

AT&T
GLENN HOGENMILLER
122 N. SECOND ST.
FESTUS, MO 63028
(636) 931-7525

DESCRIPTION	EXISTING	NEW
RIGHT-OF-WAY		
PROPERTY LINE		
PERMANENT DRAINAGE EASEMENT		
TEMPORARY CONSTRUCTION EASEMENT		
UTILITY POLE (TYPE SPECIFIED)		
UNDERGROUND CONDUIT OR CABLE (TYPE SPECIFIED)		
T-TELEPHONE P-POWER TV-TELEVISION		
OVERHEAD UTILITY LINE (TYPE SPECIFIED)		
T-TELEPHONE OH-POWER W-WATER		
LIGHT STANDARD		
TRAFFIC PULL BOX		
GAS LINE		
GAS VALVE		
WATER LINE		
WATER SERVICE VALVE		
WATER METER		
FIRE HYDRANT		
SANITARY SEWER		
STORM SEWER		
SEWER MANHOLE		
GRATED INLET		
CURB INLET/ AREA INLET		
CURB INLET (MULTIPLE UNIT)		
IDENT. OF NEW OR MOD. SANITARY STRUCTURE		
IDENT. OF NEW OR MOD. STORM STRUCTURE		
PIPE WITH HEADWALLS		
DRAINAGE V-DITCH (SODDED)		
DRAINAGE FLAT BOTTOM DITCH (SODDED)		
DRAINAGE V-DITCH (PAVED)		
DRAINAGE FLAT BOTTOM DITCH (PAVED)		
CONSTRUCTION LIMITS		
CONCRETE PAVEMENT		
ASPHALTIC CONCRETE PAVEMENT		
PAVEMENT REMOVAL		
TREE OR SHRUB		
HEDGE		
FENCE		
SIGN		
BUILDING		
MAILBOX (MB)		
TO BE REMOVED		(TBR)
TO BE ABANDONED		(TBA)
USE IN PLACE		(UIP)
TO BE REMOVED AND REPLACED		(TBR&R)
ADJUST TO GRADE		(ATG)
TO BE REMOVED AND REPLACED BY OTHERS		(TBR&RBO)
TO BE ABANDONED AND FILLED		(TBA&F)
ADJUST TO GRADE BY OTHERS		(ATGBO)
CUT CROSS		CROSS
FOUND CROSS		OCR
FOUND IRON PIPE		OIP
FOUND IRON ROD		OIR
FOUND STONE		OST
SET P.K. NAIL		PK
SET IRON PIPE		SIP
DO NOT DISTURB		(DND)
MANHOLE		MH
REFERENCE POINT		△
REMOVE		(R)
DO NOT DISTURB		(DND)



CALL "MISSOURI ONE CALL" TO HAVE LOCATIONS
MARKED IN THE FIELD AND "MODOT" FOR
UNDERGROUND LOCATES WITHIN THE RIGHT-OF-WAY.
SUBSCRIBING UTILITIES REQUIRE 48 HOURS NOTICE
PRIOR TO CONSTRUCTION. CALL MODOT CUSTOMER
SERVICE AT 314-340-4100 TWO WORKING DAYS

BEFORE YOU DIG

SPECIAL NOTE TO CONTRACTOR(S):

EXISTING UNDERGROUND AND ABOVE-GRADE FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED ON THESE CONTRACT DOCUMENTS BASED ON THE INFORMATION AND SURVEYS AVAILABLE AT THE TIME OF DRAWING PREPARATION. THE LOCATIONS OF THESE FEATURES ARE, THEREFORE, BE CONSIDERED APPROXIMATE ONLY. IN ADDITION, THERE MAY BE OTHER FACILITIES, STRUCTURES, AND UTILITIES ON THE SITE (OR THE EXISTENCE OF WHICH WAS NOT KNOWN) AT THE TIME OF DRAWING PREPARATION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR(S) TO HAVE ALL EXISTING FACILITIES, STRUCTURES, AND UTILITIES LOCATED IN THE FIELD PRIOR TO ANY EXCAVATION OR CONSTRUCTION. IT IS THE CONTRACTOR(S) RESPONSIBILITY TO PROTECT THESE SPECIFICALLY NOTED FOR REMOVAL OR DEMOLITION DURING CONSTRUCTION.

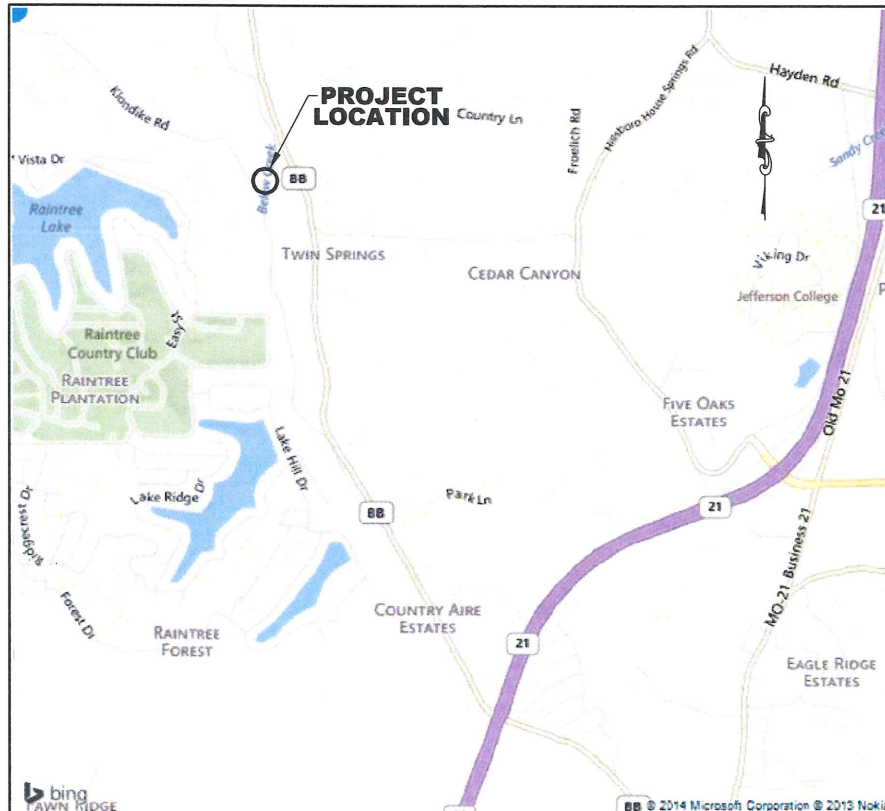
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THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEAR HEREON ASSUMES RESPONSIBILITY FOR WHAT APPEARS ON THIS PAGE AND DISCLAIMS (PURSUANT TO SECTION 327.41 RSMO) SPECIFICATION, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED BY THE UNDERSIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS PAGE REFERS.

JASON JONAS, P.E.
DIRECTOR OF PUBLIC WORKS

KLONDIKE ROAD BRIDGE REPLACEMENT OVER BELEWS CREEK

**FEDERAL PROJECT NUMBER: BRO-B050(19)
BRIDGE NO. 18700503**

CONSTRUCTION PLANS



VICINITY MAP
NOT TO SCALE

SECTION 29, TOWNSHIP 41 NORTH, RANGE 4 EAST

PREPARED NOVEMBER 12, 2015

DESCRIPTION	SHEET
COVER SHEET	1
TYPICAL SECTIONS / NOTES	2
SUMMARY OF QUANTITIES	2A
SCHEDULE OF QUANTITIES	2B
PLAN AND PROFILE SHEET	3
GRADING PLAN	4
REFERENCE POINTS & COORDINATE POINTS	5
TRAFFIC CONTROL & DETOUR PLAN	6
CROSS SECTIONS	1-4
BRIDGE SHEETS	
GENERAL PLAN & ELEVATION	B1
GENERAL NOTES	B2
DETAILS OF END BENT NO. 1	B3-B4
VERTICAL DRAIN AT END BENTS	B5
DETAILS OF END BENT NO. 2	B6-B7
PRESTRESSED GIRDER DETAILS (VWR)	B8
PRESTRESSED GIRDER DETAILS (BENT BARS)	B9
PRECAST PRESTRESSED PANELS	B10
SLAB HAUNCH, CAMBER DIAGRAM & THEORETICAL BOTTOM OF SLAB	B11
SLAB PLAN AND SECTION	B12
SAFETY BARRIER CURB DETAILS	B13
BARRIER CURB AT END BENTS	B14
SLIP-FORM SAFETY BARRIER CURB	B15
CONDUIT SYSTEM ON STRUCTURE	B16
BILL OF REINFORCING STEEL	B17-B18
AS-BUILT PILE DATA	B19
BORING DATA	B20-B21

FUNCTIONAL CLASSIFICATION	RURAL LOCAL
CURRENT POSTED SPEED	30 MPH
DESIGN SPEED	30 MPH
CURRENT ADT	150
TRUCK VOLUME	2%

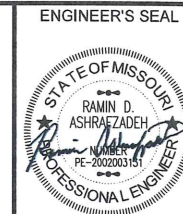
BEGINNING STATION	12+03.10
ENDING STATION	15+93.22
APPARENT LENGTH	390.12 FEET
EQUATIONS AND EXCEPTIONS	
BRIDGE EXCEPTIONS	13+35.58 TO 14+30.92
TOTAL CORRECTIONS	
NET LENGTH OF PROJECT	294.78 FEET 0.056 MILES

DESIGN CRITERIA USED:
AASHTO AND JEFFERSON COUNTY

APPROVED BY:
JEFFERSON COUNTY, MISSOURI

JASON JONAS, P.E.
DIRECTOR OF PUBLIC WORKS

DATE _____



11/12/0

DATE PREPARED
11/17/2015

ROUTE	STATE
	MO

DISTRICT	SHEET NO 1
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COUNTY
JEFFERSON

JOB NO.

CONCLUSIONS

FEDERAL PROJ. NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

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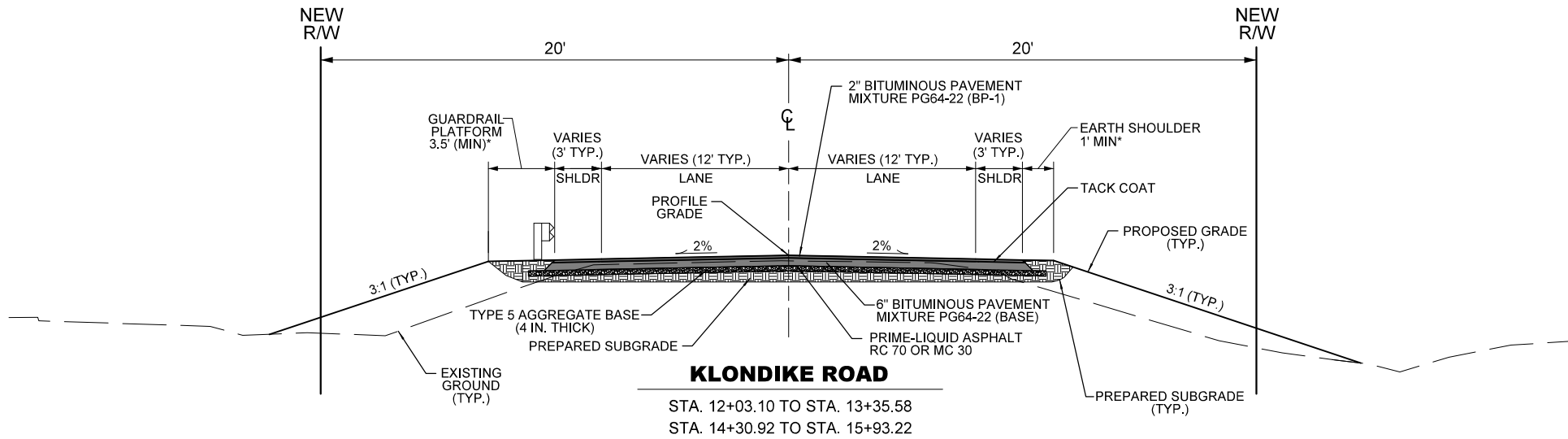
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JEFFERSON COUNTY, MISSOURI
 725 MAPLE STREET ANNEX
 135 MAPLE STREET
 P.O. BOX 100
 HILLSBORO, MO 63050
 636-797-5340
www.iejfcmo.org

HORNER SHIFRIN
401 S. 19TH ST. STE. 400 SAINT LOUIS, MO 63103-2286
TEL: 314-531-4321 • FAX: 314-531-6986 • WWW.HORNERSHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

KLONDIKE ROAD BRIDGE REPLACEMENT

1



BRIDGE: STA. 13+35.58 TO STA. 14+30.92 SEE GENERAL BRIDGE PLAN & ELEVATION

* ADDITIONAL EARTH SHOULDER NEEDED FOR GUARDRAIL PLATFORM
FOR GUARDRAIL LOCATIONS SEE PLANS

NOTES:

1. CONTRACTOR TO STAKE ALL R/W AND T.C.E. POINTS AS SHOWN ON PLANS.
2. NO TREES OUTSIDE THE EXISTING R/W SHALL BE REMOVED WITHOUT WRITTEN PERMISSION OF JEFFERSON COUNTY DEPARTMENT OF PUBLIC WORKS OR AS MARKED TO BE REMOVED ON THESE PLANS. COST OF REMOVAL SHALL BE INCLUDED IN CONTRACT UNIT PRICE FOR CLEARING.
3. CONTRACTOR TO NOTIFY AND COORDINATE WITH UTILITY COMPANIES TWO WEEKS PRIOR TO COMMENCEMENT OF PROJECT.
4. CONTRACTOR TO MAINTAIN ACCESS TO DRIVEWAYS FOR PROPERTY OWNERS AT ALL TIMES.
5. CONTRACTOR TO SALVAGE ALL SIGNS TO THE JEFFERSON COUNTY DEPARTMENT OF PUBLIC WORKS.
6. CONTRACTOR SHALL PROVIDE EROSION CONTROL PLAN TO THE JEFFERSON COUNTY DEPARTMENT OF PUBLIC WORKS 10 DAYS PRIOR TO CONSTRUCTION FOR REVIEW AND APPROVAL.

ENGINEER'S SEAL



11/12/15

DATE PREPARED
12/4/2015

ROUTE STATE

MO

DISTRICT SHEET NO.

2

COUNTY

JEFFERSON

JOB NO.

FEDERAL PROJ. NO.

BRO-B050(19)

PROJECT NO.

1334600

BRIDGE NO.

18700503

DESCRIPTION

DATE

JEFFERSON COUNTY, MISSOURI

MAPLE STREET ANNEX
725 MAPLE STREET
P.O. BOX 100
HILLSBORO, MO 63050
636-797-5340
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**KLONDIKE ROAD
BRIDGE REPLACEMENT**

TYPICAL SECTIONS & NOTES

BITUMINOUS PAVEMENT													
PLAN SHEET	STATION	STATION	LOCATION	2" BIT. PAVT. MIX BP-1 (PG64-22)		6" BIT. PAVT. MIX BASE (PG64-22)		4" TYPE 5 AGGREGATE BASE	PRIME COAT		TACK COAT		REMARKS
				(SY)	(CY)	(SY)	(CY)	(SY)	(SY)	(GAL)	(SY)	(GAL)	
1	12+03.10	13+35.58	KLONDIKE ROAD	439.3	24.4	439.3	73.2	469.3	469.3	164.3	439.3	22.0	
1	14+30.92	15+93.22	KLONDIKE ROAD	530.1	29.5	530.1	88.4	566.7	566.7	198.3	530.1	26.5	
			TOTALS	969.4	53.9		161.6	1036.0	1036.0	362.6	969.4	48.5	
			CONVERSION FACTORS										
			(TON/CY)		1.948		1.943						
			(GAL/SY)							0.35		0.05	
			TOTAL (TONS)		105.0		314.0						
			TOTAL (GAL)							362.6		48.5	
			USE		105		314	1036		370		50	

EARTHWORK				
LOCATION	CLASS "A" EXCAVATION	COMPACTING EMBANKMENT	EMBANKMENT IN PLACE	REMARKS
	(CY)			
	(CY)			
KLONDIKE ROAD	461	392	431	
TOTAL	461	392	431	
USE	461	392	431	

GRAVEL A				
PLAN SHEET	SIDE	LOCATION	6" GRAVEL A	REMARKS
			(SY)	
1	LT	KLONDIKE ROAD	168.9	
TOTAL			168.9	
USE			169	

GUARDRAIL						
PLAN SHEET	LOCATION	SIDE	TYPE A CRASHWORTHY END TERMINAL	BRIDGE ANCHOR SECTION 6.5 FT. POSTS	TRANSITION SECTION 6.5 FT. POSTS	REMARKS
			(EACH)	(EACH)	(EACH)	
1	KLONDIKE	LT/RT	4	4	4	
		TOTAL	4	4	4	
		USE	4	4	4	

REMOVAL AND RELOCATION OF MAILBOX
EACH = 1

CLEARING AND GRUBBING				
PLAN SHEET	LOCATION	SIDE	AREA	REMARKS
			(AC)	
1	KLONDIKE ROAD	BOTH	0.3	
	TOTAL		0.3	
	USE		0.3	

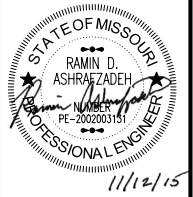
BARBED WIRE FENCE						
PLAN SHEET	LOCATION	STATION	STATION	SIDE	BARBED WIRE FENCE	REMARKS
					(LF)	
1	KLONDIKE ROAD	14+40.00	16+25.00	LT	185	
1	KLONDIKE ROAD	15+00.00	15+90.00	RT	90	
		TOTAL			275	
		USE			275	

MOBILIZATION
LUMP SUM = 1

CONTRACTOR FURNISHED SURVEYING AND STAKING
LUMP SUM = 1

REMOVAL OF IMPROVEMENTS
LUMP SUM = 1

ENGINEER'S SEAL



DATE PREPARED 12/4/2015	
ROUTE	STATE MO
DISTRICT	SHEET NO. 2B
COUNTY JEFFERSON	
JOB NO.	
FEDERAL PROJ. NO. BRO-B050(19)	
PROJECT NO. 1334600	
BRIDGE NO. 18700503	
DESCRIPTION	
DATE	

JEFFERSON COUNTY, MISSOURI

MAPLE STREET ANNEX
725 MAPLE STREET
P.O. BOX 100
HILLSBORO, MO 63050
636-797-5340
www.jeffco.org

HORNER SHIFRIN

401 S. 10TH ST., STE. 400, SAINT LOUIS, MO 63103-2298
314-551-1701
FAX: 314-551-1702
WWW.HORNERSHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

KLONDIKE ROAD
BRIDGE REPLACEMENT

SCHEDULE OF QUANTITIES

SHEET 1 OF 2

TRAFFIC CONTROL QUANTITIES							
LOCATION	SIGN	SIZE	QUANTITY	QUANTITY	DESCRIPTION	TYPE III MOVABLE BARRICADE	REMARKS
	(LF)	(IN)	(EA)	(SF)		(EA)	
KLONDIKE ROAD	MO4-8	24 X 12	1	2	DETOUR	4	
	MO4-8a	24 X 18	2	6	END DETOUR		
	MO4-9L	48 X 36	2	24	DETOUR LEFT		
	MO4-9R	48 X 36	1	12	DETOUR RIGHT		
	MO6-3	21X 15	1	2	ARROW		
	R11-2	48 X 30	4	40	ROAD CLOSED		
	R11-3a	60 X 30	1	13	ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY		
	SPECIAL SIGN	60 X 42	2	35	NOTICE		
	SPECIAL SIGN 1	48 X 9	6	18	KLONDIKE ROAD		
	WO20-3	48 X 48	1	16	ROAD CLOSED AHEAD		
	WO20-3	48 X 48	1	16	ROAD CLOSED 1000 FT		
	TOTAL			184		4	
	USE			184		4	

TEMPORARY EROSION CONTROL			
LOCATION	SIDE	SILT FENCE	REMARKS
		(LF)	
KLONDIKE ROAD	BOTH	590	
	TOTAL	590	
	USE	590	

SEEDING				
PLAN SHEET	LOCATION	SIDE	AREA	REMARKS
			(AC)	
1	KLONDIKE ROAD	BOTH	0.3	
	TOTAL		0.3	
	USE		0.3	

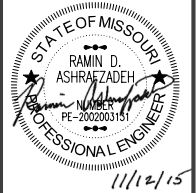
SPECIAL ROCK BLANKET				
PLAN SHEET	SIDE	LOCATION	SPECIAL ROCK BLANKET	REMARKS
			(CY)	
1	BOTH	KLONDIKE	373.8	
			373.8	
			374	

SLAB BOULDER WALL				
PLAN SHEET	SIDE	LOCATION	SLAB BOULDER WALL	REMARKS
			(CY)	
1	BOTH	KLONDIKE	100.0	
			100	
			100	

DRAINAGE					
PLAN SHEET	LOCATION	STATION	SIDE	12" GROUP C PIPE	REMARKS
				(LF)	
1	KLONDIKE ROAD	12+00.00	RT	18	
		TOTAL		18	
		USE		18	

TEMPORARY CONSTRUCTION FENCE						
PLAN SHEET	LOCATION	STATION	STATION	SIDE	TEMPORARY CONSTRUCTION FENCE	REMARKS
					(LF)	
1	KLONDIKE ROAD	14+25.00	16+00.00	RT	200	
		TOTAL			200	
		USE			200	

ENGINEER'S SEAL



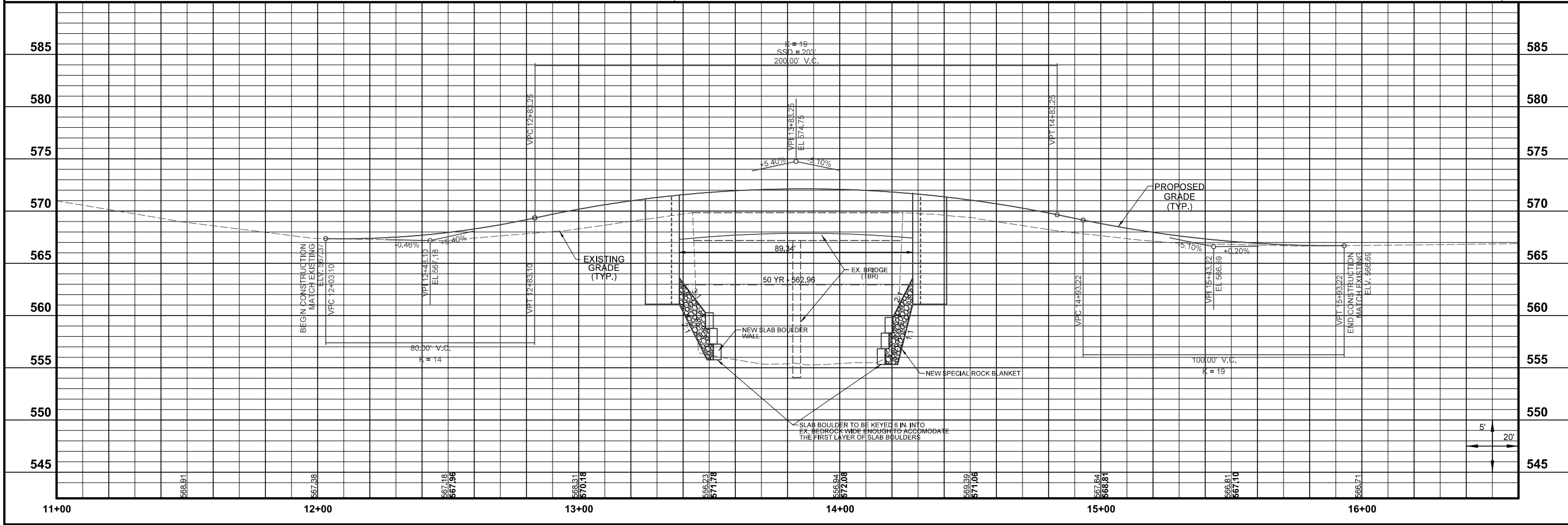
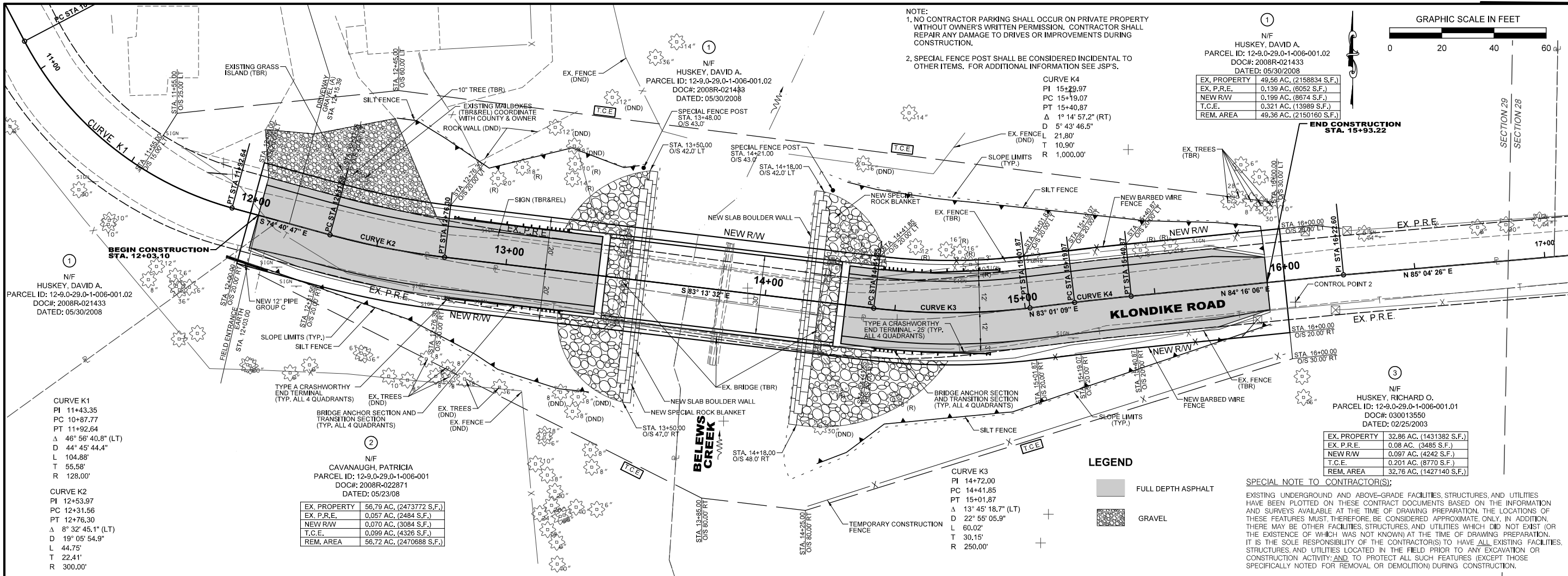
DATE PREPARED 12/4/2015	
ROUTE	STATE MO
DISTRICT	SHEET NO. 2B
COUNTY JEFFERSON	
JOB NO.	
FEDERAL PROJ. NO. BRO-B050(19)	
PROJECT NO. 1334600	
BRIDGE NO. 18700503	

DESCRIPTION					
DATE					

JEFFERSON COUNTY, MISSOURI
MAPLE STREET ANNEX
725 MAPLE STREET
P.O. BOX 100
HILLSBORO, MO 63050
636-797-5340
www.jeffco.org

HORNER SHIFRIN
401 S. 10TH ST. STE. 400 SAINT LOUIS, MO 63103-2298
314-551-4001
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

KLONDIKE ROAD
BRIDGE REPLACEMENT
SCHEDULE OF QUANTITIES
SHEET 2 OF 2



ENGINEER'S SEAL

STATE OF MISSOURI
RANIN D. ASHRAFI
PROFESSIONAL ENGINEER
NUMBER FE-200203131
11/12/15

DATE PREPARED
12/14/2015

ROUTE STATE
MO

DISTRICT SHEET NO.
3

COUNTY
JEFFERSON

JOB NO.

FEDERAL PROJ. NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

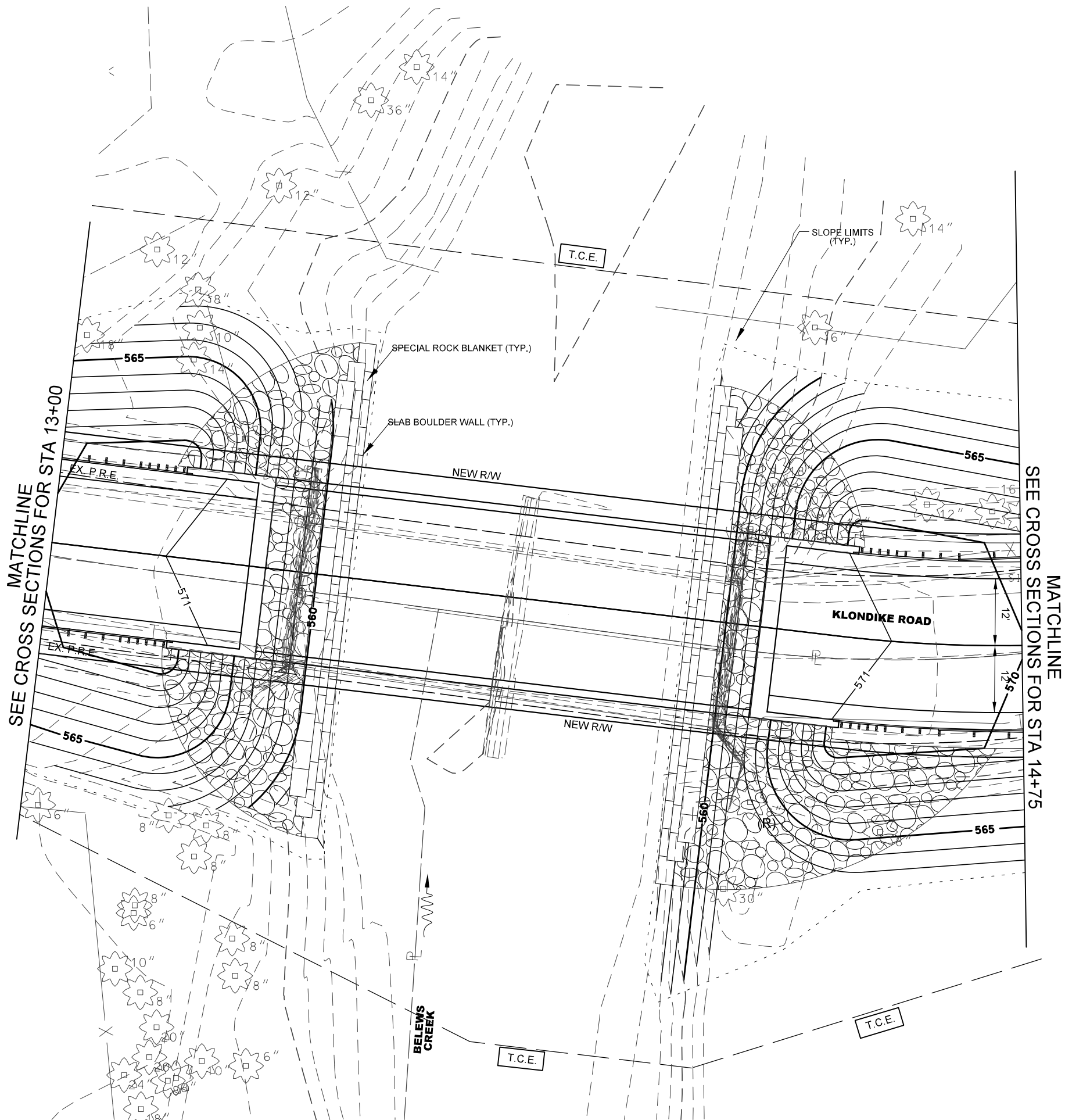
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MAPLE STREET ANNEX
725 MAPLE STREET
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HORNER SHIFRIN
401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2286
314-531-4321 • FAX 314-531-4966 • WWW.HORNERSHIFRIN.COM
DESIGNED BY: JEFFREY L. SHIFRIN
CHECKED BY: JEFFREY L. SHIFRIN
EXPIRATION DATE: DECEMBER 31, 2016

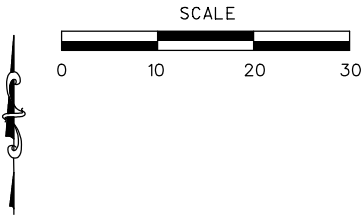
KLONDIKE ROAD
BRIDGE REPLACEMENT

PLAN / PROFILE SHEET

REV.



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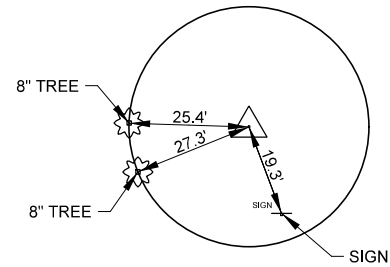
ENGINEER'S SEAL	
STATE OF MISSOURI RAMIN D. ASHRAFAZADEH PE-200200315 PROFESSIONAL ENGINEER 11/12/15	
DATE PREPARED 12/4/2015	
ROUTE	STATE MO
DISTRICT	SHEET NO. 4
COUNTY JEFFERSON	
JOB NO.	
FEDERAL PROJ. NO. BRO-B050(19)	
PROJECT NO. 1334600	
BRIDGE NO. 18700503	

DATE	DESCRIPTION

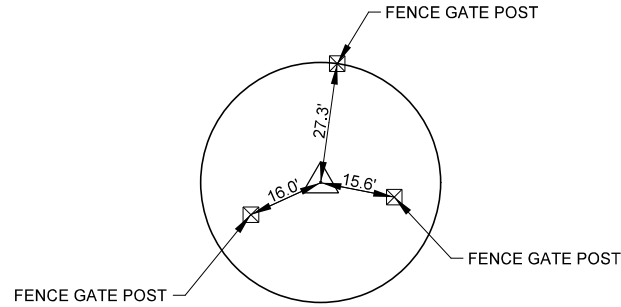
JEFFERSON COUNTY, MISSOURI
MAPLE STREET ANNEX
725 MAPLE STREET
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JEFFERSON COUNTY, MISSOURI
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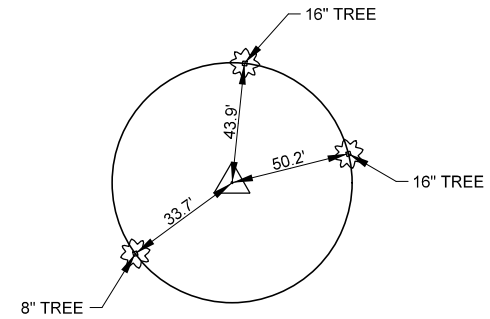
REFERENCE POINTS



CONTROL POINT 1
N 885384.3885
E 793339.9942
PK NAIL
ELEV.=572.65
STA. 10+51.92
O/S = 10.01' RT



CONTROL POINT 2
N 885257.3414
E 793852.3775
PK NAIL
ELEV.=566.34
STA. 16+03.27
O/S = 8.60' RT



CONTROL POINT 3
N 885475.7156
E 793288.0657
PK NAIL
ELEV.=574.00

MISSOURI COORDINATE SYSTEM AND ELEVATION: COORDINATES SHOWN HAVE BEEN DERIVED FROM GPS OBSERVATION USING THE MISSOURI DEPARTMENT OF TRANSPORTATION'S GNSS/GPS VRS NETWORK, WGS 84, NAVD88 ELEVATION ARE ON USGS DATUM.

COORDINATE POINTS					
SHEET NO.	STATION	LOCATION	NORTHING (FEET)	EASTING (FEET)	DESCRIPTION
	10+00.00	KLONDIKE ROAD	885435.00	793324.70	POT
	10+87.77	KLONDIKE ROAD	885357.32	793365.54	PC - CURVE K1
3	11+43.35	KLONDIKE ROAD	885308.12	793391.41	PI - CURVE K1
3	11+92.64	KLONDIKE ROAD	885293.43	793445.02	PT - CURVE K1
3	12+03.10	KLONDIKE ROAD	885290.67	793455.10	BEGIN PROJECT
3	12+31.56	KLONDIKE ROAD	885283.15	793482.55	PC - CURVE K2
3	12+53.97	KLONDIKE ROAD	885277.23	793504.17	PI - CURVE K2
3	12+76.30	KLONDIKE ROAD	885274.59	793526.43	PT - CURVE K2
3	14+41.85	KLONDIKE ROAD	885255.06	793690.81	PC - CURVE K3
3	14+72.00	KLONDIKE ROAD	885251.50	793720.76	PI - CURVE K3
3	15+01.87	KLONDIKE ROAD	885255.17	793750.69	PT - CURVE K3
3	15+19.07	KLONDIKE ROAD	885257.26	793767.76	PC - CURVE K4
3	15+29.97	KLONDIKE ROAD	885258.58	793778.58	PI - CURVE K4
3	15+40.87	KLONDIKE ROAD	885259.67	793789.43	PT - CURVE K4
3	15+93.22	KLONDIKE ROAD	885264.90	793841.52	END PROJECT
3	16+22.60	KLONDIKE ROAD	885267.83	793870.75	POT
	18+05.08	KLONDIKE ROAD	885283.50	794052.55	POT

ENGINEER'S SEAL



DATE PREPARED
12/4/2015

ROUTE	STATE MO
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STRICT	SHEET NO. 5
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COUNTY
JEFFERSON
JOB NO.

FEDERAL PROJ. NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.	18700503
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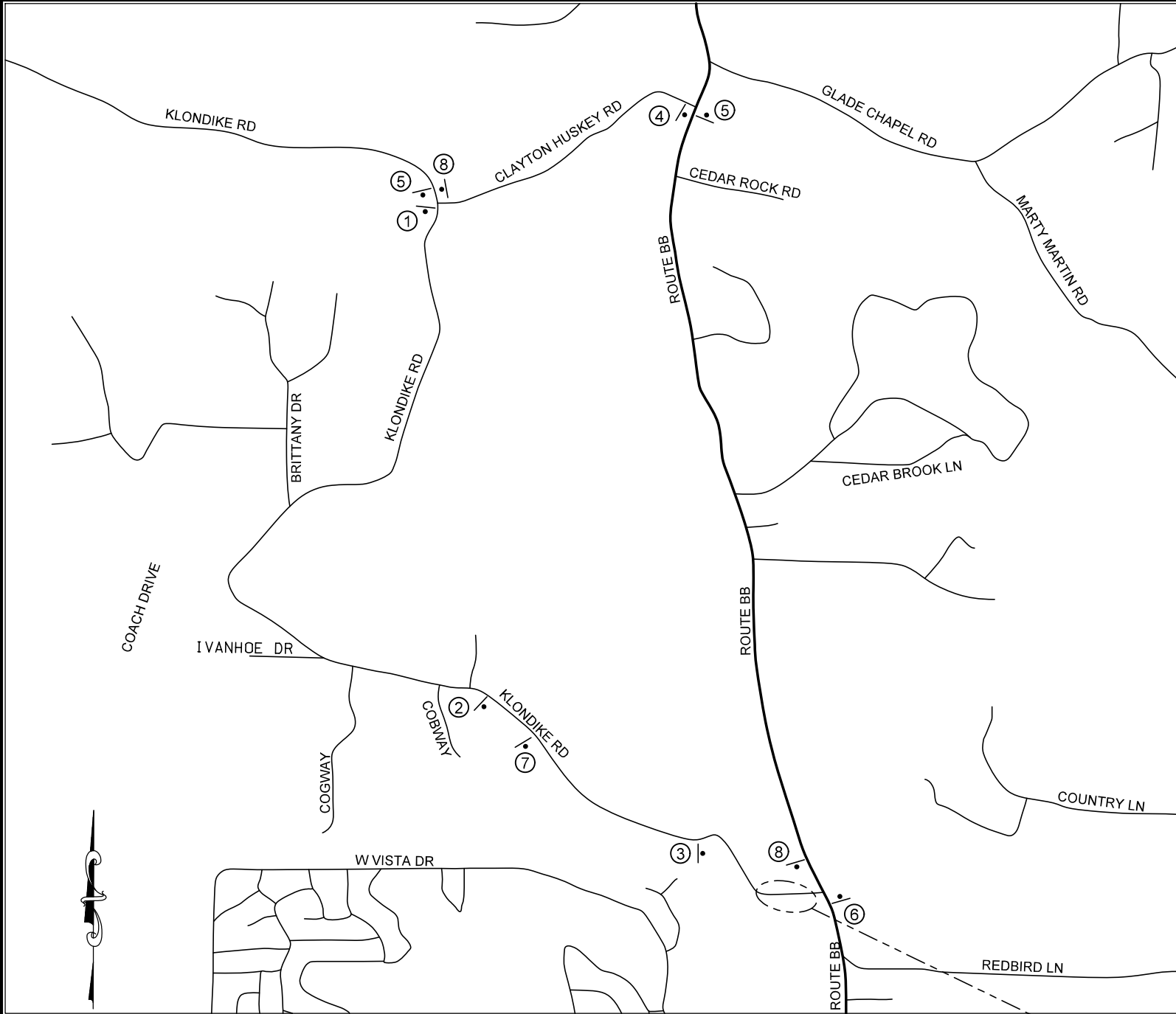

 MAPLE STREET ANNEX
 725 MAPLE STREET
 P.O. BOX 100
 HILLSBORO, MO 63050
 636-797-5340
www.jeffcomo.org



HORNES
SHIFRIN

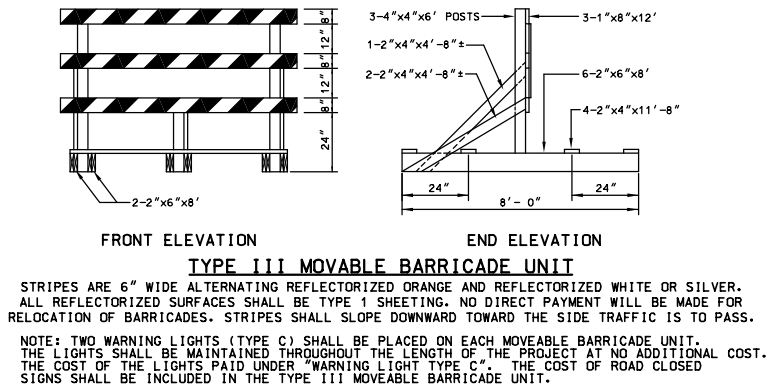
401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2296
TEL: 314/431-4321 • FAX 314/431-6866 • WWW.HORNESHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

REFERENCE POINTS & COORDINATE POINTS



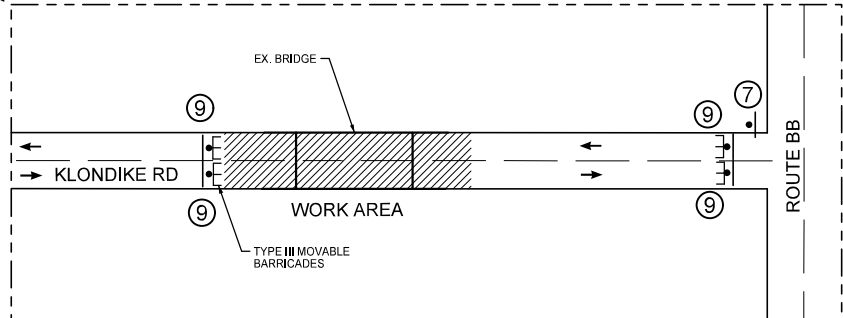
- NOTES:
- 1) SIGN LOCATIONS TO BE APPROVED BY ENGINEER.
 - 2) DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS WITH PERMISSION OF THE ENGINEER.
 - 3) NO DIRECT PAYMENT WILL BE MADE FOR RELOCATION OF TCP SIGNS AND DEVICES.
 - 4) ANY EXISTING SIGNS THAT CONFLICT WITH TEMPORARY TRAFFIC CONTROL SHALL BE COVERED OR REMOVED.
 - 5) CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES.
 - 6) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
 - 7) ALL TRAFFIC CONTROL ITEMS NOT INCLUDED IN THE PAY ITEM ARE TO BE CONSIDERED INCIDENTAL.
 - 8) THE CONTRACTOR WILL DETERMINE THE OPTIMUM LENGTH OF WORK ZONES/ AREAS AS CONSTRUCTION PROGRESSES. THE LENGTH OF WORK ZONES/AREAS WILL VARY AS REQUIRED TO MINIMIZE DISRUPTION TO ROAD TRAFFIC WHILE MAXIMIZING THE PROGRESS OF CONSTRUCTION.
 - 9) THE CONTRACTOR SHALL HAVE THE DAY TO DAY RESPONSIBILITY FOR TRAFFIC CONTROL IN WORK ZONE AREAS, AND SHALL PROVIDE ADDITIONAL TRAFFIC CONTROL MEASURES AS THEY DEEM APPROPRIATE TO PROVIDE FOR SAFE TRAFFIC CONTROL AND RELATED CONSTRUCTION OPERATIONS.
 - 10) CONTRACTOR TO INSTALL SIGN 7 AT LEAST 2 WEEKS PRIOR TO CONSTRUCTION OR ANY ROAD CLOSURES.

KLONDIKE ROAD DETOUR ROUTE



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- E TYPE III MOVABLE BARRICADE
- WORK AREA



ROAD CLOSED
XX MILES AHEAD
LOCAL TRAFFIC ONLY

R11-3a
60"x30"

1

KLONDIKE ROAD

SPECIAL SIGN 1

DETOUR
→

M04-9R
48"x36"

4

ROAD CLOSED
AHEAD

WO20-3
48"x48"

2

KLONDIKE ROAD

SPECIAL SIGN 1

DETOUR
←

M04-9L
48"x36"

5

ROAD CLOSED
1000 FT

WO20-3
48"x48"

3

KLONDIKE ROAD

SPECIAL SIGN 1

DETOUR
↑

M4-8
24"x12"

M6-3
21"x15"

6

KLONDIKE ROAD

SPECIAL SIGN 1

END
DETOUR

M04-8a
24"x18"

8

KLONDIKE ROAD

SPECIAL SIGN 1 DETAILS

9"x48"

9

NOTICE

KLONDIKE ROAD
WILL CLOSE
XX/XX/XX
AT BELEWS CREEK

SPECIAL SIGN
DETAIL

7

ROAD
CLOSED

R11-2
(ON BARRICADE)

9

ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFAZADEH

PROFESSIONAL ENGINEER

11/12/15

DATE PREPARED
12/4/2015

ROUTE

STATE

DISTRICT

SHEET NO.

COUNTY

JEFFERSON

JOB NO.

FEDERAL PROJ. NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

JEFFERSON COUNTY, MISSOURI

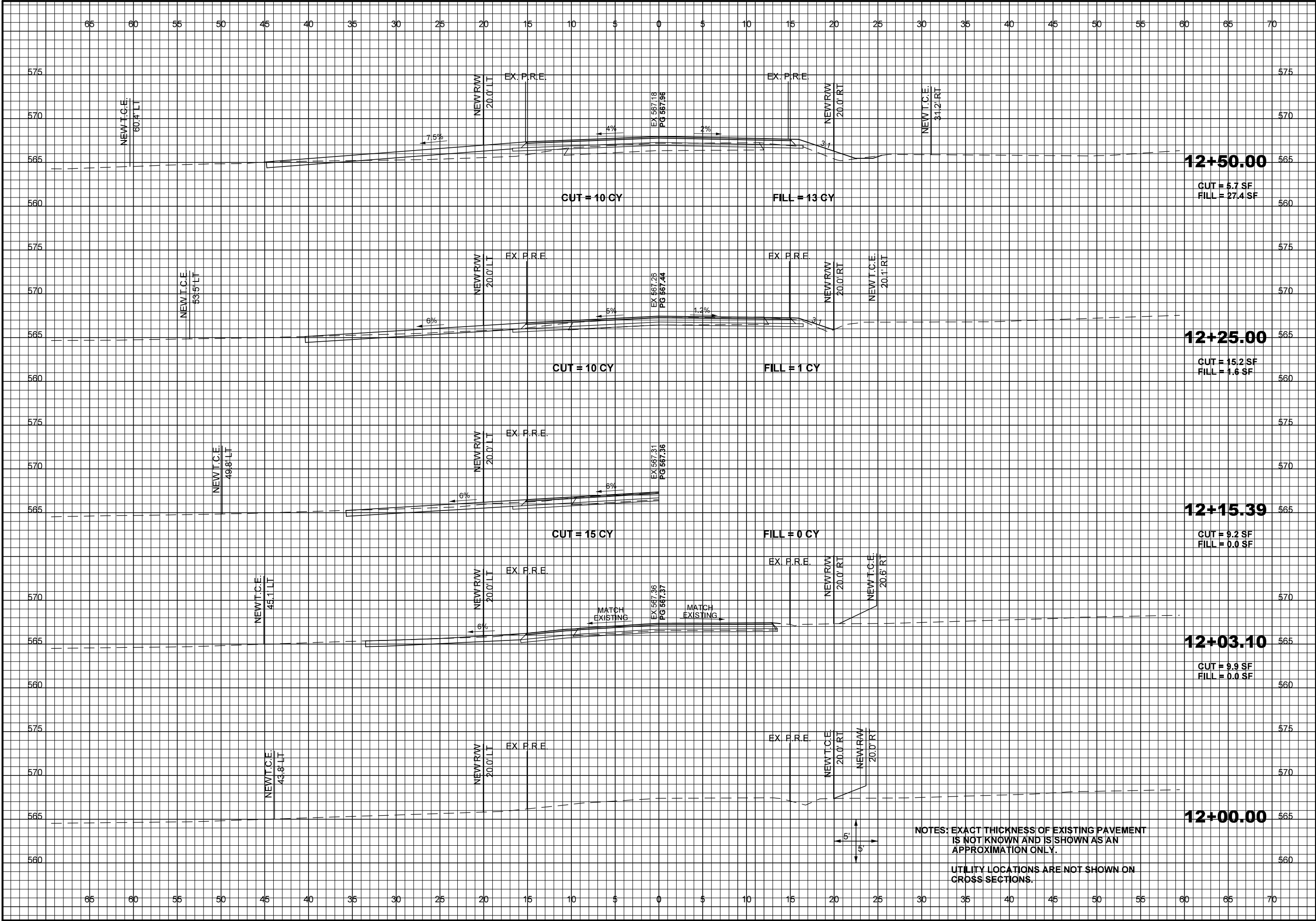
MAPLE STREET ANNEX
725 MAPLE STREET
P.O. BOX 100
HILLSBORO, MO 63050
636-797-5340
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HORNER SHIFRIN

401 S. 10TH ST., STE. 400 SAINT LOUIS, MO 63103-2286
314-551-1400
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 00159
EXPIRATION DATE: DECEMBER 31, 2016

KLONDIKE ROAD
BRIDGE REPLACEMENT

TRAFFIC CONTROL PLAN
&
DETOUR ROUTE



ENGINEER'S SEAL

STATE OF MISSOURI
RAMIN D. ASHRAF
LICENSE NO. 2002003131
PROFESSIONAL ENGINEER
11/12/15

DATE PREPARED
12/4/2015

ROUTE
STATE
MO

DISTRICT
SHEET NO.
1

COUNTY
JEFFERSON

JOB NO.

FEDERAL PROJ. NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

JEFFERSON COUNTY, MISSOURI

MAPLE STREET ANNEX
725 MAPLE STREET
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636-797-5340
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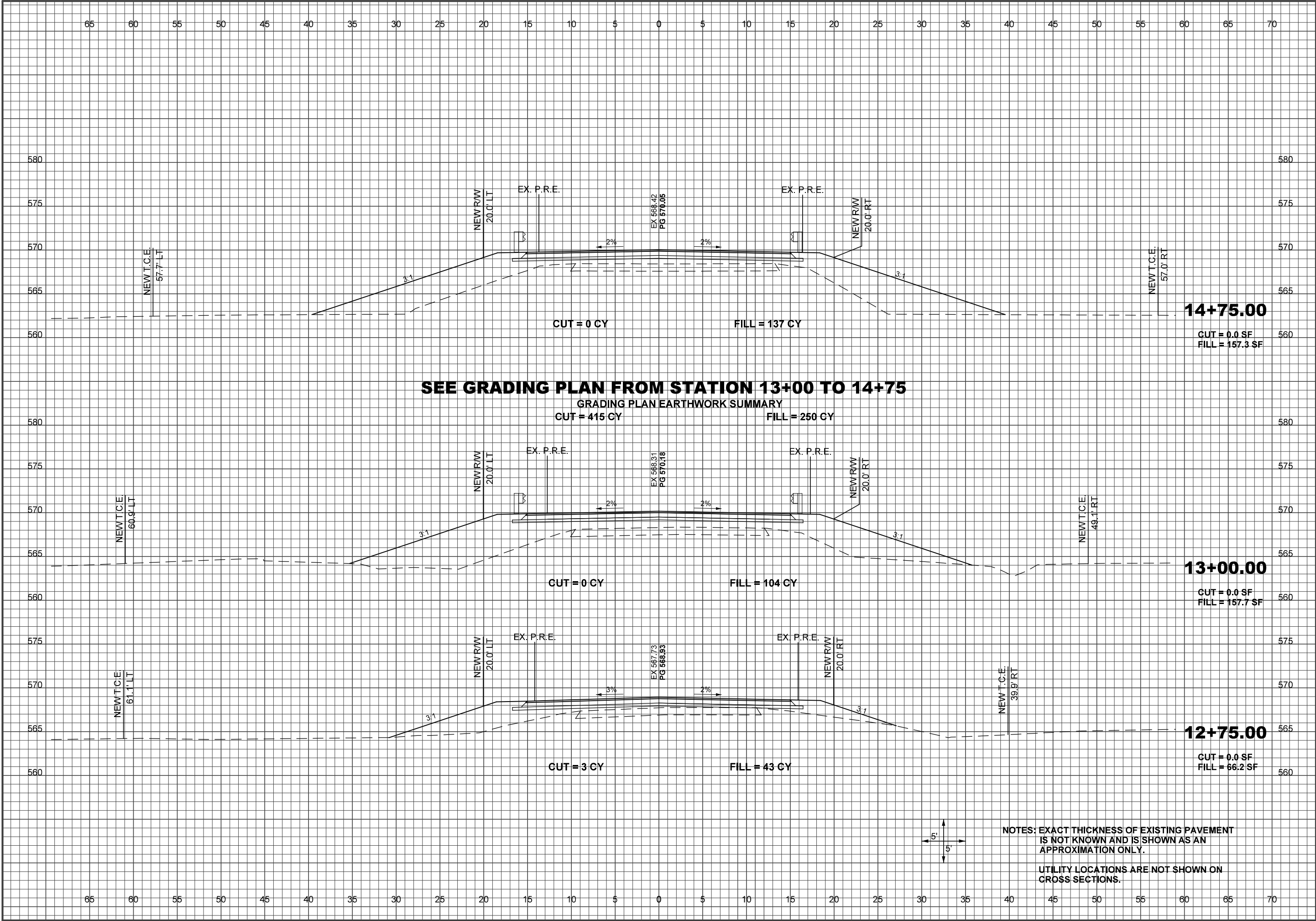
JEFFERSON COUNTY
MISSOURI

HORNER SHIFRIN

401 S. 18TH ST. STE. 400 SAINT LOUIS, MO 63103-2286
314-531-4321 • FAX 314-531-4986 • WWW.HORNERSHIFRIN.COM
DATE: 12/4/2015
DRAWN BY: JMS
CHECKED BY: JMS
EXPIRATION DATE: DECEMBER 31, 2016

KLONDIKE ROAD
BRIDGE REPLACEMENT

CROSS SECTIONS
SHEET 1 OF 4



ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFI

PROFESSIONAL ENGINEER

11/12/15

DATE PREPARED
12/4/2015

ROUTE

STATE

DISTRICT

SHEET NO.

COUNTY

JEFFERSON

JOB NO.

FEDERAL PROJ. NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

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JEFFERSON COUNTY

SEAL

HORNER SHIFRIN

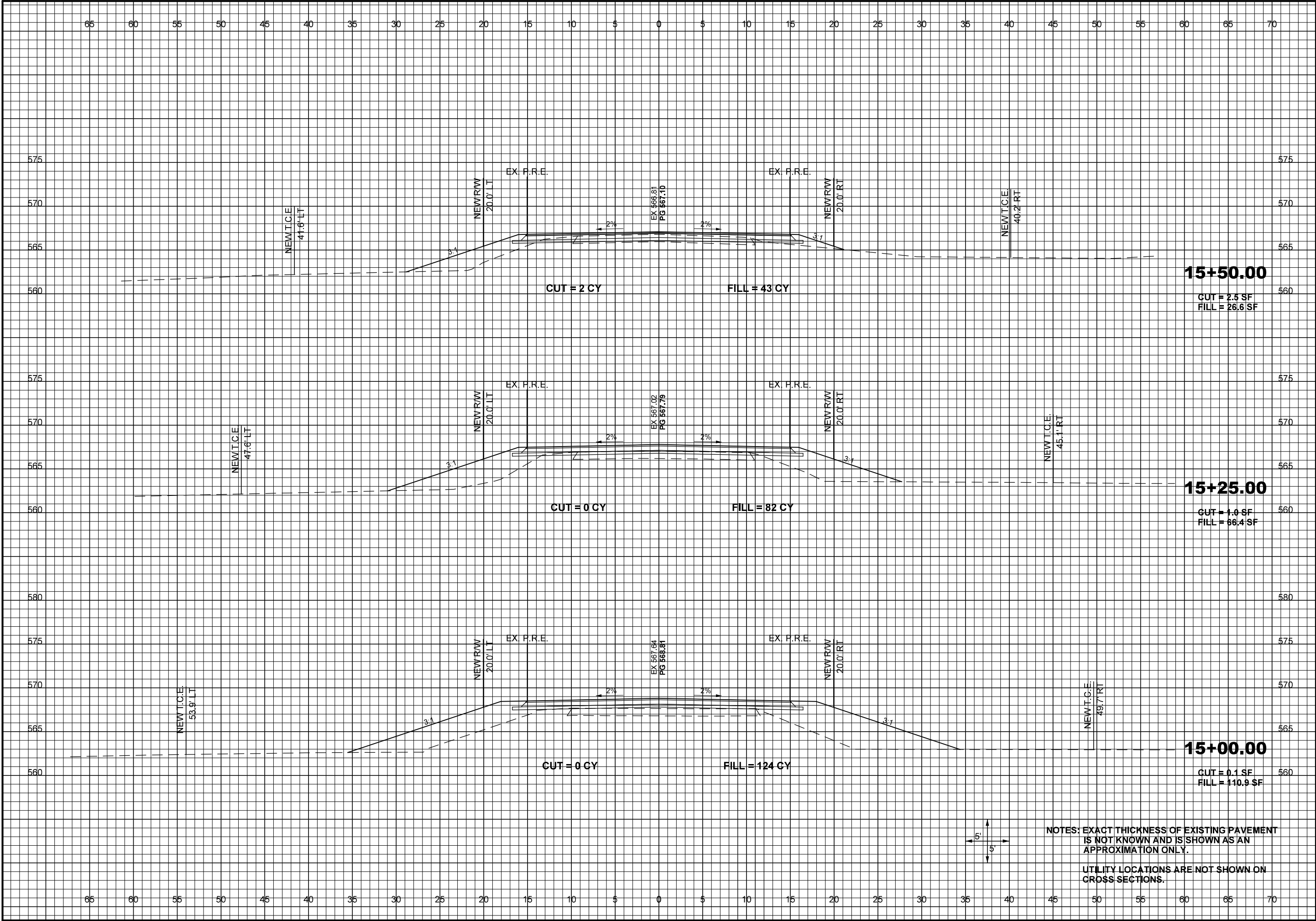
401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2286
314-451-4321 • FAX 314-451-4966 • WWW.HORNERSHIFRIN.COM
OFFICE OF PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY 030159
EXPIRATION DATE: DECEMBER 31, 2016

KLONDIKE ROAD
BRIDGE REPLACEMENT

CROSS SECTIONS
SHEET 2 OF 4

NOTES: EXACT THICKNESS OF EXISTING PAVEMENT
IS NOT KNOWN AND IS SHOWN AS AN
APPROXIMATION ONLY.

UTILITY LOCATIONS ARE NOT SHOWN ON
CROSS SECTIONS.



ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFI

PROFESSIONAL ENGINEER

11/12/15

DATE PREPARED
12/4/2015

ROUTE

STATE

MO

DISTRICT

SHEET NO.

3

COUNTY

JEFFERSON

JOB NO.

FEDERAL PROJ. NO.

BRO-B050(19)

PROJECT NO.

1334600

BRIDGE NO.

18700503

DESCRIPTION

DATE

JEFFERSON COUNTY, MISSOURI

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MISSOURI

JEFFERSON COUNTY

SEAL

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OUR PROFESSIONAL CERTIFICATE OF AUTHORITY #001159

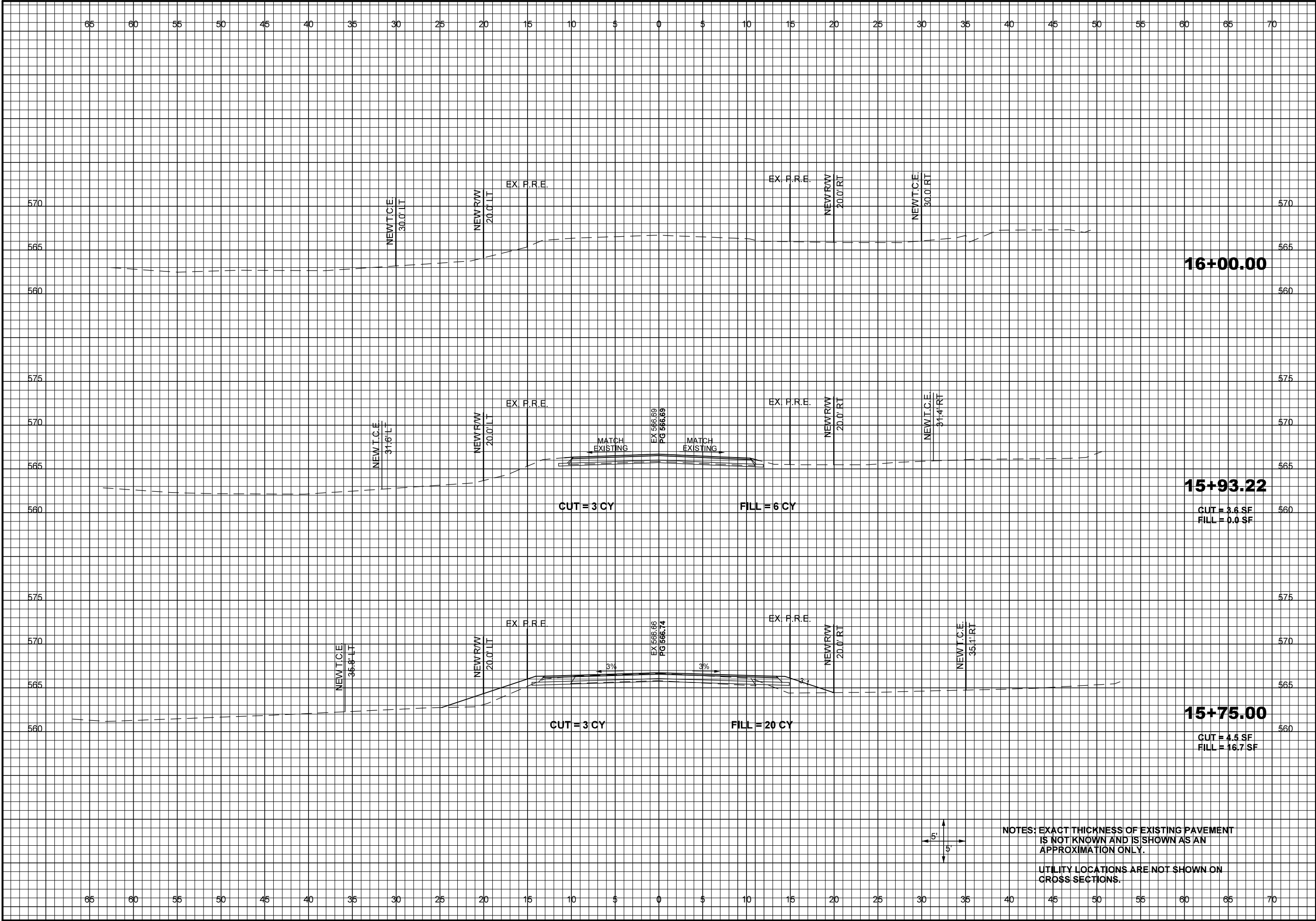
EXPIRATION DATE: DECEMBER 31, 2016

KLONDIKE ROAD

BRIDGE REPLACEMENT

CROSS SECTIONS

SHEET 3 OF 4



ENGINEER'S SEAL

STATE OF MISSOURI

RAMIN D. ASHRAFI

PROFESSIONAL ENGINEER

11/12/15

DATE PREPARED
12/4/2015

ROUTE

STATE

DISTRICT

SHEET NO.

COUNTY

JEFFERSON

JOB NO.

FEDERAL PROJ. NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

JEFFERSON COUNTY, MISSOURI

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401 S. 18TH ST. STE. 400 SAINT LOUIS, MO 63103-2286
314-451-4321 • FAX 314-451-4986 • WWW.HORNERSHIFRIN.COM
DR. MICHAEL SHIFRIN, P.E.
CERTIFICATE OF AUTHORITY 030159
EXPIRATION DATE: DECEMBER 31, 2016

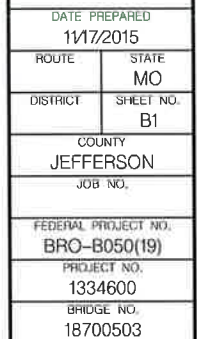
KLONDIKE ROAD
BRIDGE REPLACEMENT

CROSS SECTIONS
SHEET 4 OF 4

...\\1334600_XS Sheets.dgn

12/4/2015

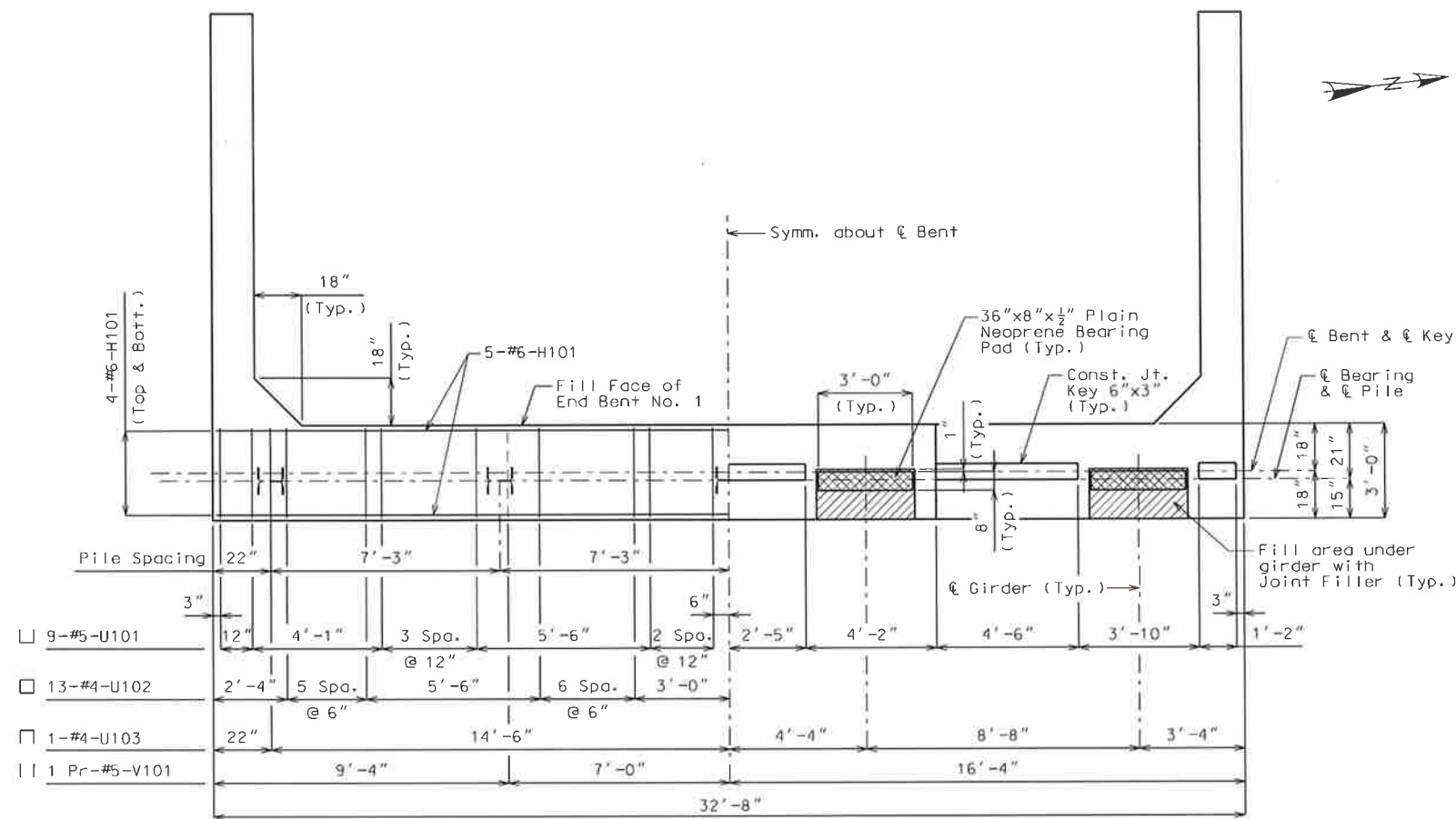
REV.

[illegible]

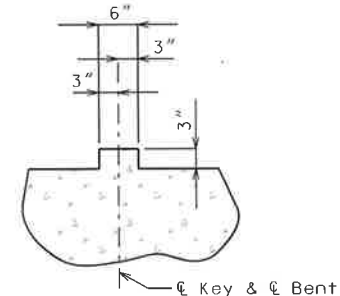
JEFFERSON COUNTY, MISSOURI
 725 MAPLE STREET
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 HILLSBORO, MO 63050
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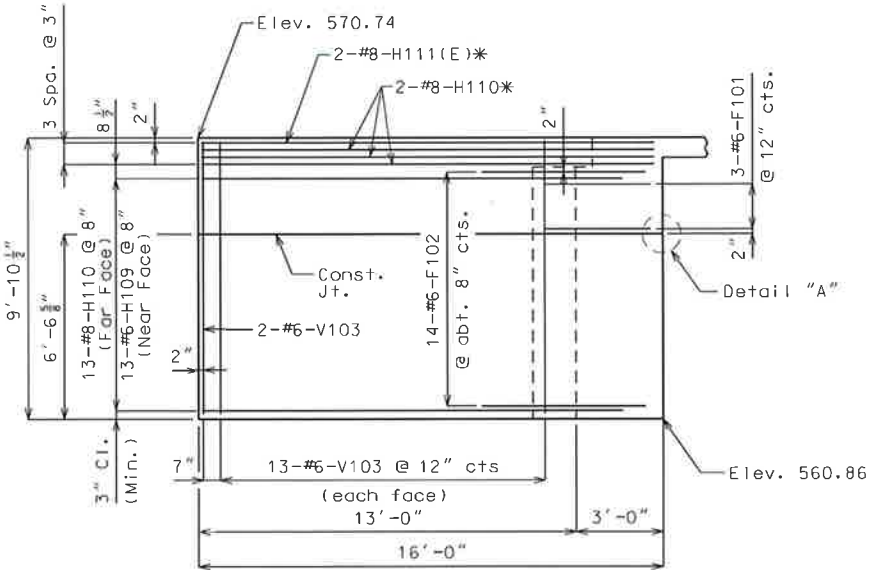
GENERAL PLAN & ELEVATION
KLONDIKE ROAD
BRIDGE REPLACEMENT
JEFFERSON COUNTY, MISSOURI
BRO-B050(19)



PLAN OF BEAM SHOWING DIMENSIONS AND REINFORCEMENT

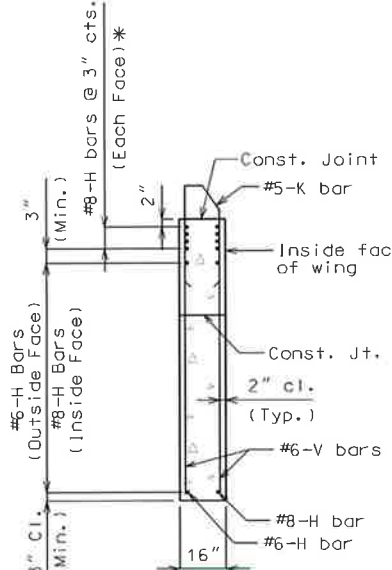


TYPICAL SECTION THRU KEY



ELEVATION E-E

Note: Right wing wall shown, left wing wall similar.



TYPICAL SECTION THRU WING

* Placed with grade

Substructure Quantity Table for End Bent No. 1		
Item		Quantity
Class 1 Excavation	cu. yard	45
Structural Steel Piles (10 in.)	linear foot	65
Pre-Bore for Piling	linear foot	50
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	33.0

Note: These quantities are included in the estimated quantities table on Sheet No. B2.

Notes:
 Work this sheet with Sheet No. B4.
 For details of Vertical Drain at End Bent, see Sheet No. B5.
 See Sheet No. B4 for Detail "A".
 For location of Elevation E-E, see Sheet No. B4.

Designed: MAC
 Detailed: CAB
 Checked: MAB

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



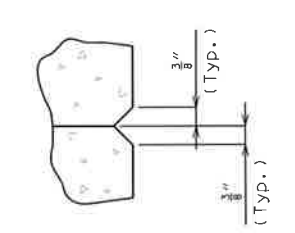
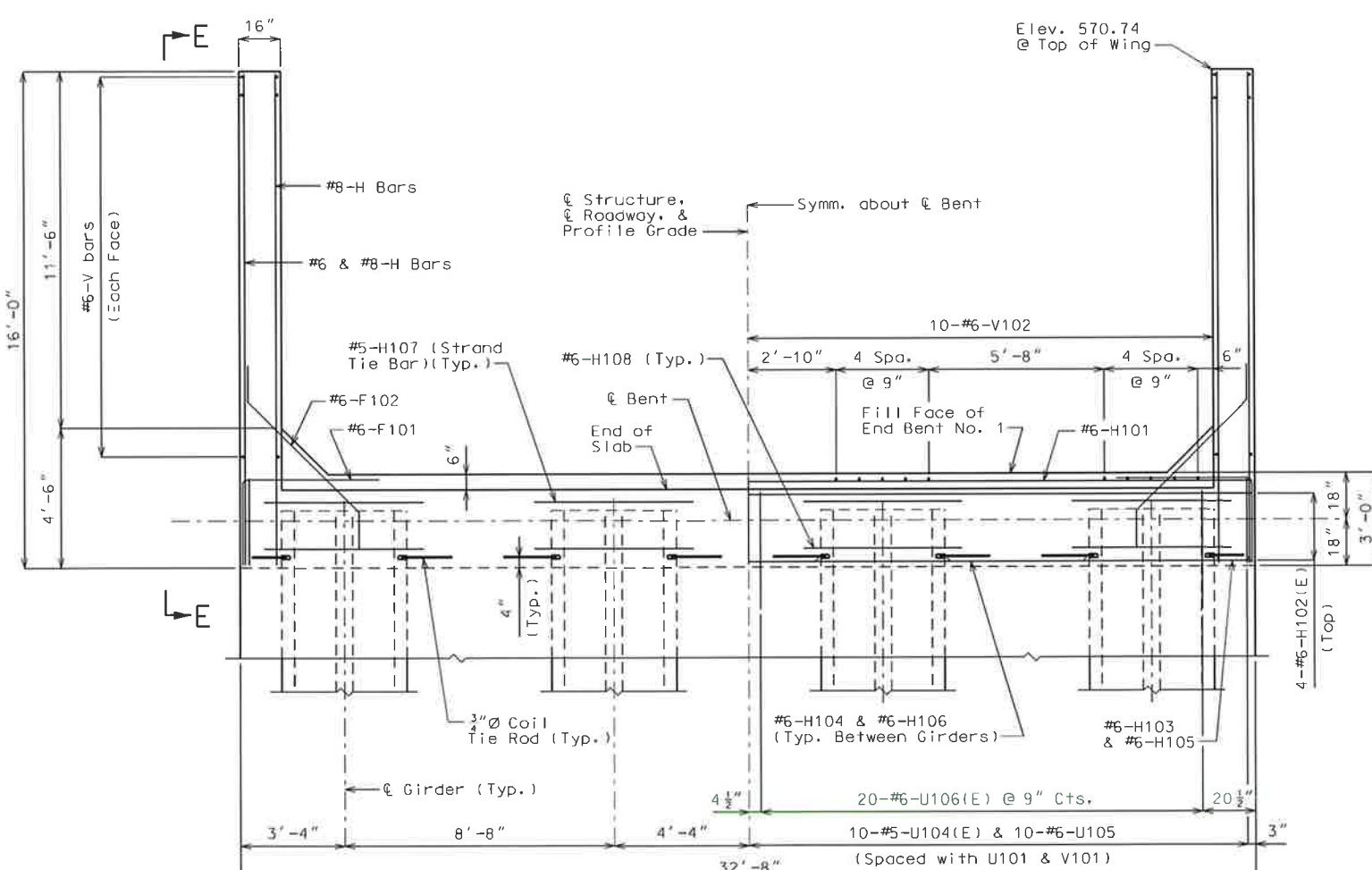
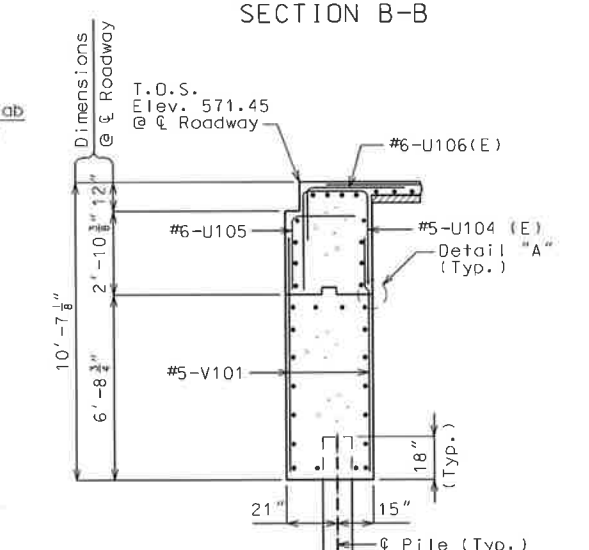
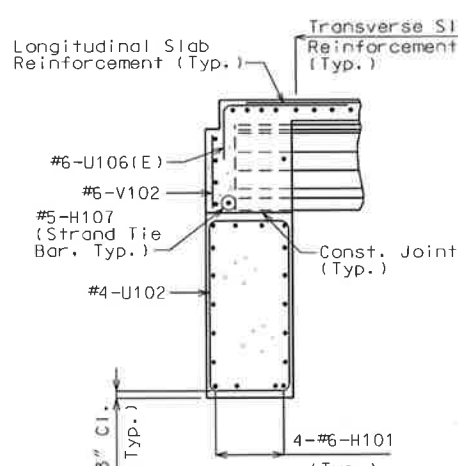
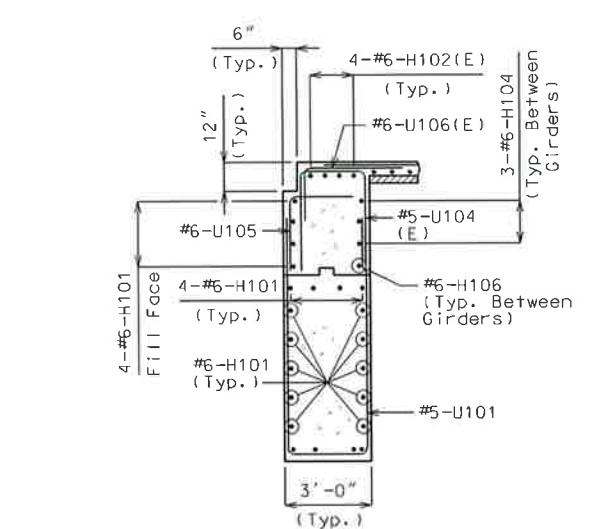
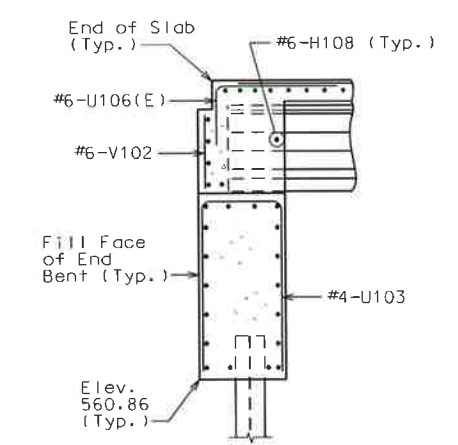
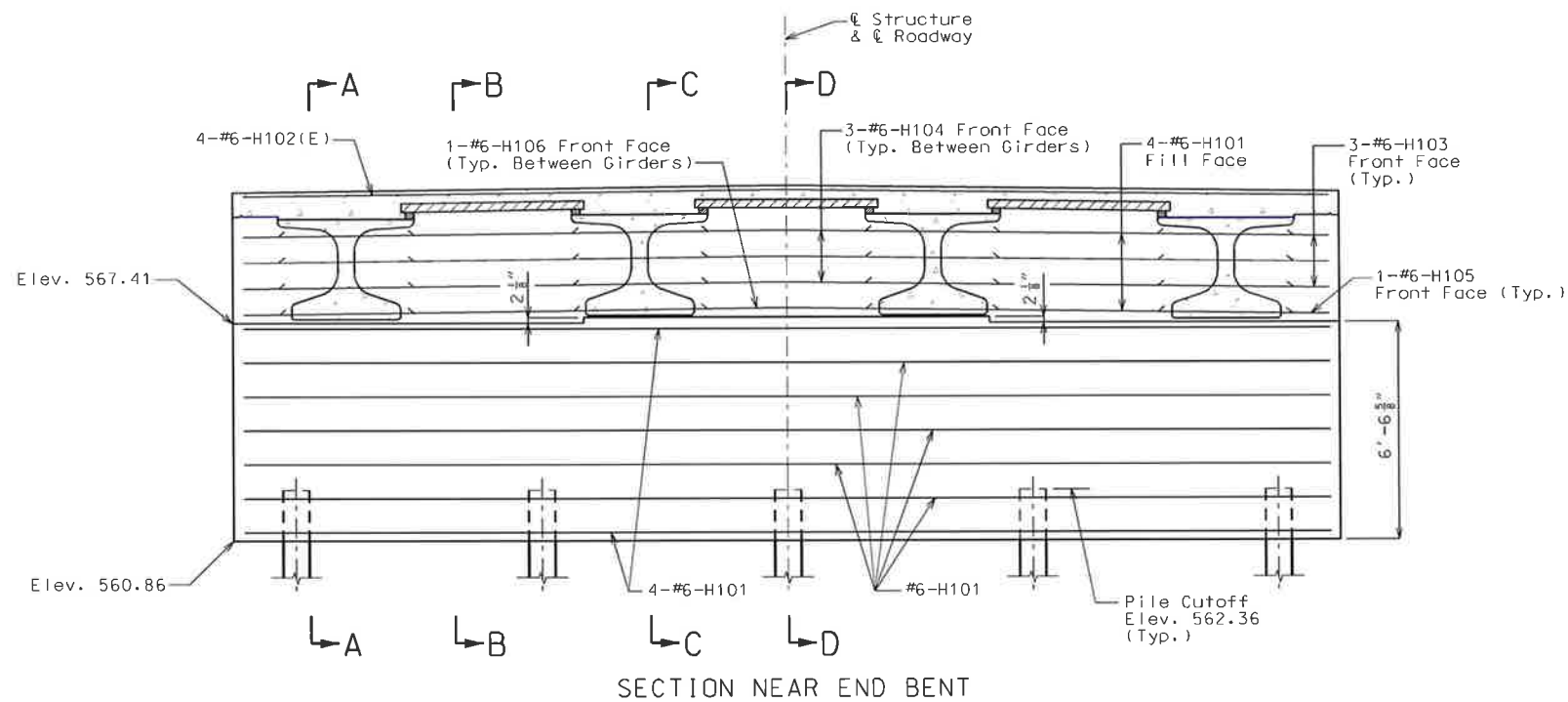
DATE PREPARED
1/17/2015
 ROUTE STATE
MO
 DISTRICT SHEET NO.
B3
 COUNTY
JEFFERSON
 JOB NO.

FEDERAL PROJECT NO.
BRO-B050(19)
 PROJECT NO.
1334600
 BRIDGE NO.
18700503

JEFFERSON COUNTY, MISSOURI
 MAPLE STREET ANNEX
 725 MAPLE STREET
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DETAILS OF END BENT NO. 1
KLONDIKE ROAD
BRIDGE REPLACEMENT
 JEFFERSON COUNTY, MISSOURI
 BRO-B050(19)



Notes:

Work this sheet with Sheet No. B3.

Bend F-bars in field to clear girders.

All concrete in the End Bent above top of Beam and below top of Slab shall be Class B-2.

Slab reinforcement not shown for clarity, see Sheet No. B12 for details.

For reinforcement of the Safety Barrier Curb at End Bents, see Sheet No. B14.

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

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

For location of Strand Tie Bars and Coil Tie Rods, see Sheet No. B8 & B9.

For details of Vertical Drain at End Bent, see Sheet No. B5.

Designed: MAC
Detailed: CAB
Checked: MAB

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

ENGINEER'S SEAL

DATE PREPARED 11/17/2015	
ROUTE	STATE MO
DISTRICT	SHEET NO. B4
COUNTY JEFFERSON	
JOB NO.	
FEDERAL PROJECT NO. BRO-B050(19)	
PROJECT NO. 1334600	
BRIDGE NO. 18700503	

DATE	DESCRIPTION

JEFFERSON COUNTY, MISSOURI

MAPLE STREET ANNEX
725 MAPLE STREET
P.O. BOX 100
HILLSBORO, MO 63050
636-797-5340
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HORNER SHIFRIN

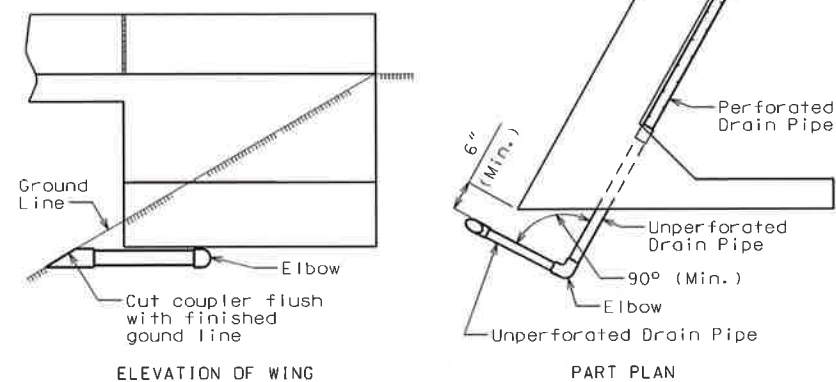
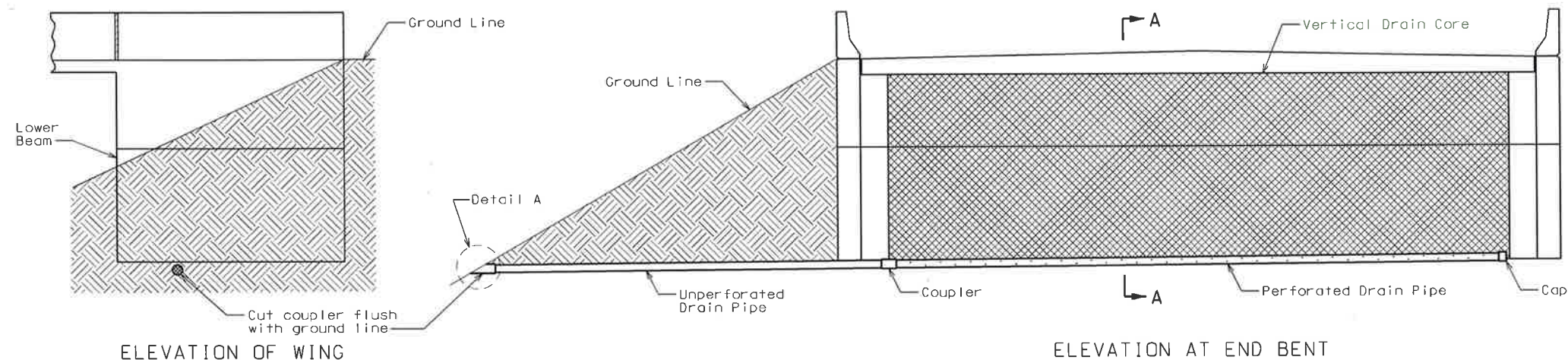
401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2286
314-531-5521 • FAX 314-531-5555 • WWW.HORNERSHIFRIN.COM
LICENSED PROFESSIONAL ENGINEER
CERTIFICATE OF AUTHORITY: 000359
EXPIRATION DATE: DECEMBER 31, 2016

DETAILS OF END BENT NO. 1

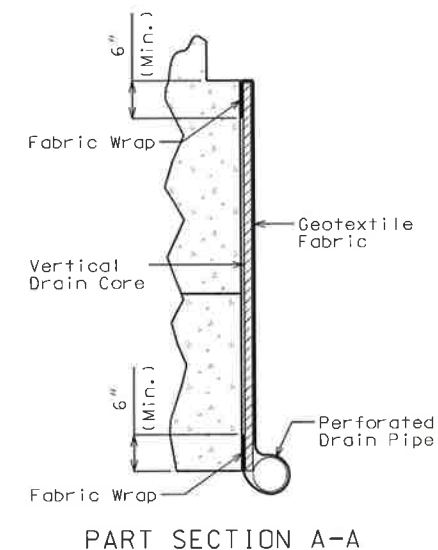
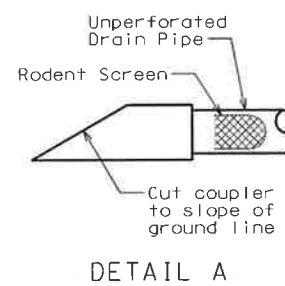
KLONDIKE ROAD

BRIDGE REPLACEMENT

JEFFERSON COUNTY, MISSOURI
BRO-B050(19)



OPTIONAL TURNED DRAIN
(Only if rock is encountered at outside of wing)



Note:

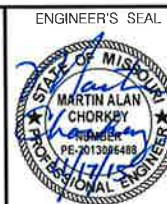
Drain pipe may be either 6-inch diameter corrugated metallic-coated steel pipe underdrain, 4-inch diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4-inch diameter corrugated polyethylene (PE) drain pipe.

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.

Designed: MAC
Detailed: CAB
Checked: MAB

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



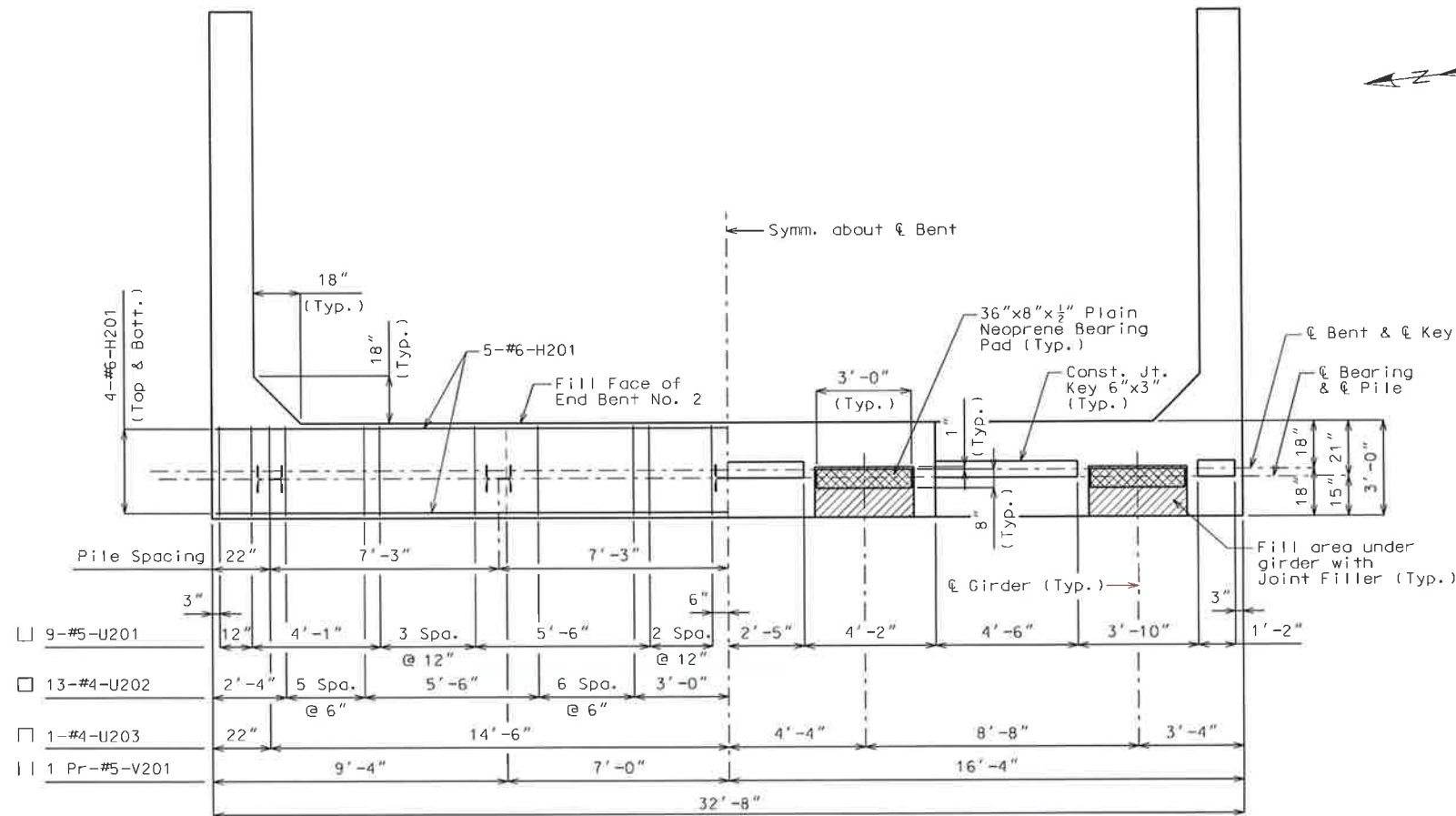
DATE PREPARED
11/17/2015
ROUTE STATE
DISTRICT SHEET NO.
B5
COUNTY
JEFFERSON
JOB NO.
FEDERAL PROJECT NO.
BRO-B050(19)
PROJECT NO.
1334600
BRIDGE NO.
18700503

DATE	DESCRIPTION

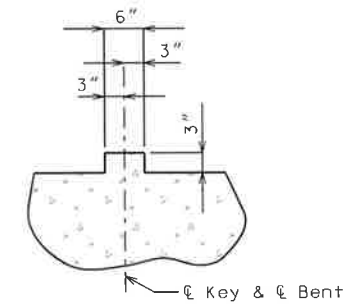
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401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2236
314-531-4422
FAX: 314-531-4423
E-MAIL: SHIFRIN@HSHIFRIN.COM
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

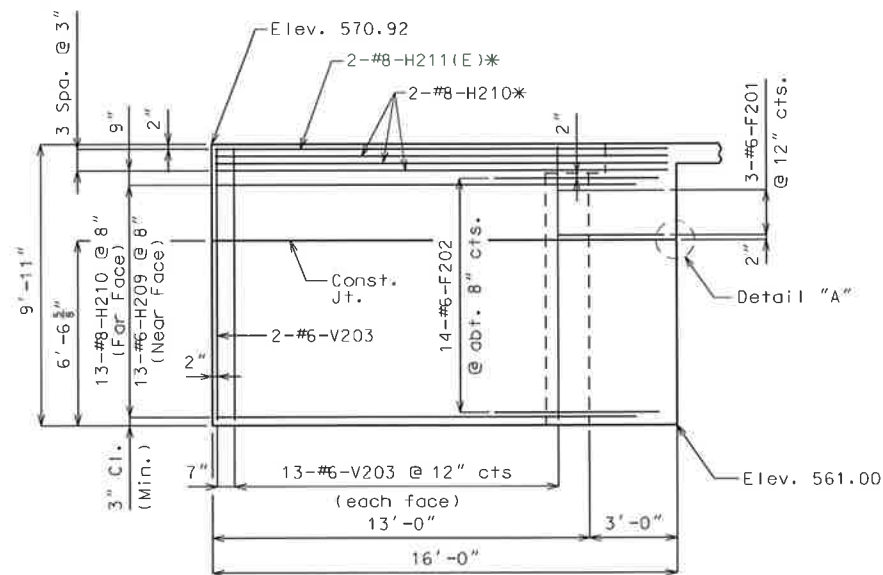
VERTICAL DRAIN AT END BENTS
KLONDIKE ROAD
BRIDGE REPLACEMENT
JEFFERSON COUNTY, MISSOURI
BRO-B050(19)



PLAN OF BEAM SHOWING DIMENSIONS AND REINFORCEMENT

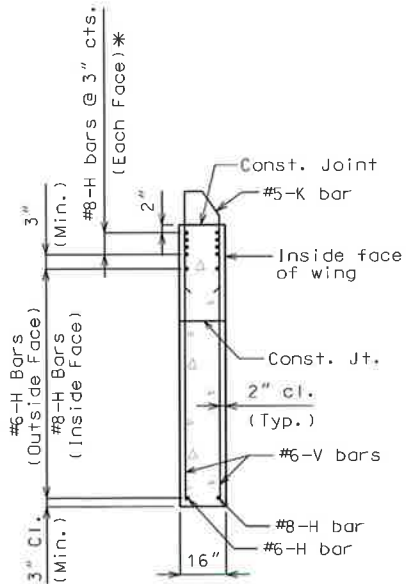


TYPICAL SECTION THRU KEY



ELEVATION E-E

Note: Left wing wall shown, right wing wall similar.



TYPICAL SECTION THRU WING

* Placed with grade

Substructure Quantity Table for End Bent No. 2		
Item		Quantity
Class 1 Excavation	cu. yard	45
Structural Steel Piles (10 in.)	linear foot	65
Pre-Bore for Piling	linear foot	50
Pile Point Reinforcement	each	5
Class B Concrete (Substructure)	cu. yard	33.0

Note: These quantities are included in the estimated quantities table on Sheet No. B2.

Notes:
 Work this sheet with Sheet No. B7.
 For details of Vertical Drain at End Bent, see Sheet No. B5.
 See Sheet No. B7 for Detail "A".
 For location of Elevation E-E, see Sheet No. B7.

Designed: MAC
 Detailed: CAB
 Checked: MAB

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

\\scd\B-28 End Bent No 2.dgn



DATE PREPARED
11/17/2015
 ROUTE STATE
MO
 DISTRICT SHEET NO.
B6
 COUNTY
JEFFERSON
 JOB NO.

FEDERAL PROJECT NO.
BRO-B050(19)
 PROJECT NO.
1334600
 BRIDGE NO.
18700503

DATE	DESCRIPTION

JEFFERSON COUNTY, MISSOURI
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DETAILS OF END BENT NO. 2
 KLONDIKE ROAD
 BRIDGE REPLACEMENT
 JEFFERSON COUNTY, MISSOURI
 BRO-B050(19)

Concrete for prestressed girders shall be Class A-1 with $f'_c = 8000$ psi and $f'_ci = 6500$ psi.

(+) indicates prestressing strand.

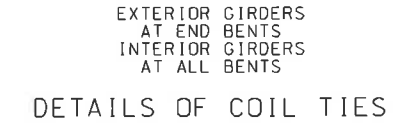
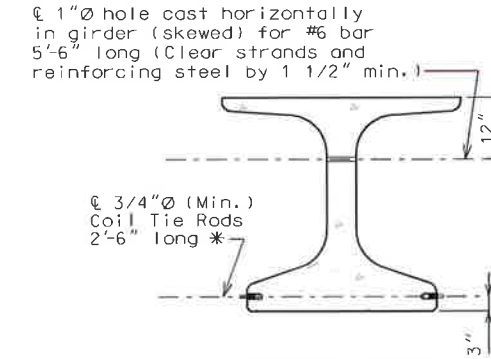
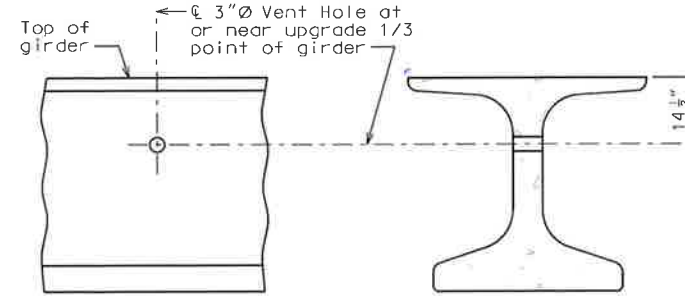
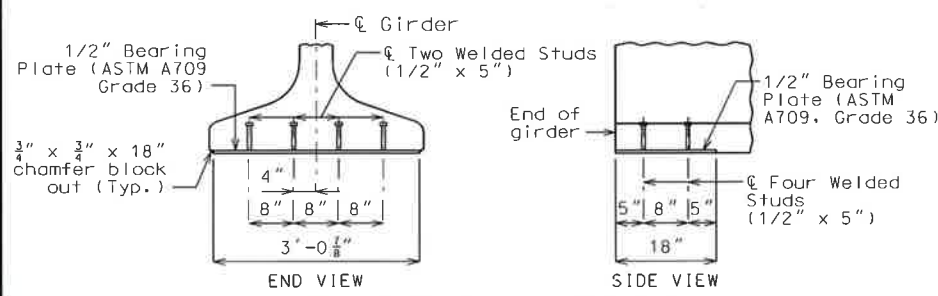
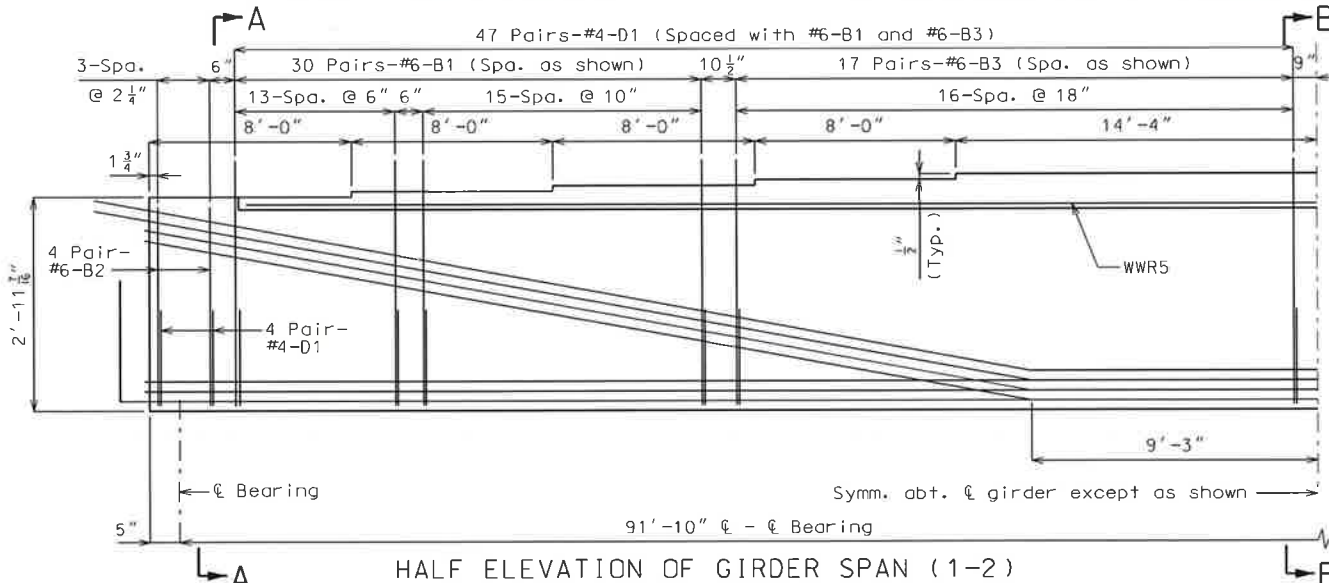
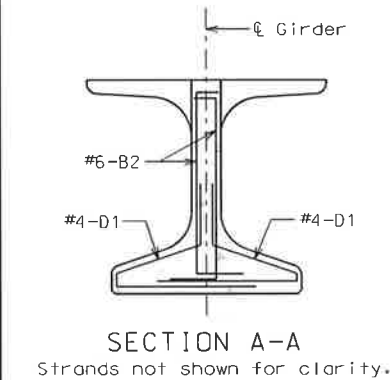
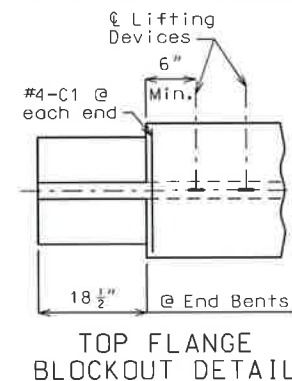
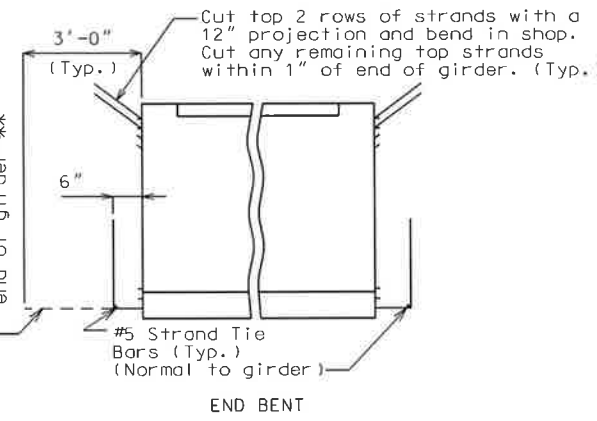
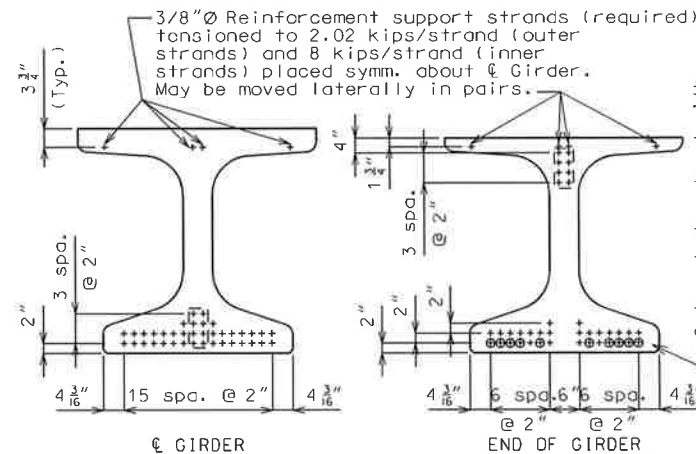
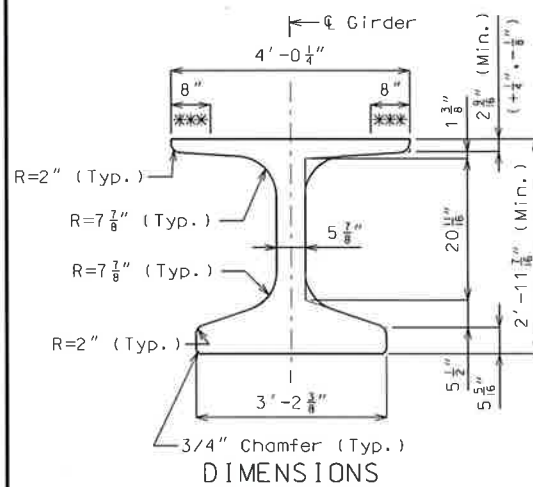
Use 38 strands with an initial prestress force of 1670 kips.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.6 inch diameter in accordance with AASHTO M 203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.

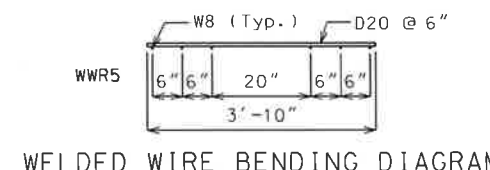
Fabricator shall be responsible for location and design of lifting devices.

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.

Girder top flange shall be steel troweled to a smooth finish for 8" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.



BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	
120	6 B1	4'-4"	19	16 1/4" 3'-10 1/4" cos(skew) SHAPE 20
16	6 B2	3'-8"	19	2'-2" 2'-9 3/8" B1
68	6 B3	4'-5"	19	3'-5 3/8" B2
2	4 C1	3'-11"	20	3'-4 3/8" B3
204	4 D1	4'-2"	9	SHAPE 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 bar lengths are measured along centerline of bar to the nearest inch.

Minimum clearance to reinforcing shall be 1".

All bar reinforcement shall be Grade 60.

Welded Wire Reinforcement (WWR) shall be in accordance with AASHTO M 221.

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

All B1 bars shall be epoxy coated.

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

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Prestressed Concrete NU-Girder.

For location of coil ties and #6 bars, see Sheets No. B3 & B6.

For Girder Camber Diagram, see Sheet No. B11.

* Length of coil tie rods at exterior girders at end bents = 1'-9".

Alternate bar reinforcing steel details are provided and may be used. The same type of reinforcing steel shall be used for all girders in all spans.

Designed: MAC
Detailed: CAB
Checked: MAB

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

ENGINEER'S SEAL

STATE OF MISSOURI

MARTIN ALAN CHORKE

PROFESSIONAL ENGINEER

DATE PREPARED: 11/17/2015

ROUTE: MO

DISTRICT: B9

COUNTY: JEFFERSON

JOB NO.

FEDERAL PROJECT NO.: BRO-B050(19)

PROJECT NO.: 1334600

BRIDGE NO.: 18700503

DESCRIPTION

DATE

JEFFERSON COUNTY, MISSOURI

MAPLE STREET ANNEX

725 MAPLE STREET

P.O. BOX 100

HILLSBORO, MO 63050

636-797-5340

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HORNER SHIFRIN

314-931-4821 • FAX 314-931-6886 • WWW.HORNERSHIFRIN.COM

DESIGNER/ENGINEER

CERTIFICATE OF AUTHORITY: 000359

EXPIRATION DATE: DECEMBER 31, 2016

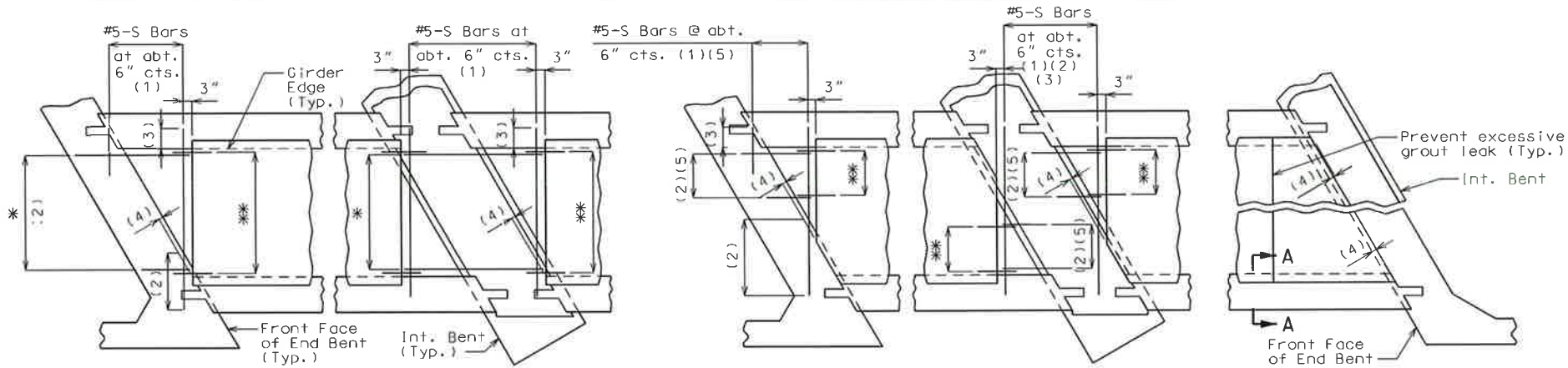
PRESTRESSED GIRDER DETAILS (BENT BARS)

KLONDIKE ROAD

BRIDGE REPLACEMENT

JEFFERSON COUNTY, MISSOURI

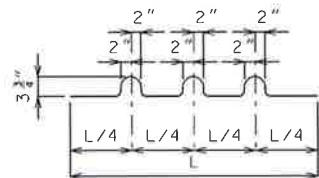
BRO-B050(19)



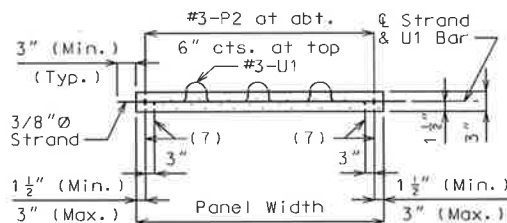
SQUARED END PANELS OR TRUNCATED END PANELS

PLAN SHOWING PANELS PLACEMENT

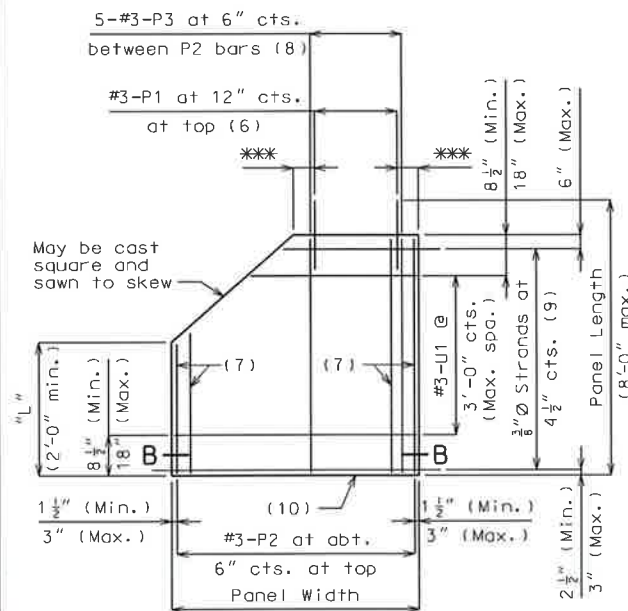
* #5-S Bars at abt. 9" cts. (1)
** #3-P1 at 12" cts. (End panels only)



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

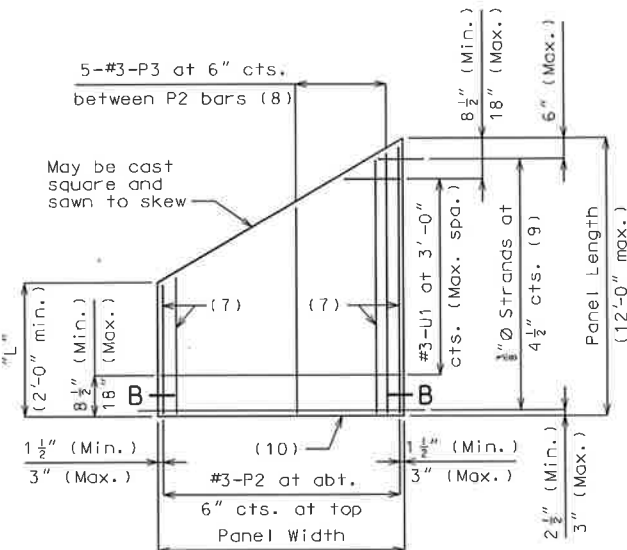


SECTION B-B

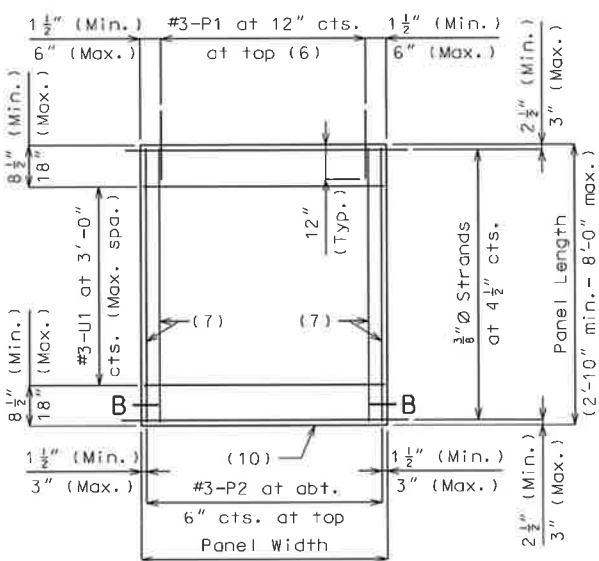


PLAN OF OPTIONAL TRUNCATED END PANEL

** 3" (Min.), 6" (Max.)



PLAN OF OPTIONAL SKEWED END PANEL

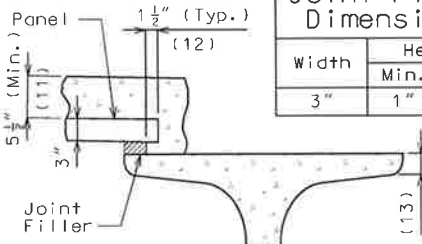


PLAN OF SQUARED PANEL

SKEWED END PANELS

Joint Filler Dimensions

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



SECTION A-A

Reference Notes:

Plan of Panels Placement:

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

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

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

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

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

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

(9) 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.

(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

Section A-A:

(11) Slab thickness over prestressed panels varies due to girder camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

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

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

General Notes:

Prestressed Panels:

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

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

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

Initial prestressing force = 17.2 kips/strand.

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

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

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

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

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

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

Reinforcing Steel:

All dimensions are out to out.

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

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

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

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

The reinforcing steel shall be tied securely to the 3/8"Ø strands with the following maximum spacing in each direction:

#3-P2 bars at 16 inches.

Welded wire reinforcement at 2'-0".

Tie the #3-U1 bars to the #3-P2 bars, or to the welded wire reinforcement, or to the strands at about 3'-0" centers.

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

All reinforcement other than prestressing strands shall be epoxy coated.

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

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

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

Joint Filler:

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

Use Slab Haunching Diagram on Sheet No. B11 for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

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

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

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

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

Designed: MAC
Detailed: CAB
Checked: MAB

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

ENGINEER'S SEAL



DATE PREPARED
11/17/2015

ROUTE
STATE
MO

DISTRICT
SHEET NO.
B10

COUNTY
JEFFERSON

JOB NO.

FEDERAL PROJECT NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

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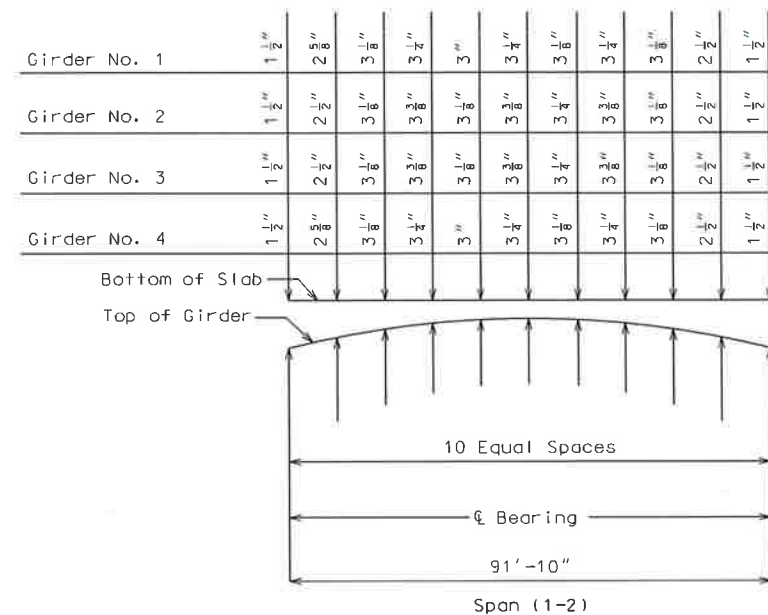
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THEORETICAL SLAB HAUNCHING DIAGRAM

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

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete NU-Girders.

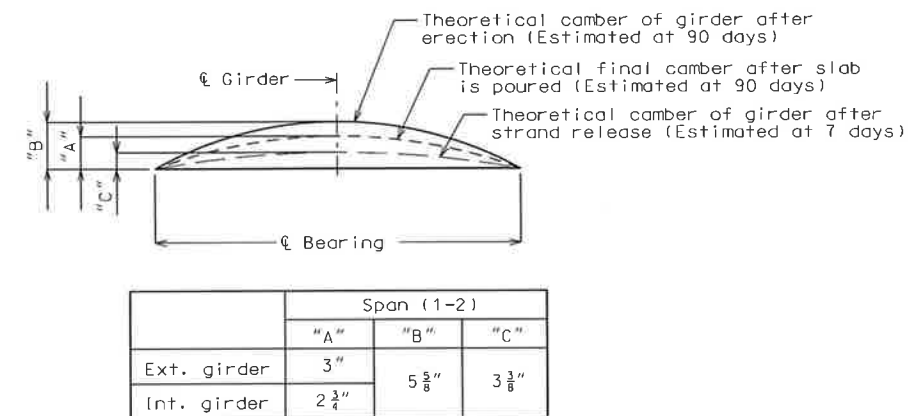
Longitudinal dimensions are horizontal.

The contractor shall not use constant joint filler option.

The maximum slab thickness shall be 9 inches, including 3 inch precast panels.

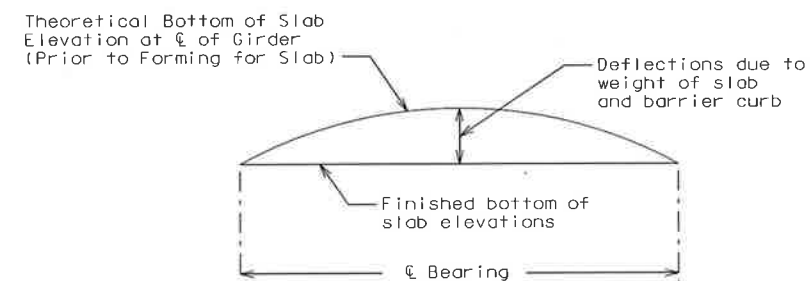
Theoretical Bottom of Slab Elevations at CL of Girder (Prior to Forming for Slab) **											
	Span (1-2) (91'-10" CL brg - CL brg.)										
	CL brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	CL brg.
Girder No. 1	570.53	570.82	571.06	571.23	571.35	571.40	571.38	571.29	571.14	570.93	570.67
Girder No. 2	570.71	571.00	571.24	571.42	571.54	571.59	571.57	571.48	571.32	571.11	570.85
Girder No. 3	570.71	571.00	571.24	571.42	571.54	571.59	571.57	571.48	571.32	571.11	570.85
Girder No. 4	570.53	570.82	571.06	571.23	571.35	571.40	571.38	571.29	571.14	570.93	570.67

** Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier curb.

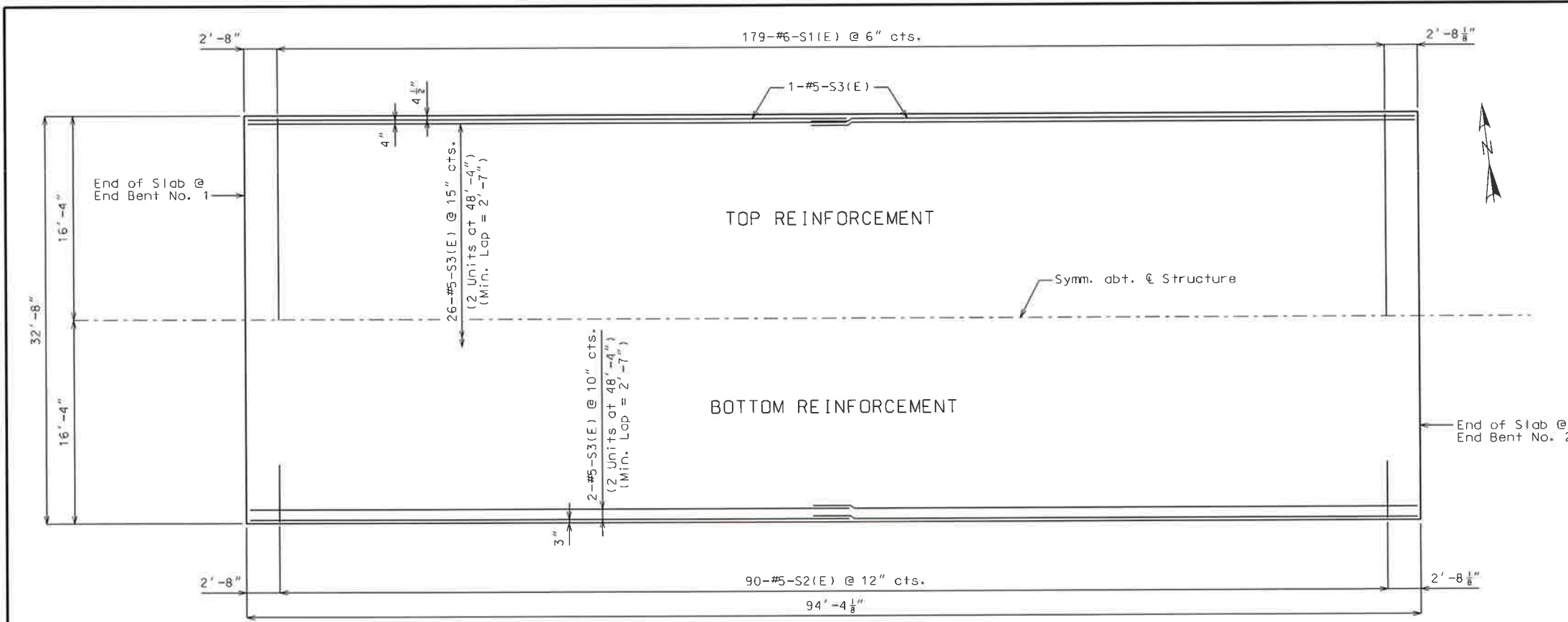


GIRDER CAMBER DIAGRAM

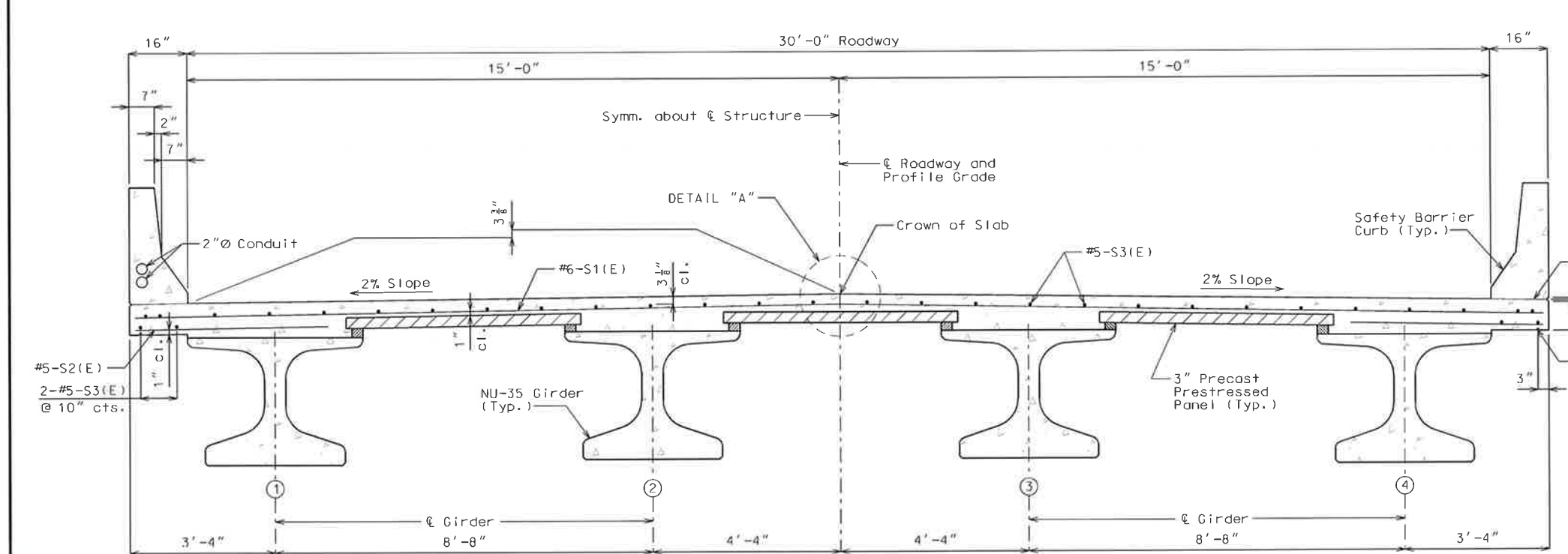
Conversion factors for girder camber
 0.1 pt. = 0.314 x 0.5 pt.
 0.2 pt. = 0.593 x 0.5 pt.
 0.3 pt. = 0.813 x 0.5 pt.
 0.4 pt. = 0.952 x 0.5 pt.



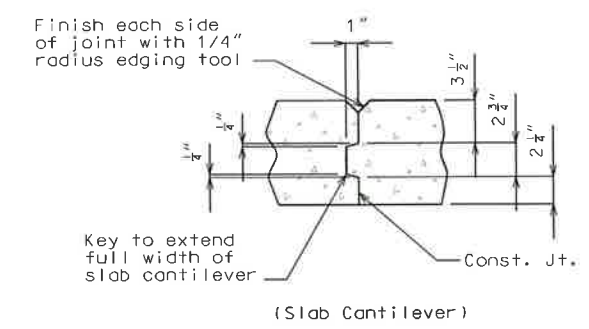
TYPICAL SLAB ELEVATIONS DIAGRAM



PLAN OF SLAB SHOWING REINFORCEMENT



TYPICAL SECTION



Finish each side of joint with 1/4" radius edging tool

Key to extend full width of slab cantilever

Const. Jt.

(Slab Cantilever)

Finish each side of joint with 1/4" radius edging tool

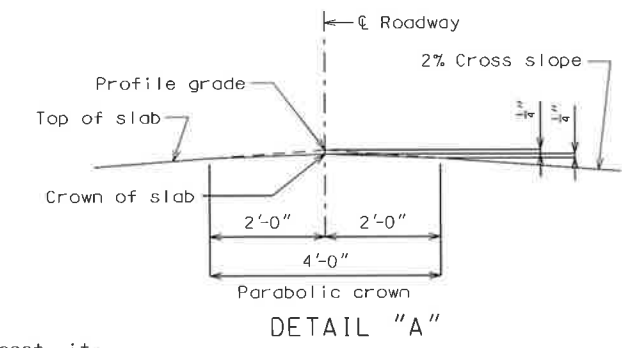
Const. joint to extend full width of slab

Panel joint

(Slab on Precast Panels)

* Adjust the construction joint to a clearance of 6 inches minimum from the panel joint.

SLAB CONSTRUCTION JOINT DETAILS



DETAIL "A"

Notes:

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 a rate of not less than 25 cubic yards per hour.

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

Longitudinal slab dimensions are measured horizontal.

For details of Precast Prestressed Panels, see Sheet No. B10.

For Theoretical Bottom of Slab Elevations, Theoretical Slab Haunching Diagram, and Girder Camber Diagram, see Sheet No. B11.

For details and reinforcement of the barrier curb not shown, see Sheets No. B13 thru B15.

Designed: MAC
Detailed: CAB
Checked: MAB

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

ENGINEER'S SEAL

DATE PREPARED 11/17/2015	
ROUTE	STATE MO
DISTRICT	SHEET NO. B12
COUNTY JEFFERSON	
JOB NO.	
FEDERAL PROJECT NO. BRO-B050(19)	
PROJECT NO. 1334600	
BRIDGE NO. 18700503	

DATE	DESCRIPTION

JEFFERSON COUNTY, MISSOURI

MAPLE STREET ANNEX
725 MAPLE STREET
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314-531-4321 • FAX 314-531-6866 • WWW.HORNERSHIFRIN.COM
DISCOUNT PRECASTING ENGINEERING INC. LICENSE NO. 000558
EXPIRATION DATE: DECEMBER 31, 2016

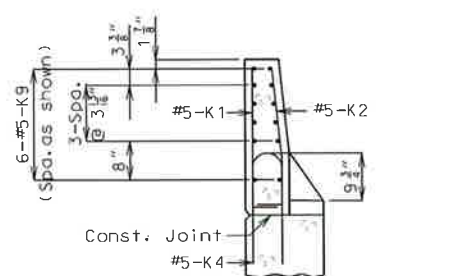
SLAB PLAN AND SECTION

KLONDIKE ROAD

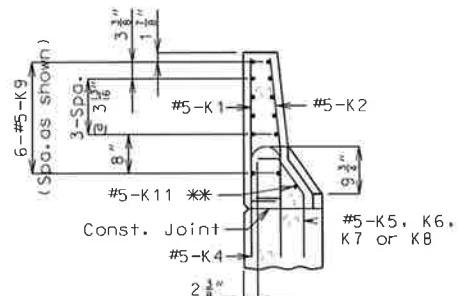
BRIDGE REPLACEMENT

JEFFERSON COUNTY, MISSOURI

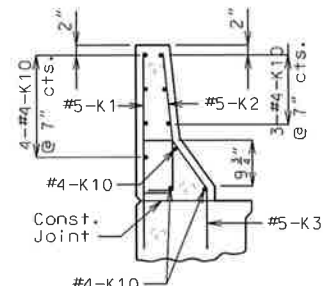
BRO-B050(19)



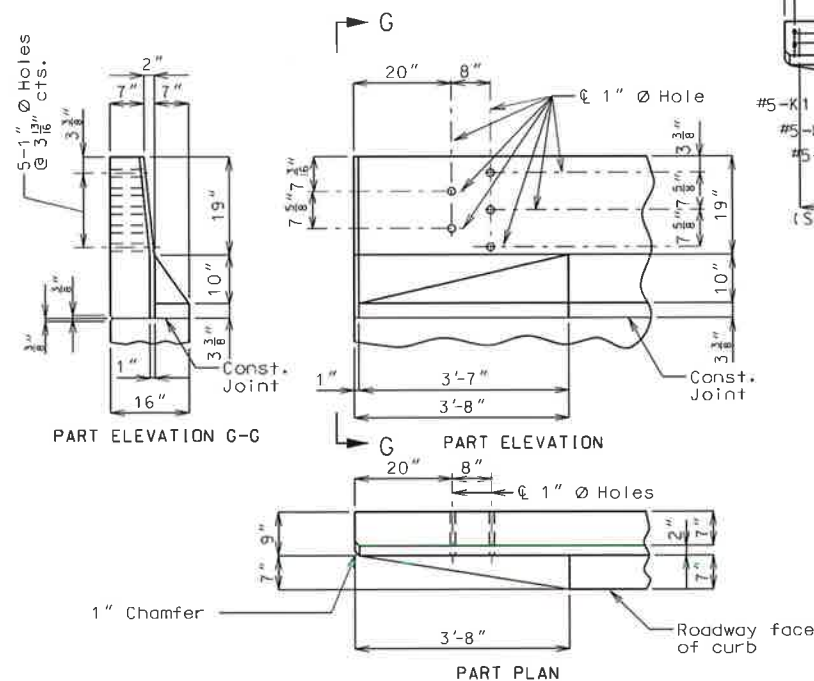
SECTION A-A



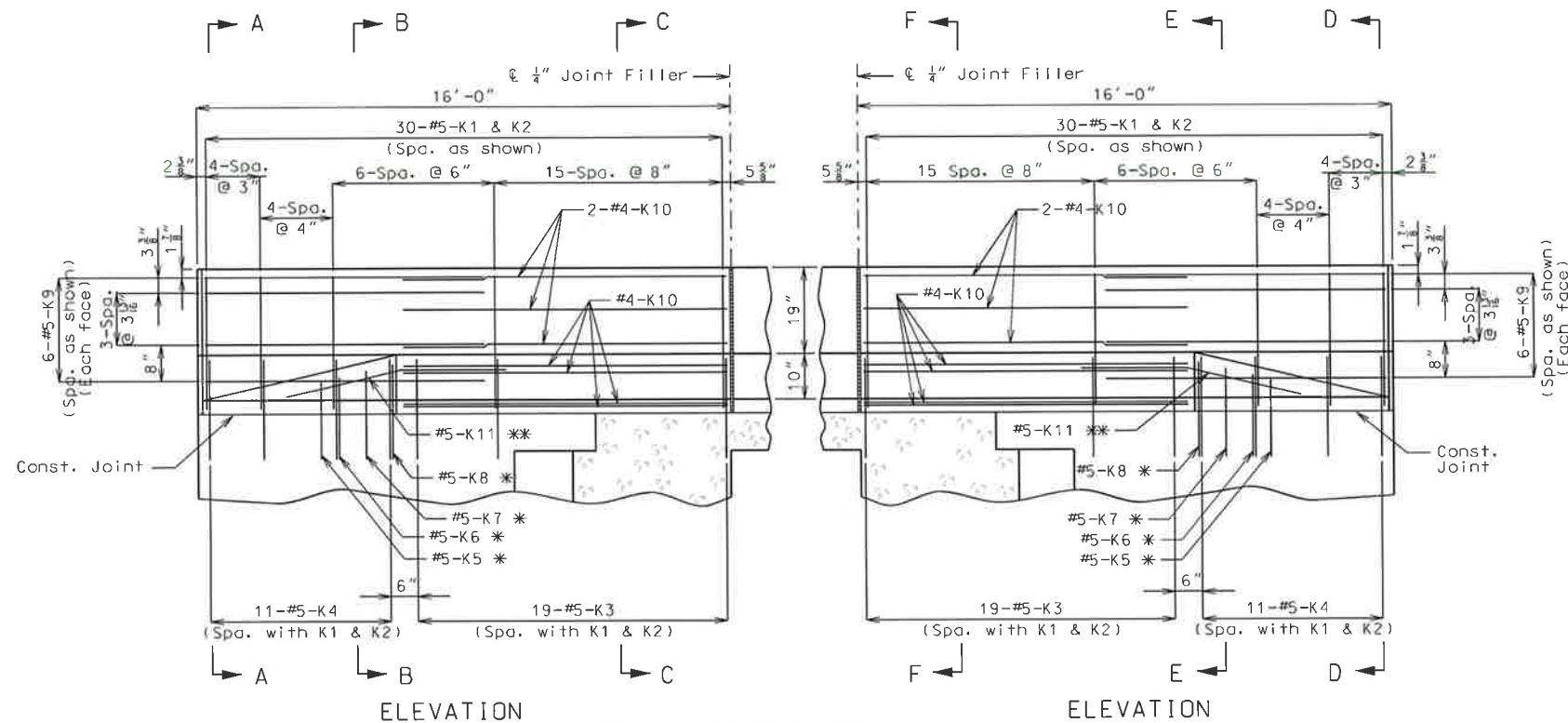
SECTION B-B



SECTION C-C



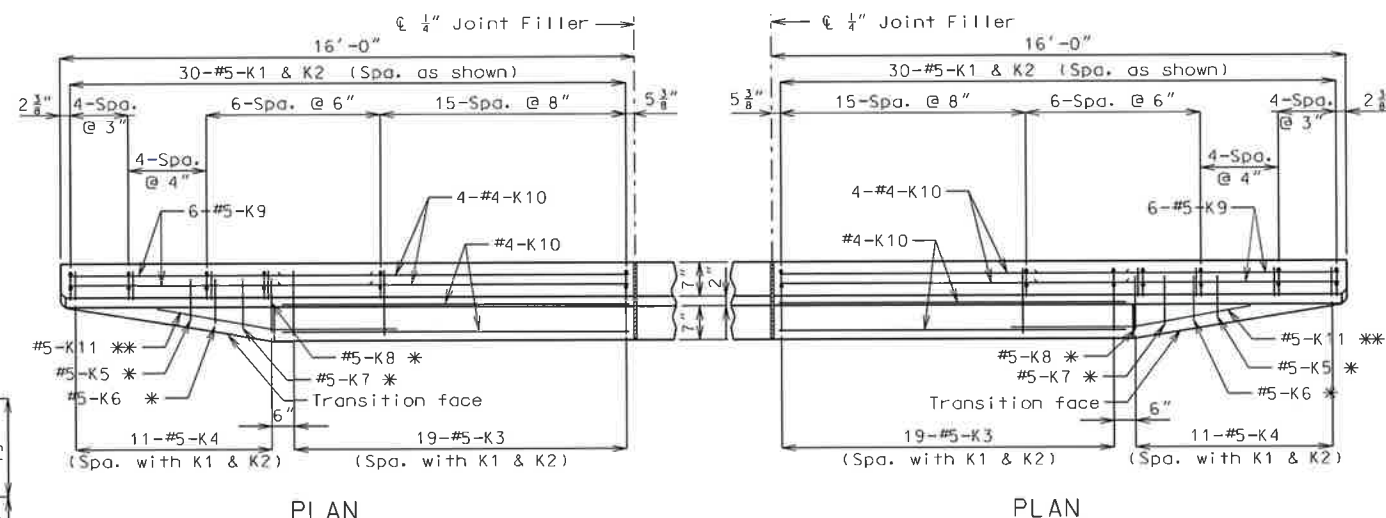
DETAILS OF GUARD RAIL ATTACHMENT



ELEVATION

* Spaced with #5-K4 bars.

** Fit bar to follow transition face of curb.



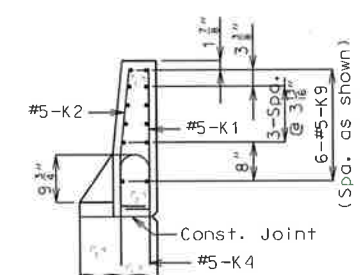
PLAN

PLAN

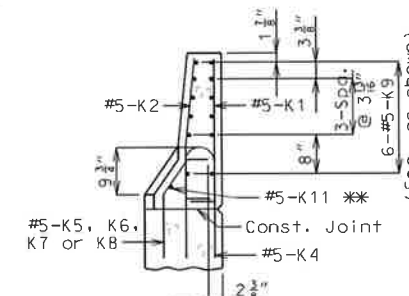
NOTES: Use a minimum lap of 2'-0" between K9 and K10 bars.

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

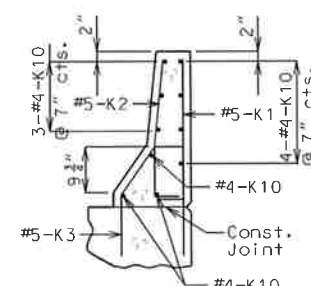
Delineators on bridges with two-lane traffic shall have retroreflective sheeting on both sides.



SECTION D-D

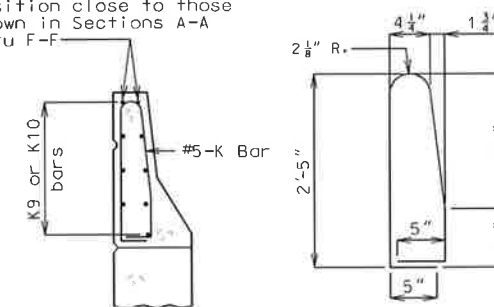


SECTION E-E



SECTION F-F

The top two K9 or K10 bars shall be kept with position close to those shown in Sections A-A thru F-F



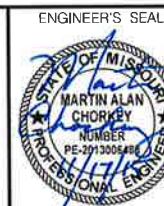
(K3 or K4 thru K8 bars not shown for clarity)

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

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

Designed: MAC
Detailed: CAB
Checked: MAB

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



DATE PREPARED
11/17/2015

ROUTE
STATE
MO

DISTRICT
SHEET NO.
B14

COUNTY
JEFFERSON

JOB NO.

FEDERAL PROJECT NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

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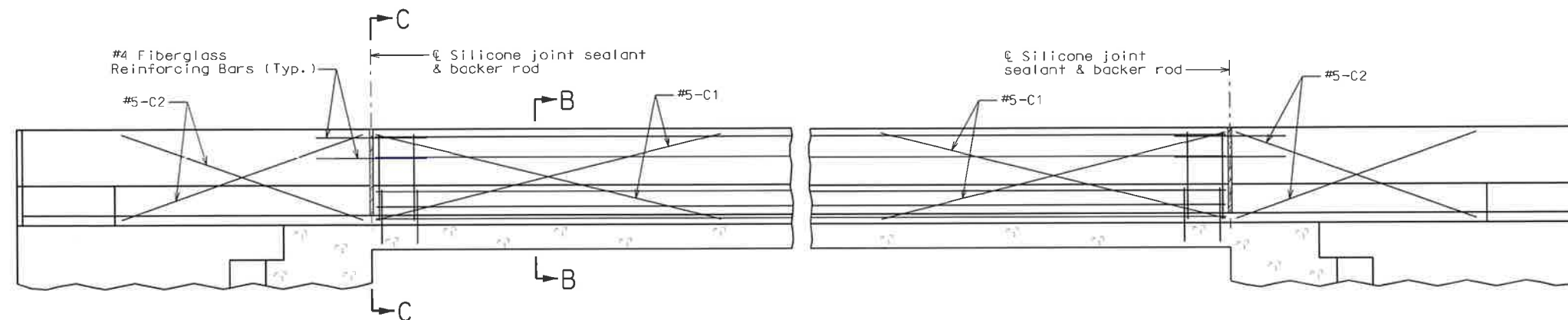
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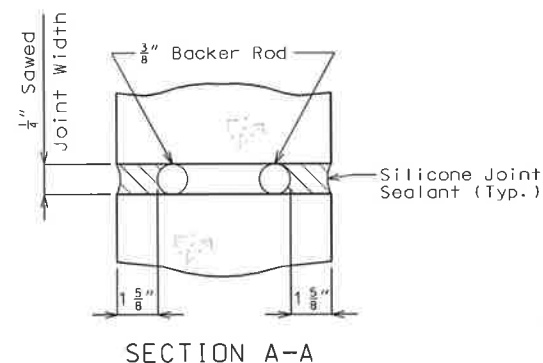
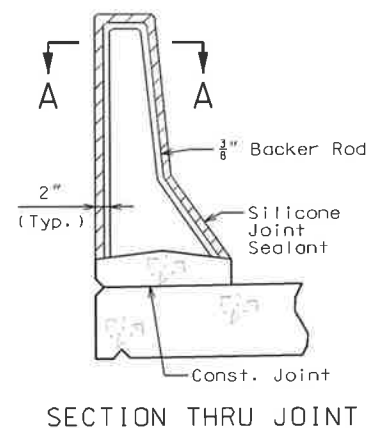
DATE

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DATE



TYPICAL SECTION NEAR LEFT SAFETY BARRIER CURB AT SUPPORT LOCATIONS
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)
(Left barrier curb shown, right barrier curb similar.)



General Notes:

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

All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Safety Barrier Curb per linear foot.

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

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

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

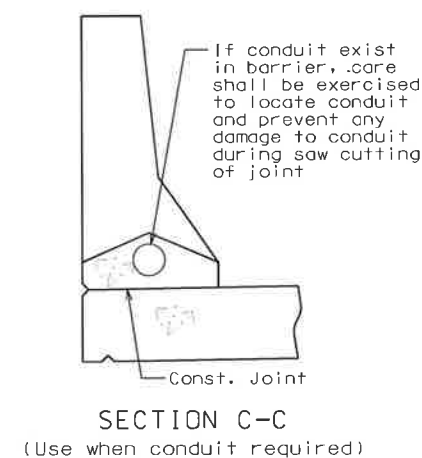
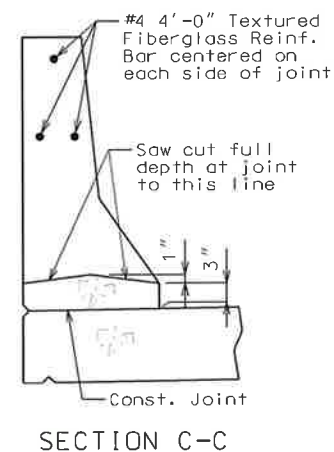
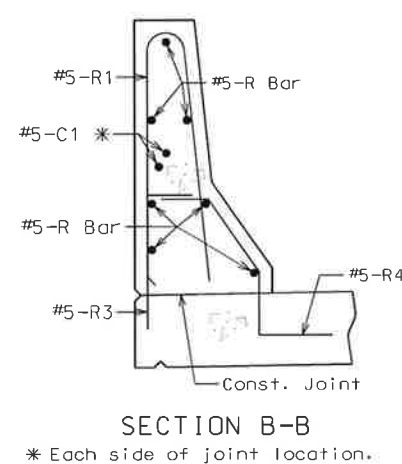
Plastic waterstop shall not be used with slip-form option.

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

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

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

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Safety Barrier Curb.

[illegible]

JEFFERSON COUNTY, MISSOURI
 MAPLE STREET ANNEX
 725 MAPLE STREET
 P.O. BOX 100
 HILLSBORO, MO 63050
 636-797-5340
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HORNER
SHIFRIN

401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2296
141-531-4321 • FAX 314-531-6566 • WWW.HORNER-SHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
CERTIFICATE OF AUTHORITY: 000159
EXPIRATION DATE: DECEMBER 31, 2016

SLIP-FORM SAFETY BARRIER CURB

KLONDIKE ROAD

BRIDGE REPLACEMENT

JEFFERSON COUNTY, MISSOURI

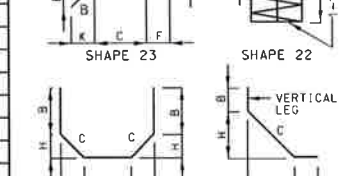
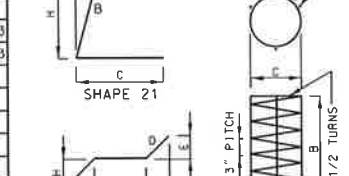
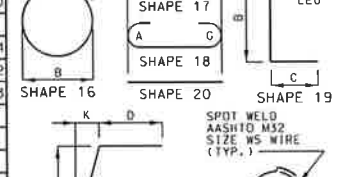
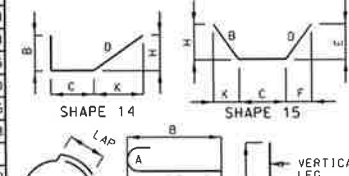
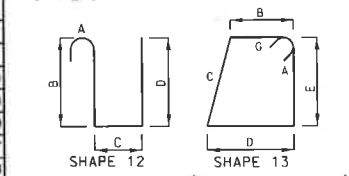
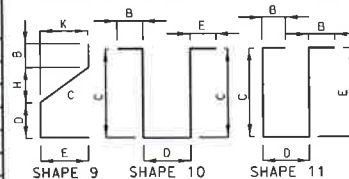
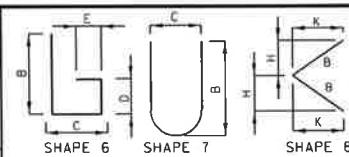
BRO-0050(19)

BILL OF REINFORCING STEEL

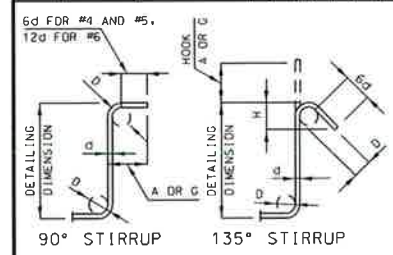
NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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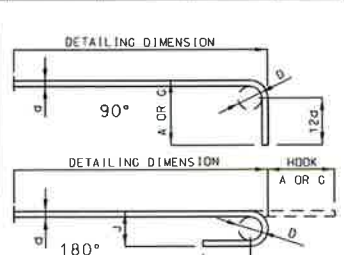


BILL OF REINFORCING STEEL																									
NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT		
									B		C		D		E		F		H					K	
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.
		TOTALS																							
	4																			676					
	4		E																	325					
	5																			830					
	5		E																	9510					
	6																			6612					
	6		E																	9967					
	8																			3196					
	8		E																	336					
		Total																		11314					
		Total	E																	20138					
		Slab on																							
		Girder																							
	4																			676					
	5																			830					
	5		E																	4296					
	6																			6612					
	6		E																	9967					
	8																			3196					
	8		E																	336					
		Total																		11314					
		Total	E																	14599					
		Safety																							
		Barrier																							
		Curb																							
	4		E																	325					
	5		E																	5028					
		Total	E																	5353					
		Slip Form																							
		Option																							
	5		E																	186					
		Total	E																	186					
				</																					



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.



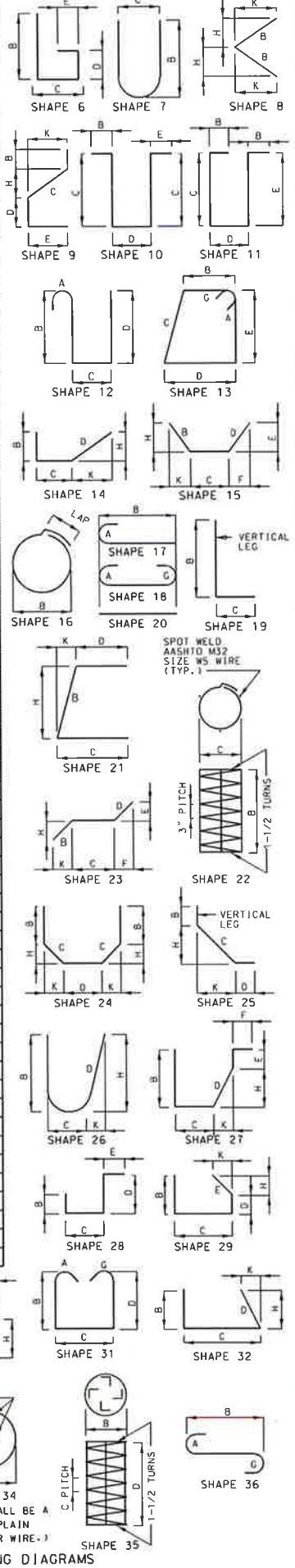
END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS A OR G	90° HOOKS J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	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. 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) F_y = 60,000 PSI.

Designed: MAC
Detailed: CAB
Checked: MAB

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

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
	SIZE	MARK								B	C	D	E	F	H	K								
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.



ENGINEER'S SEAL

STATE OF MISSOURI
JAMES M. MARTIN
Professional Engineer
No. 1715
PE-2713004188

DATE PREPARED
11/17/2015

ROUTE STATE
DISTRICT SHEET NO.
MO B18

COUNTY
JEFFERSON
JOB NO.

FEDERAL PROJECT NO.
BRO-B050(19)

PROJECT NO.
1334600

BRIDGE NO.
18700503

DESCRIPTION

DATE

JEFFERSON COUNTY, MISSOURI

MAPLE STREET ANNEX
725 MAPLE STREET
P.O. BOX 100
HILLSBORO, MO 63050
636-797-5340
www.jefco.org

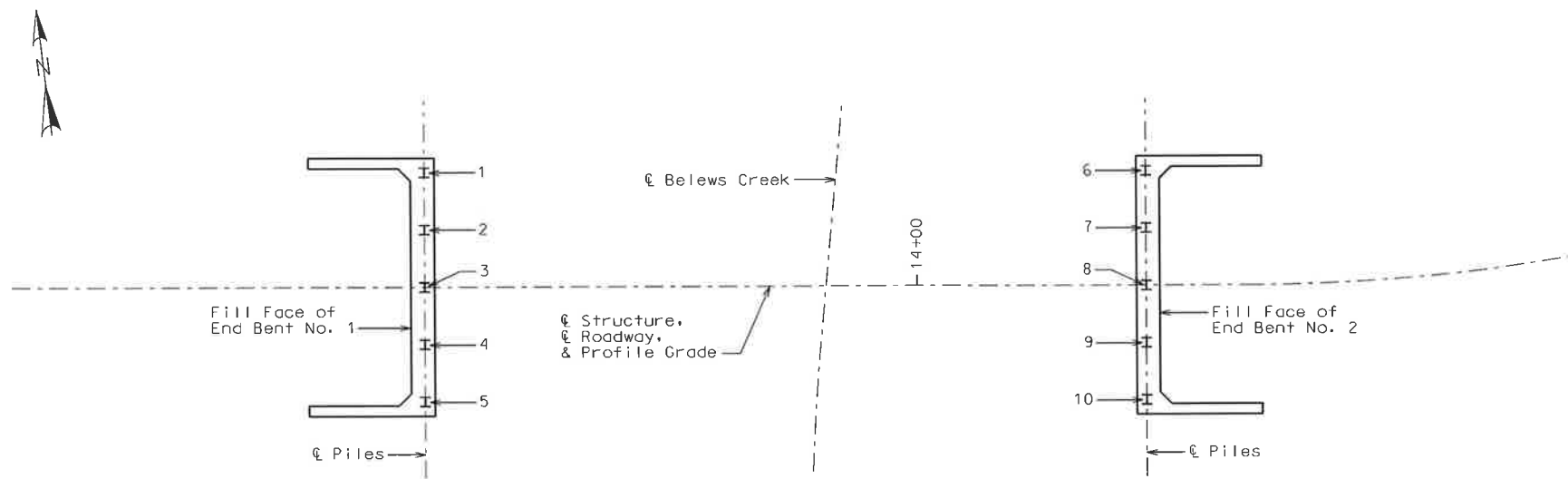
HORNER SHAFER

401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2296
DISCOUNT PRICING ON REINFORCING
314-531-4322 • FAX 314-531-6986 • WWW.HORNERSHAFER.COM
EXPIRATION DATE: DECEMBER 31, 2015

BILL OF REINFORCING STEEL

KLONDIKE ROAD
BRIDGE REPLACEMENT

JEFFERSON COUNTY, MISSOURI
BRO-B050(19)



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
			End Bent No. 1
1			
2			
3			
4			
5			

AS BUILT PILE DATA			
Pile No.	Length In Place (ft.)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 2
6			
7			
8			
9			
10			

Note: Indicate in remarks column:
a.) pile type and grade.
b.) batter.
c.) driven to practical refusal.

This sheet to be completed by Jefferson County construction personnel.

Designed: MAC
Detailed: CAB
Checked: MAB

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

ENGINEER'S SEAL

DATE PREPARED
11/17/2015
ROUTE
STATE
MO
DISTRICT
STREET NO.
B19
COUNTY
JEFFERSON
JOB NO.
FEDERAL PROJECT NO.
BRO-B050(19)
PROJECT NO.
1334600
BRIDGE NO.
18700503
DESCRIPTION
DATE

JEFFERSON COUNTY, MISSOURI
MAPLE STREET ANNEX
725 MAPLE STREET
P.O. BOX 100
HILLSBORO, MO 63050
636-797-5340
www.jefco.net

HORNER SHIFRIN
401 S. 18TH ST., STE. 400 SAINT LOUIS, MO 63103-4236
314-531-1321 • FAX 314-531-6866 • WWW.HORNERSHIFRIN.COM
DISCIPLINE: PROFESSIONAL ENGINEERING
EXPIRATION DATE: DECEMBER 31, 2016

AS-BUILT PILE DATA
KLONDIKE ROAD
BRIDGE REPLACEMENT
JEFFERSON COUNTY, MISSOURI
BRO-B050(19)

LOG OF BORING NO. B-1

Project Description: **Klondike Road Bridge over Belew Creek
Hillsboro, MO**TSI Engineering Inc.
5850 Arsenal Street
St. Louis, Missouri 63139
(314) 644-3134 (314) 644-3135 FAX

Depth, feet	Samples	Sample #	Graphic Log	Surface El.: Approx. 569.0 Location: See Site and Boring Location Plan	Recovery %	RQD	Penetration Blows Per 6 inches Hand Penetrometer TSF	Undrained Shear Strength, TSF	Unit Dry Weight, lb/cu ft.	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION													
5		SS-1		Asphaltic concrete (4.0") Dark brown, fine to medium, clayey SAND (SC), with gravel (FILL) (14% passing No. 200 sieve)	78		18 20 19			15			
		SS-2			67		4 6 8			16			
		SS-3			50		17 7 8			8			
10		SS-4		Light brown, fine to medium SAND (SP) (4% passing No. 200 Sieve)	83		2 2 2			6			
		SS-5			67		7 6 10			11			
15		SS-6		Dark brown, sandy, lean CLAY (CL), with gravel	39		8 8 10			15			
20				LIMESTONE, light gray, moderately hard, slightly to moderately weathered, finely crystalline, thin bedded, slightly dolomitic - 1/2" light gray, soft, shale seams at 16.4 ft. - vuggy from 16.4 to 17.3 ft. (No Recovery from 19.2 to 19.4 ft.) - 1/4" clay parting at 20.6 ft.	98	10			115				
25				- moderately weathered below 22.0 ft. (No Recovery from 24.4 to 24.5 ft.)	98	55			109				
Completion Depth: 25.8 Date Boring Started: 4/9/14 Date Boring Completed: 4/9/14 Engineer/Geologist: KKH Project No.: 20141003.00				Remarks: Boring drilled with CME 45 using HSA and auto SPT. Groundwater not encountered during drilling. Auger refusal at 15.8 ft.									

Completion Depth: 25.8
Date Boring Started: 4/9/14
Date Boring Completed: 4/9/14
Engineer/Geologist: KKH
Project No.: 20141003.00Remarks: Boring drilled with CME 45 using HSA and auto SPT.
Groundwater not encountered during drilling.
Auger refusal at 15.8 ft.The stratification lines represent approximate strata boundaries.
In situations, the transition may be gradual.

Continued Next Page

LOG OF BORING NO. B-1

Project Description: **Klondike Road Bridge over Belew Creek
Hillsboro, MO**TSI Engineering Inc.
5850 Arsenal Street
St. Louis, Missouri 63139
(314) 644-3134 (314) 644-3135 FAX

Depth, feet	Samples	Sample #	Graphic Log	Surface El.: Approx. 569.0 Location: See Site and Boring Location Plan	Recovery %	RQD	Penetration Blows Per 6 inches Hand Penetrometer TSF	Undrained Shear Strength, TSF	Unit Dry Weight, lb/cu ft.	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index	
				MATERIAL DESCRIPTION										
30				Boring terminated at 25.8 ft.	94	28								
50														
LOG WITH LAB KLONDIKE ROAD BRIDGE OVER BELEV CREEK CP 1 4/20/14														
Completion Depth: 25.8				Remarks: Boring drilled with CME 45 using HSA and auto SPT. Groundwater not encountered during drilling. Auger refusal at 15.8 ft.										
Date Boring Started: 4/9/14														
Date Boring Completed: 4/9/14														
Engineer/Geologist: KKH														
Project No.: 20141003.00														

Completion Depth: 25.8
Date Boring Started: 4/9/14
Date Boring Completed: 4/9/14
Engineer/Geologist: KKH
Project No.: 20141003.00Remarks: Boring drilled with CME 45 using HSA and auto SPT.
Groundwater not encountered during drilling.
Auger refusal at 15.8 ft.The stratification lines represent approximate strata boundaries.
In situations, the transition may be gradual.Designed: MAC
Detailed: CAB
Checked: MAB

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

ENGINEER'S SEAL

DATE PREPARED
11/17/2015ROUTE STATE
MODISTRICT SHEET NO.
B20COUNTY
JEFFERSON

JOB NO.

FEDERAL PROJECT NO.
BRO-B050(19)PROJECT NO.
1334600BRIDGE NO.
18700503

DESCRIPTION

DATE

DESCRIPTION

DATE

DESCRIPTION

DATE

DESCRIPTION

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DESCRIPTION

DATE

Project Description: **Klondike Road Bridge over Belew Creek
Hillsboro, MO**

TSI Engineering Inc.
5850 Arsenal Street
St. Louis, Missouri 63139
(314) 644-3134 (314) 644-3135 FAX



Depth, feet	Samples	Sample #	Graphic Log	Surface El.: Approx. 569.0 Location: See Site and Boring Location Plan	Recovery %	RQD	Penetration Blows Per 6 inches	Hand Penetrometer TSF	Undrained Shear Strength, TSF	Unit Dry Weight, lb/cu ft.	Water Content, %	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION														
		SS-1		Asphaltic concrete (4.0") Dark brown, fine to coarse SAND (SP), with gravel and clay	50		9 12 14				8			
5		SS-2		Dark brown, SAND (SP-SC), with fine gravel and clay (FILL) (6% passing No. 200 sieve)	44		5 5 4				9			
		SS-3			0		13 17 15							
		SS-4		Dark brown, SAND (SP), trace clay, with 2.0 to 3.0" gravel	6		6 12 12				9			
10		SS-5		Dark brown, clayey GRAVEL (GC), with sand	61		9 10 10				9			
		SS-6			67		50/6"				15			
15		RUN1		LIMESTONE, light gray, moderately hard, moderately weathered, very finely crystalline, thin bedded, slightly dolomitic - 45° fracture from 15.0 to 15.1 ft. - 45° fracture from 15.9 to 16.1 ft. - 60° fracture from 16.3 to 16.4 ft. - numerous shale partings from 17.0 to 18.2 ft. - near vertical fracture from 17.4 to 17.6 ft. - fine to medium crystalline below 19.2 ft.	100	13								
20		RUN2		- 1/4" gray, soft shale partings from 20.3 to 20.8 ft. - highly weathered from 22.3 to 22.7 ft.	100	27								
		RUN3		- gray, very finely crystalline below 23.2 ft. Boring terminated at 24.7 ft.	100	31			190					

Completion Depth:	24.7
Date Boring Started:	4/9/14
Date Boring Completed:	4/9/14
Engineer/Geologist:	KKH
Project No.:	20141003.00

Remarks: Boring drilled with CME 45 using HSA and auto SPT.
Groundwater not encountered during drilling.
Auger refusal at 14.7 ft.

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

Note: For locations of borings, see Sheet No. B1.

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



DATE PREPARED _____

1/17/2015

ROUTE	STATE
	112

MO

SHEET NO. D01

	B21
COUNTRY	

JEFFERSON

JOB NO:

FEDERAL PROJECT NO.

BRO-B050(19)

PROJECT NO. 152-1222

1334600

BRIDGE NO.
10700502

18700503

[illegible]

10

JEFFERSON COUNTY, MISSOURI

725 MAPLE STREET
P.O. BOX 100

HILLSBORO, MO 63050

636-797-5340
www.jeffco.com.org

Source: *Author's calculations*.



HERNIMAN SHIRIN

4015 18TH ST., STE. 400 SAINT LOUIS, MO 63103-2296
314-531-4321 • FAX 314-531-6966 • WWW.HORNERSHIFRIN.COM

DISCIPLINE: PROFESSIONAL ENGINEERING
 CERTIFICATE OF AUTHORITY: 000159
 EXPIRATION DATE: DECEMBER 31, 2016

BORING DATA

ALONDIKE ROAD BRIDGE REPLACEMENT

JEFFERSON COUNTY, MISSOURI
BRO-B050(19)

(c)