




TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
GRAYSON COUNTY
KY-224 over WESTERN KENTUCKY PARKWAY
STA. 50+00.00

ESTIMATE OF QUANTITIES																							
BID ITEM CODE		08100	08104	08150	08151	08002	08003	08020	02231	08046	08033	02998	08670	03299	25028ED	23378EC	02403	08305	08094	25078ED	08130	08133	08269
BID ITEM		CONCRETE-CLASS A	CONCRETE-CLASS AA	STEEL REINFORCEMENT	STEEL REINFORCEMENT-EPOXY COATED	STRUCTURE EXCAV-SOLID ROCK	FOUNDATION PREPARATION	CRUSHED AGGREGATE SLOPE PROT	STRUCTURE GRANULAR BACKFILL	PILES-STEEL HP12X53	TEST PILES	MASONRY COATING	PRECAST PC BOX BEAM SB27	ARMORED EDGE FOR CONCRETE	RAIL SYSTEM SINGLE SLOPE 40 IN	CONCRETE SEALING	REMOVE CONCRETE MASONRY	REMOVE REINF CONCRETE	PILE POINTS-12 IN	THRIE BEAM GUARDRAIL TRANSITION TL-3	MECHANICAL REINF COUPLER #5	MECHANICAL REINF COUPLER #8	ELECTRICAL CONDUIT
UNIT		CUYD	CUYD	LB	LB	CUYD	LS	TON	CUYD	LF	LF	SQYD	LF	LF	LF	SQFT	CUYD	LS	EACH	EACH	EACH	EACH	LS
SUBSTRUCTURE	END BENT #1	40.1		2774				121	167	154	27	40					24.4		8				
	PIER #1	128.7		19852		15						239					28.3				15	14	
	PIER #2	154.4		19864	120	15						390					29.3				15	14	
	PIER #3	128.5		19558		15						390					27.3				15	14	
	END BENT #2	47.8		3017				145	164	81	17	49					25.6		8				
SUPERSTRUCTURE			387.9		100884								1401.0	113.6	479	19012	426.9			4			
BRIDGE TOTALS		499.5	387.9	65065	101004	45	1	266	331	235	44	1108	1401.0	113.6	479	19012	561.8	1	16	4	45	42	

[illegible]

 COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS	 KENTUCKY TRANSPORTATION CABINET	REVISION	DATE	 HMB PROFESSIONAL ENGINEERS, INC.	PREPARED BY	DATE: 12/30/2021	CHECKED BY	TITLE SHEET & QUANTITIES	ROUTE	ITEM NO.	COUNTY OF
					HMB PROFESSIONAL ENGINEERS, INC.	DESIGNED BY: B. Reid	L. Boller			CROSSING	4-20001
						DETAILED BY: B. Pulliam	B. Reid	WESTERN KENTUCKY PARKWAY			KY-224
MicroStation v8.11.7.443		USER: bpulliam		DATE PLOTTED: 1/26/2022 9:53:12 AM	FILE: G:\Engr\HD1365.10 and 1365.11 Grayson WK\BRIDGES\CAD\Title Sheet & Quantities.dgn						

GENERAL NOTES

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 SPECIFICATIONS ARE TO THE 9TH EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH INTERIMS.

DESIGN LOAD

THIS BRIDGE IS DESIGNED FOR A MODIFIED HL-93 (KY HL-93) LIVE LOAD OBTAINED BY INCREASING THE AASHTO LOADING BY 25%. SEE EXISTING PLANS FOR THE DESIGN LOAD USED FOR THE SUBSTRUCTURE THAT WILL REMAIN IN-PLACE.

FUTURE WEARING SURFACE

THIS BRIDGE IS DESIGNED FOR A 15 PSF FUTURE WEARING SURFACE LOAD.

DESIGN METHOD

ALL REINFORCED CONCRETE MEMBERS ARE DESIGNED BY THE LOAD AND RESISTANCE FACTOR METHOD AS SPECIFIED IN THE CURRENT AASHTO SPECIFICATIONS. SEE EXISTING PLANS FOR THE DESIGN METHOD USED FOR THE SUBSTRUCTURE THAT WILL REMAIN IN-PLACE.

MATERIALS DESIGN SPECIFICATIONS

F'c = 3500 PSI FOR CLASS "A" REINFORCED CONCRETE
F'c = 4000 PSI FOR CLASS "AA" REINFORCED CONCRETE
Fy = 60000 PSI FOR STEEL REINFORCEMENT

FOR PRESTRESSED BEAM MATERIAL SPECIFICATIONS, SEE BEAM SHEET.

MATERIAL SPECIFICATIONS

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

STRUCTURAL STEEL, 36,000 PSI MIN. YIELD	AASHTO M-270, GRADE 36
UNCOATED SEVEN-WIRE LOW-RELAXATION STRAND	
FOR PRESTRESSED CONCRETE	AASHTO M-203, GRADE 270
STEEL REINFORCEMENT, GRADE 60	ASTM A615/A615M-96a

CONCRETE

CLASS "AA" CONCRETE IS TO BE USED IN THE SUPERSTRUCTURE. CLASS "A" CONCRETE IS TO BE USED IN THE SUBSTRUCTURE. PRESTRESSED BEAM CONCRETE SHALL BE IN ACCORDANCE WITH THE PLANS AND SPECIFICATONS.

STRUCTURE GRANULAR BACKFILL

EXCAVATION INTO EXISTING PAVEMENT OR GROUND BEHIND THE ABUTMENTS THAT MAY BE REQUIRED FOR ABUTMENT CONSTRUCTION SHALL BE BACKFILLED WITH STRUCTURE GRANULAR BACKFILL IN ACCORDANCE WITH SPECIAL PROVISION 69. WRAP ALL ROCK IN GEOTEXTILE FABRIC CLASS 2. ALL GEOTEXTILE FABRIC SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR STRUCTURE GRANULAR BACKFILL.

MASONRY COATING

CONTRARY TO THE SPECIFICATIONS, ONLY APPLY MASONRY COATING TO THE SUBSTRUCTURES. THE ENTIRE EXPOSED SUBSTRUCTURE INCLUDING THE EXISTING PORTIONS OF THE ABUTMENTS SHALL RECIEVE MASONRY COATING TO 6" BELOW THE FINISHED GROUND LINE.

ON-SITE INSPECTION

EACH CONTRACTOR SUBMITTING A BID FOR THIS WORK SHALL MAKE A 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.

DAMAGE TO THE SUBSTRUCTURES

THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES TO THE EXISTING SUBSTRUCTURES DURING RECONSTRUCTION EVEN TO THE REPLACEMENT OF THE ENTIRE SUBSTRUCTURE, SHOULD THEY BE DAMAGED DUE TO HIS ACTIONS.

PILING

PILING SHALL BE DRIVEN TO PRACTICAL REFUSAL. TEST PILES SHALL BE DRIVEN WHERE DESIGNATED ON THE PLANS TO DETERMINE THE LENGTH OF PILE REQUIRED. ALL TEST PILES SHALL BE ACCURATELY LOCATED SO THAT THEY MAY BE USED IN THE FINISHED STRUCTURE.

PILE POINTS

PILE POINTS ARE REQUIRED. THE POINTS SHALL BE THE TYPE FOR KEYING INTO A SLOPING ROCK SURFACE. SEE SECTION 604.03.04(C) OF THE STANDARD SPECIFICATIONS.

SLOPE PROTECTION

SLOPE PROTECTION SHALL BE CRUSHED AGGREGATE SLOPE PROTECTION IN ACCORDANCE WITH SECTION 805.13 OF THE SPECIFICATIONS. GEOTEXTILE FABRIC UNDER THE SLOPE PROTECTION SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR CRUSHED AGGREGATE SLOPE PROTECTION.

REINFORCEMENT

DIMENSIONS SHOWN FROM THE FACE OF CONCRETE TO BARS ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN OR NOTED. SPACING OF BARS IS FROM CENTER TO CENTER OF BARS. THE CLEAR DISTANCE TO FACE OF CONCRETE IS 2" UNLESS OTHERWISE NOTED. ANY REINFORCING BARS DESIGNATED BY THE SUFFIX (E) IN THE PLANS SHALL BE EPOXY COATED IN ACCORDANCE WITH SECTION 811.10 OF THE STANDARD SPECIFICATIONS. ANY REINFORCING BARS DESIGNATED BY THE SUFFIX (S) IN THE BENDING DIAGRAM SHALL BE CONSIDERED A STIRRUP FOR PURPOSES OF BEND DIAMETERS.

CONTRACTOR VERIFY DIMENSIONS

CONTRACTOR SHALL VERIFY DIMENSION AND ELEVATIONS SHOWN IN THE PLANS BEFORE AND DURING CONSTRUCTION AND ADJUST BAR LENGTHS AND OR BEAM LENGTHS TO ENSURE PROPER FIT AND FINISH IN THE FINAL PRODUCT. DIMENSIONS ARE FOR A NORMAL TEMPERATURE OF 60 DEGREES FAHRENHEIT. LAYOUT DIMENSIONS ARE HORIZONTAL DIMENSIONS.

BEVELED EDGES

ALL EXPOSED EDGES SHALL BE BEVELED ¾" UNLESS OTHERWISE NOTED.

COMPLETION OF THE 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, REMOVAL OF ALL OR PARTS OF EXISTING STRUCTURES, PHASE CONSTRUCTION, INCIDENTAL MATERIALS, LABOR, OR ANYTHING ELSE REQUIRED TO COMPLETE THE STRUCTURE.

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. 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.

STAY-IN-PLACE METAL FORMS

THE USE OF STAY-IN-PLACE FORMWORK FOR THE BRIDGE DECK IS PERMITTED PROVIDED THE CORRUGATIONS ARE FILLED WITH EXPANDED POLYSTYRENE.

EXISTING REINFORCING STEEL

THE COST OF CUTTING, BENDING AND CLEANING EXISTING REINFORCING STEEL IS TO BE INCIDENTAL TO THE LUMP SUM BID FOR REMOVE CONCRETE MASONRY.

FOUNDATION PREPARATION

INCLUDE IN THIS LUMP SUM BID THE COST OF ANY REQUIRED COMMON EXCAVATION (INCLUDING MATERIALS, LABOR, EQUIPMENT, ETC.) IN ACCORDANCE WITH SECTION 603 OF THE SPECIFICATIONS. CONTRARY TO THE SPECIFICATIONS, BACKFILLING BEHIND THE ABUTMENTS SHALL BE PAID FOR IN THE UNIT PRICE BID FOR STRUCTURE GRANULAR BACKFILL.

CONCRETE SEALER

SUPERSTRUCTURE AREAS DETAILED IN THE SPECIFICATIONS AS REQUIRING MASONRY COATING SHALL BE SEALED IN ACCORDANCE WITH THE SPECIAL NOTE FOR CONCRETE SEALING AND IN THE AREAS SHOWN IN THE DETAIL ON S21. CONCRETE SURFACES (EXCEPT THE DECK) SHALL RECEIVE THE ORDINARY SURFACE FINISH AS DESCRIBED IN SECTION 601.03.18(A) PRIOR TO BEING SEALED.

EXISTING HANDRAIL

REMOVE AND RELOCATE THE EXISTING ALUMINUM HANDRAIL AS DIRECTED BY THE ENGINEER. ALL COSTS TO REMOVE, DELIVER TO A LOCATION AS SPECIFIED BY THE ENGINEER, OR DISPOSAL FEES SHALL BE INCIDENTAL TO THE BID FOR REMOVE CONCRETE MASONRY.

ELECTRICAL CONDUIT

THE LUMP SUM BID FOR THIS ITEM SHALL INCLUDE FURNISHING ALL CONDUIT, JUNCTION BOXES, ANCHOR BOLTS, OTHER RELATED MATERIALS, AND ALL LABOR NECESSARY FOR PLACEMENT IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND STANDARD DRAWINGS. ALL CONDUIT SHALL BE RIGID GALVANIZED CONDUIT. CONDUIT SHALL EXTEND 4' BEYOND END OF BRIDGE AND BE CAPPED. MARK END LOCATION WITH CONCRETE MARKER, 4 REQUIRED. LOCATION OF JUNCTION BOXES SHALL BE AS DIRECTED BY THE ENGINEER.

REMOVE REINFORCED CONCRETE

THE LUMP SUM BID FOR THIS ITEM SHALL INCLUDE ALL LABOR, MATERIALS, AND DISPOSAL COSTS ASSOCIATED WITH THE REMOVAL OF THE EXISTING PAVED CONCRETE SLOPEWALLS AT EACH ABUTMENT. THE ESTIMATED QUANTITY FOR THIS REMOVAL IS 88 CY AT ABUTMENT 1 AND 90 CY AT ABUTMENT 2.

TEMPORARY SUPPORTS

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

STRUCTURE EXCAVATION

SHEETING OR SHORING MAY BE NECESSARY FOR CONSTRUCTION. THE COST OF ANY SUCH WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR FOUNDATION PREPARATION OR REMOVE CONCRETE MASONRY, AS APPROPRIATE.

CONSTRUCTION IDENTIFICATION

THE NAMES OF THE PRIME CONTRACTOR AND THE SUBCONTRACTOR SHALL BE IMPRINTED IN THE CONCRETE WITH ONE 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. SEE STD. DWG. BGX-006, C.E.

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 FOR 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.

SHOP DRAWINGS

WHEN CHANGES IN THE SHOP DRAWINGS ARE PROPOSED BY THE FABRICATOR OR SUPPLIER, THE SHOP DRAWINGS REFLECTING THESE CHANGES SHALL BE SUBMITTED TO THE CONSULTANT THROUGH THE CONTRACTOR. THE CONSULTANT SHALL PROVIDE THE DIVISION OF STRUCTURAL DESIGN ONE COPY OF THE FINAL APPROVED SHOP PLANS.

SLAB POURING SEQUENCE

SLAB SHALL BE POURED CONTINUOUSLY OUT TO OUT.

EXISTING PLANS

EXISTING PLANS CAN BE FOUND UNDER DRAWING NUMBER 14991.

BONDED CONSTRUCTION JOINT

WHERE A BONDED CONSTRUCTION JOINT IS CALLED FOR IN THE PLANS, BOND NEW PLASTIC CONCRETE TO HARDENED CONCRETE USING A TYPE V EPOXY RESIN OR OTHER APPROVED STRUCTURAL ADHESIVE AS PRESCRIBED IN SECTION 826 OF THE SPECIFICATIONS. FOLLOW THE MANUFACTURER'S RECOMMENDED APPLICATION INSTRUCTIONS. THIS WORK AND MATERIAL IS INCIDENTAL TO THE UNIT PRICE BIDS FOR CLASS "A" OR CLASS "AA" CONCRETE.

DRILLING AND GROUTING

IN ACCORDANCE WITH SECTION 826 OF THE SPECIFICATIONS, DRILL HOLES TO A DEPTH AS SHOWN HEREIN THESE PLANS AND APPLY A TYPE IV EPOXY BONDING ADHESIVE IN THE HOLES. ALSO, APPLY A TYPE V EPOXY BONDING MATERIAL TO THE INTERFACE BETWEEN THE EXISTING CONCRETE AND THE NEW CONCRETE PRIOR TO PLACING THE NEW CONCRETE. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR CLASS "A" CONCRETE.

REMOVE CONCRETE MASONRY

THE CONTRACTOR SHALL USE HAND HELD JACK HAMMERS OR HYDRO-DEMOLITION TECHNIQUES TO REMOVE CONCRETE WITHOUT DAMAGING THE EXISTING REINFORCEMENT THAT IS TO REMAIN IN PLACE. ANY CONCRETE REMOVAL OUTSIDE THE DETAILED LIMITS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL MAKE A SAW CUT AT THE REMOVAL LIMITS TO FORM A NEAT CONSTRUCTION JOINT. ALL COSTS OF THIS PROCEEDURE ARE INCLUDED IN THE PRICE BID FOR, "REMOVE CONCRETE MASONRY."

MECHANICAL COUPLERS

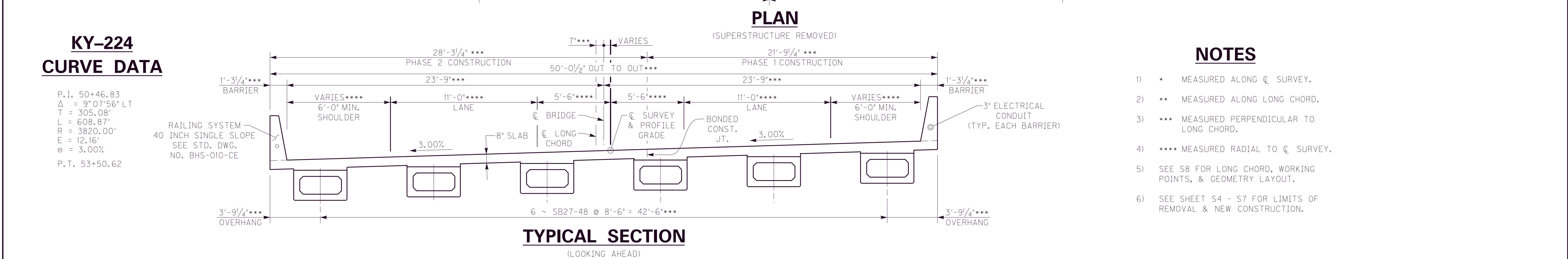
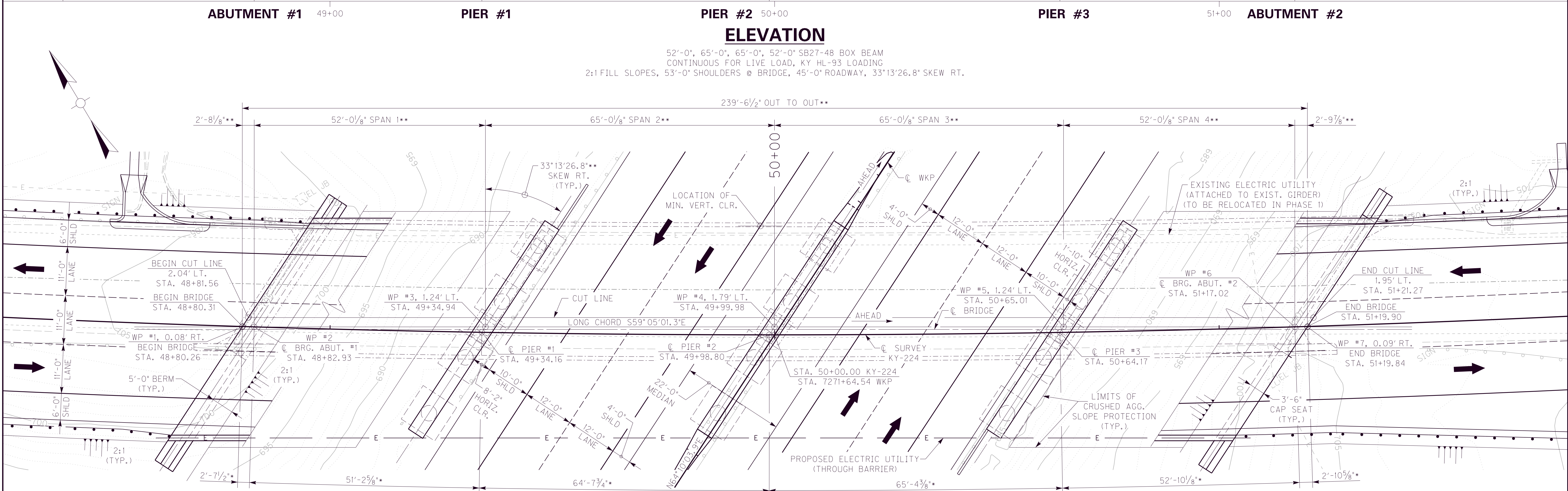
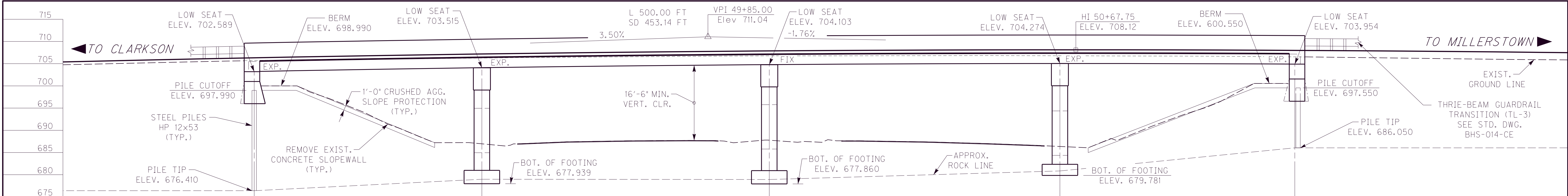
MECHANICAL COUPLERS SHALL BE IN ACCORDANCE WITH SECTION 602.03.06 OF THE SPECIFICATIONS. CONTRACTOR SHALL FURNISH TWO ADDITIONAL TEST SPECIMENS TO THE DIVISION OF MATERIALS FOR APPROVAL.

BONDING NEW CONCRETE TO OLD CONCRETE

ALL NEW CONCRETE SHALL BE BONDED TO THE OLD CONCRETE WITH A TYPE V EPOXY RESIN SYSTEM CONFORMING TO SECTION 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 BIDS FOR CLASS "A" OR CLASS "AA" CONCRETE.

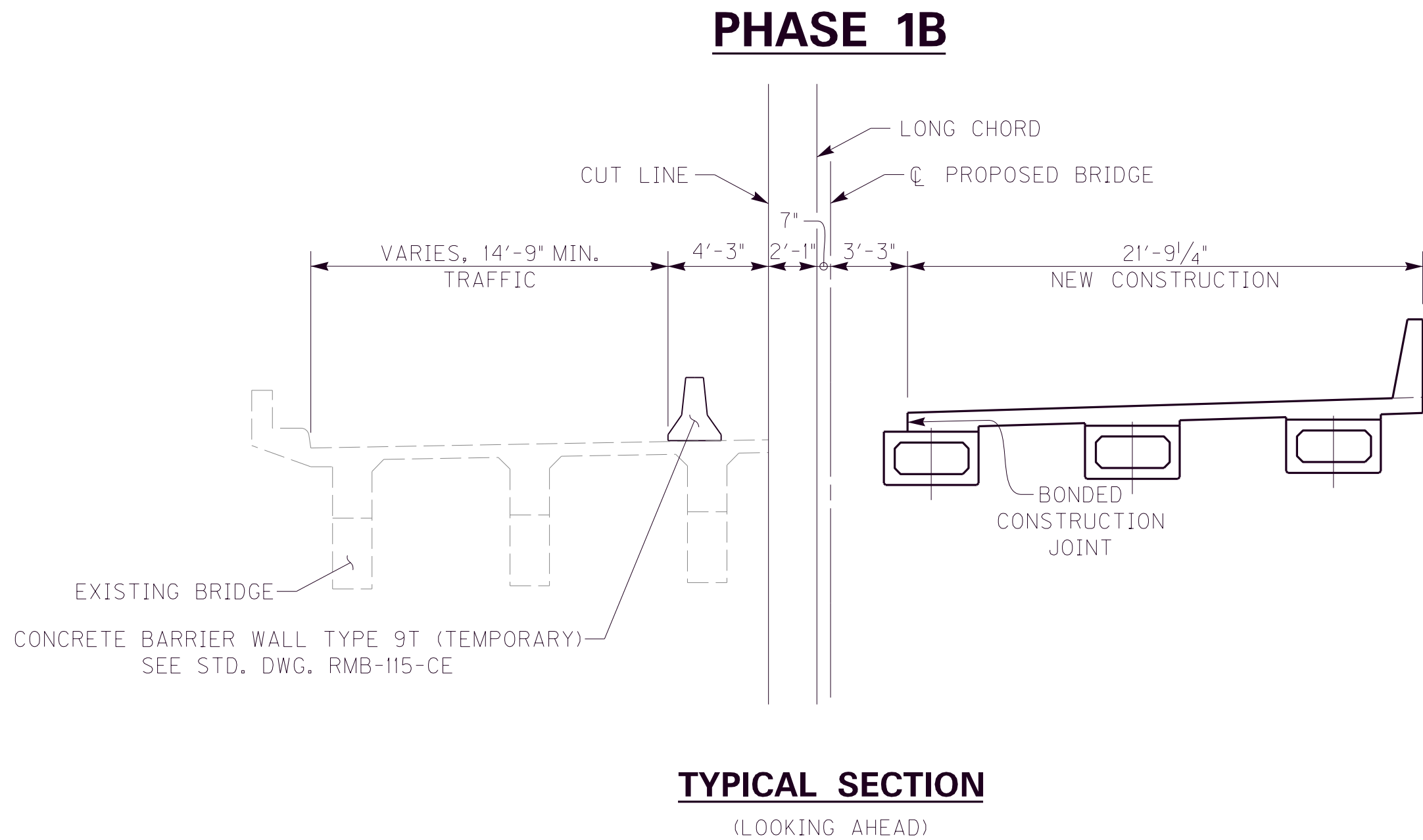
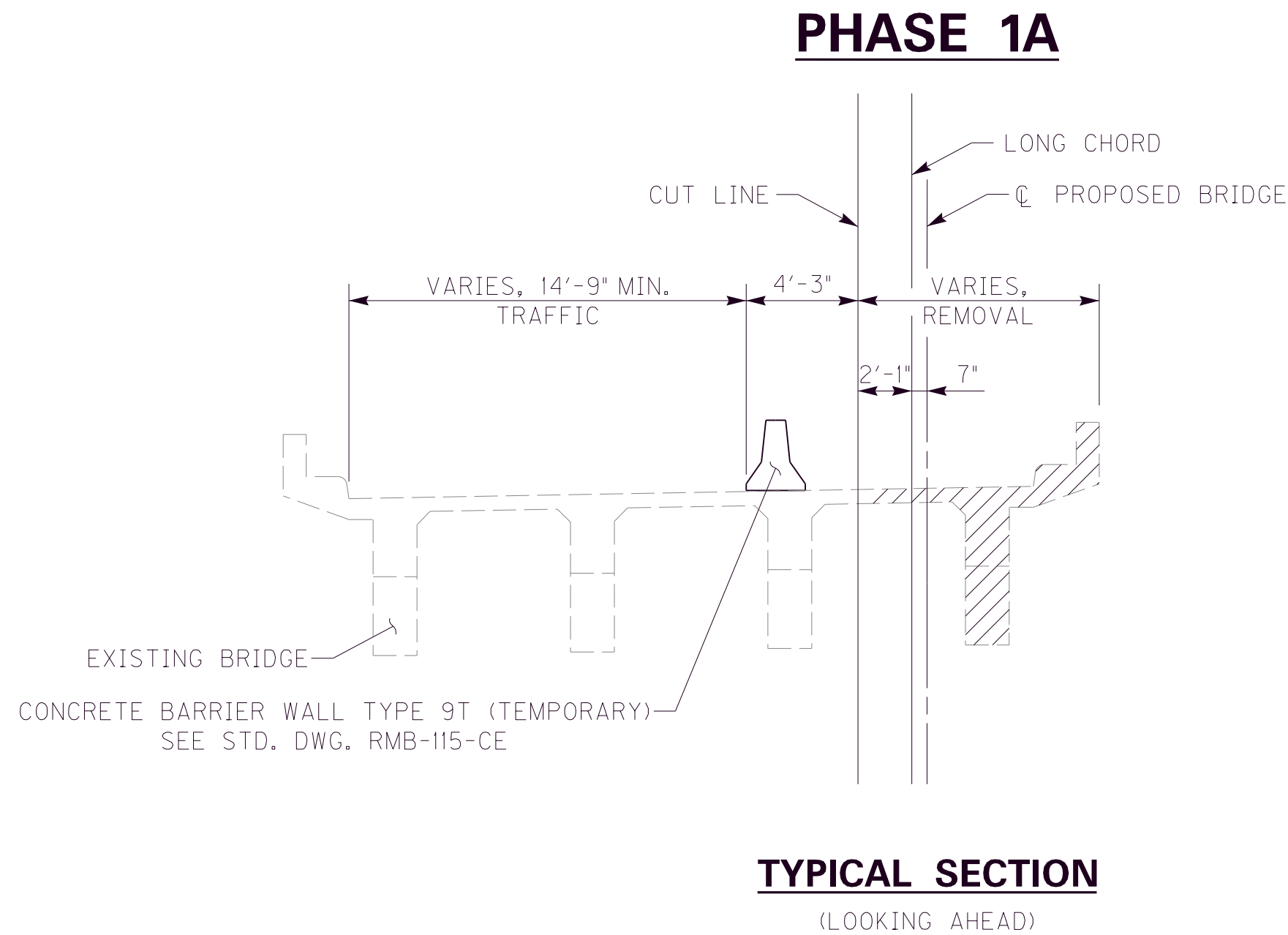
SPIRAL COLUMN TIES

SPLICES FOR SPIRALS WHERE DESIRED BY THE CONTRACTOR SHALL BE MADE WITH A MINIMUM OF ONE AND ONE-HALF TURNS OF SPIRAL. NO ADDITIONAL PAYMENT WILL BE MADE FOR THESE SPLICES, AND THE COST WILL BE CONSIDERED INCIDENTAL TO THE COST OF THE DEVELOPED-LENGTH OF SPIRAL SHOWN ON THE PLANS. SPIRAL REINFORCEMENT SHALL MEET THE REQUIREMENTS OF SECTION 811 OF THE SPECIFICATIONS.

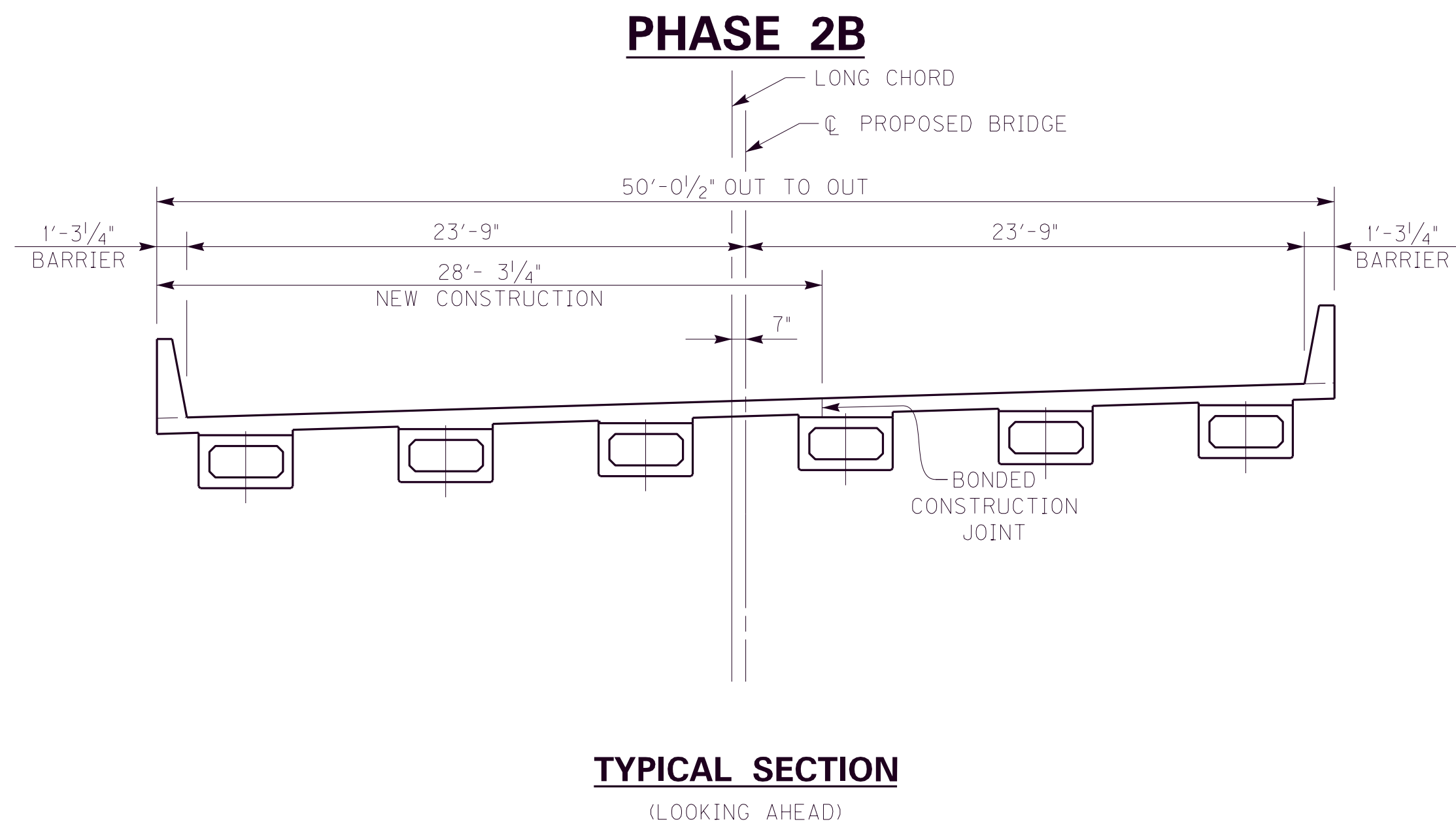
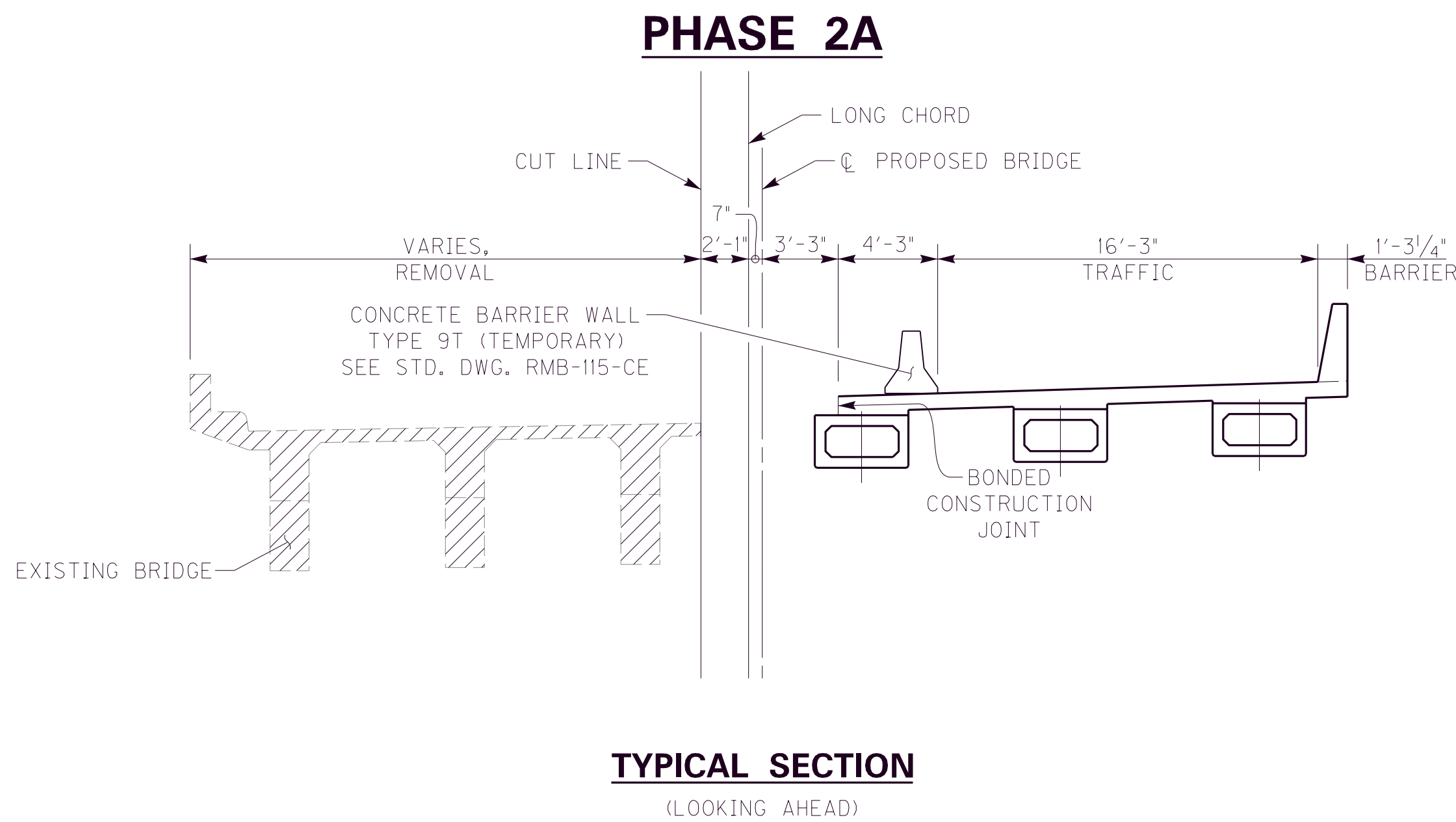


- NOTES**
- * MEASURED ALONG \mathcal{Q} SURVEY.
 - ** MEASURED ALONG LONG CHORD.
 - *** MEASURED PERPENDICULAR TO LONG CHORD.
 - **** MEASURED RADIAL TO \mathcal{Q} SURVEY.
 - SEE S8 FOR LONG CHORD, WORKING POINTS, & GEOMETRY LAYOUT.
 - SEE SHEET S4 - S7 FOR LIMITS OF REMOVAL & NEW CONSTRUCTION.

PHASE 1 CONSTRUCTION



PHASE 2 CONSTRUCTION



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
**HMB PROFESSIONAL
ENGINEERS, INC.**

DATE: 12/30/2021

DESIGNED BY: B. Reid

DETAILED BY: B. Pulliam

CHECKED BY

B. Pulliam

B. Reid

CONSTRUCTION PHASING SUPERSTRUCTURE

CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE
KY-224

ITEM NO.
4-20001
SHEET NO.
S4

COUNTY OF
GRAYSON
DRAWING NUMBER
28464

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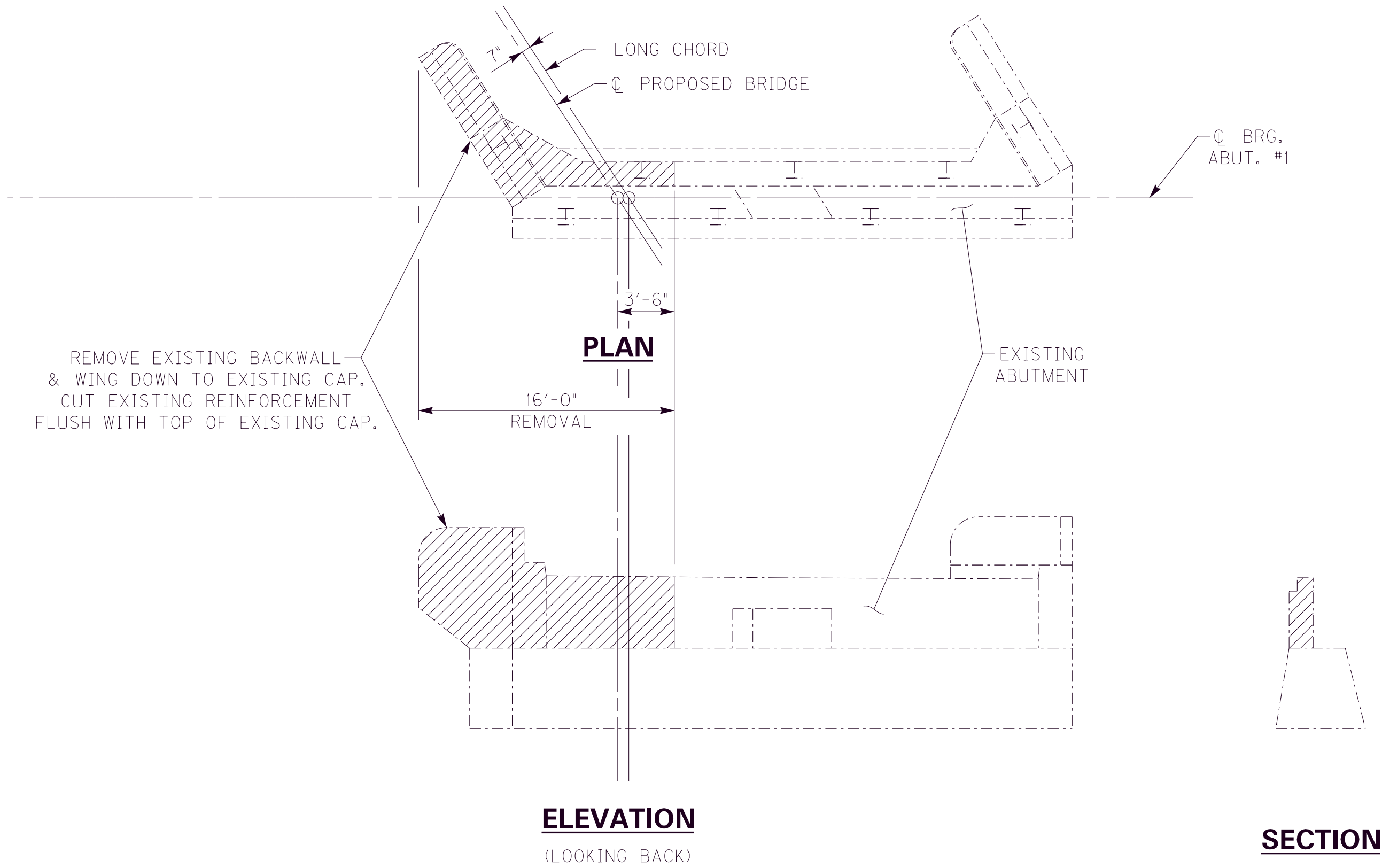
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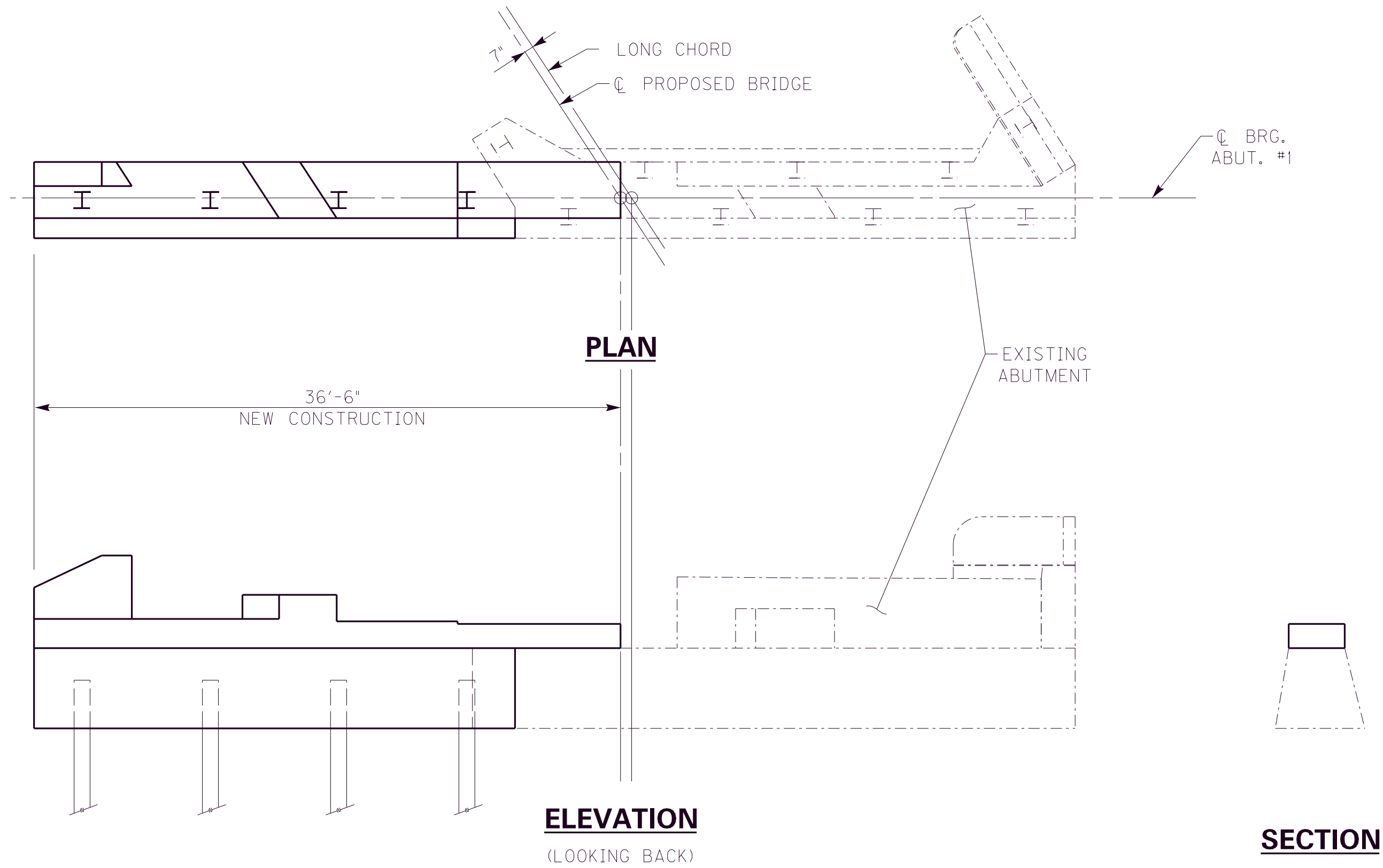
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PHASE 1 CONSTRUCTION

PHASE 1A

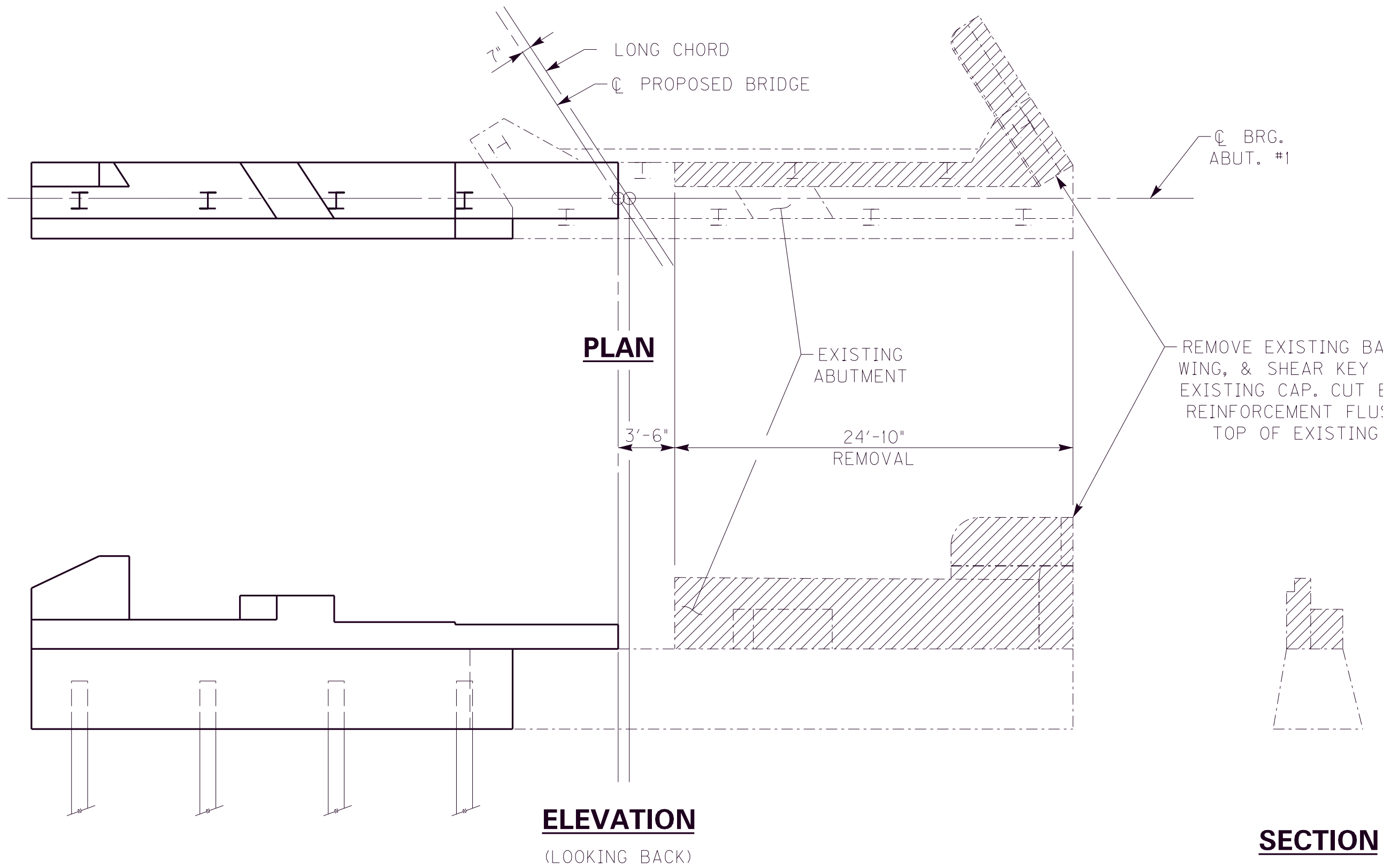


PHASE 1B

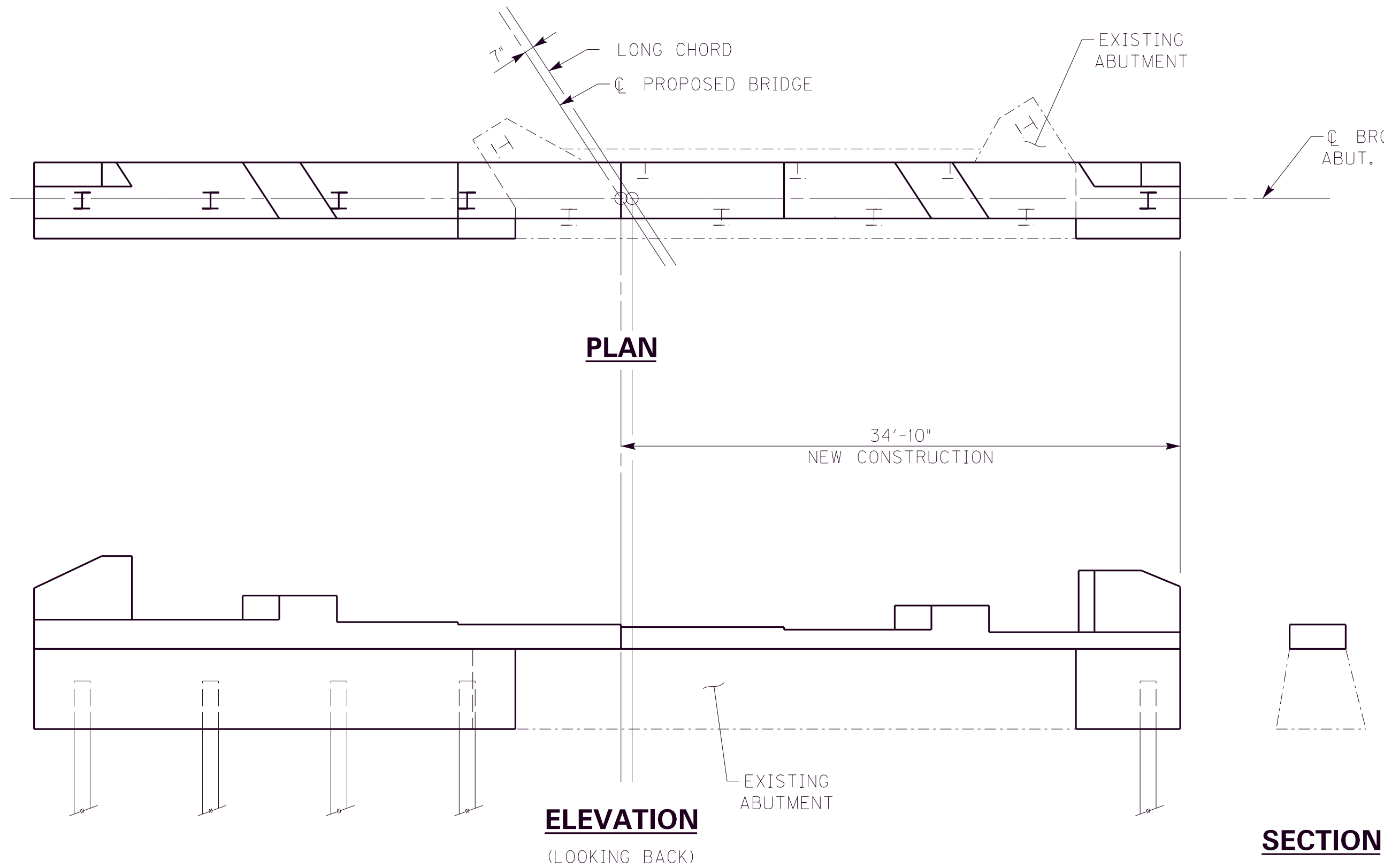


PHASE 2 CONSTRUCTION

PHASE 2A



PHASE 2B



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
HMB PROFESSIONAL
ENGINEERS, INC.

DATE: 12/30/2021

DESIGNED BY: B. Reid

DETAILED BY: B. Pulliam

CHECKED BY

B. Pulliam

B. Reid

CONSTRUCTION PHASING ABUTMENT #1

CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE

KY-224

ITEM NO.

4-20001

SHEET NO.

S5

COUNTY OF

GRAYSON

DRAWING NUMBER

28464

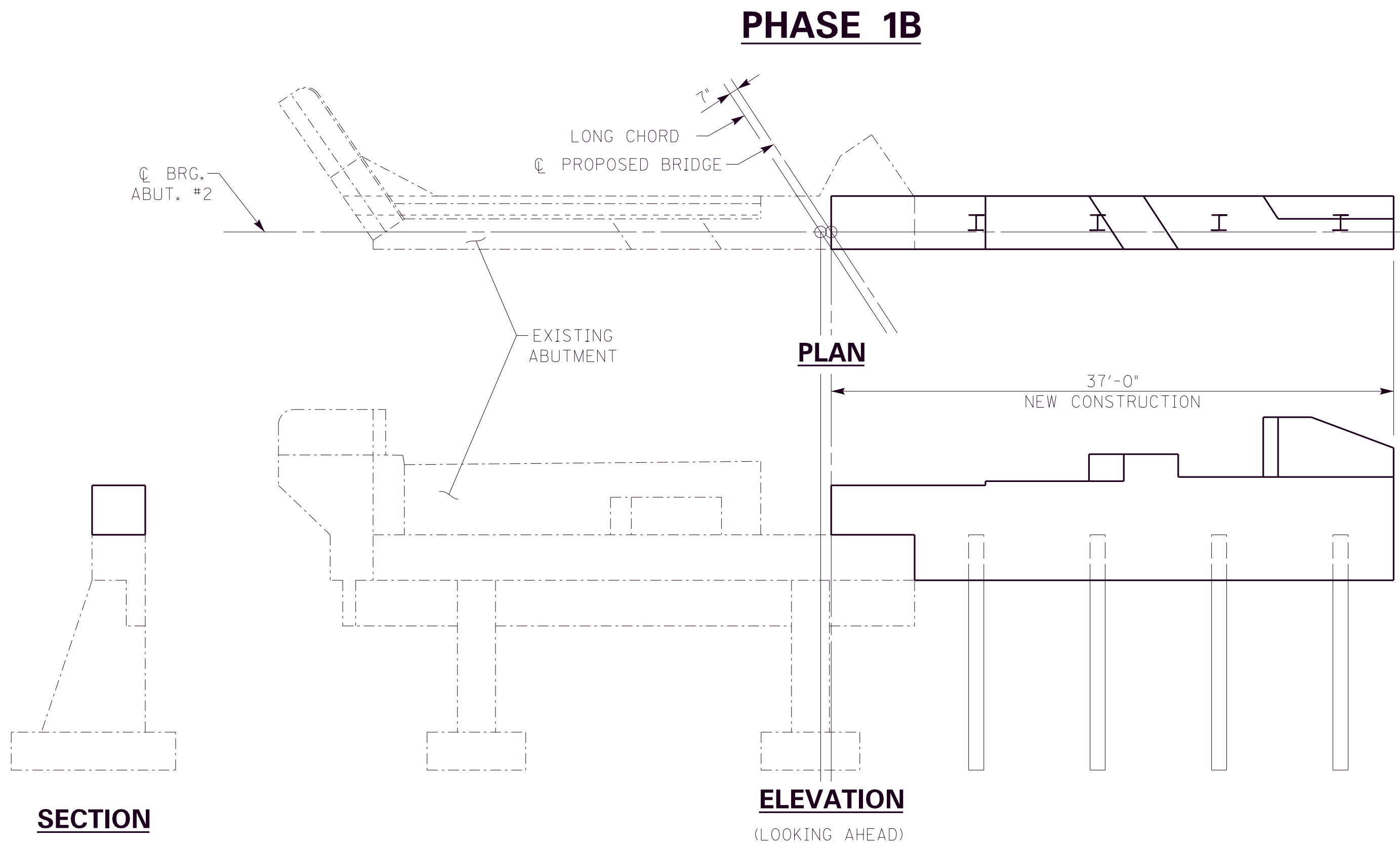
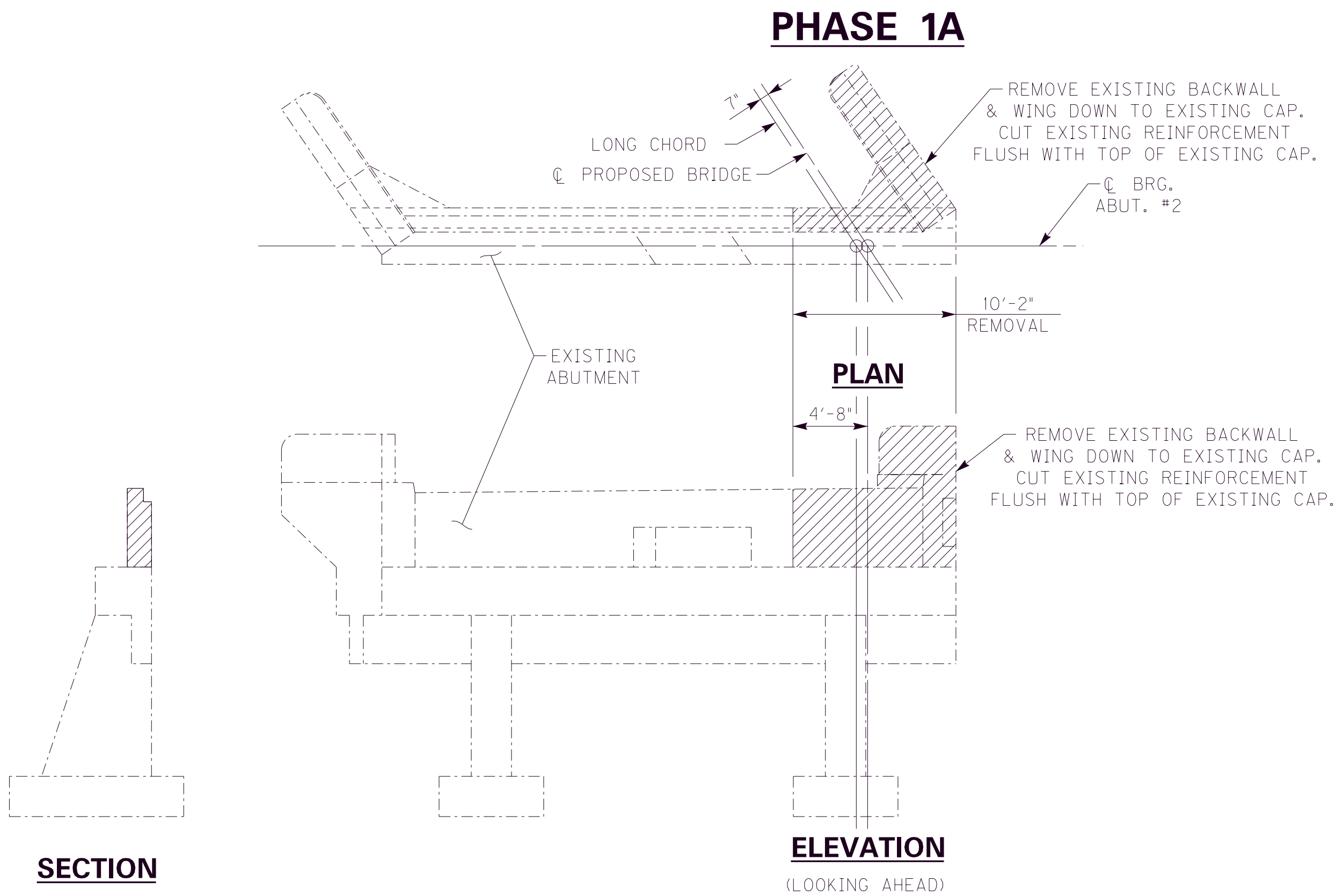
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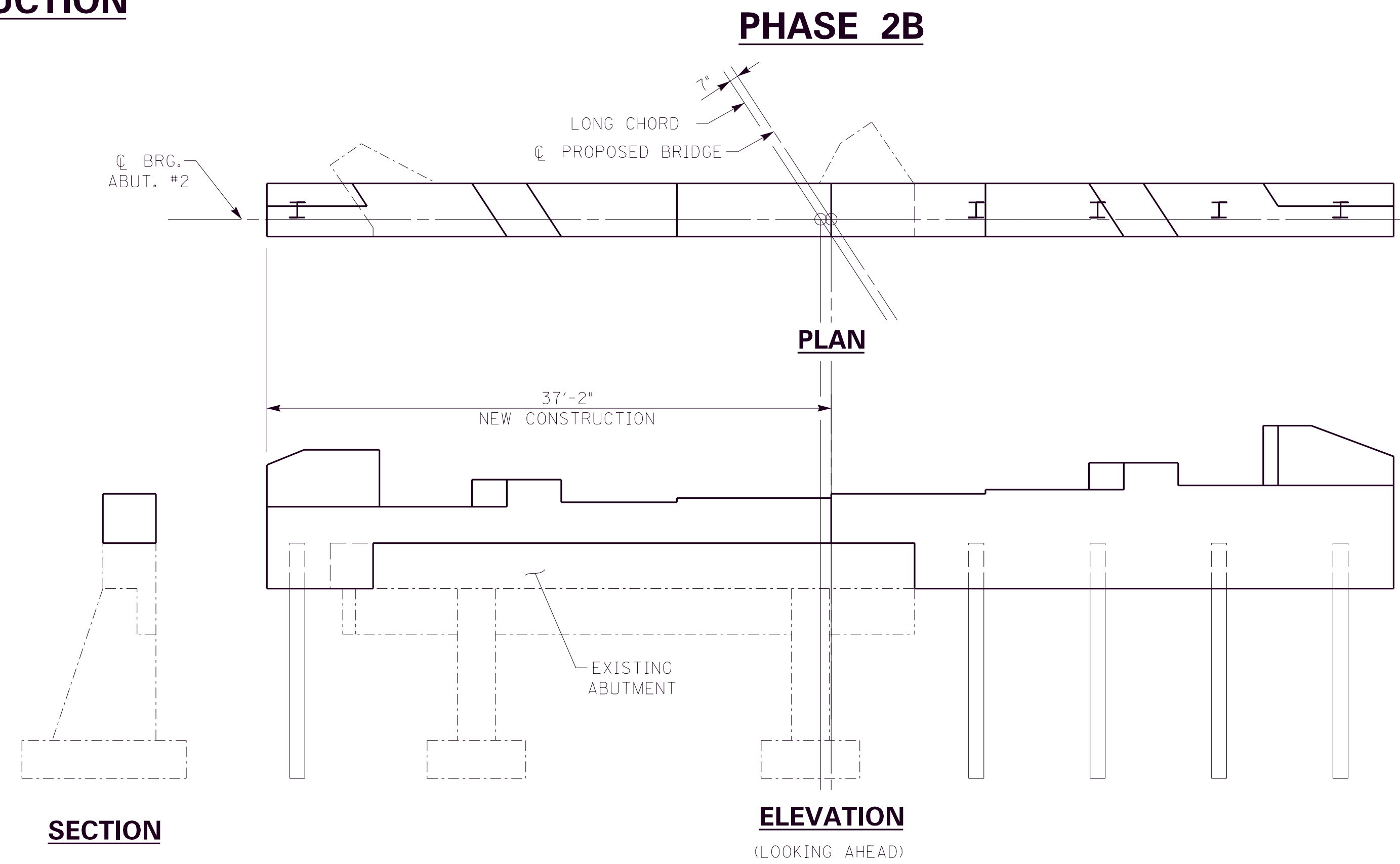
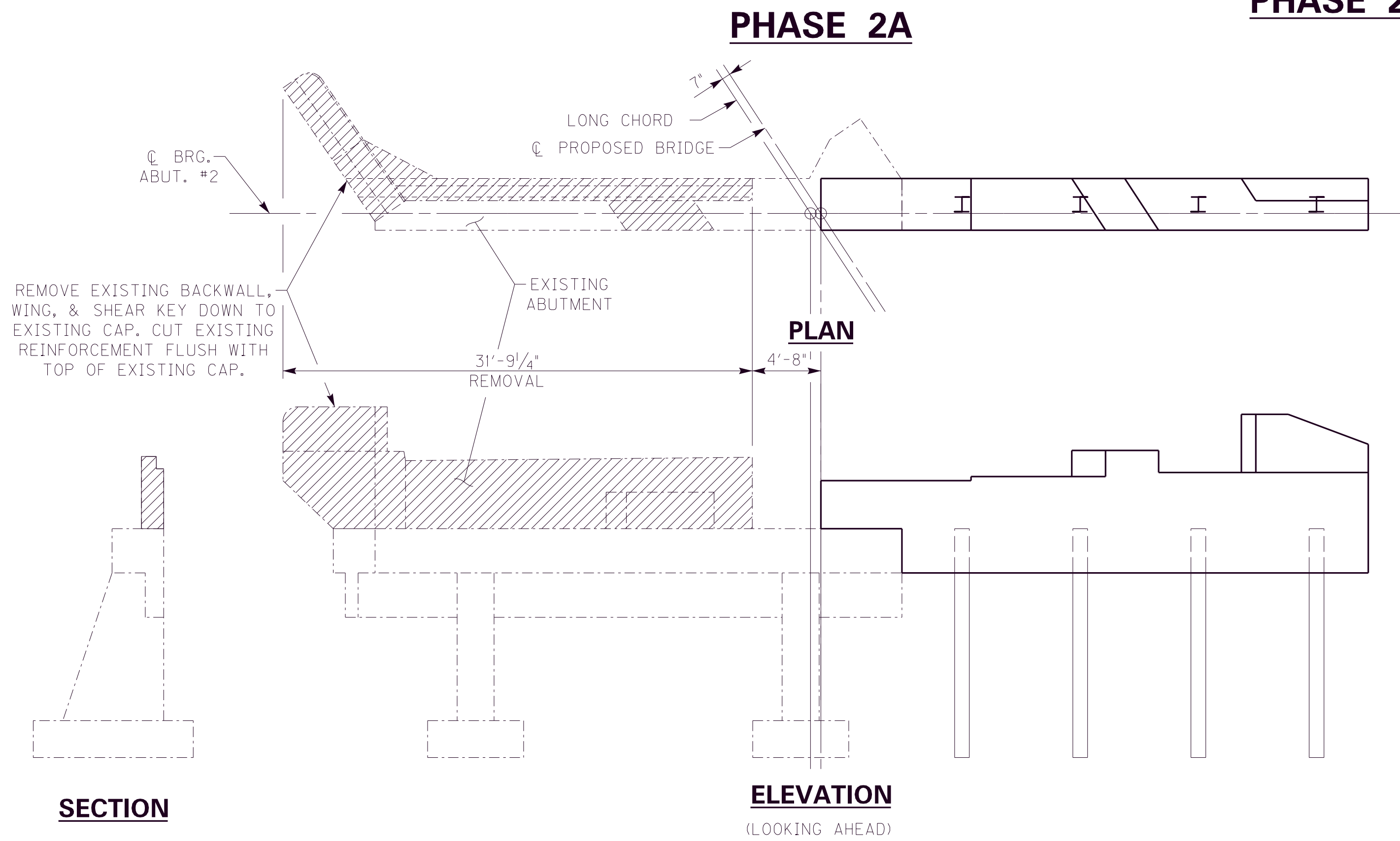
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PHASE 1 CONSTRUCTION



PHASE 2 CONSTRUCTION



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
**HMB PROFESSIONAL
ENGINEERS, INC.**

DATE: 12/30/2021

DESIGNED BY: B. Reid

DETAILED BY: B. Pulliam

CHECKED BY

B. Pulliam

B. Reid

CONSTRUCTION PHASING ABUTMENT #2
CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE
KY-224

ITEM NO.
4-20001
SHEET NO.
S6

COUNTY OF
GRAYSON
DRAWING NUMBER
28464

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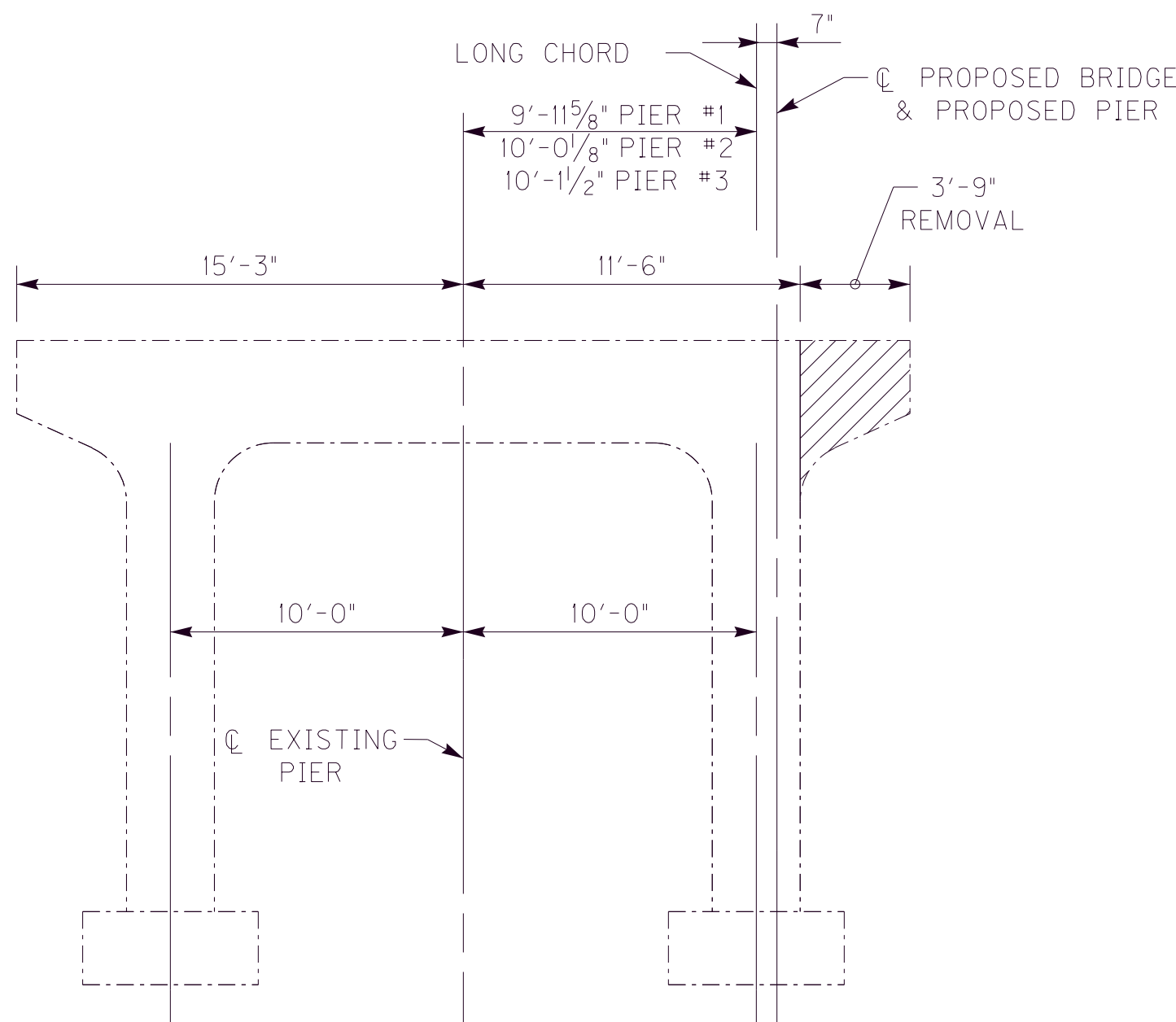
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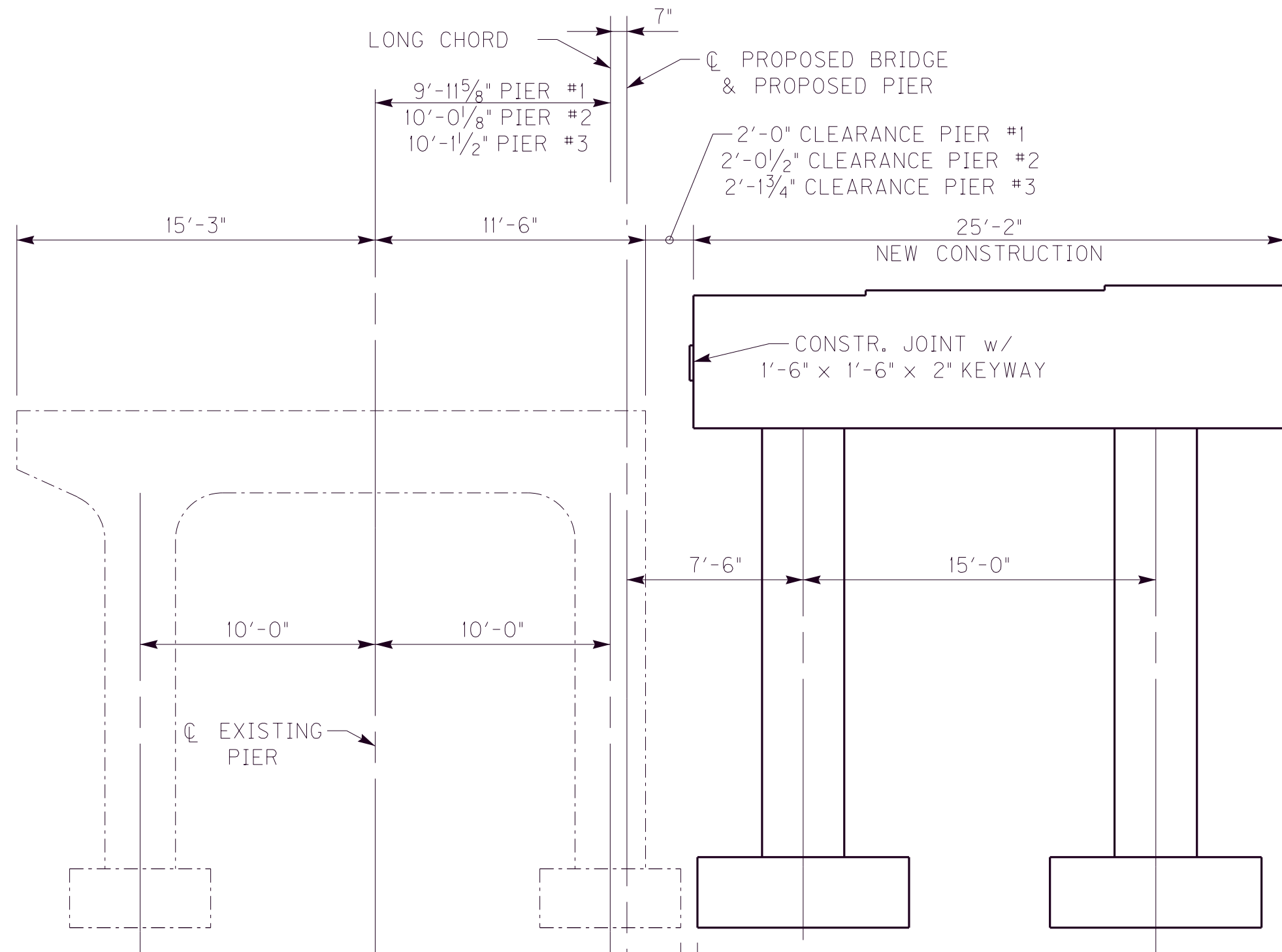
PHASE 1 CONSTRUCTION

PHASE 1A



ELEVATION
(LOOKING AHEAD)

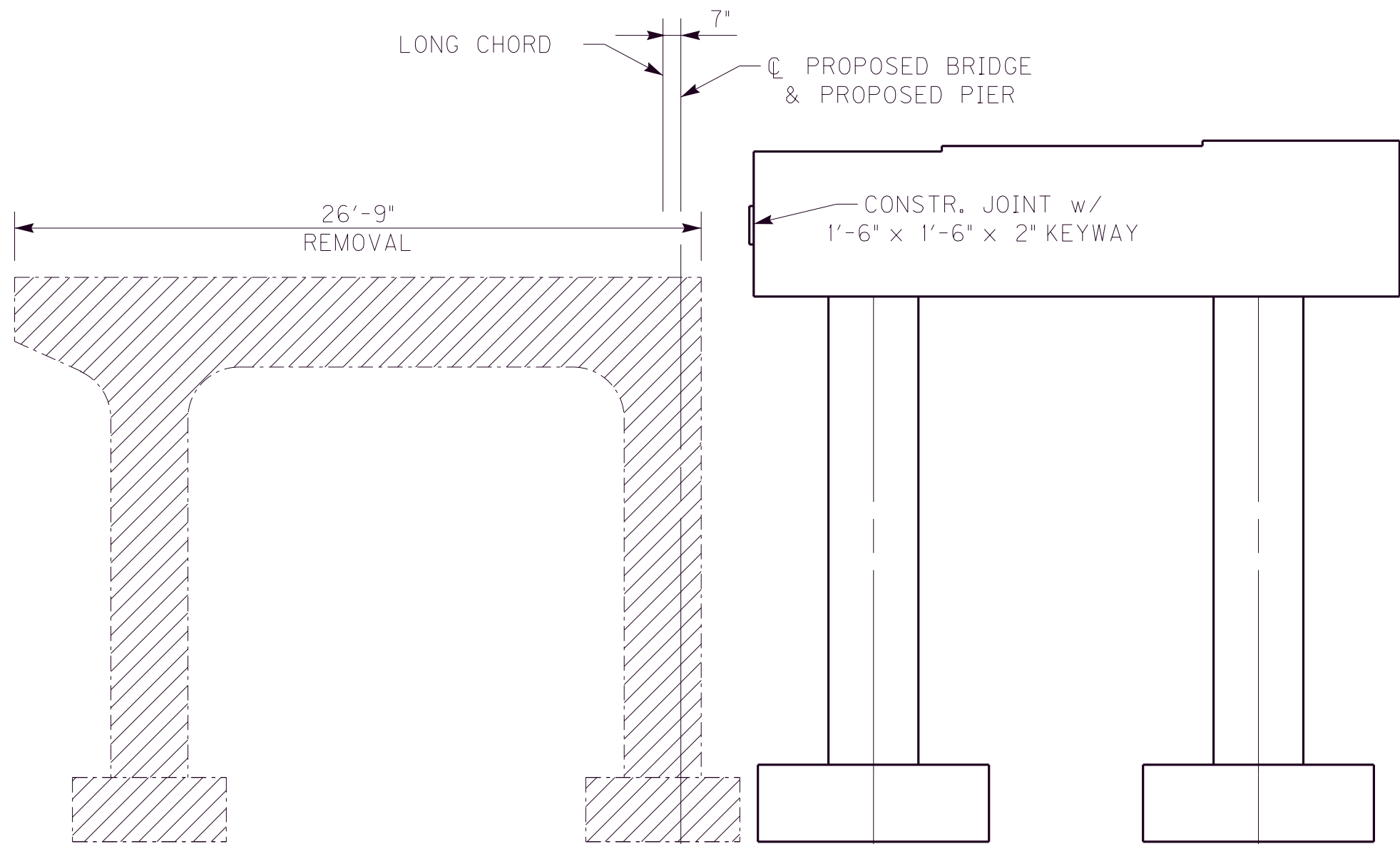
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ELEVATION
(LOOKING AHEAD)

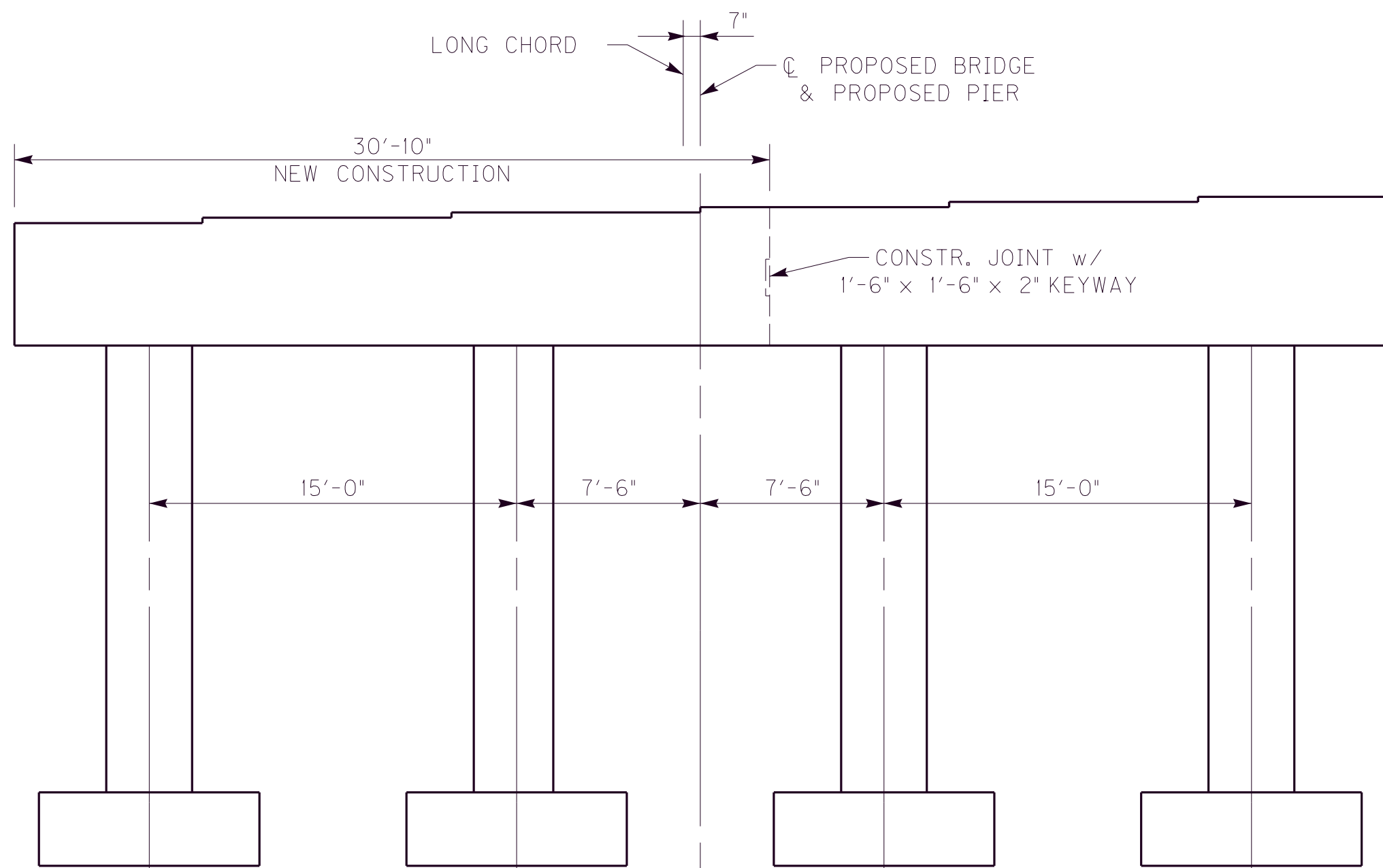
PHASE 2 CONSTRUCTION

PHASE 2A



ELEVATION
(LOOKING AHEAD)

PHASE 2B



ELEVATION
(LOOKING AHEAD)



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
HMB PROFESSIONAL
ENGINEERS, INC.

DATE: 12/30/2021

DESIGNED BY: B. Reid

DETAILED BY: B. Pulliam

CHECKED BY

B. Pulliam

B. Reid

CONSTRUCTION PHASING PIERS

CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE

KY-224

ITEM NO.

4-20001

SHEET NO.

S7

COUNTY OF

GRAYSON

DRAWING NUMBER

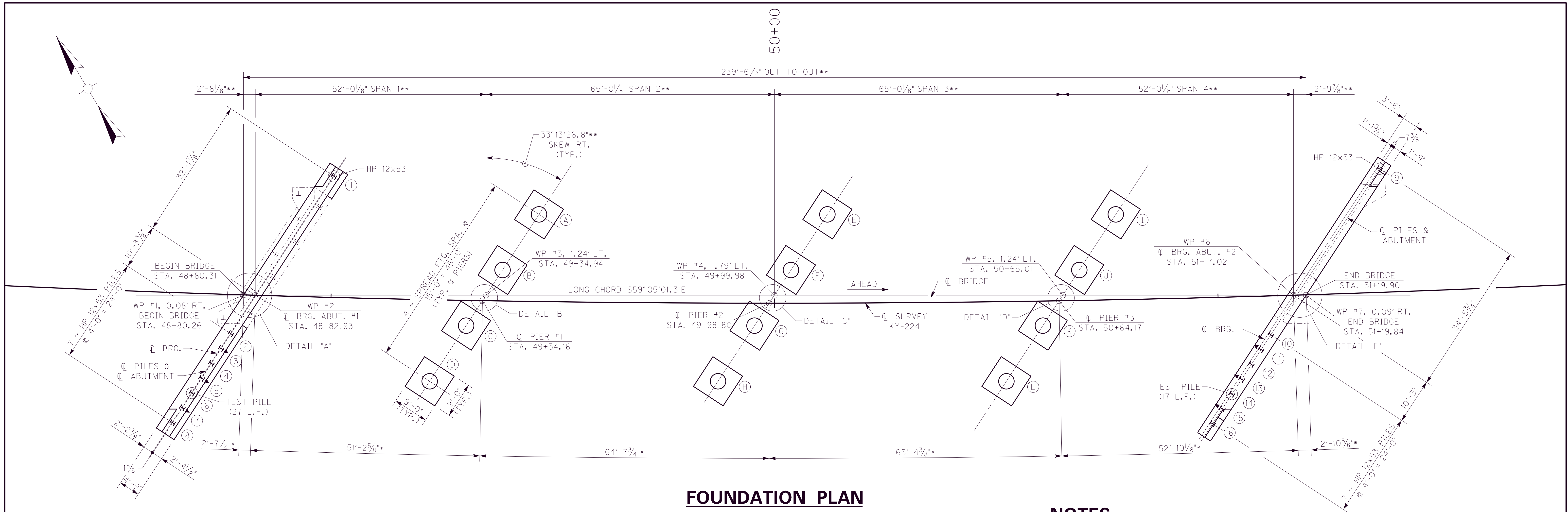
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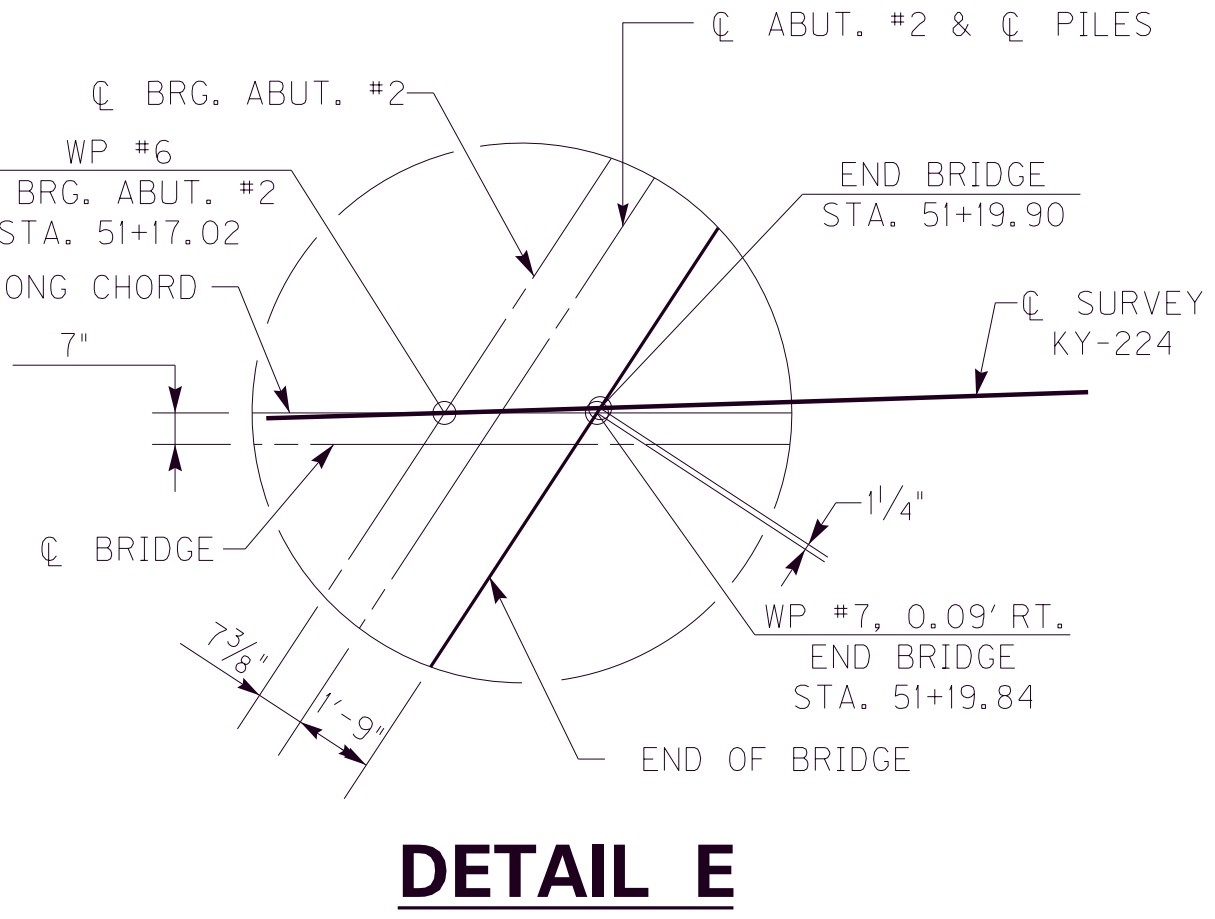
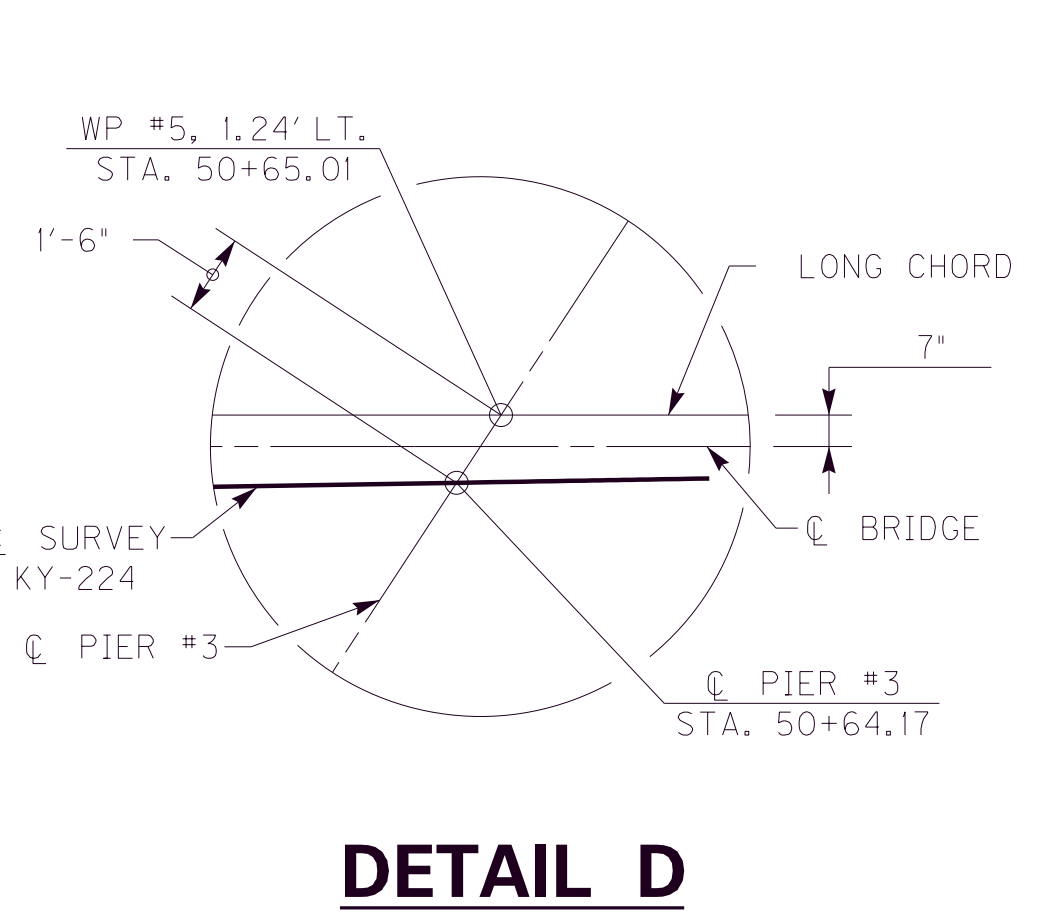
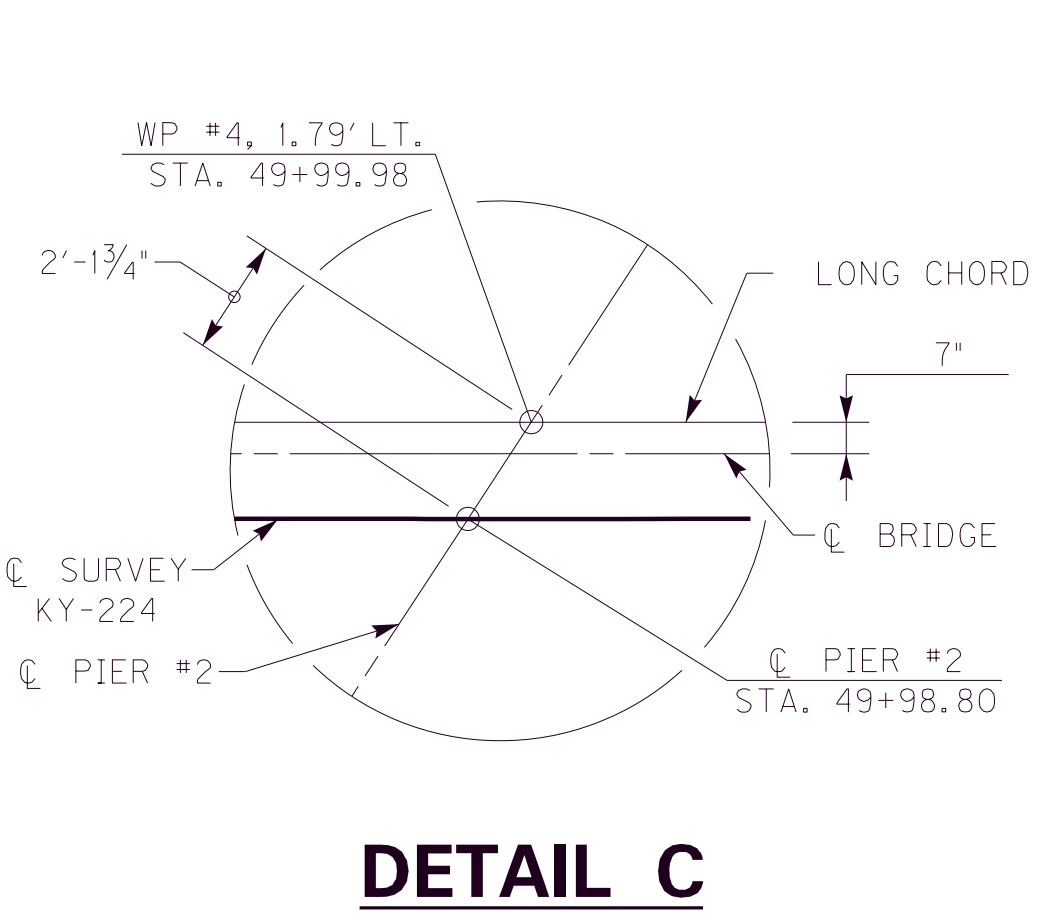
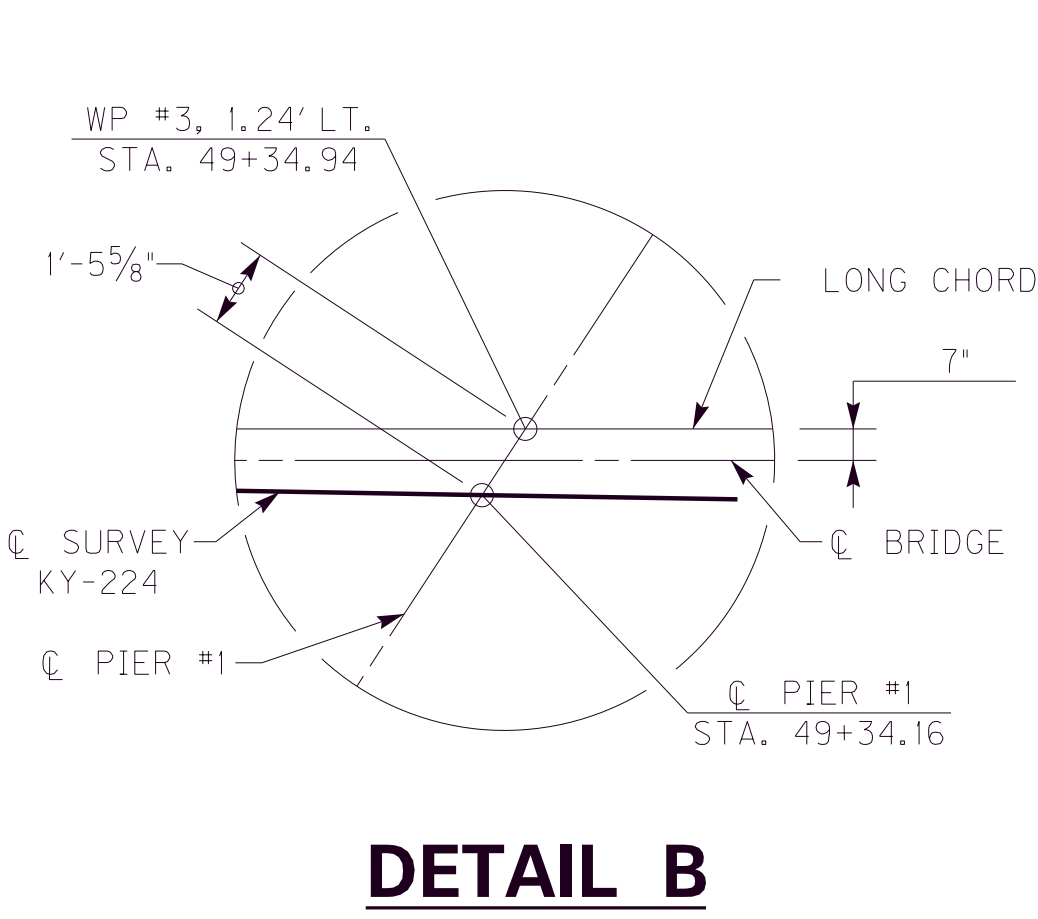
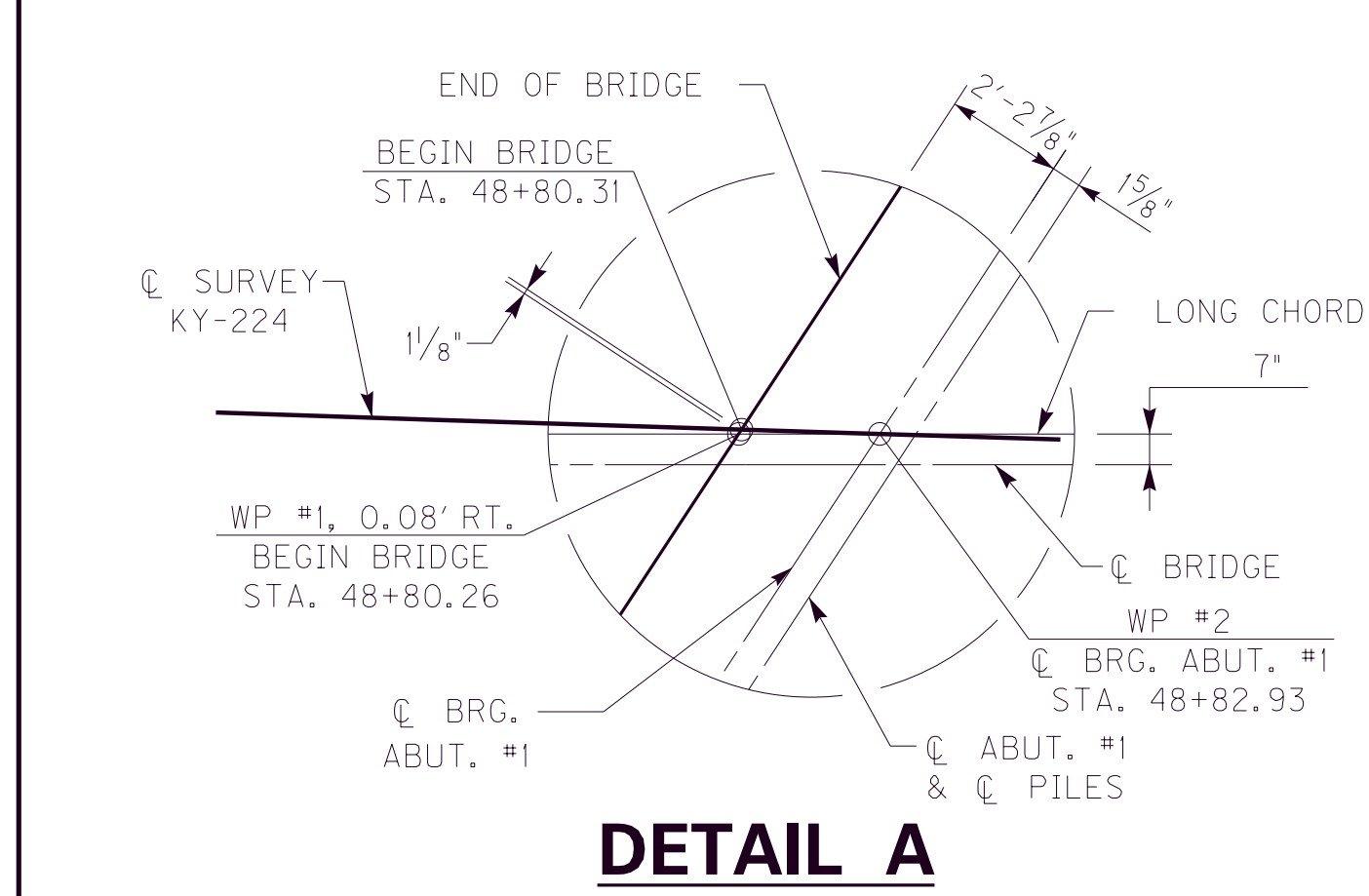
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FOUNDATION PLAN

NOTES

- 1) * MEASURED ALONG ϕ SURVEY.
2) ** MEASURED ALONG LONG CHORD.
3) \blacktriangle INDICATES DIRECTION OF 4:12 BATTER



PILE RECORD FOR POINT BEARING PILES				
PILE NO.	PILE CUT-OFF ELEVATION (FEET)	TIP OF PILE ELEVATION AS DRIVEN (FEET)	LENGTH OF PILE IN PLACE (FEET)	DESIGN AXIAL LOAD (TONS)
1	697.990			72
2				
3				
4				
5				
6				
7	↓			
8	697.990			
9	697.550			
10				
11				
12				
13				
14				
15	↓			↓
16	697.550			72

FIELD DATA

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

DIRECTOR, DIVISION OF STRUCTURAL DESIGN
ROOM #322
200 MERO STREET
FRANKFORT, KY, 40622-0001

THIS PILE RECORD DOES NOT REPLACE OTHER PILE RECORDS THE PROJECT ENGINEER IS REQUIRED TO KEEP AND SUBMIT.

AFTER PIER FOUNDATIONS HAVE BEEN PLACED, THE PROJECT RESIDENT ENGINEER SHALL RECORD THE BOTTOM OF FOOTING ELEVATION "AS-BUILT" AND SHALL SUBMIT ONE COPY OF THIS SHEET WITH THIS DATA TO THE DIRECTOR, DIVISION OF BRIDGES.

USE HP 12X53 IN ACCORDANCE WITH BPS-003, C.E.
USE GRADE 50 STEEL H-PILES WITH PILE POINTS FOR END BEARING PILES.

DEFINITIONS OF TERMS

PILE CUT-OFF ELEVATION: Elevation of the top of 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.

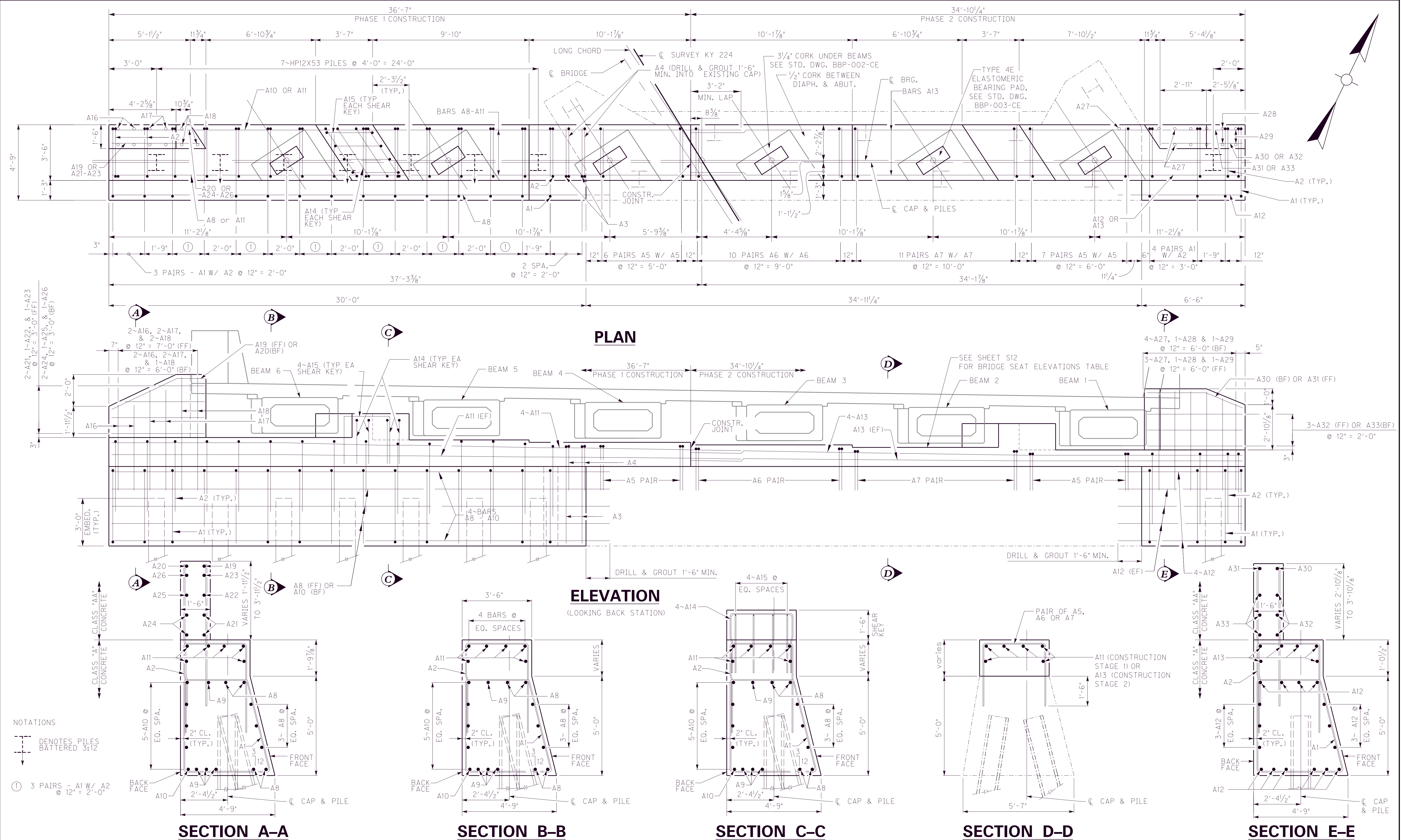
DESIGN AXIAL LOAD: Load carried by each pile as estimated from structural design calculations for Factored LRFD Loadings.

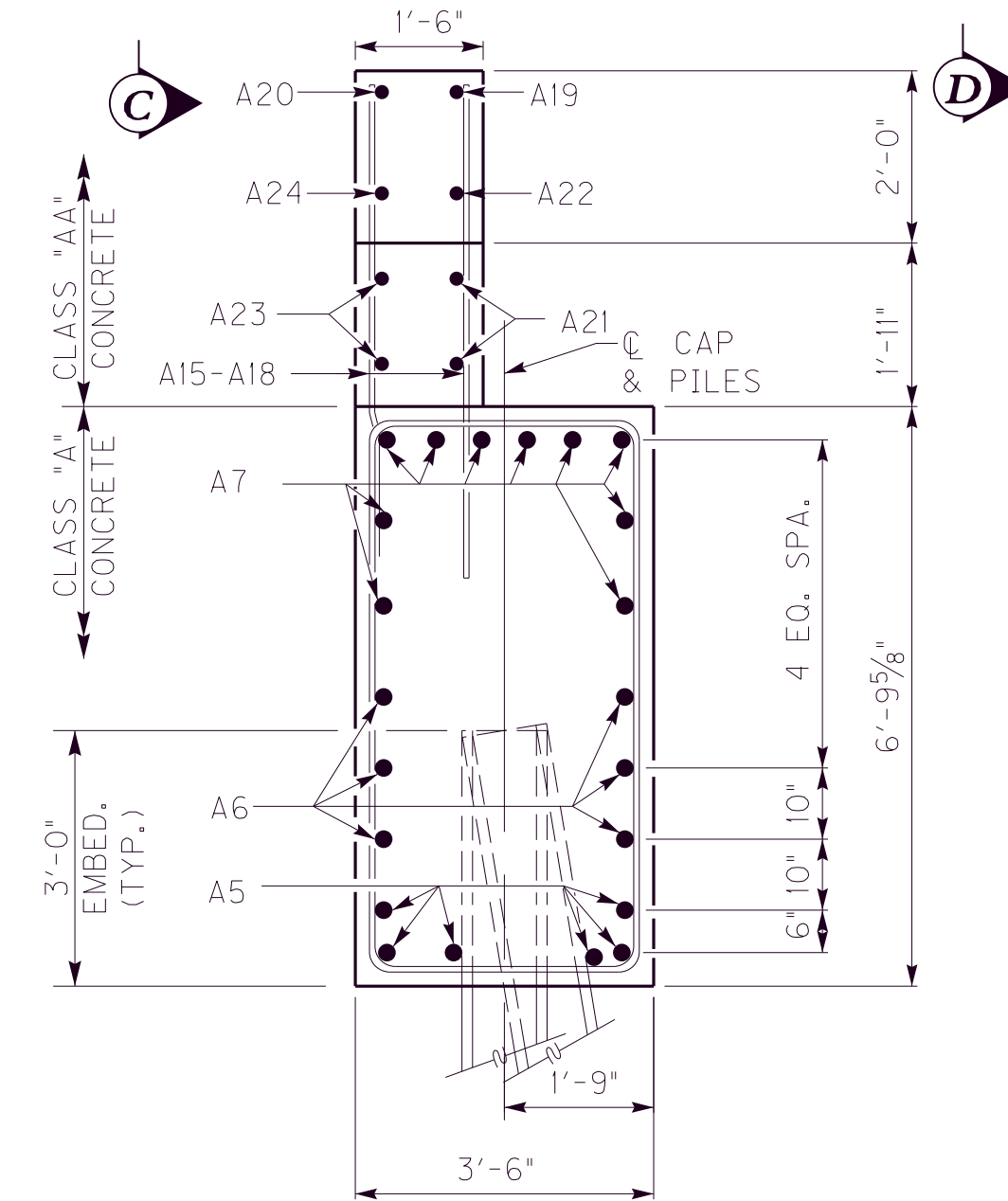
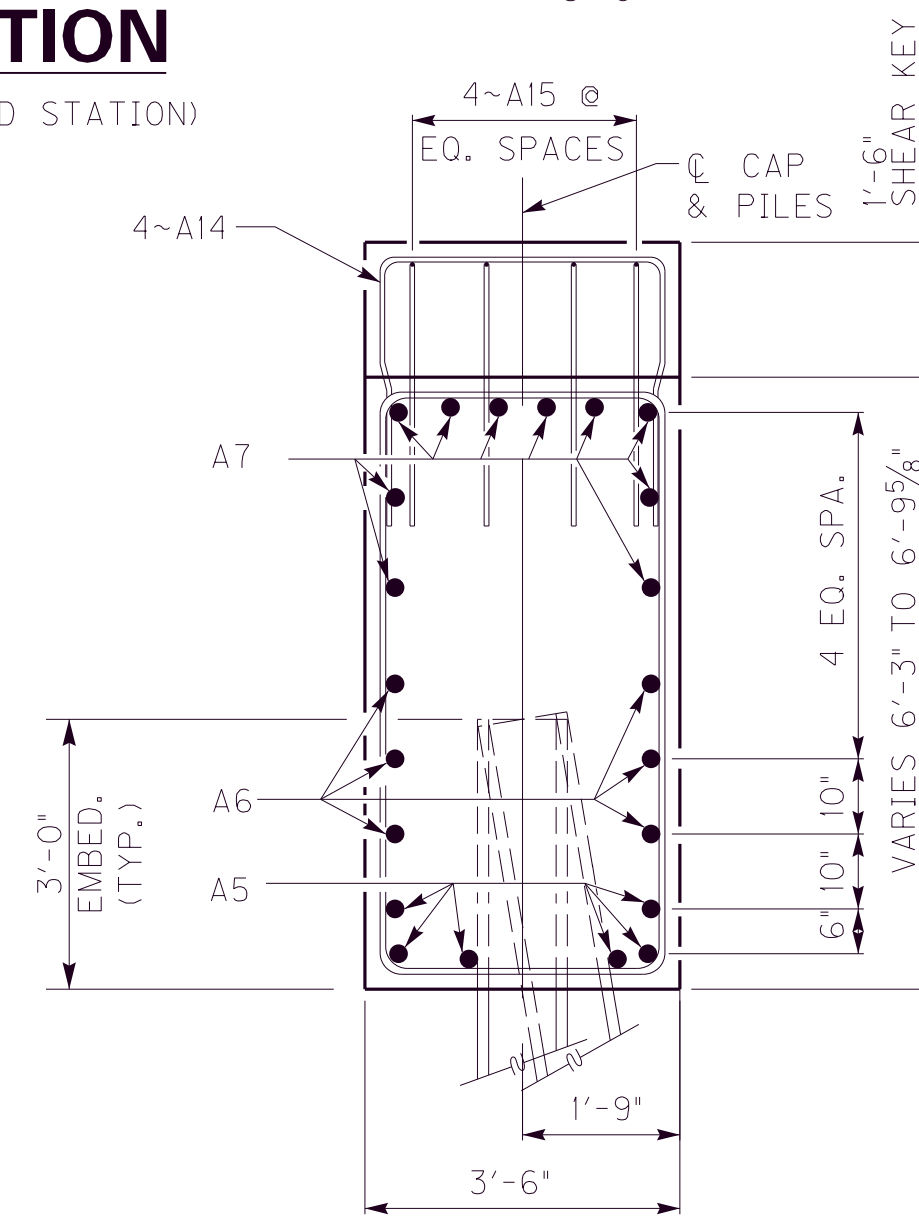
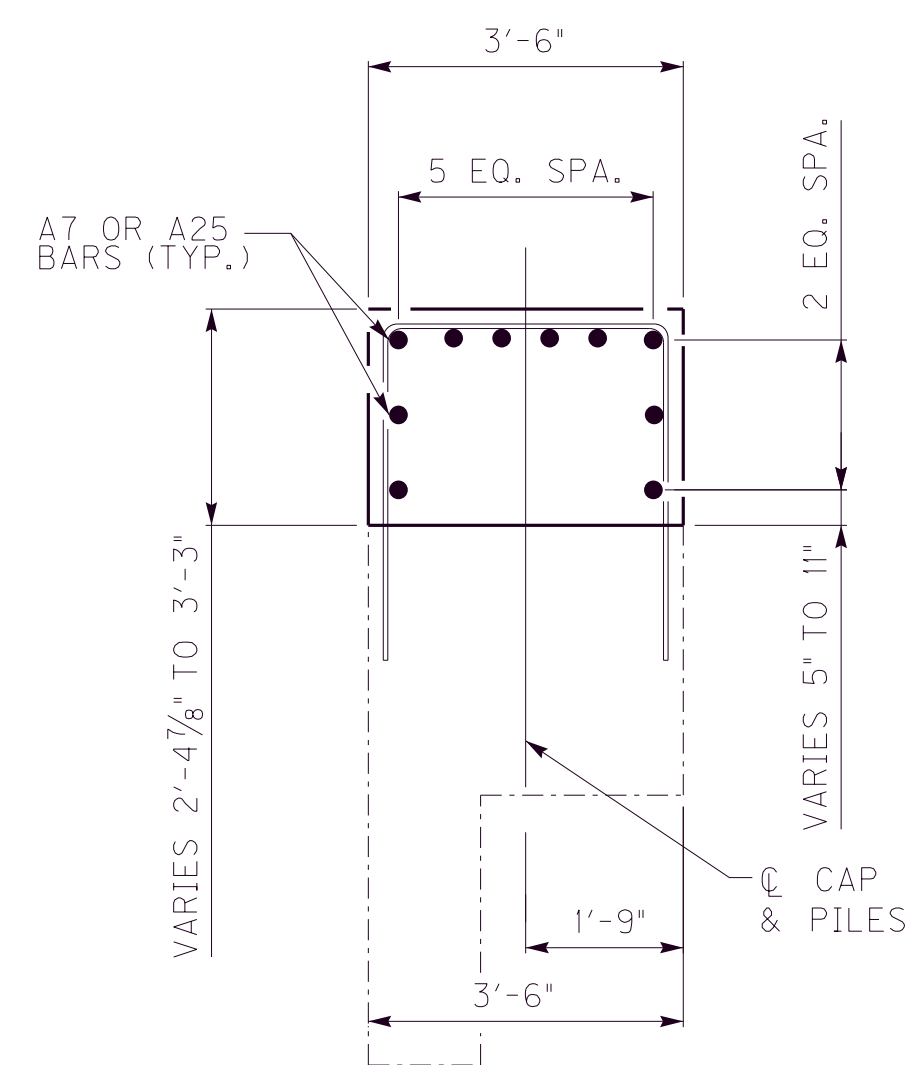
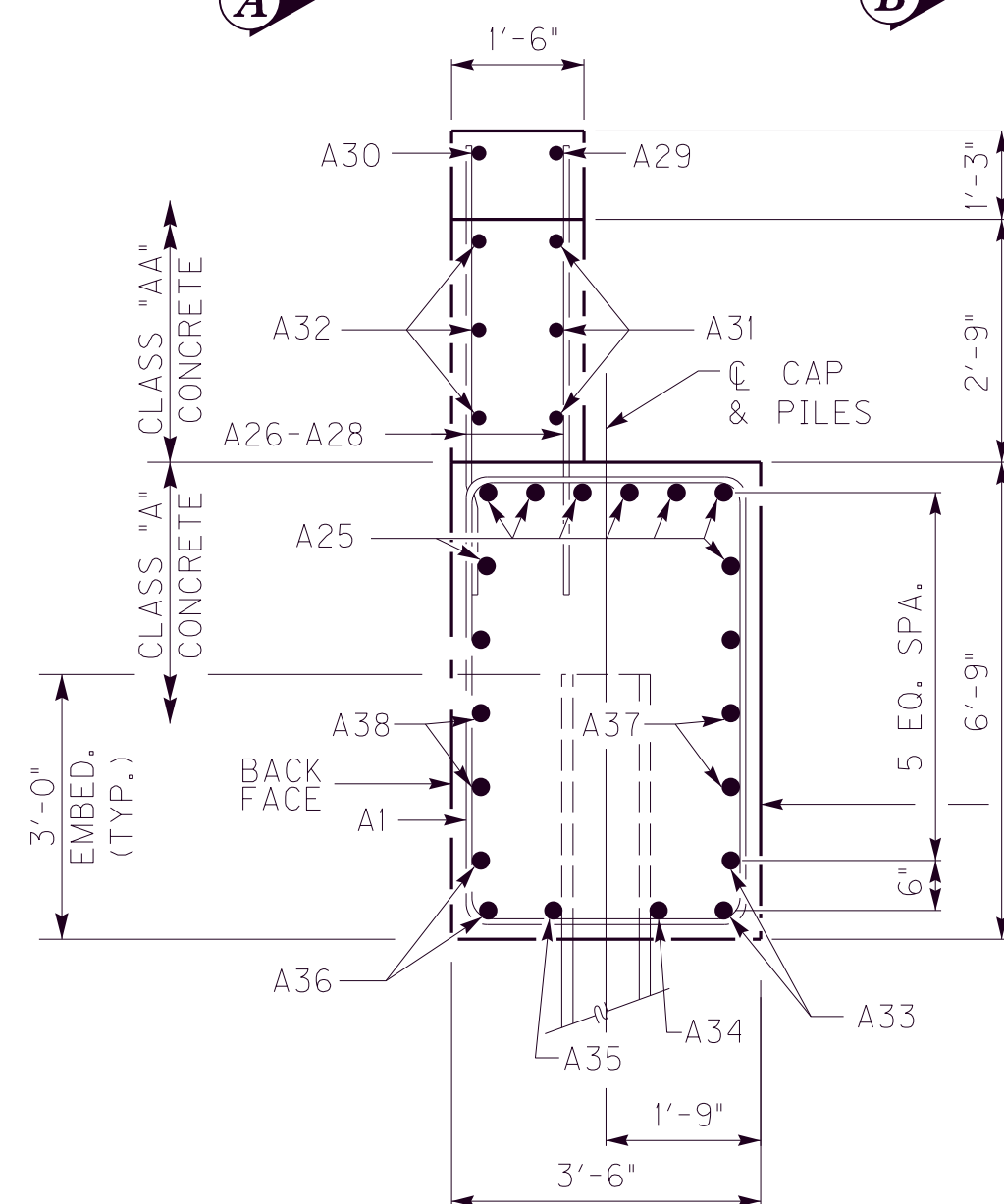
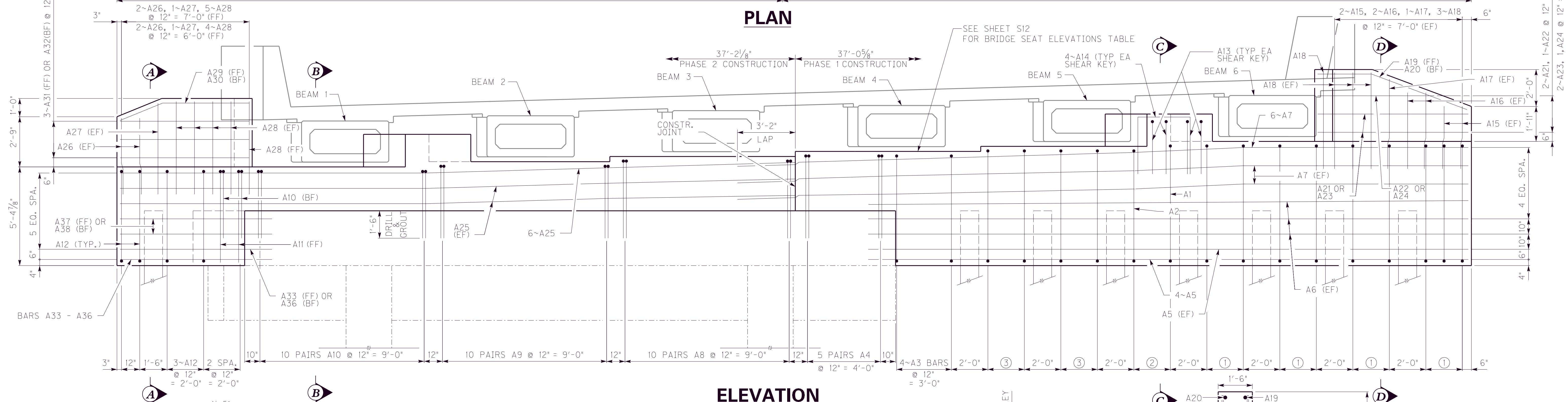
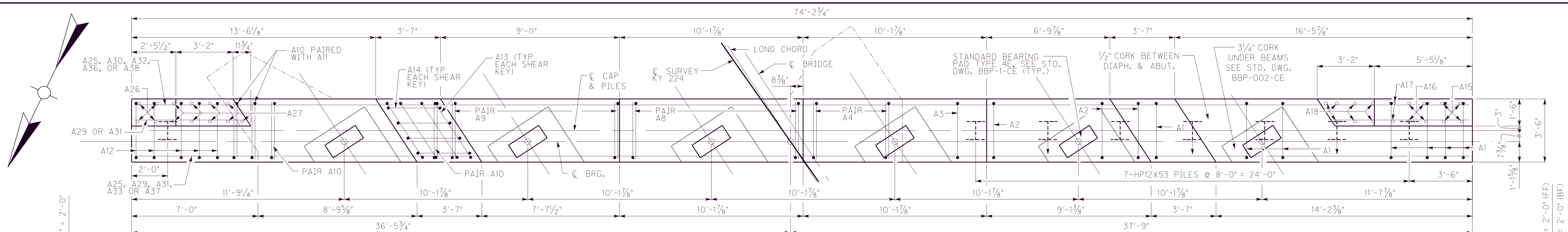
CALCULATED FIELD BEARING: Contrary to Section 604.03.07 of the Standard Specifications, in place bearing values are not required for piles bearing on rock when driven to practical refusal.

DRIVING CRITERIA: Drive point bearing piles to practical refusal.

PRACTICAL REFUSAL: FOR THIS PROJECT MINIMUM BLOW REQUIREMENTS ARE REACHED AFTER TOTAL PENETRATION BECOMES 1/2" OR LESS FOR 10 CONSECUTIVE BLOWS, PRACTICAL REFUSAL IS OBTAINED AFTER THE PILE IS STRUCK AN ADDITIONAL 10 BLOWS WITH TOTAL PENETRATION OF 1/2" OR LESS. IMMEDIATELY CEASE DRIVING OPERATIONS IF THE PILE VISIBLY YIELDS OR BECOMES DAMAGED DURING DRIVING. DRIVE ADDITIONAL PRODUCTION AND TEST PILES IF DIRECTED BY THE ENGINEER.

SPREAD FOOTING RECORD								
PIER #1			PIER #2			PIER #3		
POINT	BOTTOM FTG. ELEV.	AS-BUILT FTG. ELEVATION	POINT	BOTTOM FTG. ELEV.	AS-BUILT FTG. ELEVATION	POINT	BOTTOM FTG. ELEV.	AS-BUILT FTG. ELEVATION
A	677.939		E	677.860		I	679.781	
B	677.939		F	677.860		J	679.781	
C	677.939		G	677.860		K	679.781	
D	677.939		H	677.860		L	679.781	
FOOTINGS ARE DESIGNED FOR A MAXIMUM SERVICE LIMIT BEARING PRESSURE OF 12 ksf.								

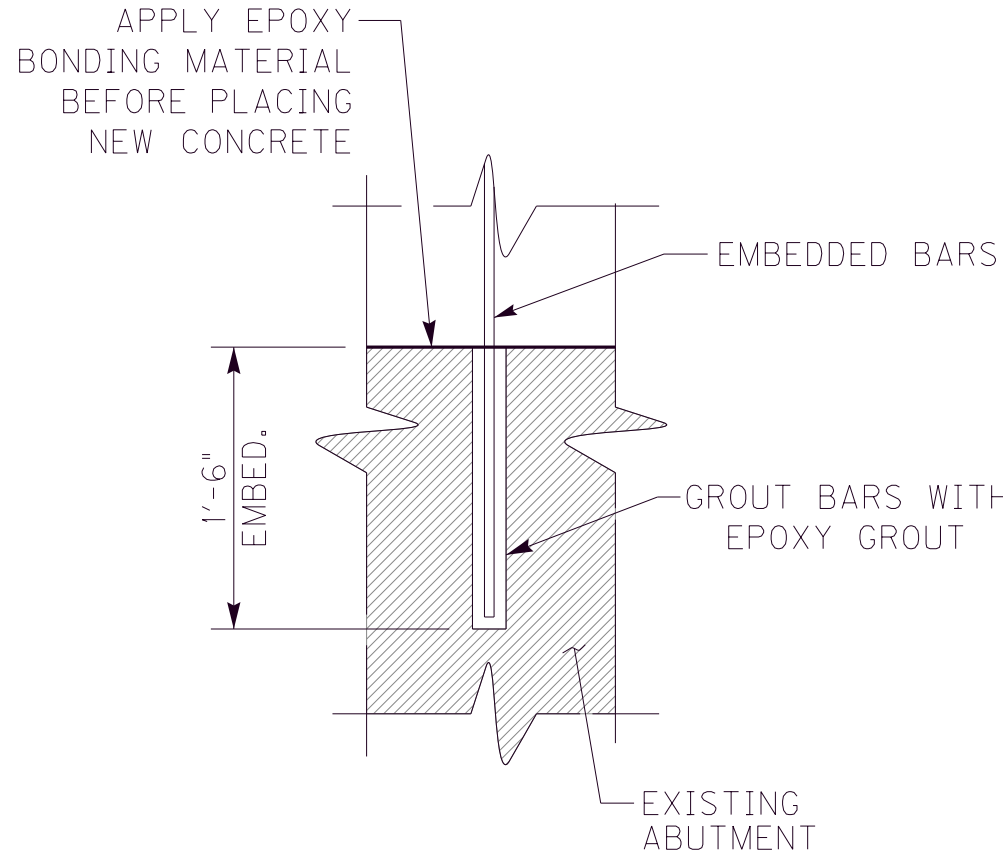




NOTATIONS

--- DENOTES PILES
BATTERED 2:12

- ① $3 \sim A1 @ 12'' = 2'-0''$
- ② $2 \sim A1 \& 1 \sim A2 @ 12'' = 2'-0''$
- ③ $3 \sim A2 @ 12'' = 2'-0''$



DRILL & GROUT DETAIL

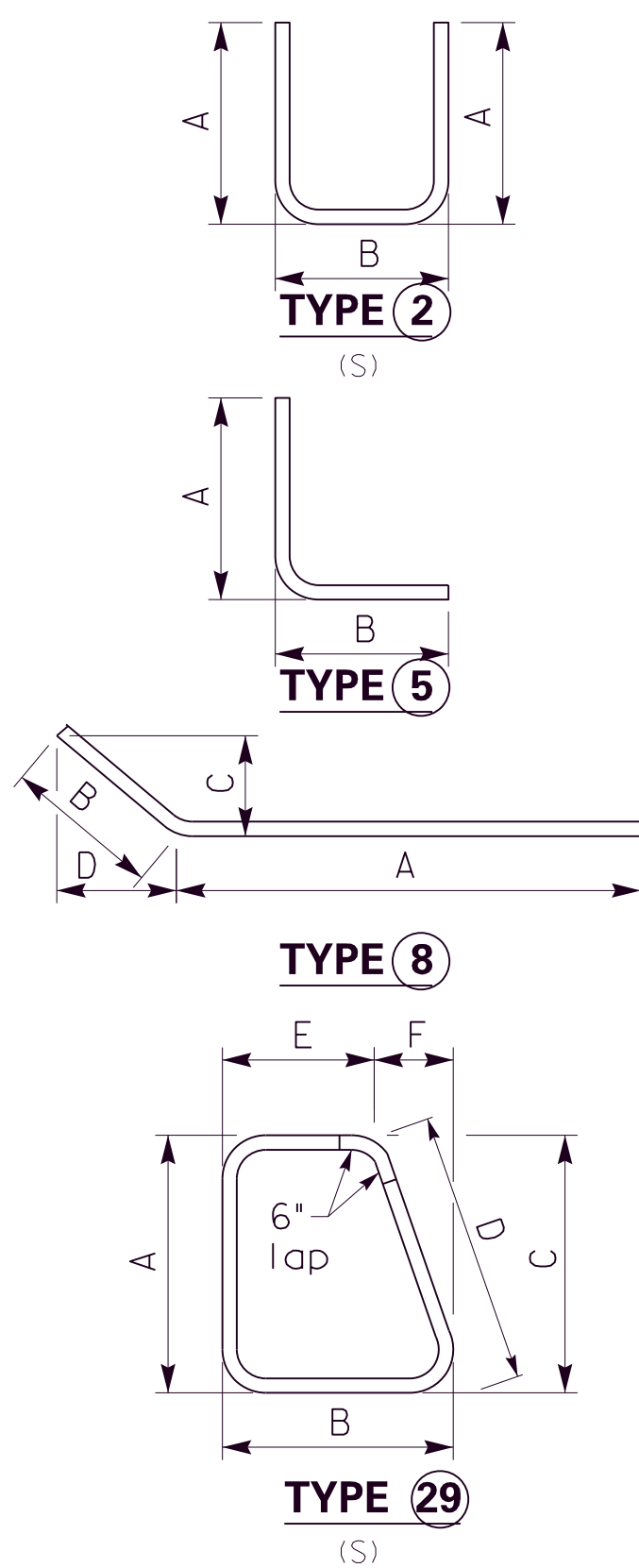
BEAM SEAT ELEVATIONS	
ABUTMENT #1	
BEAM 1	702.589
BEAM 2	702.750
BEAM 3	702.909
BEAM 4	703.066
BEAM 5	703.220
BEAM 6	703.373

BEAM SEAT ELEVATIONS	
ABUTMENT #2	
BEAM 1	703.954
BEAM 2	704.241
BEAM 3	704.524
BEAM 4	704.803
BEAM 5	705.080
BEAM 6	705.352

ABUTMENT #1 BILL OF REINFORCEMENT

MARK	TYPE	NO.	SIZE	LENGTH		LOCATION	A		B		C		D		E		F	
				FT	IN		FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN
A1	(29)	28	#5	17	7	CAP	4	8	4	4 1/2	4	8	4	9 3/4	3	2 1/2	1	2
A2	(2)	28	#5	10	10	CAP	4	6	3	2								
A3	(5)	2	#5	9	4	CAP	6	2	3	2								
A4	(5)	2	#5	6	0	CAP	3	2	2	10								
A5	(5)	26	#5	6	0	CAP	3	2	2	10								
A6	(5)	20	#5	5	10	CAP	3	2	2	8								
A7	(5)	22	#5	5	9	CAP	3	2	2	7								
A8	STR	7	#5	31	2	CAP												
A9	STR	4	#5	30	4	CAP												
A10	STR	5	#5	29	9	CAP												
A11	STR	6	#5	39	7	BEARING SEAT												
A12	STR	16	#5	7	10	CAP												
A13	STR	6	#5	34	9	BEARING SEAT												
A14	(2)	8	#5	8	9	SHEAR KEY	2	6	3	9								
A15	(2)	8	#5	8	3	SHEAR KEY	2	6	3	3								
A16	STR	4	#5	5	5	WING												
A17	STR	4	#5	6	11	WING												
A18	STR	3	#5	7	2	WING												
A19	(8)	1	#6	6	4	WING	4	7	1	9	0	8 7/8	1	6 7/8				
A20	(8)	1	#6	5	3	WING	4	7	0	8	0	3 1/2	0	7 1/4				
A21	STR	2	#5	5	10	WING												
A22	STR	1	#5	5	0	WING												
A23	STR	1	#5	2	11	WING												
A24	STR	2	#5	4	10	WING												
A25	STR	1	#5	4	2	WING												
A26	STR	1	#5	2	0	WING												
A27	STR	7	#5	6	3	WING												
A28	STR	2	#5	5	10	WING												
A29	STR	2	#5	5	6	WING												
A30	(8)	1	#6	6	2	WING	3	8	2	6	0	11 3/8	2	3 3/4				
A31	(8)	1	#6	5	2	WING	2	8	2	6	0	11 3/8	2	3 3/4				
A32	STR	3	#5	6	0	WING												
A33	STR	3	#5	5	0	WING												

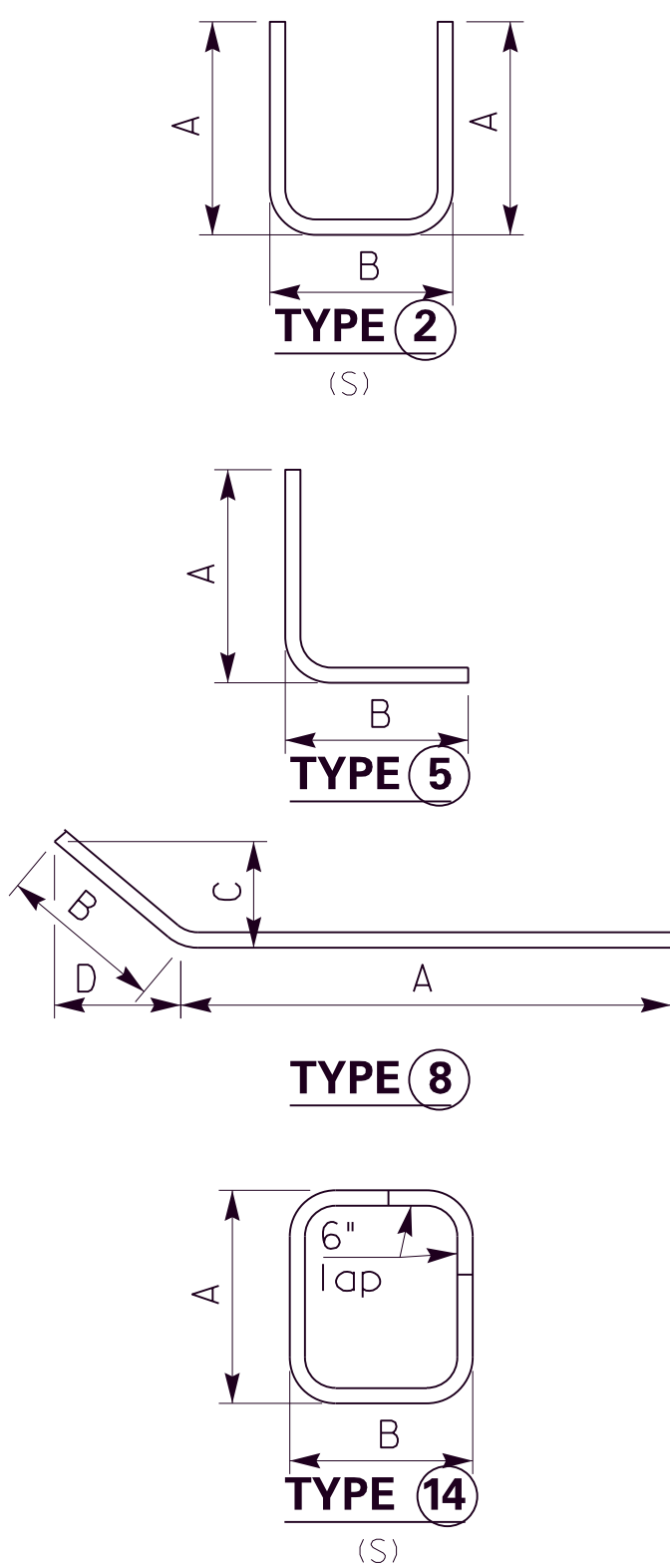
BAR TYPES



ABUTMENT #2 BILL OF REINFORCEMENT

MARK	TYPE	NO.	SIZE	LENGTH		LOCATION	A		B		C		D		E		F	
				FT	IN		FT	IN	FT	IN	FT	IN	FT	IN	FT	IN	FT	IN
A1	(14)	14	#5	19	8	CAP	6	5	3	2								
A2	(14)	7	#5	19	2	CAP	6	2	3	2								
A3	(14)	4	#5	18	8	CAP	5	11	3	2								
A4	5	10	#5	7	9	CAP	4	7	3	2								
A5	STR	6	#6	32	11	CAP												
A6	STR	6	#5	32	11	CAP												
A7	STR	10	#5	40	1	CAP												
A8	(5)	20	#5	7	6	CAP	4	4	3	2								
A9	(5)	20	#5	7	2	CAP	4	0	3	2								
A10	(5)	22	#5	6	11	CAP	3	9	3	2								
A11	(5)	2	#5	8	3	CAP	5	1	3	2								
A12	(14)	5	#5	17	0	CAP	5	1	3	2								
A13	(2)	8	#5	10	1	SHEAR KEY	3	2	3	9								
A14	(2)	8	#5	9	7	SHEAR KEY	3	2	3	3								
A15	STR	4	#5	3	6	WING												
A16	STR	4	#5	4	2	WING												
A17	STR	2	#5	4	11	WING												
A18	STR	7	#5	5	3	WING												
A19	(8)	1	#6	7	7	WING	5	7	2	0	0	8 3/8	1	10 1/2				
A20	(8)	1	#6	8	5	WING	5	7	2	10	0	11 7/8	2	7 7/8				
A21	STR	2	#5	7	5	WING												
A22	STR	1	#5	5	5	WING												
A23	STR	2	#5	8	3	WING												
A24	STR	1	#5	6	4	WING												
A25	STR	10	#5	37	0	CAP												
A26	STR	4	#5	4	2	WING												
A27	STR	2	#5	5	0	WING												
A28	STR	9	#5	5	1	WING												
A29	(8)	1	#6	7	3	WING	4	9	2	6	0	11 3/8	2	4				
A30	(8)	1	#6	6	3	WING	3	9	2	6	0	11 3/8	2	4				
A31	STR	3	#5	7	1	WING												
A32	STR	3	#5	6	1	WING												
A33	STR	2	#6	8	4	CAP												
A34	STR	1	#6	8	0	CAP												
A35	STR	1	#6	7	1	CAP												
A36	STR	2	#6	7	7	CAP												
A37	STR	2	#5	8	4	CAP												
A38	STR	2	#5	7	7	CAP												

BAR TYPES



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
**HMB PROFESSIONAL
ENGINEERS, INC.**

DATE: 12/30/2021

DESIGNED BY: B. Reid

DETAILED BY: B. Reid

CHECKED BY

B. Pulliam

B. Pulliam

ABUTMENT DETAILS

CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE

KY-224

ITEM NO.

4-20001

SHEET NO.
S12

COUNTY OF

GRAYSON

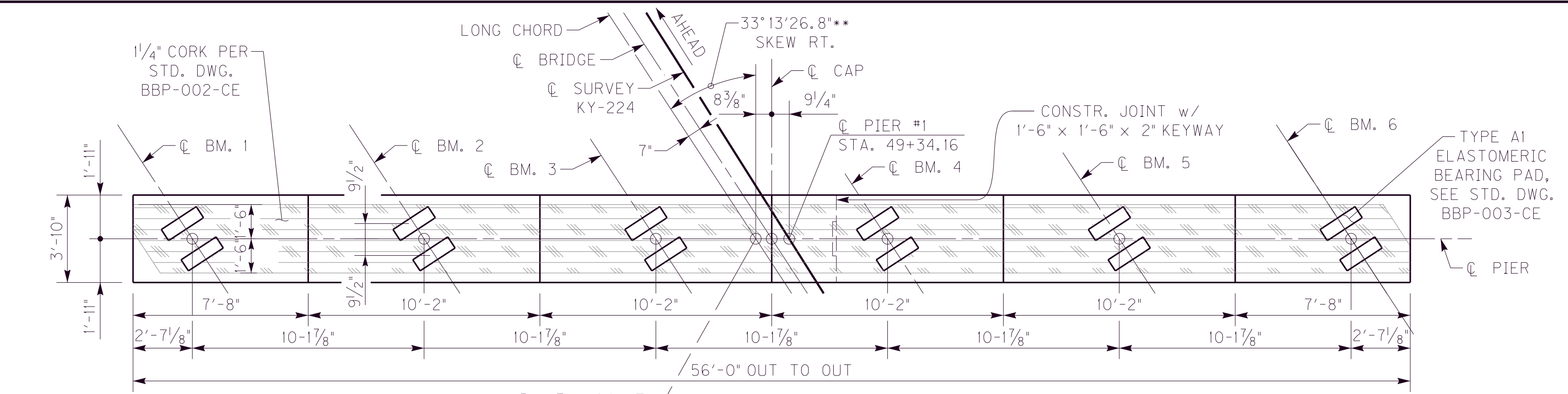
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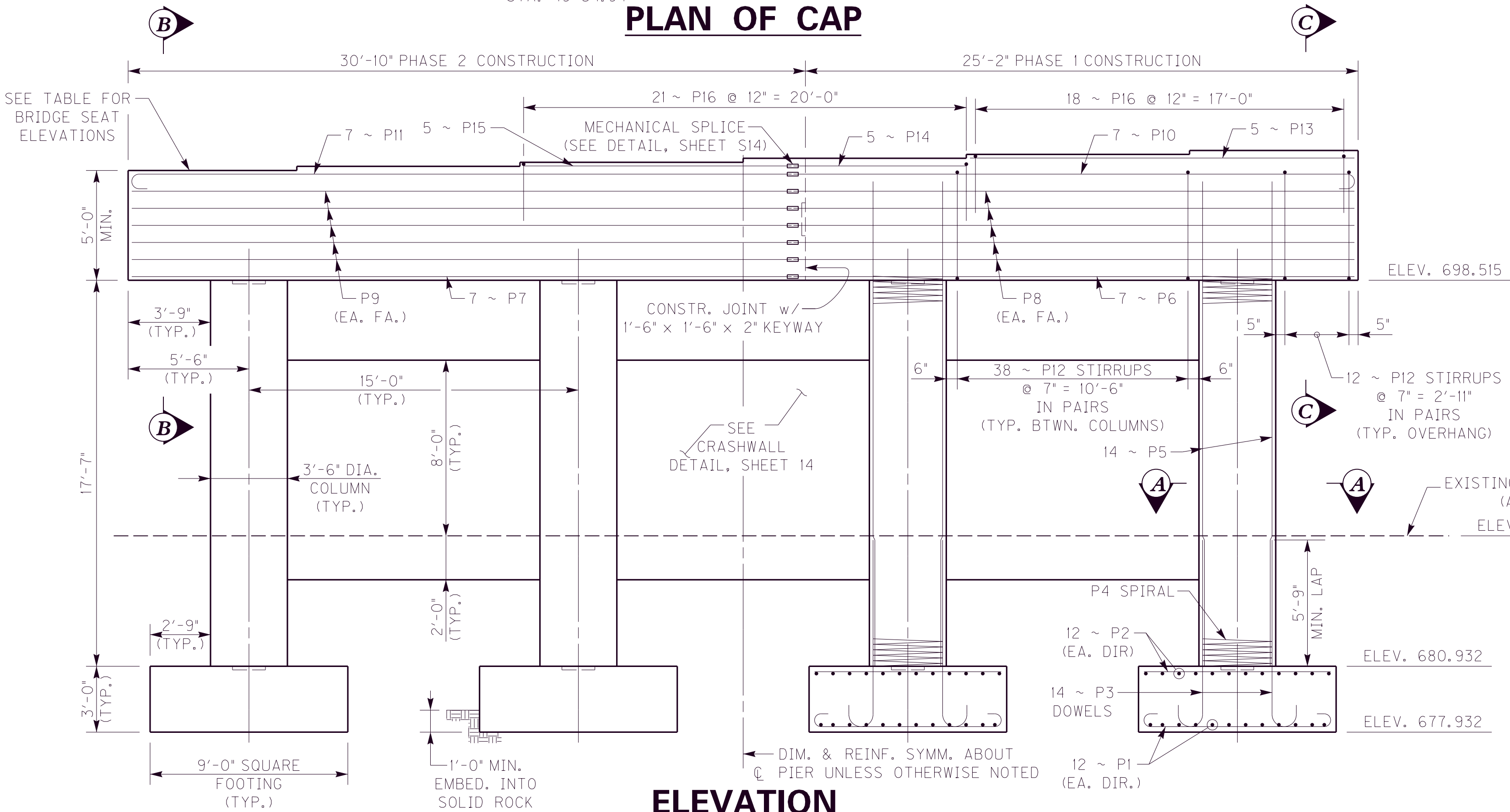
DATE PLOTTED: 1/7/2022

9:51:16 AM

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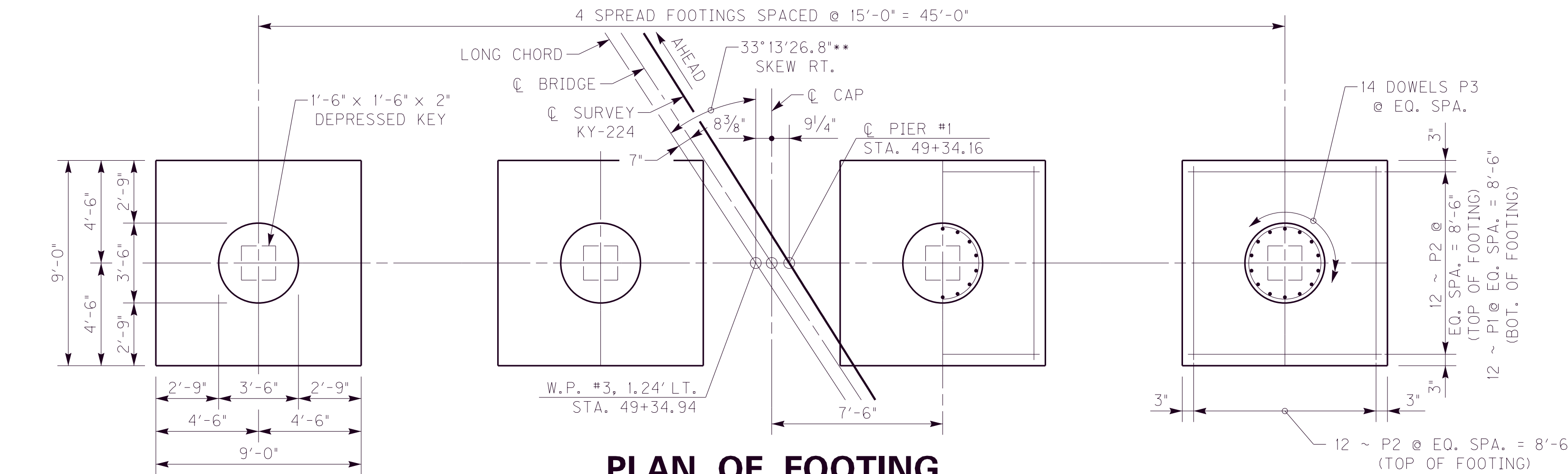


PLAN OF CAP



ELEVATION

(LOOKING AHEAD)



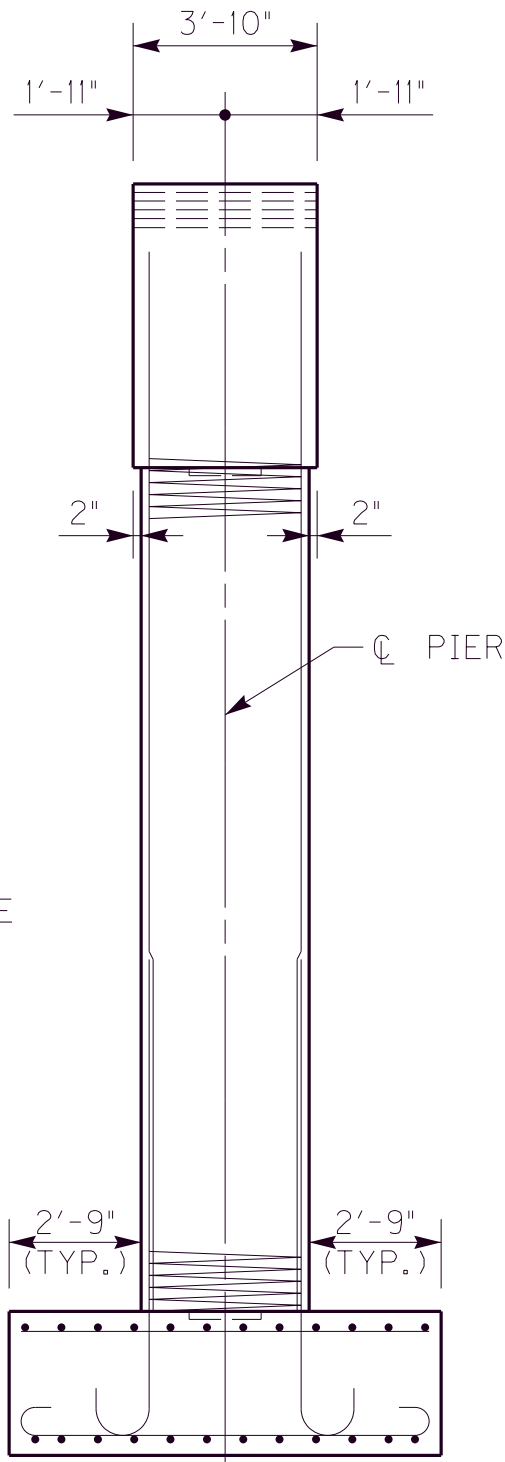
PLAN OF FOOTING

BRIDGE SEAT ELEVATIONS

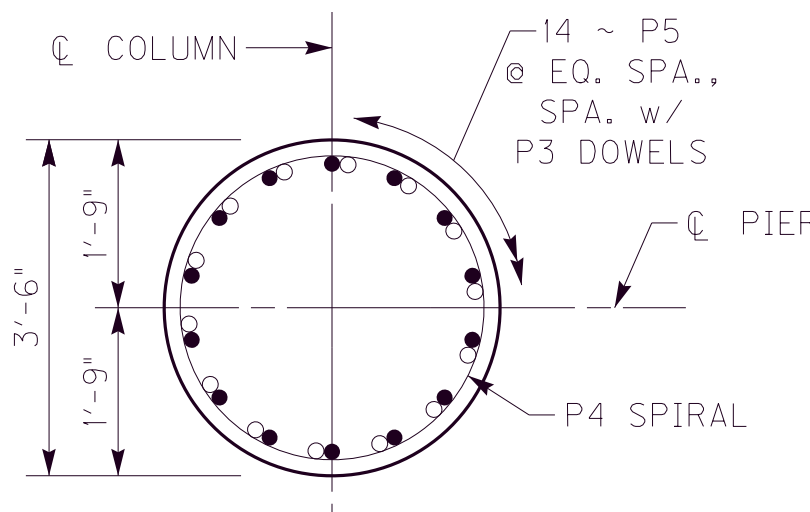
PIER 1	
BEAM 1	703.515
BEAM 2	703.702
BEAM 3	703.887
BEAM 4	704.069
BEAM 5	704.248
BEAM 6	704.425

BAR CLEARANCE

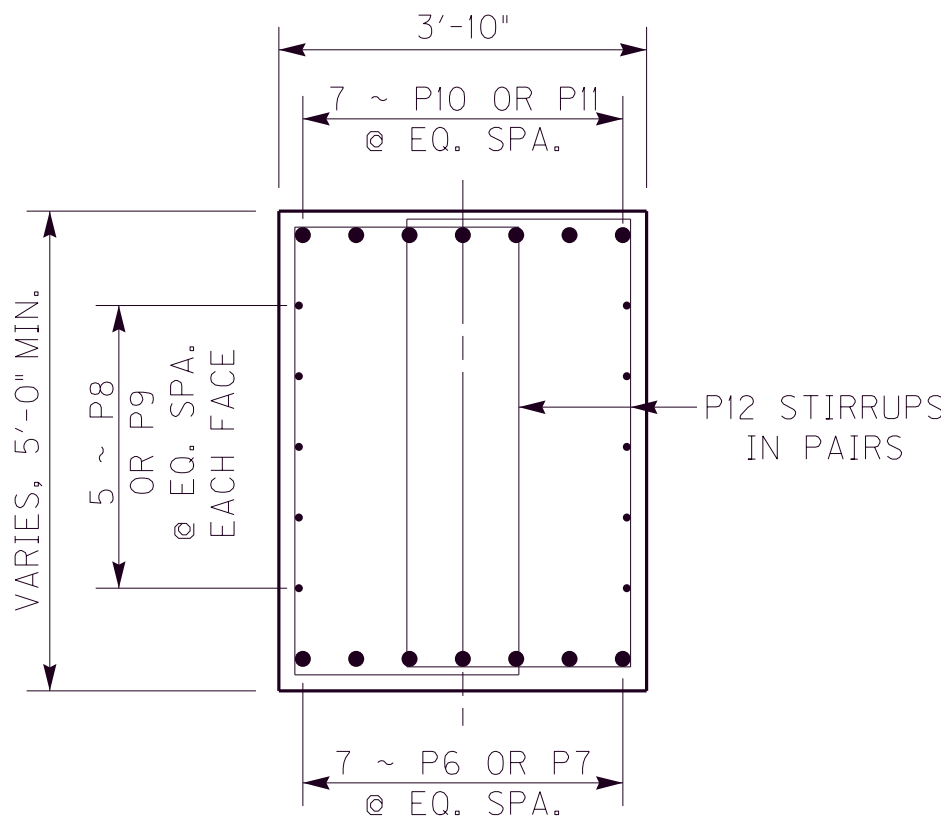
CAP	2"
COLUMN	2"
FOOTING	3"



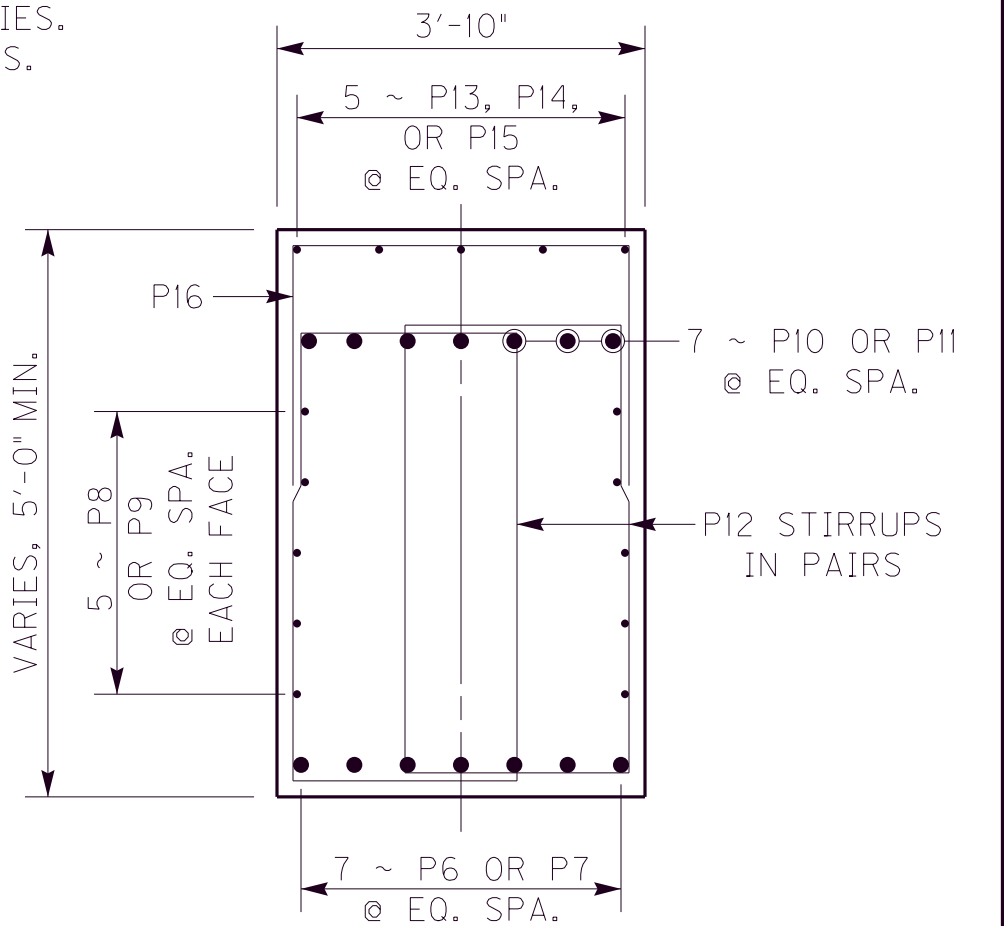
END ELEVATION



SECTION A-A



SECTION B-B

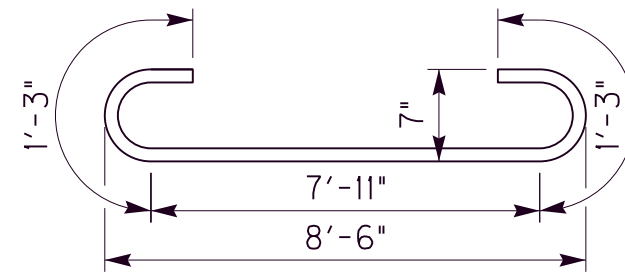


SECTION C-C

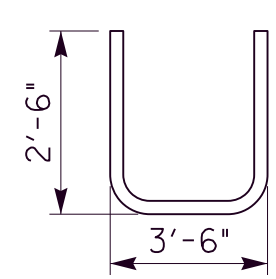
PIER #1 BILL OF REINFORCEMENT

MARK	TYPE	NO.	SIZE	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN	FT	IN
P1	(1)	96	#7	10	5	FOOTING BOT.								
P2	STR	96	#6	8	6	FOOTING TOP								
P3	(4)	56	#9	10	0	FOOTING DOWEL	8	1	1	11	0	11 3/4	8	6 3/4
P4	(18)	4	#4	17	9	COLUMN SPIRAL	74							
P5	STR	56	#9	22	1	COLUMN								
P6	STR	7	#8	26	0	CAP BOT.								
P7	STR	7	#8	29	8	CAP BOT.								
P8	STR	10	#5	26	0	CAP SIDE								
P9	STR	10	#5	29	8	CAP SIDE								
P10	(4)	7	#8	27	1	CAP TOP	25	8	1	5	0	8	26	0
P11	(4)	7	#8	30	9	CAP TOP	29	4	1	5	0	8	29	8
P12	(14)	138	#5	15	0	CAP STIRRUP								
P13	STR	5	#5	17	6	CAP STEP								
P14	STR	5	#5	8	4	CAP STEP								
P15	STR	5	#5	11	10	CAP STEP								
P16	(2)	39	#5	8	6	CAP STEP								
P17	STR	33	#6	13	0	CRASHWALL								
P18	STR	33	#6	11	2	CRASHWALL								
P19	STR	72	#5	9	8	CRASHWALL								
P20	STR	66	#6	4	6	CRASHWALL								
P21	(8)	66	#6	4	6	CRASHWALL								

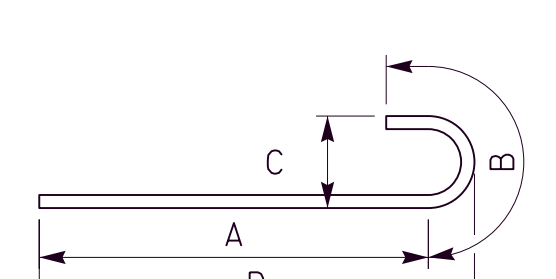
BAR TYPES



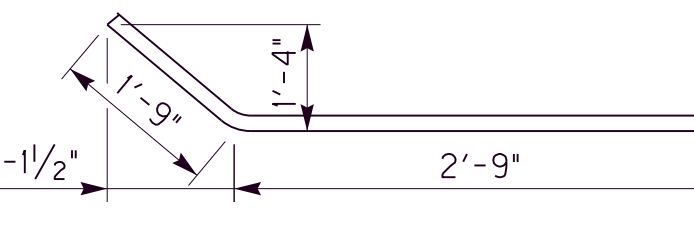
TYPE 1



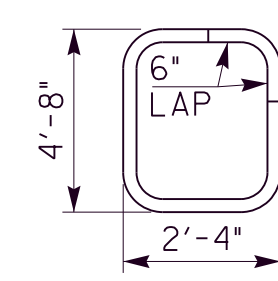
TYPE 2



TYPE 4

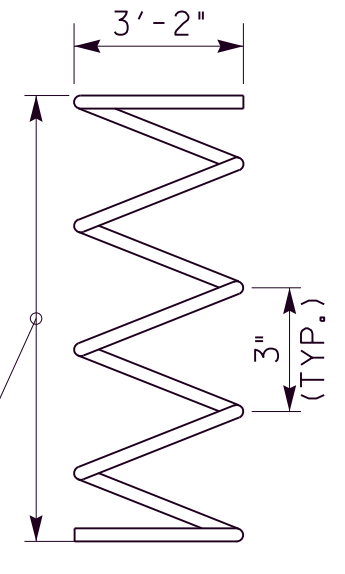


TYPE 8



TYPE 14

(S)

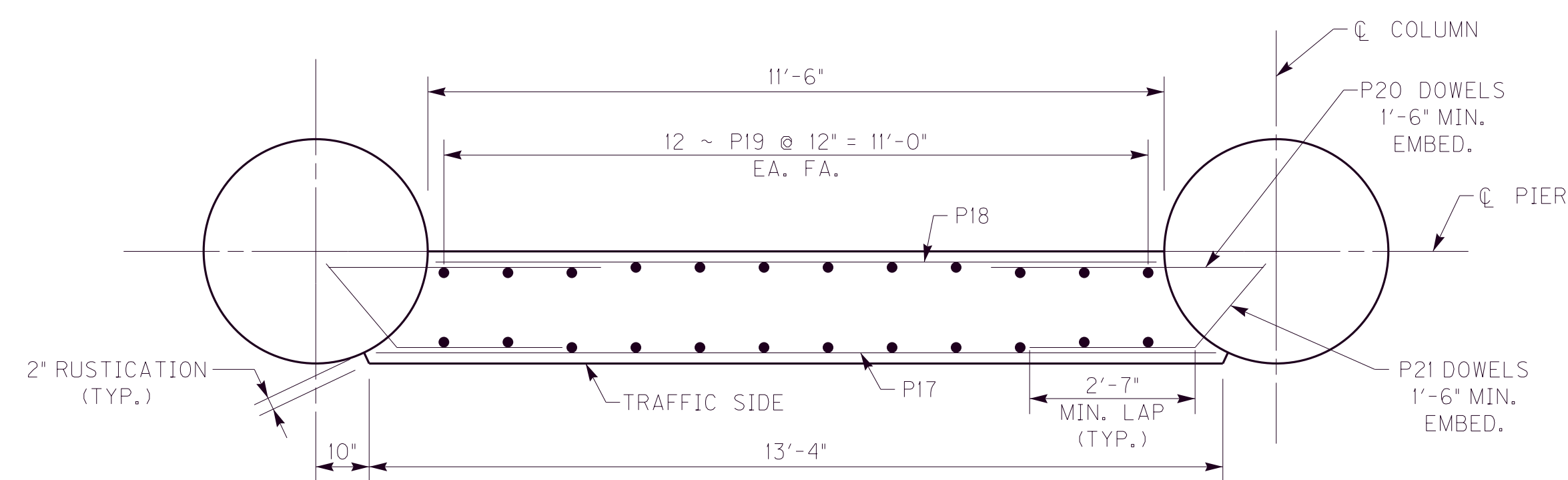


TYPE 18

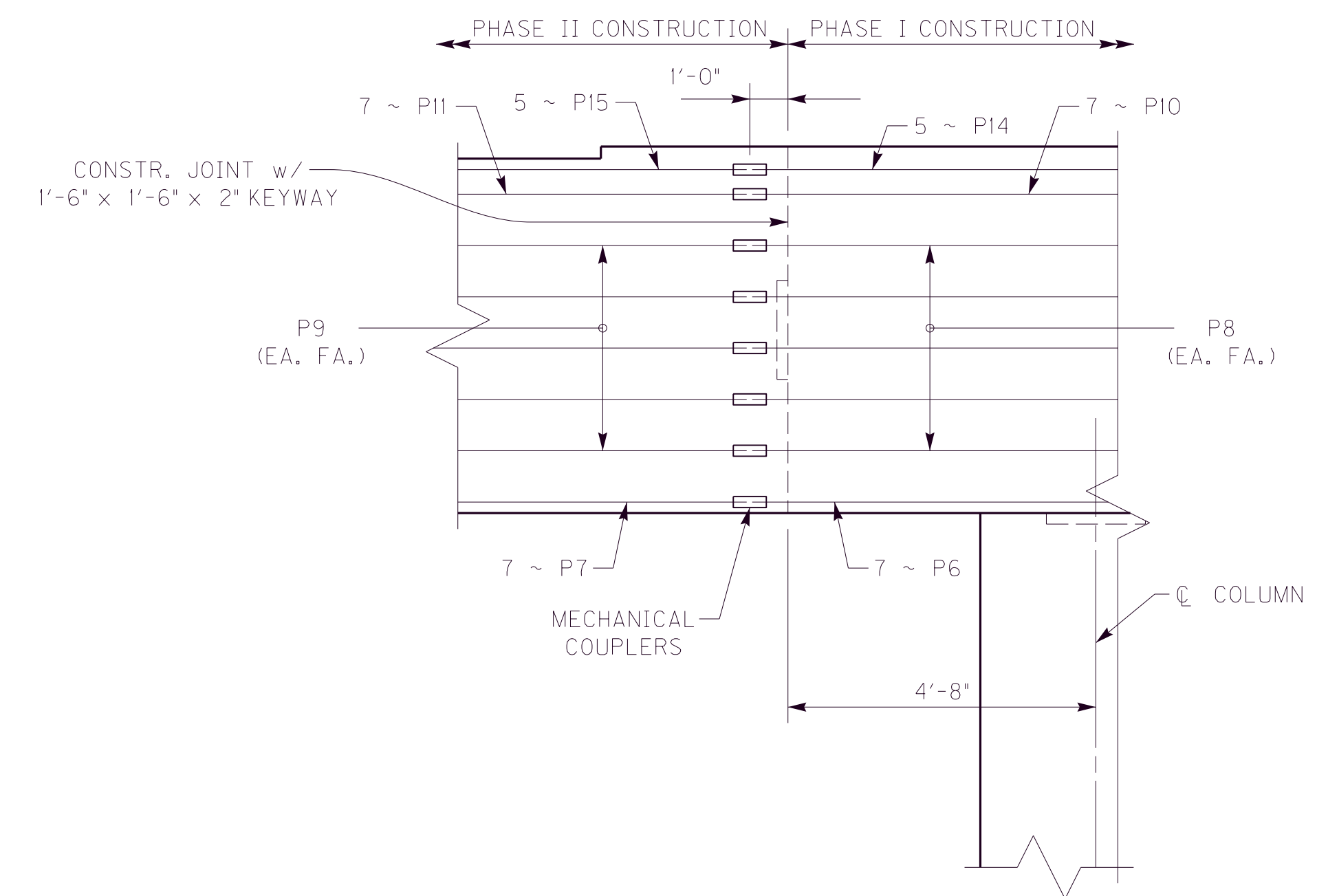
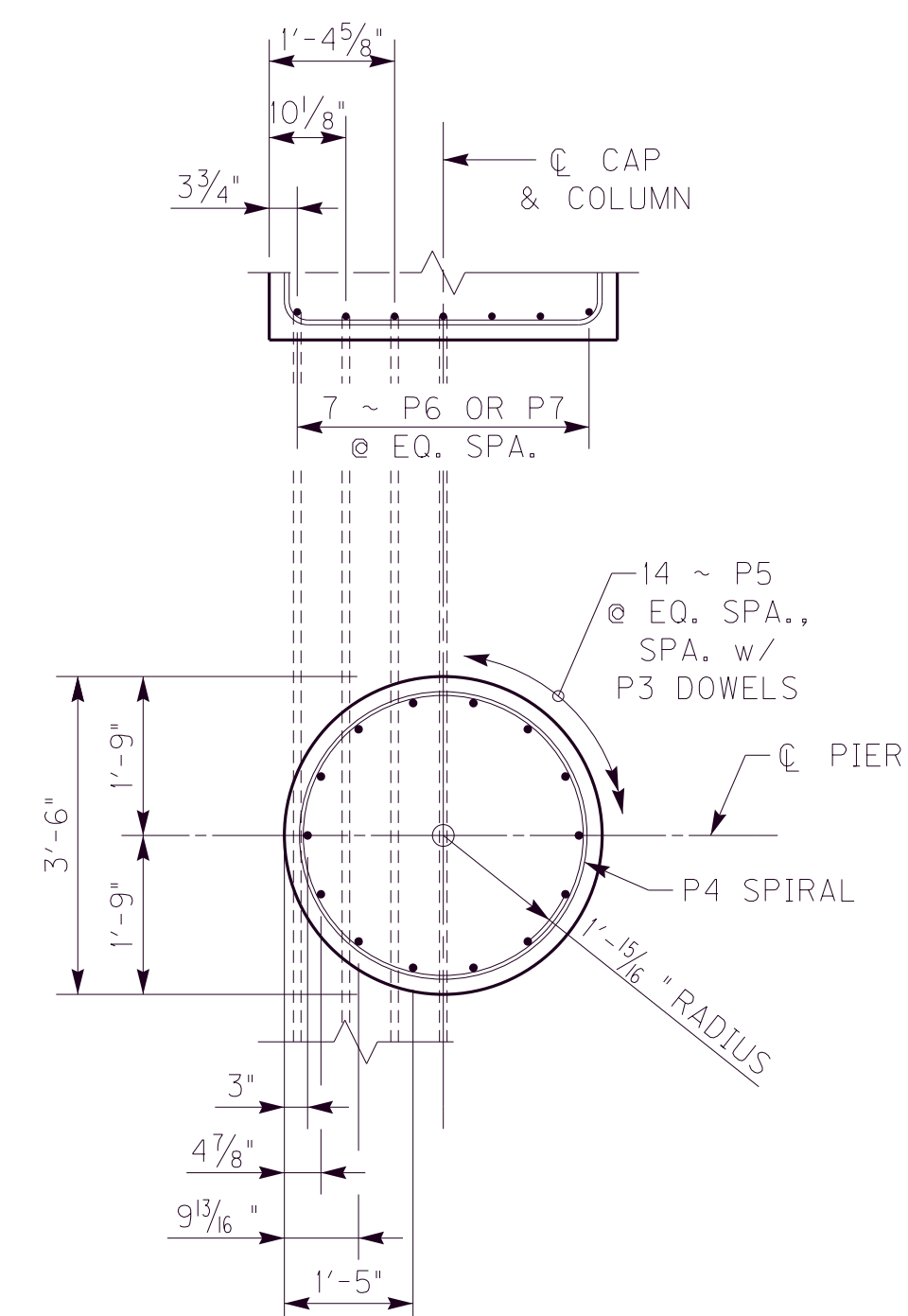
THE "LENGTH" SHOWN IN THE BILL OF REINFORCEMENT FOR SPIRALS IS THE DISTANCE FROM TOP OF FOOTING TO COLUMN CONSTRUCTION JOINT OR FROM COLUMN CONSTRUCTION JOINT TO CAP REINFORCEMENT.

THE "NUMBER OF TURNS" SHOWN IS THE "LENGTH" DIVIDED BY THE PITCH, PLUS THREE TURNS (TOTAL NUMBER OF CLOSED COILS) EXPRESSED TO THE NEAREST WHOLE NUMBER. ONE AND ONE HALF CLOSED COILS SHALL BE PROVIDED AT THE END OF EACH SPIRAL UNIT.

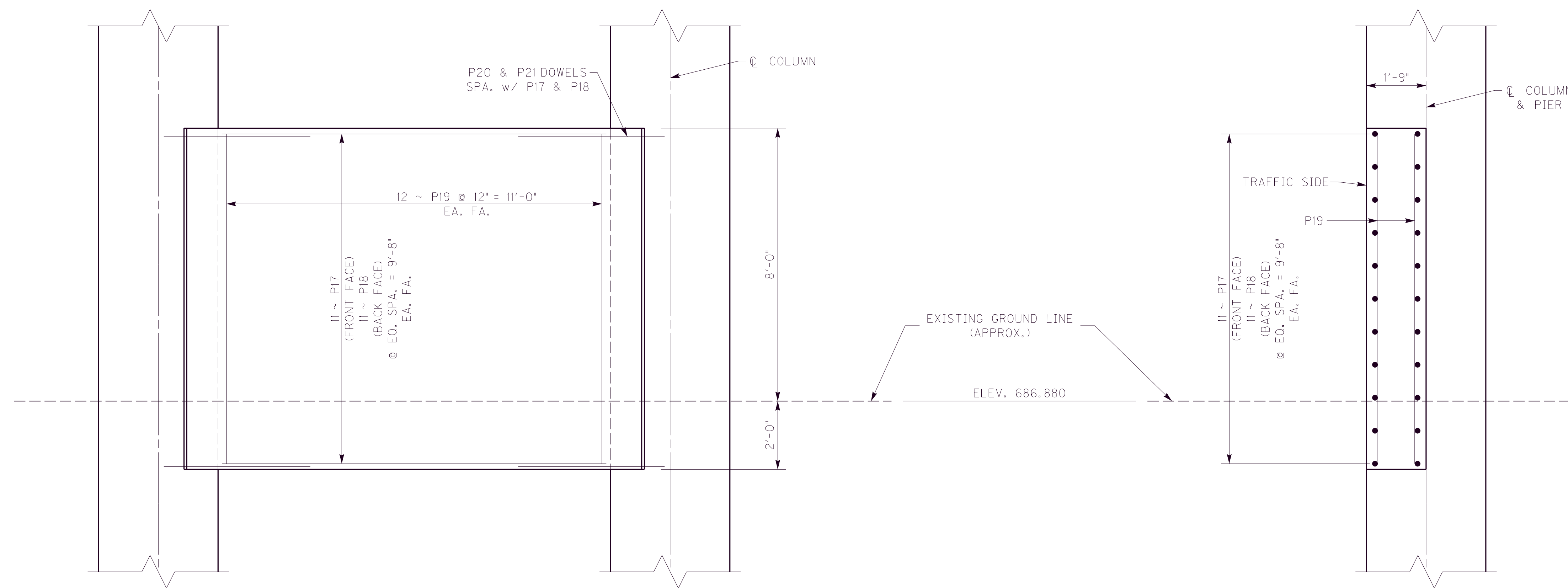
FOUR STEEL CHANNEL TEES OR ANGLE SPACERS, WEIGHING APPROXIMATELY 1.01 POUNDS PER LINEAR FOOT OF SPACER, SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG THE PERIPHERY OF THE COIL. WEIGHT OF SPIRAL REINFORCEMENT AND SPACERS IS INCLUDED IN THE ESTIMATE OF QUANTITIES. SPIRAL REINFORCING BARS SHALL HAVE DEFORMATIONS.

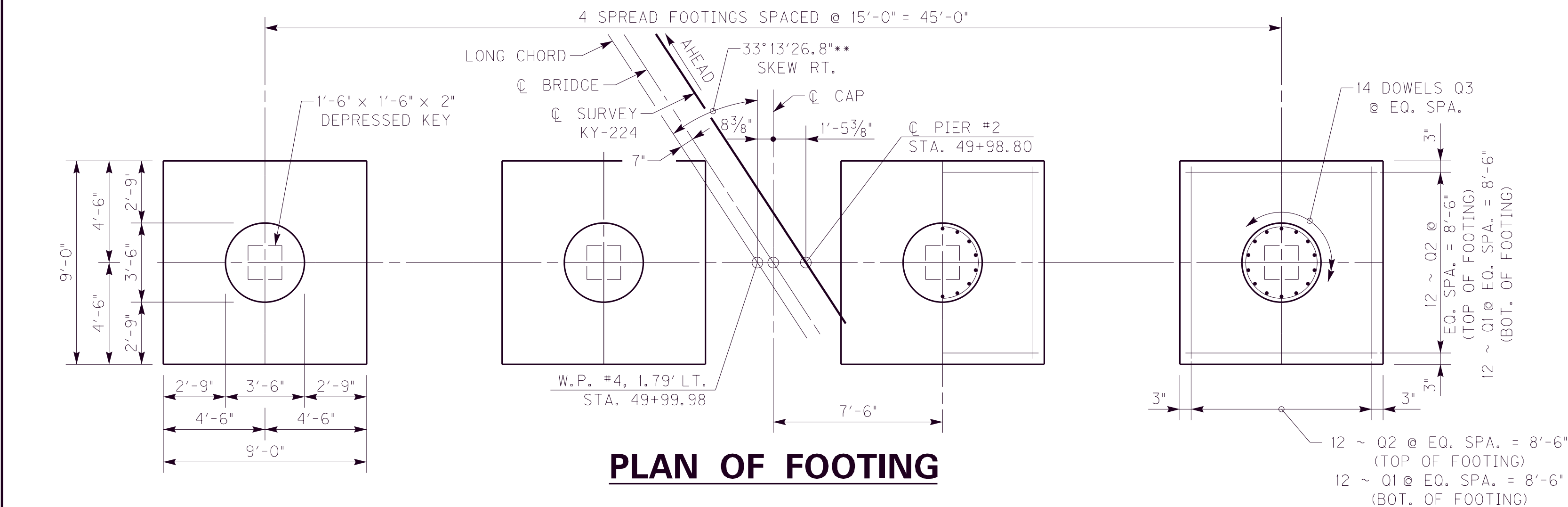
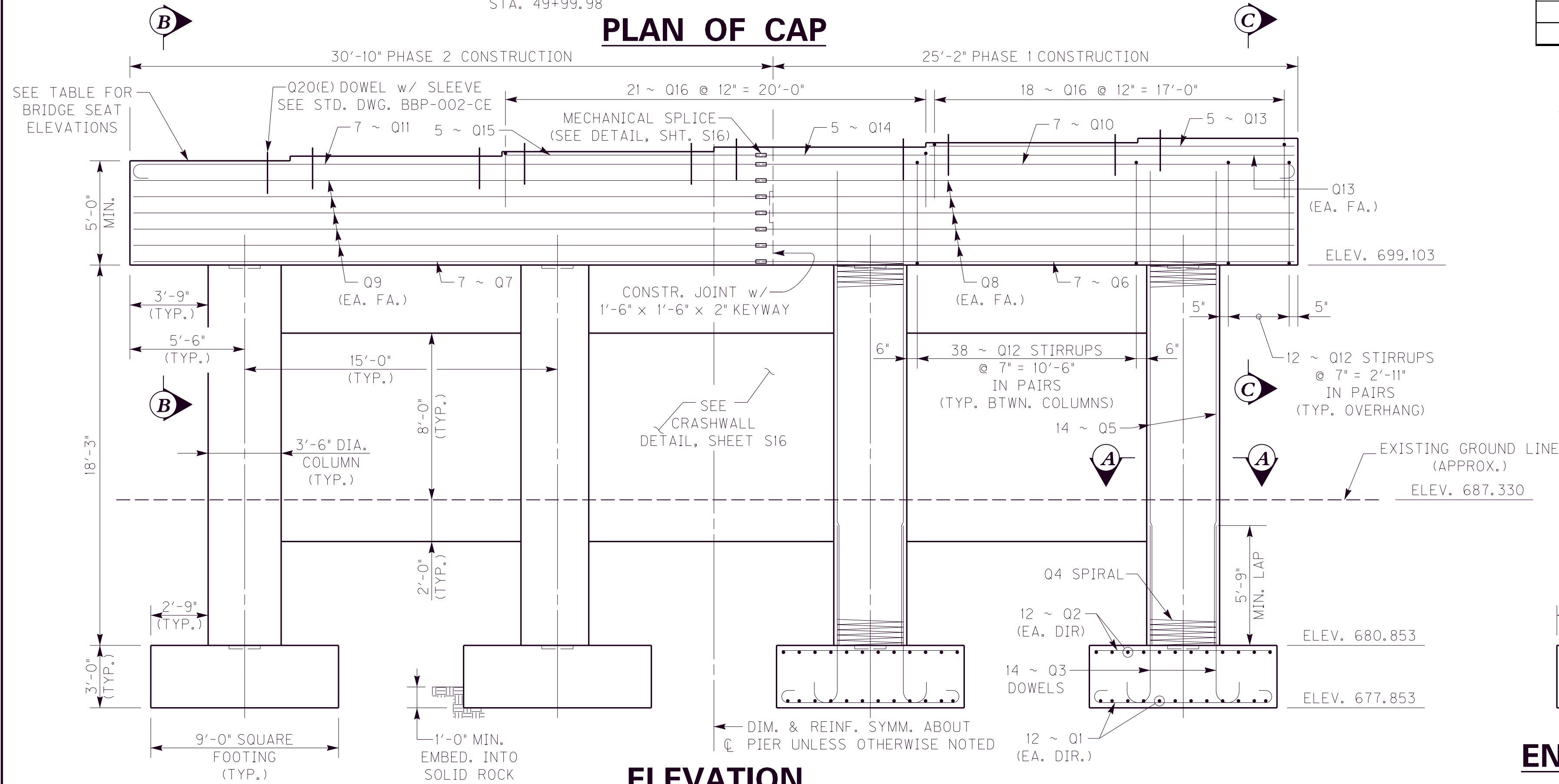
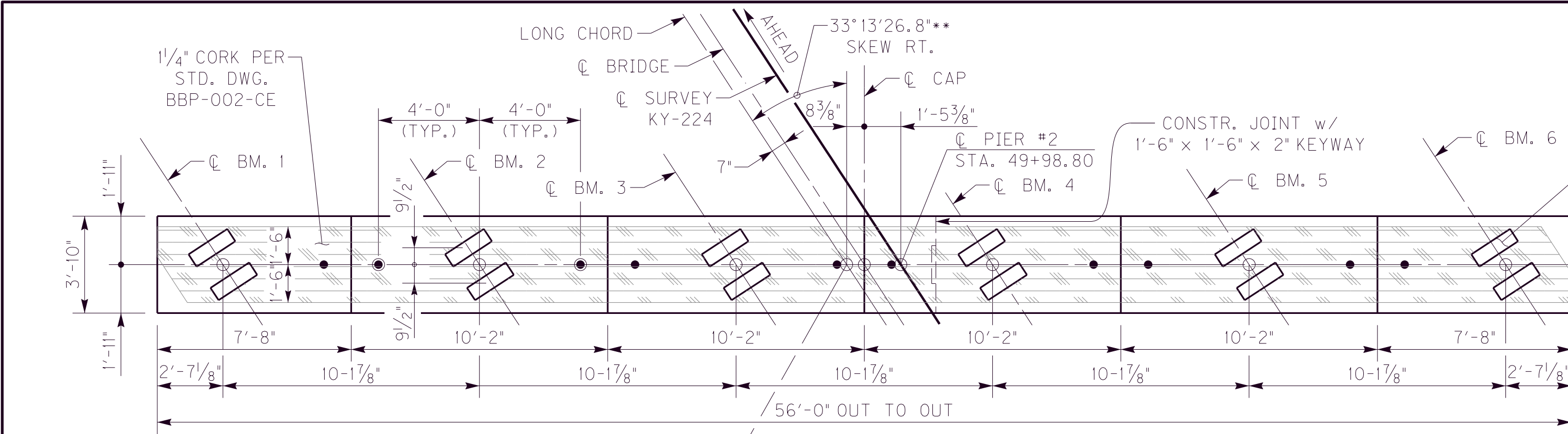


NOTE:
CONTRACTOR MAY SUBSTITUTE DOWELS
AND INSERTS FOR P20 & P21 BARS AT
THEIR DISCRETION FOR NO ADDITIONAL
COSTS TO THE DEPARTMENT.



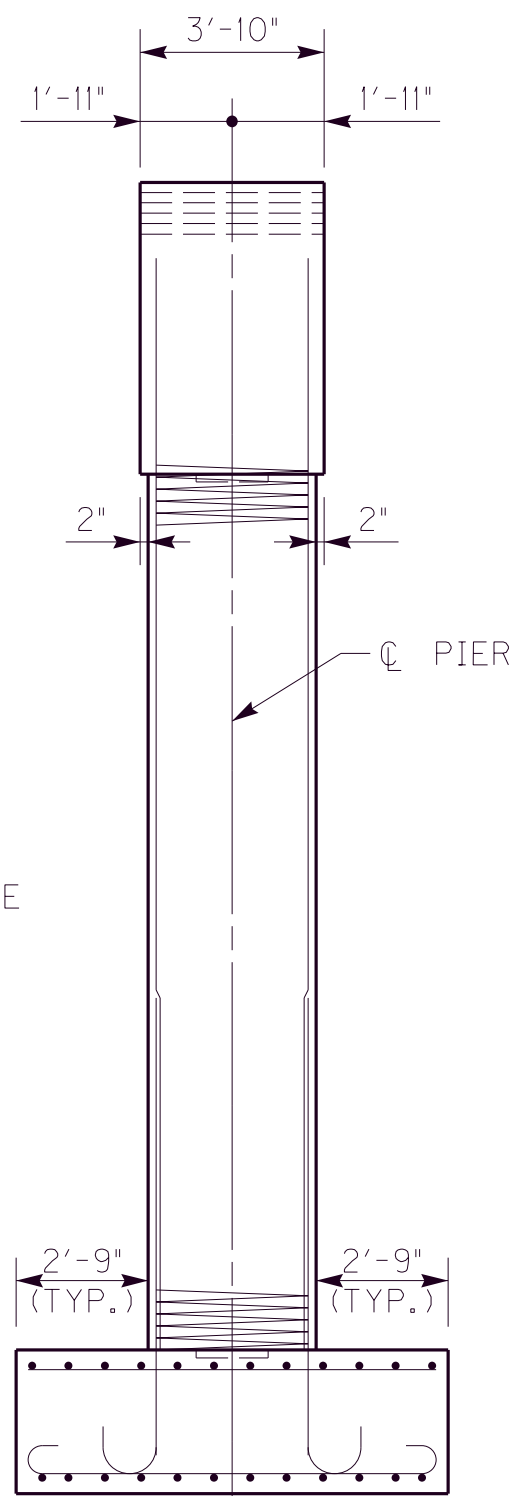
NOTE:
MECHANICAL COUPLER SHALL BE IN
ACCORDANCE WITH SECTION 602.03.06
OF THE SPECIFICATIONS. THEY SHALL BE
CAPABLE OF DEVELOPING 125% OF THE
SPECIFIED YIELD STRENGTH.



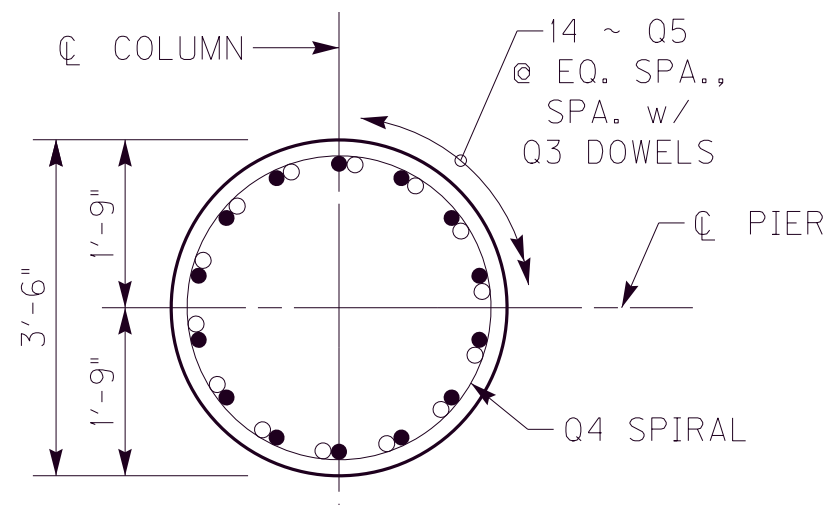


BRIDGE SEAT ELEVATIONS	
PIER 2	
BEAM 1	704.103
BEAM 2	704.324
BEAM 3	704.542
BEAM 4	704.757
BEAM 5	704.969
BEAM 6	705.178

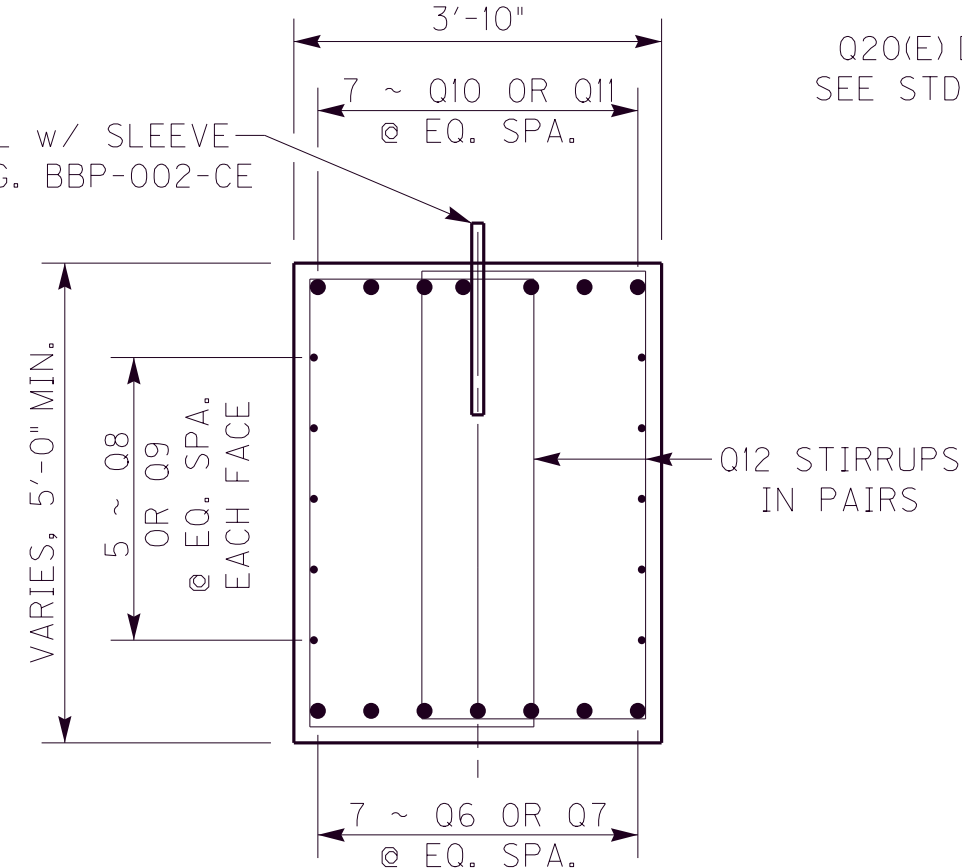
BAR CLEARANCE	
CAP	2"
COLUMN	2"
FOOTING	3"



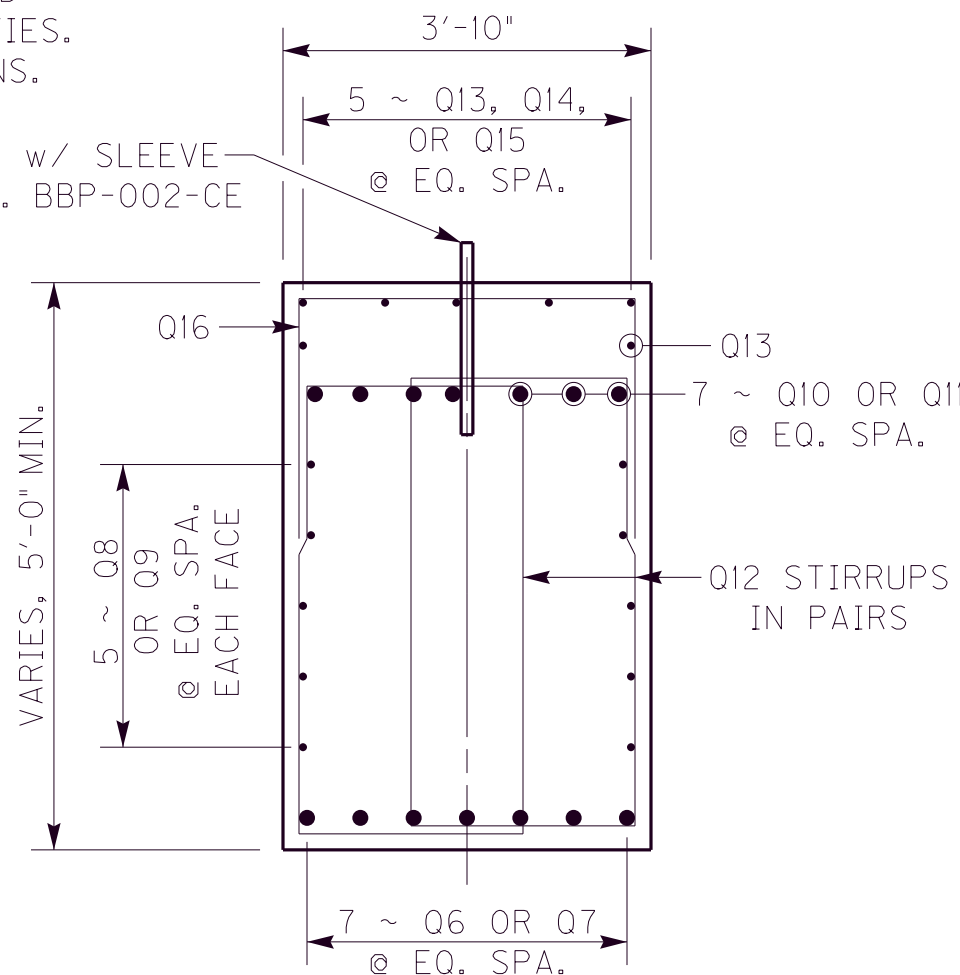
END ELEVATION



SECTION A-A



SECTION B-B



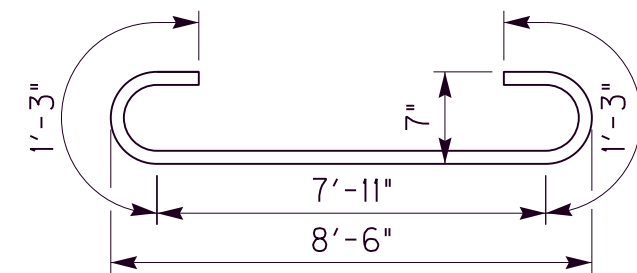
SECTION C-C

PIER #2 BILL OF REINFORCEMENT

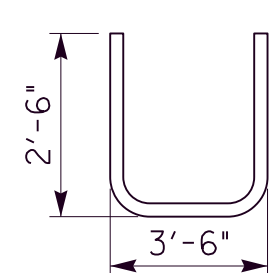
MARK	TYPE	NO.	SIZE	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN	FT	IN
Q1	(1)	96	#7	10	5	FOOTING BOT.								
Q2	STR	96	#6	8	6	FOOTING TOP								
Q3	(4)	56	#9	10	0	FOOTING DOWEL	8	1	1	11	0	11 3/4	8	6 3/4
Q4	(18)	4	#4	18	5	COLUMN SPIRAL	77							
Q5	STR	56	#9	21	0	COLUMN								
Q6	STR	7	#8	26	0	CAP BOT.								
Q7	STR	7	#8	29	8	CAP BOT.								
Q8	STR	10	#5	26	0	CAP SIDE								
Q9	STR	10	#5	29	8	CAP SIDE								
Q10	(4)	7	#8	27	1	CAP TOP	25	8	1	5	0	8	26	0
Q11	(4)	7	#8	30	9	CAP TOP	29	4	1	5	0	8	29	8
Q12	(14)	138	#5	15	0	CAP STIRRUP								
Q13	STR	7	#5	17	6	CAP STEP								
Q14	STR	5	#5	8	4	CAP STEP								
Q15	STR	5	#5	11	10	CAP STEP								
Q16	(2)	39	#5	8	6	CAP STEP								
Q17	STR	66	#6	13	0	CRASHWALL								
Q18	STR	72	#5	9	8	CRASHWALL								
Q19	STR	132	#6	4	6	CRASHWALL								
Q20(E)	STR	10	D	2	0	CAP DOWEL								

D INDICATES 1/2" COMMERCIAL GRADE SMOOTH ROUND BAR.

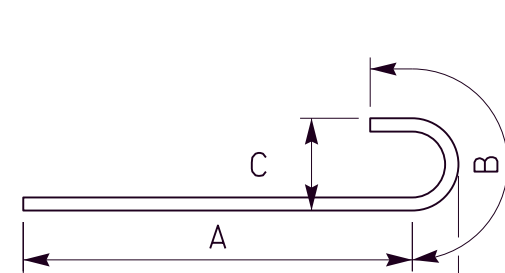
BAR TYPES



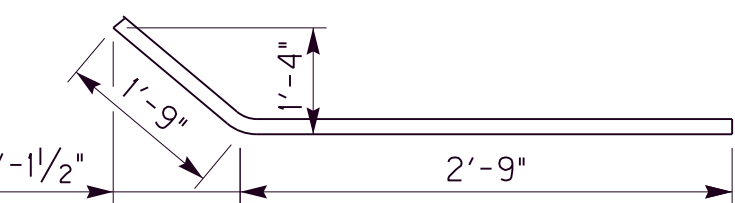
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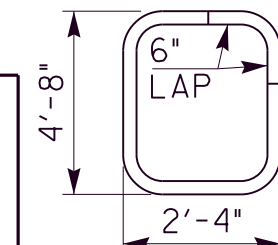
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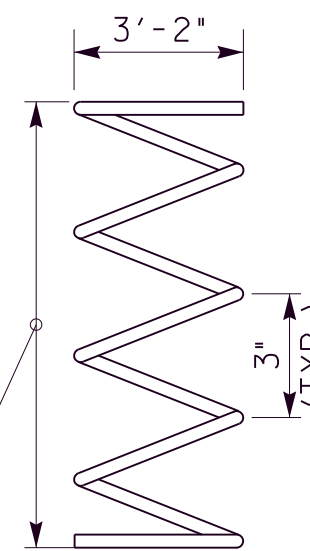
TYPE 4



TYPE 8



TYPE 14
(S)



TYPE 18

THE "LENGTH" SHOWN IN THE BILL OF REINFORCEMENT FOR SPIRALS IS THE DISTANCE FROM TOP OF FOOTING TO COLUMN CONSTRUCTION JOINT OR FROM COLUMN CONSTRUCTION JOINT TO CAP REINFORCEMENT.

THE "NUMBER OF TURNS" SHOWN IS THE "LENGTH" DIVIDED BY THE PITCH, PLUS THREE TURNS (TOTAL NUMBER OF CLOSED COILS) EXPRESSED TO THE NEAREST WHOLE NUMBER, ONE AND ONE HALF CLOSED COILS SHALL BE PROVIDED AT THE END OF EACH SPIRAL UNIT.

FOUR STEEL CHANNEL TEES OR ANGLE SPACERS, WEIGHING APPROXIMATELY 1.01 POUNDS PER LINEAR FOOT OF SPACER, SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG THE PERIPHERY OF THE COIL. WEIGHT OF SPIRAL REINFORCEMENT AND SPACERS IS INCLUDED IN THE ESTIMATE OF QUANTITIES. SPIRAL REINFORCING BARS SHALL HAVE DEFORMATIONS.



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
**HMB PROFESSIONAL
ENGINEERS, INC.**

DATE: 12/30/2021

DESIGNED BY: B. Pulliam

DETAILED BY: B. Pulliam

CHECKED BY

B. Reid

B. Reid

PIER #2

CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE

KY-224

ITEM NO.

4-20001

SHEET NO.

S15

COUNTY OF

GRAYSON

DRAWING NUMBER

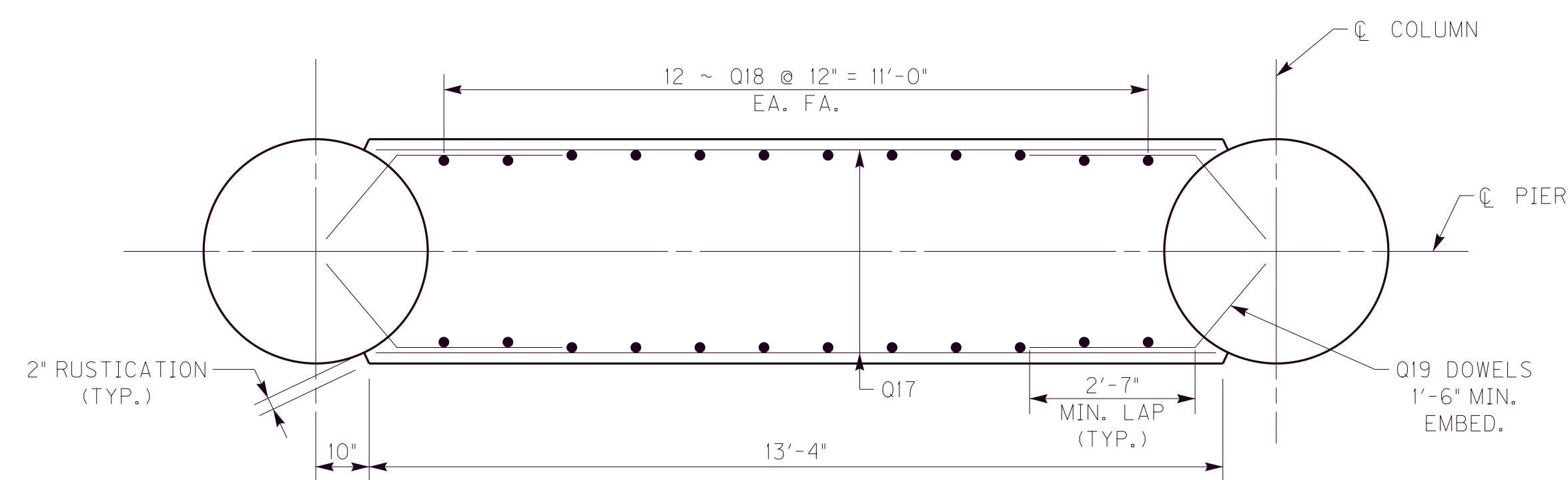
28464

MicroStation v8.11.7.443

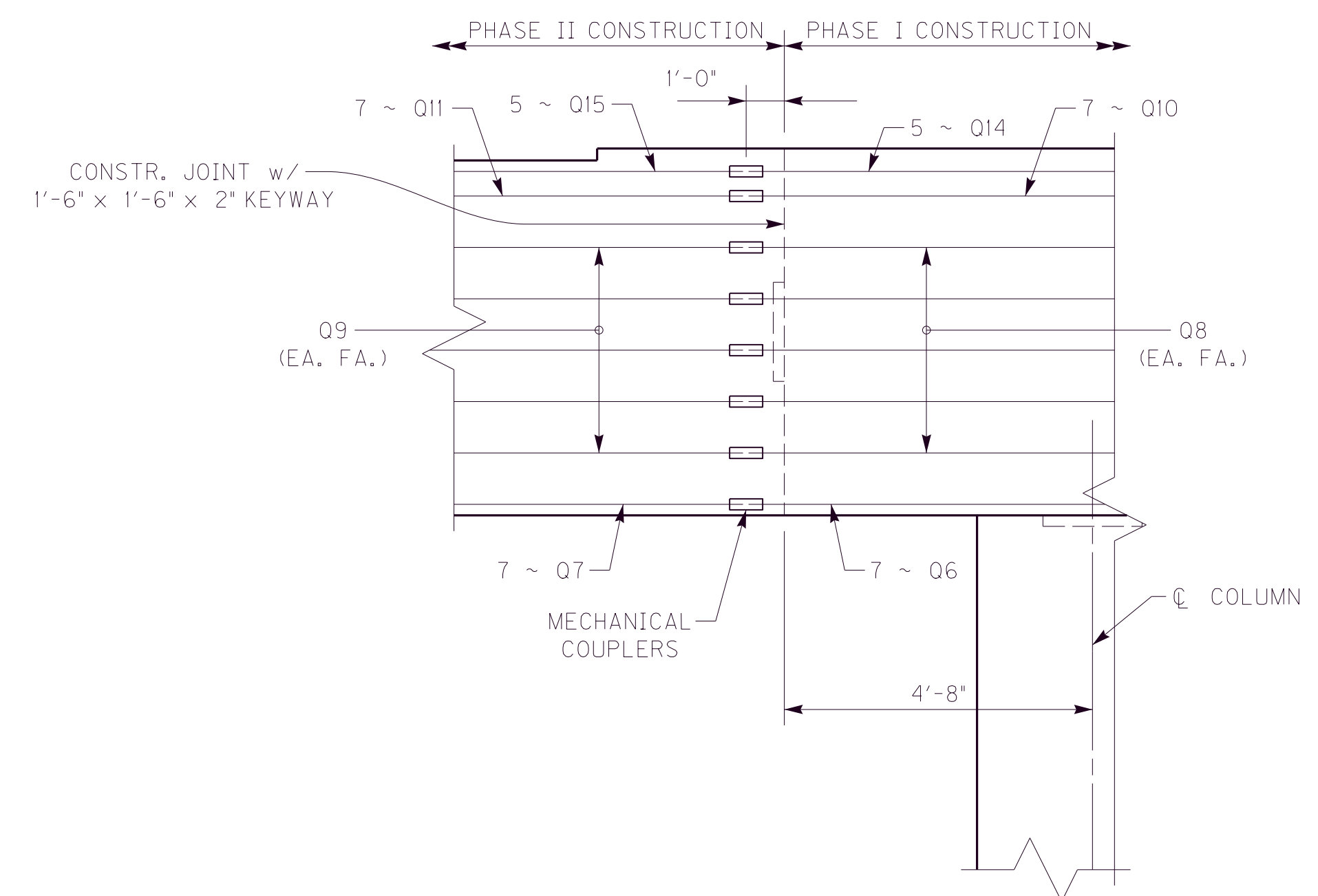
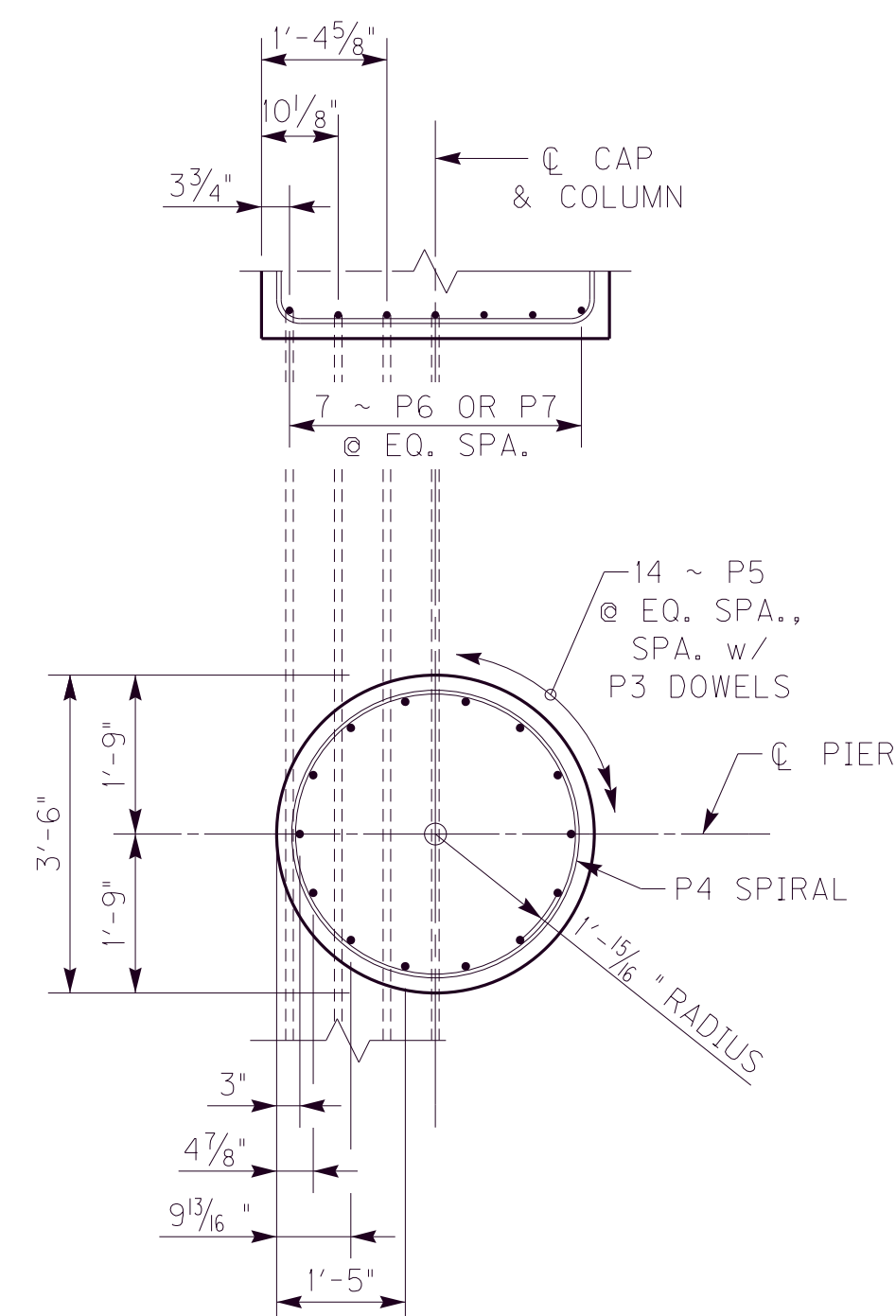
DATE PLOTTED: 1/7/2022

9:51:26 AM

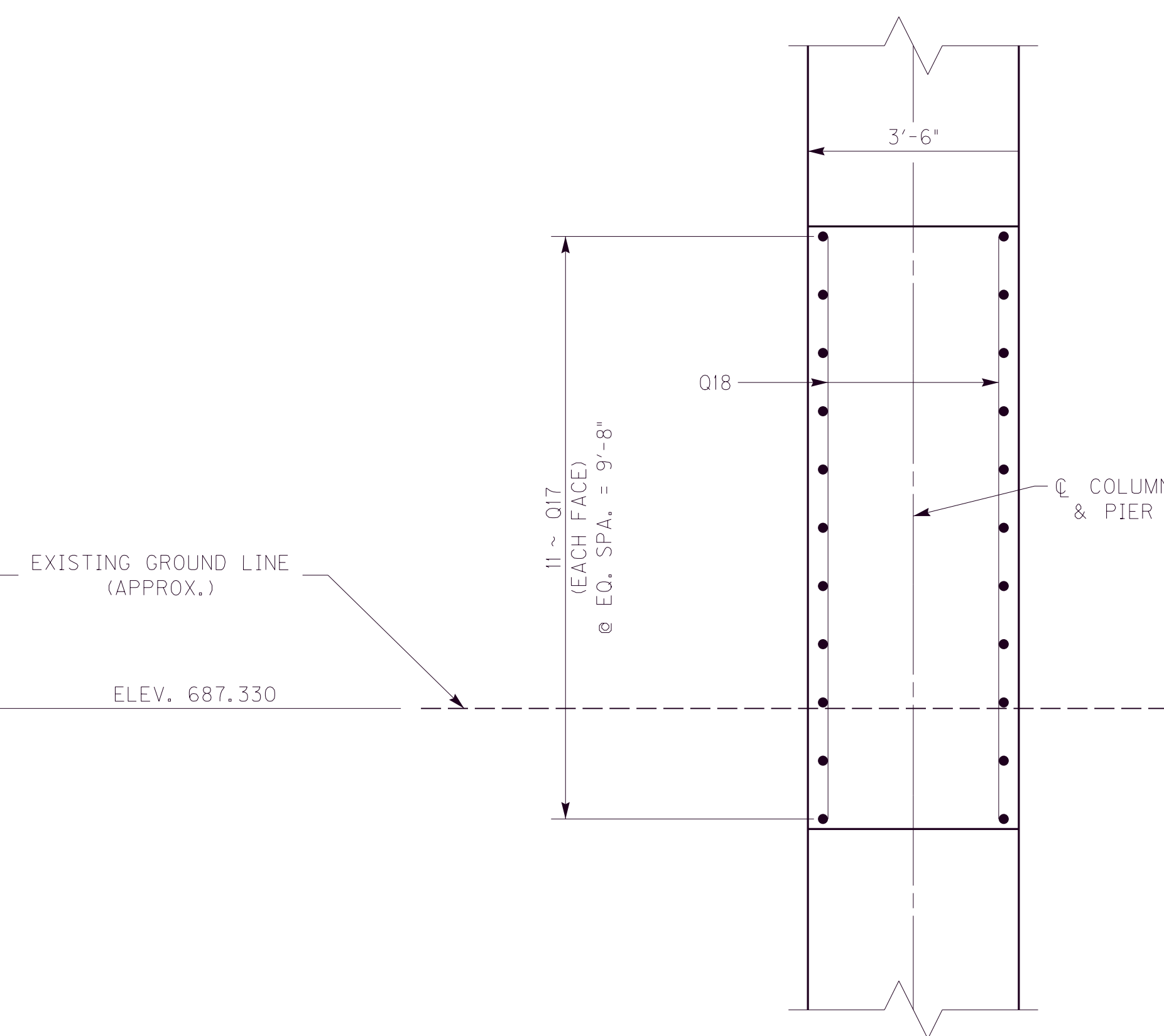
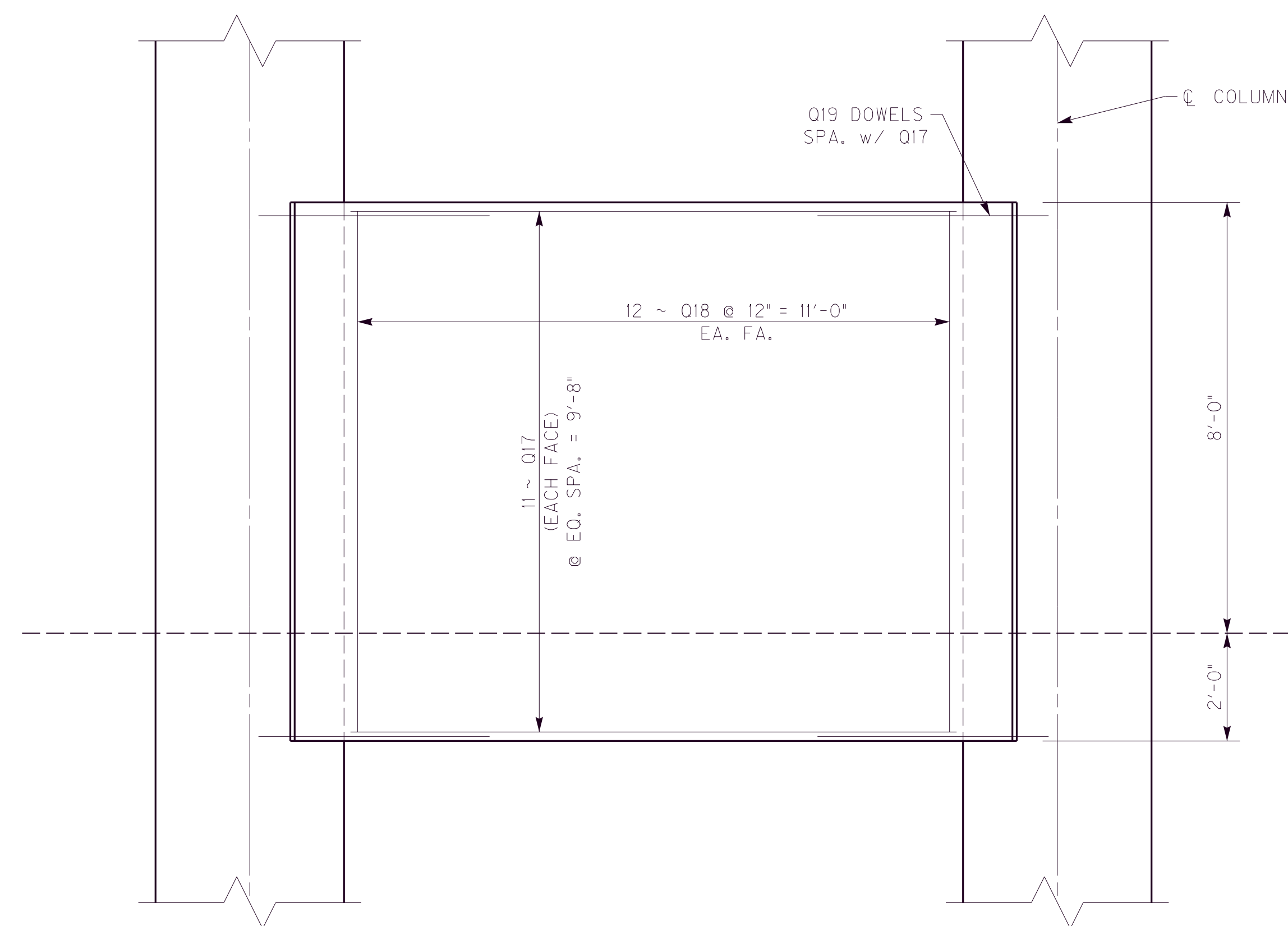
FILE: G:\Engr\HD1365.10 and 1365.11 Grayson WK\BRIDGES\CAD\Pier 2.dgn

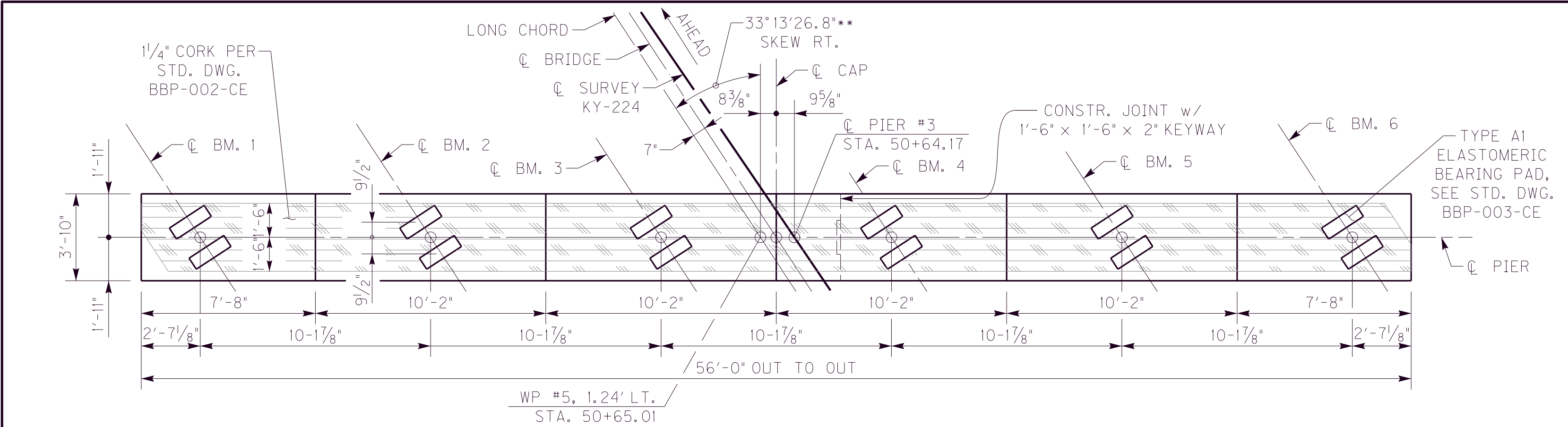


NOTE:
CONTRACTOR MAY SUBSTITUTE DOWELS
AND INSERTS FOR Q19 BARS AT
THEIR DISCRETION FOR NO ADDITIONAL
COSTS TO THE DEPARTMENT.

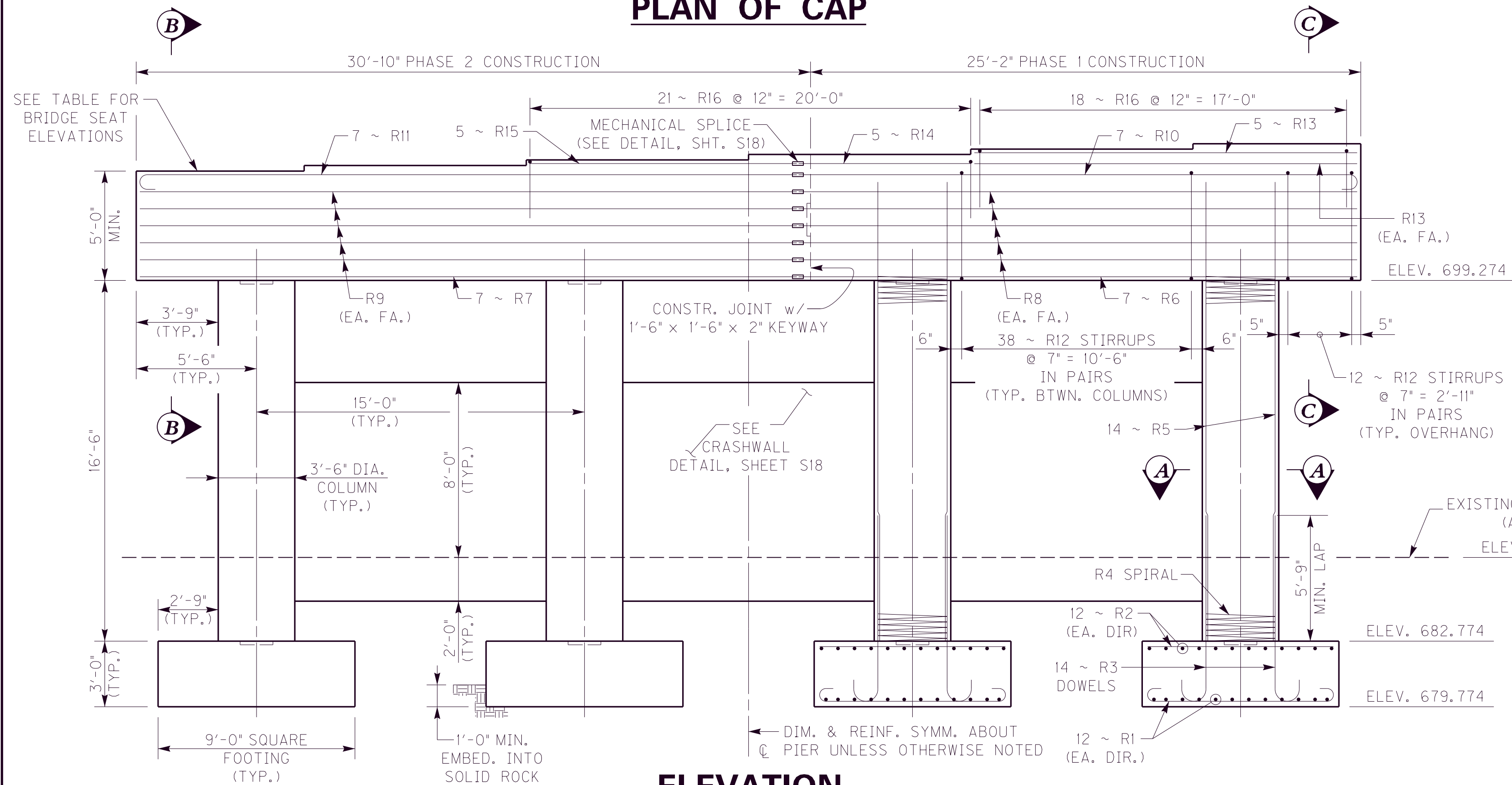


NOTE:
MECHANICAL COUPLER SHALL BE IN
ACCORDANCE WITH SECTION 602.03.06
OF THE SPECIFICATIONS. THEY SHALL BE
CAPABLE OF DEVELOPING 125% OF THE
SPECIFIED YIELD STRENGTH.

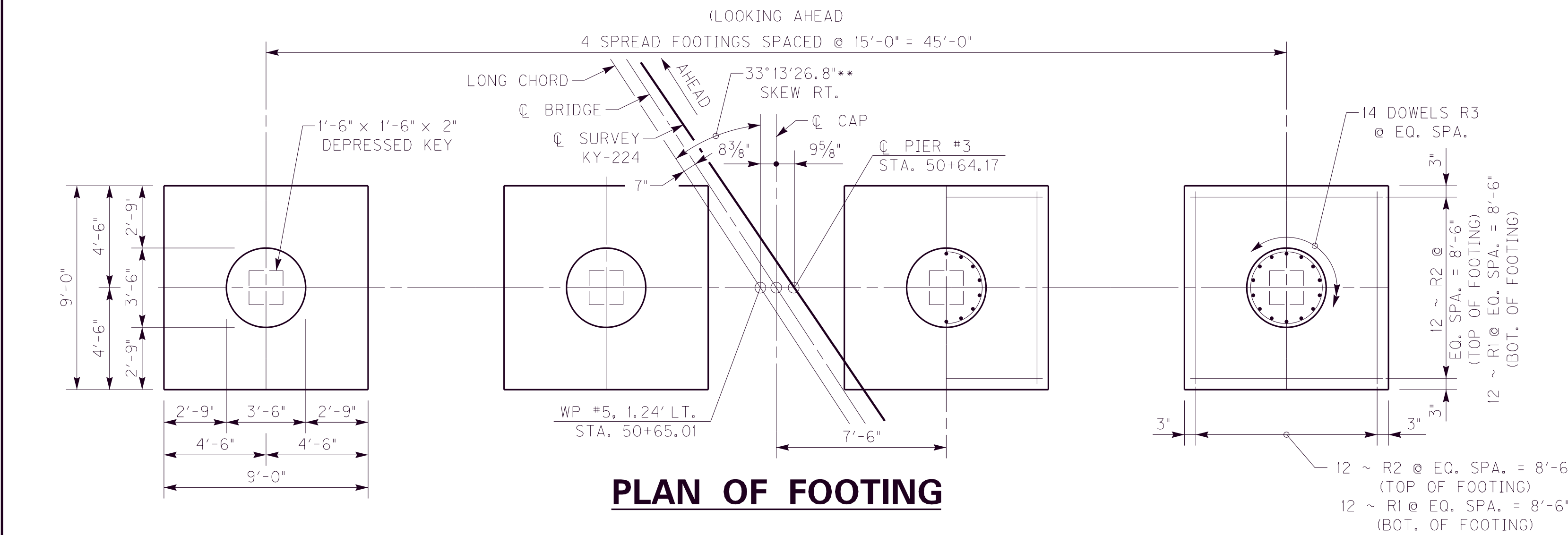




PLAN OF CAP



ELEVATION



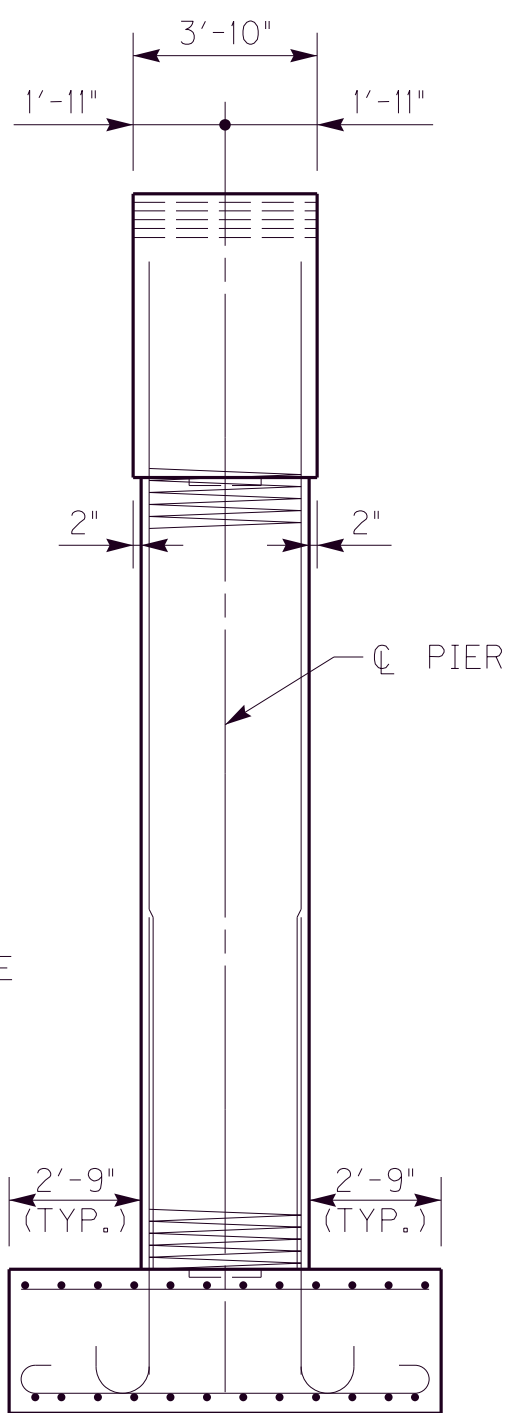
PLAN OF FOOTING

BRIDGE SEAT ELEVATIONS

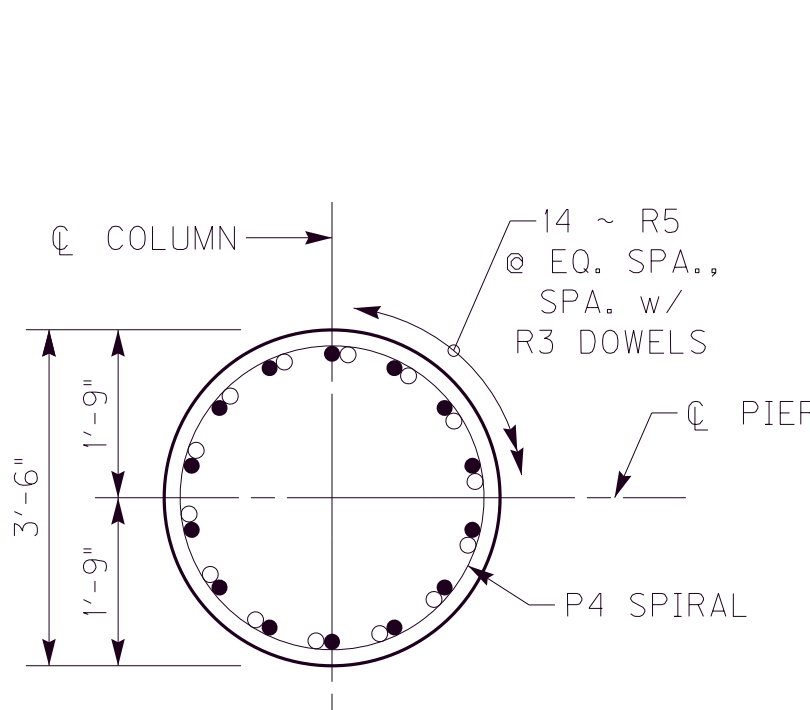
PIER 3	
BEAM 1	704.274
BEAM 2	704.531
BEAM 3	704.784
BEAM 4	705.034
BEAM 5	705.281
BEAM 6	705.525

BAR CLEARANCE

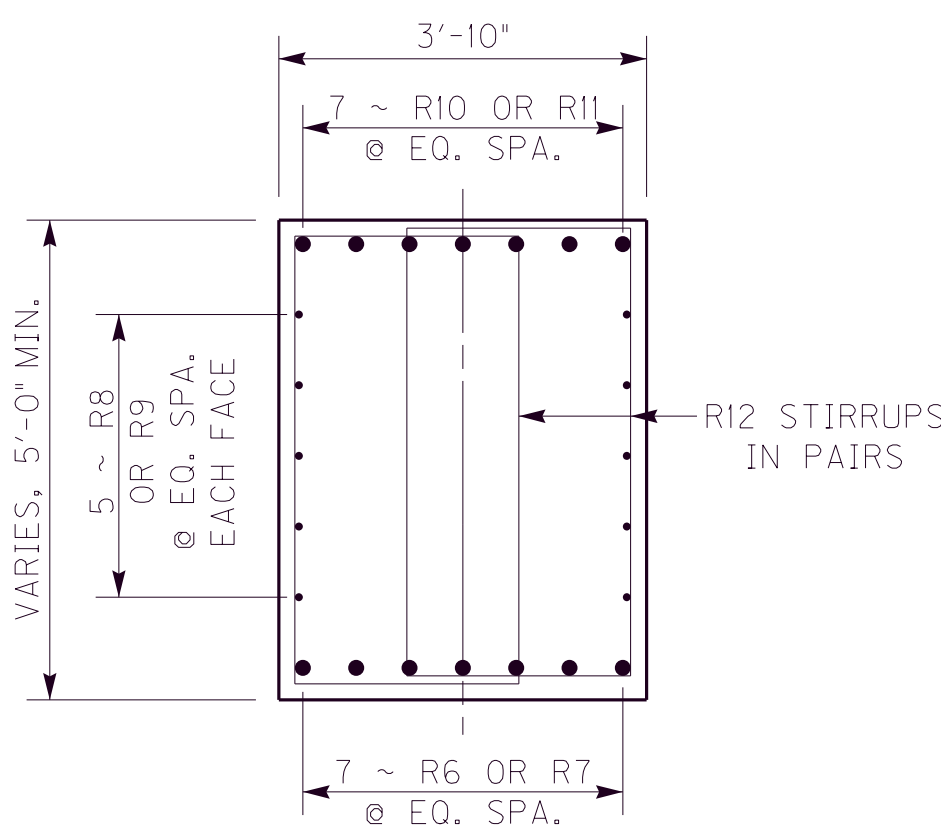
CAP	2"
COLUMN	2"
FOOTING	3"



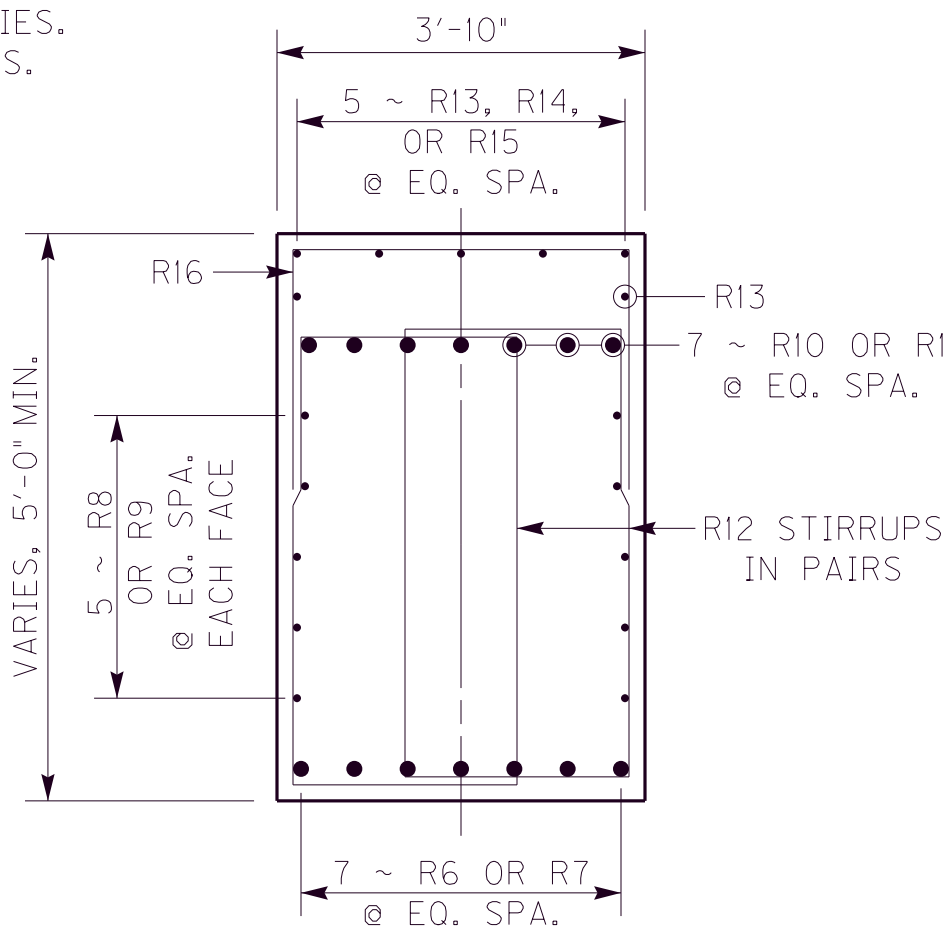
END ELEVATION



SECTION A-A



SECTION B-B

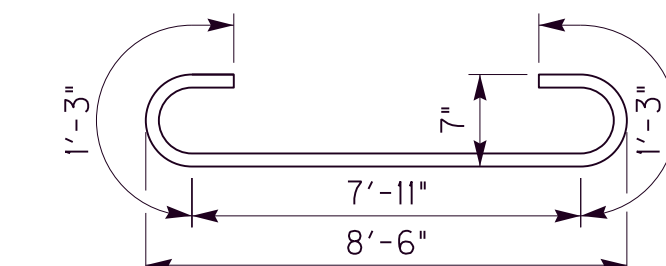


SECTION C-C

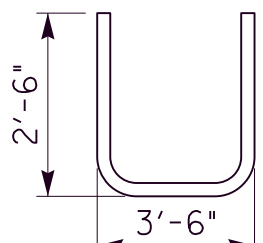
PIER #3 BILL OF REINFORCEMENT

MARK	TYPE	NO.	SIZE	LENGTH		LOCATION	A		B		C		D	
				FT	IN		FT	IN	FT	IN	FT	IN	FT	IN
R1	(1)	96	#7	10	5	FOOTING BOT.								
R2	STR	96	#6	8	6	FOOTING TOP								
R3	(4)	56	#9	10	0	FOOTING DOWEL	8	1	1	11	0	11 3/4	8	6 3/4
R4	(18)	4	#4	16	8	COLUMN SPIRAL	70							
R5	STR	56	#9	21	0	COLUMN								
R6	STR	7	#8	26	0	CAP BOT.								
R7	STR	7	#8	29	8	CAP BOT.								
R8	STR	10	#5	26	0	CAP SIDE								
R9	STR	10	#5	29	8	CAP SIDE								
R10	(4)	7	#8	27	1	CAP TOP	25	8	1	5	0	8	26	0
R11	(4)	7	#8	30	9	CAP TOP	29	4	1	5	0	8	29	8
R12	(14)	138	#5	15	0	CAP STIRRUP								
R13	STR	7	#5	17	6	CAP STEP								
R14	STR	5	#5	8	4	CAP STEP								
R15	STR	5	#5	11	10	CAP STEP								
R16	(2)	39	#5	8	6	CAP STEP								
R17	STR	33	#6	13	0	CRASHWALL								
R18	STR	33	#6	11	2	CRASHWALL								
R19	STR	72	#5	9	8	CRASHWALL								
R20	STR	66	#6	4	6	CRASHWALL								
R21	(8)	66	#6	4	6	CRASHWALL								

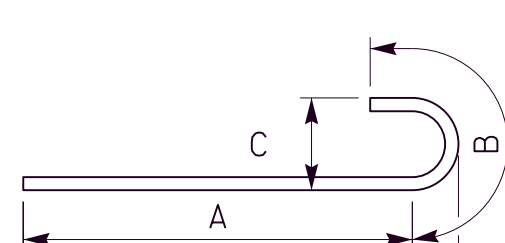
BAR TYPES



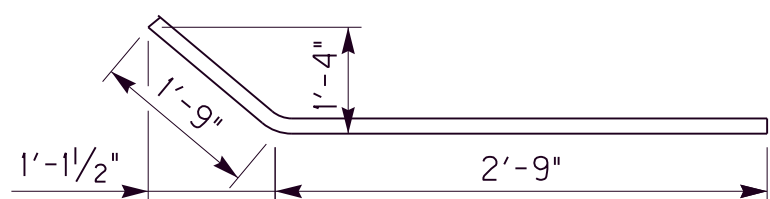
TYPE 1



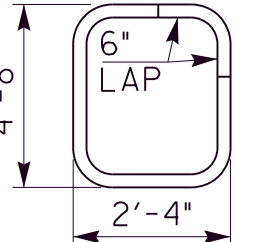
TYPE 2



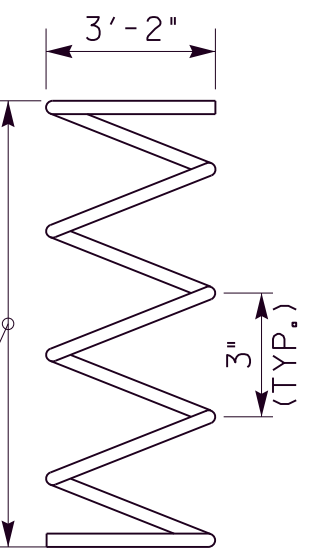
TYPE 4



TYPE 8



TYPE 14
(S)

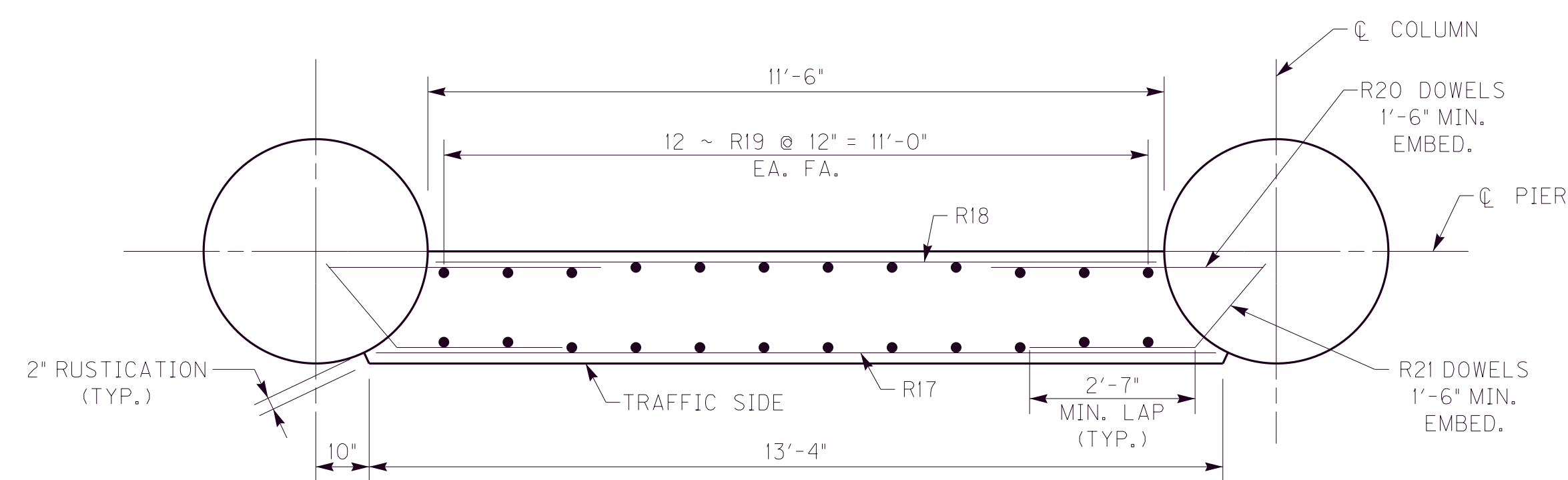


TYPE 18

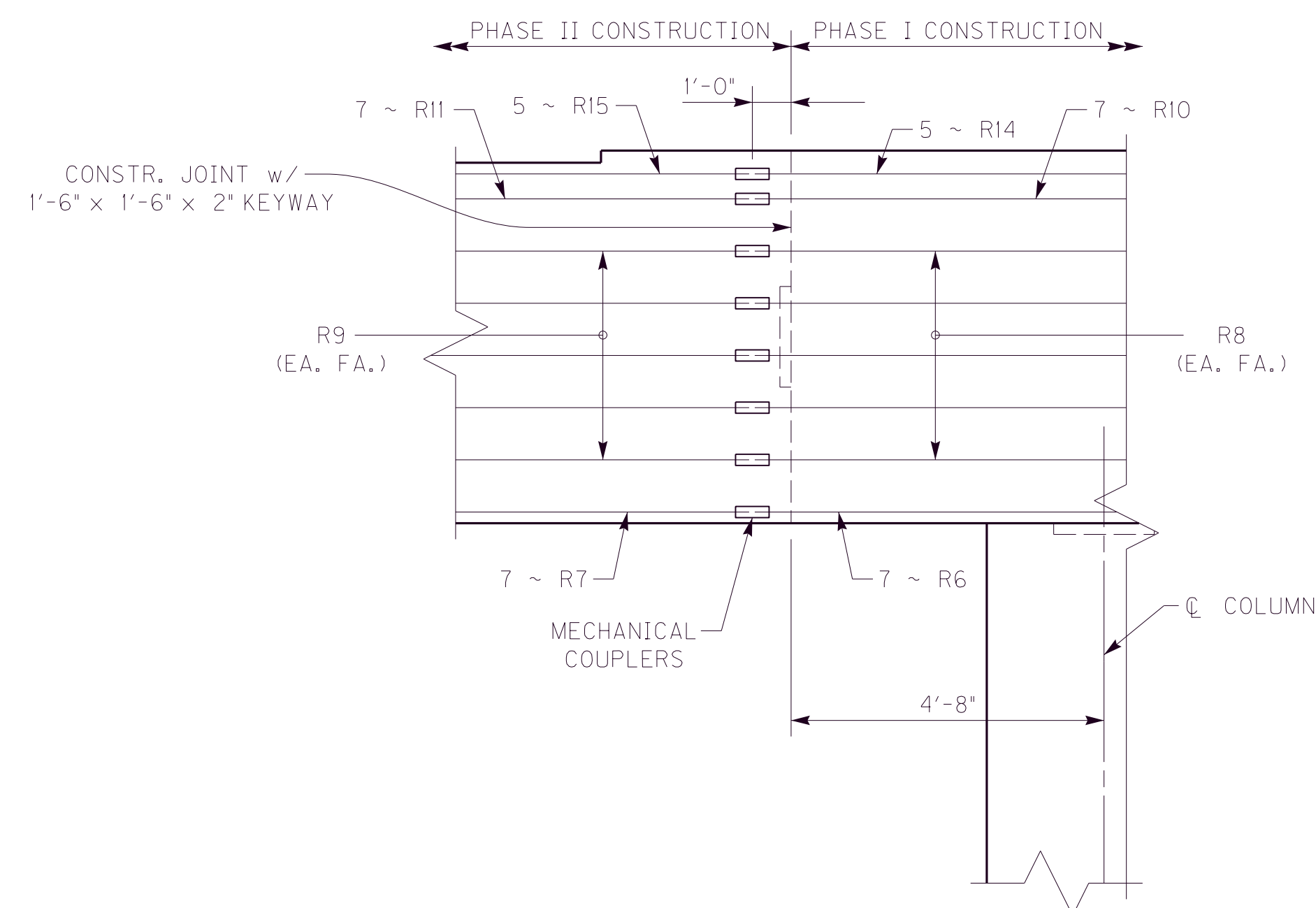
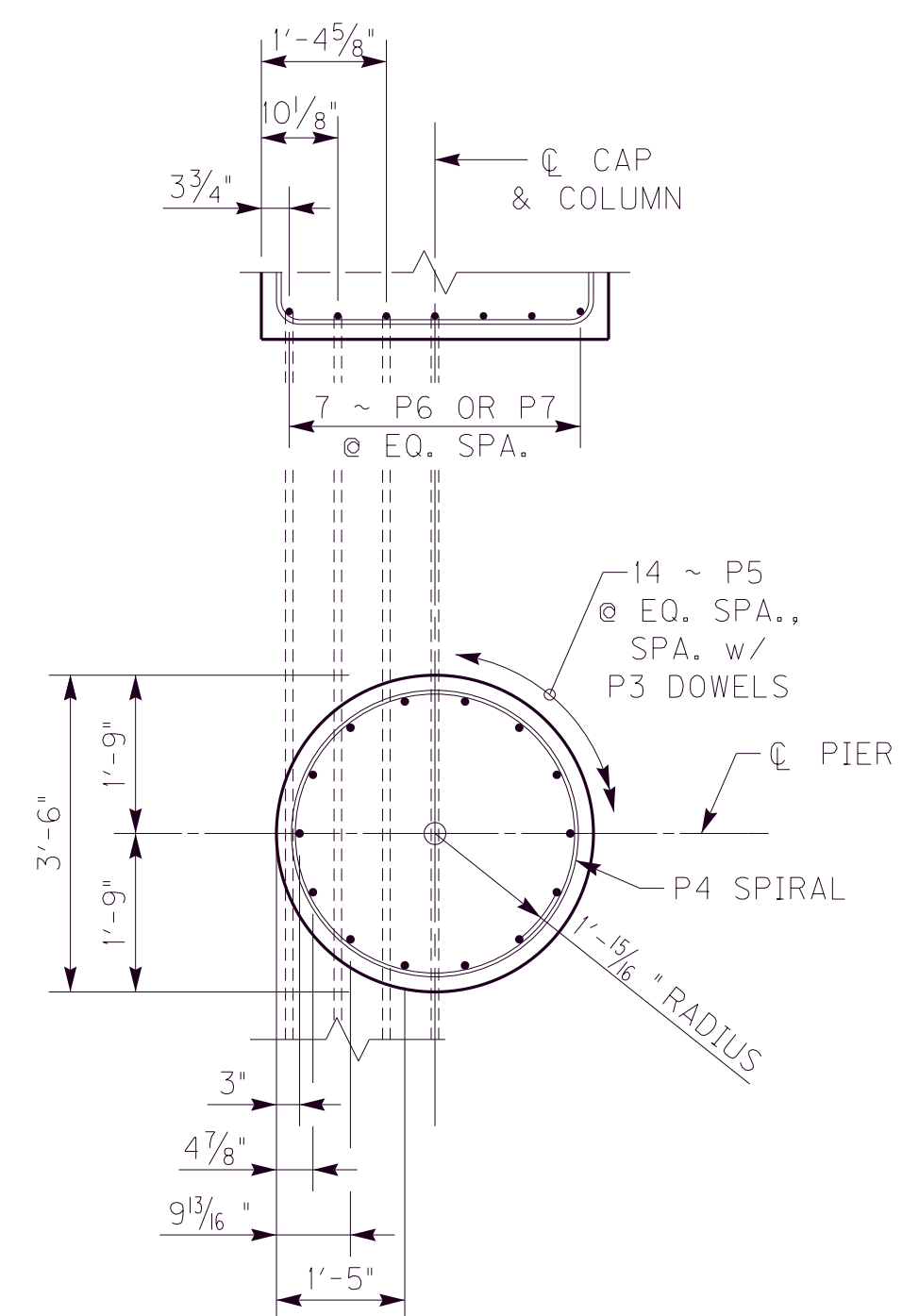
THE "LENGTH" SHOWN IN THE BILL OF REINFORCEMENT FOR SPIRALS IS THE DISTANCE FROM TOP OF FOOTING TO COLUMN CONSTRUCTION JOINT OR FROM COLUMN CONSTRUCTION JOINT TO CAP REINFORCEMENT.

THE "NUMBER OF TURNS" SHOWN IS THE "LENGTH" DIVIDED BY THE PITCH, PLUS THREE TURNS (TOTAL NUMBER OF CLOSED COILS) EXPRESSED TO THE NEAREST WHOLE NUMBER. ONE AND ONE HALF CLOSED COILS SHALL BE PROVIDED AT THE END OF EACH SPIRAL UNIT.

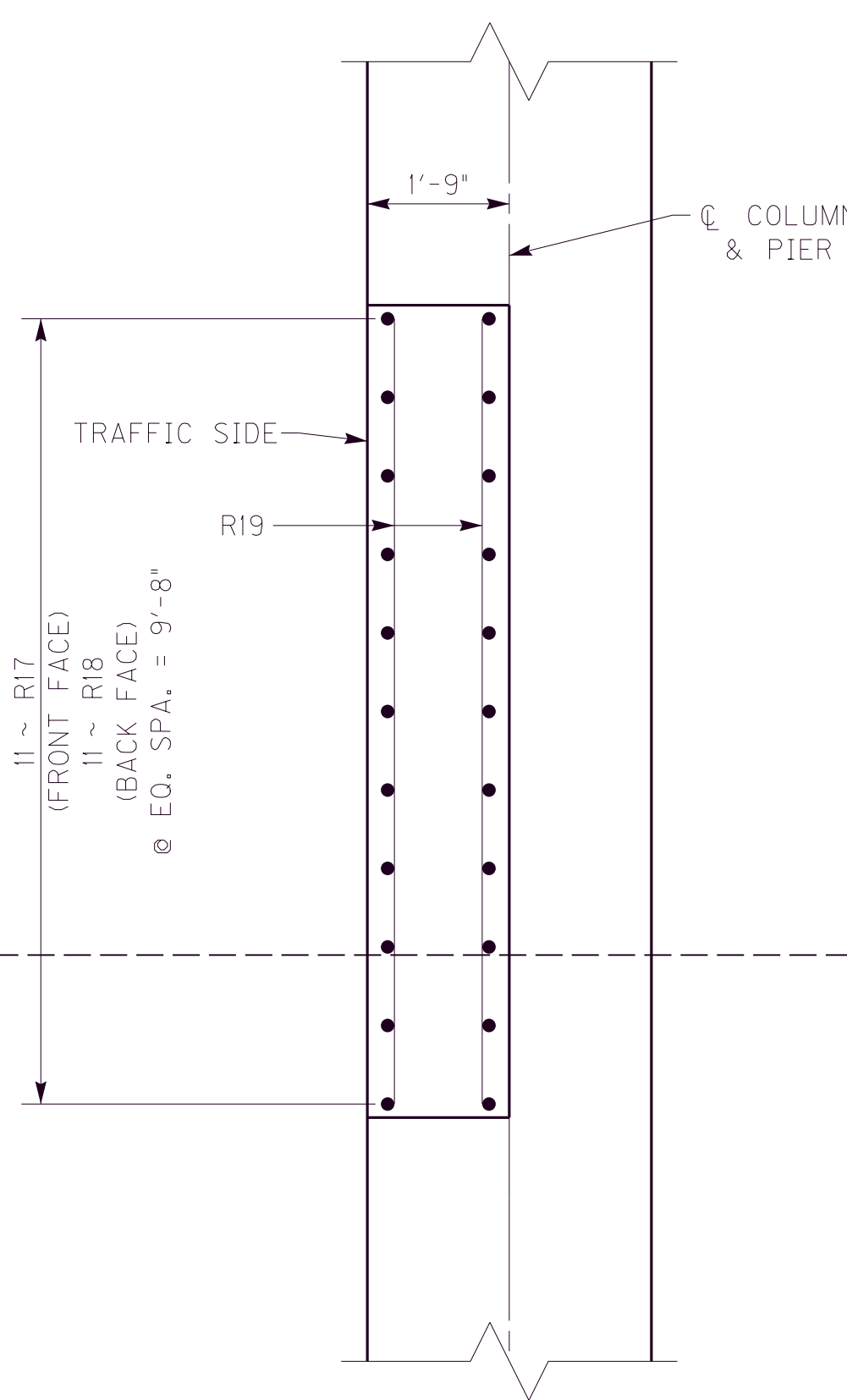
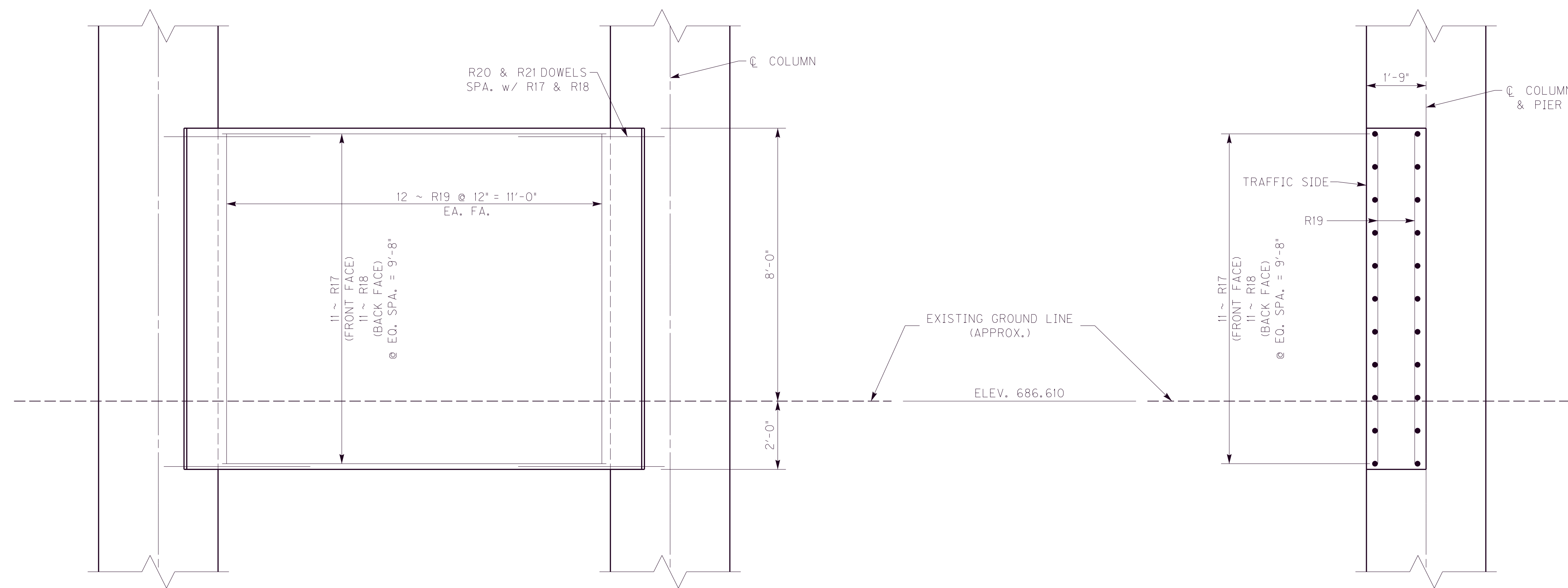
FOUR STEEL CHANNEL TEES OR ANGLE SPACERS, WEIGHING APPROXIMATELY 1.01 POUNDS PER LINEAR FOOT OF SPACER, SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG THE PERIPHERY OF THE COIL. WEIGHT OF SPIRAL REINFORCEMENT AND SPACERS IS INCLUDED IN THE ESTIMATE OF QUANTITIES. SPIRAL REINFORCING BARS SHALL HAVE DEFORMATIONS.

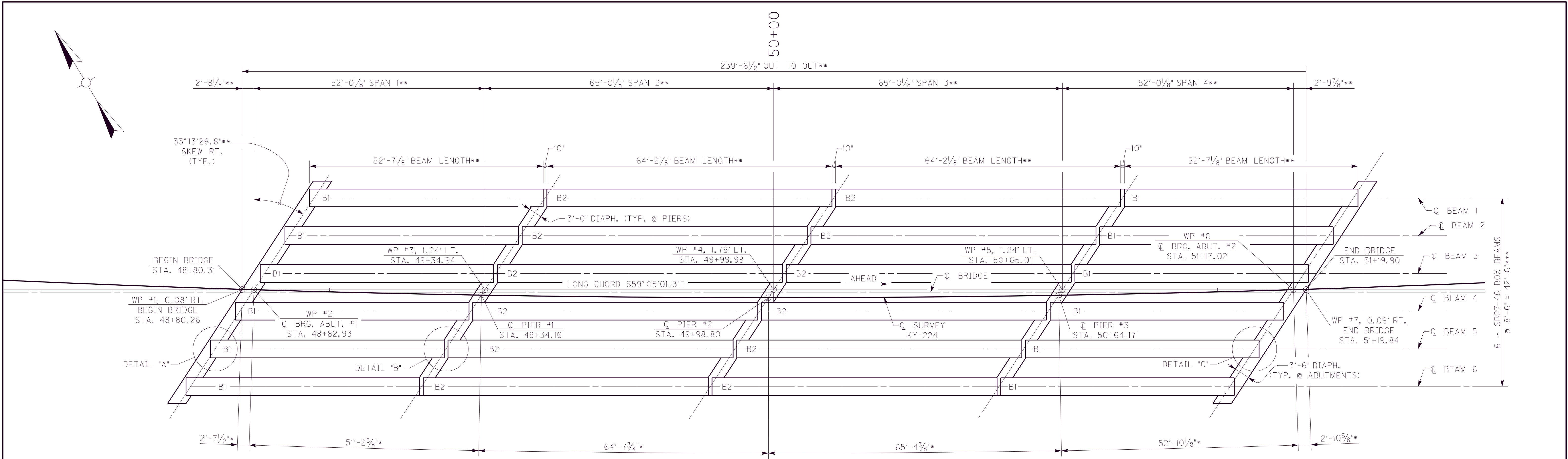


NOTE:
CONTRACTOR MAY SUBSTITUTE DOWELS
AND INSERTS FOR R20 & R21 BARS AT
THEIR DISCRETION FOR NO ADDITIONAL
COSTS TO THE DEPARTMENT.



NOTE:
MECHANICAL COUPLER SHALL BE IN
ACCORDANCE WITH SECTION 602.03.06
OF THE SPECIFICATIONS. THEY SHALL BE
CAPABLE OF DEVELOPING 125% OF THE
SPECIFIED YIELD STRENGTH.

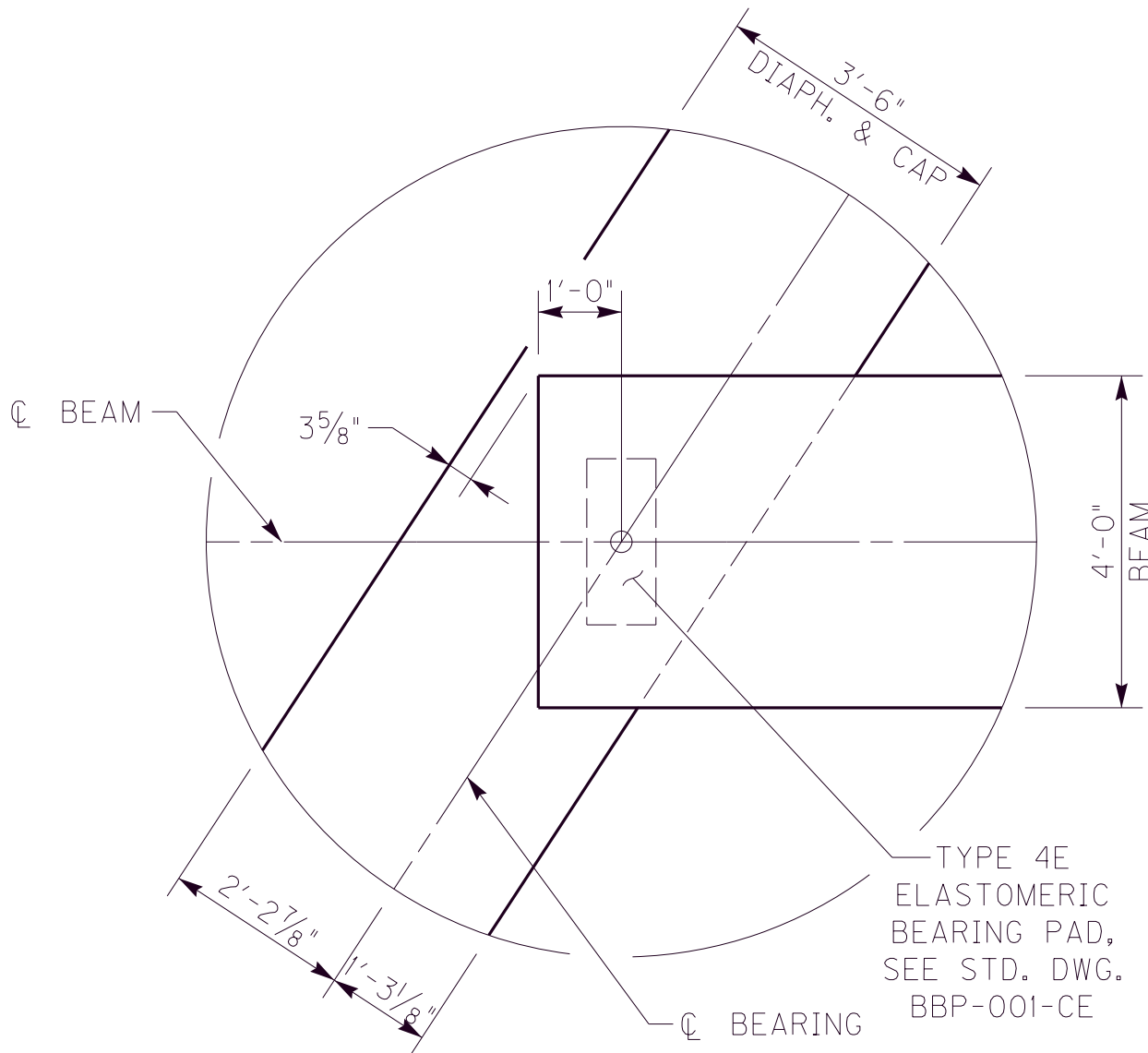




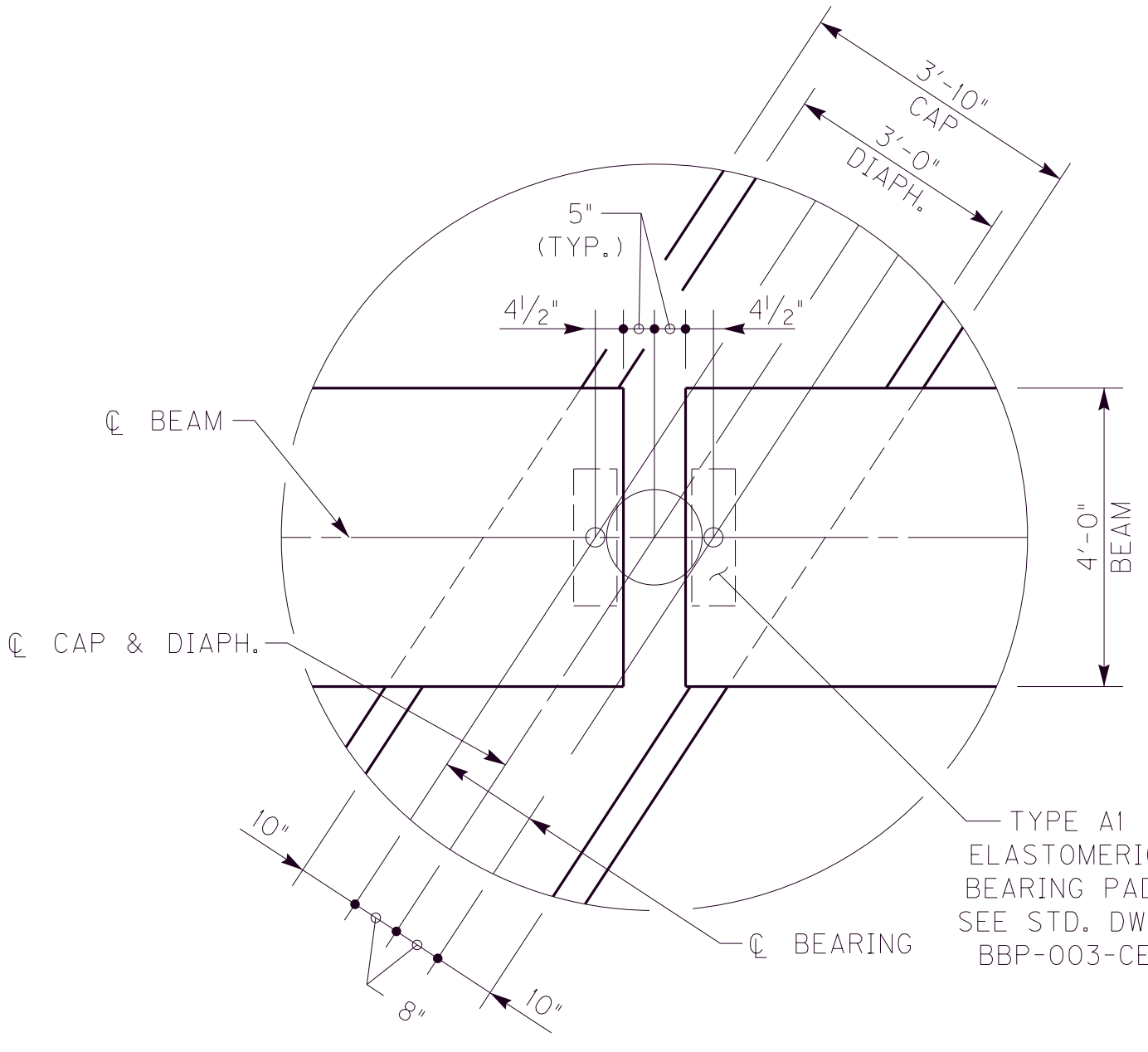
FRAMING PLAN

NOTES

- 1) * MEASURED ALONG CL SURVEY.
2) ** MEASURED ALONG LONG CHORD.
3) *** MEASURED PERPENDICULAR TO LONG CHORD.
4) SEE SHEET S8 FOR GEOMETRY LAYOUT.

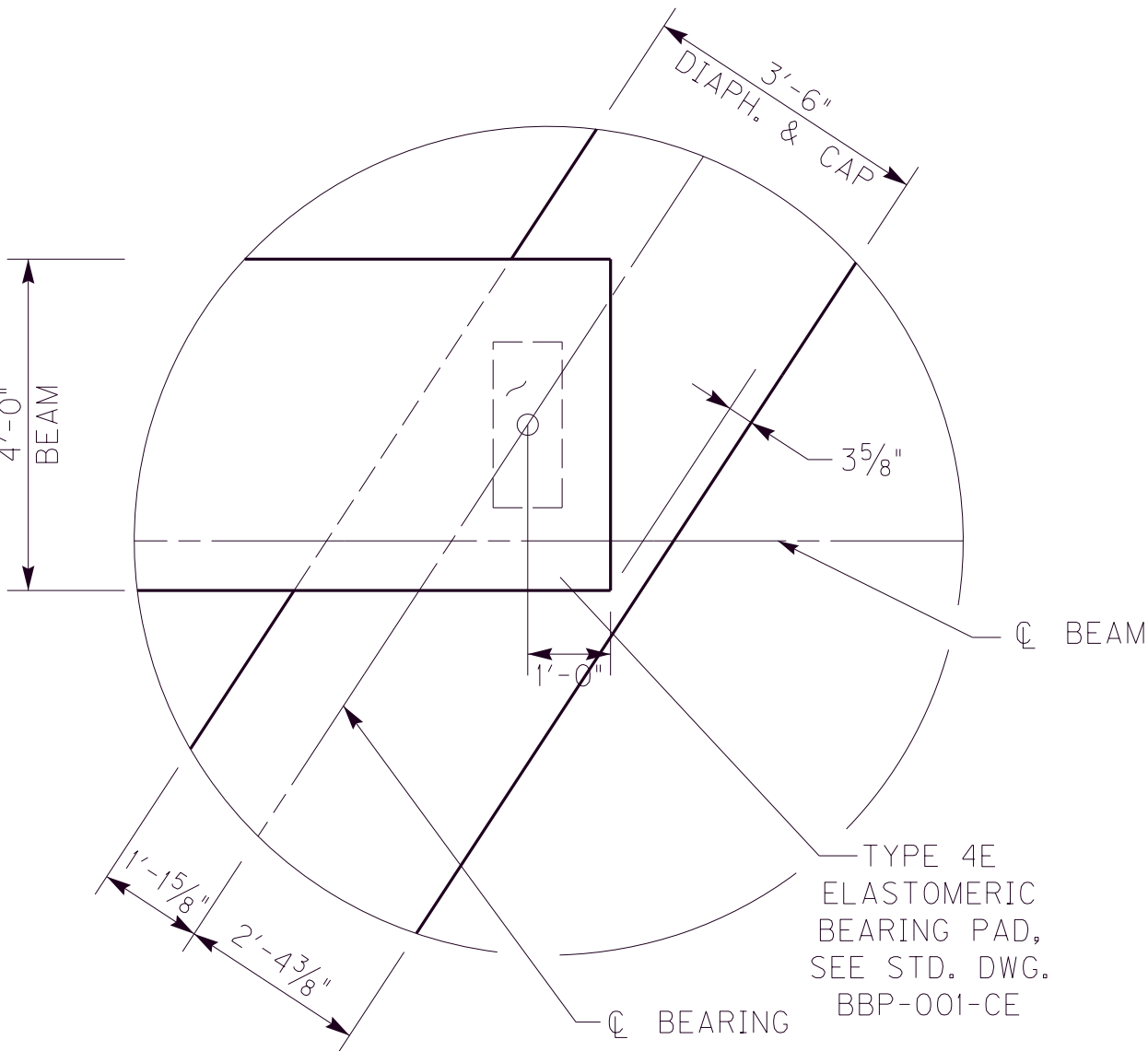


DETAIL A



DETAIL B

(TYP. EACH PIER)



DETAIL C



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
HMB PROFESSIONAL
ENGINEERS, INC.

DATE: 12/30/2021

DESIGNED BY: B. Pulliam

DETAILED BY: B. Pulliam

CHECKED BY

B. Reid

B. Reid

FRAMING PLAN

CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE

KY-224

ITEM NO.

4-20001

SHEET NO.

S19

COUNTY OF

GRAYSON

DRAWING NUMBER

28464

MicroStation v8.11.7.443

DATE PLOTTED: 1/7/2022

9:51:31 AM

FILE: G:\Engr\HD1365.10 and 1365.11 Grayson WK\BRIDGES\CAD\Framing Plan.dgn

GENERAL NOTES

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

MATERIAL DESIGN SPECIFICATIONS:
for Steel Reinforcement F_y = 60,000 psi
for Prestressed Strand F'_s = 270,000 psi

PRESTRESSING STRANDS: Prestressing strands shall be 0.6" (nominal diameter, 0.217 sq. in.), uncoated seven-wire stress relieved, low-relaxation conforming to AASHTO M 203, Grade 270. If an alternate strand arrangement or strand type is preferred by the Contractor, the designer that developed the original plans shall provide the design and also revise the original plans to reflect the changes. These design and plan modifications shall be done at the Contractor's expense.

CONSTRUCTION METHOD: No bond stress shall be transferred to the concrete, nor shall end anchors be released until the concrete has attained a minimum compressive strength of f'_{ci} (shown in table) as shown by standard cylinders made and cured identically with the girders; f'_c (shown in table) shall be attained at or prior to 28 days. An initial prestress force of 43,943 lbs. per low relaxation strand to develop a stress of 202,500 psi shall be applied. Beams with honeycomb of such extent as to affect the strength of resistance to deterioration will not be accepted. An allowance of .0005L (length) shall be made for shortening of beams due to shrinkage and elastic change. Shop plans shall show a detensioning plan by numbering in sequence, the strand pattern.

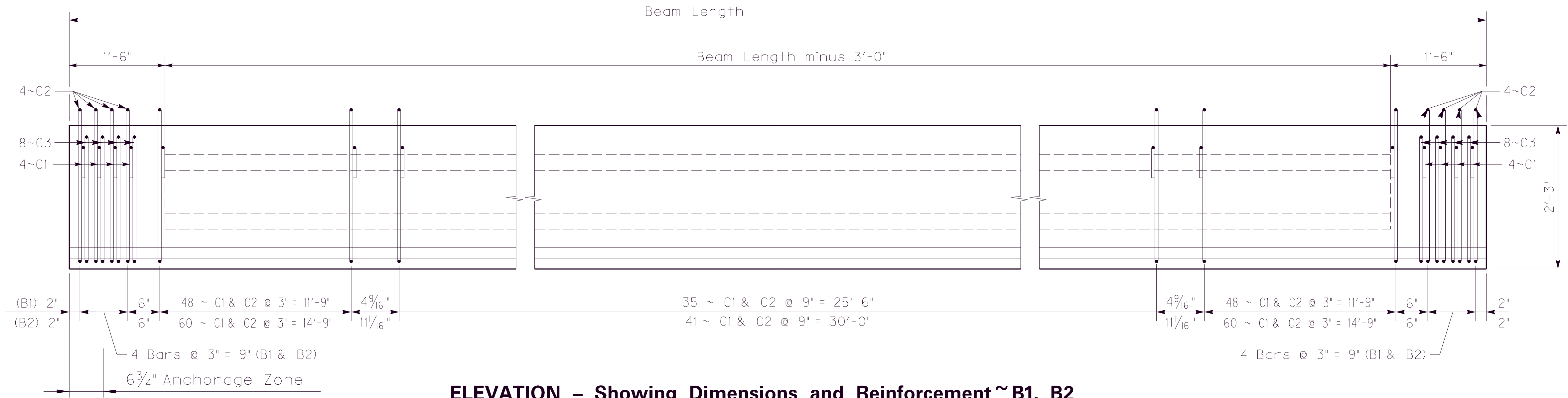
BEVELED EDGES: All exposed edges shall be beveled 3/4".

REINFORCEMENT: Dimensions shown from the face of concrete to reinforcement are clear distances. Spacing of reinforcement is from center to center of reinforcement. Epoxy Coated Reinforcement shall be in accordance with Section 811.10 of the Specifications. All bars marked "C" shall be considered a stirrup for purpose of bend diameters.

LIFTING DEVICES: Dimensions for lifting devices shall be shown on shop plans for approval. Lifting shall be by equal loads to each device.

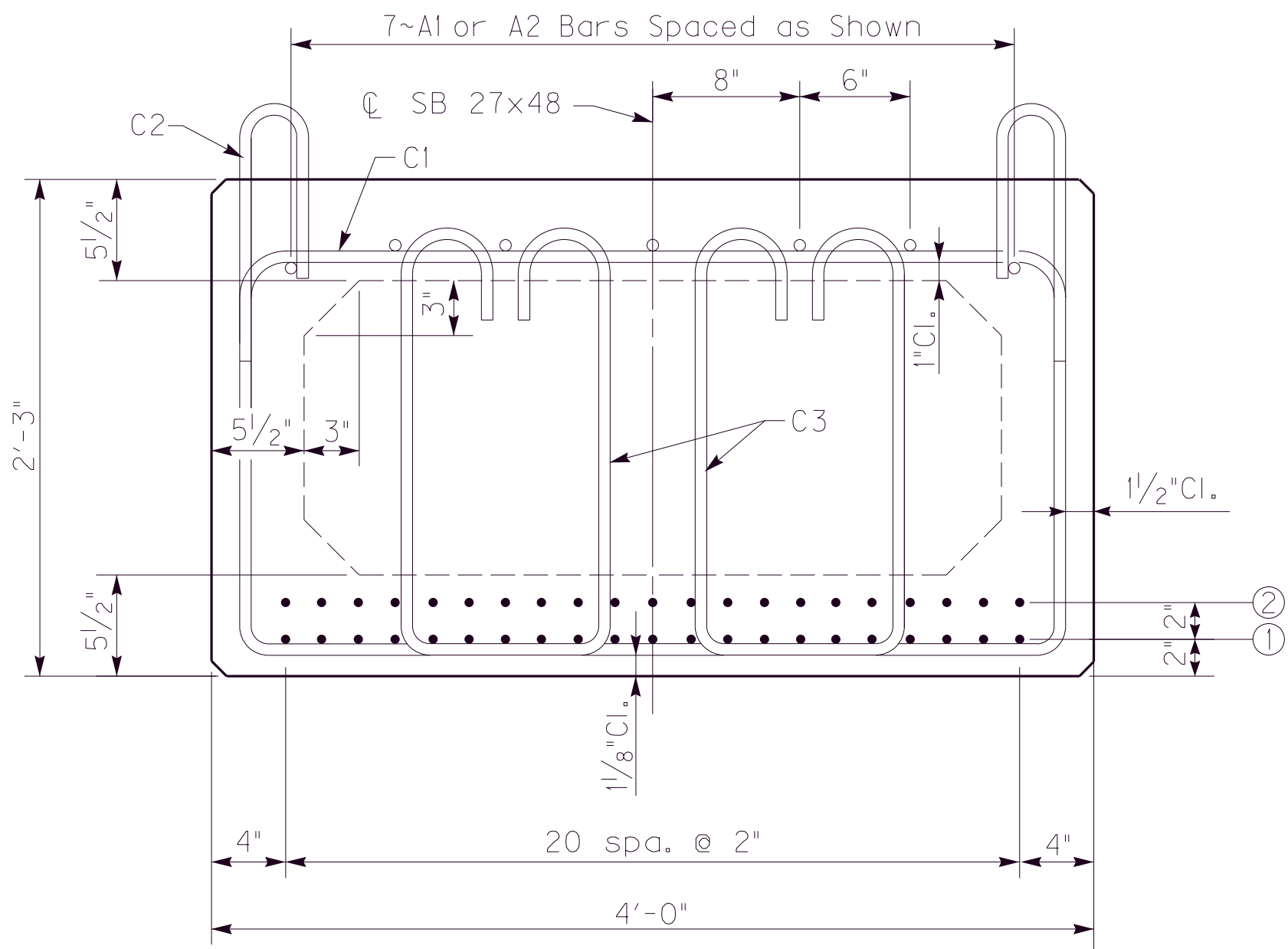
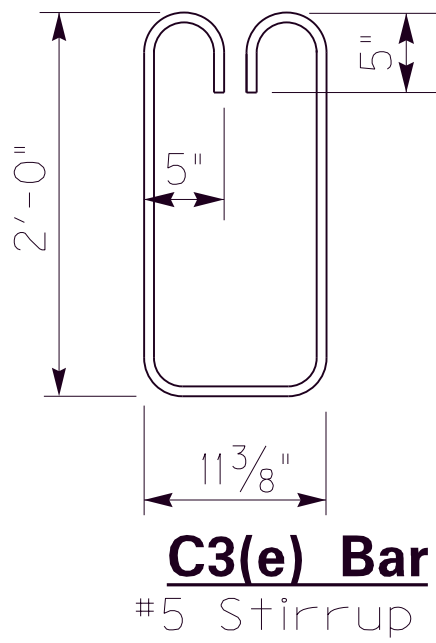
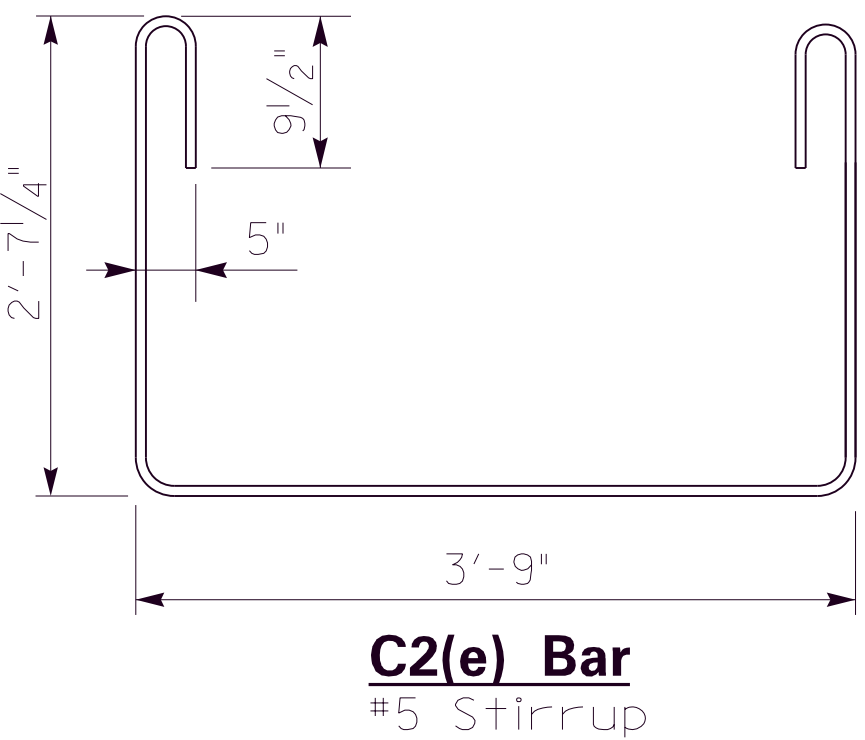
BEARING DEVICES: The cost of preformed cork and bearing pads shall be included in the price bid for per linear foot of beam.

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 of eight (8) inches as shown in the plans. This work will be considered incidental to the completion of the structure and have the approval of the Engineer.

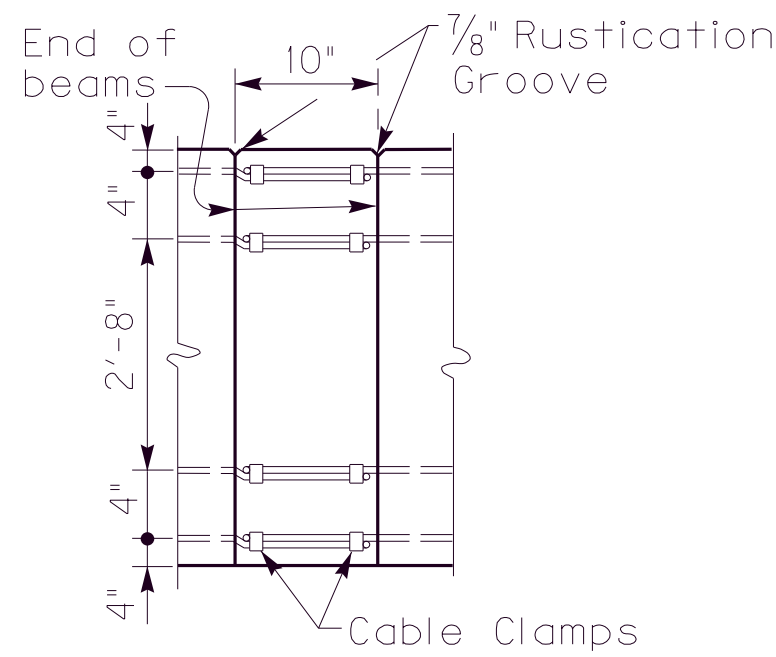


ELEVATION – Showing Dimensions and Reinforcement ~ B1, B2

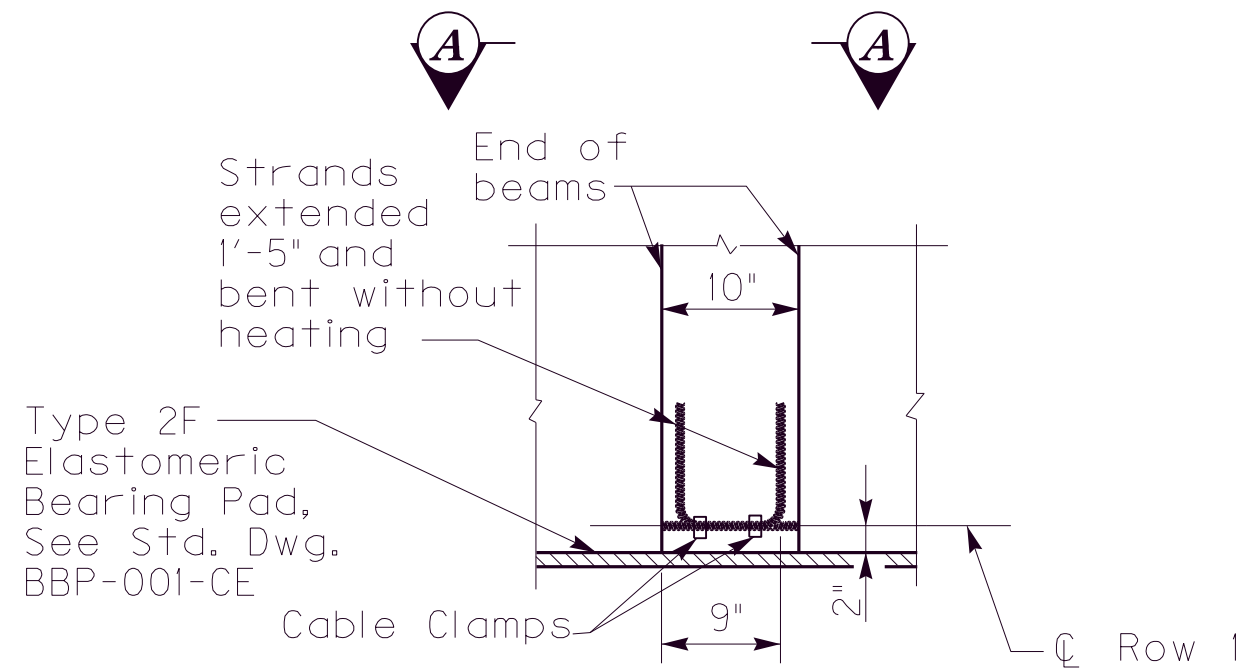
(Measured along C Beam)



TYPICAL SECTION THROUGH BOX BEAM



ELEVATION A-A






STRAND SPlicing DETAIL

~Typical at Fixed Pier~

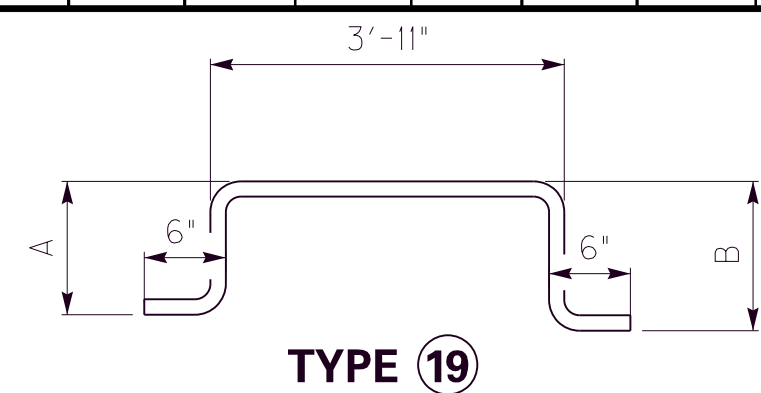
Strand Data with number indicated in rows												Box Beam Data								Straight Reinforcement			Maximum Allowable Camber	
Mark	Midspan					End					Total # of Strands	Concrete Stress (psi)		Total # of Beams	Beam Length	Approx. Weight (lbs)	No. of C Bars							Debond
	Fully Stressed					Fully Stressed						f'ci	f'c				C1	C2	C3	D	Mark	Size		
B1	13					13					13	5500	7000	12	52'-7 7/8"	41272	139	139	16	-	A1	#5	52'-4"	1 5/8"
B2	17					17					17	5500	7000	12	64'-2 1/8"	50562	169	169	16	-	A2	#5	63'-11"	2 3/4"

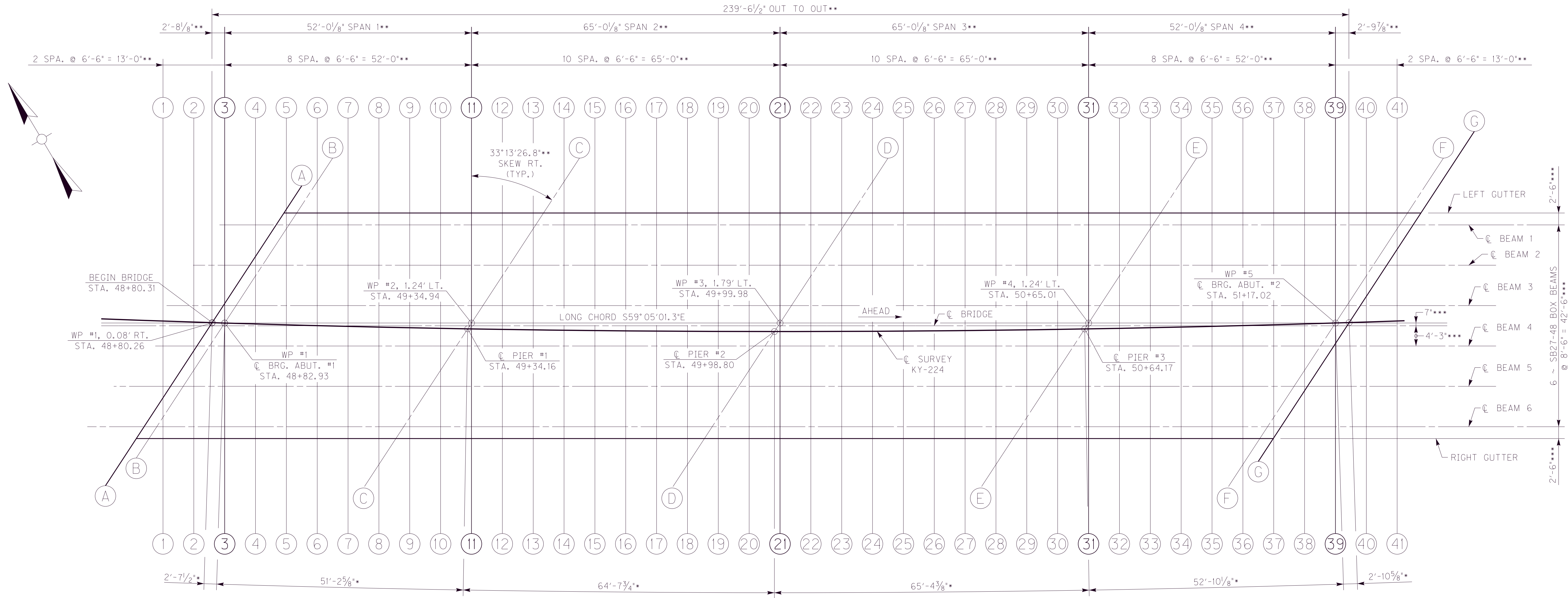
Note: A2 Bars are to be lapped 2'-2" when necessary

	COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS		REVISION		DATE		PREPARED BY HMB PROFESSIONAL ENGINEERS, INC.	DATE: 12/30/2021	CHECKED BY	SB27-48 BOX BEAM DETAILS		ROUTE KY-224	ITEM NO. 4-20001	COUNTY OF GRAYSON
													DESIGNED BY: B. Pulliam	L. Boller
										DETAILED BY: B. Pulliam	L. Boller		CROSSING WESTERN KENTUCKY PARKWAY	



BAR TYPES

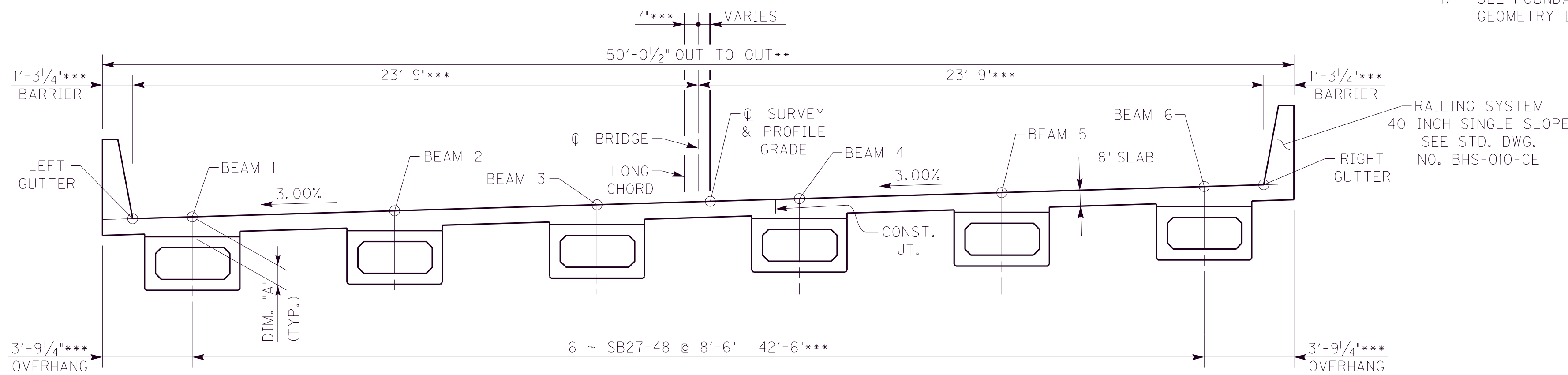




GRID LAYOUT

NOTES

- 1) * MEASURED ALONG CL SURVEY.
- 2) ** MEASURED ALONG LONG CHORD.
- 3) *** MEASURED PERPENDICULAR TO LONG CHORD.
- 4) SEE FOUNDATION LAYOUT FOR GEOMETRY LAYOUT.



TYPICAL SECTION

(LOOKING AHEAD)



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



USER: bpulliam

REVISION

DATE



PREPARED BY
**HMB PROFESSIONAL
ENGINEERS, INC.**

DATE: 12/30/2021

DESIGNED BY: B. Pulliam

DETAILED BY: B. Pulliam

CHECKED BY

L. Boller

B. Reid

CONSTRUCTION ELEVATIONS GRID

CROSSING
WESTERN KENTUCKY PARKWAY

ROUTE

KY-224

ITEM NO.

4-20001

SHEET NO.
S23

COUNTY OF

GRAYSON

DRAWING NUMBER
28464

MicroStation v8.11.7.443

DATE PLOTTED: 1/7/2022

9:51:39 AM

FILE: G:\Engr\HD1365.10 and 1365.11 Grayson WK\BRIDGES\CAD\Construction Elevations Grid.dgn

KY-224 CONSTRUCTION ELEVATIONS																							
LOCATION	LT. GUTTER	BEAM 1			BEAM 2			BEAM 3			PROFILE GRADE			BEAM 4			BEAM 5			BEAM 6			RT. GUTTER
		CONST. ELEV.	TOP OF BEAM	DIM "A"	CONST. ELEV.	TOP OF BEAM	DIM "A"	CONST. ELEV.	TOP OF BEAM	DIM "A"	CONST. ELEV.	TOP OF BEAM	DIM "A"	CONST. ELEV.	TOP OF BEAM	DIM "A"	CONST. ELEV.	TOP OF BEAM	DIM "A"	CONST. ELEV.	TOP OF BEAM	DIM "A"	
AA	705.842	705.890			706.050			706.208			706.274			706.363			706.517			706.668			706.712
BB	705.889	705.937			706.098			706.257			706.325			706.414			706.568			706.721			706.765
CC	706.650	706.705			706.892			707.077			707.182			707.259			707.438			707.615			707.667
DD	707.227	707.293			707.514			707.732			707.870			707.947			708.159			708.368			708.430
EE	707.388	707.464			707.721			707.974			708.119			708.224			708.471			708.715			708.787
FF	707.217	707.302			707.589			707.872			707.993			708.151			708.428			708.700			708.780
GG	707.200	707.285			707.574			707.859			707.977			708.140			708.418			708.692			708.772
1																				706.749			706.832
2																	706.617			706.890			706.971
3														706.481			706.754			707.025			707.103
4								706.341			706.464			706.614			706.883			707.150			707.227
5					706.199			706.470			706.597			706.740			707.004			707.265			707.340
6	705.973	706.053			706.324			706.592			706.721			706.855			707.114			707.369			707.443
7	706.095	706.174			706.440			706.703			706.834			706.961			707.214			707.464			707.537
8	706.208	706.286			706.548			706.804			706.937			707.057			707.306			707.550			707.622
9	706.311	706.388			706.644			706.895			707.030			707.143			707.388			707.641			707.725
10	706.405	706.480			706.730			706.977			707.114			707.221			707.481			707.765			707.848
11	706.488	706.562			706.808			707.051			707.197			707.318			707.601			707.882			707.962
12	706.562	706.634			706.878			707.150			707.317			707.433			707.713			707.986			708.066
13	706.629	706.700			706.980			707.263			707.429			707.540			707.814			708.080			708.156
14	706.723	706.806			707.088			707.364			707.528			707.636			707.901			708.160			708.234
15	706.827	706.908			707.184			707.455			707.617			707.719			707.975			708.225			708.297
16	706.921	707.001			707.270			707.532			707.690			707.788			708.036			708.278			708.348
17	707.003	707.081			707.343			707.596			707.751			707.843			708.083			708.318			708.386
18	707.072	707.148			707.401			707.646			707.798			707.885			708.119			708.349			708.416
19	707.128	707.201			707.445			707.684			707.832			707.916			708.145			708.386			708.469
20	707.170	707.240			707.477			707.709			707.856			707.938			708.187			708.470			708.552
21	707.199	707.268			707.499			707.727			707.884			707.986			708.267			708.546			708.626
22	707.216	707.283			707.511			707.779			707.961			708.060			708.338			708.610			708.689
23	707.226	707.293			707.569			707.850			708.028			708.126			708.398			708.663			708.739
24	707.273	707.355			707.636			707.910			708.085			708.181			708.445			708.702			708.776
25	707.335	707.416			707.691			707.960			708.129			708.223			708.478			708.726			708.798
26	707.387	707.467			707.735			707.996			708.159			708.251			708.498			708.738			708.808
27	707.427	707.505			707.766			708.019			708.174			708.265			708.504			708.738			708.806
28	707.455	707.531			707.783			708.027			708.176			708.266			708.499			708.729			708.796
29	707.469	707.542			707.786			708.024			708.165			708.256			708.484			708.721			708.800
30	707.470	707.540			707.776			708.008			708.145			708.237			708.481			708.749			708.828
31	707.457	707.526			707.757			707.984			708.122			708.235			708.503			708.769			708.846
32	707.433	707.500			707.728			707.986			708.138			708.254			708.519			708.781			708.857
33	707.400	707.467			707.732			708.000			708.148			708.265			708.525			708.782			708.856
34	707.395	707.474			707.741			708.005			708.147			708.266			708.521			708.772			708.845
35	707.400	707.478			707.742			708.001			708.136			708.257			708.507			708.753			708.826
36	707.396	707.474			707.733			707.987			708.115			708.237			708.484			708.727			708.798
37	707.384	707.460			707.714			707.963			708.082			708.209			708.452						
38	707.361	707.435			707.684			707.930			708.041			708.172									
39	707.327	707.401			707.646			707.888															
40	707.285	707.356			707.600																		
41	707.235	707.306																					

NOTES

TAKE ELEVATIONS ON TOP OF BEAM AT POINTS INDICATED BY THE GRID LAYOUT. THE BEAM ELEVATIONS ARE TO BE READ TO THREE DECIMALS AND ENTERED IN TABLES UNDER "TOP OF BEAM" ELEVATIONS. COMPUTE DIMENSION "A" AS FOLLOWS:

"CONSTRUCTION ELEVATION" MINUS "TOP OF BEAM ELEVATION" EQUALS DIMENSION "A". CONSTRUCTION ELEVATIONS INCLUDE CAMBER DUE TO WEIGHT OF CONCRETE SLAB AND BARRIER. MEASURING OF DIMENSION "A" 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 "A" ABOVE TOP OF BEAMS FOR TOP OF TEMPLATE. DO NOT SET TEMPLATE BY ELEVATIONS.

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

CONSTRUCT BARRIER TO ROADWAY GRADE. DO NOT ADD CAMBER TO PARAPET.

NOTE TO RESIDENT: 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 OF EIGHT (8) INCHES AS SHOWN IN THE PLANS. THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE STRUCTURE AND HAVE THE APPROVAL OF THE ENGINEER.