LETTING DATE

CONSTRUCTION PROJECT NO.

TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS

LIVINGSTON COUNTY

US 60 RELOCATED OVER CUMBERLAND RIVER

STA. 114+90.33 TO STA 134+03.17

PRELIMINARY NOT FOR CONSTRUCTION

STANDARD DRAWINGS

BGX-006-10	Stencils for Structures
BGX-012-02	Geotechnical Legend
BJE-001-13	Neoprene Expansion Dams and Armored Edges
BPS-011-04	HP14x89 Steel Pile
RBP-002-04	Bearing Details
RGX-100-06	Treatment of Embankments at End-Bents
RGX-105-08	Treatment of Embankments at End-Bents - Details

SPECIAL NOTES

(6J) Non-Epoxy Adhesives
(6U) Structural Mass Concrete
(11C) Drilled Shafts
Non-Destructive Testing of Drilled Shafts
Structure Lightning Protection
Disc Bearings
Steel Erection
Instrumentation On Existing Bridge
Cone Penetration Test Data
Project Specific Drilled Shaft Requirements
Mitigation Of Impacts To Osprey
Pile Dynamic Testing

SPECIAL PROVISIONS

69 Embankment at Bridge End Bent Structures
4 Welding Steel Bridges

SPECIFICATIONS

2019 Standard Specifications for Road and Bridge Construction.

2017 (8th Edition) AASHTO LRFD Bridge Design Specifications

Sheet No.	Description
1	Title Sheet
2	Estimate of Quantities
3, 4, 5	General Notes
6	Layout
7, 8, 9, 10	Foundation Layout
11	CRSI Bar Bends
12	Drilled Shaft
13	Steel Pipe Pile
14,15	Abutment 1
16-23	Pier 1-2 & 5-9
24-27	Pier 3
28-31	Pier 4
32, 33, 34	Abutment 2
35	Truss Elevation & Stress Sheet
36	Misc Truss Member Details
37	Lateral Bracing Plans
38	Lateral Bracing Details
39	Truss Joint L0
40	Truss Joint L1
41	Truss Joint L2
42	Truss Joint L3
43	Truss Joint L4
44	Truss Joint L5
45	Truss Joint U1
46	Truss Joint U2
47	Truss Joint U3
48	Truss Joint U4
49	Truss Joint U5
50	Truss Joint U6
51	Portal Strut
52	Floorbeam
53	Stringer Framing Plan
54	Stringer Details
55	Traction Frame
56	Stringer Bearings
57	Truss Bearings - Pier 3
58	Truss Bearings - Pier 4
59, 60, 61	Span 4 Slab Plan & Details
62	Span 4 Scupper & Drain Pipe
63, 64	Span 4 Construction Elevations
65	Framing Plan - Spans 1 - 3
66	Framing Plan - Spans 5 - 10
67	Elastomeric Bearing Pads
68	PCI Beam HN 66" x 49" Details
69	PCI Beam HN 78" x 49" Details
70	PCI Beam Intermediate Diaph
71, 72, 73	Span 1 - 3 Slab Plan & Details
74, 75, 76	Span 5 -10 Slab Plan & Details
77	Abutment Diaphragm Details
78, 79	Pier Diaphragm Details
80	Span 1 - 3 Construction Elevations
81, 82	Span 5 - 10 Construction Elevations
83	Approach Slabs
84	Abutment Earthwork Details
85, 86	Pier 4 Finger Joint
87	Truss Erection Scheme
88, 89	Utility Conduit
90	Water Surface Elevations
91-96	Navigation Lighting
97-101	Inspection Access Details
102, 103	Boring Layout
104-115	Logs of Borings
116	South River Bank Stability
117	North River Bank Stability
118	Spill-through Section
119	Embankment Stability Section Sta. 134+00
120	Railing System 36 inch
121	Steel Handrail

JOHN T. PERKINS 28347 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY

CHARLES A. HUNLEY 21477 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY

FOR SHEETS: S1-S6, S8, S11, S12, S24-S31, S35-S64, S85-S101

THOMAS E. KNIGHT 34759 LICENSED PROFESSIONAL ENGINEER
STATE OF KENTUCKY

FOR SHEETS: S7, S9, S10, S13, S14-S23, S32-34, S65-S84

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. PERKINS	T. HUNLEY
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

TITLE SHEET

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S1
		DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\01 TITLE SHEET.DGN
USER: dabasnam
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

ESTIMATE OF QUANTITIES

	BID ITEM CODE	02231	02998	03299	04775	04776	04793	04797	04799	06406	08001	08002	08003	08019	08020	08033	08033	08037	08051	08095	08100	08104	08137	08150	08151	08160	08170	08470	08500	08752	20410ED	20745ED	20746ED	23365EC	23859EC	23868EC	24098EC	24534ED	24614EC	24741EC		
	BID ITEM	Structure Granular Backfill	Masonry Coating	Armored Edge for Concrete	Navigation Light 360 Deg Green	Navigation Light 180 Deg Red	Aluminum Conduit – 1/4"	Conduit – 3 IN ③	Conduits – 4 IN ③	SBM Alum Sheet Signs .080 In	Structure Excavation, Common	Structure Excavation, Solid Rock	Pier 3 – Foundation Preparation	Cyclopean Stone Rip Rap	Crushed Aggregate Slope Protection	HP 14x89 Test Piles	PP30 x ¾ Test Piles	Pier 4 – Cofferdam	Steel Piles HP 14 x 89	Pile Points 14 inch	Concrete Class "A"	Concrete Class "AA"	Mechanical Reinforcing Couplers #14	Steel Reinforcement	Steel Reinforcement, Epoxy Coated	Structural Steel ①	Shear Connectors ②	Expansion Dam 2" Neoprene	Approach Slab	Paint Clearance Gauges	Maintain Lighting	Rock Soundings	Rock Corings	Lighting Nav Monitoring System	Finger Expansion Joint	Structure Lightning Protection	Precast PCI–Beam HN 66 49	PP30 x ¾ Steel Piles	Disc Expansion Bearing	Pier 3 – Sonar Caliper Testing		
	UNIT	CY	SY	LF	EA	EA	LF	LF	LF	SF	CY	CY	LS	TON	TON	LF	LF	LS	LF	EA	CY	CY	EA	LB	LB	LS	LS	LF	SY	LS	LS	LF	LF	LS	LF	LS	LF	LF	EA	EA		
Substructure	Abutment 1	170	24	40							410	150			80						115.5	30.8		3524	3510			40	112														
	Pier 1		289								510	160		280							425.1	20.6	136	81836																		
	Pier 2		330								220			250		39			544	20	380.7	20.6	136	74717																		
	Pier 3		850										1	1055							2352.7	18.3	96	283841	27098						460	465						9		
	Pier 4		1230											475				1			2599.5	21.7	96	323160	27261					1	783	345						2			
	Pier 5		356								410			250			113				569.7	23.8	136	94969												1126					
	Pier 6		327								630			250			116				688.5	23.8	172	119005												1581					
	Pier 7		271								420			250			125				645.8	23.9	172	106293												1720					
	Pier 8		295								410			250			126				488.1	24.2	68	76454												1270					
	Pier 9		222								340			250			128				368.0	25.2	68	60619												937					
	Abutment 2	330	40	40										470	140	162			3282	22	117.7	37.3		4697	2685				112													
Super	Spans 1 - 3		1696					874	876													449.8		325	194234											1452					
	Span 4		1580		2	4	180	1400	1400	16												788.7			295000	1	1				1				1	40	1					
	Spans 5 - 10		4047					1748	1752													1031.2		325	445576																
	BRIDGE TOTALS	500	11557	80	2	4	180	4022	4028	16	3350	310	1	3780	220	201	608	1	3826	42	8751.2	2540	1080	1229769	995365	1	1	40	224	1	1	1243	810	1	40	1	1452	6634	2	9		

ESTIMATE OF QUANTITIES

	BID ITEM CODE	24741EC	24804EC	24838EC	24874EC	24874EC	24875EC	24875EC	25003EC	25003EC	25004EC	25004EC	25046EC	24537ED	25027ED	25029ED	25085EC	20610NC	23233EC	08471	02555																						
	BID ITEM	Pier 4 – Sonar Caliper Testing	Precast PCI–Beam HN 78 49	Solar Powered Lighting System	Pier 3 – TIP Testing	Pier 4 – TIP Testing	Pier 3 – CSL Testing (8 Tubes)	Pier 4 – CSL Testing (8 Tubes)	Pier 3 – Drilled Shaft – 96 inch (Common)	Pier 4 – Drilled Shaft – 96 inch (Common)	Pier 3 – Drilled Shaft – 90 inch (Solid Rock)	Pier 4 – Drilled Shaft – 90 inch (Solid Rock)	Disc Fixed Bearing	Open End Inside Fit Cutting Shoe – 30"	Rail System Single Slope 36 Inch	Steel Handrail	5" Strip Seal Expansion Joint	Instrumentation	Dynamic Pile Testing	Expansion Dam – 2.5" Neoprene	Concrete Class "B"																											
	UNIT	EA	LF	EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	LF	LF	LF	LS	EA	LF	CY																						
Substructure	Abutment 1																				59																						
	Pier 1																				16																						
	Pier 2																																										
	Pier 3				8		16		267		285		2																														
	Pier 4	9				8		16		603		165						1																										
	Pier 5													12					1																									
	Pier 6													16					1																									
	Pier 7													16					1																									
	Pier 8													12					1																									
	Pier 9													9					1																									
	Abutment 2																			40																								
Super	Spans 1 - 3														737	737																											
	Span 4			6											1398	1398	40																										
	Spans 5 - 10		3336												1691	1691																											
	BRIDGE TOTALS	9	3336	6	8	8	16	16	267	603	285	165	2	65	3826	3826	40	1	5	40	75																						

PRELIMINARY NOT FOR CONSTRUCTION

① ESTIMATE OF STRUCTURAL STEEL

ITEM	UNIT	GRADE 50W	GRADE HPS 70W	A36	A53	A240	A500	A586	TOTAL
TRUSS MEMBERS, LATERAL BRACING, & CONNECTIONS	LBS	4,097,000	312,000						4,409,000
FLOORBEAMS	LBS	185,000							185,000
STRINGERS & DIAPHRAGMS	LBS	579,000							579,000
INSPECTION ACCESS	LBS	6,300		3,800	940	6,100	430	1,700	19,270
SCUPPERS & DOWNSPOUTS	LBS								6,000
TOTAL	LBS	4,867,300	312,000	3,800	940	6,100	430	1,700	5,198,270

② APPROXIMATE NUMBER OF SHEAR CONNECTORS = 13,760

③ FOR BILL OF INCIDENTAL MATERIALS SEE UTILITY CONDUIT (2) SHEET.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	S. MURPHY
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE
US 60

CROSSING
CUMBERLAND RIVER

ESTIMATE OF QUATITIES

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S2

DRAWING NO.
27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\02 ESTIMATE OF QUANTITES.DGN
USER: dabosham
DATE PLOTTED: 2/5/2020 2:43:56 PM
E-SHEET NAME:
MicroStation v8.11.9.829

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\03 GEN NOTES (1).DGN
USER: dapasham
DATE PLOTTED: 2/5/2020 4:58:25 PM
E-SHEET NAME:
MicroStation v8.11.9.829

SPECIFICATIONS

ALL REFERENCES TO THE STANDARD SPECIFICATIONS ARE TO THE 2019 EDITION OF THE KENTUCKY DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION WITH CURRENT SUPPLEMENTAL SPECIFICATIONS. ALL REFERENCES TO THE AASHTO LRFD SPECIFICATIONS ARE TO THE AASHTO LOAD AND RESISTANCE FACTOR BRIDGE SPECIFICATIONS, 8TH EDITION.

DESIGN LOAD

THIS BRIDGE IS DESIGNED FOR:
- KYHL-93 LIVE LOAD (1.25 x AASHTO HL93 LIVE LOAD)
- FUTURE WEARING SURFACE OF 15 PSF.
- STAY IN PLACE FORMWORK OF 5 PSF.
- WIND LOAD BASED ON A WIND VELOCITY OF:
  - 115 MPH FOR STR III CASE
  - 80 MPH FOR STR V CASE
  - 70 MPH FOR SER I CASE
- STREAM PRESSURE BASED ON A STREAM VELOCITY OF 10.26 FPS AT A WATERSURFACE ELEVATION OF 343.08'.
- UTILITY LOAD OF 50 PLF TOTAL AND 25 PLF MAX PER STRINGER/BEAM.
- IMPACT DUE TO AN EMPTY HOPPER BARGE AT DRIFT VELOCITY, PIERS 2 & 5-9
- IMPACT DUE TO A FULLY LOADED FLOTILLA AT A VELOCITY OF 3 FPS, PIERS 3 & 4

DESIGN METHOD

ALL NEW REINFORCED CONCRETE AND STRUCTURAL STEEL MEMBERS ARE DESIGNED BY THE LOAD AND RESISTANCE FACTOR METHOD AS SPECIFIED IN THE CURRENT AASHTO (LRFD) SPECIFICATIONS.

SLIP-CRITICAL CONNECTIONS ARE DESIGNED FOR CLASS B SURFACE CONDITIONS IN ACCORDANCE WITH ARTICLE 6.13.2.8 OF THE AASHTO LRFD SPECIFICATIONS.

EARTHQUAKE EFFECTS ARE BASED ON SITE SPECIFIC STUDY USING MCE TIME HISTORIES FROM KENTUCKY TRANSPORTATION CENTER. MULTIMODE SPECTRAL ANALYSIS METHOD WAS USED FOR SEISMIC DESIGN. KENTUCKY TRANSPORTATION CENTER (KTC) REPORT ON SEISMIC HAZARD MAPS AND TIME HISTORIES FOR THE COMMONWEALTH OF KENTUCKY (KTC-07-07/SPR246-02-6F).

TRAFFIC CONTROL

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTING AND MAINTAINING PROPER BARRICADES AND ADVANCE WARNING SIGNALS FOR ROAD CONSTRUCTION AND ROAD CLOSURE.

ON-SITE INSPECTION

EACH CONTRACTOR SUBMITTING A BID FOR THIS WORK SHALL MAKE THOROUGH INSPECTION OF THE PROJECT SITE PRIOR TO SUBMITTING A BID AND SHALL BE THOROUGHLY FAMILIARIZED WITH EXISTING CONDITIONS SO THAT WORK CAN BE EXPEDITIOUSLY PERFORMED AFTER A CONTRACT IS AWARDED. SUBMISSION OF A BID WILL BE CONSIDERED EVIDENCE OF THIS INSPECTION HAVING BEEN MADE. ANY CLAIMS RESULTING FROM SITE CONDITIONS WILL NOT BE HONORED BY THE DEPARTMENT OF HIGHWAYS.

REINFORCEMENT

DIMENSIONS SHOWN FROM THE FACE OF CONCRETE TO BARS ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN. SPACING OF BARS IS FROM CENTER TO CENTER OF BARS. CLEAR DISTANCE TO FACE OF CONCRETE IS 2" UNLESS OTHERWISE NOTED. ANY REINFORCING BARS DESIGNATED BY SUFFIX (e) IN THE PLANS SHALL BE EPOXY COATED IN ACCORDANCE WITH SECTION 811.10 OF THE STANDARD SPECIFICATIONS. TYPICAL BAR BEND SHAPES ARE BASED ON THE CONCRETE REINFORCING STEEL INSTITUTE'S "MANUAL OF STANDARD PRACTICE, 29TH EDITION". ALL BAR DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "C" ON STANDARD 180° AND 135° HOOKS. ALL REINFORCING BARS DESIGNATED BY BAR TYPE "T" AND "S" SHALL BE CONSIDERED TIES OR STIRRUPS FOR SIZING BAR DIMENSIONS.

DIMENSIONS

DIMENSIONS ARE FOR A NORMAL AMBIENT TEMPERATURE OF 60 DEGREES FAHRENHEIT. LAYOUT DIMENSIONS ARE HORIZONTAL MEASUREMENTS UNLESS OTHERWISE NOTED.

SHOP DRAWINGS

FABRICATORS SHALL SUBMIT ALL REQUIRED SHOP PLANS BY E-MAIL TO THE DESIGN CONSULTANT FOR REVIEW. THESE SUBMISSIONS SHALL DEPICT THE SHOP PLANS, IN PDF FORMAT, AS EITHER 11" x 17" OR 36" x 22" SHEETS. DESIGNERS WILL MAKE REVIEW COMMENTS ON THESE ELECTRONIC SUBMISSIONS AS NEEDED AND RETURN THEM TO THE FABRICATOR. UPON RECONCILIATION OF THE DESIGNER'S COMMENTS, FILES SHALL BE RETURNED TO THE DESIGNER. EACH SHEET WILL BE ELECTRONICALLY STAMPED BY THE DESIGNER AND PLANS WILL BE FORWARDED TO THE DIVISION OF STRUCTURAL DESIGN'S SHOP PLAN COORDINATOR FOR DISTRIBUTION. ONLY PLANS SUBMITTED DIRECTLY TO THE SHOP PLAN COORDINATOR WILL BE DISTRIBUTED AND ONLY PLANS ELECTRONICALLY STAMPED "DISTRIBUTED BY THE DIVISION OF STRUCTURAL DESIGN" ARE TO BE USED FOR FABRICATION. WHILE THIS PROCESS DOES NOT REQUIRE THE SUBMISSION OF PAPER COPIES, THE DIVISION OF STRUCTURAL DESIGN RESERVES THE RIGHT TO REQUIRE SUCH COPIES ON A CASE BY CASE BASIS.

WHEN ANY CHANGES IN THE DESIGN PLANS ARE PROPOSED BY THE FABRICATOR OR SUPPLIER, THE SHOP DRAWINGS REFLECTING THESE CHANGES SHALL BE SUBMITTED TO THE CONSULTANT THROUGH THE CONTRACTOR.

DISCLAIMER: ACCEPTANCE OF ANY CONTRACTOR'S SUBMISSION REQUIRED ON THIS PROJECT DOES NOT CONSTITUTE ENDORSEMENT OR APPROVAL. THE ACCEPTANCE IS ACKNOWLEDGEMENT OF THE WORK PERFORMED AND AUTHORIZATION OF THE CONTRACTOR TO PROCEED. THE DEPARTMENT IS NOT BOUND BY ACCEPTANCE OF ANY SUBMISSIONS REQUIRED. FINAL ACCEPTANCE OR APPROVAL WILL BE CONTINGENT ON THE SATISFACTORY COMPLETION OF THE PROJECT.

CLEANING AND PAINTING

SECTION 607.03.23 OF THE SPECIFICATIONS APPLIES TO THIS PROJECT AND CONTRACTORS ARE HEREBY REMINDED THAT IN ACCORDANCE WITH THAT SECTION ALL STEEL SURFACES TO BE PAINTED, INCLUDING EXPOSED SURFACES OF CONNECTION PLATES, NUTS, BOLTS AND WASHERS, SHALL BE BLAST CLEANED TO A NEAR-WHITE CONDITION IN ACCORDANCE WITH SSPC-SP10 IMMEDIATELY PRIOR TO BEING PAINTED WITH THE FIRST COAT OF PAINT. ALL STRUCTURAL STEEL IS TO RECEIVE THE FIRST COAT OF PAINT (PRIME COAT) IN THE SHOP PRIOR TO SHIPPING. THE PRIME COAT ON FAYING SURFACES MUST MEET CLASS "B" REQUIREMENTS FOR SLIP CRITICAL CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE FIRST COAT OF PAINT THROUGHOUT ERECTIONS TO PREVENT STAINING OF THE SUBSTRUCTURE. THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING ANY RUST STAINING ON THE SUBSTRUCTURE DUE TO FAILURE TO MAINTAIN THE FIRST COAT AT THE CONTRACTOR'S EXPENSE.

MASONRY COATING

A MASONRY COATING FINISH SHALL BE APPLIED TO THE FOLLOWING SURFACES:

BRIDGE SUPERSTRUCTURE: THE TOPS, INSIDE AND OUTSIDE FACES AND ENDS OF ALL BARRIER WALLS, PARAPETS AND CURBS THAT WILL BE EXPOSED. ALL EXPOSED SURFACES OF CONCRETE TERMINAL SECTIONS APPURTENANT TO THE BARRIERS. THE UNDERNEATH SURFACES OF SLAB OVERHANGS THAT ARE OUTSIDE THE EXTERIOR GIRDERS AND THE EXTERIOR SIDE AND BOTTOM OF THE EXTERIOR PPC I-BEAMS. DO NOT APPLY THE COATING TO THE RIDING SURFACE OF THE BRIDGE DECK.

BRIDGE SUBSTRUCTURE: ALL EXPOSED SURFACES OF THE ABUTMENTS (INCLUDING WING WALLS), PIER CAP, AND COLUMNS. DO NOT APPLY COATING TO BEARING AREAS. EXTEND THE MASONRY COATING FROM A POINT 6 INCHES BELOW THE FINISHED GROUND LINE TO THE TOP OF THE EXPOSED SURFACE.

COMPLETION OF STRUCTURE

THE CONTRACTOR IS REQUIRED TO COMPLETE THE STRUCTURE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. MATERIAL, LABOR, OR CONSTRUCTION OPERATIONS NOT OTHERWISE SPECIFIED ARE TO BE INCLUDED IN THE BID ITEM MOST APPROPRIATE TO THE WORK INVOLVED. THIS MAY INCLUDE COFFERDAMS, SHORING, EXCAVATIONS, BACKFILLING, THE REMOVAL OF ALL OR PART OF EXISTING STRUCTURES, PHASED CONSTRUCTION, INCIDENTAL MATERIALS, LABOR OR ANYTHING ELSE REQUIRED TO COMPLETE THE STRUCTURE.

DEMOLITION OF EXISTING BRIDGE

UPON COMPLETION OF THE NEW BRIDGE, TRAFFIC WILL BE REROUTED AND THE EXISTING SUPERSTRUCTURE WILL BE DEMOLISHED AND REMOVED IN ACCORDANCE WITH SECTION 203 OF THE SPECIFICATIONS. ALL SUBSTRUCTURE UNITS LOCATED WITHIN THE WATERWAY AT A WATER SURFACE ELEVATION OF EL 302 SHALL BE REMOVED DOWN TO FIVE FEET BELOW GRADE OR ELEVATION EL 284.0 FEET, WHICHEVER IS LOWER. ALL OTHER SUBSTRUCTURE UNITS SHALL BE DEMOLISHED TO A LEVEL AT LEAST TWO FEET BELOW THE LOWEST GROUND SURFACE ELEVATION AT THAT UNIT. THE WATERWAY SHALL BE CLEARED TO THE SATISFACTION OF THE USCG DISTRICT COMMANDER. A PERIOD OF 90 DAYS SUBSEQUENT TO THE OPENING OF TRAFFIC OF THE NEW US 60 BRIDGE WILL BE ALLOWED FOR SUCH REMOVAL AND CLEARANCE. THE PROPOSED METHOD AND SCHEDULE FOR REMOVAL OF THE EXISTING BRIDGE SHALL BE SUBMITTED TO THE USCG DISTRICT COMMANDER FOR APPROVAL PRIOR TO COMMENCING SUCH REMOVAL. THE DEMOLISHED BRIDGE COMPONENTS SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED AND DISPOSED OFF-SITE. THE COST IS INCLUDED IN THE GRADE, DRAIN AND SURFACING PLANS BID ITEMS AS THE LUMP SUM COST OF REMOVE STRUCTURE.

PLANS OF EXISTING STRUCTURE

AS AN AID TO THE CONTRACTOR, A PORTION OF THE PLANS AND SHOP DRAWINGS OF THE EXISTING STRUCTURE ARE AVAILABLE FROM THE DIVISION OF MAINTENANCE UPON REQUEST. THE COMPLETENESS OF THESE DRAWINGS IS NOT GUARANTEED AND NO RESPONSIBILITY IS ASSUMED BY KYTC FOR THEIR ACCURACY. THE EXISTING DRAWING NUMBERS FOR THIS STRUCTURE INCLUDE: 7646 AND 18180.

MATERIALS DESIGN SPECIFICATIONS

FOR CLASS "A" REINFORCED CONCRETE	F'C = 3,500 PSI
FOR CLASS "AA" REINFORCED CONCRETE	F'C = 4,000 PSI
FOR CLASS "A" MODIFIED CONCRETE (DRILLED SHAFTS)	F'C = 4,000 PSI
FOR STEEL REINFORCEMENT	FY = 60,000 PSI
FOR DRILLED SHAFT LONGITUDINAL REINFORCEMENT	FY = 75,000 PSI
FOR PRESTRESSED GIRDER CONCRETE	
FOR RELEASE	F'C = 6,000 PSI
FOR FINAL	F'C = 8,000 PSI
FOR PRESTRESSING STRANDS	F'S = 270,000 PSI
FOR STEEL PILING	FY = 50,000 PSI
FOR STRUCTURAL STEEL	
FOR GRADE 50W	FY = 50,000 PSI
FOR GRADE HPS 70W	FY = 70,000 PSI
FOR NON-SHRINK GROUT	F'C = 7,000 PSI

MATERIALS SPECIFICATIONS

ASTM OR AASHTO SPECIFICATIONS AS DESIGNATED BELOW SHALL GOVERN THE MATERIALS FURNISHED.

	ASTM	AASHTO
DEFORMED AND PLAIN BILLET STEEL FOR CONCRETE REINFORCEMENT	A615	M31
	A706 (COLUMN REINFORCEMENT, PIERS 1-9)	
LOW RELAXATION UNCOATED SEVEN-WIRE STABILIZED STRAND FOR PRESTRESSED CONCRETE, GRADE 270 (SUPPLEMENT S1)	A416	M203
STRUCTURAL STEEL	A709 GRADE 50W	M270 GRADE 50W
HIGH PERFORMANCE STRUCTURAL STEEL	A709 GRADE HPS 70W	M270 GRADE HPS 70W
PLATES AND ANGLES FOR CONDUIT SUPPORT	A36	
PLATES AND ANGLES FOR INT. DIAPHRAGMS	A36 OR A572	
STEEL H-PILES	A709 GRADE 50	M270 GRADE 50
STEEL PIPE PILES	A252 GRADE 3 (MODIFIED)	
DRILLED SHAFT STEEL CASING	A252 GRADE 2 OR BETTER	M169
SHEAR STUD CONNECTORS, UNS G 1015	A108	M164/M253
HIGH STRENGTH BOLTS	F3125 GRADE A325/A490	
LOW STRENGTH BOLTS AND THREADED RODS	A307	
DIRECT TENSION INDICATORS	F959	M314
ANCHOR RODS	F1554 GRADE 105	M291
NUTS FOR ANCHOR RODS	A563	M111
HOT DIP GALVANIZING FOR PLATES AND SHAPES	A123	M232
HOT DIP GALVANIZING FOR HARDWARE	A153 OR F2329	M298 CLASS 55
MECHANICAL GALVANIZING	B695	
ZINC COATING FOR FASTENERS	F1136	
ZINC COATED STRUCTURAL STRAND	A586	M105
DRAIN CASTING, CLASS 30	A48	
PIPE, STEEL, BLACK AND HOT-DIPPED ZINC COATED WELDED AND SEAMLESS	A53	
HOLLOW STRUCTURE STEEL TUBING	A500, GRADE B	
STAINLESS STEEL PLATE	A240	
STAINLESS STEEL BAR	A276, GRADE 60	

MECHANICAL REINFORCEMENT COUPLERS

MECHANICAL COUPLERS SHALL DEVELOP A MINIMUM TENSILE STRENGTH OF 125% OF THE SPECIFIED YIELD STRENGTH OF THE SPLICED REINFORCING STEEL. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL DETAILS AND/OR CATALOG CUT SHEETS FOR EACH SIZE SPLICE THAT WILL BE USED. COUPLERS SHALL BE SELECTED TO MINIMIZE DEVIATION BETWEEN BARS IN BUNDLED CONFIGURATIONS.

BEFORE YOU DIG

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIREMENTS AND CONFORMATION WITH THE UNDERGROUND FACILITY DAMAGE PREVENTION ACT OF 1994. THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING ANY UTILITIES ON THIS PROJECT. ALL UNDERGROUND UTILITIES SHALL BE LOCATED PRIOR TO CONSTRUCTION. ANY UTILITIES DISTURBED OR DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS WILL BE REPAIRED TO THE SATISFACTION OF THE UTILITY OWNER AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS ADVISED TO CALL (800) 752-6007 A MINIMUM OF TWO WORKING DAYS PRIOR TO EXCAVATION FOR INFORMATION ON THE LOCATION OF SOME BUT NOT NECESSARILY ALL UNDERGROUND UTILITIES.

STRUCTURE GRANULAR BACKFILL

THE AREA BEHIND ABUTMENT 1 AND ABUTMENT 2, INCLUDING ALL WING WALLS, SHALL BE BACKFILLED WITH STRUCTURE GRANULAR BACKFILL MEETING THE REQUIREMENTS OF SPECIAL PROVISION 69 IN ACCORDANCE WITH THE PLANS. GEOTEXTILE FABRIC TYPE 4 IS TO BE PLACED AROUND THE STRUCTURAL GRANULAR BACKFILL AS SHOW IN THESE CONTRACT DRAWINGS AND IN ACCORDANCE WITH SPECIAL PROVISION 69. PAYMENT FOR FABRIC SHALL BE INCIDENTAL TO THE STRUCTURAL GRANULAR BACKFILL.

SLOPE PROTECTION

USE CRUSHED AGGREGATE SLOPE PROTECTION AT ABUTMENT 1 BENCH AND ABOVE DRY CYCLOPEAN STONE RIPRAP PROTECTION AT ABUT 2. PIER LOCATONS SHALL BE ARMORED WITH DRY CYCLOPEAN STONE RIPRAP IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. GEOTEXTILE FABRIC, TYPE 1, SHALL BE PLACED BETWEEN THE EMBANKMENT AND THE SLOPE PROTECTION IN ACCORDANCE WITH THE SPECIFICATIONS. PAYMENT FOR FABRIC SHALL BE INCIDENTAL TO THE SLOPE PROTECTION.

FOUNDATION

SEE FOUNDATION LAYOUT (1) THRU (4) SHEETS.

PILING

SEE FOUNDATION LAYOUT (1), (3) & (4) SHEETS.

DRILLED SHAFTS

SEE FOUNDATION LAYOUT (2) AND DRILLED SHAFT SHEET.

PRELIMINARY - NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. PERKINS	T. HUNLEY
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

GENERAL NOTES (1)

ITEM NUMBER	PREPARED BY	SHEET NO.
1-1142.00	Stantec	S3
		DRAWING NO. 27458

PIER COLUMN/SHAFT REINFORCING

SPLICING OR COUPLING OF VERTICAL COLUMN/SHAFT REINFORCEMENT, IF REQUIRED, SHALL BE ENTIRELY OUTSIDE THE PLASTIC HINGE ZONES AS SHOWN ON THE PLANS.

STEEL BARS PLACED IN PIER COLUMNS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A706, GRADE 60 TO COMPLY WITH SEISMIC DETAILING REQUIREMENTS.

COLUMN TRANSVERSE REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM A706, GRADE 60 TO COMPLY WITH SEISMIC DETAILING REQUIREMENTS.

TRANSVERSE REINFORCEMENT AT PIER 3 AND PIER 4 SHALL BE BUTT-WELDED HOOPS. ULTIMATE BUTT-WELDED SPLICES SHALL USE COMPLETE JOINT PENETRATION BUTT WELDS CONFORMING TO THE REQUIREMENTS OF STRUCTURAL WELDING CODE - REINFORCING STEEL (ANSI/AWS D1.4, LATEST EDITION). BUTT WELDING OF HOOPS SHALL NOT BE PERMITTED IN THE PLASTIC HINGE ZONE AFTER THE CAGE IS ASSEMBLED.

STRUCTURAL STEEL

STRUCTURAL STEEL FOR PRIMARY TRUSS MEMBERS, MAIN GUSSET PLATES, AND SPLICE PLATES SHALL BE EITHER GRADE 50W OR GRADE HPS 70W AS NOTED. ALL OTHER STRUCTURAL STEEL FOR THE TRUSS SHALL BE GRADE 50W, UNLESS NOTED OTHERWISE.

THE FOLLOWING MEMBERS AND PLATES SHALL BE DESIGNATED FRACTURE CRITICAL (FCM):

- PRIMARY TRUSS MEMBERS IDENTIFIED AS FCM ON THE TRUSS ELEVATION AND STRESS SHEET.
- GUSSET PLATES AND SPICE PLATES CONNECTED DIRECTLY TO FCM TRUSS MEMBERS.
- FLOORBEAM FLANGES AND WEB.
- TRUSS CONNECTION PLATES CONNECTED DIRECTLY TO THE FLOORBEAM WEB OR FLANGES.

FRACTURE CRITICAL MEMBERS SHALL MEET THE SUPPLEMENTAL IMPACT TEST REQUIREMENTS FOR FRACTURE CRITICAL MEMBERS IN TABLE 10 (AASHTO M270-15) FOR ZONE 2 AND SHALL BE FABRICATED ACCORDING TO THE FRACTURE CONTROL PLAN FOR NONREDUNDANT MEMBERS IN THE AASHTO/AWS D1.5.

ALL REMAINING STRUCTURAL STEEL IN THE TRUSS SHALL MEET THE SUPPLEMENTAL IMPACT TEST REQUIREMENTS FOR NON-FRACTURE CRITICAL MEMBERS IN TABLE 9 (AASHTO M270-15) FOR ZONE 2.

SAMPLING AND TESTING PROCEDURES SHALL BE IN ACCORDANCE WITH THE AASHTO T243, CURRENT EDITION.

AASHTO GUIDE SPECIFICATIONS FOR HIGHWAY BRIDGE FABRICATION WITH HPS 70W STEEL SHALL APPLY.

PAYMENT FOR STRUCTURAL STEEL

THE LUMP SUM BID FOR STRUCTURAL STEEL WILL BE FULL PAYMENT FOR ALL STRUCTURAL STEEL, FASTENERS, WELDING, WELDING MATERIALS, DECK DRAINS, INSPECTION ACCESS, PAINT AND ALL LABOR AND MATERIALS NECESSARY TO ERECT THE BRIDGE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE APPROXIMATE WEIGHT OF STRUCTURAL STEEL SHOWN IN THE ESTIMATE OF QUANTITIES DOES NOT INCLUDE OVERRUN OR WELD MATERIAL.

MILL TEST REPORTS

NOTARIZED MILL TEST REPORTS SHALL BE FURNISHED IN TRIPLICATE TO THE ENGINEER SHOWING THAT ALL MATERIAL USED IN THE STRUCTURAL STEEL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS.

FABRICATION

THE CONSTRUCTION SHALL BE SUCH THAT AFTER THE DEAD LOAD DEFLECTION, THE FINISHED ROADWAY SURFACES WILL CONFORM TO THE FINAL GRADE. TRUSSES SHALL BE CAMBERED TO THE FULL DEAD LOAD EXCLUDING THE FUTURE WEARING SURFACE. TRUSS MEMBERS SHALL BE CAMBERED TO THE CORRECT CAMBERED LENGTH. THE CAMBERED LENGTH SHOWN IN THE PLANS IS FROM WORKING POINT TO WORKING POINT. THE WORKING POINTS ARE WHERE THE CENTERLINES OF THE CHORDS, DIAGONALS AND VERTICALS INTERSECT.

THE CHORD MEMBERS OF THE TRUSSES WITH THE CONNECTING DIAGONAL AT EACH PANEL POINT SHALL BE ASSEMBLED IN THE SHOP FOR REAMING. AT LEAST SIX ADJACENT PANELS OF CHORD SHALL BE ASSEMBLED BEFORE REAMING IS STARTED AND A MINIMUM OF THREE ABUTTING REAMED PANELS SHALL BE MAINTAINED IN THE ASSEMBLY WITH FORWARD PANELS ADDED SO THAT AT LEAST SIX PANELS ARE ASSEMBLED FOR REAMING FOR CONTROL OF LINE AND CAMBERED POSITION. ALL MEMBERS ENTERING A JOINT SHALL BE ADJUSTED TO THE FINAL GEOMETRIC ANGLE BEFORE REAMING IS STARTED. THE FINAL GEOMETRIC ANGLE IS THE ANGLE OF THE DEFLECTED STRUCTURE AS DETERMINED FROM THE GEOMETRY SHEET. THE PURPOSE OF THIS PROCEDURE IS TO OBTAIN AN ACCURATE FIT OF THE TRUSS MEMBERS AND MATCHING FOR THE CONNECTING HOLES AND TO ESSENTIALLY ELIMINATE SECONDARY STRESSES CAUSED BY THE ROTATION OF THE JOINTS DUE TO DEAD LOAD DEFLECTION. IT SHOULD BE NOTED THAT TOP AND BOTTOM CHORDS CANNOT BE CONNECTED DURING SHOP ASSEMBLY AT MORE THAN ONE POINT.

IF THE CONTRACTOR USES COMPUTER NUMERICALLY CONTROLLED DRILLS TO DRILL FULL SIZE HOLES FOR THE TRUSS CONNECTIONS, FIFTEEN PERCENT (15%) OF THE TRUSS JOINTS AND 25% OF THE STRINGER SPLICES SHALL BE ASSEMBLED IN THE SHOP TO PROVE THE ACCURACY OF THE FIT AND MATCHING FOR THE CONNECTING HOLES. ASSEMBLY WILL NOT BE REQUIRED FOR LATERAL, PORTAL, STRUT AND FLOOR BEAM CONNECTIONS. IN THE EVENT THAT SHOP ASSEMBLY REVEALS INACCURACIES OUT OF TOLERANCE, THE ENGINEER WILL REQUIRE SHOP ASSEMBLY OF ALL THE TRUSS JOINTS AS REQUIRED FOR REAMING.

THE CONTRACTOR SHALL SUBMIT THEIR PROPOSED METHOD FOR OBTAINING THE CORRECT GEOMETRIC ANGLES BETWEEN TRUSS MEMBERS TO THE ENGINEER FOR APPROVAL AT THE TIME SHOP DETAIL DRAWINGS ARE SUBMITTED.

THE SHOP DETAIL DRAWINGS SHALL INDICATE CLEARLY SUB-PUNCHED HOLES WHICH ARE TO BE REAMED AND/OR ASSEMBLED TO A TEMPLATE IN THE SHOP. HOLES WHICH ARE TO BE REAMED IN THE FIELD SHALL BE INDICATED ON THE SHOP DRAWINGS.

ALL BUILT-UP MEMBERS ARE TO BE FABRICATED BY SHOP WELDING. THE INDIVIDUAL PARTS FROM WHICH THE MEMBER WILL BE MADE ARE TO BE UNPAINTED, FREE FROM OIL, RUST, DIRT AND LOOSE SCALE, AND FREE FROM TWISTS, BENDS AND OTHER DEFORMATIONS BEFORE WELDING. PRIOR TO WELDING, THE PARTS SHALL BE ACCURATELY POSITIONED AND HELD IN PLACE BY CLAMPS, JIGS, OR OTHER SUITABLE MEANS.

ALL STEEL SHALL BE SO POSITIONED TO PLACE THE DIRECTION OF FINISHED ROLLING PARALLEL TO THE DIRECTION OF PRIMARY STRESS. SPLICES SHALL NOT BE PERMITTED IN PARTS OF MEMBERS WITHOUT THE PERMISSION OF THE BRIDGE DESIGNER. TRANSVERSE WELDS ON TRUSS MEMBERS ARE NOT PERMITTED, UNLESS EXPLICITLY SHOWN IN THE PLANS.

TRUSS MEMBERS AND/OR GUSSET PLATES THAT ARE "OUT OF FLAT" SUCH THAT SEALING CANNOT BE ACCOMPLISHED DURING BOLT TENSIONING, SHALL BE MILLED. "OUT OF FLAT" SHALL BE DEFINED AS PERMITTING A 0.005" FEELER GAUGE TO ENTER BETWEEN THE PLATES.

PLATE AREAS SHOWN IN THE PLANS ARE APPROXIMATE AND WERE USED FOR CALCULATING DEAD LOADS. "AS FABRICATED" PLATE AREAS MAY BE DIFFERENT.

TEMPORARY STRINGER/BEAM SUPPORTS

TEMPORARY SUPPORTS SHALL NOT BE PERMITTED UNDER STRINGERS OR BEAMS WHEN PLACING THE CONCRETE DECK SLAB OR TAKING 'TOP OF STRINGER/BEAM' ELEVATIONS.

STAY-IN-PLACE METAL FORMS

STAY-IN-PLACE METAL FORMS MAY BE USED IN THE DECK SLAB UNDER THE FOLLOWING CONDITION:

THE CORRUGATED VALLEYS OF FORMS SHALL BE FILLED WITH EXPANDED POLYSTYRENE TO ELIMINATE INCREASED DEAD LOAD FROM CONCRETE.

ARMORED EDGE

STEEL MATERIAL SHOULD BE NEW, COMMERCIAL GRADE STEEL SUITABLE FOR WELDING. ACCEPTANCE WILL BE BASED ON VISUAL INSPECTION BY THE ENGINEER. STUD SHEAR CONNECTORS SHALL CONFORM TO ASTM A108, GRADE 1015. TECHNIQUES AND WELDING PROCEDURE SHALL COMPLY WITH CURRENT JOINT SPECIFICATION ANSI/AWS D1.5 BRIDGE WELDING CODE. ALL METAL SURFACES SHALL HAVE ONE SHOP COAT OF ORGANIC ZINC PRIMER APPLIED PRIOR TO SHIPPING THE STEEL FROM THE PLANT. CONTRARY TO THE SPECIFICATIONS, NO FIELD COATING IS REQUIRED.

PROHIBITED FIELD WELDING

EXCEPT AS SHOWN ON THE PLANS, NO FIELD WELDING OF ANY NATURE SHALL BE PERFORMED ON THE LOAD CARRYING MEMBERS OF THE BRIDGE WITHOUT THE WRITTEN AUTHORIZATION OF THE BRIDGE DESIGNER, AND THEN ONLY IN THE MANNER AND AT THE LOCATIONS DESIGNATED IN THE AUTHORIZATION.

WELDING SPECIFICATIONS

ALL WELDING AND WELDING MATERIALS EXCEPT FOR REINFORCEMENT SHALL CONFORM TO JOINT SPECIFICATION ANSI/AASHTO/AWS D1.5-2015 BRIDGE WELDING CODE.

WELDING PROCEDURE

QUALIFICATION TESTS OF ALL WELDING PROCEDURES SHALL BE COMPLETED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO THE FINAL APPROVAL OF THE SHOP DRAWINGS AND WELDING PROCEDURES AND THE START OF THE FABRICATION.

CONCRETE

CLASS "AA" CONCRETE SHALL BE USED THROUGHOUT THE SUPERSTRUCTURE INCLUDING IN THE DIAPHRAGMS AT THE PIERS AND ABUTMENTS.

CLASS "A" CONCRETE SHALL BE USED IN THE PEDESTALS AND SHEAR KEYS AND IN THE SUBSTRUCTURE BELOW THE TOP OF CAP. CONTRARY TO THE SPECIFICATIONS, THE MAXIMUM COARSE AGGREGATE SIZE USED IN PIER 1 THROUGH 9 COLUMN CONCRETE SHALL BE #67.

CLASS "A" (MODIFIED) SHALL BE USED IN DRILLED SHAFTS IN ACCORDANCE WITH THE SPECIAL NOTE.

CLASS "D" (MODIFIED) CONCRETE SHALL BE USED IN ALL PRESTRESSED GIRDERS.

BEVELED EDGES

ALL EXPOSED CONCRETE EDGES SHALL BE BEVELED ¾" UNLESS OTHERWISE SHOWN.

BONDING NEW CONCRETE TO PREVIOUSLY PLACED CONCRETE

WHERE A BONDED CONSTRUCTION JOINT IS CALLED FOR IN THE PLANS, NEW CONCRETE SHALL BE BONDED TO PREVIOUSLY PLACED (CURED) CONCRETE WITH A TWO-COMPONENT EPOXY RESIN SYSTEM CONFORMING TO SECTIONS 511 AND 826 OF THE SPECIFICATIONS. THE COST OF THIS WORK, INCLUDING ALL LABOR, TOOLS AND MATERIALS IS TO BE INCIDENTAL TO THE UNIT PRICE BID FOR CLASS "AA" CONCRETE OR CLASS "A" CONCRETE AS APPROPRIATE.

POURING SEQUENCE

THE POURING SEQUENCE OF THE SLAB MAY NOT BE CHANGED WITHOUT THE WRITTEN APPROVAL OF THE BRIDGE DESIGNER.

PAYMENT FOR PRECAST CONCRETE BEAMS

THE BASIS OF PAYMENT FOR THE PRESTRESSED CONCRETE BEAMS SHALL BE AT THE CONTRACT UNIT PRICE PER LINEAR FOOT OF BEAM IN ACCORDANCE WITH THE SPECIFICATIONS.

CONSTRUCTION IDENTIFICATION

THE NAMES OF THE PRIME CONTRACTOR AND THE SUBCONTRACTOR SHALL BE IMPRINTED IN THE CONCRETE WITH 1 INCH LETTERS AT A LOCATION DESIGNATED BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH ALL PLANS, EQUIPMENT AND LABOR NECESSARY TO DO THE WORK FOR WHICH NO DIRECT PAYMENT WILL BE MADE.

DECK DRAIN

FOUNDRY NOTE - ALL DRAINS SHALL BE GRAY IRON CASTINGS, ASTM A48, CURRENT EDITION, CLASS 30A, FOUNDRIES SHALL CAST AT LEAST TWO TEST BARS FROM EACH DAYS PRODUCTION. THESE TEST BARS SHALL BE TESTED EITHER BY THE DIVISION OF MATERIALS OR BY THE FOUNDRIES' QUALITY CONTROL UNIT WHOM SHALL FURNISH ACTUAL TEST RESULTS FOR EACH DATE OF MANUFACTURE OR LOT NUMBER.

THE DRAIN PIPE SHALL BE 6" ROUND STANDARD WEIGHT STEEL PIPE IN ACCORDANCE WITH ASTM A53 OR A500. PIPE AND ALL FITTINGS SHALL BE GALVANIZED INSIDE AND OUT IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT REQUIRED. DRAIN CASTINGS, PIPE, FITTINGS, AND CONNECTIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR STRUCTURAL STEEL.

PREFORMED JOINT FILLER

PREFORMED JOINT FILLER SHALL CONFORM TO SUBSECTION 807.04.02 (TYPE 2-CORK) OF THE STANDARD SPECIFICATIONS.

EXPANSION JOINTS

A CANTILEVER TYPE EXPANSION JOINT WITH COLLECTION TROUGH AND DRAINAGE SYSTEM IS REQUIRED BETWEEN THE STEEL TRUSS SPAN 4 AND APPROACH SPAN 5. THIS EXPANSION JOINT SHALL BE PAID FOR AT THE UNIT PRICE BID PER LINEAR FOOT OF FINGER EXPANSION JOINT. THE COST SHALL INCLUDE THE FINGER PLATES, EMBED PLATES WITH STUDS, BOLTS, SLIDING BARRIER PLATES, DRAINAGE TROUGH, DRAIN PIPES, COLLECTOR BOXES, BRACKETS, AND ALL LABOR AND MISCELLANEOUS HARDWARE ASSOCIATED WITH THE FABRICATION AND INSTALLATION OF SAME. SHOP DRAWINGS WILL BE REQUIRED FOR THE FINGER EXPANSION JOINTS. SEE FINGER JOINT (1) AND (2) FOR DETAILS.

A STRIP SEAL EXPANSION JOINT IS USED AT PIER 3. SEE SPAN 4 SLAB PLAN AND DETAILS (3) SHEET.

NEOPRENE SHEET SEAL

THE ELASTOMER SHEET FOR SEALING THE SUPER/SUBSTRUCTURE JOINT AT THE ABUTMENTS SHALL BE ¼" NEOPRENE REINFORCED WITH TWO PLYS OF 14 OUNCE NYLON AND SHALL BE A MINIMUM OF 50 DUROMETER HARDNESS. THE COST OF THE NEOPRENE SHEET SEALS, STAINLESS STEEL BAR AND STAINLESS STEEL ANCHORS IS INCIDENTAL TO CLASS 'AA' CONCRETE.

BEARINGS

SEE STRINGER BEARINGS SHEET FOR ELASTOMERIC PADS IN SPAN 4.
SEE PCI BEAM BEARING PADS SHEET FOR BEARING PADS USED UNDER CONCRETE BEAMS.
SEE TRUSS BEARINGS PIER 3 AND TRUSS BEARINGS PIER 4 SHEETS FOR HIGH LOAD MULTI-ROTATIONAL (HLMR) DISC BEARINGS. ALSO SEE SPECIAL NOTE FOR DISC BEARINGS.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. PERKINS	T. HUNLEY
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

GENERAL NOTES (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S4
		DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabsham
DATE PLOTTED: 1/24/2020 7:26:59 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\04 GEN NOTES (2).DGN

SHEAR STUD CONNECTORS

THE "LUMP SUM BID" FOR SHEAR CONNECTORS SHALL BE FULL PAYMENT FOR ALL SHEAR CONNECTORS, WELDING AND WELDING MATERIAL, AND MATERIALS NECESSARY TO FIELD WELD THE SHEAR CONNECTORS IN PLACE ACCORDING TO THE PLANS AND SPECIFICATIONS.

SHEAR STUD CONNECTORS SHALL EXTEND AT LEAST 2 INCHES ABOVE THE BOTTOM OF SLAB. STUDS SHALL BE WELDED IN ACCORDANCE WITH AWS SPECIFICATIONS.

HIGH STRENGTH BOLT CONNECTIONS

UNLESS NOTED OTHERWISE, BOLTED CONNECTIONS SHALL BE EITHER ⅞" DIAMETER GRADE A325 (TYPE 1, HOT-DIP GALVANIZED) OR 1 ⅛" DIAMETER GRADE A490 (TYPE 3) HIGH STRENGTH BOLTS WITH A563 NUTS AND F436 WASHERS AT THE LOCATIONS SPECIFIED IN THE PLANS. BOLT THREADS ARE TO BE EXCLUDED FROM THE SHEAR PLANE IN ALL BOLTED CONNECTIONS. HOLES SHALL BE 1/16" LARGER THAN THE NOMINAL DIAMETER OF THE BOLTS FOR BOLTS UP TO 1⅛" IN DIAMETER, FOR BOLTS 1⅛" OR GREATER THE HOLE SHALL BE ⅛" LARGER THAN THE NOMINAL DIAMETER. ALL HIGH STRENGTH BOLTED FIELD CONNECTIONS ARE TO BE INSTALLED USING "DIRECT TENSION INDICATORS" (DTI'S) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND ASTM F959. ALL DTI'S FOR GRADE A325 BOLTS SHALL BE MECHANICALLY ZINC COATED. ALL DTI'S FOR GRADE A490 BOLTS CAN BE PLAIN OR MECHANICALLY ZINC COATED WITH BAKED EPOXY APPLIED OVER THE ZINC COATING. INSTALLATION DETAILS OF THE DTI'S SHALL BE SHOWN ON THE SHOP PLANS. THE DTI SHALL BE PLACED UNDER THE BOLT HEAD WHEN TIGHTENING FROM THE NUT END. FOR TRUSS CONNECTIONS, FULL SIZE DRIFT PINS SHALL BE LEFT IN 15% OF THE HOLES IN A RANDOM PATTERN UNTIL BOLTS IN THE REMAINING 85% OF THE HOLES ARE FULLY TENSIONED.

STRUCTURE LIGHTNING PROTECTION

THE STRUCTURE LIGHTNING PROTECTION SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE SPECIAL NOTE FOR STRUCTURE LIGHTNING PROTECTION. CONTRACTOR DESIGN CALCULATIONS AND SHOP DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO ORDERING MATERIALS OR BEGINNING INSTALLATION. THE COST OF ALL MATERIALS AND LABOR SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR STRUCTURE LIGHTNING PROTECTION.

NAVIGATION LIGHTING SYSTEM

SEE NAVIGATION LIGHTING (1) THROUGH (6) SHEETS. EXISTING NAVIGATION LIGHTS ON THE OLD BRIDGE SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL THE BRIDGE IS DEMOLISHED.

HANDLING AND STORING STEEL MEMBERS

STEEL MEMBERS MUST NOT BE GOUGED, SCRATCHED, DENTED, OR ALLOWED TO RUB AGAINST OTHER MEMBERS WHICH WOULD RESULT IN DAMAGE TO THE BLAST CLEANED PROFILE OF THE STEEL. MEMBERS SHALL BE HANDLED USING SOFTENERS AND SLINGS INSTEAD OF CHOKERS AND CHAINS.

MEMBERS SHALL BE STORED IN THE FABRICATION SHOP OR ON THE PROJECT SITE IN SUCH A MANNER AS TO BE KEPT FREE AND CLEAN OF ALL FOREIGN SUBSTANCES SUCH AS GREASE, OIL, MORTAR AND CONCRETE SPLATTER, CHALK AND CRAYON MARKS, PAINT, AND DIRT. ALL STORAGE MUST BE ABOVE GROUND AND SLOPED TO ALLOW FREE DRAINAGE OF MELTED SNOW, RAINWATER, AND DEW.

IF STORED FOR PERIODS LONGER THAN 3 MONTHS, THE MEMBERS MUST BE PLACED ON METAL SUPPORTS. FOR PERIODS OF STORAGE UP TO 3 MONTHS, MEMBERS MAY BE PLACED ON CLEAN, UNTREATED, WOOD TIMBERS.

STEEL STRINGERS SHALL BE STORED WITH THE WEB IN THE UPRIGHT POSITION. MEMBERS MAY BE STACKED, PROVIDED METAL SUPPORTS SEPARATE INDIVIDUAL MEMBERS, BUT SHALL NOT BE NESTED TOGETHER OR BUNDLED.

TREATED LUMBER OR TIMBER SHALL NOT BE ALLOWED TO COME IN CONTACT WITH STEEL MEMBERS.

FINAL CLEANUP OF STRUCTURAL STEEL SURFACES

UPON COMPLETION OF ALL CONCRETE CURING OPERATIONS, THE CONTRACTOR SHALL CLEAN ALL STEEL SURFACES TO REMOVE ALL GREASE, OIL, AND CONCRETE RESIDUE, DIRT, AND OTHER FOREIGN SUBSTANCES TO THE SATISFACTION OF THE ENGINEER.

CLEANING MAY BE HIGH PRESSURE WATER, POWER AND HAND WIRE BRUSHING, OR BY BRUSH-OFF BLAST CLEANING IN ACCORDANCE WITH SSPC-SP7. IF DETERGENTS AND CLEANERS ARE USED, THE CLEANING SHALL BE FOLLOWED BY A CLEAN WATER RINSE TO REMOVE ALL RESIDUES. ALL GREASE AND OIL SHALL BE REMOVED PRIOR TO THE CLEAN WATER RINSE BY SOLVENT CLEANING.

THE USE OF ACID TO REMOVE STAINS IS NOT PERMITTED.

OSPREY HABITAT ON EXISTING BRIDGE

THE EXISTING BRIDGE IS A KNOWN OSPREY NESTING LOCATION. ALL CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE SPECIAL NOTE FOR MITIGATION OF IMPACTS TO OSPREY.

FOUNDATION PREPARATION AT PIER 3

THE UNIT BID PRICE FOR PIER 3 - FOUNDATION PREPARATION SHALL INCLUDE ALL EXCAVATION, BACKFILLING, BANK REGRADING, AND COFFERDAMS OR SHORING REQUIRED FOR INSTALLATION OF THE PIER 3 SUBSTRUCTURE AND FOUNDATION.

COFFERDAM AT PIER 4

COFFERDAMS WILL BE REQUIRED FOR THE INSTALLATION OF THE FOUNDATIONS AND CONSTRUCTION OF THE SUBSTRUCTURE AT PIER 4. THE COST OF THE COFFERDAMS INCLUDING ANY LABOR, SHEETING, SHORING, EXCAVATION AND BACKFILL SHALL BE INCLUDED IN THE UNIT BID PRICE FOR PIER 4 - COFFERDAM.

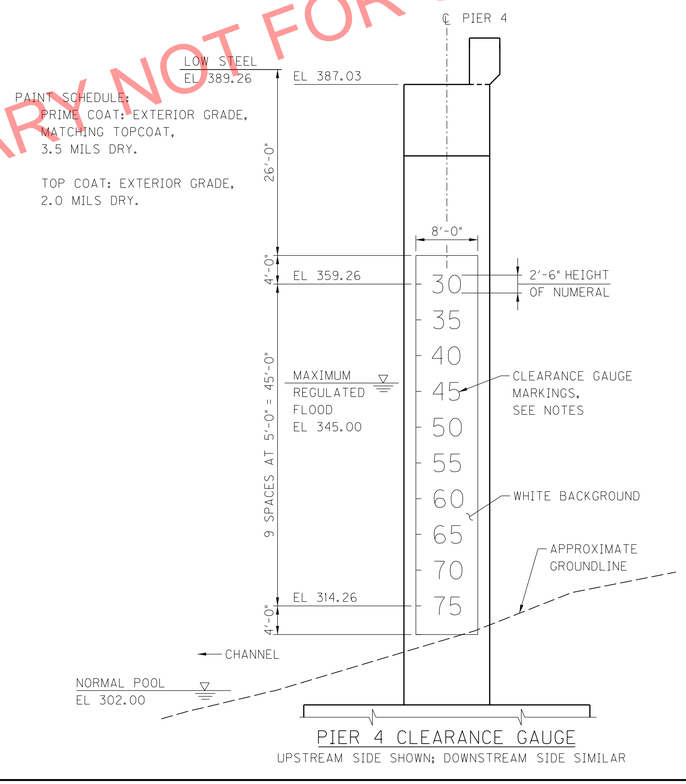
CLEARANCE GAUGES

CLEARANCE GAUGE SHALL INDICATE THE VERTICAL DISTANCE BETWEEN "LOW STEEL" OF THE BRIDGE CHANNEL SPAN AND THE LEVEL OF WATER, MEASURED TO THE BOTTOM OF THE FOOT MARKS, READ FROM TOP TO BOTTOM.

THE BRIDGE CLEARANCE GAUGES SHALL BE IN ACCORDANCE WITH 33 CFR 118.160. THE BRIDGE CLEARANCE GAUGES SHALL BE PAINTED ON THE UPSTREAM AND DOWNSTREAM SIDES OF THE PIER 4 COLUMNS USING BLACK NUMERALS AND FOOT MARKS ON A WHITE BACKGROUND. NUMERALS SHALL CONFORM TO THE FHWA "STANDARD HIGHWAY SIGNS", 2004 EDITION WITH LATEST SUPPLEMENT. NUMERALS SHALL BE SERIES E WITH A HEIGHT OF 30 INCHES.

THE AREA TO BE PAINTED SHALL BE THOROUGHLY CLEANED BEFORE PAINTING. THE PAINTED AREAS SHALL RECEIVE TWO (2) COATS OF WHITE PAINT, AS HEREINAFTER PROVIDED, AFTER WHICH GAUGE NUMBERS AND MARKINGS SHALL BE PAINTED THEREON IN TWO (2) COATS OF BLACK. EACH COAT SHALL BE APPLIED WITH A MINIMUM OF TWENTY-FOUR (24) HOURS DRYING TIME PER COAT.

ALL MATERIALS USED SHALL BE EITHER A VINYL RESIN TYPE OR CHLORINATED NATURAL RUBBER-BASE TYPE PAINT AND SHALL BE GUARANTEED BY THE MANUFACTURER TO BE SUITABLE FOR USE ON MASONRY UNDER SEVERE EXPOSURE AND SUBMERGED IN WATER CONDITIONS. ALL MATERIALS THE CONTRACTOR PROPOSES TO USE SHALL MEET THE APPROVAL OF THE ENGINEER. THE FIRST COATS OF WHITE AND GAUGE MARKINGS (BLACK) SHALL HAVE A FLAT FINISH, AND THE SECOND COATS SHALL HAVE A GLOSSY FINISH. UNLESS OTHERWISE PERMITTED BY THE ENGINEER, CONCRETE FORMS SHALL HAVE BEEN REMOVED AT LEAST SIXTY (60) DAYS PRIOR TO THE APPLICATION OF ANY PAINT OR UNDERCOAT TO THE CONCRETE SURFACE TO BE PAINTED. SURFACES TO BE PAINTED SHALL BE PREPARED BY REMOVING ALL DIRT, OIL, OR OTHER FOREIGN SUBSTANCES. PRIOR TO APPLICATION OF THE FIRST COAT, SUCH SURFACES SHALL BE ETCHED WITH APPROXIMATELY 10 PERCENT SOLUTION OF MURIATIC ACID IN WATER, FLUSHED DOWN WITH CLEAR WATER, AND ALLOWED TO DRY. THE SURFACES TO BE PAINTED SHALL BE THOROUGHLY DRY BEFORE APPLICATION. THE PAINT APPLICATION SHALL BE GENEROUS, BUT SHOULD NOT EXCEED TWO MILS PER COAT. THE FIRST COAT SHALL BE WORKED WELL INTO THE PORES OF THE CONCRETE. PAINT SHALL NOT BE APPLIED WHEN THE TEMPERATURE IS BELOW 45 DEGREES FAHRENHEIT AND PREFERABLY SHALL BE APPLIED WHEN THE WEATHER HAS REACHED THE MAXIMUM TEMPERATURE FOR THE DAY. PAINTING SHALL NOT START UNLESS IT CAN BE REASONABLY EXPECTED THAT THE CLEARANCE GAUGE CAN BE COMPLETED WITH ALL PAINT COATS PLUS AT LEAST SEVEN (7) DAYS TIME BEFORE ANY PORTION OF THE GAUGE MAY BECOME SUBMERGED. THE WORK DESCRIBED HEREIN SHALL BE PAID FOR AT THE CONTRACT LUMP SUM BID PRICE FOR "PAINT CLEARANCE GAUGES", WHICH PAYMENT AND PRICE SHALL BE FULL COMPENSATION FOR ALL WORK, LABOR, MATERIALS, EQUIPMENT, AND ALL INCIDENTALS NECESSARY TO COMPLETE THE WORK.



PIER 4 CLEARANCE GAUGE
UPSTREAM SIDE SHOWN; DOWNSTREAM SIDE SIMILAR

PRELIMINARY NOT FOR CONSTRUCTION

COAST GUARD REQUIREMENTS

THE REQUIREMENTS OF THE US COAST GUARD PERMIT, A COPY OF WHICH IS CONTAINED IN THE BID PACKAGE, ARE TO BE CONSIDERED AS REQUIREMENTS OF THIS CONTRACT.

NAVIGATION CLEARANCES

THE CONSTRUCTION OF FALSEWORK, PILINGS, COFFERDAMS OR OTHER OBSTRUCTIONS, IF REQUIRED, SHALL BE IN ACCORDANCE WITH PLANS SUBMITTED TO AND APPROVED BY THE DISTRICT COMMANDER, PRIOR TO THE CONSTRUCTION OF THE BRIDGE. ALL WORK SHALL BE SO CONDUCTED THAT THE FREE NAVIGATION OF THE WATERWAY IS NOT UNREASONABLY INTERFERED WITH AND THE PRESENT NAVIGABLE DEPTHS ARE NOT IMPAIRED. TIMELY NOTICE OF ANY AND ALL EVENTS THAT MAY AFFECT NAVIGATION SHALL BE GIVEN TO THE DISTRICT COMMANDER DURING CONSTRUCTION OF THE BRIDGE. THE CHANNEL OR CHANNELS THROUGH THE STRUCTURE SHALL BE PROMPTLY CLEARED OF ALL OBSTRUCTIONS PLACED THEREIN OR CAUSED BY THE CONSTRUCTION OF THE BRIDGE TO THE SATISFACTION OF THE DISTRICT COMMANDER, WHEN IN THE JUDGEMENT OF THE DISTRICT COMMANDER THE CONSTRUCTION WORK HAS REACHED A POINT WHERE SUCH ACTION SHOULD BE TAKEN, BUT IN NO CASE LATER THAN 90 DAYS AFTER THE BRIDGE HAS BEEN OPENED TO TRAFFIC.

ABBREVIATIONS

THE FOLLOWING ABBREVIATIONS MAY HAVE BEEN USED IN THE PREPARATION OF THESE PLANS:

B or BL	BASELINE
℄	CENTERLINE
F or FL	FLANGE
P or PL	PLATE
ABUT	ABUTMENT
ALT	ALTERNATE
APPR	APPROACH
APPROX	APPROXIMATE
BF	BACK FACE
BARR	BARRIER
BKWL	BACKWALL
BM	BEAM
BM	BENCHMARK
BOS	BOTTOM OF SLAB
BRG	BEARING
BTM	BOTTOM
BTWN	BETWEEN
CE	CURRENT EDITION
CHD	CHORD
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CSB	CONDUIT SUPPORT BRACKET
CONN	CONNECTION
CONST	CONSTRUCTION
CTR	CENTER
CVN	CHARPY V-NOTCH
DEG	DEGREE
DIA	DIAMETER
DIAPH	DIAPHRAGM
DIM	DIMENSION
DWG	DRAWING
EA	EACH
EB	EASTBOUND
EF	EACH FACE
EL	ELEVATION
EQ	EQUAL
EQUIV	EQUIVALENT
ETC	ETCETERA
EW	EACH WAY
EX	EXISTING
EXIST	EXISTING
EXP	EXPANSION
FF	FRONT FACE
FS	FIELD SPLICE
FT	FEET
FTG	FOOTING
GALV	GALVANIZED
HORIZ	HORIZONTAL
HS	HIGH STRENGTH
ID	INSIDE DIAMETER
IEB	INTEGRAL END BENT
JB	JUNCTION BOX
JT	JOINT
JUNC	JUNCTION
LP	LIGHT POLE
LONG	LONGITUDINAL
MAX	MAXIMUM
MIN	MINIMUM
NEG	NEGATIVE
NEOP	NEOPRENE
NOM	NOMINAL
OD	OUTSIDE DIAMETER
OS	OVERSIZED
PERF	PERFORATED
PG	PROFILE GRADE
PPC	PRECAST PRESTRESSED CONCRETE
PR	PAIR
PREF	PREFORMED
PROJ	PROJECTION
PRS	PAIRS
PSI	POUNDS PER SQUARE INCH
R	RADIUS
RAD	RADIUS
RDWY	ROADWAY
REINF	REINFORCEMENT
RELOC	RELOCATED
REQD	REQUIRED
RR	RAILROAD
RT	RIGHT
RTE	ROUTE
SB	SOUTHBOUND
SEC	SECTION
SER	SERIES
SHLD	SHOULDER
SHT	SHEET
SI	SEMI-INTERGAL
SIM	SIMILAR
SPA	SPACES
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIFF	STIFFENER
STR	STRAIGHT
SYS	SYSTEM
THRU	THROUGH
TOS	TOP OF SLAB
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
WB	WESTBOUND
WP	WORKING POINT

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. PERKINS	T. HUNLEY
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

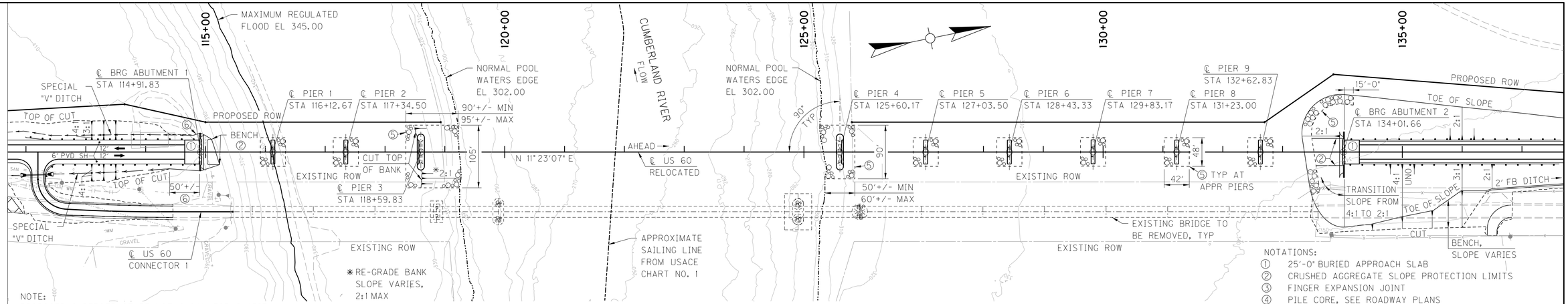
ROUTE: US 60

CROSSING: CUMBERLAND RIVER

GENERAL NOTES (3)

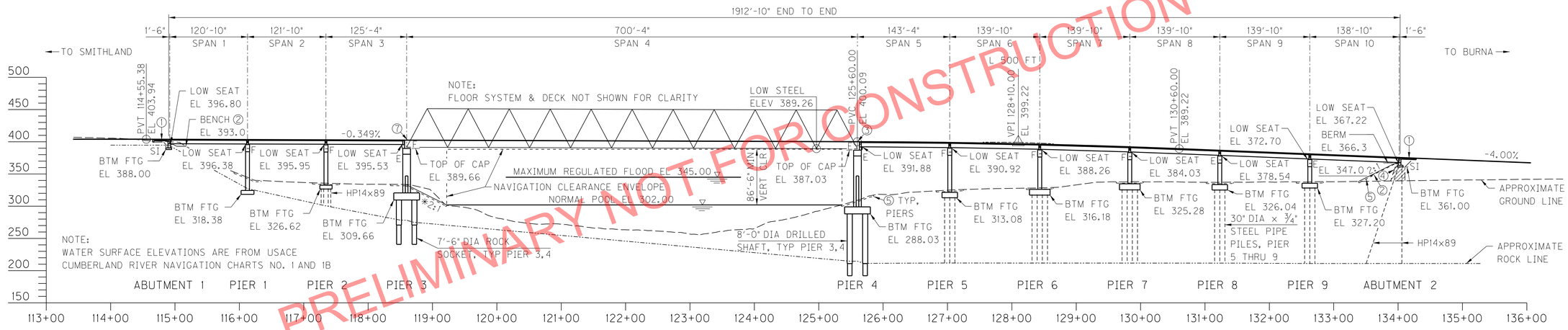
ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S5
		DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\05 GEN NOTES (3).DGN
USER: dabasham
DATE PLOTTED: 1/31/2020 2:13:58 PM
E-SHEET NAME:
MicroStation v8.11.9.829



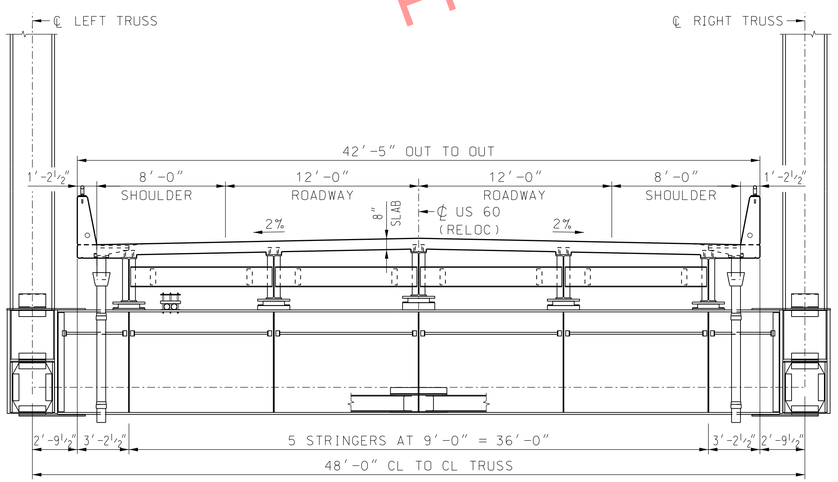
PLAN

NOTATIONS:
① 25'-0" BURIED APPROACH SLAB
② CRUSHED AGGREGATE SLOPE PROTECTION LIMITS
③ FINGER EXPANSION JOINT
④ PILE CORE, SEE ROADWAY PLANS
⑤ CYCLOPEAN STONE RIPRAP SLOPE PROTECTION, 2' DEPTH
⑥ TRANSITION SLOPE FROM 4:1 TO 2:1
⑦ STRIP SEAL EXPANSION JOINT
F - FIXED E - EXPANSION SI - SEMI-INTEGRAL

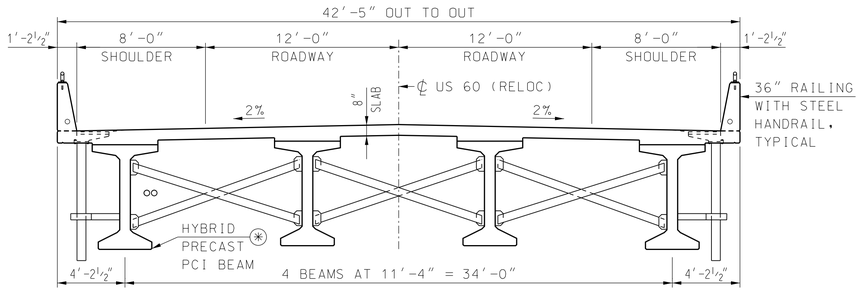


SECTION ALONG US 60 RELOCATED

SPANS 1 THRU 3: HN 66x49 HYBRID PCIB (CONTINUOUS FOR LIVE LOAD);
SPAN 4: STEEL THROUGH TRUSS (SIMPLE SPAN);
SPANS 5 THRU 10: HN 78x49 HYBRID PCIB (CONTINUOUS FOR LIVE LOAD);
0° SKEW; KYHL-93 LIVE LOADING; 40'-0" ROADWAY ON BRIDGE;
48'-0" OUT TO OUT SHOULDERS; 2:1 FILL SLOPES AT BRIDGE ENDS



TYPICAL SECTION – TRUSS SPAN
(LOOKING AHEAD)



TYPICAL SECTION – APPROACH SPANS
(LOOKING AHEAD)
✱ HN 66x49 BEAMS IN SPANS 1-3
HN 78x49 BEAMS IN SPANS 5-10

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: A. FARMER	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

LAYOUT

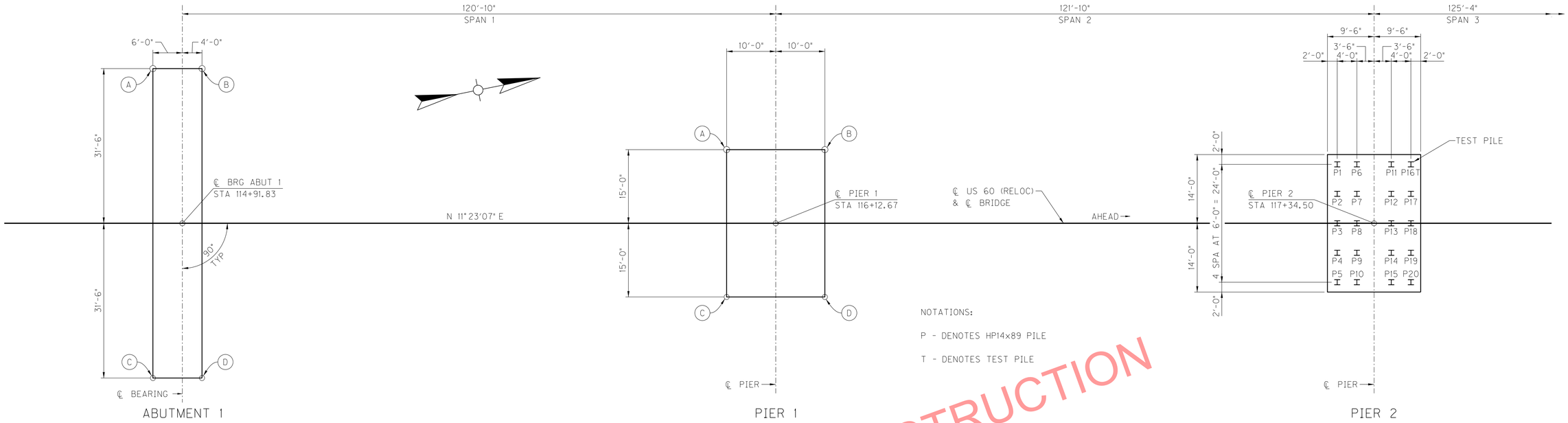
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO. S6

DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\06 LAYOUT.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



NOTATIONS:

P - DENOTES HP14x89 PILE

T - DENOTES TEST PILE

FOUNDATION PLAN – SPANS 1 & 2

PRELIMINARY NOT FOR CONSTRUCTION

SPREAD FOOTING FOUNDATION NOTES

1. TEMPORARY SHEETING, SHORING, COFFERDAMS, AND/OR A DEWATERING METHOD MAY BE REQUIRED FOR THE INSTALLATION OF THE FOUNDATION.

2. SOLID ROCK EXCAVATION WILL BE REQUIRED FOR INSTALLATION OF THE FOUNDATION.

3. STRUCTURE EXCAVATION SHALL BE COMPLETED JUST PRIOR TO STRUCTURE FOUNDATION CONSTRUCTION IN ORDER TO PREVENT THE BEDROCK FROM BEING EXPOSED FOR AN EXTENDED PERIOD OF TIME AND DETERIORATING. THE CONTRACTOR SHALL TAKE CARE DURING BLASTING AND OTHER EXCAVATION METHODS TO AVOID OVER-BREAKAGE AND DAMAGE TO THE BEDROCK BENEATH THE FOUNDATION.

4. THE BEDROCK AT THIS LOCATION MAY BE SUSCEPTIBLE TO WEATHERING AND SOFTENING IN THE PRESENCE OF WATER. WATER MUST BE KEPT OUT OF THE FOUNDATION EXCAVATIONS. THE FOUNDATION STEEL AND CONCRETE SHOULD BE PLACED THE SAME DAY AS OR AS SOON AS PRACTICAL AFTER THE LAST 6 INCHCES OF FOUNDATION BOTTOM EXCAVATION IS COMPLETE. IF THE BEDROCK BECOMES SOFTENED AT BEARING ELEVATION, THE SOFTENED MATERIAL SHOULD BE UNDERCUT TO UNWEATHERED MATERIAL PRIOR TO PLACING THE CONCRETE.

5. THE FOUNDATION SHALL BE EMBEDDED A MINIMUM OF 2 FEET INTO UNWEATHERED BEDROCK. ALL FOUNDATION EXCAVATIONS IN BEDROCK SHALL BE CUT NEAT SO THAT NO FORMING OR BACKFILLING IS NECESSARY IN THE CONSTRUCTION OF THE PORTIONS OF FOUNDATION LOCATED IN ROCK. CONCRETE SHOULD BE PLACED DIRECTLY AGAINST THE CUT ROCK FACES. WHERE THE TOP OF FOUNDATION IS LOCATED BELOW THE TOP OF BEDROCK, THE REMAINDER OF THE ROCK EXCAVATION SHALL BE FILLED WITH CONCRETE CLASS B TO THE TOP OF BEDROCK.

6. THE BOTTOM OF FOOTING ELEVATIONS CAN NOT BE RAISED.

7. AFTER THE FOUNDATION HAS BEEN PLACED, THE PROJECT RESIDENT ENGINEER SHALL RECORD BOTTOM OF FOOTING ELEVATION "AS BUILT" AND SUBMIT ONE COPY OF THIS SHEET WITH THE RECORD DATA TO:

   KENTUCKY TRANSPORTATION CABINET
   DIRECTOR, DIVISION OF STRUCTURAL DESIGN
   STATION E3-16-01
   200 MERO STREET
   FRANKFORT, KY 40622

DRIVING CRITERIA - PIER 2

H-PILES AT PIER 2 SHALL BE DRIVEN TO PRACTICAL REFUSAL IN ACCORDANCE WITH SECTION 604.03.07(C) CASE 2 OF THE SPECIFICATIONS.

SPREAD FOOTING RECORD ABUTMENT 1

POINT	PLAN FOOTING ELEVATION	AS BUILT FOOTING ELEVATION
Ⓐ	388.00	
Ⓑ	388.00	
Ⓒ	388.00	
Ⓓ	388.00	

THE NOMINAL BEARING RESISTANCE IS 20 KSF.

SPREAD FOOTING RECORD PIER 1

POINT	PLAN FOOTING ELEVATION	AS BUILT FOOTING ELEVATION
Ⓐ	318.38	
Ⓑ	318.38	
Ⓒ	318.38	
Ⓓ	318.38	

THE NOMINAL BEARING RESISTANCE IS 40 KSF.

PILE RECORD – PIER 2

PILE NUMBER	PILE CUT-OFF ELEVATION	PILE LENGTH IN PLACE	POINT OF PILE ELEVATION AS DRIVEN	DESIGN AXIAL LOAD
	FEET	FEET	FEET	TONS
P1	328.62			339.50 (EE)
P2	328.62			339.50 (EE)
P3	328.62			339.50 (EE)
P4	328.62			339.50 (EE)
P5	328.62			339.50 (EE)
P6	328.62			339.50 (EE)
P7	328.62			339.50 (EE)
P8	328.62			339.50 (EE)
P9	328.62			339.50 (EE)
P10	328.62			339.50 (EE)
P11	328.62			339.50 (EE)
P12	328.62			339.50 (EE)
P13	328.62			339.50 (EE)
P14	328.62			339.50 (EE)
P15	328.62			339.50 (EE)
P16T	328.62			339.50 (EE)
P17	328.62			339.50 (EE)
P18	328.62			339.50 (EE)
P19	328.62			339.50 (EE)
P20	328.62			339.50 (EE)

(EE) - EXTREME EVENT LIMIT STATE

DEFINITION OF TERMS

PILE CUT-OFF ELEVATION: ELEVATION OF THE TOP OF THE PILE IN THE FINISHED STRUCTURE.

PILE LENGTH IN PLACE: ACTUAL PILE LENGTH BELOW THE PILE CUT-OFF ELEVATION IN THE FINISHED STRUCTURE.

POINT OF PILE ELEVATION AS DRIVEN: ACTUAL POINT OF PILE ELEVATION IN THE FINISHED STRUCTURE.

DESIGN AXIAL LOAD: FACTORED DESIGN LOAD CARRIED BY EACH PILE AS ESTIMATED FROM STRUCTURAL DESIGN CALCULATIONS.

CALCULATED FIELD BEARING: IN ACCORDANCE WITH TO SECTION 604.03.07 OF THE STANDARD SPECIFICATIONS, IN PLACE BEARING VALUES ARE NOT REQUIRED FOR PILES BEARING ON ROCK WHEN DRIVEN TO PRACTICAL REFUSAL.

FIELD DATA FOR PILES

FOR EACH PILE, THE PROJECT ENGINEER SHALL RECORD THE FOLLOWING ON THE PILE RECORDS: PILE LENGTH IN PLACE, POINT OF PILE ELEVATION AS DRIVEN. SUBMIT THESE RECORDS TO:

   KENTUCKY TRANSPORTATION CABINET
   DIRECTOR, DIVISION OF STRUCTURAL DESIGN
   STATION E3-16-01
   200 MERO STREET
   FRANKFORT, KY. 40622

THESE PILE RECORDS DO NOT REPLACE OTHER PILE RECORDS THE PROJECT ENGINEER IS REQUIRED TO KEEP AND SUBMIT.

PILES AT PIER 2 AND ABUTMENT 2 SHALL BE HP14x89 IN ACCORDANCE WITH STD DWG BPS-011-04,CE.

PILES AT PIERS 5 THROUGH 9 SHALL BE STEEL PIPE PILES, 30" DIA x ¾", SEE STEEL PIPE PILE SHEET.

PILE LAYOUT DIMENSIONS ARE MEASURED AT THE BOTTOM OF THE FOOTING.

ADDITIONAL PILE NOTES

FOR PILE GENERAL NOTES, DRIVING CRITERIA, HAMMER CRITERIA, PILE POINTS, PILE CORE AND EMBANKMENT NOTES AT ABUTMENT 2, SEE FOUNDATION LAYOUT (3),(4).

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: D. TAYLOR	S. WILLIAMS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

FOUNDATION LAYOUT (1)

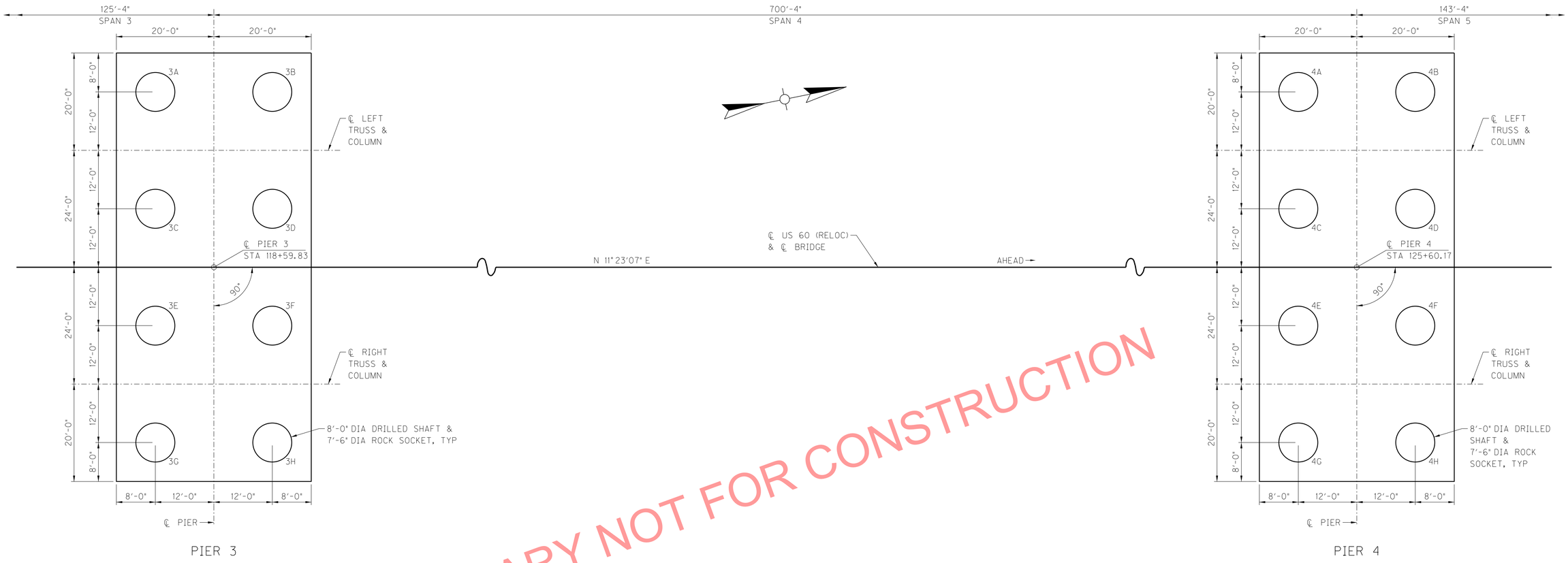
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO. S7

DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\178565011\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\07 FOUNDATION LAYOUT.DGN
USER: dtaylor
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



PRELIMINARY NOT FOR CONSTRUCTION

FOUNDATION PLAN – SPAN 4

PIER 3 AND PIER 4 DRILLED SHAFT RECORD NOTES

1. ELEVATIONS FOR TOP OF ROCK, TOP OF ROCK SOCKET, AND BOTTOM OF SHAFT SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER TO ASSURE THE MINIMUM ROCK SOCKET LENGTH AND TO DETERMINE PAY LENGTHS.

   "TOP OF ROCK" AND "BOTTOM OF SHAFT" PLAN ELEVATIONS ARE BASED ON BORINGS, AND ARE USED FOR PLAN QUANTITIES ONLY. FIELD ELEVATIONS AND PAY QUANTITIES MAY VARY FROM FROM THESE PLAN VALUES.

   "TOP OF ROCK" ELEVATIONS SHOWN IN DRILLED SHAFT RECORD DETERMINED BY AVERAGING TOP OF ROCK ELEVATIONS FROM ALL BORINGS AT EACH PIER.

2. AS-CONSTRUCTED BOTTOM OF SHAFT ELEVATION SHALL BE AT OR BELOW BOTTOM OF SHAFT ELEVATION AS SHOWN ON PLANS.

3. AFTER COMPLETING THE DRILLING OPERATIONS, THE RESIDENT ENGINEER SHALL COMPLETE THE DRILLED SHAFT RECORD. ONE COPY OF THE COMPLETED RECORD SHALL BE FORWARDED TO THE DIRECTOR, DIVISION OF STRUCTURAL DESIGN. THIS DRILLED SHAFT RECORD DOES NOT REPLACE OTHER RECORDS AND DOCUMENTATION REQUIRED. SEE THE SPECIAL NOTE FOR DRILLED SHAFTS FOR ADDITIONAL REQUIRED DRILLED SHAFT RECORDS.

4. SHAFT SIZES AND DEPTHS HAVE BEEN SELECTED ON THE BASIS OF FACTORED DESIGN LOADS, AS SHOWN IN THE TABLE. ADJUSTMENTS IN BOTTOM OF SHAFT ELEVATIONS SHALL BE MADE AS REQUIRED, BASED ON FIELD CONDITIONS. IN NO EVENT, HOWEVER, SHALL THE ROCK SOCKET LENGTH BE REDUCED FROM THE MINIMUM DIMENSION SPECIFIED IN THE TABLES.

5. REFER TO THE SPECIAL NOTE FOR PROJECT SPECIFIC DRILLED SHAFT REQUIREMENTS.

DRILLED SHAFT RECORD

	SHAFT NUMBER	DESIGN LOAD		AS SHOWN ON PLANS						AS CONSTRUCTED				
		AXIAL LOAD (TONS)	HORIZONTAL LOAD (TONS)	TOP OF SHAFT ELEVATION	TOP OF ROCK ELEVATION	TOP OF ROCK SOCKET ELEVATION	BOTTOM OF SHAFT / ROCK SOCKET ELEVATION	LENGTH OF DRILLED SHAFT, 96" COMMON	LENGTH OF DRILLED SHAFT, 90° ROCK	TOP OF ROCK ELEVATION	TOP OF ROCK SOCKET ELEVATION	BOTTOM OF SHAFT / ROCK SOCKET ELEVATION	LENGTH OF DRILLED SHAFT, 96" COMMON	LENGTH OF DRILLED SHAFT, 90° ROCK
PIER 3	3A	2803(EE I)/-323(EE I)	310(EE I)	309.66	276.3	270.7	240.7	39	30					
	3B	2803(EE I)/-323(EE I)	310(EE I)	309.66	276.3	270.7	240.7	39	30					
	3C	2663(EE I)/-196(EE I)	287(EE I)	309.66	276.3	270.7	240.7	39	30					
	3D	2663(EE I)/-196(EE I)	287(EE I)	309.66	276.3	270.7	240.7	39	30					
	3E	2663(EE I)/-196(EE I)	287(EE I)	309.66	276.3	270.7	240.7	39	30					
	3F	2663(EE I)/-196(EE I)	287(EE I)	309.66	276.3	270.7	240.7	39	30					
	3G	2803(EE I)/-323(EE I)	310(EE I)	309.66	276.3	270.7	240.7	39	30					
	3H	2803(EE I)/-323(EE I)	310(EE I)	309.66	276.3	270.7	240.7	39	30					
PIER 4	4A	3136(STR IV)/-273(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					
	4B	3136(STR IV)/-273(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					
	4C	3131(STR IV)/-164(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					
	4D	3131(STR IV)/-164(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					
	4E	3131(STR IV)/-164(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					
	4F	3131(STR IV)/-164(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					
	4G	3136(STR IV)/-273(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					
	4H	3136(STR IV)/-273(EE I)	393(EE I)	288.03	212.6	211.0	192.0	77	19					

NOTE:
FOR DRILLED SHAFT DETAILS SEE DRILLED SHAFT SHEET.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

FOUNDATION LAYOUT (2)

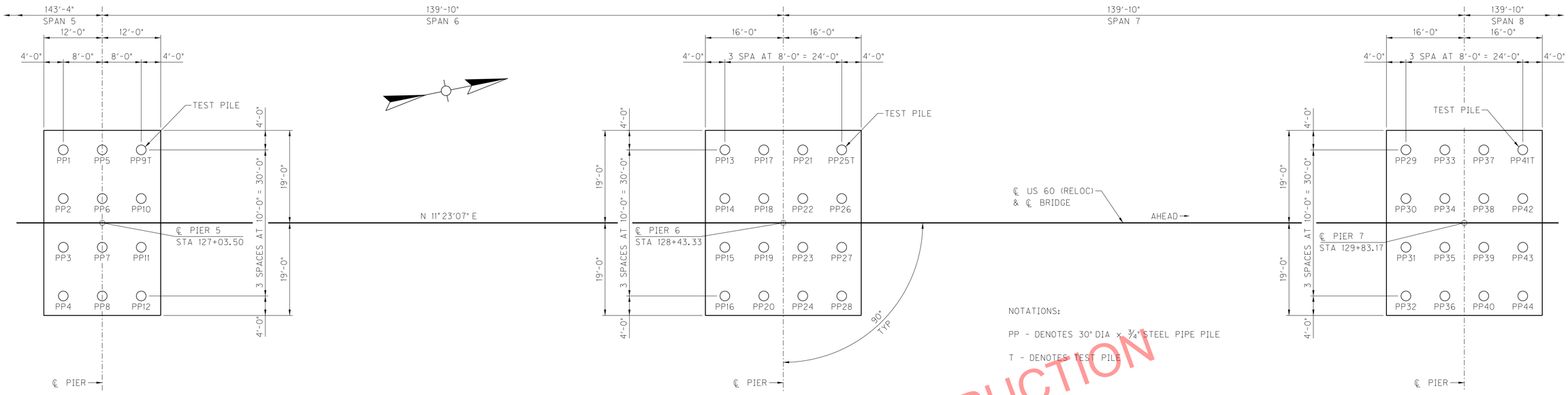
ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S8

DRAWING NO.
27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\08 FOUNDATION LAYOUT.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



NOTATIONS:

PP - DENOTES 30" DIA x 3/4" STEEL PIPE PILE

T - DENOTES TEST PILE

FOUNDATION PLAN – SPANS 6 & 7

PILE RECORD – PIER 5

PILE NUMBER	PILE CUT-OFF ELEVATION	PILE LENGTH IN PLACE	POINT OF PILE ELEVATION AS DRIVEN	DESIGN AXIAL LOAD
	FEET	FEET	FEET	TONS
PP1	314.08			697.00 (EE)
PP2	314.08			697.00 (EE)
PP3	314.08			697.00 (EE)
PP4	314.08			697.00 (EE)
PP5	314.08			697.00 (EE)
PP6	314.08			697.00 (EE)
PP7	314.08			697.00 (EE)
PP8	314.08			697.00 (EE)
PP9T	314.08			697.00 (EE)
PP10	314.08			697.00 (EE)
PP11	314.08			697.00 (EE)
PP12	314.08			697.00 (EE)

(EE) - EXTREME EVENT LIMIT STATE

PILE RECORD – PIER 6

PILE NUMBER	PILE CUT-OFF ELEVATION	PILE LENGTH IN PLACE	POINT OF PILE ELEVATION AS DRIVEN	DESIGN AXIAL LOAD
	FEET	FEET	FEET	TONS
PP13	317.18			806.00 (EE)
PP14	317.18			806.00 (EE)
PP15	317.18			806.00 (EE)
PP16	317.18			806.00 (EE)
PP17	317.18			806.00 (EE)
PP18	317.18			806.00 (EE)
PP19	317.18			806.00 (EE)
PP20	317.18			806.00 (EE)
PP21	317.18			806.00 (EE)
PP22	317.18			806.00 (EE)
PP23	317.18			806.00 (EE)
PP24	317.18			806.00 (EE)
PP25T	317.18			806.00 (EE)
PP26	317.18			806.00 (EE)
PP27	317.18			806.00 (EE)
PP28	317.18			806.00 (EE)

PILE RECORD – PIER 7

PILE NUMBER	PILE CUT-OFF ELEVATION	PILE LENGTH IN PLACE	POINT OF PILE ELEVATION AS DRIVEN	DESIGN AXIAL LOAD
	FEET	FEET	FEET	TONS
PP29	326.28			883.00 (EE)
PP30	326.28			883.00 (EE)
PP31	326.28			883.00 (EE)
PP32	326.28			883.00 (EE)
PP33	326.28			883.00 (EE)
PP34	326.28			883.00 (EE)
PP35	326.28			883.00 (EE)
PP36	326.28			883.00 (EE)
PP37	326.28			883.00 (EE)
PP38	326.28			883.00 (EE)
PP39	326.28			883.00 (EE)
PP40	326.28			883.00 (EE)
PP41T	326.28			883.00 (EE)
PP42	326.28			883.00 (EE)
PP43	326.28			883.00 (EE)
PP44	326.28			883.00 (EE)

PRELIMINARY NOT FOR CONSTRUCTION

PILE GENERAL NOTES

PROPOSED PILES SHALL BE DRIVEN AT THE LOCATIONS INDICATED IN ACCORDANCE WITH SECTION 604 OF THE STANDARD SPECIFICATIONS.

TEST PILES ARE INDICATOR PILES AND SHALL BE DRIVEN WHERE DESIGNATED ON THE PLANS TO DETERMINE THE LENGTH OF PILE REQUIRED. NO DYNAMIC TESTING IS REQUIRED.

ALL TEST PILES SHALL BE ACCURATELY LOCATED SO THAT THEY MAY BE USED IN THE FINISHED STRUCTURE.

SELECTION OF THE PRODUCTION PILES TO BE USED AS TEST PILES MAY BE MODIFIED WITH THE APPROVAL OF THE ENGINEER. NO REDUCTION IN THE TOTAL NUMBER OF TEST PILES MAY BE MADE AND EACH SUBSTRUCTURE UNIT SHALL INCLUDE AT LEAST ONE TEST PILE.

PILE POINTS

ALL PILES REQUIRE PILE POINTS OR SHOES. THE PILE POINTS SHALL BE THE TYPE FOR DRIVING THROUGH BOULDERS AND KEYING INTO A SLOPING ROCK SURFACE. PILE POINTS SHALL BE PLACED IN ACCORDANCE WITH SUBSECTION 604.03.04(C) OF THE STANDARD SPECIFICATIONS.

HAMMER CRITERIA

PIERS 5,6,7,8 & 9: REFER TO THE SPECIAL NOTE FOR DYNAMIC PILE TESTING.

PIER 2: A SINGLE-ACTING DIESEL HAMMER WITH A RATED ENERGY BETWEEN 13.5 ft-kip and 22 ft-kip WILL BE REQUIRED TO DRIVE THE H-PILES TO PRACTICAL REFUSAL WITHOUT ENCOUNTERING EXCESSIVE BLOW COUNTS OR DAMAGE TO THE PILES.

ABUTMENT 2: A SINGLE-ACTING DIESEL HAMMER WITH A RATED ENERGY BETWEEN 75.4 ft-kip AND 265 ft-kip WILL BE REQUIRED TO DRIVE THE H-PILES TO PRACTICAL REFUSAL WITHOUT ENCOUNTERING EXCESSIVE BLOW COUNTS OR DAMAGE TO THE PILES.

THE USE OF HAMMERS OTHER THAN SINGLE-ACTING DIESEL MAY REQUIRE DIFFERENT RATED ENERGIES.

THE CONTRACTOR SHALL SUBMIT THE PROPOSED PILE DRIVING SYSTEM TO THE DEPARTMENT FOR APPROVAL PRIOR TO THE INSTALLATION OF THE FIRST PILE. APPROVAL OF THE PILE DRIVING SYSTEM BY THE ENGINEER WILL BE SUBJECT TO SATISFACTORY FIELD PERFORMANCE OF THE PILE DRIVING PROCEDURES.

DRIVING CRITERIA - ABUT 2

POINT BEARING PILES SHALL BE DRIVEN TO PRACTICAL REFUSAL IN ACCORDANCE WITH SECTION 604.03.07(C) CASE 1 OF THE SPECIFICATIONS.

DRIVING CRITERIA - PIERS 5,6,7,8, & 9

REFER TO THE SPECIAL NOTE FOR DYNAMIC PILE TESTING.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: D. TAYLOR	S. WILLIAMS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

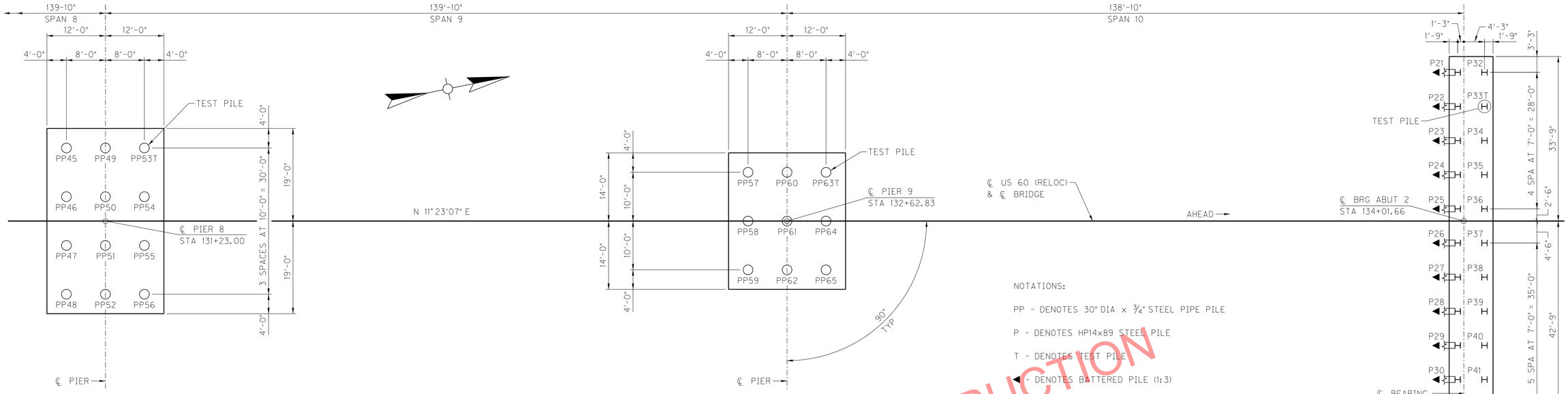
COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

FOUNDATION LAYOUT (3)

ITEM NUMBER	PREPARED BY	SHEET NO.	DRAWING NO.
1–1142.00	Stantec	S9	27458

FILE NAME: V:\1785\ACTIVE\178565011\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\09 FOUNDATION LAYOUT.DGN
USER: dataylor
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



NOTATIONS:

PP - DENOTES 30" DIA × ¾" STEEL PIPE PILE

P - DENOTES HP14×89 STEEL PILE

T - DENOTES TEST PILE

◀ - DENOTES BATTERED PILE (1:3)

FOUNDATION PLAN – SPANS 9 & 10

PRELIMINARY NOT FOR CONSTRUCTION

PILE RECORD – PIER 8

PILE NUMBER	PILE CUT-OFF ELEVATION	PILE LENGTH IN PLACE	POINT OF PILE ELEVATION AS DRIVEN	DESIGN AXIAL LOAD
	FEET	FEET	FEET	TONS
PP45	327.04			811.50 (EE)
PP46	327.04			811.50 (EE)
PP47	327.04			811.50 (EE)
PP48	327.04			811.50 (EE)
PP49	327.04			811.50 (EE)
PP50	327.04			811.50 (EE)
PP51	327.04			811.50 (EE)
PP52	327.04			811.50 (EE)
PP53T	327.04			811.50 (EE)
PP54	327.04			811.50 (EE)
PP55	327.04			811.50 (EE)
PP56	327.04			811.50 (EE)

PILE RECORD – PIER 9

PILE NUMBER	PILE CUT-OFF ELEVATION	PILE LENGTH IN PLACE	POINT OF PILE ELEVATION AS DRIVEN	DESIGN AXIAL LOAD
	FEET	FEET	FEET	TONS
PP57	328.20			771.50 (EE)
PP58	328.20			771.50 (EE)
PP59	328.20			771.50 (EE)
PP60	328.20			771.50 (EE)
PP61	328.20			771.50 (EE)
PP62	328.20			771.50 (EE)
PP63T	328.20			771.50 (EE)
PP64	328.20			771.50 (EE)
PP65	328.20			771.50 (EE)

PILE RECORD – ABUTMENT 2

PILE NUMBER	PILE CUT-OFF ELEVATION	PILE LENGTH IN PLACE	POINT OF PILE ELEVATION AS DRIVEN	DESIGN AXIAL LOAD
	FEET	FEET	FEET	TONS
P21	363.00			231.70 (STR)
P22	363.00			231.70 (STR)
P23	363.00			231.70 (STR)
P24	363.00			231.70 (STR)
P25	363.00			231.70 (STR)
P26	363.00			231.70 (STR)
P27	363.00			231.70 (STR)
P28	363.00			231.70 (STR)
P29	363.00			231.70 (STR)
P30	363.00			231.70 (STR)
P31	363.00			231.70 (STR)
P32	363.00			231.70 (STR)
P33T	363.00			231.70 (STR)
P34	363.00			231.70 (STR)
P35	363.00			231.70 (STR)
P36	363.00			231.70 (STR)
P37	363.00			231.70 (STR)
P38	363.00			231.70 (STR)
P39	363.00			231.70 (STR)
P40	363.00			231.70 (STR)
P41	363.00			231.70 (STR)
P42	363.00			231.70 (STR)

(EE) - EXTREME EVENT LIMIT STATE
(STR) - STRENGTH LIMIT STATE

PILE CORE

THE BRIDGE APPROACH EMBANKMENT SECTION AT ABUTMENT 2 SHALL INCLUDE A STRUCTURAL GRANULAR FILL PILE CORE, CONFORMING TO SECTION 805.11 OF THE SPECIFICATIONS, TO FACILITATE INSTALLATION OF THE PILES. THE CORE MATERIAL SHALL BE FREE OF ROCK FRAGMENTS LARGER THAN 4 INCHES IN SIZE AND ANY OTHER OBSTRUCTION THAT WOULD INTERFERE WITH PILE INSTALLATION. CONSTRUCTION OF THE PILE CORE SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION NO. 69 AND SECTION 206 OF THE STANDARD SPECIFICATIONS. THE COST OF PILE CORE PLACEMENT SHALL BE INCLUDED IN THE UNIT BID PRICE FOR EMBANKMENT IN-PLACE, SEE ROADWAY PLANS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: D. TAYLOR	S. WILLIAMS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

FOUNDATION LAYOUT (4)

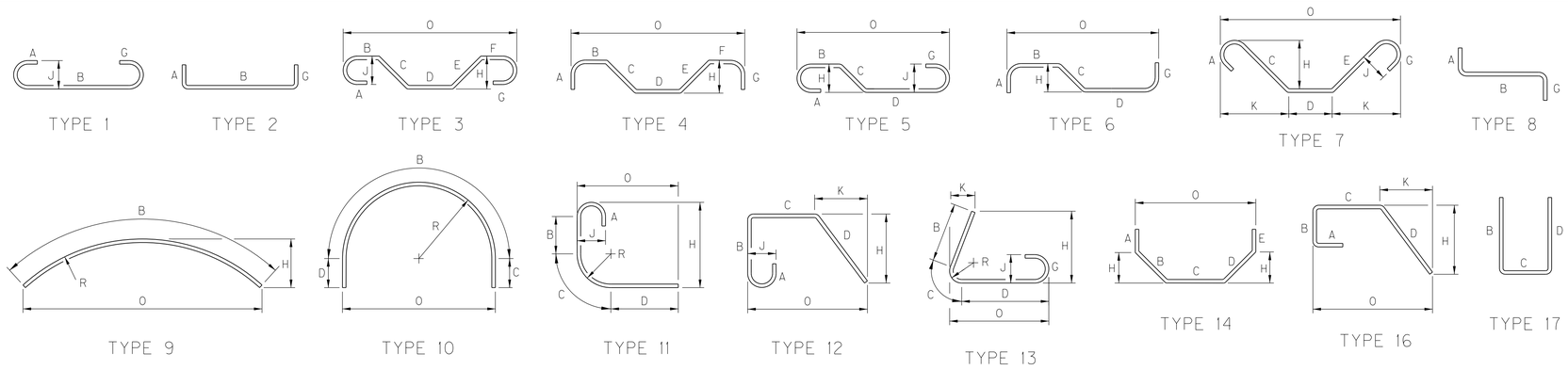
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S10

DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\17856501\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\10 FOUNDATION LAYOUT.DGN
USER: dataylor
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



PRELIMINARY NOT FOR CONSTRUCTION

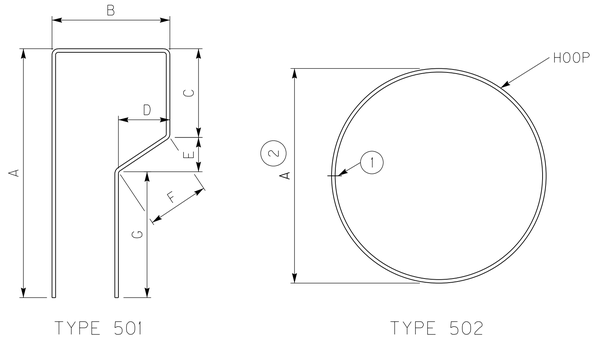
NOTES:

TYPICAL BAR BEND SHAPES ARE BASED ON THE CONCRETE REINFORCING STEEL INSTITUTE'S "MANUAL OF STANDARD PRACTICE, 28TH EDITION."

ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180° AND 135° HOOKS.

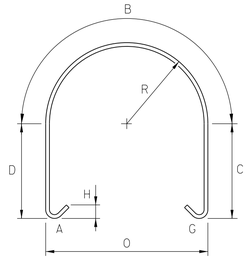
ALL REINFORCING BARS DESIGNATED BY BAR TYPE "T" OR "S" SHALL BE CONSIDERED STIRRUPS OR TIES FOR SIZING BEND DIMENSIONS.

CRSI TYPICAL BAR BENDS



NOTES:

1. ULTIMATE BUTT-WELD SPLICE - USE COMPLETE JOINT PENETRATION BUT WELD CONFORMING TO THE REQUIREMENTS OF AWS D1.4/D1/4M STRUCTURAL WELDING CODE - REINFORCING STEEL (LATEST EDITION).
2. THE FABRICATION TOLERANCE FOR WELD HOOP DIAMETER IS ± ½".



REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: A. FARMER	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

CRSI BAR BENDS

PREPARED BY: Stantec

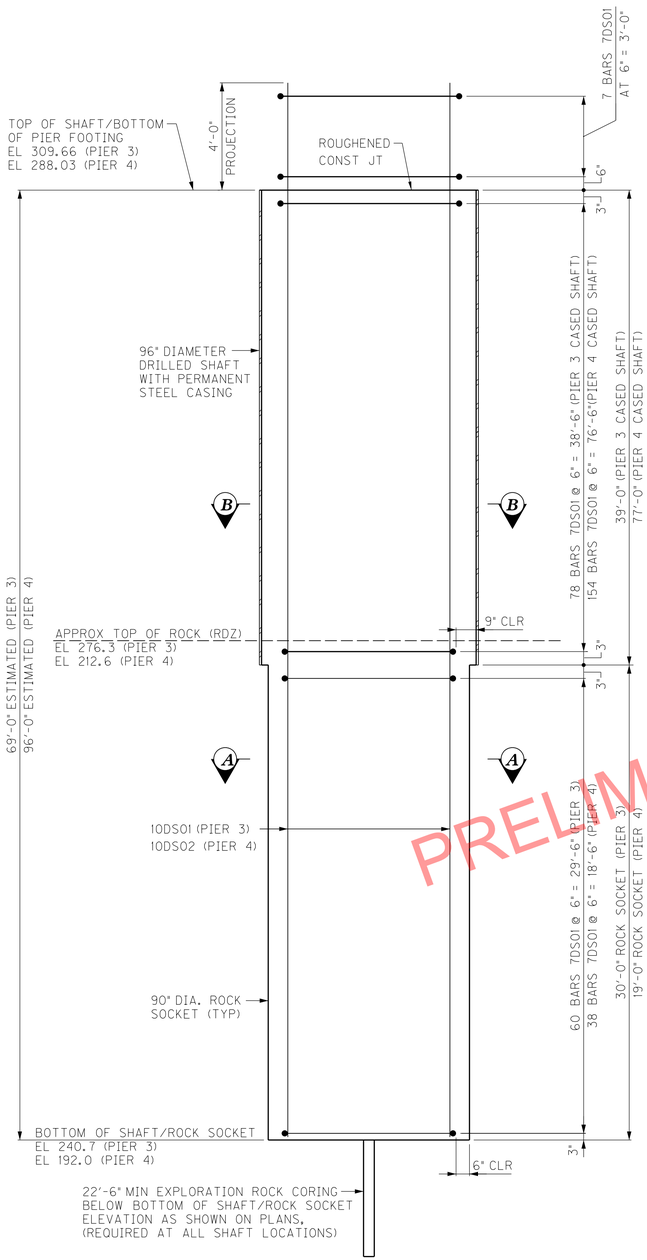
SHEET NO.: S11

DRAWING NO.: 27458

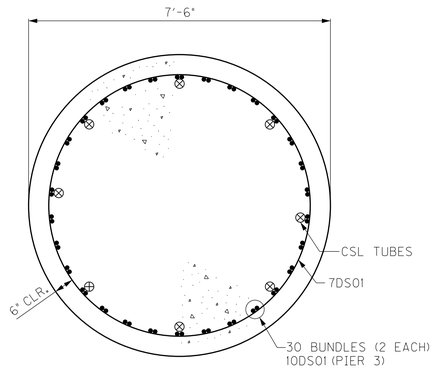
ITEM NUMBER: 1–1142.00

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dashamdashamdashamd

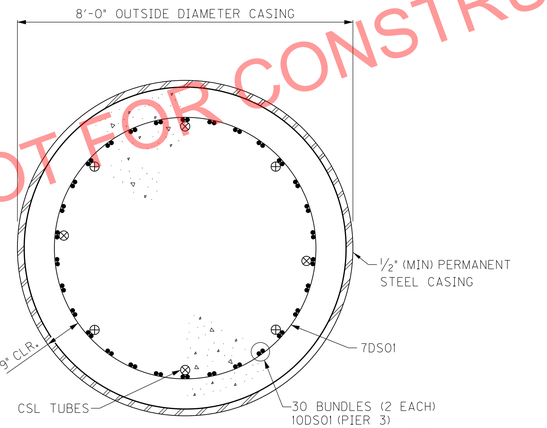
FILE NAME: V:\1785\ACTIVE\178565011\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\12 DRILLED SHAFT.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



DRILLED SHAFT DETAIL



SECTION A–A



SECTION B–B

PRELIMINARY NOT FOR CONSTRUCTION

DRILLED SHAFT FOUNDATIONS

THE CONTRACTOR SHALL USE A PERMANENT CASING FROM THE TOP OF SHAFT TO THE TOP OF UNWEATHERED BEDROCK. USE AN UNCASED ROCK SOCKET WHICH IS 6 INCHES SMALLER THAN THE INSIDE DIAMETER OF THE PERMANENT CASING. PERMANENT CASING IS INCIDENTAL TO THE UNIT BID PRICE FOR DRILLED SHAFT 96 INCH (COMMON).

DRILLED SHAFTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIAL NOTE FOR DRILLED SHAFTS. INCLUDE ALL COSTS (LABOR, EQUIPMENT, AND MATERIALS INCLUDING TRANSVERSE AND LONGITUDINAL REINFORCEMENT, REINFORCEMENT SPLICES, MECHANICAL COUPLERS, CONCRETE, AND TEMPORARY OR PERMANENT CASING) ASSOCIATED WITH DRILLED SHAFTS IN THE UNIT PRICE BID FOR DRILLED SHAFTS, COMMON OR SOLID ROCK, AS APPLICABLE.

THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING SUBSURFACE EXPLORATION DRILLING DURING CONSTRUCTION TO FINALIZE THE DRILLED SHAFT TIP ELEVATIONS. ADDITIONAL DRILLING WILL BE REQUIRED AT EACH DRILLED SHAFT LOCATION IN ACCORDANCE WITH THE SPECIAL NOTE FOR DRILLED SHAFTS, CURRENT EDITION.

NON-DESTRUCTIVE TESTING WILL BE REQUIRED AT EACH DRILLED SHAFT LOCATION IN ACCORDANCE WITH THE SPECIAL NOTE FOR NON-DESTRUCTIVE TESTING IN DRILLED SHAFTS.

HOOP SPLICE IN SUBSEQUENT HOOPS MUST BE ALTERNATING 180° (TYP).

VERTICAL BARS MUST BE SUPPORTED AT LEAST EVERY 4'-0". VERTICAL BARS SHALL NOT BE SPLICED WITHIN THE TOP 25' OF DRILLED SHAFT. NO MORE THAN 50% OF THE VERTICAL REINFORCEMENT SHALL BE SPLICED WITHIN 1 SPLICE LENGTH OF ANY LOCATION OR WITHIN 3' OF THE SPLICE LOCATION IF MECHANICAL COUPLERS ARE USED. MECHANICAL COUPLERS SHALL COMPLY WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION, ARTICLE 5.10.8.4.2b. WHEN A DRILLED SHAFT IS LENGTHENED IN THE FIELD, 100% OF THE VERTICAL REINFORCEMENT MAY BE SPLICED AT THE BOTTOM OF THE REINFORCEMENT CAGE.

FOR BILL OF REINFORCEMENT, SEE THIS SHEET. THIS IS FOR INFORMATION ONLY. THE COST OF STEEL REINFORCEMENT IN EACH SHAFT IS INCIDENTAL TO THE UNIT BID PRICE PER LINEAR FOOT FOR EACH SHAFT.

DRILLED SHAFT CONCRETE IS f'c = 4,000 PSI.
STEEL REINFORCEMENT FY = 75,000 PSI.

FOR DRILLED SHAFT RECORD, SEE FOUNDATION LAYOUT (2).

BAR MARK DESCRIPTION

10P01e
- 10 — BAR SIZE
- P01 — BAR MARK
- e — DENOTES EPOXY COATED
- 01 — BAR MARK NUMBER

DRILLED SHAFTS – BILL OF REINFORCEMENT – (FOR INFORMATION ONLY)

MARK	TYPE	NUMBER		LENGTH		LOCATION	A		B		C		D		E		F		G		H		J		K		O		R	
		PIER 3	PIER 4	FT	IN		FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN
7DS01	T3	145	199	21	5	ROCK SOCKET/SHAFT					20	5							1	0							6	6		
10DS01	STR	60		73	0	ROCK SOCKET/SHAFT																								
10DS02	STR		60	100	0	ROCK SOCKET/SHAFT																								

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

DRILLED SHAFT

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S12

DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dataylor
DATE PLOTTED: 1/24/2020 7:27:05 PM
FILE NAME: V:\1785\ACTIVE\178565001\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\13 STEEL PIPE PILE.DGN

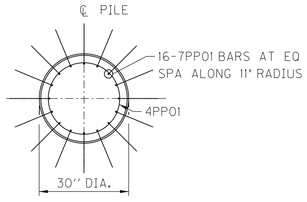
PIPE PILES – BILL OF REINFORCEMENT – (FOR INFORMATION ONLY)

MARK	TYPE	NUMBER	LENGTH FT	LENGTH IN	LOCATION	A FT	A IN	B FT	B IN	C FT	C IN	D FT	D IN	E FT	E IN	F FT	F IN	G FT	G IN	H FT	H IN	J FT	J IN	K FT	K IN	O FT	O IN	R FT	R IN
4PP01	T3	715	7	7	PIPE PILE					6	4							1	3							2	0		
7PP01	2	528	12	5	PIPE PILE PIER 5,8, & 9	1	2	11	3									-	-										
8PP01	2	512	12	9	PIPE PILE PIER 6 & 7	1	4	11	5									-	-										

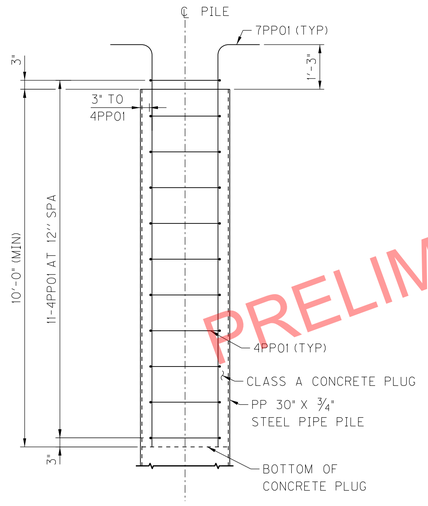
BAR MARK DESCRIPTION

4PP01

BAR SIZE — BAR MARK — BAR MARK NUMBER



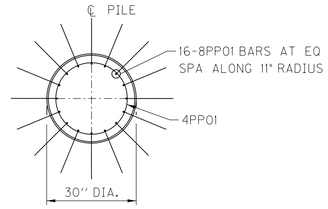
PLAN



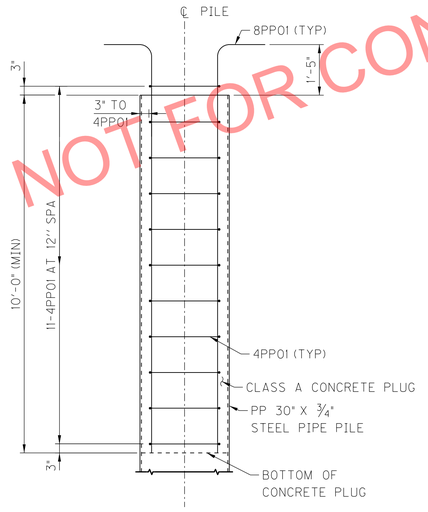
SECTION

PIPE PILE CONNECTION DETAIL – PIERS 5, 8, & 9

DETAIL SHALL APPLY AT THE FOLLOWING PILES:
PIER 5: PP1-PP12 (12 PILES)
PIER 8: PP45-PP56 (12 PILES)
PIER 9: PP57-PP65 (9 PILES)



PLAN

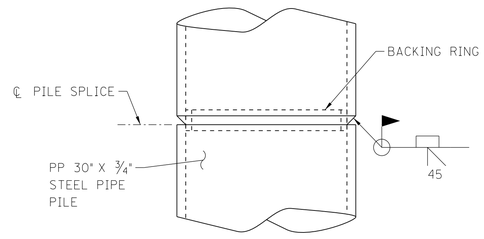


SECTION

PIPE PILE CONNECTION DETAIL – PIERS 6 & 7

DETAIL SHALL APPLY AT THE FOLLOWING PILES:
PIER 6: PP13-PP28 (16 PILES)
PIER 7: PP29-PP44 (16 PILES)

PRELIMINARY NOT FOR CONSTRUCTION



PIPE PILE SPLICE DETAIL

NOTES:

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 604 OF THE STANDARD SPECIFICATIONS.

STEEL PIPE PILES SHALL CONFORM TO ASTM A252, GRADE 3, MODIFIED (GRADE 50).

OPEN ENDED PIPE PILES SHALL BE OUTFITTED WITH PILE SHOES FABRICATED FROM CAST STEEL CONFORMING TO ASTM A148/A148M (GRADE 90-60).

REMOVE AND REPLACE OR REPAIR, TO THE SATISFACTION OF THE ENGINEER, PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

IN THE CASE THAT THE LEVEL OF SOIL INSIDE THE STEEL PIPE PILE IS BELOW THE BOTTOM ELEVATION OF THE 10 FOOT REINFORCED CONCRETE PLUG, FILL THE PILE WITH CLASS A CONCRETE TO AN ELEVATION 10 FOOT BELOW THE PILE CUT-OFF ELEVATION PRIOR TO INSTALLING THE REINFORCED PLUG. COST OF ANY ADDITIONAL CLASS A CONCRETE SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP30×¾ STEEL PILES.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE PIER FOOTINGS UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, SOIL EXCAVATION, AND DEWATERING FOR THE CONCRETE PLUG SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP30×¾ STEEL PILES.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WILLIAMS	K. WIGHT
DETAILED BY: D. TAYLOR	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

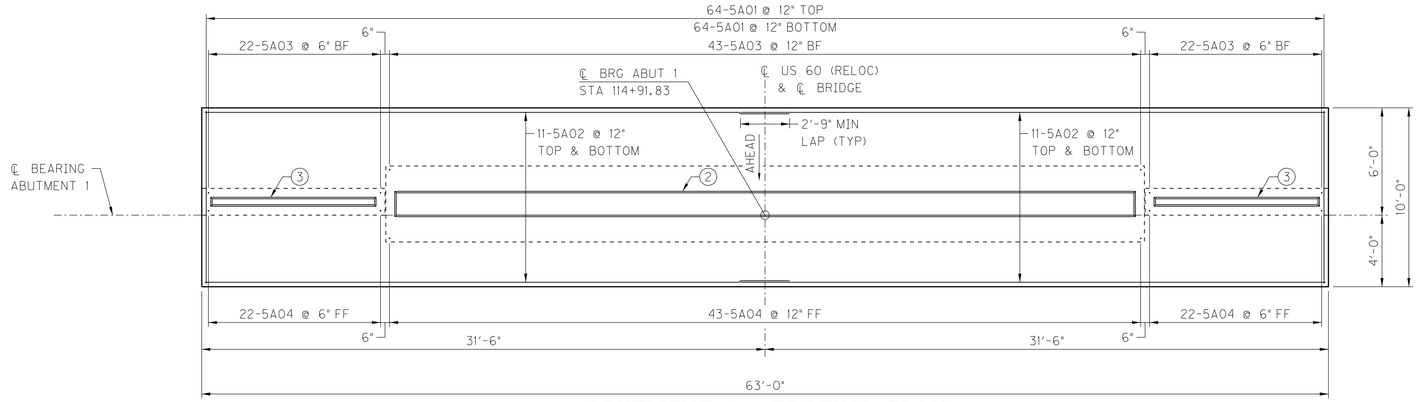
STEEL PIPE PILE

ITEM NUMBER: 1–1142.00

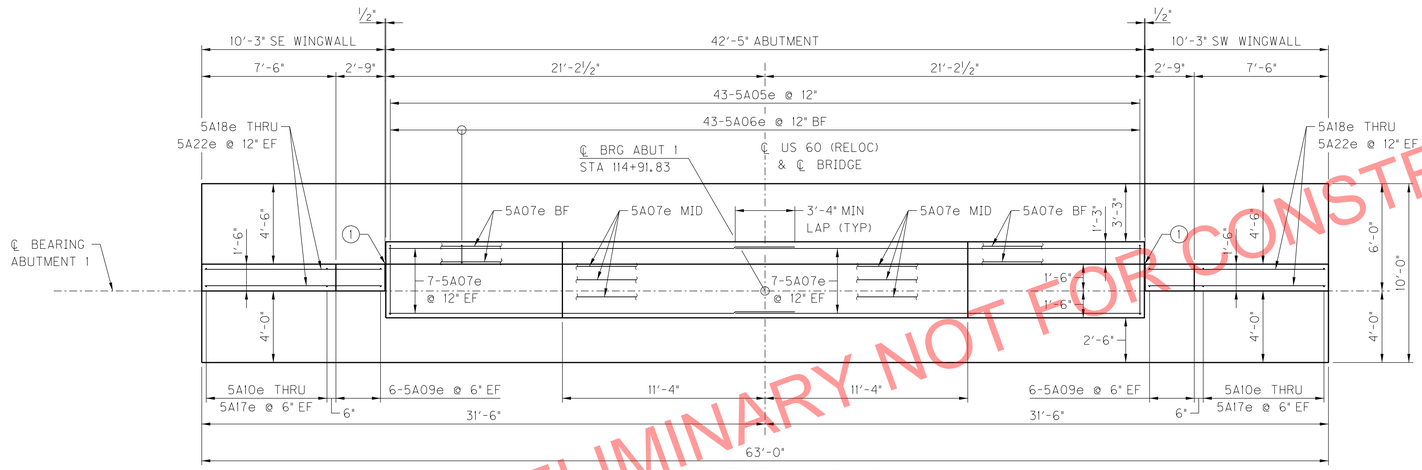
PREPARED BY: Stantec

SHEET NO.: S13

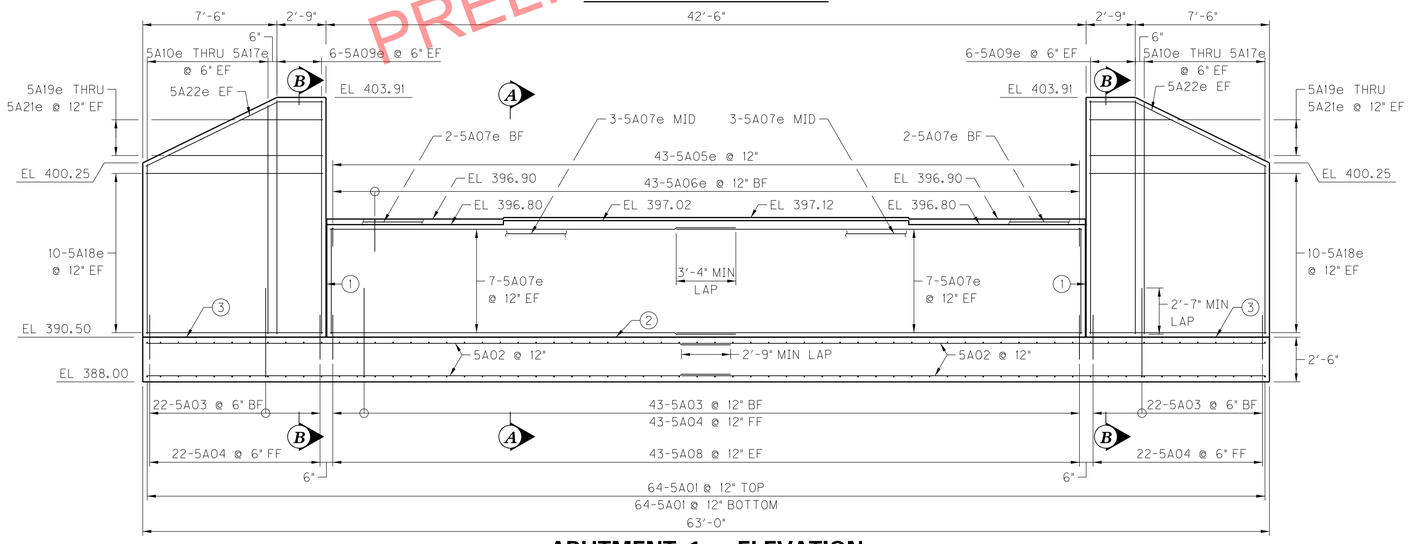
DRAWING NO.: 27458



ABUTMENT 1 – FOOTING PLAN



ABUTMENT 1 – PLAN



ABUTMENT 1 – ELEVATION

PRELIMINARY NOT FOR CONSTRUCTION

NOTATIONS

1. 1/2" EXPANSION JOINT MATERIAL
2. 2"x1'-5"x41'-5" DEPRESSED KEY CONSTRUCTION JOINT
3. 2"x6"x9'-3" DEPRESSED KEY CONSTRUCTION JOINT

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	T. KNIGHT
DETAILED BY: J. BURKE	S. WINES

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE
US 60

CROSSING
CUMBERLAND RIVER

ABUTMENT 1 (1)

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

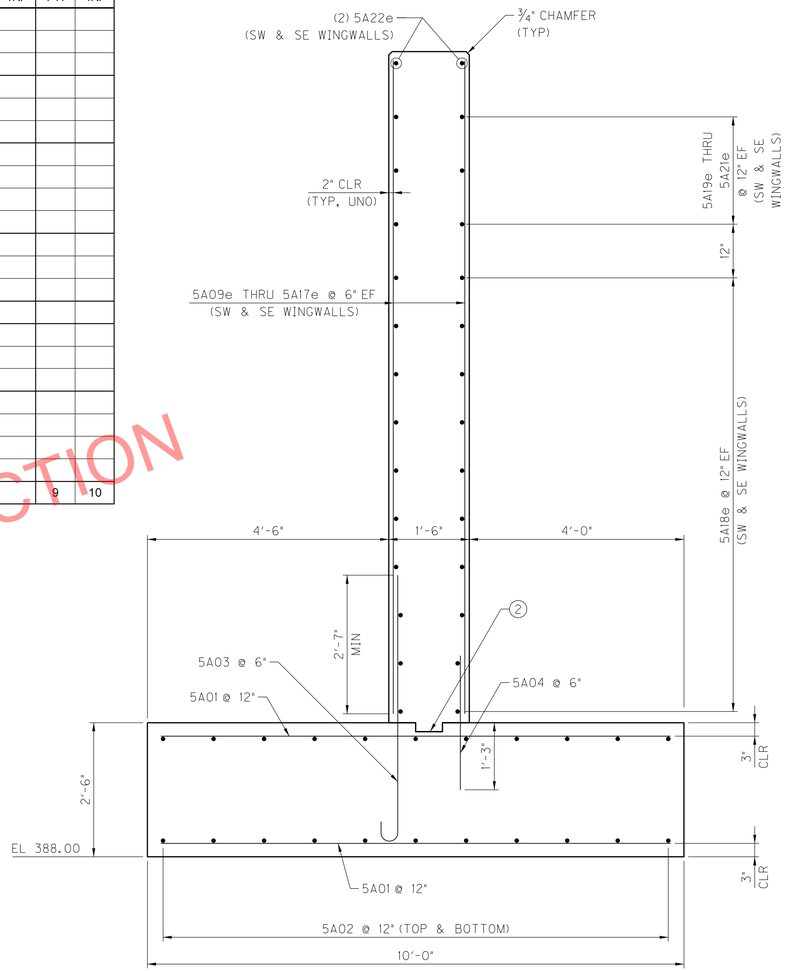
SHEET NO.
S14

DRAWING NO.
27458

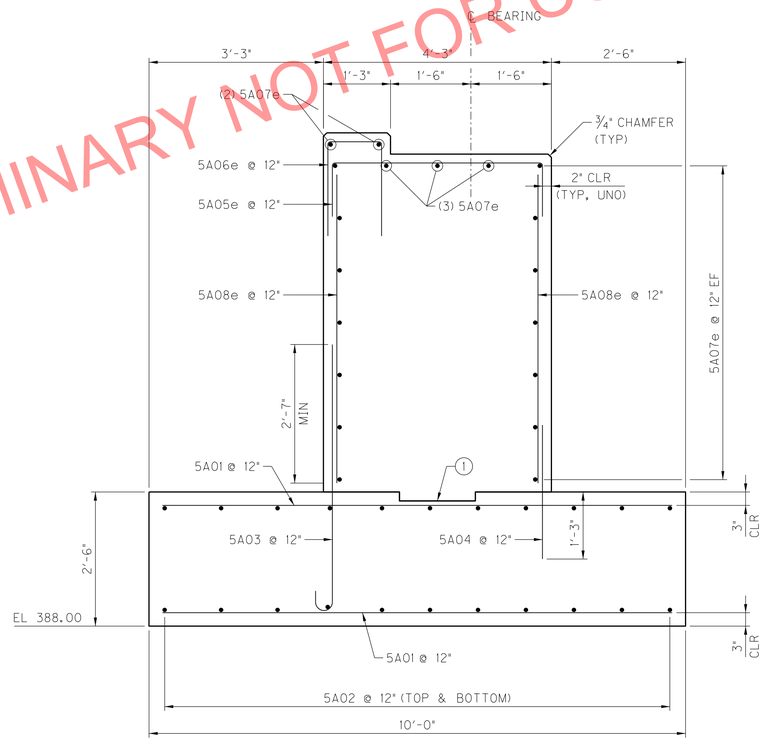
MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 13 14 ABUTMENT 1.DGN

ABUTMENT 1 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.
5A01	STR	128	9	6	FOOTING, TRANSVERSE TOP & BTM																												
5A02	STR	44	32	8	FOOTING, LONGITUDINAL TOP & BTM																												
5A03	1	87	5	10	FOOTING, VERTICAL BF	0	7	5	3													0	5										
5A04	STR	87	2	6	FOOTING, VERTICAL FF																												
5A05e	17	43	6	11	ABUTMENT, U-BAR TOP			1	6	3	11	1	6																				
5A06e	17	43	4	5	ABUTMENT, U-BAR TOP BF			1	9	0	11	1	9																				
5A07e	STR	38	22	9	ABUTMENT, HORIZONTAL																												
5A08e	STR	86	6	0	ABUTMENT, VERTICAL EF																												
5A09e	STR	24	13	2	SW & SE WINGWALLS, VERTICAL EF																												
5A10e	STR	8	12	8	SW & SE WINGWALLS, VERTICAL EF																												
5A11e	STR	8	12	2	SW & SE WINGWALLS, VERTICAL EF																												
5A12e	STR	8	11	8	SW & SE WINGWALLS, VERTICAL EF																												
5A13e	STR	8	11	2	SW & SE WINGWALLS, VERTICAL EF																												
5A14e	STR	8	10	8	SW & SE WINGWALLS, VERTICAL EF																												
5A15e	STR	8	10	2	SW & SE WINGWALLS, VERTICAL EF																												
5A16e	STR	8	9	8	SW & SE WINGWALLS, VERTICAL EF																												
5A17e	STR	4	9	6	SW & SE WINGWALLS, VERTICAL EF																												
5A18e	STR	40	9	11	SW & SE WINGWALLS, HORIZONTAL EF																												
5A19e	STR	4	8	8	SW & SE WINGWALLS, HORIZONTAL EF																												
5A20e	STR	4	6	7	SW & SE WINGWALLS, HORIZONTAL EF																												
5A21e	STR	4	4	7	SW & SE WINGWALLS, HORIZONTAL EF																												
5A22e	16	4	10	8	SW & SE WINGWALLS, HORIZ, TOP EF					2	6	8	2							3	7			7	4							9	10



SECTION B–B



SECTION A–A

PRELIMINARY NOT FOR CONSTRUCTION

NOTE

FOR EXCAVATION AND STRUCTURE GRANULAR BACKFILL SEE ABUTMENT EARTHWORK DETAILS.

NOTATIONS

1. 2"x1'-5" DEPRESSED KEY CONSTRUCTION JOINT
2. 2"x6" DEPRESSED KEY CONSTRUCTION JOINT

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	T. KNIGHT
DETAILED BY: J. BURKE	S. WINES

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

ABUTMENT 1 (2)

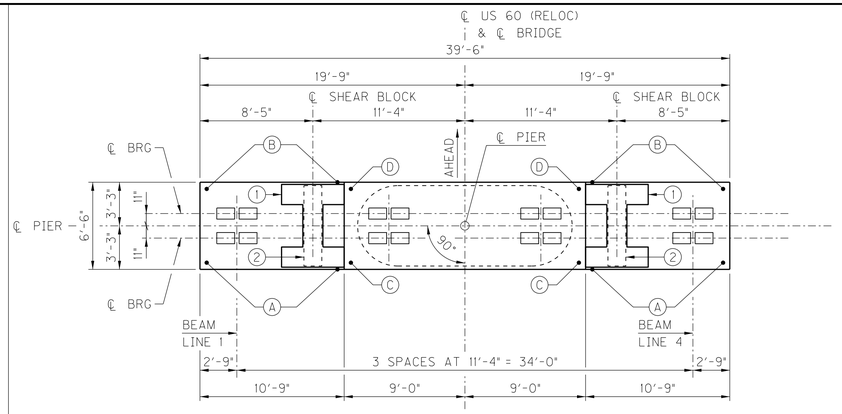
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO. S15

DRAWING NO. 27458

MicroStation v8.11.9.832 | E-SHEET NAME: | USER: jtburke DATE PLOTTED: January 24, 2020 | FILE NAME: 13 14 ABUTMENT 1.DGN



PLAN OF CAP AT PIER 1–2 & PIER 5–9

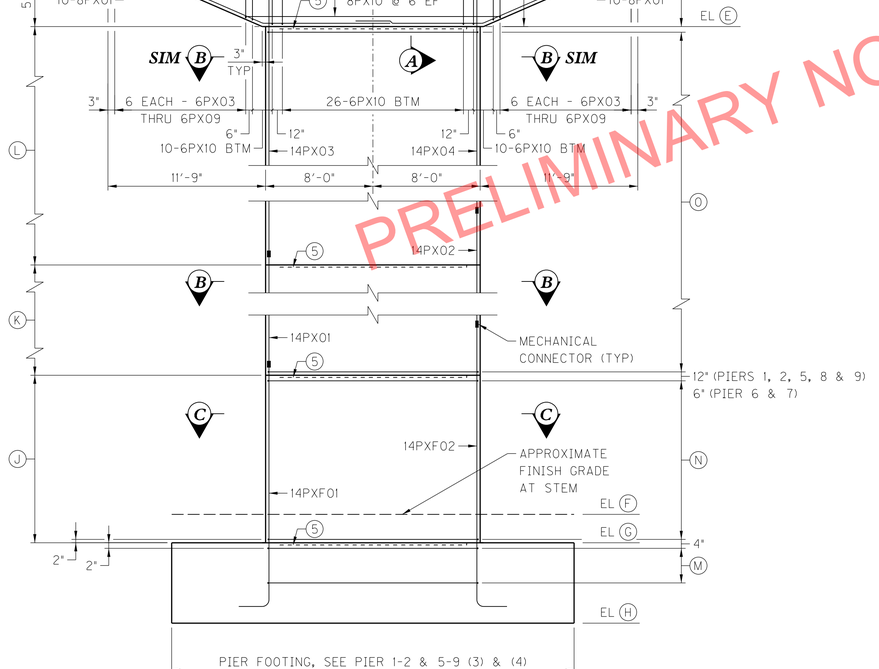
BAR MARK DESCRIPTION

14 PX 01
- 14 — BAR SIZE
- PX — PIER X (FOR X VALUE, SEE TABLE BELOW)
- 01 — BAR MARK NUMBER

PIER	X VALUE
PIER 1	A
PIER 2	B
PIER 5	E
PIER 6	F
PIER 7	G
PIER 8	H
PIER 9	J

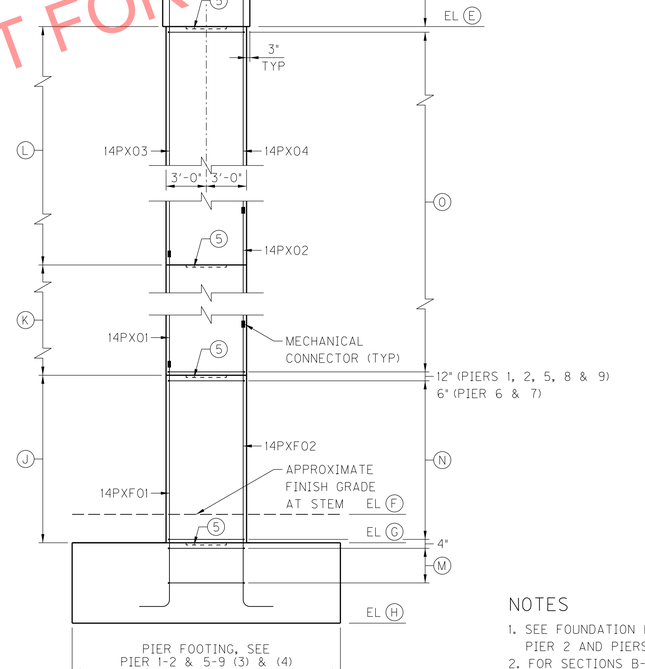
NOTE	PIER 1	PIER 2	PIER 5	PIER 6	PIER 7	PIER 8	PIER 9
	ELEVATIONS (FEET)						
Ⓐ	396.38	395.95	390.92	388.26	384.25	378.80	372.96
Ⓑ					384.03	378.54	372.70
Ⓒ	396.60	396.18	391.14	388.49	384.48	379.03	373.19
Ⓓ					384.26	378.77	372.93
Ⓔ	385.38	384.95	379.92	377.26	373.03	367.54	361.70
Ⓕ	345.00	335.00	324.00	328.00	337.00	337.00	337.00
Ⓖ	324.38	332.62	321.58	325.68	334.78	334.54	334.70
Ⓗ	318.38	326.62	313.08	316.18	325.28	326.04	327.20
	COLUMN POUR HEIGHTS						
Ⓙ	13'-0"	11'-4"	12'-4"	11'-1"	8'-9"	8'-0"	8'-0"
Ⓚ	24'-0"	20'-0"	23'-0"	20'-0"	14'-6"	25'-0"	19'-0"
Ⓛ	24'-0"	21'-0"	23'-0"	20'-0"	15'-0"	NOT USED	NOT USED
	TRANSVERSE REINFORCEMENT LAYOUT						
Ⓜ	10 LINES SET 'C' AT 4" SPACING	10 LINES SET 'C' AT 4" SPACING	10 LINES SET 'C' AT 4" SPACING	10 LINES SET 'C' AT 4" SPACING	10 LINES SET 'C' AT 4" SPACING	10 LINES SET 'C' AT 4" SPACING	10 LINES SET 'C' AT 4" SPACING
Ⓝ	38 LINES SET 'C' AT 4" SPACING	33 LINES SET 'C' AT 4" SPACING	36 LINES SET 'C' AT 4" SPACING	33 LINES SET 'C' AT 4" SPACING	26 LINES SET 'C' AT 4" SPACING	23 LINES SET 'C' AT 4" SPACING	20 LINES SET 'C' AT 4" SPACING
Ⓞ	48 LINES SET 'B' AT 12" SPACING	41 LINES SET 'B' AT 12" SPACING	46 LINES SET 'B' AT 12" SPACING	81 LINES SET 'B' AT 6" SPACING	59 LINES SET 'B' AT 6" SPACING	25 LINES SET 'B' AT 12" SPACING	20 LINES SET 'B' AT 12" SPACING

SET 'C' (SEE SECTION C-C): 2-6PX01, 2-6PX02, 2-5PX01, 1-5PX02
SET 'B' (SEE SECTION B-B): 2-6PX01, 2-6PX02, 2-5PX01, 4-5PX02

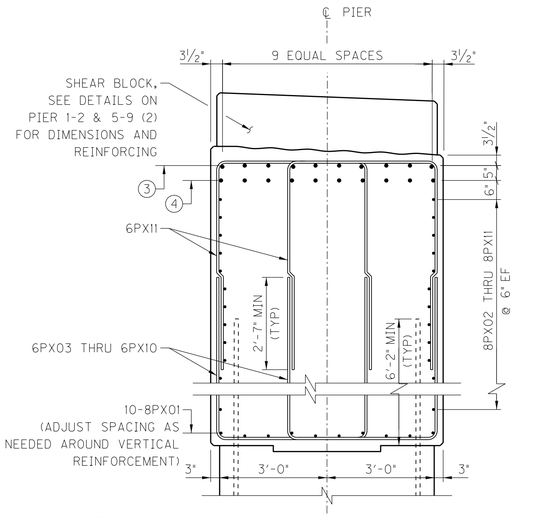


ELEVATION AT PIER 1–2 & PIER 5–9

(LOOKING AHEAD)



END ELEVATION AT PIER 1–2 & PIER 5–9



SECTION A–A

NOTATIONS

1. OUTLINE OF SHEAR BLOCK AT FIXED PIERS 1, 2, 5, 6 & 7. SEE PIER 1-2 & 5-9 (2) FOR DIMENSIONS AND REINFORCING DETAILS
2. OUTLINE OF SHEAR BLOCK AT EXPANSION PIERS 8 & 9. SEE PIER 1-2 & 5-9 (2) FOR DIMENSIONS AND REINFORCING DETAILS
3. 10-10PX01 AT PIERS 1-2
   10-11PX01 AT PIERS 5-9
4. 10-10PX02 AT PIERS 1-2
   10-11PX02 AT PIERS 5-9
5. 3'-0"x12'-0"x0'-2" DEPRESSED KEY CONSTRUCTION JOINT

NOTES

1. SEE FOUNDATION LAYOUT (1)-(4) FOR PILE LAYOUT OF PIER 2 AND PIERS 5-9.
2. FOR SECTIONS B-B AND C-C SEE PIER 1-2 & 5-9 (2).

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	P. GREENBERG
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

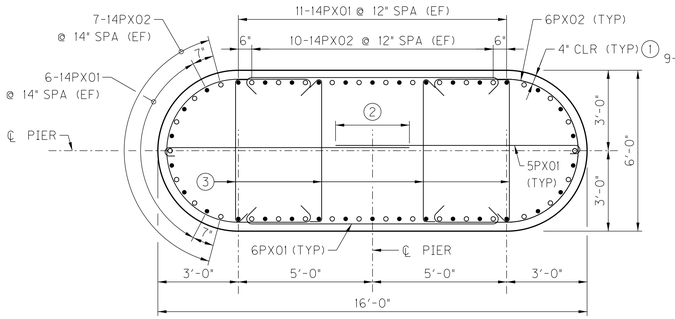
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

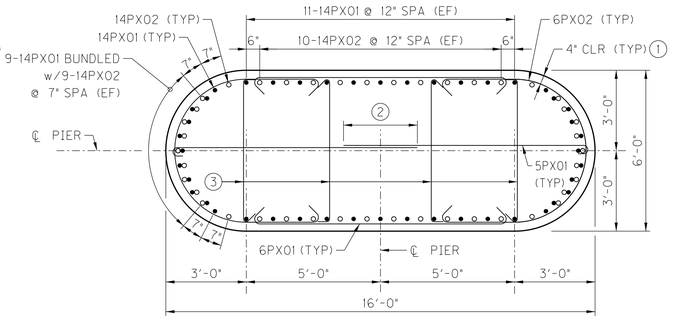
PIER 1–2 & 5–9 (1)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S16
		DRAWING NO. 27458

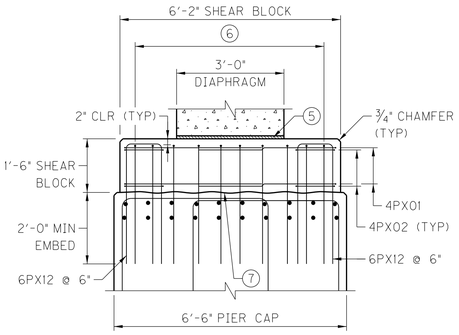
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: 15 16 17 18 PIER.DGN



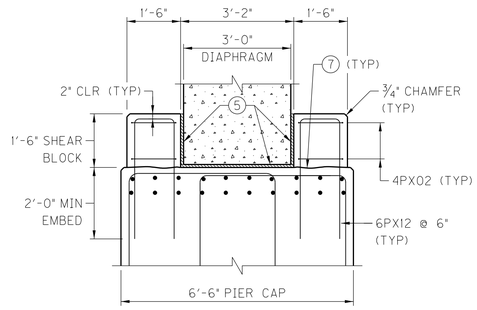
SECTION B–B
PIER 1, 2, 5, 8 & 9



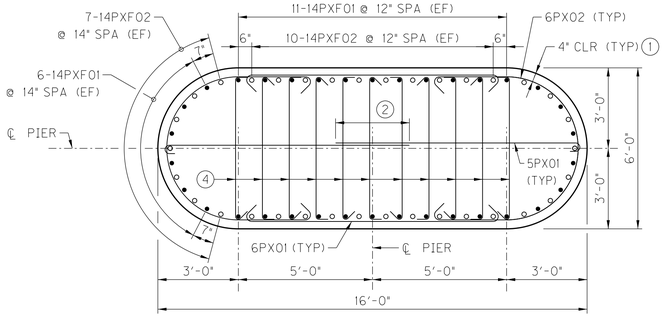
SECTION B–B
PIER 6 & 7



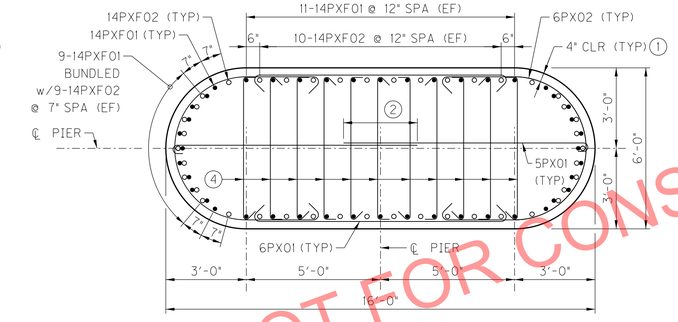
SECTION D–D



SECTION E–E

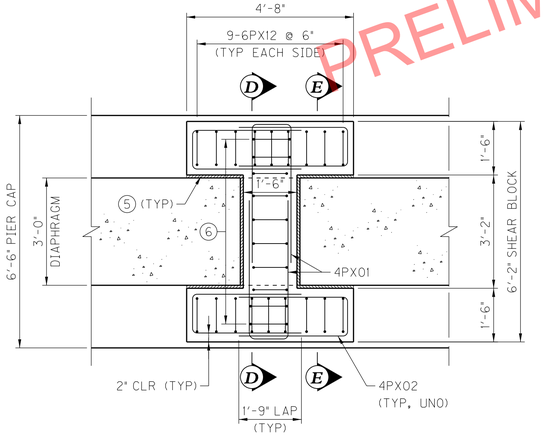


SECTION C–C
PIER 1, 2, 5, 8 & 9

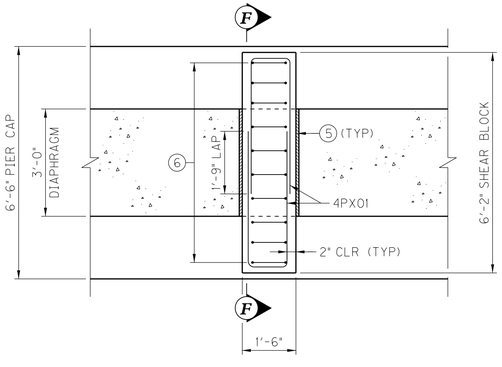


SECTION C–C
PIER 6 & 7

SECTION F–F



SHEAR BLOCK PLAN
PIERS 1, 2, 5, 6 & 7



SHEAR BLOCK PLAN
PIERS 8 & 9

NOTATIONS

1. 2" MINIMUM CLEAR TO BE PROVIDED AT MECHANICAL COUPLER LOCATIONS.
2. 2'-9" MINIMUM LAP SPLICE.
3. 5PX02 @ 48" MAX SPA - ALL HOOKS ON TIES MUST ENGAGE VERTICAL REINFORCING BARS. ALTERNATE 90° AND 135° HOOKS ON CROSS TIES BOTH VERTICALLY AND HORIZONTALLY.
4. 5PX02 @ 12" SPA - ALL HOOKS ON TIES MUST ENGAGE VERTICAL REINFORCING BARS. ALTERNATE 90° AND 135° HOOKS ON CROSS TIES BOTH VERTICALLY AND HORIZONTALLY.
5. 1" EXPANSION JOINT MATERIAL
6. 10-6PX12 PLACED AS SHOWN TO AVOID PIER CAP REINFORCING
7. INTENTIONALLY ROUGHEN SURFACE TO 1/4" AMPLITUDE

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	P. GREENBERG
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

PIER 1–2 & 5–9 (2)

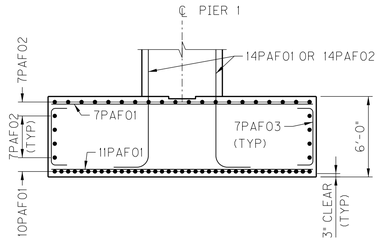
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

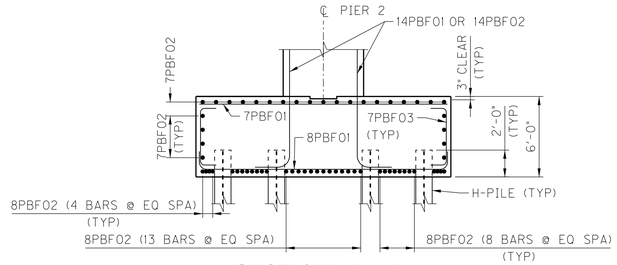
SHEET NO.: S17

DRAWING NO.: 27458

MicroStation v8.11.9.832 E-SHEET NAME: USER: jtburke DATE PLOTTED: January 29, 2020 FILE NAME: S27458_017.DGN

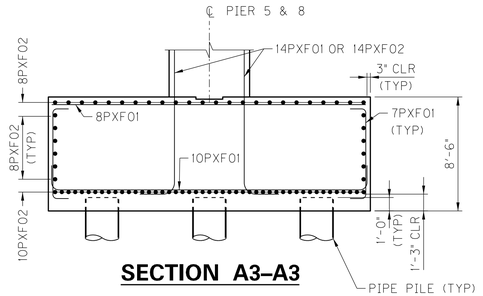


SECTION A1–A1

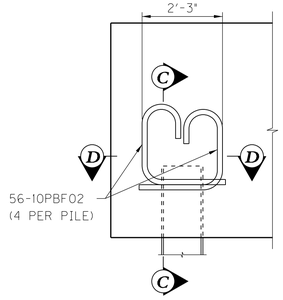


SECTION A2–A2

H-PILE ANCHORAGES NOT SHOWN, SEE DETAIL THIS SHEET

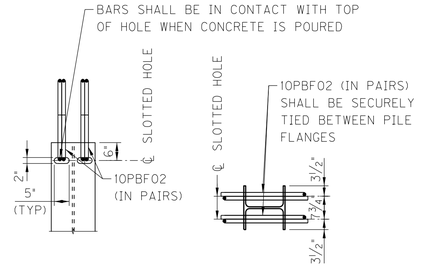


SECTION A3–A3



H-PILE ANCHORAGE DETAIL

DETAIL SHALL APPLY AT THE FOLLOWING PILES:
PIER 2: P1–P6, P10, P11, P15–P20 (14 PILES)



SECTION C–C

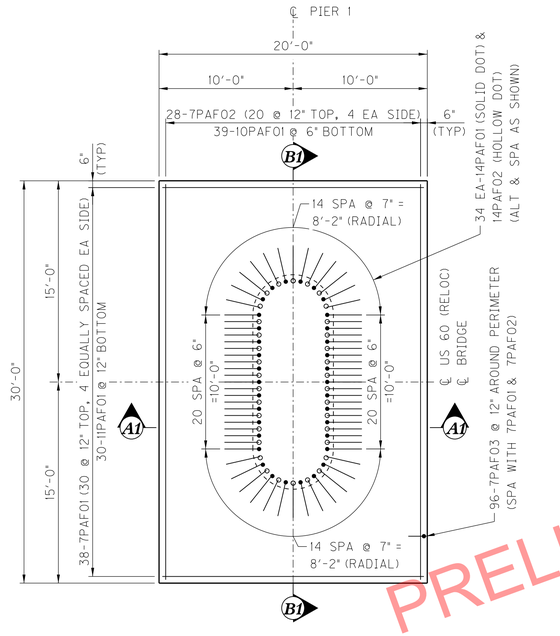
SECTION D–D

FIELD-DRILLING OF HOLES IN THE H-PILES AND ANY OTHER WORK REQUIRED TO INSTALL THE H-PILE ANCHORAGES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT BID PRICE PER LINEAR FOOT FOR THE HP14X89 STEEL PILES.

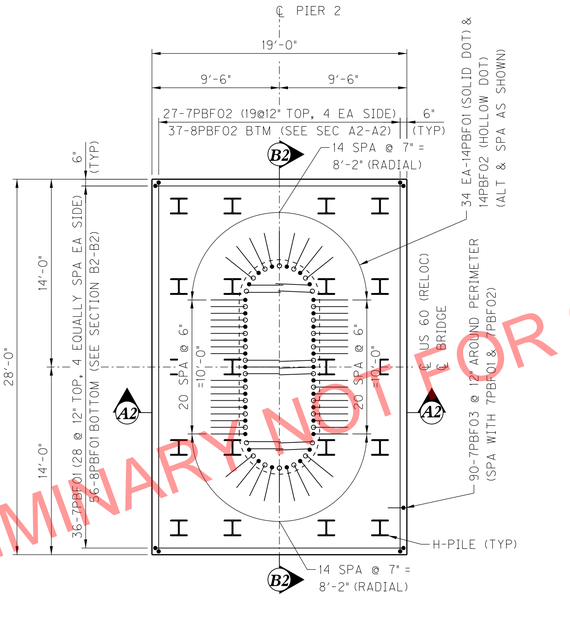
BAR MARK DESCRIPTION

14 PXF 01
- 14 — BAR SIZE
- PXF — PIER X FOOTING (FOR X VALUE, SEE TABLE BELOW)
- 01 — BAR MARK NUMBER

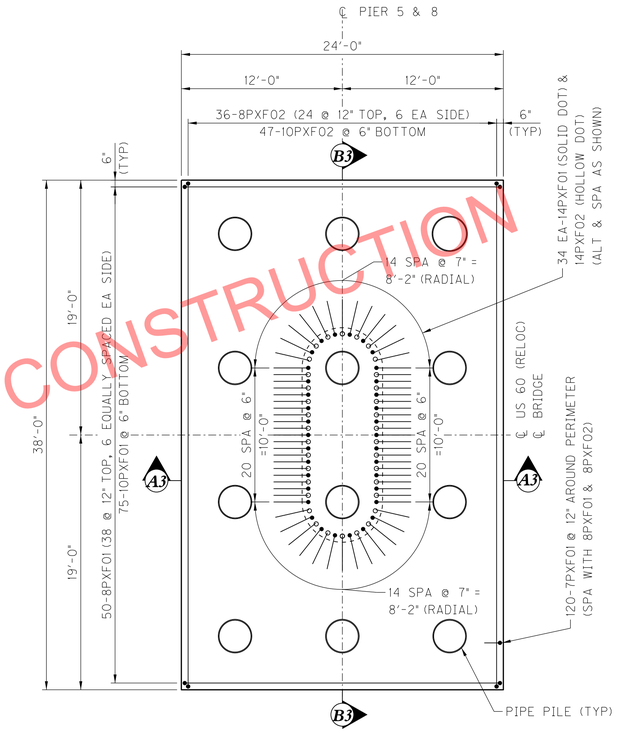
PIER	X VALUE
PIER 5	E
PIER 8	H



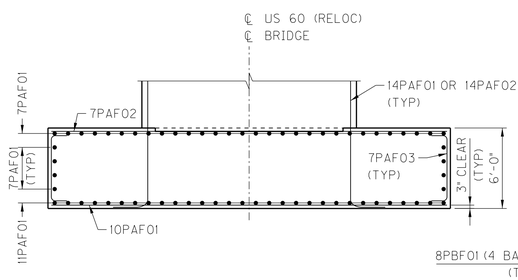
PIER 1 FOOTING PLAN



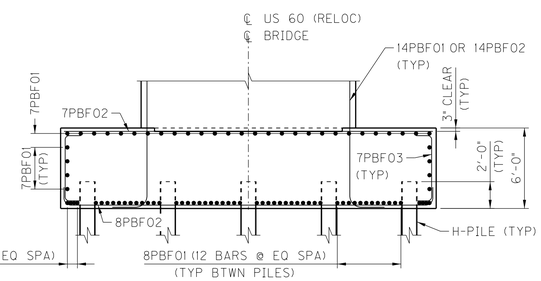
PIER 2 FOOTING PLAN



PIER 5 & 8 FOOTING PLAN

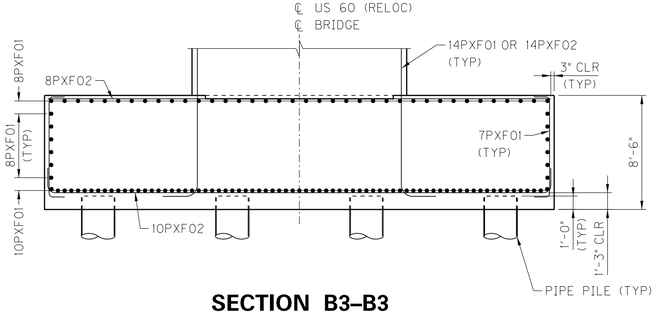


SECTION B1–B1



SECTION B2–B2

H-PILE ANCHORAGES NOT SHOWN, SEE DETAIL THIS SHEET



SECTION B3–B3

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: D. TAYLOR	S. WILLIAMS
DETAILED BY: D. TAYLOR	K. WIGHT

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

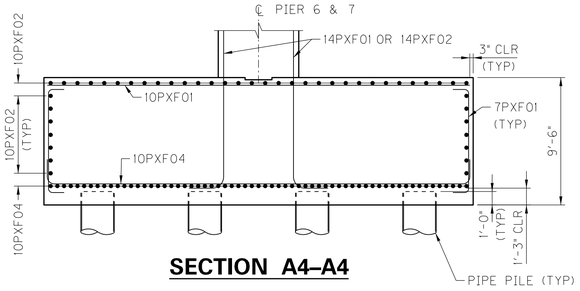
COUNTY: **LIVINGSTON**

ROUTE: **US 60** | CROSSING: **CUMBERLAND RIVER**

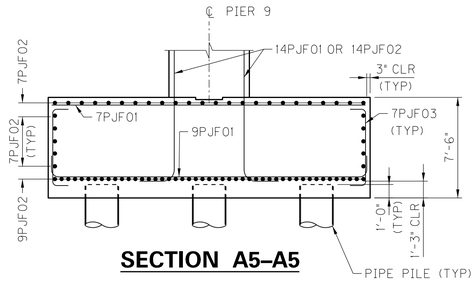
PIER 1–2 & 5–9 (3)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S18
		DRAWING NO. 27458

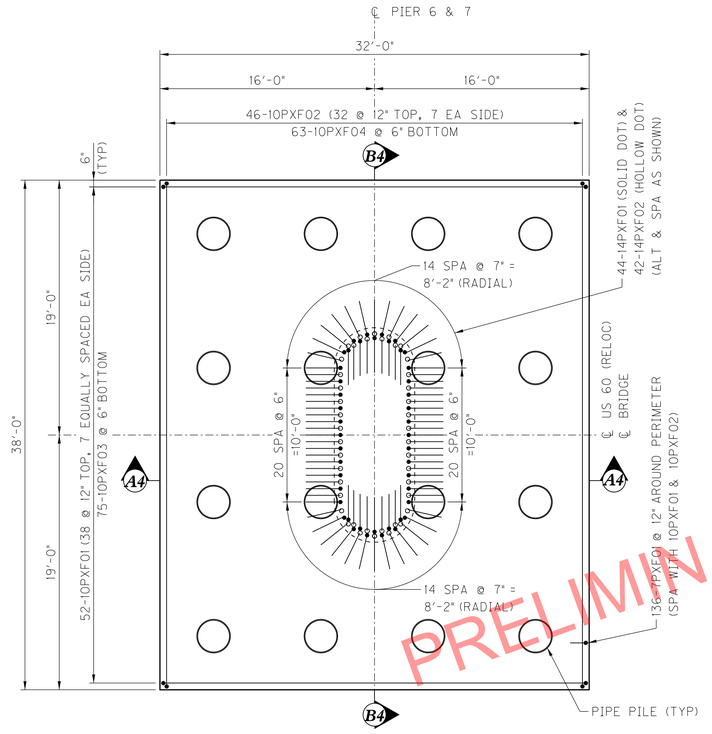
MicroStation v8.11.9.832
E-SHEET NAME:
USER: kwight
DATE PLOTTED: January 24, 2020
FILE NAME: 15 16 17 18 PIER.DGN



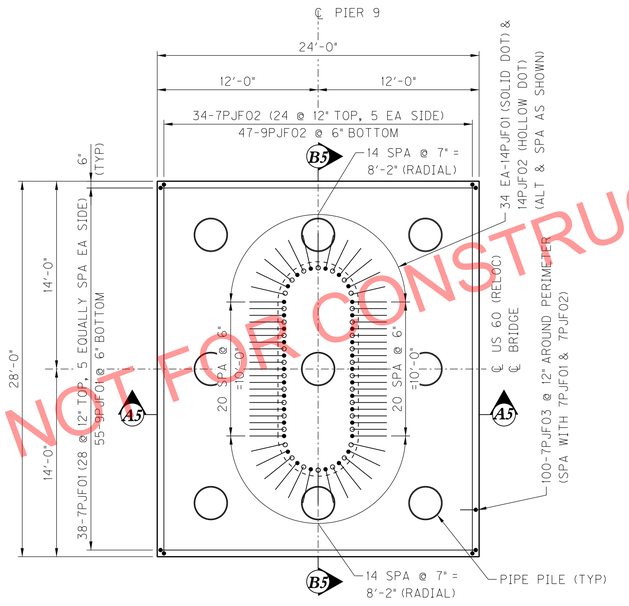
SECTION A4–A4



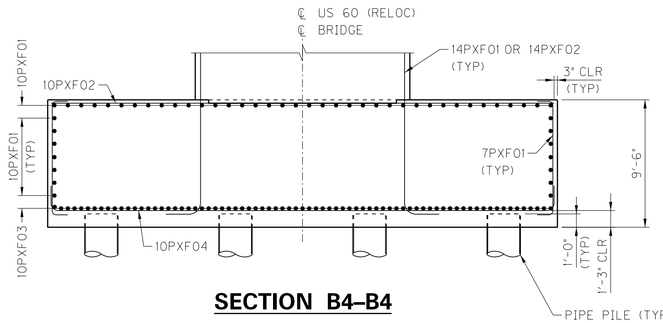
SECTION A5–A5



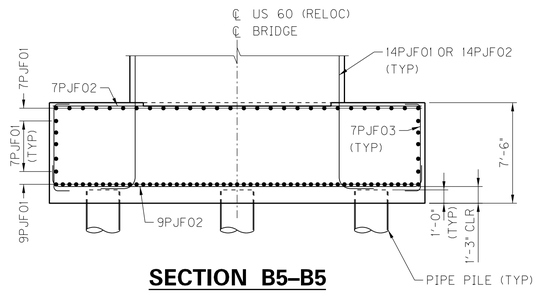
PIER 6 & 7 FOOTING PLAN



PIER 9 FOOTING PLAN



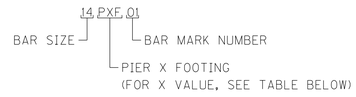
SECTION B4–B4



SECTION B5–B5

PRELIMINARY NOT FOR CONSTRUCTION

BAR MARK DESCRIPTION



PIER	X VALUE
PIER 6	F
PIER 7	G

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: D. TAYLOR	S. WILLIAMS
DETAILED BY: D. TAYLOR	K. WIGHT

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

PIER 1–2 & 5–9 (4)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S19
		DRAWING NO. 27458

MicroStation v8.11.9.832 | E-SHEET NAME: | USER: kwight DATE PLOTTED: January 24, 2020 | FILE NAME: 15 16 17 18 PIER.DGN

PIER 1 & 2 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.	R FT.	R IN.
PIER 1																																			
4PA01	S1	8	8	10	PIER CAP, SHEAR BLOCK	--	--	3	10	1	2	3	10					--	--	--	--														
4PA02	S1	16	7	4	PIER CAP, SHEAR BLOCK	--	--	3	1	1	2	3	1					--	--	--	--														
5PA01	T5	192	9	8	PIER COLUMN, HORIZONTAL MIDDLE	0	7	9	1									--	--			0	5												
5PA02	T9	720	6	3 1/2	PIER COLUMN, HORIZONTAL CROSS-TIE	0	5 1/2	5	4									0	6																
5PA03	17	12	9	2	PIER CAP ENDS, HORIZONTAL			1	6	6	2	1	6																						
6PA01	T12	192	10	10	PIER COLUMN, HORIZONTAL	0	8	9	6									0	8																
6PA02	503	192	15	3	PIER COLUMN ENDS, HORIZONTAL	0	8	8	5	2	9	2	9					0	8	0	4 1/2													5	2	8
6PA03	S1	12	11	11	PIER CAP, STIRRUPS	--	--	3	10	4	3	3	10					--	--	--	--														
6PA04	S1	12	13	3	PIER CAP, STIRRUPS	--	--	4	6	4	3	4	6					--	--	--	--														
6PA05	S1	12	14	7	PIER CAP, STIRRUPS	--	--	5	2	4	3	5	2					--	--	--	--														
6PA06	S1	12	15	11	PIER CAP, STIRRUPS	--	--	5	10	4	3	5	10					--	--	--	--														
6PA07	S1	12	17	3	PIER CAP, STIRRUPS	--	--	6	6	4	3	6	6					--	--	--	--														
6PA08	S1	12	18	7	PIER CAP, STIRRUPS	--	--	7	2	4	3	7	2					--	--	--	--														
6PA09	S1	12	19	11	PIER CAP, STIRRUPS	--	--	7	10	4	3	7	10					--	--	--	--														
6PA10	S1	46	20	9	PIER CAP, STIRRUPS	--	--	8	3	4	3	8	3					--	--	--	--														
6PA11	S1	130	14	3	PIER CAP, STIRRUPS	--	--	5	0	4	3	5	0					--	--	--	--														
6PA12	S1	56	7	9	PIER CAP, SHEAR BLOCK	--	--	3	4	1	1	3	4					--	--	--	--														
8PA01	19	20	21	6	PIER CAP, BOTTOM			12	3	9	3	--	--	--	--	--	--			4	11			11	3							20	6		
8PA02	STR	2	19	1	PIER CAP, HORIZONTAL EF																														
8PA03	STR	2	21	4	PIER CAP, HORIZONTAL EF																														
8PA04	STR	2	23	8	PIER CAP, HORIZONTAL EF																														
8PA05	STR	2	26	0	PIER CAP, HORIZONTAL EF																														
8PA06	STR	2	28	3	PIER CAP, HORIZONTAL EF																														
8PA07	STR	2	30	7	PIER CAP, HORIZONTAL EF																														
8PA08	STR	2	32	10	PIER CAP, HORIZONTAL EF																														
8PA09	STR	2	35	2	PIER CAP, HORIZONTAL EF																														
8PA10	STR	2	37	6	PIER CAP, HORIZONTAL EF																														
8PA11	STR	20	39	2	PIER CAP, HORIZONTAL EF																														
10PA01	17	10	50	0	PIER CAP, HORIZONTAL TOP			5	6	39	0	5	6																						
10PA02	1	10	41	4	PIER CAP, HORIZONTAL TOP	1	5	38	6									1	5			1	1												
14PA01	STR	34	26	7	PIER COLUMN, VERTICAL																														
14PA02	STR	34	26	7	PIER COLUMN, VERTICAL																														
14PA03	STR	34	26	7	PIER COLUMN, VERTICAL																														
14PA04	STR	34	23	7	PIER COLUMN, VERTICAL																														
PIER 2																																			
4PB01	S1	8	8	10	PIER CAP, SHEAR BLOCK	--	--	3	10	1	2	3	10					--	--	--	--														
4PB02	S1	16	7	4	PIER CAP, SHEAR BLOCK	--	--	3	1	1	2	3	1					--	--	--	--														
5PB01	T5	168	9	8	PIER COLUMN, HORIZONTAL MIDDLE	0	7	9	1									--	--			0	5												
5PB02	T9	637	6	3 1/2	PIER COLUMN, HORIZONTAL CROSS-TIE	0	5 1/2	5	4									0	6																
5PB03	17	12	9	2	PIER CAP ENDS, HORIZONTAL			1	6	6	2	1	6																						
6PB01	T12	168	10	10	PIER COLUMN, HORIZONTAL	0	8	9	6									0	8																
6PB02	503	168	15	3	PIER COLUMN ENDS, HORIZONTAL	0	8	8	5	2	9	2	9					0	8	0	4 1/2													5	4	2	8
6PB03	S1	12	11	11	PIER CAP, STIRRUPS	--	--	3	10	4	3	3	10					--	--	--	--														
6PB04	S1	12	13	3	PIER CAP, STIRRUPS	--	--	4	6	4	3	4	6					--	--	--	--														
6PB05	S1	12	14	7	PIER CAP, STIRRUPS	--	--	5	2	4	3	5	2					--	--	--	--														
6PB06	S1	12	15	11	PIER CAP, STIRRUPS	--	--	5	10	4	3	5	10					--	--	--	--														
6PB07	S1	12	17	3	PIER CAP, STIRRUPS	--	--	6	6	4	3	6	6					--	--	--	--														
6PB08	S1	12	18	7	PIER CAP, STIRRUPS	--	--	7	2	4	3	7	2					--	--	--	--														
6PB09	S1	12	19	11	PIER CAP, STIRRUPS	--	--	7	10	4	3	7	10					--	--	--	--														
6PB10	S1	46	20	9	PIER CAP, STIRRUPS	--	--	8	3	4	3	8	3					--	--	--	--														
6PB11	S1	130	14	3	PIER CAP, STIRRUPS	--	--	5	0	4	3	5	0					--	--	--	--														
6PB12	S1	56	7	9	PIER CAP, SHEAR BLOCK	--	--	3	4	1	1	3	4					--	--	--	--														
8PB01	19	20	21	6	PIER CAP, BOTTOM			12	3	9	3	--	--	--	--	--	--			4	11			11	3							20	6		
8PB02	STR	2	19	1	PIER CAP, HORIZONTAL EF																														
8PB03	STR	2	21	4	PIER CAP, HORIZONTAL EF																														
8PB04	STR	2	23	8	PIER CAP, HORIZONTAL EF																														
8PB05	STR	2	26	0	PIER CAP, HORIZONTAL EF																														
8PB06	STR	2	28	3	PIER CAP, HORIZONTAL EF																														
8PB07	STR	2	30	7	PIER CAP, HORIZONTAL EF																														
8PB08	STR	2	32	10	PIER CAP, HORIZONTAL EF																														
8PB09	STR	2	35	2	PIER CAP, HORIZONTAL EF																														
8PB10	STR	2	37	6	PIER CAP, HORIZONTAL EF																														
8PB11	STR	20	39	2	PIER CAP, HORIZONTAL EF																														
10PB01	17	10	50	0	PIER CAP, HORIZONTAL TOP			5	6	39	0	5	6																						
10PB02	1	10	41	4	PIER CAP, HORIZONTAL TOP	1	5	38	6									1	5			1	1												
14PB01	STR	34	23	1	PIER COLUMN, VERTICAL																														
14PB02	STR	34	23	1	PIER COLUMN, VERTICAL																														
14PB03	STR	34	23	1	PIER COLUMN, VERTICAL																														
14PB04	STR	34	20	1	PIER COLUMN, VERTICAL																														

PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabosham
DATE PLOTTED: January 24, 2020
FILE NAME: 15 16 17 18 PIER.DGN

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	P. GREENBERG
DETAILED BY: P. GREENBERG	J. BURKE

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

PIER 1–2 & 5–9 (5)

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S20

DRAWING NO.
27458

PIER 5 & 6 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.	R FT.	R IN.
PIER 5																																			
4PE01	S1	8	8	10	PIER CAP, SHEAR BLOCK	--	--	3	10	1	2	3	10					--	--	--	--														
4PE02	S1	16	7	4	PIER CAP, SHEAR BLOCK	--	--	3	1	1	2	3	1					--	--	--	--														
5PE01	T5	184	9	8	PIER COLUMN, HORIZONTAL MIDDLE	0	7	9	1									--	--			0	5												
5PE02	T9	690	6	3 1/2	PIER COLUMN, HORIZONTAL CROSS-TIE	0	5 1/2	5	4									0	6																
5PE03	17	12	9	2	PIER CAP ENDS, HORIZONTAL			1	6	6	2	1	6																						
6PE01	T12	184	10	10	PIER COLUMN, HORIZONTAL	0	8	9	6									0	8																
6PE02	503	184	15	3	PIER COLUMN ENDS, HORIZONTAL	0	8	8	5	2	9	2	9					0	8	0	4 1/2													5	2	8
6PE03	S1	12	11	11	PIER CAP, STIRRUPS	--	--	3	10	4	3	3	10					--	--	--	--														
6PE04	S1	12	13	3	PIER CAP, STIRRUPS	--	--	4	6	4	3	4	6					--	--	--	--														
6PE05	S1	12	14	7	PIER CAP, STIRRUPS	--	--	5	2	4	3	5	2					--	--	--	--														
6PE06	S1	12	15	11	PIER CAP, STIRRUPS	--	--	5	10	4	3	5	10					--	--	--	--														
6PE07	S1	12	17	3	PIER CAP, STIRRUPS	--	--	6	6	4	3	6	6					--	--	--	--														
6PE08	S1	12	18	7	PIER CAP, STIRRUPS	--	--	7	2	4	3	7	2					--	--	--	--														
6PE09	S1	12	19	11	PIER CAP, STIRRUPS	--	--	7	10	4	3	7	10					--	--	--	--														
6PE10	S1	46	20	9	PIER CAP, STIRRUPS	--	--	8	3	4	3	8	3					--	--	--	--														
6PE11	S1	130	14	3	PIER CAP, STIRRUPS	--	--	5	0	4	3	5	0					--	--	--	--														
6PE12	S1	56	7	9	PIER CAP, SHEAR BLOCK	--	--	3	4	1	1	3	4					--	--	--	--														
8PE01	19	20	21	6	PIER CAP, BOTTOM			12	3	9	3	--	--	--	--	--	--			4	11			11	3							20	6		
8PE02	STR	2	19	1	PIER CAP, HORIZONTAL EF																														
8PE03	STR	2	21	4	PIER CAP, HORIZONTAL EF																														
8PE04	STR	2	23	8	PIER CAP, HORIZONTAL EF																														
8PE05	STR	2	26	0	PIER CAP, HORIZONTAL EF																														
8PE06	STR	2	28	3	PIER CAP, HORIZONTAL EF																														
8PE07	STR	2	30	7	PIER CAP, HORIZONTAL EF																														
8PE08	STR	2	32	10	PIER CAP, HORIZONTAL EF																														
8PE09	STR	2	35	2	PIER CAP, HORIZONTAL EF																														
8PE10	STR	2	37	6	PIER CAP, HORIZONTAL EF																														
8PE11	STR	20	39	2	PIER CAP, HORIZONTAL EF																														
11PE01	17	10	50	0	PIER CAP, HORIZONTAL TOP			5	6	39	0	5	6																						
11PE02	1	10	41	8	PIER CAP, HORIZONTAL TOP	1	7	38	6									1	7			1	3												
14PE01	STR	34	25	7	PIER COLUMN, VERTICAL																														
14PE02	STR	34	25	7	PIER COLUMN, VERTICAL																														
14PE03	STR	34	25	7	PIER COLUMN, VERTICAL																														
14PE04	STR	34	22	7	PIER COLUMN, VERTICAL																														
PIER 6																																			
4PF01	S1	8	8	10	PIER CAP, SHEAR BLOCK	--	--	3	10	1	2	3	10					--	--	--	--														
4PF02	S1	16	7	4	PIER CAP, SHEAR BLOCK	--	--	3	1	1	2	3	1					--	--	--	--														
5PF01	T5	248	9	8	PIER COLUMN, HORIZONTAL MIDDLE	0	7	9	1									--	--			0	5												
5PF02	T9	797	6	3 1/2	PIER COLUMN, HORIZONTAL CROSS-TIE	0	5 1/2	5	4									0	6																
5PF03	17	12	9	2	PIER CAP ENDS, HORIZONTAL			1	6	6	2	1	6																						
6PF01	T12	248	10	10	PIER COLUMN, HORIZONTAL	0	8	9	6									0	8																
6PF02	503	248	15	3	PIER COLUMN ENDS, HORIZONTAL	0	8	8	5	2	9	2	9					0	8	0	4 1/2													5	4	2	8
6PF03	S1	12	11	11	PIER CAP, STIRRUPS	--	--	3	10	4	3	3	10					--	--	--	--														
6PF04	S1	12	13	3	PIER CAP, STIRRUPS	--	--	4	6	4	3	4	6					--	--	--	--														
6PF05	S1	12	14	7	PIER CAP, STIRRUPS	--	--	5	2	4	3	5	2					--	--	--	--														
6PF06	S1	12	15	11	PIER CAP, STIRRUPS	--	--	5	10	4	3	5	10					--	--	--	--														
6PF07	S1	12	17	3	PIER CAP, STIRRUPS	--	--	6	6	4	3	6	6					--	--	--	--														
6PF08	S1	12	18	7	PIER CAP, STIRRUPS	--	--	7	2	4	3	7	2					--	--	--	--														
6PF09	S1	12	19	11	PIER CAP, STIRRUPS	--	--	7	10	4	3	7	10					--	--	--	--														
6PF10	S1	46	20	9	PIER CAP, STIRRUPS	--	--	8	3	4	3	8	3					--	--	--	--														
6PF11	S1	130	14	3	PIER CAP, STIRRUPS	--	--	5	0	4	3	5	0					--	--	--	--														
6PF12	S1	56	7	9	PIER CAP, SHEAR BLOCK	--	--	3	4	1	1	3	4					--	--	--	--														
8PF01	19	20	21	6	PIER CAP, BOTTOM			12	3	9	3	--	--	--	--	--	--			4	11			11	3							20	6		
8PF02	STR	2	19	1	PIER CAP, HORIZONTAL EF																														
8PF03	STR	2	21	4	PIER CAP, HORIZONTAL EF																														
8PF04	STR	2	23	8	PIER CAP, HORIZONTAL EF																														
8PF05	STR	2	26	0	PIER CAP, HORIZONTAL EF																														
8PF06	STR	2	28	3	PIER CAP, HORIZONTAL EF																														
8PF07	STR	2	30	7	PIER CAP, HORIZONTAL EF																														
8PF08	STR	2	32	10	PIER CAP, HORIZONTAL EF																														
8PF09	STR	2	35	2	PIER CAP, HORIZONTAL EF																														
8PF10	STR	2	37	6	PIER CAP, HORIZONTAL EF																														
8PF11	STR	20	39	2	PIER CAP, HORIZONTAL EF																														
11PF01	17	10	50	0	PIER CAP, HORIZONTAL TOP			5	6	39	0	5	6																						
11PF02	1	10	41	8	PIER CAP, HORIZONTAL TOP	1	7	38	6									1	7			1	3												
14PF01	STR	44	22	10	PIER COLUMN, VERTICAL																														
14PF02	STR	42	22	10	PIER COLUMN, VERTICAL																														
14PF03	STR	44	22	10	PIER COLUMN, VERTICAL																														
14PF04	STR	42	19	10	PIER COLUMN, VERTICAL																														

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	P. GREENBERG
DETAILED BY: P. GREENBERG	J. BURKE

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

PIER 1–2 & 5–9 (6)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S21
		DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: 15 16 17 18 PIER.DGN

PIER 7 & 8 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.	R FT.	R IN.
PIER 7																																			
4PG01	S1	8	8	10	PIER CAP, SHEAR BLOCK	--	--	3	10	1	2	3	10					--	--	--	--														
4PG02	S1	16	7	4	PIER CAP, SHEAR BLOCK	--	--	3	1	1	2	3	1					--	--	--	--														
5PG01	T5	190	9	8	PIER COLUMN, HORIZONTAL MIDDLE	0	7	9	1									--	--			0	5												
5PG02	T9	632	6	3 1/2	PIER COLUMN, HORIZONTAL CROSS-TIE	0	5 1/2	5	4									0	6																
5PG03	17	12	9	2	PIER CAP ENDS, HORIZONTAL			1	6	6	2	1	6																						
6PG01	T12	190	10	10	PIER COLUMN, HORIZONTAL	0	8	9	6									0	8																
6PG02	503	190	15	3	PIER COLUMN ENDS, HORIZONTAL	0	8	8	5	2	9	2	9					0	8	0	4 1/2											5	4	2	8
6PG03	S1	12	11	11	PIER CAP, STIRRUPS	--	--	3	10	4	3	3	10					--	--	--	--														
6PG04	S1	12	13	3	PIER CAP, STIRRUPS	--	--	4	6	4	3	4	6					--	--	--	--														
6PG05	S1	12	14	7	PIER CAP, STIRRUPS	--	--	5	2	4	3	5	2					--	--	--	--														
6PG06	S1	12	15	11	PIER CAP, STIRRUPS	--	--	5	10	4	3	5	10					--	--	--	--														
6PG07	S1	12	17	3	PIER CAP, STIRRUPS	--	--	6	6	4	3	6	6					--	--	--	--														
6PG08	S1	12	18	7	PIER CAP, STIRRUPS	--	--	7	2	4	3	7	2					--	--	--	--														
6PG09	S1	12	19	11	PIER CAP, STIRRUPS	--	--	7	10	4	3	7	10					--	--	--	--														
6PG10	S1	46	20	9	PIER CAP, STIRRUPS	--	--	8	3	4	3	8	3					--	--	--	--														
6PG11	S1	130	14	3	PIER CAP, STIRRUPS	--	--	5	0	4	3	5	0					--	--	--	--														
6PG12	S1	56	7	9	PIER CAP, SHEAR BLOCK	--	--	3	4	1	1	3	4					--	--	--	--														
8PG01	19	20	21	6	PIER CAP, BOTTOM			12	3	9	3	--	--	--	--	--	--			4	11			11	3							20	6		
8PG02	STR	2	19	1	PIER CAP, HORIZONTAL EF																														
8PG03	STR	2	21	4	PIER CAP, HORIZONTAL EF																														
8PG04	STR	2	23	8	PIER CAP, HORIZONTAL EF																														
8PG05	STR	2	26	0	PIER CAP, HORIZONTAL EF																														
8PG06	STR	2	28	3	PIER CAP, HORIZONTAL EF																														
8PG07	STR	2	30	7	PIER CAP, HORIZONTAL EF																														
8PG08	STR	2	32	10	PIER CAP, HORIZONTAL EF																														
8PG09	STR	2	35	2	PIER CAP, HORIZONTAL EF																														
8PG10	STR	2	37	6	PIER CAP, HORIZONTAL EF																														
8PG11	STR	20	39	2	PIER CAP, HORIZONTAL EF																														
11PG01	17	10	50	0	PIER CAP, HORIZONTAL TOP			5	6	39	0	5	6																						
11PG02	1	10	41	8	PIER CAP, HORIZONTAL TOP	1	7	38	6									1	7			1	3												
14PG01	STR	44	17	4	PIER COLUMN, VERTICAL																														
14PG02	STR	42	17	4	PIER COLUMN, VERTICAL																														
14PG03	STR	44	17	4	PIER COLUMN, VERTICAL																														
14PG04	STR	42	14	4	PIER COLUMN, VERTICAL																														
PIER 8																																			
4PH01	S1	8	8	10	PIER CAP, SHEAR BLOCK	--	--	3	10	1	2	3	10					--	--	--	--														
5PH01	T5	116	9	8	PIER COLUMN, HORIZONTAL MIDDLE	0	7	9	1									--	--			0	5												
5PH02	T9	463	6	3 1/2	PIER COLUMN, HORIZONTAL CROSS-TIE	0	5 1/2	5	4									0	6																
5PH03	17	12	9	2	PIER CAP ENDS, HORIZONTAL			1	6	6	2	1	6																						
6PH01	T12	116	10	10	PIER COLUMN, HORIZONTAL	0	8	9	6									0	8																
6PH02	503	116	15	3	PIER COLUMN ENDS, HORIZONTAL	0	8	8	5	2	9	2	9					0	8	0	4 1/2											5	4	2	8
6PH03	S1	12	11	11	PIER CAP, STIRRUPS	--	--	3	10	4	3	3	10					--	--	--	--														
6PH04	S1	12	13	3	PIER CAP, STIRRUPS	--	--	4	6	4	3	4	6					--	--	--	--														
6PH05	S1	12	14	7	PIER CAP, STIRRUPS	--	--	5	2	4	3	5	2					--	--	--	--														
6PH06	S1	12	15	11	PIER CAP, STIRRUPS	--	--	5	10	4	3	5	10					--	--	--	--														
6PH07	S1	12	17	3	PIER CAP, STIRRUPS	--	--	6	6	4	3	6	6					--	--	--	--														
6PH08	S1	12	18	7	PIER CAP, STIRRUPS	--	--	7	2	4	3	7	2					--	--	--	--														
6PH09	S1	12	19	11	PIER CAP, STIRRUPS	--	--	7	10	4	3	7	10					--	--	--	--														
6PH10	S1	46	20	9	PIER CAP, STIRRUPS	--	--	8	3	4	3	8	3					--	--	--	--														
6PH11	S1	130	14	3	PIER CAP, STIRRUPS	--	--	5	0	4	3	5	0					--	--	--	--														
6PH12	S1	20	7	9	PIER CAP, SHEAR BLOCK	--	--	3	4	1	1	3	4					--	--	--	--														
8PH01	19	20	21	6	PIER CAP, BOTTOM			12	3	9	3	--	--	--	--	--	--			4	11			11	3							20	6		
8PH02	STR	2	19	1	PIER CAP, HORIZONTAL EF																														
8PH03	STR	2	21	4	PIER CAP, HORIZONTAL EF																														
8PH04	STR	2	23	8	PIER CAP, HORIZONTAL EF																														
8PH05	STR	2	26	0	PIER CAP, HORIZONTAL EF																														
8PH06	STR	2	28	3	PIER CAP, HORIZONTAL EF																														
8PH07	STR	2	30	7	PIER CAP, HORIZONTAL EF																														
8PH08	STR	2	32	10	PIER CAP, HORIZONTAL EF																														
8PH09	STR	2	35	2	PIER CAP, HORIZONTAL EF																														
8PH10	STR	2	37	6	PIER CAP, HORIZONTAL EF																														
8PH11	STR	20	39	2	PIER CAP, HORIZONTAL EF																														
11PH01	17	10	50	0	PIER CAP, HORIZONTAL TOP			5	6	39	0	5	6																						
11PH02	1	10	41	8	PIER CAP, HORIZONTAL TOP	1	7	38	6									1	7			1	3												
14PH01	STR	34	30	2	PIER COLUMN, VERTICAL																														
14PH02	STR	34	27	2	PIER COLUMN, VERTICAL																														

PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabsham
DATE PLOTTED: January 24, 2020
FILE NAME: I5 16 17 18 PIER.DGN

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	P. GREENBERG
DETAILED BY: P. GREENBERG	J. BURKE

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

PIER 1–2 & 5–9 (7)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S22
		DRAWING NO. 27458

PIER 9 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH		LOCATION	A		B		C		D		E		F		G		H		J		K		L		M		N		O		R	
			FT.	IN.		FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
PIER 9																																			
4PJ01	S1	8	8	10	PIER CAP, SHEAR BLOCK	--	--	3	10	1	2	3	10					--	--	--	--														
5PJ01	T5	100	9	8	PIER COLUMN, HORIZONTAL MIDDLE	0	7	9	1									--	--			0	5												
5PJ02	T9	410	6	3 1/2	PIER COLUMN, HORIZONTAL CROSS-TIE	0	5 1/2	5	4									0	6																
5PJ03	17	12	9	2	PIER CAP ENDS, HORIZONTAL			1	6	6	2	1	6																								
6PJ01	T12	100	10	10	PIER COLUMN, HORIZONTAL	0	8	9	6									0	8																
6PJ02	503	100	15	3	PIER COLUMN ENDS, HORIZONTAL	0	8	8	5	2	9	2	9					0	8	0	4 1/2													5	4	2	8
6PJ03	S1	12	11	11	PIER CAP, STIRRUPS	--	--	3	10	4	3	3	10					--	--	--	--														
6PJ04	S1	12	13	3	PIER CAP, STIRRUPS	--	--	4	6	4	3	4	6					--	--	--	--														
6PJ05	S1	12	14	7	PIER CAP, STIRRUPS	--	--	5	2	4	3	5	2					--	--	--	--														
6PJ06	S1	12	15	11	PIER CAP, STIRRUPS	--	--	5	10	4	3	5	10					--	--	--	--														
6PJ07	S1	12	17	3	PIER CAP, STIRRUPS	--	--	6	6	4	3	6	6					--	--	--	--														
6PJ08	S1	12	18	7	PIER CAP, STIRRUPS	--	--	7	2	4	3	7	2					--	--	--	--														
6PJ09	S1	12	19	11	PIER CAP, STIRRUPS	--	--	7	10	4	3	7	10					--	--	--	--														
6PJ10	S1	46	20	9	PIER CAP, STIRRUPS	--	--	8	3	4	3	8	3					--	--	--	--														
6PJ11	S1	130	14	3	PIER CAP, STIRRUPS	--	--	5	0	4	3	5	0					--	--	--	--														
6PJ12	S1	20	7	9	PIER CAP, SHEAR BLOCK	--	--	3	4	1	1	3	4					--	--	--	--														
8PJ01	19	20	21	6	PIER CAP, BOTTOM			12	3	9	3	--	--	--	--	--	--			4	11			11	3									20	6		
8PJ02	STR	2	19	1	PIER CAP, HORIZONTAL EF																														
8PJ03	STR	2	21	4	PIER CAP, HORIZONTAL EF																														
8PJ04	STR	2	23	8	PIER CAP, HORIZONTAL EF																														
8PJ05	STR	2	26	0	PIER CAP, HORIZONTAL EF																														
8PJ06	STR	2	28	3	PIER CAP, HORIZONTAL EF																														
8PJ07	STR	2	30	7	PIER CAP, HORIZONTAL EF																														
8PJ08	STR	2	32	10	PIER CAP, HORIZONTAL EF																														
8PJ09	STR	2	35	2	PIER CAP, HORIZONTAL EF																														
8PJ10	STR	2	37	6	PIER CAP, HORIZONTAL EF																														
8PJ11	STR	20	39	2	PIER CAP, HORIZONTAL EF																														
11PJ01	17	10	50	0	PIER CAP, HORIZONTAL TOP			5	6	39	0	5	6																						
11PJ02	1	10	41	8	PIER CAP, HORIZONTAL TOP	1	7	38	6									1	7			1	3												
14PJ01	STR	34	24	2	PIER COLUMN, VERTICAL																														
14PJ02	STR	34	21	2	PIER COLUMN, VERTICAL																														

PIER 1-2 & 5-9 FOOTINGS - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH		LOCATION	A		B		C		D		E		F		G		H		J	
			FT.	IN.		FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
PIER 1																							
7PAF01	STR	38	19	6	PIER FOOTING TOP AND SIDES																		
7PAF02	STR	28	29	6	PIER FOOTING TOP AND SIDES																		
7PAF03	2	96	7	6	PIER FOOTING SIDES	1	2	5	2									1	2				
10PAF01	STR	39	29	6	PIER FOOTING BOTTOM MAT																		
11PAF01	STR	30	19	6	PIER FOOTING BOTTOM MAT																		
14PAF01	2	34	22	4	PIER FOOTING TO COLUMN	2	7	19	9									--	--				
14PAF02	2	34	25	4	PIER FOOTING TO COLUMN	2	7	22	9									--	--				
PIER 2																							
7PBF01	STR	36	18	6	PIER FOOTING TOP AND SIDES																		
7PBF02	STR	27	27	6	PIER FOOTING TOP AND SIDES																		
7PBF03	2	90	7	6	PIER FOOTING SIDES	1	2	5	2									1	2				
8PBF01	2	56	21	2	PIER FOOTING BOTTOM MAT	1	4	18	6									1	4				
8PBF02	2	37	30	2	PIER FOOTING BOTTOM MAT	1	4	27	6									1	4				
10BF02	T5	56	6	0	PILE ANCHORAGE	1	5	2	3									2	4			1	1
14PBF01	2	34	20	8	PIER FOOTING TO COLUMN	2	7	18	1									--	--				
14PBF02	2	34	23	8	PIER FOOTING TO COLUMN	2	7	21	1									--	--				
PIER 5																							
7PEF01	2	120	9	4	PIER FOOTING SIDES	1	2	7	0									1	2				
8PEF01	STR	50	23	6	PIER FOOTING TOP AND SIDES																		
8PEF02	STR	36	37	6	PIER FOOTING TOP AND SIDES																		
10PEF01	2	75	27	2	PIER FOOTING BOTTOM MAT	1	10	23	6									1	10				
10PEF02	2	47	41	2	PIER FOOTING BOTTOM MAT	1	10	37	6									1	10				
14PEF01	2	34	23	2	PIER FOOTING TO COLUMN	2	7	20	7									--	--				
14PEF02	2	34	26	2	PIER FOOTING TO COLUMN	2	7	23	7									--	--				
PIER 6																							
7PFF01	2	136	10	4	PIER FOOTING SIDES	1	2	8	0									1	2				
10PFF01	STR	52	31	6	PIER FOOTING TOP AND SIDES																		
10PFF02	STR	46	37	6	PIER FOOTING TOP AND SIDES																		
10PFF03	2	75	35	2	PIER FOOTING BOTTOM MAT	1	10	31	6									1	10				
10PFF04	2	63	41	2	PIER FOOTING BOTTOM MAT	1	10	37	6									1	10				
14PFF01	2	44	22	11	PIER FOOTING TO COLUMN	2	7	20	4									--	--				
14PFF02	2	42	25	11	PIER FOOTING TO COLUMN	2	7	23	4									--	--				
PIER 7																							
7PGF01	2	136	10	4	PIER FOOTING SIDES	1	2	8	0									1	2				
10PGF01	STR	52	31	6	PIER FOOTING TOP AND SIDES																		
10PGF02	STR	46	37	6	PIER FOOTING TOP AND SIDES																		
10PGF03	2	75	35	2	PIER FOOTING BOTTOM MAT	1	10	31	6									1	10				
10PGF04	2	63	41	2	PIER FOOTING BOTTOM MAT	1	10	37	6									1	10				
14PGF01	2	44	20	7	PIER FOOTING TO COLUMN	2	7	18	0									--	--				
14PGF02	2	42	23	7	PIER FOOTING TO COLUMN	2	7	21	0									--	--				
PIER 8																							
7PHF01	2	120	9	4	PIER FOOTING SIDES	1	2	7	0									1	2				
8PHF01	STR	50	23	6	PIER FOOTING TOP AND SIDES																		
8PHF02	STR	36	37	6	PIER FOOTING TOP AND SIDES																		
10PHF01	2	75	27	2	PIER FOOTING BOTTOM MAT	1	10	23	6									1	10				
10PHF02	2	47	41	2	PIER FOOTING BOTTOM MAT	1	10	37	6									1	10				
14PHF01	2	34	18	10	PIER FOOTING TO COLUMN	2	7	16	3									--	--				
14PHF02	2	34	21	10	PIER FOOTING TO COLUMN	2	7	19	3									--	--				
PIER 9																							
7PJF01	STR	38	23	6	PIER FOOTING TOP AND SIDES																		
7PJF02	STR	34	27	6	PIER FOOTING TOP AND SIDES																		
7PJF03	2	100	8	4	PIER FOOTING SIDES	1	2	6	0									1	2				
9PJF01	2	55	26	8	PIER FOOTING BOTTOM MAT	1	7	23	6									1	7				
9PJF02	2	47	30	8	PIER FOOTING BOTTOM MAT	1	7	27	6									1	7				
14PJF01	2	34	16	10	PIER FOOTING TO COLUMN	2	7	14	3									--	--				
14PJF02	2	34	20	10	PIER FOOTING TO COLUMN	2	7	18	3									--	--				

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: D. TAYLOR	S. WILLIAMS
DETAILED BY: D. TAYLOR	S. WILLIAMS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE
US 60

CROSSING
CUMBERLAND RIVER

PIER 1-2 & 5-9 (8)

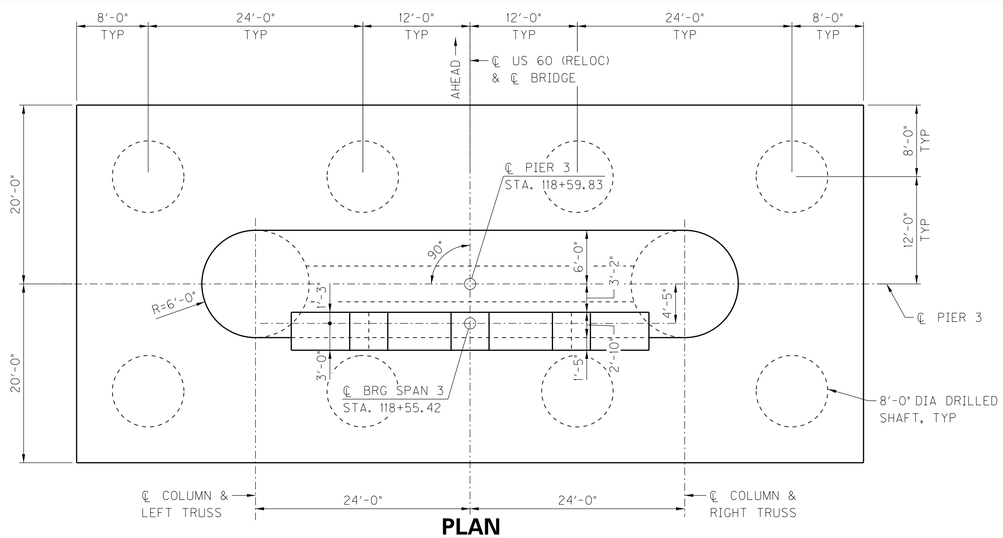
ITEM NUMBER
1-1142.00

PREPARED BY
Stantec

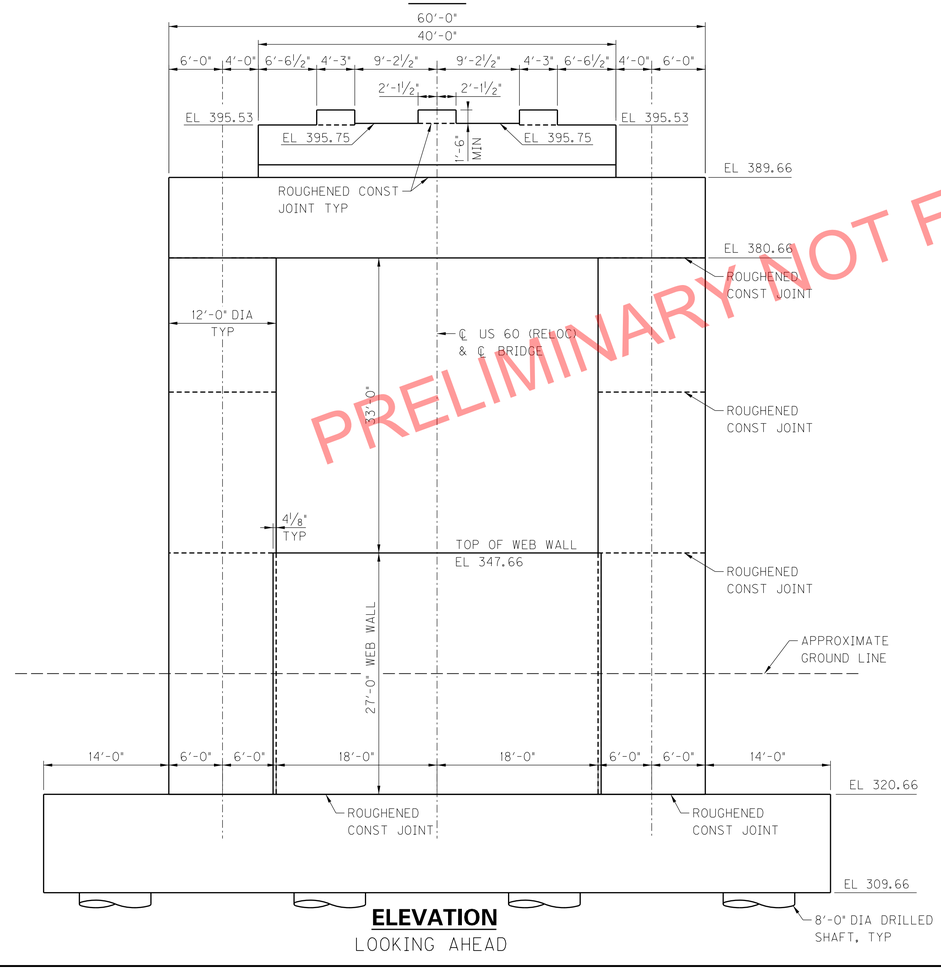
SHEET NO.
S23

DRAWING NO.
27458

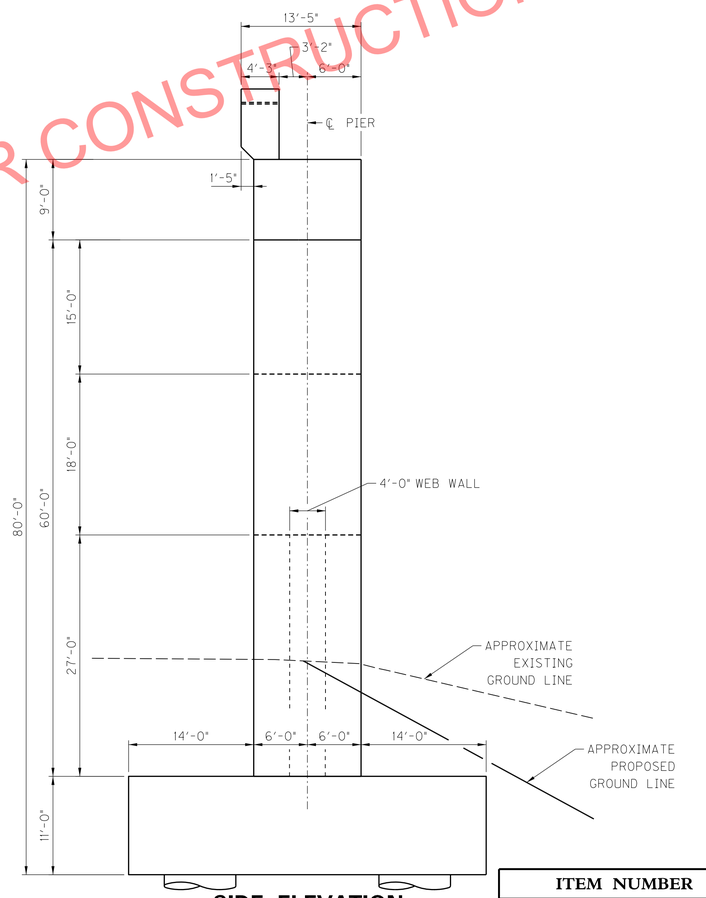
MicroStation v8.11.9.832
E-SHEET NAME:
USER: kwright
DATE PLOTTED: January 24, 2020
FILE NAME: 15 16 17 18 PIER.DGN



PLAN



ELEVATION
LOOKING AHEAD



SIDE ELEVATION
LOOKING WEST

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

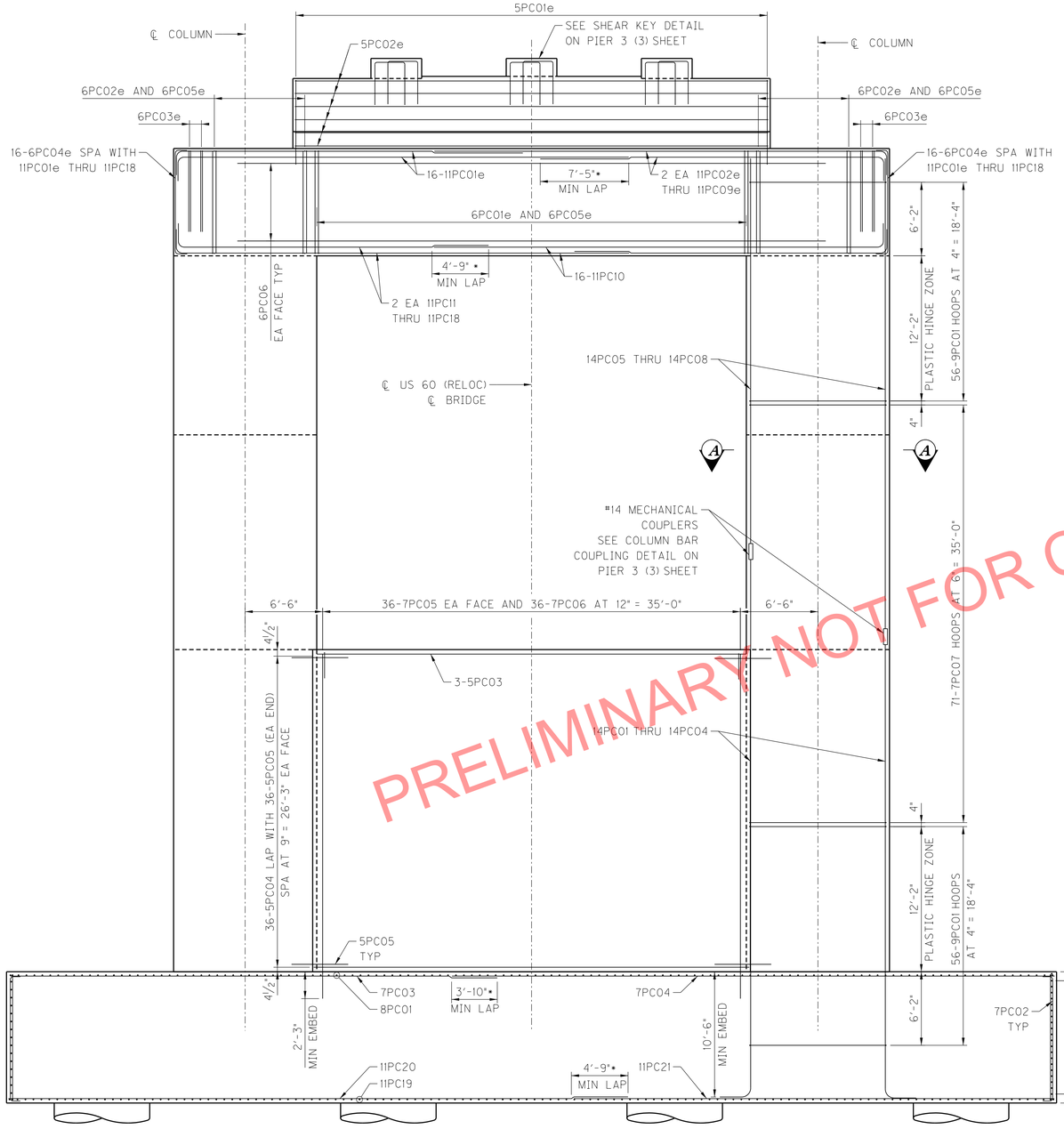
PIER 3 (1)

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO. S24
DRAWING NO. 27458

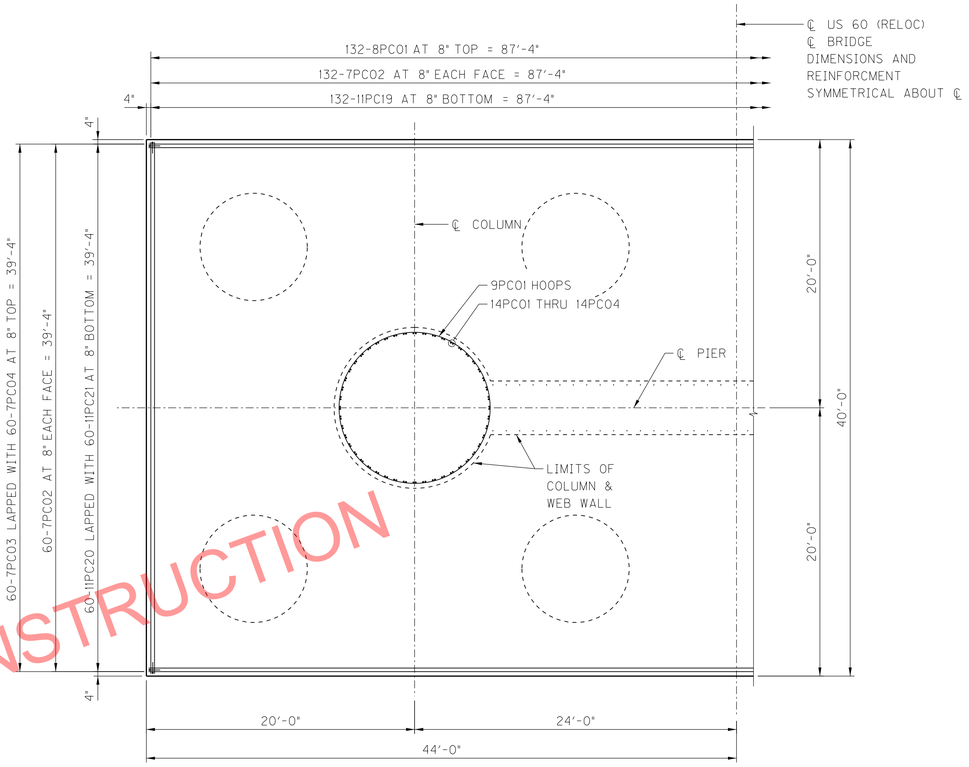
MicroStation v8.11.9.829
E-SHEET NAME:
USER: stevmurphy
DATE PLOTTED: January 24, 2020
FILE NAME: W:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\24 PIER 3 (1).DGN



• ALTERNATE LAPS ON EACH SIDE OF ℄ OF BRIDGE

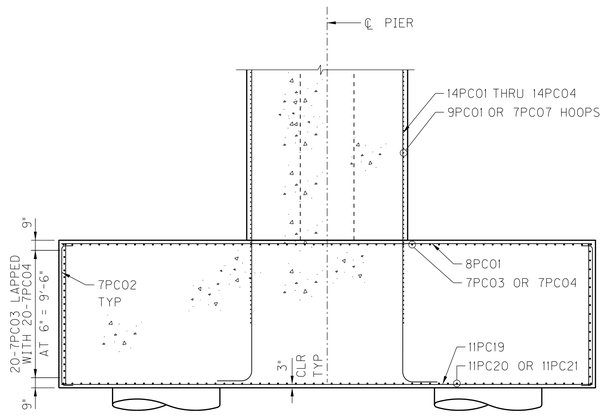
ELEVATION

LOOKING AHEAD



FOOTING HALF PLAN

FOR LAYOUT AND SPACING OF REINFORCING BARS EXTENDING FROM FOOTING INTO COLUMN SEE ELEVATION AND HALF PLAN SECTION THROUGH COLUMN AND WEB WALL ON PIER 3 (3) SHEET



LONGITUDINAL FOOTING SECTION

ALONG ℄ COLUMN

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

PIER 3 (2)

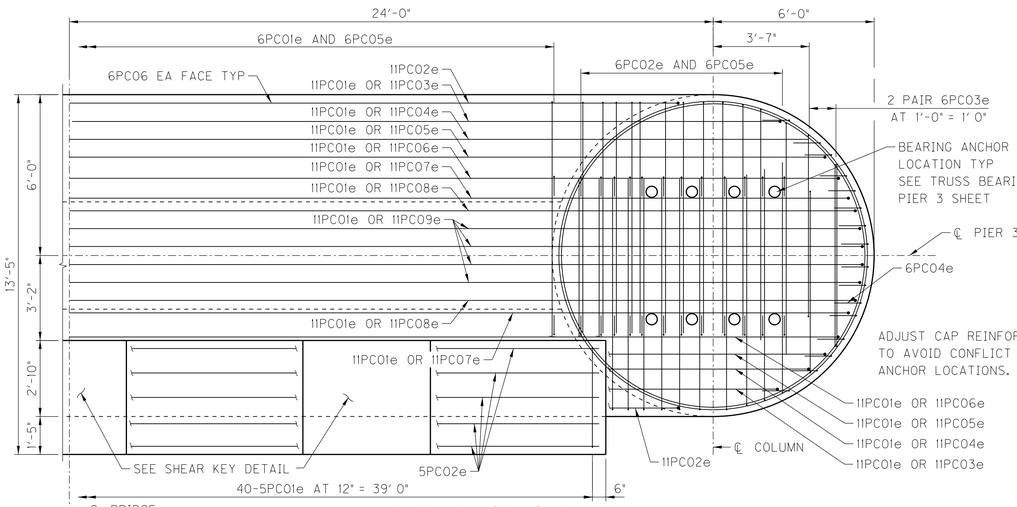
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

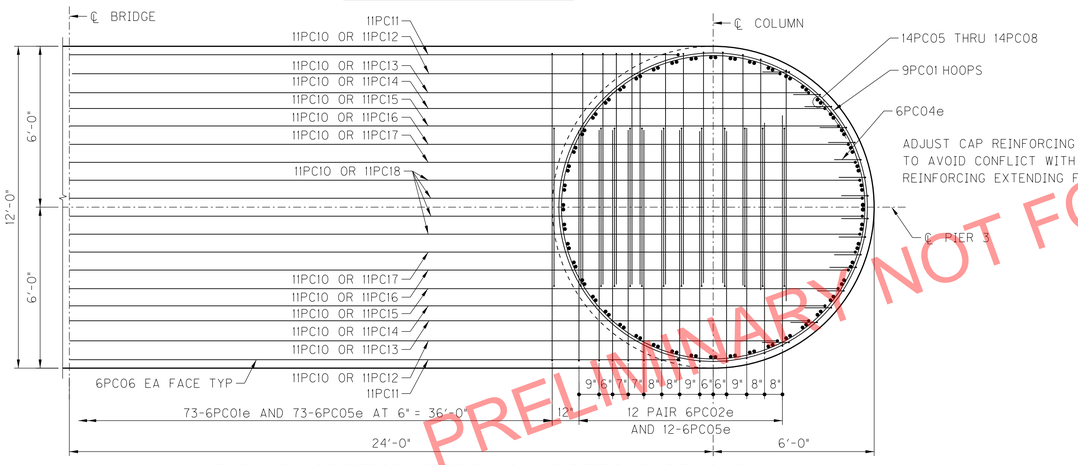
SHEET NO.: S25

DRAWING NO.: 27458

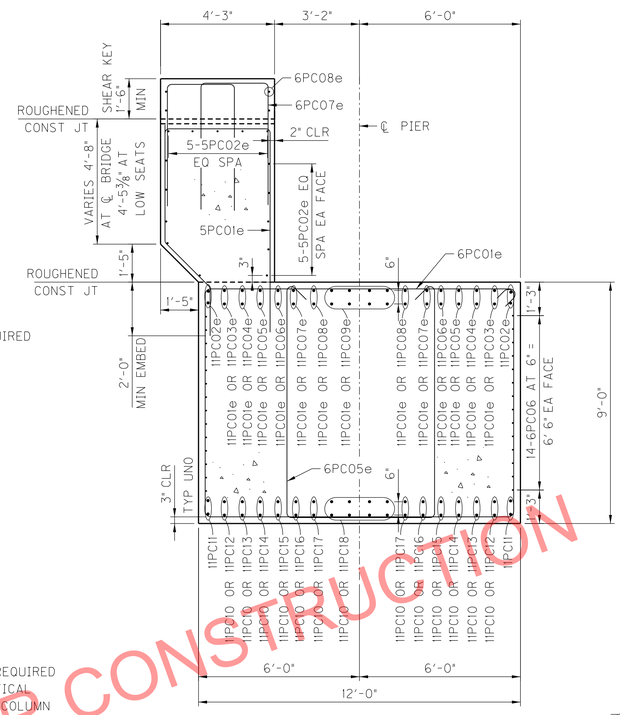
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E-SHEET NAME:
USER: stevmurphy
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\25 PIER 3 (2).DGN



HALF PLAN OF CAP

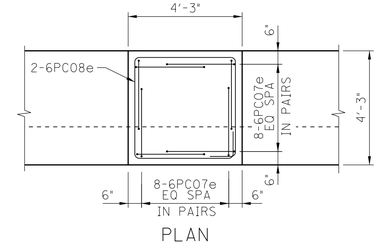


HALF PLAN SECTION THROUGH BOTTOM OF CAP

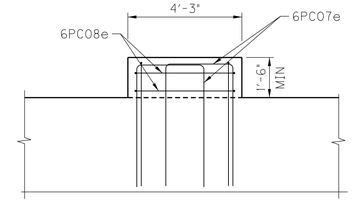


SECTION THROUGH CAP

AT ℄ BRIDGE

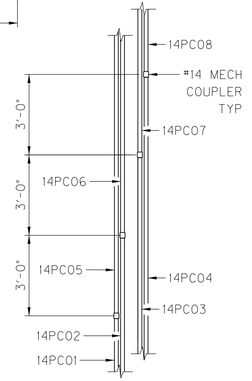


PLAN

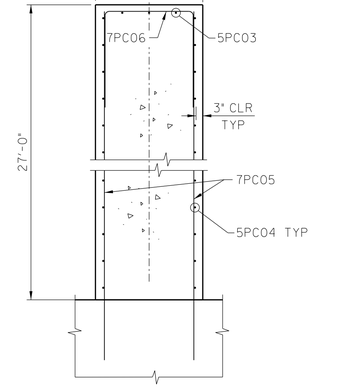


ELEVATION

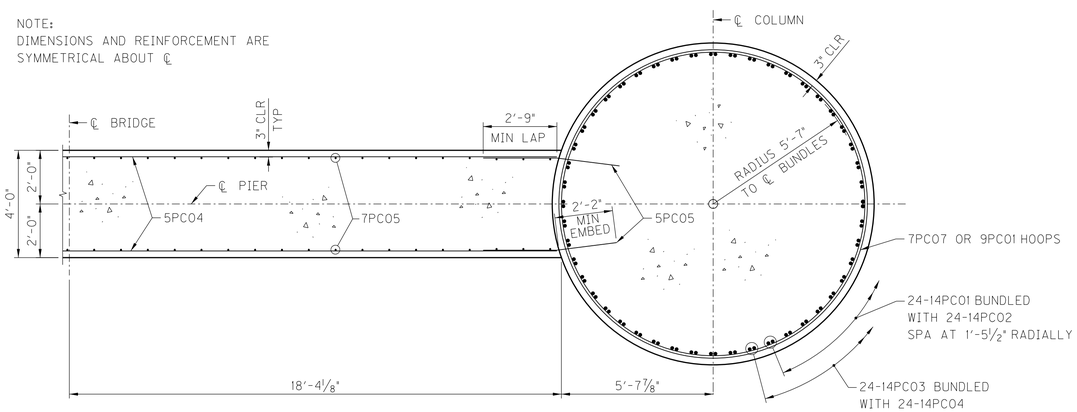
SHEAR KEY DETAIL



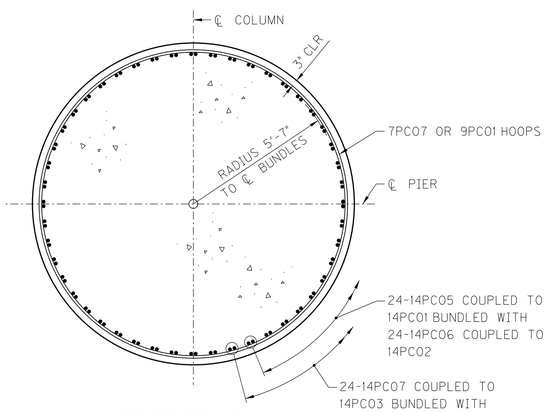
COLUMN BAR COUPLING DETAIL



SECTION THROUGH WEB WALL



HALF PLAN SECTION THROUGH COLUMN AND WEB WALL



SECTION A–A

PRELIMINARY, NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

PIER 3 (3)

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S26

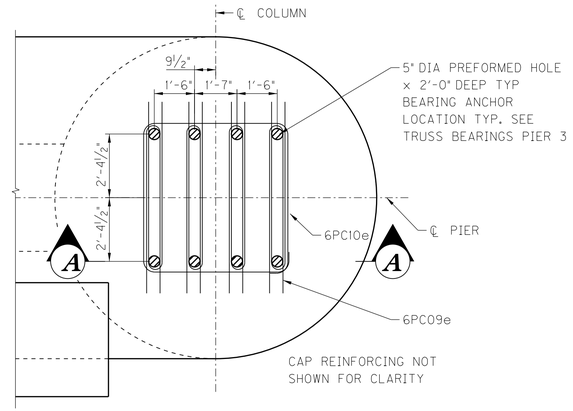
DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\26 PIER 3 (3).DGN
USER: stevmurphy
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

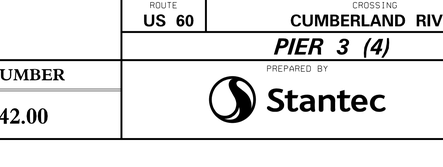
PIER 3 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.
5PC01e	501	40	20	3	APPROACH PEDESTAL	7	11	3	11	4	1 3/8	1	8	1	8	2	4	2	0														
5PC02e	STR	15	39	6	APPROACH PEDESTAL																												
5PC03	STR	3	35	8	TOP OF WEB WALL																												
5PC04	STR	72	36	6	WEB WALL HORIZONTAL																												
5PC05	STR	144	5	0	DOWEL WEB WALL TO COLUMN																												
6PC01e	T1	73	41	4	CAP CLOSED STIRRUP	0	8	11	6	8	6	11	6	8	6			0	8														
6PC02e	2	48	24	6	CAP STIRRUP ABOVE COLUMN	8	0	8	6									8	0														
6PC03e	2	8	7	9	CAP STIRRUP ABOVE COLUMN	1	0	6	9																								
6PC04e	2	32	10	6	CAP EDGE BAR	1	0	8	6									1	0														
6PC05e	S3	97	23	10	CAP VERTICAL TIES	0	8	8	6	5	6	8	6					0	8	0	4 1/2												
6PC06	STR	28	48	0	HORZ EA FACE OF CAP																												
6PC07e	2	96	12	2	SHEAR KEY	4	7	3	0									4	7														
6PC08e	T2	6	17	8	SHEAR KEY	1	0	3	11	3	11	3	11	3	11			1	0														
6PC09e	S11	32	13	3	BEARING ANCHORAGE															6	5											0	8
6PC10e	T2	4	24	0	BEARING ANCHORAGE TIES	1	0	5	6	5	6	5	6	5	6			1	0														
7PC01	STR	40	39	6	LONGITUDINAL EDGE OF FOOTING																												
7PC02	2	384	13	6	FOOTING EDGE BARS	1	6	10	6									1	6														
7PC03	STR	100	39	9	TRANSVERSE TOP & SIDES OF FOOTING																												
7PC04	STR	100	51	7	TRANSVERSE TOP & SIDES OF FOOTING																												
7PC05	STR	72	29	0	WEB WALL VERTICAL																												
7PC06	2	36	9	4	TOP OF WEB WALL	3	0	3	4									3	0														
7PC07	502	142	36	1	HOOPS IN COLUMN	11	6																										
8PC01	STR	132	39	6	LONGITUDINAL TOP OF FOOTING																												
9PC01	502	224	36	1	HOOPS IN COLUMN	11	6																										
11PC01e	2	32	38	0	TRANSVERSE TOP OF CAP	2	0	37	2																								
11PC02e	2	4	49	4	TRANSVERSE TOP OF CAP	2	0	45	4									2	0														
11PC03e	2	4	25	10	TRANSVERSE TOP OF CAP	2	0	23	10																								
11PC04e	2	4	27	9	TRANSVERSE TOP OF CAP	2	0	25	9																								
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11PC08e	2	4	31	4	TRANSVERSE TOP OF CAP	2	0	29	4																								
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11PC10	2	32	48	0	TRANSVERSE BOT OF CAP	2	0	46	0																								
11PC11	2	4	49	4	TRANSVERSE BOT OF CAP	2	0	45	4									2	0														
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11PC19	STR	132	39	6	LONGITUDINAL BOT OF FOOTING																												
11PC20	STR	60	50	0	LONGITUDINAL BOT OF FOOTING																												
11PC21	STR	60	42	3	LONGITUDINAL BOT OF FOOTING																												
14PC01	2	48	41	7	DOWEL / VERTICAL IN COLUMNS	2	7	39	0																								
14PC02	2	48	44	7	DOWEL / VERTICAL IN COLUMNS	2	7	42	0																								
14PC03	2	48	47	7	DOWEL / VERTICAL IN COLUMNS	2	7	45	0																								
14PC04	2	48	50	7	DOWEL / VERTICAL IN COLUMNS	2	7	48	0																								
14PC05	STR	48	39	9	VERTICAL IN COLUMNS																												
14PC06	STR	48	36	9	VERTICAL IN COLUMNS																												
14PC07	STR	48	33	9	VERTICAL IN COLUMNS																												
14PC08	STR	48	30	9	VERTICAL IN COLUMNS																												

PRELIMINARY NOT FOR CONSTRUCTION



DETAIL AT BEARING ANCHORS



SECTION A–A

ITEM NUMBER	1–1142.00

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

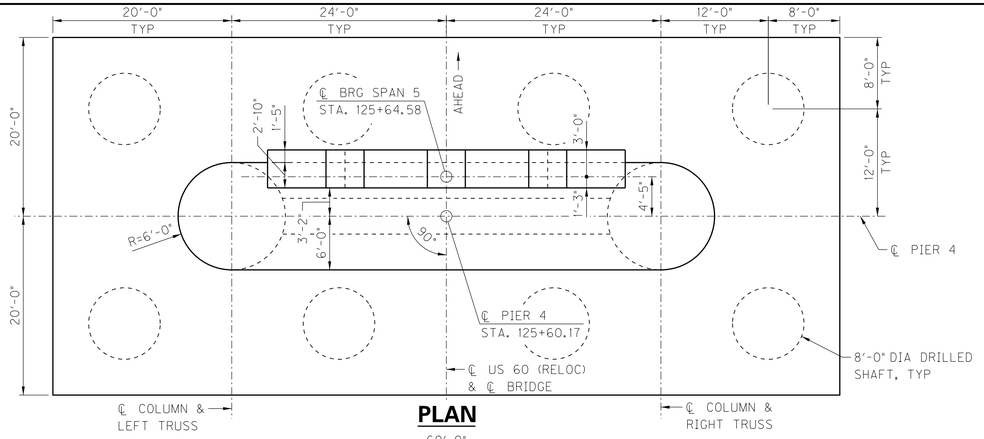
PIER 3 (4)

PREPARED BY: Stantec

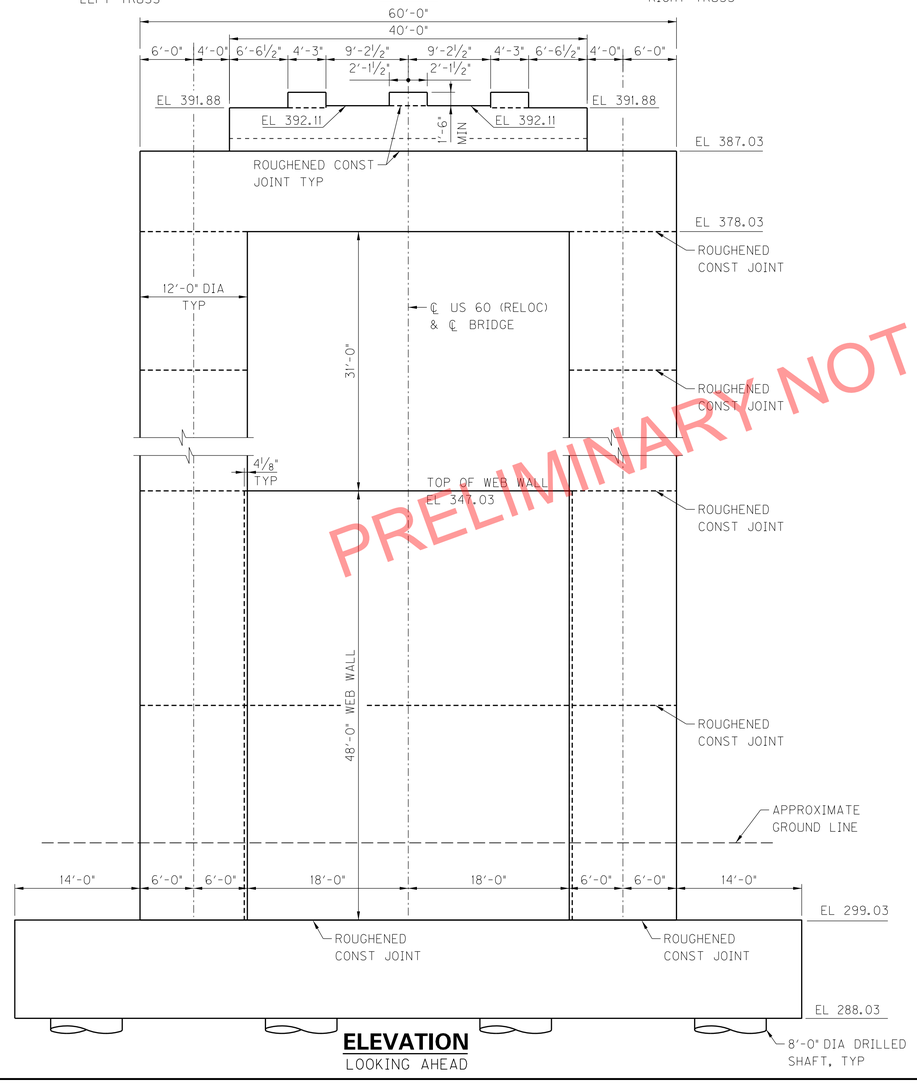
SHEET NO. S27

DRAWING NO. 27458

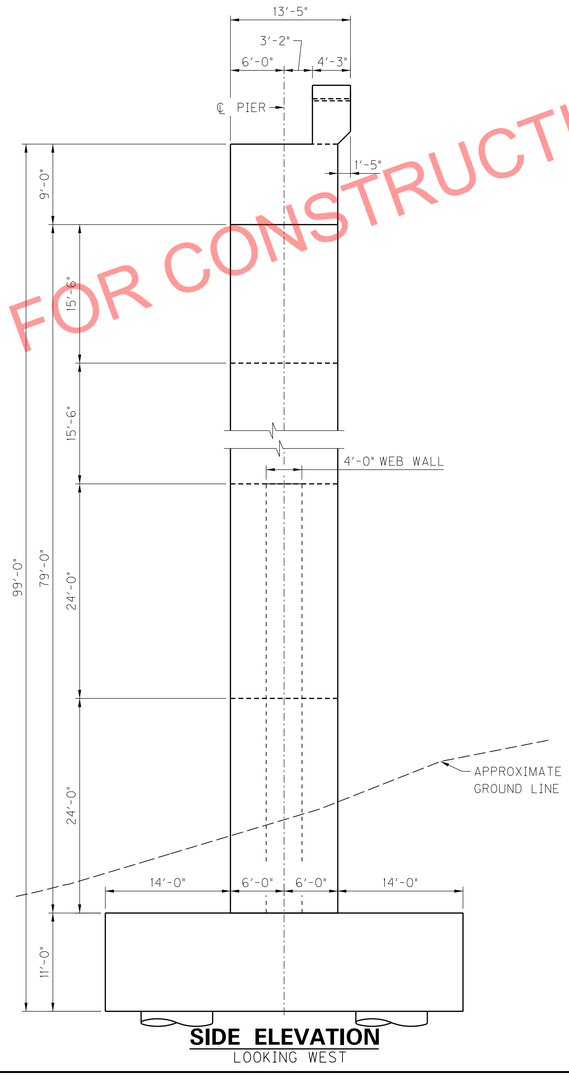
MicroStation v8.11.9.829
E-SHEET NAME:
USER: steymurphy
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\27 PIER 3 (4).DGN



PLAN



ELEVATION
LOOKING AHEAD



SIDE ELEVATION
LOOKING WEST

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

PIER 4 (1)

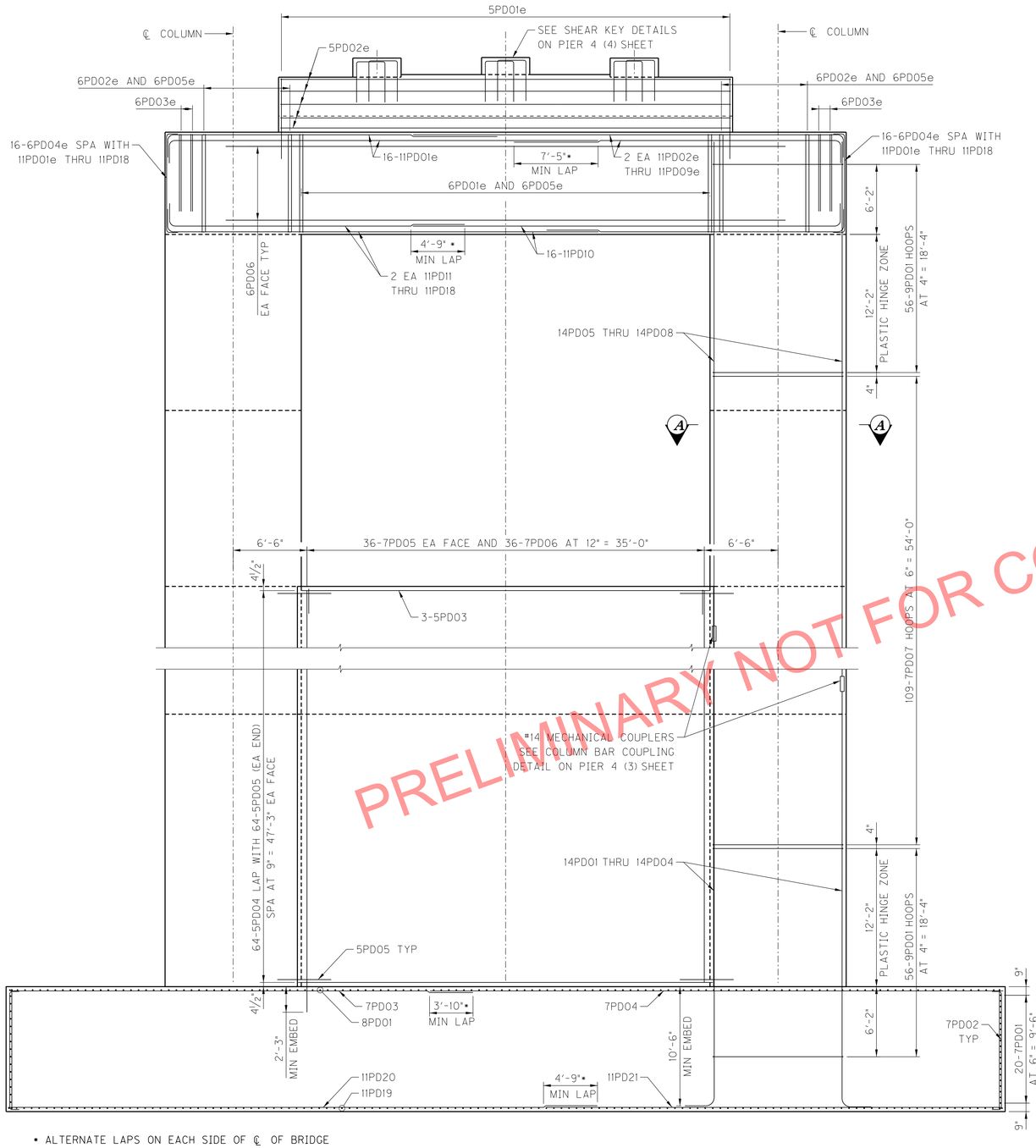
ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S28

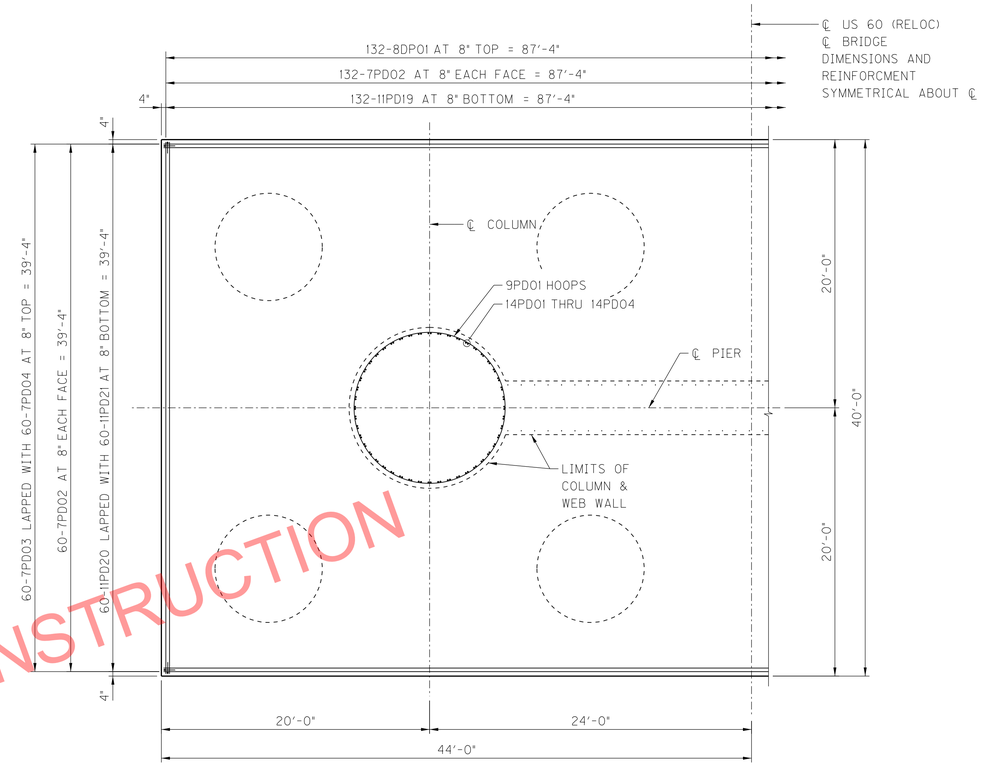
DRAWING NO.
27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: stevmurphy
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650II\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\28 PIER 4 (1).DGN



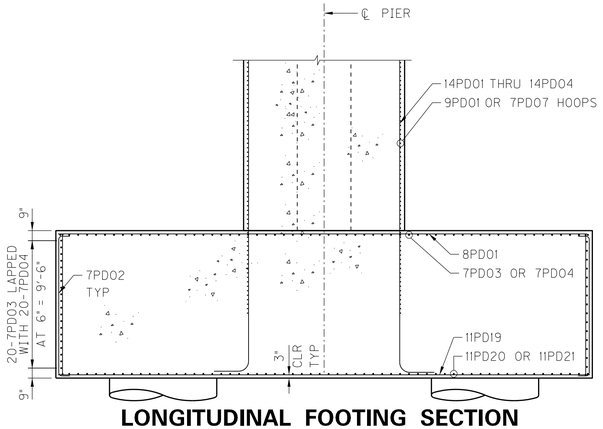
• ALTERNATE LAPS ON EACH SIDE OF ℄ OF BRIDGE

ELEVATION



FOOTING HALF PLAN

FOR LAYOUT AND SPACING OF REINFORCING BARS
EXTENDING FROM FOOTING INTO COLUMN SEE ELEVATION VIEW AND
HALF PLAN SECTION THROUGH COLUMN AND WEB WALL
ON PIER 4 (3) SHEET



LONGITUDINAL FOOTING SECTION

ALONG ℄ COLUMN

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

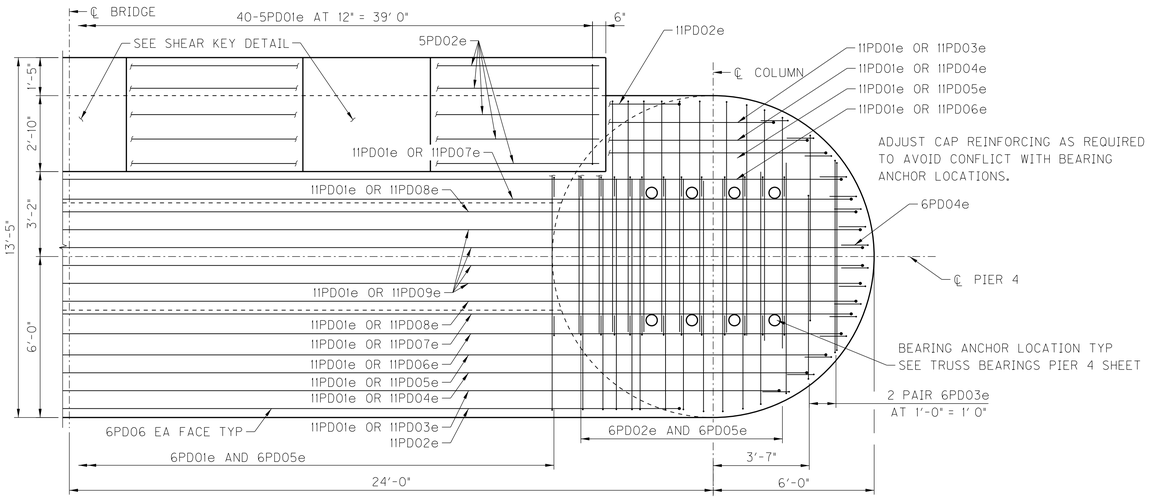
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

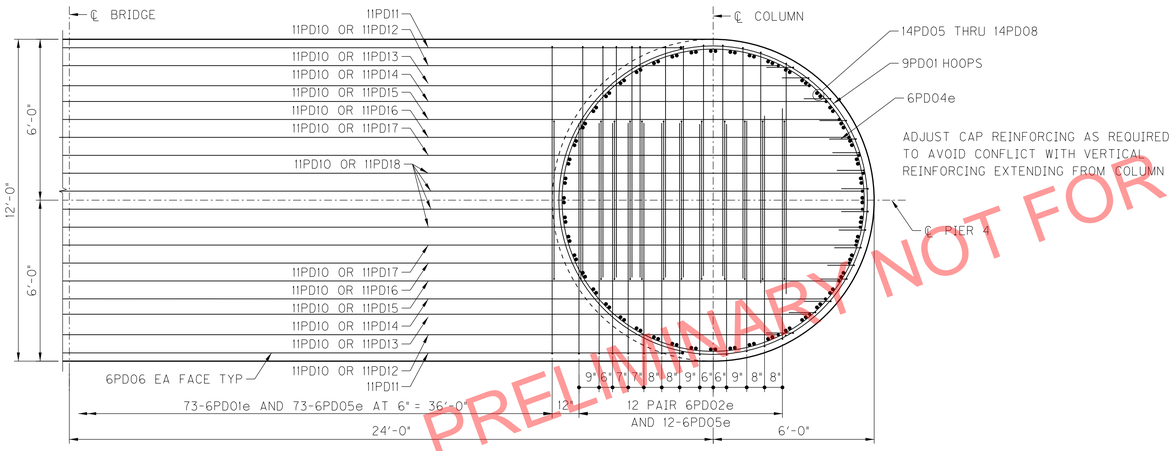
PIER 4 (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S29
		DRAWING NO. 27458

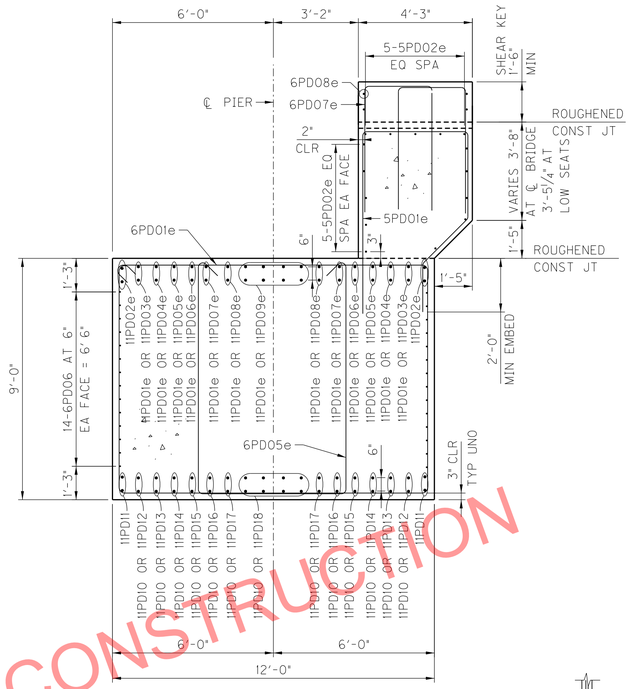
MicroStation v8.11.9.829
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\29 PIER 4 (2).DGN
USER: stevmurphy
DATE PLOTTED: January 24, 2020
E-SHEET NAME:



HALF PLAN OF CAP

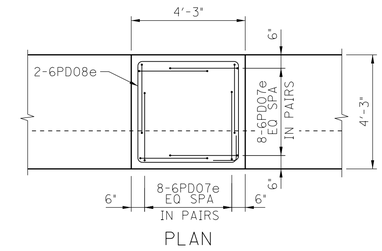


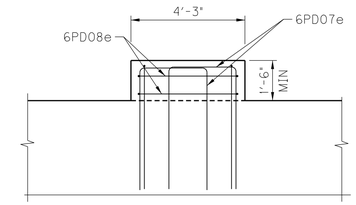
HALF PLAN SECTION THROUGH BOTTOM OF CAP



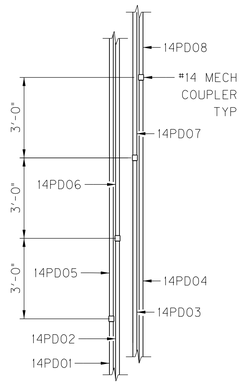
SECTION THROUGH CAP

AT ℄ BRIDGE

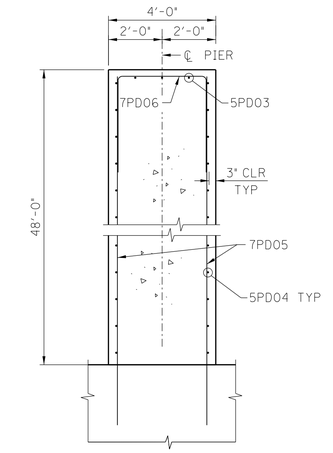




SHEAR KEY DETAIL

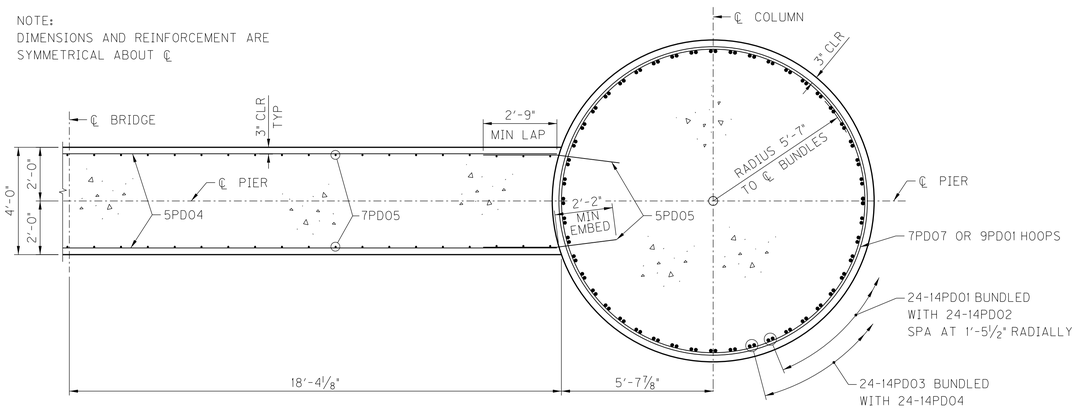


COLUMN BAR COUPLING DETAIL

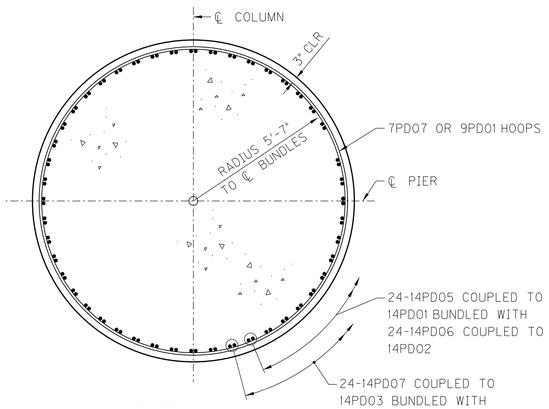


SECTION THROUGH WEB WALL

NOTE:
DIMENSIONS AND REINFORCEMENT ARE SYMMETRICAL ABOUT ℄



HALF PLAN SECTION THROUGH COLUMN AND WEB WALL



SECTION A–A

PRELIMINARY NOT FOR CONSTRUCTION

ITEM NUMBER
1–1142.00

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

PIER 4 (3)

PREPARED BY
Stantec

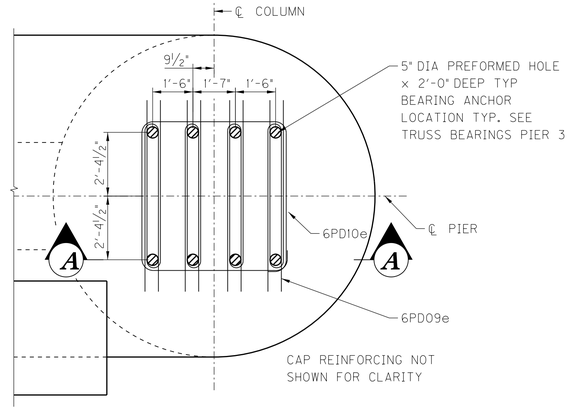
SHEET NO. S30
DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\30 PIER 4 (3).DGN

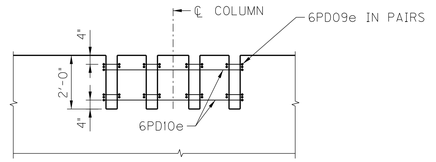
PIER 4 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.
5PD01e	501	40	20	3	APPROACH PEDESTAL	7	11	3	11	4	1 3/8	1	8	1	8	2	4	2	0														
5PD02e	STR	15	39	6	APPROACH PEDESTAL																												
5PD03	STR	3	35	8	TOP OF WEB WALL																												
5PD04	STR	128	36	6	WEB WALL HORIZONTAL																												
5PD05	STR	256	5	0	DOWEL WEB WALL TO COLUMN																												
6PD01e	T1	73	41	4	CAP CLOSED STIRRUP	0	8	11	6	8	6	11	6	8	6			0	8														
6PD02e	2	48	24	6	CAP STIRRUP ABOVE COLUMN	8	0	8	6									8	0														
6PD03e	2	8	7	9	CAP STIRRUP ABOVE COLUMN	1	0	6	9																								
6PD04e	2	32	10	6	CAP EDGE BAR	1	0	8	6									1	0														
6PD05e	S3	97	23	10	CAP VERTICAL TIES	0	8	8	6	5	6	8	6					0	8	0	4 1/2												
6PD06	STR	28	48	0	HORZ EA FACE OF CAP																												
6PD07e	2	96	12	2	SHEAR KEY	4	7	3	0									4	7														
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7PD02	2	384	13	6	FOUNDATION EDGE BARS	1	6	10	6									1	6														
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7PD05	STR	72	50	0	WEB WALL VERTICAL																												
7PD06	2	36	9	4	TOP OF WEB WALL	3	0	3	4									3	0														
7PD07	502	218	36	1	HOOPS IN COLUMN	11	6																										
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9PD01	502	224	36	1	HOOPS IN COLUMN	11	6																										
11PD01e	2	32	39	2	TRANSVERSE TOP OF CAP	2	0	37	2																								
11PD02e	2	4	49	4	TRANSVERSE TOP OF CAP	2	0	45	4									2	0														
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11PD04e	2	4	27	9	TRANSVERSE TOP OF CAP	2	0	25	9																								
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14PD01	2	48	43	7	DOWEL / VERTICAL IN COLUMNS	2	7	41	0																								
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14PD03	2	48	49	7	DOWEL / VERTICAL IN COLUMNS	2	7	47	0																								
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14PD07	STR	48	50	9	VERTICAL IN COLUMNS																												
14PD08	STR	48	47	9	VERTICAL IN COLUMNS																												

PRELIMINARY NOT FOR CONSTRUCTION



DETAIL AT BEARING ANCHORS



SECTION A–A

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: S. MURPHY	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

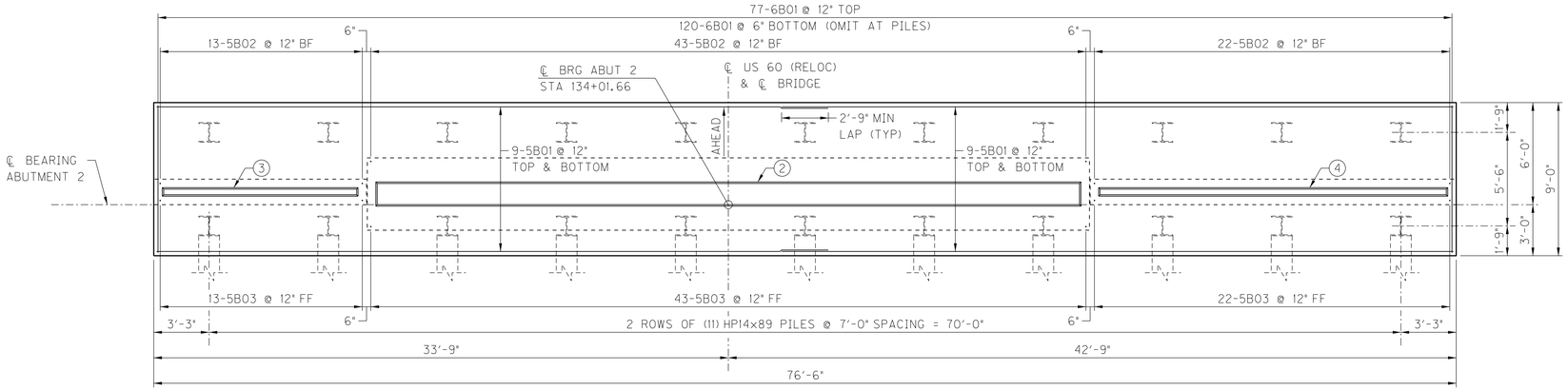
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

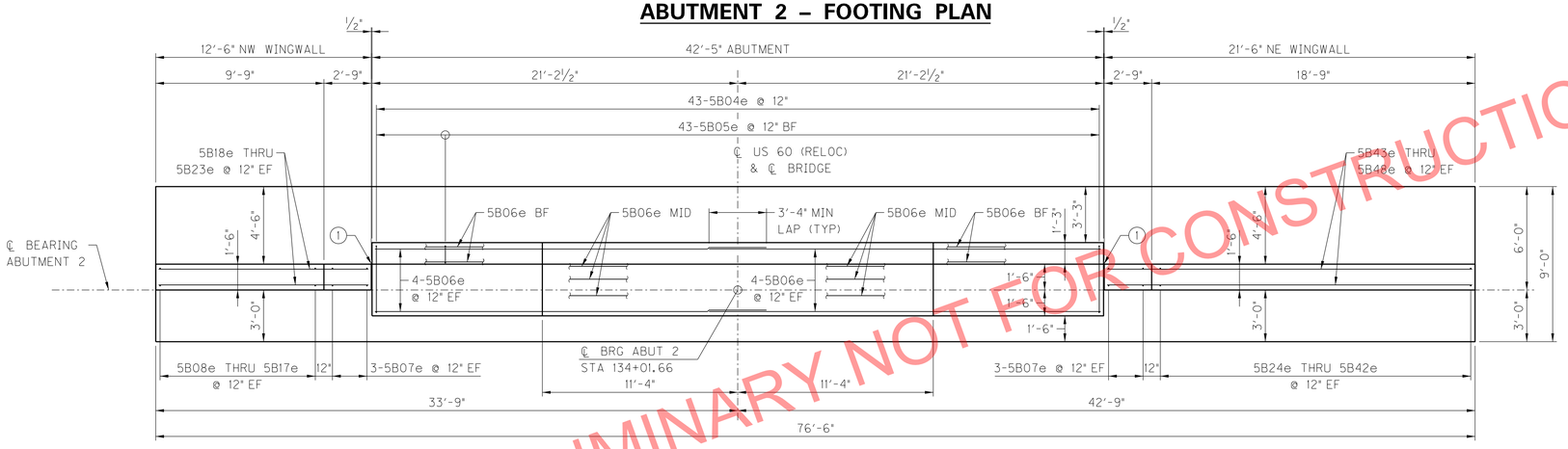
PIER 4 (4)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S31
		DRAWING NO. 27458

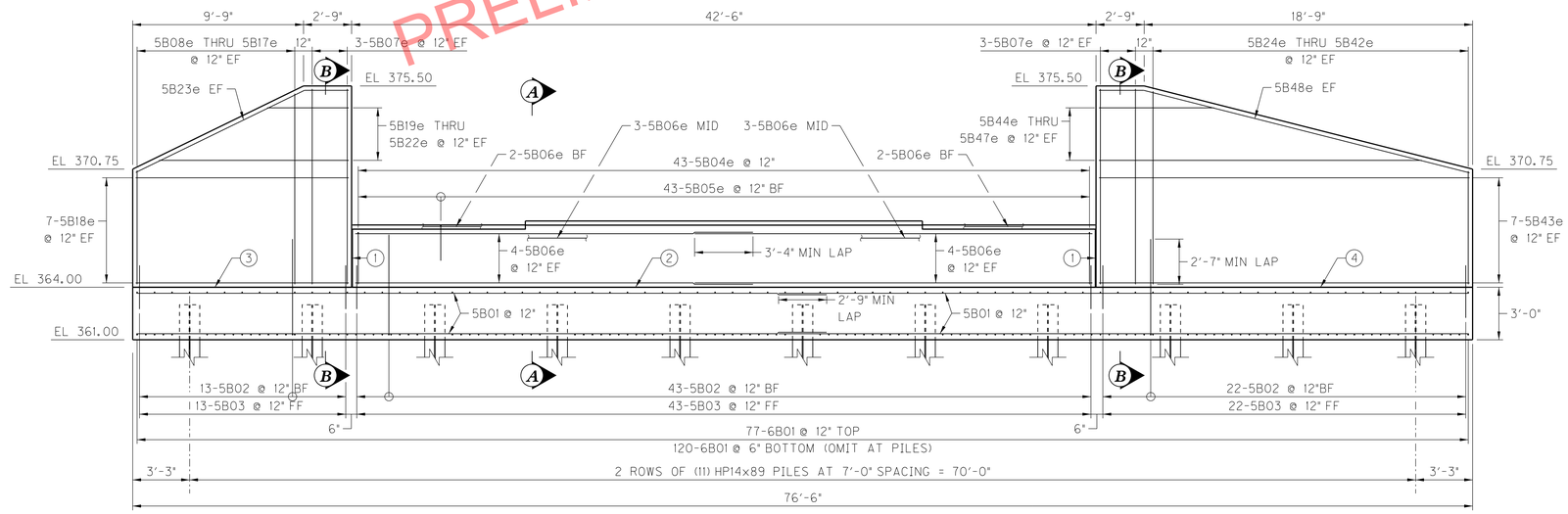
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\31 PIER 4 (4).DGN



ABUTMENT 2 – FOOTING PLAN



ABUTMENT 2 – PLAN



ABUTMENT 2 – ELEVATION

PRELIMINARY NOT FOR CONSTRUCTION

NOTE

FOR ABUTMENT AND STEM ELEVATIONS AND SECTIONS A-A AND B-B SEE ABUTMENT 2 (2).

NOTATIONS

1. ½" EXPANSION JOINT MATERIAL
2. 2"x1'-5"x41'-5" DEPRESSED KEY CONSTRUCTION JOINT
3. 2"x6"x11'-6" DEPRESSED KEY CONSTRUCTION JOINT
4. 2"x6"x20'-6" DEPRESSED KEY CONSTRUCTION JOINT

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WINES
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

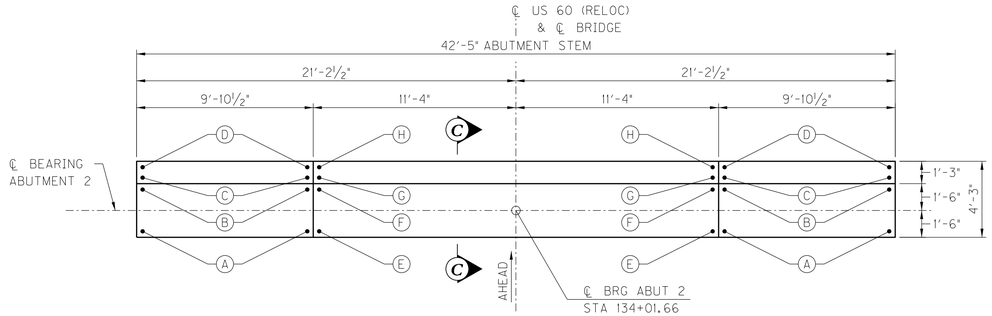
COUNTY
LIVINGSTON

ROUTE **US 60** | CROSSING **CUMBERLAND RIVER**

ABUTMENT 2 (1)

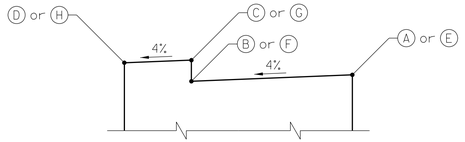
ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S32
		DRAWING NO. 27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: kwight
DATE PLOTTED: January 24, 2020
FILE NAME: 27 28 ABUTMENT 2.DGN

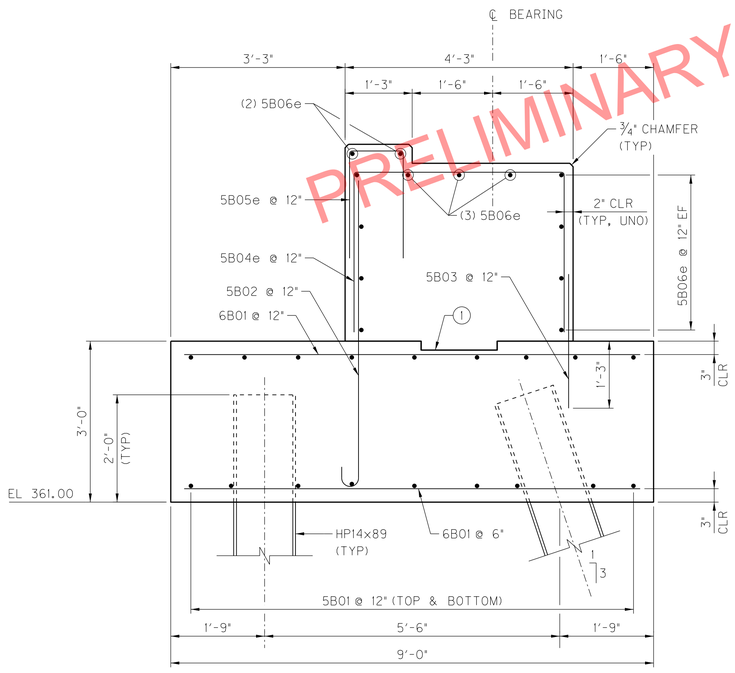


ABUTMENT 2 STEM PLAN

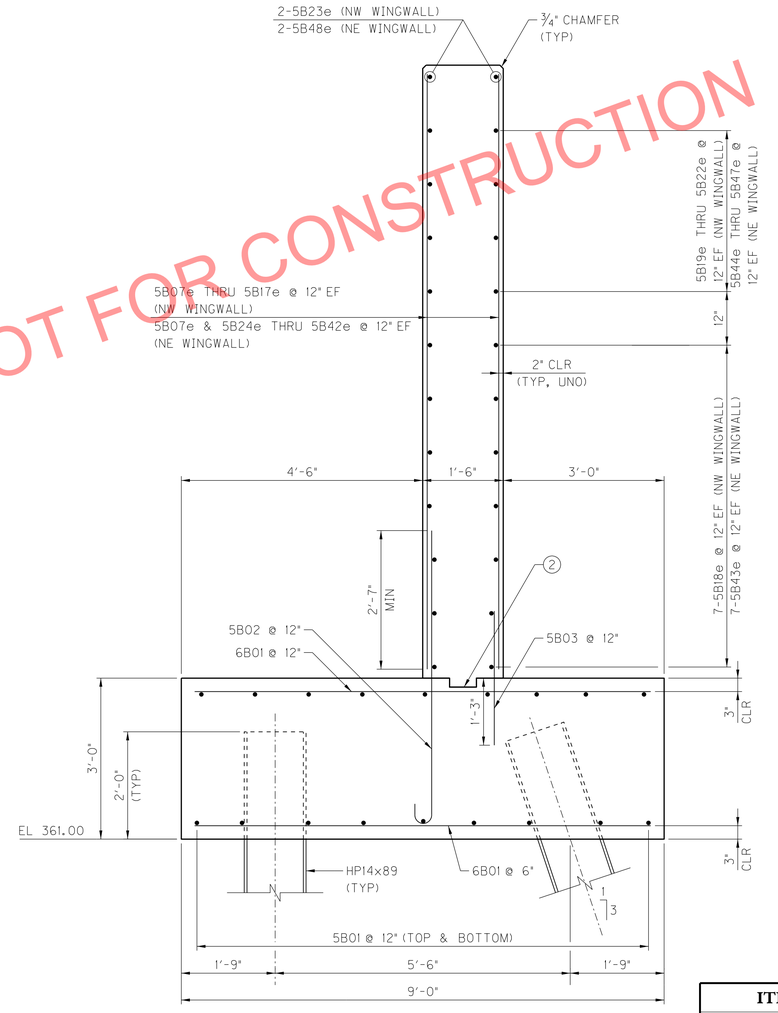
NOTE	ABUTMENT 2 ELEVATIONS (FEET)
Ⓐ	367.34
Ⓑ	367.22
Ⓒ	367.57
Ⓓ	367.52
Ⓔ	367.56
Ⓕ	367.44
Ⓖ	367.80
Ⓗ	367.75



SECTION C–C



SECTION A–A



SECTION B–B

PRELIMINARY NOT FOR CONSTRUCTION

NOTE

FOR EMBANKMENT DETAILS AND LIMITS OF STRUCTURE GRANULAR BACKFILL SEE ABUTMENT EARTHWORK DETAILS.

NOTATIONS

① 2"x1'-5" DEPRESSED KEY CONSTRUCTION JOINT

② 2"x6" DEPRESSED KEY CONSTRUCTION JOINT

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WINES
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE
US 60

CROSSING
CUMBERLAND RIVER

ABUTMENT 2 (2)

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S33

DRAWING NO.
27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 27 28 ABUTMENT 2.DGN

ABUTMENT 2 - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH		LOCATION	A		B		C		D		E		F		G		H		J		K		L		M		N		O	
			FT.	IN.		FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
5B01	STR	36	39	6	FOOTING, LONGITUDINAL TOP & BTM																												
5B02	1	78	6	1	FOOTING, VERTICAL BF	0	7	5	6									-	-			0	5										
5B03	STR	78	2	6	FOOTING, VERTICAL FF																												
5B04e	17	43	9	11	ABUTMENT, U-BAR TOP			3	0	3	11	3	0																				
5B05e	17	43	4	11	ABUTMENT, U-BAR TOP BF			2	0	0	11	2	0																				
5B06e	STR	26	23	0	ABUTMENT, HORIZONTAL																												
5B07e	STR	12	11	3	NW & NE WINGWALLS VERTICAL EF																												
5B08e	STR	2	11	0	NW WINGWALL, VERTICAL EF																												
5B09e	STR	2	10	6	NW WINGWALL, VERTICAL EF																												
5B10e	STR	2	10	0	NW WINGWALL, VERTICAL EF																												
5B11e	STR	2	9	6	NW WINGWALL, VERTICAL EF																												
5B12e	STR	2	9	0	NW WINGWALL, VERTICAL EF																												
5B13e	STR	2	8	6	NW WINGWALL, VERTICAL EF																												
5B14e	STR	2	8	0	NW WINGWALL, VERTICAL EF																												
5B15e	STR	2	7	6	NW WINGWALL, VERTICAL EF																												
5B16e	STR	2	7	0	NW WINGWALL, VERTICAL EF																												
5B17e	STR	2	6	6	NW WINGWALL, VERTICAL EF																												
5B18e	STR	14	12	2	NW WINGWALL, HORIZONTAL EF																												
5B19e	STR	2	10	9	NW WINGWALL, HORIZONTAL EF																												
5B20e	STR	2	8	8	NW WINGWALL, HORIZONTAL EF																												
5B21e	STR	2	6	7	NW WINGWALL, HORIZONTAL EF																												
5B22e	STR	2	4	6	NW WINGWALL, HORIZONTAL EF																												
5B23e	16	2	13	2	NW WINGWALL, HORIZ. TOP EF					2	6	10	8							4	8			9	7							12	1
5B24e	STR	2	11	0	NE WINGWALL, VERTICAL EF																												
5B25e	STR	2	10	9	NE WINGWALL, VERTICAL EF																												
5B26e	STR	2	10	6	NE WINGWALL, VERTICAL EF																												
5B27e	STR	2	10	3	NE WINGWALL, VERTICAL EF																												
5B28e	STR	2	10	0	NE WINGWALL, VERTICAL EF																												
5B29e	STR	2	9	9	NE WINGWALL, VERTICAL EF																												
5B30e	STR	2	9	6	NE WINGWALL, VERTICAL EF																												
5B31e	STR	2	9	3	NE WINGWALL, VERTICAL EF																												
5B32e	STR	2	9	0	NE WINGWALL, VERTICAL EF																												
5B33e	STR	2	8	9	NE WINGWALL, VERTICAL EF																												
5B34e	STR	2	8	6	NE WINGWALL, VERTICAL EF																												
5B35e	STR	2	8	3	NE WINGWALL, VERTICAL EF																												
5B36e	STR	2	8	0	NE WINGWALL, VERTICAL EF																												
5B37e	STR	2	7	9	NE WINGWALL, VERTICAL EF																												
5B38e	STR	2	7	6	NE WINGWALL, VERTICAL EF																												
5B39e	STR	2	7	3	NE WINGWALL, VERTICAL EF																												
5B40e	STR	2	7	0	NE WINGWALL, VERTICAL EF																												
5B41e	STR	2	6	9	NE WINGWALL, VERTICAL EF																												
5B42e	STR	2	6	6	NE WINGWALL, VERTICAL EF																												
5B43e	STR	14	21	2	NE WINGWALL, HORIZONTAL EF																												
5B44e	STR	2	18	3	NE WINGWALL, HORIZONTAL EF																												
5B45e	STR	2	14	4	NE WINGWALL, HORIZONTAL EF																												
5B46e	STR	2	10	5	NE WINGWALL, HORIZONTAL EF																												
5B47e	STR	2	6	6	NE WINGWALL, HORIZONTAL EF																												
5B48e	16	2	21	8	NE WINGWALL, HORIZ. TOP EF					2	6	19	2							4	8			18	7							21	1
6B01	STR	197	8	6	FOOTING, TRANSVERSE TOP & BTM																												

PRELIMINARY NOT FOR CONSTRUCTION

FILE NAME: 27 28 ABUTMENT 2.DGN
USER: jtburke
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.832

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WINES
DETAILED BY: J. BURKE	S. WINES

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE
US 60

CROSSING
CUMBERLAND RIVER

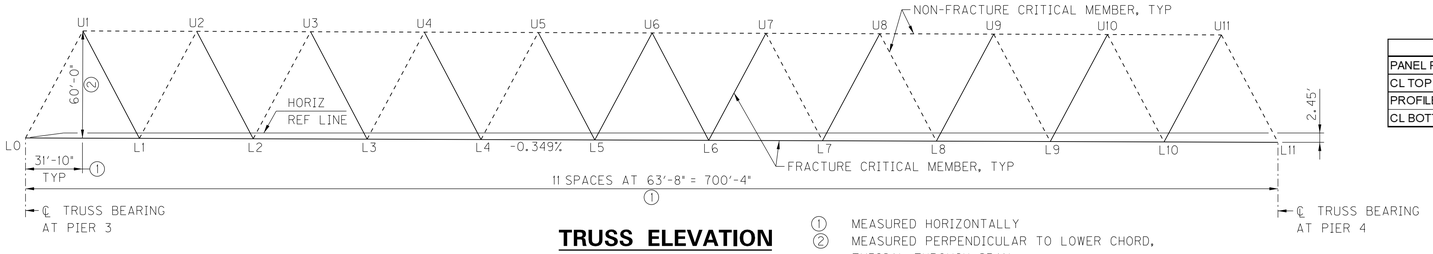
ABUTMENT 2 (3)

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S34

DRAWING NO.
27458



TRUSS ELEVATION

① MEASURED HORIZONTALLY
② MEASURED PERPENDICULAR TO LOWER CHORD, TYPICAL THROUGH SPAN

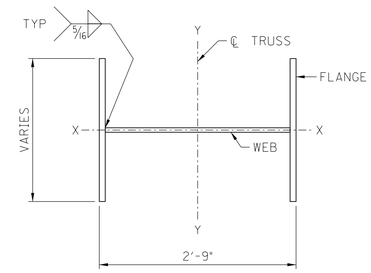
TABLE OF ELEVATIONS (FEET)												
PANEL POINT	L0	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
CL TOP CHORD		453.202	452.980	452.758	452.536	452.315	452.093	451.871	451.649	451.427	451.205	450.983
PROFILE GRADE	402.530	402.309	402.087	401.865	401.643	401.421	401.199	400.977	400.755	400.534	400.312	400.090
CL BOTTOM CHORD	393.313	393.091	392.869	392.647	392.425	392.204	391.982	391.760	391.538	391.316	391.094	390.872

NOTES:

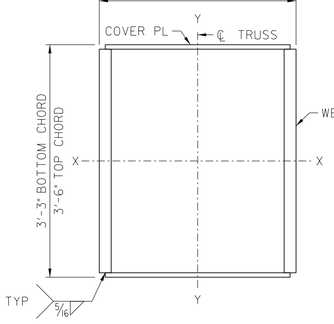
1. MEMBER LENGTHS SHOWN ARE FROM PANEL POINT TO PANEL POINT WITHOUT CAMBER OR TEMPERATURE CORRECTIONS.
2. ELEVATIONS SHOWN IN TABLE INDICATE PANEL POINT POSITIONS UNDER FULL DEADLOAD (NOT INCLUDING FUTURE WEARING SURFACE).
3. SERVICE, STRENGTH, FATIGUE, AND EXTREME EVENT (I.E. SEISMIC) LOAD COMBINATIONS WERE USED FOR THE DESIGN OF THE MAIN TRUSS MEMBERS IN ACCORDANCE WITH AASHTO LRFD TABLE 3.4.1-1. MAXIMUM AND MINIMUM LOAD FACTORS WERE APPLIED IN ACCORDANCE WITH AASHTO LRFD TABLE 3.4.1-2. FOR THE STRENGTH LIMIT STATES, A REDUNDANCY FACTOR OF 1.05 WAS INCLUDED FOR ALL FRACTURE CRITICAL MEMBERS.
4. 5 PSF ALLOWANCE FOR STAY-IN-PLACE FORMS HAS BEEN INCLUDED IN THE CONCRETE DEAD LOAD.
5. MAIN TRUSS MEMBER FORCES WERE DETERMINED USING A 3D ANALYSIS MODEL.
6. (+) INDICATES TENSION FORCE
   (-) INDICATES COMPRESSION FORCE
7. MAIN TRUSS MEMBERS WERE DESIGNED FOR COMBINED AXIAL AND BENDING USING INTERACTION EQUATIONS FROM AASHTO LRFD 6.8.2.3 AND 6.9.2.2 FOR TENSION AND COMPRESSION MEMBERS, RESPECTIVELY. IF THE INTERACTION OF AXIAL TENSION AND BENDING DOES NOT PRODUCE NET COMPRESSION IN EITHER FLANGE, THE FLEXURAL CAPACITY LIMIT STATES OF LATERAL TORSIONAL BUCKLING AND LOCAL FLANGE BUCKLING ARE NOT APPLICABLE.
8. FOR THE SLENDERNESS RATIO (KL/R), THE UNBRACED LENGTH IS MEASURED ALONG THE CENTERLINE OF THE MEMBER FROM PANEL POINT TO PANEL POINT. THE EFFECTIVE LENGTH FACTOR (K) IS TAKEN AS 0.75 IN ACCORDANCE WITH AASHTO LRFD 4.6.2.5.
9. DEAD LOAD AXIAL DEFLECTION REPRESENTS THE AXIAL SHORTENING (-) OR LENGTHENING (+) OF THE TRUSS MEMBERS DUE TO THE TOTAL BRIDGE DEAD LOAD (NOT INCLUDING FUTURE WEARING SURFACE). ALL TRUSS MEMBERS AND CONNECTIONS DETAILS SHALL BE BASED UPON THE GEOMETRY OF THE FINAL ERECTED STRUCTURE.
10. GROSS AREA FOR MEMBERS L0-L1 AND L10-L11 PRESENTED FOR FULL SECTION AS WELL AS SECTION WHERE COVER PLATES TERMINATE AT GUSSETS L0 AND L11. SLENDERNESS RATIOS PROVIDED BASED ON FULL SECTION INCLUDING WEB PLATES AND COVER PLATES.

TRUSS MEMBERS		MEMBER AXIAL FORCES (KIPS) - SERVICE LOADS							FACTORED DESIGN LOADS			GOVERNING LOAD GROUP	LIVE LOAD RANGE FOR FATIGUE TRUCK (KSI)	SECTION DESCRIPTION									DEAD LOAD AXIAL DEFLECTION (INCHES)
		DC		DW		LL+I	WS	WL (+ / -)	AXIAL (KIP)	MOMENT - Mx (KIP - FT)	MOMENT - My (KIP - FT)			TYPE	MATERIAL GRADE	FLANGE / COVER PLATES	WEB PLATES	SECTION AREA (SQ. IN.) GROSS	SECTION AREA (SQ. IN.) NET	SHEAR LAG FACTOR	MEMBER LENGTH (FEET)	Slenderness Ratio KL/rx	Slenderness Ratio KL/ry	
		STEEL	CONC.	FWS	UTILITIES																		
BOTTOM CHORDS	L0 - L1	712	474	51	0	301 / -39	148 / -147	21	2460	515	555	STR V	2.20	BOX	50W	32.00 x 0.50	38.00 x 1.00	76 / 108	58.50	1.00	63.667	41.1	20.0	0.29
	L1 - L2	1923	1288	138	0	734 / -34	207 / -207	36	5891	375	692	STR I	2.14	BOX	50W	31.50 x 0.75	37.50 x 1.50	159.75	136.31	1.00	63.667	41.5	20.3	0.53
	L2 - L3	2906	1926	207	0	1062 / -31	267 / -266	47	8660	470	818	STR I	2.08	BOX	50W	30.75 x 0.75	37.50 x 2.25	214.88	182.06	1.00	63.667	43.9	20.1	0.59
	L3 - L4	3626	2381	255	0	1292 / -28	304 / -304	55	10649	706	934	STR I	2.07	BOX	50W	30.00 x 0.75	37.50 x 3.00	270.00	227.81	1.00	63.667	45.5	20.2	0.59
	L4 - L5	4069	2655	285	0	1430 / -26	320 / -320	58	11851	768	1116	STR I	3.55	BOX	50W	29.75 x 1.00	37.00 x 3.25	300.00	253.13	1.00	63.667	44.9	20.6	0.59
	L5 - L6	4139	2736	292	0	1518 / -11	316 / -315	58	12396	1027	1030	STR I	2.34	BOX	50W	29.50 x 1.00	37.00 x 3.50	318.00	268.00	1.00	63.667	45.3	20.7	0.57
	L6 - L7	4069	2655	285	0	1430 / -26	320 / -320	58	11851	768	1116	STR I	3.55	BOX	50W	29.75 x 1.00	37.00 x 3.25	300.00	253.13	1.00	63.667	44.9	20.6	0.59
	L7 -L8	3626	2381	255	0	1292 / -28	304 / -304	55	10649	706	934	STR I	2.07	BOX	50W	30.00 x 0.75	37.50 x 3.00	270.00	227.81	1.00	63.667	45.5	20.2	0.59
	L8 - L9	2906	1926	207	0	1062 / -31	267 / -266	47	8660	470	818	STR I	2.08	BOX	50W	30.75 x 0.75	37.50 x 2.25	214.88	182.06	1.00	63.667	43.9	20.1	0.59
	L9 - L10	1923	1288	138	0	734 / -34	207 / -207	36	5891	375	692	STR I	2.14	BOX	50W	31.50 x 0.75	37.50 x 1.50	159.75	136.31	1.00	63.667	41.5	20.3	0.53
	L10 - L11	712	474	51	0	301 / -39	148 / -147	21	2460	515	555	STR V	2.20	BOX	50W	32.00 x 0.50	38.00 x 1.00	76 / 108	58.50	1.00	63.667	41.1	20.0	0.29
TOP CHORDS	U1 - U2	-1343	-924	-99	0	-524	25 / -22	2	-4006	369	185	STR I	1.79	BOX	50W	32.00 x 0.75	40.50 x 1.00	121.50	98.38	0.88	63.667	36.7	41.3	-0.46
	U2 - U3	-2563	-1729	-186	0	-953	47 / -43	11	-7247	514	239	STR I	1.71	BOX	50W	31.00 x 0.75	40.50 x 2.00	201.00	161.31	1.00	63.667	40.4	40.0	-0.54
	U3 - U4	-3395	-2265	-243	0	-1232	106 / -103	20	-9638	639	157	STR I	1.57	BOX	50W	30.50 x 1.00	40.00 x 2.50	251.00	201.00	1.00	63.667	40.5	40.9	-0.57
	U4 - U5	-4019	-2659	-285	0	-1432	149 / -146	27	-11273	722	136	STR I	1.53	BOX	50W	30.00 x 1.00	40.00 x 3.00	290.00	231.25	1.00	63.667	41.5	41.0	-0.59
	U5 - U6	-4320	-2843	-305	0	-1525	169 / -166	30	-12080	832	67	STR I	1.37	BOX	50W	29.50 x 1.00	40.00 x 3.50	329.00	261.50	1.00	63.667	42.3	41.2	-0.56
	U6 - U7	-4320	-2843	-305	0	-1525	169 / -166	30	-12080	832	67	STR I	1.37	BOX	50W	29.50 x 1.00	40.00 x 3.50	329.00	261.50	1.00	63.667	42.3	41.2	-0.56
	U7 - U8	-4019	-2659	-285	0	-1432	149 / -146	27	-11273	722	136	STR I	1.53	BOX	50W	30.00 x 1.00	40.00 x 3.00	290.00	231.25	1.00	63.667	41.5	41.0	-0.59
	U8 - U9	-3395	-2265	-243	0	-1232	106 / -103	20	-9638	639	157	STR I	1.57	BOX	50W	30.50 x 1.00	40.00 x 2.50	251.00	201.00	1.00	63.667	40.5	40.9	-0.57
	U9 - U10	-2563	-1729	-186	0	-953	47 / -43	11	-7247	514	239	STR I	1.71	BOX	50W	31.00 x 0.75	40.50 x 2.00	201.00	161.31	1.00	63.667	40.4	40.0	-0.54
	U10 - U11	-1343	-924	-99	0	-524	25 / -22	2	-4006	369	185	STR I	1.79	BOX	50W	32.00 x 0.75	40.50 x 1.00	121.50	98.38	0.88	63.667	36.7	41.3	-0.46
DIAGONALS	L0 - U1	-1558	-1027	-110	0	-596	88 / -88	8	-4328	683	1595	STR V	2.57	BOX	50W	30.75 x 0.75	31.50 x 2.25	180.38	135.38	0.86	67.922	54.4	43.4	-0.39
	U1 - L1	1442	1022	110	0	586	47 / -47	4	4120	256	2093	STR V	3.05	H	50W	36.00 x 2.00	29.00 x 0.50	158.50	128.50	0.90	67.922	61.7	40.8	0.44
	L1 - U2	-1289	-796	-86	0	42 / -485	23 / -23	2	-3598	295	1471	STR I	3.27	H	50W	34.00 x 2.00	29.00 x 0.75	157.75	117.75	0.90	67.922	67.1	41.5	-0.37
	U2 - L2	1165	797	86	0	485 / -41	17 / -17	2	3441	185	1061	STR I	3.59	H	50W	34.00 x 1.50	30.00 x 0.50	117.00	94.50	0.91	67.922	66.7	40.7	0.47
	L2 - U3	-1019	-603	-65	0	71 / -399	9 / -8	3	-2830	283	1081	STR I	3.54	H	50W	34.00 x 1.50	30.00 x 0.75	124.50	94.50	0.90	67.922	68.8	41.5	-0.37
	U3 - L3	886	604	65	0	400 / -69	8 / -8	2	2664	147	1020	STR I	3.82	H	50W	30.00 x 1.50	30.00 x 0.50	105.00	82.50	0.90	67.922	76.2	40.9	0.40
	L3 - U4	-721	-401	-43	0	108 / -324	7 / -9	2	-2042	272	1082	STR I	3.85	H	50W	30.00 x 1.50	30.00 x 0.75	112.50	90.00	0.90	67.922	78.9	41.8	-0.28
	U4 - L4	577	401	43	0	325 / -105	8 / -7	1	1863	124	922	STR I	4.67	H	50W	28.00 x 1.25	30.50 x 0.50	85.25	72.75	0.90	67.922	83.5	41.1	0.32
	L4 - U5	-416	-201	-22	0	148 / -251	7 / -9	2	-1231	220	958	STR I	4.56	H	50W	28.00 x 1.25	30.50 x 0.75	92.88	80.38	0.90	67.922	87.1	42.3	-0.19
	U5 - L5	266	202	22	0	252 / -146	8 / -7	1	1046	90	820	STR I	5.22	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	0.17
	L5 - U6	-85	0	0	0	203 / -201	6 / -7	1	-457	175	836	STR I	5.25	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	-0.03
	U6 - L6	-85	0	0	0	203 / -201	6 / -7	1	-457	175	836	STR I	5.25	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	-0.03
	L6 - U7	266	202	22	0	252 / -146	8 / -7	1	1046	90	820	STR I	5.22	H	50W	24.00 x 1.25	30.50 x 0.50	75.25	62.75	0.90	67.922	98.8	41.5	0.17
	U7 - L7	-416	-201	-22	0	148 / -251	7 / -9	2	-1231	220	958	STR I	4.56	H	50W	28.00 x 1.25	30.50 x 0.75	92.88	80.38	0.90	67.922	87.1	42.3	-0.19
	L7 - U8	577	401	43	0	325 / -105	8 / -7	1	1863	124	922	STR I	4.67	H	50W	28.00 x 1.25	30.50 x 0.50	85.25	72.75	0.90	67.922	83.5	41.1	0.32
	U8 - L8	-721	-401	-43	0	108 / -324	7 / -9	2	-2042	272	1082	STR I	3.85	H	50W	30.00 x 1.50	30.00 x 0.75	112.50	90.00	0.90	67.922	78.9	41.8	-0.28
	L8 - U9	886	604	65	0	400 / -69	8 / -8	2	2664	147	1020	STR I	3.82	H	50W	30.00 x 1.50	30.00 x 0.50	105.00	82.50	0.90	67.922	76.2	40.9	0.40
	U9 - L9	-1019	-603	-65	0	71 / -399	9 / -8	3	-2830	283	1081	STR I	3.54	H	50W	34.00 x 1.50	30.00 x 0.75	124.50	94.50	0.90	67.922	68.8	41.5	-0.37
	L9 - U10	1165	797	86	0	485 / -41	17 / -17	2	3441	185	1061	STR I	3.59	H	50W	34.00 x 1.50	30.00 x 0.50	117.00	94.50	0.91	67.922	66.7	40.7	0.47
	U10 - L10	-1289	-796	-86	0	42 / -485	23 / -23	2	-3598	295	1471	STR I	3.27	H	50W	34.00 x 2.00	29.00 x 0.75	157.75	117.75	0.90	67.922	67.1	41.5	-0.37
	U10 - L11	1442	1022	110	0	586	47 / -47	4	4120	256	2093	STR V	3.05	H	50W	36.00 x 2.00	29.00 x 0.50	158.50	128.50	0.90	67.922	61.7	40.8	0.44
	U11 - L11	-1558	-1027	-110	0	-596	88 / -88	8	-4328	683	1595	STR V	2.57	BOX	50W	30.75 x 0.75	31.50 x 2.25	180.38	135.38	0.86	67.922	54.4	43.4	-0.39

PRELIMINARY NOT FOR CONSTRUCTION



H MEMBERS



BOX MEMBERS

REVISION	DATE

DATE: JANUARY 2020 — CHECKED BY
DESIGNED BY: J. HUDSON — T. PERKINS
DETAILED BY: D. BASHAM — T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

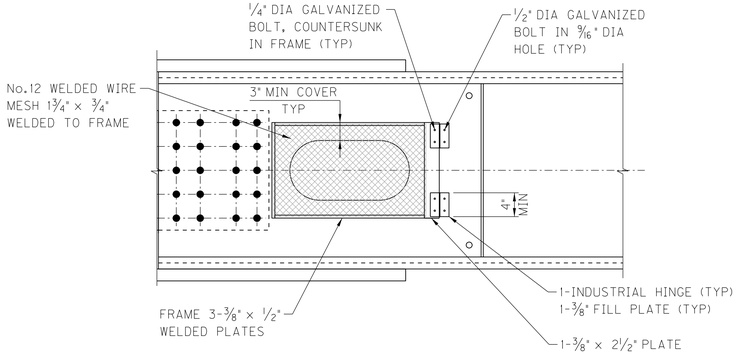
TRUSS ELEV & STRESS SHEET

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

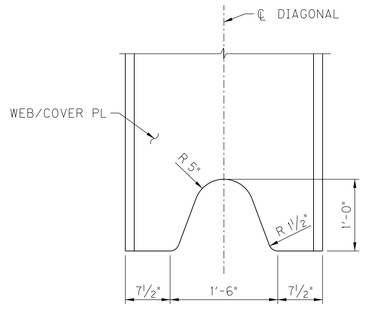
SHEET NO. S35
DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

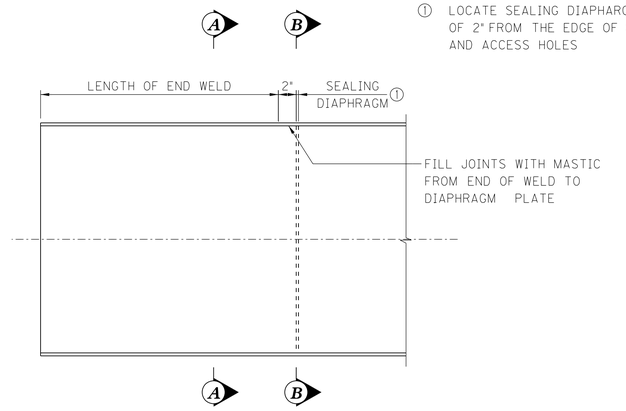


TYPICAL 10" x 20" ACCESS HOLE DETAIL AT TOP CHORD AND END POST

(TOP CHORD SHOWN, END POST SIMILAR)



TYPICAL DIAGONAL END DETAIL AT BOTTOM CHORD



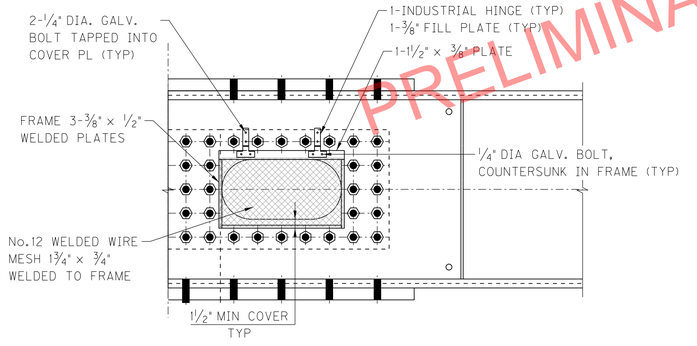
ELEVATION

NOTE:

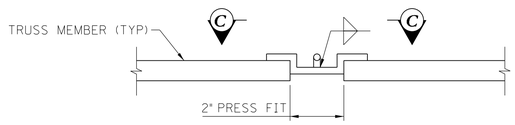
FRAME AND MESH TO BE HOT DIPPED GALVANIZED AFTER WELDING.

INDUSTRIAL HINGES TO BE STAINLESS STEEL BALL BEARINGS AND NON-REMOVABLE PINS. HINGE PLATES TO BE MINIMUM 0.12" THICKNESS AND PINS ARE TO BE MINIMUM 0.25" DIAMETER.

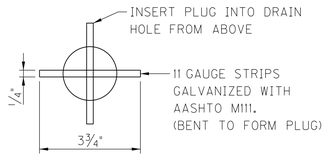
GALVANIZED BOLTS FOR CONNECTING HINGES TO BE ASTM A307 (NON HIGH STRENGTH).



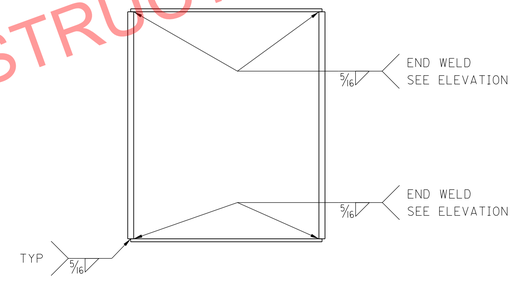
TYPICAL 10" x 20" ACCESS HOLE DETAIL AT BOTOM CHORDS



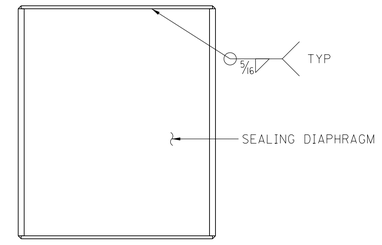
SECTION THRU DRAIN HOLE



VIEW C–C



SECTION A–A



SECTION B–B

WELDING DETAILS – BOX MEMBERS

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

MISC TRUSS MEMBER DETAILS

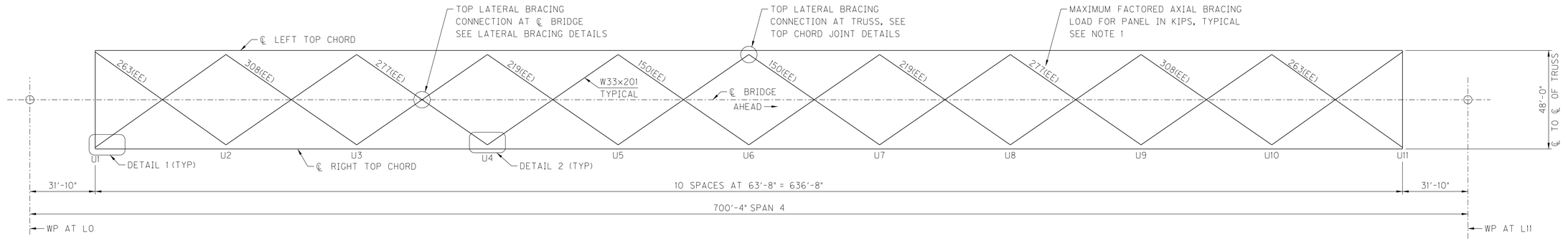
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

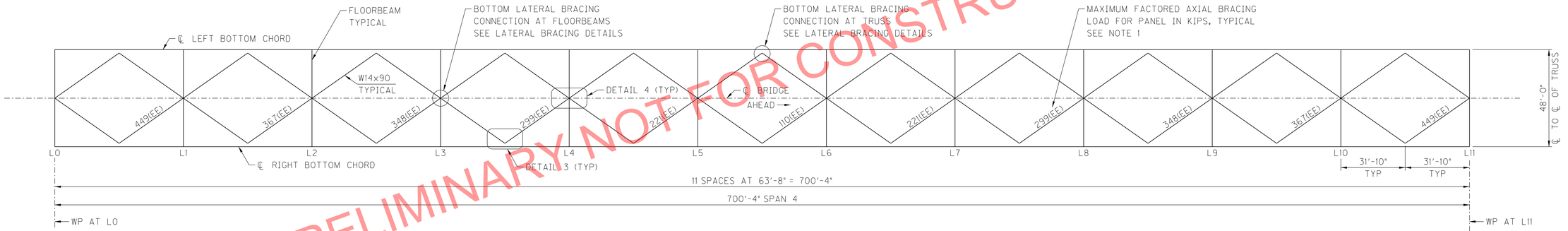
SHEET NO.: S36

DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 1:28:02 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\36 MISC TRUSS MEMBER DETAILS.DGN

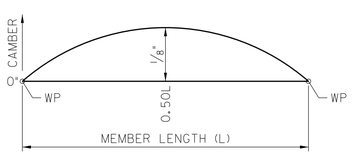


TOP LATERAL BRACING PLAN

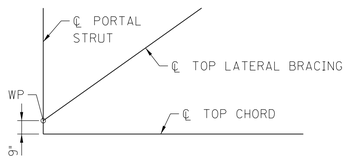


BOTTOM LATERAL BRACING PLAN

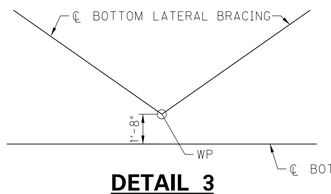
PRELIMINARY NOT FOR CONSTRUCTION



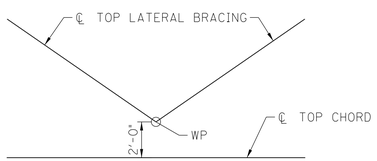
TOP LATERAL BRACING CAMBER DIAGRAM



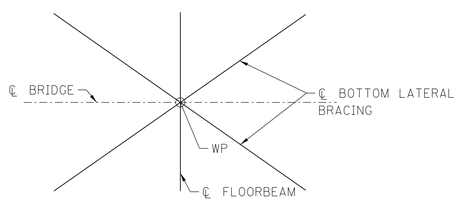
DETAIL 1



DETAIL 3



DETAIL 2



DETAIL 4

NOTES:

1. LATERAL BRACING IS DESIGNED AT THE CONTROLLING STRENGTH (STR) OR EXTREME EVENT (EE) LIMIT STATE FOR A COMBINATON OF AXIAL LOAD AND BENDING MOMENT. LOADS SHOWN ARE THE ABSOLUTE MAXIMUM FOR THE BAY OF BRACING. LOADS ARE REVERSIBLE.
2. ALL DIMENSIONS SHOWN ARE HORIZONTAL, UNLESS NOTED OTHERWISE.
3. ORIENT ROLLED SECTIONS WITH NATURAL CAMBER UPWARDS.

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

LATERAL BRACING PLANS

ITEM NUMBER: 1–1142.00

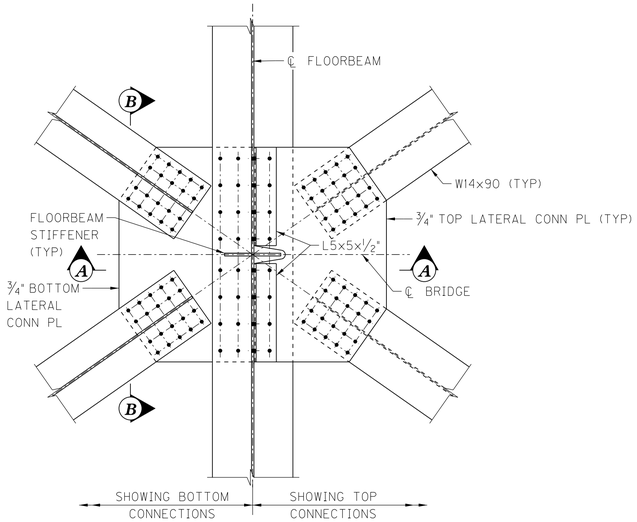
PREPARED BY: Stantec

SHEET NO. S37

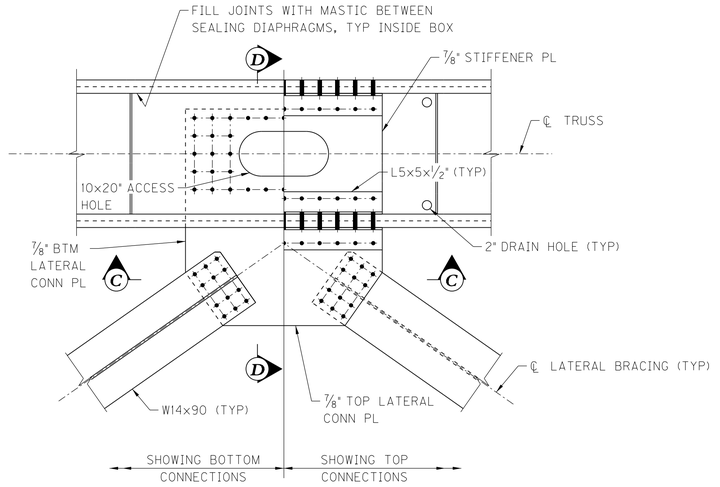
DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\37 LATERAL BRACING PLANS.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

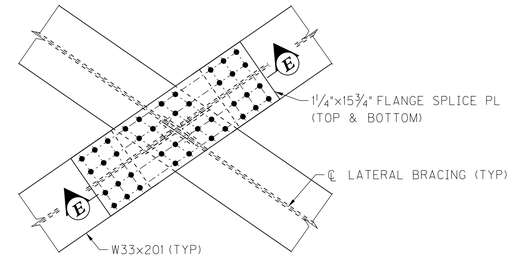
PRELIMINARY NOT FOR CONSTRUCTION



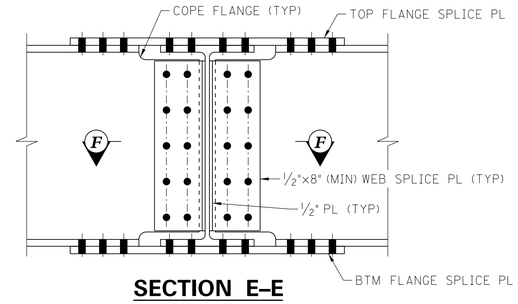
PLAN – BOTTOM LATERAL BRACING CONNECTION AT FLOORBEAM



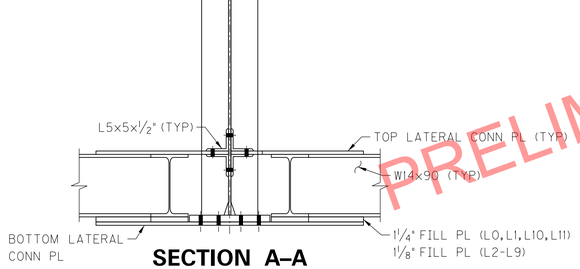
PLAN – BOTTOM LATERAL BRACING CONNECTION AT TRUSS BOTTOM CHORD



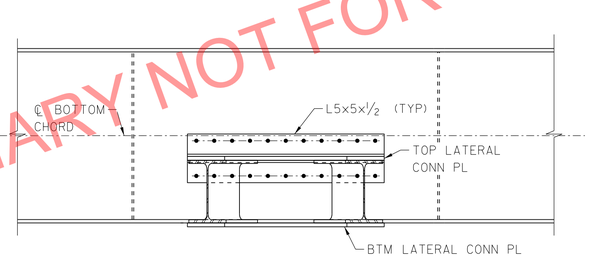
PLAN – TOP LATERAL BRACING AT CL OF BRIDGE



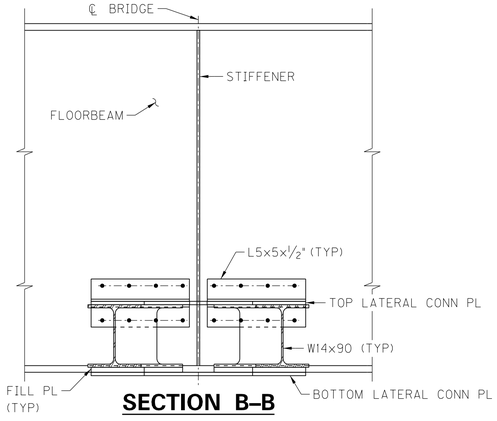
SECTION E–E



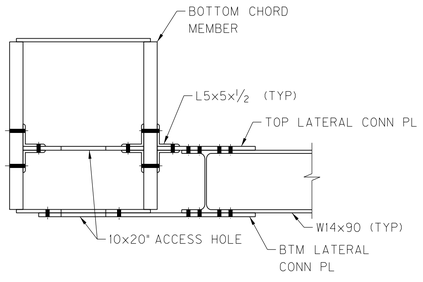
SECTION A–A



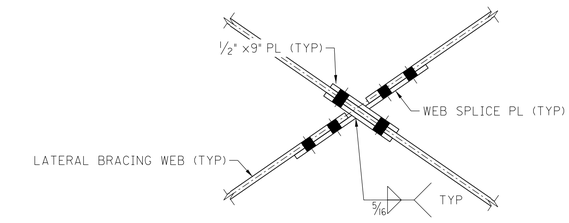
SECTION C–C



SECTION B–B



SECTION D–D



SECTION F–F

LATERAL BRACING NOTES:

1. ALL BOLTS IN LOWER LATERAL BRACING CONNECTIONS ARE ⅞" DIA. ASTM F3125 GRADE A325.
2. ALL BOLTS IN TOP LATERAL BRACING CONNECTIONS AT ℄ OF BRIDGE SHALL BE 1⅛" DIA. ASTM F3125 GRADE A490.
3. SHORT SLOTTED HOLES SHALL BE PROVIDED IN THE LOWER LATERAL BRACING MEMBERS ORIENTED IN THE DIRECTION OF THE MEMBER IN ALL LATERAL BRACING MEMBERS.
4. AFTER COMPLETION OF THE STEEL PORTION OF THE SUPERSTRUCTURE THE CONTRACTOR SHALL LOOSEN BOLTS AT ALL SHORT SLOTTED HOLES TO RELEASE THE DEAD LOAD AXIAL FORCES AND RETIGHTEN THE CONNECTIONS.
5. AFTER COMPLETION OF THE DECK POUR THE CONTRACTOR SHALL LOOSEN BOLTS AT ALL SHORT SLOTTED HOLES TO RELEASE THE DEAD LOAD AXIAL FORCES. ALL BOLTS IN THE CONNECTIONS SHALL BE REPLACED AND TIGHTENED.
6. WHILE LOSENING AND RETIGHTENING OR REPLACING BOLTS, THE CONTRACTOR SHALL COMPLETE ALL WORK AT ONE LOWER LATERAL GUSSET PLATE BEFORE PROCEEDING TO THE NEXT.
7. INACCORDANCE WITH SECTION 607.03.06 OF THE SPECIFICATION F3125 GRADE A490 BOLTS MAY NOT BE REUSED AFTER INITIAL TIGHTENING.

ITEM NUMBER
1–1142.00

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

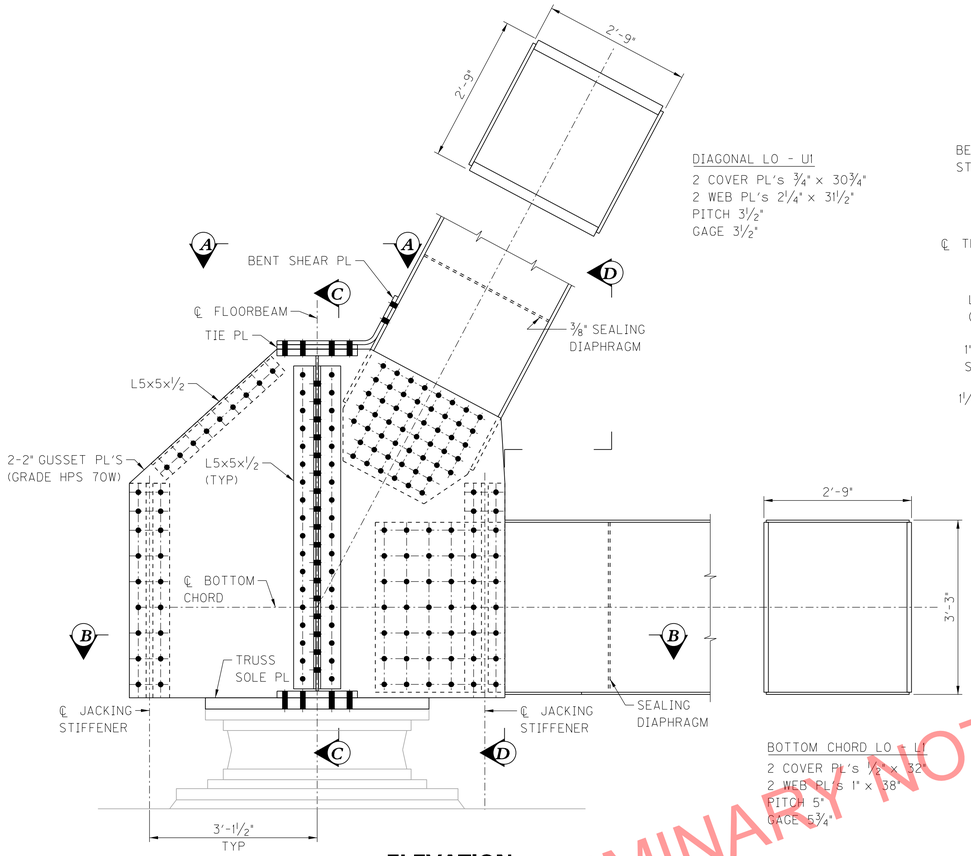
LATERAL BRACING DETAILS

PREPARED BY
Stantec

SHEET NO. S38
DRAWING NO. 27458

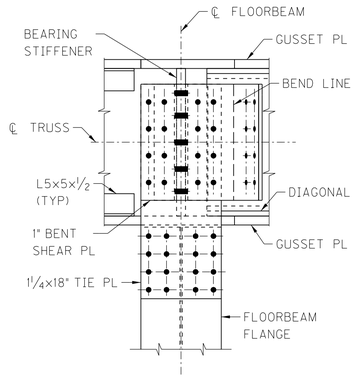
FILE NAME: V:\1785\ACTIVE\1785650II\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\38 LATERAL BRACING DETAILS.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

PRELIMINARY NOT FOR CONSTRUCTION

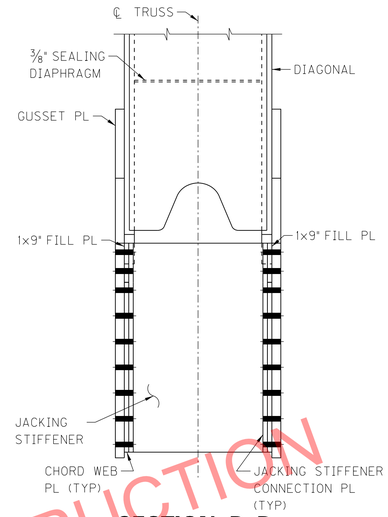


ELEVATION
(INBOARD)

DIAGONAL LO - U1
2 COVER PL's ¾" x 30¾"
2 WEB PL's 2¼" x 31½"
PITCH 3½"
GAGE 3½"



VIEW A–A



SECTION D–D

NOTE:
LO SHOWN, L11 SIMILAR EXCEPT FOR CONNECTION TO TRUSS DISC BEARINGS. FOR DETAILS, SEE TRUSS BEARING SHEETS.

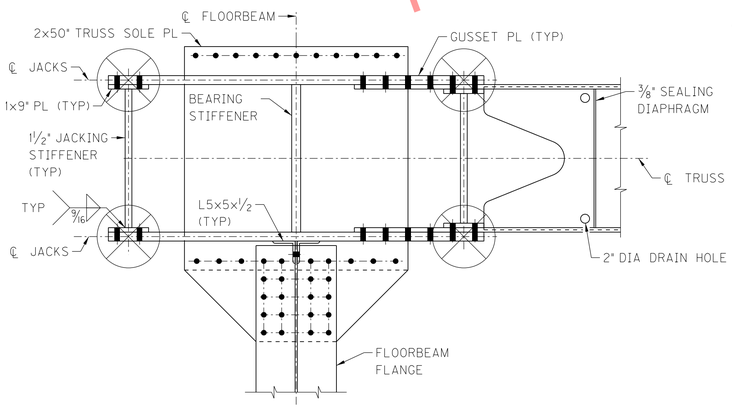
TRUSS JOINT NOTES:

1. SEE GENERAL NOTES SHEETS.
2. ALL BOLTS IN TRUSS JOINTS ARE 1⅛" DIAMETER, UNLESS NOTED OTHERWISE.
3. 1⅛" DIAMETER BOLTS SHALL BE HIGH STRENGTH ASTM F3125 GRADE A490.
4. BOLT THREADS ARE TO BE EXCLUDED FROM THE SHEAR PLANE.
5. ALL CONNECTION STEEL TO BE GRADE 50W, UNLESS NOTED.
6. BOLT PATTERNS SHOWN ARE BASED ON SPACING OF 3½" MINIMUM FOR 1⅛" DIAMETER BOLTS. MINIMUM BOLT SPACINGS AND MAXIMUM GAGE AND PITCH FOR STITCH AND SEALING FASTENERS SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS, UNLESS NOTED OTHERWISE.
7. MINIMUM EDGE DISTANCE OF FASTENERS SHALL BE 2" FOR 1⅛" DIAMETER BOLTS.
8. JOINT DETAILS ARE SYMMETRIC ABOUT ℄ OF BRIDGE.
9. TRUSS JOINTS ARE SHOWN FOR LEFT TRUSS, UNO.

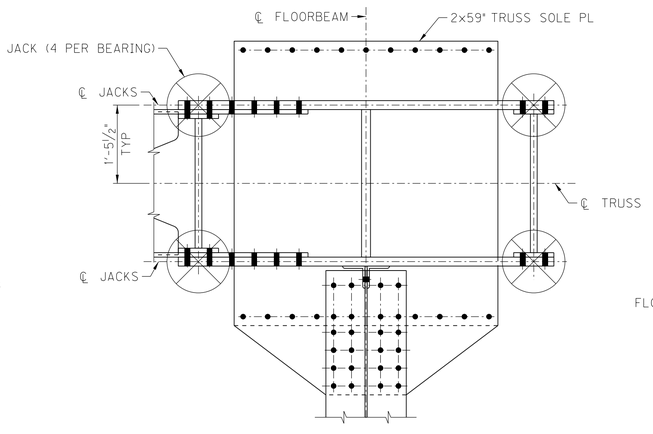
NOTES FOR FUTURE JACKING:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE JACKS AND THE JACKING PROCEDURES. SUBMIT THE PROPOSED JACKING AND/OR BEARING REPLACEMENT PROCEDURE TO KYTC FOR REVIEW AND APPROVAL PRIOR TO THE COMMENCEMENT OF ANY JACKING OPERATIONS.
2. ONLY ONE BEARING MAY BE JACKED OR REPLACED AT A TIME.
3. ACCOUNT FOR ANY THERMAL MOVEMENTS AND ANY HORIZONTAL FORCES THAT MAY BE ENCOUNTERED DURING THE PERIOD WHEN THE TRUSS IS BEING JACKED.
4. TRAFFIC IS PERMITTED ON THE BRIDGE, EXCEPT ROADWAY SHOULDER SHOULD BE CLOSED, DURING JACKING. ACCOUNT FOR THE EFFECTS OF VIBRATIONS DUE TO TRAFFIC ON THE BRIDGE AND ALSO NEAR THE SUBSTRUCTURE UNIT ON WHICH JACKING IS TAKING PLACE.
5. THE MAXIMUM ALLOWABLE JACKING DISPLACEMENT OF THE SUPERSTRUCTURE IS 3/8 IN VERTICAL.

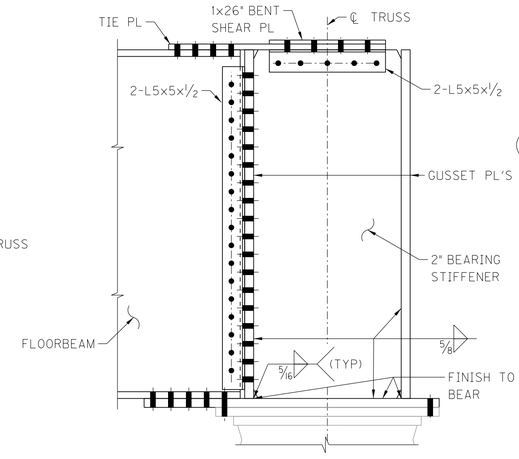
BOTTOM CHORD LO - L1
2 COVER PL's ½" x 32"
2 WEB PL's 1" x 38"
PITCH 5"
GAGE 5¾"



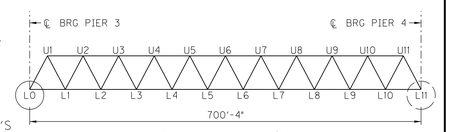
SECTION B–B AT L0



SECTION B–B AT L11



SECTION C–C



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

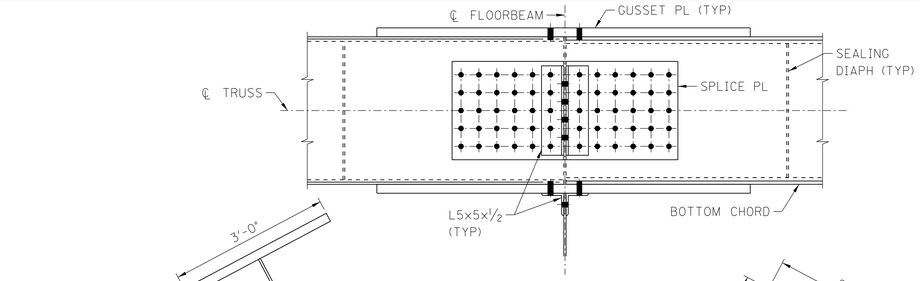
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

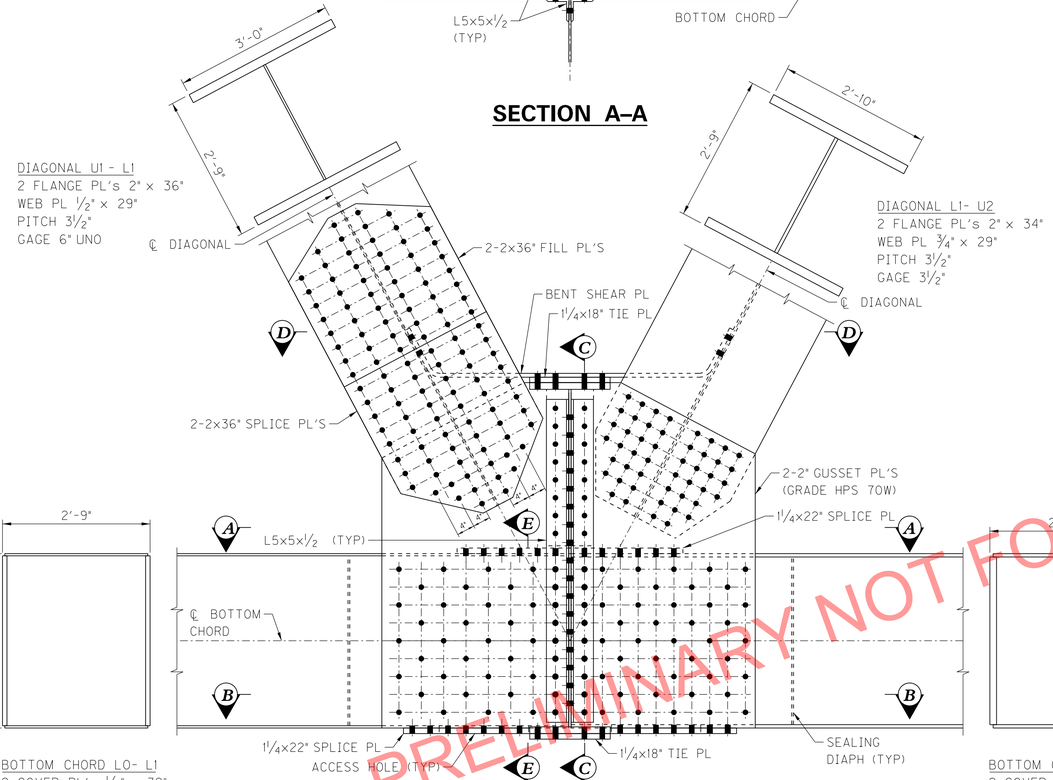
TRUSS JOINT L0

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S39
		DRAWING NO. 27458

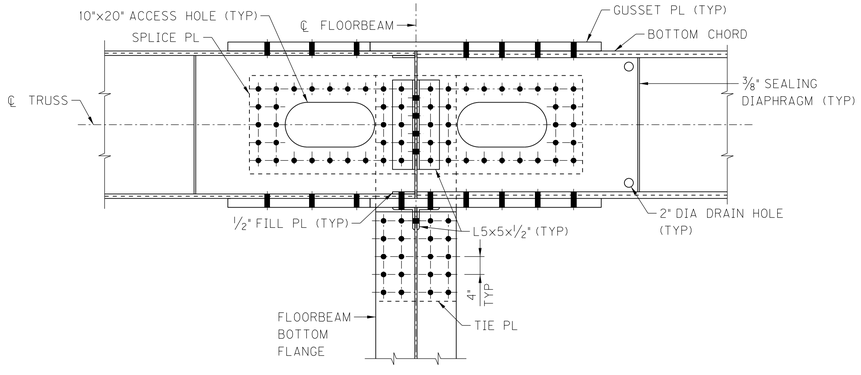
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:04 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\39 TRUSS JOINT L0.DGN



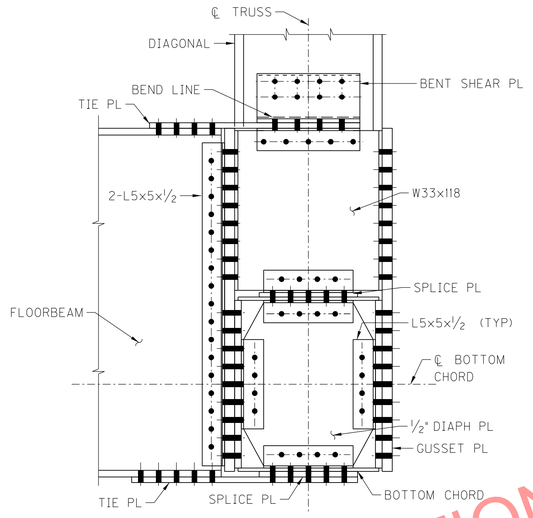
SECTION A–A



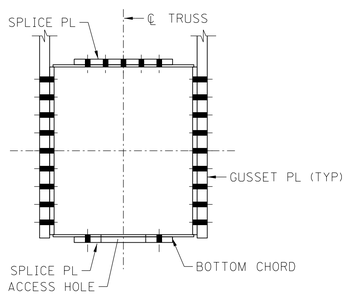
ELEVATION
(INBOARD)



SECTION B–B



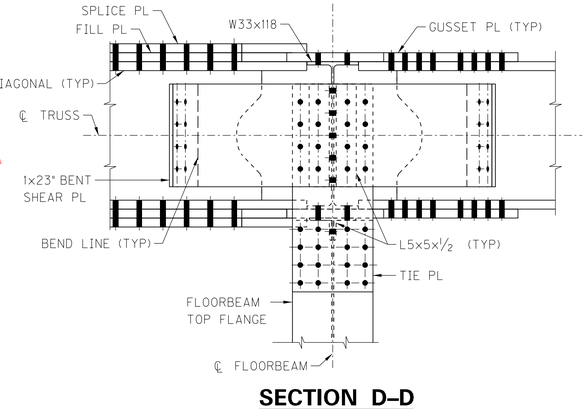
SECTION C–C



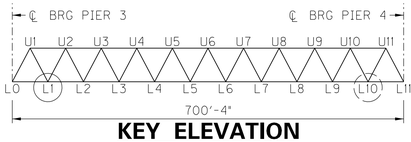
SECTION E–E

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT LO SHEET.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. L1 SHOWN, L10 SYMMETRICAL BY OPPOSITE HAND.



SECTION D–D



KEY ELEVATION

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: A. GRACE	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

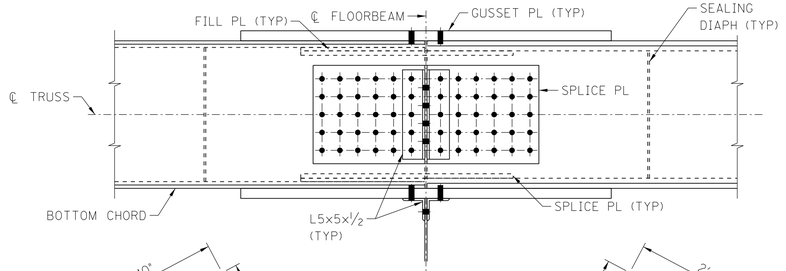
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

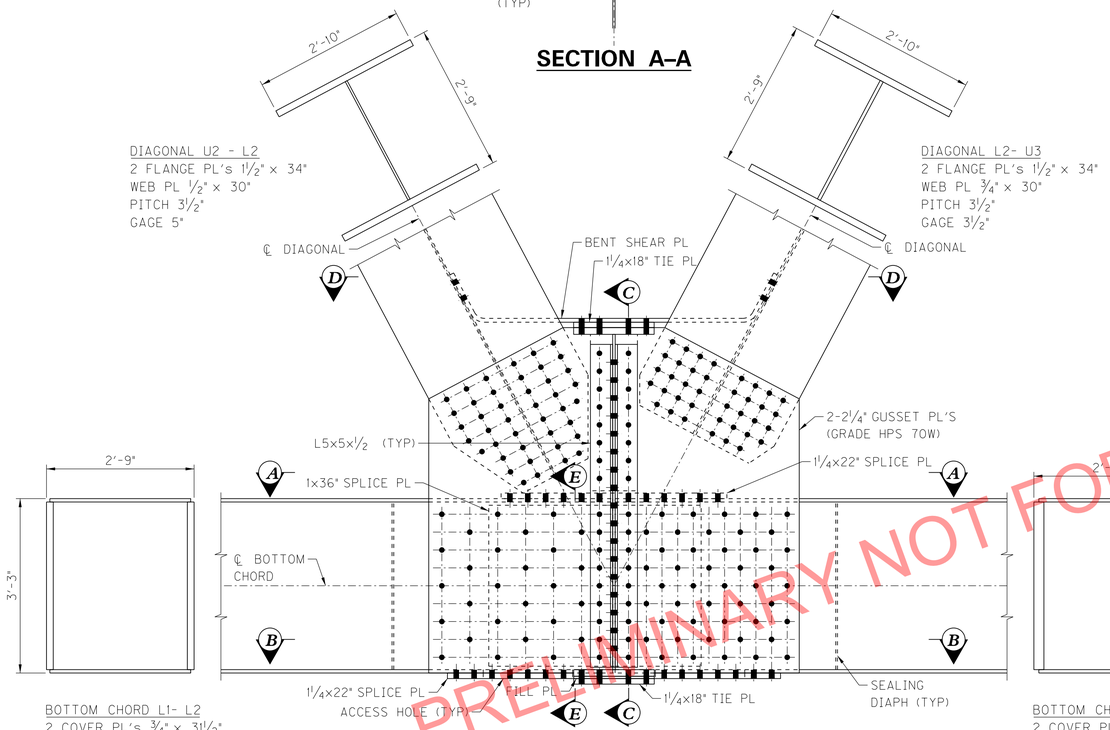
TRUSS JOINT L1

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S40
		DRAWING NO. 27458

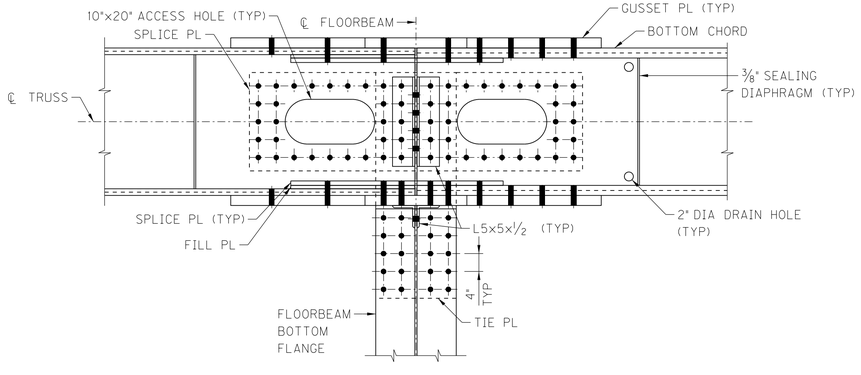
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabosham
DATE PLOTTED: 1/24/2020 7:28:04 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\40 TRUSS JOINT L1.DGN



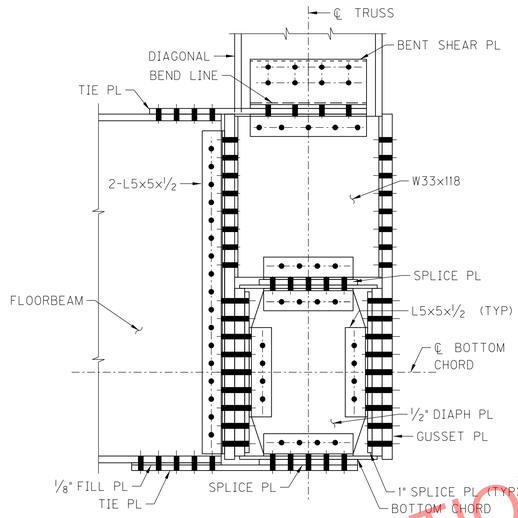
SECTION A–A



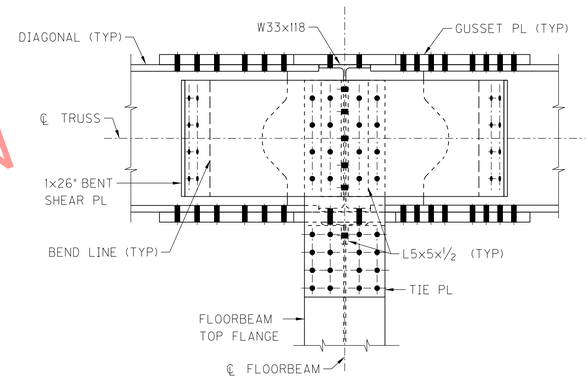
ELEVATION
(INBOARD)



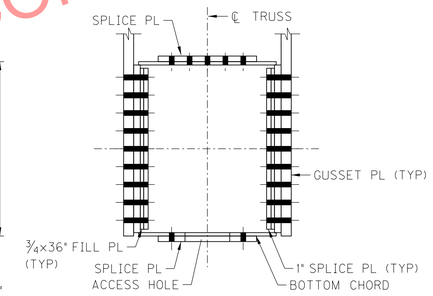
SECTION B–B



SECTION C–C



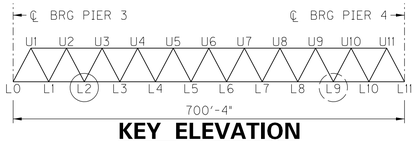
SECTION D–D



SECTION E–E

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT LO SHEET.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. L2 SHOWN, L9 SYMMETRICAL BY OPPOSITE HAND.



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: A. GRACE	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

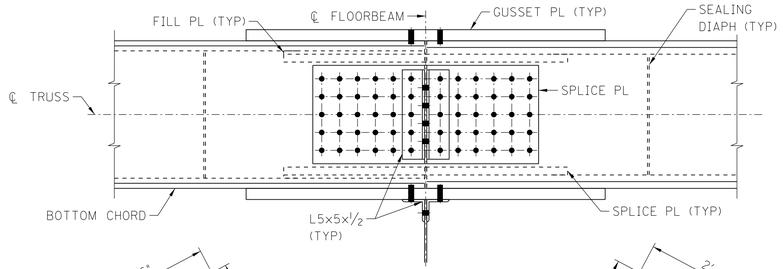
ROUTE	CROSSING
US 60	CUMBERLAND RIVER

TRUSS JOINT L2

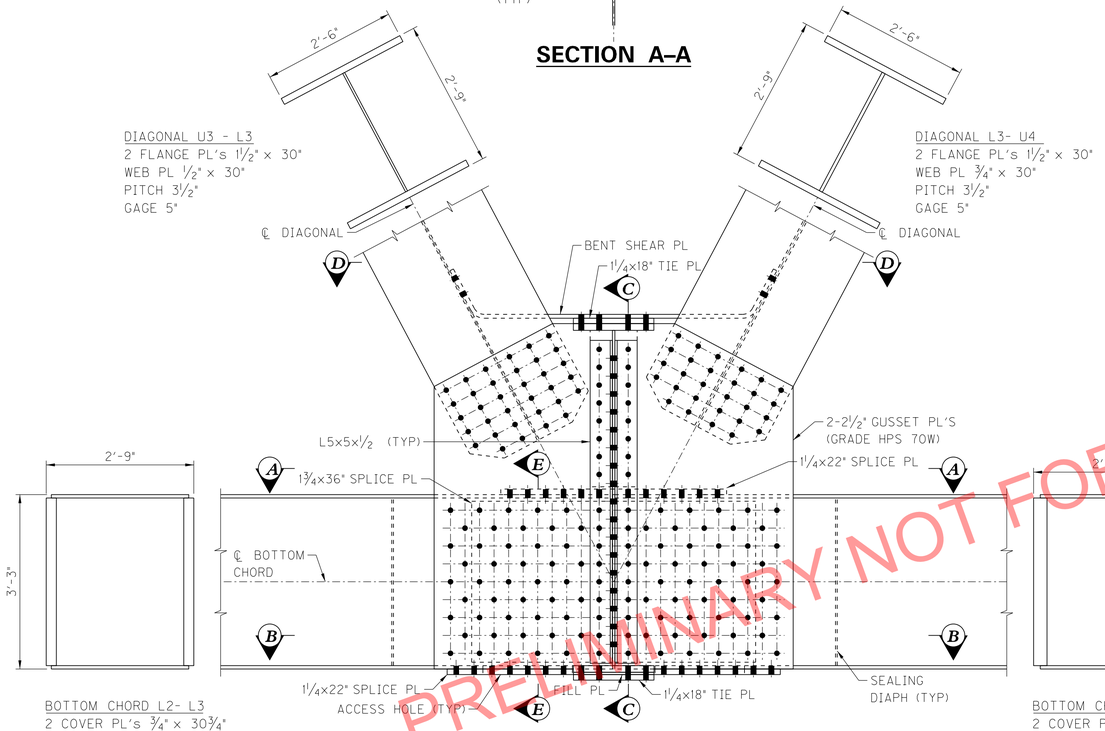
ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S41
		DRAWING NO. 27458

PRELIMINARY NOT FOR CONSTRUCTION

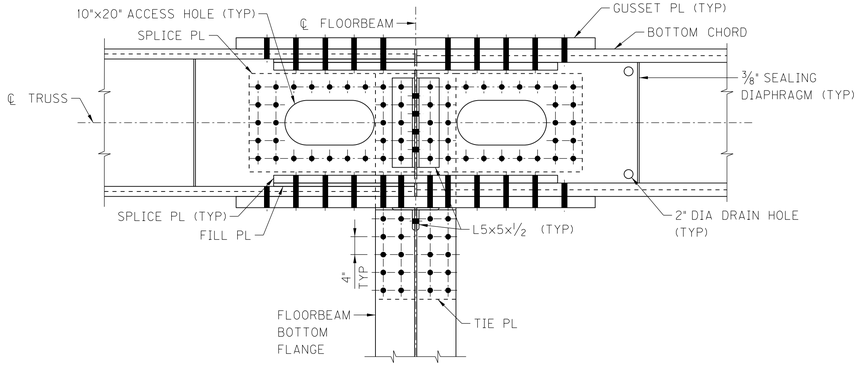
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabosham
DATE PLOTTED: 1/24/2020 7:28:05 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\41 TRUSS JOINT L2.DGN



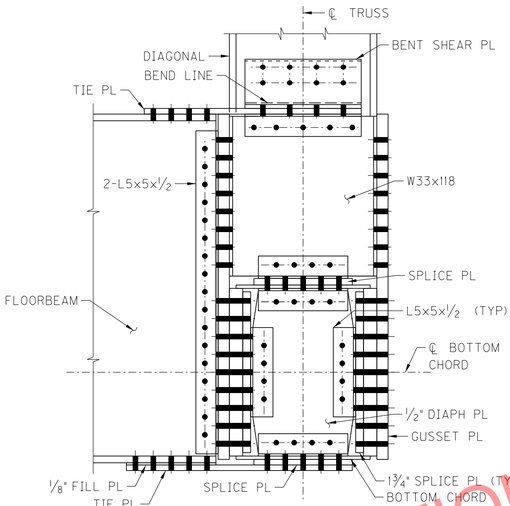
SECTION A–A



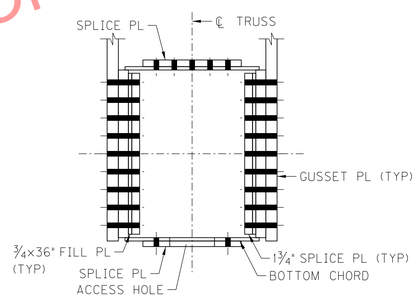
ELEVATION
(INBOARD)



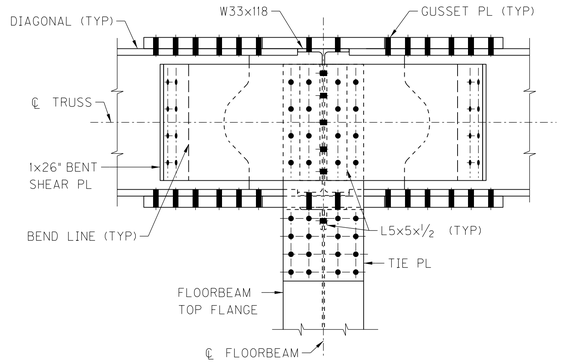
SECTION B–B



SECTION C–C



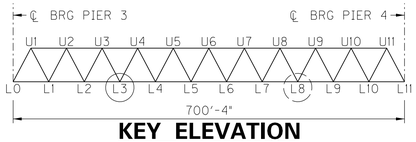
SECTION E–E



SECTION D–D

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT LO SHEET.
2. ALL BOLTS TO BE 1 1/8" DIAMETER.
3. L3 SHOWN, L8 SYMMETRICAL BY OPPOSITE HAND.



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: A. GRACE	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

TRUSS JOINT L3

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

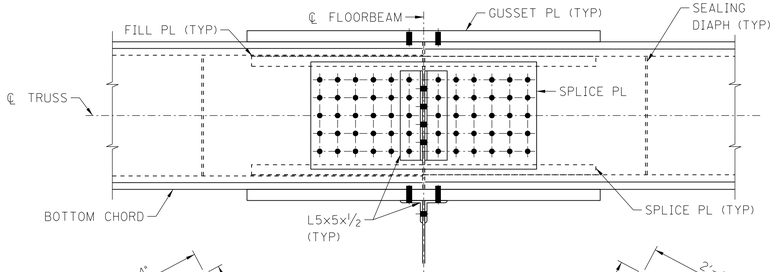
SHEET NO.: S42

DRAWING NO.: 27458

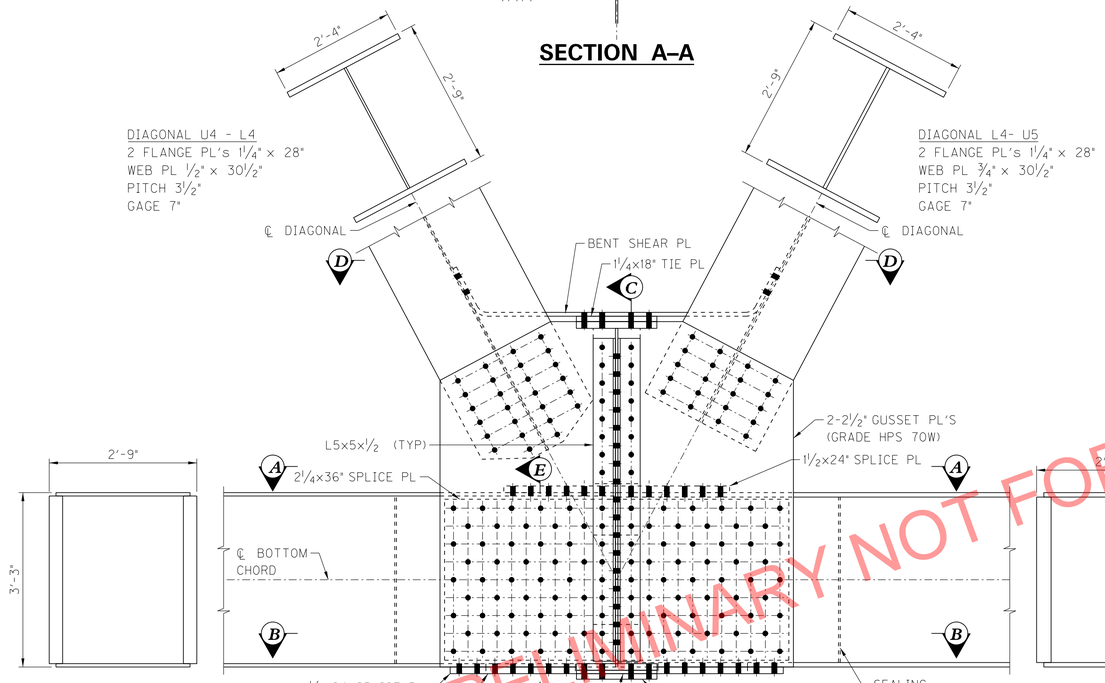
PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabosham
DATE PLOTTED: 1/24/2020 7:28:05 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\42 TRUSS JOINT L3.DGN

PRELIMINARY NOT FOR CONSTRUCTION

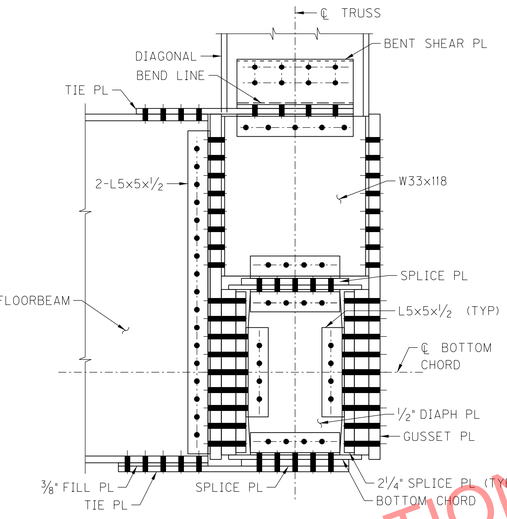


SECTION A–A



ELEVATION

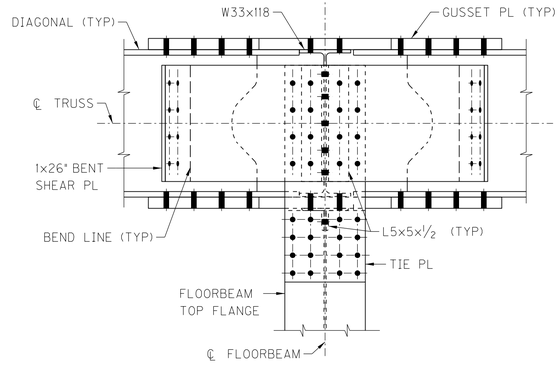
(INBOARD)



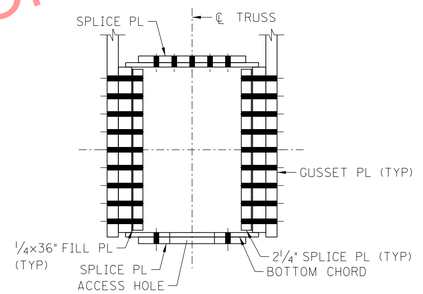
SECTION C–C

NOTES:

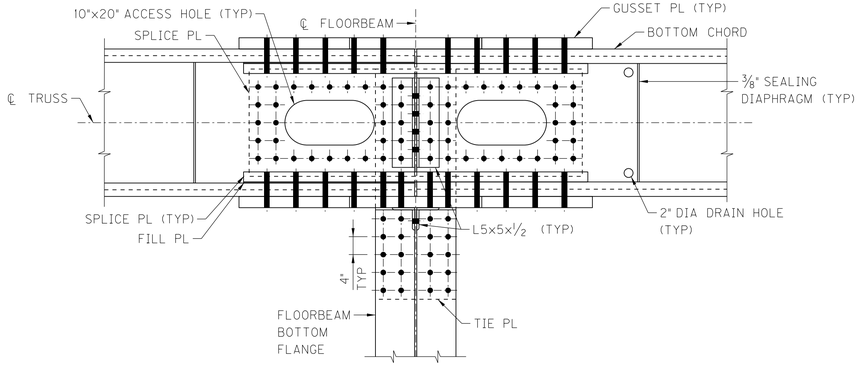
1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT LO SHEET.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. L4 SHOWN, L7 SYMMETRICAL BY OPPOSITE HAND.



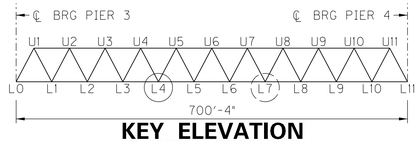
SECTION D–D



SECTION E–E



SECTION B–B



KEY ELEVATION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: A. GRACE	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

TRUSS JOINT L4

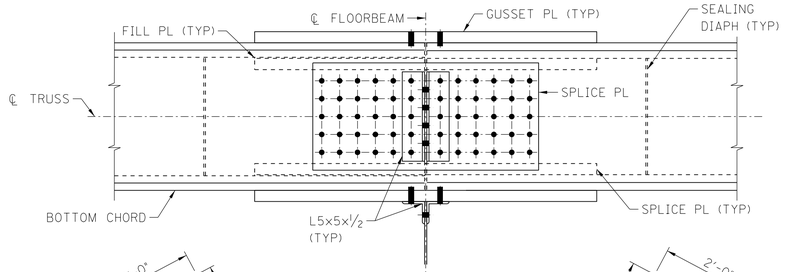
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

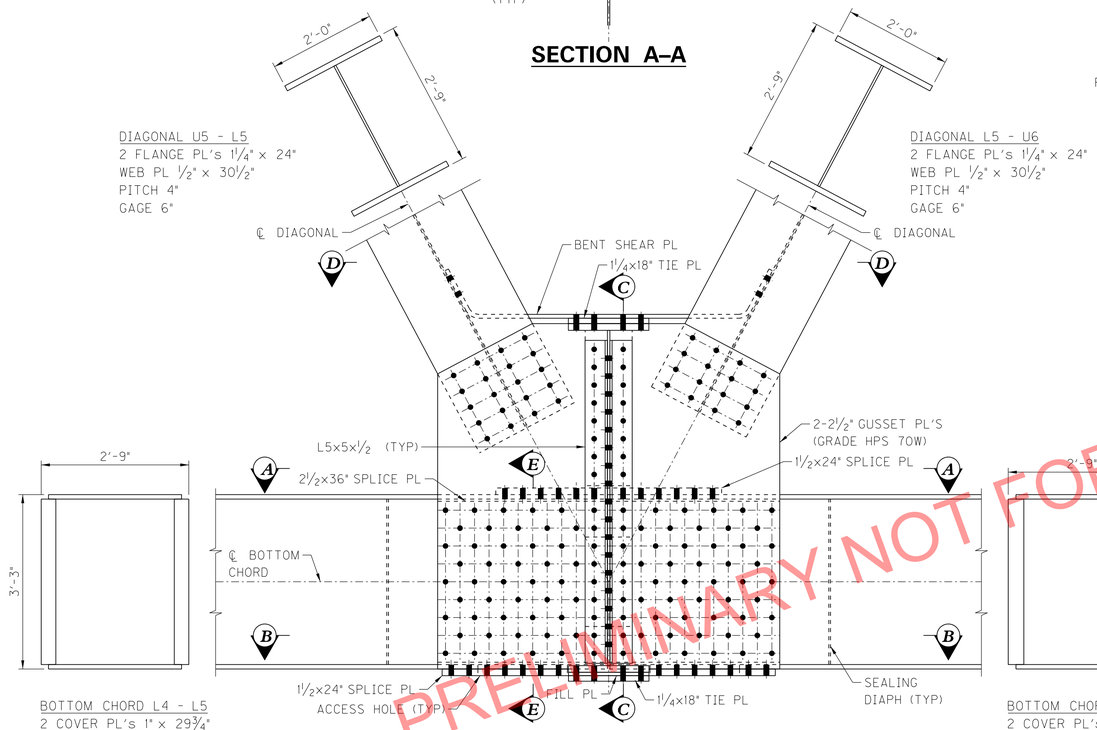
SHEET NO.: S43

DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabosham
DATE PLOTTED: 1/24/2020 7:28:05 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\43 TRUSS JOINT L4.DGN

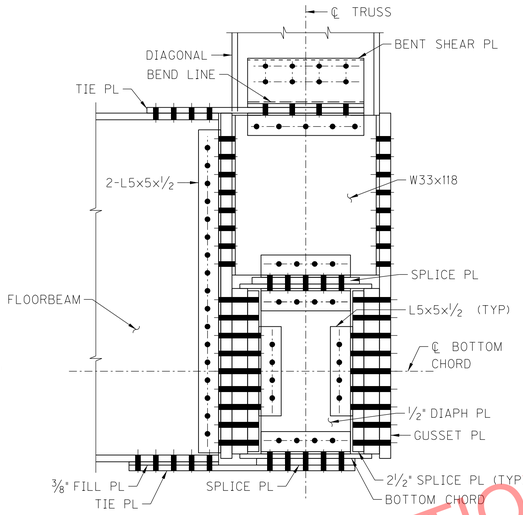


SECTION A–A

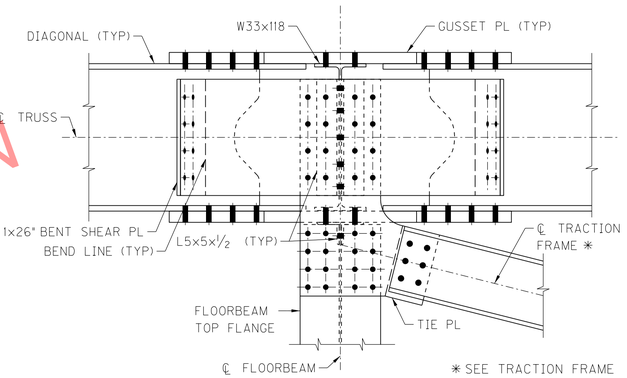


ELEVATION

(INBOARD)

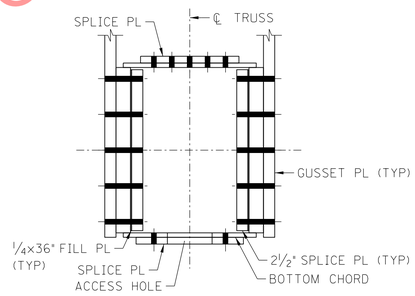


SECTION C–C

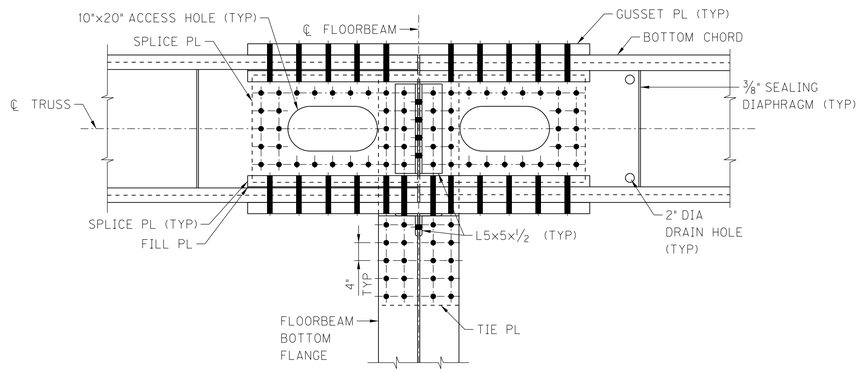


SECTION D–D

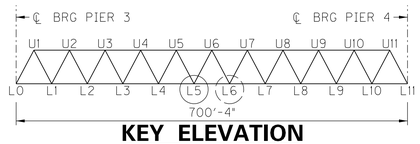
* SEE TRACTION FRAME SHEET FOR TIE PLATE DETAILS



SECTION E–E



SECTION B–B



KEY ELEVATION

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT LO SHEET.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. L5 SHOWN, L6 SYMMETRICAL BY OPPOSITE HAND.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

TRUSS JOINT L5

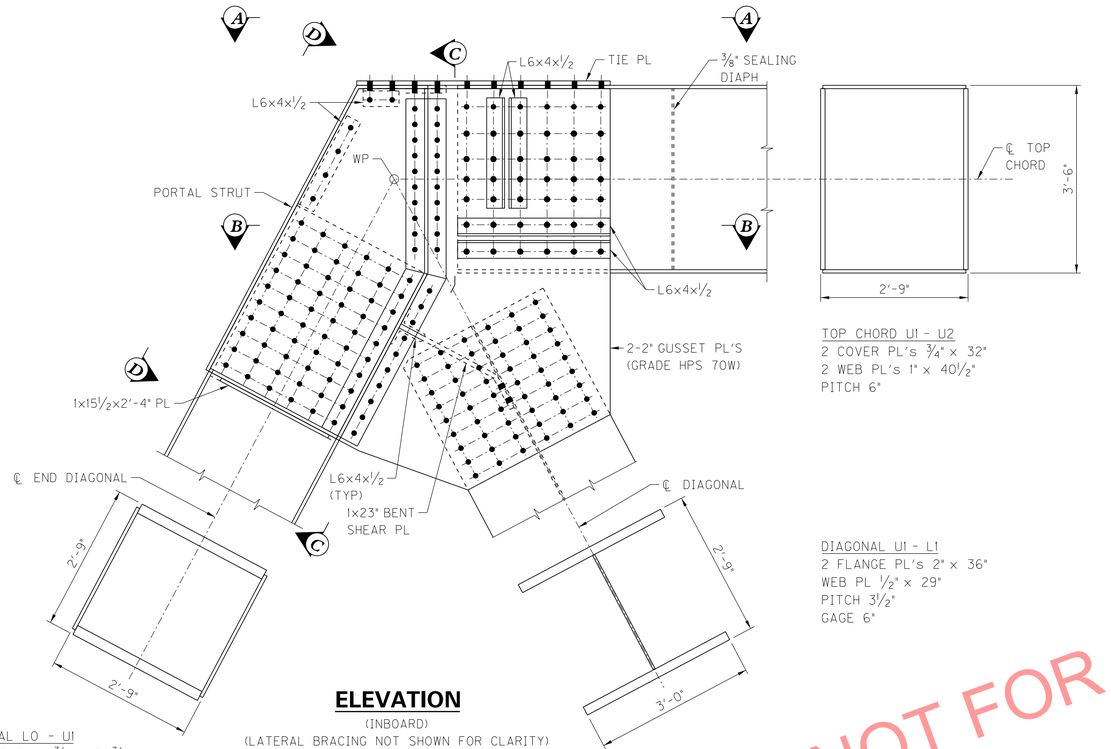
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S44

DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:06 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\44 TRUSS JOINT L5.DGN



ELEVATION

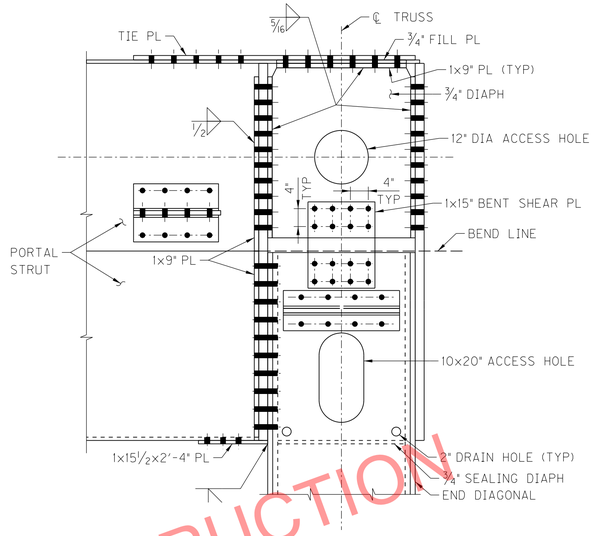
(INBOARD)

(LATERAL BRACING NOT SHOWN FOR CLARITY)

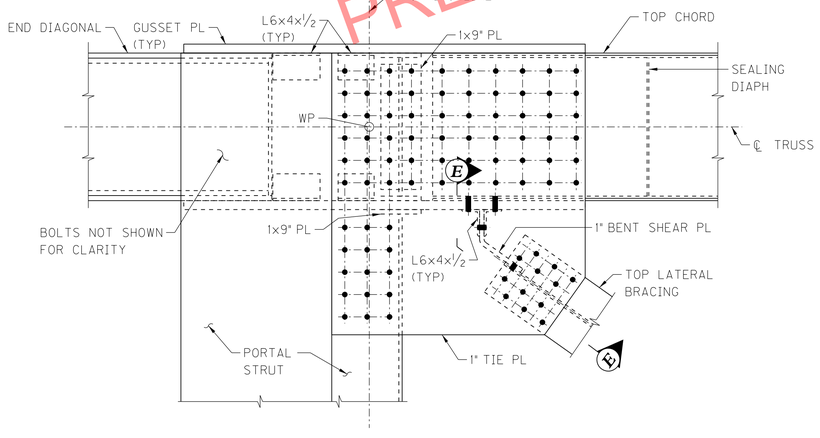
TOP CHORD U1 - U2
2 COVER PL's ¾" x 32"
2 WEB PL's 1" x 40½"
PITCH 6"

DIAGONAL U1 - L1
2 FLANGE PL's 2" x 36"
WEB PL ½" x 29"
PITCH 3½"
GAGE 6"

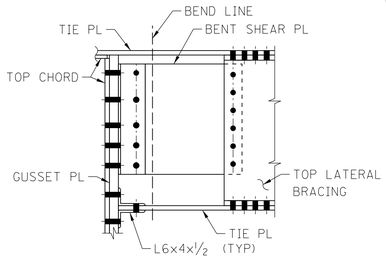
DIAGONAL L0 - U1
2 COVER PL's ¾" x 30¾"
2 WEB PL's 2¼" x 31½"
PITCH 4"
GAGE 5½"



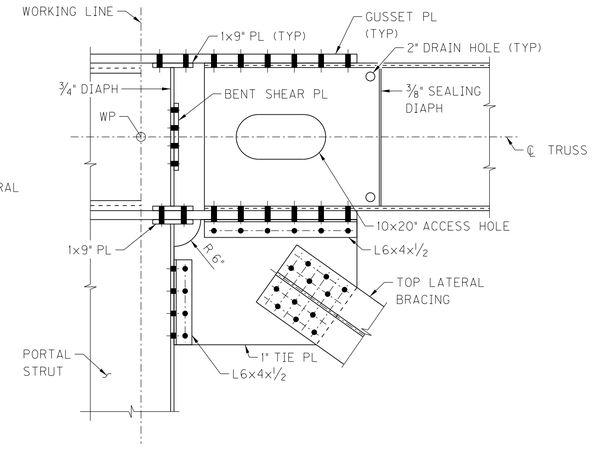
SECTION C–C



VIEW A–A



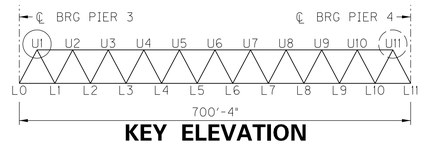
SECTION E–E



SECTION B–B

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT L0.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. U1 SHOWN, U11 SYMMETRICAL BY OPPOSITE HAND.
4. FOR TOP CHORD GAGE DETAIL SEE TRUSS JOINT U2.
5. FOR VIEW D-D SEE PORTAL STRUT.



KEY ELEVATION

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

TRUSS JOINT U1

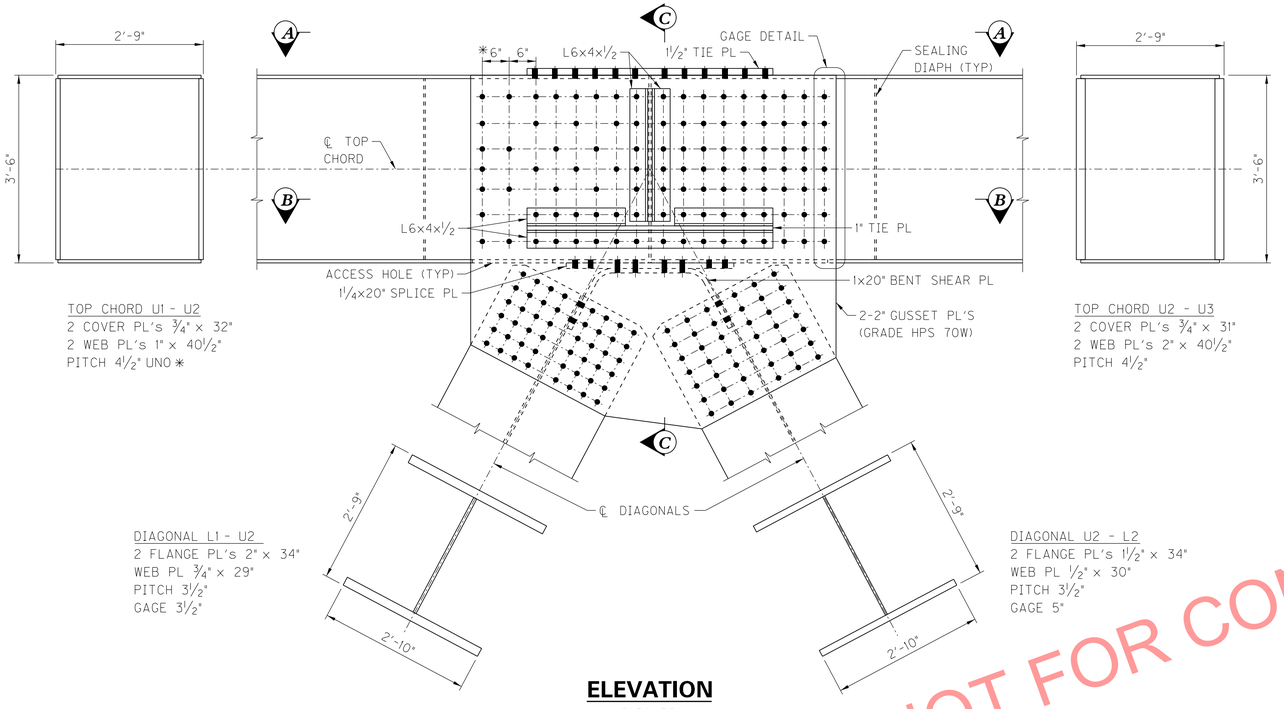
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO. S45

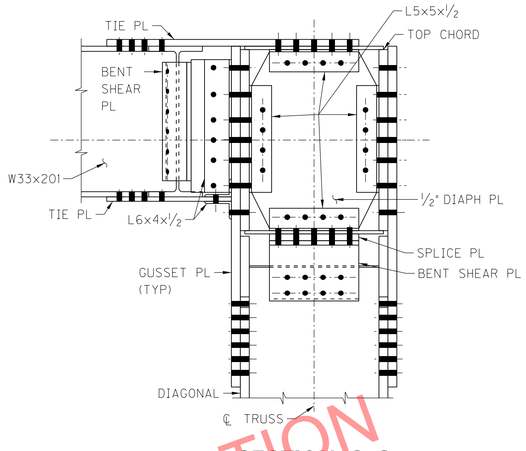
DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 1:28:06 PM
FILE NAME: V:\1785\ACTIVE\178565011\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\45 TRUSS JOINT U1.DGN

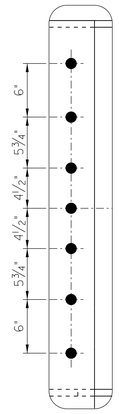


ELEVATION

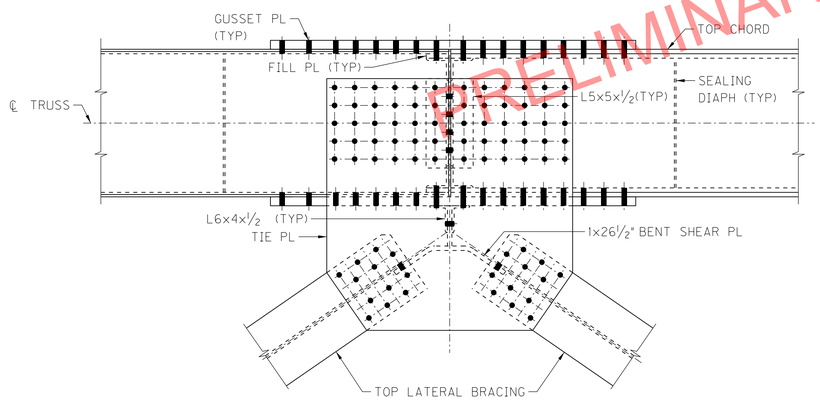
(INBOARD)
(LATERAL BRACING NOT SHOWN FOR CLARITY)



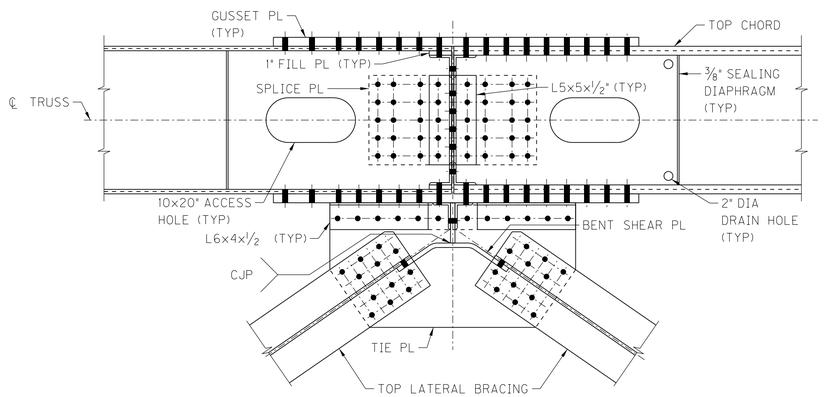
SECTION C–C



GAGE DETAIL



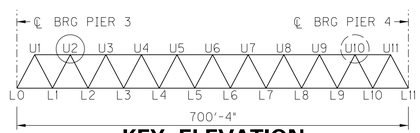
SECTION A–A



SECTION B–B

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT LO.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. U2 SHOWN, U10 SYMMETRICAL BY OPPOSITE HAND.



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020 — CHECKED BY
DESIGNED BY: J. HUDSON — T. PERKINS
DETAILED BY: D. BASHAM — T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 — CROSSING: CUMBERLAND RIVER

TRUSS JOINT U2

ITEM NUMBER: 1–1142.00

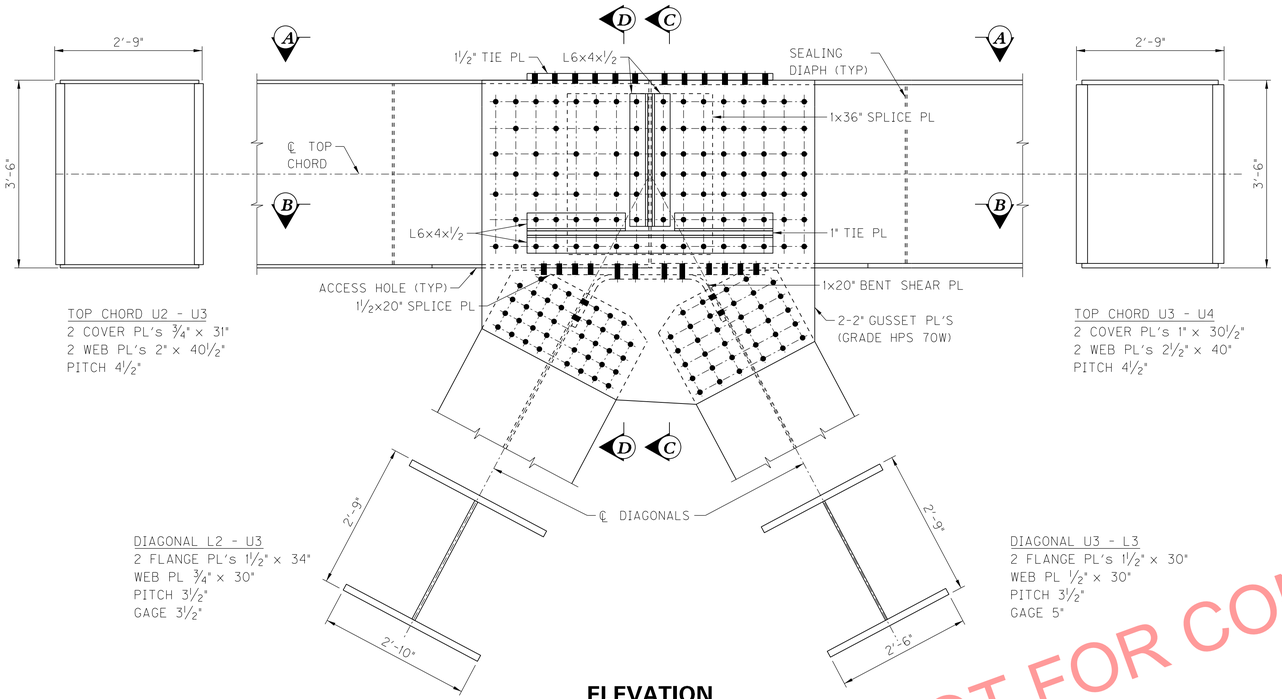
PREPARED BY: Stantec

SHEET NO. S46

DRAWING NO. 27458

PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:07 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\46 TRUSS JOINT U2.DGN



TOP CHORD U2 - U3
2 COVER PL's ¾" x 31"
2 WEB PL's 2" x 40½"
PITCH 4½"

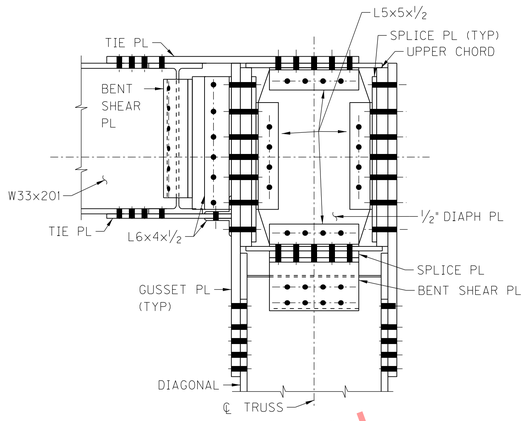
TOP CHORD U3 - U4
2 COVER PL's 1" x 30½"
2 WEB PL's 2½" x 40"
PITCH 4½"

DIAGONAL L2 - U3
2 FLANGE PL's 1½" x 34"
WEB PL ¾" x 30"
PITCH 3½"
GAGE 3½"

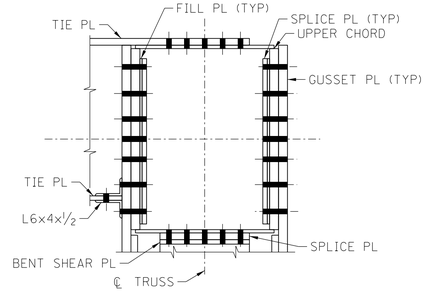
DIAGONAL U3 - L3
2 FLANGE PL's 1½" x 30"
WEB PL ½" x 30"
PITCH 3½"
GAGE 5"

ELEVATION

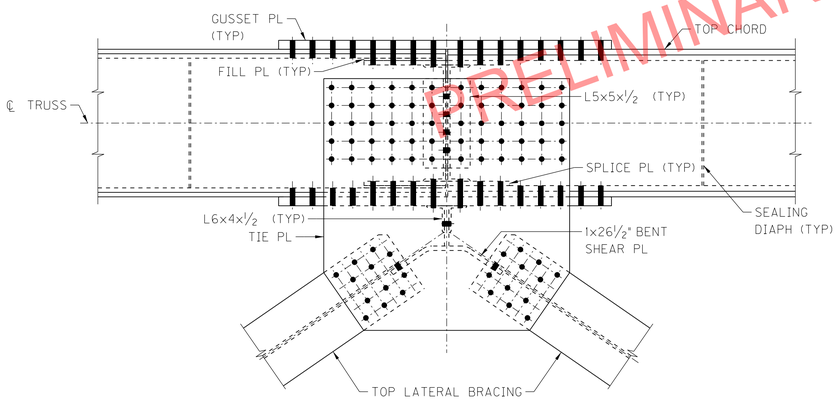
(INBOARD)
(LATERAL BRACING NOT SHOWN FOR CLARITY)



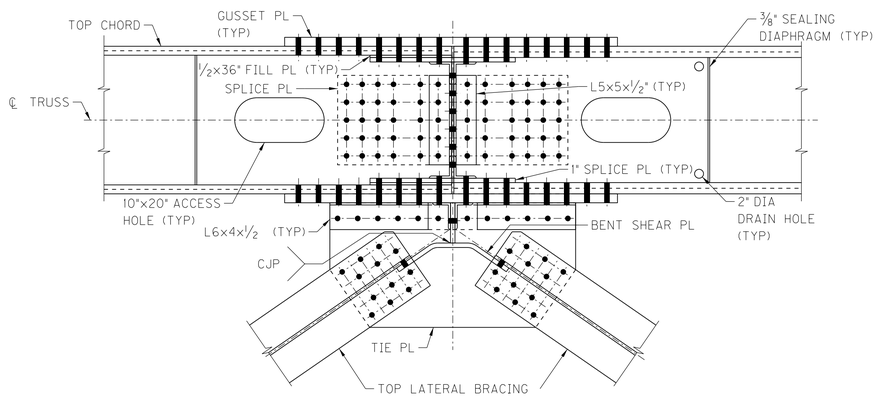
SECTION C–C



SECTION D–D



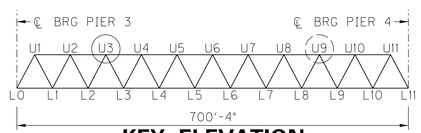
SECTION A–A



SECTION B–B

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT L0.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. U3 SHOWN, U9 SYMMETRICAL BY OPPOSITE HAND.
4. FOR TOP CHORD GAGE DETAIL SEE TRUSS JOINT U2.



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

TRUSS JOINT U3

ITEM NUMBER: 1–1142.00

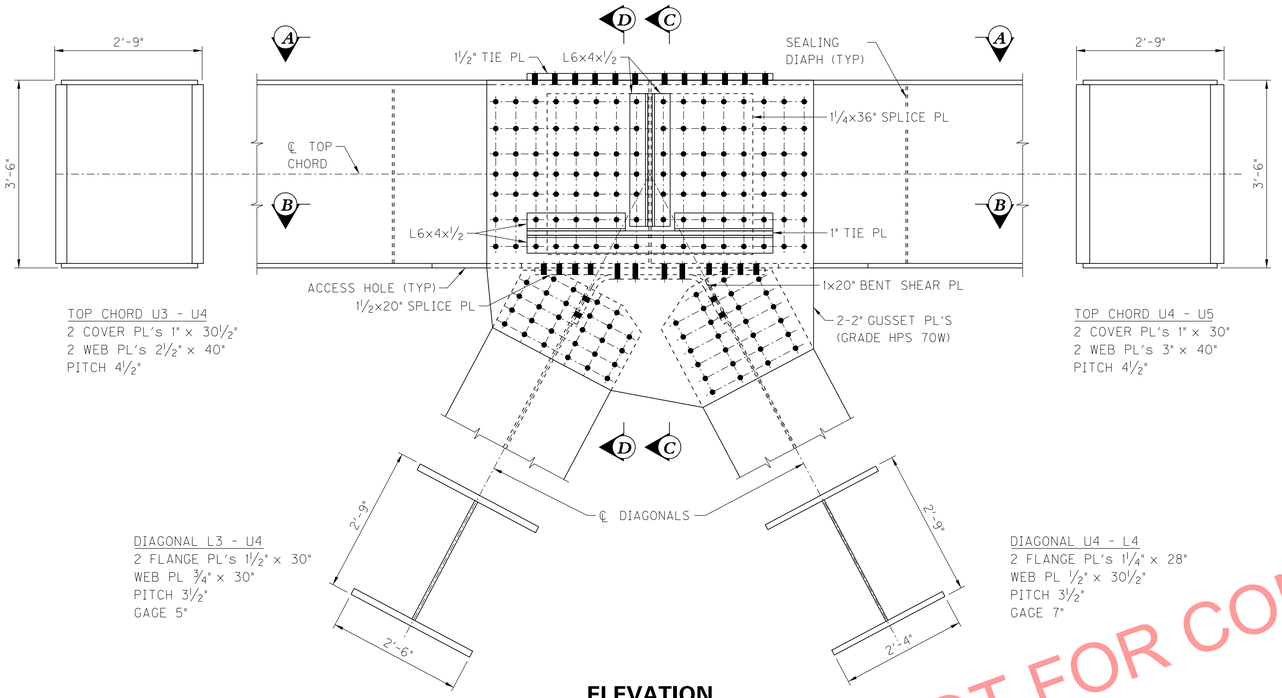
PREPARED BY: Stantec

SHEET NO.: S47

DRAWING NO.: 27458

PRELIMINARY NOT FOR CONSTRUCTION

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\47 TRUSS JOINT U3.DGN
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:07 PM
E-SHEET NAME:
MicroStation v8.11.9.829



TOP CHORD U3 - U4
2 COVER PL's 1" x 30½"
2 WEB PL's 2½" x 40"
PITCH 4½"

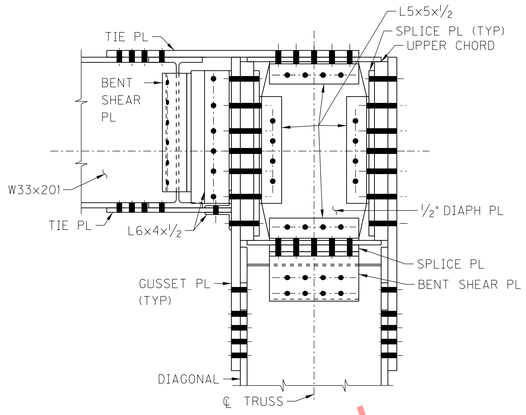
TOP CHORD U4 - U5
2 COVER PL's 1" x 30"
2 WEB PL's 3" x 40"
PITCH 4½"

DIAGONAL L3 - U4
2 FLANGE PL's 1½" x 30"
WEB PL ¾" x 30"
PITCH 3½"
GAGE 5"

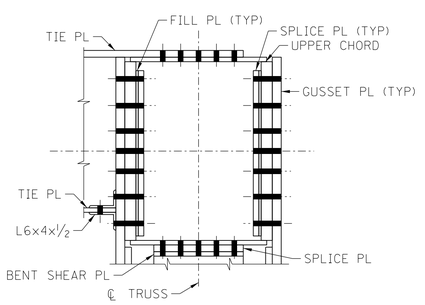
DIAGONAL U4 - L4
2 FLANGE PL's 1¼" x 28"
WEB PL ½" x 30½"
PITCH 3½"
GAGE 7"

ELEVATION

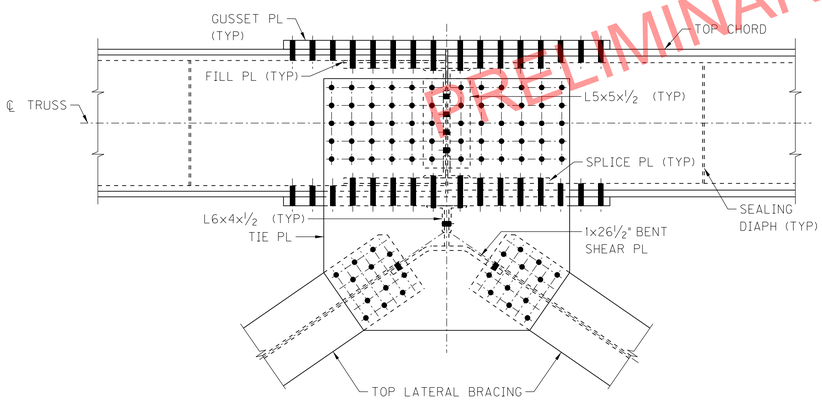
(INBOARD)
(LATERAL BRACING NOT SHOWN FOR CLARITY)



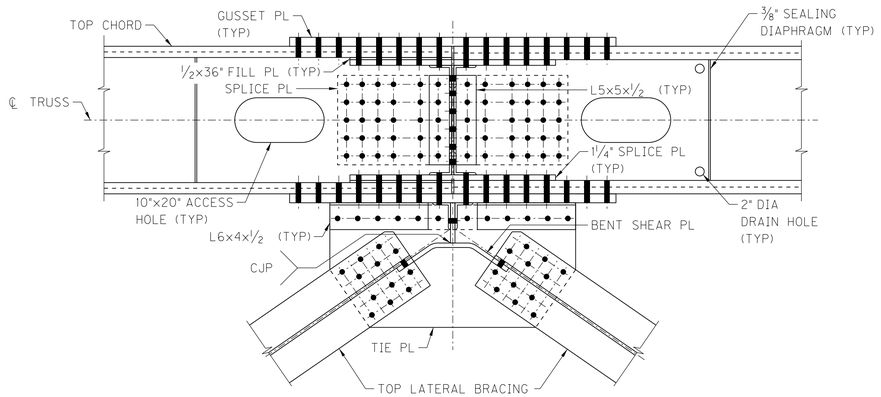
SECTION C–C



SECTION D–D



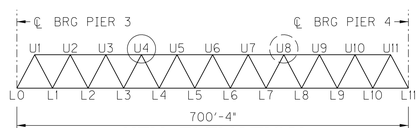
SECTION A–A



SECTION B–B

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT L0.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. U4 SHOWN, U8 SYMMETRICAL BY OPPOSITE HAND.
4. FOR TOP CHORD GAGE DETAIL SEE TRUSS JOINT U2.



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020 — CHECKED BY
DESIGNED BY: J. HUDSON — T. PERKINS
DETAILED BY: D. BASHAM — T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 — CROSSING: CUMBERLAND RIVER

TRUSS JOINT U4

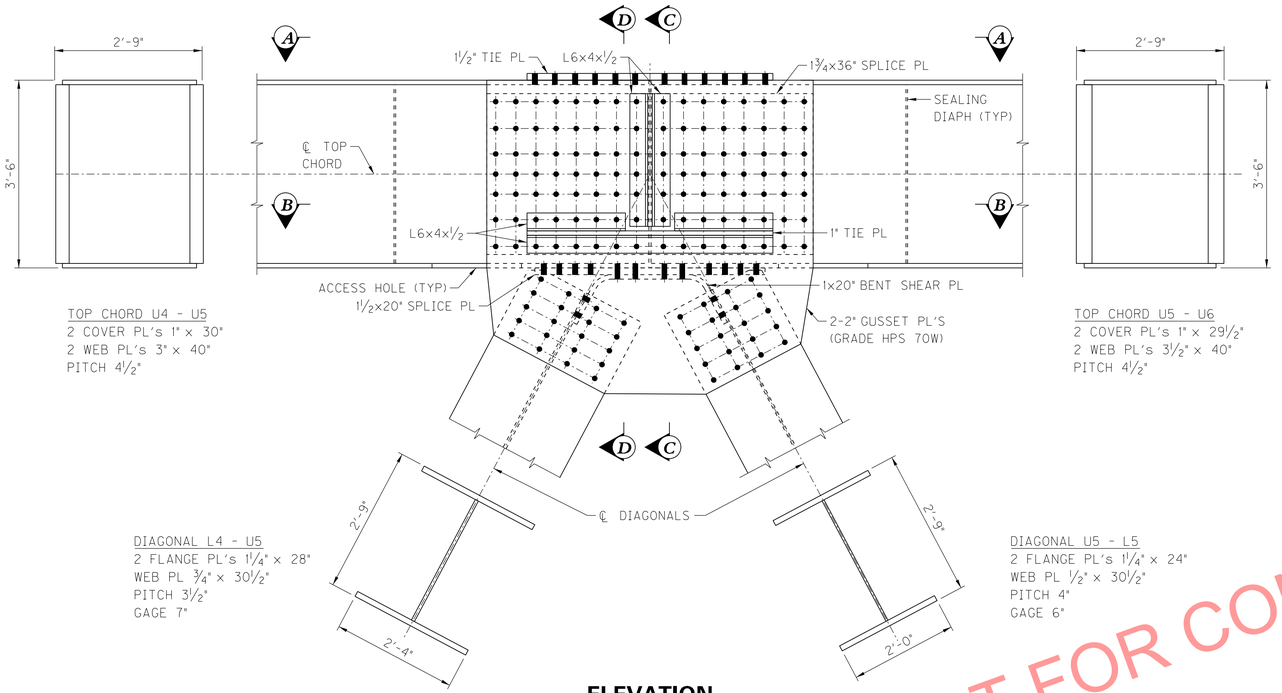
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S48
DRAWING NO.: 27458

PRELIMINARY NOT FOR CONSTRUCTION

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\48 TRUSS JOINT U4.DGN
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:08 PM
E-SHEET NAME:
MicroStation v8.11.9.829



TOP CHORD U4 - U5
2 COVER PL's 1" x 30"
2 WEB PL's 3" x 40"
PITCH 4½"

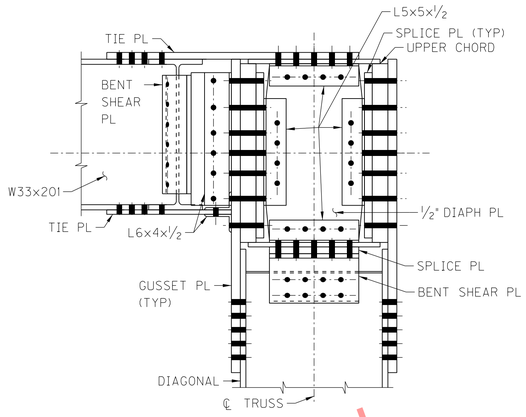
TOP CHORD U5 - U6
2 COVER PL's 1" x 29½"
2 WEB PL's 3½" x 40"
PITCH 4½"

DIAGONAL L4 - U5
2 FLANGE PL's 1¼" x 28"
WEB PL ¾" x 30½"
PITCH 3½"
GAGE 7"

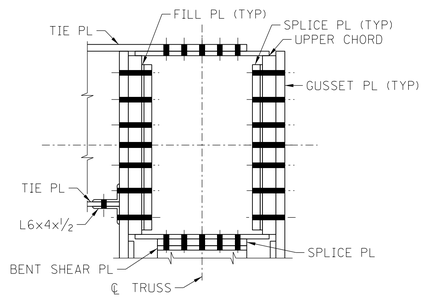
DIAGONAL U5 - L5
2 FLANGE PL's 1¼" x 24"
WEB PL ½" x 30½"
PITCH 4"
GAGE 6"

ELEVATION

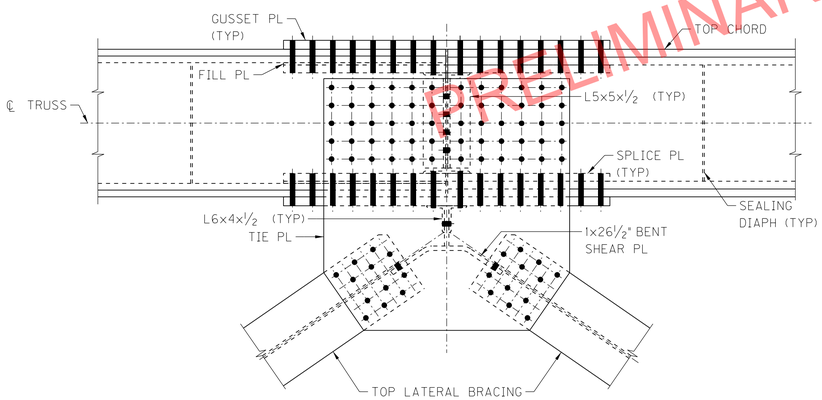
(INBOARD)
(LATERAL BRACING NOT SHOWN FOR CLARITY)



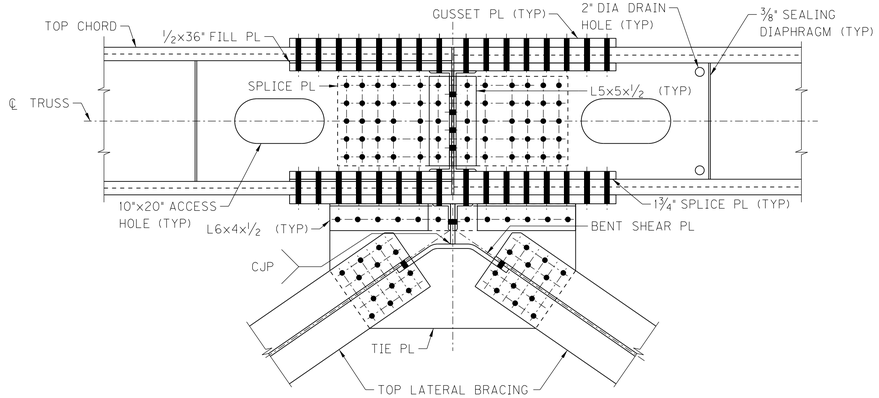
SECTION C–C



SECTION D–D



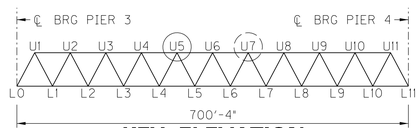
SECTION A–A



SECTION B–B

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT L0.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. U5 SHOWN, U7 SYMMETRICAL BY OPPOSITE HAND.
4. FOR TOP CHORD GAGE DETAIL SEE TRUSS JOINT U2.



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020 — CHECKED BY
DESIGNED BY: J. HUDSON — T. PERKINS
DETAILED BY: D. BASHAM — T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 — CROSSING: CUMBERLAND RIVER

TRUSS JOINT U5

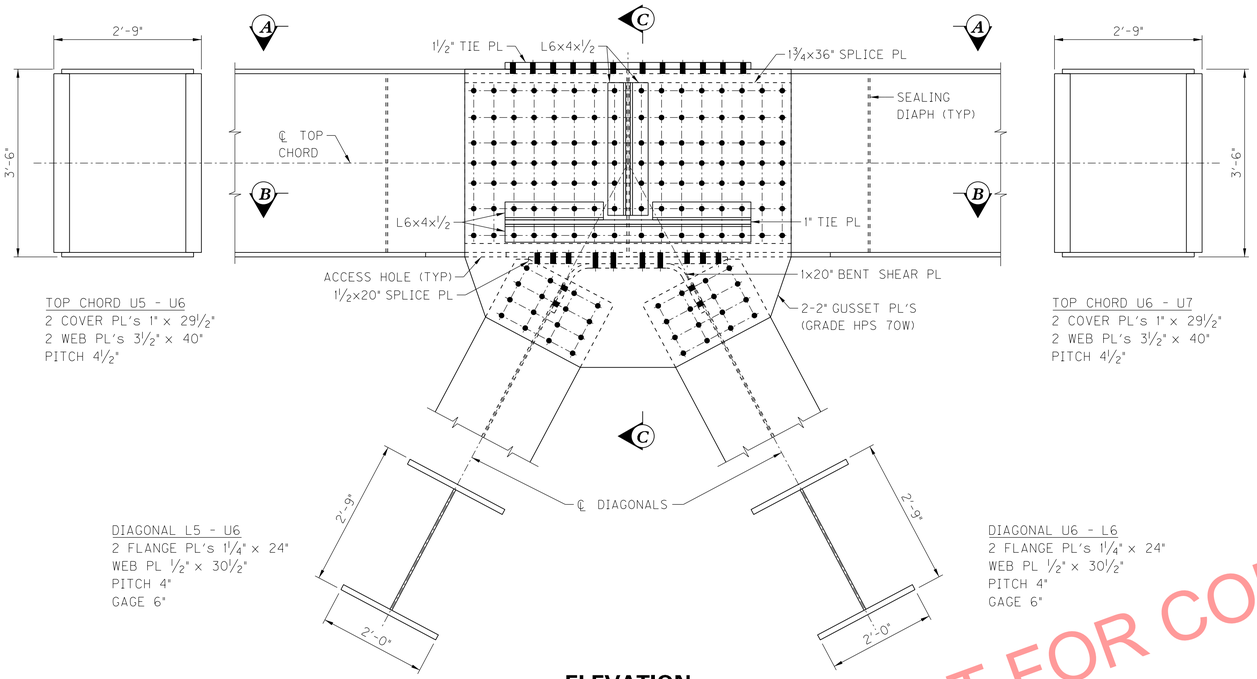
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S49
DRAWING NO.: 27458

PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:08 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\49 TRUSS JOINT U5.DGN



TOP CHORD U5 - U6
2 COVER PL's 1" x 29½"
2 WEB PL's 3½" x 40"
PITCH 4½"

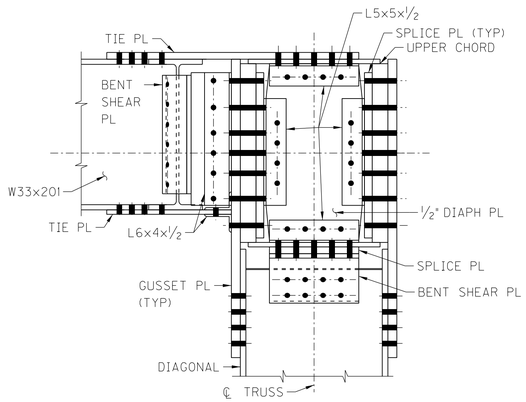
TOP CHORD U6 - U7
2 COVER PL's 1" x 29½"
2 WEB PL's 3½" x 40"
PITCH 4½"

DIAGONAL L5 - U6
2 FLANGE PL's 1¼" x 24"
WEB PL ½" x 30½"
PITCH 4"
GAGE 6"

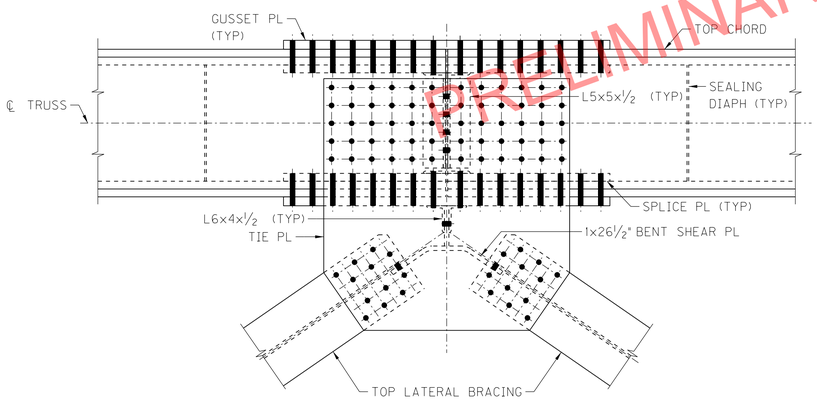
DIAGONAL U6 - L6
2 FLANGE PL's 1¼" x 24"
WEB PL ½" x 30½"
PITCH 4"
GAGE 6"

ELEVATION

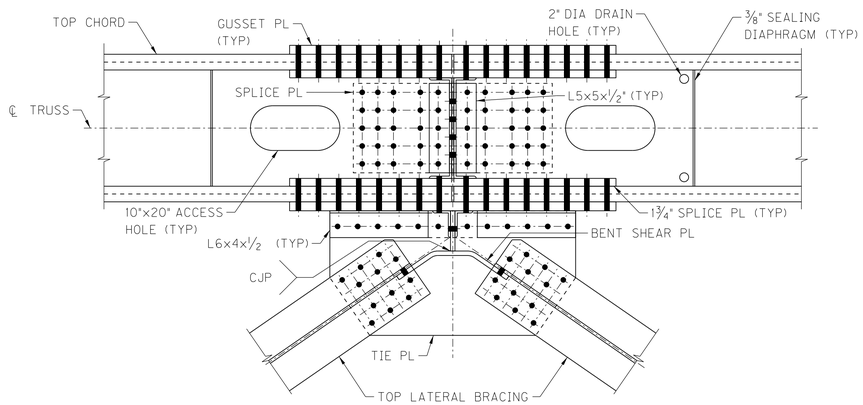
(INBOARD)
(LATERAL BRACING NOT SHOWN FOR CLARITY)



SECTION C–C



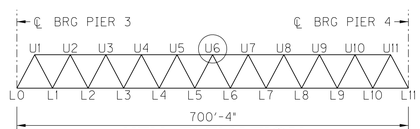
SECTION A–A



SECTION B–B

NOTES:

1. FOR TRUSS JOINT NOTES SEE TRUSS JOINT LO.
2. ALL BOLTS TO BE 1⅛" DIAMETER.
3. FOR TOP CHORD GAGE DETAIL SEE TRUSS JOINT U2.



KEY ELEVATION

REVISION	DATE

DATE: JANUARY 2020 — CHECKED BY
DESIGNED BY: J. HUDSON — T. PERKINS
DETAILED BY: D. BASHAM — T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON
ROUTE: US 60
CROSSING: CUMBERLAND RIVER

TRUSS JOINT U6

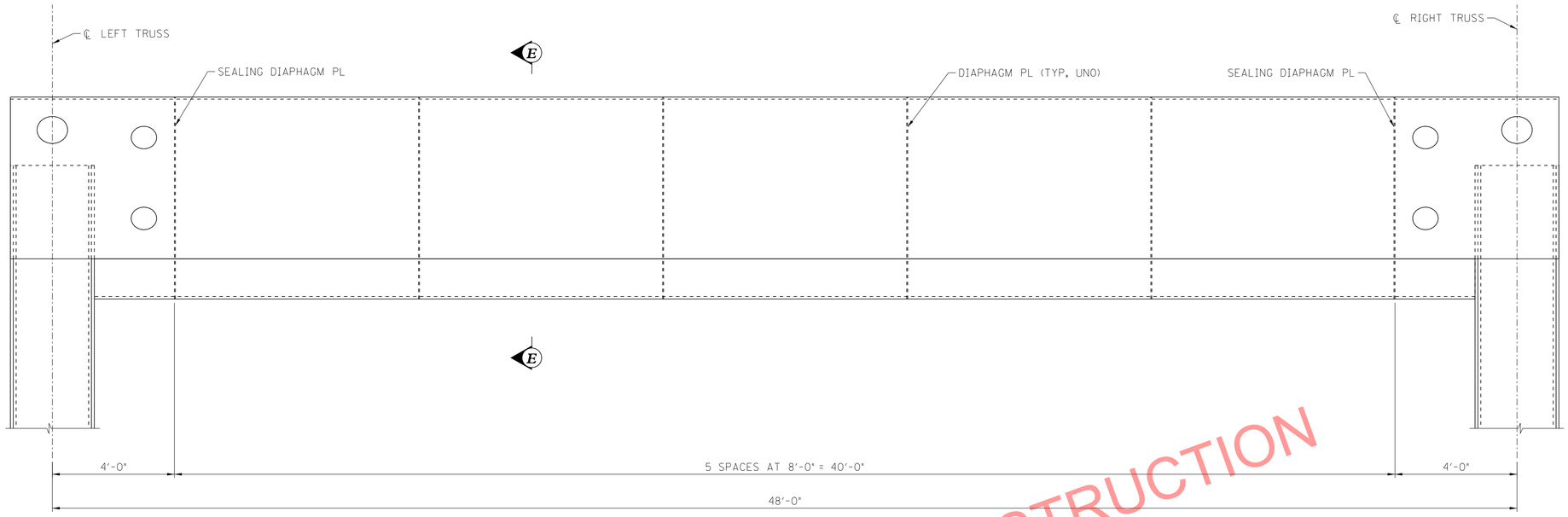
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S50
DRAWING NO.: 27458

PRELIMINARY NOT FOR CONSTRUCTION

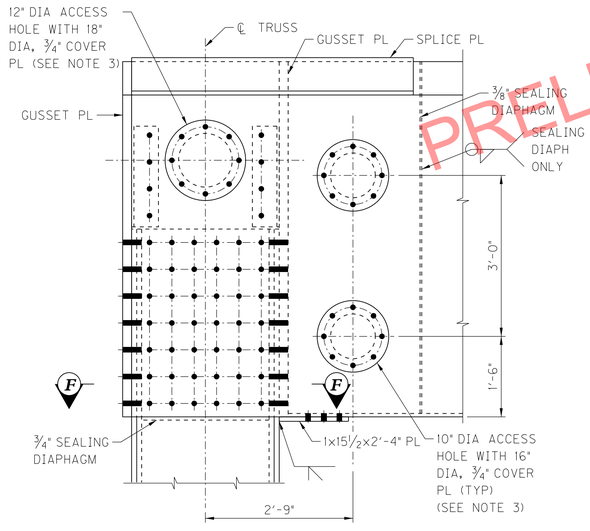
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:08 PM
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S0 TRUSS JOINT U6.DGN



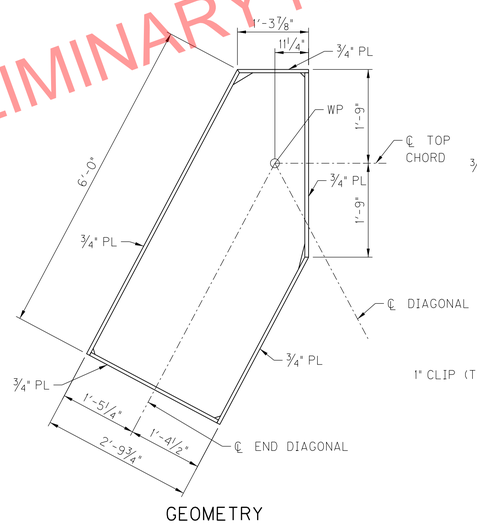
PORTAL STRUT ELEVATION

SHOWN AT U1 (LOOKING AHEAD)

PRELIMINARY NOT FOR CONSTRUCTION

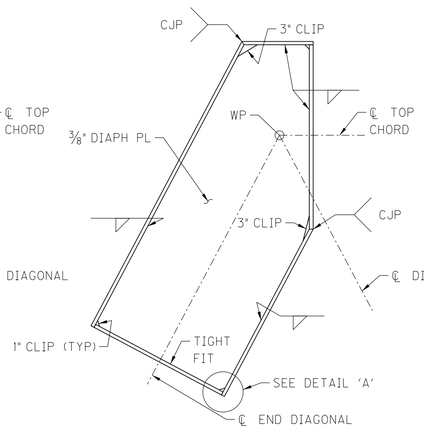


VIEW D–D



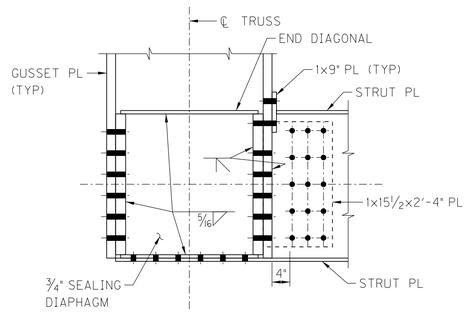
GEOMETRY

SECTION E–E

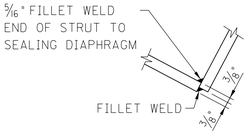


DIAPHRAGMS

(FOR SEALING DIAPHRAGMS EXCLUDE CLIPS AND WELD ALL AROUND)



SECTION F–F



DETAIL 'A'

NOTE:

1. SEE TRUSS JOINT U1 FOR VIEW D-D LOCATION.
2. ALL BOLTS TO BE 1⅛" DIAMETER, UNO.
3. PROVIDE 8-⅞" DIA. HS BOLTS EQUALLY SPACED AROUND COVER PLATES. TACK WELD NUTS TO INSIDE FACE OF OUTER PORTAL PLATE.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. HUNLEY

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: **LIVINGSTON**

ROUTE: **US 60**

CROSSING: **CUMBERLAND RIVER**

PORTAL STRUT

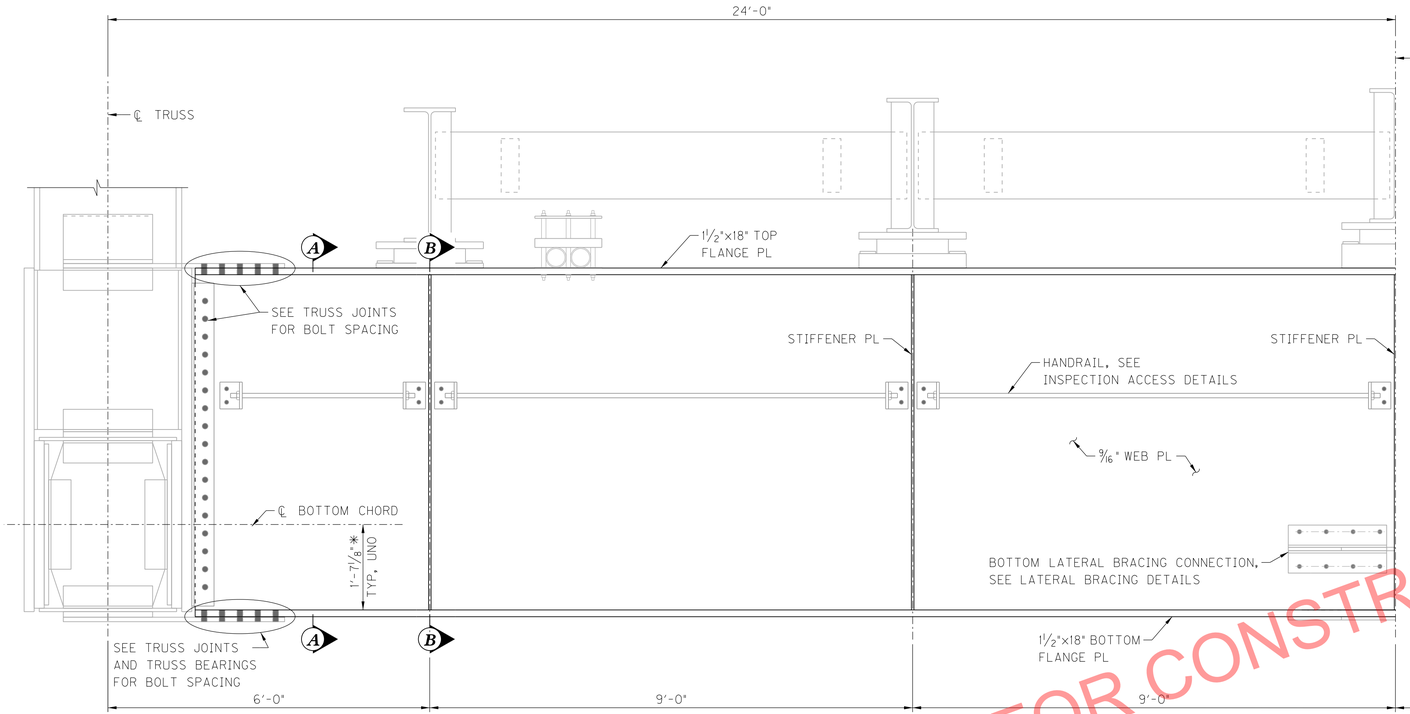
ITEM NUMBER: **1–1142.00**

PREPARED BY: Stantec

SHEET NO.: S51

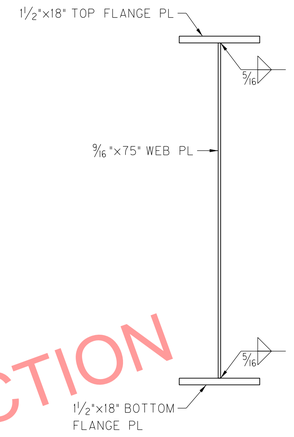
DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 1:28:09 PM
FILE NAME: V:\1785\ACTIVE\1785650II\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S1 PORTAL STRUT.DGN

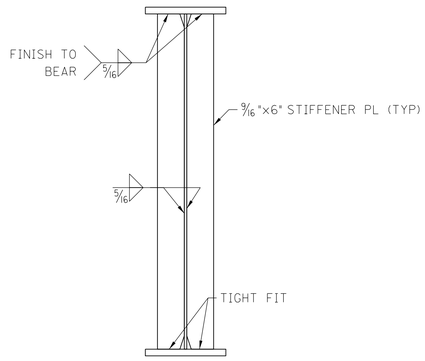


ELEVATION FB0 – FB11

*1'-7⅛" AT FB0, FB1, FB10, AND FB11 FLOORBEAM SHOWN AT L2, ALL FLOORBEAMS SIMILAR EXCEPT AS NOTED

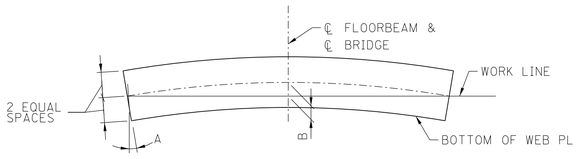


SECTION A–A



SECTION B–B

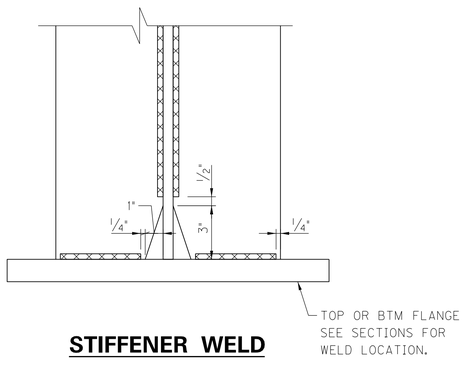
(TYPICAL AT ℄ STRINGERS)



FLOORBEAM – WEB CAMBER AND END CUT DIAGRAM

FLOORBEAM CAMBER & DEFLECTION						
FLOORBEAM	END ROATATION A (deg)	TOTAL CAMBER B (in)	DEAD LOAD DEFLECTION (in)			
			¼ POINT		½ POINT	
			STEEL	CONCRETE	STEEL	CONCRETE
L0 & L11	0.045	0.154	0.029	0.081	0.042	0.112
L1 - L10	0.091	0.302	0.033	0.181	0.049	0.254

NOTE:
ALL DEFLECTIONS ARE DOWNWARD.
STEEL - DEAD LOAD DEFLECTION FROM WEIGHT OF STRINGERS, DIAPHRAGMS, LATERAL BRACING, AND FLOORBEAM SELF WEIGHT.
CONC - DEAD LOAD DEFLECTION FROM WEIGHT OF SLAB AND BARRIERS (NOT INCLUDING FUTURE WEARING SURFACE).



STIFFENER WELD TERMINATION DETAIL

NOTES:

1. ALL STIFFENERS TO BE VERTICAL UNDER FULL DEAD LOAD.
2. TOP & BOTTOM FLANGE TO BE LEVEL UNDER FULL DEAD LOAD.
3. END OF FLOORBEAMS SHALL BE TRUELY VERTICAL UNDER FULL DEAD LOAD.
4. FOR STRINGER BEARING CONNECTIONS TO FLOORBEAMS, SEE STRINGER BEARINGS.
5. FOR FLOORBEAM CONNECTIONS TO LOWER CHORD GUSSET PLATES SEE TRUSS JOINT DETAILS.
6. FLOORBEAM WEBS ARE TO BE ERECTED NORMAL TO THE CENTERLINE OF LOWER CHORD.
7. FOR UTILITY CONDUIT CONNECTIONS TO FLOORBEAMS, SEE UTILITY CONDUIT DETAILS.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

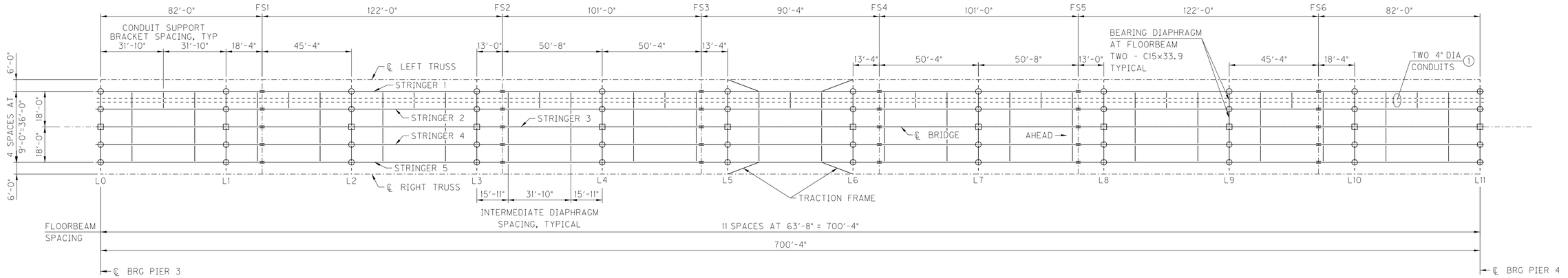
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

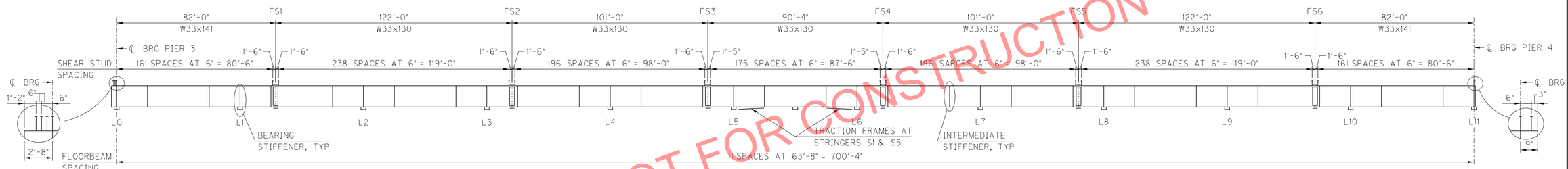
FLOORBEAM

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S52
		DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S2 FLOORBEAM.DGN



STRINGER FRAMING PLAN



PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. ALL STRINGERS, STRINGER SPLICE PLATES, DIAPHRAGMS, AND STIFFENERS TO BE A709 GRADE 50W, UNLESS NOTED OTHERWISE. ALL STRUCTURAL STEEL SHALL BE PAINTED TO MATCH FINISHED COLOR OF TRUSS.
2. STRINGERS AND STRINGER SPLICE PLATES SHALL BE SUPPLIED MEETING THE REQUIREMENTS OF CHARPY V-NOTCH TESTING. CHARPY V-NOTCH (CVN) REQUIREMENTS SHALL CONFORM TO THE SUPPLEMENTAL REQUIREMENTS FOR NOTCH TOUGHNESS, (ZONE 2).
3. STRINGERS AND DECK ARE CONTINUOUS ALONG ENTIRE LENGTH OF TRUSS.
4. STRINGERS NEED NOT BE CAMBERED, HOWEVER, ORIENT STRINGERS WITH NATURAL CAMBER UPWARD.
5. ALL BEARING STIFFENERS SHALL BE PERPENDICULAR TO PROFILE GRADE UNDER FULL DEAD LOAD AT 60°F.
6. ALL INTERMEDIATE STIFFENERS SHALL BE PERPENDICULAR TO FLANGES.
7. DO NOT WELD ANY SHEAR STUDS TO STRINGER FLANGE SPLICE PLATES.
8. FOR STRINGER DIAPHRAGM AND SPLICE DETAILS, SEE STRINGERS DETAILS SHEET.

NOTICE TO FABRICATOR/CONTRACTOR:

ALL LONGITUDINAL LAYOUT DIMENSIONS SHOWN ARE BASED ON HORIZONTAL DISTANCES MEASURED FROM "CENTERLINE BEARING PIER 3" OR "CENTERLINE BEARING PIER 4," WHICH ARE VERTICAL PROJECTIONS FROM PANEL WORKING POINTS LOCATED ALONG CENTERLINE OF THE BOTTOM CHORD OF THE TRUSS. THE CONTRACTOR AND/OR STRUCTURAL STEEL FABRICATOR IS ADVISED TO ADJUST THESE DIMENSIONS TO COMPENSATE FOR THE INCREASE IN LENGTH, DUE TO SLOPE DISTANCES ALONG THE STRINGERS.

STRINGER ELEVATION

STRINGER DEAD LOAD DEFLECTION

STRINGER	LOCATION	1/4 POINT			1/2 POINT			3/4 POINT		
		STEEL	SLAB	CDL	STEEL	SLAB	CDL	STEEL	SLAB	CDL
S1 & S5	L0 - L1	0.104	0.596	0.053	0.131	0.754	0.067	0.072	0.407	0.037
	L1 - L2	0.008	0.068	0.006	0.029	0.208	0.018	0.017	0.119	0.010
	L2 - L3	0.037	0.225	0.020	0.061	0.378	0.032	0.034	0.210	0.018
	L3 - L4	0.029	0.182	0.016	0.052	0.332	0.028	0.029	0.186	0.016
	L4 - L5	0.031	0.193	0.017	0.054	0.345	0.029	0.030	0.192	0.017
	L5 - L6	0.030	0.190	0.016	0.054	0.340	0.029	0.030	0.190	0.016
S2 - S4	L0 - L1	0.108	0.642	0.050	0.137	0.811	0.063	0.075	0.438	0.034
	L1 - L2	0.008	0.073	0.006	0.031	0.224	0.017	0.018	0.128	0.010
	L2 - L3	0.038	0.242	0.019	0.063	0.407	0.031	0.035	0.226	0.017
	L3 - L4	0.030	0.196	0.015	0.054	0.358	0.027	0.030	0.200	0.015
	L4 - L5	0.032	0.208	0.016	0.057	0.371	0.028	0.032	0.207	0.016
	L5 - L6	0.031	0.205	0.015	0.056	0.367	0.028	0.031	0.205	0.015

NOTE:
ALL DEFLECTIONS ARE IN INCHES AND DOWNWARD. DEFLECTIONS ARE SYMMETRICAL ABOUT ℄ TRUSS SPAN.

STEEL - NON-COMPOSITE DEAD LOAD DEFLECTION FROM SELF-WEIGHT & DIAPHRAGMS
SLAB - NON-COMPOSITE DEAD LOAD DEFLECTION FROM WEIGHT OF SLAB
CDL - COMPOSITE DEAD LOAD DEFLECTION (NOT INCLUDING FUTURE WEARING SURFACE)

NOTATIONS:

- ○ DENOTES STRINGER EXPANSION BEARING LOCATONS
- □ DENOTES STRINGER FIXED BEARING LOCATIONS
- (1) TWO 4" DIA GALVANIZED RIGID CONDUITS SUPPORTED ON HANGER ASSEMBLIES AT FLOORBEAMS, INTERMEDIATE STRINGER DIAPHRAGMS AND SUPPORT BRACKETS. SEE UTILITY CONDUIT (1) & (2) FOR DETAILS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

STRINGER FRAMING PLAN

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

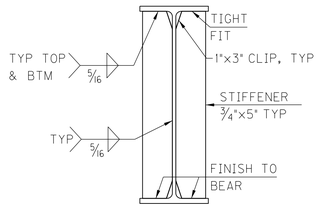
SHEET NO.
S53

DRAWING NO.
27458

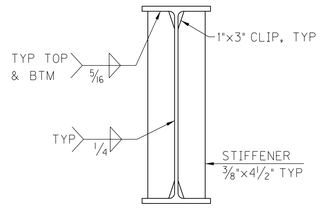
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USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S4 STRINGER DETAILS.DGN

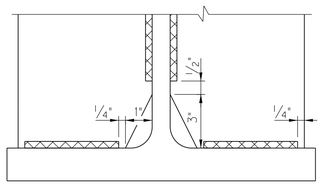


BEARING STIFFENERS



INTERMEDIATE STIFFENERS

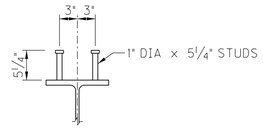
SHOWN FOR STRINGERS 2,3,& 4
OMIT OUTER STIFFENER AT
STRINGERS 1 & 5



STIFFENER WELD TERMINATION DETAIL

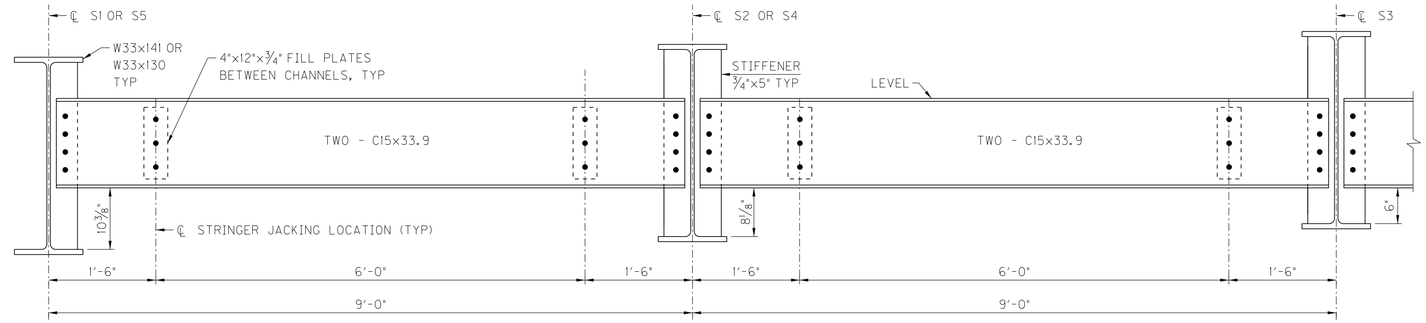
NOTE:
1. ALL BOLTS SHALL BE 7/8" DIAMETER ASTM F3125 GRADE A325 ACCOMODATED BY 15/16" DIAMETER HOLES.

2. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE.



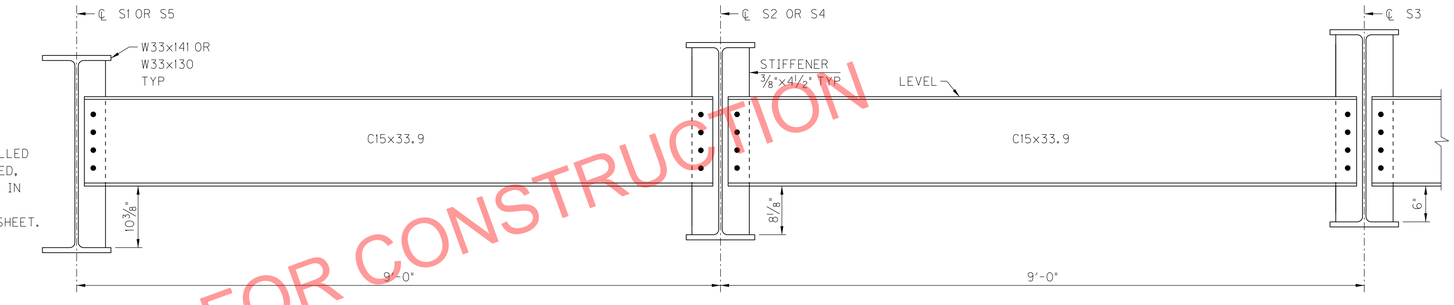
SHEAR STUD DETAILS

1" DIA x 5 1/4" GRANULAR OR SOLID FLUX FILLED HEADED STUDS, AUTOMATICALLY END WELDED, STUDS SHALL BE ATTACHED TO STRINGERS IN FIELD. FOR STUD SPACING SEE STRINGER ELEVATION ON STRINGERS FRAMING PLAN SHEET.

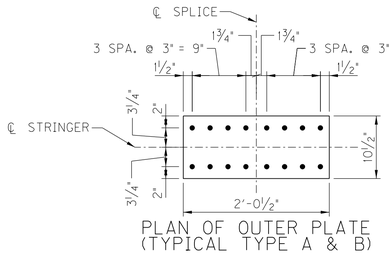


BEARING DIAPHRAGMS

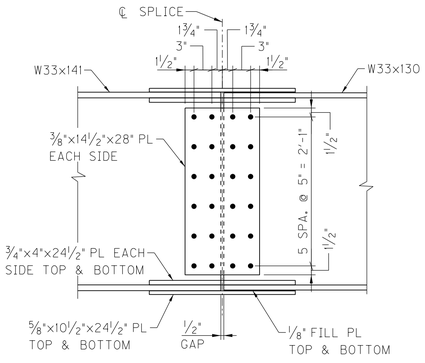
NOTE: FOR CONDUIT ATTACHMENTS TO STRINGER DIAPHRAGMS SEE UTILITY CONDUIT (1)&(2) SHEETS.



INTERMEDIATE DIAPHRAGMS



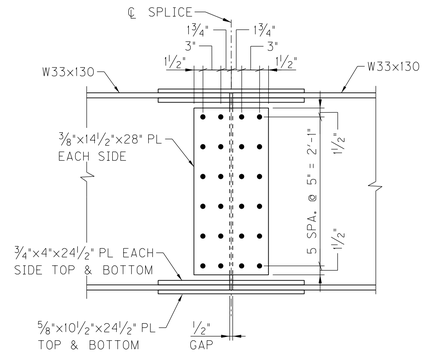
PLAN OF OUTER PLATE
(TYPICAL TYPE A & B)



ELEVATION

SPLICE TYPE A

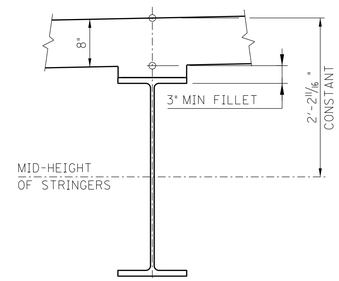
FS1 & FS6



ELEVATION

SPLICE TYPE B

FS2, FS3, FS4, FS5



FILLET OVER STRINGERS

NOTE:
THE STRINGERS ARE LOCATED VERTICALLY BY SETTING THE MID-HEIGHT OF THE STRINGERS A CONSTANT DISTANCE BELOW THE THEORETICAL TOP OF SLAB ELEVATION AT THE "℄ BRG PIER 3", ℄ OF ALL SPLICES AND "℄ BRG PIER 4". THIS CONSTANT DIMENSION IS ESTABLISHED BY LOCATING THE BOTTOM OF THE TOP FLANGE 3" BELOW THE THEORETICAL BOTTOM OF SLAB.

INTERMEDIATE DIAPHRAGMS

NOTES FOR FUTURE JACKING:

1. CONTRACTOR IS RESPONSIBLE FOR DESIGNING THE JACKS AND THE JACKING PROCEDURES. SUBMIT THE PROPOSED JACKING AND/OR BEARING REPLACEMENT PROCEDURE TO KYTC FOR REVIEW AND APPROVAL PRIOR TO THE COMMENCEMENT OF ANY JACKING OPERATIONS.

2. THE MAXIMUM ALLOWABLE JACKING DISPLACEMENT OF THE SUPERSTRUCTURE IS 3/8" VERTICAL. LIMIT DIFFERENTIAL DISPLACEMENT BETWEEN STRINGER LINES TO 1/8". PROVIDE HYDRAULIC REGULATING DEVICES AS REQUIRED.

3. JACK THE SUPERSTRUCTURE ONLY AT LOCATIONS SHOWN ON THE DRAWINGS AND CENTER THE JACKS ON THE CENTERLINE OF THE FLOORBEAM TOP FLANGE.

4. ACCOUNT FOR ANY THERMAL MOVEMENTS AND ANY HORIZONTAL FORCES THAT MAY BE ENCOUNTERED DURING THE PERIOD WHEN THE SUPERSTRUCTURE IS BEING JACKED OR IS SHORED ON TEMPORARY SUPPORTS.

5. TRAFFIC IS PERMITTED ON THE BRIDGE DURING JACKING; HOWEVER, SHIFT TRAFFIC SO THAT NO LIVE LOAD IS DISTRIBUTED TO THE EXTERIOR STRINGER JACK. ACCOUNT FOR THE EFFECTS OF VIBRATIONS DUE TO TRAFFIC ON THE BRIDGE AND THE FLOORBEAM ON WHICH JACKING IS TAKING PLACE OR WHILE THE SUPERSTRUCTURE IS SHORED ON TEMPORARY SUPPORTS.

STRINGER	SERVICE REACTIONS (KIPS)		
	DC	DW	LL & I
S1 & S5	88.52	8.89	132.56
S2 - S4	93.95	11.56	146.47

NOTE:
MAXIMUM STRINGER REACTIONS PROVIDED.

REVISION	DATE

DATE: JANUARY 2020 | CHECKED BY
DESIGNED BY: J. HUDSON | C. GREENWELL
DETAILED BY: D. BASHAM | T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

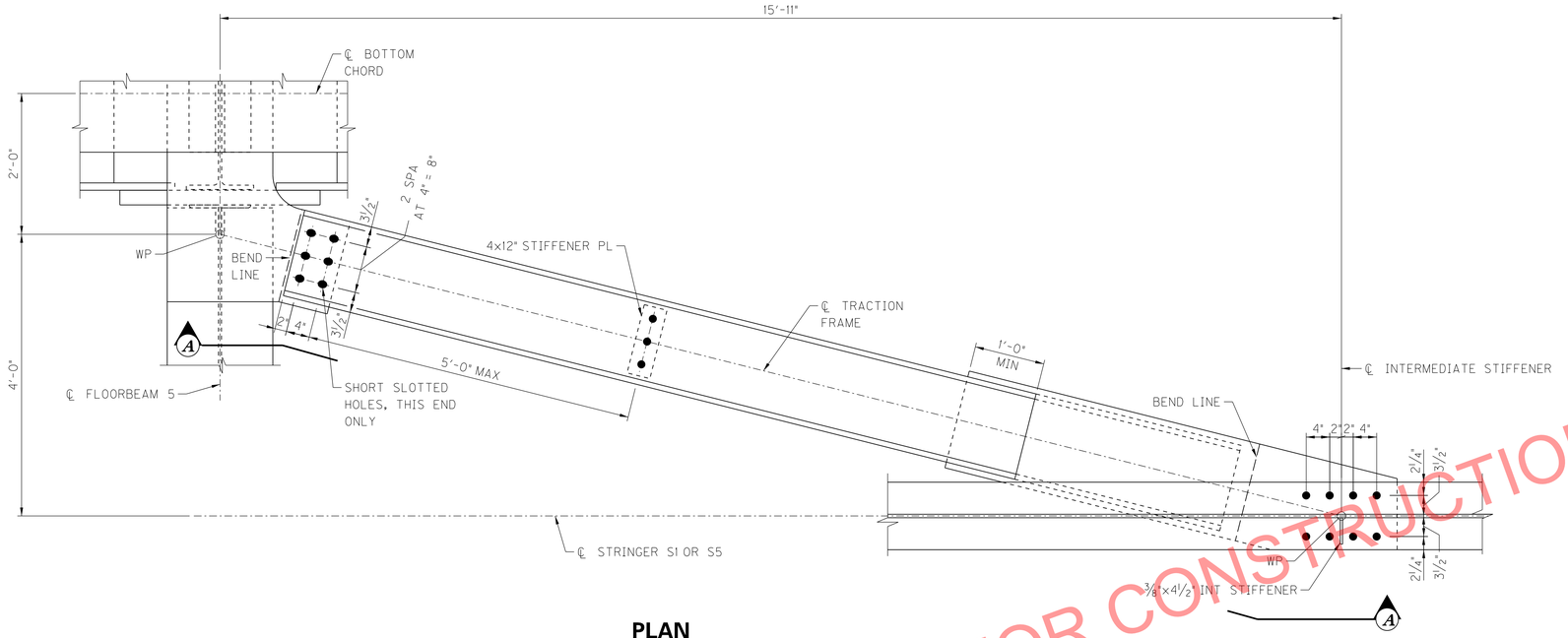
STRINGER DETAILS

ITEM NUMBER
1–1142.00

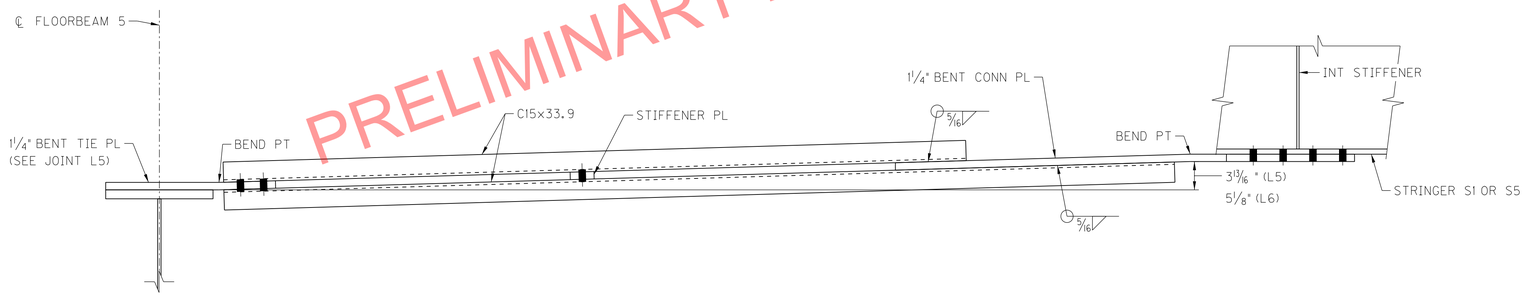
PREPARED BY
Stantec

SHEET NO.
S54

DRAWING NO.
27458



PLAN



VIEW A–A

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. BOLTS SHALL BE 1 1/8" DIAMETER ASTM F3125 GRADE A490.
2. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE.
3. SHORT SLOTTED HOLES SHALL BE PROVIDED IN THE TRACTION FRAME MEMBERS AT THE FLOORBEAM TIE PLATE CONNECTION END, ORIENTED IN THE DIRECTION OF THE MEMBER.
4. AFTER THE COMPLETION OF THE DECK POUR, THE CONTRACTOR SHALL LOOSEN BOLTS AT ALL SHORT SLOTTED HOLES TO RELEASE THE DEAD LOAD AXIAL FORCES. ALL BOLTS IN THE CONNECTION SHALL BE REPLACED AND TIGHTENED.
5. CONNECTION AT L5 SHOWN. CONNECTION AT L6 IS SYMETRICAL.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

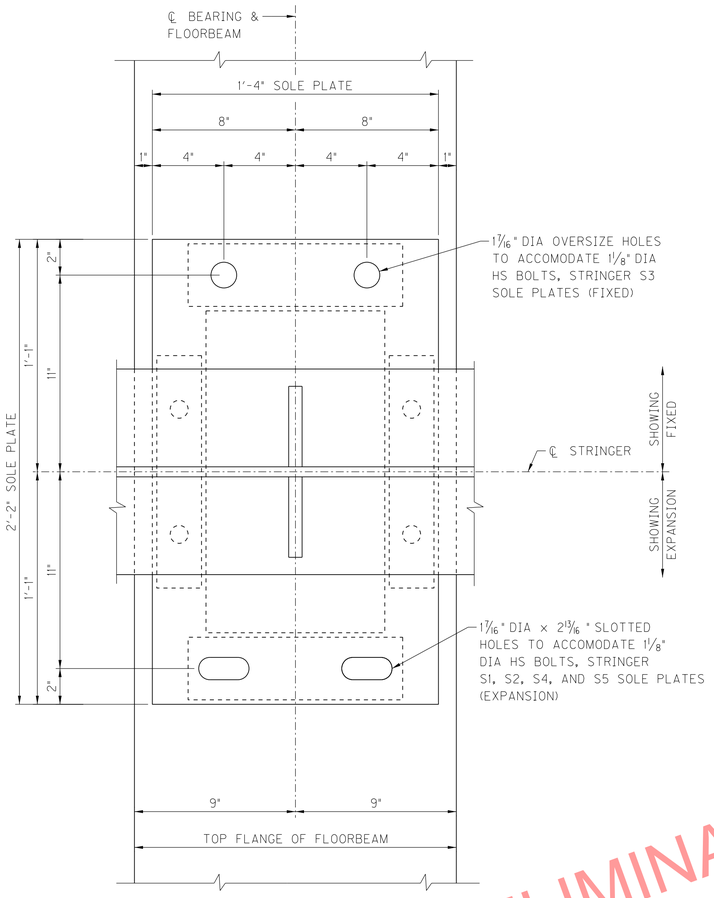
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

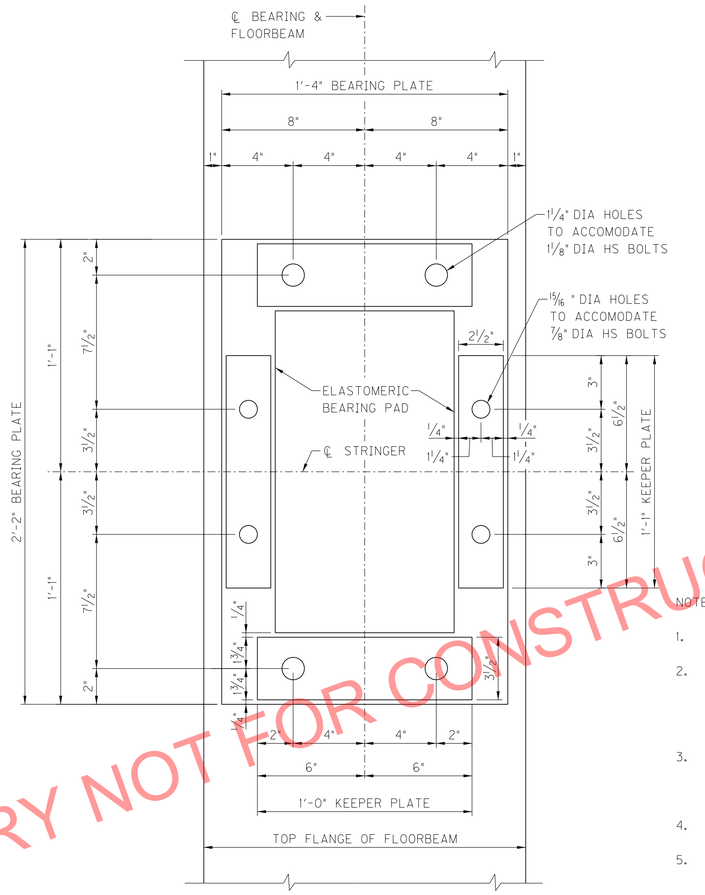
TRACTION FRAME

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S55
		DRAWING NO. 27458

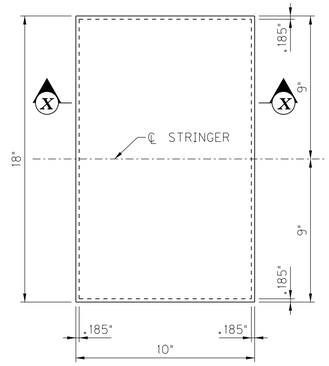
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650II\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S5 TRACTION FRAME.DGN



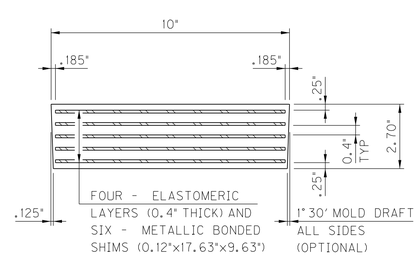
SECTION A–A



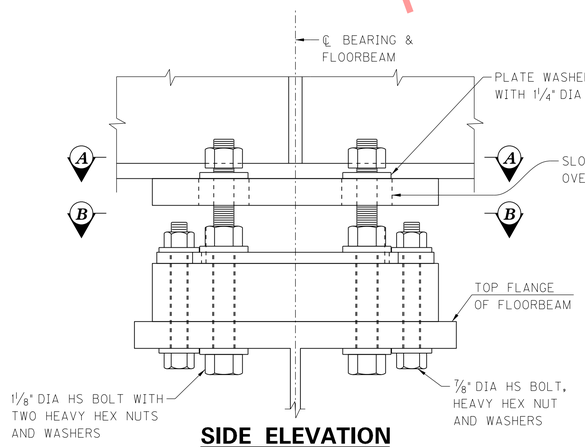
SECTION B–B



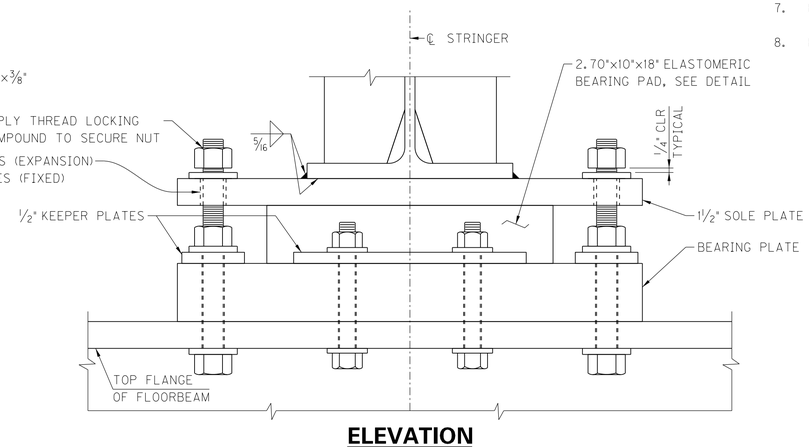
ELASTOMERIC BEARING PAD PLAN



SECTION X–X



SIDE ELEVATION



ELEVATION

LOOKING AHEAD

NOTES:

1. 1 1/8" DIA HS BOLTS SHALL BE F3125 GRADE A490. 7/8" DIA HS BOLTS SHALL BE F3125 GRADE A325.
2. ELASTOMERIC BEARING PADS SHALL CONFORM TO THE DIMENSIONS SHOWN IN THESE PLANS AND SHALL CONFORM TO THE REQUIREMENTS OF DIVISION II, SECTION 18 OF THE AASHTO SPECIFICATIONS. BEARING PADS ARE DESIGNED ACCORDING TO DIVISION I, ARTICLE 14.7.5 OF THE AASHTO SPECIFICATIONS. TESTING IN ACCORDANCE WITH DIVISION II, ARTICLE 18.7 IS REQUIRED.
3. THE ELASTOMER COMPOUND SHALL BE LOW TEMPERATURE GRADE 3 WITH A SHEAR MODULUS BETWEEN 95 PSI AND 125 PSI. CONTRARY TO AASHTO SPECIFICATIONS DIVISION II, ARTICLE 18.4.5 THE LOW ELASTOMER MATERIAL SHALL BE VIRGIN NEOPRENE (POLYCHLOPRENE). NATURAL RUBBER (POLYISOPRENE) WILL NOT BE ALLOWED.
4. METALLIC SHIM MATERIAL FOR BEARING PADS SHALL BE ASTM A209 OR A1011 GRADE 36.
5. SHOP DRAWINGS ARE REQUIRED FOR ALL BEARING PADS. PAYMENT FOR BEARING PADS SHALL BE INCLUDED IN THE STRUCTURAL STEEL LUM SUM PRICE.
6. THE BEARING SHALL BE INSPECTED PERIODICALLY DURING AND IMMEDIATELY AFTER COMPLETION OF CONSTRUCTION. IF SHEAR DEFORMATION IN A STRINGER BEARING EXCEEDS 1/4" AT 60° F, THE BEARING SHALL BE RESET BY JACKING THE STRINGER TO RELEASE THE SHEAR LOAD, AS DIRECTED BY THE ENGINEER.
7. BEARING PLATES SHALL CONSIST OF A MAXIMUM OF 3 SEPERATE PLATES WITH A MINIMUM THICKNESS OF 3/4" EACH.
8. FOR BEARING REPLACEMENT, REFER TO STRINGER DETAILS SHEET FOR FUTURE JACKING NOTES.

BEARING PLATE THICKNESS			
FLOORBEAM	STRINGERS S1 & S5	STRINGERS S2 & S4	STRINGER S3
LO - L11	1 1/2"	3 11/16"	5 13/16"

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	T. PERKINS
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

STRINGER BEARINGS

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

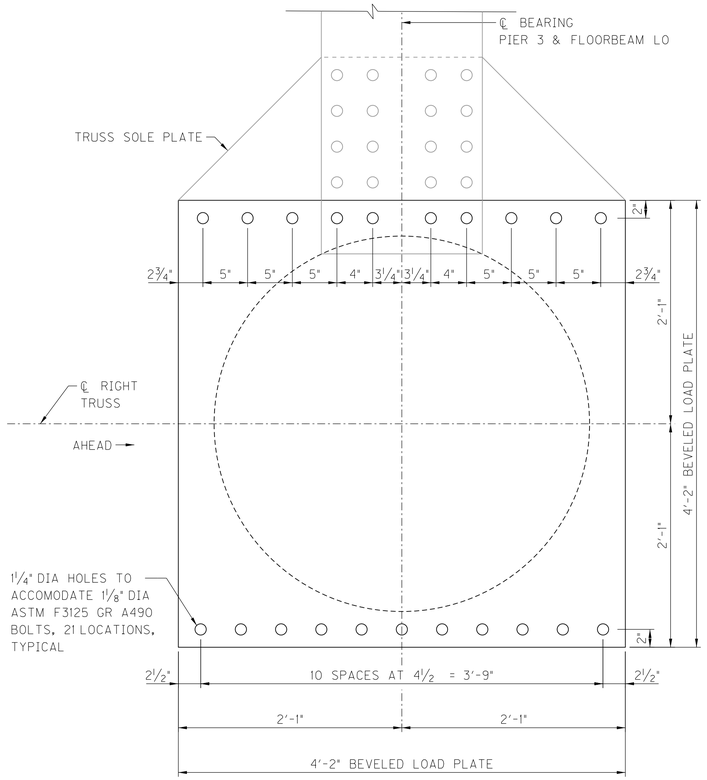
SHEET NO. S56
DRAWING NO. 27458

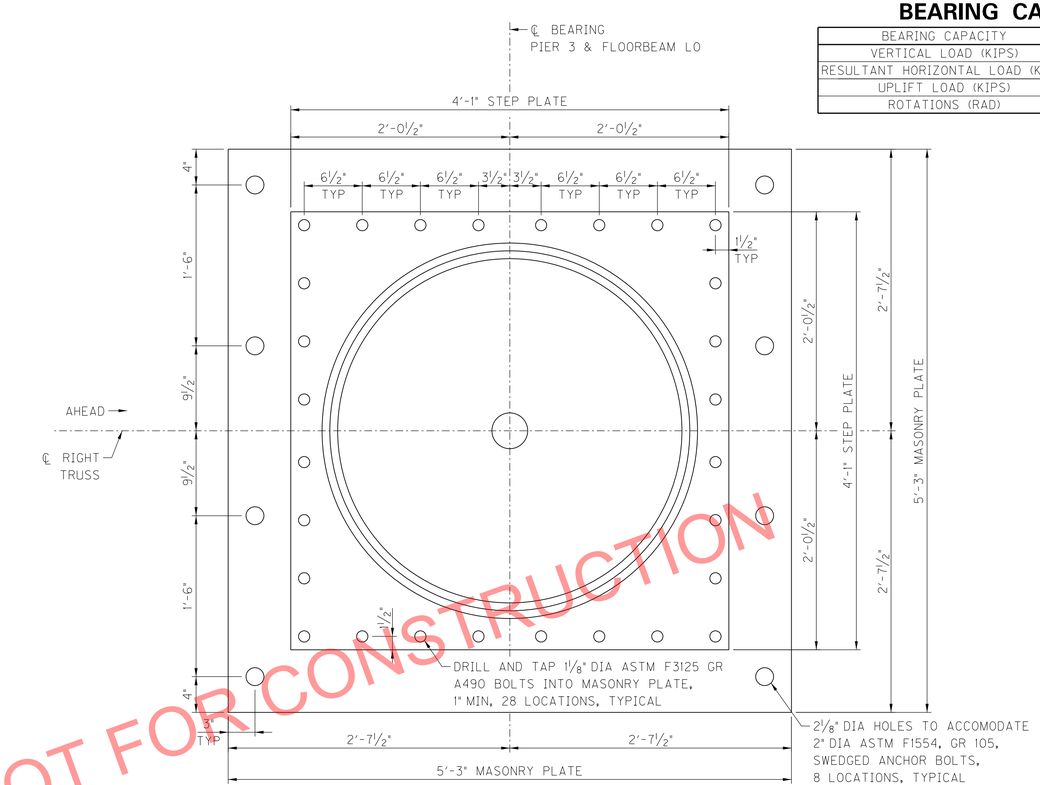
MICROSTATION V8.11.9.829 E-SHEET NAME: USER: dabasham DATE PLOTTED: January 24, 2020 FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S6 STRINGER BEARINGS.DGN

PRELIMINARY NOT FOR CONSTRUCTION

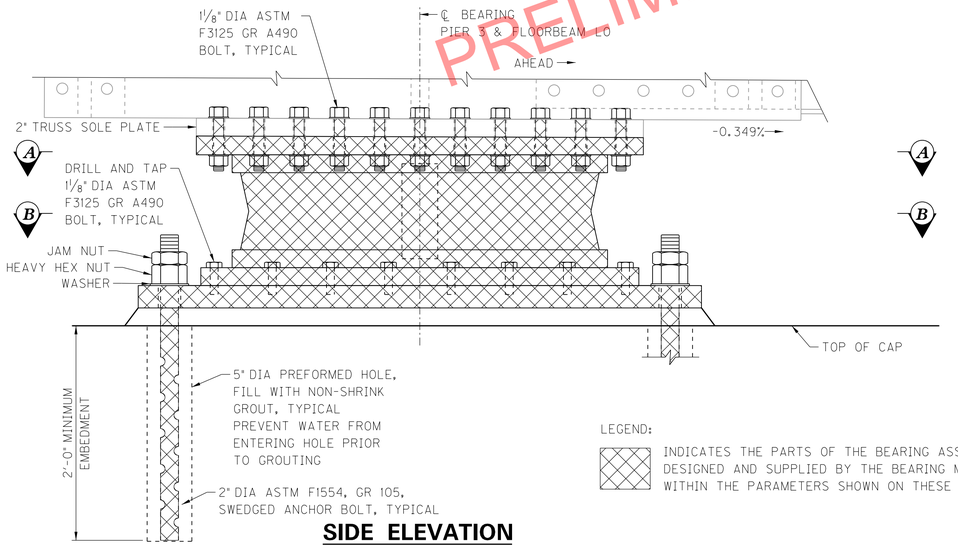
BEARING CAPACITY REQUIREMENTS

BEARING CAPACITY	SERVICE	STRENGTH	EXTREME EVENT
VERTICAL LOAD (KIPS)	3242	4149	3200
RESULTANT HORIZONTAL LOAD (KIPS)	560	876	1379
UPLIFT LOAD (KIPS)	-	-	-
ROTATIONS (RAD)	+/- 0.004		





SECTION A–A

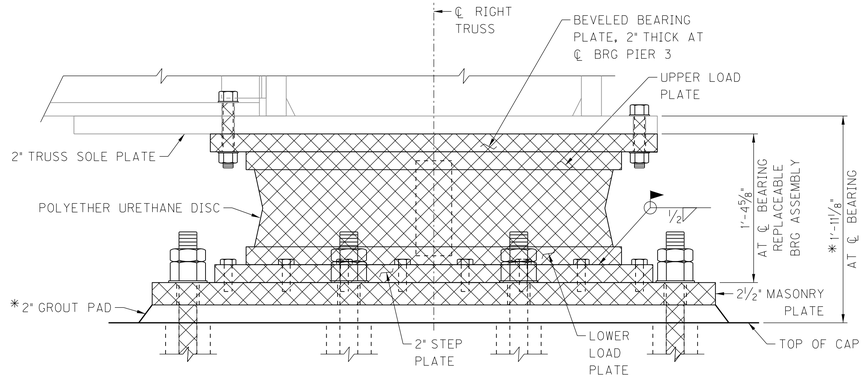


SIDE ELEVATION

LEGEND:

INDICATES THE PARTS OF THE BEARING ASSEMBLY TO BE DESIGNED AND SUPPLIED BY THE BEARING MANUFACTURER WITHIN THE PARAMETERS SHOWN ON THESE PLANS

SECTION B–B



ELEVATION

LOOKING AHEAD

* GROUT PAD THICKNESS TO BE DETERMINED BASED ON THE FINISHED TOP OF CAP ELEVATION AND SHALL PROVIDE A LEVEL BEARING SURFACE. SEE SPECIAL NOTE FOR DISC BEARING FOR ADDITIONAL REQUIREMENTS.

NOTES FOR PIER 3 TRUSS BEARINGS:

1. DETAILS SHOWN ARE FOR THE RIGHT TRUSS, THE LEFT TRUSS IS SIMILAR BY OPPOSITE HAND.
2. THE BEARING DEVICES SUPPLIED SHALL BE CAPABLE OF TRANSMITTING THE LOADS AND MOVEMENTS SHOWN ON THESE PLANS.
3. BEARINGS SHALL BE DISC TYPE, FIXED BEARINGS.
4. FOR TRUSS BEARING DESIGN AND ERECTION NOTES, SEE TRUSS BEARINGS - PIER 4.
5. SEE TRUSS JOINT LO FOR FUTURE JACKING NOTES.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: A. GRACE	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

TRUSS BEARINGS – PIER 3

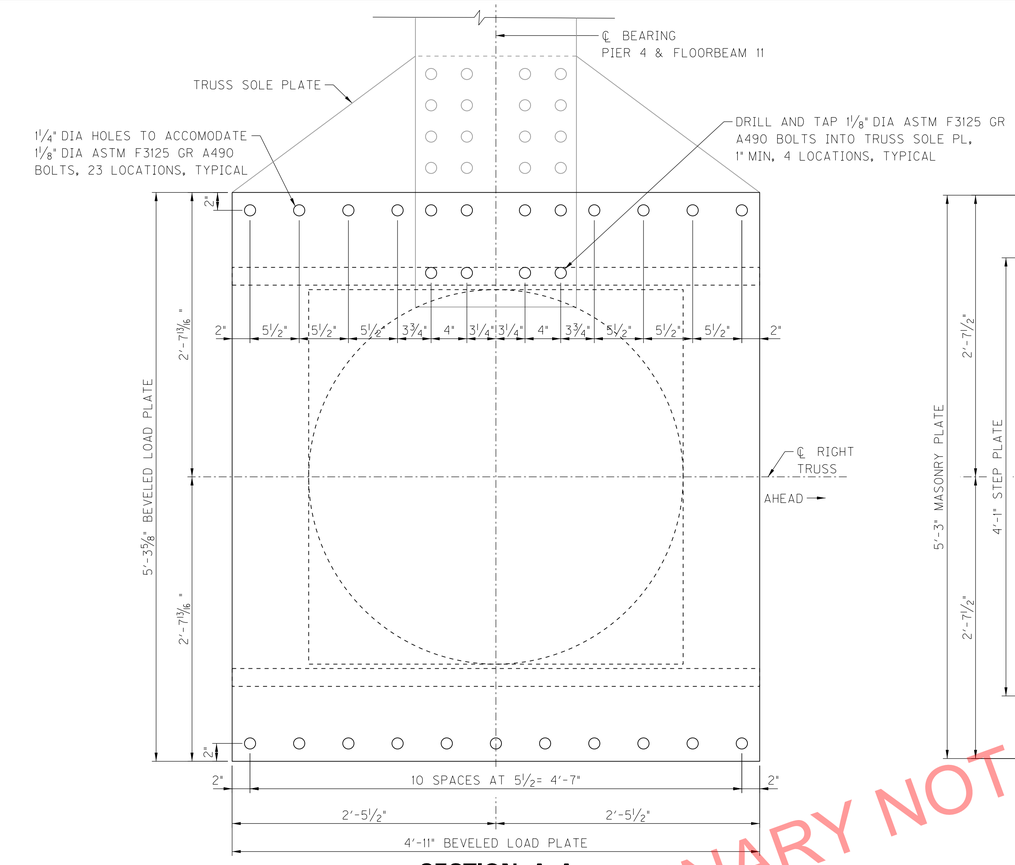
ITEM NUMBER	PREPARED BY	SHEET NO.	DRAWING NO.
1–1142.00	Stantec	S57	27458

FILE NAME: V:\1785\ACTIVE\1785650\11\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S7 TRUSS BEARINGS - PIER 3.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

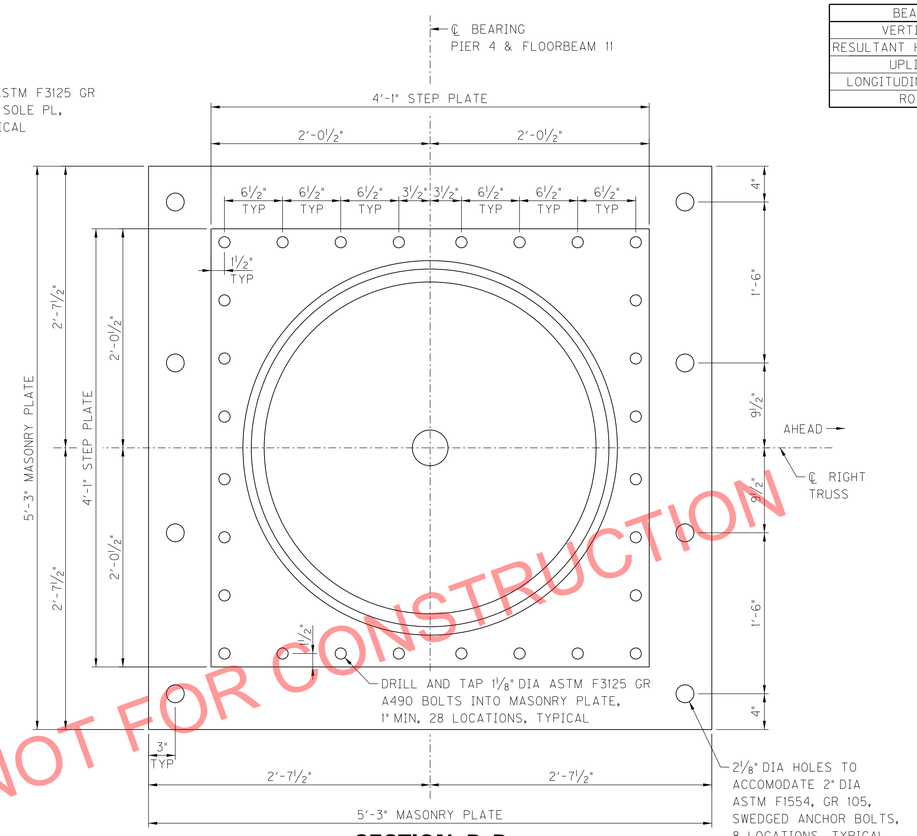
PRELIMINARY NOT FOR CONSTRUCTION

BEARING CAPACITY REQUIREMENTS

BEARING CAPACITY	SERVICE	STRENGTH	EXTREME EVENT
VERTICAL LOAD (KIPS)	3247	4157	3147
RESULTANT HORIZONTAL LOAD (KIPS)	222	497	698
UPLIFT LOAD (KIPS)	-	-	-
LONGITUDINAL DISPACEMENT (IN)	+/- 8.0		
ROTATIONS (RAD)	+/- 0.004		



SECTION A–A



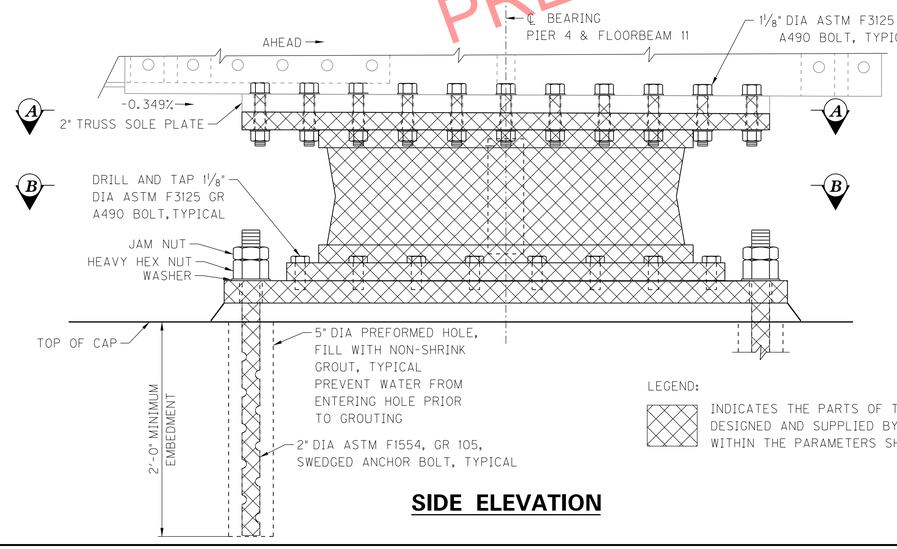
SECTION B–B

NOTES FOR TRUSS BEARINGS - PIER 4:

1. DETAILS SHOWN ARE FOR THE RIGHT TRUSS, THE LEFT TRUSS IS SIMILAR BY OPPOSITE HAND.
2. THE BEARING DEVICES SUPPLIED SHALL BE CAPABLE OF TRANSMITTING THE LOADS AND MOVEMENTS SHOWN ON THESE PLANS. HORIZONTAL LOAD PRESENTED DOES NOT ACCOUNT FOR ANY FRICTION FORCE DUE TO SLIDING.
3. BEARINGS SHALL BE DISC TYPE, UNIDIRECTIONAL BEARINGS.
4. SEE TRUSS JOINT LO FOR FUTURE JACKING NOTES.

NOTES FOR TRUSS BEARING DESIGN AND ERECTION:

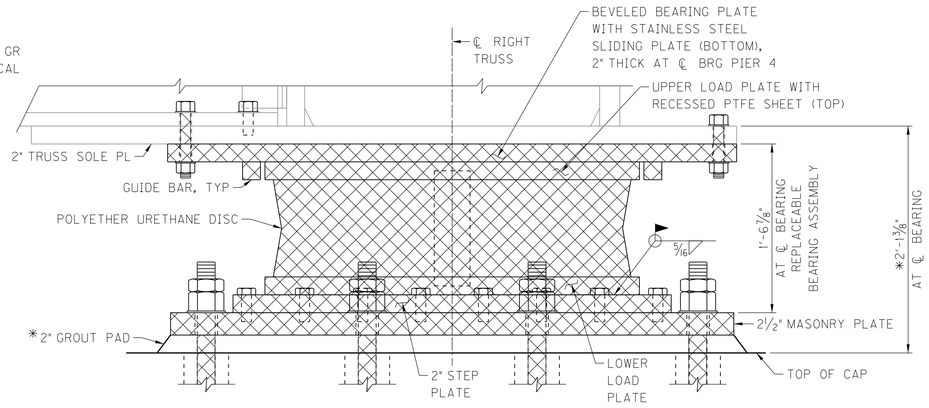
1. BEARING ARRANGEMENT SHOWN ON THESE PLANS ARE FOR INFORMATION ONLY BASED ON A PRELIMINARY DESIGN. CONTRACTOR IS RESPONSIBLE FOR THE FINAL DESIGN OF THE BEARING ASSEMBLY, STEP PLATE, MASONRY PLATE, CONNECTION OF THE BEARING ASSEMBLY, AND ANCHOR BOLTS.
2. CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF THE BEARING ASSEMBLY TO THE ENGINEER FOR REVIEW AND APPROVAL. DESIGN CALCULATIONS, STAMPED BY A PROFESSIONAL ENGINEER, SHALL BE PROVIDED.
3. PTFE SHALL BE RECESSED IN UPPER BEARING PLATE. DESIGN COEFFICIENT OF FRICTION SHALL NOT EXCEED 0.05, USING A SERVICE DEAD LOAD REACTION OF 3247 KIPS.
4. THE BEVELED BEARING PLATE SHALL BE BOLTED TO THE TRUSS SOLE PLATE TO ACCOMMODATE A FUTURE REPLACEMENT.
5. THE STEP PLATE SHALL BE ATTACHED TO THE MASONRY PLATE WITH DRILLED AND TAPPED BOLTS TO ACCOMMODATE A FUTURE REPLACEMENT.
6. FIELD WELD LOWER LOAD PLATE TO THE STEP PLATE AS SHOWN TO ACCOMMODATE CONSTRUCTION TOLERANCES.
7. THE CONCRETE SURFACE UNDER THE GROUT PAD SHALL BE ROUGHENED AND BLAST CLEANED PRIOR TO GROUT INSTALLATION. USE NON-SHRINK GROUT FROM THE KYTC LIST OF APPROVED MATERIALS AND CONFORMING TO SECTION 601 OF THE STANDARD SPECIFICATIONS.
8. FOR ADDITIONAL REQUIREMENTS, SEE SPECIAL NOTE FOR DISC BEARINGS.



SIDE ELEVATION

LEGEND:

INDICATES THE PARTS OF THE BEARING ASSEMBLY TO BE DESIGNED AND SUPPLIED BY THE BEARING MANUFACTURER WITHIN THE PARAMETERS SHOWN ON THESE PLANS



ELEVATION
LOOKING AHEAD

*GROUT PAD THICKNESS TO BE DETERMINED BASED ON THE FINISHED TOP OF CAP ELEVATION AND SHALL PROVIDE A LEVEL BEARING SURFACE. SEE SPECIAL NOTE FOR DISC BEARING FOR ADDITIONAL REQUIREMENTS.

ITEM NUMBER
1–1142.00

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

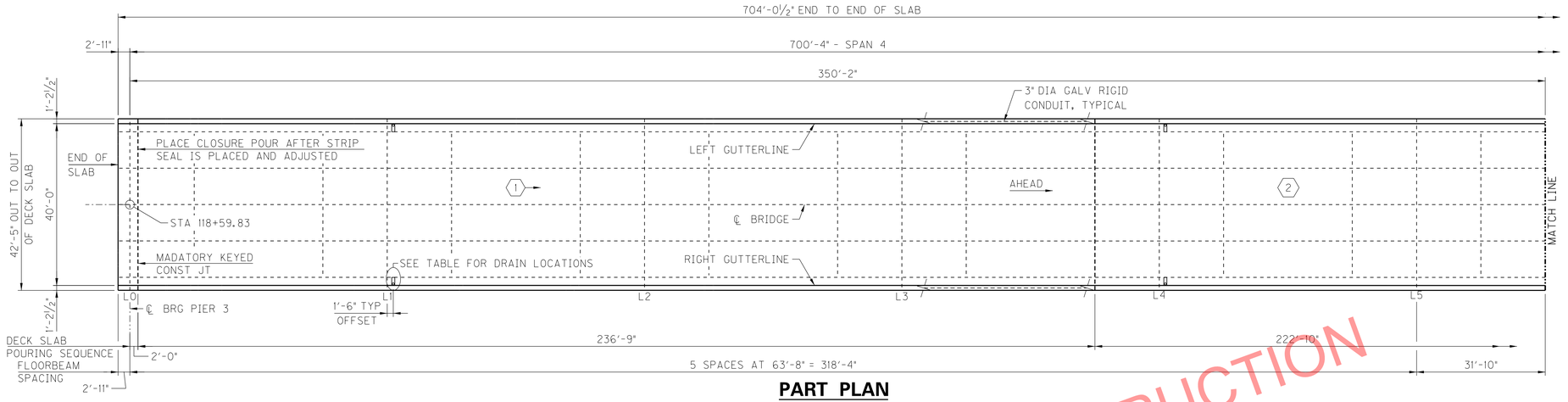
TRUSS BEARINGS – PIER 4

PREPARED BY: Stantec

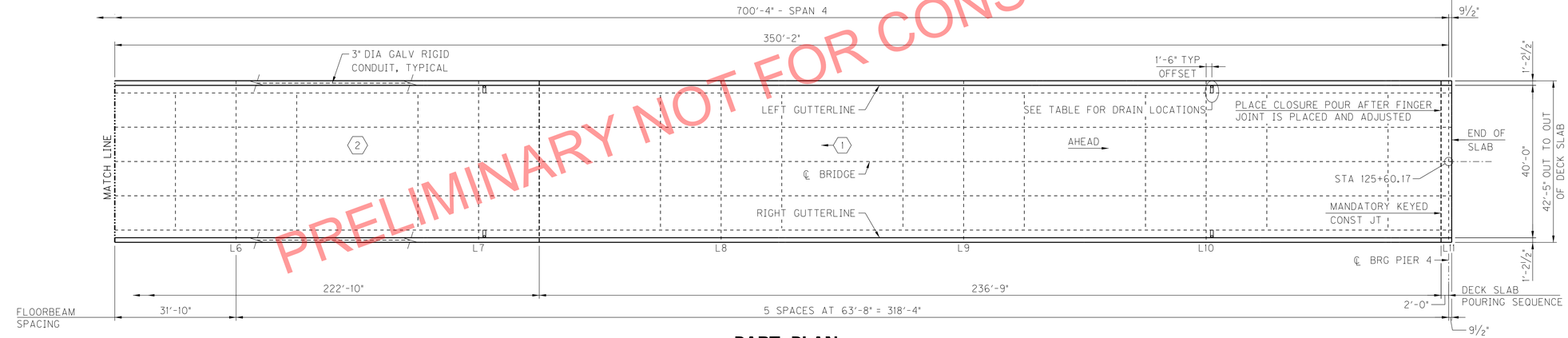
SHEET NO. S58

DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\58 TRUSS BEARINGS - PIER 4.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



PART PLAN



PART PLAN

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. THIS SHEET SHOWS SPACING FOR DRAIN SCUPPERS. FOR REINFORCING SEE SPAN 4 SLAB PLAN & DETAILS (2).

2. MANDATORY TRANSVERSE KEYED CONSTRUCTION JOINTS SHALL BE COATED WITH AN EPOXY BONDING AGENT.

◄X► - INDICATES ORDER AND DIRECTION OF DECK SLAB POUR. ALL CONCRETE IN ANY POUR MUST BE IN PLACE BEFORE THE CONCRETE IN THAT POUR ACHIEVES ITS FINAL SET. ALL DECK SLAB CONSTRUCTION JOINTS SHALL BE COATED WITH AN EPOXY BONDING AGENT.

DECK SLAB SHALL BE POURED FULL WIDTH, WITH A SCREED MACHINE LARGE ENOUGH TO SPAN THIS DISTANCE.

SLAB POURING SEQUENCE SHALL NOT BE CHANGED WITHOUT THE WRITTEN APPROVAL OF THE BRIDGE DESIGNER.

DRAIN LOCATIONS			
STATION	OFFSET	STATION	OFFSET
119+25.00	20'-0" LEFT	119+25.00	20'-0" RIGHT
121+16.00	20'-0" LEFT	121+16.00	20'-0" RIGHT
123+07.00	20'-0" LEFT	123+07.00	20'-0" RIGHT
124+98.00	20'-0" LEFT	124+98.00	20'-0" RIGHT

FOR DRAIN DETAILS SEE SPAN 4 SCUPPER AND DRAIN PIPE SHEET

NOTICE TO CONTRACTOR:

ALL LAYOUT DIMENSIONS SHOWN ARE HORIZONTAL DISTANCES. THE CONTRACTOR AND/OR STEEL FABRICATOR IS ADVISED TO ADJUST THESE DIMENSIONS TO COMPENSATE FOR THE INCREASE IN LENGTH, DUE TO SLOPE DISTANCES ALONG THE STRINGERS.

CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT STRINGER LINES 1 AND/OR 5 REMAIN VERTICAL AND DO NOT ROLL OVER OR TWIST LATERALLY DURING THE DECK SLAB PLACEMENT OPERATION.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

SPAN 4 SLAB PLAN & DETAILS (1)

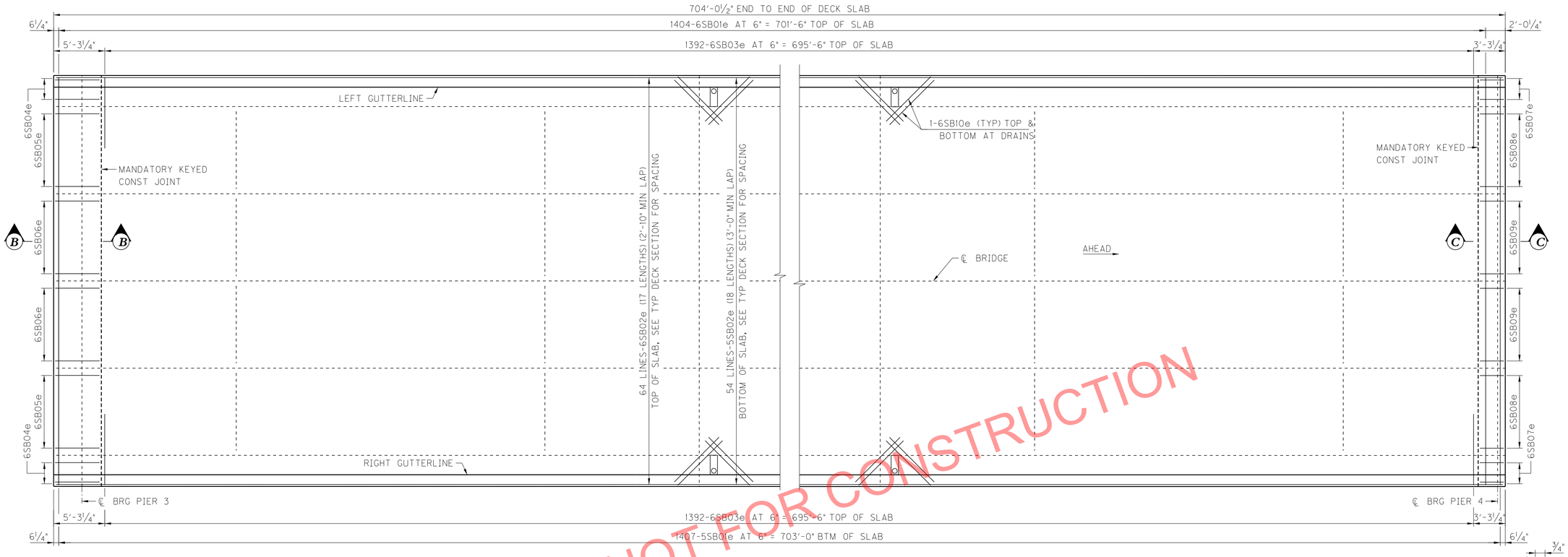
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S59

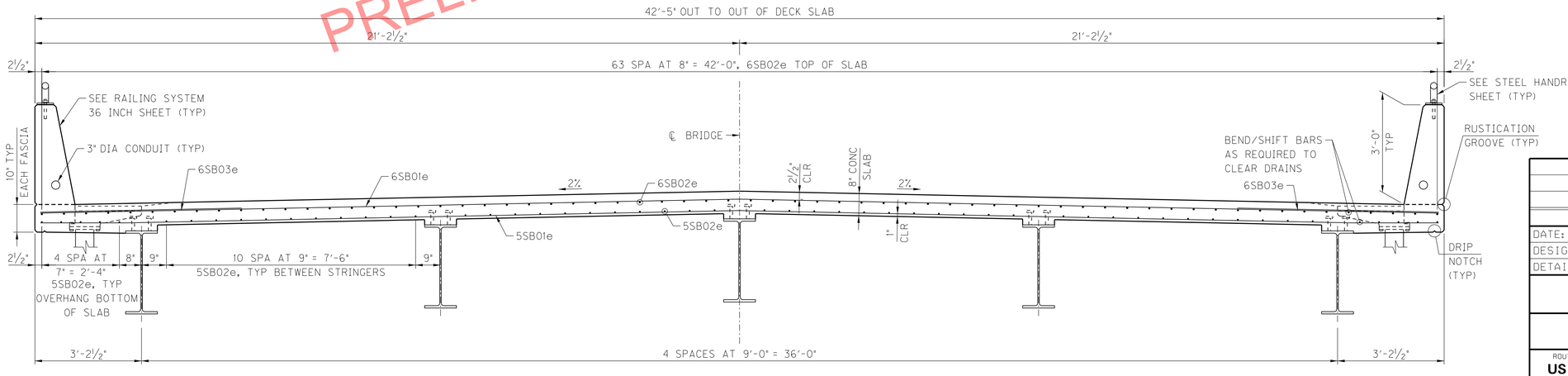
DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\178565011\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S9 SPAN 4 SLAB PLAN & DETAILS (1).DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



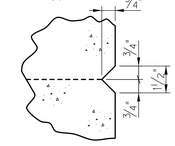
PLAN

SHOWING REINFORCING LAYOUT

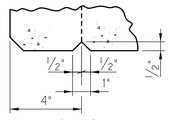


TYPICAL DECK SECTION – SPAN 4

LOOKING AHEAD



RUSTICATION GROOVE



DRIP NOTCH DETAIL

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

SPAN 4 SLAB PLAN & DETAILS (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S60
		DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\60 SPAN 4 SLAB PLAN & DETAILS (2).DGN

FILE NAME: V:\1785\ACTIVE\1785650II\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\61 SPAN 4 SLAB PLAN & DETAILS (3).DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SPAN 4 SLAB - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.
5SB01e	STR	1407	42	1	BOTTOM OF SLAB																												
5SB02e	STR	972	42	0	BOTTOM OF SLAB																												
5SB03e	STR	24	2	10	END OF SLAB																												
5SB04e	STR	48	8	8	END OF SLAB																												
6SB01e	STR	1404	42	1	TOP OF SLAB																												
6SB02e	STR	1088	44	6	TOP OF SLAB																												
6SB03e	STR	2784	6	3	TOP OF SLAB																												
6SB04e	16	10	10	6	END OF SLAB AT PIER 3	4	7	1	0	4	0	0	10 5/8							0	9			0	8 1/2							4	7
6SB05e	16	32	10	9	END OF SLAB AT PIER 3	4	7	1	1	4	0	1	1							0	11			0	8 1/2							4	7
6SB06e	16	32	11	1	END OF SLAB AT PIER 3	4	7	1	3	4	0	1	2 3/4							1	1			0	8 1/2							4	7
6SB07e	16	10	6	2	END OF SLAB AT PIER 4	2	5	1	0	1	10	0	10 5/8							0	9			0	8 1/2							2	5
6SB08e	16	32	6	5	END OF SLAB AT PIER 4	2	5	1	1	1	10	1	1							0	11			0	8 1/2							2	5
6SB09e	16	32	6	9	END OF SLAB AT PIER 4	2	5	1	3	1	10	1	2 3/4							1	1			0	8 1/2							2	5
6SB10e	STR	64	6	6	AT GUTTER DRAINS																												

BAR MARK DESCRIPTION

5AB01e

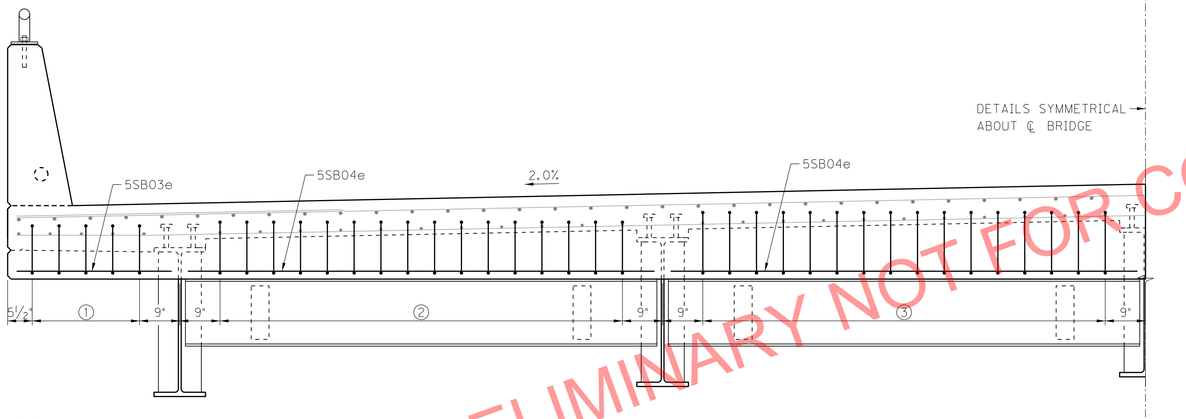
BAR SIZE — BAR MARK

DENOTES EPOXY COATED — BAR MARK NUMBER

STRIP SEAL TEMPERATURE INCREMENT TABLE

INSTALLATION TEMPERATURE (°F)	JOINT OPENING (IN)
20	3.52
30	3.39
40	3.26
50	3.13
60	3.00
70	2.87
80	2.74
90	2.61
100	2.48

**60°F MEDIAN DESIGN TEMPERATURE



NOTATIONS:

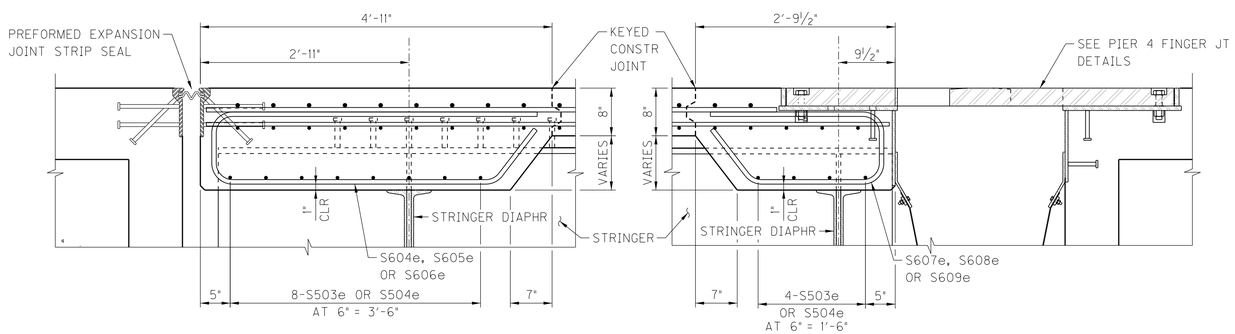
① 5-6SB04e AT 6" = 2'-0" PIER 3
5-6SB07e AT 6" = 2'-0" PIER 4

② 16-6SB05e AT 6" = 7'-6" PIER 3
16-6SB08e AT 6" = 7'-6" PIER 4

③ 16-6SB06e AT 6" = 7'-6" PIER 3
16-6SB09e AT 6" = 7'-6" PIER 4

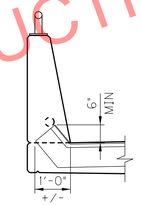
SECTION A–A

SECTION AT PIER 3 - LOOKING AHEAD, PIER 4 SIMILAR

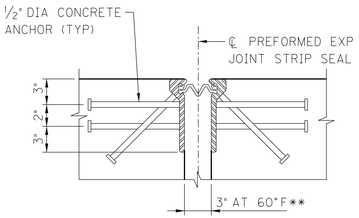


SECTION B–B

SECTION C–C



STRIP SEAL SECTION AT BARRIER



SECTION THROUGH STRIP SEAL

NOTES:
PREFORMED EXPANSION JOINT STRIP SEAL SHALL BE EITHER ONE OF THE FOLLOWING OR AN APPROVED EQUIVALENT:

D.S. BROWN COMPANY
L2-500 WITH A SSPA STEELFLEX RAIL

WATSON BOWMAN ACME
SE-500 WITH TYPE 'P' RAIL

SUBMIT SHOP DRAWINGS FOR APPROVAL. SEE SECTION 609.03.04 OF THE STANDARD SPECIFICATIONS.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. HUDSON	C. GREENWELL
DETAILED BY: A. GRACE	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

SPAN 4 SLAB PLAN & DETAILS (3)

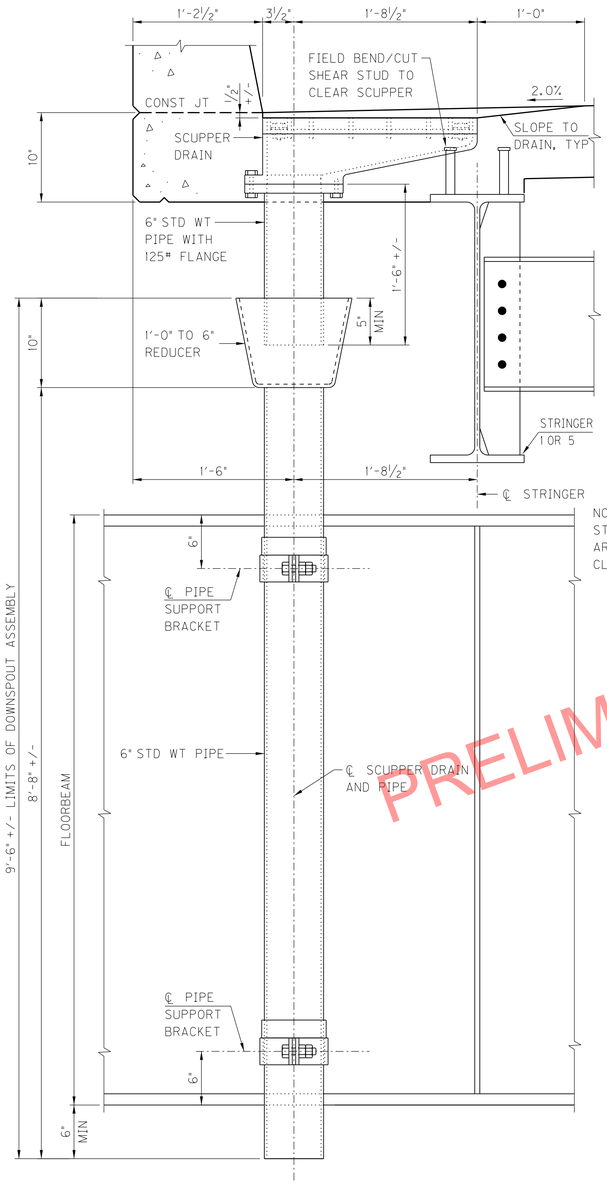
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

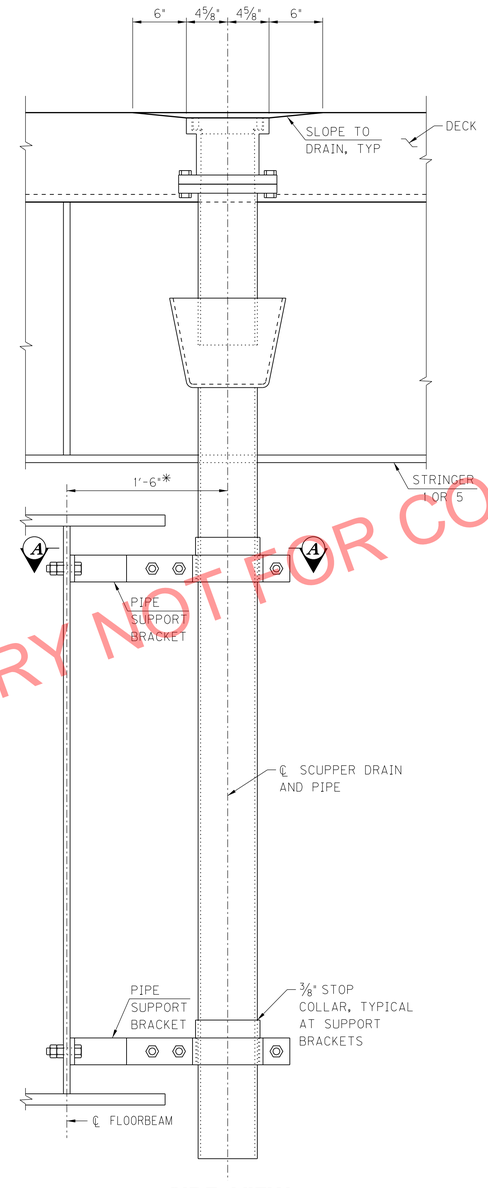
SHEET NO.: S61

DRAWING NO.: 27458

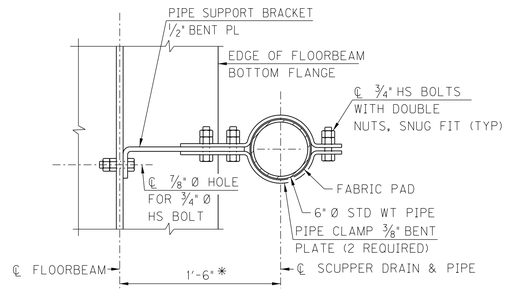
MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S62 SPAN 4 SCUPPER & DRAIN PIPE.DGN



ELEVATION



SIDE VIEW



SECTION A–A

NOTE: STOP COLLAR NOT SHOWN FOR CLARITY.

* MODIFY PIPE LOCATION TO ALIGN WITH ℄ OF SCUPPER DRAIN AFTER INSTALLATION.

NOTES:

1. SCUPPER DRAINS SHALL BE NEENAH R-4014-T2L OVERHEAD SCUPPER DRAIN WITH BOLTED TYPE L GRATE OR AN APPROVED EQUIVALENT.
2. DOWNSPOUT DRAIN PIPES ATTACHED TO SCUPPER DRAINS SHALL BE 6" STANDARD WEIGHT PIPE OUTFITTED WITH A STANDARD 125 POUND FLANGED TEMPLATE.
3. DOWNSPOUT DRAIN PIPES ATTACHED TO THE FLOORBEAMS SHALL BE 6" STANDARD WEIGHT PIPE OUTFITTED WITH A REDUCER.
4. ALL GRATES SHALL BE SECURELY BOLTED TO SCUPPER DRAIN FRAME AND IN ADDITION SHALL BE ATTACHED TO SCUPPER FRAMES WITH A 3/16" PROOF COIL CHAIN OF SUFFICIENT LENGTH TO ALLOW REMOVAL FOR CLEAN OUT.
5. FOR SCUPPER DRAIN LOCATIONS SEE SPAN 4 SLAB PLAN & DETAILS (1).
6. SCUPPER DRAINS, DOWNSPOUTS, ASSEMBLY COMPONENTS, AND BRACKETS INCLUDING CONNECTORS ARE INCLUDED IN THE LUMP SUM PRICE FOR STRUCTURAL STEEL.
7. ¾" DIA. HS BOLTS SHALL BE ASTM F3125 GRADE A325.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: A. FARMER	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

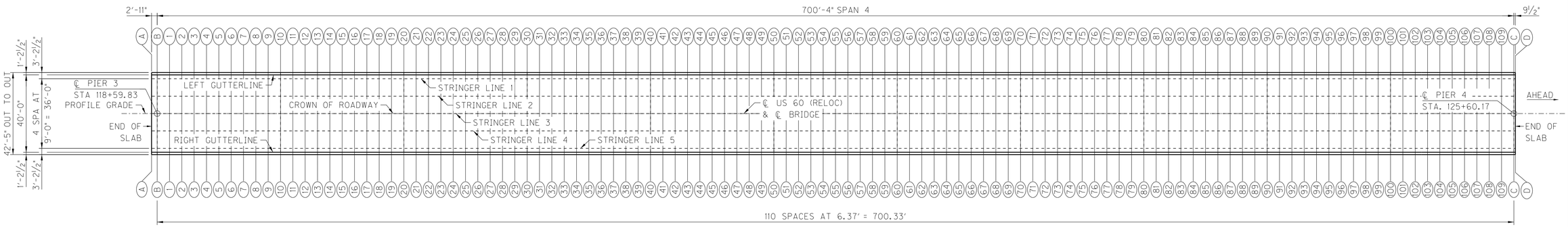
SPAN 4 SCUPPER & DRAIN PIPE

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

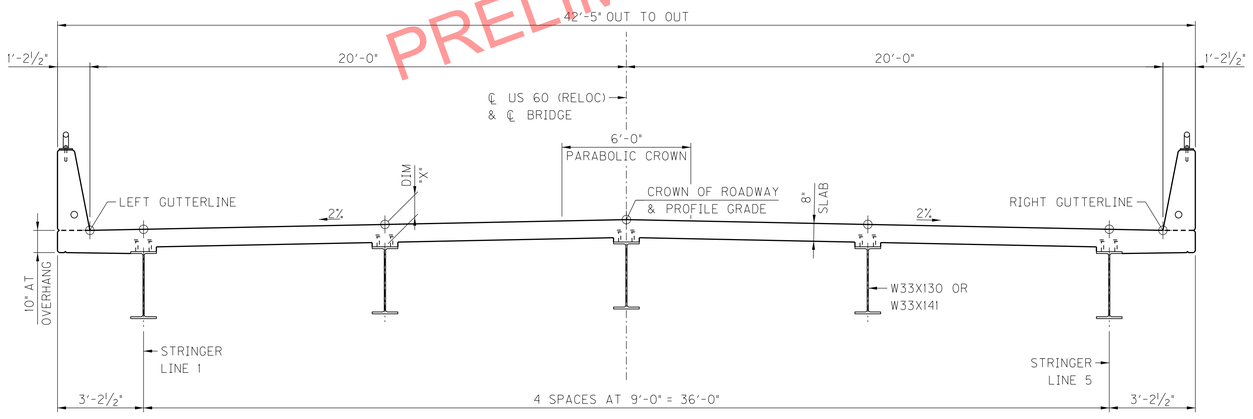
SHEET NO. S62

DRAWING NO. 27458



PLAN

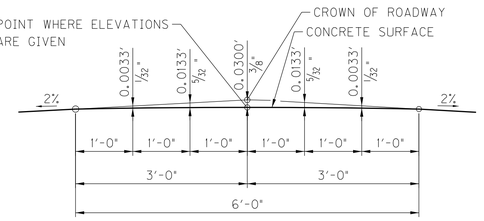
PRELIMINARY NOT FOR CONSTRUCTION



TYPICAL SECTION

LOOKING AHEAD

⊕ - INDICATES POINT WHERE CONSTRUCTION ELEVATIONS ARE GIVEN



PARABOLIC CROWN

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

SPAN 4 CONST ELEVATIONS (1)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S63
		DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\63 SPAN 4 CONST ELEVATIONS (1).DGN

GRID	LEFT G.L. TOP OF SLAB ELEV.	STRINGER LINE 1 TOP OF SLAB ELEV.	STRINGER LINE 1 TOP OF STRINGER	STRINGER LINE 1 DIM. X	STRINGER LINE 2 TOP OF SLAB ELEV.	STRINGER LINE 2 TOP OF STRINGER	STRINGER LINE 2 DIM. X	PROFILE GRADE / STRINGER LINE 3 TOP OF SLAB ELEV.	PROFILE GRADE / STRINGER LINE 3 TOP OF STRINGER	PROFILE GRADE / STRINGER LINE 3 DIM. X	STRINGER LINE 4 TOP OF SLAB ELEV.	STRINGER LINE 4 TOP OF STRINGER	STRINGER LINE 4 DIM. X	STRINGER LINE 5 TOP OF SLAB ELEV.	STRINGER LINE 5 TOP OF STRINGER	STRINGER LINE 5 DIM. X	RIGHT G.L. TOP OF SLAB ELEV.
A	402.141	402.181			402.361			402.511			402.361			402.181			402.141
B	402.130	402.170			402.350			402.500			402.350			402.170			402.130
1	402.108	402.148			402.328			402.478			402.328			402.148			402.108
2	402.086	402.126			402.306			402.456			402.306			402.126			402.086
3	402.064	402.104			402.284			402.434			402.284			402.104			402.064
4	402.042	402.082			402.262			402.412			402.262			402.082			402.042
5	402.019	402.059			402.239			402.389			402.239			402.059			402.019
6	401.997	402.037			402.217			402.367			402.217			402.037			401.997
7	401.975	402.015			402.195			402.345			402.195			402.015			401.975
8	401.953	401.993			402.173			402.323			402.173			401.993			401.953
9	401.931	401.971			402.151			402.301			402.151			401.971			401.931
10	401.908	401.948			402.128			402.278			402.128			401.948			401.908
11	401.886	401.926			402.106			402.256			402.106			401.926			401.886
12	401.864	401.904			402.084			402.234			402.084			401.904			401.864
13	401.842	401.882			402.062			402.212			402.062			401.882			401.842
14	401.820	401.860			402.040			402.190			402.040			401.860			401.820
15	401.797	401.837			402.017			402.167			402.017			401.837			401.797
16	401.775	401.815			401.995			402.145			401.995			401.815			401.775
17	401.753	401.793			401.973			402.123			401.973			401.793			401.753
18	401.731	401.771			401.951			402.101			401.951			401.771			401.731
19	401.709	401.749			401.929			402.079			401.929			401.749			401.709
20	401.687	401.727			401.907			402.057			401.907			401.727			401.687
21	401.664	401.704			401.884			402.034			401.884			401.704			401.664
22	401.642	401.682			401.862			402.012			401.862			401.682			401.642
23	401.620	401.660			401.840			401.990			401.840			401.660			401.620
24	401.598	401.638			401.818			401.968			401.818			401.638			401.598
25	401.576	401.616			401.796			401.946			401.796			401.616			401.576
26	401.553	401.593			401.773			401.923			401.773			401.593			401.553
27	401.531	401.571			401.751			401.901			401.751			401.571			401.531
28	401.509	401.549			401.729			401.879			401.729			401.549			401.509
29	401.487	401.527			401.707			401.857			401.707			401.527			401.487
30	401.465	401.505			401.685			401.835			401.685			401.505			401.465
31	401.442	401.482			401.662			401.812			401.662			401.482			401.442
32	401.420	401.460			401.640			401.790			401.640			401.460			401.420
33	401.398	401.438			401.618			401.768			401.618			401.438			401.398
34	401.376	401.416			401.596			401.746			401.596			401.416			401.376
35	401.354	401.394			401.574			401.724			401.574			401.394			401.354
36	401.331	401.371			401.551			401.701			401.551			401.371			401.331
37	401.309	401.349			401.529			401.679			401.529			401.349			401.309
38	401.287	401.327			401.507			401.657			401.507			401.327			401.287
39	401.265	401.305			401.485			401.635			401.485			401.305			401.265
40	401.243	401.283			401.463			401.613			401.463			401.283			401.243
41	401.221	401.261			401.441			401.591			401.441			401.261			401.221
42	401.198	401.238			401.418			401.568			401.418			401.238			401.198
43	401.176	401.216			401.396			401.546			401.396			401.216			401.176
44	401.154	401.194			401.374			401.524			401.374			401.194			401.154
45	401.132	401.172			401.352			401.502			401.352			401.172			401.132
46	401.110	401.150			401.330			401.480			401.330			401.150			401.110
47	401.087	401.127			401.307			401.457			401.307			401.127			401.087
48	401.065	401.105			401.285			401.435			401.285			401.105			401.065
49	401.043	401.083			401.263			401.413			401.263			401.083			401.043
50	401.021	401.061			401.241			401.391			401.241			401.061			401.021
51	400.999	401.039			401.219			401.369			401.219			401.039			400.999
52	400.976	401.016			401.196			401.346			401.196			401.016			400.976
53	400.954	400.994			401.174			401.324			401.174			400.994			400.954
54	400.932	400.972			401.152			401.302			401.152			400.972			400.932
55	400.910	400.950			401.130			401.280			401.130			400.950			400.910
56	400.888	400.928			401.108			401.258			401.108			400.928			400.888
57	400.866	400.906			401.086			401.236			401.086			400.906			400.866
58	400.843	400.883			401.063			401.213			401.063			400.883			400.843
59	400.821	400.861			401.041			401.191			401.041			400.861			400.821
60	400.799	400.839			401.019			401.169			401.019			400.839			400.799
61	400.777	400.817			400.997			401.147			400.997			400.817			400.777
62	400.755	400.795			400.975			401.125			400.975			400.795			400.755
63	400.732	400.772			400.952			401.102			400.952			400.772			400.732
64	400.710	400.750			400.930			401.080			400.930			400.750			400.710
65	400.688	400.728			400.908			401.058			400.908			400.728			400.688
66	400.666	400.706			400.886			401.036			400.886			400.706			400.666
67	400.644	400.684			400.864			401.014			400.864			400.684			400.644
68	400.621	400.661			400.841			400.991			400.841			400.661			400.621
69	400.599	400.639			400.819			400.969			400.819			400.639			400.599
70	400.577	400.617			400.797			400.947			400.797			400.617			400.577
71	400.555	400.595			400.775			400.925			400.775			400.595			400.555
72	400.533	400.573			400.753			400.903			400.753			400.573			400.533
73	400.510	400.550			400.730			400.880			400.730			400.550			400.510
74	400.488	400.528			400.708			400.858			400.708			400.528			400.488
75	400.466	400.506			400.686			400.836			400.686			400.506			400.466
76	400.444	400.484			400.664			400.814			400.664			400.484			400.444
77	400.422	400.462			400.642			400.792			400.642			400.462			400.422
78	400.400	400.440			400.620			400.770			400.620			400.440			400.400
79	400.377	400.417			400.597			400.747			400.597			400.417			400.377
80	400.355	400.395			400.575			400.725			400.575			400.395			400.355
81	400.333	400.373			400.553			400.703			400.553			400.373			400.333
82	400.311	400.351			400.531			400.681			400.531			400.351			400.311
83	400.289	400.329			400.509			400.659			400.509			400.329			400.289
84	400.266	400.306			400.486			400.636			400.486			400.306			400.266
85	400.244	400.284			400.464			400.614			400.464			400.284			400.244
86	400.222	400.262			400.442			400.592			400.442			400.262			400.222
87	400.200	400.240			400.420			400.570			400.420			400.240			400.200
88	400.178	400.218			400.398			400.548			400.398			400.218			400.178
89	400.155	400.195			400.375			400.525			400.375			400.195			400.155

GRID	LEFT G.L. TOP OF SLAB ELEV.	STRINGER LINE 1 TOP OF SLAB ELEV.	STRINGER LINE 1 TOP OF STRINGER	STRINGER LINE 1 DIM. X	STRINGER LINE 2 TOP OF SLAB ELEV.	STRINGER LINE 2 TOP OF STRINGER	STRINGER LINE 2 DIM. X	PROFILE GRADE / STRINGER LINE 3 TOP OF SLAB ELEV.	PROFILE GRADE / STRINGER LINE 3 TOP OF STRINGER	PROFILE GRADE / STRINGER LINE 3 DIM. X	STRINGER LINE 4 TOP OF SLAB ELEV.	STRINGER LINE 4 TOP OF STRINGER	STRINGER LINE 4 DIM. X	STRINGER LINE 5 TOP OF SLAB ELEV.	STRINGER LINE 5 TOP OF STRINGER	STRINGER LINE 5 DIM. X	RIGHT G.L. TOP OF SLAB ELEV.
90	400.133	400.173			400.353			400.503			400.353			400.173			400.133
91	400.111	400.151			400.331			400.481			400.331			400.151			400.111
92	400.089	400.129			400.309			400.459			400.309			400.129			400.089
93	400.067	400.107			400.287			400.437			400.287			400.107			400.067
94	400.044	400.084			400.264			400.414			400.264			400.084			400.044
95	400.022	400.062			400.242			400.392			400.242			400.062			400.022
96	400.000	400.040			400.220			400.370			400.220			400.040			400.000
97	399.978	400.018			400.198			400.348			400.198			400.018			399.978
98	399.956	399.996			400.176			400.326			400.176			399.996			399.956
99	399.934	399.974			400.154			400.304			400.154			399.974			399.934
100	399.911	399.951			400.131			400.281			400.131			399.951			399.911
101	399.889	399.929			400.109			400.259			400.109			399.929			399.889
102	399.867	399.907			400.087			400.237			400.087			399.907			399.867
103	399.845	399.885			400.065			400.215			400.065			399.885			399.845
104	399.823	399.863			400.043			400.193			400.043			399.863			399.823
105	399.800	399.840			400.020			400.170			400.020			399.840			399.800
106	399.778	399.818			399.998			400.148			399.998			399.818			399.778
107	399.756	399.796			399.976			400.126			399.976			399.796			399.756
108	399.734	399.774			399.954			400.104			399.954			399.774			399.734
109	399.712	399.752			399.932			400.082			399.932			399.752			399.712
C	399.689	399.729			399.909			400.059			399.909			399.729			399.689
D	399.687	399.727			399.907			400.057			399.907			399.727			399.687

TABLE OF DEAD LOAD DEFLECTIONS (INCHES)												
PANEL POINT	L0	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
CONCRETE (SLAB & BARRIERS)	0.00	2.70	5.01	6.81	8.04	8.68	8.68	8.04	6.81	5.01	2.70	0.00

NOTE: DEFLECTIONS ARE DOWNWARD

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

TOP OF SLAB ELEVATIONS SHOWN IN THE TABLES ARE THE FINAL TOP OF DECK ELEVATIONS BASED ON THE THEORETICAL PROFILE GRADE.

THE CONTRACTOR SHALL ADJUST EACH OF THESE ELEVATIONS BY ADDING TO THEM THE FOLLOWING LOCAL AND GLOBAL DEFLECTIONS (DUE TO SLAB & CDL), CALCULATED AT THE PARTICULAR GRID LINE LOCATIONS.

1. LOCAL - STRINGER DEAD LOAD DEFLECTION, SHOWN ON STRINGER FRAMING PLAN.

2. LOCAL - FLOORBEAM DEAD LOAD DEFLECTION AT EACH STRINGER LINE, GUTTERLINES AND PROFILE GRADE (CL BRIDGE), SHOWN ON FLOORBEAM SHEET.

3. GLOBAL - THE VALUE OF THE TRUSS DEFLECTION WILL NEED TO BE OBTAINED FROM THE TRUSS ERECTION CALCULATIONS, INCORPORATING THE EFFECTS OF THE DECK SLAB POURING SEQUENCE INTO THE ELEVATIONS OF EACH SEGMENT OF THE DECK SLAB CASTING.

TOTAL CONCRETE DEAD LOAD DEFLECTION AT EACH PANEL POINT IS PROVIDED FOR REFERENCE IN THE ABOVE TABLE.

THE TABLES PROVIDED IN THESE DRAWINGS SHALL BE REGENERATED WITH THE ADJUSTED "TOP OF SLAB ELEVATIONS" SUBSTITUTED.

PRIOR TO BEGINNING THE FIRST DECK SLAB POUR, THE CONTRACTOR SHALL TAKE ELEVATIONS ALONG THE TOPS OF ALL STRINGERS AT THE POINTS INDICATED. A COPY OF THE TOP OF STRINGER ELEVATIONS SHALL BE PROVIDED TO THE ENGINEER. ELEVATIONS SHALL BE READ TO THREE (3) DECIMAL PLACES AND ENTERED IN THE TABLE UNDER "TOP OF STRINGER ELEVATION".

COMPUTE DIMENSION "X" AS FOLLOWS: "TOP OF SLAB ELEVATION" MINUS "TOP OF STRINGER ELEVATION" EQUALS DIMENSION "X". THIS IS THE THICKNESS OF THE DECK SLAB PLUS FILLET OVER THE TOP FLANGE OF THE STRINGER AT THIS POINT. IN NO CASE SHALL DIMENSION "X" BE LESS THAN 8 INCHES OR GREATER THAN 11 INCHES AT THE CENTER OF THE STRINGER WEB. IF THE COMBINATION OF LOCAL AND GLOBAL CAMBERS IS SUCH THAT THIS MINIMUM CANNOT BE OBTAINED, THE PROFILE GRADE SHALL BE ADJUSTED TO MAINTAIN THE MINIMUM REQUIRED DECK SLAB THICKNESS WITH A FILLET DEPTH LESS THAN 5 INCHES. THE SCREED CALCULATIONS SHALL INCLUDE THE THEORETICAL ELEVATIONS OF THE STRINGERS AND DECK SLAB AFTER EACH DECK SLAB POUR.

AFTER EACH DECK SLAB POUR, THE CONTRACTOR SHALL TAKE ELEVATIONS ALONG THE TOPS OF ALL STRINGERS AT THE POINTS INDICATED. THESE ELEVATIONS SHALL BE CHECKED AGAINST THE THEORETICAL ELEVATION ESTABLISHED ABOVE. IF THE DEVIATION BETWEEN THE ACTUAL AND THEORETICAL ELEVATIONS EXCEEDS 1 INCH, THE CONTRACTOR SHALL RECALCULATE ALL SCREED ELEVATIONS. IF THE REVISED DIMENSION "X" IS LESS THAN 8 INCHES OR GREATER THAN 11 INCHES, THE CONTRACTOR SHALL ADJUST THE PROFILE GRADE.

NOTICE TO CONTRACTOR:

ALL LONGITUDINAL LAYOUT DIMENSIONS SHOWN ARE BASED ON HORIZONTAL DISTANCES MEASURED FROM "CENTERLINE BEARING," WHICH ARE VERTICAL PROJECTIONS FROM PANEL WORKING POINTS LOCATED ALONG CENTERLINE OF THE BOTTOM CHORD OF THE TRUSS. THE CONTRACTOR IS ADVISED TO ADJUST THESE DIMENSIONS TO COMPENSATE FOR THE INCREASE IN LENGTH, DUE TO SLOPE DISTANCES ALONG THE STRINGERS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

SPAN 4 CONST ELEVATIONS (2)

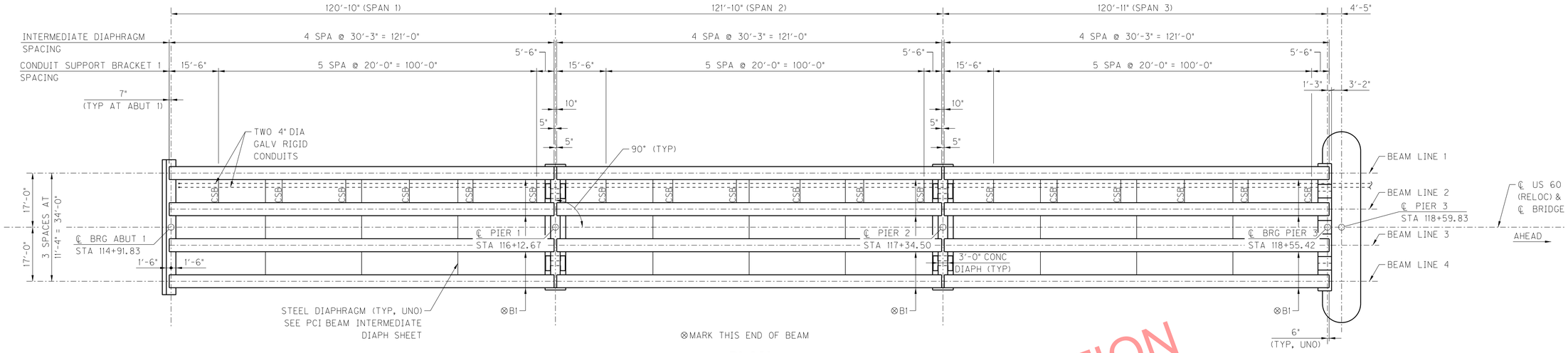
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO. S64

DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S64 SPAN 4 CONST ELEVATIONS (2).DGN



PLAN

(SPANS 1-3)

PRELIMINARY NOT FOR CONSTRUCTION

NOTE

SEE UTILITY CONDUIT (2) SHEET FOR CONDUIT SUPPORT BRACKET (CSB) DETAILS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

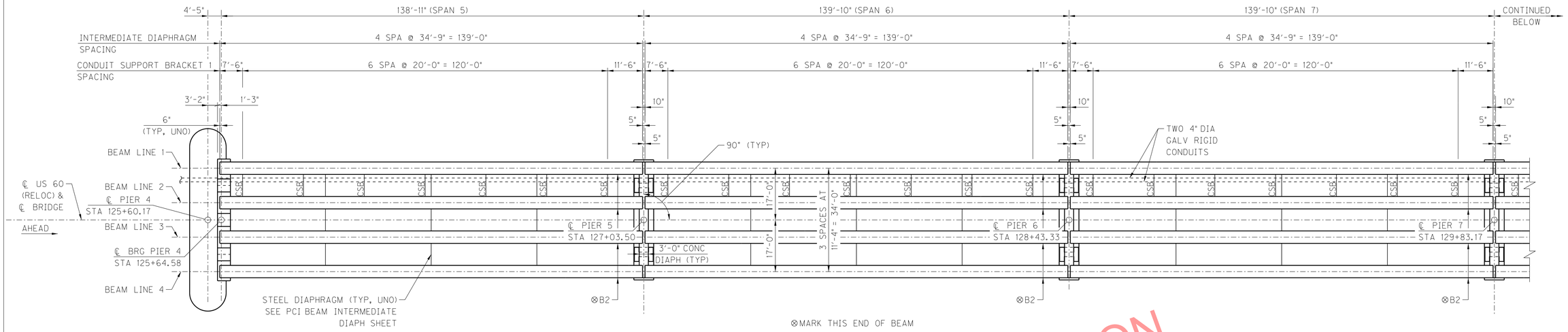
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

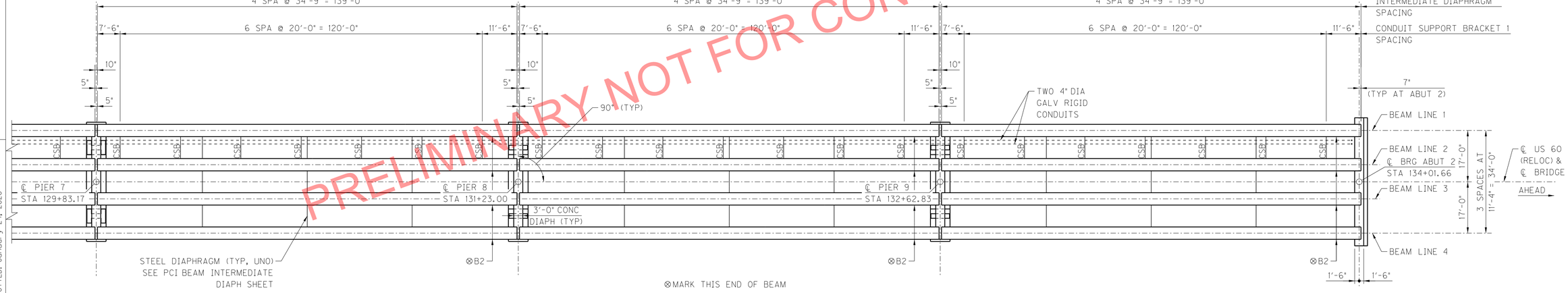
FRAMING PLAN – SPANS 1–3

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S65
		DRAWING NO. 27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: Jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 59-60 FRAMING PLANS.DGN



PLAN
(SPANS 5-7)



PLAN
(SPANS 8-10)

PRELIMINARY NOT FOR CONSTRUCTION

NOTE
SEE UTILITY CONDUIT (2) SHEET FOR CONDUIT SUPPORT BRACKET (CSB) DETAILS.

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: **LIVINGSTON**

ROUTE: **US 60** | CROSSING: **CUMBERLAND RIVER**

FRAMING PLAN – SPANS 5–10

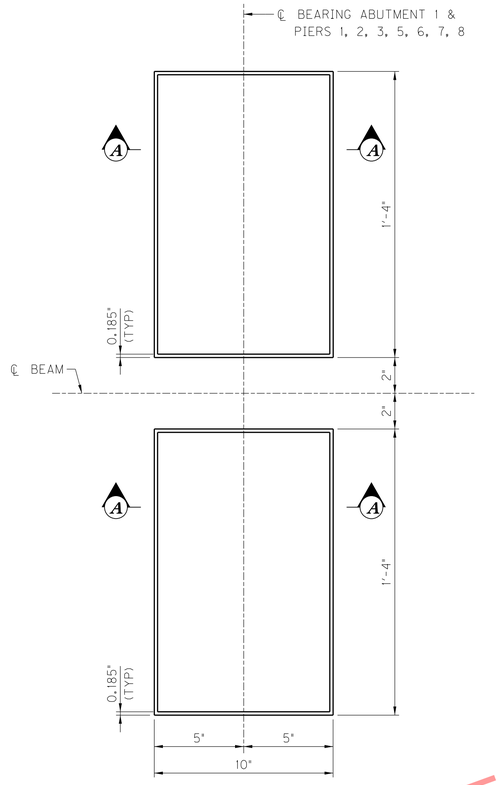
ITEM NUMBER: **1–1142.00**

PREPARED BY: Stantec

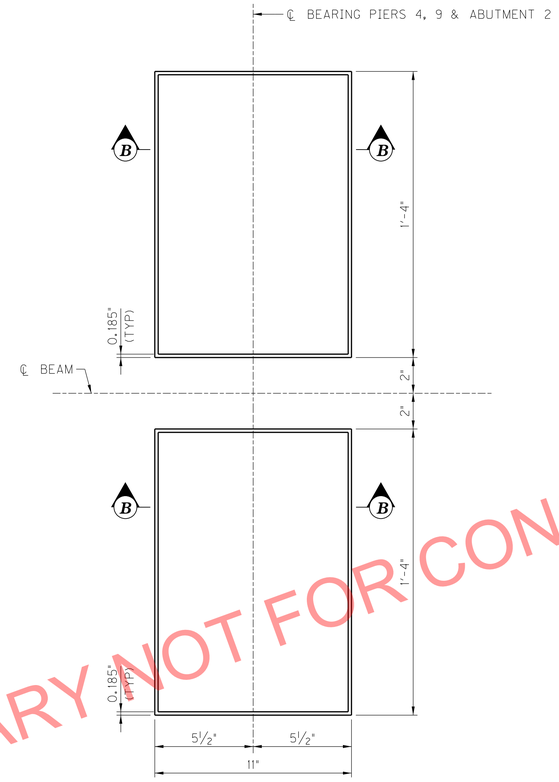
SHEET NO. S66

DRAWING NO. 27458

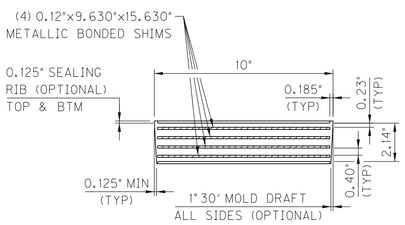
FILE NAME: 59-60 FRAMING PLANS.DGN
USER: jtburke
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.832



PLAN

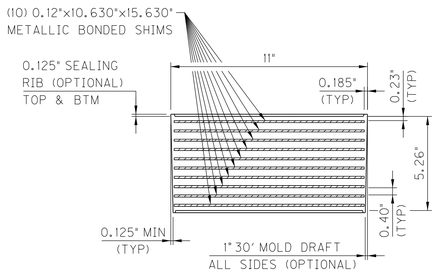


PLAN



SECTION A–A

ELASTOMERIC BEARING PAD
(PIERS 1, 2, 3, 5, 6, 7, 8 & ABUTMENT 1)



SECTION B–B

ELASTOMERIC BEARING PAD
(PIER 4, 9 & ABUTMENT 2)

PRELIMINARY NOT FOR CONSTRUCTION

NOTES

1. ELASTOMERIC BEARING PADS SHALL CONFORM TO THE DIMENSIONS SHOWN ON THIS SHEET AND SHALL CONFORM TO THE REQUIREMENTS OF SECTION 18 OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. BEARINGS SHALL BE LOW TEMPERATURE GRADE 3 WITH A SHEAR MODULUS OF 0.095 - 0.130 (KSI) AT 73°F AND SHALL BE SUBJECTED TO THE LOAD TESTING REQUIREMENTS CORRESPONDING TO DESIGN METHOD B. SHOP DRAWINGS ARE REQUIRED FOR ALL PADS.
2. THE COST OF THE BEARING PADS IS TO BE INCLUDED IN THE UNIT PRICE PER LINEAR FOOT FOR PRECAST BEAMS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	J. GRIGAS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

PCI BEAM BEARING PADS

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S67
		DRAWING NO. 27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 6\ELASTOMERIC BEARING PADS.DGN

Strand Data with number indicated in rows

Mark	Midspan (SECTION B–B) ①	②	③	④	⑤	⑥	⑦	⑧	End (SECTION A–A) ①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	Total No.	Concrete Stress (psi) f'ci	f'c	No. of S Bars S1	S2	Hold-Down Capacity lbs.
B1	17	17	7	3	3				17	14	4									3	3	3	3	47	6000	8000	144	24	43,945

Beam Data (measured along centerline)

Total No.	Dimensions A	B	C	D	E	F	G	H	I	M	Appr. Weight	Maximum Allowable Camber
12	121'-0"	50'-6"	20'-0"	24	6"	12"	96	12"	16½"	¼"	140,965	5"

General Notes

CONCRETE: Ensure prestressed girder concrete is in accordance with these plans and the specifications.

MATERIALS DESIGN SPECIFICATIONS: For prestressed beams:
FY = 60,000 psi F'S = 270,000 psi

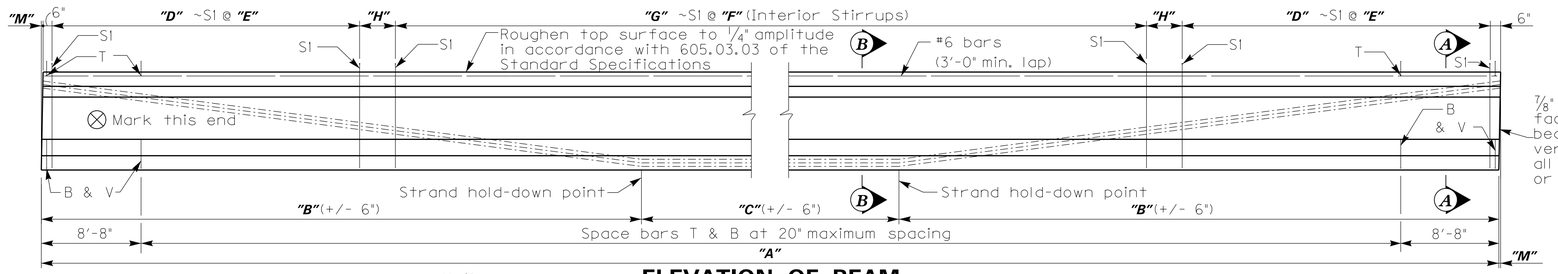
PRESTRESSING REINFORCEMENT: Ensure that strands are 0.6" (nominal diameter, 0.217 sq. in.), uncoated seven - wire stabilized, low-relaxation conforming to AASHTO M 203, Grade 270. Billing of the cost for redesign of beam and subsequent plan modifications will be made for any request of alternate strand type or arrangement. The designer of the original plan is responsible for the billing and work.

CONSTRUCTION METHOD: Pretension all beams. Ensure concrete has attained f'ci (shown in the table) in standard test cylinders that are made and cured identically with the beams without bond stresses being transferred to the concrete or releasing the end anchors. Attain f'c (shown in the table) at or prior to 28 days. Apply an initial force of 43,943 lbs. per low-relaxation strand to develop a stress of 202,500 psi. No beam will be accepted that is honeycombed to the extent that strength of the beam or resistance to deterioration has been affected. An allowance of 0.0005L is made for shortening of beams due to shrinkage and elastic change. Show a detensioning plan by sequential numbering of the strand pattern on the shop plans.

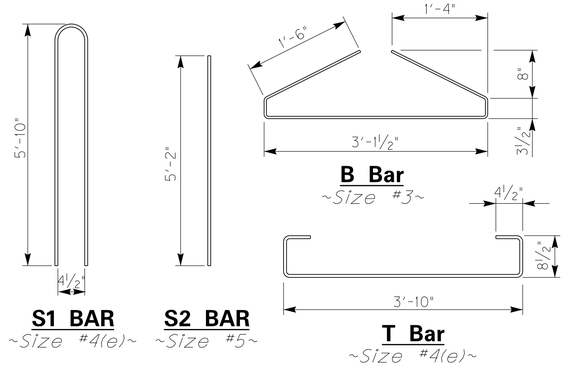
LIFTING DEVICES: Detail lifting devices on the shop plans. Loads are to be distributed equally to each device.

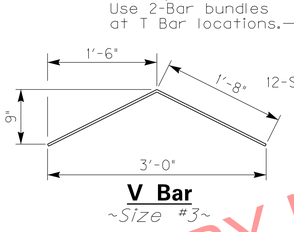
BEARING DEVICES: Include the price for lead plates and/or bearing pads in the bid for precast beams.

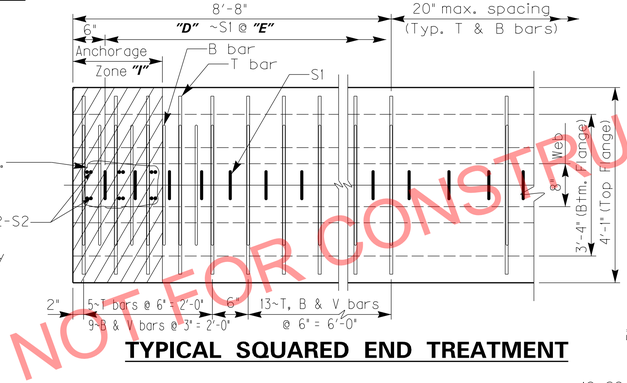
FABRICATION: The "Maximum Allowable Camber" shown on the beam sheet is the amount of camber, measured prior to casting the deck, above which the beam will begin to encroach into the slab. If the measured camber is greater than the "Maximum Allowable Camber" the contractor will be responsible for any necessary adjustments to assure a minimum slab thickness as shown in the plans. This work will be considered incidental to the completion of the structure and have the approval of the Engineer.



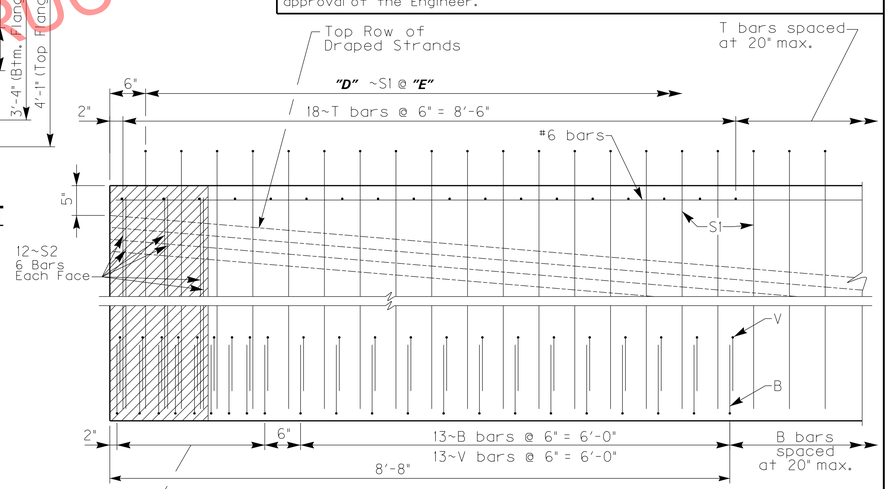
ELEVATION OF BEAM



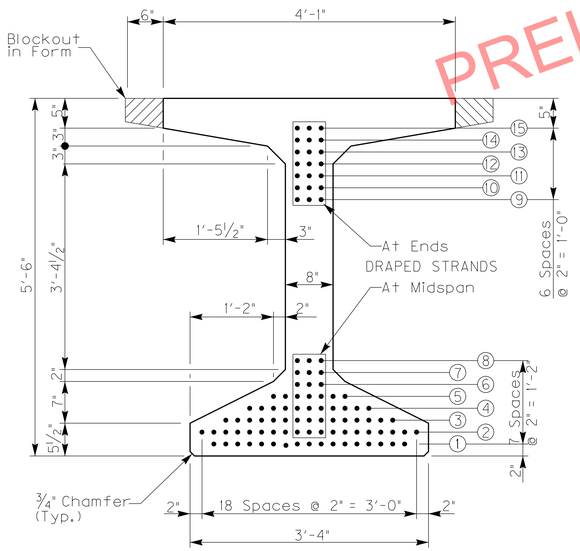




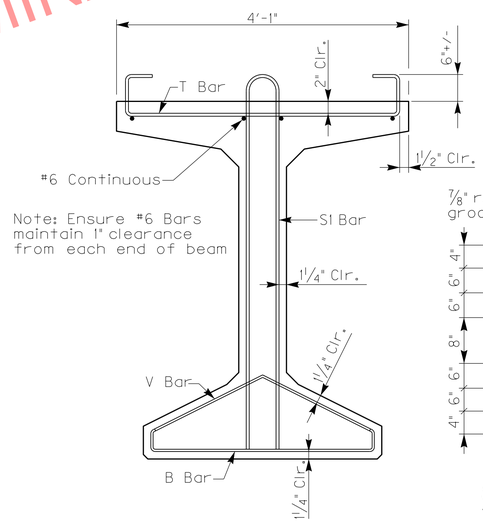
TYPICAL SQUARED END TREATMENT



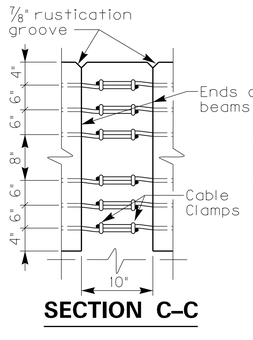
PARTIAL SECTION ON CENTERLINE



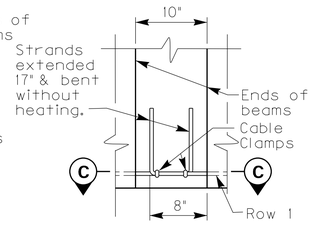
SECTION A–A



SECTION B–B



SECTION C–C



STRAND SPLICE DETAIL

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

PCI BEAM HN 66" X 49" DETAILS

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S68

DRAWING NO.: 27458

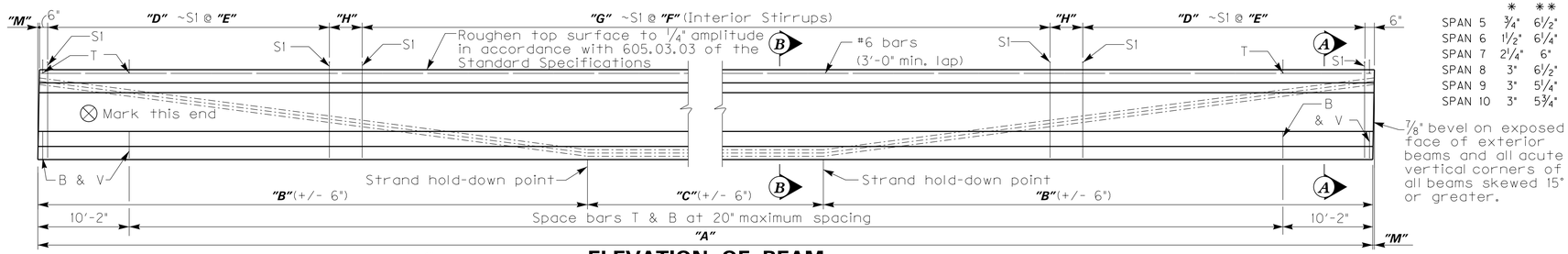
FILE NAME: 62 PCI BEAM HN 66 X 49 DETAILS.DGN
USER: jtburke
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.832

Strand Data with number indicated in rows

Mark	Midspan (SECTION B–B) ①	②	③	④	⑤	⑥	⑦	⑧	End (SECTION A–A) ①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	Total No.	Concrete Stress (psi) f'ci	f'c	No. of S Bars S1	S2	Hold-Down Capacity lbs.
B2	17	19	11	3	3				17	16	8									3	3	3	3	53	6000	8000	162	24	46,140

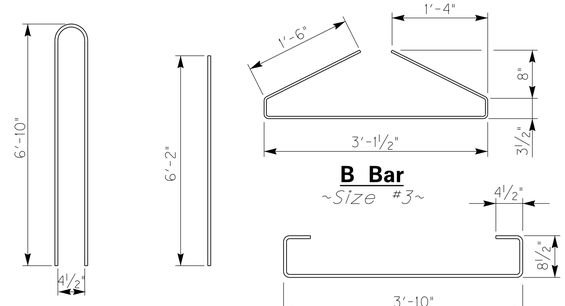
Beam Data (measured along centerline)

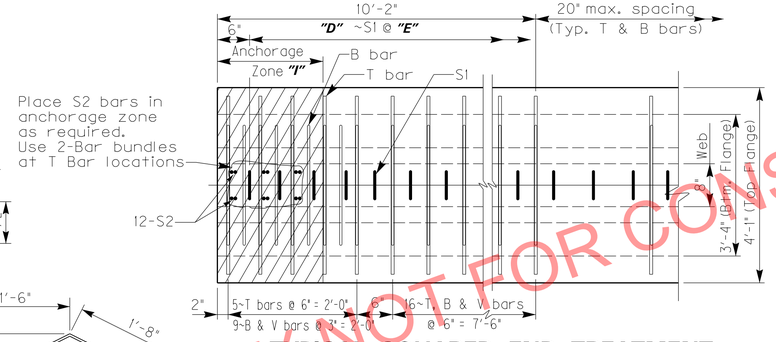
Total No.	Dimensions A	B	C	D	E	F	G	H	I	M	Appr. Weight	Maximum Allowable Camber
24	139'-0"	59'-6"	20'-0"	24	6"	12"	114	12"	19½"	*	175,835	**



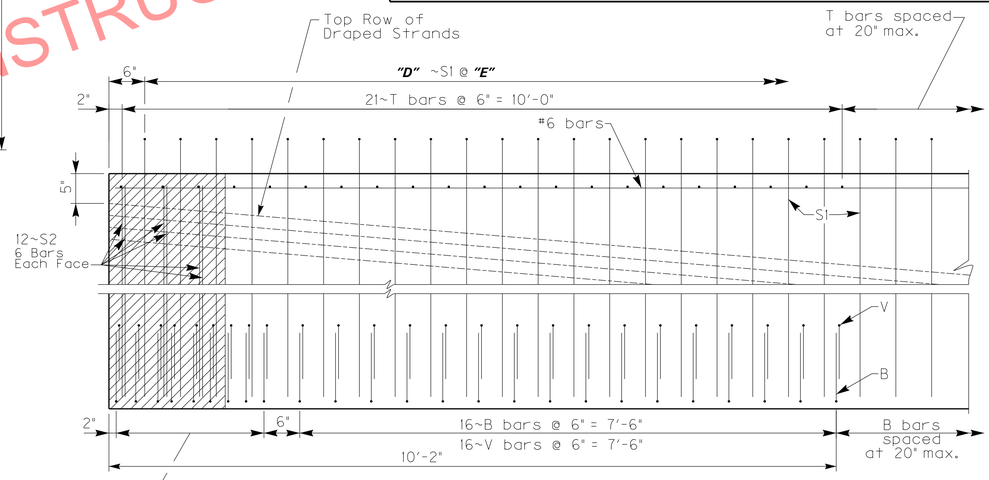
	*	**
SPAN 5	¾"	6½"
SPAN 6	1½"	6¼"
SPAN 7	2¼"	6"
SPAN 8	3"	6½"
SPAN 9	3"	5¼"
SPAN 10	3"	5¾"

ELEVATION OF BEAM

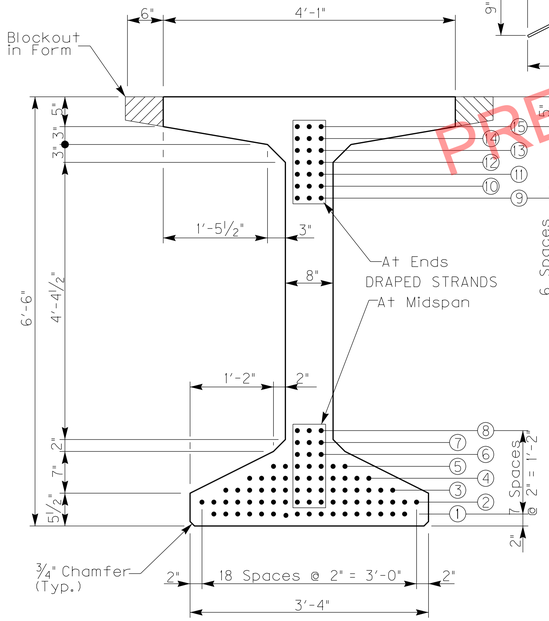




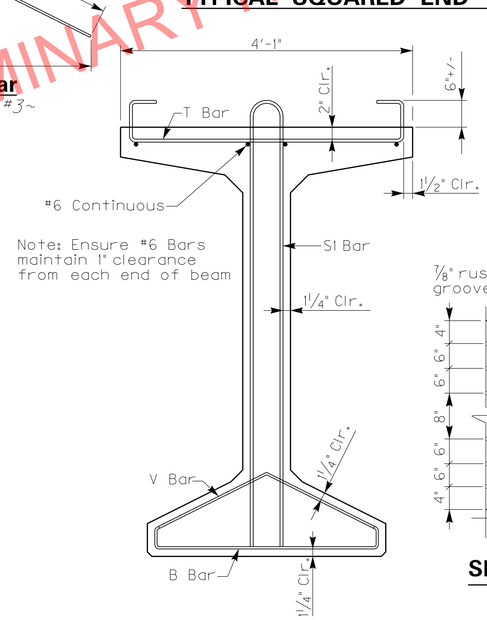
TYPICAL SQUARED END TREATMENT



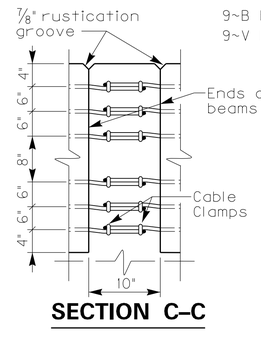
PARTIAL SECTION ON CENTERLINE



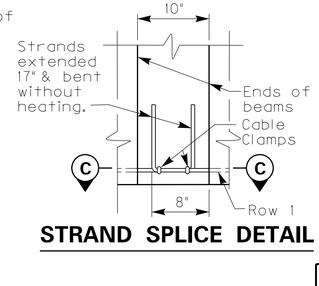
SECTION A–A



SECTION B–B



SECTION C–C



STRAND SPLICE DETAIL

General Notes

CONCRETE: Ensure prestressed girder concrete is in accordance with these plans and the specifications.

MATERIALS DESIGN SPECIFICATIONS: For prestressed beams:
FY = 60,000 psi F'S = 270,000 psi

PRESTRESSING REINFORCEMENT: Ensure that strands are 0.6" (nominal diameter, 0.217 sq. in.), uncoated seven - wire stabilized, low-relaxation conforming to AASHTO M 203, Grade 270. Billing of the cost for redesign of beam and subsequent plan modifications will be made for any request of alternate strand type or arrangement. The designer of the original plan is responsible for the billing and work.

CONSTRUCTION METHOD: Pretension all beams. Ensure concrete has attained f'ci (shown in the table) in standard test cylinders that are made and cured identically with the beams without bond stresses being transferred to the concrete or releasing the end anchors. Attain f'c (shown in the table) at or prior to 28 days. Apply an initial force of 43,943 lbs. per low-relaxation strand to develop a stress of 202,500 psi. No beam will be accepted that is honeycombed to the extent that strength of the beam or resistance to deterioration has been affected. An allowance of 0.0005L is made for shortening of beams due to shrinkage and elastic change. Show a detensioning plan by sequential numbering of the strand pattern on the shop plans.

LIFTING DEVICES: Detail lifting devices on the shop plans. Loads are to be distributed equally to each device.

BEARING DEVICES: Include the price for lead plates and/or bearing pads in the bid for precast beams.

FABRICATION: The "Maximum Allowable Camber" shown on the beam sheet is the amount of camber, measured prior to casting the deck, above which the beam will begin to encroach into the slab. If the measured camber is greater than the "Maximum Allowable Camber" the contractor will be responsible for any necessary adjustments to assure a minimum slab thickness as shown in the plans. This work will be considered incidental to the completion of the structure and have the approval of the Engineer.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

PCI BEAM HN 78" X 49" DETAILS

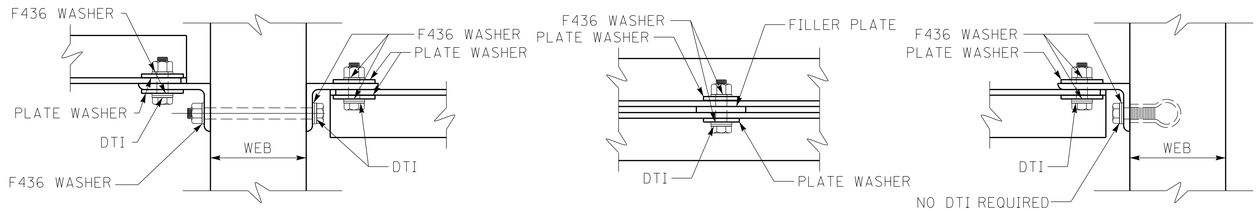
ITEM NUMBER: 1–1142.00

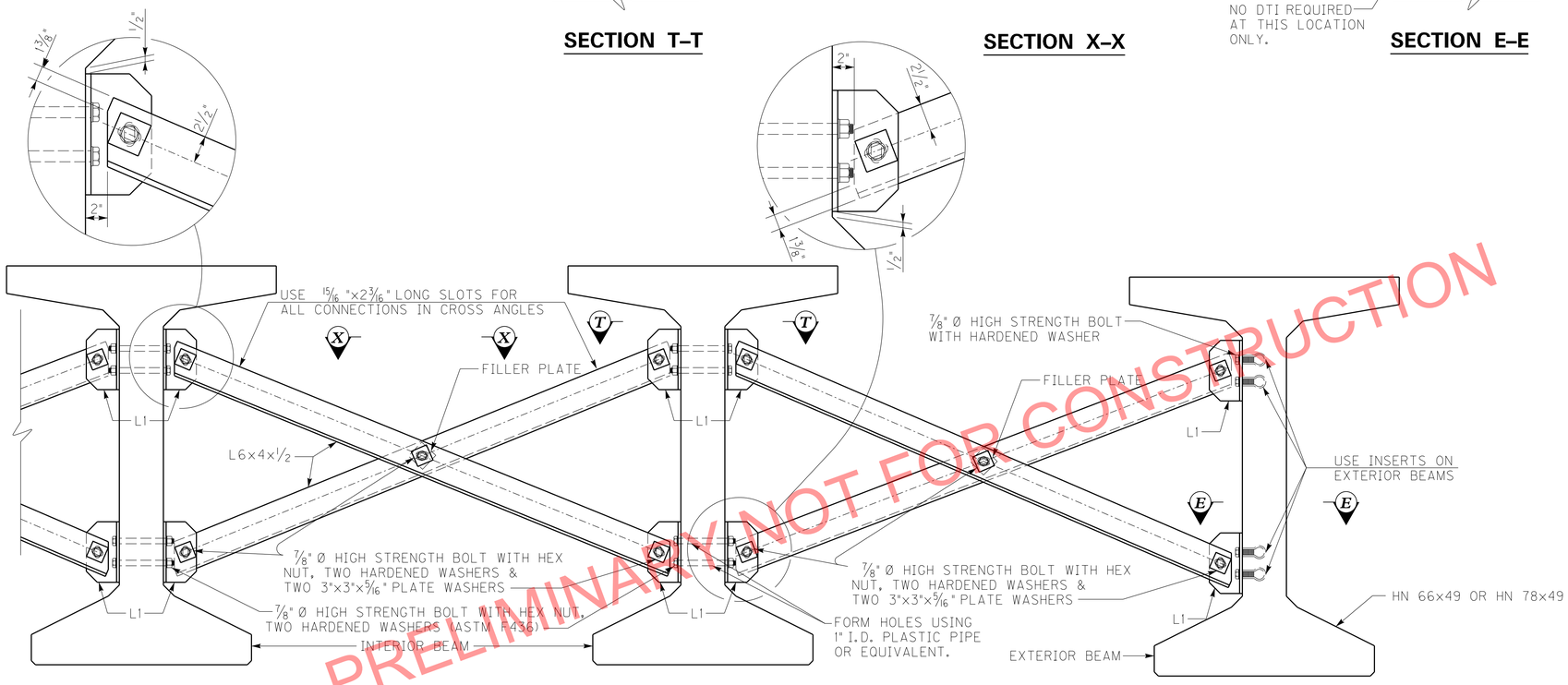
PREPARED BY: Stantec

SHEET NO.: S69

DRAWING NO.: 27458

FILE NAME: 63 PCI BEAM HN 78 X 49 DETAILS.DGN
USER: jburke
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.832





INTERMEDIATE DIAPHRAGM DETAILS

PRELIMINARY NOT FOR CONSTRUCTION

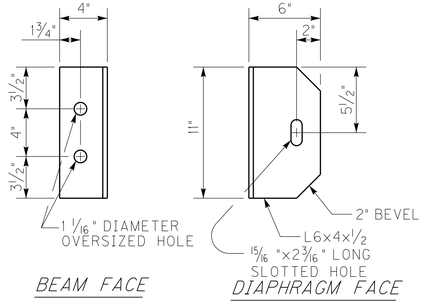
DIAPHRAGM NOTES

CONNECTIONS: ENSURE ALL BOLTED CONNECTIONS ARE ASTM A325, 7/8 INCH DIAMETER HIGH STRENGTH BOLTS, NUTS, AND WASHERS, MECHANICALLY ZINC COATED IN ACCORDANCE WITH AASHTO M298, FOR CLASS 50. INSTALL ALL HIGH STRENGTH BOLTED FIELD CONNECTIONS USING "DIRECT TENSION INDICATORS" (DTI'S), EXCEPT AS NOTED, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND ASTM F959. ENSURE ALL DTI'S ARE MECHANICALLY ZINC COATED. SHOW INSTALLATION DETAILS OF THE DTI'S ON THE SHOP PLANS. PLACE DTI'S UNDER THE BOLT HEAD. ASTM A449 BOLTS MAY BE USED IN LIEU OF A325 FOR THE BOLTS CARRIED THROUGH THE GIRDER WEBS ONLY.

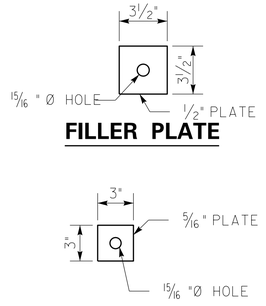
STRUCTURAL STEEL: ENSURE PLATES AND ANGLES CONFORM TO ASTM A36 OR A572 AND GALVANIZED AFTER FABRICATION.

SHOP DRAWINGS: SHOW THE LOCATION OF ALL INSERTS AND HOLES ON THE PRECAST BEAM SHOP DRAWINGS. SUBMIT SHOP DRAWINGS FOR THE STEEL DIAPHRAGMS TO THE DIVISION OF STRUCTURAL DESIGN FOR APPROVAL.

DIAPHRAGMS: ERECT THE DIAPHRAGMS THE SAME DAY THAT THE PRECAST BEAMS ARE PLACED ON THE SUBSTRUCTURE. INCLUDE THE COST OF ALL MATERIALS AND LABOR REQUIRED TO FABRICATE AND ERECT THE DIAPHRAGMS IN THE BID FOR PRECAST BEAMS.



CLIP ANGLE – L1



FILLER PLATE

PLATE WASHER

NOTE:
INSERTS AND HOLES FOR DIAPHRAGM ANCHOR BOLTS SHALL BE ADJUSTED VERTICALLY AS REQUIRED TO MISS PRESTRESSED STRANDS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

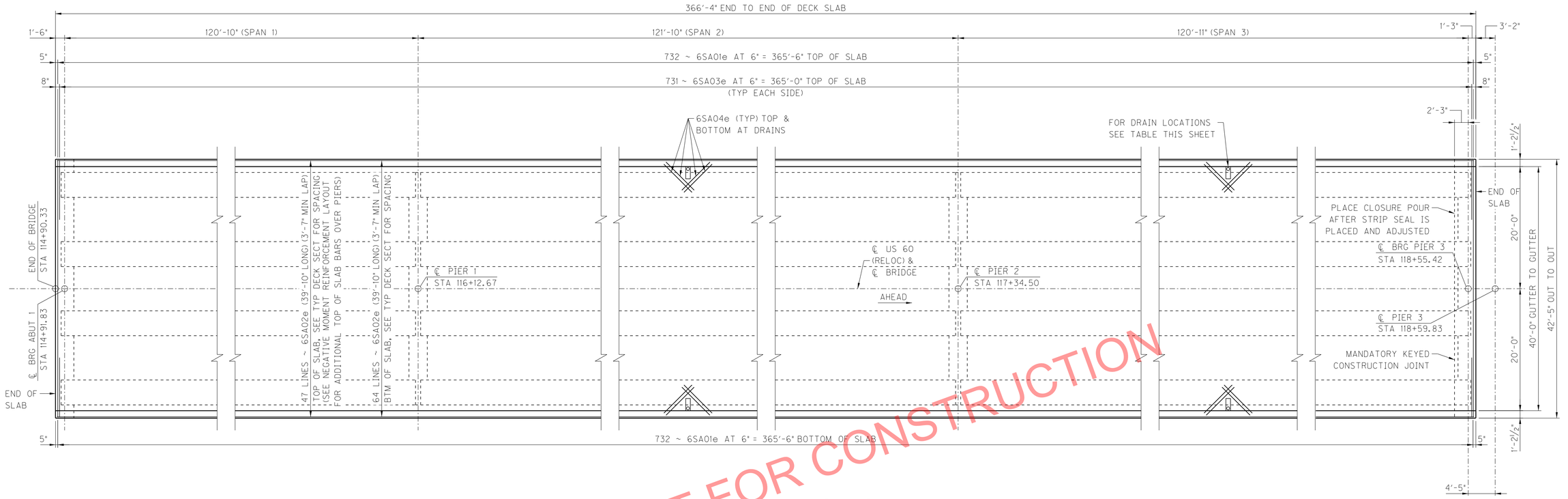
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

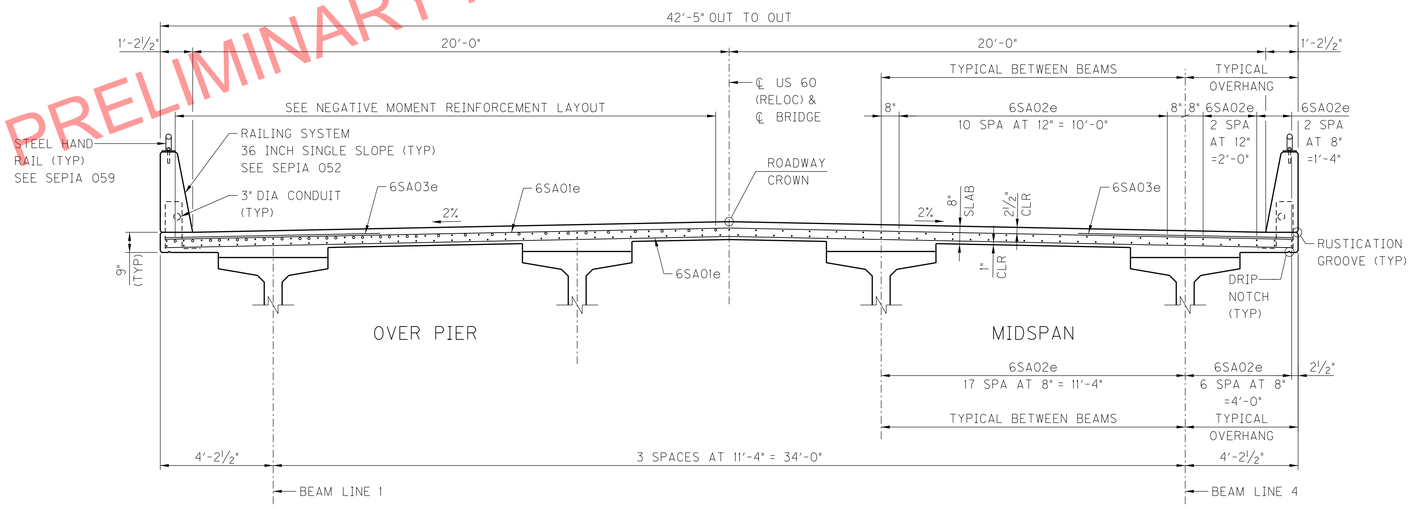
PCI BEAM INTERMEDIATE DIAPH

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S70
		DRAWING NO. 27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: Jburke
DATE PLOTTED: January 24, 2020
FILE NAME: 64 INTERMEDIATE DIAPHRAGMS.DGN



PLAN OF SLAB – SPANS 1–3



TYPICAL DECK SECTION – SPANS 1–3

(LOOKING AHEAD)

DRAIN LOCATIONS			
STATION	OFFSET	STATION	OFFSET
116+74.00	20'-0" LEFT	116+74.00	20'-0" RIGHT
117+97.00	20'-0" LEFT	117+97.00	20'-0" RIGHT

NOTES:

1. SEE SPANS 1-3 SLAB PLAN & DET (2) FOR SCUPPER & DRAIN PIPE DETAILS.

2. SEE SPAN 4 SLAB PLAN & DETAILS (2) FOR RUSTICATION GROOVE AND DRIP NOTCH DETAILS.

3. SEE ABUTMENT DIAPHRAGM DETAILS AND PIER DIAPHRAGM DETAILS (1) FOR ADDITIONAL REINFORCEMENT DETAILS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: K. WIGHT	S. WILLIAMS
DETAILED BY: K. WIGHT	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: **LIVINGSTON**

ROUTE: **US 60** | CROSSING: **CUMBERLAND RIVER**

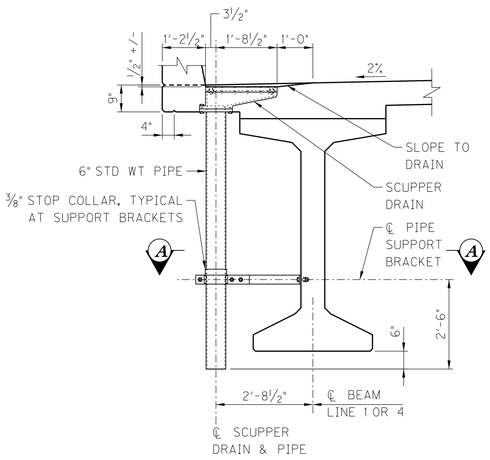
SPANS 1–3 SLAB PLAN & DET (1)

ITEM NUMBER	PREPARED BY	SHEET NO.	DRAWING NO.
1–1142.00	Stantec	S71	27458

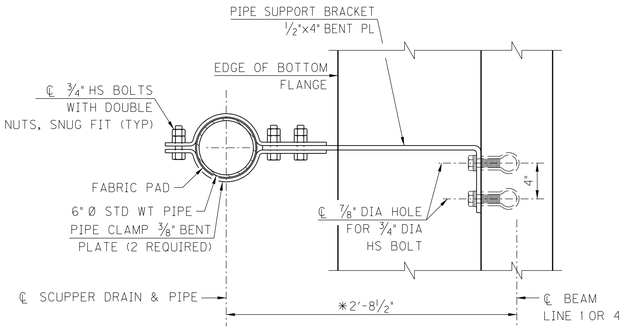
PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.832 | E-SHEET NAME: | USER: jtburke DATE PLOTTED: January 24, 2020 | FILE NAME: 65 66 67 68 SLAB PLAN AND DETAILS.DGN

PRELIMINARY NOT FOR CONSTRUCTION



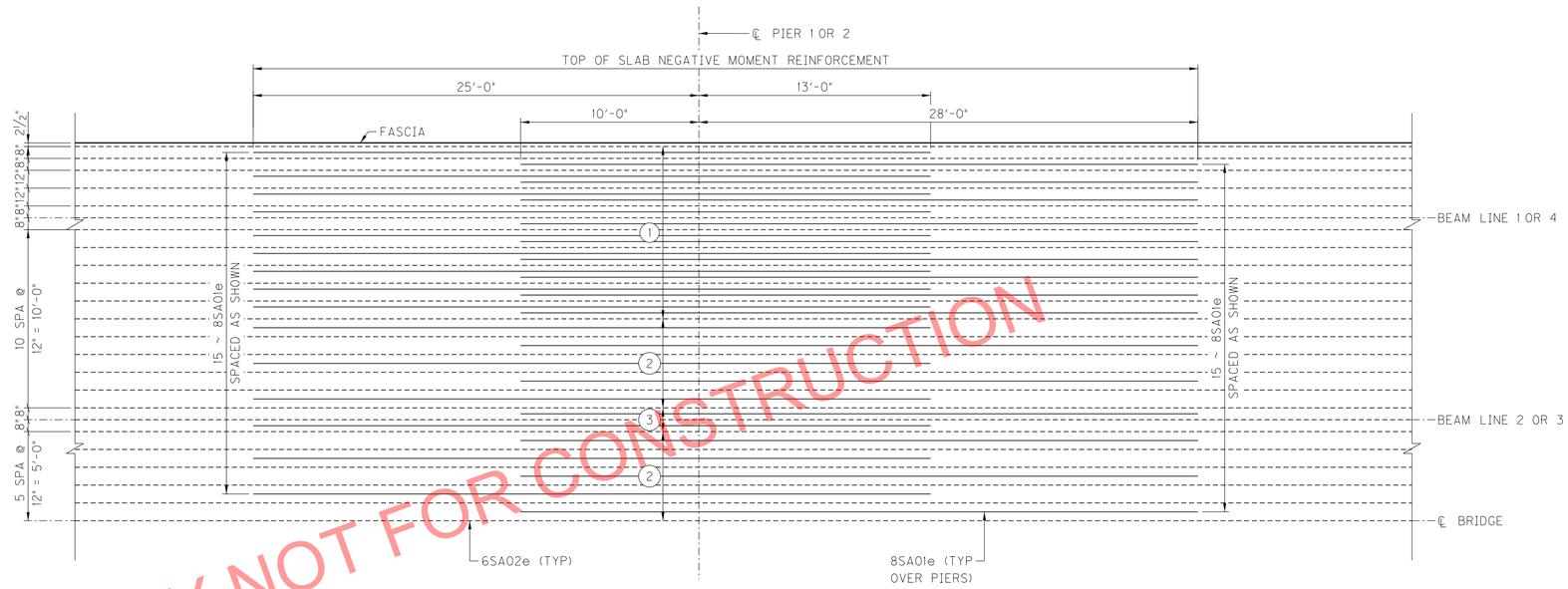
SECTION AT DRAIN



SECTION A–A

NOTE: STOP COLLAR NOT SHOWN FOR CLARITY.

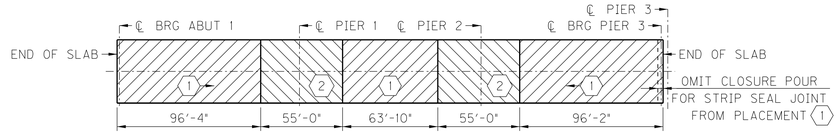
* MODIFY SCUPPER LOCATION TO ALIGN WITH BRACKET AS NEEDED.



SPAN 1 OR 3

SPAN 2

NEGATIVE MOMENT REINFORCEMENT LAYOUT – PIERS 1 & 2



SLAB POURING SEQUENCE

POURING SEQUENCE NOTES:

⬡ INDICATES ORDER AND DIRECTION OF SLAB POUR. ALL CONCRETE IN ANY POUR MUST BE IN PLACE BEFORE THE CONCRETE IN THAT POUR HAS ITS INITIAL SET. ALL SLAB CONSTRUCTION JOINTS TO BE COATED WITH AN EPOXY BONDING AGENT.

AREAS MARKED ⬡1 SHALL BE PLACED BEFORE AREAS MARKED ⬡2, BUT AREAS OF THE SAME NUMBER NEED NOT BE PLACED SIMULTANEOUSLY.

PLACEMENT AREAS MARKED ⬡2 SHALL NOT COMMENCE UNTIL AT LEAST 48 HOURS HAVE ELAPSED AFTER COMPLETION OF AREAS MARKED ⬡1.

NOTATIONS

(1) 29 SPACES AT 4" OVER PIER = 9'-8"

(2) 10 SPACES AT 6" OVER PIER = 5'-0"

(3) 4 SPACES AT 4" OVER PIER = 1'-4"

NOTE:

SEE SPAN 4 SCUPPER & DRAIN PIPE FOR SCUPPER DRAIN NOTES.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WILLIAMS
DETAILED BY: K. WIGHT	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

SPANS 1–3 SLAB PLAN & DET (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S72
		DRAWING NO. 27458

FILE NAME: 65 66 67 68 SLAB PLAN AND DETAILS.DGN
USER: Jtburke
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.832

SPANS 1-3 SLAB & DIAPHRAGMS - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH FT.	LENGTH IN.	LOCATION	A FT.	A IN.	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	G FT.	G IN.	H FT.	H IN.	J FT.	J IN.	K FT.	K IN.	L FT.	L IN.	M FT.	M IN.	N FT.	N IN.	O FT.	O IN.	R FT.	R IN.
					SPANS 1-3 SLAB																																
6SA01e	STR	1464	42	1	TRANSVERSE TOP AND BOTTOM																														
6SA02e	STR	1110	39	10	LONGITUDINAL TOP AND BOTTOM																														
6SA03e	STR	1462	8	1	OVERHANG TOP																														
6SA04e	STR	32	6	6	SCUPPER TOP & BOTTOM																														
8SA01e	STR	120	38	0	NEGATIVE MOMENT TOP																														
					SPANS 1-3 DIAPHRAGMS																														
5DA01e	S1	50	9	6	ABUT DIAPH, STIRRUPS	--	--	3	0	3	6	3	0					--	--	--	--												
5DA02e	S1	32	8	4	ABUT DIAPH, STIRRUPS	--	--	3	0	2	4	3	0					--	--	--	--												
5DA03e	20	66	8	6	ABUT DIAPH, VERTICAL			4	3	4	3	--	--																				
5DA04e	STR	14	22	8	ABUT DIAPH, HORIZONTAL																												
5DA05e	STR	7	7	8	ABUT AND PIER DIAPH, HORIZONTAL																												
5DA06e	STR	72	10	4	ABUT AND PIER DIAPH, HORIZONTAL																												
5DA07e	STR	18	6	11	ABUT AND PIER DIAPH, HORIZONTAL																												
5DA08e	S1	8	7	7	ABUT DIAPH, HORIZONTAL	--	--	2	2	3	3	2	2					--	--	--	--												
5DA09e	S1	4	5	8	ABUT DIAPH, HORIZONTAL	--	--	1	10	2	0	1	10					--	--	--	--												
5DA10e	STR	8	3	6	ABUT DIAPH, HORIZONTAL																												
5DA11e	S4	38	16	8	PIER DIAPH, STIRRUPS	1	0	6	0	2	8	6	0					1	0														
5DA12e	S1	48	8	2	PIER DIAPH, STIRRUPS	--	--	2	6	3	2	2	6					--	--	--	--												
5DA13e	S4	4	14	0	PIER DIAPH, STIRRUPS	1	0	4	8	2	8	4	8					1	0														
5DA14e	17	16	5	6	PIER DIAPH AT SHEAR BLOCK			2	9	2	9	--	--																				
5DA15e	S1	8	14	5	PIER DIAPH, STIRRUPS	--	--	6	0	2	5	6	0					--	--	--	--												
5DA16e	S1	32	7	8	PIER DIAPH, STIRRUPS	--	--	2	3	3	2	2	3					--	--	--	--												
5DA17e	S1	15	11	5	PIER DIAPH, STIRRUPS	--	--	4	6	2	5	4	6					--	--	--	--												
5DA18e	16	23	7	2	PIER DIAPH, JOINT HEADER	3	0	0	9	2	5	1	0							0	8 1/2			0	8 1/2							3	1 1/2		
5DA19e	17	6	4	2	PIER DIAPH AT SHEAR BLOCK			2	9	1	5	--	--																				
5DA20e	17	2	12	0	PIER DIAPH AT SHEAR BLOCK			2	9	6	6	2	9																				
5DA21e	17	2	8	10	PIER DIAPH AT SHEAR BLOCK			2	9	6	1	--	--																				
5DA22e	S1	8	6	9	PIER DIAPH, HORIZONTAL	--	--	2	3	2	3	2	3					--	--	--	--												
5DA23e	STR	5	39	8	PIER DIAPH, HORIZONTAL																												
*DOWEL	STR	27	2	0	ABUT DIAPH, APPROACH SLAB SEAT																												

*1½" SMOOTH ROUND PIN MAY BE COMMERCIAL GRADE STEEL

PRELIMINARY NOT FOR CONSTRUCTION

FILE NAME: 65 66 67 68 SLAB PLAN AND DETAILS.DGN
USER: Jtburke
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.832

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. KNIGHT	S. WILLIAMS
DETAILED BY: P. GREENBERG	T. KNIGHT

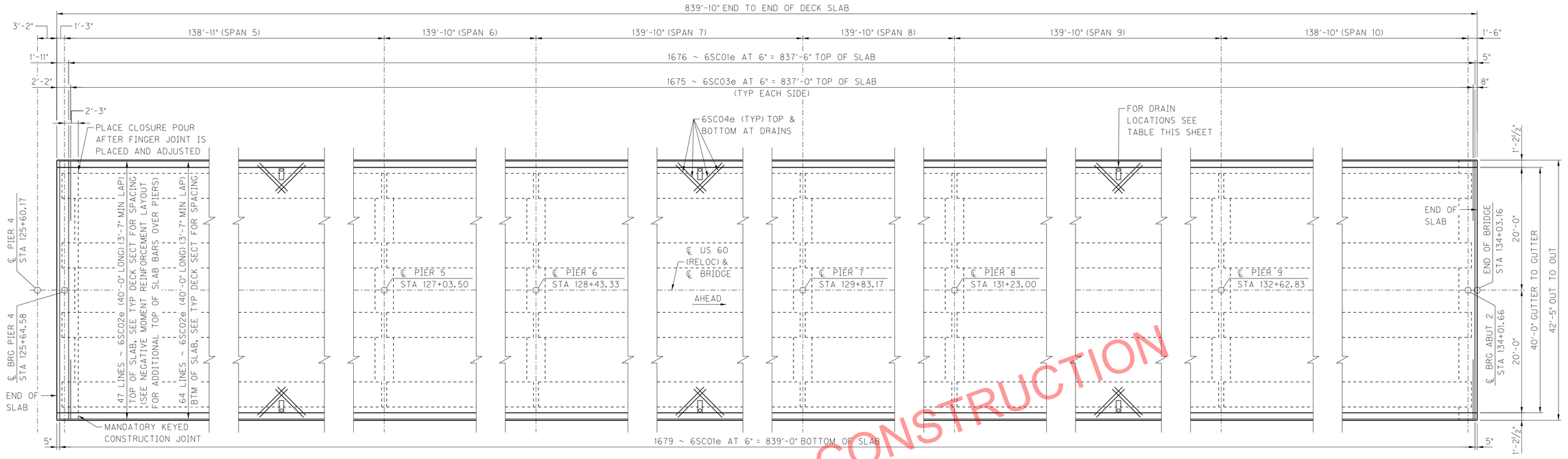
Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

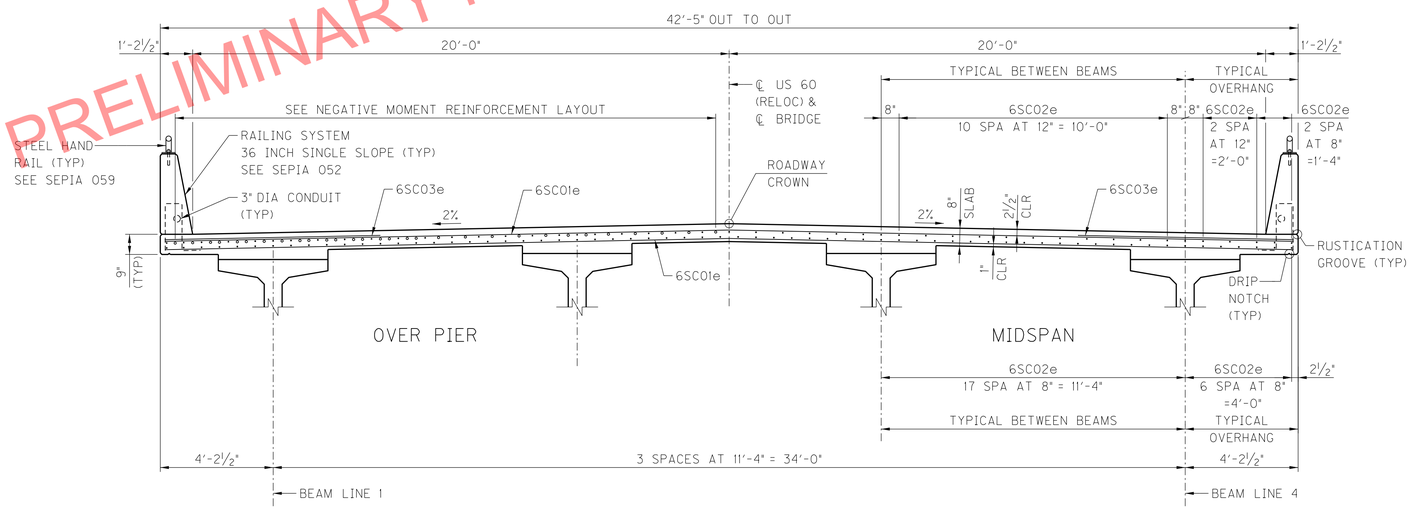
ROUTE	CROSSING
US 60	CUMBERLAND RIVER

SPANS 1–3 SLAB PLAN & DET (3)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S73
		DRAWING NO. 27458



PLAN OF SLAB – SPANS 5–10



TYPICAL DECK SECTION – SPANS 5–10

(LOOKING AHEAD)

DRAIN LOCATIONS			
STATION	OFFSET	STATION	OFFSET
126+32.00	20'-0" LEFT	126+32.00	20'-0" RIGHT
129+13.00	20'-0" LEFT	129+13.00	20'-0" RIGHT
131+93.00	20'-0" LEFT	131+93.00	20'-0" RIGHT

NOTES:

1. SEE SPANS 1-3 SLAB PLAN & DET (2) FOR SCUPPER & DRAIN PIPE DETAILS.

2. SEE SPAN 4 SLAB PLAN & DETAILS (2) FOR RUSTICATION GROOVE AND DRIP NOTCH DETAILS.

3. SEE ABUTMENT DIAPHRAGM DETAILS AND PIER DIAPHRAGM DETAILS (2) FOR ADDITIONAL REINFORCEMENT DETAILS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: K. WIGHT	S. WILLIAMS
DETAILED BY: K. WIGHT	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

SPANS 5–10 SLAB PLAN & DET (1)

ITEM NUMBER: 1–1142.00

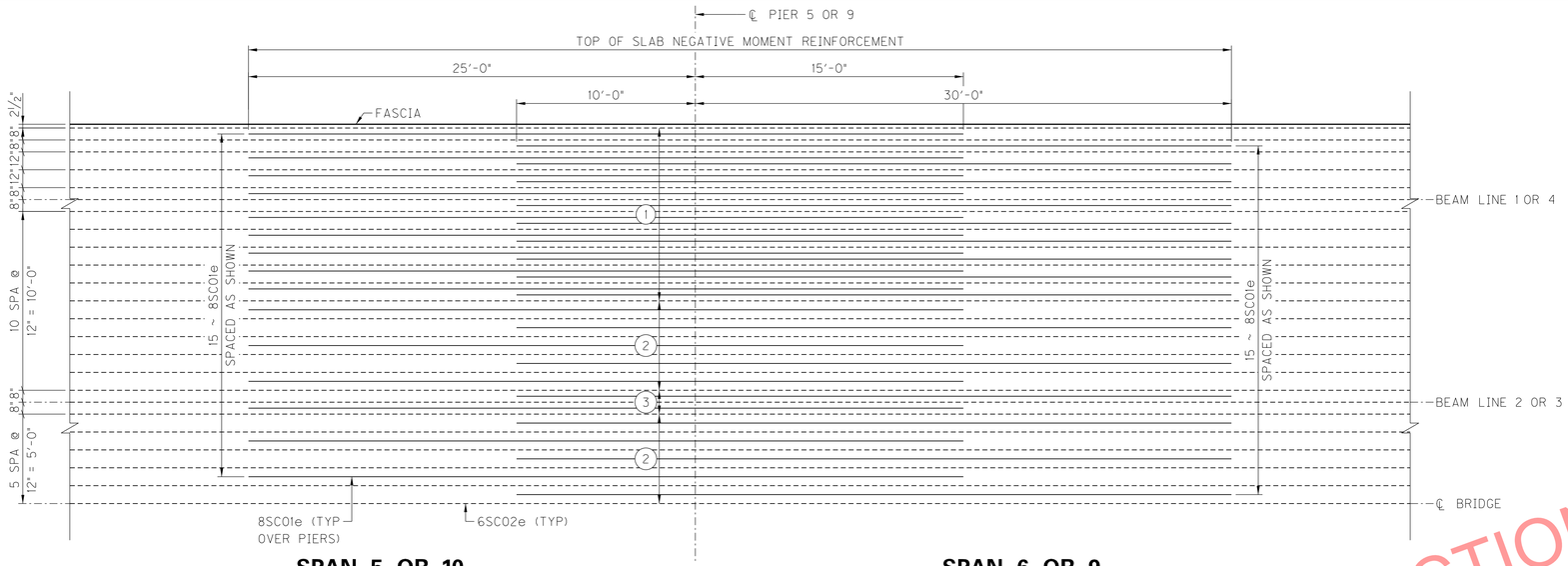
PREPARED BY: Stantec

SHEET NO. S74

DRAWING NO. 27458

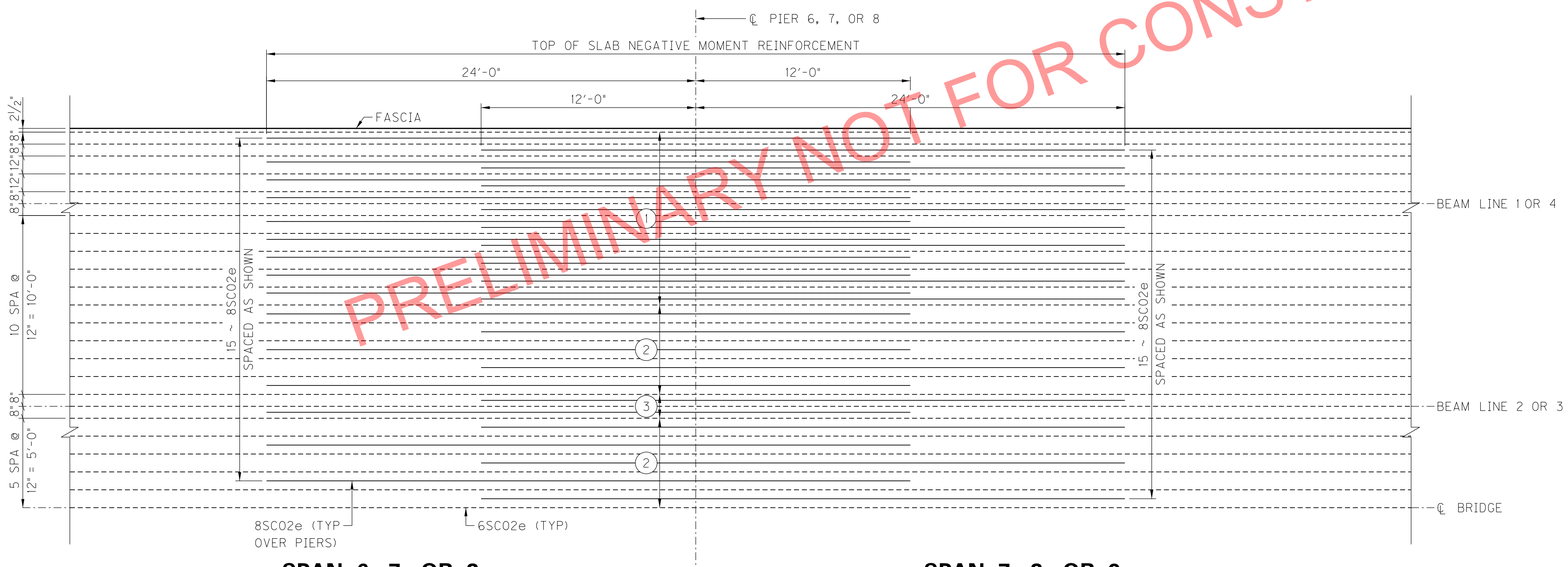
PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 65 66 67 68 SLAB PLAN



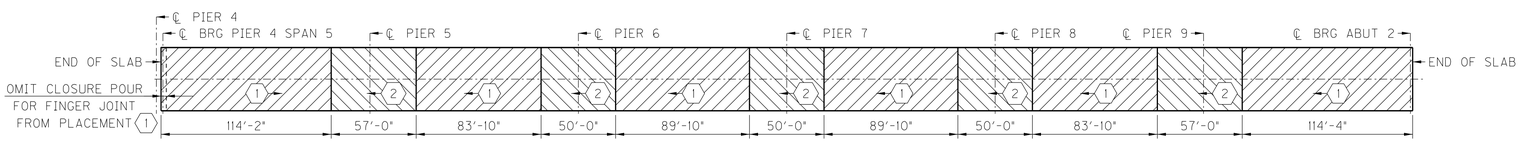
SPAN 5 OR 10 **SPAN 6 OR 9**

NEGATIVE MOMENT REINFORCEMENT LAYOUT – PIERS 5 & 9



SPAN 6, 7, OR 8 **SPAN 7, 8, OR 9**

NEGATIVE MOMENT REINFORCEMENT LAYOUT – PIERS 6, 7, & 8



SLAB POURING SEQUENCE

NOTATIONS

(1) 29 SPACES AT 4" OVER PIER = 9'-8"

(2) 10 SPACES AT 6" OVER PIER = 5'-0"

(3) 4 SPACES AT 4" OVER PIER = 1'-4"

POURING SEQUENCE NOTES:

⬡ INDICATES ORDER AND DIRECTION OF SLAB POUR. ALL CONCRETE IN ANY POUR MUST BE IN PLACE BEFORE THE CONCRETE IN THAT POUR HAS ITS INITIAL SET. ALL SLAB CONSTRUCTION JOINTS TO BE COATED WITH AN EPOXY BONDING AGENT.

AREAS MARKED ⬡(1) SHALL BE PLACED BEFORE AREAS MARKED ⬡(2), BUT AREAS OF THE SAME NUMBER NEED NOT BE PLACED SIMULTANEOUSLY.

PLACEMENT AREAS MARKED ⬡(2) SHALL NOT COMMENCE UNTIL AT LEAST 48 HOURS HAVE ELAPSED AFTER COMPLETION OF AREAS MARKED ⬡(1).

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	S. WILLIAMS
DETAILED BY: K. WIGHT	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

SPANS 5–10 SLAB PLAN & DET (2)

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S75

DRAWING NO.: 27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: jburke
DATE PLOTTED: January 24, 2020
FILE NAME: 65 66 67 68 SLAB PLAN AND DETAILS.DGN

SPANS 5-10 SLAB & DIAPHRAGMS - BILL OF REINFORCEMENT

MARK	TYPE	NUMBER	LENGTH		LOCATION	A		B		C		D		E		F		G		H		J		K		L		M		N		O		R	
			FT.	IN.		FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
					SPANS 5-10 SLAB																															
6SC01e	STR	3355	42	1	TRANSVERSE TOP AND BOTTOM																														
6SC02e	STR	2553	40	0	LONGITUDINAL TOP AND BOTTOM																														
6SC03e	STR	3350	8	1	OVERHANG TOP																														
6SC04e	STR	48	6	6	SCUPPER TOP AND BOTTOM																														
8SC01e	STR	120	40	0	NEGATIVE MOMENT TOP, PIERS 5 & 9																														
8SC02e	STR	180	36	0	NEGATIVE MOMENT TOP, PIERS 6, 7, & 8																														
					SPANS 5-10 DIAPHRAGMS																															
5DC01e	S1	50	10	6	ABUT DIAPH, STIRRUPS	--	--	3	0	4	6	3	0					--	--	--	--														
5DC02e	S1	32	9	5	ABUT DIAPH, STIRRUPS	--	--	3	0	3	5	3	0					--	--	--	--														
5DC03e	20	66	8	6	ABUT DIAPH, VERTICAL			4	3	4	3	--	--																						
5DC04e	STR	16	22	8	ABUT DIAPH, HORIZONTAL																														
5DC05e	STR	13	7	8	ABUT AND PIER DIAPH, HORIZONTAL																														
5DC06e	STR	180	10	4	ABUT AND PIER DIAPH, HORIZONTAL																														
5DC07e	STR	36	6	11	ABUT AND PIER DIAPH, HORIZONTAL																														
5DC08e	S1	10	7	7	ABUT DIAPH, HORIZONTAL	--	--	2	2	3	3	2	2					--	--	--	--														
5DC09e	S1	4	5	8	ABUT DIAPH, HORIZONTAL	--	--	1	10	2	0	1	10					--	--	--	--														
5DC10e	STR	10	3	6	ABUT DIAPH, HORIZONTAL																														
5DC11e	S4	95	18	8	PIER DIAPH, STIRRUPS	1	0	7	0	2	8	7	0					1	0																
5DC12e	S1	120	9	2	PIER DIAPH, STIRRUPS	--	--	2	6	4	2	2	6					--	--	--	--														
5DC13e	S4	10	16	0	PIER DIAPH, STIRRUPS	1	0	5	8	2	8	5	8					1	0																
5DC14e	17	40	5	6	PIER DIAPH AT SHEAR BLOCK			2	9	2	9	--	--																						
5DC15e	S1	8	16	9	PIER DIAPH, STIRRUPS	--	--	7	2	2	5	7	2					--	--	--	--														
5DC16e	S1	32	8	8	PIER DIAPH, STIRRUPS	--	--	2	3	4	2	2	3					--	--	--	--														
5DC17e	S1	15	13	9	PIER DIAPH, STIRRUPS	--	--	5	8	2	5	5	8					--	--	--	--														
5DC18e	16	23	7	2	PIER DIAPH, JOINT HEADER	3	0	0	9	2	5	1	0							0	8 1/2			0	8 1/2							3	1 1/2		
5DC19e	17	6	4	2	PIER DIAPH AT SHEAR BLOCK			2	9	1	5	--	--																						
5DC20e	17	2	12	0	PIER DIAPH AT SHEAR BLOCK			2	9	6	6	2	9																						
5DC21e	17	2	8	10	PIER DIAPH AT SHEAR BLOCK			2	9	6	1	--	--																						
5DC22e	S1	10	6	9	PIER DIAPH, HORIZONTAL	--	--	2	3	2	3	2	3					--	--	--	--														
5DC23e	STR	6	39	8	PIER DIAPH, HORIZONTAL																														
*DOWEL	STR	27	2	0	ABUT DIAPH, APPROACH SLAB SEAT																														

*1½" SMOOTH ROUND PIN MAY BE COMMERCIAL GRADE STEEL

PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 65 66 67 68 SLAB PLAN AND DETAILS.DGN

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: K. WIGHT	S. WILLIAMS
DETAILED BY: P. GREENBERG	T. KNIGHT

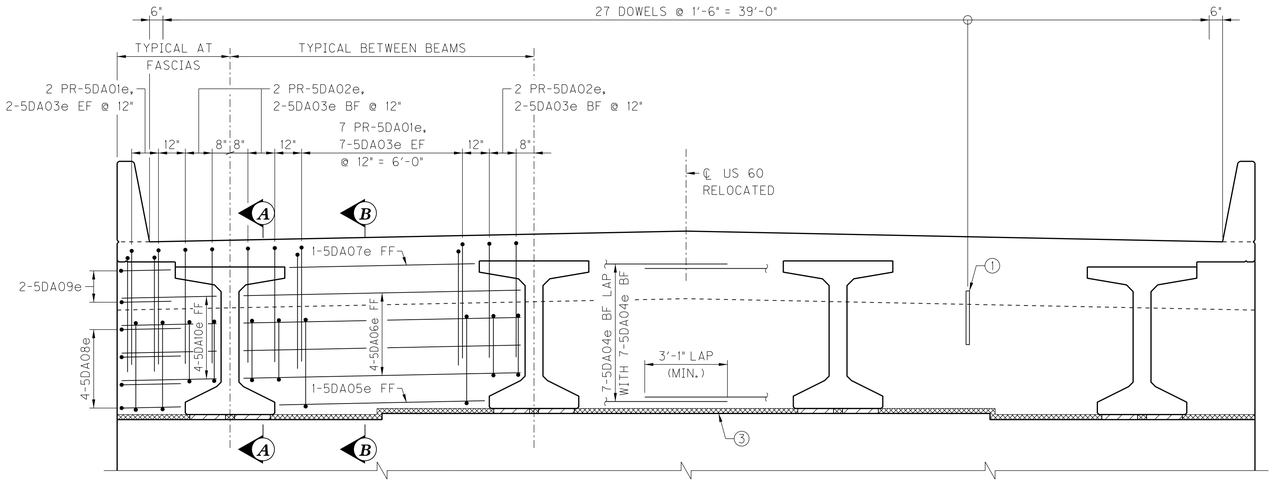
Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

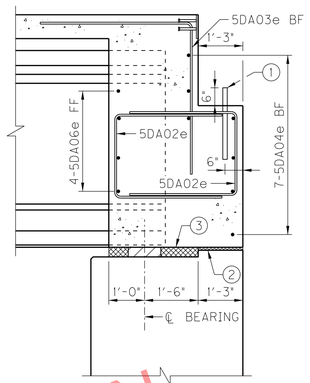
SPANS 5-10 SLAB PLAN & DET (3)

ITEM NUMBER	PREPARED BY	SHEET NO.
1-1142.00	Stantec	S76
		DRAWING NO. 27458

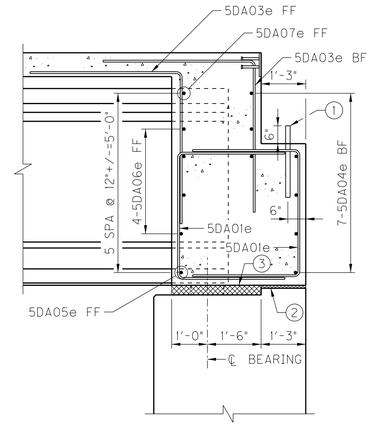


DIAPHRAGM AT ABUTMENT 1

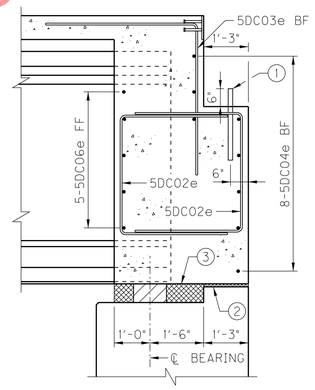
(LOOKING BACK STATION)



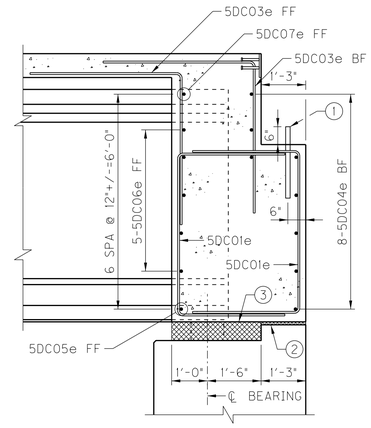
SECTION A–A



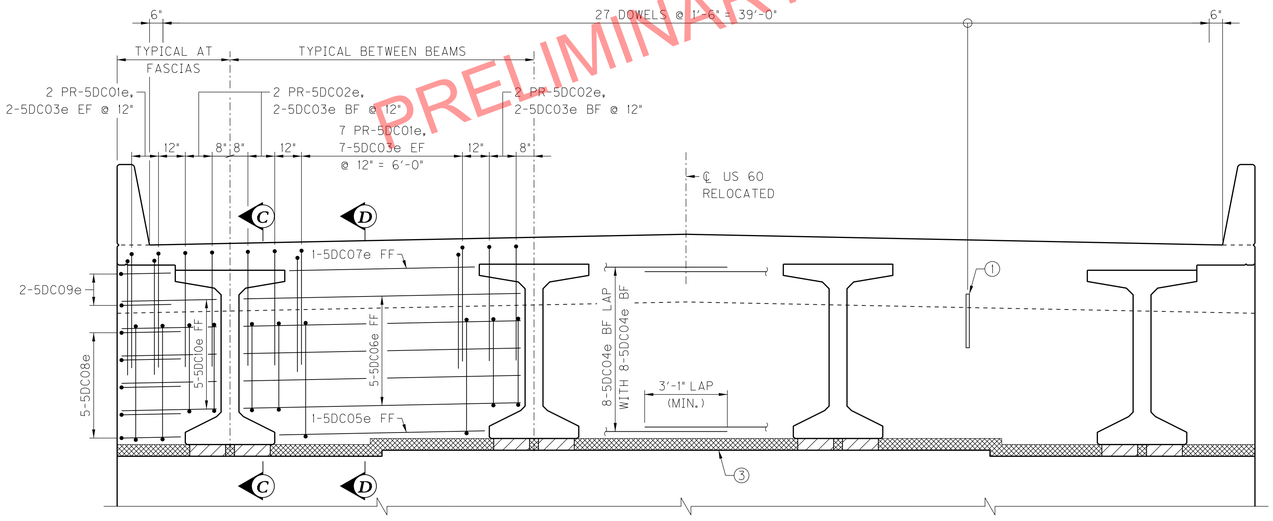
SECTION B–B



SECTION C–C



SECTION D–D



DIAPHRAGM AT ABUTMENT 2

(LOOKING AHEAD STATION)

PRELIMINARY NOT FOR CONSTRUCTION

NOTATIONS

① 1½" DIA x 2'-0" DOWEL
② 1" STYROFOAM OR CORK EXPANSION JOINT MATERIAL
③ 2¼" STYROFOAM OR CORK EXPANSION JOINT MATERIAL (ABUTMENT 1)
5¼" STYROFOAM OR CORK EXPANSION JOINT MATERIAL (ABUTMENT 2)

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	T. KNIGHT
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: **LIVINGSTON**

ROUTE: **US 60**

CROSSING: **CUMBERLAND RIVER**

ABUTMENT DIAPHRAGM DETAILS

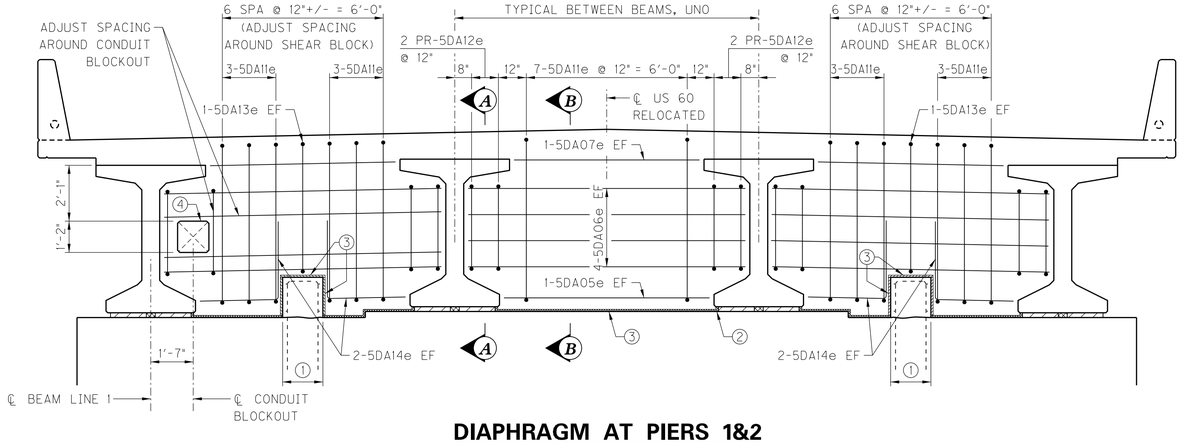
ITEM NUMBER: **1–1142.00**

PREPARED BY: Stantec

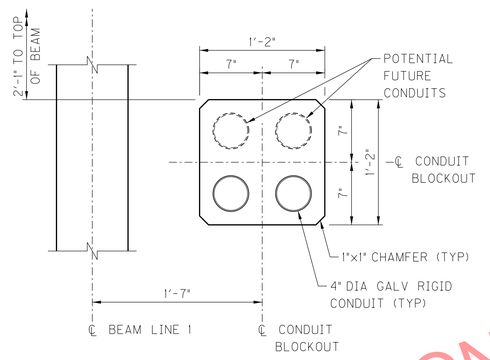
SHEET NO.: S77

DRAWING NO.: 27458

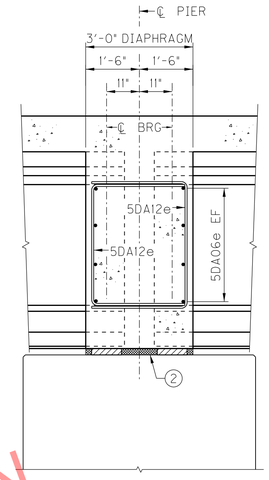
FILE NAME: 69 ABUTMENT DIAPHRAGM DETAILS.DGN
USER: jtburke
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.832



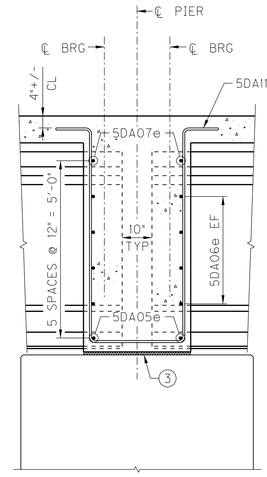
DIAPHRAGM AT PIERS 1&2
(LOOKING AHEAD STATION)



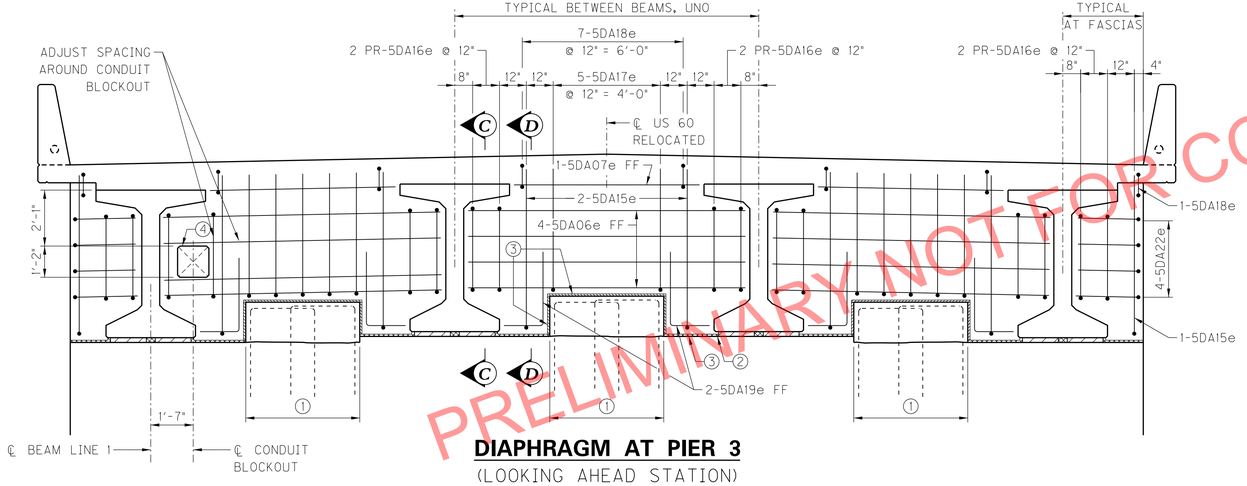
CONDUIT BLOCKOUT DETAIL



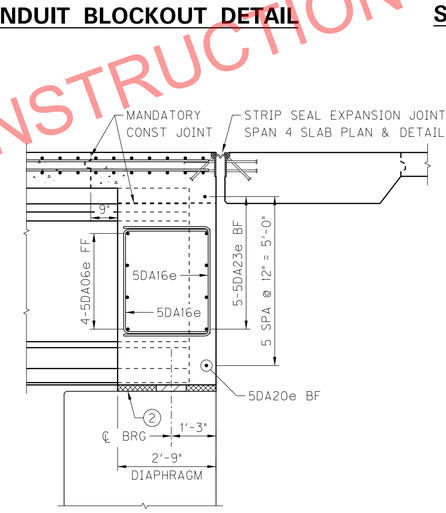
SECTION A–A



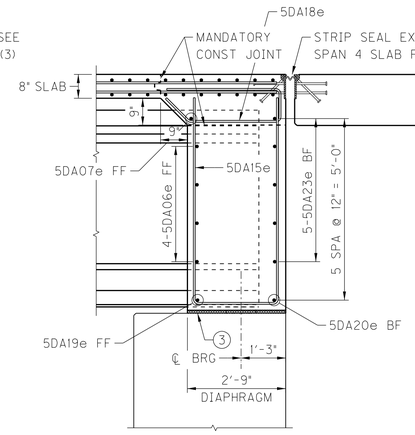
SECTION B–B



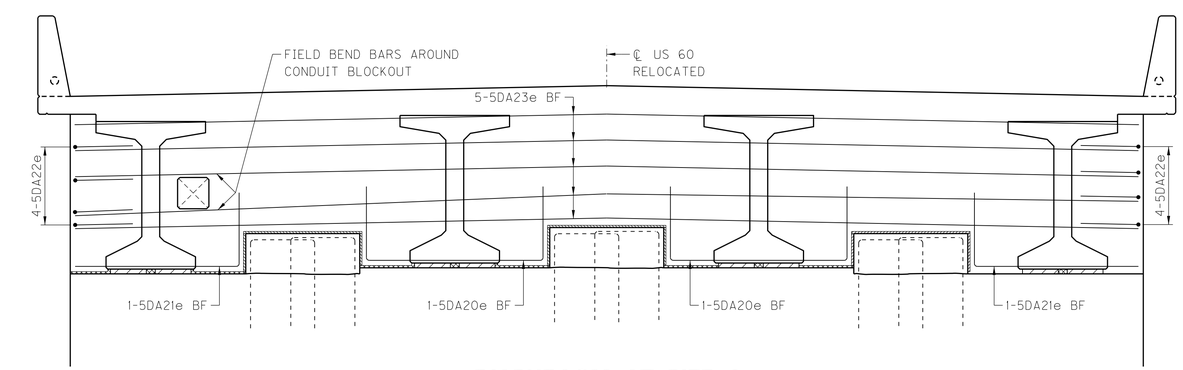
DIAPHRAGM AT PIER 3
(LOOKING AHEAD STATION)



SECTION C–C



SECTION D–D



DIAPHRAGM AT PIER 3
(SHOWING BACKFACE REINFORCEMENT)
(LOOKING AHEAD STATION)

PRELIMINARY NOT FOR CONSTRUCTION

NOTATIONS

1. SHEAR BLOCKS FROM PREVIOUS CONSTRUCTION
2. 2¼" STYROFOAM OR CORK EXPANSION JOINT MATERIAL UNDER BEAMS (TYP)
3. 1" STYROFOAM OR CORK EXPANSION JOINT MATERIAL
4. SEE CONDUIT BLOCKOUT DETAIL THIS SHEET

NOTE

PIER DIAPHRAGMS 1-2 SHALL BE PLACED MONOLITHICALLY WITH SLAB (TYP).

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	T. KNIGHT
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

PIER DIAPHRAGM DETAILS (1)

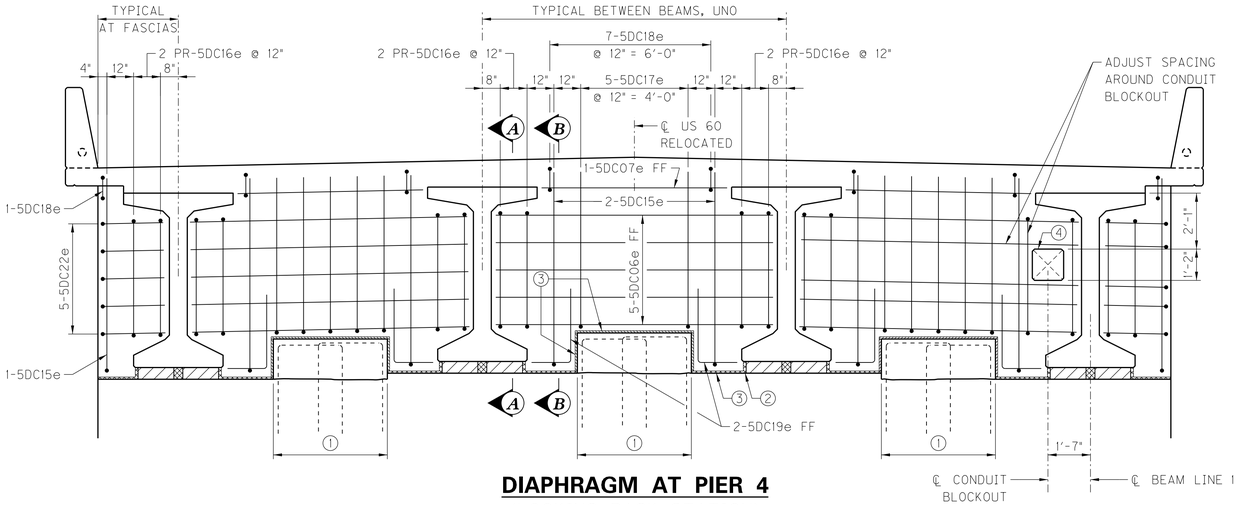
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

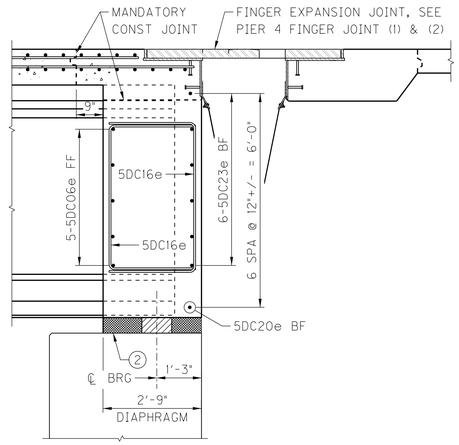
SHEET NO.: S78

DRAWING NO.: 27458

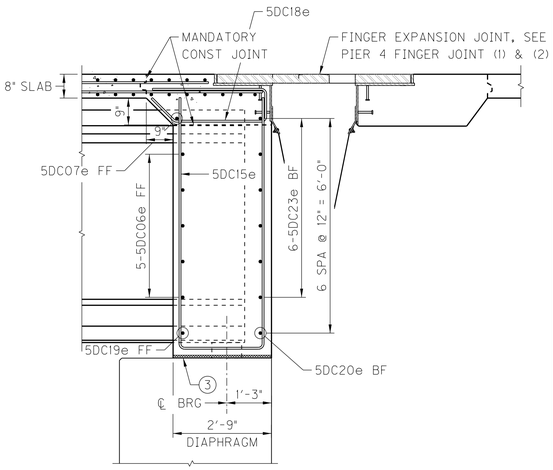
MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 70-71 PIER DIAPHR DETAILS.DGN



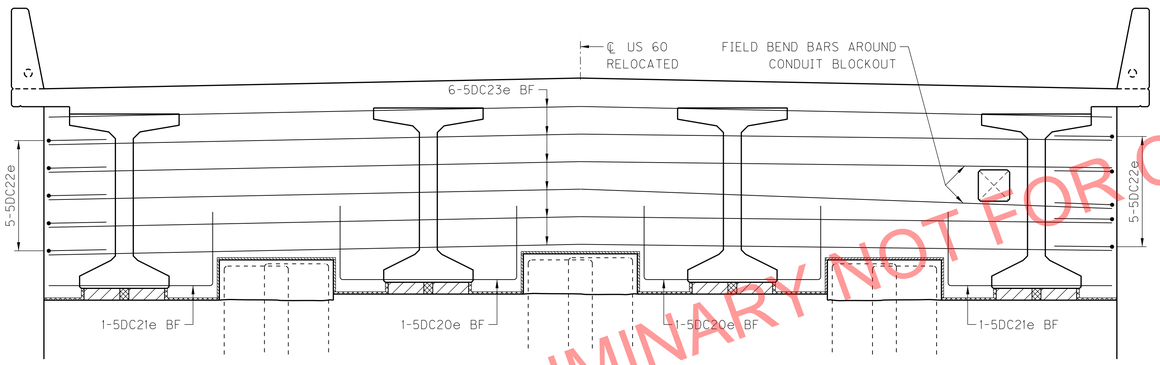
DIAPHRAGM AT PIER 4
(LOOKING BACK STATION)



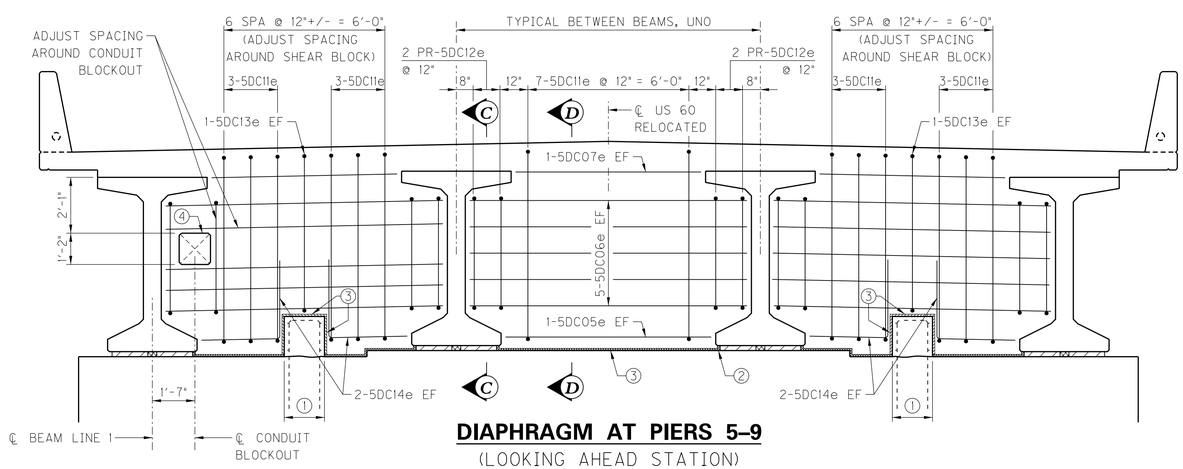
SECTION A–A



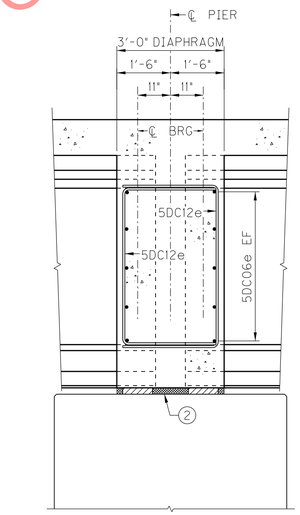
SECTION B–B



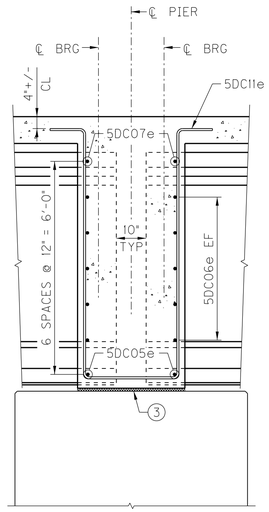
DIAPHRAGM AT PIER 4
(SHOWING BACKFACE REINFORCEMENT)
(LOOKING BACK STATION)



DIAPHRAGM AT PIERS 5–9
(LOOKING AHEAD STATION)



SECTION C–C



SECTION D–D

PRELIMINARY - NOT FOR CONSTRUCTION

NOTATIONS

1. SHEAR BLOCKS FROM PREVIOUS CONSTRUCTION
2. 5¼" STYROFOAM OR CORK EXPANSION JOINT MATERIAL UNDER BEAMS (TYP, PIERS 4&9) 2¼" STYROFOAM OR CORK EXPANSION JOINT MATERIAL UNDER BEAMS (TYP, PIERS 5-8)
3. 1" STYROFOAM OR CORK EXPANSION JOINT MATERIAL
4. SEE PIER DIAPHRAGM DETAILS (1) FOR CONDUIT BLOCKOUT DETAIL

NOTE

PIER DIAPHRAGMS 5-9 SHALL BE PLACED MONOLITHICALLY WITH SLAB (TYP).

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	T. KNIGHT
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

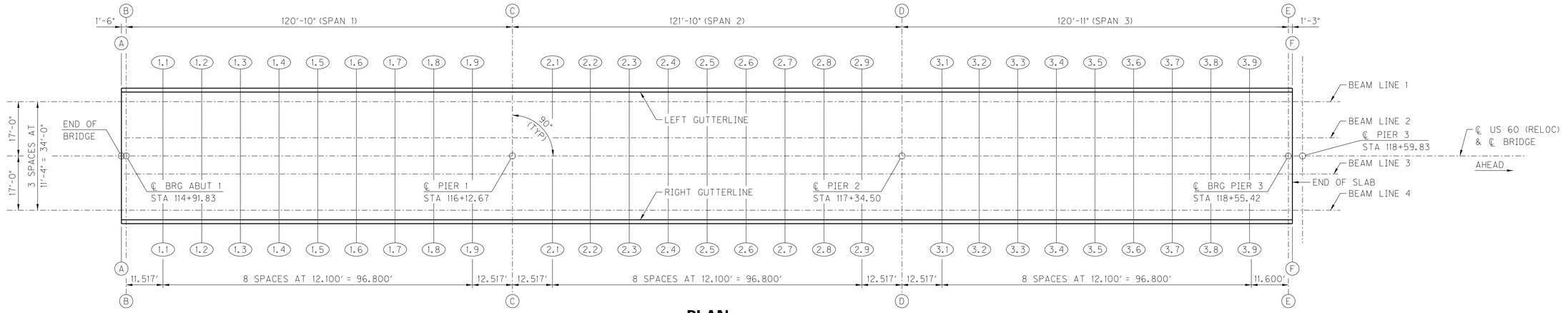
COUNTY: **LIVINGSTON**

ROUTE: **US 60** | CROSSING: **CUMBERLAND RIVER**

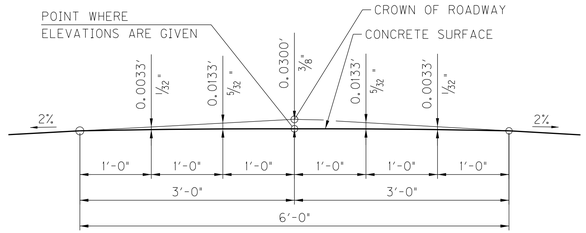
PIER DIAPHRAGM DETAILS (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S79
		DRAWING NO. 27458

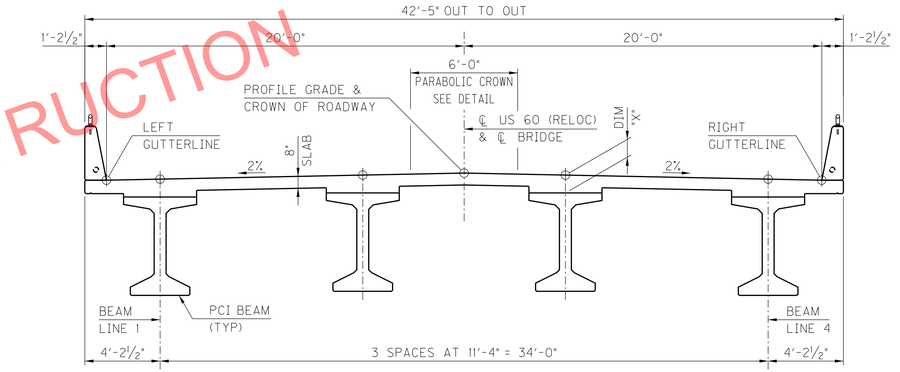
MicroStation v8.11.9.832 | E-SHEET NAME: | USER: jtburke DATE PLOTTED: January 24, 2020 | FILE NAME: 70-71PIER DIAPHR DETAILS.DGN



PLAN
(SPANS 1-3)



PARABOLIC CROWN



⊕ - INDICATES POINTS WHERE CONSTRUCTION ELEVATIONS ARE GIVEN

TYPICAL SECTION
(LOOKING AHEAD)

SPAN 1-3 TABLE OF ELEVATIONS

GRID	LEFT GUTTERLINE	BEAM LINE 1			BEAM LINE 2			PROFILE GRADE	BEAM LINE 3			BEAM LINE 4			RIGHT GUTTERLINE
	CONST ELEV	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV
A	403.418	403.478			403.705			403.787	403.705			403.478			403.418
B	403.413	403.473			403.700			403.782	403.700			403.473			403.413
1.1	403.413	403.473			403.705			403.787	403.705			403.473			403.413
1.2	403.408	403.468			403.704			403.786	403.704			403.468			403.408
1.3	403.394	403.454			403.695			403.777	403.695			403.454			403.394
1.4	403.370	403.430			403.678			403.756	403.673			403.430			403.370
1.5	403.334	403.394			403.638			403.720	403.638			403.394			403.334
1.6	403.285	403.345			403.588			403.670	403.588			403.345			403.285
1.7	403.224	403.284			403.525			403.607	403.525			403.284			403.224
1.8	403.153	403.213			403.450			403.532	403.450			403.213			403.153
1.9	403.074	403.134			403.366			403.448	403.366			403.134			403.074
C	402.992	403.052			403.279			403.361	403.279			403.052			402.992
2.1	402.985	403.045			403.277			403.359	403.277			403.045			402.985
2.2	402.978	403.038			403.275			403.357	403.275			403.038			402.978
2.3	402.964	403.024			403.265			403.347	403.265			403.024			402.964
2.4	402.940	403.000			403.243			403.325	403.243			403.000			402.940
2.5	402.904	402.964			403.208			403.290	403.208			402.964			402.904
2.6	402.855	402.915			403.159			403.241	403.159			402.915			402.855
2.7	402.795	402.855			403.096			403.178	403.096			402.855			402.795
2.8	402.725	402.785			403.022			403.104	403.022			402.785			402.725
2.9	402.648	402.708			402.940			403.022	402.940			402.708			402.648
D	402.567	402.627			402.854			402.936	402.854			402.627			402.567
3.1	402.562	402.622			402.854			402.936	402.854			402.622			402.562
3.2	402.557	402.617			402.854			402.936	402.854			402.617			402.557
3.3	402.544	402.604			402.845			402.927	402.845			402.604			402.544
3.4	402.521	402.581			402.824			402.906	402.824			402.581			402.521
3.5	402.485	402.545			402.789			402.871	402.789			402.545			402.485
3.6	402.437	402.497			402.740			402.822	402.740			402.497			402.437
3.7	402.377	402.437			402.677			402.759	402.677			402.437			402.377
3.8	402.305	402.365			402.602			402.684	402.602			402.365			402.305
3.9	402.226	402.286			402.518			402.600	402.518			402.286			402.226
E	402.146	402.206			402.433			402.515	402.433			402.206			402.146
F	402.142	402.202			402.428			402.510	402.428			402.202			402.142

PRELIMINARY NOT FOR CONSTRUCTION

NOTES

TAKE ELEVATIONS ON TOP OF BEAMS AT POINTS INDICATED IN PLAN AND TYPICAL SECTION. ELEVATIONS SHALL BE READ TO THREE (3) DECIMALS AND ENTERED IN THE TABLE UNDER "TOP OF BEAM ELEVATION".

COMPUTE DIMENSION "X" AS FOLLOWS:
"CONSTRUCTION ELEVATION" MINUS "TOP OF BEAM ELEVATION" EQUALS DIMENSION "X". "CONSTRUCTION ELEVATION" INCLUDES CAMBER DUE TO WEIGHT OF CONCRETE SLAB AND BARRIER. MEASURING OF DIMENSION "X" GIVES THE FINAL CHECK ON BEAM TOLERANCES FOR CAMBER, BEAM DAMAGE, AND ERRORS IN ERECTION THAT PRODUCE REVERSE CAMBERS, SAGS, AND UNSIGHTLY FASCIA BEAMS.

FOR SETTING TEMPLATES, MEASURE DIMENSION "X" ABOVE TOP OF BEAM. DO NOT SET TEMPLATES BY ELEVATIONS.

TEMPORARY SUPPORTS OR SHORING WILL NOT BE PERMITTED UNDER THE BEAMS WHEN POURING THE CONCRETE DECK SLAB OR WHEN TAKING "TOP OF BEAM ELEVATIONS".

NOTE TO RESIDENT:
THE "MAXIMUM ALLOWABLE CAMBER" SHOWN ON THE BEAM SHEETS IS THE AMOUNT OF CAMBER, MEASURED PRIOR TO CASTING THE DECK, ABOVE WHICH THE BEAM WILL BEGIN TO ENCROACH INTO THE SLAB. IF THE MEASURED CAMBER IS GREATER THAN THE "MAXIMUM ALLOWABLE CAMBER" THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY NECESSARY ADJUSTMENTS TO ASSURE A MINIMUM SLAB THICKNESS OF EIGHT (8) INCHES AS SHOWN IN THE PLANS. THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE STRUCTURE AND REQUIRE THE APPROVAL OF THE ENGINEER.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

SPANS 1-3 CONST ELEVATIONS

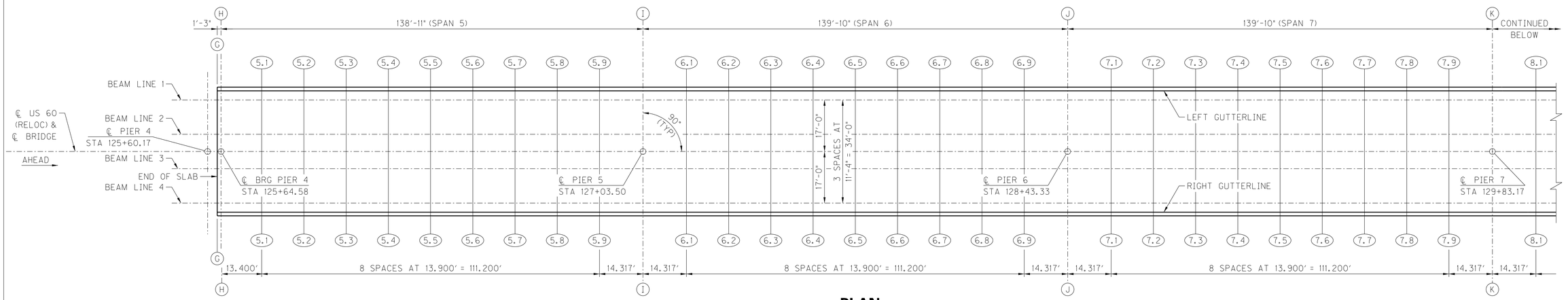
ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

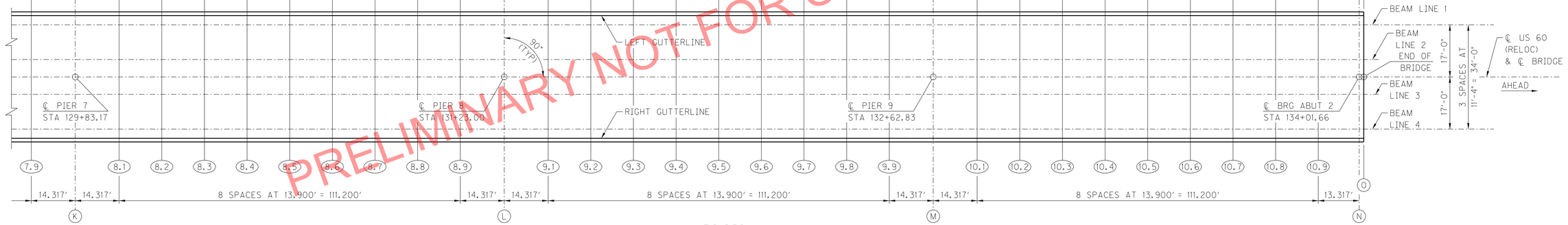
SHEET NO.: S80

DRAWING NO.: 27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: jburke
DATE PLOTTED: January 24, 2020
FILE NAME: 72 73 74 CONST ELEV SPAN 1-3 AND 5-10.DGN



PLAN
(SPANS 5-7)



PLAN
(SPANS 8-10)

PRELIMINARY NOT FOR CONSTRUCTION

NOTES

1. SEE SPANS 1-3 CONST ELEVATIONS SHEET FOR TYPICAL SECTION, PARABOLIC CROWN DETAIL AND NOTES.
2. SEE SPANS 5-10 CONST ELEVATIONS (2) SHEET FOR TABLE OF ELEVATIONS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

SPANS 5–10 CONST ELEVATIONS (1)

ITEM NUMBER	PREPARED BY	SHEET NO.	DRAWING NO.
1–1142.00	Stantec	S81	27458

MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 72 73 74 CONST ELEV SPAN 1-3 AND 5-10.DGN

SPAN 5-10 TABLE OF ELEVATIONS															
GRID	LEFT GUTTERLINE	BEAM LINE 1			BEAM LINE 2			PROFILE GRADE	BEAM LINE 3			BEAM LINE 4			RIGHT GUTTERLINE
	CONST ELEV	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV	TOP OF BEAM ELEV	DIM X	CONST ELEV
G	399.679	399.739			399.966			400.048	399.966			399.739			399.679
H	399.679	399.739			399.966			400.048	399.966			399.739			399.679
5.1	399.663	399.723			399.955			400.038	399.955			399.723			399.663
5.2	399.632	399.692			399.930			400.012	399.930			399.692			399.632
5.3	399.577	399.637			399.880			399.962	399.880			399.637			399.577
5.4	399.496	399.556			399.801			399.883	399.801			399.556			399.496
5.5	399.387	399.447			399.694			399.776	399.694			399.447			399.387
5.6	399.249	399.309			399.555			399.637	399.555			399.309			399.249
5.7	399.083	399.143			399.386			399.468	399.386			399.143			399.083
5.8	398.891	398.951			399.190			399.272	399.190			398.951			398.891
5.9	398.676	398.736			398.969			399.051	398.969			398.736			398.676
I	398.439	398.499			398.726			398.808	398.726			398.499			398.439
6.1	398.275	398.335			398.568			398.650	398.568			398.335			398.275
6.2	398.100	398.160			398.399			398.481	398.399			398.160			398.100
6.3	397.903	397.963			398.206			398.288	398.206			397.963			397.903
6.4	397.680	397.740			397.986			398.068	397.986			397.740			397.680
6.5	397.429	397.489			397.736			397.818	397.736			397.489			397.429
6.6	397.150	397.210			397.456			397.538	397.456			397.210			397.150
6.7	396.843	396.903			397.146			397.228	397.146			396.903			396.843
6.8	396.510	396.570			396.809			396.891	396.809			396.570			396.510
6.9	396.155	396.215			396.447			396.530	396.447			396.215			396.155
J	395.772	395.832			396.059			396.141	396.059			395.832			395.772
7.1	395.463	395.523			395.756			395.838	395.756			395.523			395.463
7.2	395.147	395.207			395.445			395.527	395.445			395.207			395.147
7.3	394.808	394.868			395.111			395.193	395.111			394.868			394.808
7.4	394.443	394.503			394.748			394.830	394.748			394.503			394.443
7.5	394.050	394.110			394.356			394.439	394.356			394.110			394.050
7.6	393.629	393.689			393.934			394.016	393.934			393.689			393.629
7.7	393.179	393.239			393.482			393.564	393.482			393.239			393.179
7.8	392.704	392.764			393.003			393.085	393.003			392.764			392.704
7.9	392.207	392.267			392.499			392.581	392.499			392.267			392.207
K	391.678	391.738			391.964			392.046	391.964			391.738			391.678
8.1	391.221	391.281			391.513			391.596	391.513			391.281			391.221
8.2	390.763	390.823			391.061			391.143	391.061			390.823			390.763
8.3	390.282	390.342			390.584			390.667	390.584			390.342			390.282
8.4	389.775	389.835			390.080			390.162	390.080			389.835			389.775
8.5	389.240	389.300			389.547			389.629	389.547			389.300			389.240
8.6	388.677	388.737			388.983			389.065	388.983			388.737			388.677
8.7	388.100	388.160			388.403			388.485	388.403			388.160			388.100
8.8	387.511	387.571			387.810			387.892	387.810			387.571			387.511
8.9	386.914	386.974			387.207			387.289	387.207			386.974			386.914
L	386.297	386.357			386.584			386.666	386.584			386.357			386.297
9.1	385.768	385.828			386.061			386.143	386.061			385.828			385.768
9.2	385.253	385.313			385.552			385.634	385.552			385.313			385.253
9.3	384.730	384.790			385.033			385.115	385.033			384.790			384.730
9.4	384.194	384.254			384.500			384.582	384.500			384.254			384.194
9.5	383.645	383.705			383.952			384.034	383.952			383.705			383.645
9.6	383.082	383.142			383.388			383.470	383.388			383.142			383.082
9.7	382.505	382.565			382.808			382.890	382.808			382.565			382.505
9.8	381.917	381.977			382.215			382.297	382.215			381.977			381.917
9.9	381.320	381.380			381.613			381.695	381.613			381.380			381.320
M	380.704	380.764			380.991			381.073	380.991			380.764			380.704
10.1	380.176	380.236			380.469			380.551	380.469			380.236			380.176
10.2	379.663	379.723			379.961			380.043	379.961			379.723			379.663
10.3	379.140	379.200			379.443			379.525	379.443			379.200			379.140
10.4	378.606	378.666			378.911			378.994	378.911			378.666			378.606
10.5	378.058	378.118			378.364			378.446	378.364			378.118			378.058
10.6	377.495	377.555			377.800			377.882	377.800			377.555			377.495
10.7	376.918	376.978			377.221			377.303	377.221			376.978			376.918
10.8	376.328	376.388			376.627			376.709	376.627			376.388			376.328
10.9	375.730	375.790			376.022			376.104	376.022			375.790			375.730
N	375.151	375.211			375.437			375.520	375.437			375.211			375.151
O	375.091	375.151			375.377			375.460	375.377			375.151			375.091

PRELIMINARY NOT FOR CONSTRUCTION

MicroStation v8.11.9.832
E-SHEET NAME:
USER: Jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: T2 T3 T4 CONST ELEV SPAN 1-3 AND 5-10.DGN

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	S. WILLIAMS
DETAILED BY: J. BURKE	P. GREENBERG

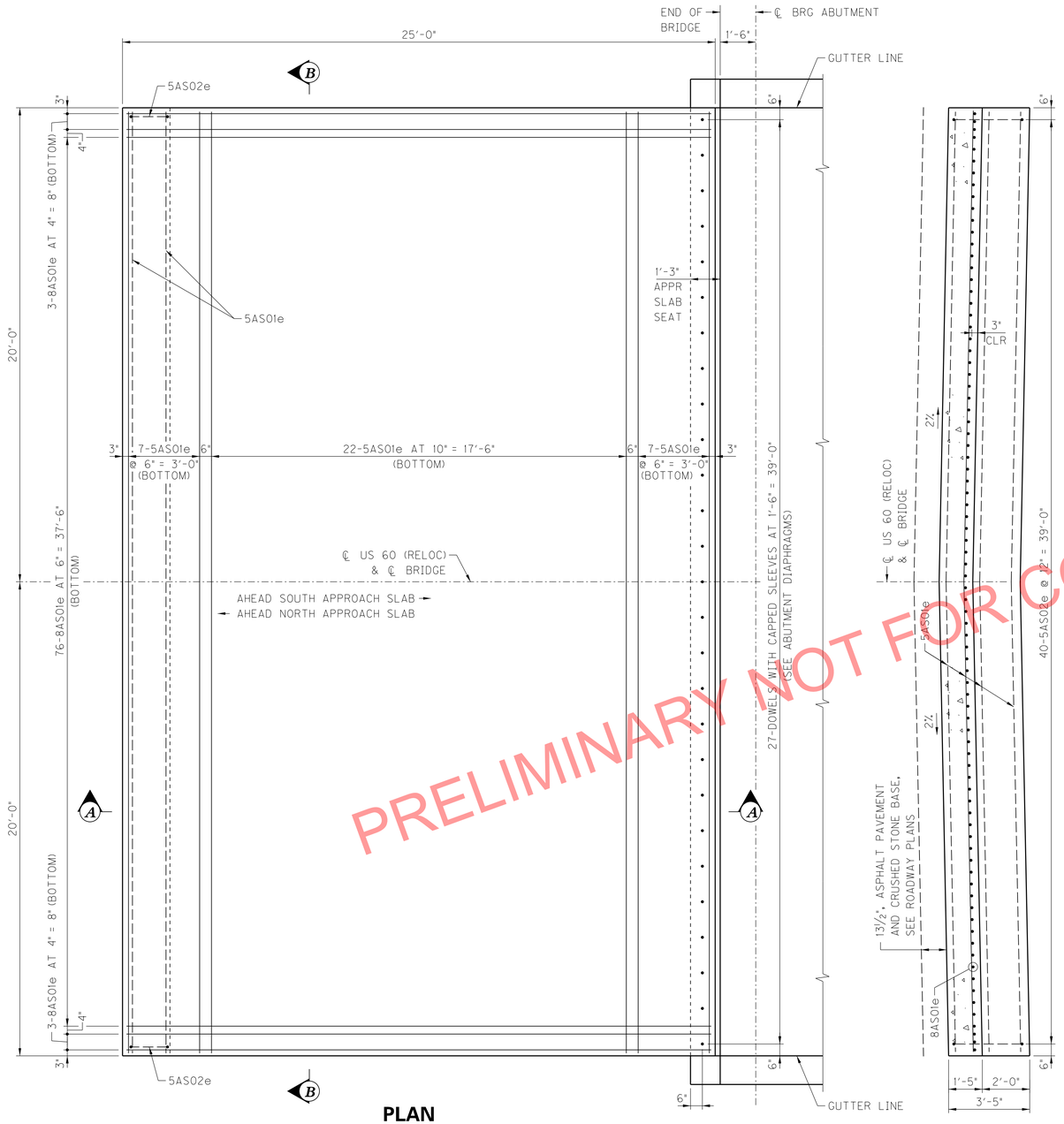
Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

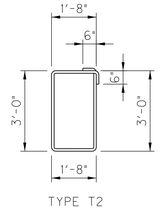
SPANS 5–10 CONST ELEVATIONS (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S82
		DRAWING NO. 27458



PLAN

SECTION B–B



TYPE T2

BILL OF REINFORCEMENT (FOR INFORMATION ONLY)

MARK	TYPE	NUMBER	LENGTH FT	LENGTH IN	LOCATION
5AS01e	STR	42	39	8	APPROACH SLAB
5AS02e	T2	40	10	4	APPROACH SLAB
8AS01e	STR	82	24	8	APPROACH SLAB

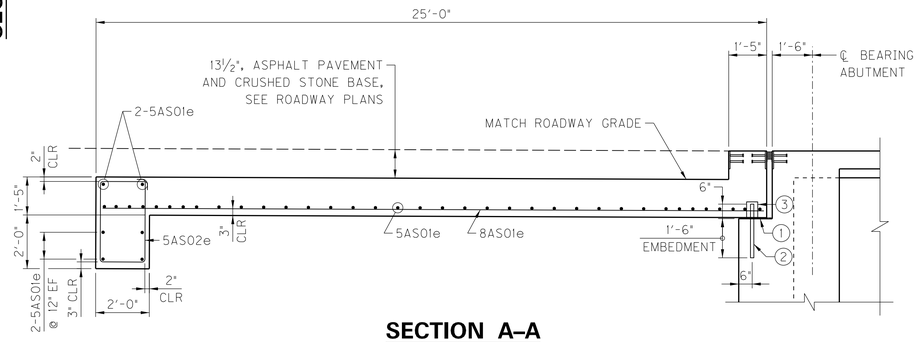
GENERAL NOTES

CROWN: CROWN SHALL CONFORM TO THE RATE OF CROWN AT THE APPROACH PAVEMENT AND BRIDGE DECK. IF THE RATE OF CROWN AT THE BRIDGE DECK DIFFERS FROM THAT OF APPROACH PAVEMENT, A SMOOTH TRANSITION SHALL BE PROVIDED WITHIN THE LIMITS OF THE APPROACH PAVEMENT.

CONCRETE: CONCRETE SHALL BE CLASS "AA".

REINFORCEMENT: ALL STEEL REINFORCEMENT SHALL BE GRADE 60 AND EPOXY COATED.

PAYMENT: INCLUDE THE COST OF CLASS "AA" CONCRETE, EPOXY COATED STEEL REINFORCEMENT, AND ALL LABOR AND MATERIALS REQUIRED TO CONSTRUCT THE APPROACH SLAB IN THE BID ITEM FOR APPROACH SLAB.



SECTION A–A

NOTATIONS

1. ½" EXPANSION JOINT MATERIAL
2. 1½" DIA. x 2'-0" DOWEL
3. 5" ID CAPPED PIPE SLEEVE, 7" LONG. CENTER CAP ON DOWEL, FILL ANNULAR SPACE WITH FOAM PRIOR TO PLACING CONCRETE.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: P. GREENBERG	T. KNIGHT
DETAILED BY: J. BURKE	P. GREENBERG

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

APPROACH SLABS

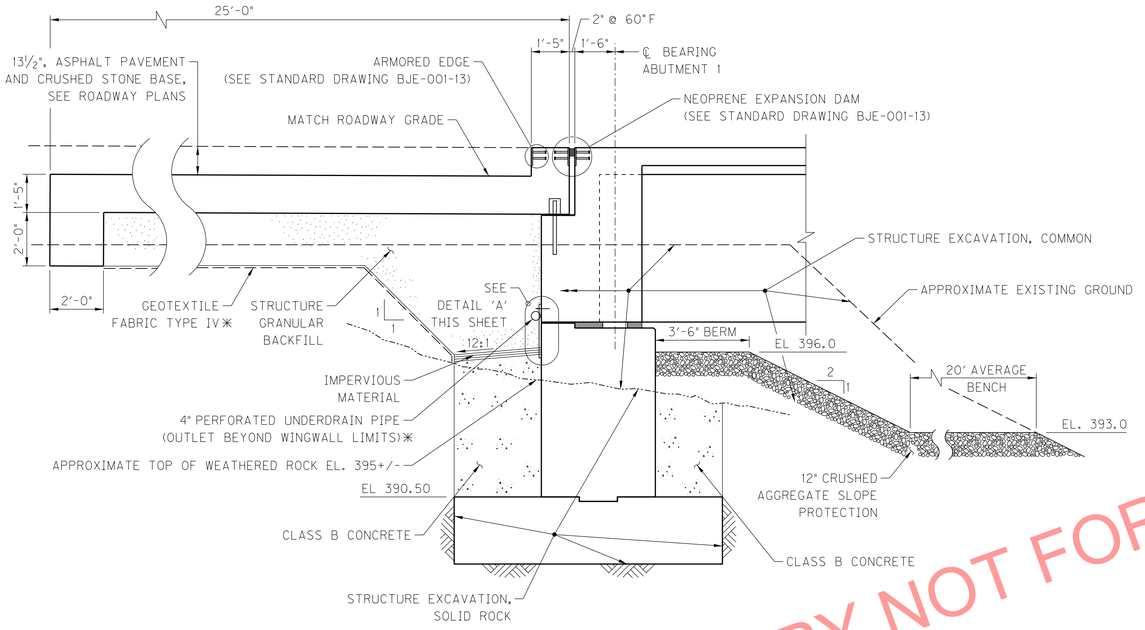
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

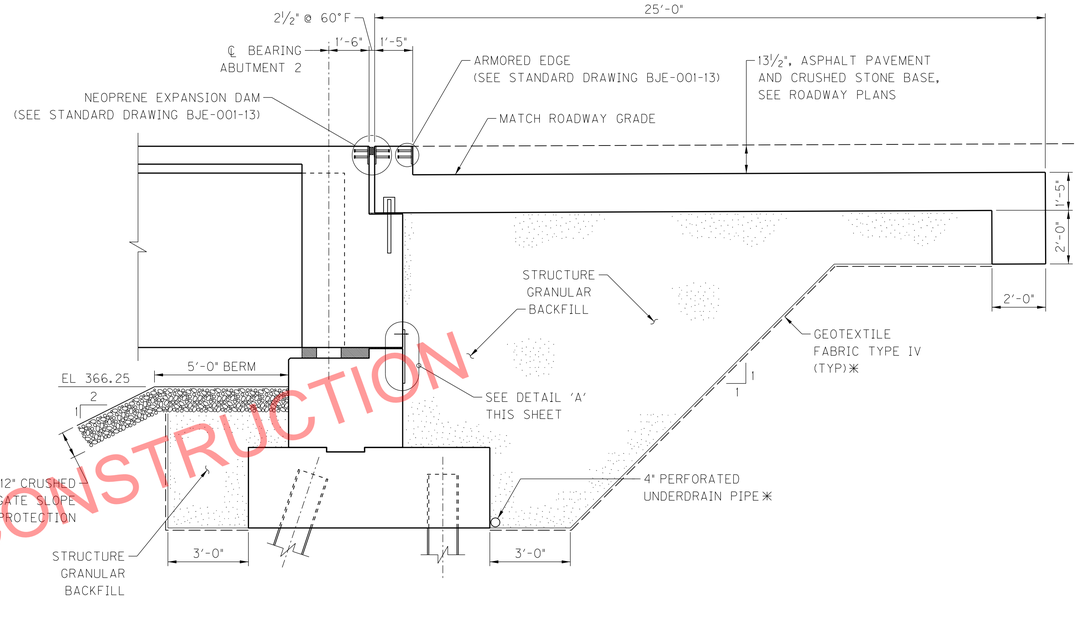
SHEET NO. S83

DRAWING NO. 27458

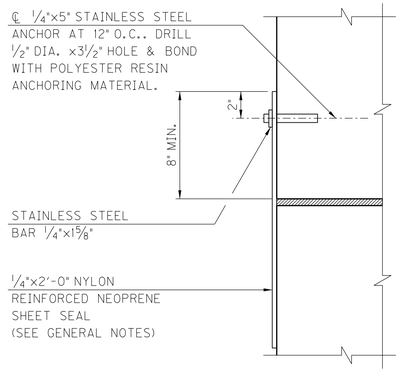
MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: T5 APPROACH SLAB.DGN



EARTHWORK SECTION AT ABUTMENT 1



EARTHWORK SECTION AT ABUTMENT 2



DETAIL 'A'

NOTES

1. REFER TO STANDARD DRAWING RGX-100-05 AND RGX-105-06 FOR ADDITIONAL EMBANKMENT DETAILS NOT SHOWN HERE.

✳ TO BE CONSIDERED INCIDENTAL TO STRUCTURAL GRANULAR BACKFILL.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: S. WINES	T. KNIGHT
DETAILED BY: J. BURKE	S. WINES

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE **US 60** | CROSSING **CUMBERLAND RIVER**

ABUTMENT EARTHWORK DETAILS

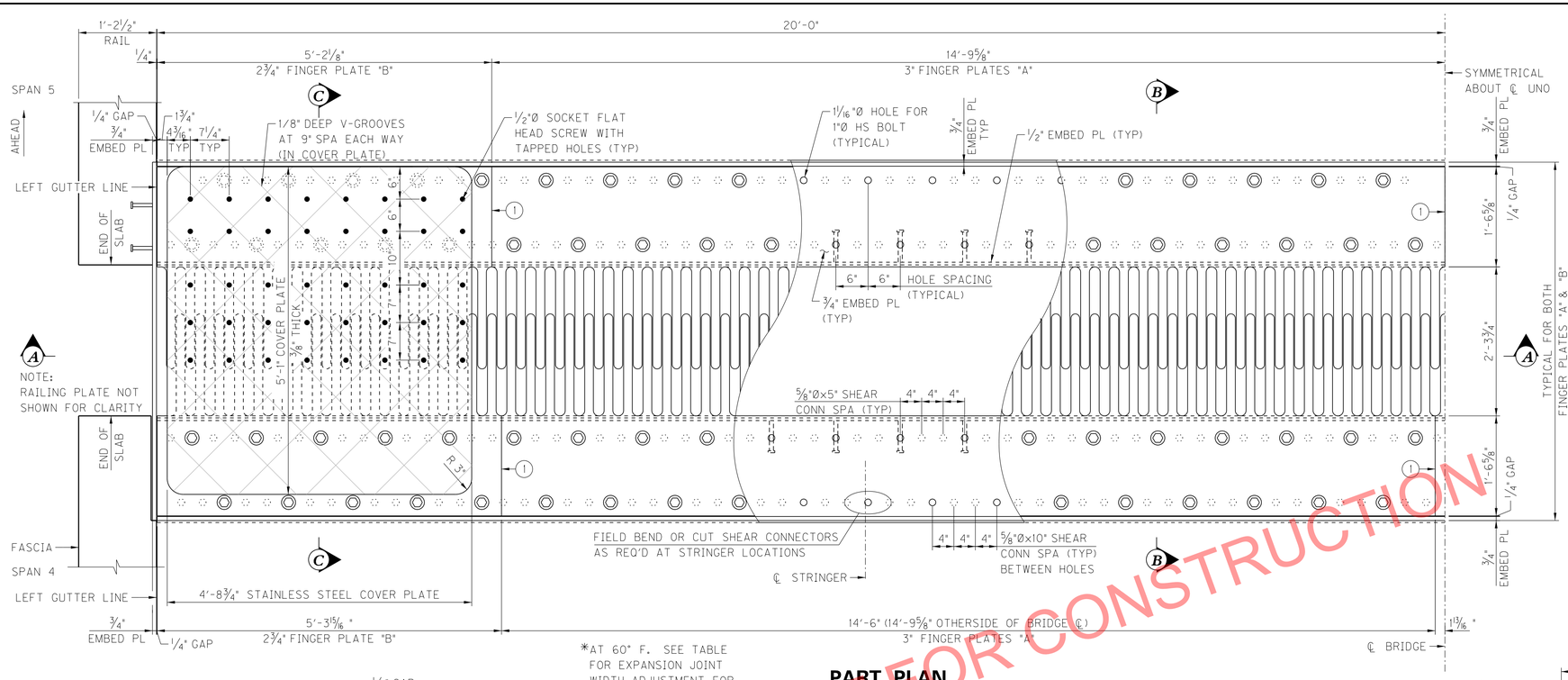
ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO. S84

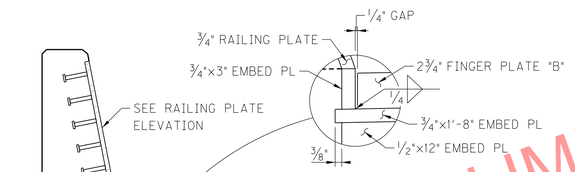
DRAWING NO. 27458

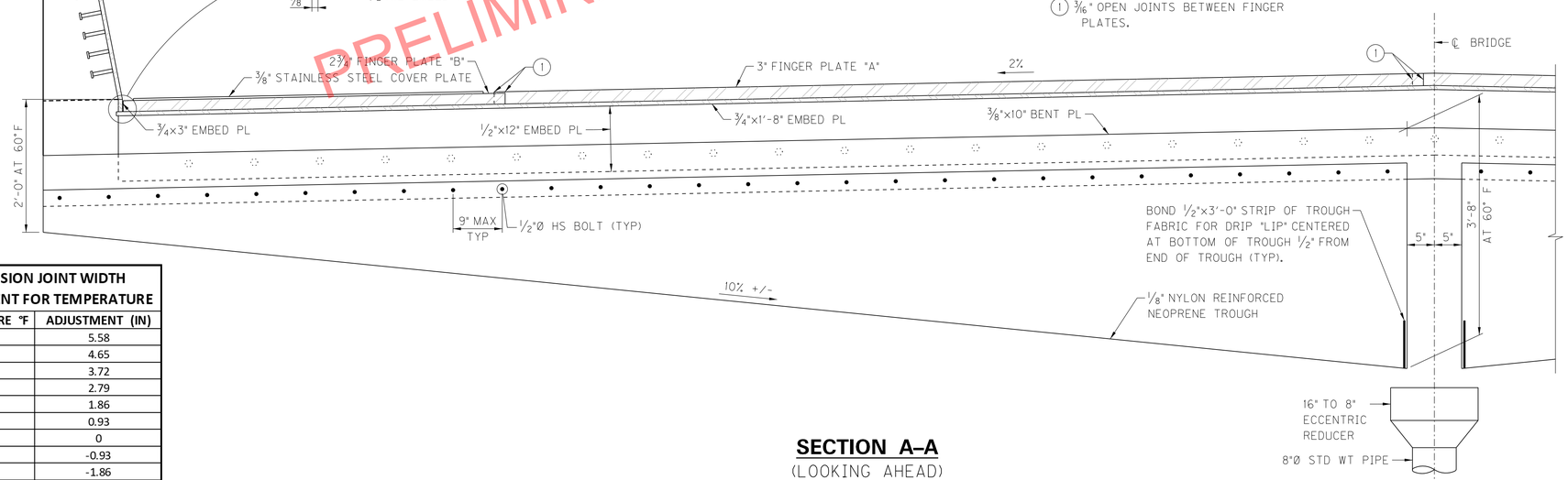
MicroStation v8.11.9.832
E-SHEET NAME:
USER: jtburke
DATE PLOTTED: January 24, 2020
FILE NAME: 76 ABUTMENT EARTHWORK DETAILS.DGN



*AT 60° F. SEE TABLE FOR EXPANSION JOINT WIDTH ADJUSTMENT FOR TEMPERATURE

PART PLAN





SECTION A–A

(LOOKING AHEAD)

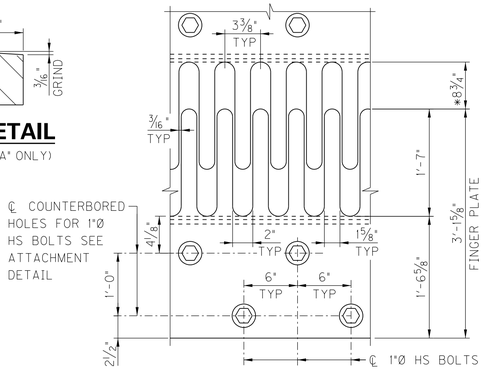
(EXPANSION SYSTEM TO CONFORM TO CROSS SLOPE AND PARABOLIC CROWN)

NOTATION:

① 3/16" OPEN JOINTS BETWEEN FINGER PLATES.

TOOTH DETAIL

(FINGER PLATE "A" ONLY)



FINGER PLATE DETAIL

NOT TO SCALE

FINGER EXPANSION JOINT NOTES

STEEL PLATES SHALL CONFORM TO ASTM A709 GRADE 50W UNLESS NOTED OTHERWISE.

DRAIN PIPE SHALL BE 8" ROUND STANDARD WEIGHT IN ACCORDANCE WITH ASTM A83 OR A500.

NEOPRENE TROUGH SHALL BE REINFORCED WITH ONE OR TWO PLIES OF TIGHTLY WOVEN NYLON FABRIC. THE INSIDE SURFACES OF THE TROUGH SHALL BE SMOOTH TO PROMOTE SELF-REMOVAL OF FOREIGN MATERIAL DURING NORMAL JOINT OPERATION.

COUNTERSUNK CAP SCREWS SHALL BE ZINC PLATED AND CONFORM TO ASTM F835.

HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM F3125 GRADE A325. HEAVY HEX NUTS SHALL CONFORM TO A563-DH AND HARDENED WASHERS SHALL CONFORM TO F436. HIGH STRENGTH BOLTS, NUTS AND WASHERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

HEADED SHEAR STUDS SHALL CONFORM TO ASTM A108 GRADE 1015, AUTOMATIC END WELDED.

ALL WELDING AND WELD MATERIALS SHALL CONFORM WITH AASHTO/AWS D1.5-2002 BRIDGE WELDING CODE. FLAME (TORCH) CUTTING AND GOUGE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 607.03.08(B).

FINGER PLATES, EMBEDDED PLATES, BARRIER PLATES, COVER PLATES, REDUCER, AND DOWNSPOUT FITTINGS SHALL BE HOT DIP GALVANIZED PER ASTM A123
AFTER FABRICATION. THE FINGER PLATES SHALL BE GALVANIZED SEPERATELY FROM THE EMBEDDED PLATES.

FINGER PLATE EXPANSION JOINTS SHALL BE FULLY SHOP ASSEMBLED FOR SHIPMENT TO THE JOB SITE. THE FABRICATOR SHALL INDICATE ANY SHIPPING AND ERECTING DEVICES TO BE USED INCLUDING LIFT WEIGHTS. THESE DEVICES SHALL BE REMOVED WITHIN TWO HOURS OF CLOSURE CONCRETE POUR. PLUG WELD ANY HOLES AND GRIND ALL ROADWAY SURFACE WELDS FLAT AND SMOOTH.

EXPANSION JOINT WIDTH ADJUSTMENT FOR TEMPERATURE

TEMPERATURE °F	ADJUSTMENT (IN)
0	5.58
10	4.65
20	3.72
30	2.79
40	1.86
50	0.93
60	0
70	-0.93
80	-1.86
90	-2.79
100	-3.72
110	-4.65
120	-5.58

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

PIER 4 FINGER JOINT (1)

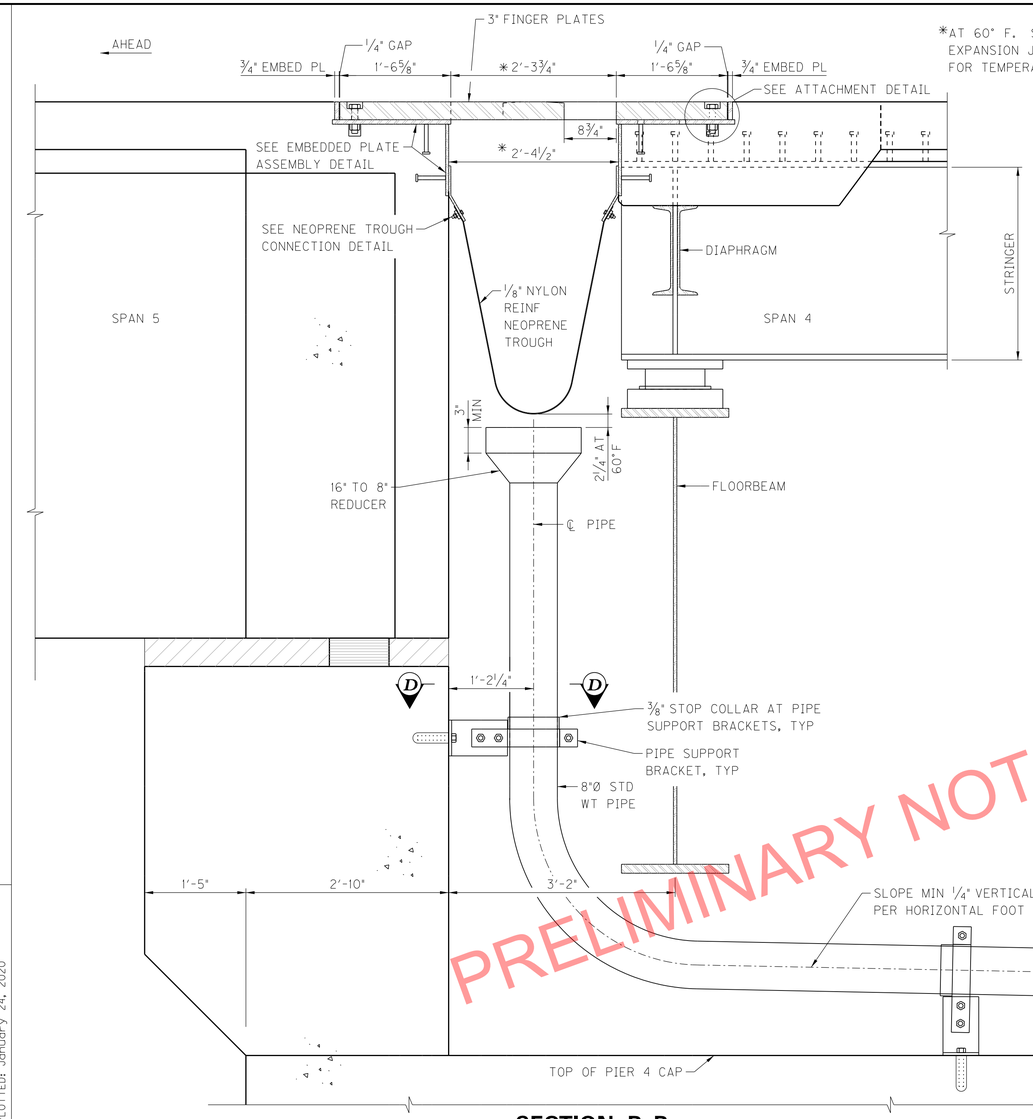
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO. S65

DRAWING NO. 27458

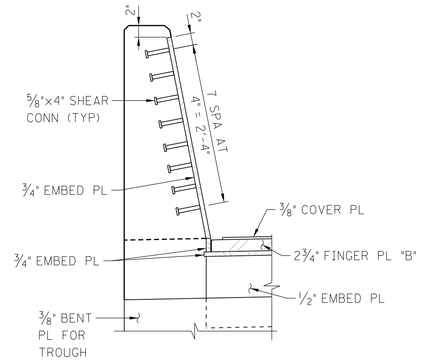
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\85 PIER 4 FINGER JOINTS (1).DGN
USER: dabasham
DATE PLOTTED: January 31, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



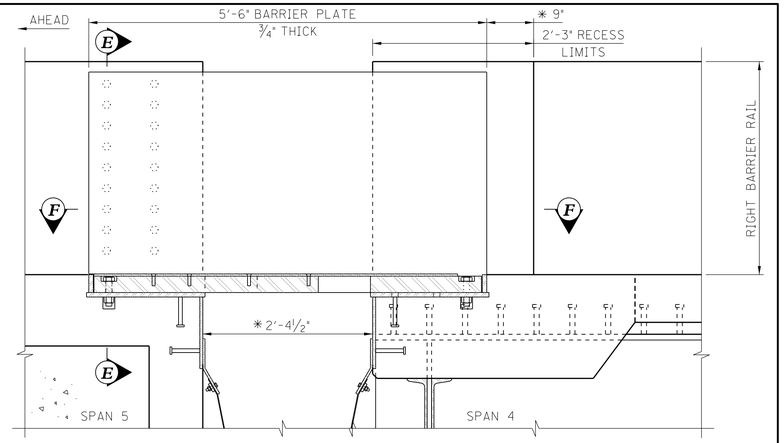
SECTION B–B

(FINGER PLATE "A")

*AT 60° F. SEE TABLE FOR EXPANSION JOINT WIDTH ADJUSTMENT FOR TEMPERATURE, FINGER JOINT (1).

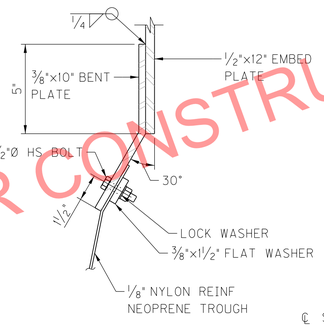


SECTION E–E

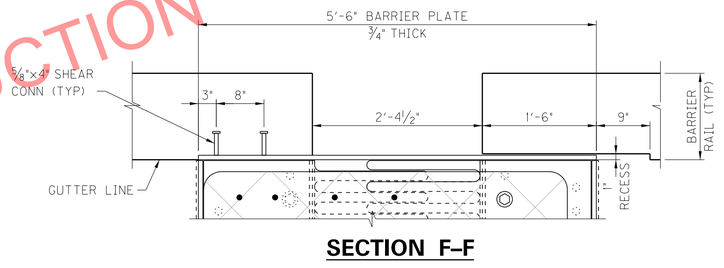


BARRIER PLATE ELEVATION

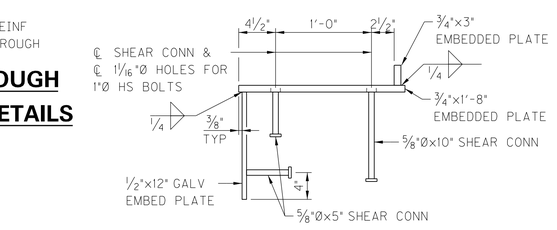
(RIGHT BARRIER SHOWN, LEFT BARRIER SIMILAR)



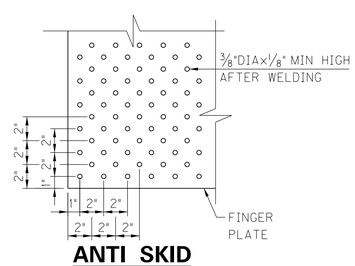
NEOPRENE TROUGH CONNECTION DETAILS



SECTION F–F

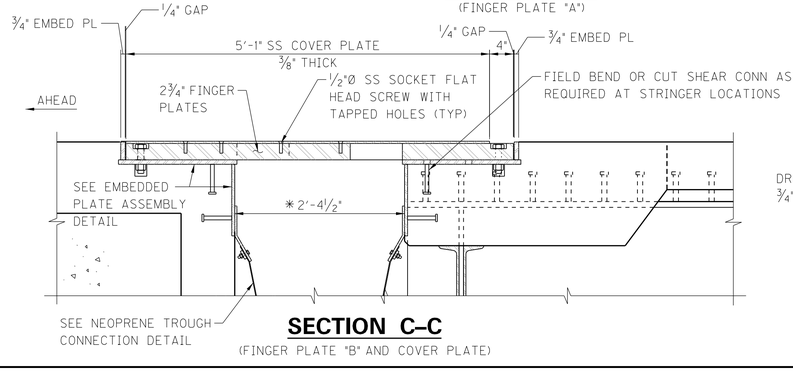


EMBEDDED PLATE ASSEMBLY DETAIL



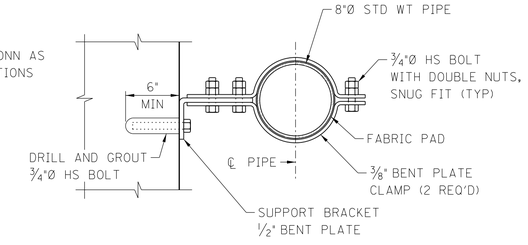
ANTI SKID PATTERN DETAIL

(3" FINGER PLATE "A" ONLY)



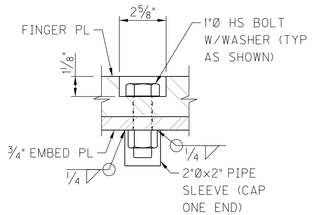
SECTION C–C

(FINGER PLATE "B" AND COVER PLATE)



SECTION D–D

NOTE: STOP COLLAR NOT SHOWN FOR CLARITY



ATTACHMENT DETAIL

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

PIER 4 FINGER JOINT (2)

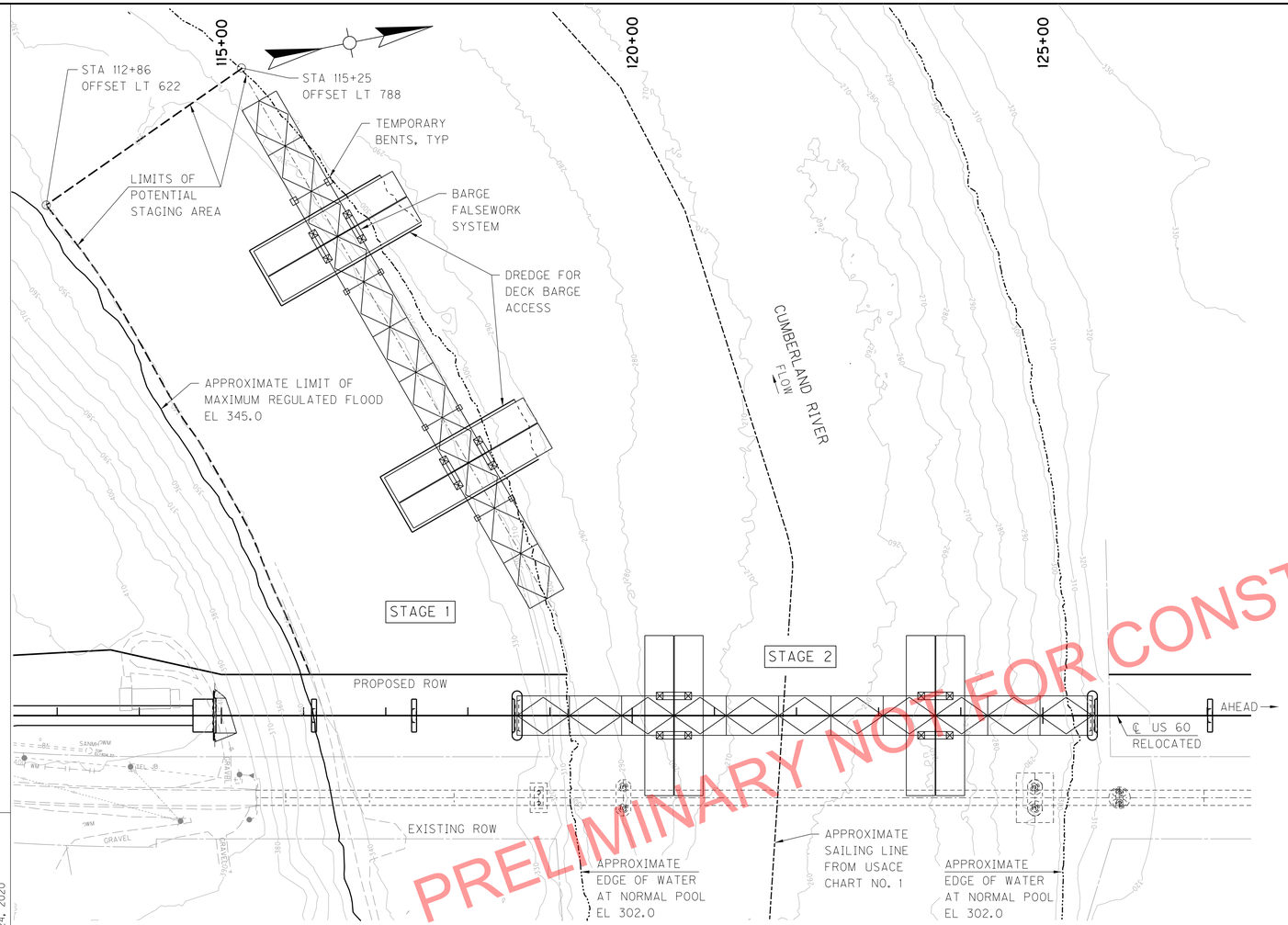
ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

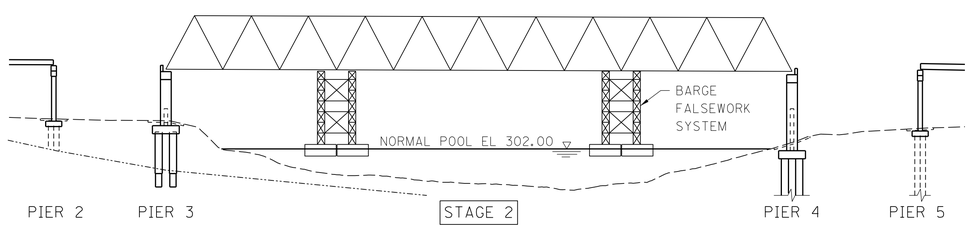
SHEET NO.: S86

DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\86 PIER 4 FINGER JOINTS (2).DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



PLAN – TRUSS ERECTION STAGING



ELEVATION – TRUSS ERECTION STAGING

NOTES:

THIS TRUSS ERECTION SCHEME REPRESENTS ONE FEASIBLE METHOD OF CONSTRUCTING THE TRUSS SPAN. THE DRAWINGS ARE CONCEPTUAL ONLY AND ARE NOT WORKING DRAWINGS. THE MEANS AND METHODS OF ACCESS AND CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SEE SPECIAL NOTE FOR STEEL ERECTION FOR ADDITIONAL REQUIREMENTS. THE STABILITY OF THE STRUCTURE DURING ERECTION AND THE FINAL GEOMETRY OF STRUCTURE IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN AN ERECTION ENGINEER FOR THE PURPOSE OF EVALUATING THE STABILITY, STATE OF STRESS AND GEOMETRY OF THE STRUCTURE DURING AND AFTER ERECTION. SEE SPECIAL NOTE FOR STEEL ERECTION FOR ADDITIONAL REQUIREMENTS.

THE CONSTRUCTION OF FALSEWORK, PILINGS, COFFERDAMS OR OTHER OBSTRUCTIONS, IF REQUIRED, SHALL BE IN ACCORDANCE WITH PLANS SUBMITTED TO AND APPROVED BY THE COMMANDER, EIGHTH COAST GUARD DISTRICT, PRIOR TO CONSTRUCTION OF THE BRIDGE. ALL WORK SHALL BE SO CONDUCTED THAT THE FREE NAVIGATION OF THE WATERWAY IS NOT UNREASONABLY INTERFERED WITH AND THE PRESENT NAVIGABLE DEPTHS ARE NOT IMPAIRED. TIMELY NOTICE OF ANY AND ALL EVENTS THAT MAY AFFECT NAVIGATION SHALL BE GIVEN TO THE DISTRICT COMMANDER DURING CONSTRUCTION OF THE BRIDGE. THE CHANNEL OR CHANNELS THROUGH THE STRUCTURE SHALL BE PROMPTLY CLEARED OF ALL OBSTRUCTIONS PLACED THEREIN, OR CAUSED BY THE CONSTRUCTION OF THE BRIDGE, TO THE SATISFACTION OF THE DISTRICT COMMANDER. ALL REQUIREMENTS OF THE COAST GUARD PERMIT SHALL BE FOLLOWED.

STAGE 1: TRUSS CONSTRUCTION
1. CONSTRUCT TEMPORARY BENT SYSTEM TO SUPPORT TRUSS.
3. DREDGE CELLS WITHIN STAGING AREA FOR BARGE ACCESS.
2. ERECT ENTIRE TRUSS, INCLUDING STRINGERS ON TEMPORARY BENT SYSTEM.
4. ADDITIONAL ELEMENTS MAY BE PLACED AT THE CONTRACTORS DISCRETION; SIP SLAB FORMS, SLAB REINFORCING BARS AND INSPECTION ACCESS STEEL.
5. INSTALL LOWER BARGE FALSEWORK SYSTEM FOR FLOAT IN.

STAGE 2: FLOAT IN
1. INSTALL TRUSS BEARINGS
2. ENGAGE AND INCREMENTALLY RAISE BARGE MOUNTED FALSEWORK SYSTEM TO LIFT TRUSS TO INSTALLATION HEIGHT.
2. DURING THE NAVIGATION OUTAGE WINDOW, ROTATE/FLOAT TRUSS SPAN INTO LOCATION.
4. LOWER TRUSS FROM BARGE FALSEWORK SYSTEM TO TRUSS BEARINGS.

STAGE 3:
1. CONSTRUCT CONCRETE SLAB AND RAILING.
2. FINISH CONSTRUCTION OF APPROACH SPANS.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. PERKINS	T. HUNLEY
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

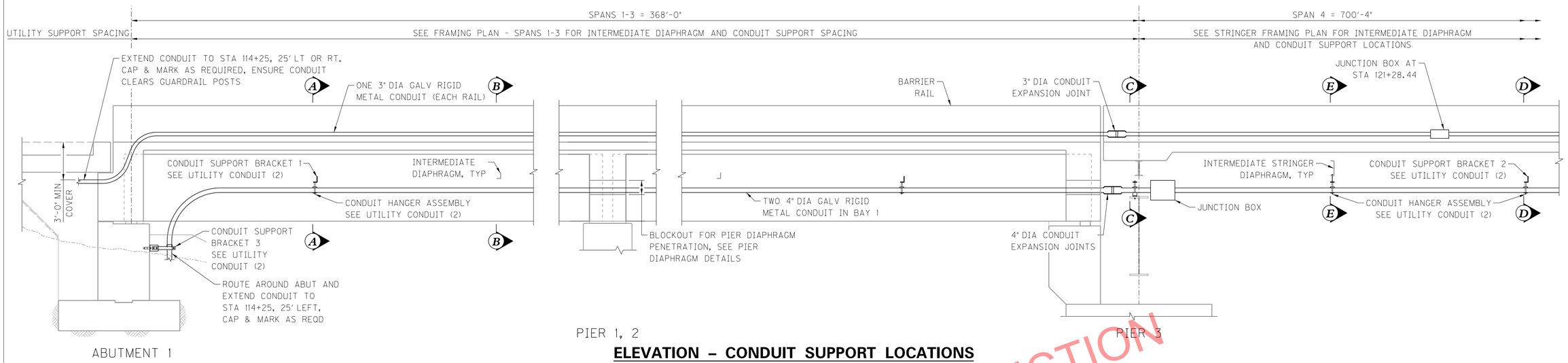
COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

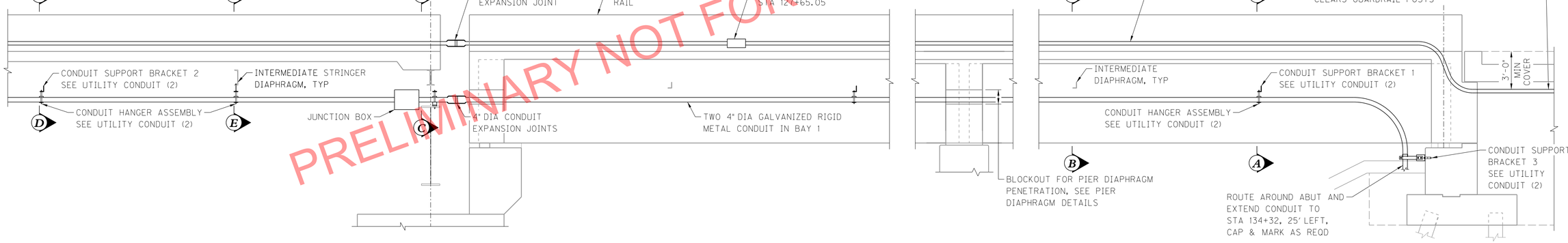
TRUSS ERECTION SCHEME

ITEM NUMBER	PREPARED BY	SHEET NO.	DRAWING NO.
1–1142.00	Stantec	S87	27458

FILE NAME: V:\1785\ACTIVE\178565001\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\87 TRUSS ERECTION SCHEME.DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829



ELEVATION – CONDUIT SUPPORT LOCATIONS



PRELIMINARY NOT FOR CONSTRUCTION

ELEVATION – CONDUIT SUPPORT LOCATIONS

SEE UTILITY CONDUIT (2) FOR CONDUIT NOTES AND DETAILS

ITEM NUMBER
1–1142.00

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: A. FARMER	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

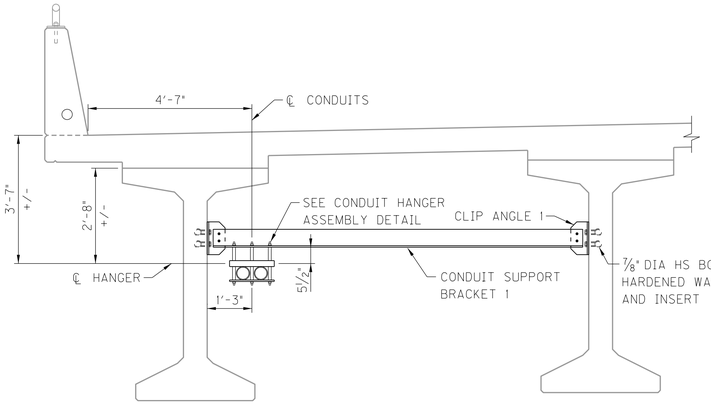
UTILITY CONDUIT (1)

PREPARED BY
Stantec

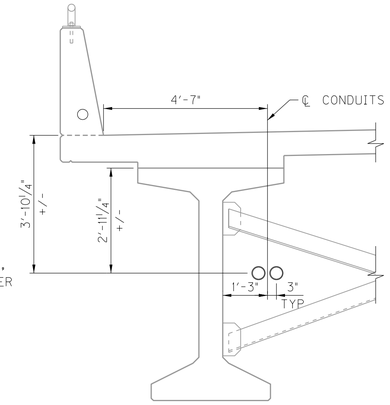
SHEET NO. S88
DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabsham
DATE PLOTTED: 1/24/2020 1:28:44 PM
FILE NAME: 88 UTILITY CONDUIT (1).DGN

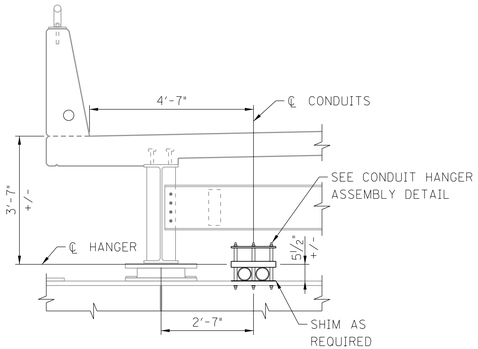
PRELIMINARY NOT FOR CONSTRUCTION



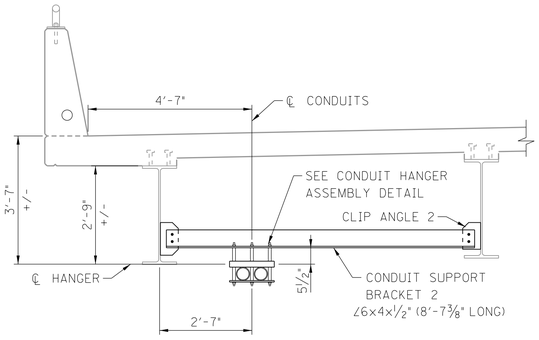
SECTION A–A



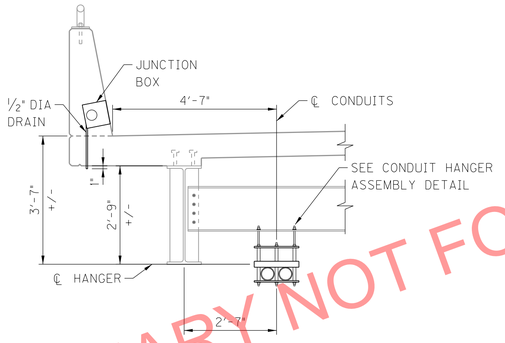
SECTION B–B



SECTION C–C



SECTION D–D



SECTION E–E

3 INCH UTILITY CONDUIT NOTES

1 CONDUIT SHALL BE 3" DIAMETER GALVANIZED RIGID METAL CONDUIT (RMC).

2 JUNCTION BOX DIMENSIONS SHALL BE 12"X8"X8" FLUSH MOUNT WITH WATER TIGHT, OUTSIDE FLANGED, RECESSED COVER PLATE MANUFACTURED BY O-Z/GEDNEY (TYPE YR) OR APPROVED EQUIVALENT. COVER PLATE SHALL HAVE RAISED CAST-ON LETTERS DENOTING THE NAME OF THE UTILITY.

3 EXPANSION FITTINGS SHALL BE WEATHERPROOF WITH INSULATING BUSHING AND BONDING JUMPER , TYPE EX-8, AS MANUFACTURED BY O-Z/GEDNEY, OR APPROVED EQUIVALENT. FITTINGS SHALL ACCOMMODATE THE ANTICIPATED MOVEMENT LISTED ON THIS SHEET.

4 ALL STEEL COMPONENTS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

5 BEFORE ORDERING MATERIAL, CONTRACTOR SHALL ENSURE THAT THE CONDUIT AND FITTING PROVIDED ARE COMPATIBLE WITH THE DETAILS SHOWN IN THESE PLANS. IF ANY CHANGES ARE PROPOSED, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.

6 THE LINEAR FOOT BID FOR "CONDUIT - 3 INCH" SHALL INCLUDE FURNISHING AND INSTALLING ALL 3" RMC, EXPANSION FITTINGS, JUNCTION BOX, AND OTHER MATERIALS, LABOR, AND EQUIPMENT ASSOCIATED WITH THIS BID ITEM IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

4 INCH UTILITY CONDUIT NOTES

1 CONDUIT SHALL BE 4" DIAMETER GALVANIZED RIGID METAL CONDUIT (RMC) WITH THREADED COUPLINGS.

2 EXPANSION FITTINGS SHALL BE WEATHERPROOF WITH INSULATING BUSHING AND BONDING JUMPER, TYPE EX-8, AS MANUFACTURED BY O-Z/GEDNEY, OR APPROVED EQUIVALENT. FITTINGS SHALL ACCOMMODATE THE ANTICIPATED MOVEMENT LISTED BELOW. OUTER SLEEVE SHALL HAVE CORROSION RESISTANT IDENTIFICATION PLATE DENOTING "WINDSTREAM":

3 ALL STEEL PLATES AND ANGLES FOR SUPPORTS SHALL BE PER ASTM A36.

4 ALL BOLTS SHALL BE PER ASTM F3125 GRADE A325. THREADED RODS SHALL BE PER ASTM A307.

5 ALL SUPPORT HARDWARE INCLUDING PLATES, ANGLES, WELDMENTS, AND FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

6 THE CONTRACTOR SHALL ENSURE THAT THE CONDUIT AND ATTACHMENTS PROVIDED ARE COMPATIBLE WITH THE BRIDGE DETAILS SHOWN IN THESE PLANS. THE CONTRACTOR SHALL SUBMIT THE FOLLOWING ITEMS FOR REVIEW AND ACCEPTANCE PRIOR TO INSTALLATION OF THE CONDUIT:
- A. SHOP DRAWINGS FOR ALL CONDUIT SUPPORT FRAMES.
- B. SHOP DRAWINGS FOR THE TWO 4 INCH CONDUIT SHOWING THE LOCATION OF CONDUIT BENDS, SUPPORTS, AND JOINTS, INCLUDING THE MANUFACTURER DETAILS AND SPECIFICATIONS FOR THE VARIOUS COMPONENTS.

7 THE LINEAR FOOT BID FOR "CONDUIT - 4 INCH" SHALL INCLUDE FURNISHING AND INSTALLING ALL 4" RMC, EXPANSION FITTINGS/PULL BOXES, SUPPORTS, AND OTHER MATERIALS, LABOR, AND EQUIPMENT ASSOCIATED WITH THIS BID ITEM IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

3" UTILITY CONDUIT
BILL OF INCIDENTAL MATERIAL

ITEM	UNIT	TOTAL
EXPANSION FITTING (TYPE EX-8)	EA	4
JUNCTION BOX (TYPE YR)	EA	4

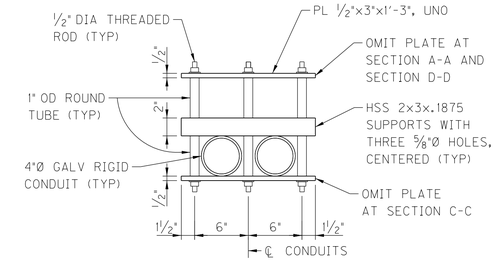
4" UTILITY CONDUIT
BILL OF INCIDENTAL MATERIAL

ITEM	UNIT	TOTAL
STRUCTURAL STEEL ANGLE (L6x4x½) AND ⅞" FASTENERS FOR CONDUIT SUPPORT	LB	13950
STRUCTURAL STEEL PLATE (PL ½"x3x1'-3"), ½" DIA THREADED ROD AND 1" OD ROUND TUBE CONDUIT SUPPORT	LB	1450
PIPE CLAMP W/STOP COLLAR, BENT PLATE, AND FASTENERS	EA	2
HSS 2x3x.1875 SUPPORT	LB	750
EXPANSION FITTING	EA	4
JUNCTION BOX (TYPE EX-8)	EA	2

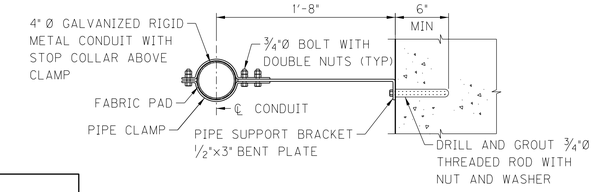
CONDUIT EXPANSION JOINT MOVEMENT

1 PIER 3 JOINT - 1½" EXPANSION/CONTRACTION AT 60°F (2½" TOTAL MOVEMENT). ADJUST INSTALLATION OPENING ¼" FOR EACH 10F OF DEVIATION FROM 60°F.

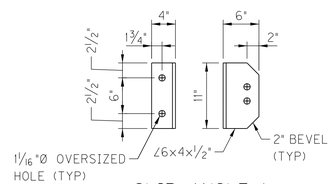
2 PIER 4 JOINT - 9" EXPANSION/CONTRACTION AT 60°F (18" TOTAL MOVEMENT). ADJUST INSTALLATION OPENING BY ⅞" FOR EACH 10°F OF DEVIATION FROM 60°F.



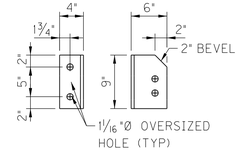
CONDUIT HANGER ASSEMBLY DETAIL



CONDUIT SUPPORT BRACKET 3



CLIP ANGLE 1



CLIP ANGLE 2

CLIP ANGLES

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: A. FARMER	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

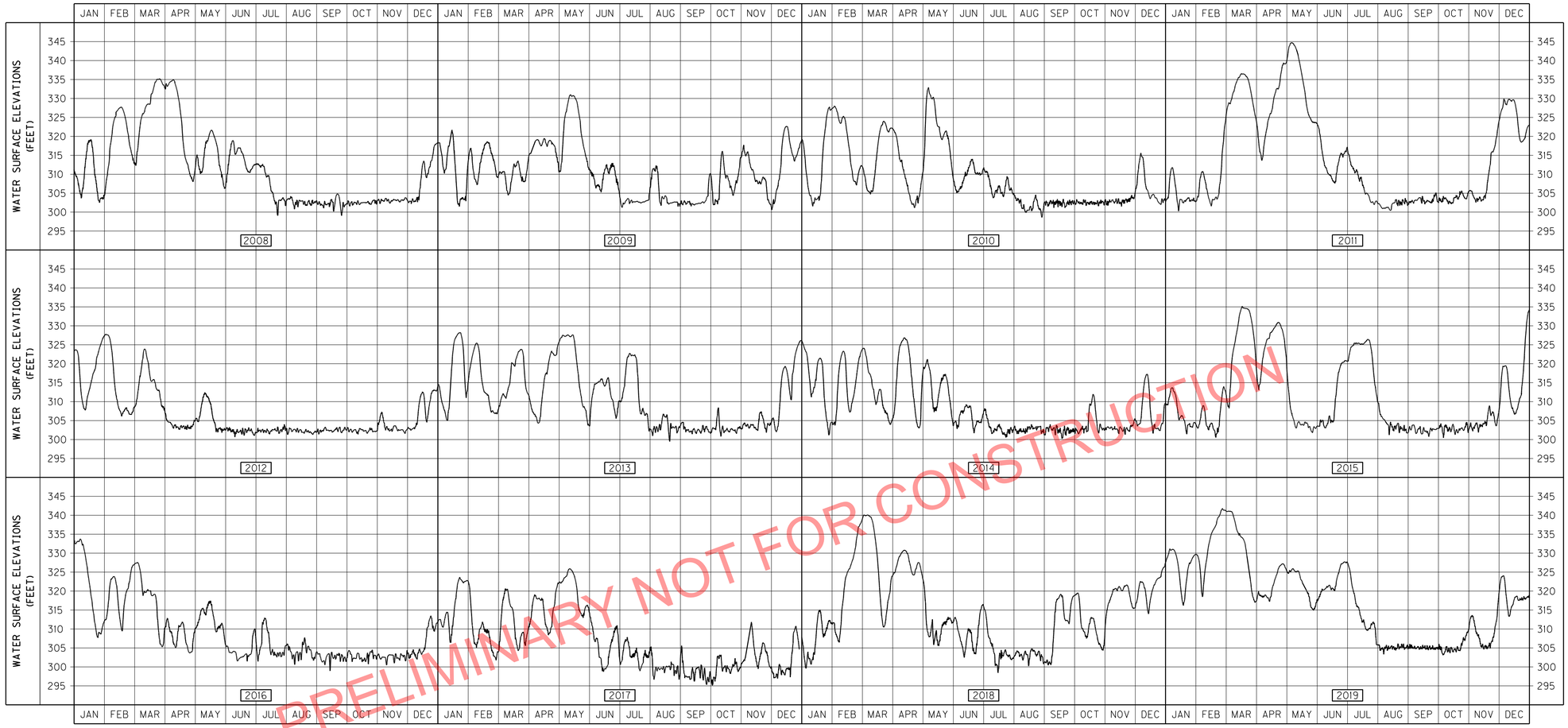
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

UTILITY CONDUIT (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142:00	Stantec	S89
		DRAWING NO. 27458

MICROSTATION V8.11.9.829 | E-SHEET NAME: | USER: DABASHAM DATE PLOTTED: 1/24/2020 7:28:45 PM | FILE NAME: V:\1785\ACTIVE\178565001\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S89 UTILITY CONDUIT (2).DGN



PRELIMINARY NOT FOR CONSTRUCTION

2008 THRU 2019 WATER SURFACE ELEVATIONS

USGS SITE 03399800 (TAILWATER GAGE) OHIO RIVER AT SMITHLAND LOCKS AND DAM, KY

(GAGE LOCATED ADJACENT TO TAILWATER LOCK GUIDE WALL TERMINUS AT MILE 919 OHIO RIVER)

NOTES:

THE WATER SURFACE ELEVATION DATA WAS TAKEN FROM READINGS AT USGS SITE 03399800 OHIO RIVER AT SMITHLAND DAM, SMITHLAND, KY (TAILWATER GAGE). THE RECORD FOR THIS SITE IS MAINTAINED BY THE USGS KENTUCKY WATER SCIENCE CENTER.

ELEVATIONS PRESENTED RELATIVE TO NAVD 88 DATUM.

GAGE SITE DESCRIPTION:
LATITUDE 37°09'30", LONGITUDE 88°25'34" NAD27
POPE COUNTY, ILLINOIS, HYDROLOGIC UNIT 05140203
DATUM (ZERO) OF TAILWATER GAGE: 289.28 FEET (1929 NGVD) OR 289.08 FEET (NAVD 88)

THE BRIDGE LOCATION IS 1.7+/- MILES SOUTHEAST OF THE TAILWATER GAGE SITE AND .5+/- MILES UPSTREAM OF THE JOHN CARROL DAYBEACON ON THE RIGHT BANK OF THE CUMBERLAND RIVER WHERE IT INTERSECTS THE LEFT BANK OF THE OHIO RIVER.

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: D. BASHAM	T. PERKINS
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

WATER SURFACE ELEVATIONS

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

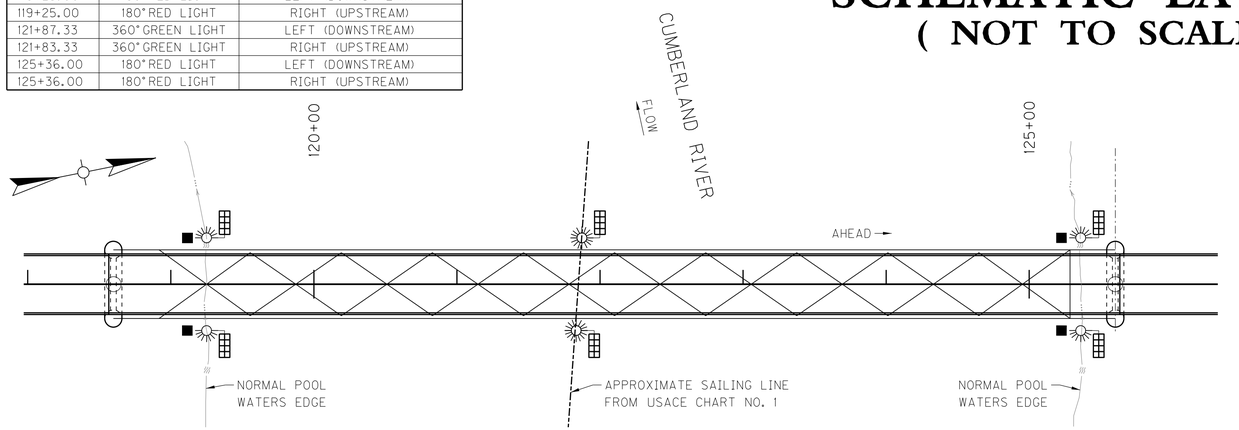
SHEET NO.: S90

DRAWING NO.: 27458

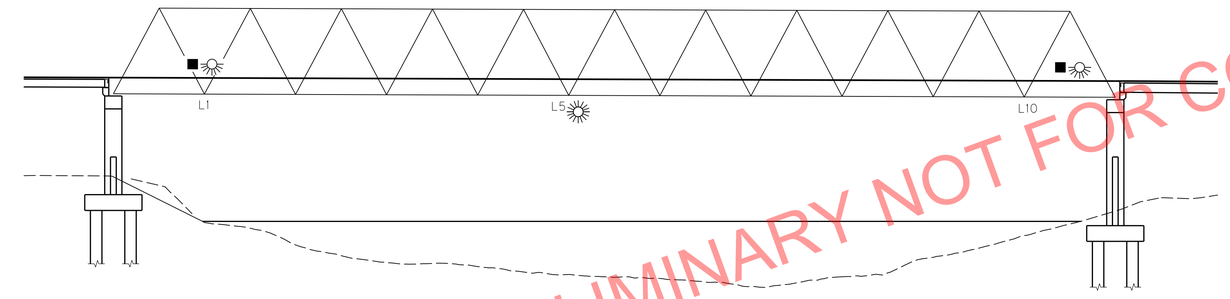
FILE NAME: V:\1785\ACTIVE\17856501\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\90 WATER SURFACE ELEVATIONS.DGN
USER: stevmurphy
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

NAVIGATION LIGHT & MONITORING SYSTEM SCHEMATIC LAYOUT
(NOT TO SCALE)

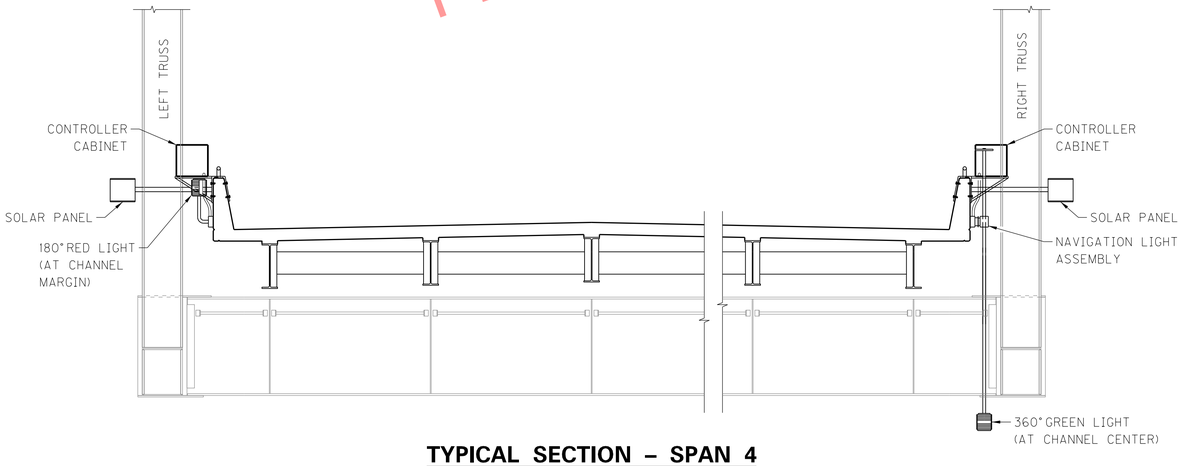
NAVIGATION LIGHTING LOCATIONS		
STATION	TYPE	SIDE OF BRIDGE
119+25.00	180°RED LIGHT	LEFT (DOWNSTREAM)
119+25.00	180°RED LIGHT	RIGHT (UPSTREAM)
121+87.33	360°GREEN LIGHT	LEFT (DOWNSTREAM)
121+83.33	360°GREEN LIGHT	RIGHT (UPSTREAM)
125+36.00	180°RED LIGHT	LEFT (DOWNSTREAM)
125+36.00	180°RED LIGHT	RIGHT (UPSTREAM)



PLAN – SPAN 4



ELEVATION – SPAN 4



TYPICAL SECTION – SPAN 4

LOOKING AHEAD

PRELIMINARY NOT FOR CONSTRUCTION

MISCELLANEOUS NOTES

ALL ATTACHMENTS SHALL BE MADE BY GRADE 316 STAINLESS STEEL DEVICES CLAMPED TO STRUCTURAL MEMBERS OR BOLTED TO BARRIER RAILS. DRILLING AND/OR WELDING STRUCTURAL STEEL BRIDGE MEMBERS SHALL NOT BE ALLOWED.

ALL ATTACHMENTS TO BARRIER RAILS SHALL BE MADE BY DRILLING AND INSTALLING ANCHOR BOLTS WITH AN EPOXY RESIN SYSTEM. ANCHOR BOLTS SHALL BE SIZED PER MANUFACTURERS RECOMMENDATIONS.

ALL CABINETS / ENCLOSURES SHALL BE ALUMINUM.

ALL MOUNTING HARDWARE, BRACKETS, AND PLATFORMS SHALL BE MADE OF GRADE 316 STAINLESS STEEL.

CONDUIT SHALL BE 1-1/4" LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LFMC), SECURED EVERY 4 FEET. ALL LFMC SHALL BE CONSIDERED INCIDENTAL.

ALL NAVIGATION LIGHTING COMPONENTS INCLUDING LIGHT ASSEMBLIES, SOLAR PANELS, WINCHES, AND CONDUIT WILL BE ATTACHED TO THE BARRIER RAILS ON THE UPSTREAM AND DOWNSTREAM SIDES OF THE BRIDGE. GREEN LIGHTS SHALL BE MOUNTED TO HANG JUST BELOW THE LOWEST BRIDGE MEMBER.

THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION, AND OTHER SPECIAL NOTES AND SPECIFICATIONS WILL APPLY ON THIS PROJECT. SEE SECTION 716 FOR MEASUREMENT AND OTHER DETAILS.

THE CONTRACTOR SHALL MAKE AN INSPECTION OF THE PROJECT SITE PRIOR TO SUBMITTING A BID AND SHALL BE THOROUGHLY FAMILIARIZED WITH EXISTING CONDITIONS. SUBMISSIONS OF A BID WILL BE CONSIDERED AN AFFIRMATION OF THIS INSPECTION HAVING BEEN COMPLETED.

ADD SENTENCE TO SECTION 834.09: ALL WIRE SHALL HAVE WORDING ADDED TO THE OUTER JACKET THAT STATES: "PROPERTY OF KENTUCKY TRANSPORTATION CABINET 502 564 0501".

NAVIGATION LIGHTS SHALL NOT BE OUT OF OPERATION BETWEEN DUSK AND DAWN. IF LIGHTS ARE OUT, CONTRACTOR SHALL NOTIFY KYTC AND USCG. LIQUIDATED DAMAGES OF $500 PER DAY SHALL BE ASSESSED IF KYTC AND USCG ARE NOT NOTIFIED OF OUTAGE.

MEASUREMENT NOTES THAT ARE IN ADDITION TO SECTION 716:

SOLAR POWERED NAVIGATION LIGHTING SYSTEM: DEPARTMENT WILL MEASURE THE QUANTITY AS EACH INDIVIDUAL UNIT. THE DEPARTMENT WILL NOT MEASURE FURNISHING AND INSTALLING PLATFORMS, SOLAR ARRAYS, CONTROL EQUIPMENT, BATTERIES, CABINETS, MOUNTING HARDWARE, CONDUIT, WIRING AND ALL OTHER NECESSARY EQUIPMENT TO COMPLETE A FULLY FUNCTIONING SOLAR POWERED NAVIGATION LIGHTING SYSTEM THAT COMPLIES WITH UNITED STATES COAST GUARD AND ALL OTHER REGULATORY REQUIREMENTS.

LIGHTING-NAV MONITORING SYSTEM: DEPARTMENT WILL MEASURE THE QUANTITY AS LUMP SUM UNIT. THE DEPARTMENT WILL NOT MEASURE FURNISHING AND INSTALLING ALL NECESSARY EQUIPMENT INCLUDING HARDWARE AND SOFTWARE, RADIO TRANSMITTERS AND RECEIVERS, MODEMS, CURRENT TRANSFORMERS, CABINETS, WIRING, CONDUIT AND ALL OTHER EQUIPMENT TO COMPLETE A FULLY FUNCTIONING MONITORING SYSTEM FOR THE NAVIGATION LIGHTING.

NAVIGATION LIGHT (360 DEGREE GREEN AND 180 DEGREE RED): THE DEPARTMENT WILL MEASURE THE QUANTITY AS EACH INDIVIDUAL UNIT FURNISHED AND INSTALLED AS SPECIFIED IN THE PLANS. THE FIXTURE SHALL HAVE TWO SEPARATELY CONNECTED LAMPS AS INDICATED IN THE DETAIL SHEETS. ALL REQUIRED EQUIPMENT SUCH AS, BUT NOT LIMITED TO, MOUNTING HARDWARE, STEMS, LATCHES, PULL CHAINS, HOUSINGS, LENSES, LAMPS, SPARE LAMPS, ETC. TO INSTALL THE FIXTURE AS INDICATED IN THE PLANS SHALL BE CONSIDERED INCIDENTAL TO THE NAVIGATION LIGHT.

LEGEND	
	NAVIGATION LIGHT (GREEN) 360 DEGREES
	NAVIGATION LIGHT (RED) 180 DEGREES
■	RED RETRO-REFLECTIVE PANELS
▦	SOLAR PANEL AND CONTROLLER CABINET

SCHEMATIC LAYOUT

ITEM NUMBER
1–1142.00

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. LEWIS	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: **LIVINGSTON**

ROUTE: **US 60** | CROSSING: **CUMBERLAND RIVER**

NAVIGATION LIGHTING (1)

PREPARED BY: Stantec

SHEET NO. S91

DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650\11\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\91 NAVIGATION LIGHTING (1).DGN

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S92 NAVIGATION LIGHTING (2).DGN
USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

NAVIGATION LIGHTING SYSTEM SPECIFICATIONS

General:
This installation shall consist of all components necessary for construction of a complete, 12-volt, solar powered navigation lighting system for the US 60 Bridge over the Cumberland River. The system shall conform to the requirements the US Coast Guard and all other applicable regulatory agencies. This project also includes furnishing and installing a wireless system designed to monitor the status of the US 60 Bridge for all navigation light locations.

System Design:
System shall be designed to utilize solar electric modules with storage batteries as the power sources to provide continuous power for navigation lights at the all the specified locations on each bridge as well as sufficient power to operate the wireless monitoring system (approximately 10 watts per location of each monitoring control panel). The system must be designed for operation at an average monthly insolation on a horizontal surface, insolation at tilt, and average monthly temperatures at each site. The system shall be designed for operation at a 3.6 monthly isolation.

Solar modules and mounting structure:
Solar electric panels shall be triple junction solar cells with an unbreakable construction. Panel shall be polymer encapsulated (glass encapsulation is not acceptable). The cells shall be encapsulated to protect from an environment consistent with this site. Each module shall include a weather tight junction box for connecting the array output cable to the battery terminals. The modules shall be designed to provide rated power output for a minimum of fifteen years.

One separate panel shall be installed for each light. Each panel shall be sized to provide the necessary wattage for the LED lighting fixtures, all control equipment and 10 additional watts at 12 volts D.C. to power the separate monitoring system. There should also be enough solar power for the wireless router stated later in these specifications. Avoid truss shadow as much as possible when locating solar panels and account for truss shadows accordingly when sizing the solar panels.

The solar electric modules shall be designed to be securely attached to the bridge structure. Schematic-only diagrams are shown depicting attachment to the selected portion of the bridge. Mounting brackets and arms shall be fabricated from stainless steel structure materials sufficient to provide necessary stability for the panel arrays. Panel orientation shall be adjustable to facilitate maximum solar input. All mounting hardware for attachment to the bridge shall be stainless steel. Isolators shall be required between all dissimilar metals.

The Contractor shall submit to the Engineer for approval the shop drawings for cabinets, mounting brackets, and other structural items prior to the fabrication of these items.

Solar controls:
Each solar control shall utilize a solid state integrated control unit capable of managing battery charging and navigation light output control. These functions shall be accomplished within a single cabinet with monitoring system in each of the specified locations.

The charge control portion of the control unit shall be designed such that it draws its power from the solar array only when power is available so as to reduce parasitic load on the system. Units shall use an ambient temperature sensor to adjust the charge termination point (temperature compensated charging) to prolong the battery life. The charge circuit shall employ a pulse-width modulation algorithm for charging the batteries and shall be of solid state series switch type configuration.

On-board, short-circuit protection shall be provided. The controls shall have the ability to detect day and night through a photovoltaic array (dusk till dawn activator). The load control function shall incorporate a low voltage disconnect circuit to disconnect power to the control circuit if the battery voltage falls to a low state of charge (typically 20%). We recommend to use Morningstar Sunsaver SS-20L or approved equal.

System Enclosure:
The enclosure shall be fabricated from aluminum with a minimum thickness of 0.125" and be NEMA 3R rated. The cabinet shall provide screened louvered vents on each side of each compartment. The louver screening shall be aluminum for longevity. An integral rain lip shall also be provided at the top of the main cabinet body to minimize entry of rain. The maintenance entrance shall be hinged and double- locking. The entrance shall be lined with a neoprene gasket around the entire edge. The entrance shall be secured with a Corbin #2 lock. The keyhole for this lock shall have a cover attached to the door with a single rivet. The battery component shall provide a minimum of (1/2") of insulating sheeting around the battery to minimize heat transfer between the battery and the enclosure wall. The cabinet shall be of sufficient size to house the battery and all control components (including monitoring system) and allow sufficient room for routine maintenance. Maximum size: 22" high X 24" wide X 24" deep. All conduit attachments to this cabinet shall be made in the base or side of the cabinet to minimize moisture penetration. Isolators shall be required between all dissimilar metals.

Batteries:
Batteries shall be Absorbed Glass Mat maintenance-free and be non-spillable. Batteries shall be deep cycle marine batteries and shall be 12 volt, maximum 90 amp hour. Batteries shall be warrantied for 5 years.

System Wiring:
The system shall feature a color coded wiring harness for both the lamps and solar array output. A keyed locking connector shall be utilized in the harness to allow the lamps to be quickly and easily disconnected from the control electronics. An integral fuse assembly shall be included in the load positive wire of the harness. All connections shall be terminated with crimped spade terminals.

The output harness for the solar array shall consist of a jacketed pair of conductors. Jackets shall be of UV resistant PVC or XLT material. Marine terminals shall be utilized for installation and maintenance. All wiring shall be encased in liquid-tight flexible metallic conduit. All conductors shall be sized in accordance with National Electrical Code, be appropriate to the solar array output current, and shall be Type THHN or THWN.

Conduit:
All conduit shall be minimum 1-1/4" liquid-tight flexible metallic conduit (LFMC). Where conduit crosses an expansion or open joint, LFMC with a conduit on each end shall be used to compensate for movement in any direction between the two conduit ends which it connects. Conduits shall be affixed to the bridge members by using stainless steel straps with stainless steel nuts, bolts and locking washers. Isolators shall be required between all dissimilar metals.

WIRELESS MONITORING SYSTEM SPECIFICATIONS

Monitoring systems:
The contractor shall provide a K&T Crosstalk Communication System or an approved equal. The system shall be installed to monitor the status of the individual navigation lighting units. The purpose of the monitoring system is to provide a complete, programmable, intelligent, networkable and expandable low voltage monitoring system for the navigational lighting as described herein and as shown on the schematic drawings and schedules.

The contractor shall furnish and install a complete, microprocessor based, addressable, networkable distributed intelligent low voltage lighting communication system for centralized monitoring. System shall include but not be limited to: relays, controllers, light level sensors, radio frequency transceivers, low voltage control power and data line wiring, software, programming, custom graphical screens and miscellaneous components as required for a complete, operable navigational monitoring system. All system components shall arrive at the job site completely factory pre-wired and ready for field installation. All connections shall be clearly and permanently labeled to facilitate correct and easy identification and installation of equipment.

Each monitoring system shall be wireless and will be powered by the 12 volt feed inside the navigation control cabinet. The monitoring system shall be capable of sensing current flow, voltage, and fault conditions for the navigation lighting units. The central processing unit cabinet shall have the necessary communications equipment to relay information to the District 1 office by wireless modem compatible with the Verizon network.

Contractor shall furnish and install wireless router, antenna, antenna cabling, power supply, data cables, all connectors, and hardware required for communication. The wireless router shall be installed in one of the solar control cabinets. The wireless router shall be Sierra Wireless AirLink GX450 with ethernet add-on and shall support Verizon 3G/4G/LTE services for the camera installation. The antenna should be Laird Lp-800-2500-9NF sku393969 and include a DH wireless solutions AP-CCG-0-S222-BL for GPS locating.

The Contractor shall deliver the wireless router (GX450) to Central Office Traffic Operations for provisioning on the KYTC APN. The cabinet will provision the router within 4 weeks of receipt and return via mail to the contractor. The cabinet will pay the monthly data plan charges. All system components shall arrive at the job site completely factory pre-wired and ready for field installation. All connections shall be clearly and permanently labeled to facilitate correct and easy termination of equipment. The routers and antennas will be incidental to the monitoring system bid item. The cabinet will allow temporary access to the router until the close of the contract for configuring of the monitoring system.

The monitoring system shall have a two year warranty on all parts and materials. The warranty shall start on the date of the acceptance of the installation by the Kentucky Transportation Cabinet.

Wireless monitoring shall be possible from up to 1/2 mile line of sight distance to or from the closest transceiver in an urban environment or with wireless repeaters. Fully programmable circuit diagnostic capability and alarming via Personal Computer (PC) shall be possible for all fixtures.

Radio network shall operate within an unlicensed FCC band, utilizing spread spectrum and frequency hopping technology. Radio network shall be transparent across Ethernet (LAN) platform.

All of the data accumulation transferred over the wireless RF network shall be automatically error checked. Systems that do not provide send/acknowledge error checking are not acceptable.

Password protected access via the modem shall be possible for interoperable connection from an off-site based PC for factory programming and support and owner access. System communications shall include the modem and bridge to the monitoring system. Factory programming and troubleshooting assistance shall be available via the wireless modem. The system shall be capable of accepting any number of commands or command sequences allowing programs to run continuously.

The monitoring system shall be able to email alerts for each node values and no cell modem connection for a minimum of 1 minute increments. The emails shall be assigned to a minimum of 30 emails. The Alerts shall be label for each node including minimum thresholds, maximum thresholds, actual current reading, and location of system. The monitoring system shall include web based (internet browser) control. The web based control application shall reside within the owner's secure server network and provide the capability to reset the alert/notification system (via the internet) to a user-defined default condition. This web based control application shall not have any recurring maintenance costs by the cabinet.

The enclosure shall be fabricated from aluminum with a minimum thickness of 0.125" and be NEMA 3R rated. The cabinet shall provide screened louvered vents on each side of each compartment. The louver screening shall be aluminum for longevity. An integral rain lip shall also be provided at the top of the main cabinet body to minimize entry of rain. The maintenance entrance shall be hinged and double- locking. The entrance shall be lined with a neoprene gasket around the entire edge. The entrance shall be secured with a Corbin #2 lock. The keyhole for this lock shall have a cover attached to the door with a single rivet. The battery component shall provide a minimum of (1/2") of insulating sheeting around the battery to minimize heat transfer between the battery and the enclosure wall. The cabinet shall be of sufficient size to house the battery and all control components(including monitoring system) and allow sufficient room for routine maintenance. Maximum size: 22" high X 24" wide X 24" deep. All conduit attachments to this cabinet shall be made in the base or side of the cabinet to minimize moisture penetration. Isolators shall be required between all dissimilar metals.

Central control unit shall support up to 64,000 controllers networked on wireless systems.

Programmed data being stored in static RAM shall be protected from loss during power failure. The CPU based real time clock shall be protected by a rechargeable NiCad or lithium battery capable of withstanding up to a 30-day power loss.

Programmable Wireless RF Linking:
Provide wireless linking expandability with a wireless card slot in communication hub. Wireless link shall provide full function zone control and data accumulation, diagnostics, including current sensing and voltage sensing.

Wireless communications shall be bidirectional. RF transceiver shall operate in an unlicensed FCC ISM band, FCC/IC certified. RF range shall be a minimum½mile line of sight. Maximum distances of up to 20 miles are subject to urban environmental conditions and obstructions. Surge Protection shall be a minimum 2500 Volts to ground. Equipment shall operate at a voltage of 12 VDC. Equipment shall be capable of operating at temperatures ranging from -40°C to 65°C, @ 95% relative humidity and at a relative humidity ranging from 0-95%, non-condensing.

Provide Redundant RF link where specified, one for each transceiver used.

Custom Graphical Screens:
Provide custom graphical site screens using cad drawings of the site provided by the Kentucky Transportation Cabinet to serve as backgrounds for the site zoom screens. Provide a custom graphical screen for each monitoring system. From there the user shall be able to access each fixture individually, view fixture status, diagnostic files, and data logs.

Data accumulation and archive: The lighting monitor system software shall allow all types of data from the system to be logged and archived. Data shall be accessible via spreadsheet or database, and contain the following:

Navigation Lighting
- Voltage levels for each voltage sensor.
- Current drawn per fixture.
- True and Real Power
- Time and date stamping as required by user.

Factory Service, Support and Start-up:
The manufacturer shall provide factory assembly and testing of all monitor stations and associated apparatus. Monitor modules shall be factory programmed per project specifications. All required software shall be installed prior to factory shipment or uploaded from the factory via modem link.

An on site factory start-up by a qualified technician shall be provided as a part of the system package. Start-up will not be performed until the system installation is complete and a wireless modem has been installed for the system. Start-up shall include a system inspection, additional software installation if necessary; program testing, training and troubleshooting assistance. Support via modem from factory for direct system diagnosis and programming assistance shall be provided at no charge until such time as final acceptance of the complete system has been granted. The manufacturer shall provide a complete submittal package for approval prior to shipment. The package shall consist of product cut sheets and specifications, a bill of materials, warranty information, wire riser diagrams, and field wiring instructions. In addition to the submittals, a set of installation, operator, and maintenance manuals shall be shipped with the equipment.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. LEWIS	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

NAVIGATION LIGHTING (2)

LIGHTING & MONITORING SPECIFICATIONS

ITEM NUMBER
1-1142.00

PREPARED BY
Stantec

SHEET NO.
S92

DRAWING NO.
27458

TYPICAL DUAL LAMP NAVIGATION LIGHT FIXTURES

NAVIGATION FIXTURES

1) Navigation Lights shall meet all requirements of the United States Coast Guard and other regulatory agencies.

2) Dual lamp housing, mounting, and swivels shall be cast silicon bronze. Stems and pull chains shall be stainless steel. All connections shall be sealed with waterproof gaskets and the assembly shall be rain tight.

3) Lens shall be of permanent, rigid, heat resistant glass, 8" nominal outside diameter, standard marine fresnel type 180° red or 360° green as specified.

4) Lighting source shall be 12 volt LED. There shall only be one LED on at a time and shall automatically switch when one goes out. The LED'S shall utilize ALINGaP (aluminum indium gallium phosphorus) technology for red and INGaN (Indium gallium nitride) for green indications, and shall be rated for 100,000 hours of continuous operation over a temperature range of -40° C to + 74° C. The LED modules shall be rated for a minimum life of 60 months and shall meet all parameters of this specification throughout the 60 month period. Two spare lamps shall be provided for each fixture.

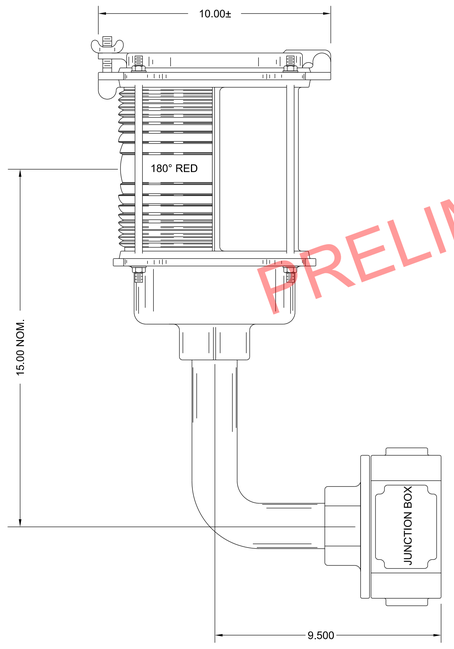
5) Pivoting fixtures shall be suspended from the swivel on a stem made of 1½" (i.d.) shedule 40 stainless steel pipe of required length to meet USCG requirements as noted in the plans. Stems over 5 feet long shall require a 60% counterweight.

6) Swivel and pipe stem shall provide for all wiring to be completely contained inside the light assembly. Gaskets and O-rings shall be used to provide a weather tight assembly. The swivel shall be of cast silicon bronze and spindle shall be of stainless steel.

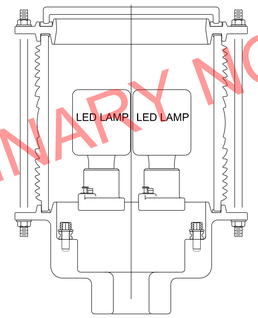
7) An automatic latch shall hold the light securely in normal operating and service positions. A firm pull on the stainless steel pull chain shall automatically release the latch, allowing the fixture to pivot. As the light is raised, latch shall automatically engage to hold light in service position. Service position shall be at most one foot from the bridge barrier rail. The service position shall be at least one foot above the bridge barrier rail. Fixture shall be designed so that light may be pulled from either side.

8) Assembly mounting shall be accomplished by using ½" diameter stainless steel bolts, nuts, and locking washers.

9) All attachments to bridge steel members shall be separated from direct contact with steel members by a minimum ⅛" neoprene or mylar gasketing material to prevent corrosion caused by contact between dissimilar metals. This includes navigation fixtures, control cabinets, and all mounting brackets.



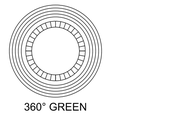
180° RED LIGHT



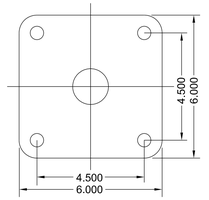
FIXTURE SECTION
RED LIGHT



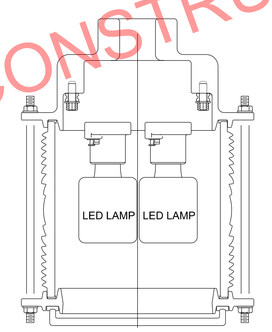
LENS
PATTERN



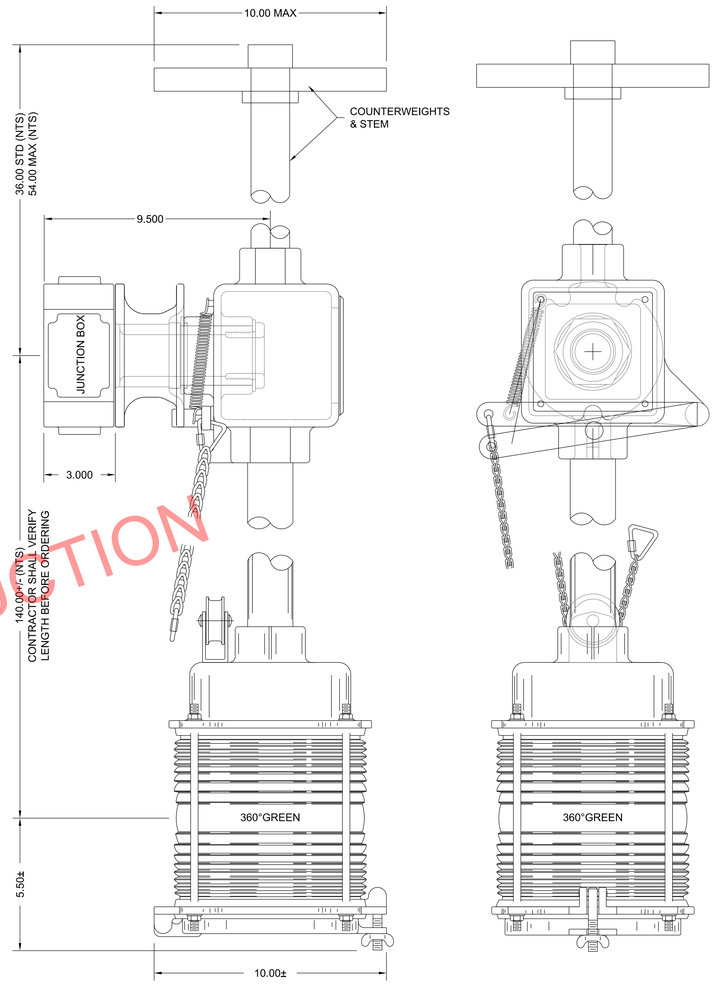
LENS
PATTERN



MTG DIM



FIXTURE SECTION
GREEN LIGHT



360° GREEN LIGHT

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

STEM FOR GREEN NAVIGATION LIGHT SHALL BE THE LENGTH NECESSARY FOR THE NAVIGATION LIGHT TO HANG BELOW THE LOWEST BRIDGE MEMBER IN THE NAVIGATION SPAN SO AS TO BE VISIBLE FROM AN APPROACHING VESSEL.

DIMENSIONS ARE SHOWN IN INCHES.

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. LEWIS	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

NAVIGATION LIGHTING (3)

NAVIGATION FIXTURE DETAILS

ITEM NUMBER: 1–1142.00

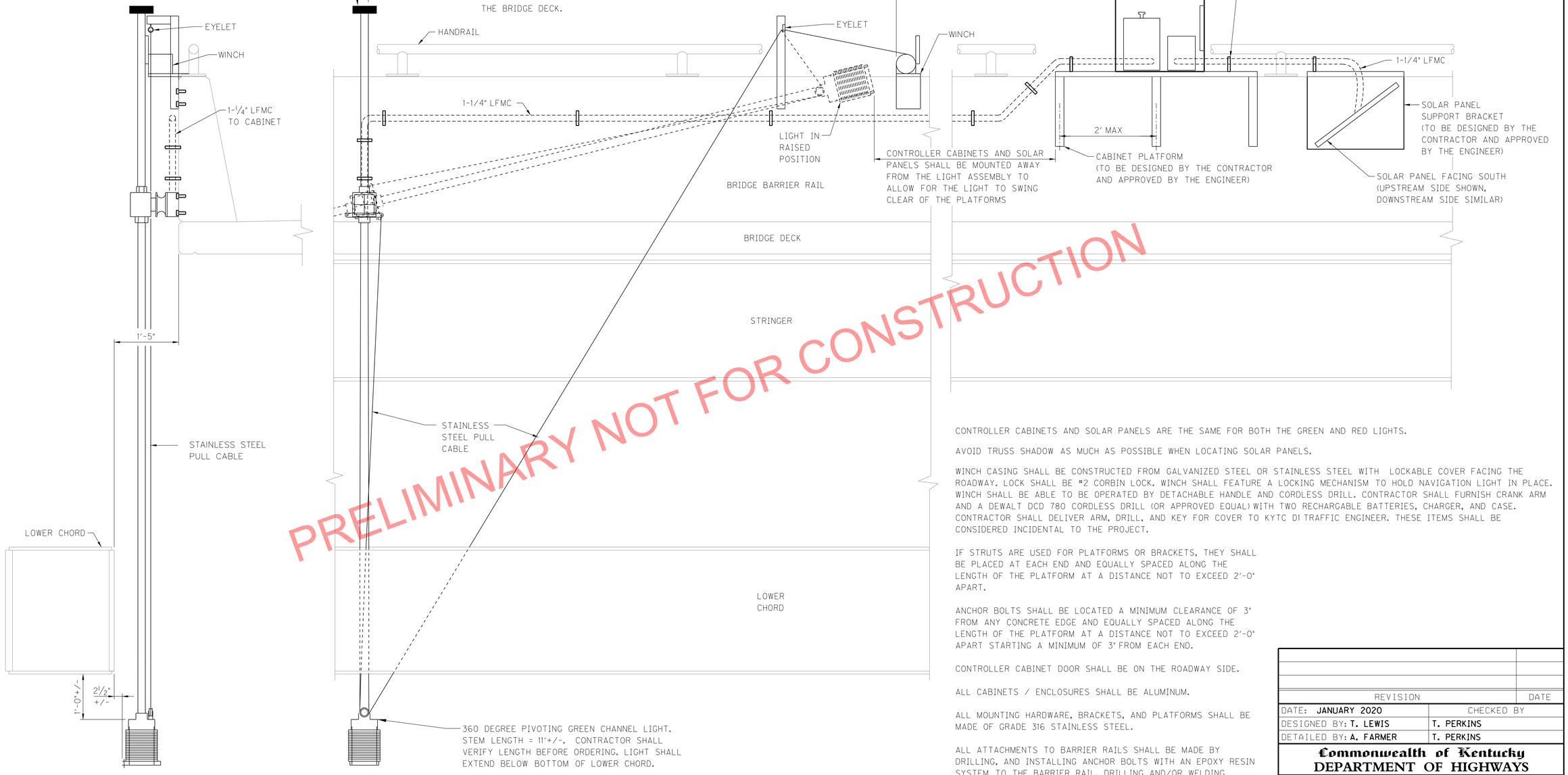
PREPARED BY: Stantec

SHEET NO.: S93

DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\178565011\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\93 NAVIGATION LIGHTING (3).DGN
USER: dabsham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650H\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S94 NAVIGATION LIGHTING (4).DGN



SECTION VIEW **PROFILE VIEW**

PIVOTING CHANNEL LIGHT 360° GREEN

PRELIMINARY NOT FOR CONSTRUCTION

CONTROLLER CABINETS AND SOLAR PANELS ARE THE SAME FOR BOTH THE GREEN AND RED LIGHTS.

AVOID TRUSS SHADOW AS MUCH AS POSSIBLE WHEN LOCATING SOLAR PANELS.

WINCH CASING SHALL BE CONSTRUCTED FROM GALVANIZED STEEL OR STAINLESS STEEL WITH LOCKABLE COVER FACING THE ROADWAY. LOCK SHALL BE #2 CORBIN LOCK. WINCH SHALL FEATURE A LOCKING MECHANISM TO HOLD NAVIGATION LIGHT IN PLACE. WINCH SHALL BE ABLE TO BE OPERATED BY DETACHABLE HANDLE AND CORDLESS DRILL. CONTRACTOR SHALL FURNISH CRANK ARM AND A DEWALT DCD 780 CORDLESS DRILL (OR APPROVED EQUAL) WITH TWO RECHARGABLE BATTERIES, CHARGER, AND CASE. CONTRACTOR SHALL DELIVER ARM, DRILL, AND KEY FOR COVER TO KYTC D1 TRAFFIC ENGINEER. THESE ITEMS SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

IF STRUTS ARE USED FOR PLATFORMS OR BRACKETS, THEY SHALL BE PLACED AT EACH END AND EQUALLY SPACED ALONG THE LENGTH OF THE PLATFORM AT A DISTANCE NOT TO EXCEED 2'-0" APART.

ANCHOR BOLTS SHALL BE LOCATED A MINIMUM CLEARANCE OF 3" FROM ANY CONCRETE EDGE AND EQUALLY SPACED ALONG THE LENGTH OF THE PLATFORM AT A DISTANCE NOT TO EXCEED 2'-0" APART STARTING A MINIMUM OF 3" FROM EACH END.

CONTROLLER CABINET DOOR SHALL BE ON THE ROADWAY SIDE.

ALL CABINETS / ENCLOSURES SHALL BE ALUMINUM.

ALL MOUNTING HARDWARE, BRACKETS, AND PLATFORMS SHALL BE MADE OF GRADE 316 STAINLESS STEEL.

ALL ATTACHMENTS TO BARRIER RAILS SHALL BE MADE BY DRILLING, AND INSTALLING ANCHOR BOLTS WITH AN EPOXY RESIN SYSTEM TO THE BARRIER RAIL. DRILLING AND/OR WELDING STRUCTURAL BRIDGE MEMBERS SHALL NOT BE ALLOWED.

CONDUIT SHALL BE 1-1/4" LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LFMC) SECURED EVERY 4 FEET. ALL LFMC SHALL BE CONSIDERED INCIDENTAL.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. LEWIS	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

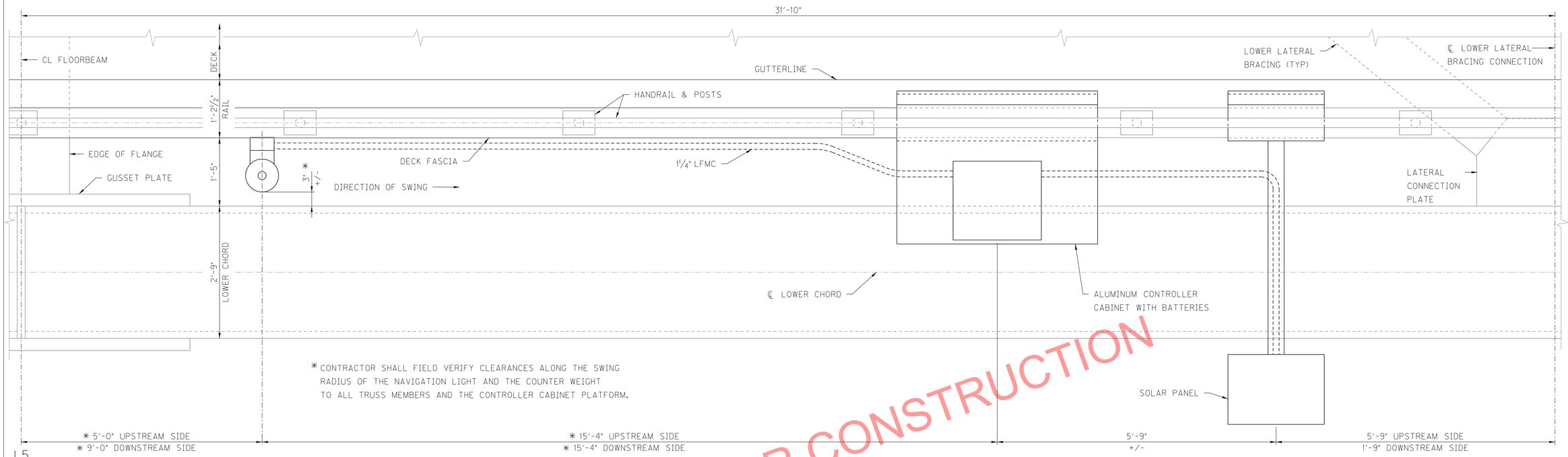
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

NAVIGATION LIGHTING (4)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S94
		DRAWING NO. 27458

GREEN CHANNEL LIGHT MOUNTING (1)

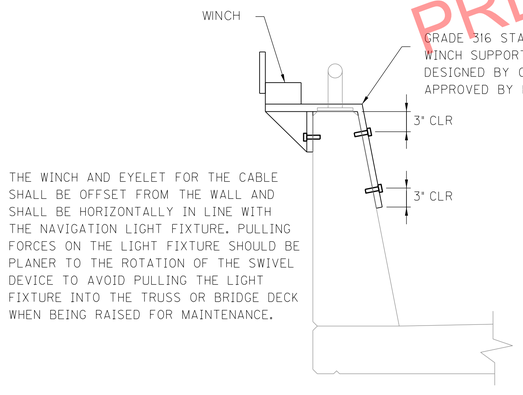


UPSTREAM (RIGHT) SIDE PLAN VIEW

(SHOWING CHANNEL LIGHT MOUNTING LOCATION)
(DIAGONAL MEMBERS AND WINCH LOCATION NOT SHOWN FOR CLARITY)

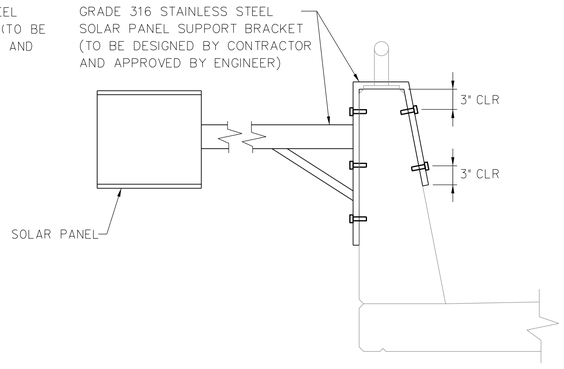
SEE NAVIGATION LIGHT LOCATION TABLE ON NAVIGATION LIGHTING (1) SHEET

PRELIMINARY NOT FOR CONSTRUCTION

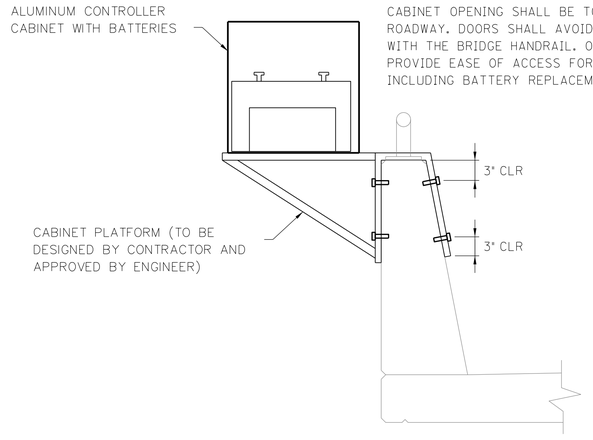


THE WINCH AND EYELET FOR THE CABLE SHALL BE OFFSET FROM THE WALL AND SHALL BE HORIZONTALLY IN LINE WITH THE NAVIGATION LIGHT FIXTURE. PULLING FORCES ON THE LIGHT FIXTURE SHOULD BE PLANER TO THE ROTATION OF THE SWIVEL DEVICE TO AVOID PULLING THE LIGHT FIXTURE INTO THE TRUSS OR BRIDGE DECK WHEN BEING RAISED FOR MAINTENANCE.

WINCH SECTION VIEW



SOLAR PANEL SECTION VIEW



CONTROLLER CABINET SECTION VIEW

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. LEWIS	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

NAVIGATION LIGHTING (5)

GREEN CHANNEL LIGHT MOUNTING (2)

ITEM NUMBER: 1–1142.00

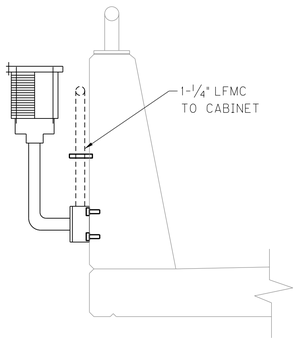
PREPARED BY: Stantec

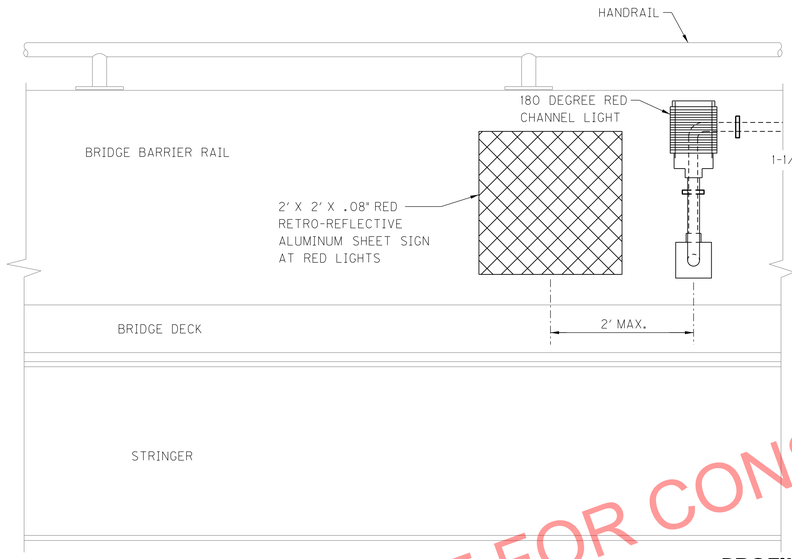
SHEET NO.: S95

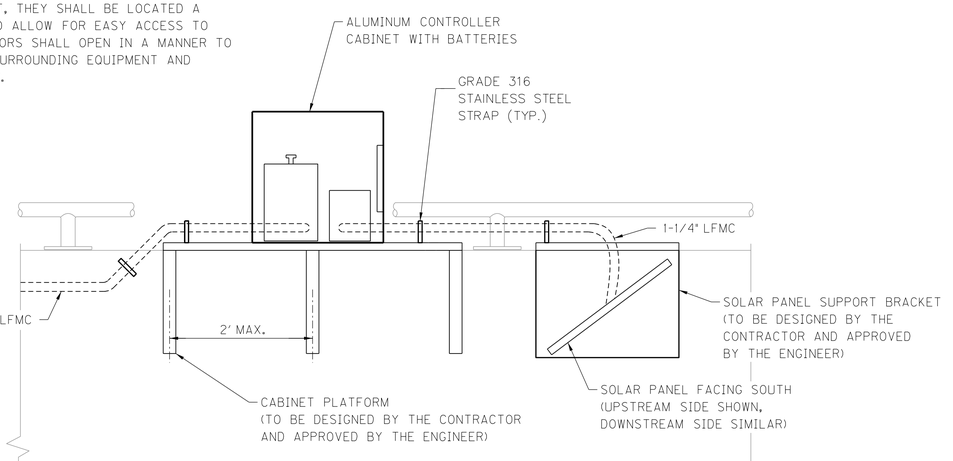
DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\95 NAVIGATION LIGHTING (5).DGN

IF SEPARATE ENCLOSURES ARE USED FOR BATTERIES AND CONTROLLER CABINET, THEY SHALL BE LOCATED A MINIMUM OF 10' APART TO ALLOW FOR EASY ACCESS TO LOCKING MECHANISMS. DOORS SHALL OPEN IN A MANNER TO AVOID CONFLICTS WITH SURROUNDING EQUIPMENT AND EXISTING BRIDGE RAILING.







SECTION VIEW

PROFILE VIEW

PRELIMINARY NOT FOR CONSTRUCTION

180° RED CHANNEL LIGHT

SEE NAVIGATION LIGHTING (4) AND (5) SHEETS FOR ADDITIONAL NOTES AND DETAILS

SEE NAVIGATION LIGHT LOCATION TABLE ON NAVIGATION LIGHTING (1) SHEET

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: T. LEWIS	T. PERKINS
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

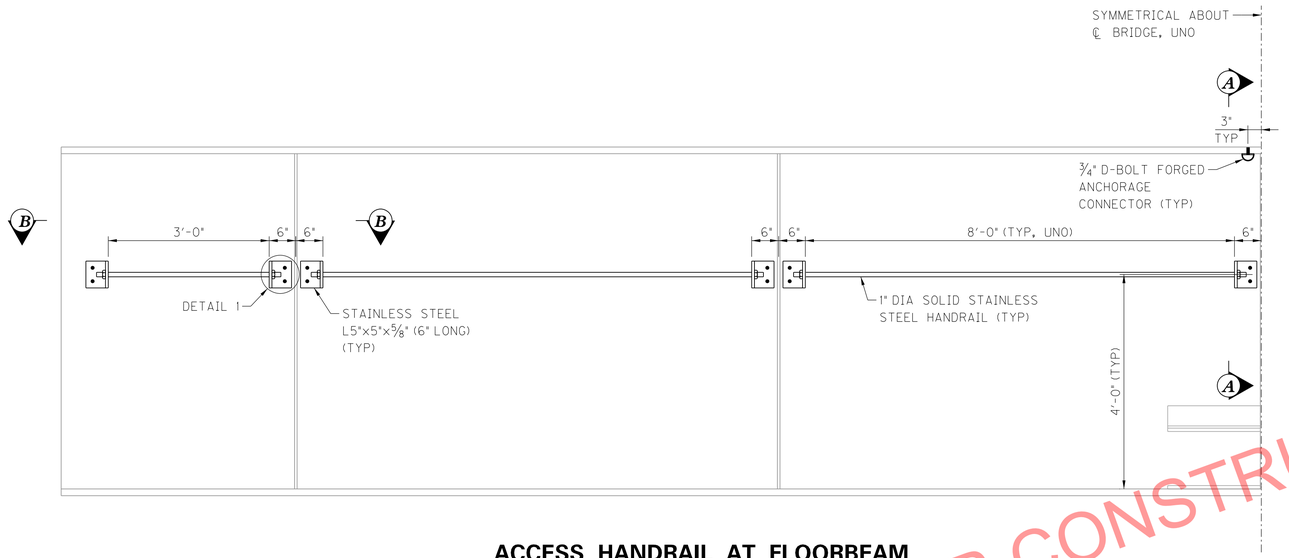
ROUTE	CROSSING
US 60	CUMBERLAND RIVER

NAVIGATION LIGHTING (6)

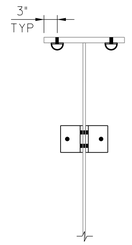
ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S96
		DRAWING NO. 27458

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USER: dabasham
DATE PLOTTED: January 24, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

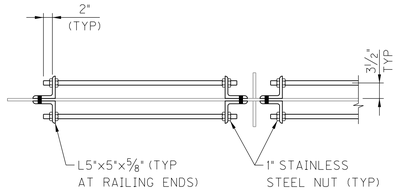
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USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\97 INSPECTION ACCESS DETAILS (1).DGN



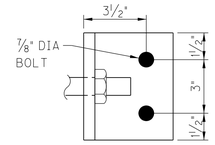
ACCESS HANDRAIL AT FLOORBEAM



SECTION A–A



SECTION B–B



DETAIL 1

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. FLOORBEAM HANDRAIL AND ATTACHMENT ANGLE SHALL BE STAINLESS STEEL CONFORMING TO ASTM A240 AND FLOORBEAM HANDRAIL SHALL HAVE A MINIMUM YIELD STRESS OF 60 KSI.
2. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL BE ⅞" DIA. F3125 GRADE A325 BOLTS WITH 15/16" DIA. HOLES.
3. ALL D-BOLT FORGED ANCHORAGE CONNECTORS SHALL BE CAPABLE OF SUPPORTING A 5000 POUND FALL ARREST LOAD APPLIED IN ANY DIRECTION AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: A. FARMER	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

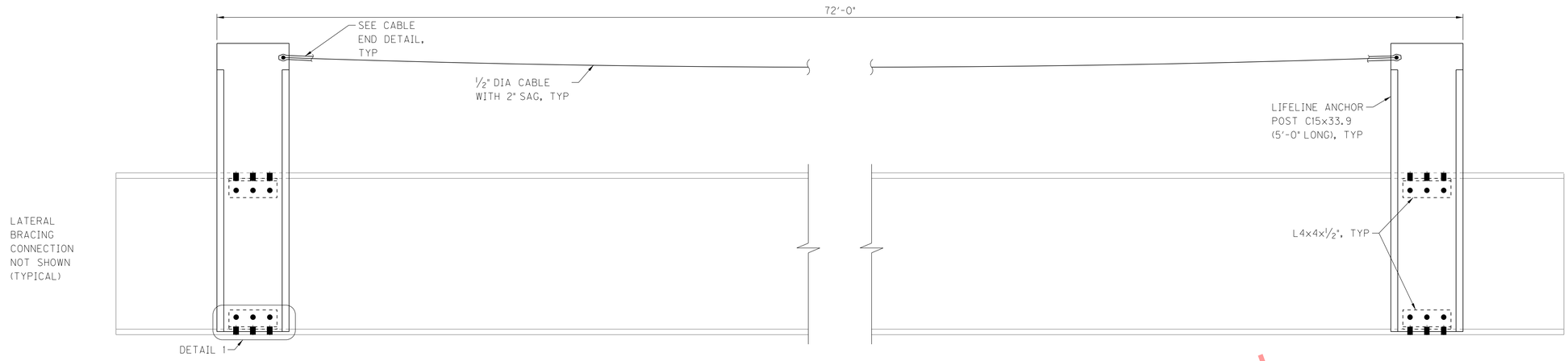
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

INSPECTION ACCESS DETAILS (1)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S97
		DRAWING NO. 27458

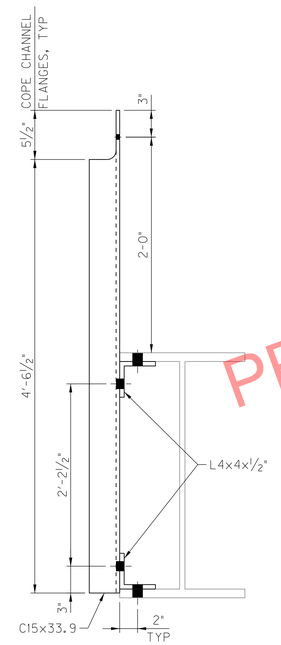
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USER: dabasham
DATE PLOTTED: January 24, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\S98 INSPECTION ACCESS DETAILS (2).DGN



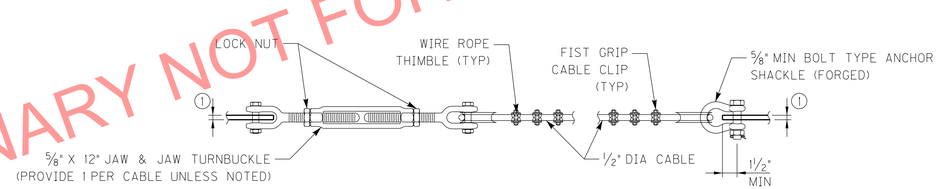
INSPECTION ACCESS AT LATERAL BRACING U5–U6

ONE ACCESS SYSTEM REQUIRED FROM U5 (LEFT TRUSS) TO U6 (RIGHT TRUSS)

PRELIMINARY NOT FOR CONSTRUCTION



SECTION AT LIFELINE ANCHOR POST



CABLE END DETAIL

(1) WEB OF LIFELINE ANCHOR POST, (C15X33.9) = ⅜"
THICKNESS OF CABLE CONNECTION PLATE AT L0 & L11 = ½"
THICKNESS OF DIAGONAL FLANGES AT L1 - L10 VARY FROM 1¼" TO 2",
SEE TRUSS JOINTS L1 - L5.

DETAIL 1

NOTES:

1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL BE ⅞" DIA. F3125 GRADE A325 BOLTS WITH ¹⁵⁄₁₆" DIA. HOLES.
2. CABLES TO BE ½" A586 ZINC COATED STRUCTURAL STRAND WITH CLASS A ZINC COATING THROUGHOUT AND HAVE A MINIMUM BREAKING STRENGTH OF 15 TONS.
3. ALL CABLE FITTINGS (TURNBUCKLES, THIMBLES, CLIPS, SHACKLES, ETC.) SHALL BE HOT-DIPPED GALVANIZED AND SHALL MEET OR EXCEED THE CAPACITY OF THE STRUCTURAL STRAND AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS. THE DESIGN, FURNISHING, GALVANIZATION, FABRICATING, AND INSTALLATION OF CABLE FITTINGS TO BE INCIDENTAL TO PAY ITEM "STRUCTURAL STEEL".
4. CONTRACTOR IS TO INSTALL THE UPPER LATERAL BRACING HORIZONTAL LIFE LINE SHORTLY AFTER THE INSTALLATION OF THE LATERAL BRACING FROM U5 TO U6.
5. THE UPPER LATERAL BRACING HORIZONTAL LIFE LINE SYSTEM IS DESIGNED FOR A 5000 POUND FALL ARREST LOAD.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: A. FARMER	T. PERKINS

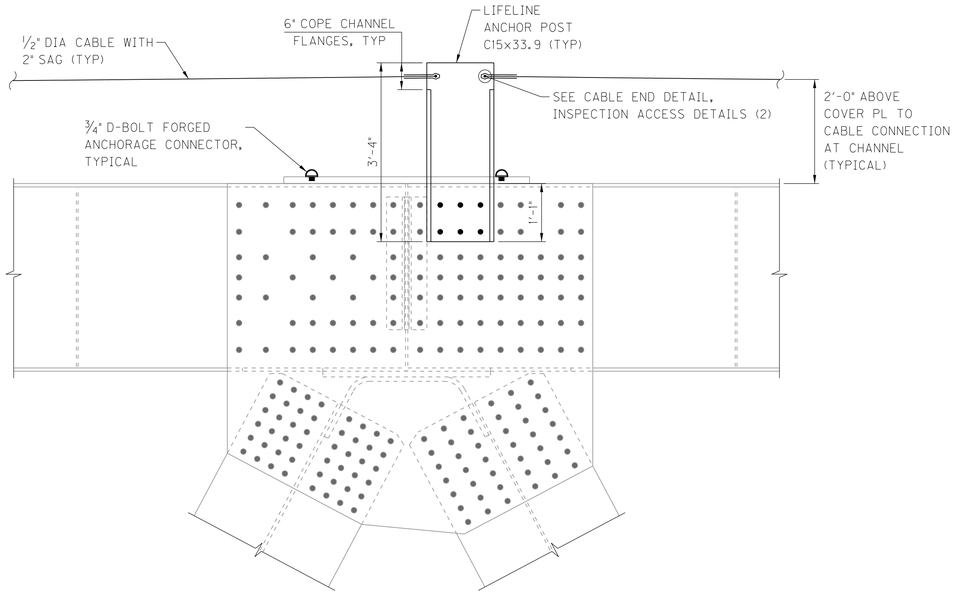
Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: **LIVINGSTON**

ROUTE: **US 60** | CROSSING: **CUMBERLAND RIVER**

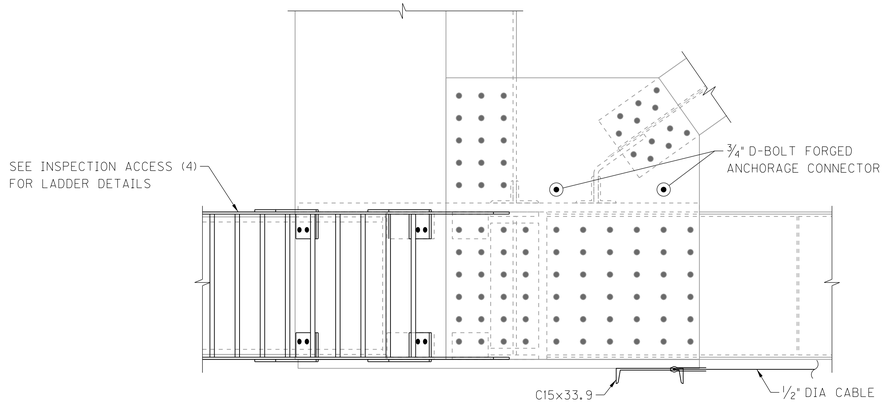
INSPECTION ACCESS DETAILS (2)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S98
		DRAWING NO. 27458



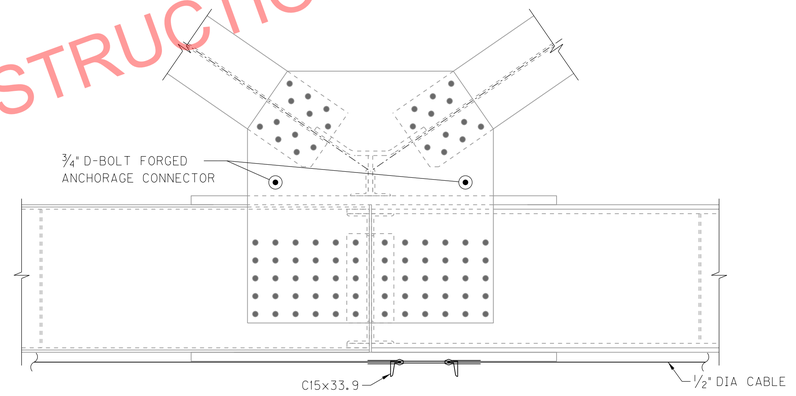
TYPICAL INSPECTION ACCESS – UPPER CHORD (U2 – U10)

(OUTBOARD SIDE SHOWN)

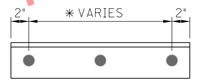


U1 / U11 TOP VIEW

U1 (RIGHT TRUSS) SHOWN

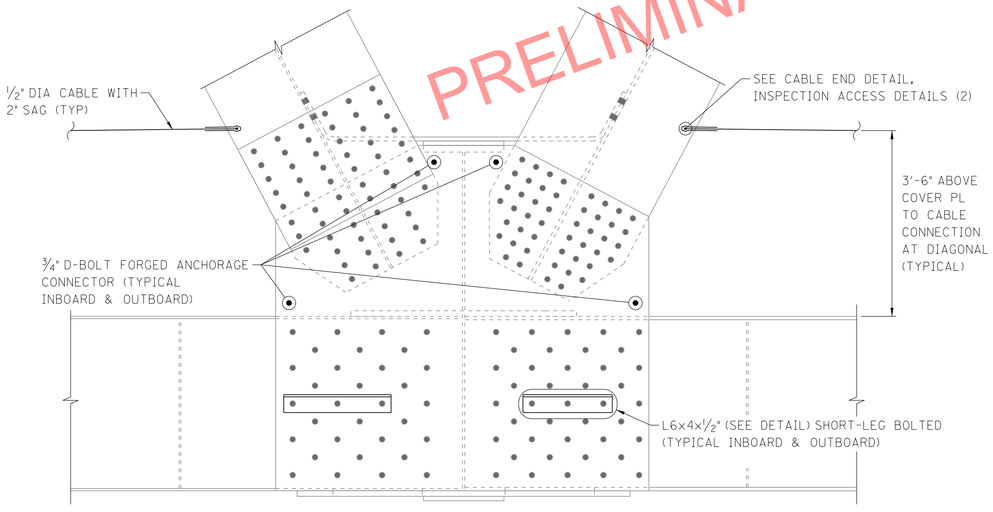


U2 – U10 TOP VIEW



STEP ANGLE DETAIL

* FOR SPACING SEE PITCH ON TRUSS JOINT SHEETS



TYPICAL INSPECTION ACCESS – LOWER CHORD

(OUTBOARD SIDE SHOWN)

NOTES:

1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS WILL UTILIZE EXISTING TRUSS CONNECTION HOLES, UNLESS OTHERWISE NOTED.
2. ALL D-BOLT FORGED ANCHORAGE CONNECTORS SHALL BE CAPABLE OF SUPPORTING A 5000 POUND FALL ARREST LOAD APPLIED IN ANY DIRECTION AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS.
3. CABLES TO BE ½" A586 ZINC COATED STRUCTURAL STRAND WITH CLASS A ZINC COATING THROUGHOUT AND HAVE A MINIMUM BREAKING STRENGTH OF 15 TONS.
4. CONTRACTOR IS TO INSTALL UPPER CHORD HORIZONTAL LIFE LINE SHORTLY AFTER INSTALLATION OF EACH UPPER CHORD MEMBER.
5. ALL CABLE FITTINGS (TURNBUCKLES, THIMBLES, CLIPS, SHACKLES, ETC.) TO BE HOT - DIPPED GALVANIZED AND SHALL MEET OR EXCEED THE CAPACITY OF THE STRUCTURAL STRAND AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURERS SPECIFICATIONS. THE DESIGN, FURNISHING, GALVANIZATION, FABRICATING, AND INSTALLATION OF CABLE FITTINGS TO BE INCIDENTAL TO PAY ITEM "STRUCTURAL STEEL".
6. BOLT SPACING IN STEP ANGLES SHALL NOT EXCEED 6".
7. THE UPPER CHORD HORIZONTAL LIFE LINE SYSTEM IS DESIGNED FOR A 6000 POUND FALL ARREST LOAD.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

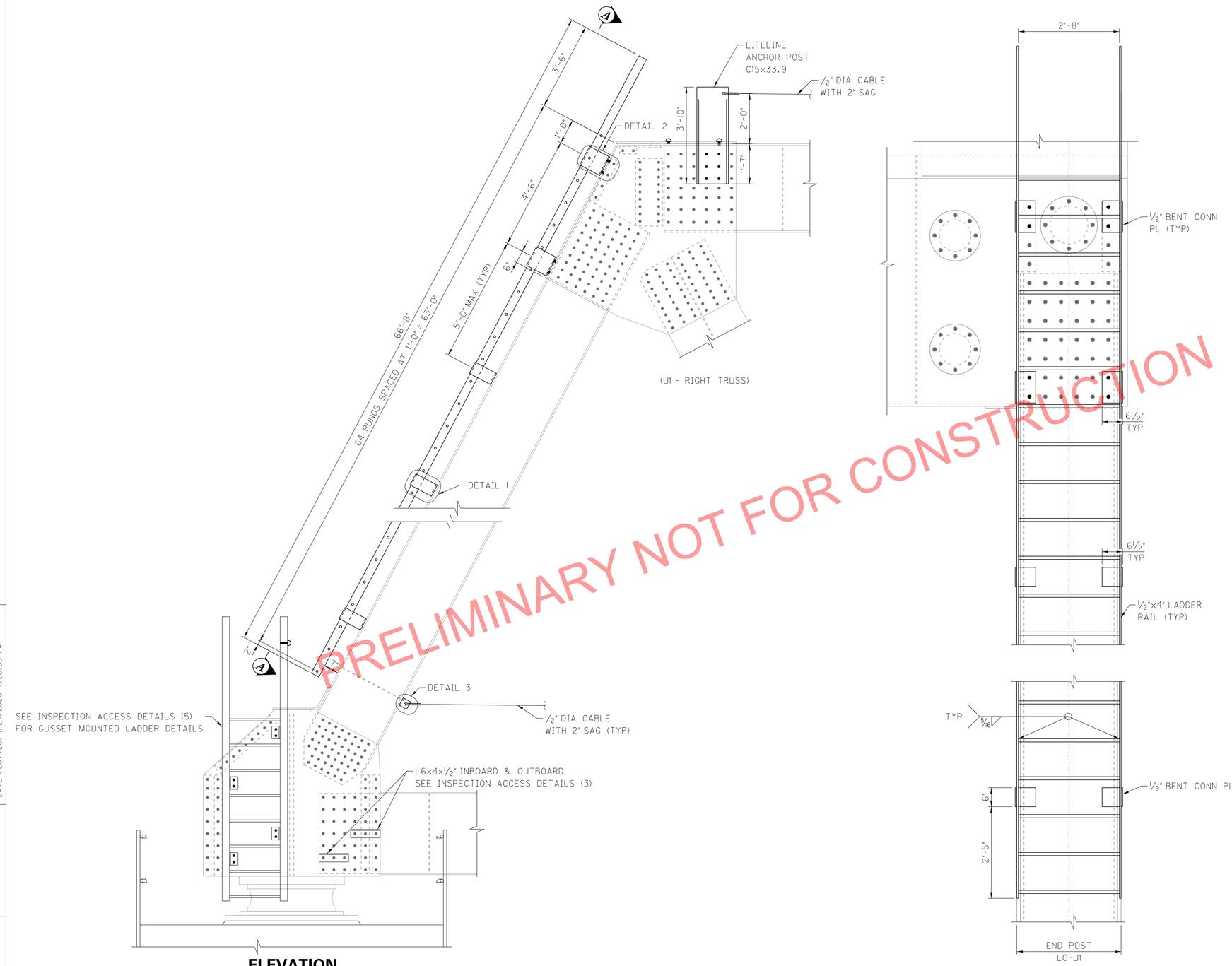
ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

INSPECTION ACCESS DETAILS (3)

ITEM NUMBER	PREPARED BY	SHEET NO.	DRAWING NO.
1–1142.00	Stantec	S99	27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: dabasham
DATE PLOTTED: 1/24/2020 1:28:52 PM
FILE NAME: V:\1785\ACTIVE\1785650II\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\99 INSPECTION ACCESS DETAILS (3).DGN

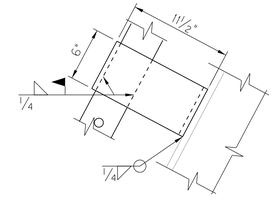
PRELIMINARY NOT FOR CONSTRUCTION



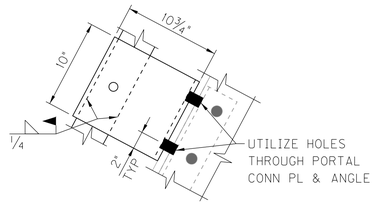
ELEVATION

(LO - RIGHT TRUSS)
(LOOKING AT OUTBORAD SIDE)

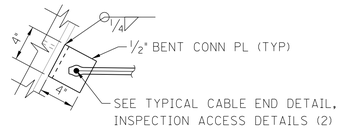
VIEW A–A



DETAIL 1



DETAIL 2



DETAIL 3

NOTES:

1. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS SHALL UTILIZE EXISTING TRUSS MEMBER BOLTS, UNLESS NOTED OTHERWISE. IF NOTED OTHERWISE, BOLTS SHALL BE ⅞" DIA. F3125 GRADE A325 BOLTS WITH 15/16 " DIA. HOLES.
2. ALL LADDER RUNGS MUST BE COATED WITH A SKID RESISTANT MATERIAL TO MINIMIZE SLIPPING PER OSHA STANDARDS. THE FURNISHING AND INSTALLATION OF THE SKID RESISTANT MATERIAL TO BE INCIDENTAL TO THE PAY ITEM FOR "STRUCTURAL STEEL".

END POST LADDER DETAILS

LADDER AT LO-U1 (RIGHT TRUSS) SHOWN,
LADDER AT U11-L11 (LEFT TRUSS) SYMMETRICAL
BY OPPOSITE HAND.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

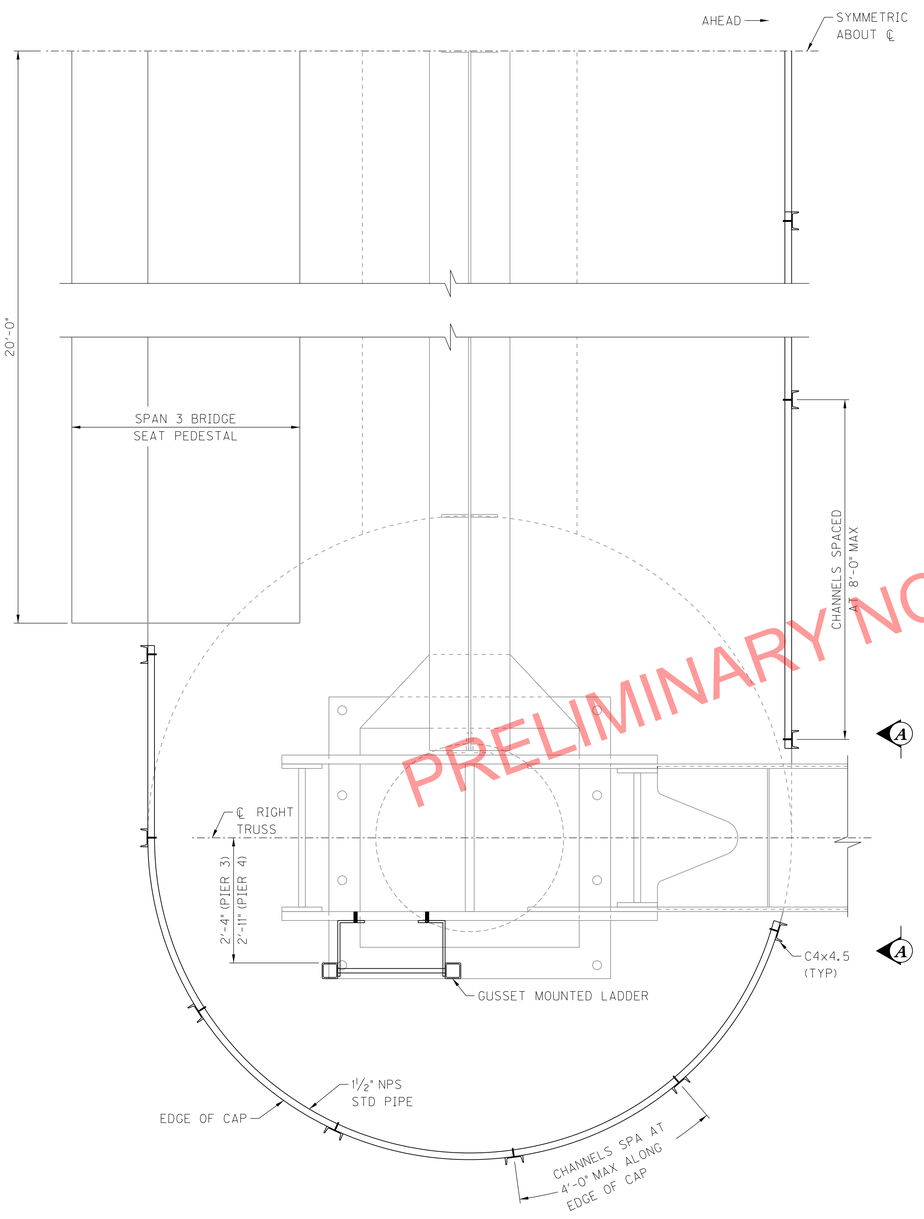
ROUTE	CROSSING
US 60	CUMBERLAND RIVER

INSPECTION ACCESS DETAILS (4)

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S100
		DRAWING NO. 27458

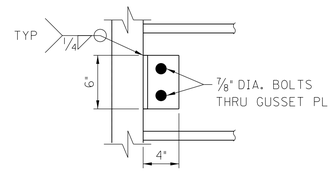
FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\100 INSPECTION ACCESS DETAILS (4).DGN
USER: dabasham
DATE PLOTTED: 1/24/2020 1:28:53 PM
E-SHEET NAME:
MicroStation v8.11.9.829

PRELIMINARY - NOT FOR CONSTRUCTION

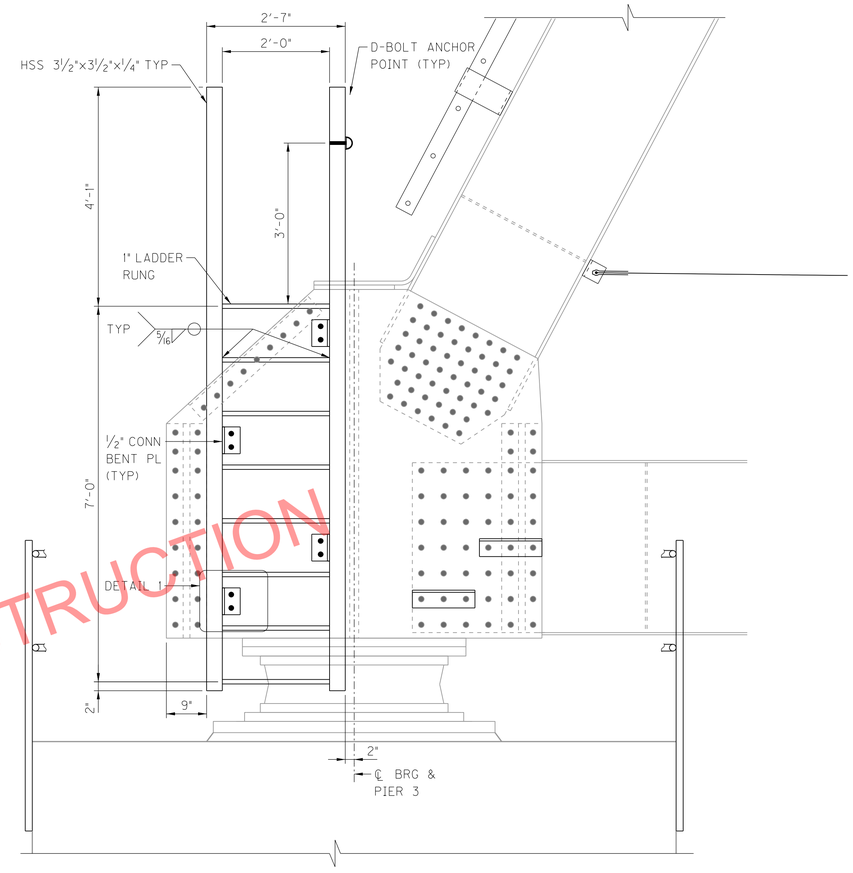


PART PLAN AT PIER 3

RIGHT TRUSS SHOWN, LEFT TRUSS SIMILAR, UNO
DETAILS AT PIER 4 SIMILAR, UNO

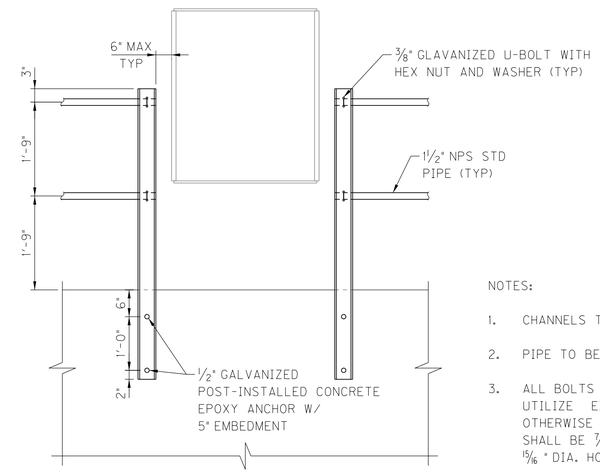


DETAIL 1



ELEVATION – GUSSET MOUNTED LADDER

(LO - RIGHT TRUSS SHOWN)
(L11 - LEFT TRUSS SIMILAR)



VIEW A–A

NOTES:

1. CHANNELS TO BE GRADE 50W.
2. PIPE TO BE A53 GRADE B.
3. ALL BOLTS FOR INSPECTION ACCESS ATTACHMENTS WILL UTILIZE EXISTING TRUSS CONNECTION HOLES, UNLESS OTHERWISE NOTED. IF NOTED OTHERWISE, THEN BOLTS SHALL BE ⅞" DIA. F3125 GRADE A325 BOLTS WITH 15/16" DIA. HOLES.

REVISION	DATE

DATE: JANUARY 2020	CHECKED BY
DESIGNED BY: J. MURPHY	J. HUDSON
DETAILED BY: D. BASHAM	T. PERKINS

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

INSPECTION ACCESS DETAILS (5)

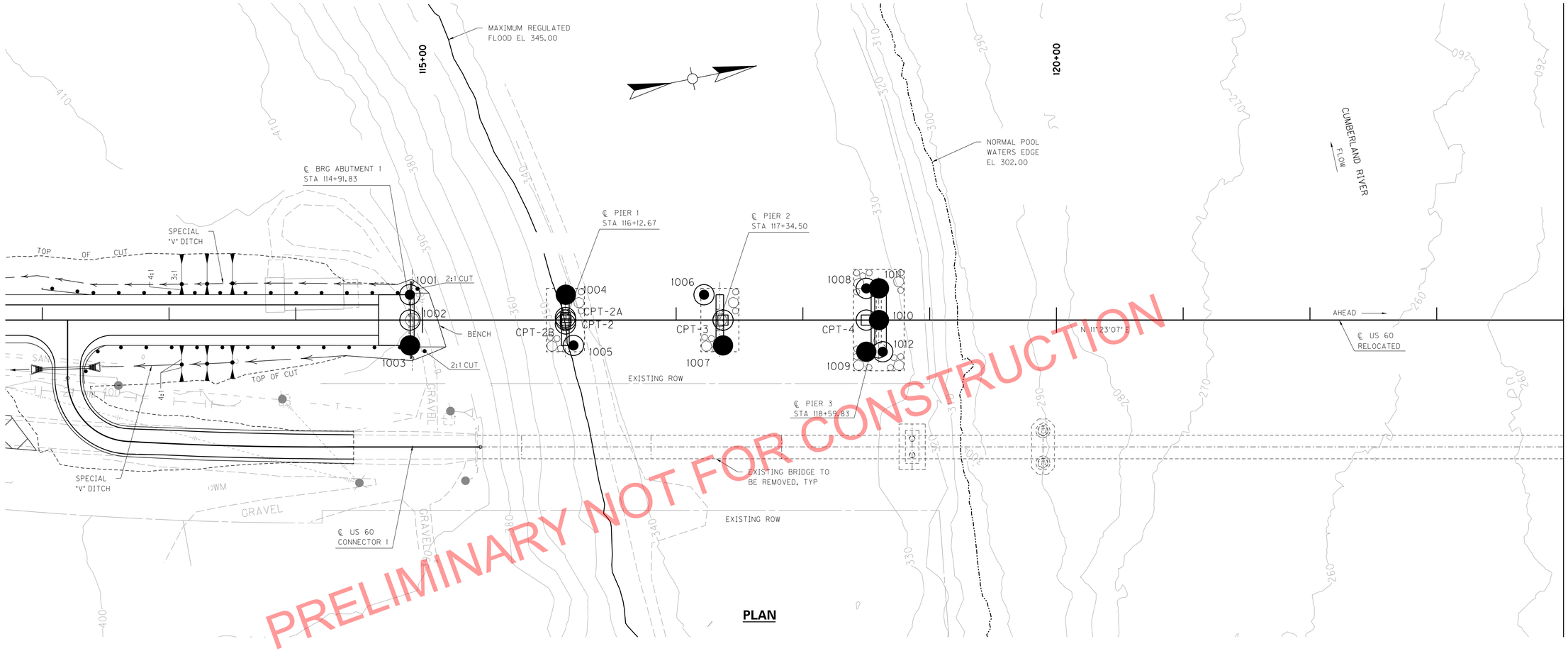
ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S101

DRAWING NO.
27458

FILE NAME: V:\1785\ACTIVE\1785650II\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWING\101 INSPECTION ACCESS DETAILS (5).DGN
USER: dabasham
DATE PLOTTED: 1/24/2020 1:28:53 PM
E-SHEET NAME:
MicroStation v8.11.9.829



PRELIMINARY NOT FOR CONSTRUCTION

PLAN

GEOTECHNICAL NOTE:

Pier arrangements and orientations are shown as at the time of the geotechnical exploration and analyses. Please refer to sheets S1 through S101 for final substructure dimensions and orientations.

CONE PENETRATION TEST NOTE:

Cone Penetration Test soundings CPT-2 through CPT-11 were performed at the locations shown on the layout. Refer to special note for Cone Penetration Test Data for additional information.

SCALE: 1" = 40'

REVISION	DATE

DATE: JANUARY, 2020	CHECKED BY
DESIGNED BY: WAM	KJS
DETAILED BY: RE, RF	KJS, WAM

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

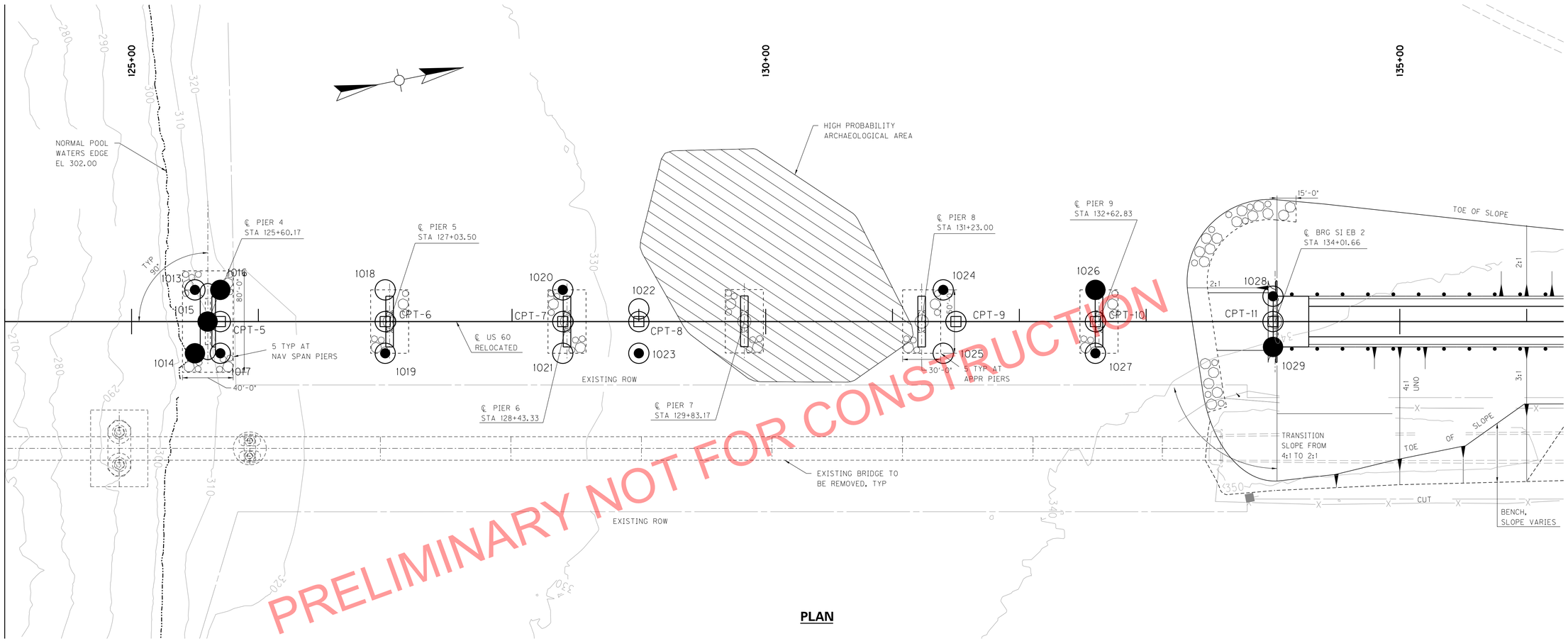
COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

BORING LAYOUT

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S102
		DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: RFlynn
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\1785650\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_LAYO_1.DGN



PRELIMINARY NOT FOR CONSTRUCTION

PLAN

GEOTECHNICAL NOTE:

Pier arrangements and orientations are shown as at the time of the geotechnical exploration and analyses. Please refer to sheets S1 through S101 for final substructure dimensions and orientations.

CONE PENETRATION TEST NOTE:

Cone Penetration Test soundings CPT-2 through CPT-11 were performed at the locations shown on the layout. Refer to special note for Cone Penetration Test Data for additional information.

SCALE: 1" = 40'

ITEM NUMBER
1–1142.00

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE
US 60

CROSSING
CUMBERLAND RIVER

BORING LAYOUT

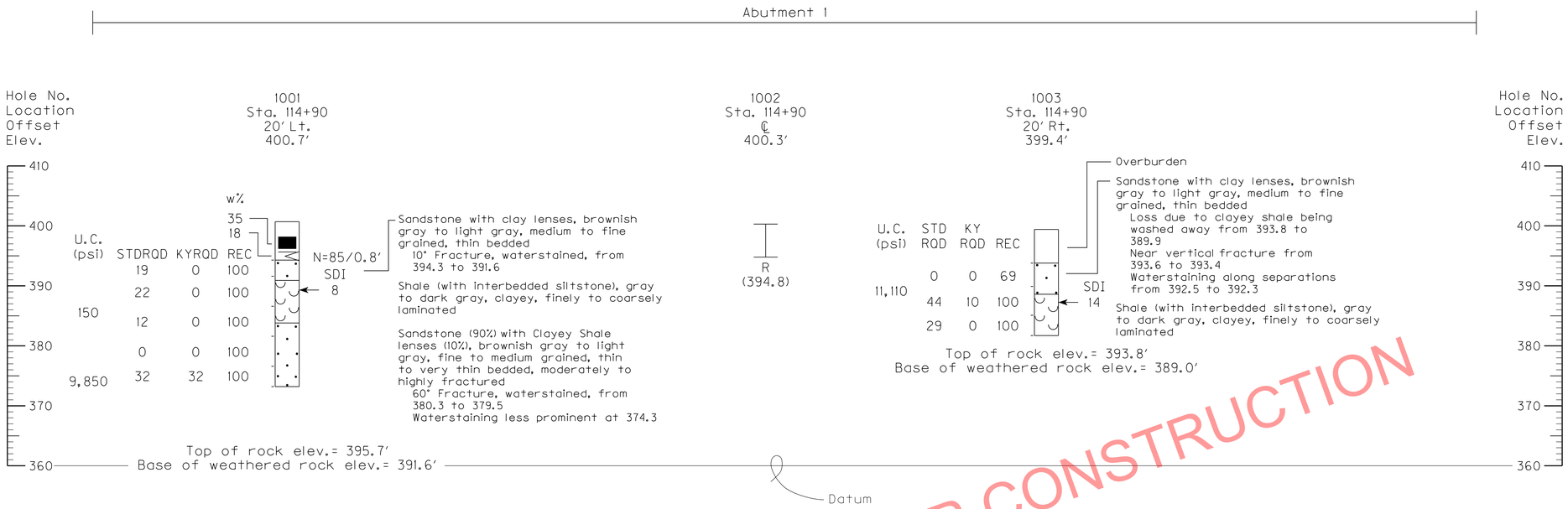
PREPARED BY
Stantec

SHEET NO.
S103

DRAWING NO.
27458

FILE NAME: V:\1785\ACTIVE\1785650\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_LAYO_2.DGN
USER: RFlynn
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SUBSURFACE DATA



PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. All standard penetration testing performed for structure borings depicted on this sheet were done utilizing an automatic hammer.
4. The rockline soundings were drilled to auger refusal. Refusal, as used herein, refers to auger refusal using a carbide-tipped-tooth bit. This may indicate the presence of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.

SCALE: 1" = 10'
(Vertical Only)

ITEM NUMBER
1-1142.00

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

PREPARED BY: Stantec

SHEET NO.: S104

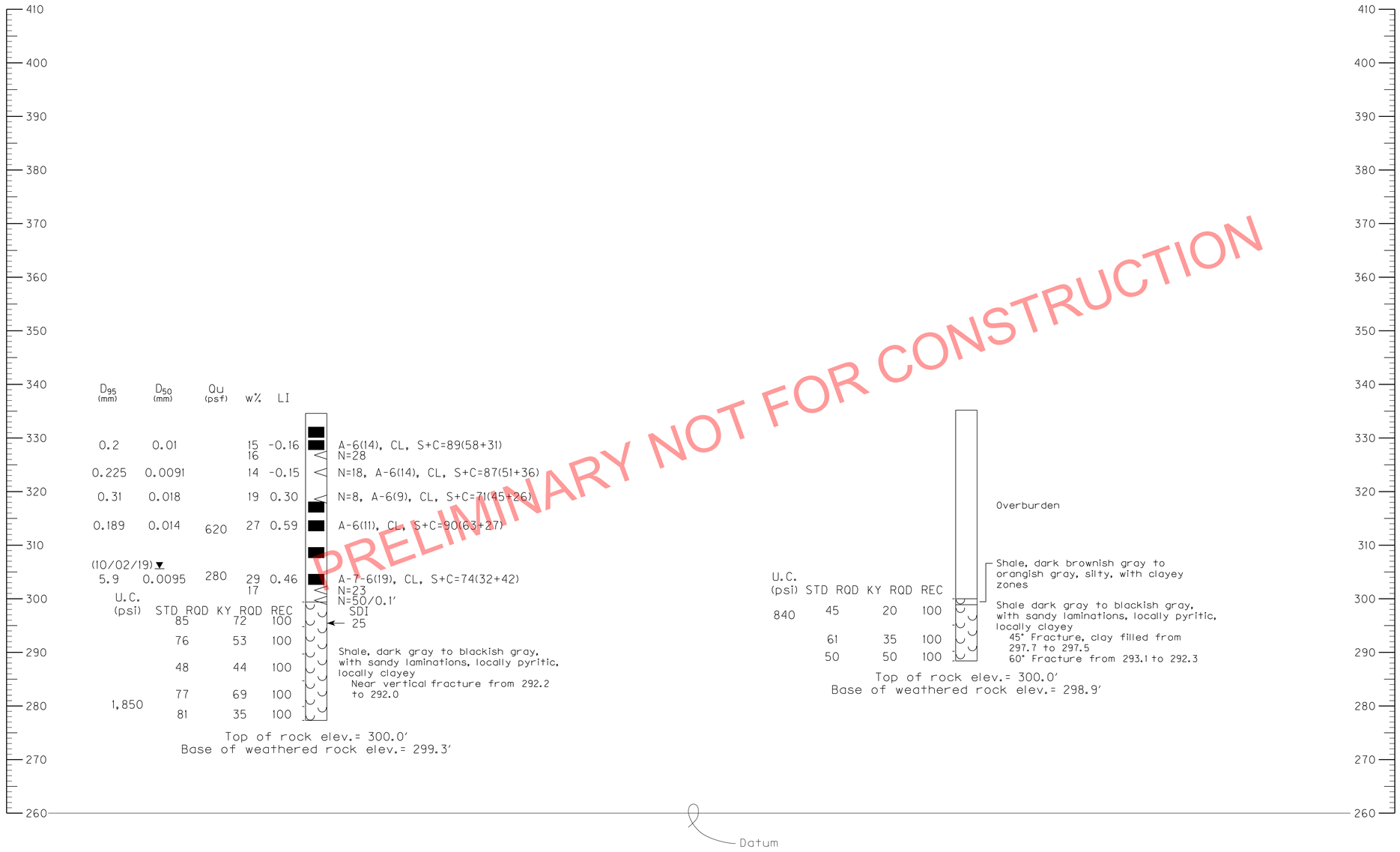
DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: RFlynn
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\1785650II\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_1.DGN

SUBSURFACE DATA

Pier 2

Hole No.	1006	1007
Location	Sta. 117+22	Sta. 117+37
Offset	20' Lt.	20' Rt.
Elev.	334.6'	335.2'



PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

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2. Surface elevations are referenced to Mean Sea Level.
3. All standard penetration testing performed for structure borings depicted on this sheet were done utilizing an automatic hammer.
4. The rockline soundings were drilled to auger refusal. Refusal, as used herein, refers to auger refusal using a carbide-tipped-tooth bit. This may indicate the presence of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.

SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

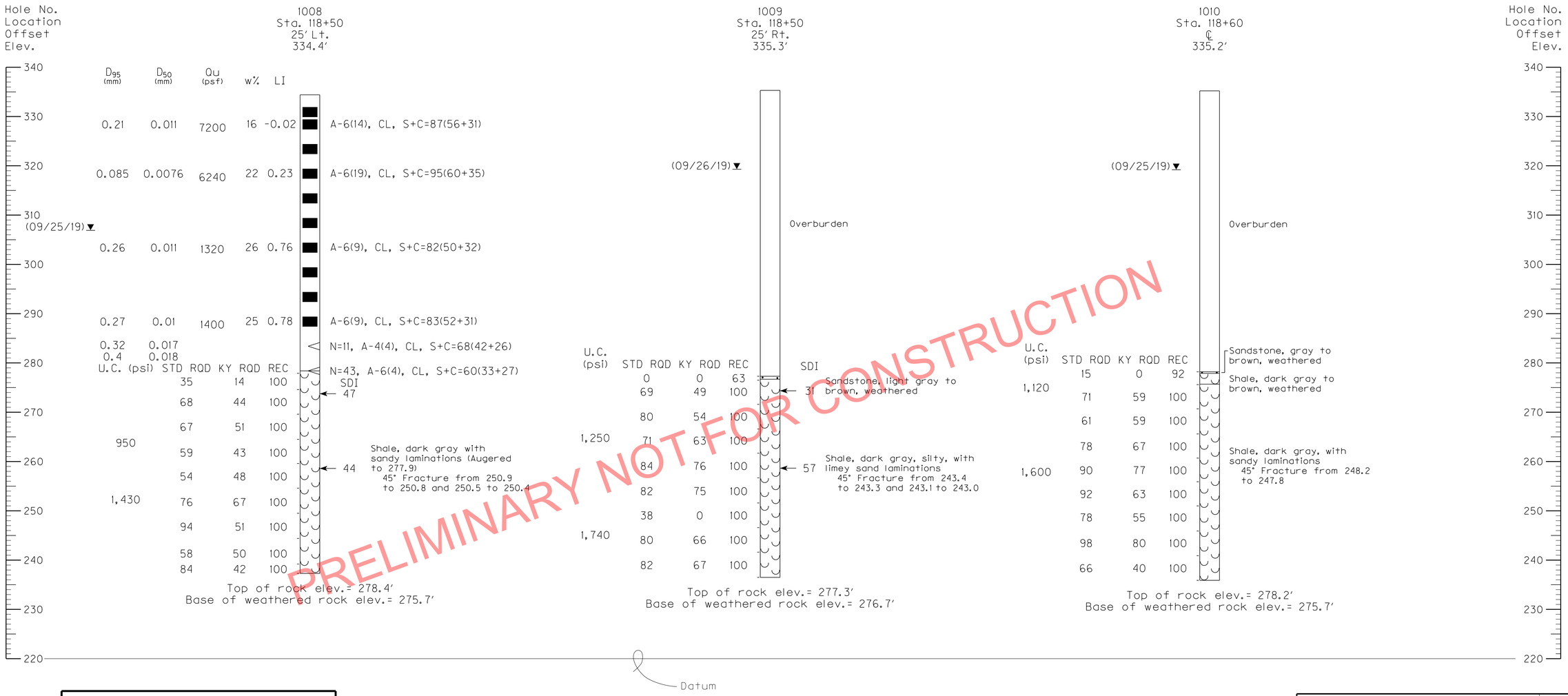
SHEET NO.: S105

DRAWING NO.: 27458

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USER: DEllison
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SUBSURFACE DATA

Pier 3



PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. All standard penetration testing performed for structure borings depicted on this sheet were done utilizing an automatic hammer.
4. The rockline soundings were drilled to auger refusal. Refusal, as used herein, refers to auger refusal using a carbide-tipped-tooth bit. This may indicate the presence of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.

SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY, 2020	CHECKED BY
DESIGNED BY: WAM	KJS
DETAILED BY: RE, RF	KJS, WAM

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

SHEET NO.: S106

DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: DEllison
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_3.DGN

SUBSURFACE DATA

Pier 3

Hole No.
Location
Offset
Elev.

1011
Sta. 118+60
25' Lt.
329.8'

(09/23/19) ▼

Overburden

Sandstone, light gray to brown, weathered

Shale, dark gray, silty
Soft zone from 266.7 to 265.5
Claylike from 265.7 to 265.5
45° Fracture from 247.7 to 247.6

U.C. (psi)	STD	RQD	KY	RQD	REC
840		61		22	72
		64		46	100
		74		38	100
		66		38	100
		86		56	100
		88		77	100
		54		48	100
		64		56	100
1,580		72		48	100

Top of rock elev.= 272.3'
Base of weathered rock elev.= 271.6'

1012
Sta. 118+63
25' Rt.
334.2'

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	
0.3	0.027		14	-0.18	A-6(9), CL, S+C=75(51+24)
0.26	0.013	1500	21	0.36	A-6(11), CL, S+C=82(51+31)
0.38	0.15	480	21	NP	A-2-4(0), SM, S+C=24(14+10)
0.08	0.0155	1300	23	0.52	A-6(8), CL, S+C=80(53+27)

(10/01/19) ▼

D_{95} (mm)	D_{50} (mm)				
41	0.06				N=20 / N=26 — A-6(4), CL, S+C=53(35+18)

Sandstone, light gray to brown, weathered

Shale, dark gray, weathered (loss)

SDI

39

62

Shale, dark gray, silty
45° Fracture from 262.3 to 262.1

U.C. (psi)	STD	RQD	KY	RQD	REC
650		0		0	43
		73		39	100
		52		48	100
		71		48	100
		80		70	100
		78		57	100
		76		71	100
		82		82	100
1,680		84		74	100

Top of rock elev.= 275.2'
Base of weathered rock elev.= 274.5'

Elevations: 340, 330, 320, 310, 300, 290, 280, 270, 260, 250, 240, 230, 220

Datum

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. All standard penetration testing performed for structure borings depicted on this sheet were done utilizing an automatic hammer.
4. The rockline soundings were drilled to auger refusal. Refusal, as used herein, refers to auger refusal using a carbide-tipped-tooth bit. This may indicate the presence of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.

SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: **US 60**
CROSSING: **CUMBERLAND RIVER**

LOGS OF BORINGS

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO.
S107

DRAWING NO.
27458

FILE NAME: V:\1785\ACTIVE\1785650II\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_4.DGN
USER: DEllison
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SUBSURFACE DATA

Pier 4

Hole No.	1013	1014	1015
Location	Sta. 125+50	Sta. 125+50	Sta. 125+60
Offset	25' Lt.	25' Rt.	℄
Elev.	309.6'	306.0'	309.9'

Elev.	D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	1013	1014	1015
310	0.19	0.0083		25	0.46	N=7		
				26	0.52	N=3 — A-6(16), CL, S+C=89(59+30)		
300	0.34	0.085 (10/16/19) ▼		30		N=1, S+C=46	(10/02/19) ▼	(10/07/19) ▼
	0.37	0.16		28		N=HW, S+C=14		
290	0.27	0.015		32	2.27	N=3, A-4(3), CL-ML, S+C=81(58+23)		
	0.35	0.13		28		N=4, S+C=29		
280				32	0.71	N=4		
	0.27	0.0094		29	0.52	N=9 — A-6(13), CL, S+C=83(50+33)		
270				25	0.42	N=10		
	0.25	0.0098				N=10 — A-6(13), CL, S+C=84(54+30)		
260						N=6	Overburden	Overburden
	0.065	0.0026	680	36	0.55	A-7-6(27), CL, S+C=98(55+43)		
250	0.051	0.0028				N=3, A-7-6(40), CH, S+C=99(51+48)		
	0.0401	0.018	2180	39	0.44	A-7-6(49), CH, S+C=99(48+51)		
240	15.0	N/A		25		N=14, S+C=57		
	22.5	0.155		22		N=16, S+C=42		
230				17		N=13		
	24.0	4.99		17		N=39 — S+C=41		
220				17		N=43		
						N=50/0.1'		

Elev.	U.C. (psi)	STD	RQD	KY	RQD	REC	1013	1014	1015
		0		0		100			
210		26		26		100			
		46		46		100			
	11,410								
200		92		68		100			
		53		53		100			
190	19,130	79		79		100			
		88		88		100			
180									
	16,250	90		90		100			
		89		63		100			
170							Sandstone, light gray to gray, very fined grained, locally fractured		
							Top of rock elev.= 214.5'		
							Base of weathered rock elev.= 214.3'		

Elev.	U.C. (psi)	STD	RQD	KY	RQD	REC	1013	1014	1015
	23,270	13		13		100			
		8		8		100			
200		24		16		100			
	17,830	28		28		100			
		68		62		100			
190	21,710	56		56		100			
		68		68		100			
		100		100		100			
180	26,090	92		92		100			
		100		100		100			
170								Sandstone, light gray to gray, very fine grained 10° Fracture from 195.1 to 194.6 and 192.8 to 192.1 10° to 15° Fracture from 188.5 to 187.5	
								Top of rock elev.= 211.5'	
								Base of weathered rock elev.= 211.4'	

Elev.	U.C. (psi)	STD	RQD	KY	RQD	REC	1013	1014	1015
	27,620	15		15		73			
		16		16		96			
		0		0		52			
200		44		20		82			
	14,900	64		64		100			
		90		90		100			
190		100		96		100			
	23,140	83		83		100			
		100		98		100			
180		40		40		100			
									Sandstone, light gray to gray, very fine grained
170									Top of rock elev.= 214.7'
									Base of weathered rock elev.= 214.7'

Datum

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. All standard penetration testing performed for structure borings depicted on this sheet were done utilizing an automatic hammer.
4. The rockline soundings were drilled to auger refusal. Refusal, as used herein, refers to auger refusal using a carbide-tipped-tooth bit. This may indicate the presence of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.
5. HW - indicates the weight of the SPT hammer was enough to advance the sampler at least 2, 6" intervals, without any driving energy.

SCALE: 1" = 10' (Vertical Only)

ITEM NUMBER 1–1142.00

REVISION	DATE

DATE:	CHECKED BY
DESIGNED BY: JANUARY, 2020	KJS
DETAILED BY: RE, RF	KJS, WAM

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

PREPARED BY: Stantec

SHEET NO. S108

DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: RFlynn
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\178565001\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_5.DGN

SUBSURFACE DATA

Pier 4

Hole No.
Location
Offset
Elev.

1016
Sta. 125+70
25' Lt.
316.5'

(10/17/19) ▼

Overburden

U.C. (psi)	STD	RQD	KY	RQD	REC
	35		35		100
	29		17		100
	0		0		14*
	28		28		100
22,510					
	40		40		100
	48		48		100
28,670	73		73		100
	75		58		100
	31		31		100

* - core bit failed and ground away sample, resulting in poor recovery. No voids indicated. Drill action smooth.

Sandstone, light gray to gray, very fined grained, with local shale streaks and partings
45° Fracture from 176.2 to 176.0

Shale, dark gray, clayey

Top of rock elev.= 211.3'
Base of weathered rock elev.= 211.3'

1017
Sta. 125+70
25' Rt.
310.6'

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	
			21		N=11
0.34	0.025	440	30	1.52	A-4(3), CL, S+C=60(40+20)
	(10/10/19) ▼				
0.24	0.018	600	32	1.44	A-4(6), CL, S+C=86(65+21)
0.35	0.12		28		N=9, S+C=32
					N=6
0.36	0.071				N=HW — A-6(4), CL, S+C=51(24+27)
					N=2
0.04	0.0016	1120	34	0.35	A-7-6(46), CH, S+C=99(45+54)
0.057	0.005	1680	30	0.33	A-7-6(28), CL, S+C=96(60+36)
19	5.8		15		N=6, S+C=3
0.086	0.0035				N=HW, A-6(19), CL, S+C=95(55+40)
			14		N=52
24	5		14		N=50/0.4' — S+C=6
					N=50/0.1'

U.C. (psi)	STD	RQD	KY	RQD	REC
	0		0		97
	0		0		98
15,600	10		10		98
	0		0		48
	61		61		100
	42		42		100
22,870	83		83		100
	84		76		100
	55		55		100

Sandstone, light gray to gray, very fined grained
Shale streaks and partings present above elevation 193.1'

Top of rock elev.= 211.0'
Base of weathered rock elev.= 210.7'

Hole No.
Location
Offset
Elev.

Datum

320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160

PRELIMINARY NOT FOR CONSTRUCTION

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5. HW - indicates the weight of the SPT hammer was enough to advance the sampler at least 2, 6" intervals, without any driving energy.

SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY, 2020	CHECKED BY
DESIGNED BY: WAM	KJS
DETAILED BY: RE, RF	KJS, WAM

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER
1-1142.00

PREPARED BY
Stantec

SHEET NO.
S109

DRAWING NO.
27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: DEllison
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\1785650\\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_6.DGN

SUBSURFACE DATA

Pier 5

	1018	1019
Hole No.		
Location	Sta. 127+00	Sta. 127+00
Offset	25' Lt.	25' Rt.
Elev.	325.6'	324.9'

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	
0.074	0.0045		17	-0.17	< N=17, A-7-6(25), CL, S+C=95(56+39)
0.065	0.0067		24	0.23	< N=7, A-6(20), CL, S+C=97(65+32)
0.055	0.0064		29	0.37	A-7-6(22), CL, S+C=99(67+32)
0.28	0.02	940	34	0.92	A-6(11), CL, S+C=79(55+24)
0.25	0.0135		29	0.74	< N=5, A-6(11), CL, S+C=84(57+27)
0.28	0.0085	780	26	0.49	A-6(12), CL, S+C=80(50+30)
0.09	0.0155		35	1.12	A-6(12), CL, S+C=95(72+23)
0.38	0.17	140	27	NP	A--3(0), SP-SM, S+C=8(4+4)
0.051	0.00365				< N=6, A-7-6(32), CH, S+C=97(55+42)
0.055	0.0023	1460	52	1.20	A-7-6(26), CL, S+C=96(52+44)
			27		< N=18
0.365	0.12		27		< N=27 — S+C=36
0.350	0.089		28		< N=6, S+C=43
17.0	3.87		13		< N=41, S+C=9
2.0	0.0036				< N=26, A-7-6(19), CL, S+C=88(46+42)
24.0	3.8		15		< N=56, S+C=12
24.5	10.0		11		< N=57, S+C=12

(10/01/19) ▼

(10/01/19) ▼

R
(211.7)

U.C. (psi)	STD RQD	KY RQD	REC
	32	32	100
	16	16	100
21,000			
	55	55	100
	50	50	100
	89	89	100

Sandstone, light gray with local shale stringers and partings, very fine to fine grained, thin to medium bedded. Locally healed fractures.

Top of rock elev.= 211.9'
Base of weathered rock elev.= 211.9'

Datum

PRELIMINARY NOT FOR CONSTRUCTION

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SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY. 2020		CHECKED BY
DESIGNED BY:	WAM	KJS
DETAILED BY:	RE, RF	KJS, WAM

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER
1-1142.00

PREPARED BY
Stantec

SHEET NO. S110
DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: DEllson
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_7.DGN

SUBSURFACE DATA

Pier 6

Hole No.	1020	1021
Location	Sta. 128+40	Sta. 128+40
Offset	25' Lt.	25' Rt.
Elev.	327.9'	328.6'

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	1020
0.15	0.0045		21	0.03	N=15
			22	0.06	N=9 — A-7-6(26), CL, S+C=92(54+38)
					(09/23/19) ▼
0.351	0.016	1560	23	0.77	A-6(4), CL, S+C=62(34+28)
0.26	0.0021		51	0.93	N=5, A-7-6(32), CH, S+C=84(35+49)
0.34	0.011	700	31	0.83	A-6(12), CL, S+C=75(44+31)
0.1	0.0069		34	0.62	A-7-6(24), CL, S+C=94(57+37)
0.22	0.009		34	0.76	A-6(18), CL, S+C=87(56+31)
0.29	0.0025	200	40	0.78	A-7-6(21), CL, S+C=77(29+48)
0.072	0.0061		34	0.63	A-7-6(24), CL, S+C=96(59+37)
0.04	0.003				N=1, A-7-6(33), CH, S+C=99(53+46)
0.068	0.005	360	38	0.67	A-7-6(29), CL, S+C=97(59+38)
			25		N=7, S+C=23
0.42	0.038				N=12 — A-4(2), CL, S+C=59(37+22) — N=20
0.12	0.0015				N=7, A-6(20), CL, S+C=94(37+57)
0.032	0.0014	1500	35	0.58	A-7-6(26), CL, S+C=99(38+61)
0.28	0.008				N=3 — A-6(13), CL, S+C=88(55+33) — N=6
					N=50/0.4'

U.C. (psi)	STD RQD	KY RQD	REC
15,150	40	40	100
	38	38	100
	63	63	100
	62	62	100

Sandstone, light gray to gray, very fine to fine grained, thin to medium bedded, with local shale streaks and partings. Locally healed fractures.

Top of rock elev.= 212.6'
Base of weathered rock elev.= 212.3'

(09/25/19) ▼

R
(211.0)

Datum

PRELIMINARY NOT FOR CONSTRUCTION

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SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

SHEET NO.: S111

DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\1785650II\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_B.DGN
USER: DEllison
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SUBSURFACE DATA

Pier 7

	1022	1023
Hole No.		
Location	Sta. 129+00	Sta. 129+00
Offset	10' Lt.	25' Rt.
Elev.	333.1'	331.8'

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	
			13	-0.06	N=16
			15	0.06	N=14 — A-6(6), CL, S+C=60(35+25)
0.34	0.032		19	0.33	N=10
0.35	0.074		31		N=5, S+C=47
0.35	0.120		30		N=7 — S+C=34
			35		N=5
0.27	0.007		40	1.19	N=3, A-6(14), CL, S+C=82(45+37)
0.17	0.0085	440	35	0.77	A-6(21), CL, S+C=90(57+33)
0.23	0.0046	660	32	0.51	A-7-6(23), CL, S+C=87(46+41)
0.051	0.0025	1140	35	0.43	A-7-6(37), CH, S+C=98(51+47)
0.05	0.0027	1480	35	0.42	A-7-6(34), CH, S+C=98(53+45)
			26		N=11
0.40	0.11		26		N=33 — S+C=39
			26		N=21
					N=23
0.2	0.0057				A-6(16), CL, S+C=89(59+30)
					N=4
0.15	0.0018	380	32	0.65	A-6(21), CL, S+C=92(41+51)
0.31	0.012		30	0.84	A-6(10), CL, S+C=72(41+31)
10.4	0.014				N=3, A-6(12), CL, S+C=76(56+20)
17.0	4.1		14		N=50/0.5', S+C=12

(09/19/19) ▼

(09/18/19) ▼

R
(212.5)

U.C. (psi)	STD RQD	KY RQD	REC
28,010	44	44	100
	52	52	98
	71	71	100
	53	53	100

Sandstone, light gray to gray, very fine to fine grained, thin to medium bedded, with local shale streaks and partings
45° Healed fracture from 210.8 to 210.6

Top of rock elev.= 210.8'
Base of weathered rock elev.= 210.8'

Datum

PRELIMINARY NOT FOR CONSTRUCTION

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SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

SHEET NO.: S112

DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\1785650I\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_9.DGN
USER: DEllison
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SUBSURFACE DATA

Pier 8

Hole No.	1024	1025
Location	Sta. 131+50	Sta. 131+50
Offset	25' Lt.	25' Rt.
Elev.	337.1'	337.5'

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	1024	1025
0.04	0.008		18	0.01	A-6(10), CL, S+C=77(46+31)	
0.7	0.00		21		N=14, S+C=61	
0.31	0.016	740	24	0.63	A-6(8), CL, S+C=73(46+27)	
(09/10/19) ▼						(09/17/19) ▼
			31		N=2	
0.301	0.014		31	0.85	A-6(10), CL, S+C=78(52+26)	
0.07	0.0069		44	0.87	N=2, A-7-6(27), CL, S+C=97(70+27)	
0.065	0.005	760	39	0.76	A-7-6(26), CL, S+C=97(59+38)	
0.3	0.014	80	42	2.00	A-6(8), CL, S+C=76(50+26)	
0.34	0.032				N=5, N=11 — A-4(4), CL, S+C=64(52+12)	
0.35	0.084				N=18, A-6(4), CL, S+C=60(45+15)	
0.31	0.17		25		N=14, N=21 — S+C=47	
			25			
			19		N=84, N=32 — S+C=11	
			19			
					N=22, N=49, N=41 — A-2-4(0), SM, S+C=13(12+1)	
9.1	0.21					
			17		N=10, S+C=59	
0.074	0.0019	3180	27	0.08	A-7-6(28), CH, S+C=95(44+51)	
0.21	0.0062				N=4, N=11, N=27 — A-6(11), CL, S+C=88(50+38)	

U.C. (psi)	STD	RQD	KY	RQD	REC	
				0	100	N=50/0.1'
24,210		0		0	100	Sandstone, light gray to gray, very fine to fine grained, thin to medium bedded, with local shale streaks and partings 10° Fracture, waterstained, from 211.5 to 211.0 Near vertical fracture from 207.1 to 206.9 Lost water at 207.1
		54		54	96	
		69		69	100	SDI = 100
		0		0	56	
990		46		34	100	Shale, dark gray to gray, locally clayey with silty zones, poorly laminated

Top of rock elev.= 212.0'
Base of weathered rock elev.= 211.2'

Datum

R
(211.3)

340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180

PRELIMINARY NOT FOR CONSTRUCTION

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SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER: 1–1142.00

PREPARED BY: Stantec

SHEET NO.: S113

DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\178565011\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_10.DGN
USER: DEllison
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SUBSURFACE DATA

Pier 9

Hole No.	1026	1027
Location	Sta. 132+60	Sta. 132+60
Offset	25' Lt.	25' Rt.
Elev.	337.1'	338.3'

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	1027
0.29	0.0064		20	0.09	A-7-6(18), CL, S+C=83(46+37)
0.32	0.03	1280	21	0.61	A-6(6), CL, S+C=69(50+19)
			31		N=2
(08/27/19)▼			29		N=3 — S+C=59
0.34			34		N=3
			35	1.52	N=2
0.31	0.023		32	1.25	N=4 — A-6(5), CL, S+C=68(46+22)
0.061	0.0024		36	0.92	N=2, A-6(18), CL, S+C=97(51+46)
0.058	0.0024	620	35	0.78	A-6(21), CL, S+C=100(53+47)
7.5	0.175		29		N=14, S+C=15
					N=9
0.62	0.0044				N=16 — A-6(13), CL, S+C=85(50+35)
			45		N=9
10	0.22		45		N=6 — S+C=12
			45		N=22
20	0.16		64		N=15, S+C=33
8	0.17		23		N=24
			23		N=12 — S+C=28
			23		N=19
0.008	0.0012				N=1
					N=4 — A-7-6(25), CL, S+C=99(32+67)
0.14	0.0022	1360	31	0.61	A-6(21), CL, S+C=92(44+48)
0.25	0.0046				N=6, A-6(14), CL, S+C=86(47+39)
					N=29
0.6	0.0092				N=27 — A-6(10), CL, S+C=71(38+33)
					N=50/0.2', S+C=9

(08/30/19)▼

Overburden

Sandstone, light gray to gray, very fine to fine grained, thin to medium bedded, with local shale streaks and partings
Waterstaining, orangish brown, to 210.5
80° Fractures, waterstained from 208.7 to 207.6 and 205.6 to 205.0

Shale, dark gray to gray, locally clayey with silty zones, poorly laminated
Lost water at 201.4

STD	RQD	KY	RQD	REC
0	0			100
44	44			94
0	0			66

Top of rock elev.= 211.0'
Base of weathered rock elev.= 210.5'

U.C. (psi)	STD	RQD	KY	RQD	REC
	0		0		100
	0		0		28
	12		8		80
	12		0		92
	33		15		100
1,090	36		18		100

SDI 22

Sandstone, light gray to gray, very fine to fine grained, thin to medium bedded, with local shale streaks and partings

Shale, dark gray to gray, locally clayey with sandy zones, poorly laminated

Sandstone, light gray to gray, very fine to fine grained, thin bedded, with local shale streaks and partings

Shale, dark gray to gray, silty, with sandy lenses, laminated

Top of rock elev.= 211.2'
Base of weathered rock elev.= 210.2'

Datum

PRELIMINARY NOT FOR CONSTRUCTION

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SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE:	JANUARY, 2020	CHECKED BY	
DESIGNED BY:	WAM		KJS
DETAILED BY:	RE, RF		KJS, WAM

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

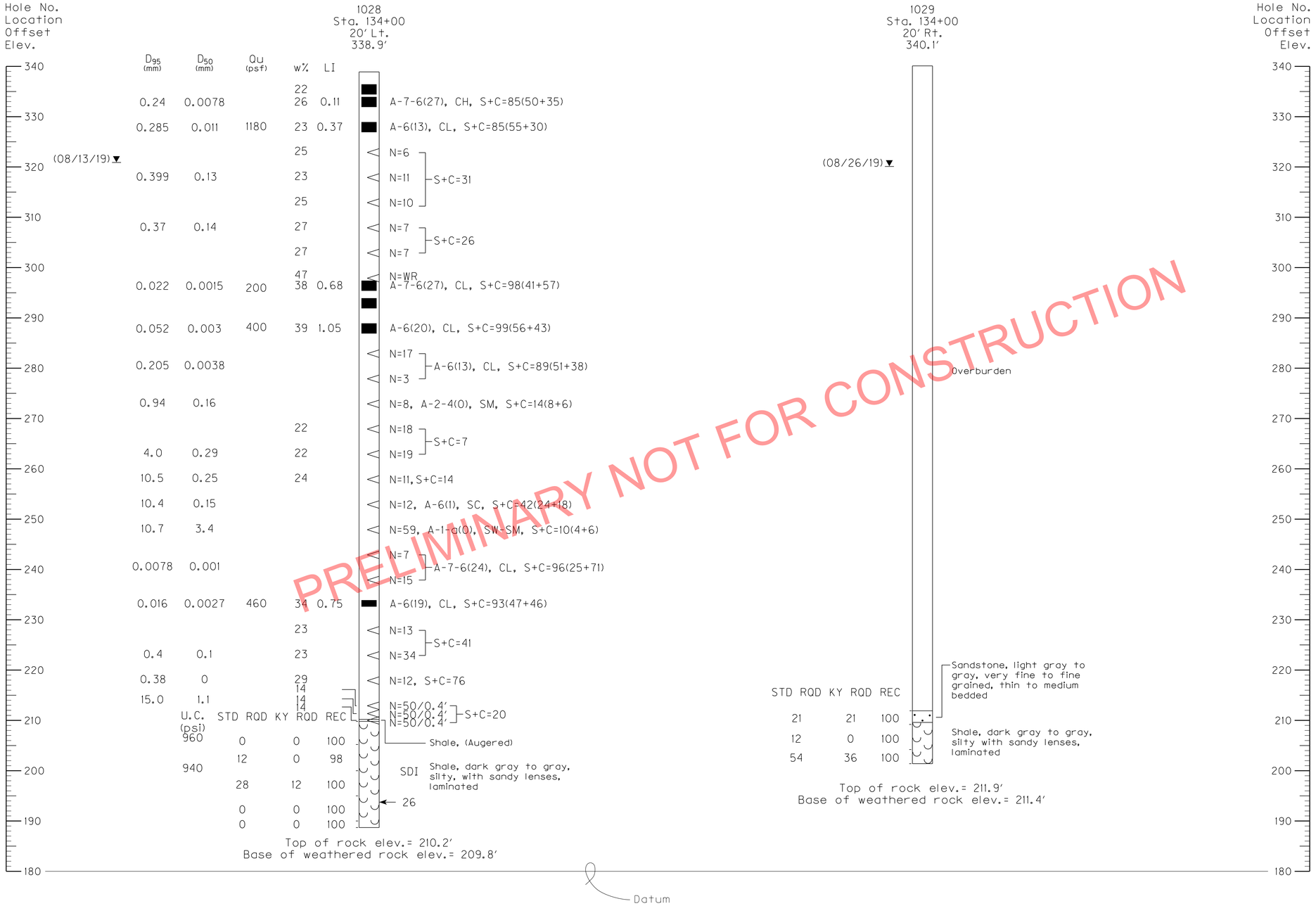
SHEET NO.: S114

DRAWING NO.: 27458

FILE NAME: V:\1785\ACTIVE\178565011\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_11.DGN
USER: DEllison
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

SUBSURFACE DATA

Abutment 2



PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. All standard penetration testing performed for structure borings depicted on this sheet were done utilizing an automatic hammer.
4. The rockline soundings were drilled to auger refusal. Refusal, as used herein, refers to auger refusal using a carbide-tipped-tooth bit. This may indicate the presence of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.
5. WR - indicates the weight of the drilling rods was enough to advance the sampler at least 2, 6" intervals, without any energy from the hammer.

SCALE: 1" = 10'
(Vertical Only)

REVISION	DATE

DATE:	JANUARY, 2020	CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE	CROSSING
US 60	CUMBERLAND RIVER

LOGS OF BORINGS

ITEM NUMBER
1-1142.00

PREPARED BY
Stantec

SHEET NO. S115
DRAWING NO. 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: RFlynn
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\1785650I\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\LOG_SHT_12.DGN

SUMMARY OF TRIAXIAL TEST DATA	
STATION	134+00
OFFSET	100' Lt.
DEPTH	(3.3'-3.8') (3.9'-4.4') (5.8'-6.3')
$\bar{c}$	400 psf
$\bar{\phi}$	32.7°

The summary above represents consolidated Undrained Triaxial test results.

ESTIMATED SOIL STRENGTH PARAMETERS		
SOIL	I	II
SHORT TERM	γ = 128.5 pcf c = 1000 psf ϕ = 0°	γ = 145.0 pcf c = 0 psf ϕ = 38°
LONG TERM	γ = 128.5 pcf $\bar{c}$ = 300 psf $\bar{\phi}$ = 30°	γ = 145.0 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 38°
SEISMIC	γ = 128.5 pcf $\bar{c}$ = 800 psf $\bar{\phi}$ = 15°	γ = 145.0 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 32°

FACTORS OF SAFETY			
ANALYSIS CONDITION	SLOPE	FAILURE SURFACE	FACTOR OF SAFETY
SHORT TERM	2:1	A	1.3
INTERMEDIATE TERM	2:1	B	1.5
LONG TERM	2:1	C	1.4
PSEUDOSTATIC	2:1	D	1.0

1012
Sta. 118+70
25' Rt.
334.2'

Hole No.
Location
Offset
Elev.

MAXIMUM REGULATED FLOOD EL 345.00

NORMAL POOL EL 302.00

APPROXIMATE GROUND LINE

APPROXIMATE ROCK LINE

BTM FTG EL 309.66

CUT

FILL

2H:1V

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	
0.3	0.027		14	-0.18	A-6(9), CL, S+C=75(51+24)
0.26	0.013	1500	21	0.36	A-6(11), CL, S+C=82(51+31)
0.38	0.15	480	21	NP	A-2-4(0), SM, S+C=24(14+10)
0.08	0.0155	1300	23	0.52	A-6(8), CL, S+C=80(53+27)

(10/01/19) ▼

N=20
N=26
A-6(4), CL, S+C=53(35+18)

Sandstone, light gray to brown, weathered

Shale, dark gray, weathered (loss)

Shale, dark gray, silty
45° Fracture from 262.3 to 262.1

U.C. (psi)	STD ROD	KY ROD	REC.	
	0	0	45	
650	73	39	100	
	52	48	100	SDI
	71	48	100	39
	80	70	100	62
	78	57	100	
	76	71	100	
	82	82	100	
1,680	84	74	100	

Top of rock elev.= 275.2'
Base of weathered rock elev.= 274.5'

PIER 3

Datum

360 350 340 330 320 310 300 290 280 270 260 250 240 230 220

117+50 118+00 118+50 119+00 119+50 120+00

PRELIMINARY NOT FOR CONSTRUCTION

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.

GEOTECHNICAL NOTE:

Pier arrangements and orientations are shown as at the time of the geotechnical exploration and analyses. Please refer to sheets S1 through S101 for final substructure dimensions and orientations.

SCALE: 1" = 10'

REVISION	DATE

DATE: JANUARY, 2020		CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

SOUTH RIVER BANK STABILITY

ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

SHEET NO. S116

DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650II\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\STAB_PIER_3.DGN
USER: RFlynn
DATE PLOTTED: January 21, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

MAXIMUM REGULATED FLOOD EL 345.00

NORMAL POOL EL 302.00

Hole No.
Location
Offset
Elev.

ESTIMATED SOIL STRENGTH PARAMETERS								
SOIL	I	II	III•	IV	V	VI	VII	VIII
LONG TERM	ɣ = 110.0 pcf c = 300 psf ø = 30°	ɣ = 118.0 pcf c = 0 psf ø = 27°	ɣ = 118.0 pcf c = 0 psf ø = 27°	ɣ = 110.0 pcf c = 300 psf ø = 30°	ɣ = 115.0 pcf c = 300 psf ø = 28°	ɣ =150.0 pcf c = 0 psf ø = 36°	ɣ = 115.0 pcf c = 300 psf ø = 30°	ɣ =126.0 pcf c = 0 psf ø = 30°
SEISMIC	ɣ = 110.0 pcf c̄ = 480 psf ø̄ = 15°	ɣ = 118.0 pcf c̄ = 0 psf ø̄ = 22°	ɣ = 118.0 pcf c̄ = -- psf ø̄ = --°	ɣ = 110.0 pcf c̄ = 800 psf ø̄ = 15°	ɣ = 115.0 pcf c̄ = 640 psf ø̄ = 12°	ɣ =150.0 pcf c̄ = 0 psf ø̄ = 30°	ɣ = 115.0 pcf c̄ = 300 psf ø̄ = 15°	ɣ =126.0 pcf c̄ = 0 psf ø̄ = 25°

For seismic stability analyses, soil III was modeled using a c/p ratio of 0.1

FACTORS OF SAFETY			
ANALYSIS CONDITION	SLOPE	FAILURE SURFACE	FACTOR OF SAFETY
LONG TERM	4:1	A	2.2
RAPID DRAW DOWN	4:1	B	1.4
POST EQ. WITHOUT PIER STRUCTURE	4:1	C	.83
POST EQ. WITH PIER STRUCTURE	4:1	D	1.0

SUMMARY OF TRIAXIAL TEST DATA	
STATION	134+00
OFFSET	100' Lt.
DEPTH	(3.3'-3.8') (3.9'-4.4') (5.8'-6.3')
c̄	400 psf
ø̄	32.7°

The summary above represents consolidated Undrained Triaxial test results.

1017
Sta. 125+70
25' Rt.
310.6'

126+30

APPROXIMATE GROUND LINE

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI		
			21			N=11
0.34 (10/10/19) ▼	0.025	440	30	1.52	I	A-4(3), CL, S+C=60(40+20)
					II	BTM FTG EL 291.00
0.24	0.018	600	32	1.44	III	A-4(6), CL, S+C=86(65+21)
0.35	0.12		28			N=9, S+C=32
					VII	N=6
0.36	0.071					N=HW — A-6(4), CL, S+C=51(24+27)
						N=2
					IV	
0.04	0.0016	1120	34	0.35		A-7-6(46), CH, S+C=99(45+54)
8'-0" DIA DRILLED SHAFT, TYP 0.057	0.005	1680	30	0.33		A-7-6(28), CL, S+C=96(60+36)
					VIII	
					V	
19	5.8		15			N=6, S+C=3
0.086	0.0035					N=HW, A-6(19), CL, S+C=95(55+40)
			14		VI	N=52 — S+C=6
24	5		14			N=50/0.4'
U.C. (psi)	STD ROD	KY ROD	REC			N=50/0.1'
	0	0	97			
	0	0	98			
15,600	10	10	98			
	0	0	48			
	61	61	100			
	42	42	100			
22,870	83	83	100			
	84	76	100			
	55	55	100			

Sandstone, light gray to gray, very fined grained Shale streaks and partings present above elevation 193.1'

Top of rock elev.= 211.0'
Base of weathered rock elev.= 210.7'

APPROXIMATE ROCK LINE

Datum

330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160

124+00 124+50 125+00 125+50 126+00 126+50

SCALE: 1" = 10'

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. HW - indicates the weight of the SPT hammer was enough to advance the sampler at least 2, 6" intervals, without any driving energy.

GEOTECHNICAL NOTE:

Pier arrangements and orientations are shown as at the time of the geotechnical exploration and analyses. Please refer to sheets S1 through S101 for final substructure dimensions and orientations.

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE:	JANUARY, 2020	CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE: US 60
CROSSING: CUMBERLAND RIVER

NORTH RIVER BANK STABILITY

ITEM NUMBER
1–1142.00

PREPARED BY
Stantec

SHEET NO. S117
DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650II\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\STAB_PIER_4.DGN
USER: RFlynn
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

FACTORS OF SAFETY			
ANALYSIS CONDITION	SLOPE	FAILURE SURFACE	FACTOR OF SAFETY
SHORT TERM	2:1	A	1.3
LONG TERM	2:1	B	1.8
RAPID DRAWDOWN	2:1	C	1.7
PSEUDOSTATIC	2:1	D	1.1

ESTIMATED SOIL STRENGTH PARAMETERS						
SOIL	I	II	III	IV	V	VI
SHORT TERM	γ = 130 pcf c = 1800 psf ϕ = 0°	γ = 124 pcf c = 1300 psf ϕ = 0°	γ = 120 pcf c = 0 psf ϕ = 30°	γ = 124 pcf c = 640 psf ϕ = 29°	γ = 122 pcf c = 0 psf ϕ = 30°	γ = 115 pcf c = 1000 psf ϕ = 0°
LONG TERM	γ = 130 pcf $\bar{c}$ = 270 psf $\bar{\phi}$ = 28°	γ = 124 pcf $\bar{c}$ = 300 psf $\bar{\phi}$ = 30°	γ = 120 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 30°	γ = 124 pcf $\bar{c}$ = 200 psf $\bar{\phi}$ = 0°	γ = 122 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 30°	γ = 115 pcf $\bar{c}$ = 300 psf $\bar{\phi}$ = 28°
SEISMIC	γ = 130 pcf $\bar{c}$ = 1440 psf $\bar{\phi}$ = 0°	γ = 124 pcf $\bar{c}$ = 1040 psf $\bar{\phi}$ = 15°	γ = 120 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 25°	γ = 124 pcf $\bar{c}$ = 512 psf $\bar{\phi}$ = 15°	γ = 122 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 25°	γ = 115 pcf $\bar{c}$ = 800 psf $\bar{\phi}$ = 12°

Hole No.
Location
Offset
Elev.

1027
Sta. 132+60
25' Rt.
338.3'

1028
Sta. 134+00
20' Lt.
338.9'

LOW SEAT
EL 373.07

LOW SEAT
EL 367.67

BERM
EL 366.7

BTM FTG
EL 361.00

-4.00%

2:1

EL 347.0

Phreatic Surface positioned at Elevation 345.0 feet for Rapid Drawdown slope stability analyses

Position of phreatic surface modeled for short- and long-term slope stability analyses

APPROXIMATE GROUND LINE

BTM FTG
EL 329.00

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	
0.29	0.0064		20	0.09	A-7-6(18), CL, S+C=83(46+37)
0.32	0.03	1280	21	0.61	A-6(6), CL, S+C=69(50+19)
(08/27/19)▼			31		N=2
			29		N=3
			34		N=3 — S+C=59
			35	1.52	N=2
0.31	0.023		32	1.25	N=4 — A-6(5), CL, S+C=68(46+22)
0.061	0.0024		36	0.92	N=2, A-6(18), CL, S+C=97(51+46)
0.058	0.0024	620	35	0.78	A-6(21), CL, S+C=100(53+47)
			29		N=14, S+C=15
					N=9
0.62	0.0044				N=26 — A-6(13), CL, S+C=85(50+35)
			45		N=9
			45		N=6 — S+C=12
			45		N=22
			64		N=15, S+C=33
			23		N=24
			23		N=12 — S+C=28
			23		N=19
					N=1
0.008	0.0012				N=4 — A-7-6(25), CL, S+C=99(32+67)
0.14	0.0022	1360	31	0.61	A-6(21), CL, S+C=92(44+48)
0.25	0.0046				N=6, A-6(14), CL, S+C=86(47+39)

D_{95} (mm)	D_{50} (mm)	Qu (psf)	w%	LI	
			22		
0.24	0.0078		26	0.11	A-7-6(27), CH, S+C=85(50+35)
0.285	0.011	1180	23	0.37	A-6(13), CL, S+C=85(55+30)
(08/13/19)▼			25		N=6
			23		N=11 — S+C=31
			25		N=10
			27		N=7 — S+C=26
			27		N=7
			47		N=WR
0.022	0.0015	200	38	0.68	A-7-6(27), CL, S+C=98(41+57)
0.052	0.003	400	39	1.05	A-6(20), CL, S+C=99(56+43)
0.205	0.0038				N=17 — A-6(13), CL, S+C=89(52+38)
					N=3
0.94	0.16				N=8, A-2-4(0), SM, S+C=14(8+6)
			22		N=18 — S+C=7
			22		N=19
			24		N=11, S+C=14
10.4	0.15				N=12, A-6(1), SC, S+C=42(24+18)
10.7	3.4			NP	N=59, A=1-a(0), SW-WM, S+C=10(4+6)
0.0078	0.001				N=7 — A-7-6(24), CL, S+C=96(25+71)
					N=15
0.016	0.0027	460	34	0.75	A-6(19), CL, S+C=93(47+46)
			23		N=13 — S+C=41
			23		N=34

I II III IV V VI

Datum

390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220

132+50 133+00 133+50 134+00 134+50 135+00

SCALE: 1" = 10'

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. WR - indicates the weight of the drilling rods was enough to advance the sampler at least 2, 6" intervals, without any energy from the hammer.

GEOTECHNICAL NOTE:

Pier arrangements and orientations are shown as at the time of the geotechnical exploration and analyses. Please refer to sheets S1 through S101 for final substructure dimensions and orientations.

PRELIMINARY COPY NOT FOR CONSTRUCTION

REVISION	DATE

DATE:	JANUARY, 2020	CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60

CROSSING: CUMBERLAND RIVER

SPILL-THROUGH SECTION

ITEM NUMBER: 1-1142.00

PREPARED BY: Stantec

SHEET NO.: S118

DRAWING NO.: 27458

MicroStation v8.11.9.829
E-SHEET NAME:
USER: RFlynn
DATE PLOTTED: January 23, 2020
FILE NAME: V:\1785\ACTIVE\1785650II\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\STAB_PIER_EB2.DGN

SUMMARY OF TRIAXIAL TEST DATA	
STATION	134+00
OFFSET	100' Lt.
DEPTH	(3.3'-3.8') (3.9'-4.4') (5.8'-6.3')
$\bar{c}$	400 psf
$\bar{\phi}$	32.7°

The summary above represents consolidated Undrained Triaxial test results.

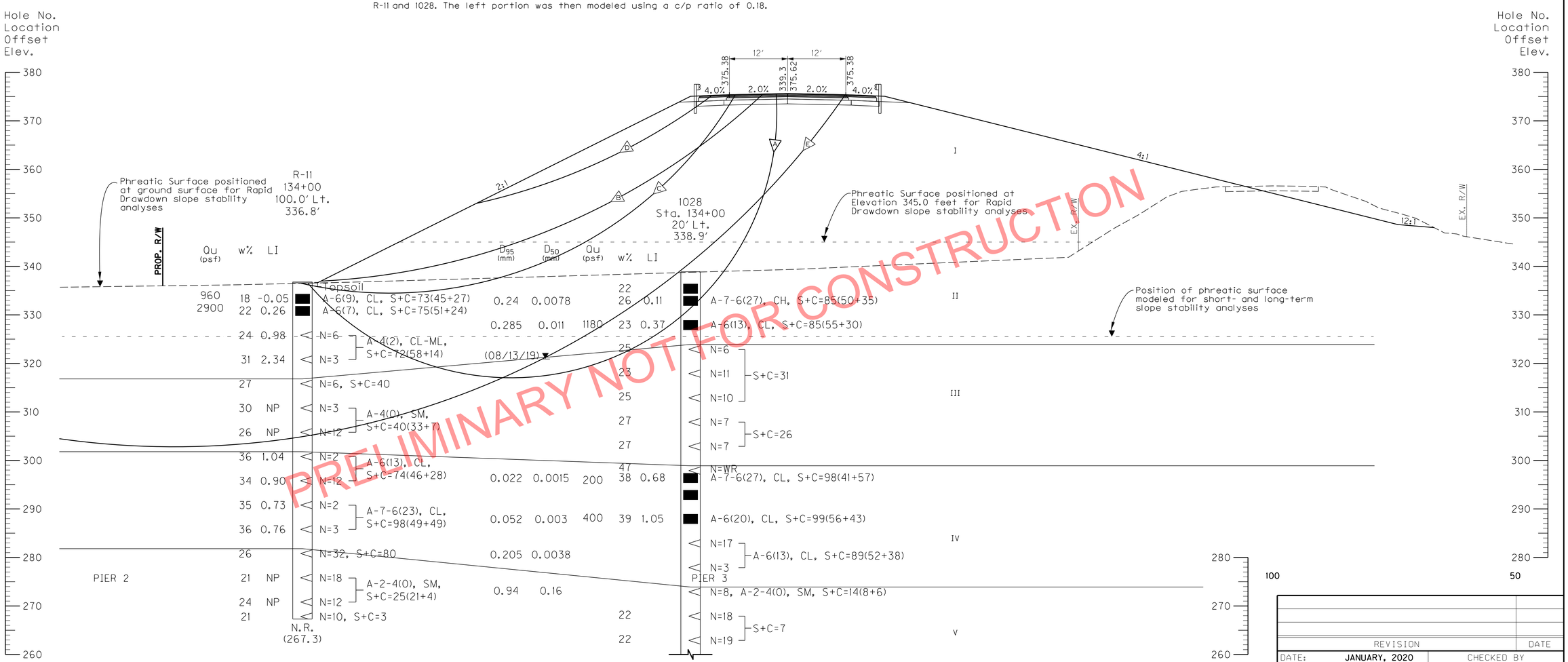
ESTIMATED SOIL STRENGTH PARAMETERS					
SOIL	I	II	III•	IV	V
SHORT TERM	γ = 130 pcf c = 1800 psf ϕ = 0°	γ = 124 pcf c = 1300 psf ϕ = 0°	γ = 120 pcf c = 0 psf ϕ = 30°	γ = 124 pcf c = 640 psf ϕ = 29°	γ = 122 pcf c = 0 psf ϕ = 30°
LONG TERM	γ = 130 pcf $\bar{c}$ = 270 psf $\bar{\phi}$ = 28°	γ = 124 pcf $\bar{c}$ = 300 psf $\bar{\phi}$ = 30°	γ = 120 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 30°	γ = 124 pcf $\bar{c}$ = 200 psf $\bar{\phi}$ = 0°	γ = 122 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 30°
SEISMIC	γ = 130 pcf $\bar{c}$ = 1440 psf $\bar{\phi}$ = 0°	γ = 124 pcf $\bar{c}$ = 1040 psf $\bar{\phi}$ = 15°	γ = 120 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 25°	γ = 124 pcf $\bar{c}$ = 512 psf $\bar{\phi}$ = 15°	γ = 122 pcf $\bar{c}$ = 0 psf $\bar{\phi}$ = 25°

•For seismic stability analyses, soil III was split vertically half-way between R-11 and 1028. The left portion was then modeled using a c/p ratio of 0.18.

FACTORS OF SAFETY			
ANALYSIS CONDITION	SLOPE	FAILURE SURFACE	FACTOR OF SAFETY
SHORT TERM	2:1	A	1.7
LONG TERM	2:1	B	1.8
RAPID DRAWDOWN	2:1	C	1.6
PSEUDOSTATIC	2:1	D	1.5
POST-EARTHQUAKE	2:1	E	1.6

NOTES:

1. This sheet presents geotechnical data and recommendations. Refer to project plans, profiles, and cross sections for final alignment and grade.
2. Surface elevations are referenced to Mean Sea Level.
3. WR - indicates the weight of the drilling rods was enough to advance the sampler at least 2, 6" intervals, without any energy from the hammer.



PRELIMINARY NOT FOR CONSTRUCTION

134+00

SCALE: 1" = 10'

REVISION	DATE

DATE:	JANUARY, 2020	CHECKED BY	
DESIGNED BY:	WAM	KJS	
DETAILED BY:	RE, RF	KJS, WAM	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY
LIVINGSTON

ROUTE
US 60

CROSSING
CUMBERLAND RIVER

EMBANKMENT STABILITY SECTION

ITEM NUMBER
1–1142.00

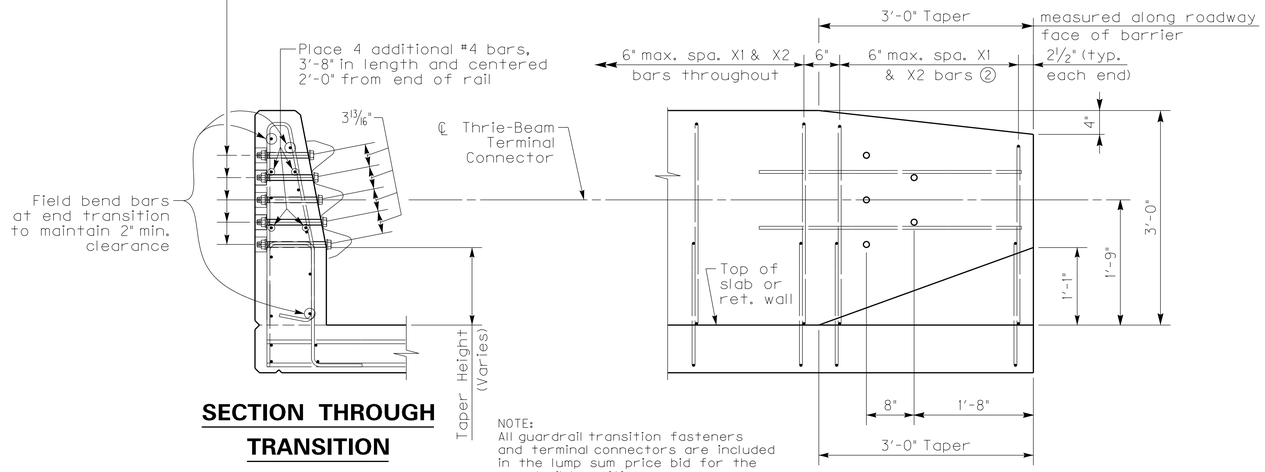
PREPARED BY
Stantec

SHEET NO.
S119

DRAWING NO.
27458

FILE NAME: V:\1785\ACTIVE\1785650111\GEOTECHNICAL\DRAWING\SHEET_FILES\BRIDGE\XS13400.DGN
USER: DEllison
DATE PLOTTED: January 23, 2020
E-SHEET NAME:
MicroStation v8.11.9.829

5 ~ 1" Dia holes and 2 ½" Dia x 2" deep recesses. Form or core holes and recesses. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes and recesses. Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail. Tighten the 5 Terminal Connection Bolts in a well distributed pattern so to prevent damage or distortion of the Thrie-Beam Connection and the guardrail Transition. Cut bolts off after installation so as to extend no more than ¾" beyond nut. Paint ends of cut-off bolts with Zinc-rich paint.



SECTION THROUGH TRANSITION

ELEVATION

NOTE:
All guardrail transition fasteners and terminal connectors are included in the lump sum price bid for the guardrail transition.

General Notes

This rail system has been structurally evaluated to be equivalent or greater in strength to other single slope railings which have been crash tested to MASH TL-4 Criteria. This rail system can be used for speeds of 50 mph or greater when a TL-3 rated transition is used. When a TL-2 transition is used, this railing can only be used for 45 mph or less.

CONCRETE: Use Class AA Concrete throughout.

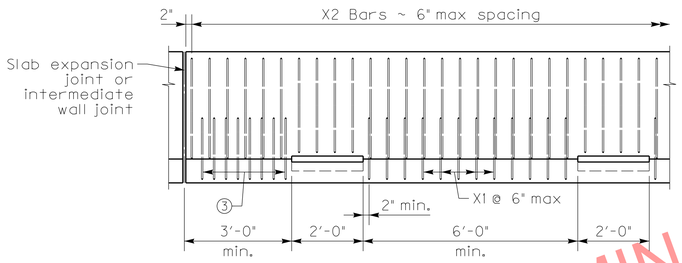
SHOP DRAWINGS: Are not required for this rail.

OPTIONAL WELDED WIRE REINFORCEMENT: At the contractor's option, deformed welded wire reinforcement (WWR) in accordance with ASTM A1064 and epoxy coated in accordance with ASTM A884 may be used in place of stirrup bars X1, X2 and X3 as well as the straight or longitudinal reinforcement attached to these stirrups. Use size D20 wire for both stirrups and straight reinforcement. Locate and space the wire reinforcement the same as the conventional reinforcement. Use a minimum 1'-11" lap for the straight reinforcement between sheets of WWR.

MEASUREMENT: The linear foot bid for the barrier is measured along the roadway gutterline. Include all reinforcement shown and all concrete above the top of slab in the bid item for Rail System, 36 Inch Single Slope.

REINFORCEMENT: All reinforcement shown on this sheet is to be epoxy coated Grade 60. Use stirrup bend diameters for all bent bars. Straight reinforcement is to be Size #4 and lapped 1'-11" when necessary.

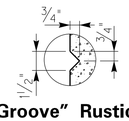
Average weight of rail is 412 lb/ft.



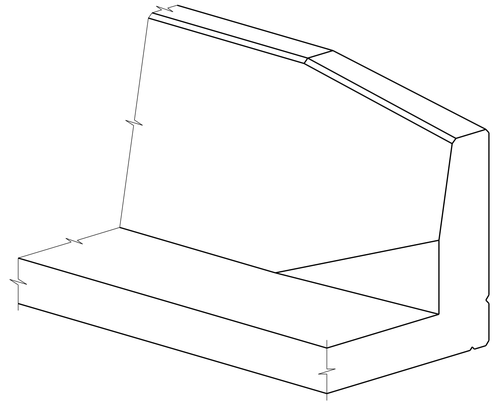
OPTIONAL SIDE SLOT DRAIN DETAIL

Note: Open joints are not required.

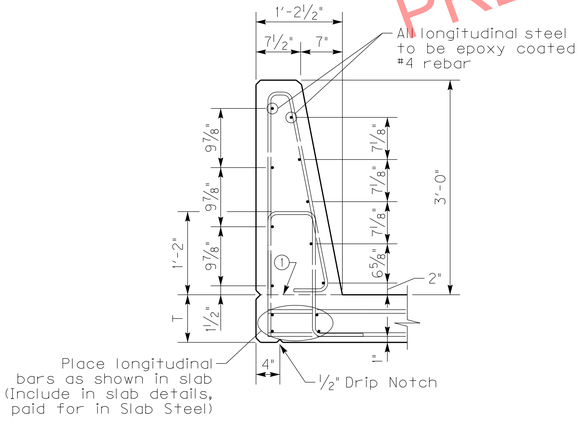
③ Space X1 @ 4" max. when end region of barrier is less than 6'-0" from joint to side slot. Space X1 @ 6" max. when end region is greater than 6'-0" from joint to edge of side slot.



"V-Groove" Rustication

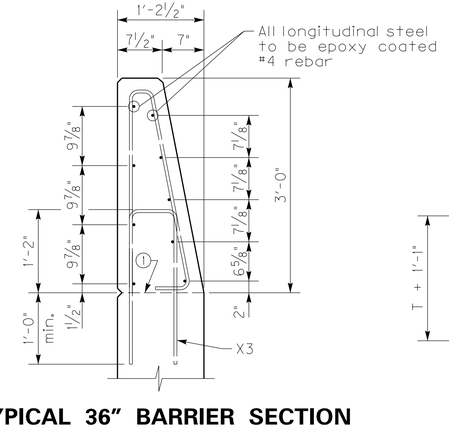


OBLIQUE VIEW

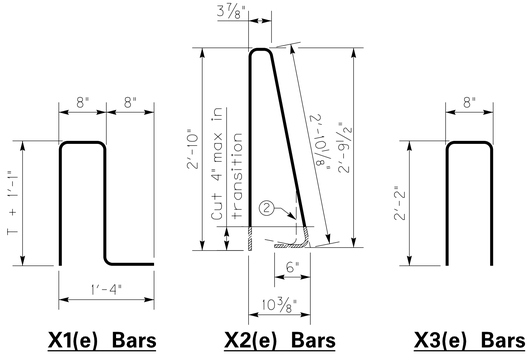


TYPICAL 36" BARRIER SECTION

① Mandatory roughened construction joint. Concrete above this joint is to be placed after slab has been properly cured and included in the bid for Rail System, 36 Inch Single Slope.



TYPICAL 36" BARRIER SECTION ON RETAINING WALL



X1(e) Bars #4 Bar

X2(e) Bars #4 Bar

X3(e) Bars #4 Bar

② Bend and field cut X2 bar as necessary to maintain 2" min. clearance to sides of taper and 2" to top of barrier.

PRELIMINARY NOT FOR CONSTRUCTION

ITEM NUMBER
1–1142.00

REVISION	DATE
DATE: JANUARY 2020	CHECKED BY
DESIGNED BY:	
DETAILED BY:	

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: LIVINGSTON

ROUTE: US 60 | CROSSING: CUMBERLAND RIVER

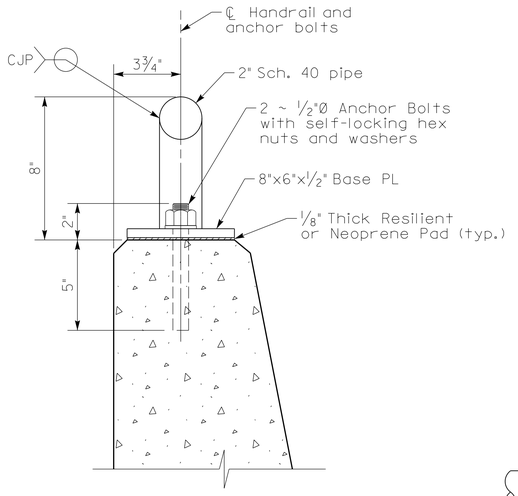
RAILING SYSTEM 36 INCH

PREPARED BY: Stantec

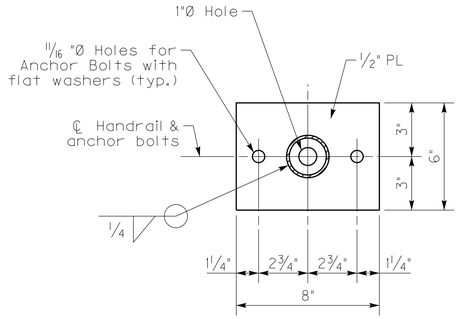
SHEET NO. S120

DRAWING NO. 27458

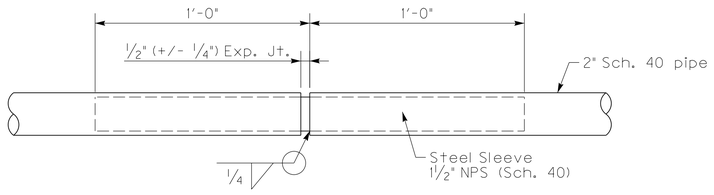
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TYPICAL SECTION

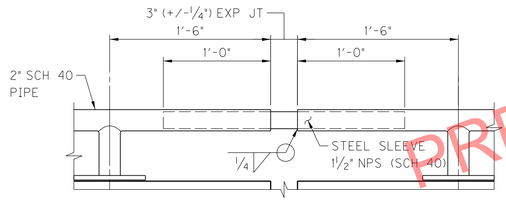


BASE PLATE DETAIL

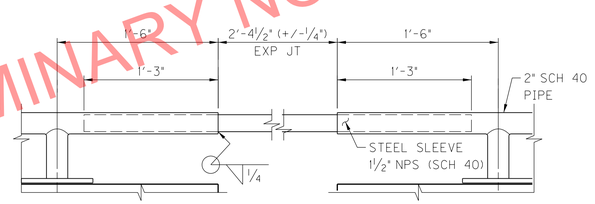


EXPANSION JOINT

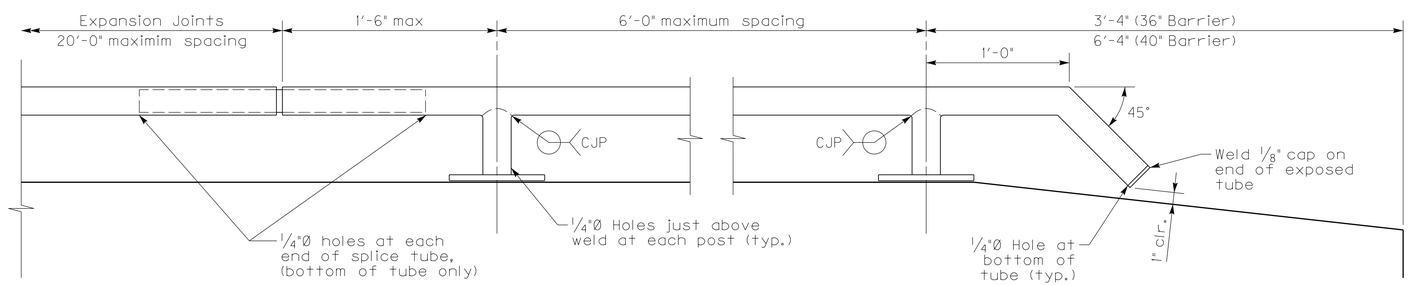
*Note: Expansion Joints shall be placed at bridge expansion joint locations and shall match Bridge Expansion Joint Size. This handrail shall not be used where bridge expansion and contraction will leave less than 6 inch overlap in handrail joint.



HANDRAIL EXPANSION JOINT AT PIER 3



HANDRAIL EXPANSION JOINT AT PIER 4



ELEVATION

General Notes

PIPE RAILING & POSTS: Pipe Rails and Posts shall be in accordance with ASTM A53 Grade B for standard weight pipe and ASTM A500 Grade B, C or D or ASTM A501 for structural tube. For curved longitudinal alignments the top and bottom rails and handrails shall be shop bent to match the alignment radius.

BASE PLATES: Base Plates shall be in accordance with ASTM A36 or ASTM A709 Grade 36.

COATINGS: The railing shall be hot-dip galvanized after fabrication in accordance with AASHTO M111. All nuts, anchor bolts, and washers shall be hot-dip galvanized in accordance with AASHTO M232.

ANCHOR BOLTS: Anchor bolts shall be in accordance with ASTM F1554 Grade 36. Headless anchor bolts for Adhesive Anchors shall be threaded full length. Cutting of reinforcing steel is permitted for drilled hole installation. All anchor bolts shall have single self-locking hex nuts. Tack welding of the nut to the anchor bolt may be used in lieu of self-locking nuts. All nuts shall be in accordance with ASTM A563 or ASTM A194. Flat Washers shall be in accordance with ASTM F436. After the nuts have been snug tightened, the anchor bolt threads shall be distorted to prevent removal of the nuts. Distorted threads and tack welds shall be coated with a zinc rich paint. Mechanical anchors may be allowed. Submit calculations by a professional engineer and manufacture data for proposed mechanical anchor to the engineer for approval along with the shop drawings.

RESILIENT AND NEOPRENE PADS: Resilient and Neoprene pads shall be in accordance with Specification Section 932, except that testing of the finished pads shall not be required. Neoprene pads shall be durometer hardness 60 or 70.

JOINTS: All fixed joints are to be welded all around and plug welds ground smooth. Remove burs and weld splatter, additionally remove any sharp edges on rails to prevent injury. Expansion Joints shall be spaced at a maximum of 20'-0". Field splices similar to the expansion joint detail may be approved by the Engineer to facilitate shipping and handling, but rails must be continuous across a minimum of two posts.

WELDING: All welding shall be in accordance with the American Welding Society Structural Welding Code (Steel) ANSI/AWS D1.1 (current edition). Weld metal shall be E60XX or E70XX. Nondestructive testing of welds is not required.

SHOP DRAWINGS: Details addressing project specific geometry (line & grade) showing post and expansion joint locations must be submitted by the Contractor for the Engineer's approval prior to fabrication of the railing. Shop drawings shall be in accordance with the Specifications.

PAYMENT: Steel handrail shall be paid for under the contract unit price for Steel Handrail, LF. Payment for the handrail will be plan quantity measured as the length along the center line of the top rail, and includes rails, posts, rail splice assembly, base plates, anchor bolts, nuts, washers, resilient or neoprene pads and all incidental materials and labor required to complete installation of the handrail.

RAILING MEMBER DIMENSIONS TABLE			
MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
Posts and Rails	2" NPS (Sch. 40)	2.375"	0.154"
Rail Joint/Splice Sleeves	1½" NPS (Sch. 40)	1.900"	0.145"

PRELIMINARY NOT FOR CONSTRUCTION

REVISION	DATE

DATE: JANUARY 2020 — CHECKED BY
DESIGNED BY:
DETAILED BY:

Commonwealth of Kentucky
DEPARTMENT OF HIGHWAYS

COUNTY: **LIVINGSTON**

ROUTE: **US 60** — CROSSING: **CUMBERLAND RIVER**

STEEL HANDRAIL

ITEM NUMBER	PREPARED BY	SHEET NO.
1–1142.00	Stantec	S121
		DRAWING NO. 27458

FILE NAME: V:\1785\ACTIVE\1785650I\STRUCTURAL\CUMBERLAND RIVER BRIDGE\DRAWINGS\121 STEEL HANDRAIL.DGN
USER: dabasham
DATE PLOTTED: 1/24/2020 7:28:54 PM
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