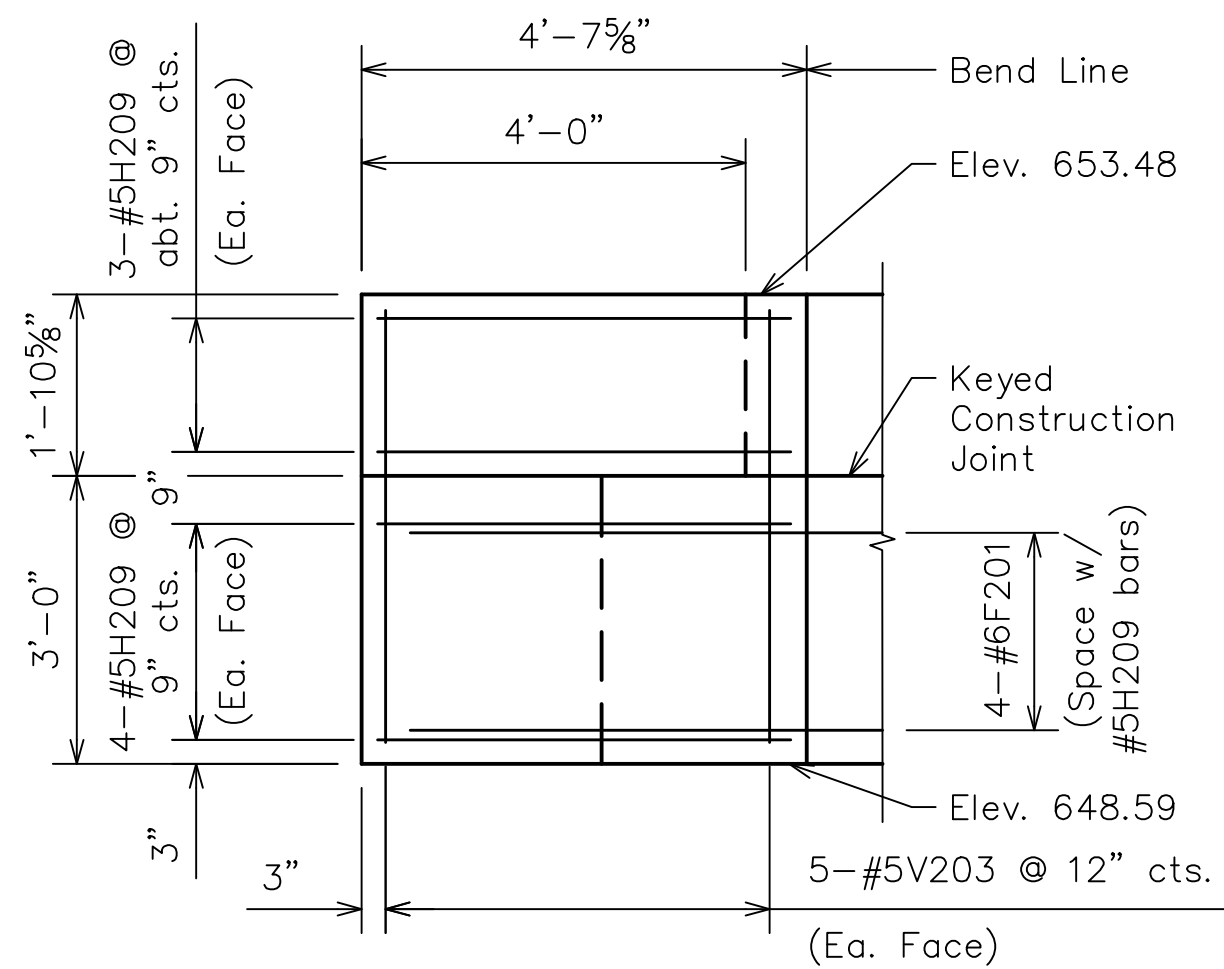
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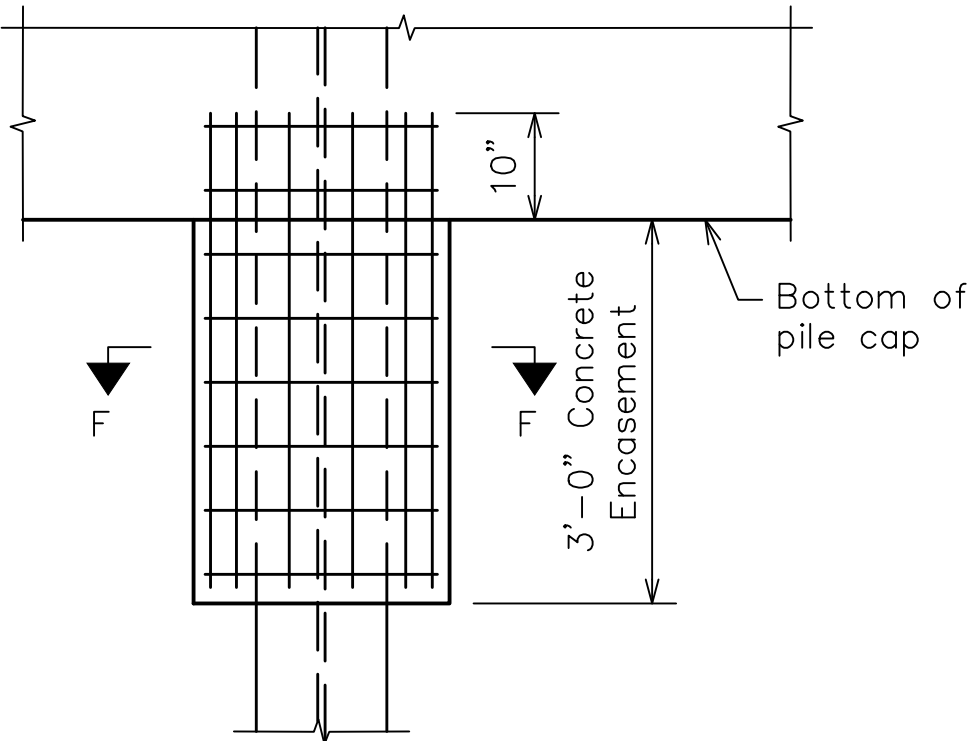
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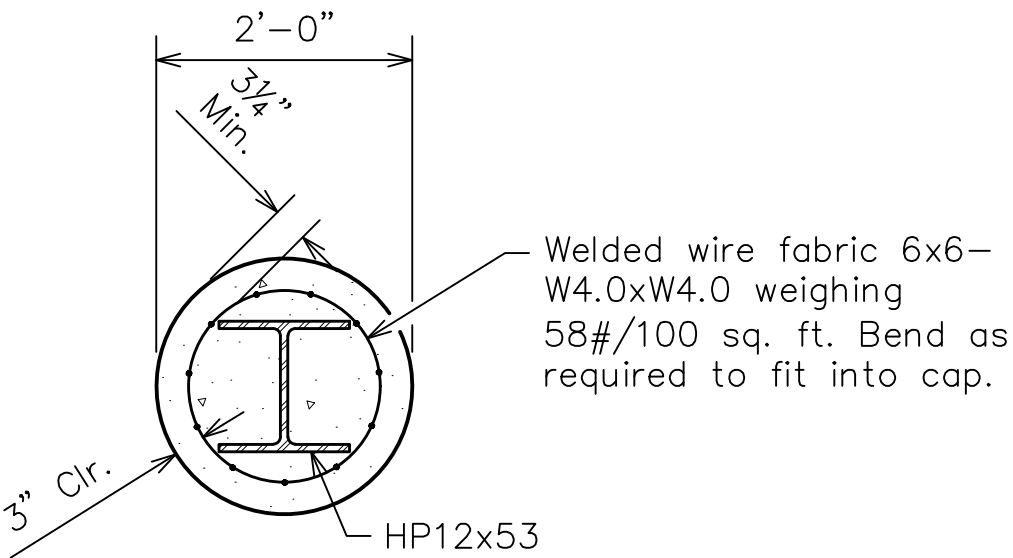
CERT. OF AUTHORITY: E-2006035000



ELEVATION E-E



ELEVATION



Note:
Forms for encasement may be omitted if bored into stable soil.

The cost of excavation, concrete encasement and reinforcement shall be included with Structural Steel Piles (12 in.)

SECTION F-F

PILE ENCASEMENT

SUBSTRUCTURE QUANTITIES TABLE FOR END BENTS			
ITEM		END BENT 1	END BENT 2
Class 1 Excavation	Cu. Yd.	55	55
Structural Steel Piles (12in.)	Ft.	138	144
Pile Point Reinforcement	Each	6	6
Class B Concrete (Substructure)	Cu. Yd.	17.4	17.8
Reinforcing Steel (Epoxy Coated)	Lbs.	3190	3260
Vertical Drains At End Bents	Each	1	1

NOTE: These quantities are included in the estimated quantities table on the general notes and quantities sheet.

END BENT DETAILS
Old Lemay Ferry Road over
Tributary to Glaize Creek

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

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
JOHN J. GRUENDLER
NUMBER E-23263

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE

STATE

MO

DISTRICT
BR

SHEET NO.
14

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

DESCRIPTION

DATE

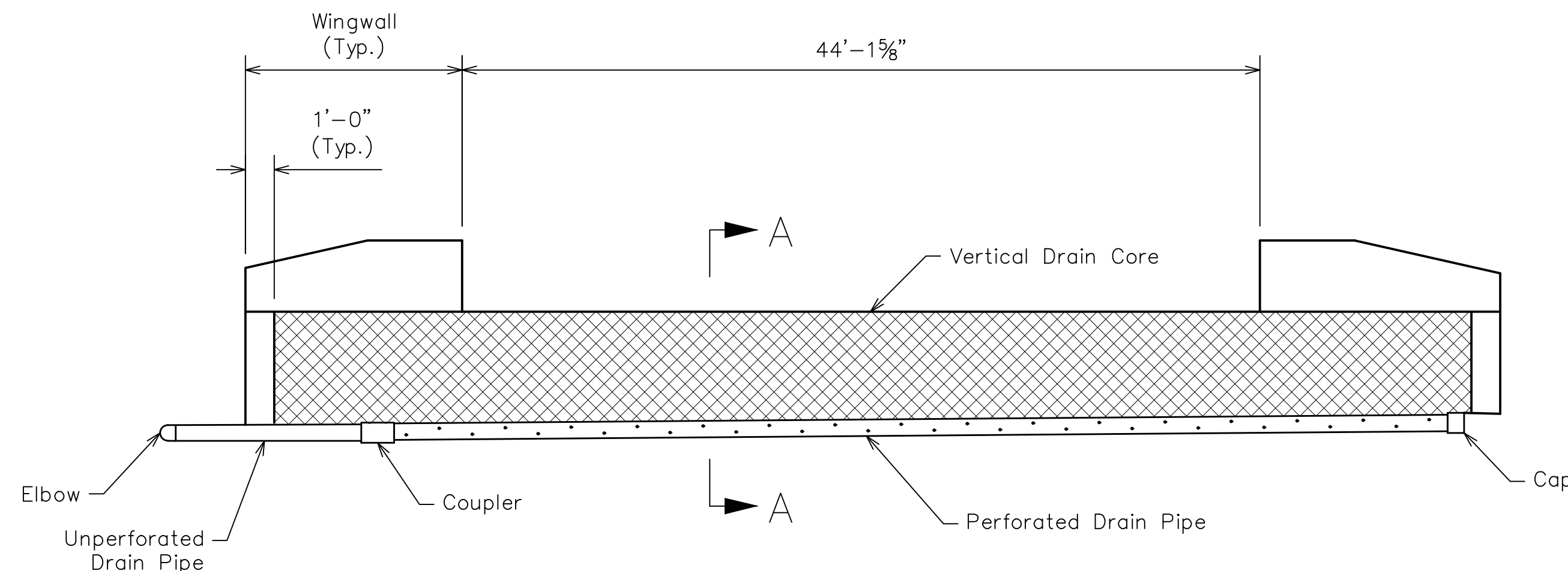
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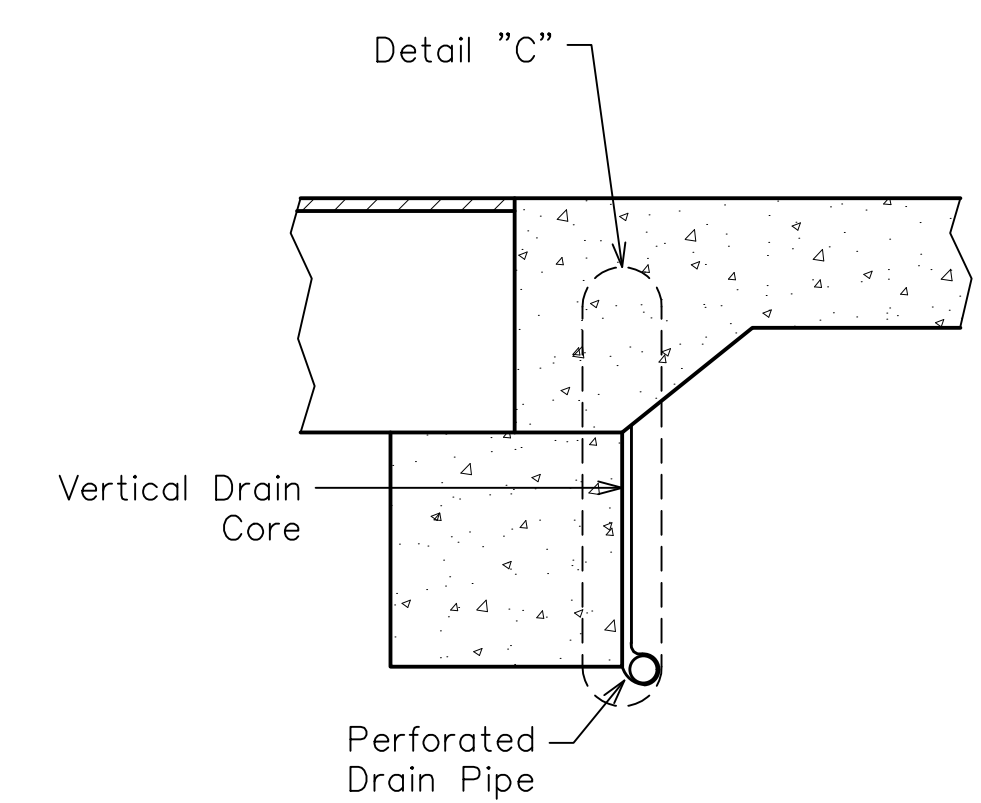
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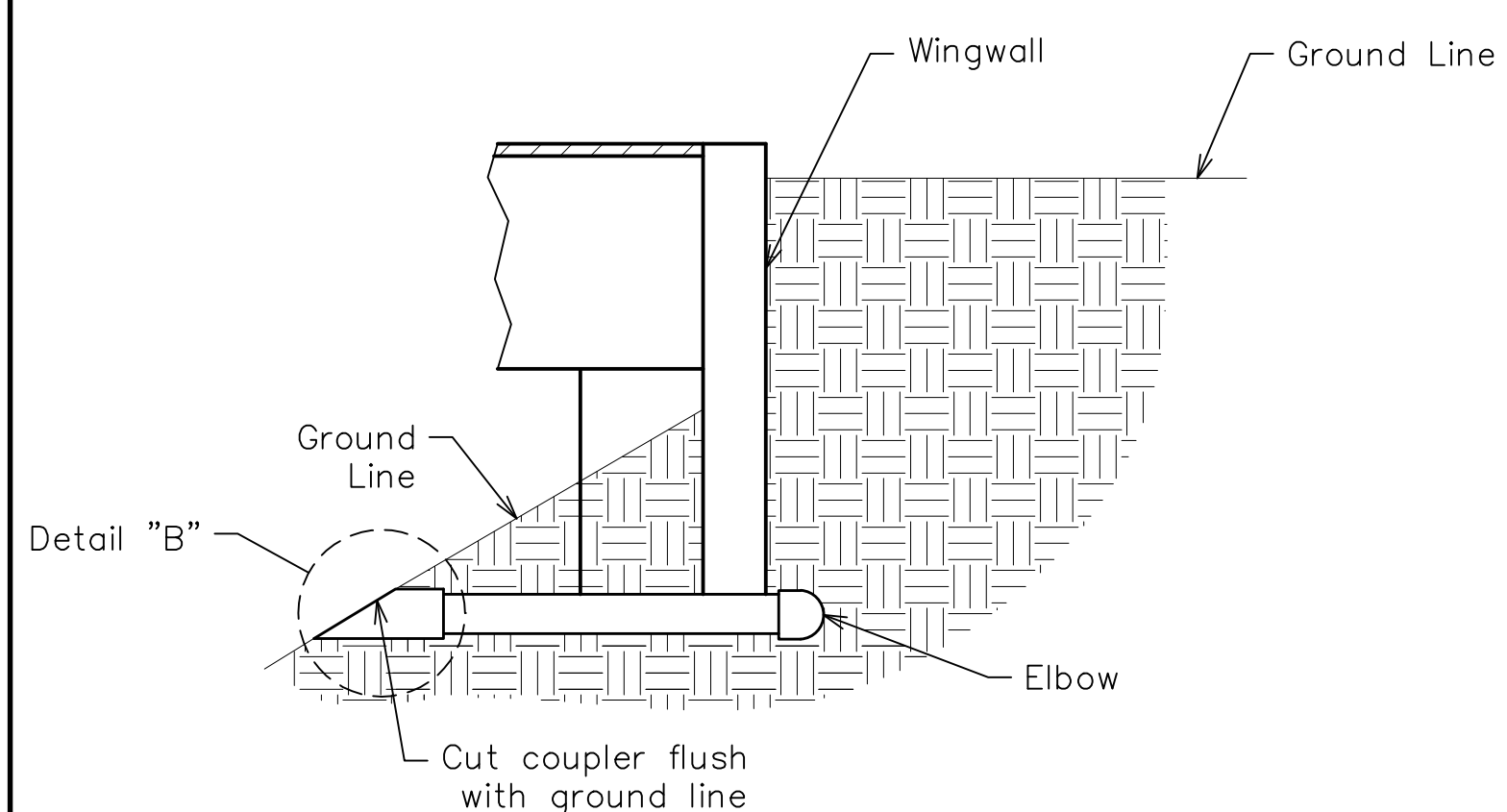
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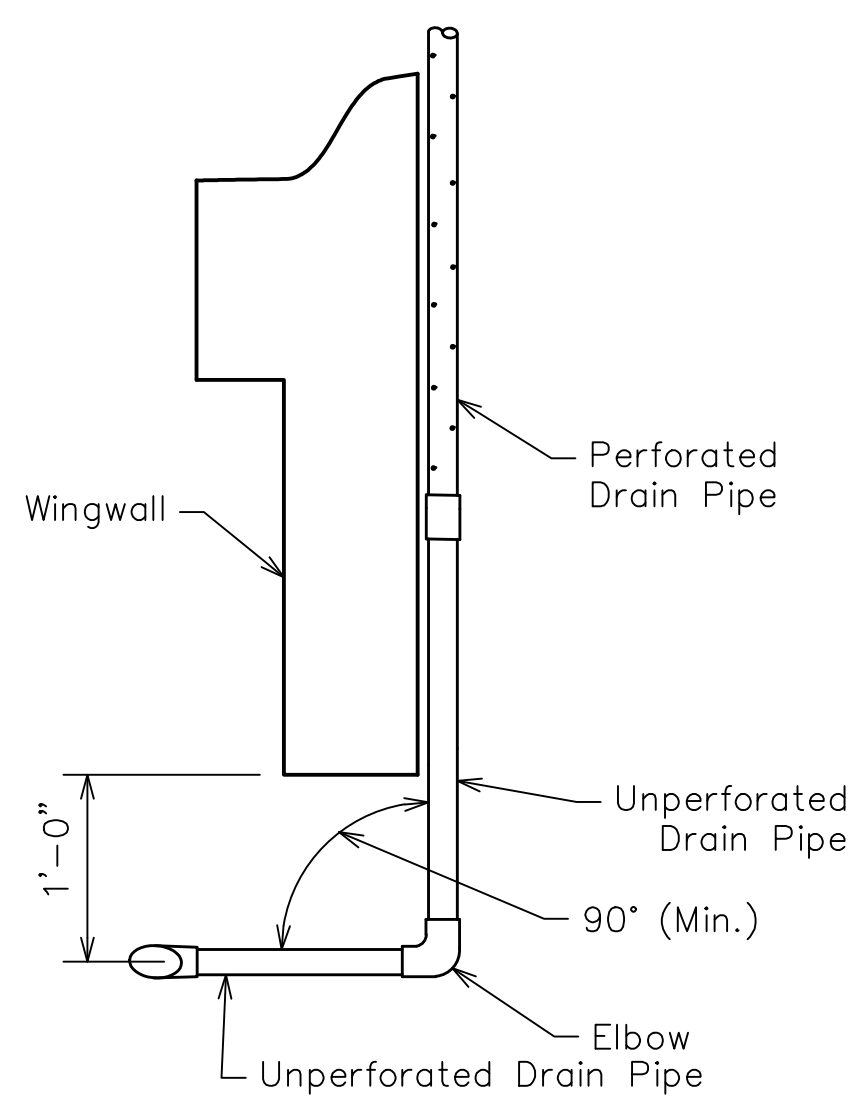
ELEVATION AT END BENT



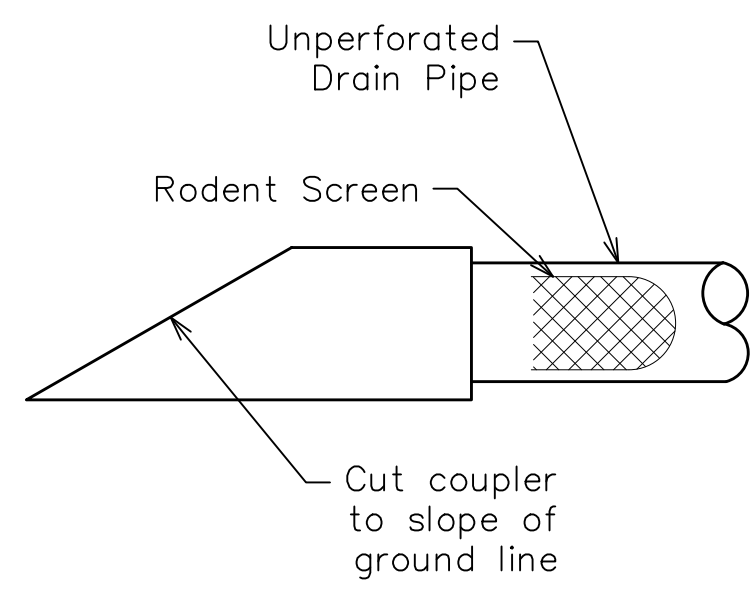
SECTION A-A



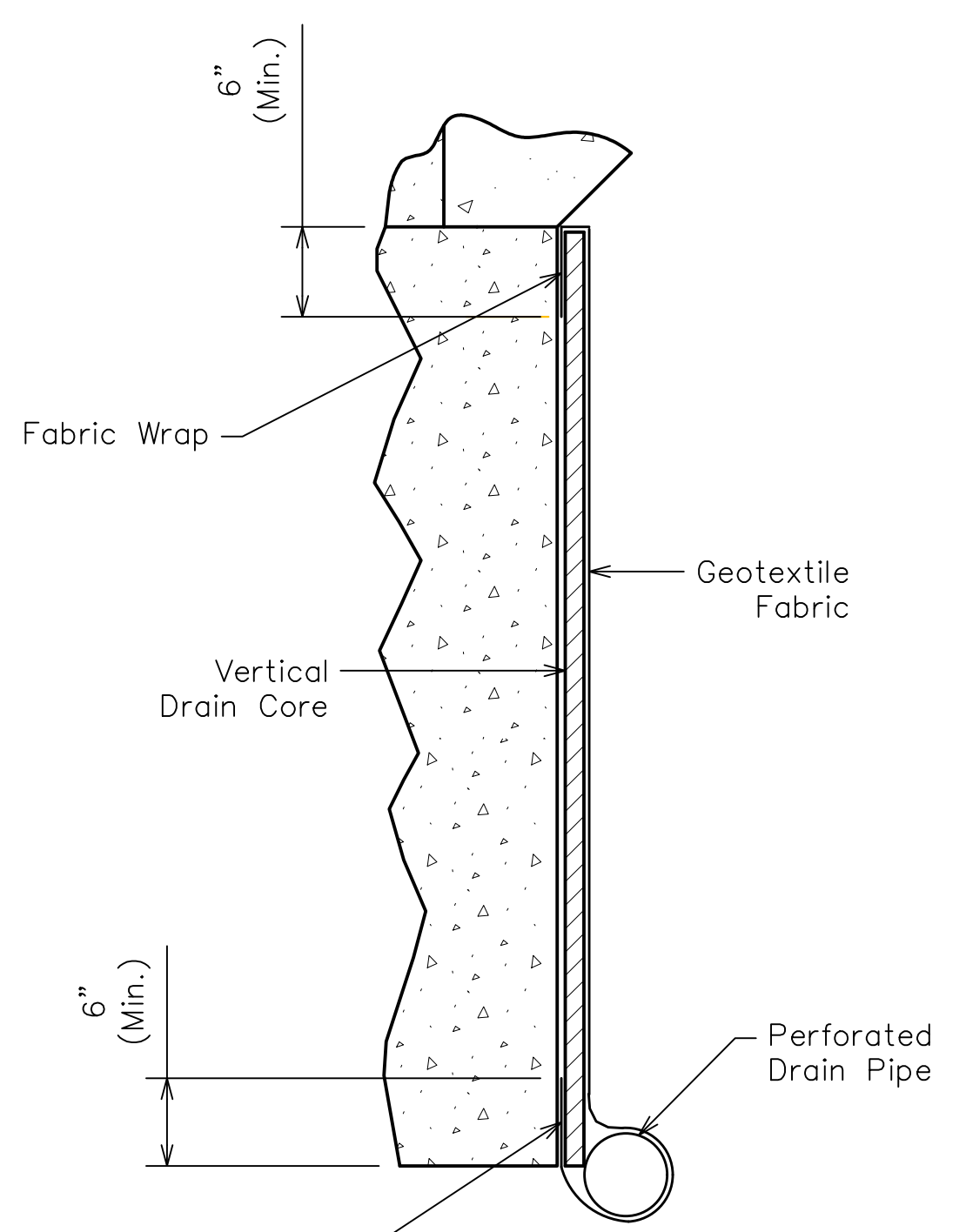
END VIEW AT END BENT



PART PLAN



DETAIL B



DETAIL C

Note:

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

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

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

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

VERTICAL DRAIN AT END BENT
Old Lemay Ferry Road over
Tributary to Glaize Creek

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
JOHN J. GRUENDLER
NUMBER E-23263

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE
STATE
BR
MO

DISTRICT
SHEET NO.
BR
15

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

DESCRIPTION

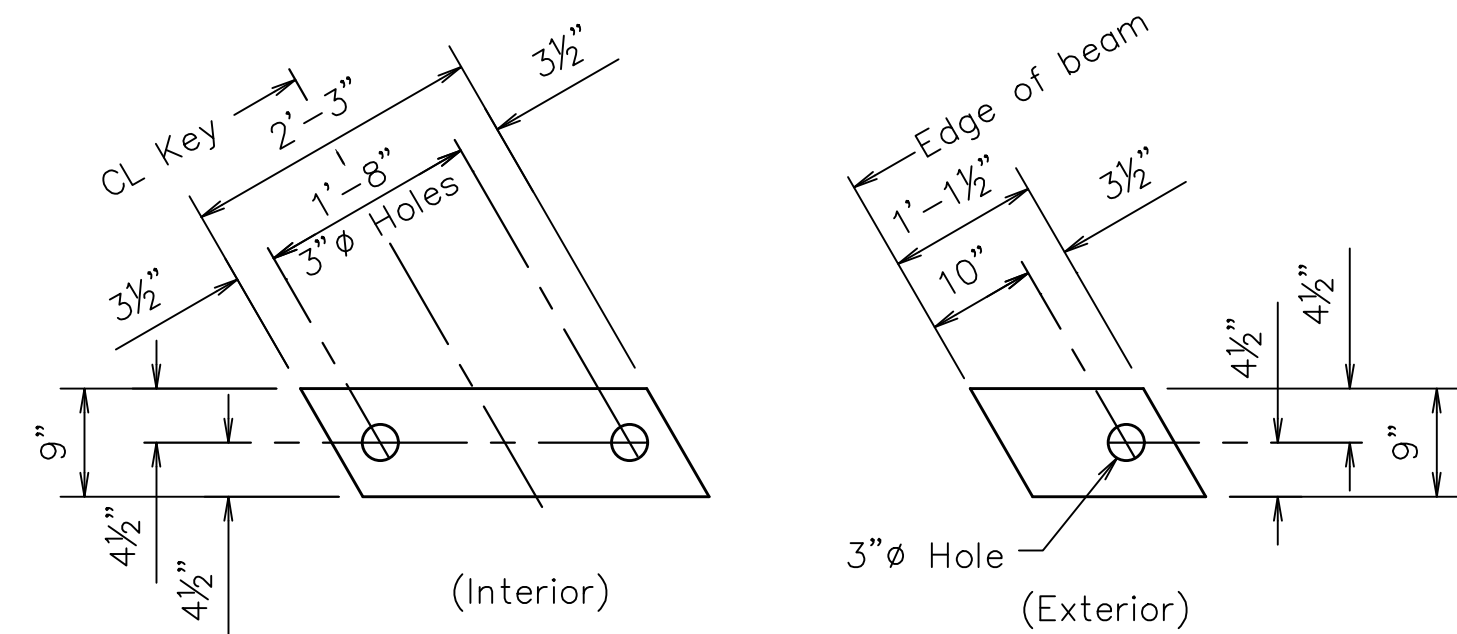
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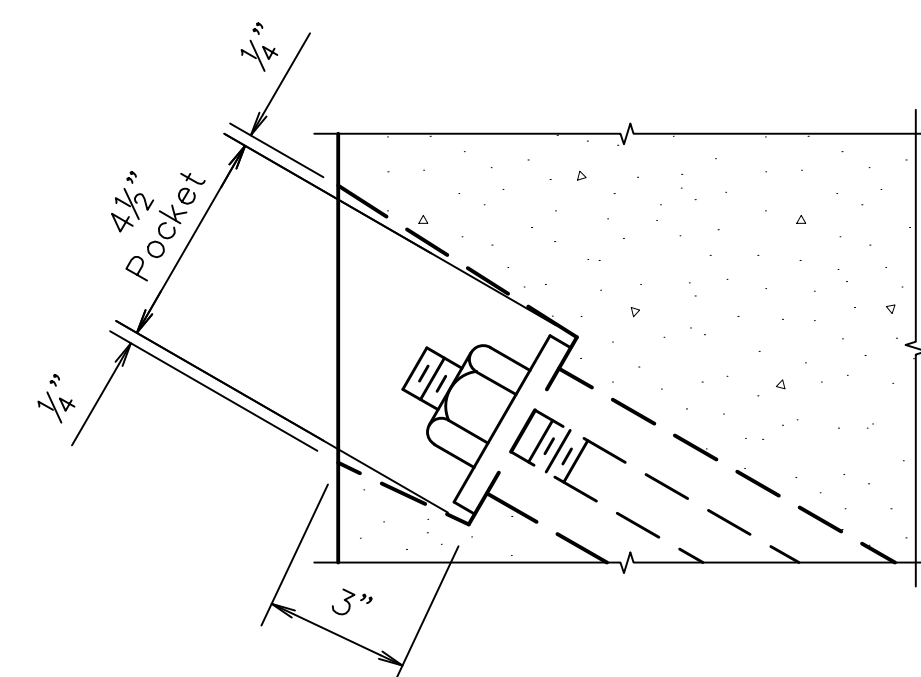
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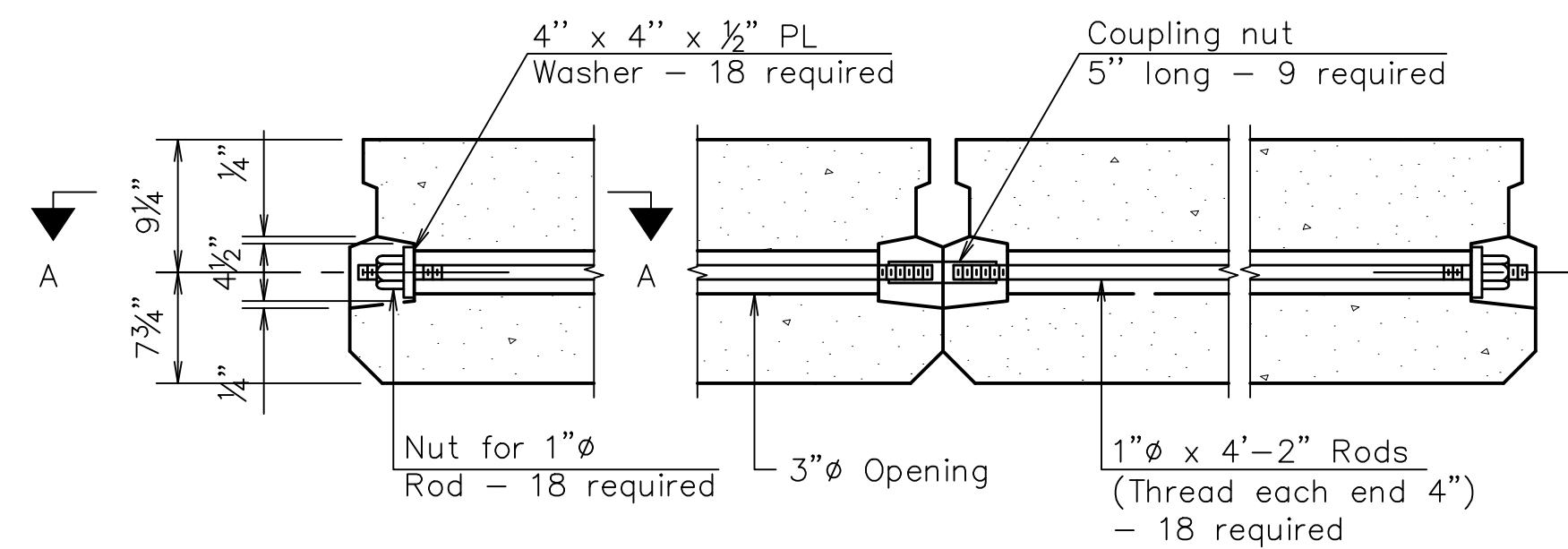


PLAIN NEOPRENE BEARING PAD

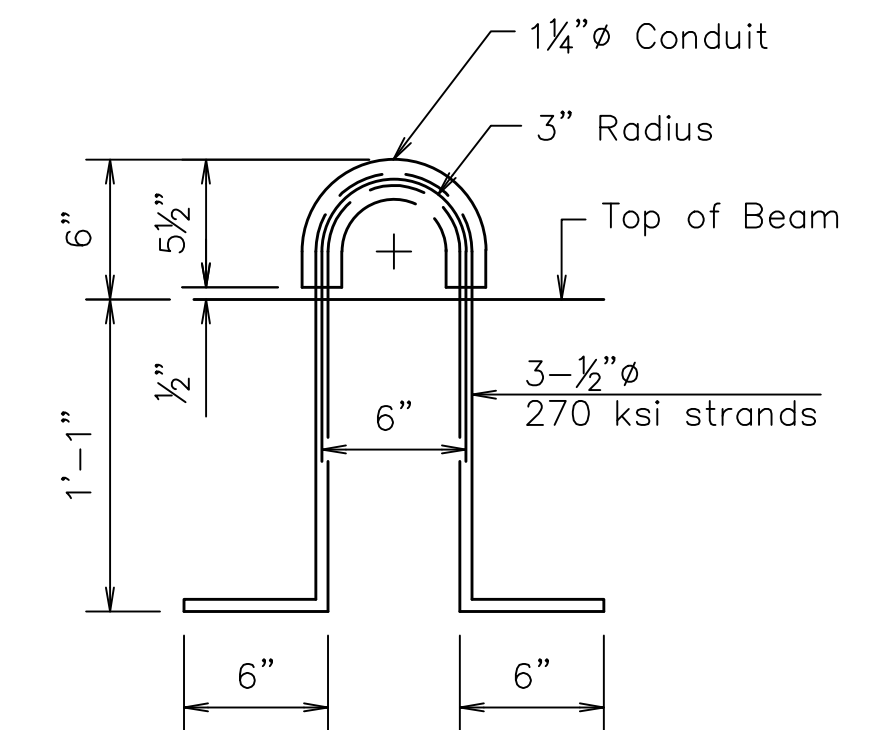
Note:
All bearing pads shall be 1/2" thick.



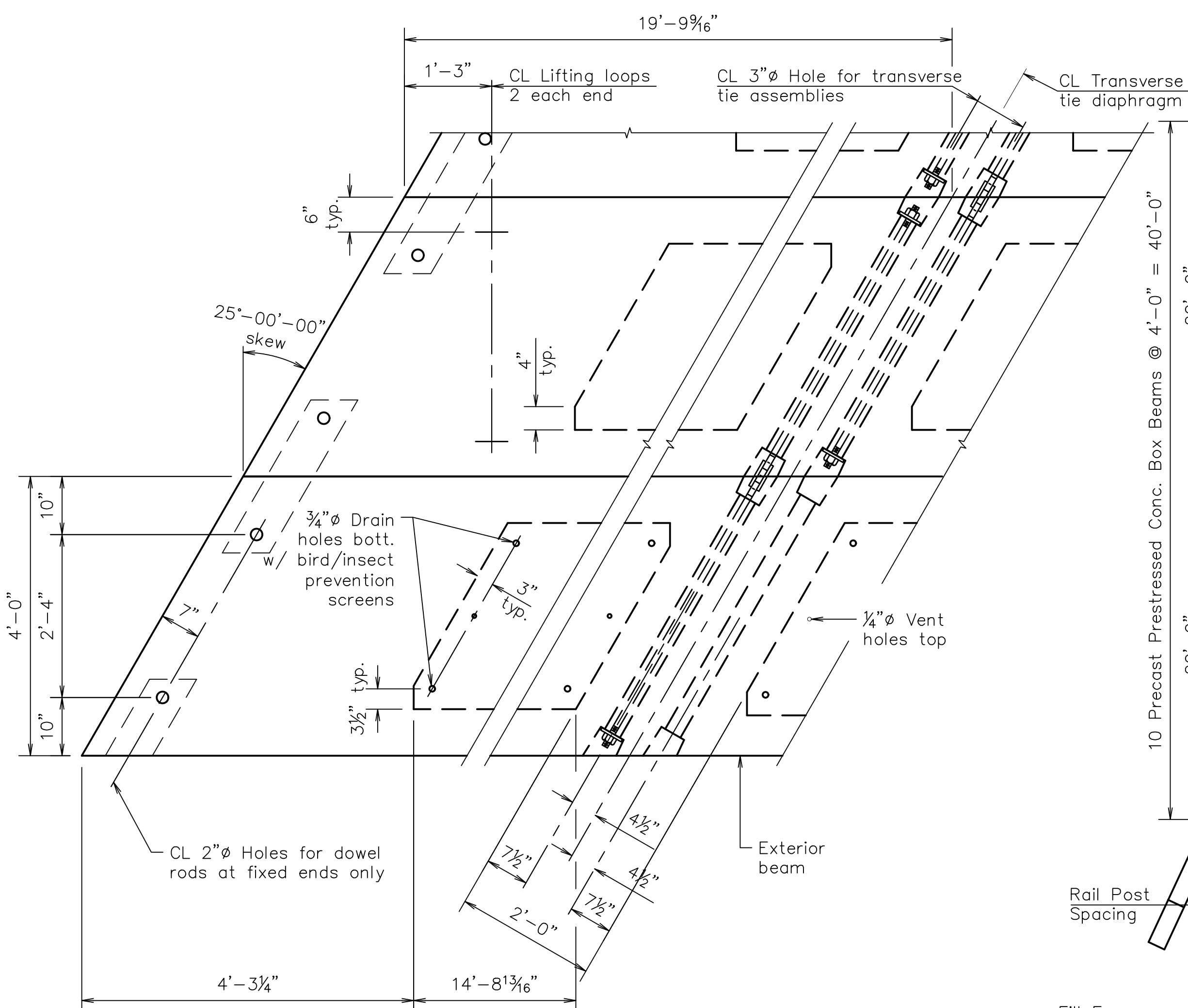
SECTION A-A



TYPICAL TRANSVERSE TIE ASSEMBLY

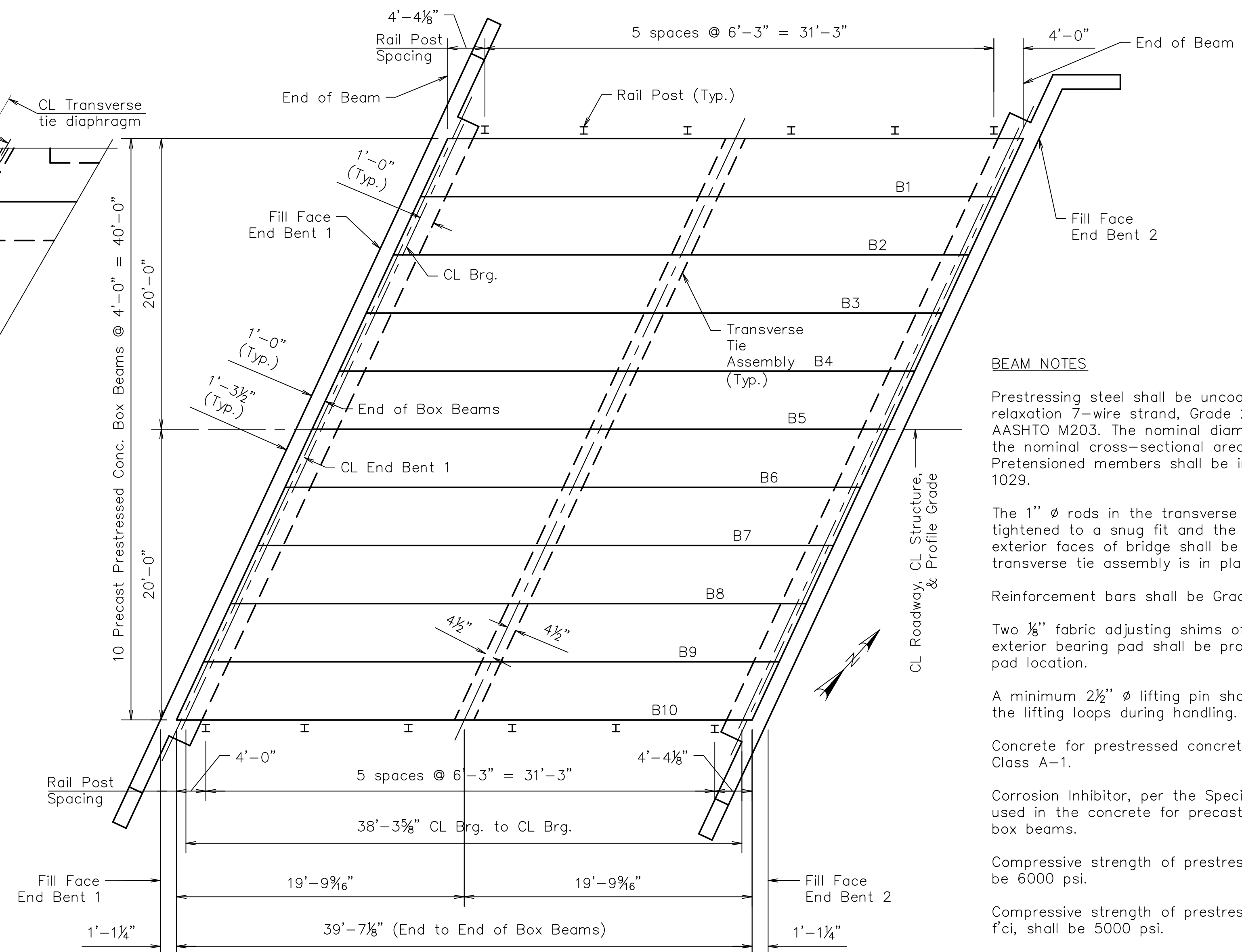


LIFTING LOOP DETAIL



PLAN VIEW

Note: Connect beams in pairs with the transverse tie configuration shown.



PLAN OF PRESTRESSED CONCRETE BOX BEAMS

BEAM NOTES

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270, in accordance with AASHTO M203. The nominal diameter shall be $\frac{1}{2}$ " and the nominal cross-sectional area shall be 0.153 sq. in. Pretensioned members shall be in accordance with Sec. 1029.

The 1" $\varnothing$ rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.

Reinforcement bars shall be Grade 60.

Two $\frac{1}{8}$ " fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

A minimum 2½" Ø lifting pin shall be used to engage the lifting loops during handling.

Concrete for prestressed concrete box beams shall be Class A-1.

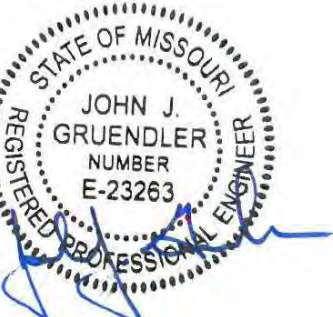
Corrosion Inhibitor, per the Special Provisions, shall be used in the concrete for precast prestressed concrete box beams.

Compressive strength of prestressed concrete, f'_c , shall be 6000 psi.

Compressive strength of prestressed concrete at release, f'_{ci} , shall be 5000 psi.

BEAM DETAILS
Old Lemay Ferry Road over
Tributary to Glaize Creek

Sheet 8 of 18



DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE	STATE
	MO

DISTRICT	SHEET NO.
BR	16

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
DW15113BYC

BRIDGE NO.
1070007

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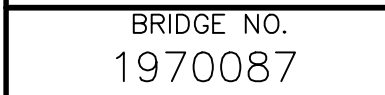
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Sheet 9 of 18

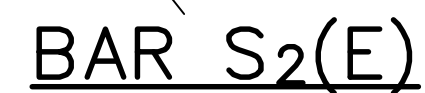
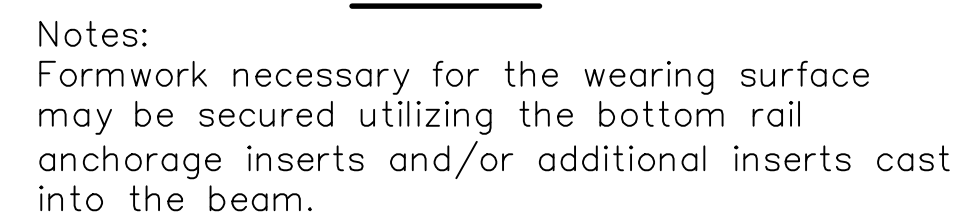


TABLE OF DIMENSIONS

Location	A	B	C
CL B1	5¾"	5¼"	5"
PG Line	5¼"	5⅛"	5¼"
CL B10	5"	5⅛"	5¾"

Note: Dimensions shown are based on $\frac{1}{8}$ " deflection at midspan of beam due to concrete overlay.

Adjust final profile grade as necessary for minimum concrete wearing surface thickness of 5".

BAR LIST
ONE BEAM
ONLY

(For information only)

Bar	No.	Size	Length	Shape
A(E)	11	#4	3'-7"	
A ₁ (E)	22	#4	3'-10"	
B(E)	5	#5	39'-4"	
B ₁ (E)	4	#4	39'-4"	
D(E)**	12	#4	2'-9"	
S(E)	52	#4	6'-9"	
S ₁ (E)	8	#4	5'-3"	
S ₂ (E)	44	#4	5'-6"	
S ₃ (E)	12	#4	5'-1"	
S ₄ (E)	12	#4	4'-4"	
U(E)	12	#5	3'-8"	
U ₁ (E)	2	#4	8'-0"	

** Exterior beams only.

Notes: See sheet 9 of 18 for additional details.

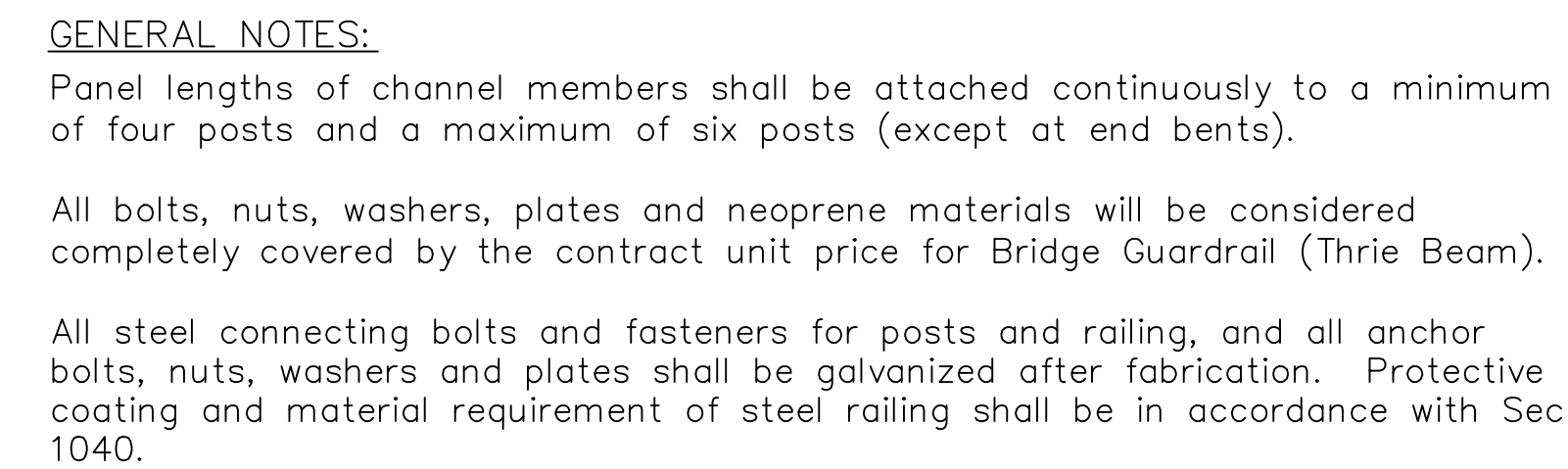
Bars in beam designated (E) shall be epoxy coated.

Sheet 10 of 18

BEAM DETAILS
Old Lemay Ferry Road over
Tributary to Glaize Creek



CERT. OF AUTHORITY: E-2006035000



Rail posts shall be set perpendicular to roadway profile grade, vertically in cross section and aligned in accordance with Sec 713 except that the rail posts shall be aligned by the use of shims such that the post deviates not more than 1/2 inch from true horizontal alignment after final adjustment. The shims shall be 3" x 1 3/4" and placed between the blackout and the thrie beam rail. The thickness of the shims shall be determined by the contractor and verified by the engineer before ordering material for this work.

Minimum length of thrie beam sections is equal to one post space.

5/8" ϕ button-head, oval shoulder bolts with 3/8" min. thickness hex nuts shall be used at all slots.

Thrie beam guardrail on the bridge shall be 12 gauge steel.

Posts, cap rail angles, post plates, channels and channel splice plates shall be fabricated from ASTM A709 Grade 36 steel and galvanized.

Washers shall be used at all post bolts between the bolt head and beam. The flat washers shall be rectangular in shape 3" x 1 3/4" x 3/16" minimum and with a 11/16" x 1" slot, or when necessary of such design as to fit the contour of the beam. A 3" x 1 3/4" x 5/8" rectangular washer shall be used between the blockout and the thrie beam rail.

Special drilling of the thrie beam may be required at the splices. All drilling details shall be shown on the shop drawings.

Fabrication of structural steel shall be in accordance with Sec 1080.

The guard rail anchor detail shown on this sheet shall be supplied by the precast concrete beam supplier for installation during beam fabrication.

The guard rail supplier shall supply the rail system which shall include all three beam railing, channels, posts, connecting plates, and bolts, including the guard rail anchor bolts.

Shim plates 6x6x1/16" may be used between the top of the post and the channel member as required for vertical alignment.

All field drilled holes shall be coated with an approved zinc rich paint before erection.

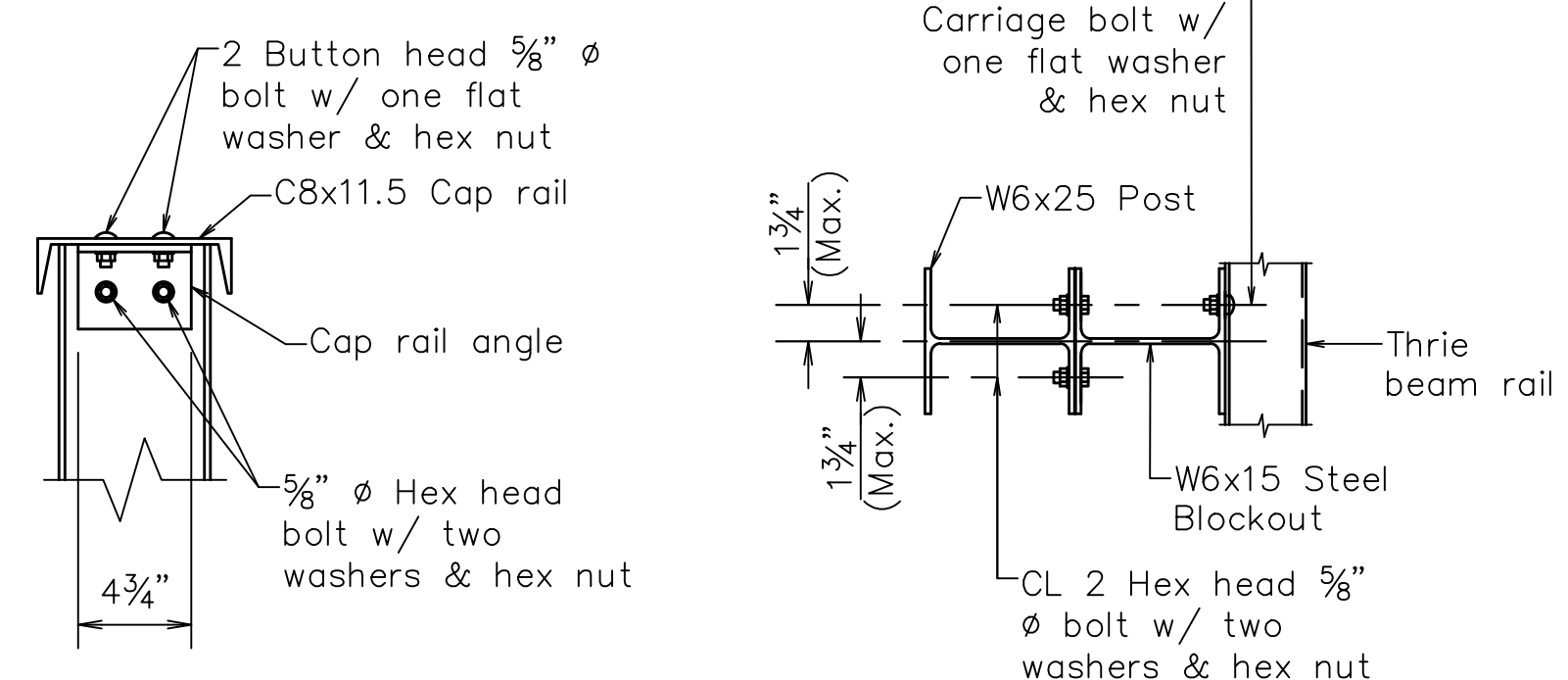
See Missouri Standard Plans drawing 606.00 for details not shown.

Plain bearing pads shall be of 70 Durometer neoprene and shall be in accordance with Sec. 716.

The 1" dia. M164 bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional $\frac{1}{8}$ " turn, the $\frac{5}{8}$ " dia cap screws in bottom of posts shall be tightened to a snug fit only.

Hollow structural steel tubing shall be in accordance w/ ASTM A500 Grade B and shall be galvanized. All other steel shapes and plates shall be fabricated from AASHTO M270 Grade 36 steel and galvanized.

Welded shear stud connectors for anchor devices shall be in accordance w/ Sec 1037.

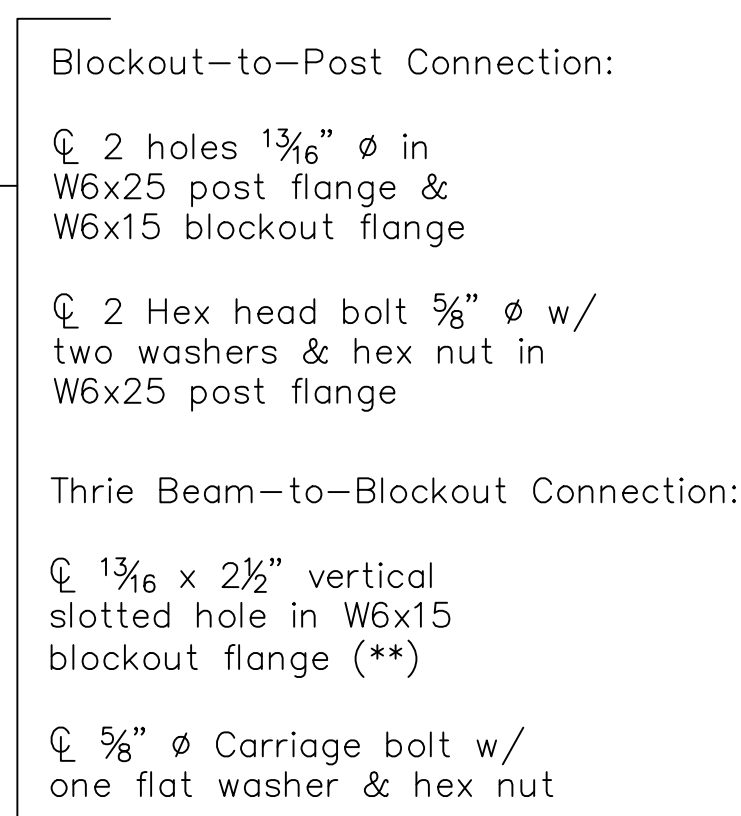


DETAIL A

SECTION C-C

BRIDGE RAILING
Old Lemay Ferry Road over
Tributary to Glaize Creek

Sheet 12 of 18



(**) Required on one side of web only, but may be provided on both sides of web at the contractor's option.

- * The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bars shall be placed directly above the studs of the rail post anchor device.

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



Diagram illustrating the dimensions and components of a splice connection:

- Top Dimension:** 12½" (Lap)
- Left Side Labels:**
 - CL 29/32" x 1/8" slots at regular splices
 - CL 3/4" x 2 1/2" regular slots at post
- Right Side Label:** Direction of Traffic
- Bottom Dimension Labels:**
 - (At regular splices)
 - 2"
 - 4 1/4"
 - 4 1/4"
 - 2"
- Internal Detail:** At splices between posts, eliminate this slot or provide button head bolt

THREE BEAM RAIL SPLICE DETAIL

TYPICAL SPLICE PLAN

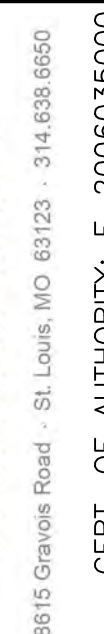


ANCHOR DEVICE

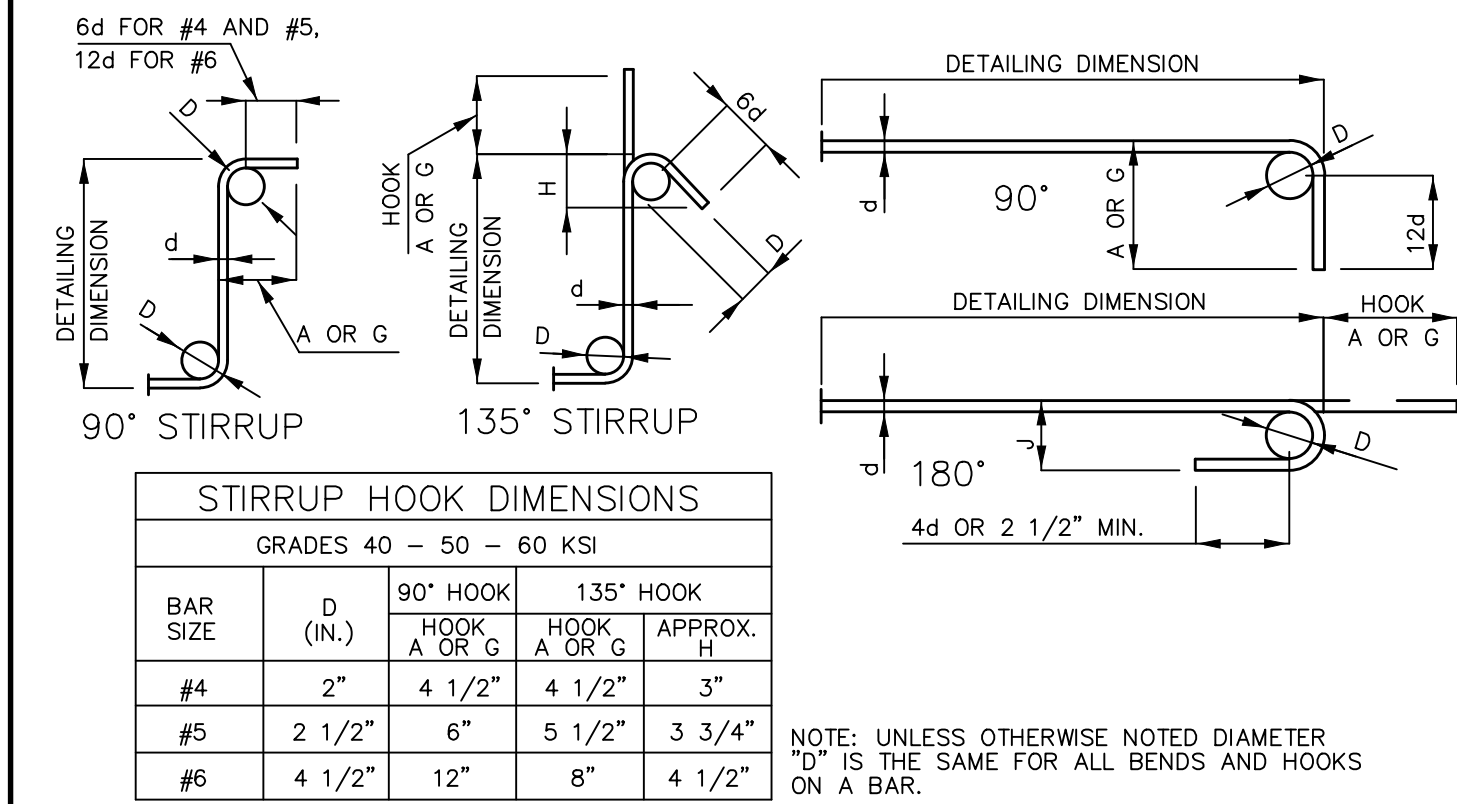
VIEW D-D

BRIDGE RAILING DETAILS
Old Lemay Ferry Road over
Tributary to Glaize Creek

Sheet 13 of 18



BILL OF REINFORCING STEEL																			
NO. REQ'D.	MARK NO.	SIZE MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS							NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
										B	C	D	E	F	H	K			
										FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT.IN.	FT.IN.	LBS.
			END BENT 1																
12	8	H101	BEAM	E20	X					46 7						46 7	46 7	1493	
2	6	H102	BEAM	E20	X					11 3						11 3	11 3	34	
8	5	H103	WING	E12	X						10 7	10				8 8	8 6	71	
8	5	H104	WING	E20	X					10 0						10 0	10 0	83	
4	5	H105	WING	E20	X	V	2			10 8						10 8	10 8		
			INCR.=4.0 IN							11 0						11 0	11 0	45	
4	5	H106	WING	E20	X	V	2			11 3						11 3	11 3		
			INCR.=8.0 IN							11 11						11 11	11 11	48	
2	5	T101	WING	E21	X					3 11		7 2			10.250	3 9.875	11 1	11 1	23
2	5	T102	WING	E21	X					3 11		8 1			10.250	3 9.875	12 0	12 0	25
44	5	V101	BEAM/APPROACH	E19	S	X				3 0	1 8					4 8	4 7	210	
8	5	V102	WING	E20	X	V	2			3 9						3 9	3 9		
			INCR.=2.375 IN							4 4						4 4	4 4	34	
9	5	V103	WING	E20	X					4 7						4 7	4 7	43	
8	5	V104	WING	E20	X	V	2			3 8						3 8	3 8		
			INCR.=2.625 IN							4 4						4 4	4 4	33	
10	5	V105	WING	E20	X					4 6						4 6	4 6	47	
12	4	U101	BEAM	E10	S	X					1 6	2 3				5 3	5 1	41	
79	5	U102	BEAM	E13	S	X				2 3	2 7	2 3	2 7			10 7	10 3	845	
8	6	U103	BEAM	E10	S	X					3 9	2 1				9 7	9 3	111	



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

NOTE:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS. HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.

S = STIRRUP.

X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.

V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.

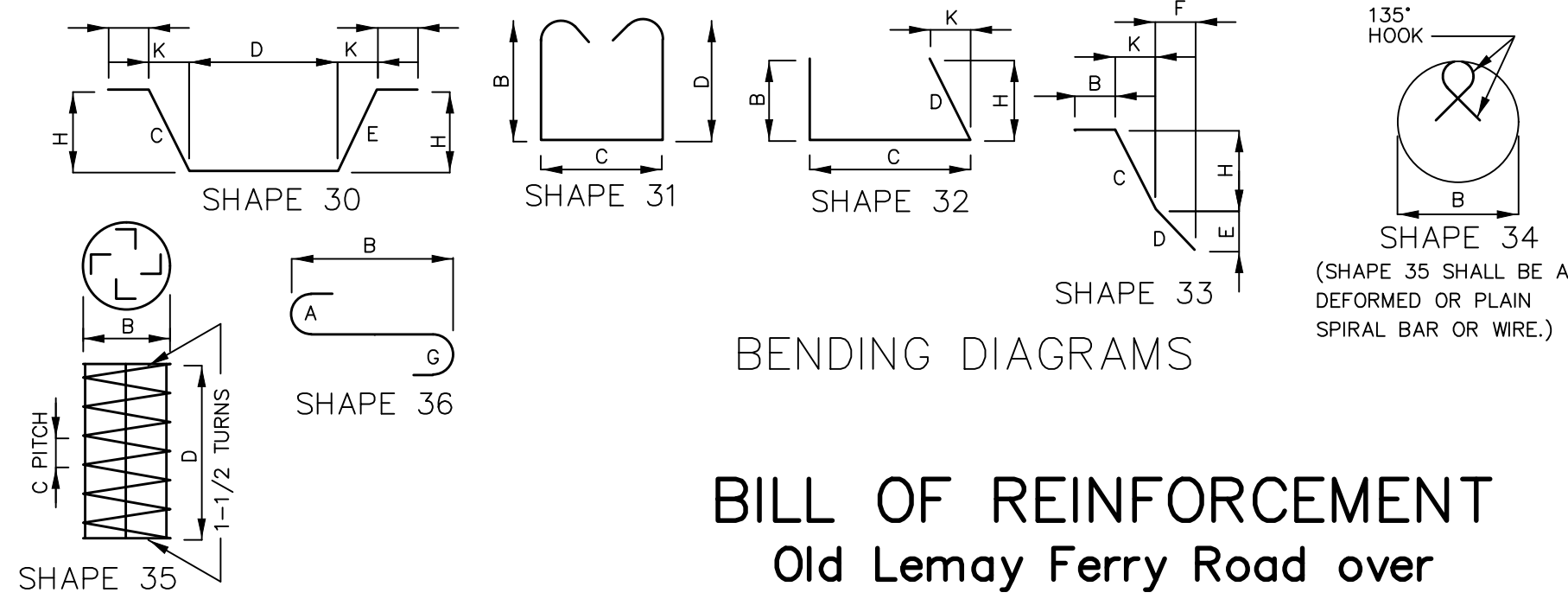
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH. PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

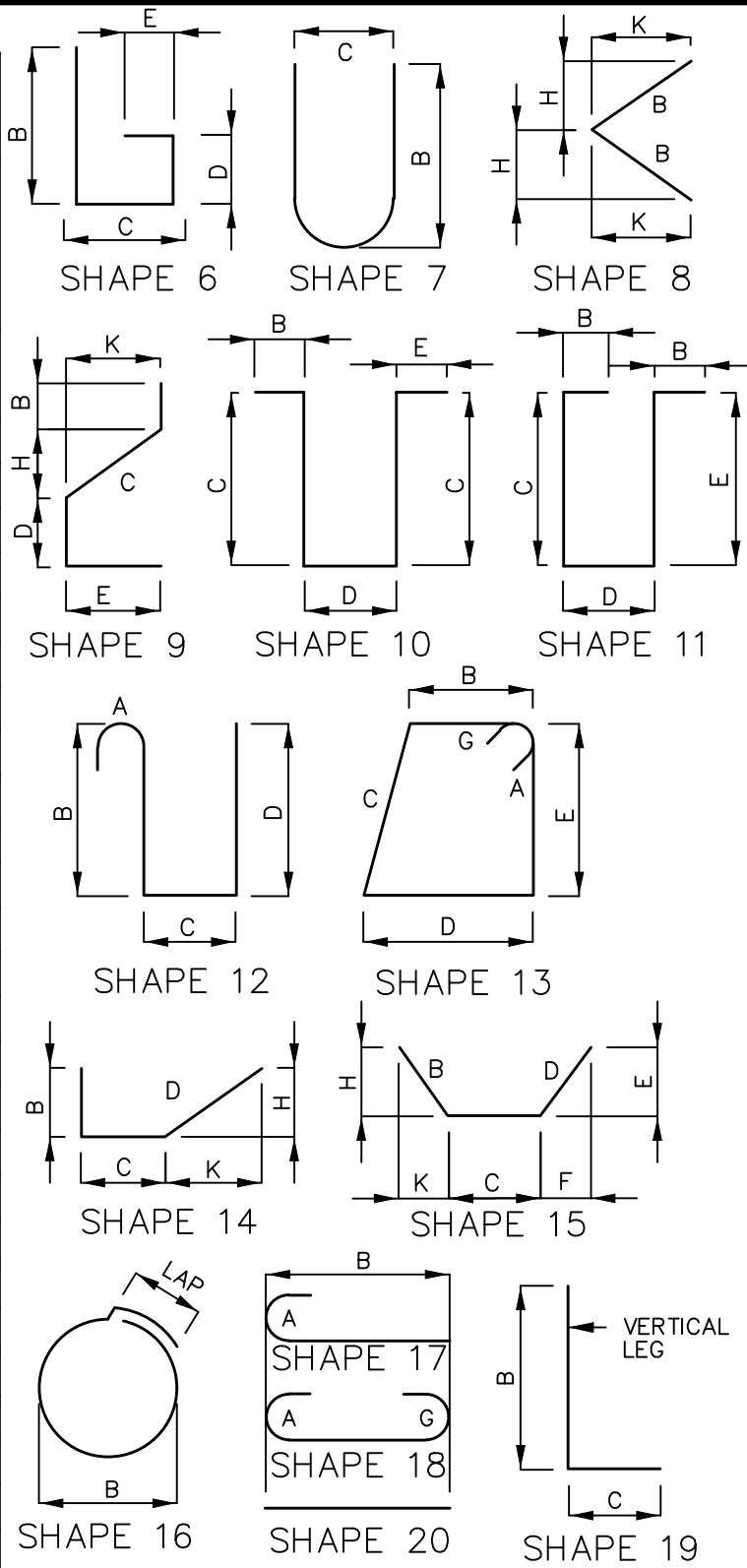


BENDING DIAGRAMS

BILL OF REINFORCEMENT
Old Lemay Ferry Road over
Tributary to Glaize Creek

Sheet 15 of 18

BILL OF REINFORCING STEEL																			
NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B	C	D	E	F	H	K				
									FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT. IN.	FT.IN.	FT.IN.		
		END BENT 2																	
4	6 F201	WING	E 15	S X					1 2	4 10	1 2	7.500	11.875	7.500	11.875	7 2	7 1	43	
12	8 H201	BEAM	E 20	X					46 7							46 7	46 7	1493	
2	6 H202	BEAM	E 20	X					11 3							11 3	11 3	34	
4	5 H203	WING	E 12	X						10 7	10					8 8	6 6	35	
4	5 H204	WING	E 20	X					10 0							10 0	10 0	42	
4	5 H205	WING	E 20	X V	2				11 10							11 10	11 10		
		INCR.=1.0 IN							11 11							11 11	11 11	50	
6	5 H206	WING	E 20	X					7 8							7 8	7 8	48	
4	5 H207	WING	E 12	X						10 4	6					5 4	5 2	22	
4	5 H208	WING	E 20	X					7 0							7 0	7 0	29	
14	5 H209	WING	E 20	X					4 4							4 4	4 4	63	
2	5 T201	WING	E 21	X					3 11		8 1			10.875	3 9.750	12 0	12 0	25	
44	5 V201	BEAM/APPROACH	E 19	S X					3 0	1 8						4 8	4 7	210	
10	5 V202	WING	E 20	X					4 8							4 8	4 8	49	
19	5 V203	WING	E 20	X					4 5							4 5	4 5	88	
8	5 V204	WING	E 20	X V	2				3 9							3 9	3 9		
		INCR.=3.0 IN							4 6							4 6	4 6	34	
12	4 U201	BEAM	E 10	S X						1 6	2 3					5 3	5 1	41	
79	5 U202	BEAM	E 13	S X					2 3	2 7	2 3	2 7				10 7	10 3	845	
8	6 U203	BEAM	E 10	S X						3 9	2 1					9 7	9 3	111	
								</											



STATE OF MISSOURI
JOHN J. GRUENDLER
NUMBER E-23263
REGISTERED PROFESSIONAL ENGINEER

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE
SL

STATE
MO

DISTRICT
23

SHEET NO.
23

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

BRIDGE NO.
1970087

DESCRIPTION

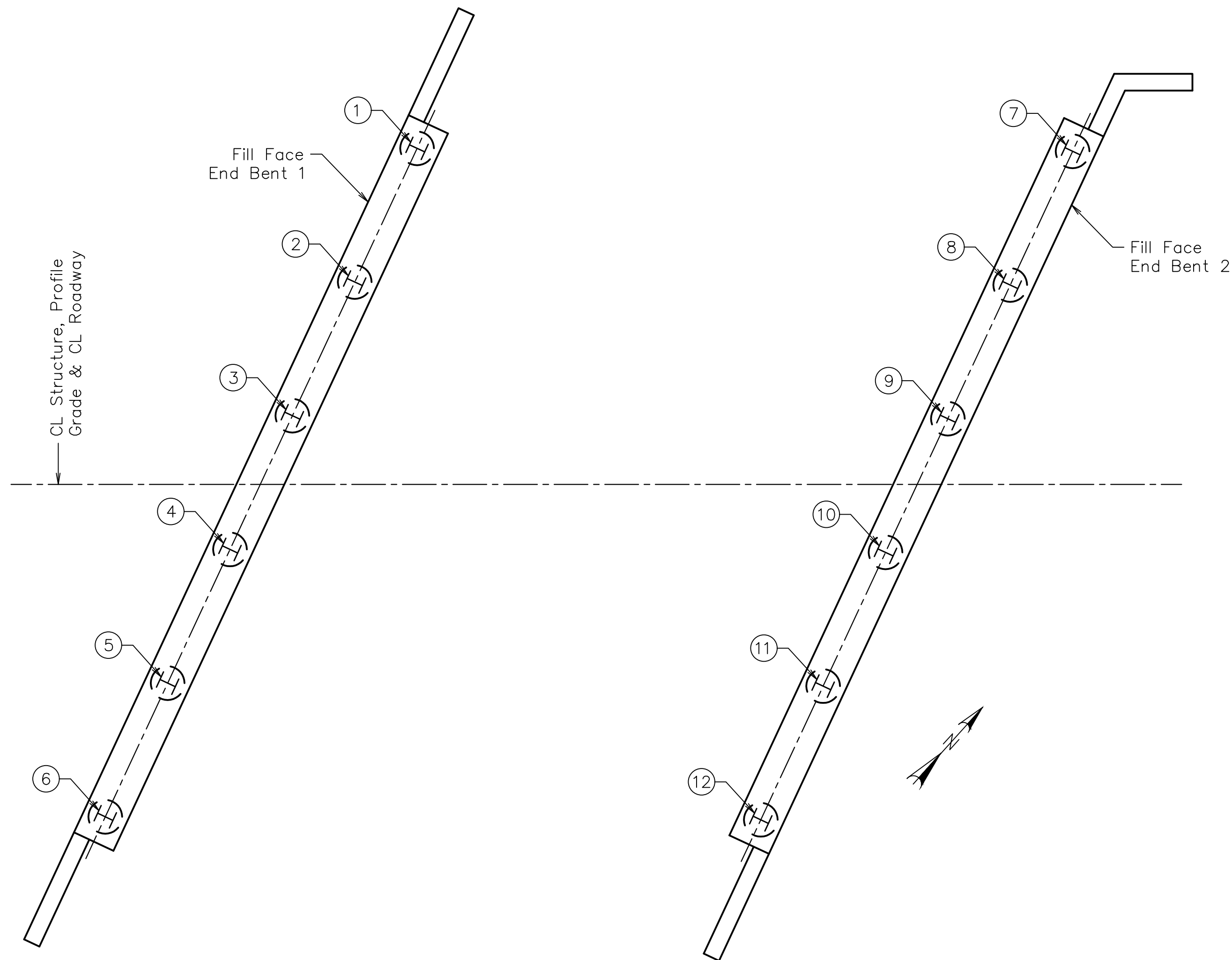
DATE

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

P.O. BOX 100
HILLSBORO, MO
(636-797-5340) PHONE
(636-797-5565) FAX

STRUCTURES, INC.
A STRUCTURAL ENGINEERING FIRM
8815 Gravois Road - St. Louis, MO 63123 - 314.638.6650

CERT. OF AUTHORITY: E-2006035000



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

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
1			
2			
3			
4			
5			
6			

END BENT 1

Note:
Indicate in remarks column:
A. Pile type and grade
B. If piles were driven to practical refusal

This sheet to be completed by County construction personnel.

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
7			
8			
9			
10			
11			
12			

END BENT 2

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE	STATE
BR	MO
DISTRICT	SHEET NO.
BR	24

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
PW15113BXC

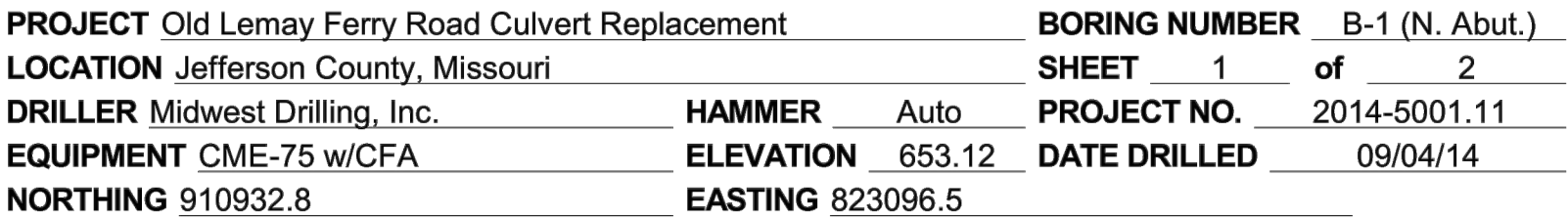
BRIDGE NO.
1970087

DESCRIPTION	DATE

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

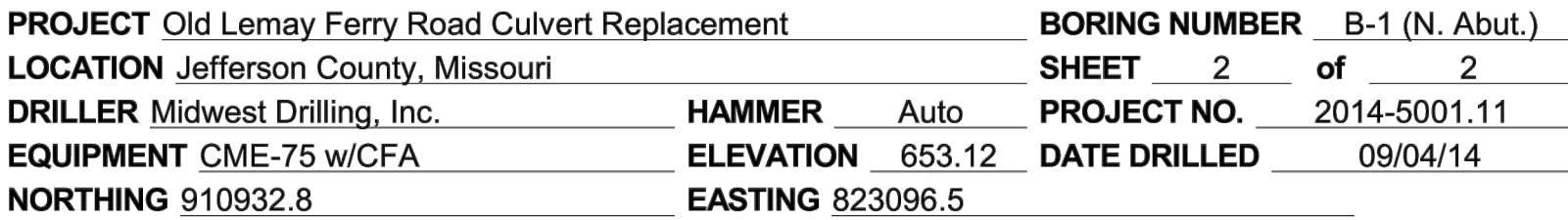
P.O. BOX 100
HILLSBORO, MO
(636-797-5340) PHONE
(636-797-5565) FAX

STRUCTURES, INC.
A STRUCTURAL ENGINEERING FIRM
8815 Gravois Road - St. Louis, MO 63123 - 314.638.6650
CERT. OF AUTHORITY: E-2006035000



WATER LEVEL: 25.0 ft --- ft --- ft	NONE OBSERVED WHILE DRILLING WHILE DRILLING HRS AFTER DRILLING DAYS AFTER DRILLING	REMARKS:
---	---	-----------------

See October 2014 SCI Engineering Inc.
geotechnical report for additional data.



WATER LEVEL: 25.0 ft --- ft --- ft	REMARKS: 1) RQD = 86% NONE OBSERVED WHILE DRILLING WHILE DRILLING HRS AFTER DRILLING DAYS AFTER DRILLING
---	--

BORING DATA

Old Lemay Ferry Road over
Tributary to Glaize Creek

DATE
4/30/2015

DATE PREPARED
4/30/2015

ROUTE	STATE
	MO

DISTRICT	SHEET NO.
BR	25

COUNTY
JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO.
DW15113DVC

BRIDGE NO.
1070007

1970087

DATE	DESCRIPTION
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JEFFERSON COUNTY PUBLIC
WORKS DEPARTMENT



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



PROJECT Old Lemay Ferry Road Culvert Replacement		BORING NUMBER B-2 (S. Abut.)	
LOCATION Jefferson County, Missouri		SHEET 1 of 2	
DRILLER Midwest Drilling, Inc.	HAMMER Auto	PROJECT NO. 2014-5001.11	
EQUIPMENT CME-75 w/CFA	ELEVATION 653.24	DATE DRILLED 09/04/14	
NORTHING 910875.8	EASTING 823059.9		

DEPTH (ft)	SAMPLE				DESCRIPTION (UNIFIED SOIL CLASSIFICATION)	GRAPHIC	SEE REMARK NO.	LABORATORY TEST RESULTS						ELEVATION (ft)
	NUMBER	TYPE	RECOVERY (min)	BLOWS (per 6 in)				MOISTURE CONTENT (%)	DRY DENSITY (pcf)	HAND PENETROMETER (ksf)	UNCONFINED COMPRESSIVE STRENGTH (ksf)	LIQUID LIMIT	PLASTICITY INDEX	
3	1	SS	4/18	4	8" ASPHALTIC CONCRETE		14	-					651	
				3	FILL: Crushed rock									
6	2	SS	10/18	5	FILL: Crushed rock and brown lean clay		19	4.0				648		
				8										
6	3	SS	18/18	5			46	8.5				645		
				14		16								
9	4	SS	18/18	8	FAT CLAY with GRAVEL (CH): Brown, gravel is fine to coarse chert		26	>9.0	116	89		642		
				16										
15	5	SS	18/18	5	SANDY FAT CLAY with GRAVEL (CH): Brown, sand is fine to coarse, gravel is coarse chert		17	>9.0				639		
				8		7								
18	6	SS	18/18	9			12	>9.0				636		
				14		17								

WATER LEVEL: 23.0 ft --- ft --- ft		REMARKS: NONE OBSERVED WHILE DRILLING WHILE DRILLING HRS AFTER DRILLING DAYS AFTER DRILLING
---	--	---



PROJECT Old Lemay Ferry Road Culvert Replacement			BORING NUMBER		B-2 (S. Abut.)	
LOCATION Jefferson County, Missouri			SHEET		2 of 2	
DRILLER Midwest Drilling, Inc.			HAMMER	Auto	PROJECT NO.	14-5001.11
EQUIPMENT CME-75 w/CFA			ELEVATION	653.24	DATE DRILLED	09/04/14
NORTHING 910875.8			EASTING 823059.9			

[illegible]

WATER LEVEL: 23.0 ft --- ft --- ft		REMARKS: 1) RQD = 78%	
NONE OBSERVED WHILE DRILLING WHILE DRILLING --- HRS AFTER DRILLING --- DAYS AFTER DRILLING			



DATE	
4/30/2015	
DATE PREPARED	
4/30/2015	
ROUTE	STATE
	MO
DISTRICT	SHEET NO.
BR	26
COUNTY	
JEFFERSON	
JOB NO.	

CONTRACT ID.

PROJECT NO.
PW15113BXC
BRIDGE NO.
1970087

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STRUCTURES, INC.
A STRUCTURAL ENGINEERING FIRM

8615 Gravois Road • St. Louis, MO 63123 • 314.538.6650

For location of borings, see Sheet No. 1 of 18.

See October 2014 SCI Engineering Inc.
geotechnical report for additional data.

BORING DATA
Old Lemay Ferry Road over
Tributary to Glaize Creek



CERT. OF AUTHORITY: E-2006035000



4/30/2015

4/30/2015

ROUTE	STATE
	MO

	MO
DISTRICT	SHEET NO.

SL 31

COUNTY

JEFFERSON

JOB NO.

CONTRACT ID.

PROJECT NO. _____

PW15113BXC

BRIDGE NO.
1970087

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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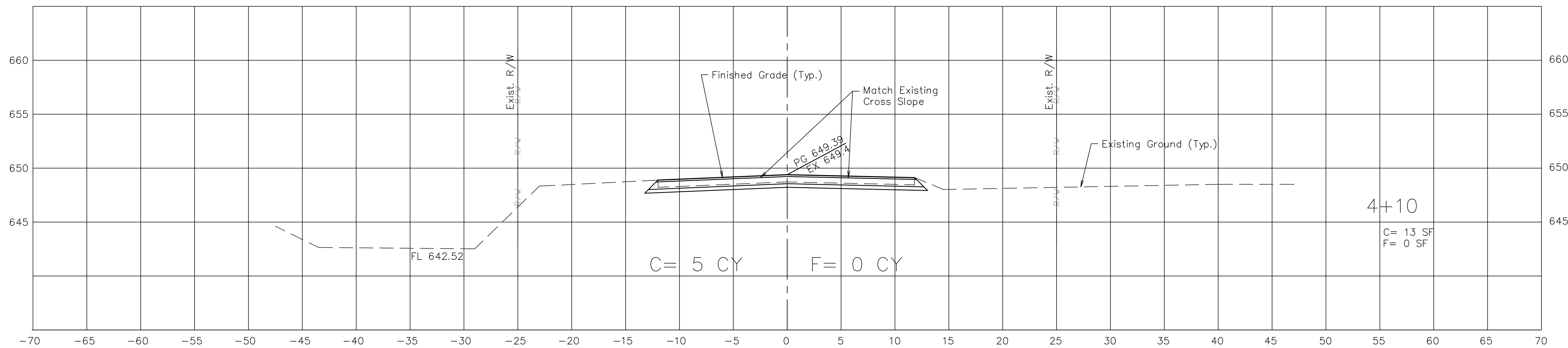
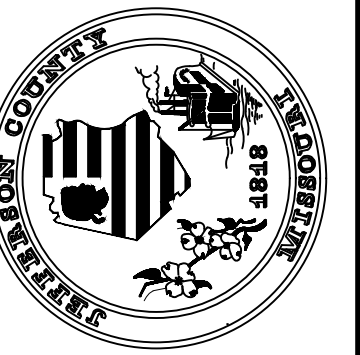
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WORKS DEPARTMENT

WORKS DEPARTMENT

P.O. BOX 100

HILLSBORO, MO
(636) 707-5340) PHONER

(636-797-5565) FAX



ROADWAY CROSS SECTIONS

Old Lemay Ferry Road over Tributary to Glaize Creek