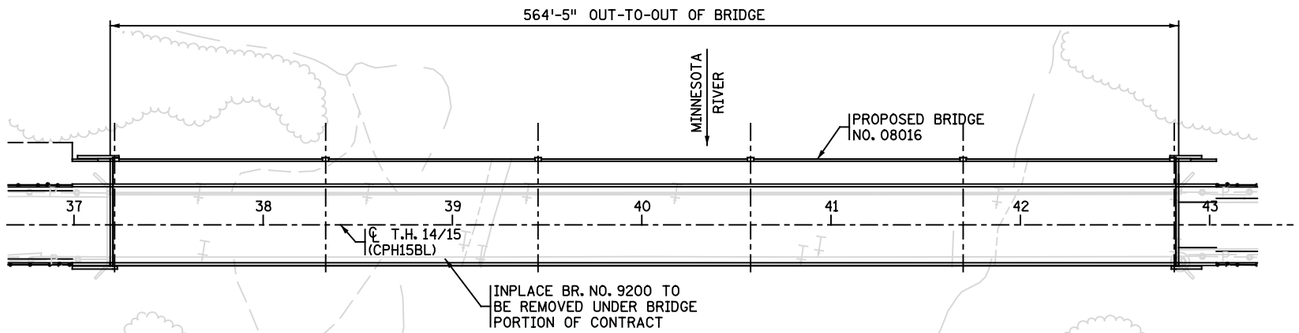
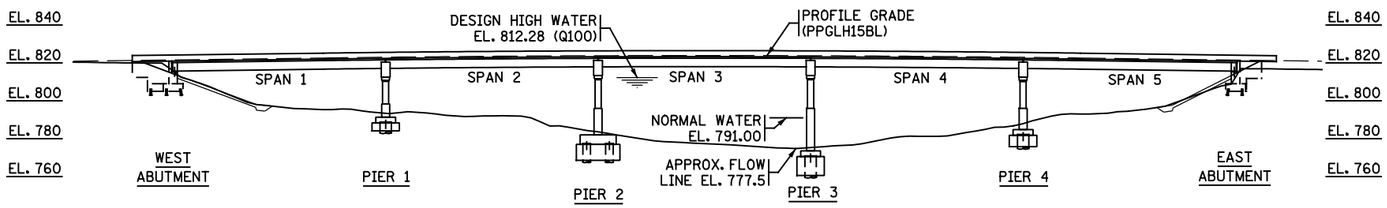
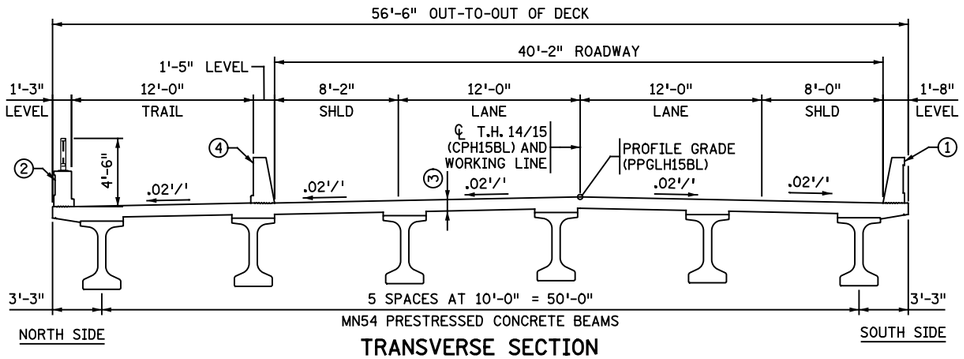


GENERAL PLAN



GENERAL ELEVATION



TRANSVERSE SECTION

LIST OF SHEETS

NO.	TITLE
1	KEY PLAN
2	CONSTRUCTION NOTES AND SOQ
3-4	GENERAL PLAN AND ELEVATION
5	BRIDGE LAYOUT
6	CORNER DETAILS
7-9	WEST ABUTMENT DETAILS
10-14	WEST ABUTMENT REINFORCEMENT
15-17	EAST ABUTMENT DETAILS
18-22	EAST ABUTMENT REINFORCEMENT
23	PIER FOUNDATION LAYOUT
24-27	DRILLED SHAFTS PIERS 1 - 4
28	DRILLED SHAFT DETAILS
29	PIER 1 DETAILS
30	PIER DETAILS
31-34	PIER 1 REINFORCEMENT
35	PIER 2 DETAILS
36-39	PIER 2 REINFORCEMENT
40	PIER 3 DETAILS
41-44	PIER 3 REINFORCEMENT
45	PIER 4 DETAILS
46-49	PIER 4 REINFORCEMENT
50	FRAMING PLAN
51	PRESTRESSED CONCRETE BEAM
52-55	SUPERSTRUCTURE DETAILS
56-61	BARRIER LAYOUT
62-63	SINGLE SLOPE CONCRETE BARRIER (36")
64	ORNAMENTAL METAL RAILING (DESIGN T-4)
65	CONCRETE PARAPET MOD
66	CONCRETE PARAPET MISC. DETAILS
67	RIPRAP SLOPE
68-69	WATERPROOF EXPANSION DEVICE
70-75	BRIDGE DETAILS
76	AS-BUILT PLAN
77	BRIDGE SURVEY
78-79	BORINGS

DESIGN DATA

DESIGNED IN ACCORDANCE WITH 2014 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

HL-93 LIVE LOAD

DEAD LOAD INCLUDES 20 psf ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.

MATERIAL DESIGN PROPERTIES:
- REINFORCED CONCRETE:
  - f'c = 4 ksi CONCRETE
  - fy = 60 ksi PLAIN AND EPOXY COATED BARS
  - fy = 60 ksi STAINLESS STEEL BARS
  - n = 8 FOR REINFORCEMENT
- PRETENSIONED CONCRETE:
  - f'c = 9 ksi CONCRETE
  - fpu = 270 ksi LOW RELAXATION STRANDS
  - n = 1 FOR REINFORCEMENT
  - 0.75 fpu FOR INITIAL PRESTRESS

2035 PROJECTED TRAFFIC VOLUMES:

ROAD OVER		ROAD UNDER
10650	A.D.T.	N.A.
1150	H.C.A.D.T.	N.A.

DESIGN SPEED: 50 MPH (OVER), N.A. MPH (UNDER)
APPROXIMATE DECK AREA = 31890 SF
HL 93 LRFR
BRIDGE OPERATING RATING FACTOR RF = ___

NOTES:

FOR CONSTRUCTION NOTES, SEE SHEET 2.

SEE BORING SHEETS FOR INPLACE UTILITIES.

SUBSTRUCTURES SET PARALLEL AT AZ. 351°13'33.1"

BRIDGE APPROACH PANEL LAYOUT STANDARDS 5-297.224 AND 5-297.225 SHALL APPLY.

BRIDGE APPROACH TREATMENT STANDARD 5-297.233 APPLIES.

TRAFFIC TO BE DETOURED TO C.S.A.H. 37 DURING CONSTRUCTION.

ALLOW FOR 2" FORMLINER IN ABUTMENT FACE AND WINGWALLS.

① CONCRETE BARRIER TYPE 1 MOD S, (TL-4) 3'-0" MIN. HEIGHT ABOVE SLAB.

② CONCRETE PARAPET TYPE MOD P-1 WITH ORNAMENTAL METAL RAILING.

③ 9" MIN. SLAB

④ CONCRETE BARRIER TYPE 2 MOD S, (TL-4) 3'-0" MIN. HEIGHT ABOVE SLAB.

I HEREBY CERTIFY THAT THIS PLAN 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

SIGNED: _____ DATE: _____
LICENSED PROFESSIONAL ENGINEER

NAME: LIC. NO.

TRUNK HIGHWAY NO. 14/15
MINNESOTA DEPARTMENT
OF TRANSPORTATION

BRIDGE NO. 08016
KEY PLAN

T.H. 14/15 OVER MINNESOTA RIVER
0.8 MILES NORTHEAST OF
JCT. T.H. 14 AND T.H. 15

112'-112'-112'-112'-112' PRESTRESSED CONC. BEAM SPANS
SPAN IDENTIFICATION NO. 501

SEC. 20/21 TWP. 110 N. R. 30 W.

CITY OF NEW ULM
COURTLAND TWP.
BROWN COUNTY, MN
NICOLLET COUNTY, MN

APPROVED: _____
STATE BRIDGE ENGINEER DATE

DES: DJR	DR: DJR	08016
CHK: BAP	CHK: BAP	

MINNESOTA PROJECT NO. NHPP | MNDOT REVIEW UNIT: BEN JILK | JOB NO. T7A805 | STATE PROJ. NO. 0804-08016 (T.H.14=007) | SHEET NO. 1 OF 79 SHEETS

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CONSTRUCTION NOTES:

THE 2016 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.

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.

BARS MARKED WITH THE SUFFIX "S" SHALL BE STAINLESS STEEL IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

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".

THE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (Rn) WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

CONSTRUCTION OF THE EAST ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS SECTION (AND ALLOWED TO SETTLE FOR THREE DAYS).

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	ITEM	UNIT	QUANTITY	
2105.601	CONSTRUCT ACCESS FACILITY	LUMP SUM	1	
2401.501	STRUCTURAL CONCRETE (1G52)	CU YD	0	(P)
2401.501	STRUCTURAL CONCRETE (3B52)	CU YD	0	(P)
2401.501	STRUCTURAL CONCRETE (1X62)	CU YD	0	
2401.513	TYPE MOD P-1 BARRIER CONC (3S52)	LIN FT	0	(P)
2401.513	TYPE 1 MOD S (TL-4) 36" BARRIER CONCRETE (3S52)	LIN FT	0	(P)
2401.513	TYPE 2 MOD S (TL-4) 36" BARRIER CONCRETE (3S52)	LIN FT	0	(P)
2401.541	REINFORCEMENT BARS	POUND	0	(P)
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	0	(P)
2401.541	REINFORCEMENT BARS (STAINLESS-60KSI)	POUND	0	(P)
2401.601	STRUCTURE EXCAVATION	LUMP SUM	0	
2401.601	FOUNDATION PREPARATION PIER 1	LUMP SUM	0	
2401.601	FOUNDATION PREPARATION PIER 2	LUMP SUM	0	
2401.601	FOUNDATION PREPARATION PIER 3	LUMP SUM	0	
2401.601	FOUNDATION PREPARATION PIER 4	LUMP SUM	0	
2401.602	CONCRETE RAIL POST TYPE 1	EACH	0	
2401.602	CONCRETE RAIL POST TYPE 2	EACH	0	
2401.602	CONCRETE RAIL POST TYPE 3	EACH	0	
2401.608	SHAFT REINFORCEMENT	POUND	0	(P)
2401.618	BRIDGE SLAB CONCRETE (3YHPC-M)	SQ FT	0	(P)
2402.583	ORNAMENTAL METAL RAILING	LIN FT	0	(P)
2402.591	EXPANSION JOINT DEVICES TYPE 5	LIN FT	0	(P)
2402.595	BEARING ASSEMBLY	EACH	0	
2405.502	PRESTRESSED CONCRETE BEAMS MN54	LIN FT	0	(P)
2405.511	DIAPHRAGMS FOR TYPE MN54 PREST BEAMS	LIN FT	0	(P)
2411.602	PRECAST CONCRETE CAP	EACH	0	
2411.604	STONE MASONRY VENEER 1.0" THICK	SQ FT	0	(P)
2411.604	STONE MASONRY VENEER 2.0" THICK	SQ FT	0	(P)
2411.618	ANTI-GRAFFITI COATING	SQ FT	0	(P)
2411.618	ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	SQ FT	0	(P)
2411.618	ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	SQ FT	0	(P)
2411.618	ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	SQ FT	0	(P)
2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	0	
2452.520	STEEL H-TEST PILE 55 FT LONG 10"	EACH	0	
2452.520	STEEL H-TEST PILE 85 FT LONG 10"	EACH	0	
2452.530	PILE TIP PROTECTION 10"	EACH	0	
2452.603	STEEL H-PILING 10"	LIN FT	0	
2453.603	THERMAL INTEGRITY PROFILER TEST	LIN FT	0	
2453.603	72" DIA DRILLED SHAFT (EARTH)	LIN FT	0	
2453.603	48" DIA DRILLED SHAFT (EARTH)	LIN FT	0	
2453.603	66" DIA DRILLED SHAFT (ROCK)	LIN FT	0	
2453.603	42" DIA DRILLED SHAFT (ROCK)	LIN FT	0	
2453.603	72" DIA CASED SHAFT	LIN FT	0	
2453.603	48" DIA CASED SHAFT	LIN FT	0	
2502.502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	0	
2511.501	RANDOM RIPRAP CLASS III	CU YD	0	(P)

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE:

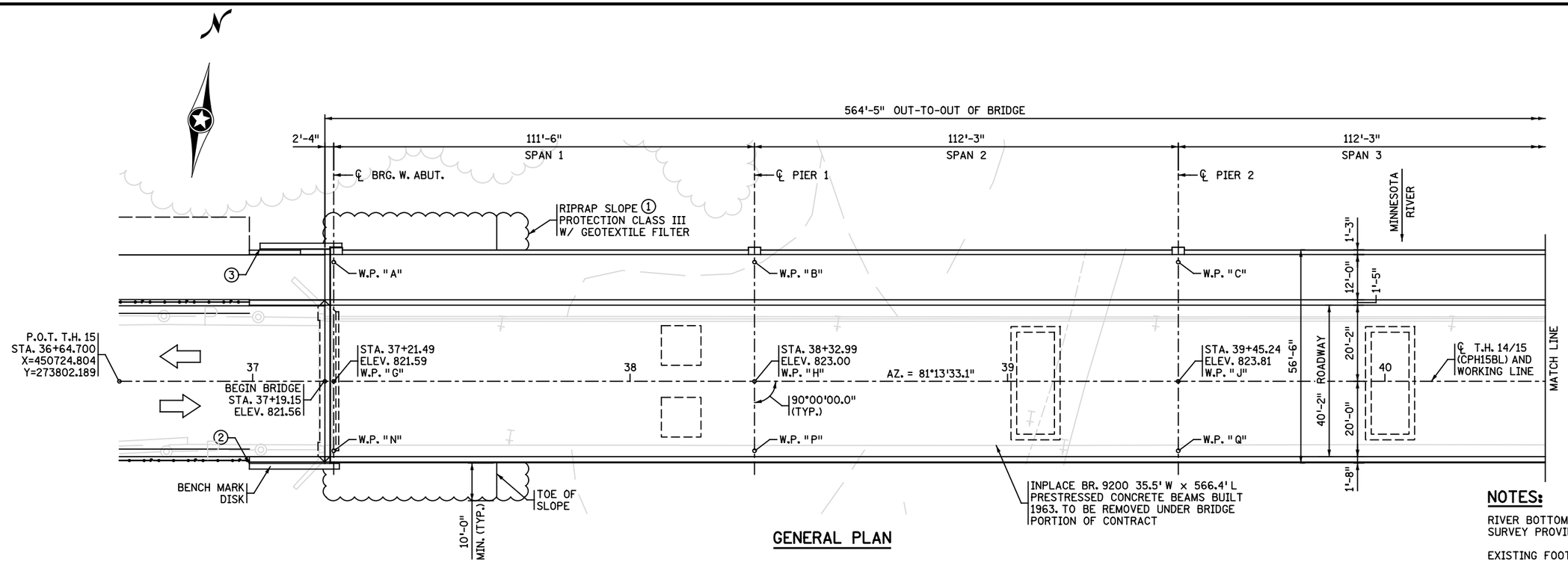
CONSTRUCTION NOTES AND SUMMARY OF QUANTITIES

DES: DRS	DR: DJR	APPROVED:
CHK: BAP	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 2 OF 79 SHEETS

BRIDGE NO. 08016



GENERAL PLAN

NOTES:

RIVER BOTTOM GROUNDLINE BASED ON BATHYMETRIC SURVEY PROVIDED BY MNDOT HYDRAULICS UNIT.

EXISTING FOOTING GEOMETRY AND LOCATION ARE APPROXIMATE AND BASED ON BR. 9200 PLANS DATED 11-16-1957.

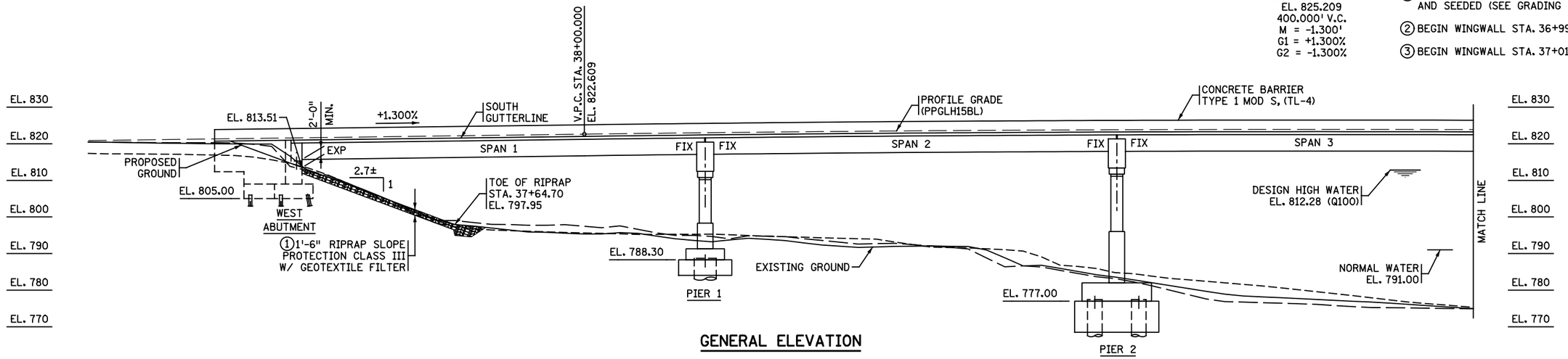
SEE BORING SHEETS FOR INPLACE UTILITIES.

V.P.I. STA. 40+00.000
EL. 825.209
400.000' V.C.
M = -1.300'
G1 = +1.300%
G2 = -1.300%

① RIPRAP ON SLOPES TO BE COVERED WITH COMPOST AND SEEDED (SEE GRADING PLAN).

② BEGIN WINGWALL STA. 36+99.15

③ BEGIN WINGWALL STA. 37+01.99



GENERAL ELEVATION

EXISTING GROUND PROFILE
35' LT. – – – – –
℄ T.H. 14/15 ————
22' RT. — — —

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

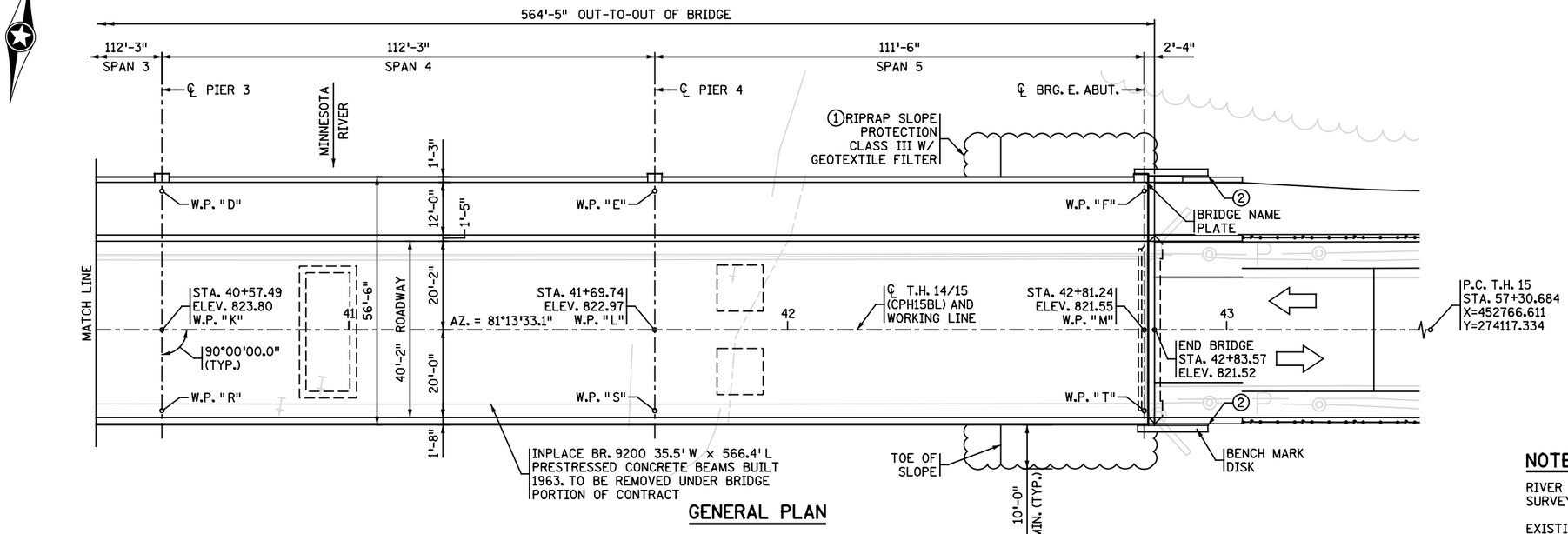
TITLE: GENERAL PLAN AND ELEVATION 1

DES: DJR	DR: DJR	APPROVED:
CHK: BAP	CHK: BAP	

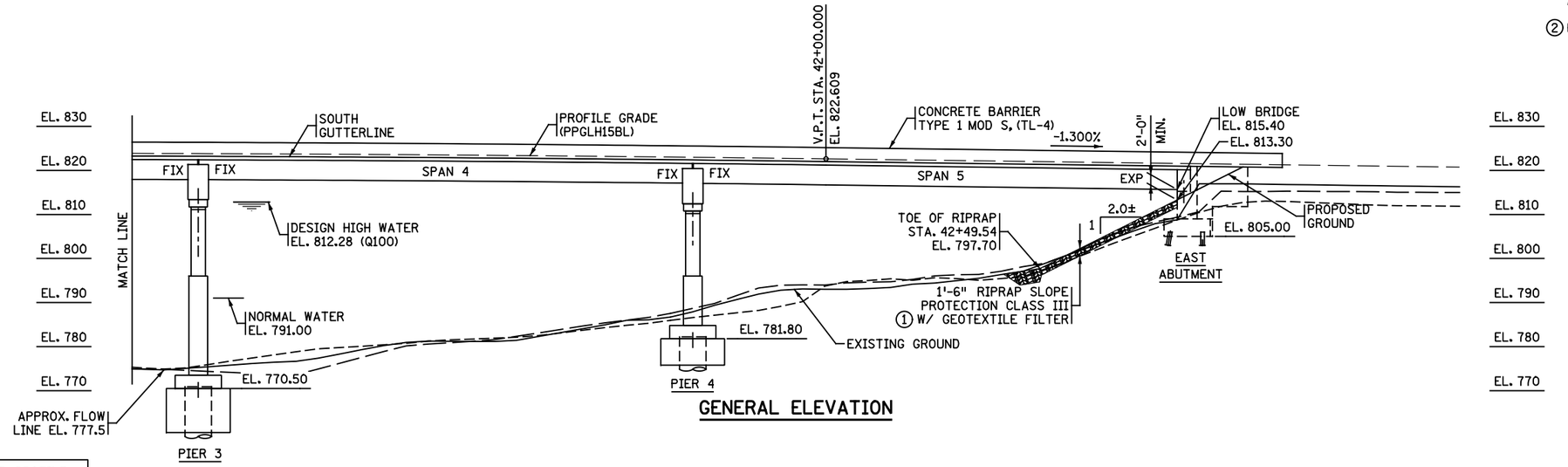
STATE PROJECT NO. 0804-08016

SHEET NO. 3 OF 79 SHEETS

BRIDGE NO. 08016



GENERAL PLAN



GENERAL ELEVATION

EXISTING GROUND PROFILE
35' LT. – – – – –
℄ T.H. 14/15 ————
22' RT. — — —

NOTES:

RIVER BOTTOM GROUNDLINE BASED ON BATHYMETRIC SURVEY PROVIDED BY MNDOT HYDRAULICS UNIT.

EXISTING FOOTING GEOMETRY AND LOCATION ARE APPROXIMATE AND BASED ON BR. 9200 PLANS DATED 11-16-1957.

SEE BORING SHEETS FOR INPLACE UTILITIES.

(1) RIPRAP ON SLOPES TO BE COVERED WITH COMPOST AND SEEDED (SEE GRADING PLAN).

(2) END WINGWALL STA. 42+95.74

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE: GENERAL PLAN AND ELEVATION 2

DES: DJR	DR: DJR	APPROVED:
CHK: BAP	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 4 OF 79 SHEETS

BRIDGE NO. 08016

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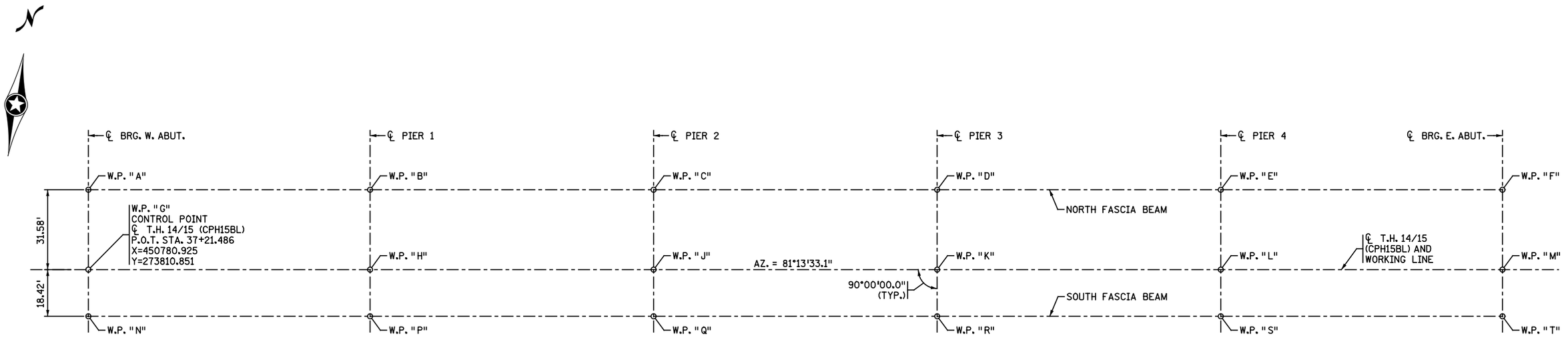


WORKING POINT LAYOUT

TOP OF ROADWAY TO BRIDGE SEAT

②	DECK THICKNESS	STOOL HEIGHT		BEAM HEIGHT	BEARING HEIGHT	TOTAL N. FASCIA		TOTAL S. FASCIA	
		N. FASCIA	S. FASCIA			INCHES	FEET	INCHES	FEET
WEST ABUT.	9"	3 7/8"	3 7/8"	54"	7 3/4"	74 5/8"	6.22'	74 5/8"	6.22'
PIER 1 WEST	9"	3 7/8"	4"	54"	3 1/4"	70 1/8"	5.84'	70 1/4"	5.85'
PIER 1 EAST	9"	4 1/8"	4 1/8"	54"	3 1/4"	70 3/8"	5.86'	70 3/8"	5.86'
PIER 2 WEST	9"	2 3/4"	2 7/8"	54"	3 1/4"	69"	5.75'	69 1/8"	5.76'
PIER 2 EAST	9"	2 7/8"	3"	54"	3 1/4"	69 1/8"	5.76'	69 1/4"	5.77'
PIER 3 WEST	9"	2 7/8"	3"	54"	3 1/4"	69 1/8"	5.76'	69 1/4"	5.77'
PIER 3 EAST	9"	2 7/8"	2 7/8"	54"	3 1/4"	69 1/8"	5.76'	69 1/8"	5.76'
PIER 4 WEST	9"	4 1/8"	4 1/8"	54"	3 1/4"	70 3/8"	5.86'	70 3/8"	5.86'
PIER 4 EAST	9"	3 7/8"	4"	54"	3 1/4"	70 1/8"	5.84'	70 1/4"	5.85'
EAST ABUT.	9"	3 7/8"	3 7/8"	54"	8 1/8"	75 3/4"	6.31'	75 3/4"	6.31'

DIMENSIONS BETWEEN WORKING POINTS

POINT	STATION	X-COORDIN	Y-COORDIN	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
A	37+21.49	450776.107	273842.065		111.50					31.58	115.89						122.20	229.27			
B	38+32.99	450886.303	273859.073			112.25					31.58	116.61				122.20		122.88	230.00			
C	39+45.24	450997.239	273876.196				112.25					31.58	116.61			229.27	122.88		122.88	230.00		
D	40+57.49	451108.175	273893.318					112.25					31.58	116.61			230.00	122.88		122.88	229.27
E	41+69.74	451219.112	273910.441						111.50					31.58	115.89			230.00	122.88		122.20
F	42+81.24	451329.307	273927.449												31.58				229.27	122.20	
G	37+21.49	450780.925	273810.851								111.50					18.42	113.01				
H	38+32.99	450891.120	273827.859									112.25					18.42	113.75			
J	39+45.24	451002.057	273844.982										112.25					18.42	113.75		
K	40+57.49	451112.993	273862.104											112.25					18.42	113.75	
L	41+69.74	451223.929	273879.227												111.50					18.42	113.01
M	42+81.24	451334.125	273896.235																		18.42
N	37+21.49	450783.734	273792.650														111.50				
P	38+32.99	450893.930	273809.658															112.25			
Q	39+45.24	451004.866	273826.781																112.25		
R	40+57.49	451115.802	273843.903																	112.25	
S	41+69.74	451226.739	273861.026																		111.50
T	42+81.24	451336.934	273878.034																		

ELEVATIONS ①

POINT	TOP OF ROADWAY	TOP OF RDWY TO BR. SEAT	BRIDGE SEAT	POINT
A	820.99	6.22	814.77	A
B	822.40			B
C	823.21			C
D	823.20			D
E	822.37			E
F	820.95	6.31	814.64	F
G	821.59			G
H	823.00			H
J	823.81			J
K	823.80			K
L	822.97			L
M	821.55			M
N	822.22	6.22	815.00	N
P	822.63			P
Q	823.44			Q
R	823.43			R
S	822.60			S
T	821.18	6.31	814.87	T

TABLE A ELEVATIONS

②	TOP OF ROADWAY	TOP OF RDWY TO BR. SEAT	BRIDGE SEAT	POINT
PIER 1 WEST	822.39	5.84	816.55	B
PIER 1 EAST	822.41	5.86	816.55	
PIER 2 WEST	823.20	5.75	817.45	C
PIER 2 EAST	823.21	5.76	817.45	
PIER 3 WEST	823.20	5.76	817.44	D
PIER 3 EAST	823.20	5.76	817.44	
PIER 4 WEST	822.38	5.86	816.52	E
PIER 4 EAST	822.36	5.84	816.52	
PIER 1 WEST	822.63	5.85	816.78	P
PIER 1 EAST	822.64	5.86	816.78	
PIER 2 WEST	823.44	5.76	817.68	Q
PIER 2 EAST	823.45	5.77	817.68	
PIER 3 WEST	823.44	5.77	817.67	R
PIER 3 EAST	823.43	5.76	817.67	
PIER 4 WEST	822.61	5.86	816.75	S
PIER 4 EAST	822.60	5.85	816.75	

NOTES:

ALL DISTANCES ARE STRAIGHT LINE HORIZONTAL DISTANCES MEASURED IN FEET.

ALL COORDINATE VALUES SHOWN ARE PROJECT COORDINATES DEFINED IN FEET.

WORKING LINE IS TANGENT TO ℄ T.H. 14/15 AT CONTROL POINT (℄ T.H. 14/15 INTERSECTION WITH ℄ BRG. WEST ABUT.)

① SEE TABLE A FOR ELEVATIONS NOT SHOWN.

② WEST AND EAST REFER TO ℄ BEARING LOCATION AT PIER.

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

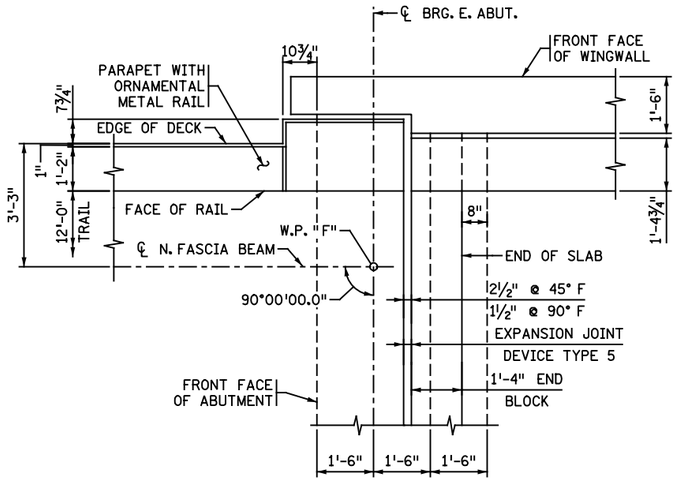
TITLE: BRIDGE LAYOUT

DES: DJR	DR: DJR	APPROVED:
CHK: CEW	CHK: BAP	

STATE PROJECT NO. 0804-08016

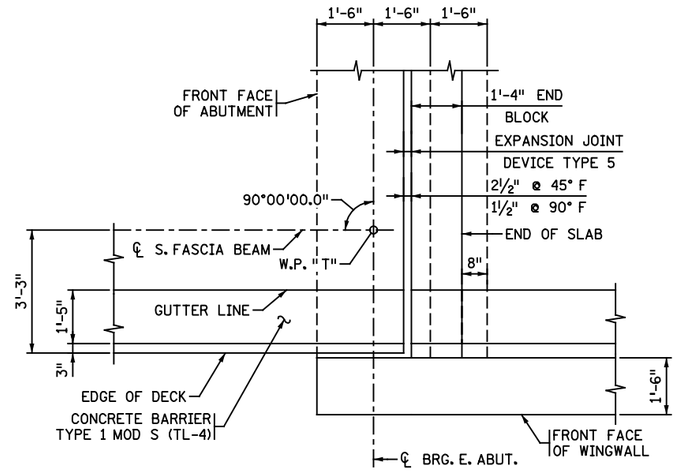
SHEET NO. 5 OF 79 SHEETS

BRIDGE NO. 08016



NORTHEAST CORNER DETAIL

NORTHWEST CORNER SIMILAR



SOUTHEAST CORNER DETAIL

SOUTHWEST CORNER SIMILAR

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE: CORNER DETAILS

DES: DJR	DR: DJR	APPROVED:
CHK: RJR	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 6 OF 79 SHEETS

BRIDGE NO. 08016

WEST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ dyn	✳✳R_n
MNDOT PILE FORMULA 2012 (MPF12) $R_n=20\sqrt{\frac{W\times H}{1000}}\times \log\left(\frac{10}{S}\right)$	0.60	221.0
PDA	0.65	204.0

✳✳ R_n = (FACTORED DESIGN LOAD) / ϕ dyn

WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	112.1
FACTORED LIVE LOAD	20.5
✳FACTORED DESIGN LOAD	132.6

✳BASED ON STRENGTH I LOAD COMBINATION

WEST ABUTMENT COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	112.1
FACTORED DOWNDRAG	72.6
✳✳✳ FACTORED DEAD LOAD EARTH PRESSURE + DOWNDRAG	184.7

✳✳✳ BASED ON DOWN DRAG LOAD COMBINATION, NOT INCLUDING TRANSIENT LOADS. ONLY USED FOR COMPARISON WITH FACTORED STRUCTURAL RESISTANCE. NOT TO BE USED FOR DRIVING.

PILE NOTES

1 STEEL H TEST PILES 55 FT. LONG
17 STEEL H PILES EST. LENGTH 50 FT.
18 STEEL H PILES REQ'D FOR WEST ABUTMENT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

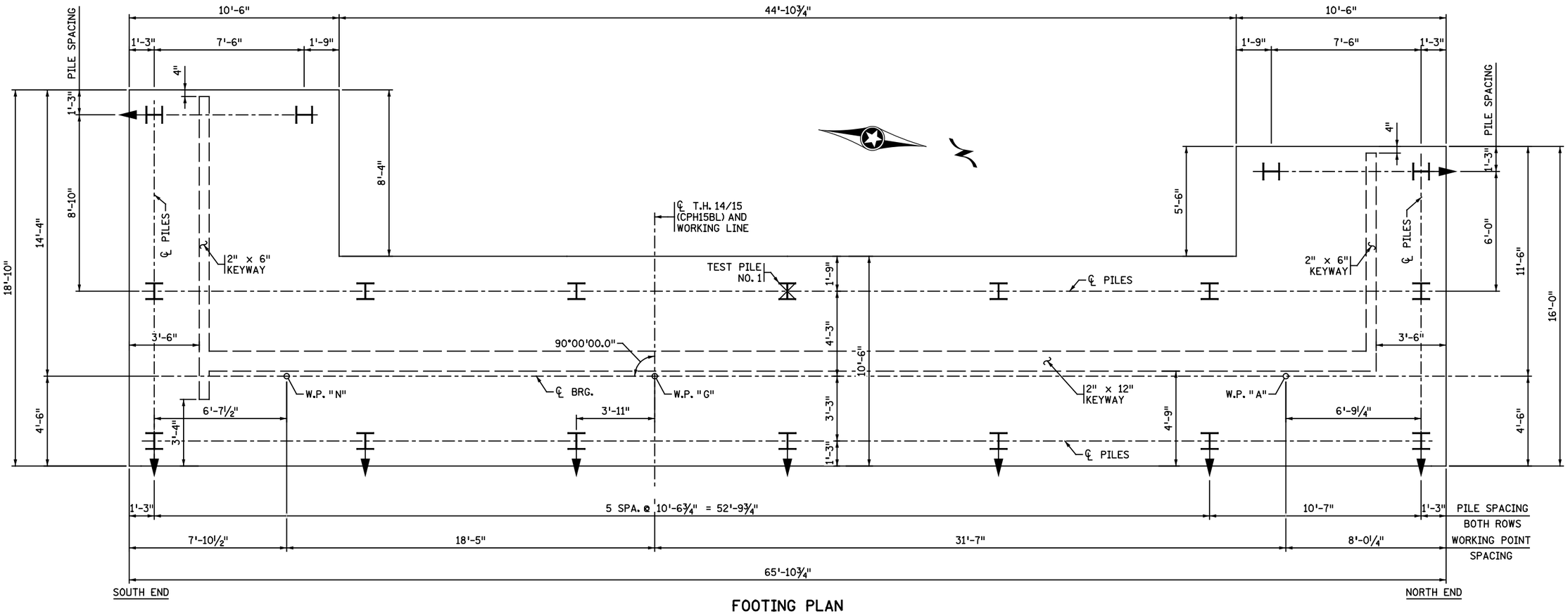
PILES MARKED THUS H← TO BE BATTERED 3" PER FOOT IN DIRECTION SHOWN.

PILES TO BE HP-10x57.

FOR PILE SPLICE DETAILS SEE DETAIL B202.

SUMMARY OF QUANTITIES FOR WEST ABUTMENT

STRUCTURAL CONCRETE (1G52)	0	CU YD
STRUCTURAL CONCRETE (3B52)	0	CU YD
REINFORCEMENT BARS	0	POUND
REINFORCEMENT BARS (EPOXY COATED)	0	POUND
REINFORCEMENT BARS (STAINLESS-60KSI)	0	POUND
ANTI-GRAFFITI COATING	0	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	0	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	0	SQ FT
STEEL H-TEST PILE 55 FT LONG 10"	0	EACH
STEEL H-PILING 10"	0	LIN FT
PILE TIP PROTECTION 10"	0	EACH



FOOTING PLAN

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

CERTIFIED BY: _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: WEST ABUTMENT DETAILS 1

DES: LPR	DR: DJR	APPROVED:
CHK: DRS	CHK: DRS	

STATE PROJECT NO. 0804-08016

SHEET NO. 7 OF 79 SHEETS

BRIDGE NO. 08016

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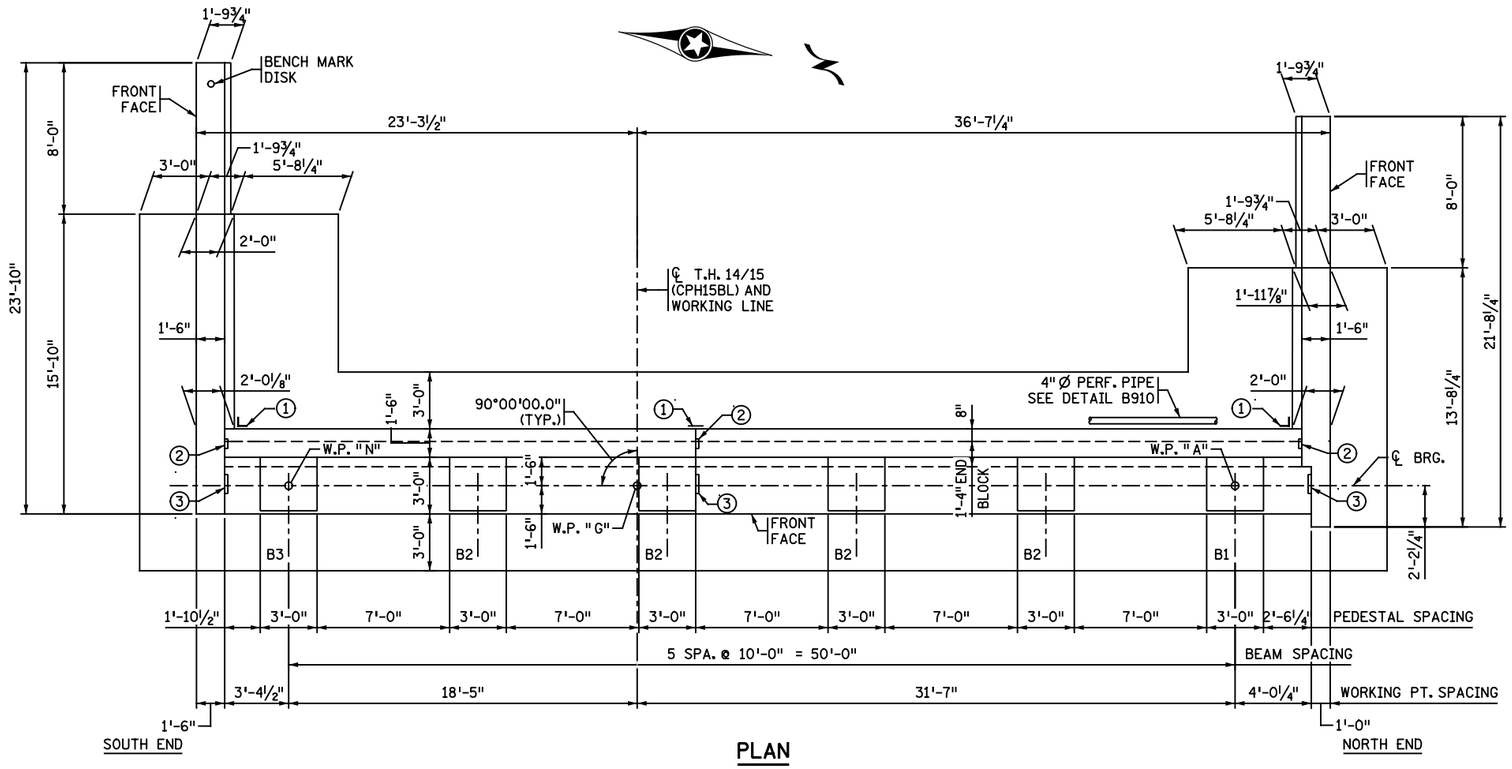
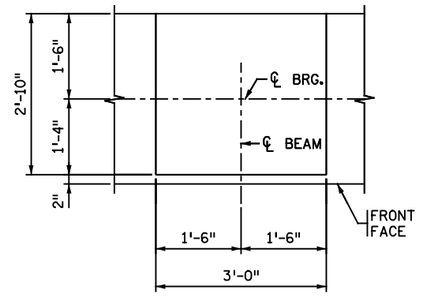
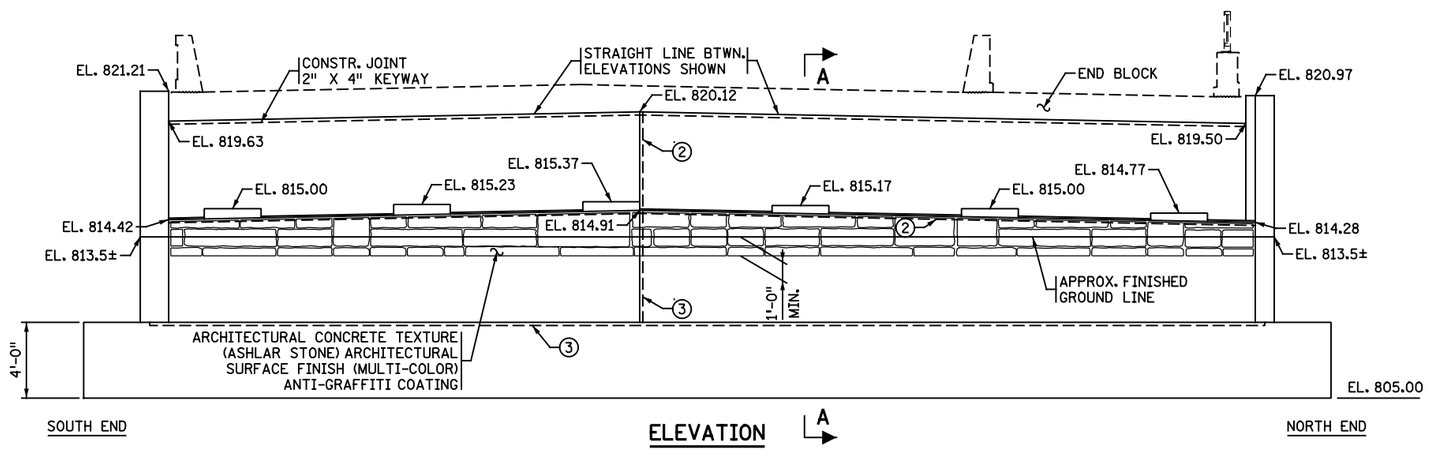
4/14/2017



PLAN



BRIDGE SEAT DETAIL



ELEVATION

NOTES:

FOR WINGWALL ELEVATIONS, SEE SHEET 9.

ARCHITECTURAL CONCRETE TEXTURE SHALL BE MATCHED ACROSS CONSTRUCTION JOINTS TO PROVIDE THE APPEARANCE OF A CONTINUOUS PATTERN.

SEE SPECIAL PROVISIONS FOR SPECIAL SURFACE FINISH COLORS AND LOCATIONS.

FOR SECTION A-A SEE SHEET 9.

PROVIDE A 72 HOUR MINIMUM TIME DELAY BETWEEN CONCRETE POURS ON ADJACENT ABUTMENT AND WINGWALL SECTIONS.

VERTICAL KEYWAYS SHALL STOP 1'-0" ± FROM EXPOSED SURFACE.

PILING NOT SHOWN FOR CLARITY.

① MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2481.3B. TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE (3B52).

② CONSTRUCTION JOINT 2" X 6" KEYWAY.

③ CONSTRUCTION JOINT 2" X 12" KEYWAY

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

HDR

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE: WEST ABUTMENT DETAILS 2

DES: LPR	DR: DJR	APPROVED:
CHK: DRS	CHK: DRS	

STATE PROJECT NO. 0804-08016

SHEET NO. 8 OF 79 SHEETS

BRIDGE NO. 08016

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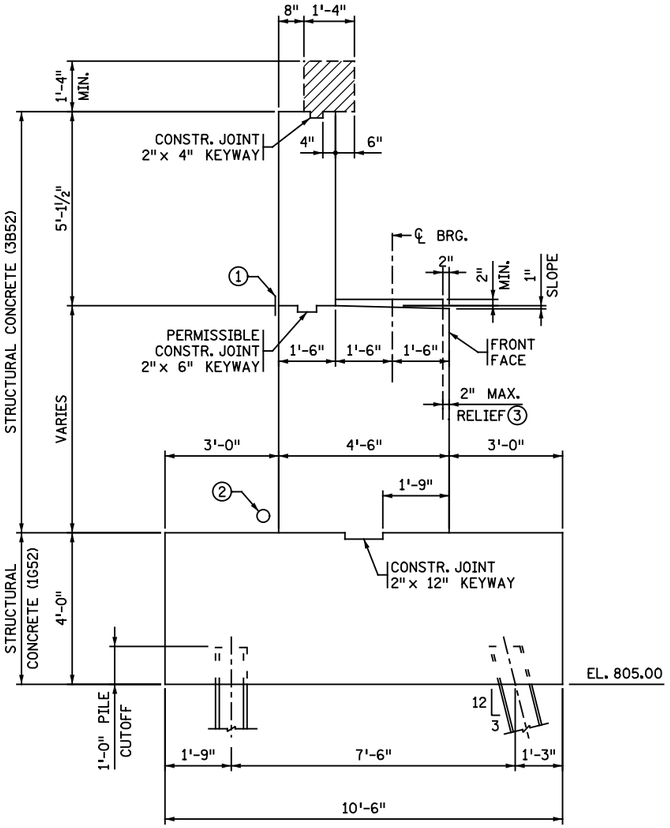
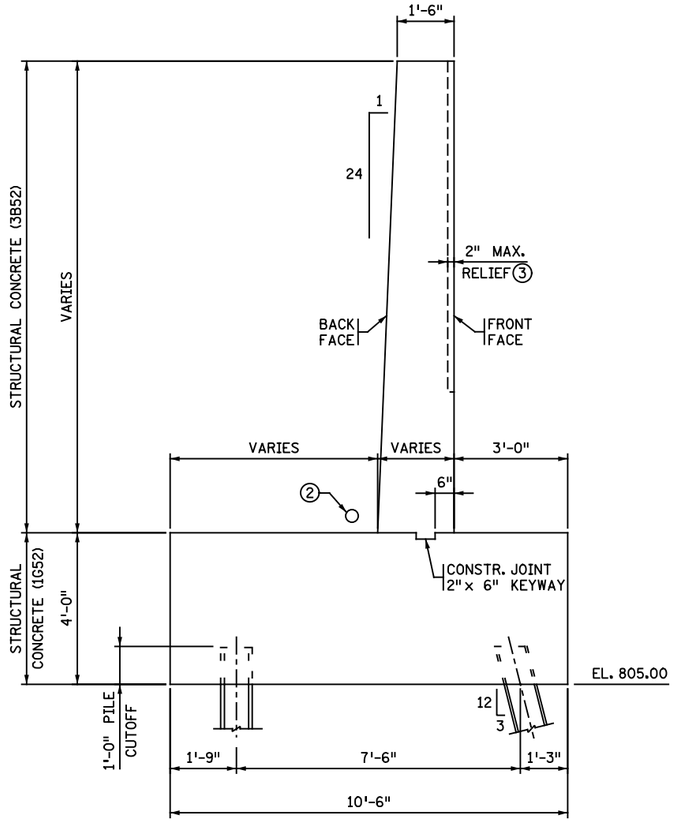
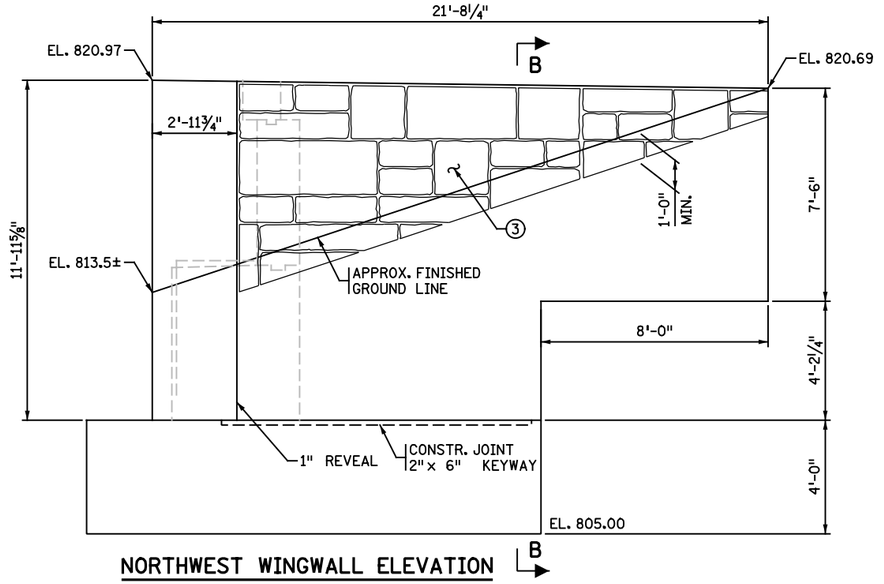


SECTION A-A



SECTION B-B

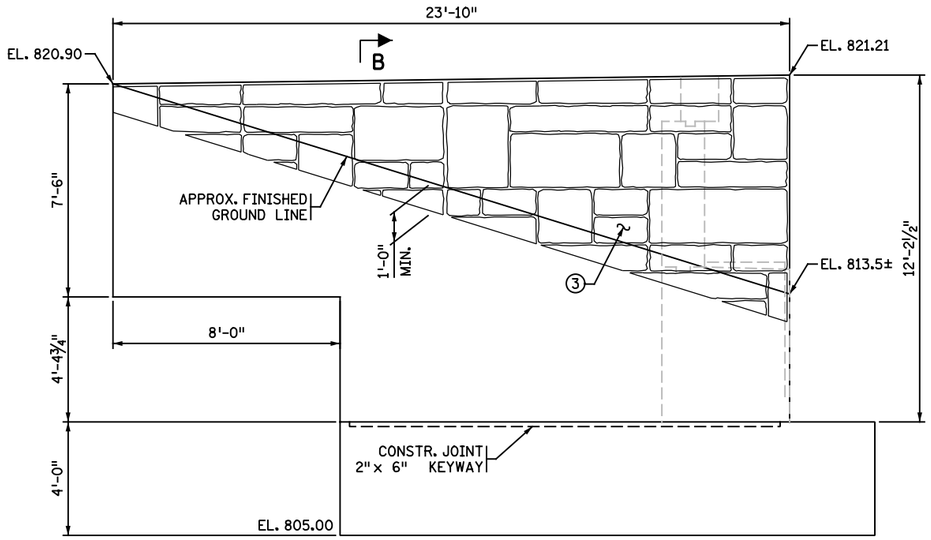


NORTHWEST WINGWALL ELEVATION

PILING NOT SHOWN FOR CLARITY

NOTES:

1. MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2481.3B. TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE (3B52).
2. 4"Ø PERFORATED PIPE. SEE DETAIL B910 FOR DETAILS.
3. ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)
   ARCHITECTURAL SURFACE FINISH (MULTI-COLOR)
   ANTI-GRAFFITI COATING



SOUTHWEST WINGWALL ELEVATION

PILING NOT SHOWN FOR CLARITY

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE: WEST ABUTMENT DETAILS 3

DES: LPR	DR: DJR	APPROVED:
CHK: DRS	CHK: DRS	

STATE PROJECT NO. 0804-08016

SHEET NO. 9 OF 79 SHEETS

BRIDGE NO. 08016

EAST ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE FOR H-PILES R_n - TONS/PILE

FIELD CONTROL METHOD	ϕ dyn	✳✳R_n
MNDOT PILE FORMULA 2012 (MPF12) $R_n=20\sqrt{\frac{W\times H}{1000}}\times \log\left(\frac{10}{S}\right)$	0.60	221.0
PDA	0.65	204.0

✳✳ R_n = (FACTORED DESIGN LOAD) / ϕ dyn

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	112.1
FACTORED LIVE LOAD	20.5
✳FACTORED DESIGN LOAD	132.6

✳BASED ON STRENGTH I LOAD COMBINATION

EAST ABUTMENT COMPUTED PILE LOAD - TONS/PILE

FACTORED DEAD LOAD + EARTH PRESSURE	112.1
FACTORED DOWNDRAG	72.6
✳✳✳ FACTORED DEAD LOAD EARTH PRESSURE + DOWNDRAG	184.7

✳✳✳ BASED ON DOWN DRAG LOAD COMBINATION, NOT INCLUDING TRANSIENT LOADS. ONLY USED FOR COMPARISON WITH FACTORED STRUCTURAL RESISTANCE. NOT TO BE USED FOR DRIVING.

PILE NOTES

1 STEEL H TEST PILES 85 FT. LONG
13 STEEL H PILES EST. LENGTH 80 FT.
14 STEEL H PILES REQ'D FOR EAST ABUTMENT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.

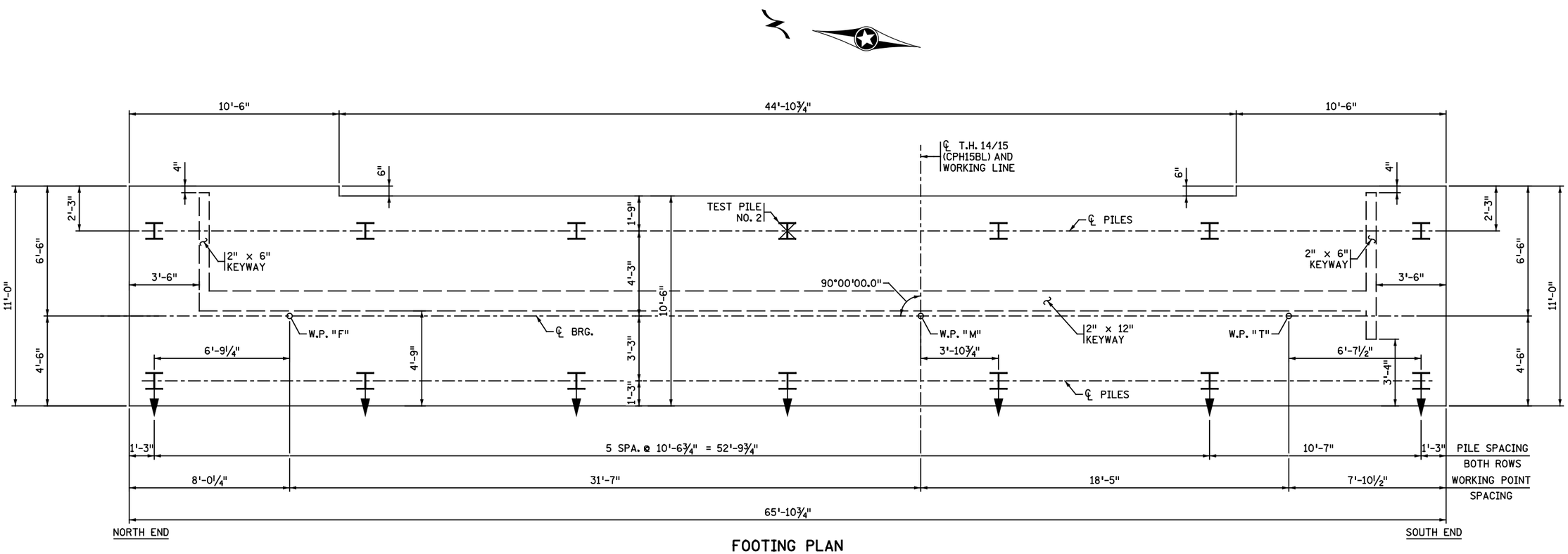
PILES MARKED THUS H← TO BE BATTERED 3" PER FOOT IN DIRECTION SHOWN.

PILES TO BE HP-10x57.

FOR PILE SPLICE DETAILS SEE DETAIL B202.

SUMMARY OF QUANTITIES FOR EAST ABUTMENT

STRUCTURAL CONCRETE (1G52)	0	CU YD
STRUCTURAL CONCRETE (3B52)	0	CU YD
REINFORCEMENT BARS	0	POUND
REINFORCEMENT BARS (EPOXY COATED)	0	POUND
REINFORCEMENT BARS (STAINLESS-60KSI)	0	POUND
ANTI-GRAFFITI COATING	0	SQ FT
ARCHITECTURAL SURFACE FINISH (MULTI COLOR)	0	SQ FT
ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)	0	SQ FT
STEEL H-TEST PILE 85 FT LONG 10"	0	EACH
STEEL H-PILING 10"	0	LIN FT
PILE TIP PROTECTION 10"	0	EACH



FOOTING PLAN

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

CERTIFIED BY: _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: EAST ABUTMENT DETAILS 1

DES: LPR | DR: DJR | APPROVED:
CHK: DRS | CHK: DRS

STATE PROJECT NO. 0804-08016

SHEET NO. 15 OF 79 SHEETS

BRIDGE NO. 08016

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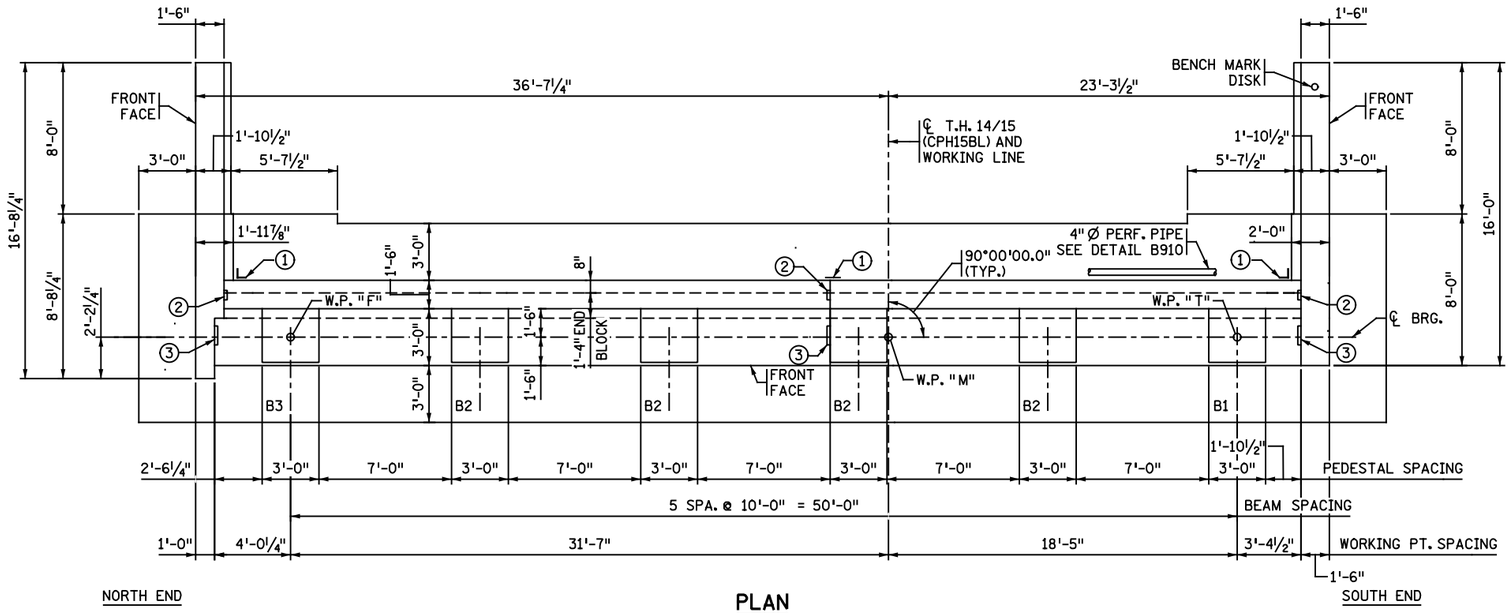
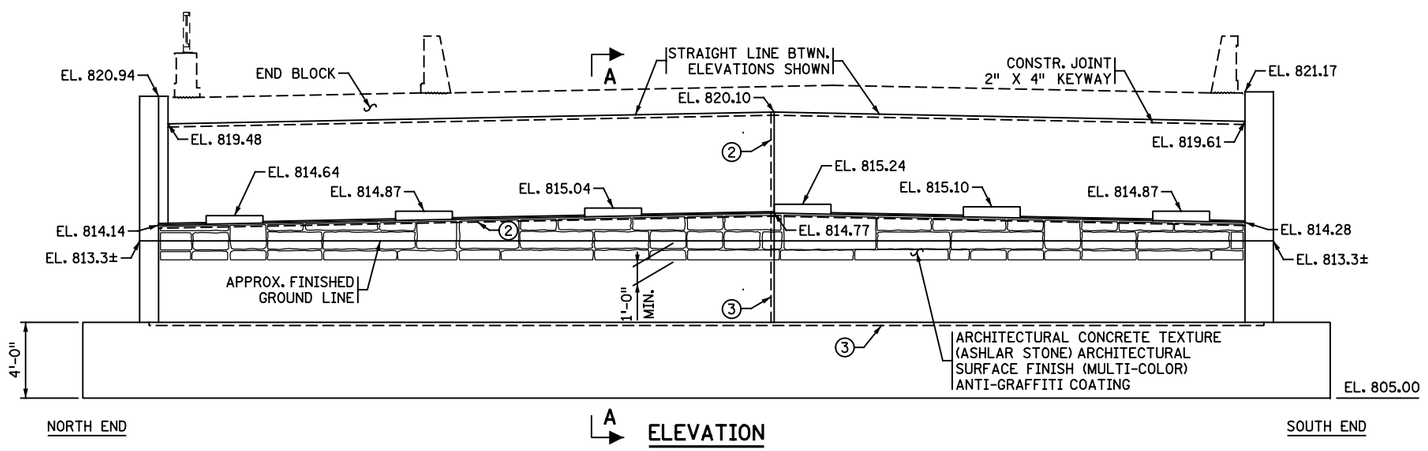


PLAN



ELEVATION

NOTES:

FOR ADDITIONAL ABUTMENT NOTES, SEE SHEET 8 .

FOR WINGWALL ELEVATIONS, SEE SHEET 17.

FOR SECTION A-A SEE SHEET 17.

FOR BRIDGE SEAT DETAIL, SEE SHEET 8 .

PILING NOT SHOWN FOR CLARITY.

(1) MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2481.3B. TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE (3B52).

(2) CONSTRUCTION JOINT 2" X 6" KEYWAY.

(3) CONSTRUCTION JOINT 2" X 12" KEYWAY

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE: EAST ABUTMENT DETAILS 2

DES: LPR	DR: DJR	APPROVED:
CHK: DRS	CHK: DRS	

STATE PROJECT NO. 0804-08016

SHEET NO. 16 OF 79 SHEETS

BRIDGE NO. 08016

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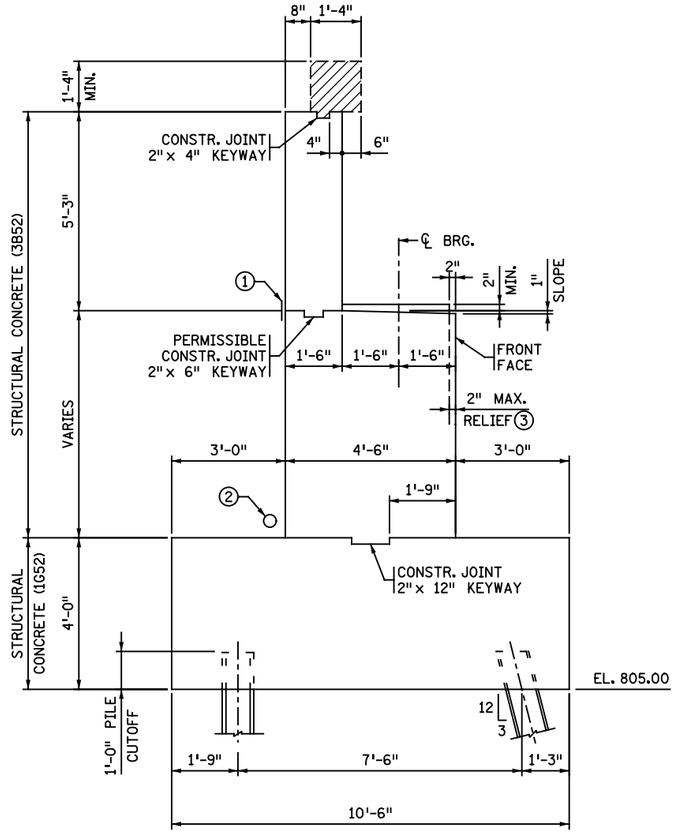
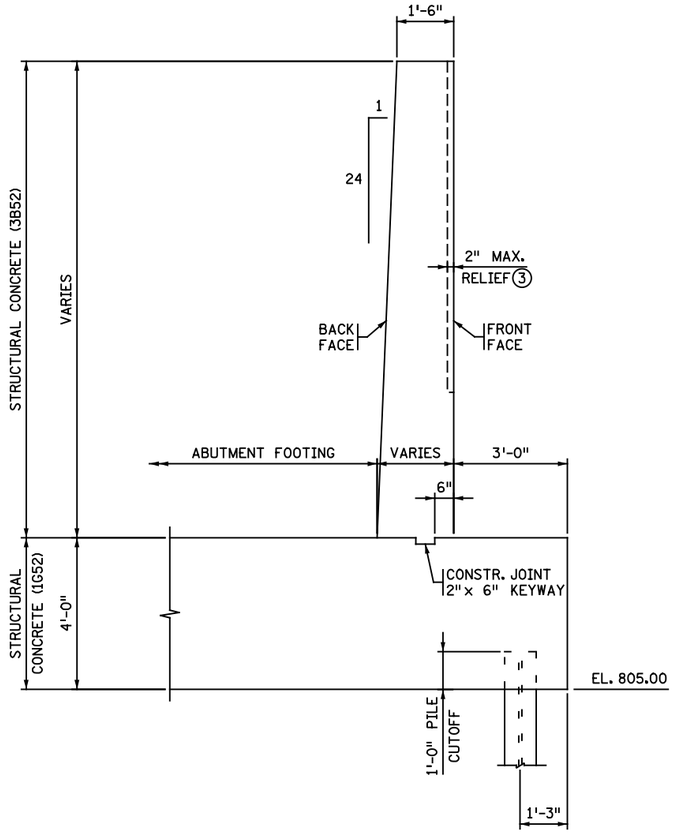
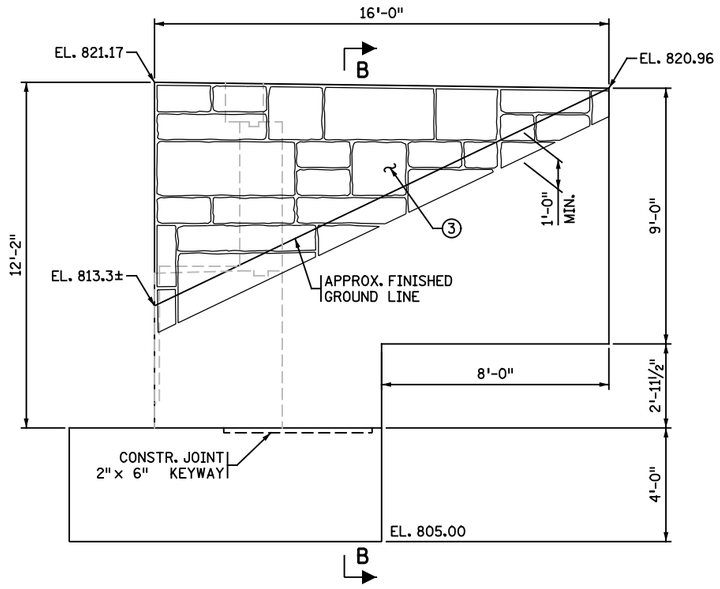


SECTION A-A

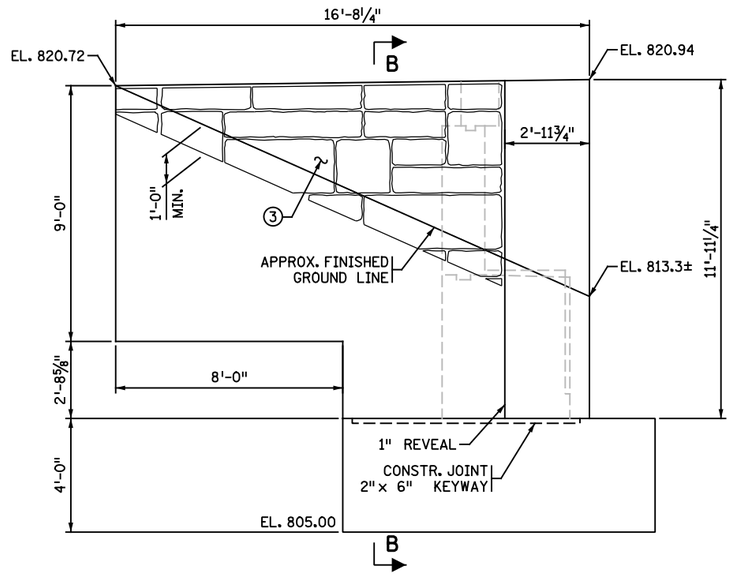


SECTION B-B



SOUTHEAST WINGWALL ELEVATION

PILING NOT SHOWN FOR CLARITY



NORTHEAST WINGWALL ELEVATION

PILING NOT SHOWN FOR CLARITY

NOTES:

1. MEMBRANE WATERPROOFING SYSTEM PER MnDOT 2481.3B. TO BE INCLUDED IN PRICE BID FOR STRUCTURAL CONCRETE (3B52).
2. 4"Ø PERFORATED PIPE. SEE DETAIL B910 FOR DETAILS.
3. ARCHITECTURAL CONCRETE TEXTURE (ASHLAR STONE)
   ARCHITECTURAL SURFACE FINISH (MULTI-COLOR)
   ANTI-GRAFFITI COATING

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

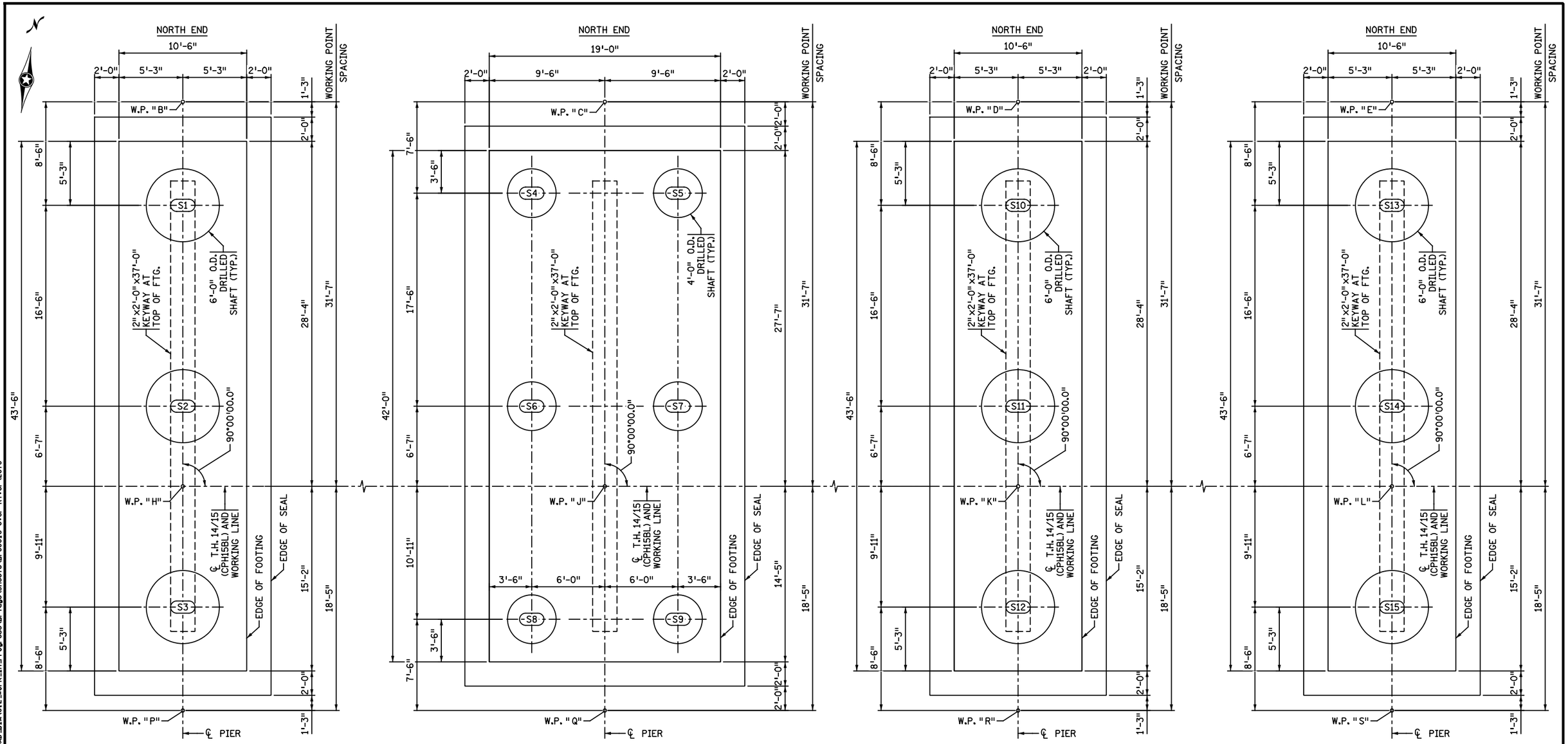
TITLE: EAST ABUTMENT DETAILS 3

DES: LPR	DR: DJR	APPROVED:
CHK: DRS	CHK: DRS	

STATE PROJECT NO. 0804-08016

SHEET NO. 17 OF 79 SHEETS

BRIDGE NO. 08016



NOTES:

SEE PIER SHEETS FOR ADDITIONAL INFORMATION ON SEALS AND FOOTINGS.

DRILLED SHAFT CONSTRUCTION TOLERANCES SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

FOR ADDITIONAL DRILLED SHAFT INFORMATION AND REQUIREMENTS SEE SPECIAL PROVISIONS AND NOTES ON SHEET 28.

SEAL DIMENSIONS ARE BASED ON A MIN. OF 2'-0" OUTSIDE OF FOOTING. CONTRACTOR MAY ADJUST SIZE BASED ON CONSTRUCTION METHODS BUT SHALL SUBMIT REVISED SEAL CALCULATIONS TO MNDOT FOR APPROVAL.

SEAL QUANTITIES ARE SHOWN IN SUMMARY OF QUANTITIES FOR PIERS.

(XX) DENOTES DRILLED SHAFT NUMBER

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

HDR

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE:

PIER FOUNDATION LAYOUT

DES: REM	DR: DJR	APPROVED:
CHK: RJR	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 23 OF 79 SHEETS

BRIDGE NO. 08016

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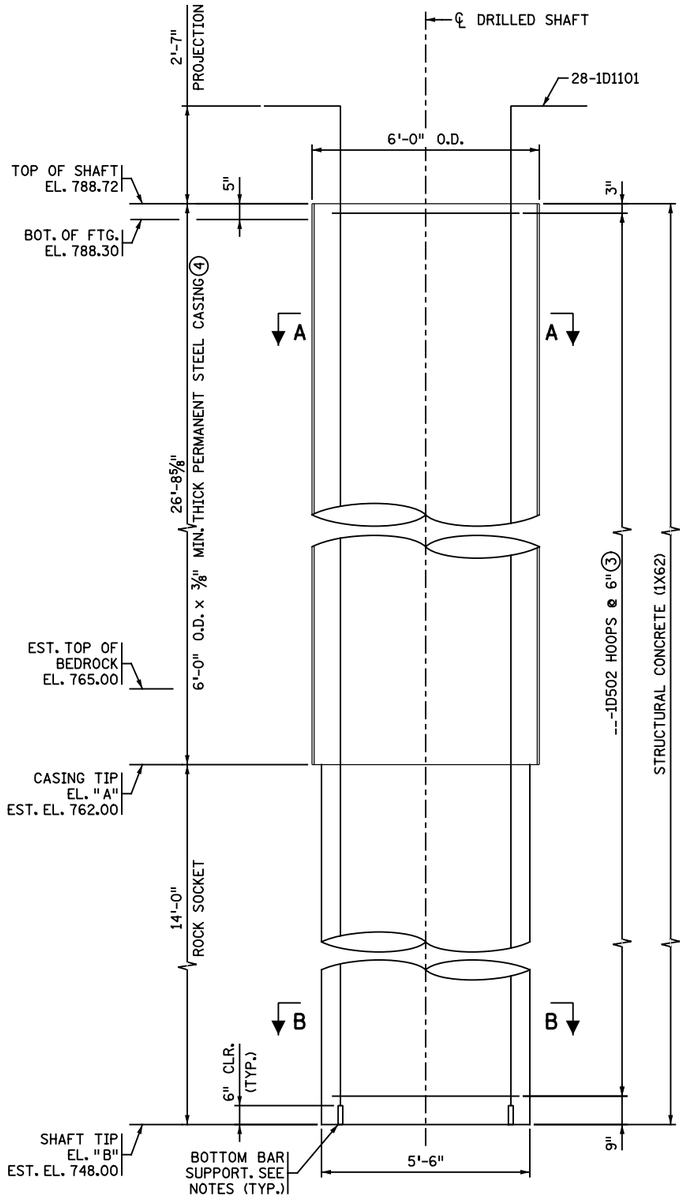
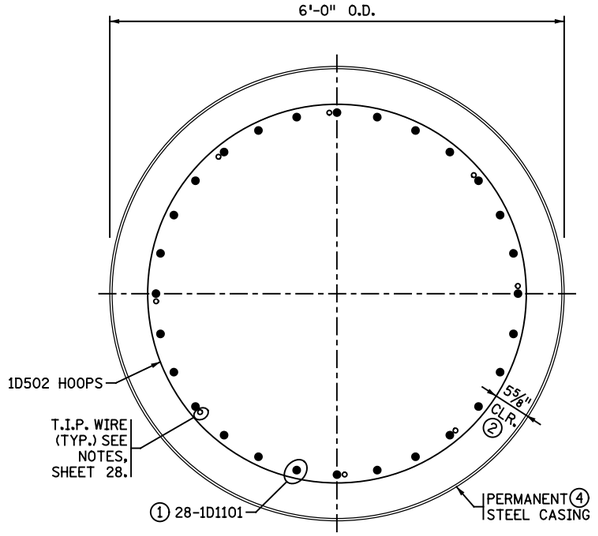


DRILLED SHAFT ELEVATION

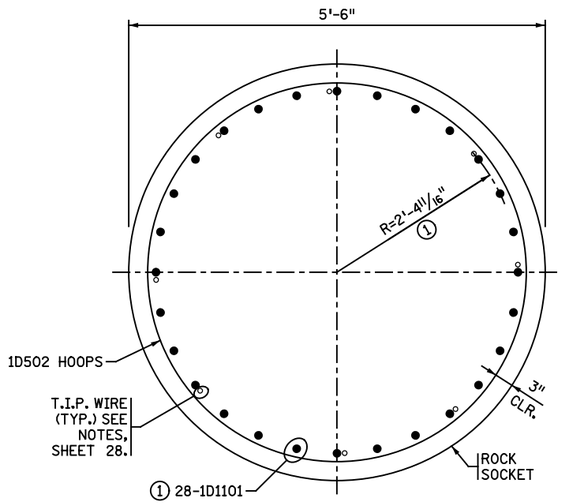
DESIGN DATA
PIER 1 DRILLED SHAFTS

SHAFT NUMBER	FACTORED DESIGN LOAD (KIPS)	ϕ_s	ϕ_b	f_s nominal (KSF)*	f_b nominal (KSF)	R_n PROV'D. (KIPS)	LOAD CASE
S1-S3	2700	0.55	0.50	10	120	5270	STRENGTH
	2404	1.00	1.00				EXTREME

*APPLIES TO ROCK SOCKET ONLY



SECTION A-A
THRU CASED LENGTH



SECTION B-B
THRU ROCK SOCKET

SUMMARY OF QUANTITIES FOR PIER 1 DRILLED SHAFTS

STRUCTURAL CONCRETE (1X62)	0	CU YD
SHAFT REINFORCEMENT	0	POUND
72" DIA DRILLED SHAFT (EARTH)	0	LIN FT
66" DIA DRILLED SHAFT (ROCK)	0	LIN FT
72" DIA CASED SHAFT	0	LIN FT
THERMAL INTEGRITY PROFILER TEST	0	LIN FT

BILL OF REINFORCEMENT
FOR PIER 1 DRILLED SHAFTS

BAR	NO.	LENGTH	SHAPE	LOCATION
1D1101	84	-- *	⌊‾‾⌋	VERTICAL
1D502	- *	--	○	HOOP

*BASED ON ESTIMATED TIP ELEVATION

AS-BUILT DATA
PIER 1 DRILLED SHAFTS

SHAFT NUMBER	ESTIMATED EL. "A"	ACTUAL EL. "A"	ESTIMATED EL. "B"	ACTUAL EL. "B"	EST. CASING LGTH.	ACTUAL CASING LGTH.	MINIMUM ROCK SOCKET LENGTH	ACTUAL ROCK SOCKET LENGTH
S1	762.00		748.00		26'-8⅝"		14'-0"	
S2	762.00		748.00		26'-8⅝"		14'-0"	
S3	762.00		748.00		26'-8⅝"		14'-0"	

NOTES:

FOR ADDITIONAL INFORMATION AND REQUIREMENTS SEE SPECIAL PROVISIONS AND NOTES ON SHEET 28.

① BARS UNIFORMLY DISTRIBUTED AROUND PERIMETER AS SHOWN AND ALIGNED USING A TEMPLATE. SEE NOTES ON SHEET 28 FOR ADDITIONAL INFORMATION.

② CLEARANCE SHALL BE ADJUSTED FOR CASING THICKNESS LARGER THAN ⅜".

③ ALTERNATE LAP SPLICE LOCATION 180° ON EACH HOOP.

④ FOR ADDITIONAL PERMANENT CASING INFORMATION SEE NOTES, SHEET 28.

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

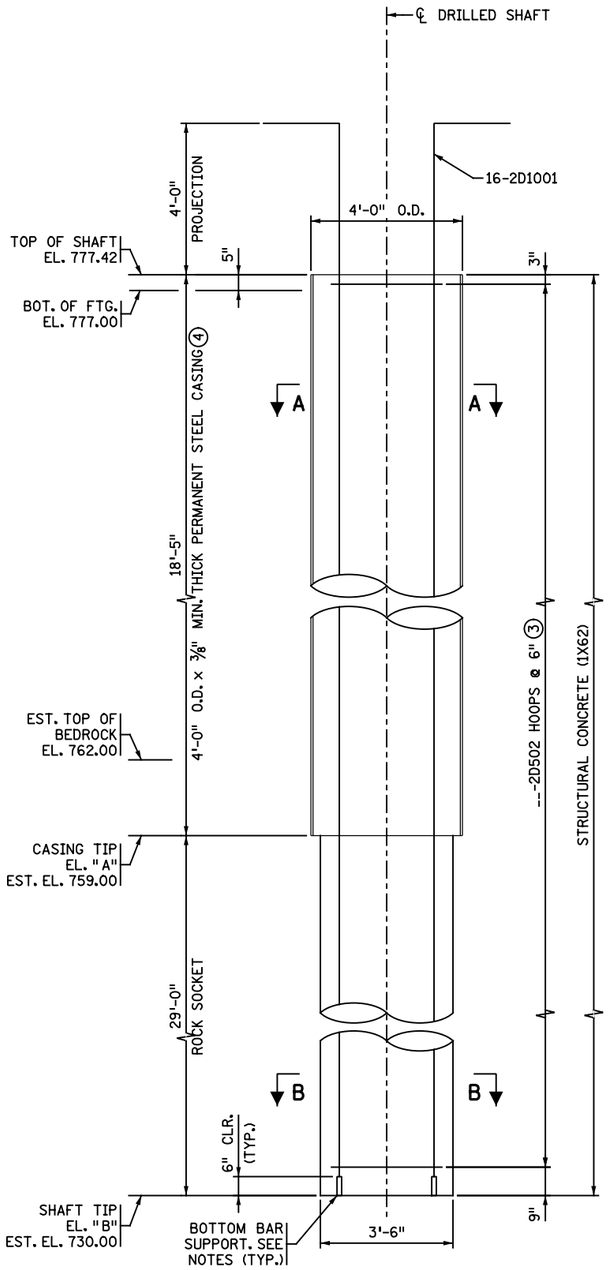
TITLE: DRILLED SHAFTS PIER 1

DES: REM	DR: DJR	APPROVED:
CHK: RJR	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 24 OF 79 SHEETS

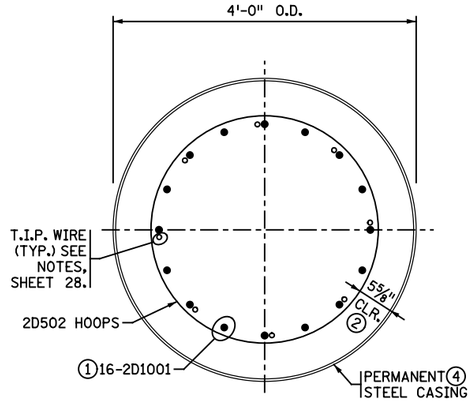
BRIDGE NO. 08016



DRILLED SHAFT ELEVATION

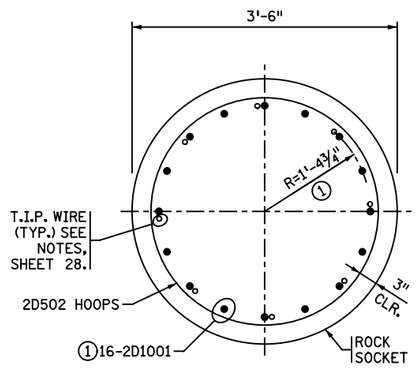
DESIGN DATA PIER 2 DRILLED SHAFTS							
SHAFT NUMBER	FACTORED DESIGN LOAD (KIPS)	ϕ_s	ϕ_b	f_s nominal (KSF)*	f_b nominal (KSF)	R_n PROV'D. (KIPS)	LOAD CASE
S4-S9	1846	0.55	0.50	10	110	3642	STRENGTH
	1564	1.00	1.00				EXTREME

*APPLIES TO ROCK SOCKET ONLY



SECTION A-A

THRU CASED LENGTH



SECTION B-B

THRU ROCK SOCKET

SUMMARY OF QUANTITIES FOR PIER 2 DRILLED SHAFTS		
STRUCTURAL CONCRETE (1X62)	0	CU YD
SHAFT REINFORCEMENT	0	POUND
48" DIA DRILLED SHAFT (EARTH)	0	LIN FT
42" DIA DRILLED SHAFT (ROCK)	0	LIN FT
48" DIA CASED SHAFT	0	LIN FT
THERMAL INTEGRITY PROFILER TEST	0	LIN FT

BILL OF REINFORCEMENT FOR PIER 2 DRILLED SHAFTS				
BAR	NO.	LENGTH	SHAPE	LOCATION
2D1001	96	-- *	L	VERTICAL
2D502	- *	--	O	HOOP

*BASED ON ESTIMATED TIP ELEVATION

AS-BUILT DATA PIER 2 DRILLED SHAFTS								
SHAFT NUMBER	ESTIMATED EL. "A"	ACTUAL EL. "A"	ESTIMATED EL. "B"	ACTUAL EL. "B"	EST. CASING LGTH.	ACTUAL CASING LGTH.	MINIMUM ROCK SOCKET LENGTH	ACTUAL ROCK SOCKET LENGTH
S4	759.00		730.00		18'-5"		29'-0"	
S5	759.00		730.00		18'-5"		29'-0"	
S6	759.00		730.00		18'-5"		29'-0"	
S7	759.00		730.00		18'-5"		29'-0"	
S8	759.00		730.00		18'-5"		29'-0"	
S9	759.00		730.00		18'-5"		29'-0"	

NOTES:

FOR ADDITIONAL INFORMATION AND REQUIREMENTS SEE SPECIAL PROVISIONS AND NOTES ON SHEET 28.

(1) BARS UNIFORMLY DISTRIBUTED AROUND PERIMETER AS SHOWN AND ALIGNED USING A TEMPLATE. SEE NOTES ON SHEET 28 FOR ADDITIONAL INFORMATION.

(2) CLEARANCE SHALL BE ADJUSTED FOR CASING THICKNESS LARGER THAN 3/8".

(3) ALTERNATE LAP SPLICE LOCATION 180° ON EACH HOOP.

(4) FOR ADDITIONAL PERMANENT CASING INFORMATION SEE NOTES, SHEET 28.

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

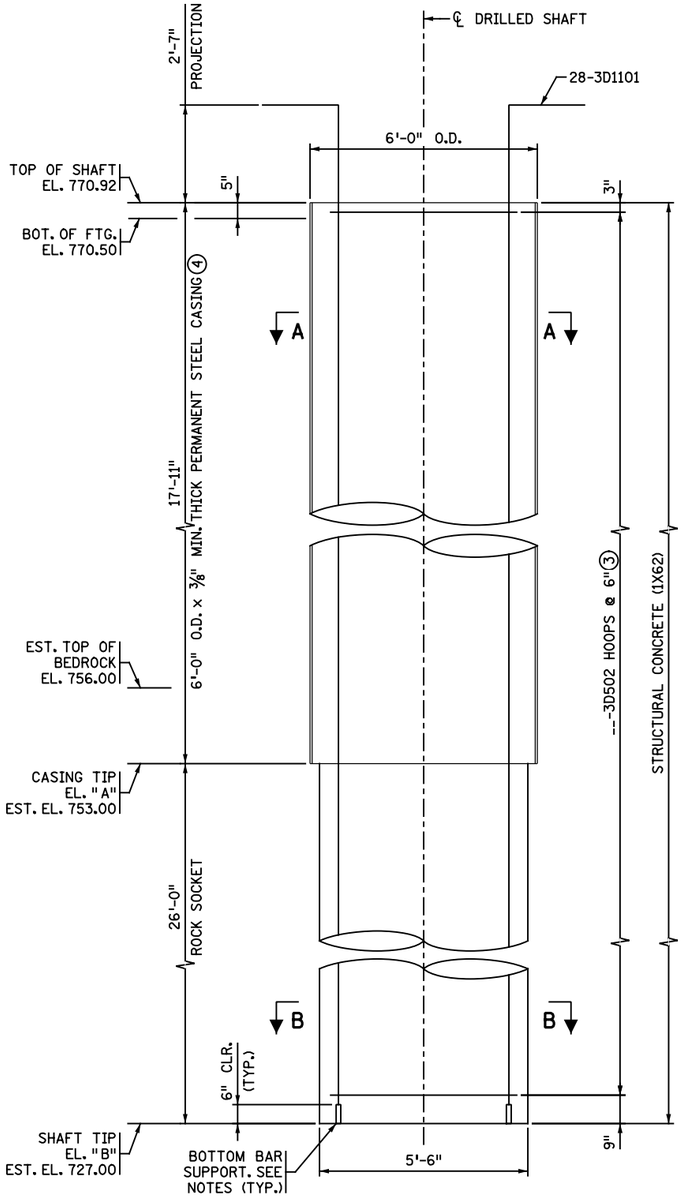
TITLE: DRILLED SHAFTS PIER 2

DES: REM	DR: DJR	APPROVED:
CHK: RJR	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 25 OF 79 SHEETS

BRIDGE NO. 08016

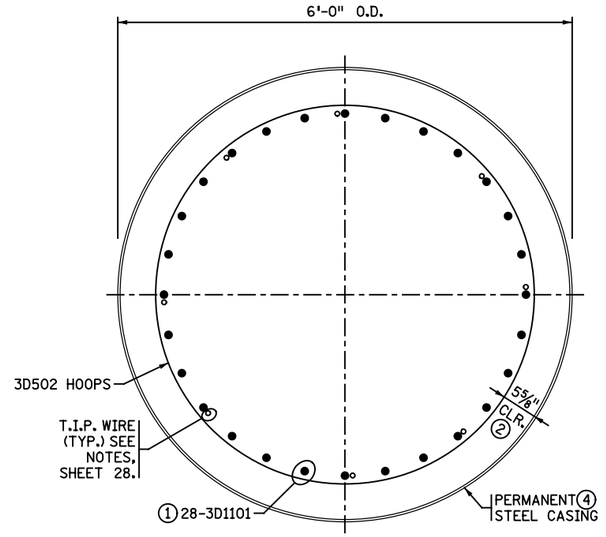


DRILLED SHAFT ELEVATION

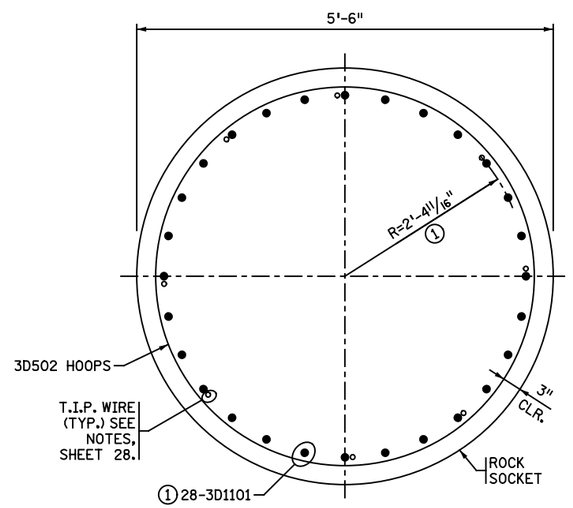
DESIGN DATA
PIER 3 DRILLED SHAFTS

SHAFT NUMBER	FACTORED DESIGN LOAD (KIPS)	ϕ_s	ϕ_b	f_s nominal (KSF)*	f_b nominal (KSF)	R_n PROV'D. (KIPS)	LOAD CASE
S10-S12	3164	0.55	0.50	10	120	6152	STRENGTH
	2988	1.00	1.00				EXTREME

*APPLIES TO ROCK SOCKET ONLY



SECTION A-A
THRU CASED LENGTH



SECTION B-B
THRU ROCK SOCKET

SUMMARY OF QUANTITIES FOR PIER 3 DRILLED SHAFTS

STRUCTURAL CONCRETE (1X62)	0	CU YD
SHAFT REINFORCEMENT	0	POUND
72" DIA DRILLED SHAFT (EARTH)	0	LIN FT
66" DIA DRILLED SHAFT (ROCK)	0	LIN FT
72" DIA CASED SHAFT	0	LIN FT
THERMAL INTEGRITY PROFILER TEST	0	LIN FT

BILL OF REINFORCEMENT
FOR PIER 3 DRILLED SHAFTS

BAR	NO.	LENGTH	SHAPE	LOCATION
3D1101	84	-- *	⌊‾‾⌋	VERTICAL
3D502	- *	--	○	HOOP

*BASED ON ESTIMATED TIP ELEVATION

AS-BUILT DATA
PIER 3 DRILLED SHAFTS

SHAFT NUMBER	ESTIMATED EL. "A"	ACTUAL EL. "A"	ESTIMATED EL. "B"	ACTUAL EL. "B"	EST. CASING LGTH.	ACTUAL CASING LGTH.	MINIMUM ROCK SOCKET LENGTH	ACTUAL ROCK SOCKET LENGTH
S10	753.00		727.00		17'-11'		26'-0"	
S11	753.00		727.00		17'-11'		26'-0"	
S12	753.00		727.00		17'-11"		26'-0"	

NOTES:

FOR ADDITIONAL INFORMATION AND REQUIREMENTS SEE SPECIAL PROVISIONS AND NOTES ON SHEET 28.

(1) BARS UNIFORMLY DISTRIBUTED AROUND PERIMETER AS SHOWN AND ALIGNED USING A TEMPLATE. SEE NOTES ON SHEET 28 FOR ADDITIONAL INFORMATION.

(2) CLEARANCE SHALL BE ADJUSTED FOR CASING THICKNESS LARGER THAN 3/8".

(3) ALTERNATE LAP SPLICE LOCATION 180° ON EACH HOOP.

(4) FOR ADDITIONAL PERMANENT CASING INFORMATION SEE NOTES, SHEET 28.

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

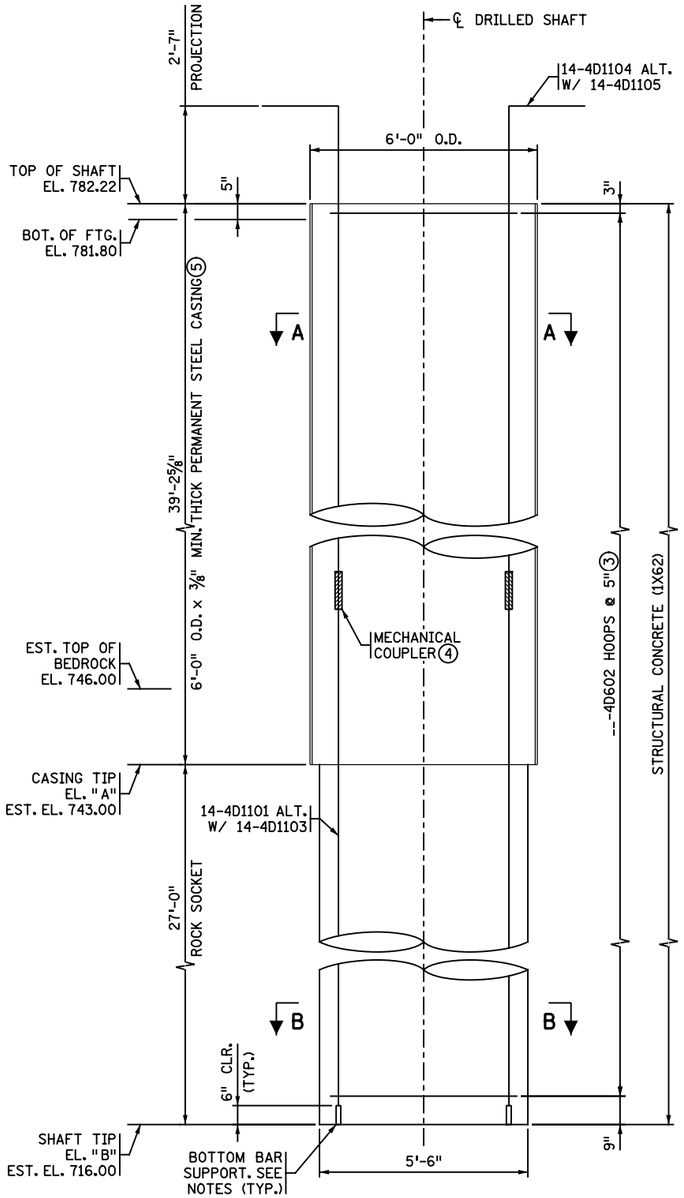
TITLE: DRILLED SHAFTS PIER 3

DES: REM	DR: DJR	APPROVED:
CHK: RJR	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 26 OF 79 SHEETS

BRIDGE NO. 08016

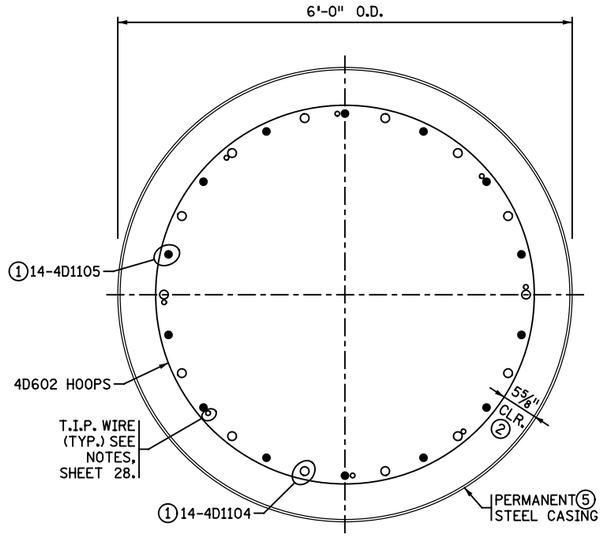


DRILLED SHAFT ELEVATION

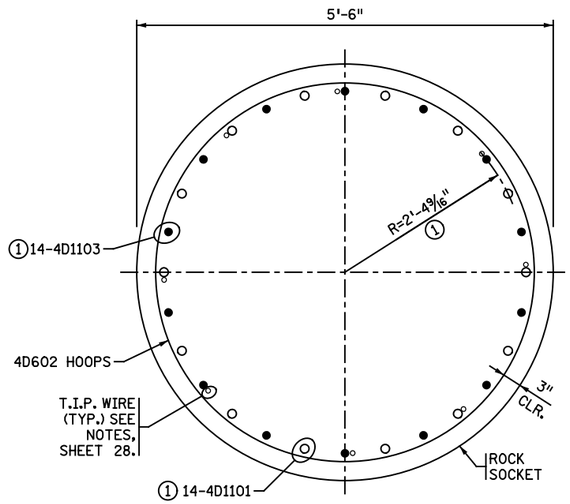
DESIGN DATA
PIER 4 DRILLED SHAFTS

SHAFT NUMBER	FACTORED DESIGN LOAD (KIPS)	ϕ_s	ϕ_b	f_s nominal (KSF)*	f_b nominal (KSF)	R_n PROV'D. (KIPS)	LOAD CASE
S13-S15	2966	0.55	0.50	10	110	5758	STRENGTH
	2780	1.00	1.00				EXTREME

*APPLIES TO ROCK SOCKET ONLY



SECTION A-A
THRU CASED LENGTH



SECTION B-B
THRU ROCK SOCKET

SUMMARY OF QUANTITIES FOR PIER 4 DRILLED SHAFTS

STRUCTURAL CONCRETE (1X62)	0	CU YD
SHAFT REINFORCEMENT	0	POUND
72" DIA DRILLED SHAFT (EARTH)	0	LIN FT
66" DIA DRILLED SHAFT (ROCK)	0	LIN FT
72" DIA CASED SHAFT	0	LIN FT
THERMAL INTEGRITY PROFILER TEST	0	LIN FT

BILL OF REINFORCEMENT
FOR PIER 4 DRILLED SHAFTS

BAR	NO.	LENGTH	SHAPE	LOCATION
4D1101	42	-- *	——	VERTICAL
4D602	- *	--	O	HOOP
4D1103	42	-- *	——	VERTICAL
4D1104	42	--	L——	VERTICAL
4D1105	42	--	L——	VERTICAL

*BASED ON ESTIMATED TIP ELEVATION

AS-BUILT DATA
PIER 4 DRILLED SHAFTS

SHAFT NUMBER	ESTIMATED EL. "A"	ACTUAL EL. "A"	ESTIMATED EL. "B"	ACTUAL EL. "B"	EST. CASING LGTH.	ACTUAL CASING LGTH.	MINIMUM ROCK SOCKET LENGTH	ACTUAL ROCK SOCKET LENGTH
S13	743.00		717.00		39'-2⅝"		27'-0"	
S14	743.00		717.00		39'-2⅝"		27'-0"	
S15	743.00		717.00		39'-2⅝"		27'-0"	

NOTES:

FOR ADDITIONAL INFORMATION AND REQUIREMENTS SEE SPECIAL PROVISIONS AND NOTES ON SHEET 28.

(1) BARS UNIFORMLY DISTRIBUTED AROUND PERIMETER AS SHOWN AND ALIGNED USING A TEMPLATE. SEE NOTES ON SHEET 28 FOR ADDITIONAL INFORMATION.

(2) CLEARANCE SHALL BE ADJUSTED FOR CASING THICKNESS LARGER THAN ⅜".

(3) ALTERNATE LAP SPLICE LOCATION 180° ON EACH HOOP.

(4) STAGGER COUPLER LOCATION BY 3'-6" VERTICALLY ON ADJACENT BARS. SEE DETAIL AND NOTES ON SHEET 28.

(5) FOR ADDITIONAL PERMANENT CASING INFORMATION SEE NOTES, SHEET 28.

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

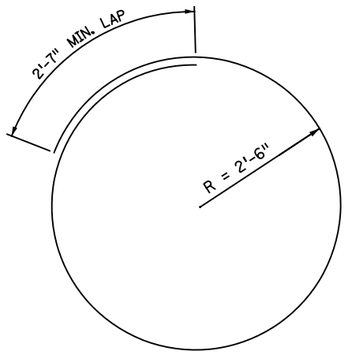
TITLE: DRILLED SHAFTS PIER 4

DES: REM	DR: DJR	APPROVED:
CHK: RJR	CHK: BAP	

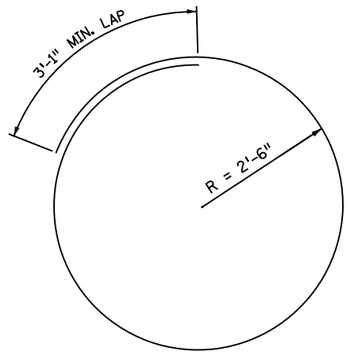
STATE PROJECT NO. 0804-08016

SHEET NO. 27 OF 79 SHEETS

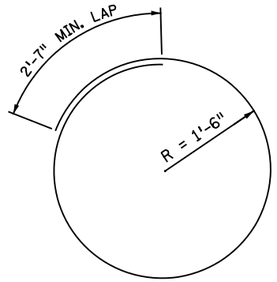
BRIDGE NO. 08016



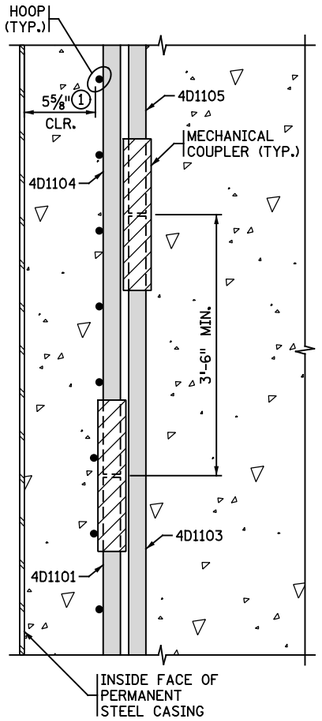
1D502 OR 3D502



4D602

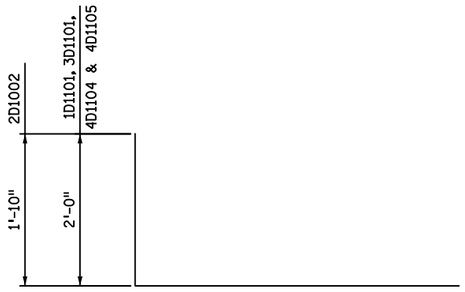


2D502



COUPLER DETAIL

REQ'D. AT PIER 4 ONLY



1D1101, 2D1001, 3D1101, 4D1104, & 4D1105

NOTES:

RIVERBED AND TOP OF BEDROCK ELEVATIONS ARE ESTIMATED PER CONTRACT BORINGS. ACTUAL CONDITIONS MAY VARY.

DURING EXCAVATION OF THE SHAFT, THE CONTRACTOR SHALL PERFORM PLUMBNESS, ALIGNMENT AND DIMENSIONAL CHECKS OF THE SHAFT AT 5 FOOT INCREMENTS IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

PROVIDE A TEMPLATE AT THE TOP OF EACH SHAFT TO LOCATE AND ALIGN VERTICAL SHAFT REINFORCEMENT BARS TO MATCH THAT SHOWN ON THE DRILLED SHAFTS SHEETS. THE TEMPLATE IS REQUIRED IN ORDER TO FACILITATE THREADING OF HORIZONTAL REINFORCEMENT BARS THROUGH THE FOOTING AS SHOWN ON THE PIER DETAIL SHEETS. FINAL ORIENTATION OF ALL TEMPLATES IN EACH RESPECTIVE SUBSTUCTURE UNIT MUST MATCH SO THAT HORIZONTAL REINFORCEMENT BARS CAN BE THREADED THROUGH FROM SHAFT TO SHAFT IN EACH ORTHOGONAL DIRECTION. SEE PIER REINFORCEMENT SHEETS FOR THE LAYOUT OF THE PLINTH/FOOTING HORIZONTAL REINFORCEMENT.

REINFORCEMENT LENGTHS SHOWN ARE BASED ON ESTIMATED TIP ELEVATIONS. ADJUST LENGTHS BASED ON ACTUAL SHAFT TIP ELEVATIONS. SEE SPECIAL PROVISIONS FOR PAYMENT INFORMATION.

REINFORCING CAGE SHALL BE SUPPORTED ON BOTTOM OF EXCAVATION USING SUPPORTS IN ACCORDANCE WITH THE PLANS AND SPECIAL PROVISIONS.

ALL DRILLED SHAFT REINFORCEMENT, INCLUDING COUPLERS, ARE NOT EPOXY COATED.

BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS NOTED OTHERWISE.

STAGGER COUPLER LOCATIONS (PIER 4 ONLY) ON ADJACENT BARS BY 3'-6" MINIMUM. SEE COUPLER DETAIL ON THIS SHEET.

ALTERNATE LAP SPLICE LOCATION 180° ON EACH HOOP.

THE CONTRACTOR SHALL PLACE PERMANENT CASING AT LOCATIONS AND ELEVATIONS AS SHOWN IN THE PLANS. THE CASING TIP ELEVATION SHOWN IS ANTICIPATED AND IS SUBJECT TO CHANGE BASED ON THE LOCATION OF BEDROCK AND THE NECESSARY EMBEDMENT TO MAINTAIN A STABLE EXCAVATION. PERMANENT CASING SHALL HAVE A MINIMUM THICKNESS OF ⅜ IN. THE CONTRACTOR SHALL DESIGN THE CASING AND END STIFFENERS AS NECESSARY FOR CONSTRUCTION STRESSES BASED ON THE APPROVED MEANS AND METHODS. ALL COSTS ASSOCIATED WITH CASING DESIGN, FURNISHING AND INSTALLATION OF PERMANENT CASING SHALL BE INCLUDED IN THE BID ITEM NO. 2453.603

CASING SHALL BE SOCKETED INTO SCOURED BEDROCK AS REQUIRED FOR CONSTRUCTION. THE ESTIMATED ELEVATIONS ARE BASED ON AN ESTIMATED TOP OF SCOURED BEDROCK AND AN ANTICIPATED 3 FT OF CASING EMBEDMENT INTO BEDROCK. CONTRACTOR MAY ADJUST THE CASING TIP ELEVATION IN BEDROCK TO MAINTAIN A STABLE EXCAVATION.

PERMANENT CASING SHALL BE GRADE 36 OR BETTER. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

CASING SHALL BE USED AS DESCRIBED IN THE APPROVED DRILLED SHAFT INSTALLATION PLAN AND SHALL REMAIN IN PLACE.

THERMAL INTEGRITY PROFILE (T.I.P.) TESTING SHALL BE CONDUCTED ON ALL SHAFTS IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE GEOTECHNICAL ENGINEER, OR THEIR REPRESENTATIVE ON SITE, SHALL DETERMINE ACTUAL TOP OF BEDROCK ELEVATION DURING SHAFT EXCAVATION. DURING ROCK SOCKET EXCAVATION, THE GEOTECHNICAL ENGINEER SHALL DETERMINE IF A CHANGE TO THE ROCK SOCKET LENGTH OR TIP ELEVATION IS NECESSARY ON THE BASIS OF OBSERVATION OF THE ROCK SOCKET EXCAVATION. THE GEOTECHNICAL ENGINEER WILL COORDINATE WITH THE ENGINEER REGARDING NECESSARY CHANGES AND THE ENGINEER WILL TRANSMIT REVISED SOCKET LENGTH AND TIP ELEVATION TO THE CONTRACTOR. IF VARIATIONS IN THE BEDROCK RELATIVE TO THE DESIGN ASSUMPTIONS ARE ENCOUNTERED DURING EXCAVATION, THE GEOTECHNICAL ENGINEER WILL COORDINATE TO DETERMINE A DESIGN CHANGE, IF ANY.

BASE OF DRILLED SHAFT EXCAVATIONS SHALL BE CLEANED AND INSPECTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

WET CONSTRUCTION METHOD IS ANTICIPATED AND SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIAL PROVISIONS. DEWATERING IS NOT ALLOWED.

SEE SPECIAL PROVISIONS FOR DRILLING FLUID REQUIREMENTS.

CONCRETE SHALL BE PLACED WITHIN 72 HOURS OF COMPLETION OF ROCK SOCKET EXCAVATION.

(1) CLEARANCE SHALL BE ADJUSTED FOR CASING THICKNESS GREATER THAN ⅜".

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE: DRILLED SHAFT DETAILS

DES: REM	DR: DJR	APPROVED:	
CHK: RJR	CHK: BAP		
STATE PROJECT NO. 0804-08016			BRIDGE NO. 08016
SHEET NO. 28 OF 79 SHEETS			

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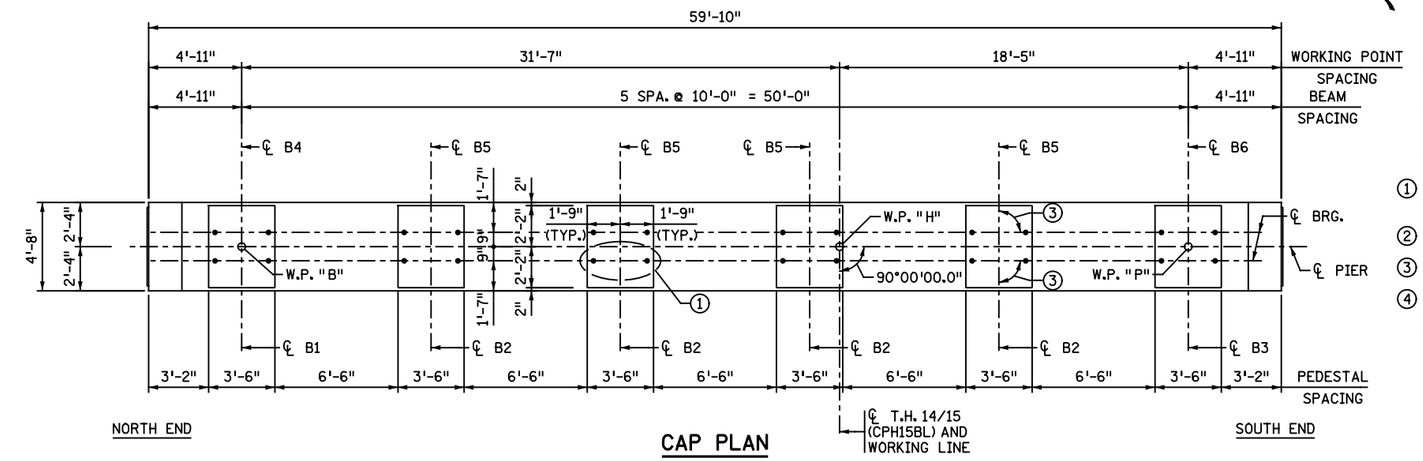
SUMMARY OF QUANTITIES FOR PIER 1

STRUCTURAL CONCRETE (1G52)	0	CU YD
STRUCTURAL CONCRETE (3B52)	0	CU YD
STRUCTURAL CONCRETE (1X62)	0	CU YD
REINFORCEMENT BARS	0	POUND
REINFORCEMENT BARS (EPOXY COATED)	0	POUND
FOUNDATION PREPARATION PIER 1	0	EACH
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	0	SQ FT



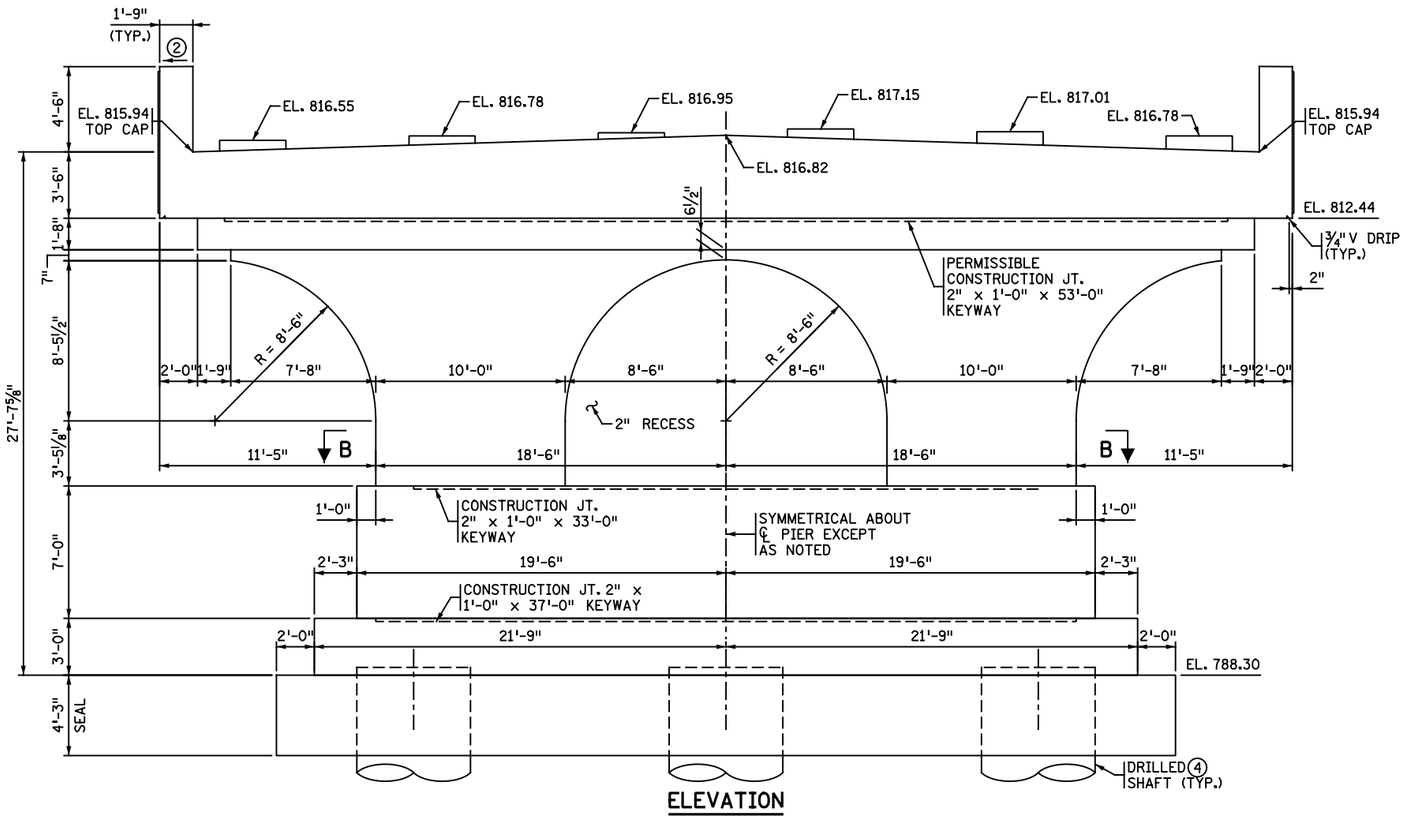
CAP PLAN

NOTES:

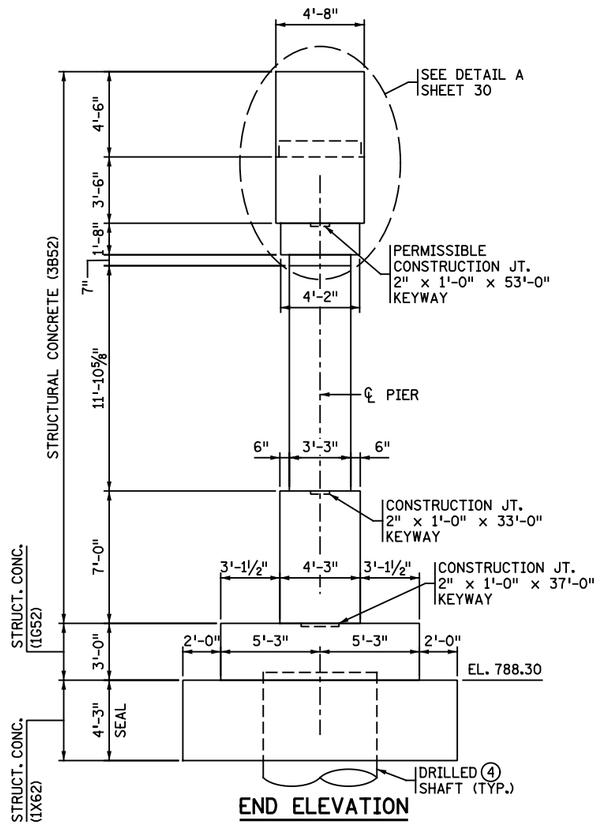
FOR SEAL REQUIREMENTS, SEE SHEET 23.

FOR SECTION B-B AND CAP SECTION, SEE SHEET 30.

1. FOR ANCHOR ROD DETAILS, SEE SHEET 30.
2. SLOPE TO DRAIN (TYP.)
3. 90°00'00.0" (TYP.)
4. 6'-0" O.D. DRILLED SHAFT. SEE PIER FOUNDATION LAYOUT AND DRILLED SHAFT DETAILS.



ELEVATION



END ELEVATION

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

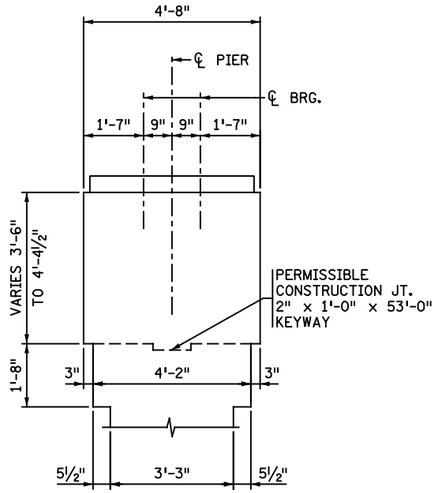
CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

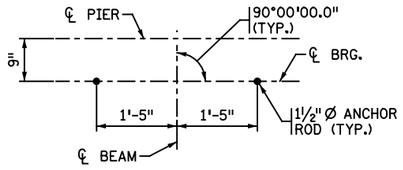
NAME: LIC. NO.

TITLE: PIER 1 DETAILS

DES: REM	DR: DJR	APPROVED:	
CHK: RJR	CHK: BAP		
STATE PROJECT NO. 0804-08016			BRIDGE NO. 08016
SHEET NO. 29 OF 79 SHEETS			

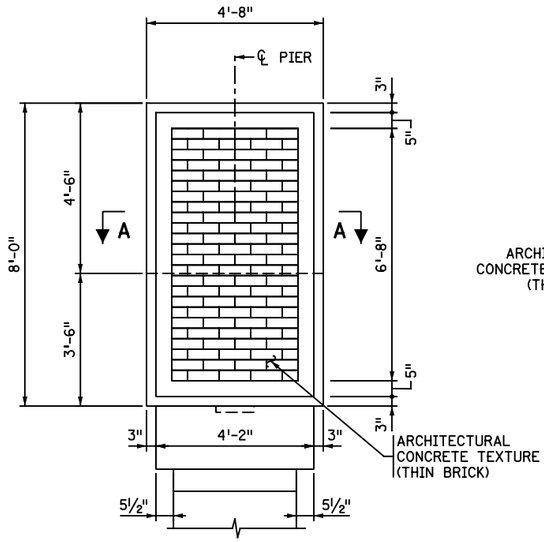


CAP SECTION

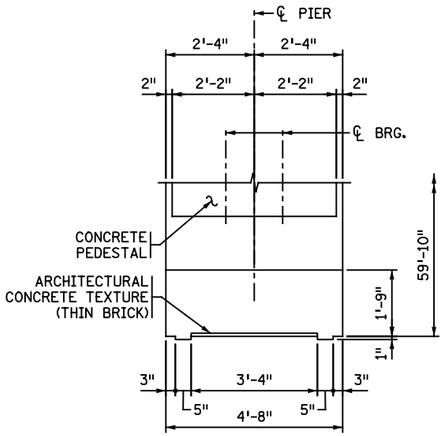


ANCHOR ROD DETAILS

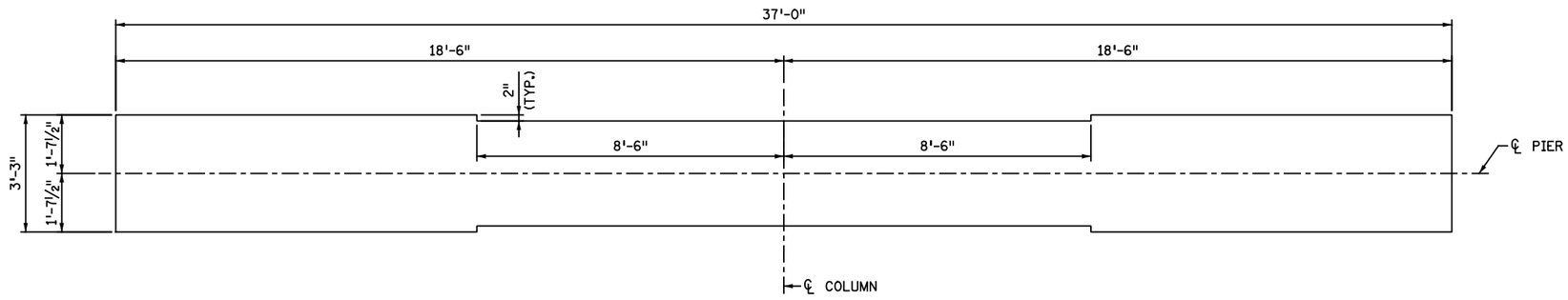
TYPICAL ALL FIXED BEAM LOCATIONS



DETAIL A



SECTION A-A



SECTION B-B

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

HDR

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

TITLE: PIER DETAILS

DES: RJR	DR: DJR	APPROVED:
CHK: REM	CHK: BAP	

STATE PROJECT NO. 0804-08016

SHEET NO. 30 OF 79 SHEETS

BRIDGE NO. 08016

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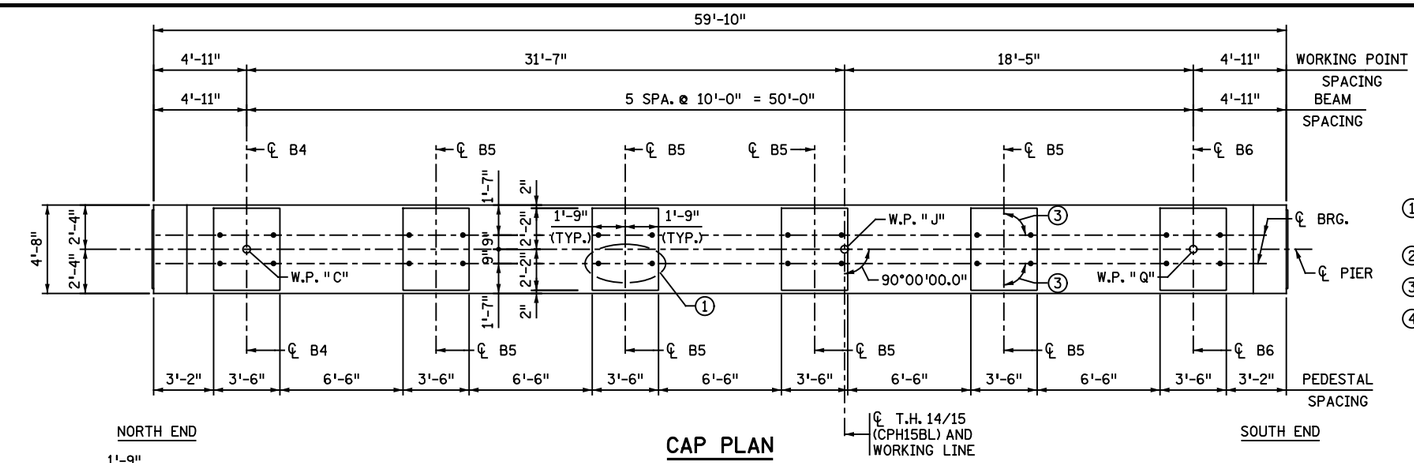


CAP PLAN

NOTES:

FOR SECTION B-B AND CAP SECTION, SEE SHEET 30.

① FOR ANCHOR ROD DETAILS, SEE SHEET 30.

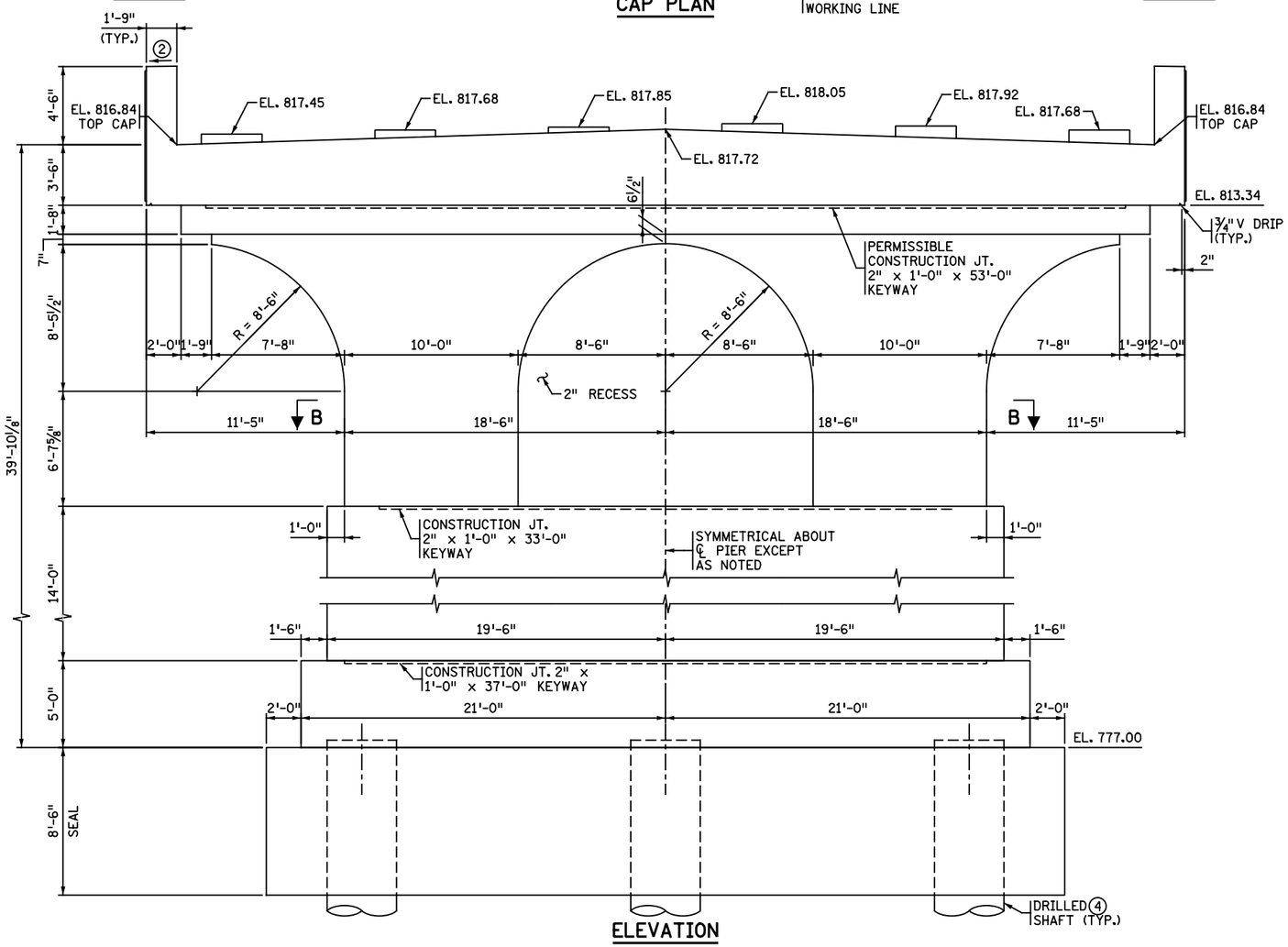
② SLOPE TO DRAIN (TYP.)

③ 90°00'00.0" (TYP.)

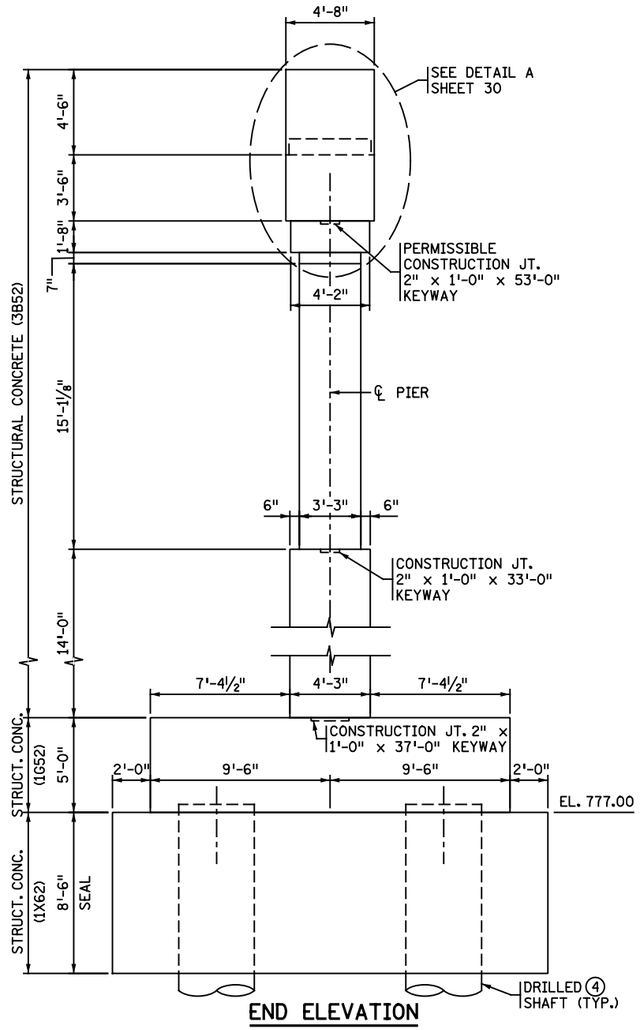
④ 4'-0" O.D. DRILLED SHAFT. SEE PIER FOUNDATION LAYOUT AND DRILLED SHAFT DETAILS.

SUMMARY OF QUANTITIES FOR PIER 2

STRUCTURAL CONCRETE (1G52)	0	CU YD
STRUCTURAL CONCRETE (3B52)	0	CU YD
STRUCTURAL CONCRETE (1X62)	0	CU YD
REINFORCEMENT BARS	0	POUND
REINFORCEMENT BARS (EPOXY COATED)	0	POUND
FOUNDATION PREPARATION PIER 2	0	EACH
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	0	SQ FT



ELEVATION



END ELEVATION

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

CERTIFIED BY: _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

TITLE: PIER 2 DETAILS

DES: REM	DR: DJR	APPROVED:	
CHK: RJR	CHK: BAP		

STATE PROJECT NO. 0804-08016

SHEET NO. 35 OF 79 SHEETS

BRIDGE NO. 08016

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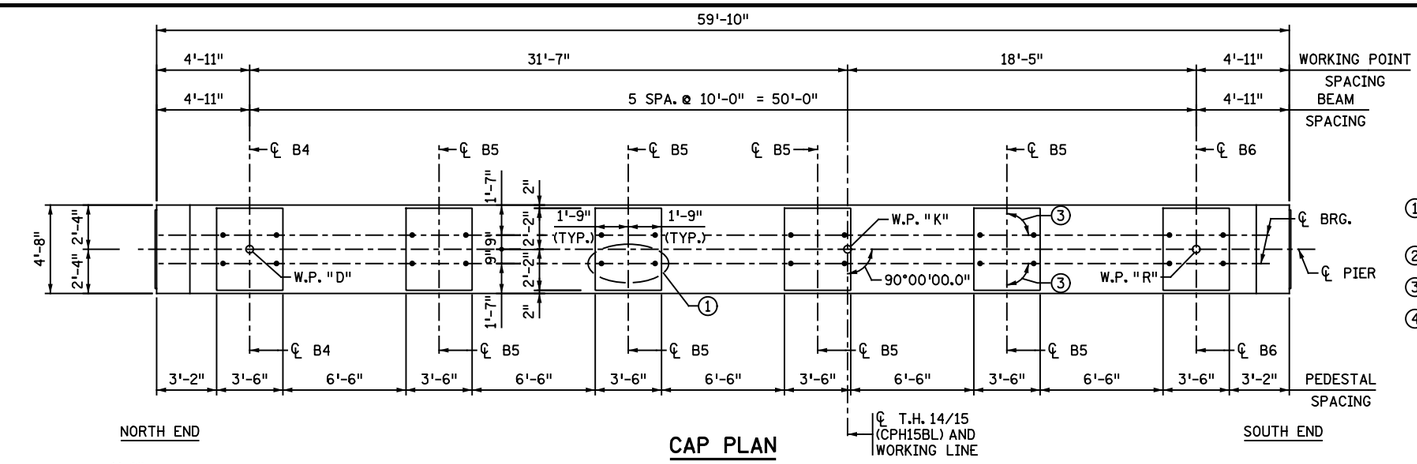
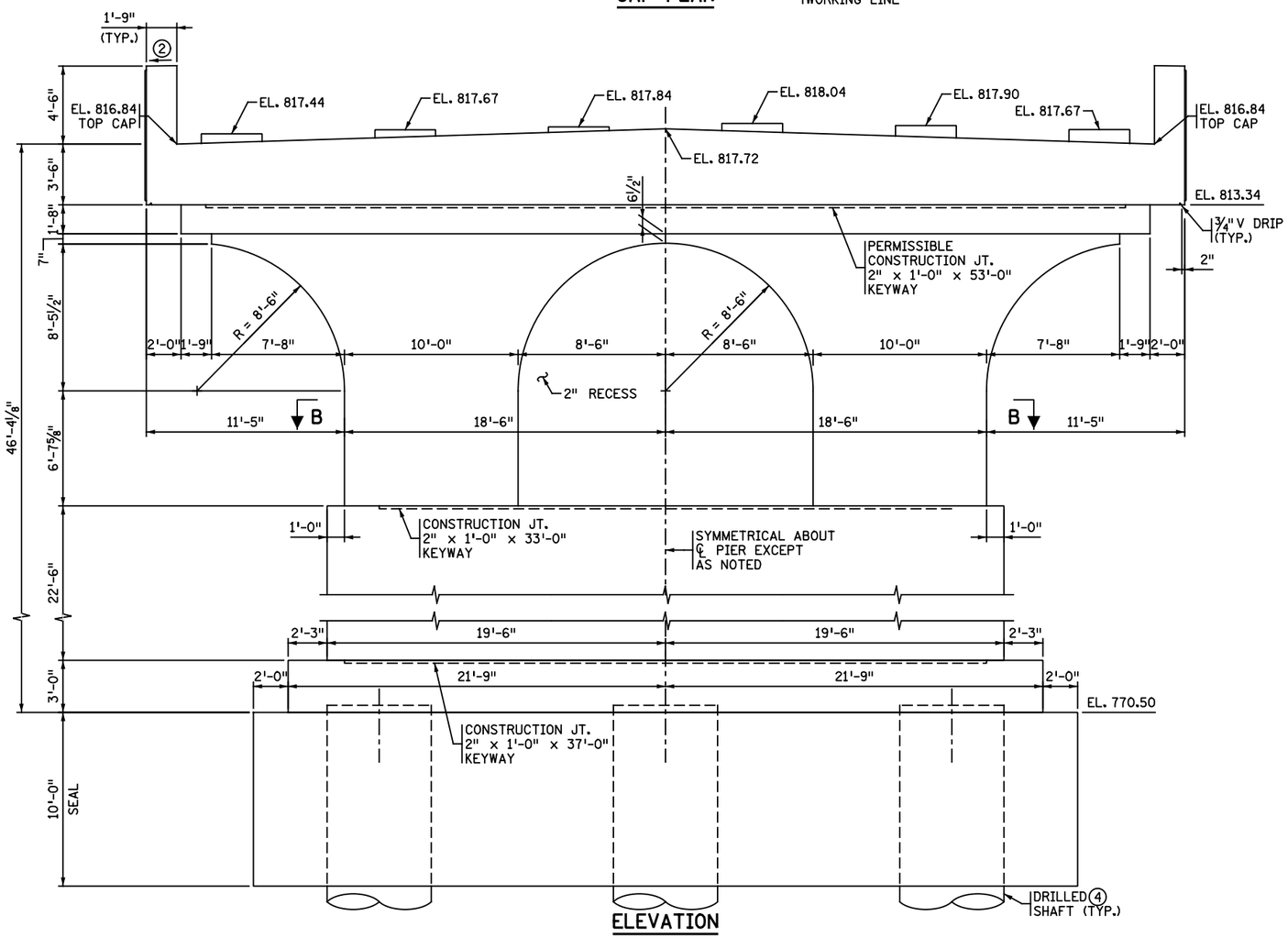
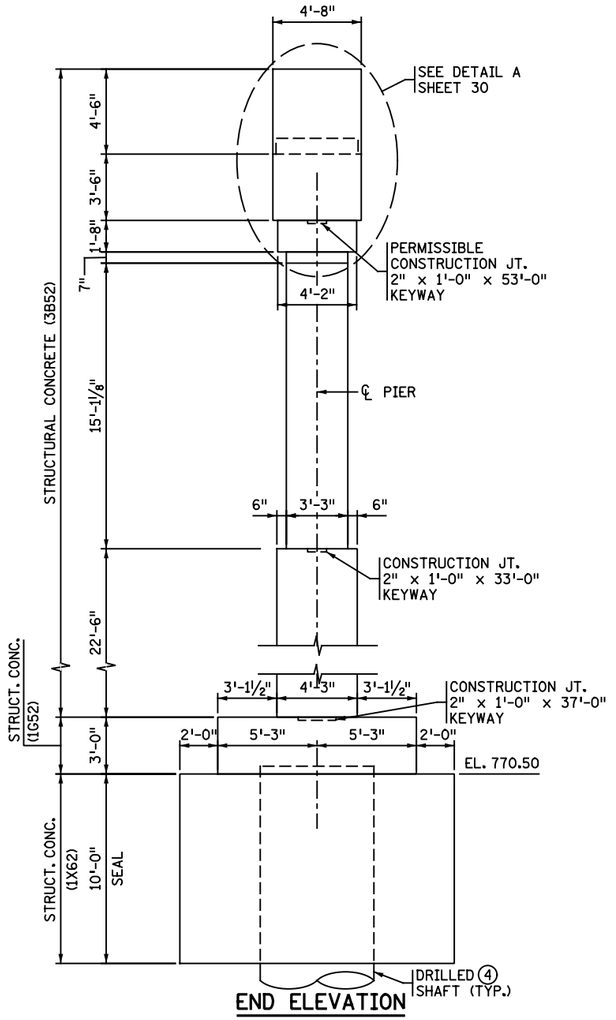


CAP PLAN



ELEVATION



END ELEVATION

NOTES:

FOR SECTION B-B AND CAP SECTION, SEE SHEET 30.

① FOR ANCHOR ROD DETAILS, SEE SHEET 30.

② SLOPE TO DRAIN (TYP.)

③ 90°00'00.0" (TYP.)

④ 6'-0" O.D. DRILLED SHAFT. SEE PIER FOUNDATION LAYOUT AND DRILLED SHAFT DETAILS.

SUMMARY OF QUANTITIES FOR PIER 3

STRUCTURAL CONCRETE (1G52)	0	CU YD
STRUCTURAL CONCRETE (3B52)	0	CU YD
STRUCTURAL CONCRETE (1X62)	0	CU YD
REINFORCEMENT BARS	0	POUND
REINFORCEMENT BARS (EPOXY COATED)	0	POUND
FOUNDATION PREPARATION PIER 3	0	EACH
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	0	SQ FT

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

CERTIFIED BY: _____ LICENSED PROFESSIONAL ENGINEER _____ DATE

NAME: LIC. NO.

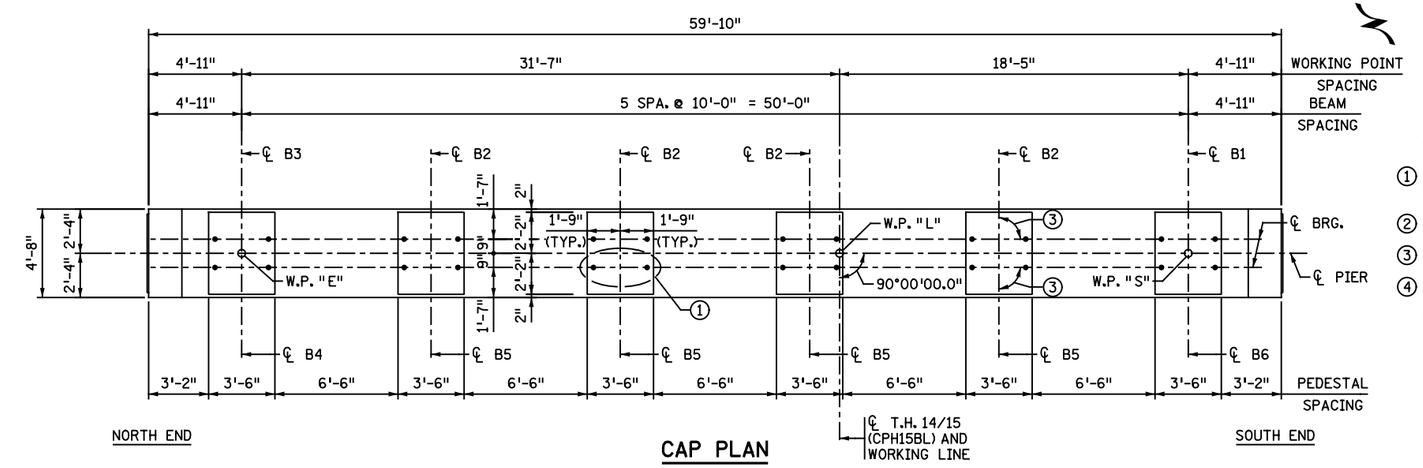
TITLE: PIER 3 DETAILS

DES: REM | DR: DJR | APPROVED:
CHK: RJR | CHK: BAP

STATE PROJECT NO. 0804-08016

SHEET NO. 40 OF 79 SHEETS

BRIDGE NO. 08016



CAP PLAN

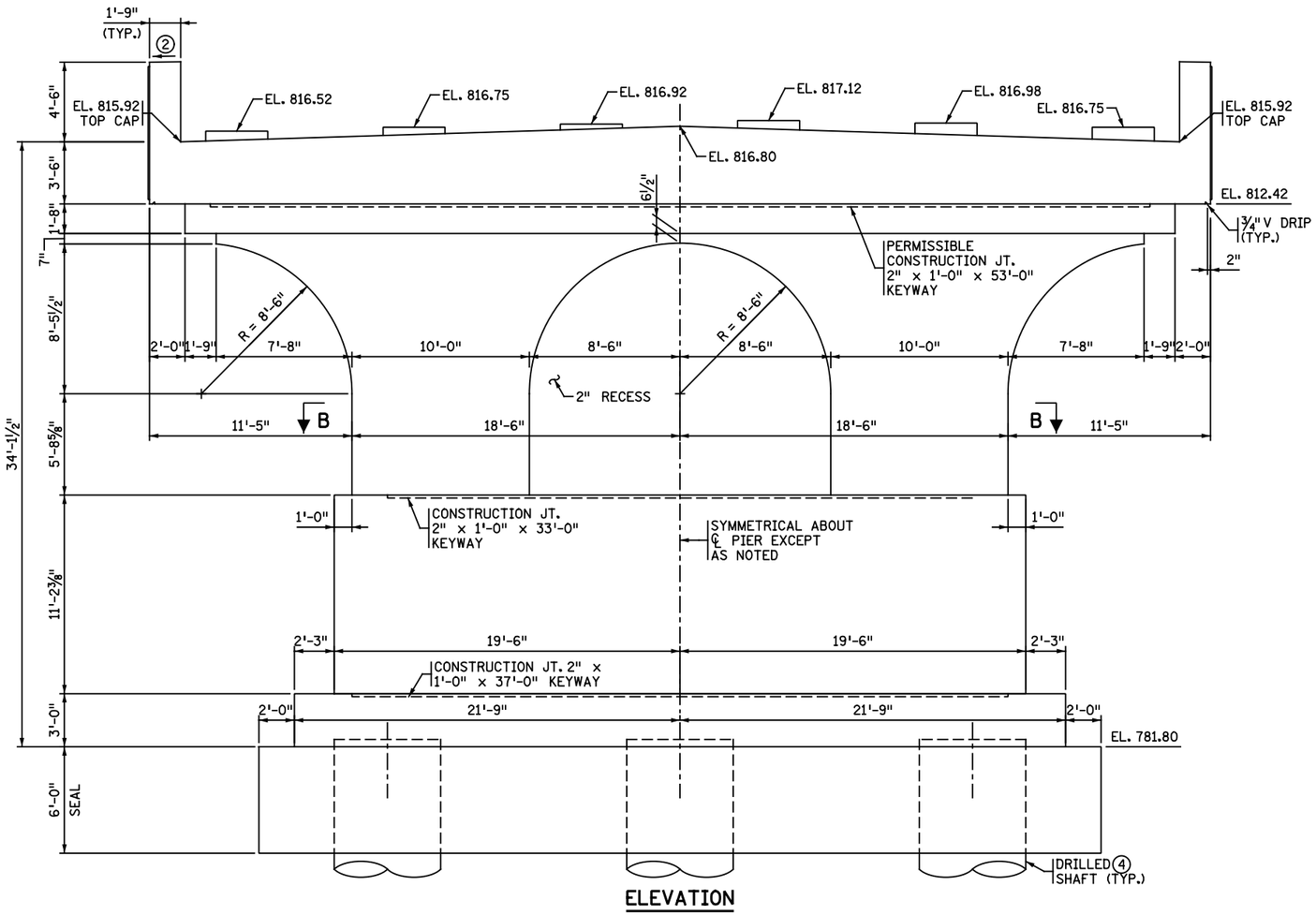
NOTES:

FOR SECTION B-B AND CAP SECTION, SEE SHEET 30.

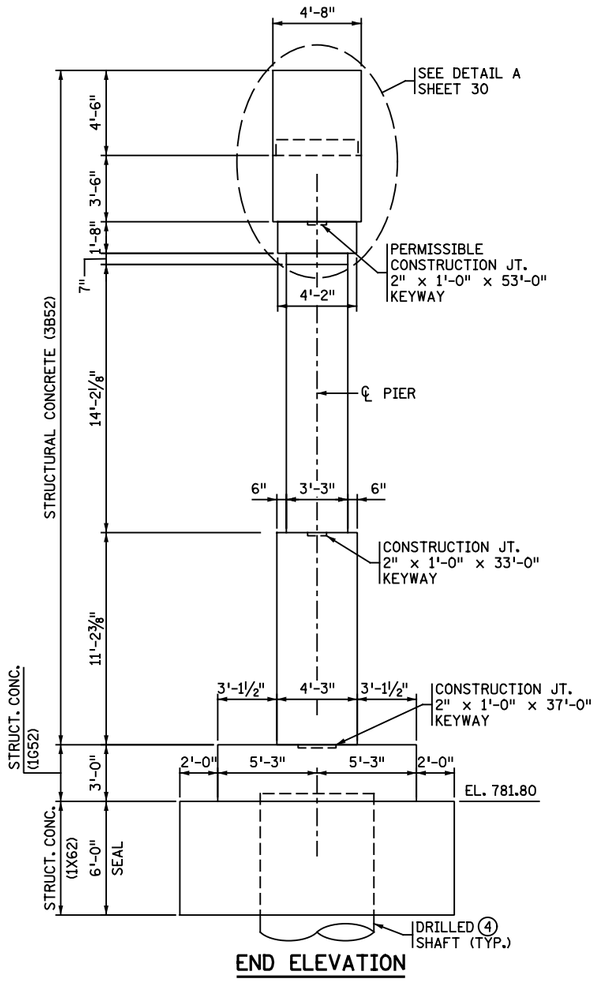
1. FOR ANCHOR ROD DETAILS, SEE SHEET 30.
2. SLOPE TO DRAIN (TYP.)
3. 90°00'00.0" (TYP.)
4. 6'-0" O.D. DRILLED SHAFT. SEE PIER FOUNDATION LAYOUT AND DRILLED SHAFT DETAILS.

SUMMARY OF QUANTITIES FOR PIER 4

STRUCTURAL CONCRETE (1G52)	0	CU YD
STRUCTURAL CONCRETE (3B52)	0	CU YD
STRUCTURAL CONCRETE (1X62)	0	CU YD
REINFORCEMENT BARS	0	POUND
REINFORCEMENT BARS (EPOXY COATED)	0	POUND
FOUNDATION PREPARATION PIER 4	0	EACH
ARCHITECTURAL CONCRETE TEXTURE (THIN BRICK)	0	SQ FT



ELEVATION



END ELEVATION

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

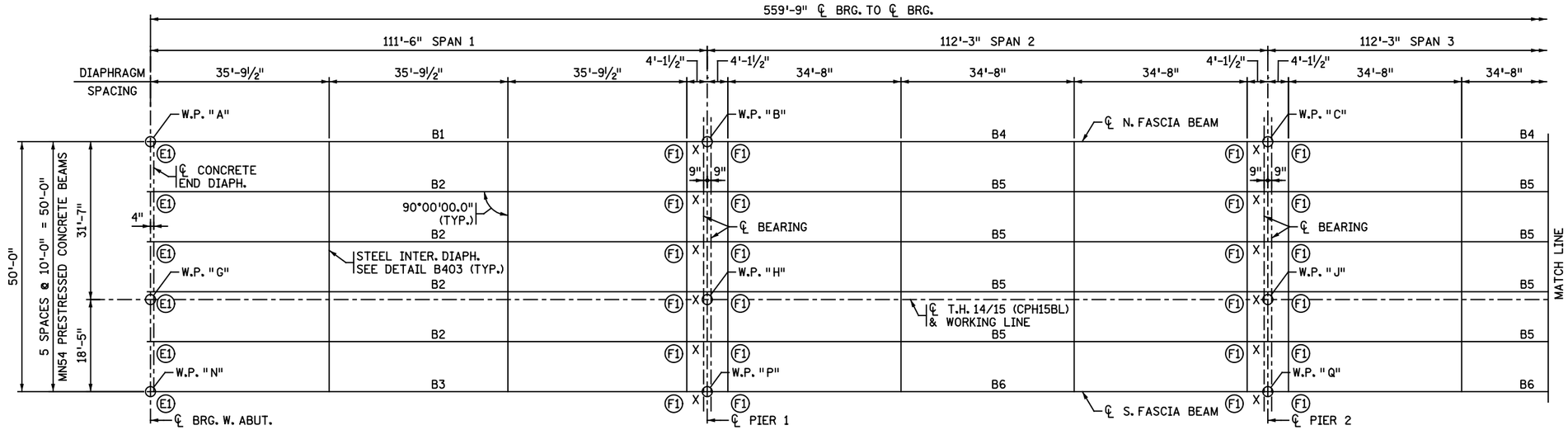
CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

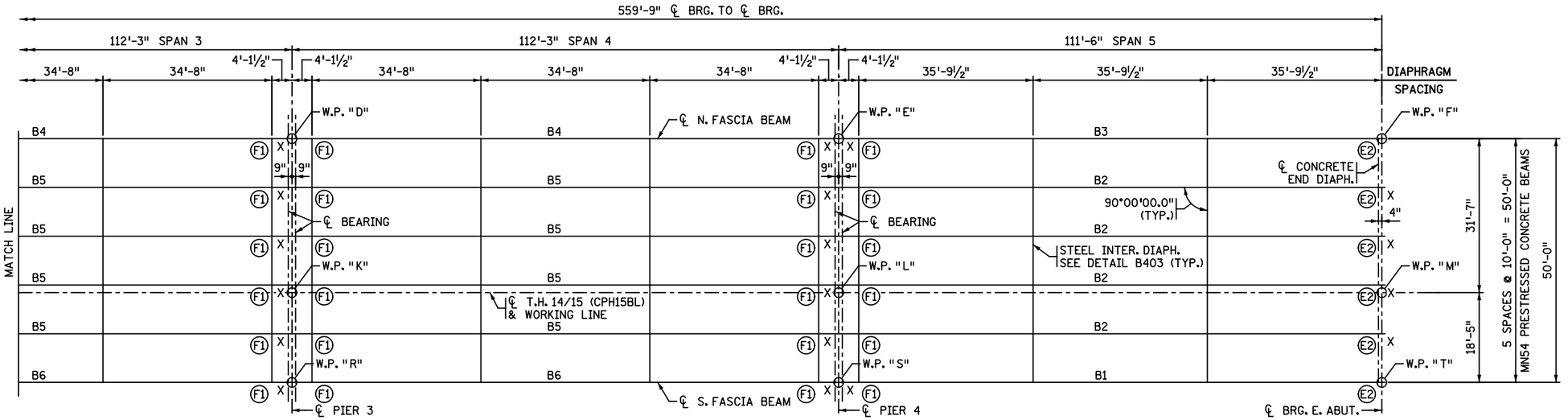
NAME: LIC. NO.

TITLE: PIER 4 DETAILS

DES: REM	DR: DJR	APPROVED:	
CHK: RJR	CHK: BAP		
STATE PROJECT NO. 0804-08016			BRIDGE NO. 08016
SHEET NO. 45 OF 79 SHEETS			



FRAMING PLAN



FRAMING PLAN

NOTES:

"X" DENOTES X END OF BEAM.

(F1) DENOTES FIXED CURVE PLATE BEARING ASSEMBLY TYPE F1. SEE DETAIL B310.

(E1) DENOTES EXPANSION CURVE PLATE BEARING ASSEMBLY TYPE E1. SEE DETAIL B311.

(E2) DENOTES EXPANSION CURVE PLATE BEARING ASSEMBLY TYPE E2. SEE DETAIL B311.

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

CERTIFIED BY:

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: LIC. NO.

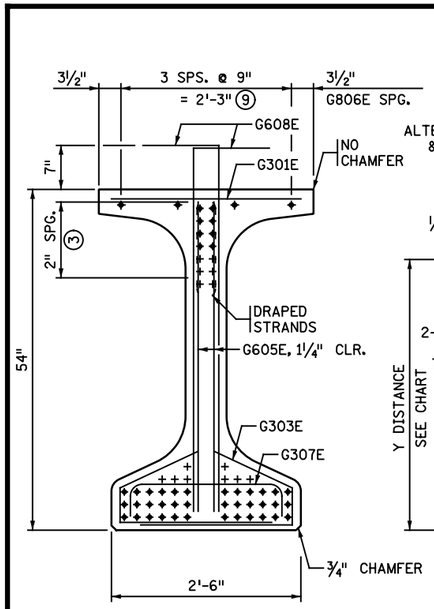
TITLE: FRAMING PLAN

DES: DRS	DR: DJR	APPROVED:
CHK: REM	CHK: RJR	

STATE PROJECT NO. 0804-08016

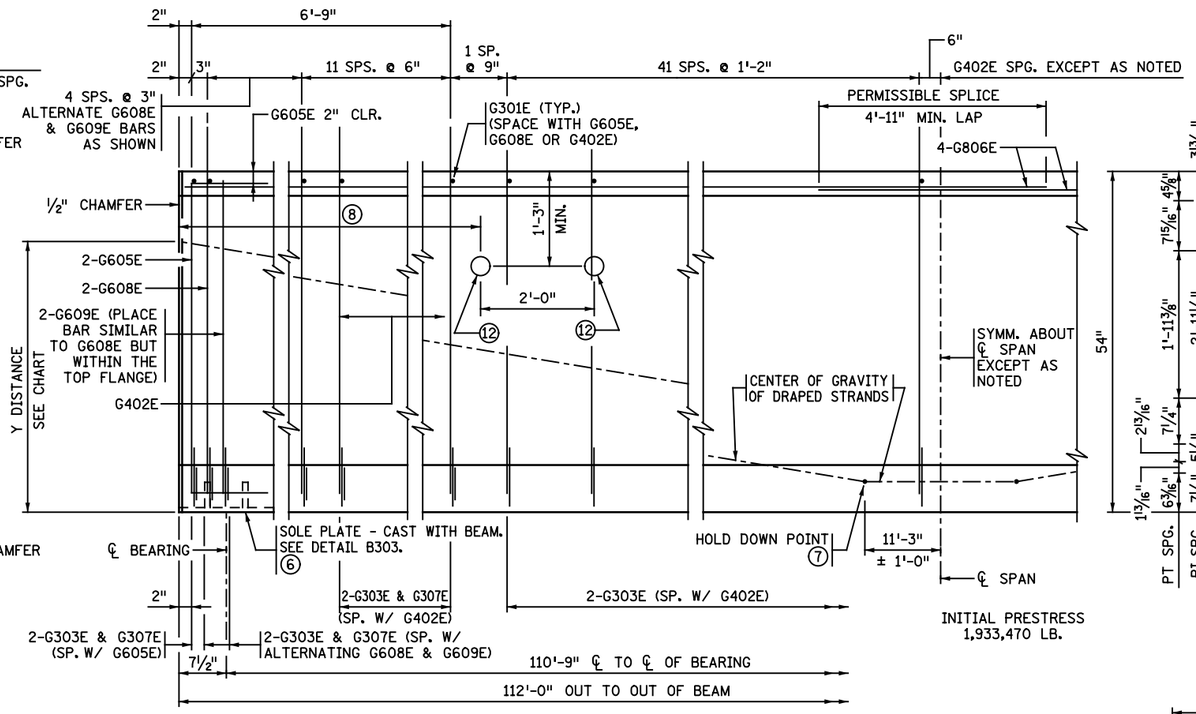
SHEET NO. 50 OF 79 SHEETS

BRIDGE NO. 08016



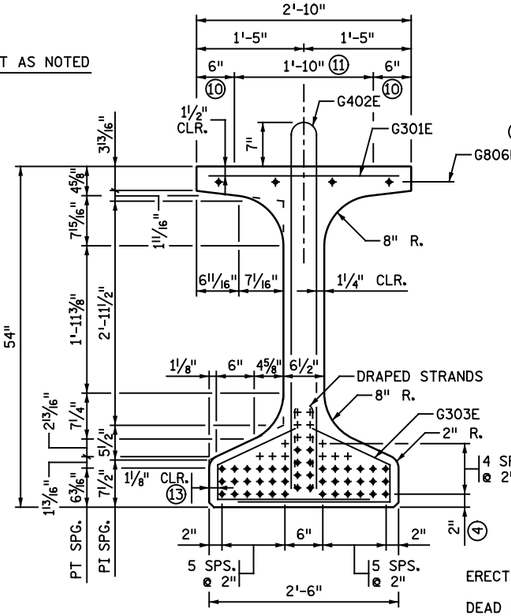
END VIEW

CUT STRANDS FLUSH WITH CONCRETE. COVER ENDS WITH SEALANT PER APPROVED PRODUCTS LIST "BRIDGE-PRESTRESSED BEAMS-CUT STRAND SEALANT."



BEAM ELEVATION

INITIAL PRESTRESS 1,933,470 LB.



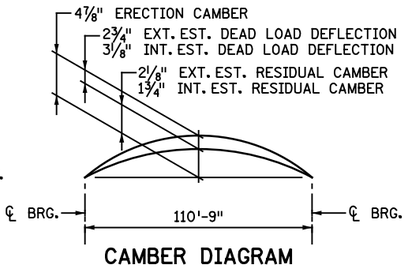
SECTION AT ℄ SPAN

Y DISTANCES (INCHES)

	NO.	℄ SPAN	END
STRAIGHT STRANDS	36	4.00	
DRAPED STRANDS	8	6.00	48.00 ▫
TOTAL STRANDS	44	4.36	

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.

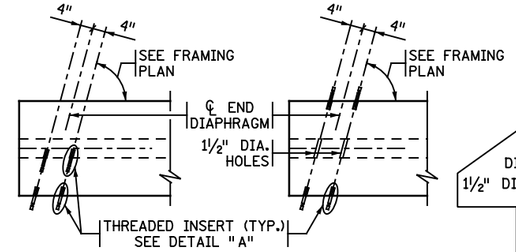


CAMBER DIAGRAM

ERECTION CAMBER SHOWN IS AFTER DIAPHRAGMS ARE IN PLACE.

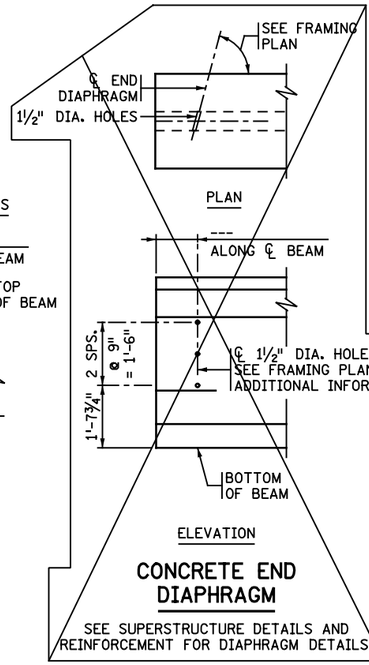
DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF SLAB, WEARING COURSE, BARRIER, SIDEWALK AND MEDIAN WHERE APPLICABLE.

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.



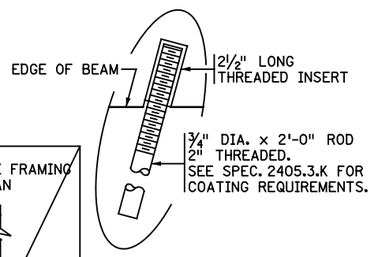
CONCRETE END DIAPHRAGM

PARAPET ABUTMENT
(SEE DETAIL B814 FOR DIAPHRAGM DETAILS)

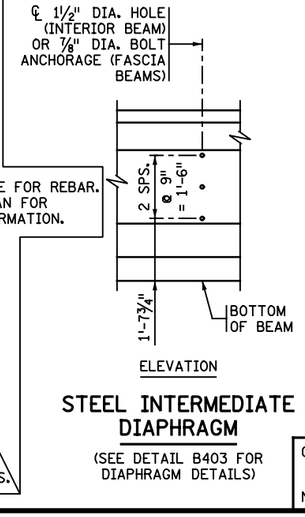


CONCRETE END DIAPHRAGM

SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.



DETAIL "A"



STEEL INTERMEDIATE DIAPHRAGM

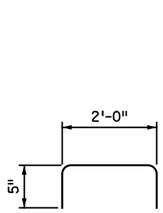
(SEE DETAIL B403 FOR DIAPHRAGM DETAILS)

CALCULATED PRESTRESS LOSSES

ELASTIC SHORTENING LOSS	24.1 KSI
LONG TERM LOSSES	25.3 KSI
TOTAL LOSSES	49.4 KSI

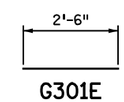
MINIMUM CONCRETE STRENGTH - K.S.I.

① f'cI	② f'c
7.0 KSI	9.0 KSI

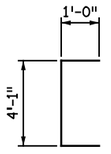


G307E

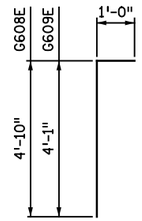
G402E



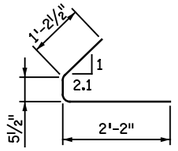
G301E



G605E



G608E & G609E



G303E

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 STENCILLED 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 Daubenberger
STATE BRIDGE ENGINEER

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

TITLE: MN54" PRESTRESSED CONCRETE BEAM (PRETENSIONED) MN54-112

BEAMS B1-B6

FIG. 5-397.508

DES: DRS	DR: JN	APPROVED:
CHK: BAP	CHK: LPR	

SHEET NO. 51 OF 79 SHEETS

BRIDGE NO. 08016

pw:\\pwdrusden01:HDR_US_Central_01\Documents\3966\10044305\6.0_CAD_BIM\6.2_Work_In_Progress\Bridge\Sheets\Br08016 Over River\3010
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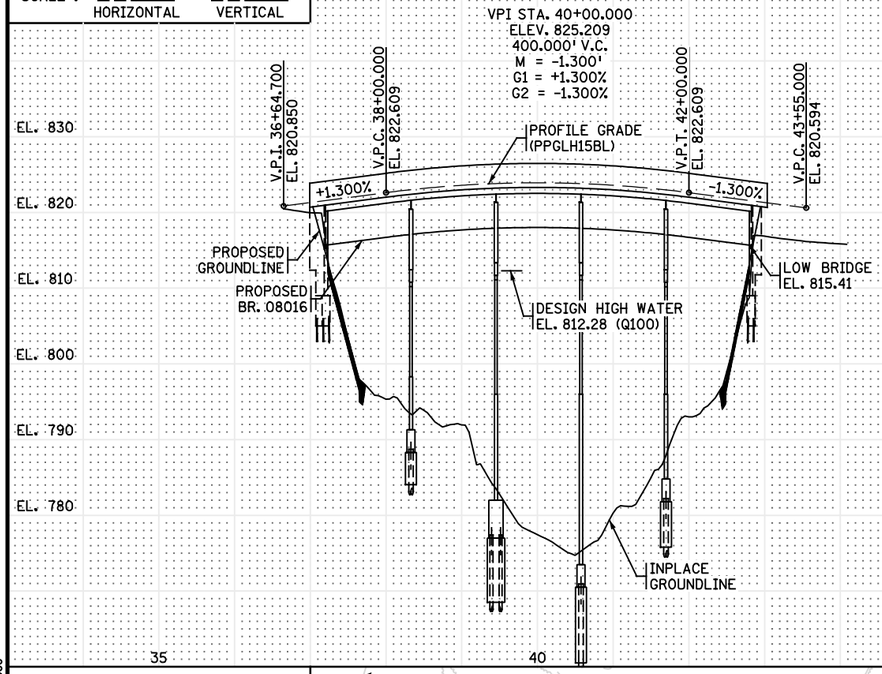
4/14/2017

CONTRACTED PROFILE

SCALE : 0 50' 100' (HORIZONTAL) 0 5' 10' (VERTICAL)

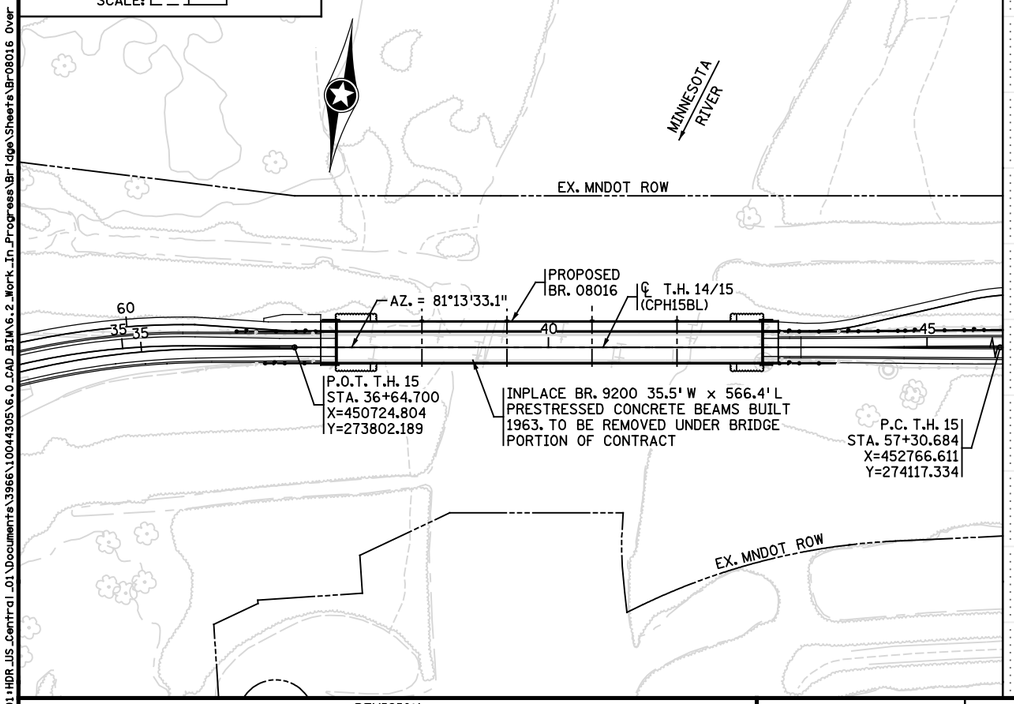
T.H. 14/15 PROFILE (PTH15BL)



PLAT

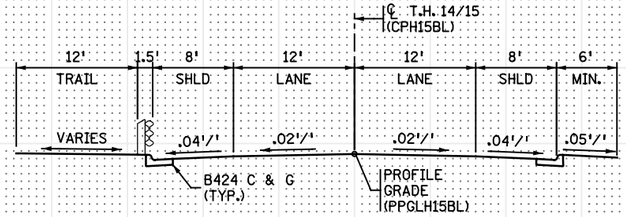
SCALE: 0 50' 100'

FOR UTILITIES SEE SHEETS 78 & 79.



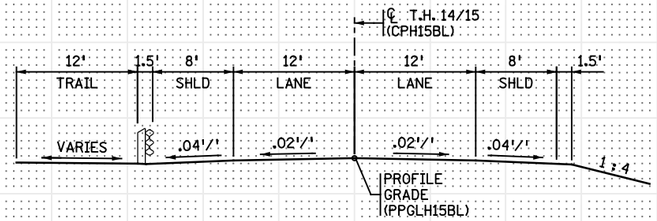
TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



PROPOSED TYPICAL SECTION T.H. 14/15

STA. 36+65 TO STA. 36+99



PROPOSED TYPICAL SECTION T.H. 14/15

STA. 43+04 TO STA. 43+44

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

1. SPECIAL FEATURES: FLOODS, ICE, DEBRIS, RECREATIONAL BOATING.
2. OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM (PARTICULARLY STRUCTURES WHICH CARRY HIGH WATER WITHOUT OVERFLOW OF ROADWAY): NONE
3. APPARENT HIGHWATER ELEVATION 813.0 (NAVD 88) OBTAINED FROM: MNDOT HYDRAULIC REPORT DATED 10-23-2015
4. OTHER DATA: NONE

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: 10-23-15

STREAM OR DITCH DESIGNATION: MINNESOTA RIVER
DRAINAGE AREA: 9582 SQ. MI.
MAX. FLOOD ON RECORD: UNKNOWN C.F.S. (SUMMER 1993)
MAXIMUM OBSERVED HIGHWATER ELEVATION: 813.0 FT.
DESIGN FLOOD (100 YR. FREQ.): 64000 C.F.S.
HEADWATER ELEVATION: 812.3 FT.
DESIGN MEAN VELOCITY THROUGH STRUCTURE: 5.1 F.P.S.
TOTAL STAGE INCREASE: 0.0 FT.
LOW MEMBER AT OR ABOVE ELEVATION: 813.0 FT.
WATERWAY AREA REQUIRED BELOW ELEV. 811.7 = 12940 SQ. FT. AT RIGHT ANGLES TO CHANNEL

FLOWLINE ELEVATION: 777.5 FT. SKEW ANGLE: 0°
ESTIMATED PRELIMINARY TOTAL SCOUR AT PIER EL. XXX.X (500 OR OT YR. FREQ.) SCOUR ANALYSIS NOT COMPLETE

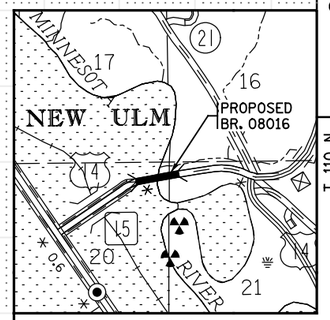
SCOUR CONFIRMATION RECOMMENDATION

DATE: NOT COMPLETE

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

BRIDGE SURVEY SHEETS MADE FROM :
FILES:
JOBD81.GPK, 080481_ALL.TIN, CD080481_AL100.DGN, CD080481_CP.DGN, CD080481_PR.DGN, CD080481_TOPO.DGN

BENCH MARK ELEVATION 847.751 (NAVD 88)
GSID STATION #94068, MNDOT NAME: 5202 C RESET
X=454924.270, Y=273986.045 NICOLLET COUNTY COORDS. (1996 ADJ.)



MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

T.H. 14/15 OVER MINNESOTA RIVER
0.8 MILES NORTHEAST OF
JCT. T.H. 14 AND T.H. 15

SEC. 20/21 TWP. 110 N. R. 30 W.

CITY OF NEW ULM BROWN COUNTY, MN
COURTLAND TWP. NICOLLET COUNTY, MN

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

HDR

TITLE: BRIDGE SURVEY

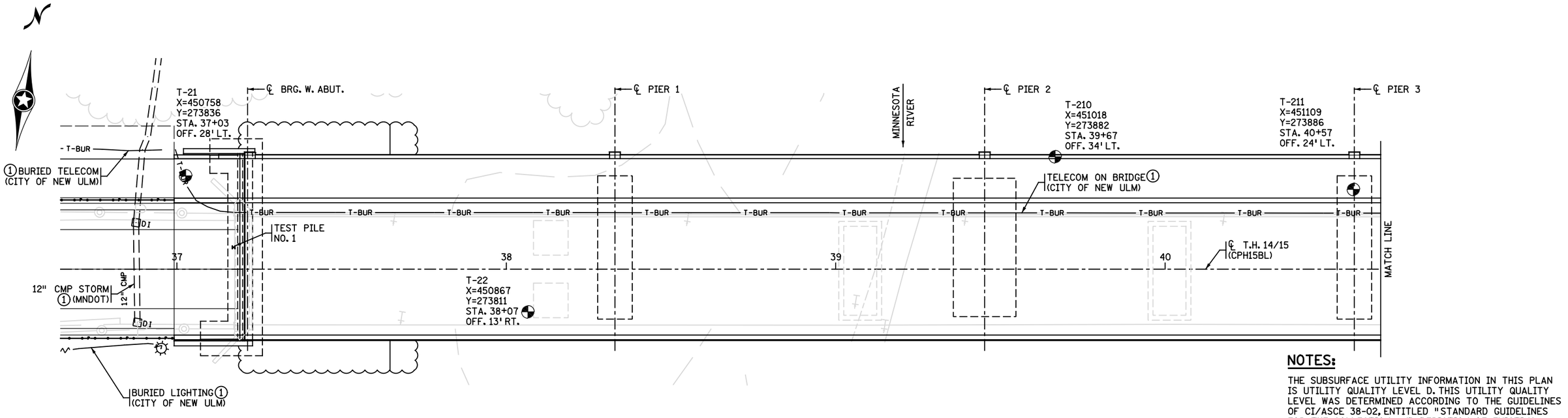
DES: DJR	DR: DJR	APPROVED:	
CHK: TAL	CHK: RJR		

STATE PROJECT NO. 0804-81

SHEET NO. 77 OF 79 SHEETS

BRIDGE NO. 08016

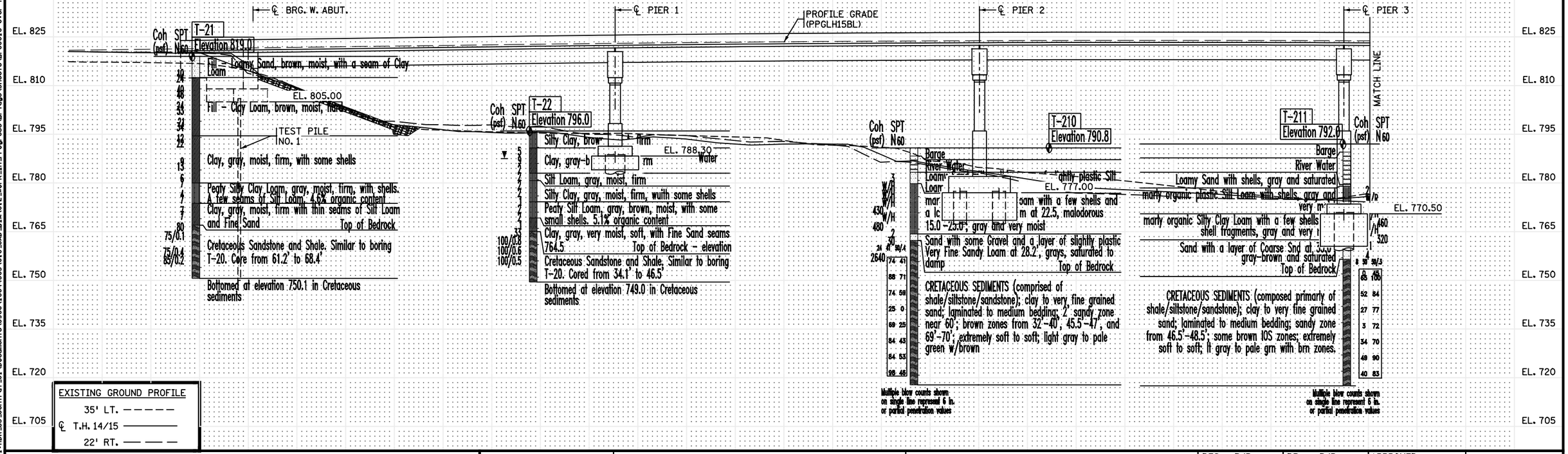
pw:\\pwhdruscen01:HDR_US_Central_01\Documents\3966\10044305\6.0_CAD_BIM\6.2_Work_In_Progress\Bridge\Sheets\Br08016 Over River\5000 untitled 8:41:05 AM 4/14/2017



NOTES:

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".

1 TO BE REMOVED.



EXISTING GROUND PROFILE
35' LT. – – – – –
℄ T.H. 14/15 ———
22' RT. — — —

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

TITLE:

BORINGS 1

DES: DJR	DR: DJR	APPROVED:		
CHK: BAP	CHK: CEW			

STATE PROJECT NO. 0804-08016

SHEET NO. 78 OF 79 SHEETS

BRIDGE NO. 08016

pw:\\pwhdrusceno01:HDR_US_Central_01\Documents\3966\10044305\6.0_CAD_BIM\6.2_Work_In_Progress\Bridge\Sheets\Br08016 Over River\5100

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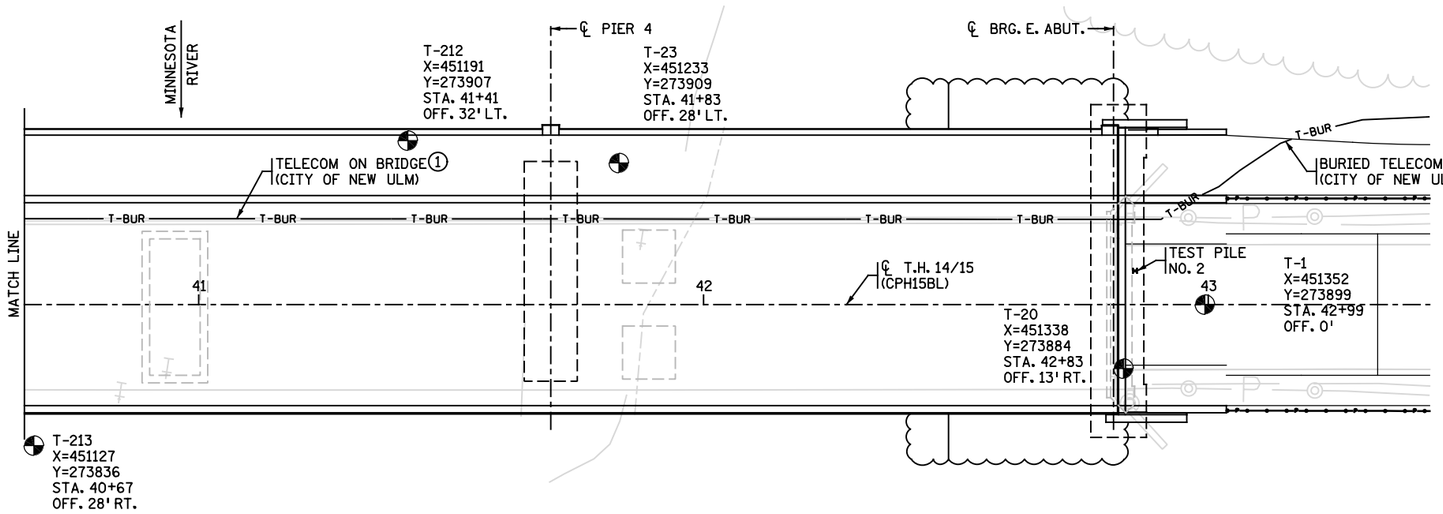
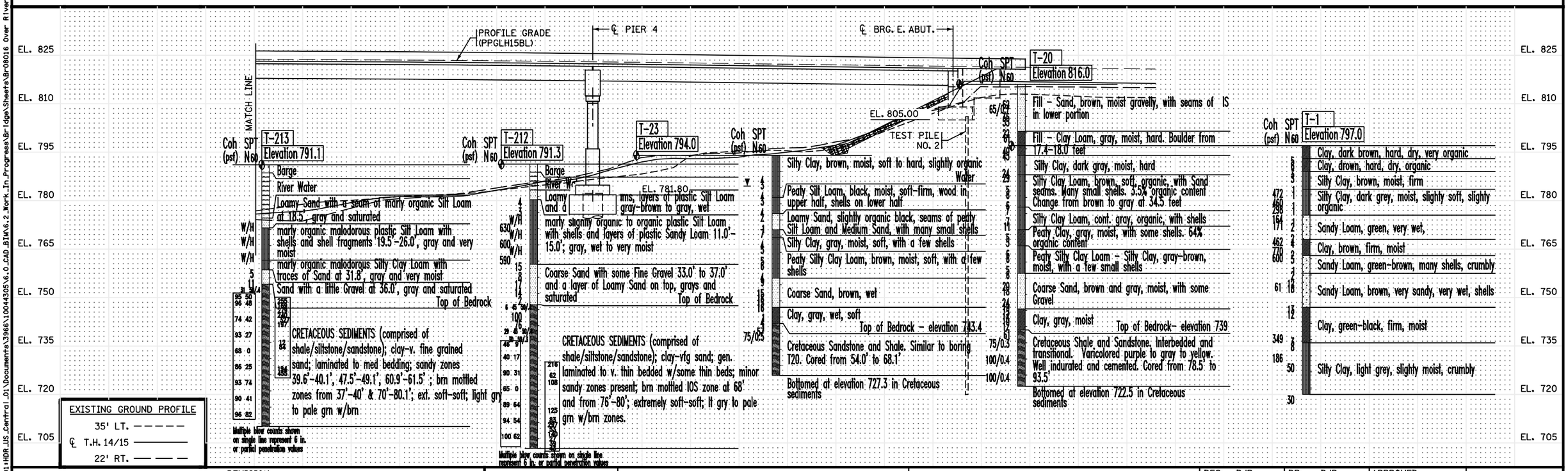


NOTES:

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".

(1) TO BE REMOVED.



EXISTING GROUND PROFILE
35' LT. - - - - -
℄ T.H. 14/15 ———
22' RT. — — —

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

HDR

TITLE: BORINGS 2

DES: DJR	DR: DJR	APPROVED:	
CHK: BAP	CHK: CEW		

STATE PROJECT NO. 0804-08016

SHEET NO. 79 OF 79 SHEETS

BRIDGE NO. 08016

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