

DESIGN DESIGNATION

LOCAL / RURAL LOCAL
ADT 2018 < 100 CURRENT SPEED 20 MPH
DESIGN ADT 2038 < 400 DESIGN SPEED 20 MPH
TRUCKS 5%

STATE OF MISSOURI
JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT
PLANS FOR THE PROPOSED STRUCTURE REPLACEMENT
OF
ROCK CREEK GARDENS ROAD
OVER
ROCK CREEK
PW-18428 BRG
BRIDGE NO. 042800041
FINAL PLANS
MAY 16, 2018

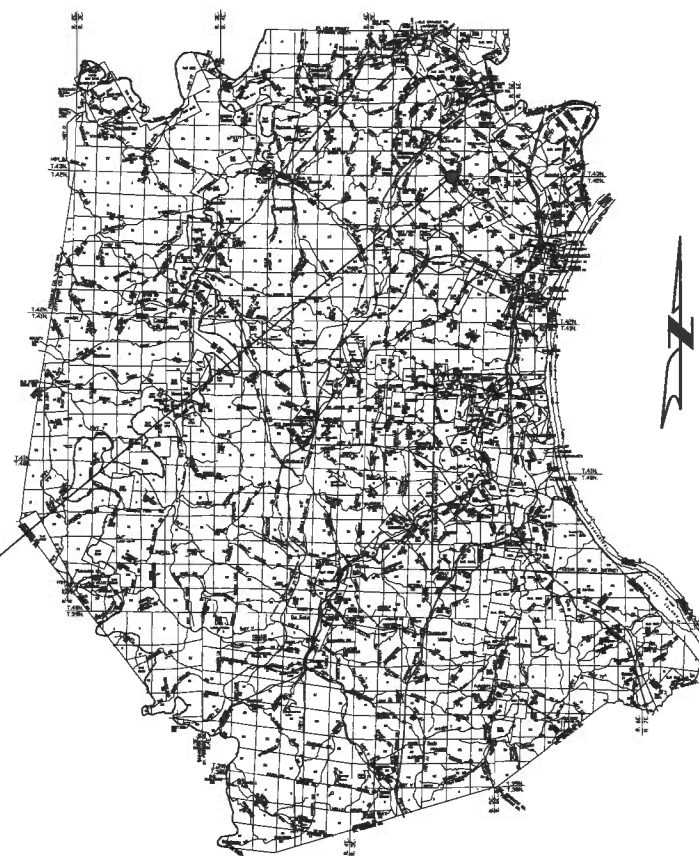
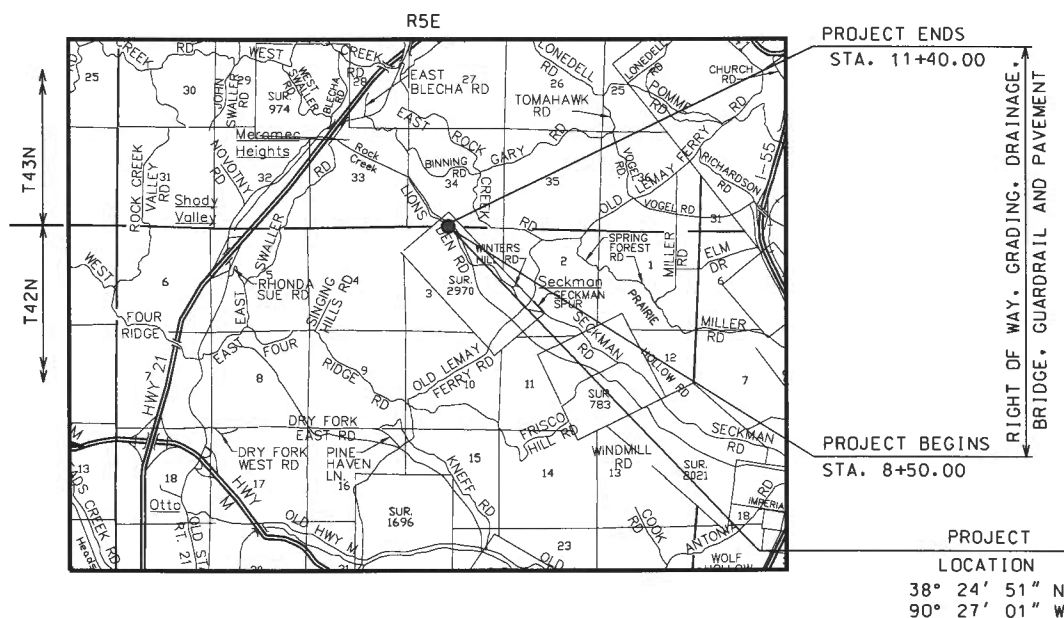
JEFFERSON COUNTY
SEC 34 T45N, R5E (SURVEY 2970)

SYMBOL LEGEND

A/C UNIT	GRATED MANHOLE	STORM MANHOLE
BOLLARD	GUY WIRE ANCHOR	STUMP
BUSH	LANDSCAPE LIGHT	TELEPHONE PEDESTAL
CLEANOUT	LAWN SPRINKLER	TELEPHONE PULLBOX
COMBINED MANHOLE	LIGHT STANDARD	TEMPORARY CONSTRUCTION EASEMENT
CURB/AREA INLET	MONITORING WELL	TREE, DECIDUOUS
ELECTRIC MANHOLE	PARKING METER	TREE, CONIFEROUS
ELECTRIC METER	POWER POLE	TRAFFIC SIGNAL MAST ARM
ELECTRIC PEDESTAL	PROPOSED ROW	TRAFFIC SIGNAL PEDESTAL
ELECTRIC PULLBOX	ROW MARKER	UTILITY MARKER
FIRE HYDRANT	RR FLASHERS	WATER MANHOLE
GAS DRIP	SAMPLING TEE	WATER METER
GAS METER	SANITARY MANHOLE	WATER VALVE
GAS VALVE	SIGN	
GRATED INLET	SOIL BORING	

INDEX

SHEET NO.	DESCRIPTION OF SHEET
1	COVER SHEET
2	TYPICAL SECTIONS
2A	SUMMARY OF QUANTITIES & SCHEDULE OF QUANTITIES
3	PLAN & PROFILE
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5	EROSION CONTROL
6	SLOPE PROTECTION
7	TRAFFIC CONTROL
8-23	BRIDGE DRAWINGS
24-25	ROADWAY CROSS SECTIONS
26	CREEK CROSS SECTIONS



LOCATION MAP
NET PROJECT LENGTH 290 FEET (0.0549 MILES)

Line Legend

Existing Right of Way	---
Temporary Construction Easement	--- TCE ---
Overhead Electric	--- OHE ---
Underground Telephone	--- T ---
Slope Limit	--- SL ---
Proposed Ditch	--- S ---
Sanitary Sewer	--- S ---
Property Line	--- P ---

Control Benchmark:
JE-BM-102, Elevation: 589.37

Site Benchmarks:(NAVD 1988)

BM#1 - CPS in asphalt on the West shoulder of road at intersection of Rock Creek Gardens Rd. and Lions Den Rd. Sta. 7+28.66, 11.80' Rt. Elevation 518.05

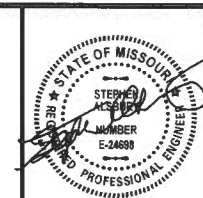
BM#2 - Chiseled "L" on Southeast corner of a concrete pad near an electric meter. ±200 feet Southeast of the intersection of Lions Den Rd. and Rock Creek Gardens Rd. Sta. 9+34.96, 68.70' Rt. Elevation 514.54

APPROVED FOR CONSTRUCTION

PUBLIC WORKS DIRECTOR

5/16/2018

DATE



DATE PREPARED
5/15/2018

STATE SHEET NO.
MO 1

ROUTE
ROCK GARDENS

COUNTY
JEFFERSON

JOB NO.
17-6066

PROJECT NO.
PW-18428 BRG

BRIDGE NO.
042800041

DESCRIPTION

DATE

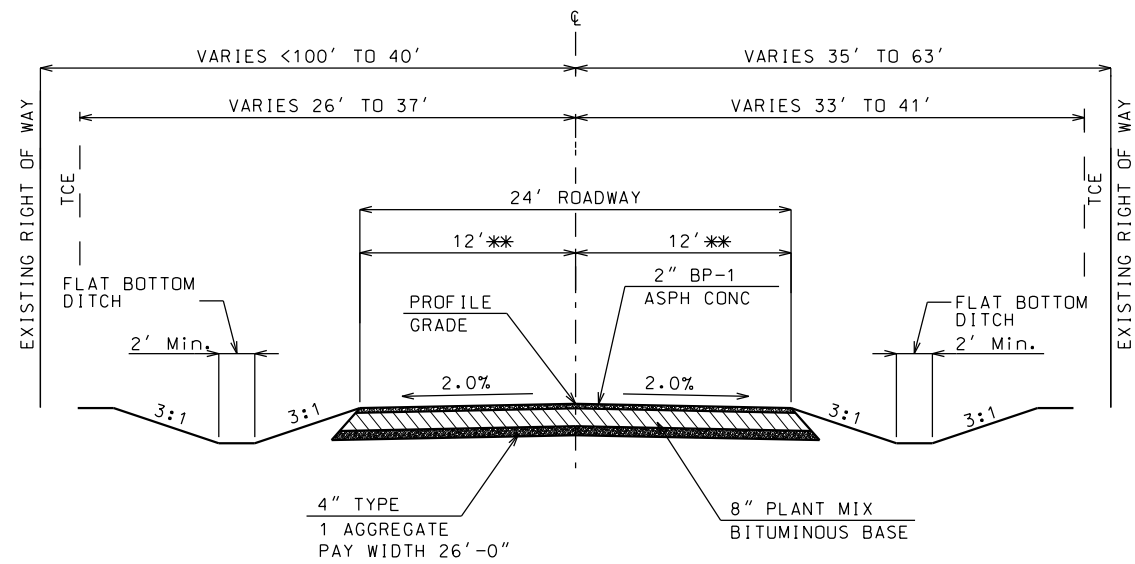
JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

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(636-797-5340) PHONE
(636-797-5565) FAX



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PH. 314-454-0222
CERTIFICATE/LICENSE NO. 001501

XABNA



PROPOSED TYPICAL CROSS SECTION
ROCK CREEK GARDENS ROAD

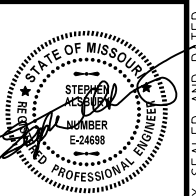
STA 8+50.00 TO STA 9+58.08
STA 10+44.91 TO STA 11+40.00

** TRANSITION FROM 12' TO EXISTING STA 11+00.00 TO STA 11+40

Detailed April 2018
Checked April 2018

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

TYPICAL SECTIONS



DATE PREPARED
5/15/2018
STATE
MO
SHEET NO.
2
ROUTE
ROCK GARDENS
COUNTY
JEFFERSON
JOB NO.
17-6066
PROJECT NO.
PW-18428 BRG
BRIDGE NO.
042800041

DATE	DESCRIPTION

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[illegible]

(1) INCLUDES TACK FOR ONE LIFT

EARTH WORK SUMMARY	CUT	FILL
	CU YD	CU YD
CLASS A EXCAVATION (MAIN LINE)	250	140
CLASS A EXCAVATION (CHANNEL)	430	
CLASS A EXCAVATION (RIPRAP)	390	
ESTIMATED EXCESS *		930
TOTALS	1070	1070
* For Information Only		

RESTORATION OF
LOW WATER CROSSING = 0.6 ACRES

440 CU YD

Note: County will retain pipes.

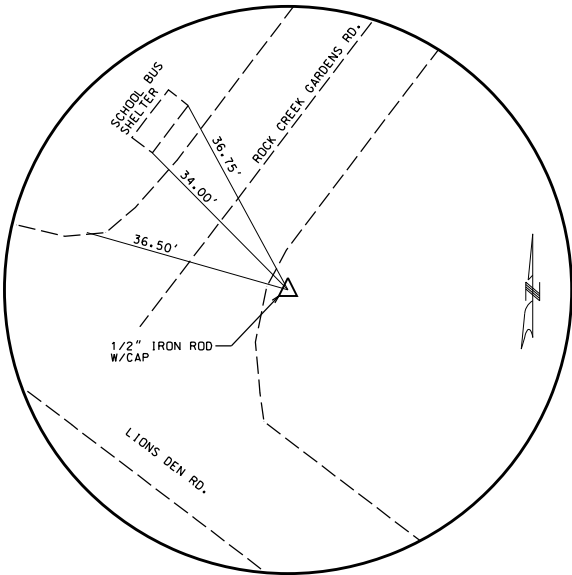
END BENT NO. 1	=	30	CU	YD
END BENT NO. 2	=	30	CU	YD
TOTAL	=	60	CU	YD

CONTRACTOR FURNISHED SURVEY & STAKING = 1 LUMP SUM

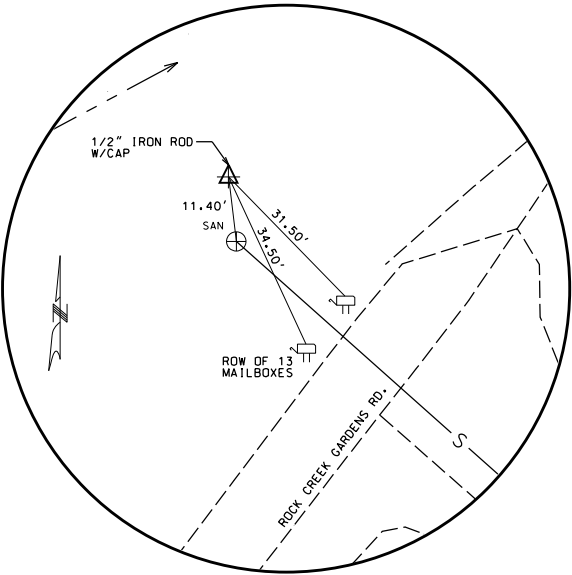
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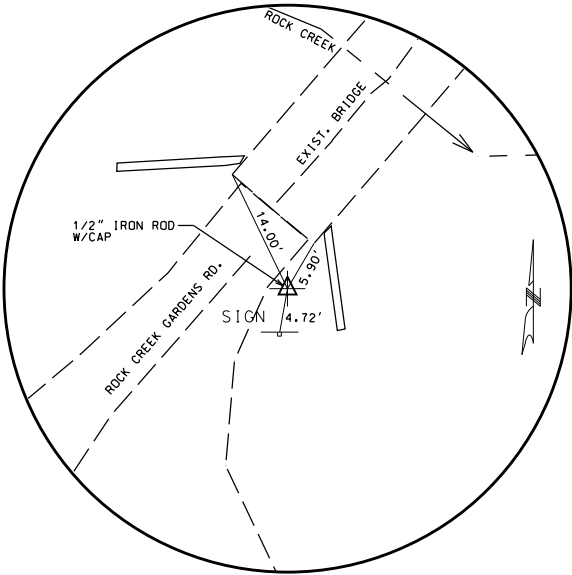
ROCK CREEK GARDENS ROAD LAYOUT COORDINATE TABLE		
Point Description	North	East
Control Point TPR-400	939,563.068	834,258.317
Control Point TPR-401	939,702.271	834,286.393
Control Point TPR-402	939,716.639	834,362.331
Control Point TPR-403	939,827.468	834,446.781
Control Point TPR-404	939,794.867	834,301.774
POT Sta. 7+48.39	939,540.087	834,220.108
PC Sta. 9+35.36	939,689.123	834,333.004
PT Sta. 9+54.77	939,704.208	834,345.219
PC Sta. 10+51.50	939,777.373	834,408.490
PT Sta. 11+21.03	939,825.759	834,458.301
POT Sta. 11+55.00	939,847.225	834,484.633



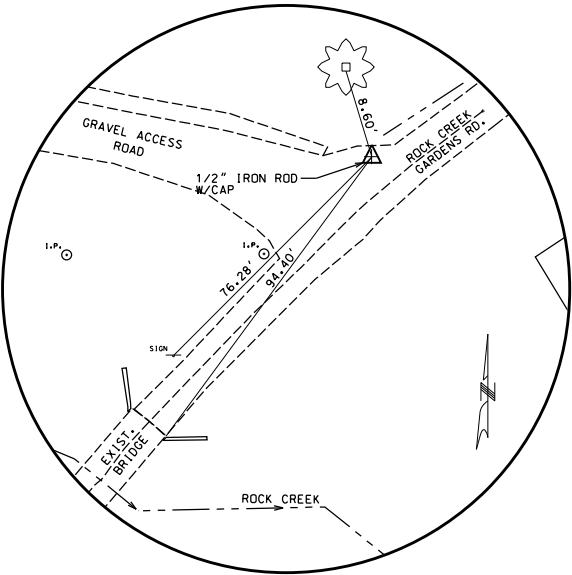
TPR-400



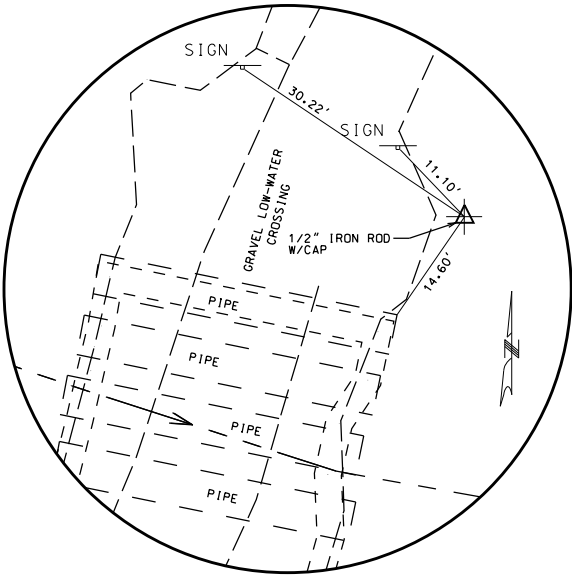
TPR-401



TPR-402



TPR-403



TPR-404

COORDINATE POINTS

Detailed April 2018
Checked April 2018

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



DATE PREPARED 5/15/2018	
STATE MO	SHEET NO. 4
ROUTE ROCK GARDENS	
COUNTY JEFFERSON	
JOB NO. 17-6066	
PROJECT NO. PW-18428 BRG	
BRIDGE NO. 042800041	

DATE	DESCRIPTION

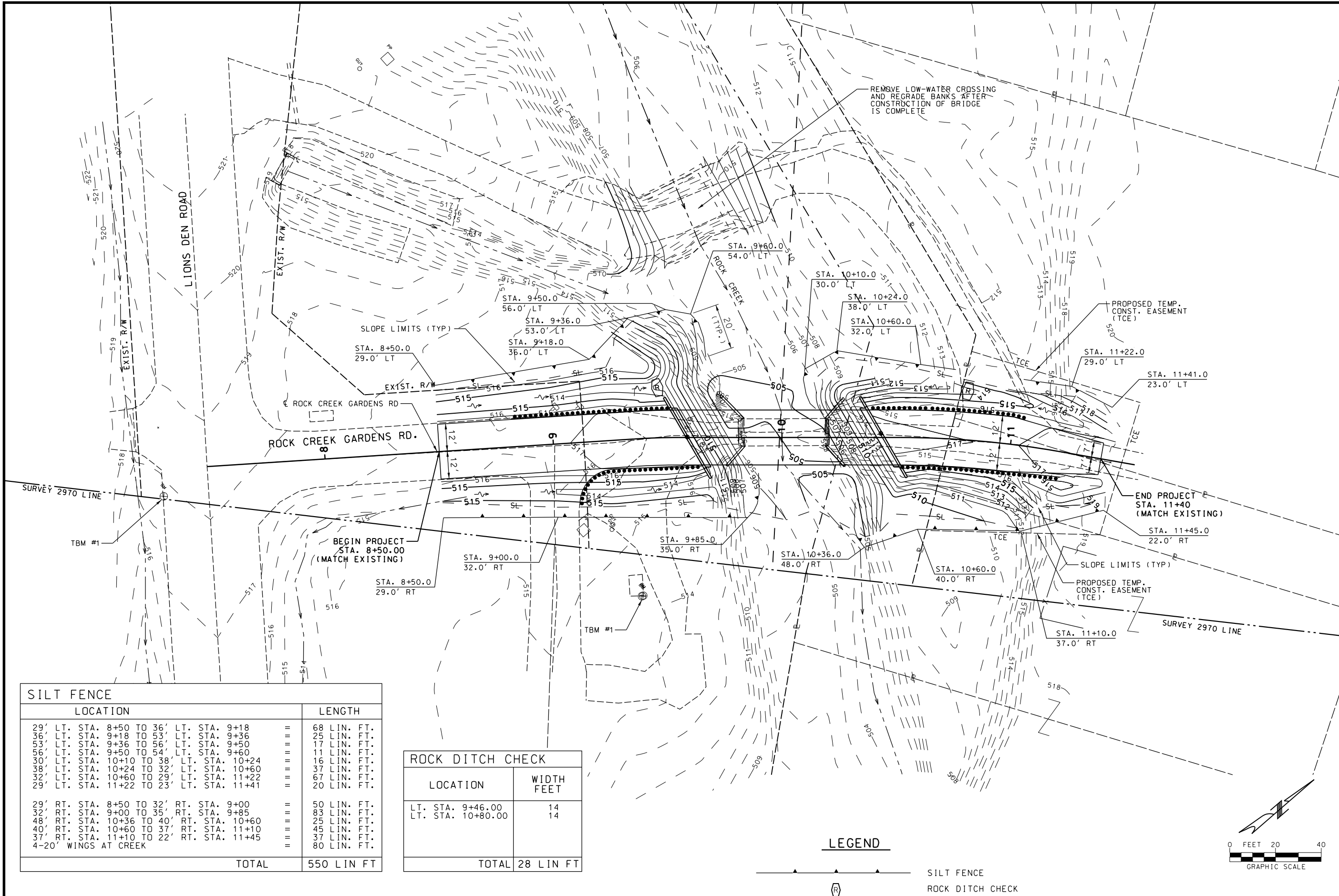
JEFFERSON COUNTY PUBLIC WORKS
DEPARTMENT



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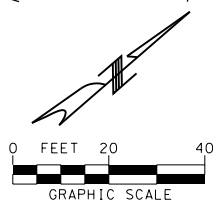


SILT FENCE					
LOCATION				LENGTH	
29'	LT. STA. 8+50 TO 36'	LT. STA. 9+18	==	68 LIN. FT.	
36'	LT. STA. 9+18 TO 53'	LT. STA. 9+36	==	25 LIN. FT.	
53'	LT. STA. 9+36 TO 56'	LT. STA. 9+50	==	17 LIN. FT.	
56'	LT. STA. 9+50 TO 54'	LT. STA. 9+60	==	11 LIN. FT.	
30'	LT. STA. 10+10 TO 38'	LT. STA. 10+24	==	16 LIN. FT.	
38'	LT. STA. 10+24 TO 32'	LT. STA. 10+60	==	37 LIN. FT.	
32'	LT. STA. 10+60 TO 29'	LT. STA. 11+22	==	67 LIN. FT.	
29'	LT. STA. 11+22 TO 23'	LT. STA. 11+41	==	20 LIN. FT.	
29'	RT. STA. 8+50 TO 32'	RT. STA. 9+00	==	50 LIN. FT.	
32'	RT. STA. 9+00 TO 35'	RT. STA. 9+85	==	83 LIN. FT.	
48'	RT. STA. 10+36 TO 40'	RT. STA. 10+60	==	25 LIN. FT.	
40'	RT. STA. 10+60 TO 37'	RT. STA. 11+10	==	45 LIN. FT.	
37'	RT. STA. 11+10 TO 22'	RT. STA. 11+45	==	37 LIN. FT.	
4-20' WINGS AT CREEK				80 LIN. FT.	
TOTAL				550 LIN FT	

ROCK DITCH CHECK	
LOCATION	WIDTH FEET
LT. STA. 9+46.00	14
LT. STA. 10+80.00	14
TOTAL	
28 LIN FT	

LEGEND

—▲— SILT FENCE
—(R)— ROCK DITCH CHECK



EROSION CONTROL

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
STEPHEN J. KASSEL
NUMBER E-24688

DATE PREPARED
5/15/2018

STATE
MO

SHEET NO.
5

ROUTE
ROCK GARDENS

COUNTY
JEFFERSON

JOB NO.
17-6066

PROJECT NO.
PW-18428 BRG

BRIDGE NO.
042800041

DESCRIPTION

DATE

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

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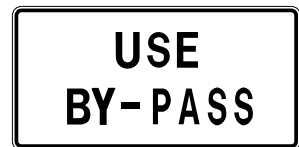
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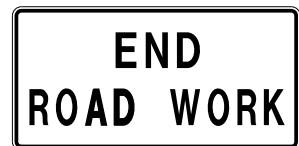
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48" x 30"
R11-2



48" x 24"
SPECIAL



48" x 24"
G020-2

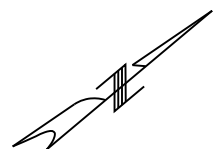


3

TYPE III
MOVEABLE BARRICADE
W/ROAD CLOSED SIGN

NOTES:

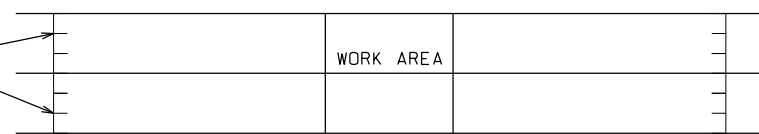
1. ALL CONSTRUCTION SIGNS SHALL BE NON-PORTABLE MOUNTED 48 HOURS PRIOR TO ROAD CLOSURE.
2. TYPE III BARRICADES SHALL EXTEND FROM SHOULDER TO SHOULDER.
3. CONTRACTOR IS RESPONSIBLE FOR UTILITY LOCATES PRIOR TO PLACING SIGN POSTS.



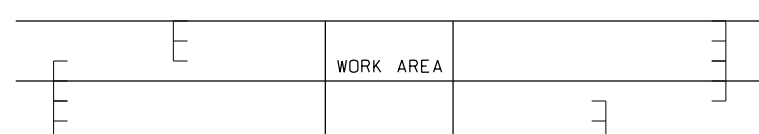
NOT TO SCALE

MOUNT ROAD CLOSED
SIGNS 100' IN FRONT
OF BARRICADES (TYP.)

8' WIDE BARRICADE



NIGHT OR WHEN WORKERS NOT PRESENT



DAY TIME WHEN WORKERS PRESENT (AT CONTRACTORS OPTION)

BARRICADE PLACEMENT



36" x 36"
W08-7

4



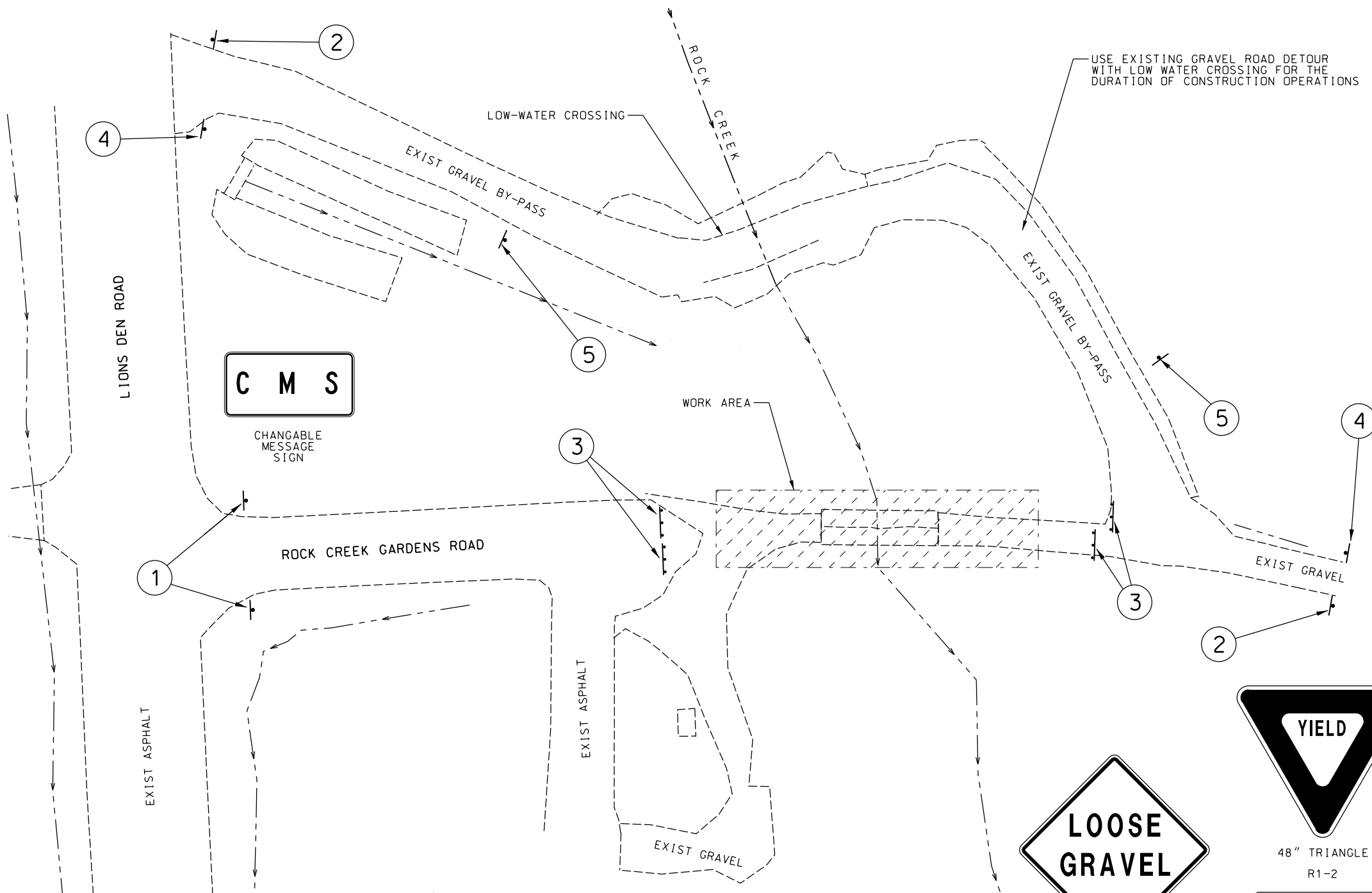
48" TRIANGLE
R1-2



36" x 36"
R1-2a

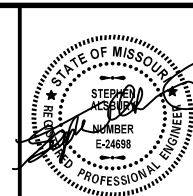
5

TRAFFIC CONTROL



CHANGABLE
MESSAGE
SIGN

USE EXISTING GRAVEL ROAD DETOUR
WITH LOW WATER CROSSING FOR THE
DURATION OF CONSTRUCTION OPERATIONS

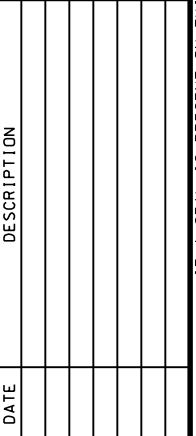
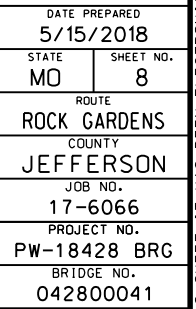


DATE PREPARED
5/15/2018
STATE
MO
SHEET NO.
7
ROUTE
ROCK GARDENS
COUNTY
JEFFERSON
JOB NO.
17-6066
PROJECT NO.
PW-18428 BRG
BRIDGE NO.
042800041

DESCRIPTION	DATE

JEFFERSON COUNTY PUBLIC WORKS
DEPARTMENT
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ST. LOUIS, MO 63108
PH. 314-454-0222
CERTIFICATE/LICENSE NO. 001501



JEFFERSON COUNTY PUBLIC WORKS
DEPARTMENT

The seal of Jefferson County, Missouri, is circular. It features a central shield with a red and white striped field and a blue chief containing a white star. To the right of the shield is a plow, and below it are three white flowers. The year '1848' is inscribed in the center. The words 'JEFFERSON COUNTY' are written along the top arc, and 'MISSOURI' along the bottom arc.

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

BM#2 - Chiseled "L" on Southeast corner of a concrete pad near an electric meter. ±200 feet Southeast of the intersection of Lions Den Rd. and Rock Creek Gardens Rd. Sta. 9+34.96, 68.70' Rt. Elevation 514.54

STA. 9+58.08

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Estimated Quantities			
Item		Substr.	Superstr.
Class 1 Excavation	cu. yard	90	
Removal of Bridges	lump sum		
Galvanized Structural Steel Piles (10 in.)	linear foot	236	
Pile Point reinforcement	each	8	
Class B Concrete (Substructure)	cu. yard	30.6	
33in Prestressed Concrete Adjacent Box Beam	linear foot		509
Waterproofing Membrane	sq. yard		243
Bridge Guard Rail (Thrie Beam)	linear foot		166
Plain Neoprene Bearing Pad	each		14
Reinforcing Steel Bridges	pounds	4300	

Cost of L4x4x $\frac{3}{8}$ Pile Anchors (ASTM A709 Grade A36) complete in place shall be considered completely covered in the contract.

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

Foundation Data			
Type	Design Data	Bent No.	
		1	2
Load Bearing Pile	Pile Type and Size	HP 10x42	HP 10x42
	Number	4	4
	Approximate Length per Each	ft 26	33
	Pile Point Reinforcement	ea 4	4
	Minimum Galvanized Penetration (Elev.)	ft 492	480
	Minimum Tip Penetration (Elev.)	ft 492	480
	Criteria for Minimum Tip Penetration	Minimum Embedment into Natural Ground	Minimum Embedment into Natural Ground
	Pile Driving Verification Method	DF	DF
	Design Bearing		
	Nominal Axial Pile Compression Resistance	kip 219	219
	Hammer Energy Required	ft-lb 8000	8000

INDEX OF SHEETS - BRIDGE PLANS

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- GENERAL NOTES AND ESTIMATED QUANTITIES
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- 4
- END BENT NO. 1 - ELEVATION
- 5
- END BENT NO. 2 - PLAN DETAILS
- 6
- END BENT NO. 2 - ELEVATION
- 7
- SUPERSTRUCTURE FRAMING
- 8
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- 9
- GIRDER DETAILS
- 10
- BRIDGE RAIL LAYOUT
- 11
- BRIDGE RAIL DETAILS
- 12
- BAR LIST
- 13
- AS BUILT PILE
- 14-16
- SOIL BORINGS

GENERAL NOTES:

Design Specifications:
2017 - AASHTO LRFD 8th Edition
Load and Resistance Factor Design
Seismic Performance Category B

Design Earthquake Response Spectral Acceleration Coefficient at 1.0 Second Period, SD1= 0.56
Acceleration Coefficient (Effective Peak Ground Acceleration Coefficient) AS= .18

Design Loading:
HL-93 (LRFD Superstructure, LRFD Substructure)
25#/Sq. Ft. Wearing Surface
Earth 120 #/Cu. Ft., Equivalent Fluid Pressure 45#/Cu. Ft.
Superstructure: Simply-supported, non-composite for dead load and live load.

Design Unit Stresses:
Class B Concrete (Substructure) f'c = 3,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi
Steel Pile (ASTM A709 Grade 50) fb = 9,000 psi fy = 50,000 psi
For Prestressed Girder Stresses, see Sheet No. 9.

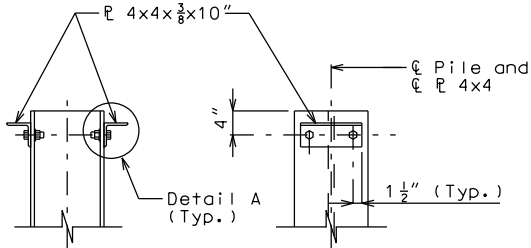
Neoprene Pads:
Bearings shall be 60 durometer neoprene pads. Plain Neoprene Bearing Pads shall be in accordance with Sec 716.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.
All reinforcing steel shall be tied 100% at all intersections with minimum 16 gauge wire.

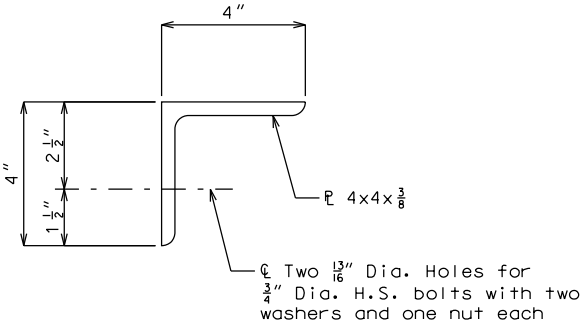
Existing Structure:
Remove existing Bridge over Rock Creek. Existing Low water crossing shall also be removed.

Construction Specifications:
The 2017 Edition of the Missouri Highway and Transportation Commission, "Missouri Standard Specifications for Highway Construction" supplemental revisions and the job specifications shall govern.

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



DETAIL OF HP PILE ANCHORS



DETAIL A

Note:
Galvanizing L4x4, $\frac{3}{4}$ " Diameter High Strength Bolts, Washers and Nuts shall not be required.

GENERAL NOTES AND ESTIMATED QUANTITIES

Detailed April 2018
Checked April 2018

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

Sheet No. 2 of 16

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
STEPHEN J. KESNER
LICENSE NUMBER
E-24688

DATE PREPARED
5/15/2018

STATE
MO

SHEET NO.
9

ROUTE
ROCK GARDENS

COUNTY
JEFFERSON

JOB NO.
17-6066

PROJECT NO.
PW-18428 BRG

BRIDGE NO.
042800041

DESCRIPTION

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JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

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JEFFERSON COUNTY

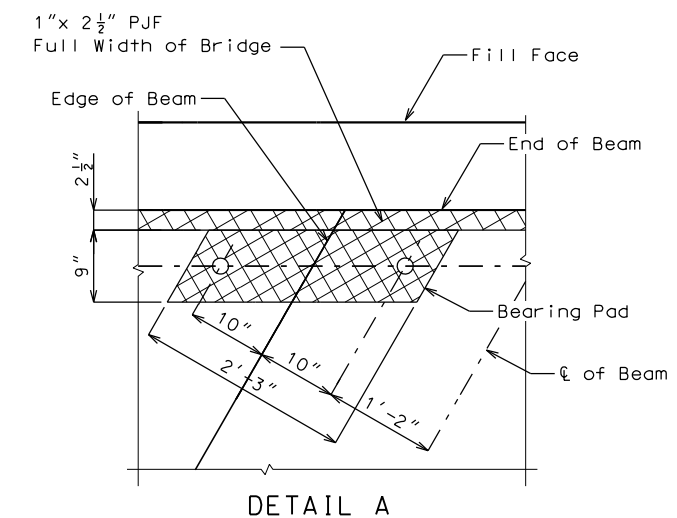
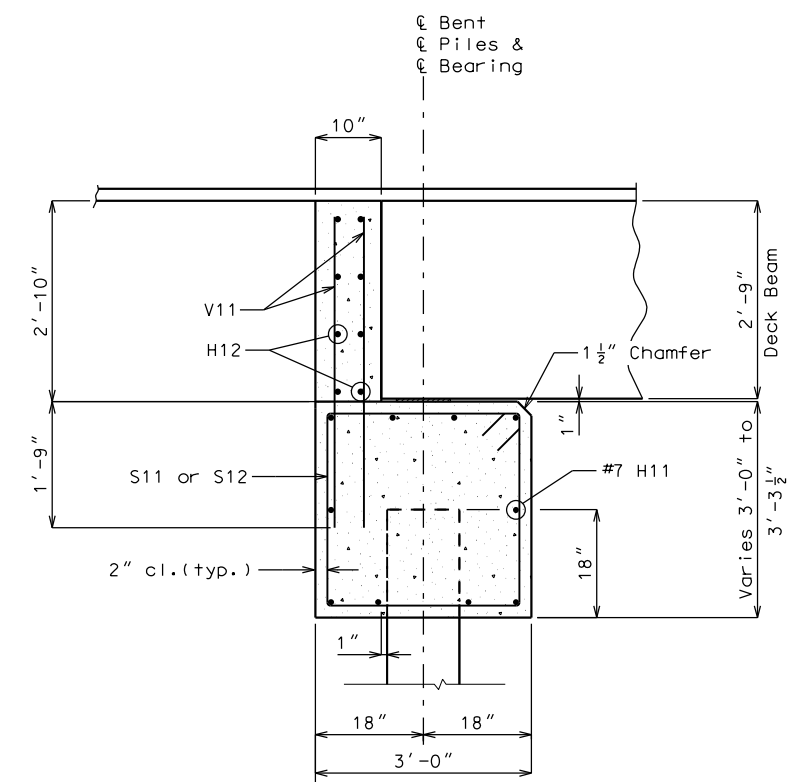
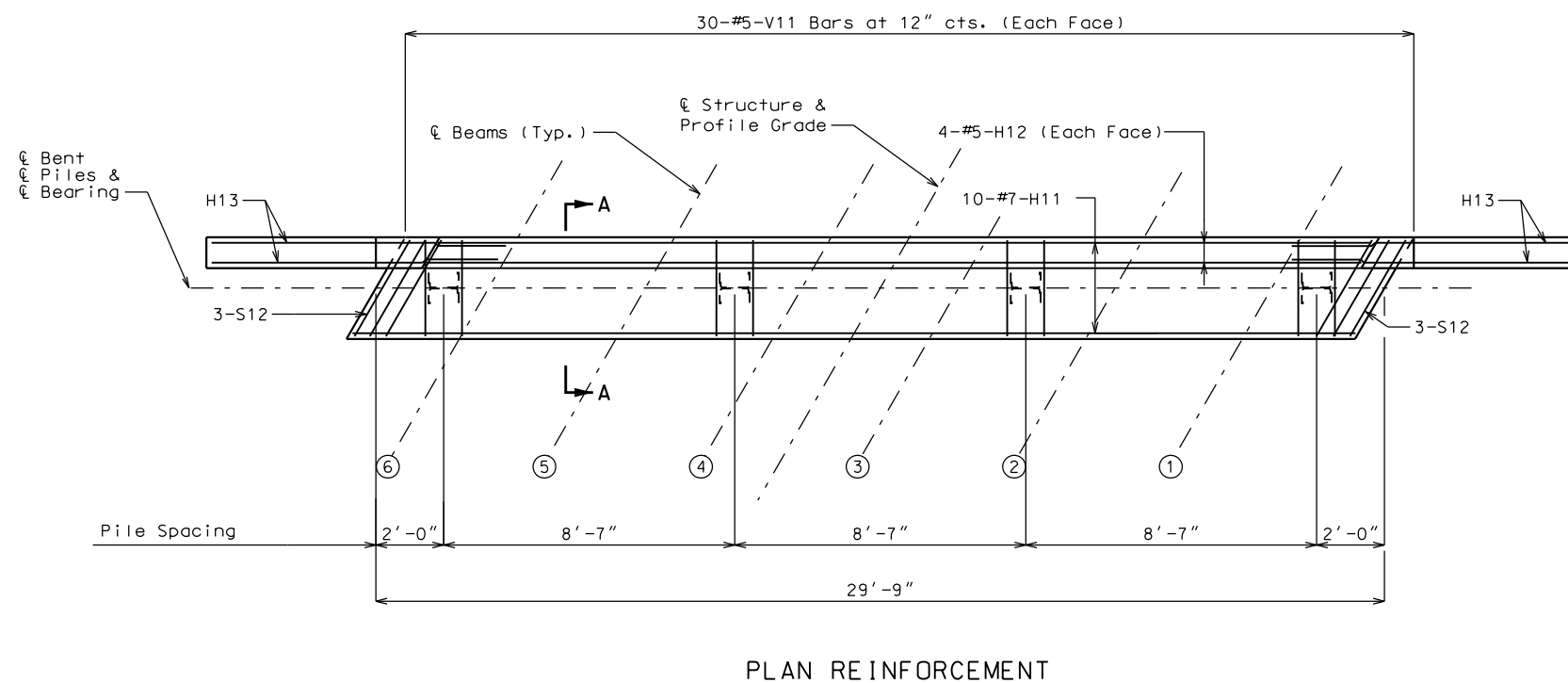
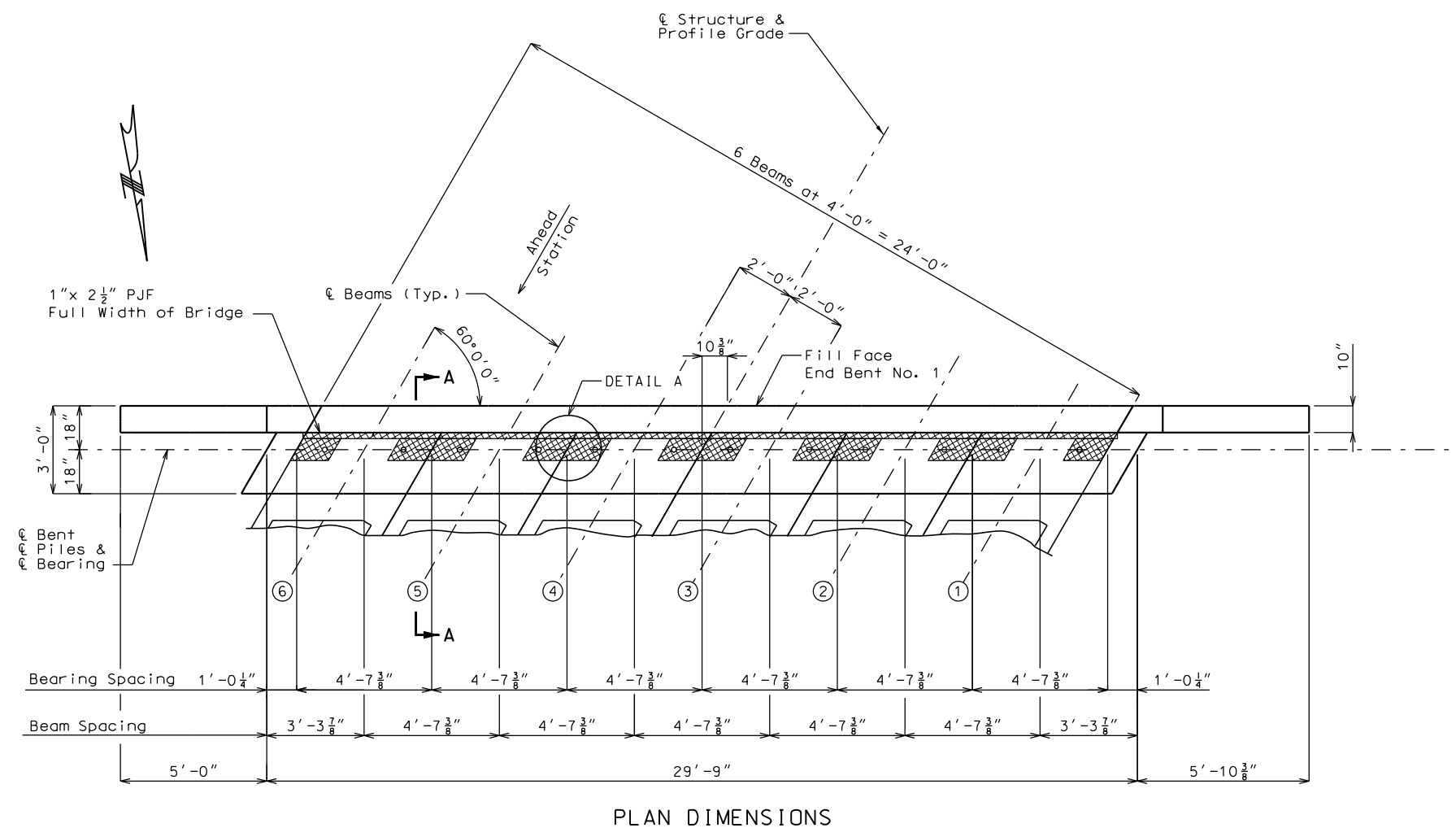
MISSOURI

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



Notes:

Work this Sheet with Sheet No. 4.

For details of Pile Anchors, see Sheet No. 2.

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

The back wall & top of wings shall be poured after the deck beams are in place

Item	Quantity
Class 1 Excavation	cu. yard 45
Structural Steel Pile (10 in.)	linear foot 104
Pile Point Reinforcement	each 4
Class B Concrete (substructure)	cu. yard 15.3
Reinforcing Steel Bridges	pounds 2150



DATE PREPARED
5/15/2018

STATE MO	SHEET NO. 10
-------------	-----------------

ROUTE
OCK GARDENS

COUNTY
EFFERSON

JOB NO.
17-6066

PROJECT NO.	W-18428 BRG
BRIDGE NO.	

042800041					
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DESCRIPTION

DATE _____

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DEPARTMENT

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(636-797-5340) PHONE
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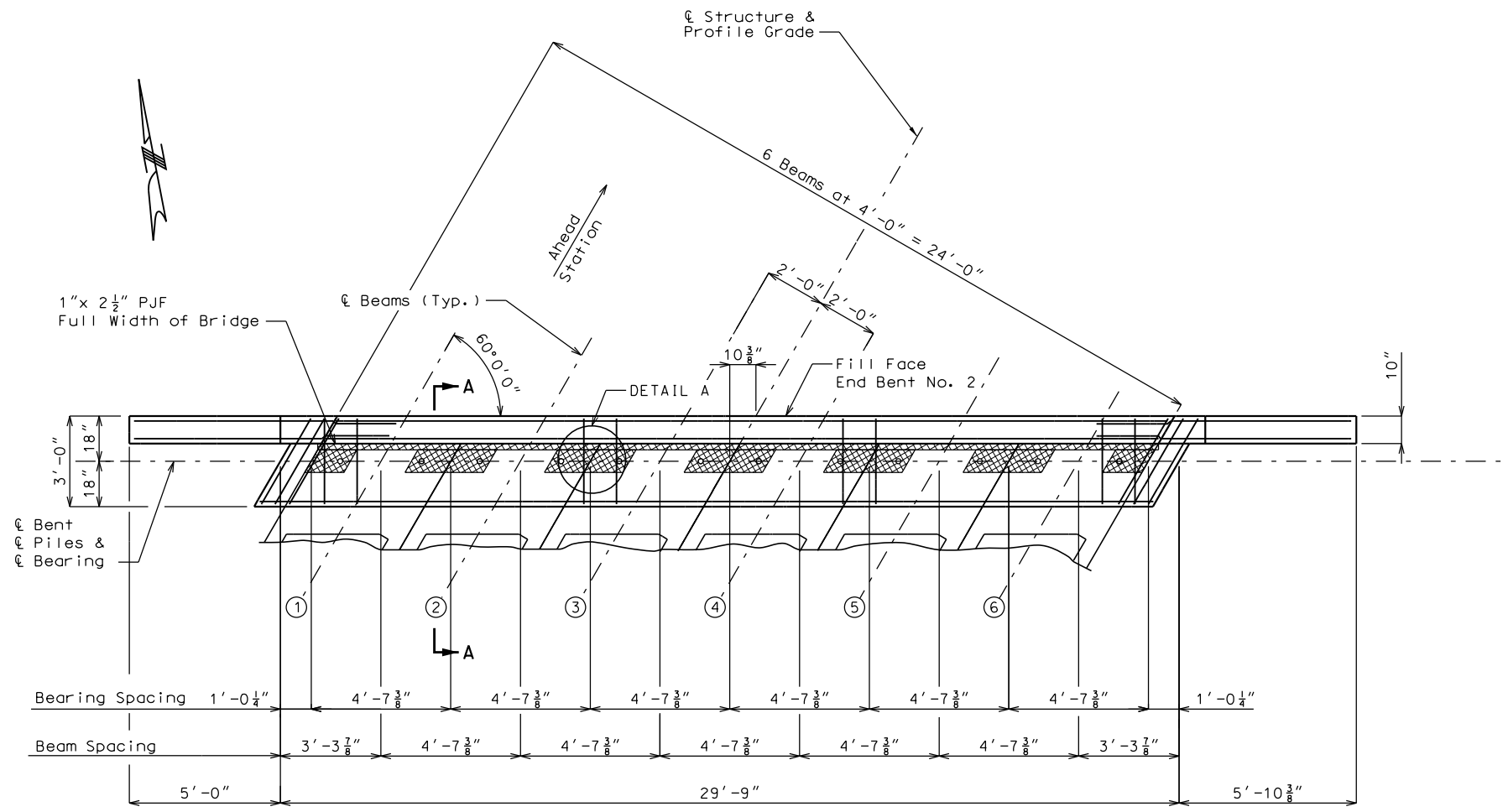
NA
4140 LINDELL BOULEVARD
ST. LOUIS, MO 63108
PH. 314-454-0222
CERTIFICATE/LICENSE NO. 001501

Detailed April 2018
Checked April 2018

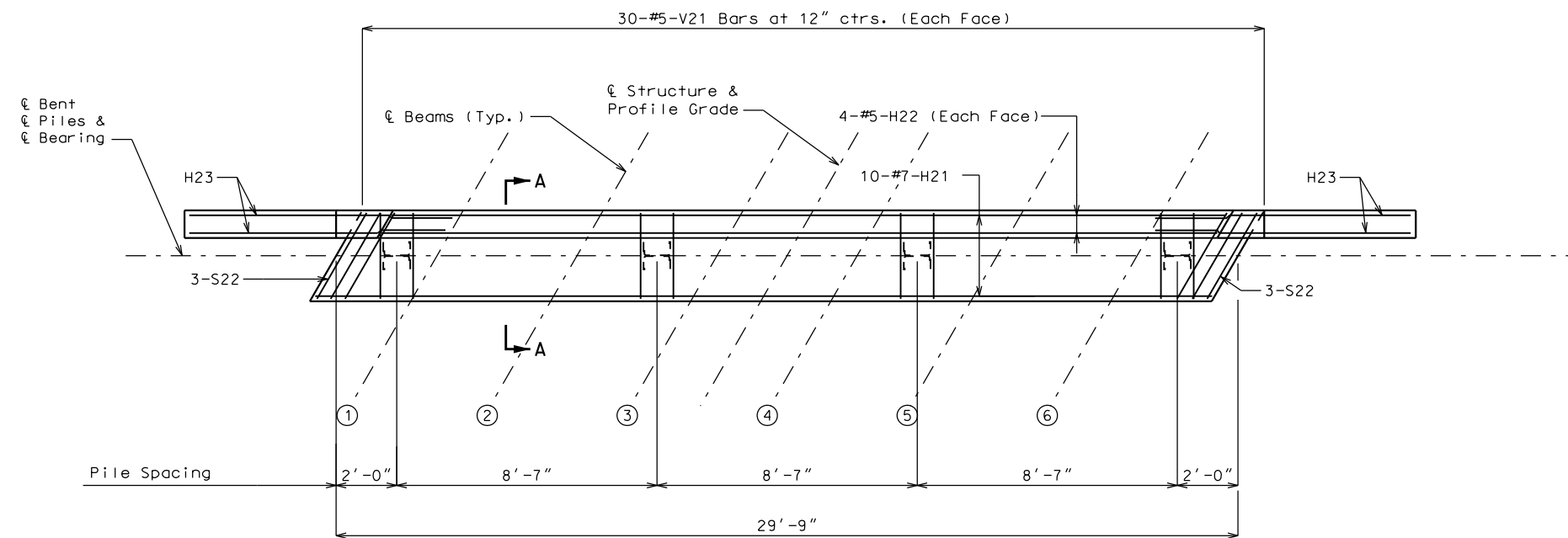
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 3 of 16

J:\2017\6066\Cadd\Design\17-6066_10_SHT-End Bent 1 A.dgn 2:21:07 PM 5/15/2018

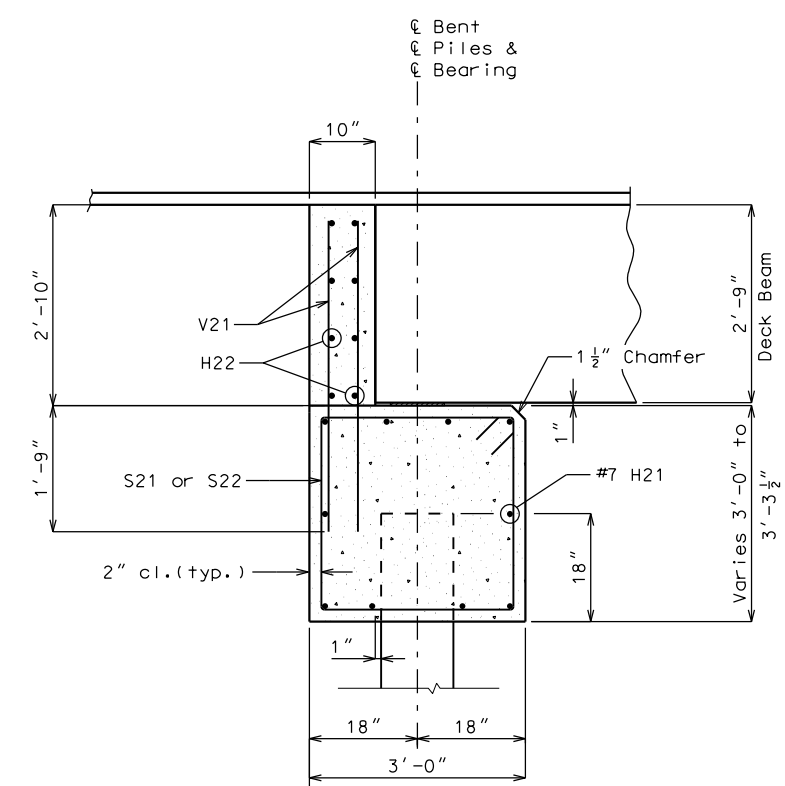


PLAN DIMENSIONS

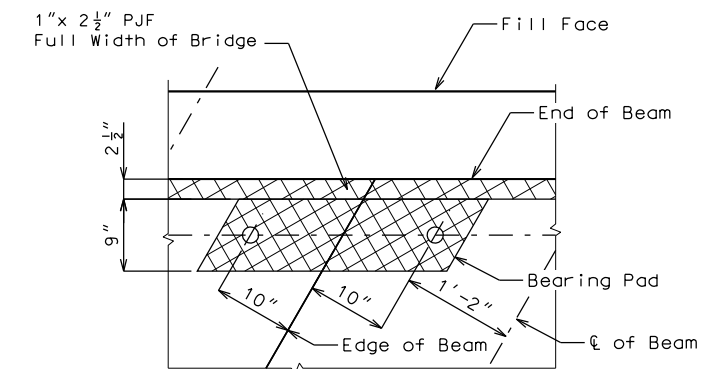


PLAN REINFORCEMENT

END BENT NO. 2 - PLAN DETAILS



SECTION A-A



DETAIL A

Notes:

Work this Sheet with Sheet No. 6.

For details of Pile Anchors, see Sheet No. 2.

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

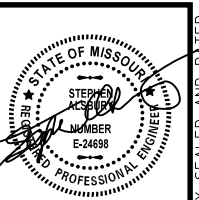
The back wall & top of wings shall be poured after the deck beams are in place.

Substructure Quantity Table for End Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	45
Structural Steel Pile (10 in.)	linear foot	132
Pile Point Reinforcement	each	4
Class B Concrete (substructure)	cu. yard	15.3
Reinforcing Steel Bridges	pounds	2150

Detailed April 2018
Checked April 2018

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

Sheet No. 5 of 16



DATE PREPARED
5/15/2018
STATE
MO
SHEET NO.
12
ROUTE
ROCK GARDENS
COUNTY
JEFFERSON
JOB NO.
17-6066
PROJECT NO.
PW-18428 BRG
BRIDGE NO.
042800041

DESCRIPTION

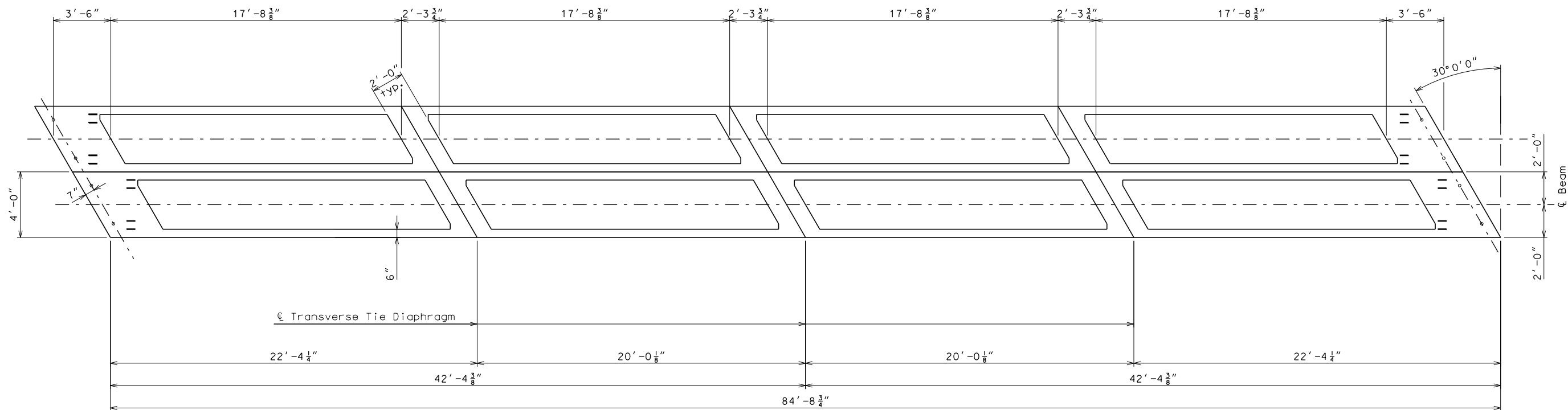
DATE

JEFFERSON COUNTY PUBLIC WORKS
DEPARTMENT

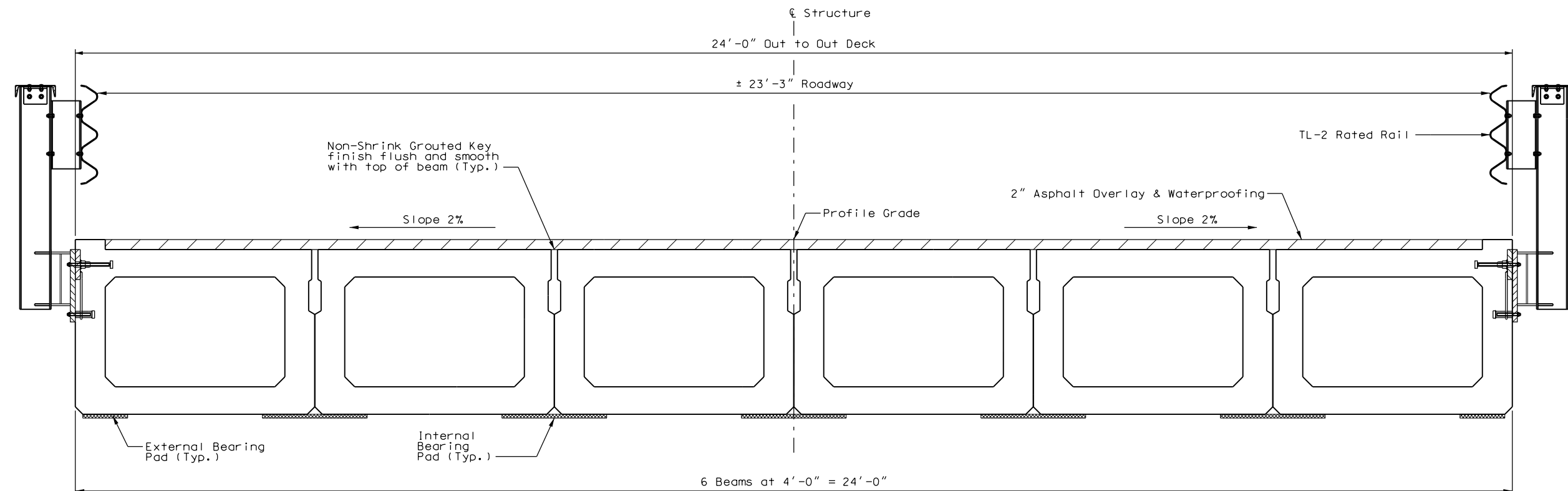


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TYPICAL PLAN OF DECK BEAMS



TYPICAL CROSS SECTION

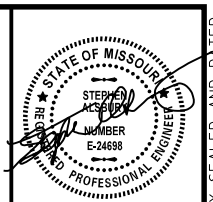
SUPERSTRUCTURE FRAMING

Detailed April 2018
Checked April 2018

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

Sheet No. 7 of 16

J:\2017\6066\Cadd\Design\17-6066_14_SHT-Deck Beam Detail03.dgn 10:05:04 AM 5/16/2018



DATE PREPARED 5/16/2018	
STATE MO	SHEET NO. 14
ROUTE ROCK GARDENS	
COUNTY JEFFERSON	
JOB NO. 17-6066	
PROJECT NO. PW-18428 BRG	
BRIDGE NO. 042800041	

DATE	DESCRIPTION

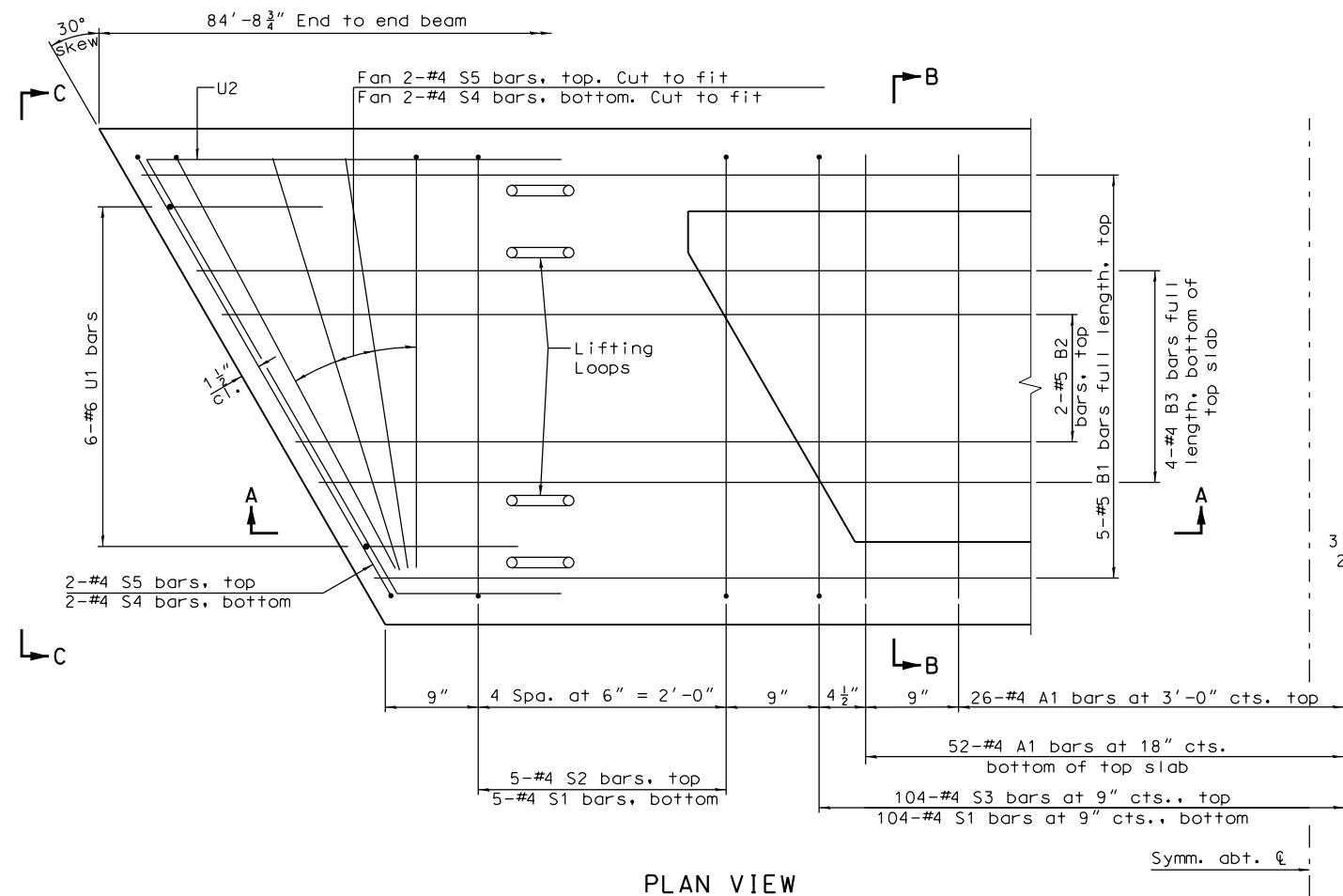
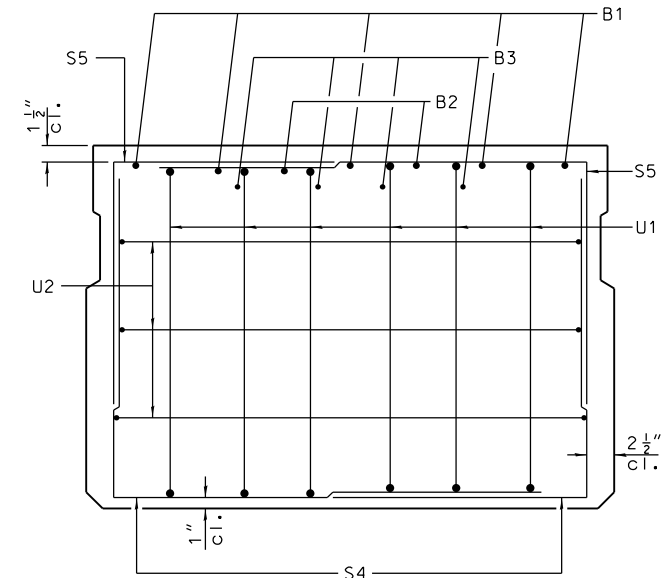
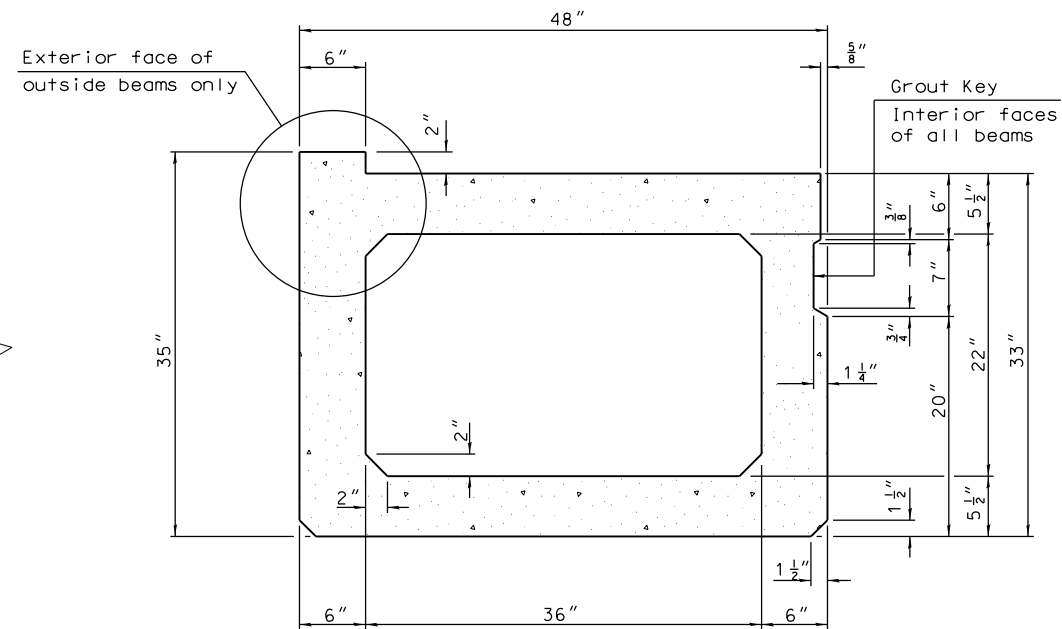
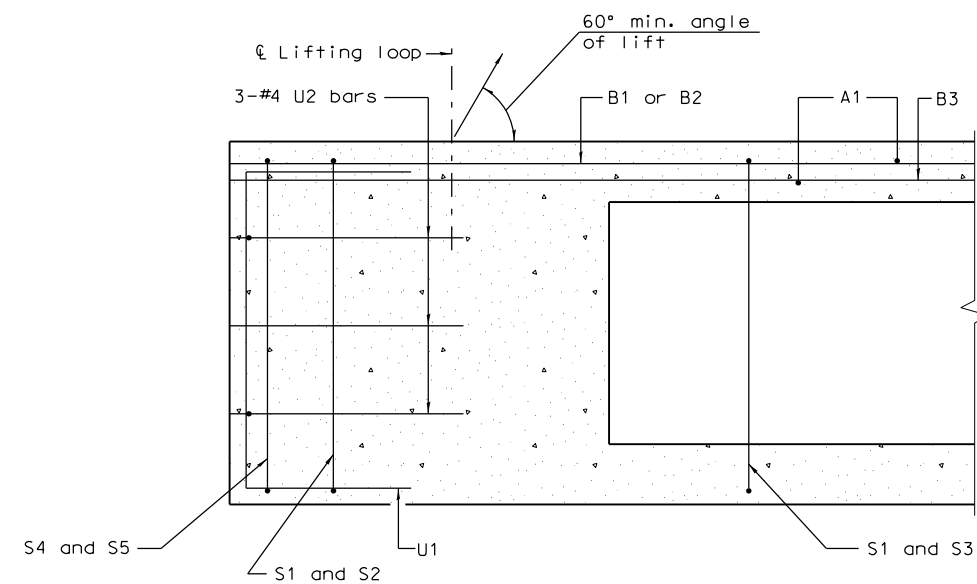
JEFFERSON COUNTY PUBLIC WORKS
DEPARTMENT

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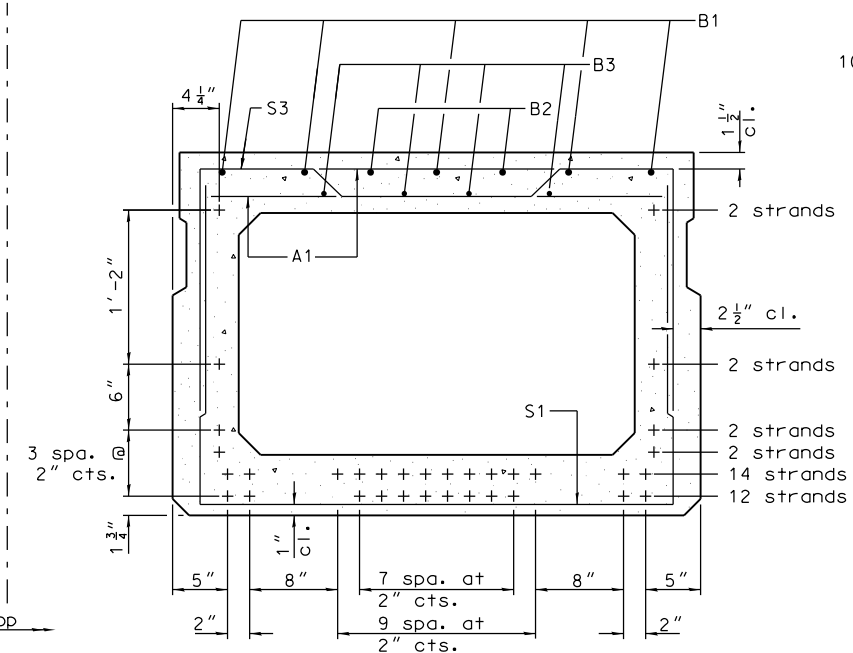
XABNA

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PH. 314-454-0222
CERTIFICATE/LICENSE NO. 001501

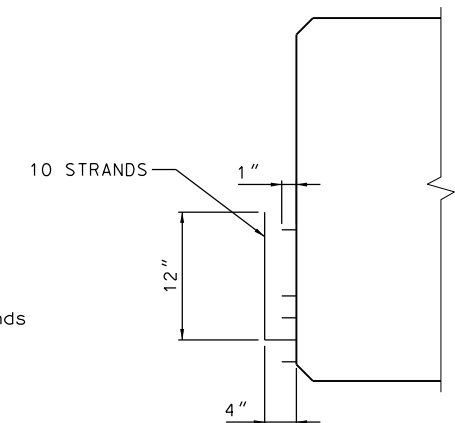
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



Note: Spacing of S1 and S3 bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.



Note:
Place the number of strands specified in each row
symmetrically about the centerline of beam in the
permissible strand locations shown.



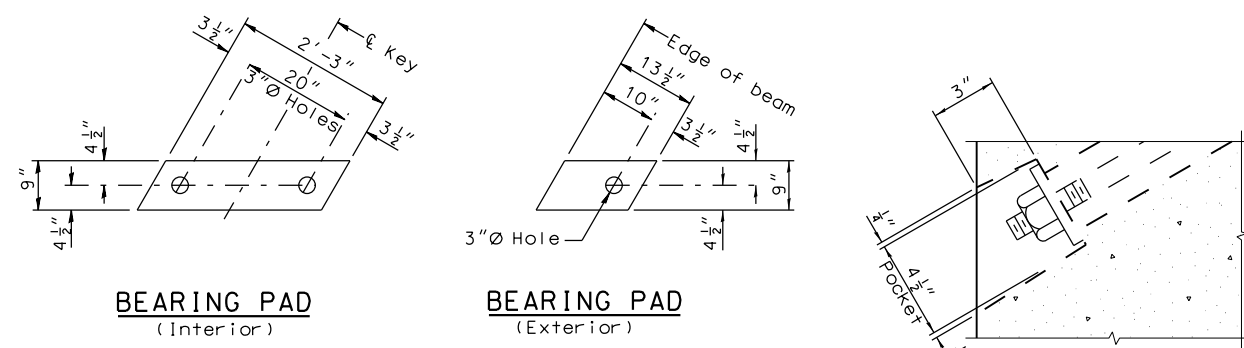
BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A1	79	#4	3' - 7"	—
B1	10	#5	43' - 6"	—
B2	4	#5	10' - 0"	—
B3	8	#4	43' - 3"	—
S1	114	#4	8' - 8"	└┘
S2	10	#4	7' - 5"	┐┌
S3	104	#4	7' - 8"	┐┌
S4	20	#4	6' - 6 ¹ / ₂ "	└┘
S5	20	#4	5' - 11"	└┘
U1	12	#6	5' - 0"	└┘
U2	6	#4	8' - 7"	└┘

Note:
See sheet 2 of 16 for additional
details and Bill of Material.

MINIMUM BAR LAP

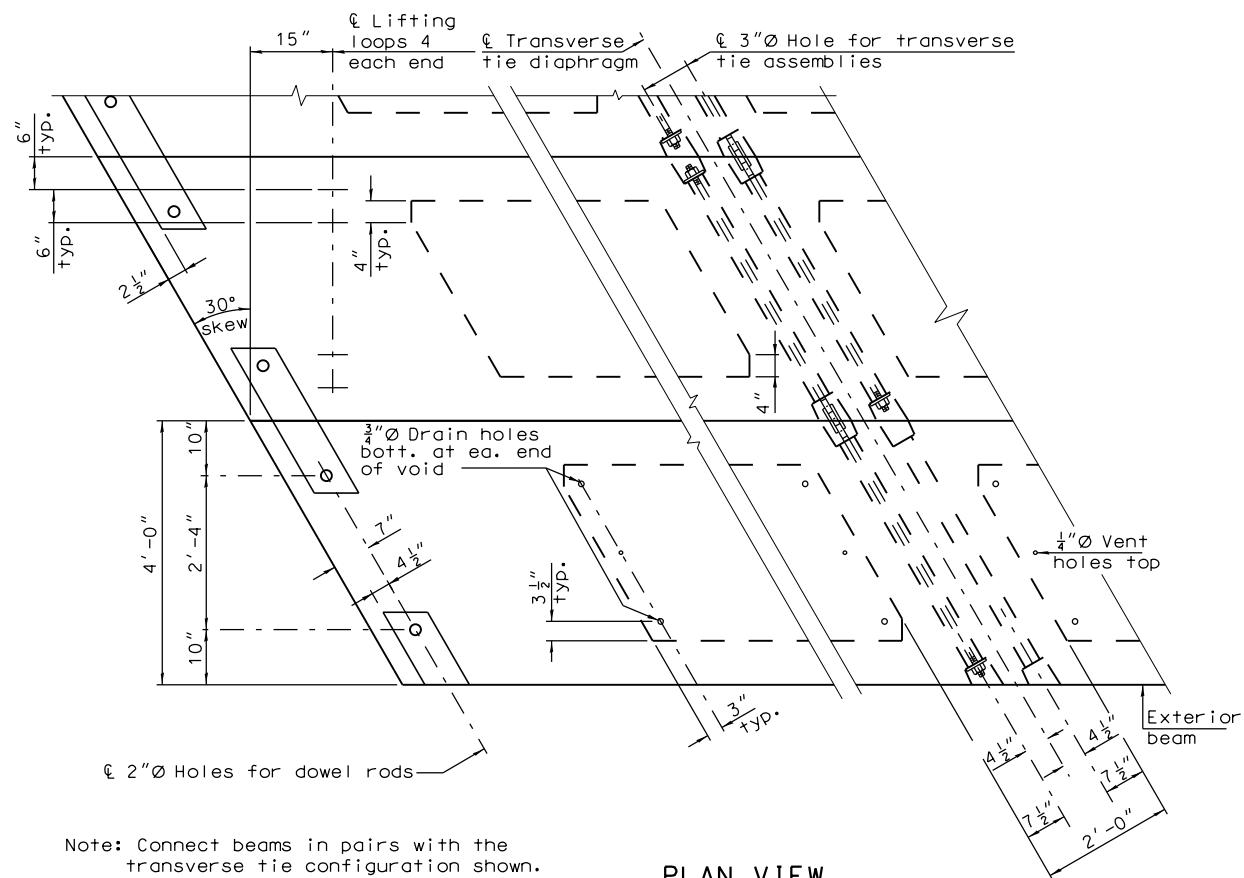
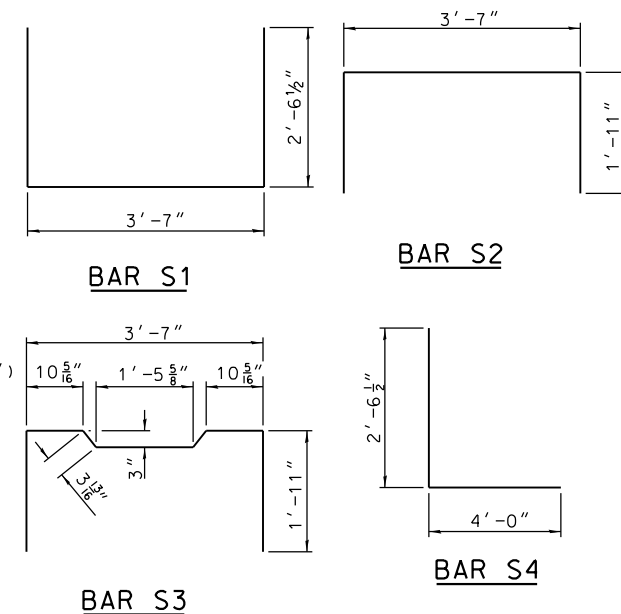
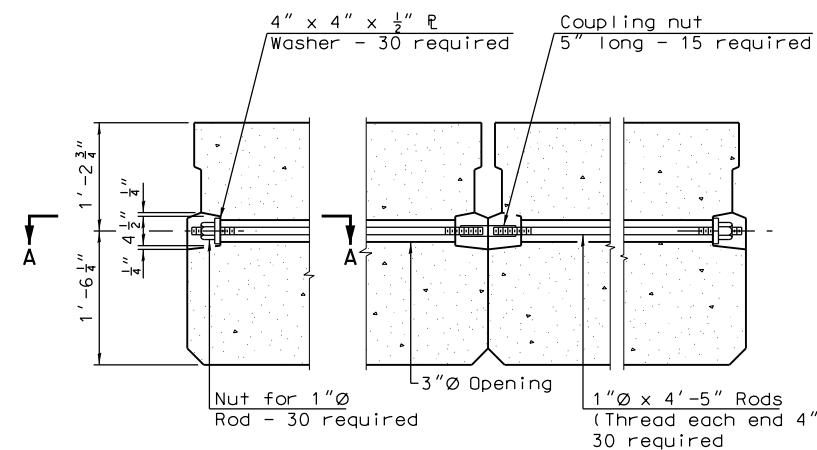
#4 bar	=	2'-0"
#5 bar	=	2'-6"



FIXED

Note: All bearing pads shall be 1" thick Plain Neoprene.

SECTION A-A



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

PLAN VIEW

NOTES

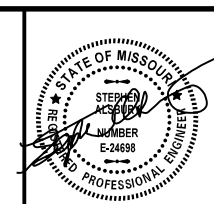
- Concrete for prestressed girders shall be Class A-1 with corrosion inhibitor ASTM 1582 admixture, with $f'c = 6000$ psi and $f'ci = 5000$ psi.
- (+) Indicates prestressing strand.
- Use 34 strands with an initial prestress force of 1053 kips.
- Prestressing tendons shall be uncoated, seven-wire, low relaxation strands, 1/2 inch diameter and the nominal cross section area shall be 0.153 Sq. in. in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with section 1029.
- The 1 inch diameter rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets in the external faces of the Bridge shall be filled with grout after transverse tie assembly is in place.
- Two 1/8" plain neoprene shims of the dimensions of the exterior bearing shall be provided for each bearing pad location. Cost of adjusting shims shall be included in the unit price for "plain neoprene bearing pads"
- A minimum 2 1/2" diameter lifting pin shall be used to engage lifting loops during handling.

GIRDER DETAILS

Detailed April 2018
Checked April 2018

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

Sheet No. 9 of 16

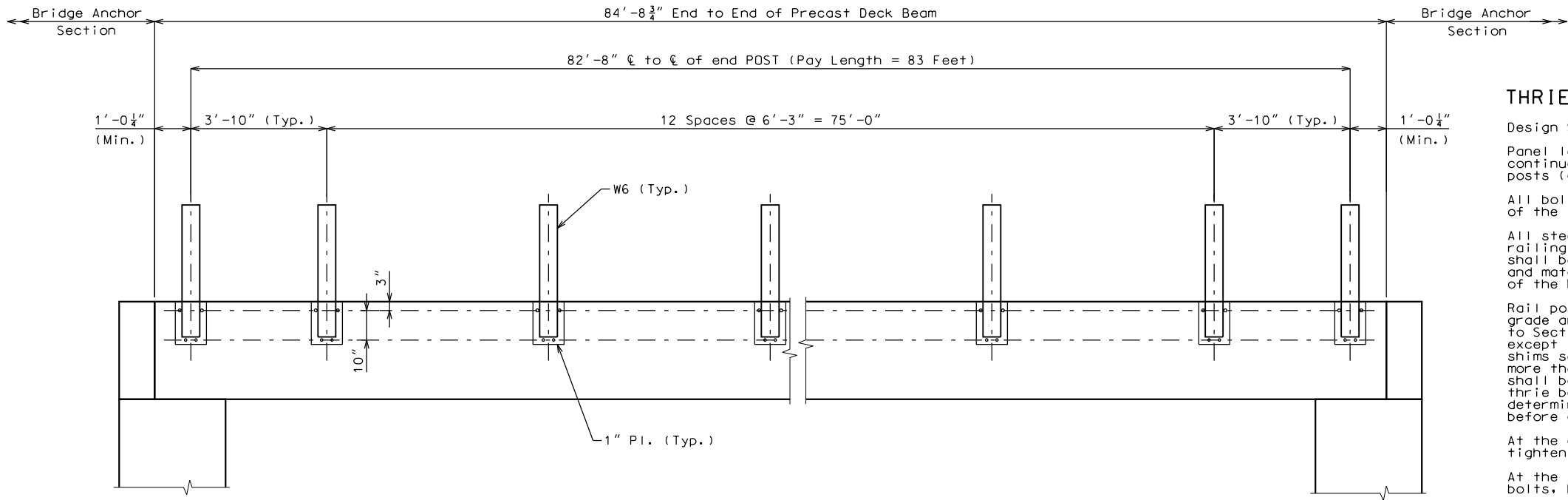


DATE PREPARED
5/15/2018
STATE MO SHEET NO. 16
ROUTE ROCK GARDENS
COUNTY JEFFERSON
JOB NO. 17-6066
PROJECT NO. PW-18428 BRG
BRIDGE NO. 042800041

DATE	DESCRIPTION

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT
P.O. BOX 100
HILLSBORO, MO 63050
(636-797-5340) PHONE
(636-797-5565) FAX

XABNA
4140 LINDELL BOULEVARD
ST. LOUIS, MO 63108
PH. 314-454-0222
CERTIFICATE/LICENSE NO. 001501



ELEVATION OF OUTSIDE BEAMS - RAIL POST SPACING

THRIE BEAM RAIL NOTES:

Design Specifications: 2002 AASHTO 17th Edition.

Panel lengths of channel members shall be attached continuously to a minimum of four posts and a maximum of six posts (except at end bents).

All bolts, nuts, washers and plates are considered as parts of the thrie beam rail for payment.

All steel connecting bolts and fasteners for posts and railing, and all anchor bolts, nuts, washers, and plates shall be galvanized after fabrication. For protective coating and material requirement of steel railing, see Section 1040 of the Missouri Standard Specifications.

Rail posts shall be set perpendicular to roadway profile grade and vertically in cross section, and aligned according to Section 713 of the Missouri Standard Specifications, except that the rail posts shall be aligned by the use of shims so that in the final adjustment no part shall deviate more than one inch from true horizontal alignment. 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.

At the expansion slots in the thrie beam rails and channels, tighten bolts, back off one-half turn and burr threads.

At the thrie beam connection to blackout on wings, tighten bolts, back off one-half turn and burr threads.

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

Use 5/8" Ø button-head, oval shoulder bolts with hex nuts at all slots (thickness of hex nuts = 3/8" min.).

Thrie beam guardrail on the bridge shall be made of steel and shall be 12 gage.

Posts, cap rail angles, 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). They shall be rectangular in shape (3" x 1 3/4" x 3/16" min.) and flat with a 11/16" x 1" slot, or when necessary of such design as to fit the contour of the beam. (Use a 3" x 1 3/4" x 5/8" rectangular washer between the blackout and the thrie beam rail.)

Special drilling of the thrie beam may be required at the splices. (All drilling details are to be shown on the shop drawings.)

Fabrication of structural steel shall be in accordance with Section 1080 of the Missouri Standard Specifications.

Expansion splices in the thrie beam rail shall be made at either the first or second post on either side of the joint and on structure at bridge ends. When the splice is made at the second post, an expansion slot shall be provided in the thrie beam rail for connection to the first post to allow for movement.

In addition to the expansion provisions at these expansion joints, expansion splices in the thrie beam rail and the channel shall be provided at other locations so that the maximum length without expansion provisions does not exceed 200ft.

Contractor shall verify all dimensions in field before ordering material.

Shim plates 6" x 6" x 1/16" may be used between the top of the post and the channel member as required for vertical alignment.

See Missouri Standard Plans drawing 606.00 for details not shown.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Guardrail (Thrie Beam)	Lin. Ft.	166

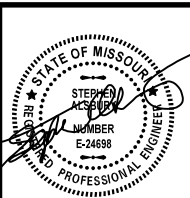
BRIDGE RAIL LAYOUT

Detailed April 2018
Checked April 2018

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

Sheet No. 10 of 16

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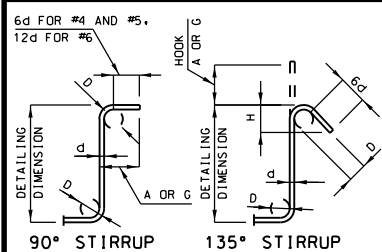
DATE PREPARED 5/15/2018	
STATE MO	SHEET NO. 17
ROUTE ROCK GARDENS	
COUNTY JEFFERSON	
JOB NO. 17-6066	
PROJECT NO. PW-18428 BRG	
BRIDGE NO. 042800041	

DESCRIPTION	DATE

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT	P.O. BOX 100 HILLSBORO, MO 63050 (636-797-5340) PHONE (636-797-5565) FAX
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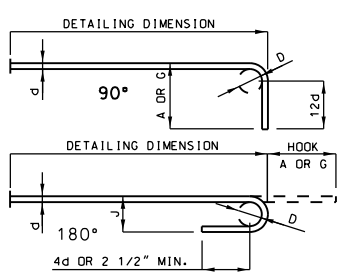
XABNA 4140 LINDELL BOULEVARD ST. LOUIS, MO 63108 PH. 314-454-0222 CERTIFICATE/LICENSE NO. 001501

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.
			END BENT 1																							
10	7	H11	BEAM	E	20	X				29	5									29	5	29	5	601		
8	5	H12	BACKWALL	E	20	X				30	8									30	8	30	8	256		
28	6	H13	WING	E	20	X				8	4									8	4	8	4	350		
8	6	H14	WING	E	14	X					2	6	4	11.5			1	1	4	10	7	6	7	5	89	
21	5	S11	BEAM	E	13	S	X			2	8	2	8	2	8	2	8				11	7	11	3	246	
6	5	S12	BEAM	E	13	S	X			3	1	2	8	3	1	2	8				12	5	12	1	76	
6	6	U11	BEAM	E	21	X				2	11.5	5	11.375	4	6						13	6	13	1	118	
64	5	V11	BEAM/BK WALL	E	20	X				4	4										4	4	4	4	289	
24	5	V12	WING	E	20	X	V	4		5	6										5	6				
			INCR 3.0 IN							4	3										4	3			122	
			END BENT 2																							
10	7	H21	BEAM	E	20	X				29	5										29	5	29	5	601	
8	5	H22	BACKWALL	E	20	X				30	8										30	8	30	8	256	
28	6	H23	WING	E	20	X				8	4										8	4	8	4	350	
8	6	H24	WING	E	14	X					2	6	4	11.5			1	1	4	10	7	6	7	5	89	
21	5	S21	BEAM	E	13	S	X			2	8	2	8	2	8	2	8				11	7	11	3	246	
6	5	S22	BEAM	E	13	S	X			3	1	2	8	3	1	2	8				12	5	12	1	76	
6	6	U21	BEAM	E	21	X				2	11.5	5	11.375	4	6						13	6	13	1	118	
64	5	V21	BEAM/BK WALL	E	20	X				4	4										4	4	4	4	289	
24	5	V22	WING	E	20	X	V	4		5	6										5	6				
			INCR 3.0 IN							4	3										4	3			122	



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° 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				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS A OR G	90° HOOKS 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"

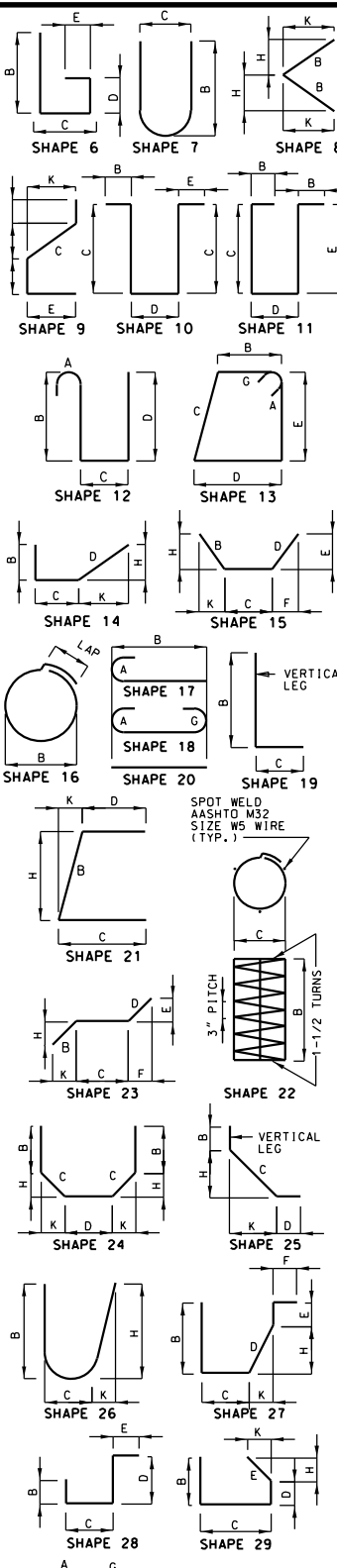
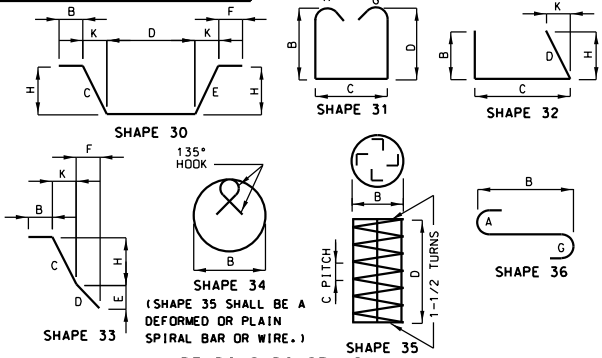
NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
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.
PAY WEIGHTS ARE BASED ON ACTUAL LENGTHS.
FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.
REINFORCING STEEL (GRADE 60) F_y = 60,000 PSI.

Detailed April 2018
Checked April 2018

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

Sheet No. 12 of 16

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				
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.
														</										



DATE PREPARED
5/15/2018

STATE
MO

SHEET NO.
19

ROUTE
ROCK GARDENS

COUNTY
JEFFERSON

JOB NO.
17-6066

PROJECT NO.
PW-18428 BRG

BRIDGE NO.
042800041

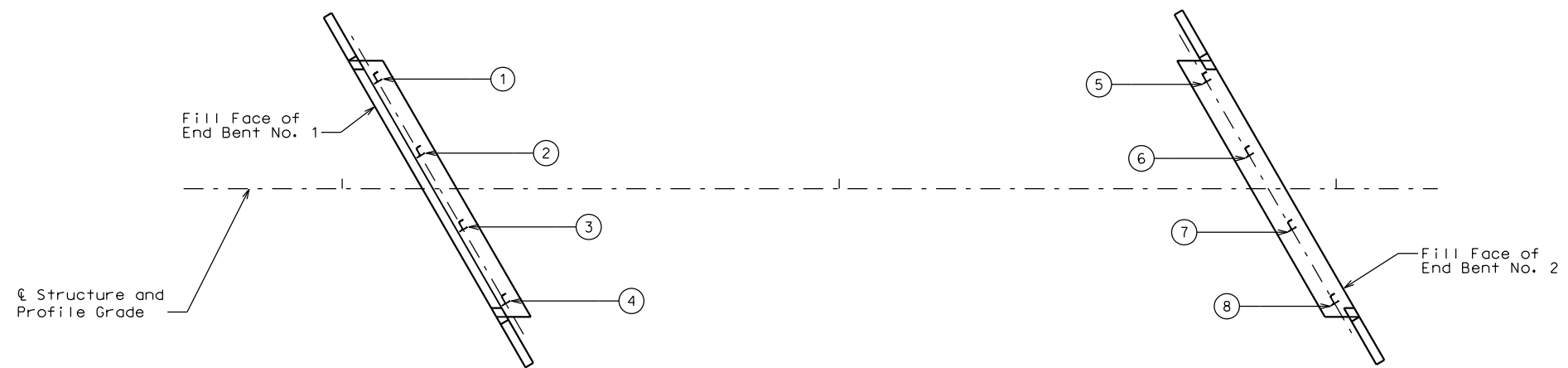
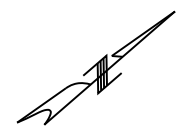
DESCRIPTION

DATE

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HILLSBORO, MO 63050
(636-797-5340) PHONE
(636-797-5565) FAX

CERTIFICATE/LICENSE NO. 001501



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

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

NOTE: THIS SHEET TO BE COMPLETED BY CONSTRUCTION PERSONNEL.

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			END BENT NO. 1
1			
2			
3			
4			

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (KIPS)	REMARKS
			END BENT NO. 2
5			
6			
7			
8			

"AS BUILT PILE" DATA

STATE OF MISSOURI
STEPHEN A. KASPER
LICENSE NO. E-24688
PROFESSIONAL ENGINEER

DATE PREPARED
5/15/2018

STATE
MO

SHEET NO.
20

ROUTE
ROCK GARDENS

COUNTY
JEFFERSON

JOB NO.
17-6066

PROJECT NO.
PW-18428 BRG

BRIDGE NO.
042800041

DESCRIPTION

DATE

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

P.O. BOX 100
HILLSBORO, MO 63050
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4140 LINDELL BOULEVARD
ST. LOUIS, MO 63108
PH. 314-454-0222
CERTIFICATE/LICENSE NO. 001501

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

		DAILY FIELD REPORT BOREHOLE LOG										SHEET 1 OF 2	
												PROJECT NUMBER: 17-6066	
												HOLE NUMBER: BH-1	
PROJECT: Rock Creek Gardens Bridge					Location: West end of the Bridge								
COORDINATES:					DRILLING CONTRACTOR: Terracon								
DRILL MAKE AND MODEL: CME - ATV Drill Rig			DEPTH TOP OF ROCK: 24.5'		DEPTH CASING & SIZE: 24.5' - HAS				HOLE SIZE: 4.5"				
ELEVATION: 515.9		ANGLE FROM VERT. AND BEARING: 0				DEPTH BOTTOM OF HOLE: 39.5'							
WATER LEVEL: 18.5'		FLUIDS AND ADDITIVES: Water for Coring				DATE START: 1/24/18		DATE FINISH: 1/24/18		LOGGER: RJS			
ELEVATION	DEPTH BELOW SURFACE	SAMPLE		STANDARD PENETRATION TEST RESULT	SYMBOLIC LOG	MOISTURE %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	SOIL DESCRIPTION			
		INTERVAL	RECOVERY										
	Feet	TYPE & NUMBER		Pocket Penetrometer tons/ft²						NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL			
	1									Limestone Aggregate for Roadway			
	2	1-2.5	SS-1	14"	6 - 14 - 23		4.00			Light Gray, Gravelly Sand, Dense, Angular, Crushed or Broken			
	3				PP = 0								
	4	3.5-5	SS-2	16"	23 - 27 - 22		5.41			Dark Gray, Gravelly Sand, Medium Dense, Angular, Crushed or Broken			
	5				PP = 0								
	6												
	7	6-7.5	SS-3	12"	10 - 11 - 13		6.41			Brown Gravelly Sand, Medium Dense, Angular, Crushed or Broken, Residium			
	8				PP = 0								
	9	8.5-10	---	0	10 - 8 - 6					No material recovered			
	10												
	11												
	12												
	13												
	14	13.5-15	SS-4	15"	2 - 2 - 2		30.00	38	20	18	Gray and Brown Clay with Gravel, Soft, Angular		
	15				PP = 0								
	16												
	17												
	18												
	19	18.5-20	SS-5	8"	11 - 20 - 25		15.2				Water encountered at 18.5' Brown Gravelly Sand with Clay (Residium), Dense, Angular		
	20				PP = 0								

Detailed April 2018
Checked April 2018

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

Sheet No. 14 of 16

		DAILY FIELD REPORT BOREHOLE LOG										SHEET 2 OF 2	
												PROJECT NUMBER: 17-6066	
												HOLE NUMBER: BH-1	
PROJECT: Rock Creek Gardens Bridge					Location: West end of the Bridge								
COORDINATES:					DRILLING CONTRACTOR: Terracon								
DRILL MAKE AND MODEL: CME - ATV Drill Rig			DEPTH TOP OF ROCK: 24.5'		DEPTH CASING & SIZE: 24.5' - HAS				HOLE SIZE: 4.5"				
ELEVATION: 515.9		ANGLE FROM VERT. AND BEARING: 0				DEPTH BOTTOM OF HOLE: 39.5'							
WATER LEVEL: 18.5'		FLUIDS AND ADDITIVES: Water for Coring				DATE START: 1/24/18		DATE FINISH: 1/24/18		LOGGER: RJS			
ELEVATION	DEPTH BELOW SURFACE	SAMPLE		STANDARD PENETRATION TEST RESULT	SYMBOLIC LOG	MOISTURE %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	SOIL DESCRIPTION			
		INTERVAL	RECOVERY										
	Feet	TYPE & NUMBER		Pocket Penetrometer tons/ft²						NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL			
	21												
	22												
	23												
	24	23.5-25	SS-6	2"	50/3"		18.71			Brown Gravelly Sand with Clay (Residium), Dense, Angular			
	25									Thinly Bedded Limestone with Shale - Very Poor RQD			
	26												
	27	24.5-29.5	Core 55/60"		RQD = 0								
	28												
	29												
	30									Thinly Bedded Limestone with Shale - Very Poor RQD			
	31									2" Chert			
	32									Thinly Bedded Limestone with Shale - Very Poor RQD			
	33	29.5-24.5	Core 12"/60		RQD = 0								
	34												
	35									Thinly Bedded, Highly Weathered, Limestone with Shale - Very Poor RQD			
	36												
	37	34.5-39.5	Core 60/60		RQD = 0								
	38												
	39												
	40									Bottom of the Boring at 39.5'			

BORING BH-1
BORING LOGS



DATE PREPARED
5/15/2018
STATE
MO
SHEET NO.
21
ROUTE
ROCK GARDENS
COUNTY
JEFFERSON
JOB NO.
17-6066
PROJECT NO.
PW-18428 BRG
BRIDGE NO.
042800041

JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT

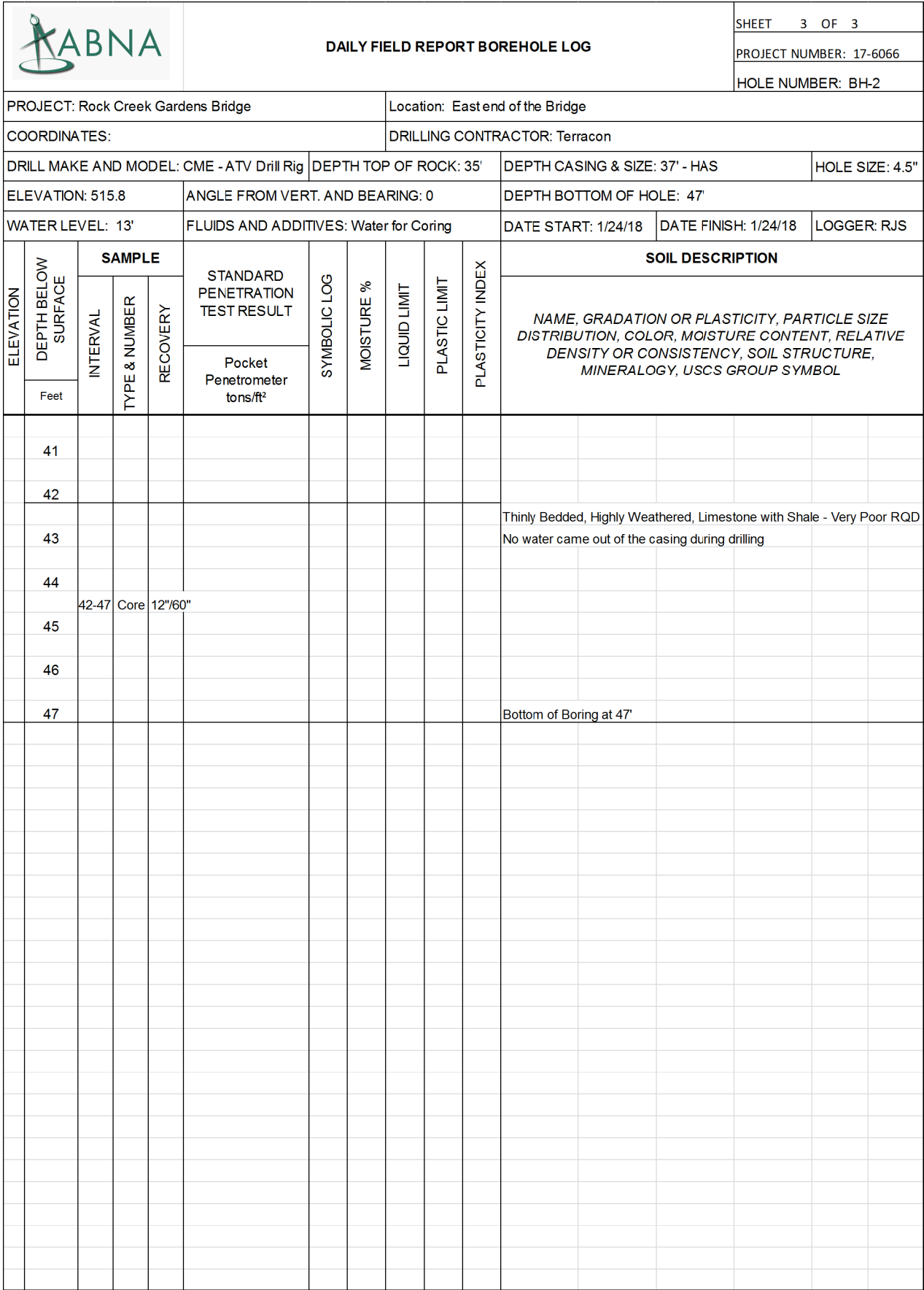


P.O. BOX 100
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(636-797-5340) PHONE
(636-797-5565) FAX



4140 LINDELL BOULEVARD
ST. LOUIS, MO 63108
PH. 314-454-0222
CERTIFICATE/LICENSE NO. 001501

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

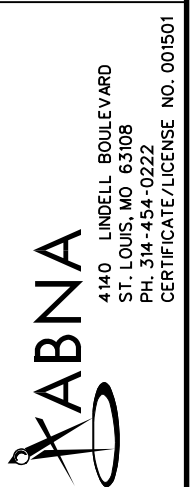


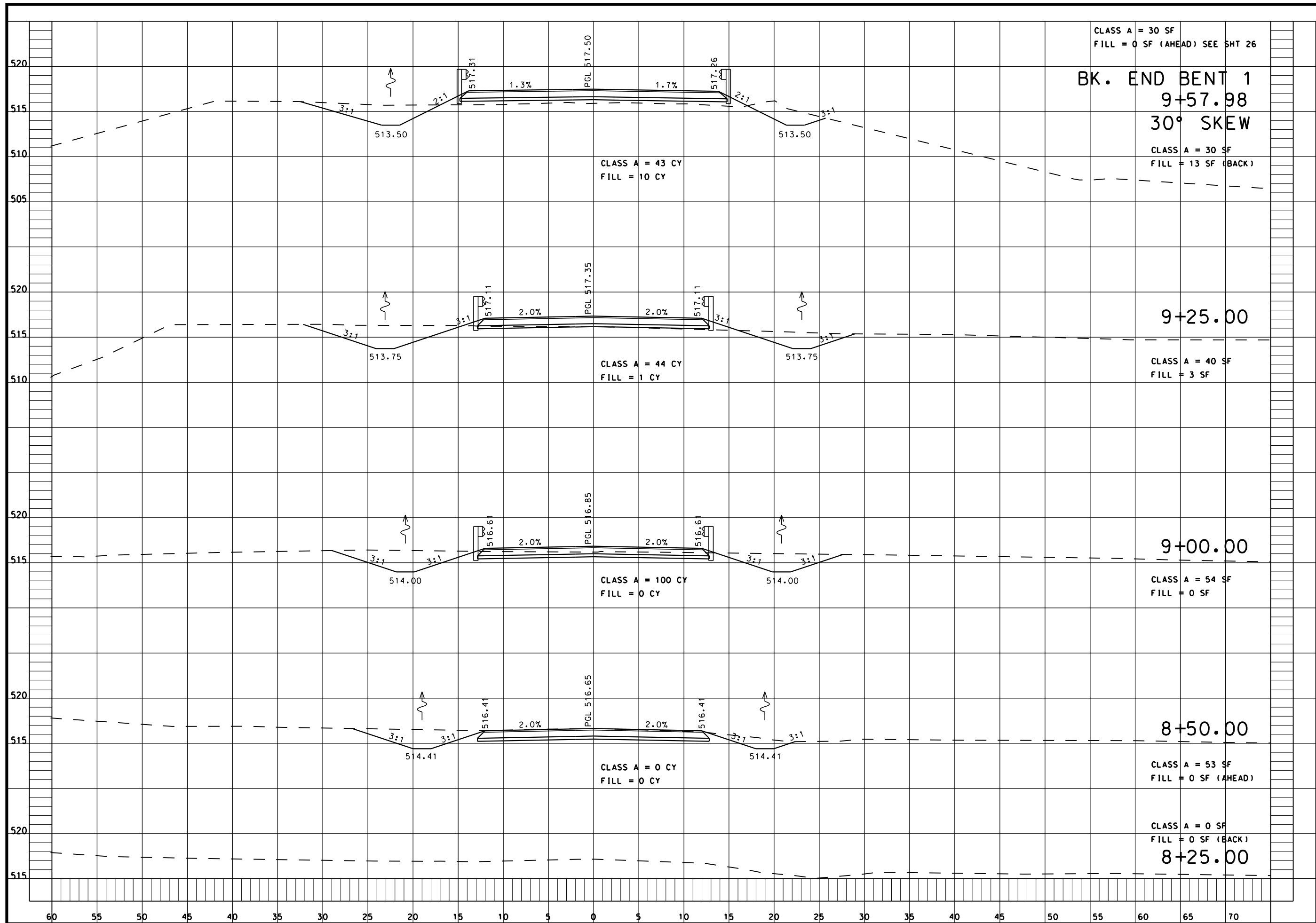
Detailed April 2018
Checked April 2018

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Sheet No. 16 of 16

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STATE OF MISSOURI
STEPHEN
NUMBER
E-24688
PROFESSIONAL ENGINEER

DATE PREPARED
5/16/2018

STATE
MO

SHEET NO.
24

ROUTE
ROCK GARDENS

COUNTY
JEFFERSON

JOB NO.
17-6066

PROJECT NO.
PW-18428 BRG

BRIDGE NO.
042800041

DATE

DESCRIPTION

JEFFERSON COUNTY PUBLIC WORKS
DEPARTMENT

P.O. BOX 100
HILLSBORO, MO 63050
(636-797-5340) PHONE
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JEFFERSON COUNTY

1848

MISSOURI

XABNA

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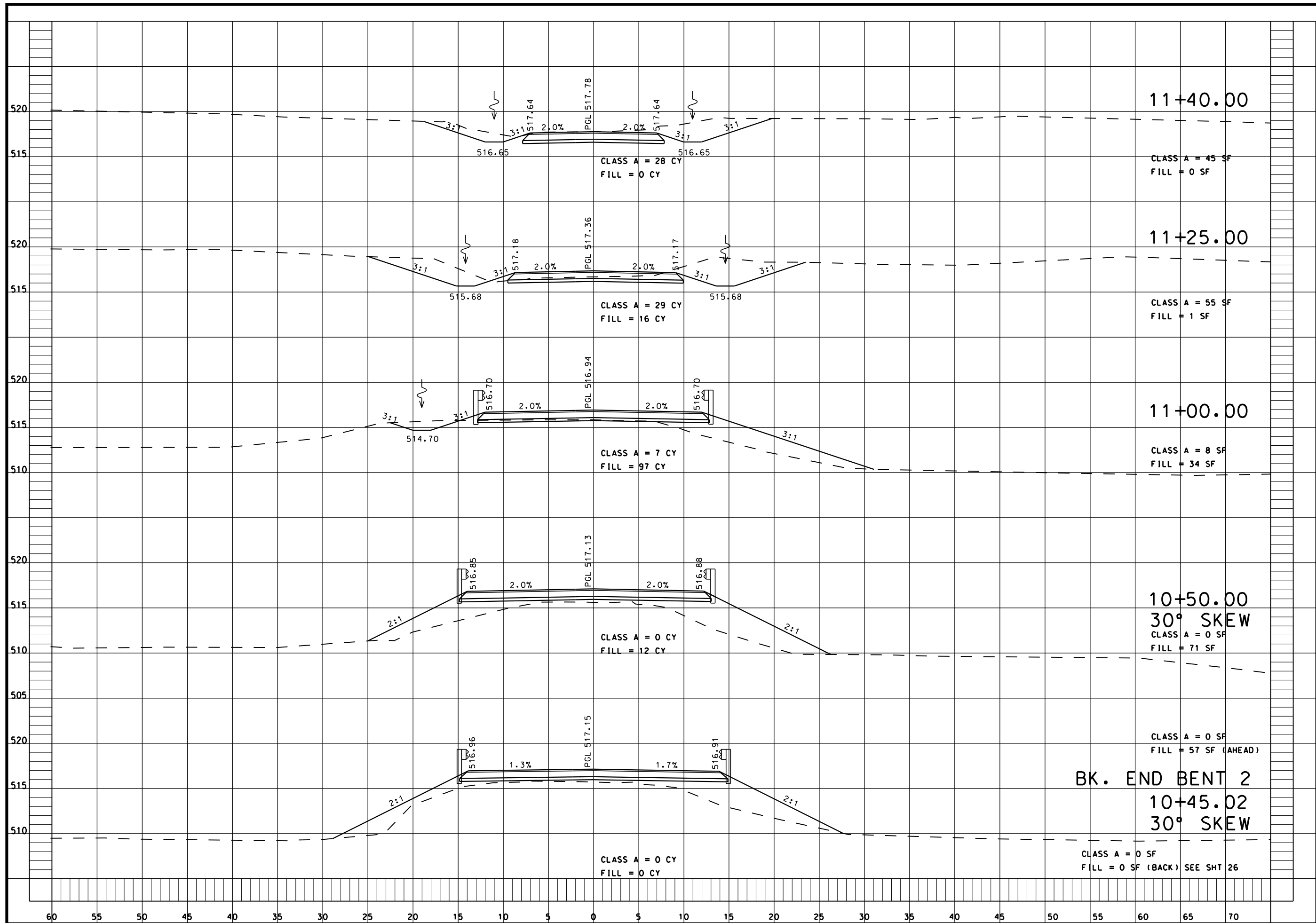
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REV.

Detailed April 2018
Checked April 2018

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STATE OF MISSOURI

SEAL

ENGINEER

E-24688

DATE PREPARED
5/16/2018

STATE
MO

SHEET NO.
25

ROUTE
ROCK GARDENS

COUNTY
JEFFERSON

JOB NO.
17-6066

PROJECT NO.
PW-18428 BRG

BRIDGE NO.
042800041

DESCRIPTION

DATE

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DEPARTMENT

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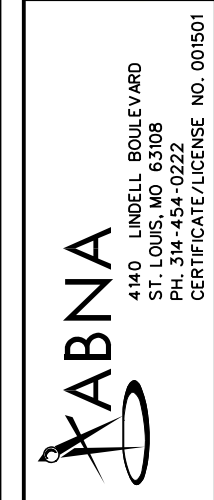
JEFFERSON COUNTY

MISSOURI

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REV.



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