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TOTAL PLAN SHEETS = 99



7533 SUNWOOD DRIVE N.W.
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

JAMES D. ARCHER
LIC. NO. 45501 DATE 12/31/2017

APPROVED: _____
CITY OF RAMSEY
DATE: _____

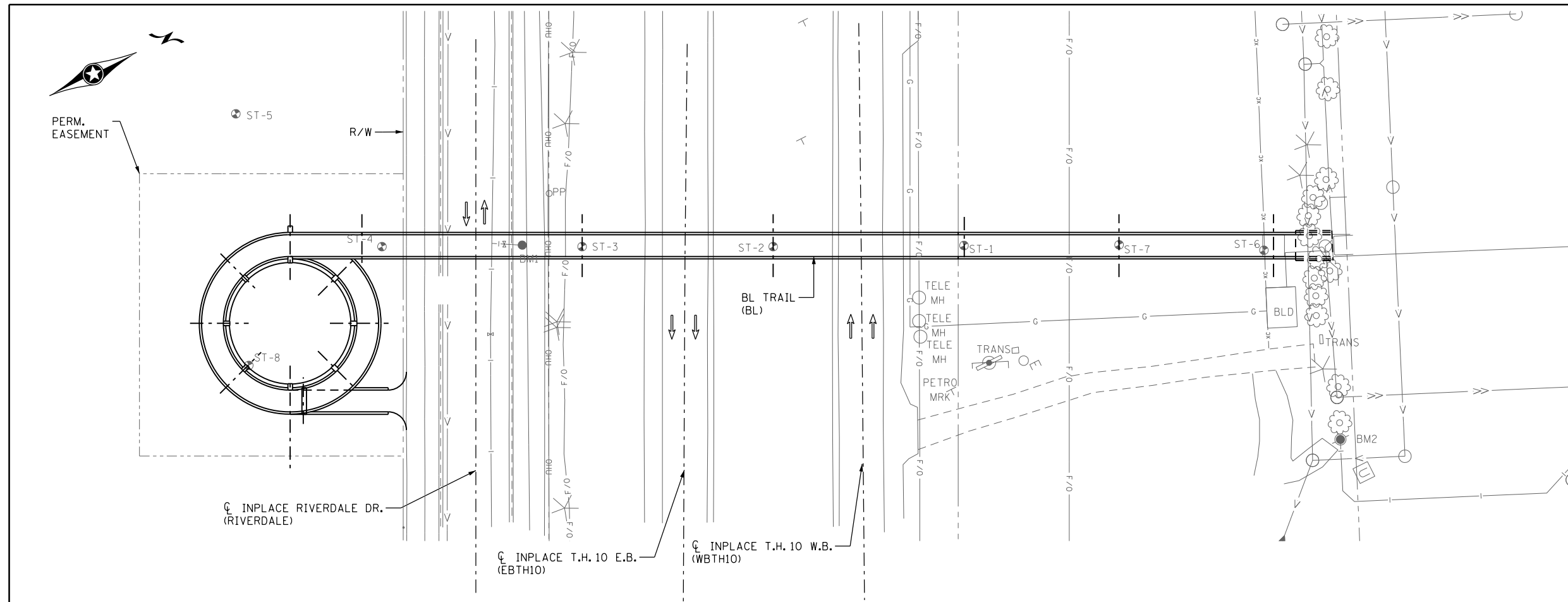
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02053
MISSISSIPPI SKYWAY PEDESTRIAN BRIDGE
OVER T.H. 10 FROM RIVERDALE DRIVE
TO THE NORTH STAR STATION
0.47 MILES EAST OF JCT. OF C.S.A.H. 83 & T.H. 10

PREFABRICATED STEEL TRUSS:
105'-0" MAIN SPANS
14'-6" DECK
IDENTIFICATION NO. 209 (SPAN 1)
IDENTIFICATION NO. 301 (SPAN 7)
IDENTIFICATION NO. 302 (SPANS 3 & 4)
IDENTIFICATION NO. 501 (SPANS 2, 5, 6)
SEC: 28 TWP: 32N, R25W
COUNTY: ANOKA
CITY: RAMSEY

APPROVED: _____ DATE _____
STATE BRIDGE ENGINEER

DES. RRE	DR. JMR	02053
CHK. ATP	CHK. RRE	



CONSTRUCTION NOTES

THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

SEE SPECIAL PROVISIONS FOR ALL XXXX.6XX SERIES PAY ITEMS FOR ADDITIONAL REQUIREMENTS. (EXAMPLE 2411.618)

THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS.

BARs MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C1/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE BEAMS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR RODS.

FOR ADDITIONAL NOTES AND SUMMARY OF QUANTITIES, SEE SHEET 3.

PROPOSED TYPE OF STRUCTURE

- SUPERSTRUCTURE:**
 - MN45 PRESTRESSED CONCRETE BEAMS
SIMPLE SPANS
7" MIN. CONCRETE DECK
ALL BARS EPOXY COATED
 - PREFAB STEEL TRUSS
SIMPLE SPANS
7 1/2" MIN. CONCRETE DECK
ALL BARS EPOXY COATED
 - W16 X 77 STEEL BEAMS
SIMPLE SPAN
7" MIN. CONCRETE DECK
ALL BARS EPOXY COATED
 - REINFORCED CONCRETE SLAB & HELIX
HPC VARIABLE DEPTH (7" MIN.)
ALL BARS EPOXY COATED
- SUBSTRUCTURE:**
 - RECTANGULAR HELIX COLUMNS
SUPPORTED ON SPREAD FOOTINGS
 - RECTANGULAR COLUMN PIER SUPPORTED
ON SPREAD FOOTINGS

DESIGN DATA

DESIGNED IN ACCORDANCE WITH THE 2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SUPPLEMENTED WITH THE 2009 LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES (AND CURRENT INTERIM)

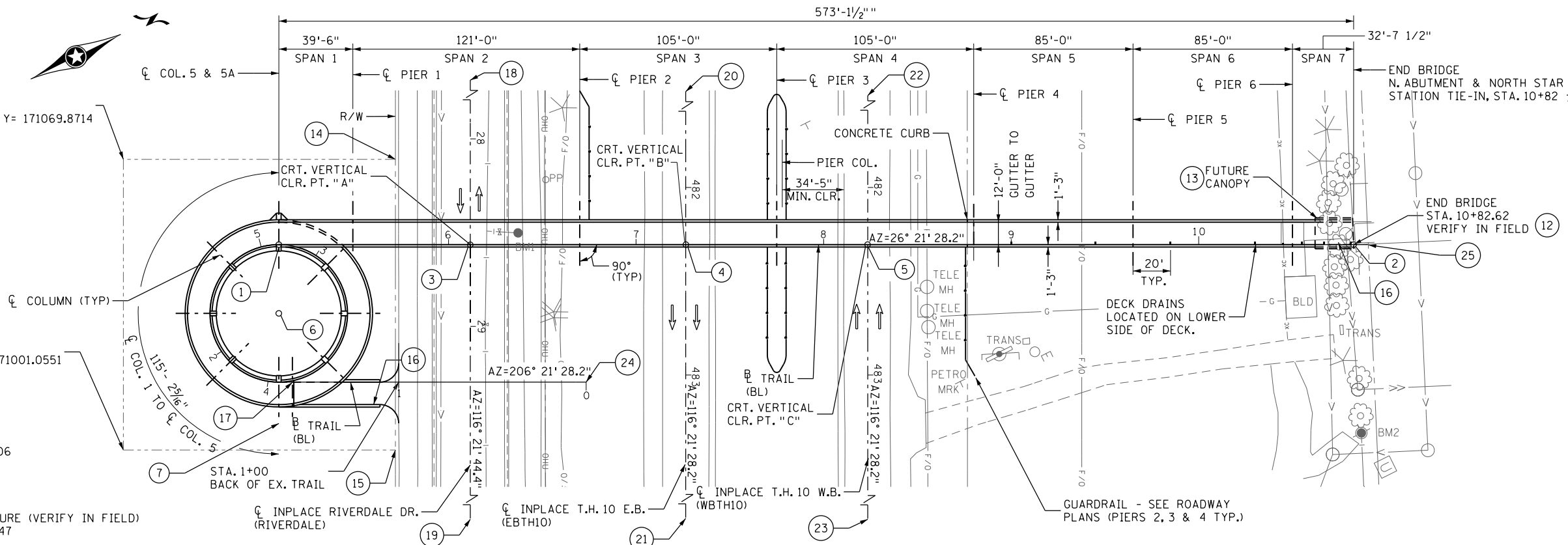
90 PSF LIVE LOAD (PEDESTRIAN)
H10 LIVE LOAD (VEHICULAR)

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 KSI n = 8
fy = 60 KSI REINFORCEMENT
PRESTRESSED CONCRETE:
f'c = 8.0 KSI n = 1
fpu = 270 KSI LOW RELAXATION STRANDS
0.75 fpu FOR INITIAL PRESTRESS
STRUCTURAL STEEL (PAINTED):
fy = 36 KSI SPEC 3306
fy = 50 KSI SPEC 3309
TUBING TYPE A (RAILING) SPEC 3361
TUBING TYPE C (TRUSS) SPEC 3361

DESIGN SPEED
OVER = N/A UNDER = 70 MPH (ADT > 6000)

APPROXIMATE DECK AREA 13322 SQ. FT.

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PERM. EASEMENT
CORNER - X=449546.9789 Y= 171069.8714

PERM EASEMENT
CORNER = X= 449685.8649 Y=171001.0551

1) TRAIL (BL)
STA. 2+79.113
LOWER HELIX GUTTERLINE
STA. 5+09.496
UPPER HELIX GUTTERLINE
X= 449624.482 Y= 171123.906

2) TRAIL (BL)
STA. 10+82.620
GUTTERLINE
TIE INTO STATION STRUCTURE (VERIFY IN FIELD)
X= 449878.935 Y= 171637.447

3) TRAIL (BL) P.O.T. STA. 6+11.594 =
RIVERDALE DR. (RIVERDALE) P.O.T. STA. 28+56.392
X= 449669.811 Y= 171215.390
AZ 90° 00' 16.2"

4) TRAIL (BL) P.O.T. STA. 7+26.497 =
T.H. 10 E.B. (EBTH10) P.O.T. STA. 482+30.472
X= 449720.825 Y= 171318.347
AZ 90° 00' 00"

5) TRAIL (BL) P.O.T. STA. 8+23.497 =
T.H. 10 W.B. (WBTH10) P.O.T. STA. 482+30.469
X= 449763.890 Y= 171405.263
AZ 90° 00' 00"

6) CENTER OF HELIX
X= 449657.337 Y= 171107.627
RADIUS TO BASELINE = 36'-8"

7) CL. 1 & BEGIN HELIX CURVE
STA. 1+63.92
BRIDGE NAME PLATE (PLACE ON SOUTHEAST
FACE OF COLUMN)

8) PIER TO BE LOCATED MORE THAN 30'-0" FROM
EDGE OF LANE; CONSTRUCTION PER MNDOT PIER
PROTECTION POLICY NOT REQUIRED

9) PROFILE GRADE FOR RIVERDALE DRIVE
(EXRIVERDALE)

10) PROFILE GRADE FOR EASTBOUND T.H. 10
(EXTH10EB)

11) PROFILE GRADE FOR WESTBOUND T.H. 10
(EXTH10WB)

12) VERIFY LOCATION OF BUILDING PRIOR TO
ORDERING STEEL BEAMS. REMOVE & RECONSTRUCT
WALL PANEL/CURBS AT END FACE OF SKYWAY TO
INCLUDE DOORWAY AND TIE INTO EXISTING
WALKWAY.

13) POTENTIAL FUTURE METAL ROOF CANOPY
(BY OTHERS)

15) X= 449750.244
Y= 171130.985

16) BENCHMARK DISK
(SEE APPLICABLE DETAILS)

17) END SOUTH ABUTMENT AND BEGIN BRIDGE
STA. 1+55.92

18) CL. RIVERDALE DR. (RIVERDALE)
P.O.T. STA. 26+37.225
X= 449473.437 Y= 171312.710

19) CL. RIVERDALE DR. (RIVERDALE)
P.O.T. STA. 32+15.297
X= 449991.391 Y= 171056.020

20) CL. T.H. 10 E.B. (EBTH10)
P.O.T. STA. 480+04.738
X= 449518.559 Y= 171418.567

21) CL. T.H. 10 E.B. (EBTH10)
P.O.T. STA. 485+65.093
X= 450020.658 Y= 171169.783

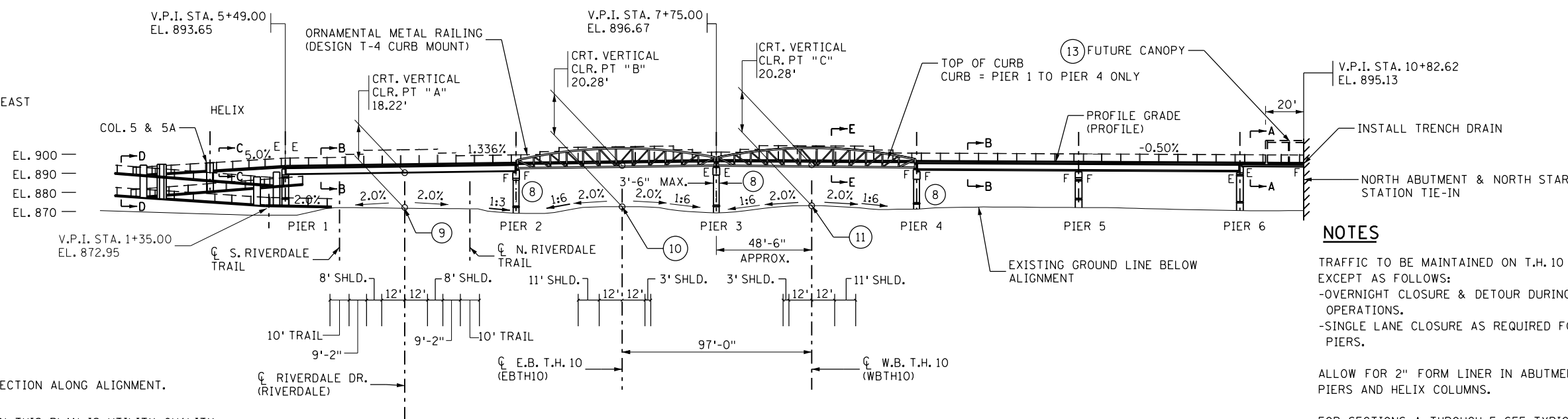
22) CL. T.H. 10 W.B. (WBTH10)
P.O.T. STA. 480+03.808
X= 449560.793 Y= 171505.895

23) CL. T.H. 10 W.B. (WBTH10)
P.O.T. STA. 485+63.467
X= 450062.269 Y= 171257.420

24) TRAIL (BL)
STA. 0+00.000
X= 449762.969 Y= 171238.228

25) TRAIL (BL)
STA. 10+85.113
X= 449882.298 Y= 171644.235

GENERAL PLAN



GENERAL ELEVATION

CROSS-SLOPES SHOWN ARE ON THE TRAVELED WAY
FORESLOPES SHOWN ARE THE MAX. BEYOND TRAVELED WAY

SET STAINLESS STEEL NAIL/PIN, WITH CUT 'X' IN EXPOSED HEAD,
IN WEST FACE OF EACH PIER APPX. 4' ABOVE FINISHED GRADE.

NOTES

TRAFFIC TO BE MAINTAINED ON T.H. 10 DURING CONSTRUCTION.
EXCEPT AS FOLLOWS:
-OVERNIGHT CLOSURE & DETOUR DURING BEAM/TRUSS SETTING
OPERATIONS.
-SINGLE LANE CLOSURE AS REQUIRED FOR WORK NEAR MAINSPAN
PIERS.

ALLOW FOR 2" FORM LINER IN ABUTMENT FACE, WINGWALLS,
PIERS AND HELIX COLUMNS.

FOR SECTIONS A THROUGH E, SEE TYPICAL SECTIONS.

"F" DENOTES FIXED BEARINGS.

"E" DENOTES EXPANSION BEARINGS.

SEE SHEET 99 FOR DETAILED ROADWAY SECTION ALONG ALIGNMENT.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY
LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO
THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR
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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

GENERAL PLAN AND ELEVATION

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S.A.P. 199-010-012

SHEET NO. 2 OF 99 SHEETS

BRIDGE NO.
02053

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SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE				
ITEM NO.	ITEM	UNIT	TOTAL ESTIMATED QUANTITY	AS-BUILT QUANTITY
2021.601	MOBILIZATION BRIDGE	LUMP SUM	1	
2100.601	PEDESTRIAN BRIDGE (SUPERSTRUCTURE)	LUMP SUM	1	
2105.522	SELECT GRANULAR BORROW MOD 10% (CV)	CU YD	131	(P)
2211.503	AGGREGATE BASE (CV) CLASS 5 MODIFIED	CU YD	14	(P)
2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)	TON	14	
2401.501	STRUCTURAL CONCRETE (1G52)	CU YD	437.3	
2401.501	STRUCTURAL CONCRETE (3B52)	CU YD	256.4	
2401.501	STRUCTURAL CONCRETE (3S52)	CU YD	40.8	
2401.541	REINFORCEMENT BARS	POUND	25766	
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	222232	
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1	
2401.607	BRIDGE SLAB CONCRETE (3YHPC-M)	CU YD	540.4	
2402.521	STRUCTURAL STEEL (3309)	POUND	7677	
2402.583	ORNAMENTAL METAL RAILING (3 TYPES)	LIN FT	2004.8	
2402.590	ELASTOMERIC BEARING PAD	EACH	4	
2402.591	EXPANSION JOINT DEVICES TYPE 4	LIN FT	39.0	(P)
2402.595	BEARING ASSEMBLY	EACH	14	
2402.601	DRAINAGE SYSTEM	LUMP SUM	1	
2405.502	PRESTRESSED CONCRETE BEAMS MN45	LIN FT	580.2	(P)
2405.511	DIAPHRAGMS FOR TYPE MN45 PREST BEAMS	LIN FT	68.0	(P)
2411.618	ANTI-GRAFFITI COATING	SQ FT	15717	(P)
2411.618	ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	SQ FT	34588	(P)
2411.618	ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	SQ FT	1649	(P)
2411.618	ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	SQ FT	1649	(P)
2411.618	ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	SQ FT	1204	(P)
2433.601	REMOVE AND RECONSTRUCT PORTIONS OF EXISTING STRUCTURE	LUMP SUM	1	
2545.501	LIGHTING SYSTEM	LUMP SUM	1	

(P) DENOTES PLAN QUANTITY PAY ITEMS AS PER SPEC. 1901.

1. INCLUDES BEARING ASSEMBLIES (TYPE F2 AND E3)
2. EXCLUDES QUANTITIES FOR PREFABRICATED TRUSS
3. REFER TO DETAIL B305 (MOD.)
4. INCLUDES SPLASH BASINS AND DOWNSPOUTS AS REQUIRED.
5. INCLUDES INSTALLATION OF SECURITY ENTRANCE (PROVIDED BY OTHERS). INCLUDES ALL COSTS ASSOCIATED WITH RECONSTRUCTING THE EXISTING STRUCTURE AT THE TIE-IN LOCATIONS; SEE NORTH ABUTMENT DETAILS.
6. INCLUDES ALL COSTS ASSOCIATED WITH INSTALLING LIGHTING SYSTEM TYPE SPECIAL 1 AND LIGHTING SYSTEM TYPE SPECIAL 2.
7. INCLUDES PAYMENT FOR THE FOLLOWING ELEMENTS IN SPAN 7: STEEL BEAMS, DIAPHRAGMS, STIFFENERS, NUTS, BOLTS, WASHERS, BEARING SOLE PLATES AND CONNECTION PLATES.
8. BRIDGE SLAB CONCRETE (3YHPC-M). VOLUME WAS COMPUTED USING AN AVERAGE STOOL HEIGHT OF 2 INCHES. INCLUDES END DIAPHRAGMS AND BENCH MARK DISK. STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.
9. INCLUDES DECK, END DIAPHRAGMS AND CURB REINFORCEMENT.
10. APPLY COATING TO ALL ABOVE GRADE PORTIONS OF HELIX, BRIDGE SLAB & DECK, PCB BEAMS AND CURBS EXCEPT 12' RIDING SURFACE OF TRAIL. APPLY COATING TO BOTTOM AND SIDE FACES OF PIER CAPS, ASHLAR STONE AND COLLAR PORTIONS OF PIERS.
11. APPLY COATING TO PORTIONS OF PIER COLUMNS WITH "THIN BRICK" FINISH.
12. APPLY TO ALL FINISHED FACES OF HELIX (EXCEPT 12' RIDING SURFACE) AND TO EXPOSED PORTIONS OF PIER COLUMNS.

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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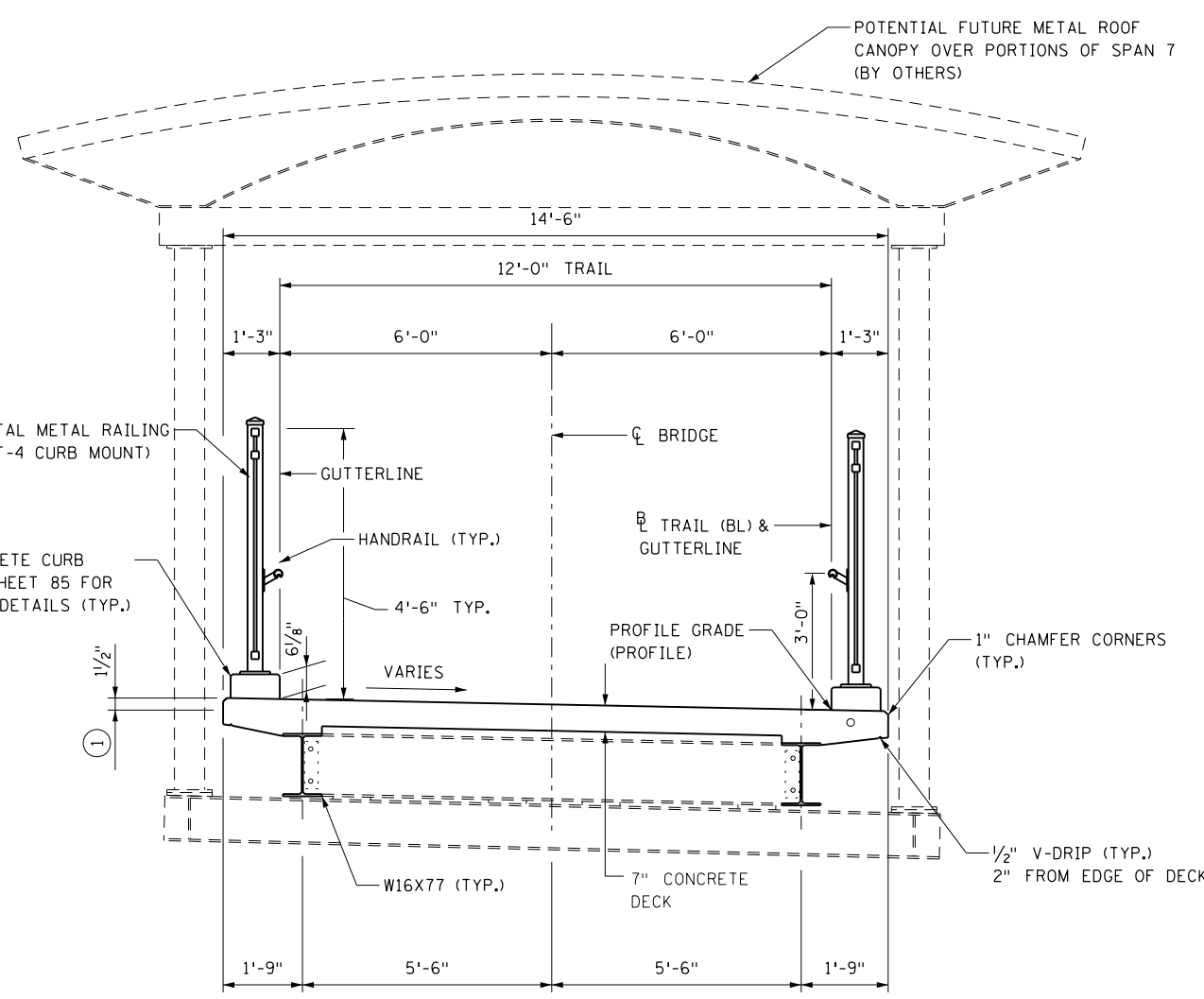
QUANTITIES AND NOTES

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	

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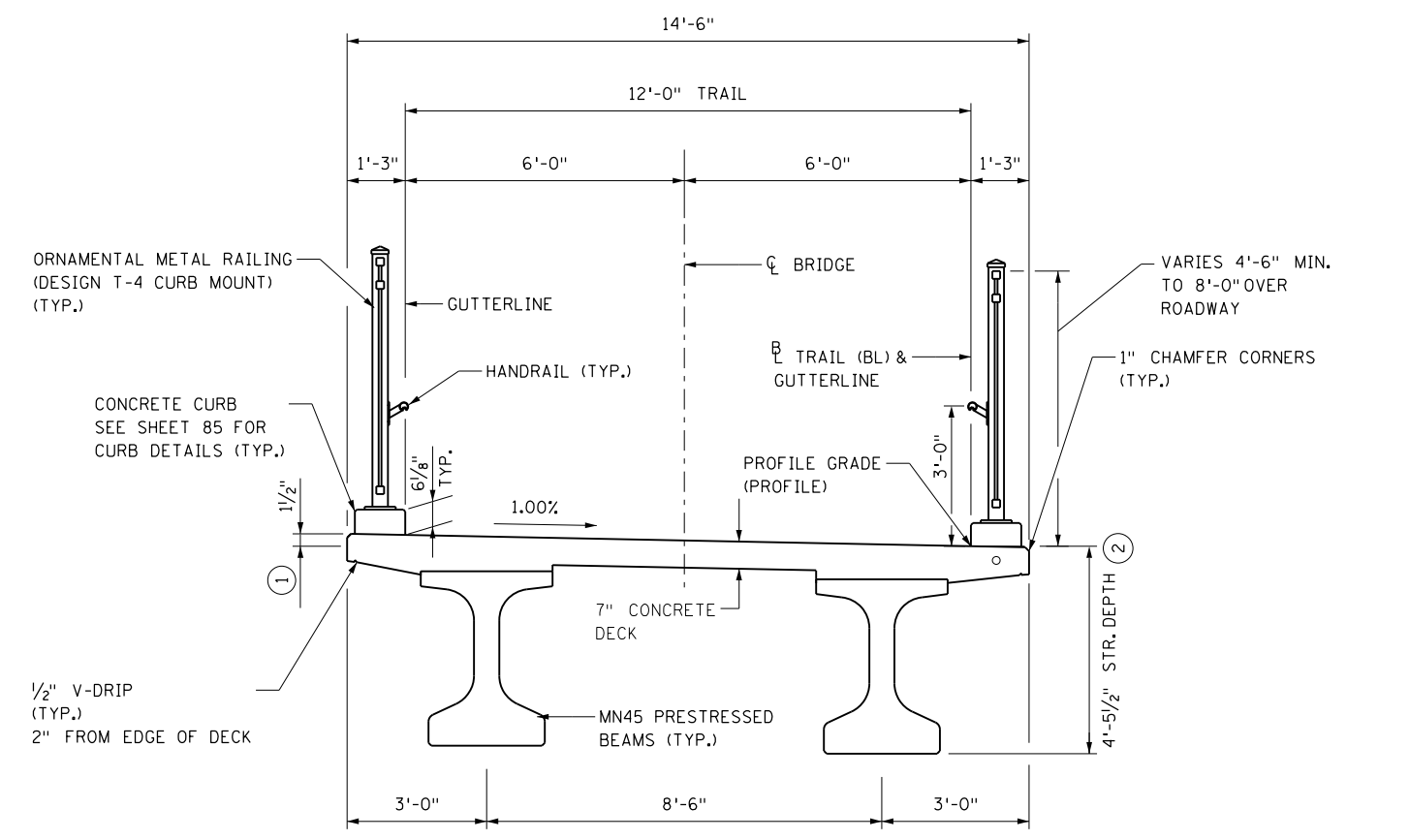
SHEET NO. 3 OF 99 SHEETS

BRIDGE NO.
 02053

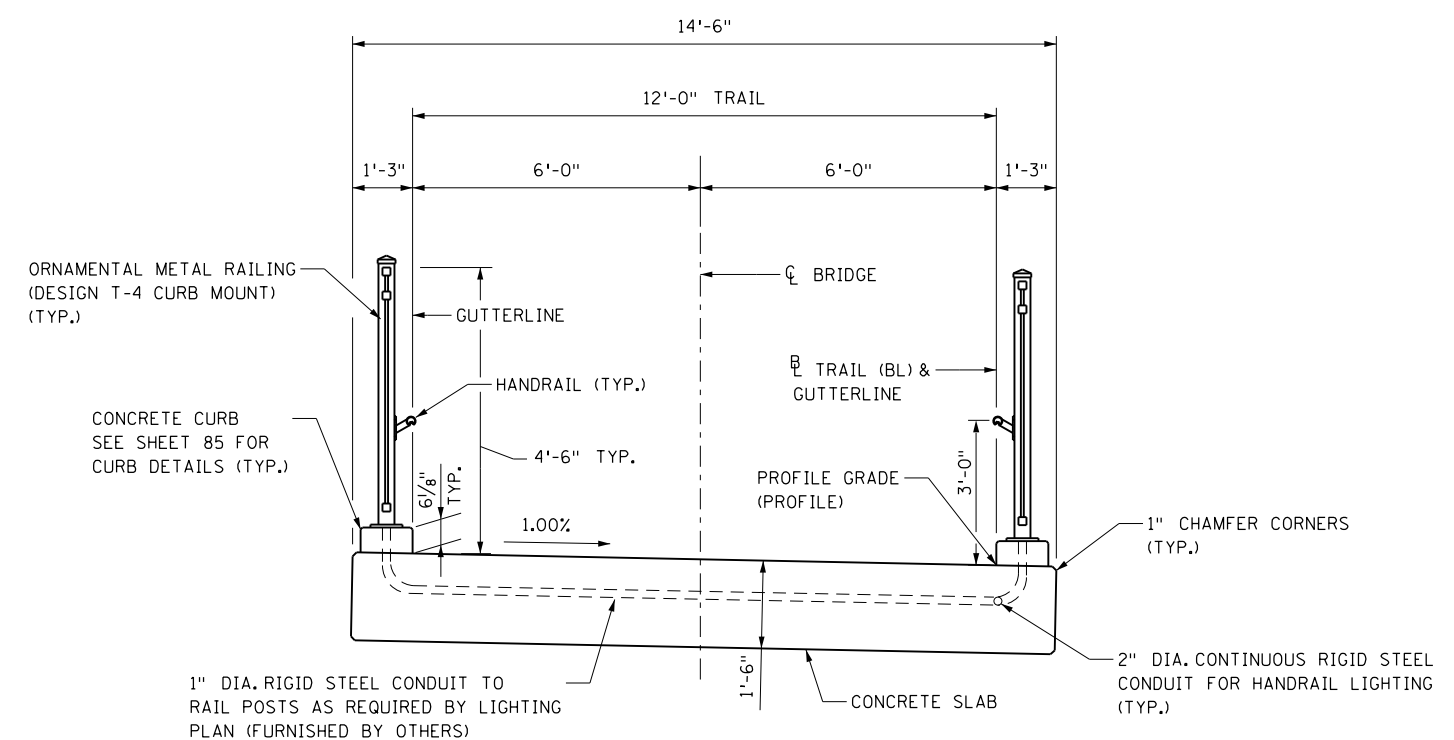


SECTION A-A
TIE IN SPAN

- ① MEASURED GUTTERLINE TO GUTTERLINE
- ② STRUCTURE DEPTH INDICATED IS FROM PROFILE GRADE TO BOTTOM OF MEMBER AND IS CALCULATED BASED ON A STOOL HEIGHT OF 1 5/8" AT CL BEAM.



SECTION B-B
APPROACH SPANS



SECTION C-C
APPROACH SPAN

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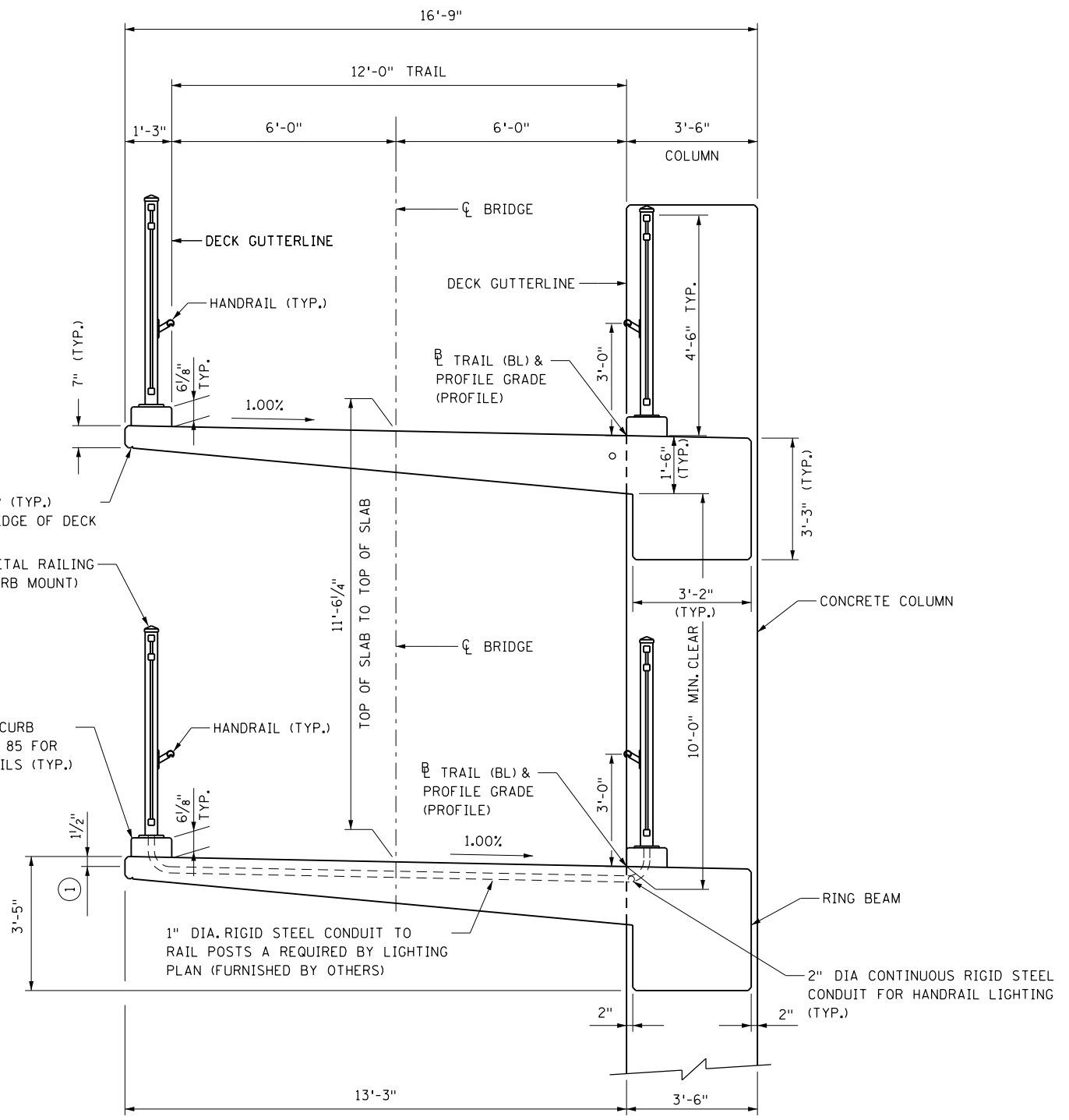
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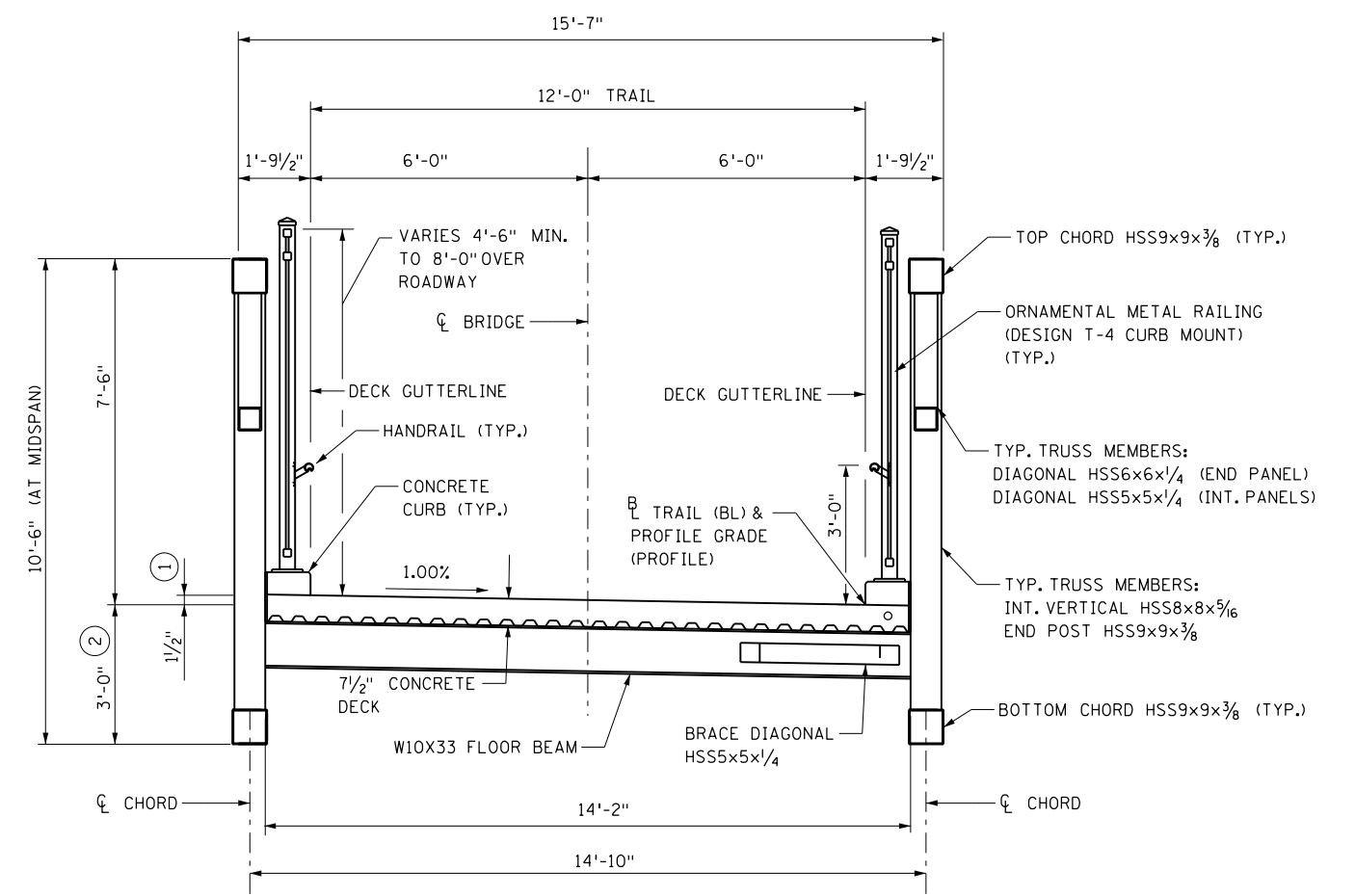
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CHECKED		ATP	CHECK	RRE	
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TYPICAL SECTIONS					
SHEET NO. 4 OF 99 SHEETS					

BRIDGE NO.
02053

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SECTION D-D
HELIX



SECTION E-E
STEEL TRUSS

- ① MEASURED GUTTERLINE TO GUTTERLINE
- ② STRUCTURE DEPTH INDICATED IS FROM PROFILE GRADE TO BOTTOM OF MEMBER.

NOTE:
 IF TRUSS DESIGN IS MODIFIED FROM THE CONFIGURATION SHOWN, CONTRACTOR SHALL SUBMIT FOR REVIEW CALCULATIONS SIGNED BY AN ENGINEER LICENSED IN THE STATE OF MINNESOTA.

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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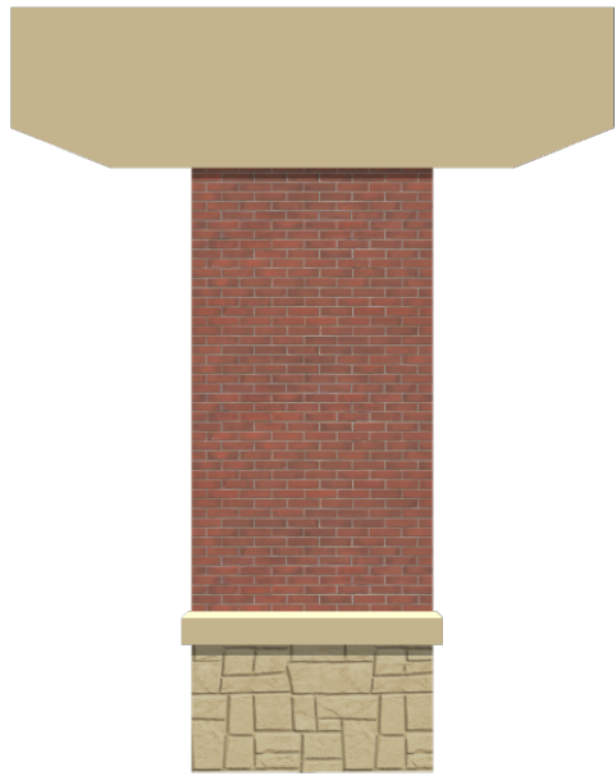
TITLE:
TYPICAL SECTIONS

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	

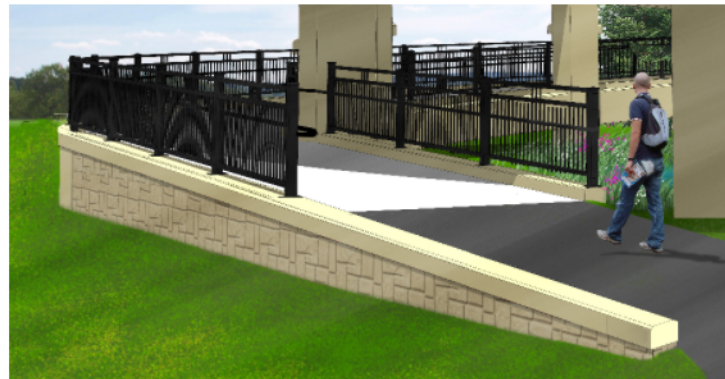
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BRIDGE NO.
02053

SHEET NO. 5 OF 99 SHEETS



PIER RENDERING

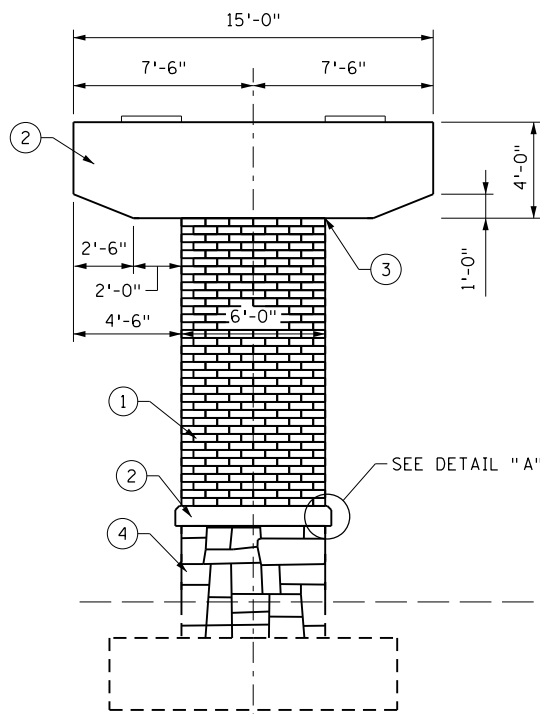


RETAINING WALL RENDERING

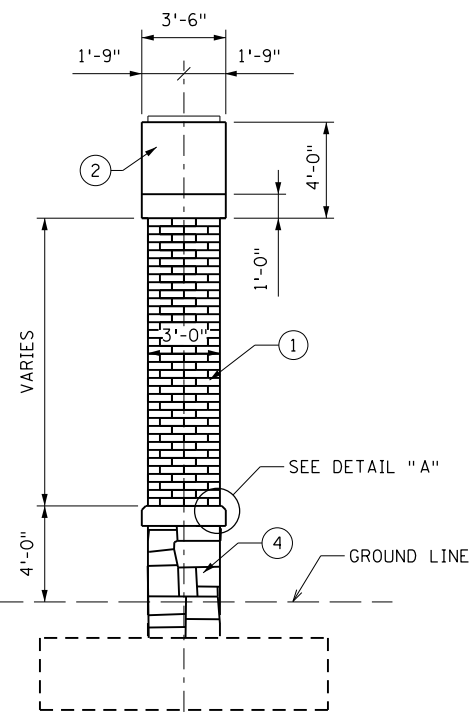


MAIN SPAN RENDERING

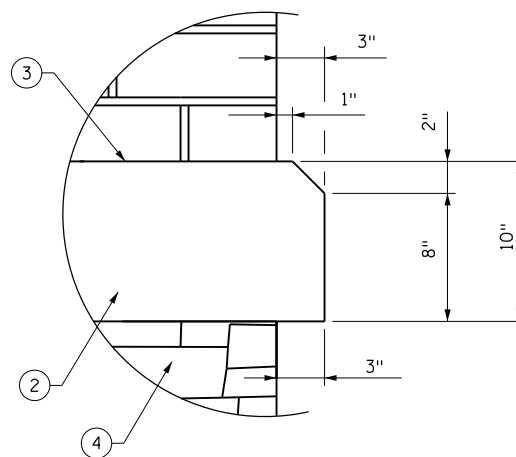
STEEL TRUSS SHALL BE SHOP PAINTED TO MATCH COLORS OF STEEL ELEMENTS ON CONNECTED NORTH STAR STATION. FEDERAL STANDARD COLOR NO. 25193 (BLUE-GREEN, SEMI GLOSS) CONTRACTOR SHALL VERIFY COLOR PRIOR TO FABRICATION.



TYPICAL PIER ELEVATION
(APPROACH PIER SHOWN, MAIN SPAN PIERS SIMILAR)



TYPICAL PIER END VIEW
(APPROACH PIER SHOWN, MAIN SPAN PIERS SIMILAR)



DETAIL "A"

- ① +0": FRONT FACE OF FORMLINER ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK) ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) AND ANTI-GRAFFITI COATING.
- ② +3": SPECIAL SURFACE FINISH (COLOR 2).
- ③ PERMISSIBLE CONSTRUCTION JOINT. LOCATE CONSTRUCTION JOINTS IN MORTAR LINE OF THE FORMLINER.
- ④ +0": FRONT FACE OF FORMLINER ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR - COLOR 2) AND ANTI-GRAFFITI COATING.

COLOR 1 SHALL BE FEDERAL STANDARD COLOR NO. 33578

COLOR 2 SHALL BE FEDERAL STANDARD COLOR NO. 33522.

NOTES:

PIER DIMENSIONS SHOWN ARE RECOMMENDED; SUBJECT TO MODIFICATION DURING FINAL DESIGN, PROVIDED AESTHETIC CONCEPT IS MAINTAINED.

EXTEND ARCHITECTURAL TREATMENTS AND ANTI-GRAFFITI COATINGS MINIMUM 1'-0" BELOW PROPOSED GROUND LINE, WHERE APPLICABLE.

ARCHITECTURAL SURFACE FINISH (MULTI-COLOR) SHALL BE ENDICOTT TYPE 'MEDIUM IRONSPOT #7' OR SIMILAR APPROVED EQUIVALENT. MORTAR JOINTS SHALL BE COLOR 1.

PCB'S SHALL RECEIVE S.S.F. - COLOR 2.

OUTSIDE AND BOTTOM FACES OF BRIDGE SLAB, HELIX RAMP AND COLUMNS, AS WELL AS ALL SIDES OF CONCRETE CURBS, SHALL RECEIVE S.S.F. - COLOR 2.

SEE SOUTH ABUTMENT DETAILS FOR ARCHITECTURAL TREATMENT LAYOUT ON WALL PANELS.

THE GENERAL INTENT OF THE PROPOSED BRIDGE AESTHETICS IS TO MATCH THE CONNECTED NORTH STAR 'COR' AREA PARKING RAMP. ELEMENTS WILL CLOSELY RESEMBLE THE STYLE UTILIZED ON THE NEARBY ARMSTRONG BOULEVARD CROSSING OF T.H. 10. THE STEEL TRUSS AND BEAM COLORS PROPOSED HAVE BEEN SELECTED TO TIE-IN WITH THE BLUE-GREEN UTILIZED ON THE CONNECTED NORTH STAR STATION.

MAXIMUM DEPTH OF ARCHITECTURAL CONCRETE TEXTURE IS 1 1/2" (FROM F.F. OF FORMLINER)

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



7533 SUNWOOD DRIVE N.W.
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

ARCHITECTURAL DETAILS

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	

S.A.P. 199-010-012

SHEET NO. 6 OF 99 SHEETS

BRIDGE NO.
02053

COORDINATES (5)

POINTS	STATION	X-COORDINATE	Y-COORDINATE	ELEVATION (6)
A	1+55.92	449704.496	171093.189	874.12
B	1+63.92	449700.944	171086.020	874.52
C	1+92.72	449672.893	171061.514	875.96
D	2+21.52	449635.730	171064.020	877.40
E	2+50.31	449611.223	171092.071	878.84
F	2+79.11	449613.730	171129.234	880.28
G	3+07.91	449641.780	171153.741	881.72
H	3+36.71	449678.944	171151.235	883.16
J	3+65.51	449703.450	171123.184	884.60
K	3+94.30	449700.944	171086.020	886.04
L	4+23.10	449672.893	171061.514	887.48
M	4+51.90	449635.730	171064.020	888.92
N	4+80.70	449611.223	171092.071	890.36
P	5+09.50	449613.730	171129.234	891.80
Q	5+49.00	449631.268	171164.631	893.77
R	6+70.00	449684.989	171273.051	895.39
S	7+75.00	449731.607	171367.136	896.79
T	8+80.00	449778.224	171461.220	896.26
U	9+65.00	449815.962	171537.383	895.84
V	10+50.00	449853.700	171613.546	895.41
W	10+82.13 (7)	449867.964	171642.333	895.13 (8)
X	1+55.92	449693.743	171098.517	874.00
Y	1+63.92	449690.192	171091.348	874.40
Z	1+92.72	449669.058	171072.884	875.84
AA	2+21.52	449641.058	171074.773	877.28
BB	2+50.31	449622.594	171095.907	878.72
CC	2+79.11	449624.482	171123.906	880.16
DD	3+07.91	449645.616	171142.370	881.60
EE	3+36.71	449673.616	171140.482	883.04
FF	3+65.51	449692.080	171119.348	884.48
GG	3+94.30	449690.192	171091.348	885.92
HH	4+23.10	449669.058	171072.884	887.36
JJ	4+51.90	449641.058	171074.773	888.80
KK	4+80.70	449622.594	171095.907	890.24
LL	5+09.50	449624.482	171123.906	891.68
MM	5+49.00	449642.021	171159.303	893.65
NN	6+70.00	449695.742	171267.724	895.27
PP	7+75.00	449742.359	171361.808	896.67
QQ	8+80.00	449788.977	171455.892	896.14
RR	9+65.00	449826.715	171532.055	895.72
SS	10+50.00	449864.453	171608.218	895.29
TT	10+82.62 (7)	449878.933	171637.444	895.13 (8)

- (5) ALL COORDINATE VALUES SHOWN ARE PROJECT COORDINATES DEFINED IN FEET.
- (6) ELEVATIONS ARE AT TOP OF TRAIL.
- (7) VERIFY EDGE OF RAMSEY STATION.
- (8) ESTIMATED TIE-IN ELEVATION FROM SURVEY. FIELD VERIFY AND ADJUST HAUNCH THICKNESS AS NEEDED TO MATCH FINISHED FLOOR OF SKYWAY PLATFORM.

ELEVATIONS

	LOCATION	STATION	TOP OF TRAIL @ B.L.	VERTICAL OFFSET TO FASCIA GIRDER (1)	TOP OF TRAIL @ FASCIA GIRDER	TOP OF TRAIL TO BR. SEAT	BRIDGE SEAT	NEAR POINT (2)
EAST FASCIA GIRDER (3)	PIER 1 SOUTH	5+48.13	893.61		893.61	1.94	891.67	MM
	PIER 1 NORTH	5+49.83	893.66	0.0175	893.68	4.97	888.71	
	PIER 2 SOUTH	6+69.25	895.26	0.0175	895.27	4.80	890.47	NN
	PIER 2 NORTH	6+70.75	895.28	---	---	3.55	891.72	
	PIER 3 SOUTH	7+74.25	896.66	---	---	3.55	893.11	PP
	PIER 3 NORTH	7+75.75	896.67	---	---	3.55	893.11	
	PIER 4 SOUTH	8+79.25	896.15	---	---	3.55	892.60	QQ
	PIER 4 NORTH	8+80.75	896.14	0.0175	896.16	4.80	891.36	
	PIER 5 SOUTH	9+64.25	895.72	0.0175	895.74	4.80	890.95	RR
	PIER 5 NORTH	9+65.75	895.72	0.0175	895.73	4.80	890.94	
	PIER 6 SOUTH	10+49.17	895.30	0.0175	895.32	4.96	890.35	SS
	PIER 6 NORTH	10+50.75	895.29	0.005	895.30	2.51	892.78	
WEST FASCIA GIRDER (3)	PIER 1 SOUTH	5+48.13	893.61	0.12	893.73	2.06	891.67	Q
	PIER 1 NORTH	5+49.83	893.66	0.1025	893.76	4.97	888.80	
	PIER 2 SOUTH	6+69.25	895.26	0.1025	895.36	4.80	890.56	R
	PIER 2 NORTH	6+70.75	895.28	---	---	3.55	891.72	
	PIER 3 SOUTH	7+74.25	896.66	---	---	3.55	893.11	S
	PIER 3 NORTH	7+75.75	896.67	---	---	3.55	893.11	
	PIER 4 SOUTH	8+79.25	896.15	---	---	3.55	892.60	T
	PIER 4 NORTH	8+80.75	896.14	0.1025	896.24	4.80	891.45	
	PIER 5 SOUTH	9+64.25	895.72	0.1025	895.83	4.80	891.03	U
	PIER 5 NORTH	9+65.75	895.72	0.1025	895.82	4.80	891.02	
	PIER 6 SOUTH	10+49.17	895.30	0.1025	895.40	4.96	890.44	V
	PIER 6 NORTH	10+50.75	895.29	0.115	895.41	2.51	892.89	

- (1) VERTICAL ADJUSTMENT FOR TOP OF TRAIL ELEVATION RELATIVE TO BASELINE OF TRAIL AT GIRDER CENTERLINE ('-' = DOWNWARD)
- (2) NEAREST WORKING POINT TO BRIDGE SEAT SHOWN
- (3) FOR TRUSSES, 'GIRDER' CORRESPONDS TO CENTERLINE OF BOTTOM CHORD. FOR HELIX SLAB, 'GIRDER' CORRESPONDS TO OUTSIDE BEARING LINES.

TOP OF TRAIL TO BRIDGE SEAT

	DECK/SLAB THICKNESS	STOOL HEIGHT		BEAM HEIGHT (4)	BEARING HEIGHT	TOTAL E. FASCIA		TOTAL W. FASCIA	
		E. FASCIA	W. FASCIA			INCHES	FEET	INCHES	FEET
PIER 1 SOUTH	18.875	0.00	1.44	0.00	4.375	23.25	1.94	24.69	2.06
PIER 1 NORTH	7.00	2.36	2.36	45.00	5.250	59.61	4.97	59.61	4.97
PIER 2 SOUTH	7.00	2.36	2.36	45.00	3.250	57.61	4.80	57.61	4.80
PIER 2 NORTH	0.00	0.00	0.00	36.00	6.625	42.63	3.55	42.63	3.55
PIER 3 SOUTH	0.00	0.00	0.00	36.00	6.625	42.63	3.55	42.63	3.55
PIER 3 NORTH	0.00	0.00	0.00	36.00	6.625	42.63	3.55	42.63	3.55
PIER 4 SOUTH	0.00	0.00	0.00	36.00	6.625	42.63	3.55	42.63	3.55
PIER 4 NORTH	7.00	2.29	2.29	45.00	3.250	57.54	4.80	57.54	4.80
PIER 5 SOUTH	7.00	2.29	2.29	45.00	3.250	57.54	4.80	57.54	4.80
PIER 5 NORTH	7.00	2.29	2.29	45.00	3.250	57.54	4.80	57.54	4.80
PIER 6 SOUTH	7.00	2.29	2.29	45.00	5.250	59.54	4.96	59.54	4.96
PIER 6 NORTH	7.00	1.55	1.55	16.50	5.125	30.18	2.51	30.18	2.51

- NOTE: PCB STOOL HEIGHT IS SELECTED TO PROVIDE A MIN 1.5" AT EDGE OF BEAM FLANGE.
- NOTE: RSB STOOL HEIGHT IS DESIGNED TO BE A CONSTANT 1.5" AT THE EDGE OF LOW FLANGE. ADJUST PER NOTES ON NORTH ABUTMENT DETAILS AS NEEDED.
- NOTE: AT PIER 1 SOUTH, STOOL HEIGHT REPRESENTS THE THICKENED END REGION (SLAB DIAPHRAGM) BETWEEN CORE SLAB THICKNESS AND TOP OF BEARING.
- BEARING HEIGHT IS THE HEIGHT OF THE EMBEDDED BEARING PAD ABOVE THE BRIDGE SEAT.
- (4) BEAM HEIGHT FOR TRUSSES IS THE DISTANCE FROM TOP OF DECK AT BASELINE TO BOTTOM OF TRUSS CHORD.

NOTES

FOR WORKING POINT LAYOUT AND WORKING POINT DIMENSIONS, SEE PREVIOUS SHEET.

ALL ELEVATIONS ARE MEASURED IN FEET.

SEE GENERAL PLAN AND ELEVATION SHEET FOR PROFILE DATE AND OTHER INFORMATION.

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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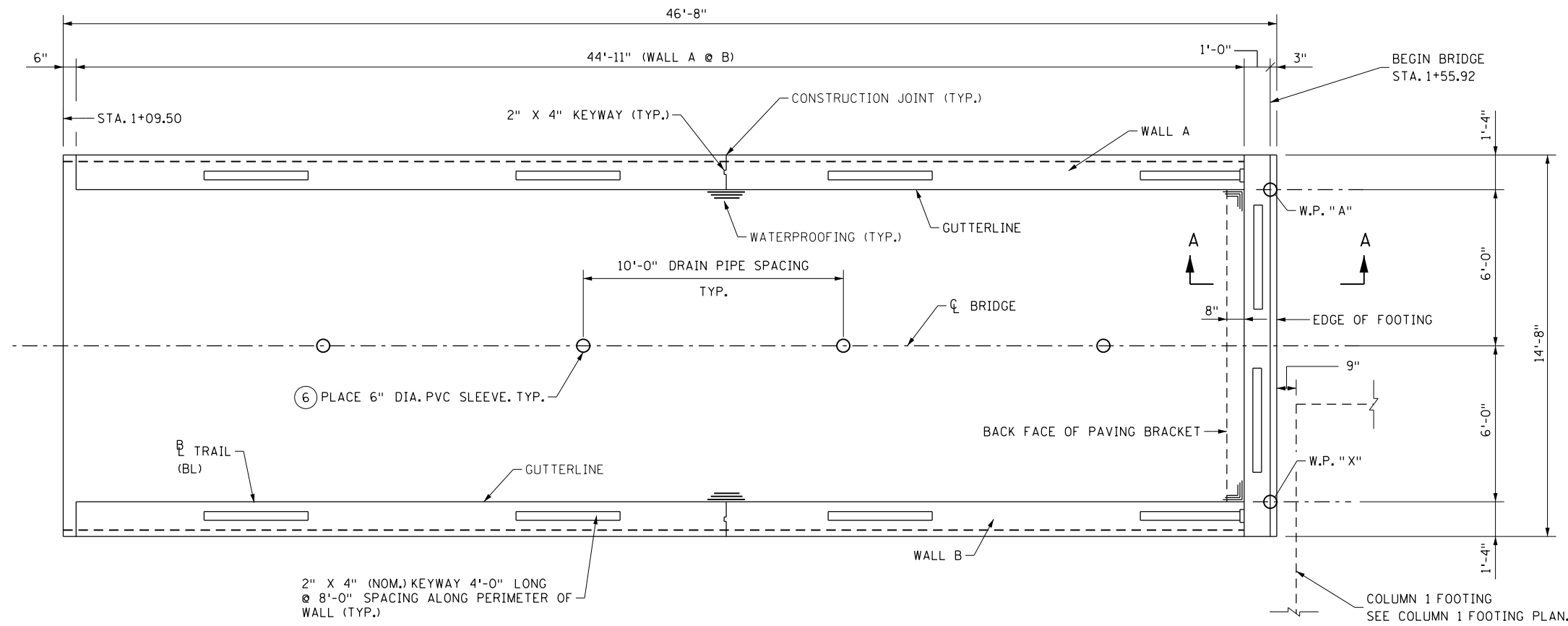
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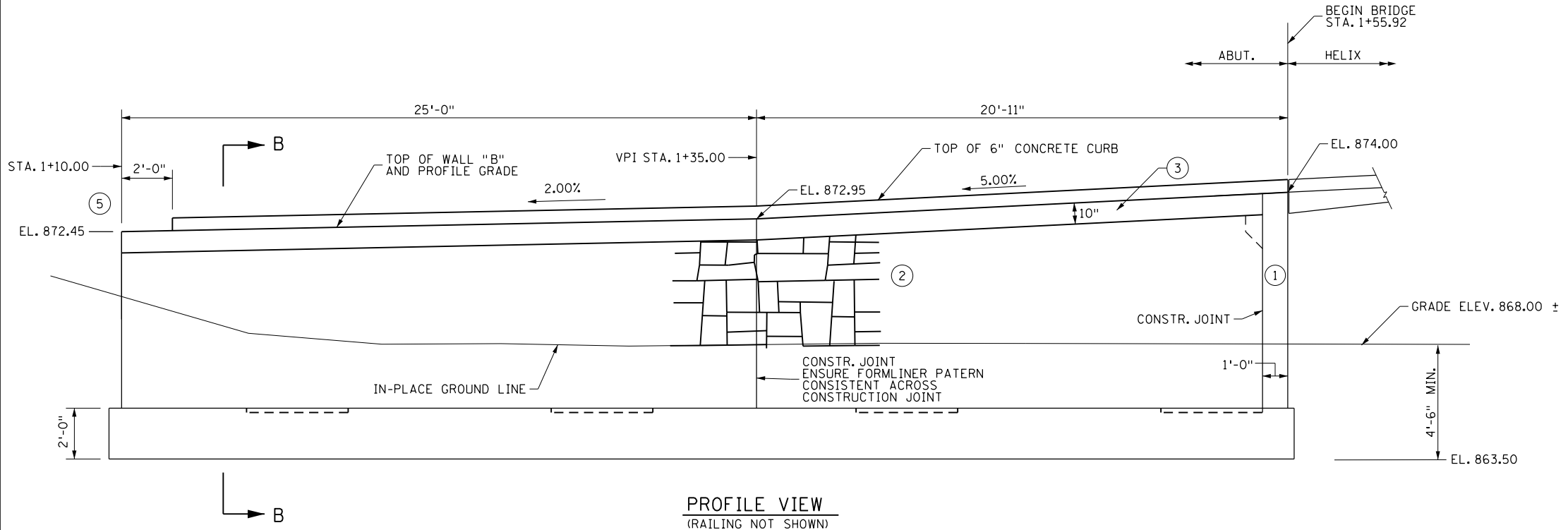
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S.A.P. 199-010-012				
SHEET NO. 8 OF 99 SHEETS				

BRIDGE NO.
 02053

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FOOTING PLAN



PROFILE VIEW
 (RAILING NOT SHOWN)
 (ELEVATIONS SHOWN ALONG PROFILE GRADE)

NOTES

- ① +3": SPECIAL SURFACE FINISH (COLOR 2) AND ANTI-GRAFFITI COATING. NO TEXTURE ON END FACE OF WALL.
 - ② +0": FRONT FACE OF FORMLINER ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE) ARCHITECTURAL SURFACE FINISH (SINGLE COLOR- COLOR 2) AND ANTI-GRAFFITI COATING.
 - ③ +3": 10" COPING SPECIAL SURFACE FINISH (COLOR 2). EXTEND ARCHITECTURAL TREATMENTS AND ANTI-GRAFFITI COATINGS MINIMUM 1'-0" BELOW PROPOSED GROUND LINE, WHERE APPLICABLE.
 - ④ 4" TYPE SP 12.5 WEARING COARSE MIXTURE (SPWEB340B) 2 -2" LIFTS WITH 6" AGGREGATE BASE (CV) CLASS 5 MOD. - SPEC 2211
 - ⑤ TRANSITION FROM IN-PLACE CROSS-SLOPE AT EXISTING TRAIL TIE-IN (STA. 1+00.00 TO SLOPE SHOWN AT STA. 1+10.00)
 - ⑥ PLACE A 6" DIAMETER PVC SLEEVE THROUGH FOOTING CONCRETE FOR DRAINAGE. PLACE RODENT SHIELD AND TYPE 1 GEOTEXTILE FABRIC ON TOP OF PIPE. ALL MATERIAL AND INSTALLATION SHALL BE INCLUDED IN BID PRICE FOR DRAINAGE SYSTEM. SEE PIPE DRAIN DETAIL, SHEET 10.
- FINISH TOP OF FOOTING CONCRETE TO SLOPE TO DRAIN PIPE AREA.
- SEE ARCHITECTURAL DETAILS SHEET FOR ADDITIONAL INFORMATION ON ARCHITECTURAL SURFACE TREATMENTS AND COLOR TYPES.
- MAXIMUM DEPTH OF ARCHITECTURAL CONCRETE TEXTURES IS 1/2" (FROM F.F. OF FORMLINER).
- FOR SECTION A - A , SEE SHEET 10.
- FOR SECTION B - B , SEE SHEET 10.

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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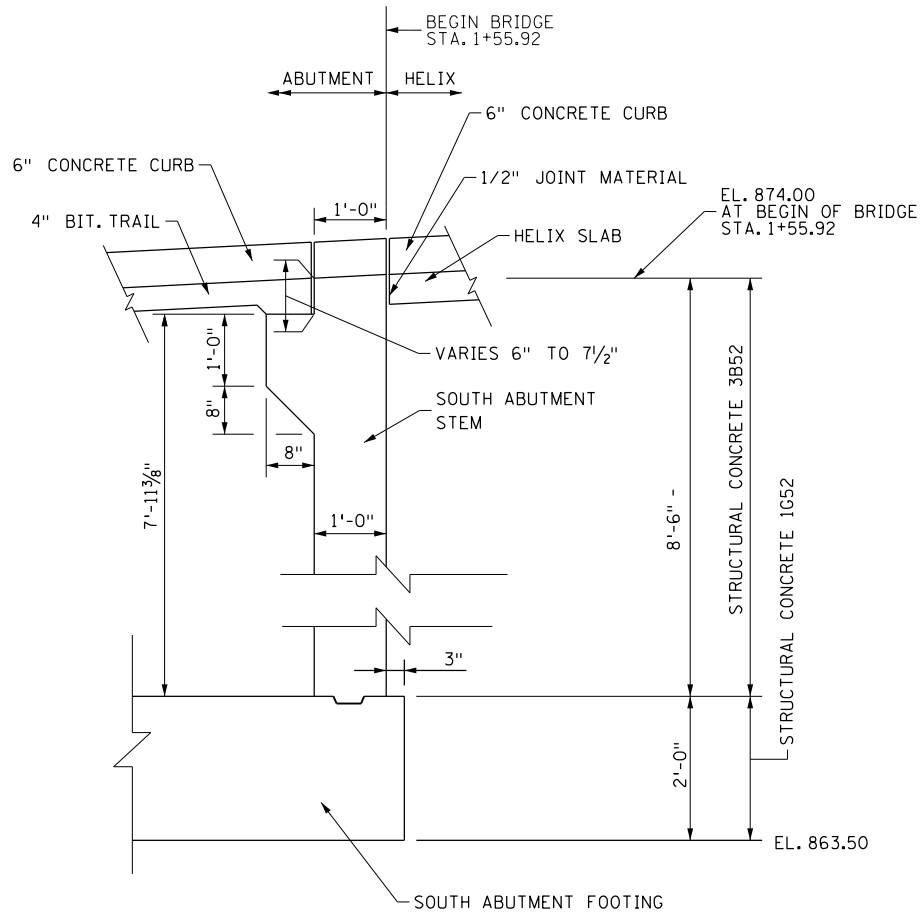
SOUTH ABUTMENT DETAILS

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	

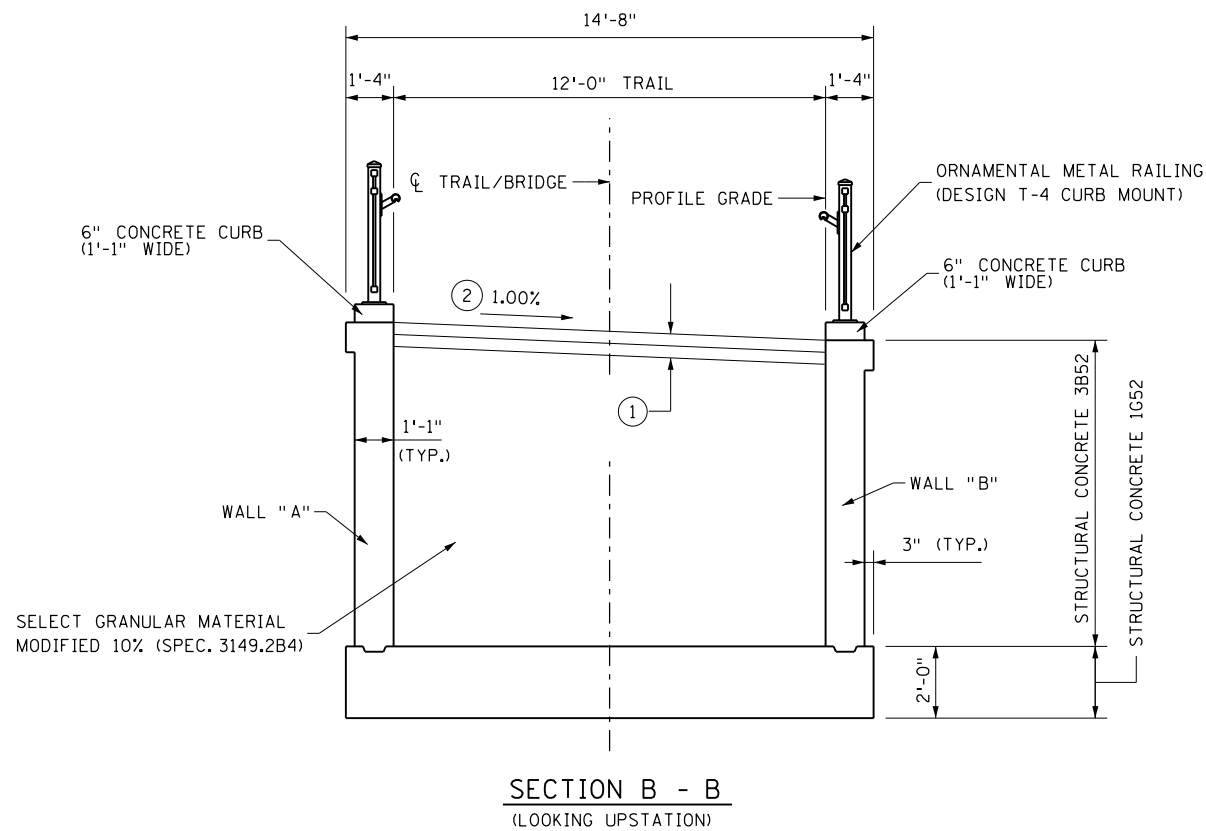
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SHEET NO. 9 OF 99 SHEETS

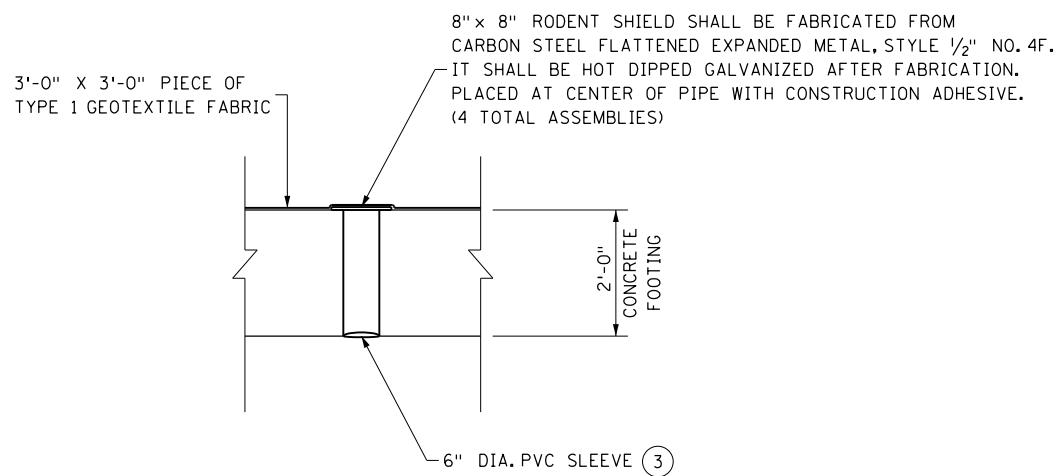
BRIDGE NO.
 02053



SECTION A - A



SECTION B - B
(LOOKING UPSTATION)



DRAIN PIPE DETAIL

NOTES

- ① 4" TYPE SP 12.5 WEARING COARSE MIXTURE (SPWEB340B) 2 -2" LIFTS WITH 6" AGGREGATE BASE (CV) CLASS 5 MOD. - SPEC 2211
- ② TRANSITION FROM IN-PLACE CROSS-SLOPE AT EXISTING TRAIL TIE-IN (STA. 1+00.00 TO SLOPE SHOWN AT STA. 1+10.00)
- ③ PLACE A 6" DIAMETER PVC SLEEVE THROUGH FOOTING CONCRETE FOR DRAINAGE. PLACE RODENT SHIELD AND TYPE 1 GEOTEXTILE FABRIC ON TOP OF PIPE. ALL MATERIAL AND INSTALLATION SHALL BE INCLUDED IN BID PRICE FOR DRAINAGE SYSTEM.

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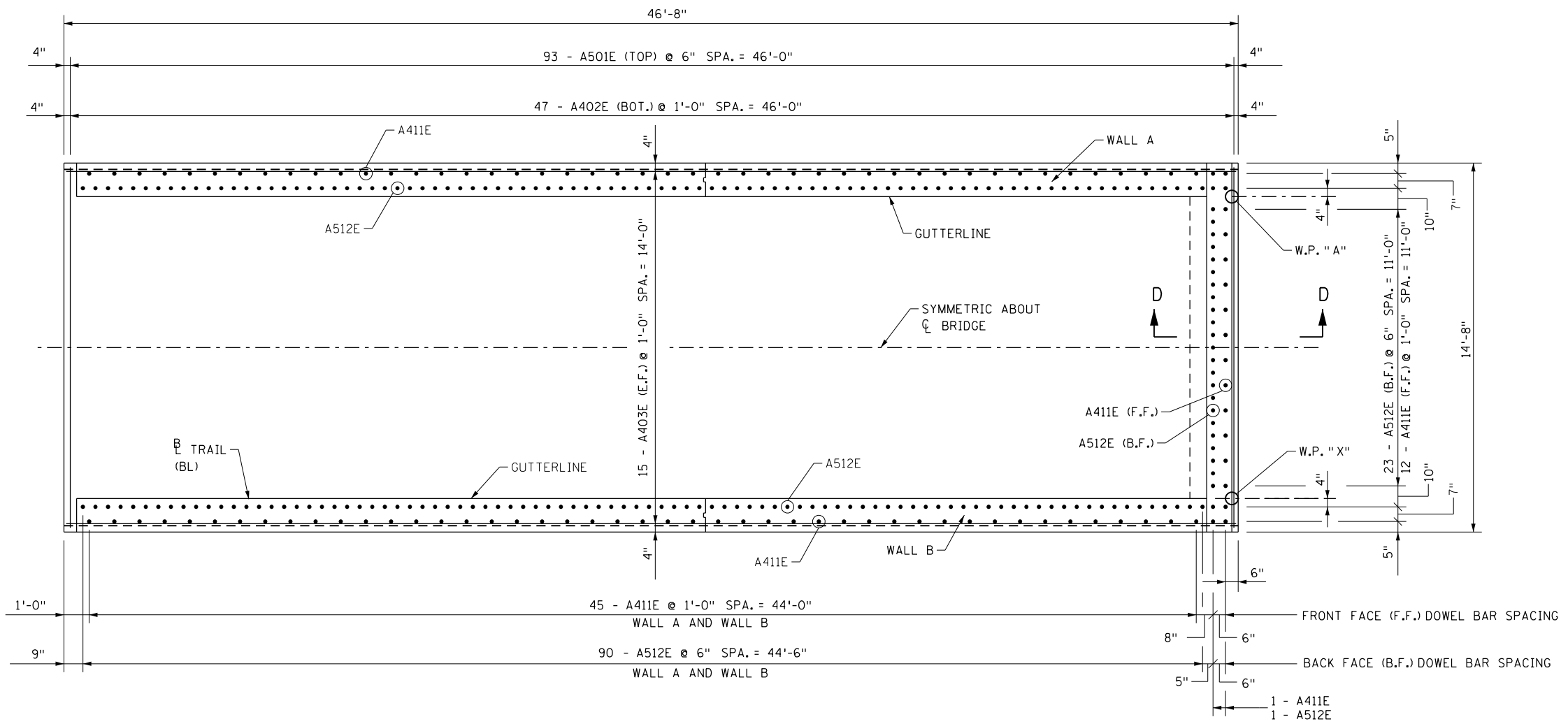
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DESIGNED	RRE	DRAWN	JMR	APPROVED
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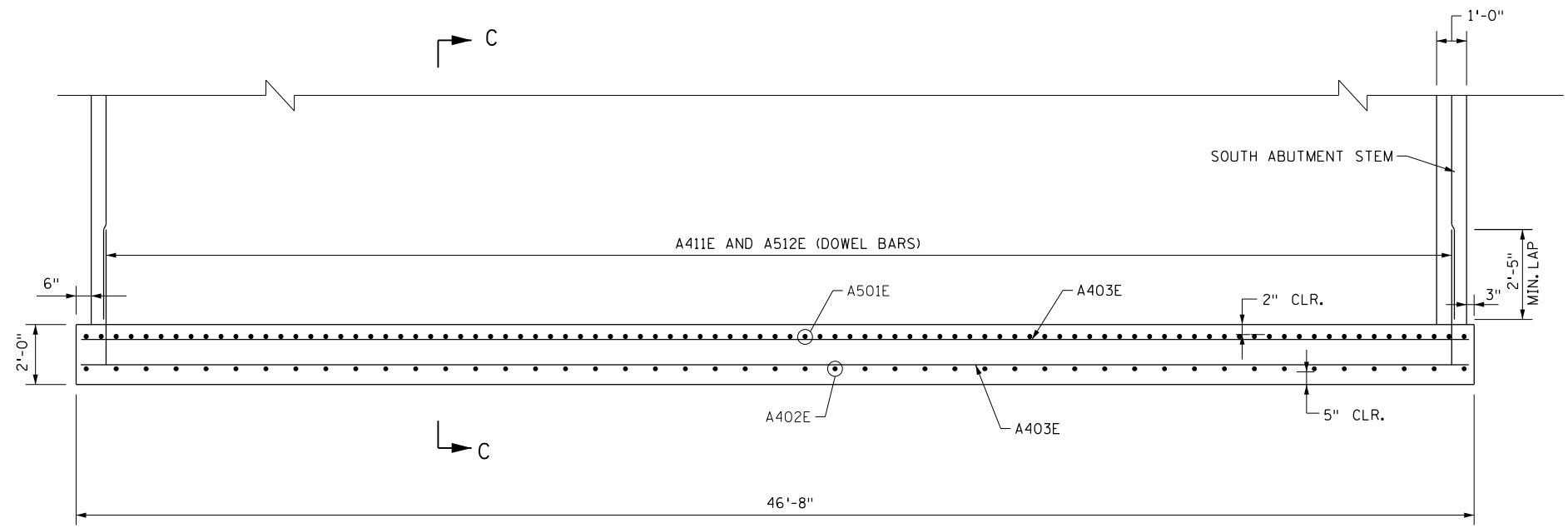
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SHEET NO. 10 OF 99 SHEETS

BRIDGE NO.
02053



FOOTING PLAN - REINFORCEMENT
KEYWAYS NOT SHOWN FOR CLARITY



FOOTING SECTION - REINFORCEMENT
KEYWAYS NOT SHOWN FOR CLARITY

SOUTH ABUTMENT SPREAD FOOTING LOAD DATA	
* FACTORED DESIGN BEARING PRESSURE	0.7 TONS/SQ.FT.
EFFECTIVE WIDTH B'	14.7 FT.
EFFECTIVE LENGTH L'	N/A
FACTORED BEARING RESISTANCE $\phi_s \cdot q_n$	2.5 TONS/SQ.FT.

* BASED ON SERVICE I LOAD COMBINATION

NOTES

- F.F. = FRONT FACE
- B.F. = BACK FACE
- FOR SECTION C - C , SEE SHEET 12.
- FOR SECTION D - D , SEE SHEET 13.

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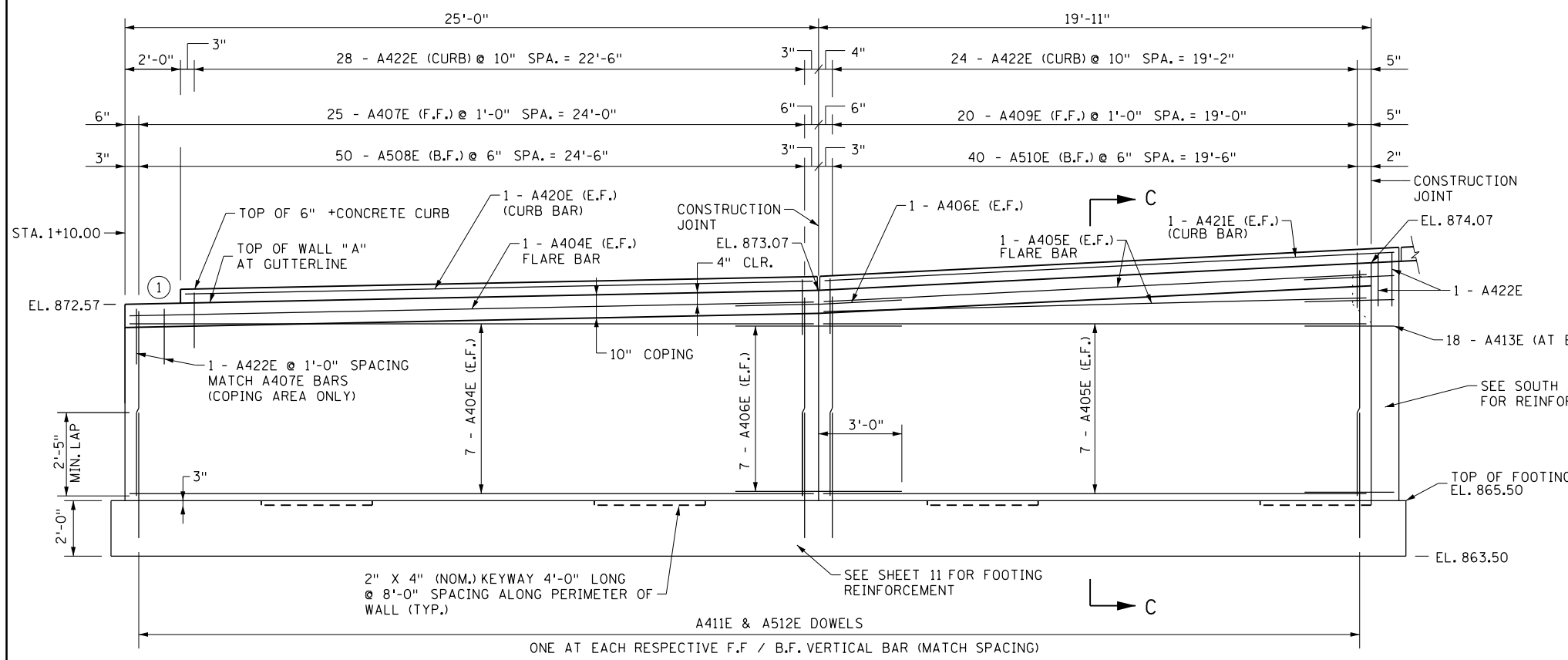
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TITLE:
SOUTH ABUTMENT DETAILS

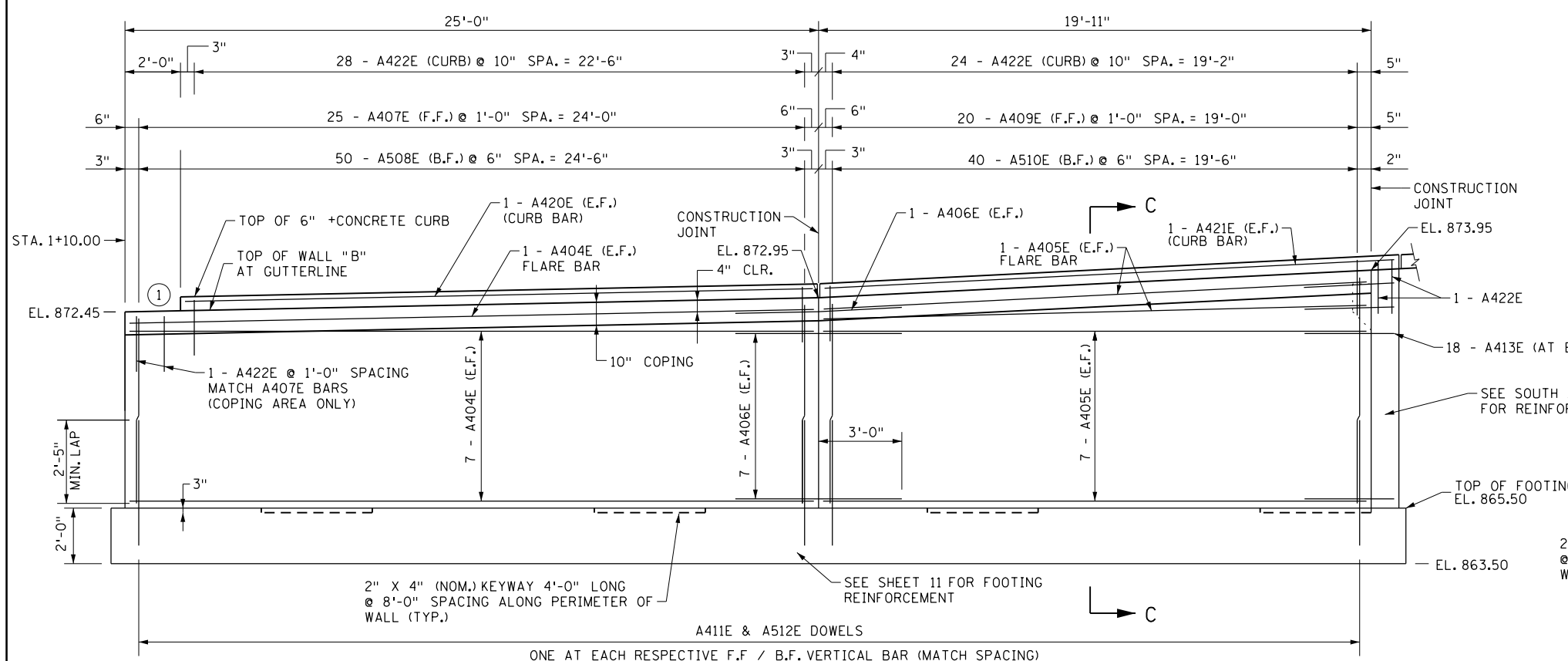
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S.A.P. 199-010-012
 SHEET NO. 11 OF 99 SHEETS

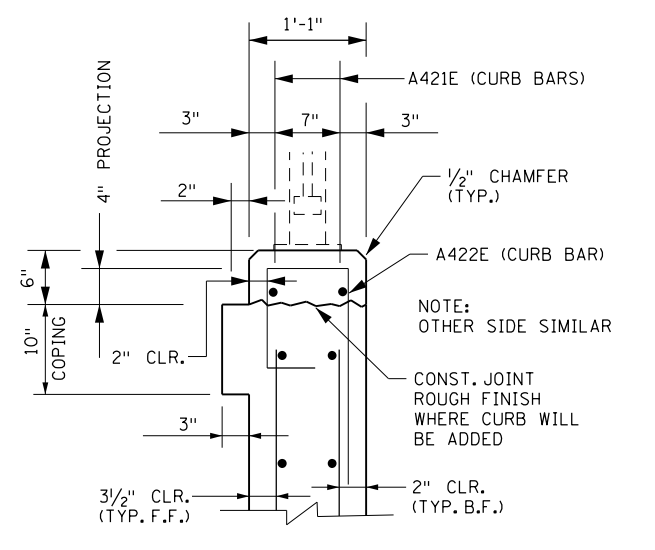
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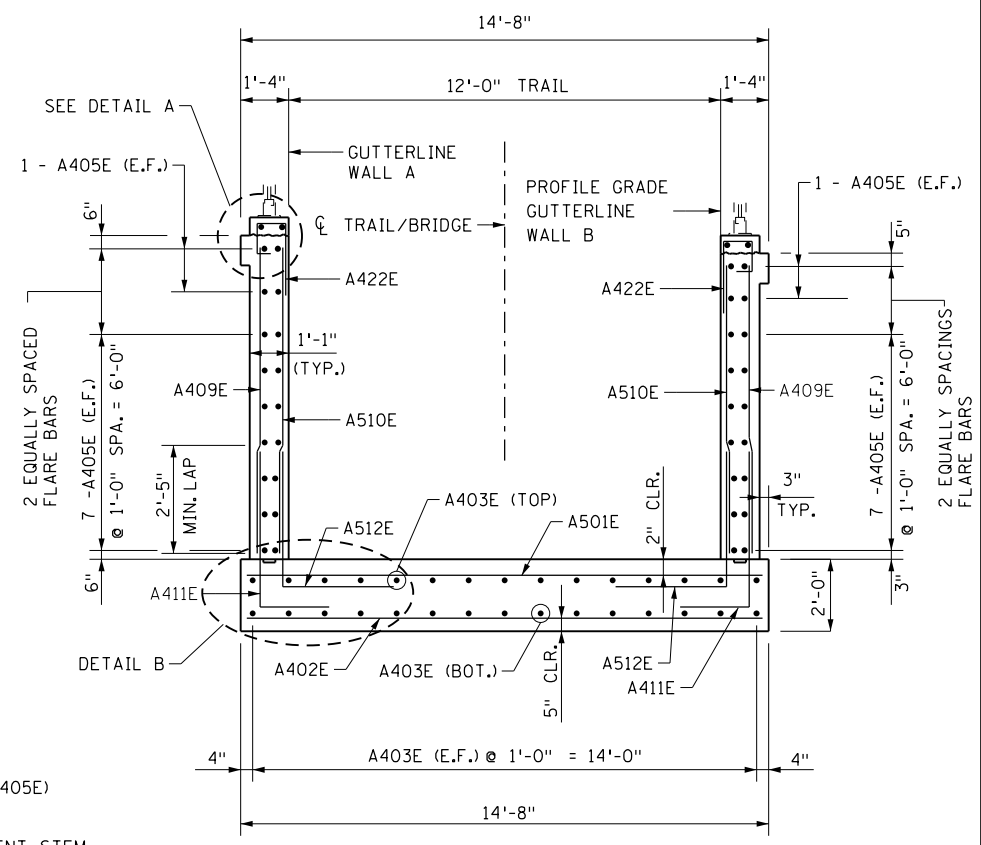
ELEVATION WALL A - REINFORCEMENT
ELEVATIONS SHOWN ARE ALONG GUTTERLINE



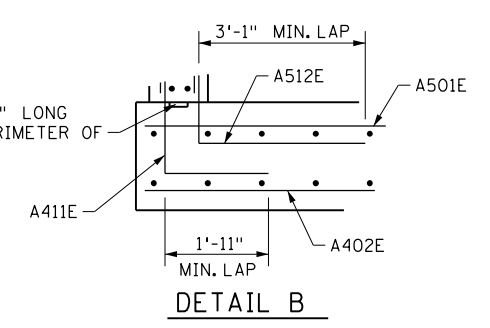
ELEVATION WALL B - REINFORCEMENT
ELEVATIONS SHOWN ARE ALONG GUTTERLINE



DETAIL A
CONCRETE CURB



SECTION C - C
(LOOKING UPSTATION)



DETAIL B

NOTES
F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE

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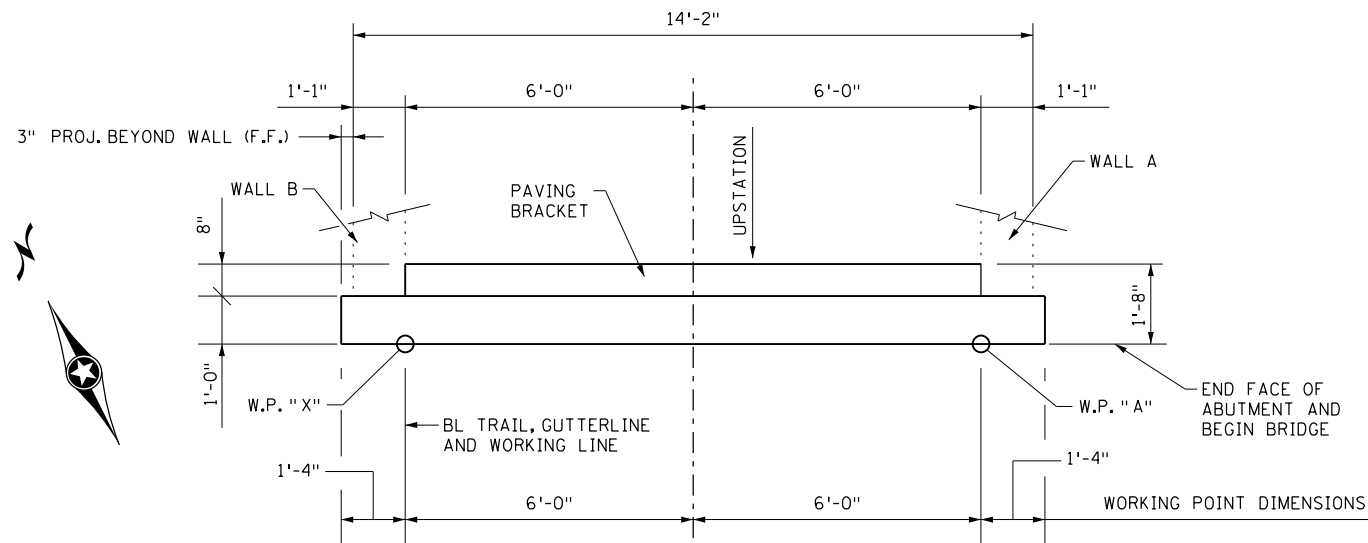
SOUTH ABUTMENT DETAILS

DESIGNED	CHKD.	APP'D.	DATE
RRE	ATP	JMR	

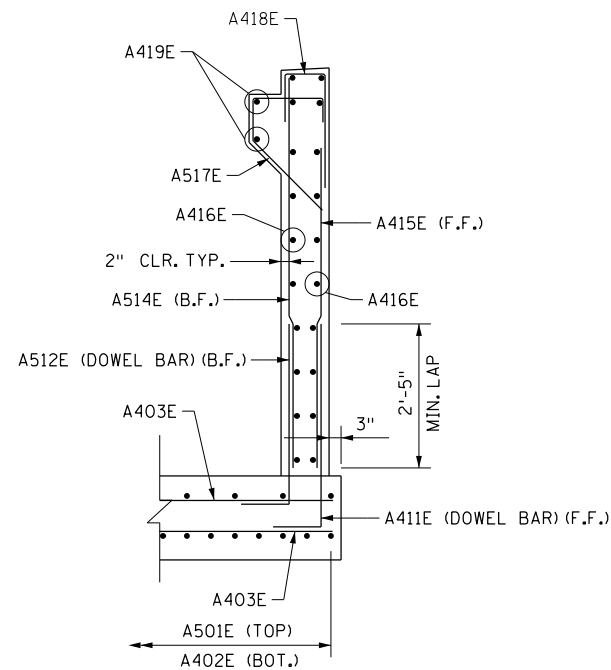
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SHEET NO. 12 OF 99 SHEETS

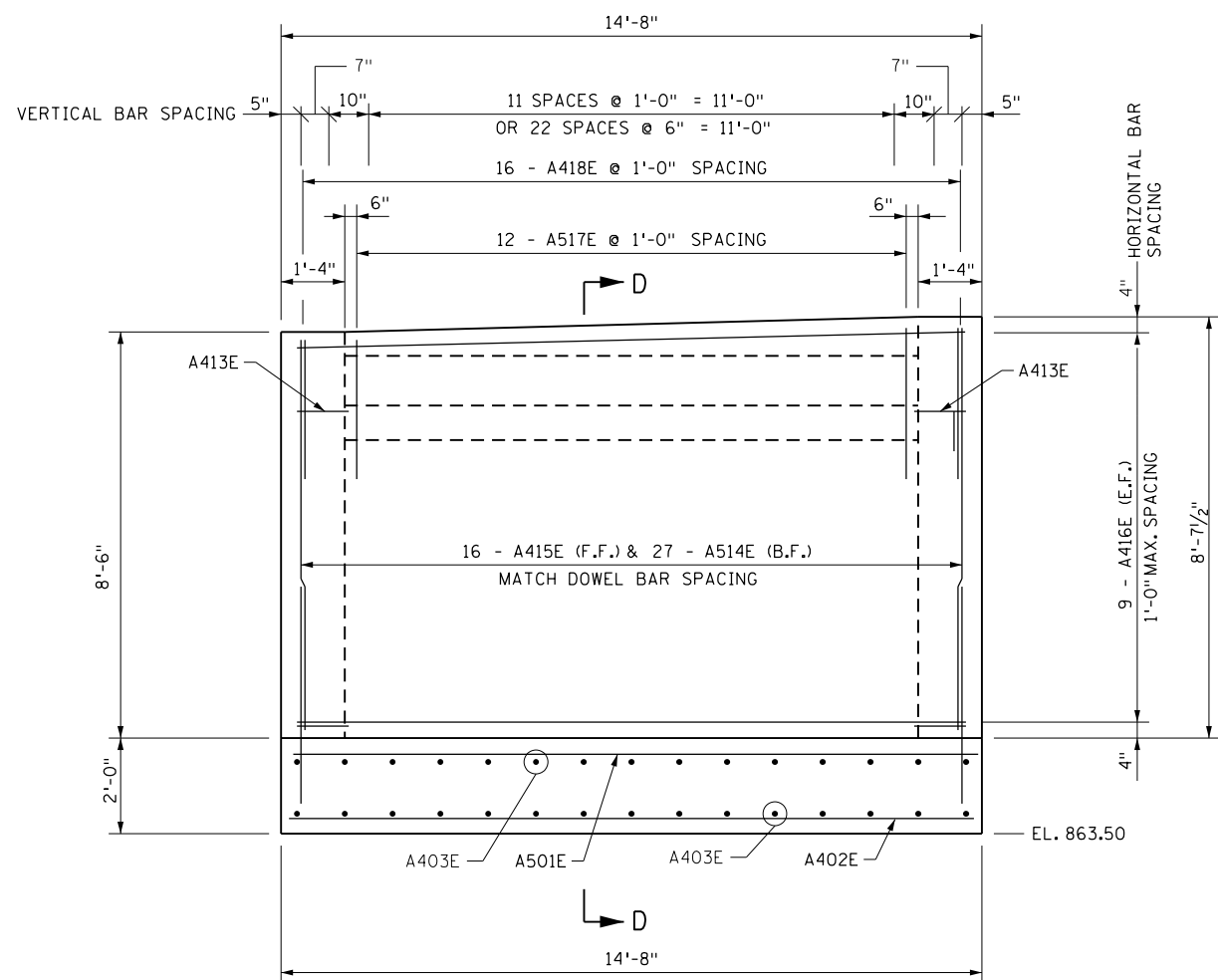
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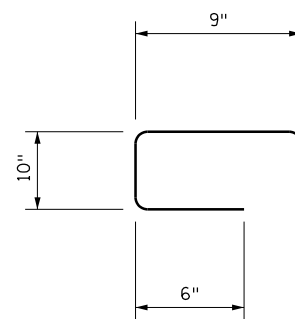
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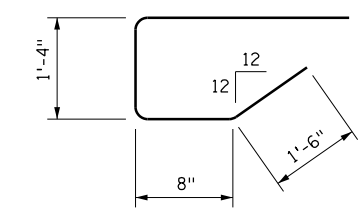
SECTION D - D
SOUTH ABUTMENT STEM REINFORCEMENT



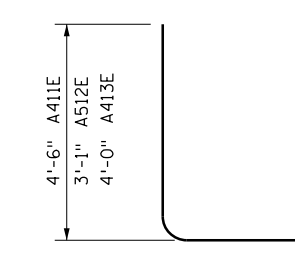
END ELEVATION
LOOKING DOWNSTATION



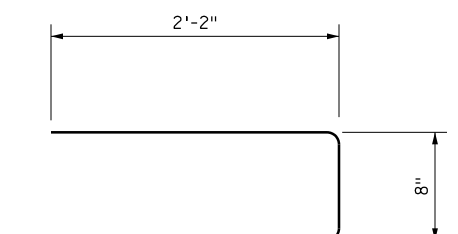
A422E



A517E



A411E , A512E , A413E



A418E

SUMMARY OF QUANTITIES
FOR SOUTH ABUTMENT

STRUCTURAL CONCRETE (1G52)	50.7	CU YD
STRUCTURAL CONCRETE (3B52)	33.0	CU YD
STRUCTURAL CONCRETE (3S52)	1.8	CU YD
REINFORCEMENT BARS (EPOXY COATED)	8735	POUND
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	607	SQ FT
ANTI-GRAFFITI COATING	808	SQ FT
AGGREGATE BASE (CV) CLASS 5 MODIFIED	14	CU YD
SELECT GRANULAR BORROW MOD 10% (CV)	131	CU YD
TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)	14	TON
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	808	SQ FT

SOUTH ABUTMENT
BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	TYPE	LOCATION
A501E	93	14'-2"	—	APRON, TOP, TRANSV.
A402E	47	14'-2"	—	APRON, BOT., TRANSV.
A403E	30	46'-2"	—	APRON, TOP & BOT., LONG.
A404E	32	24'-8"	—	WALL, HORIZ.
A405E	36	19'-7"	—	WALL, HORIZ.
A406E	32	6'-0"	—	WALL, HORIZ.
A407E	2 SETS OF 25	6'-9" TO 7'-3"	—	WALL, VERT., F.F.
A508E	2 SETS OF 50	6'-9" TO 7'-3"	—	WALL, VERT., B.F.
A409E	1 SET OF 40	7'-3" TO 8'-3"	—	WALL, VERT., F.F.
A510E	1 SET OF 80	7'-3" TO 8'-3"	—	WALL, VERT., B.F.
A411E	106	6'-5"	L	WALL, VERT., F.F., DOWEL
A512E	207	6'-2"	L	WALL, VERT., B.F., DOWEL
A413E	36	8'-0"	L	WALL CORNER, HORIZ.
A514E	27	8'-3"	—	WALL STEM, VERT.
A415E	16	8'-3"	—	WALL STEM, VERT.
A416E	18	14'-2"	—	WALL STEM, HORIZ.
A517E	12	4'-0"	U	PAVING BRACKET
A418E	16	4'-12"	U	WALL STEM, TOP
A419E	2	11'-8"	—	PAVING BRACKET, LONG.
A420E	4	22'-9"	—	CURB, HORIZ.
A421E	4	20'-7"	—	CURB, HORIZ.
A422E	112	4'-7"	U	CURB, VERT.

NOTES

F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE
E.S. = EACH SIDE

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



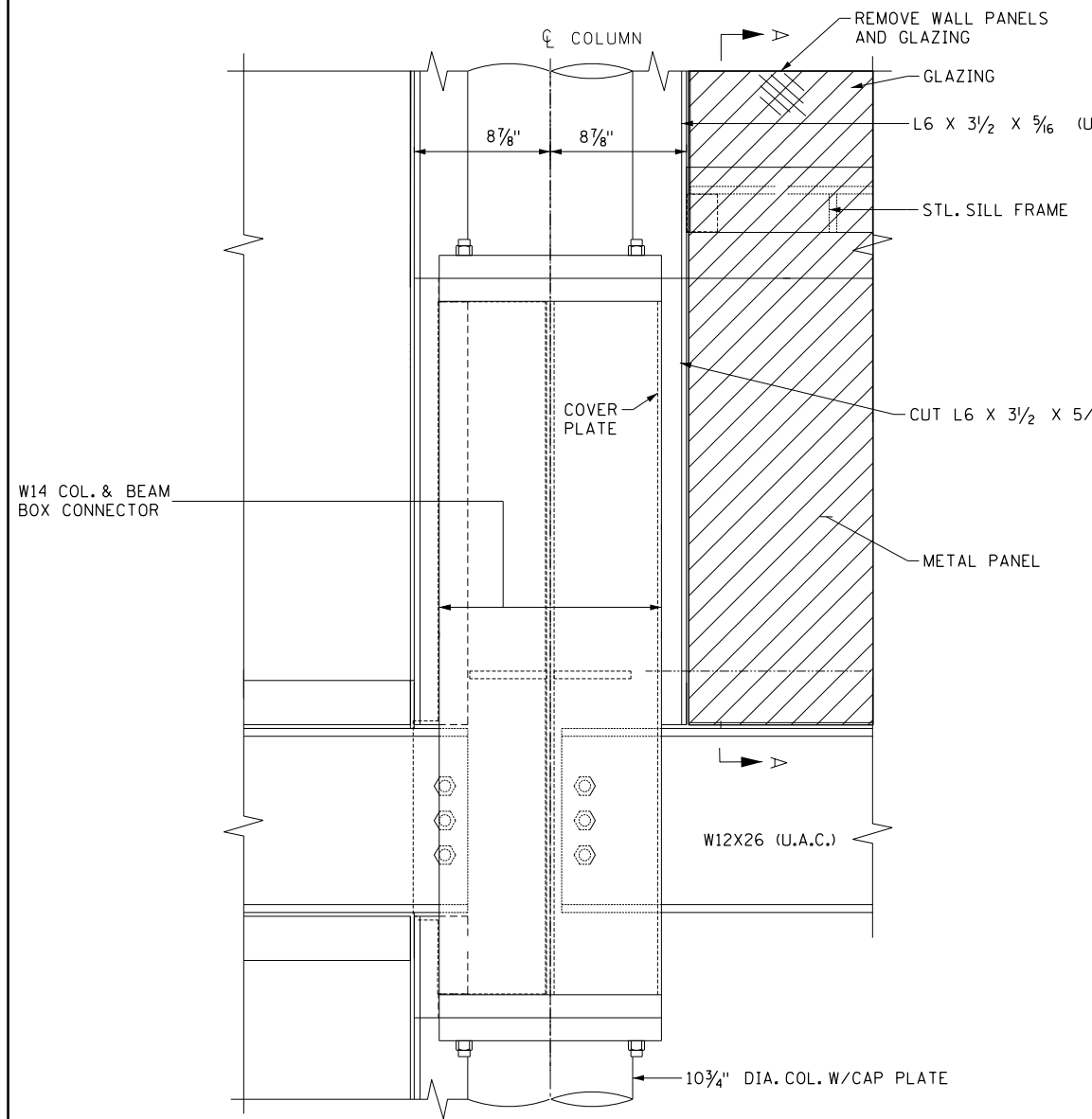
7533 SUNWOOD DRIVE N.W.
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

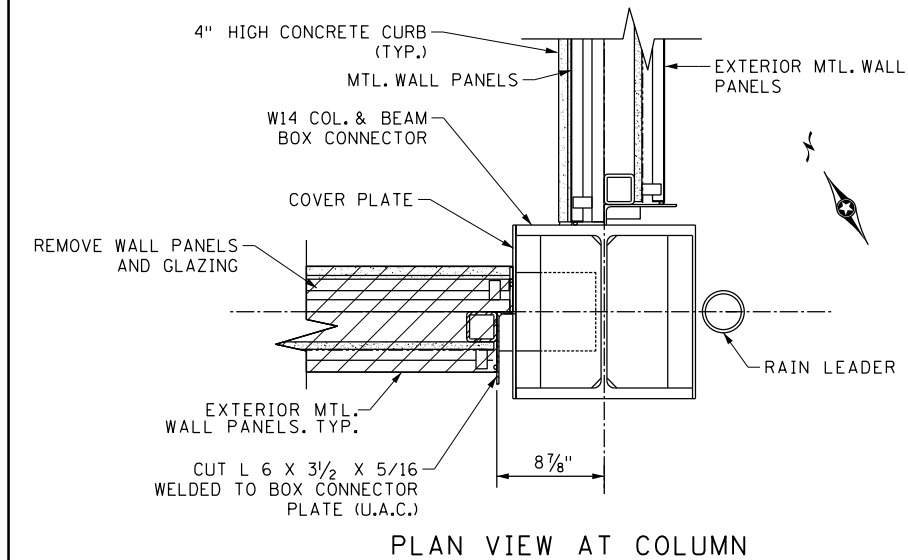
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CHECKED	ATP	CHECK	RRE	
S.A.P. 199-010-012				
SHEET NO. 13 OF 99 SHEETS				

BRIDGE NO.
02053

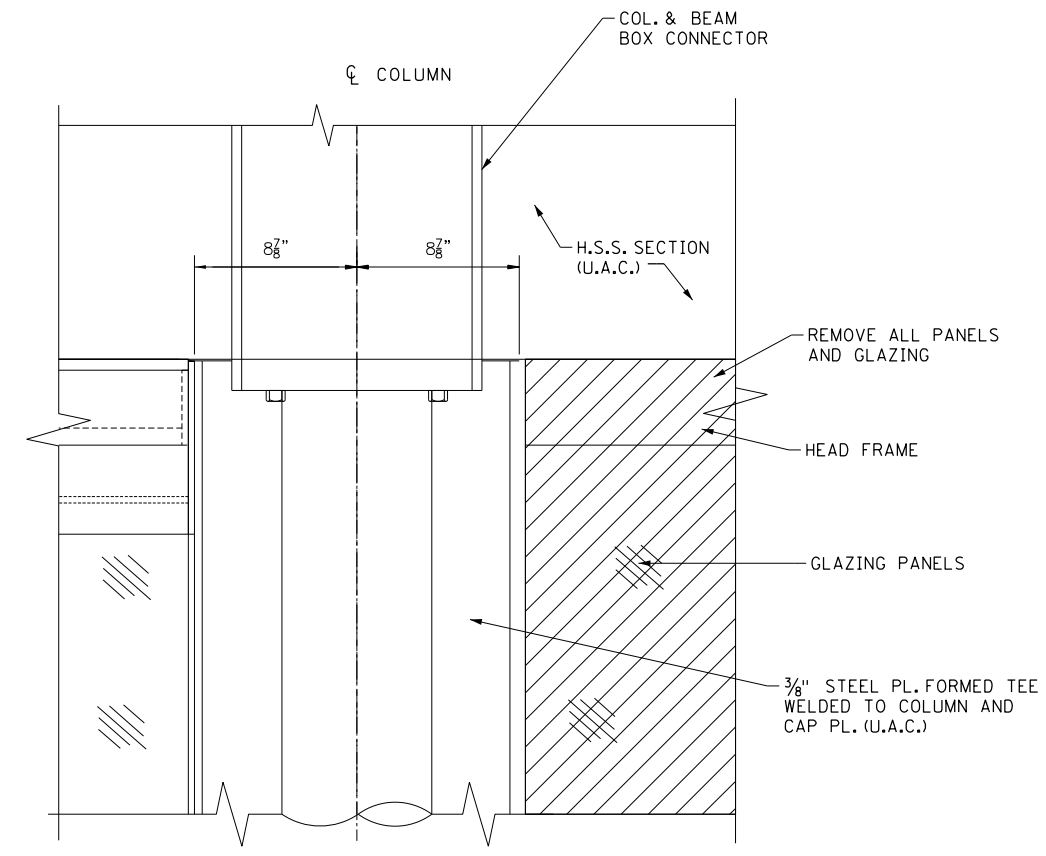
SOUTH ABUTMENT DETAILS



PART ELEVATION AT BEAM BOX CONNECTOR
(VIEWING FROM SOUTH)



PLAN VIEW AT COLUMN



PART ELEVATION AT UPPER COLUMN
(VIEWING FROM SOUTH)

LEGEND

= REMOVALS

NOTES:

HATCHED AREAS INDICATE CONCRETE TO BE REMOVED. NO CUTTING WILL BE PERMITTED UNTIL THE CUTTING LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC. 2433.

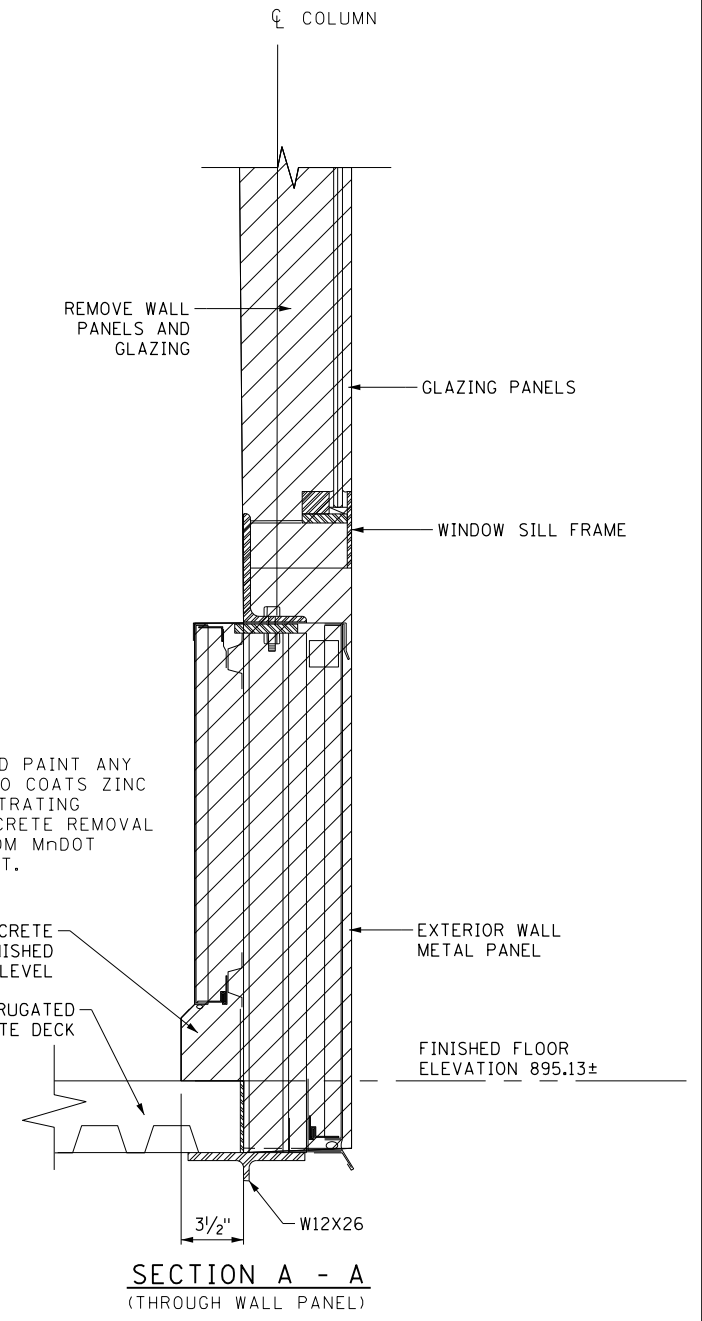
THE LUMP SUM BID ITEM "REMOVE AND RECONSTRUCT PORTIONS OF EXISTING STRUCTURE" SHALL BE FULL COMPENSATION FOR REMOVING EXISTING WALL PANELS & ASSOCIATED ATTACHMENTS, GLAZING, AND CONCRETE CURB AS REQUIRED TO FACILITATE INSTALLATION OF ENTRY DOORS AND FRAMING; LUMP SUM BID ITEM ALSO INCLUDES ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING ENTRY DOORS.

ENTRY DOORS SHALL MATCH SIMILAR UNITS IN THE RAMSEY STATION STRUCTURE. PROPOSED DETAILS AND MANUFACTURER INFORMATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

DETAILS OF EXISTING STRUCTURE SHOWN ON THIS SHEET SHALL BE CONSIDERED FOR GENERAL INFORMATION ONLY AND HAVE BEEN RECREATED FROM RECORD DRAWINGS FOR 'THE NORTHSTAR CORRIDOR COMMUTER RAIL - RAMSEY STATION' (ANOKA COUNTY REGIONAL RAIL AUTHORITY). RECORD DRAWINGS WILL BE MADE AVAILABLE TO THE CONTRACTOR. CONTRACTOR SHALL REVIEW RECORD DRAWINGS AND FIELD VERIFY ANY PERTINENT DETAILS & DIMENSIONS.

① FINISH SMOOTH. TRIM AND PAINT ANY EXPOSED STEEL WITH TWO COATS ZINC RICH PAINT. APPLY PENETRATING EPOXY SEALANT TO CONCRETE REMOVAL AREAS. USE SEALANT FROM MNDOT APPROVED PRODUCTS LIST.

① REMOVE CONCRETE CURB TO FINISHED FLOOR LEVEL



SECTION A - A
(THROUGH WALL PANEL)

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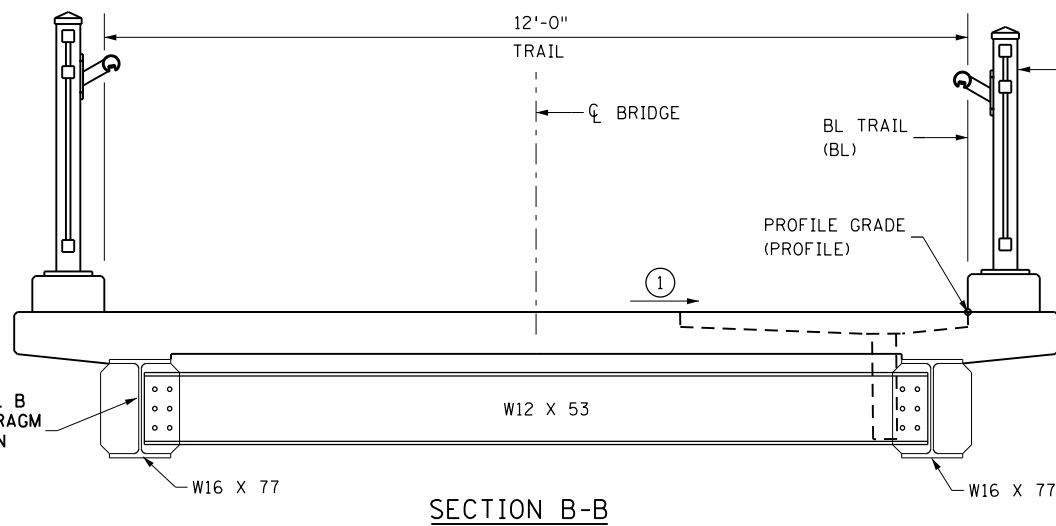
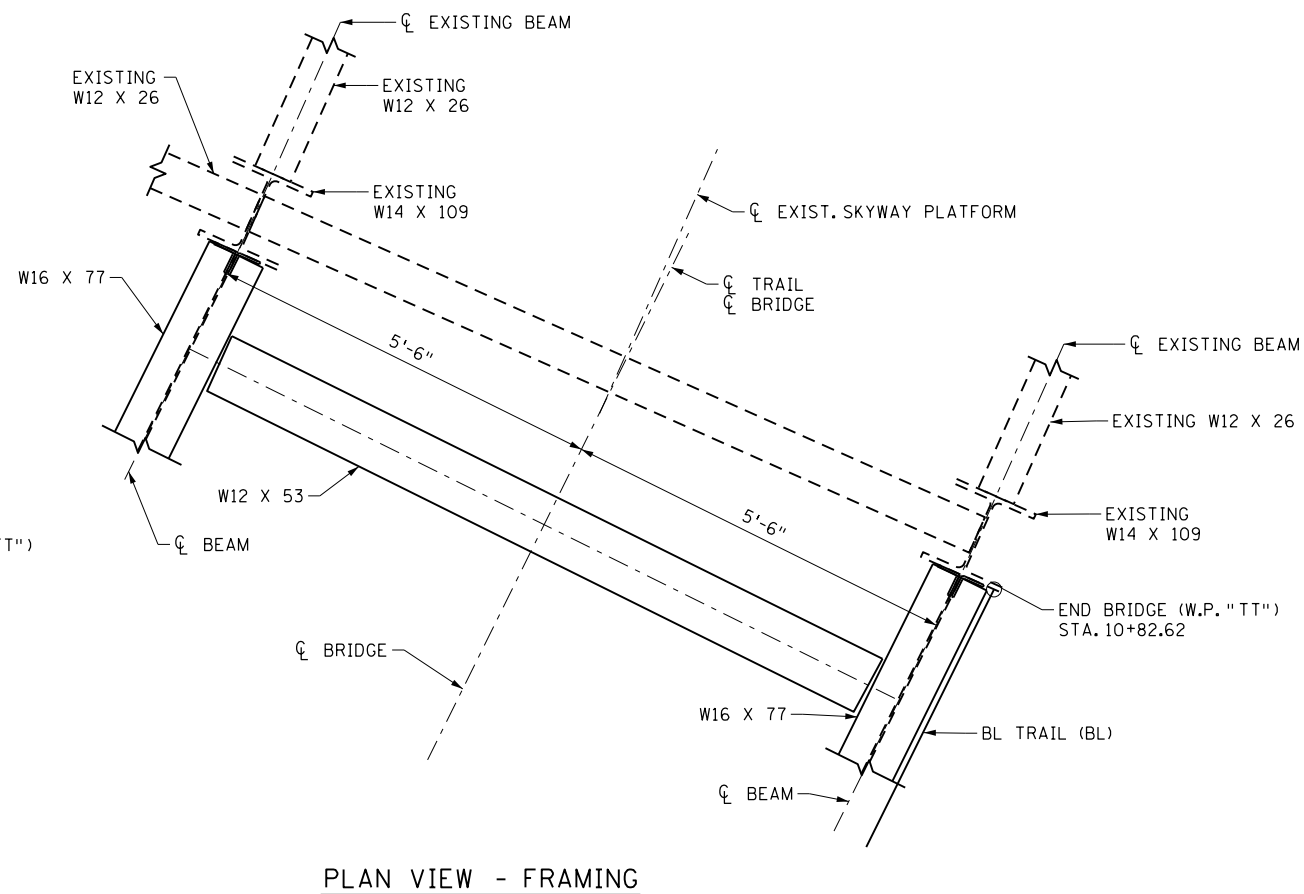
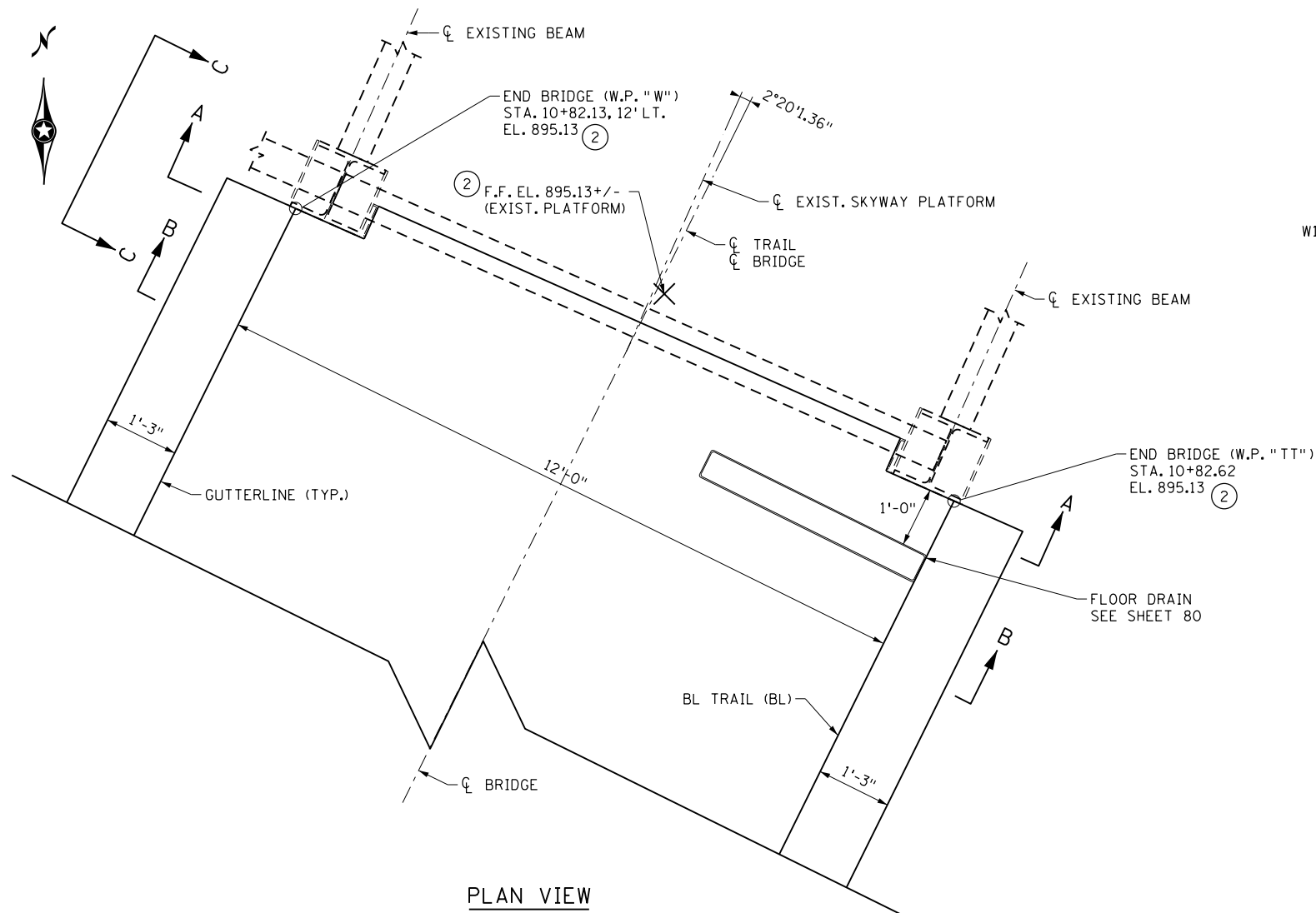
NORTH ABUTMENT DETAILS & REMOVALS

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CHECKED	ATP	CHECK	RRE	

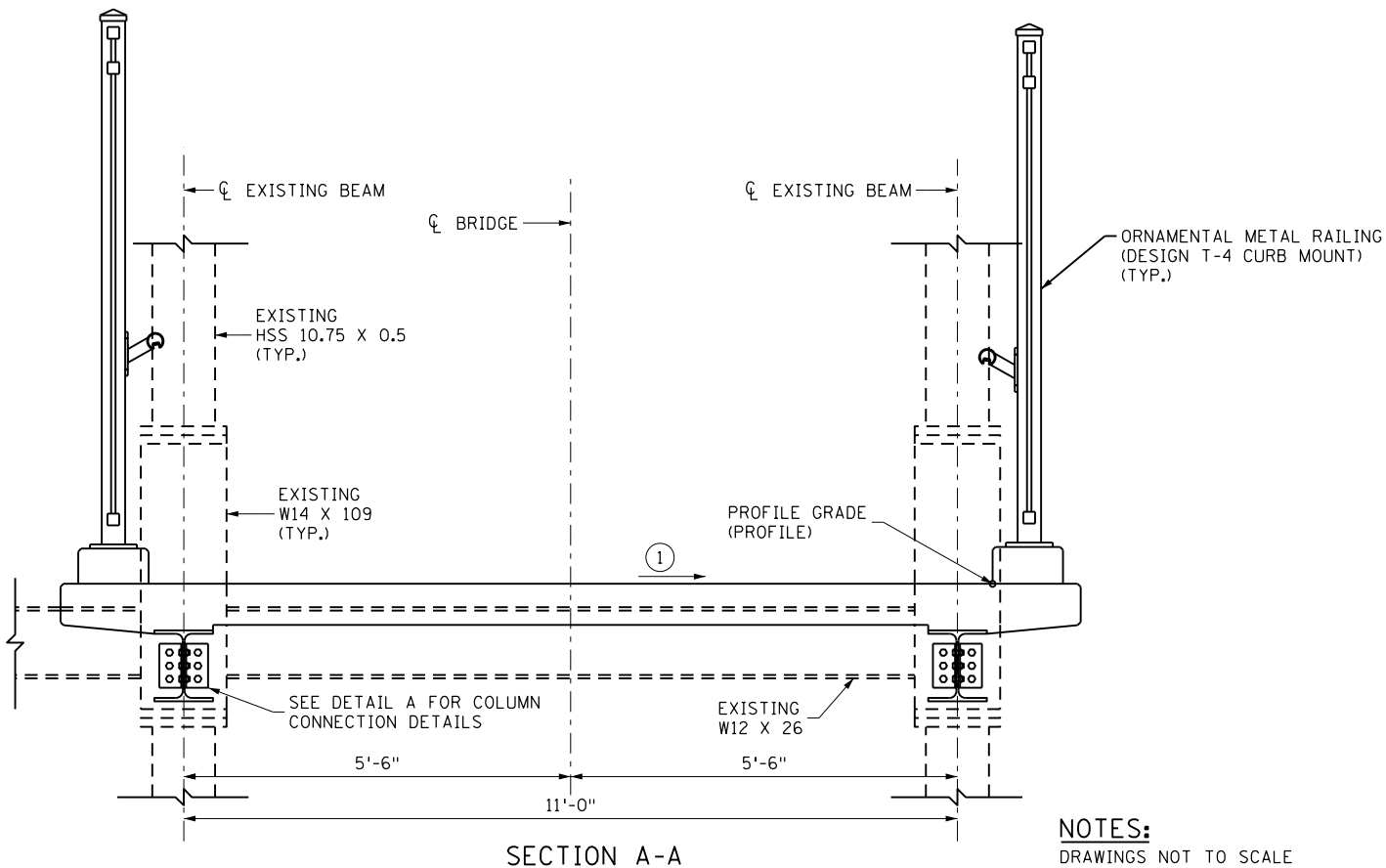
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SHEET NO. 14 OF 99 SHEETS

BRIDGE NO.
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- ① TRANSITION DECK CROSS-SLOPE OVER ENTIRE SPAN LENGTH TO MATCH SLOPE OF SKYWAY AT TIE-IN. (FIELD VERIFY)
- ② ESTIMATED FROM SURVEY. ADJUST HAUNCH AS NEEDED TO TIE-IN TO SKYWAY PLATFORM.



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TITLE:
NORTH ABUTMENT DETAILS

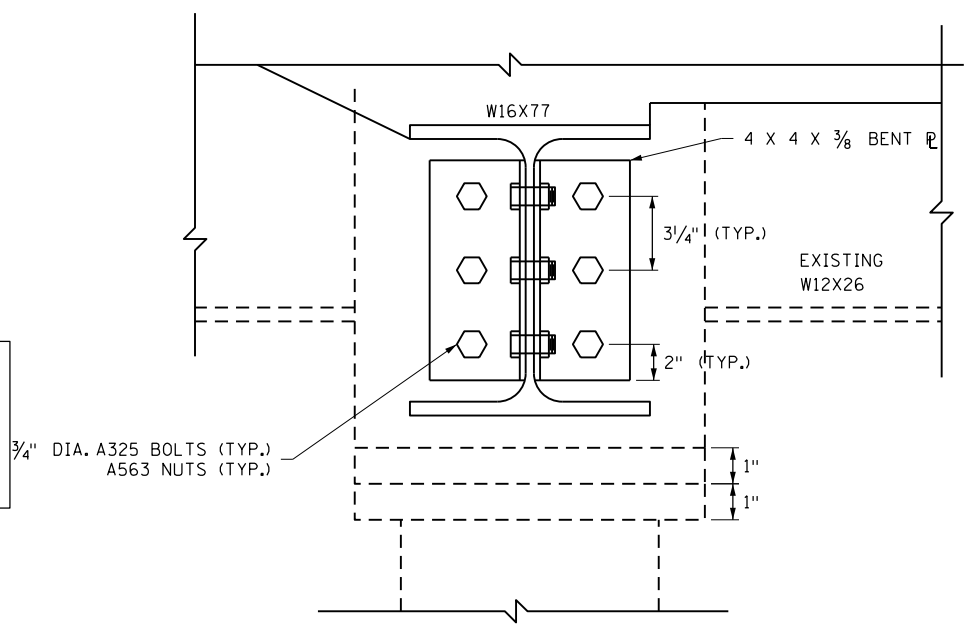
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S.A.P. 199-010-012

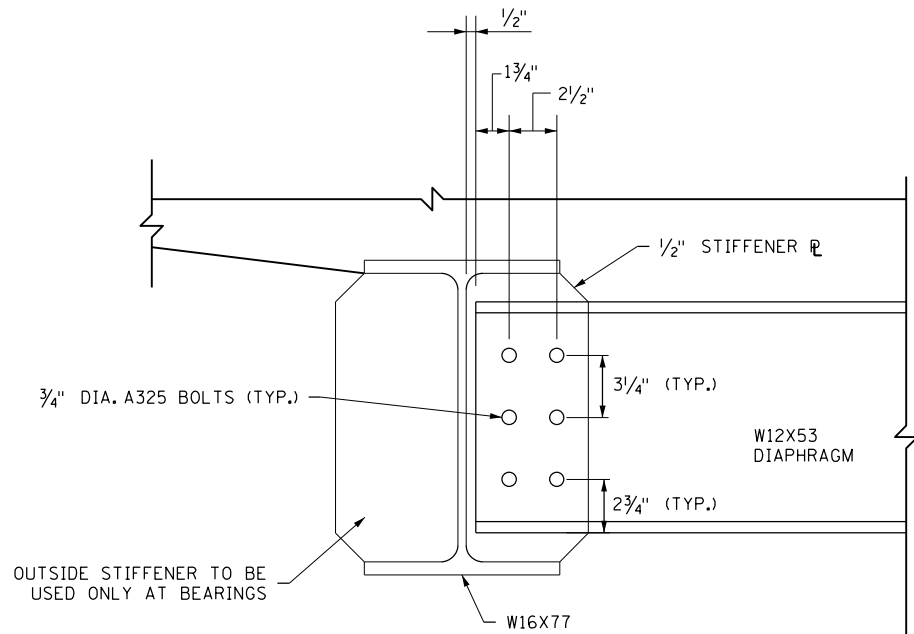
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BRIDGE NO.
 02053

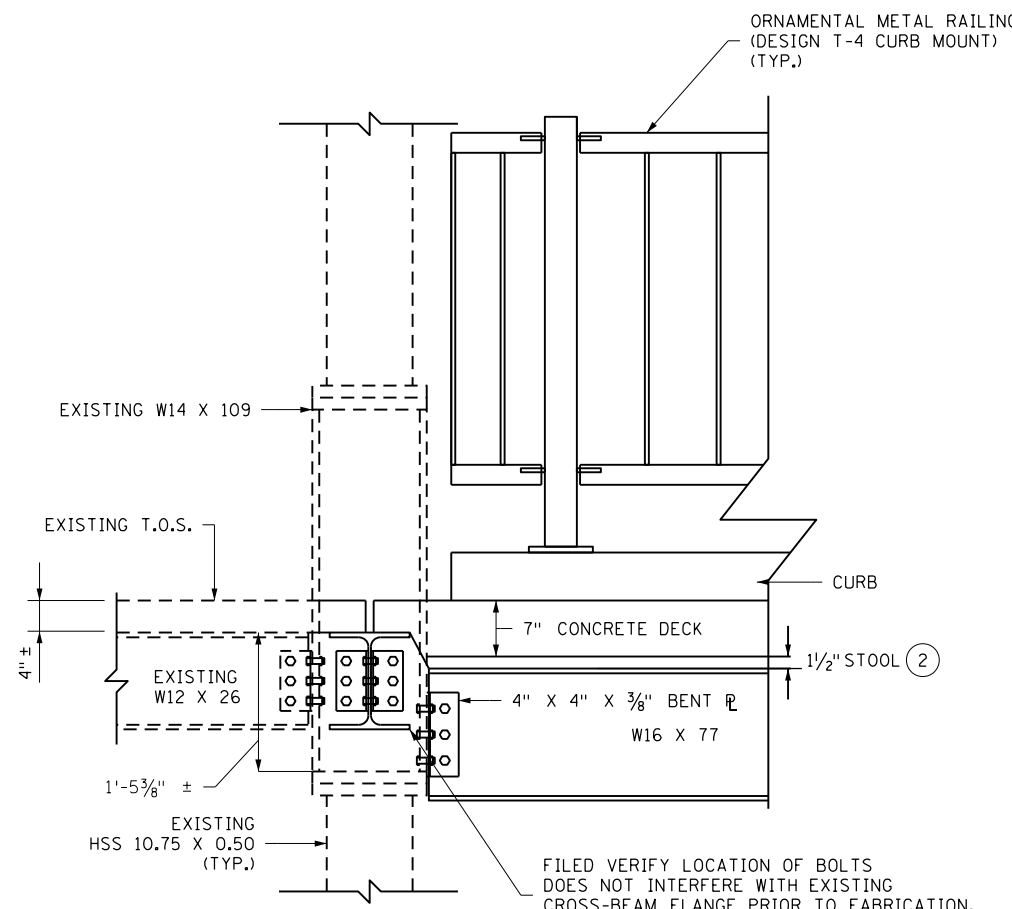
NOTE:
THE CONTRACTOR SHALL MAKE FIELD MEASUREMENTS AS NECESSARY PRIOR TO FABRICATION OF THE STEEL BEAMS AND CONNECTIONS TO ASSURE PROPER FIT IN THE FINAL WORK.



DETAIL A



DETAIL B ①



VIEW C-C

NOTES:

- ① FASCIA BEAM SHOWN MIRROR CONNECTION FOR INTERIOR BEAM.
- ② STOOL HEIGHT SHOWN IS FOR DESIGN. ADJUST HAUNCH AS NEEDED TO TIE-IN TO SKYWAY PLATFORM.

DRAWING NOT TO SCALE.

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HELIX NOTES

HELIX HAS BEEN DESIGNED ASSUMING THE FINAL CONDITION ONLY. FALSEWORK AND CONSTRUCTION SEQUENCE SHALL BE DESIGNED SUCH THAT NO LOCKED-IN CONSTRUCTION FORCE EFFECTS ARE INTRODUCED INTO THE STRUCTURE DUE TO SEGMENTAL REMOVAL OF FORMS & OTHER CONSTRUCTION LOADS.

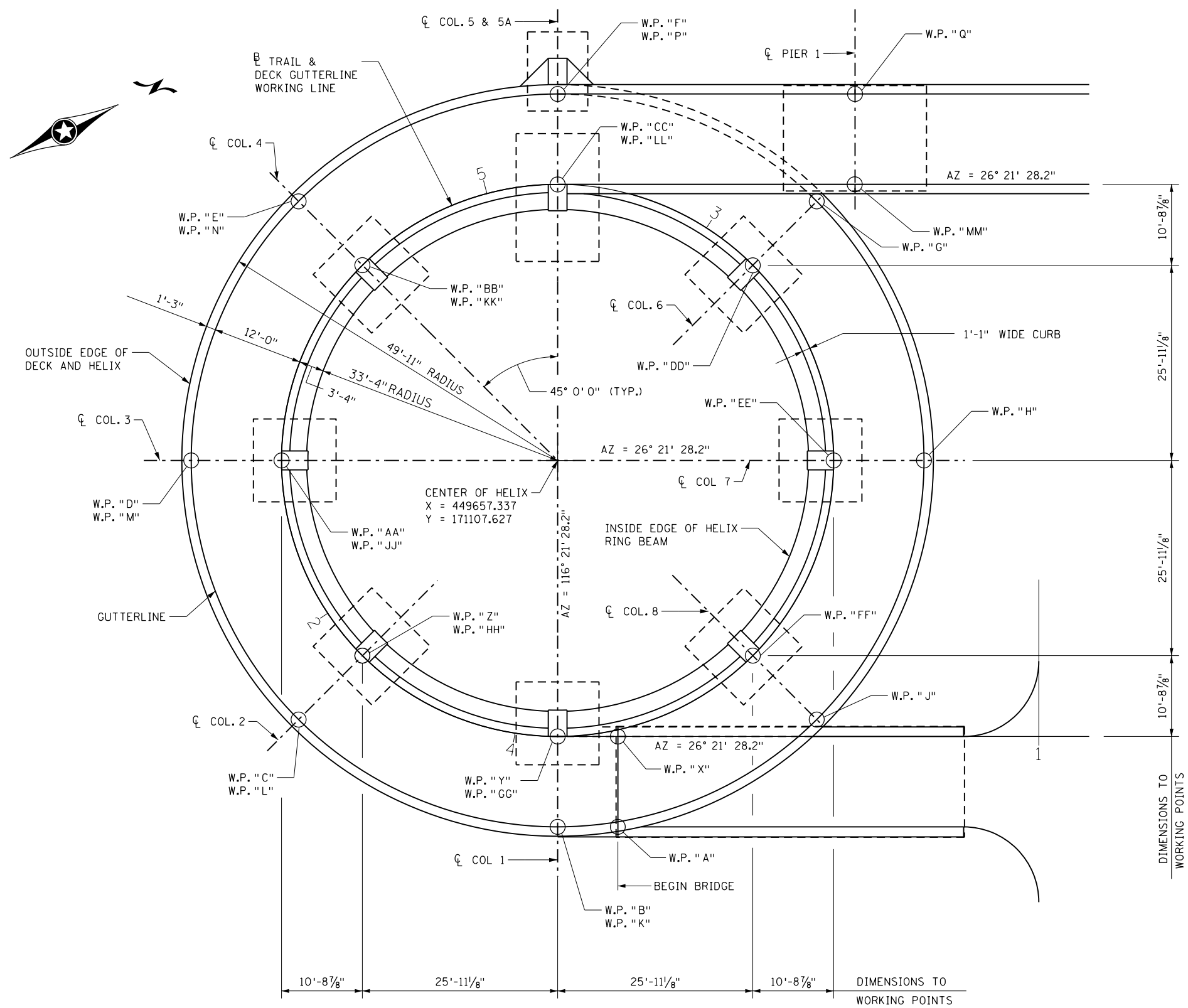
THE DESIGN AND ENGINEERING OF THE FALSEWORK AND ITS CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CONTRACTOR SHALL MAKE PROVISIONS FOR ANTICIPATED DEFLECTIONS IN FALSEWORK TO ALLOW FOR CORRECT FINAL ELEVATIONS ON THE HELIX CONSTRUCTION.

ANTICIPATED CONSTRUCTION JOINT LOCATIONS AND POUR SEQUENCE IS SHOWN ON THE PLANS. ALTERNATE CONSTRUCTION JOINT LOCATIONS DESIGNED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE PLANS IDENTIFY CONSTRUCTION JOINTS BASED UPON AN ASSUMED SEQUENCE AND DIRECTION OF CONSTRUCTION. THE GENERAL CONTRACTOR (BASED UPON HIS PROPOSED SEQUENCE, DIRECTION AND SCHEDULE OF CONSTRUCTION) MAY PROPOSE ALTERNATE CONSTRUCTION JOINT LOCATIONS AND SEQUENCE OF CONSTRUCTION.

SUBMIT SHOP DRAWINGS SHOWING LAYOUT OF FALSEWORK, CONSTRUCTION JOINT LOCATIONS, AND POUR SEQUENCE. A LICENSED STRUCTURAL ENGINEER, LICENSED IN THE STATE OF MINNESOTA, SHALL CERTIFY THE SHOP DRAWINGS AND CALCULATIONS BEFORE SUBMITTAL OF SHOP DRAWINGS.

ALL SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE PROJECT ENGINEER IN A TIMELY MANNER TO ALLOW FOR ADEQUATE REVIEW OF THE SUBMITTED SHOP DRAWINGS AND CALCULATIONS.



HELIX GENERAL PLAN

NOTES

FOR WORKING POINT DIMENSIONS AND COORDINATES SEE WORKING POINT LAYOUT, SHEET 7.

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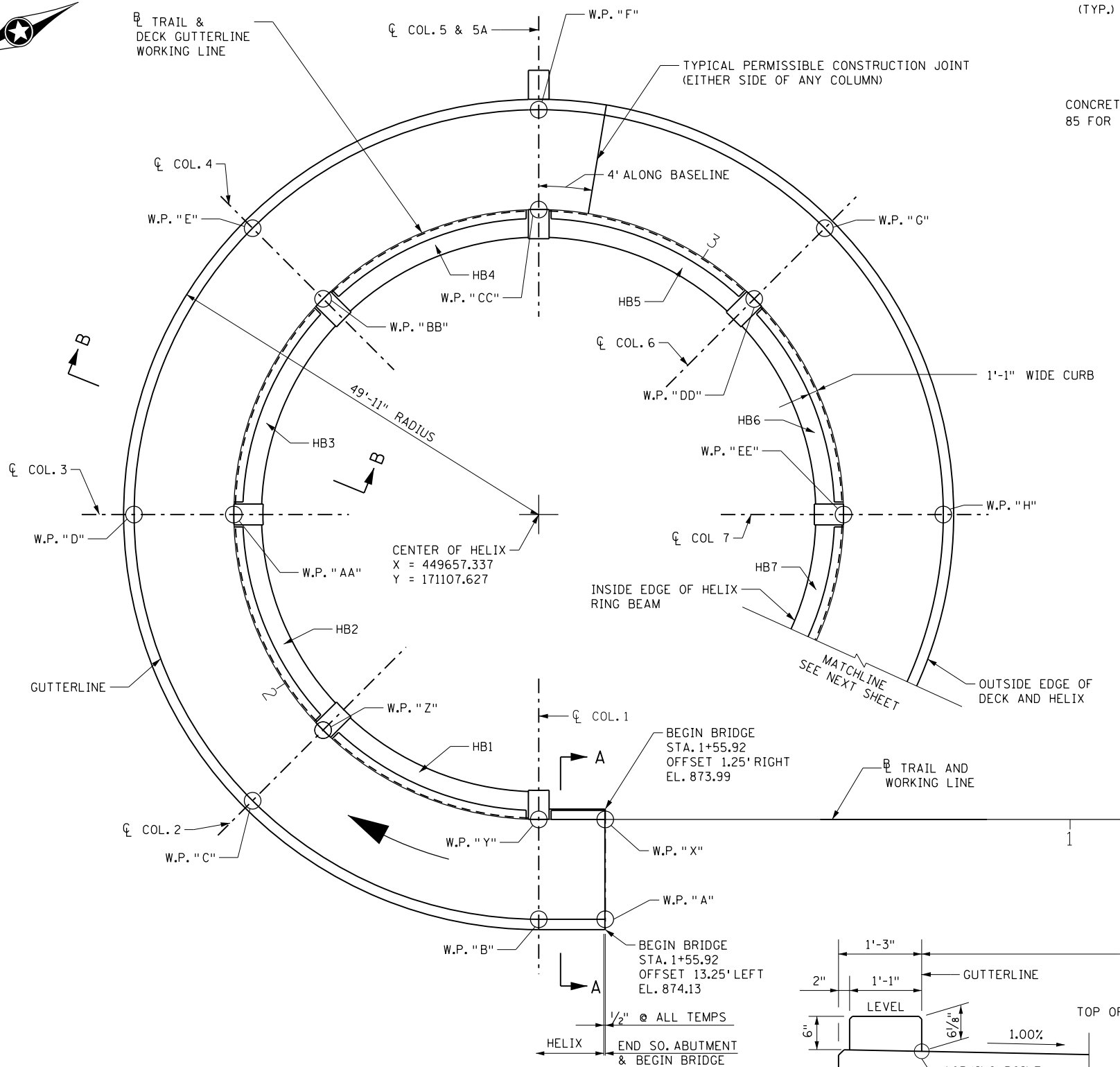
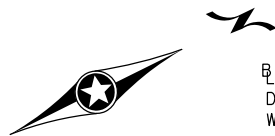
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 RYAN R. EVANS
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TITLE:
HELIX GEOMETRY

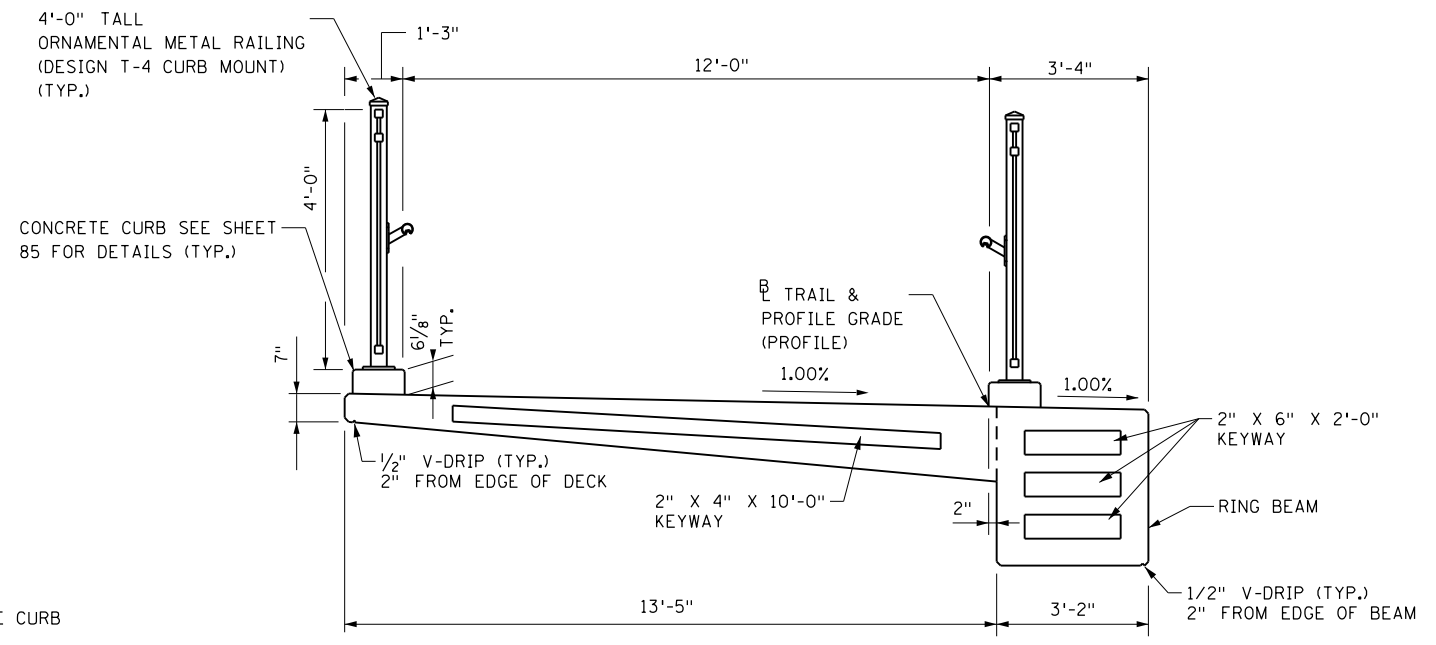
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 SHEET NO. 17 OF 99 SHEETS

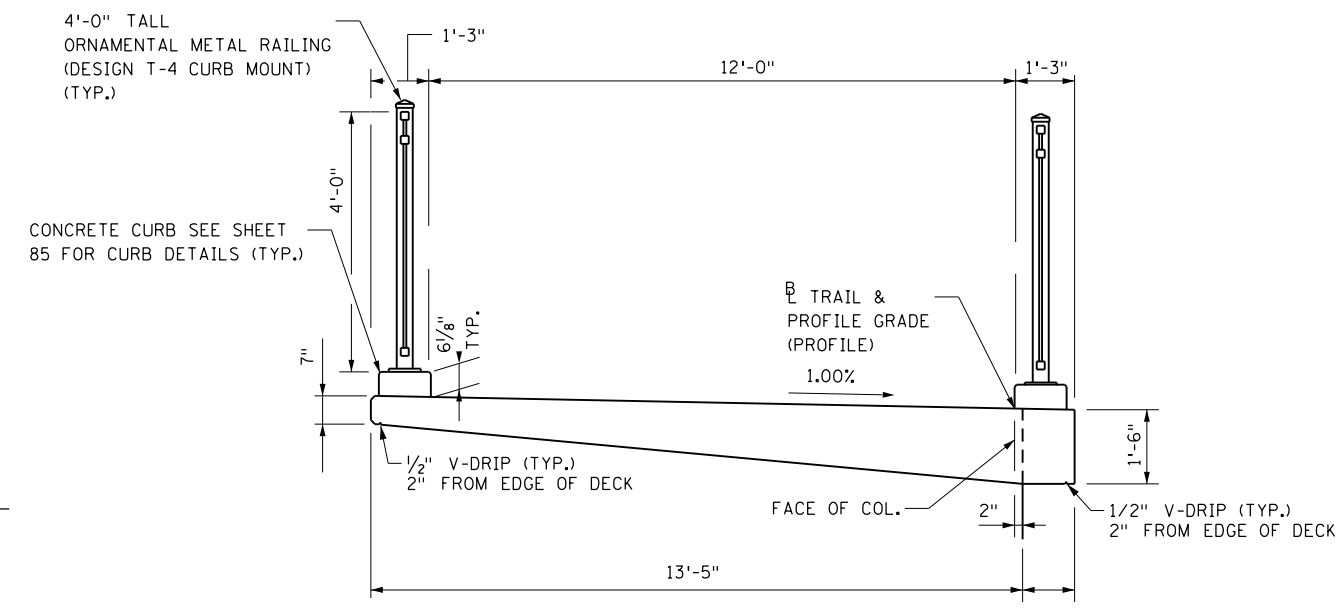
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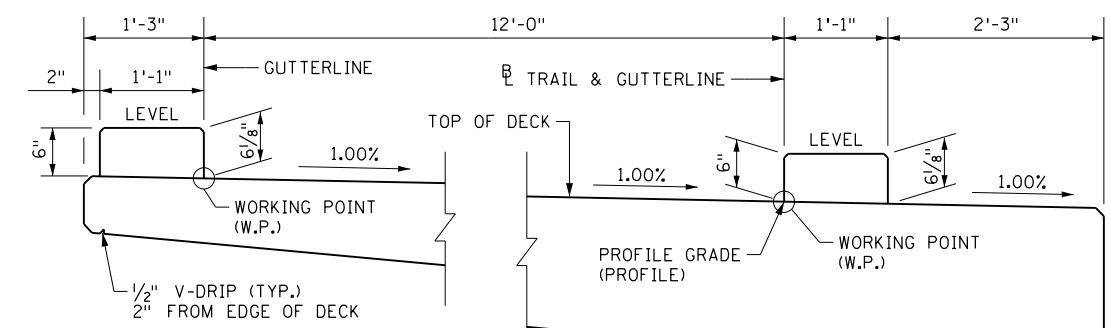
PARTIAL LOWER HELIX PLAN



TYPICAL CONSTRUCTION JOINT SECTION



SECTION A - A



CURB DETAIL

- NOTES**
- FOR WORKING POINT DIMENSIONS AND COORDINATES SEE WORKING POINT LAYOUT, SHEET 7.
 - FOR UPPER HALF OF HELIX, SEE SHEET 19.
 - HB = HELIX BEAM
 - DIRECTIONAL ARROW INDICATES UP DIRECTION OF HELIX.
 - FOR SECTION B - B, SEE SHEET 19.

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TITLE:
HELIX DETAILS

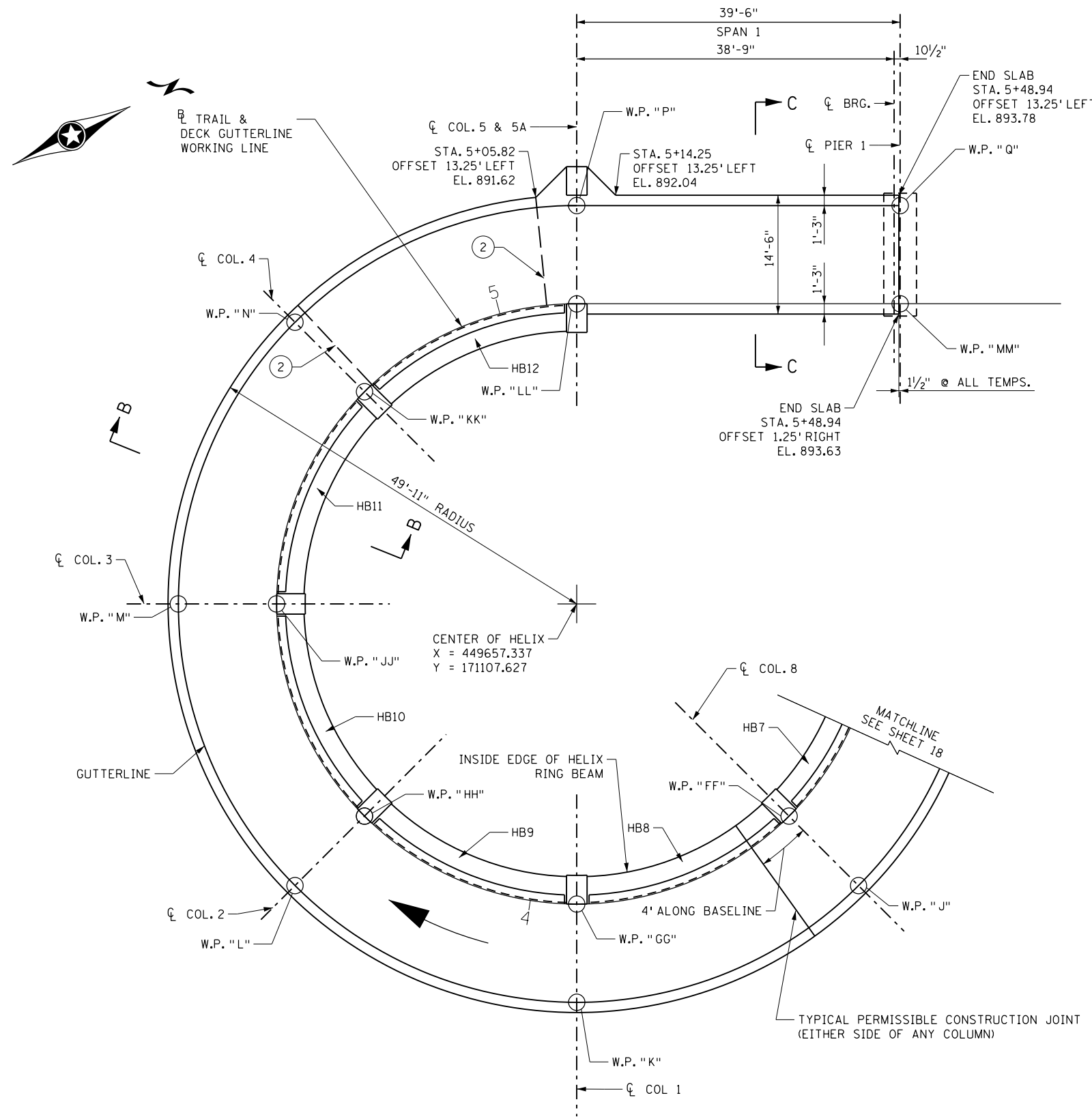
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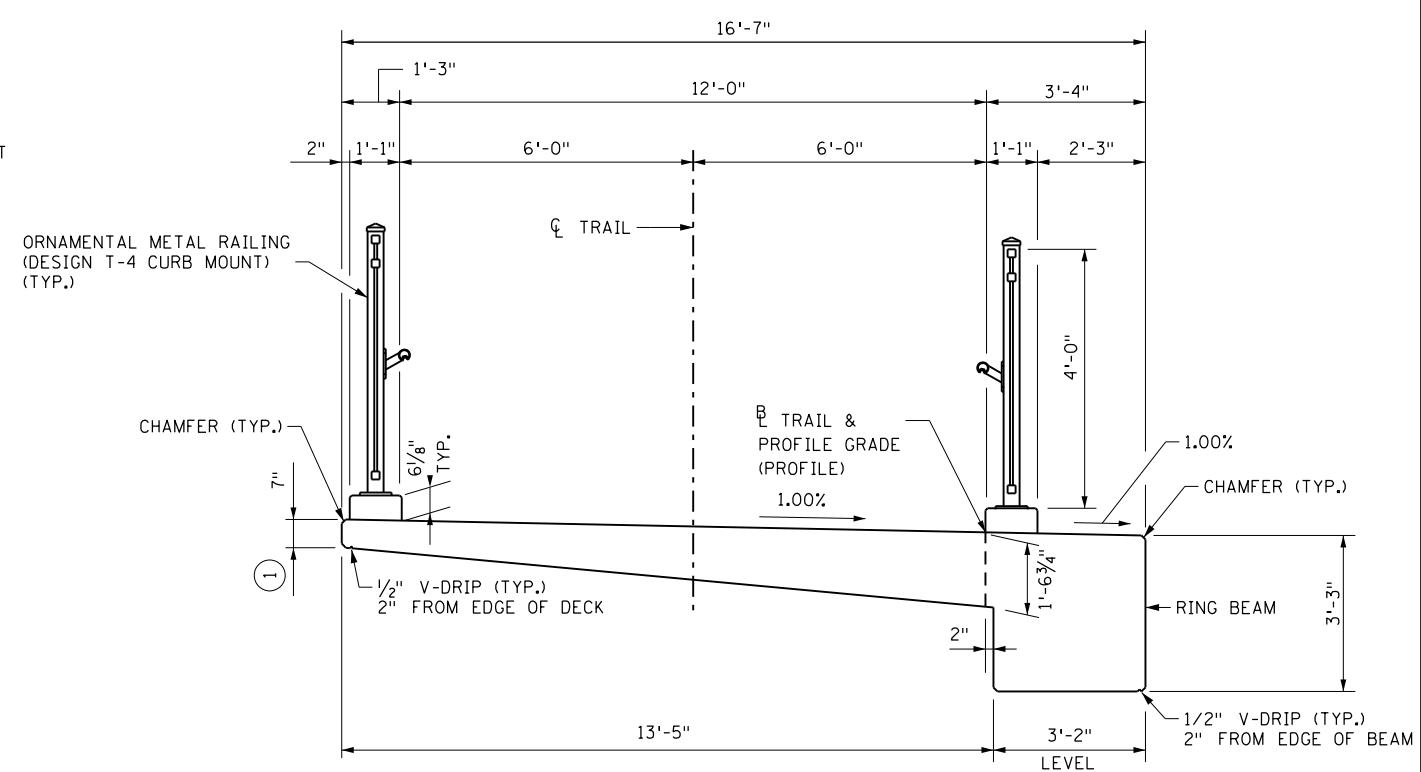
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SHEET NO. 18 OF 99 SHEETS

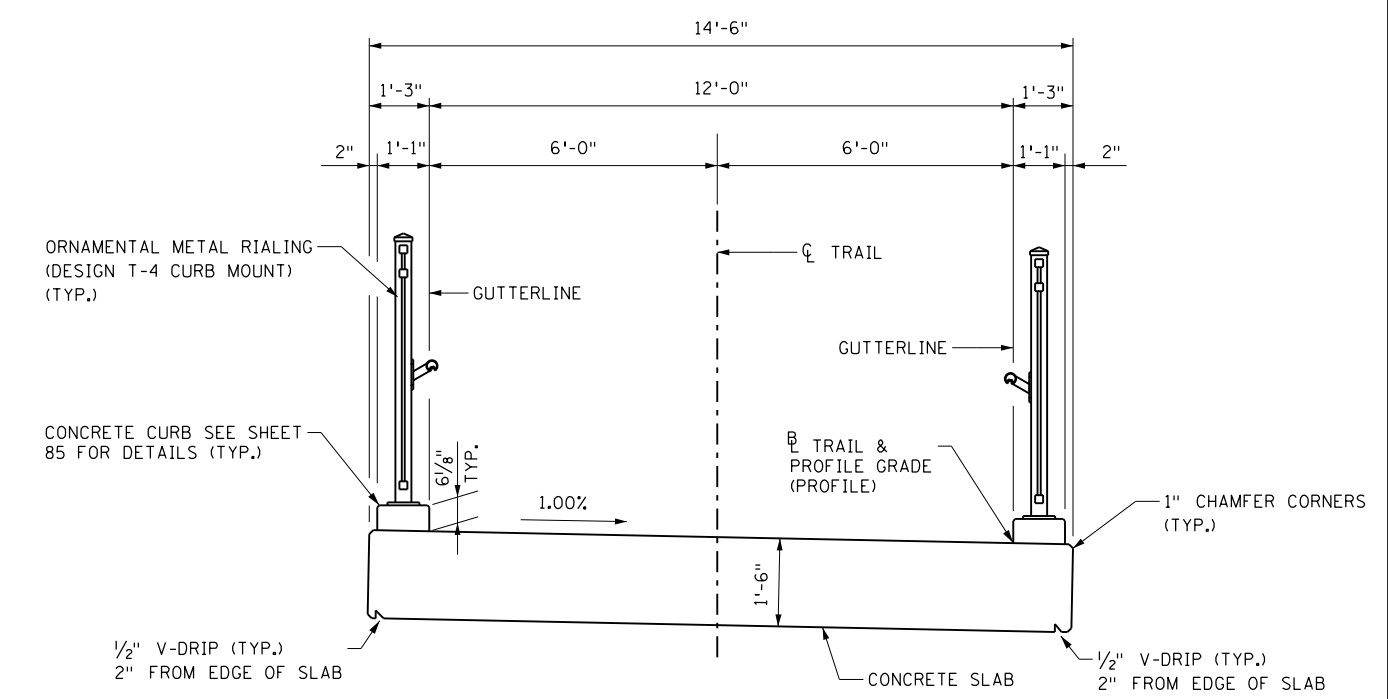
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PARTIAL UPPER HELIX PLAN



SECTION B - B



SECTION C - C

- NOTES**
- ① VARIES FROM 7" AT STA. 4+81.95 TO 1'-6" AT STA. 5+05.82 FOR WORKING POINT DIMENSIONS AND COORDINATES SEE WORKING POINT LAYOUT, SHEET 7.
 - ② TRANSITION LIMITS. TAPER HELIX SLAB THICKNESS TO UNIFORM 1'-6" SLAB WITHIN LIMITS SHOWN. MAINTAIN NOTED COVER FOR BARS. FOR LOWER HALF OF HELIX, SEE SHEET 18.
- HB = HELIX BEAM
 DIRECTIONAL ARROW INDICATES UP DIRECTION OF HELIX.

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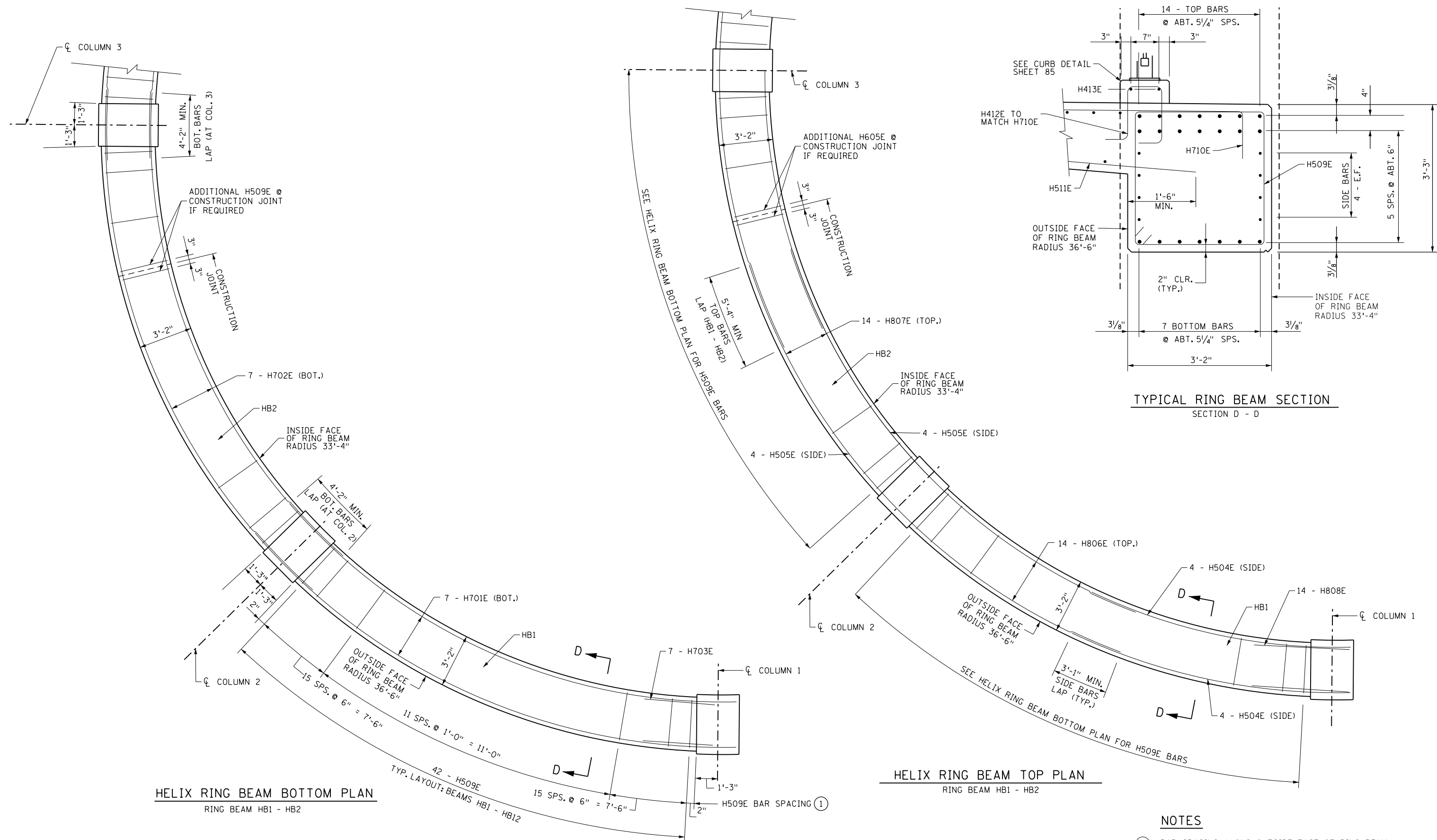
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HELIX RING BEAM BOTTOM PLAN
RING BEAM HB1 - HB2

HELIX RING BEAM TOP PLAN
RING BEAM HB1 - HB2

TYPICAL RING BEAM SECTION
SECTION D - D

NOTES

- ① BAR SPACING ALONG OUTSIDE FACE OF RING BEAM.
- SIDE BAR LAPS AND TOP BARS LAP LOCATED AT MID SPAN.
- BOTTOM BAR LAPS LOCATED AT COLUMN.

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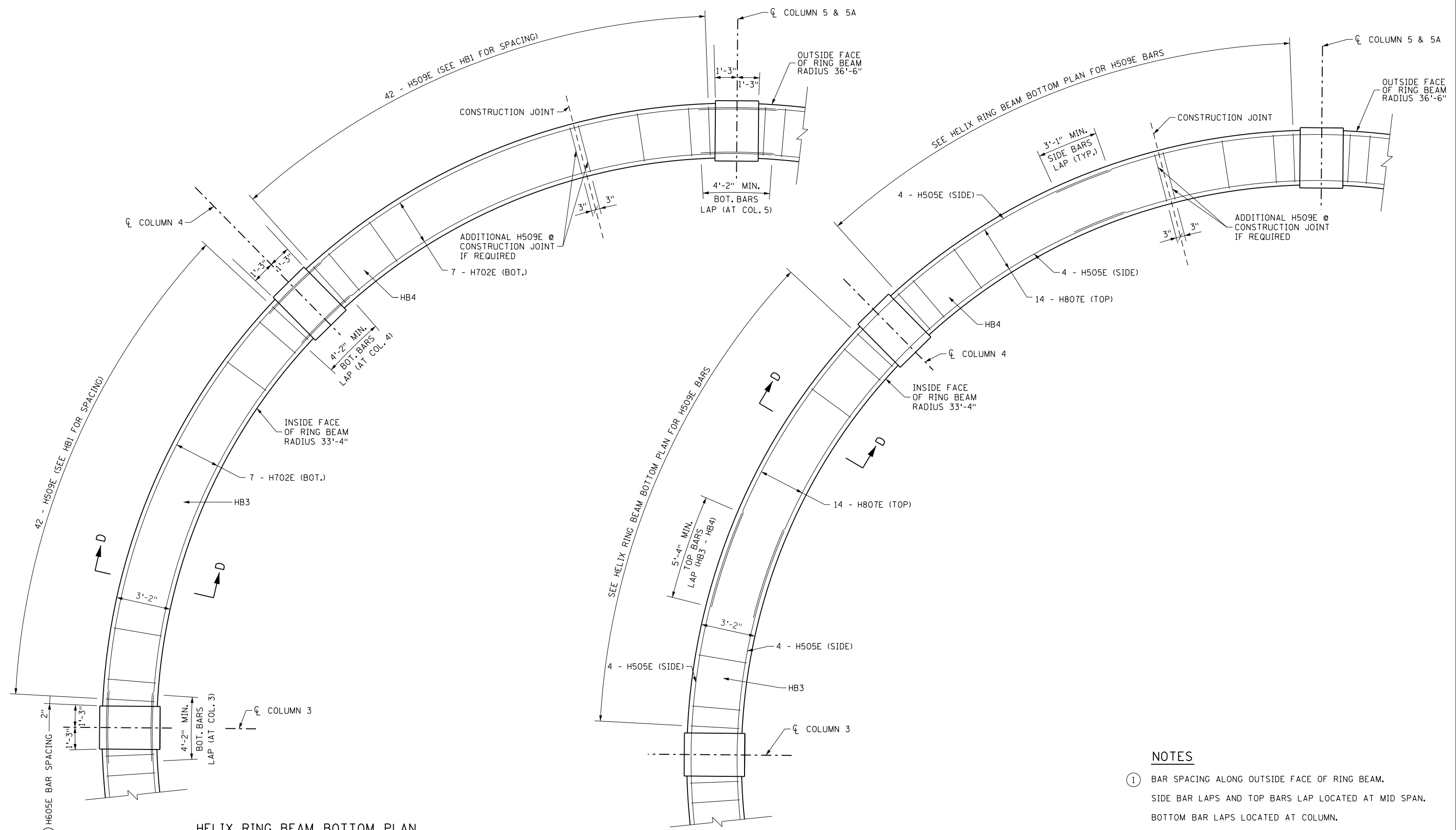
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HELIX RING BEAM BOTTOM PLAN
RING BEAM HB3 - HB4

HELIX RING BEAM TOP PLAN
RING BEAM HB3 - HB4

NOTES

- ① BAR SPACING ALONG OUTSIDE FACE OF RING BEAM.
- SIDE BAR LAPS AND TOP BARS LAP LOCATED AT MID SPAN.
- BOTTOM BAR LAPS LOCATED AT COLUMN.
- FOR SECTION D - D, SEE SHEET 20.

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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HELIX DETAILS

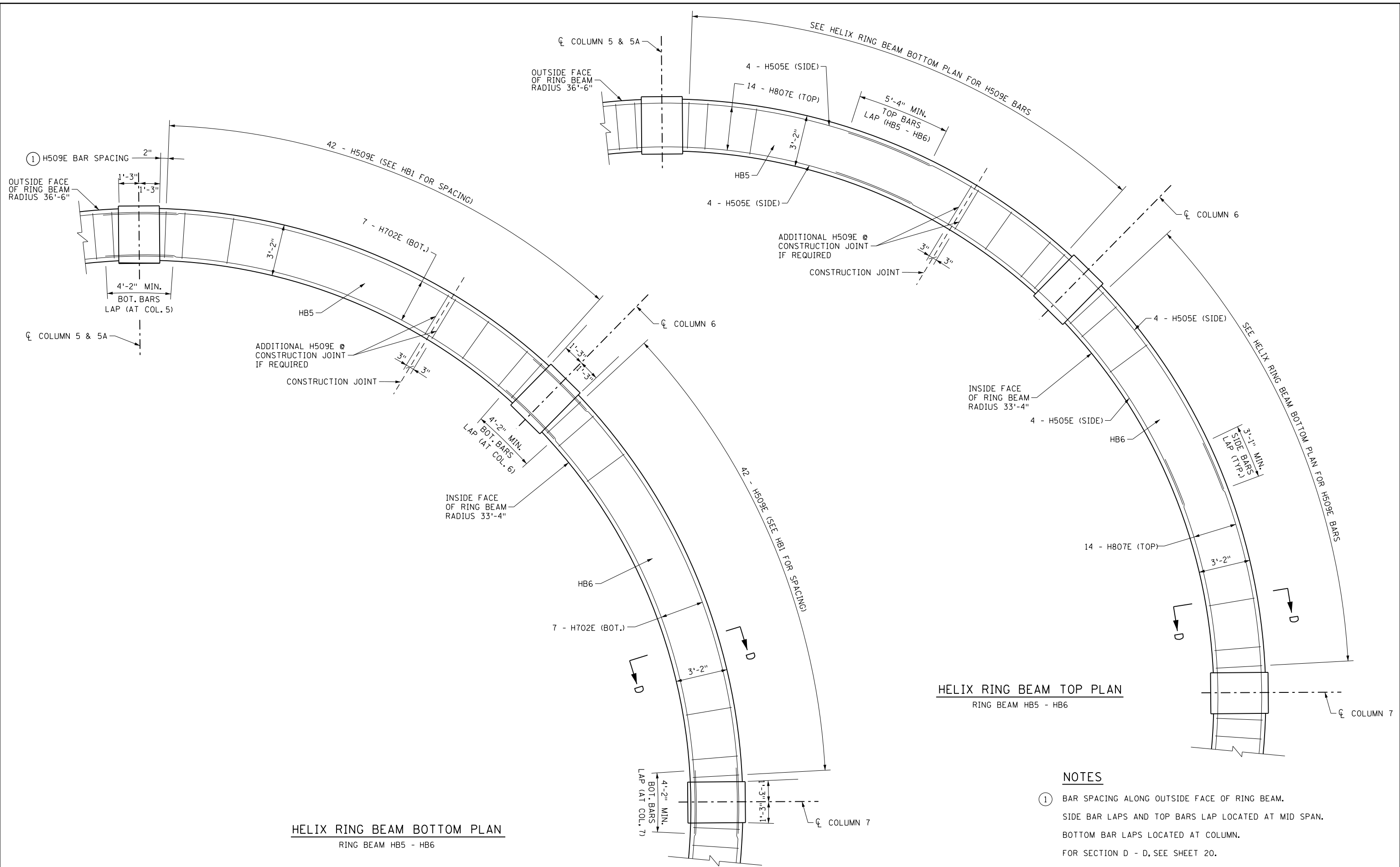
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HELIX RING BEAM BOTTOM PLAN
 RING BEAM HB5 - HB6

HELIX RING BEAM TOP PLAN
 RING BEAM HB5 - HB6

NOTES

- ① BAR SPACING ALONG OUTSIDE FACE OF RING BEAM.
- SIDE BAR LAPS AND TOP BARS LAP LOCATED AT MID SPAN.
- BOTTOM BAR LAPS LOCATED AT COLUMN.
- FOR SECTION D - D, SEE SHEET 20.

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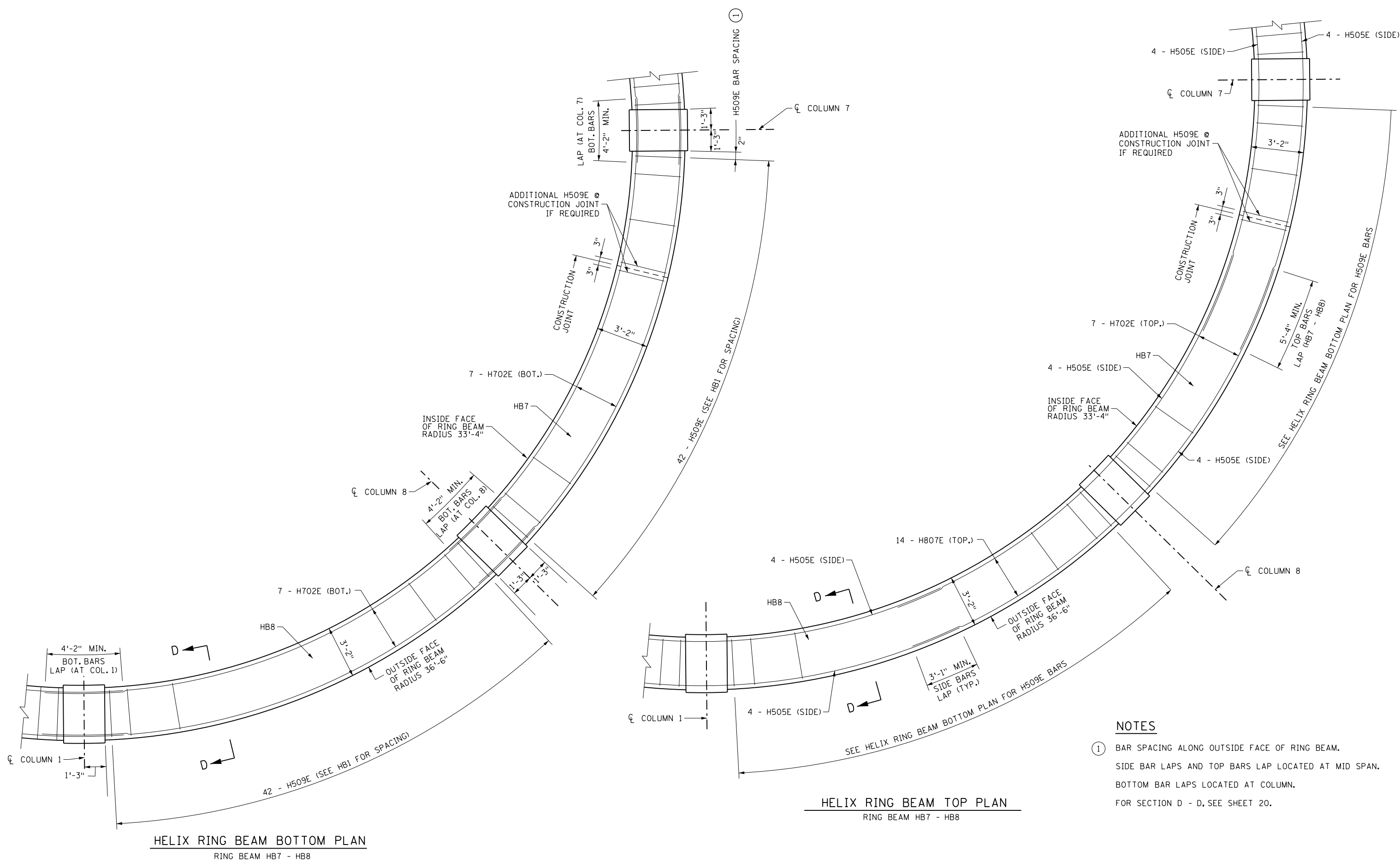
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- NOTES**
- ① BAR SPACING ALONG OUTSIDE FACE OF RING BEAM. SIDE BAR LAPS AND TOP BARS LAP LOCATED AT MID SPAN. BOTTOM BAR LAPS LOCATED AT COLUMN. FOR SECTION D - D, SEE SHEET 20.

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 RYAN R. EVANS
 LIC. NO. 53920 DATE

TITLE:
HELIX DETAILS

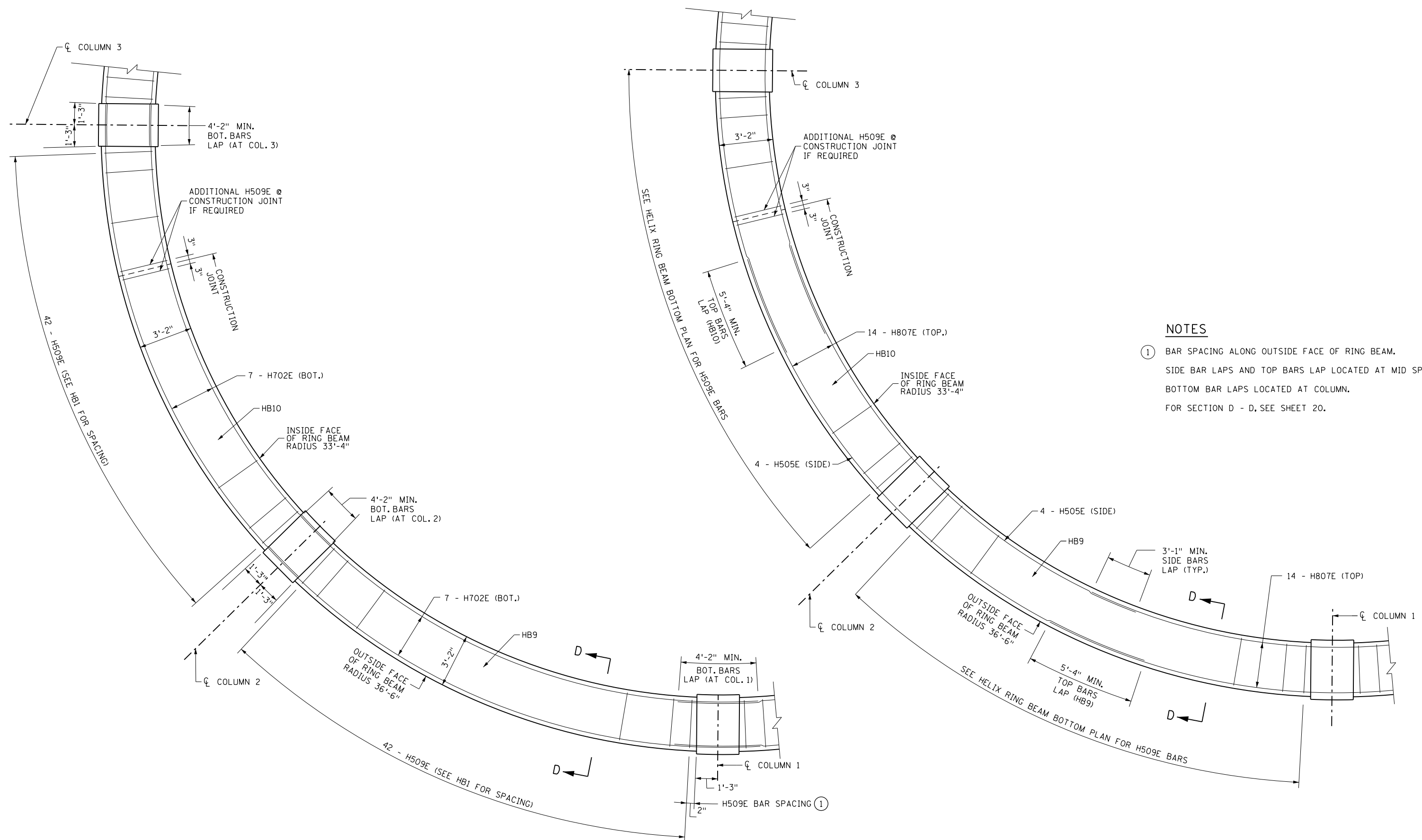
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SHEET NO. 23 OF 99 SHEETS

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- NOTES**
- ① BAR SPACING ALONG OUTSIDE FACE OF RING BEAM. SIDE BAR LAPS AND TOP BARS LAP LOCATED AT MID SPAN. BOTTOM BAR LAPS LOCATED AT COLUMN. FOR SECTION D - D, SEE SHEET 20.

HELIX RING BEAM BOTTOM PLAN
 RING BEAM HB9 - HB10

HELIX RING BEAM TOP PLAN
 RING BEAM HB9 - HB10

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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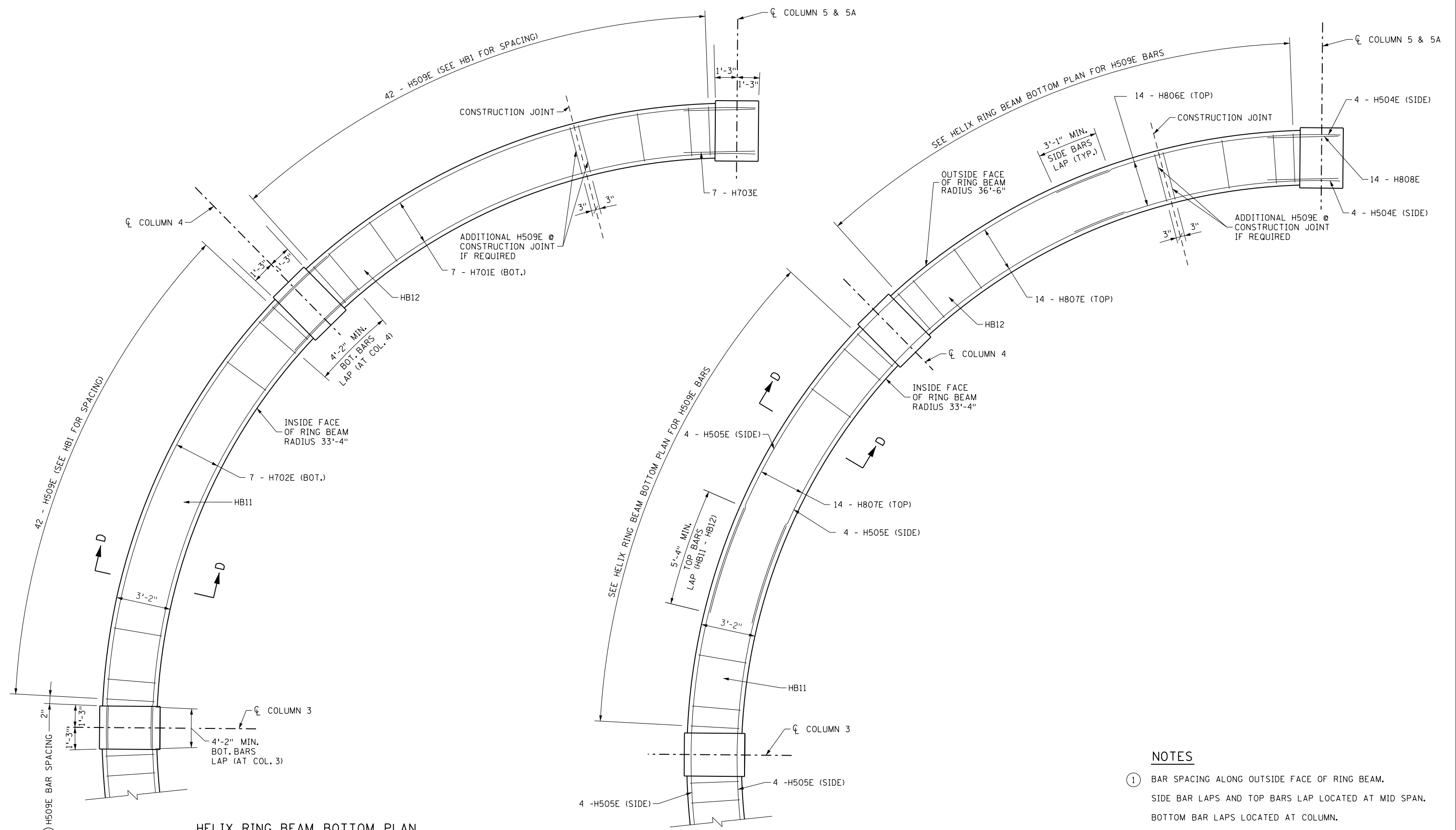
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HELIX DETAILS

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HELIX RING BEAM BOTTOM PLAN
 RING BEAM HB11 - HB12

HELIX RING BEAM TOP PLAN
 RING BEAM HB11 - HB12

NOTES

- ① BAR SPACING ALONG OUTSIDE FACE OF RING BEAM. SIDE BAR LAPS AND TOP BARS LAP LOCATED AT MID SPAN. BOTTOM BAR LAPS LOCATED AT COLUMN. FOR SECTION D - D, SEE SHEET 20.

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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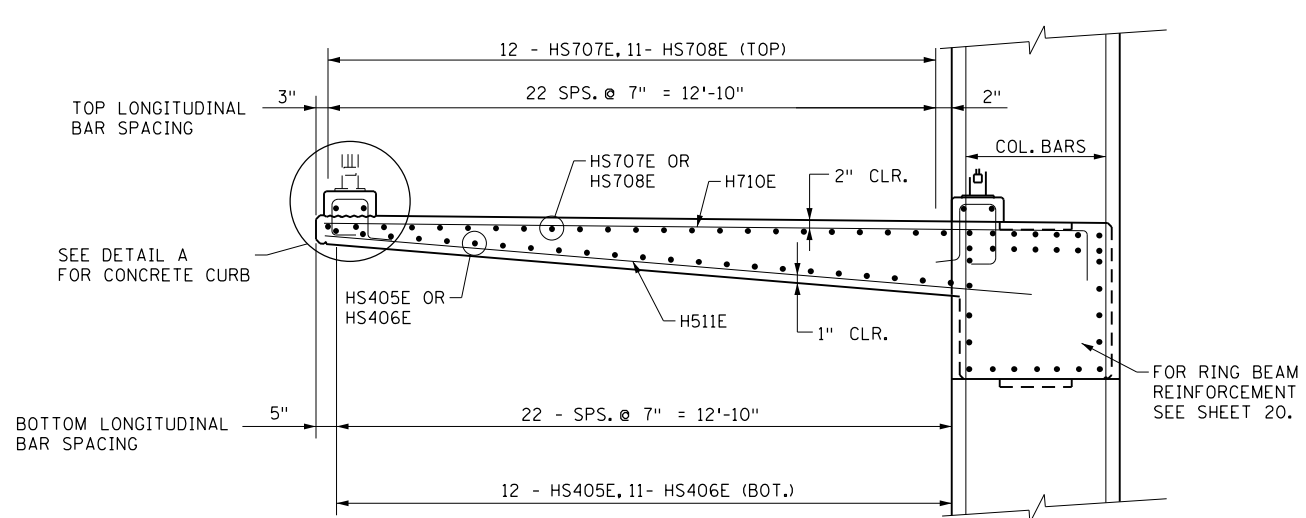
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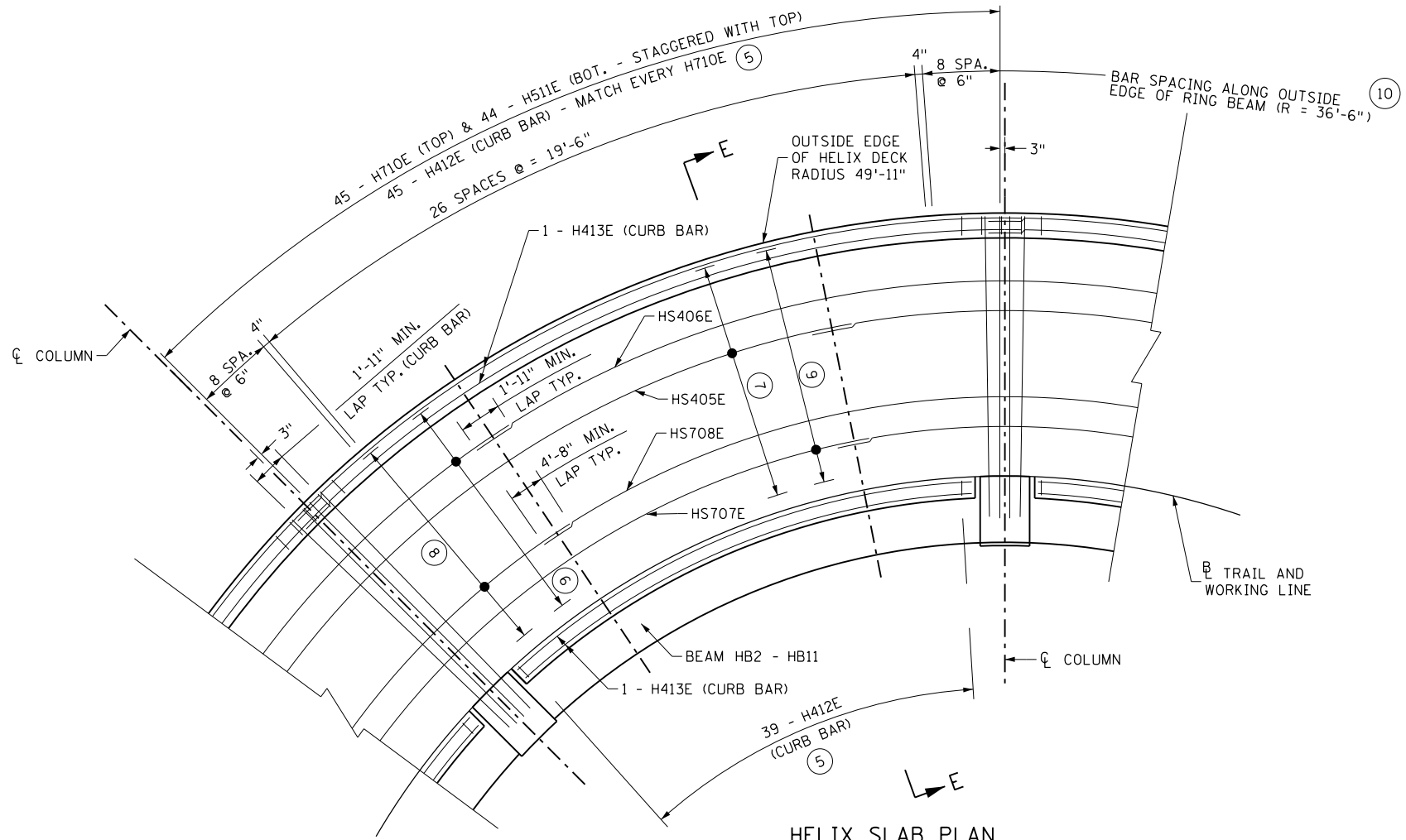
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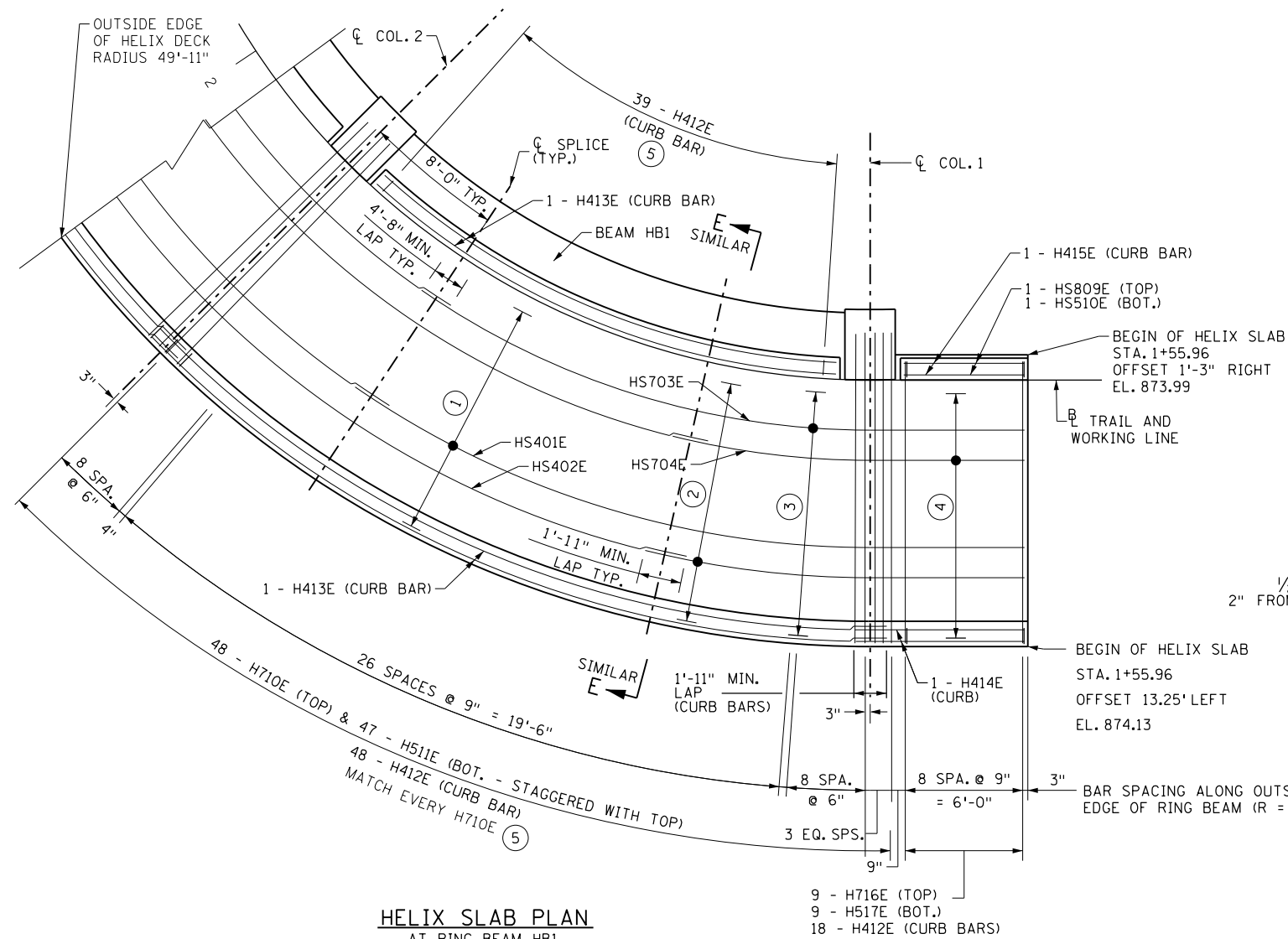
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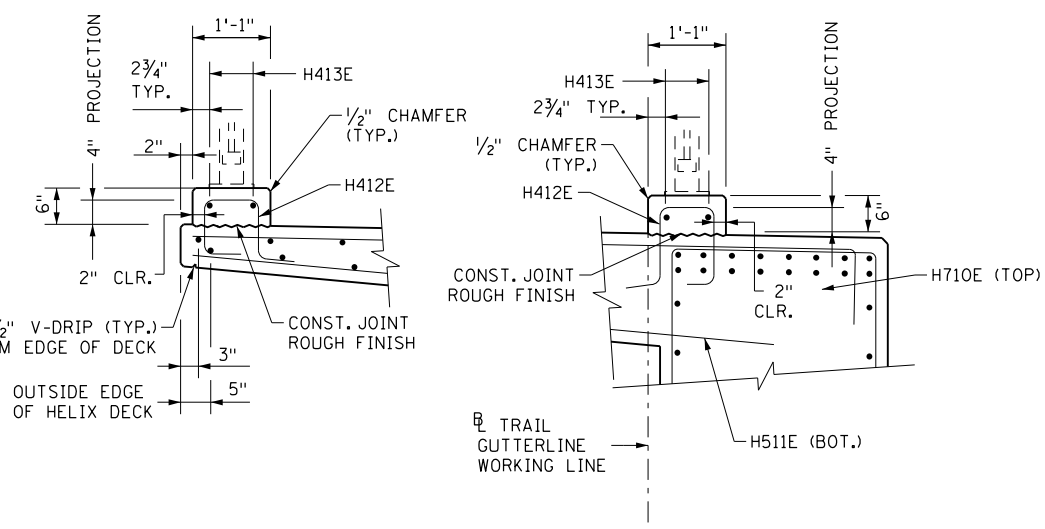
SECTION E - E
HELIX SLAB - TYP. REINF. SHOWN
(OTHER SECTIONS SIMILAR).



HELIX SLAB PLAN
AT RING BEAMS HB2 - HB11



HELIX SLAB PLAN
AT RING BEAM HB1



DETAIL A
CONCRETE CURB

NOTES

- ① 12 - HS401E (BOT.)
ALTERNATE WITH HS402E (BOT.)
- ② 11 - HS402E (BOT.)
ALTERNATE WITH HS401E (BOT.)
- ③ 12 - HS703E (TOP)
ALTERNATE WITH HS704E (TOP)
- ④ 11 - HS704E (TOP)
ALTERNATE WITH HS703E (TOP)
- ⑤ MATCH H710E (TOP BARS)
VERIFY RAIL ANCHOR CLEARANCE
- ⑥ 11 - HS406E (BOT.)
ALTERNATE WITH HS405E (BOT.)
- ⑦ 12 - HS405E (BOT.)
ALTERNATE WITH HS406E (BOT.)
- ⑧ 11 - HS708E (TOP)
ALTERNATE WITH HS707E (TOP)
- ⑨ 12 - HS707E (TOP)
ALTERNATE WITH HS708E (TOP)
- ⑩ TRANSVERSE BAR SPACING IS PROVIDED
ALONG OUTSIDE EDGE OF RING BEAM
(RADIUS = 36'-6"). FLARE BARS
RADIALLY FROM CENTER OF HELIX.
SPACING AT OUTSIDE EDGE OF HELIX
SLAB WILL BE LARGER THAN SPACING
PROVIDED AT RING BEAM FACE, BUT
SHOULD NOT EXCEED 1'-1".

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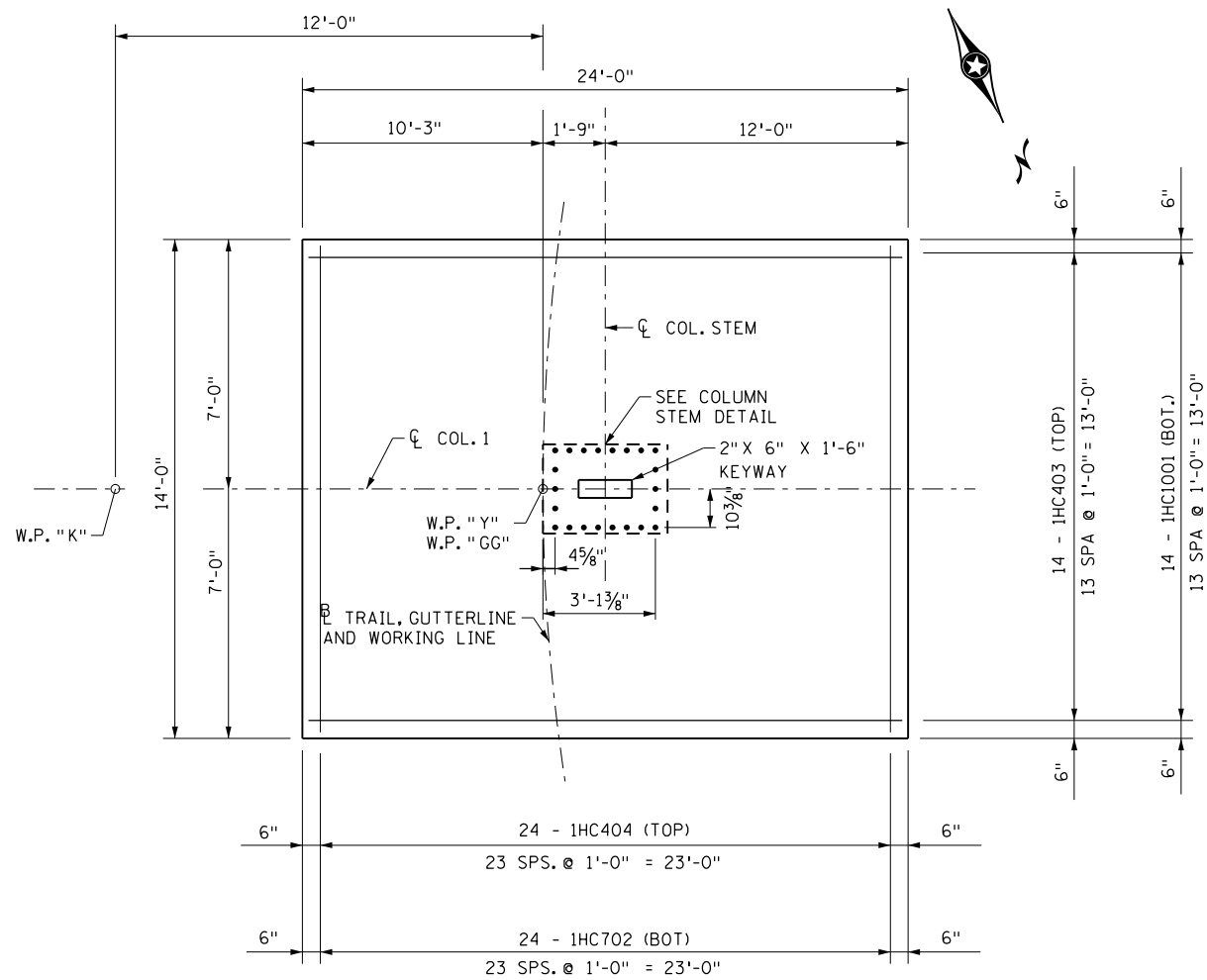
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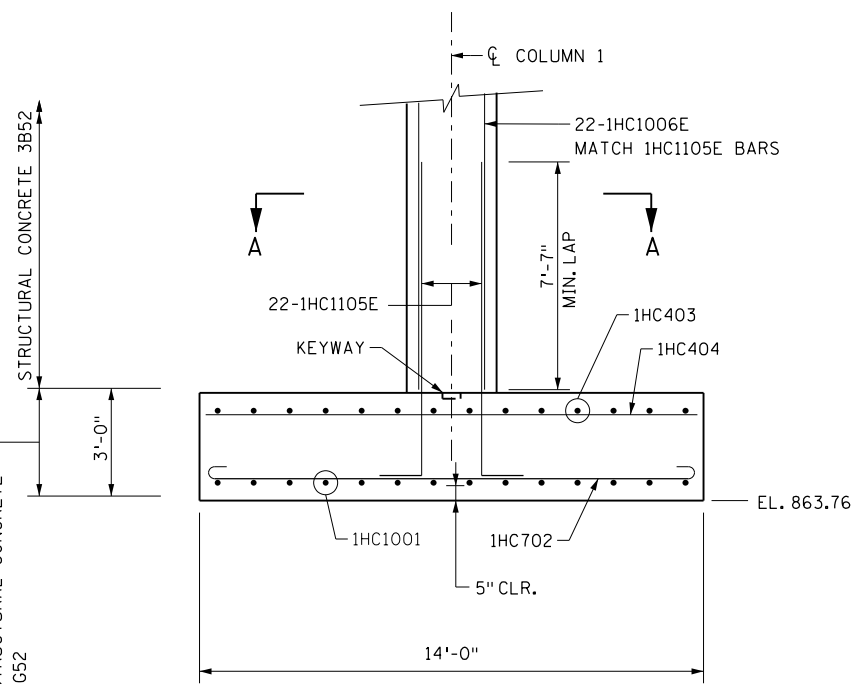
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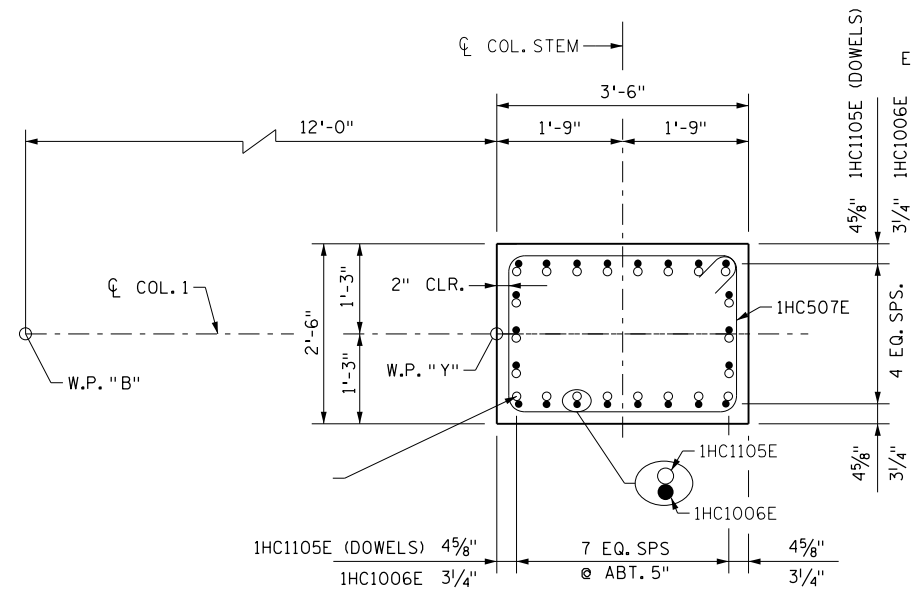
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FOOTING PLAN

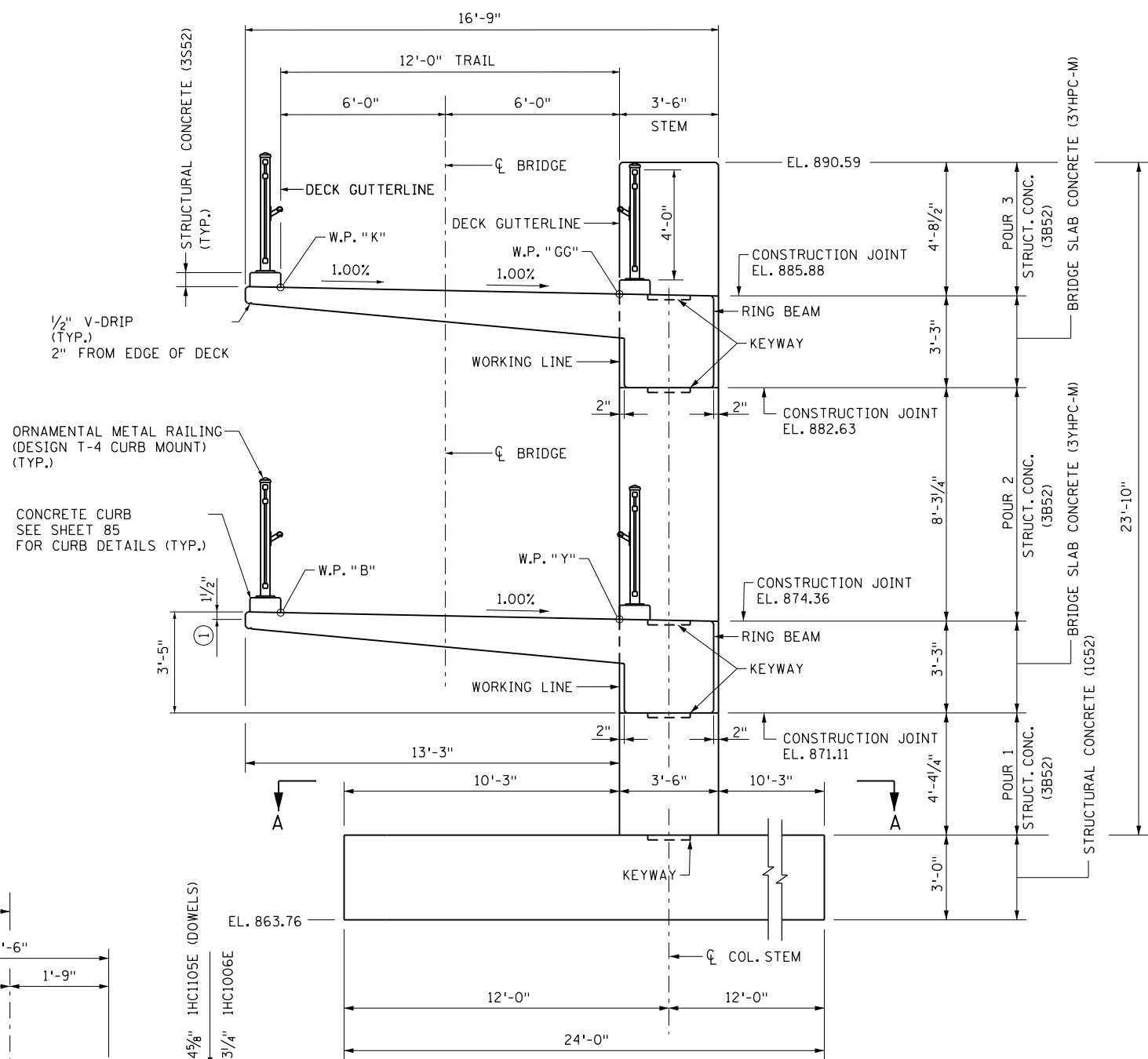


FOOTING SECTION



COLUMN STEM DETAIL

SECTION A-A



ELEVATION

COLUMN 1 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.3 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	6.37 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	15.14 FT.
SERVICE BEARING RESISTANCE $\phi_b \cdot q_n$	2.4 TONS/SQ.FT.

* BASED ON SERVICE 1 LOAD COMBINATION

NOTES

- ① MEASURED GUTTERLINE TO GUTTERLINE.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 46.

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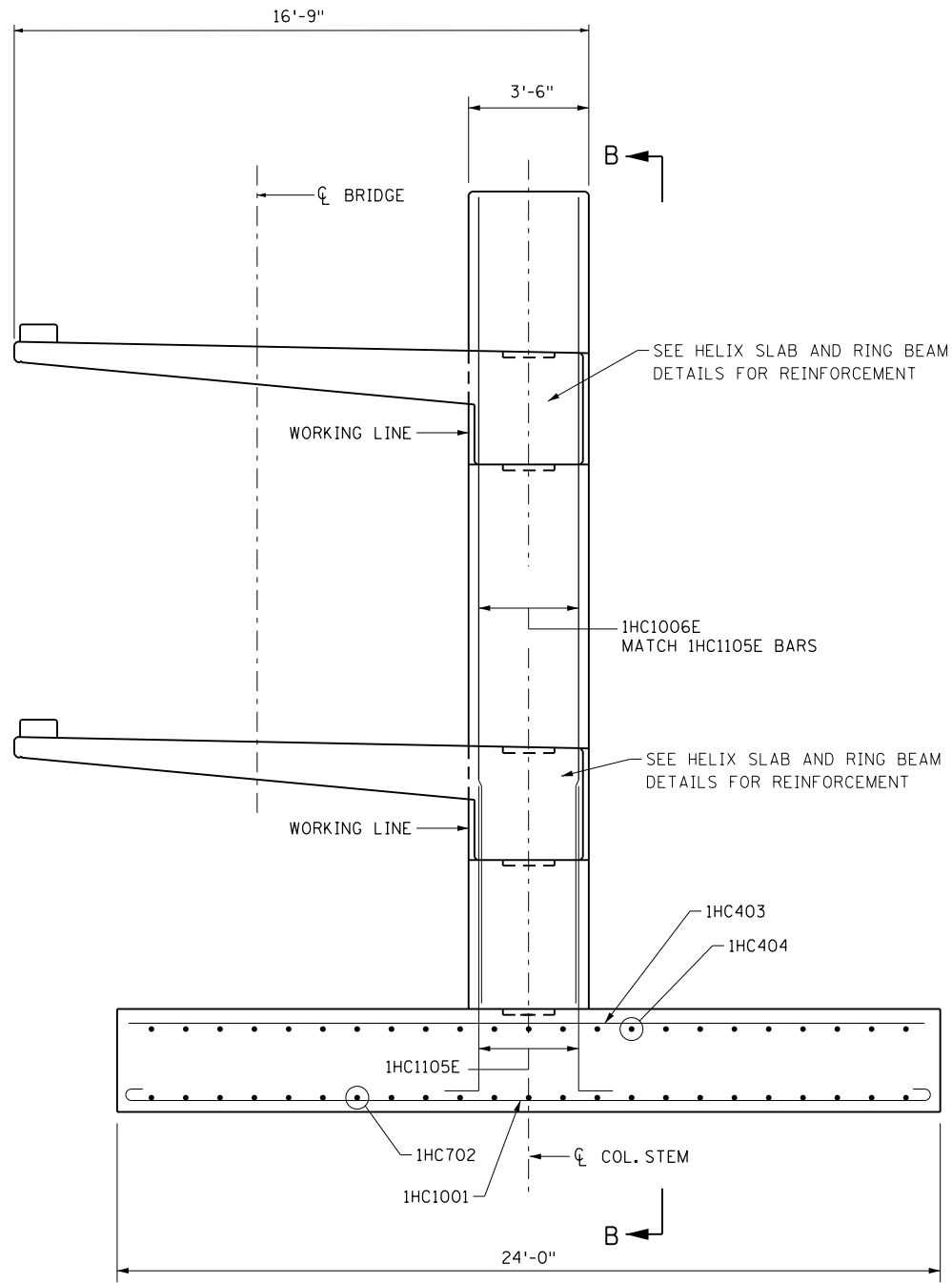
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HELIX COLUMN 1
DETAILS & REINFORCEMENT

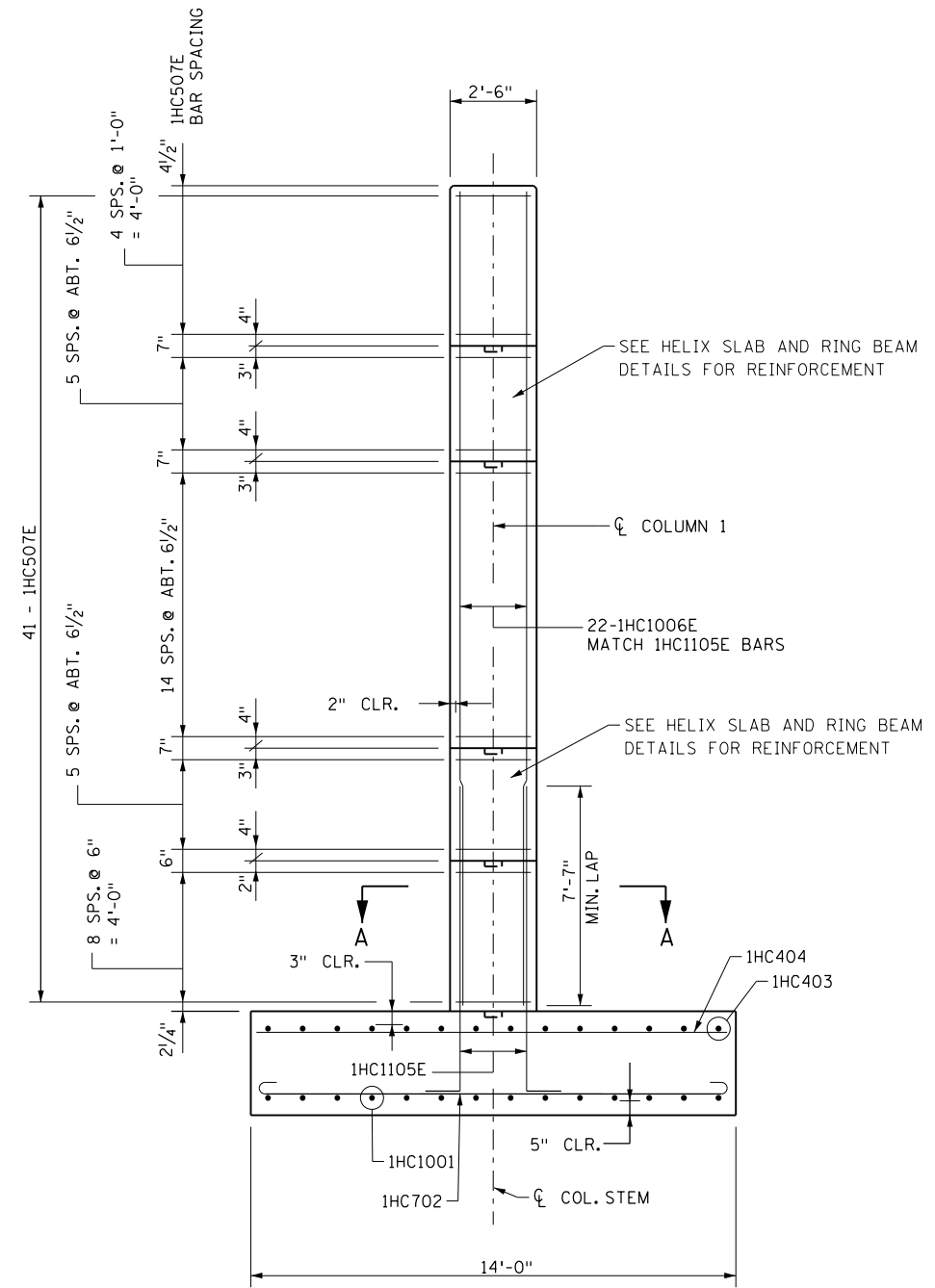
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SHEET NO. 28 OF 99 SHEETS

BRIDGE NO.
02053



ELEVATION



SECTION B - B

NOTES

- FOR SECTION A - A, COLUMN STEM DETAIL SEE SHEET 28.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 46.

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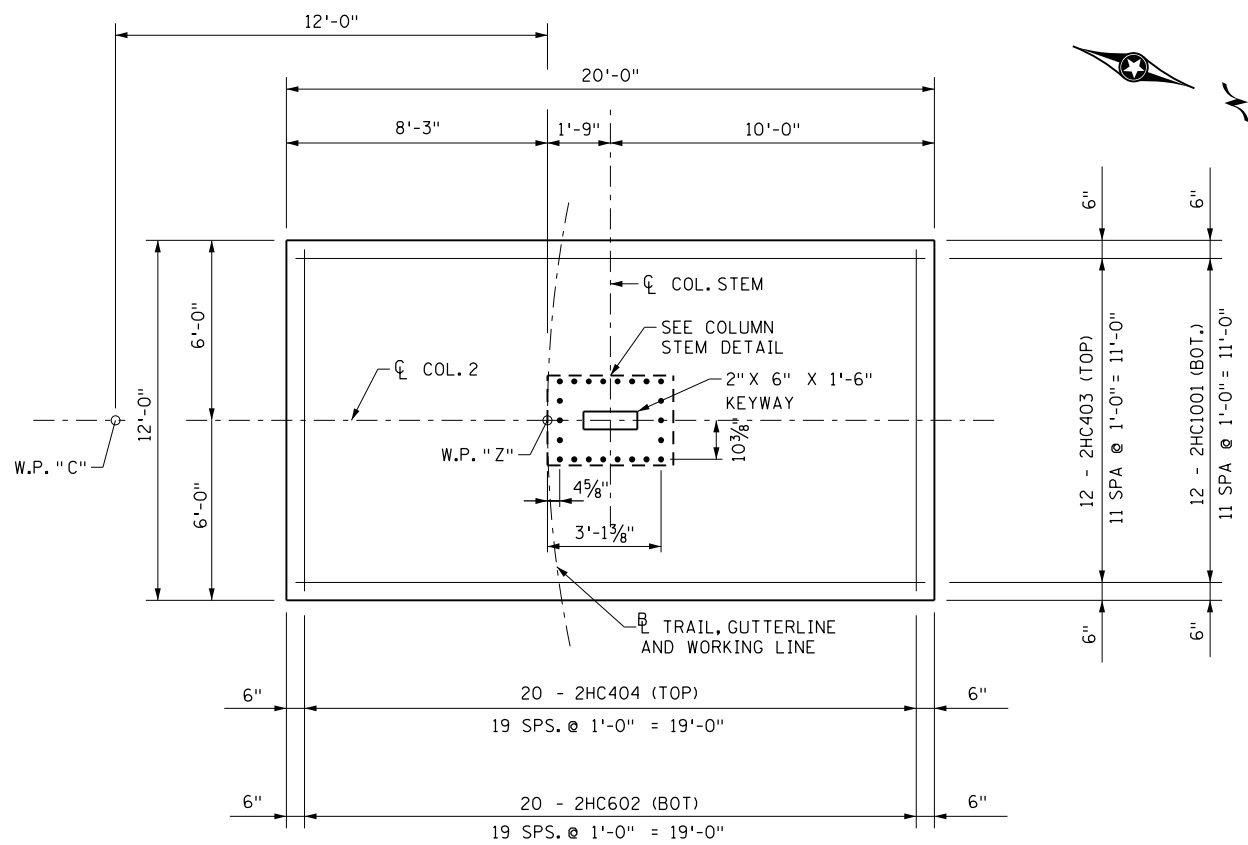
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**HELIX COLUMN 1
 DETAILS & REINFORCEMENT**

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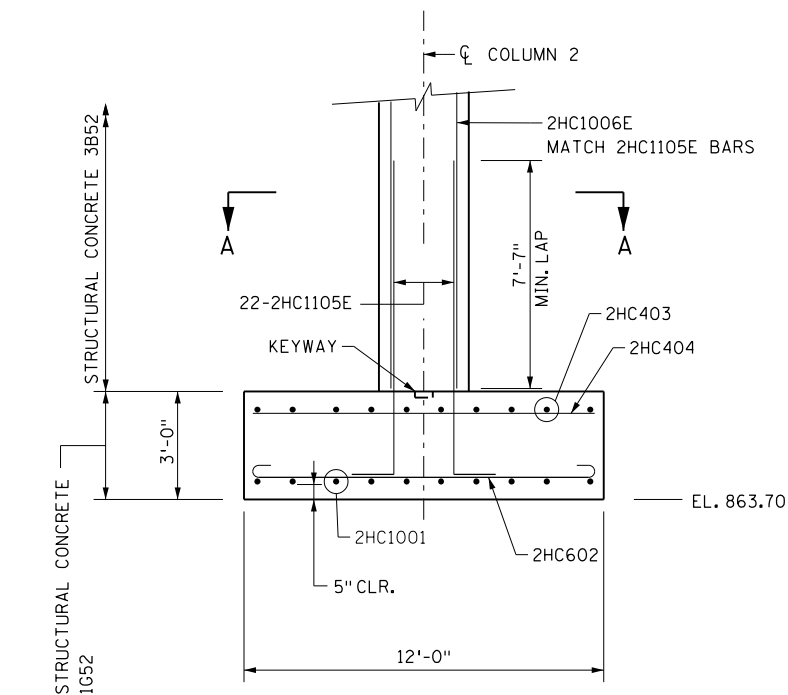
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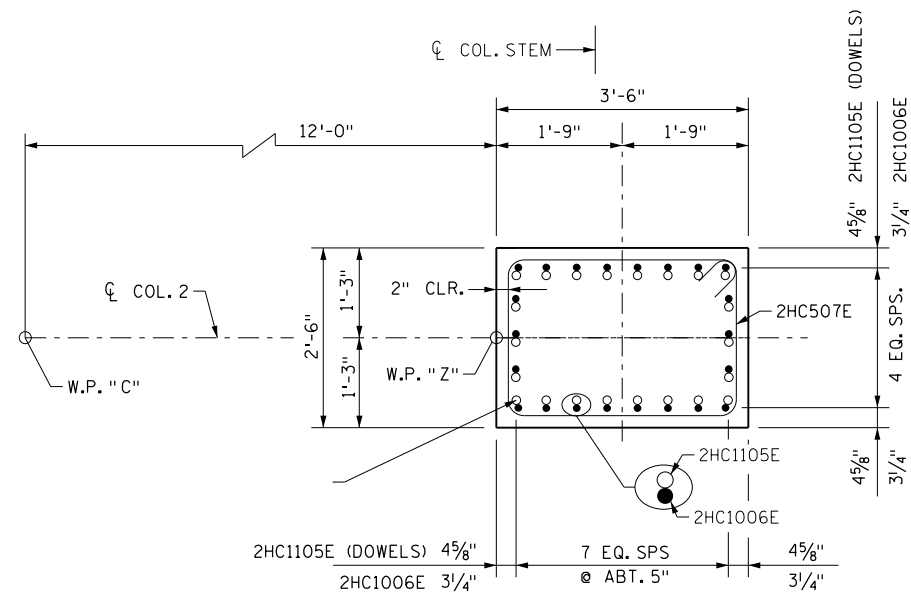
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FOOTING PLAN

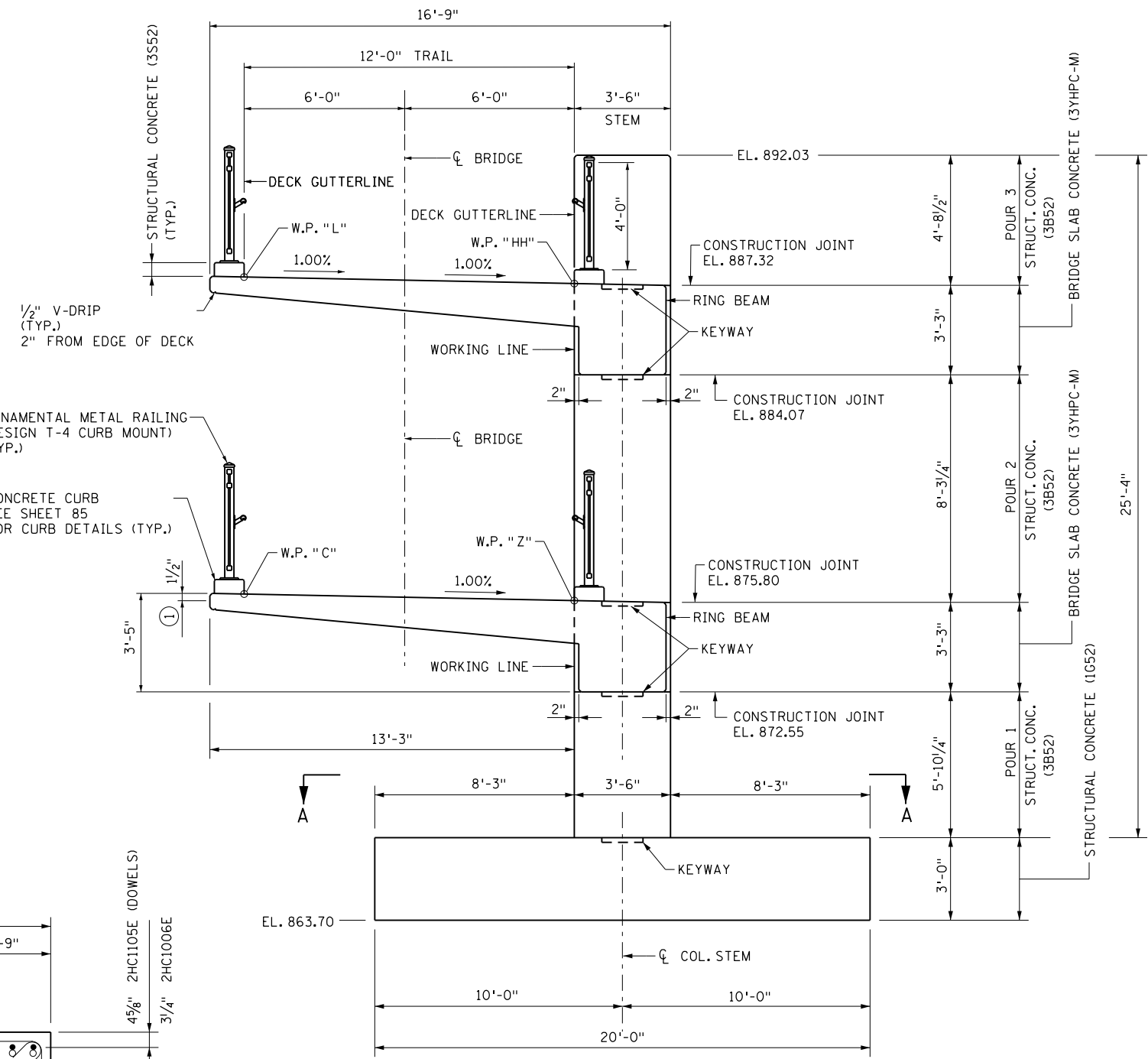


FOOTING SECTION



COLUMN STEM DETAIL

SECTION A-A



ELEVATION

COLUMN 2 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.6 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	10.39 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	8.68 FT.
SERVICE BEARING RESISTANCE $\phi_s \cdot q_n$	2.9 TONS/SQ.FT.

* BASED ON SERVICE 1 LOAD COMBINATION

NOTES

- ① MEASURED GUTTERLINE TO GUTTERLINE.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 46.

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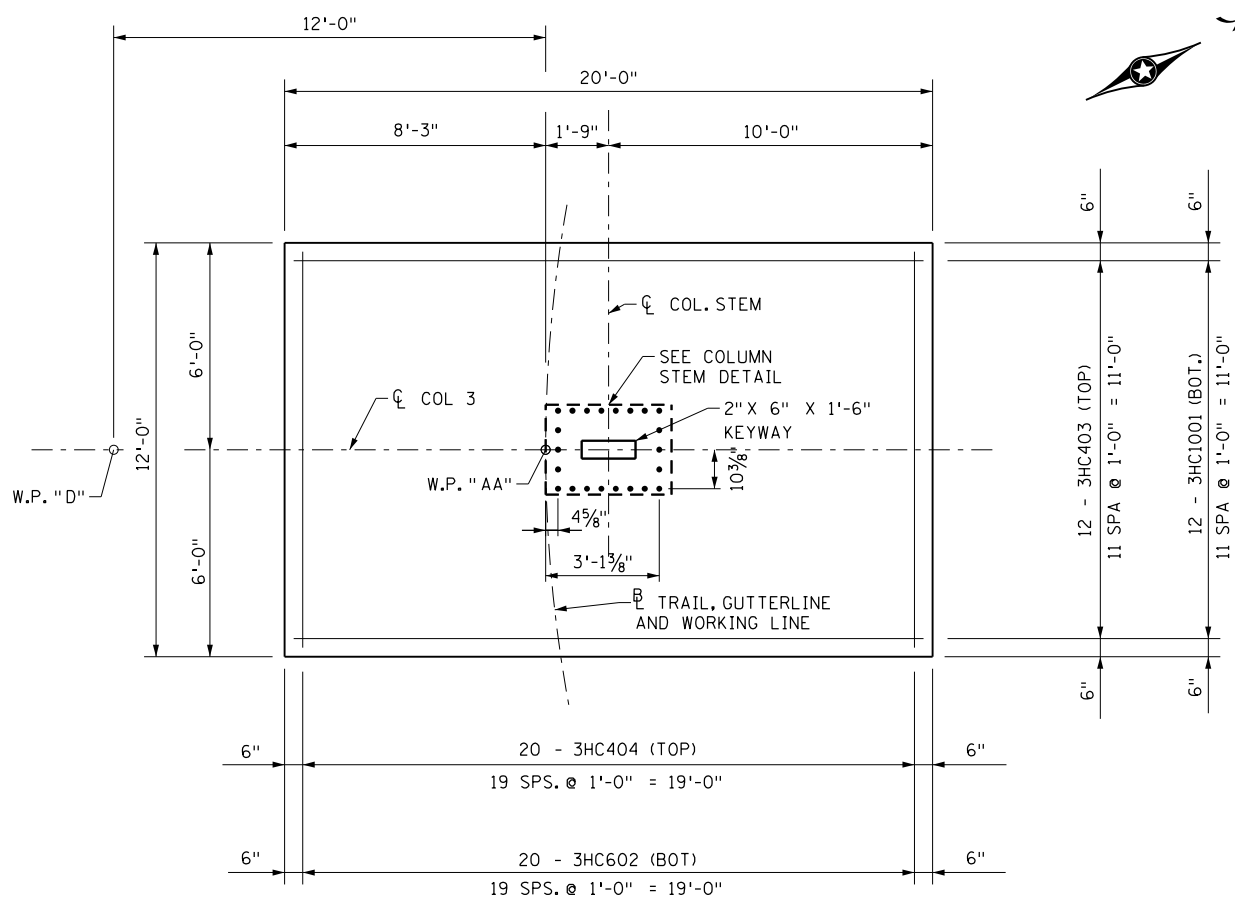
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TITLE:
**HELIX COLUMN 2
DETAILS & REINFORCEMENT**

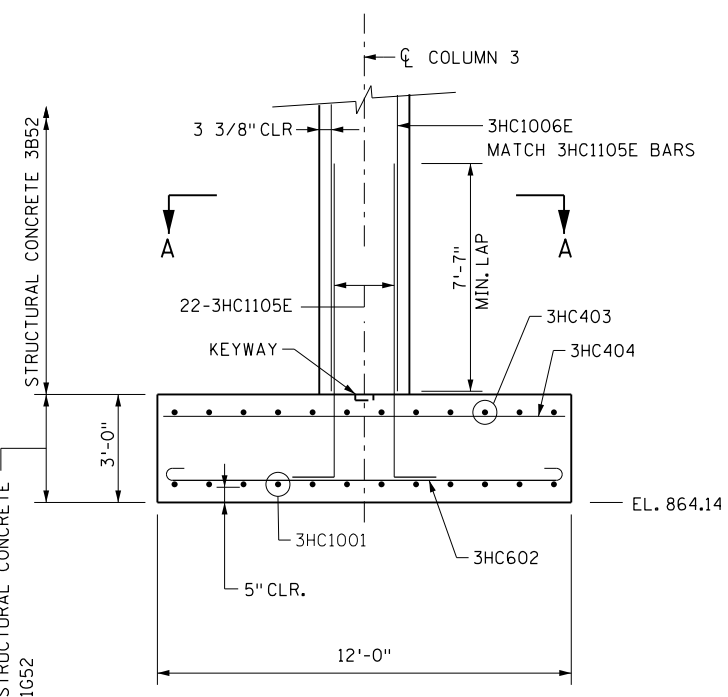
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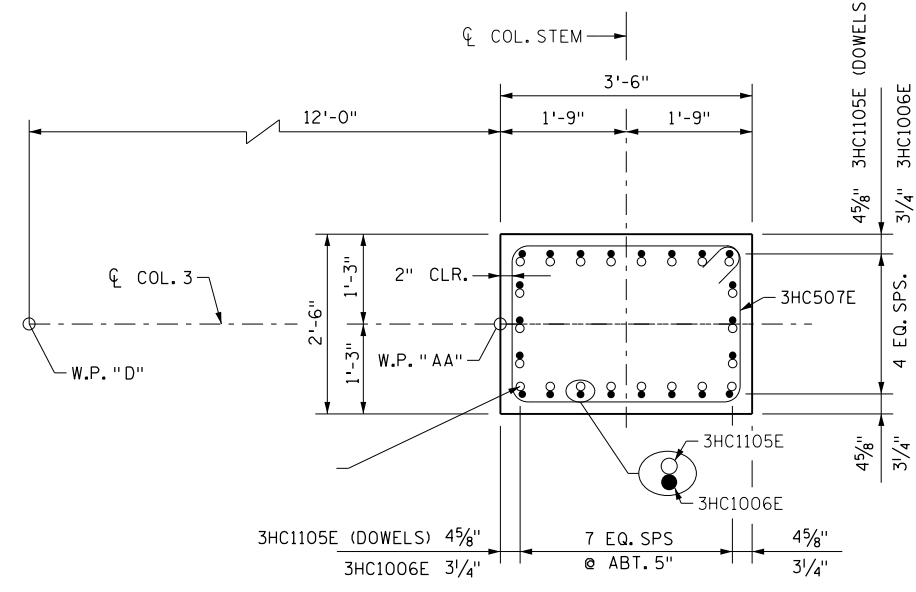
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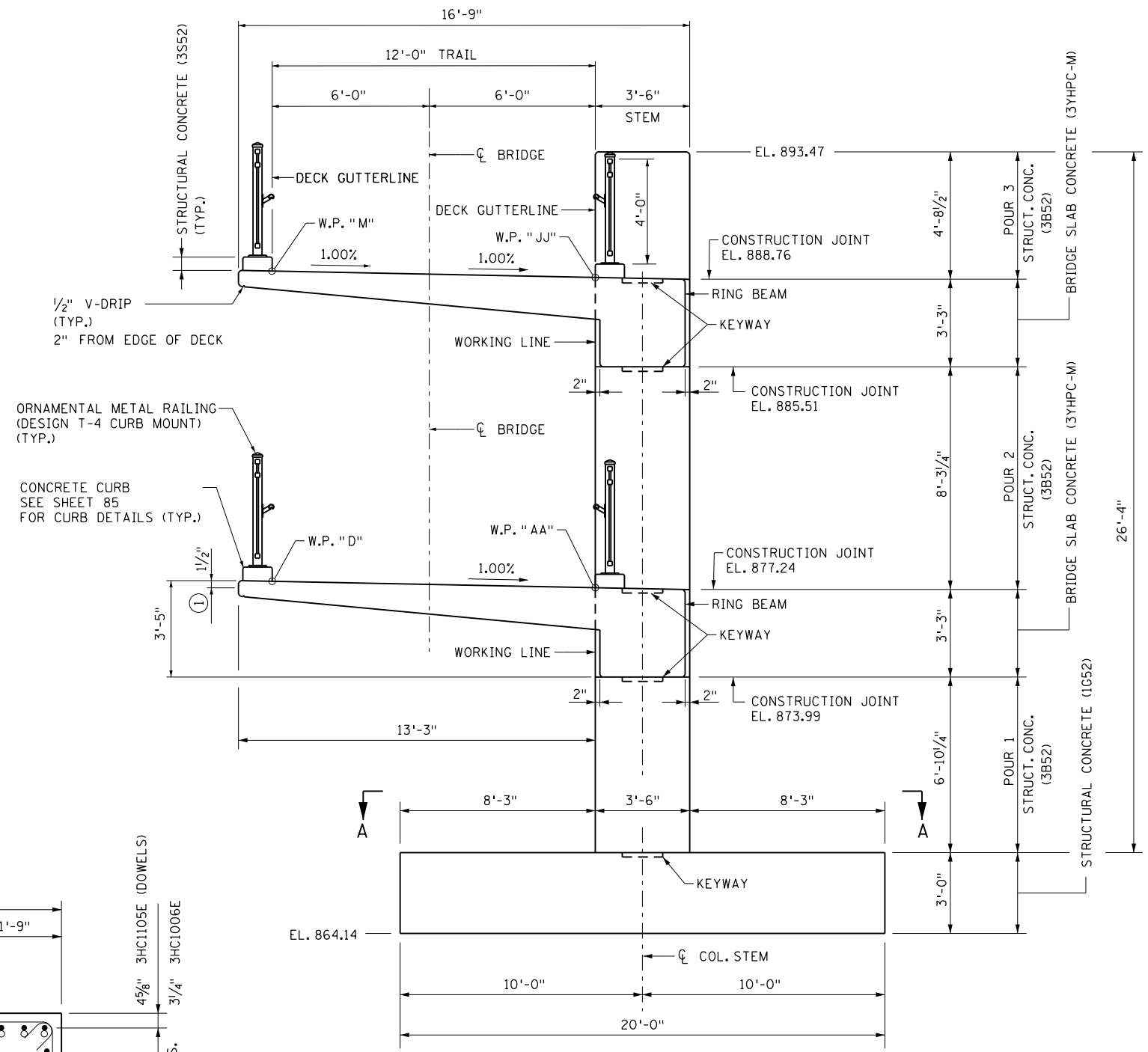
FOOTING PLAN



FOOTING SECTION



COLUMN STEM DETAIL SECTION A-A



ELEVATION

COLUMN 3 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.8 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	10.41 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	7.95 FT.
SERVICE BEARING RESISTANCE $\phi_b \cdot q_n$	2.9 TONS/SQ.FT.

- NOTES**
- ① MEASURED GUTTERLINE TO GUTTERLINE.
 - ALL KEYWAYS ARE 2" X 6" X 1'-6".
 - FOR BILL OF REINFORCEMENT, SEE SHEET 46.

* BASED ON SERVICE 1 LOAD COMBINATION

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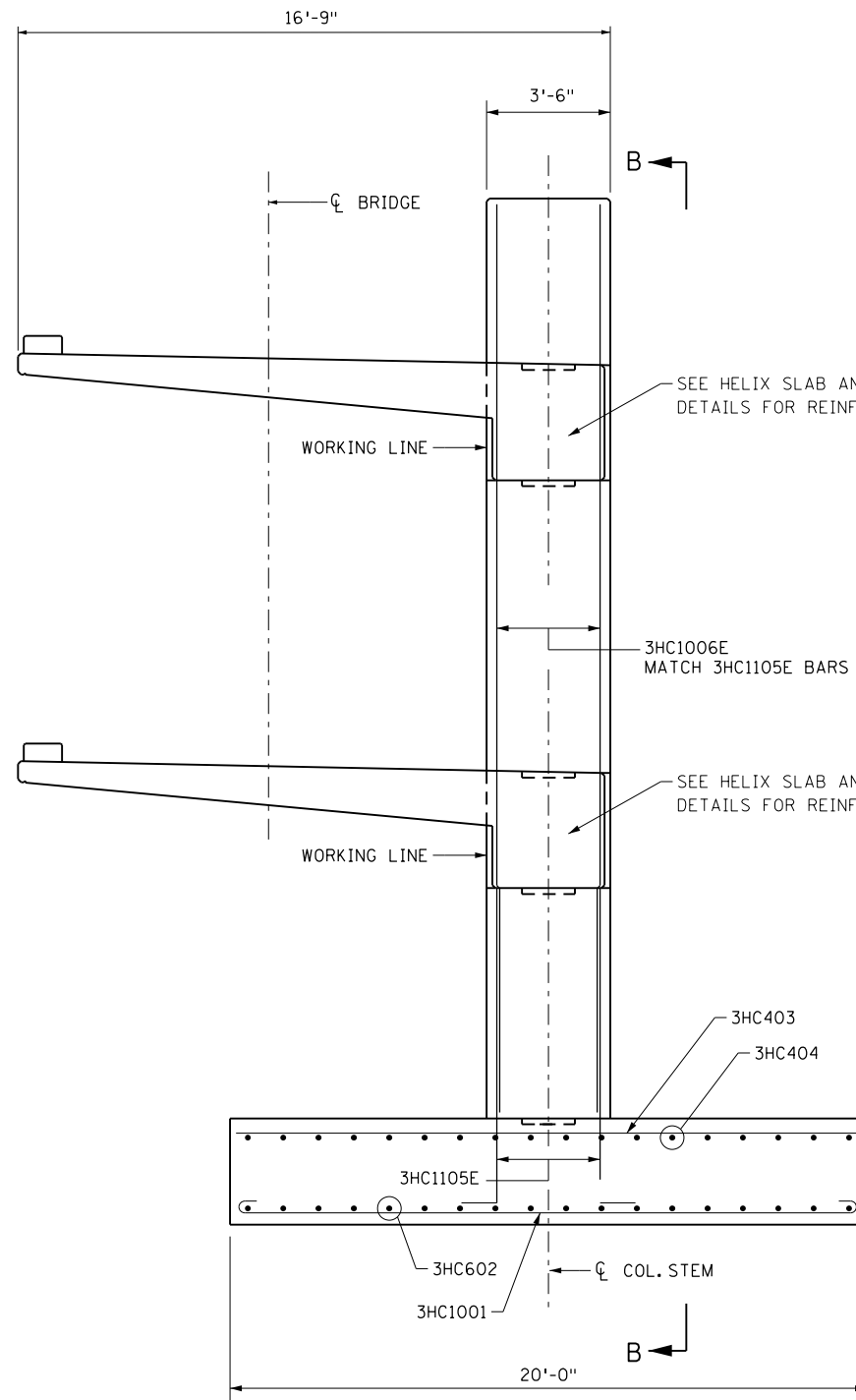
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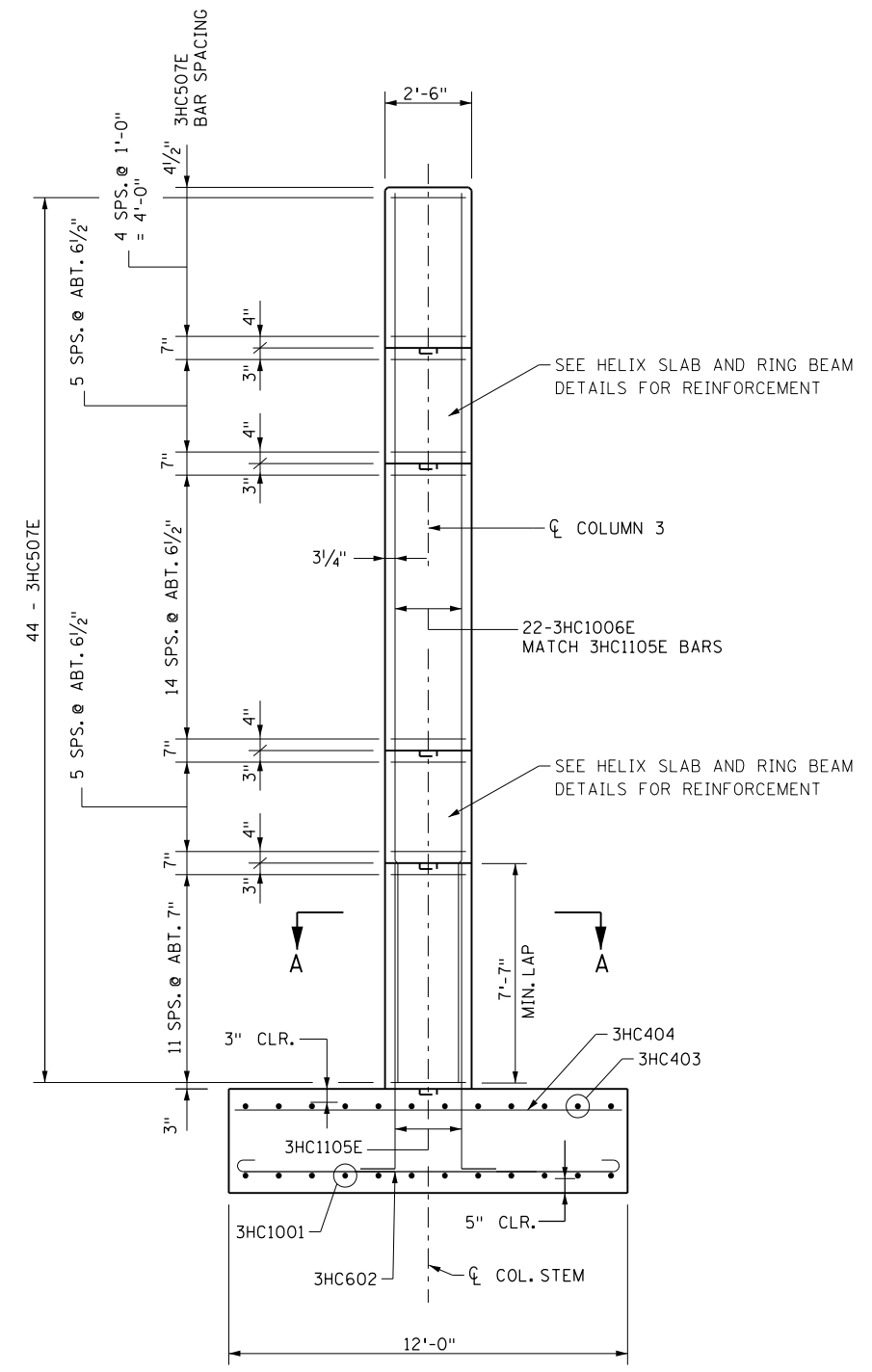
HELIX COLUMN 3 DETAILS & REINFORCEMENT
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 SHEET NO. 32 OF 99 SHEETS

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ELEVATION



SECTION B - B

NOTES

- FOR SECTION A - A ,SEE SHEET 32.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT,SEE SHEET 46.

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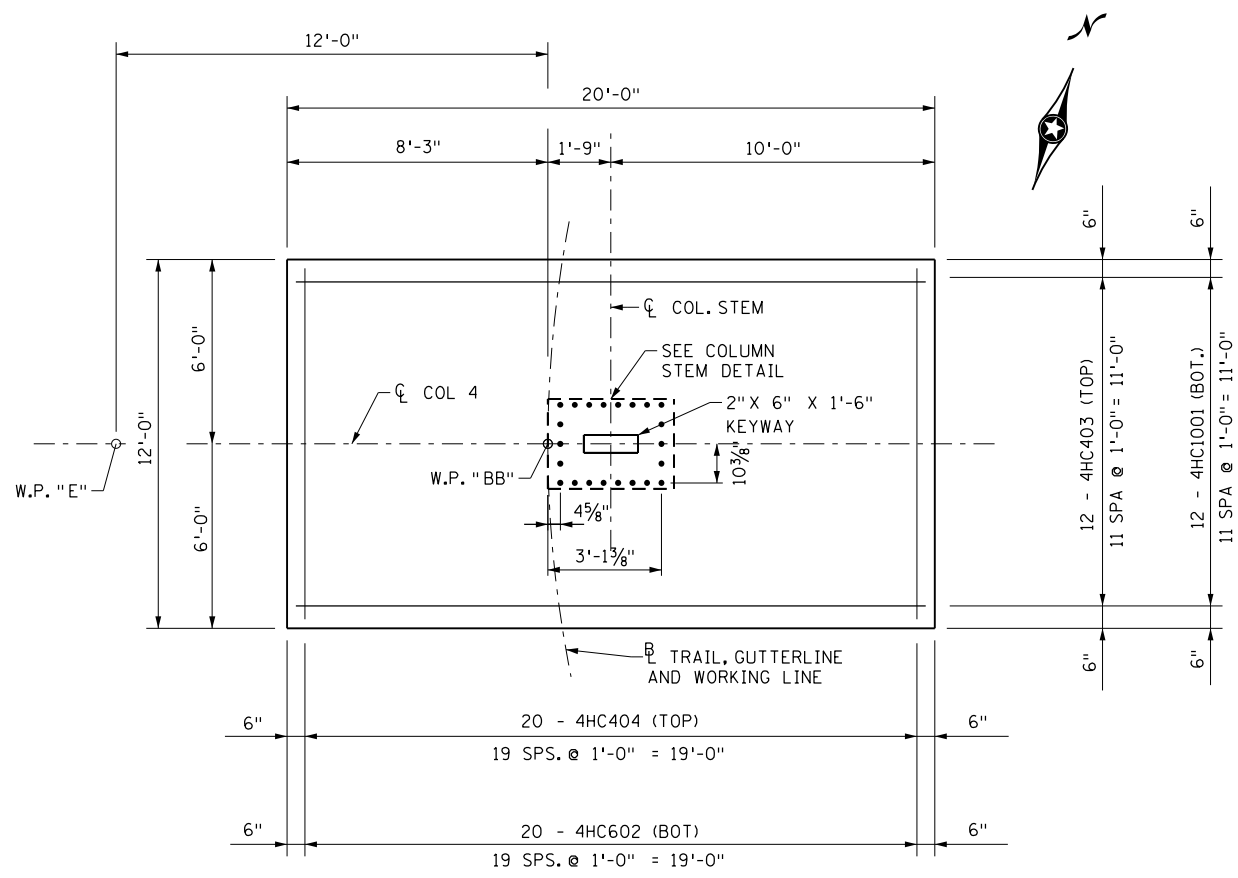
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 DETAILS & REINFORCEMENT**

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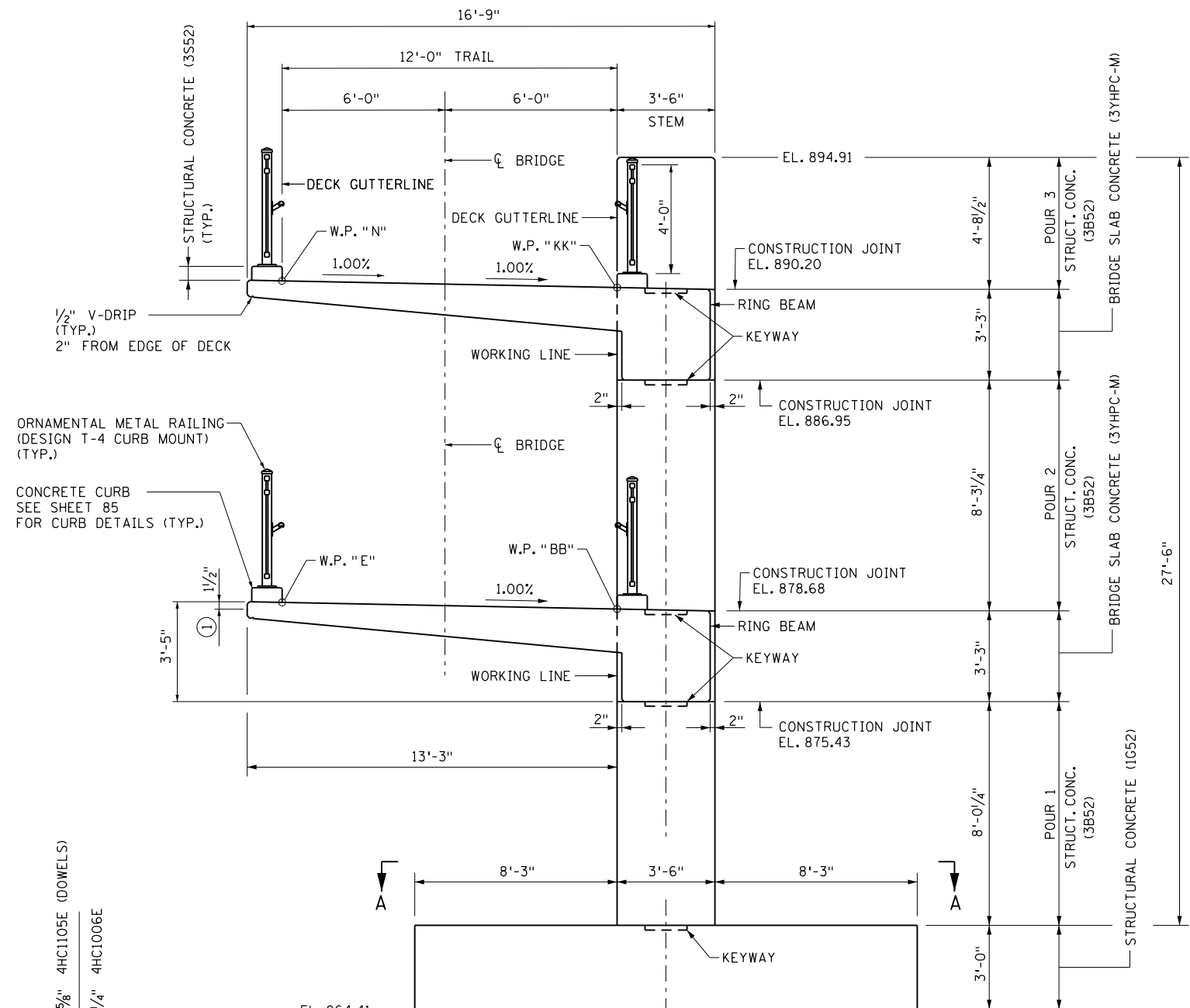
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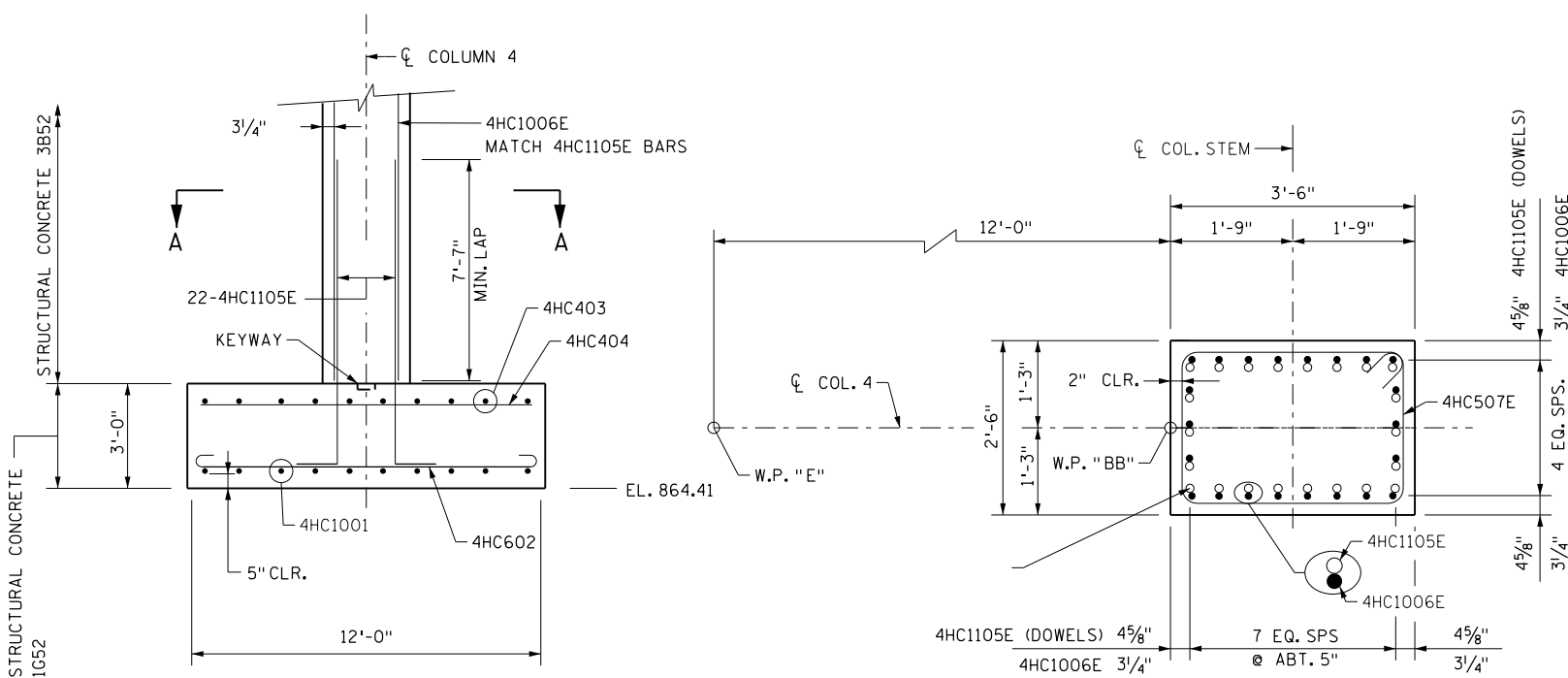
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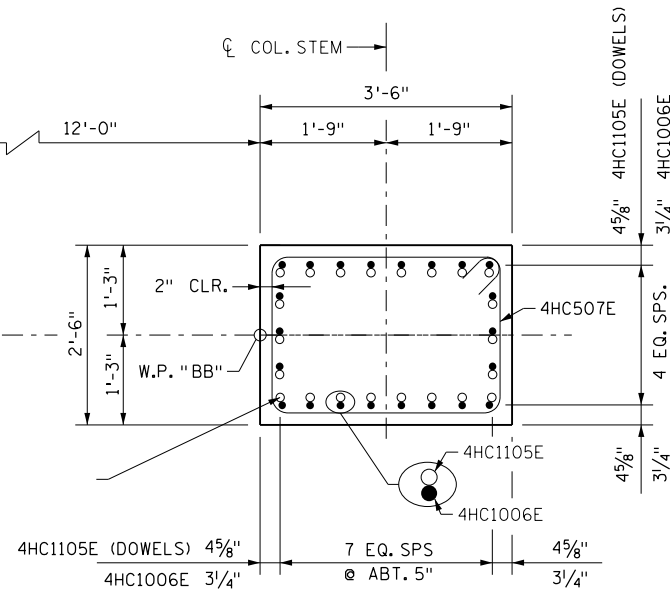
FOOTING PLAN



ELEVATION



FOOTING SECTION



COLUMN STEM DETAIL SECTION A-A

COLUMN 4 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.7 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	10.4 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	7.9 FT.
SERVICE BEARING RESISTANCE $\phi_p \cdot q_n$	2.9 TONS/SQ.FT.

* BASED ON SERVICE 1 LOAD COMBINATION

- NOTES**
- ① MEASURED GUTTERLINE TO GUTTERLINE.
 - ALL KEYWAYS ARE 2" X 6" X 1'-6".
 - FOR BILL OF REINFORCEMENT, SEE SHEET 47.

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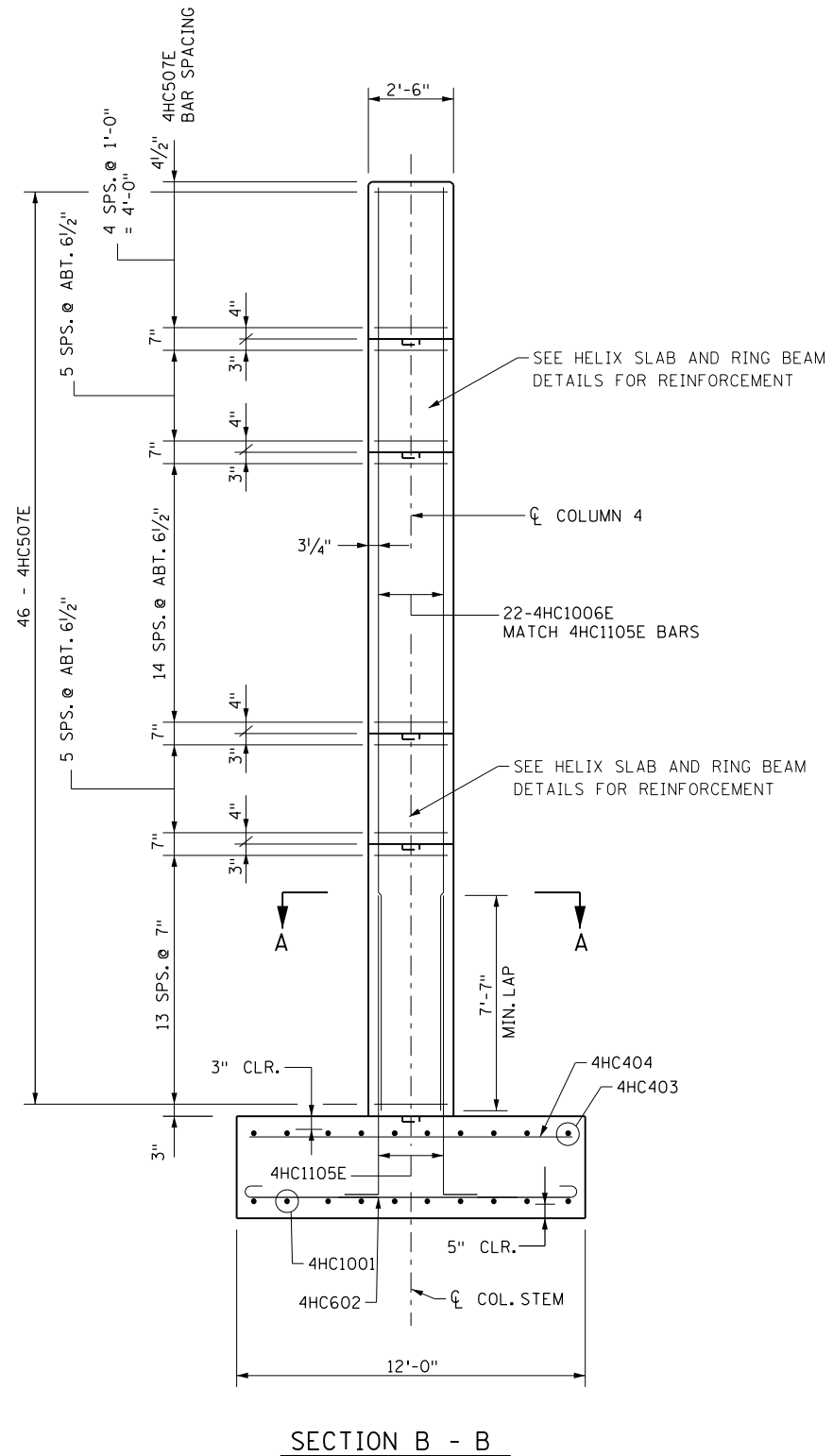
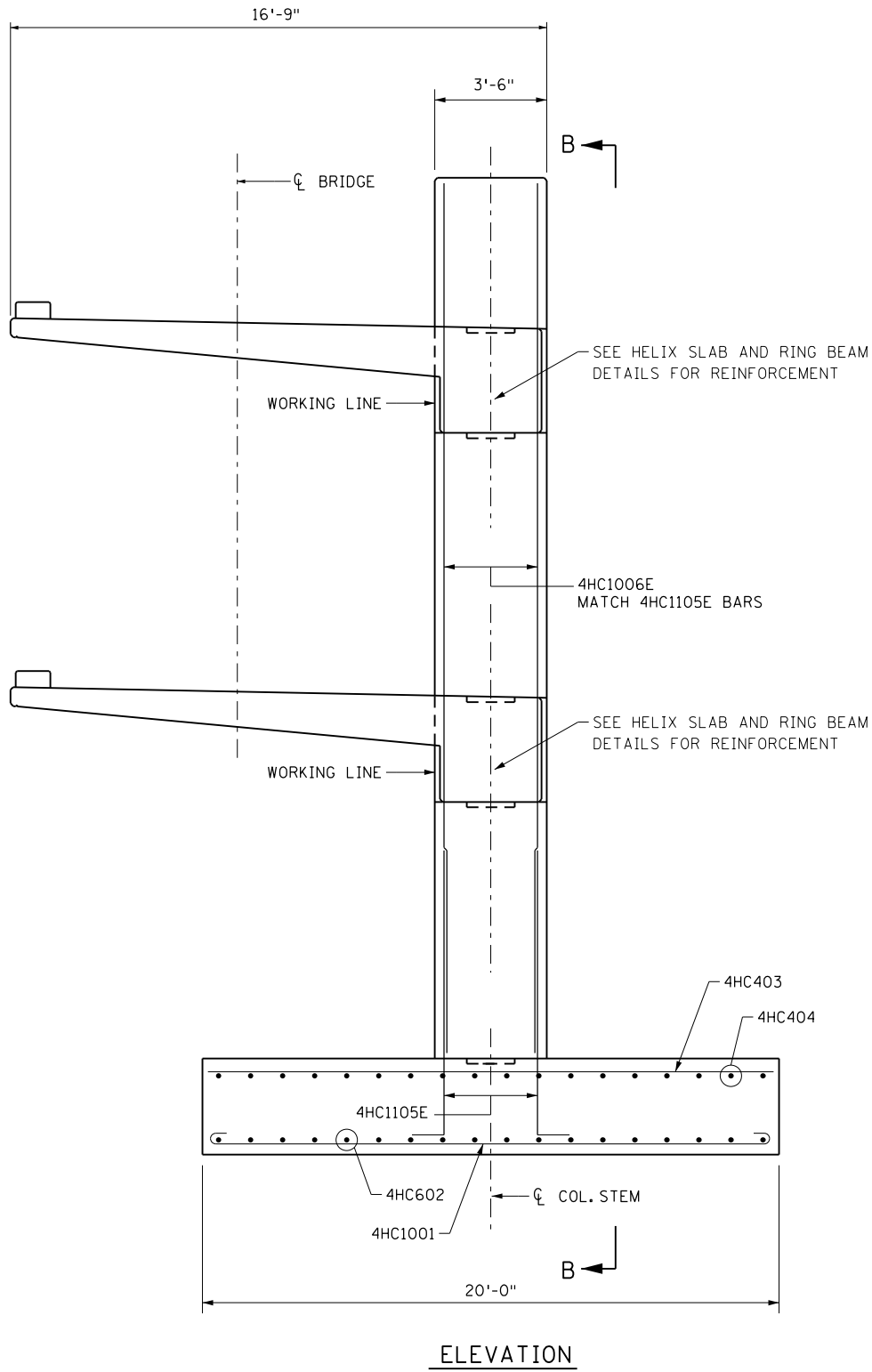
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NOTES

FOR SECTION A - A, SEE SHEET 34.

ALL KEYWAYS ARE 2" X 6" X 1'-6".

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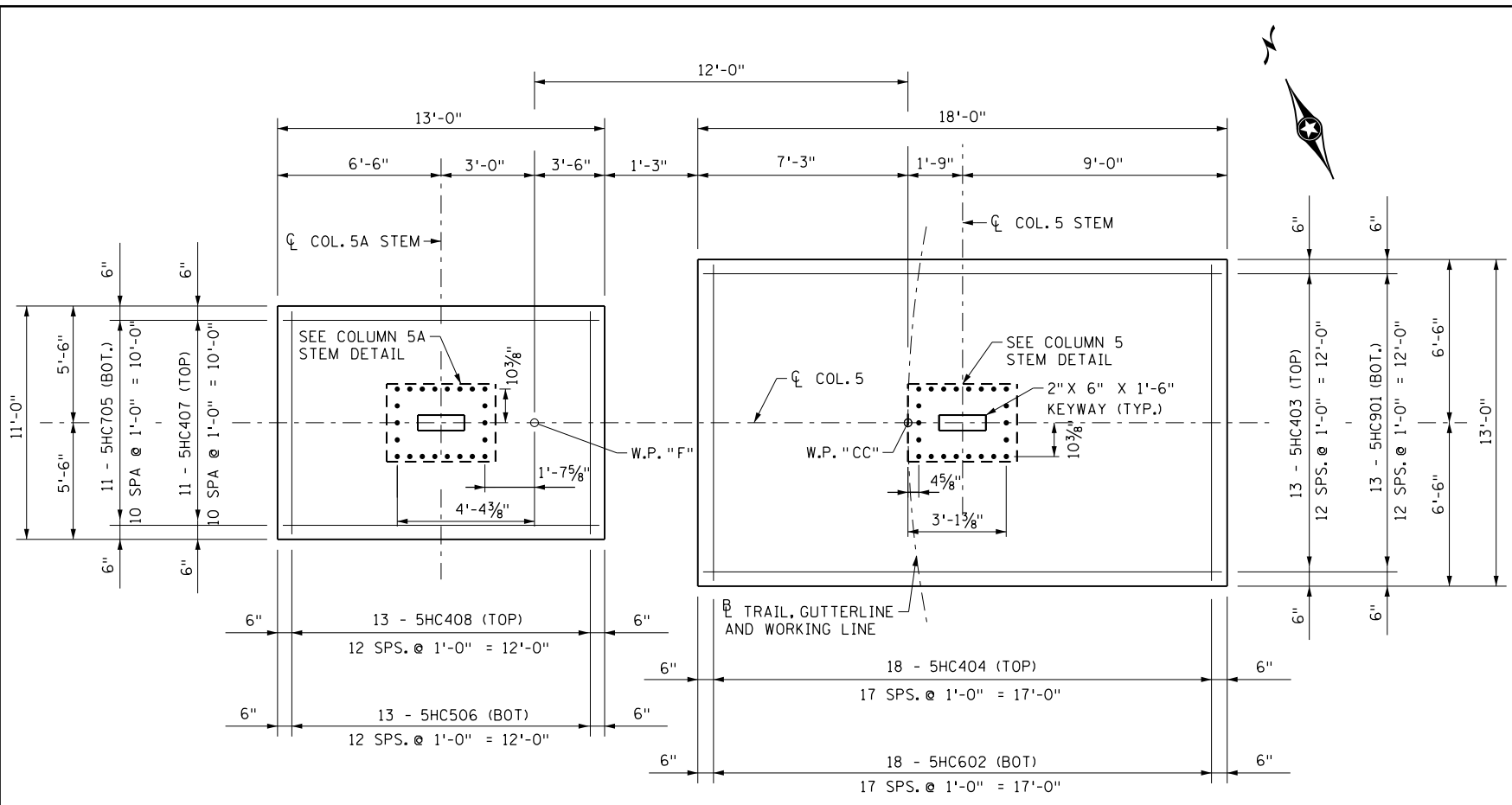
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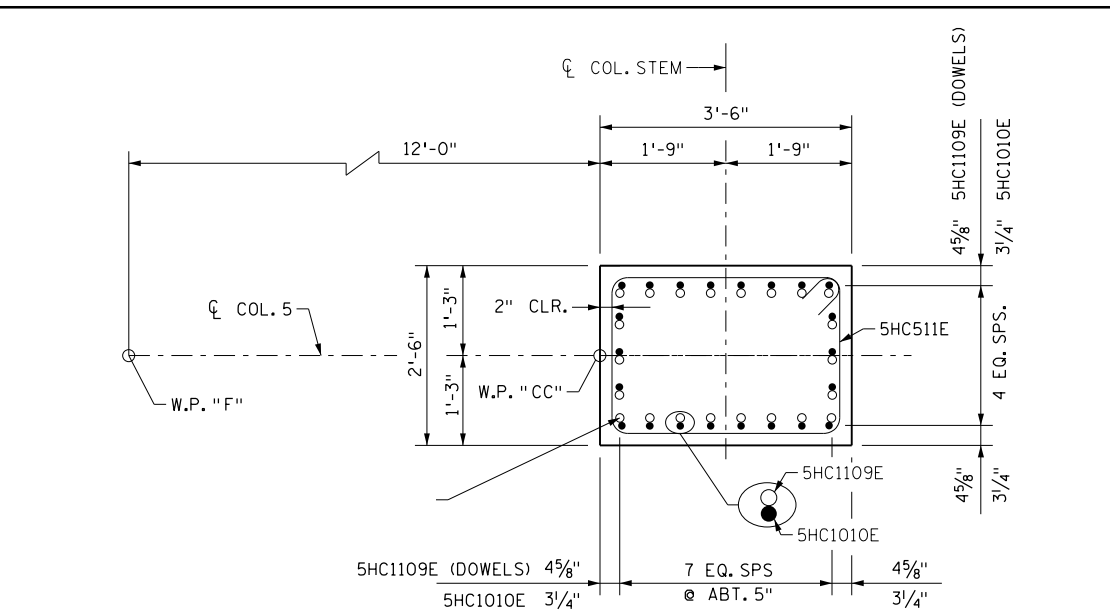
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SHEET NO. 35 OF 99 SHEETS						

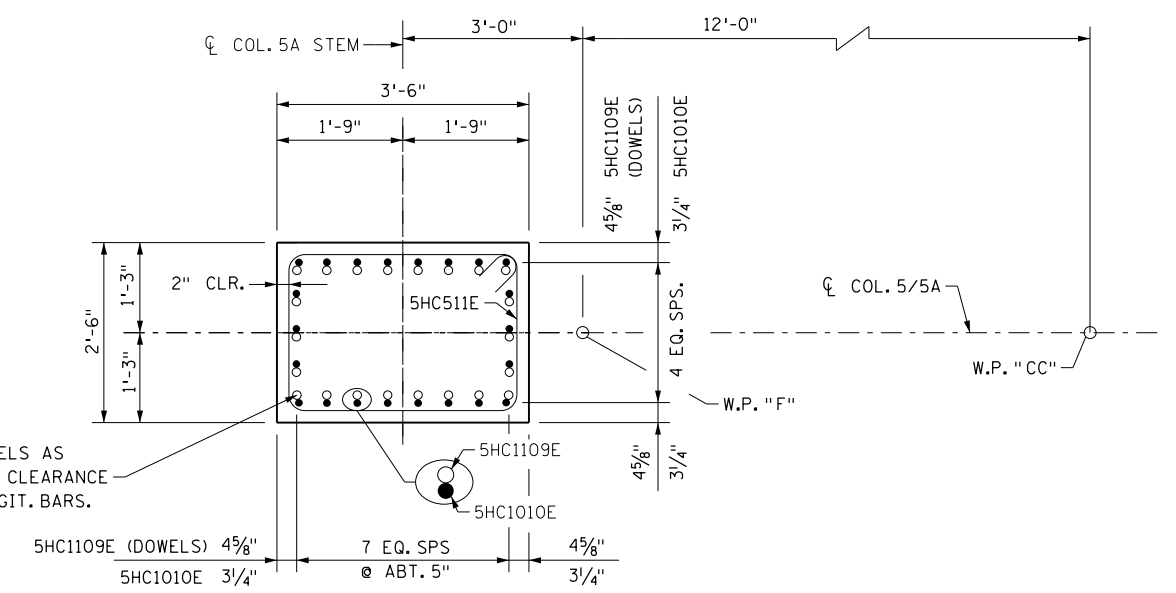
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FOOTING PLAN

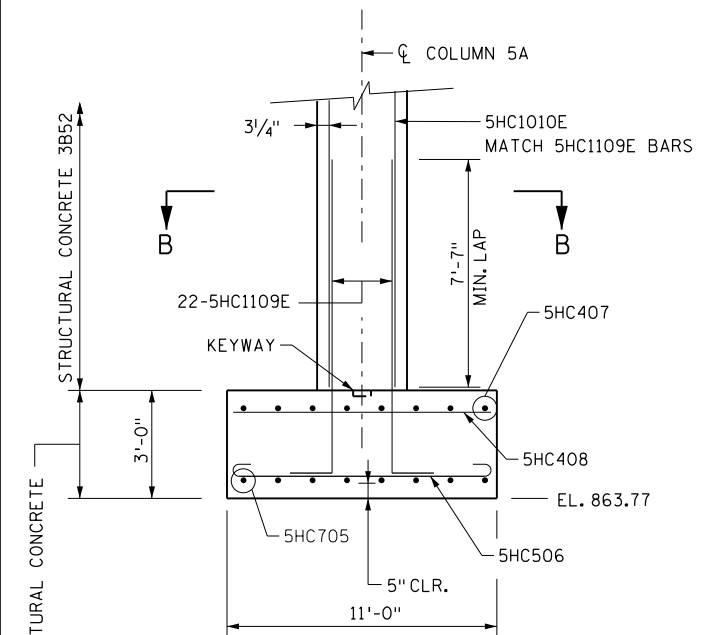


COLUMN 5 STEM DETAIL
SECTION A - A

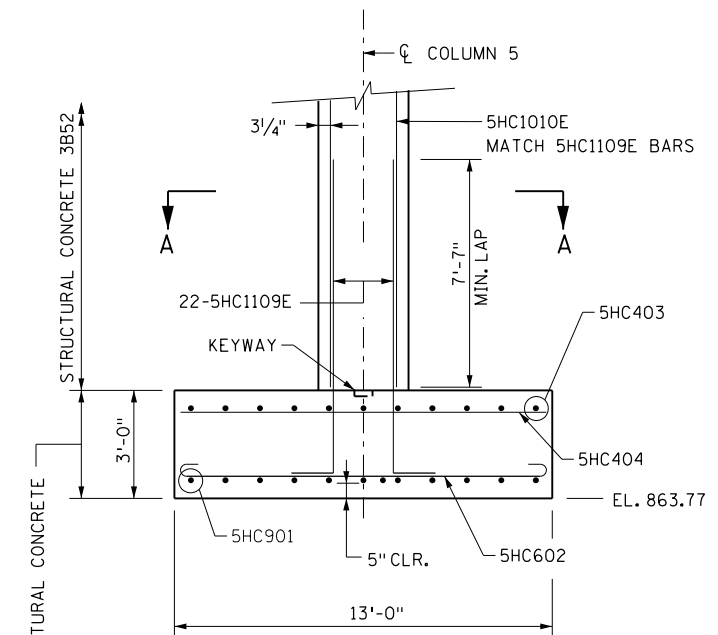


COLUMN 5A STEM DETAIL
SECTION B - B

LAP BARS WITH DOWELS AS SHOWN TO MAXIMIZE CLEARANCE FOR RING BEAM LONGIT. BARS.



FOOTING SECTION
COLUMN 5A



FOOTING SECTION
COLUMN 5

COLUMN 5A SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.6 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	10.03 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	4.71 FT.
SERVICE BEARING RESISTANCE $\phi_b \cdot q_n$	2.7 TONS/SQ.FT.

COLUMN 5 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.6 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	10.14 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	8.37 FT.
SERVICE BEARING RESISTANCE $\phi_b \cdot q_n$	2.7 TONS/SQ.FT.

* BASED ON SERVICE 1 LOAD COMBINATION

* BASED ON SERVICE 1 LOAD COMBINATION

NOTES
ALL KEYWAYS ARE 2" X 6" X 1'-6".
FOR BILL OF REINFORCEMENT, SEE SHEET 47.

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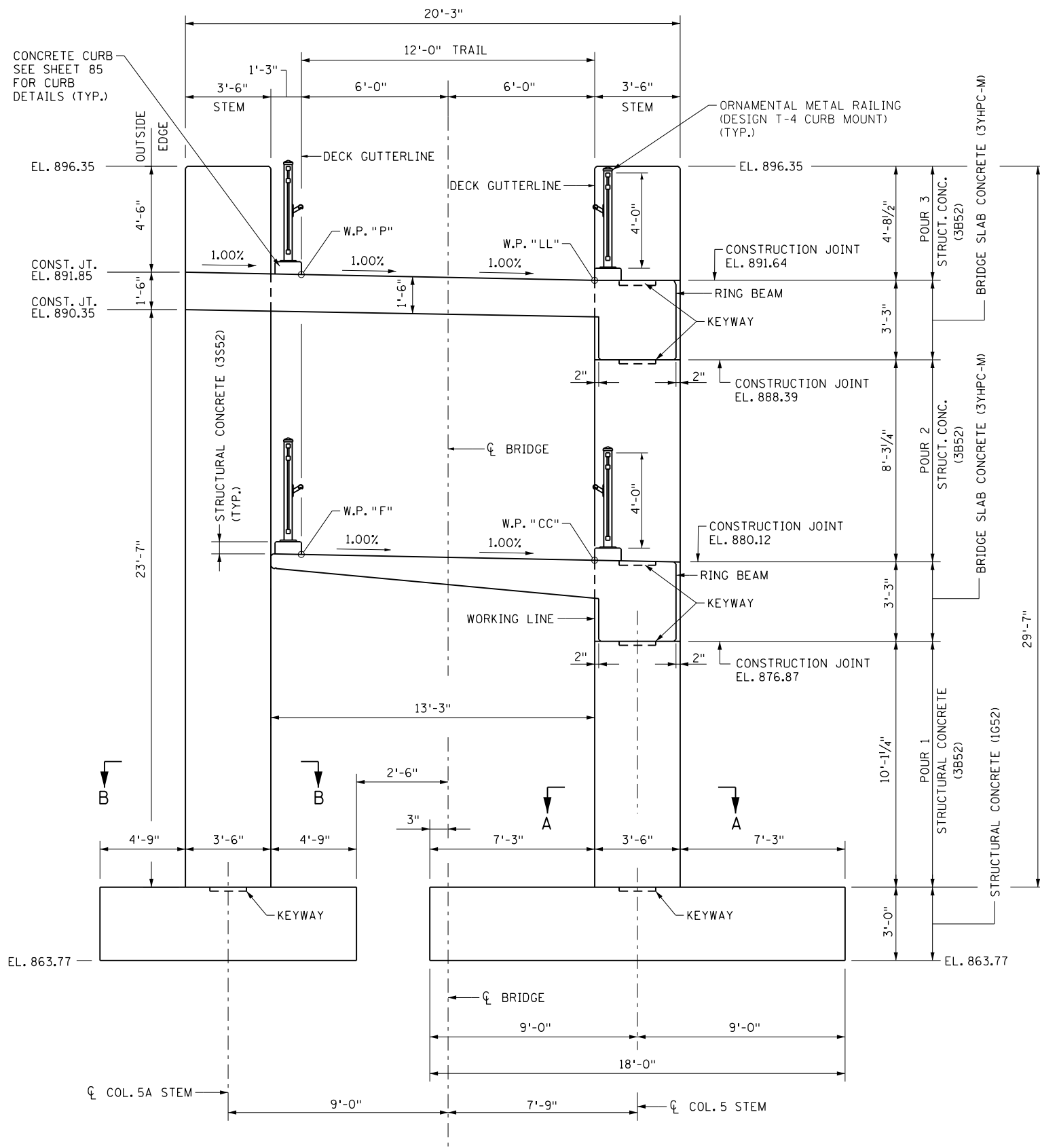
7533 SUNWOOD DRIVE N.W.
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

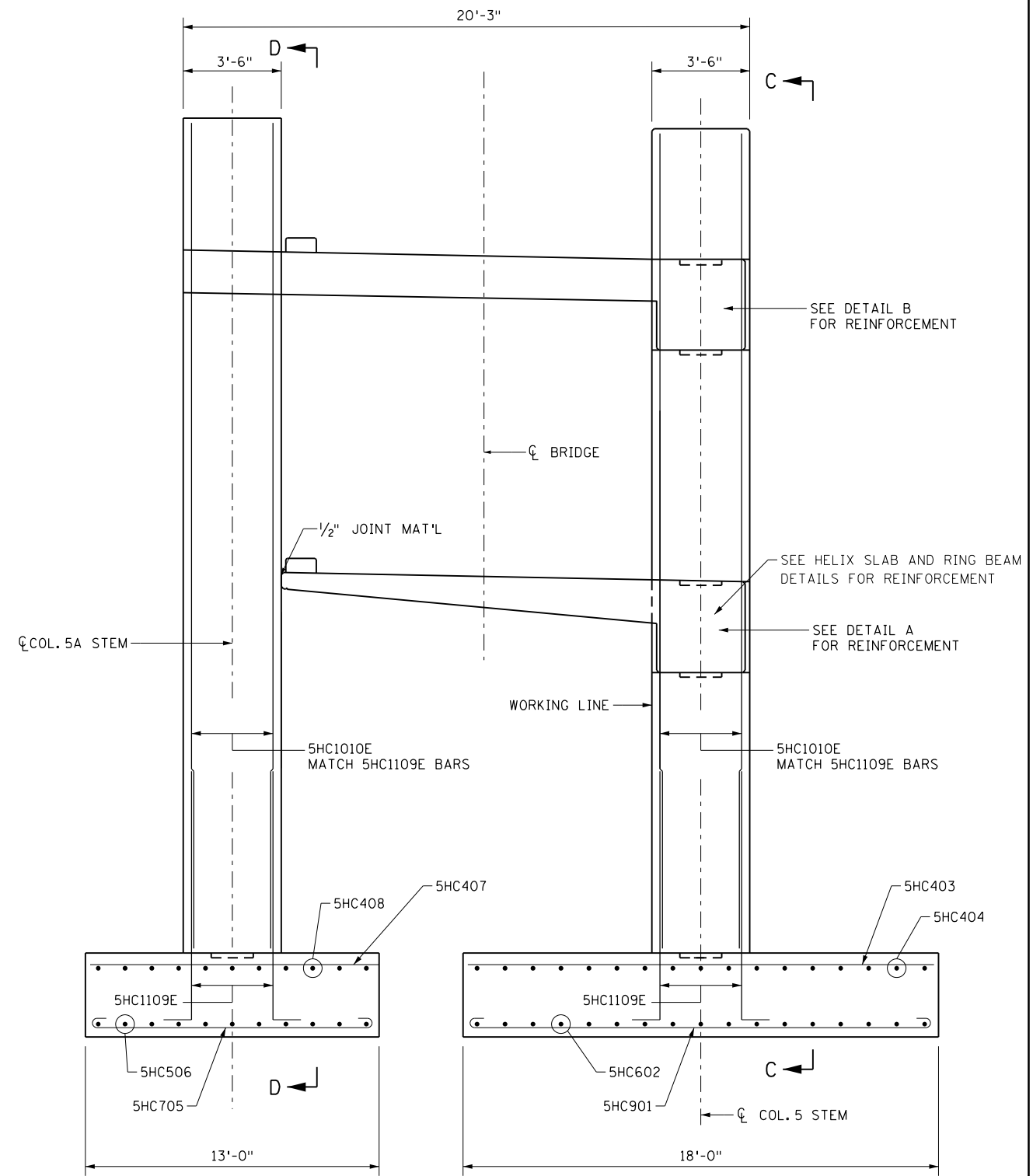
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HELIX COLUMN 5
DETAILS & REINFORCEMENT
S.A.P. 199-010-012
SHEET NO. 36 OF 99 SHEETS

BRIDGE NO.
02053



ELEVATION PLAN



ELEVATION REINFORCEMENT

NOTES

- FOR SECTIONS A - A AND B - B, SEE SHEET 36.
- FOR SECTIONS C - C AND D - D, SEE SHEET 38.
- FOR DETAILS A AND B, SEE SHEET 38.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 47.

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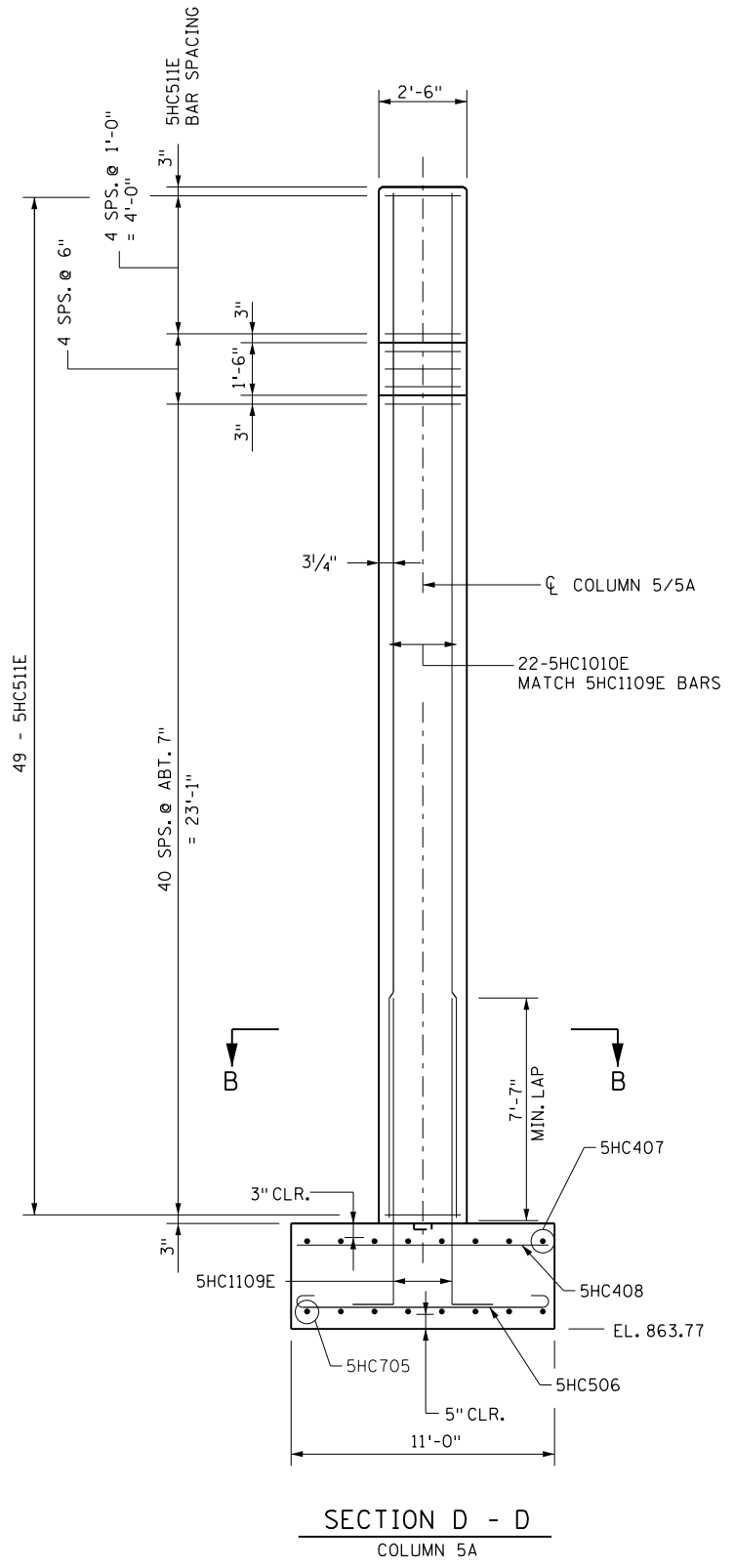
HELIX COLUMN 5
 DETAILS & REINFORCEMENT

DESIGNED	ATP	DRAWN	JMR	APPROVED

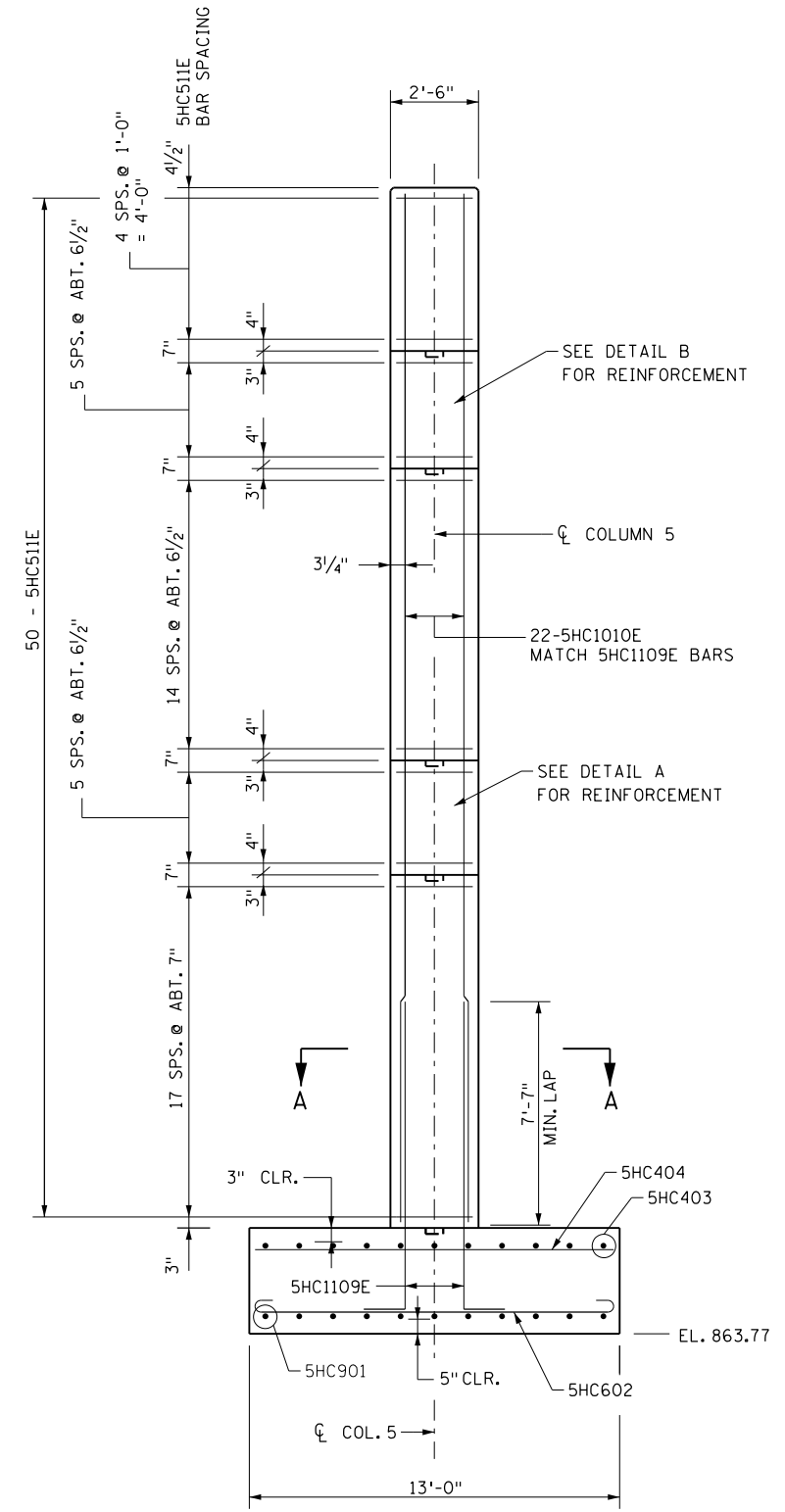
S.A.P. 199-010-012
 SHEET NO. 37 OF 99 SHEETS

BRIDGE NO.
 02053

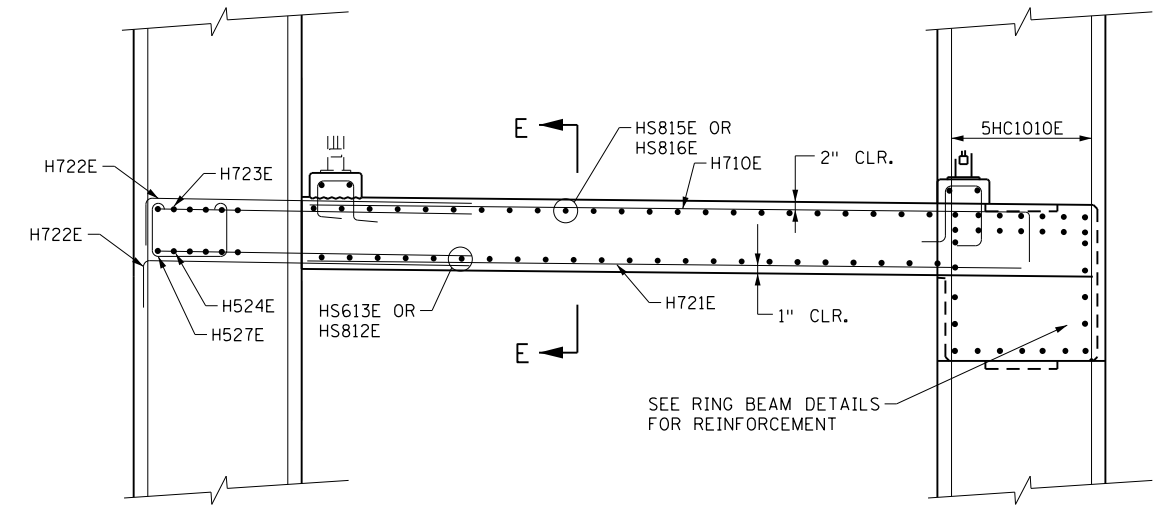
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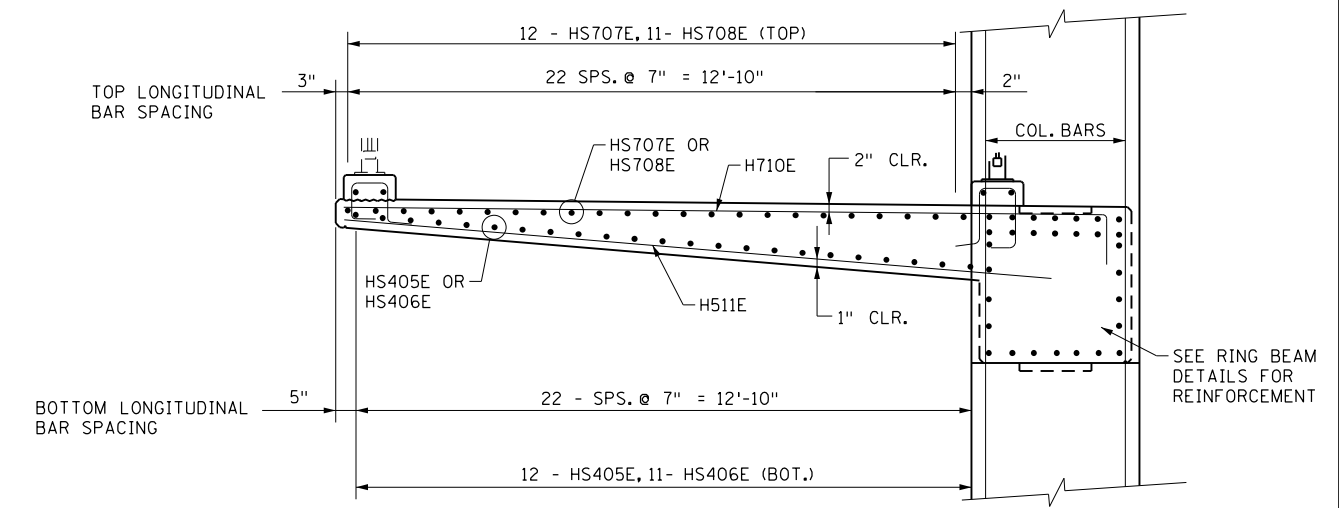
SECTION D - D
COLUMN 5A



SECTION C - C
COLUMN 5



DETAIL B
SLAB SEGMENT THRU COLUMN STEM



DETAIL A
SLAB SEGMENT THRU COLUMN STEM

NOTES

- FOR SECTIONS A - A AND B - B, SEE SHEET 36.
- FOR SECTIONS E - E, SEE SHEET 39.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 47.

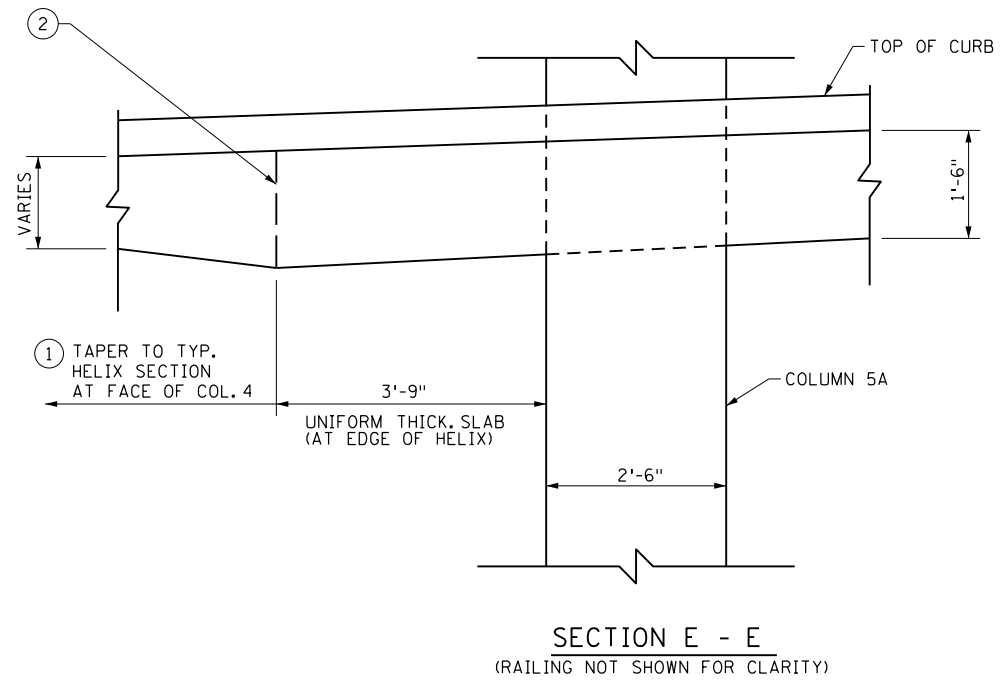
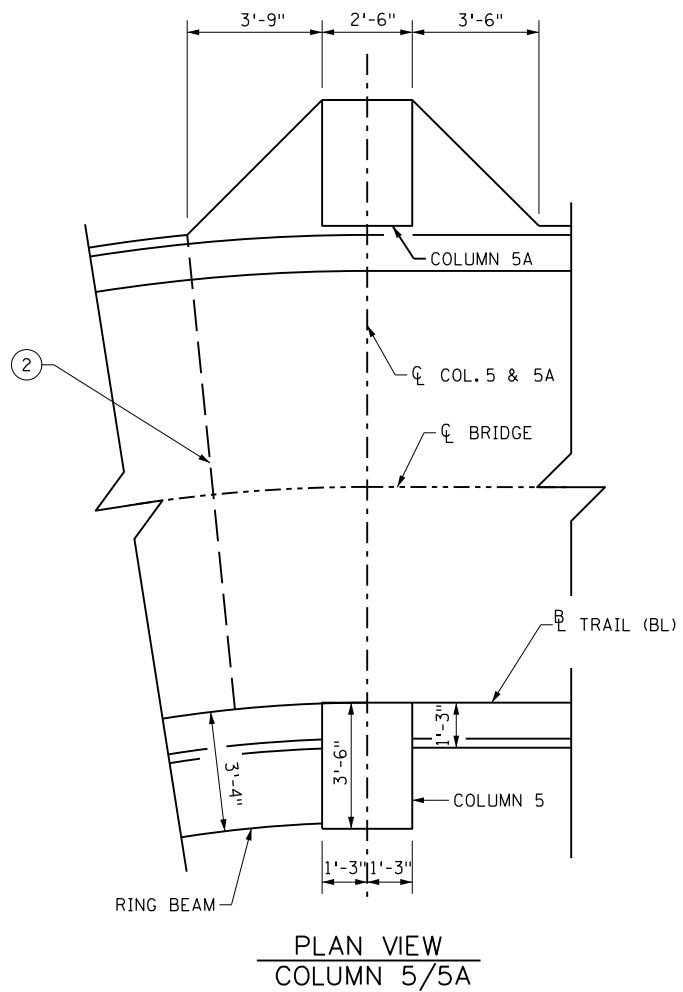
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HELIX COLUMN 5 DETAILS & REINFORCEMENT					
S.A.P. 199-010-012					
SHEET NO. 38 OF 99 SHEETS					
BRIDGE NO.					02053



NOTES

- ① DECK TAPERED FROM TYPICAL OVERHANG THICKNESS TO MATCH APPROACH SPAN THICKNESS.

ALL KEYWAYS ARE 2" X 6" X 1'-6".

FOR BILL OF REINFORCEMENT, SEE SHEET 47.
- ② TRANSITION LIMITS. TAPER HELIX SLAB THICKNESS TO UNIFORM 1'-6" SLAB WITHIN LIMITS SHOWN. MAINTAIN NOTED COVER FOR BARS.

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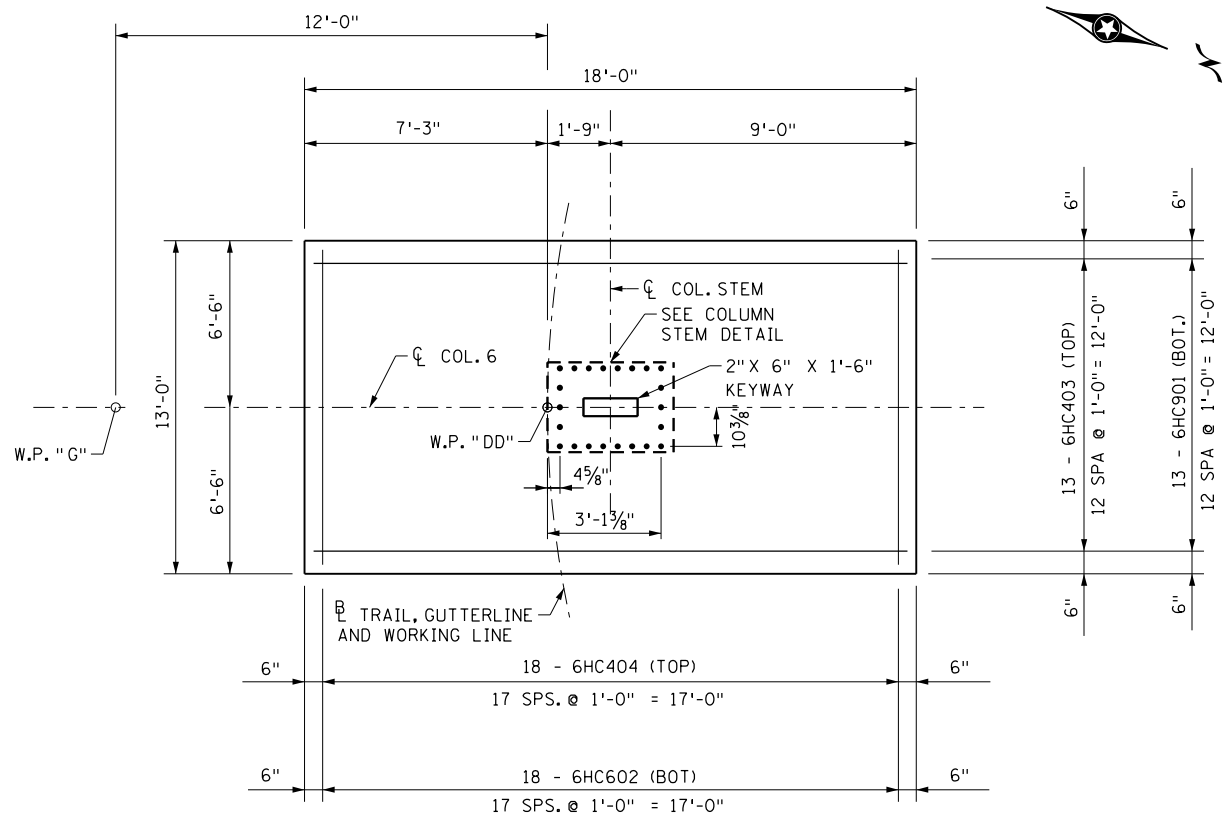
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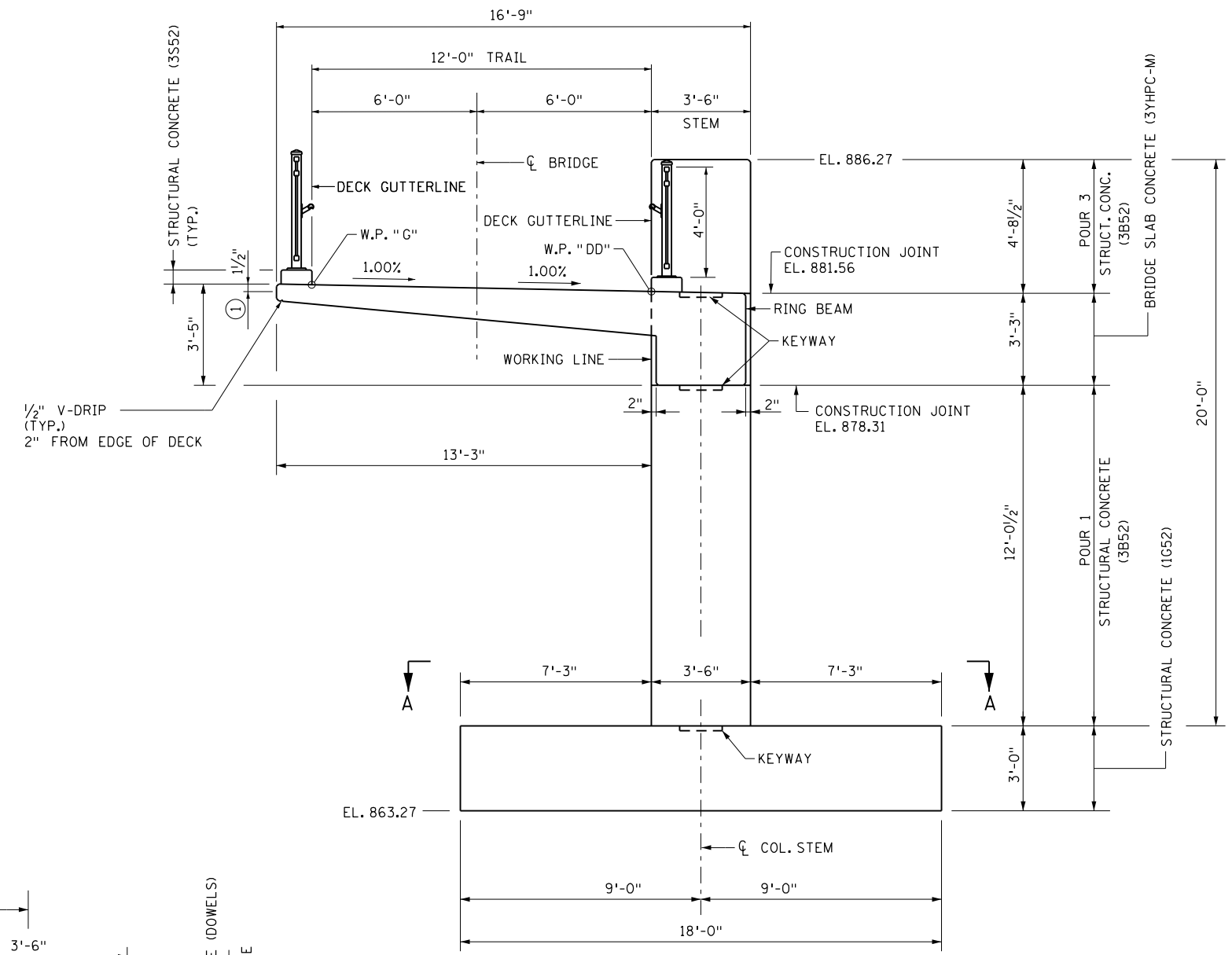
**HELIX COLUMN 5
DETAILS & REINFORCEMENT**

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S.A.P. 199-010-012				
SHEET NO. 39 OF 99 SHEETS				

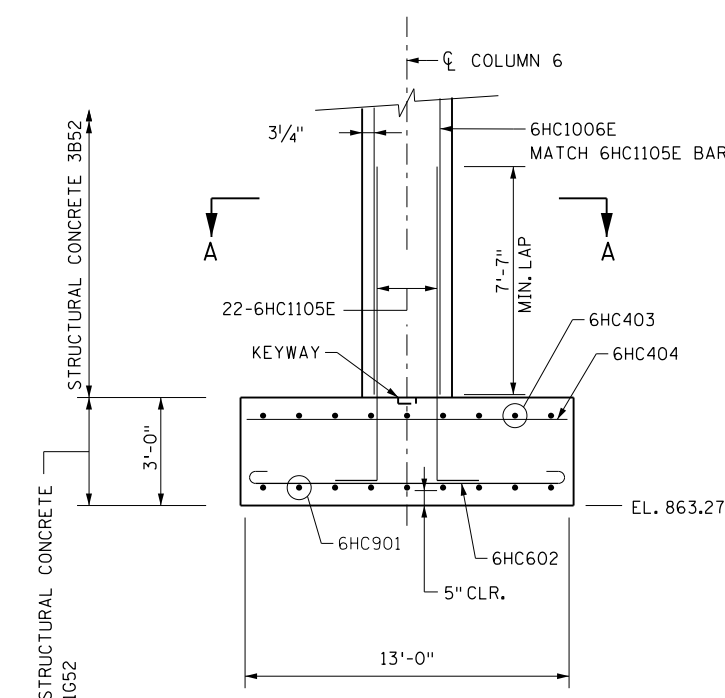
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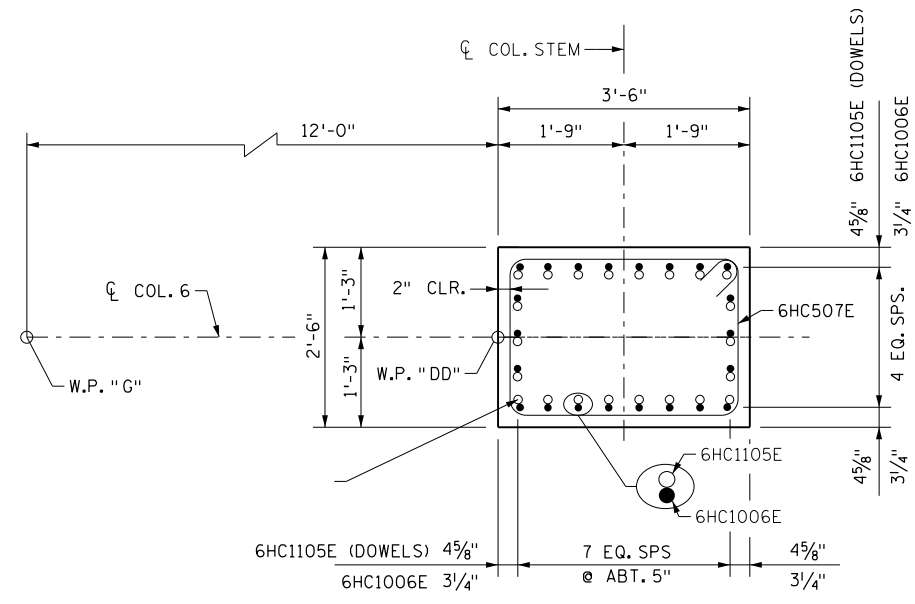
FOOTING PLAN



ELEVATION



FOOTING SECTION



COLUMN STEM DETAIL SECTION A-A

COLUMN 6 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.5 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	9.61 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	6.52 FT.
SERVICE BEARING RESISTANCE $\phi_b \cdot q_n$	2.8 TONS/SQ.FT.

* BASED ON SERVICE 1 LOAD COMBINATION

NOTES

- ① MEASURED GUTTERLINE TO GUTTERLINE.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 47.

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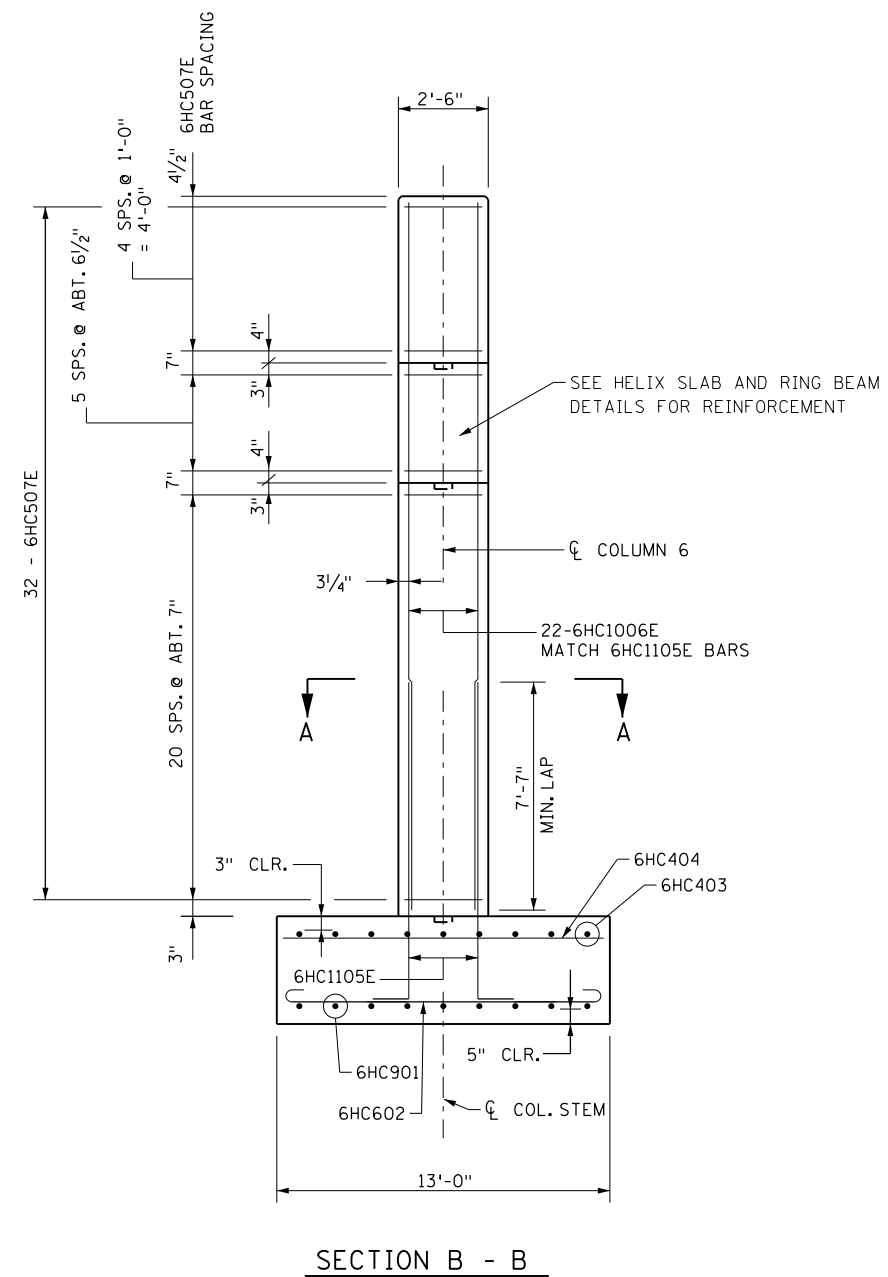
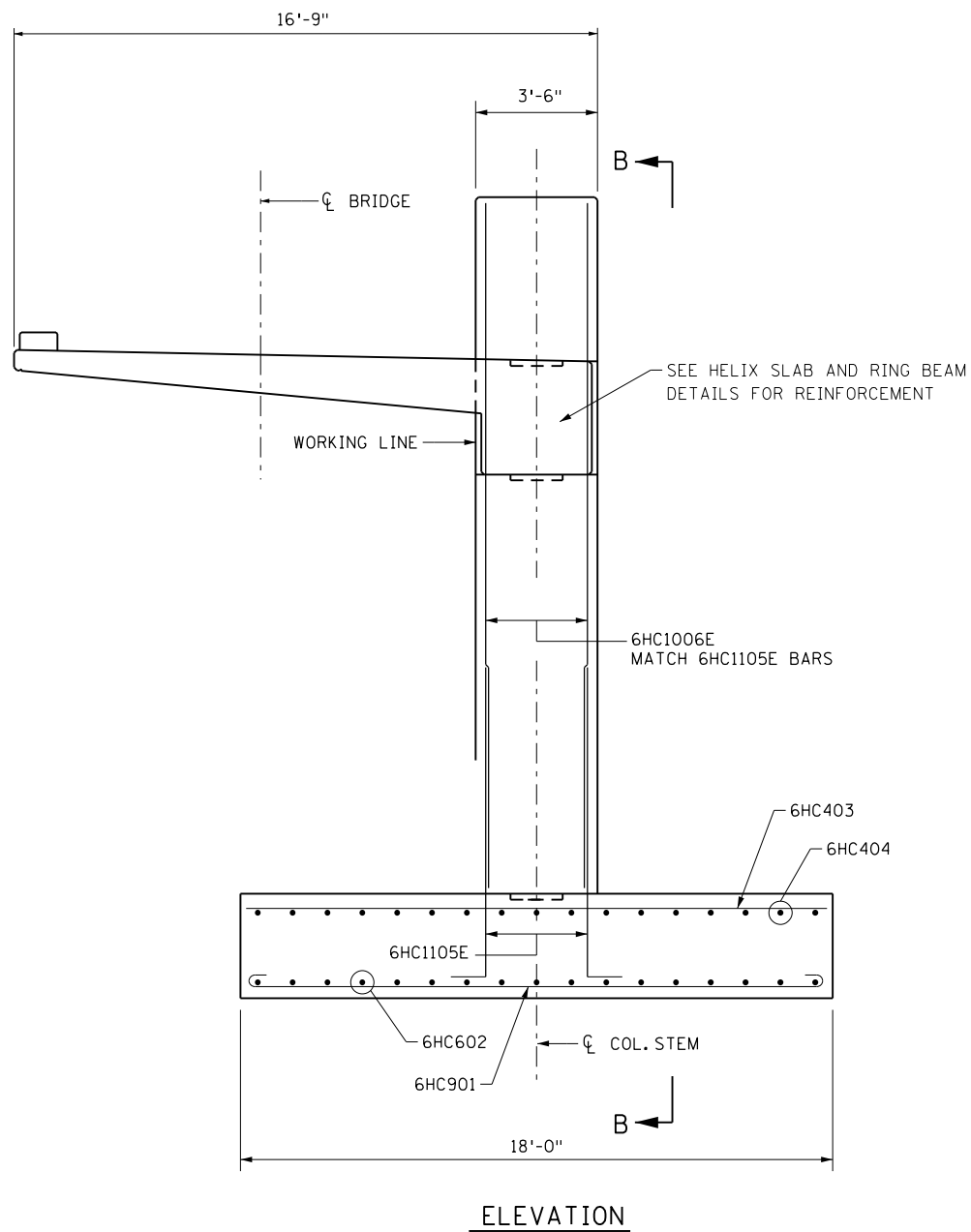
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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

TITLE:
**HELIX COLUMN 6
 DETAILS & REINFORCEMENT**

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	

S.A.P. 199-010-012
 SHEET NO. 40 OF 99 SHEETS

BRIDGE NO.
02053



NOTES

- FOR SECTION A - A , SEE SHEET 40.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 47.

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TITLE:

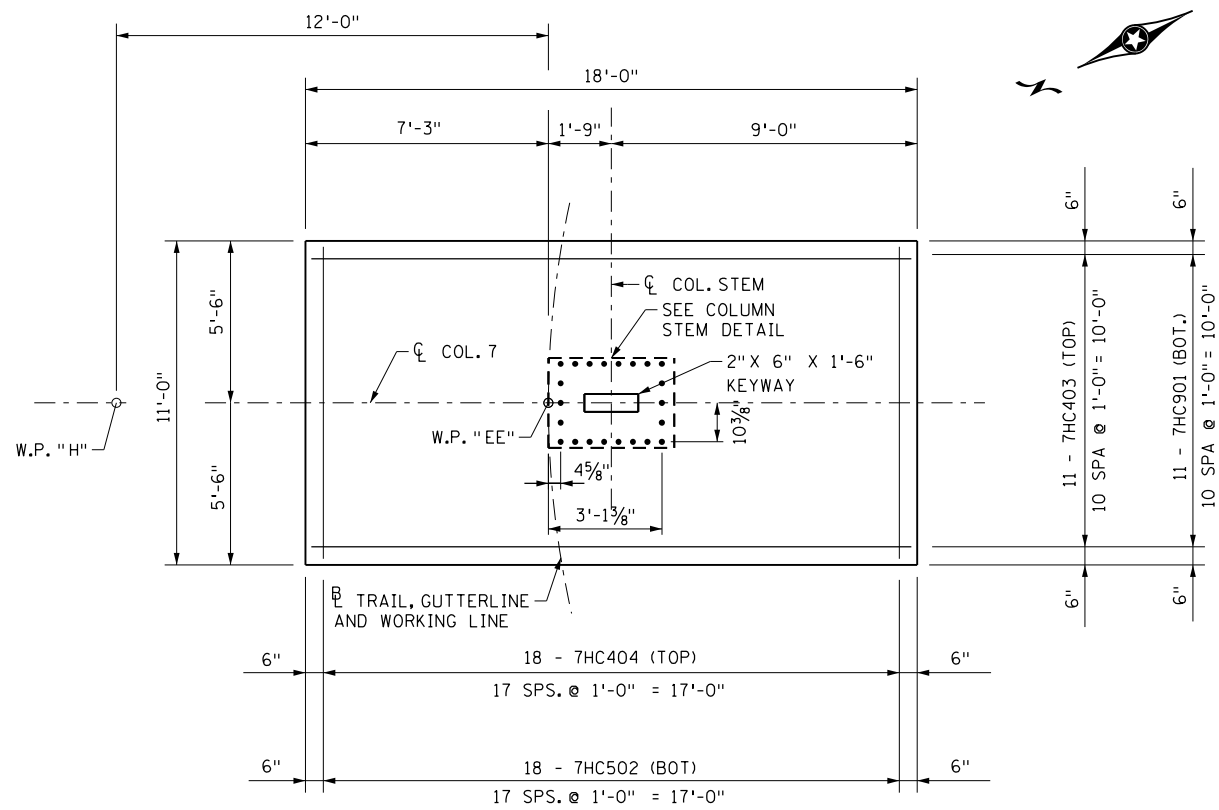
**HELIX COLUMN 6
DETAILS & REINFORCEMENT**

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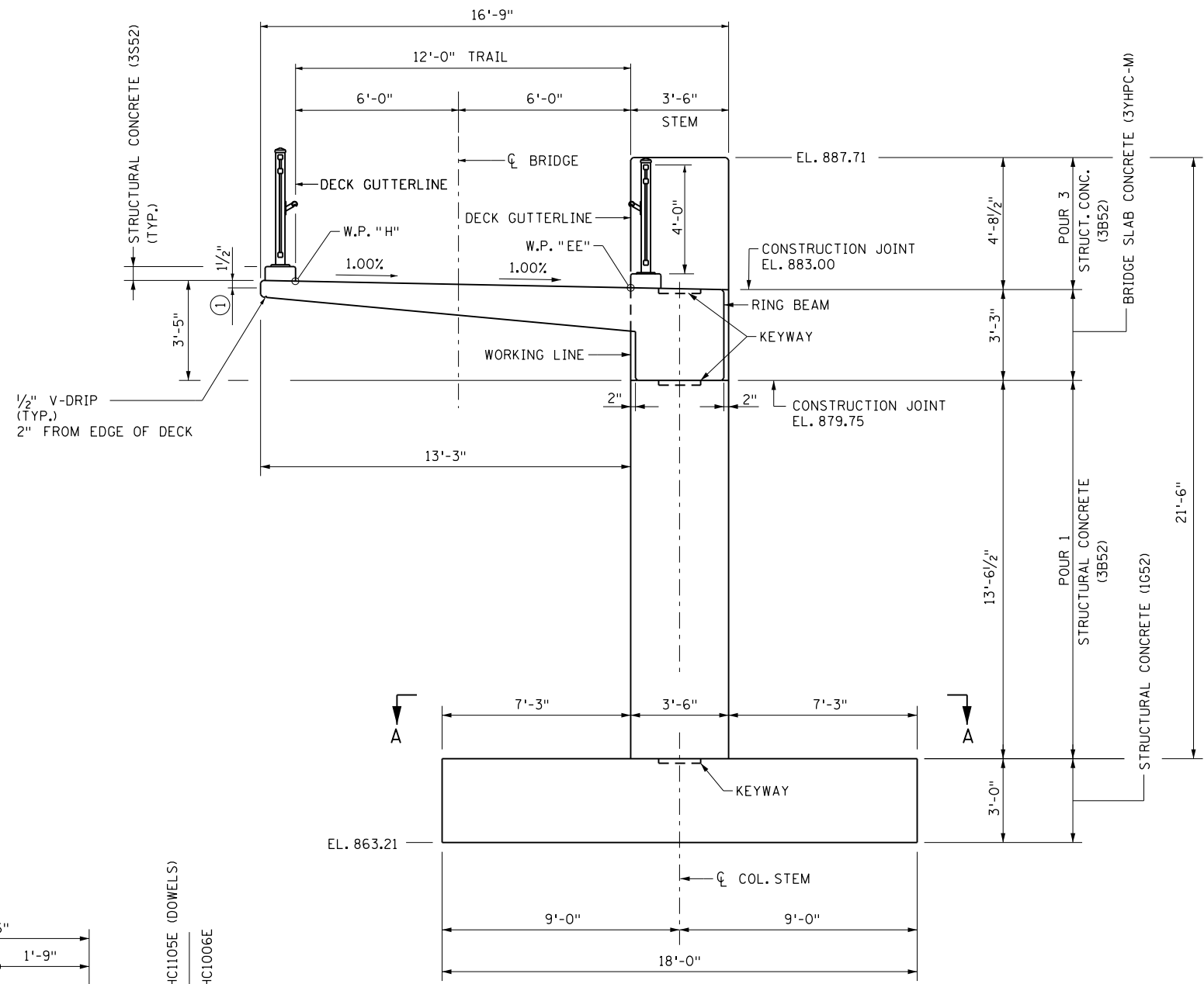
S.A.P. 199-010-012

SHEET NO. 41 OF 99 SHEETS

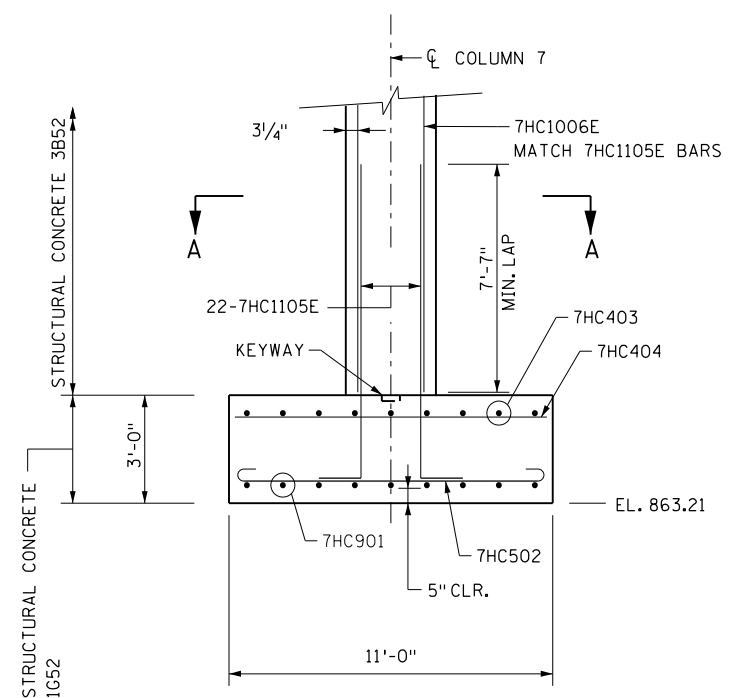
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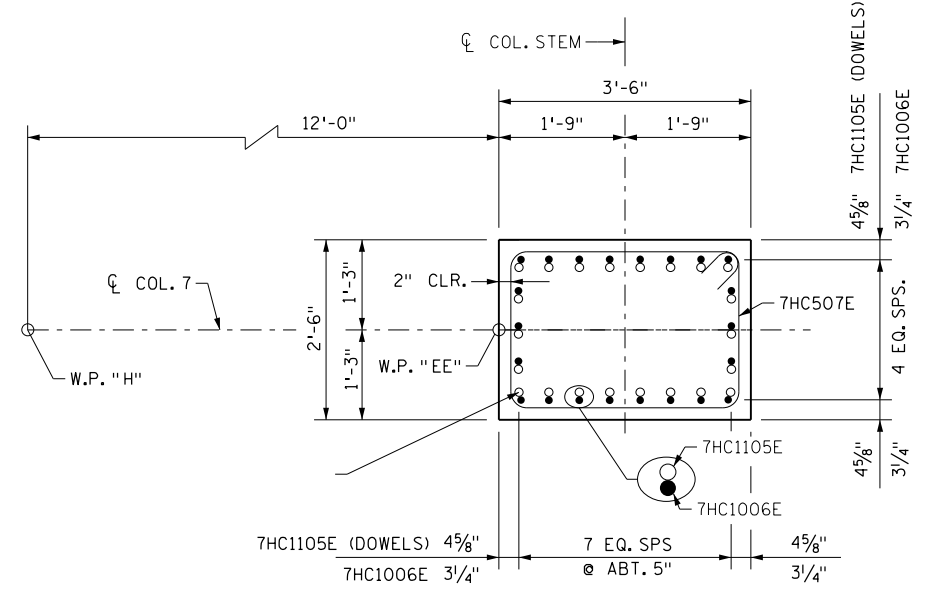
FOOTING PLAN



ELEVATION



FOOTING SECTION



COLUMN STEM DETAIL SECTION A-A

COLUMN 7 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.6 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	9.25 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	5.79 FT.
SERVICE BEARING RESISTANCE $\phi_b \cdot q_n$	2.8 TONS/SQ.FT.

* BASED ON SERVICE 1 LOAD COMBINATION

NOTES

- ① MEASURED GUTTERLINE TO GUTTERLINE.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 48.

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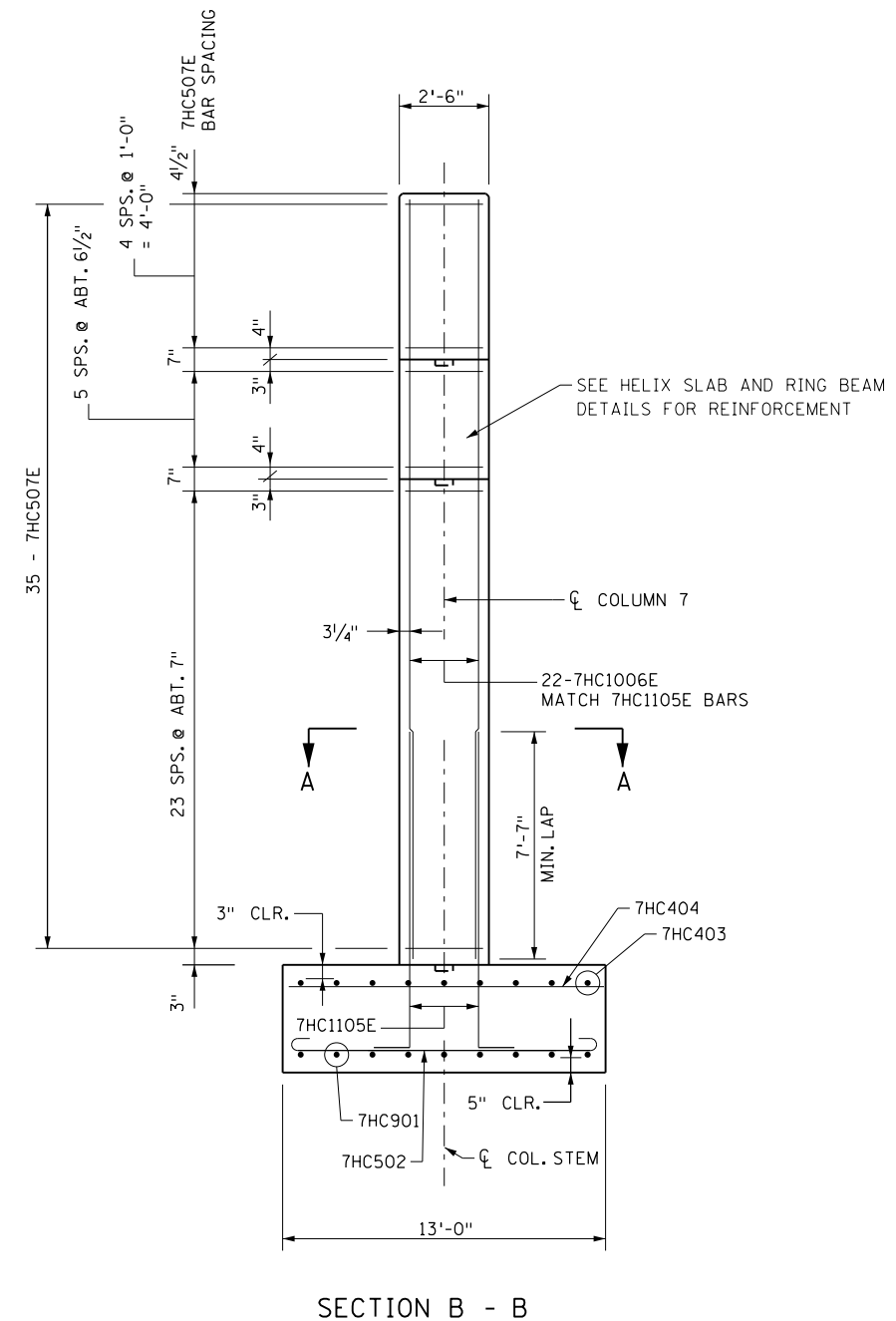
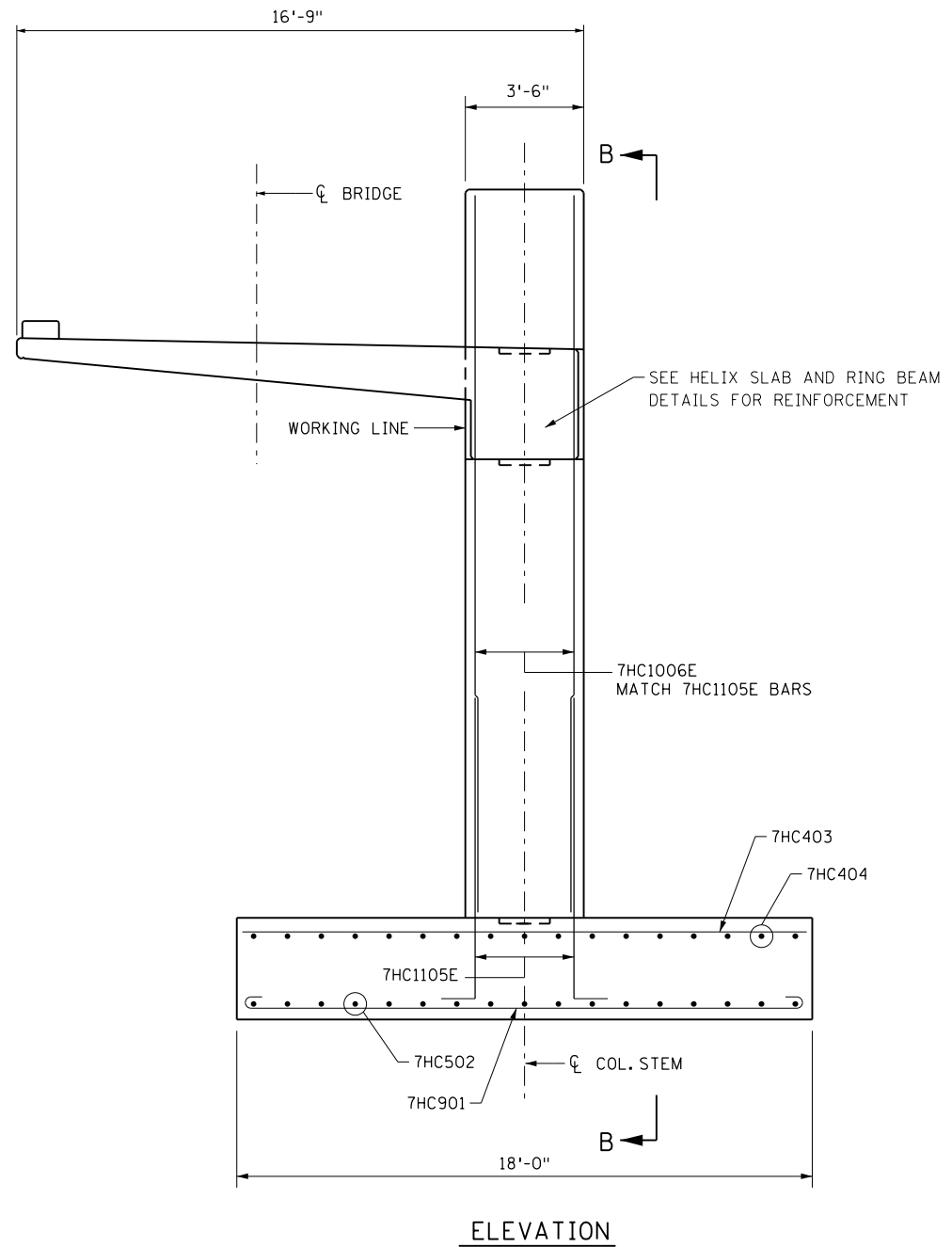
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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

TITLE:
**HELIX COLUMN 7
DETAILS & REINFORCEMENT**

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	

S.A.P. 199-010-012
SHEET NO. 42 OF 99 SHEETS

BRIDGE NO.
02053



NOTES

FOR SECTION A - A , SEE SHEET 42.

ALL KEYWAYS ARE 2" X 6" X 1'-6".

FOR BILL OF REINFORCEMENT, SEE SHEET 48.

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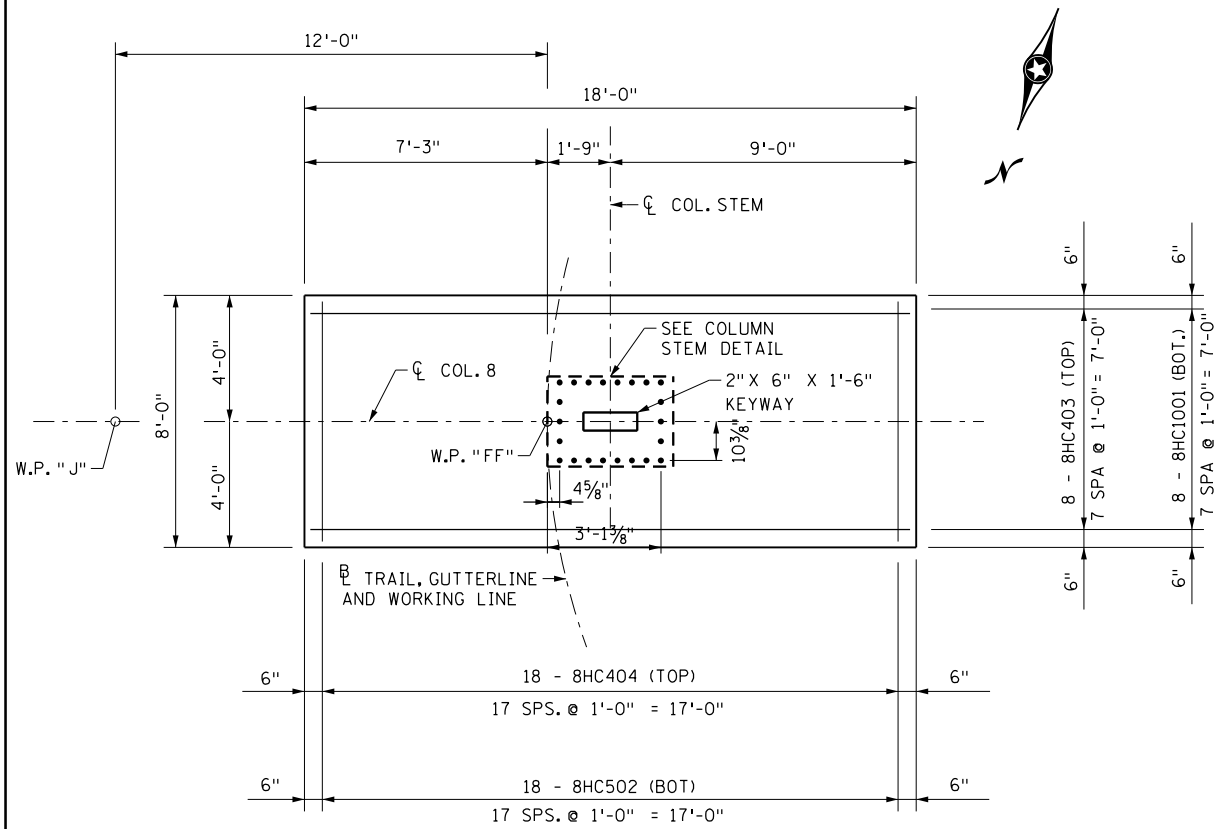
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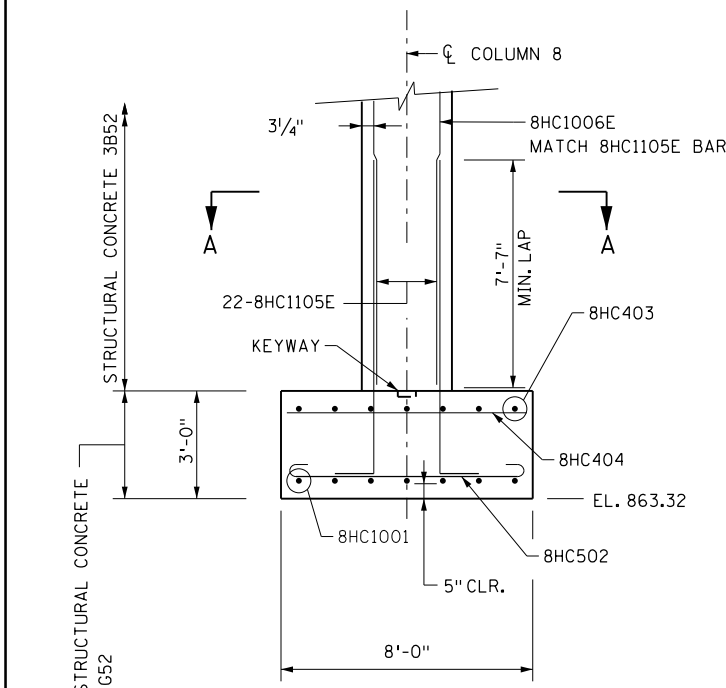
**HELIX COLUMN 7
 DETAILS & REINFORCEMENT**

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S.A.P. 199-010-012				
SHEET NO. 43 OF 99 SHEETS				

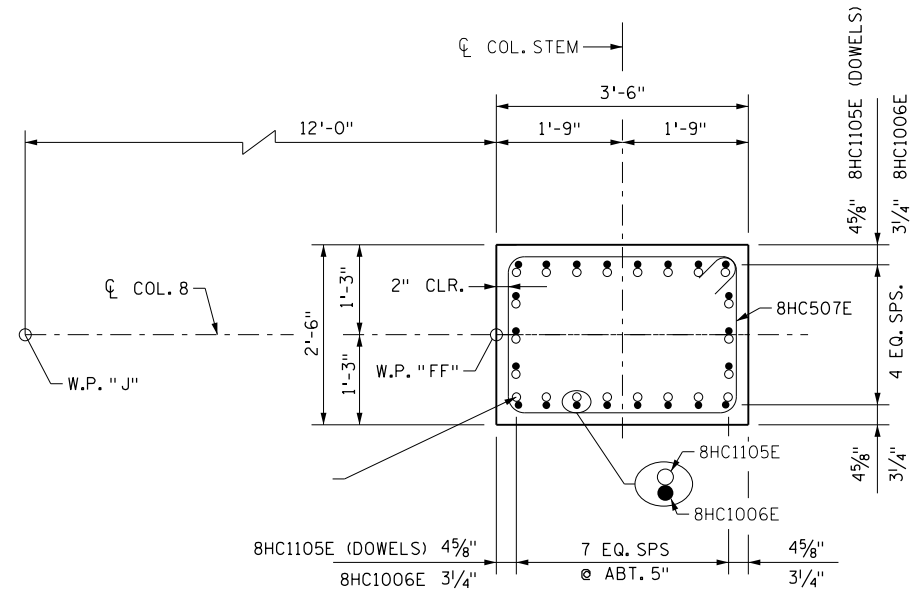
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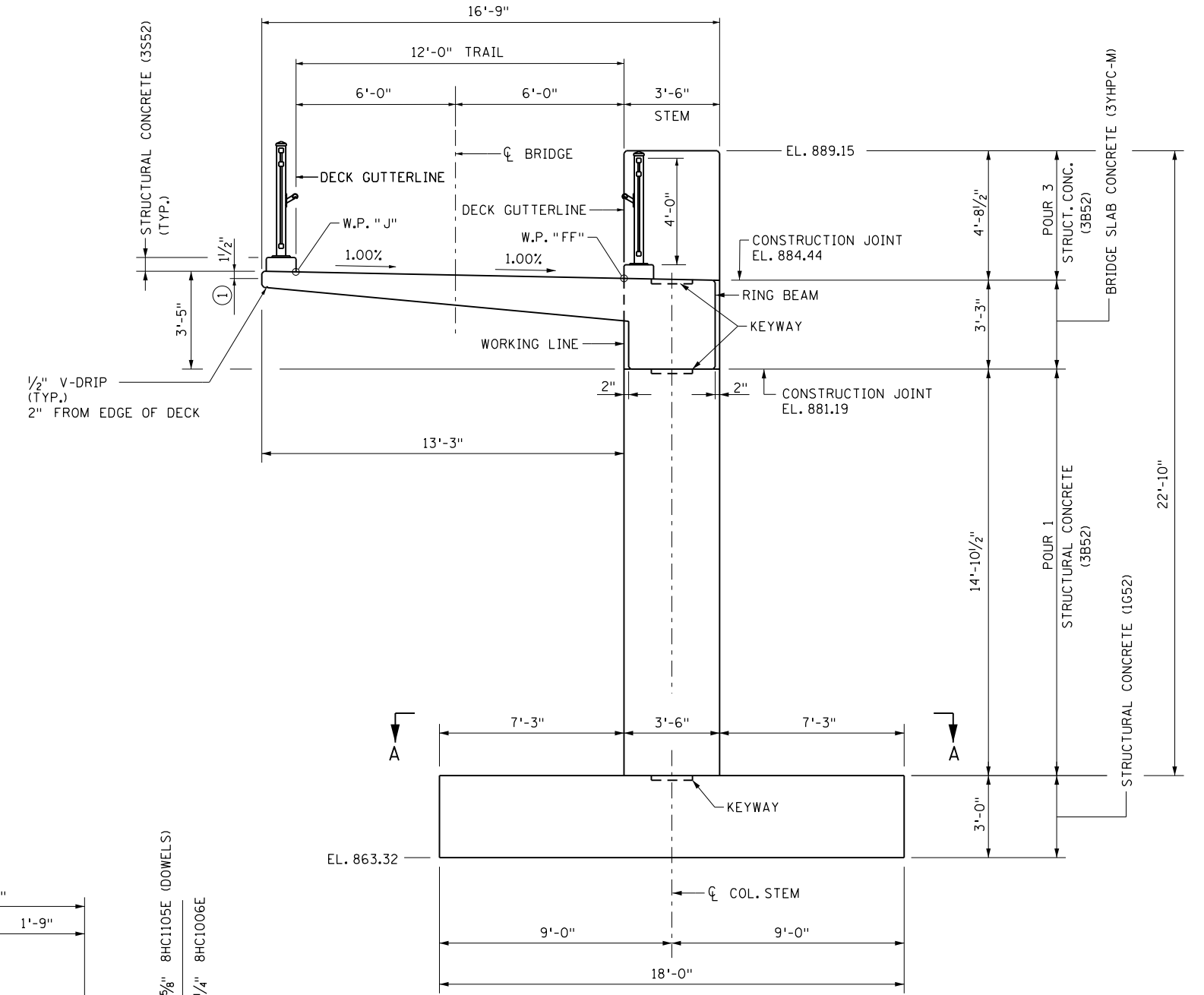
FOOTING PLAN



FOOTING SECTION



COLUMN STEM DETAIL SECTION A-A



ELEVATION

COLUMN 8 SPREAD FOOTING LOAD DATA	
* SERVICE DESIGN BEARING PRESSURE	2.9 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	6.81 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	6.75 FT.
SERVICE BEARING RESISTANCE $\phi_b \cdot q_n$	3.3 TONS/SQ.FT.

NOTES

- ① MEASURED GUTTERLINE TO GUTTERLINE.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 48.

* BASED ON SERVICE 1 LOAD COMBINATION

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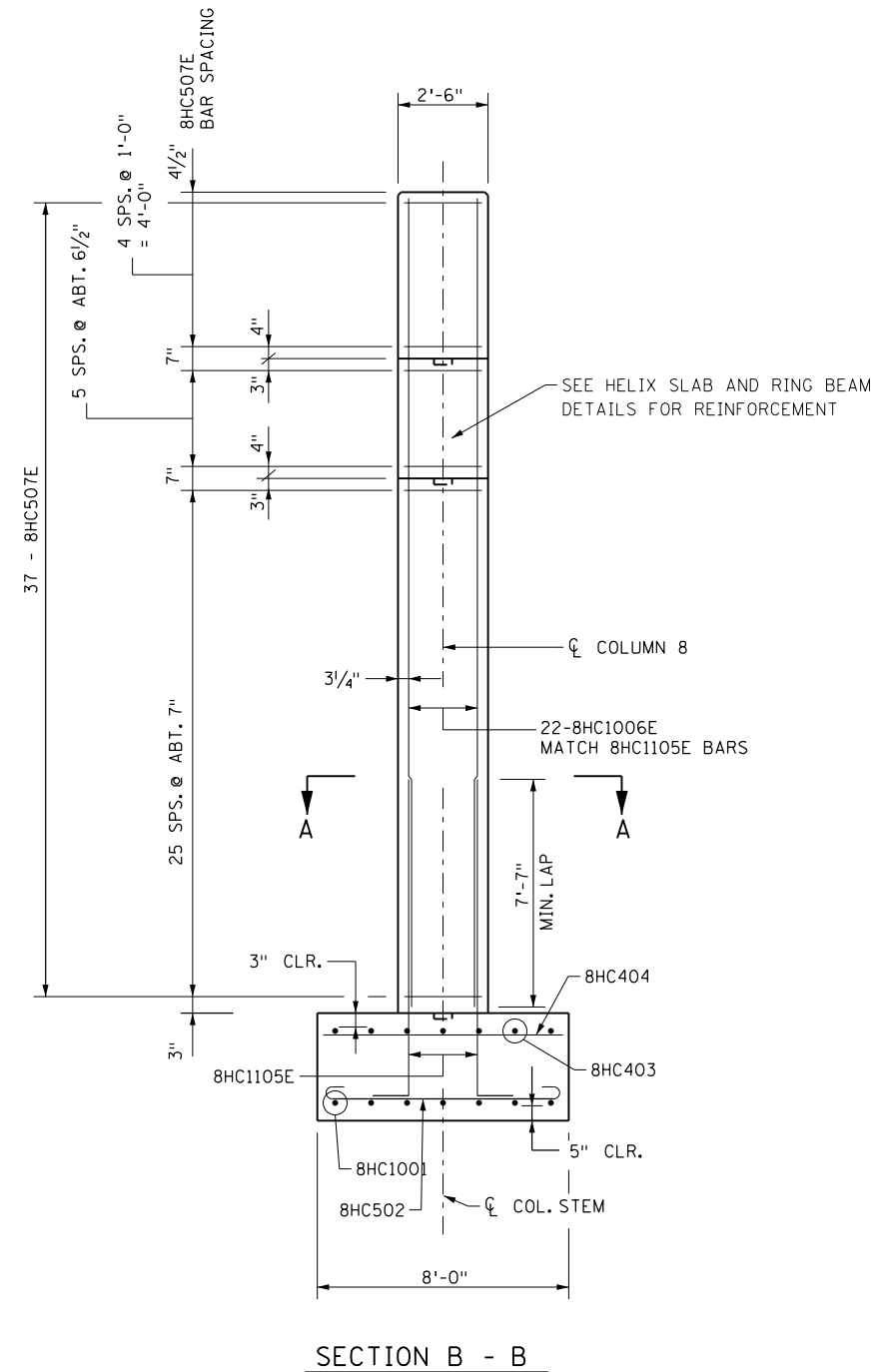
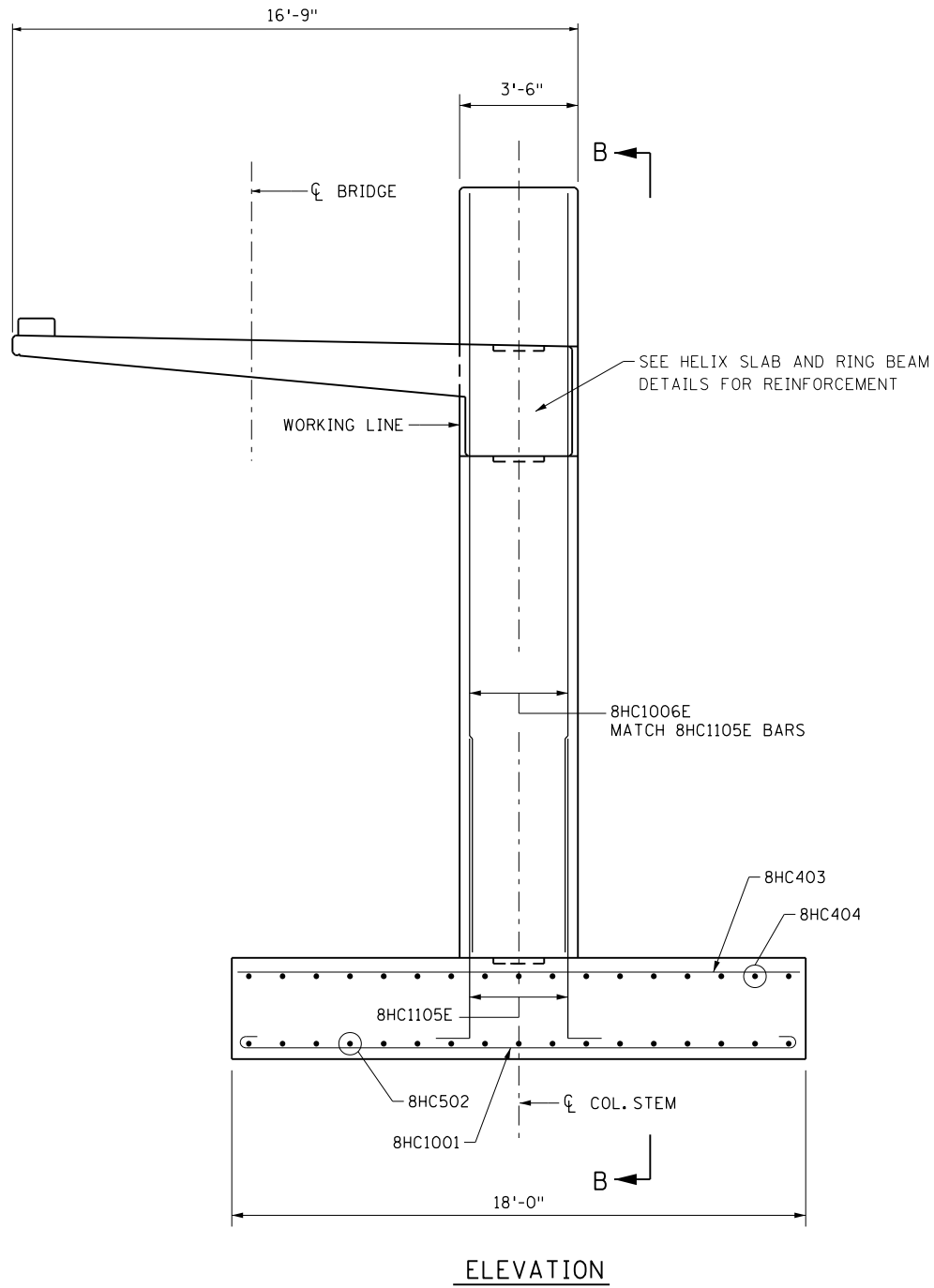
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TITLE:
**HELIX COLUMN 8
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S.A.P. 199-010-012
 SHEET NO. 44 OF 99 SHEETS

BRIDGE NO.
02053



NOTES

- FOR SECTION A - A , SEE SHEET 44.
- ALL KEYWAYS ARE 2" X 6" X 1'-6".
- FOR BILL OF REINFORCEMENT, SEE SHEET 48.

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TITLE:

**HELIX COLUMN 8
 DETAILS & REINFORCEMENT**

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	
S.A.P. 199-010-012				
SHEET NO. 45 OF 99 SHEETS				








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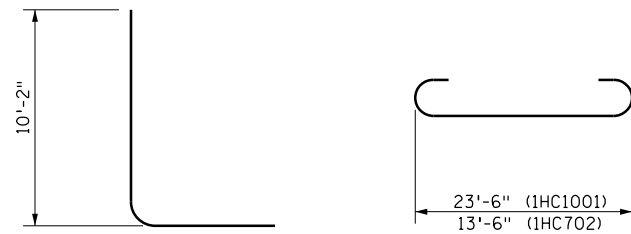
SUMMARY OF QUANTITIES FOR COLUMN 1

STRUCTURAL CONCRETE (1G52)	37.3	CU YD
STRUCTURAL CONCRETE (3B52)	5.6	CU YD
REINFORCEMENT BARS	2807	POUND
REINFORCEMENT BARS (EPOXY COATED)	4150	POUND
ANTI-GRAFFITI COATING	208	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	208	SQ FT

COLUMN 1

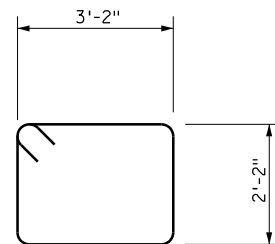
BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
1HC1001	14	26'-4"		FOOTING, LONG.
1HC702	24	16'-0"		FOOTING, TRANSV.
1HC403	14	23'-6"		FOOTING, LONG.
1HC404	24	13'-6"		FOOTING, TRANSV.
1HC1105E	22	12'-2"		FOOTING, VERT., DOWEL
1HC1006E	22	23'-7"		COLUMN, LONG.
1HC507E	41	11'-7"		COLUMN, TIE



1HC1105E

1HC1001, 1HC702










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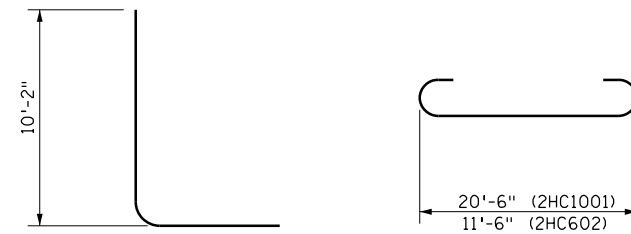
SUMMARY OF QUANTITIES FOR COLUMN 2

STRUCTURAL CONCRETE (1G52)	26.7	CU YD
STRUCTURAL CONCRETE (3B52)	8.2	CU YD
REINFORCEMENT BARS	1849	POUND
REINFORCEMENT BARS (EPOXY COATED)	4304	POUND
ANTI-GRAFFITI COATING	304	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	304	SQ FT

COLUMN 2

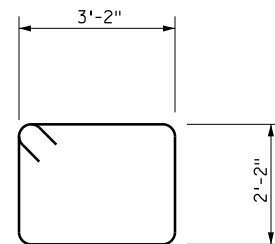
BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
2HC1001	12	22'-4"		FOOTING, LONG.
2HC602	20	12'-10"		FOOTING, TRANSV.
2HC403	12	19'-6"		FOOTING, LONG.
2HC404	20	11'-6"		FOOTING, TRANSV.
2HC1105E	22	12'-2"		FOOTING, VERT., DOWEL
2HC1006E	22	25'-1"		COLUMN, LONG.
2HC507E	42	11'-7"		COLUMN, TIE



2HC1105E

2HC1001, 2HC602










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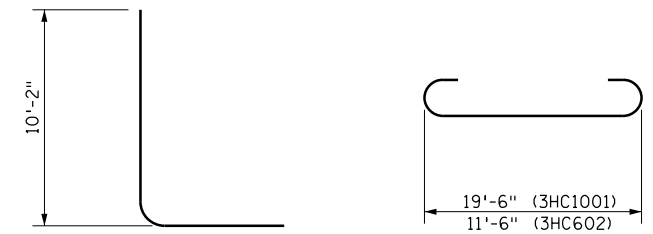
SUMMARY OF QUANTITIES FOR COLUMN 3

STRUCTURAL CONCRETE (1G52)	26.7	CU YD
STRUCTURAL CONCRETE (3B52)	8.4	CU YD
REINFORCEMENT BARS	1849	POUND
REINFORCEMENT BARS (EPOXY COATED)	4423	POUND
ANTI-GRAFFITI COATING	312	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	312	SQ FT

COLUMN 3

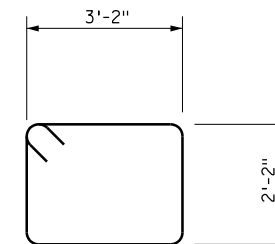
BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
3HC1001	12	22'-4"		FOOTING, LONG.
3HC602	20	12'-10"		FOOTING, TRANSV.
3HC403	12	19'-6"		FOOTING, LONG.
3HC404	20	11'-6"		FOOTING, TRANSV.
3HC1105E	22	12'-2"		FOOTING, VERT., DOWEL
3HC1006E	22	26'-1"		COLUMN, LONG.
3HC507E	44	11'-7"		COLUMN, TIE



3HC1105E

3HC1001, 3HC602



3HC507E

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE _____

HELIX BAR LISTS AND QUANTITIES

DESIGNED	ATP	DRAWN	JMR	APPROVED

S.A.P. 199-010-012
 SHEET NO. 46 OF 99 SHEETS

BRIDGE NO.
 02053

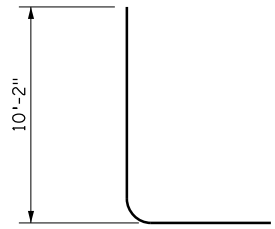
SUMMARY OF QUANTITIES FOR COLUMN 4

STRUCTURAL CONCRETE (1G52)	26.7	CU YD
STRUCTURAL CONCRETE (3B52)	8.9	CU YD
REINFORCEMENT BARS	1849	POUND
REINFORCEMENT BARS (EPOXY COATED)	4558	POUND
ANTI-GRAFFITI COATING	330	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	330	SQ FT

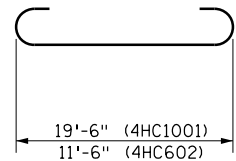
COLUMN 4

BILL OF REINFORCEMENT

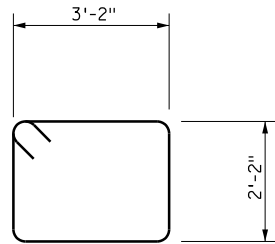
BAR	NUMBER	LENGTH	SHAPE	LOCATION
4HC1001	12	22'-4"		FOOTING, LONG.
4HC602	20	12'-10"		FOOTING, TRANSV.
4HC403	12	19'-6"		FOOTING, LONG.
4HC404	20	11'-6"		FOOTING, TRANSV.
4HC1105E	22	12'-2"		FOOTING, VERT., DOWEL
4HC1006E	22	27'-3"		COLUMN, LONG.
4HC507E	46	11'-7"		COLUMN, TIE



4HC1105E



4HC1001, 4HC602



4HC507E

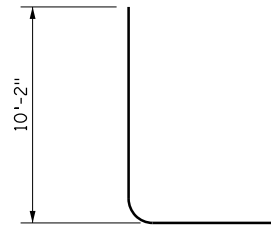
SUMMARY OF QUANTITIES FOR COLUMN 5/5A

STRUCTURAL CONCRETE (1G52)	41.9	CU YD
STRUCTURAL CONCRETE (3B52)	19.1	CU YD
REINFORCEMENT BARS	2220	POUND
REINFORCEMENT BARS (EPOXY COATED)	9594	POUND
ANTI-GRAFFITI COATING	708	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	708	SQ FT

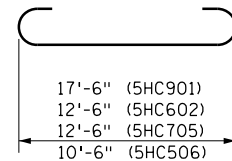
COLUMN 5/5A

BILL OF REINFORCEMENT

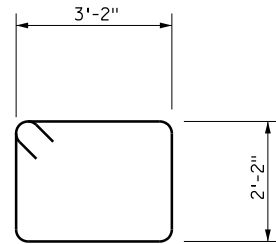
BAR	NUMBER	LENGTH	SHAPE	LOCATION
5HC901	13	20'-0"		FOOTING, LONG.
5HC602	18	13'-10"		FOOTING, TRANSV.
5HC403	13	17'-6"		FOOTING, LONG.
5HC404	18	12'-6"		FOOTING, TRANSV.
5HC705	11	14'-2"		FOOTING, LONG.
5HC506	13	11'-8"		FOOTING, TRANSV.
5HC407	11	12'-6"		FOOTING, LONG.
5HC408	13	10'-6"		FOOTING, TRANSV.
5HC1109E	44	12'-2"		FOOTING, VERT., DOWEL
5HC1010E	44	29'-4"		COLUMN, LONG.
5HC511E	99	11'-7"		COLUMN, TIE



5HC1109E



5HC901, 5HC602, 5HC705, 5HC506



5HC511E

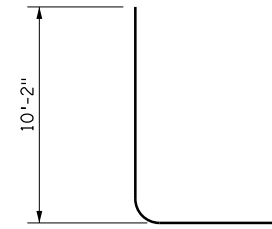
SUMMARY OF QUANTITIES FOR COLUMN 6

STRUCTURAL CONCRETE (1G52)	26.0	CU YD
STRUCTURAL CONCRETE (3B52)	6.5	CU YD
REINFORCEMENT BARS	1560	POUND
REINFORCEMENT BARS (EPOXY COATED)	3678	POUND
ANTI-GRAFFITI COATING	240	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	240	SQ FT

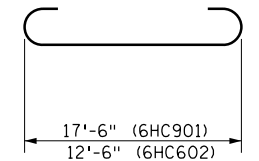
COLUMN 6

BILL OF REINFORCEMENT

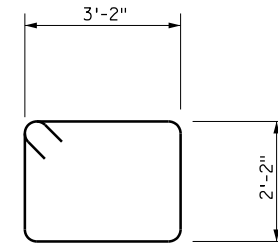
BAR	NUMBER	LENGTH	SHAPE	LOCATION
6HC901	13	20'-0"		FOOTING, LONG.
6HC602	18	13'-10"		FOOTING, TRANSV.
6HC403	13	17'-6"		FOOTING, LONG.
6HC404	18	12'-6"		FOOTING, TRANSV.
6HC1105E	22	12'-2"		FOOTING, VERT., DOWEL
6HC1006E	22	19'-9"		COLUMN, LONG.
6HC507E	32	11'-7"		COLUMN, TIE



6HC1105E



6HC901, 6HC602



6HC507E

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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

TITLE:
HELIX BAR LISTS AND QUANTITIES

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	RRE	

S.A.P. 199-010-012
 SHEET NO. 47 OF 99 SHEETS








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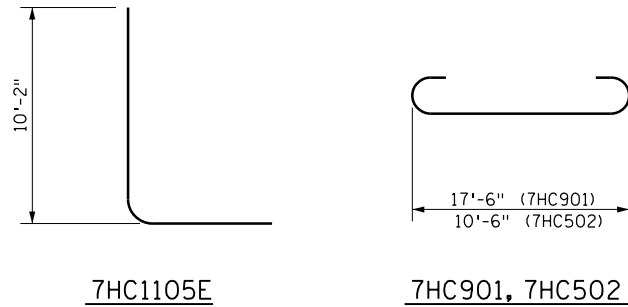
SUMMARY OF QUANTITIES FOR COLUMN 7

STRUCTURAL CONCRETE (1G52)	22.0	CU YD
STRUCTURAL CONCRETE (3B52)	7.0	CU YD
REINFORCEMENT BARS	1222	POUND
REINFORCEMENT BARS (EPOXY COATED)	3857	POUND
ANTI-GRAFFITI COATING	258	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	258	SQ FT

COLUMN 7

BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
7HC901	11	20'-0"		FOOTING, LONG.
7HC502	18	11'-8"		FOOTING, TRANSV.
7HC403	11	17'-6"		FOOTING, LONG.
7HC404	18	10'-6"		FOOTING, TRANSV.
7HC1105E	22	12'-2"		FOOTING, VERT., DOWEL
7HC1006E	22	21'-3"		COLUMN, LONG.
7HC507E	35	11'-7"		COLUMN, TIE










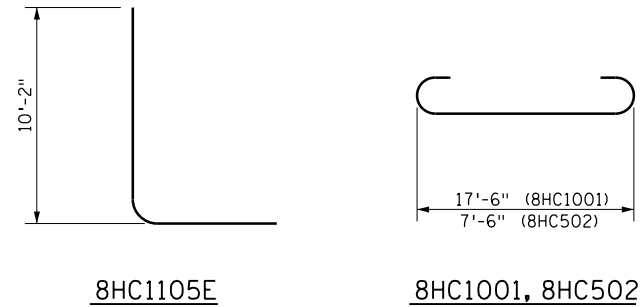
SUMMARY OF QUANTITIES FOR COLUMN 8

STRUCTURAL CONCRETE (1G52)	16.0	CU YD
STRUCTURAL CONCRETE (3B52)	7.4	CU YD
REINFORCEMENT BARS	1046	POUND
REINFORCEMENT BARS (EPOXY COATED)	4007	POUND
ANTI-GRAFFITI COATING	274	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	274	SQ FT

COLUMN 8

BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
8HC1001	8	20'-4"		FOOTING, LONG.
8HC502	18	8'-8"		FOOTING, TRANSV.
8HC403	8	17'-6"		FOOTING, LONG.
8HC404	18	7'-6"		FOOTING, TRANSV.
8HC1105E	22	12'-2"		FOOTING, VERT., DOWEL
8HC1006E	22	22'-7"		COLUMN, LONG.
8HC507E	37	11'-7"		COLUMN, TIE



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CHECKED	RRE	CHECK	RRE	

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 SHEET NO. 48 OF 99 SHEETS

BRIDGE NO.
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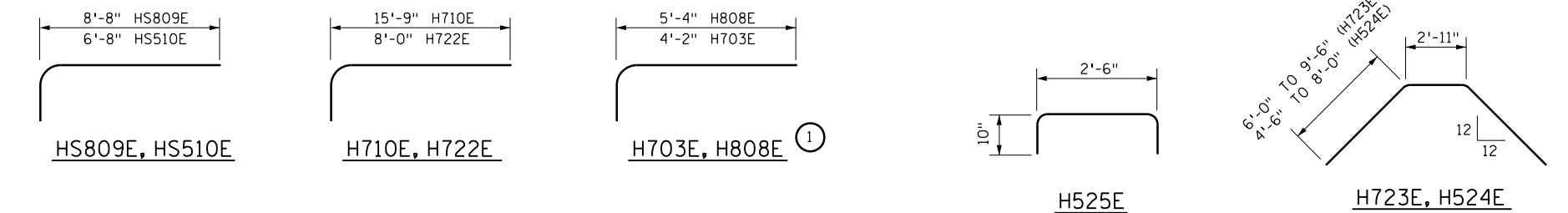
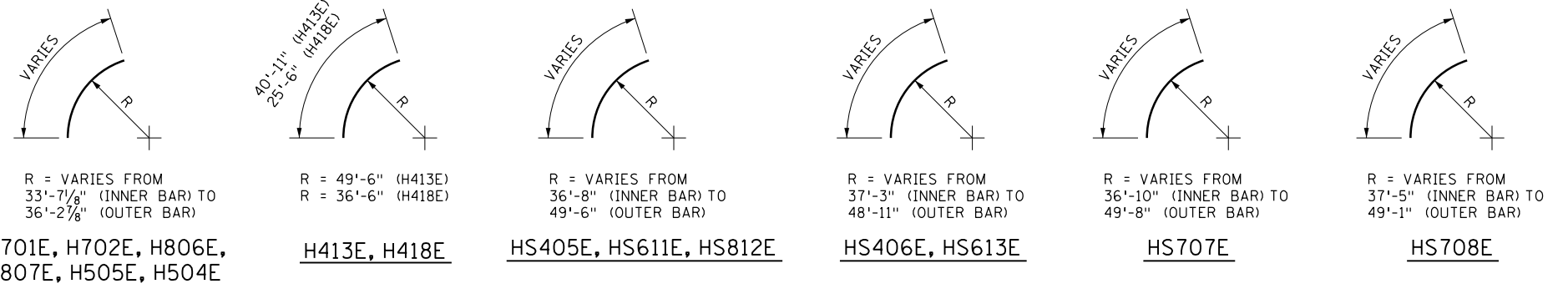
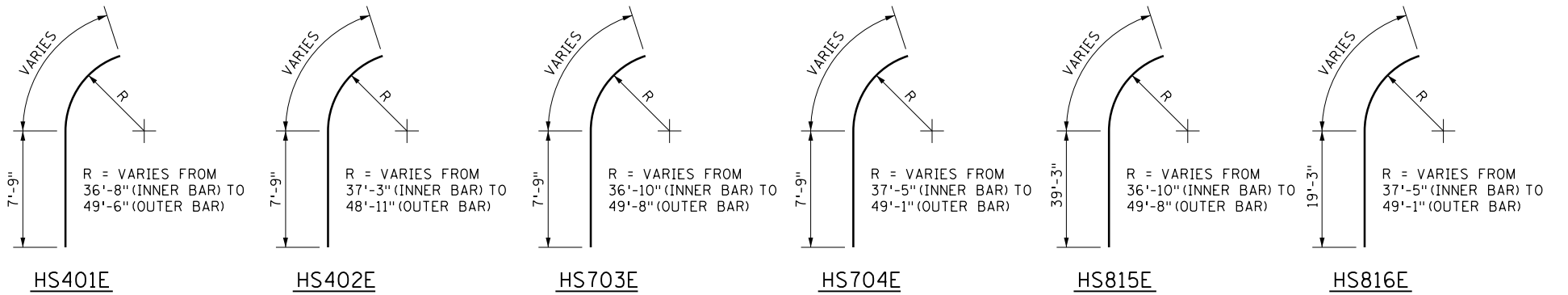
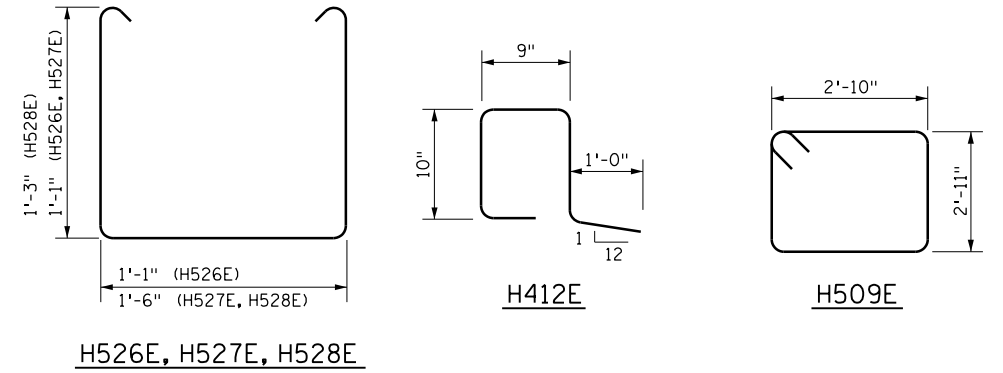
HELIX SUPERSTRUCTURE

BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
HS401E	1 SET OF 12	29'-7" TO 36'-10"		HELIX SLAB, LONGIT., BOT., ENDS
HS402E	1 SET OF 11	16'-11" TO 19'-6"		HELIX SLAB, LONGIT., BOT., ENDS
HS703E	1 SET OF 12	31'-1" TO 38'-4"		HELIX SLAB, LONGIT., TOP, ENDS
HS704E	1 SET OF 11	18'-4" TO 20'-11"		HELIX SLAB, LONGIT., TOP, ENDS
HS405E	11 SETS OF 12	30'-10" TO 40'-11"		HELIX SLAB, LONGIT., BOT.
HS406E	11 SETS OF 11	31'-3" TO 40'-5"		HELIX SLAB, LONGIT., BOT.
HS707E	11 SETS OF 12	33'-8" TO 43'-9"		HELIX SLAB, LONGIT., TOP
HS708E	11 SETS OF 11	34'-2" TO 43'-4"		HELIX SLAB, LONGIT., TOP
HS809E	2	10'-0"		HELIX SLAB, LONGIT., TOP, ENDS
HS510E	2	7'-6"		HELIX SLAB, LONGIT., BOT., ENDS
HS611E	1 SET OF 12	32'-6" TO 42'-7"		HELIX SLAB, LONGIT., BOT.
HS812E	1 SET OF 12	49'-2" TO 51'-11"		HELIX SLAB, LONGIT., BOT.
HS613E	1 SET OF 11	32'-8" TO 39'-3"		HELIX SLAB, LONGIT., BOT.
HS814E	11	32'-0"		HELIX SLAB, LONGIT., BOT.
HS815E	1 SET OF 12	49'-8" TO 52'-6"		HELIX SLAB, LONGIT., TOP
HS816E	1 SET OF 11	45'-7" TO 52'-2"		HELIX SLAB, LONGIT., TOP
HS817E	11	20'-0"		HELIX SLAB, LONGIT., TOP
HS818E	4	40'-7"		HELIX SLAB, LONGIT., TOP & BOT.
HS719E	84	14'-0"		HELIX SLAB, TRANSV., TOP & BOT.
H701E	2 SETS OF 7	29'-10" TO 31'-11"		RING BEAM, LONGIT., BOT.
H702E	10 SETS OF 7	30'-8" TO 32'-9"		RING BEAM, LONGIT., BOT.
H703E	14	5'-4"		RING BEAM, LONGIT., BOT., ENDS
H504E	8 SETS OF 2	16'-1" TO 17'-1"		RING BEAM, LONGIT., SIDE
H505E	44 SETS OF 2	29'-7" TO 31'-8"		RING BEAM, LONGIT., SIDE
H806E	2 SETS OF 14	33'-8" TO 43'-9"		RING BEAM, LONGIT., TOP
H807E	11 SETS OF 14	33'-8" TO 43'-9"		RING BEAM, LONGIT., TOP
H808E	28	6'-8"		RING BEAM, LONGIT., TOP, ENDS
H509E	504	12'-5"		RING BEAM, VERTICAL
H710E	545	16'-11"		HELIX SLAB, TRANSV., TOP
H511E	487	14'-8"		HELIX SLAB, TRANSV., BOT.
H412E	1105	4'-0"		CURB, VERTICAL
H413E	24	40'-11"		CURB, LONG., OUTER
H414E	2	8'-9"		CURB, LONG., OUTER
H415E	2	6'-2"		CURB, LONG., INNER
H716E	9	14'-2"		HELIX SLAB, TRANSV., TOP
H517E	9	14'-2"		HELIX SLAB, TRANSV., BOT.
H418E	24	25'-6"		CURB, LONG., INNER
H419E	2	37'-7"		CURB, LONG., SPAN 1
H420E	2	40'-3"		CURB, LONG., SPAN 1
H721E	46	15'-8"		HELIX SLAB, TRANSV., BOT.
H722E	10	9'-2"		HELIX SLAB, TRANSV., BOT.
H723E	1 SET OF 7	14'-11" TO 21'-11"		HELIX, TRANSITION, HORIZ.
H524E	1 SET OF 7	11'-11" TO 18'-11"		HELIX, TRANSITION, HORIZ.
H525E	20	4'-2"		HELIX, TRANSITION, TIES
H526E	16	4'-3"		HELIX, TRANSITION, TIES
H527E	4	4'-5"		HELIX, TRANSITION, TIES
H528E	28	5'-0"		HELIX, TRANSITION, TIES

SUMMARY OF QUANTITIES FOR HELIX SUPERSTRUCTURE

STRUCTURAL CONCRETE (3YHPC-M)	360.5	CU YD
STRUCTURAL CONCRETE (3S52)	17.7	CU YD
REINFORCEMENT BARS (EPOXY COATED)	105845	POUND
ANTI-GRAFFITI COATING	10029	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	10884	SQ FT



① CURVE OUT-OF-PLANE TO MATCH RADIUS OF LAPPED BARS (BENT LEG FACING DOWN)

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



7533 SUNWOOD DRIVE N.W.
 RAMSEY, MINNESOTA 55303
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 www.bolton-menk.com

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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

TITLE:
 HELIX BAR LISTS AND QUANTITIES

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRR	CHECK	RRR	

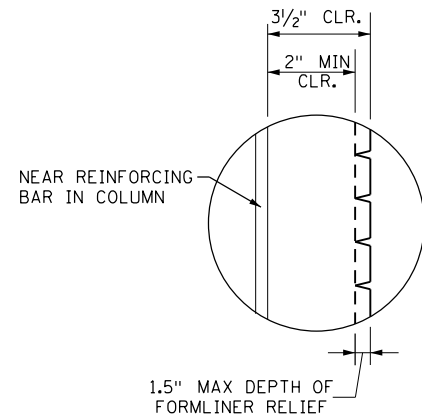
S.A.P. 199-010-012

SHEET NO. 49 OF 99 SHEETS

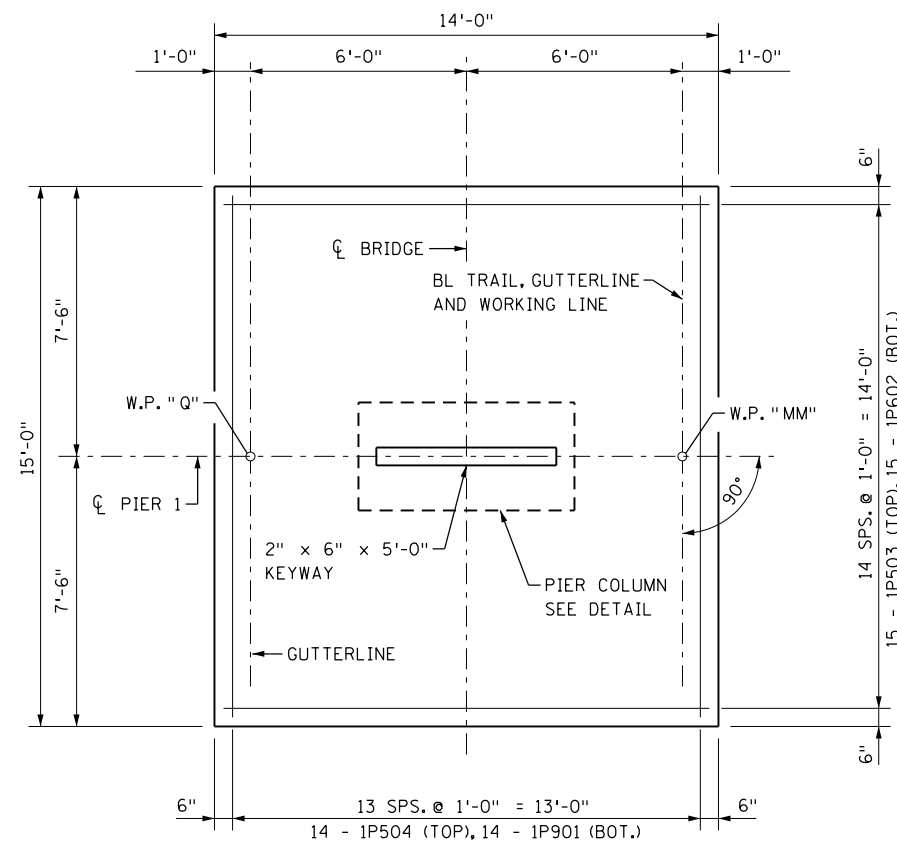
BRIDGE NO.
 02053

PIER 1 SPREAD FOOTING LOAD DATA	
*FACTORED DESIGN BEARING PRESSURE	2.12 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	10.2 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	13.4 FT.
FACTORED BEARING RESISTANCE $\phi_s \cdot q_n$	2.29 TONS/SQ.FT.

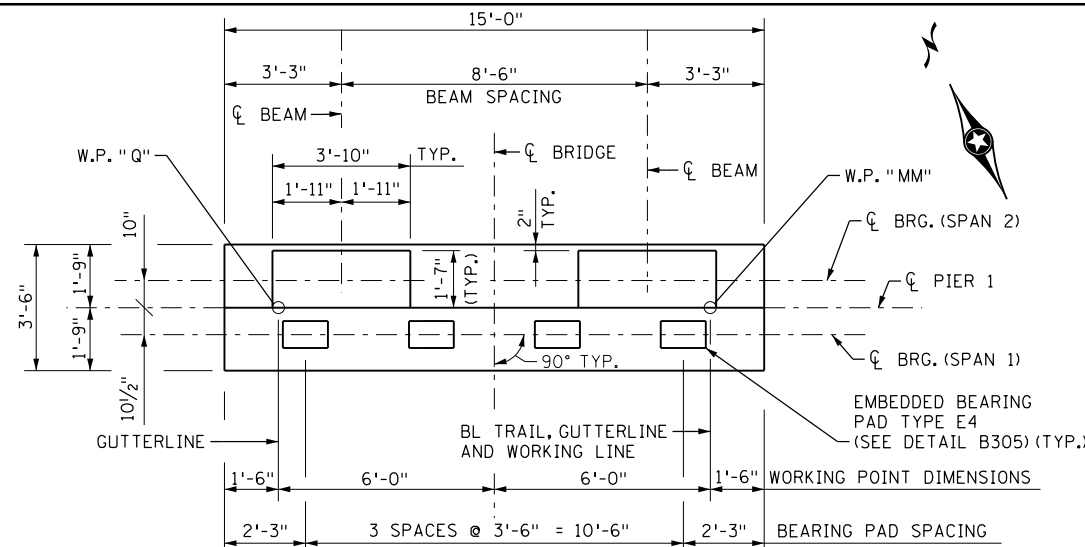
*BASED ON SERVICE I LOAD COMBINATION



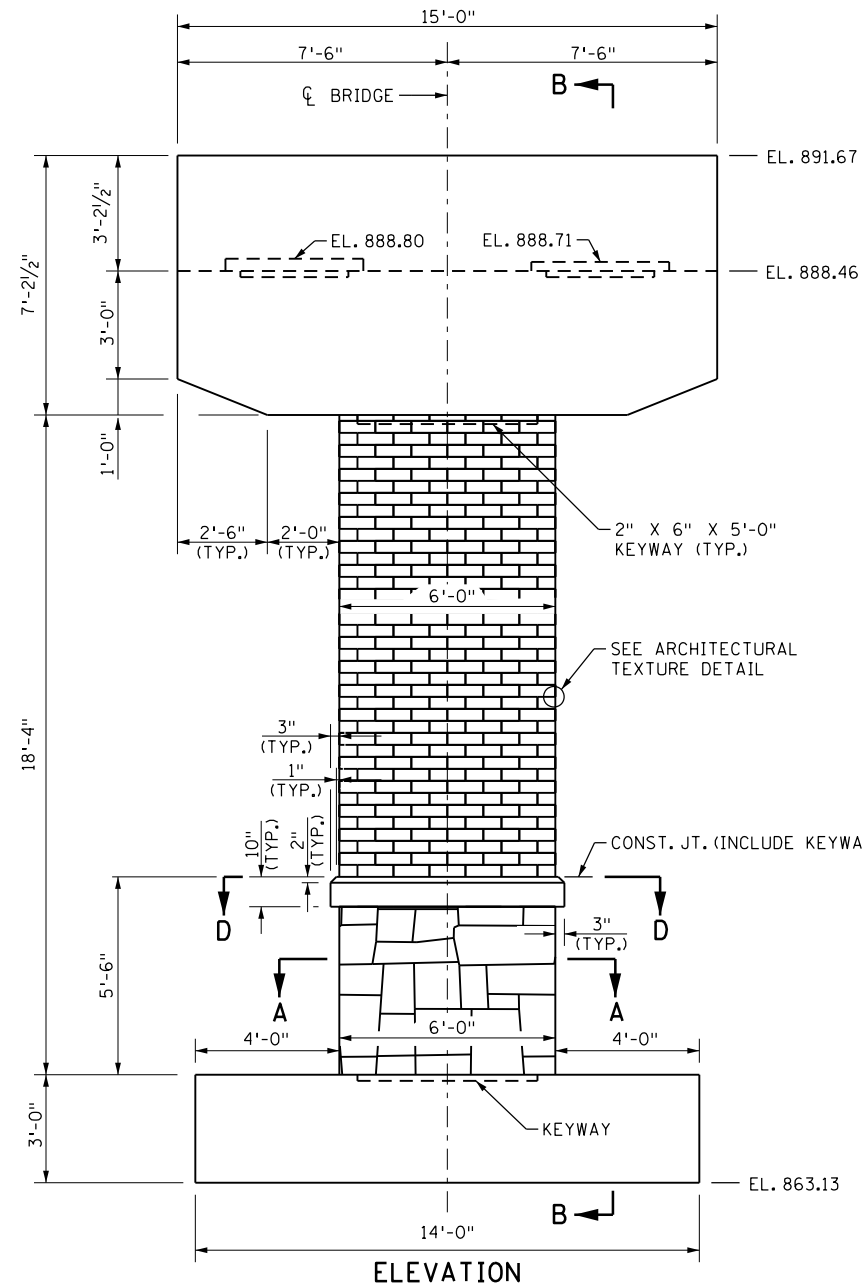
ARCHITECTURAL TEXTURE DETAIL
NOT TO SCALE



FOOTING PLAN



PLAN



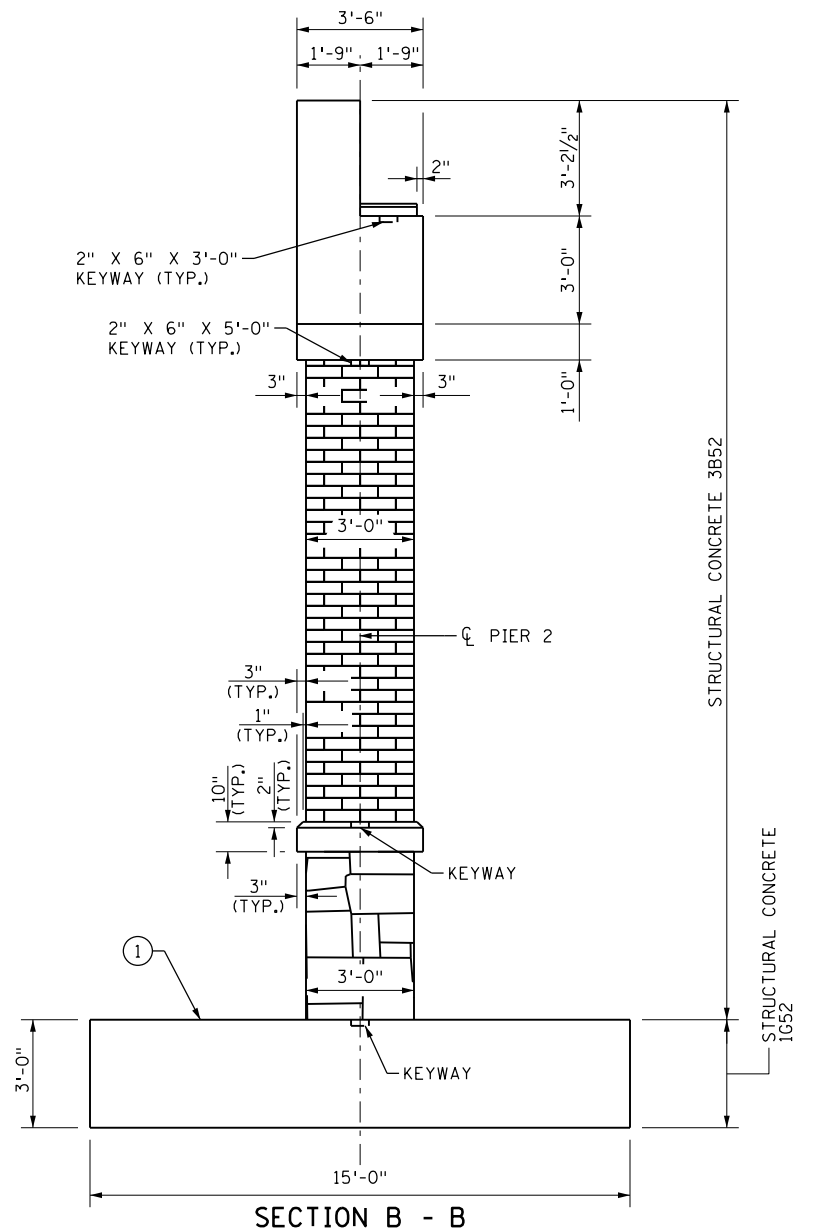
ELEVATION

SUMMARY OF QUANTITIES FOR PIER 1

STRUCTURAL CONCRETE (1G52)	23.3	CU YD
STRUCTURAL CONCRETE (3B52)	22.9	CU YD
REINFORCEMENT BARS	1566	POUND
REINFORCEMENT BARS (EPOXY COATED)	4557	POUND
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	84	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	231	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	304	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	231	SQ FT
ANTI-GRAFFITI COATING	315	SQ FT

NOTES

- TOP OF FOOTING SHALL HAVE A MINIMUM OF 1'-6" SOIL COVER
- SET STAINLESS STEEL NAIL/PIN WITH CUT "X" IN EXPOSED HEAD (FLUSH WITH FINISHED CONCRETE FACE.) IN WEST FACE OF PIER APPROXIMATE 4' ABOVE FINISHED GRADE.



SECTION B - B

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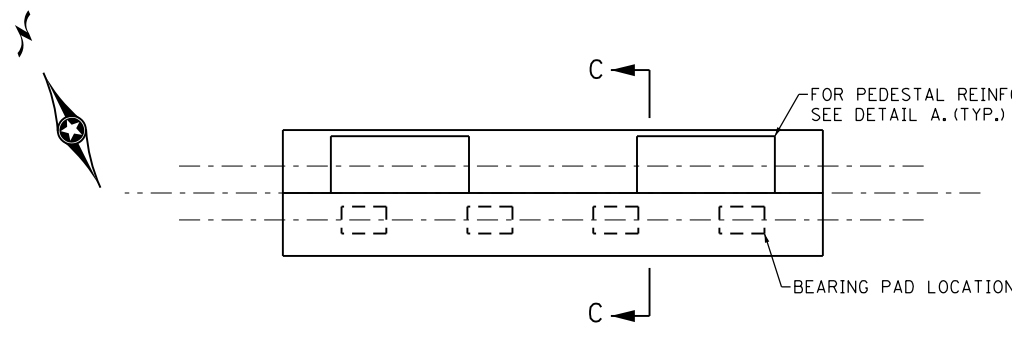
**PIER 1
DETAILS & REINFORCEMENT**

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	ATP	

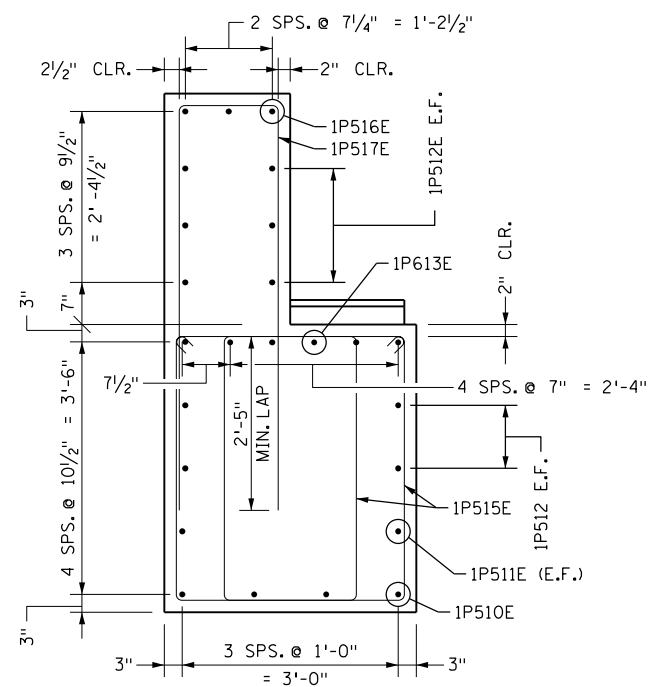
S.A.P. 199-010-012
SHEET NO. 50 OF 99 SHEETS

**BRIDGE NO.
02053**

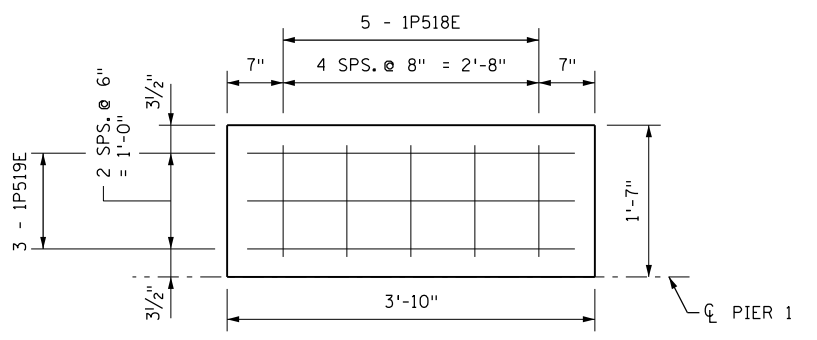
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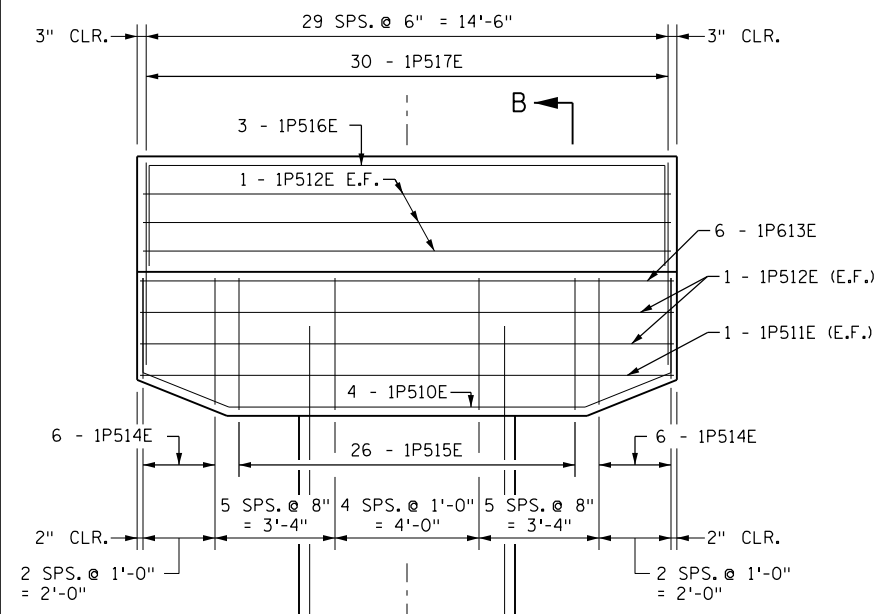
PIER CAP PLAN - REINFORCEMENT



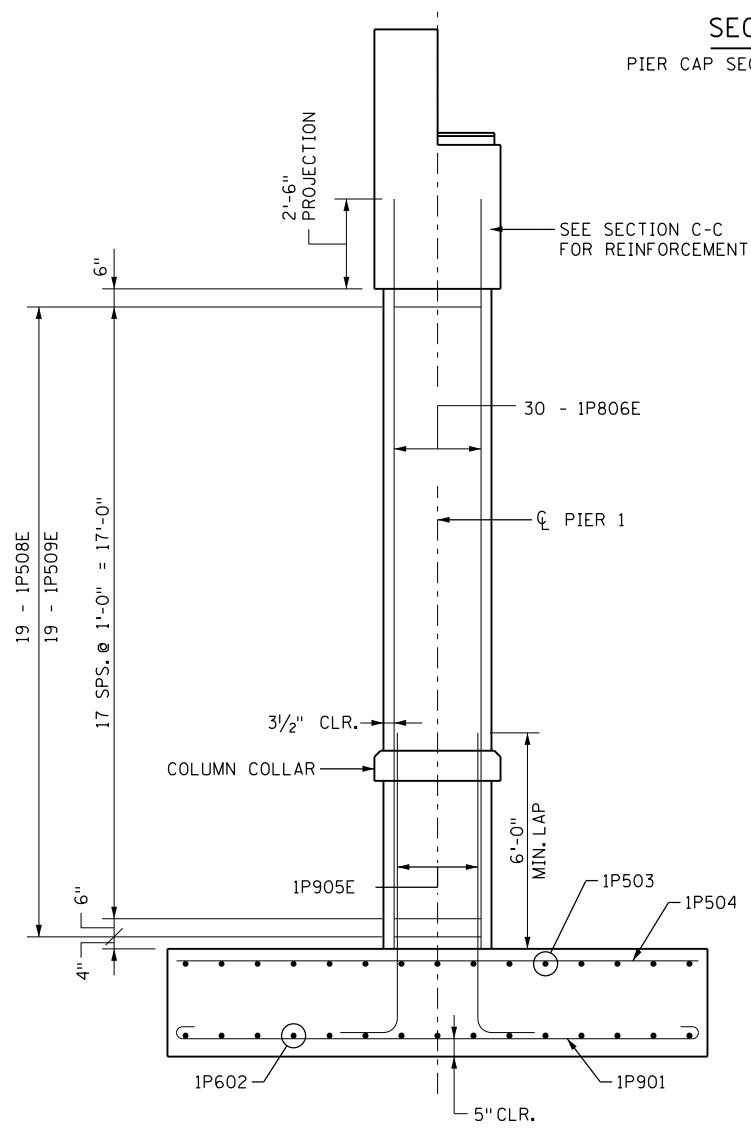
SECTION C-C
PIER CAP SECTION REINFORCEMENT



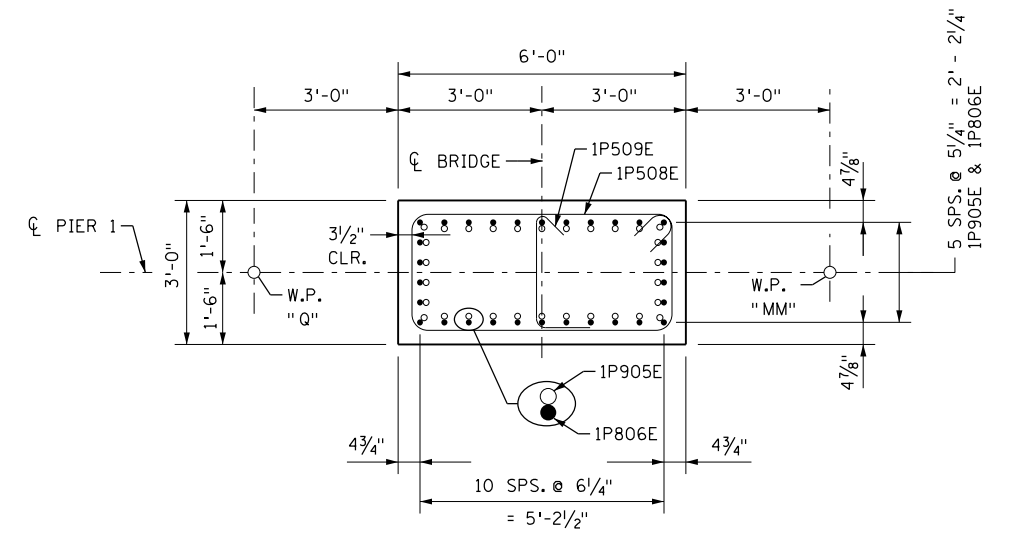
DETAIL A
PEDESTAL PLAN REINFORCEMENT



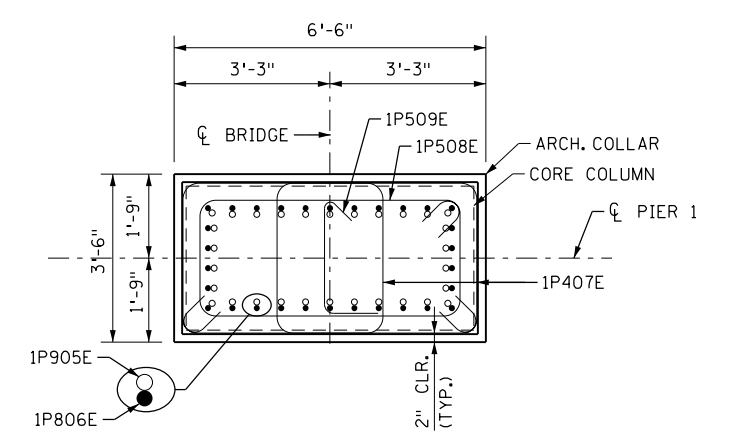
ELEVATION



SECTION B - B



PIER COLUMN DETAIL
SECTION A-A



SECTION D-D
AT COLUMN COLLAR

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

PIER 1
 DETAILS & REINFORCEMENT

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	ATP	

S.A.P. 199-010-012
 SHEET NO. 51 OF 99 SHEETS

BRIDGE NO.
 02053

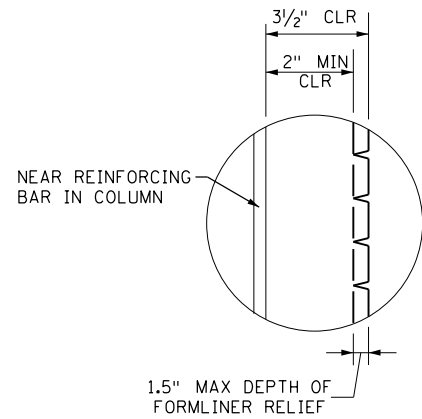
SUMMARY OF QUANTITIES FOR PIER 2

STRUCTURAL CONCRETE (1G52)	28.0	CU YD
STRUCTURAL CONCRETE (3B52)	28.4	CU YD
REINFORCEMENT BARS	2284	POUND
REINFORCEMENT BARS (EPOXY COATED)	6037	POUND
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	107	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	312	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	365	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	312	SQ FT
ANTI-GRAFFITI COATING	420	SQ FT

PIER 2 SPREAD FOOTING LOAD DATA

*FACTORED DESIGN BEARING PRESSURE	1.87 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	11.1 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	17.1 FT.
FACTORED BEARING RESISTANCE $\phi_s \cdot q_n$	1.89 TONS/SQ.FT.

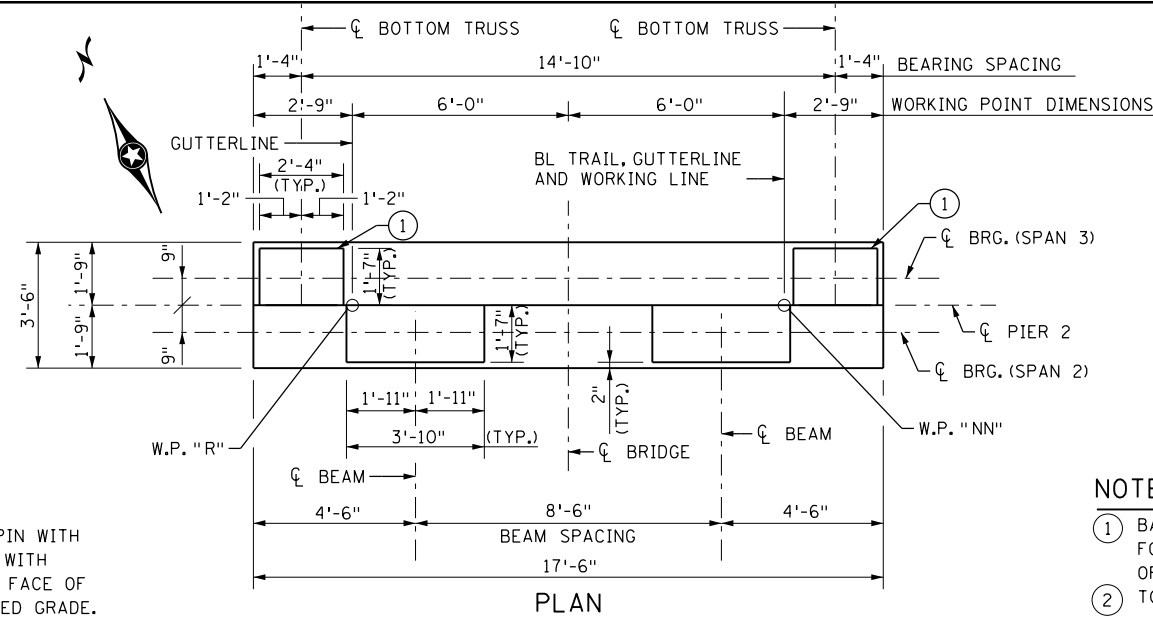
*BASED ON SERVICE I LOAD COMBINATION



ARCHITECTURAL TEXTURE DETAIL

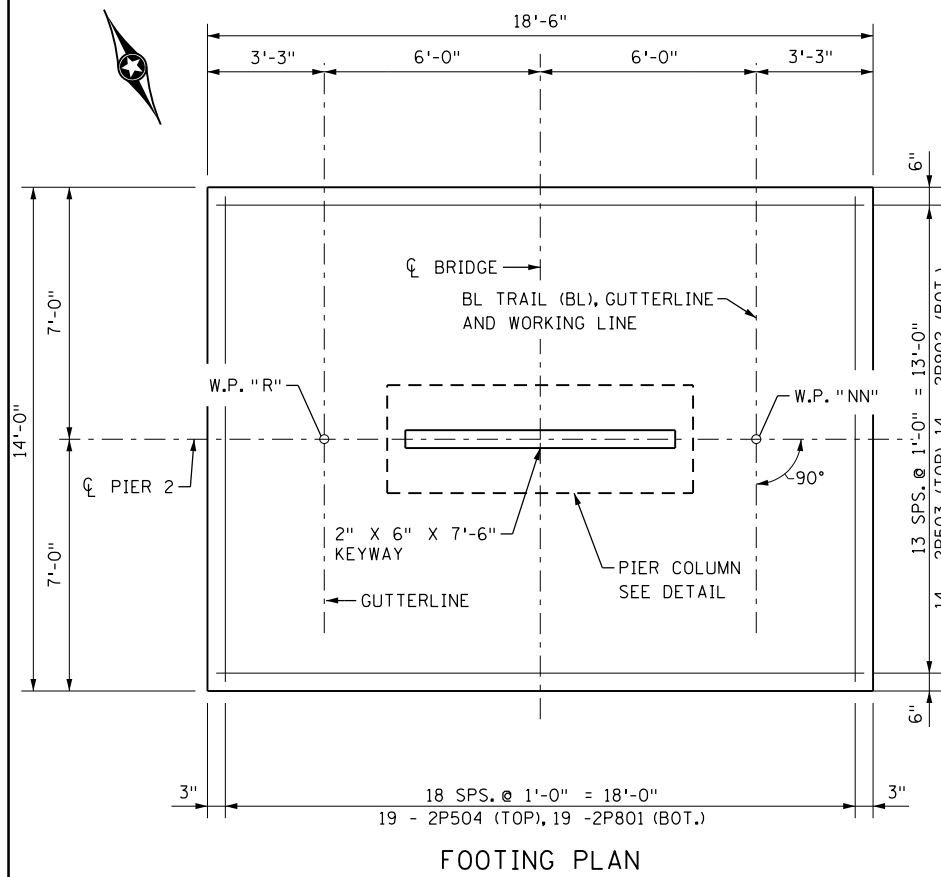
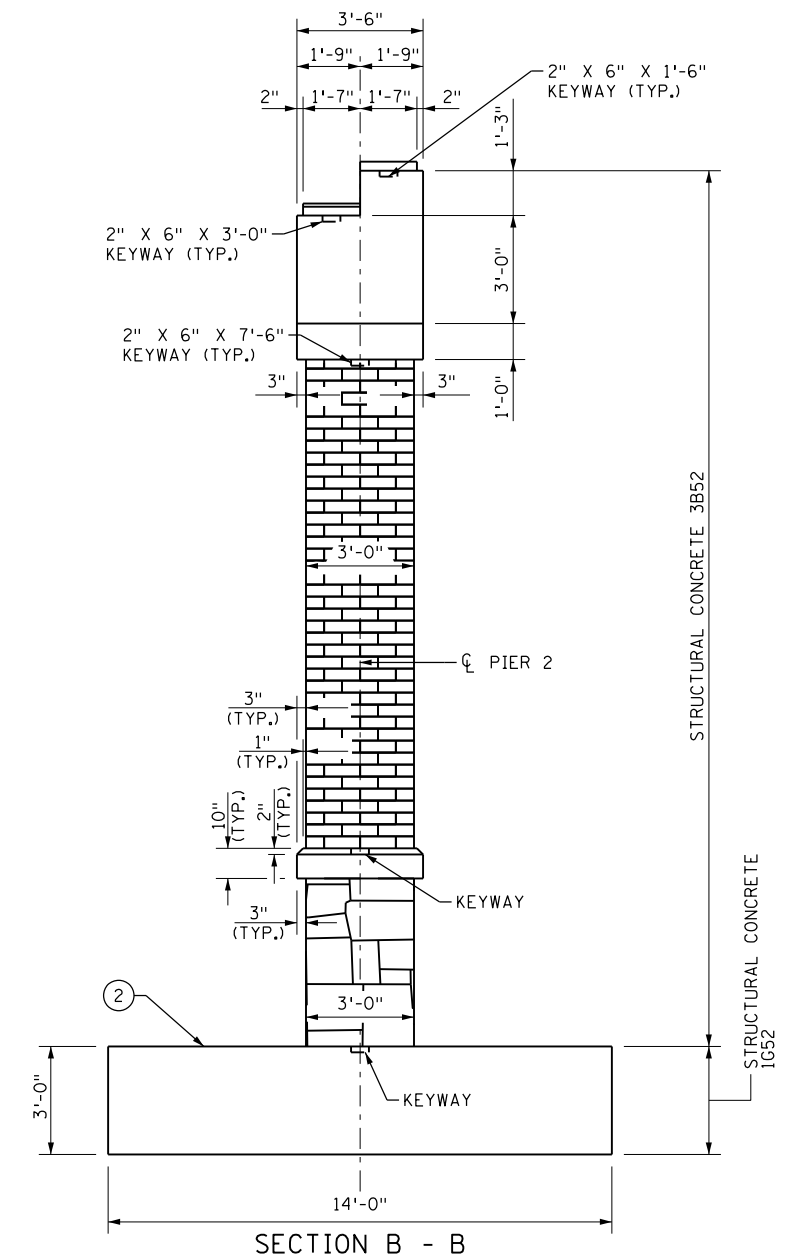
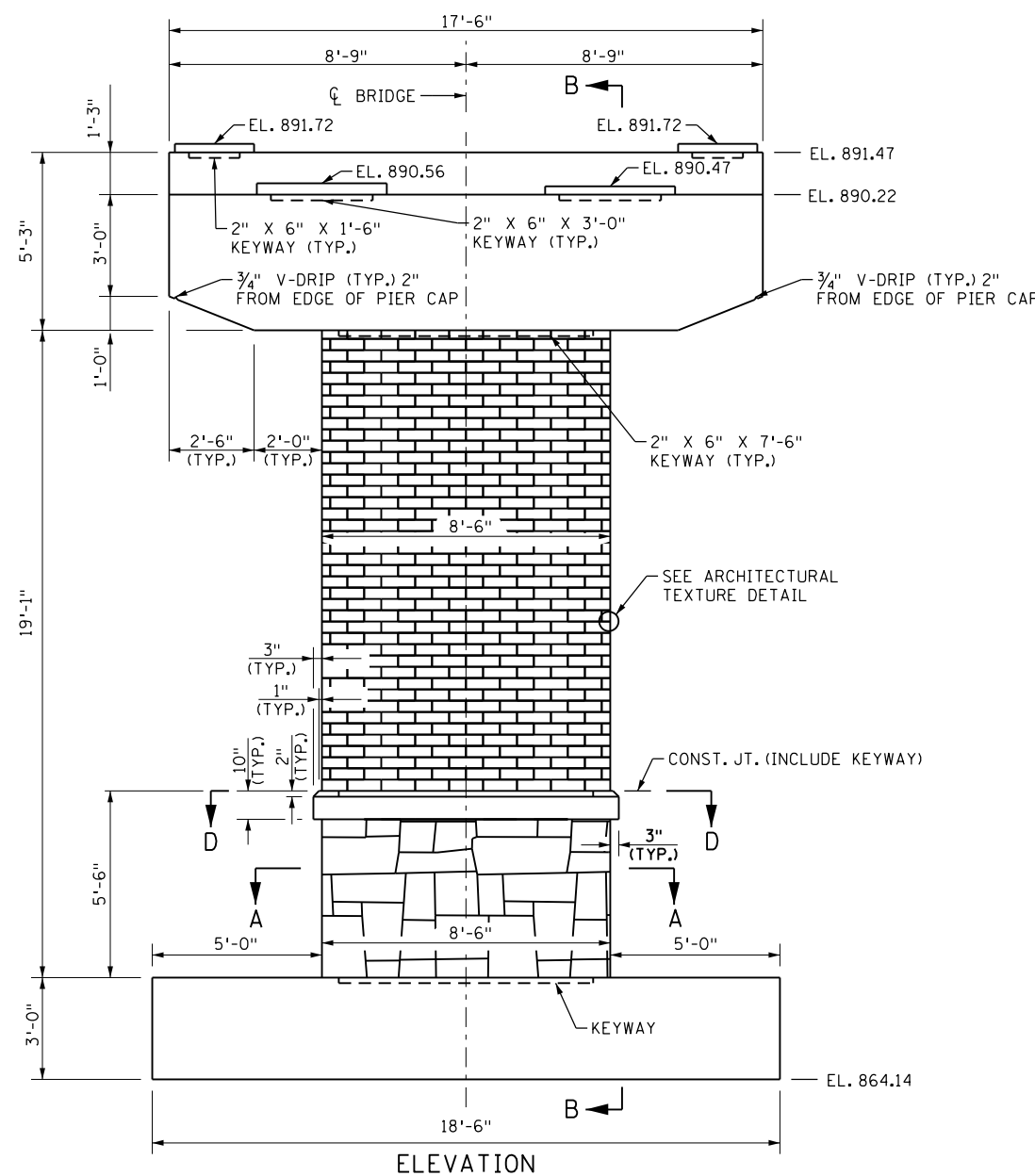
NOT TO SCALE

NOTE: SET STAINLESS STEEL NAIL/PIN WITH CUT "X" IN EXPOSED HEAD (FLUSH WITH FINISHED CONCRETE FACE), IN WEST FACE OF PIER APPROXIMATE 4' ABOVE FINISHED GRADE.



NOTES

- BASED ON ASSUMED BEARING SIZE/THICKNESS; SEE PREFABRICATED TRUSS DETAILS FOR ESTIMATED BEARING SIZE. VERIFY FINAL PEDESTAL ELEVATIONS UPON APPROVAL OF TRUSS SHOP DRAWINGS.
- TOP OF FOOTING SHALL HAVE A MINIMUM OF 1'-6" SOIL COVER.



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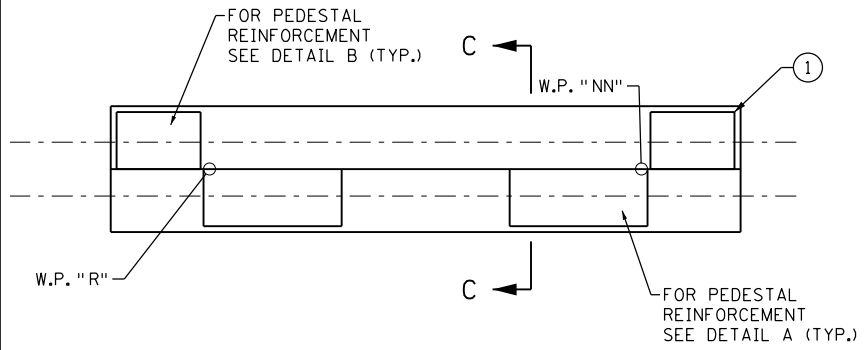
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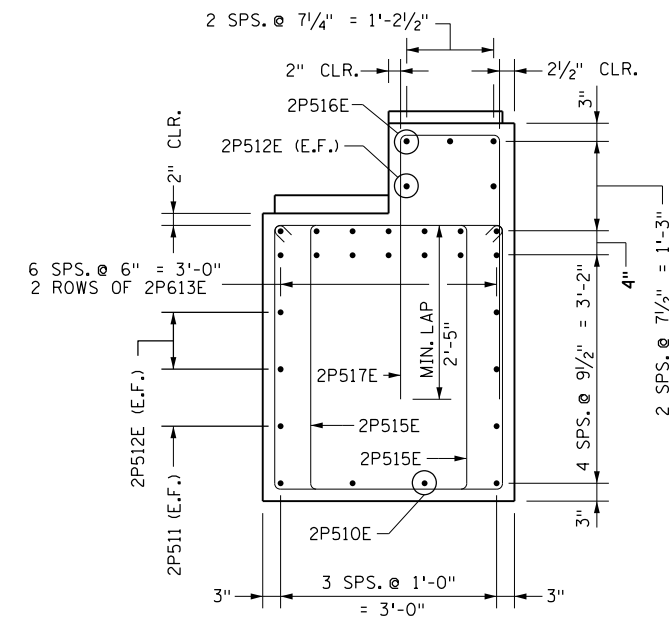
ENGINEER SIGNATURE

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LIC. NO. 53920

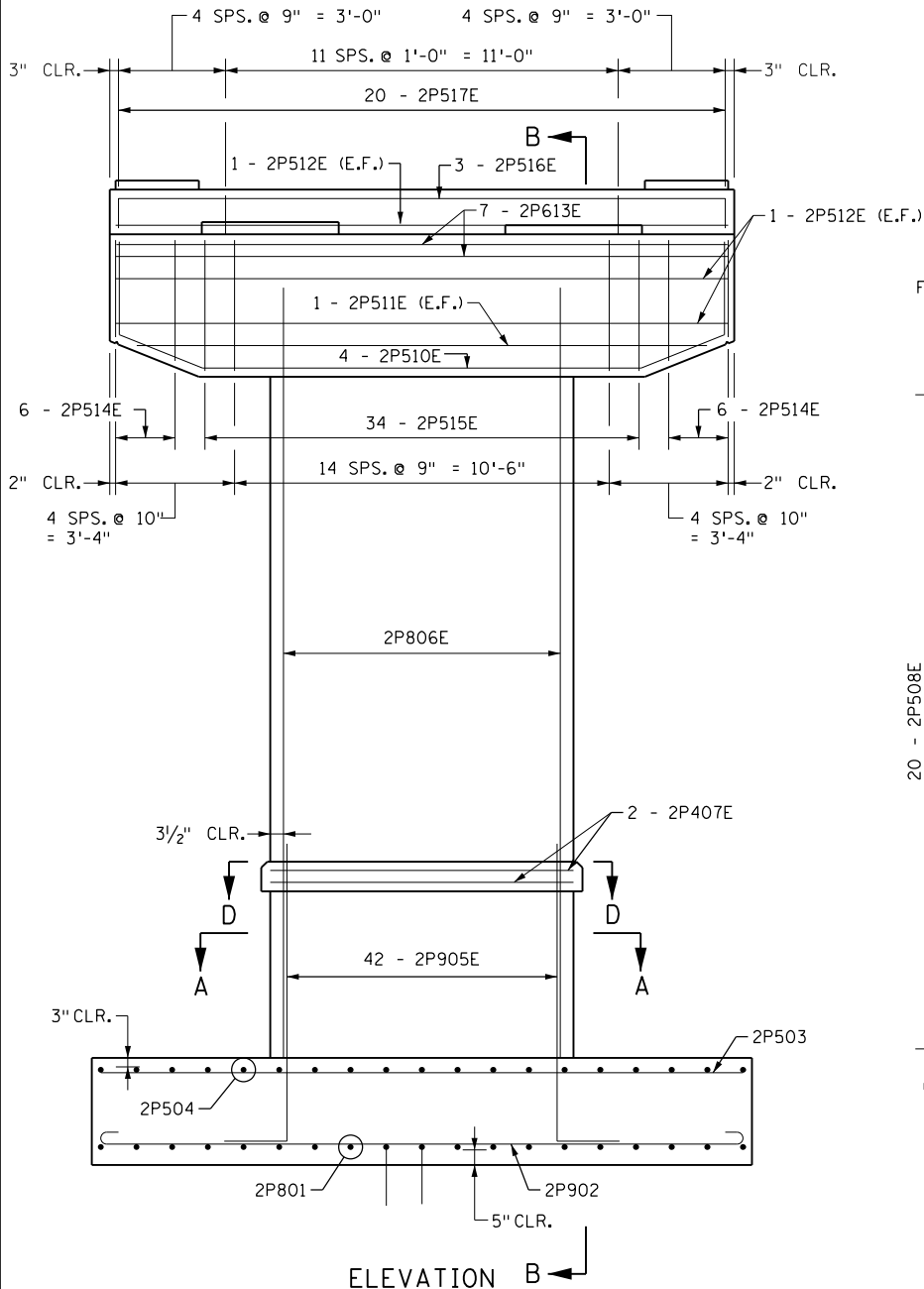
PIER 2 DETAILS & REINFORCEMENT		BRIDGE NO. 02053
DESIGNED	ATP	DRAWN
CHECKED	RRE	CHKD
S.A.P. 199-010-012		
SHEET NO. 52 OF 99 SHEETS		



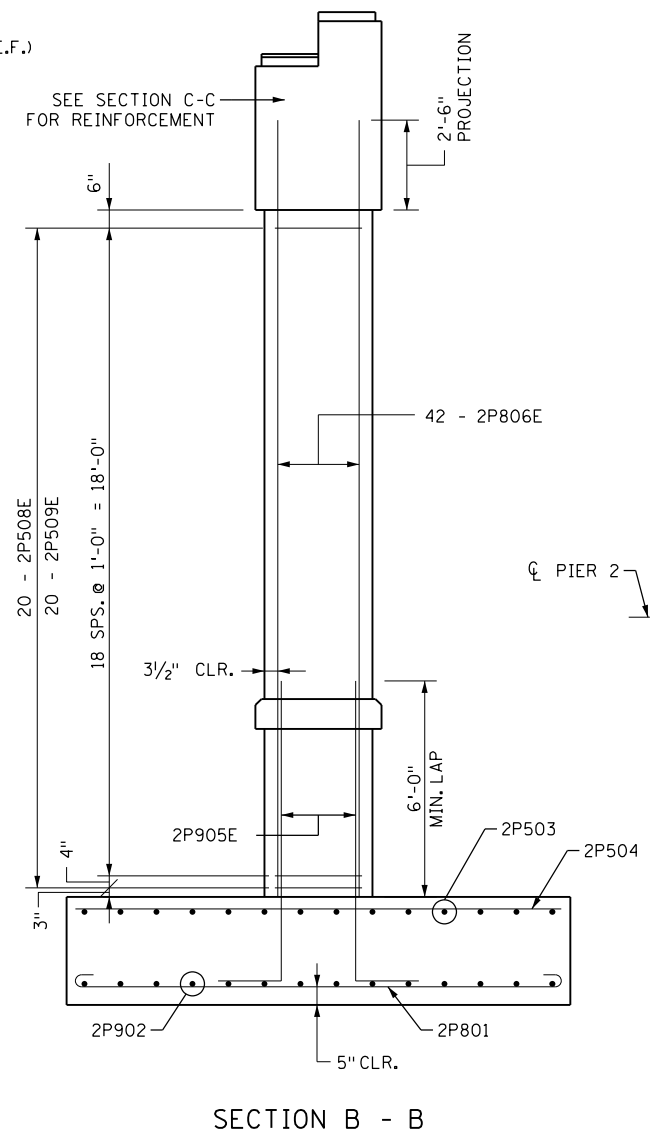
PIER CAP PLAN - REINFORCEMENT



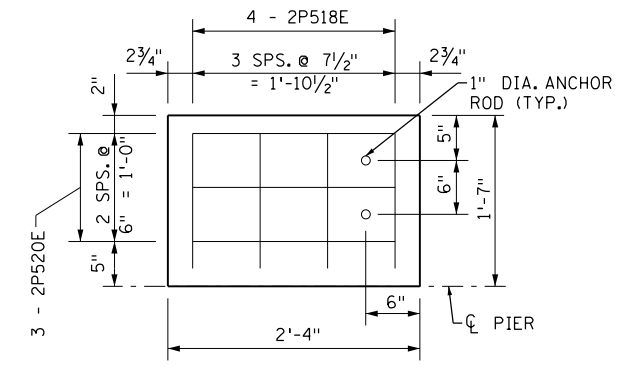
SECTION C-C
PIER CAP SECTION REINFORCEMENT



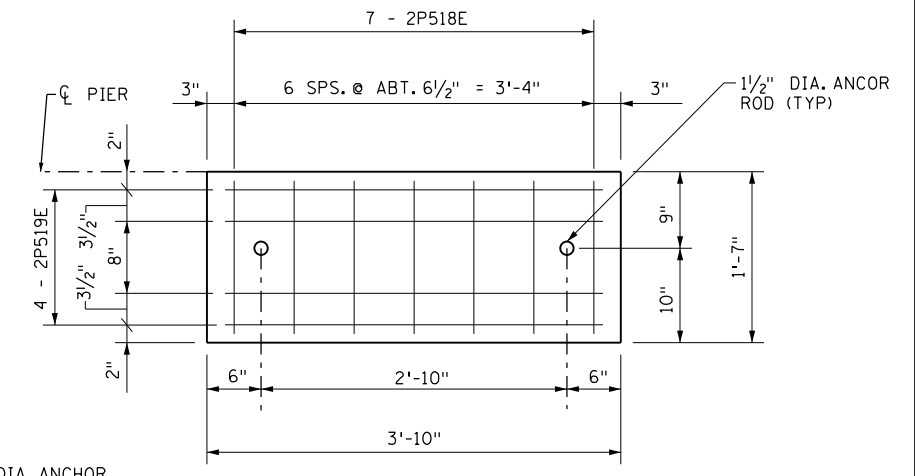
ELEVATION B



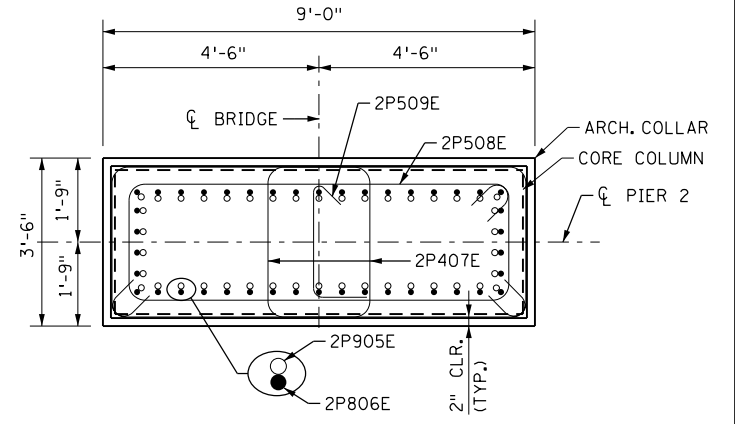
SECTION B - B



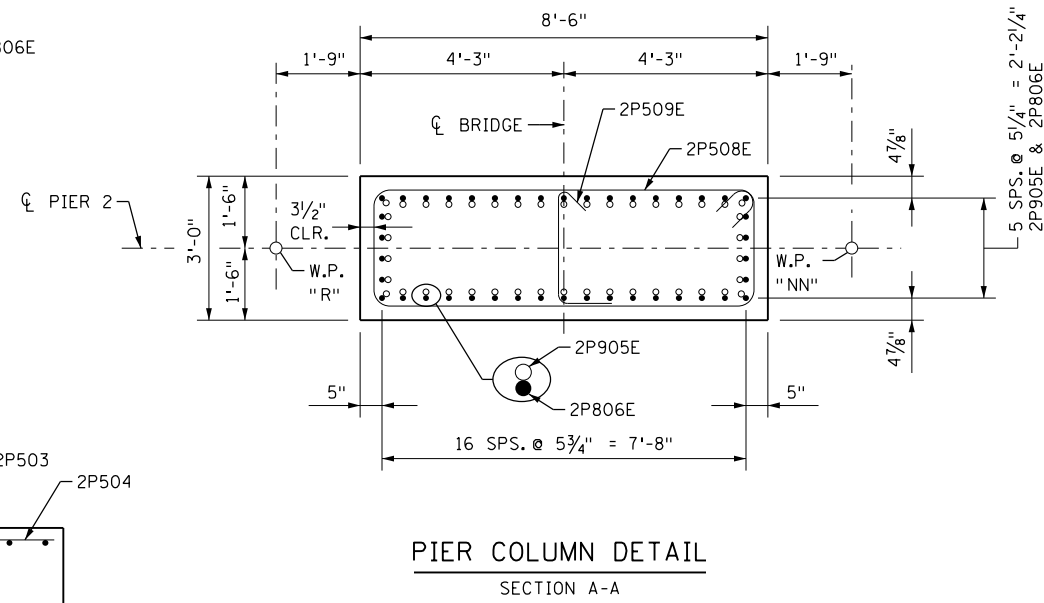
DETAIL B
TRUSS PEDESTAL PLAN REINFORCEMENT



DETAIL A
BEAM PEDESTAL PLAN REINFORCEMENT



SECTION D-D



PIER COLUMN DETAIL
SECTION A-A

- NOTES**
- PEDESTAL BEARING SEAT SIZE AND FINAL ELEVATION OF THE SEAT FOR THE MAIN SPAN TRUSS SHALL BE COORDINATED WITH APPROVED SHOP PLANS FOR THE TRUSS BEARING ASSEMBLY PROVIDED BY THE TRUSS MANUFACTURER.
 - REINFORCEMENT TO BE PLACED TO ENSURE ADEQUATE CLEARANCE FROM TRUSS ANCHOR RODS PER BEARING ASSEMBLY PROVIDED BY TRUSS MANUFACTURER.

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**PIER 2
DETAILS & REINFORCEMENT**

DESIGNED	ATP	DRAWN	JMR	APPROVED

S.A.P. 199-010-012
SHEET NO. 53 OF 99 SHEETS

**BRIDGE NO.
02053**

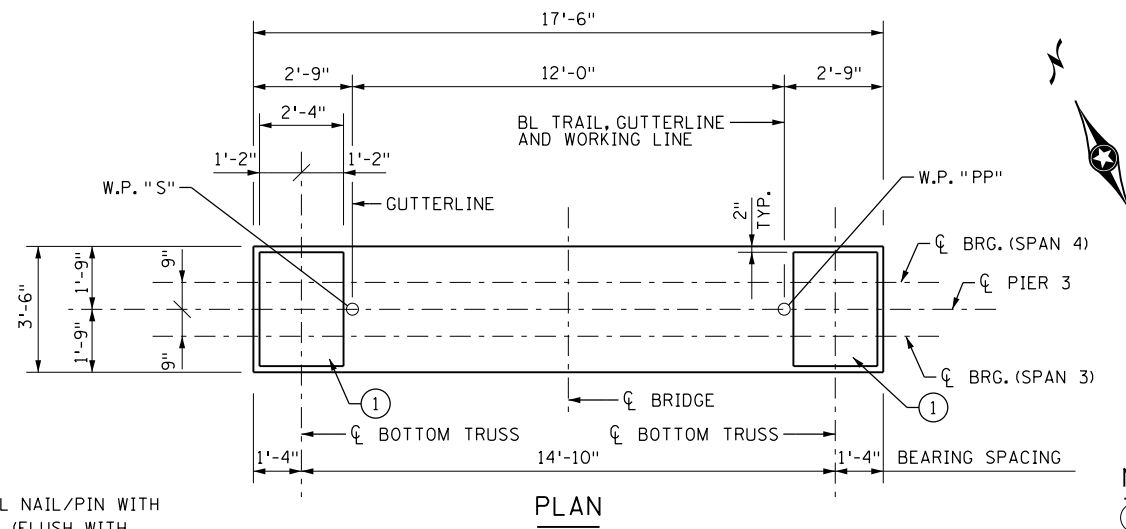
**PIER 3
SPREAD FOOTING LOAD DATA**

*FACTORED DESIGN BEARING PRESSURE	1.94 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	11.4 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	12.6 FT.
FACTORED BEARING RESISTANCE $\phi_s \cdot q_n$	2.3 TONS/SQ.FT.

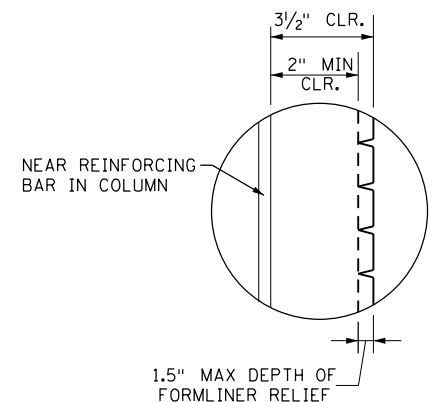
*BASED ON SERVICE I LOAD COMBINATION

**SUMMARY OF QUANTITIES
FOR PIER 3**

STRUCTURAL CONCRETE (1G52)	21.8	CU YD
STRUCTURAL CONCRETE (3B52)	28.9	CU YD
REINFORCEMENT BARS	1182	POUND
REINFORCEMENT BARS (EPOXY COATED)	5996	POUND
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	107	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	360	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	365	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	360	SQ FT
ANTI-GRAFFITI COATING	468	SQ FT



PLAN

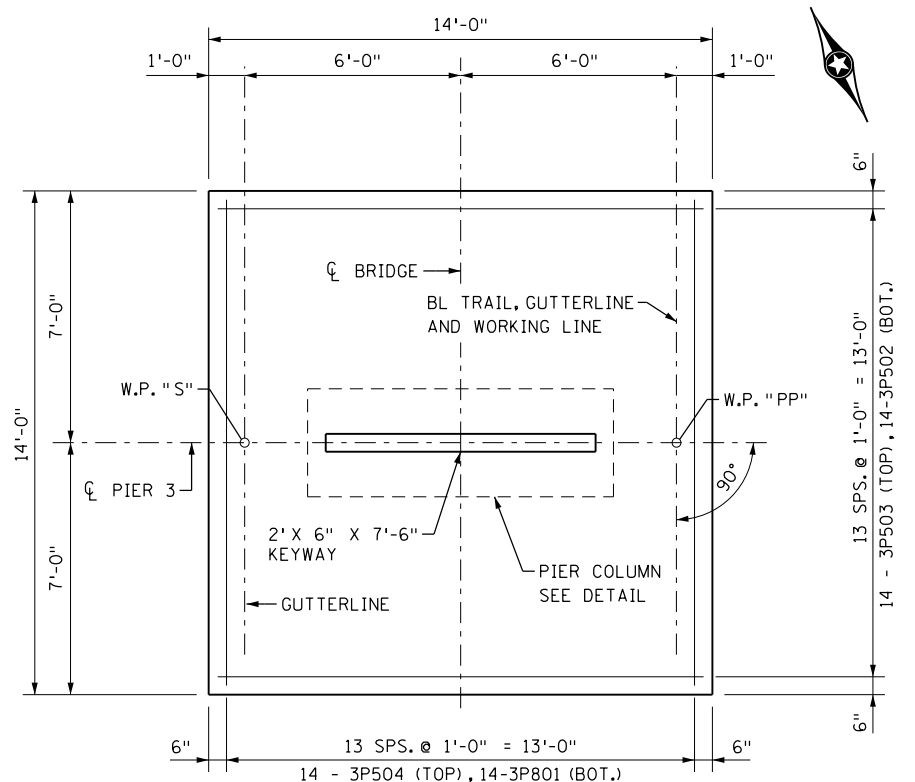


**ARCHITECTURAL TEXTURE DETAIL
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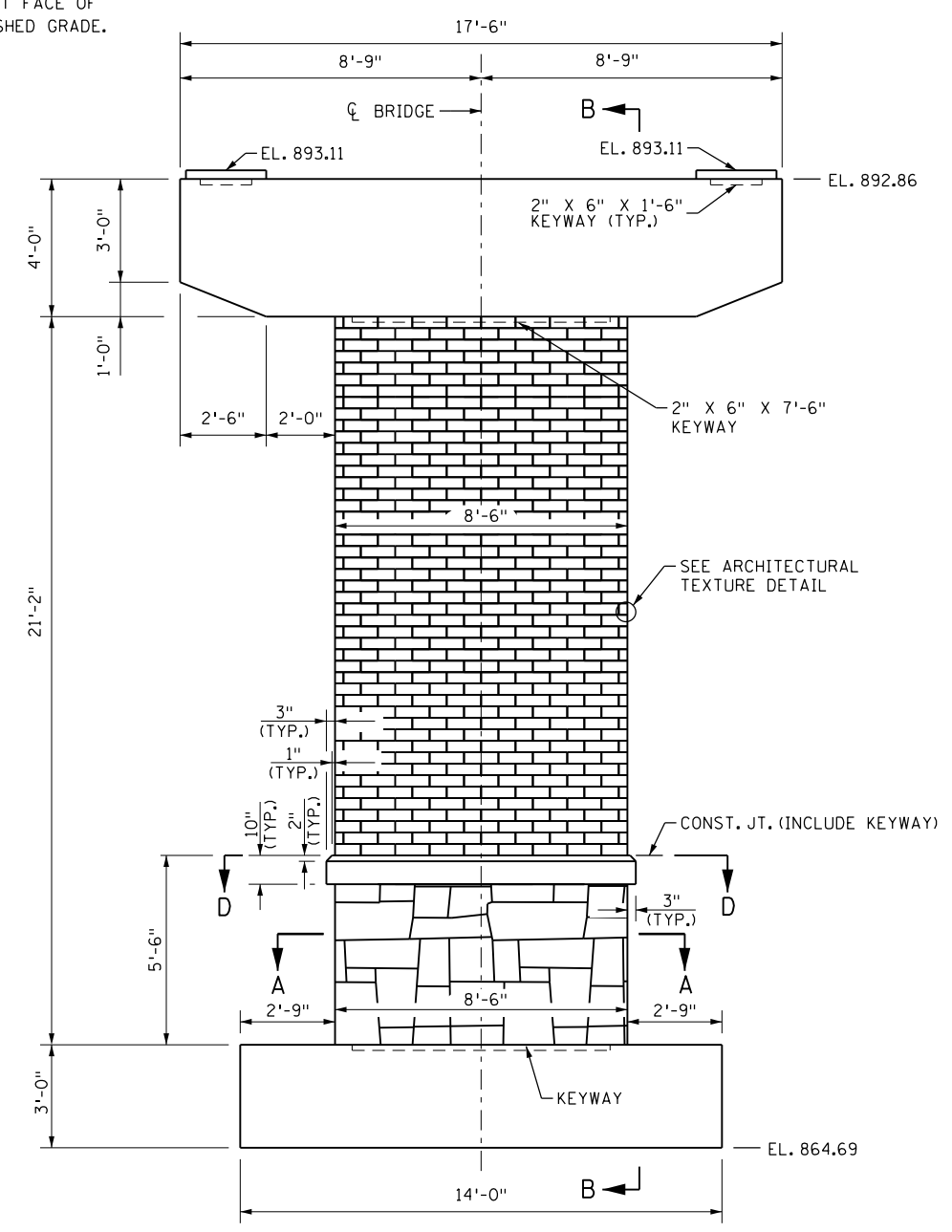
NOTE: SET STAINLESS STEEL NAIL/PIN WITH CUT "X" IN EXPOSED HEAD (FLUSH WITH FINISHED CONCRETE FACE), IN WEST FACE OF PIER APPROXIMATE 4' ABOVE FINISHED GRADE.

NOTES

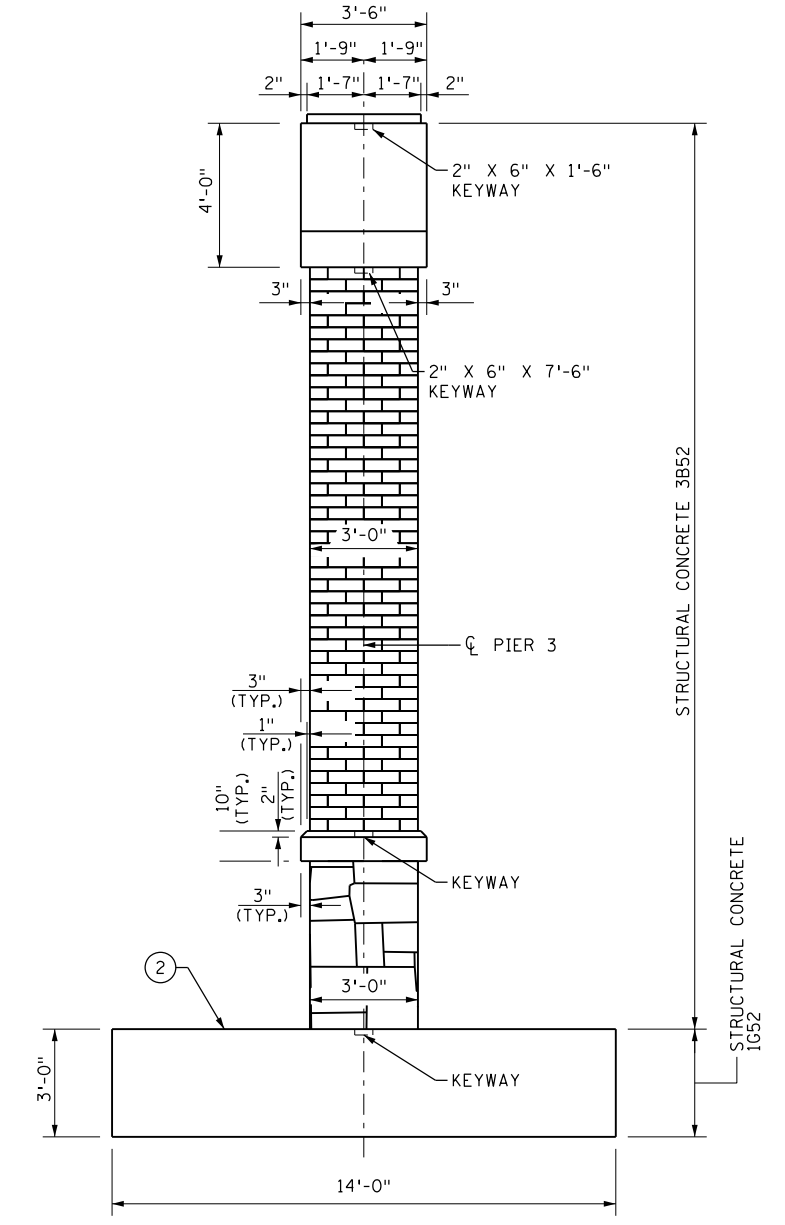
- ① BASED ON ASSUMED BEARING SIZE/THICKNESS; SEE PREFABRICATED TRUSS DETAILS FOR ESTIMATED BEARING SIZE. VERIFY FINAL PEDESTAL ELEVATIONS UPON APPROVAL OF TRUSS SHOP DRAWINGS.
- ② TOP OF FOOTING SHALL HAVE A MINIMUM OF 1'-6" SOIL COVER.



FOOTING PLAN



ELEVATION



SECTION B - B

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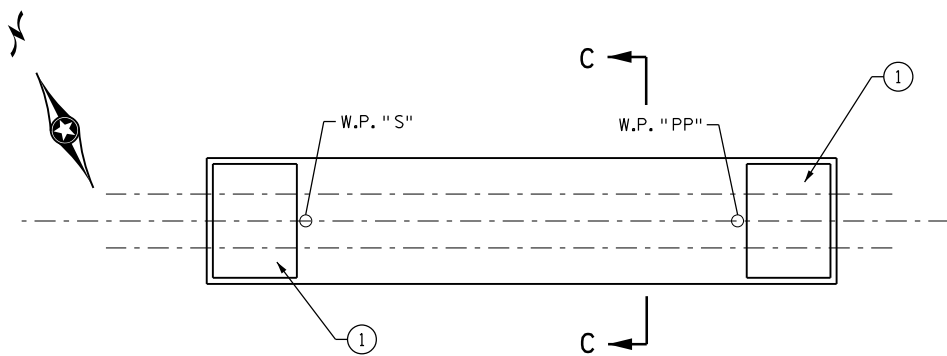
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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

**PIER 3
DETAILS & REINFORCEMENT**

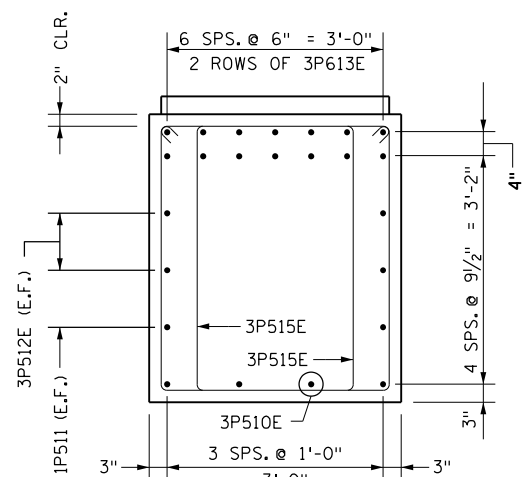
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SHEET NO. 54 OF 99 SHEETS

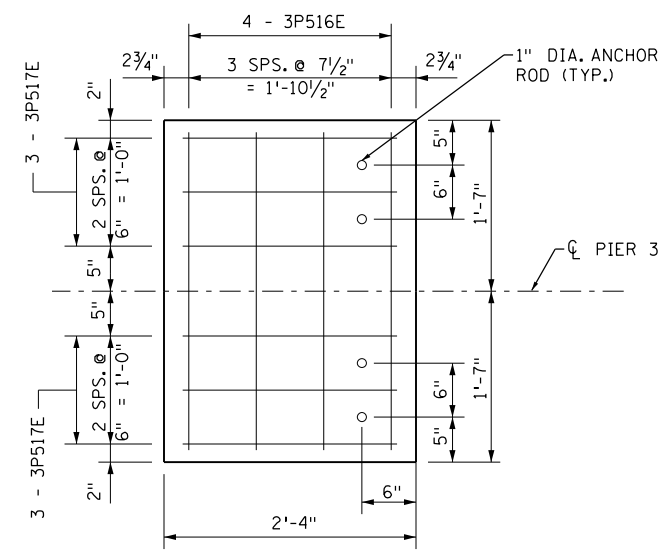
**BRIDGE NO.
02053**



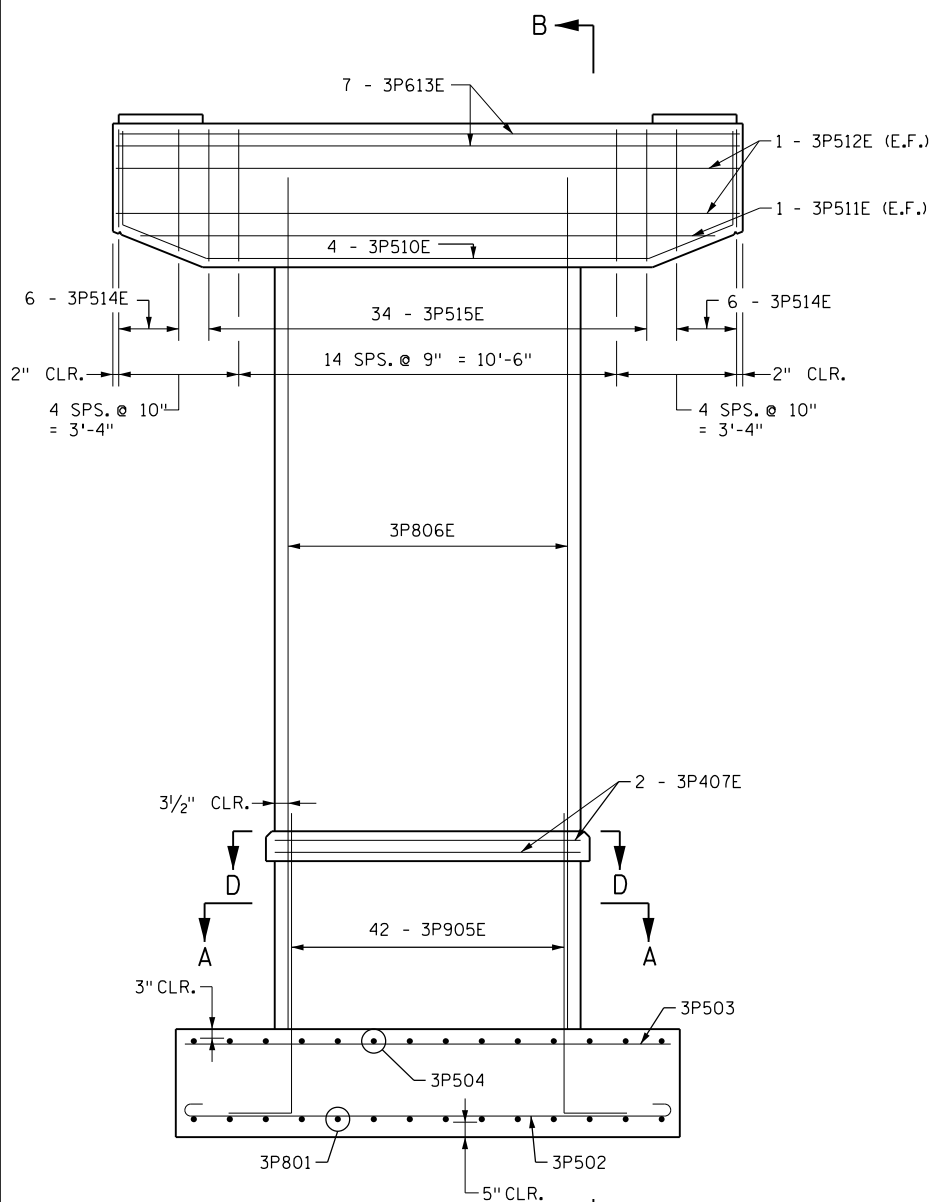
PIER CAP PLAN - REINFORCEMENT



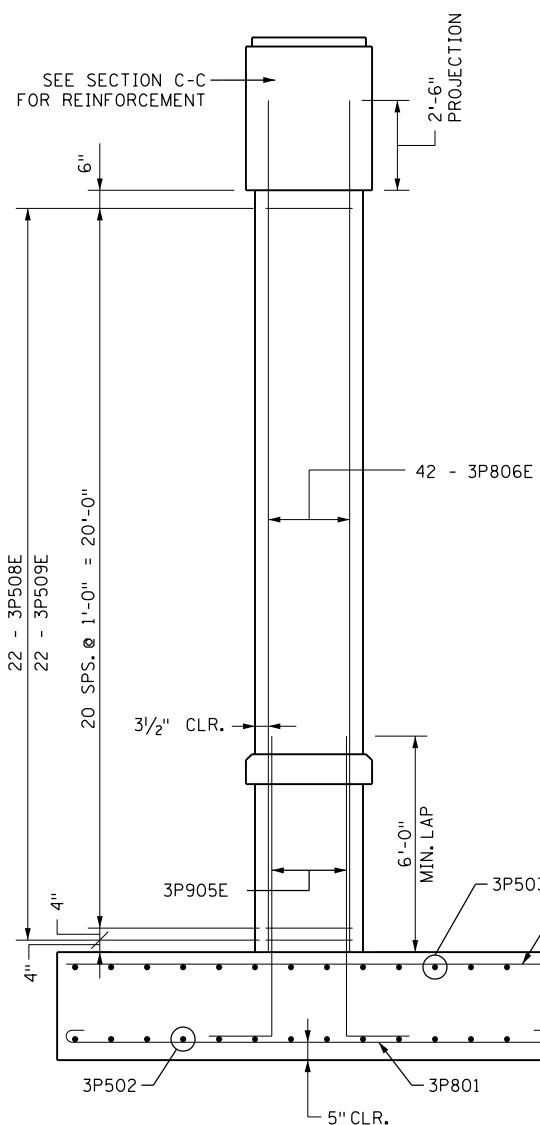
SECTION C-C
PIER CAP SECTION REINFORCEMENT



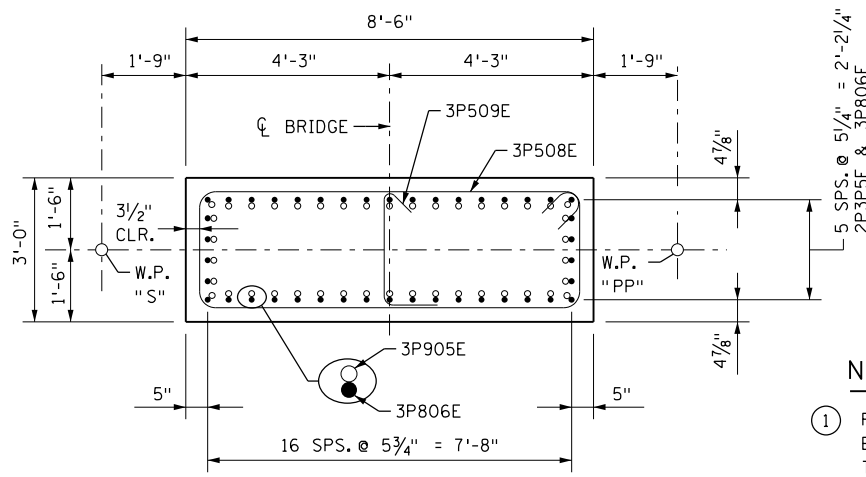
DETAIL B
TRUSS PEDESTAL PLAN REINFORCEMENT (2)



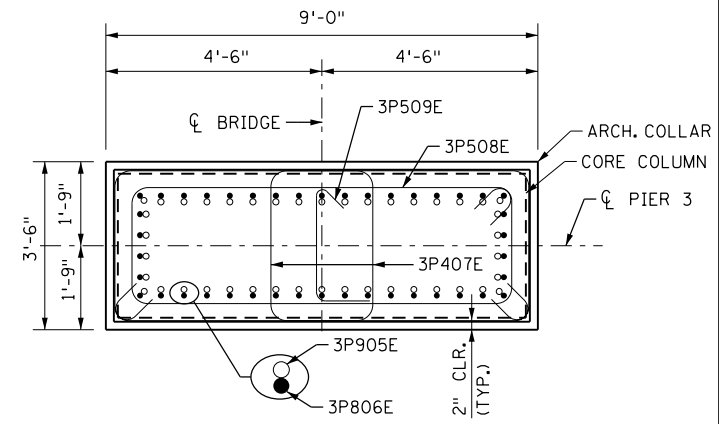
ELEVATION B



SECTION B - B



PIER COLUMN DETAIL
SECTION A-A



SECTION D-D

- NOTES**
- PEDESTAL BEARING SEAT SIZE AND FINAL ELEVATION OF THE SEAT FOR THE MAIN SPAN TRUSS SHALL BE COORDINATED WITH APPROVED SHOP PLANS FOR THE TRUSS BEARING ASSEMBLY PROVIDED BY THE TRUSS MANUFACTURER.
 - REINFORCEMENT TO BE PLACED TO ENSURE ADEQUATE CLEARANCE FROM TRUSS ANCHOR RODS PER BEARING ASSEMBLY PROVIDED BY TRUSS MANUFACTURER.

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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

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CHECKED		RRE	CHECK		ATP		
S.A.P. 199-010-012						BRIDGE NO.	
SHEET NO. 55 OF 99 SHEETS						02053	

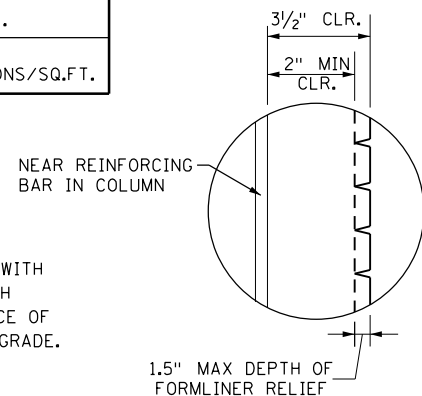
PIER 3
DETAILS & REINFORCEMENT

PIER 4 SPREAD FOOTING LOAD DATA

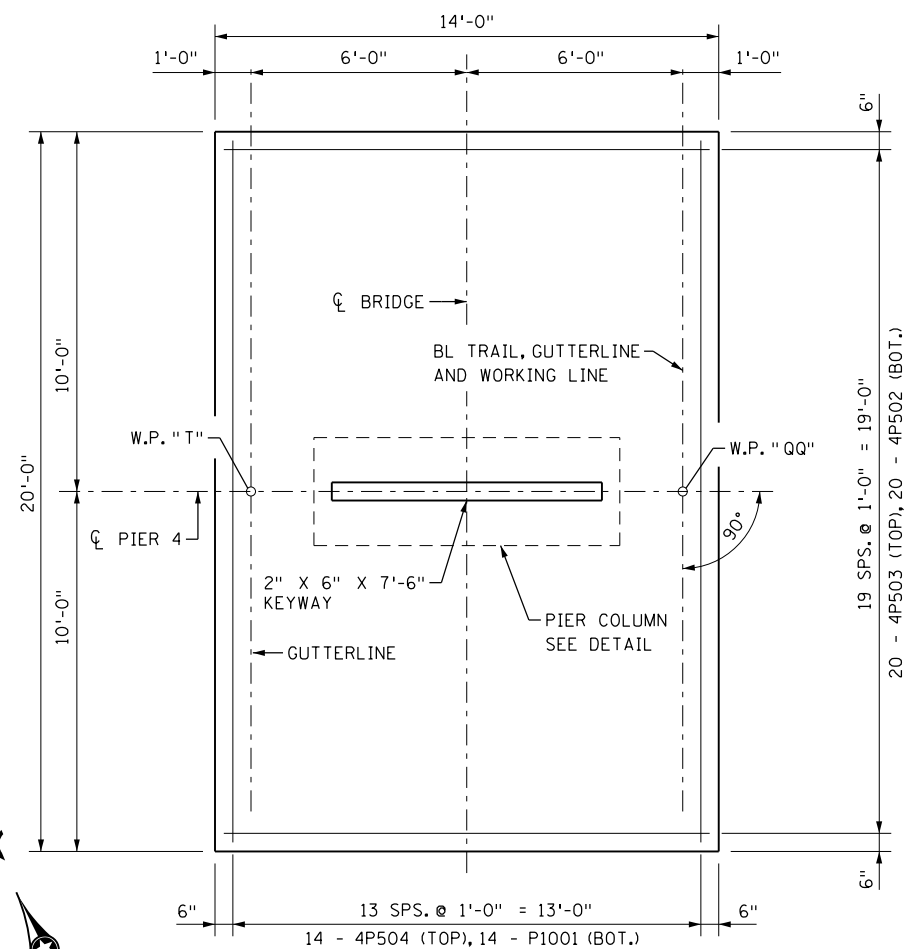
* FACTORED DESIGN BEARING PRESSURE	2.14 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	11.6 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	12.7 FT.
FACTORED BEARING RESISTANCE $\phi_b \cdot q_n$	2.19 TONS/SQ.FT.

* BASED ON SERVICE I LOAD COMBINATION

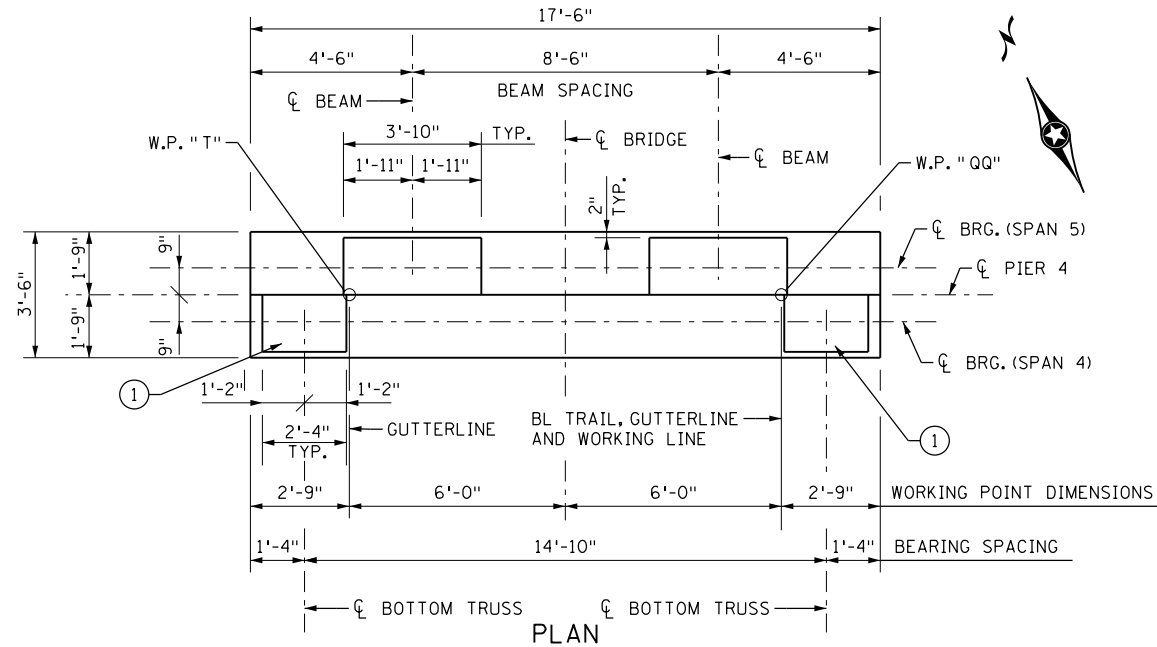
NOTE: SET STAINLESS STEEL NAIL/PIN WITH CUT "X" IN EXPOSED HEAD (FLUSH WITH FINISHED CONCRETE FACE), IN WEST FACE OF PIER APPROXIMATE 4' ABOVE FINISHED GRADE.



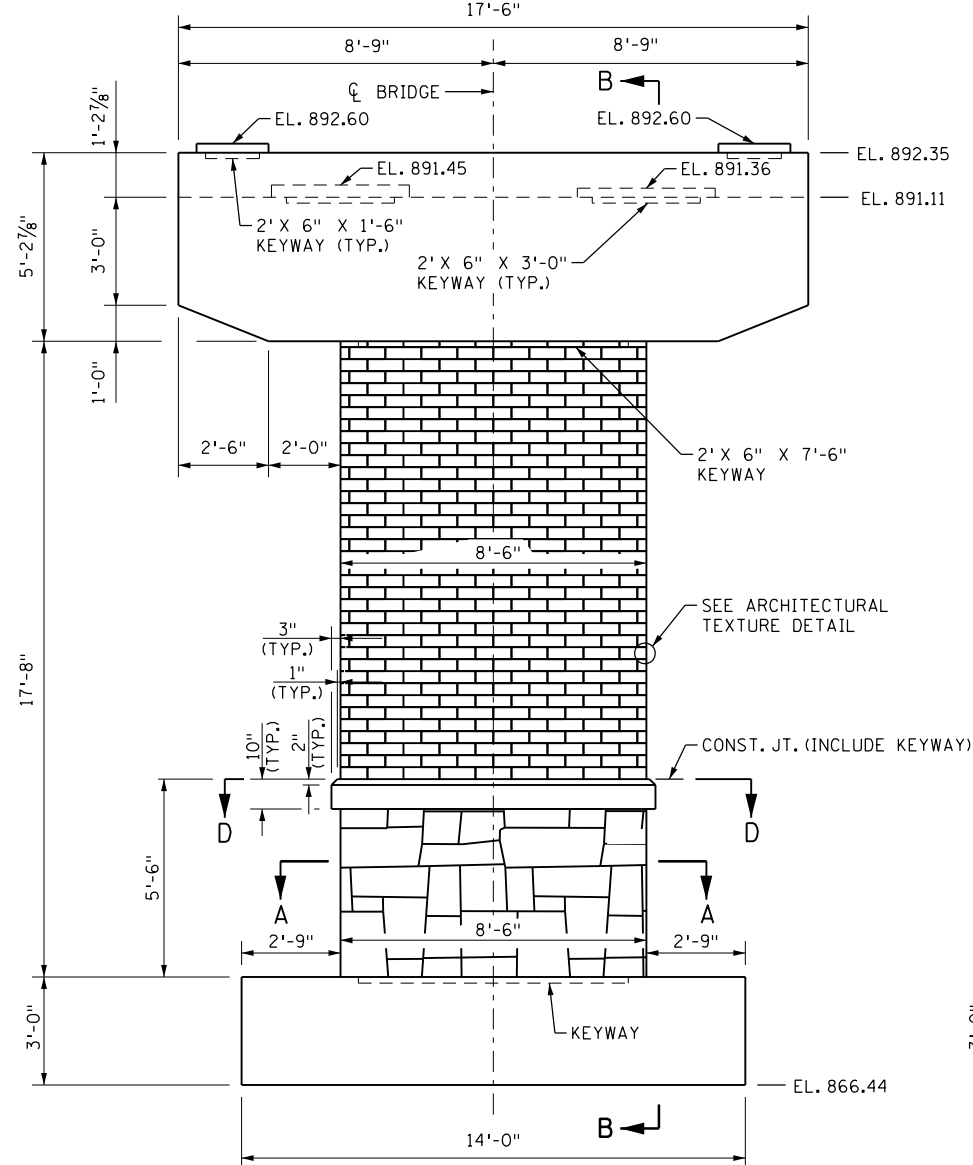
ARCHITECTURAL TEXTURE DETAIL
NOT TO SCALE



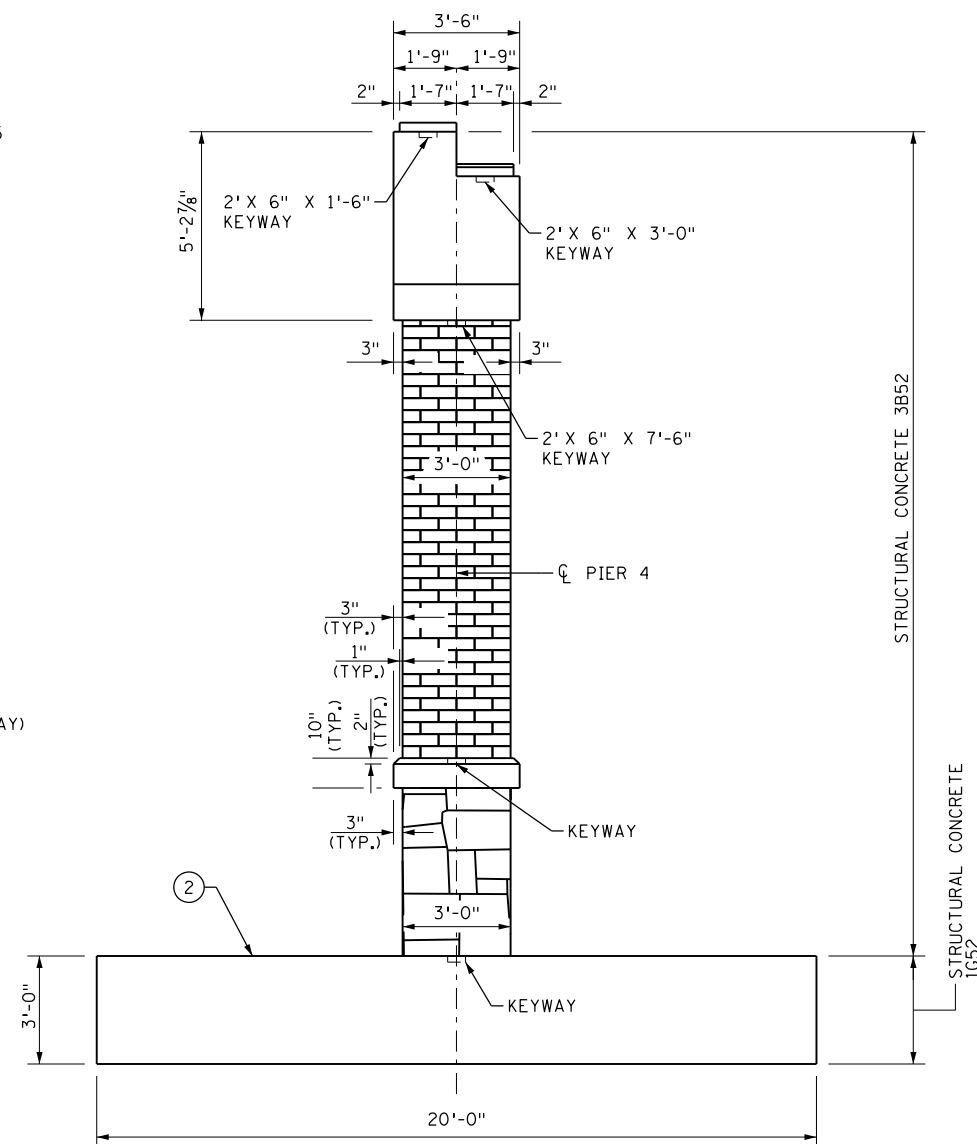
FOOTING PLAN



PLAN



ELEVATION



SECTION B - B

SUMMARY OF QUANTITIES FOR PIER 4

STRUCTURAL CONCRETE (1G52)	31.1	CU YD
STRUCTURAL CONCRETE (3B52)	27.0	CU YD
REINFORCEMENT BARS	2218	POUND
REINFORCEMENT BARS (EPOXY COATED)	5736	POUND
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	107	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	280	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	365	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	280	SQ FT
ANTI-GRAFITTI COATING	387	SQ FT

NOTES

- ① BASED ON ASSUMED BEARING SIZE/THICKNESS; SEE PREFABRICATED TRUSS DETAILS FOR ESTIMATED BEARING SIZE. VERIFY FINAL PEDESTAL ELEVATIONS UPON APPROVAL OF TRUSS SHOP DRAWINGS.
- ② TOP OF FOOTING SHALL HAVE A MINIMUM OF 1'-6" SOIL COVER.

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



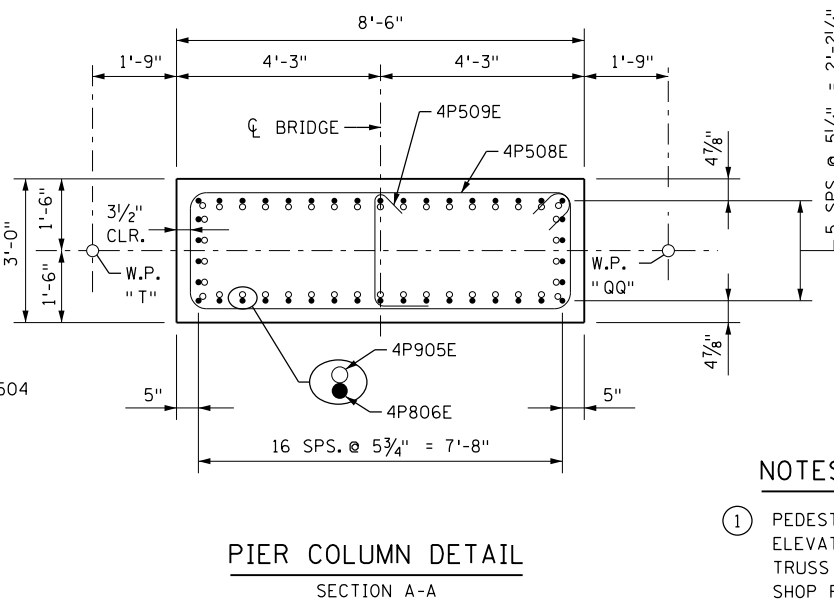
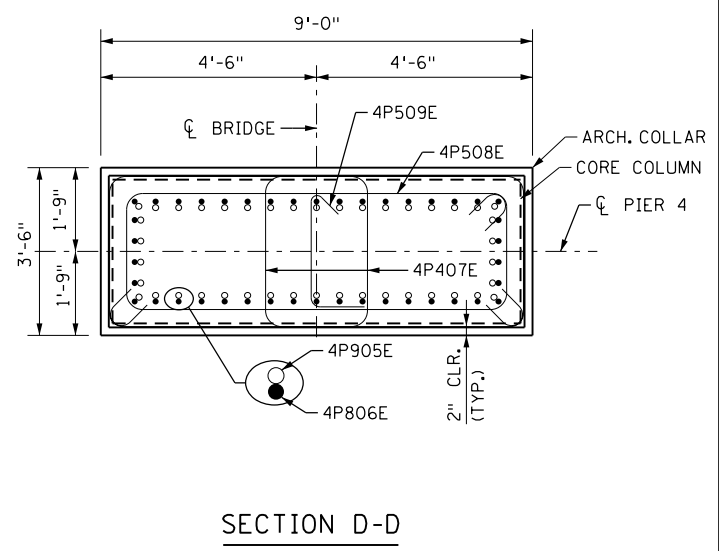
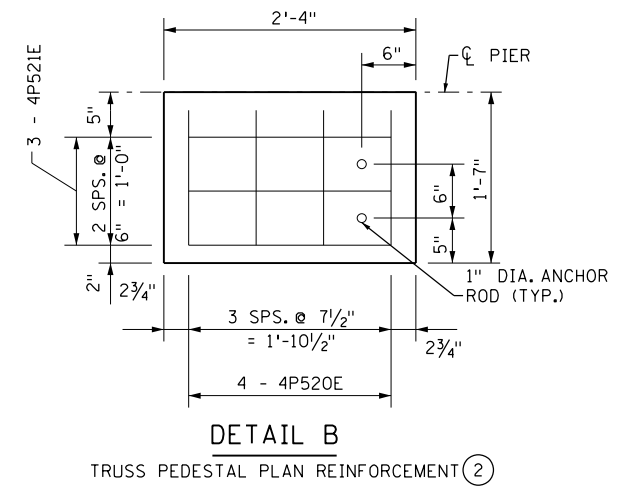
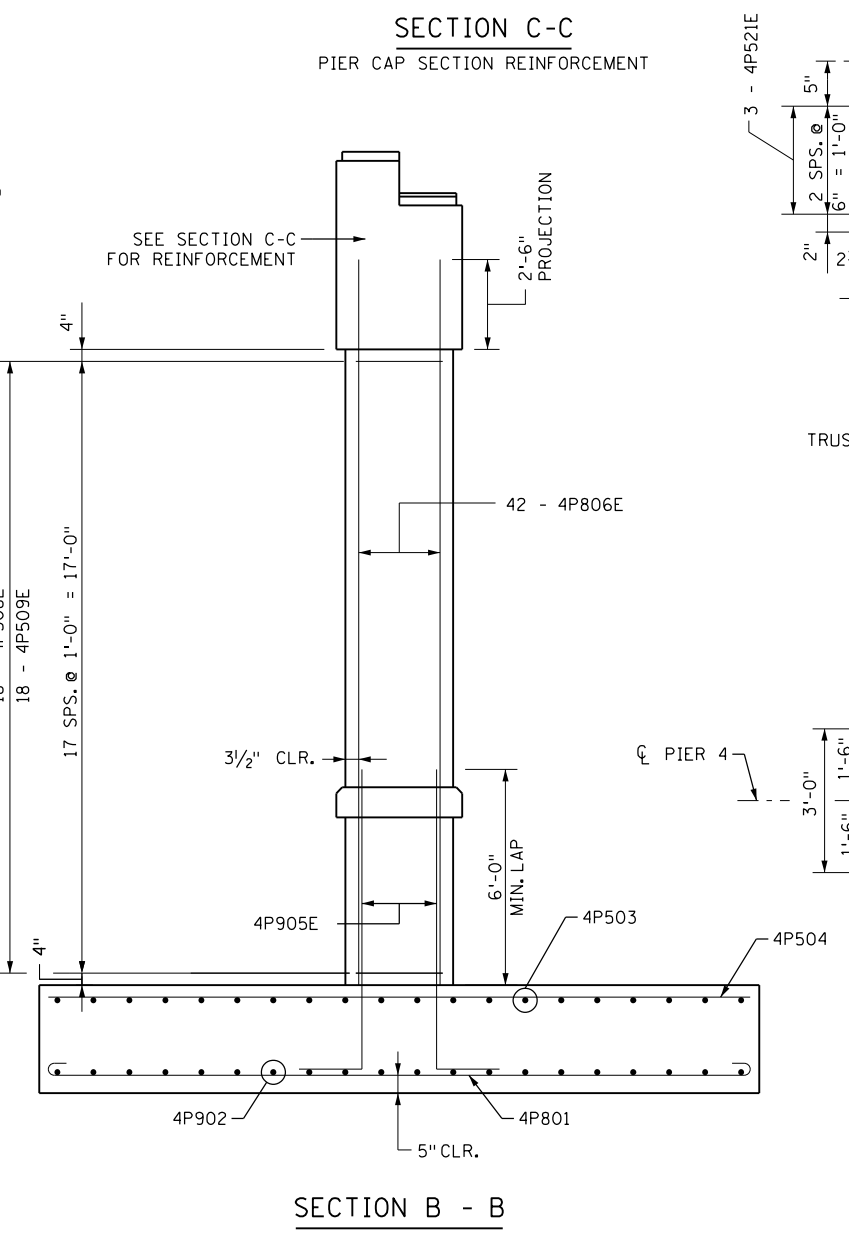
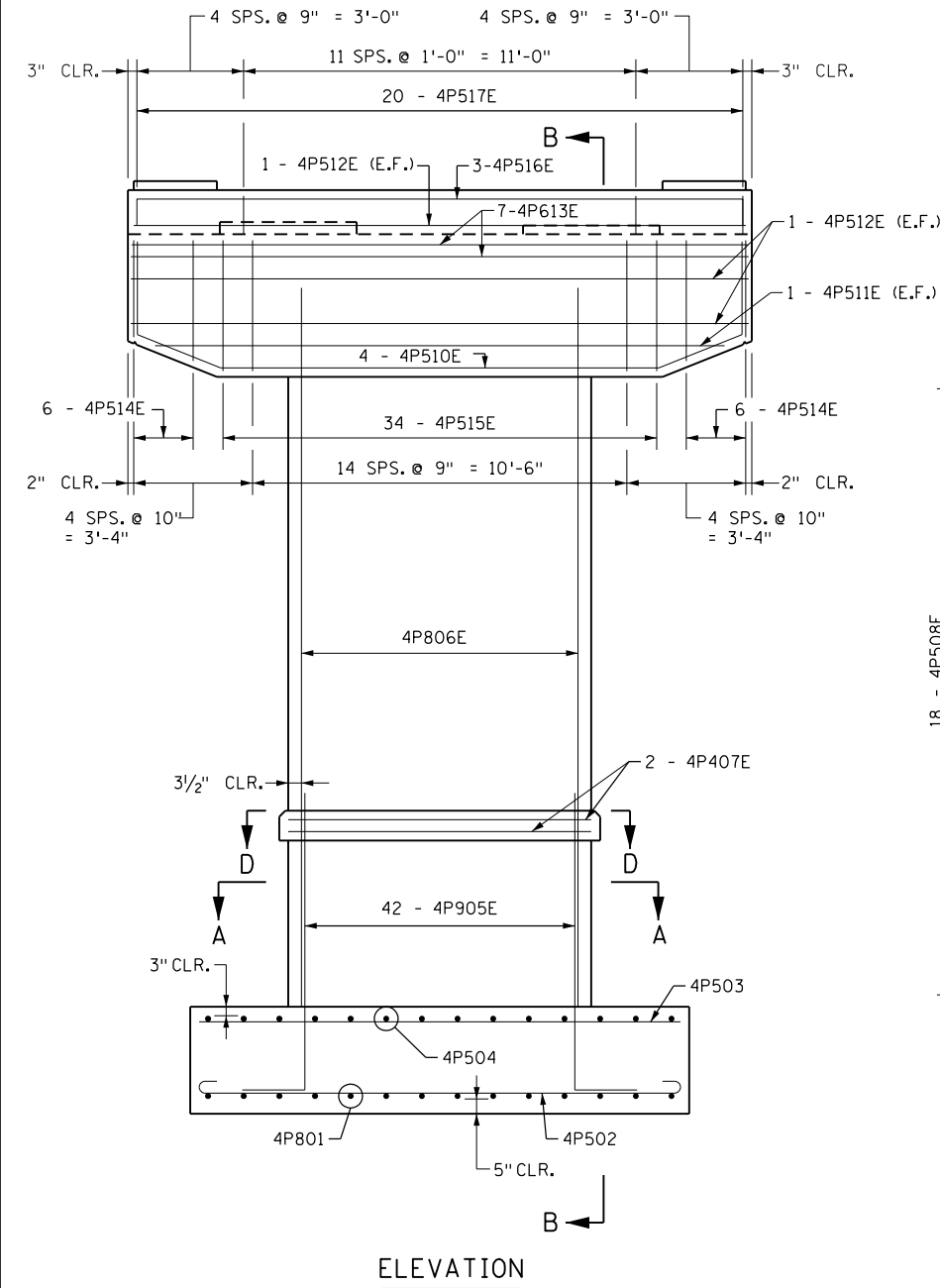
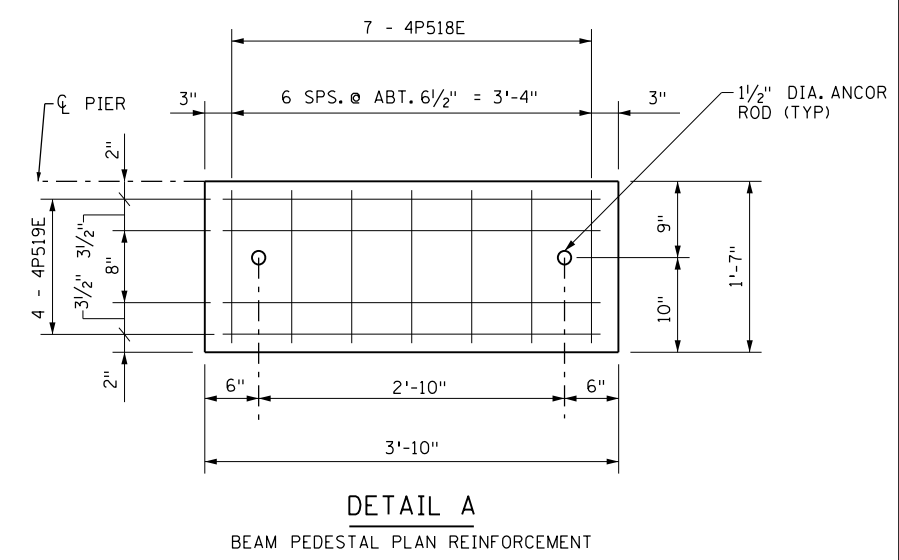
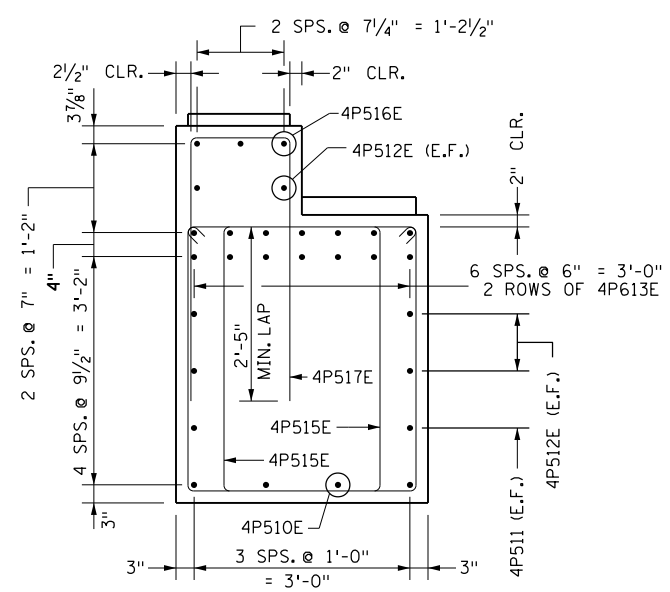
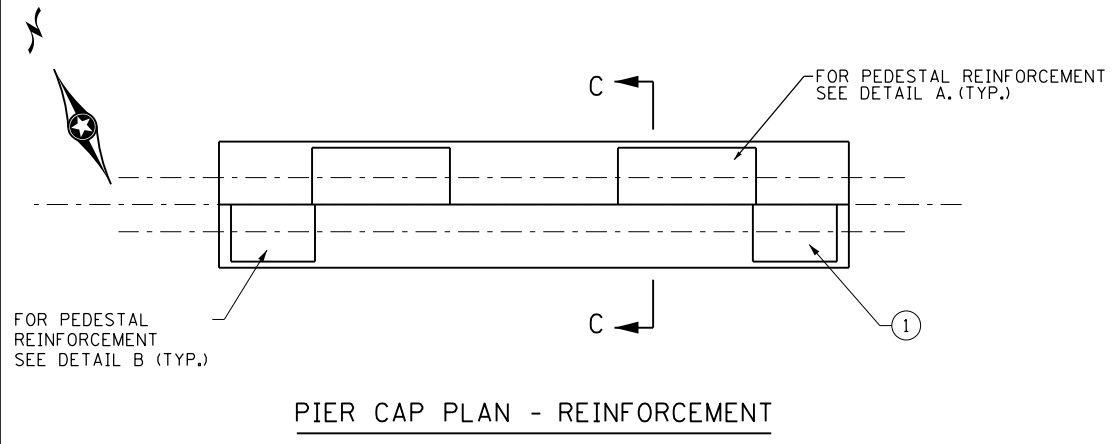
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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

**PIER 4
DETAILS & REINFORCEMENT**

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	ATP	
S.A.P. 199-010-012				
SHEET NO. 56 OF 99 SHEETS				

**BRIDGE NO.
02053**



- NOTES**
- ① PEDESTAL BEARING SEAT SIZE AND FINAL ELEVATION OF THE SEAT FOR THE MAIN SPAN TRUSS SHALL BE COORDINATED WITH APPROVED SHOP PLANS FOR THE TRUSS BEARING ASSEMBLY PROVIDED BY THE TRUSS MANUFACTURER.
 - ② REINFORCEMENT TO BE PLACED TO ENSURE ADEQUATE CLEARANCE FROM TRUSS ANCHOR RODS PER BEARING ASSEMBLY PROVIDED BY TRUSS MANUFACTURER.

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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE _____

PIER 4
DETAILS & REINFORCEMENT

DESIGNED	ATP	DRAWN	JMR	APPROVED

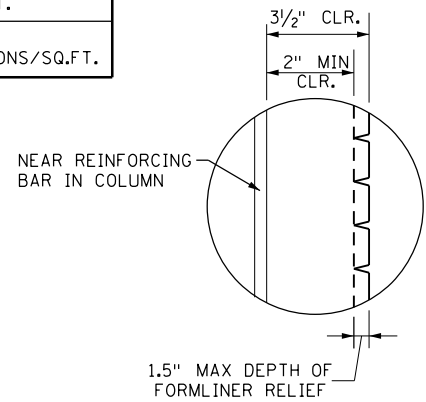
S.A.P. 199-010-012
 SHEET NO. 57 OF 99 SHEETS

BRIDGE NO.
 02053

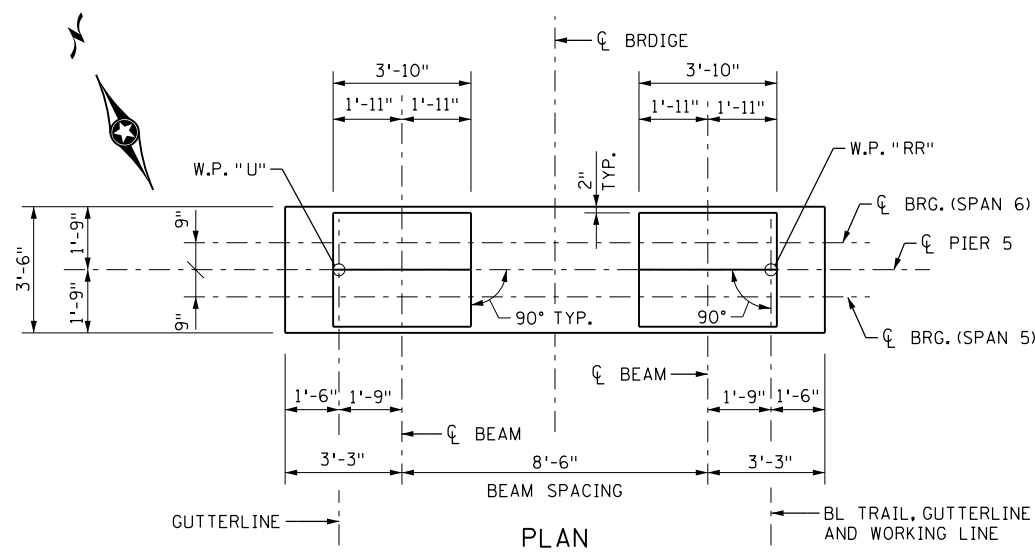
**PIER 5
SPREAD FOOTING LOAD DATA**

* FACTORED DESIGN BEARING PRESSURE	1.81 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	13.2 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	13.2 FT.
FACTORED BEARING RESISTANCE $\phi_b \cdot q_n$	1.9 TONS/SQ.FT.

* BASED ON SERVICE I LOAD COMBINATION



ARCHITECTURAL TEXTURE DETAIL
NOT TO SCALE



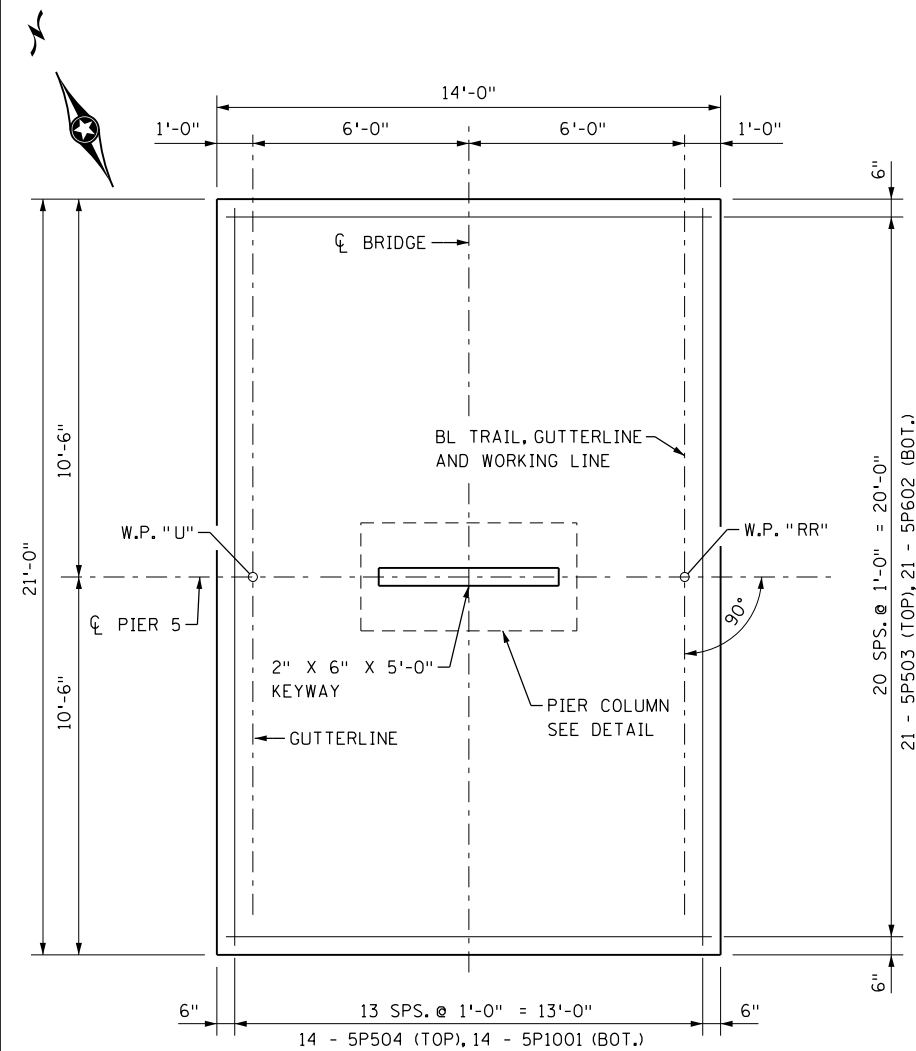
PLAN

**SUMMARY OF QUANTITIES
FOR PIER 5**

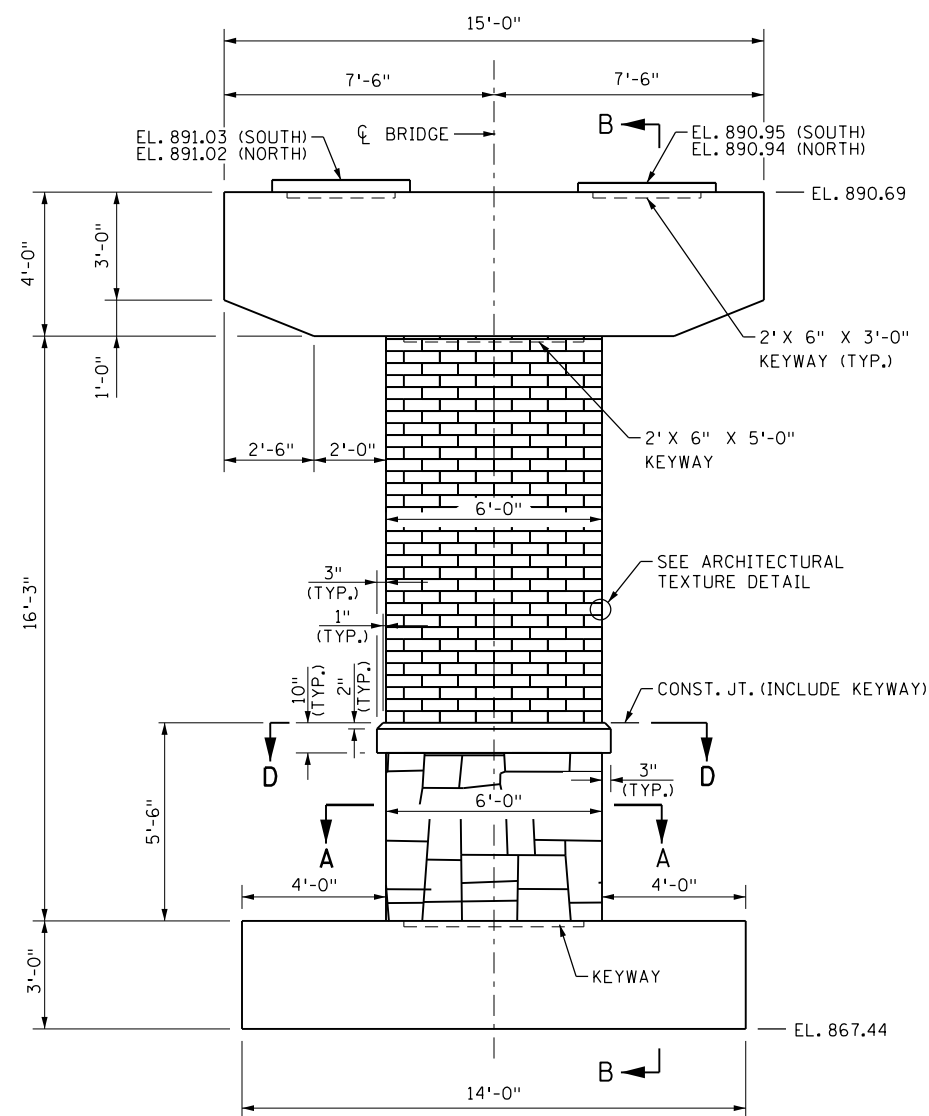
STRUCTURAL CONCRETE (1G52)	32.7	CU YD
STRUCTURAL CONCRETE (3B52)	18.4	CU YD
REINFORCEMENT BARS	2469	POUND
REINFORCEMENT BARS (EPOXY COATED)	4129	POUND
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	84	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	194	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	304	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	194	SQ FT
ANTI-GRAFFITI COATING	278	SQ FT

NOTES

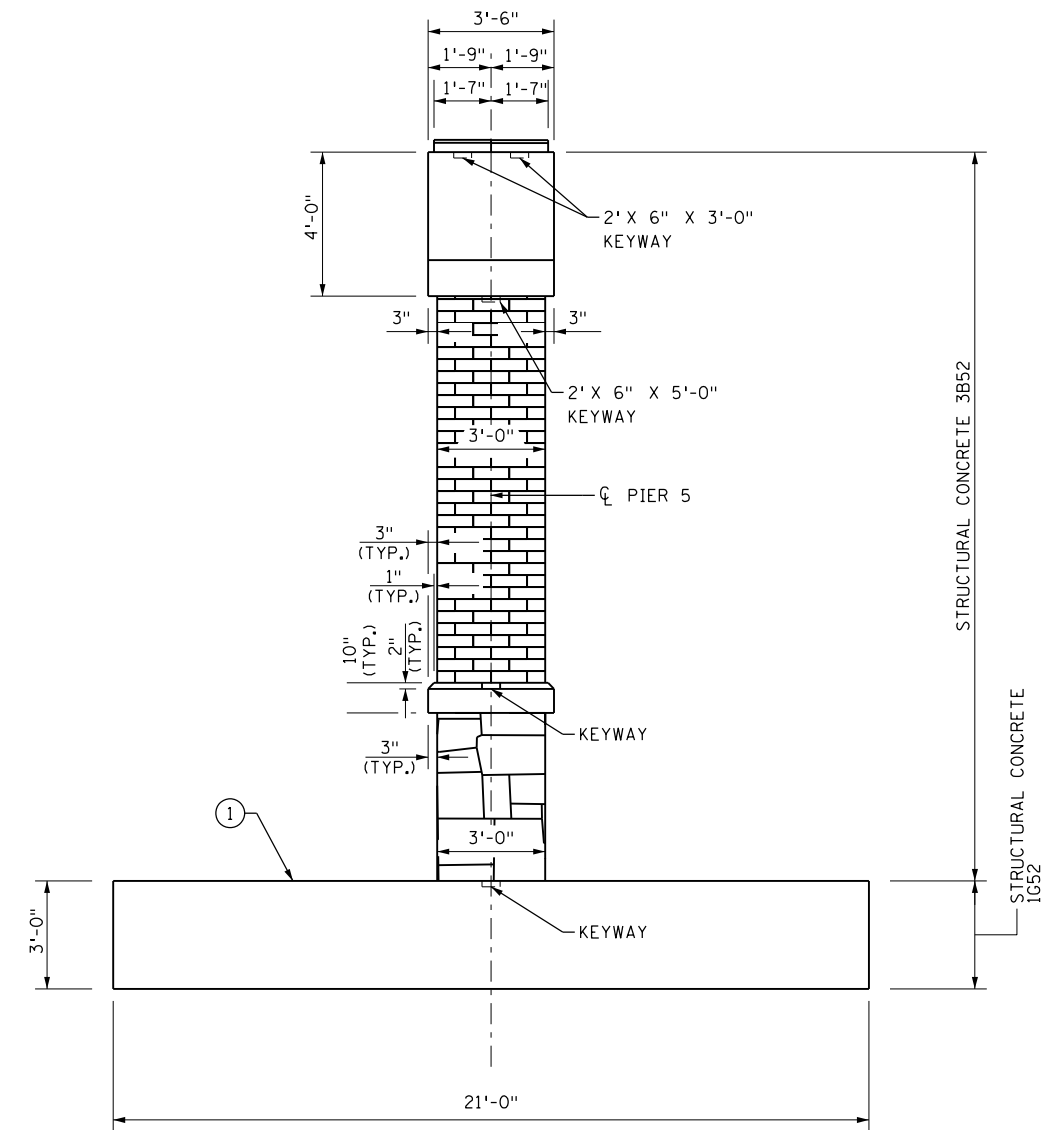
- TOP OF FOOTING SHALL HAVE A MINIMUM OF 1'-6" SOIL COVER.
- SET STAINLESS STEEL NAIL/PIN WITH CUT "X" IN EXPOSED HEAD (FLUSH WITH FINISHED CONCRETE TEXTURE), IN WEST FACE OF PIER APPROXIMATE 4' ABOVE FINISHED GRADE.



FOOTING PLAN



ELEVATION



SECTION B - B

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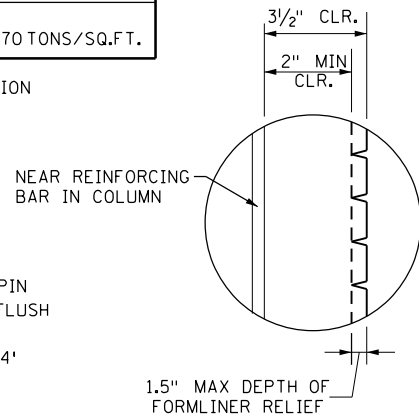
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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

DESIGNED		ATP	DRAWN		JMR	APPROVED	
CHECKED		RRE	CHECK		ATP		
PIER 5 DETAILS & REINFORCEMENT							
S.A.P. 199-010-012							
SHEET NO. 58 OF 99 SHEETS							
BRIDGE NO. 02053							

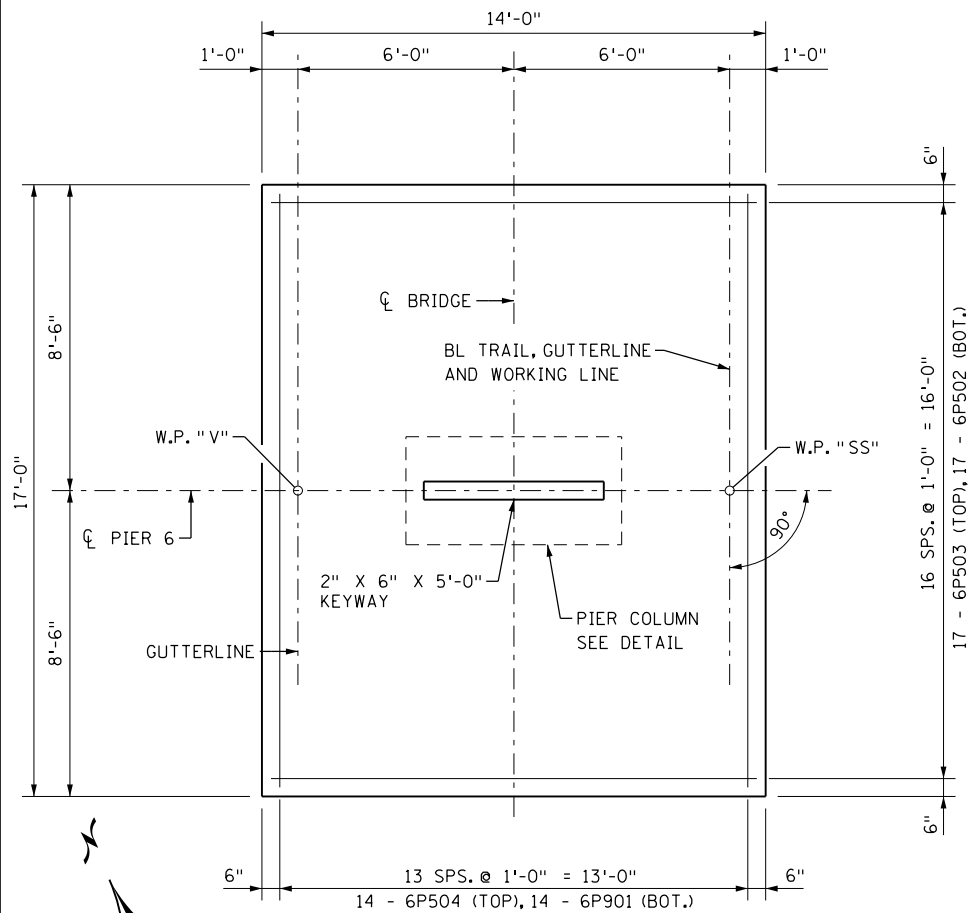
**PIER 6
SPREAD FOOTING LOAD DATA**

* FACTORED DESIGN BEARING PRESSURE	1.61 TONS/SQ.FT.
EFFECTIVE WIDTH B' (PERPENDICULAR TO PIER)	11.1 FT.
EFFECTIVE LENGTH L' (PARALLEL TO PIER)	13.3 FT.
FACTORED BEARING RESISTANCE $\phi_b \cdot q_n$	1.70 TONS/SQ.FT.

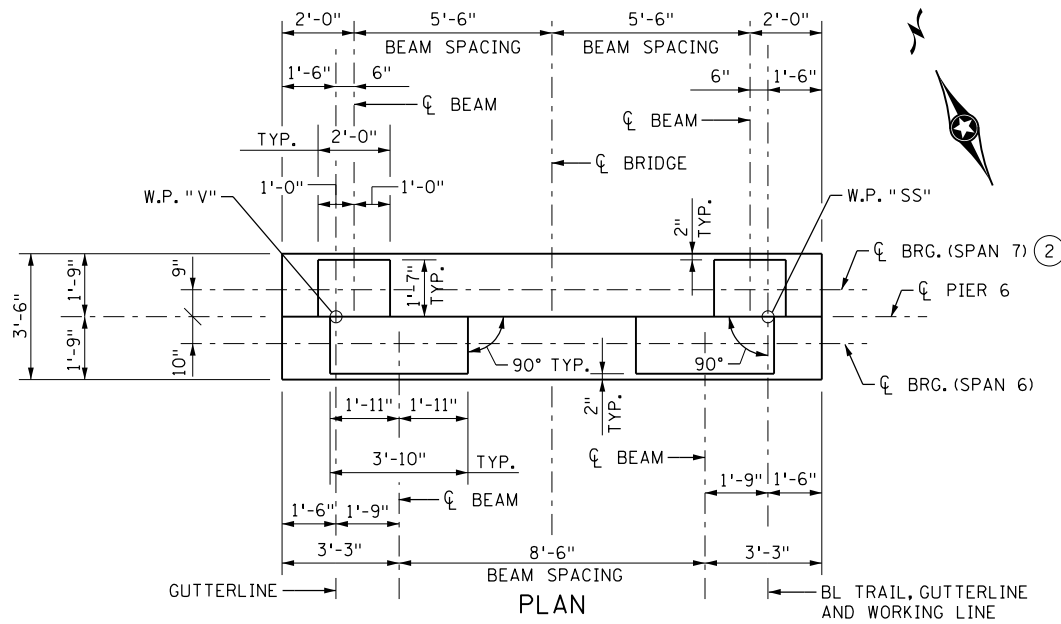
* BASED ON SERVICE I LOAD COMBINATION



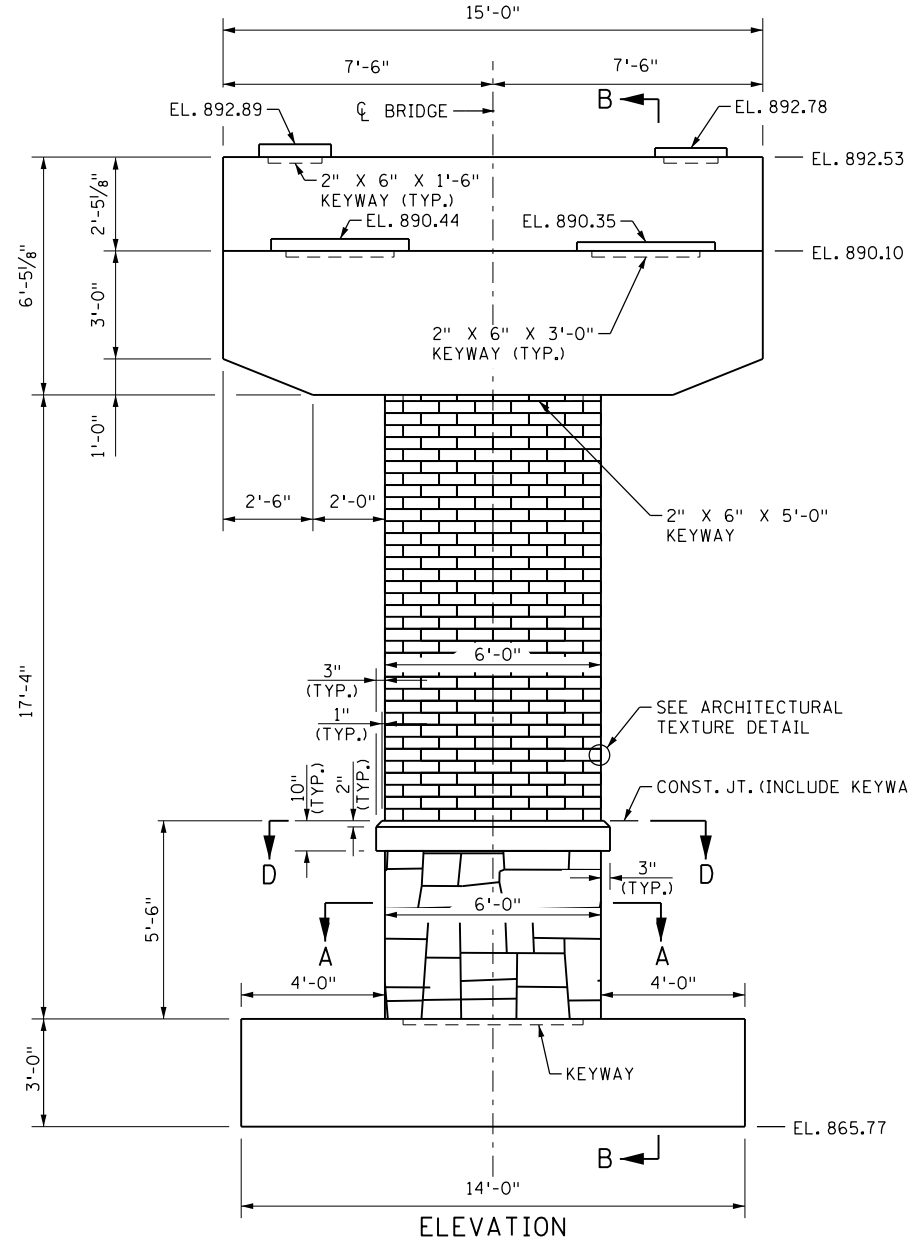
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NOT TO SCALE



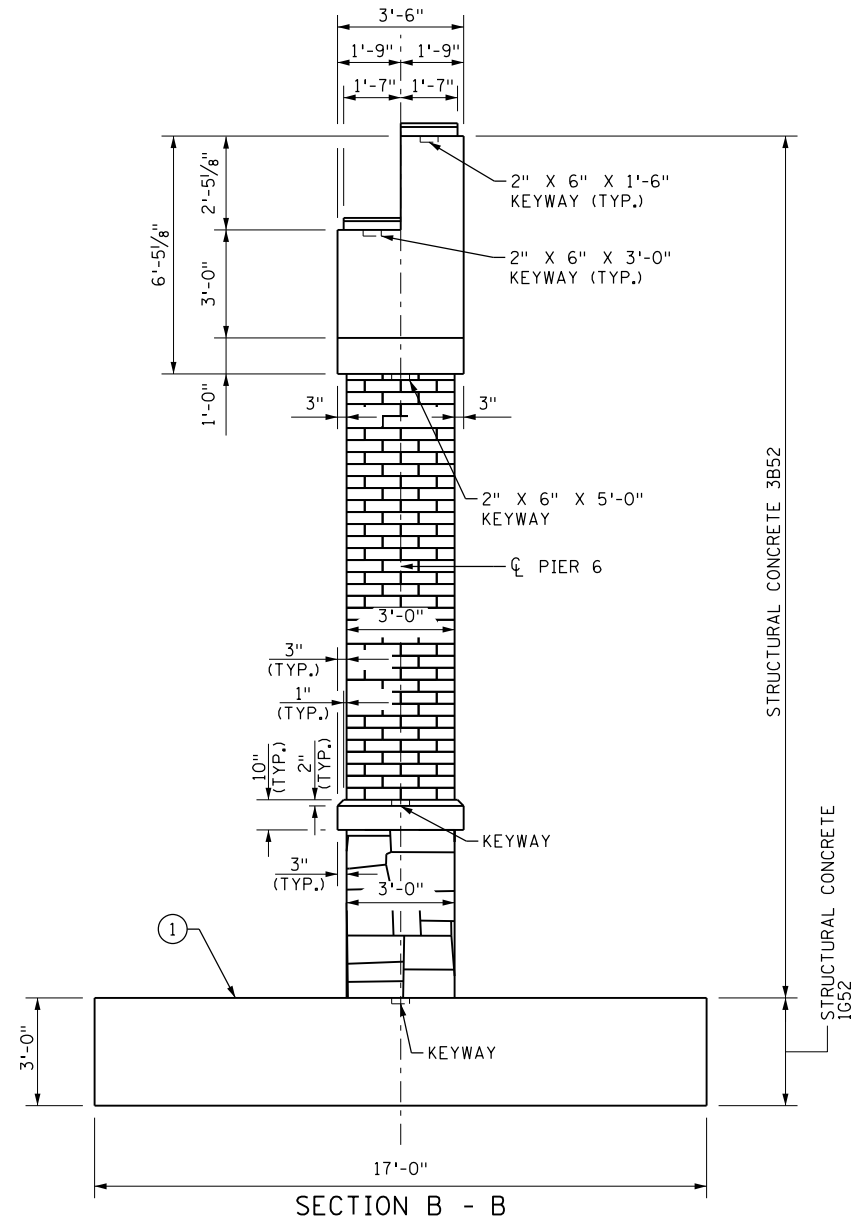
FOOTING PLAN



PLAN



ELEVATION



SECTION B - B

**SUMMARY OF QUANTITIES
FOR PIER 6**

STRUCTURAL CONCRETE (1G52)	26.4	CU YD
STRUCTURAL CONCRETE (3B52)	26.5	CU YD
REINFORCEMENT BARS	1645	POUND
REINFORCEMENT BARS (EPOXY COATED)	4462	POUND
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	107	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	272	SQ FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	327	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	272	SQ FT
ANTI-GRAFFITTI COATING	380	SQ FT

NOTES

- TOP OF FOOTING SHALL HAVE A MINIMUM OF 1'-6" SOIL COVER.
- CONTRACTOR SHALL FIELD VERIFY LOCATION OF TIE-IN POINTS TO NORTH STAR STATION COLUMNS TO VERIFY REQUIRED LENGTHS OF STEEL BEAMS (FOR THE CL BEARING LOCATION SHOWN) PRIOR TO FABRICATION. BEARING LINE FOR STEEL BEAMS MAY BE FURTHER ADJUSTED +2" (OUTWARD) OR -1" (INWARD) AS NEEDED IN THE FIELD.

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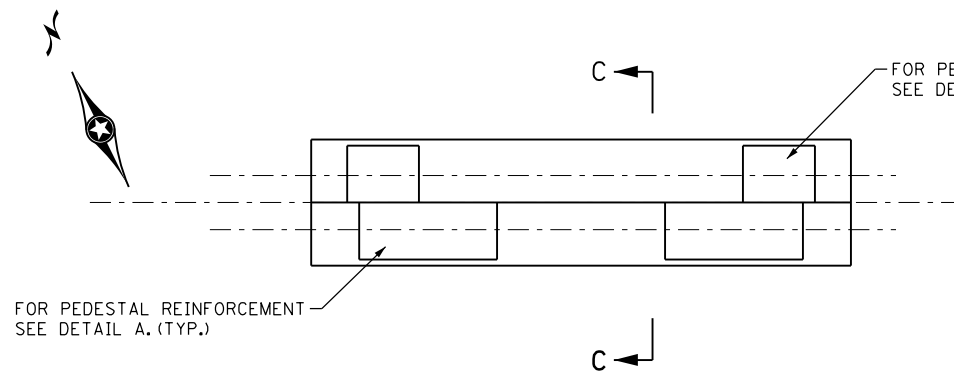
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**PIER 6
DETAILS & REINFORCEMENT**

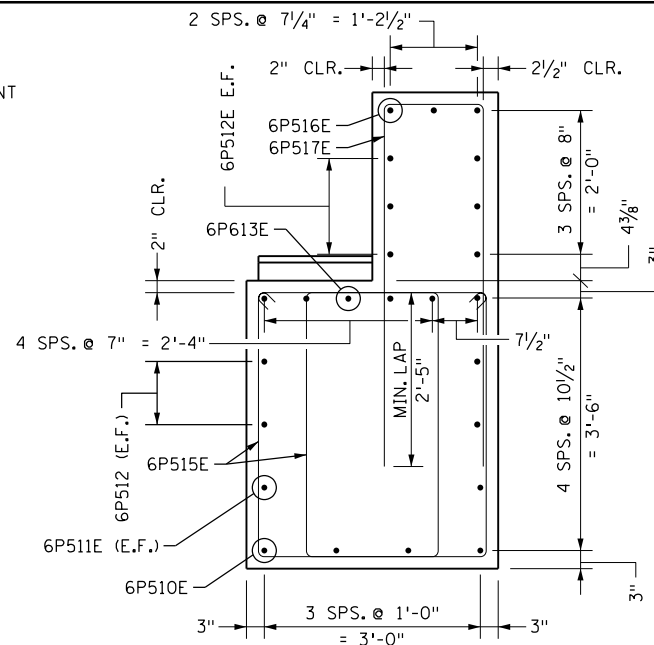
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SHEET NO. 60 OF 99 SHEETS

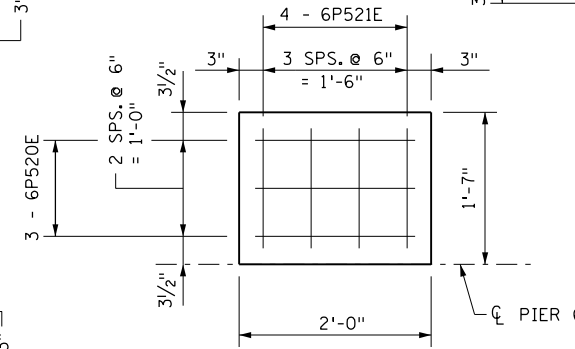
**BRIDGE NO.
02053**



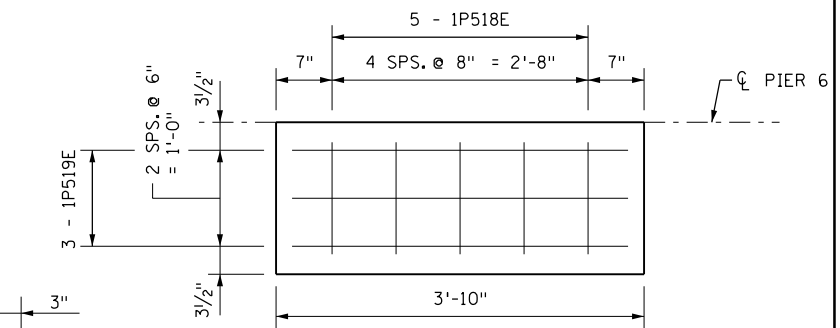
PIER CAP - REINFORCEMENT



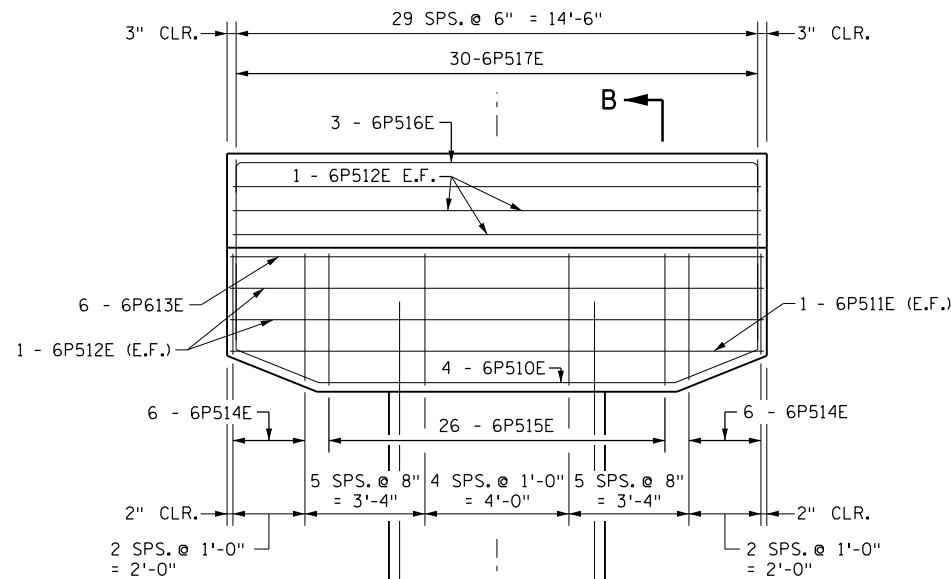
SECTION C-C
PIER CAP SECTION REINFORCEMENT



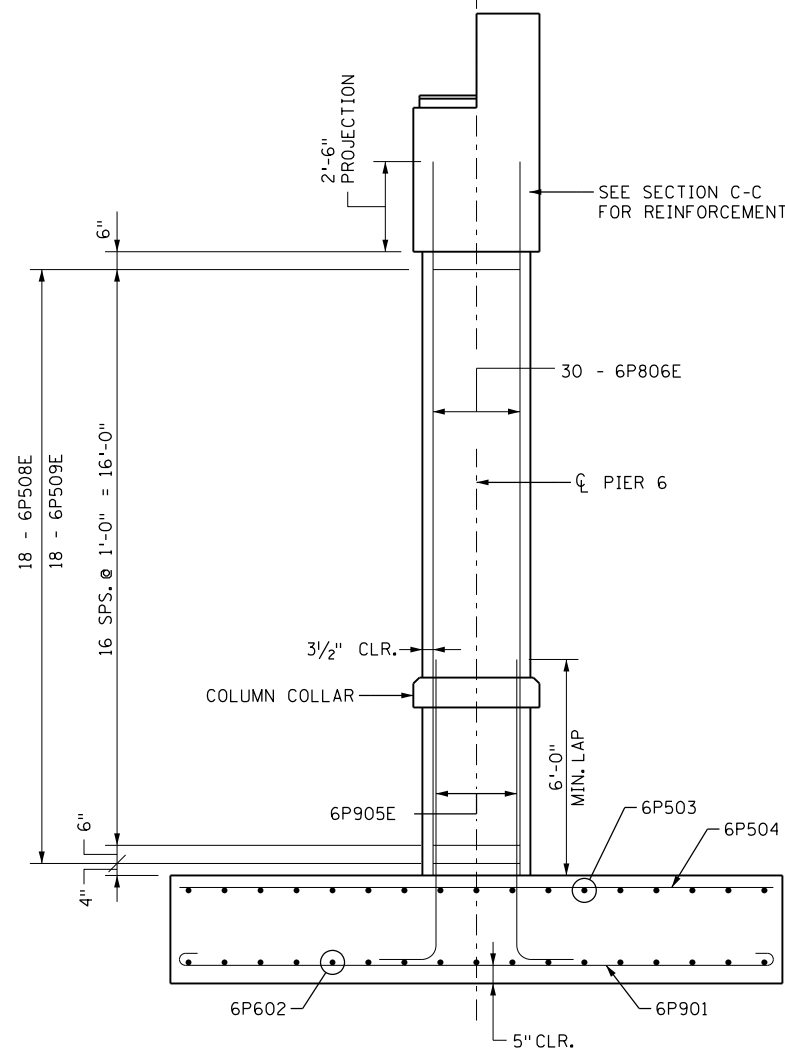
DETAIL B
PEDESTAL PLAN REINFORCEMENT



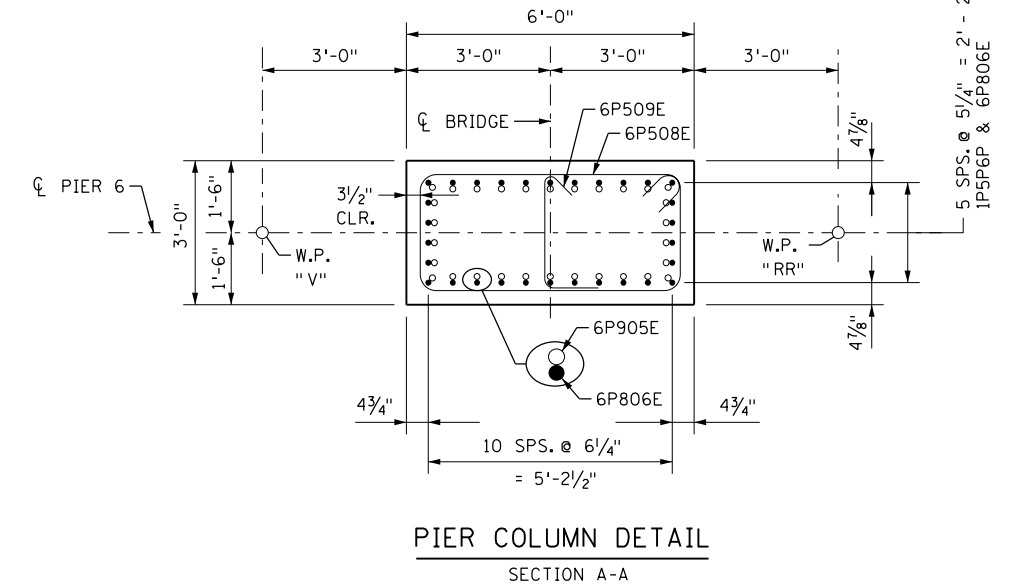
DETAIL A
PEDESTAL PLAN REINFORCEMENT



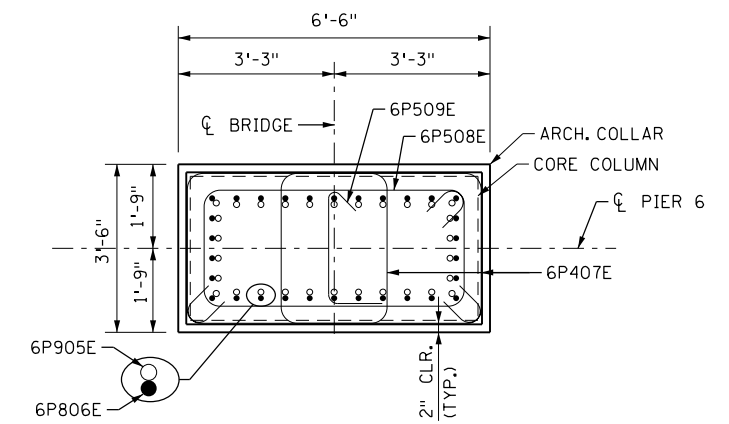
ELEVATION



SECTION B - B



PIER COLUMN DETAIL
SECTION A-A



SECTION D-D
AT COLUMN COLLAR

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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

PIER 6
DETAILS & REINFORCEMENT

DESIGNED	ATP	DRAWN	JMR	APPROVED

S.A.P. 199-010-012

SHEET NO. 61 OF 99 SHEETS

BRIDGE NO.
02053

PIER 1

BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	TYPE	LOCATION
1P901	14	17'-0"	4	BOT. FTG., LONGITUDINAL
1P602	15	14'-10"	4	BOT. FTG., TRANSVERSE
1P503	15	13'-6"		TOP FTG., TRANSVERSE
1P504	14	14'-6"		TOP FTG., LONGITUDINAL
1P905E	30	10'-0"	2	FOOTING DOWEL
1P806E	30	20'-11"		COLUMN VERTICALS
1P407E	4	15'-7"	17	COLLAR STIRRUP
1P508E	19	16'-7"	17	COLUMN STIRRUP
1P509E	19	3'-5"	19	COLUMN TIE
1P510E	4	20'-3"	21	BOTTOM CAP HORIZONTAL
1P511E	2	14'-4"		CAP HORIZONTAL
1P512E	10	14'-6"		CAP HORIZONTAL
1P613E	6	14'-6"		TOP CAP HORIZONTAL
1P514E	4 SETS OF 3	11'-7" TO 13'-7"	17	CAP STIRRUP
1P515E	26	12'-11"	17	CAP STIRRUP
1P516E	3	20'-2"	6	STEP HORIZONTAL
1P517E	30	12'-5"	6	STEP TIE
1P518E	10	3'-3"	6	PEDESTAL TIE
1P519E	6	5'-6"	6	PEDESTAL TIE

PIER 2

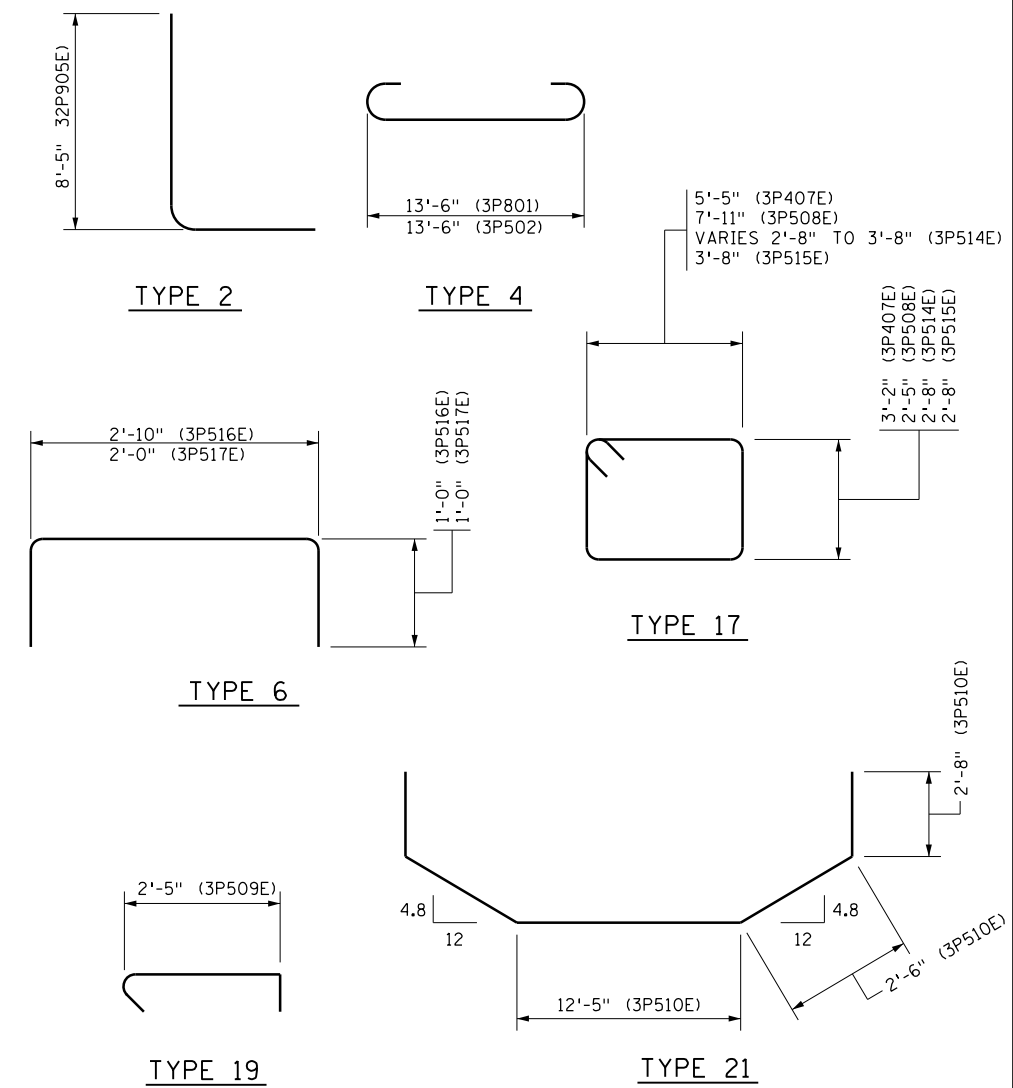
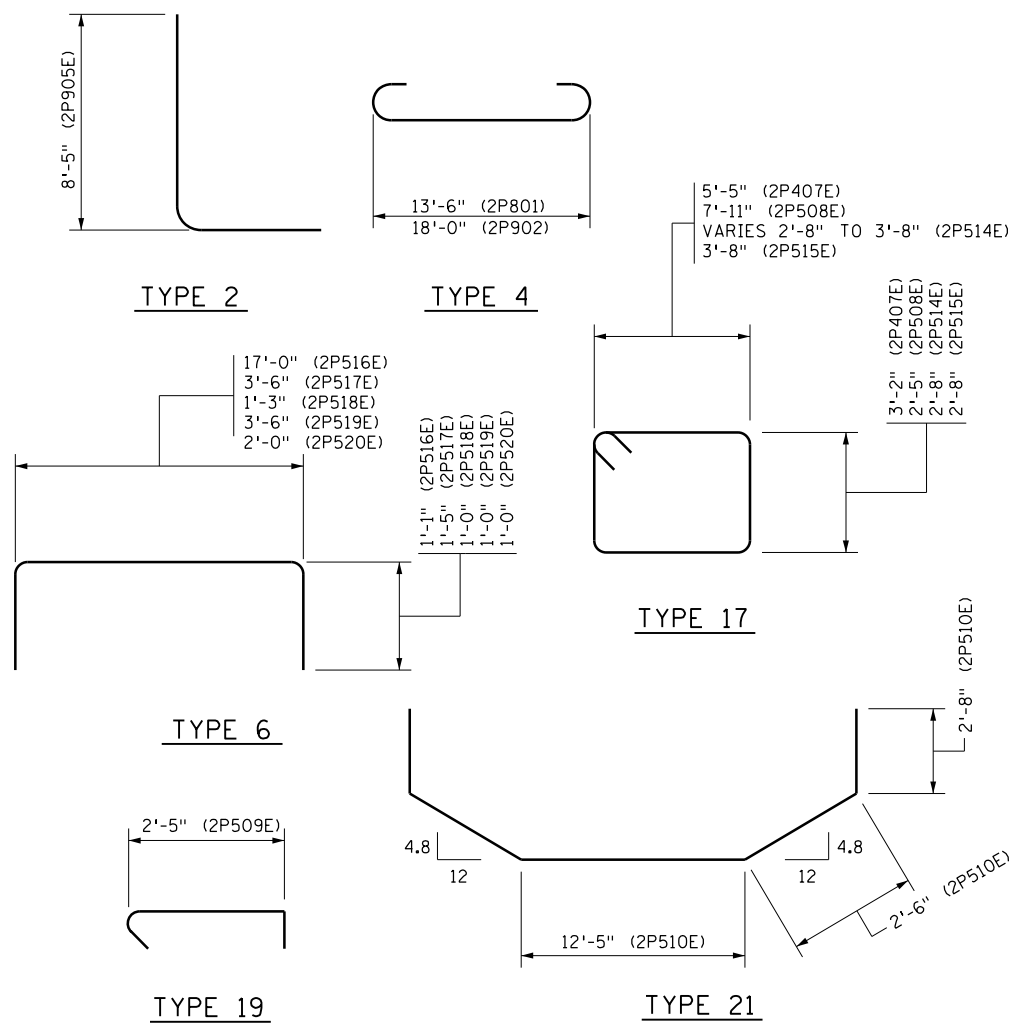
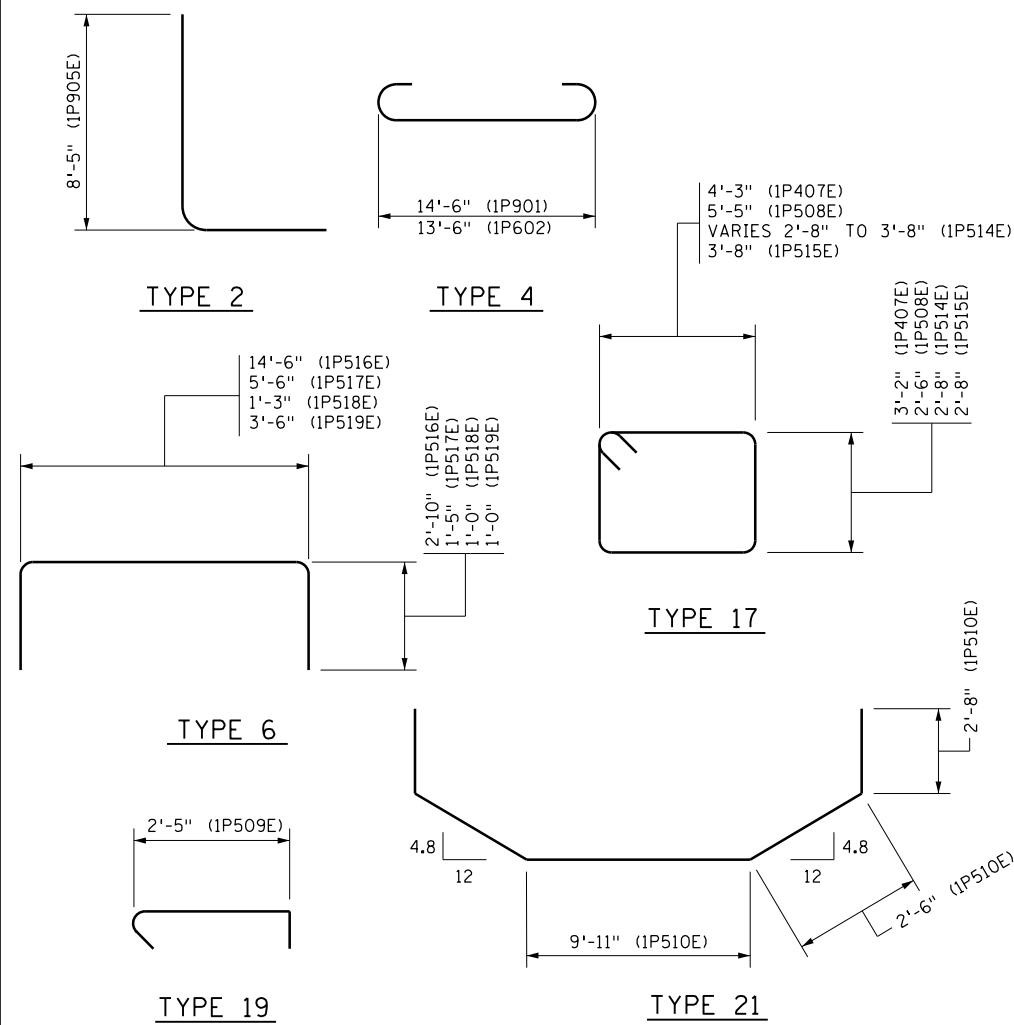
BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
2P801	19	15'-4"	4	BOT. FTG., LONGITUDINAL
2P902	14	20'-6"	4	BOT. FTG., TRANSVERSE
2P503	14	18'-0"		TOP FTG., TRANSVERSE
2P504	19	13'-6"		TOP FTG., LONGITUDINAL
2P905E	42	10'-0"	2	FOOTING DOWEL
2P806E	42	21'-7"		COLUMN VERTICALS
2P407E	4	17'-11"	17	COLLAR STIRRUP
2P508E	20	21'-7"	17	COLUMN STIRRUP
2P509E	20	3'-5"	19	COLUMN TIE
2P510E	4	22'-9"	21	BOTTOM CAP HORIZONTAL
2P511E	2	17'-0"		CAP HORIZONTAL
2P512E	6	17'-2"		CAP HORIZONTAL
2P613E	14	17'-2"		TOP CAP HORIZONTAL
2P514E	4 SETS OF 3	11'-7" TO 13'-7"	17	CAP STIRRUP
2P515E	34	13'-7"	17	CAP STIRRUP
2P516E	3	19'-2"	6	STEP HORIZONTAL
2P517E	20	8'-5"	6	STEP TIE
2P518E	22	3'-3"	6	PEDESTAL TIE
2P519E	8	5'-6"	6	PEDESTAL TIE
2P520E	6	4'-0"	6	PEDESTAL TIE

PIER 3

BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
3P801	14	15'-4"	4	BOT. FTG., LONGITUDINAL
3P502	14	14'-8"	4	BOT. FTG., TRANSVERSE
3P503	14	13'-6"		TOP FTG., TRANSVERSE
3P504	14	13'-6"		TOP FTG., LONGITUDINAL
3P905E	42	10'-0"	2	FOOTING DOWEL
3P806E	42	23'-8"		COLUMN VERTICALS
3P407E	4	17'-11"	17	COLLAR STIRRUP
3P508E	22	21'-7"	17	COLUMN STIRRUP
3P509E	22	3'-5"	19	COLUMN TIE
3P510E	4	22'-9"	21	BOTTOM CAP HORIZONTAL
3P511E	2	17'-0"		CAP HORIZONTAL
3P512E	4	17'-2"		CAP HORIZONTAL
3P613E	14	17'-2"		TOP CAP HORIZONTAL
3P514E	4 SETS OF 3	11'-7" TO 13'-7"	17	CAP STIRRUP
3P515E	34	13'-7"	17	CAP STIRRUP
3P516E	8	4'-10"	6	PEDESTAL TIE
3P517E	12	4'-0"	6	PEDESTAL TIE



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ENGINEER SIGNATURE
 RYAN R. EVANS
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PIER BAR LIST & QUANTITIES

DESIGNED	ATP	DRAWN	JMR	APPROVED

S.A.P. 199-010-012
 SHEET NO. 62 OF 99 SHEETS

BRIDGE NO.
 02053

PIER 4

BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
4P1001	14	22'-4"	4	BOT. FTG., LONGITUDINAL
4P502	20	14'-8"	4	BOT. FTG., TRANSVERSE
4P503	20	13'-6"		TOP FTG., TRANSVERSE
4P504	14	19'-6"		TOP FTG., LONGITUDINAL
4P905E	42	10'-0"	2	FOOTING DOWEL
4P806E	42	20'-2"		COLUMN VERTICALS
4P407E	4	17'-11"	17	COLLAR STIRRUP
4P508E	18	21'-7"	17	COLUMN STIRRUP
4P509E	18	3'-2"	19	COLUMN TIE
4P510E	4	22'-9"	21	BOTTOM CAP HORIZONTAL
4P511E	2	17'-0"		CAP HORIZONTAL
4P512E	6	17'-2"		CAP HORIZONTAL
4P613E	14	17'-2"		TOP CAP HORIZONTAL
4P514E	4 SETS OF 3	11'-7" TO 13'-7"	17	CAP STIRRUP
4P515E	28	13'-7"	17	CAP STIRRUP
4P516E	3	19'-2"	6	STEP HORIZONTAL
4P517E	20	8'-5"	6	STEP TIE
4P518E	22	3'-3"	6	PEDESTAL TIE
4P519E	8	5'-6"	6	PEDESTAL TIE
4P520E	6	4'-0"	6	PEDESTAL TIE

PIER 5

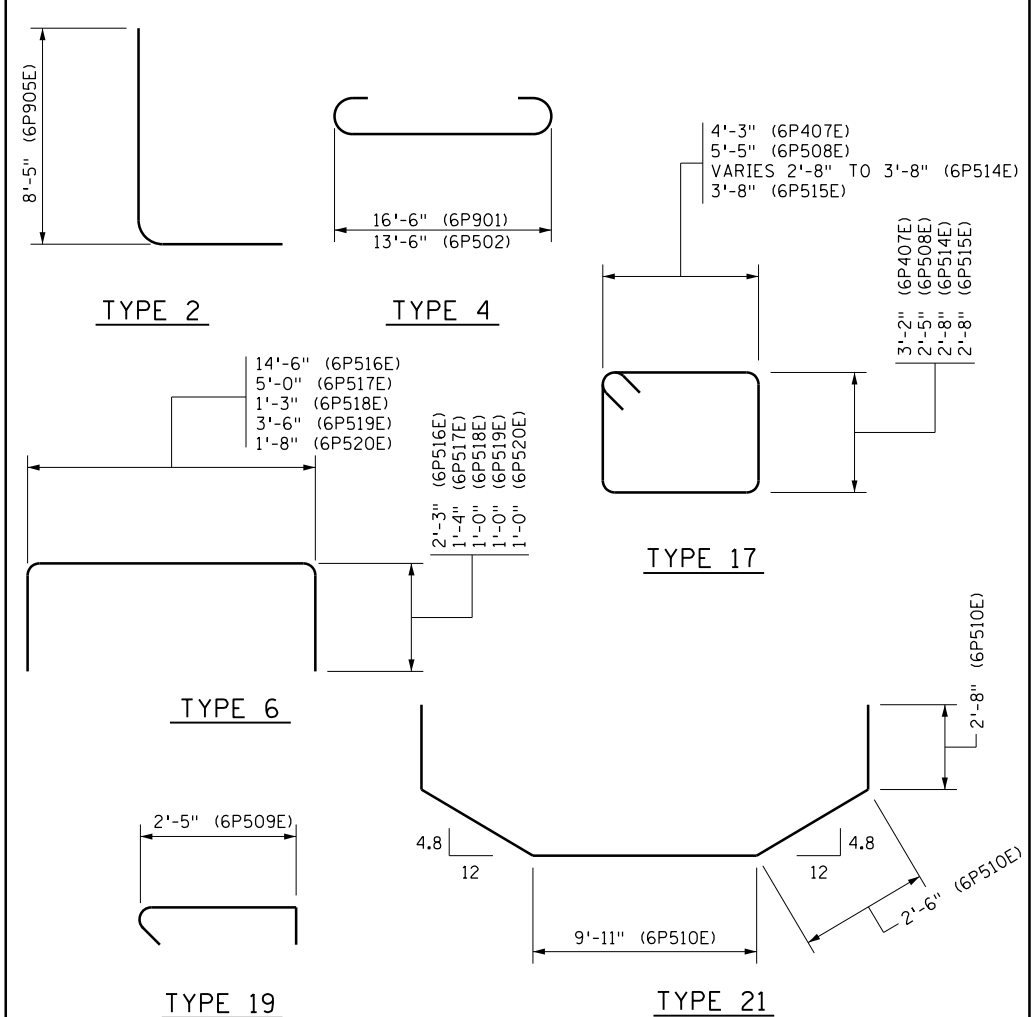
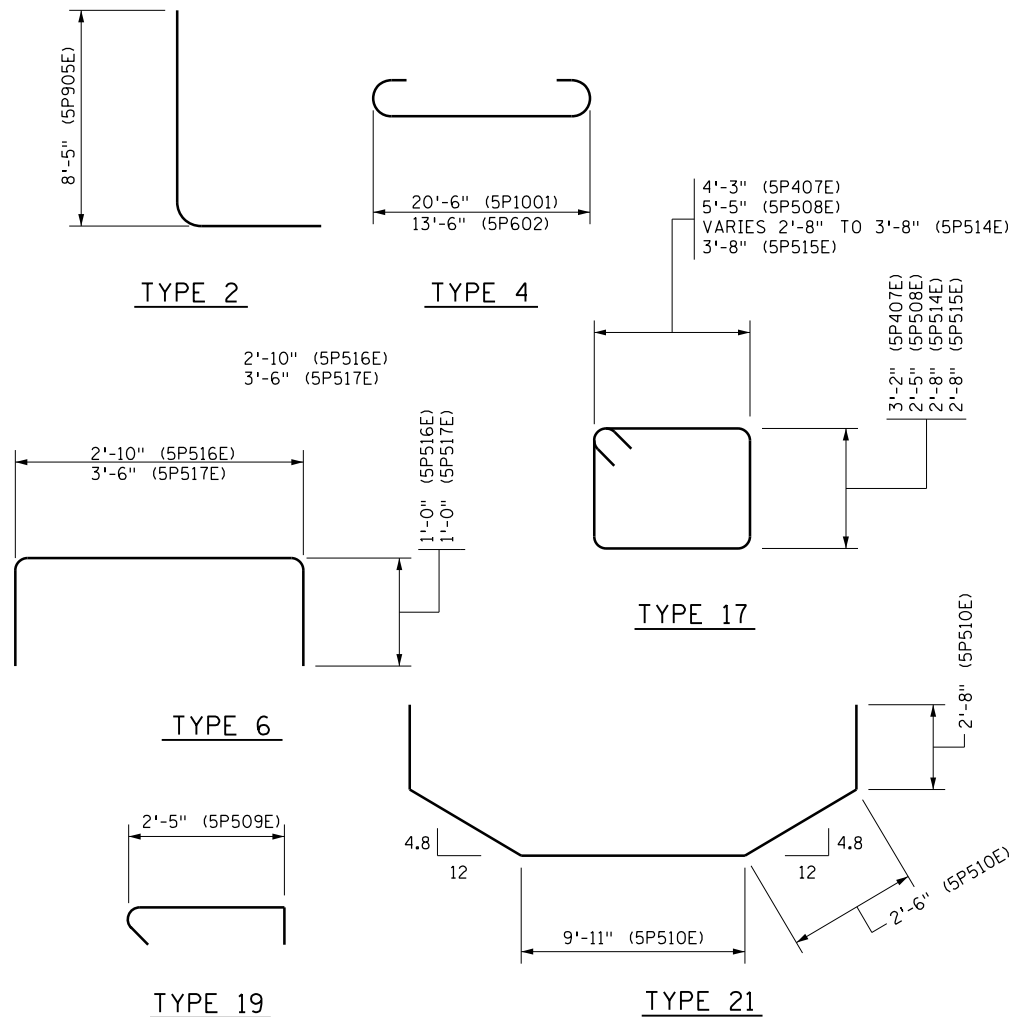
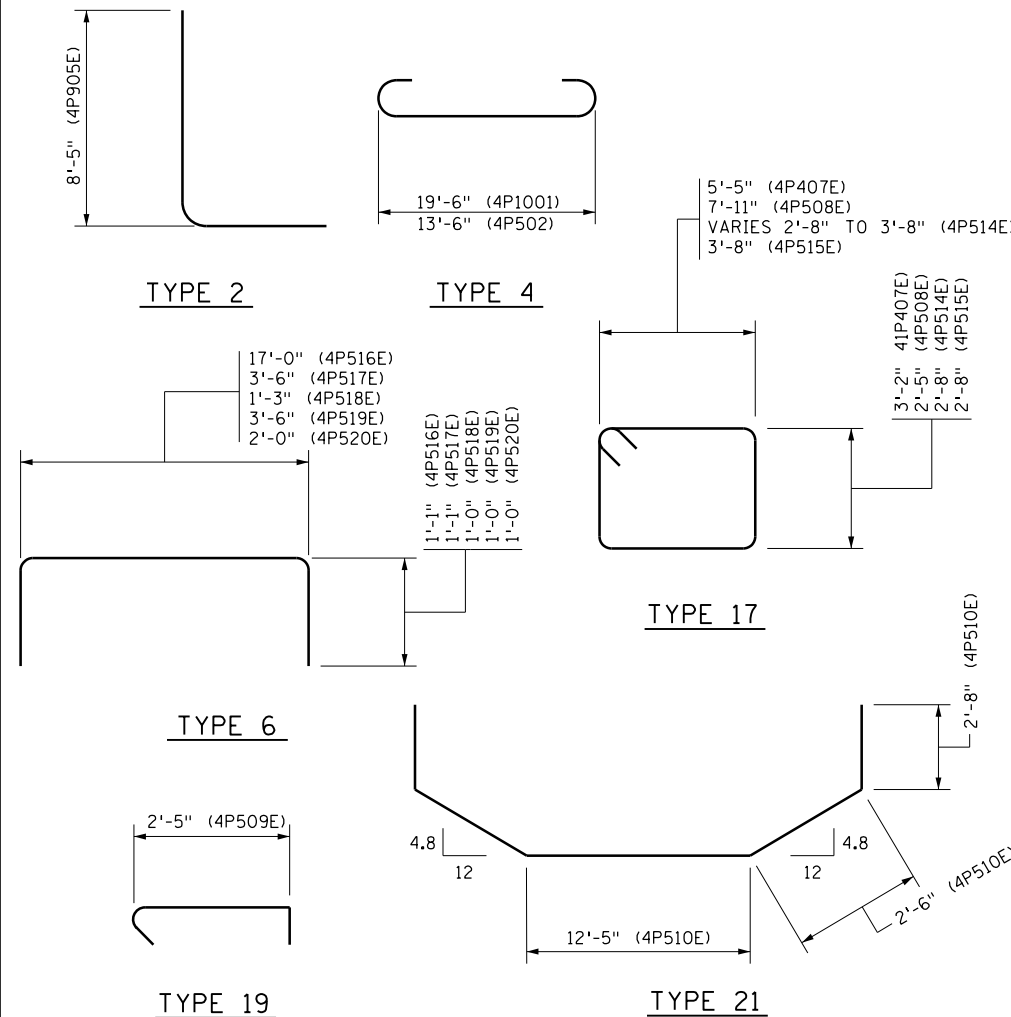
BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
5P1001	14	23'-4"	4	BOT. FTG., LONGITUDINAL
5P602	21	14'-10"	4	BOT. FTG., TRANSVERSE
5P503	21	13'-6"		TOP FTG., TRANSVERSE
5P504	14	20'-6"		TOP FTG., LONGITUDINAL
5P905E	30	10'-0"	2	FOOTING DOWEL
5P806E	30	18'-9"		COLUMN VERTICALS
5P407E	4	15'-7"	17	COLLAR STIRRUP
5P508E	17	16'-7"	17	COLUMN STIRRUP
5P509E	17	3'-5"	19	COLUMN TIE
5P510E	4	20'-3"	21	BOTTOM CAP HORIZONTAL
5P511E	2	14'-6"		CAP HORIZONTAL
5P512E	10	14'-8"		CAP HORIZONTAL
5P613E	12	14'-8"		TOP CAP HORIZONTAL
5P514E	4 SETS OF 3	11'-7" TO 13'-7"	17	CAP STIRRUP
5P515E	26	13'-3"	17	CAP STIRRUP
5P516E	14	4'-10"	6	PEDESTAL TIE
5P517E	16	5'-6"	6	PEDESTAL TIE

PIER 6

BILL OF REINFORCEMENT

BAR	NUMBER	LENGTH	SHAPE	LOCATION
6P901	14	19'-0"	4	BOT. FTG., LONGITUDINAL
6P502	17	14'-8"	4	BOT. FTG., TRANSVERSE
6P503	17	13'-6"		TOP FTG., TRANSVERSE
6P504	14	16'-6"		TOP FTG., LONGITUDINAL
6P905E	30	10'-0"	2	FOOTING DOWEL
6P806E	30	19'-10"		COLUMN VERTICALS
6P407E	4	15'-7"	17	COLLAR STIRRUP
6P508E	18	16'-7"	17	COLUMN STIRRUP
6P509E	18	3'-5"	19	COLUMN TIE
6P510E	4	20'-3"	21	BOTTOM CAP HORIZONTAL
6P511E	2	14'-4"		CAP HORIZONTAL
6P512E	10	14'-6"		CAP HORIZONTAL
6P613E	6	14'-6"		TOP CAP HORIZONTAL
6P514E	4 SETS OF 3	11'-7" TO 13'-7"	17	CAP STIRRUP
6P515E	26	12'-11"	17	CAP STIRRUP
6P516E	3	19'-0"	6	STEP HORIZONTAL
6P517E	30	11'-4"	6	STEP TIE
6P518E	18	3'-3"	6	PEDESTAL TIE
6P519E	6	5'-6"	6	PEDESTAL TIE
6P520E	6	3'-8"	6	PEDESTAL TIE



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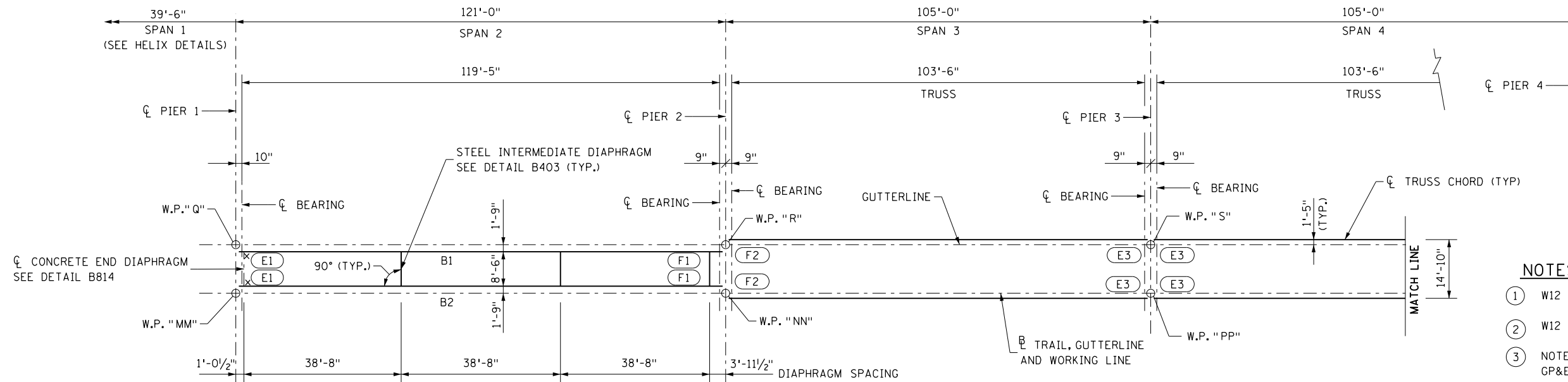
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ENGINEER SIGNATURE
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 LIC. NO. 53920 DATE _____

PIER BAR LIST & QUANTITIES

DESIGNED	ATP	DRAWN	JMR	APPROVED
CHECKED	RRE	CHECK	ATP	

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 SHEET NO. 63 OF 99 SHEETS

BRIDGE NO.
 02053



FRAMING PLAN

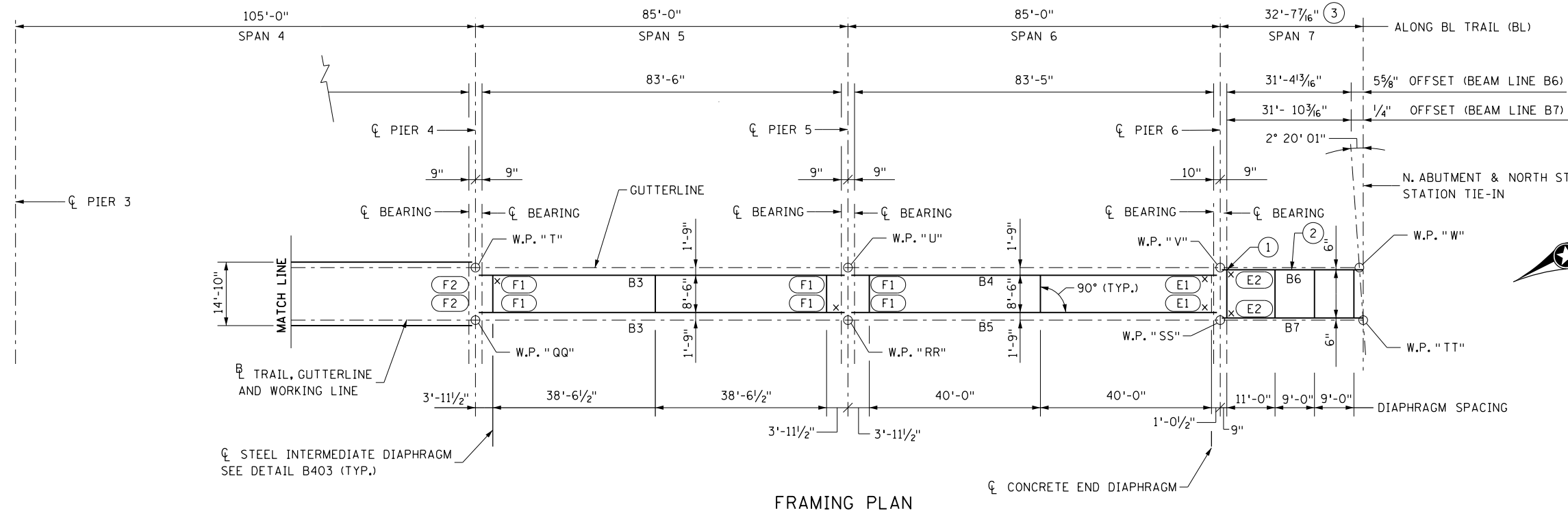
NOTES

- ① W12 X 53 BOLTED ABUTMENT DIAPHRAGM (SEE B402).
- ② W12 X 53 BOLTED INTERMEDIATE DIAPHRAGM TYP. (SEE B402)
- ③ NOTE THAT SPAN 7 LENGTH IS DIFFERENT THAN GP&E DUE TO ROUNDING (DIMENSION ACCURACY PROVIDED TO THE 1/16" ON FRAMING PLAN).
- E1 INDICATES EXPANSION BEARING ASSEMBLY, TYPE E1 SEE DETAIL B311 ON SHEET 87.
- E2 INDICATES EXPANSION BEARING ASSEMBLY, TYPE E2 SEE DETAIL B355 ON SHEET 88.
- E3 INDICATES EXPANSION BEARING ASSEMBLY, TYPE E3 SEE PREFABRICATED TRUSS DETAILS.
- F1 INDICATES FIXED BEARING ASSEMBLY, TYPE F1 SEE DETAIL B310 ON SHEET 87.
- F2 INDICATES FIXED BEARING ASSEMBLY, TYPE F2 SEE PREFABRICATED TRUSS DETAILS.

"X" DENOTES END OF BEAM

BEAMS B1 THRU B5 = MN45 PRESTRESSED CONCRETE BEAM

BEAMS B6 THRU B7 = W16 X 77 STRUCTURAL STEEL BEAM



FRAMING PLAN

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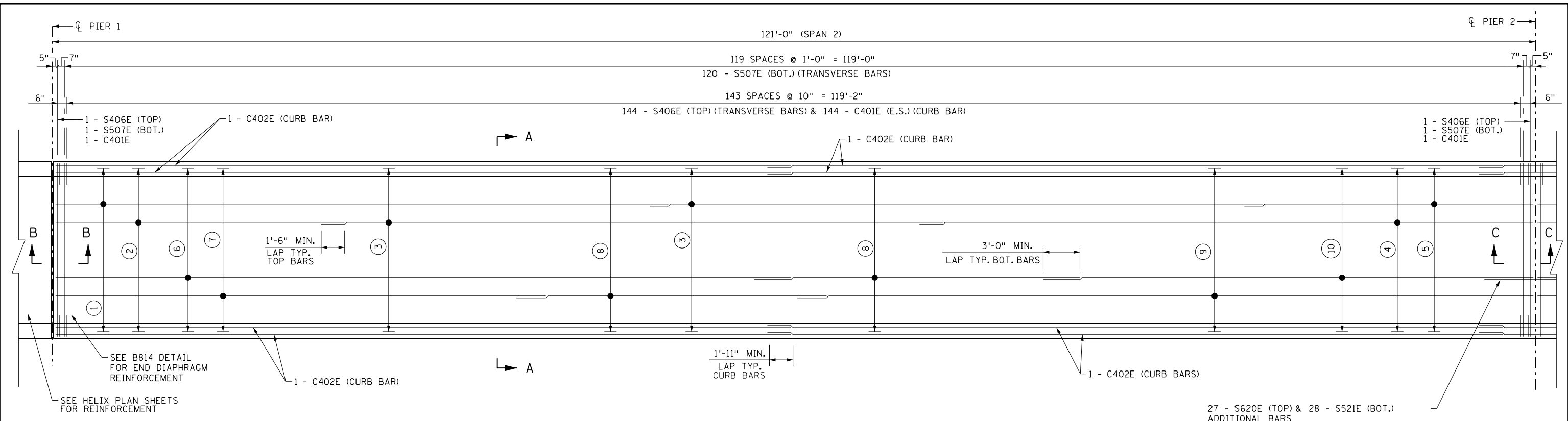
FRAMING PLAN

DESIGNED	RRE	DRAWN	JMR	APPROVED

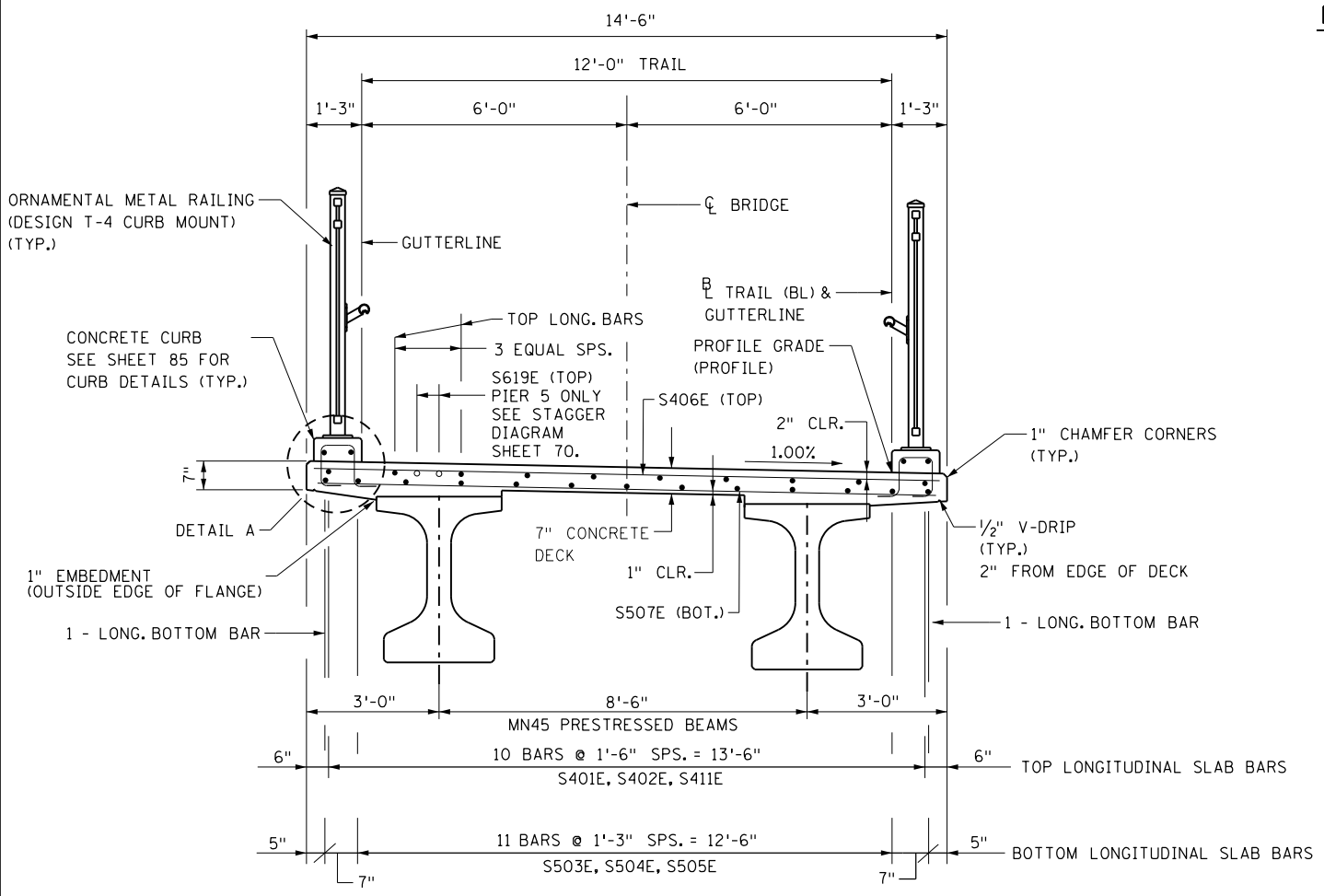
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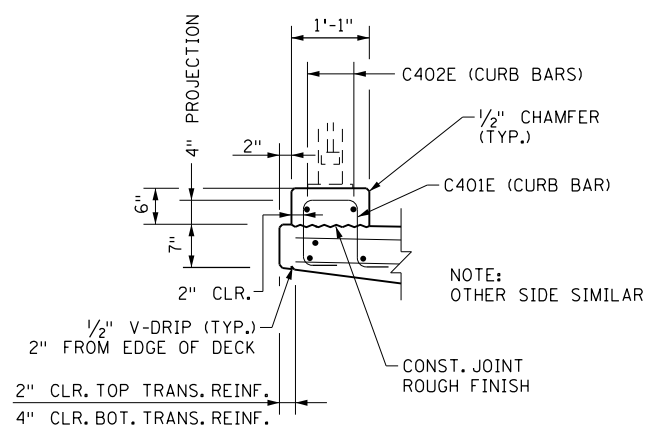
BRIDGE NO.
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DECK PLAN
SPAN 2



SECTION A - A
TRANSVERSE SECTION



DETAIL A
CONCRETE CURB

27 - S620E (TOP) & 28 - S521E (BOT.)
ADDITIONAL BARS
MATCH TOP AND BOTTOM LONGITUDINAL BARS
SEE SECTION E - E FOR SPACING

NOTES

- ① 5 - S401E (TOP)
ALTERNATE WITH S402E (TOP)
- ② 5 - S402E (TOP)
ALTERNATE WITH S401E (TOP)
- ③ 10 - S401E (TOP)
- ④ 5 - S401E (TOP)
ALTERNATE WITH S402E (TOP)
- ⑤ 5 - S402E (TOP)
ALTERNATE WITH S401E (TOP)
- ⑥ 6 - S503E (BOT.)
ALTERNATE WITH S504E (BOT.)
- ⑦ 7 - S504E (BOT.)
ALTERNATE WITH S503E (BOT.)
- ⑧ 13 - S505E (BOT.)
- ⑨ 7 - S503E (BOT.)
ALTERNATE WITH S504E (BOT.)
- ⑩ 6 - S504E (BOT.)
ALTERNATE WITH S503E (BOT.)

FOR SECTION B - B AND SECTION C - C
SEE SHEET 69.

E.S. = EACH SIDE

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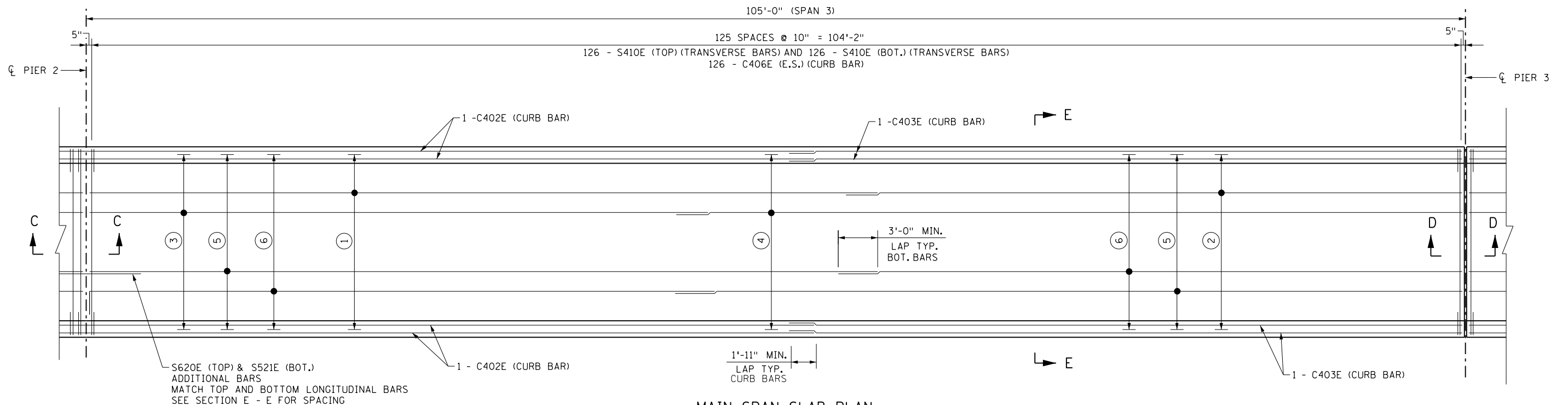
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TITLE:
 SUPERSTRUCTURE
 DETAILS AND REINFORCEMENT

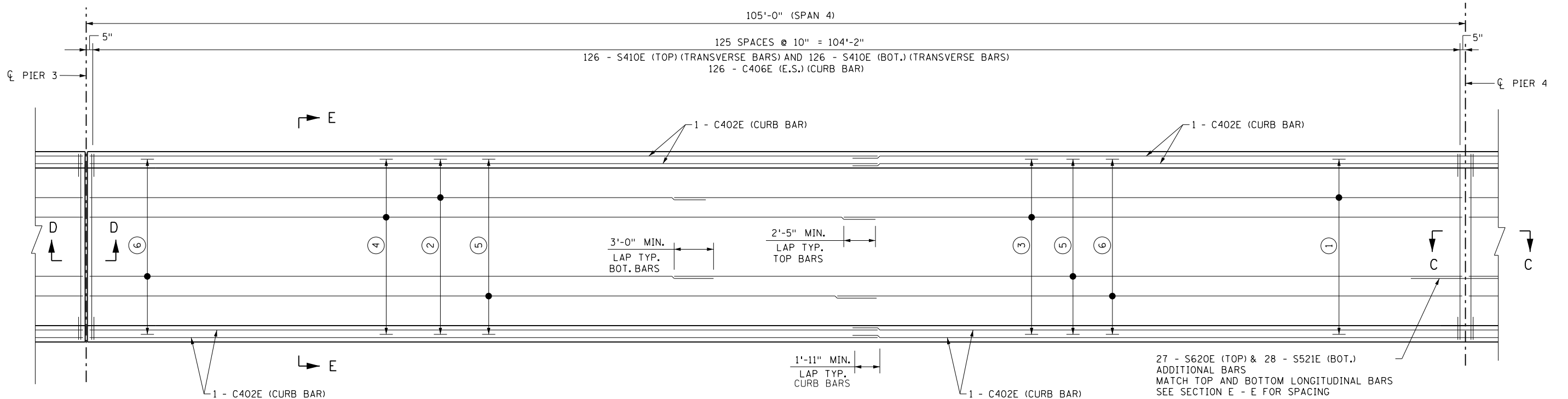
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BRIDGE NO.
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MAIN SPAN SLAB PLAN
SPAN 3



MAIN SPAN SLAB PLAN
SPAN 4

27 - S620E (TOP) & 28 - S521E (BOT.)
ADDITIONAL BARS
MATCH TOP AND BOTTOM LONGITUDINAL BARS
SEE SECTION E - E FOR SPACING

NOTES

- ① 14 - S503E (TOP)
ALTERNATE WITH S508E (TOP)
 - ② 14 - S508E (TOP)
ALTERNATE WITH S503E (TOP)
 - ③ 13 - S508E (TOP)
ALTERNATE WITH S503E (TOP)
 - ④ 13 - S503E (TOP)
ALTERNATE WITH S508E (TOP)
 - ⑤ 28 - S503E (BOT.)
ALTERNATE WITH S509E (BOT.)
 - ⑥ 28 - S509E (BOT.)
ALTERNATE WITH S503E (BOT.)
- FOR SECTION C - C AND SECTION D - D
SEE SHEET 69.
- FOR SECTION E - E, SEE SHEET 69.
- E.S. = EACH SIDE

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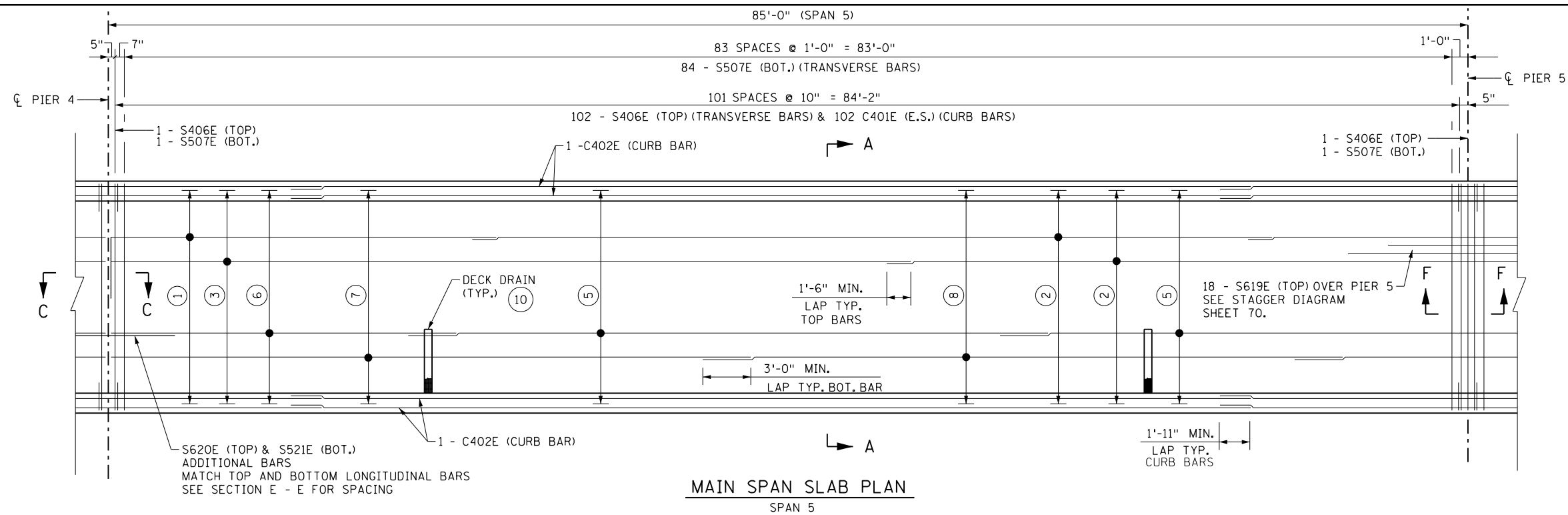
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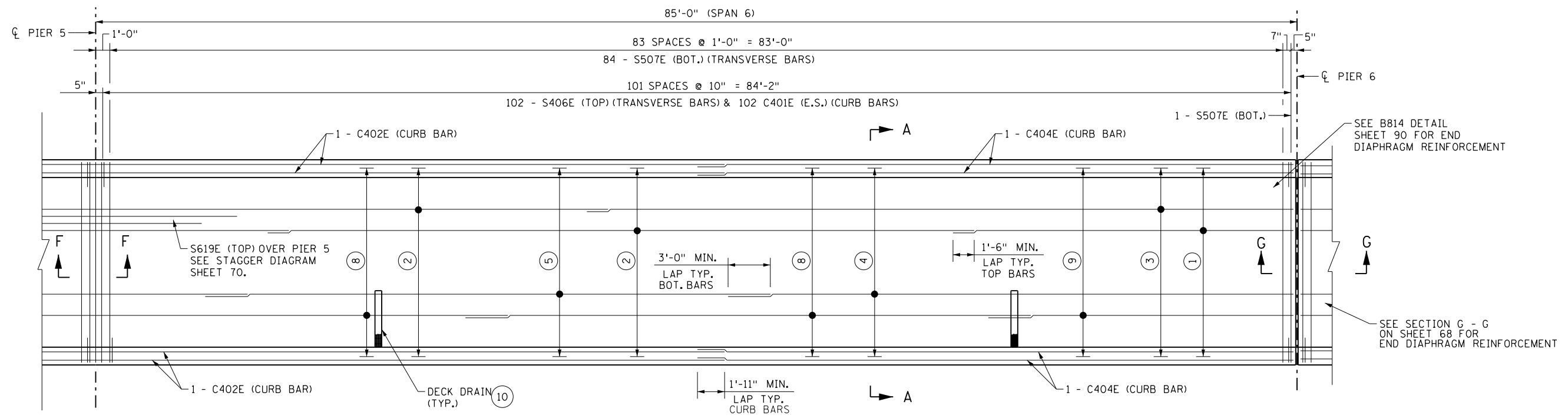
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SHEET NO. 66 OF 99 SHEETS

BRIDGE NO.
02053



MAIN SPAN SLAB PLAN
SPAN 5



MAIN SPAN SLAB PLAN
SPAN 6

NOTES

- ① 5 - S411E (TOP)
ALTERNATE WITH S401E (TOP)
- ② 10 - S401E (TOP)
- ③ 5 - S401E (TOP)
ALTERNATE WITH S411E (TOP)
- ④ 7 - S504E (BOT.)
ALTERNATE WITH S512E (BOT.)
- ⑤ 13 - S504E (BOT.)
- ⑥ 7 - S512E (BOT.)
ALTERNATE WITH S504E (BOT.)
- ⑦ 6 - S504E (BOT.)
ALTERNATE WITH S512E (BOT.)
- ⑧ 13 - S504E (BOT.)
- ⑨ 6 - S512E (BOT.)
ALTERNATE WITH S504E (BOT.)
- ⑩ ADJUST TRANSVERSE BARS AND FIELD TRIM TOP LONG. BARS AS NEEDED TO ACCOMMODATE DECK DRAINS. APPLY EPOXY TOUCH-UP PAINT TO ENDS OF CUT BARS.

FOR SECTION A - A, SEE SHEET 65.

FOR SECTION C - C, SECTION D - D AND SECTION F - F, SEE SHEET 69.

FOR SECTION G - G, SEE SHEET 68.

E.S. = EACH SIDE

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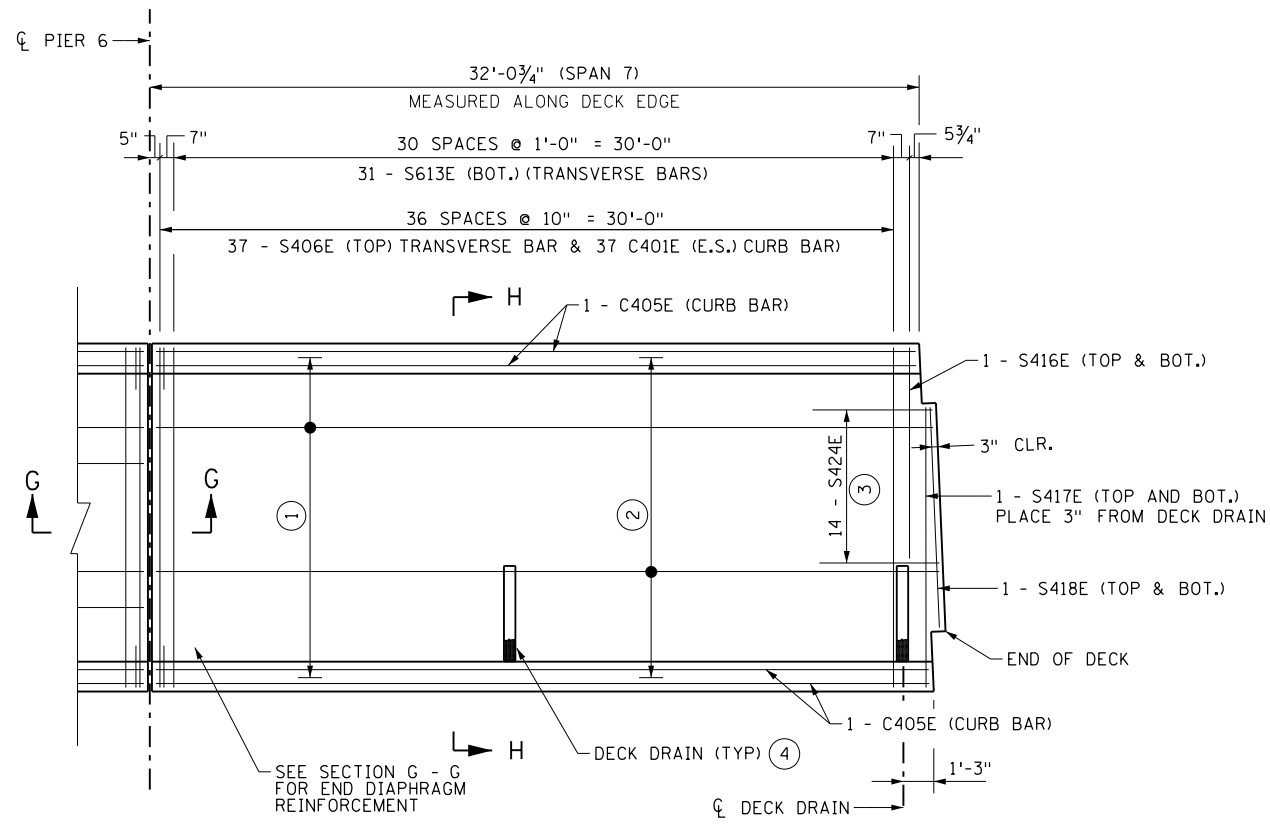
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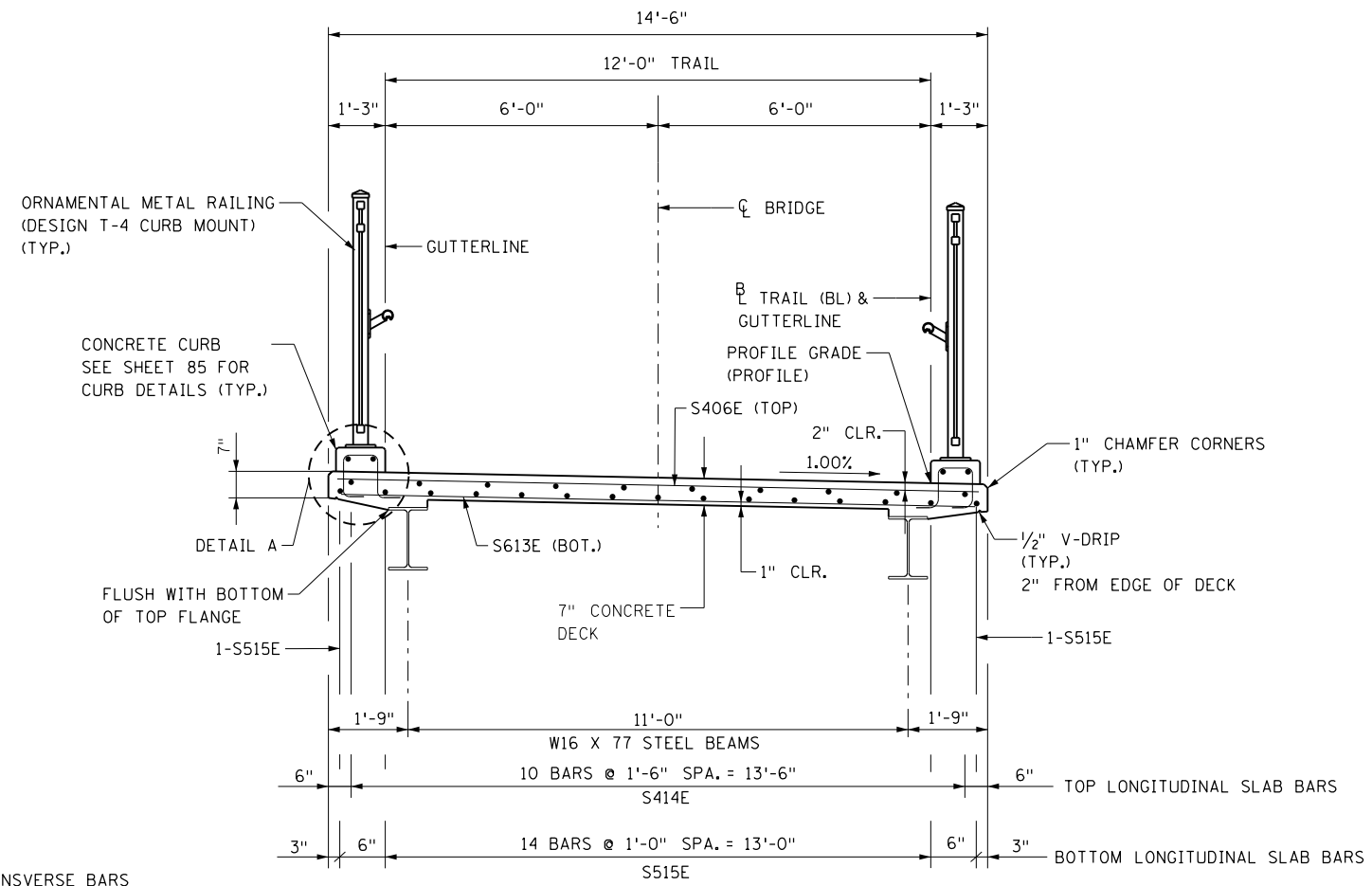
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 SHEET NO. 67 OF 99 SHEETS

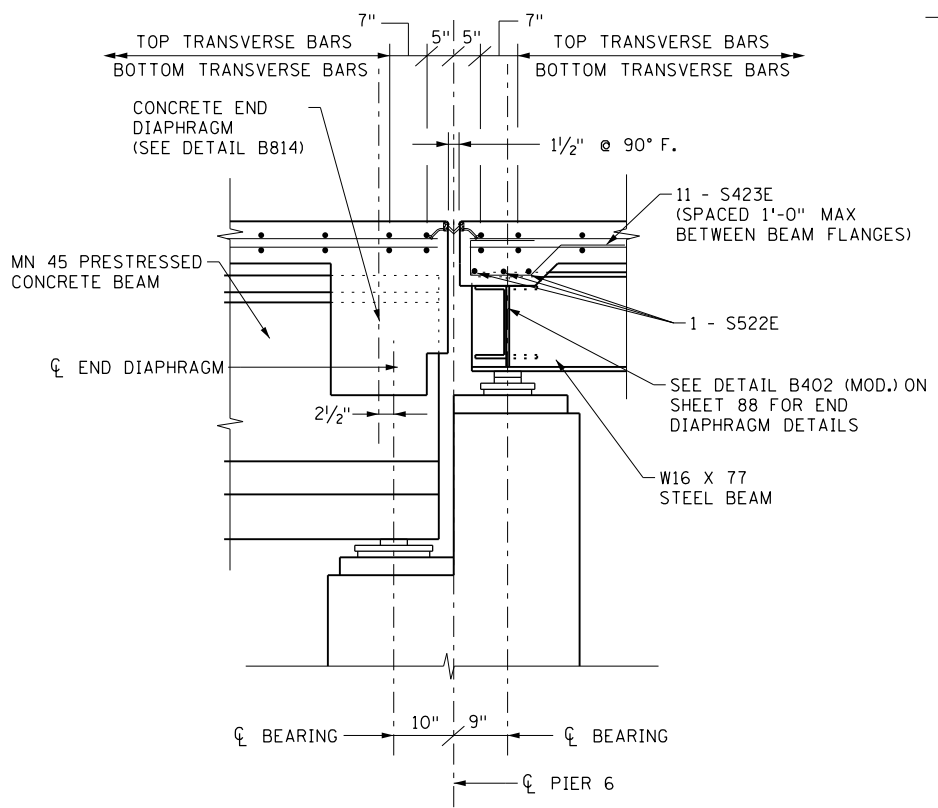
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MAIN SPAN SLAB PLAN
SPAN 7



SECTION H - H
TRANSVERSE SECTION



SECTION G - G
PIER 6

NOTES

- ① 10 - S414E (TOP)
- ② 16 - S515E (BOT.)
- ③ TOP AND BOT. BARS SPACE BETWEEN S414E (TOP) AND BETWEEN S515E (BOT.)
- ④ ADJUST TRANSVERSE BARS AND FIELD TRIM TOP LONG. BARS AS NEEDED TO ACCOMMODATE DECK DRAINS. APPLY EPOXY TOUCH-UP PAINT TO ENDS OF CUT BARS.

FOR DETAIL A, SEE SHEET 65.

E.S. = EACH SIDE

FOR END OF DECK DIMENSIONS, SEE SHEET 15 FOR NORTH ABUTMENT DETAILS.

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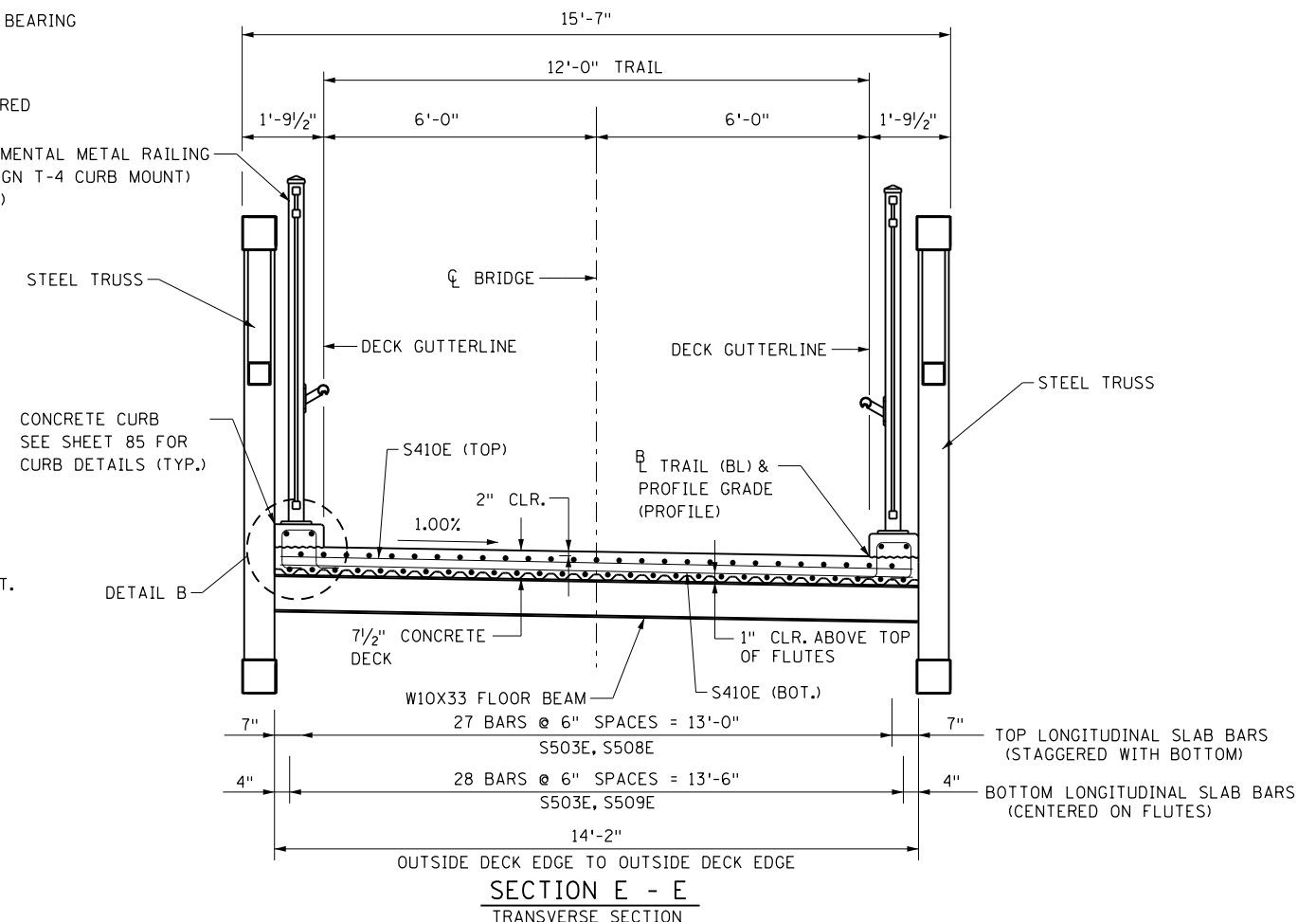
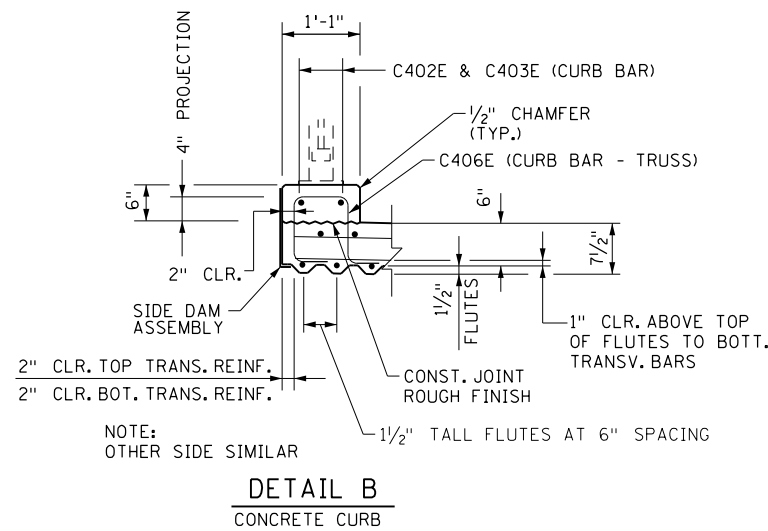
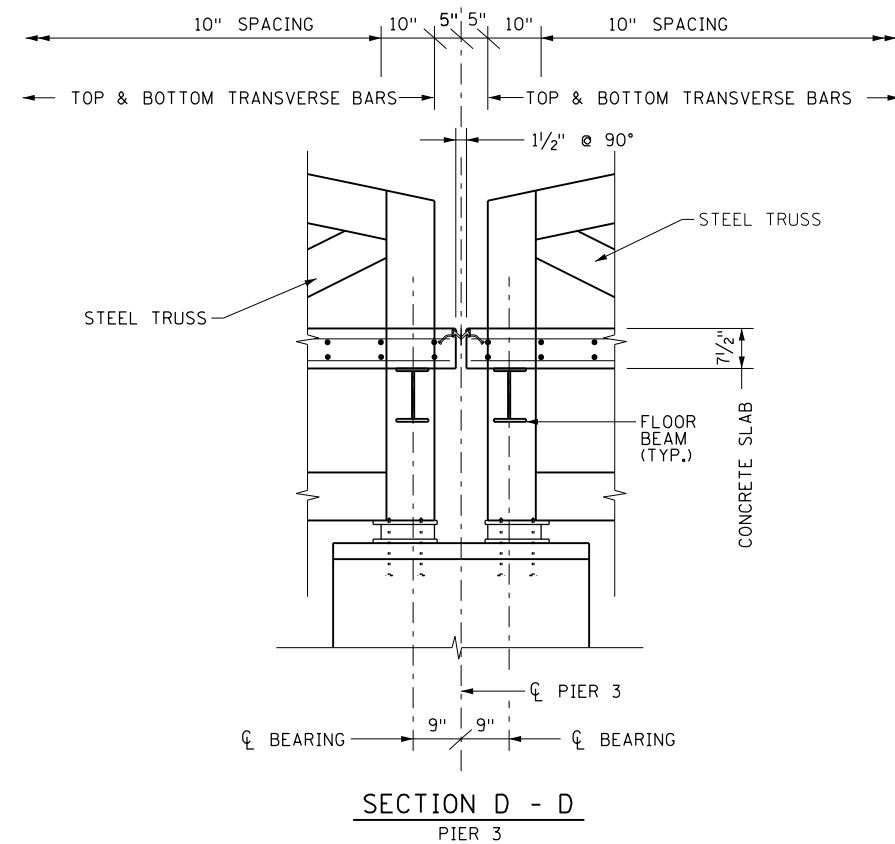
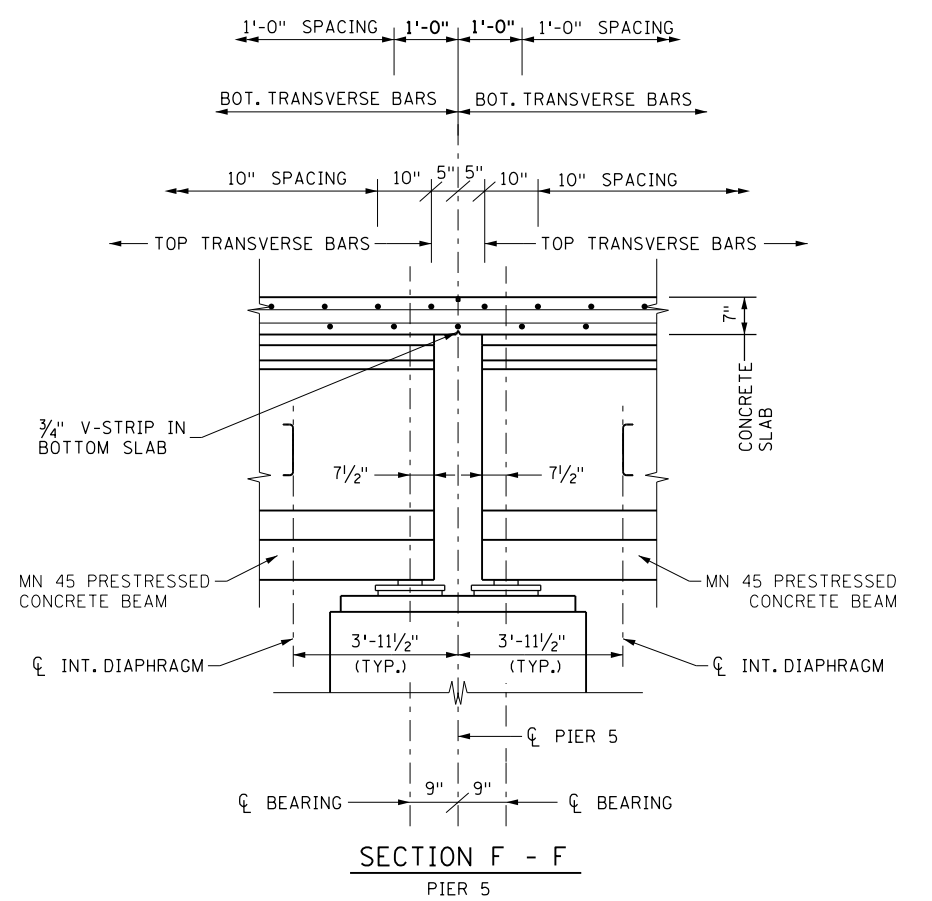
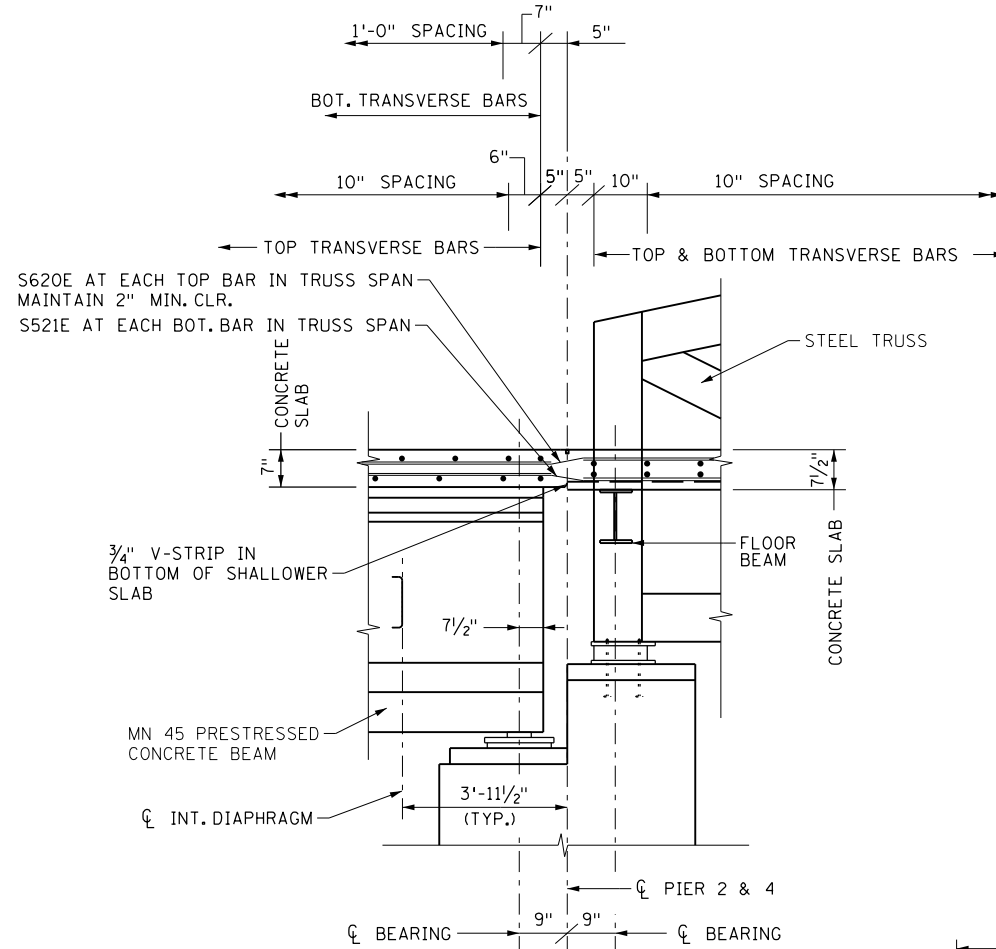
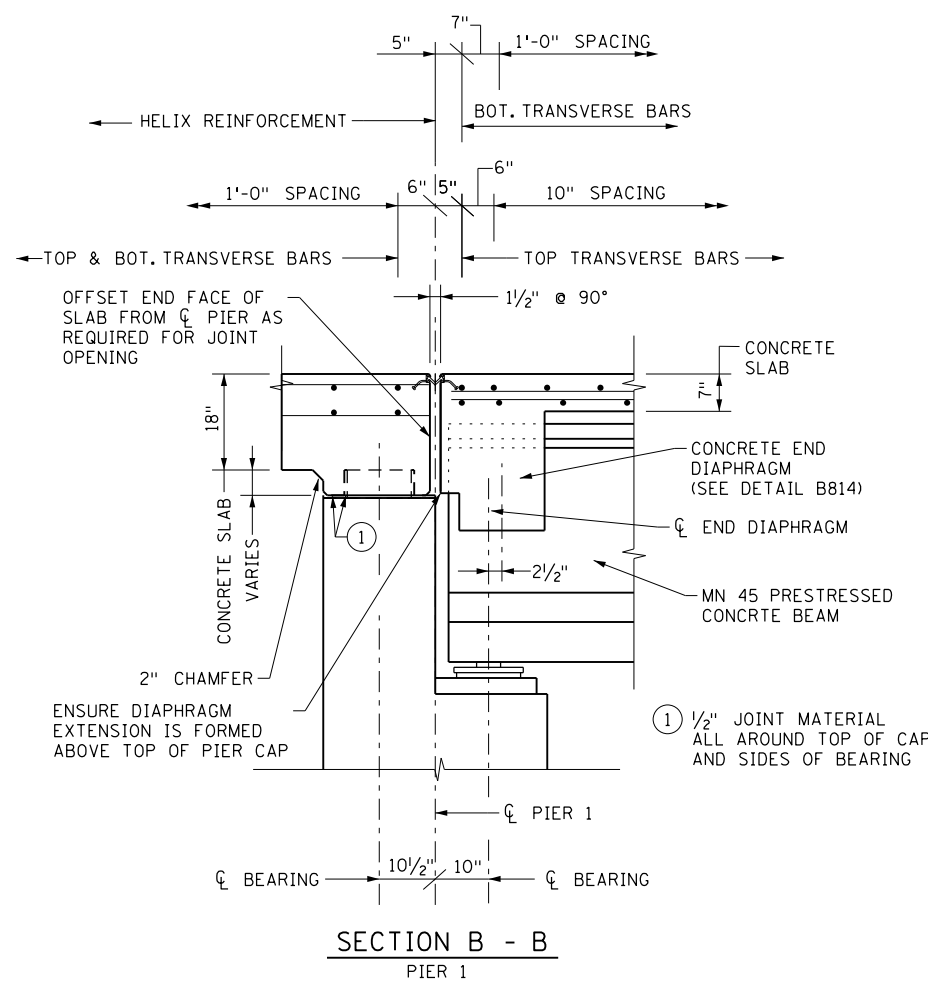
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SHEET NO. 68 OF 99 SHEETS									

BRIDGE NO.
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SUPERSTRUCTURE
DETAILS AND REINFORCEMENT



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 DETAILS AND REINFORCEMENT**

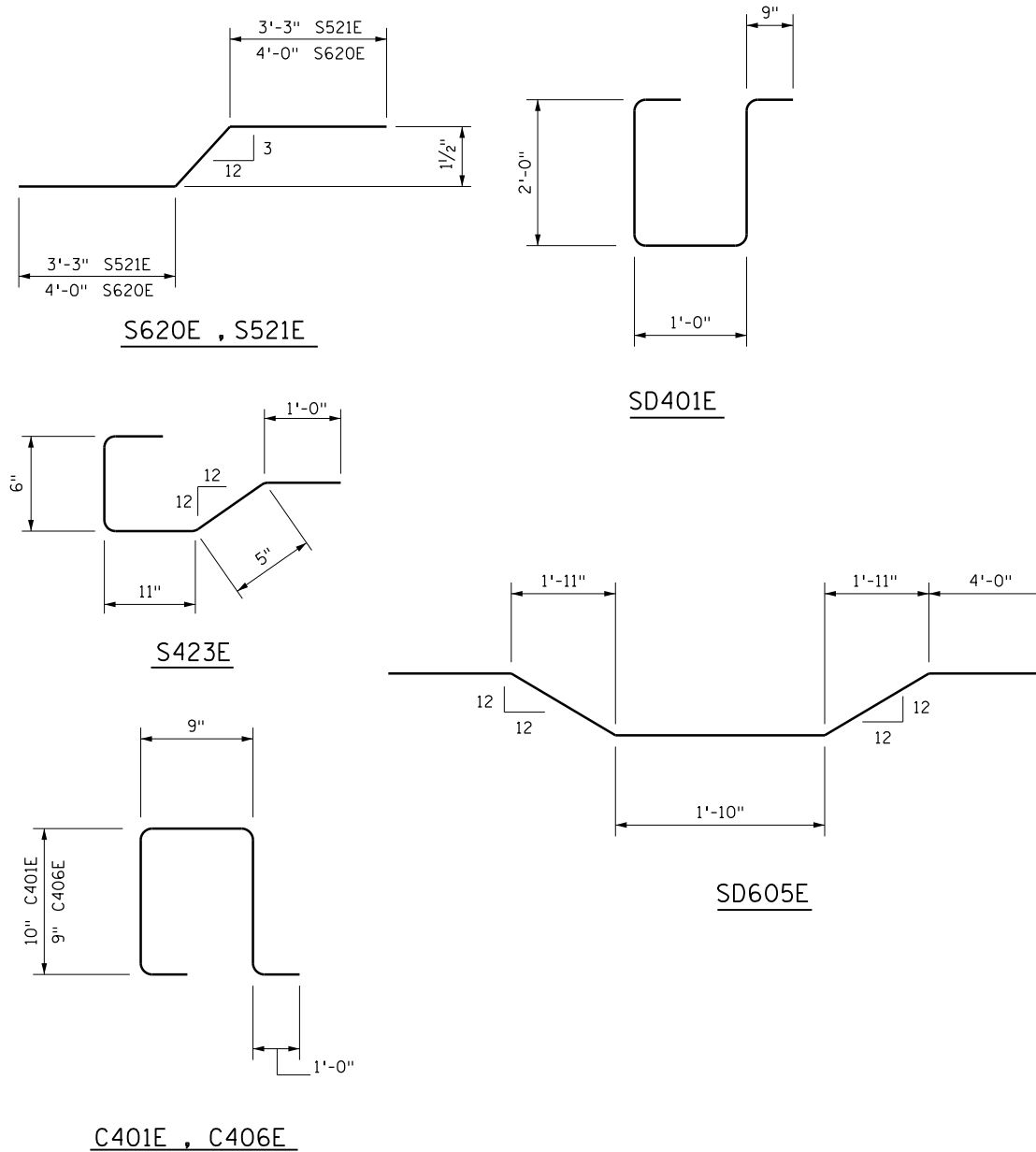
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SHEET NO. 69 OF 99 SHEETS				

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BRIDGE SUPERSTRUCTURE

BILL OF REINFORCEMENT

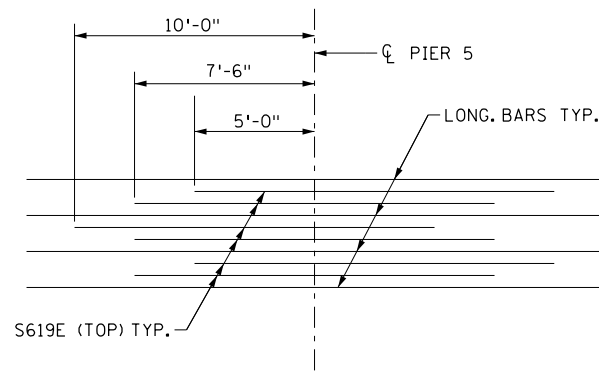
BAR	NUMBER	LENGTH	SHAPE	LOCATION
S401E	50	50'-0"	—	DECK TOP LONGITUDINAL
S402E	10	23'-7"	—	DECK TOP LONGITUDINAL
S503E	110	60'-0"	—	DECK TOP & BOT. LONGITUDINAL
S504E	65	40'-0"	—	DECK TOP & BOT. LONGITUDINAL
S505E	13	26'-7"	—	DECK BOT. LONGITUDINAL
S406E	388	14'-2"	—	DECK TOP TRANSVERSE
S507E	293	13'-10"	—	DECK BOT. TRANSVERSE
S508E	54	47'-0"	—	DECK TOP LONGITUDINAL
S509E	56	47'-7"	—	DECK BOT. LONGITUDINAL
S410E	504	13'-8"	—	DECK TOP & BOT. TRANSVERSE
S411E	10	24'-1"	—	DECK TOP LONGITUDINAL
S512E	13	21'-7"	—	DECK BOT. LONGITUDINAL
S613E	31	13'-10"	—	DECK BOT. TRANSVERSE
S414E	10	31'-7"	—	DECK TOP LONGITUDINAL
S515E	16	31'-7"	—	DECK BOT. LONGITUDINAL
S416E	2	8'-9"	—	DECK TOP & BOT. TRANSVERSE
S417E	2	11'-8"	—	DECK TOP & BOT. TRANSVERSE
S418E	2	9'-1"	—	DECK TOP & BOT. TRANSVERSE
S619E	18	15'-0"	—	DECK LONGITUDINAL STAGGERED PIER 5
S620E	54	8'-6"	—	DECK LONGITUDINAL PIER 2 & 4
S521E	56	7'-0"	—	DECK LONGITUDINAL PIER 2 & 4
S522E	3	10'-0"	—	DECK BOT. TRANSVERSE PIER 6
S423E	11	3'-4"	—	CONC. DIAPHRAGM PIER 6
S424E	14	5'-0"	—	DECK TOP & BOT. LONGITUDINAL
C401E	774	4'-0"	—	CURB, VERTICAL
C402E	28	60'-0"	—	CURB LONGITUDINAL
C403E	4	51'-4"	—	CURB LONGITUDINAL
C404E	4	42'-3"	—	CURB LONGITUDINAL
C405E	4	31'-8"	—	CURB LONGITUDINAL
C406E	504	3'-10"	—	CURB, VERTICAL, TRUSS SPANS
SD401E	10	6'-6"	—	END DIAPHRAGM VERTICAL TIE
SD403E	4	5'-6"	—	END DIAPHRAGM TOP LONGITUDINAL
SD704E	4	6'-6"	—	END DIAPHRAGM BOT. LONGITUDINAL
SD605E	2	15'-3"	—	END DIAPHRAGM LONGITUDINAL



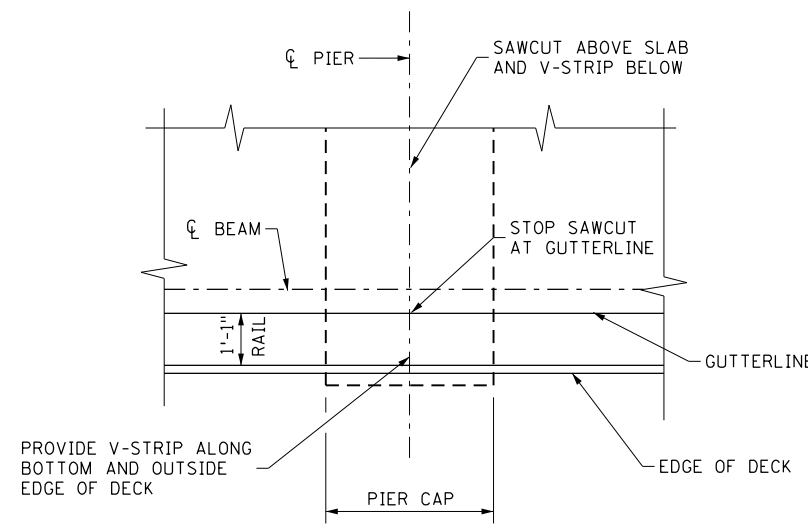
SUMMARY OF QUANTITIES - BRIDGE SUPERSTRUCTURE

ITEM	QUANTITY	UNIT
STRUCTURAL CONCRETE (3S52)	21.3	CU YD
BRIDGE SLAB CONCRETE (3YHPC-M)	179.9	CU YD
REINFORCEMENT BARS (EPOXY COATED)	38164	POUND
STRUCTURAL STEEL (3309)	7677	POUND
ORNAMENTAL METAL RAILING (TYPE 1)	1568.8	LIN FT
ORNAMENTAL METAL RAILING (TYPE 2)	118.7	LIN FT
ORNAMENTAL METAL RAILING (TYPE 3)	317.3	LIN FT
ELASTOMERIC BEARING PAD	4	EACH
EXPANSION JOINT DEVICE TYPE 4	39.0	LIN FT
BEARING ASSEMBLY	14	EACH
PRESTRESSED CONCRETE BEAMS MN45	580.2	LIN FT
DIAPHRAGMS FOR TYPE MN45 PREST BEAMS	68.0	LIN FT
ARCHITECTURAL SURFACE FINISH (SINGLE COLOR)	18232	SQ FT

- ① "BRIDGE SLAB CONCRETE (3YHPC-M)" VOLUME WAS COMPUTED USING AN AVERAGE STOOL HEIGHT OF 2 INCHES. INCLUDES END DIAPHRAGMS.
- ② INCLUDES DECK, END DIAPHRAGMS AND CURB REINFORCEMENT.



STAGGER DIAGRAM
PIER 5 ONLY



SAWCUT DETAIL AT PIER
TYPICAL OVER PIERS 2, 4 & 5

NOTES

- MAKE SAW CUT IN STRUCTURAL SLAB (TYP. PIERS 2, 4, & 5) OVER CENTERLINE OF PIERS AS SOON AS THE CUTTING CAN BE DONE WITHOUT RAVELING THE CONCRETE. APPLY POLYSTYRENE TO TIPS OF FLANGES THAT PROJECT PAST CENTERLINE OF PIER. SEAL JOINT PER SPEC. 3723.
- SUPERSTRUCTURE DIMENSIONS ARE BASED ON THE EXPANSION JOINT DIMENSIONS AT 90° F.
- SEE SHEET 88 FOR CONCRETE END DIAPHRAGM REINFORCING DETAILS.
- SEE SHEET 85 FOR CURB REINFORCING DETAILS.

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



7533 SUNWOOD DRIVE N.W.
RAMSEY, MINNESOTA 55303
Phone: (763) 433-2851
Email: Ramsey@bolton-menk.com
www.bolton-menk.com

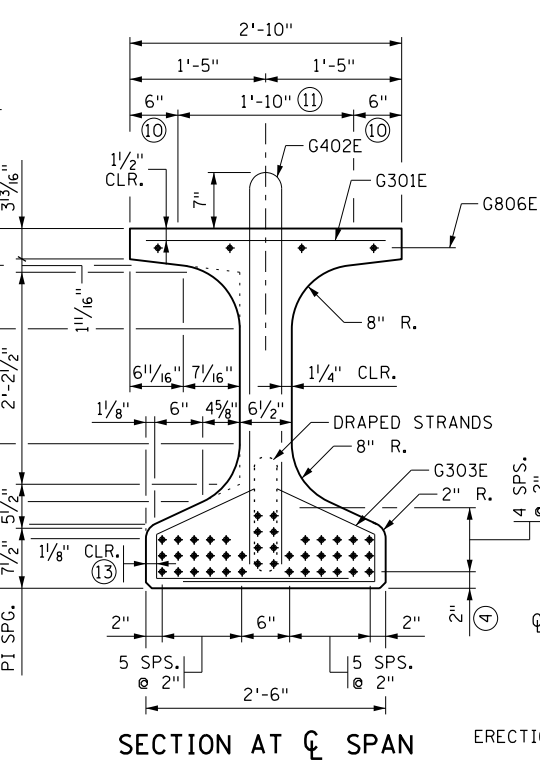
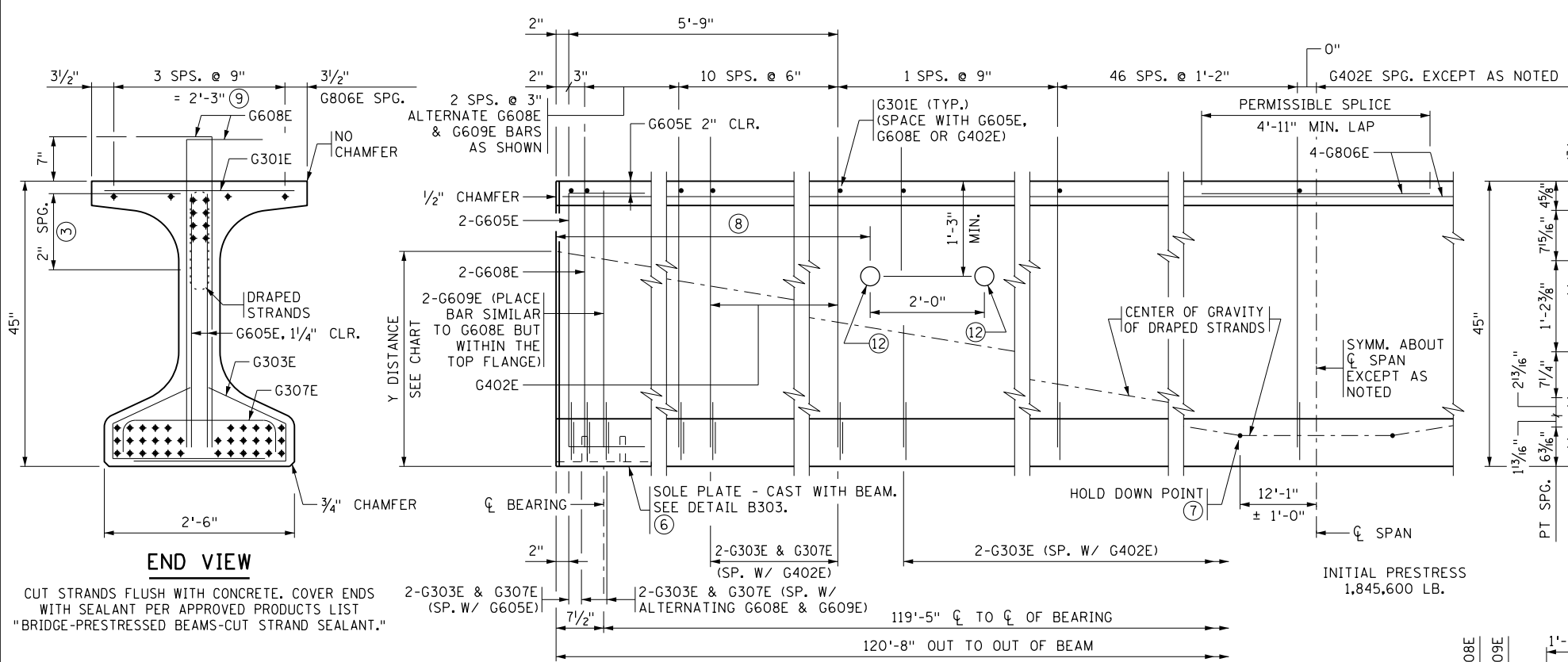
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

SUPERSTRUCTURE DETAILS AND REINFORCEMENT

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	
S.A.P. 199-010-012				
SHEET NO. 70 OF 99 SHEETS				

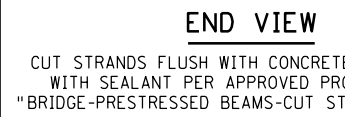
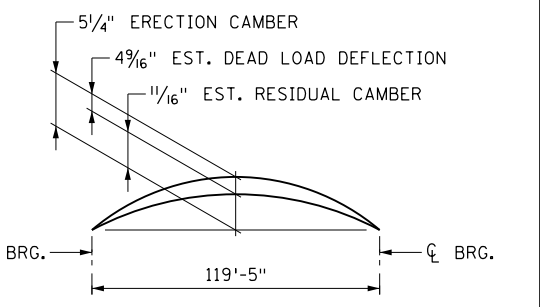
BRIDGE NO.
02053



Y DISTANCES (INCHES)			
	NO.	ϕ SPAN	END
STRAIGHT STRANDS	34	3.88	
DRAPED STRANDS	8	6.0	39
TOTAL STRANDS	42	4.29	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

□ A TOLERANCE OF $\pm 1"$ WILL BE PERMITTED IN THIS DIMENSION.

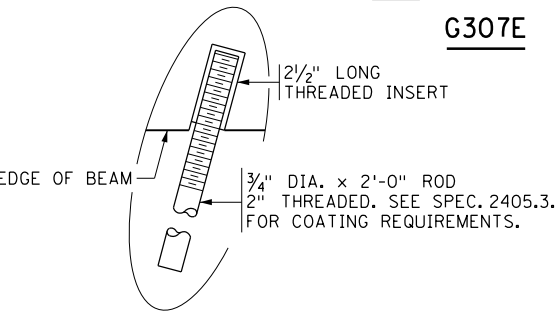
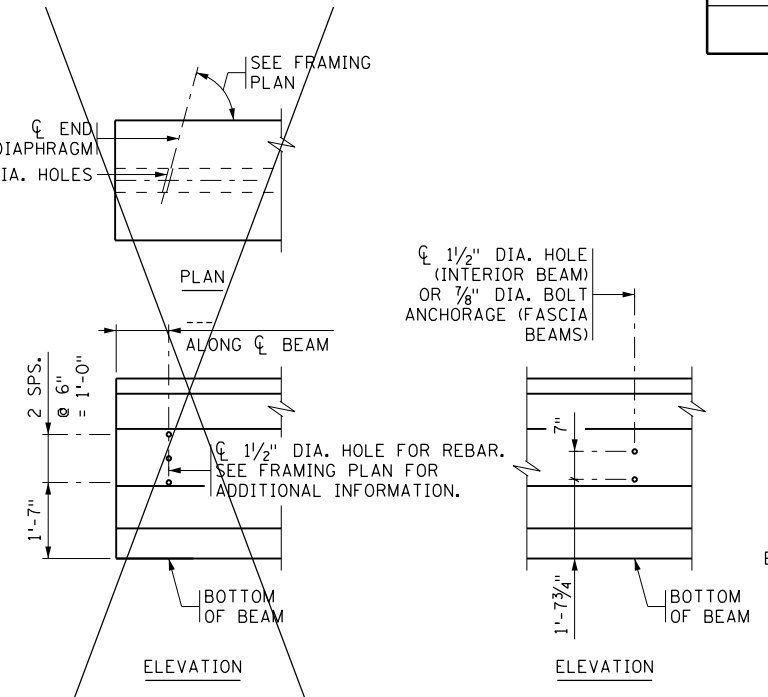
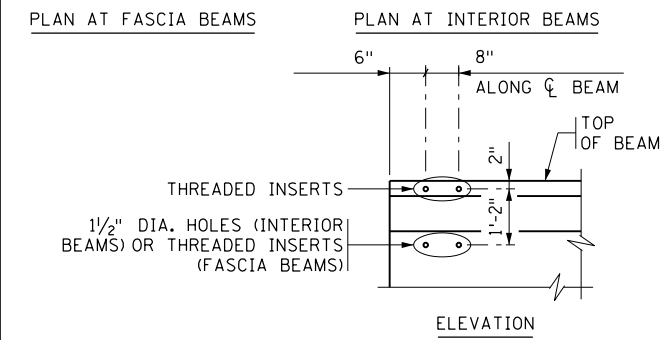
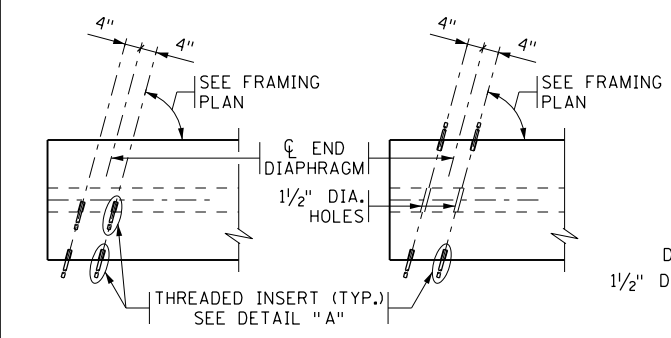


CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	22.12 KSI
LONG TERM LOSSES	25.41 KSI
TOTAL LOSSES	47.53 KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'_{c1}	② f'_c
7.0 KSI	8.0 KSI

GENERAL NOTES

- PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.
- MARK EACH BEAM SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. ENSURE ALL MARKINGS ARE STENCILED AND CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.
- ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET IS INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE SPEC. 2405.
- SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.
- AS AN ALTERNATE TO THE END DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 15 KIPS PER ANCHORAGE.
- APPLY AN APPROVED SEALER TO THE SIDES OF THE BEAM NEAR EACH END PER THE SPECIAL PROVISIONS.
- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ③ DRAPED STRANDS.
- ④ STRAIGHT STRANDS.
- ⑤ USE 0.6" DIA. 7-WIRE LOW RELAXATION PRESTRESSING STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE. BEAMS DETAILED TO INCLUDE A TAPERED PLATE PER STANDARD FIGURE B309 MUST INCLUDE SOLE PLATE.
- ⑦ CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.
- ⑧ DIMENSION DETERMINED BY CONTRACTOR. MAINTAIN 2" MINIMUM CLEAR FROM STRANDS.
- ⑨ TWO INSIDE BARS MAY BE PLACED ADJACENT TO VERTICAL STIRRUP FOR TYING CONVENIENCE.
- ⑩ STEEL TROWEL TO SMOOTH FINISH AND APPLY BOND BREAKER PER APPROVED PRODUCTS LIST.
- ⑪ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3.D.
- ⑫ OPTIONAL: 3" MAX. DIA. SLEEVE FOR HAULING (AFTER INSTALLATION, COAT WITH APPROVED EPOXY BONDING AGENT & FILL WITH APPROVED NON-SHRINK GROUT).
- ⑬ TYP. CLR. FOR ENTIRE BOTTOM FLANGE.



REVISED: DECEMBER 02, 2015

APPROVED: JANUARY 13, 2015

Nancy Dubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY _____ DATE _____
LICENSED PROFESSIONAL ENGINEER

NAME: _____ LIC. NO. _____

BEAMS B1-B2

TITLE: **MN45" PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN45-121**

S.A.P. 199-010-012

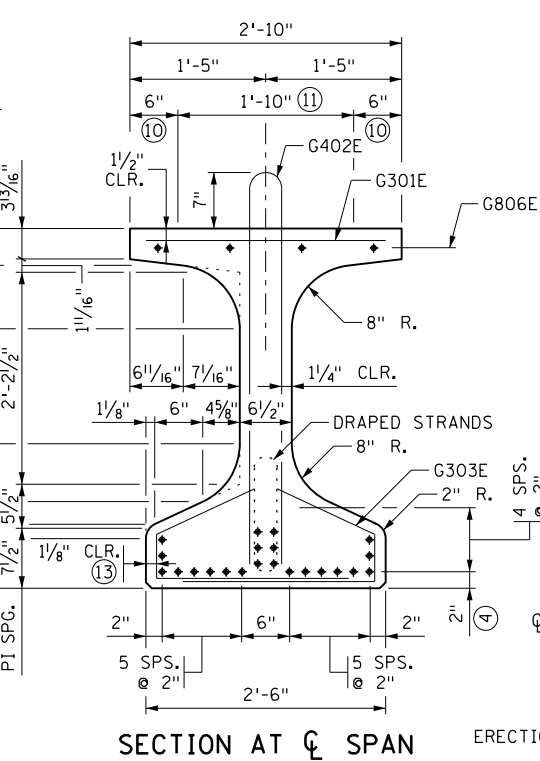
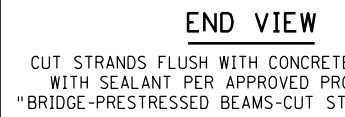
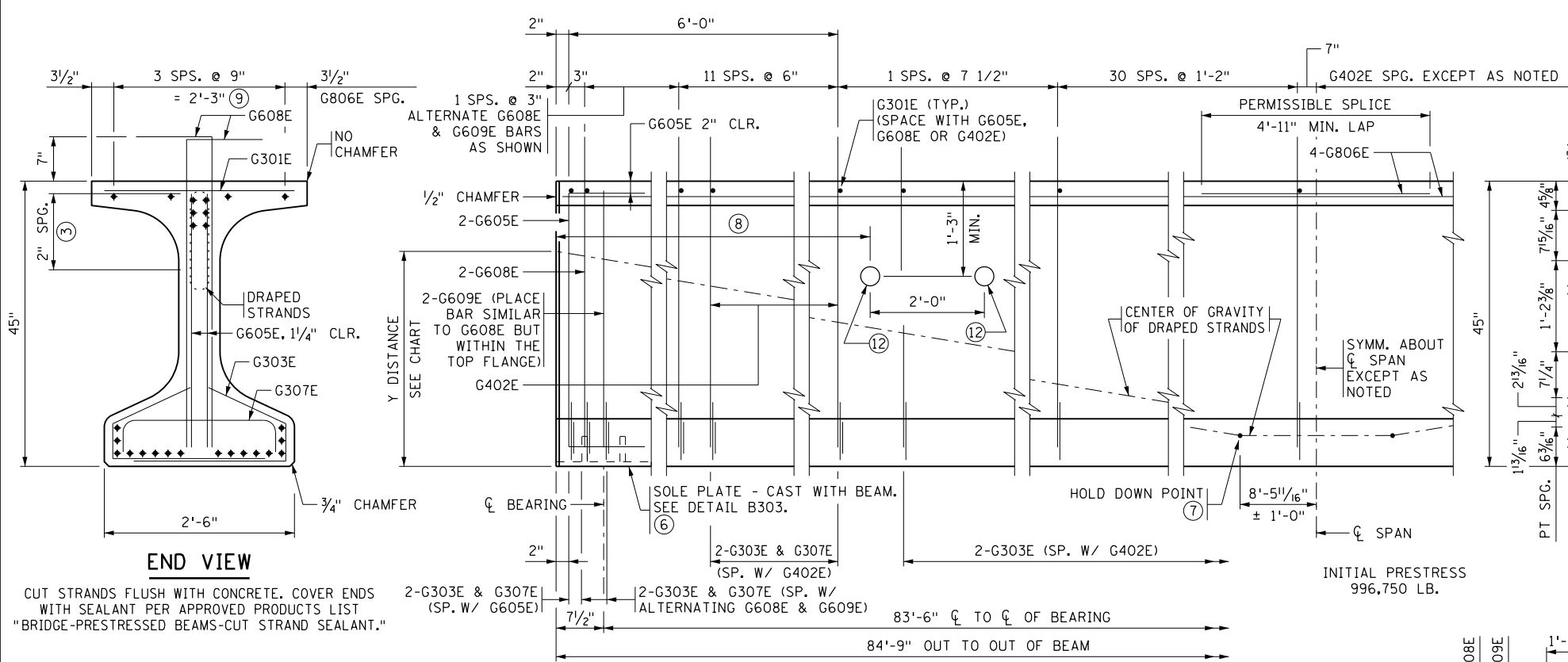
FIG. 5-397.507

APPROVED: _____

BRIDGE NO. 02053

SHEET NO. 71 OF 99 SHEETS

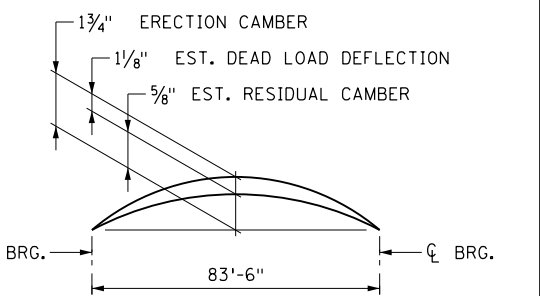
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Y DISTANCES (INCHES)			
	NO.	CL SPAN	END
STRAIGHT STRANDS	16	2.75	
DRAPED STRANDS	6	5.0	40.0
TOTAL STRANDS	22	3.36	

Y = DISTANCE TO CENTER OF GRAVITY OF STRANDS FROM BOTTOM OF BEAM. ALL STRANDS SPACED 2" CENTER TO CENTER, HORIZONTALLY AND VERTICALLY, EXCEPT AS NOTED.

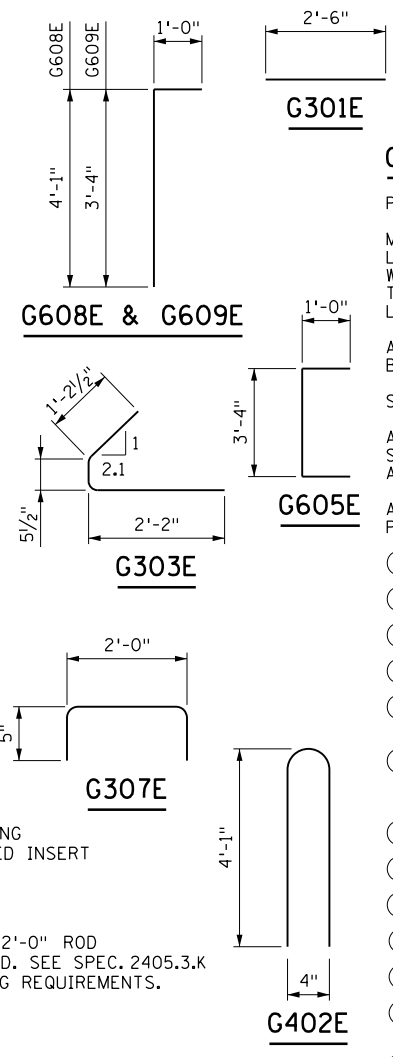
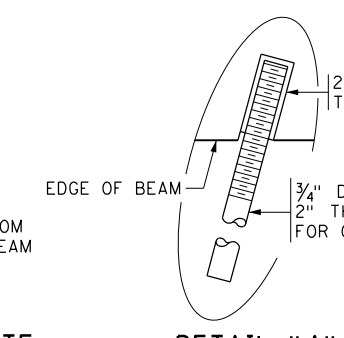
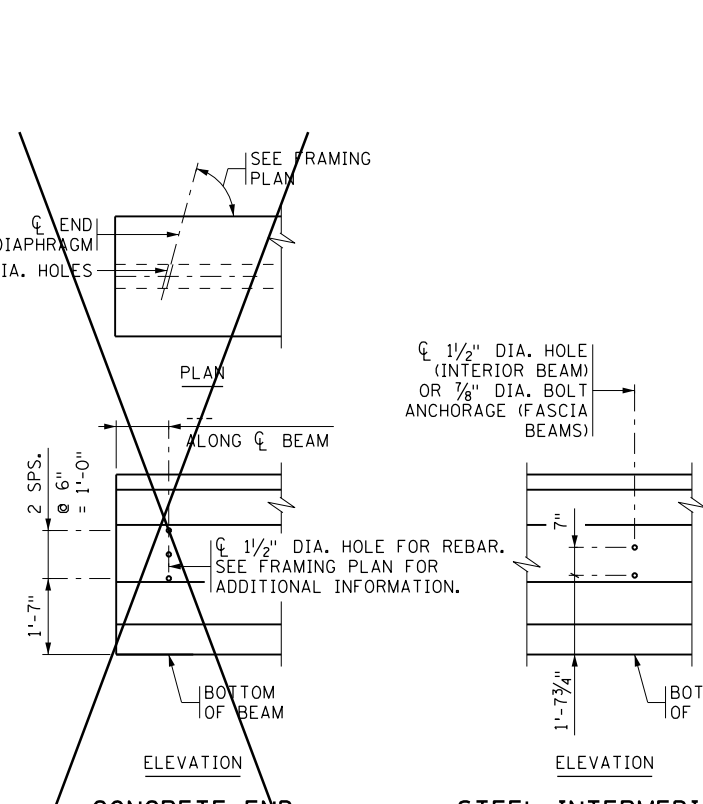
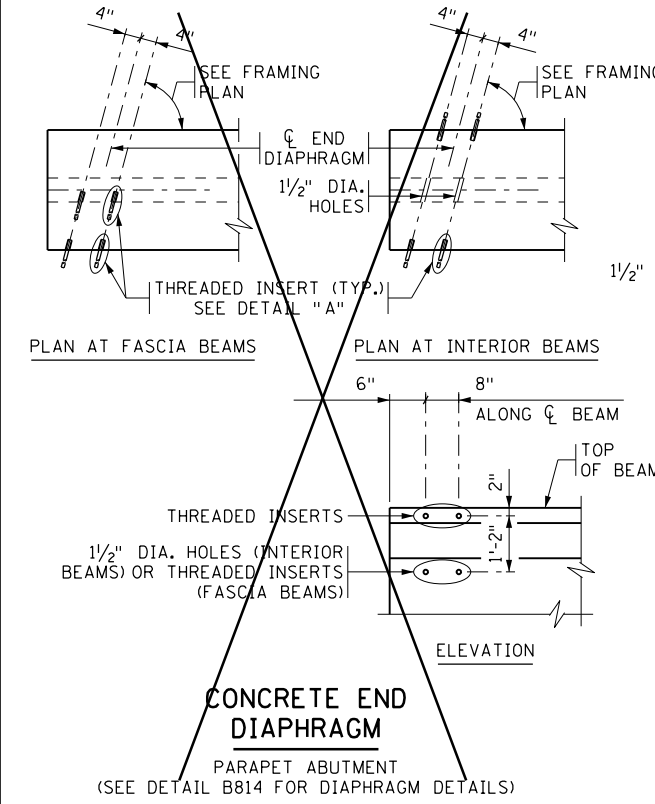
□ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.



BEAM ELEVATION

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	14.31 KSI
LONG TERM LOSSES	24.86 KSI
TOTAL LOSSES	39.17 KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'c1	② f'c
4.5 KSI	5.5 KSI



GENERAL NOTES

- PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.
- MARK EACH BEAM SHOWING BRIDGE NUMBER, CASTING DATE, AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. ENSURE ALL MARKINGS ARE STENCILED AND CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.
- ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET IS INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE SPEC. 2405.
- SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.
- AS AN ALTERNATE TO THE END DIAPHRAGM ANCHORAGES SHOWN, THE CONTRACTOR MAY SUBMIT DETAILS OF A CAST-IN-PLACE ANCHORAGE TO THE ENGINEER FOR APPROVAL. ANCHORAGE MUST PROVIDE AN ULTIMATE PULL OUT STRENGTH OF 15 KIPS PER ANCHORAGE.
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- ① MINIMUM CONCRETE STRENGTH AT TIME OF PRESTRESS TRANSFER.
- ② MINIMUM CONCRETE STRENGTH WHEN BEAM CAN BE TRANSPORTED AND INSTALLED.
- ③ DRAPED STRANDS.
- ④ STRAIGHT STRANDS.
- ⑤ USE 0.6" DIA. 7-WIRE LOW RELAXATION PRESTRESSING STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE. BEAMS DETAILED TO INCLUDE A TAPERED PLATE PER STANDARD FIGURE B309 MUST INCLUDE SOLE PLATE.
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- ⑧ DIMENSION DETERMINED BY CONTRACTOR. MAINTAIN 2" MINIMUM CLEAR FROM STRANDS.
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- ⑩ STEEL TROWEL TO SMOOTH FINISH AND APPLY BOND BREAKER PER APPROVED PRODUCTS LIST.
- ⑪ ROUGH FLOAT AND BROOM TRANSVERSELY FOR BOND PER SPEC. 2405.3.D.
- ⑫ OPTIONAL: 3" MAX. DIA. SLEEVE FOR HAULING (AFTER INSTALLATION, COAT WITH APPROVED EPOXY BONDING AGENT & FILL WITH APPROVED NON-SHRINK GROUT).
- ⑬ TYP. CLR. FOR ENTIRE BOTTOM FLANGE.

REVISED: DECEMBER 02, 2015
 APPROVED: JANUARY 13, 2015
 Nancy Dubenberger
 STATE BRIDGE ENGINEER

BEAMS B3
 S.A.P. 199-010-012
 FIG. 5-397.507

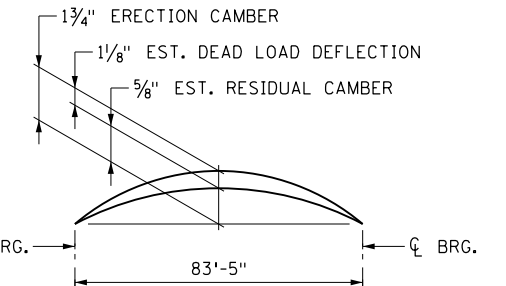
CERTIFIED BY	DATE	TITLE:	DES:	DR:	APPROVED:	BRIDGE NO. 02053
NAME:	LIC. NO.	MN45" PRESTRESSED CONCRETE BEAM (PRE-TENSIONED) MN45-85	CHK:	CHK:	SHEET NO. 72 OF 99 SHEETS	

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Y DISTANCES (INCHES)			
	NO.	CL. SPAN	END
STRAIGHT STRANDS	16	2.75	
DRAPED STRANDS	6	5.0	40.0
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□ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.

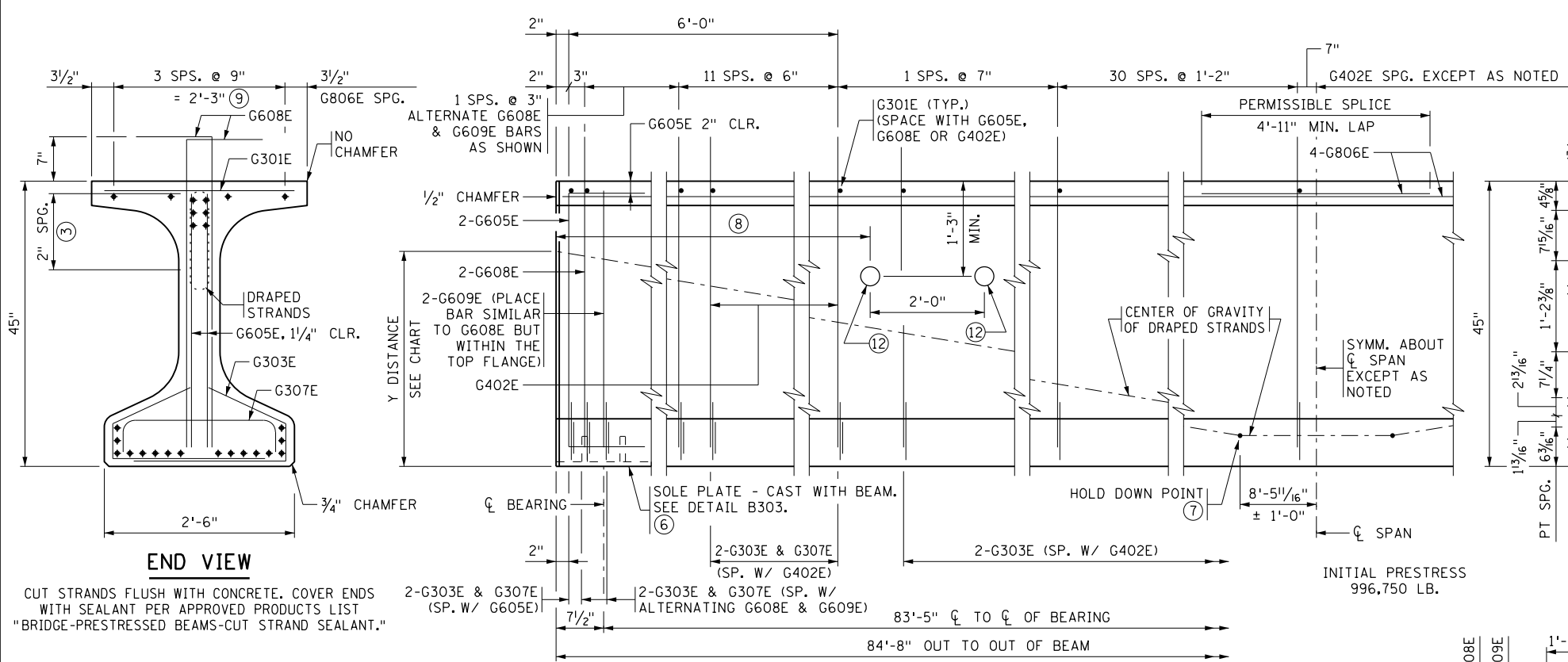


CAMBER DIAGRAM

ERECTION CAMBER SHOWN IS AFTER DIAPHRAGMS ARE IN PLACE.

DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, BARRIER, SIDEWALK AND MEDIAN WHERE APPLICABLE.

CONTRACTOR WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE BUILDING FORMS TO CORRECT GRADE AND SPECIFIED SLAB THICKNESS. PROVIDE COPY OF ELEVATIONS TO THE ENGINEER.

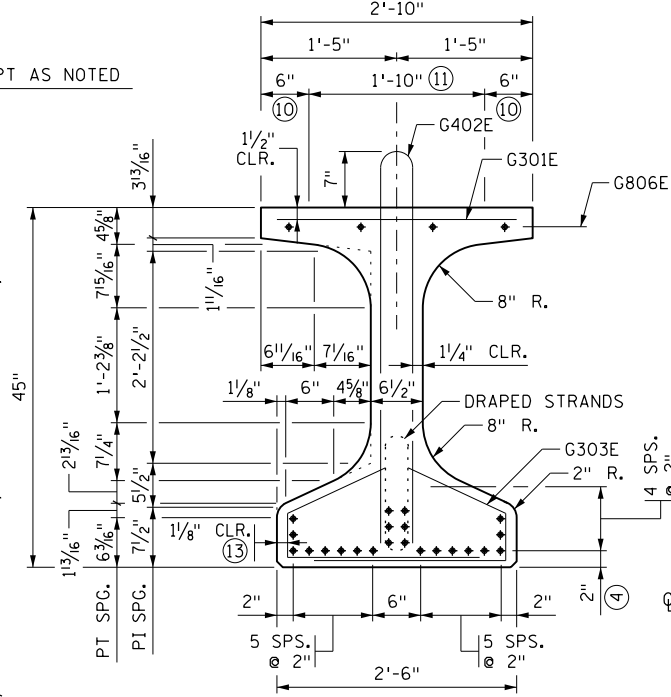


BEAM ELEVATION

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	14.32 KSI
LONG TERM LOSSES	24.87 KSI
TOTAL LOSSES	39.19 KSI

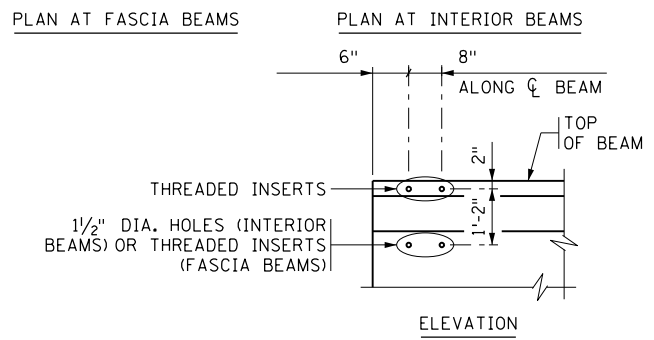
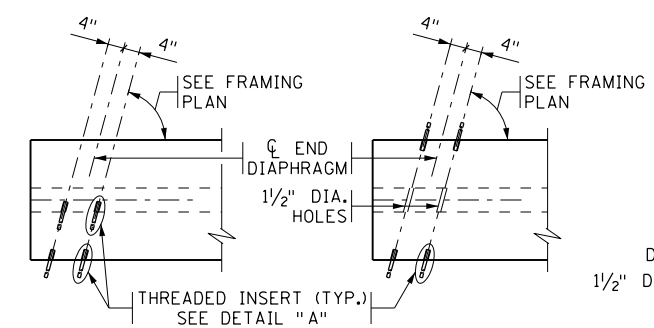
MINIMUM CONCRETE STRENGTH - K.S.I.	
① f'c1	② f'c
4.5 KSI	5.5 KSI

SECTION AT CL SPAN

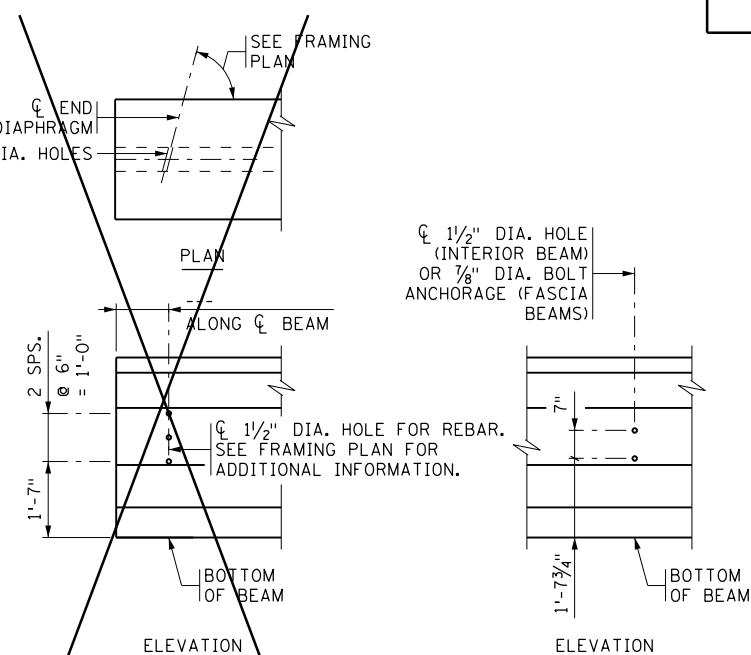


GENERAL NOTES

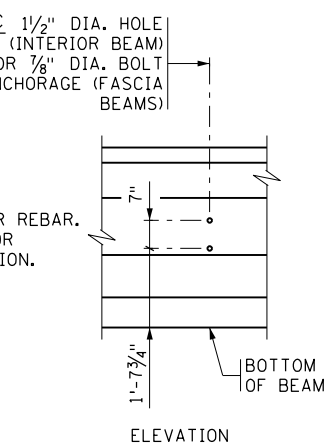
- PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.
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- ALL MATERIAL AND WORK SHOWN OR NOTED ON THIS SHEET IS INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE SPEC. 2405.
- SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.
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- ③ DRAPED STRANDS.
- ④ STRAIGHT STRANDS.
- ⑤ USE 0.6" DIA. 7-WIRE LOW RELAXATION PRESTRESSING STRAND, CONFORMING TO ASTM A416, GRADE 270.
- ⑥ FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE. BEAMS DETAILED TO INCLUDE A TAPERED PLATE PER STANDARD FIGURE B309 MUST INCLUDE SOLE PLATE.
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- ⑫ OPTIONAL: 3" MAX. DIA. SLEEVE FOR HAULING (AFTER INSTALLATION, COAT WITH APPROVED EPOXY BONDING AGENT & FILL WITH APPROVED NON-SHRINK GROUT).
- ⑬ TYP. CLR. FOR ENTIRE BOTTOM FLANGE.



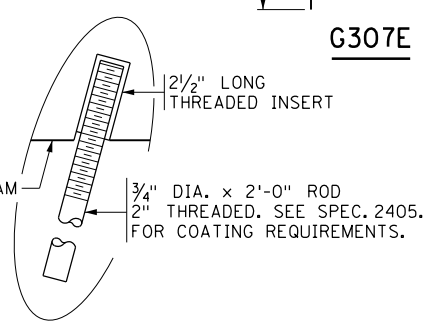
CONCRETE END DIAPHRAGM
PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)



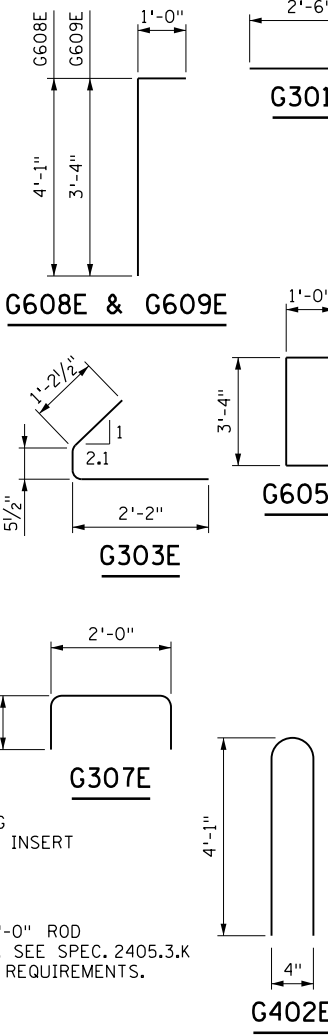
CONCRETE END DIAPHRAGM
(SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.)



STEEL INTERMEDIATE DIAPHRAGM
(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)



DETAIL "A"



BEAMS B4-B5

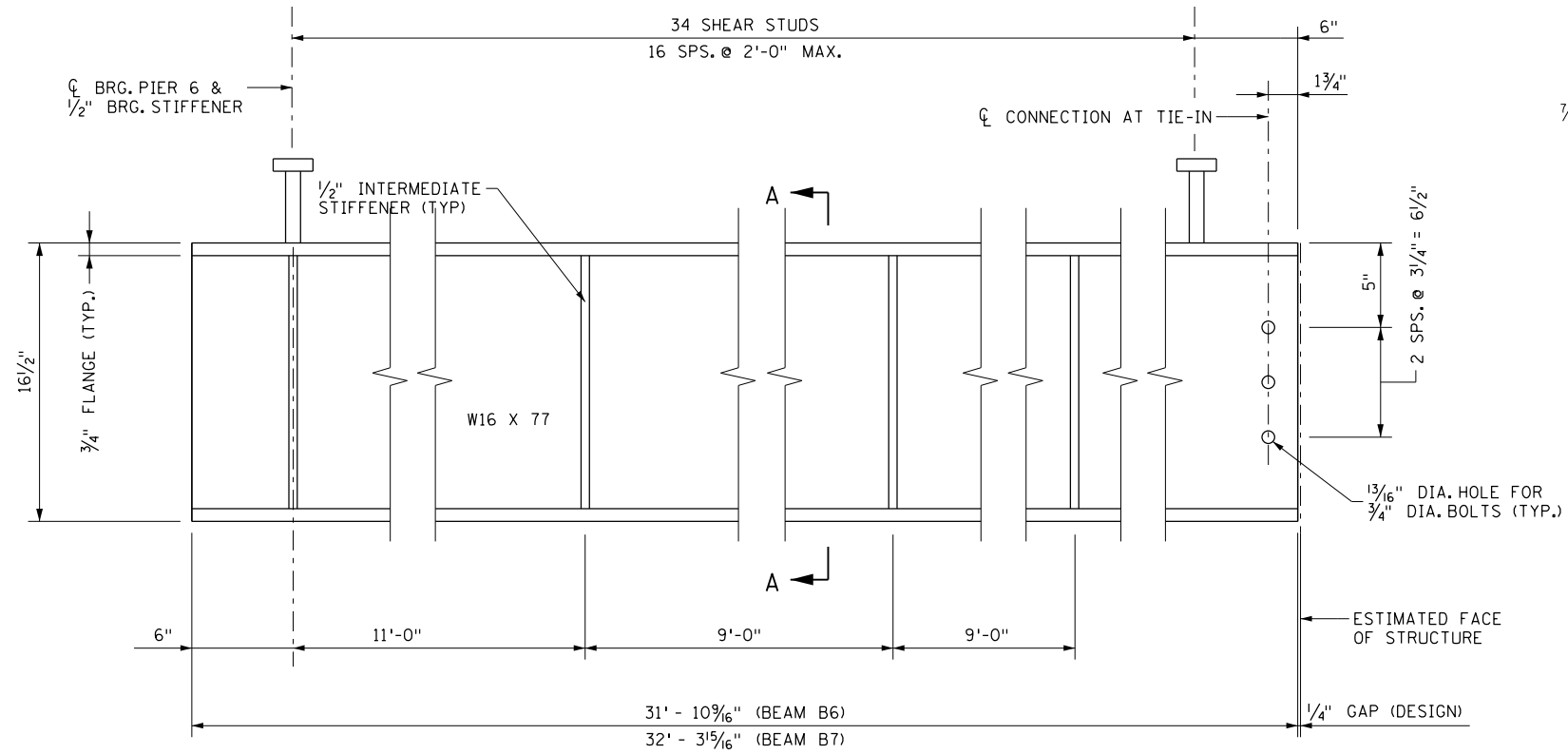
REVISED: DECEMBER 02, 2015
APPROVED: JANUARY 13, 2015
Nancy Dubenberger
STATE BRIDGE ENGINEER

CERTIFIED BY _____ DATE _____
LICENSED PROFESSIONAL ENGINEER
NAME: _____ LIC. NO. _____

TITLE: **MN45" PRESTRESSED CONCRETE BEAM (PRE-TENSIONED) MN45-85**

S.A.P. 199-010-012
FIG. 5-397.507
APPROVED: _____
BRIDGE NO. 02053
SHEET NO. 73 OF 99 SHEETS

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BEAM ELEVATION
NOT TO SCALE

NOTES:

BEAMS AND CONNECTED ELEMENTS SHALL BE SHOP PAINTED BLUE-GREEN (FEDERAL STANDARD COLOR NO. 25193) PER SPEC. 2478. CONTRACTOR SHALL VERIFY COLOR MATCH TO NORTH STAR STATION PRIOR TO FABRICATION (SEE SHEET 6). FIELD PAINT BOLTED CONNECTIONS AND OTHER TOUCH UP AREAS AS NEEDED.

BEARING STIFFENERS AND ENDS OF BEAMS SHALL BE PERPENDICULAR TO FLANGE.

ALL STRUCTURAL STEEL SHALL CONFORM TO SPEC. 3309 UNLESS OTHERWISE NOTED.

SHEAR STUDS ON THE TOP FLANGE OF THE GIRDER SHALL BE INSTALLED IN THE FIELD.

SHEAR CONNECTORS TO PROJECT A MINIMUM OF 2" INTO DECK STRUCTURAL SLAB. IN NO CASE SHALL SHEAR CONNECTORS PROJECT CLOSER THAN 1" TO TOP OF DECK STRUCTURAL SLAB. ENGINEER TO FIELD VERIFY BEAM ELEVATION AND AUTHORIZE STUD LENGTH.

SHEAR CONNECTORS TO BE INCLUDED IN WEIGHT OF STRUCTURAL STEEL (3309) AND CONFORM TO SPEC. 3391.

ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER A325 BOLTS, EXCEPT AS NOTED.

SEE DETAIL B402 FOR STIFFENER CONNECTION DETAILS.

MARK EACH BEAM SHOWING BRIDGE NUMBER AND INDIVIDUAL IDENTIFICATION LETTERS AND NUMBERS ON THE FACE OF THE BEAM, NEAR THE END, SO LOCATED THAT THEY WILL BE EXPOSED AFTER THE END DIAPHRAGMS HAVE BEEN CAST. MARK FASCIA BEAMS ON THE INSIDE FACE. ENSURE ALL MARKINGS ARE STENCILLED AND CLEARLY LEGIBLE. FOR LOCATION OF BEAMS, SEE FRAMING PLAN.

SEE FRAMING PLAN FOR BEAM END MARKED "X" AND DIAPHRAGM SPACING.

DEFLECTION AND CAMBER NOTES:

BASE LINE IS A STRAIGHT LINE FROM CL BRG TO CL CONNECTION ALONG TOP OF BEAM.

BEAM DISTANCES ARE MEASURED HORIZONTALLY ALONG CL OF BEAM WEB.

CAMBER DIAGRAM IS FOR BEAMS IN UNLOADED POSITION AND PROVIDES FOR ALL DEAD LOAD DEFLECTIONS.

NO RESIDUAL CAMBER WAS USED IN CAMBER CALCULATIONS.

DIAGRAMS NOT TO SCALE.

- ① DEFLECTIONS DUE TO WEIGHT OF STRUCTURAL STEEL.
- ② DEFLECTIONS DUE TO WEIGHT OF SLAB, CURBS AND RAILING.

NOTE

THE CONTRACTOR SHALL MAKE FIELD MEASUREMENTS AS NECESSARY PRIOR TO FABRICATION OF THE STEEL BEAMS AND CONNECTIONS TO ASSURE PROPER FIT IN THE FINAL WORK.

NOTE

SHALLOW SPAN 7 BEAMS WILL NOT SUPPORT TYPICAL OVERHANG ASSEMBLIES FOR CONSTRUCTION PLATFORMS.

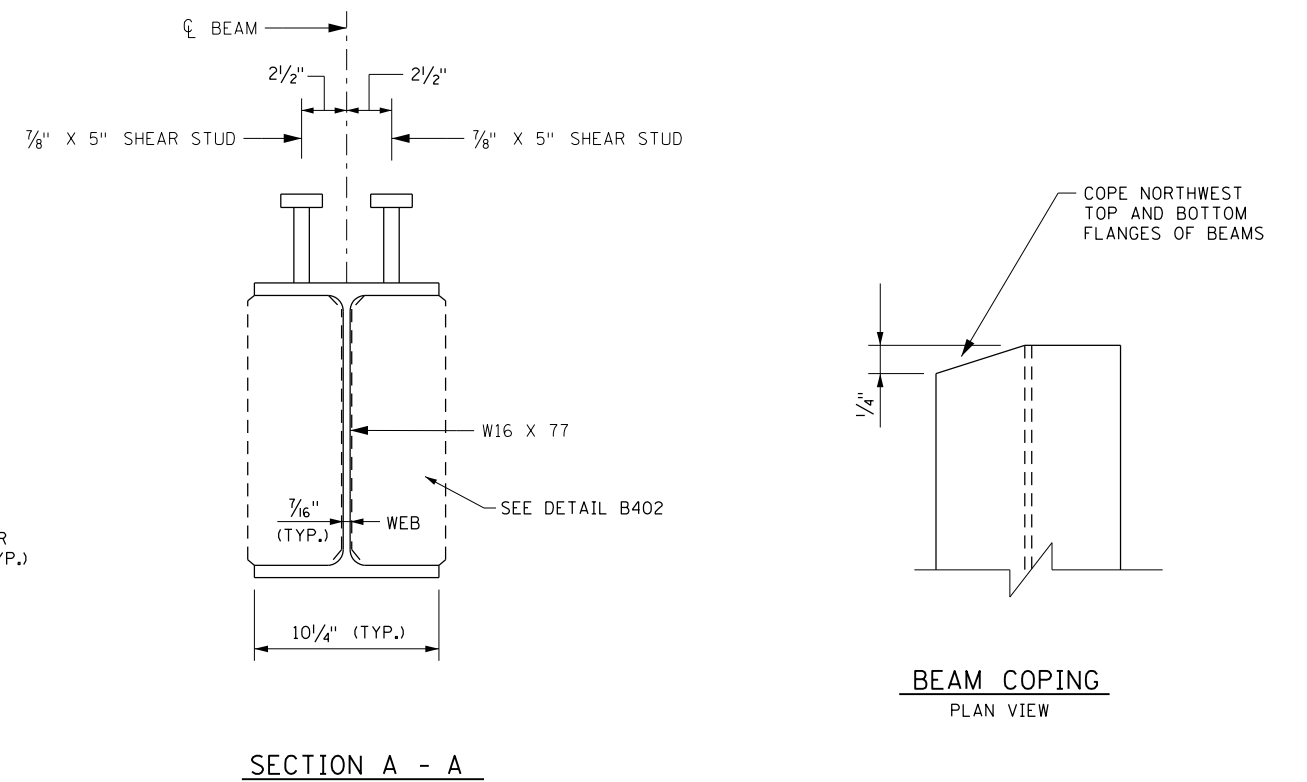
CONTRACTOR IS RESPONSIBLE FOR VERIFYING BEAM CAPACITY FOR PROPOSED CONSTRUCTION METHODS, AND SHALL SUBMIT FALSEWORK DRAWINGS AND CALCULATIONS FOR APPROVAL PRIOR TO SUPERSTRUCTURE CONSTRUCTION.

CAMBER DATA

POINT	BEAM B6	BEAM B7
0	0	0
0.25	3/8"	7/16"
0.5	9/16"	5/8"
0.75	3/8"	7/16"
1	0	0

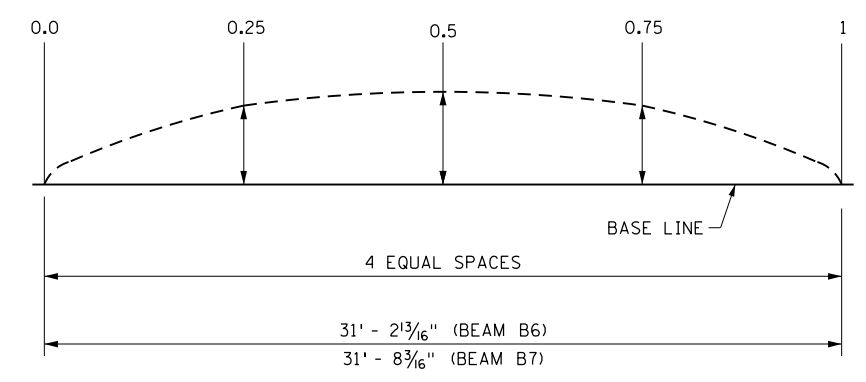
DEFLECTION DATA

POINT	BEAM B6		BEAM B7	
	①	②	①	②
0	0	0	0	0
0.25	1/16"	5/16"	1/16"	3/8"
0.5	1/16"	7/16"	1/16"	1/2"
0.75	1/16"	5/16"	1/16"	3/8"
1	0	0	0	0

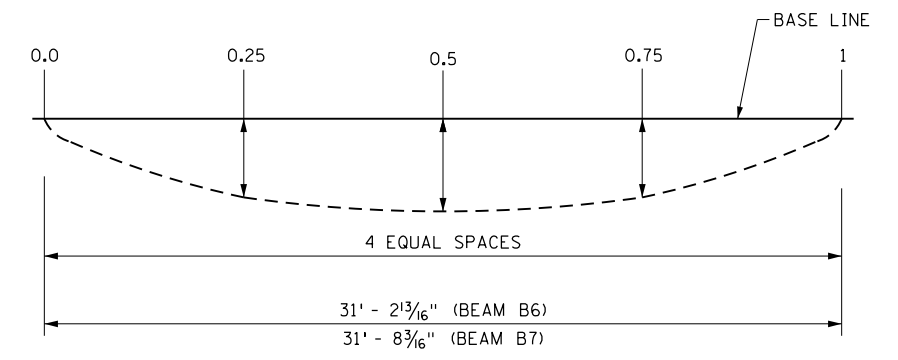


SECTION A - A

BEAM COPING
PLAN VIEW



BEAM CAMBER DIAGRAM



BEAM DEFLECTION DIAGRAM

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



7533 SUNWOOD DRIVE N.W.
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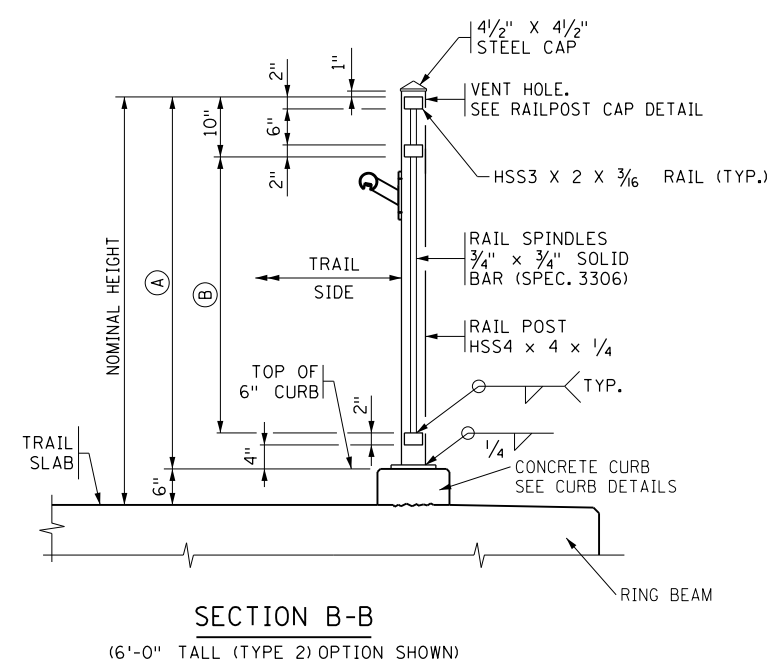
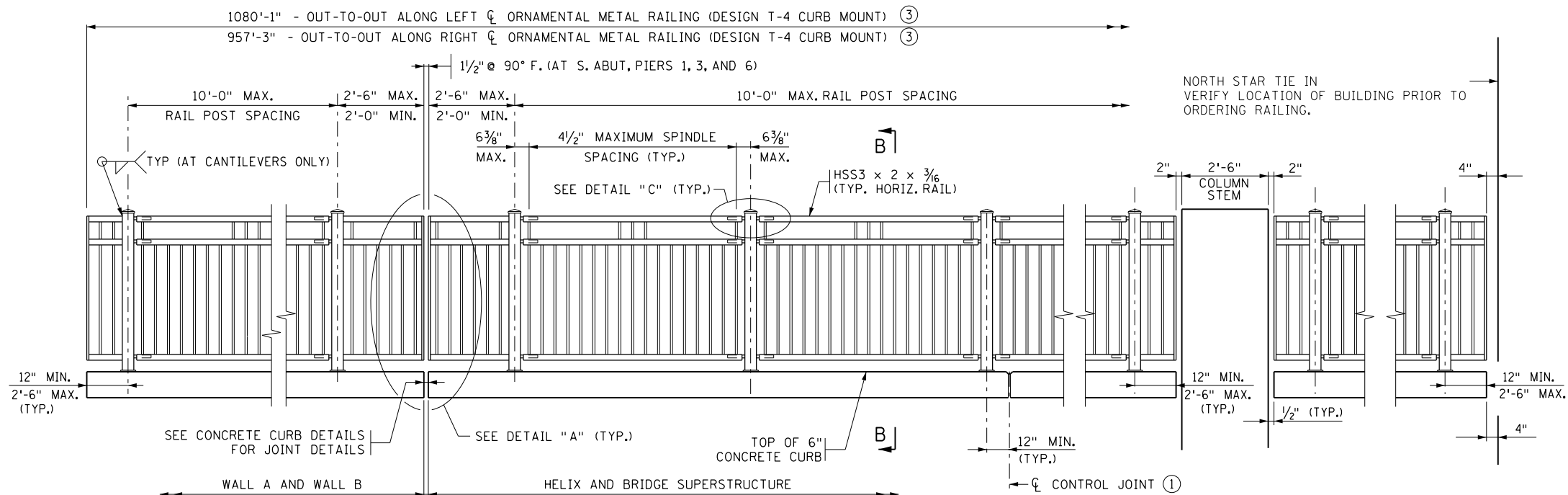
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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

TITLE:
STEEL BEAM DETAILS

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CHECKED	ATP	CHECK	RRE	

S.A.P. 199-010-012
 SHEET NO. 74 OF 99 SHEETS

BRIDGE NO.
 02053



RAILING HEIGHT TABLE

TYPE	NOMINAL HEIGHT	(A)	(B)
1	4'-6"	4'-0"	2'-8"
2	6'-0"	5'-6"	4'-2"
3	8'-0"	7'-6"	6'-2"

GENERAL NOTES

CONTINUOUSLY GROUND ALL METAL RAILINGS; SEE THE SPECIAL PROVISIONS, REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

PAYMENT LENGTH FOR TYPE 1, 2 AND 3 SHALL BE MEASURED AS THE OUT TO OUT LENGTH ALONG THE CENTERLINE OF THE RAILING AND BETWEEN THE CL OF POST OR OUTSIDE ENDS, WITH DEDUCTIONS FOR THE LENGTH OF CONCRETE COLUMN STEMS.

PAYMENT LENGTHS ARE MEASURED TO THE HORIZONTAL AND DO NOT INCLUDE ADDITIONS DUE TO VERTICAL PROFILE (NO ADDITIONAL PAYMENT WILL BE MADE).

PRICE BID FOR ORNAMENTAL METAL RAILING, TYPE 1, 2 AND 3 INCLUDES ANCHORAGES AND ALL MATERIAL ABOVE TOP OF CONCRETE CURB.

PROVIDE A500, GRADE B STRUCTURAL STEEL TUBING (HSS) IN THE RAIL CONFORMING TO SPEC. 3361. ALL OTHER STEEL SHALL CONFORM TO SPEC. 3306.

GALVANIZE BOLTS, NUTS, WASHERS AND ANCHORS PER SPEC. 3392. GALVANIZE ALL OTHER STRUCTURAL STEEL PER SPEC. 3394, AFTER FABRICATION.

COAT THE GALVANIZED RAILING, BASE PLATES, AND PROTRUDING PORTIONS OF BOLTS, NUTS, ANCHORS, AND WASHERS.

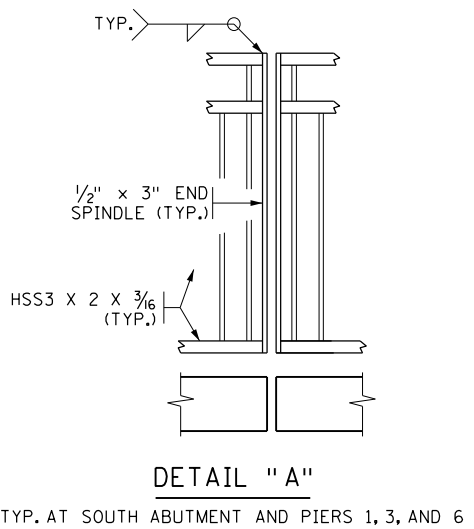
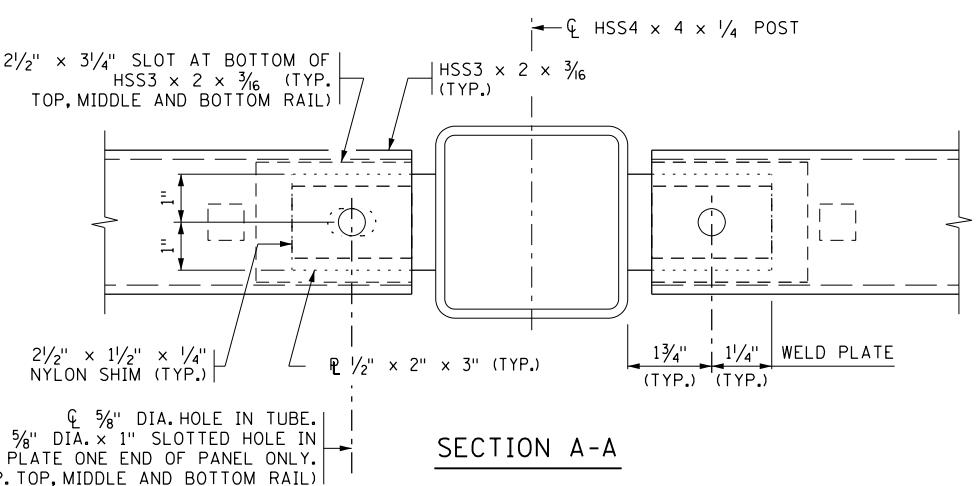
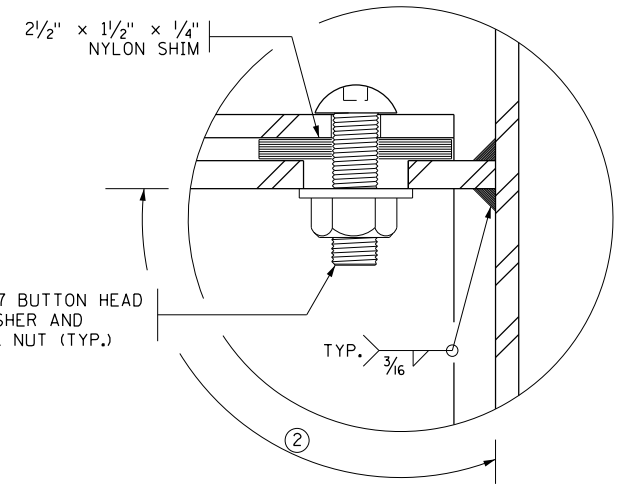
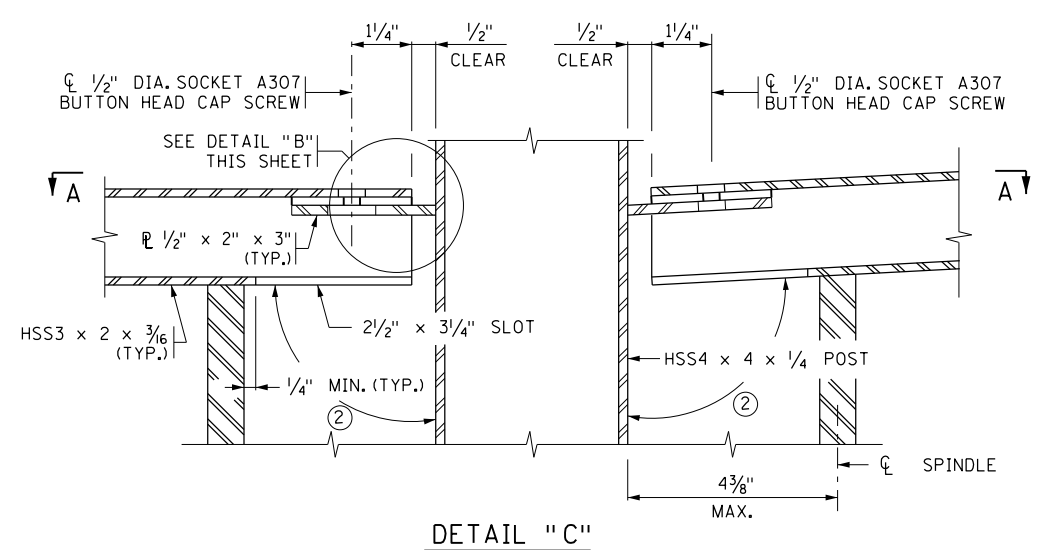
CURVE HORIZONTAL RAILS WHERE APPLICABLE AND PLACE RAILS PARALLEL TO THE EDGE OF TRAIL PROFILE.

SEE SPECIAL PROVISIONS FOR REQUIREMENTS NOT INCLUDED ON THIS SHEET.

DRILL 1/2" DIA. MAX. VENT HOLES ON THE UNDERSIDE OF RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

FOR ADDITIONAL NOTES AND DETAILS, SEE SHEET XX.

- ① SEE CONCRETE CURB SHEETS FOR CONTROL JOINT SPACING AND DETAILS.
- ② ANGLE VARIES TOP AND BOTTOM HORIZONTAL RAILINGS SHALL FOLLOW PROFILE GRADE SEE BRIDGE PLAN AND PROFILE SHEETS FOR GRADE.
- ③ LENGTH SHOWN IS HORIZONTAL AND DOES NOT ACCOUNT FOR VERTICAL GRADE OR DEDUCTION OF COLUMN STEMS.



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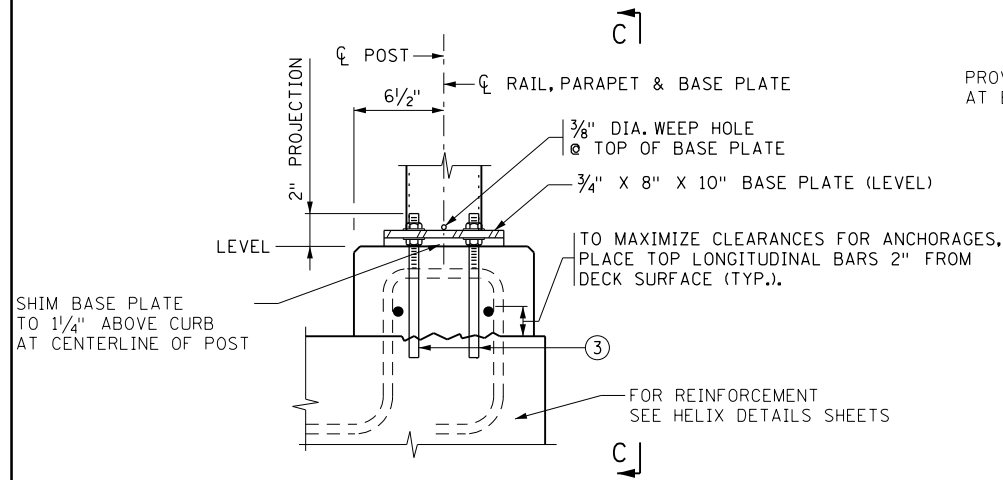
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DESIGNED	CHKD.	DRAWN	APP'D.
RRE	ATP	JMR	RRE

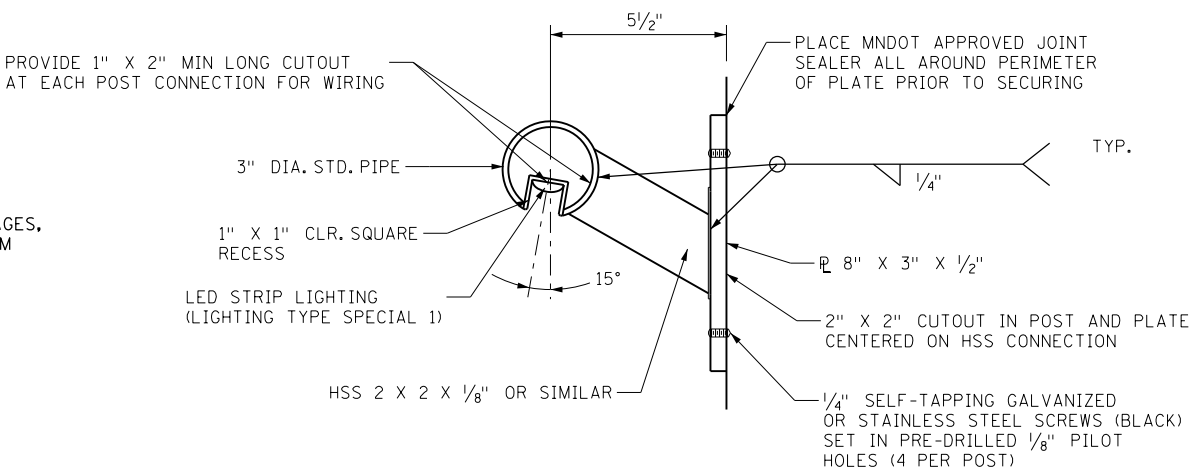
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SHEET NO. 75 OF 99 SHEETS

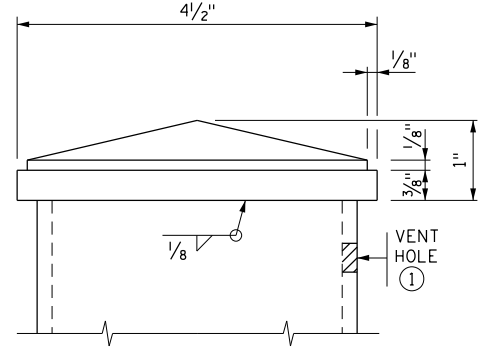
BRIDGE NO.
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ANCHOR DETAIL
DOUBLE NUT OPTION SHOWN ④



HANDRAIL DETAIL

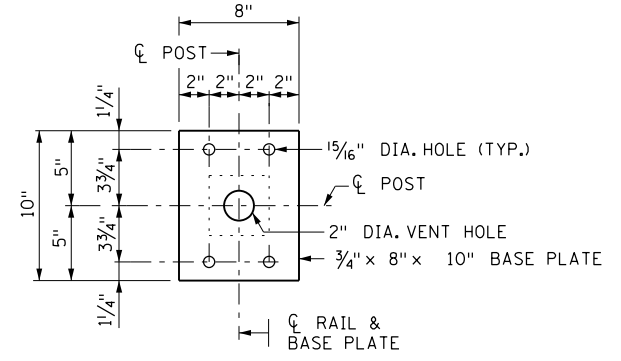


RAILPOST CAP DETAIL ②

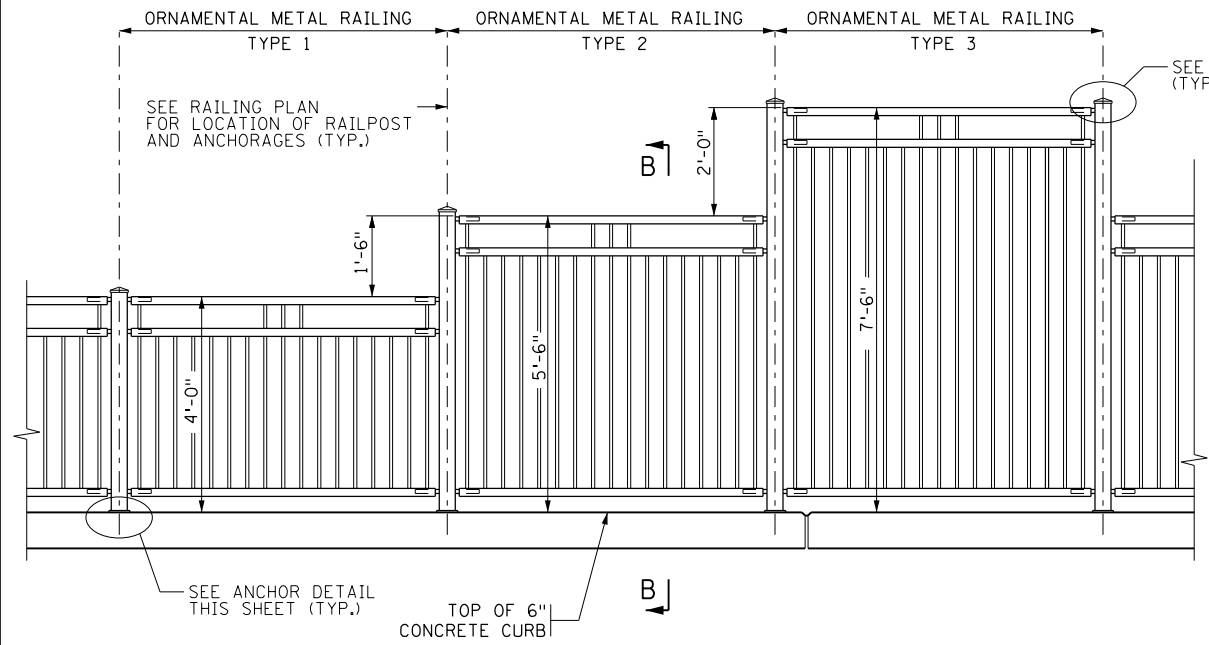
HANDRAIL NOTES:

RECESS SHALL BE FORMED WITH BENT METAL PLATE TACK WELDED OR OTHERWISE PERMANENTLY ATTACHED TO GROOVE IN HANDRAIL. CHAMFER AND GRIND/DE-BURR EDGES SUCH THAT RECESS DOES NOT POSE A CUT HAZARD.

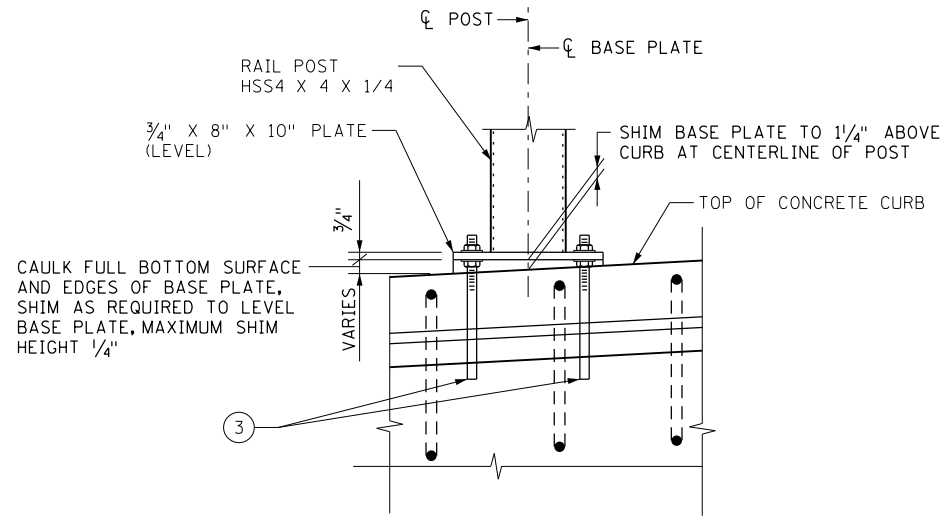
SHOP DRAWINGS SHALL INDICATE HANDRAIL SPLICE LOCATIONS AND METHOD; SPLICE SHALL ALLOW FOR CONTINUOUS PLACEMENT OF LED STRIP LIGHTING.



BASE PLATE



TYPICAL ELEVATION OF RAILING
TYPE 1, 2 AND 3 RAILING



SECTION C - C
DOUBLE NUT OPTION SHOWN ④

GENERAL NOTES

- FOR ADDITIONAL NOTES AND DETAILS, SEE SHEET 75.
- FOR SECTION B - B, SEE SHEET 75.
- ① DRILL VENT HOLE IN THE RAIL POST WITHIN 2" OF THE UNDERSIDE OF THE CAP, ON THE NON-TRAFFIC SIDE OF THE POST AS NECESSARY TO FACILITATE GALVANIZING. MAXIMUM HOLE SIZE IS 1/2" DIA.
- ② PROVIDE A PYRAMID TOP STYLE STEEL CAP WELDED TO TOP OF POST WITH A SURFACE FINISH OF 1000 MICRO-INCH, OR SMOOTHER, PRIOR TO GALVANIZING.
- ③ ADHESIVE ANCHORAGE WITH 5/8" DIA. ANCHOR ROD PER SPEC. 3385, TYPE A WITH HEX NUTS AND WASHERS. PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH IN UNCRACKED CONCRETE OF 1.5 KSI. EMBED THE ANCHORAGE NO LESS THAN 9" REGARDLESS OF CHARACTERISTIC BOND STRENGTH. DRILL THROUGH REINFORCEMENT (IF ENCOUNTERED) TO ACHIEVE MINIMUM EMBEDMENT. ENSURE HEX NUT IS IN CONTACT WITH THE ADJACENT SURFACE AND TORQUE TO 60 FT-LBS UNLESS A HIGHER TORQUE IS RECOMMENDED BY THE MANUFACTURER. PROOF LOAD TO 8.8 KIPS. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
- ④ DOUBLE NUT OPTION SHOWN. USE ONLY WHEN MAXIMUM SHIM DIMENSION IS GREATER THAN 1/4" OR AS NOTED IN THE SPECIAL PROVISIONS. USE APPROVED EPOXY OR LATEX MODIFIED MORTAR.

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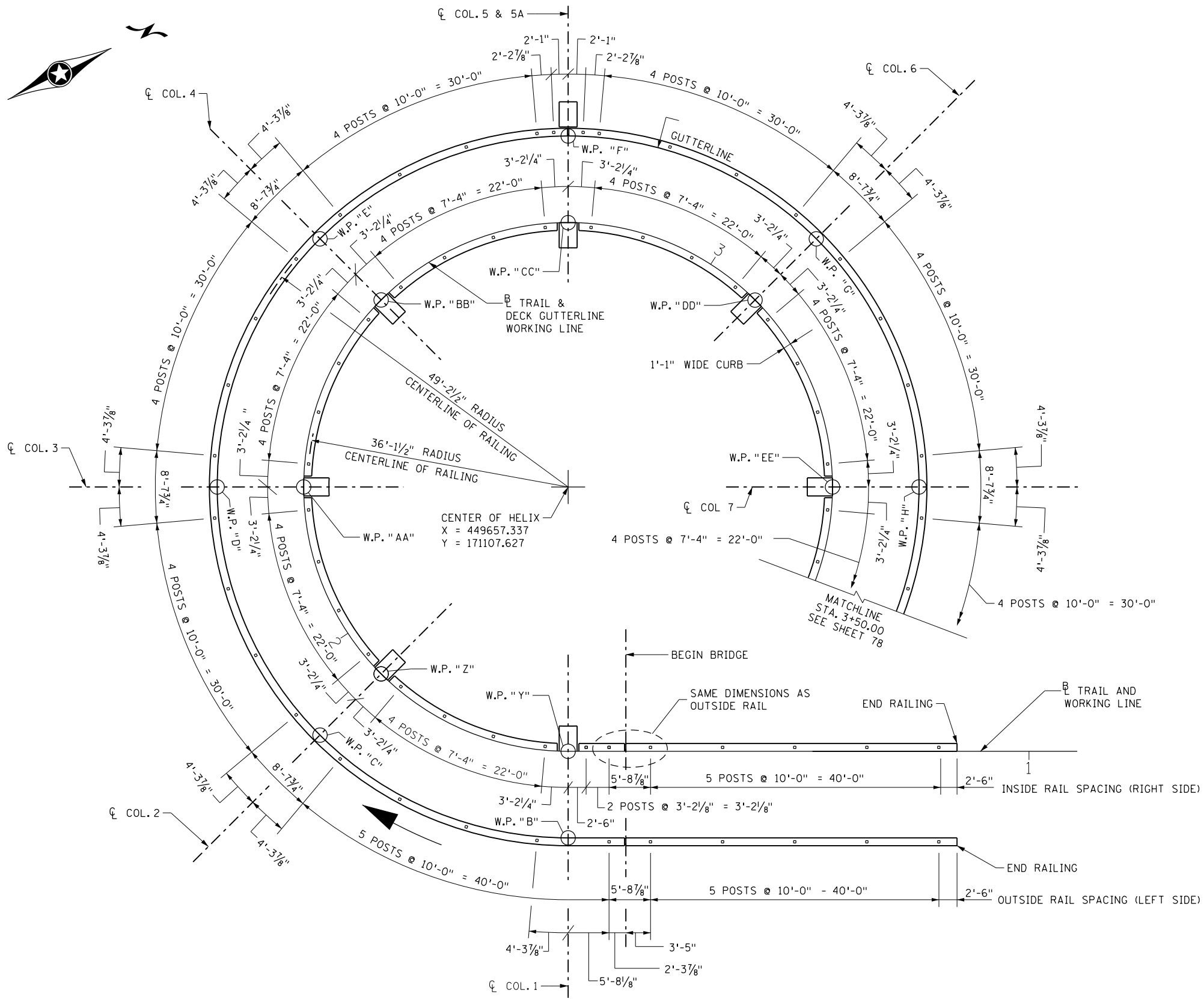
RAILING DETAILS

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SHEET NO. 76 OF 99 SHEETS

BRIDGE NO.
02053



PARTIAL LOWER HELIX PLAN

- NOTES**
- FOR WORKING POINT DIMENSIONS AND COORDINATES SEE WORKING POINT LAYOUT, SHEET 7.
 - FOR UPPER HALF OF HELIX, SEE SHEET 78.
 - DIRECTIONAL ARROW INDICATES UP DIRECTION OF HELIX.
 - ALL RAILING ON HELIX SHALL BE TYPE 1, (4'-6" NOMINAL HEIGHT), SEE DETAIL ON SHEET 75.
 - ALL POST SPACING DIMENSIONS ARE MEASURED ALONG CENTERLINE OF RAILING.

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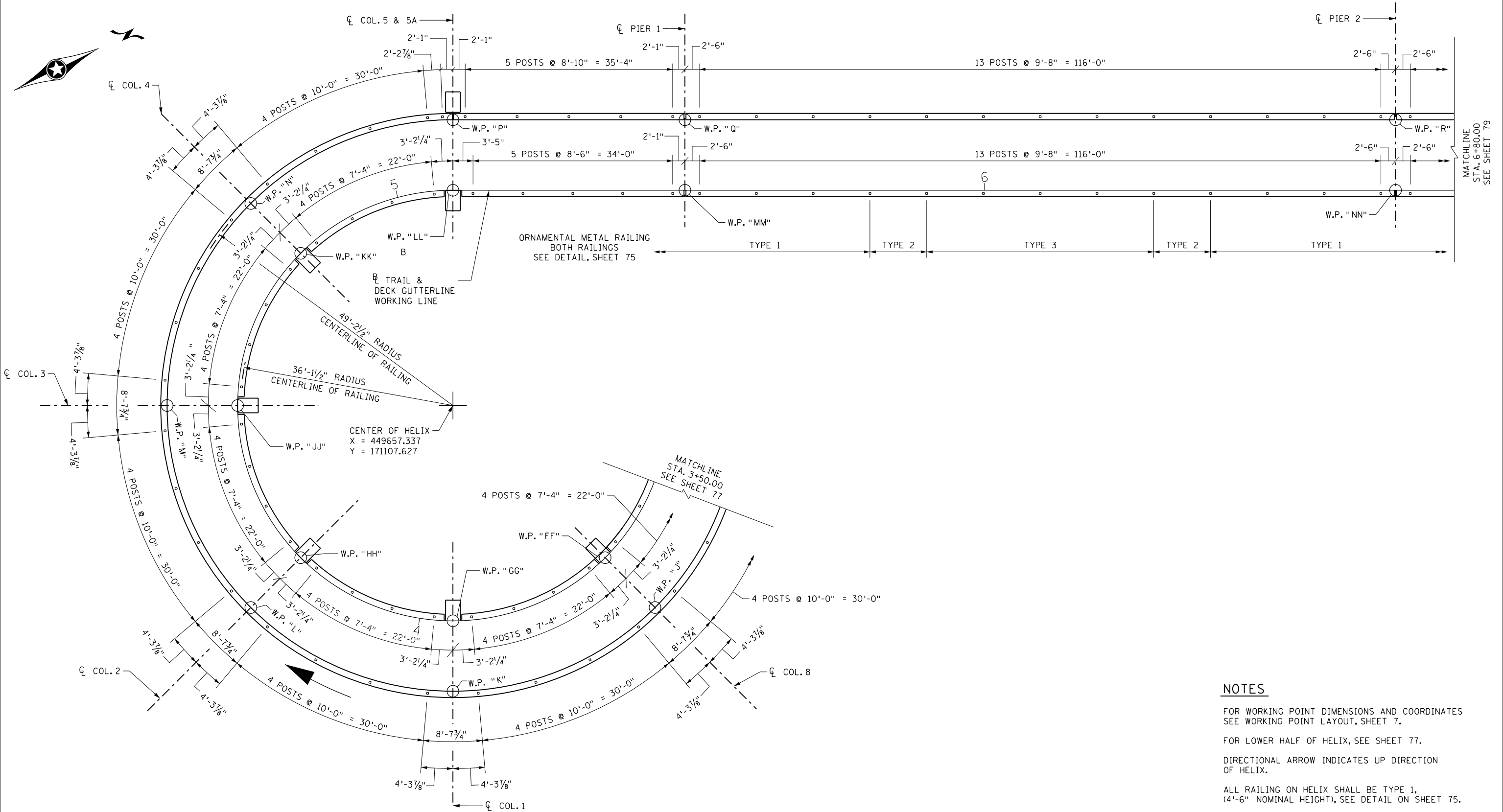
RAILING DETAILS

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PARTIAL UPPER HELIX PLAN

- NOTES**
- FOR WORKING POINT DIMENSIONS AND COORDINATES SEE WORKING POINT LAYOUT, SHEET 7.
 - FOR LOWER HALF OF HELIX, SEE SHEET 77.
 - DIRECTIONAL ARROW INDICATES UP DIRECTION OF HELIX.
 - ALL RAILING ON HELIX SHALL BE TYPE 1, (4'-6" NOMINAL HEIGHT), SEE DETAIL ON SHEET 75.
 - ALL POST SPACING DIMENSIONS ARE MEASURED ALONG CENTERLINE OF RAILING.

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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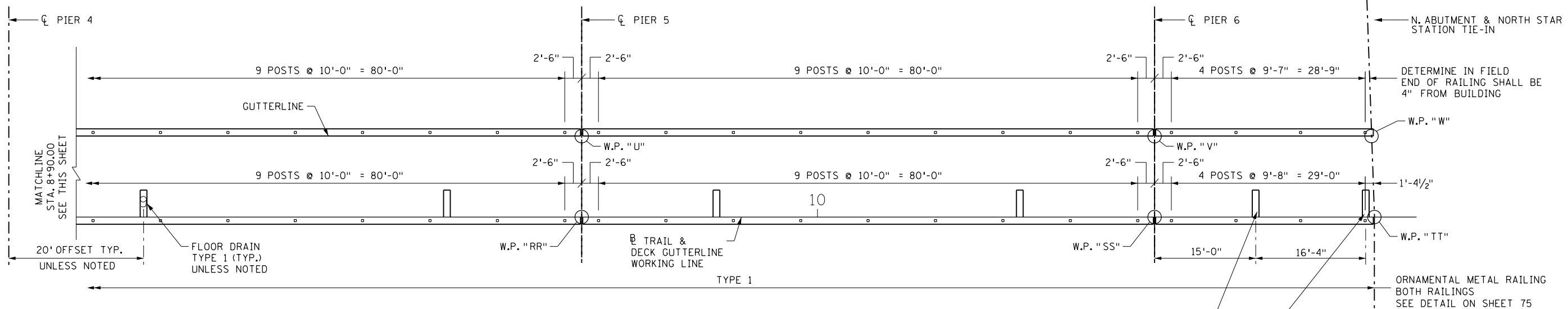
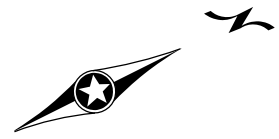
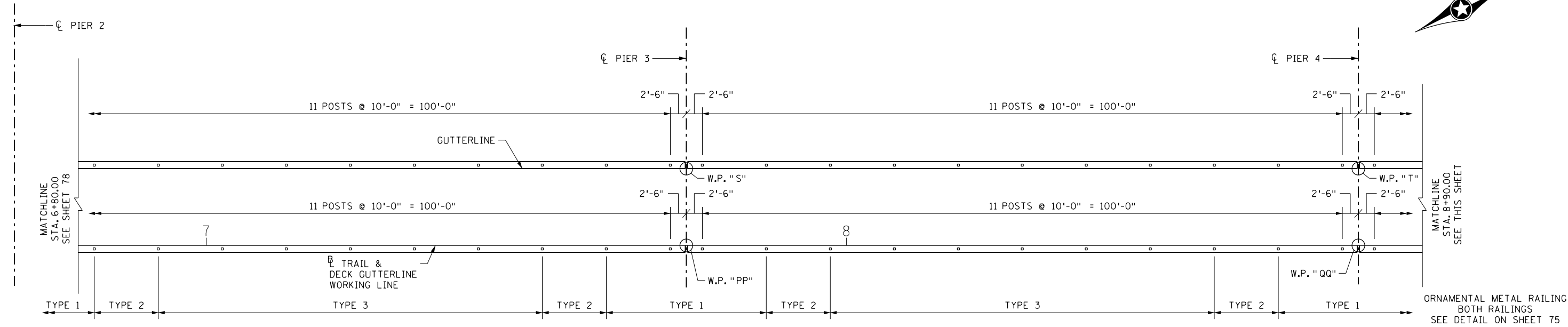
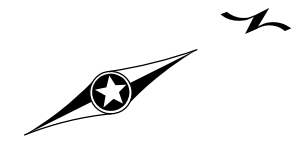
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TITLE: RAILING DETAILS

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SHEET NO. 78 OF 99 SHEETS

BRIDGE NO.
 02053



NOTES

- FOR WORKING POINT DIMENSIONS AND COORDINATES SEE WORKING POINT LAYOUT, SHEET 7.
- ALL RAILING ON HELIX SHALL BE TYPE 1, (4'-6" NOMINAL HEIGHT), SEE DETAIL ON SHEET 75.
- ALL POST SPACING DIMENSIONS ARE MEASURED ALONG CENTERLINE OF RAILING.

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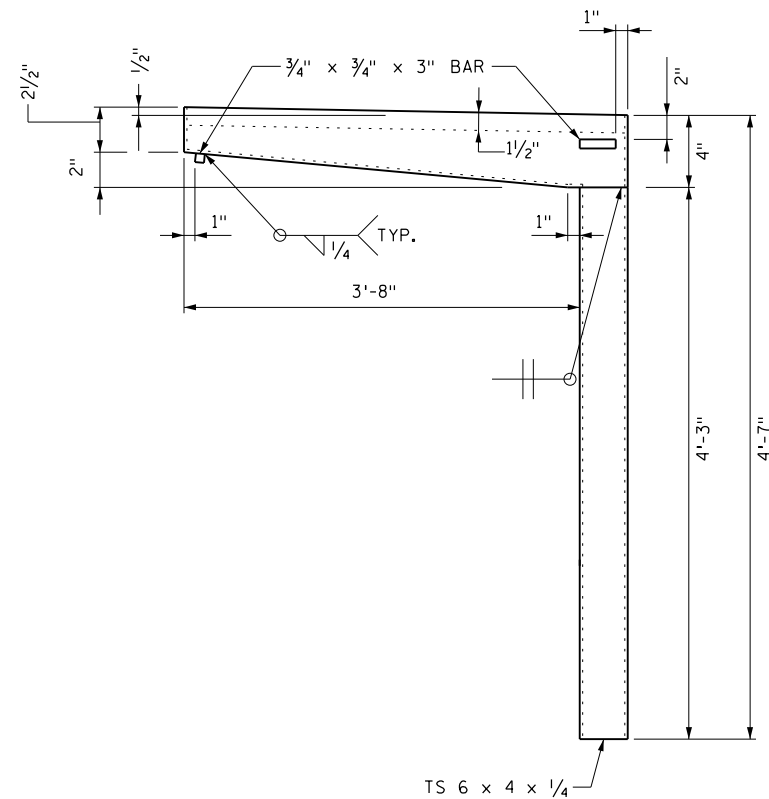
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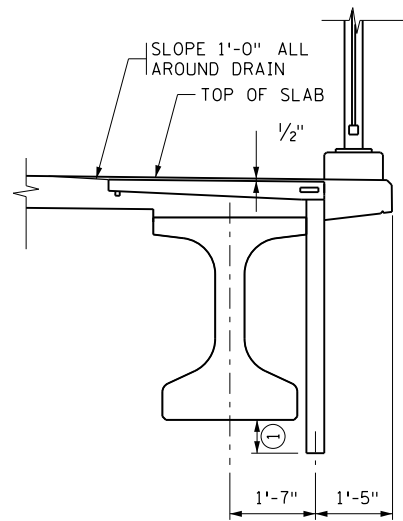
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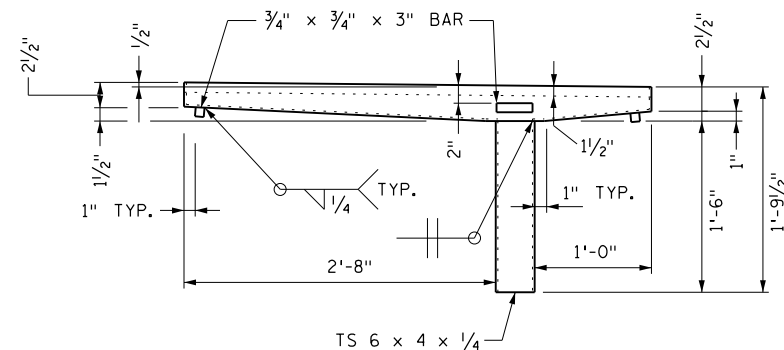
ELEVATION

BRIDGE FLOOR DRAIN TYPE 1

(STRUCTURAL TUBE)
SPANS 5 & 6 ONLY - 4 REQUIRED



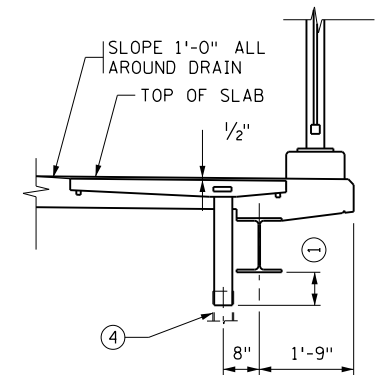
**FLOOR DRAIN
PLACEMENT DIAGRAM**



ELEVATION

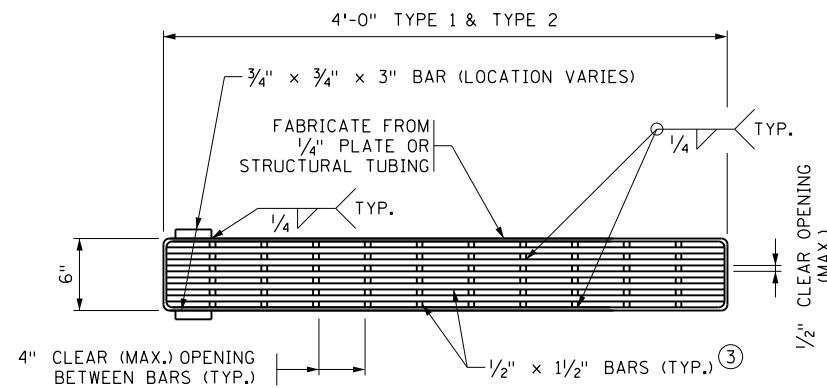
BRIDGE FLOOR DRAIN TYPE 2

(STRUCTURAL TUBE)
SPAN 7 ONLY - 2 REQUIRED



**FLOOR DRAIN
PLACEMENT DIAGRAM**

FLOOR DRAIN SUMMARY	
LOCATION	DRAIN TYPE
STA 9+00.00	TYPE 1
STA 9+45.00	TYPE 1
STA 9+85.00	TYPE 1
STA 10+30.00	TYPE 1
STA 10+65.00	TYPE 2
STA 10+81.37	TYPE 2



FLOOR DRAIN PLAN - TYPE 1 & 2

NOTES:

- MATERIAL TO BE STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.
- GALVANIZE MATERIAL PER Mn/DOT SPEC. 3394 AFTER FABRICATION.
- PAYMENT FOR FLOOR DRAINS SHALL INCLUDE ALL MATERIAL SHOWN ON THIS DETAIL.
- CONSTRUCT 8'x8' SPLASH BLOCKS BENEATH DRAINS, WHERE APPLICABLE (INCIDENTAL).
- ① 1" ± BELOW BOTTOM OF BEAM EXCEPT ON RURAL STREAM CROSSINGS WHERE DRAIN SHOULD BE EVEN TO BOTTOM OF BEAM.
- ② ATTACH TO BEAM WITH 3/4" DIA. BOLT, LOCKWASHER AND NUT AS REQUIRED. SEE SPECIAL PROVISIONS FOR APPROVED ANCHORAGE REQUIRED FOR CONCRETE BEAMS. ANCHORAGE TO MISS DRAPED STRANDS.
- ③ GRATE MAY BE FABRICATED FROM WELDED BUILT-UP BARS AS SHOWN OR CUT FROM PLATE STEEL; DO NOT EXCEED CLEAR DIMENSIONS SHOWN.
- ④ FOR DRAIN AT END OF BRIDGE ONLY, CONNECT DRAIN TO DOWNSPOUT. TERMINATE DOWNSPOUT WITHIN 12" OF EXISTING GROUND. SECURELY ATTACH TO EXISTING STATION COLUMN BY METHODS APPROVED BY THE ENGINEER. MATERIALS SHALL BE ALUMINUM OR GALVANIZED STEEL AND COLOR-MATCHED TO STATION COLUMNS. ASSOCIATED COSTS INCIDENTAL TO DRAINAGE SYSTEM BID ITEM.

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DRAIN DETAILS

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LIGHTING DETAILS TO BE FINALIZED AND
 ADDED UPON COMPLETION OF PROJECT FUNDING

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



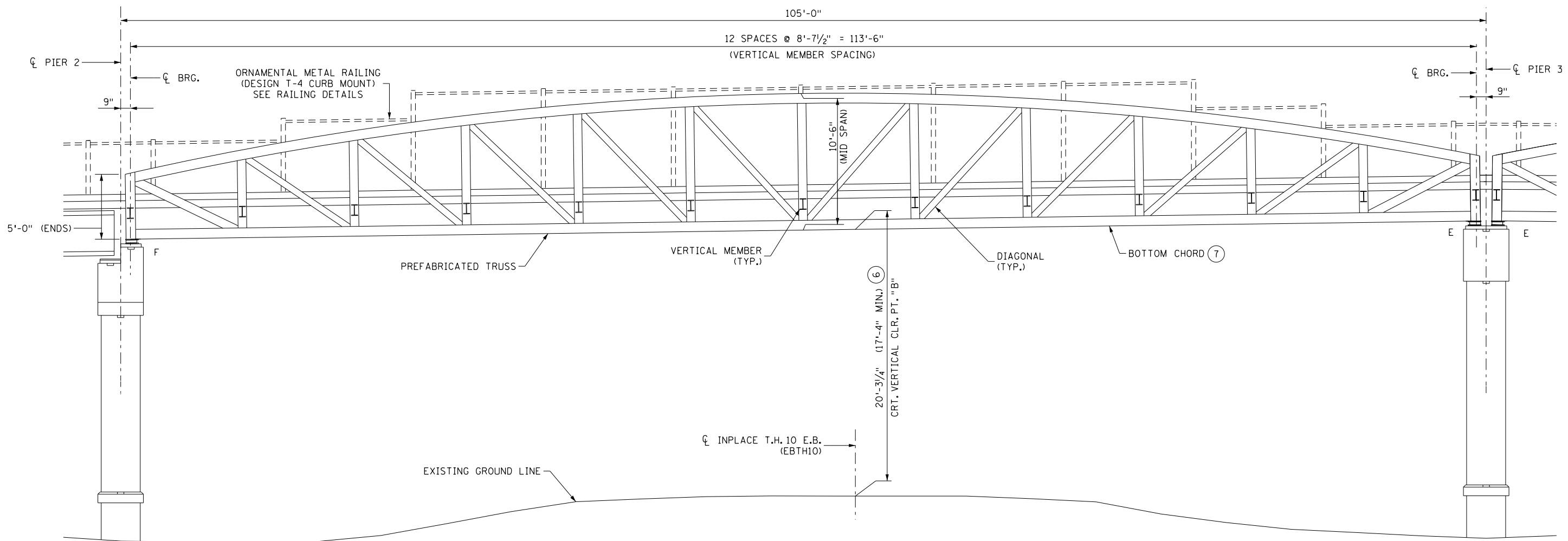
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LIGHTING DETAILS

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BRIDGE NO.
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PREFABRICATED TRUSS ELEVATION (4)
(SPAN 3 TRUSS SHOWN, SPAN 4 SIMILAR)

TRUSS BEARING LOADS (PER BEARING*) (4) (5)			
TYPE	LOADING		NOTES
	PIERS 2 & 4	PIER 3	
DEAD LOAD (DC1/DC2)	53.8 KIPS DOWNWARD	53.8 KIPS DOWNWARD	INCLUDES TRUSS, CURB AND RAILING, DECK, AND 15 PSF STAY-IN-PLACE FORM ALLOWANCE.
PEDESTRIAN LOAD (PL)	28.4 KIPS DOWNWARD	28.4 KIPS DOWNWARD	90 PSF PED LOADING (H10 DID NOT CONTROL FOR PIER REACTIONS).
HORIZ. WIND LOAD (WS)	12.5 KIPS TRANSVERSE, 3.0 KIPS LONGITUDINAL, +/-10.1 KIPS VERTICAL	7.5 KIPS TRANSVERSE, 1.8 KIPS LONGITUDINAL, +/-6.1 KIPS VERTICAL	BASED ON WIND PRESSURES OF 75 PSF TRANSVERSE, 18 PSF LONGITUDINAL APPLIED CONCURRENTLY TO EXPOSED WIND AREA FOR PIER DESIGN (DESIGN PRESSURES ACCOUNT FOR LOAD ON WINDWARD AND LEEWARD TRUSSES). HORIZONTAL LOADS ASSUMED TO ACT AN AVERAGE OF 6 FT ABOVE BEARING.
VERT. WIND LOAD (WS)	10.2 KIPS UPWARD AND +/-5.4 KIPS VERTICAL	6.1 KIPS UPWARD AND +/-3.2 KIPS VERTICAL	BASED ON 20 PSF VERTICAL WIND PRESSURE APPLIED AT WINDWARD QUARTER POINT OF SPAN.
TEMPERATURE (TU)	+/-5.3 KIPS (FROM SPAN 4), +/-3.8 KIPS (FROM SPAN 3)	+/-5.3 KIPS (FROM SPAN 4), +/-3.8 KIPS (FROM SPAN 3)	HORIZONTAL FORCE APPLIED THROUGH TRUSS BEARINGS DUE TO DEFORMATIONS FROM 75°F TEMPERATURE CHANGE (BASED ON BEARING PAD SIZES SHOWN ON THESE DETAILS). NOTE: THESE ARE PROVIDED FOR INFORMATION ONLY AND ARE NOT NECESSARILY THE CONTROLLING DESIGN THERMAL FORCE FOR THE PIERS.

*TWO BEARINGS PER PIER ASSUMED FOR CALCULATIONS

NOTES

FOR TYPICAL SECTION, SEE SHEET 83.
FOR NOTES, SEE SHEET 83.

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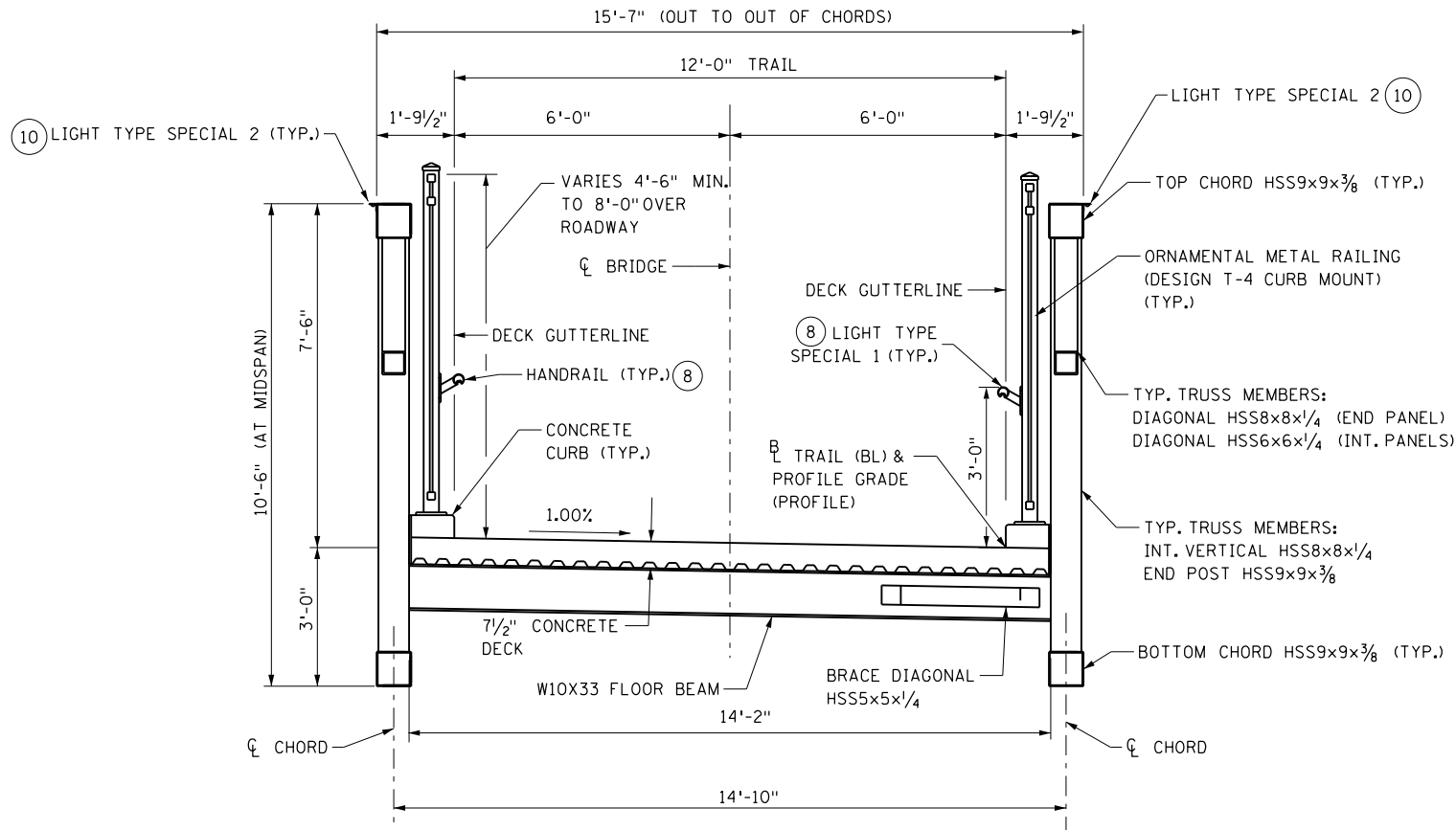
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PREFABRICATED TRUSS DETAILS

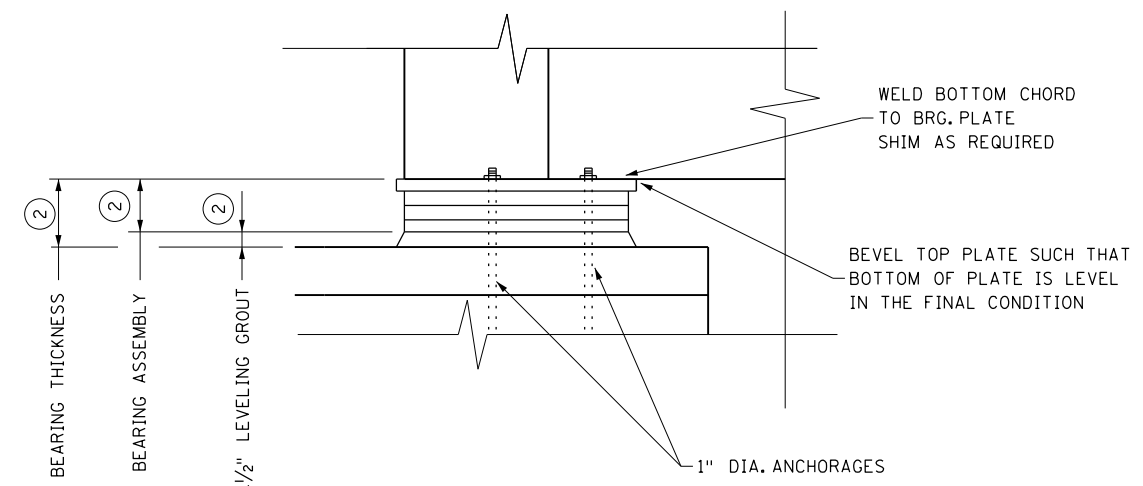
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 SHEET NO. 82 OF 99 SHEETS

BRIDGE NO.
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TYPICAL SECTION



BEARING DETAIL

NOTES:

1. SEE SPECIAL PROVISIONS FOR ADDITIONAL DESIGN/BUILD SUPERSTRUCTURE SPECIFICATIONS.
 2. BEARING DETAILS INDICATED WERE ASSUMED FOR PIER DESIGN AND ELEVATION COMPUTATIONS (BASED UPON CONFIGURATION USED ON SIMILAR STRUCTURES). BRIDGE MANUFACTURER TO MODIFY BEARING DETAILS IF DESIGN WARRANTS (SUBJECT TO APPROVAL BY THE ENGINEER).
 3. BID ITEM "PEDESTRIAN BRIDGE (SUPERSTRUCTURE)" INCLUDES ALL MATERIALS, LABOR AND DESIGN FOR THE PREFABRICATED STEEL TRUSS, TRUSS BEARINGS, PAINTING, CONCRETE DECK AND REINFORCEMENT (SPANS 3 AND 4) COMPLETE IN PLACE AND DESIGNED PER CURRENT AASHTO AND MNDOT LRFD BRIDGE DESIGN SPECIFICATIONS.
 4. TRUSS DIMENSIONS ARE BASED ON DESIGN PERFORMED BY ENGINEER OF RECORD. BRIDGE MANUFACTURER SHALL PERFORM INDEPENDENT DESIGN CALCULATIONS AND ADJUST TRUSS DETAILS MINIMALLY AS REQUIRED (EFFORT SHALL BE MADE TO MAINTAIN INDICATED LAYOUT & SIZING AS MUCH AS POSSIBLE); CALCULATIONS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL - SEE SPECIAL PROVISIONS. UNFACTORED BEARING LOADS HAVE BEEN PROVIDED TO SUMMARIZE DESIGN RESULTS AND TO INDICATE DESIGN LOADING USED FOR PIERS.
 5. DUE TO VARIATIONS IN PIER BEARING FIXITY, PIERS 2 AND 4 ARE ASSUMED TO RESIST 62.5% OF THE APPLIED WIND LOADS TO THE SPANS (IDEALIZED AS A PROPPED CANTILEVER); PIER 3 IS ASSUMED TO RESIST 37.5% .
 6. MINIMUM VERTICAL CLEARANCE BY DESIGN. ACTUAL VERTICAL CLEARANCE MAY VARY.
 7. BOTTOM CHORD SHALL HAVE 0" OF RESIDUAL UPWARD CAMBER.
 8. LIGHT TYPE SPECIAL 1 SET IN HANDRAIL - SEE RAILING DETAILS.
 9. F DENOTES FIXED BEARINGS
E DENOTES EXPANSION BEARINGS
 10. LIGHT TYPE SPECIAL 2 SHALL BE MOUNTED TO ANGLE L2X2X1/8 WELDED ALONG TOP TRUSS CHORD. CONTRACTOR TO COORDINATE WITH LIGHTING SUPPLIER AND FABRICATOR TO ENSURE SUFFICIENT PRE-DRILLED HOLES FOR ATTACHMENT.
- TRUSS AND CONNECTED ELEMENTS SHALL BE SHOP PAINTED BLUE-GREEN (FEDERAL STANDARD COLOR NO. 25193) PER SPEC. 2478. CONTRACTOR SHALL VERIFY COLOR MATCH TO NORTH STAR STATION PRIOR TO FABRICATION (SEE SHEET 6). FIELD PAINT BOLTED CONNECTIONS AND OTHER TOUCH UP AREAS AS NEEDED.

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

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 www.bolton-menk.com

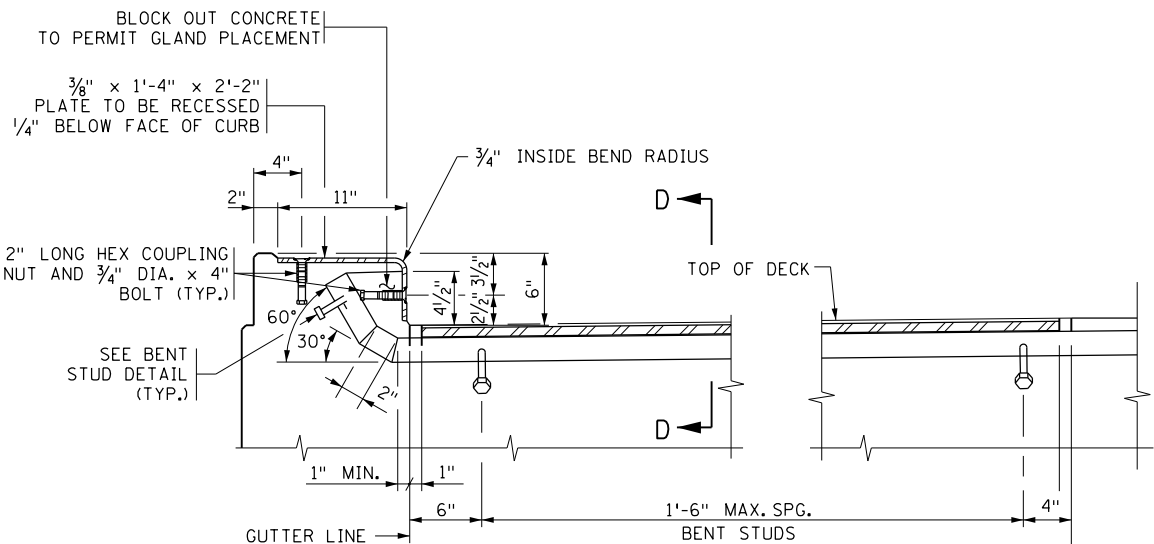
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE _____

PREFABRICATED TRUSS DETAILS

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	

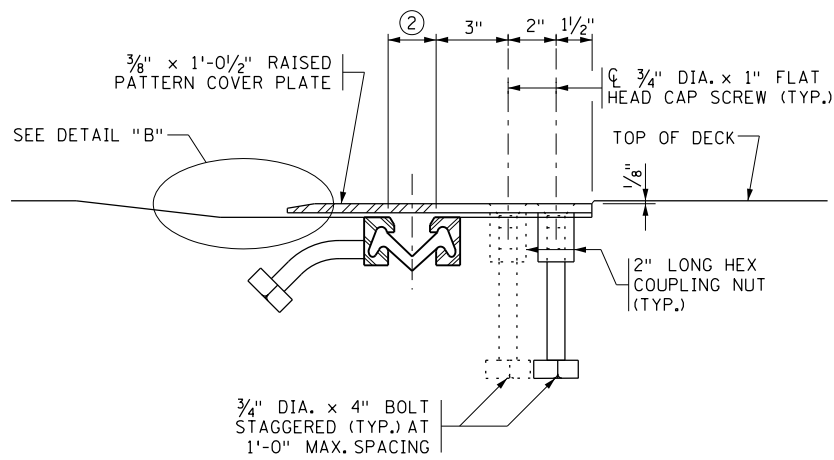
S.A.P. 199-010-012
 SHEET NO. 83 OF 99 SHEETS

BRIDGE NO.
 02053

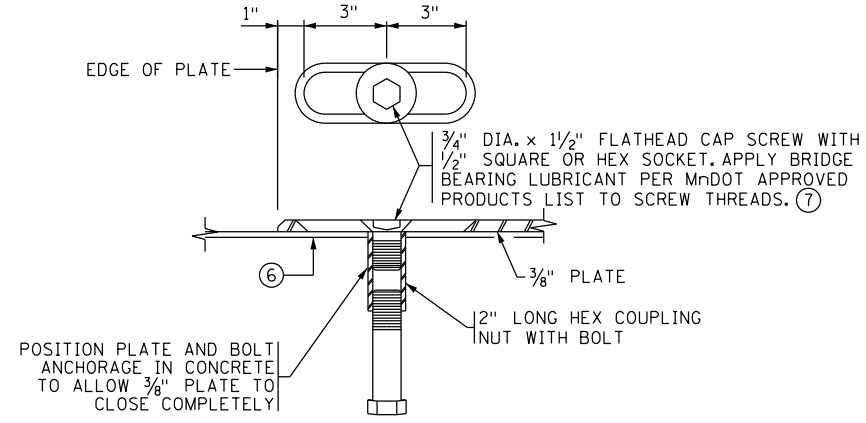


CONCRETE CURB

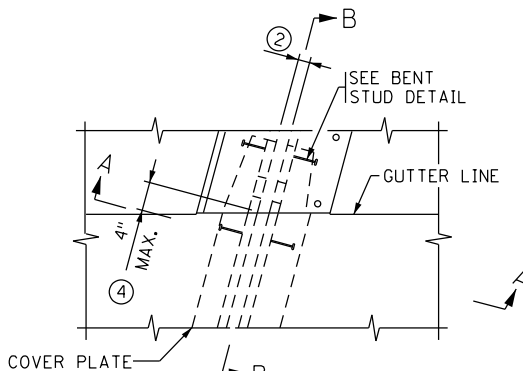
SECTION THROUGH CURB



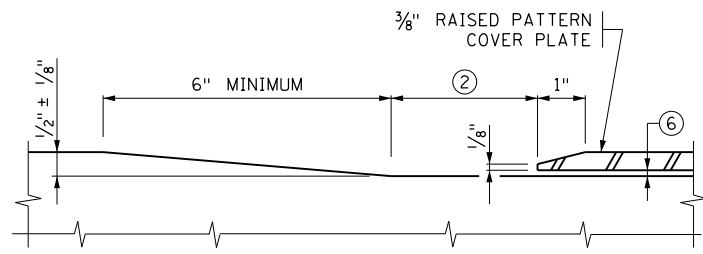
SECTION D-D



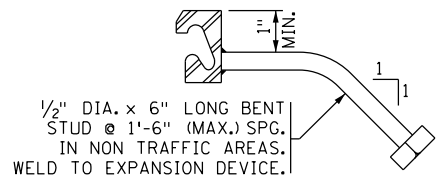
DETAIL "A"



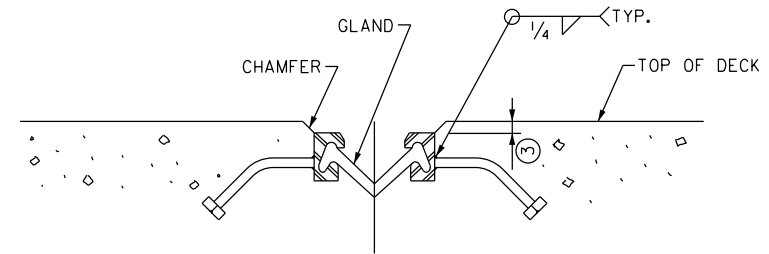
PLAN VIEW @ EXPANSION DEVICE



DETAIL "B"

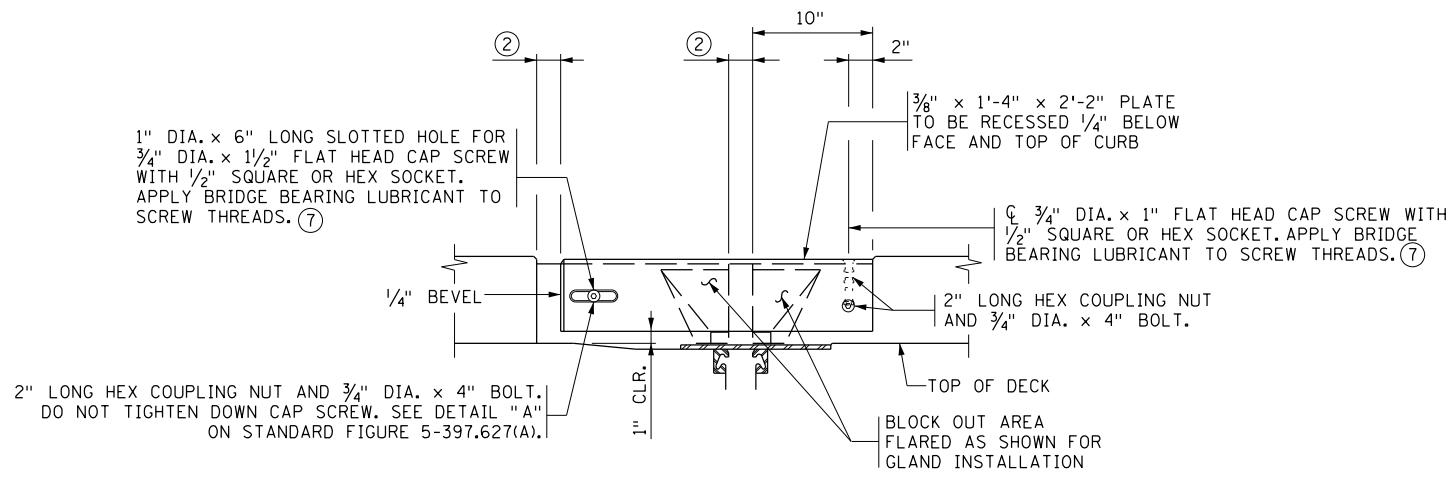


BENT STUD DETAIL

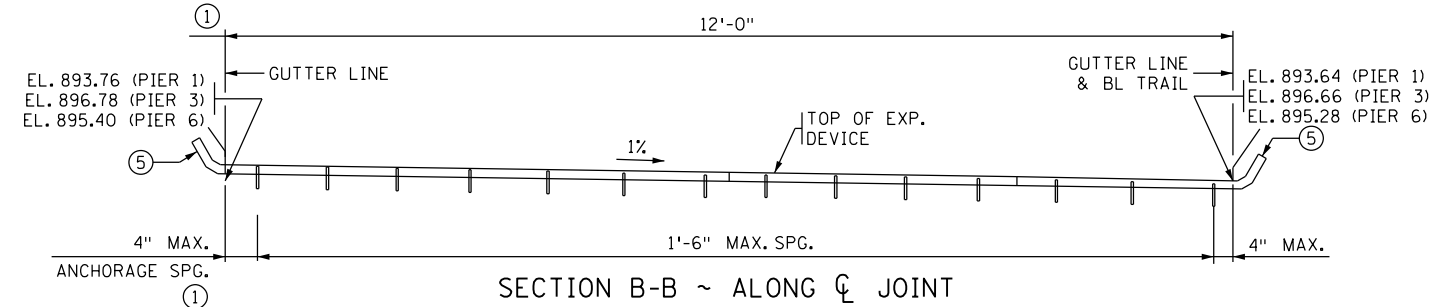


SECTION A-A

(COVER PLATE NOT SHOWN)



INSIDE ELEVATION OF CONCRETE CURB



SECTION B-B ~ ALONG CL JOINT

ELEVATIONS SHOWN ARE 1/8" BELOW TOP OF SLAB @ CL JOINT

GENERAL NOTES

- GALVANIZE STRUCTURAL STEEL AFTER FABRICATION PER SPEC. 3394. GALVANIZE FASTENERS PER SPEC. 3392.
- LOCATE JOINTS IN EXTRUSION AT BREAKS IN TRANSVERSE PROFILE AND AS OTHERWISE REQUIRED, WITH CLOSE FIT, WELDED JOINTS. REPAIR AFTER WELDING PER SPEC. 2471.3.L.
- PROVIDE STRUCTURAL STEEL PER SPEC. 3306 OR SPEC. 3309.
- STRAIGHTEN EXPANSION DEVICE TO A TOLERANCE OF 1/8" IN 10 FT.
- 3/4" DIA. X 1/2" FLATHEAD CAP SCREW WITH 1/2" SQUARE OR HEX SOCKET PER SPEC 3391. COUNTERSINK CAP SCREWS 1/16" BELOW TOP OF PLATE. APPLY BRIDGE BEARING LUBRICANT PER MnDOT APPROVED PRODUCTS LIST TO SCREW THREADS. (7)
- PAYMENT LENGTH IS BASED ON THE HORIZONTAL DISTANCE BETWEEN THE OUTSIDE EDGES OF THE DECK MEASURED ALONG THE CENTERLINE OF JOINT.
- TRANSVERSE DECK REINFORCEMENT MAY BE SHIFTED THE MINIMUM DISTANCE REQUIRED FOR EXPANSION DEVICE PLACEMENT.

- (1) DIMENSIONS ARE ALONG CENTERLINE OF JOINT.
- (2) 2 3/8" AT 45° F; 1/2" AT 90° F (PIER 3)
2" AT 45° F; 1/2" AT 90° F (PIERS 1&6)
- (3) 1/8" (1/4" MAX.).
- (4) PLACE BENT RODS NORMAL TO JOINT.
- (5) EXTEND GLAND 1" MIN. BEYOND THE TOP OF THE EXTRUSION.
- (6) PROVIDE SMOOTH CONCRETE FINISH BENEATH PLATE WITH 0" MIN. TO 1/8" MAX. GAP BETWEEN CONCRETE AND UNDERSIDE OF PLATE. PROVIDE BOND BREAKER (DUCT TAPE, ETC.) TO UNDERSIDE OF COVER PLATE.
- (7) LUBRICANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST: BRIDGE GREASE.
- (8) DIMENSIONS SHOWN ARE REQUIRED TO COMPLY WITH A.D.A. STANDARDS.

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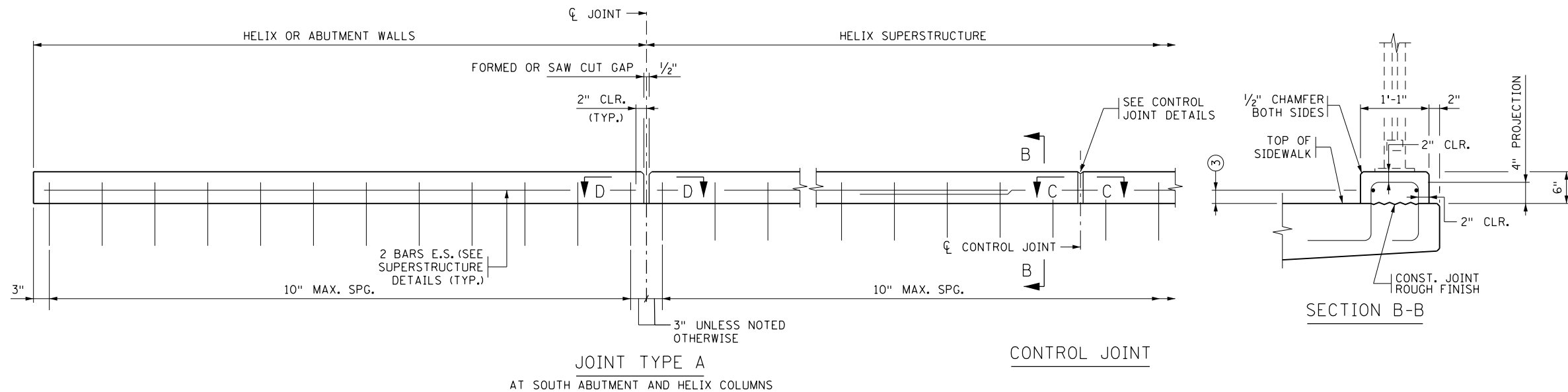
7533 SUNWOOD DRIVE N.W.
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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

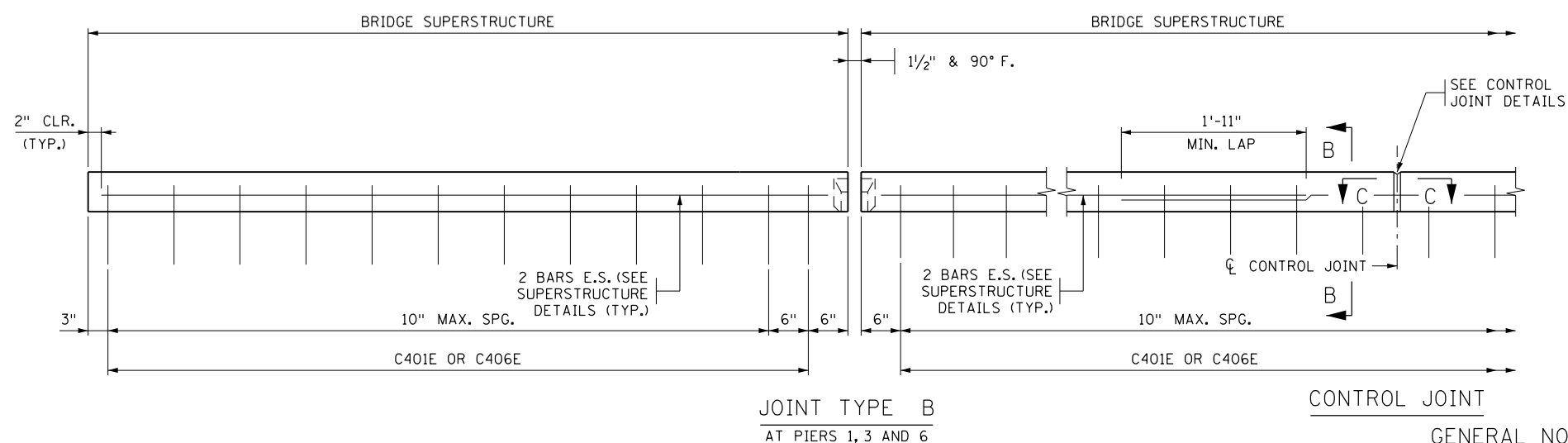
WATERPROOF EXPANSION DEVICE

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	
S.A.P. 199-010-012				
SHEET NO. 84 OF 99 SHEETS				

BRIDGE NO.
 02053



INSIDE ELEVATION OF CONCRETE CURB



INSIDE ELEVATION OF CONCRETE CURB

CURB DOES NOT MEET CRASH TEST REQUIREMENTS OF NCHRP REPORT 350 OR MASH

GENERAL NOTES

CONTINUOUSLY GROUND ALL METAL RAILINGS; SEE THE SPECIAL PROVISIONS. REFER TO THE ELECTRICAL PLANS AND ELECTRICAL SPECIAL PROVISIONS FOR DETAILS REGARDING BONDING MULTIPLE ELECTRICAL GROUNDING SYSTEMS.

MEASURE PAYMENT LENGTH BETWEEN THE OUTSIDE ENDS OF THE CONCRETE CURB.

CONCRETE CURB = 81 LBS./FT. (0.020 CU. YDS./FT.)

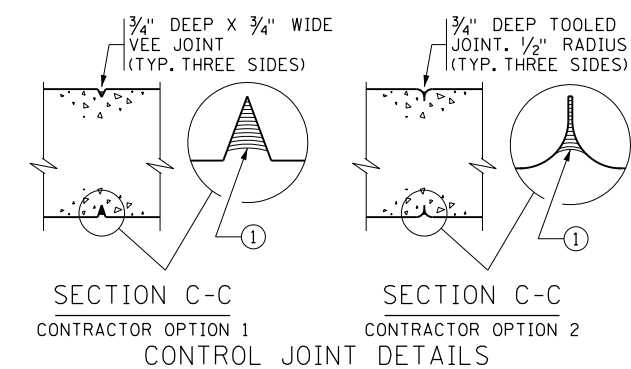
FINISH ALL EDGES OF CURB WITH 1/2" CHAMFER, EXCEPT WHERE OTHERWISE NOTED.

MAXIMUM SPACING OF CONTROL JOINTS IS 10 FT. SEE SUPERSTRUCTURE SHEET FOR JOINT SPACING.

CONCRETE CURB QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

FOR BILL OF REINFORCEMENT, SEE SHEET 70.

- ① JOINT SEALANT PER MnDOT APPROVED/QUALIFIED PRODUCTS LIST - CRACK AND JOINT MATERIALS - SILICONE JOINT SEALERS.
- ② REFER TO STANDARD FIGURE 5-397.632 FOR COVER PLATE DETAILS.
- ③ TO MAXIMIZE CLEARANCES FOR ANCHORAGES, PLACE TOP OF OUTSIDE LONGITUDINAL BARS 2" FROM DECK SURFACE (TYP.).
- ④ SAW CUT NOT REQUIRED AT HELIX COLUMNS. USE 1/2" JOINT MATERIAL BETWEEN CURB AND COLUMN, SEAL AS SHOWN.



WHEN USING SLIP FORM METHOD TO PLACE THE CONCRETE, CUT JOINT 3 INCHES DEEP USING MARGIN TROWEL OR SIMILAR MEANS IMMEDIATELY AFTER CONCRETE PLACEMENT (TYP. THREE SIDES)

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

CONCRETE CURB FOR USE WITH ORNAMENTAL RAILING

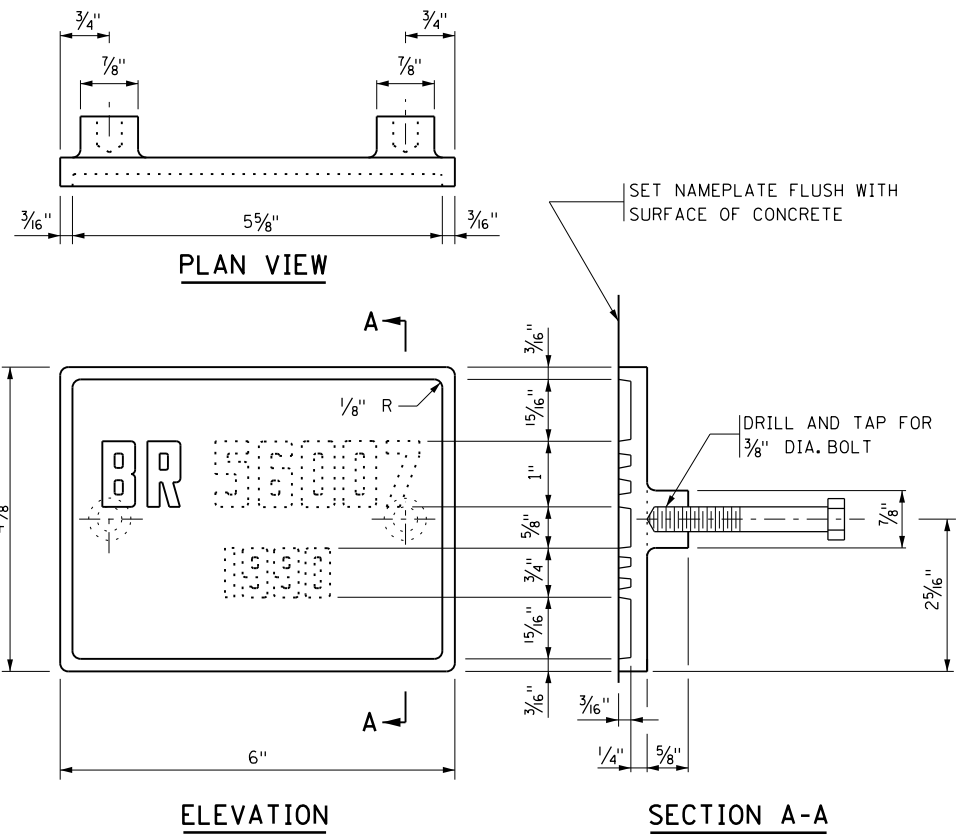
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RRE	ATP		JMR

S.A.P. 199-010-012

BRIDGE NO. 02053

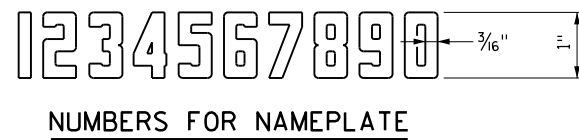
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THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION. DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE 02053
YEAR 2018



NOTES:
MATERIAL SHALL COMPLY WITH SPEC. 3327.
LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

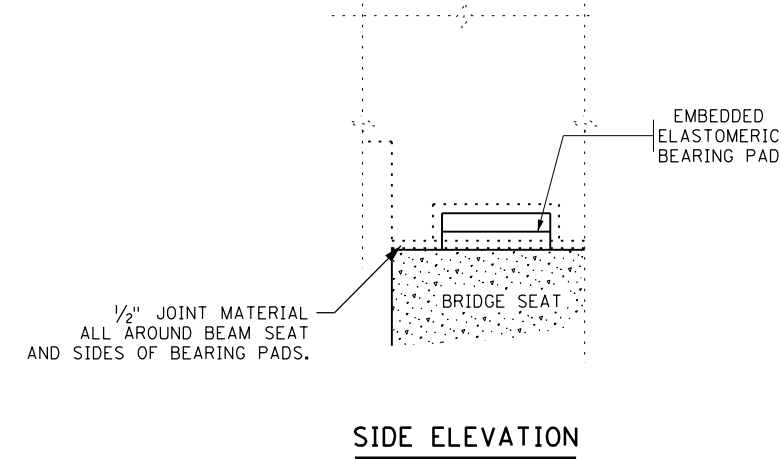
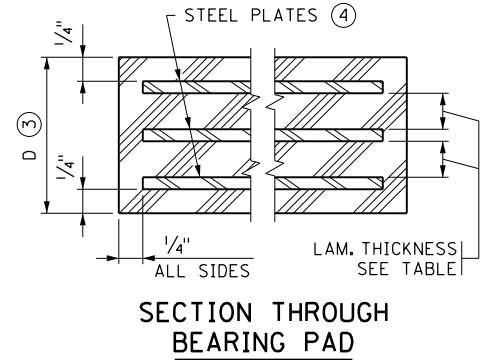
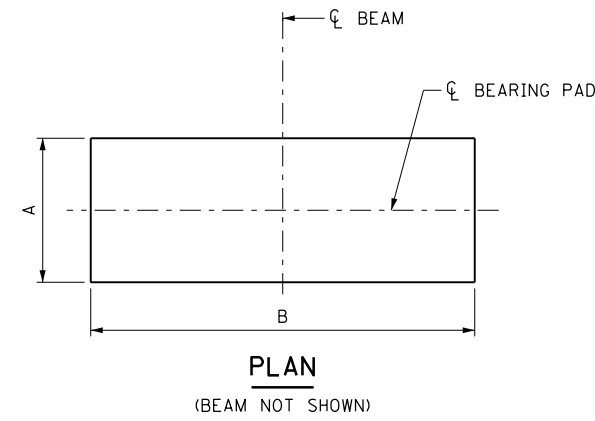


TABLE									
ASSEMBLY TYPE	LOCATION	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR
		A	B	D (1)	NO.	THICK.	NO.	THICK.	
E4	PIER 1	12"	24"	4 3/8"	7	1/8"	6	1/2"	8.0

NOTES:
USE NEOPRENE OR NATURAL RUBBER AND FABRICATE PAD PER SPEC. 3741.
PAYMENT FOR ELASTOMERIC BEARING PAD INCLUDED IN ITEM "ELASTOMERIC BEARING PAD" PER EACH.
① "D" INDICATES THE THICKNESS OF THE BEARING PAD.
③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.
④ DO NOT GALVANIZE THIS PLATE.

MODIFICATIONS MADE TO TABLE AND DIAGRAMS TO INCLUDE ADDITION OF STEEL REINFORCING PLATES.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 09-11-2014	DETAIL NO. B101
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 12-17-2008 05-24-2012 01-13-2015 05-10-2017	DETAIL NO. B305 MODIFIED
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	ELASTOMERIC BEARING PAD (PRESTRESSED CONCRETE BEAMS)		

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

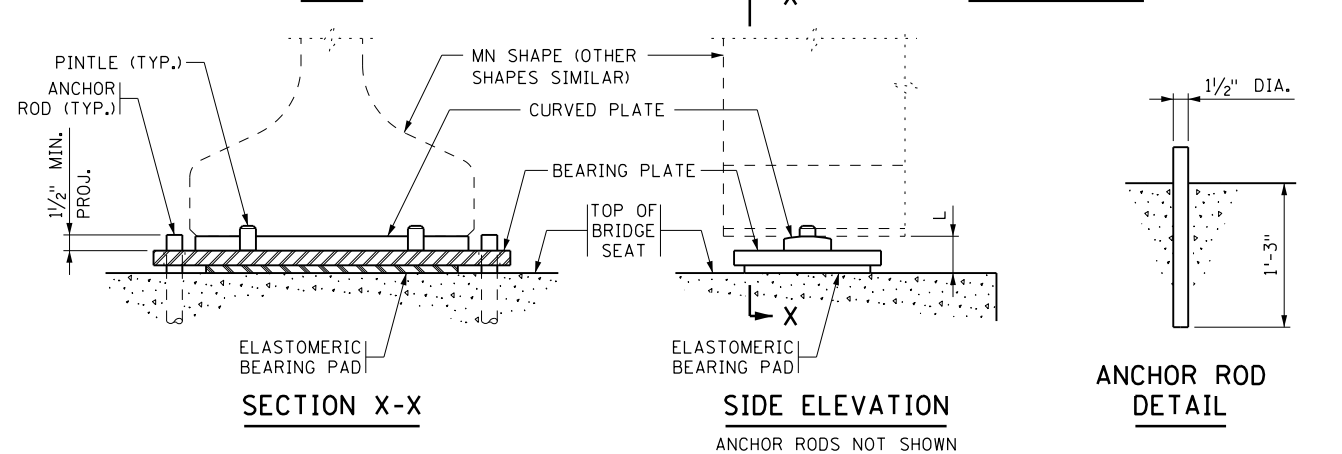
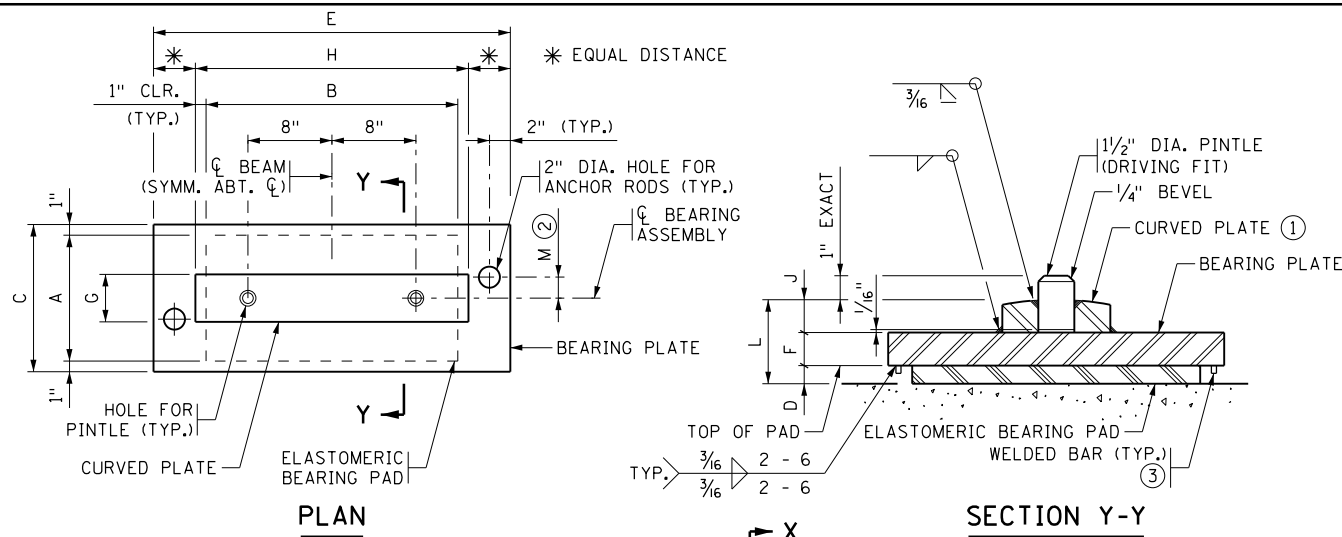
B-DETAILS

DESIGNED	ATP	DRAWN	TMS	APPROVED
CHECKED	RRE	CHECK	RRE	

BRIDGE NO.
02053

S.A.P. 199-010-012
SHEET NO. 86 OF 99 SHEETS

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ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR	BEARING PLATE SIZE					CURVED PLATE SIZE		ANCHOR ROD OFFSET		ASSY. HEIGHT	CURVED PLATE
			A	B	D		C	E	F	G	H	J	+/- 2	M	L		
F1	PIER	MN45	12"	24"	1/2"	8.0	14"	38"	1 1/2"	4 1/2"	26"	1 1/4"		0	3/4"	16"	

NOTES:

PROVIDE ELASTOMERIC MATERIALS AND PAD CONSTRUCTION PER SPEC. 3741.

PROVIDE STEEL PLATES PER SPEC. 3306.

PROVIDE ANCHOR RODS PER SPEC. 3306. GALVANIZE PER SPEC. 3394.

PROVIDE PINTLES PER SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY INCLUDES ALL MATERIAL ON THIS DETAIL.

1 THE MIN. RADIUS IS 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS IS 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

2 "+" DENOTES OFFSET AS SHOWN. "-" DENOTES OFFSET OPPOSITE OF SHOWN.

3 3/8" X 3/8" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = 1/2".

DESIGN DATA:
 MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1 1/2" PINTLES.

APPROVED: SEPTEMBER 22, 2011

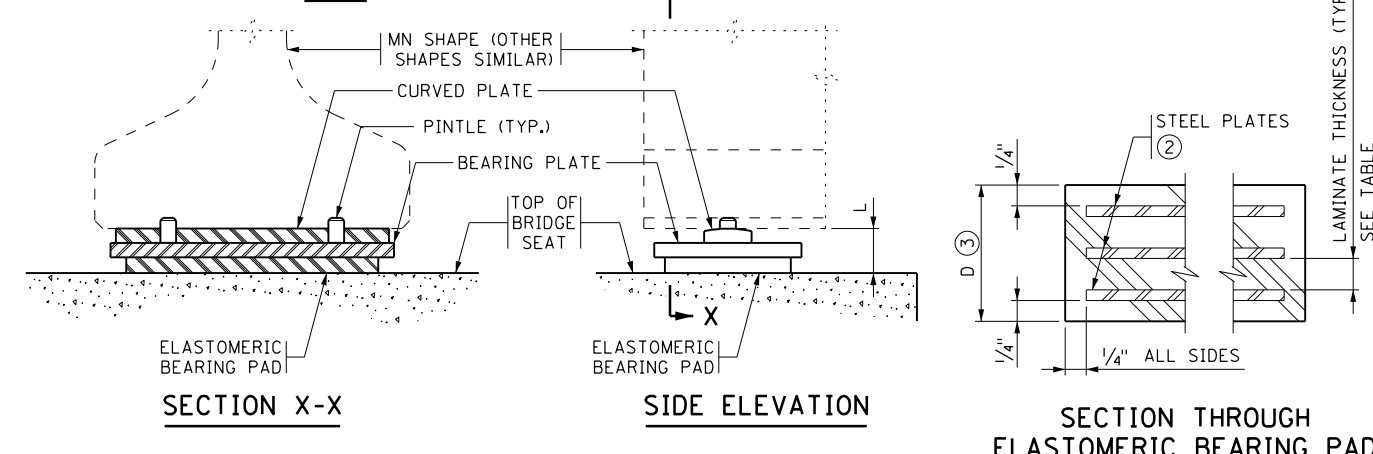
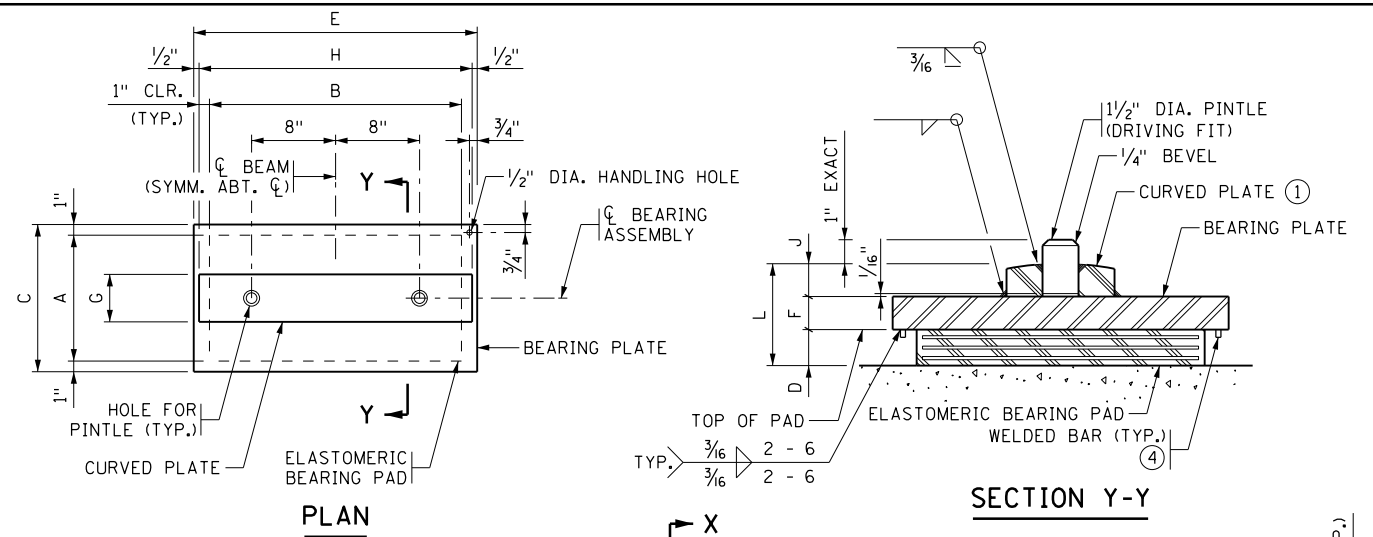
STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION

Nancy Dubenberger
 STATE BRIDGE ENGINEER

CURVED PLATE BEARING ASSEMBLY
 (PRESTRESSED CONCRETE BEAMS)
 (FIXED)

REVISED
 11-06-2013
 11-03-2015
 01-05-2017

DETAIL NO.
B310



ASSEMBLY TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			STEEL PLATES		LAMINATES		SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE		ASSY. HEIGHT	CURVED PLATE	
			A	B	D	NO.	THICK.	NO.	THICK.		C	E	F	G	H			J
E1	PIER	MN45	12"	24"	2 1/2"	4	1/8"	3	1/2"	8.0	14"	27"	1 1/2"	4 1/2"	26"	1 1/4"	5 1/4"	16

NOTES:

PROVIDE ELASTOMERIC MATERIALS AND PAD CONSTRUCTION PER SPEC. 3741.

PROVIDE STEEL PLATES PER SPEC. 3306.

PROVIDE PINTLES PER SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY INCLUDES ALL MATERIAL ON THIS DETAIL.

1 THE MIN. RADIUS IS 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS IS 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

2 DO NOT GALVANIZE THESE PLATES.

3 THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

4 3/8" X 3/8" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = 1/2".

DESIGN DATA:
 MAXIMUM HORIZONTAL LOAD IS 70 KIPS FOR 1 1/2" PINTLES.

APPROVED: SEPTEMBER 22, 2011

STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION

Nancy Dubenberger
 STATE BRIDGE ENGINEER

CURVED PLATE BEARING ASSEMBLY
 (PRESTRESSED CONCRETE BEAMS)
 (EXPANSION)

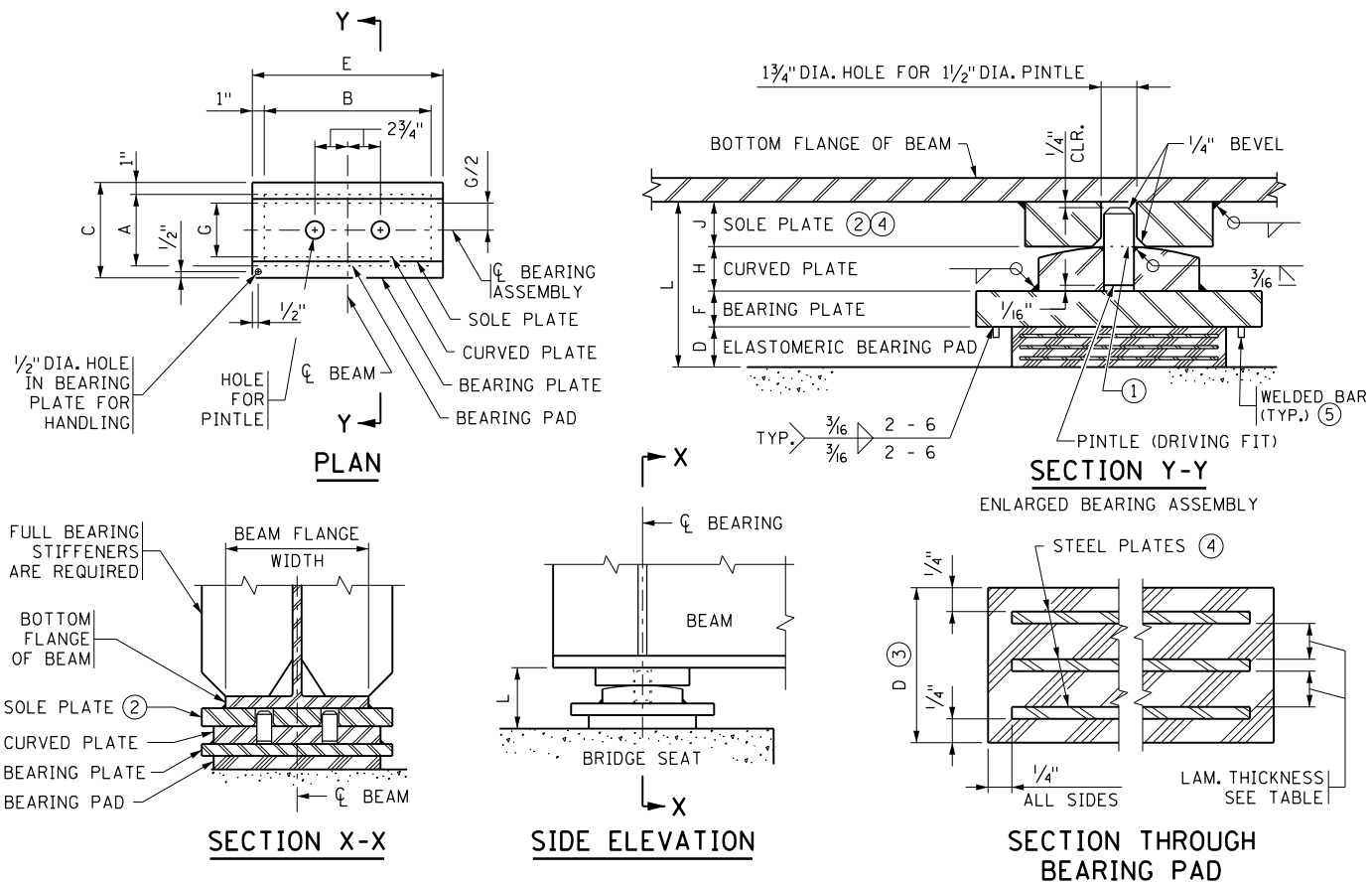
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 11-03-2015

DETAIL NO.
B311

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.	BOLTON & MENK 7533 SUNWOOD DRIVE N.W. RAMSEY, MINNESOTA 55303 Phone: (763) 433-2851 Email: Ramsey@bolton-menk.com www.bolton-menk.com	I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. ENGINEER SIGNATURE RYAN R. EVANS LIC. NO. 53920 DATE	DESIGNED	ATP	DRAWN	TMS	APPROVED	BRIDGE NO. 02053

B-DETAILS



TABLE

ASSEMBLY TYPE	LOCATION	BEAM FLANGE WIDTH	BEARING PAD SIZE			STEEL PLATES		LAMINATES	SHAPE FACTOR	BEARING PLATE SIZE			CURVED PLATE SIZE				SOLE PLATE SIZE			PINTLE DIA.	ASSY. HEIGHT L	
			A	B	D	NO.	THICK.			C	E	F	G	B	H	R	WID.	LEN.	J			
E2	PIER 6	10"	8"	14"	1 1/8"	2	1/8"	1	3/8"	6.8	10"	16"	1 1/2"	4 1/2"	14"	1 1/4"	16"	6"	16"	1 1/4"	1 1/2"	5 1/8"

NOTES:

PROVIDE ELASTOMERIC MATERIALS AND PAD CONSTRUCTION PER SPEC. 3741.

PROVIDE STEEL PLATES PER SPEC. 3306 EXCEPT THE SOLE PLATE. PROVIDE SOLE PLATE WITH THE SAME MATERIAL SPECIFICATION AS THE STEEL BEAMS.

PROVIDE PINTLES PER SPEC. 3309.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY INCLUDES ALL MATERIAL ON THIS DETAIL EXCEPT THE SOLE PLATE. THE SOLE PLATE IS INCLUDED IN THE WEIGHT OF STRUCTURAL STEEL.

① THE MIN. RADIUS IS 16" UNLESS OTHERWISE SPECIFIED IN THE TABLE. THE MAX. RADIUS IS 24". FINISH TO 250 MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.

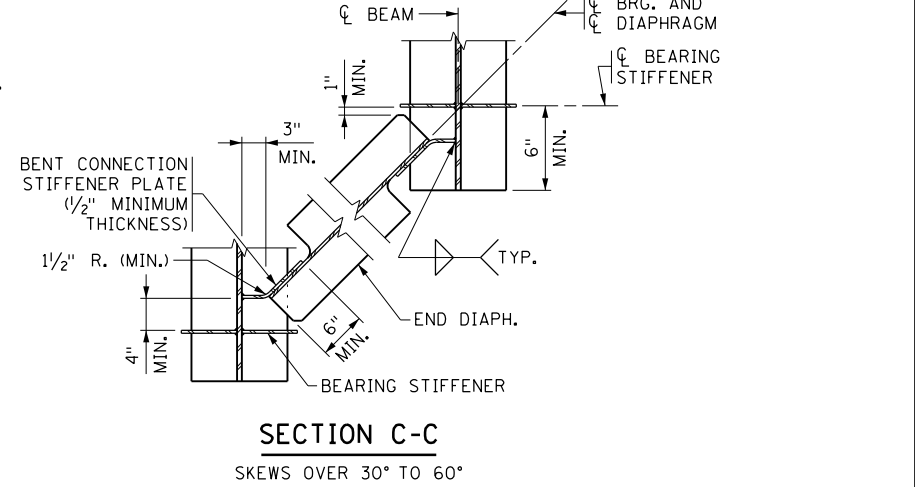
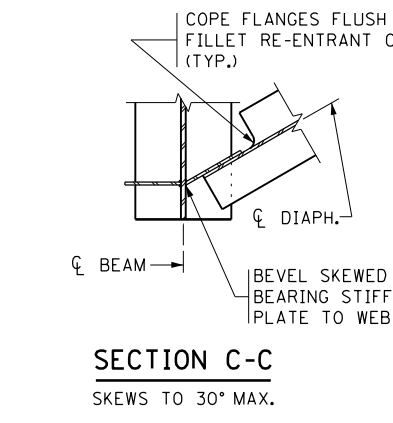
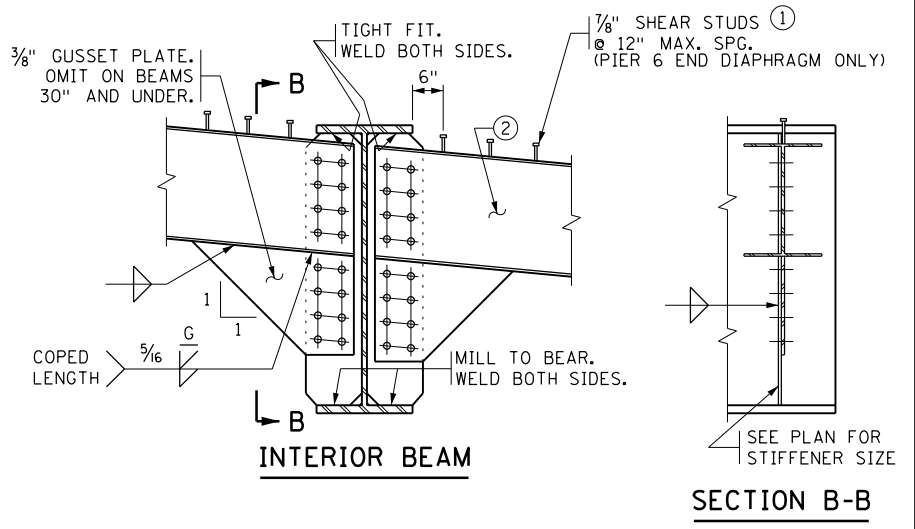
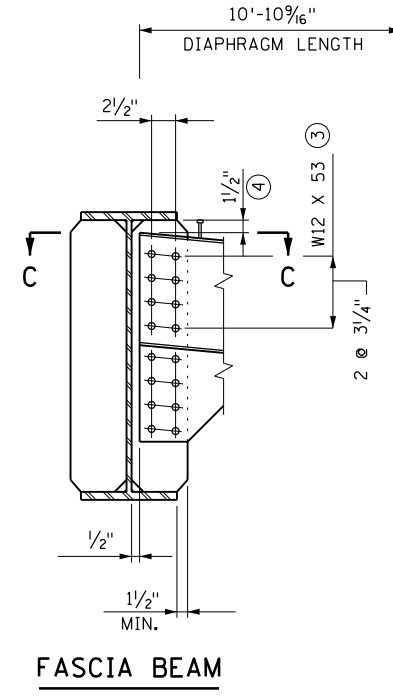
② WHEN THE SOLE PLATE IS TAPERED, DIMENSIONS "J" AND "L" ARE THICKNESS OF SOLE PLATE AND BEARING ASSEMBLY AT CENTERLINE OF BEARING.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

④ DO NOT GALVANIZE THIS PLATE.

⑤ 3/8" X 3/8" BAR INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. BAR LENGTH IS 2" LESS THAN ADJACENT PAD DIMENSION, CENTERED ON PAD. CENTERLINE OF BAR TO EDGE OF PAD DIMENSION = 1/2".

DESIGN DATA:
 MAXIMUM HORIZONTAL LOAD IS 70 KIPS. MINIMUM SOLE PLATE THICKNESS IS 1/4".



SECTION C-C
 SKEWS TO 30° MAX.

SECTION C-C
 SKEWS OVER 30° TO 60°

MODIFIED TO INDICATE DETAILS ARE APPLICABLE TO ALL DIAPHRAGMS IN SPAN 7.
 SHEAR STUDS AT PIER 6 END DIAPHRAGM ONLY.

NOTES:

PROVIDE STRUCTURAL STEEL PER SPEC. 3309.

① USE SAME SHEAR STUD HEIGHT AS USED ON THE BEAMS.

② SEE FRAMING PLAN FOR SIZE OF DIAPHRAGM.

③ FOR PLATE GIRDERS, PROVIDE END DIAPHRAGMS AT LEAST 1/2 THE BEAM HEIGHT.

④ DIAPHRAGMS MAY BE PLACED LEVEL, PROVIDED MINIMUM CLEARANCES ARE MET.

⑤ MILL TO BEAR FOR BEARING STIFFENERS.

APPROVED: NOVEMBER 22, 2002
 STATE BRIDGE ENGINEER

STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
CURVED PLATE BEARING ASSEMBLY
 (STEEL BEAMS)
 (EXPANSION)

REVISED
 08-10-2006
 12-17-2008
 11-03-2015
 DETAIL NO.
B355

APPROVED: MARCH 26, 2009
 STATE BRIDGE ENGINEER

STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
BOLTED DIAPHRAGMS
 (FOR STEEL BEAMS)

REVISED
 01-05-2017
 DETAIL NO.
B402 MODIFIED

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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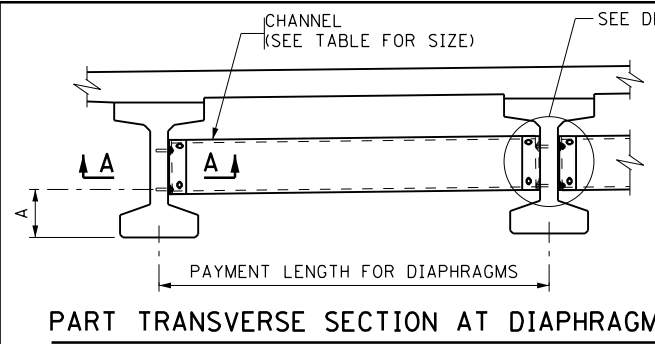
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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

B-DETAILS

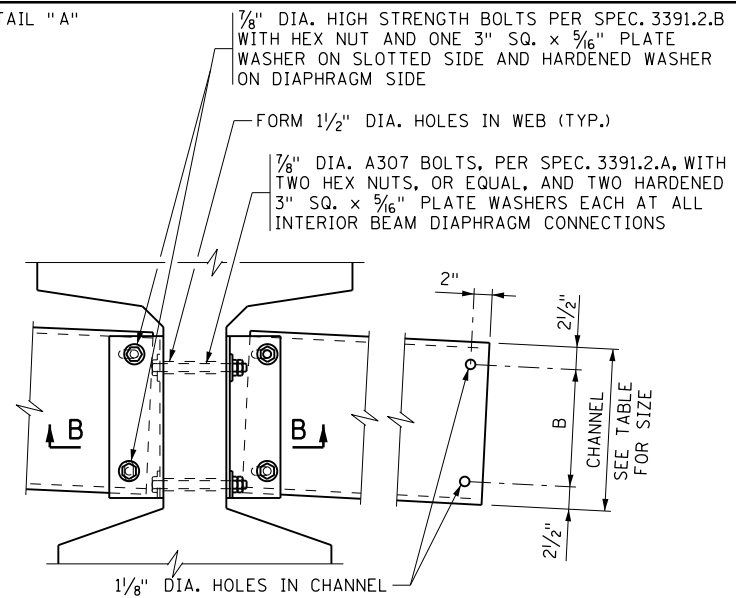
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 CHECKED RRE
 APPROVED
S.A.P. 199-010-012
 SHEET NO. 88 OF 99 SHEETS

BRIDGE NO.
 02053

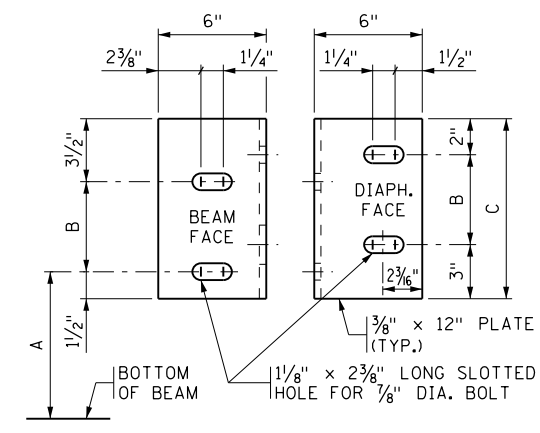
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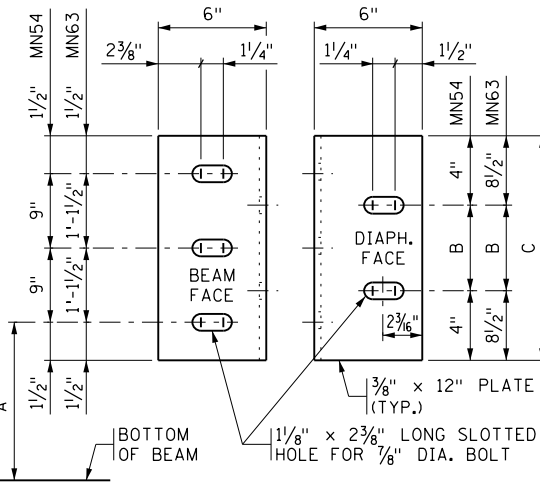
PART TRANSVERSE SECTION AT DIAPHRAGM



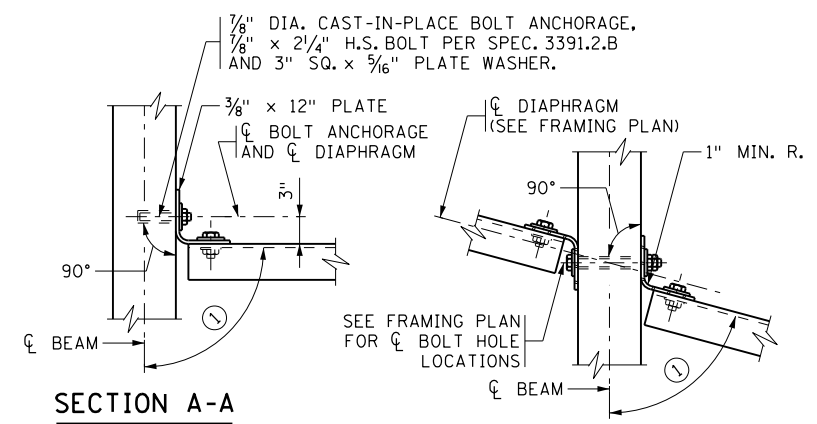
DETAIL "A"
INTERIOR BEAM WITH CONTINUOUS LINE OF DIAPHRAGMS



DIAPHRAGM CONNECTION
FOR 36M, AND MN45 BEAMS



DIAPHRAGM CONNECTION
FOR MN54 AND MN63 BEAMS

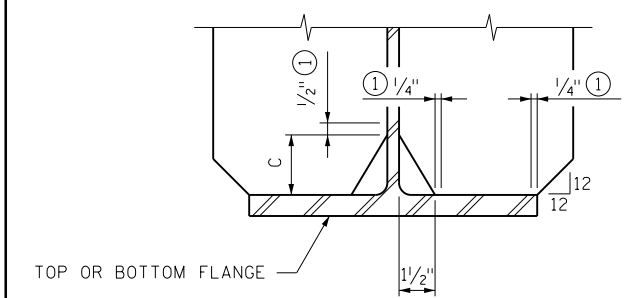


SECTION A-A
TYPICAL SECTION AT ALL FASCIA BEAMS

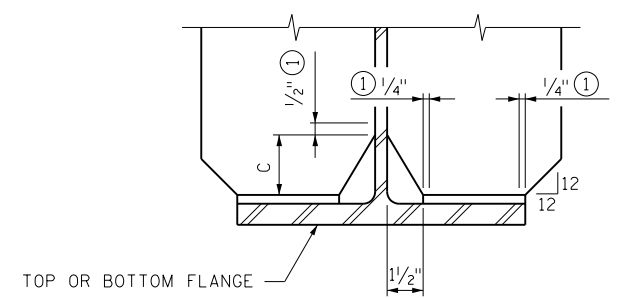
SECTION B-B
TYPICAL SECTION AT INTERIOR BEAM WITH CONTINUOUS OR STAGGERED INTERMEDIATE DIAPHRAGMS

NOTES:
 PROVIDE STEEL PER SPEC. 3306.
 INSTALL PER SPEC. 2405.3.K.
 TORQUE ALL BOLTS, INCLUDING ANCHOR BOLTS TO 80 FT.-LBS.
 SHOP BEND THE LEG OF THE 12" PLATE TO CONFORM TO THE DIAPHRAGM. A 3/8" x 6" x 6" ANGLE MAY BE USED FOR DIAPHRAGMS PERPENDICULAR TO BEAMS.
 INCLUDE ALL STRUCTURAL STEEL SHOWN ON THIS DETAIL, INCLUDING BOLTS AND WASHERS, IN UNIT PRICE BID FOR DIAPHRAGMS FOR PRESTRESSED BEAMS.
 BENT PLATES MAY BE USED IN PLACE OF CHANNELS IF THE BENT PLATES HAVE THE SAME HEIGHT AS THE CHANNELS THEY REPLACE, ARE 5/16" IN THICKNESS, AND HAVE LEGS 5" LONG.
 GALVANIZE STEEL PLATES AND SHAPES PER SPEC. 3394.
 GALVANIZE BOLTS, NUTS AND WASHERS PER SPEC. 3392.
 (1) FOR SKEW ANGLES UNDER 20°, USE 90° LESS THE SKEW ANGLE. FOR SKEW ANGLES OVER 20°, USE 90°.

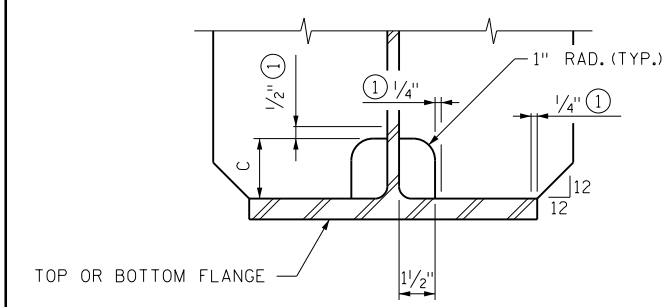
BEAM HEIGHT	DISTANCE			CHANNEL SIZE
	A	B	C	
36M	1'-3"	7"	1'-0"	C12x20.7
MN45	1'-7 3/4"	7"	1'-0"	C12x20.7
MN54	1'-7 3/4"	1'-1"	1'-9"	MC18x42.7
MN63	1'-7 3/4"	1'-1"	2'-6"	MC18x42.7



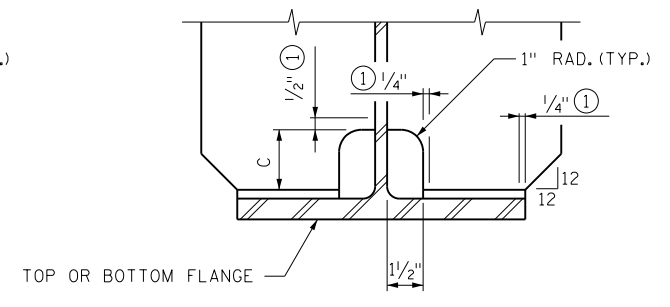
STIFFENER TO FLANGE CONNECTION
OPTION 1



STIFFENER TO TAB PLATE CONNECTION
OPTION 1

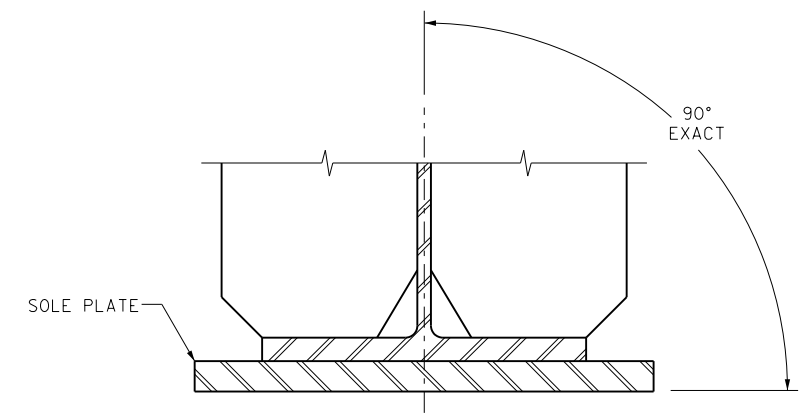


STIFFENER TO FLANGE CONNECTION
OPTION 2



STIFFENER TO TAB PLATE CONNECTION
OPTION 2

STIFFENER COPE DETAIL
PLATE GIRDER OR ROLLED BEAM



SOLE PLATE AT BEARING

WEB THICKNESS	DIMENSION C
1/2", 9/16", 5/8"	2 1/2"
11/16", 3/4"	3"

NOTES:
 (1) DO NOT WELD IN THIS AREA. SEE B410 FOR CONNECTION DETAILS.

APPROVED: NOVEMBER 03, 2015
 STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
STEEL INTERMEDIATE DIAPHRAGM
 (FOR 36M, MN45 - MN63 PRESTRESSED CONCRETE BEAMS)

REVISION 01-05-2017
 DETAIL NO. B403

APPROVED: OCTOBER 22, 2008
 STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
STIFFENER DETAILS
 (FOR STEEL BEAMS)

REVISION
 DETAIL NO. B411

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

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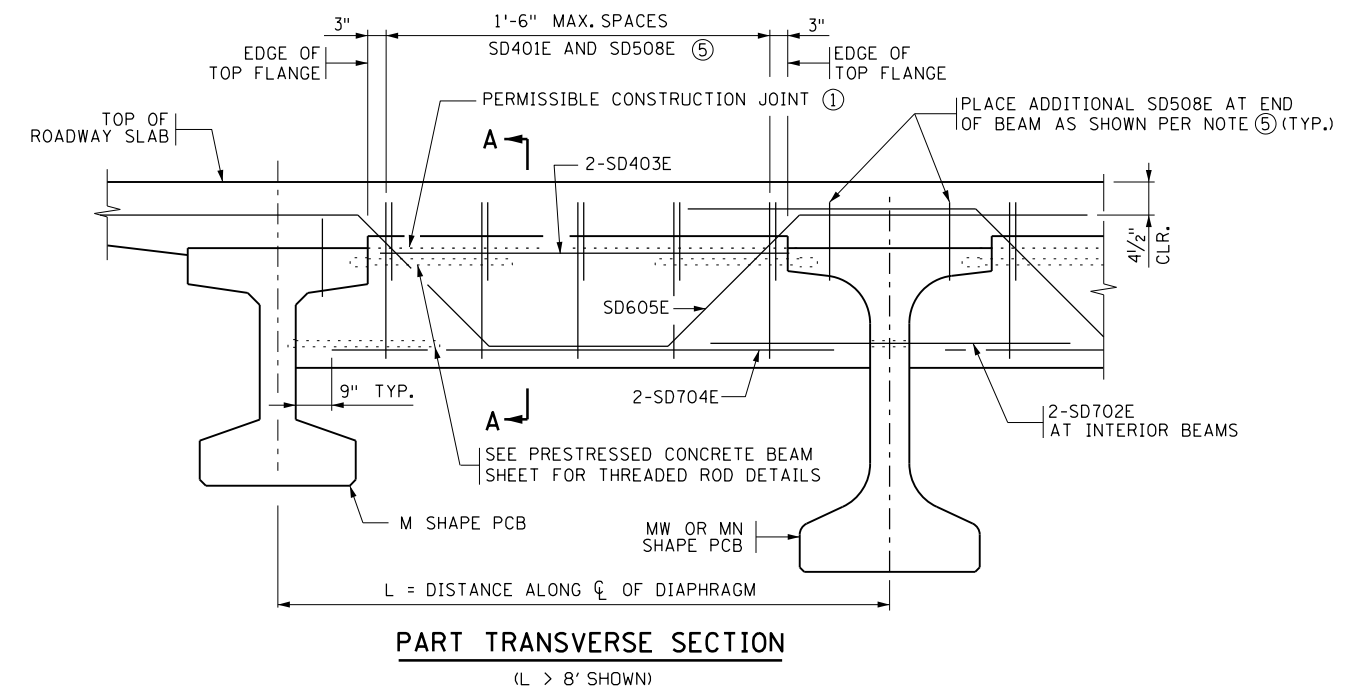
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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

DESIGNED ATP
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 DRAWN TMS
 CHECKED RRE
 APPROVED
S.A.P. 199-010-012
B-DETAILS
 SHEET NO. 89 OF 99 SHEETS

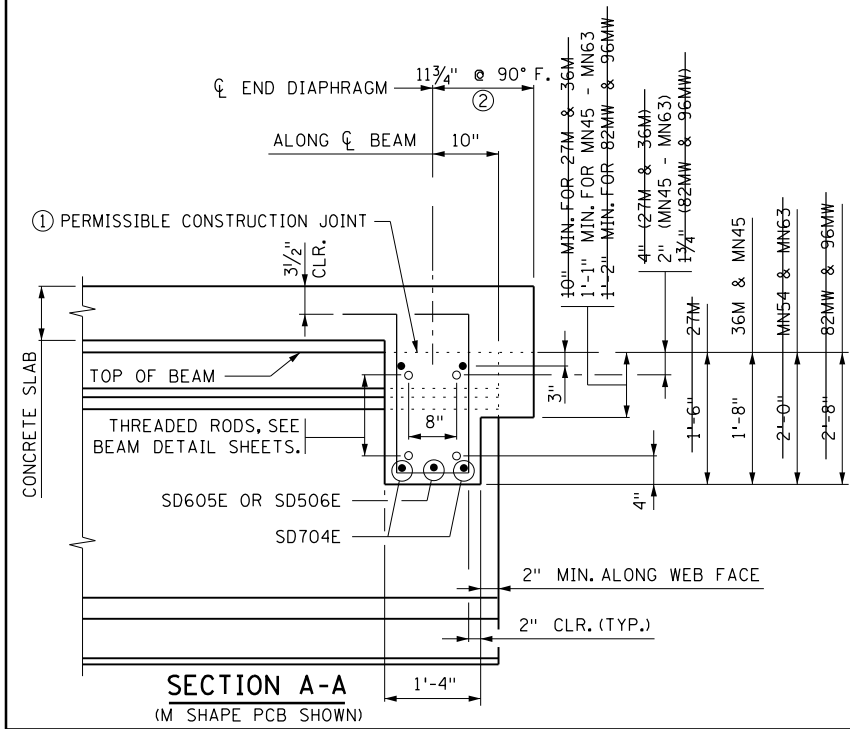
BRIDGE NO. 02053

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REMOVED NOTE 3
 REMOVED NOTE 4 & 5 AND NON-APPLICABLE DETAILS
 BAR LENGTHS FOR 7" DECK THICKNESS
 BILL OF REINFORCEMENT ON SUPERSTRUCTURE DETAILS AND REINFORCEMENT SHEETS



- NOTES:**
- SEE SHEET 70 FOR BILL OF REINFORCEMENT.
 - CONCRETE FOR END DIAPHRAGMS SHALL BE THE SAME MIX AS USED IN DECK.
 - QUANTITIES FOR END DIAPHRAGM CONCRETE AND REINFORCEMENT SHOWN ON THIS DETAIL SHALL BE LISTED IN SUPERSTRUCTURE QUANTITIES.
 - THREADED RODS ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.
 - ① USE OF CONSTRUCTION JOINT REQUIRES CLEARANCE FOR EXPANSION DEVICE. WHEN CONSTRUCTION JOINT IS USED AT THIS LOCATION, DIAPHRAGM FALSEWORK SHALL REMAIN INPLACE UNTIL COMPLETION OF SLAB CURING PERIOD.
 - ② PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.
 - ⑤ ADD SD507E AND SD508E ONLY IF NO. OF BARS AND LENGTHS ARE INCLUDED IN BILL OF REINFORCEMENT. SPACE SD508E AT 1'-6" MAX. FOR ENTIRE LENGTH OF DIAPHRAGM. REFER TO "PART TRANSVERSE SECTION" ABOVE.

APPROVED: SEPTEMBER 22, 2011  STATE BRIDGE ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CONCRETE END DIAPHRAGM (27M & 36M, MN45 - MN63, 82MW & 96MW PRESTRESSED CONCRETE BEAMS) (PARAPET ABUTMENT)	REVISED 04-17-2013 11-06-2013	DETAIL NO. B814 MODIFIED
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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



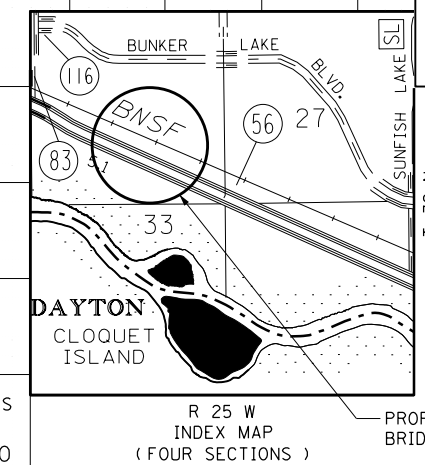
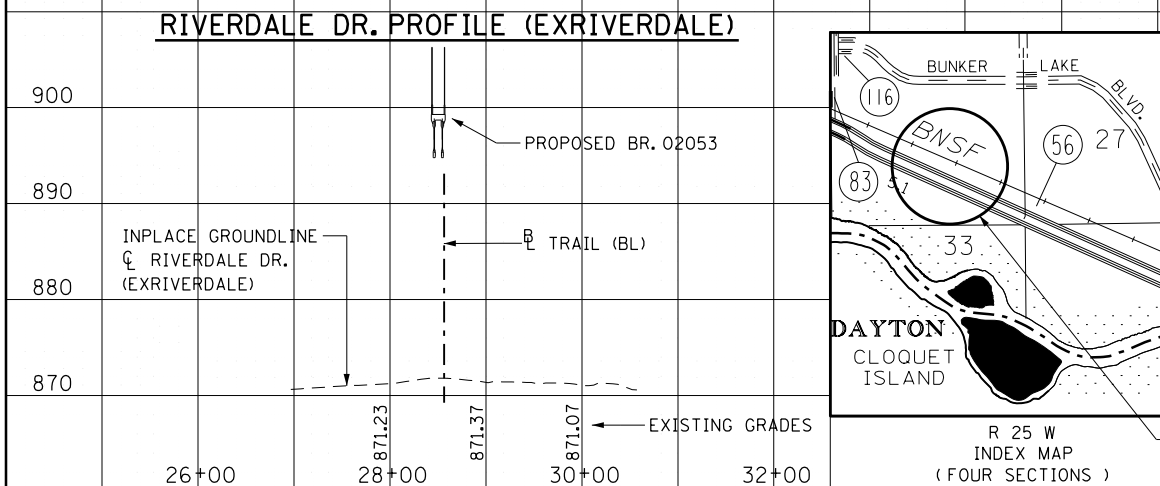
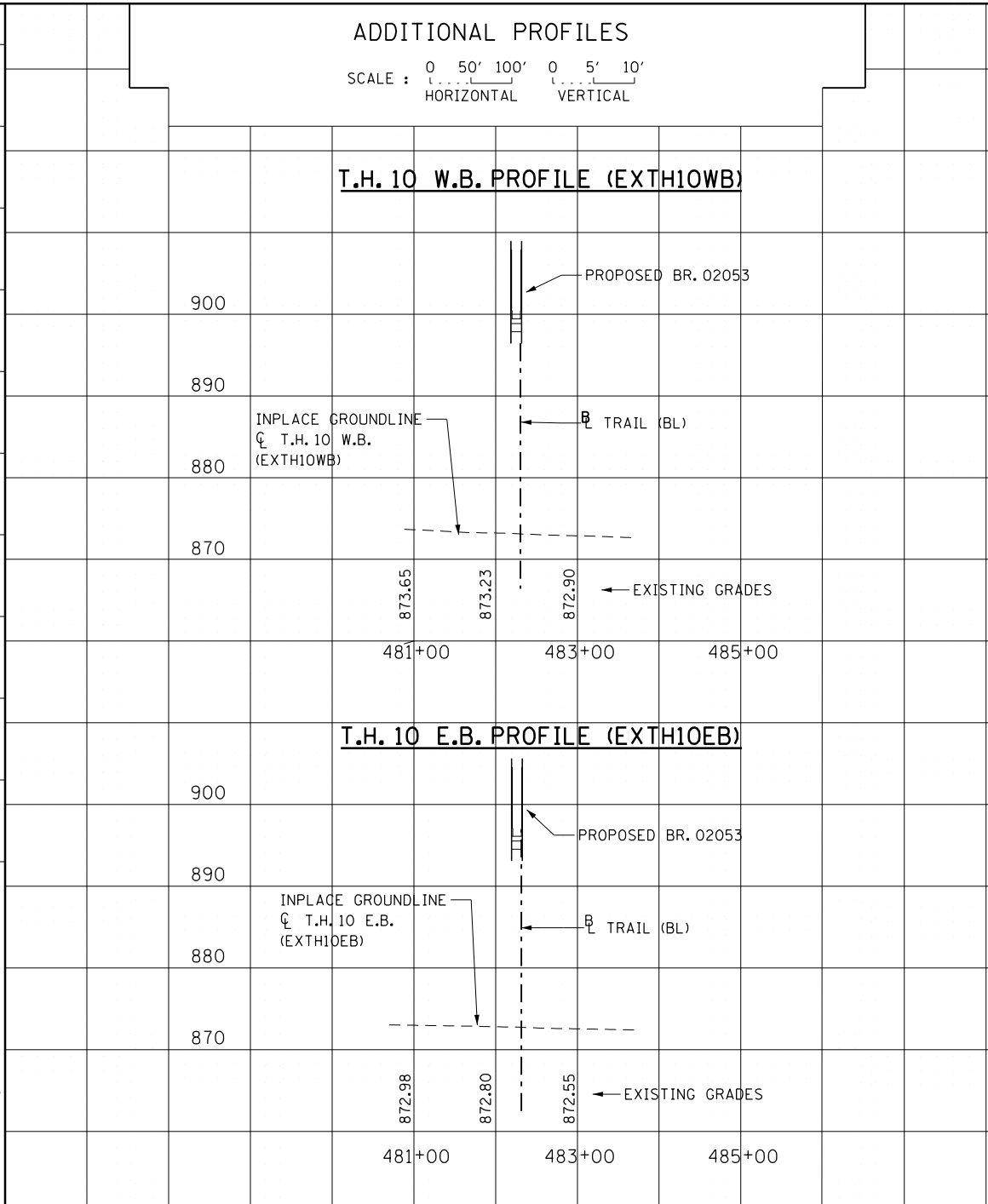
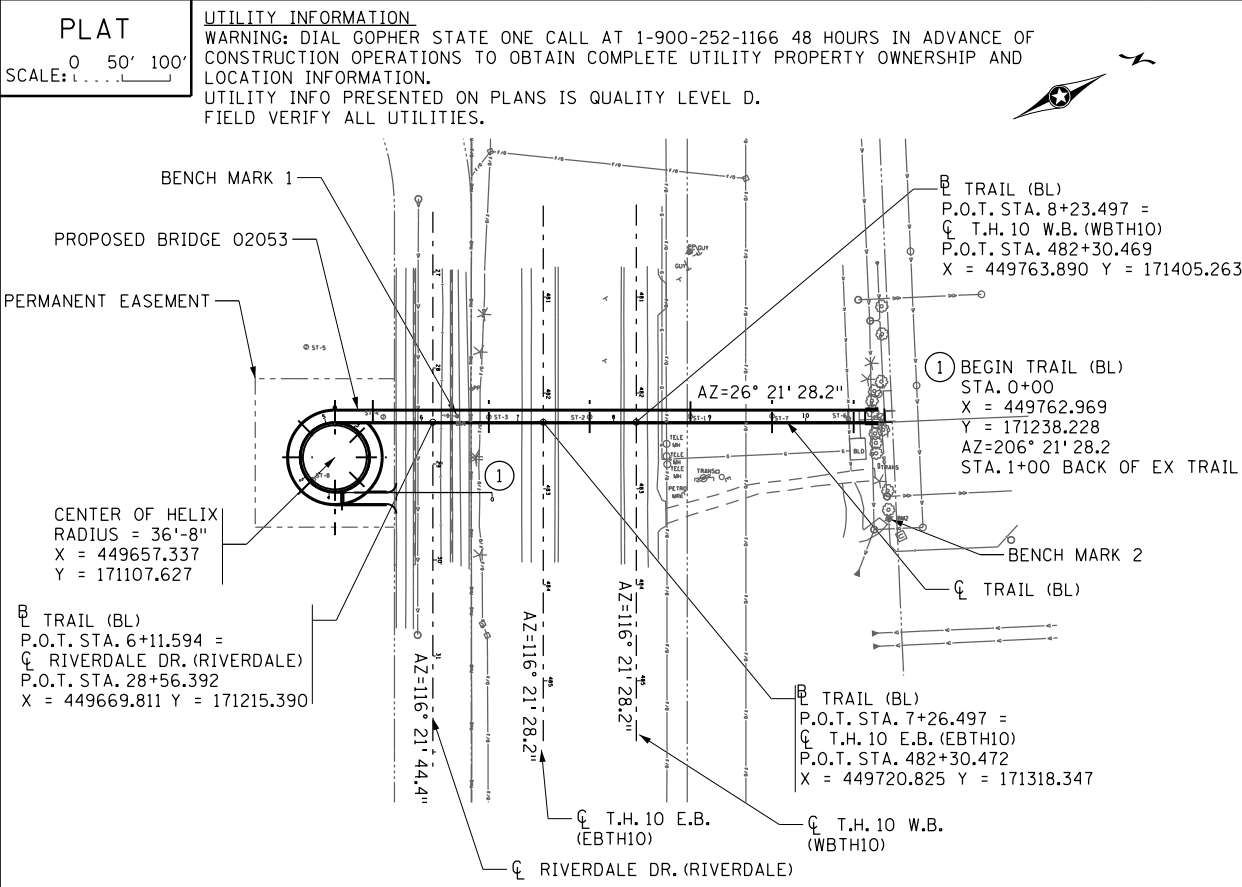
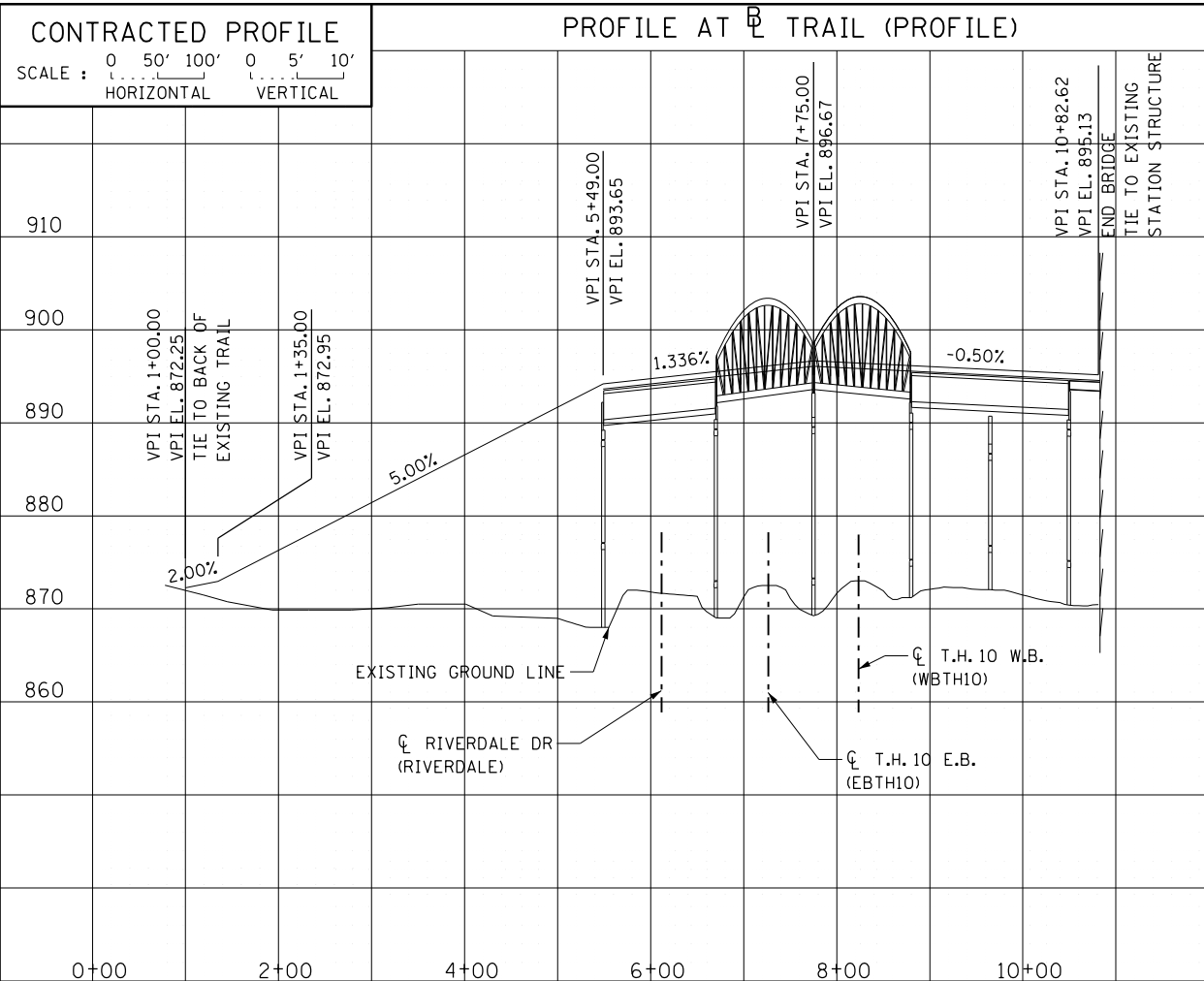
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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

B-DETAILS

DESIGNED	ATP	DRAWN	TMS	APPROVED
CHECKED	RRE	CHECK	RRE	
S.A.P. 199-010-012				
SHEET NO. 90 OF 99 SHEETS				

BRIDGE NO.
 02053



LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): GIVEN LOCATION, TYPE, LENGTH, HEIGHT ABOVE HIGH WATER, CROSS-SECTIONAL AREA ETC.
- APPARENT HIGHWATER ELEVATION OBTAINED FROM:
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION
DATE: XX-XX-XX

STREAM OR DITCH DESIGNATION: XXX
 DRAINAGE AREA: XXX SQ. MI.
 MAX. FLOOD ON RECORD: XXX C.F.S. (XX-XX-XX)
 MAXIMUM OBSERVED HIGHWATER ELEVATION: XXX.X FT.
 DESIGN FLOOD (XX YR. FREQ.): XXX C.F.S.
 HEADWATER ELEVATION: XXX.X FT.
 DESIGN MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.
 TOTAL STAGE INCREASE: XX FT.
 LOW MEMBER AT OR ABOVE ELEVATION: XXX.X FT.
 WATERWAY AREA REQUIRED BELOW ELEV. XXX.X = XXX SQ. FT. AT RIGHT ANGLES TO CHANNEL
 BASIC FLOOD (100 YR. FREQ.): XXXX C.F.S.
 HEADWATER ELEVATION: XXX.X FT.
 TOTAL STAGE INCREASE: X.X FT.
 MEAN VELOCITY THROUGH STRUCTURE: X.X F.P.S.
 FLOWLINE ELEVATION: XXX.X FT. SKEW ANGLE: XX
 ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. XXX.X (500 OR 0T YR. FREQ.)

SCOUR CONFIRMATION RECOMMENDATION
DATE: XX-XX-XX

TOTAL SCOUR AT PIER EL. XXX.XX (500 OR 0T YR. FREQ.)
 SCOUR CODE: OBTAIN FROM HYDRAULIC ENGINEER

BRIDGE SURVEY SHEETS MADE FROM:
 FILES:
 JOB053.GPK, CBRO2053 TOPO.DGN, CBRO2053 AL.DGN, CBRO2053 PR.DGN, CBRO2053 FINAL BR PLAN.DGN

GEODETIC SYSTEM - HYATT MONUMENT (GSID STATION #808), ELEVATION 878.971 (N.A.V.D. 88 ADJ.)

BENCH MARK 1 ELEVATION 874.273 (N.A.V.D. 88 ADJ.)
 TOP NUT OF HYDRANT AT STATION 6+37, 6.0' LEFT
 BENCH MARK 2 ELEVATION 871.43 (N.A.V.D. 88 ADJ.)
 TOP NUT OF HYDRANT AT STATION 10+86, 100' RIGHT

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

MISSISSIPPI SKYWAY PEDESTRIAN BRIDGE OVER T.H. 10 FROM RIVERDALE DRIVE TO THE NORTH STAR STATION

SEC 28 T 32 N R 25 W
 COUNTY: ANOKA
 CITY OF RAMSEY

DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

BOLTON & MENK

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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

BRIDGE SURVEY PLAN & PROFILE

DESIGNED	CHKD.	DATE	APP'D.	DATE

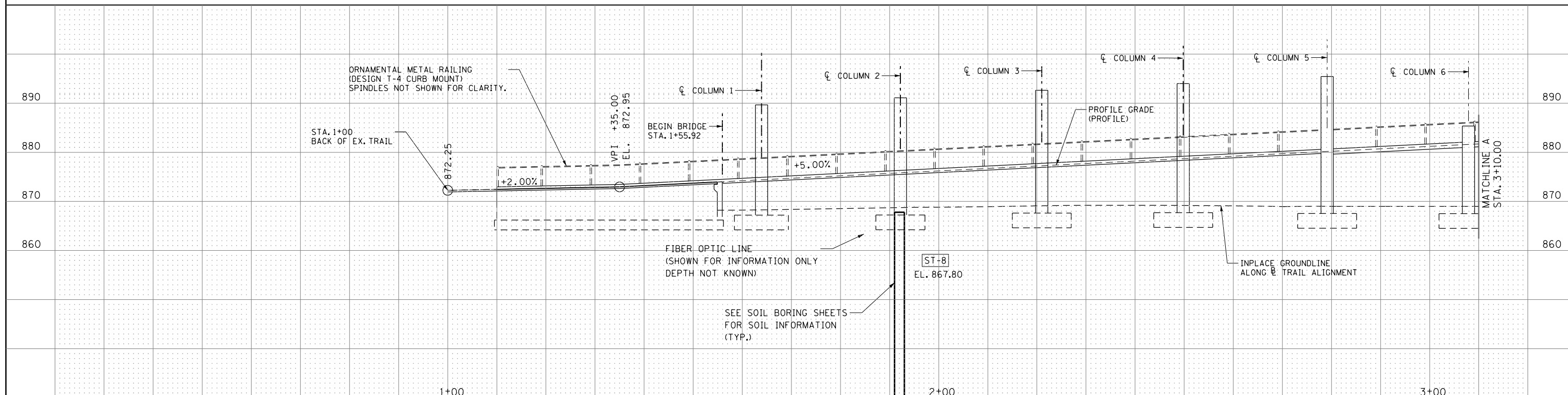
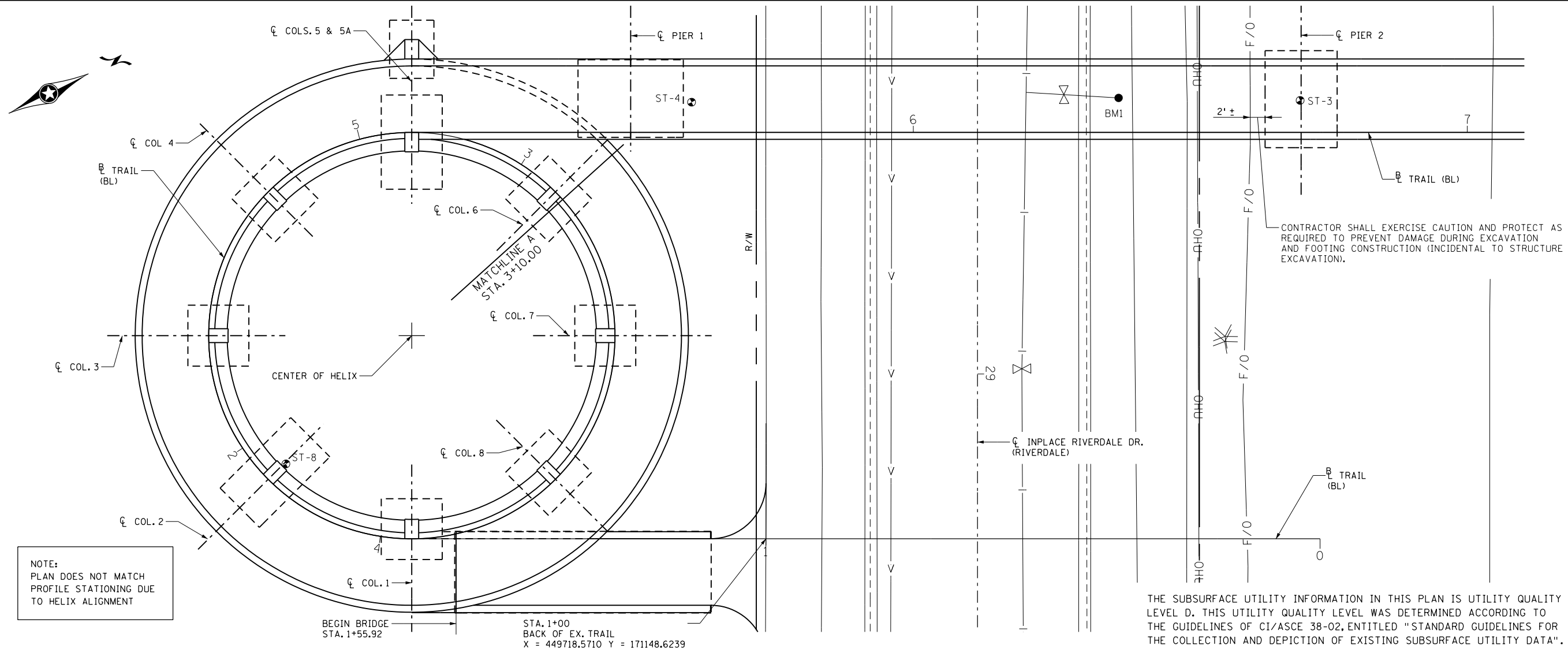
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SHEET NO. 92 OF 99 SHEETS

BRIDGE NO.
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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

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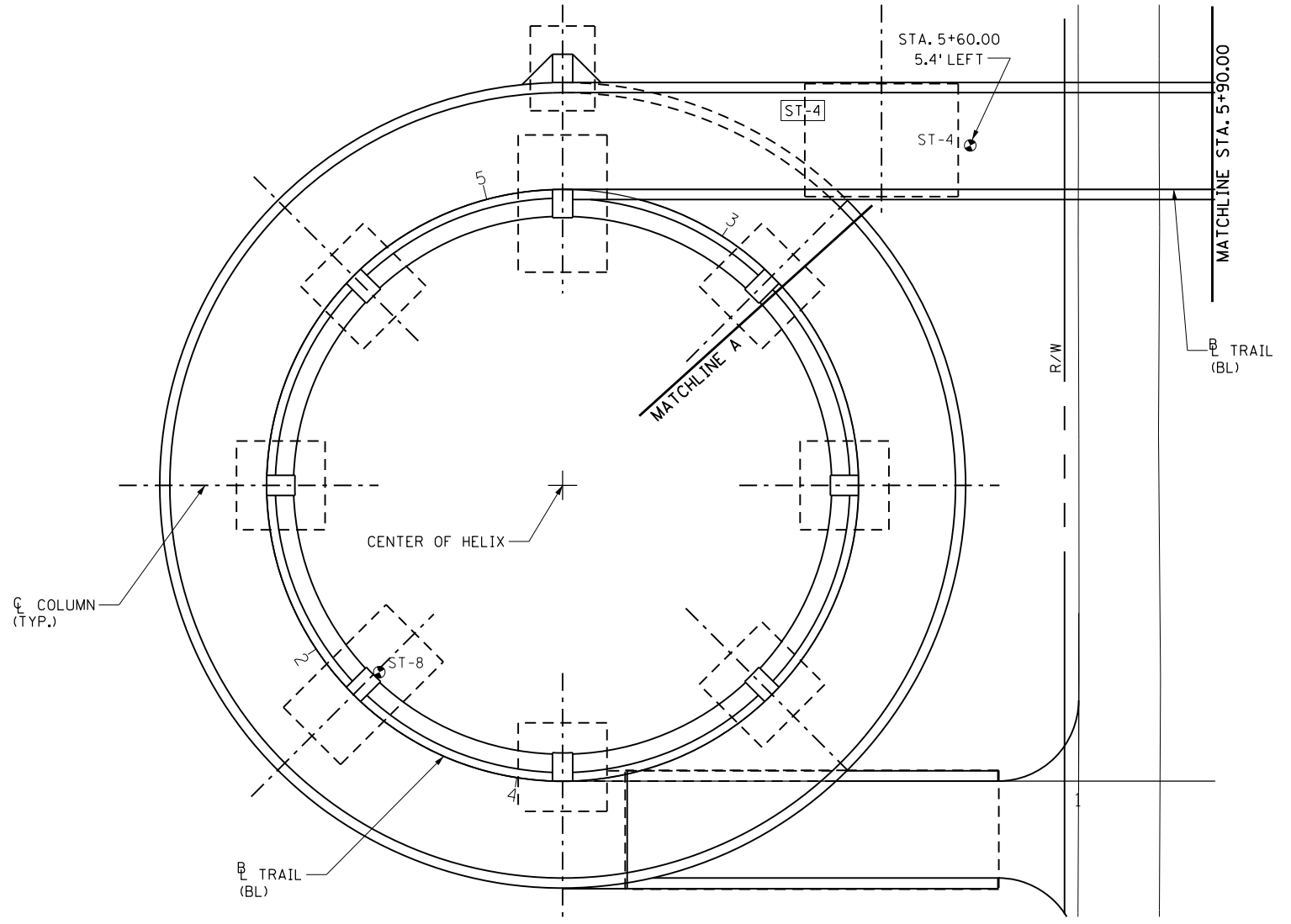
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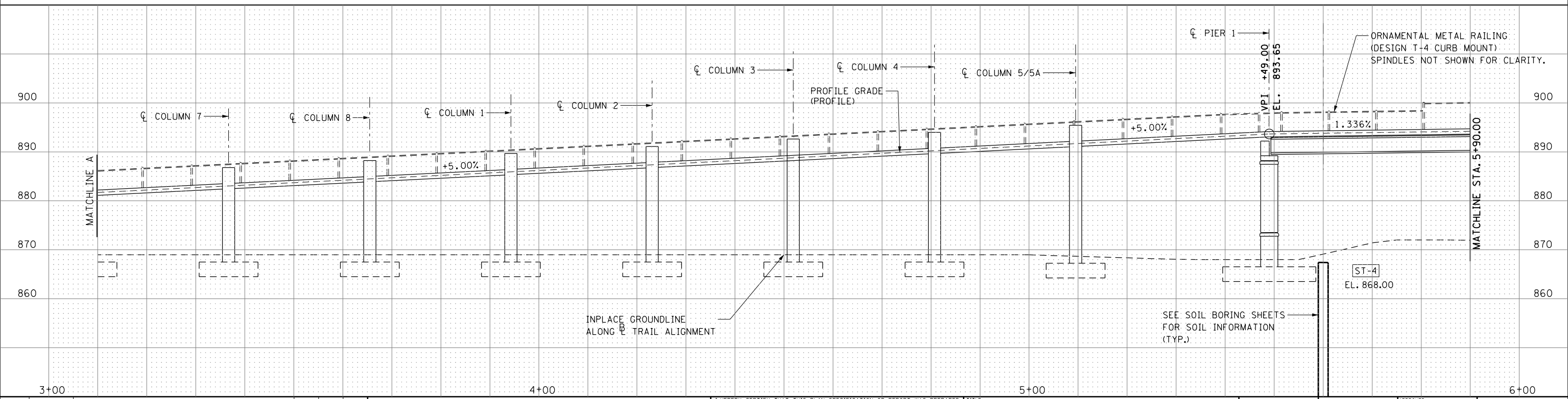
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BRIDGE NO.
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THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".



DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

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ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920

TITLE: BRIDGE SURVEY PLAN & PROFILE

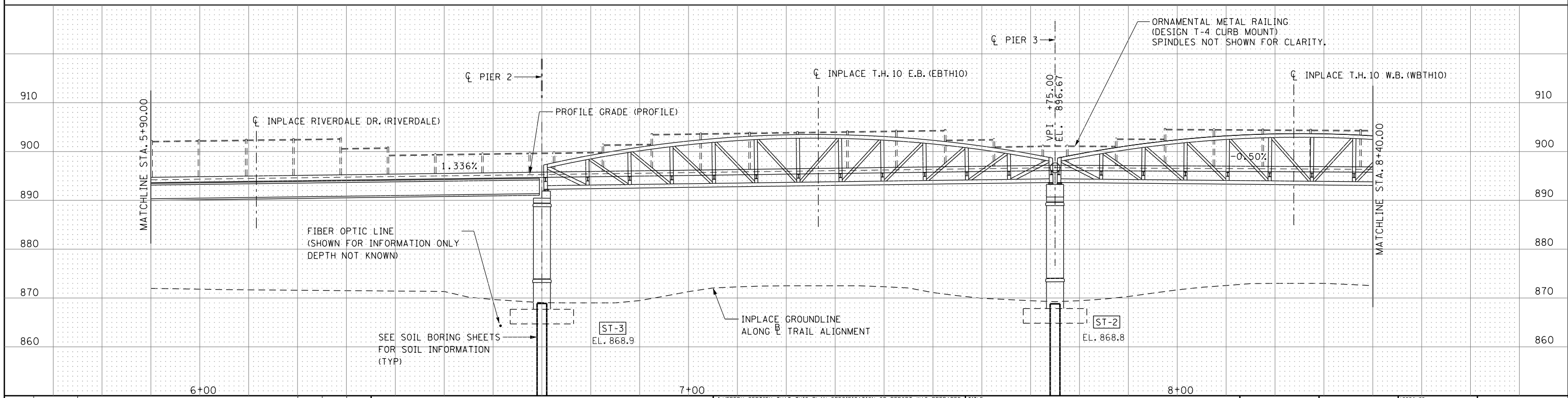
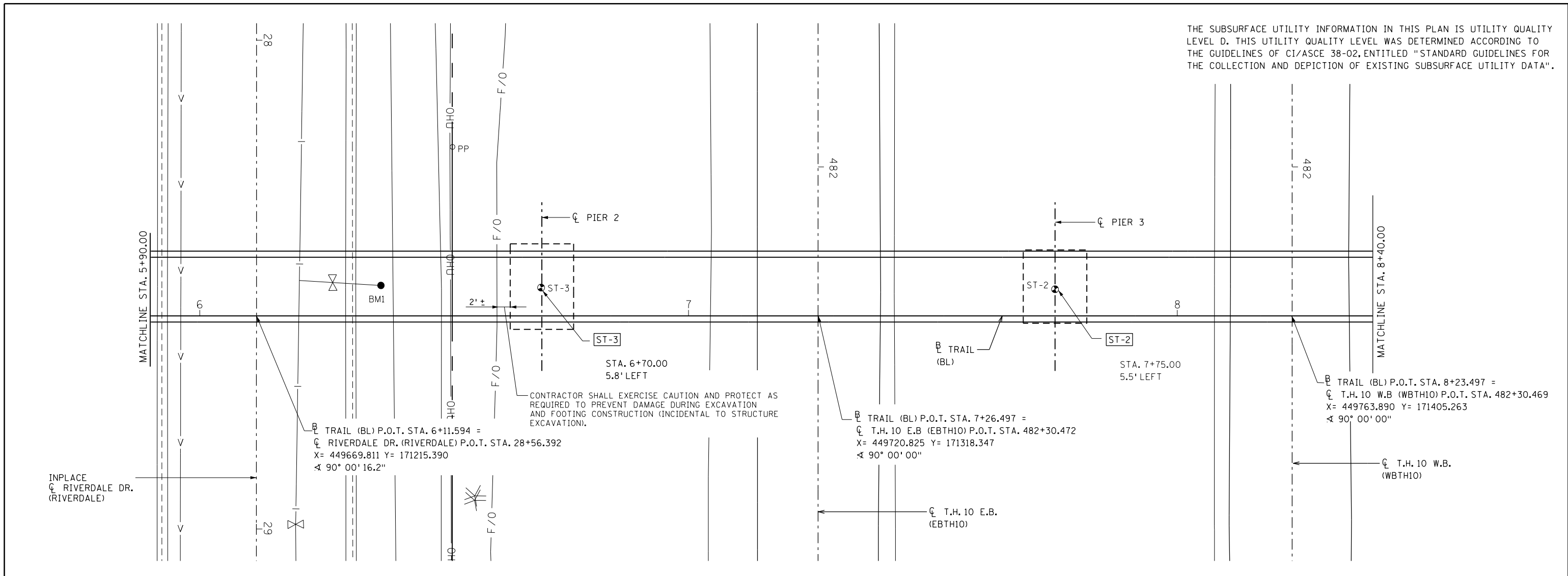
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CHECKED	ATP	CHECK	RRE	

S.A.P. 199-010-012

SHEET NO. 94 OF 99 SHEETS

BRIDGE NO. 02053

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

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ENGINEER SIGNATURE
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 LIC. NO. 53920 DATE _____

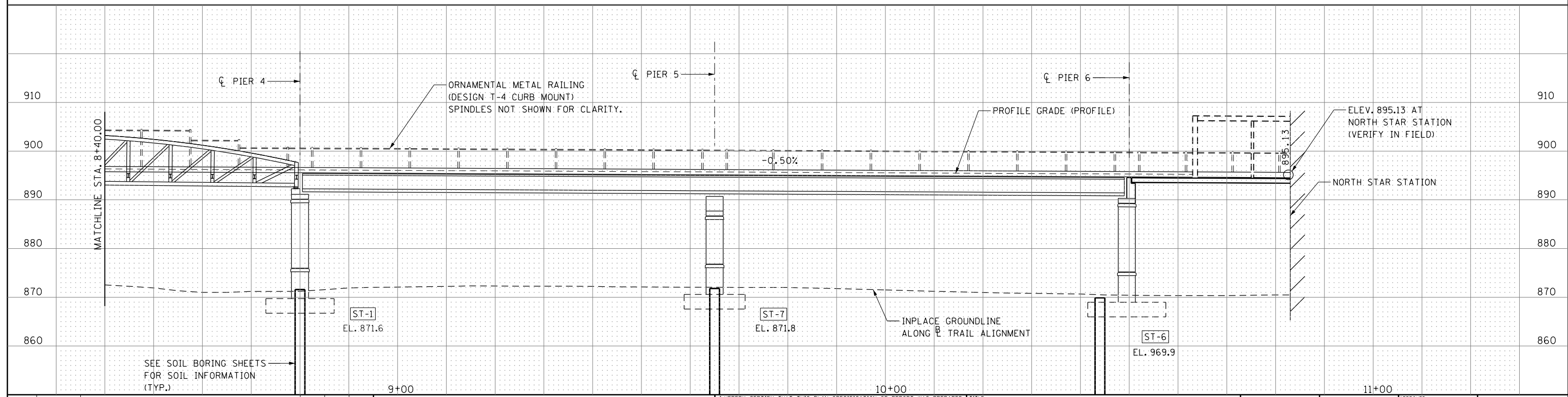
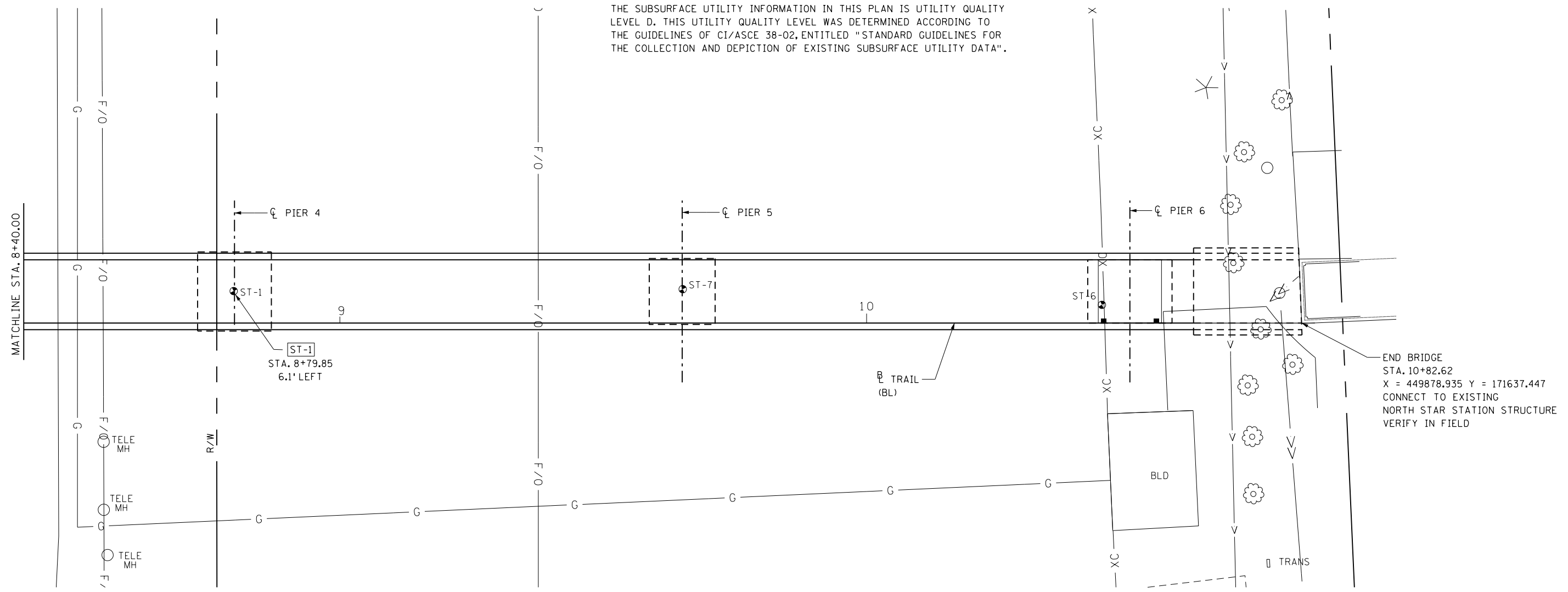
BRIDGE SURVEY PLAN & PROFILE

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	

S.A.P. 199-010-012
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BRIDGE NO.
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 LIC. NO. 53920 DATE _____

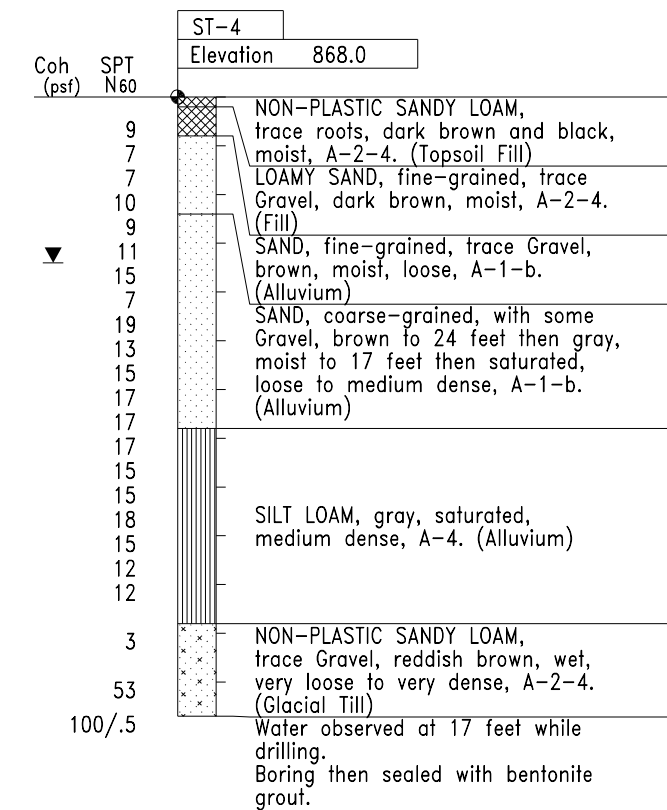
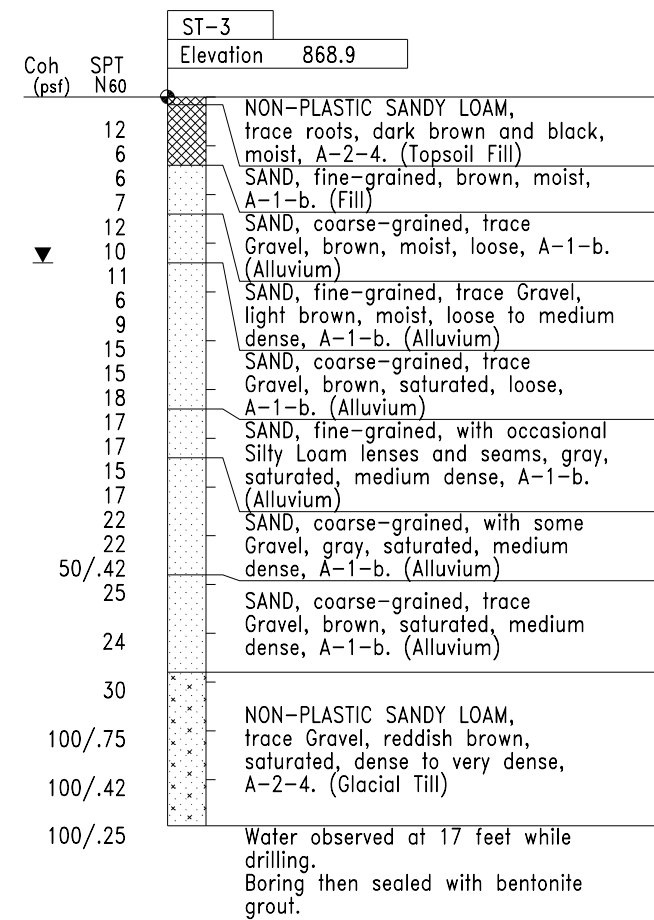
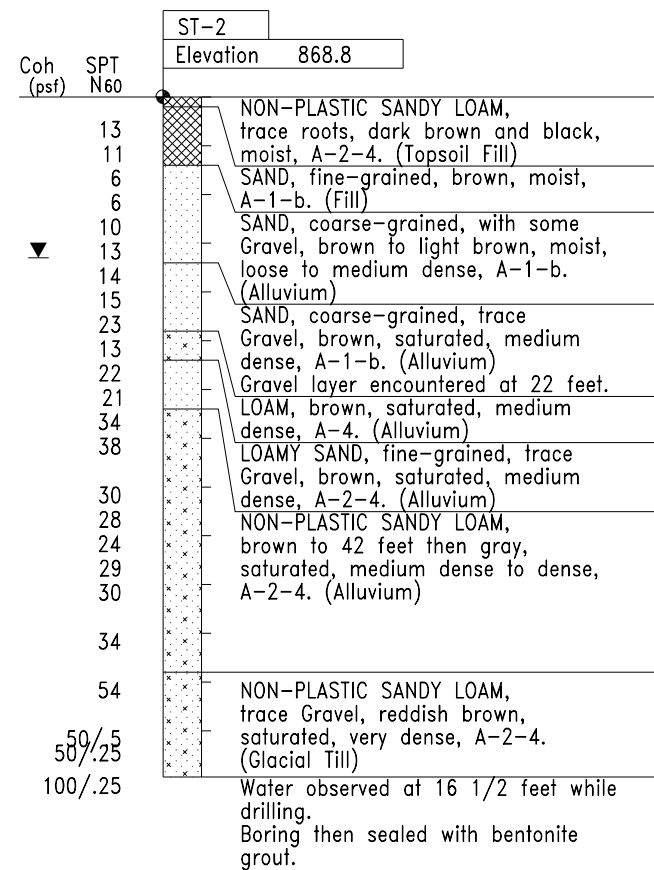
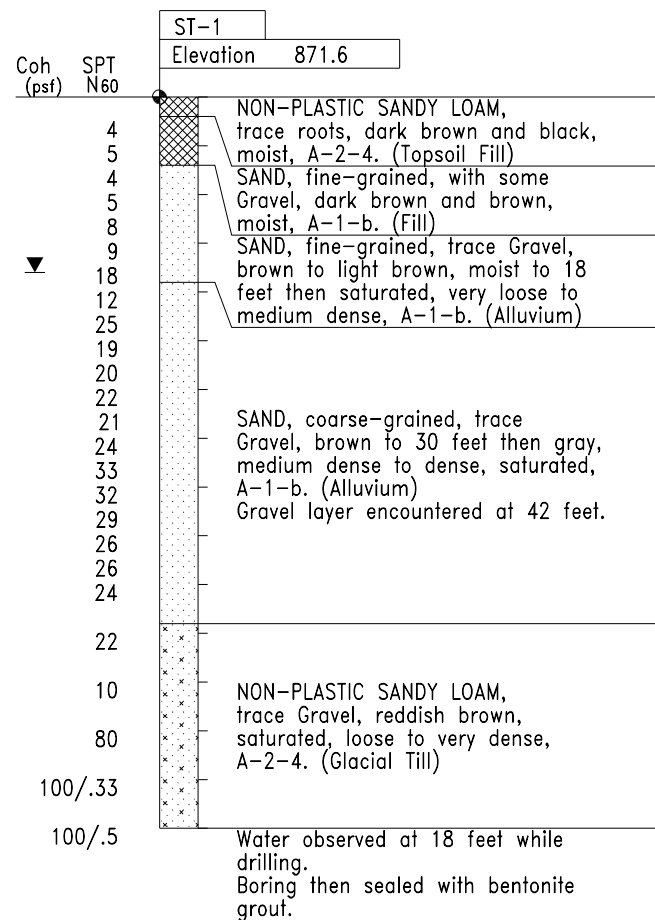
BRIDGE SURVEY PLAN & PROFILE
 TITLE:

DESIGNED	CHKD	APP'D.	DRAWN	CHKD	APP'D.
RRE	ATP		JMR		RRE

S.A.P. 199-010-012
 SHEET NO. 96 OF 99 SHEETS

BRIDGE NO.
 02053

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



7533 SUNWOOD DRIVE N.W.
 RAMSEY, MINNESOTA 55303
 Phone: (763) 433-2851
 Email: Ramsey@bolton-menk.com
 www.bolton-menk.com

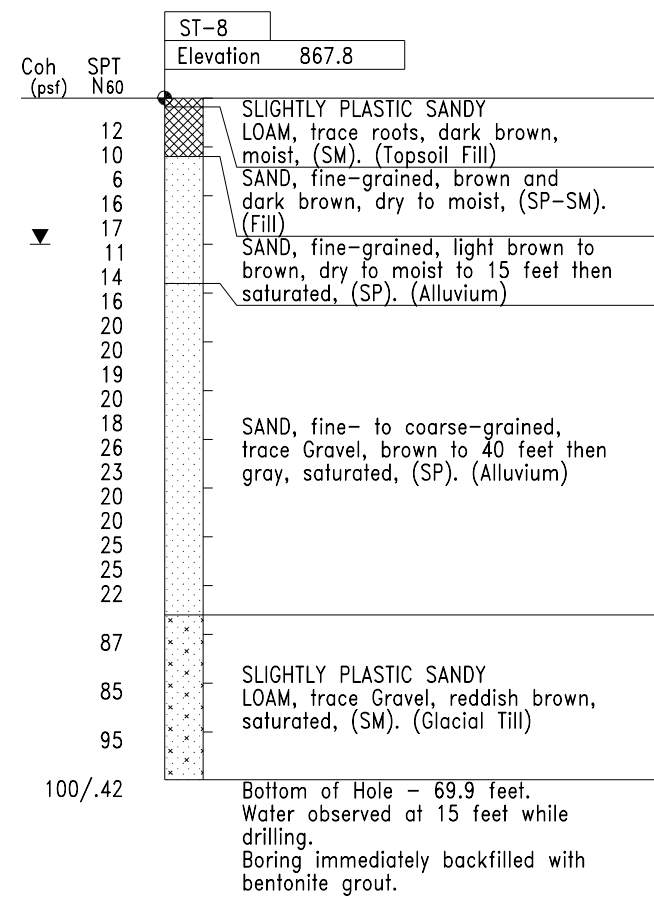
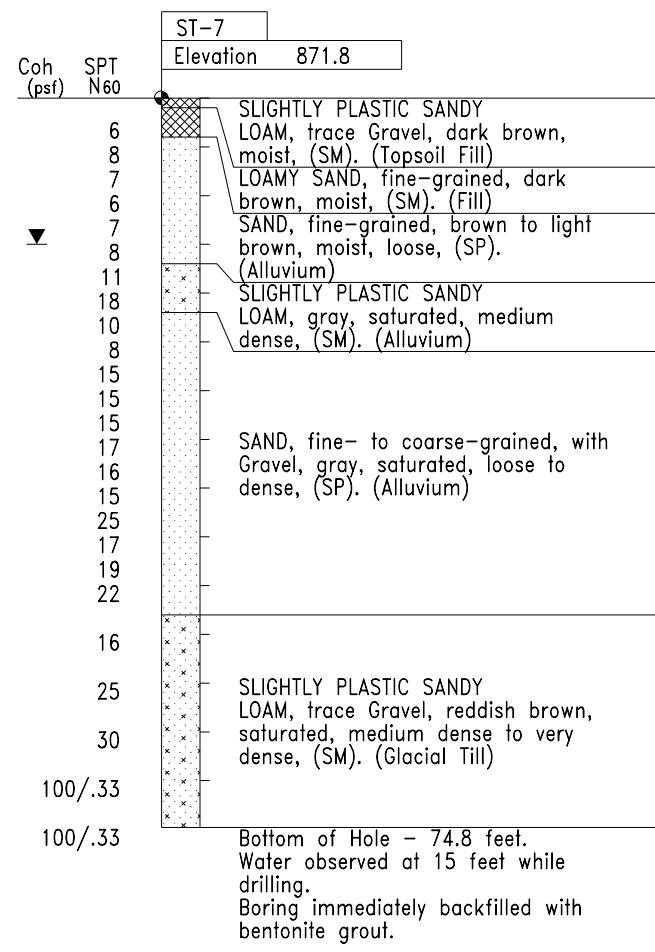
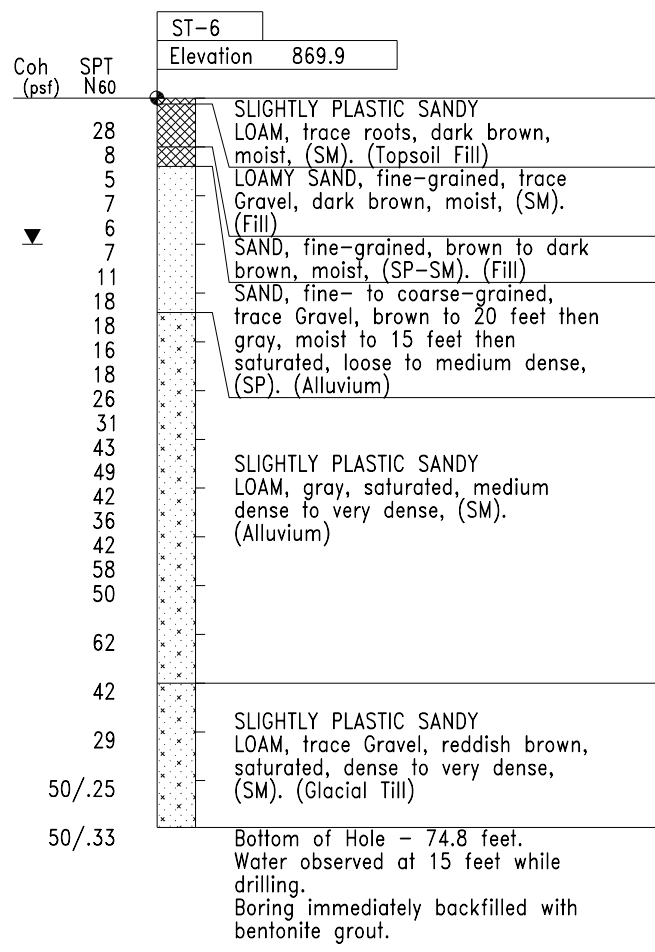
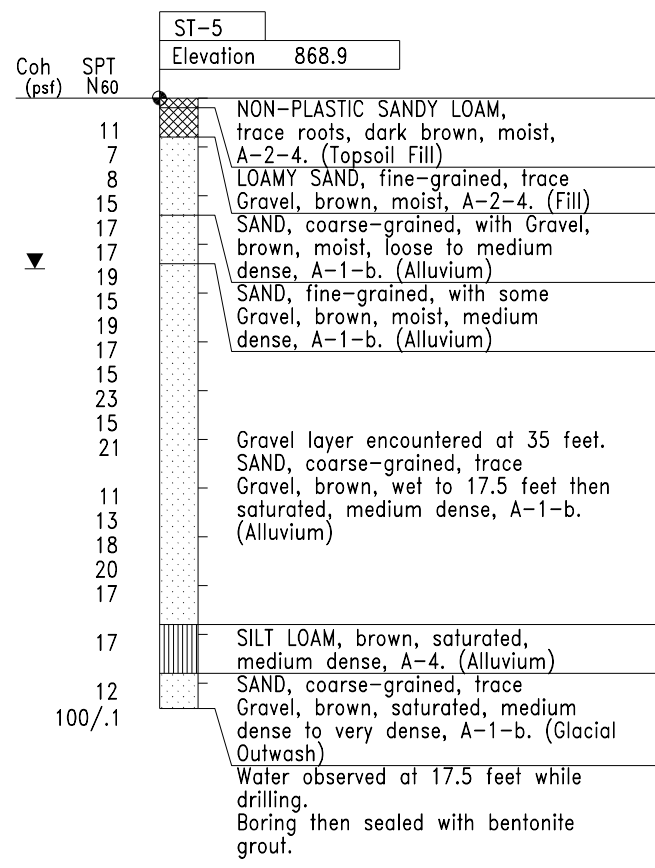
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

SOIL BORINGS

DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	
S.A.P. 199-010-012				
SHEET NO. 97 OF 99 SHEETS				

BRIDGE NO.
02053

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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.

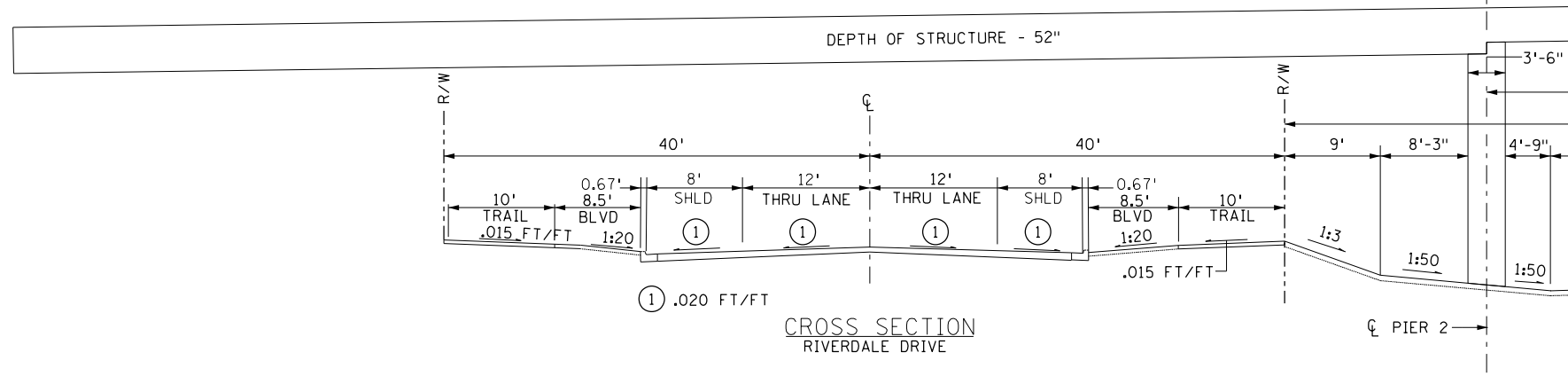


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 ENGINEER SIGNATURE
 RYAN R. EVANS
 LIC. NO. 53920 DATE

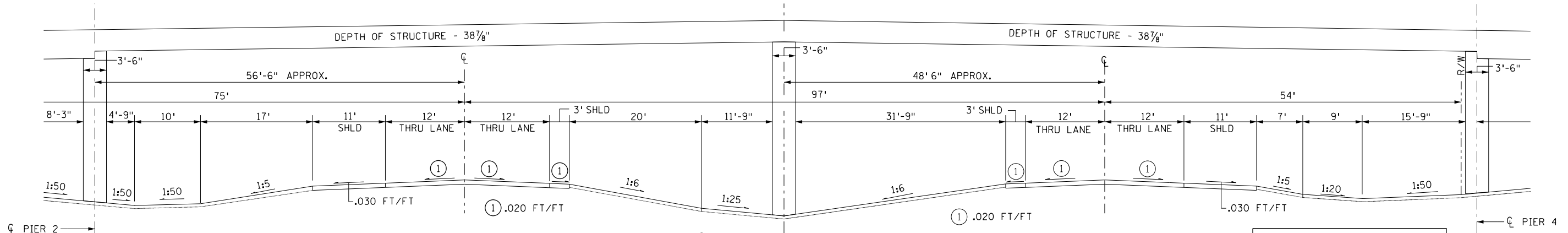
DESIGNED	RRE	DRAWN	JMR	APPROVED
CHECKED	ATP	CHECK	RRE	
S.A.P. 199-010-012				
SOIL BORINGS				
SHEET NO. 98 OF 99 SHEETS				

BRIDGE NO.
02053



CROSS SECTION
RIVERDALE DRIVE

DESIGN SPEED = 70 MPH
ADT > 6,000
TANGENT SECTION



CROSS SECTION
S.B. U.S. HIGHWAY 10/169

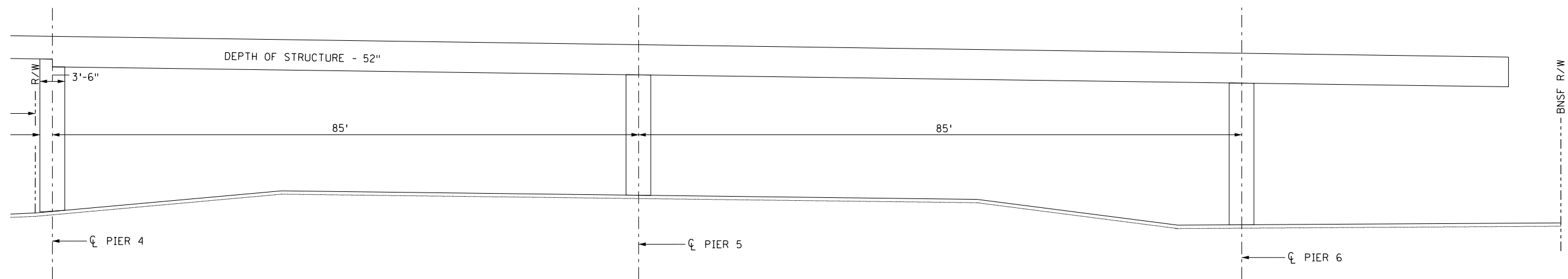
CROSS SECTION
N.B. U.S. HIGHWAY 10/169

CLEAR ZONE PROVIDED = 42.75 FT
WEIGHTED SLOPE = -0.15 = 1:6
CLEAR ZONE REQUIRED = 38 FT
NO PROTECTION REQUIRED

CLEAR ZONE PROVIDED = 34.75 FT
WEIGHTED SLOPE = -0.14 = 1:7
CLEAR ZONE REQUIRED = 38 FT
PROTECTION REQUIRED

CLEAR ZONE PROVIDED = 34.75 FT
SLOPE = 1:6
CLEAR ZONE REQUIRED = 38 FT
PROTECTION REQUIRED

CLEAR ZONE PROVIDED = 42.75 FT
WEIGHTED SLOPE = -0.12 = 1:8
CLEAR ZONE REQUIRED = 36 FT
NO PROTECTION REQUIRED



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ryanev bmi.tbl
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DESIGNED	DATE	REVISION DESCRIPTION	DR.	CHK.	APP'D.



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ENGINEER SIGNATURE
RYAN R. EVANS
LIC. NO. 53920 DATE

TITLE:

ROADWAY TYPICAL SECTION

DESIGNED	RRE	DRAWN	JMR	APPROVED

S.A.P. 199-010-012
SHEET NO. 99 OF 99 SHEETS

BRIDGE NO.
02053