

DESIGN DESIGNATION

AADT - 2017 = 300
AADT - 2037 = 500
T = 10%
V = 35 MPH

FUNCTIONAL CLASSIFICATION - SECONDARY ARTERIAL

UTILITIES

WHITE RIVER VALLEY ELECTRIC
RICK BERTOGGIO
(417) 294-0549
Rbertoggio@whiteriver.org

TOTAL HIGH SPEED INTERNET SOLUTIONS
CHRIS HARNNESS
(417) 720-0676
Charness @totalhighspeed.net

SHO-ME TECHNOLOGIES, LLC
BRAD BAKER
(417) 859-3529 X3092
Bbaker@shometech.com

CENTURY LINK/LUMEN
MIKE EDWARDS
(479) 238-4778
Michael.edwards@lumen.com

CONVENTIONAL SYMBOLS

- IRON PIN SET (TYPICAL) GREAT RIVER 2001011476
- IRON PIN FOUND, AS NOTED
- CUT CROSS
- RIGHT OF WAY MARKER
- STONE
- CONTROL POINT
- PERMANENT BENCHMARK
- CONTOUR MAJOR
- CONTOUR MINOR
- DECIDUOUS TREE, SIZE AS NOTED
- CONIFER TREE, SIZE AS NOTED
- BUSH, SIZE AS NOTED
- LIGHT POLE
- POWER POLE
- ELECTRIC RISER
- ELECTRIC BOX
- ELECTRIC METER
- GUY WIRE ANCHOR
- PEDESTAL, AS NOTED
- SANITARY SEWER CLEAN OUT
- SEPTIC TANK
- TELEPHONE RISER
- GAS VALVE
- GAS METER
- WELL
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- WATER HYDRANT
- MAIL BOX
- SIGN
- POST
- FLAG POLE
- CABLE TV RISER
- SANITARY SEWER LINE
- FENCE CHAIN-LINK
- WIRE
- WOOD
- ELECTRIC LINE
- UNDERGROUND ELECTRIC LINE
- TELEPHONE LINE
- UNDERGROUND TELEPHONE LINE
- CABLE TV LINE
- GAS LINE
- WATER LINE
- GAS & WATER LINE
- FIBER OPTIC LINE
- TREE LINE

PLANS FOR PROPOSED
GREEN BRIDGE OVER FINLEY RIVER
BRIDGE NO. 24900032
SECTION 18, TOWNSHIP 27 NORTH, RANGE 20 WEST
CHRISTIAN COUNTY, MISSOURI

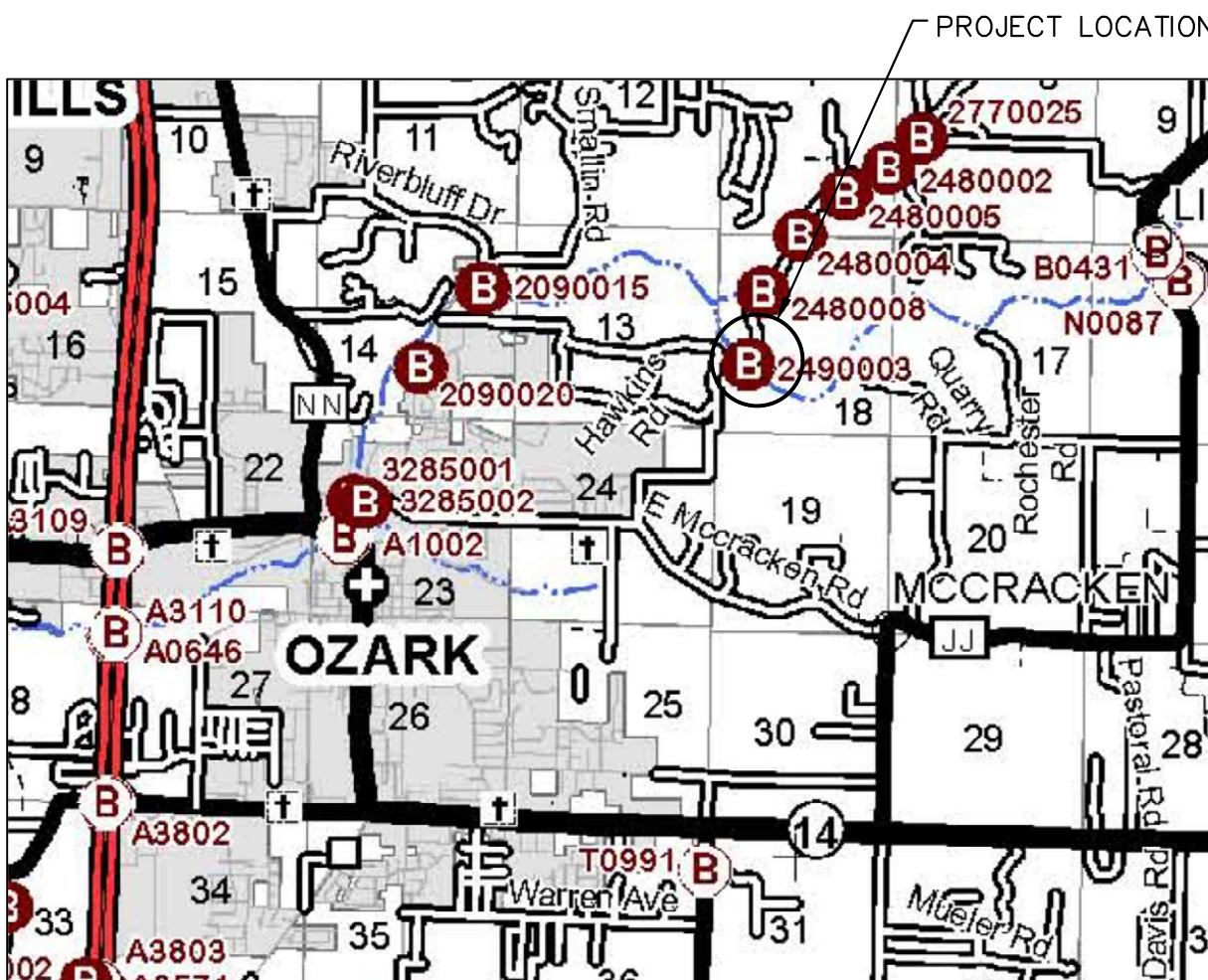
INDEX OF SHEETS

Table with 2 columns: DESCRIPTION, SHEET NUMBER. Lists various sheet types and numbers from C1 to C26.

Table with 2 columns: STRUCTURAL, SHEET NUMBER. Lists structural details and sheet numbers from S1 to S38.

Revision table with columns for Date, Description, and Revision. Includes a professional seal for John Aaron Cahill, Engineer, Missouri State Certificate of Authority Number: 200701476, dated 06/10/2024.

Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design\B - Drawings\4049.01_CIVIL_C1_THRU_C6.dwg PLOT DATE: 6/10/2024 2:47:00 PM LAST SAVE: 6/10/2024 1:43:29 PM



CHRISTIAN COUNTY MISSOURI GOVERNMENT
APPROVED: [Signature] 5-31-24
MIRANDA REAZES, PA HIGHWAY ADMINISTRATOR DATE

RIGHT-OF-WAY PLAN table with 2 columns: DESCRIPTION, SHEET NUMBER. Lists RW1 through RW4.

LENGTH OF PROJECT table with 3 columns: LOCATION, BEGINNING OF PROJECT, END OF PROJECT, APPARENT LENGTH, NET LENGTH OF PROJECT, STATE LENGTH. Provides stationing and length data for Greenbridge Rd./Smyrna Rd. and Hawkins Rd.

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
COVER SHEET
6/10/2024
JOB 4049.01
C1

GENERAL NOTES

THE CONTRACTOR SHALL FOLLOW THE JOB SPECIAL PROVISIONS FOR THIS PROJECT. FOR ITEMS NOT DIRECTLY COVERED IN THE JOB SPECIAL PROVISIONS THE CONTRACTOR SHALL FOLLOW THE SPECIFICATIONS AS STATED IN THE "MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION," 2023 EDITION, AND CURRENT SUPPLEMENTAL SPECIFICATION REVISIONS.

FENCES

FENCES SHALL BE MOVED OR ADJUSTED PRIOR TO CONSTRUCTION AS NECESSARY BY THE CONTRACTOR TO FIT THE NEW CONSTRUCTION. TEMPORARY FENCING SHALL BE PROVIDED WHERE EXISTING FENCING IS REMOVED FOR CONSTRUCTION. CONTRACTOR SHALL MAINTAIN TEMPORARY FENCING IN GOOD WORKING CONDITION UNTIL PERMANENT FENCING IS COMPLETED. COST FOR FURNISHING, INSTALLING AND MAINTAINING SHALL BE CONSIDERED INCIDENTAL TO FENCE CONSTRUCTION.

CONTRACTOR SHALL PROVIDE LAND OWNERS TEMPORARY FENCING CONSISTING OF AT LEAST 3--STRAND BARB WIRE WITH METAL T POST. WOODEN CORNER POST ARE ALLOWED. TEMPORARY FENCING WILL BE PROVIDED PER LAND OWNER REQUEST. TEMPORARY FENCING WHEN REQUESTED MUST BE MAINTAINED AT ALL TIMES. FAILURE TO DO SO WILL RESULT IN WORK STOPPAGE. TEMPORARY FENCING SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION, NO DIRECT PAYMENT WILL BE MADE.

TREE CLEARING

THE CLEARING OF BAT SUITABLE HABITAT TREES AND/OR SNAGS MUST BE CONDUCTED BETWEEN NOVEMBER 1 AND MARCH 31 TO AVOID ADVERSLEY AFFECTING THREATENED OR ENDANGERED BAT SPECIES THAT MAY BE IN THE PROJECT AREA.

PERMANENT SIGNING & MARKING

ALL ROADSIDE SIGNS, GUIDEPOSTS, AND MARKERS SHALL REMAIN THE PROPERTY OF THE COUNTY AND THOSE REMOVED WITHIN THE PROJECT AREA SHALL BE STACKED ON SITE FOR PICKUP BY COUNTY FORCES.

TEMPORARY SIGNING

TEMPORARY SIGNING AND MARKING SHALL REMAIN IN PLACE AT ALL TIMES DURING CONSTRUCTION. TEMPORARY SIGNING SHALL BE KEPT CLEAN AND VISIBLE THROUGH OUT CONSTRUCTION. FAILURE TO DO SO WILL RESULT IN WORK STOPPAGE.

DITCHES

DITCHES MUST BE GRADED FOR POSITIVE DRAINAGE AND IN ACCORDANCE WITH PLANS AND SPECIFICATIONS. DITCH FLOW LINES WITHOUT POSITIVE DRAINAGE WILL NOT BE ACCEPTED AND THE CONTRACTOR WILL BE REQUIRED TO REGRADE THE DITCHES TO PROVIDE POSITIVE DRAINAGE.

UTILITIES

PUBLIC AND PRIVATE UTILITY FACILITIES SHALL BE MOVED OR ADJUSTED PRIOR TO CONSTRUCTION AS NECESSARY BY THE OWNERS TO FIT THE CONSTRUCTION UNLESS NOTED ON THE PLANS OR IN THE PROPOSAL.

THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.

CONTRACTOR SHALL CONTACT MISSOURI ONE CALL AT 1-800-344-7483 (DIG-RITE), 811 OR MO1CALL.COM AT LEAST THREE DAYS PRIOR TO BEGINNING CONSTRUCTION.

ROADWAY QUANTITIES

ITEM	TOTAL	UNITS
CLEARING AND GRUBBING	3.2	ACRE
REMOVAL OF IMPROVEMENTS	1	LUMP SUM
UNCLASSIFIED EXCAVATION (ROADWAY)	4,886	CU. YARD
EMBANKMENT IN PLACE W/ COMPACTION	4,493	CU. YARD
TYPE 1 AGGREGATE FOR BASE (6 IN. THICK)	3,903	SQ. YARD
TYPE 1 AGGREGATE 12 IN. THICK (SHOULDERS)	1,099	SQ. YARD
TYPE 1 AGGREGATE 5 IN. THICK (FIELD ENTRANCE)	34	SQ. YARD
3/4" CLEAN ROCK (TRAILS)	91	SQ. YARD
BITUMINOUS PAVEMENT MIXTURE PG64-22, (BP-1)	422.4	TON
BITUMINOUS PAVEMENT MIXTURE PG64-22, (BASE)	842.6	TON
TACK COAT	195	GALLON
BRIDGE ANCHOR SECTION	4	EACH
ASYMMETRICAL TRANSITION SECTION, 6.5 FT. POSTS	4	EACH
GUARDRAIL TYPE A	950	LIN. FOOT
TL-1 SOFTSTOP END SECTION	4	EACH
BARBED WIRE FENCE AND T-POST	2,439	LIN. FOOT
TYPE 1 ROCK DITCH LINER	70	CU. YARD
TYPE 2 ROCK BLANKET	1,276	CU. YARD
TYPE III MOVEABLE BARRICADE WITH LIGHT	15	EACH
CONSTRUCTION SIGNS	159	SQ. FOOT
MOBILIZATION	1	LUMP SUM
18 IN. CORRUGATED METALLIC-COATED STEEL PIPE	67	LIN. FOOT
ELLIPTICAL RCP 42" I.D. ROUND PIPE EQUIVALENT	40	LIN. FOOT
ELLIPTICAL RCP 18" I.D. ROUND PIPE EQUIVALENT	111	LIN. FOOT
PRECAST CONCRETE AREA INLET 6FT X 6FT	2	EACH
ELLIPTICAL RCP 42" I.D. ROUND PIPE EQUIVALENT FES	1	EACH
SEEDING	2.3	ACRE
DITCH CHECK	21	EACH
TYPE 4 EROSION CONTROL BLANKET	109	SQ. YARD
SILT FENCE	656	LIN. FOOT
STOP SIGN	1	EACH

Point #	Northing	Easting	Elevation	Description
1	437457.1823	1443650.7398	1255.90	CP1 DNR CH-10
2	439598.0070	1445102.2839	1156.25	CP2 60D
3	439767.6377	1444770.9113	1137.06	CP3 60D
4	439099.3097	1444703.2531	1136.77	CP4 60D

HORIZONTAL COORDINATES ARE BASED ON THE MISSOURI COORDINATE SYSTEM OF 1983, CENTRAL ZONE

BENCHMARK DATA

BM - 5/8" REBAR SET AT SOUTH END OF BRIDGE, 10.7' S OF POWER POLE AND 17.5' SW OF GUY ANCHOR FOR POWER POLE.

ELEVATION = 1144.33'

(VERTICAL DATUM: NAVD88)

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Date

Revision/Issue

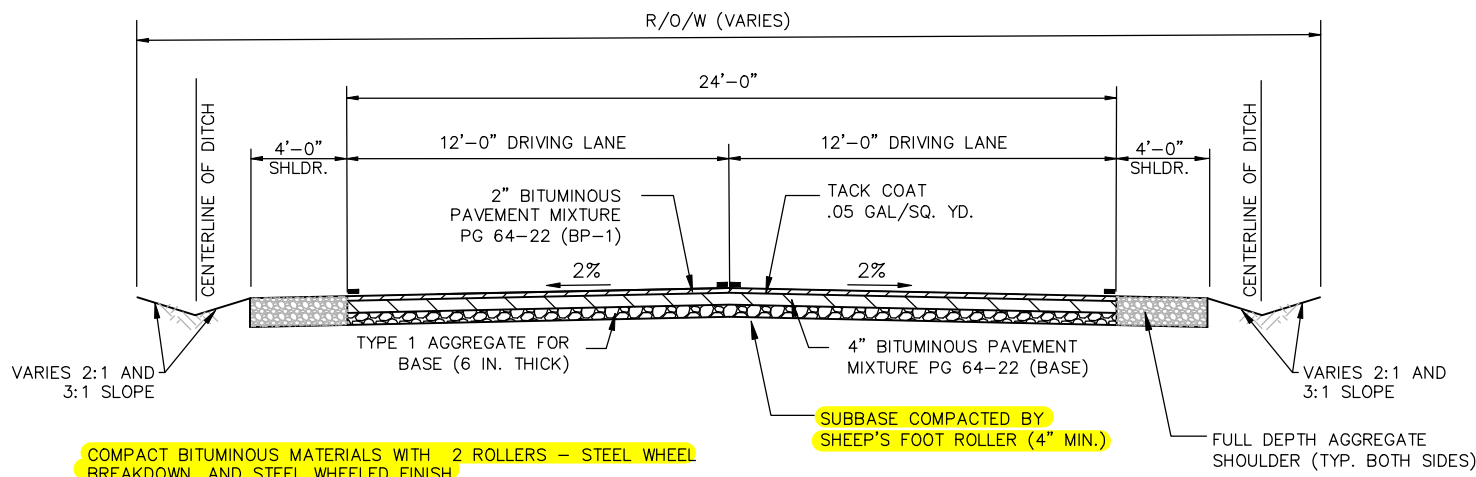
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

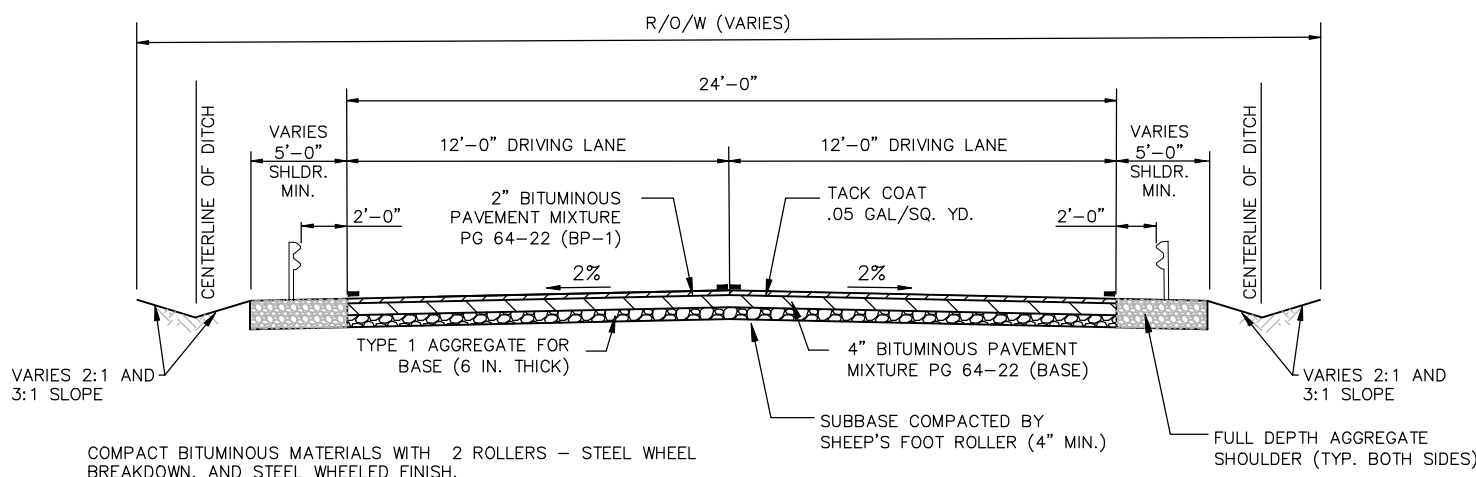
JOHN AARON CAHILL - ENGINEER
MO# PE-2021028074

Missouri State Certificate of Authority Numbers:
Engineering: 011476,
Landscape Architecture: 200703873

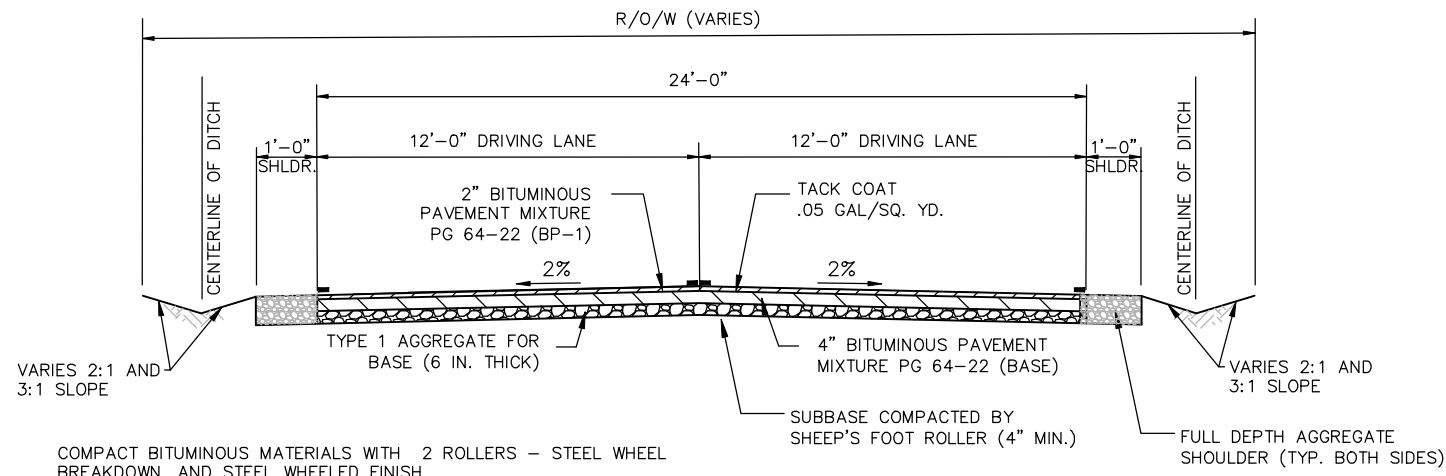
GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
GENERAL NOTES & QUANTITIES



**TYPICAL ASPHALT PAVING SECTION
(GREENBRIDGE ROAD, SMYRNA ROAD)**

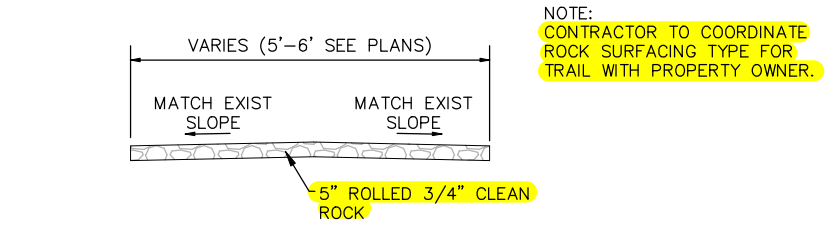


**TYPICAL ASPHALT PAVING SECTION W/ GUARDRAIL
(GREENBRIDGE ROAD, SMYRNA ROAD)**

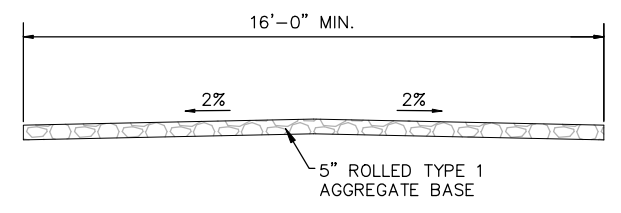


**TYPICAL ASPHALT PAVING SECTION
(HAWKINS ROAD)**

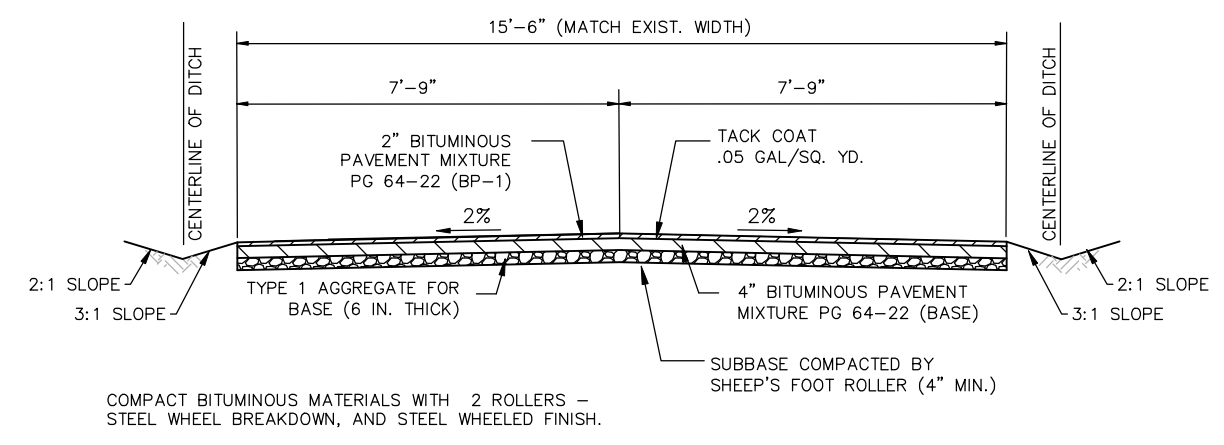
SUPERELEVATION REGION	STATION	DESCRIPTION	LEFT OUTSIDE SHOULDER	LEFT OUTSIDE LANE	RIGHT OUTSIDE SHOULDER	RIGHT OUTSIDE LANE
1	7+00.63	END NORMAL CROWN	-2.00%	-2.00%	-2.00%	-2.00%
1	7+39.13	LEVEL CROWN	-2.00%	-2.00%	0.00%	0.00%
1	7+77.63	REVERSE CROWN	-2.00%	-2.00%	2.00%	2.00%
1	8+16.13	BEGIN FULL SUPER	-4.00%	-4.00%	4.00%	4.00%
2	16+91.81	END FULL SUPER	-4.00%	-4.00%	4.00%	4.00%
2	17+30.31	REVERSE CROWN	-2.00%	-2.00%	2.00%	2.00%
2	17+68.81	LEVEL CROWN	-2.00%	-2.00%	0.00%	0.00%
	18+00.00	END ALIGNMENT	-	-2.80%	-	-4.40%



TYPICAL GRAVEL TRAIL SECTION



**TYPICAL GRAVEL FIELD
ENTRANCE SECTION**

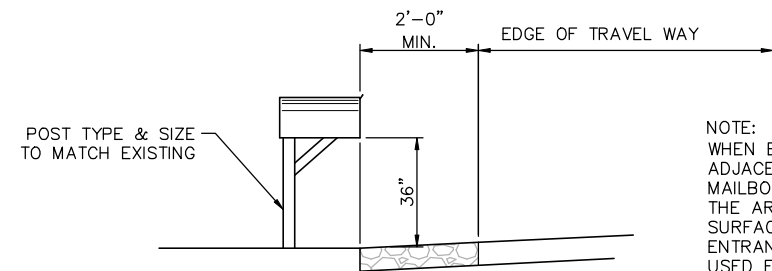
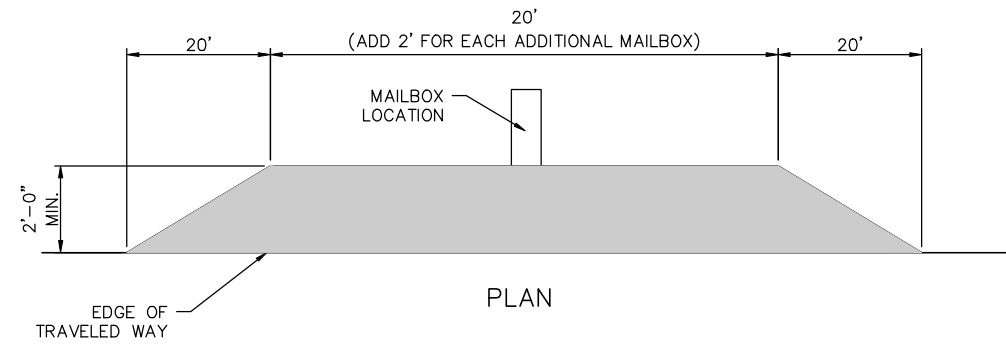


**TYPICAL ASPHALT PAVING SECTION
(ATTEBERRY DRIVEWAY)**

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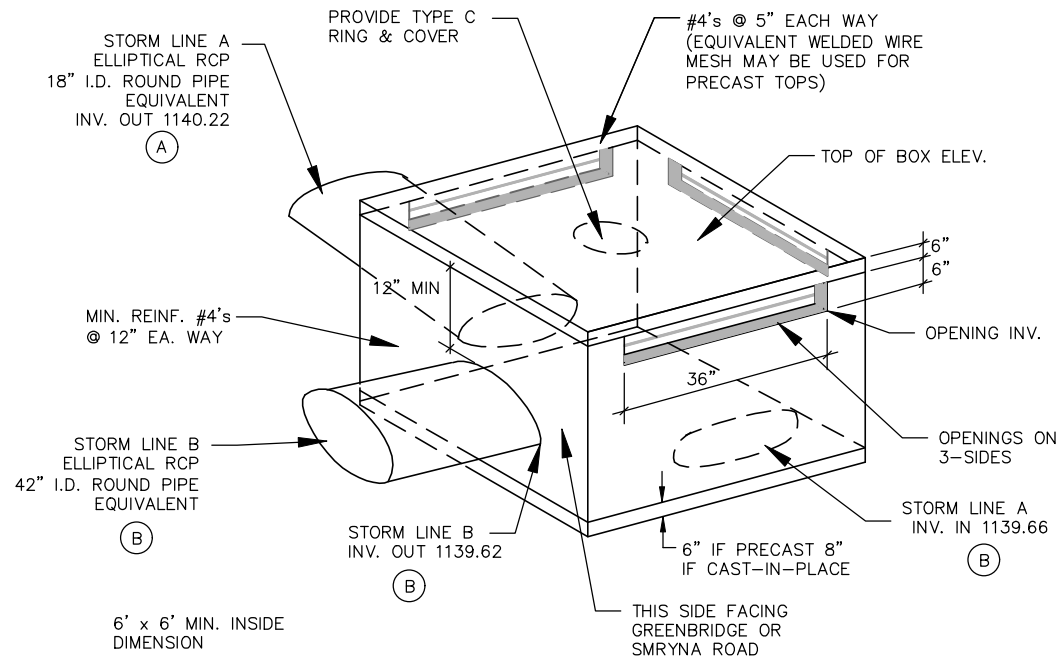
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Revision/Issue	
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
TYPICAL ROADWAY SECTIONS	
6/10/2024	
JOB 4049.01	
C3	

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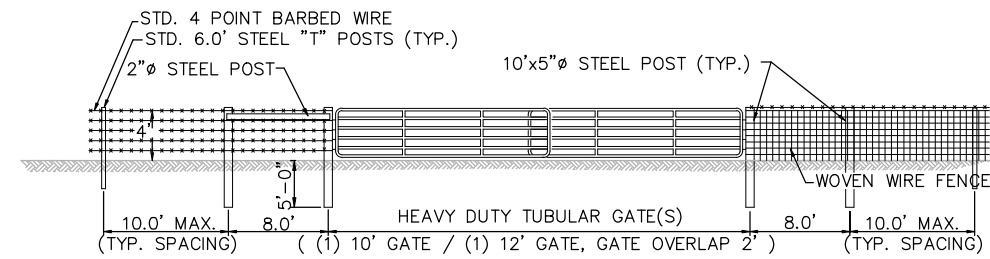
IMPROVED PAVING
MAILBOX REPLACEMENT
NOT TO SCALE

NOTE:
WHEN ENTRANCE IS
ADJACENT TO
MAILBOX TURNOUT,
THE AREA AND
SURFACING OF THE
ENTRANCE MAY BE
USED FOR A PORTION
OF THE MAILBOX
TURNOUT.

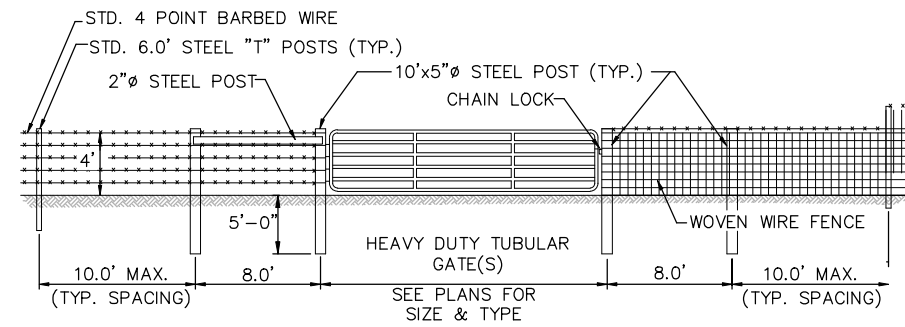


6' x 6' AREA INLET (OPENINGS ON 3 SIDES)
NOT TO SCALE

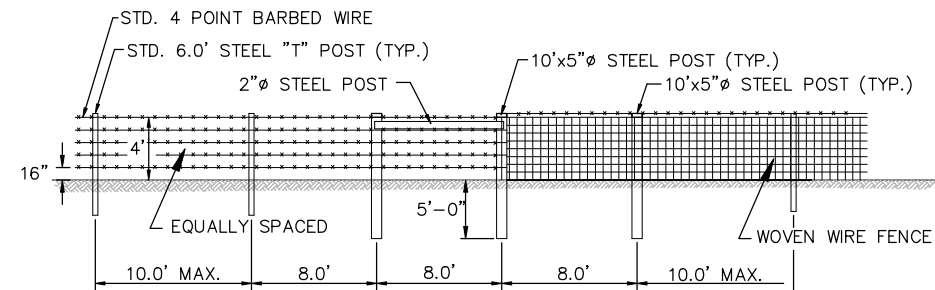
BOX ID	ITEM	TOP BOX ELEV.	BOX INVERT	OPENING INVERT
(A)	STA 4+00.33 21.46' RT	1143.35	1140.22	1142.35
(B)	STA 5+17.47 21.83' RT	1144.35	1139.62	1143.35



TYPICAL FENCE DOUBLE GATE AND BRACING
(FOR BARBED WIRE & WOVEN WIRE FENCING)



TYPICAL FENCE GATE AND BRACING
(FOR BARBED WIRE & WOVEN WIRE FENCING)



TYPICAL CORNER AND BRACING
(FOR BARBED WIRE & WOVEN WIRE FENCING)

CONTRACTOR SHALL MATCH EXISTING FENCE TYPE (I.E. 5 STRAND
BARBED WIRE OR WOVEN WIRE FENCE)

NOTES:

- FENCING SHOWN IN THIS DETAIL IS THE MINIMUM REQUIRED BY THE ENGINEER.
- TIES TO EXISTING FENCE REQUIRE THE SAME LAYOUT AS FENCE CORNERS (I.E. CORNER POSTS WITH BRACING.)
- CORNER AND BRACING POST SHALL BE BURIED A MINIMUM OF 5 FEET.
- ALL 10' x 5" Ø STEEL PIPE MUST HAVE WELD ON DOME CAP. PLASTIC CAP WILL NOT BE ACCEPTED.



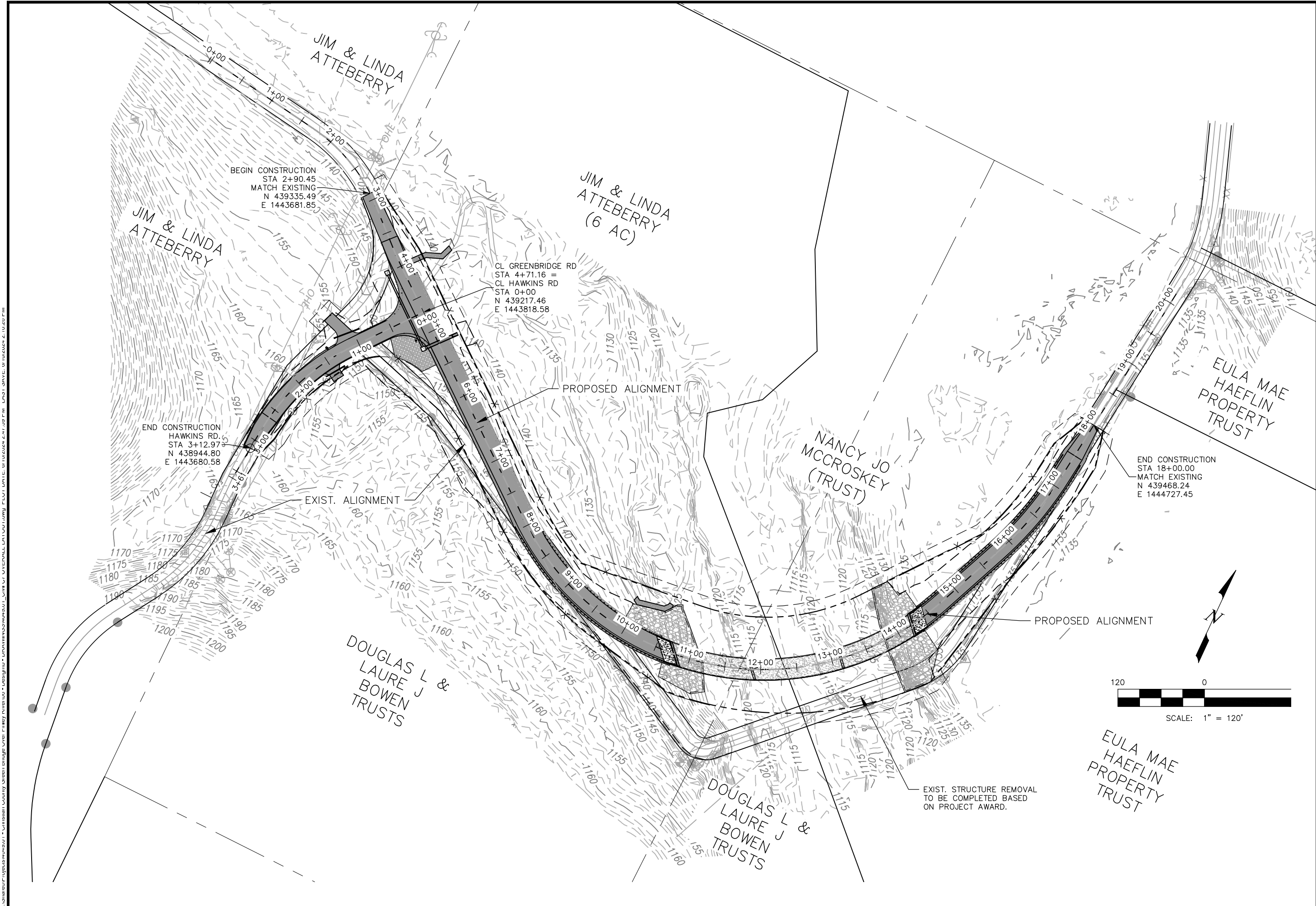
R1-1
(36" x 36")

STOP SIGN

Date	
Revision/Issue	
No.	1
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Missouri State Certificate of Authority Numbers: Engineering: 06101476 Landscape Architecture: 200701873	

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
TYPICAL DETAILS

6/10/2024
JOB 4049.01



20240610 12:00 PM
 JOHN AARON CAHILL - ENGINEER
 MISSOURI PROFESSIONAL ENGINEERING BOARD
 LICENSE NO. FE-2021028074

No.	Revision/Issue	Date

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JOHN AARON CAHILL - ENGINEER
 MISSOURI PROFESSIONAL ENGINEERING BOARD
 LICENSE NO. FE-2021028074

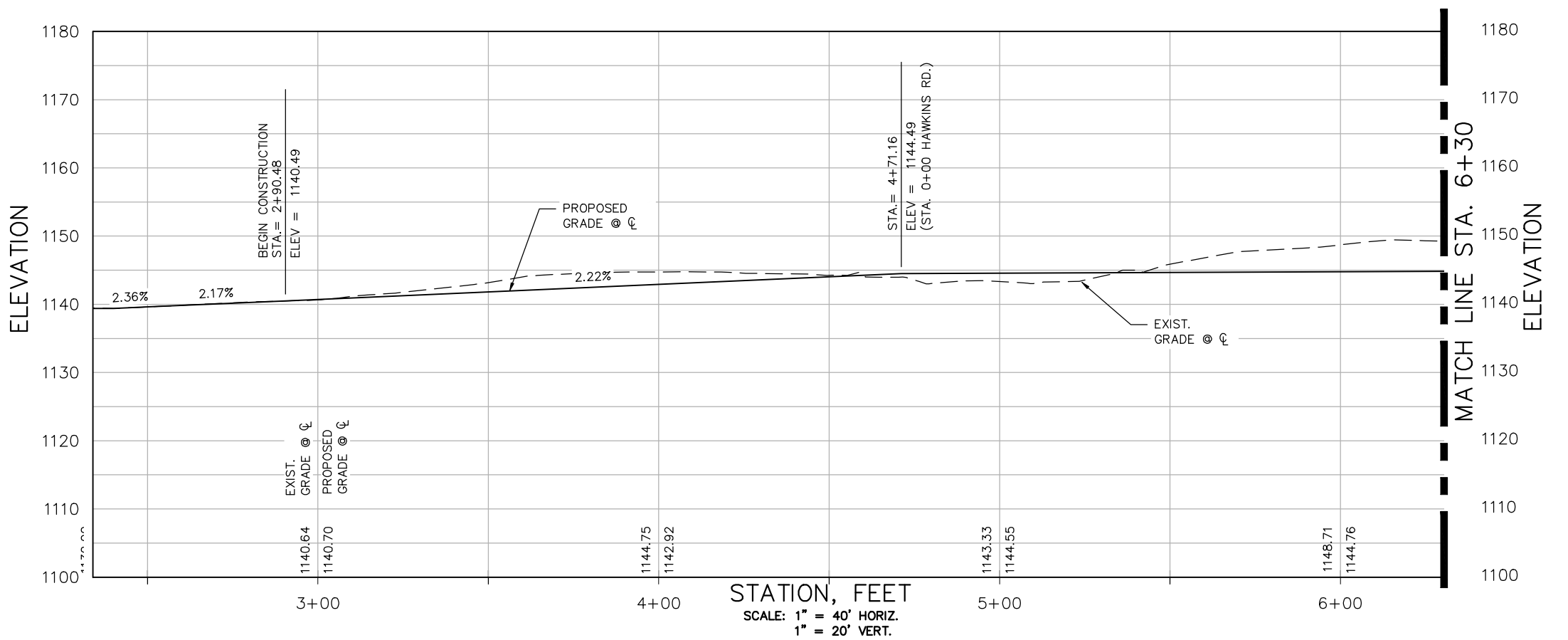
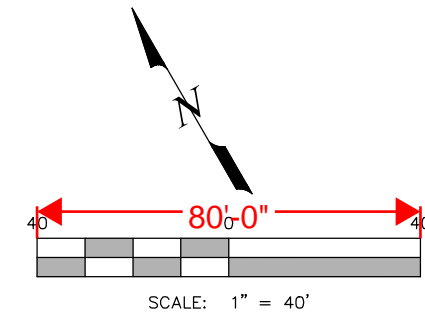
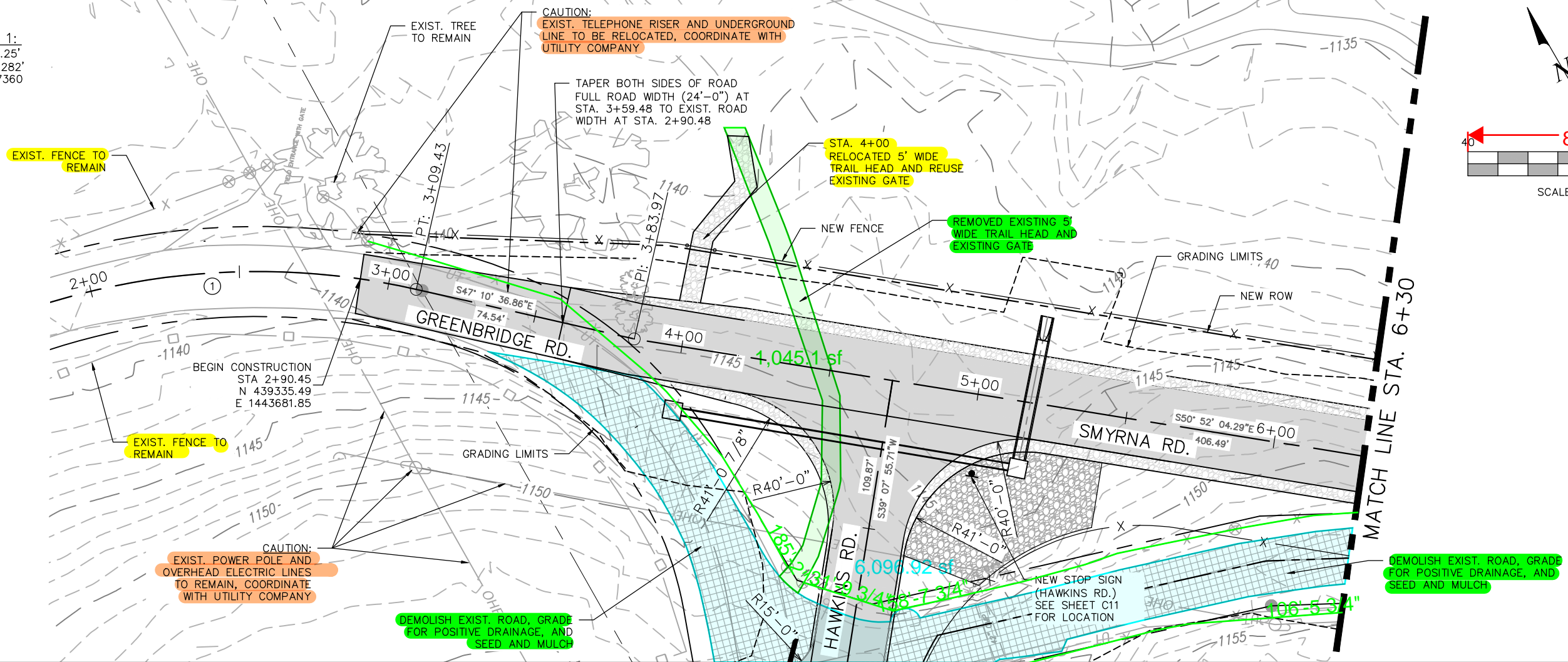
GRE GREAT RIVER ENGINEERING

Missouri State Certificate of Authority Numbers:
 Engineering: 200019688; Land Surveying: 200101476;
 Landscape Architecture: 2007013673

GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 OVERALL SITE PLAN

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CURVE 1:
 R = 238.25'
 L = 140.282'
 Δ = 33.7360



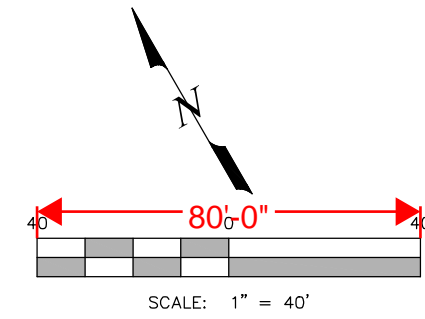
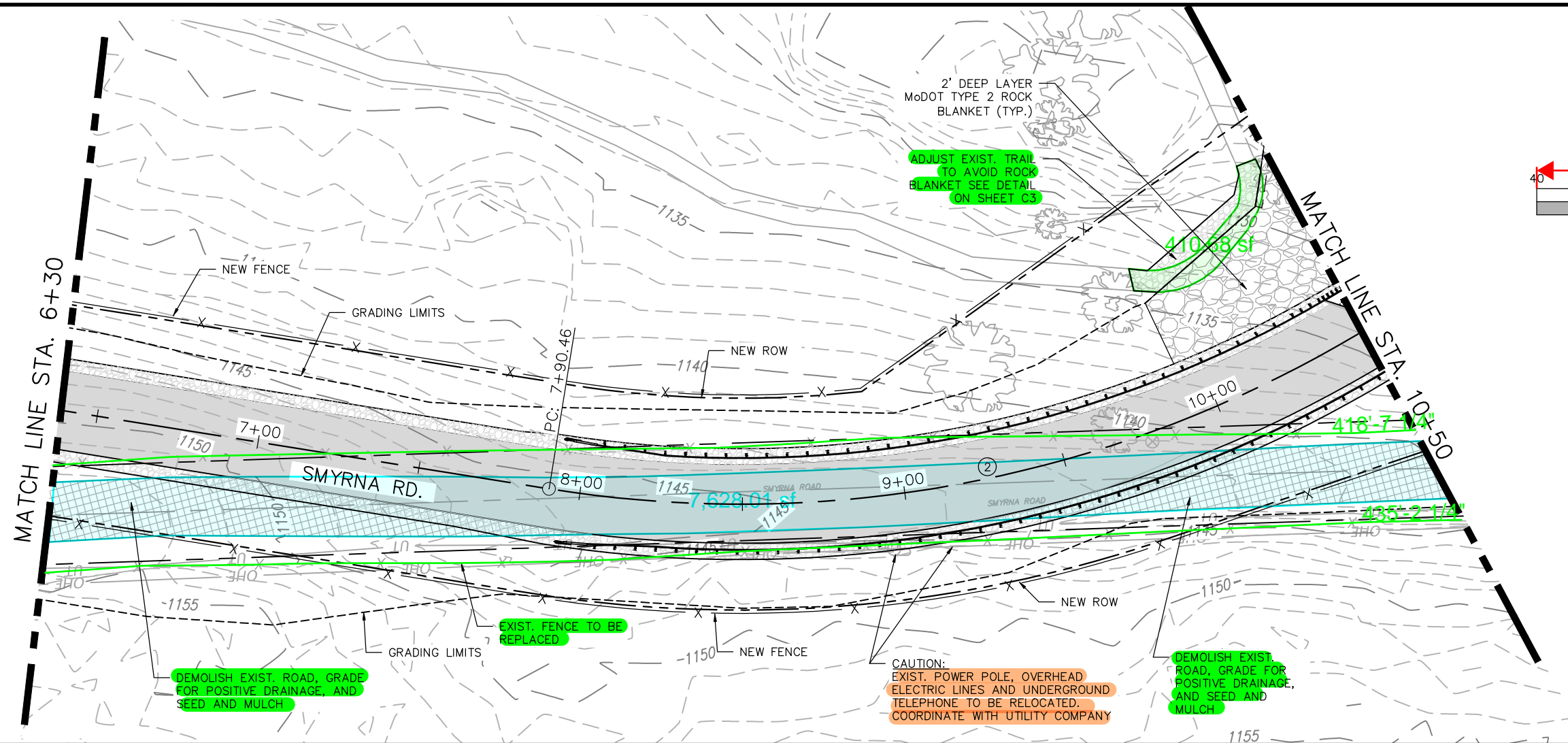
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GRE GREAT RIVER ENGINEERING <small>Missouri State Certificate of Authority Numbers: 06101476, Engineering: Landscape Architecture: 200703873</small>	
JOHN AARON CAHILL - ENGINEER <small>MO# PE-2021028074</small>	

GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 ROADWAY PLAN & PROFILE

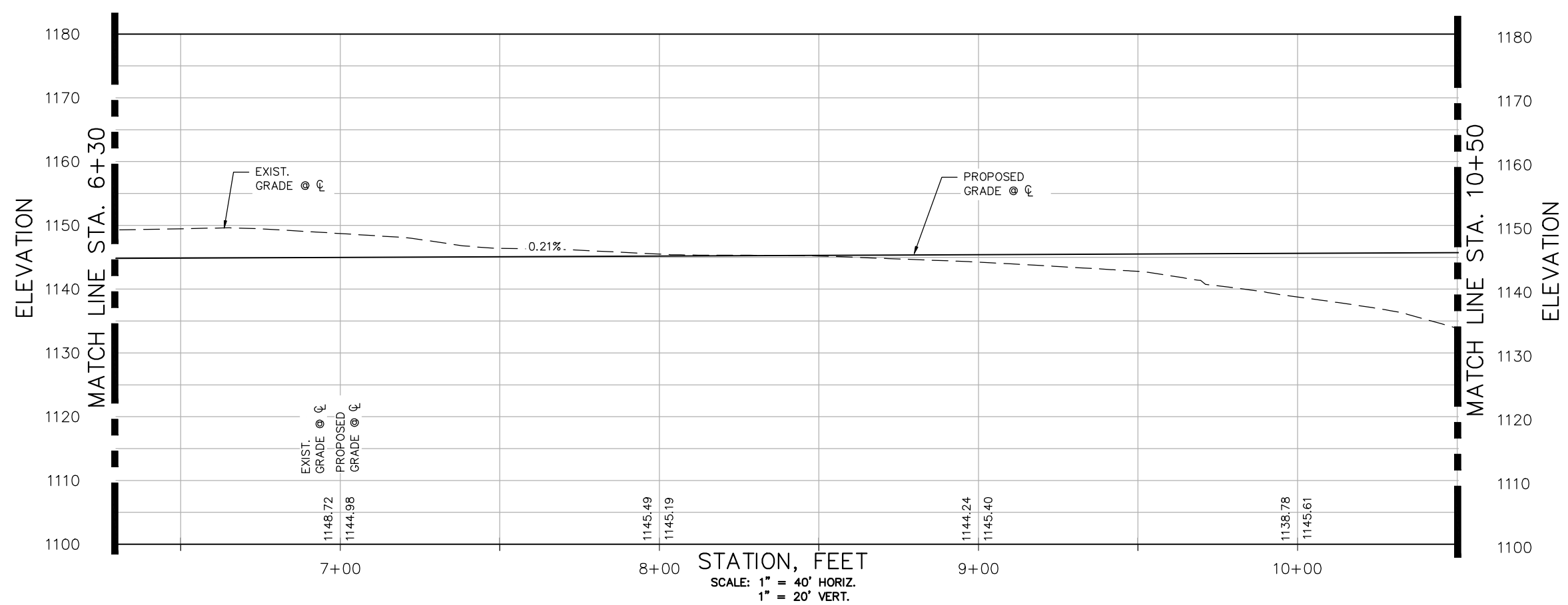
6/10/2024
 JOB 4049.01

C6

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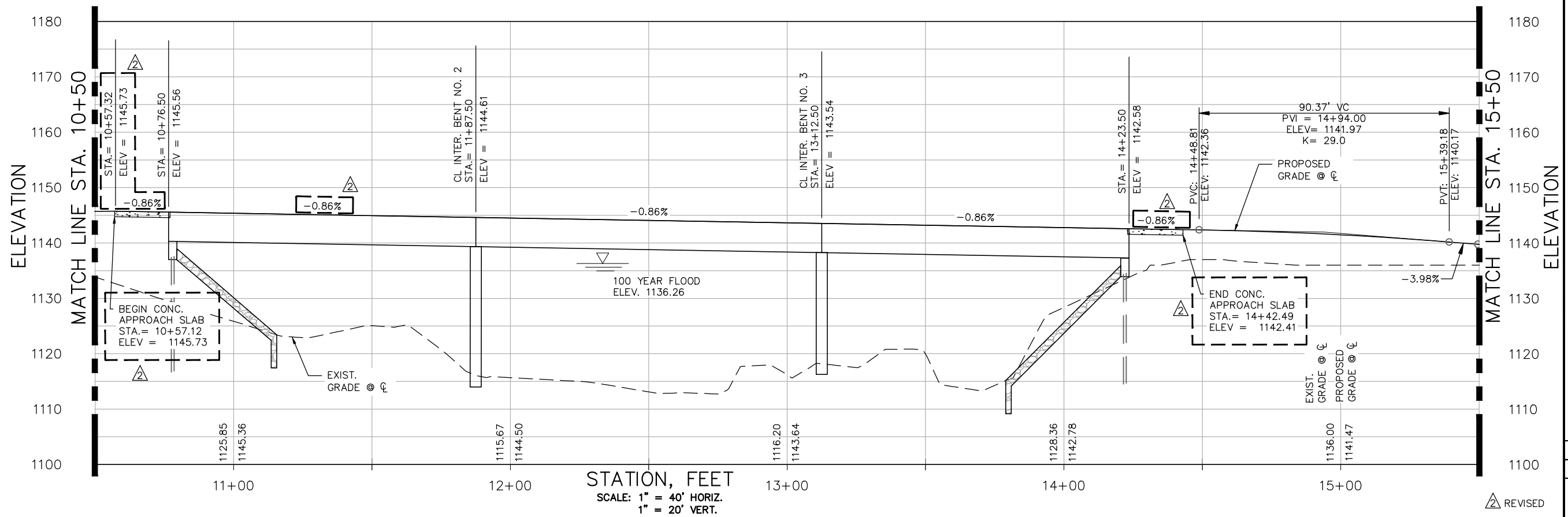
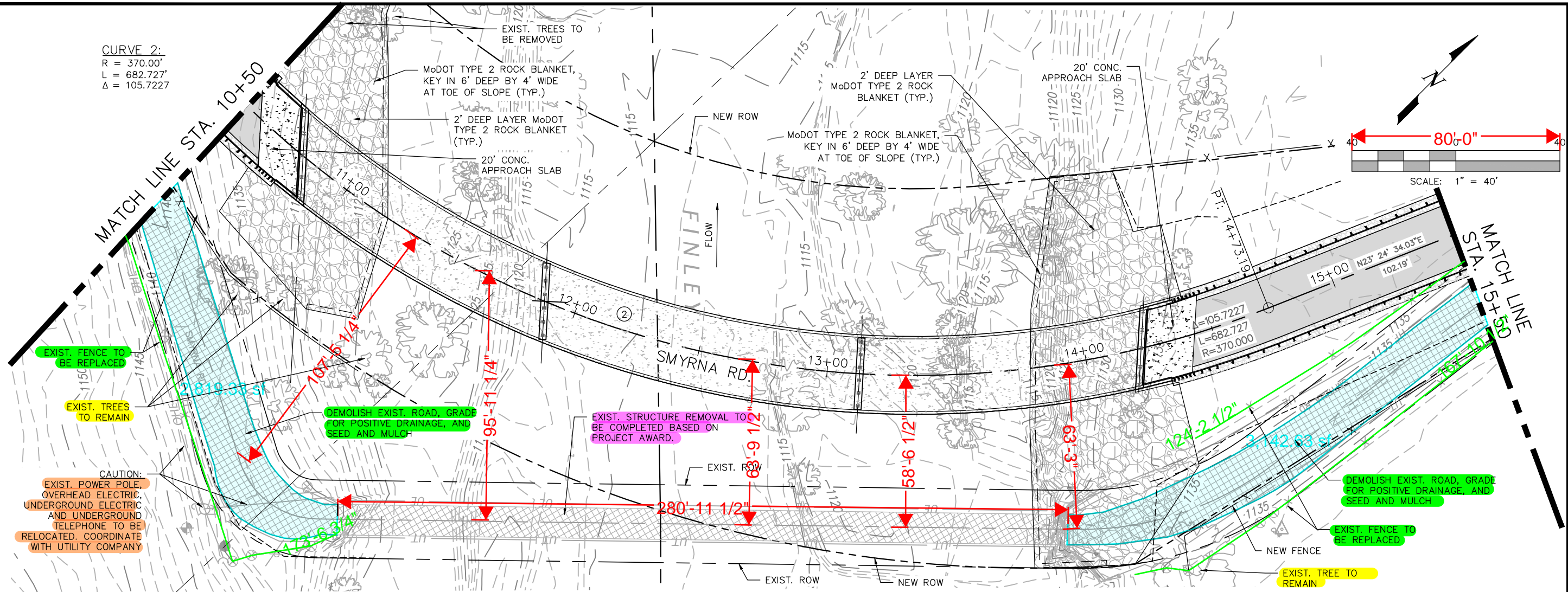
CURVE 2:
 R = 370.00'
 L = 682.727'
 Δ = 105.7227



Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
GRE GREAT RIVER ENGINEERING <small>Missouri State Certificate of Authority Numbers: 011476, 011478, 011479, 011480, 011481, 011482, 011483, 011484, 011485, 011486, 011487, 011488, 011489, 011490, 011491, 011492, 011493, 011494, 011495, 011496, 011497, 011498, 011499, 011500, 011501, 011502, 011503, 011504, 011505, 011506, 011507, 011508, 011509, 011510, 011511, 011512, 011513, 011514, 011515, 011516, 011517, 011518, 011519, 011520, 011521, 011522, 011523, 011524, 011525, 011526, 011527, 011528, 011529, 011530, 011531, 011532, 011533, 011534, 011535, 011536, 011537, 011538, 011539, 011540, 011541, 011542, 011543, 011544, 011545, 011546, 011547, 011548, 011549, 011550, 011551, 011552, 011553, 011554, 011555, 011556, 011557, 011558, 011559, 011560, 011561, 011562, 011563, 011564, 011565, 011566, 011567, 011568, 011569, 011570, 011571, 011572, 011573, 011574, 011575, 011576, 011577, 011578, 011579, 011580, 011581, 011582, 011583, 011584, 011585, 011586, 011587, 011588, 011589, 011590, 011591, 011592, 011593, 011594, 011595, 011596, 011597, 011598, 011599, 011600, 011601, 011602, 011603, 011604, 011605, 011606, 011607, 011608, 011609, 011610, 011611, 011612, 011613, 011614, 011615, 011616, 011617, 011618, 011619, 011620, 011621, 011622, 011623, 011624, 011625, 011626, 011627, 011628, 011629, 011630, 011631, 011632, 011633, 011634, 011635, 011636, 011637, 011638, 011639, 011640, 011641, 011642, 011643, 011644, 011645, 011646, 011647, 011648, 011649, 011650, 011651, 011652, 011653, 011654, 011655, 011656, 011657, 011658, 011659, 011660, 011661, 011662, 011663, 011664, 011665, 011666, 011667, 011668, 011669, 011670, 011671, 011672, 011673, 011674, 011675, 011676, 011677, 011678, 011679, 011680, 011681, 011682, 011683, 011684, 011685, 011686, 011687, 011688, 011689, 011690, 011691, 011692, 011693, 011694, 011695, 011696, 011697, 011698, 011699, 011700, 011701, 011702, 011703, 011704, 011705, 011706, 011707, 011708, 011709, 011710, 011711, 011712, 011713, 011714, 011715, 011716, 011717, 011718, 011719, 011720, 011721, 011722, 011723, 011724, 011725, 011726, 011727, 011728, 011729, 011730, 011731, 011732, 011733, 011734, 011735, 011736, 011737, 011738, 011739, 011740, 011741, 011742, 011743, 011744, 011745, 011746, 011747, 011748, 011749, 011750, 011751, 011752, 011753, 011754, 011755, 011756, 011757, 011758, 011759, 011760, 011761, 011762, 011763, 011764, 011765, 011766, 011767, 011768, 011769, 011770, 011771, 011772, 011773, 011774, 011775, 011776, 011777, 011778, 011779, 011780, 011781, 011782, 011783, 011784, 011785, 011786, 011787, 011788, 011789, 011790, 011791, 011792, 011793, 011794, 011795, 011796, 011797, 011798, 011799, 011800, 011801, 011802, 011803, 011804, 011805, 011806, 011807, 011808, 011809, 011810, 011811, 011812, 011813, 011814, 011815, 011816, 011817, 011818, 011819, 011820, 011821, 011822, 011823, 011824, 011825, 011826, 011827, 011828, 011829, 011830, 011831, 011832, 011833, 011834, 011835, 011836, 011837, 011838, 011839, 011840, 011841, 011842, 011843, 011844, 011845, 011846, 011847, 011848, 011849, 011850, 011851, 011852, 011853, 011854, 011855, 011856, 011857, 011858, 011859, 011860, 011861, 011862, 011863, 011864, 011865, 011866, 011867, 011868, 011869, 011870, 011871, 011872, 011873, 011874, 011875, 011876, 011877, 011878, 011879, 011880, 011881, 011882, 011883, 011884, 011885, 011886, 011887, 011888, 011889, 011890, 011891, 011892, 011893, 011894, 011895, 011896, 011897, 011898, 011899, 011900, 011901, 011902, 011903, 011904, 011905, 011906, 011907, 011908, 011909, 011910, 011911, 011912, 011913, 011914, 011915, 011916, 011917, 011918, 011919, 011920, 011921, 011922, 011923, 011924, 011925, 011926, 011927, 011928, 011929, 011930, 011931, 011932, 011933, 011934, 011935, 011936, 011937, 011938, 011939, 011940, 011941, 011942, 011943, 011944, 011945, 011946, 011947, 011948, 011949, 011950, 011951, 011952, 011953, 011954, 011955, 011956, 011957, 011958, 011959, 011960, 011961, 011962, 011963, 011964, 011965, 011966, 011967, 011968, 011969, 011970, 011971, 011972, 011973, 011974, 011975, 011976, 011977, 011978, 011979, 011980, 011981, 011982, 011983, 011984, 011985, 011986, 011987, 011988, 011989, 011990, 011991, 011992, 011993, 011994, 011995, 011996, 011997, 011998, 011999, 020000</small>	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI ROADWAY PLAN & PROFILE	
6/10/2024	
JOB 4049.01	
C7	

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CURVE 2:
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L = 682.727'
Δ = 105.7227



Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: Engineering: 0611476 Landscape Architecture: 2007019673	

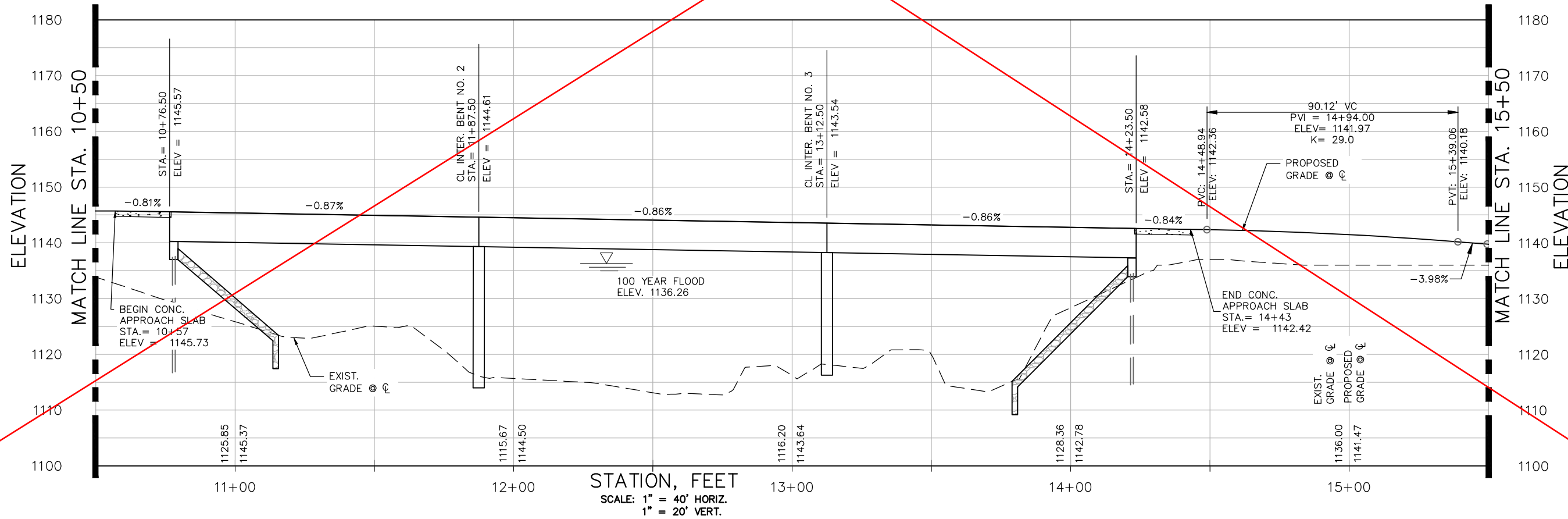
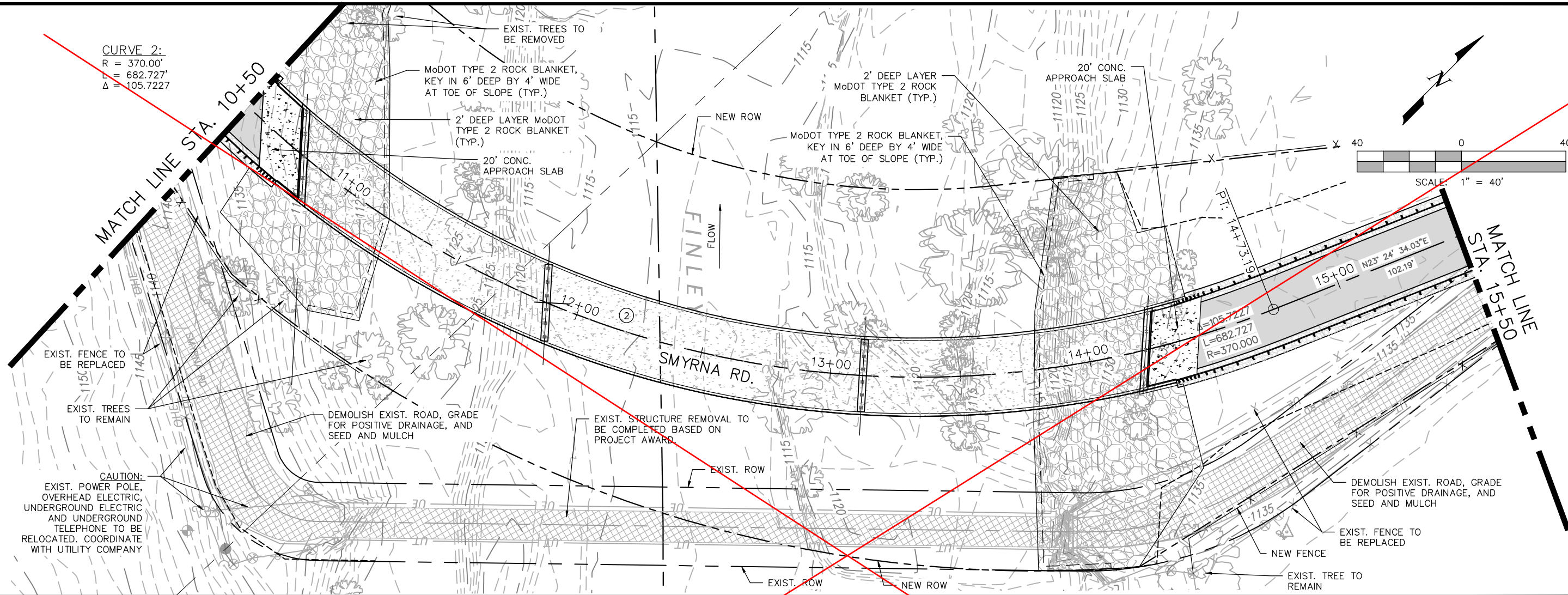
GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 ROADWAY PLAN & PROFILE

6/19/2024
 JOB 4049.01
 C8

REVISIONS

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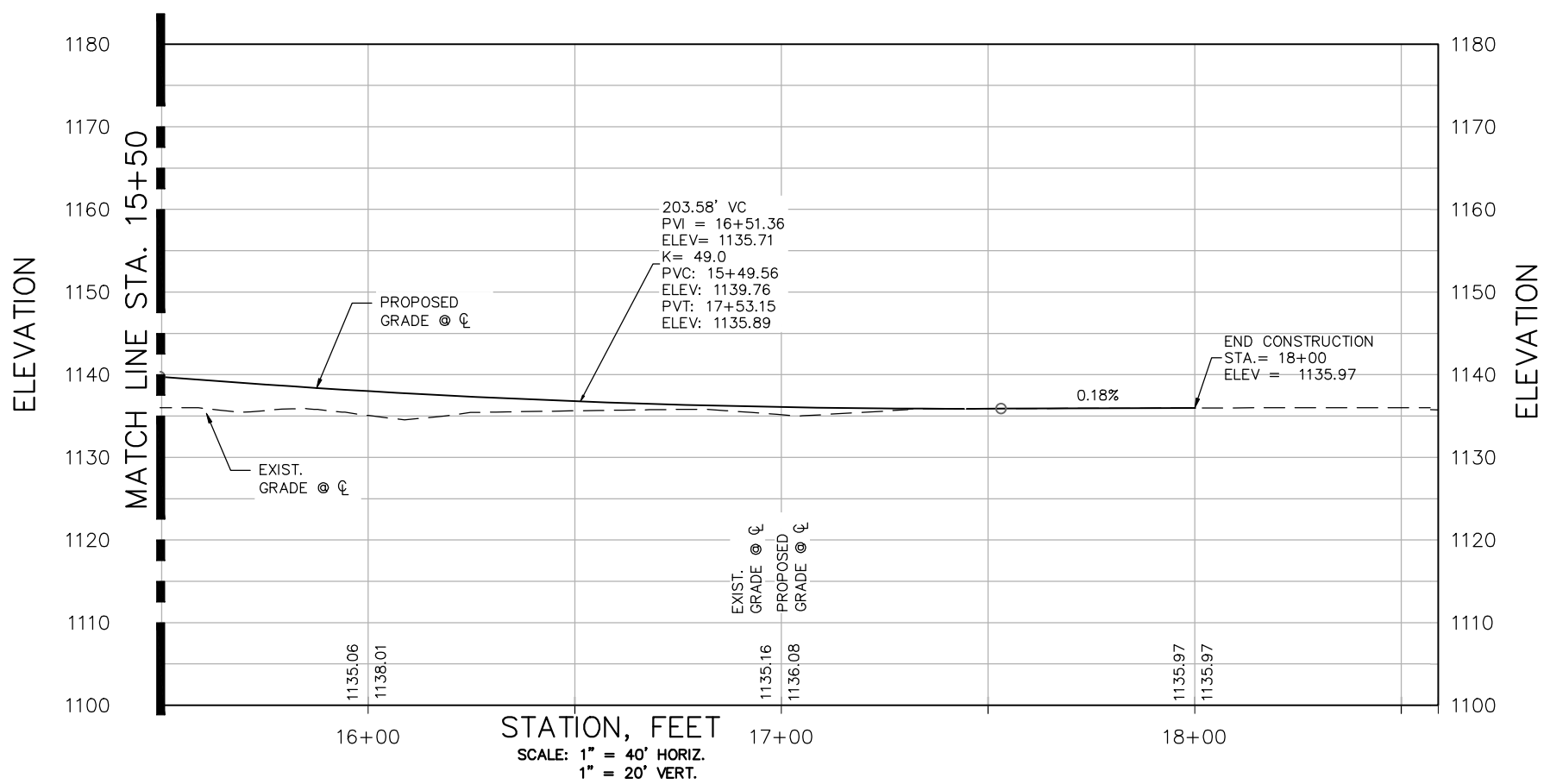
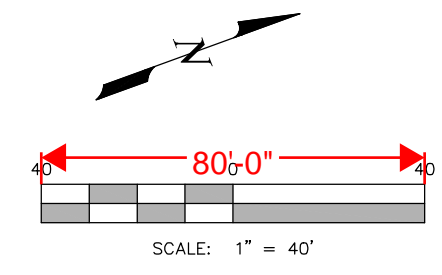
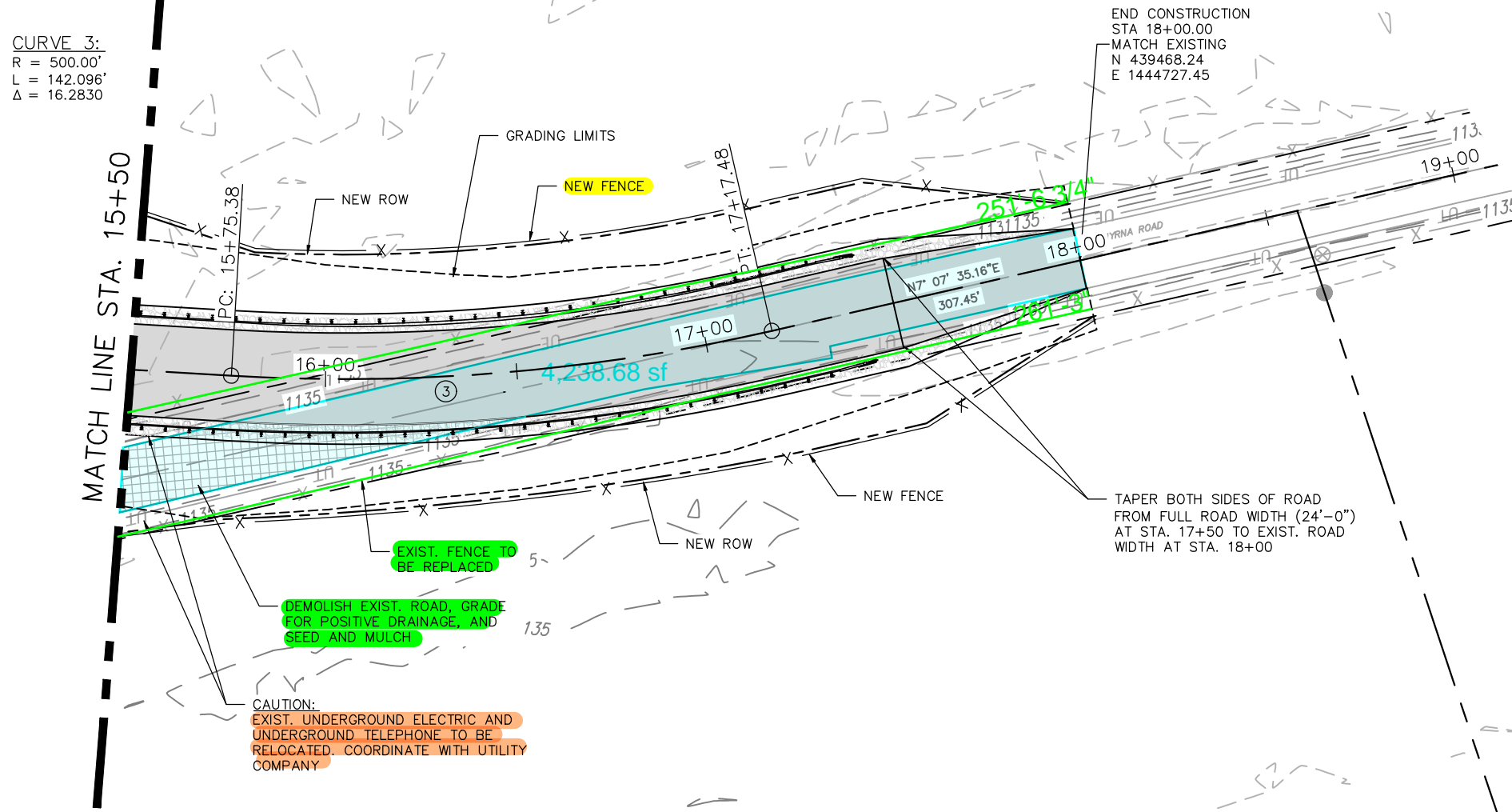
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 $L = 682.727'$
 $\Delta = 105.7227'$



Date	
Revision/Issue	
No.	1
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GRE GREAT RIVER ENGINEERING Missouri State Certificate of Authority Numbers: 06101476, 06101477, 06101478 Engineering: Landscape Architecture: 200703873	

GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 ROADWAY PLAN & PROFILE
 6/10/2024
 JOB 4049.01
 C8

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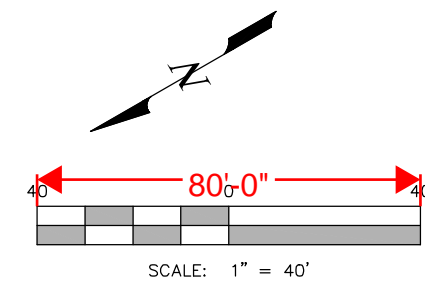
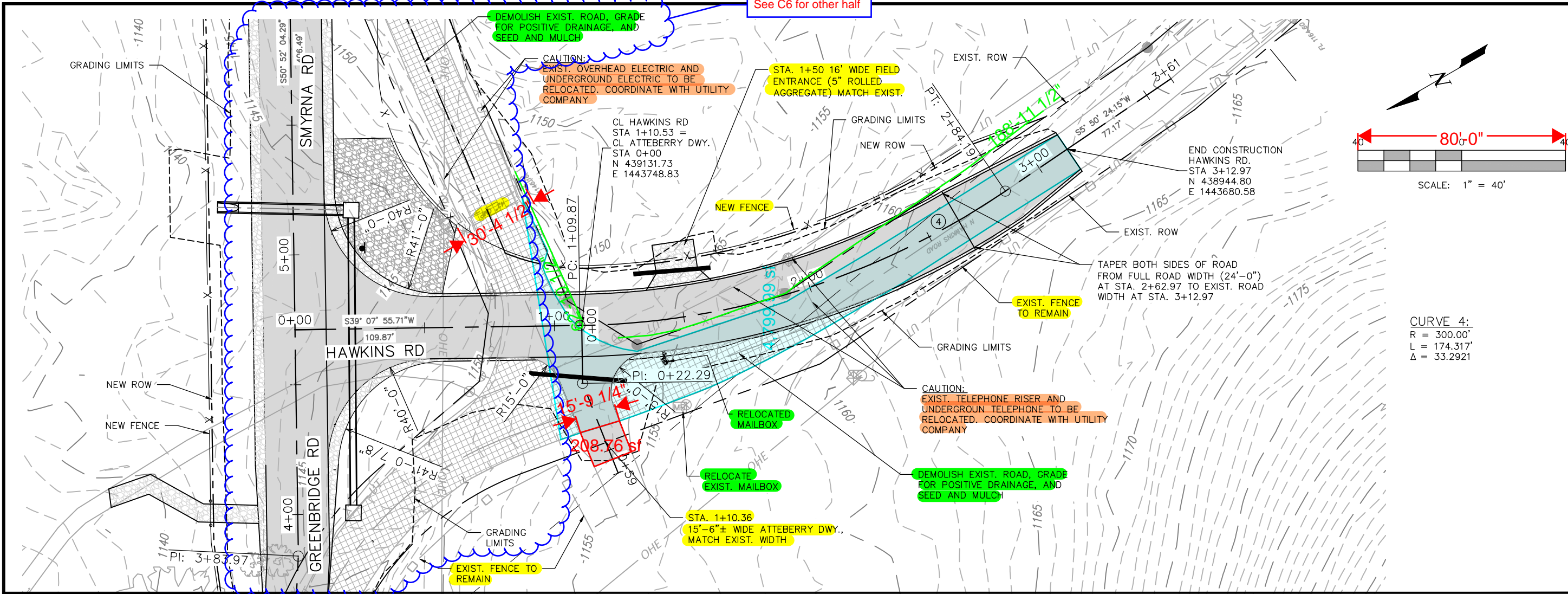


Date	
Revision/Issue	
No.	1
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GRE GREAT RIVER ENGINEERING <small>Missouri State Certificate of Authority Numbers: 06101476, 200703873 Engineering: Landscape Architecture</small>	

GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 ROADWAY PLAN & PROFILE

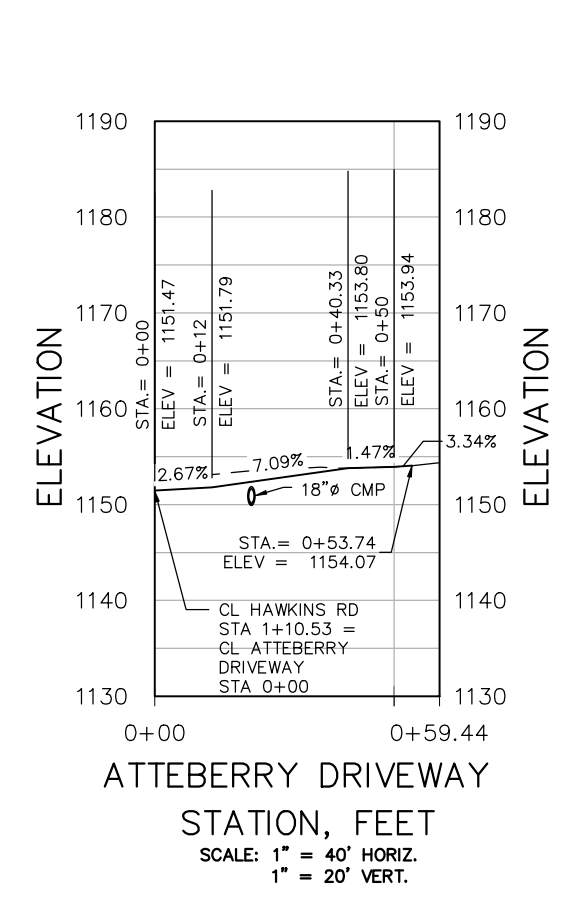
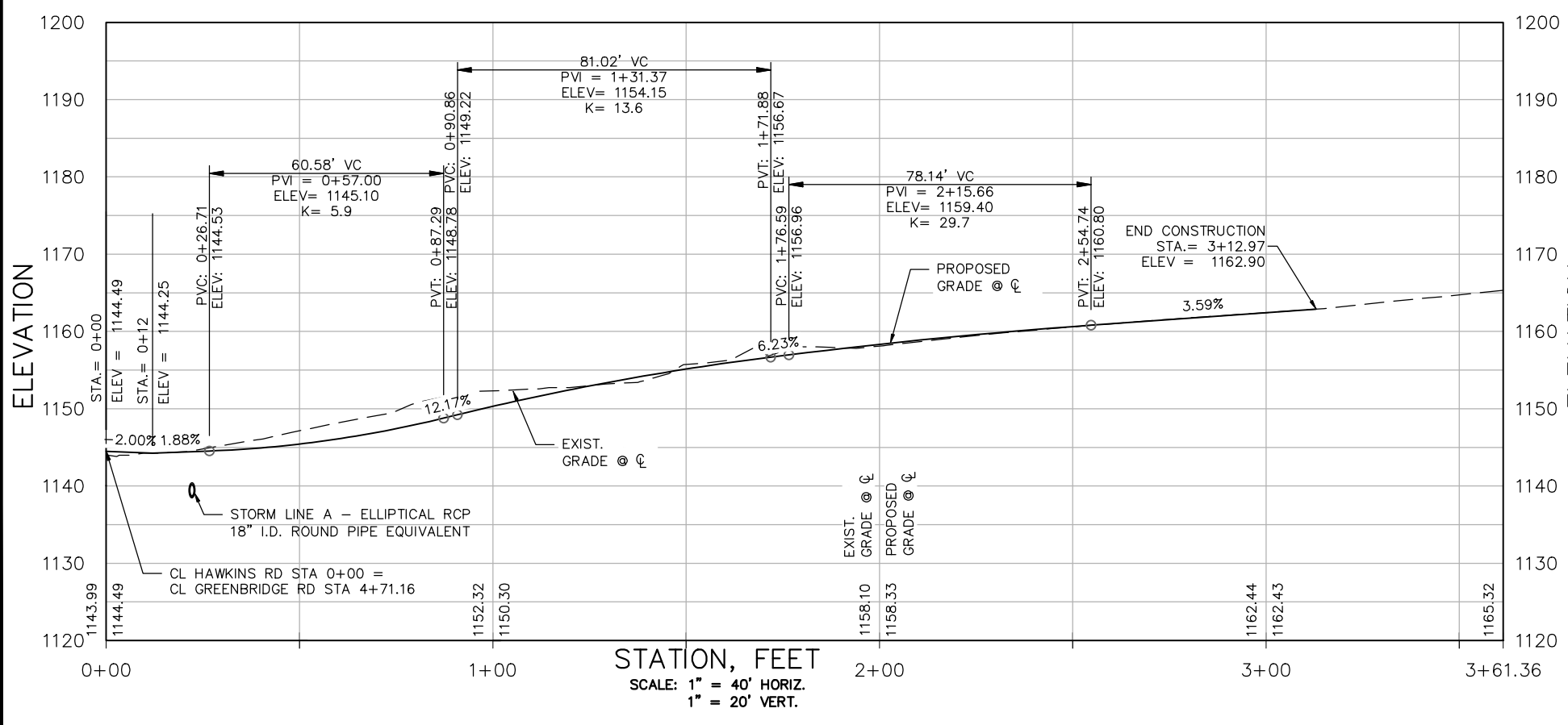
6/10/2024
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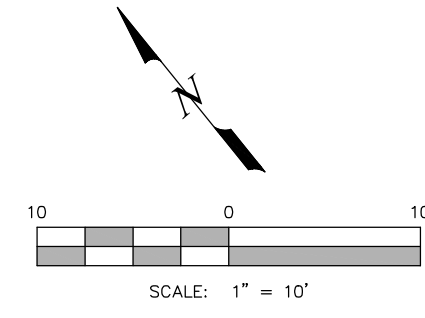
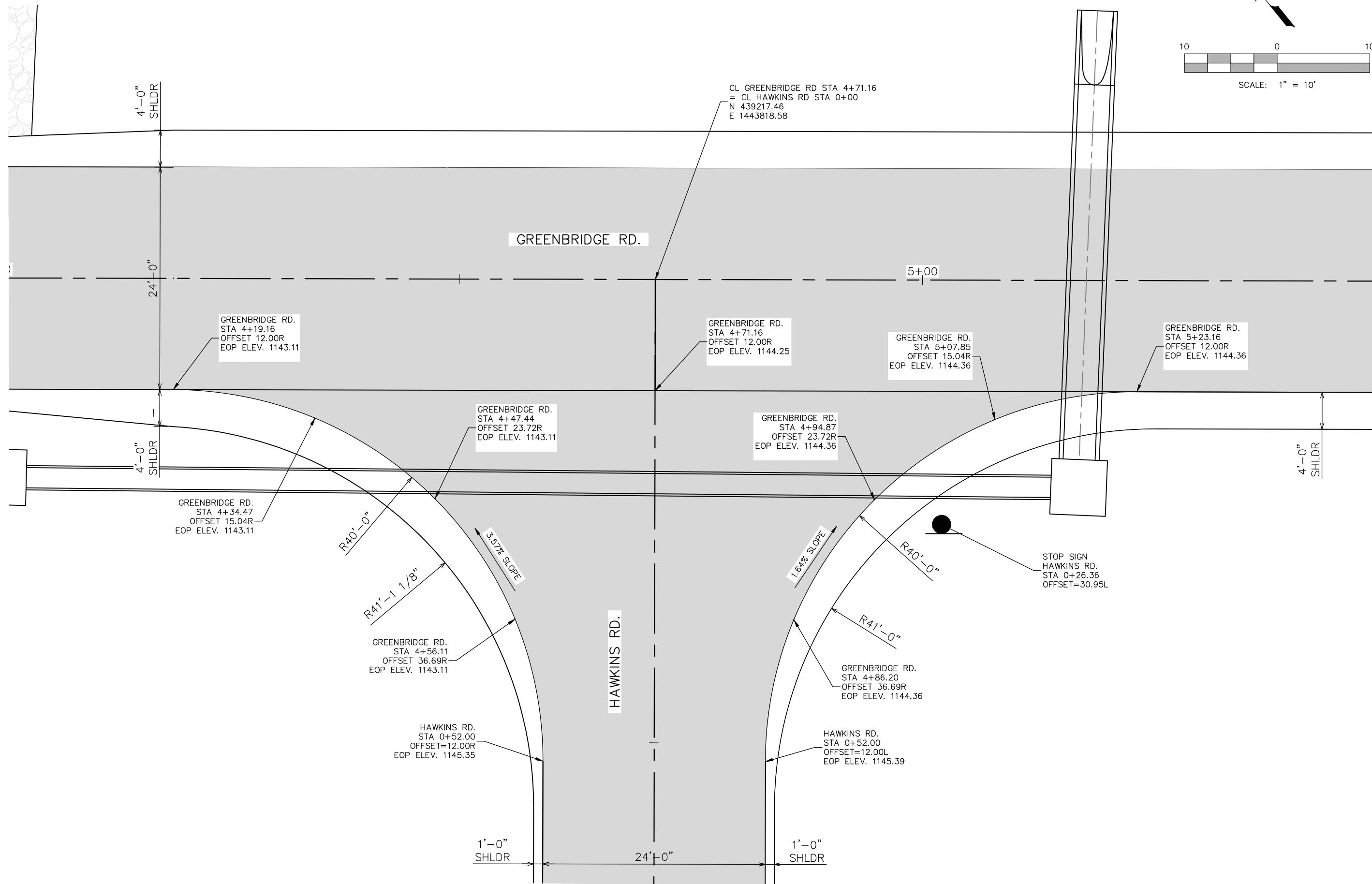
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Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: Engineering: 011476 Landscape Architecture: 200703873	



GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 ROADWAY PLAN & PROFILE
 (HAWKINS RD)

6/10/2024
 JOB 4049.01
 C10

Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design\B - DRAWINGS\4049.01_Civil.dwg PLOT DATE: 6/10/2024 2:49:11 PM LAST SAVE: 6/10/2024 1:43:20 PM



No.	Revision/Issue	Date

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JOHN AARON CAHILL - ENGINEER
MO# PE-2021028074

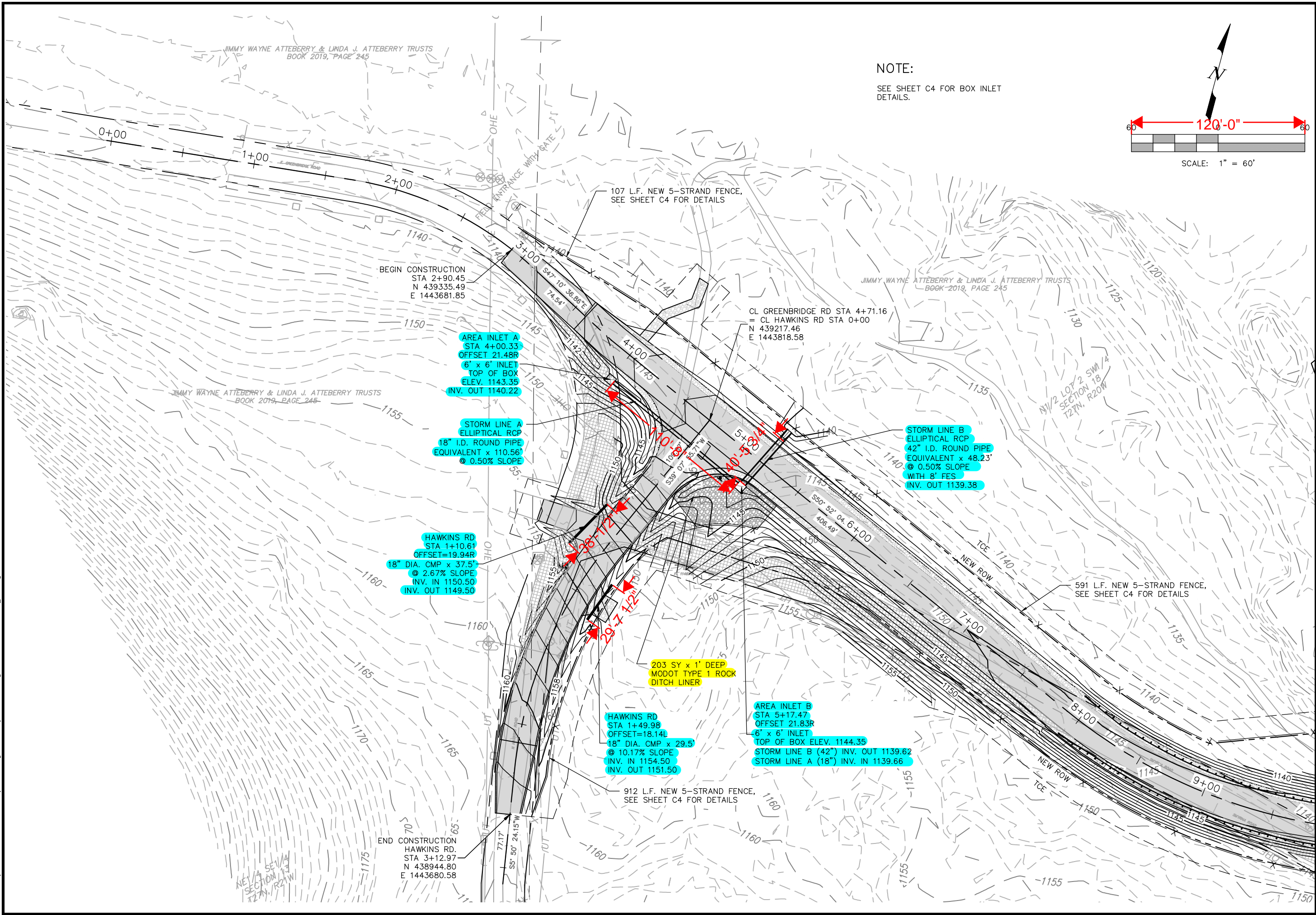


GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
INTER. PLAN (GREENBRIDGE
RD-HAWKINS RD)

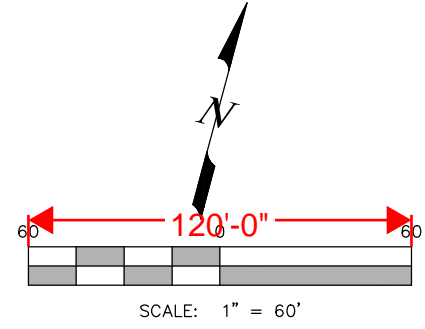
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JOB 4049.01

C11

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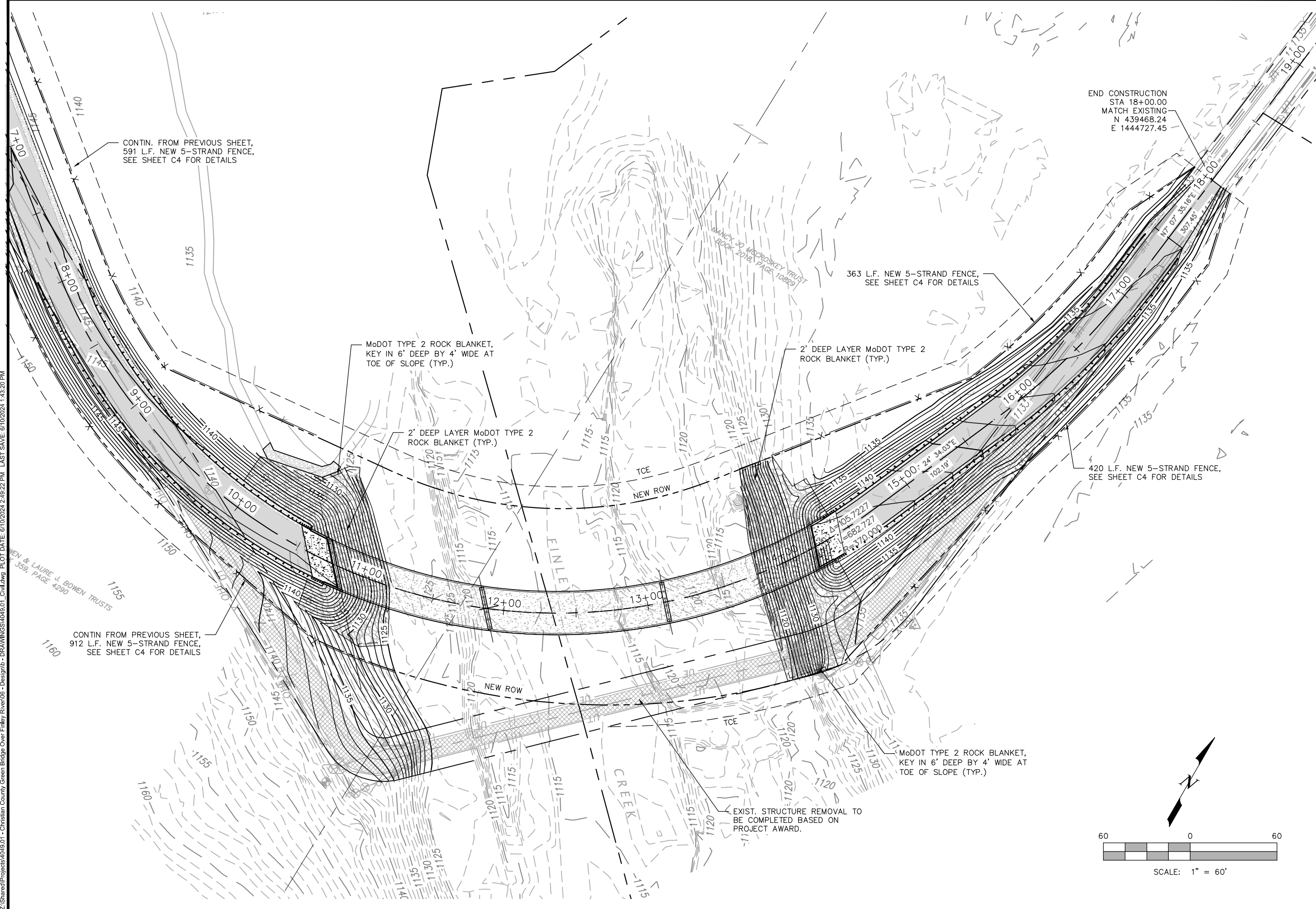


NOTE:
SEE SHEET C4 FOR BOX INLET
DETAILS.



Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: Professional Engineer: 06101476 Landscape Architecture: 200703873	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
GRADING PLAN	
6/11/2024	
JOB 4049.01	
C12	

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CONTIN. FROM PREVIOUS SHEET,
591 L.F. NEW 5-STRAND FENCE,
SEE SHEET C4 FOR DETAILS

MoDOT TYPE 2 ROCK BLANKET,
KEY IN 6' DEEP BY 4' WIDE AT
TOE OF SLOPE (TYP.)

2' DEEP LAYER MoDOT TYPE 2
ROCK BLANKET (TYP.)

363 L.F. NEW 5-STRAND FENCE,
SEE SHEET C4 FOR DETAILS

2' DEEP LAYER MoDOT TYPE 2
ROCK BLANKET (TYP.)

END CONSTRUCTION
STA 18+00.00
MATCH EXISTING
N 439468.24
E 1444727.45

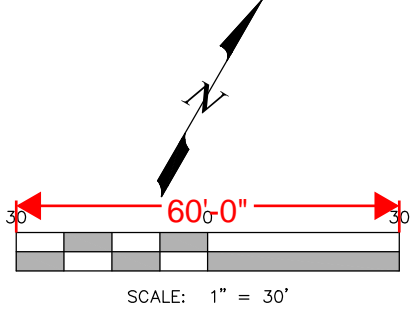
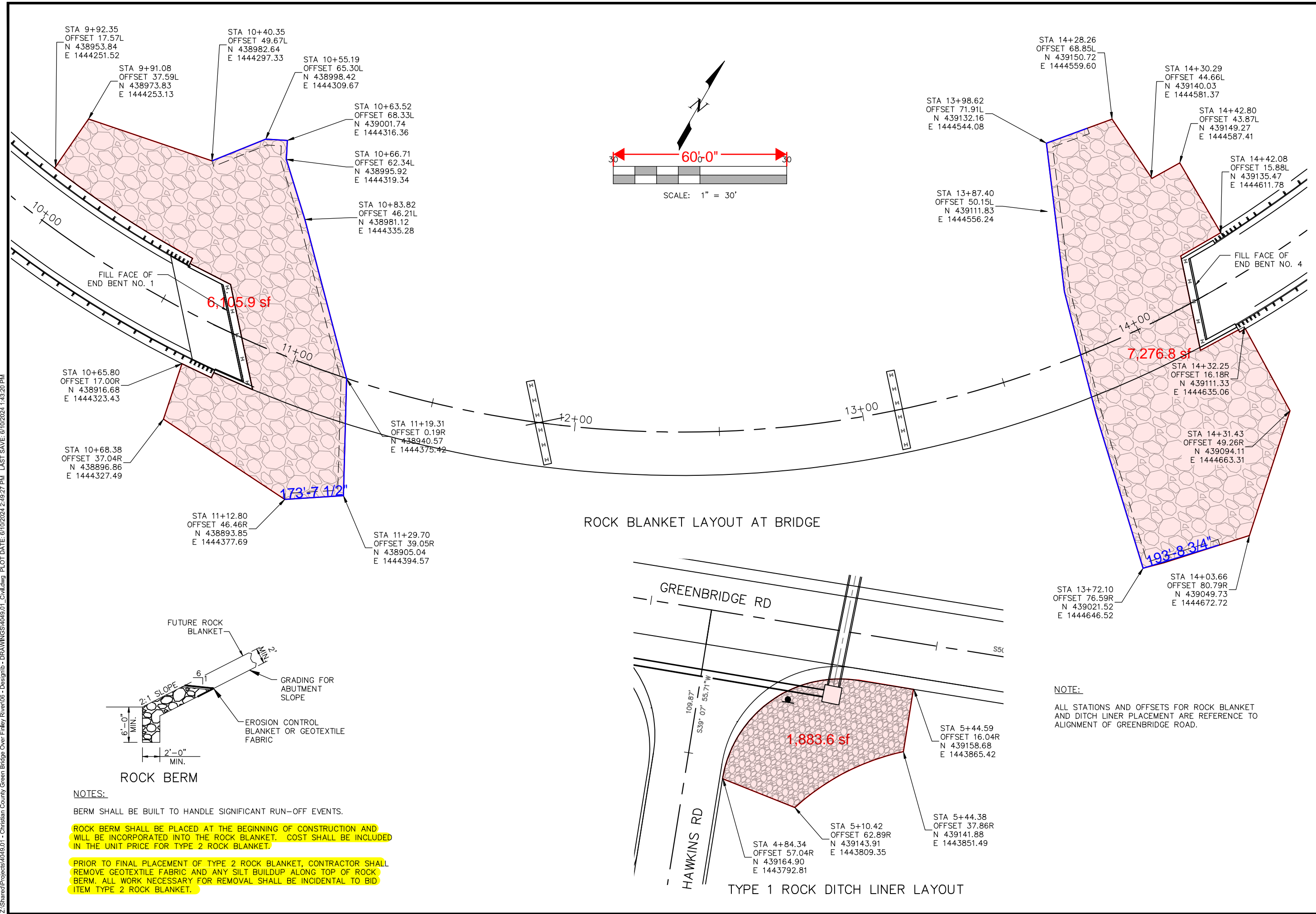
420 L.F. NEW 5-STRAND FENCE,
SEE SHEET C4 FOR DETAILS

MoDOT TYPE 2 ROCK BLANKET,
KEY IN 6' DEEP BY 4' WIDE AT
TOE OF SLOPE (TYP.)

EXIST. STRUCTURE REMOVAL TO
BE COMPLETED BASED ON
PROJECT AWARD.

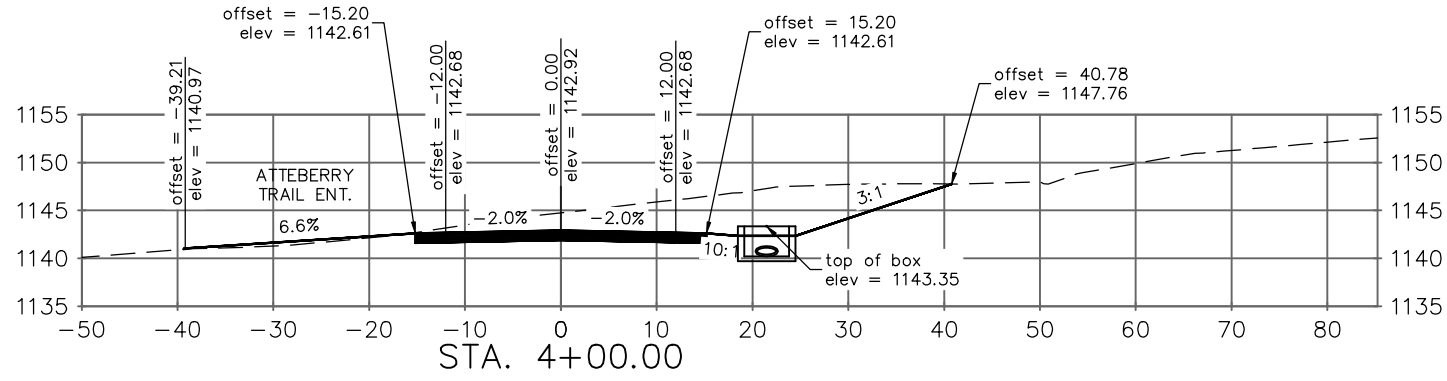
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: 011476, Engineering: Landscape Architecture: 2007018573	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
GRADING PLAN	
6/10/2024	
JOB 4049.01	
C13	

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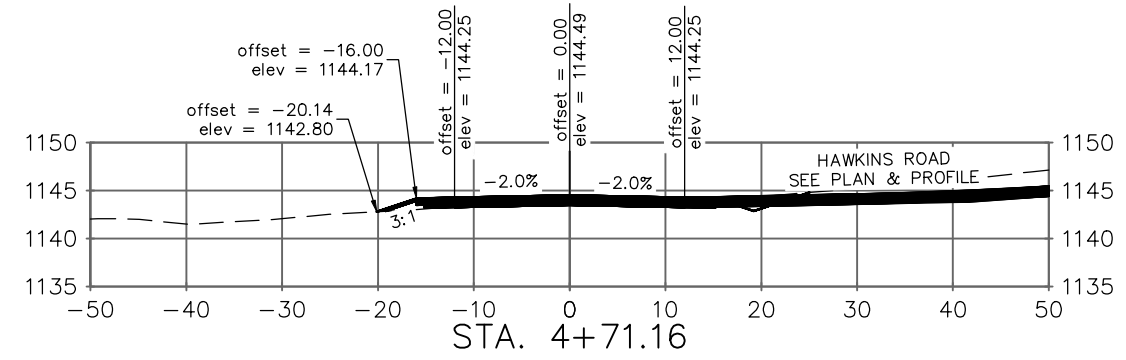
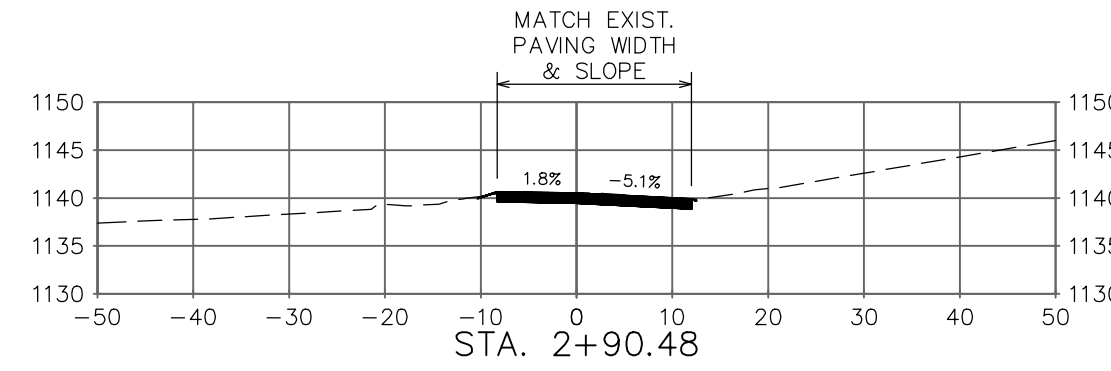
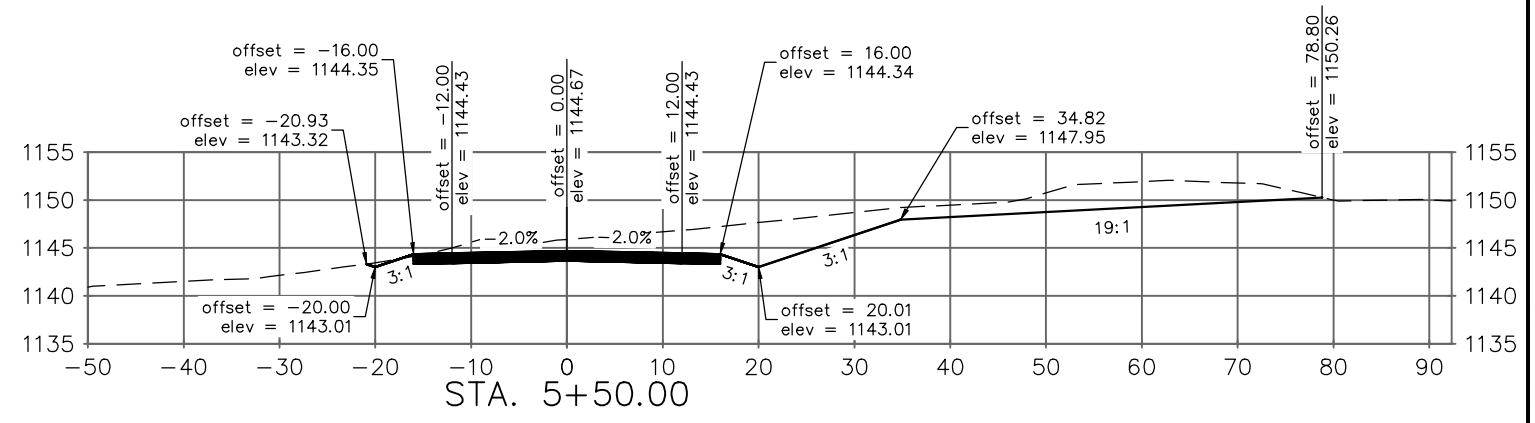
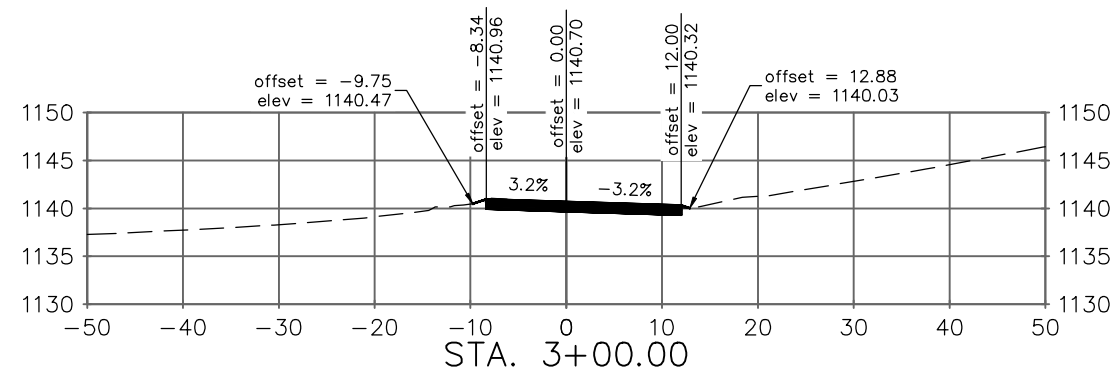
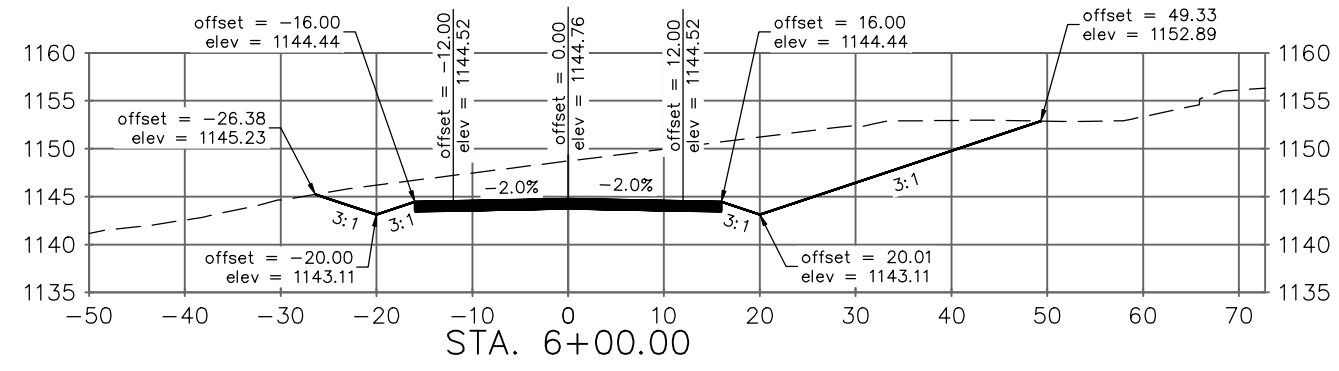
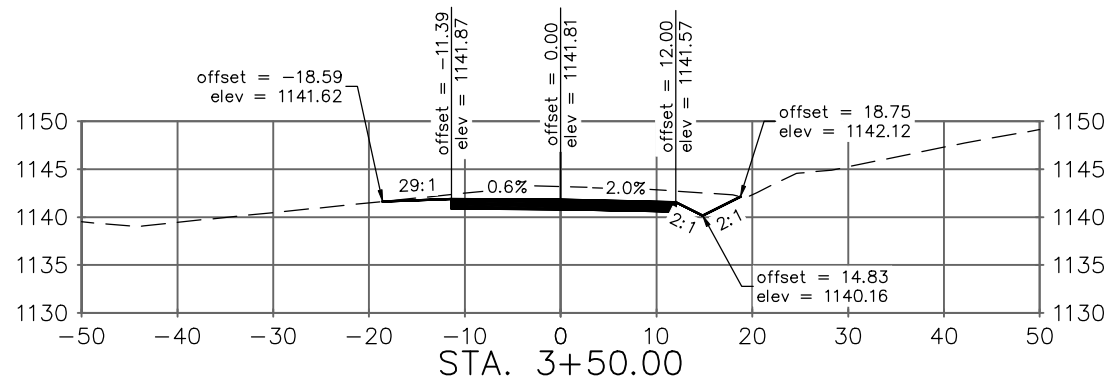
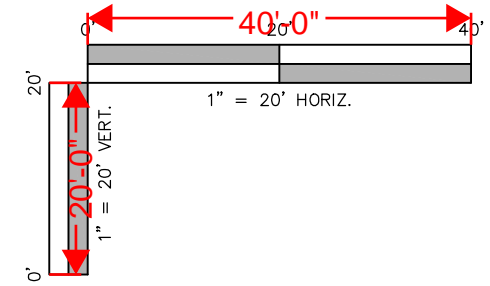
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No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: 011476, Engineering: 200703873, Landscape Architecture: 200703873	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
ROCK BLANKET LAYOUT	
6/10/2024	
JOB 4049.01	
C14	

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NOTE:

SHOULDER ALONG ROADWAY SHALL BE 12" FULL DEPTH AGGREGATE.
SEE TYPICAL ROADWAY SECTIONS SHEETS C3.

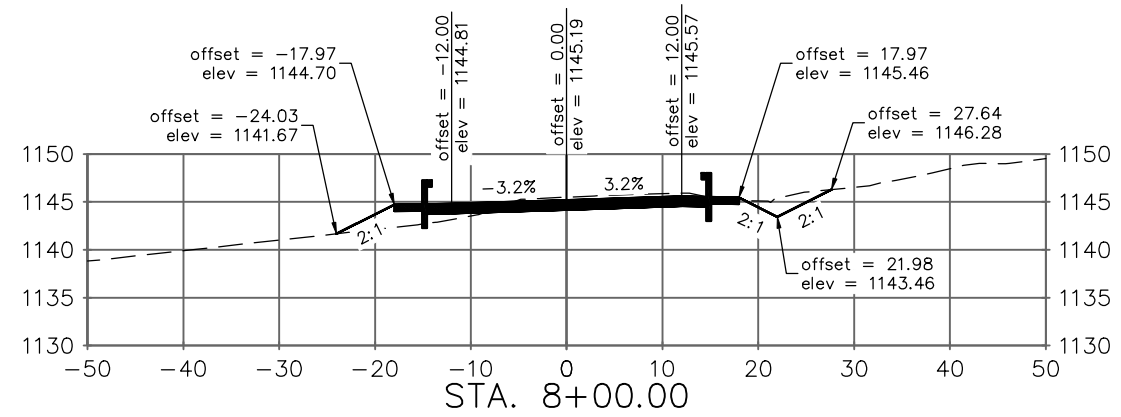
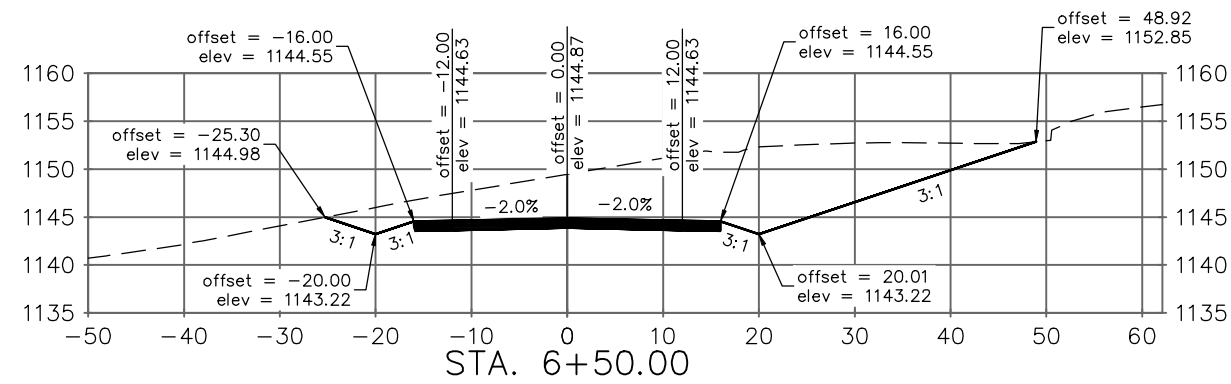
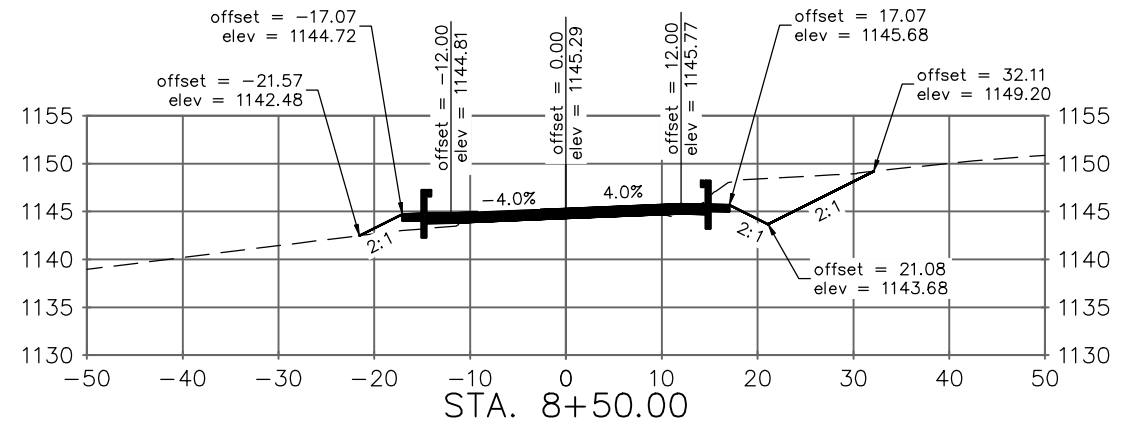
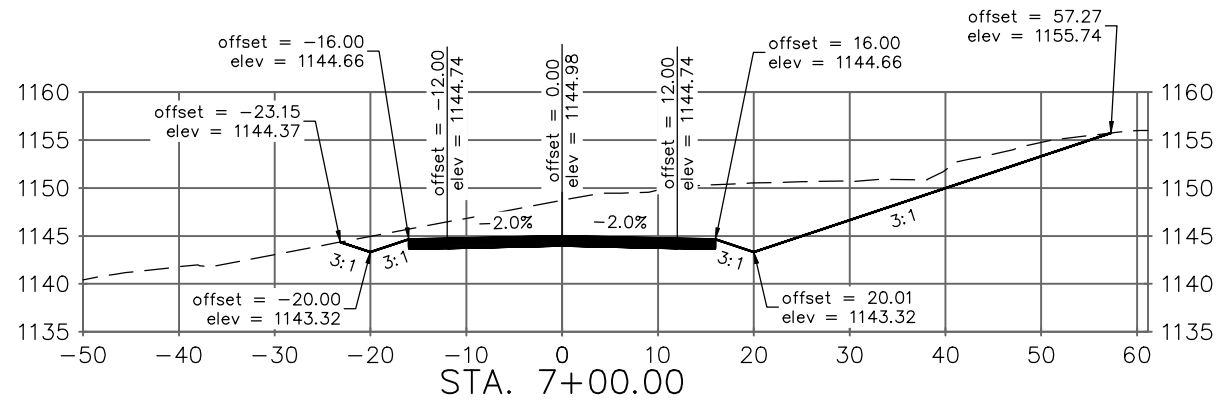
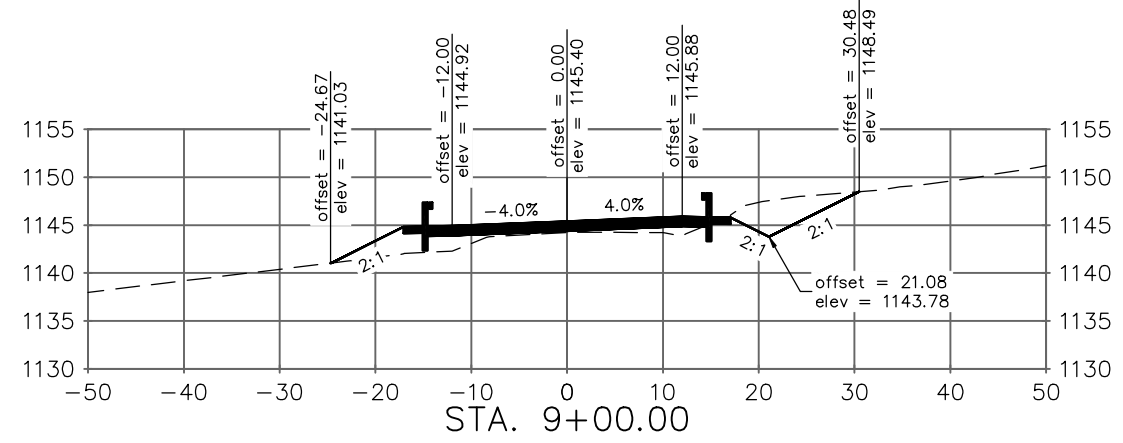
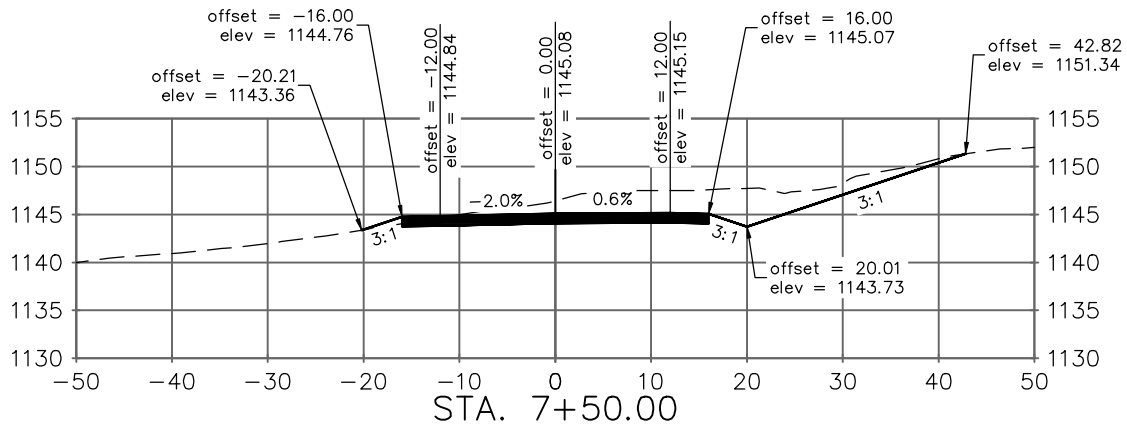


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JOHN AARON CAHILL - ENGINEER MISSOURI PROFESSIONAL ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: Engineering: 011476 Landscape Architecture: 200703673	

GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
CROSS SECTIONS (GREENBRIDGE RD)

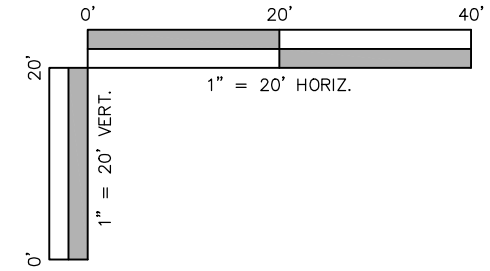
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NOTE:

SHOULDER ALONG ROADWAY SHALL BE 12" FULL DEPTH AGGREGATE.
SEE TYPICAL ROADWAY SECTIONS SHEETS C3.



No.	Revision/Issue	Date

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

JOHN AARON CAHILL - ENGINEER
MO# PE-2021028074

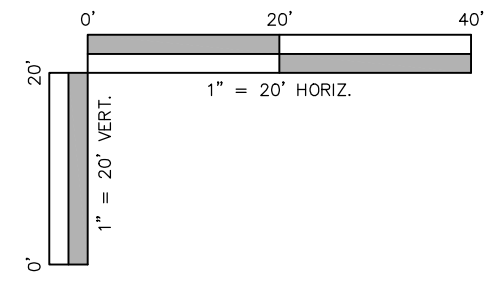
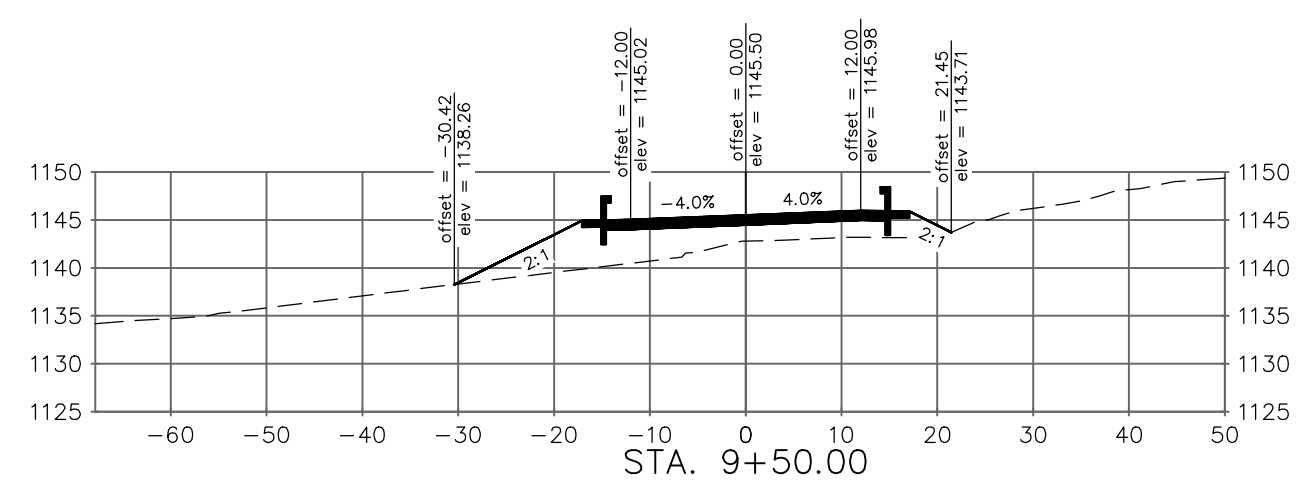
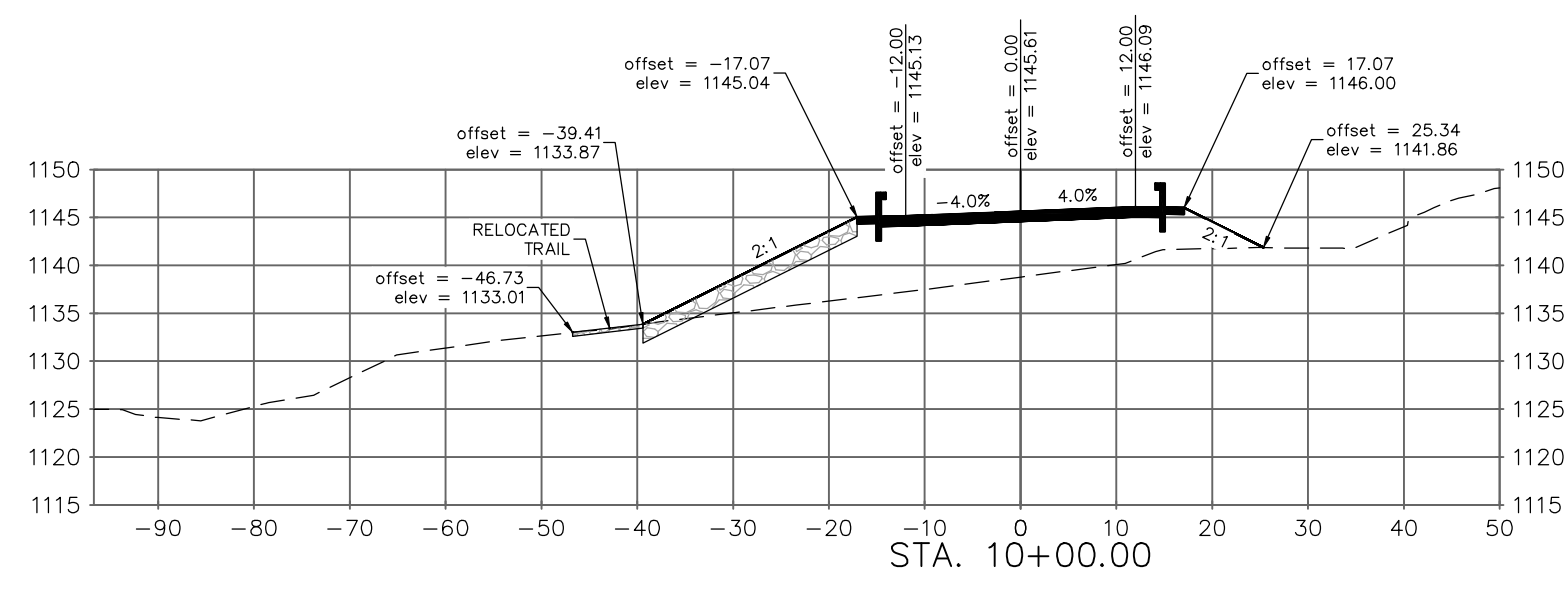
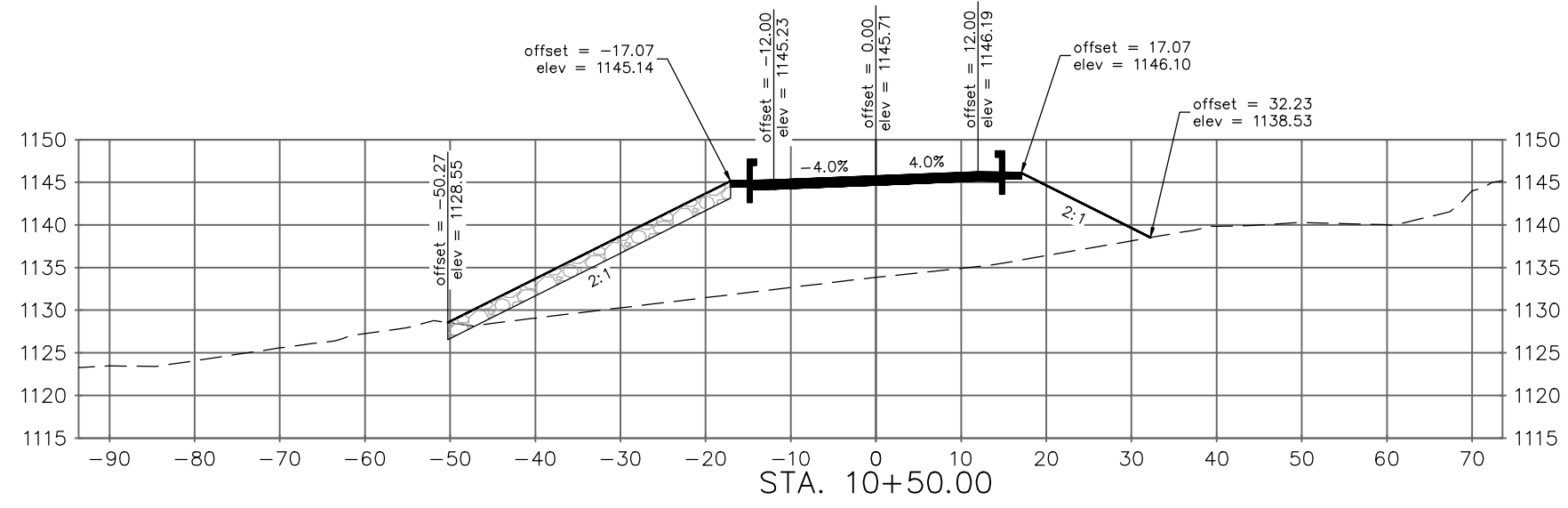
GRE GREAT RIVER ENGINEERING

Missouri State Certificate of Authority Numbers:
Engineering: 200701476
Landscape Architecture: 200701873

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
CROSS SECTIONS (GREENBRIDGE RD)

6/10/2024
JOB 4049.01

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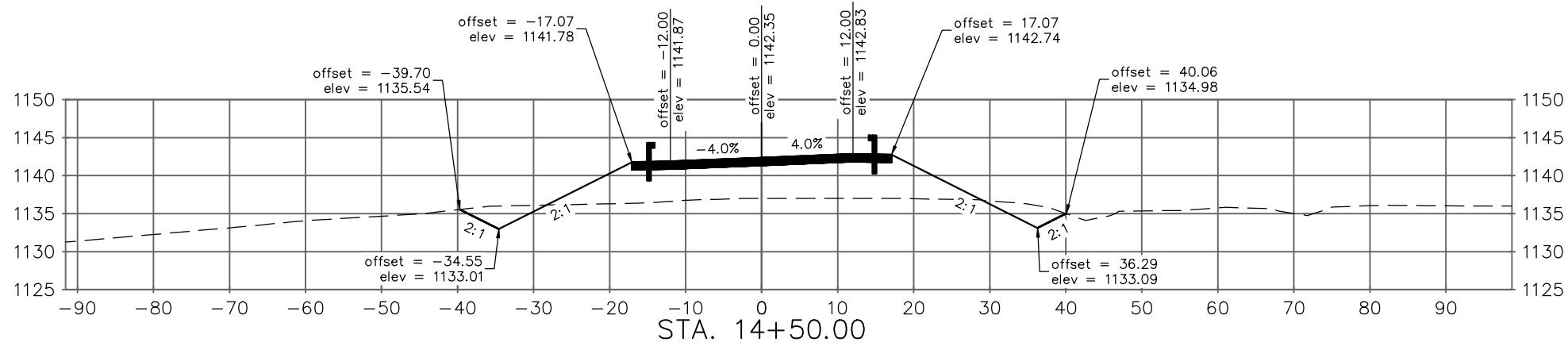
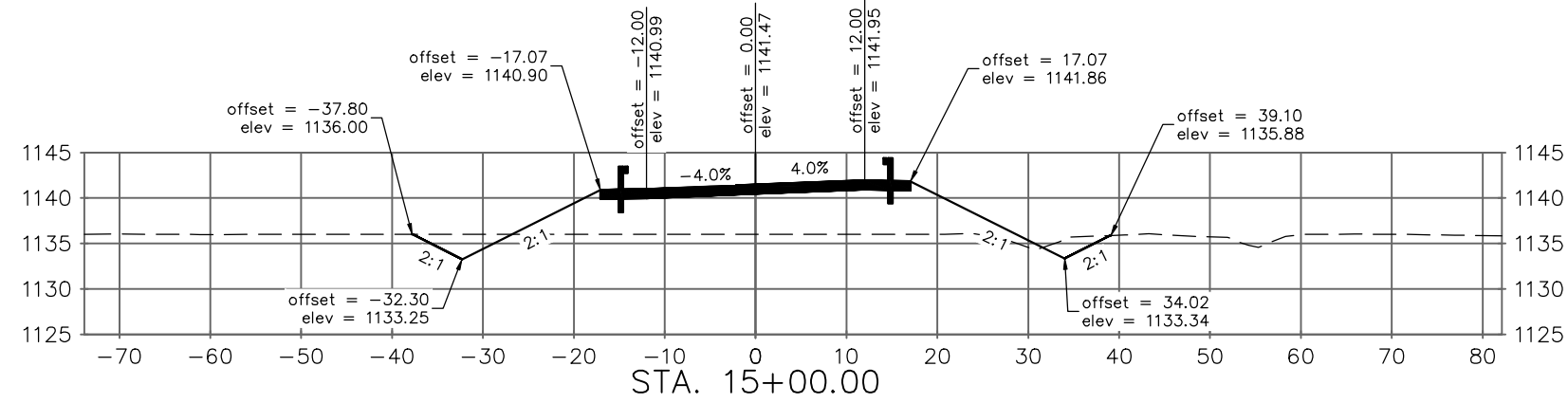


NOTE:

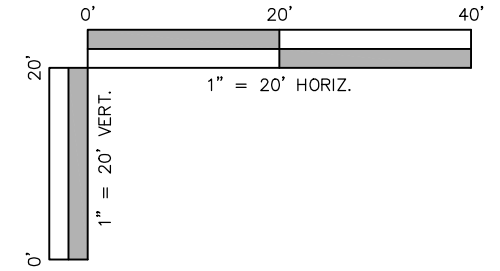
SHOULDER ALONG ROADWAY SHALL BE 12" FULL DEPTH AGGREGATE.
SEE TYPICAL ROADWAY SECTIONS SHEETS C.3.

Revision/Issue	Date
No.	
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
GRE GREAT RIVER ENGINEERING Missouri State Certificate of Authority Numbers: 011476, 011478, 011479, 011480 Engineering: 2007018673, Landscape Architecture: 2007018673	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI CROSS SECTIONS (GREENBRIDGE RD)	
6/10/2024	
JOB 4049.01	
C17	

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SECTIONS 10+76.50 THRU 14+23.50
NOT SHOWN DUE TO BRIDGE



NOTE:

SHOULDER ALONG ROADWAY SHALL BE 12" FULL DEPTH AGGREGATE.
SEE TYPICAL ROADWAY SECTIONS SHEETS C3.

Date	Revision/Issue

No.

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

STATE OF MISSOURI
JOHN AARON CAHILL - ENGINEER
PE-2021028074
06/10/2024

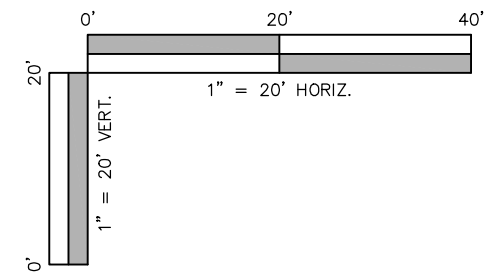
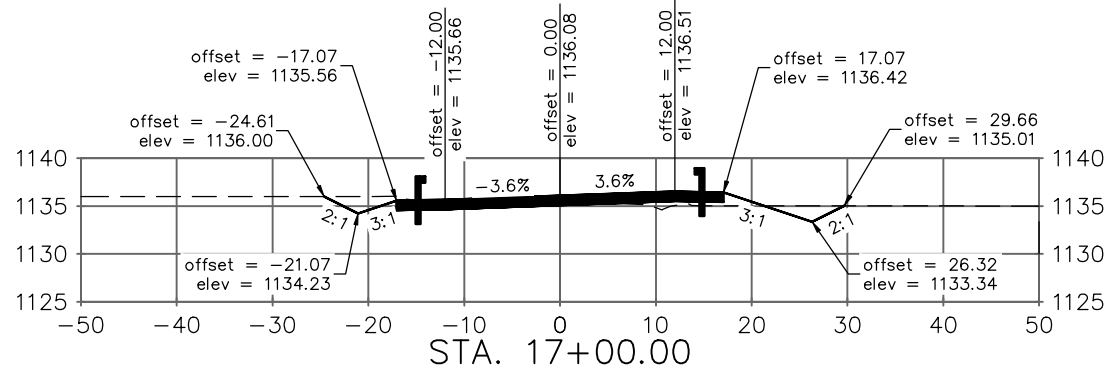
JOHN AARON CAHILL - ENGINEER
MO# PE-2021028074



GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
CROSS SECTIONS (GREENBRIDGE RD)

6/10/2024
JOB 4049.01

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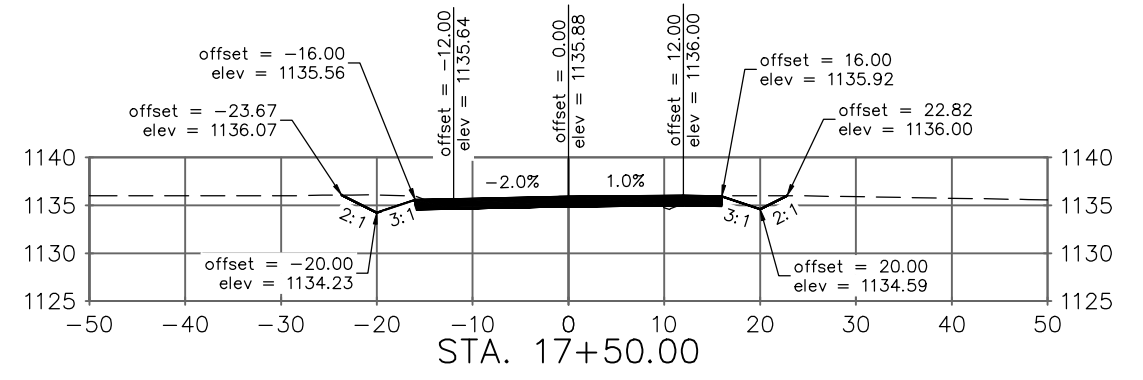
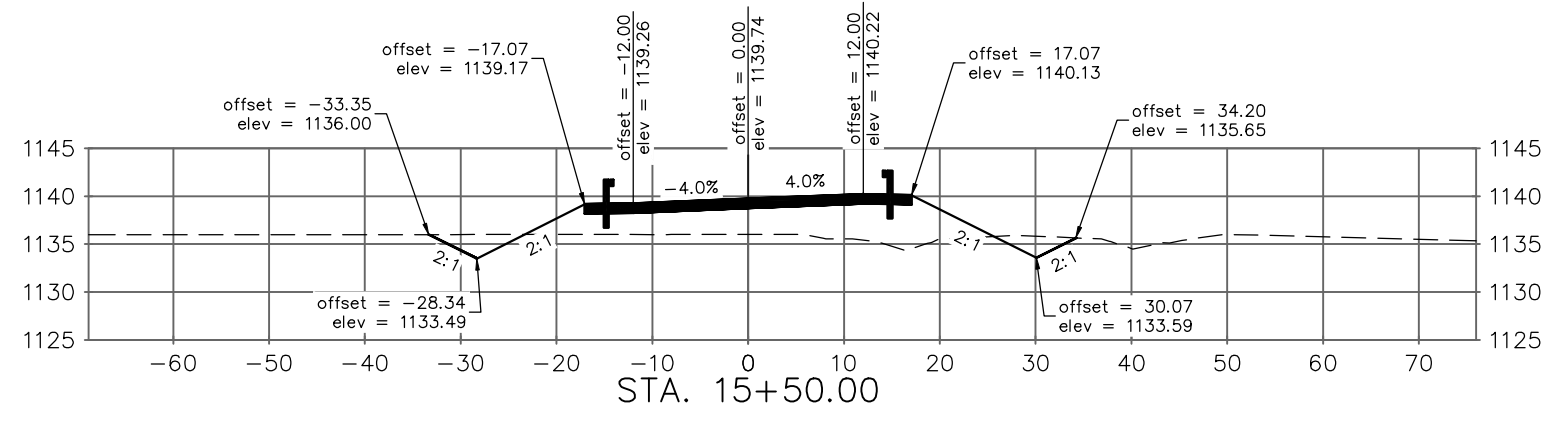
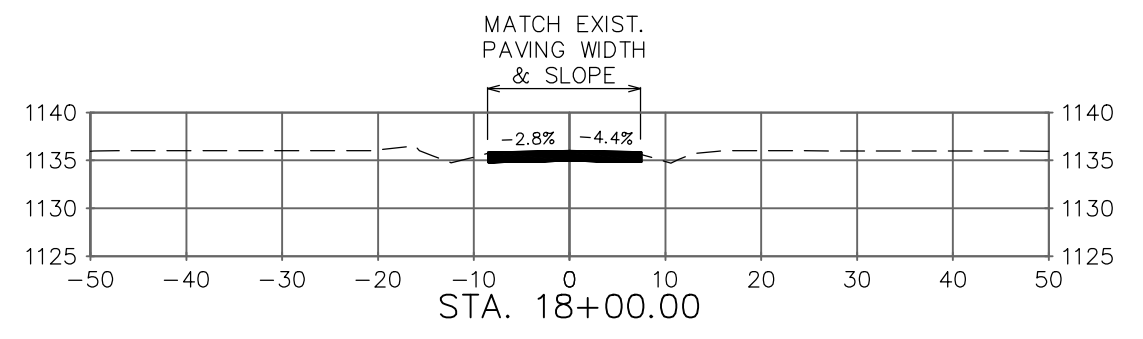
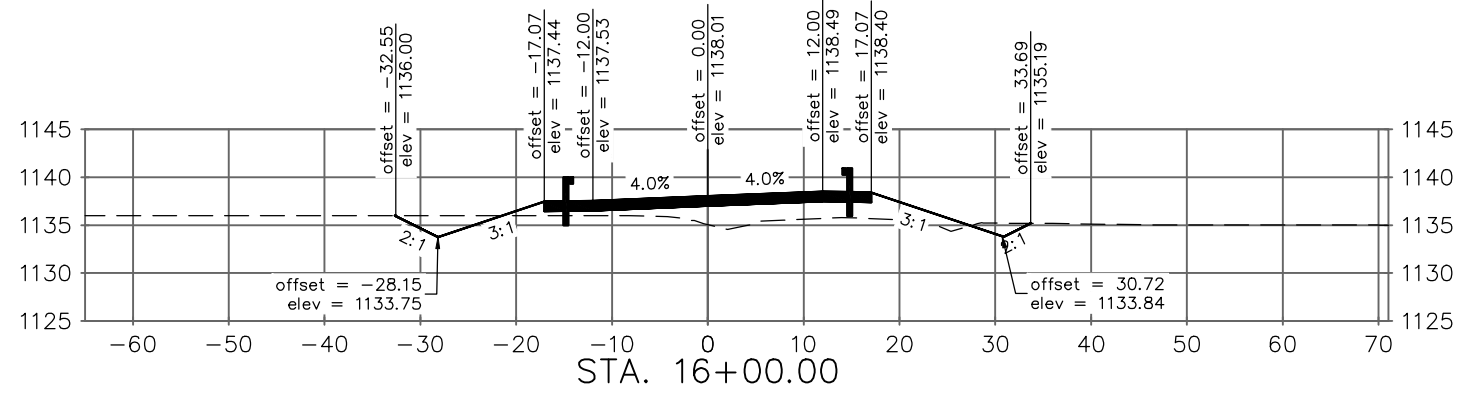
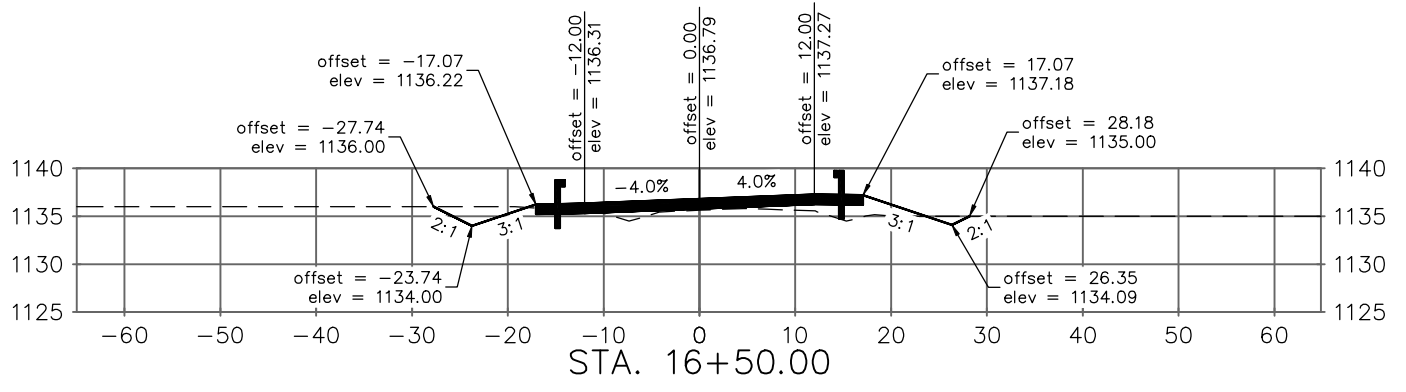
NOTE:

SHOULDER ALONG ROADWAY SHALL BE 12" FULL DEPTH AGGREGATE.

SEE TYPICAL ROADWAY SECTIONS SHEETS C.3.

EARTHWORK QUANTITIES

CUT = 4516 CY } NO ADJUSTMENT HAS
 FILL = 4467 CY } BEEN MADE FOR
 SHRINKAGE OR SWELL



Date	
Revision/Issue	
No.	◀◀◀◀◀◀◀◀◀
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: 200701476, 200701873 Landscape Architecture: 200701873	

GREEN BRIDGE OVER FINLEY RIVER

CHRISTIAN COUNTY, MISSOURI

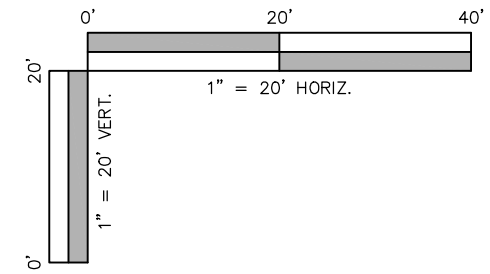
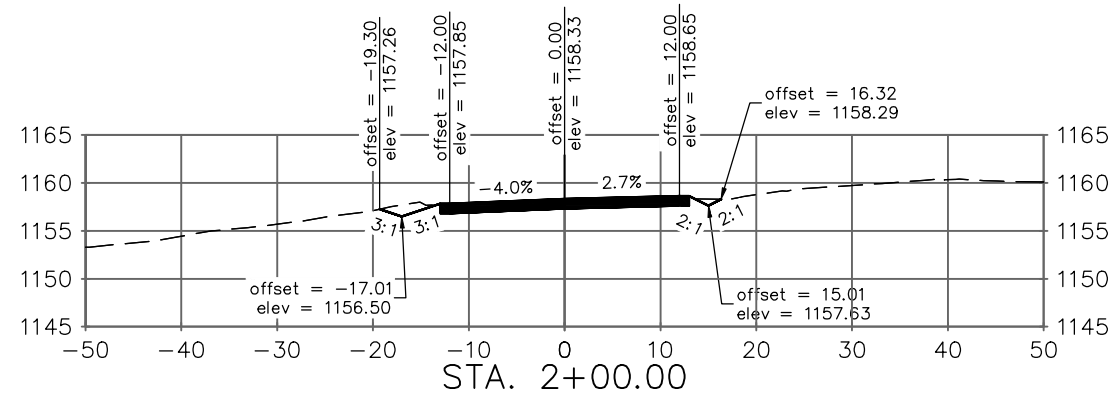
CROSS SECTIONS (GREENBRIDGE RD)

6/10/2024

JOB 4049.01

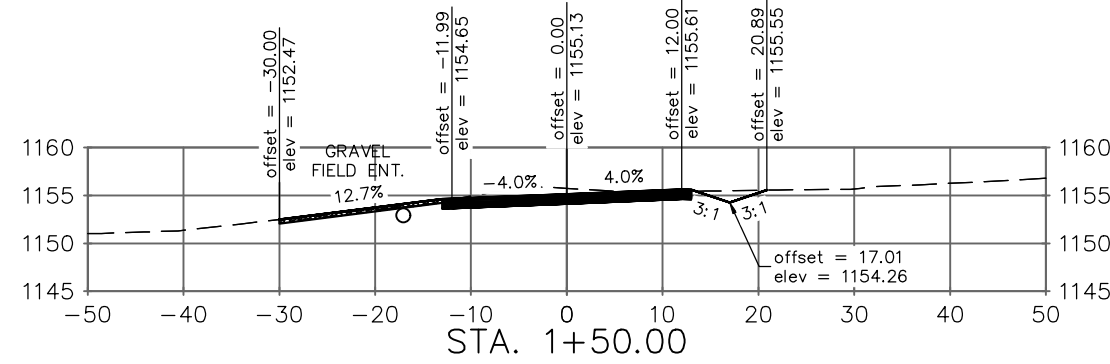
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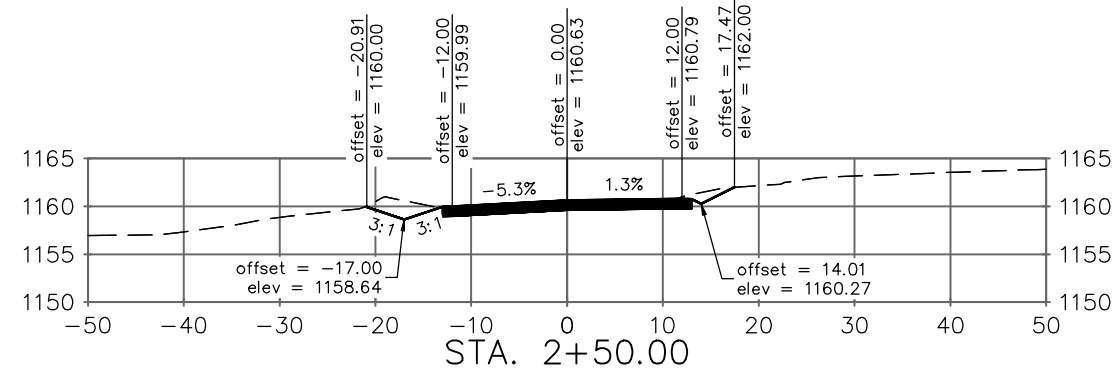
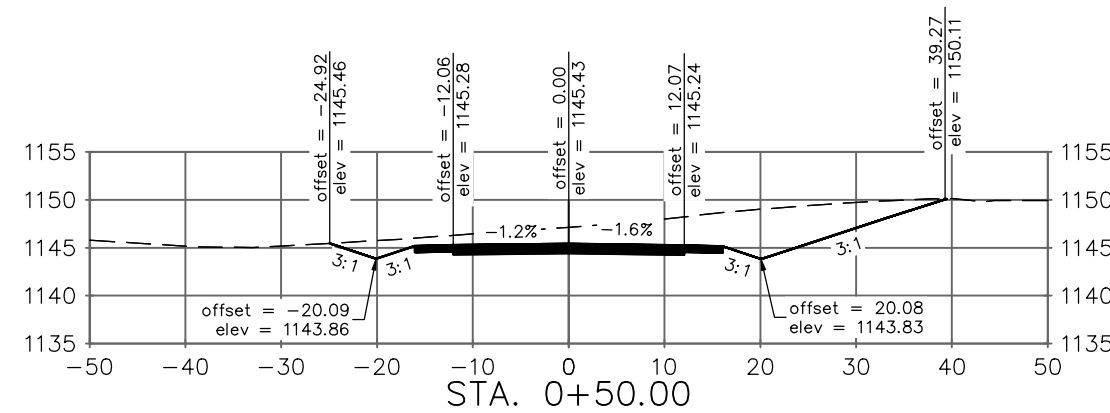
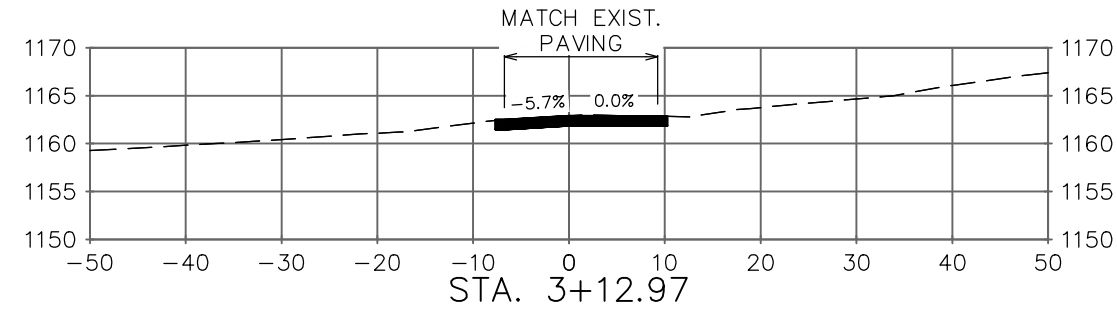
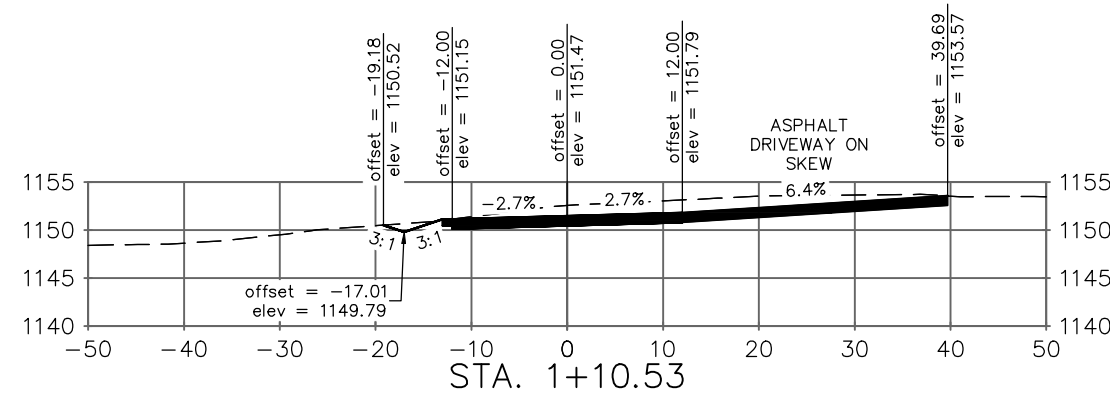
EARTHWORK QUANTITIES

CUT = 370 CY } NO ADJUSTMENT HAS
 FILL = 26 CY } BEEN MADE FOR
 SHRINKAGE OR SWELL



NOTE:

SHOULDER ALONG ROADWAY SHALL
 BE 12" FULL DEPTH AGGREGATE.
 SEE TYPICAL ROADWAY SECTIONS
 SHEETS C3.



Date	
Revision/Issue	
No.	1

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



JOHN AARON CAHILL - ENGINEER
MO# PE-2021028074

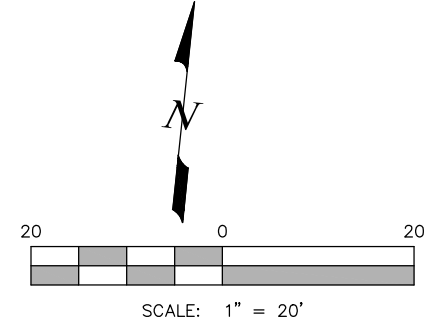
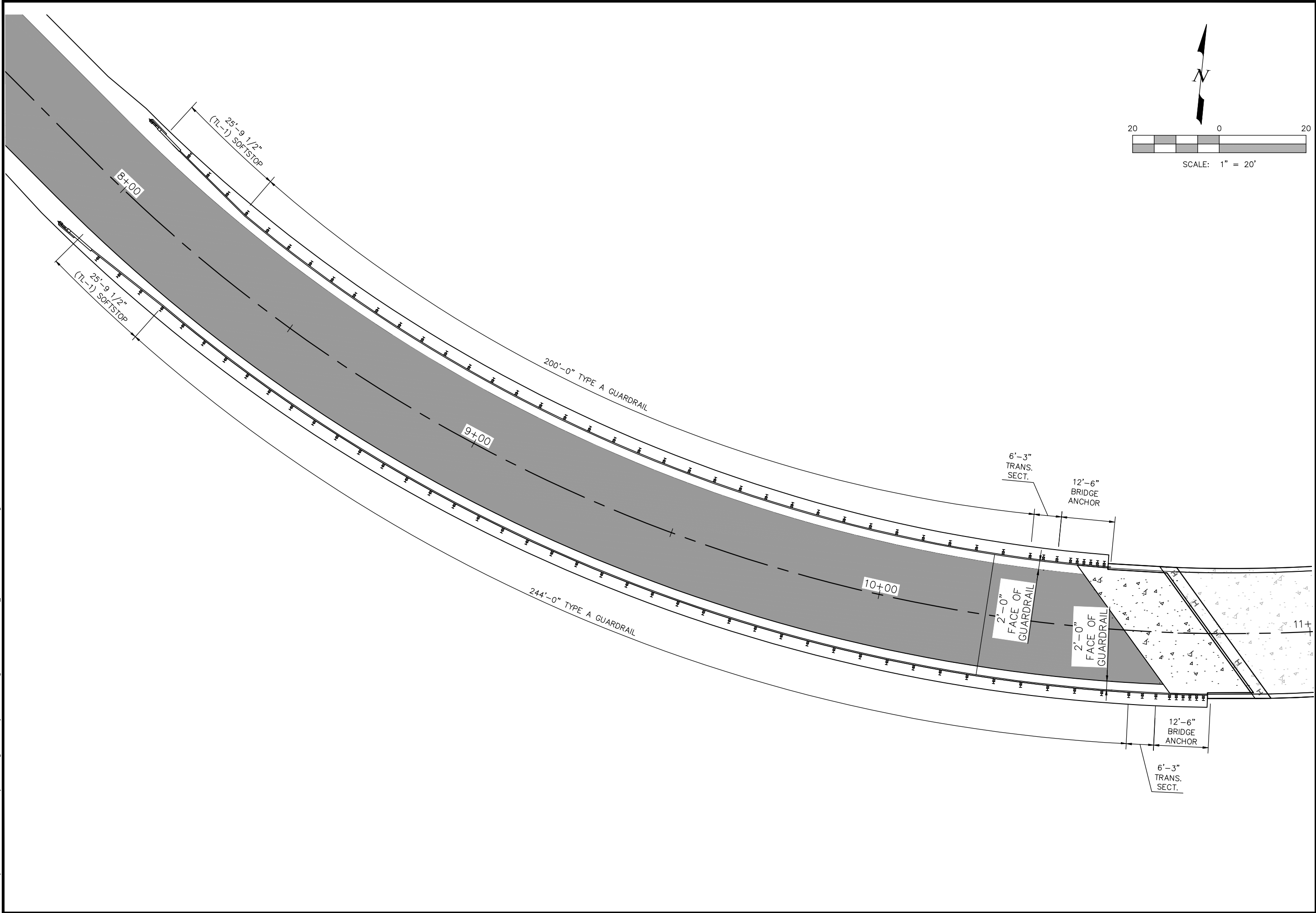


GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 CROSS SECTIONS (HAWKINS RD)

6/10/2024
JOB 4049.01

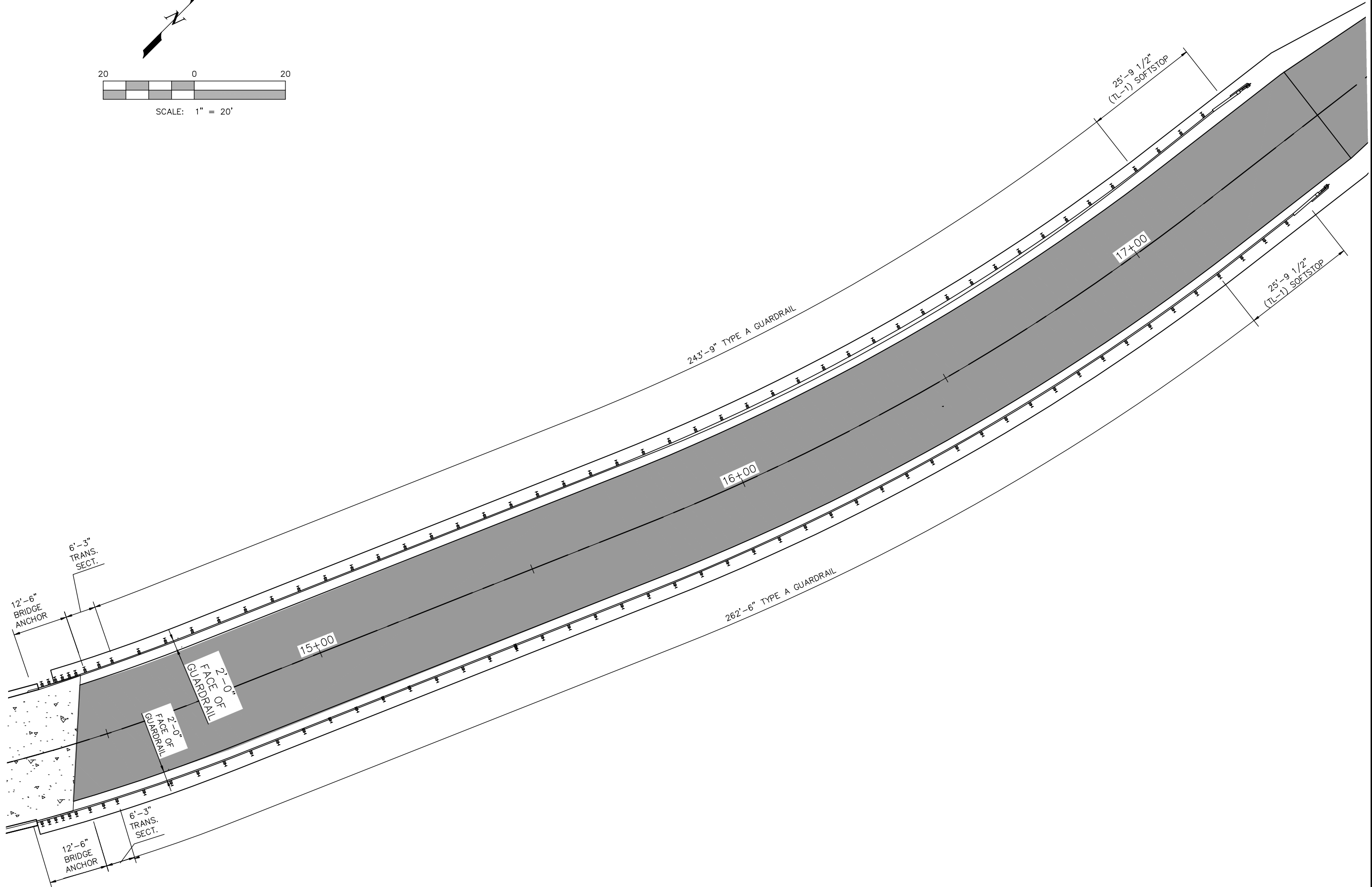
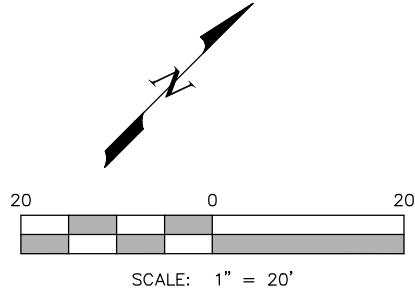
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No. IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	Revision/Issue Date			MISSOURI STATE CERTIFICATE OF AUTHORITY NUMBERS: Engineering: 1011476, Landscape Architecture: 200703873	GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI GUARDRAIL LAYOUT
Date: 6/10/2024		JOB: 4049.01		C21	

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Revision/Issue	Date

No.

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



JOHN AARON CAHILL - ENGINEER
MO# PE-2021028074

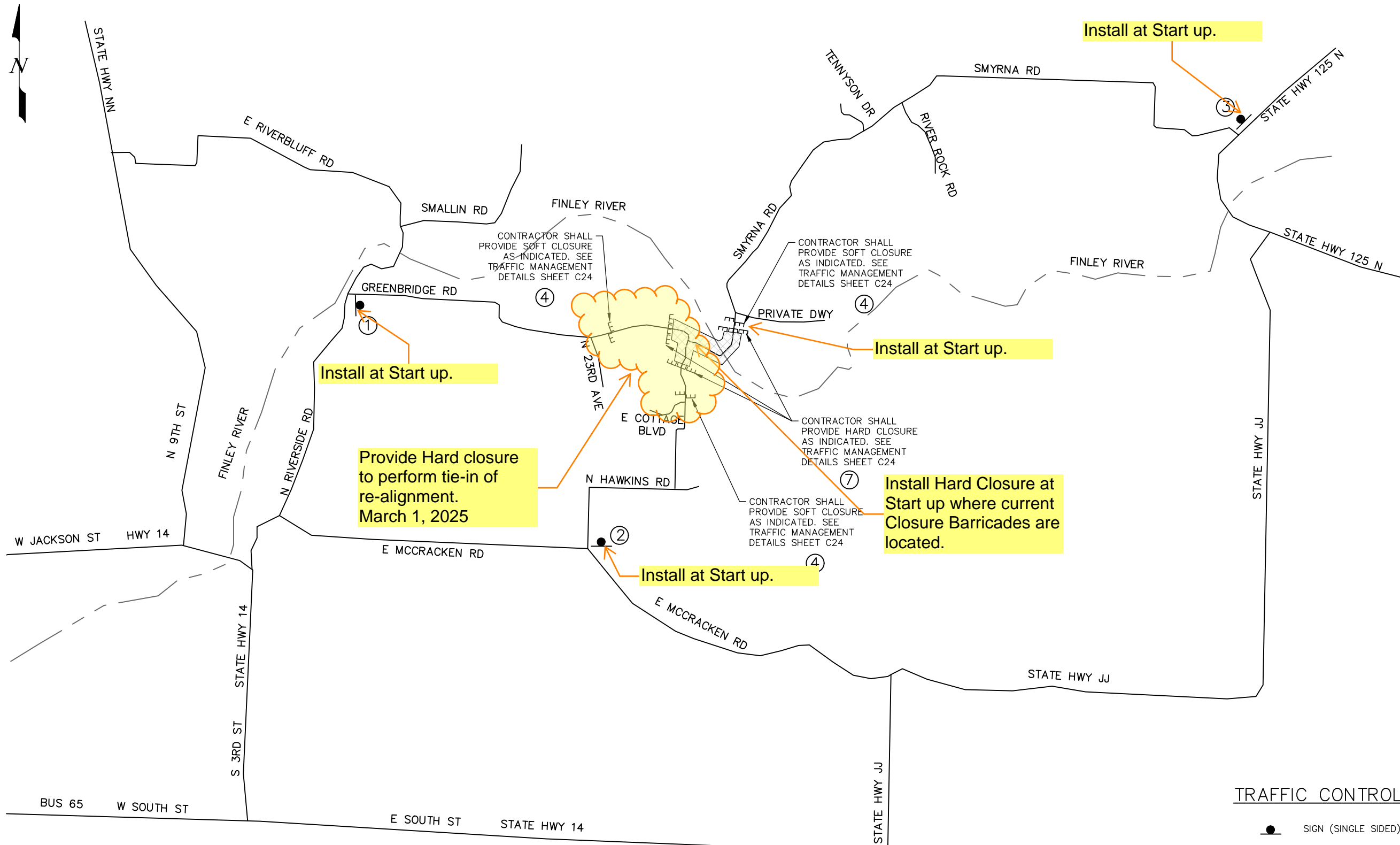


GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
GUARDRAIL LAYOUT

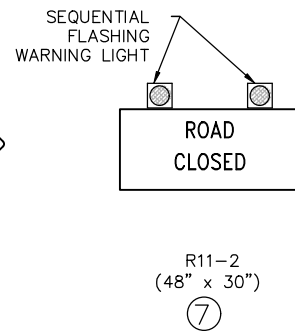
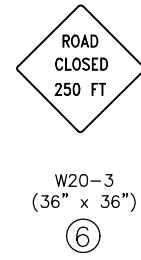
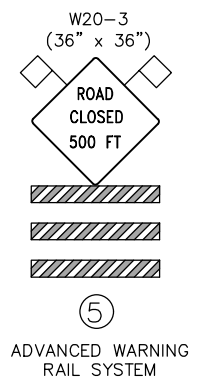
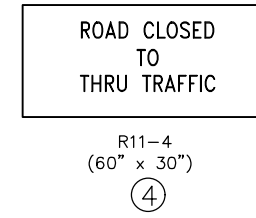
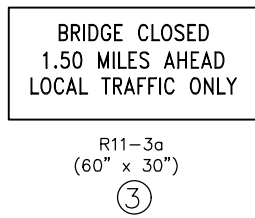
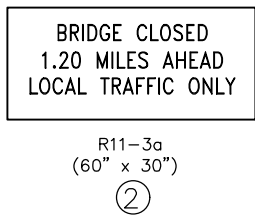
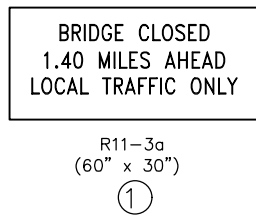
6/10/2024
JOB 4049.01

C22

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TRAFFIC MANAGEMENT PLAN



TRAFFIC CONTROL LEGEND

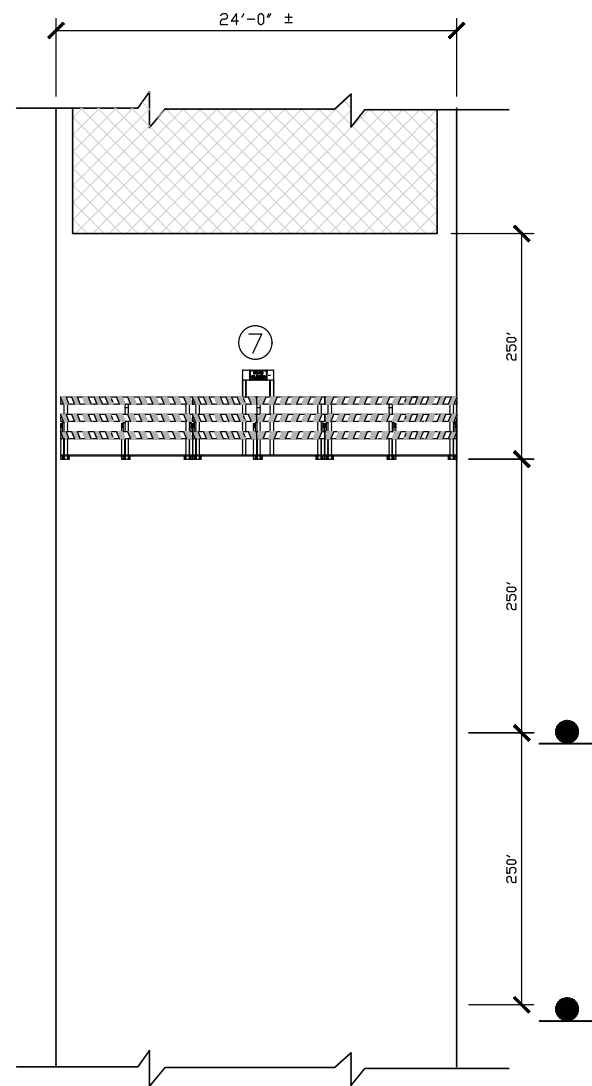
- SIGN (SINGLE SIDED)
- TYPE 3 BARRICADE
- WORK AREA

NOTE:
ALL SIGNS SHOULD BE PLACED APPROX. 500' APART, OR AS DIRECTED BY THE COUNTY. USE IN PLACE ALL SIGNS WHICH DO NOT CONFLICT WITH THIS PLAN. COVER AND/OR REMOVE CONFLICTING SIGNS.

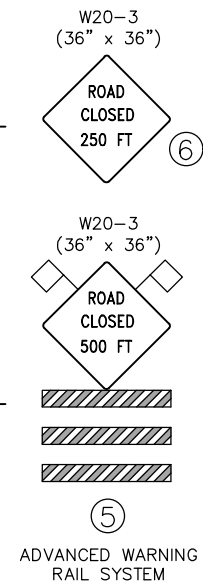
SEE MISSOURI STANDARD PLANS DRAWING 616.10
"TEMPORARY TRAFFIC CONTROL DEVICES" FOR DETAILS NOT SHOWN.

Date	
Revision/Issue	
No.	1 2 3 4 5 6 7 8 9 10
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: Engineering: 011476 Landscape Architecture: 200703873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI TRAFFIC MANAGEMENT PLAN	
6/10/2024	
JOB 4049.01	
C23	

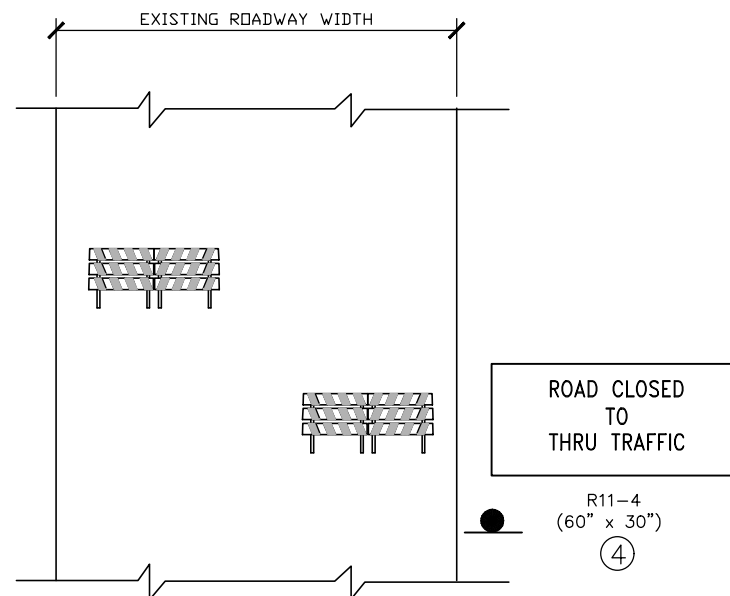
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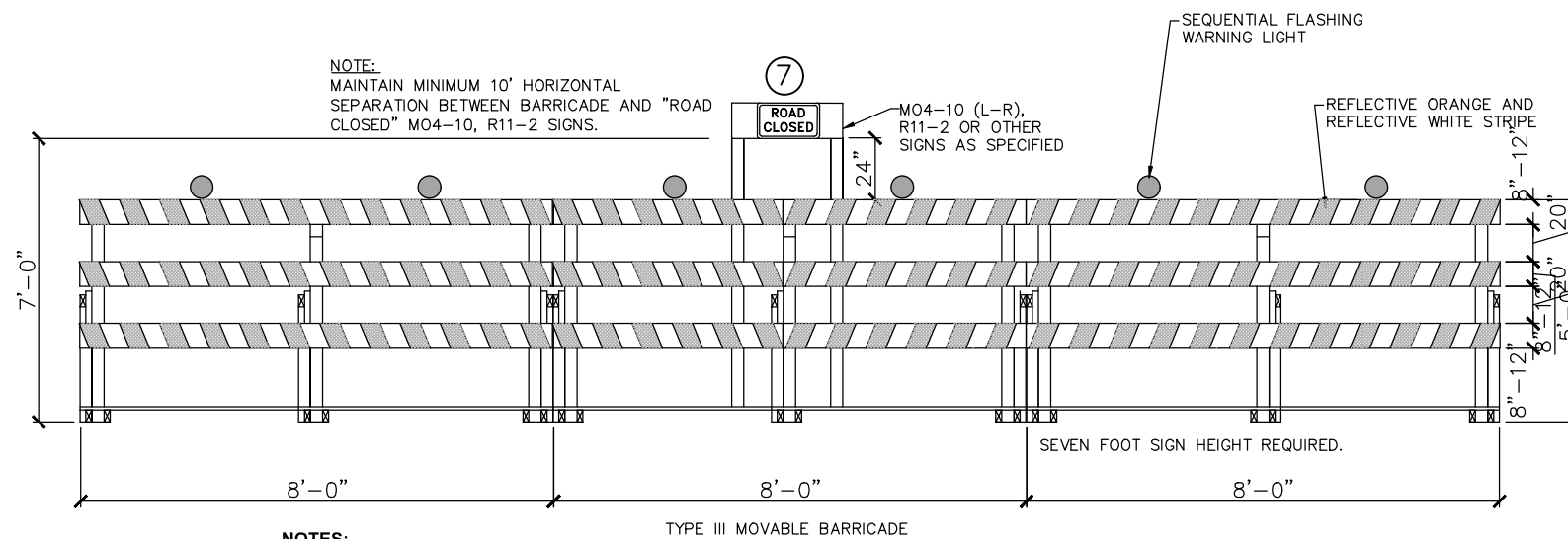
TYPICAL HARD CLOSURE



ADVANCED WARNING RAIL SYSTEM



TYPICAL SOFT CLOSURE



TYPE III MOVABLE BARRICADE

NOTES:

- 1. ALL SIGNS TO MEET MoDOT STANDARD SPECIFICATIONS FOR REFLECTIVITY AND OTHER DETAILS. ALL SIGNAGE TO MEET MUTCD REQUIREMENTS. SHOULD CONFLICTS EXIST BETWEEN MoDOT AND MUTCD FOLLOW MUTCD.
- 2. ALL REFLECTORIZED SURFACES SHALL BE TYPE 1 SHEETING UNLESS OTHERWISE INDICATED. NO DIRECT PAYMENT WILL BE MADE FOR RELOCATION OF BARRICADES. NO PAYMENT WILL BE MADE FOR RELOCATING SIGNS ON MOVABLE BARRICADES WHICH ARE TO BE RELOCATED UNLESS THE SIGN LEGEND IS TO BE CHANGED. STRIPES SHALL SLOPE DOWNWARD TOWARD THE SIDE WHICH TRAFFIC IS TO PASS.
- 3. ALL SEQUENTIAL FLASHING WARNING LIGHTS SHALL COMPLY WITH MoDOT STANDARD SPECIFICATION SECTION 1063.6.

TYPE 3 BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHTS

TRAFFIC CONTROL NOTES:

- 1. ALL CONSTRUCTION SIGNS AND BARRICADES MUST BE UTILIZED AND MAINTAINED IN COMPLIANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2023 EDITION, OR LATEST REVISION THEREOF.
- 2. ALL EXISTING SIGNS SHALL BE MAINTAINED AND RELOCATED WHEN NECESSARY. SIGNING SHALL BE INSTALLED PRIOR TO OPENING ANY SECTION OF THE ROADWAY FOR TRAFFIC.
- 3. SIGNAGE SHOWN SHALL REMAIN IN PLACE FOR THE PROJECT DURATION AND BE MODIFIED AS NECESSARY AND AS DIRECTED BY THE COUNTY.
- 4. ANY ALTERNATE TRAFFIC CONTROL PLAN MUST BE APPROVED IN WRITING BY THE COUNTY PRIOR TO IMPLEMENTATION.
- 5. SIGN ⑦ MOUNTED ON TYPE 3 BARRICADES SHALL BE LIGHTWEIGHT.
- 6. ACCESS TO LOCAL PROPERTIES WITHIN THE WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AND COORDINATED WITH PROPERTY OWNER.

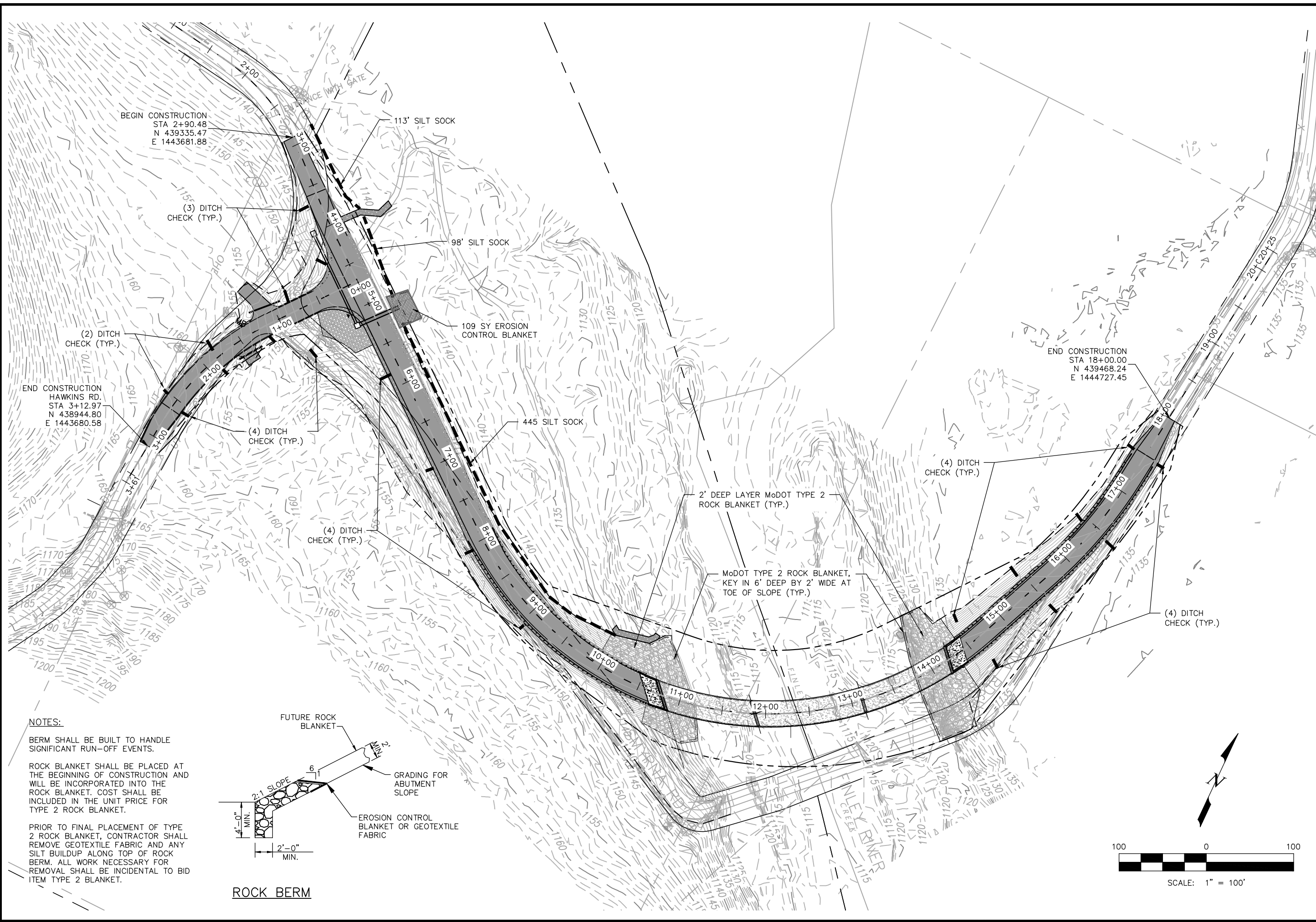
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Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	

Missouri State Certificate of Authority Numbers: 011476
Engineering: Landscape Architecture: 2007018573

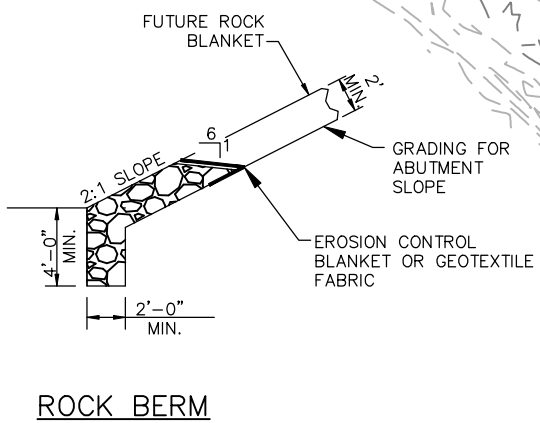
GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
TRAFFIC MANAGEMENT DETAILS

6/10/2024
JOB 4049.01
C24

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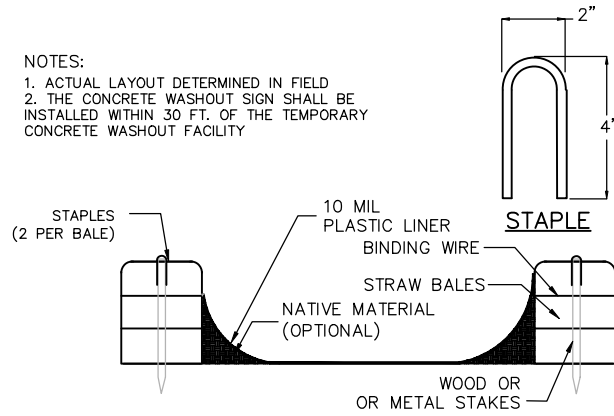
NOTES:
BERM SHALL BE BUILT TO HANDLE SIGNIFICANT RUN-OFF EVENTS.
ROCK BLANKET SHALL BE PLACED AT THE BEGINNING OF CONSTRUCTION AND WILL BE INCORPORATED INTO THE ROCK BLANKET. COST SHALL BE INCLUDED IN THE UNIT PRICE FOR TYPE 2 ROCK BLANKET.
PRIOR TO FINAL PLACEMENT OF TYPE 2 ROCK BLANKET, CONTRACTOR SHALL REMOVE GEOTEXTILE FABRIC AND ANY SILT BUILDUP ALONG TOP OF ROCK BERM. ALL WORK NECESSARY FOR REMOVAL SHALL BE INCIDENTAL TO BID ITEM TYPE 2 BLANKET.



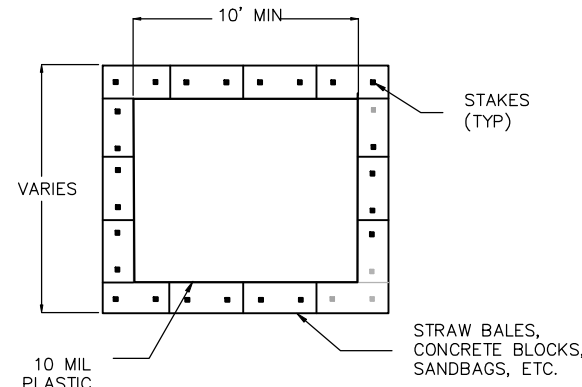
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Revision/Issue	
No.	▲▲▲▲▲▲▲▲
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
JOHN AARON CAHILL - ENGINEER MO# PE-2021028074	
Missouri State Certificate of Authority Numbers: Engineering: 0101476 Landscape Architecture: 200703873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI EROSION CONTROL PLAN	
6/10/2024 JOB 4049.01	
C25	

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NOTES:
 1. ACTUAL LAYOUT DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY

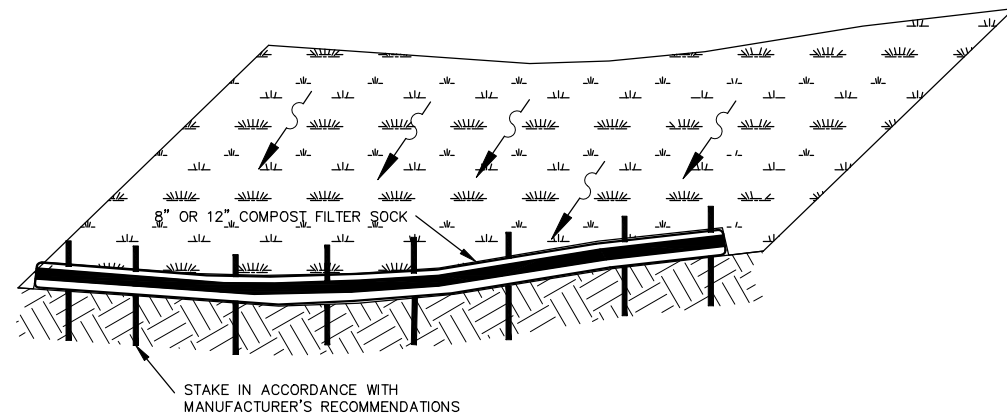


SECTION



PLAN

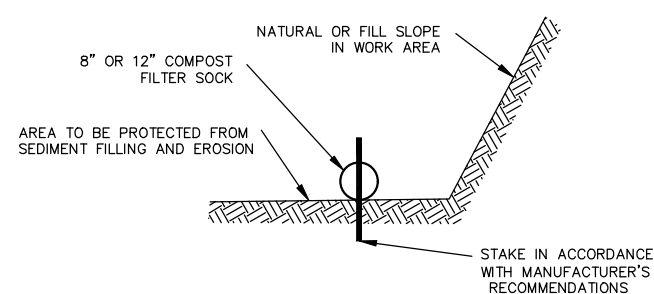
CONCRETE WASHOUT-ABOVE GRADE



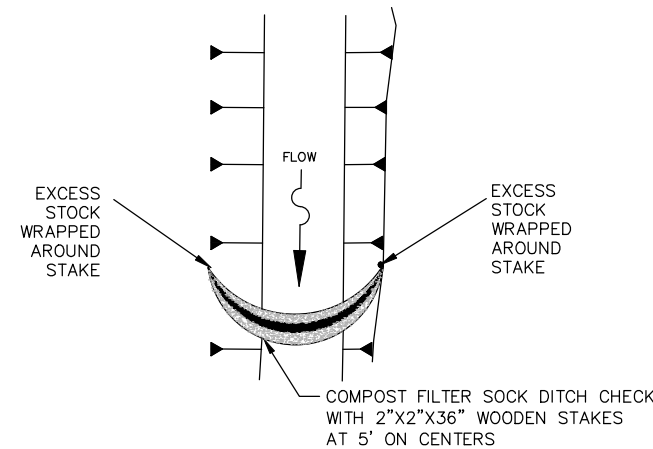
LONGITUDINAL ELEVATION VIEW

COMPOST FILTER SOCK SEDIMENT BARRIER NOTES

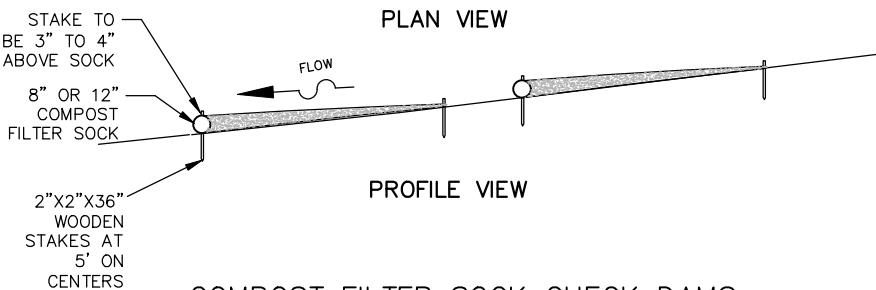
1. PRIOR TO DISTURBING EARTH OR PLACING FILL UPSTREAM, INSTALL COMPOST FILTER SOCK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. FOR DURATION OF PROJECT, MAINTAIN AND REPAIR OR REPLACE COMPOST FILTER SOCK AS REQUIRED FOR CONTINUOUS SEDIMENT CONTROL.
3. AFTER EACH RAINFALL REMOVE AND DISPOSE OF ALL SEDIMENT ACCUMULATED UPSTREAM OF COMPOST FILTER SOCK.
4. UPON COMPLETION OF PROJECT, AND ESTABLISHMENT OF PERMANENT VEGETATION, REMOVE ALL COMPOST FILTER SOCK MATERIAL THEN SEED AND MULCH AREA.
5. CONTRACTOR IS RESPONSIBLE FOR LOCATION OF COMPOST FILTER SOCK OUT OF THE WAY OF WORK AREAS. IF IT BECOMES A HINDRANCE AND MUST BE MOVED, MOVING COSTS ARE INCIDENTAL TO UNIT PRICE BID FOR PROVISION OF COMPOST FILTER SOCK.
6. CONTRACTOR IS TO BE CERTIFIED BY THE COMPOST FILTER MANUFACTURER.



SECTION VIEW AT TOE OF SLOPES

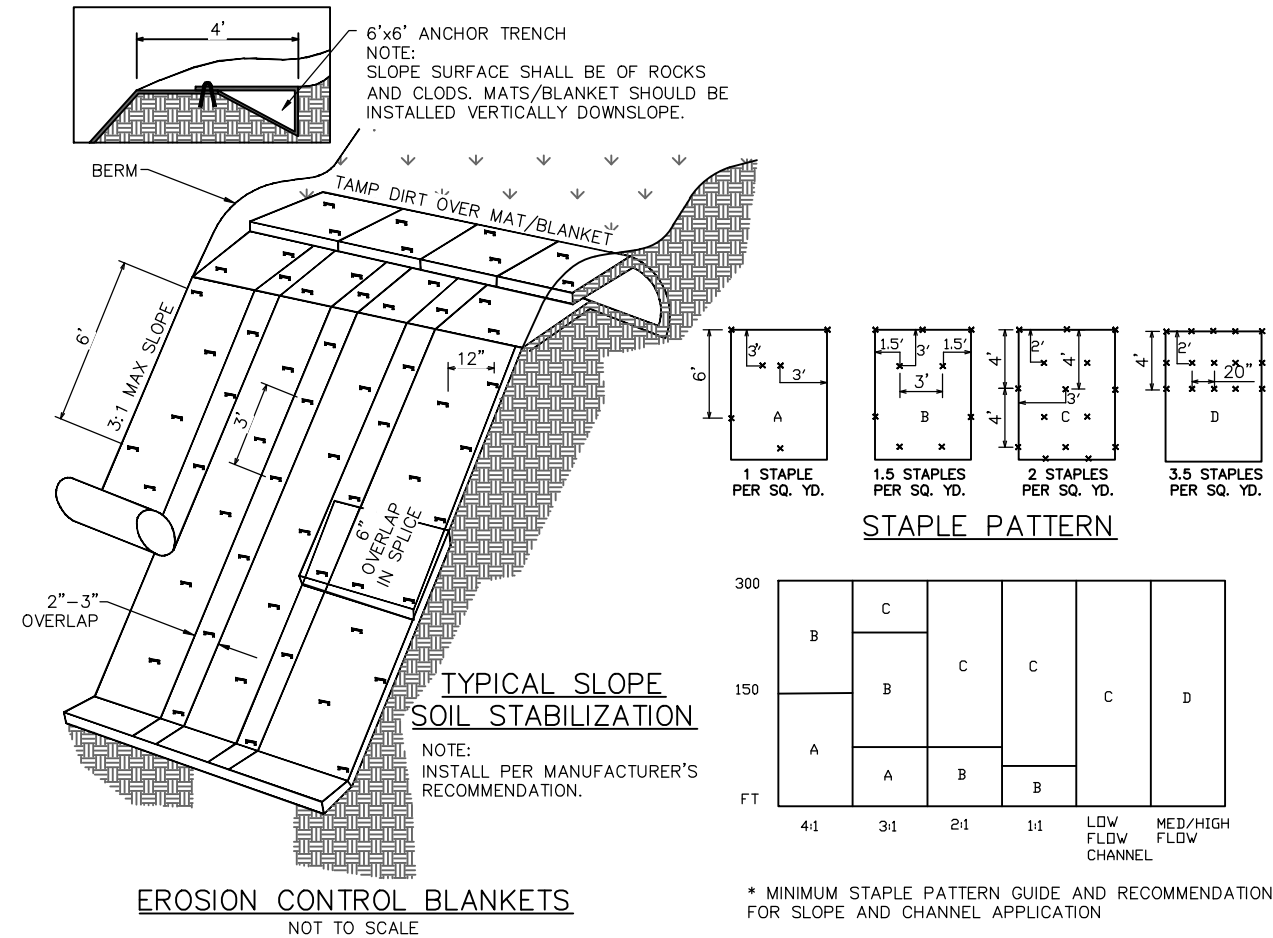


PLAN VIEW



PROFILE VIEW

COMPOST FILTER SOCK CHECK DAMS FOR ROADWAY DITCHES



EROSION CONTROL BLANKETS

NOT TO SCALE

STAPLE PATTERN

STAPLE PATTERN	STAPLES PER SQ. YD.
A	1
B	1.5
C	2
D	3.5

SLOPE RATIO	LOW FLOW CHANNEL	MED/HIGH FLOW
4:1	A	B
3:1	A	B
2:1	B	C
1:1	B	C

LENGTH AND SLOPE TABLE

GENERAL NOTES FOR SEDIMENT & EROSION CONTROL

1. THIS PLAN SHOWS THE LOCATION AND DETAILS FOR PRIMARY SEDIMENT CONTROLS TO BE CONSTRUCTED. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING EROSION AND DISCHARGE OF SEDIMENT FROM THE SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE NECESSARY MEASURES DURING ALL PHASES OF HIS OPERATIONS REGARDLESS OF WHETHER THEY ARE SPECIFICALLY NOTED ON THIS PLAN AND SHALL MAINTAIN AND REPLACE CONTROLS AS NECESSARY DURING THE COURSE OF HIS OPERATIONS.
2. COMPOST FILTER SOCK SEDIMENT BARRIERS AND ROCK FILTER ARE TO BE INSTALLED BEFORE ANY OTHER WORK.
3. THE CONTRACTOR SHALL CLEAN THE FARM ROAD ADJACENT TO THE SITE AS NEEDED AFTER EACH RAINFALL, AND AT THE END OF CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST DURING CONSTRUCTION AND SHALL WATER CONSTRUCTION AREAS WHENEVER CONDITIONS WARRANT.
5. ALL DISTURBED AREAS NOT RECEIVING OTHER PERMANENT STABILIZATION SUCH AS PAVEMENT, CONCRETE, SOD, ETC., SHALL BE SEEDED AND MULCHED, AS SPECIFIED BELOW BEFORE TEMPORARY SEDIMENT CONTROLS CAN BE REMOVED AND PRIOR TO FINAL APPROVAL OF CONSTRUCTION.
6. SEE JOB SPECIAL PROVISIONS IN CONTRACT DOCUMENTS FOR FERTILIZATION AND SEEDING SPECIFICATIONS.
7. ALL DISTURBED AREAS NOT RECEIVING OTHER PERMANENT STABILIZATION SUCH AS PAVEMENT, ROOFS, SOD, ETC., SHALL BE SEEDED AND MULCHED, AS SPECIFIED BELOW BEFORE TEMPORARY SEDIMENT CONTROLS CAN BE REMOVED AND PRIOR TO FINAL APPROVAL OF CONSTRUCTION. A MINIMUM DEPTH OF 4" OF TOPSOIL (AFTER COMPACTING) SHALL BE SPREAD ON AREAS TO BE SEEDED. AFTER TOPSOIL IS SPREAD, LIME SHALL BE SPREAD AT THE RATE OF 800-900 POUNDS PER ACRE, EFFECTIVE NEUTRALIZING MATERIAL (ENM) PER ACRE. FERTILIZER SHALL BE SPREAD AT THE RATE OF 400-500 POUNDS PER ACRE, AND SHALL BE 13-13-13 NITROGEN, PHOSPHORUS, AND POTASSIUM. SEED MIX SHALL CONSIST OF 80% KENTUCKY 31 TALL FESCUE AND 20% ANNUAL RYE GRASS (GERMINATION SHALL BE AT LEAST 85%). SEED MIX SHALL BE SPREAD AT THE RATE OF 400-500 POUNDS PER ACRE. ALL DISTURBED AREAS ARE TO BE MULCHED WITH TYPE 3 MULCH ("HYDROMULCH") MEETING THE REQUIREMENTS OF SECTION 802 OF THE STATE SPECIFICATIONS SHALL BE USED. TYPE 3 MULCH SHALL BE APPLIED AT THE RATE OF 2000 POUNDS PER ACRE. PERMANENT SEEDING SEASON RUNS FROM MARCH 1ST TO JUNE 1ST AND AUGUST 15TH TO NOVEMBER 1ST. SEEDING AND MULCHING MUST BE DONE WHENEVER WORK IS COMPLETE REGARDLESS OF THE SEASON. WHENEVER SEEDING AND MULCH IS INSTALLED OUTSIDE OF THE PERMANENT SEEDING SEASON THE CONTRACTOR WILL BE RESPONSIBLE FOR REPLANTING AND MULCHING ANY AREAS WHERE GROWTH HAS NOT BECOME ESTABLISHED DURING THE NEXT PERMANENT SEEDING SEASON. ALL AREAS MUST BE MAINTAINED BY THE CONTRACTOR (FOR A MINIMUM OF 60 DAYS FOLLOWING INSTALLATION OR 60 DAYS FROM THE START OF THE FIRST PERMANENT SEEDING SEASON AFTER INSTALLATION) UNTIL VEGETATION IS FIRMLY ESTABLISHED. VEGETATION WILL BE CONSIDERED FIRMLY ESTABLISHED WHEN IT HAS SURVIVED FROM THE PERMANENT SEEDING SEASON IN WHICH IT IS PLACED, TO THE NEXT PERMANENT SEEDING SEASON, AND GROWTH HAS BEEN ESTABLISHED ON ALL ERODED AREAS WHICH HAVE BEEN NOTED FOR REPAIR. TEMPORARY SEEDING SHALL BE AT THE SAME RATES FOR SEED, MULCH AND FERTILIZER SPECIFIED ABOVE. TOPSOIL SPREADING IS NOT REQUIRED IN AREAS DESIGNATED TO RECEIVE TEMPORARY SEEDING ONLY.
8. TEMPORARY EROSION CONTROL BLANKET IS TO BE INSTALLED AT LOCATIONS INDICATED BY THE INSPECTOR DURING CONSTRUCTION. ACCEPTABLE TYPES ARE: 2 PSF COCONUT MAT W/ STRAW FOR <5% GRADE AND 4.5 PSF COIR MAT FOR >5% GRADE. INSTALLATION IS TO BE PER MANUFACTURER'S RECOMMENDATIONS.
9. SYNTHETIC TURF REINFORCEMENT MAT IS TO BE ULTRAVIOLET STABILIZED WITH A MINIMUM OF 8 PSF SHEAR STRENGTH. INSTALLATION IS TO BE PER MANUFACTURER'S RECOMMENDATIONS.

Revision/Issue

No.	1	2	3	4	5	6	7	8	9	10
Date										

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

JOHN AARON CAHILL - ENGINEER
 MO# PE-2021028074

GRE GREAT RIVER ENGINEERING

Missouri State Certificate of Authority Numbers: 011476, Landscape Architecture: 200701873

GREEN BRIDGE OVER FINLEY RIVER

CHRISTIAN COUNTY, MISSOURI

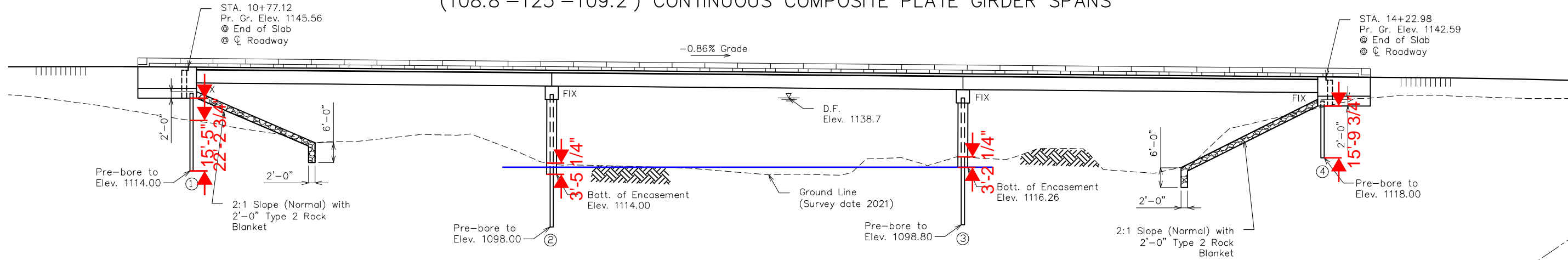
EROSION CONTROL DETAILS

6/10/2024

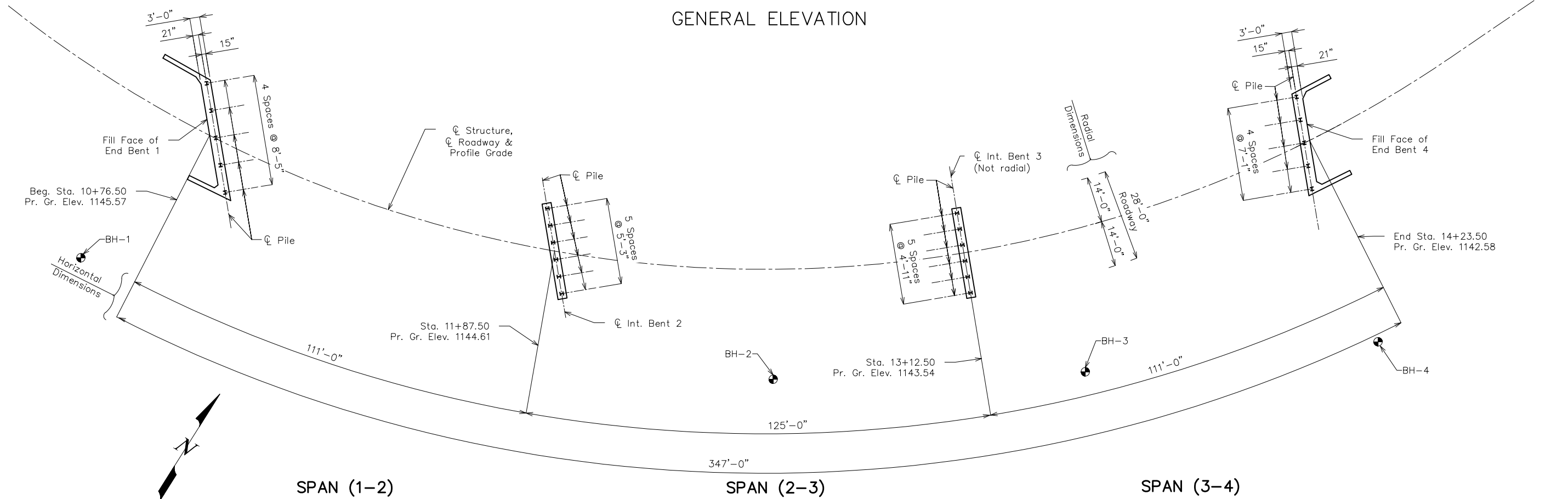
JOB 4049.01

C26

(108.8'-125'-109.2') CONTINUOUS COMPOSITE PLATE GIRDER SPANS



GENERAL ELEVATION



PLAN

CURVE	CL ROADWAY
PI	12+79.00
PC	7+90.46
PT	14+73.19
Δ	105'43"21.7"
D	15'29"07.2"
L	682.73'
T	488.54'
R	370.00'

Old roadway fill under the ends of the bridge shall be removed as shown. Removal of old roadway fill will be considered completely covered by the contract unit price for roadway excavation.

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.

Notes:

For General Notes, Estimated Quantities, Foundation Data, Hydrologic Data, and Location Sketch, see Sheet S2.

Exist. structure not shown, removal to be completed based on project award.

⊕ Indicates location of borings

Notice and Disclaimer Regarding Boring Log Data

The location of all subsurface borings for this structure are shown on the plan sheet for this structure. The boring data for all locations indicated, as well as any other boring log or other factual records of the subsurface data and investigation performed for the design of the project, are shown on the boring data sheet or will be available from the project contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the owner or elsewhere.

The Owner does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Owner.

Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 00101416 Landscape Architecture: 200701872	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI GENERAL PLAN & ELEVATION	
6/11/2024	
JOB 4049.01	
S1	

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General Notes:

Design Specifications

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
Seismic Performance Category = A

Design Loading:

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf

Design Unit Stresses:

Class B Concrete (Substructure)	$f'_c = 3,000$ psi
Class B-1 Concrete (Corral Rail)	$f'_c = 4,000$ psi
Class B-2 Concrete (Superstructure, except Corral Rail)	$f'_c = 4,000$ psi
Reinforcing Steel (Grade 60)	$f_y = 60,000$ psi
Structural Steel (ASTM A709 Grade 50W)	$f_y = 50,000$ psi
Structural Steel HP Pile (ASTM A709 Grade 50S)	$f_y = 50,000$ psi

Neoprene Pads:

Neoprene bearing pads shall be 60 durometer and shall be in accordance with Sec 716.

Fabricated Steel Connections:

Field connections shall be made with $\frac{3}{4}$ " diameter ASTM F3125 Grade A325 Type 3 bolts and $\frac{1}{8}$ " diameter holes except as noted.

Joint Filler:

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

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be $1\frac{1}{2}$ " unless otherwise shown.

Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including bar supports shall be $1\frac{1}{2}$ ". Nylon, PVC, or Polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

Traffic Handling:

Structure to be closed during construction. Traffic to be maintained on other routes. See roadway plans for traffic control.

Miscellaneous:

"Sec" refers to sections in the Missouri Standard Specification of Highway Construction and supplemental specifications.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106.

Concrete Protective Coatings:

Temporary coating for concrete bents and piers (weathering steel) shall be applied on all concrete surfaces above the ground line or low water elevation on all abutments and intermediate bents in accordance with Sec 711.

Estimated Quantities

Item	Substr.	Superstr.	Total	
Class 1 Excavation	cu. yard	10	10	25
Removal of Bridges (24900031)	lump sum		1	
Bridge Approach Slab (Minor)	sq. yard	122	122	125
Galvanized Structural Steel Piles (12 in.)	linear foot	721	721	733
Pile Wave Analysis	each	2	2	
Pre-Bore for Piling	linear foot	354	354	399
Pile Point Reinforcement	each	22	22	
Class B Concrete (Substructure)	cu. yard	161.8	161.8	
Slab on Steel	sq. yard		1,154	1,154
Corral Rail	linear foot		738	738
Reinforcing Steel (Bridges)	pound	8,790	8,790	9,190
Conduit System on Structure	lump sum		1	
Temporary Coating - Concrete Bents and Piers (Weathering Steel)	lump sum	1	1	
Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50W	pound		408,400	433,620
Vertical Drain at End Bents	each		2	
Plain Neoprene Bearing Pad	each		8	8
Laminated Neoprene Bearing Pad Assembly (Tapered)	each		8	8

All concrete between the upper and lower construction joints in the end bents is included in the estimated quantities for slab on steel.

All reinforcement in the end bents is included in the estimated quantities for slab on steel.

Bid Alternate Estimated Quantities

Item	Substr.	Superstr.	Total
Removal of Bridges (24900031) *	lump sum		-1
Salvage of Existing Trusses	lump sum		1
Removal of Remaining Existing Bridge	lump sum		1

* Item Removal of Bridges is a deduction from the base bid and must be at the same unit and extended price as in the base bid. Reference JSP 69.

Foundation Data

Type	Design Data	Bent 1	Bent 2	Bent 3	Bent 4	
Load Bearing Pile	Pile Type & Size	HP 12x53	HP 12x53	HP 12x53	HP 12x53	
	Number	5	6	6	5	
	Approximate Length Per Each	ft	24	45	41, 43	17
	Pile Point Reinforcement	ea	All	All	All	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length			
	Pile Driving Verification Method		DF	WEAP	WEAP	DF
	Resistance Factor		0.4	0.5	0.5	0.4
	Minimum Nominal Axial Compressive Resistance	kip	400	583	566	378

DF = FHWA-modified Gates Dynamic Formula

WEAP = Wave Equation Analysis of Piles

Minimum Nominal Axial Compressive Resistance = Maximum Factored Loads/Resistance Factor

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

Prebore for piles at Bents 1, 2, 3 and 4 to elevations 1114.00, 1098.00, 1098.80 and 1118.00 respectively. A minimum of prebore of 5 feet into rock shall also be obtained.

All piles shall be galvanized down to the minimum galvanized penetration (elevation).

Pile point reinforcement need not be galvanized. Shop drawings will not be required for pile point reinforcement.

Piles are anticipated to be driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702 at Bents 1 and 4 and in accordance with job special provisions at Bents 2 and 3.

Hydrologic Data

Drainage Area = 177 mi ²
Design Flood Frequency = 500 years
Design Flood Discharge = 42,700 cfs
Design Flood (D.F.) Elevation = 1138.7 ft
Base Flood (100-Year)
Base Flood Elevation = 1136.3 ft
Base Flood Discharge = 31,900 cfs
Estimated Backwater = 0.5 ft
Average Velocity Thru Opening = 8.6 ft/s
Freeboard (50-year)
Freeboard = 2.7 ft
Roadway Overtopping
Overtopping Flood Discharge = 31,900 cfs
Overtopping Flood Frequency = 100 years
Overtopping Flood Elevation = 1136.3 ft

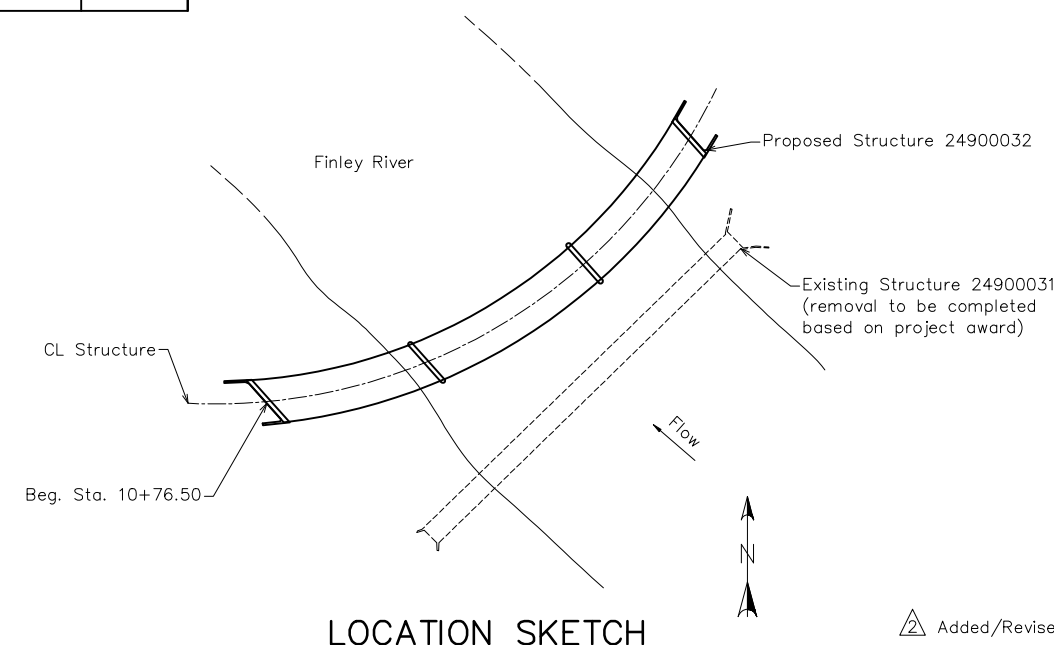
Estimated Quantities for Slab on Steel

Item	Substr.	Superstr.	Total
Class B-2 Concrete	cu. yard		315
Reinforcing Steel (Epoxy Coated)	pound		82,440

The table of estimated quantities for Slab on Steel represents the quantities used by the county in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for prestressed panels, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the Estimated Quantities but the variations cannot be used for an adjustment in the contract unit price.

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

Slab shall be cast-in-place with conventional forms or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.



Note: Drawing not to scale. Follow dimensions.

Added/Revised

Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design - DRAWINGS\4049.01 - STRUCTURAL - 1.dwg PLOT DATE: 6/24/2024 10:13:44 AM LAST SAVE: 6/24/2024 9:46:46 AM

Date	
Revision/Issue	
No.	1 2 3 4 5 6 7 8 9 10
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: 06/24/2024 Engineering: 01/14/16 Landscape Architecture: 2007/03/23	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
ESTIMATED QUANTITIES & GENERAL NOTES	
6/24/2024	
JOB 4049.01	
S2	

General Notes:

Design Specifications

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
Seismic Performance Category = A

Design Loading:

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf

Design Unit Stresses:

Class B Concrete (Substructure)	$f'_c = 3,000$ psi
Class B-1 Concrete (Corral Rail)	$f'_c = 4,000$ psi
Class B-2 Concrete (Superstructure, except Corral Rail)	$f'_c = 4,000$ psi
Reinforcing Steel (Grade 60)	$f_y = 60,000$ psi
Structural Steel (ASTM A709 Grade 50W)	$f_y = 50,000$ psi
Structural Steel HP Pile (ASTM A709 Grade 50S)	$f_y = 50,000$ psi

Neoprene Pads:

Neoprene bearing pads shall be 60 durometer and shall be in accordance with Sec 716.

Fabricated Steel Connections:

Field connections shall be made with $\frac{3}{4}$ " diameter ASTM F3125 Grade A325 Type 3 bolts and $\frac{1}{8}$ " diameter holes except as noted.

Joint Filler:

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

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be $1\frac{1}{2}$ " unless otherwise shown.

Minimum clearance between galvanized piles and uncoated (plain) reinforcing steel including bar supports shall be $1\frac{1}{2}$ ". Nylon, PVC, or Polyethylene spacers shall be used to maintain clearance. Nylon cable ties shall be used to bind the spacers to the reinforcement.

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Structure to be closed during construction. Traffic to be maintained on other routes. See roadway plans for traffic control.

Miscellaneous:

"Sec" refers to sections in the Missouri Standard Specification of Highway Construction and supplemental specifications.

High strength bolts, nuts and washers will be sampled for quality assurance as specified in Sec 106.

Concrete Protective Coatings:

Temporary coating for concrete bents and piers (weathering steel) shall be applied on all concrete surfaces above the ground line or low water elevation on all abutments and intermediate bents in accordance with Sec 711.

Estimated Quantities

Item	Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	10	10
Removal of Bridges (24900031)	lump sum		1
Bridge Approach Slab (Minor)	sq. yard	122	122
Galvanized Structural Steel Piles (12 in.)	linear foot	721	721
Pile Wave Analysis	each	2	2
Pre-Bore for Piling	linear foot	354	354
Pile Point Reinforcement	each	22	22
Class B Concrete (Substructure)	cu. yard	161.8	161.8
Slab on Steel	sq. yard	1,154	1,154
Corral Rail	linear foot	738	738
Reinforcing Steel (Bridges)	pound	8,790	8,790
Conduit System on Structure	lump sum	1	1
Temporary Coating - Concrete Bents and Piers (Weathering Steel)	lump sum	1	1
Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50W	pound	408,400	408,400
Vertical Drain at End Bents	each		2
Plain Neoprene Bearing Pad	each	8	8
Laminated Neoprene Bearing Pad Assembly (Tapered)	each	8	8

All concrete between the upper and lower construction joints in the end bents is included in the estimated quantities for slab on steel.

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	Approximate Length Per Each	ft	24	45	41	17
	Pile Point Reinforcement	ea	All	All	All	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length			
	Pile Driving Verification Method		DF	WEAP	WEAP	DF
	Resistance Factor		0.4	0.5	0.5	0.4
	Minimum Nominal Axial Compressive Resistance	kip	400	583	566	378

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WEAP = Wave Equation Analysis of Piles

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Hydrologic Data

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Design Flood Frequency = 500 years
Design Flood Discharge = 42,700 cfs
Design Flood (D.F.) Elevation = 1138.7 ft
Base Flood (100-Year)
Base Flood Elevation = 1136.3 ft
Base Flood Discharge = 31,900 cfs
Estimated Backwater = 0.5 ft
Average Velocity Thru Opening = 8.6 ft/s
Freeboard (50-year)
Freeboard = 2.7 ft
Roadway Overtopping
Overtopping Flood Discharge = 31,900 cfs
Overtopping Flood Frequency = 100 years
Overtopping Flood Elevation = 1136.3 ft

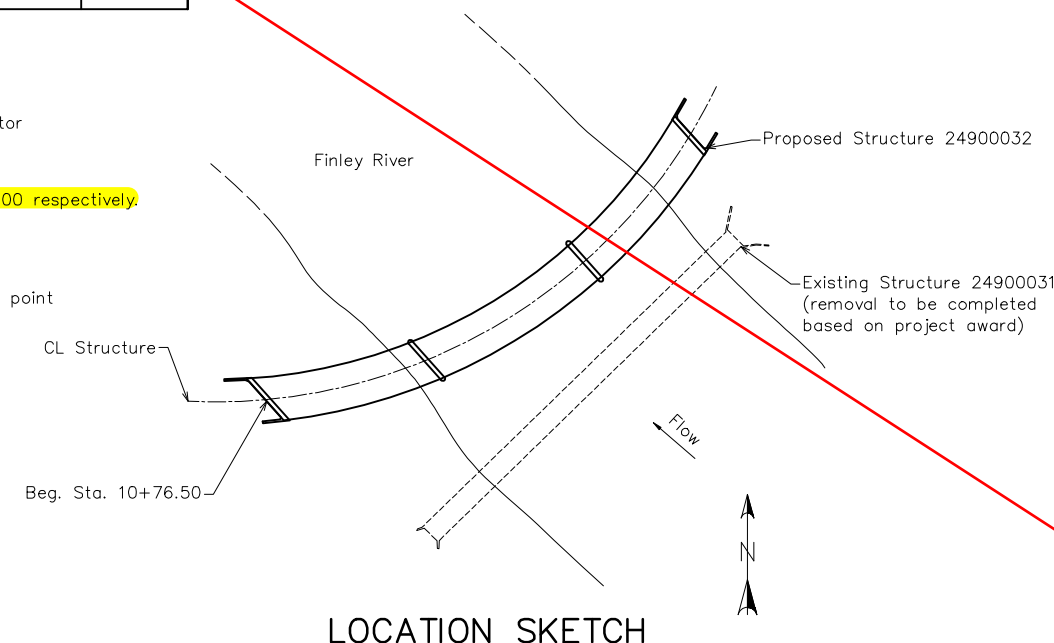
Estimated Quantities for Slab on Steel

Item	Total
Class B-2 Concrete	cu. yard 315
Reinforcing Steel (Epoxy Coated)	pound 82,440

The table of estimated quantities for Slab on Steel represents the quantities used by the county in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for prestressed panels, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the Estimated Quantities but the variations cannot be used for an adjustment in the contract unit price.

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

Slab shall be cast-in-place with conventional forms or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.



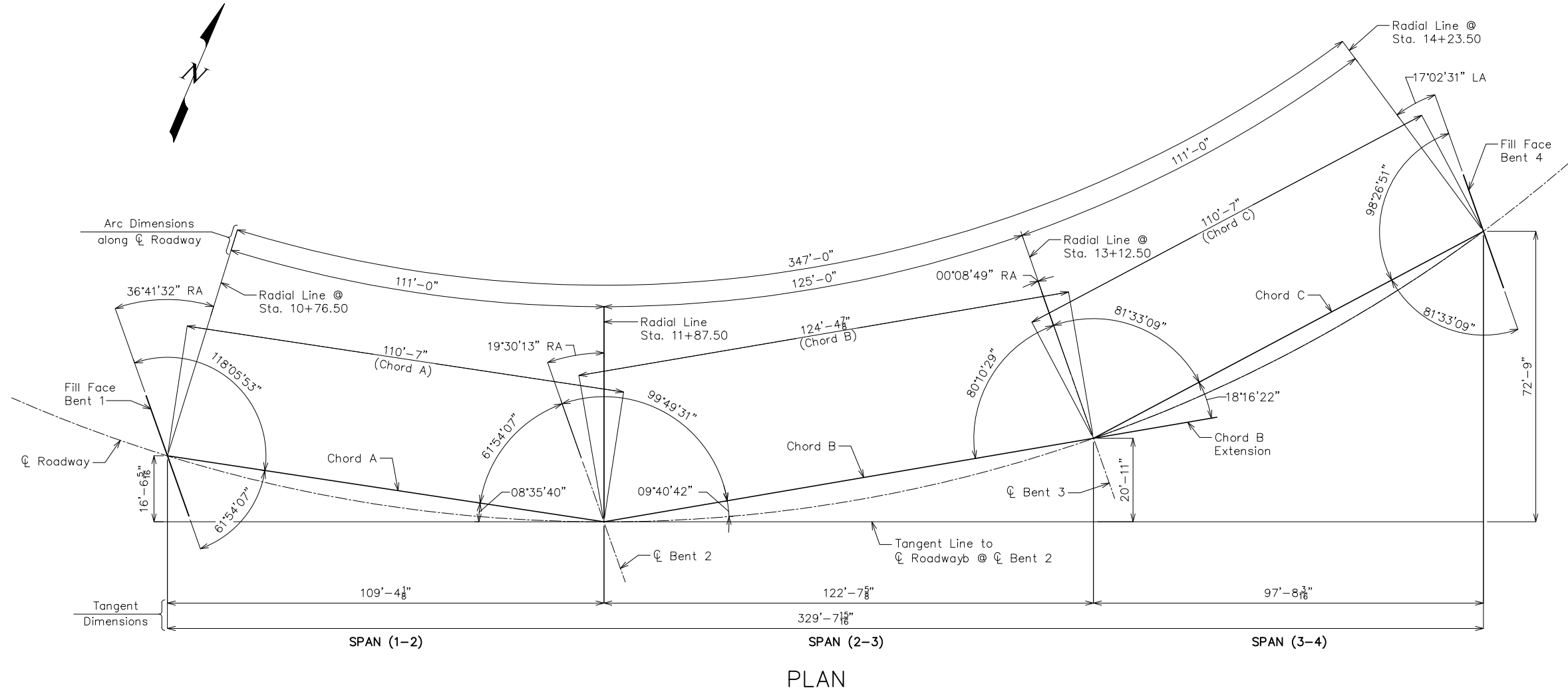
LOCATION SKETCH

Note: Drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 0101476 Landscape Architecture: 200701873	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
ESTIMATED QUANTITIES & GENERAL NOTES	
6/11/2024	
JOB 4049.01	
S2	

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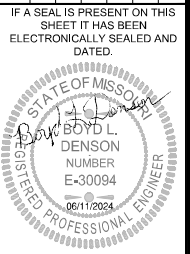
PLAN

General Notes:
 All dimensions are horizontal.
 All bents are parallel.
 RA = Right Advance
 LA = Left Advance

Note: Drawing not to scale. Follow dimensions.

No.	Revision/Issue	Date

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

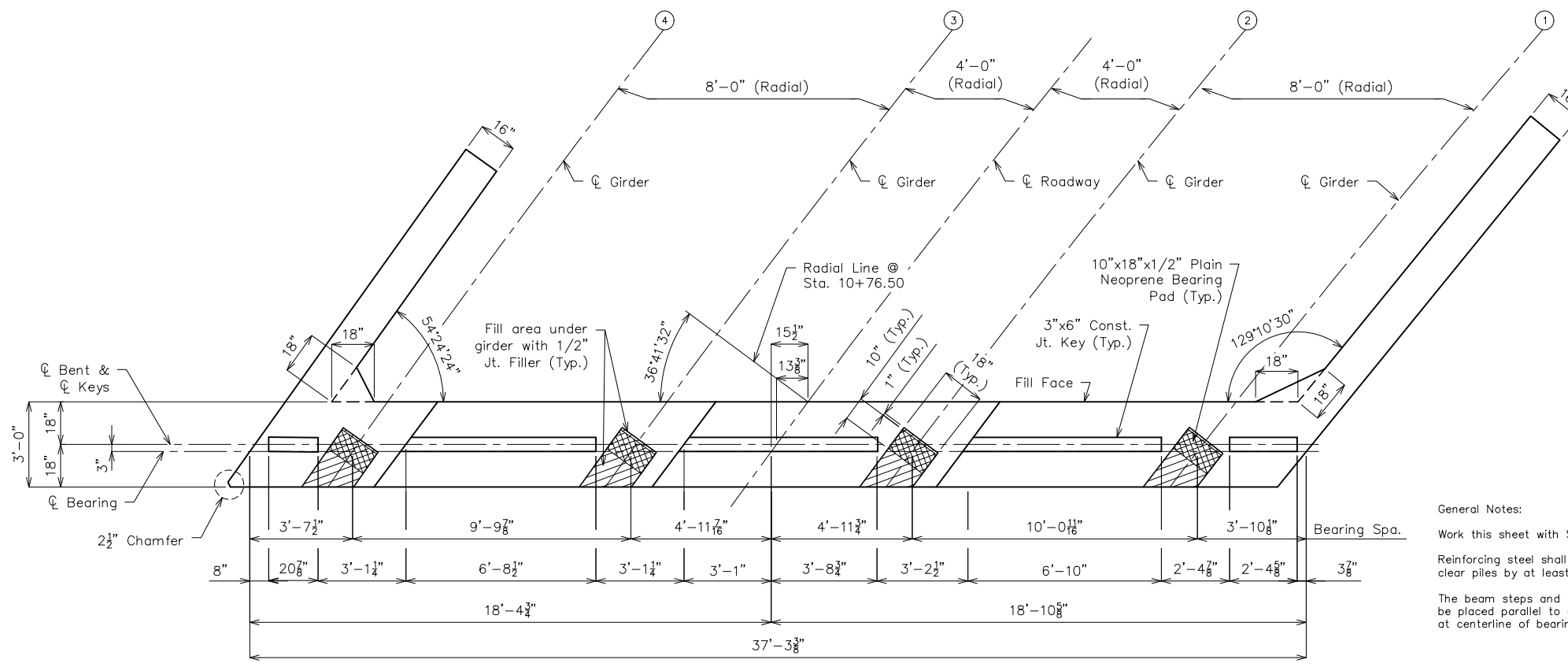


GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 SUBSTRUCTURE LAYOUT

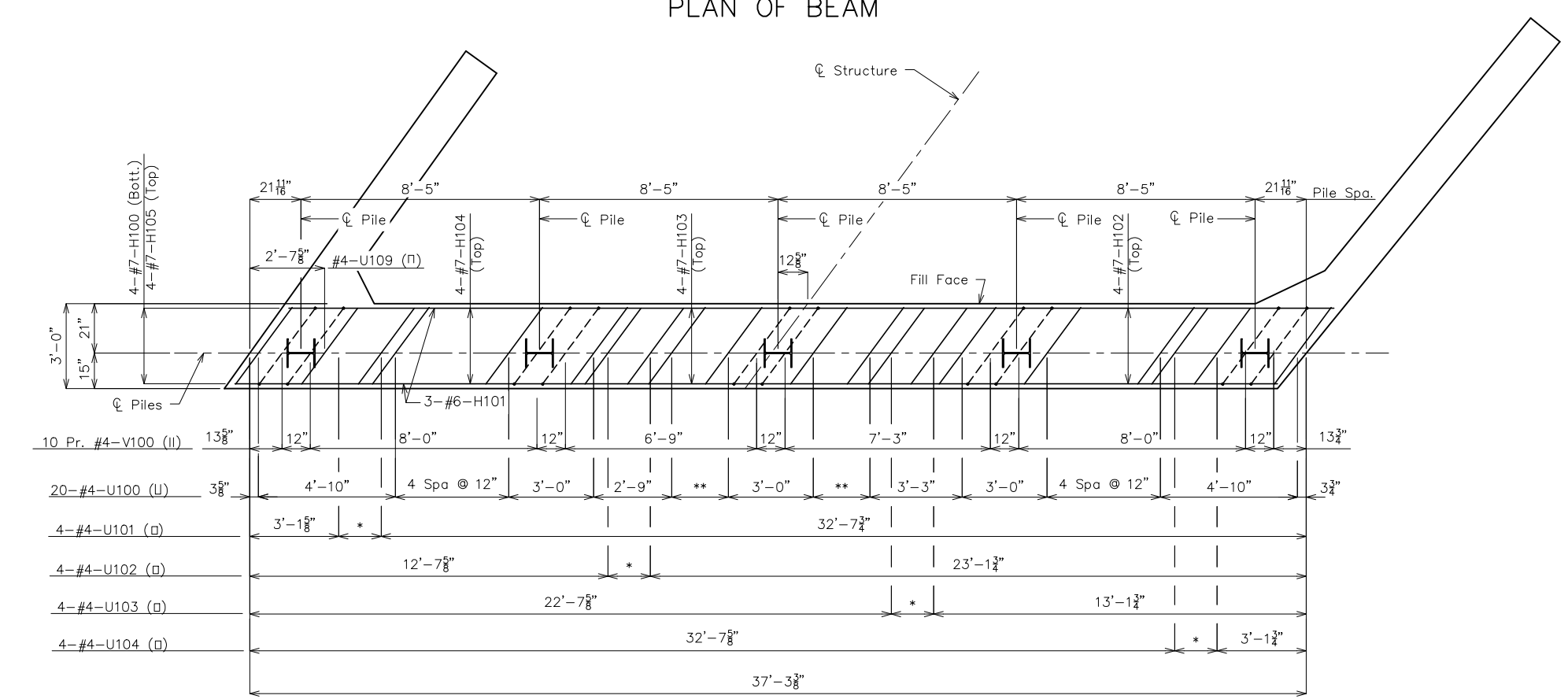
6/11/2024
 JOB 4049.01

S3

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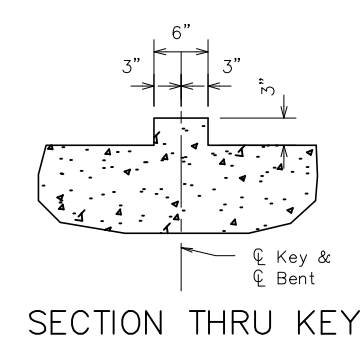
PLAN OF BEAM



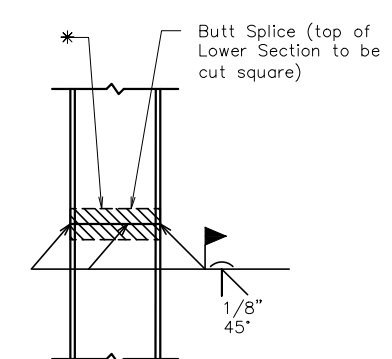
PLAN OF BEAM SHOWING REINFORCEMENT & PILES

* 3 Spa. @ 6"
** 2 Spa. @ 12"

Keys and steps not shown for clarity.



SECTION THRU KEY



STEEL PILE SPLICE
(If required)

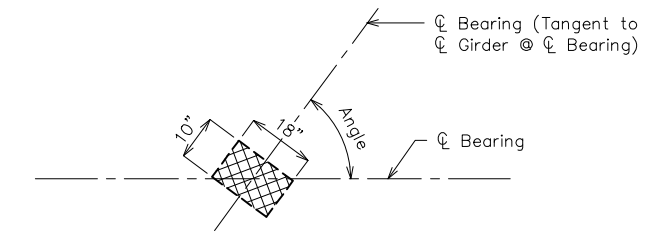
* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.

General Notes:

Work this sheet with Sheets S5 & S6.

Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.

The beam steps and the U bars and pairs of V bars shall be placed parallel to a line tangent to centerline of roadway at centerline of bearing.



ANCHOR BOLT LAYOUT

Girder	1	2	3	4
Angle	52°13'05"	53°10'57"	54°05'41"	54°57'31"

Item	Qty.
Galvanized Structural Steel Piles (12 in.)	linear foot 120
Pre-Bore for Piling	linear foot 75
Pile Point Reinforcement	each 5
Class B Concrete (Substructure)	cu. yard 18.9

These quantities are included in the estimated quantities table on Sheet S2.

Revision/Issue

No. 1 2 3 4 5 6 7 8 9 10

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

STATE OF MISSOURI
BOYD L. DENSON
NUMBER E-30094
06/24/2024
REGISTERED PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

Missouri State Certificate of Authority Numbers:
Professional Engineer: 0101476
Landscape Architect: 200701873

GREEN BRIDGE OVER FINLEY RIVER

CHRISTIAN COUNTY, MISSOURI

END BENT 1 DETAILS

6/24/2024

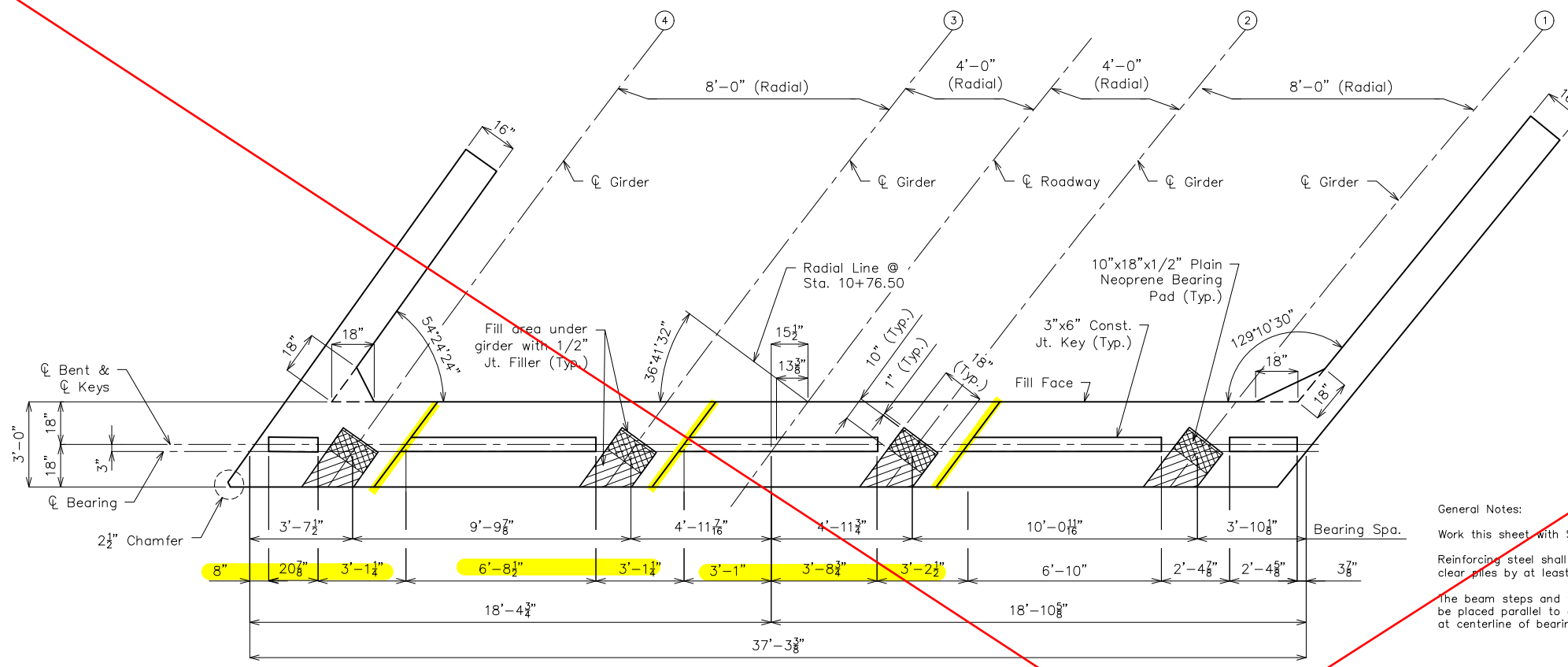
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S4

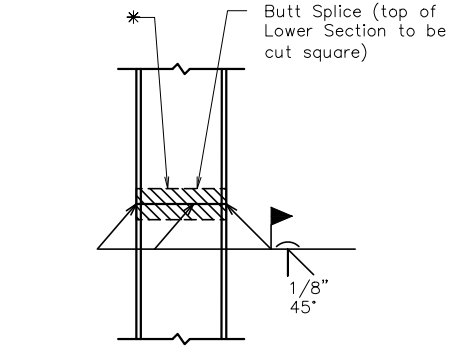
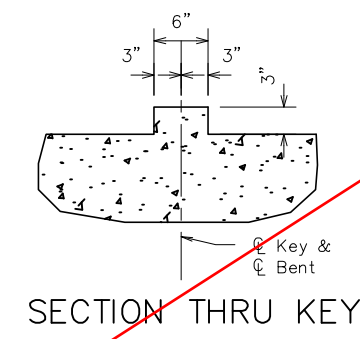
Note: This drawing not to scale. Follow dimensions.

Revised

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PLAN OF BEAM



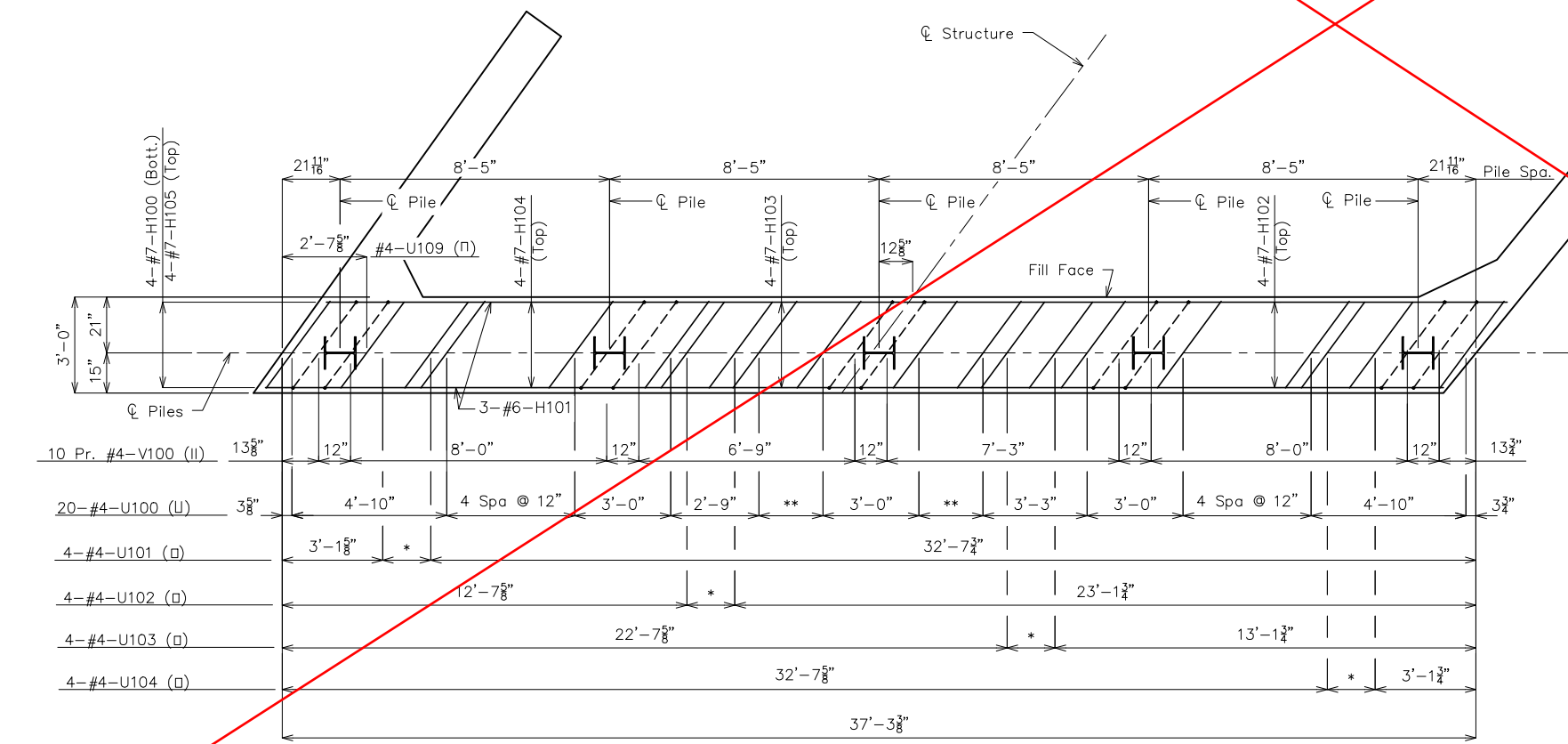
General Notes:

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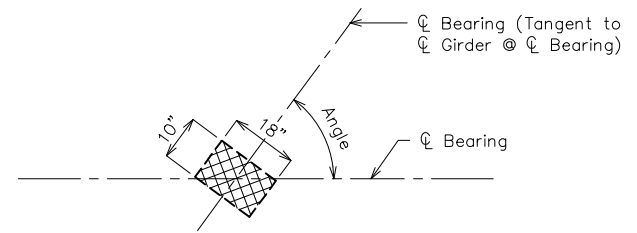
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.

The beam steps and the U bars and pairs of V bars shall be placed parallel to a line tangent to centerline of roadway at centerline of bearing.

* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.



PLAN OF BEAM SHOWING REINFORCEMENT & PILES
Keys and steps not shown for clarity.



ANCHOR BOLT LAYOUT

Girder	1	2	3	4
Angle	52°13'05"	53°10'57"	54°05'41"	54°57'31"

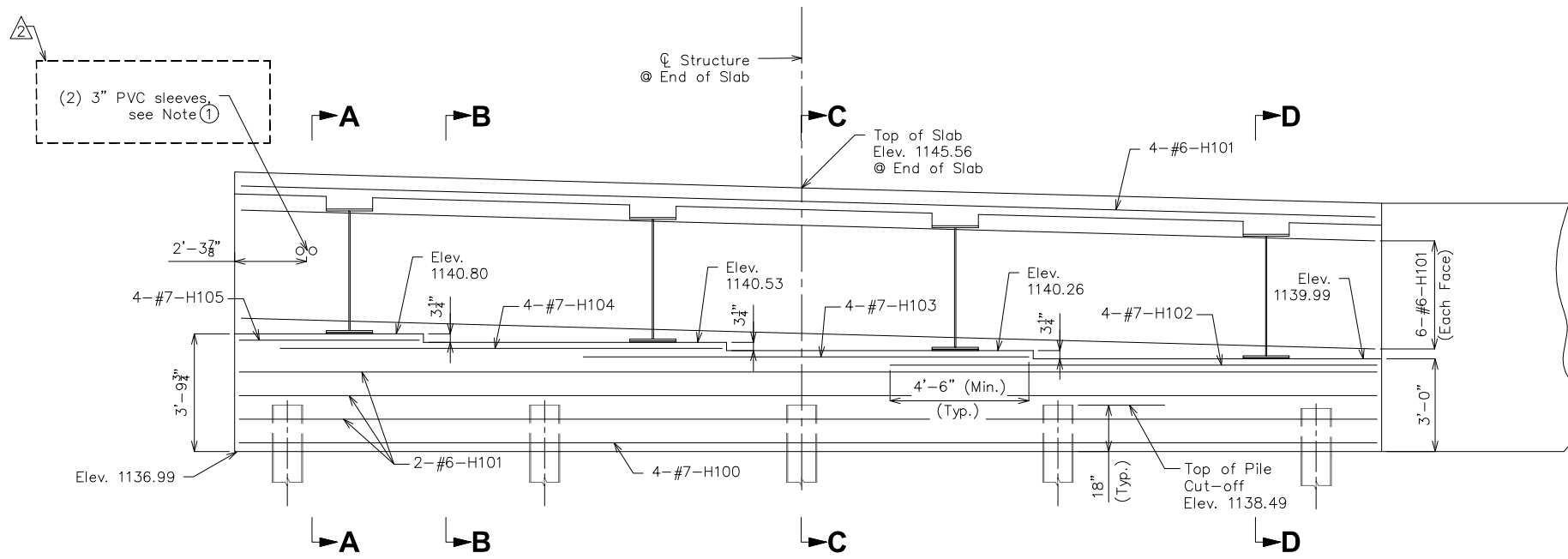
Item	Qty.
Galvanized Structural Steel Piles (12 in.)	linear foot 120
Pre-Bore for Piling	linear foot 75
Pile Point Reinforcement	each 5
Class B Concrete (Substructure)	cu. yard 18.9

These quantities are included in the estimated quantities table on Sheet S2.

No.	Revision/Issue	Date	
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.			
Missouri State Certificate of Authority Numbers: Engineering: 00101416 Landscape Architecture: 200701823			
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI END BENT 1 DETAILS			
6/11/2024 JOB 4049.01			
S4			

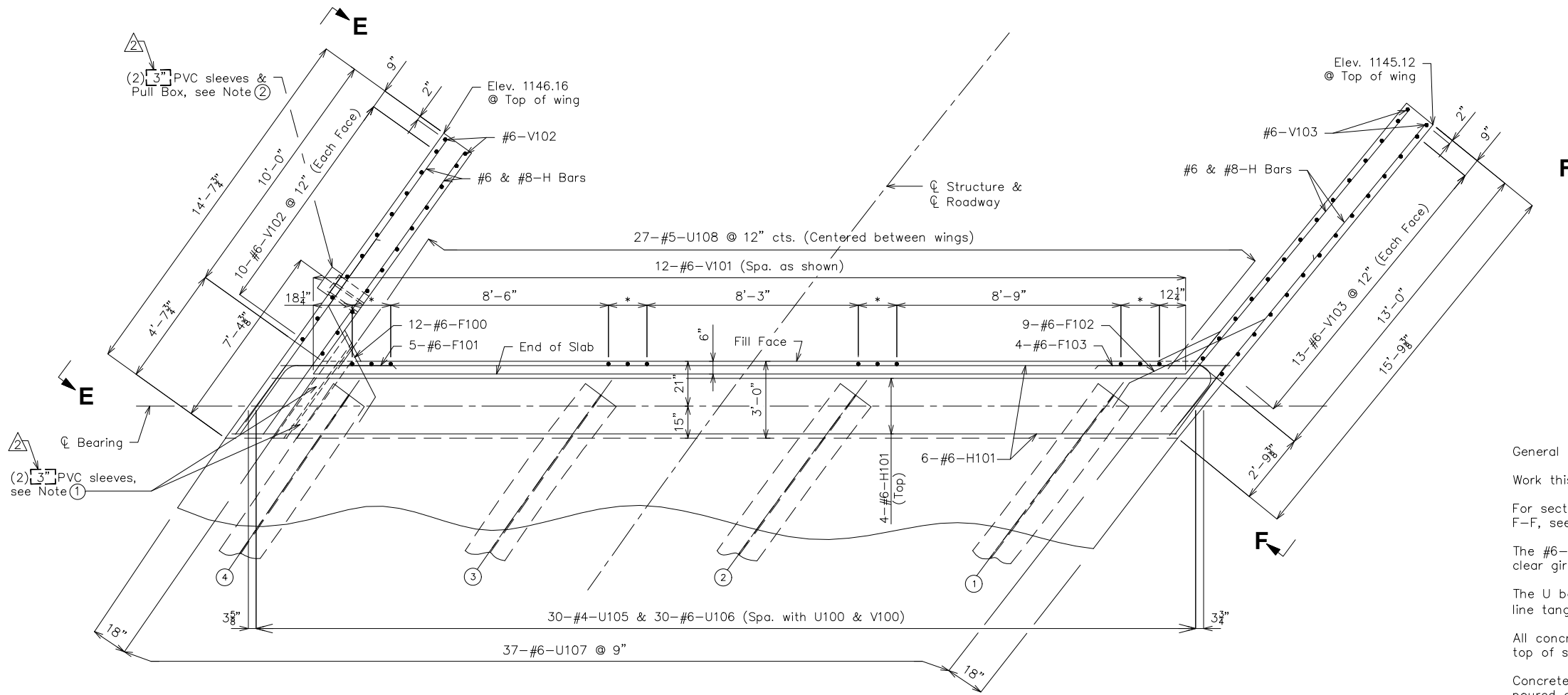
Note: This drawing not to scale. Follow dimensions.

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SECTION NEAR END BENT

- ① Contractor shall install 2 - 3" PVC sleeves through the diaphragm to allow for the installation of the 1-1.5" ϕ HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow 30" \pm conduit depth at the fill faces. Contractor may then use long radius elbows in conduit to hang closer to the bottom of the deck.
- ② Contractor shall install 90 degree elbow after fill face and install 2 - 3" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight. Pull box shall be flush mount to wingwall.



PART PLAN

* 2 Spa. @ 9"

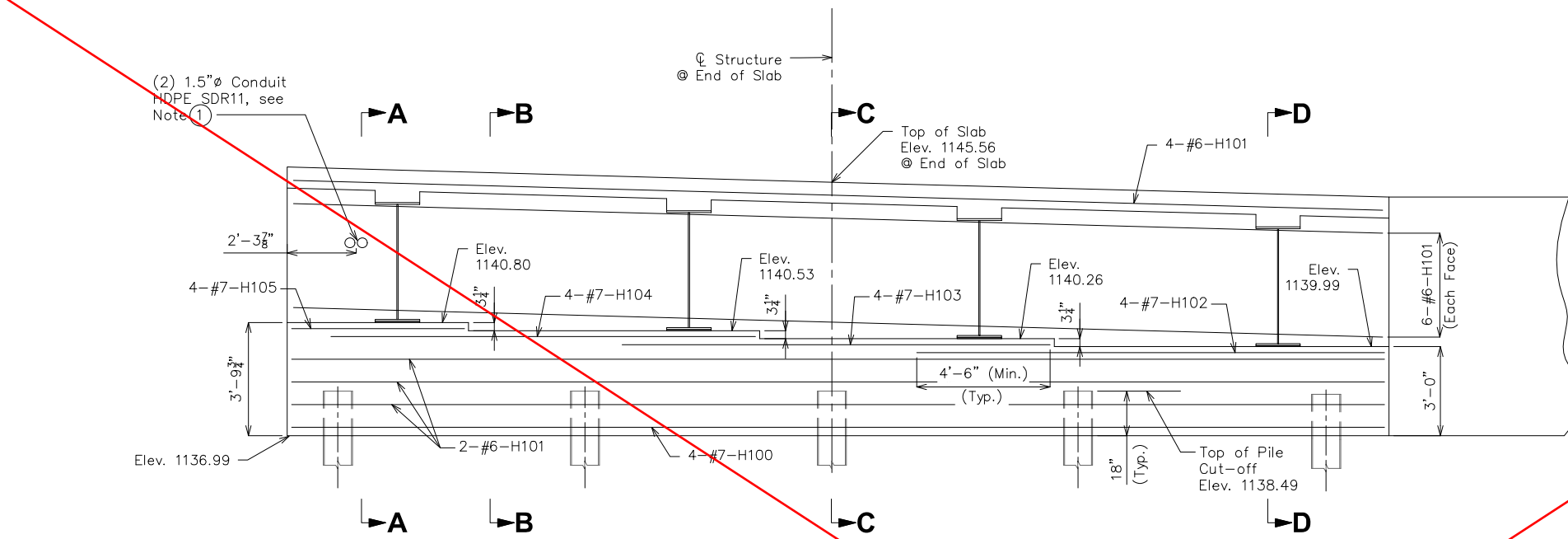
- General Notes:
- Work this sheet with Sheets S4 & S6.
 - For sections A-A, B-B & C-C & D-D and Elevations E-E & F-F, see Sheet S6.
 - The #6-F100 and #6-F102 bars shall be bent in the field to clear girders.
 - The U bars and pairs of V bars shall be placed parallel to a line tangent to the ϕ Roadway at ϕ Bearing.
 - All concrete in the end bent above top of beam and below top of slab shall be Class B-2.
 - Concrete diaphragms at the integral end bents shall be poured a minimum of 12 hours before the slab is poured.
 - For details of Vertical Drain at End Bents, see Sheet S7.
 - For details of Bridge Approach Slab, see Sheet S32.

Note: This drawing not to scale. Follow dimensions.

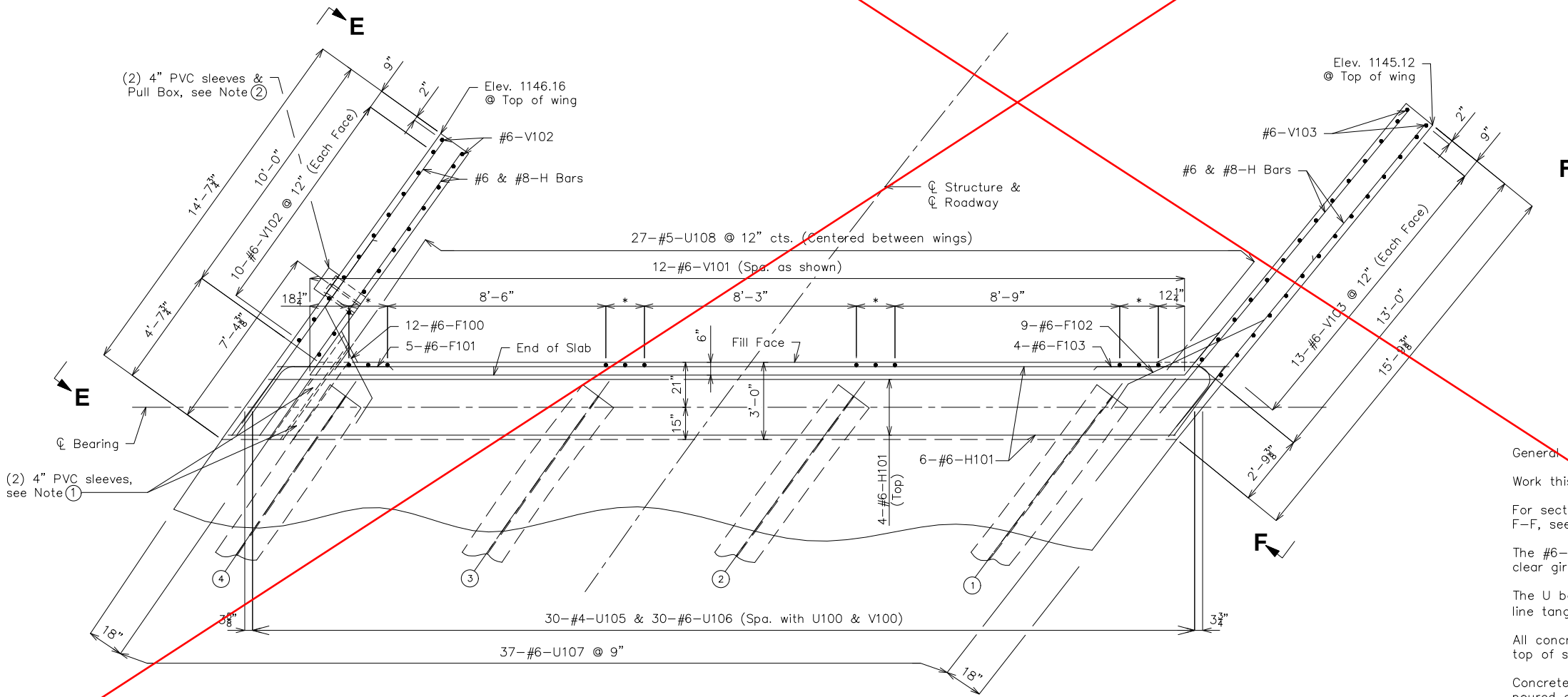
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Revision/Issue					
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.					
Missouri State Certificate of Authority Numbers: Engineering: 01011416 Landscape Architecture: 200701873					
GREEN BRIDGE OVER FINLEY RIVER					
CHRISTIAN COUNTY, MISSOURI					
END BENT 1 DETAILS					
6/24/2024					
JOB 4049.01					
S5					

Revised

Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design\Drawings\4049.01 - STRUCTURAL 1.dwg PLOT DATE: 6/11/2024 6:24:59 AM LAST SAVE: 6/11/2024 6:21:23 AM



SECTION NEAR END BENT



PART PLAN

* 2 Spa. @ 9"

- ① Contractor shall install 2 - 4" PVC sleeves through the diaphragm to allow for the installation of the 1-1.5" Ø HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow 30± conduit depth at the fill faces. Contractor may then use long radius elbows in conduit to hang closer to the bottom of the deck.
- ② Contractor shall install 90 degree elbow after fill face and install 2 - 4" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight. Pull box shall be flush mount to wingwall.

General Notes:

Work this sheet with Sheets S4 & S6.

For sections A-A, B-B & C-C & D-D and Elevations E-E & F-F, see Sheet S6.

The #6-F100 and #6-F102 bars shall be bent in the field to clear girders.

The U bars and pairs of V bars shall be placed parallel to a line tangent to the ϕ Roadway at ϕ Bearing.

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

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

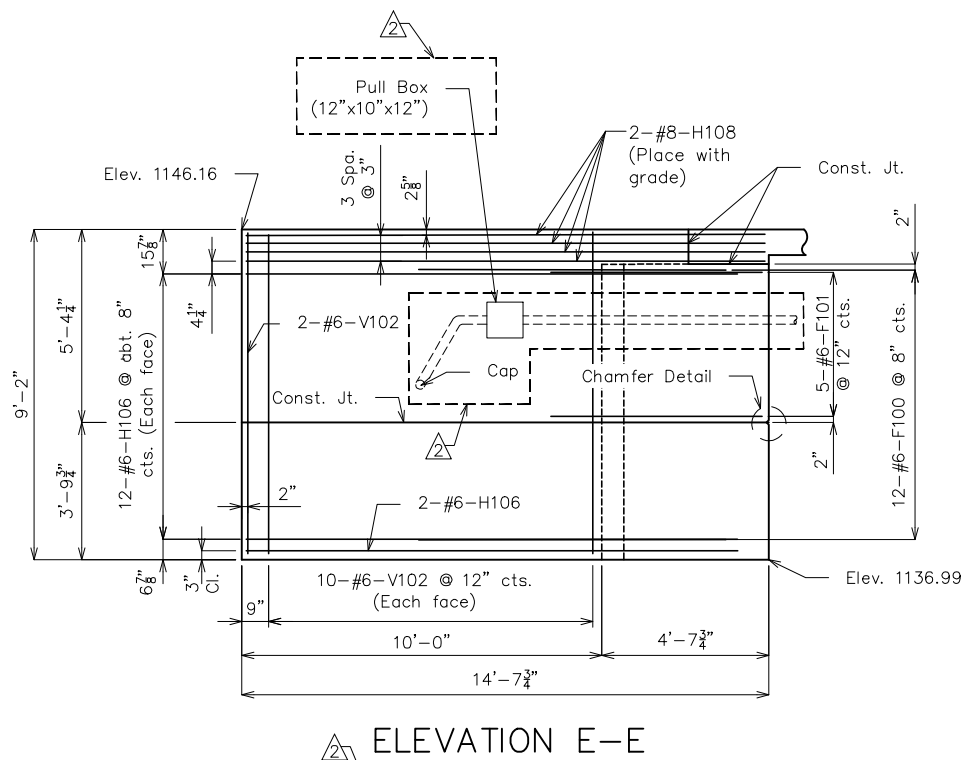
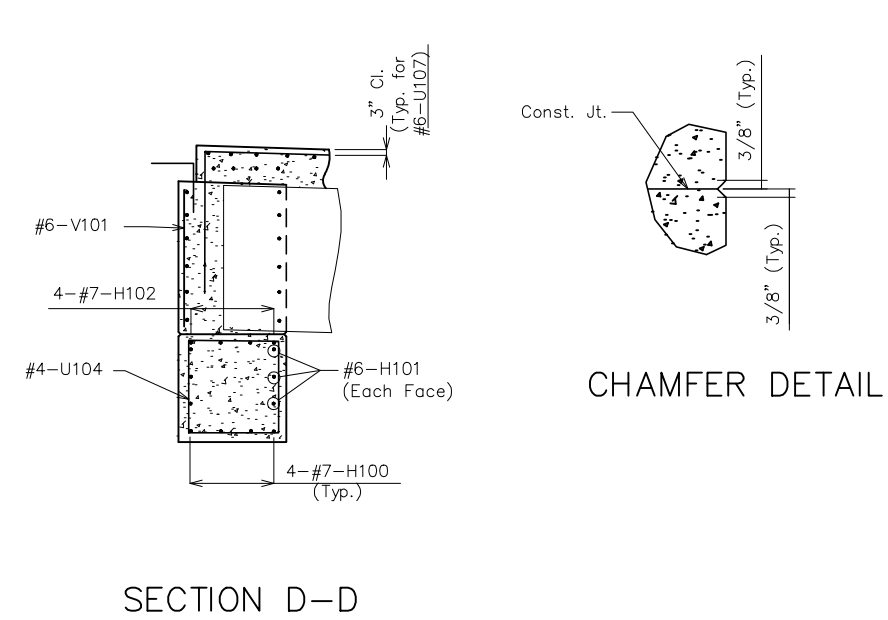
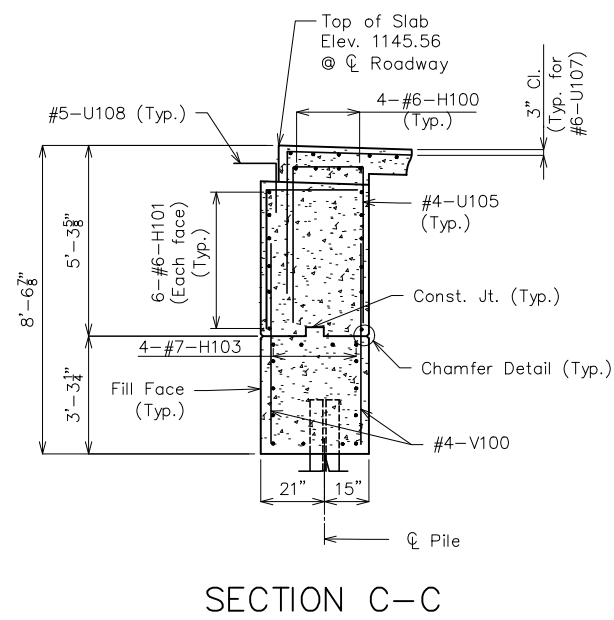
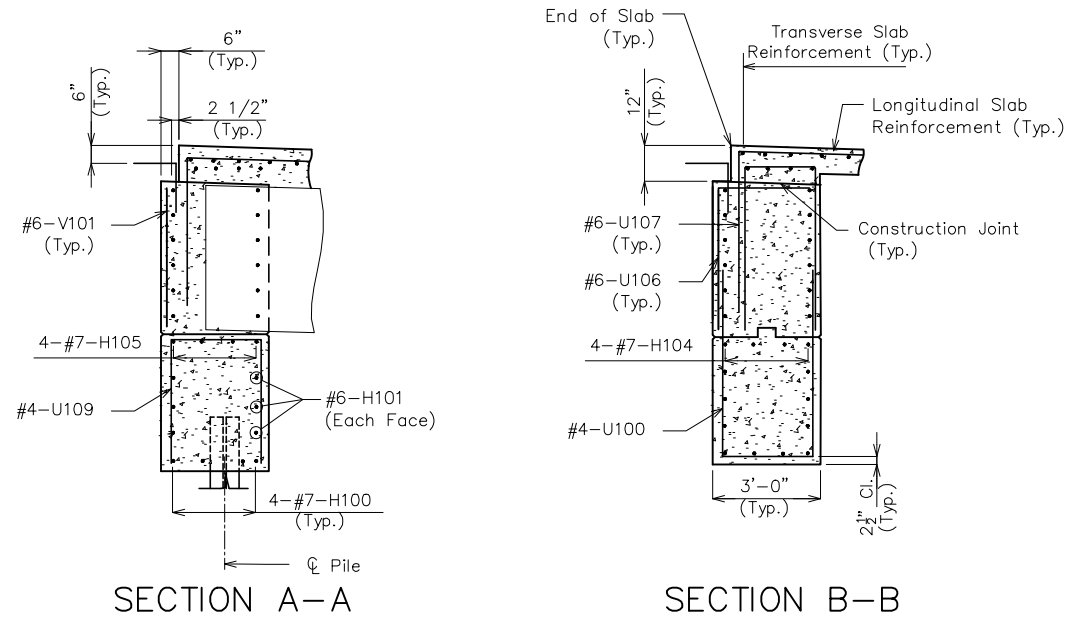
For details of Vertical Drain at End Bents, see Sheet S7.

For details of Bridge Approach Slab, see Sheet S32.

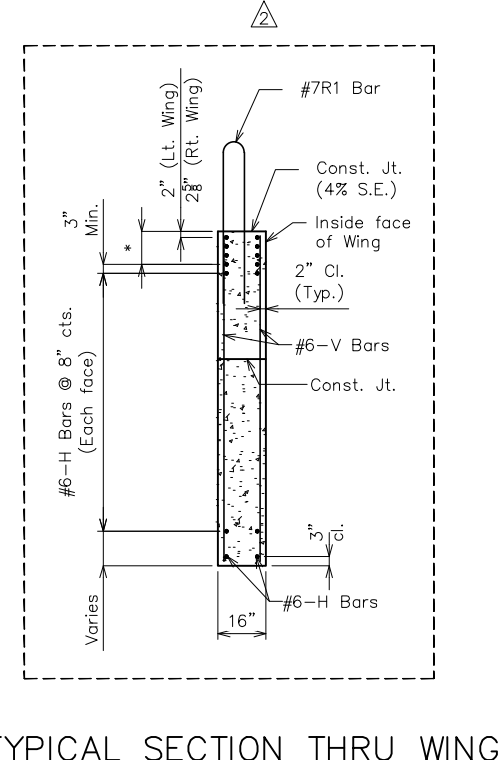
Note: This drawing not to scale. Follow dimensions.

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Revision/Issue	
No.	▲▲▲▲▲▲▲▲
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Missouri State Certificate of Authority Numbers: Professional Engineer: 01011416 Landscape Architect: 200701873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI END BENT 1 DETAILS	
6/11/2024	
JOB 4049.01	
S5	

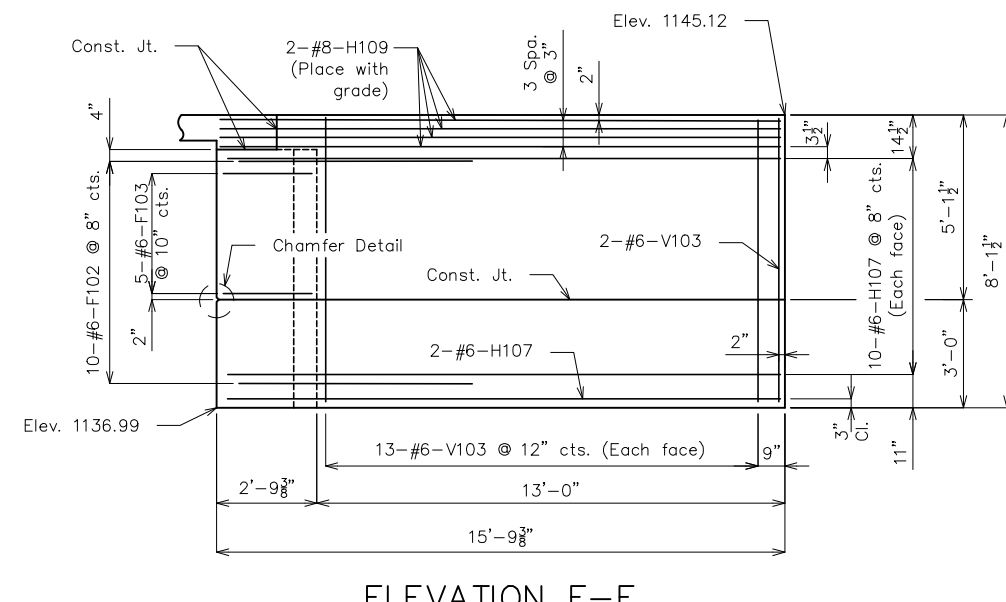
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ELEVATION E-E
PVC thru Wingwall Note:
 Contractor shall install 90 degree elbow after fill face and install 2 - 3" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight.



* #8-H Bars at 3" Cts. (Each face) (Place with grade)



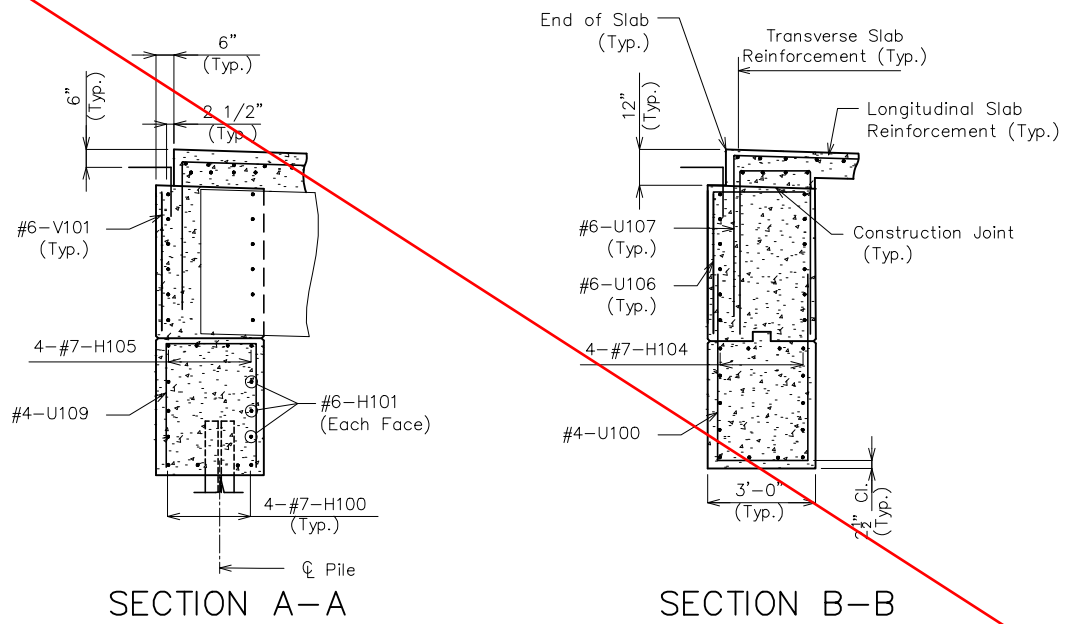
General Notes:
 Work this sheet with Sheets S4 & S5.
 For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet S5.
 U (□) bars vary with beam steps.
 For reinforcement of the corral rail, see Sheets S29-S31.

Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Professional Engineer: 00101416 Landscape Architect: 200701873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI END BENT 1 DETAILS	
6/24/2024 JOB 4049.01	
S6	

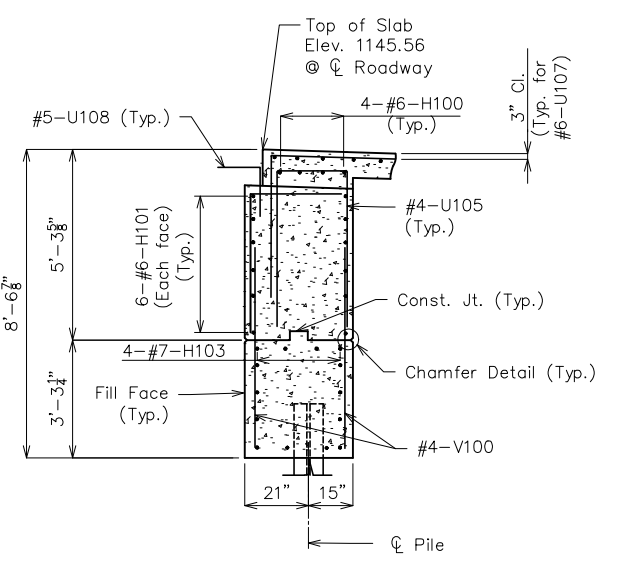
Revised

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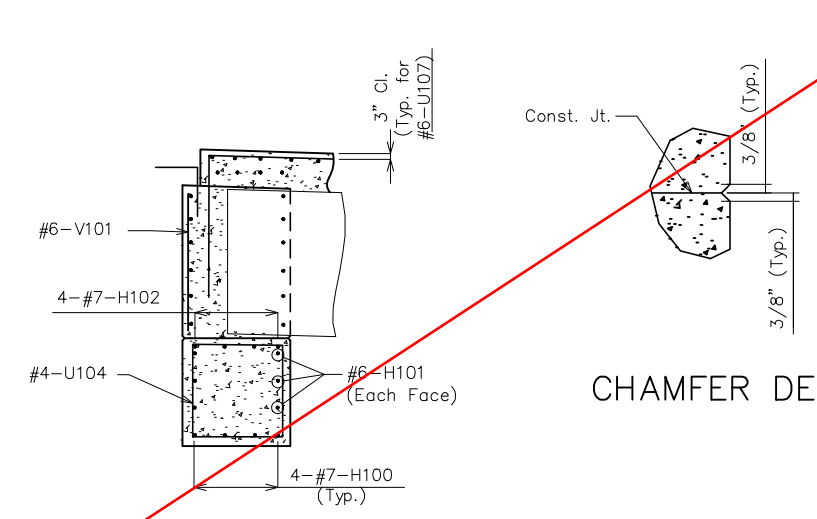


SECTION A-A

SECTION B-B

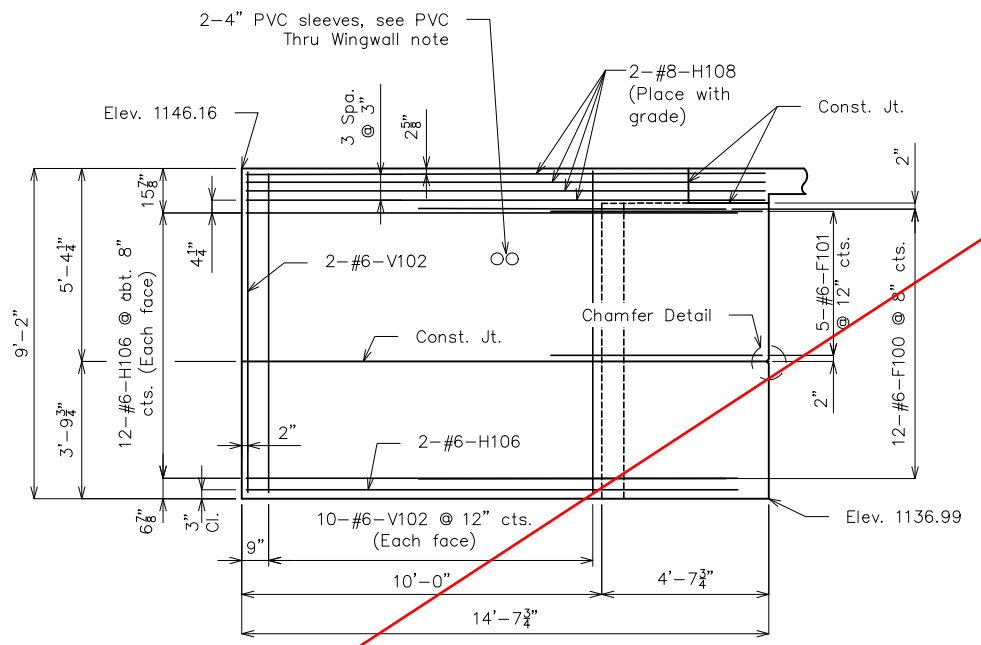


SECTION C-C



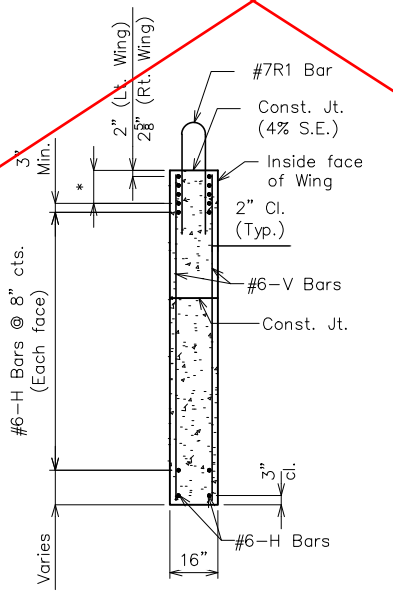
SECTION D-D

CHAMFER DETAIL



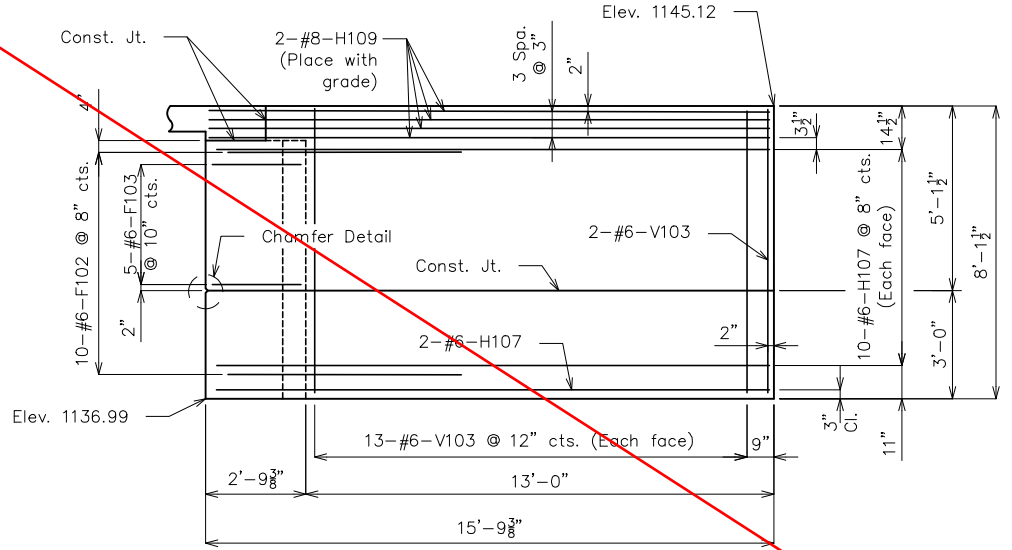
ELEVATION E-E

PVC thru Wingwall Note:
Contractor shall install 90 degree elbow after fill face and install 2 - 4" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight.



TYPICAL SECTION THRU WING

* #8-H Bars at 3" cts. (Each face) (Place with grade)



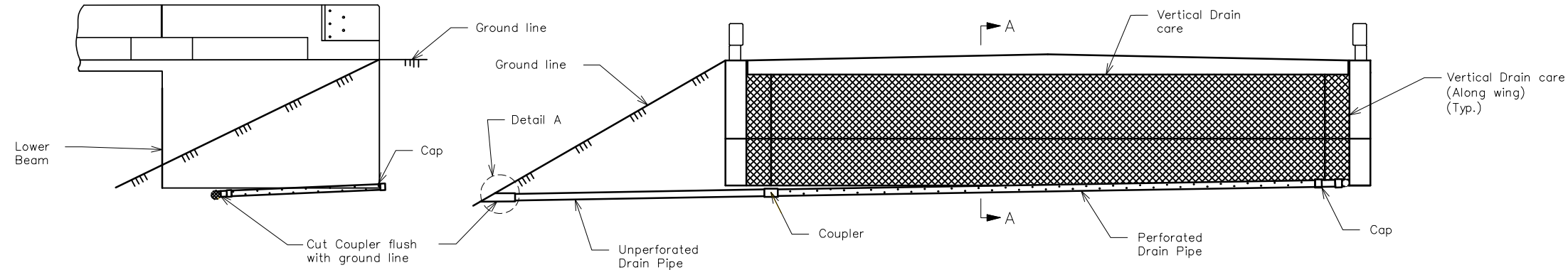
ELEVATION F-F

General Notes:
Work this sheet with Sheets S4 & S5.
For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet S5.
U () bars vary with beam steps.
For reinforcement of the corral rail, see Sheets S29-S31.

Note: This drawing not to scale. Follow dimensions.

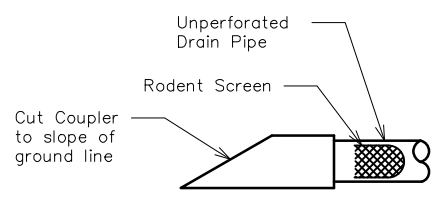
Revision/Issue	Date
No.	
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 00101416 Landscape Architecture: 200701873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI END BENT 1 DETAILS	
6/11/2024	
JOB 4049.01	
S6	

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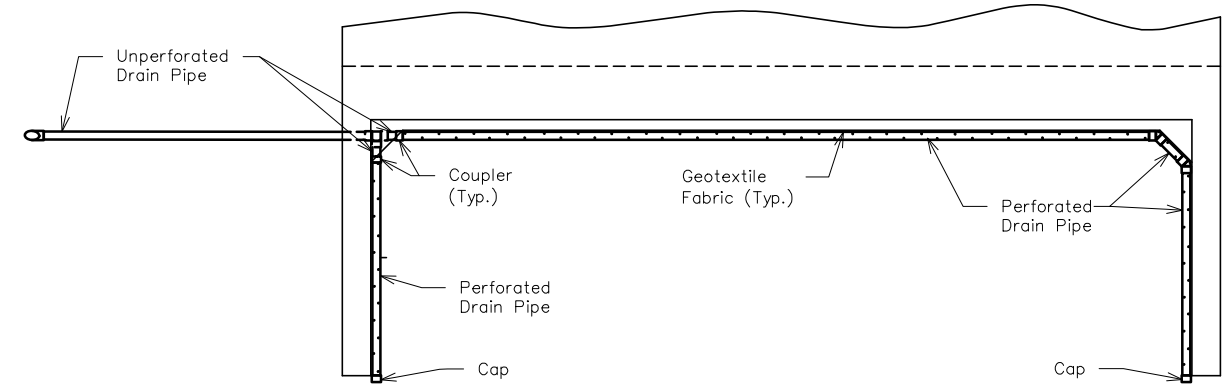


ELEVATION OF WING

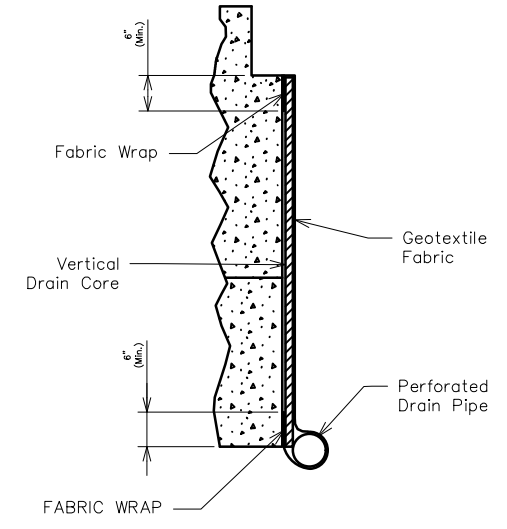
ELEVATION AT END BENT



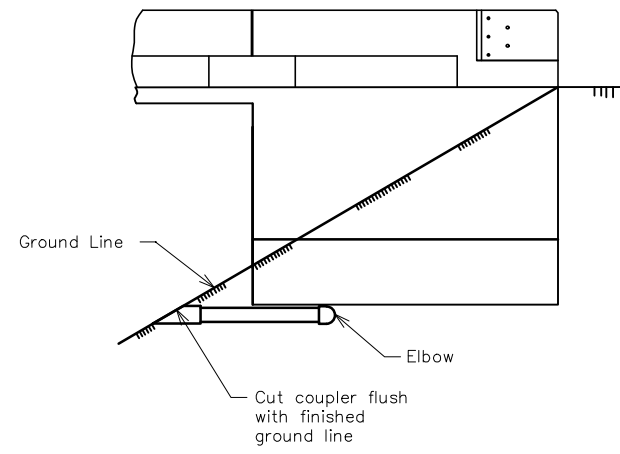
DETAIL A



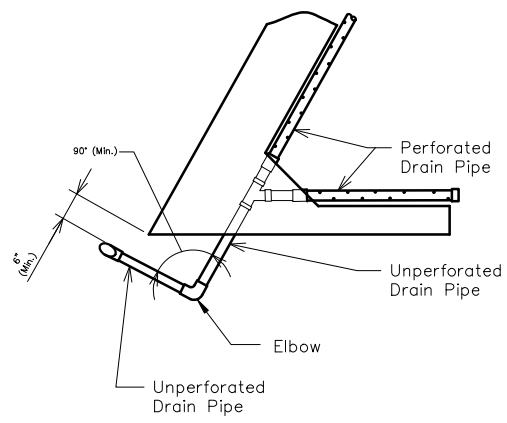
PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)



ELEVATION OF WING



PART PLAN

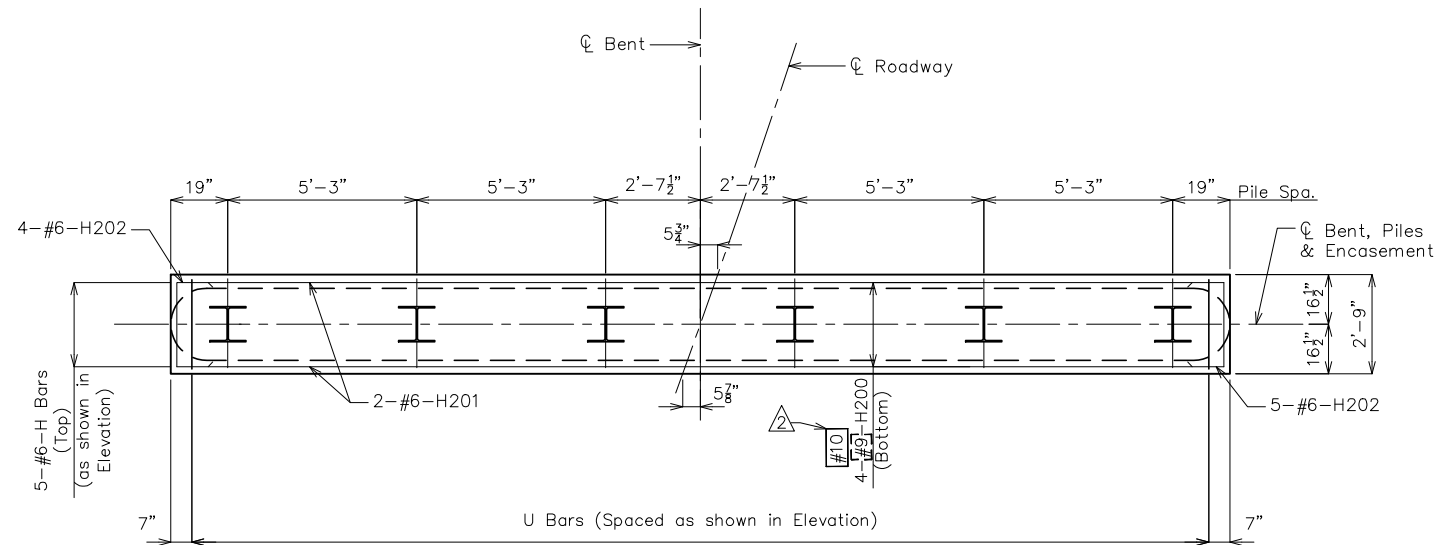
OPTIONAL TURNED DOWN
(Use only when straight drain is not practical)

Notes:
 All drain pipe shall be slope 1 to 2 percent.
 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 shall be placed at fill face of end bent and inside face of wings. The pipe shall slope to lowest grade of ground line, also missing the lower beam of end bent by 1 1/2 inches.
 Perforated pipe shall be placed at fill face side and inside face of wings at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

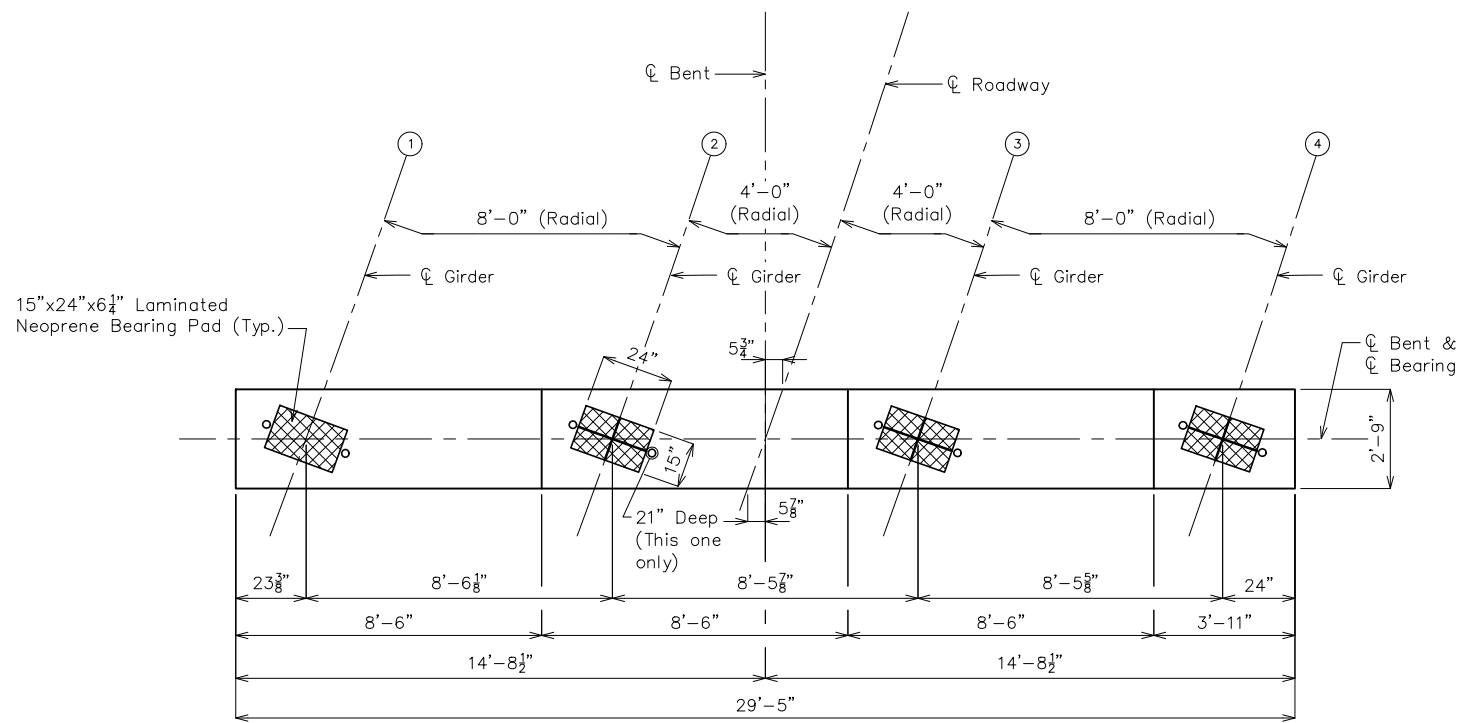
Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	1 2 3 4 5 6 7 8 9 10
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 011416 Landscape Architecture: 200701873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI VERTICAL DRAIN @ END BENTS	
6/11/2024	
JOB 4049.01	
S7	

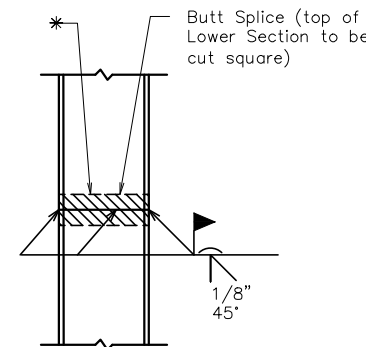
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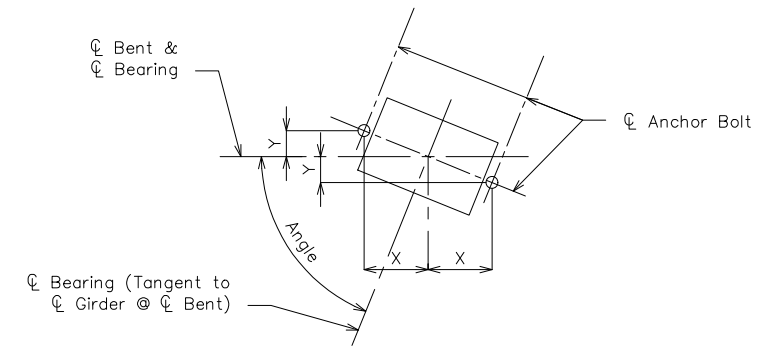
PLAN OF BEAM SHOWING REINFORCEMENT AND PILES



PLAN OF BEAM

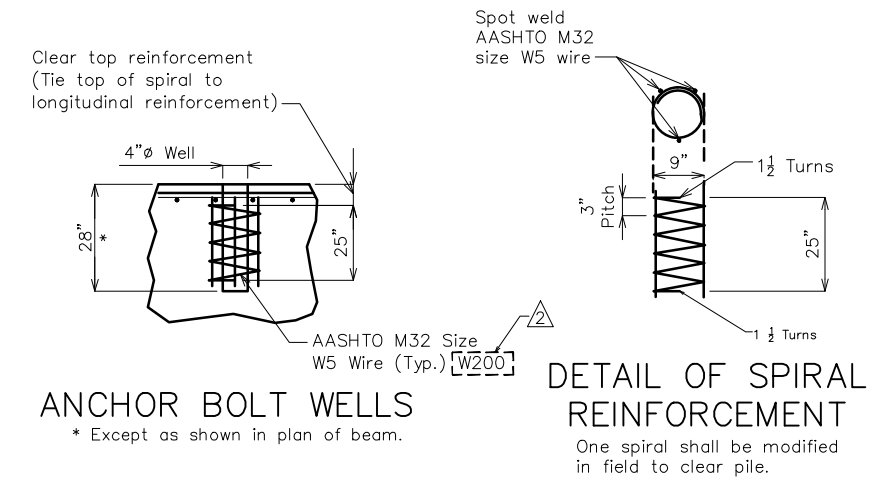


* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.



ANCHOR BOLT LAYOUT

Girder	1	2	3	4
Angle	69°48'53"	70°16'28"	70°42'48"	71°07'58"
X	13 3/8"	13 3/8"	13 3/4"	13 3/4"
Y	4 7/8"	4 3/4"	4 5/8"	4 1/2"



ANCHOR BOLT WELLS
* Except as shown in plan of beam.

DETAIL OF SPIRAL REINFORCEMENT
One spiral shall be modified in field to clear pile.

General Notes:

For details of Intermediate Bent 2 not shown, see Sheet S9.

Reinforcing Steel shall be shifted to clear anchor bolt wells at least 1/2".

For bearing pad details, see Sheet S23.

Item	Qty.
Class 1 Excavation	cu. yard 10
Pre-Bore for Piling	lin. foot 96
Galvanized Structural Steel Piles (12 in.)	lin. foot 270
Pile Wave Analysis	each 1
Pile Point Reinforcement	each 6
Class B Concrete (Substructure)	cu. yard 68.4
Reinforcing Steel (Bridges)	pound 4,630

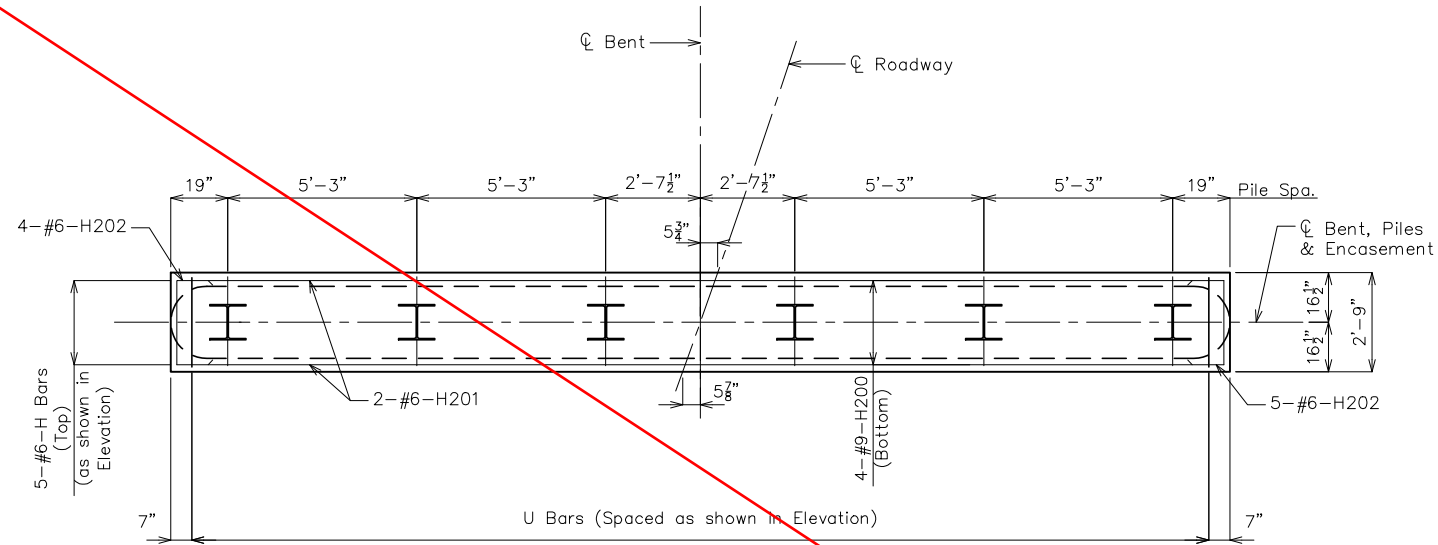
These quantities are included in the estimated quantities table on Sheet S2.

Added/Revised

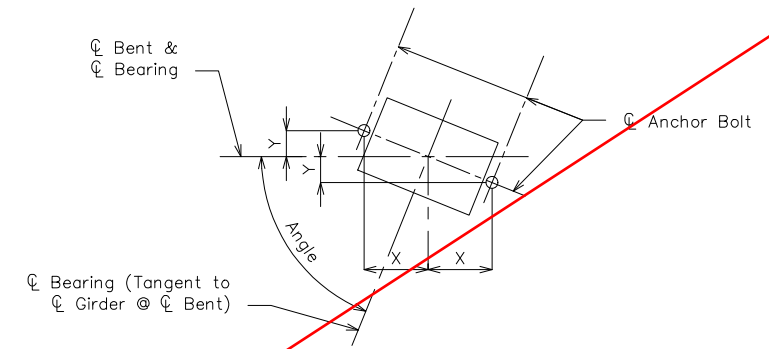
Note: This drawing not to scale. Follow dimensions.

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Revision/Issue	
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineer: 0101416 Landscape Architect: 200701873	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
INTERMEDIATE BENT 2 DETAILS	
6/24/2024	
JOB 4049.01	
S8	

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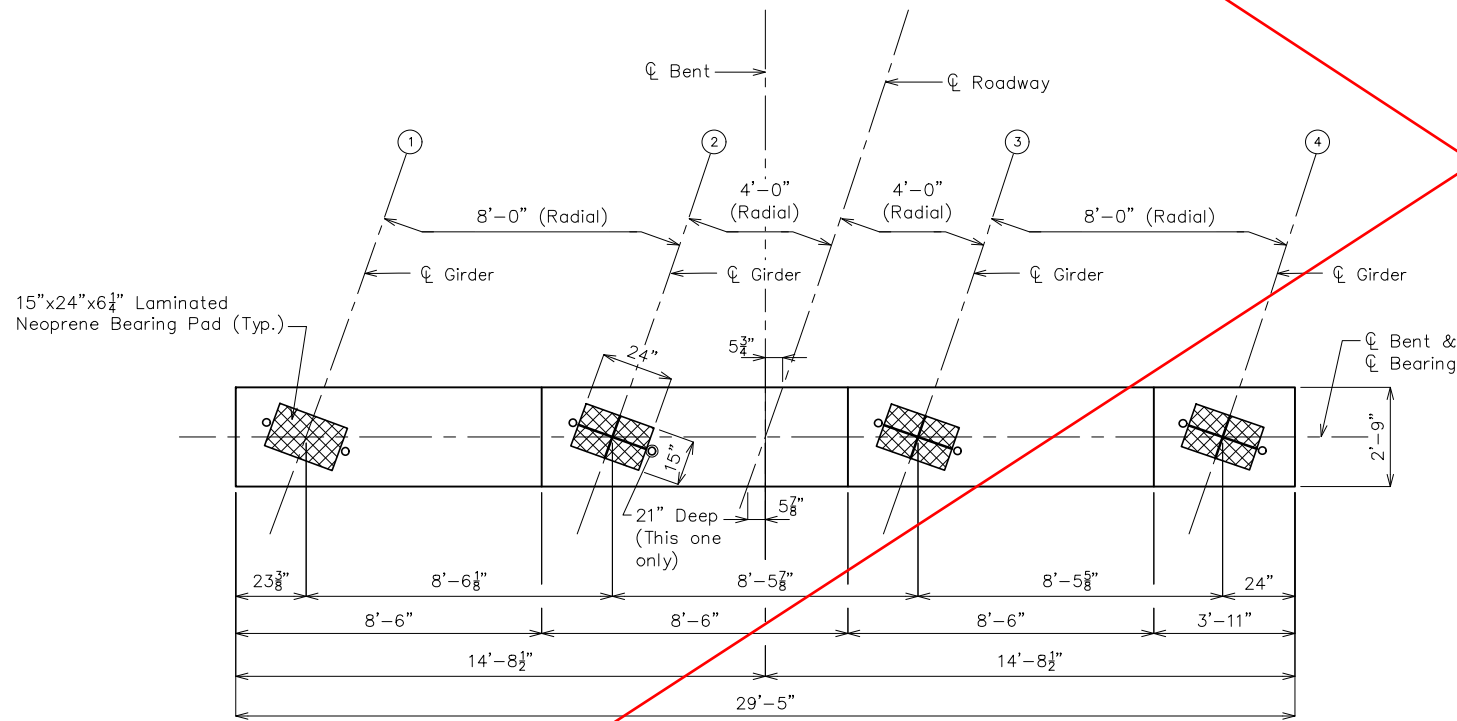
PLAN OF BEAM SHOWING REINFORCEMENT AND PILES



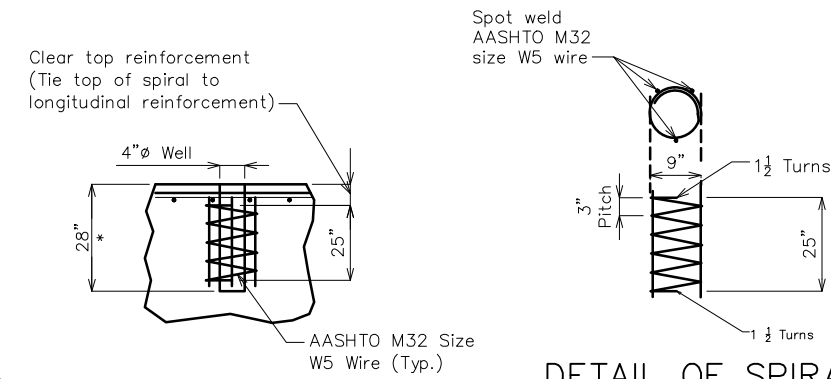
ANCHOR BOLT LAYOUT

Anchor Bolt Layout Dimensions

Girder	1	2	3	4
Angle	69°48'53"	70°16'28"	70°42'48"	71°07'58"
X	13 3/8"	13 3/8"	13 1/4"	13 1/4"
Y	4 7/8"	4 3/4"	4 5/8"	4 1/2"



PLAN OF BEAM



ANCHOR BOLT WELLS

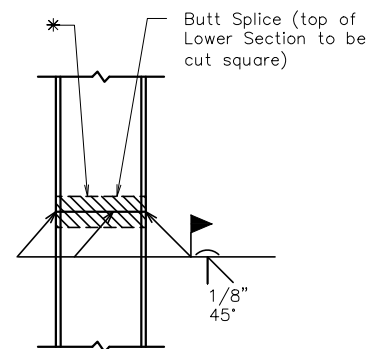
DETAIL OF SPIRAL REINFORCEMENT

General Notes:

For details of Intermediate Bent 2 not shown, see Sheet S9.

Reinforcing Steel shall be shifted to clear anchor bolt wells at least 1/2".

For bearing pad details, see Sheet S23.



STEEL PILE SPLICE
(If required)

* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.

Item	Qty.
Class 1 Excavation	cu. yard 10
Pre-Bore for Piling	lin. foot 96
Galvanized Structural Steel Piles (12 in.)	lin. foot 270
Pile Wave Analysis	each 1
Pile Point Reinforcement	each 6
Class B Concrete (Substructure)	cu. yard 68.4
Reinforcing Steel (Bridges)	pound 4.630

These quantities are included in the estimated quantities table on Sheet S2.

Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	1

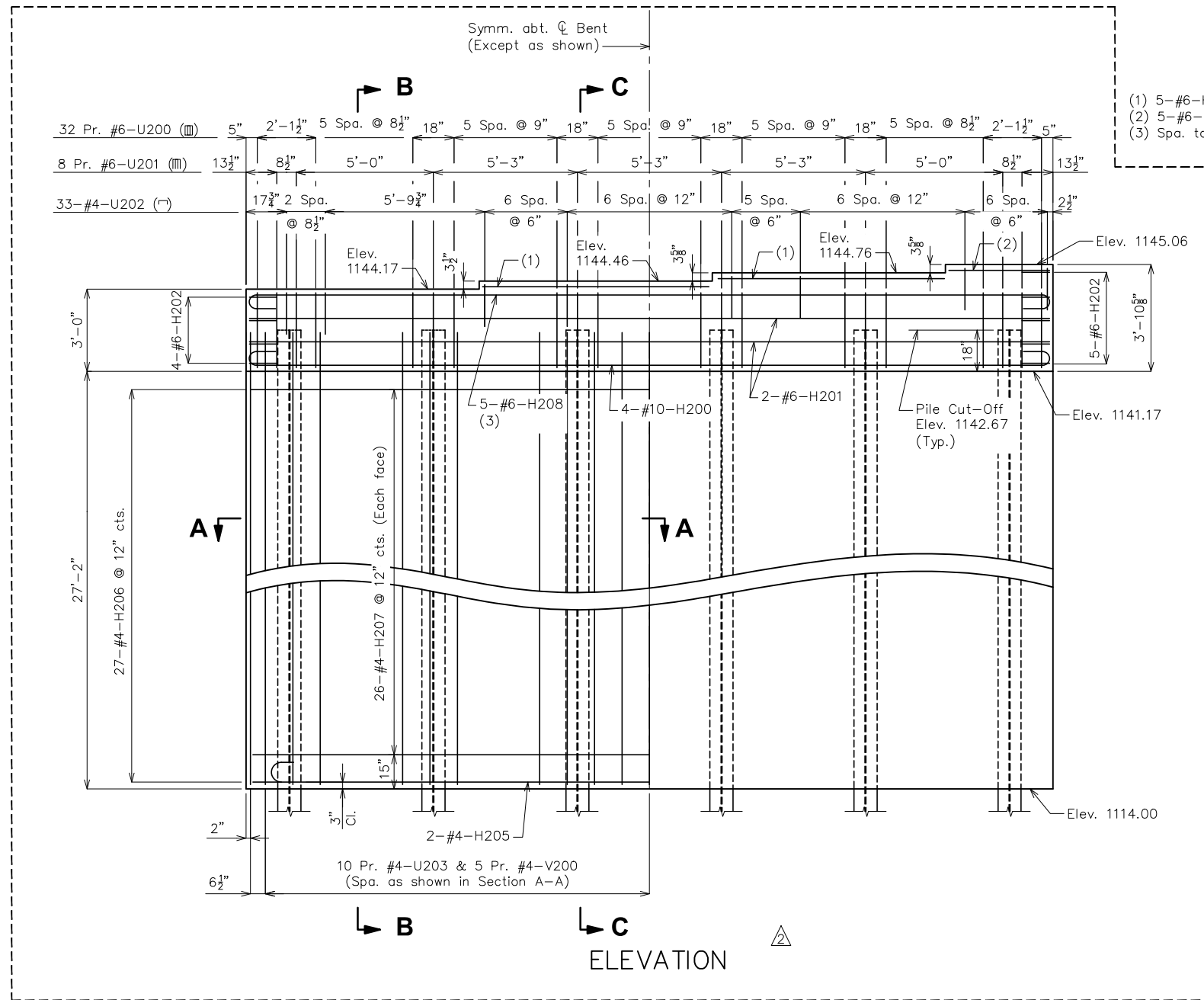
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

GRE GREAT RIVER ENGINEERING
Missouri State Certificate of Authority Numbers: 00101416, 00101417, 00101418, 00101419, 00101420, 00101421, 00101422, 00101423, 00101424, 00101425, 00101426, 00101427, 00101428, 00101429, 00101430, 00101431, 00101432, 00101433, 00101434, 00101435, 00101436, 00101437, 00101438, 00101439, 00101440, 00101441, 00101442, 00101443, 00101444, 00101445, 00101446, 00101447, 00101448, 00101449, 00101450, 00101451, 00101452, 00101453, 00101454, 00101455, 00101456, 00101457, 00101458, 00101459, 00101460, 00101461, 00101462, 00101463, 00101464, 00101465, 00101466, 00101467, 00101468, 00101469, 00101470, 00101471, 00101472, 00101473, 00101474, 00101475, 00101476, 00101477, 00101478, 00101479, 00101480, 00101481, 00101482, 00101483, 00101484, 00101485, 00101486, 00101487, 00101488, 00101489, 00101490, 00101491, 00101492, 00101493, 00101494, 00101495, 00101496, 00101497, 00101498, 00101499, 00101500

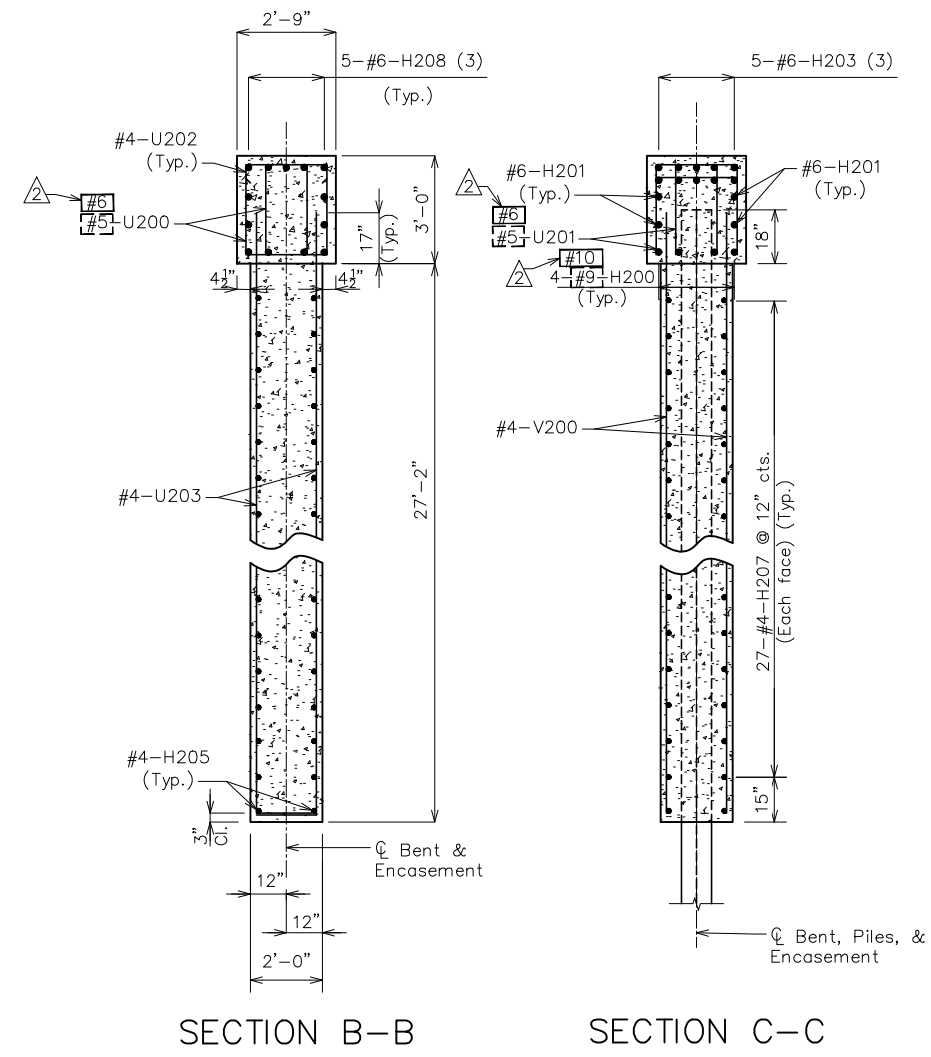
GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
INTERMEDIATE BENT 2 DETAILS

6/11/2024
JOB 4049.01
S8

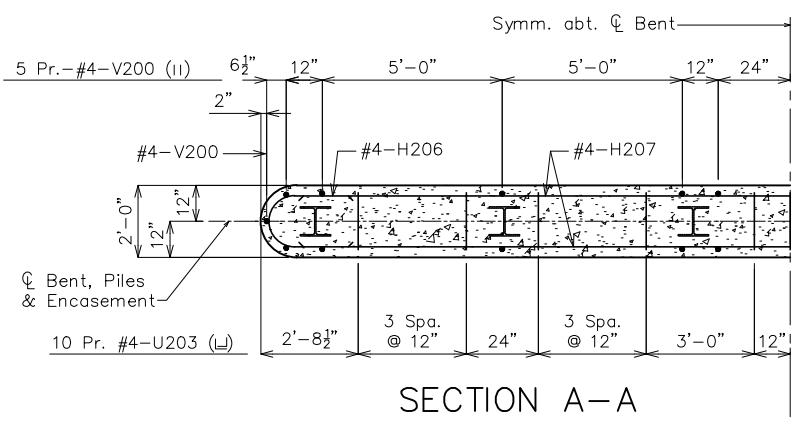
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- (1) 5-#6-H203 (Spa. to avoid anchor-wells)
- (2) 5-#6-H204 (Spa. to avoid anchor-wells)
- (3) Spa. to avoid anchor-wells



SECTION B-B SECTION C-C



SECTION A-A

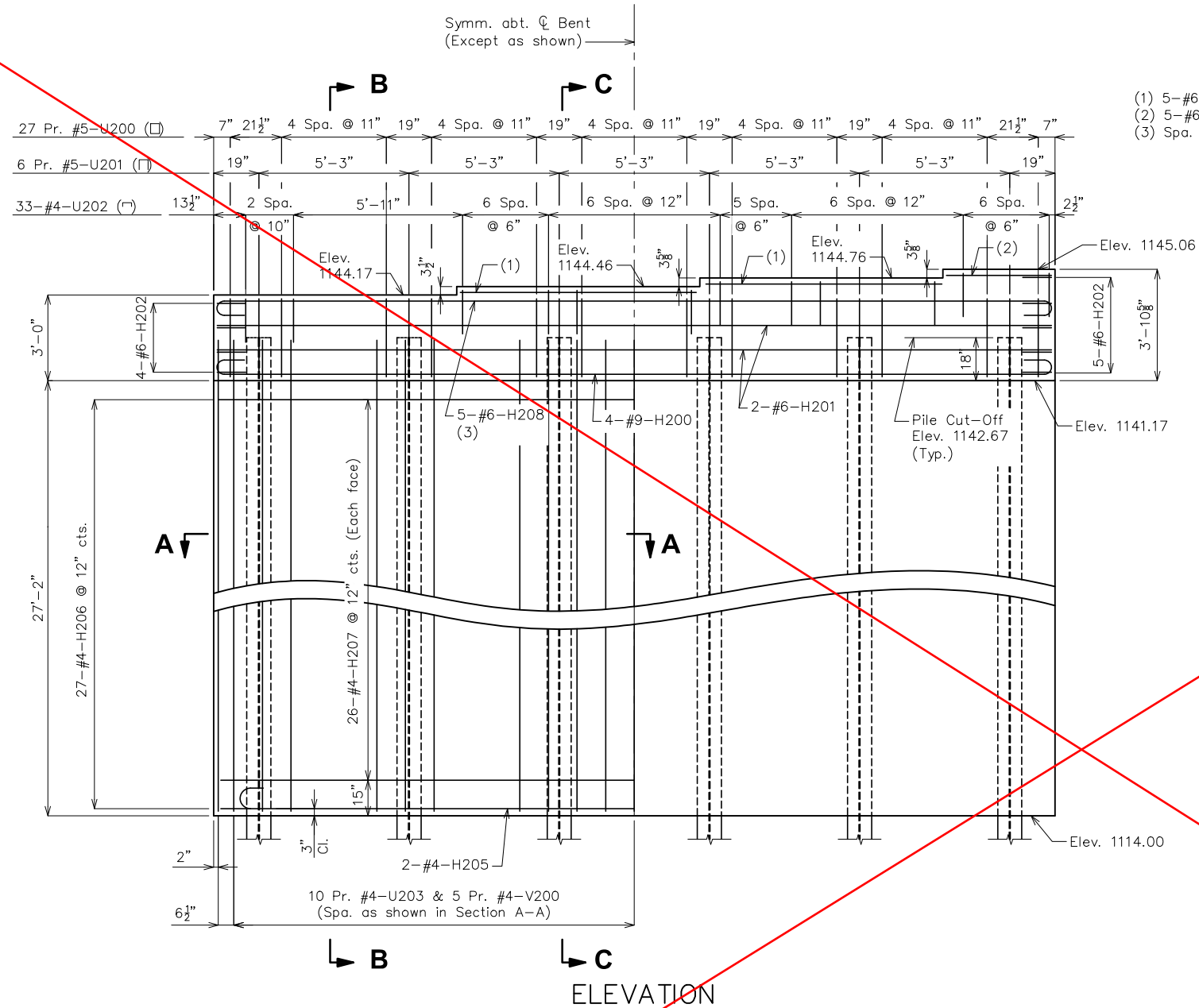
General Notes:
For details of Intermediate Bent 2 not shown, see Sheet S8.

Note: This drawing not to scale. Follow dimensions.

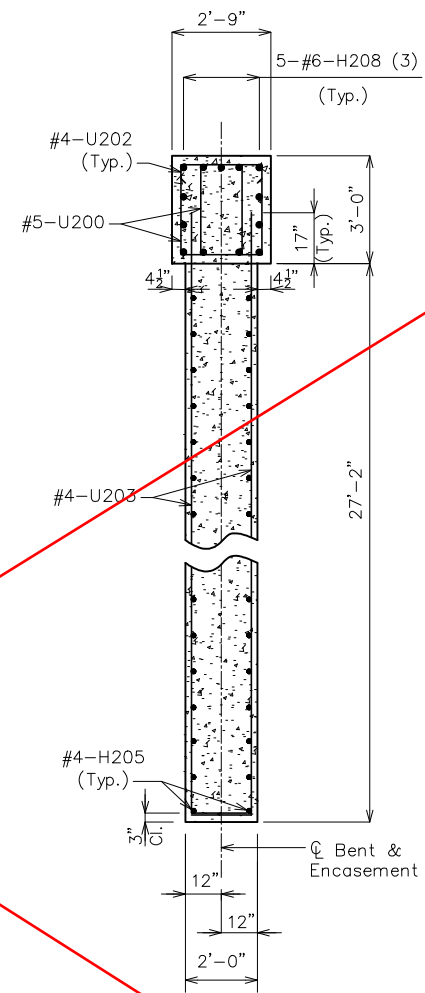
Revised

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Revision/Issue	
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<p>IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.</p>	
<p>Missouri State Certificate of Authority Numbers: Engineer: 0011416 Landscape Architect: 200701823</p>	
<p>GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI INTERMEDIATE BENT 2 DETAILS</p>	
<p>6/24/2024 JOB 4049.01</p>	
<p>S9</p>	

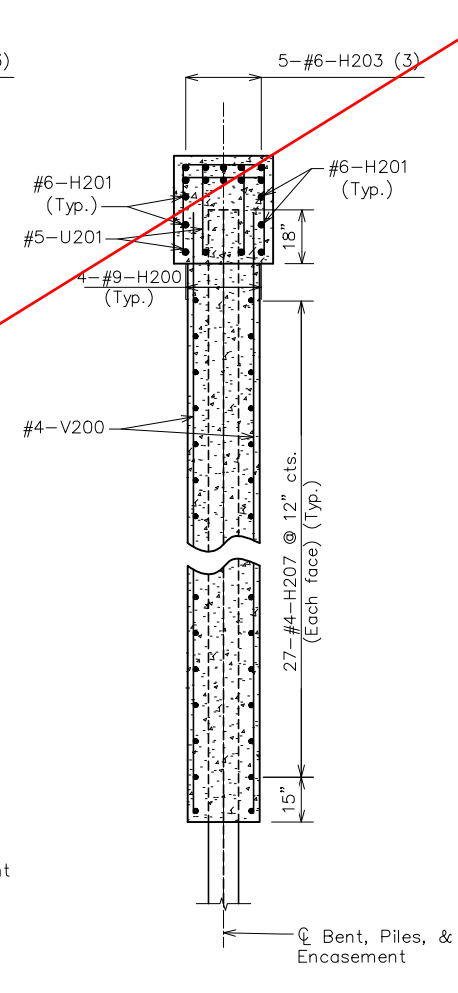
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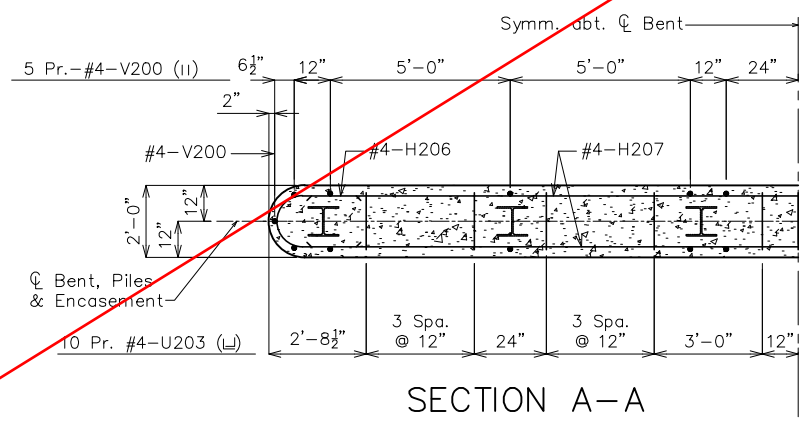
- (1) 5-#6-H203 (Spa. to avoid anchor-wells)
- (2) 5-#6-H204 (Spa. to avoid anchor-wells)
- (3) Spa. to avoid anchor-wells



SECTION B-B



SECTION C-C



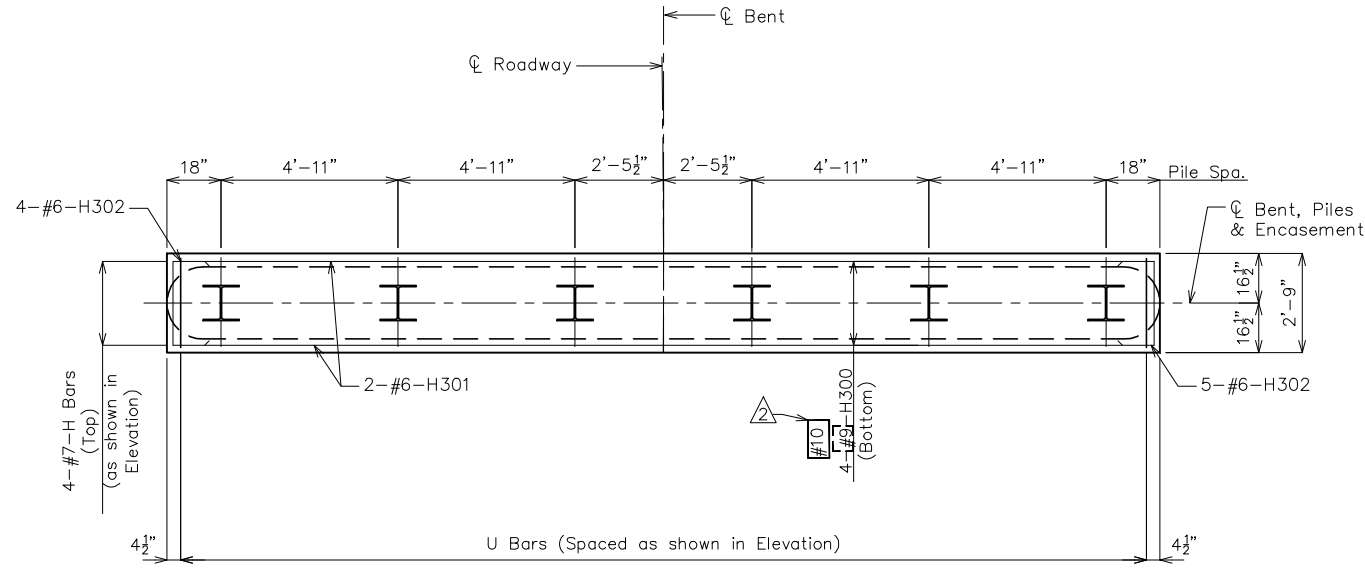
SECTION A-A

General Notes:
For details of Intermediate Bent 2 not shown, see Sheet S8.

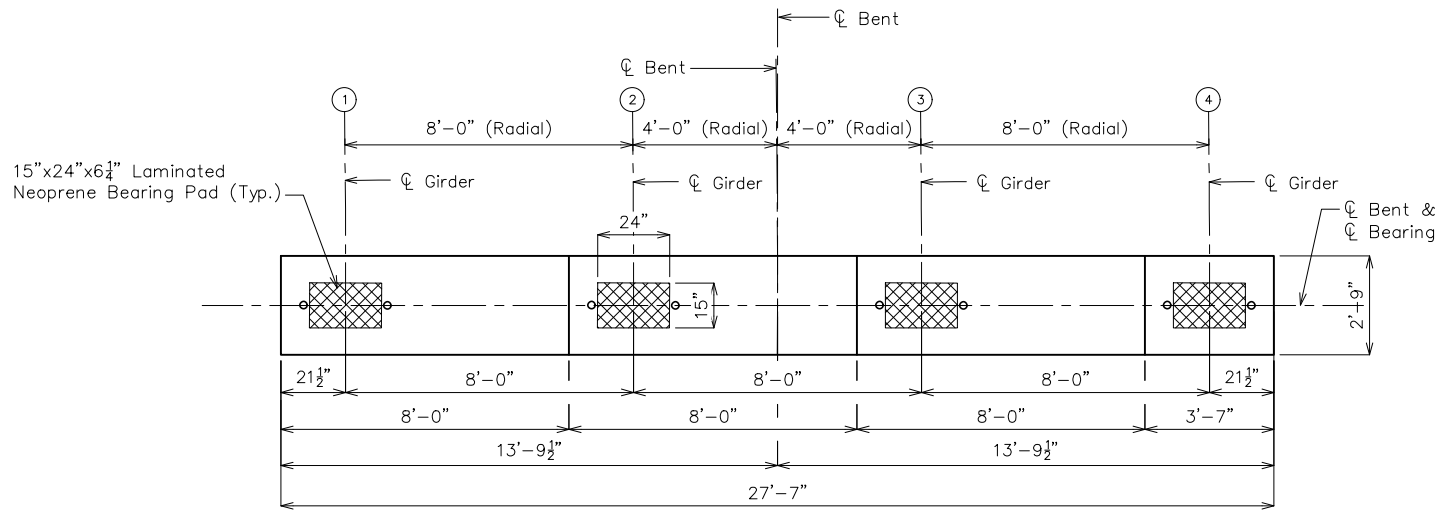
Note: This drawing not to scale. Follow dimensions.

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6/11/2024 JOB 4049.01	
S9	

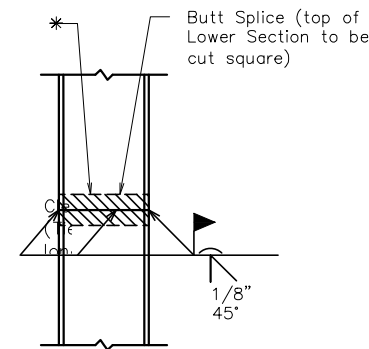
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PLAN OF BEAM SHOWING REINFORCEMENT AND PILES

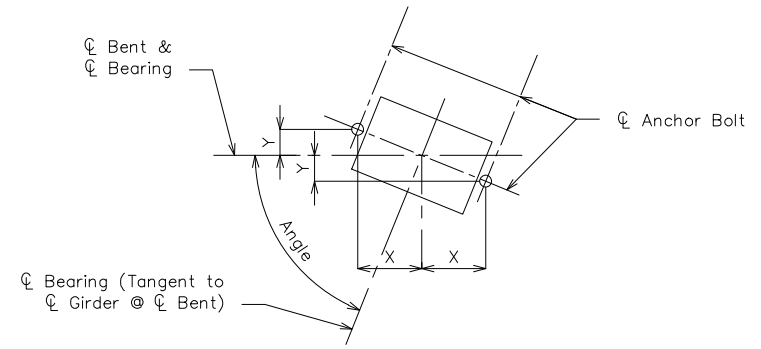


PLAN OF BEAM



STEEL PILE SPLICE
(If required)

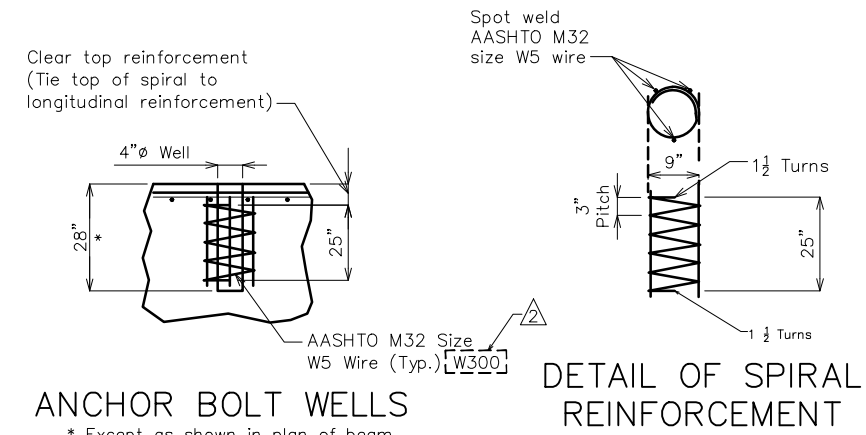
* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.



ANCHOR BOLT LAYOUT

Anchor Bolt Layout Dimensions

Girder	1	2	3	4
Angle	89°50'53"	89°51'05"	89°51'17"	89°51'28"
X	14"	14"	14"	14"
Y	1 1/8"	1 1/8"	1 1/8"	1 1/8"



ANCHOR BOLT WELLS

* Except as shown in plan of beam.

DETAIL OF SPIRAL REINFORCEMENT

General Notes:

- For details of Intermediate Bent 3 not shown, see Sheet S11.
- Reinforcing Steel shall be shifted to clear anchor bolt wells at least 1/2".
- For bearing pad details, see Sheet S23.

Substructure Quantity Table for Bent 3

Item	Qty.
Class 1 Excavation	cu. yard 10
Pre-Bore for Piling	linear foot 108
Galvanized Structural Steel Piles (12 in.)	linear foot 246
Pile Wave Analysis	each 1
Pile Point Reinforcement	each 6
Class B Concrete (Substructure)	cu. yard 57.4
Reinforcing Steel (Bridges)	pound 4,160

These quantities are included in the estimated quantities table on Sheet S2.

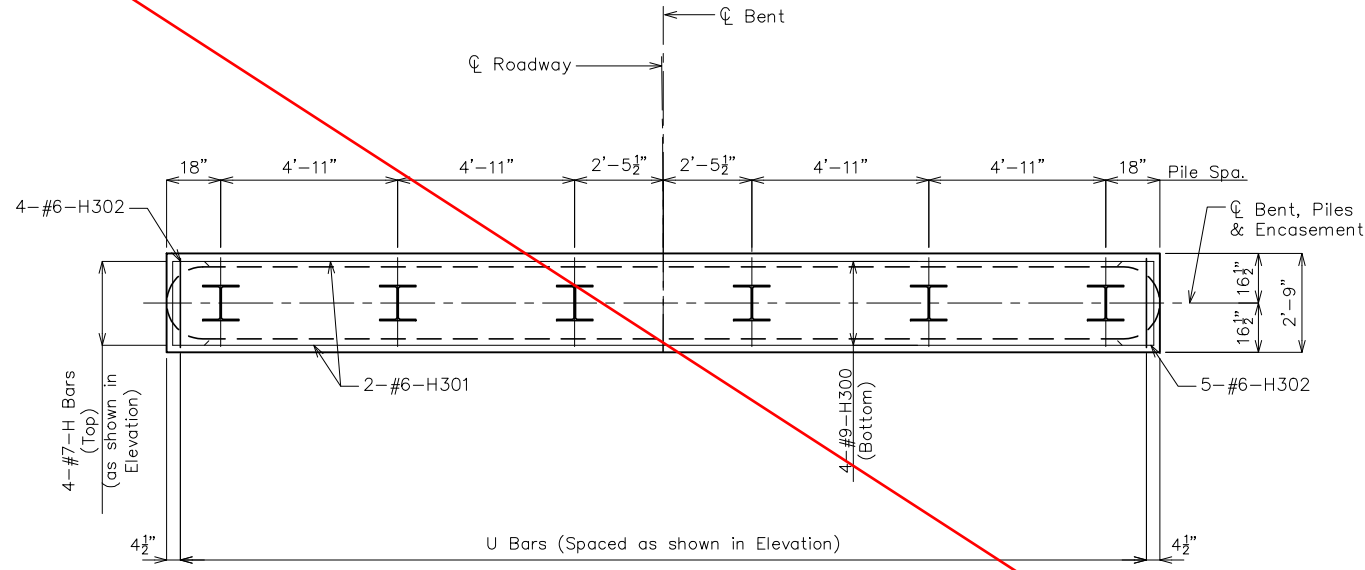
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Added/Revised

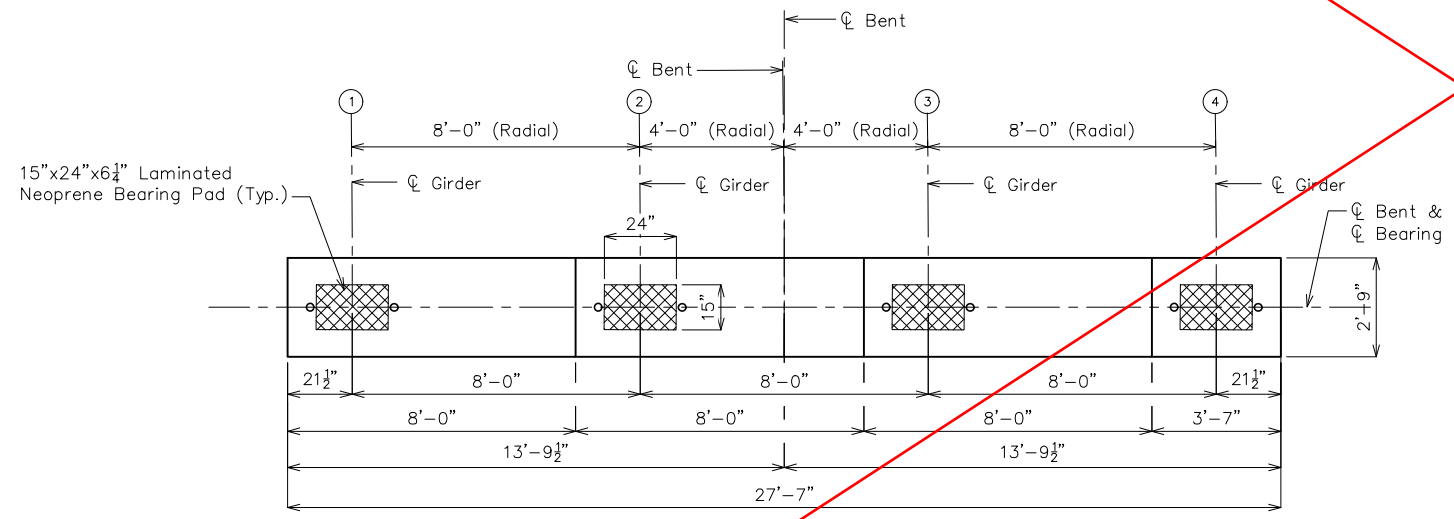
Note: This drawing not to scale. Follow dimensions.

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GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
INTERMEDIATE BENT 3 DETAILS	
6/24/2024	
JOB 4049.01	
S10	

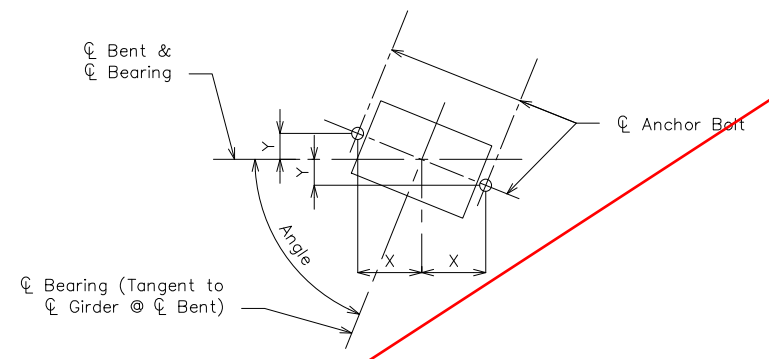
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PLAN OF BEAM SHOWING REINFORCEMENT AND PILES

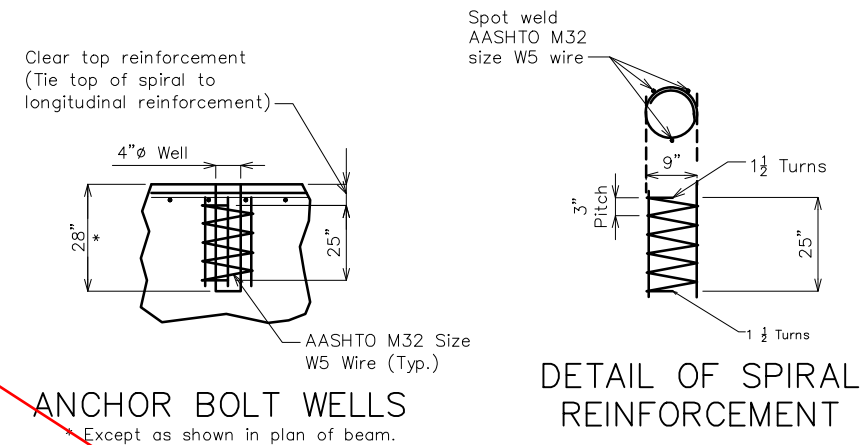


PLAN OF BEAM



ANCHOR BOLT LAYOUT

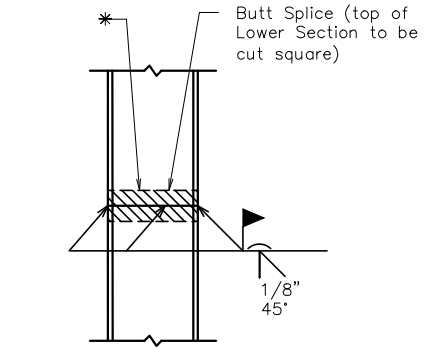
Girder	1	2	3	4
Angle	89°50'53"	89°51'05"	89°51'17"	89°51'28"
X	14"	14"	14"	14"
Y	1 1/8"	1 1/8"	1 1/8"	1 1/8"



ANCHOR BOLT WELLS
Except as shown in plan of beam.

DETAIL OF SPIRAL REINFORCEMENT

General Notes:
 For details of Intermediate Bent 3 not shown, see Sheet S11.
 Reinforcing Steel shall be shifted to clear anchor bolt wells at least 1/2".
 For bearing pad details, see Sheet S23.



STEEL PILE SPLICE
(If required)

* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.

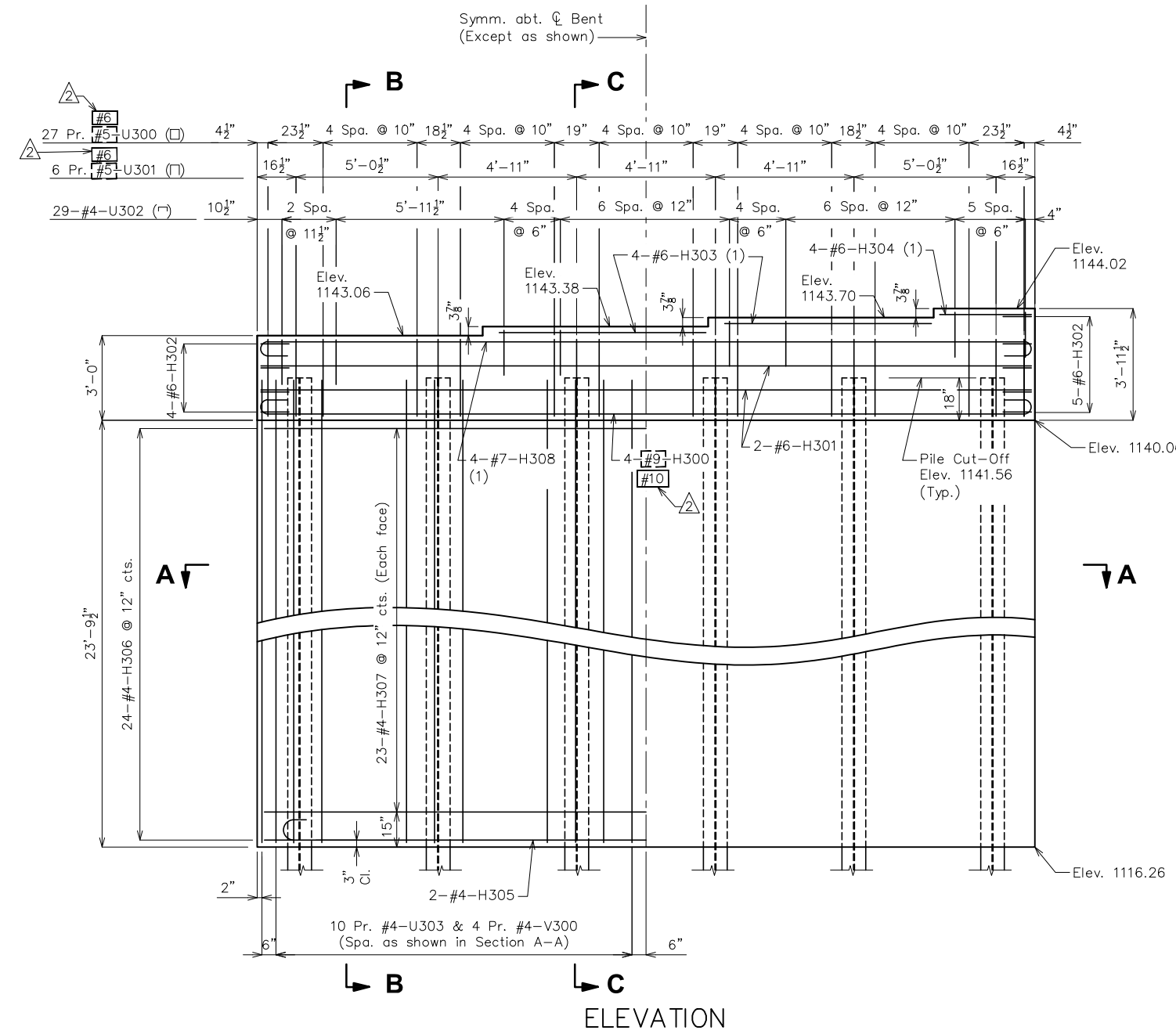
Item	Qty.
Class 1 Excavation	cu. yard 10
Pre-Bore for Piling	linear foot 108
Galvanized Structural Steel Piles (12 in.)	linear foot 246
Pile Wave Analysis	each 1
Pile Point Reinforcement	each 6
Class B Concrete (Substructure)	cu. yard 57.4
Reinforcing Steel (Bridges)	pound 4,160

These quantities are included in the estimated quantities table on Sheet S2.

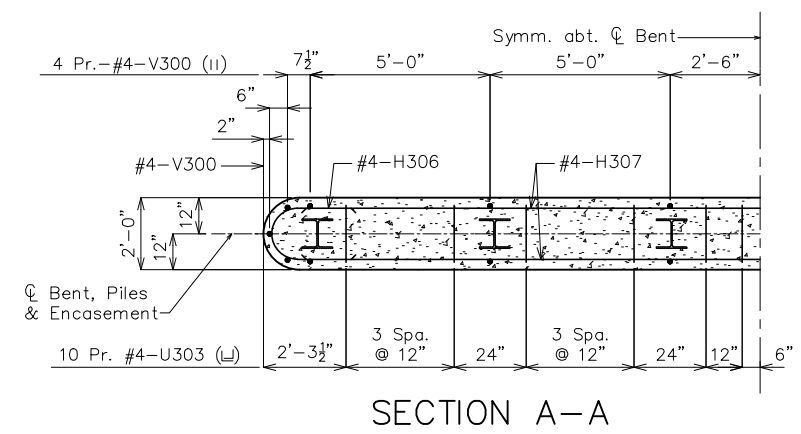
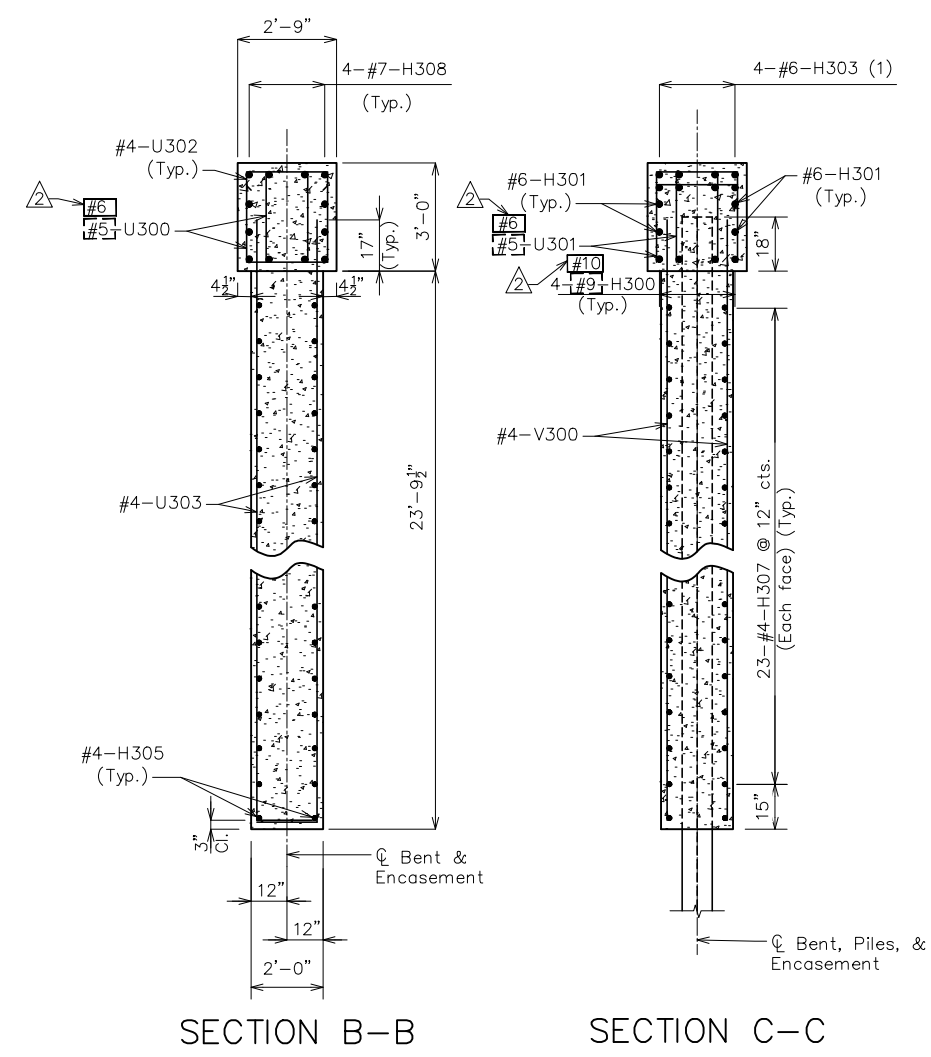
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GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI INTERMEDIATE BENT 3 DETAILS							
6/11/2024							
JOB 4049.01							
S10							

Note: This drawing not to scale. Follow dimensions.

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(1) Spa. to avoid anchor-wells



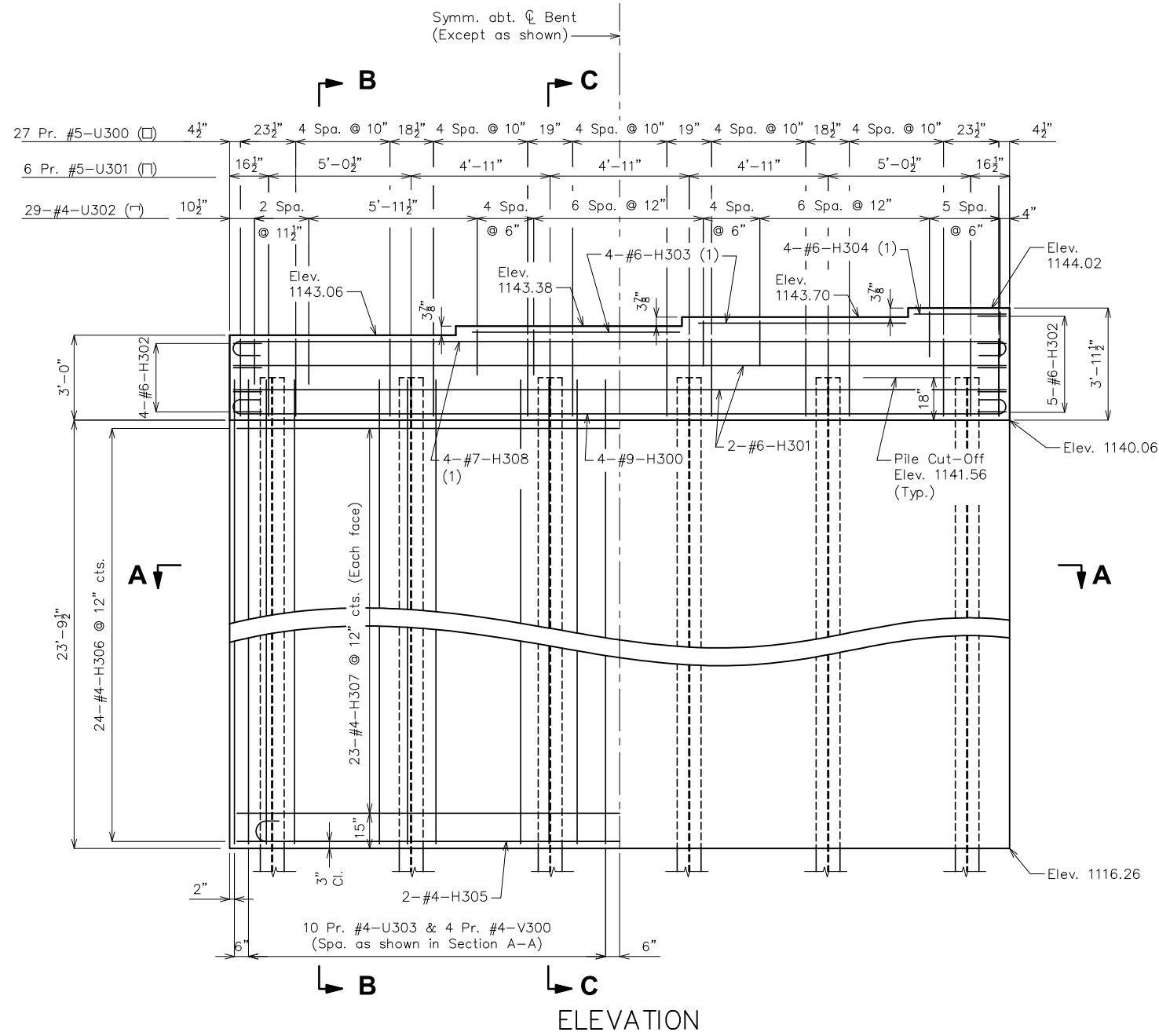
General Notes:
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Note: This drawing not to scale. Follow dimensions.

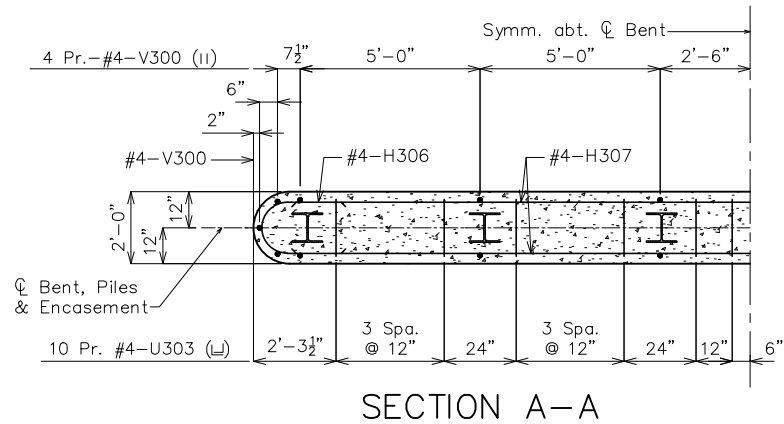
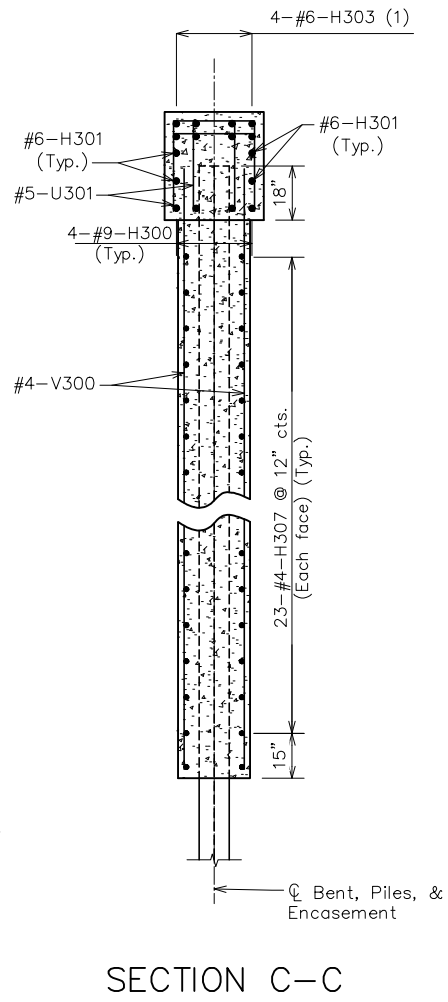
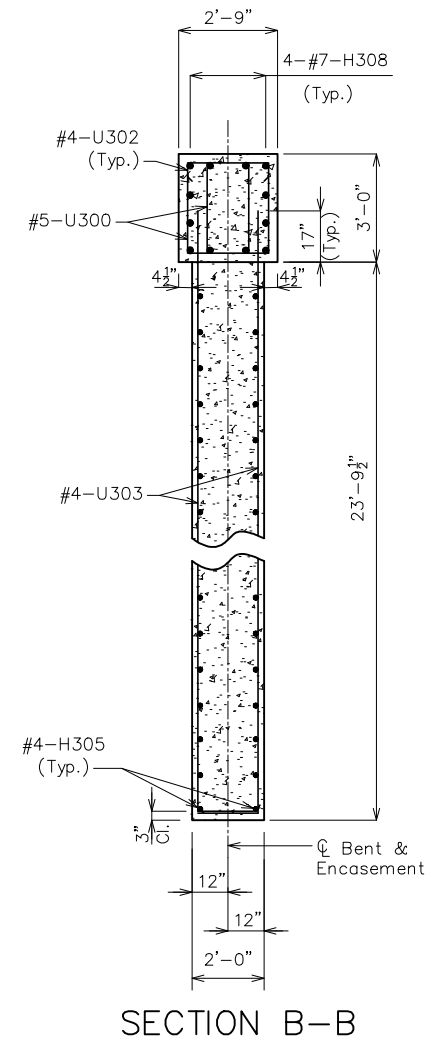
Revised

Revision/Issue	Date
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<p>Missouri State Certificate of Authority Numbers: Engineering: 0011416 Landscape Architecture: 2007018573</p>	
<p>GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI INTERMEDIATE BENT 3 DETAILS</p>	
<p>6/24/2024 JOB 4049.01</p>	
<p>S11</p>	

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(1) Spa. to avoid anchor-wells

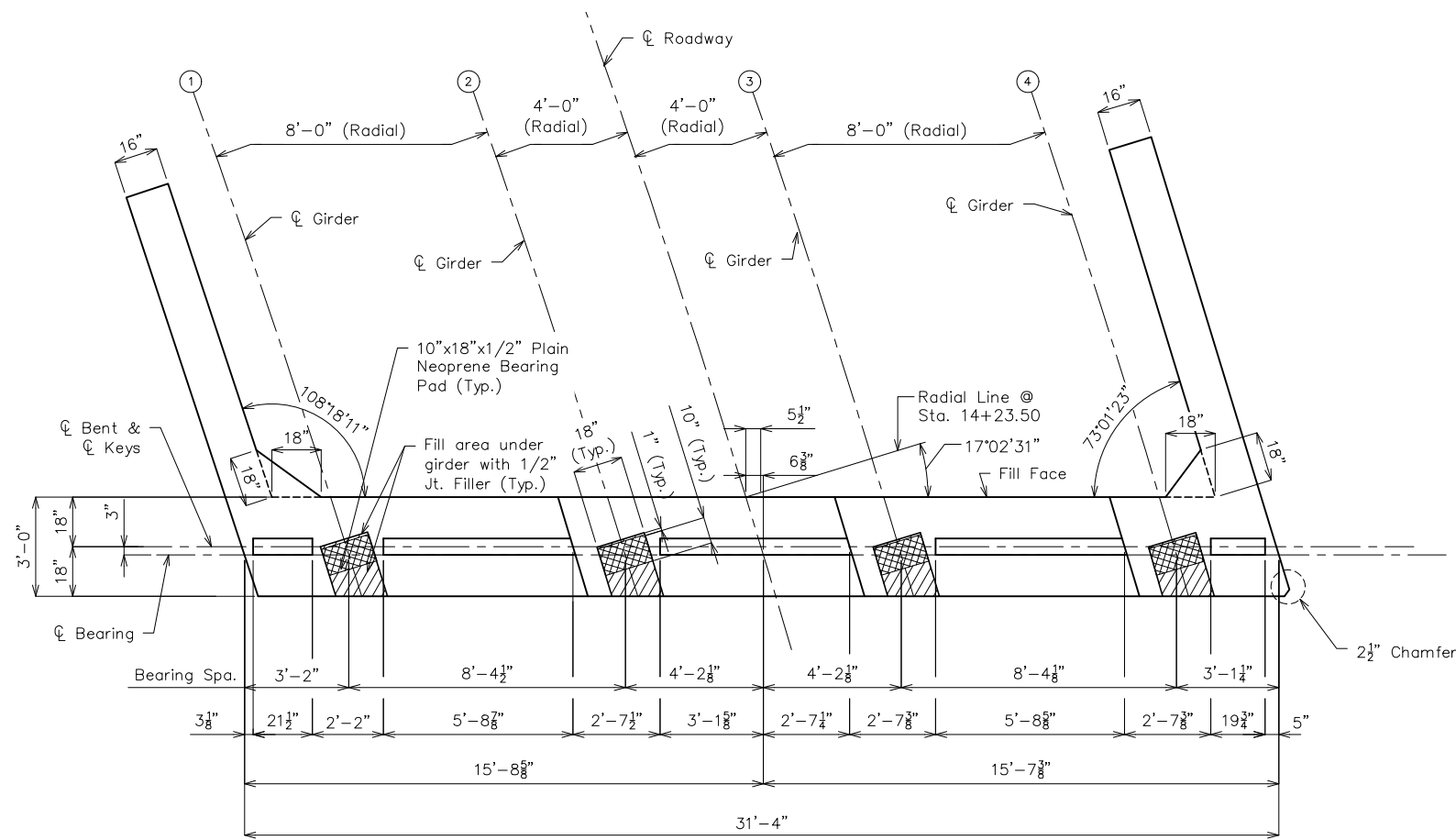


General Notes:
For details of Intermediate Bent 3 not shown, see Sheet S10.

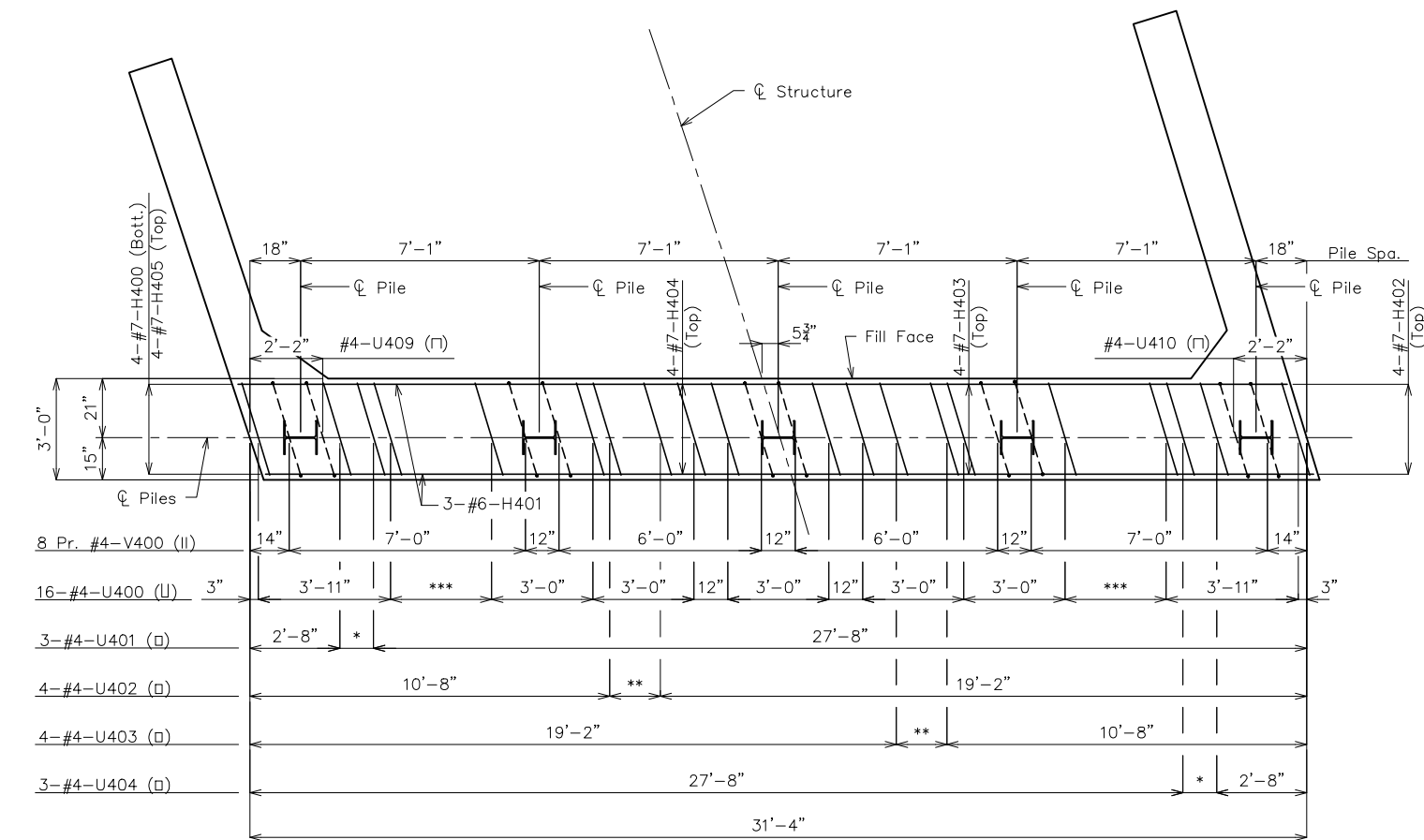
Note: This drawing not to scale. Follow dimensions.

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6/11/2024	
JOB 4049.01	
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PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT & PILES
Keys and steps not shown for clarity.

* 2 Spa. @ 6"
** 3 Spa. @ 6"
*** 3 Spa. @ 12"

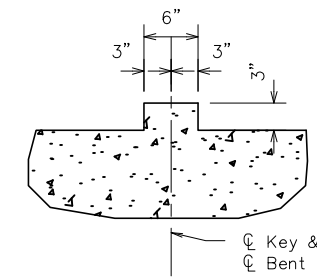
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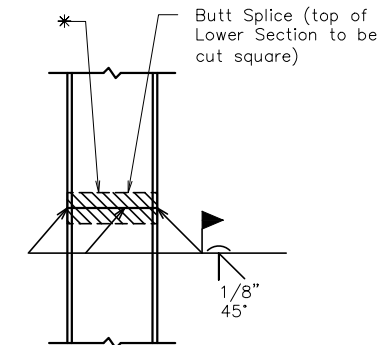
Work this sheet with Sheets S13 & S14.

The beam steps and the U bars and pairs of V bars shall be placed parallel to a line tangent to centerline of roadway at centerline of bearing.

Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.

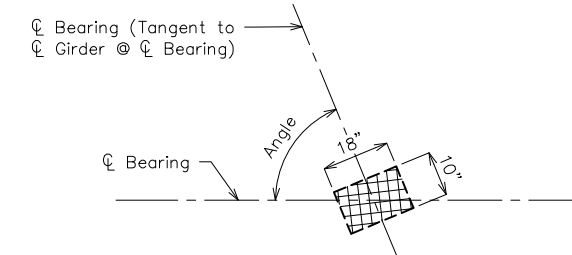


SECTION THRU KEY



STEEL PILE SPLICE
(If required)

* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.



ANCHOR BOLT LAYOUT

Girder	1	2	3	4
Angle	72°39'44"	73°03'10"	73°25'33"	73°46'57"

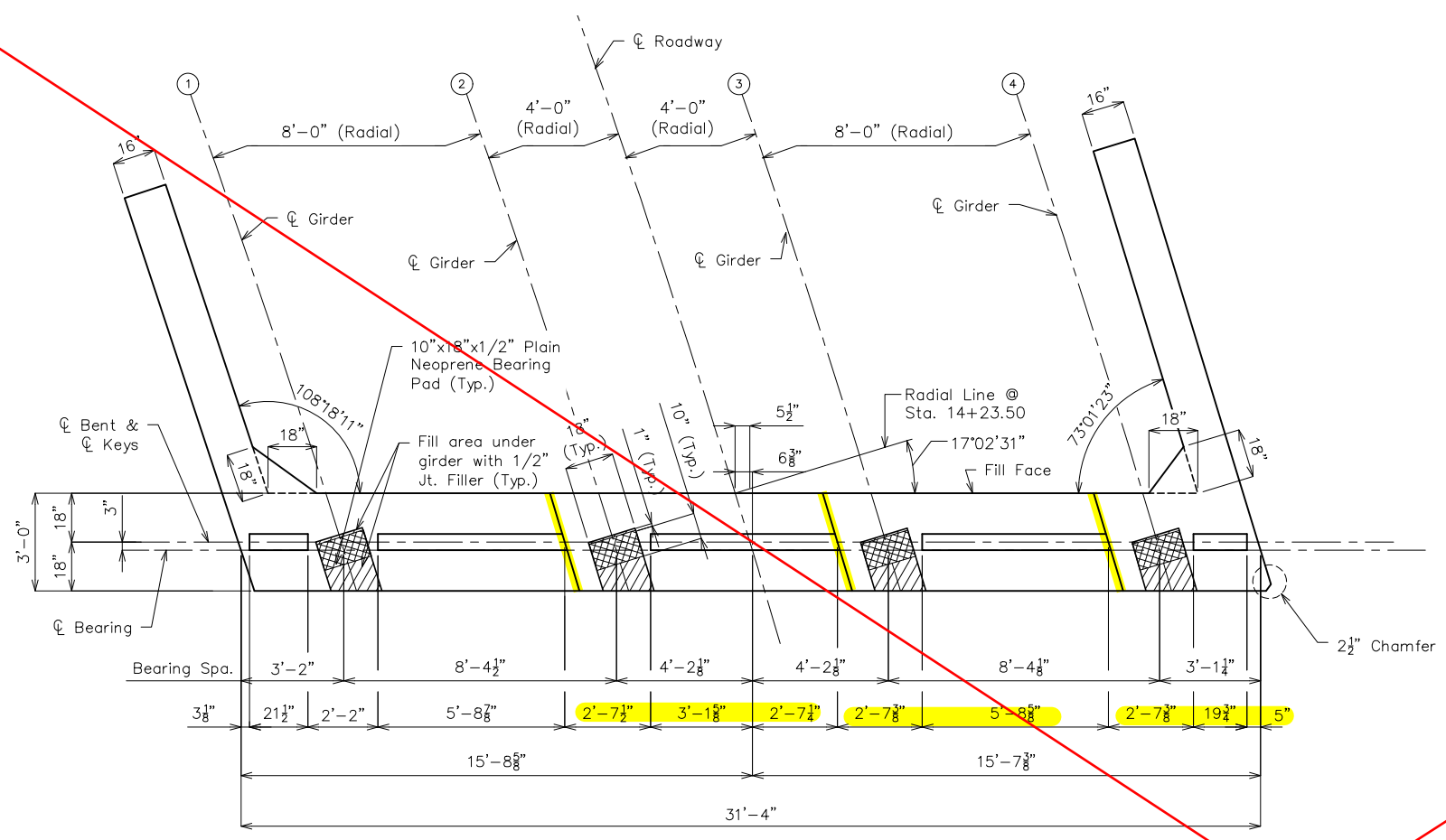
Item	Qty.
Class 1 Excavation	cu. yard 5
Galvanized Structural Steel Piles (12 in.)	linear foot 85
Pre-Bore for Piling	linear foot 75
Pile Point Reinforcement	each 5
Class B Concrete (Substructure)	cu. yard 17.1

These quantities are included in the estimated quantities table on Sheet S2.

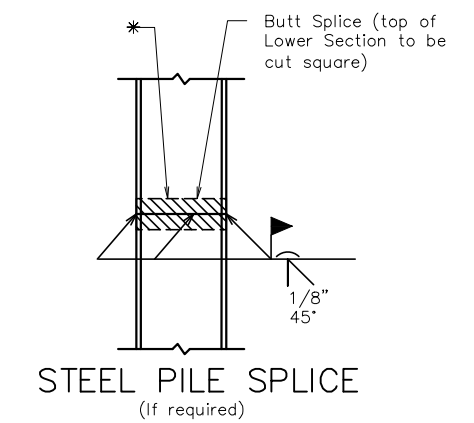
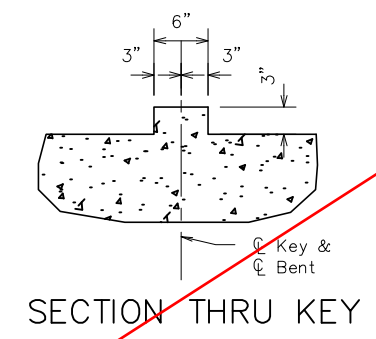
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GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI END BENT 4 DETAILS							
6/24/2024							
JOB 4049.01							
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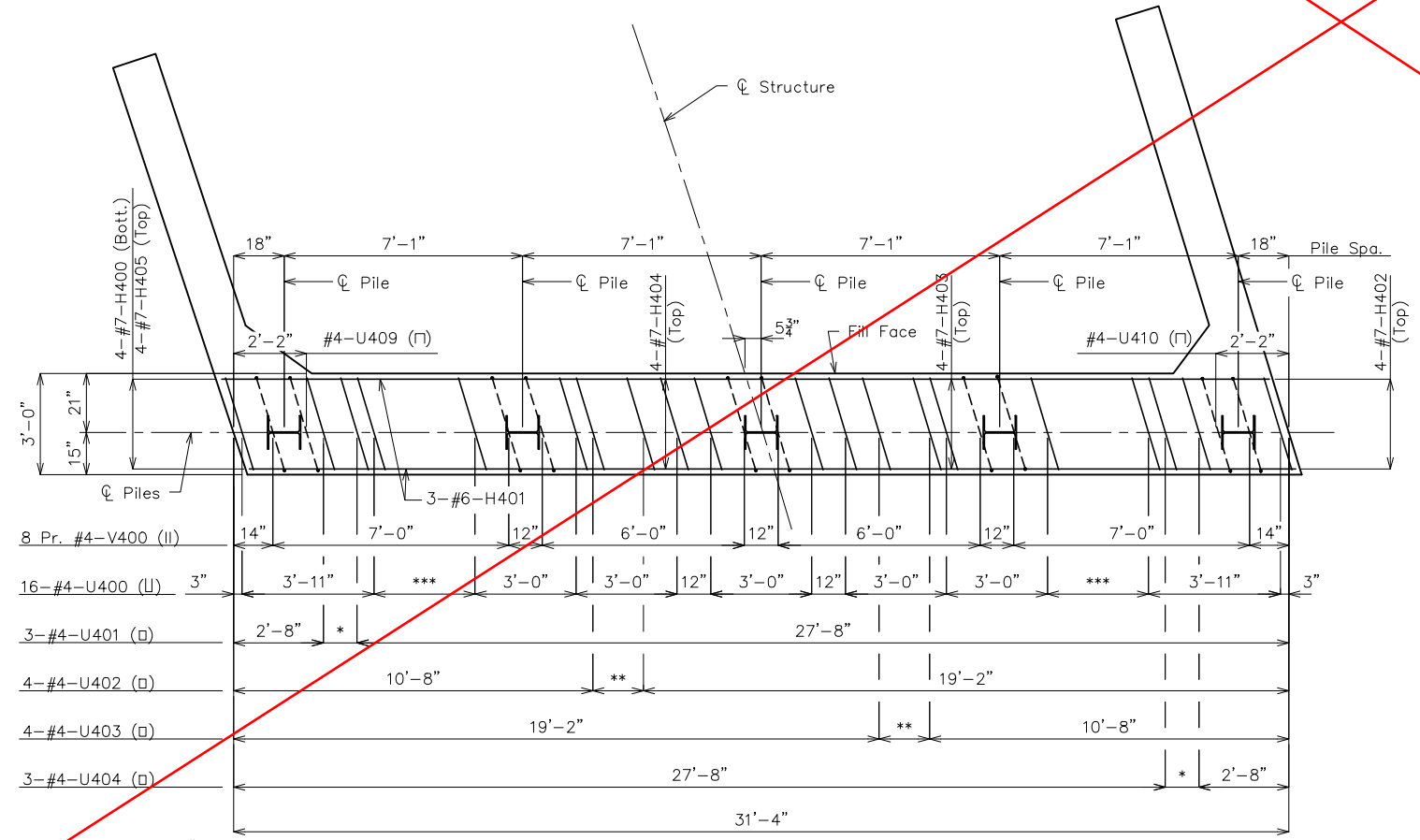


PLAN OF BEAM

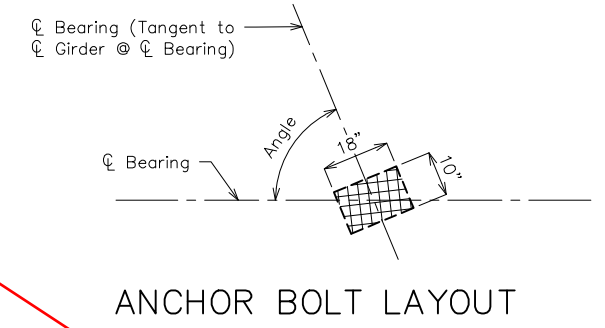


* Galvanizing material shall be omitted or removed 1 inch clear of weld location in accordance with Sec 702.

General Notes:
 Work this sheet with Sheets S13 & S14.
 The beam steps and the U bars and pairs of V bars shall be placed parallel to a line tangent to centerline of roadway at centerline of bearing.
 Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inches.



PLAN OF BEAM SHOWING REINFORCEMENT & PILES
 Keys and steps not shown for clarity.



Girder	1	2	3	4
Angle	72°39'44"	73°03'10"	73°25'33"	73°46'57"

Item	Qty.
Galvanized Structural Steel Piles (12 in.)	linear foot 85
Pre-Bore for Piling	linear foot 75
Pile Point Reinforcement	each 5
Class B Concrete (Substructure)	cu. yard 17.1

These quantities are included in the estimated quantities table on Sheet S2.

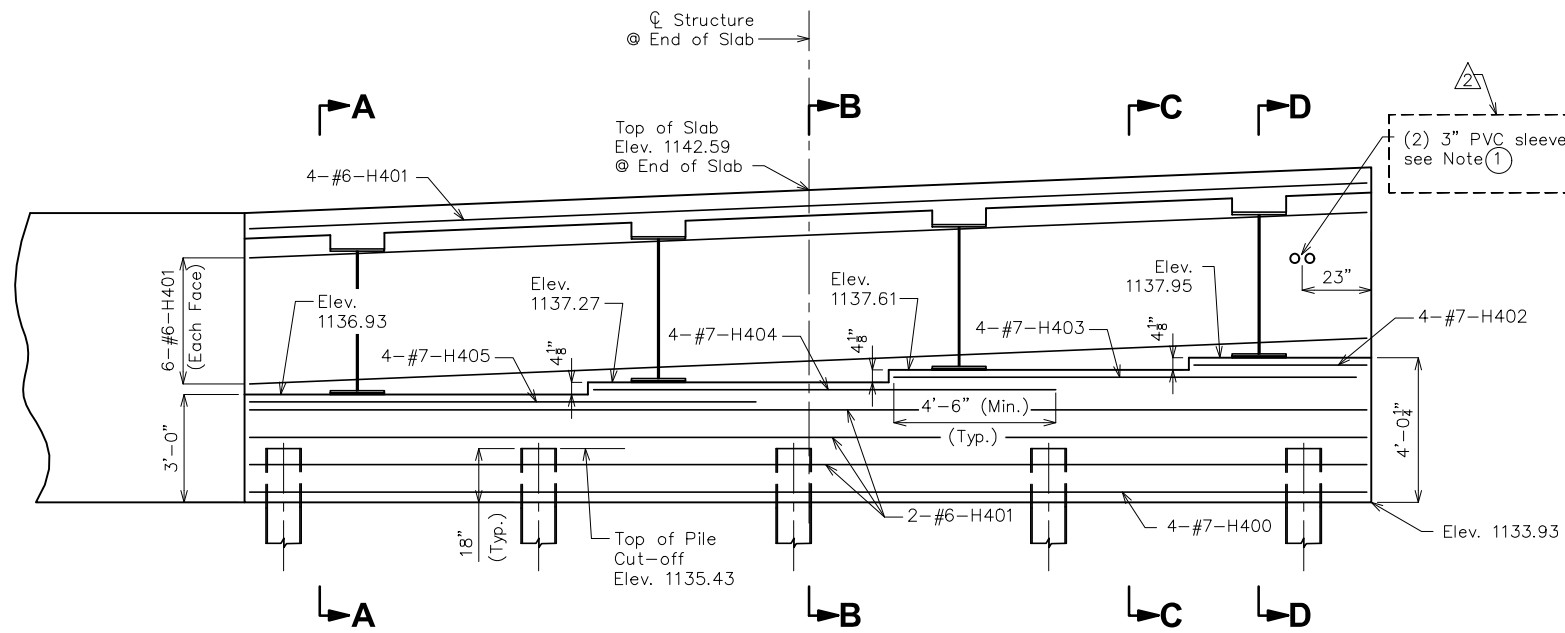
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GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 END BENT 4 DETAILS

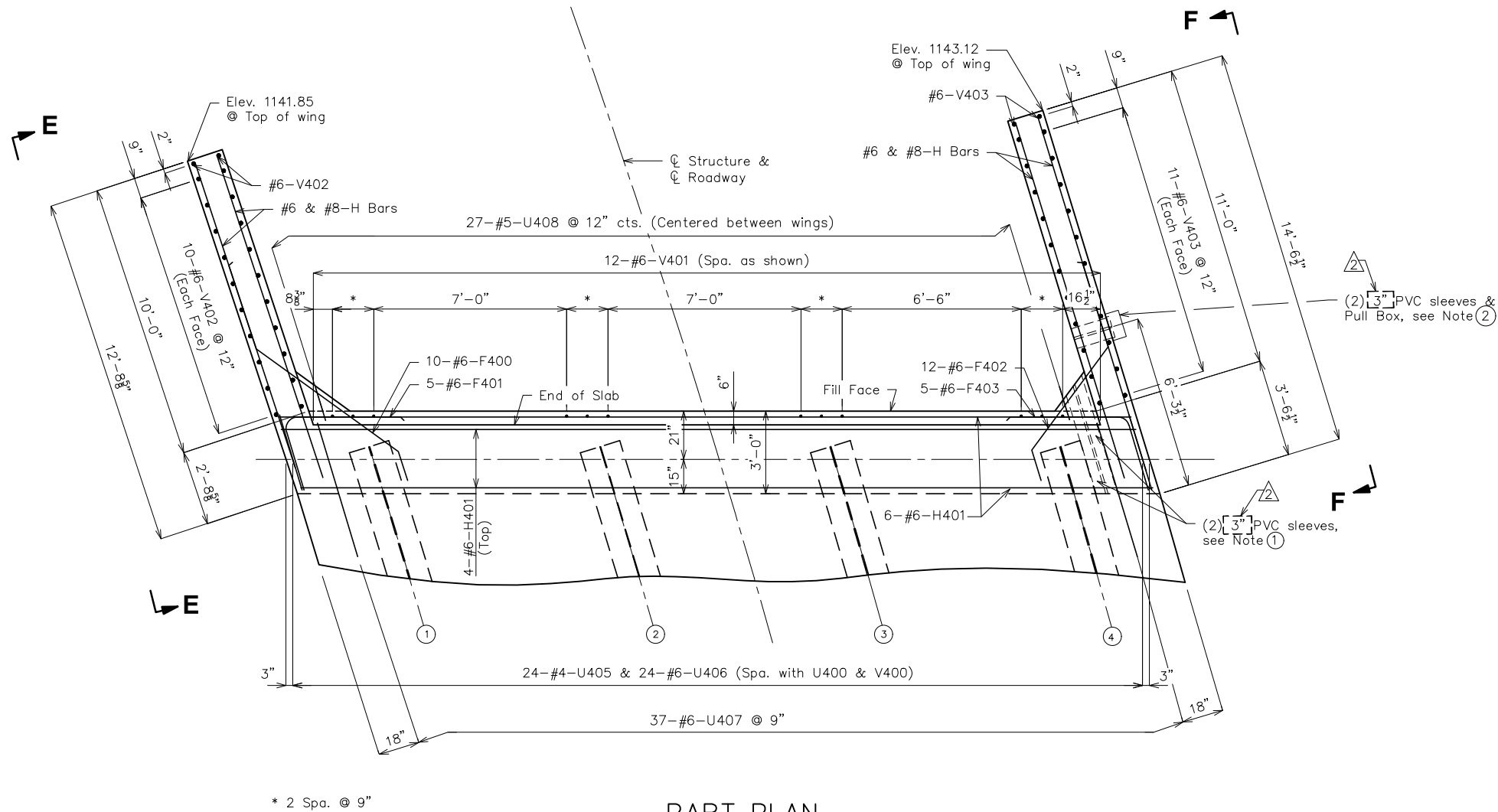
Note: This drawing not to scale. Follow dimensions.

- * 2 Spa. @ 6"
- ** 3 Spa. @ 6"
- *** 3 Spa. @ 12"

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SECTION NEAR END BENT



PART PLAN

* 2 Spa. @ 9"

Note: This drawing not to scale. Follow dimensions.

- ① Contractor shall install 2 - 3" PVC sleeves through the diaphragm to allow for the installation of the 1-1.5" ϕ HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow 30" \pm conduit depth at the fill faces. Contractor may then use long radius elbows in conduit to hang closer to the bottom of the deck.
- ② Contractor shall install 90 degree elbow after fill face and install 2 - 3" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight. Pull box shall be flush mount to wingwall.

(2) 3" PVC sleeves & Pull Box, see Note ②

(2) 3" PVC sleeves, see Note ①

General Notes:

Work this sheet with Sheets S12 & S14.

For sections A-A, B-B & C-C & D-D and Elevations E-E & F-F, see Sheet S14.

The #6-F400 and #6-F402 bars shall be bent in the field to clear girders.

The U bars and pairs of V bars shall be placed parallel to a line tangent to the ϕ Roadway at ϕ Bearing.

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

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

For details of Vertical Drain at End Bents, see Sheet S7.

For details of Bridge Approach Slab, see Sheet S32.

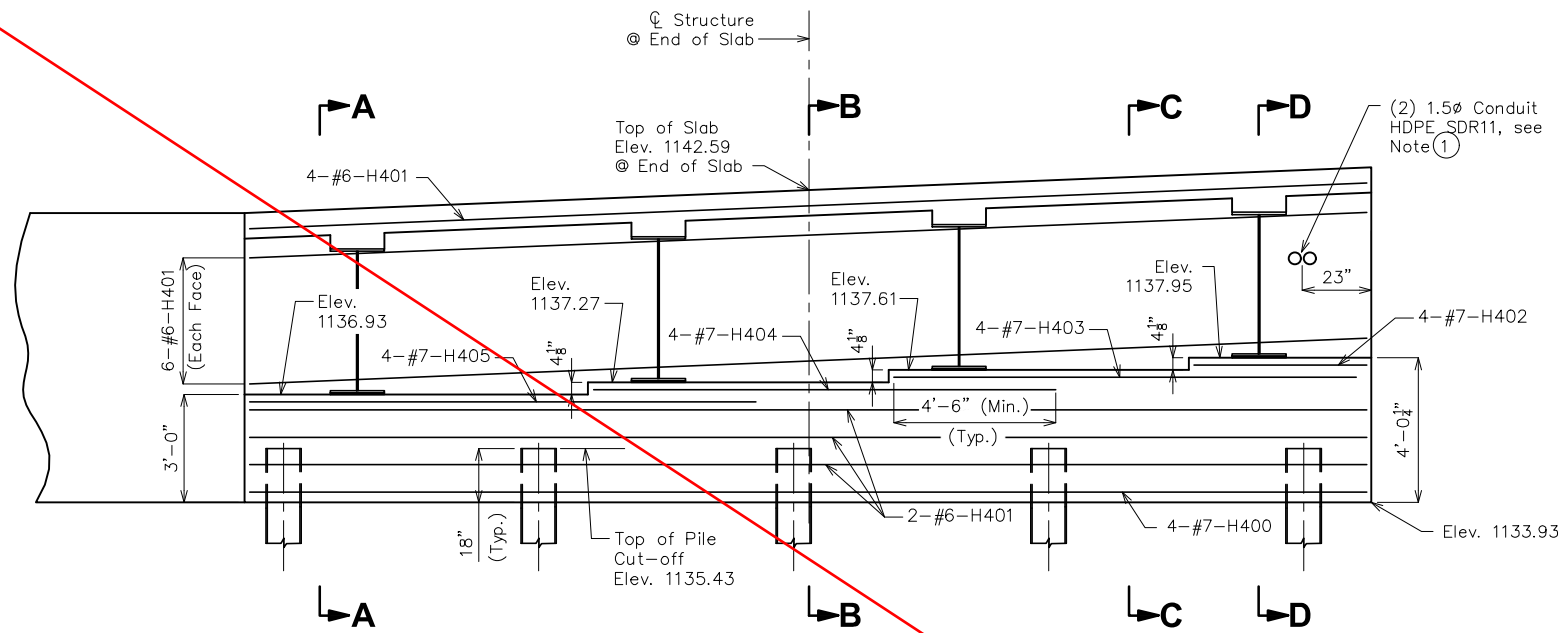
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GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 END BENT 4 DETAILS

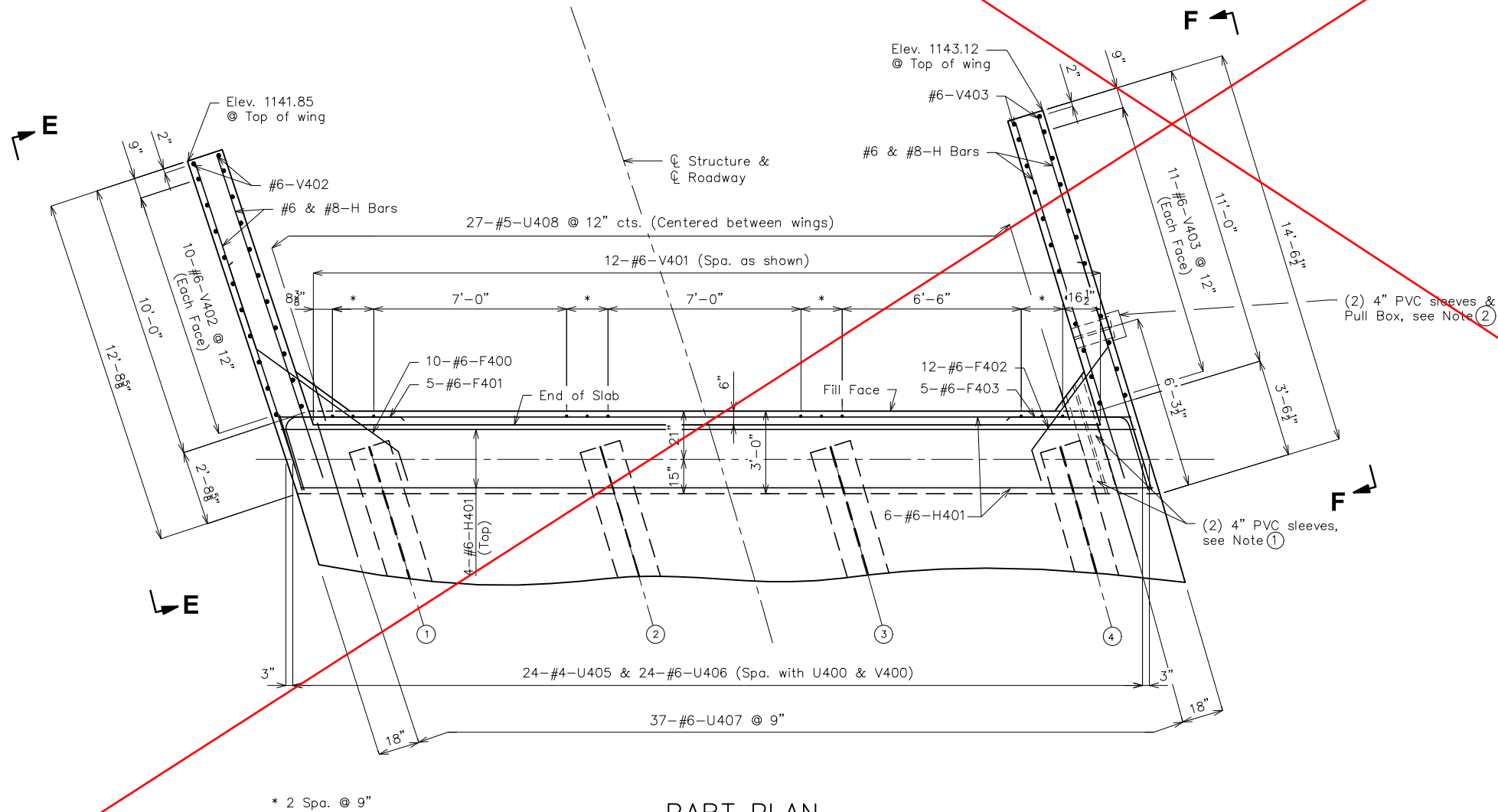
6/24/2024
JOB 4049.01
S13

Revised

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SECTION NEAR END BENT



PART PLAN

* 2 Spa. @ 9"

Note: This drawing not to scale. Follow dimensions.

- ① Contractor shall install 2 - 4" PVC sleeves through the diaphragm to allow for the installation of the 1-1.5" HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow 30± conduit depth at the fill faces. Contractor may then use long radius elbows in conduit to hang closer to the bottom of the deck.
- ② Contractor shall install 90 degree elbow after fill face and install 2 - 4" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 round conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight. Pull box shall be flush mount to wingwall.

General Notes:

Work this sheet with Sheets S12 & S14.

For sections A-A, B-B & C-C & D-D and Elevations E-E & F-F, see Sheet S14.

The #6-F400 and #6-F402 bars shall be bent in the field to clear girders.

The U bars and pairs of V bars shall be placed parallel to a line tangent to the ϕ Roadway at ϕ Bearing.

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

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

For details of Vertical Drain at End Bents, see Sheet S7.

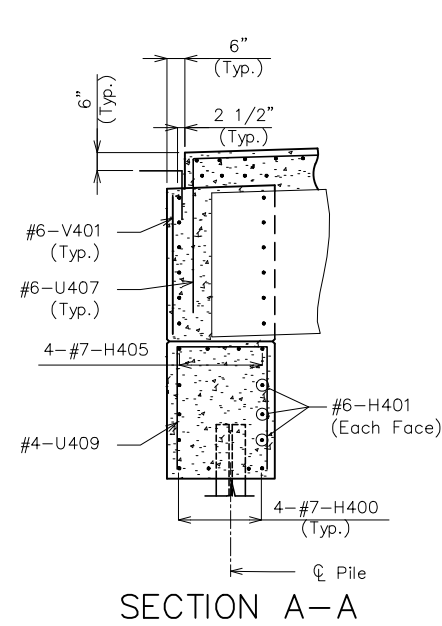
For details of Bridge Approach Slab, see Sheet S32.

Date	
Revision/Issue	
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Missouri State Certificate of Authority Numbers: Engineering: 0101416 Landscape Architecture: 200701873	

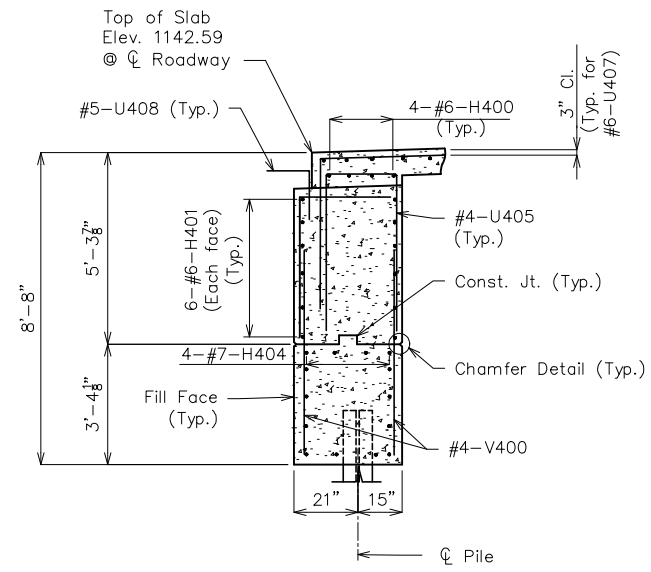
GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 END BENT 4 DETAILS

6/11/2024
 JOB 4049.01
 S13

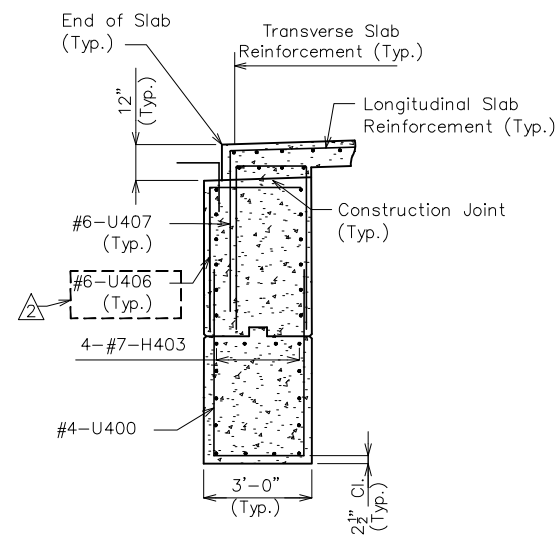
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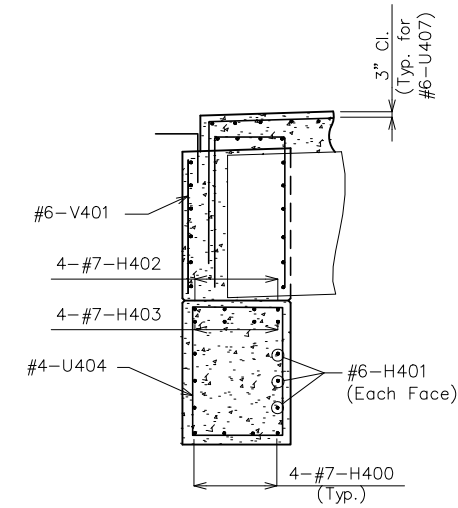
SECTION A-A



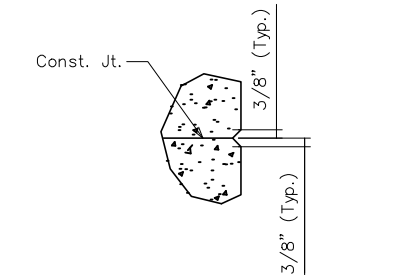
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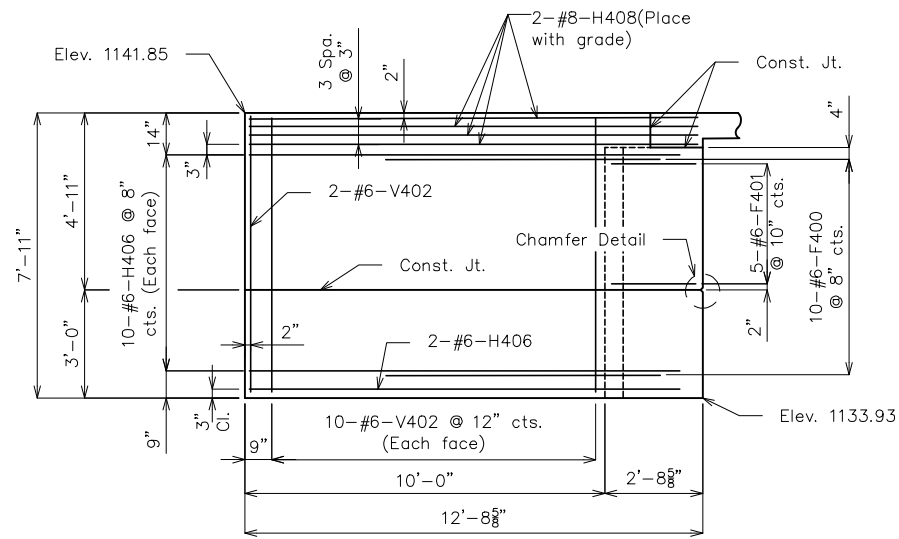
SECTION C-C



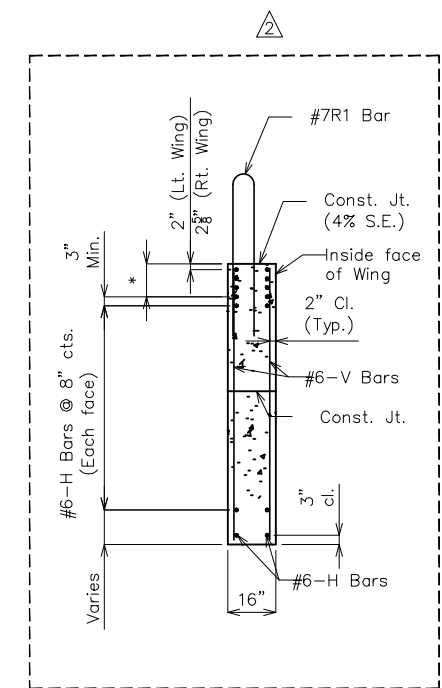
SECTION D-D



CHAMFER DETAIL

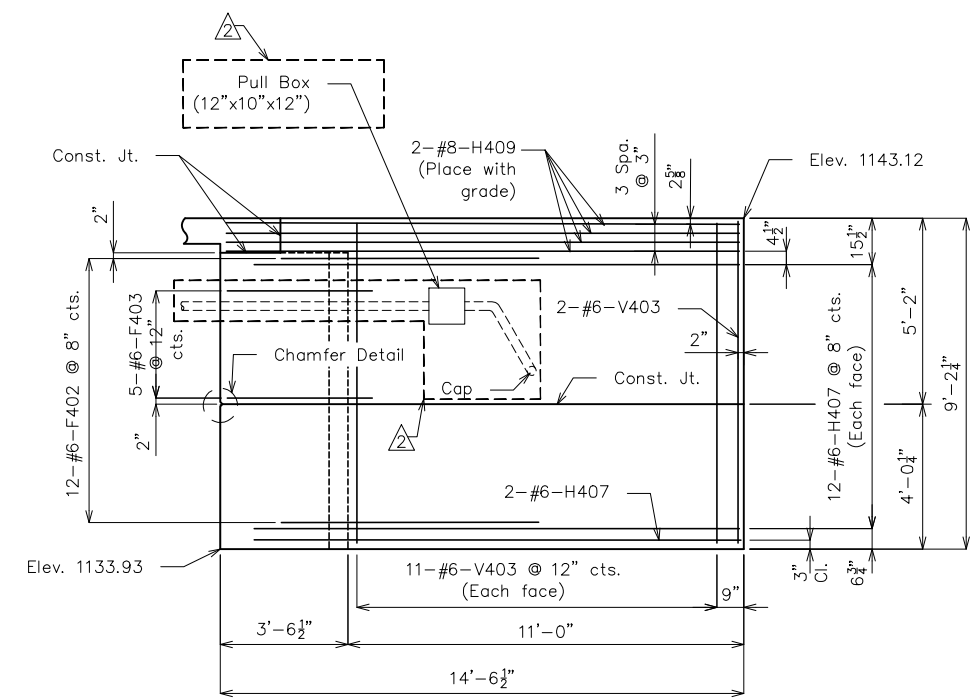


ELEVATION E-E



TYPICAL SECTION THRU WING

* #8-H Bars at 3" Cts. (Each face) (Place with grade)



ELEVATION F-F

PVC thru Wingwall Note:
Contractor shall install 90 degree elbow after fill face and install 2 - 3" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight.

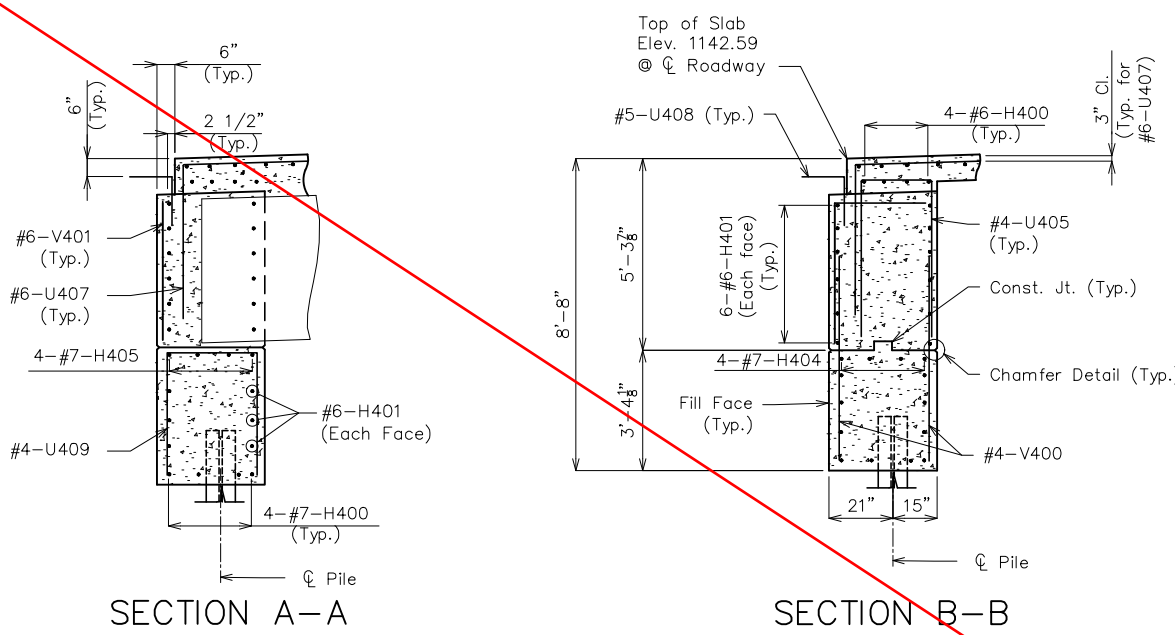
General Notes:
Work this sheet with Sheets S12 & S13.
For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet S13.
U (□) bars vary with beam steps.
For reinforcement of the corral rail, see Sheets S29-S31.

Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Professional Engineer: 01011416 Landscape Architect: 200701873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI END BENT 4 DETAILS	
6/24/2024	
JOB 4049.01	
S14	

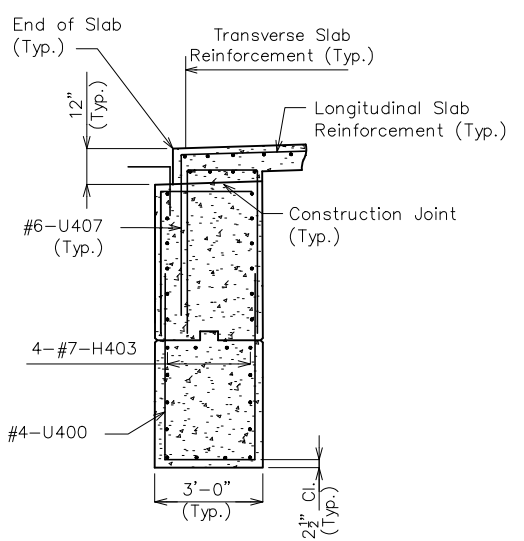
Added/Revised

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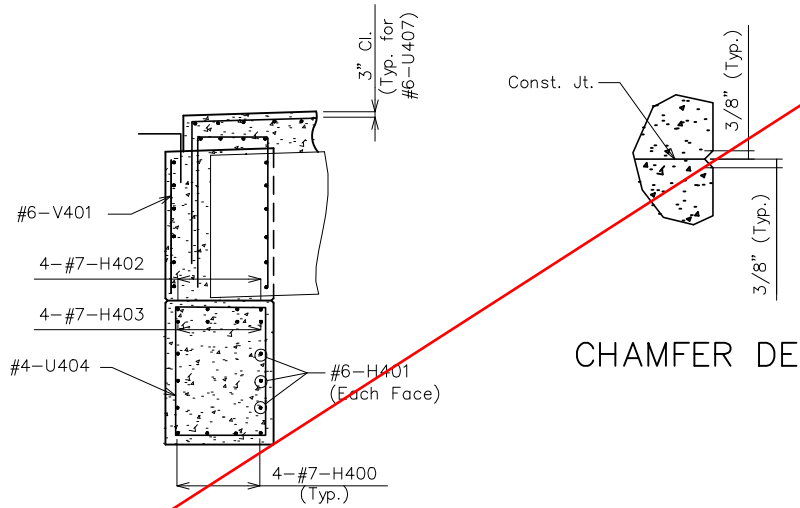


SECTION A-A

SECTION B-B

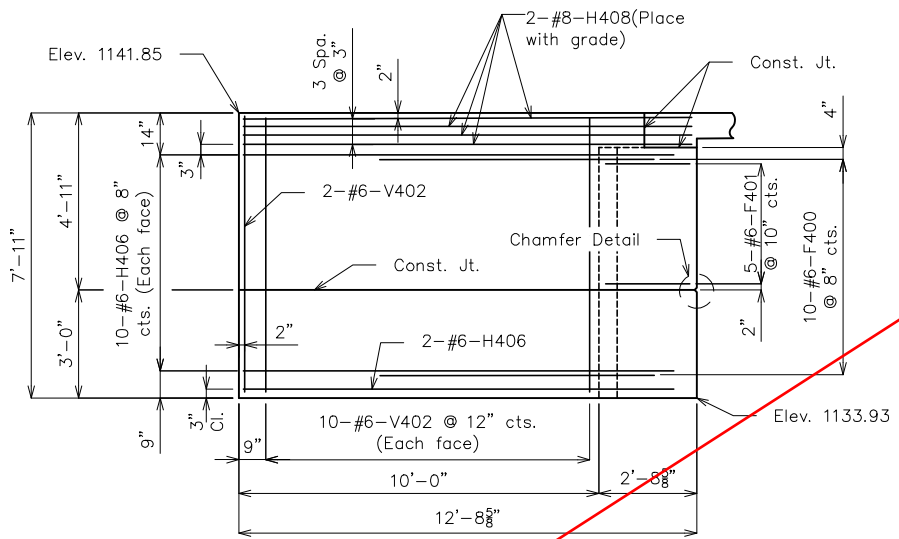


SECTION C-C

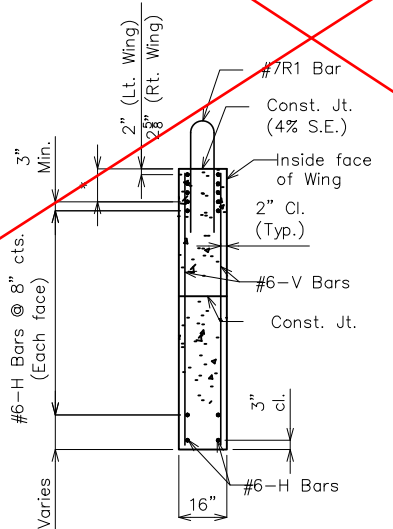


SECTION D-D

CHAMFER DETAIL

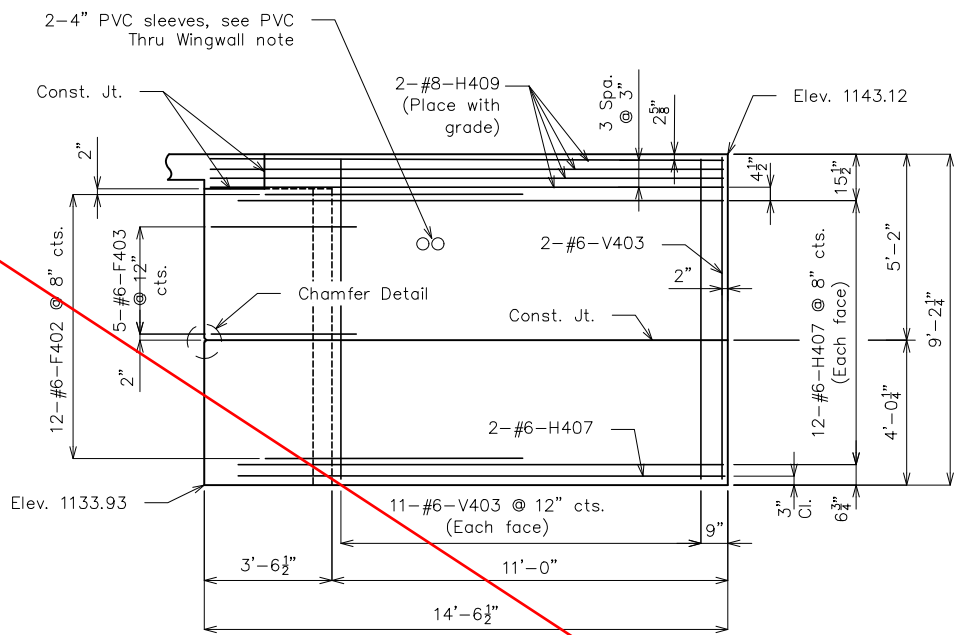


ELEVATION E-E



TYPICAL SECTION THRU WING

* #8-H Bars at 3" Cts. (Each face) (Place with grade)



ELEVATION F-F

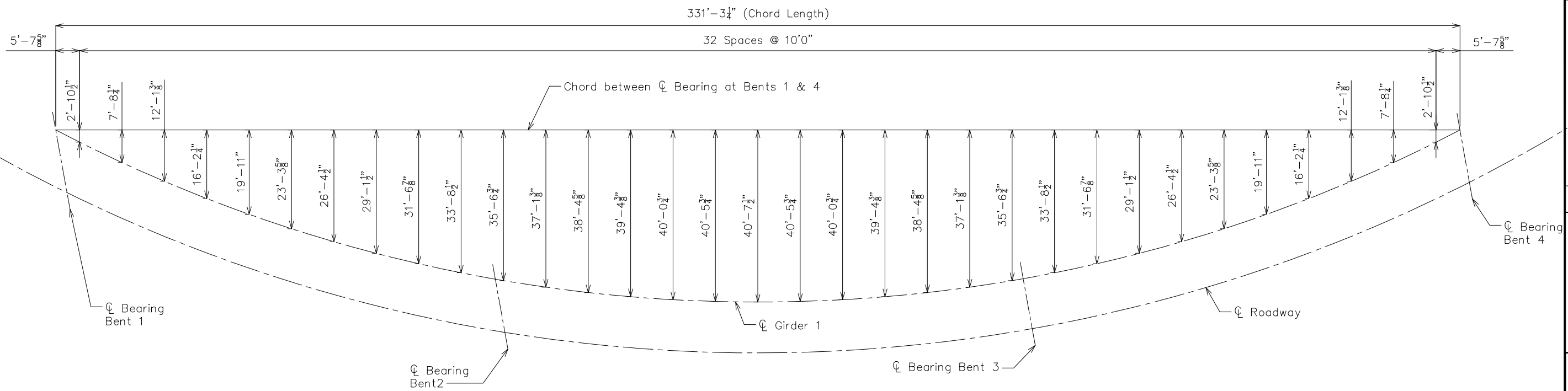
PVC thru Wingwall Note:
Contractor shall install 90 degree elbow after fill face and install 2 - 4" PVC sleeves with cap immediately when through the wingwall to allow for the installation of the 1-1.5" HDPE SDR11 conduit for utilities. The location of the sleeve may be adjusted as necessary to allow for daylight.

General Notes:
Work this sheet with Sheets S12 & S13.
For location of Sections A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet S13.
U (□) bars vary with beam steps.
For reinforcement of the corral rail, see Sheets S29-S31.

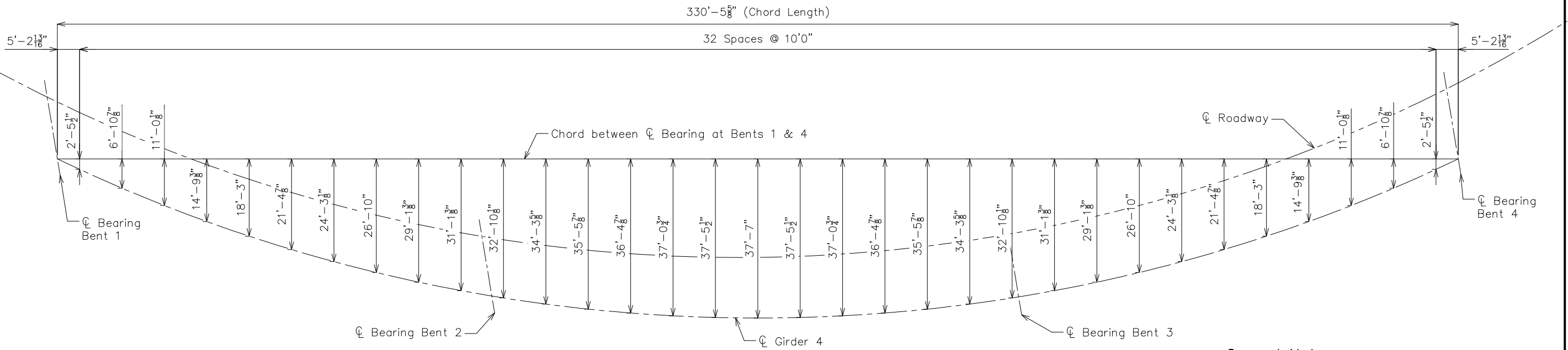
Note: This drawing not to scale. Follow dimensions.

Revision/Issue		Date			
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Missouri State Certificate of Authority Numbers: Professional Engineer: 00101416 Landscape Architect: 200701873					
GREEN BRIDGE OVER FINLEY RIVER					
CHRISTIAN COUNTY, MISSOURI					
END BENT 4 DETAILS					
6/11/2024					
JOB 4049.01					
S14					

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PLAN OF GIRDER 1 CURVE OFFSETS

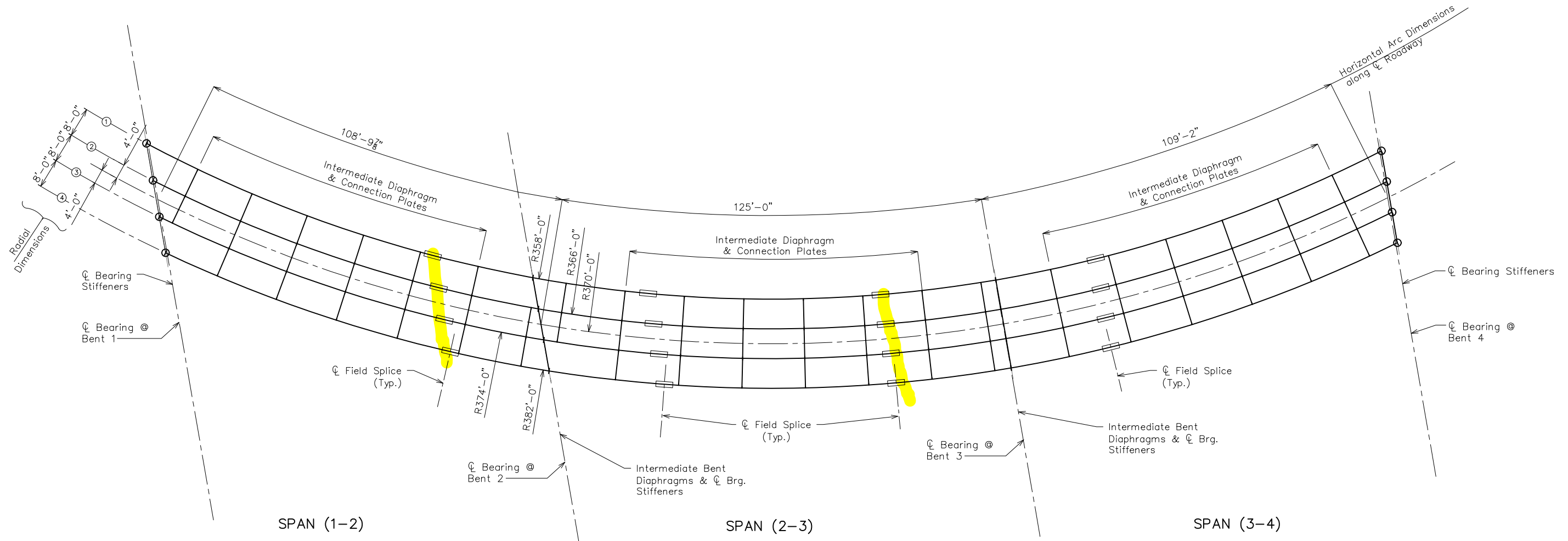


PLAN OF GIRDER 4 CURVE OFFSETS

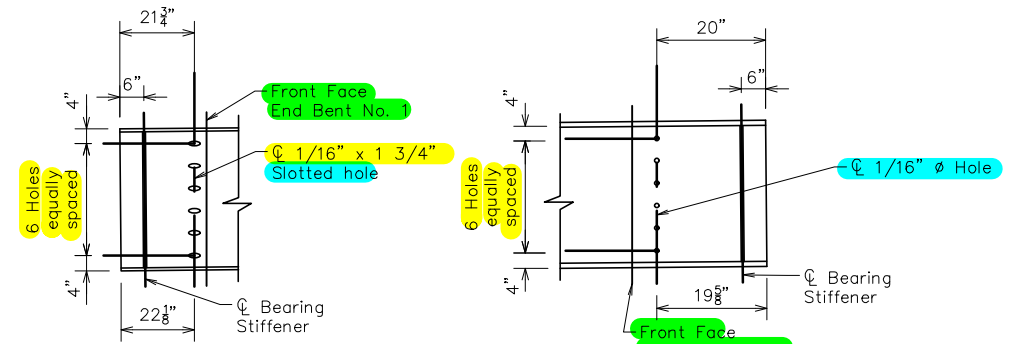
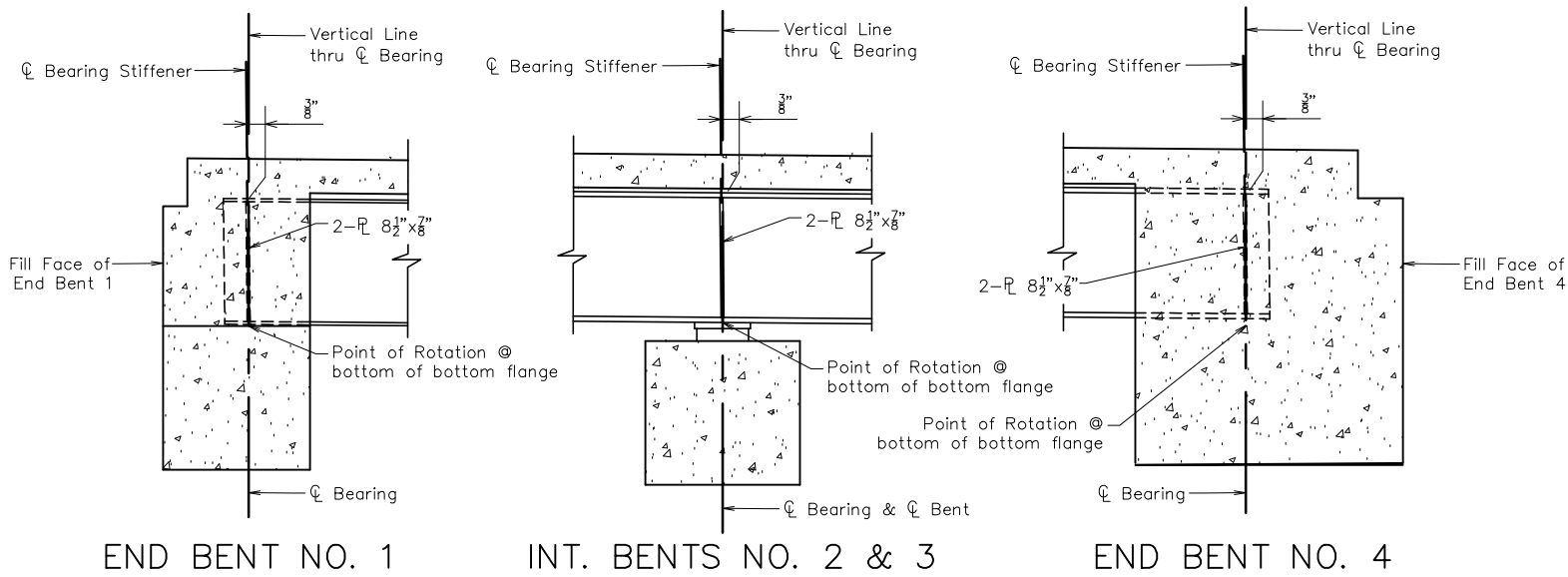
General Notes:
All dimensions are horizontal.

Revision/Issue		Date
No.		
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.		
Missouri State Certificate of Authority Numbers: Engineering: 200701476 Landscape Architecture: 200701373		
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI GIRDER CURVE OFFSETS		
6/11/2024		
JOB 4049.01		
S15		

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PLAN OF STRUCTURAL STEEL



DETAIL OF WEB HOLES AT END BENT

General Notes:

Fabricated structural low alloy steel shall be ASTM A709 Grade 50W except as noted.

Plate girders shall be fabricated to conform to the Camber Diagram shown on Sheet S24.

Intermediate diaphragm connection plates, intermediate bearing stiffener plates and end bent bearing stiffener plates shall be located as shown in Girder Elevations, on Sheets S17-S20.

For Shear connector Details, see Sheet S21.

For Details of Bolted Field Splice, see Sheet S22.

For Details of Diaphragms, see Sheet S21.

Diaphragms are spaced radially.

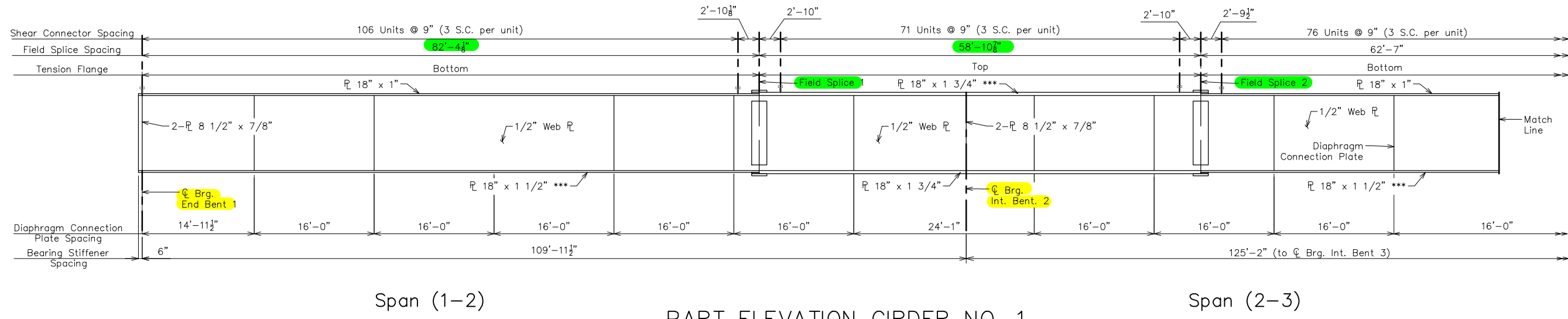
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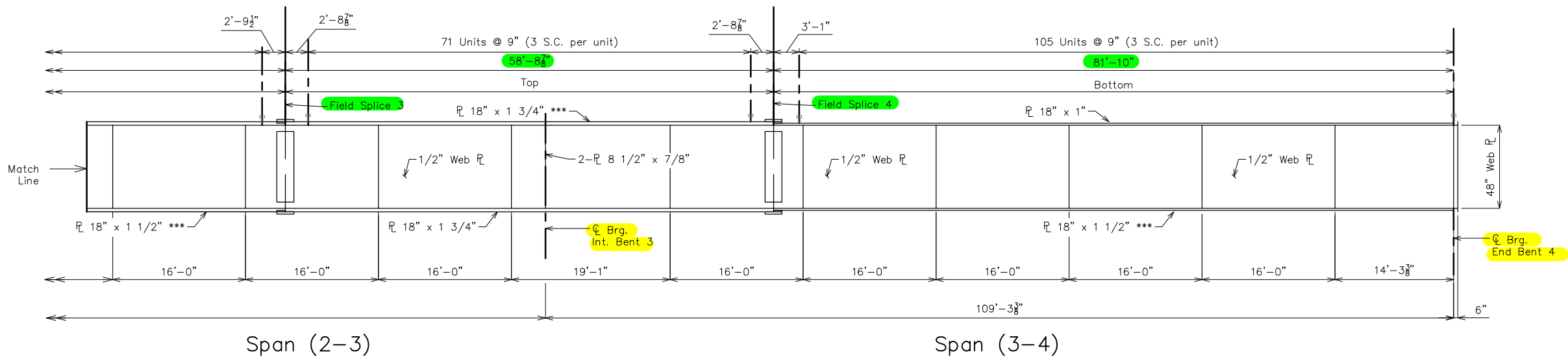


GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
STEEL PLATE GIRDER DETAILS

6/10/2024
JOB 4049.01



PART ELEVATION GIRDER NO. 1



PART ELEVATION GIRDER NO. 1

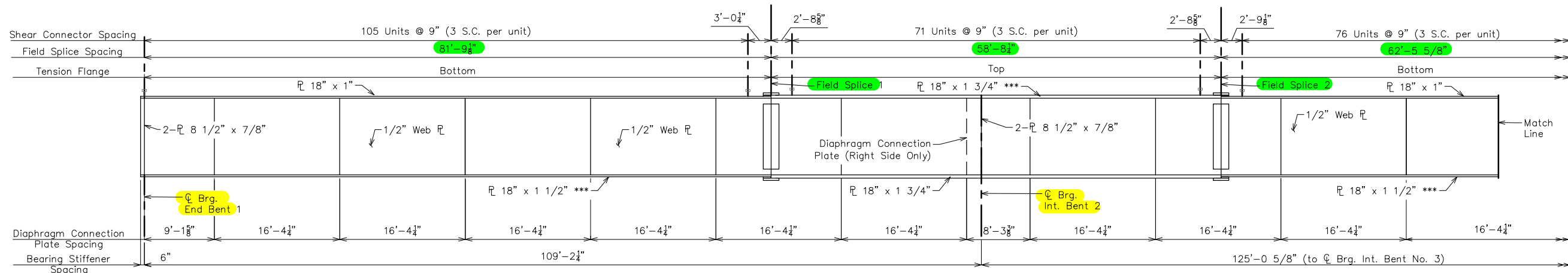
General Notes:

- Work this sheet with Sheet S16.
- Diaphragm and Diaphragm Connection plates on right side of web only.
- Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet S24.
- *** Indicates flange plates subject to notch toughness requirements.
- All web plates shall be subject to notch toughness requirements.
- The flange and web splice plates shall be subject to notch toughness requirements, when notch toughness is required for flanges on both sides of splice.
- Fabricated structural, low alloy steel shall be ASTM 709 Grade 50W, except as noted.
- Longitudinal dimensions are horizontal arc dimensions from \bar{C} Brg. to \bar{C} Brg. See Part Longitudinal Sections on Sheet S16.
- For Details of Bolted Field Splice & Shear Connectors see Sheet S22.
- For Details of Intermediate Diaphragms & Bearing Stiffeners see Sheet S21.
- For Plan of Structural Steel see Sheet S16.

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Revision/Issue	
No.	◀◀◀◀◀◀◀◀◀◀
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Missouri State Certificate of Authority Numbers: 06101476 Engineering: Landscape Architecture: 200703873	
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6/10/2024	
JOB 4049.01	
S17	

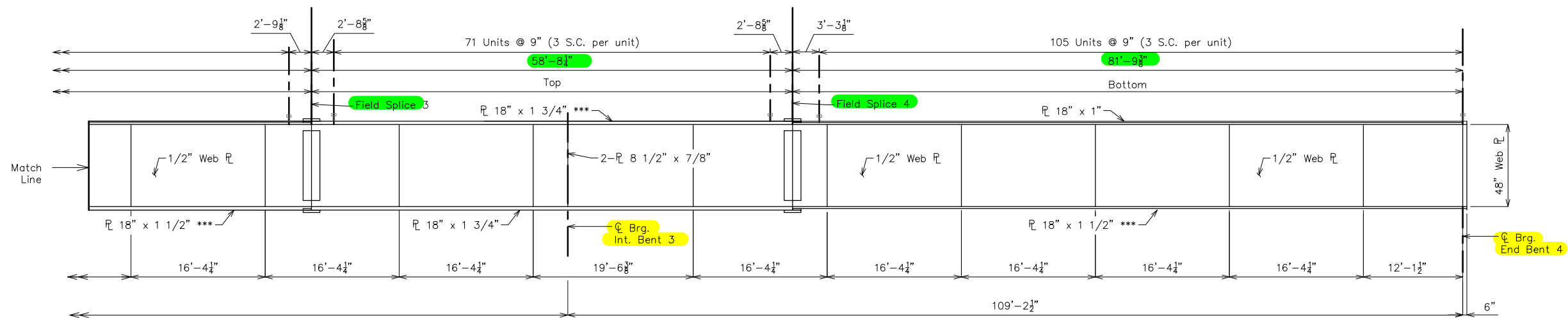
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Span (1-2)

PART ELEVATION GIRDER NO. 2

Span (2-3)



Span (2-3)

PART ELEVATION GIRDER NO. 2

Span (3-4)

General Notes:

Work this sheet with Sheet S16.

Diaphragm and Diaphragm Connection plates on both sides of web except as noted.

Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet S24.

*** Indicates flange plates subject to notch toughness requirements.

All web plates shall be subject to notch toughness requirements.

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

Fabricated structural, low alloy steel shall be ASTM 709 Grade 50W, except as noted.

Longitudinal dimensions are horizontal arc dimensions from \bar{C} Brg. to \bar{C} Brg. See Part Longitudinal Sections on Sheet S16.

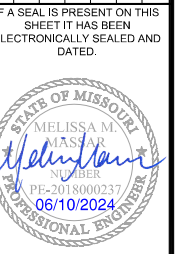
For Details of Bolted Field Splice & Shear Connectors see Sheet S22.

For Details of Intermediate Diaphragms & Bearing Stiffeners see Sheet S21.

For Plan of Structural Steel see Sheet S16.

No.	Revision/Issue	Date

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

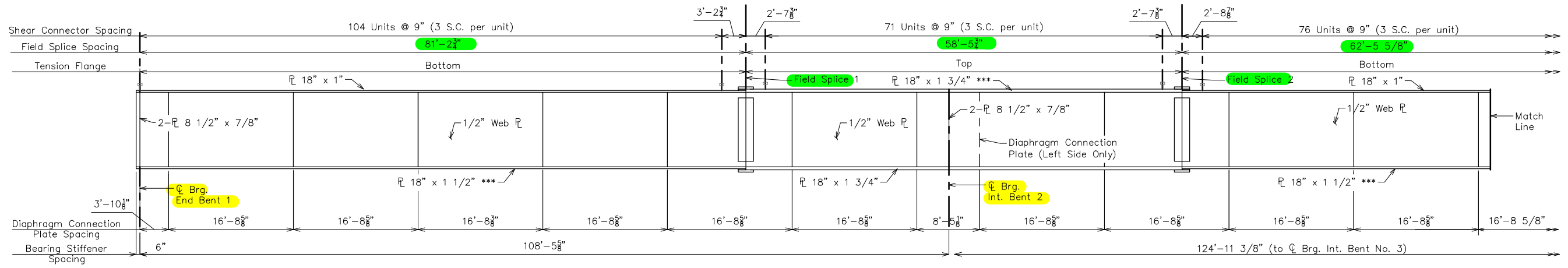


GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
GIRDER 2 ELEVATION

6/10/2024

JOB 4049.01

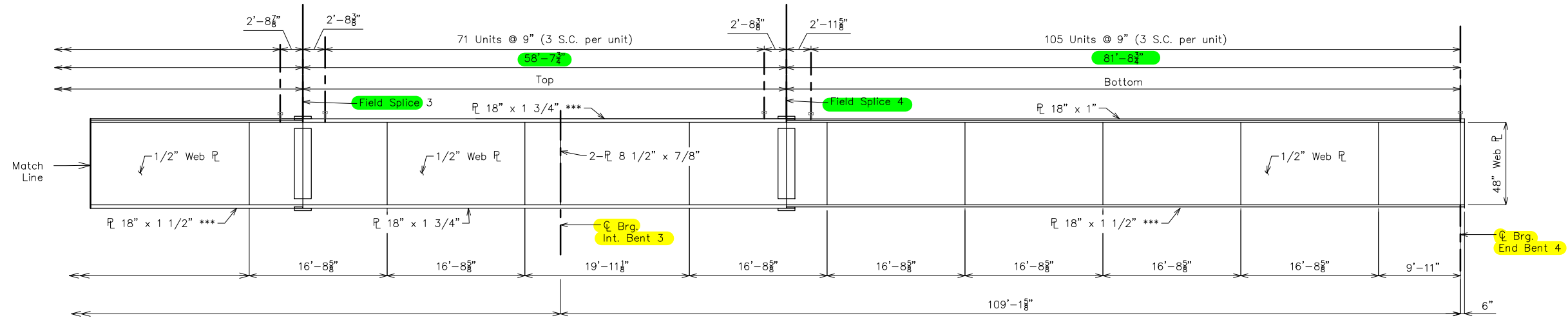
S18



Span (1-2)

PART ELEVATION GIRDER NO. 3

Span (2-3)



Span (2-3)

PART ELEVATION GIRDER NO. 3

Span (3-4)

General Notes:

Work this sheet with Sheet S16.

Diaphragm and Diaphragm Connection plates on both sides of web except as noted.

Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet S24.

*** Indicates flange plates subject to notch toughness requirements.

All web plates shall be subject to notch toughness requirements.

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

Fabricated structural, low alloy steel shall be ASTM 709 Grade 50W, except as noted.

Longitudinal dimensions are horizontal arc dimensions from \bar{C} Brg. to \bar{C} Brg. See Part Longitudinal Sections on Sheet S16.

For Details of Bolted Field Splice & Shear Connectors see Sheet S22.

For Details of Intermediate Diaphragms & Bearing Stiffeners see Sheet S21.

For Plan of Structural Steel see Sheet S16.

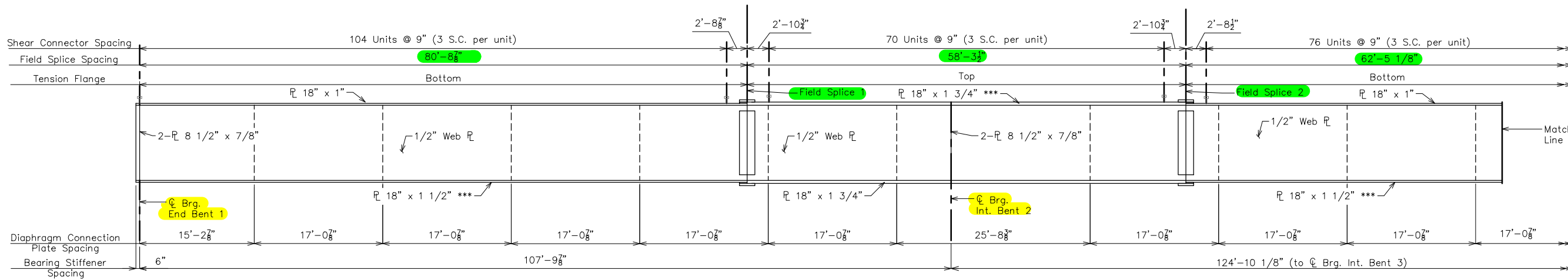
Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
GIRDER 3 ELEVATION

6/10/2024
JOB 4049.01
S19

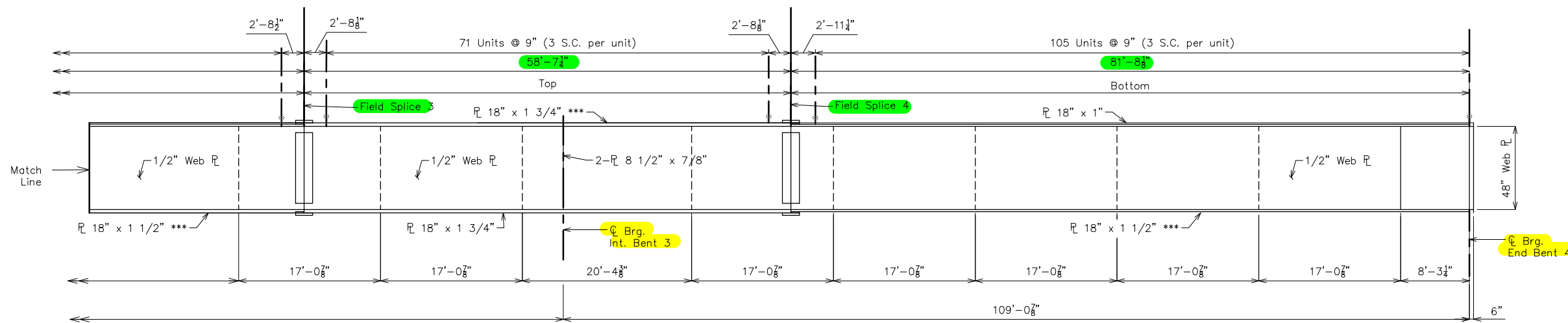
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Span (1-2)

PART ELEVATION GIRDER NO. 4

Span (2-3)



Span (2-3)

PART ELEVATION GIRDER NO. 4

Span (3-4)

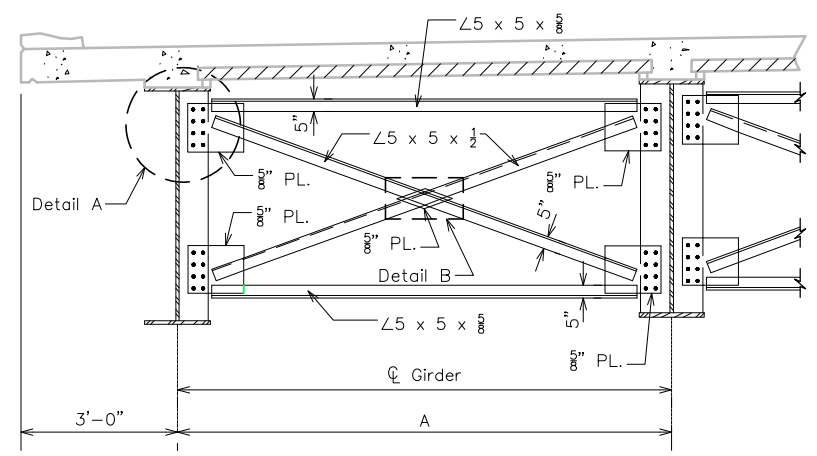
General Notes:

- Work this sheet with Sheet S16.
- Diaphragm and Diaphragm Connection plates on left side of web only.
- Plate girders shall be fabricated to be in accordance with the camber diagram shown on Sheet S24.
- *** Indicates flange plates subject to notch toughness requirements.
- All web plates shall be subject to notch toughness requirements.
- The flange and web splice plates shall be subject to notch toughness requirements, when notch toughness is required for flanges on both sides of splice.
- Fabricated structural, low alloy steel shall be ASTM 709 Grade 50W, except as noted.
- Longitudinal dimensions are horizontal arc dimensions from ϕ Brg. to ϕ Brg. See Part Longitudinal Sections on Sheet S16.
- For Details of Bolted Field Splice & Shear Connectors see Sheet S22.
- For Details of Intermediate Diaphragms & Bearing Stiffeners see Sheet S21.
- For Plan of Structural Steel see Sheet S16.

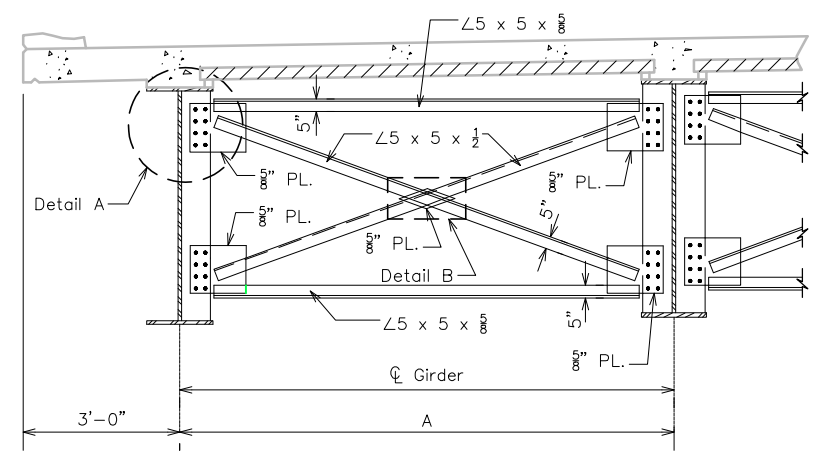
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Missouri State Certificate of Authority Numbers: Professional Engineer: 20701476 Landscape Architect: 207013873	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
GIRDER 4 ELEVATION	
6/10/2024	
JOB 4049.01	
S20	

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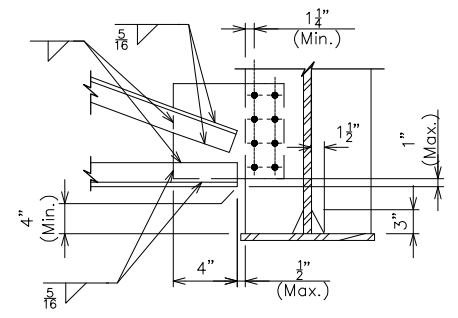


TYPICAL PART SECTION SHOWING CROSS FRAMES AND INTERMEDIATE DIAPHRAGMS

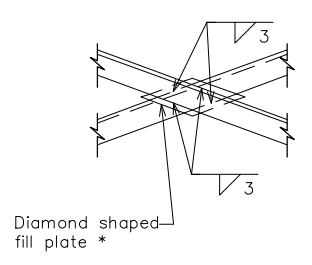


TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS AND CROSS FRAMES

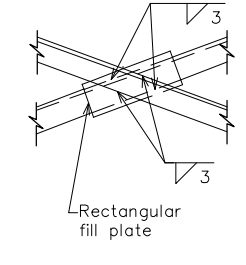
Int. Bent Diaphragm Data	
Int. Bent Diaphragm	Dim. A
Bent 2	
Girder 1-2	8'-6 1/8"
Girder 2-3	8'-5 7/8"
Girder 3-4	8'-5 5/8"
Bent 3	
Girder 1-2	8'-0"
Girder 2-3	8'-0"
Girder 3-4	8'-0"



DETAIL A (DETAIL E SIMILAR)

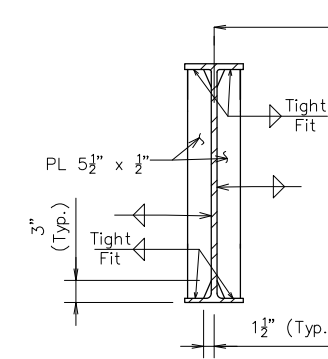


DETAIL B

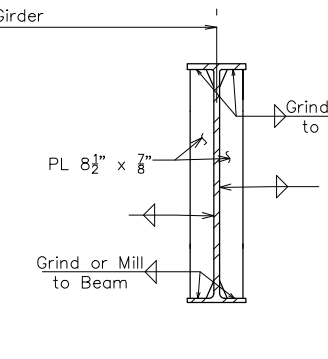


OPTIONAL DETAIL B

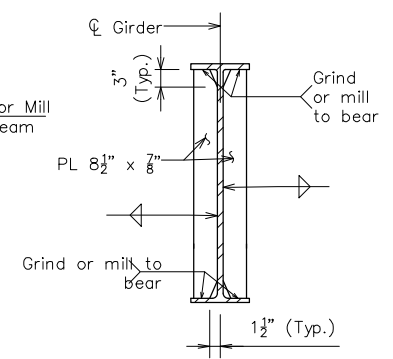
* At the contractor's option, rectangular fill plates may be used in lieu of diamond fill plates as shown in Optional Detail B.



INTERMEDIATE DIAPHRAGM CONNECTION PLATE



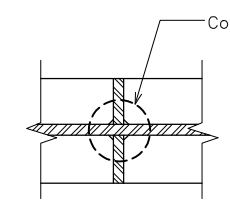
INTERMEDIATE BENT BEARING STIFFENER



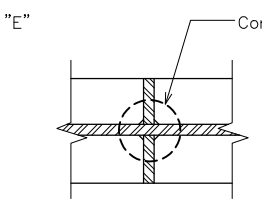
END BENT BEARING STIFFENER

WELDING DETAILS

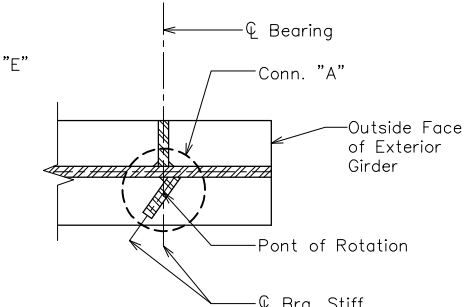
Typical for all intermediate web stiffeners, intermediate diaphragm connection plates, and bearing stiffeners.



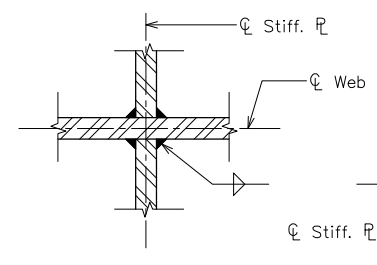
END BRG. STIFF. & BENT 3 INT. BRG. STIFF.



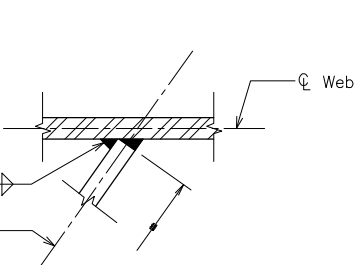
DIA. CONN. PLATE



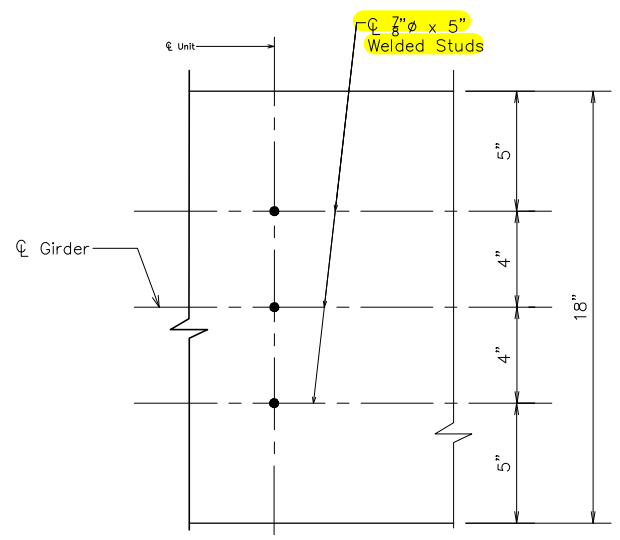
BENT 2 INT. BRG. STIFF.



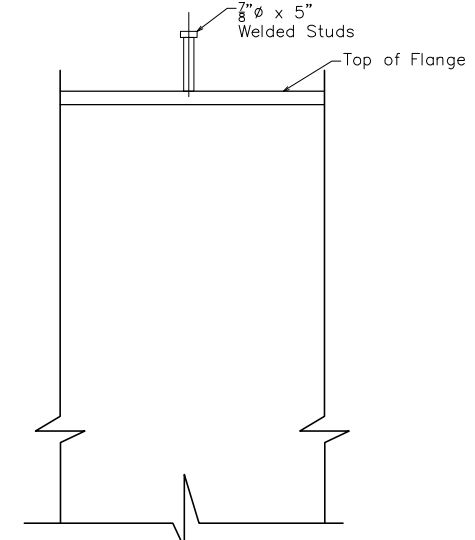
CONN. E TYPICAL LOCATION DETAILS



CONN. A



PLAN OF STUD CONNECTORS



ELEVATION

DETAILS OF SHEAR CONNECTORS

Note:

Weight of 5,027 lbs. of shear connectors is included in the weight of Fabricated Structural Low Alloy Steel (Plate Girder) A709 Grade 50W.

For shear connector spacing see Sheets S17 - S20.

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

General Notes:

All structural steel for diaphragms shall conform to the requirements of ASTM A709 Grade 50W.

All bolts shall be 3/4 inch high strength steel bolts with 13/16 inch ϕ holes.

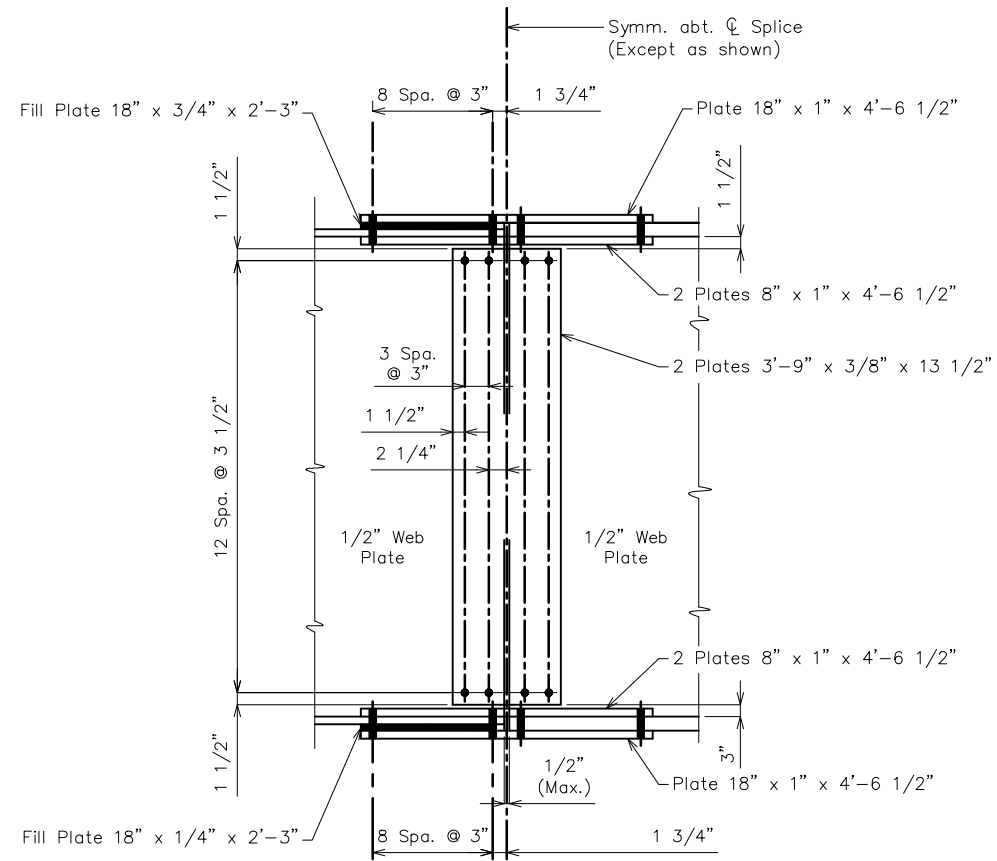
For locations of diaphragms, see Girder Elevation Sheets S17 - S20.

For Structural Steel Notes, see Plan of Structural Steel Sheet S16.

Note: This drawing not to scale. Follow dimensions.

Date									
Revision/Issue									
No.	1	2	3	4	5	6	7	8	9
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.									
Missouri State Certificate of Authority Numbers: Engineering: 06101476 Landscape Architecture: 2007018273									
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6/10/2024									
JOB 4049.01									
S21									

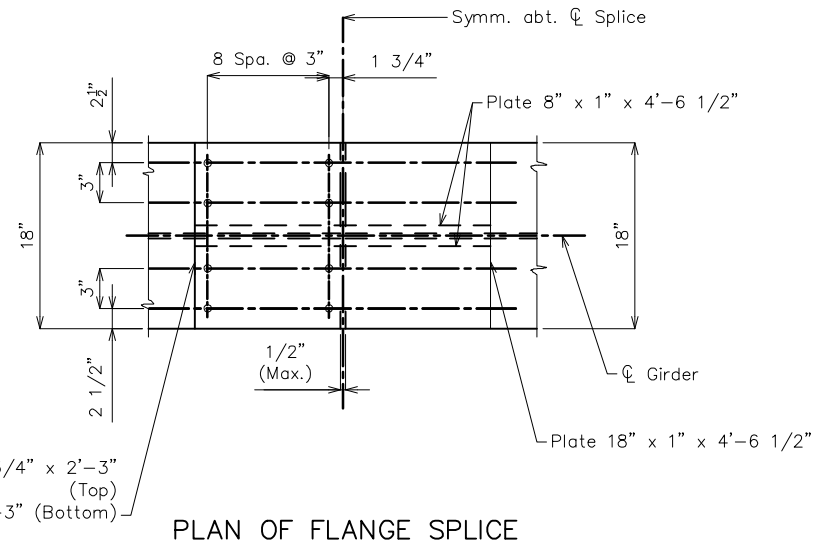
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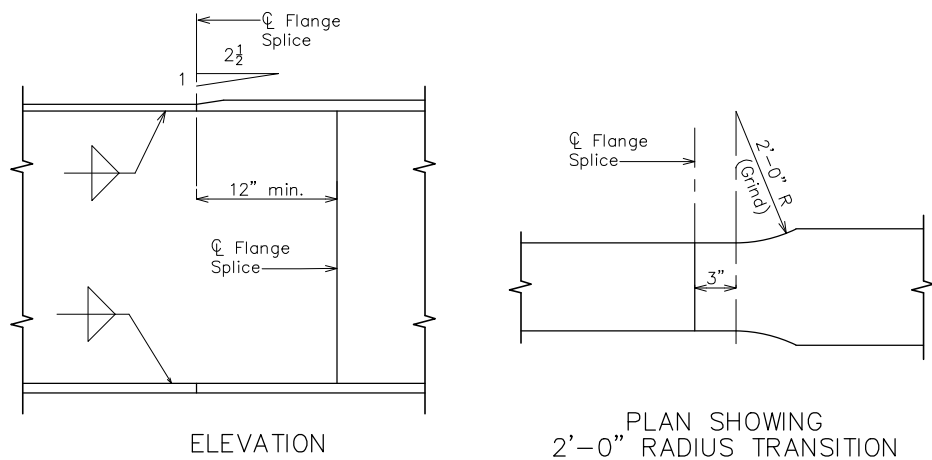
DETAIL OF BOLTED FIELD SPLICE

Bolts shall be 7/8"Ø ASTM F3125 Grad A325 Type 3 in 15/16"Ø holes.

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

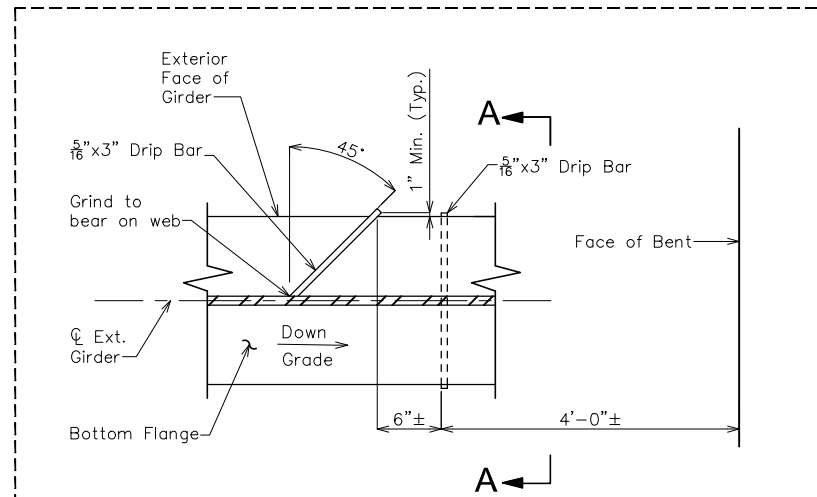


PLAN OF FLANGE SPLICE

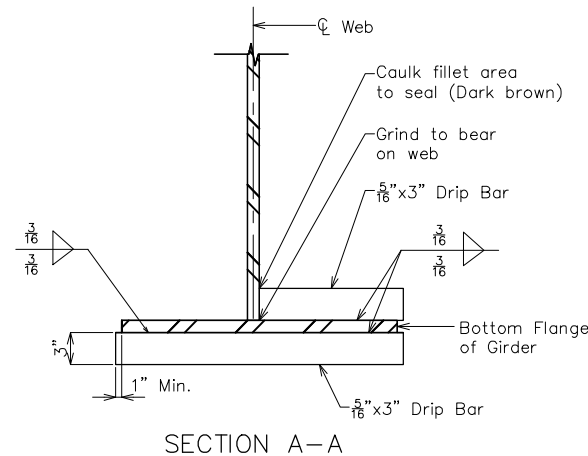


WELDED SHOP WEB AND FLANGE SPLICE

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



DRIP BAR DETAIL NEAR BENTS 2, 3 AND 4



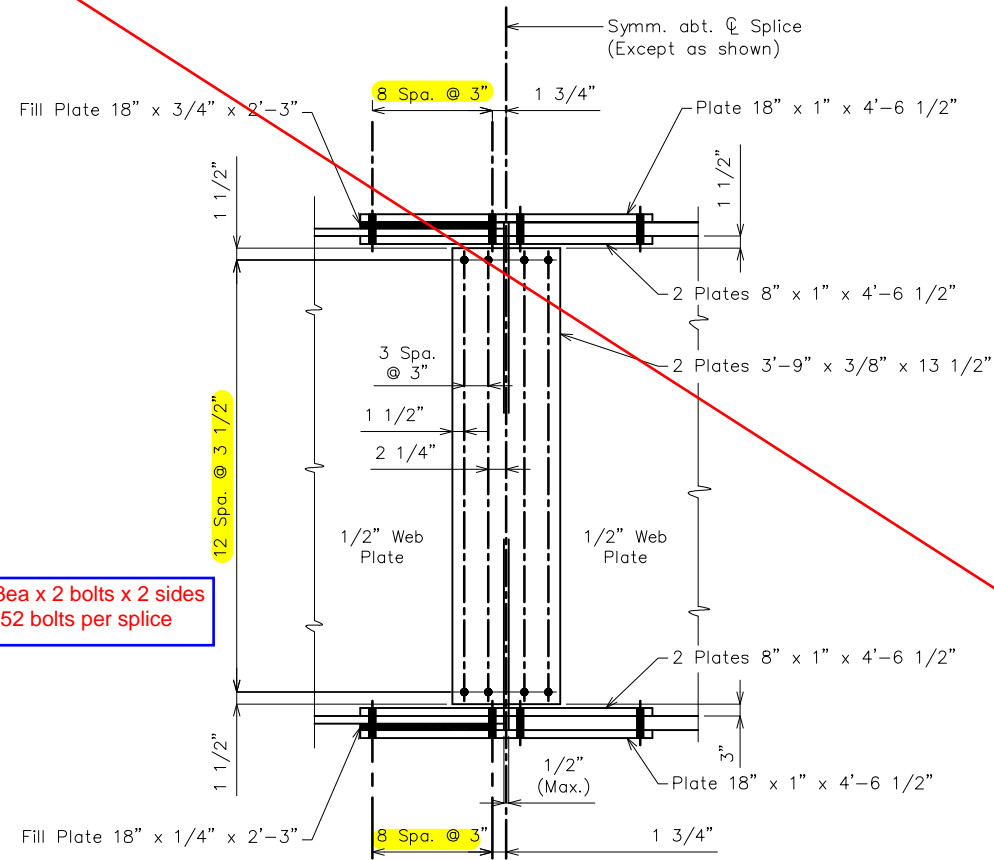
SECTION A-A

Note: Steel for drip bars shall be same grade as bottom flange.

	<p>Missouri State Certificate of Authority Numbers: Professional Engineer: 06101476 Landscape Architect: 200701872</p>
<p>GREEN BRIDGE OVER FINLEY RIVER</p> <p>CHRISTIAN COUNTY, MISSOURI</p>	<p>DETAILS OF BOLTED FIELD SPLICE</p>
<p>6/24/2024</p> <p>JOB 4049.01</p>	<p>S22</p>

Added

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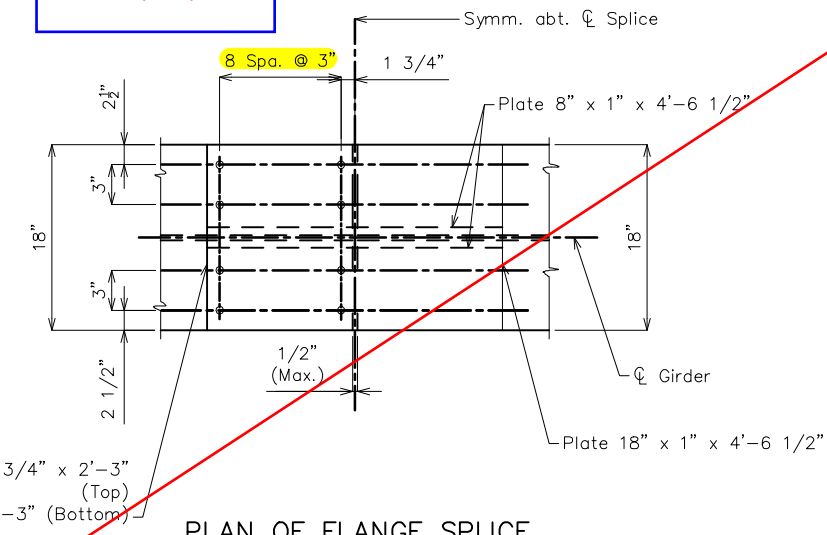
DETAIL OF BOLTED FIELD SPLICE

Bolts shall be 7/8"Ø ASTM F3125 Grad A325 Type 3 in 15/16"Ø holes.

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

Top:
 9ea x 2 bolts x 2 sides
 = 36 bolts per splice

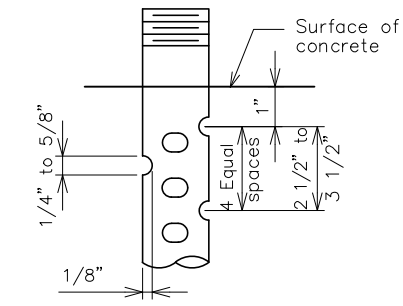
Bottom:
 9ea x 2 bolts x 2 sides
 = 36 bolts per splice



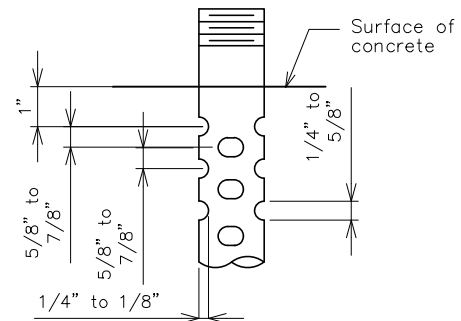
PLAN OF FLANGE SPLICE

Revision/Issue	Date
No.	
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineer No. 0114176 Landscape Architecture: 2007018073	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
DETAILS OF BOLTED FIELD SPLICE	
6/10/2024	
JOB 4049.01	
S22	

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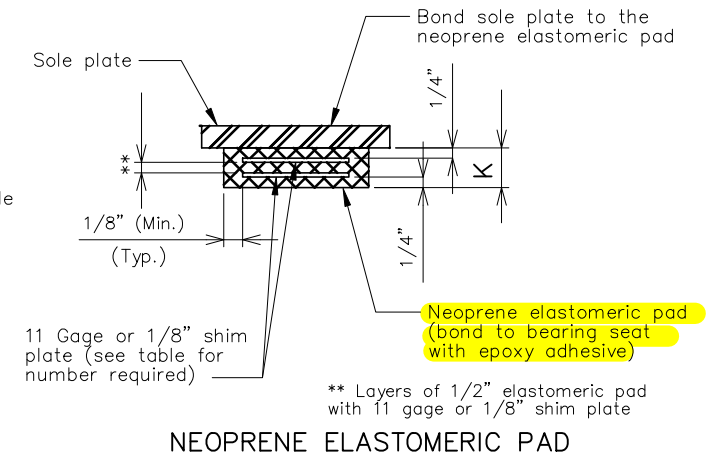
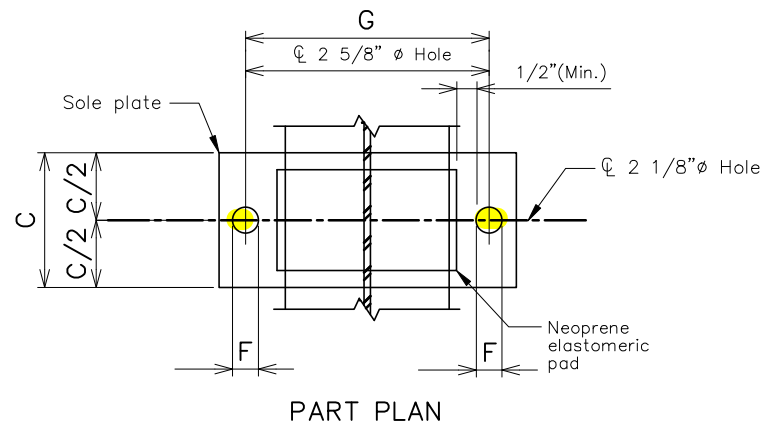
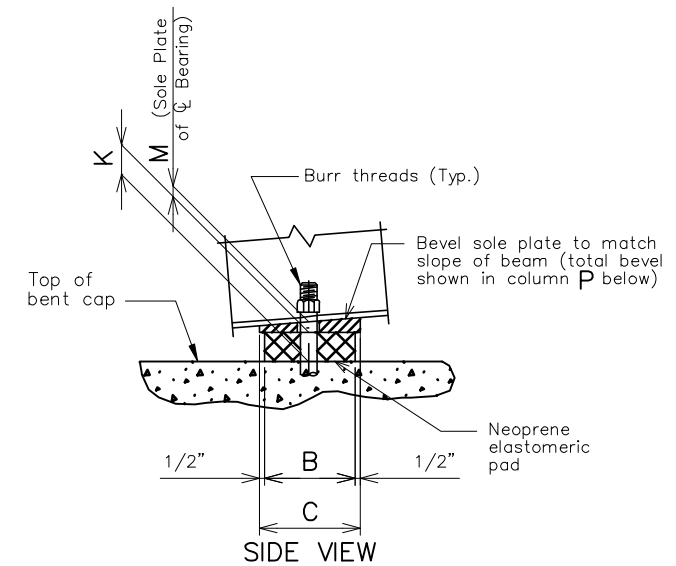
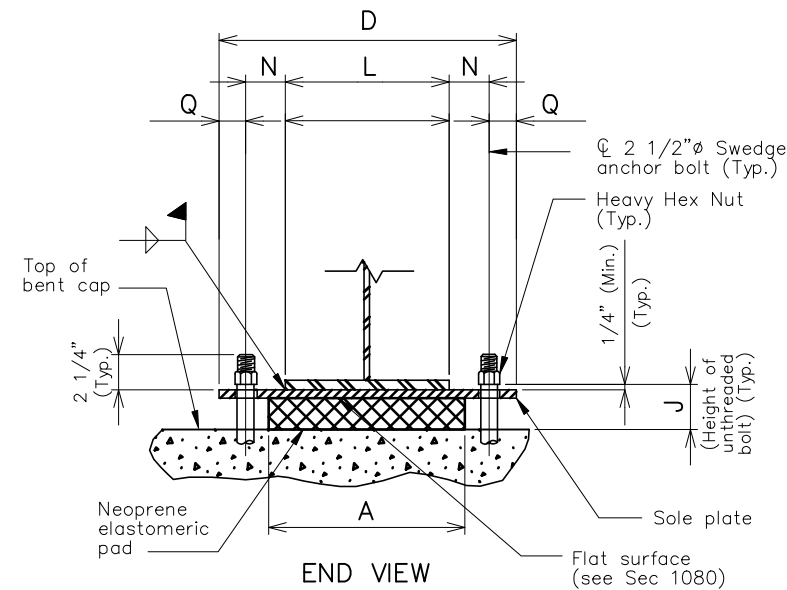


DETAIL FOR 3/4" THRU 2 1/2" ANCHOR BOLTS



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

SWEDGE ANCHOR BOLT DETAILS



GENERAL NOTES:

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

Anchor bolts and heavy hex nuts shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with Sec 1080.

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate shall be ASTM A709 Grade 50W. The welds shall have corrosion resistance and weathering characteristics compatible with base material.

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

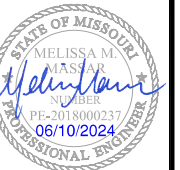
FIXED BEARINGS														NUMBER OF SHIM PLATES *	NUMBER REQUIRED
BENT NO.	A	B	C	D	F	G	J	K	L	M	N	P	Q		
2	24"	15"	16"	36"	2 5/8"	28"	8"	6 1/4"	18"	1 1/2"	5"	1/8"	4"	10	4
3	24"	15"	16"	36"	2 5/8"	28"	8"	6 1/4"	18"	1 1/2"	5"	1/8"	4"	10	4
														TOTAL BEARINGS	8

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

Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	1

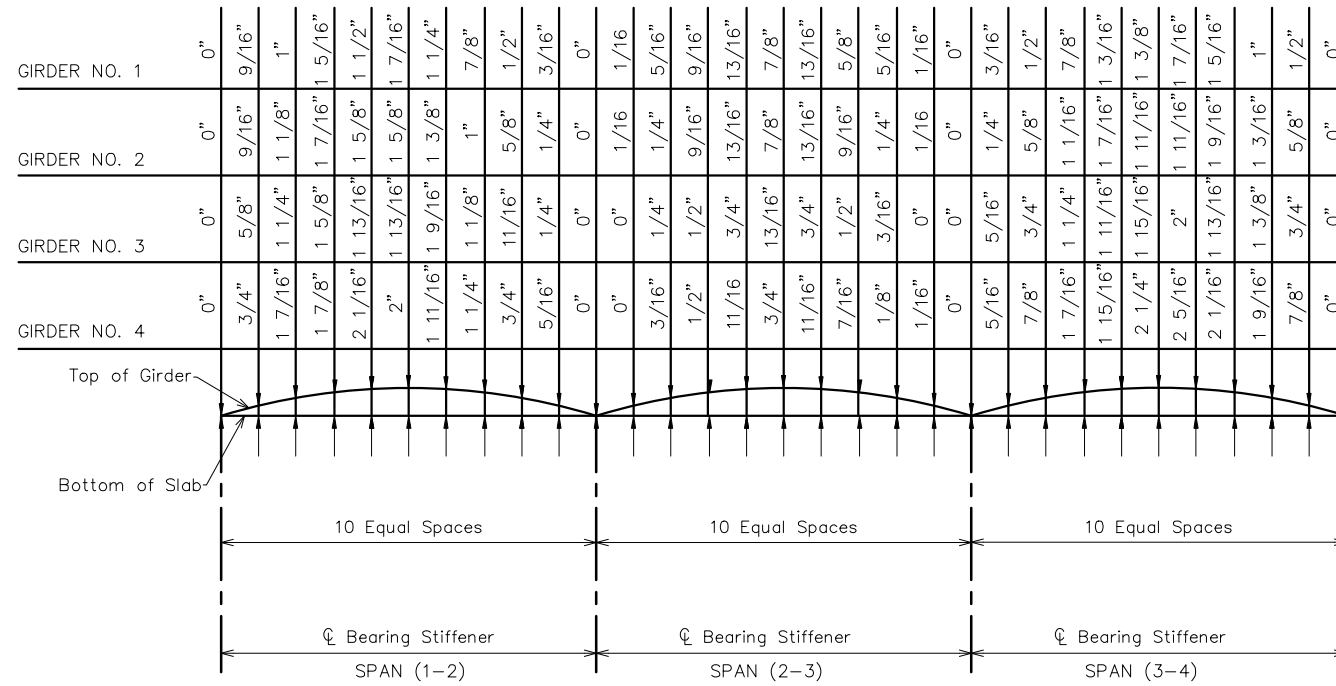
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
LAMINATED NEOPRENE BEARING PAD ASSEMBLY

6/10/2024
JOB 4049.01
S23

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CAMBER DIAGRAM

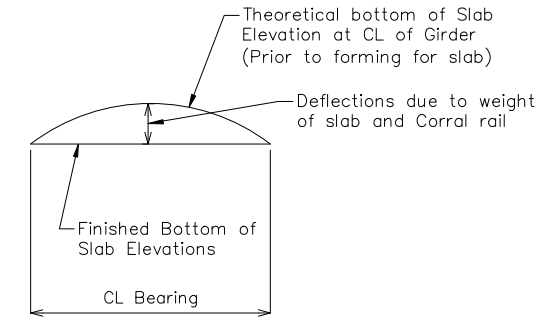
Camber includes allowance for dead load deflection due to structural steel, concrete slab, and corral rail.

For % of dead load deflection due to the weight of structural steel, see table.

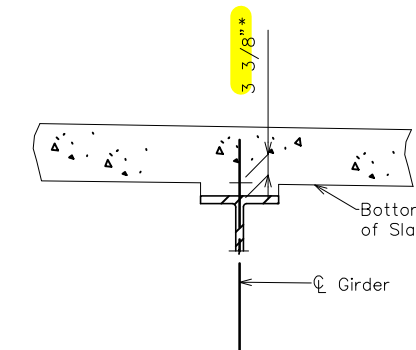
Dead load deflection includes weight of structural steel, concrete slab, and corral rail.

Girder Number	% of Dead Load Deflection		
	Span (1-2)	Span (2-3)	Span (3-4)
1	26%	30%	26%
2	25%	34%	25%
3	25%	36%	25%
4	25%	30%	25%

DEAD LOAD DEFLECTION



TYPICAL SLAB ELEVATIONS DIAGRAM



THEORETICAL SLAB HAUNCH

* Dimension (bottom of slab to top of web) may vary if girder camber after erection differs from plan camber by more than the % of Dead Load Deflection due to weight of structural steel. No payment will be made for additional forming or concrete required for variable haunching.

Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) **											
Girder Number	Span (1-2) (CL Brg. - CL Brg.)										
	CL Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	CL Brg.
1	1144.43	1144.37	1144.30	1144.22	1144.13	1144.03	1143.92	1143.81	1143.69	1143.57	1143.46
2	1144.70	1144.64	1144.58	1144.51	1144.42	1144.33	1144.22	1144.10	1143.98	1143.86	1143.75
3	1144.97	1144.92	1144.86	1144.80	1144.72	1144.62	1144.51	1144.40	1144.28	1144.16	1144.05
4	1145.24	1145.20	1145.15	1145.09	1145.01	1144.92	1144.81	1144.69	1144.57	1144.45	1144.34
Girder Number	Span (2-3) (CL Brg. - CL Brg.)										
	CL Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	CL Brg.
1	1143.46	1143.35	1143.25	1143.16	1143.06	1142.96	1142.84	1142.72	1142.59	1142.46	1142.35
2	1143.75	1143.65	1143.55	1143.46	1143.37	1143.26	1143.15	1143.03	1142.90	1142.78	1142.67
3	1144.05	1143.94	1143.85	1143.76	1143.67	1143.57	1143.46	1143.34	1143.21	1143.09	1142.99
4	1144.34	1144.24	1144.15	1144.06	1143.97	1143.87	1143.76	1143.64	1143.52	1143.41	1143.31
Girder Number	Span (3-4) (CL Brg. - CL Brg.)										
	CL Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	CL Brg.
1	1142.35	1142.26	1142.19	1142.11	1142.04	1141.95	1141.86	1141.75	1141.64	1141.51	1141.38
2	1142.67	1142.59	1142.52	1142.45	1142.38	1142.30	1142.21	1142.10	1141.99	1141.86	1141.72
3	1142.99	1142.91	1142.85	1142.79	1142.73	1142.65	1142.56	1142.45	1142.33	1142.20	1142.06
4	1143.31	1143.24	1143.18	1143.13	1143.07	1143.00	1142.91	1142.81	1142.68	1142.55	1142.40

** 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 and corral rail.

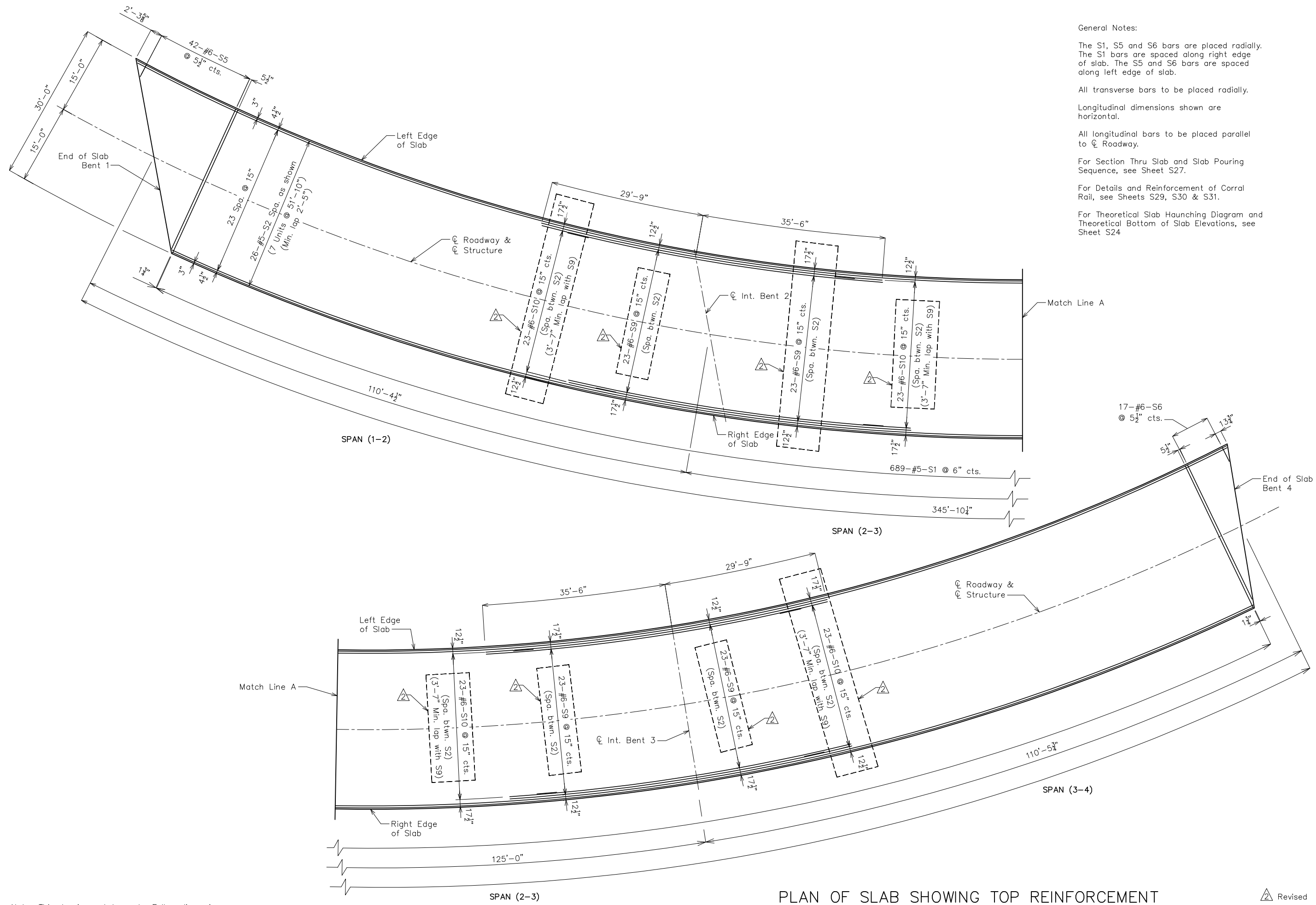
Girder Number	Span Lengths (CL Brg. - CL Brg.)		
	Span (1-2)	Span (2-3)	Span (3-4)
1	113'-7 5/8"	129'-4 1/2"	112'-11 1/4"
2	110'-4 1/2"	126'-5"	110'-4 3/4"
3	107'-3 7/8"	123'-7 3/8"	107'-11 5/8"
4	104'-5 3/8"	120'-11"	105'-7 3/4"

SPAN LENGTHS

Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	◀◀◀◀◀◀
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: 200701872 Engineering: 200701872 Landscape Architecture: 200701872	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI SLAB HAUNCHING & CAMBER DETAILS	
6/10/2024	
JOB 4049.01	
S24	

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General Notes:
 The S1, S5 and S6 bars are placed radially. The S1 bars are spaced along right edge of slab. The S5 and S6 bars are spaced along left edge of slab.
 All transverse bars to be placed radially.
 Longitudinal dimensions shown are horizontal.
 All longitudinal bars to be placed parallel to C Roadway.
 For Section Thru Slab and Slab Pouring Sequence, see Sheet S27.
 For Details and Reinforcement of Corral Rail, see Sheets S29, S30 & S31.
 For Theoretical Slab Haunching Diagram and Theoretical Bottom of Slab Elevations, see Sheet S24

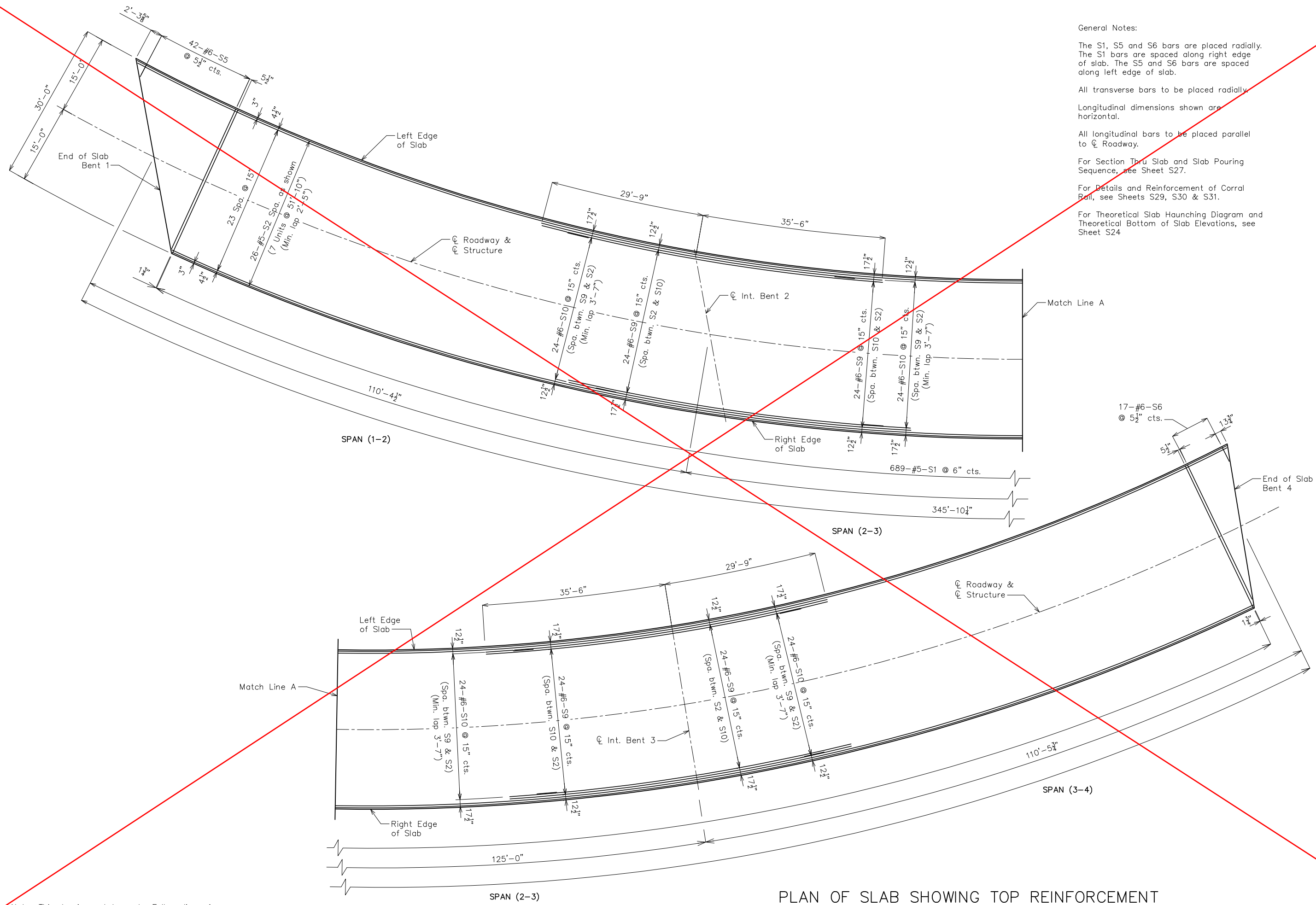
Note: This drawing not to scale. Follow dimensions.

PLAN OF SLAB SHOWING TOP REINFORCEMENT

Revised

Date	
Revision/Issue	
No.	1 2 3 4 5 6 7 8 9 10
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 0011416 Landscape Architecture: 200701823	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI	
PLAN OF SLAB SHOWING TOP REINFORCEMENT	
6/24/2024	
JOB 4049.01	
S25	

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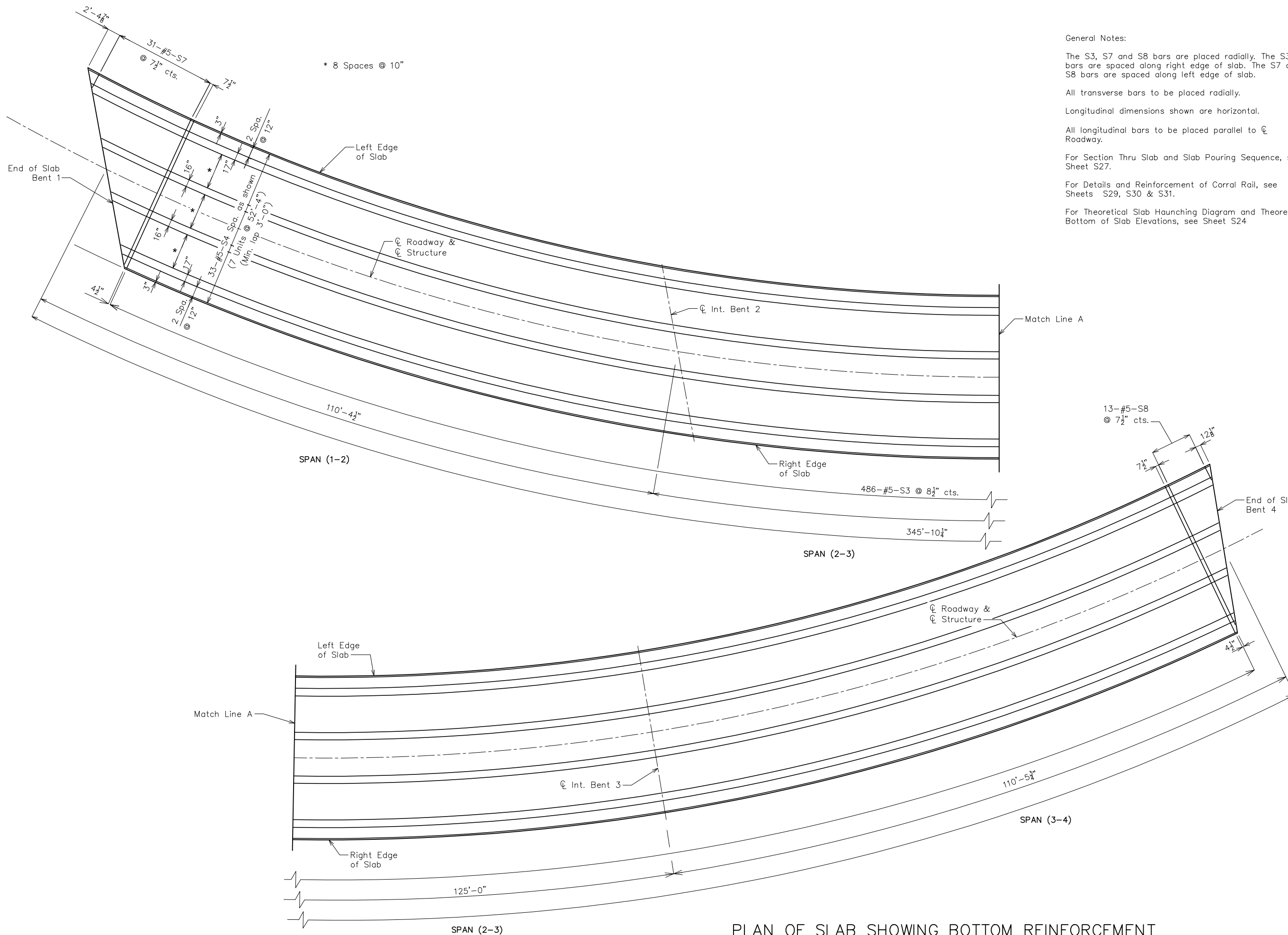
General Notes:
 The S1, S5 and S6 bars are placed radially. The S1 bars are spaced along right edge of slab. The S5 and S6 bars are spaced along left edge of slab.
 All transverse bars to be placed radially.
 Longitudinal dimensions shown are horizontal.
 All longitudinal bars to be placed parallel to ϕ Roadway.
 For Section Thru Slab and Slab Pouring Sequence, see Sheet S27.
 For Details and Reinforcement of Corral Rail, see Sheets S29, S30 & S31.
 For Theoretical Slab Haunching Diagram and Theoretical Bottom of Slab Elevations, see Sheet S24

Note: This drawing not to scale. Follow dimensions.

PLAN OF SLAB SHOWING TOP REINFORCEMENT

Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 0101416 Landscape Architecture: 200701873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI	
PLAN OF SLAB SHOWING TOP REINFORCEMENT	
6/11/2024 JOB 4049.01	
S25	

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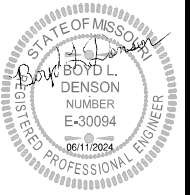


General Notes:

- The S3, S7 and S8 bars are placed radially. The S3 bars are spaced along right edge of slab. The S7 and S8 bars are spaced along left edge of slab.
- All transverse bars to be placed radially.
- Longitudinal dimensions shown are horizontal.
- All longitudinal bars to be placed parallel to ϕ Roadway.
- For Section Thru Slab and Slab Pouring Sequence, see Sheet S27.
- For Details and Reinforcement of Corral Rail, see Sheets S29, S30 & S31.
- For Theoretical Slab Haunching Diagram and Theoretical Bottom of Slab Elevations, see Sheet S24

No.	Revision/Issue	Date

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GRE GREAT RIVER ENGINEERING

Missouri State Certificate of Authority Numbers:
 Professional Engineer No. 0101416,
 Landscape Architecture No. 200701873

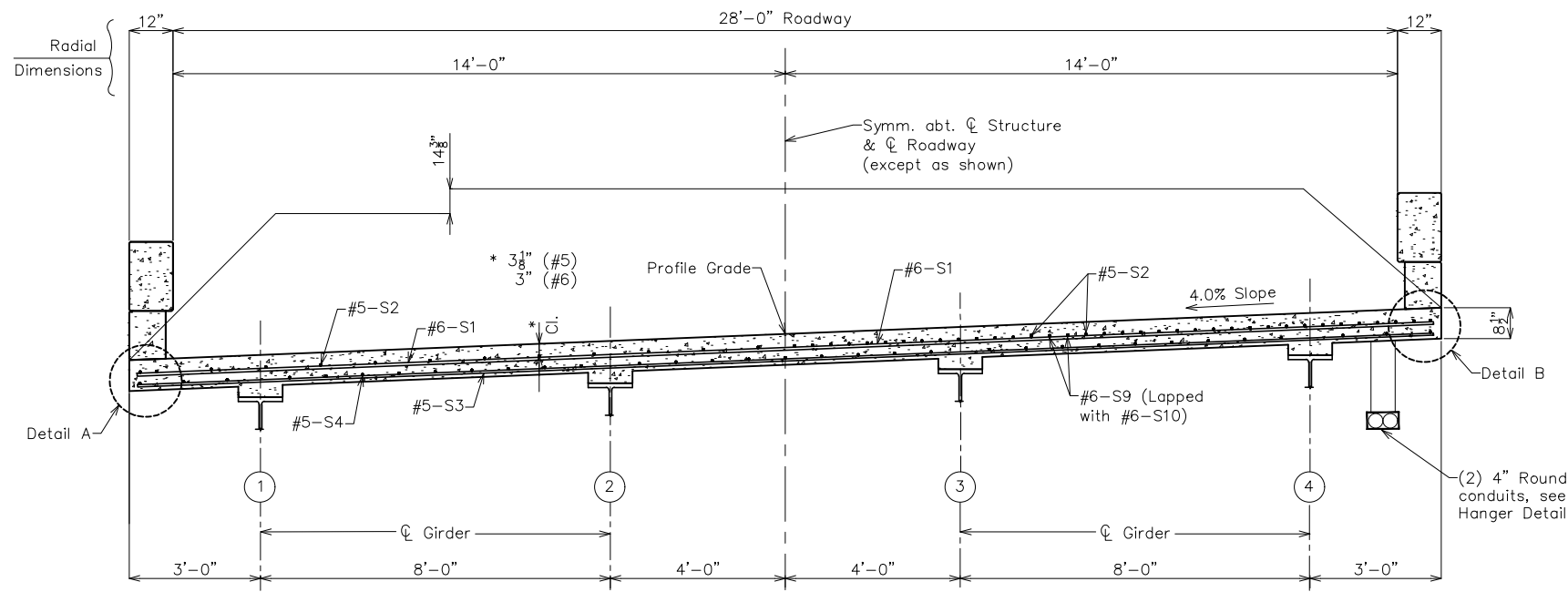
GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

6/11/2024
 JOB 4049.01

S26

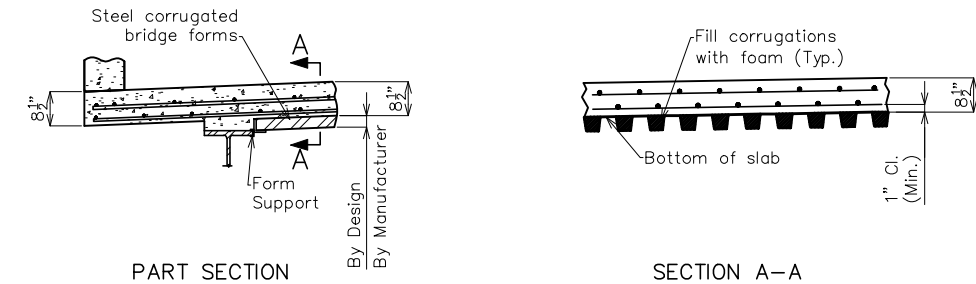
Note: This drawing not to scale. Follow dimensions.

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT



HALF SECTION NEAR MIDSPAN

SECTION THRU SLAB
HALF SECTION NEAR INTERMEDIATE BENT



STAY-IN-PLACE FORM DETAILS

Stay-In-Place Forms:

Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec 1080.

Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

Form sheets shall not rest directly on the top of girder flanges. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. Welding on or drilling holes in the girder flanges will not be permitted. All steel fabrication and construction shall be in accordance with Sec 1080 and 712. Certified field welders will not be required for welding on the form supports.

The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.

The contractor shall provide a method of preventing the direct contact of the stay-in-place forms and connection components with uncoated weathering steel members that is approved by the engineer.

General Notes:

For reinforcement of corral rail not shown, see Sheets S29, S30 & S31.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet S24.

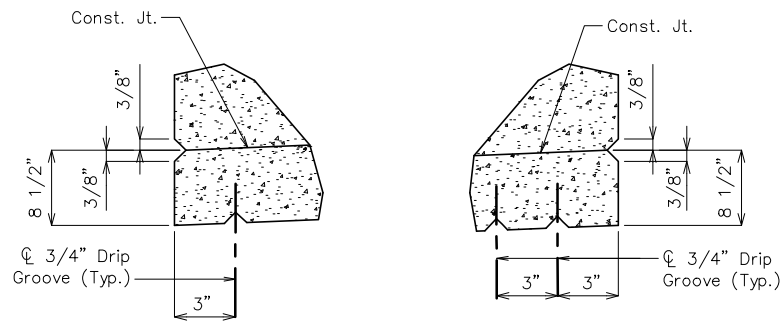
For Plan of Slab Showing Top Reinforcement, see Sheet S25.

For Plan of Slab Showing Bottom Reinforcement, see Sheet S26.

All conduits shall be rigid, Nonmetallic Schedule 40, Heavy wall Polyvinyl Chloride (PVC).

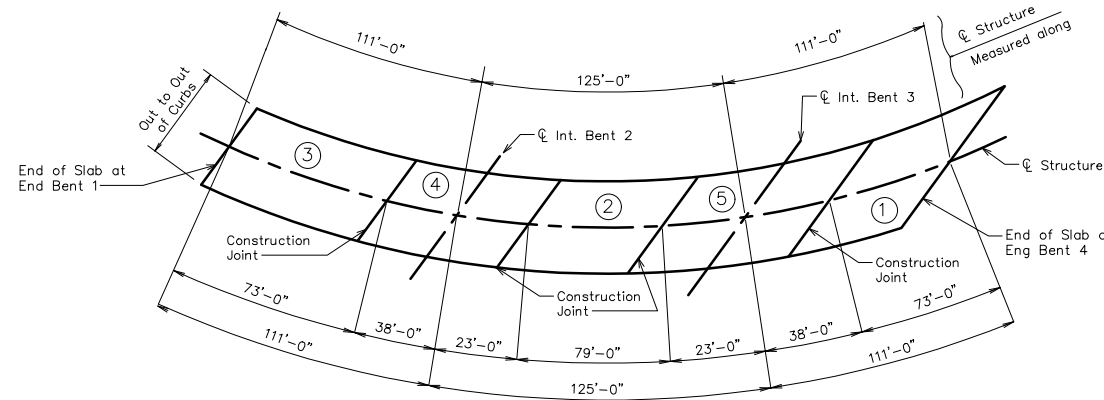
All conduit fittings shall be in accordance with Sec. 1060.

Utility hanger connections shall be field installed per manufacturer recommendations. Care shall be taking to avoid reinforcement.



DETAIL A

DETAIL B



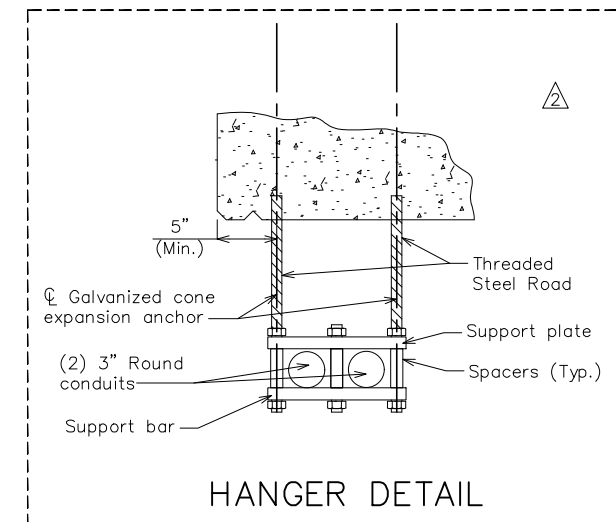
Span (1-2) Span (2-3) Span (3-4)

Basic Sequence	Sequence of Pours					Min. Rate of Pour Cu. Yd./Hour	
	Direction					With Retarder	No Retarder
	1	2	3	4	5		
	Either Direction					25	25
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Section 703.							
Alternate "A" Pours	1	5 + 2	4 + 3			33	50
	End to 5	1 to 4	2 to End				
Alternate "B" Pours	1 + 5 + 2		4 + 3			50	50
	End to 4		2 to End				
Alternate "C" Pours	1 + 5 + 2 + 4 + 3					50	50
	End to End						

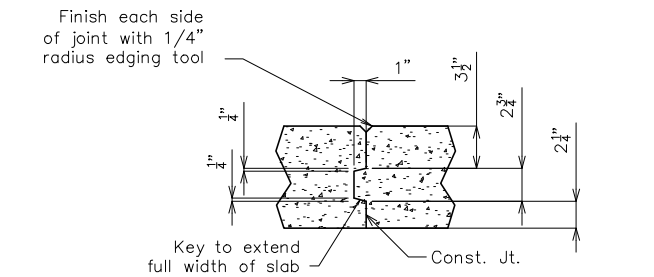
The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

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

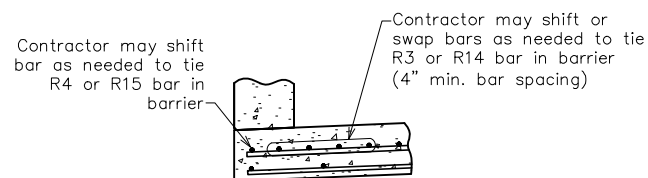
SLAB POURING SEQUENCE



HANGER DETAIL



SLAB CONSTRUCTION JOINT



OPTION SHIFTING TOP BARS AT BARRIER

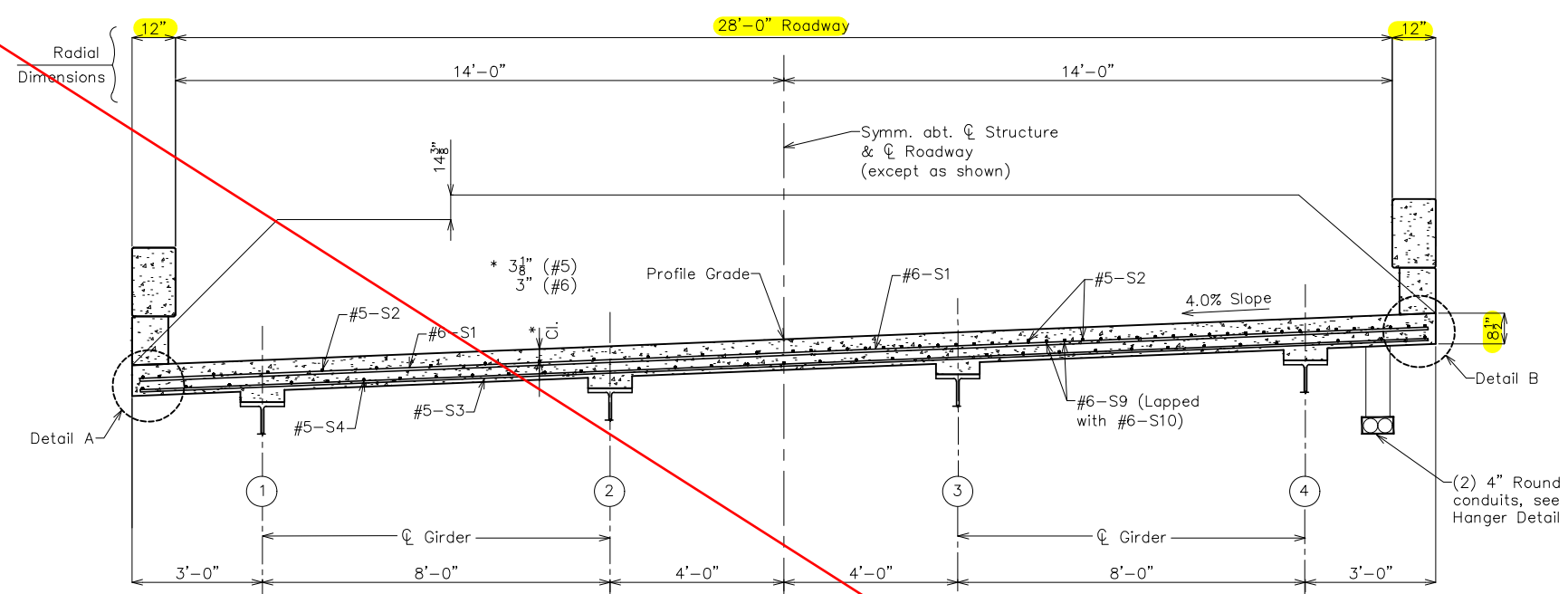
Note: This drawing not to scale. Follow dimensions.

Date	6/24/2024
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineer: 0011416 Landscape Architect: 200701873	
GREEN BRIDGE OVER FINLEY RIVER	
CHRISTIAN COUNTY, MISSOURI	
SLAB DETAILS	
6/24/2024	
JOB 4049.01	
S27	

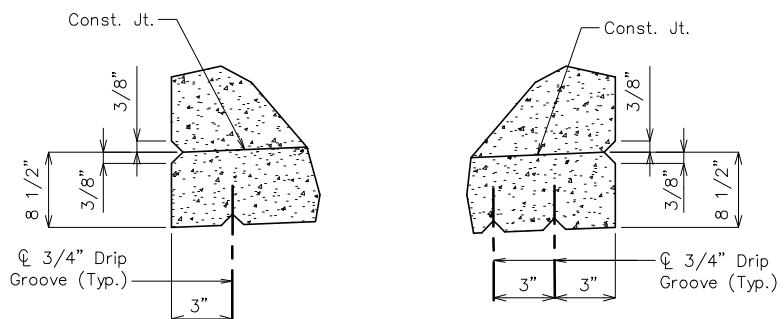
Revised

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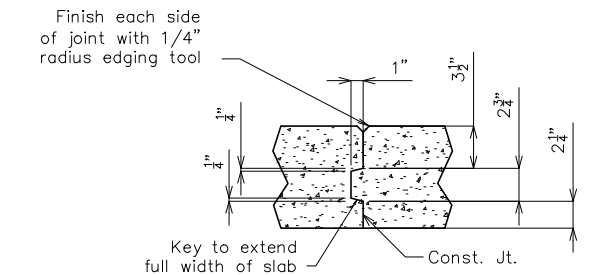


HALF SECTION NEAR MIDSPAN SECTION THRU SLAB HALF SECTION NEAR INTERMEDIATE BENT

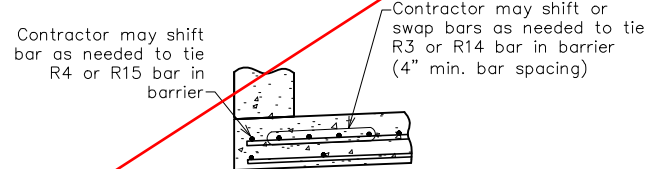


DETAIL A

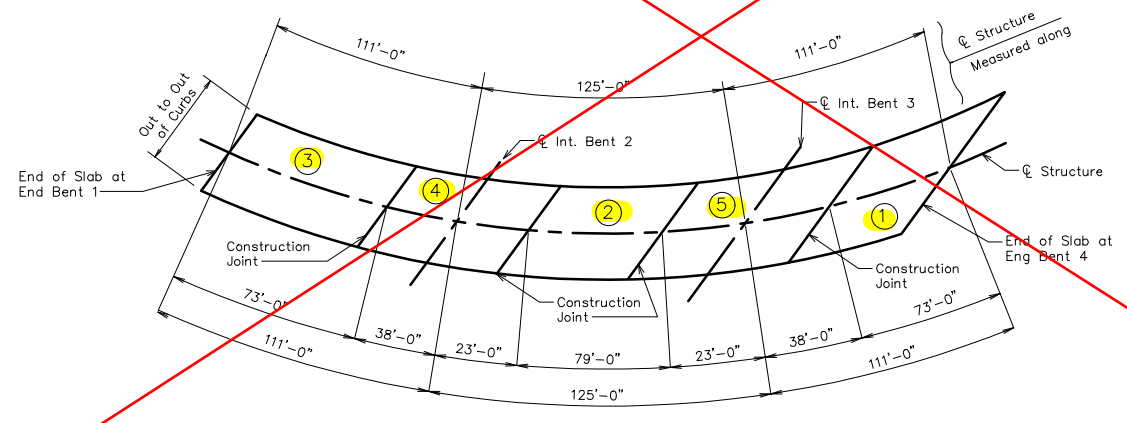
DETAIL B



SLAB CONSTRUCTION JOINT



OPTION SHIFTING TOP BARS AT BARRIER

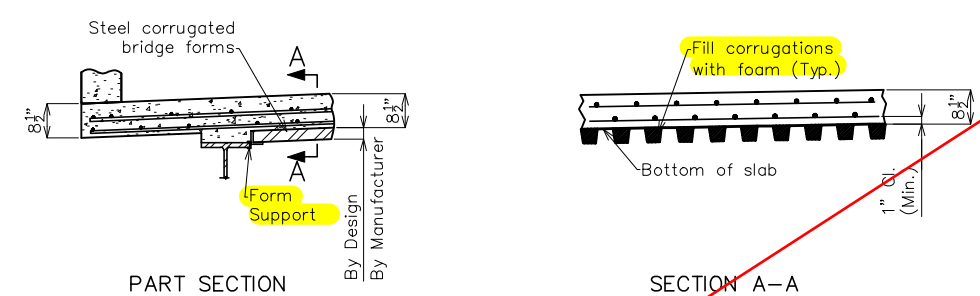


Basic Sequence	Sequence of Pours					Min. Rate of Pour Cu. Yd./Hour	
	Direction					With Retarder	No Retarder
	1	2	3	4	5		
	Either Direction					25	25
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Section 703.							
Alternate "A" Pours	1	5 + 2	4 + 3	2 to End	33	50	
Alternate "B" Pours	1 + 5 + 2	4 + 3	2 to End		50	50	
Alternate "C" Pours	1 + 5 + 2 + 4 + 3					50	50
	End to End						

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

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

SLAB POURING SEQUENCE



STAY-IN-PLACE FORM DETAILS

Stay-In-Place Forms:

Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec 1080.

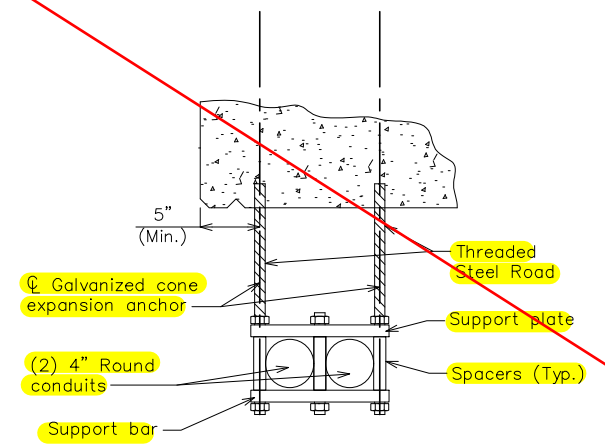
Corrugations of stay-in-place forms shall be filled with an expanded polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

Form sheets shall not rest directly on the top of girder flanges. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. Welding on or drilling holes in the girder flanges will not be permitted. All steel fabrication and construction shall be in accordance with Sec 1080 and 712. Certified field welders will not be required for welding on the form supports.

The design of stay-in-place corrugated steel forms is per manufacturer which shall be in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.

The contractor shall provide a method of preventing the direct contact of the stay-in-place forms and connection components with uncoated weathering steel members that is approved by the engineer.

- General Notes:
- For reinforcement of corral rail not shown, see Sheets S29, S30 & S31.
 - For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet S24.
 - For Plan of Slab Showing Top Reinforcement, see Sheet S25.
 - For Plan of Slab Showing Bottom Reinforcement, see Sheet S26.
 - All conduits shall be rigid, Nonmetallic Schedule 40, Heavy wall Polyvinyl Chloride (PVC).
 - All conduit fittings shall be in accordance with Sec. 1060.
 - Utility hanger connections shall be field installed per manufacturer recommendations. Care shall be taking to avoid reinforcement.

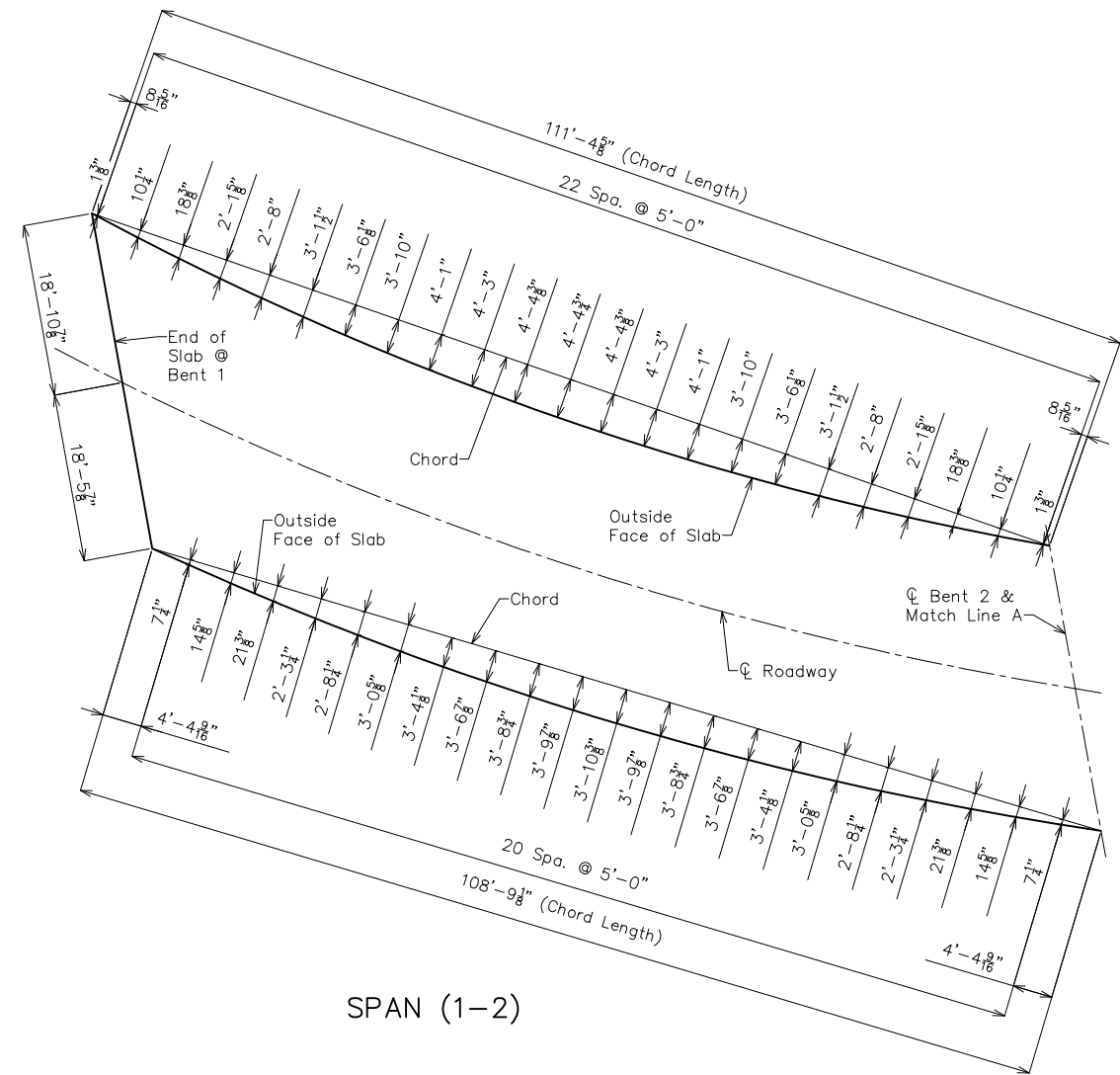


HANGER DETAIL

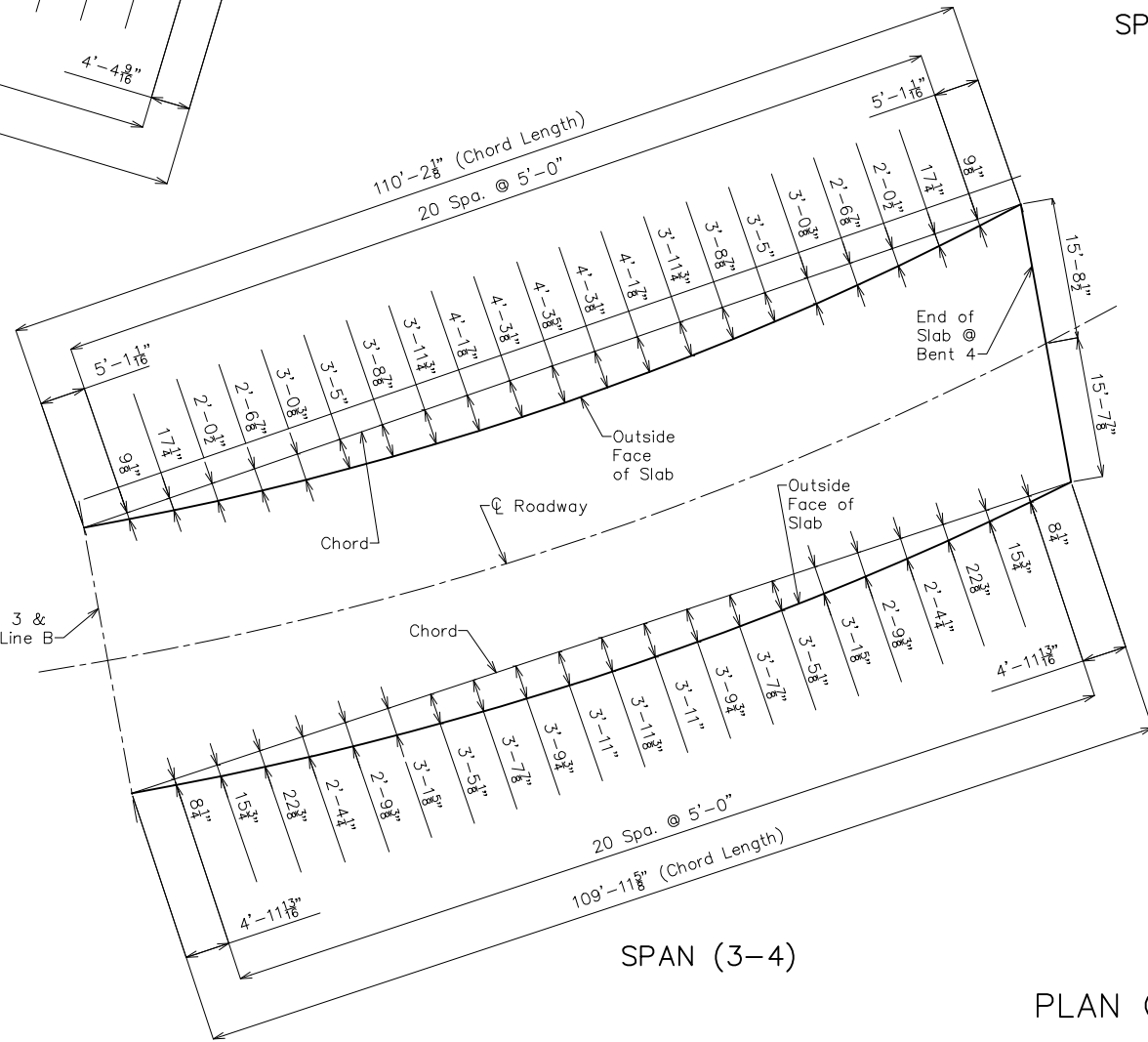
Date	6/11/2024
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: 0000014146 Engineering: Landscape Architecture: 2007018373	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI SLAB DETAILS	
6/11/2024	
JOB 4049.01	
S27	

Note: This drawing not to scale. Follow dimensions.

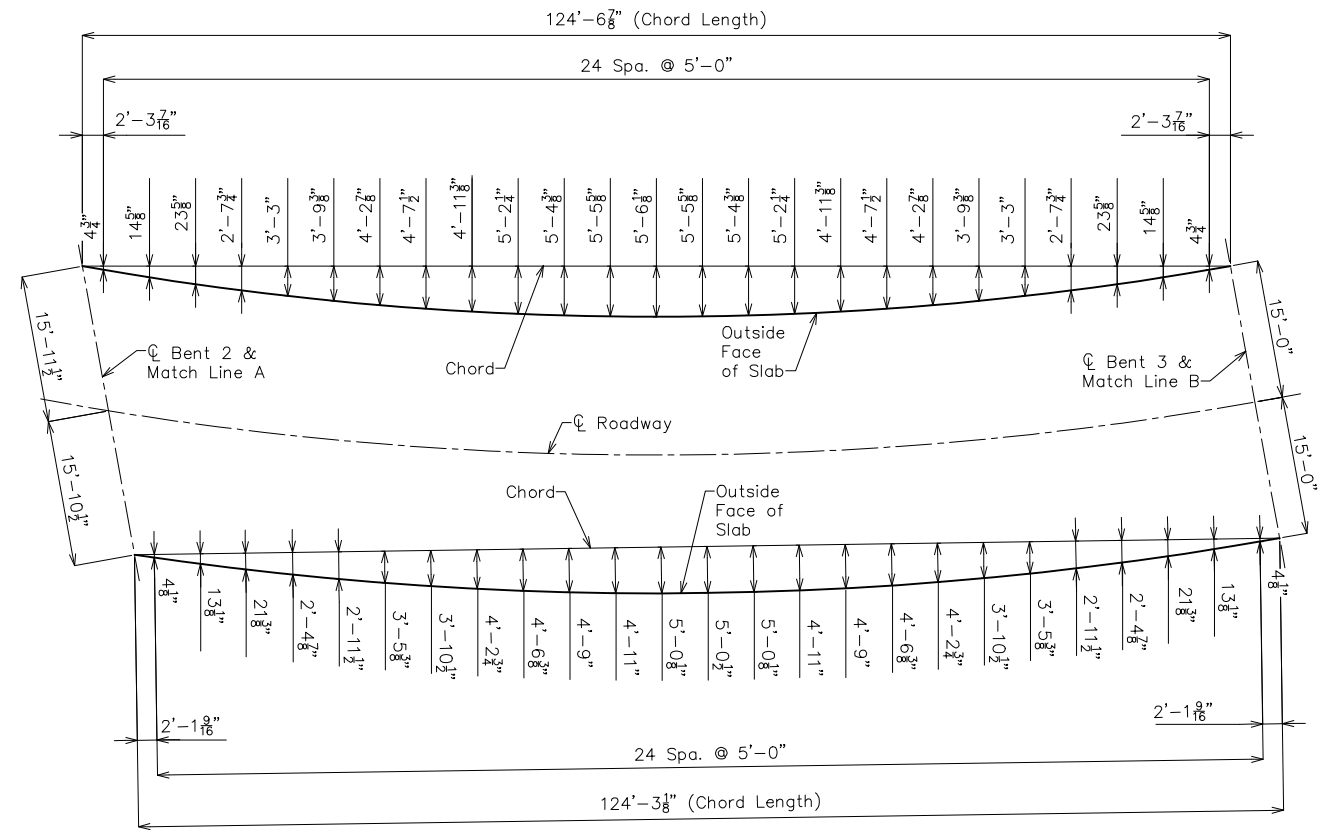
Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design\Drawings\4049.01_STRUCTUREAL 2.dwg PLOT DATE: 6/11/2024 6:26:24 AM LAST SAVE: 6/11/2024 6:21:04 AM



SPAN (1-2)

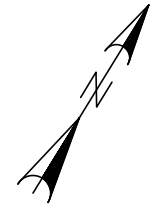


SPAN (3-4)



SPAN (2-3)

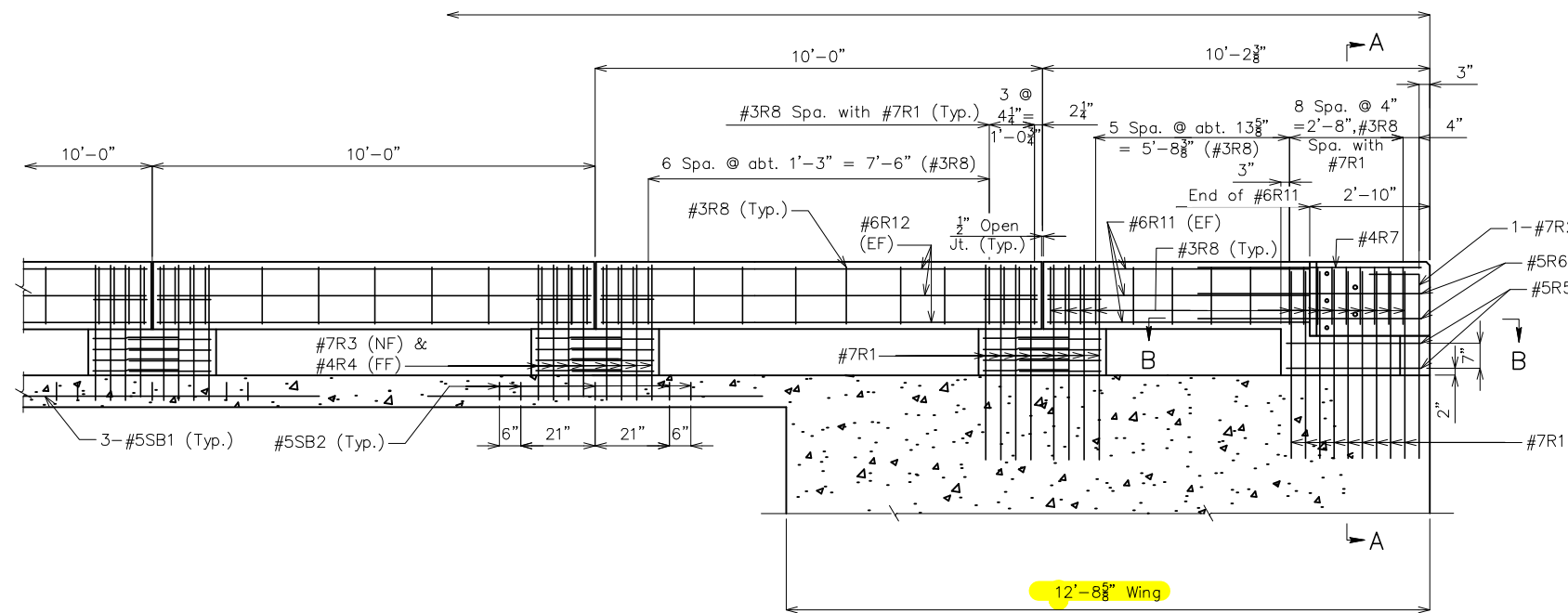
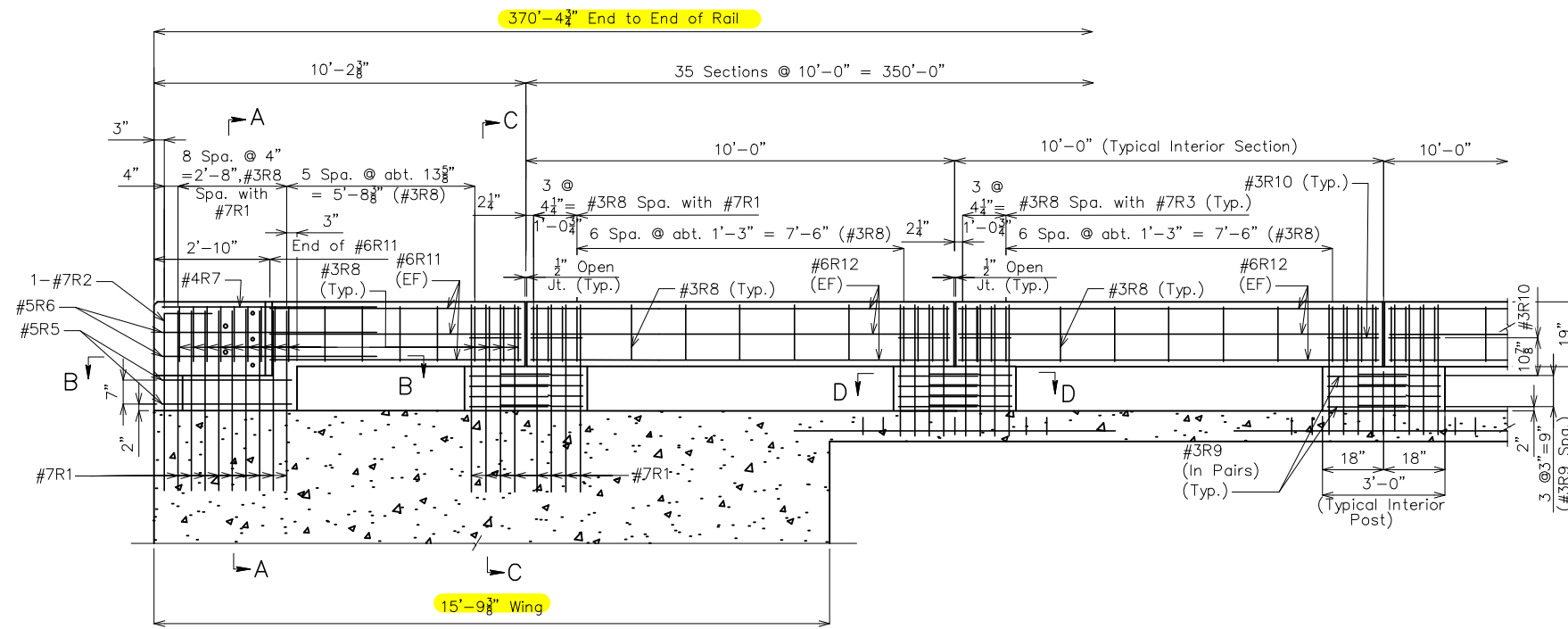
General Notes:
All dimensions are horizontal.



Note: This drawing not to scale. Follow dimensions.

Revision/Issue	Date
No.	
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 061011416 Landscape Architecture: 200701823	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI SLAB CURVE ORDINATES	
6/11/2024	
JOB 4049.01	
S28	

Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design\Drawings\4049.01 - STRUCTURAL 2.dwg PLOT DATE: 6/11/2024 6:26:30 AM LAST SAVE: 6/11/2024 6:21:04 AM



ELEVATION OF LEFT CORRAL RAIL ALONG TRAFFIC FACE
 Longitudinal dimensions are horizontal arc dimensions along outside face of curb.

General Notes:

For Sections A-A, B-B, C-C and D-D, see Sheet S31.

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

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

Concrete in barrier shall be Class B-1.

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

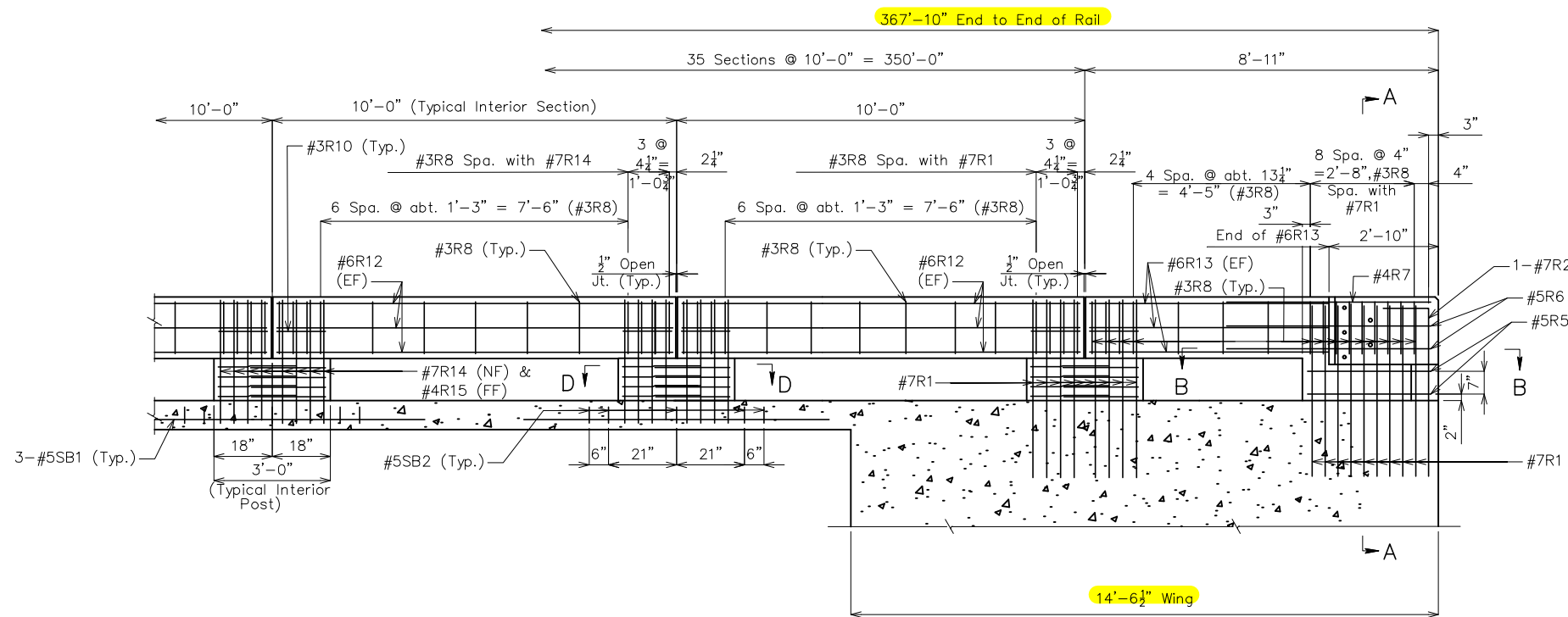
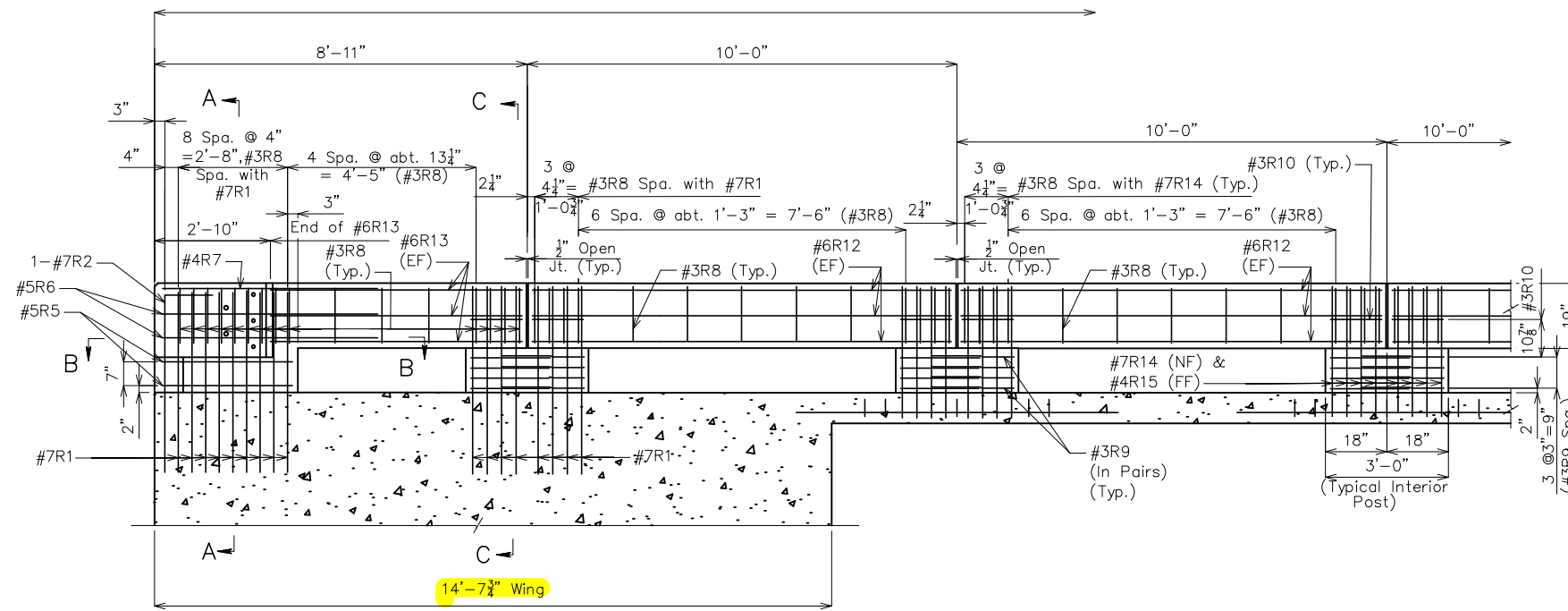
Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standards Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be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

- EF = Each Face
- FF = Far Face
- NF = Near Face

Note: Drawing not to scale. Follow dimensions.

Date		Revision/Issue			
No.	1	No.	1	No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.					
Missouri State Certificate of Authority Numbers: Engineering: 00101416 Landscape Architecture: 200701873					
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI ELEVATION OF LEFT CORRAL RAIL					
6/11/2024					
JOB 4049.01					
S29					

Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design\B - DRAWINGS\4049.01_STRUCTURE\2.dwg PLOT DATE: 6/11/2024 6:26:34 AM LAST SAVE: 6/11/2024 6:21:04 AM



ELEVATION OF RIGHT CORRAL RAIL ALONG TRAFFIC FACE

Longitudinal dimensions are horizontal arc dimensions along outside face of curb.

General Notes:

For Sections A-A, B-B, C-C and D-D, see Sheet S31.

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

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

Concrete in barrier shall be Class B-1.

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

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standards 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 Corral Curb.

EF = Each Face

FF = Far Face

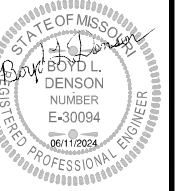
NF = Near Face

Note: Drawing not to scale. Follow dimensions.

Revision/Issue	Date

No.	

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

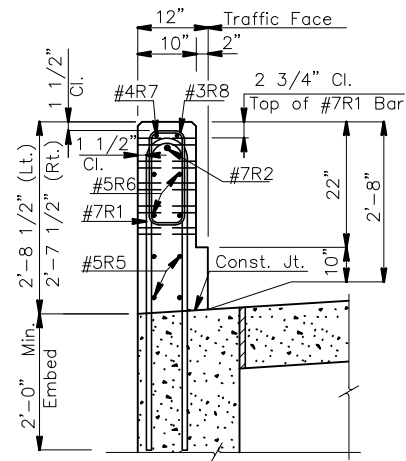


GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
ELEVATION OF RIGHT CORRAL RAIL

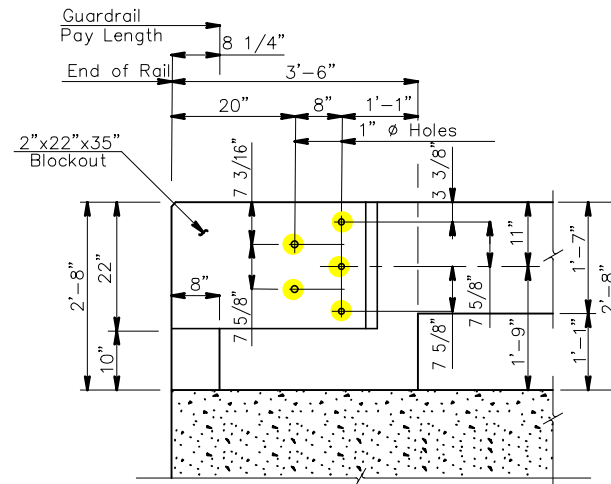
6/11/2024
JOB 4049.01

S30

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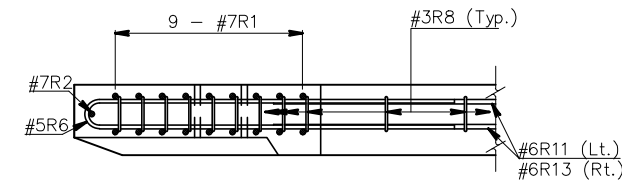


SECTION A-A

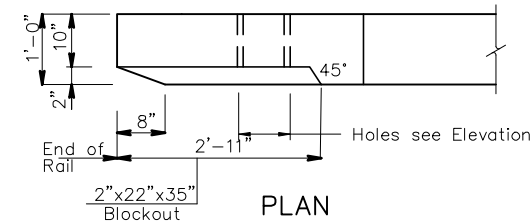


ELEVATION

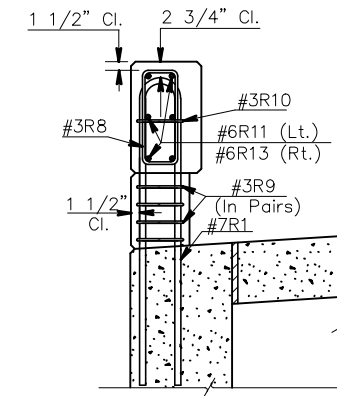
(Dimensions at traffic face of rail.)



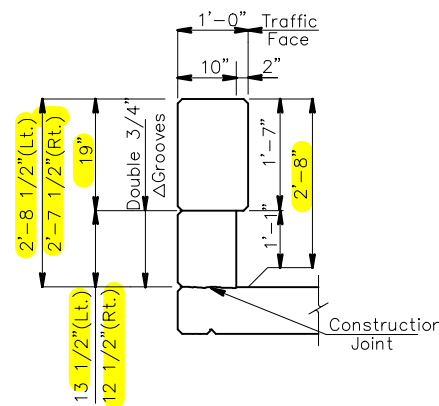
SECTION B-B



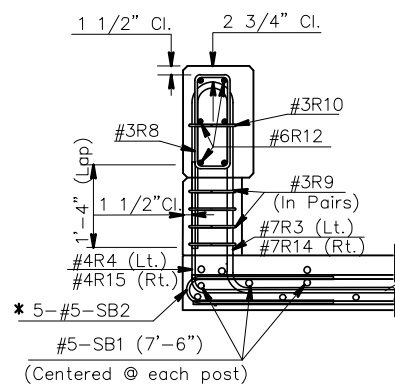
PLAN



SECTION C-C

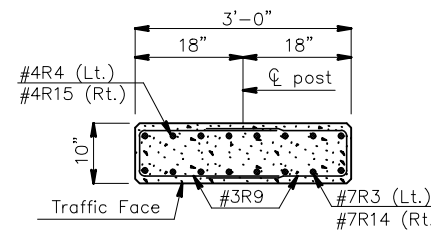


TYPICAL INTERIOR POST

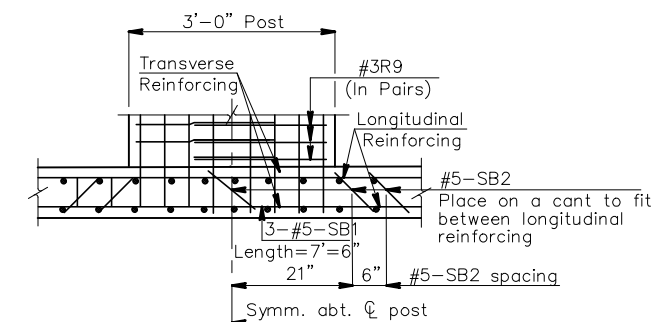


SECTION THRU INTERIOR POST

*Note:
The hook may be canted to provide clearance and/or fit between reinforcing.



SECTION D-D

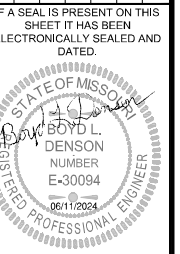


ELEVATION SHOWING SB1 & SB2 BAR PLACEMENT

Note: Drawing not to scale. Follow dimensions.

No.	Revision/Issue	Date

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

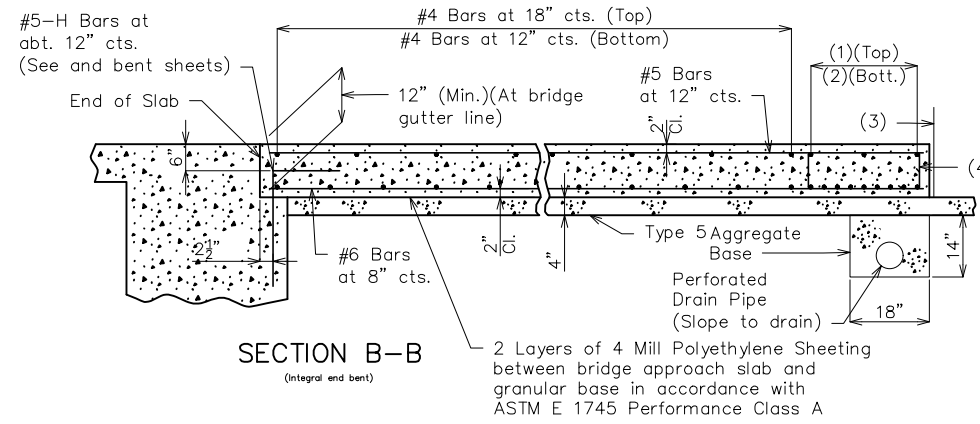
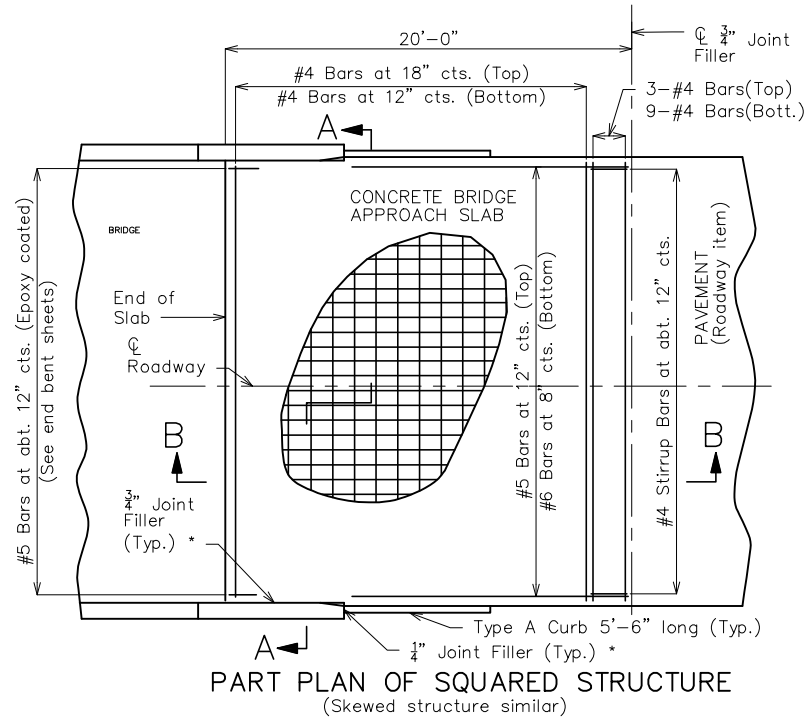


GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
DETAILS OF CORRAL RAIL

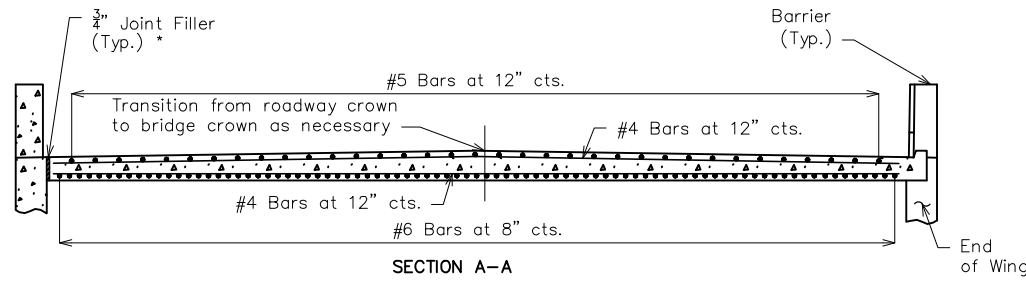
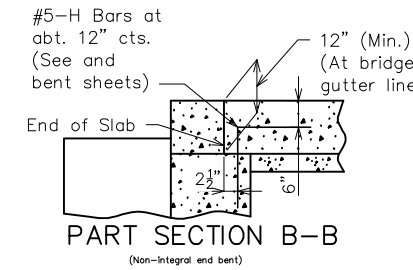
6/11/2024
JOB 4049.01

S31

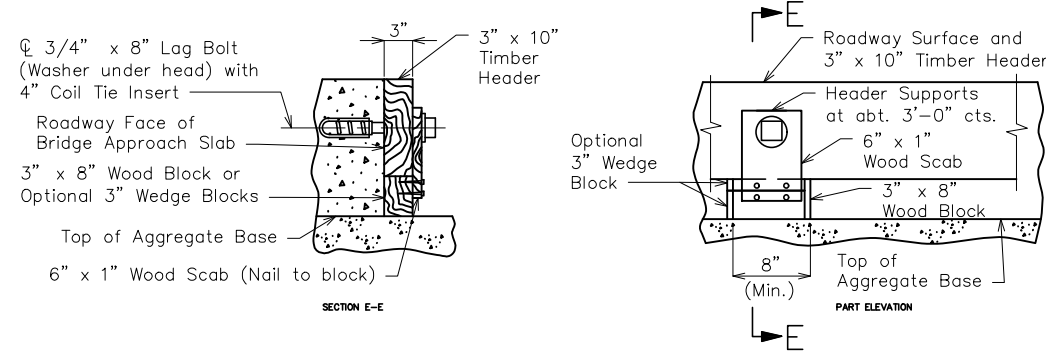
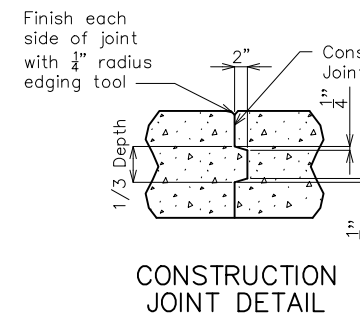
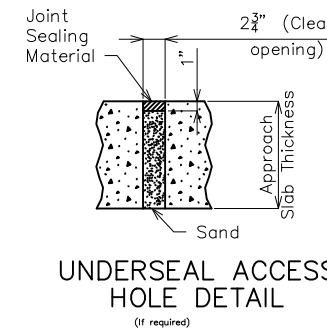
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- (1) 3-#4 Bars
- (2) 9-#4 Bars
- (3) 3/4" Jt. Filler
- (4) #4 Stirrup Bars, at abt. 12" cts.; 2'-0" x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.



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



Remove timber header when roadway pavement is placed.

General Notes:

Integral end bents shown, non-integral end bent similar.

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

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

Longitudinal construction joints in bridge approach slab shall be aligned with longitudinal construction joints in bridge slab.

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 23 inches for #4 bars, or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

The contractor shall pour and satisfactorily finish the bridge slab before placing the bridge approach slab.

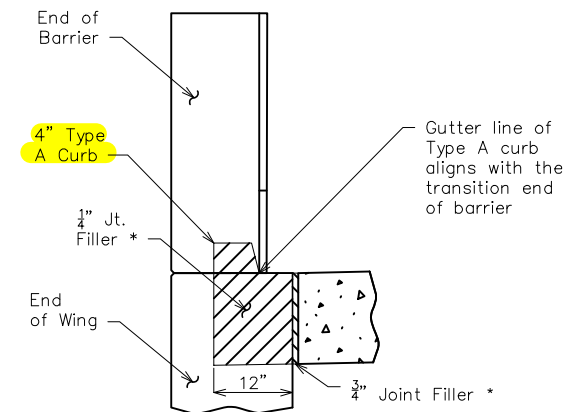
All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler except as noted.

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

See Missouri Standard Plan 609.00 for details of Type A curb.

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

* Seal joint between vertical face of approach slab and wing with sealant in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.



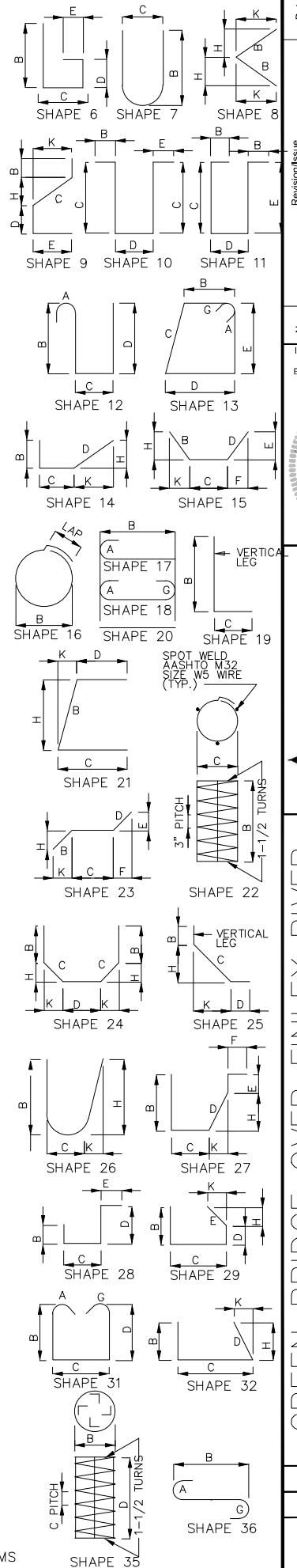
SECTION BETWEEN CURB AND BARRIER

Date	
Revision/Issue	
No.	1
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.	
Missouri State Certificate of Authority Numbers: Engineering: 0101476 Landscape Architecture: 200701873	
GREEN BRIDGE OVER FINLEY RIVER CHRISTIAN COUNTY, MISSOURI BRIDGE APPROACH SLAB (MINOR)	
6/11/2024	
JOB 4049.01	
S32	

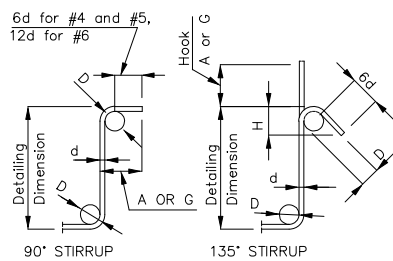
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NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	DIMENSIONS																NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
								B		C		D		E		F		H		K						
								FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.			
4	R7	CORRAL RAIL		7				5	3.000	4.000								10	8	10	8	29				
976	R8	CORRAL RAIL		13				6.000	1	4.000	6.000	1	4.000					4	3	4	1	1498				
576	R9	CORRAL RAIL		10						11.000	8.000							4	6	4	4	938				
144	R10	CORRAL RAIL		13				8.000	1	3.000	8.000	1	3.000					4	5	4	3	230				
12	R11	CORRAL RAIL		20				7	2.375									7	2	7	2	129				
420	R12	CORRAL RAIL		20				9	8.000									9	8	9	8	6098				
12	R13	CORRAL RAIL		20				5	11.000									5	11	5	11	107				
272	R14	CORRAL RAIL		51				2	3.000	7.000	2	11.250	2	0.000		1.000	2	0.000	7	10	7	3	4031			
272	R15	CORRAL RAIL		25				2	1.250	1	10.000				1.000	1	10.000	3	11	3	10	697				
204	SB1	CORRAL RAIL		20				7	6.000									7	6	7	6	1396				
340	SR2	CORRAL RAIL		7				2	2.000	5.000								4	7	4	7	1625				

NO. REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS																NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
									B		C		D		E		F		H		K						
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.			
TOTALS																											
3																						2666					
4																						4748					
4																						2695					
5																						63069					
6																						3051					
6																						24905					
7																						236					
7																						10734					
8																						1153					
10																						1067					
TOTAL																											
TOTAL																								9102			
TOTAL																								105222			
SLAB ON STEEL																											
4																						1257					
5																						59703					
6																						18571					
7																						1331					
8																						1153					
TOTAL																								82015			
REINFORCING STEEL (BRIDGES)																											
4																						4748					
6																						3051					
7																						236					
10																						1067					
TOTAL																								9190			
CORRAL RAIL																											
3																						2666					
4																						1438					
5																						3366					
6																						6334					
7																						9403					
TOTAL																								23207			

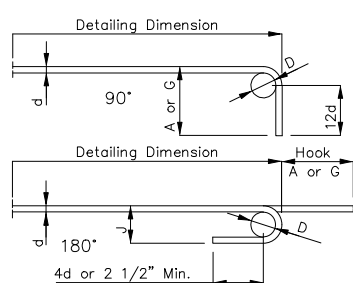


Added



Bar Size	D (In.)	90° Hook		135° Hook	
		Hook A or G	Hook A or G	Approx. H	Approx. H
#3	1 1/2"	4"	4"	2 1/2"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"	4 1/2"

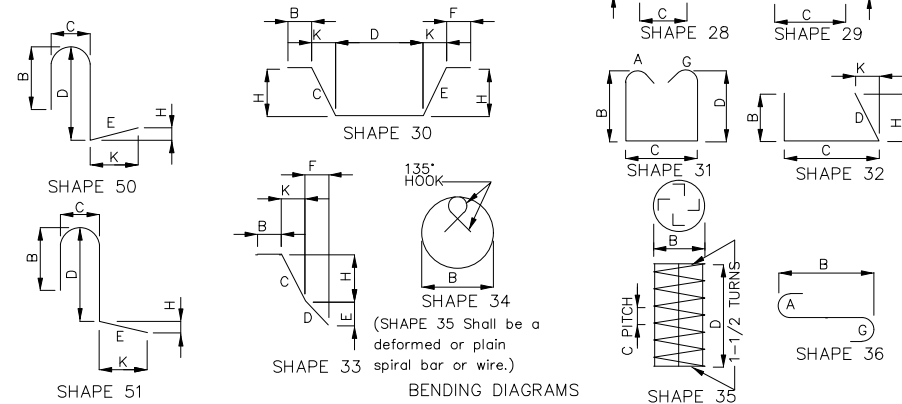
Note: Unless otherwise noted diameter "D" is the same for all bends and hooks on a bar.



Bar Size	D (In.)	All Grades			
		180° Hooks		90° Hooks	
		A or G	J	A or G	A or G
#3	2 1/4"	5"	3"	6"	6"
#4	3"	6"	4"	8"	8"
#5	3 3/4"	7"	5"	10"	10"
#6	4 1/2"	8"	6"	12"	12"
#7	5 1/4"	10"	7"	14"	14"
#8	6"	11"	8"	16"	16"
#9	9 1/2"	15"	11 3/4"	19"	19"
#10	10 3/4"	17"	13 1/4"	22"	22"
#11	12"	19"	14 3/4"	2'-0"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"	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.
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)
Payweights are based on actual lengths.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals.
Length and Weight of column spirals do not include splices or spacers.
Reinforcing steel (Grade 60) fy = 60,000 psi.



Note: Drawing not to scale. Follow dimensions.

Date: _____

Revision/Issue: _____

No.

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

STATE OF MISSOURI
BOYD L. DENSON
NUMBER E-30084
6/24/2024
REGISTERED PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

Missouri State Certificate of Authority Numbers:
Engineering: 00101416
Landscape Architecture: 2007018523

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI

BILL OF REINFORCING

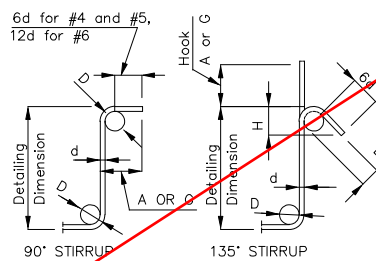
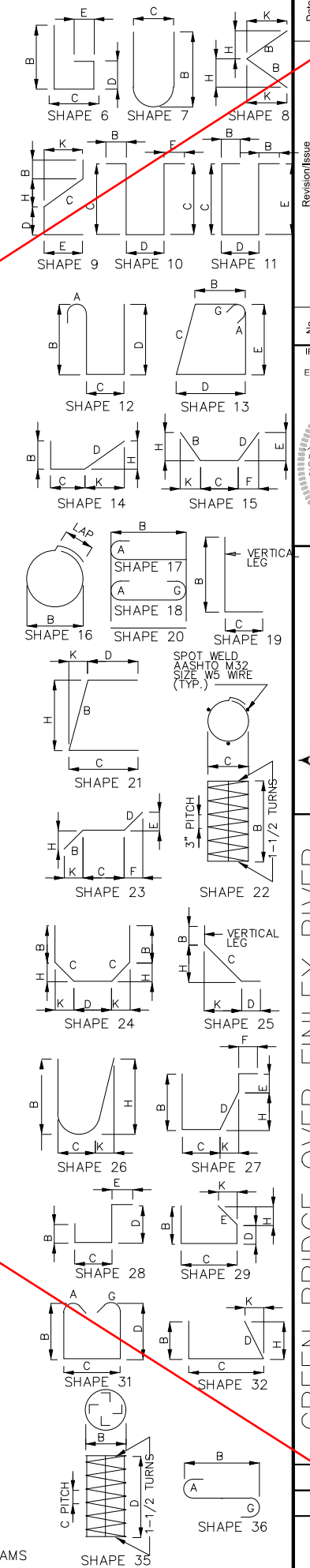
6/24/2024
JOB 4049.01

S34

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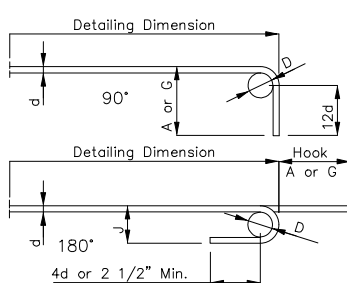
BILL OF REINFORCING STEEL																									
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									B		C		D		E					F		H		K	
									FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.
12	6 R11	CORRAL RAIL		20					7	2	3	7	2				7	2	129						
420	6 R12	CORRAL RAIL		20					9	8	0	9	8				9	8	6098						
12	6 R13	CORRAL RAIL		20					5	11	0	5	11				5	11	107						
272	7 R14	CORRAL RAIL		51					2	3	0	7	10	7	3		7	10	4031						
272	4 R15	CORRAL RAIL		25					2	1	2	1	10	0			3	11	697						

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																									
3																		2670							
4																		3089							
4																		2703							
5																		3700							
5																		59844							
6																		933							
6																		25335							
7																		236							
7																		10726							
8																		1153							
9																		835							
TOTAL																8793									
TOTAL																102431									
SLAB ON STEEL																									
4																		1265							
5																		59699							
6																		19001							
7																		1323							
8																		1153							
TOTAL																82441									
REINFORCING STEEL (BRIDGES)																									
4																		3089							
5																		3700							
6																		933							
7																		236							
9																		835							
TOTAL																8793									
CORRAL RAIL																									
3																		2670							
4																		1438							
5																		145							
6																		6334							
7																		9403							
TOTAL																19990									



STIRRUP HOOK DIMENSIONS GRADES 40 - 50 - 60 KSI				
Bar Size	D (in.)	90° Hook A or G	135° Hook A or G	Approx. H
#3	1 1/2"	4"	4"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

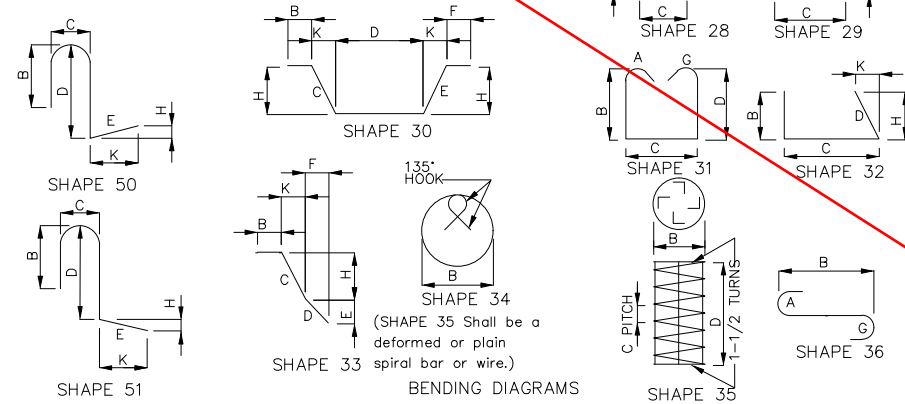
Note: Unless otherwise noted diameter "D" is the same for all bends and hooks on a bar.



END HOOK DIMENSIONS				
Bar Size	D (in.)	All Grades		
		180° Hooks		90° Hooks
		A or G	J	A or G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
All standard hooks and bends other than 180 degree are to be bent with same procedure as for 90 degree standard hooks.
Hooks and bends shall be in accordance with the procedures as shown on this sheet.
E = Epoxy Coated Reinforcement.
S = Stirrup.
X = Bar is included in Substructure Quantities.
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)
Payweights are based on actual lengths.
Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals.
Length and Weight of column spirals do not include splices or spacers.
Reinforcing steel (Grade 60) fy = 60,000 psi.



Date: _____

Revision/Issue: _____

No.

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

STATE OF MISSOURI
BOYD L. DENSON
NUMBER E-30094
06/11/2024
REGISTERED PROFESSIONAL ENGINEER

Missouri State Certificate of Authority Numbers:
Engineering: 0011416
Landscaping/Architecture: 200703823


GRE GREAT RIVER ENGINEERING

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI

BILL OF REINFORCING

6/11/2024
JOB 4049.01
S34

Z:\Shared\Projects\4049.01 - Christian County Green Bridge Over Finley River\06 - Design - DRAWINGS\4049.01 - STRUCTURAL\2.dwg PLOT DATE: 6/11/2024 6:26:58 AM LAST SAVE: 6/11/2024 6:21:04 AM



BORING NUMBER BH-1

PAGE 1 OF 1

CLIENT <u>Christian County</u>	PROJECT NAME <u>Green Bridge #24900031</u>
PROJECT NUMBER <u>4049.01</u>	PROJECT LOCATION <u>Ozark, MO</u>
DATE STARTED <u>2/23/24</u> COMPLETED <u>2/23/24</u>	GROUND ELEVATION <u>1139.40 ft</u> HOLE SIZE <u>4</u>
DRILLING CONTRACTOR <u>Great River Engineering</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Solid Stem Auger</u>	AT TIME OF DRILLING <u>---</u>
LOGGED BY <u>C. Southard</u> CHECKED BY <u>C. Gibson</u>	AT END OF DRILLING <u>---</u>
NOTES	AFTER DRILLING <u>---</u>


DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		ASPHALT ROADWAY OVER BASESTONE										
		LIGHT BROWN SILTY GRAVEL, MOIST, MEDIUM DENSE TO LOOSE										
		WEATHERED LIMESTONE										
		LIMESTONE, MODERATELY HARD, MODERATELY FRESH										

Due to shallow bedrock encountered in the initial borings, 2 additional borings were advanced with approximately 10 feet of BH-1. The refusal depths of the additional borings were 5'-2" and 8'-9".

Refusal at 3.5 feet.
Bottom of borehole at 8.5 feet.

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
13.08		BEGAN CORING AT 13.08' UNTIL ENCOUNTERING A CORE BARREL ISSUE AT 14.50'. RESUMED RECOVERABLE CORING ATTEMPT AT 16.42										
16.42 - 17.92		RUN 1: 16.42'-17.92' RECOVERY: 100% "EXCELLENT" RQD: 27.63% "POOR"	RC									
17.92 - 22.92		RUN 2: 17.92'-22.92' RECOVERY: 100% "EXCELLENT" RQD: 80.62% "GOOD" ROCK BREAK STRENGTHS (psi): 10,198; 11,911; 11,570; 11,185; 12,229	RC	100 (28)								

(Continued Next Page)



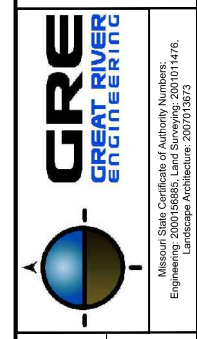
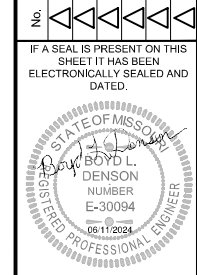
BORING NUMBER BH-2

PAGE 1 OF 2

CLIENT <u>Christian County</u>	PROJECT NAME <u>Green Bridge #24900031</u>
PROJECT NUMBER <u>4049.01</u>	PROJECT LOCATION <u>Ozark, MO</u>
DATE STARTED <u>2/23/24</u> COMPLETED <u>2/23/24</u>	GROUND ELEVATION <u>1116.49 ft</u> HOLE SIZE <u>8</u>
DRILLING CONTRACTOR <u>Great River Engineering</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	AT TIME OF DRILLING <u>---</u>
LOGGED BY <u>C. Southard</u> CHECKED BY <u>C. Gibson</u>	AT END OF DRILLING <u>---</u>
NOTES	AFTER DRILLING <u>---</u>

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		BORING ADVANCED IN RIVER BOTTOM, BROKEN ROCK AND GRAVEL										
5		ROCKS, COBBLES, AND GRAVEL, ESTIMATED TO BE MEDIUM DENSE										

No.	Revision/Issue	Date



GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
BORING DATA

6/11/2024
JOB 4049.01
S35

Note: Drawing not to scale. Follow dimensions.

For locations of borings, see Sheet S1.



BORING NUMBER BH-2
PAGE 2 OF 2

CLIENT Christian County PROJECT NAME Green Bridge #24900031
PROJECT NUMBER 4049.01 PROJECT LOCATION Ozark, MO

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
20		RUN 2: 17.92'-22.92' RECOVERY: 100% "EXCELLENT" RQD: 80.62% "GOOD" ROCK BREAK STRENGTHS (psi): 10,198; 11,911; 11,570; 11,185; 12,229 (continued)	RC	100 (81)								
25		RUN 3: 22.92'-27.92' RECOVERY: 100% "EXCELLENT" RQD: 90.83% "EXCELLENT"	RC	100 (91)								

Refusal at 13.1 feet.
Bottom of borehole at 27.9 feet.



BORING NUMBER BH-3
PAGE 1 OF 2

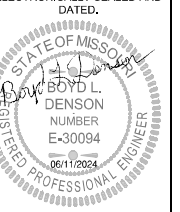
CLIENT Christian County PROJECT NAME Green Bridge #24900031
PROJECT NUMBER 4049.01 PROJECT LOCATION Ozark, MO
DATE STARTED 2/22/24 COMPLETED 2/22/24 GROUND ELEVATION 1119.79 ft HOLE SIZE 8
DRILLING CONTRACTOR Great River Engineering GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger AT TIME OF DRILLING ---
LOGGED BY C. Southard CHECKED BY C. Gibson AT END OF DRILLING ---
NOTES AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		BORING ADVANCED IN RIVER BOTTOM, BROKEN ROCK AND GRAVEL										
5		ROCKS, COBBLES, AND GRAVEL, ESTIMATED TO BE MEDIUM DENSE										
15		RUN 1: 15.67'-18.50' RECOVERY: 88.24% "GOOD" RQD: 79.58% "GOOD"	RC	88 (80)								
20												

(Continued Next Page)

No.	Revision/Issue	Date

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GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
BORING DATA

6/11/2024
JOB 4049.01
S36

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Note: Drawing not to scale. Follow dimensions.

For locations of borings, see Sheet S1.



BORING NUMBER BH-3

PAGE 2 OF 2

CLIENT Christian County PROJECT NAME Green Bridge #24900031
PROJECT NUMBER 4049.01 PROJECT LOCATION Ozark, MO

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
20		RUN 2: 18.50'-23.50' RECOVERY: 100% "EXCELLENT" RQD: 98% "EXCELLENT" ROCK BREAK STRENGTHS (psi): 10,472; 11,119; 9,282; 11,185; 9,627 (continued)	RC	100 (98)								
25		RUN 3: 23.50'-26.00' RECOVERY: 86.67% "GOOD" RQD: 86.67% "GOOD"	RC	87 (87)								

Refusal at 15.7 feet.
Bottom of borehole at 26.0 feet.



BORING NUMBER BH-4

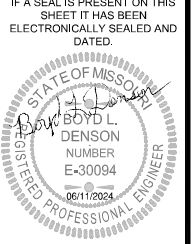
PAGE 1 OF 1

CLIENT Christian County PROJECT NAME Green Bridge #24900031
PROJECT NUMBER 4049.01 PROJECT LOCATION Ozark, MO
DATE STARTED 2/22/24 COMPLETED 2/22/24 GROUND ELEVATION 1134.98 ft HOLE SIZE 4
DRILLING CONTRACTOR Great River Engineering GROUND WATER LEVELS:
DRILLING METHOD Solid Stem Auger AT TIME OF DRILLING ---
LOGGED BY C. Southard CHECKED BY C. Gibson AT END OF DRILLING ---
NOTES _____ AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
									LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
0		ASPHALT ROADWAY OVER BASESTONE										
		LIGHT BROWN SILTY GRAVEL, MOIST, MEDIUM DENSE TO LOOSE										
5		POOR RECOVERY, SOUNDS LIKE GRAVEL, LIKELY LOOSE FILL AND CUTTINGS FORCED INTO VOIDS										
		BROWN LEAN CLAY WITH 10-30% GRAVEL, MOIST, MEDIUM FIRM										
		WEATHERED LIMESTONE										
		LIMESTONE, MODERATELY HARD, MODERATELY FRESH										

Refusal at 8.3 feet.
Bottom of borehole at 8.5 feet.

Date	
Revision/Issue	
No.	1



GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
BORING DATA

6/11/2024
JOB 4049.01
S37

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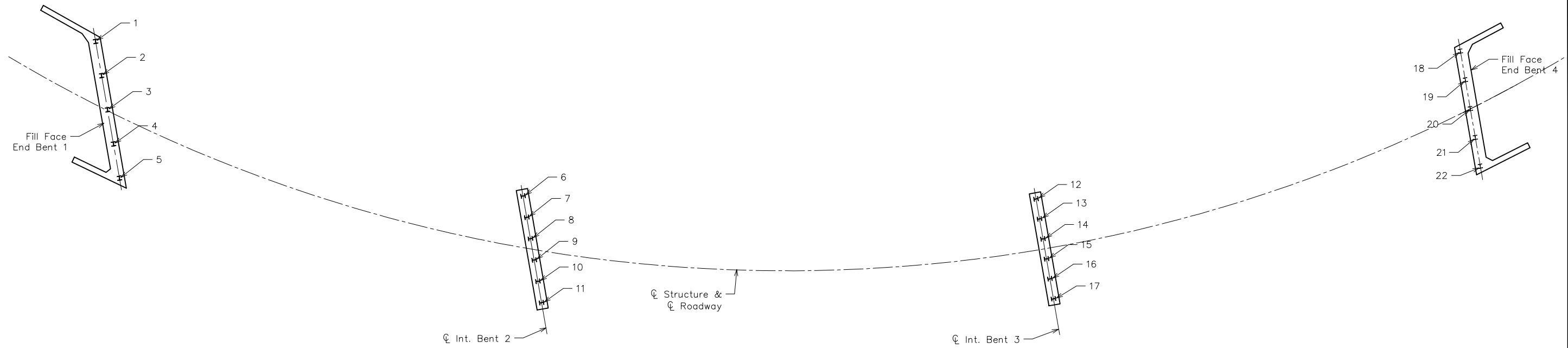
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Note: Drawing not to scale. Follow dimensions.

For locations of borings, see Sheet S1.

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

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

As-Built Pile Data for End Bent 3			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
12			
13			
14			
15			
16			
17			

As-Built Pile Data for End Bent 2			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
6			
7			
8			
9			
10			
11			

As-Built Pile Data for End Bent 4			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
18			
19			
20			
21			
22			

Note:
Indicate in remarks column:
A. Pile type & grade
B. Batter
C. Driven to practical refusal

Note: This drawing not to scale. Follow dimensions.

Date	
Revision/Issue	
No.	1
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GRE GREAT RIVER ENGINEERING

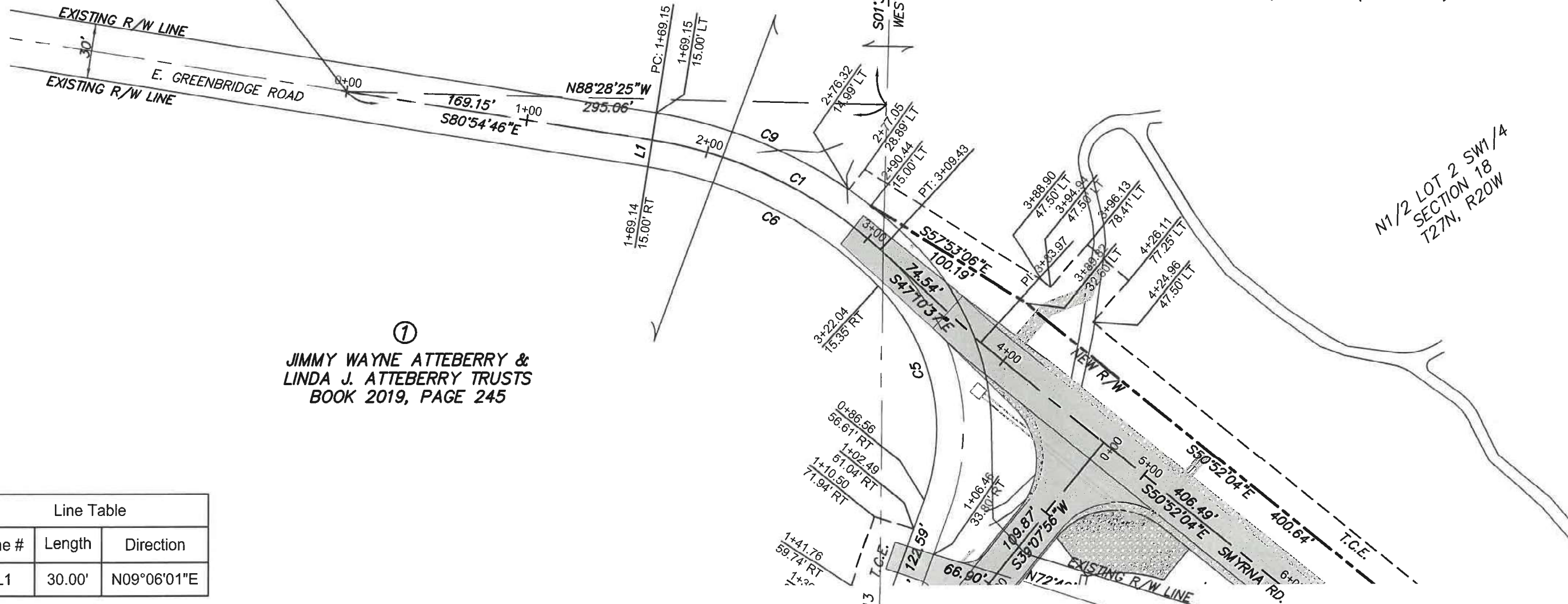
Missouri State Certificate of Authority Numbers:
Professional Engineer: 011416,
Landscape Architect: 200701873

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
AS BUILT PILE DATA

6/11/2024
JOB 4049.01
S38



BEGIN PROJECT
GREEN BRIDGE ROAD &
SMYRNA ROAD STA. 0+00



NE 1/4 SE 1/4
SECTION 13
T27N, R21W

EAST 1/4 CORNER
SECTION 13
T27N, R21W

①

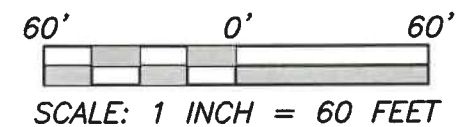
JIMMY WAYNE ATTEBERRY &
LINDA J. ATTEBERRY TRUSTS
BOOK 2019, PAGE 245
NEW R/W = 58,438 SQ.FT. (1.34 ACRES)
EXISTING R/W = 23,030 SQ.FT. (0.53 ACRES)
T.C.E. = 18,664 SQ.FT. (0.43 ACRES)

N 1/2 LOT 2 SW 1/4
SECTION 18
T27N, R20W

①
JIMMY WAYNE ATTEBERRY &
LINDA J. ATTEBERRY TRUSTS
BOOK 2019, PAGE 245

Line Table		
Line #	Length	Direction
L1	30.00'	N09°06'01"E

Curve Table					
CURVE NO.	DELTA ANGLE	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	033°44'09"	238.25'	140.28'	S64°02'42"E	138.26'
C5	063°53'30"	113.30'	126.34'	N12°00'30"W	119.90'
C6	036°56'45"	223.43'	144.07'	N62°25'37"W	141.59'
C9	029°08'52"	253.43'	128.93'	S66°19'33"E	127.54'



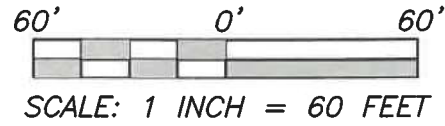
R/W = RIGHT OF WAY (FEE SIMPLE ACQUISITION)
T.C.E. = TEMPORARY CONSTRUCTION EASEMENT



Date	04/11/24
Revision/Issue	TRACT 1 REVISION
No.	A

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
RIGHT-OF-WAY PLAN

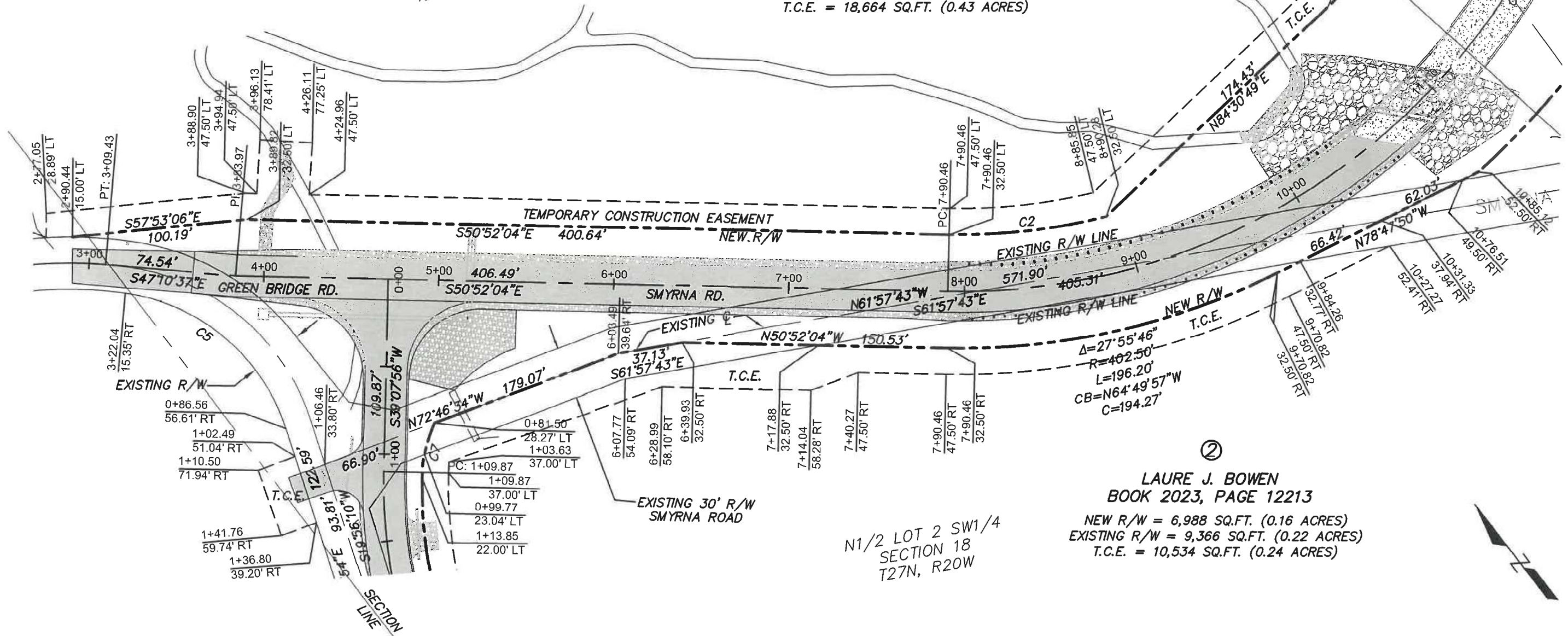
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Great River Engineering
CHECKED BY: JMW
DRAWN BY: JMW
JOB NUMBER: 4049.01
FILE NAME: 4049.01_RW
SCALE: NO SCALE
ISSUE DATE: 08.01.2022
SHEET NUMBER:
RW1



N1/2 LOT 2 SW1/4
SECTION 18
T27N, R20W

①
JIMMY WAYNE ATTEBERRY &
LINDA J. ATTEBERRY TRUSTS
BOOK 2019, PAGE 245

NEW R/W = 58,438 SQ.FT. (1.34 ACRES)
EXISTING R/W = 23,030 SQ.FT. (0.53 ACRES)
T.C.E. = 18,664 SQ.FT. (0.43 ACRES)



$\Delta = 27^{\circ}55'46''$
 $R = 402.50'$
 $L = 196.20'$
 $CB = N64^{\circ}49'57''W$
 $C = 194.27'$

②
LAURE J. BOWEN
BOOK 2023, PAGE 12213
NEW R/W = 6,988 SQ.FT. (0.16 ACRES)
EXISTING R/W = 9,366 SQ.FT. (0.22 ACRES)
T.C.E. = 10,534 SQ.FT. (0.24 ACRES)

N1/2 LOT 2 SW1/4
SECTION 18
T27N, R20W

Curve Table					
CURVE NO.	DELTA ANGLE	RADIUS	LENGTH	CHORD BEARING	CHORD
C2	015°27'29"	337.50'	91.06'	S58°35'49"E	90.78'
C3	018°47'01"	282.03'	92.46'	N75°07'18"E	92.05'
C5	063°53'30"	113.30'	126.34'	N12°00'30"W	119.90'
C7	023°33'46"	80.00'	32.90'	S50°09'12"W	32.67'
C17	105°43'22"	370.00'	682.73'	N76°16'15"E	589.91'



Date	04/11/24
Revision/Issue	TRACT 1 REVISION
No.	1

GREEN BRIDGE OVER FINLEY RIVER
CHRISTIAN COUNTY, MISSOURI
RIGHT-OF-WAY PLAN

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Great River Engineering
CHECKED BY: JMW
DRAWN BY: JMW
JOB NUMBER: 4049.01
FILE NAME: 4049.01_RW
SCALE: NO SCALE
ISSUE DATE: 08.01.2022
SHEET NUMBER:

R/W = RIGHT OF WAY (FEE SIMPLE ACQUISITION)
T.C.E. = TEMPORARY CONSTRUCTION EASEMENT

RW2

Date	04/11/24
Revision/Issue	TRACT 1 REVISION
No.	1

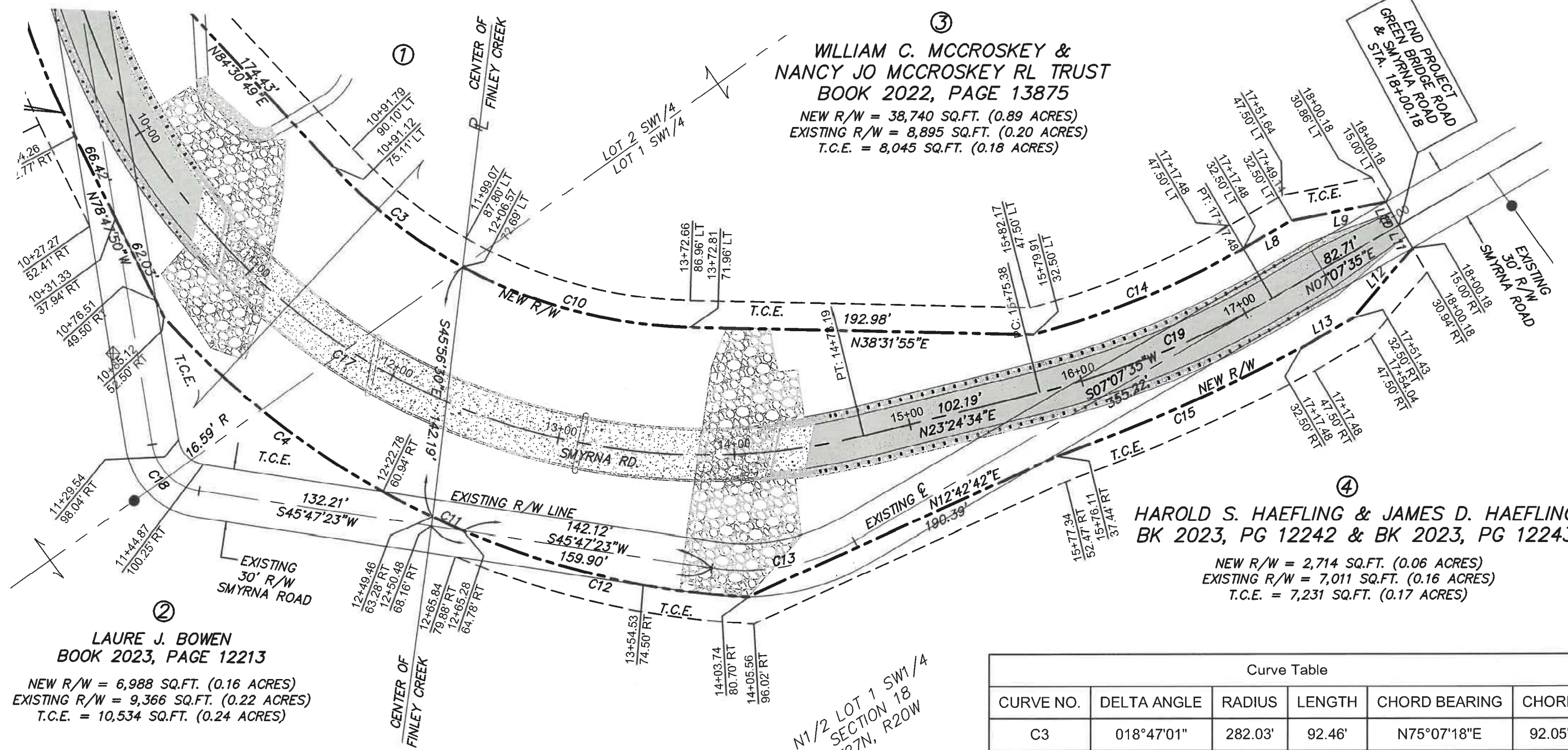
GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 RIGHT-OF-WAY PLAN

③
WILLIAM C. MCCROSKEY & NANCY JO MCCROSKEY RL TRUST
 BOOK 2022, PAGE 13875

NEW R/W = 38,740 SQ.FT. (0.89 ACRES)
 EXISTING R/W = 8,895 SQ.FT. (0.20 ACRES)
 T.C.E. = 8,045 SQ.FT. (0.18 ACRES)

④
HAROLD S. HAEFLING & JAMES D. HAEFLING
 BK 2023, PG 12242 & BK 2023, PG 12243

NEW R/W = 2,714 SQ.FT. (0.06 ACRES)
 EXISTING R/W = 7,011 SQ.FT. (0.16 ACRES)
 T.C.E. = 7,231 SQ.FT. (0.17 ACRES)



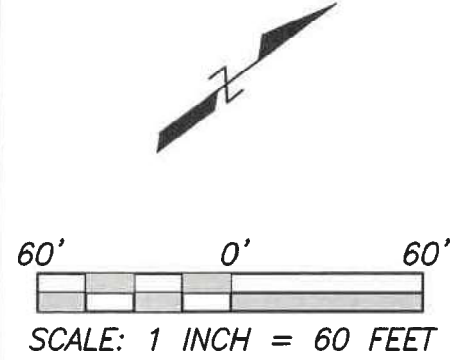
②
LAURE J. BOWEN
 BOOK 2023, PAGE 12213

NEW R/W = 6,988 SQ.FT. (0.16 ACRES)
 EXISTING R/W = 9,366 SQ.FT. (0.22 ACRES)
 T.C.E. = 10,534 SQ.FT. (0.24 ACRES)

N1/2 LOT 1 SW1/4 SECTION 18 T27N, R20W

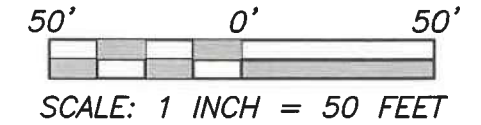
Line Table		
Line #	Length	Direction
L8	31.66'	N07°07'35"E
L9	53.96'	N26°02'56"E
L10	15.00'	S82°52'25"E
L11	15.00'	N82°52'25"W
L12	51.80'	N12°37'07"W
L13	33.95'	N07°07'35"E

Curve Table					
CURVE NO.	DELTA ANGLE	RADIUS	LENGTH	CHORD BEARING	CHORD
C3	018°47'01"	282.03'	92.46'	N75°07'18"E	92.05'
C4	022°51'12"	476.46'	190.04'	S73°58'23"W	188.79'
C10	027°11'53"	282.03'	133.88'	N52°07'52"E	132.62'
C11	002°14'19"	476.46'	18.62'	S61°25'37"W	18.61'
C12	019°59'52"	476.46'	166.30'	N50°18'32"E	165.46'
C13	038°39'50"	122.57'	82.71'	S26°27'29"W	81.15'
C14	015°45'52"	467.50'	128.63'	N15°00'31"E	128.22'
C15	008°42'02"	994.19'	150.97'	N13°22'06"E	150.83'
C17	105°43'22"	370.00'	682.73'	N76°16'15"E	589.91'
C18	072°14'51"	31.59'	39.83'	S81°54'50"W	37.25'
C19	016°16'59"	500.00'	142.10'	N15°16'05"E	141.62'



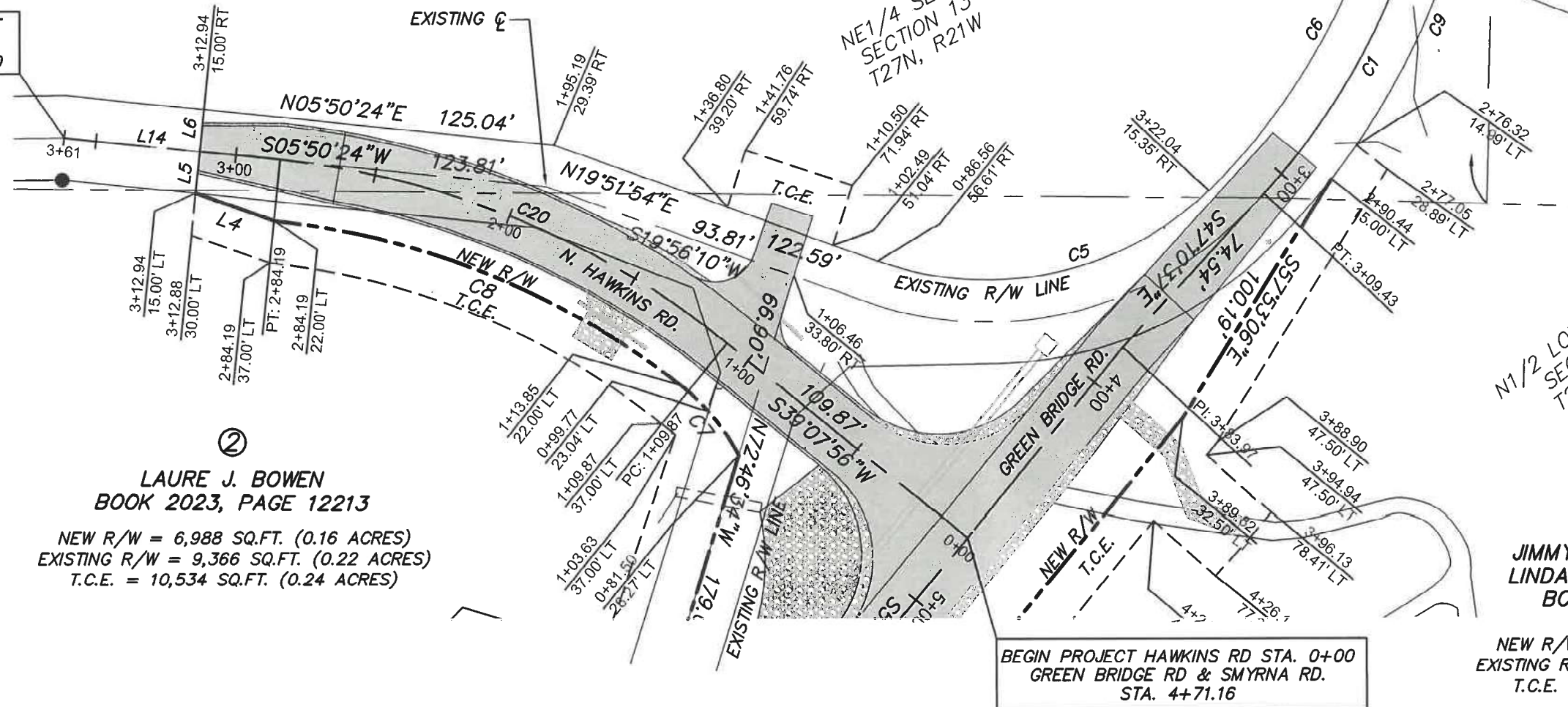
R/W = RIGHT OF WAY (FEE SIMPLE ACQUISITION)
 T.C.E. = TEMPORARY CONSTRUCTION EASEMENT

①
**JIMMY WAYNE ATTEBERRY &
 LINDA J. ATTEBERRY TRUSTS**
 BOOK 2019, PAGE 245



Date	04/11/24
Revision/Issue	TRACT REVISION
No.	1 2 3 4 5 6 7 8 9 10

END PROJECT
 HAWKINS RD.
 STA. 3+61.00



②
LAURE J. BOWEN
 BOOK 2023, PAGE 12213
 NEW R/W = 6,988 SQ.FT. (0.16 ACRES)
 EXISTING R/W = 9,366 SQ.FT. (0.22 ACRES)
 T.C.E. = 10,534 SQ.FT. (0.24 ACRES)

①
**JIMMY WAYNE ATTEBERRY &
 LINDA J. ATTEBERRY TRUSTS**
 BOOK 2019, PAGE 245
 NEW R/W = 58,438 SQ.FT. (1.34 ACRES)
 EXISTING R/W = 23,030 SQ.FT. (0.53 ACRES)
 T.C.E. = 18,664 SQ.FT. (0.43 ACRES)

BEGIN PROJECT HAWKINS RD STA. 0+00
 GREEN BRIDGE RD & SMYRNA RD.
 STA. 4+71.16

Curve Table

CURVE NO.	DELTA ANGLE	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	033°44'09"	238.25'	140.28'	S64°02'42"E	138.26'
C5	063°53'30"	113.30'	126.34'	N12°00'30"W	119.90'
C6	036°56'45"	223.43'	144.07'	N62°25'37"W	141.59'
C7	023°33'46"	80.00'	32.90'	S50°09'12"W	32.67'
C8	032°31'55"	278.00'	157.84'	S22°06'21"W	155.73'
C9	029°08'52"	253.43'	128.93'	S66°19'33"E	127.54'
C20	033°17'32"	300.00'	174.32'	S22°29'10"W	171.88'

Line Table

Line #	Length	Direction
L4	29.59'	S19°31'29"W
L5	15.00'	N84°09'36"W
L6	15.00'	N84°09'36"W
L14	76.81'	S05°50'24"W



R/W = RIGHT OF WAY (FEE SIMPLE ACQUISITION)
 T.C.E. = TEMPORARY CONSTRUCTION EASEMENT

GREEN BRIDGE OVER FINLEY RIVER
 CHRISTIAN COUNTY, MISSOURI
 RIGHT-OF-WAY PLAN

CHECKED BY: JMW
DRAWN BY: JMW
JOB NUMBER: 4049.01
FILE NAME: 4049.01_RW
SCALE: NO SCALE
ISSUE DATE: 08.01.2022
SHEET NUMBER:

RW4