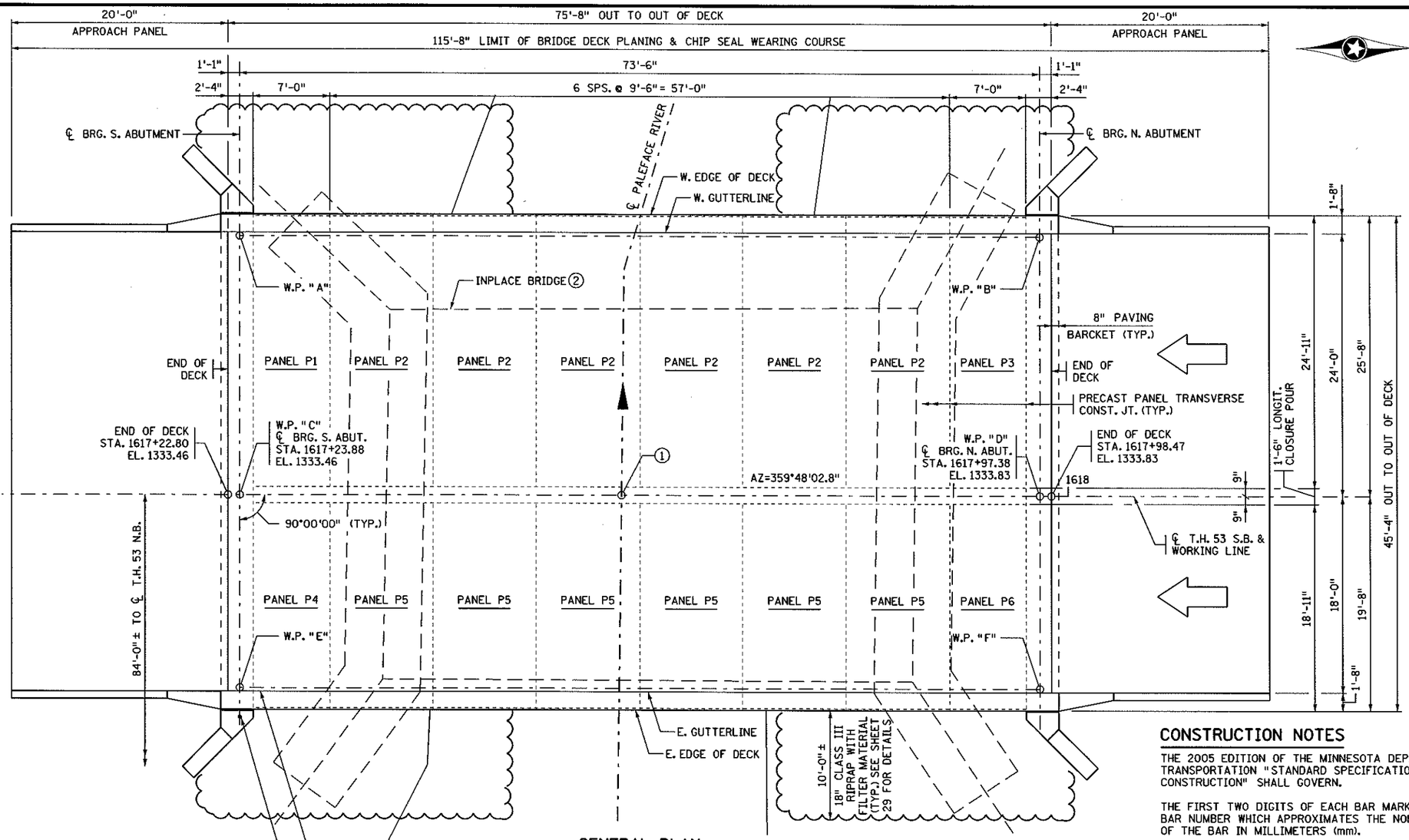
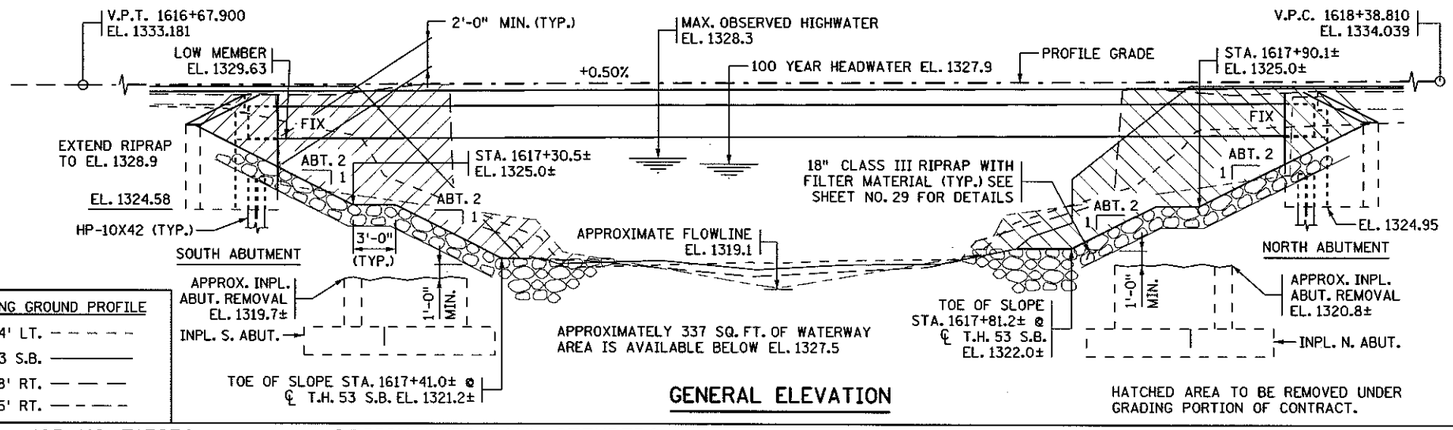


GENERAL PLAN



GENERAL ELEVATION

HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.

br-69071_sup.dgn
10/5/2010

CONSTRUCTION NOTES

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATES THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS (mm).

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 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 WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.

THE GIRDERS HAVE BEEN DESIGNED AND DETAILED WITHOUT DIAPHRAGMS. THE CONTRACTOR'S ENGINEER SHALL DESIGN, AND THE CONTRACTOR SHALL CONSTRUCT A TEMPORARY BRACING SYSTEM. THE SYSTEM SHALL PROVIDE LATERAL AND ROTATIONAL STABILITY OF THE GIRDERS TO RESIST UNSYMMETRICAL PRECAST CONCRETE DECK PANEL LOADS AND CONSTRUCTION LOADS.

CONSTRUCTION OF EACH ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS SECTION.

FEDERAL PROJ. NO.

DESIGN DATA

2007 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

LOAD AND RESISTANCE FACTOR DESIGN METHOD
HL93 LIVE LOAD

DEAD LOAD INCLUDES 20 PSF ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 KSI n = 8
fy = 60 KSI REINFORCEMENT
PRESTRESSED CONCRETE (BEAMS):
f'c = 9.0 KSI n = 1
fpu = 270 KSI LOW RELAXATION STRANDS
0.75 fpu FOR INITIAL PRESTRESS
PRECAST CONCRETE (DECK PANELS):
f'c = 4 KSI n = 8
fpu = 270 KSI LOW RELAXATION STRANDS
0.70 fpu FOR INITIAL POST-TENSION

DECK AREA = 3430 SQ. FT.
5,310 PROJECTED ADT FOR YEAR 2030
DESIGN SPEED = 70 MILES PER HOUR
BRIDGE OPERATING RATING HS 40.7

LIST OF SHEETS

NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	TRANSVERSE SECTION
3	BRIDGE LAYOUT
4-5	SOUTH ABUTMENT DETAILS
6-8	SOUTH ABUTMENT REINFORCEMENT
9-10	NORTH ABUTMENT DETAILS
11-13	NORTH ABUTMENT REINFORCEMENT
14	FRAMING PLAN
15-16	PRESTRESSED CONCRETE BEAM 27M
17-20	SUPERSTRUCTURE DETAILS
21-24	SUPERSTRUCTURE REINFORCEMENT
25-26	CONCRETE END DIAPHRAGM & MOCK-UP PANEL
27-28	CONCRETE RAILING (MOD. TYPE F)
29	RIPRAP SLOPE WITH GEOTEXTILE FILTER
30-32	DETAILS
33	AS-BUILT DATA
34	BRIDGE SURVEY
35	BRIDGE SURVEY PLAN AND PROFILE

(1) ℄ T.H. 53 S.B. (CONST) P.O.T. 1617+58.976 = ℄ PALEFACE RIVER (PALEFACE) P.O.T. 10+00.000
X 490,470.185 Y 304,325.986

(2) INPLACE BRIDGE 6603, BUILT IN 1953
SINGLE SPAN CONCRETE DECK GIRDER
STRUCTURE LENGTH 50.5 FT.
DECK WIDTH 34.8 FT.
TO BE REMOVED UNDER BRIDGE PORTION OF CONTRACT.

BM 6917AJ EL. 1332.701 (NAVD88 ADJ)

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 10-7-10
LICENSED PROFESSIONAL ENGINEER
NAME: FRANCIS M. JORDAN LIC NO. 15048

TRUNK HIGHWAY NO.
MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 69071

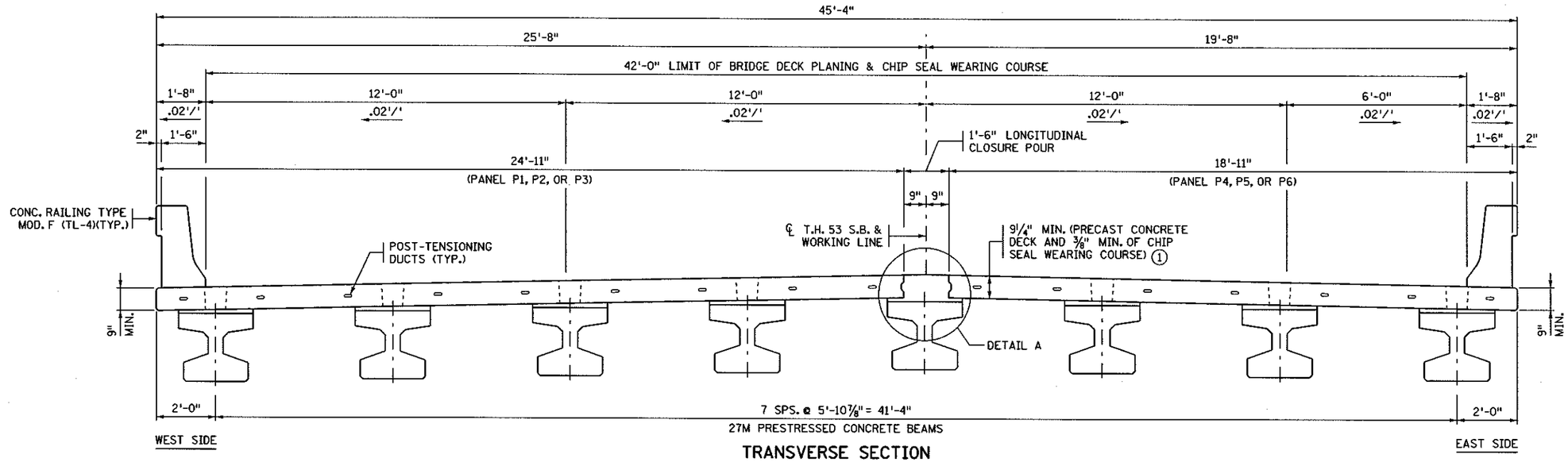
T.H. 53 S.B. OVER THE PALEFACE RIVER
14.3 MILES SOUTH OF THE JUNCTION OF T.H. 37
75' PRESTRESSED CONCRETE BEAM SINGLE SPAN
42'-0" ROADWAY PRECAST CONCRETE DECK AND TYPE MODIFIED F CONCRETE RAILING
IDENTIFICATION NO. 501

GENERAL PLAN AND ELEVATION

SEC. 34 T 55 N R 17 W
ELLSBURG TOWNSHIP ST. LOUIS COUNTY
APPROVED _____ STATE BRIDGE ENGINEER
DATE 10/7/2010 FOR

DES.	F.M.J.	DR.	B.T.	69071
CHK.	P.M.S.	CHK.	F.M.J.	

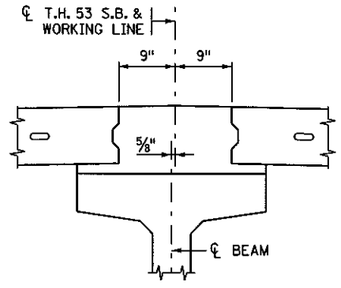
JOB NO. T17930 DESIGN UNIT: PAUL STENBERG STATE PROJ. NO. 6917-69071 (T.H. 53=011) SHEET NO. 1 OF 35 SHEETS



TRANSVERSE SECTION

SCHEDULE OF QUANTITIES FOR BRIDGE				
ITEM NO.	ITEM	UNIT	TOTAL QUANTITIES	
2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	74	(P)
2401.513	TYPE F (TL-4) RAILING CONCRETE (3Y46)(MOD)	LIN. FT.	154	(P)
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	16090	(P)
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1	
2401.607	STRUCTURAL CONCRETE (3Y33HP) SPECIAL	CU. YD.	33	(P)
(2) 2401.618	BRIDGE DECK PLANING	SQ. FT.	4858	(P)
2402.590	ELASTOMERIC BEARING PAD TYPE 1	EACH	16	
(2) 2404.618	CHIP SEAL WEARING COURSE	SQ. FT.	4858	(P)
2405.502	PRESTRESSED CONCRETE BEAMS 27M	LIN. FT.	598	(P)
(3) 2405.601	MOCK-UP PANEL	LUMP SUM	1	
2405.616	POST-TENSIONING SYSTEM	SYS.	1	
2405.618	PRECAST DECK PANEL	SQ. FT.	3069	(P)
2442.501	REMOVE EXISTING BRIDGE	LUMP SUM	1	
2452.510	STEEL H-PILING DRIVEN 10"	LIN. FT.	420	
2452.511	STEEL H-PILING DELIVERED 10"	LIN. FT.	420	
2452.520	STEEL H-TEST PILE 40 FT. LONG 10"	EACH	2	
2452.602	PILE TIP PROTECTION 10"	EACH	16	
2502.502	DRAINAGE SYSTEM TYPE (B910)	LUMP SUM	1	
2511.501	RANDOM RIPRAP CLASS III	CU. YD.	264	(P)
2511.515	GEOTEXTILE FILTER TYPE IV (MOD)	SQ. YD.	505	(P)

(P) DENOTES PLAN QUANTITY PAY ITEM AS PER MN/DOT SPEC. 1901.



DETAIL A

NOTES:

(1) 9¼" MINIMUM TOTAL THICKNESS AFTER BRIDGE DECK PLANING AND CHIP SEAL WEARING COURSE IS APPLIED.

(2) INCLUDES BRIDGE DECK AND APPROACH PANELS.

(3) SEE SHEET 26 FOR DETAILS.

10/6/2010 br-6907l1_sup.dgn

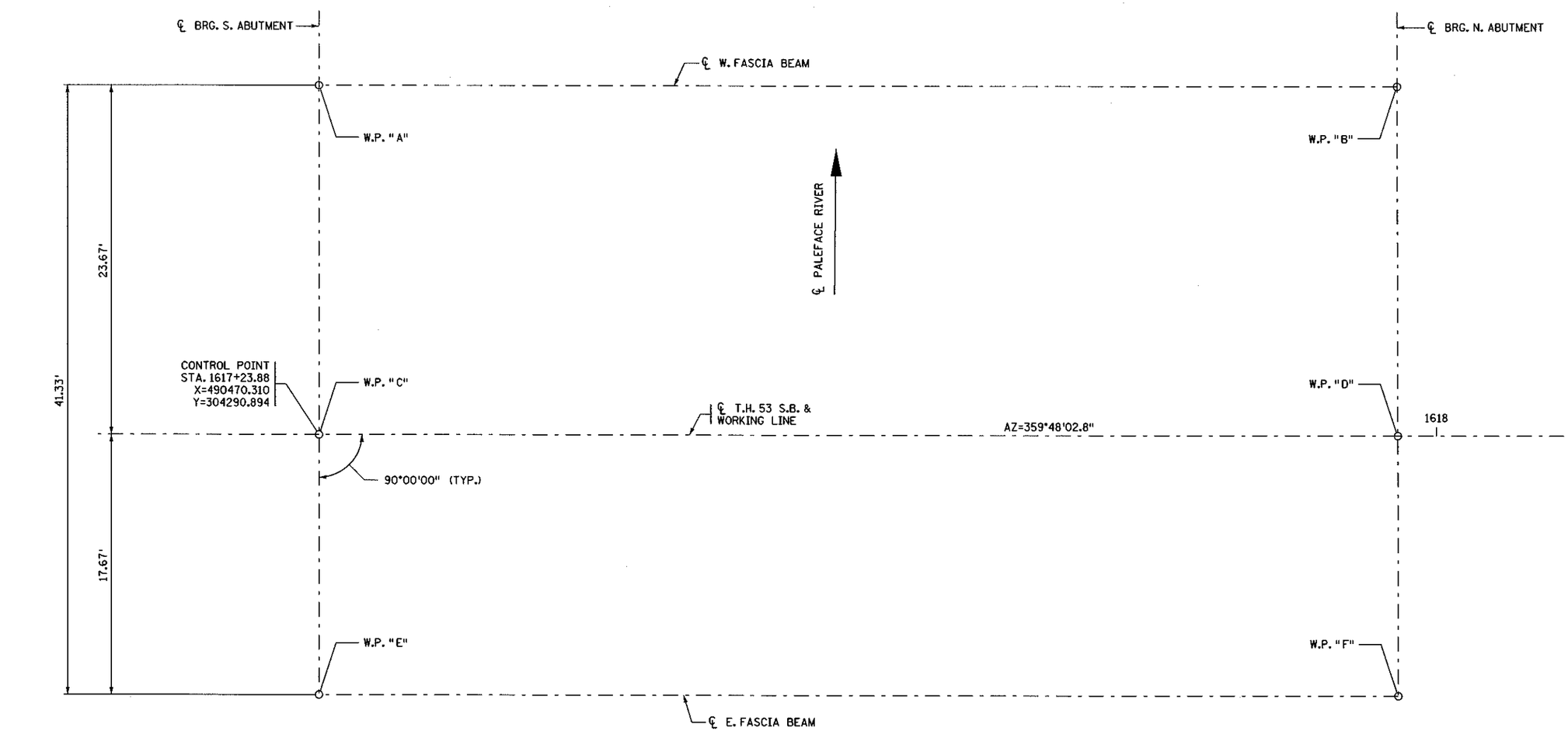
CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

TITLE: TRANSVERSE SECTION

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 2 OF 35 SHEETS

BRIDGE NO. 69071



WORKING POINT LAYOUT

POINT	DIMENSIONS BETWEEN WORKING POINTS: STATION	X-COORDIN	Y-COORDIN	A	B	C	D	E	F	ELEVATIONS: TOP OF ROADWAY	TOP OF RDWY TO BR. SEAT	BRIDGE SEAT	POINT
A	1617+23.88	490446.644	304290.811		73.50	23.67	77.22		84.32	1332.99	3.41	1329.58	A
B	1617+97.38	490446.388	304364.311			77.22	23.67	84.33		1333.36	3.41	1329.95	B
C	1617+23.88	490470.310	304290.894				73.50	17.67	75.59				C
D	1617+97.38	490470.055	304364.393					75.59	17.67				D
E	1617+23.88	490487.977	304290.955						73.50	1333.11	3.41	1329.70	E
F	1617+97.38	490487.721	304364.455							1333.48	3.41	1330.07	F

TOP OF ROADWAY TO BRIDGE SEAT	DECK THICKNESS	STOOL HEIGHT	BEAM HEIGHT	BEARING HEIGHT	TOTAL INCHES	TOTAL FEET
S. ABUT	9¼"	4⅛"	27"	½"	40⅞"	3.41'
N. ABUT.	9¼"	4⅛"	27"	½"	40⅞"	3.41'

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: BRIDGE LAYOUT

DES: F.M.J. DR: B.T. APPROVED: 10/7/10

CHK: P.M.S. CHK: F.M.J.

SHEET NO. 3 OF 35 SHEETS

BRIDGE NO. 69071

dgnfilename
mmddyy

SOUTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE		
FIELD CONTROL METHOD	φ dyn	✳ R_n
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	211.3
PDA	0.65	130.0

✳ R_n = (FACTORED DESIGN LOAD) / φ dyn

SOUTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	57.4
FACTORED LIVE LOAD	27.7
✳ FACTORED DESIGN LOAD	85.1

✳ BASED ON STRENGTH I LOAD COMBINATION

PILE NOTES

1 STEEL HP 10X42 TEST PILES 40 FT. LONG
7 STEEL HP 10X42 PILES EST. LENGTH 30 FT.
8 STEEL HP 10X42 PILES REQ'D. FOR SOUTH ABUTMENT.

PILE SPACING SHOWN IS AT BOTTOM OF ABUTMENT.

PILES TO BE HP 10X42.

FOR PILE SPLICE DETAILS SEE DETAIL B202.

ALL PILES SHALL BE EQUIPPED WITH PILE TIP PROTECTION. ALL PILES SHALL BE DRIVEN TO A MINIMUM TIP ELEVATION OF 1305.00.

⑦ STATE WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. PAYMENT FOR PLACING SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEMS.

SUMMARY OF QUANTITIES FOR SOUTH ABUTMENT		
STRUCTURAL CONCRETE (3Y43)	37	CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	4830	POUND
① STEEL H-PILING DELIVERED 10"	210	LIN. FT.
① STEEL H-PILING DRIVEN 10"	210	LIN. FT.
STEEL H-TEST PILE 40 FT. LONG 10"	1	EACH
STEEL H-PILE TIP PROTECTION 10"	8	EACH
③ DRAINAGE SYSTEM TYPE (B910)	0.5	LUMP SUM
⑦ BENCH MARK DISK	1	EACH

NOTES:

① DOES NOT INCLUDE TEST PILES.

② TO BE INCLUDED IN SUPERSTRUCTURE QUANTITIES.

③ FOR ABUTMENT DRAINAGE SYSTEM SEE DETAIL B910. PAYMENT WILL BE INCLUDED IN SINGLE LUMP SUM PRICE FOR ITEM 2502.502 "DRAINAGE SYSTEM TYPE (B910)".

④ PERMISSIBLE CONSTRUCTION JOINT AND 2" X 6" KEYWAY.

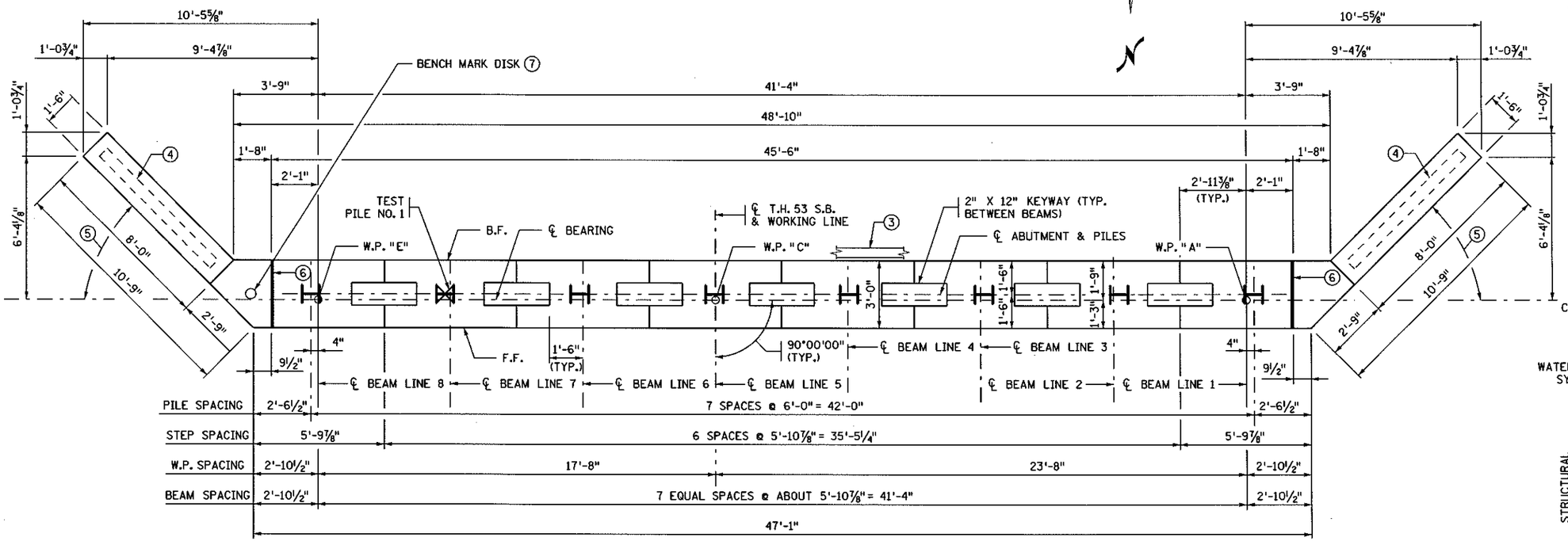
⑤ 45°00'00.0"

⑥ 1" CORK, INCLUDED IN SUPERSTRUCTURE QUANTITIES.

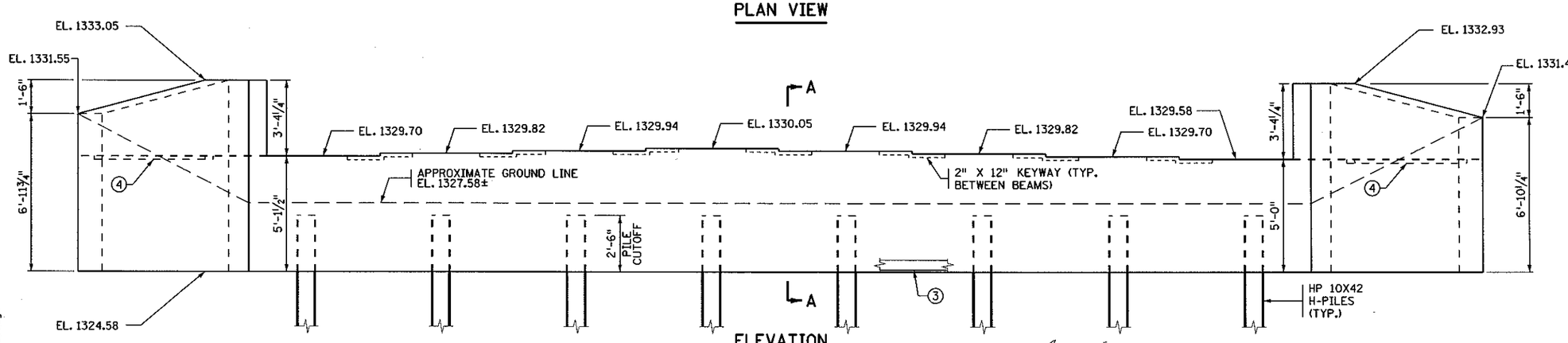
F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

SEE SHEET NO. 5 FOR ADDITIONAL WINGWALL DETAILS AND DIMENSIONS.



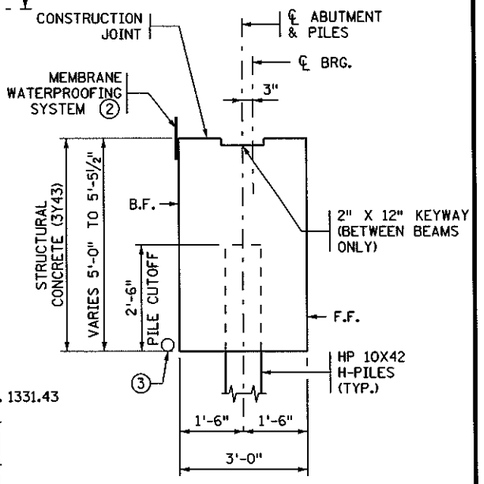
PLAN VIEW



ELEVATION

SOUTHEAST CORNER

SOUTHWEST CORNER



SECTION A-A

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: SOUTH ABUTMENT DETAILS

DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

SHEET NO. 4 OF 35 SHEETS

BRIDGE NO. 69071

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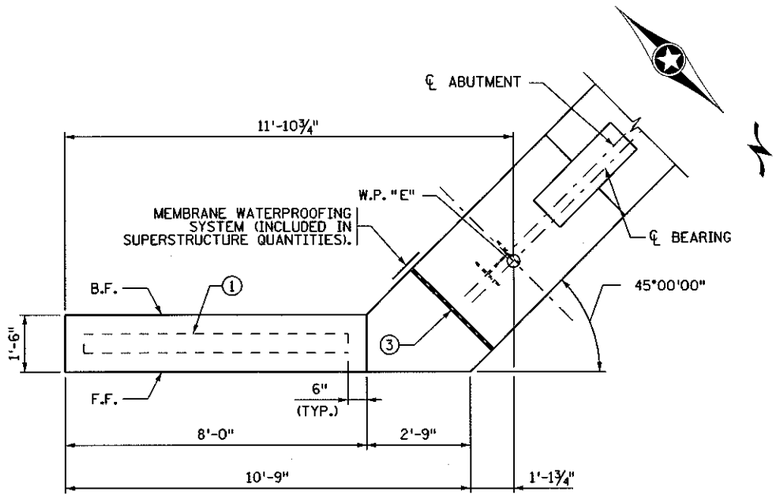
10/4/2010



SOUTHEAST WINGWALL PLAN

NOTES:

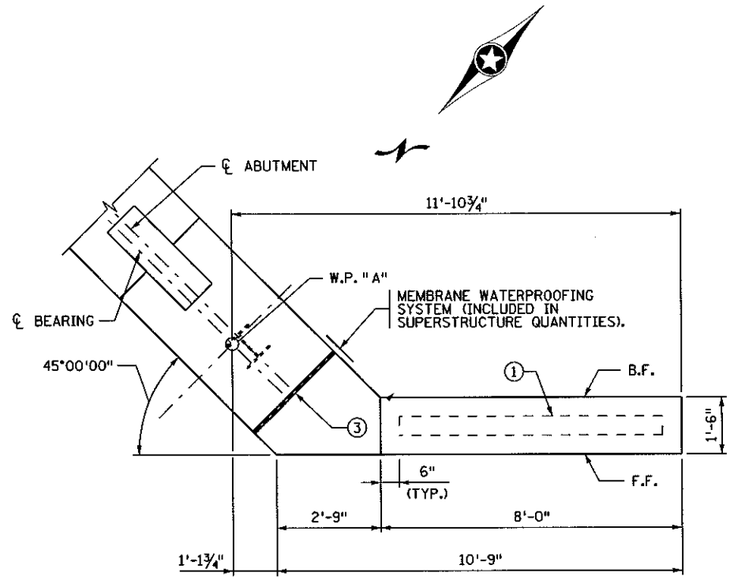
F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

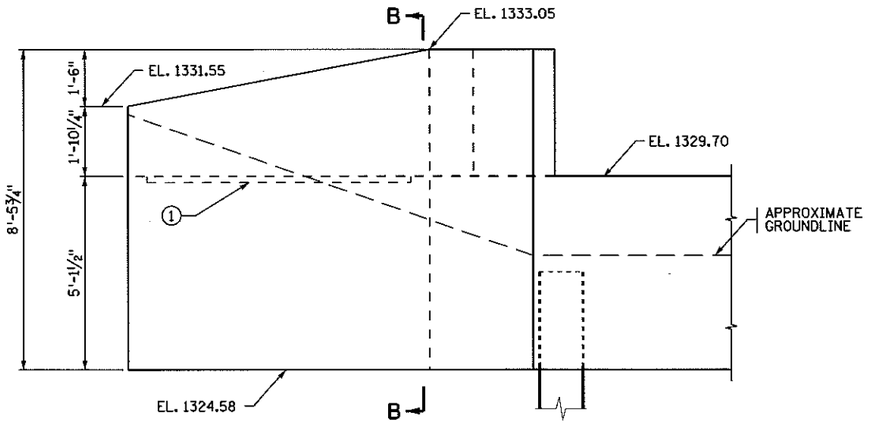
(1) PERMISSIBLE CONSTRUCTION JOINT AND 2" X 6" KEYWAY.

(2) MEMBRANE WATERPROOFING SYSTEM, IF CONSTRUCTION JOINT IS USED (INCLUDED IN SUPERSTRUCTURE QUANTITIES).

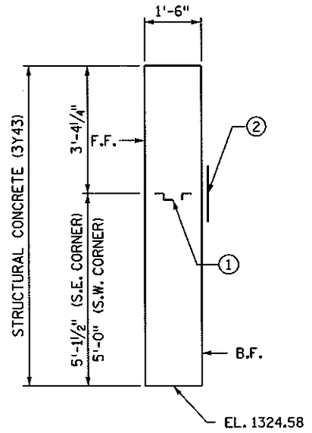
(3) 1" THICK CORK (INCLUDED IN SUPERSTRUCTURE QUANTITIES).



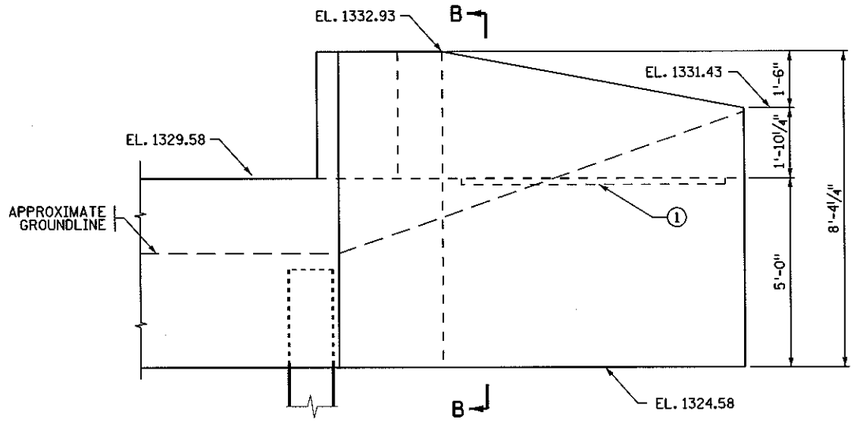
SOUTHWEST WINGWALL PLAN



SOUTHEAST WINGWALL ELEVATION



SECTION B-B



SOUTHWEST WINGWALL ELEVATION

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: SOUTH ABUTMENT DETAILS

DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

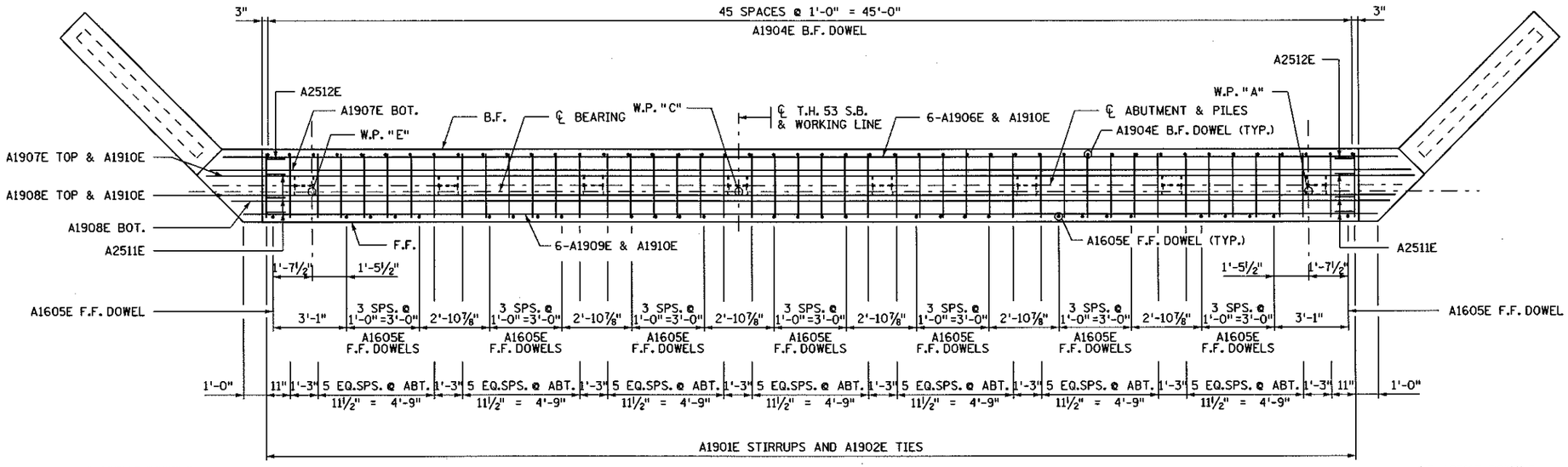
SHEET NO. 5 OF 35 SHEETS

BRIDGE NO. 69071

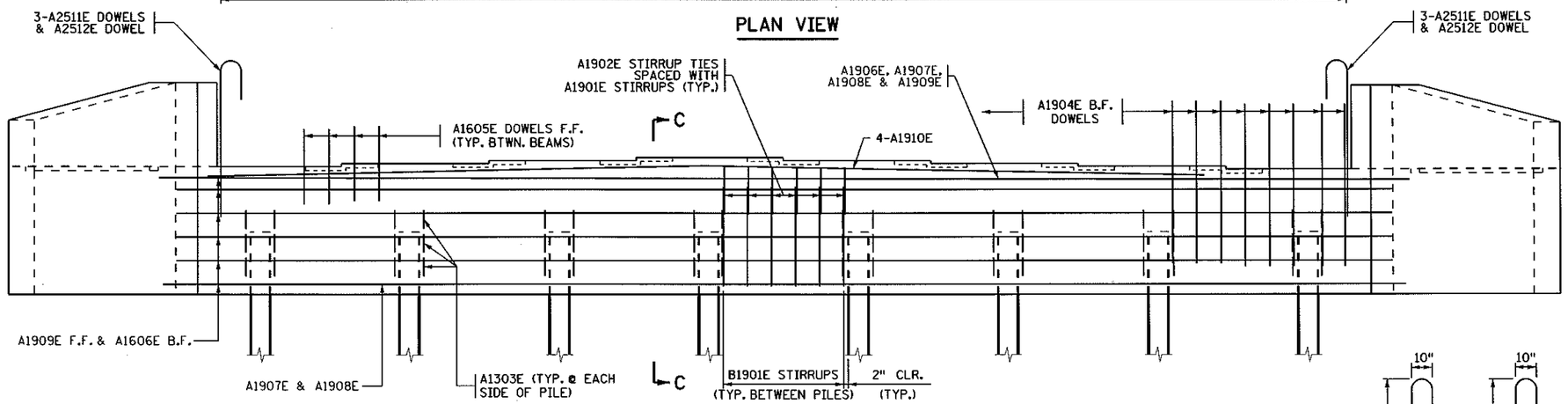
10/7/2010 b-69071_Nabt.dgn

BILL OF REINFORCEMENT FOR SOUTH ABUTMENT

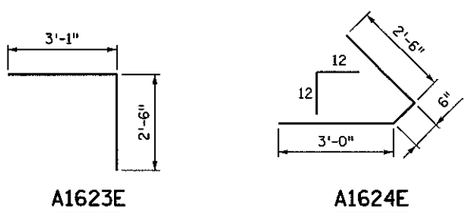
BAR	NO.	LENGTH	SHAPE	LOCATION
A1901E	46	12'-0"		STIRRUP
A1902E	46	6'-8"		STIRRUP TIE
A1303E	48	4'-0"		TIES @ PILES
A1904E	46	6'-6"		B.F. VERTICAL DOWEL
A1605E	30	3'-6"		F.F. VERTICAL DOWEL
A1906E	6	52'-0"		LONGITUDINAL B.F.
A1907E	2	50'-4"		LONGITUDINAL
A1908E	2	48'-3"		LONGITUDINAL
A1909E	6	47'-0"		LONGITUDINAL F.F.
A1910E	4	40'-0"		LONGITUDINAL TOP
A2511E	6	8'-7"		ENDPOST DOWEL
A2512E	2	13'-0"		ENDPOST DOWEL
A1913E	2 SERIES OF 9	FR. 6'-6" TO 7'-10"		EAST WINGWALL VERTICAL
A1914E	2 SERIES OF 9	FR. 6'-7" TO 7'-11"		WEST WINGWALL VERTICAL
A1915E	7	7'-11"		EAST WINGWALL VERTICAL
A1916E	7	8'-0"		WEST WINGWALL VERTICAL
A1917E	10	13'-6"		WINGWALL HORIZONTAL F.F.
A1918E	10	10'-1"		WINGWALL HORIZONTAL E.F.
A1619E	8	10'-1"		WINGWALL HORIZONTAL E.F.
A1620E	2	6'-10"		EAST WINGWALL HORIZ. E.F.
A1621E	2	7'-3"		WEST WINGWALL HORIZ. E.F.
A1622E	4	10'-3"		WINGWALL HORIZ. E.F.
A1623E	8	5'-7"		WINGWALL CORNER TIE B.F.
A1624E	8	6'-0"		WINGWALL CORNER TIE F.F.
A1625E	18	2'-10"		WINGWALL END TIES



PLAN VIEW

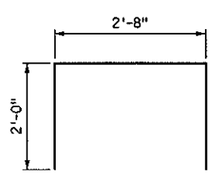


ELEVATION



A1623E

A1624E



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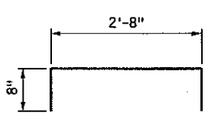

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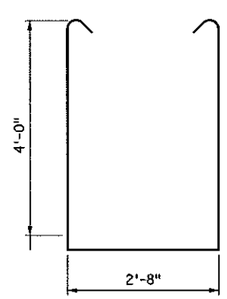

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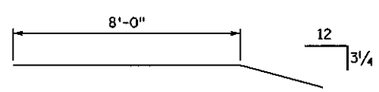

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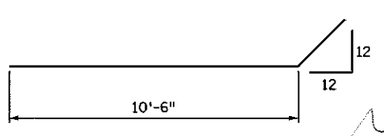

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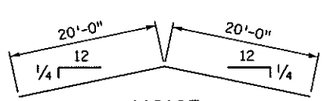
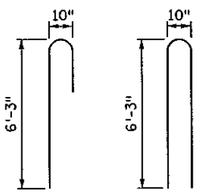
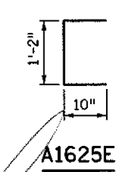


A1910E

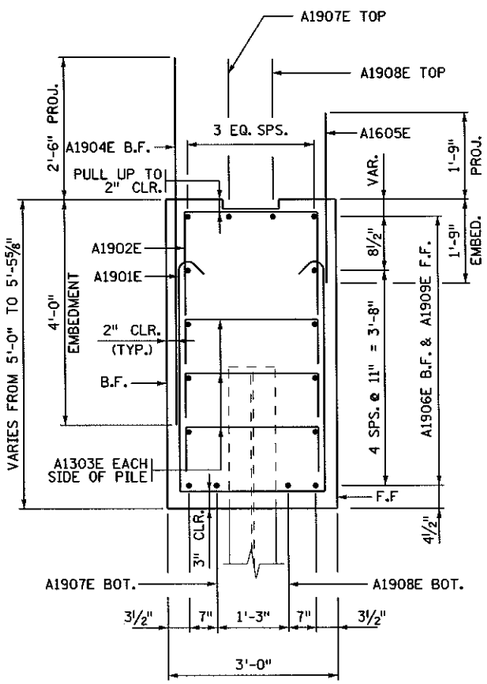


A2511E

A2512E



A1625E



SECTION C-C

NOTES:

F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

E.F. DENOTES EACH FACE.

SEE SHEETS NO. 7 AND 8 FOR WINGWALL REINFORCEMENT.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

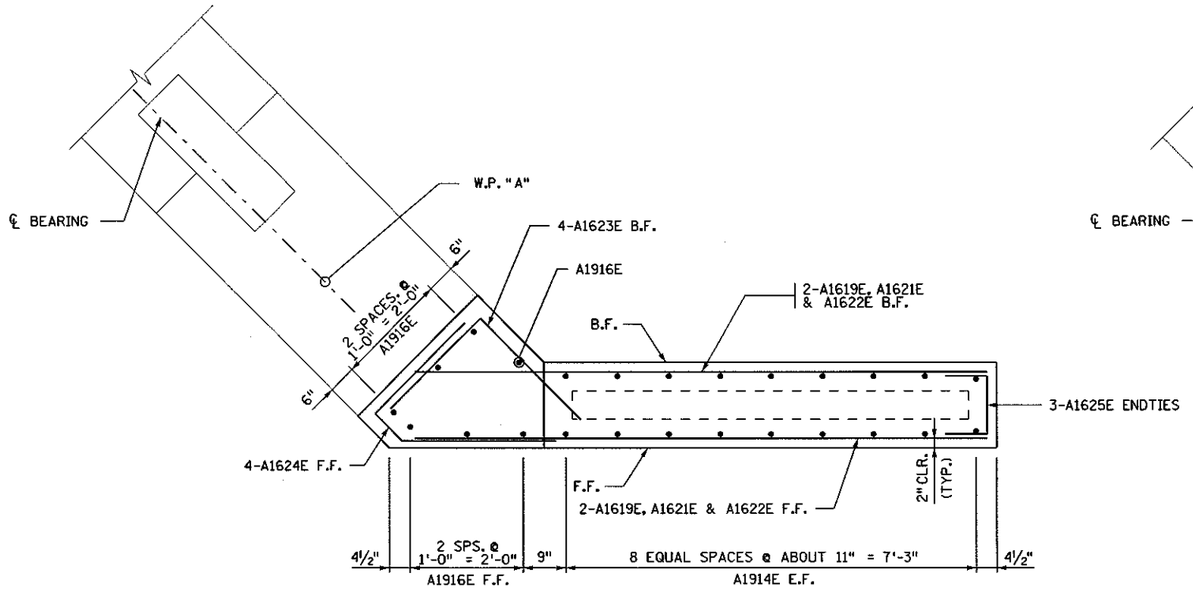
TITLE: SOUTH ABUTMENT REINFORCEMENT

DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

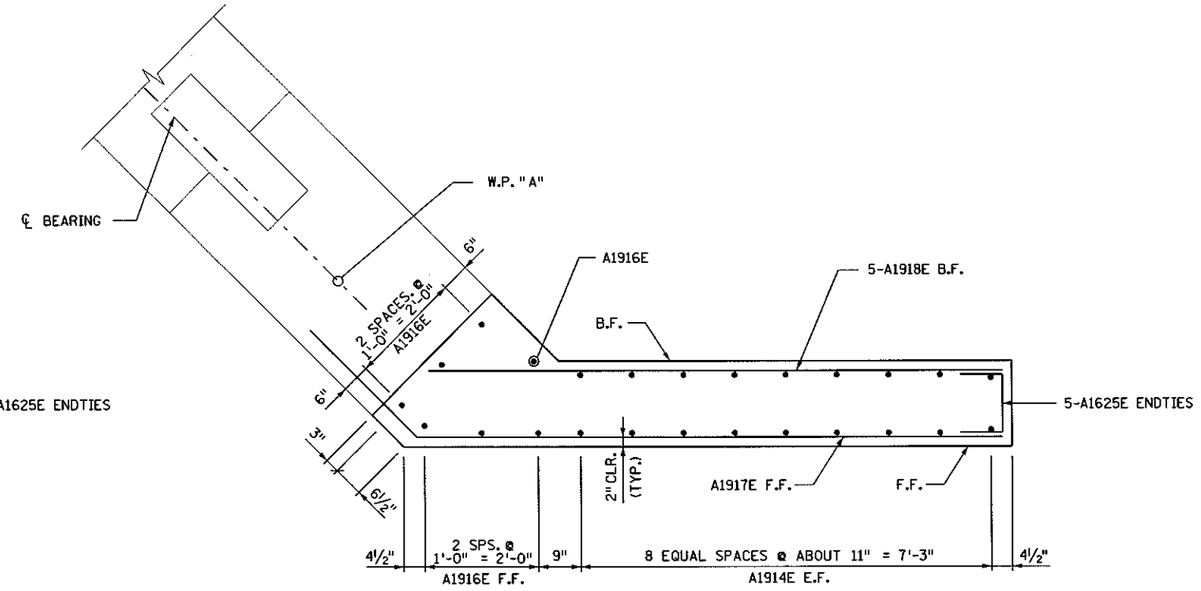
SHEET NO. 6 OF 35 SHEETS

BRIDGE NO. 69071

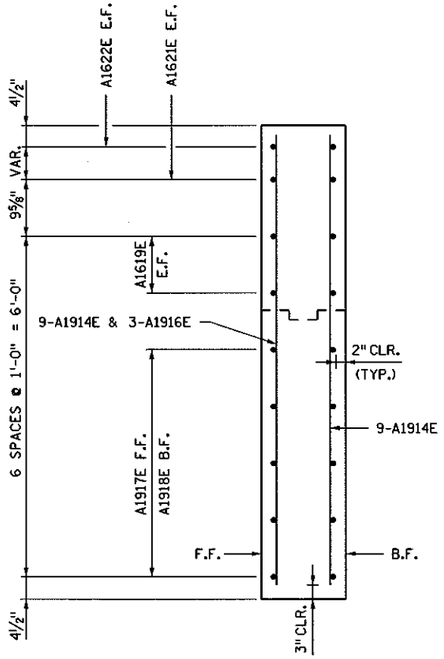
10/7/2010 br69071.hbst.dgn



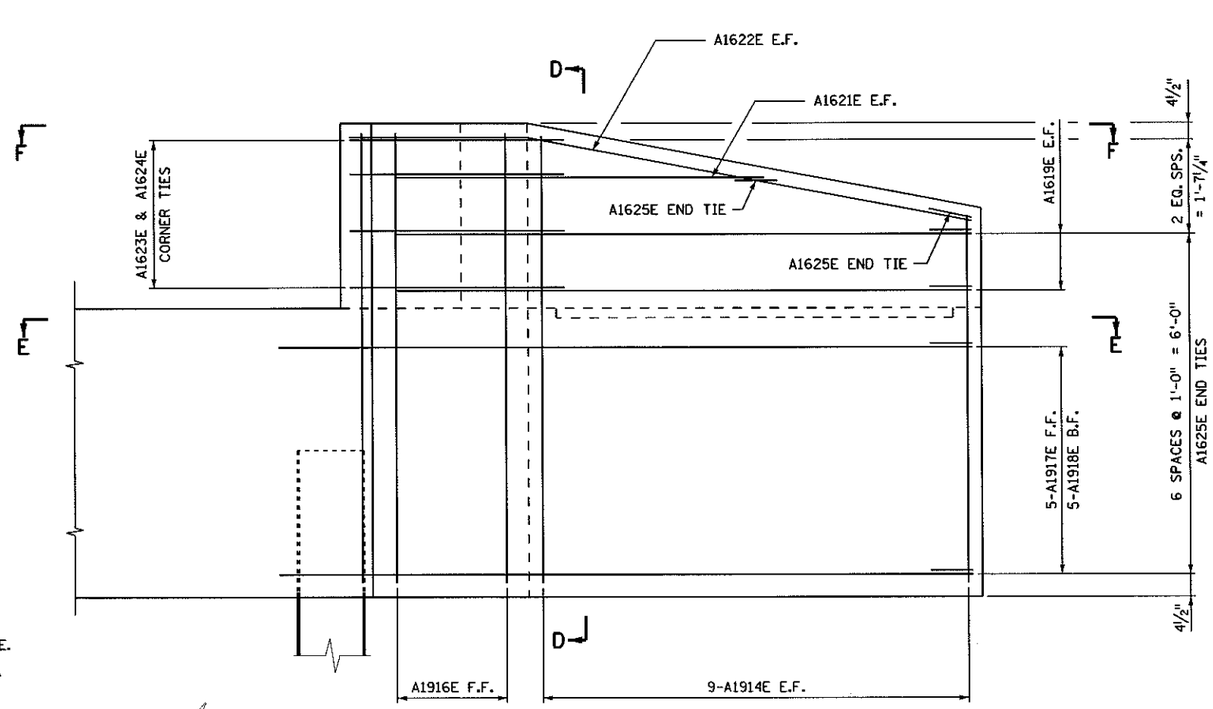
SECTION F-F



SECTION E-E



SECTION D-D



SOUTHWEST WINGWALL ELEVATION

NOTES:

F.F. DENOTES FRONT FACE.
B.F. DENOTES BACK FACE.
E.F. DENOTES EACH FACE

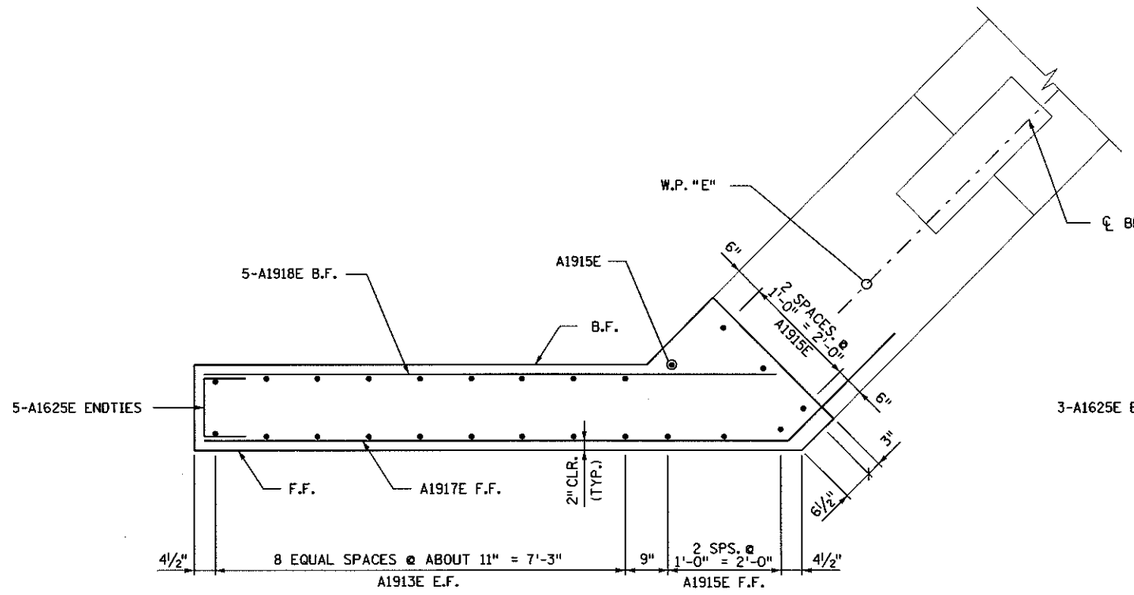
CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: SOUTH ABUTMENT REINFORCEMENT

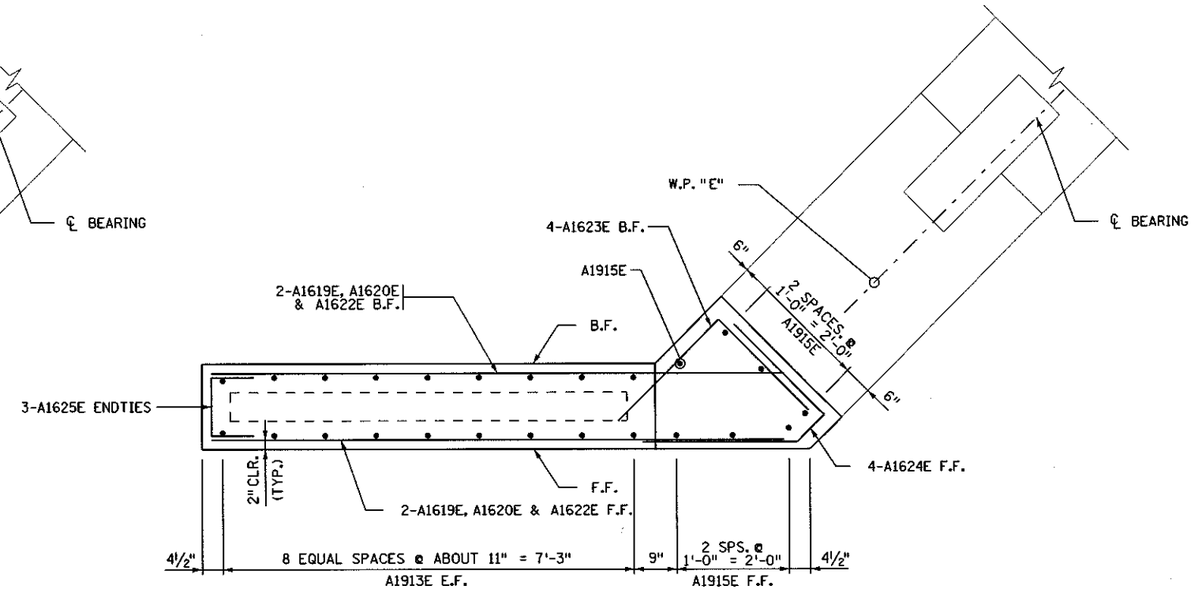
DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	SHEET NO. 7 OF 35 SHEETS

BRIDGE NO. 69071

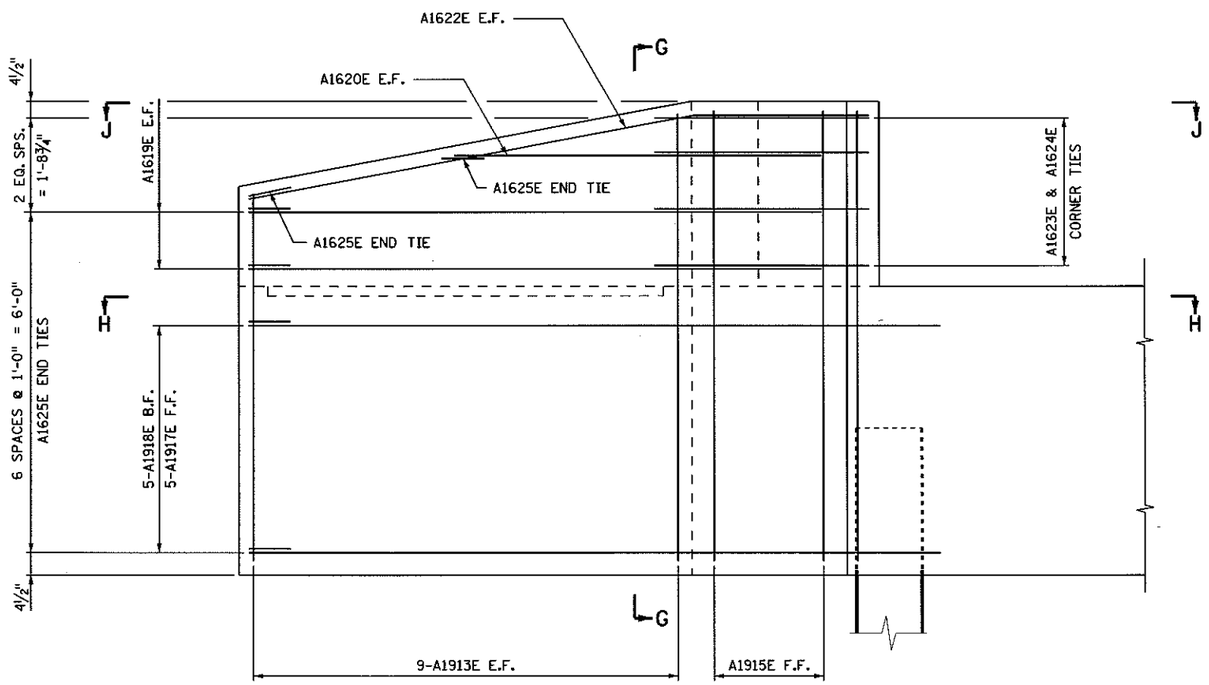
10/7/2010 br-69071.Rebt.dgn



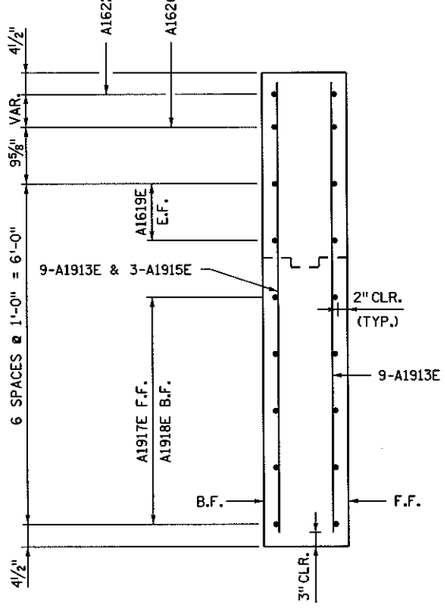
SECTION H-H



SECTION J-J



SOUTHEAST WINGWALL ELEVATION



SECTION G-G

NOTES:

F.F. DENOTES FRONT FACE.
B.F. DENOTES BACK FACE.
E.F. DENOTES EACH FACE

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

TITLE: SOUTH ABUTMENT REINFORCEMENT

DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

SHEET NO. 8 OF 35 SHEETS

BRIDGE NO. 69071

10/7/2010 br69071_Nabs.dgn

NORTH ABUTMENT REQUIRED NOMINAL PILE BEARING RESISTANCE R_n - TONS/PILE		
FIELD CONTROL METHOD	φ_{dyn}	$*R_n$
MN/DOT NOMINAL RESISTANCE FORMULA	0.40	211.3
PDA	0.65	130.0

$*R_n$ = (FACTORED DESIGN LOAD) / φ_{dyn}

NORTH ABUTMENT COMPUTED PILE LOAD - TONS/PILE	
FACTORED DEAD LOAD + EARTH PRESSURE	57.4
FACTORED LIVE LOAD	27.7
*FACTORED DESIGN LOAD	85.1

*BASED ON STRENGTH I LOAD COMBINATION

PILE NOTES

1 STEEL HP 10X42 TEST PILES 40 FT. LONG
7 STEEL HP 10X42 PILES EST. LENGTH 30 FT.
8 STEEL HP 10X42 PILES REQ'D. FOR NORTH ABUTMENT.

PILE SPACING SHOWN IS AT BOTTOM OF ABUTMENT.

PILES TO BE HP 10X42.

FOR PILE SPLICE DETAILS SEE DETAIL B202.

ALL PILES SHALL BE EQUIPPED WITH PILE TIP PROTECTION. ALL PILES SHALL BE DRIVEN TO A MINIMUM TIP ELEVATION OF 1305.00.

SUMMARY OF QUANTITIES FOR NORTH ABUTMENT		
STRUCTURAL CONCRETE (3Y43)	37	CU. YD.
REINFORCEMENT BARS (EPOXY COATED)	4830	POUND
(1) STEEL H-PILING DELIVERED 10"	210	LIN. FT.
(1) STEEL H-PILING DRIVEN 10"	210	LIN. FT.
STEEL H-TEST PILE 40 FT. LONG 10"	1	EACH
STEEL H-PILE TIP PROTECTION 10"	8	EACH
(3) DRAINAGE SYSTEM TYPE (B910)	0.5	LUMP SUM

NOTES:

(1) DOES NOT INCLUDE TEST PILES.

(2) TO BE INCLUDED IN SUPERSTRUCTURE QUANTITIES.

(3) FOR ABUTMENT DRAINAGE SYSTEM SEE DETAIL B910. PAYMENT WILL BE INCLUDED IN SINGLE LUMP SUM PRICE FOR ITEM 2502.502 "DRAINAGE SYSTEM TYPE (B910)".

(4) PERMISSIBLE CONSTRUCTION JOINT AND 2" X 6" KEYWAY.

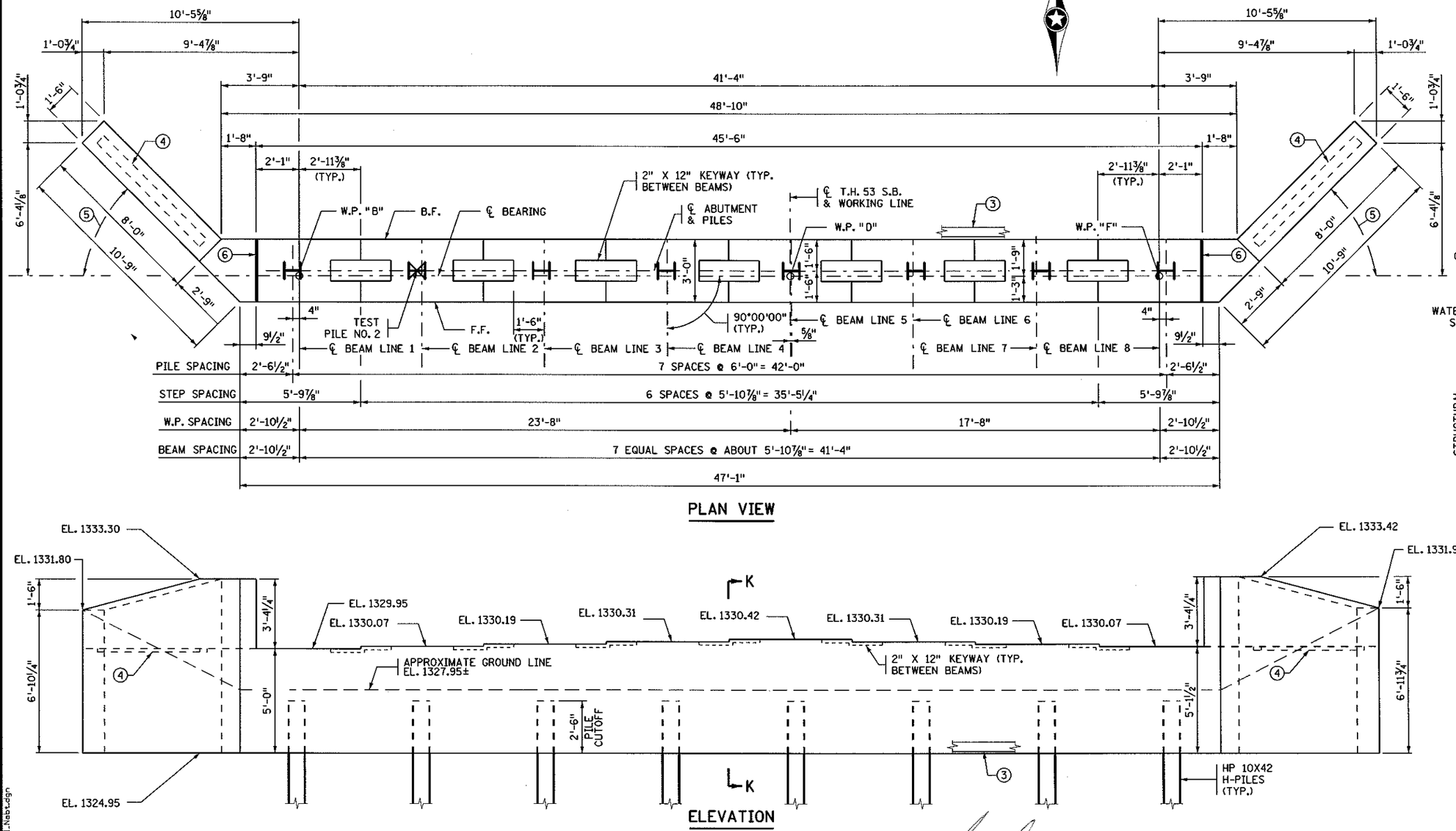
(5) 45°00'00.0"

(6) 1" CORK, INCLUDED IN SUPERSTRUCTURE QUANTITIES.

F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

SEE SHEET NO. 10 FOR ADDITIONAL WINGWALL DETAILS AND DIMENSIONS.

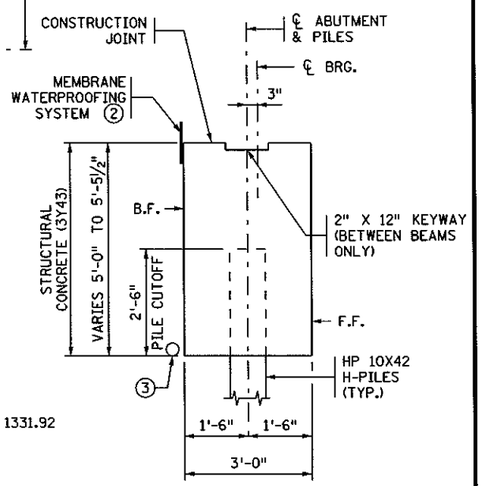


PLAN VIEW

ELEVATION

NORTHWEST CORNER

NORTHEAST CORNER



SECTION K-K

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

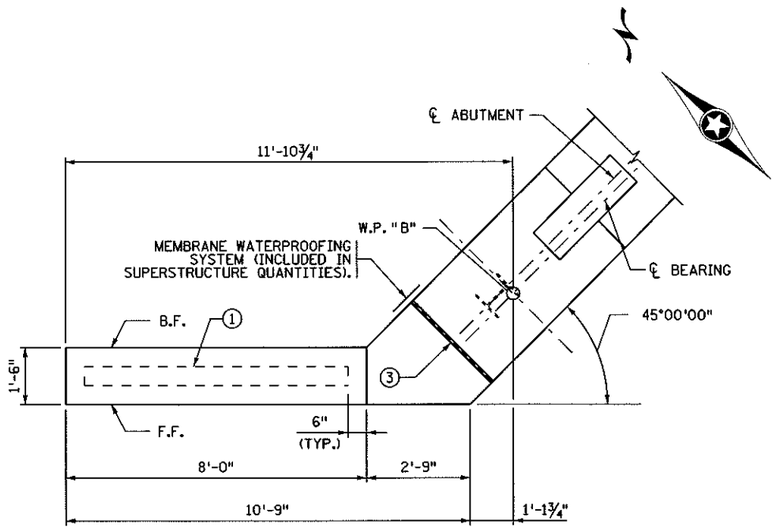
TITLE: NORTH ABUTMENT DETAILS

DES: FMJ	DR: DPK/MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

SHEET NO. 9 OF 35 SHEETS

BRIDGE NO. 69071

10/4/2010 br-69071-Nabt.dgn



NORTHWEST WINGWALL PLAN

NOTES:

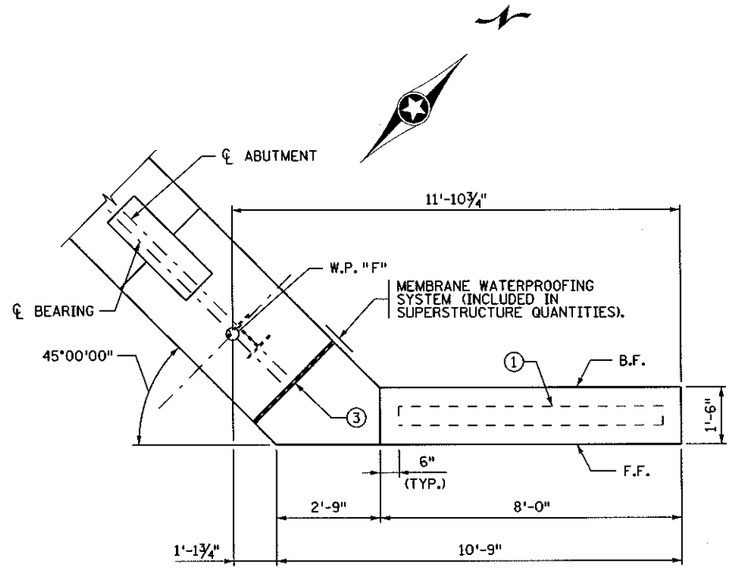
F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

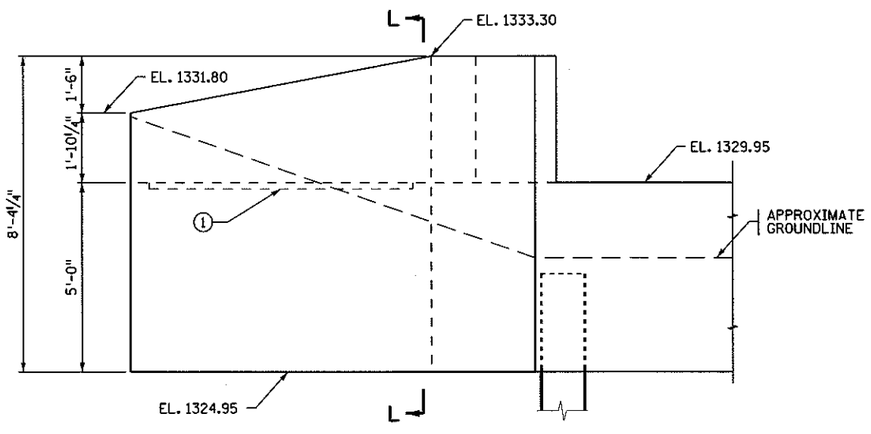
(1) PERMISSIBLE CONSTRUCTION JOINT AND 2" X 6" KEYWAY.

(2) MEMBRANE WATERPROOFING SYSTEM, IF CONSTRUCTION JOINT IS USED (INCLUDED IN SUPERSTRUCTURE QUANTITIES).

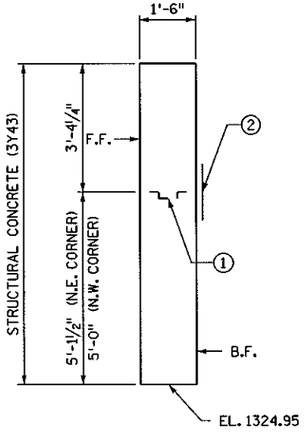
(3) 1" THICK CORK (INCLUDED IN SUPERSTRUCTURE QUANTITIES).



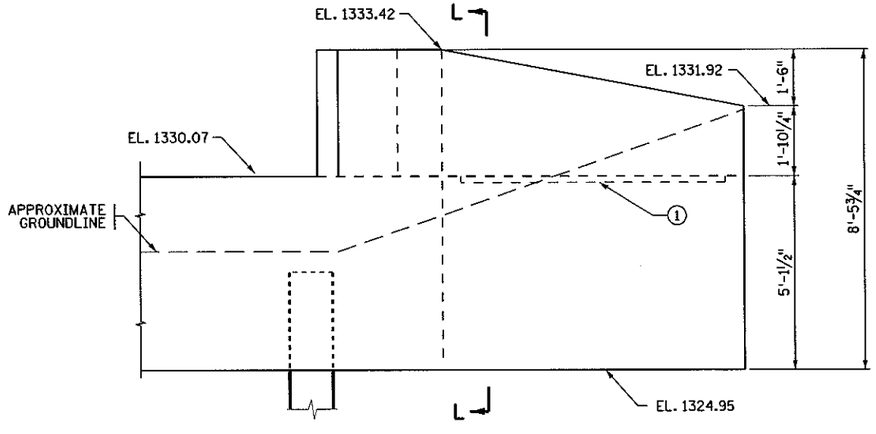
NORTHEAST WINGWALL PLAN



NORTHWEST WINGWALL ELEVATION



SECTION L-L



NORTHEAST WINGWALL ELEVATION

10/7/2010 br-69071_Nabt.dgn

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

TITLE: NORTH ABUTMENT DETAILS

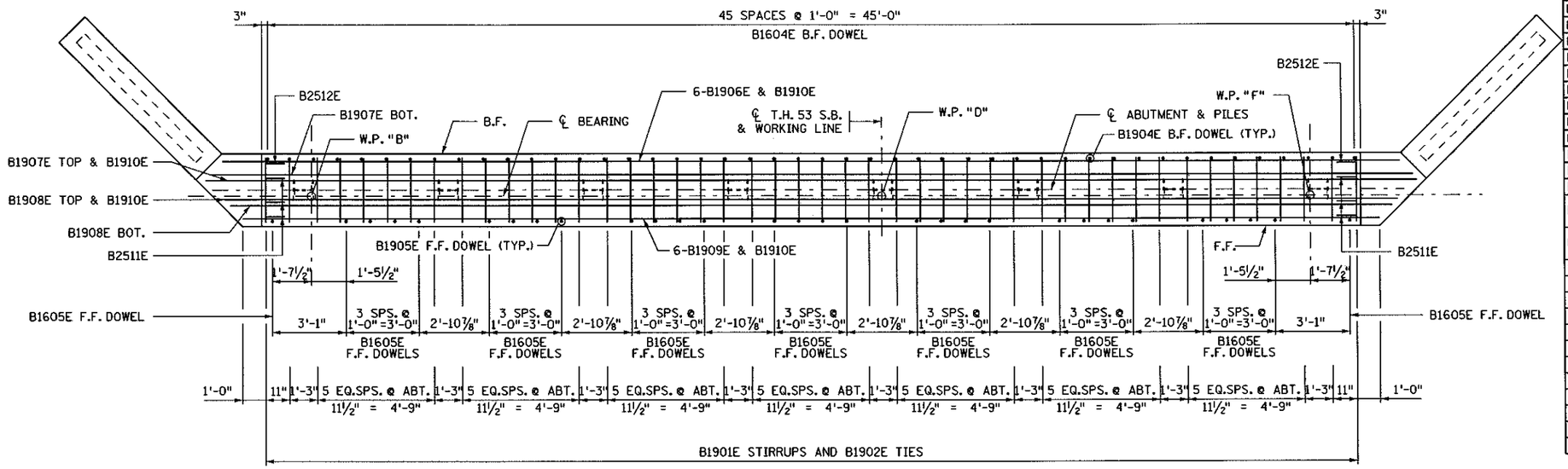
DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

SHEET NO. 10 OF 35 SHEETS

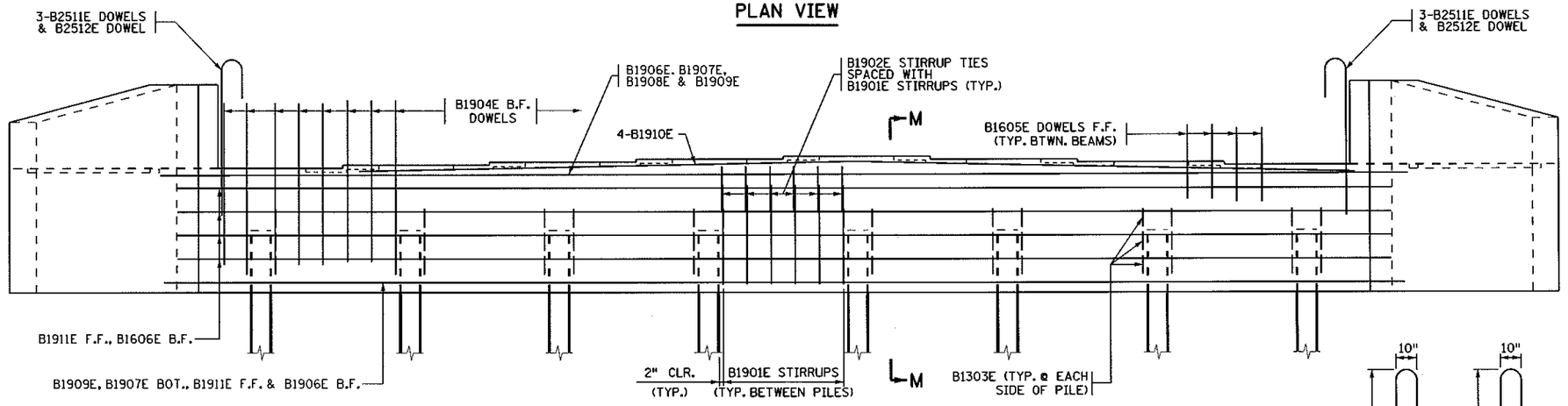
BRIDGE NO. 69071

BILL OF REINFORCEMENT FOR NORTH ABUTMENT

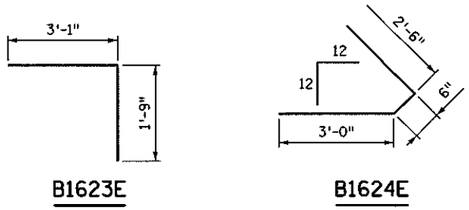
BAR	NO.	LENGTH	SHAPE	LOCATION
B1901E	46	12'-0"		STIRRUP
B1902E	46	6'-8"		STIRRUP TIE
B1303E	48	4'-0"		TIES @ PILES
B1904E	46	6'-6"		B.F. VERTICAL DOWEL
B1605E	30	3'-6"		F.F. VERTICAL DOWEL
B1906E	6	52'-0"		LONGITUDINAL B.F.
B1907E	2	50'-4"		LONGITUDINAL
B1908E	2	48'-3"		LONGITUDINAL
B1909E	6	47'-0"		LONGITUDINAL F.F.
B1910E	4	40'-0"		LONGITUDINAL TOP
B2511E	6	8'-7"		ENDPOST DOWEL
B2512E	2	13'-0"		ENDPOST DOWEL
B1913E	2 SERIES OF 9	FR. 6'-6" TO 7'-10"		EAST WINGWALL VERTICAL
B1914E	2 SERIES OF 9	FR. 6'-7" TO 7'-11"		WEST WINGWALL VERTICAL
B1915E	7	7'-11"		EAST WINGWALL VERTICAL
B1916E	7	8'-0"		WEST WINGWALL VERTICAL
B1917E	10	13'-6"		WINGWALL HORIZONTAL F.F.
B1918E	10	10'-1"		WINGWALL HORIZONTAL E.F.
B1619E	8	10'-1"		WINGWALL HORIZONTAL E.F.
B1620E	2	6'-10"		EAST WINGWALL HORIZ. E.F.
B1621E	2	7'-3"		WEST WINGWALL HORIZ. E.F.
B1622E	4	10'-3"		WINGWALL HORIZ. E.F.
B1623E	8	5'-7"		WINGWALL CORNER TIE B.F.
B1624E	8	6'-0"		WINGWALL CORNER TIE F.F.
B1625E	18	2'-10"		WINGWALL END TIES



PLAN VIEW

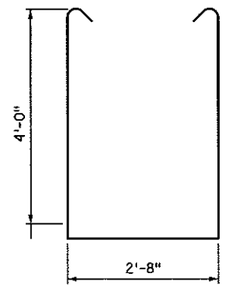


ELEVATION



B1623E

B1624E



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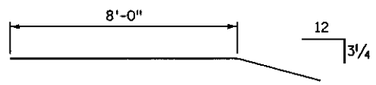

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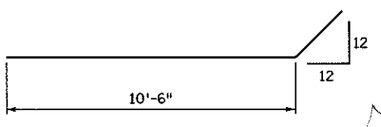

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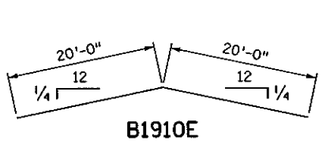

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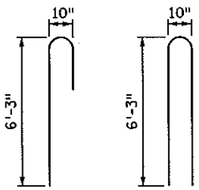
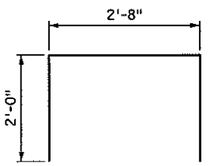


B2511E B2512E



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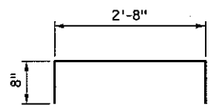

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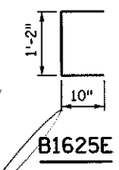

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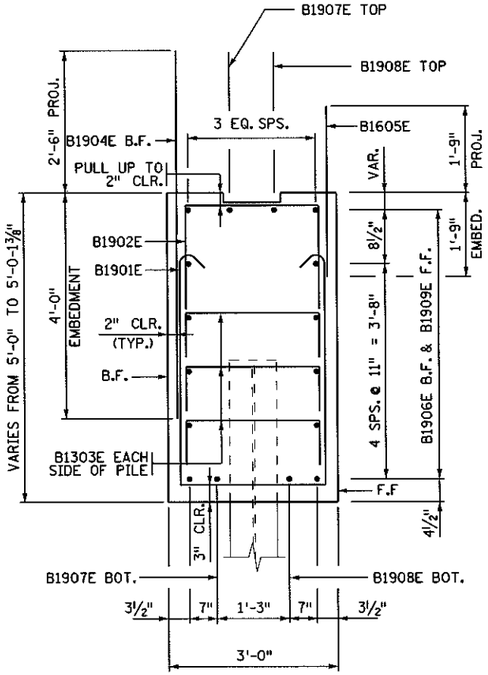


SECTION M-M

NOTES:

F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

E.F. DENOTES EACH FACE.

SEE SHEETS NO. 12 AND 13 FOR WINGWALL REINFORCEMENT.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: NORTH ABUTMENT REINFORCEMENT

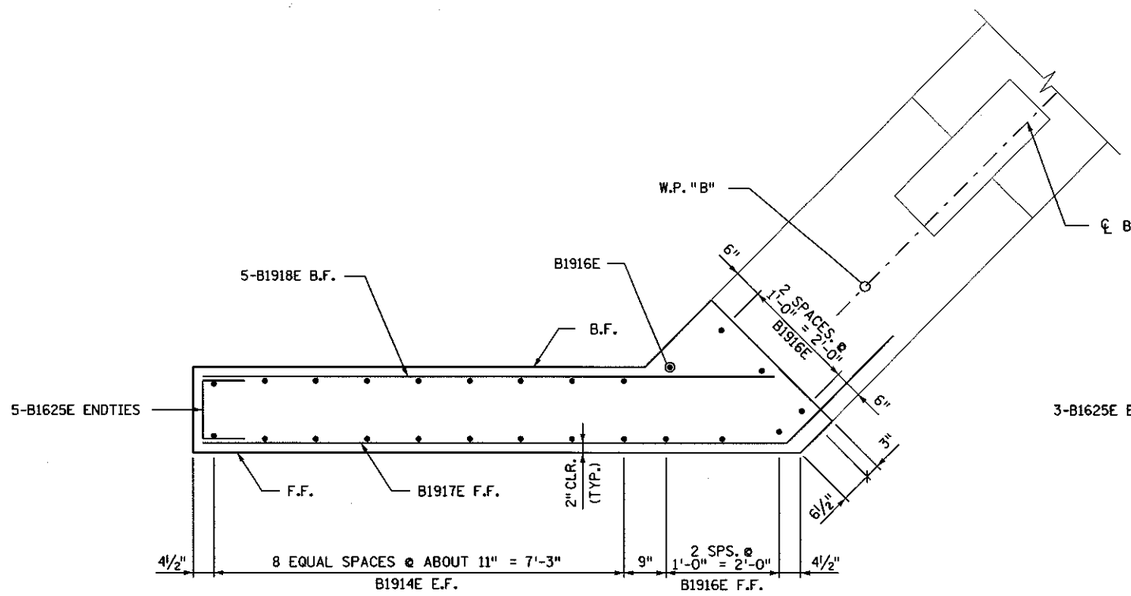
DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

SHEET NO. 11 OF 35 SHEETS

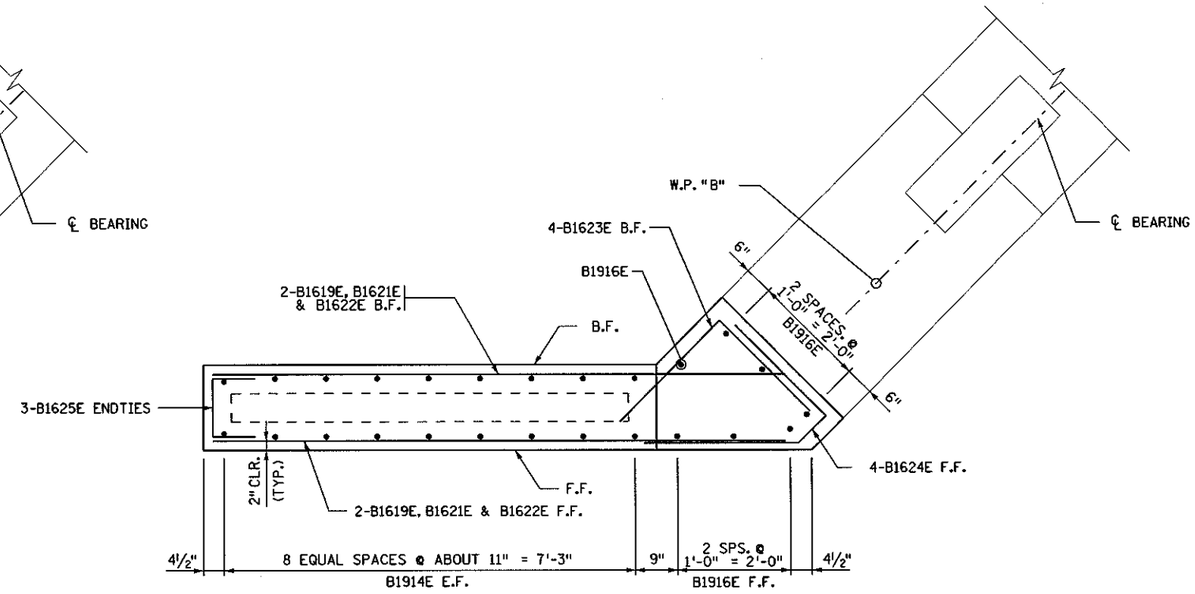
BRIDGE NO. 69071

br-69071_Nabt.dgn

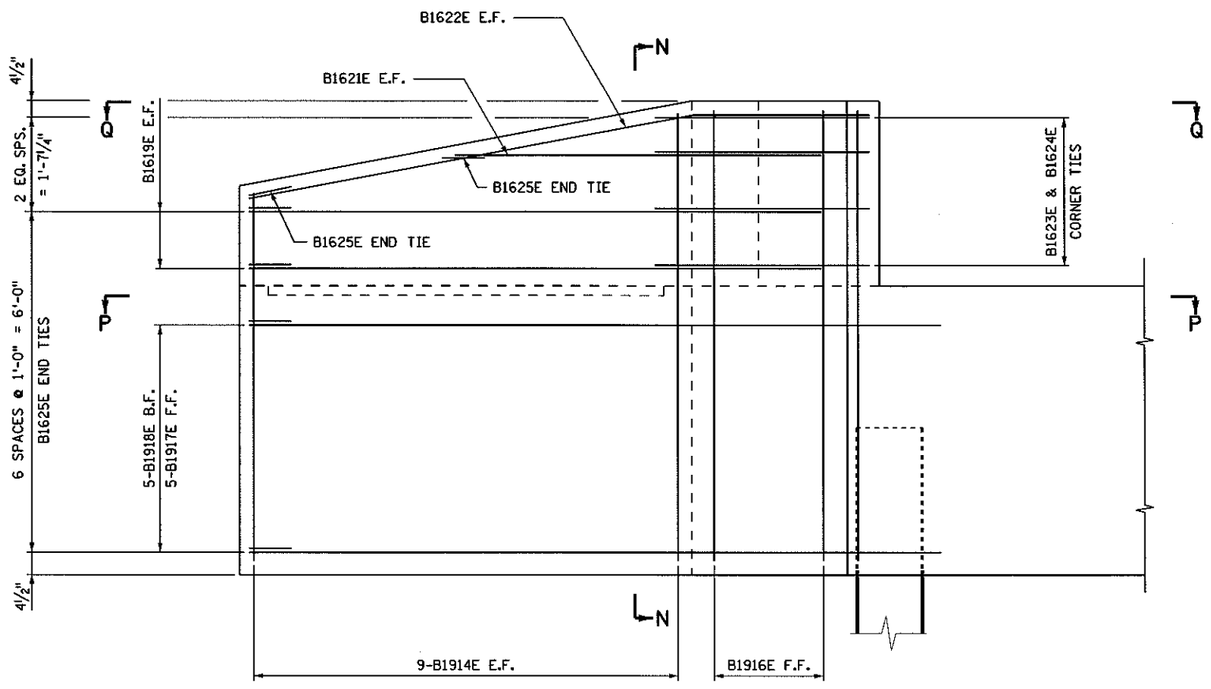
10/7/2010



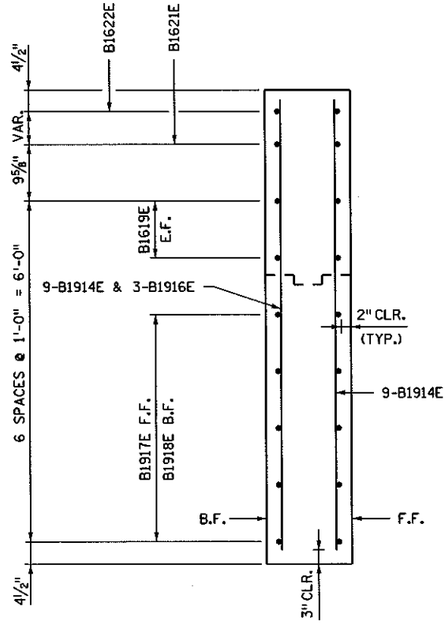
SECTION P-P



SECTION Q-Q



NORTHWEST WINGWALL ELEVATION



SECTION N-N

NOTES:

F.F. DENOTES FRONT FACE.
B.F. DENOTES BACK FACE.
E.F. DENOTES EACH FACE

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

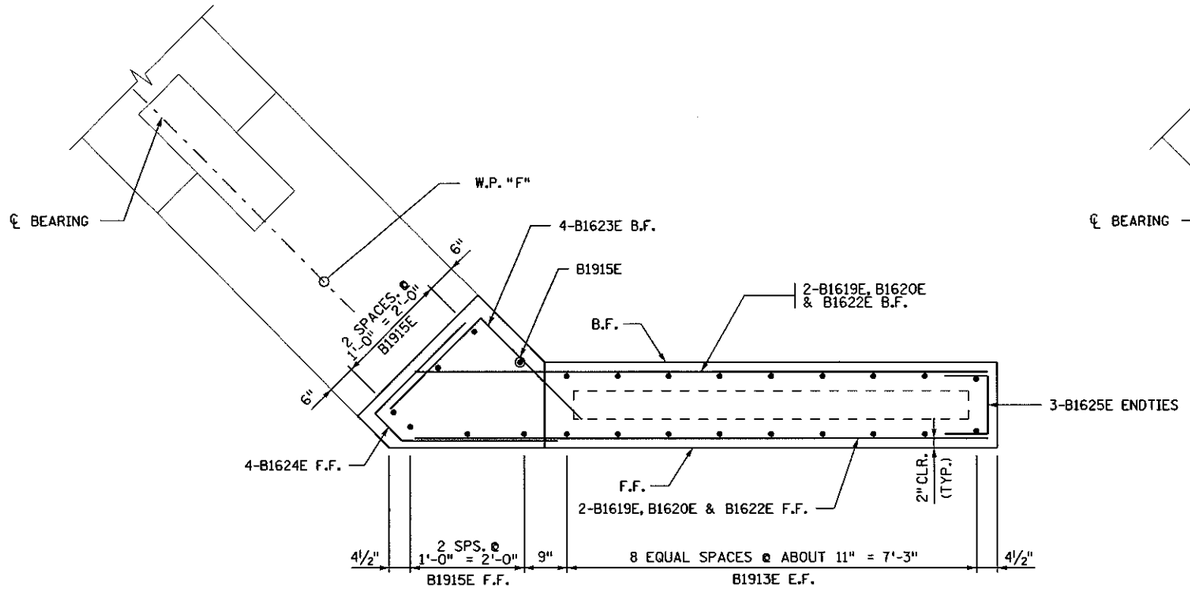
TITLE: NORTH ABUTMENT REINFORCEMENT

DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

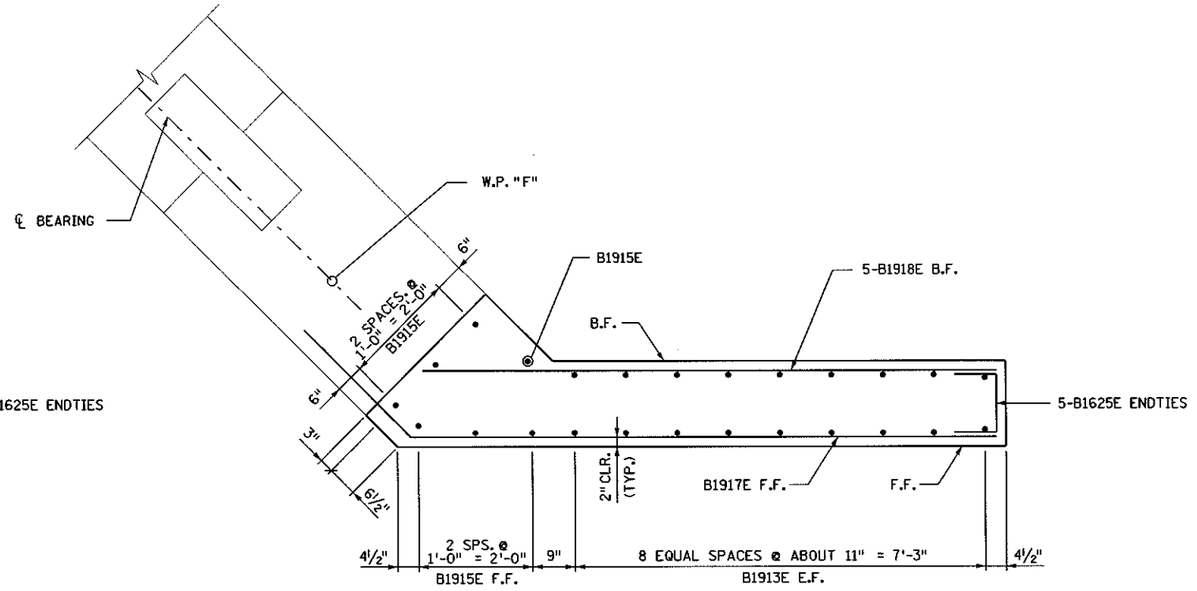
SHEET NO. 12 OF 35 SHEETS

BRIDGE NO. 69071

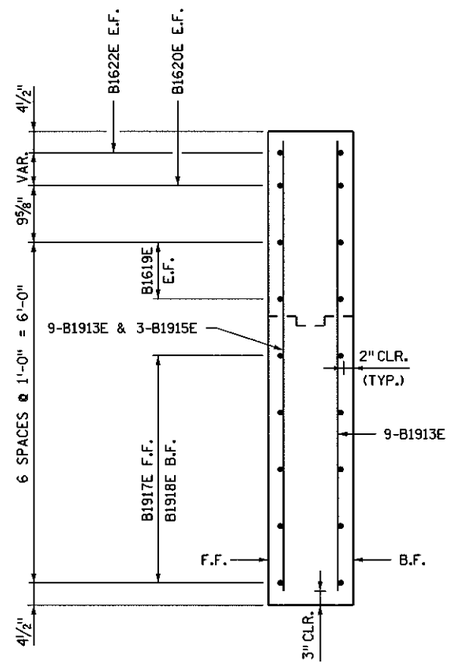
10/4/2010 b-69071.Nabt.dgn



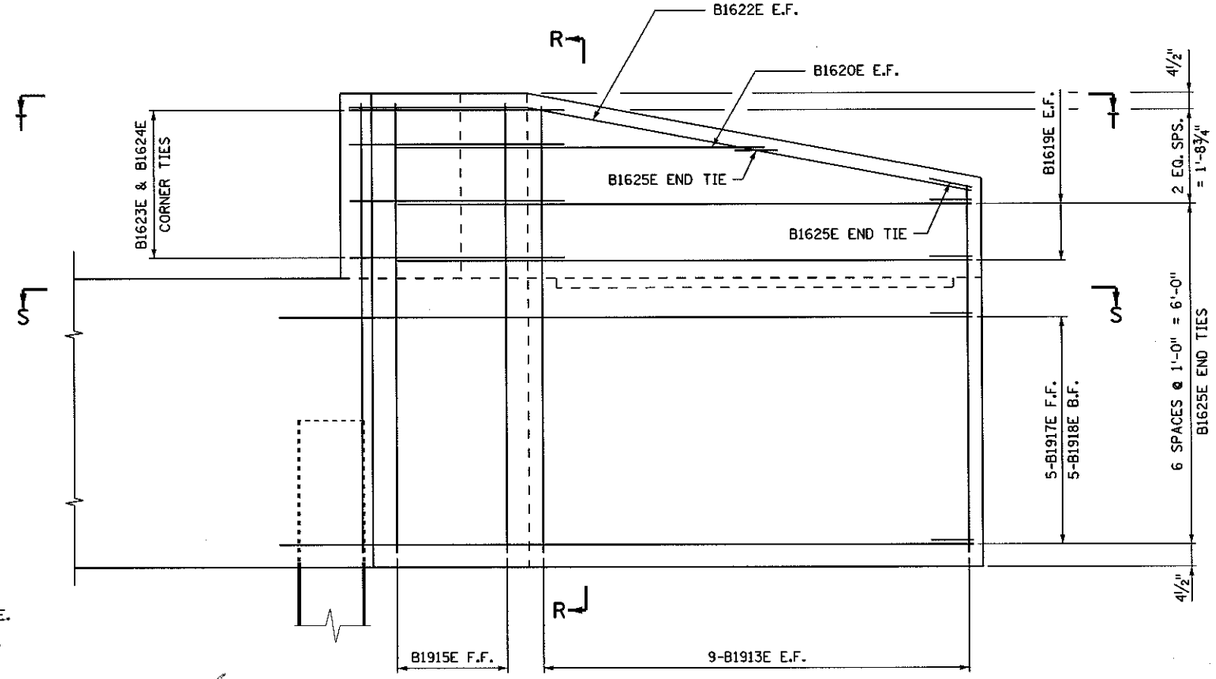
SECTION T-T



SECTION S-S



SECTION R-R



NORTHEAST WINGWALL ELEVATION

NOTES:

F.F. DENOTES FRONT FACE.
B.F. DENOTES BACK FACE.
E.F. DENOTES EACH FACE

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

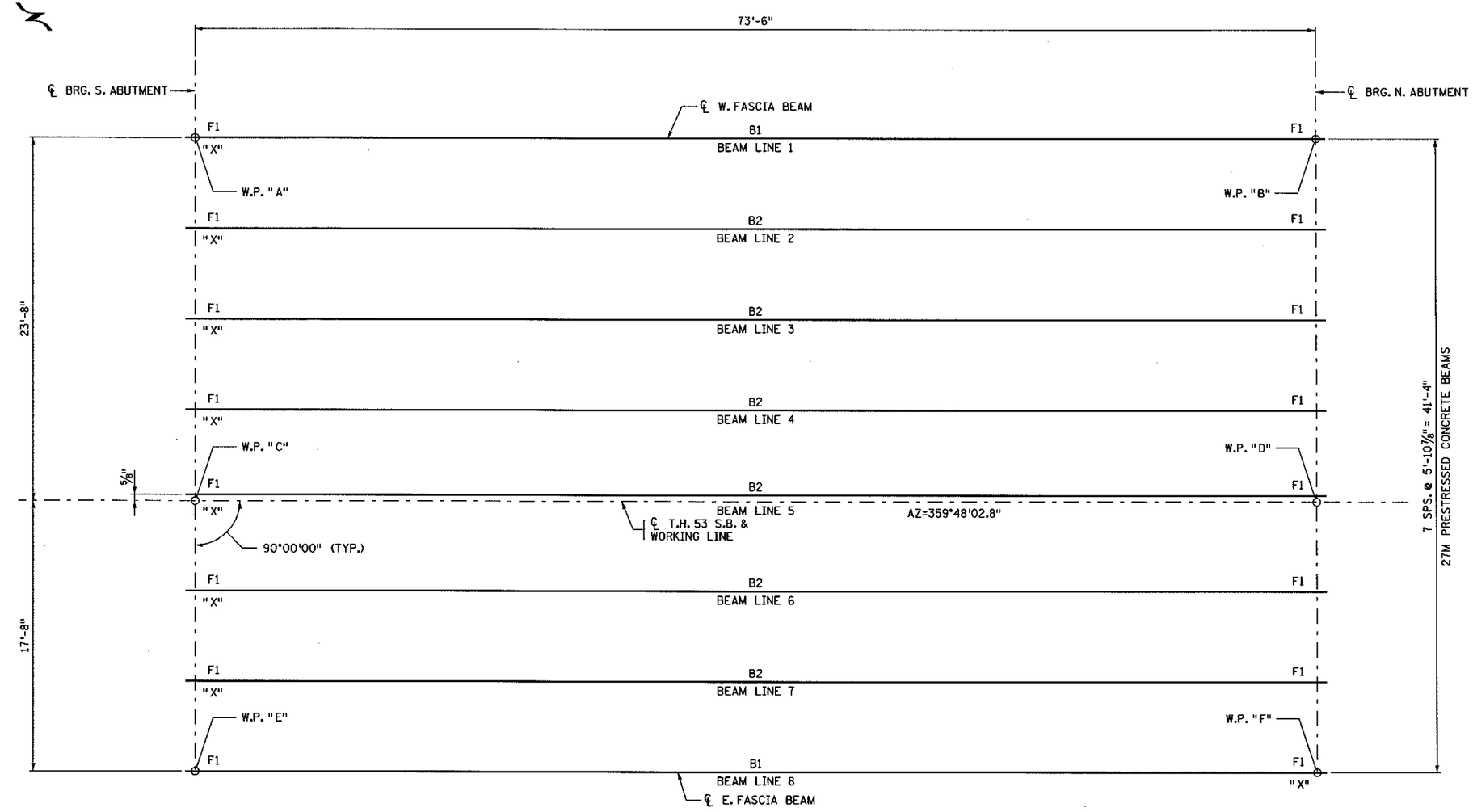
TITLE: NORTH ABUTMENT REINFORCEMENT

DES: FMJ	DR: MDH	APPROVED: 10/7/10
CHK: JWD	CHK: RWS	

SHEET NO. 13 OF 35 SHEETS

BRIDGE NO. 69071

10/1/2010 br-69071.hdst.dgn



FRAMING PLAN

NOTES:

"X" DENOTES 'X' END OF BEAM.

F1 DENOTES ELASTOMERIC BEARING PAD TYPE 1. SEE DETAIL B305.

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

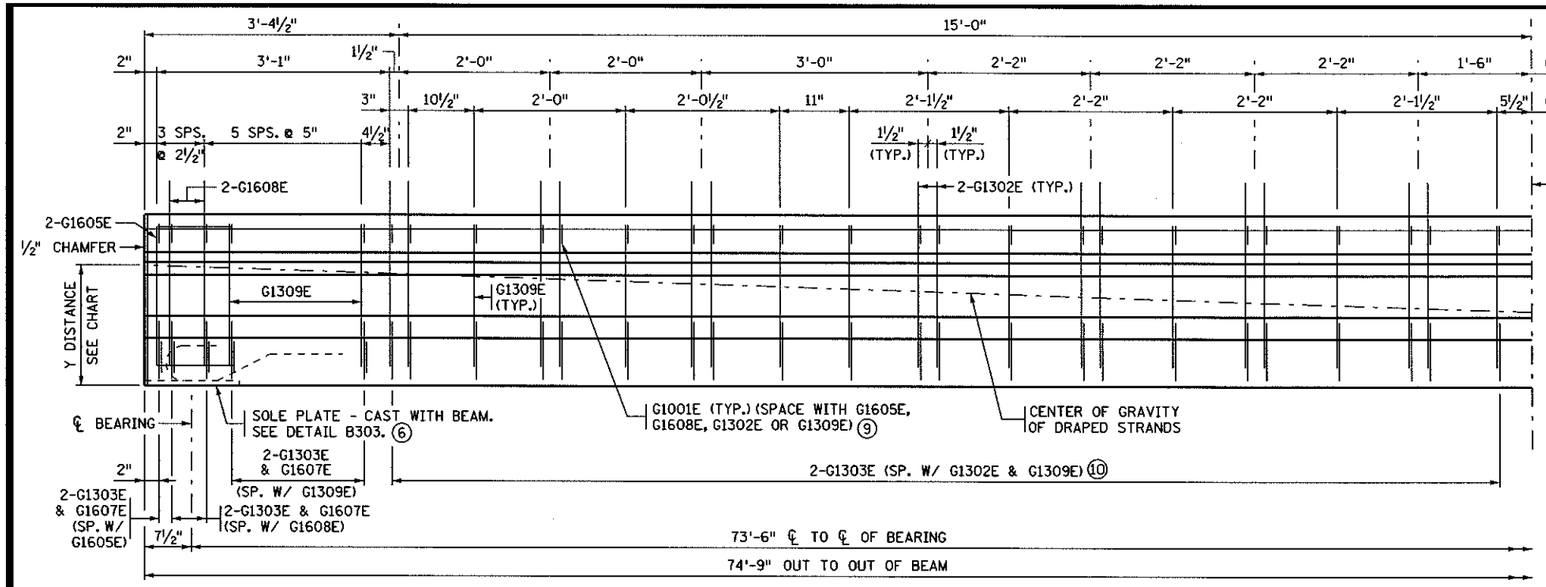
TITLE: FRAMING PLAN

DES:	DR: B.T.	APPROVED: 10/7/10
CHK:	CHK: F.M.J.	

SHEET NO. 14 OF 35 SHEETS

BRIDGE NO. 69071

mmddyy dgnfilename



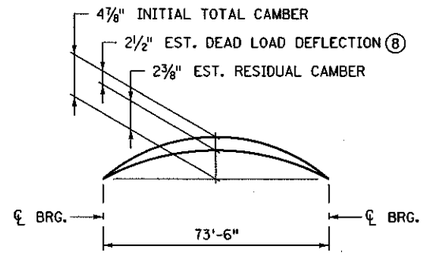
PARTIAL - BEAM ELEVATION

SPACING OF G1302E BARS SHALL BE COORDINATED WITH SPACING OF BLOCK-OUTS IN DECK PANELS. SEE SHEETS 18 & 19.

Y DISTANCES (IN INCHES)			
	NO.	℄ SPAN	END
STRAIGHT STRANDS	24	3.67	
DRAPED STRANDS	6	5.00	22.00 □
TOTAL STRANDS	30	3.93	

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.

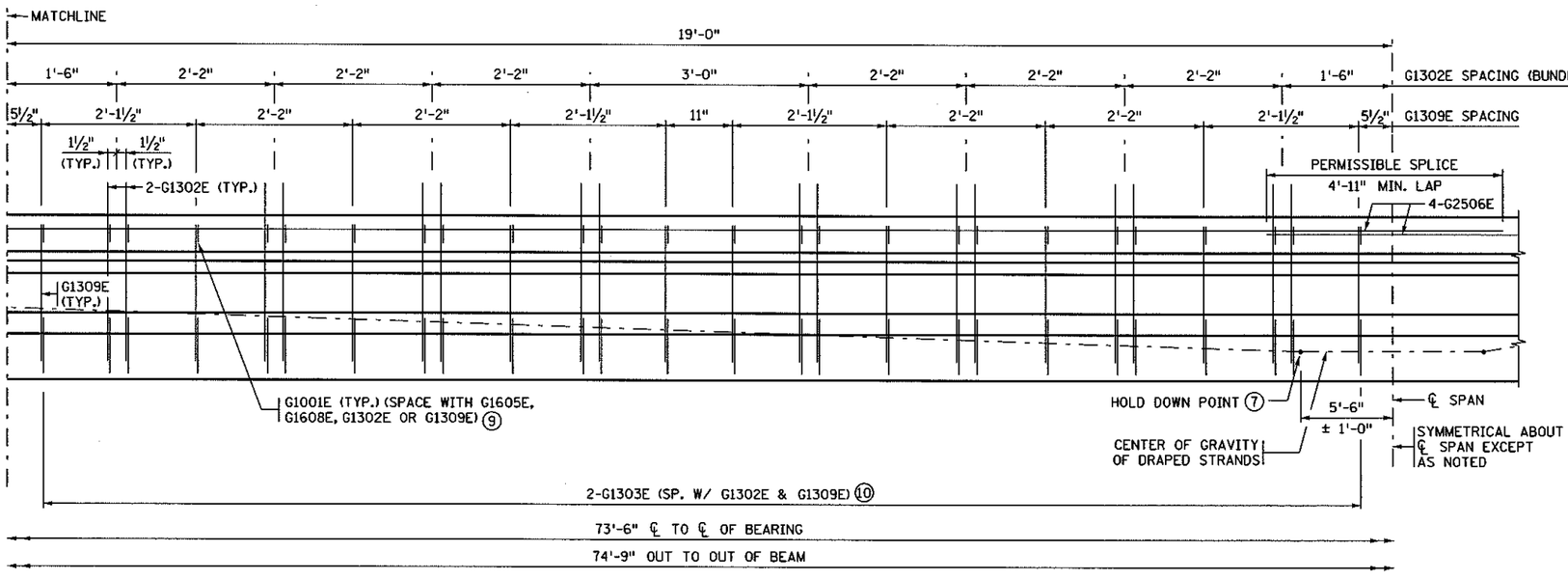
□ A TOLERANCE OF ± 1" WILL BE PERMITTED IN THIS DIMENSION.



CAMBER DIAGRAM

DEAD LOAD DEFLECTION SHOWN IS FOR WEIGHT OF DECK PANELS, OVERLAY, RAILING, SIDEWALK AND MEDIAN WHERE APPLICABLE.

ENGINEER WILL TAKE ELEVATIONS AT TOP OF BEAMS AFTER ERECTION AND WILL ALLOW FOR DEFLECTION SHOWN TO ENABLE CONTRACTOR TO ADJUST DECK PANELS TO CORRECT GRADE.



PARTIAL - BEAM ELEVATION

INITIAL PRESTRESS 1,318,300 LB.

GENERAL NOTES

TOPS OF BEAMS SHALL BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BOND.

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR.

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

ALL MATERIAL AND WORK SHOWN OR NOTED ON SHEETS 15 AND 16 SHALL BE INCLUDED IN UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS. SEE Mn/DOT SPEC. 2405.

SEE FRAMING PLAN FOR BEAM END MARKED "X".

APPROXIMATE WEIGHT OF BEAM IS 21 TONS.

(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) PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION STRAND, CONFORMING TO ASTM A416, GRADE 270.

(6) FOR INTEGRAL ABUTMENT, SOLE PLATE CAN BE ELIMINATED OR REPLACED WITH AN APPROVED PROTECTION PLATE.

(7) CENTER OF GRAVITY OF HOLD DOWNS WHEN MULTIPLE HOLD DOWNS ARE USED.

(8) DEAD LOAD DEFLECTION FOR WEIGHT OF DECK PANELS ONLY IS 1¾".

(9) ONE G1001E PER BUNDLED PAIR G1302E.

(10) 2-G1303E PER BUNDLED PAIR G1302E.

(11) 4 BARS TOTAL FOR EACH SHEAR POCKET BLOCK-OUT.

CONTRACTOR SHALL VERIFY STABILITY OF ALL BEAMS FROM OVERTURNING (NO PERMANENT BEAM DIAPHRAGMS ARE PRESENT). CONTRACTOR SHALL PROVIDE TEMPORARY BRACING SYSTEM TO RESIST CONSTRUCTION LOADS.

PRESTRESSING STRAND DIAMETER	
(5)	½" □
(5)	0.60" ☒

CALCULATED PRESTRESS LOSSES	
ELASTIC SHORTENING LOSS	23.8 KSI
LONG TERM LOSSES	23.8 KSI
TOTAL LOSSES	47.6 KSI

MINIMUM CONCRETE STRENGTH - K.S.I.	
(1) f'cI	(2) f'c
7.5 KSI	9.0 KSI

REVISED: 10-22-2009

APPROVED: OCTOBER 22, 2008

STATE BRIDGE ENGINEER

CERTIFIED BY _____ 10-7-10

LICENSED PROFESSIONAL ENGINEER — DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: 27" PRESTRESSED CONCRETE BEAM (PRETENSIONED) 27M-75

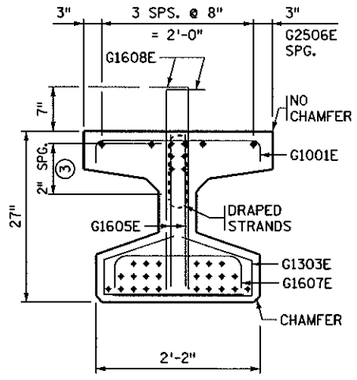
BEAMS B1 & B2

FIG. 5-397.504 (MOD.)

DES: F.M.J.	DR: B.T.	APPROVED:
CHK: P.M.S.	CHK: F.M.J.	10/7/10

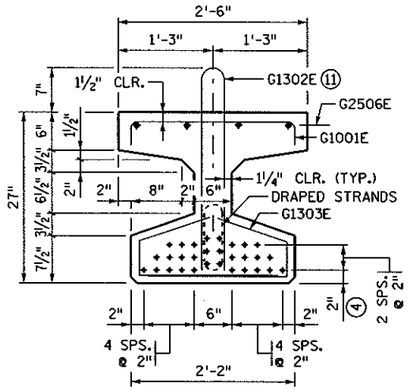
SHEET NO. 15 OF 35 SHEETS

BRIDGE NO. 69071

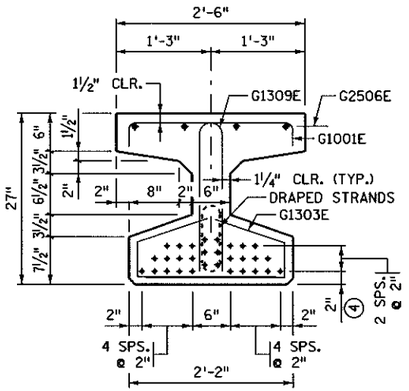


END VIEW

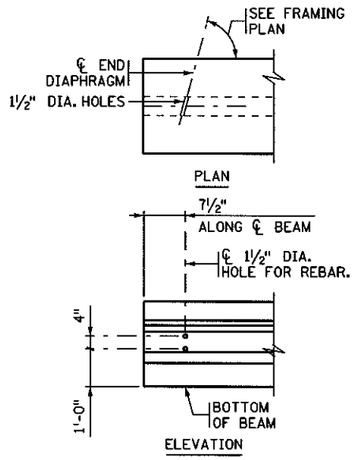
CUT STRANDS FLUSH WITH CONCRETE. PAINT ENDS WITH AN APPROVED GRAY EPOXY EXCEPT AS NOTED.



SECTION AT BLOCKOUT

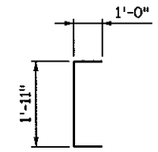


SECTION BETWEEN BLOCKOUT

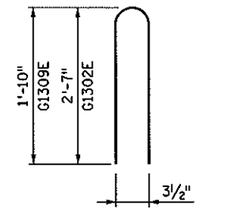


CONCRETE END DIAPHRAGM

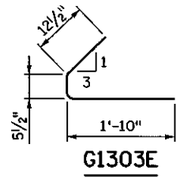
SEE SUPERSTRUCTURE DETAILS AND REINFORCEMENT FOR DIAPHRAGM DETAILS.



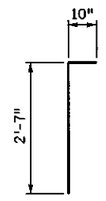
G1605E



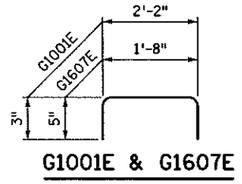
G1302E & G1309E



G1303E



G1608E



G1001E & G1607E

NOTES:

SEE SHEET 15 FOR NOTES ③ ④ AND ⑪.

REVISED: 10-22-2009

APPROVED: OCTOBER 22, 2008

STATE BRIDGE ENGINEER

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

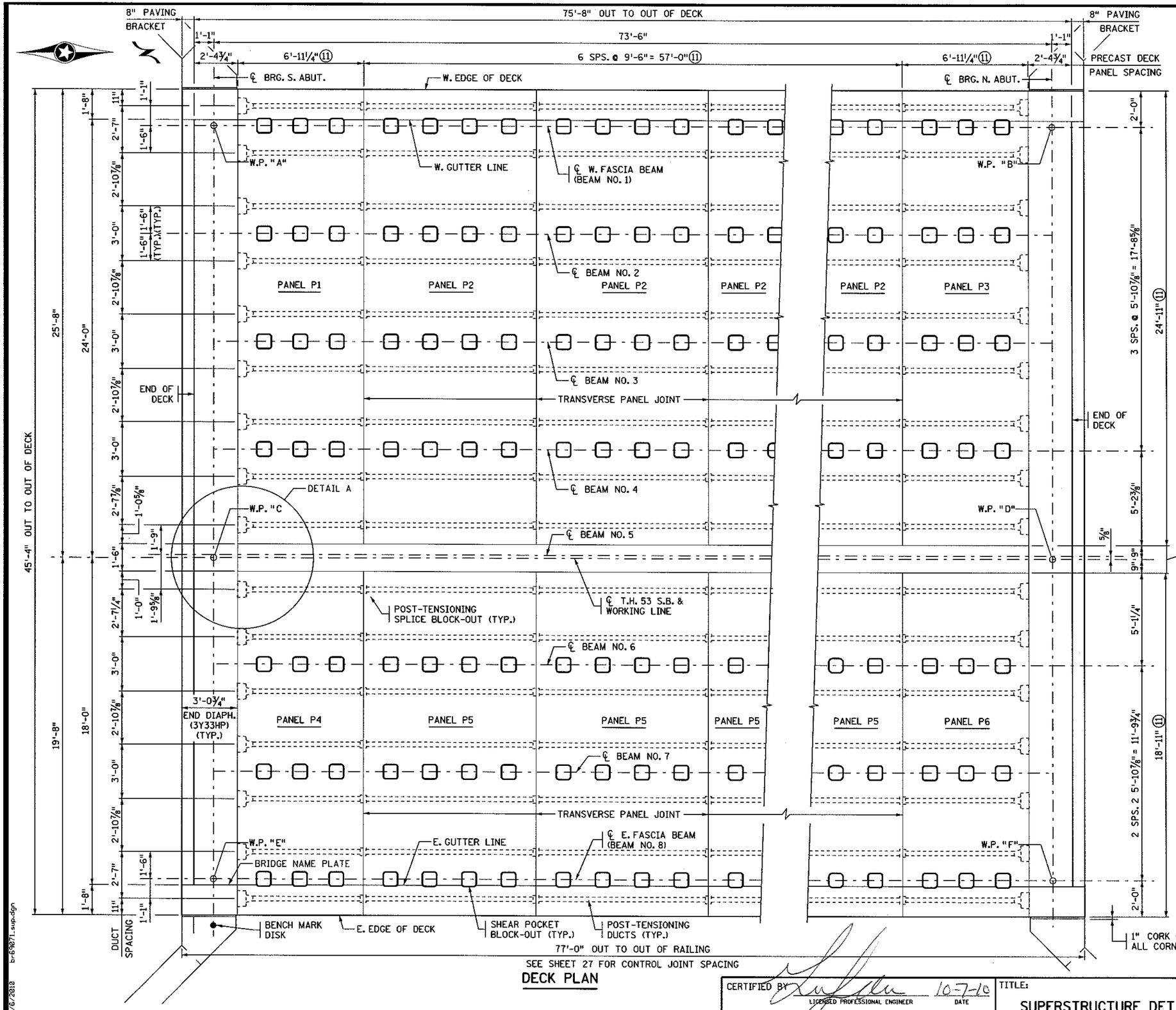
TITLE: 27" PRESTRESSED CONCRETE BEAM (PRETENSIONED) 27M-75

BEAMS B1 & B2

FIG. 5-397.504 (MOD.)

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	BRIDGE NO. 69071

SHEET NO. 16 OF 35 SHEETS



DECK PLAN

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE

6 7	STRUCTURAL CONCRETE (3Y33HP) SPECIAL	33	CU. YD.
10 6	CHIP SEAL WEARING COURSE	4858	SQ. FT.
1	TYPE F (TL-4) RAILING CONCRETE (3Y46) (MOD)	154	LIN. FT.
2	REINFORCEMENT BARS (EPOXY COATED)	6430	POUND
6 3	ELASTOMERIC BEARING PAD TYPE 1	16	EACH
5 4	POLYSTYRENE TYPE B	33	SQ. FT.
6	PRESTRESSED CONCRETE BEAMS 27M	598	LIN. FT.
6 5	1" THICK CORK	41	SQ. FT.
5	BRIDGE NAME PLATE	1	EACH
5	MEMBRANE WATERPROOFING SYSTEM	106	LIN. FT.
10 6	BRIDGE DECK PLANING	4858	SQ. FT.
6	POST-TENSIONING SYSTEM	1	SYS.
9 6	NON-SHRINK GROUT	16	CU. YD.
8 6	PRECAST DECK PANEL	3069	SQ. FT.

(1) "TYPE F (TL-4) RAILING CONCRETE (3Y46) (MOD)" VOLUME IS APPROXIMATELY 18 CU. YDS.

(2) INCLUDES LONGITUDINAL CLOSURE POUR, END DIAPHRAGM, AND RAILING REINFORCEMENT.

(3) PAYMENT FOR ELASTOMERIC BEARING PAD INCLUDED IN ITEM ELASTOMERIC BEARING PAD TYPE 1 PER EACH.

(4) THICKNESS AT BRG. PAD VARIES, FILL TO BOTTOM OF BEAM.

(5) TO BE INCLUDED IN PRICE BID FOR CONCRETE (3Y36).

(6) SEE SPECIAL PROVISIONS.

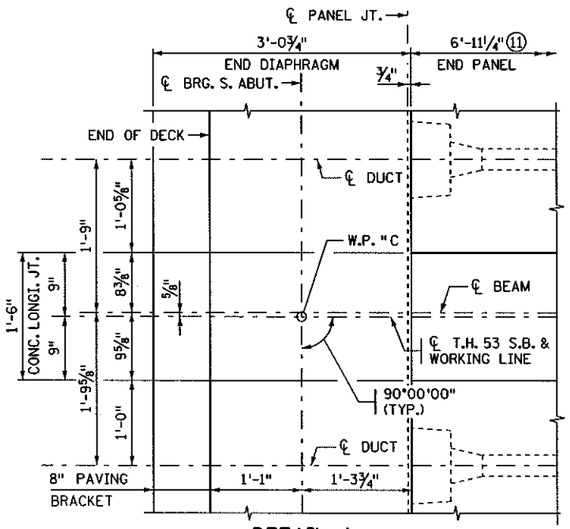
(7) INCLUDES 28 CU. YDS. FOR END DIAPHRAGMS AND 5 CU. YDS. FOR LONGITUDINAL CLOSURE POUR.

(8) INCLUDES CONCRETE, REINFORCEMENT BARS, POST-TENSIONING DUCTS, LIFTING ASSEMBLIES, VERTICAL ADJUSTMENT ASSEMBLIES AND THE FURNISHING AND INSTALLING OF NON-SHRINK GROUT.

(9) INCLUDED IN PRICE BID FOR PRECAST DECK PANEL.

(10) INCLUDES 1680 SQ. FT. FOR APPROACH PANELS.

(11) MEASURED ALONG TOP SURFACE OF DECK PANEL.



DETAIL A

(SOUTH ABUTMENT SHOWN, NORTH ABUTMENT OPPOSITE HAND)

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

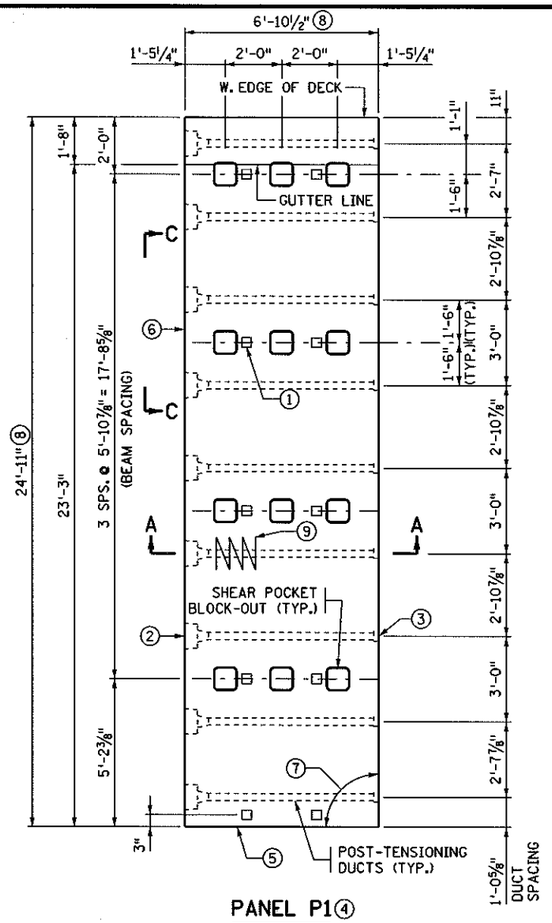
TITLE: SUPERSTRUCTURE DETAILS

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 17 OF 35 SHEETS

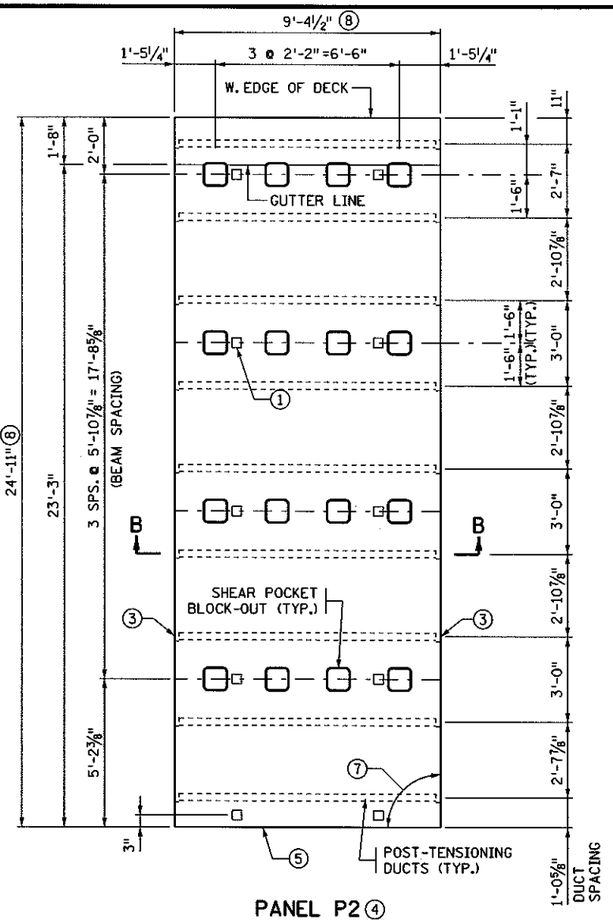
BRIDGE NO. 69071

br69071.sup.dgn 10/6/2010



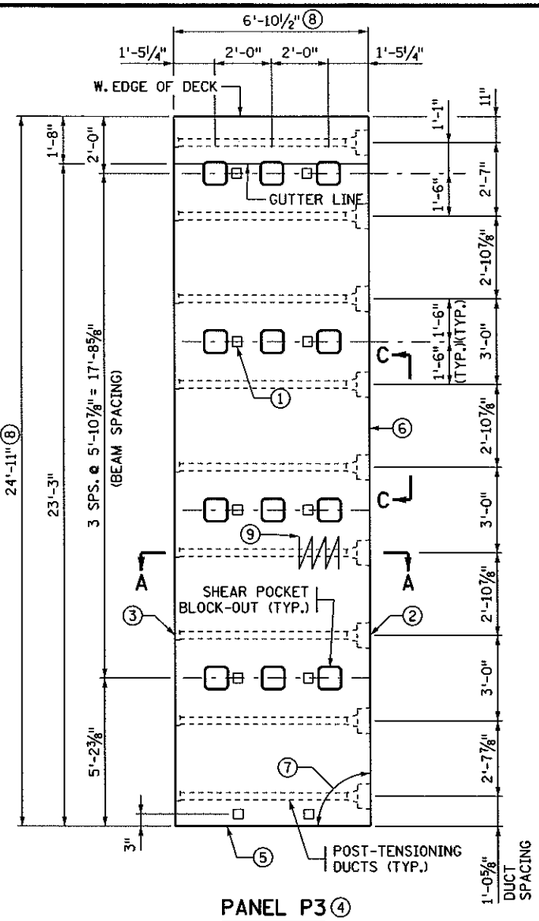
PANEL P1 ④

(1 PANEL REQUIRED)



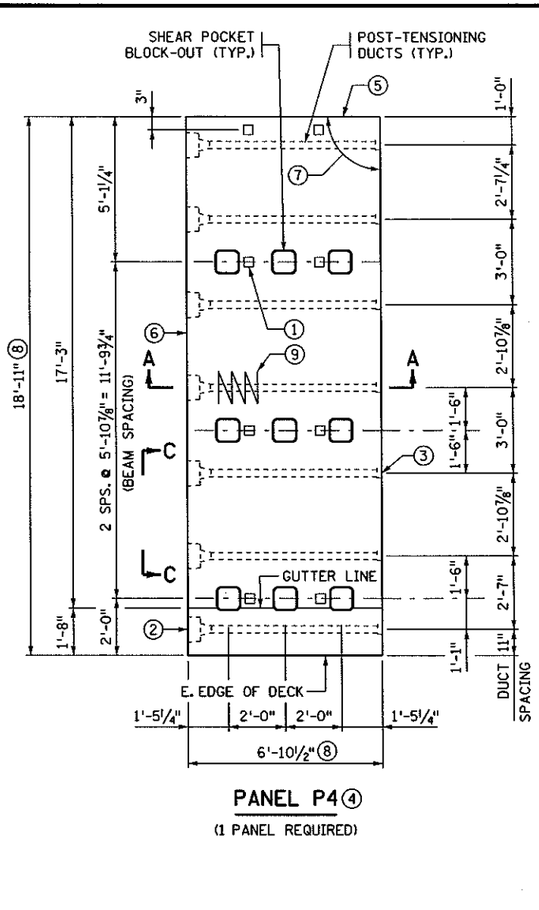
PANEL P2 ④

(6 PANELS REQUIRED)



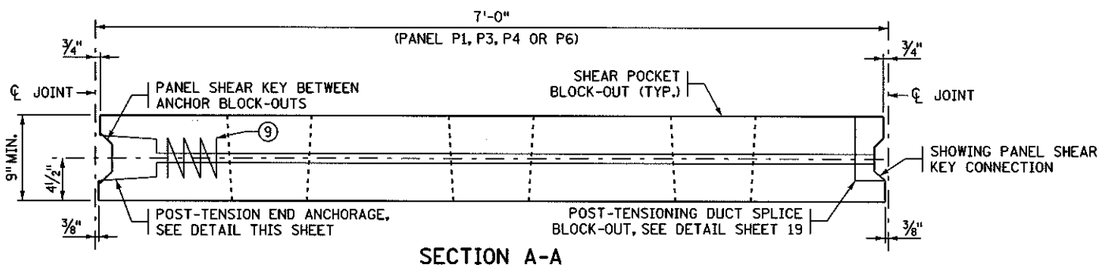
PANEL P3 ④

(1 PANEL REQUIRED)

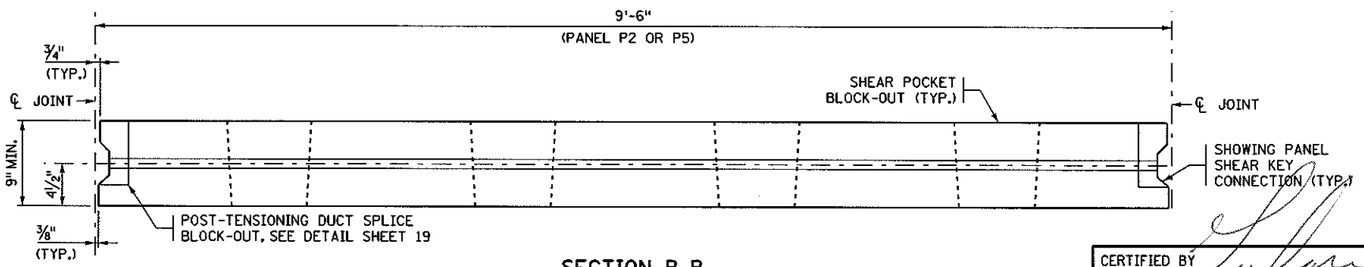


PANEL P4 ④

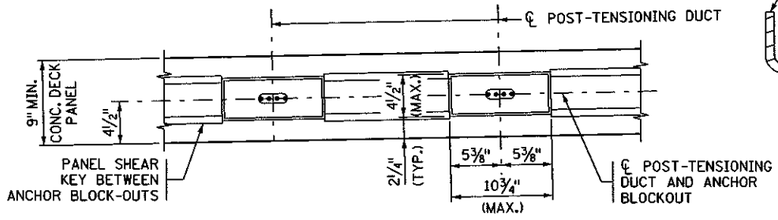
(1 PANEL REQUIRED)



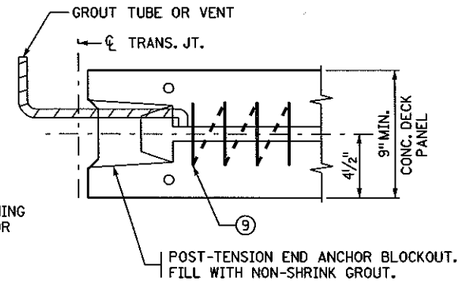
SECTION A-A



SECTION B-B



VIEW C-C



END ANCHORAGE ZONE REINFORCEMENT

NOTE:

① VERTICAL ADJUSTMENT ASSEMBLY. A MINIMUM OF 2 ASSEMBLIES REQUIRED AT EACH BEAM PER PANEL. SEE DETAIL SHEET 19.

② POST-TENSION END ANCHORAGE BLOCK-OUT (TYP.).

③ DUCT SPLICE BLOCK-OUT (TYP.).

④ CONTRACTOR SHALL DETERMINE NUMBER, SIZE AND LOCATIONS OF LIFTING ASSEMBLIES, SEE SPECIAL PROVISIONS AND PRECAST DECK PANEL NOTES.

⑤ PANEL SHEAR KEY REQUIRED FULL LENGTH AT LONGITUDINAL CLOSURE POUR.

⑥ PANEL SHEAR KEY REQUIRED BETWEEN ANCHOR BLOCK-OUTS.

⑦ 90°00'00" (TYP.)

⑧ MEASURED ALONG TOP SURFACE OF DECK PANEL.

⑨ ANCHORAGE ZONE REINFORCEMENT (TYP.).

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: SUPERSTRUCTURE DETAILS

DES: F.M.J.	DR: B.T.	APPROVED:
CHK: P.M.S.	CHK: F.M.J.	10/7/10

SHEET NO. 18 OF 35 SHEETS

BRIDGE NO. 69071

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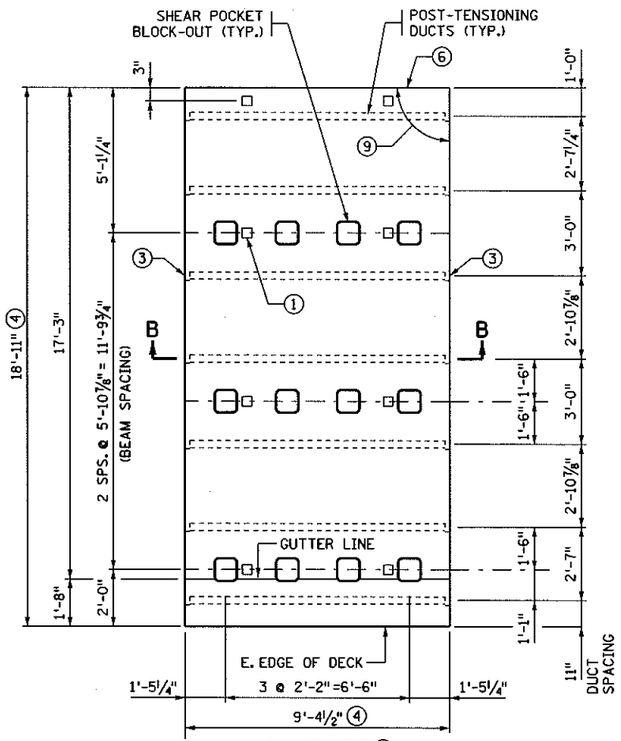
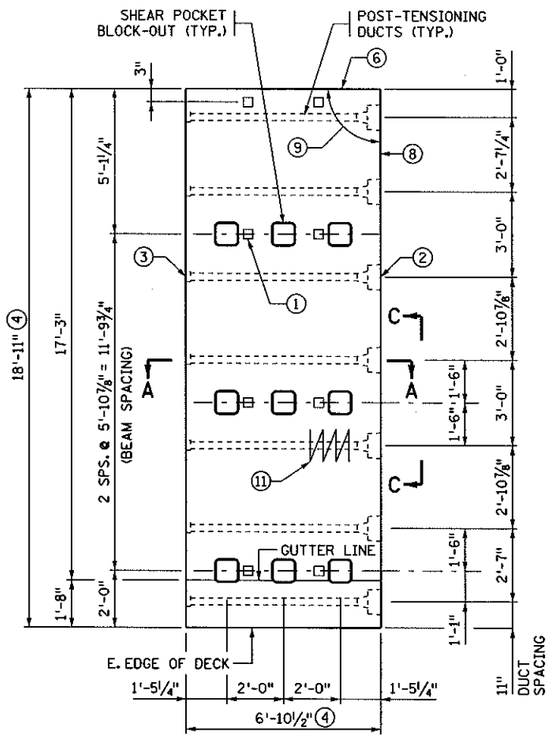
10/5/2010



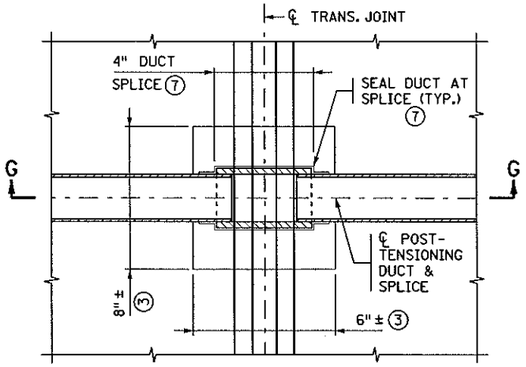
PANEL P5⑤

(6 PANELS REQUIRED)

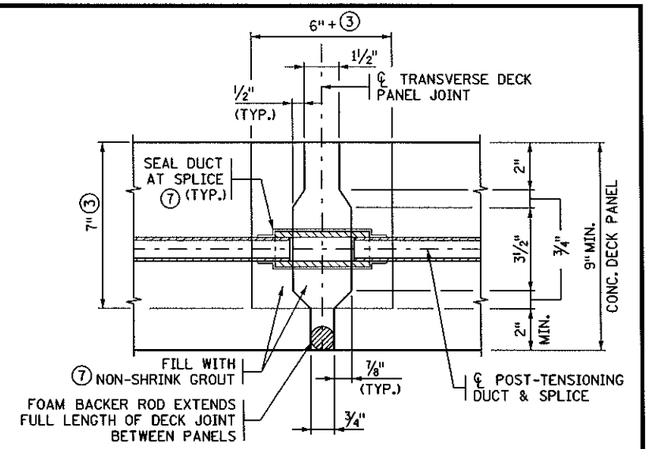


PANEL P6⑤

(1 PANEL REQUIRED)

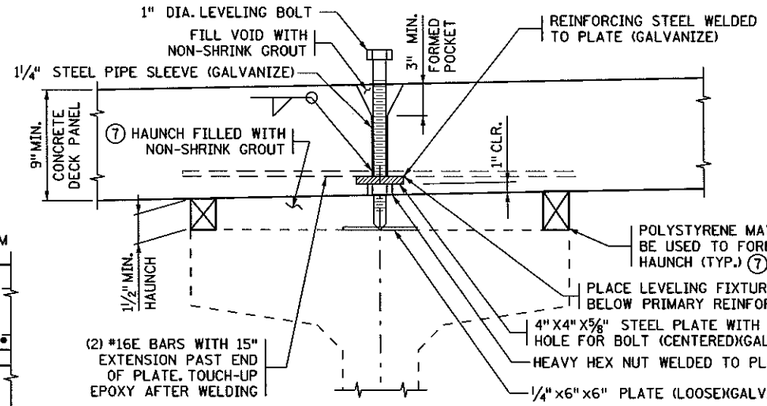


PLAN VIEW AT DUCT CONNECTION

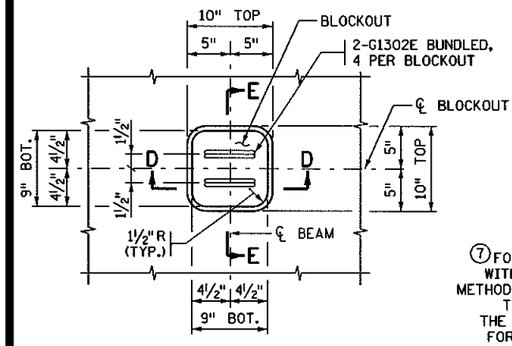


SECTION G-G

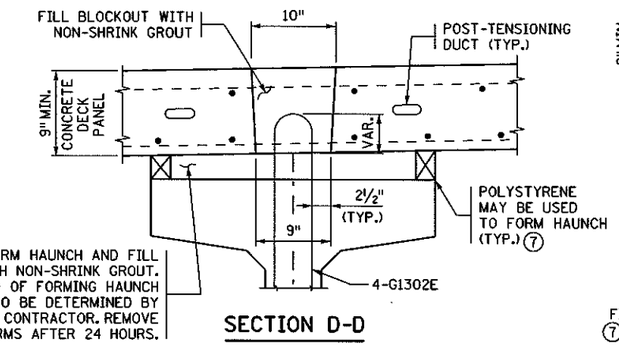
(PANEL SHEAR KEY)



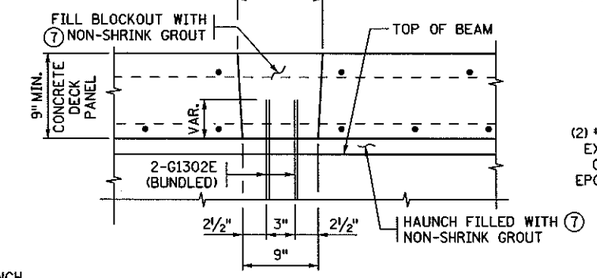
VERTICAL ADJUSTMENT DETAIL ①



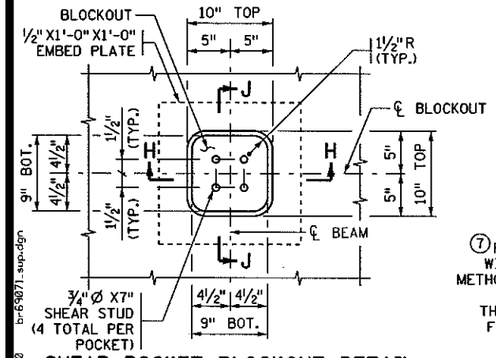
SHEAR POCKET BLOCKOUT DETAIL



SECTION D-D

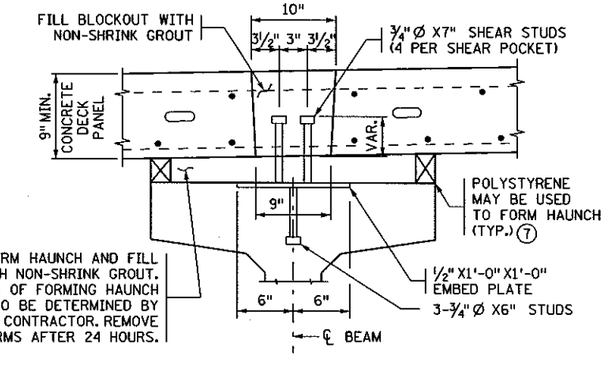


SECTION E-E



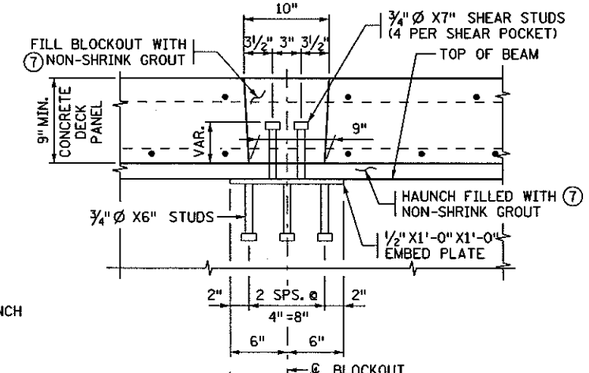
SHEAR POCKET BLOCKOUT DETAIL

(SHEAR STUD OPTION) ⑩



SECTION H-H

(SHEAR STUD OPTION) ⑩



SECTION J-J

(SHEAR STUD OPTION) ⑩

NOTES:

SEE SHEET 18 FOR SECTIONS A-A, B-B & C-C.

① VERTICAL ADJUSTMENT ASSEMBLY. A MINIMUM OF 2 ASSEMBLIES REQUIRED AT EACH BEAM PER PANEL. SEE SPECIAL PROVISIONS.

② POST-TENSION END ANCHORAGE BLOCK-OUT (TYP.).

③ POST-TENSIONING DUCT SPLICE BLOCK-OUT (TYP.).

④ MEASURED ALONG TOP SURFACE OF DECK PANEL.

⑤ CONTRACTOR SHALL DETERMINE NUMBER, SIZE AND LOCATIONS OF LIFTING ASSEMBLIES, SEE SPECIAL PROVISIONS AND PRECAST SLAB PANEL NOTES.

⑥ PANEL SHEAR KEY REQUIRED FULL LENGTH AT LONGITUDINAL CLOSURE POUR.

⑦ SEE SPECIAL PROVISIONS.

⑧ PANEL SHEAR KEY REQUIRED BETWEEN ANCHOR BLOCK-OUTS.

⑨ 90°00'00" (TYP.)

⑩ CONTRACTOR SHALL PROVIDE GROUNDING METHOD PRIOR TO FIELD WELDING. IF SHEAR STUD OPTION IS USED, THE FURNISHING AND INSTALLATION OF THE SHEAR STUDS AND EMBED PLATES SHALL BE INCLUDED IN THE PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

⑪ ANCHORAGE ZONE REINFORCEMENT (TYP.).

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: SUPERSTRUCTURE DETAILS

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 19 OF 35 SHEETS

BRIDGE NO. 69071

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10/5/2010

PRECAST DECK PANEL NOTES:

FABRICATOR SHALL BE RESPONSIBLE FOR EXERCISING CARE IN LIFTING, HANDLING, STORING, AND TRANSPORTATION OF THE PRECAST DECK PANELS TO PREVENT CRACKING OR DAMAGE. PANELS SHALL BE LIFTED BY DEVICES AS DESIGNED BY THE CONTRACTOR AND REVIEWED BY THE ENGINEER.

USE THE PCI DESIGN HANDBOOK, PRECAST AND PRESTRESSED CONCRETE, FIFTH EDITION WITH ALL INTERIMS AND ERRATA FOR THE DESIGN AND DETAIL OF LIFTING SUPPORTS AND HANDLING CONSIDERATIONS (NO CRACKING CRITERIA). LIFTING HARDWARE LEFT INPLACE SHALL BE GALVANIZED AND SHALL HAVE A 3" MIN. CLEAR COVER TO THE TOP OF THE SLAB AND A 1" MIN. CLEAR COVER TO THE BOTTOM OF THE SLAB.

POST-TENSIONING STRANDS SHALL BE UNCOATED, SEVEN-WIRE, LOW-RELAXATION STEEL STRAND OF 0.5" NOMINAL DIAMETER, AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A416, GRADE 270. ALL METHODS EMPLOYED AND PROCEDURES TO BE FOLLOWED IN POST-TENSIONING THE STRANDS SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.

POST-TENSIONING PARAMETERS:
- MAXIMUM JACKING STRESS = 0.8 FU = 216 KSI.
- MAXIMUM STRESS AT ANCHOR (SET) = 0.70 FU = 189 KSI.
- ASSUMED ANCHOR SET = 0.375 IN.
- FOUR STRANDS PER DUCT, JACKING FORCE PER STRAND = 29 KIPS.
- ASSUMED FRICTION COEFFICIENT = 0.23.
- ASSUMED WOBBLE COEFFICIENT = 0.0002/FT.

THE POST-TENSIONING PARAMETERS HAVE BEEN DEVELOPED ASSUMING A FLAT END ANCHORAGE AND FLAT CORRUGATED PLASTIC POST-TENSIONING DUCT.

IF THE PROPOSED DUCT DOES NOT MEET THESE VALUES, THEN THE CONTRACTOR SHALL ADJUST THE JACKING FORCE TO PRODUCE THE FINAL POST-TENSIONING FORCE LISTED BELOW.

BEGIN STRESSING AT CENTER OF PANELS. DO NOT ALLOW MORE THAN 12.5% OF THE PRESTRESSING FORCE TO BE ECCENTRIC AT ANY TIME. SUBMIT STRESSING SEQUENCE TO ENGINEER FOR REVIEW PRIOR TO WORK.

CONCRETE IN THE PRECAST DECK PANELS SHALL HAVE A MINIMUM CONCRETE STRENGTH OF 4000 PSI BEFORE REMOVAL FROM CASTING BEDS.

DECK PANELS MUST BE ALLOWED TO SLIDE ON GIRDERS DURING POST-TENSIONING.

FORCE PER STRAND = 26.0 KIPS (AFTER LOSSES DUE TO FRICTION, ANCHORAGE SET AND ELASTIC SHORTENING).

THE CONTRACTOR IS RESPONSIBLE FOR DESIGN OF ALL POST-TENSIONING ELEMENTS AND ANCHORAGE ZONE REINFORCEMENT (REQUIRED FOR SPLITTING, BURSTING, SPALLING, ETC.) INCLUDING THE LOCAL ZONE (REGION IMMEDIATELY SURROUNDING POST-TENSIONING DEVICES). DESIGN SHALL CONFORM WITH AASHTO LRFD SPECIFICATIONS.

SPIRAL REINFORCEMENT ALTERNATE IS SHOWN FOR INFORMATION ONLY.

THE PRECAST CONCRETE DECK PANELS SHALL BE FABRICATED TO PLAN DIMENSIONS WITHIN THE RECOMMENDED TOLERANCES SHOWN.

PRECAST DECK PANELS SHALL BE PRODUCED AND PLACED SUCH THAT THERE IS NO MORE THAN ¼ IN. DIFFERENCE IN ELEVATION BETWEEN THE TOP SURFACES OF ADJACENT PANELS.

USE A LIGHT BROOM FINISH FOR THE TOP SURFACES OF PANELS AND AT ALL JOINT SURFACES. USE A SMOOTH FINISH FOR THE BOTTOM OF THE PANELS.

CONTRACTOR SHALL PROVIDE TEST PANEL MOCK-UPS. SEE SPECIAL PROVISIONS.

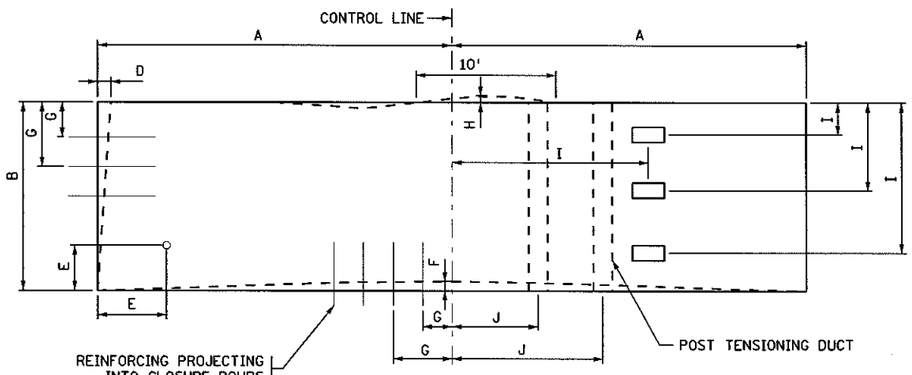
ALL PANEL JOINTS SHALL BE CLEAN AND CONTAIN NO DIRT, OIL, GREASE OR OTHER LOOSE MATERIAL BEFORE PLACING GROUT OR CONCRETE. WATER BLAST AFTER CLEANING.

SUPERSTRUCTURE CONSTRUCTION SEQUENCE

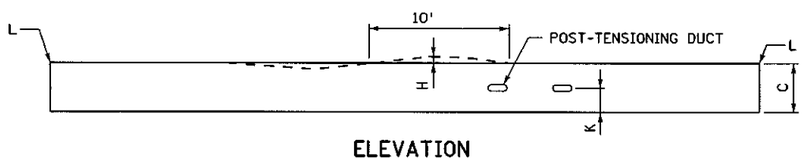
THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW A DETAILED CONSTRUCTION SEQUENCE OF WORK TASKS TO BE PERFORMED BEFORE REMOVAL OF THE EXISTING STRUCTURE. DETAIL WORK TASK SEQUENCE SHALL INCLUDE THE INTENDED METHOD FOR FORMING THE GIRDER HAUNCHES & QUALITY CONTROL CONSTRUCTION METHOD FOR OBTAINING THE PROPER ALIGNMENT AND GRADE FOR THE PRECAST DECK PANELS. THE PLANS HAVE BEEN DEVELOPED ASSUMING THE FOLLOWING CONSTRUCTION SEQUENCE.

1. ERECT ALL OF THE GIRDERS FOR THE ENTIRE LENGTH OF THE BRIDGE INCLUDING ALL TEMPORARY BRACING FOR BEAM STABLILITY. TOP OF BEAMS SHALL BE CLEAN AND CONTAIN NO DIRT, OIL, GREASE OR OTHER LOOSE MATERIAL BEFORE PLACING HAUNCH FORMS, PRECAST DECK PANELS AND NON SHRINK GROUT.
2. FORM THE GIRDER HAUNCHES. NOTES: ALL PANELS SHALL BE ERECTED AND THE PANELS SHALL BE LONGITUDINALLY POST-TENSIONED AND ACCEPTED BY THE ENGINEER PRIOR TO PLACING CONCRETE FOR HAUNCHES (SEE STEP 12 BELOW).
3. ERECT ALL OF THE PRECAST DECK PANELS AS SHOWN IN THE SUPERSTRUCTURE SHEETS. PLACE PANELS AT ENDS OF SPAN FIRST. CARE SHOULD BE TAKEN TO ENSURE THE PRECAST SLAB PANELS ARE IN TIGHT CONTACT WITH THE BACKER ROD SEPARATING THEM AND PROPER ALIGNMENT IS ACHIEVED. USE LEVELING BOLTS TO ACHIEVE THE REQUIRED GRADE. TORQUE ALL LEVELING BOLTS ON EACH PANEL TO WITHIN 15 PERCENT OF EACH OTHER TO ENSURE PROPER DISTRIBUTION OF PANEL WEIGHT TO THE SUPPORTING BEAMS. AT NO TIME WILL CONSTRUCTION EQUIPMENT BE ALLOWED ON THE PRECAST SLAB PANELS UNTIL CONSTRUCTION OF THE PRECAST SLAB IS COMPLETE AND THE HAUNCHES AND KEYWAYS HAVE ACHIEVED A MINIMUM COMPRESSIVE STRENGTH OF 6000 PSI. THE CONTRACTOR SHALL ENSURE ALL BOLTS ARE IN CONTACT WITH THE TOP FLANGE BEFORE THE PRECAST SLAB PANELS ARE RELEASED FROM THE ERECTING CRANE AND THE PRECAST SLAB PANELS ARE SOLEY SUPPORTED BY ALL THE LEVELING BOLTS.
4. JOIN DUCTS FOR POST-TENSIONING TENDONS AT ALL TRANSVERSE JOINTS. IT IS SUGGESTED THAT THE DUCT SPLICE BE ATTACHED TO THE DUCTS PROTRUDING OUT OF THE PANELS BEFORE THE NEXT SUCCESSIVE PANELS ARE ERECTED.
5. CLEAN TRANSVERSE JOINT SURFACES. FILL THE TRANSVERSE JOINTS WITH NON-SHRINK GROUT LEVEL WITH THE TOPS OF THE PRECAST DECK PANELS. ALLOW THE GROUT TO ATTAIN A COMPRESSIVE STRENGTH OF 6000 PSI BEFORE PROGRESSING.
6. INSTALL THE 0.5" POST-TENSIONING STRANDS THROUGH THE POST-TENSIONING DUCTS AND ANCHORAGE SYSTEMS.
7. BEGINNING AT EITHER END OF THE BRIDGE, TENSION THE STRANDS IN EACH POST-TENSIONING DUCT TO THE SPECIFIED FORCE AND IN THE SEQUENCE SHOWN IN THE REVIEWED SHOP DRAWINGS.
8. GROUT POST-TENSIONING DUCTS WITH MANUFACTURER'S RECOMMENDED PRODUCT.
9. CAP AND SEAL END ANCHORAGES.
10. PLACE END DIAPHRAGMS WITH CONCRETE MIX (3Y33HP) SPECIAL.
11. PLACE LONGITUDINAL CLOSURE POUR CONCRETE MIX (3Y33HP) SPECIAL.
12. FILL ALL SHEAR STUD POCKETS IN THE PRECAST DECK PANELS, DUCT SPLICE POCKETS AND HAUNCHES WITH THE SPECIFIED GROUT MIX. CURE TO SPECIFIED STRENGTH.
13. REMOVE LEVELING BOLTS AND FILL HOLES WITH THE SPECIFIED GROUT MIX.
14. PERFORM BRIDGE DECK PLANING. SEE SPECIAL PROVISIONS.
15. PLACE BARRIER RAIL.
16. SEAL ALL DECK AND JOINT CRACKS WITH JOINT & CRACK SEALANT. CONTRACTOR TO VERIFY COMPACTABILITY OF ANY JOINT/CRACK WITH CHIP SEAL WEARING COURSE SUPPLIER.
17. PLACE EPOXY CHIP SEAL WEARING COURSE. SEE SPECIAL PROVISIONS.

DECK PANEL TOLERANCES		
A	LENGTH MEASURED FROM CONTROL LINE	± 3/16"
B	WIDTH (OVERALL)	± 1/4"
C	DEPTH (OVERALL)	+ 3/16"
D	VARIATION FROM SPECIFIED PLAN END SQUARENESS OR SKEW	± 1/4"
E	LOCATION OF LEVELING BOLTS	± 1"
F	SWEEP OVER MEMBER LENGTH:	± 1/4"
G	LOCATION OF PROJECTING REINFORCING MEASURED FROM A COMMON REFERENCE POINT	± 1/2"
H	LOCAL SMOOTHNESS OF ANY SURFACE	± 1/8" IN 10 FEET
I	LOCATION OF BLOCKOUT FOR SHEAR CONNECTORS	± 1/2"
J	LOCATION OF POST TENSIONING DUCT MEASURED FROM A COMMON REFERENCE POINT	± 1/8"
K	LOCATION OF POST TENSIONING DUCT MEASURED FROM BOTTOM OF PANEL.	± 1/8"
L	ERECTION ELEVATION TOLERANCE	± 1/8"



PLAN
(N.T.S.)



ELEVATION
(N.T.S.)

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

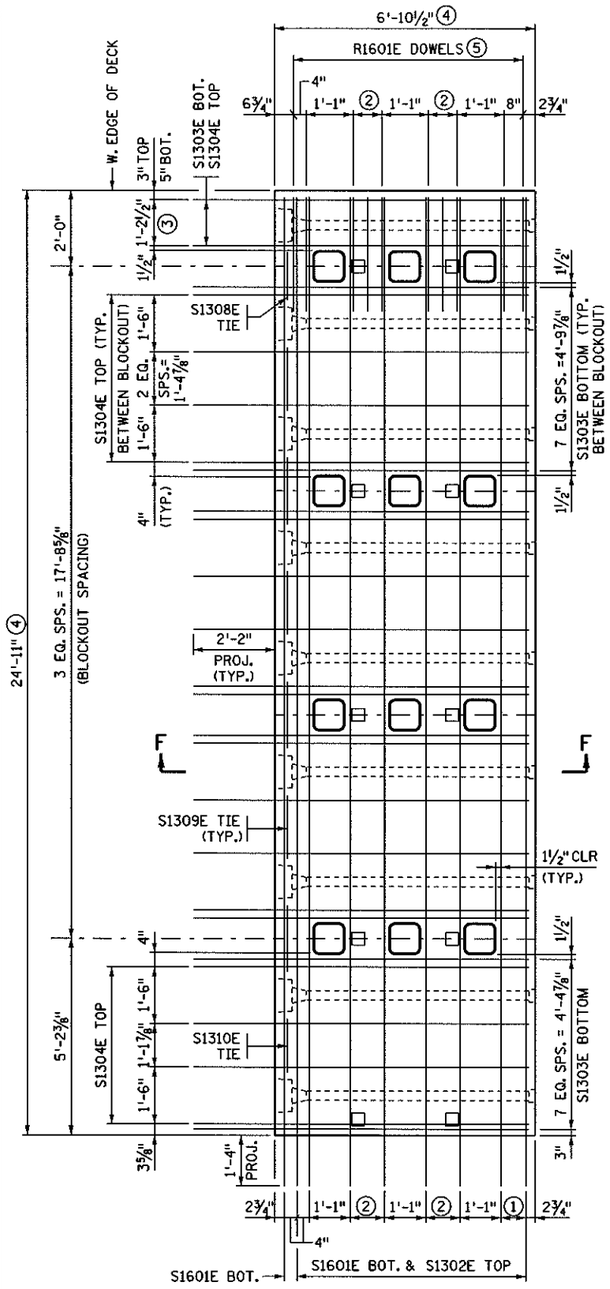
TITLE: SUPERSTRUCTURE DETAILS

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 20 OF 35 SHEETS

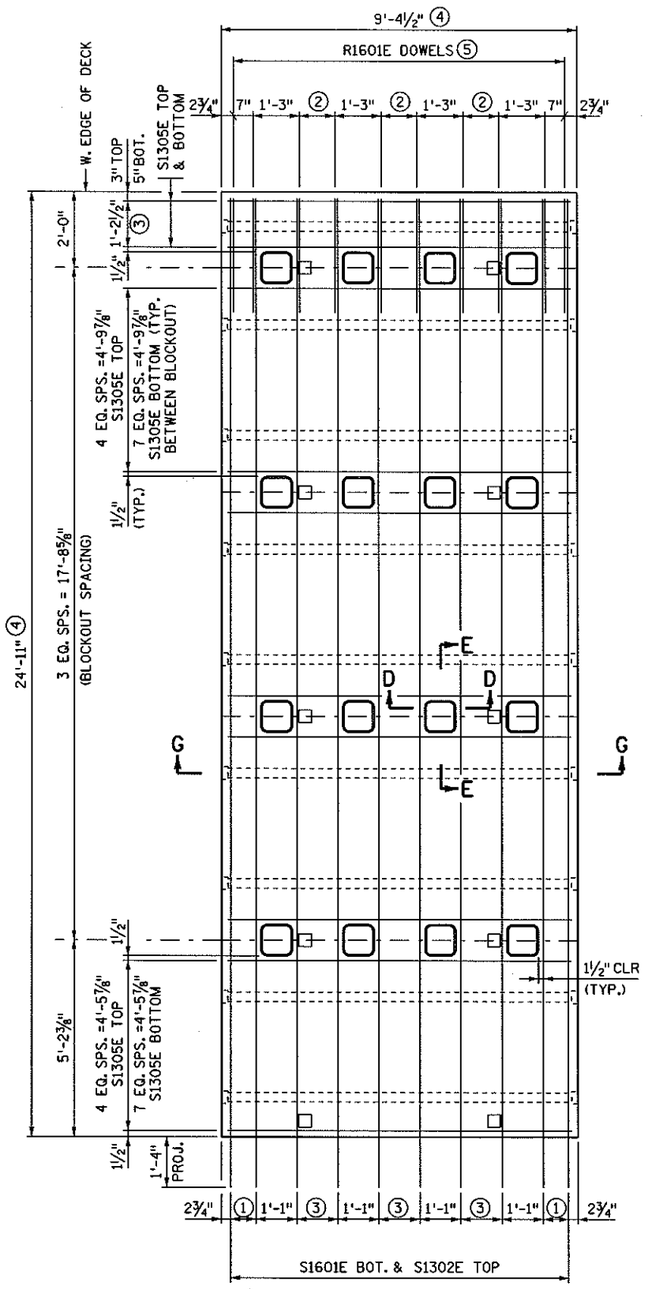
BRIDGE NO. 69071

10/6/2010 br69071_sup.dgn



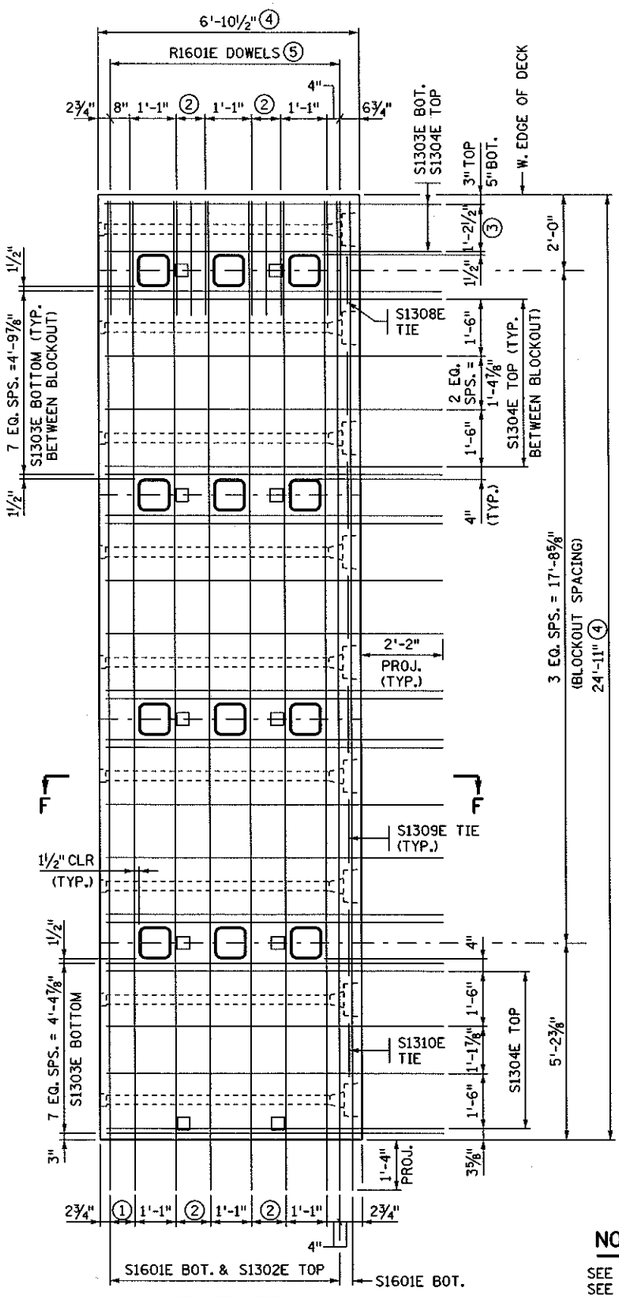
PANEL P1

(1 PANEL REQUIRED)



PANEL P2

(6 PANELS REQUIRED)



PANEL P3

(1 PANEL REQUIRED)

NOTES:

SEE SHEET 19 FOR SECTIONS D-D & E-E.
SEE SHEET 22 FOR SECTIONS F-F & G-G.

① 2 SPS. @ 4" = 8".

② 2 SPS. @ 5½" = 11".

③ 2 SPS. @ 6¼" = 1'-0½".

④ MEASURED ALONG TOP SURFACE OF DECK PANEL.

⑤ CONTRACTOR SHALL WRAP R1601E BARS AT PRECAST SLAB FACILITY TO PROTECT FROM EXPOSURE TO SUN LIGHT.

APPROXIMATE PANEL WEIGHT	
PANEL	WEIGHT (TONS)
P1 & P3	9.6
P2	13.3
P4 & P6	7.3
P5	10.1

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

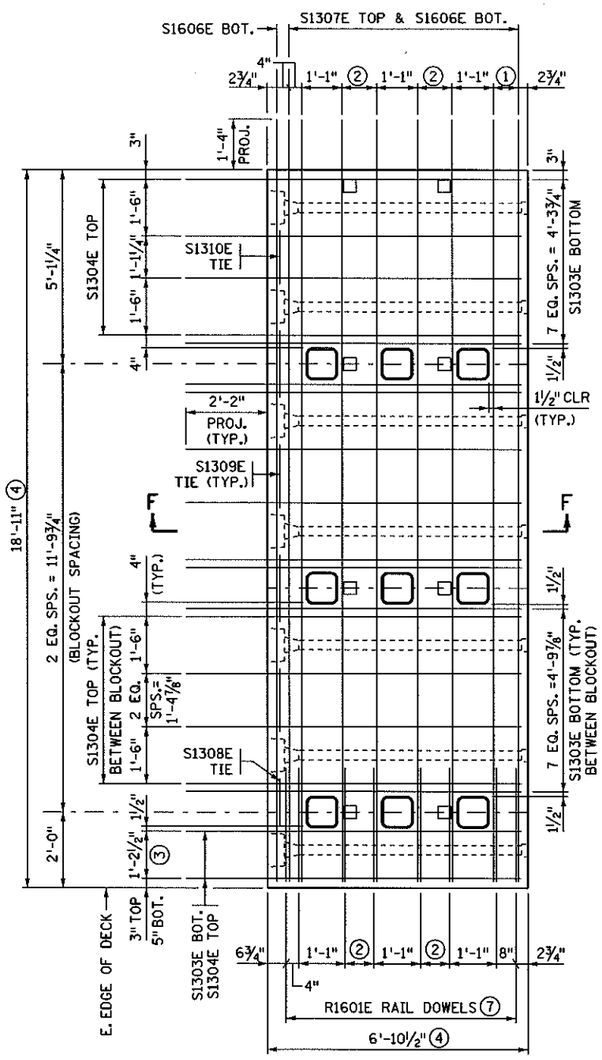
TITLE: SUPERSTRUCTURE DETAILS AND REINFORCEMENT

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 21 OF 35 SHEETS

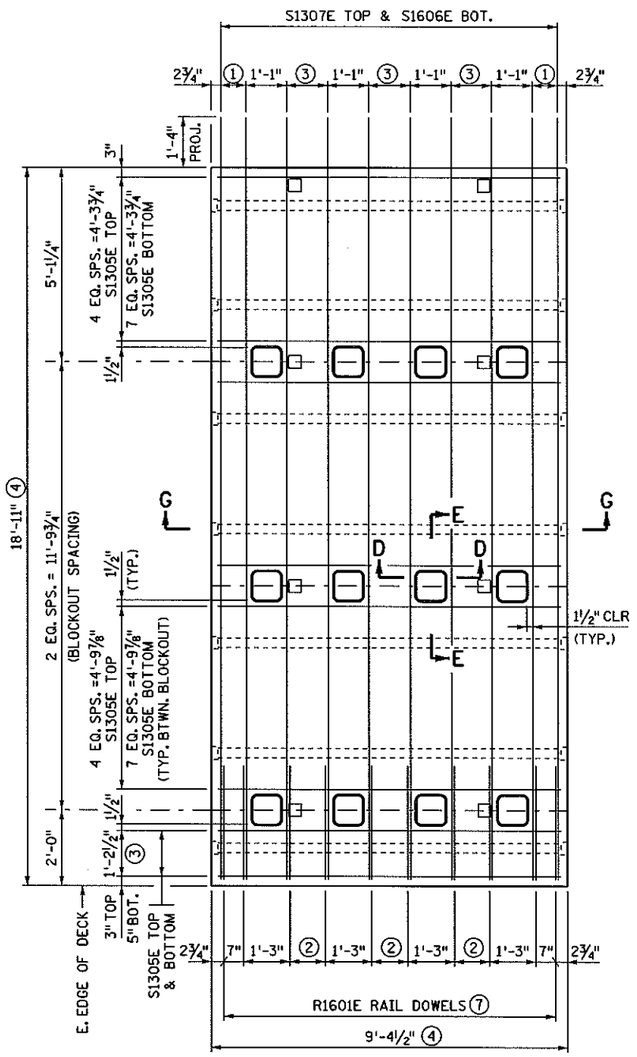
BRIDGE NO. 69071

10/5/2010 br69071_sup.dgn



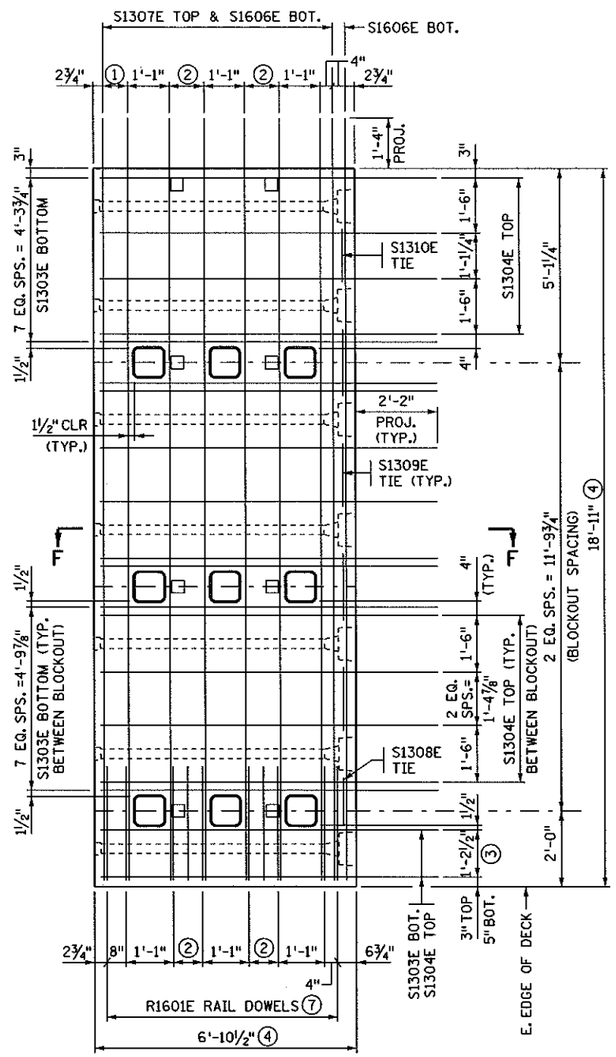
PANEL P4

(1 PANEL REQUIRED)



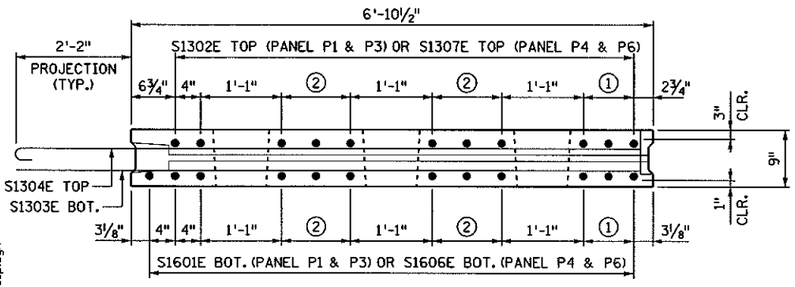
PANEL P5

(6 PANELS REQUIRED)

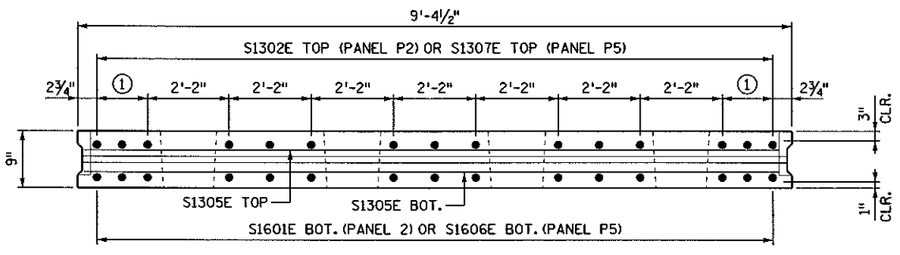


PANEL P6

(1 PANEL REQUIRED)



SECTION F-F



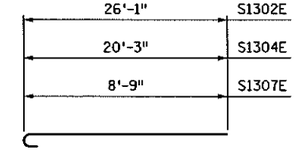
SECTION G-G

BILL OF REINFORCEMENT FOR PRECAST CONCRETE PANELS ⑤

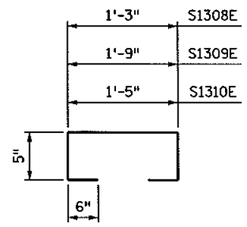
BAR	NO.	LENGTH	SHAPE	LOCATION
S1601E	114	26'-1"	—	PANELS P1, P2 & P3 BOT.
S1302E	112	26'-7"	⊃	PANELS P1, P2 & P3 TOP
S1303E	120	20'-3"	—	END PANELS BOT.
S1304E	74	20'-9"	⊃	END PANELS TOP
S1305E	606	9'-1"	—	INTER. PANELS TOP & BOT.
S1606E	114	8'-9"	—	PANELS P4, P5 & P6 BOT.
S1307E	112	9'-3"	⊃	PANELS P4, P5 & P6 TOP
S1308E	4	3'-1"	⊏ ⊐	END TIES
S1309E	20	3'-7"	⊏ ⊐	END TIES
S1310E	4	3'-3"	⊏ ⊐	END TIES

BILL OF REINFORCEMENT FOR LONGITUDINAL CLOSURE POUR ⑥

BAR	NO.	LENGTH	SHAPE	LOCATION
S1611E	6	37'-0"	—	LONGIT. JT. BOTTOM
S1312E	6	37'-0"	—	LONGIT. JT. TOP



S1302E, S1304E & S1307E



S1308E, S1309E & S1310E

NOTES:

SEE SHEET 19 FOR SECTIONS D-D & E-E.

① 2 SPS. @ 4" = 8".

② 2 SPS. @ 5½" = 11".

③ 2 SPS. @ 6¼" = 1'-0½".

④ MEASURED ALONG TOP SURFACE OF DECK PANEL.

⑤ INCLUDED IN PRICE BID FOR "PRECAST DECK PANEL".

⑥ INCLUDED IN PRICE BID FOR "REINFORCEMENT BAR (EPOXY COATED)".

⑦ CONTRACTOR SHALL WRAP R1601E BARS AT PRECAST SLAB FACILITY TO PROTECT FROM EXPOSURE TO SUN LIGHT.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: SUPERSTRUCTURE DETAILS AND REINFORCEMENT

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 22 OF 35 SHEETS

BRIDGE NO. 69071

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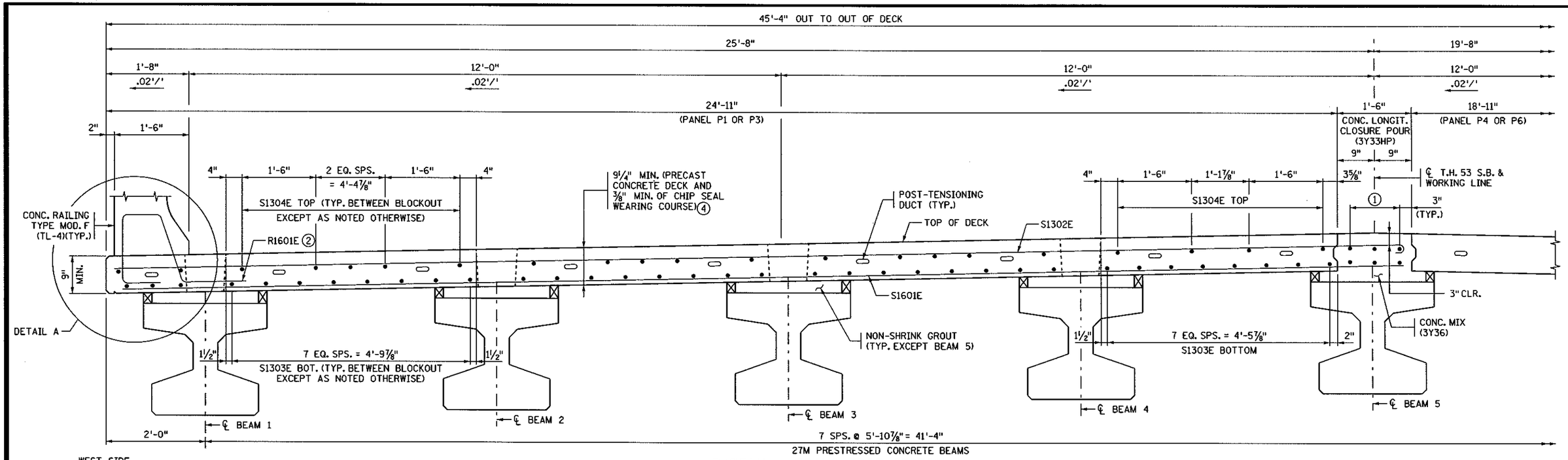
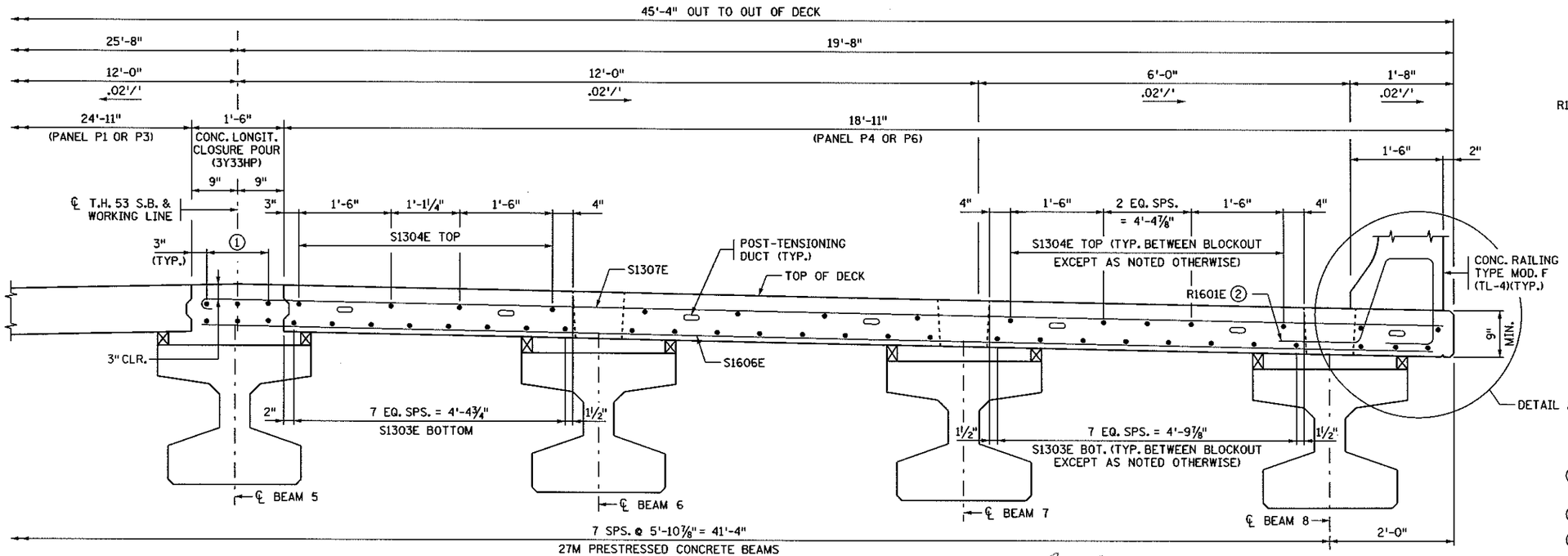


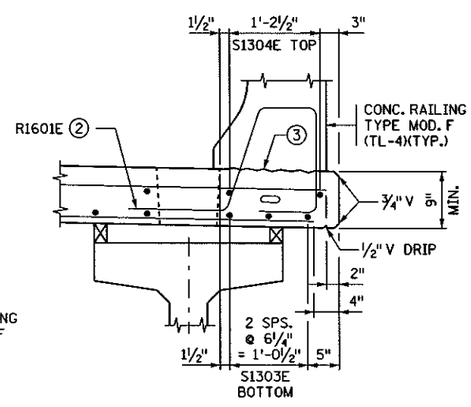
PARTIAL - TRANSVERSE SECTION

(SECTION AT END PANEL)



PARTIAL - TRANSVERSE SECTION

(SECTION AT END PANEL)



DETAIL A

NOTE:

1. (1) 2 SPS. @ 6" = 1'-0" S1611E BOTTOM & S1312E TOP
2. (2) SEE RAIL SHEET NO. 28 FOR DETAILS.
3. (3) ROUGH FINISH. SEE BARRIER SHEET NO. 28 FOR DETAILS.
4. (4) 9¼" MIN. TOTAL THICKNESS AFTER BRIDGE DECK PLANING & CHIP SEAL WEARING COURSE IS APPLIED.

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

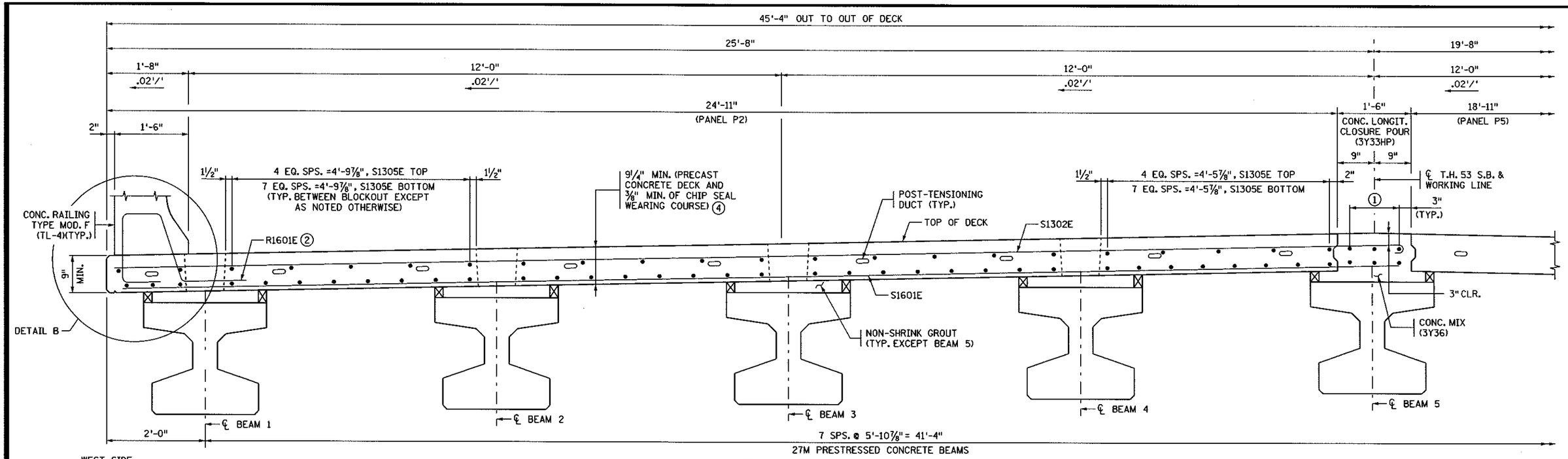
TITLE: SUPERSTRUCTURE DETAILS AND REINFORCEMENT

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 23 OF 35 SHEETS

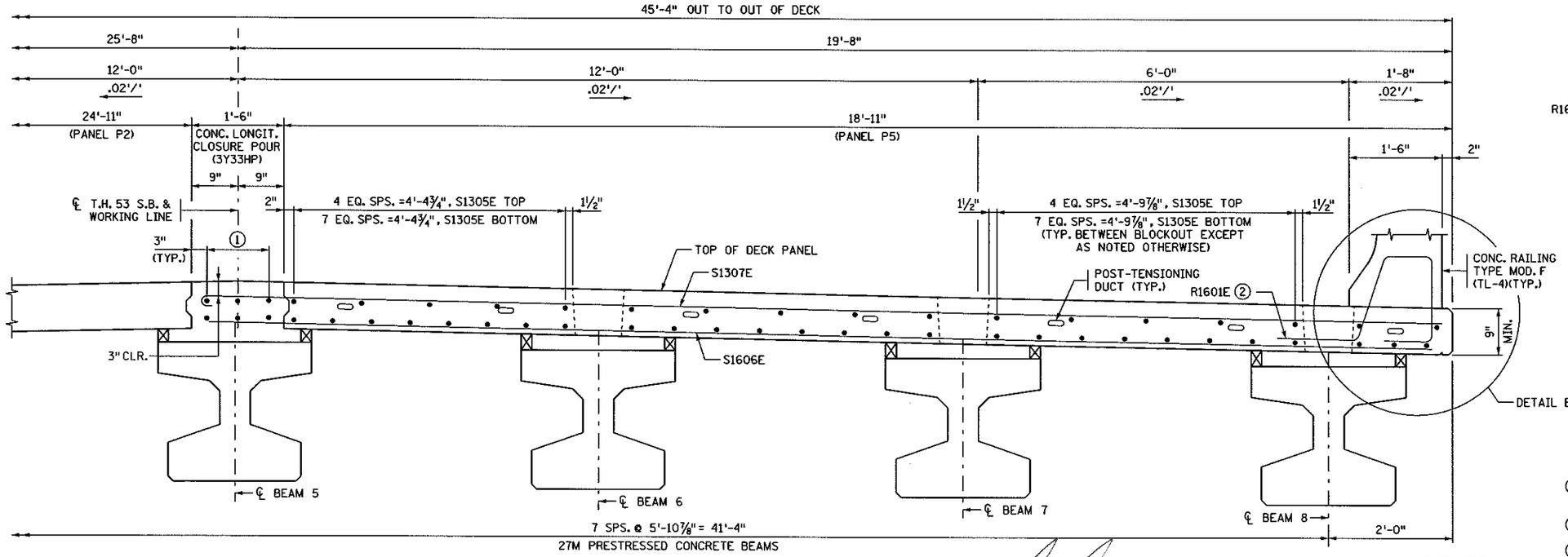
BRIDGE NO. 69071

10/6/2010 b-69071_sup.dgn



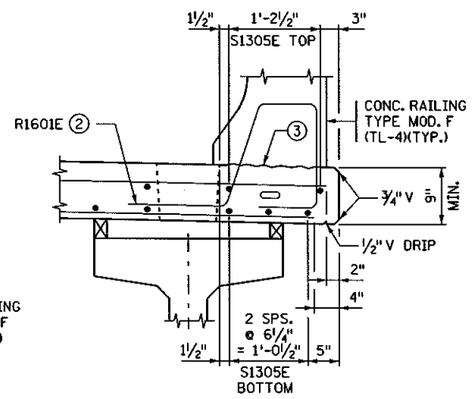
PARTIAL - TRANSVERSE SECTION

(SECTION AT INTERIOR PANEL)



PARTIAL - TRANSVERSE SECTION

(SECTION AT INTERIOR PANEL)



DETAIL B

NOTE:

① 2 SPS. @ 6" = 1'-0"
S1611E BOTTOM & S1312E TOP

② SEE RAIL SHEET NO. 28 FOR DETAILS.

③ ROUGH FINISH. SEE BARRIER SHEET NO. 28 FOR DETAILS.

④ 9¼" MIN. TOTAL THICKNESS AFTER BRIDGE DECK PLANING & CHIP SEAL WEARING COURSE IS APPLIED.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE

NAME: FRANCIS M. JORDAN LIC. NO. 15048

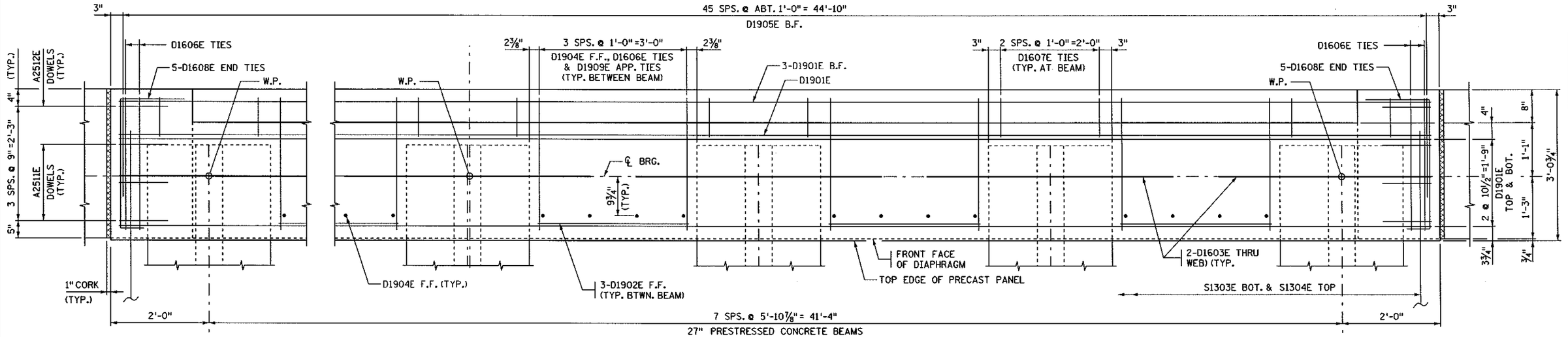
TITLE: SUPERSTRUCTURE DETAILS AND REINFORCEMENT

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 24 OF 35 SHEETS

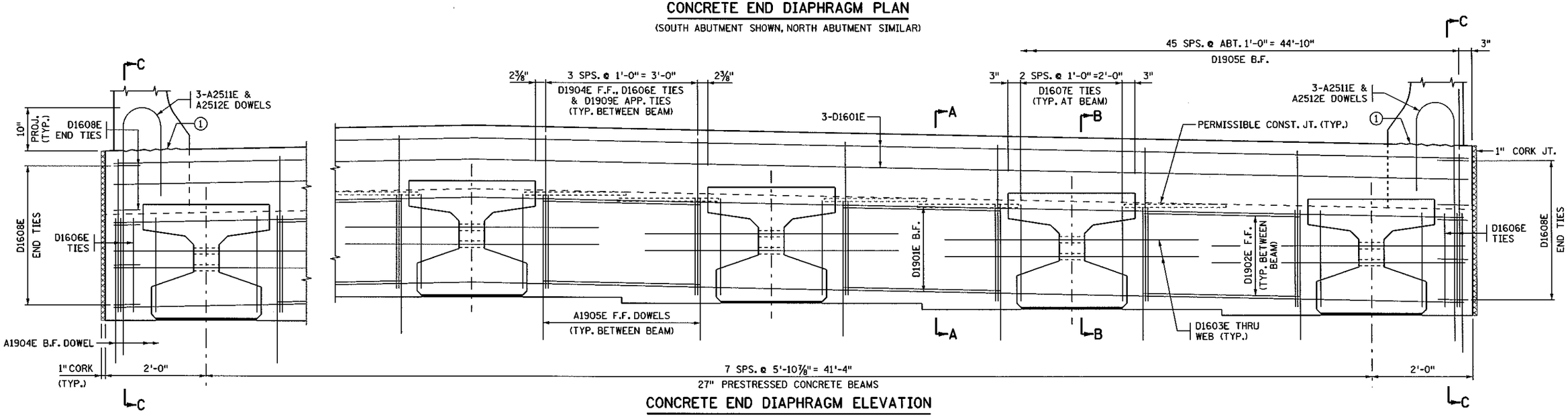
BRIDGE NO. 69071

10/5/2010 b-69071_sup.dgn



CONCRETE END DIAPHRAGM PLAN

(SOUTH ABUTMENT SHOWN, NORTH ABUTMENT SIMILAR)



CONCRETE END DIAPHRAGM ELEVATION

(SOUTH ABUTMENT SHOWN, NORTH ABUTMENT SIMILAR)

NOTES:

F.F. DENOTES FRONT FACE.
B.F. DENOTES BACK FACE.

QUANTITIES FOR END DIAPHRAGM CONCRETE AND REINFORCEMENT SHOWN ON THIS DETAIL SHALL BE LISTED IN SUPERSTRUCTURE QUANTITIES.

SEE SHEET 26 FOR SECTIONS A-A, B-B & C-C.

① ROUGH FINISH. SEE BARRIER SHEET NO. 28 FOR DETAILS.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER 10-7-10 DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

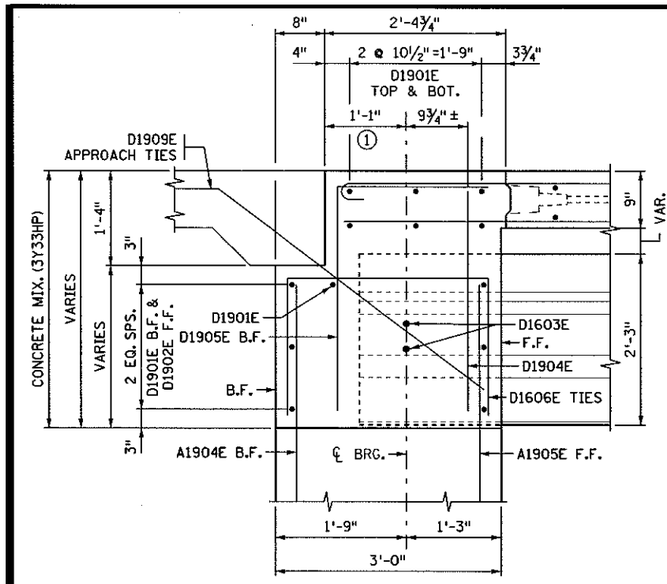
TITLE: CONCRETE END DIAPHRAGM

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 25 OF 35 SHEETS

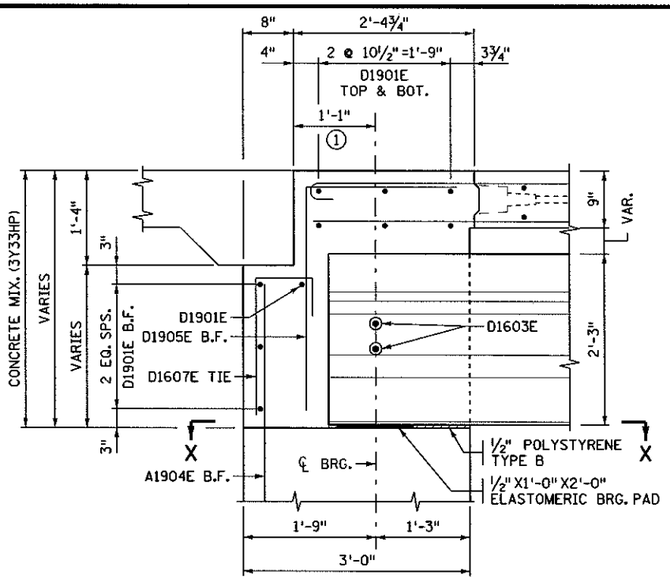
BRIDGE NO. 69071

10/5/2010 b-69071_sup.dgn



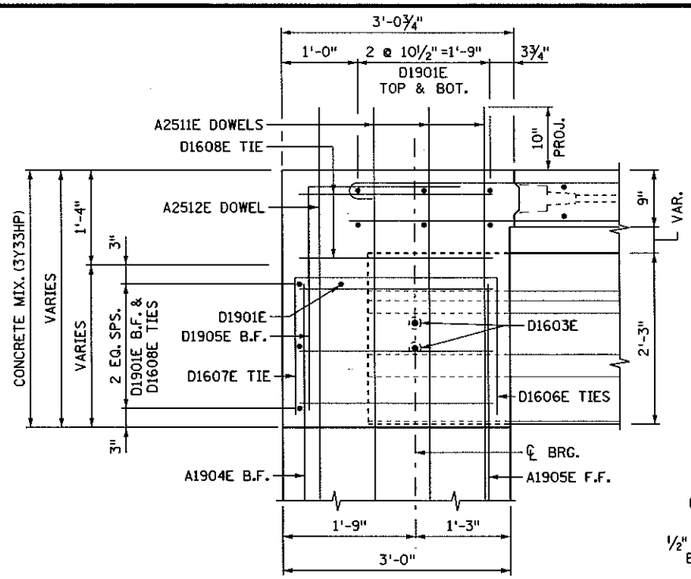
SECTION A-A ②

(BETWEEN BEAM)



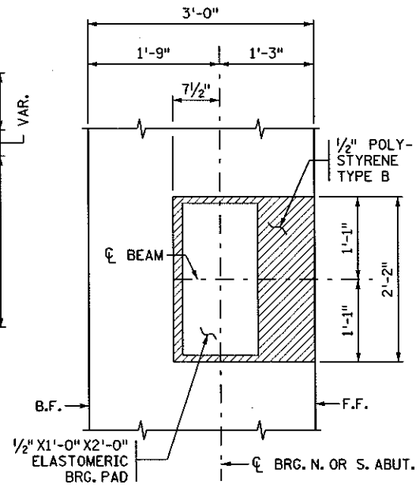
SECTION B-B ②

(AT BEAM)



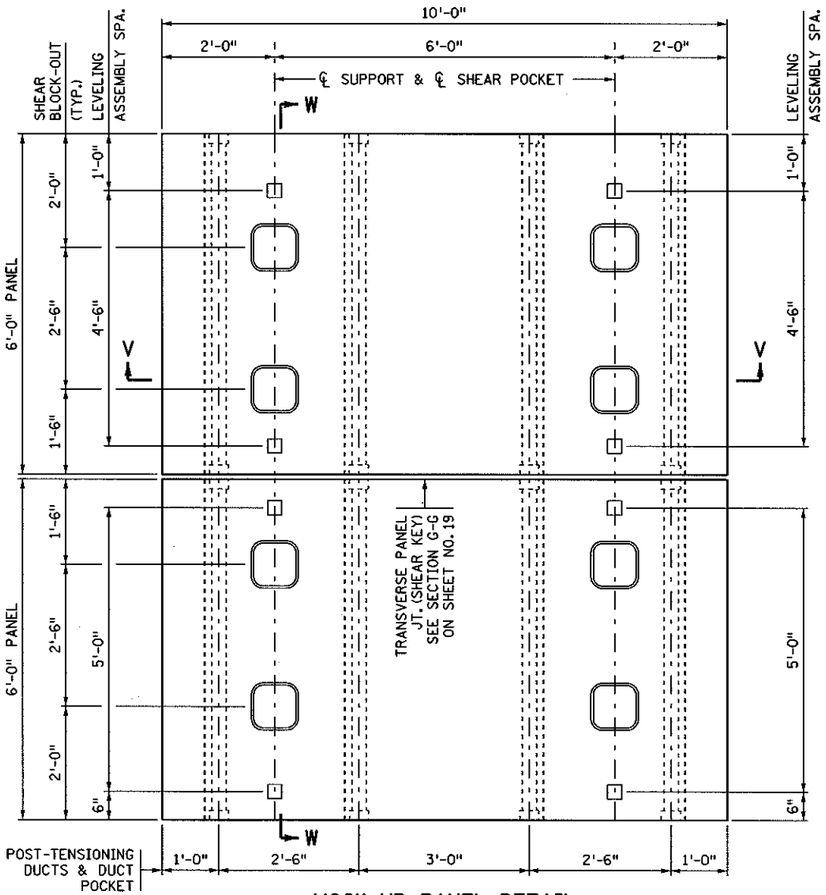
SECTION C-C ②

(AT RAIL)

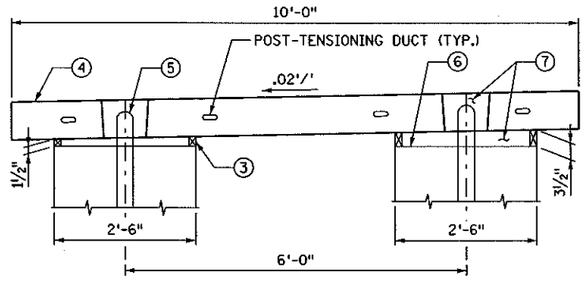


SECTION X-X

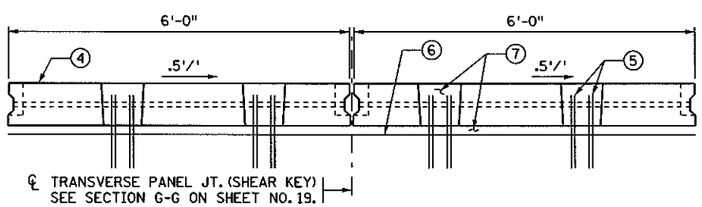
(TYP. @ ALL BEAMS)



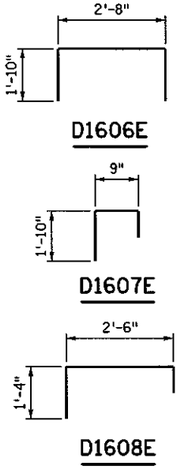
MOCK-UP PANEL DETAIL

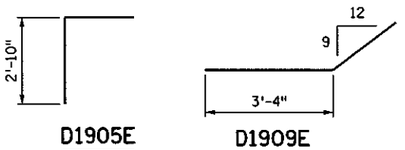


SECTION V-V



SECTION W-W





BILL OF REINFORCEMENT FOR TWO END DIAPHRAGMS

BAR	NO.	LENGTH	SHAPE	LOCATION
D1901E	20	45'-0"	——	END DIAPH. HORIZ.
D1902E	42	3'-1"	——	END DIAPH. HORIZ.
D1603E	32	5'-0"	——	THRU WEB HORIZONTAL
D1904E	56	2'-11"	——	END DIAPH. VERTICAL F.F.
D1905E	92	4'-10"	⌊	END DIAPH. VERTICAL B.F.
D1606E	56	6'-4"	⌐ ⌐	TIES BETWEEN BEAM
D1607E	48	3'-1"	⌐	TIES AT BEAM
D1608E	12	4'-4"	⌐ ⌐	END TIES
D1909E	56	5'-4"	⌊	APP. PANEL TIES

MOCK-UP PANEL NOTES:

SEE SHEET 19 FOR ADDITIONAL DETAILS FOR THE MOCK-UP PANEL. CONTRACTOR SHALL PROVIDE AT LEAST FOUR LIFTING ASSEMBLIES PER MOCK-UP PANEL IDENTICAL TO THE LIFTING ASSEMBLIES FOR THE PRECAST CONCRETE DECK PANELS.

REINFORCEMENT SHALL CONSIST OF TWO MATS WITH BAR SIZE AND SPACING SIMILAR TO THAT OF THE PRECAST CONCRETE DECK PANELS SHOWN ON SHEETS 21 & 22.

THE SAME SIZE POST-TENSIONING DUCT, THE SAME PROPOSED VERTICAL ADJUSTMENT ASSEMBLY, THE SAME SIZE SHEAR BLOCKOUT AND DUCT SPLICE POCKET SHALL BE USED AS SHOWN FOR THE PRECAST CONCRETE DECK PANEL. SEE SPECIAL PROVISIONS.

③ USE PROPOSED HAUNCH FORMING MATERIAL.

④ PRECAST CONCRETE MOCK-UP PANEL SHALL BE CAST IN THE SAME FORMS AS THE PRECAST DECK PANELS FOR BR. NO. 69071. THE CONCRETE MIX, PANEL THICKNESS, REINFORCEMENT, POCKET DIMENSIONS, TRANSVERSE PANEL JOINT, LIFTING ASSEMBLIES, POST-TENSIONING DUCTS AND LEVELING ASSEMBLIES SHALL BE THE SAME AS USED FOR THE PRECAST DECK PANELS.

⑤ 4-#13E HOOK BARS (BUNDLED PAIRS) PER SHEAR POCKET. USE (4) ¾" Ø SHEAR STUDS IF SHEAR STUD OPTION IS USED.

⑥ SUPPORT SURFACE SHALL BE ROUGHENED SIMILAR TO TOP OF THE PRESTRESSED CONC. BEAM. SUPPORTS DO NOT NEED TO BE PRESTRESSED BEAMS.

⑦ USE PROPOSED NON-SHRINK GROUT IN POCKETS, TRANSVERSE JOINT AND HAUNCH.

CONCRETE END DIAPHRAGM NOTES:

F.F. DENOTES FRONT FACE.
B.F. DENOTES BACK FACE.

SEE ABUTMENT DETAIL SHEETS FOR LOCATIONS OF WATERPROOFING MEMBRANE SYSTEMS.

QUANTITIES FOR END DIAPHRAGM CONCRETE AND REINFORCEMENT SHOWN ON THIS DETAIL ARE INCLUDED IN THE SUMMARY OF QUANITITIES FOR SUPERSTRUCTURE.

SEE SHEET 25 FOR SECTIONS A-A, B-B & C-C LOCATIONS.

① PERPENDICULAR TO CENTERLINE OF DIAPHRAGM.

② SOUTH ABUTMENT SHOWN, NORTH ABUTMENT SIMILAR.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER — DATE 10-7-10

NAME: FRANCIS M. JORDAN — LIC. NO. 15048

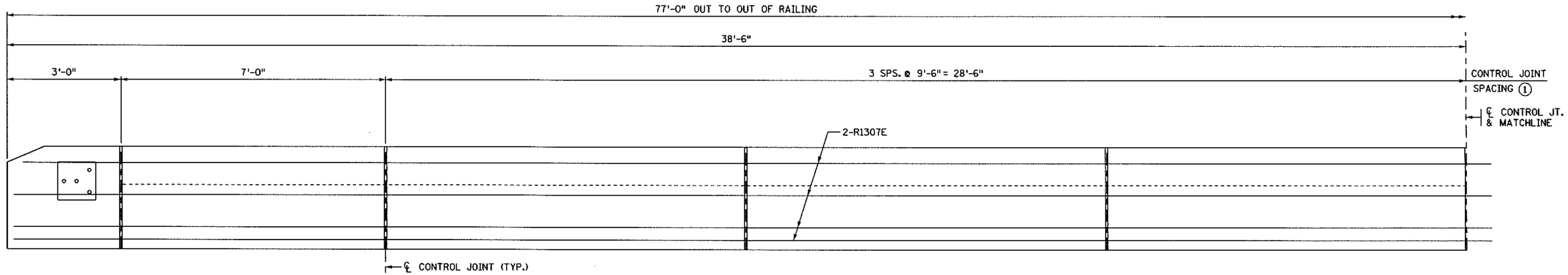
TITLE: CONCRETE END DIAPHRAGM AND MOCK-UP PANEL

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 26 OF 35 SHEETS

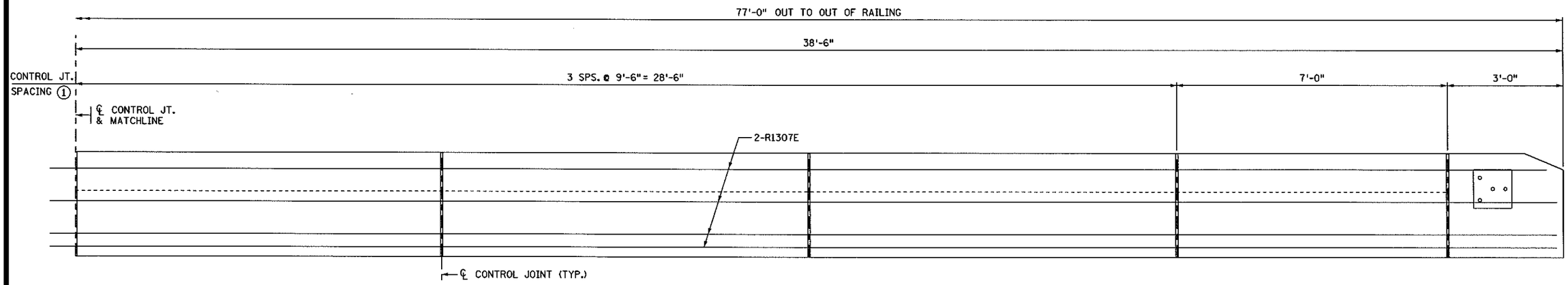
BRIDGE NO. 69071

10/5/2010 b-69071_sup.dgn



PARTIAL INSIDE ELEVATION CONCRETE RAILING MOD. TYPE F

(DIMENSIONS ARE ALONG GUTTERLINE) (ELEVATION SHOWN IS FOR BOTH WEST AND EAST RAILING)



PARTIAL INSIDE ELEVATION CONCRETE RAILING MOD. TYPE F

(DIMENSIONS ARE ALONG GUTTERLINE) (ELEVATION SHOWN IS FOR BOTH WEST AND EAST RAILING)

NOTE:

(1) MATCH DECK PANEL JOINTS.

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER — DATE 10-7-10

NAME: FRANCIS M. JORDAN — LIC. NO. 15048

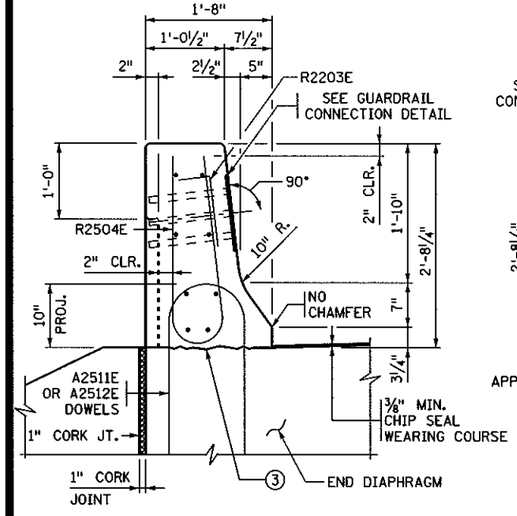
TITLE: CONCRETE RAILING (MOD. TYPE F)(WEST & EAST)

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

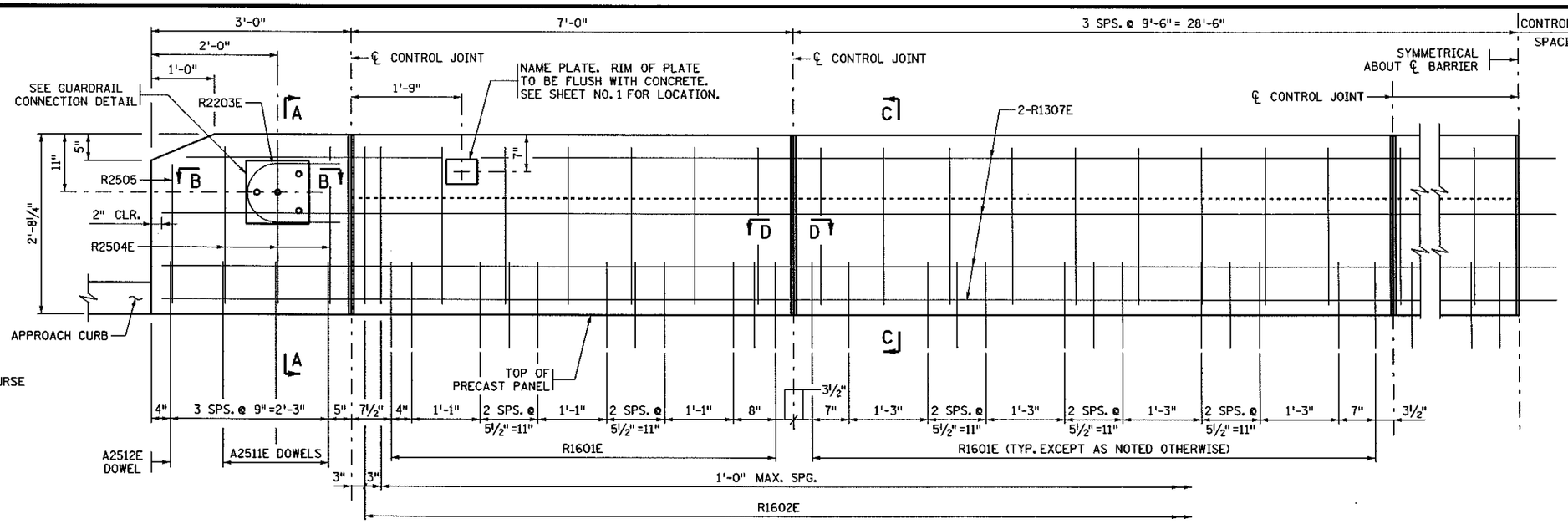
SHEET NO. 27 OF 35 SHEETS

BRIDGE NO. 69071

10/5/2010 b-69071_sup.dgn



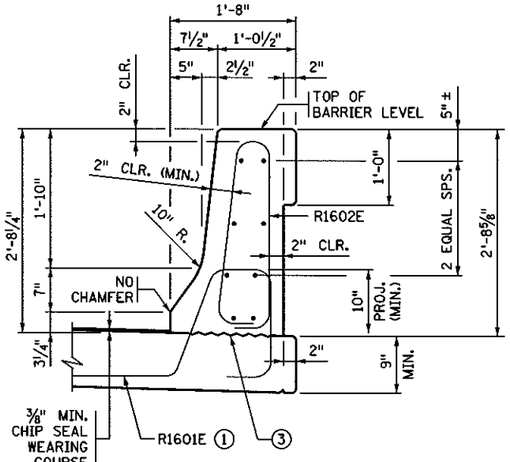
SECTION A-A



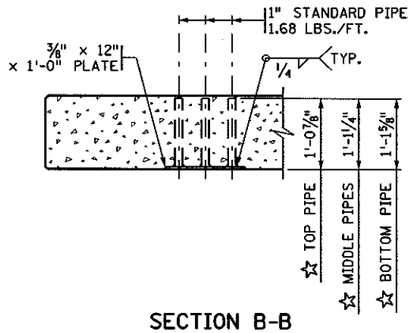
INSIDE ELEVATION OF BARRIER

(OVERLAY NOT SHOWN)

BARRIER MEETS TEST LEVEL 4 REQUIREMENTS OF NCHRP REPORT 350

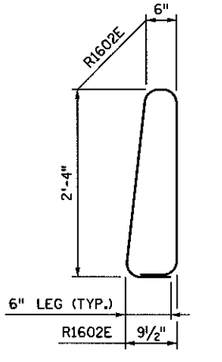


SECTION C-C

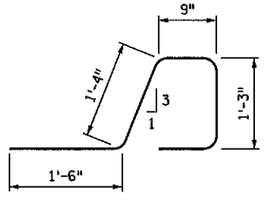


SECTION B-B

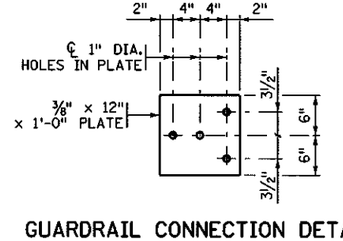
(REINFORCEMENT NOT SHOWN)
☆ DIMENSIONS INCLUDE ⅜" PLATE



R1602E

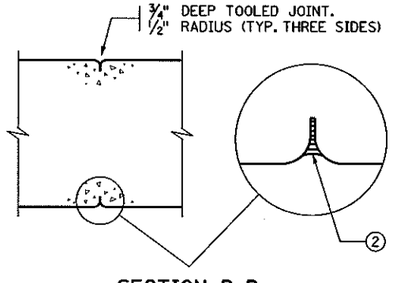


R1601E



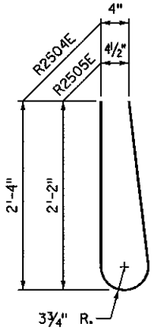
GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394
ESTIMATED WEIGHT = 23 LBS

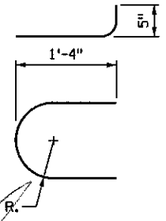


SECTION D-D

CONTROL JOINT DETAILS



R2504E & R2505E



R2203E

BILL OF REINFORCEMENT FOR BARRIER

BAR	NO.	LENGTH	SHAPE	LOCATION
R1601E	224	5'-5"		BARRIER DOWEL
R1602E	182	6'-3"		BARRIER VERTICAL
R2203E	4	4'-1"		END POST
R2504E	12	5'-0"		END POST
R2505E	4	4'-9"		END POST
R1306E	16	12'-6"	—	BARRIER LONGIT.
R1307E	32	39'-0"	—	BARRIER LONGIT.

GENERAL NOTES

LENGTH OF "TYPE F (TL-4) RAILING CONCRETE (3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE BARRIER.

CONCRETE BARRIER = 477 LBS./FT. (0.117 CU. YDS./FT.)

FINISH ALL EDGES OF BARRIER AND END POST WITH ½" VEE, EXCEPT WHERE OTHERWISE NOTED.

SEE CONCRETE RAILING (MOD. TYPE F) SHEET NO. 27 FOR JOINT SPACING.

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, Mn/DOT SPEC. 3306.

GUARDRAIL CONNECTION, AND NAME PLATE TO BE CONSIDERED INCIDENTAL TO "TYPE F (TL-4) RAILING CONCRETE (3Y46)".

BARRIER QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.

(1) PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.

(2) SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.

(3) THE TOP SURFACE OF THE END DIAPHRAGMS AND THE TOP SURFACE OF THE PRECAST PANELS UNDER THE CONCRETE BARRIER SHALL BE ROUGH FINISHED. AT THE EDGE OF PANELS AND UNDER THE ROADWAY FACE OF THE BARRIER A STRIP 2" WIDE SHALL BE GIVEN A SMOOTH FINISH.

(4) MATCH DECK PANEL JOINTS.

REVISED: 05-26-2006

APPROVED: DECEMBER 18, 2003
STATE BRIDGE ENGINEER

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

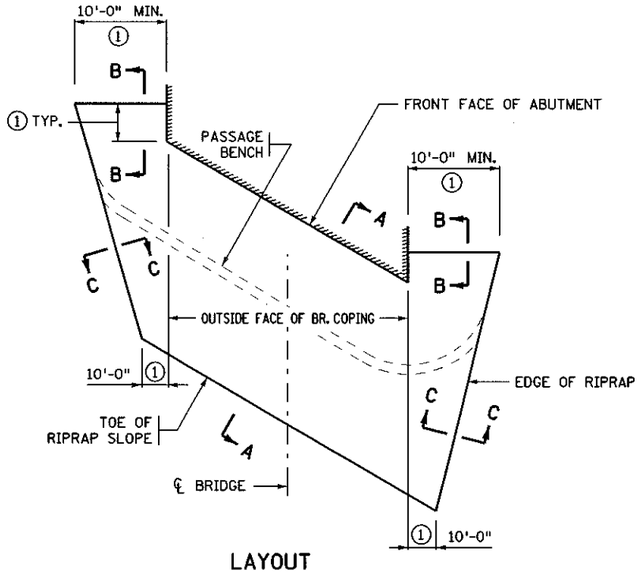
TITLE: CONCRETE BARRIER (TYPE F, TL-4) (WITH OVERLAY)

DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

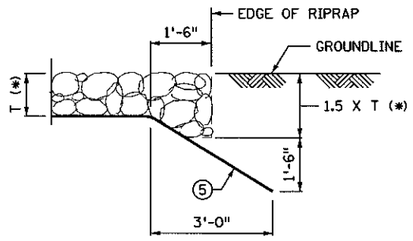
FIG. 5-397.116 (MOD.)

SHEET NO. 28 OF 35 SHEETS

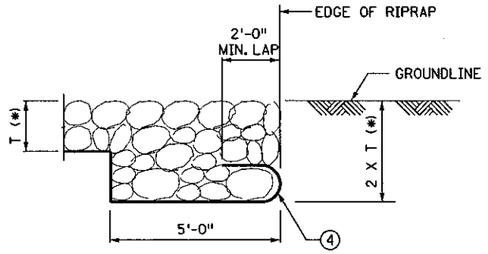
BRIDGE NO. 69071



LAYOUT



SECTION B-B



SECTION C-C

GENERAL NOTES

SEE SPECIAL PROVISIONS FOR MATERIALS, PREPARATION AND PLACEMENT.

GEOTEXTILE FILTER MATERIAL AS PER Mn/DOT SPECIAL PROVISION 2511.

PAYMENT WILL BE MADE UNDER ITEM 2511.515 GEOTEXTILE FILTER TYPE IV (MODIFIED) BY THE SQ. YD.

PAYMENT WILL BE MADE UNDER ITEM 2511.501 RANDOM RIPRAP CLASS III BY THE CU. YD.

SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE : HORIZONTAL DISTANCE.

BENCHES TO BE SURFACED WITH AGGREGATE CLASS 5 (INCIDENTAL TO RIPRAP). BENCHES SHOULD TIE INTO NATURAL GROUNDLINES OUTSIDE OF BRIDGE.

SLOPE BOTTOM OF TRENCHES 1:20 PARALLEL TO ABUTMENT FACE TO PROVIDE POSITIVE DRAINAGE.

① SEE PLAN SHEET NO. 1 FOR DIMENSIONS, AND FOR ELEVATIONS OF RIPRAP TOE AND PASSAGE BENCHES.

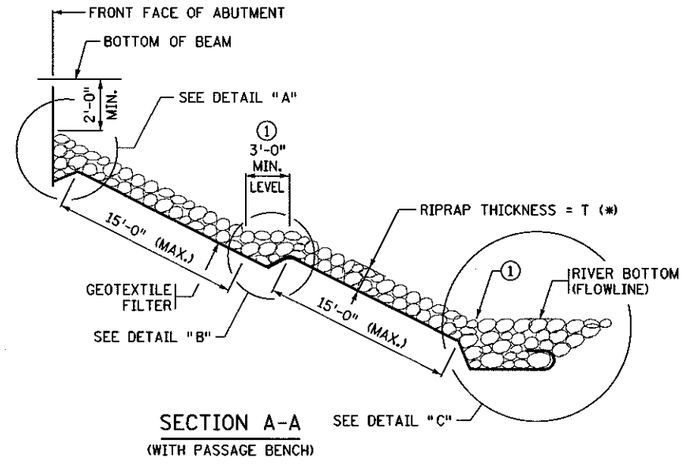
② PLACE RIPRAP IN TRENCH TO HOLD THE GEOTEXTILE FABRIC IN PLACE BEFORE PLACING THE REST OF THE RIPRAP (FROM THE BOTTOM OF THE SLOPE).

③ OVERLAP GEOTEXTILE FILTER 1'-6" MINIMUM.

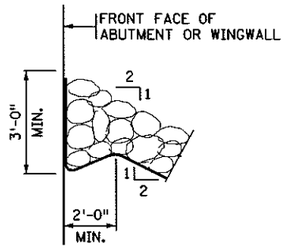
④ WRAP GEOTEXTILE FILTER AROUND TOE, OVERHANG BETWEEN 1ST AND 2ND LAYER OF RIPRAP. USE HAND PLACEMENT OR SIMILAR METHODS TO ESTABLISH PROFILE AND PLACE FABRIC IF UNDER WATER.

⑤ BURY EDGES OF GEOTEXTILE FILTER SUFFICIENTLY TO DIRECT WATER FLOW OVER THE FABRIC WITHOUT UNDERMINING.

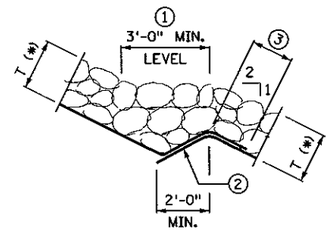
⑥ THE TRENCH SHOWN IN DETAIL "D" AND THE 15'-0" MAXIMUM SPACING BETWEEN TRENCHES MAY BE OMITTED FOR SLOPES 1:3 OR FLATTER.



SECTION A-A
(WITH PASSAGE BENCH)

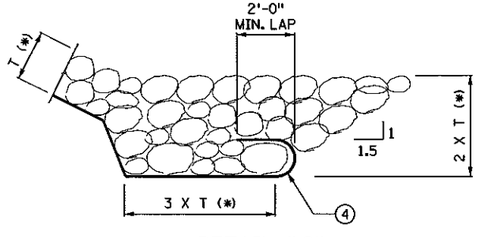


DETAIL "A"

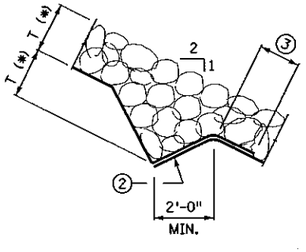


DETAIL "B"

*	DIMENSION T
	CLASS III = 1'-6"
	~~CLASS IV = 2'-0"~~



DETAIL "C"



DETAIL "D"

REVISED:

APPROVED: XXXXXXX XX, XXXX

STATE BRIDGE ENGINEER

CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER — DATE

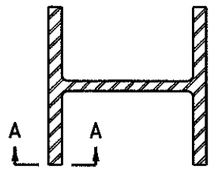
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

TITLE: RIPRAP SLOPE WITH GEOTEXTILE FILTER (SLOPES 1:2 AND FLATTER)

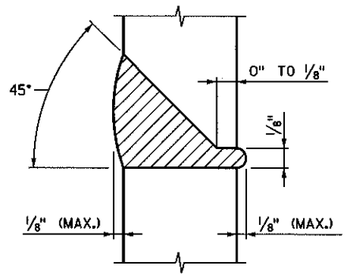
DES: F.M.J.	DR: B.T.	APPROVED: 10/7/10
CHK: P.M.S.	CHK: F.M.J.	

SHEET NO. 29 OF 35 SHEETS

BRIDGE NO. 69071



SECTION AT JOINT



SECTION A-A

100% BUTT WELDED PILE SPLICE

NOTES:

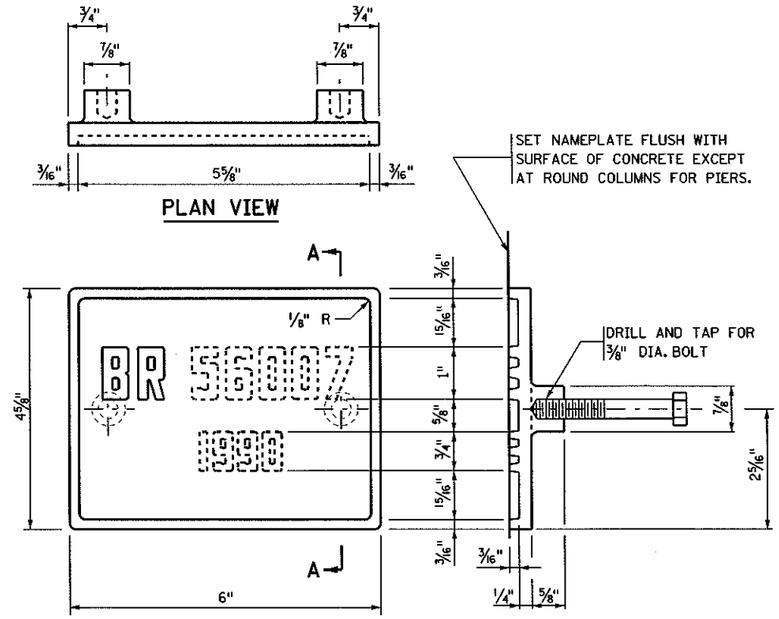
CELLULOSIC TYPE ELECTRODES E-6010 OR E-6011 SHALL BE USED FOR 100% BUTT WELDED SPLICES.

ELECTRODES WHICH HAVE BECOME WET, SOILED OR DAMAGED SHALL NOT BE USED.

WELDING SHALL NOT BE DONE WHEN THE AMBIENT TEMPERATURE IS LOWER THAN 0° F. OR WHEN THE PILE IS WET OR EXPOSED TO FALLING RAIN OR SNOW. WHEN THE PILE METAL TEMPERATURE IS BELOW 32° F., THE PILE METAL IN THE AREA OF THE WELD SHALL BE HEATED TO A MINIMUM TEMPERATURE OF 70° F. AND MAINTAINED AT THIS TEMPERATURE DURING WELDING.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Daniel L Hanson STATE BRIDGE ENGINEER	PILE SPLICE (STEEL H BEARING PILES 10" TO 14")		B202

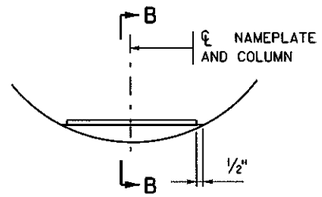
br69071_sup.dgn
10/5/2010



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

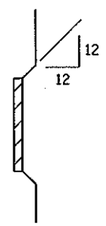
BRIDGE 69071

YEAR 2011

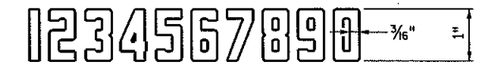


NAMEPLATE PLACEMENT

(ROUND CONCRETE PIER COLUMNS)



SECTION B-B



NUMBERS FOR NAMEPLATE

NOTES:

NO SHOP DRAWING REQUIRED.

MATERIAL SHALL COMPLY WITH Mn/DOT 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.

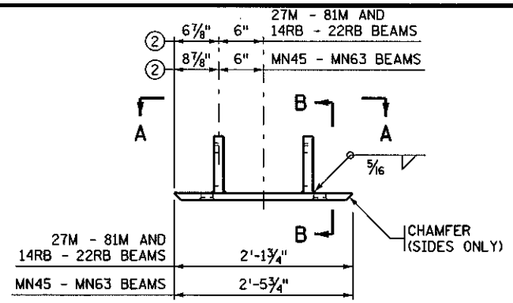
ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Daniel L Hanson STATE BRIDGE ENGINEER	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		B101

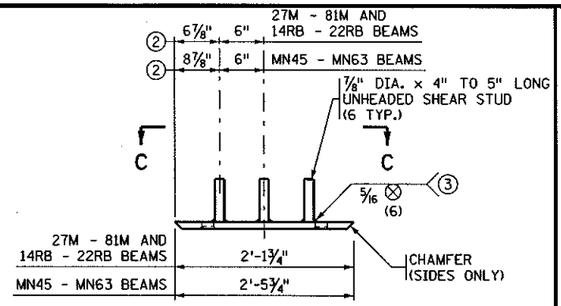
CERTIFIED BY [signature] 10-7-10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: DETAILS

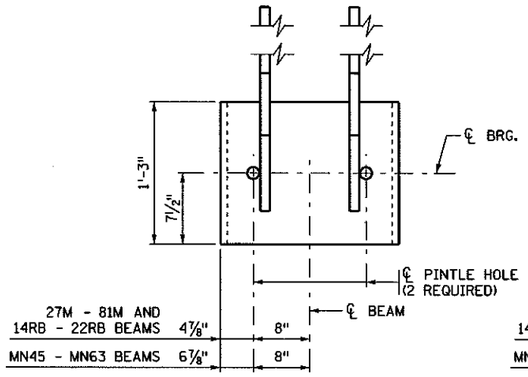
DES:	DR: B.T.	APPROVED: 10/7/10	BRIDGE NO. 69071
CHK:	CHK: F.M.J.		
SHEET NO. 30 OF 35 SHEETS			



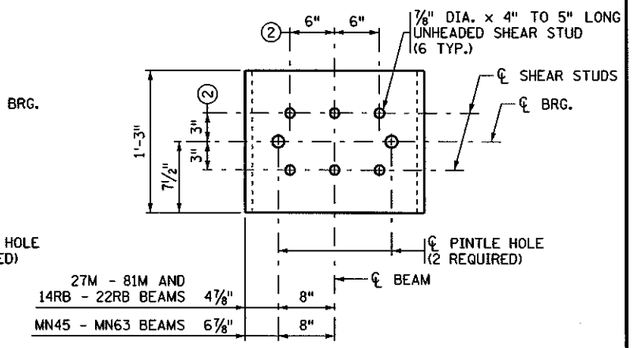
FRONT ELEVATION - OPTION 1



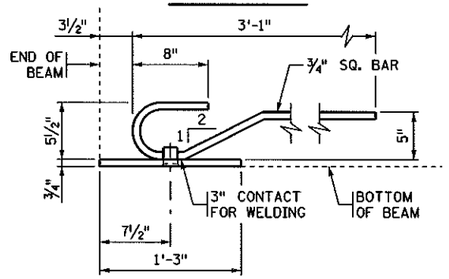
FRONT ELEVATION - OPTION 2



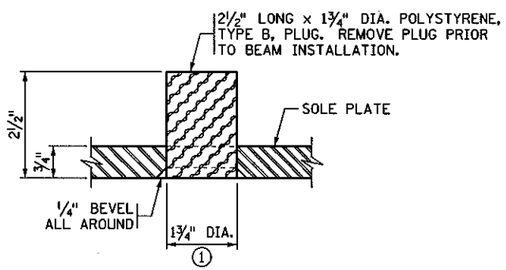
SECTION A-A



SECTION C-C



SECTION B-B



PINTLE HOLE DETAIL

NOTES:

MATERIAL TO BE STRUCTURAL STEEL PER Mn/DOT SPEC. 3306.

WELDED STUDS TO BE WELDABLE CARBON STEEL PER Mn/DOT SPEC. 3391.2D.

SOLE PLATE FOR BEARING ASSEMBLY TO BE GALVANIZED PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

PINTLE HOLES SHALL BE FREE OF ZINC BUILD UP FROM GALVANIZING.

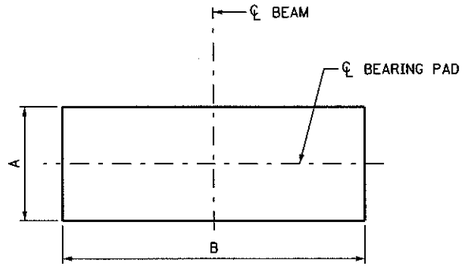
SOLE PLATES ARE INCIDENTAL TO PRESTRESSED CONCRETE BEAMS.

① FOR 1½" DIA. PINTLES.

② THESE DIMENSIONS MAY BE MODIFIED TO CLEAR PRESTRESSED STRANDS. HOWEVER, CHANGES MUST BE APPROVED BY THE ENGINEER.

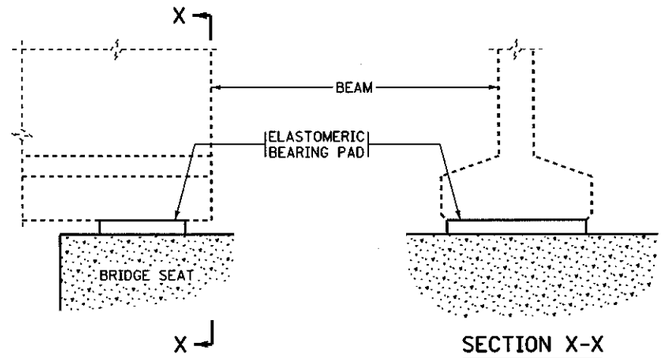
③ THE REQUIREMENTS FOR WELDING STUDS SHALL COMPLY WITH AASHTO/AWS D1.1.

APPROVED: OCTOBER 26, 2005	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 06-14-2006 10-28-2008 03-30-2010	DETAIL NO.
Daniel D Worgan STATE BRIDGE ENGINEER	SOLE PLATE (PRESTRESSED CONCRETE BEAMS) (FOR BEARINGS WITH PINTLES)		B303



PLAN

(BEAM NOT SHOWN)



SIDE ELEVATION

SECTION X-X

TABLE						
PAD TYPE	LOCATION	BEAM SIZE	BEARING PAD SIZE			SHAPE FACTOR
			A	B	D ①	
F1	S. & N. ABUT.		12	24	½	8.0

NOTES:

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

PAYMENT FOR ELASTOMERIC BEARING PAD, TYPE 1, INCLUDED IN ITEM "ELASTOMERIC BEARING PAD" PER EACH.

① "D" INDICATES THE THICKNESS OF THE BEARING PAD.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 12-17-2008	DETAIL NO.
Daniel D Worgan STATE BRIDGE ENGINEER	ELASTOMERIC BEARING PAD (PRESTRESSED CONCRETE BEAMS)		B305

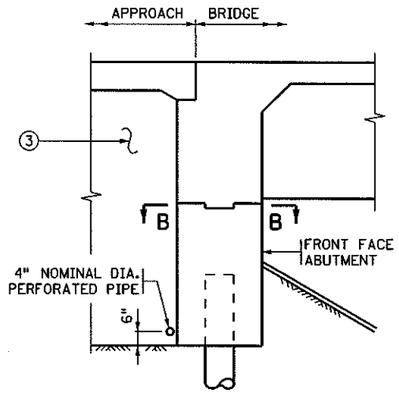
CERTIFIED BY _____ 10-7-10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: FRANCIS M. JORDAN LIC. NO. 15048

TITLE: DETAILS

DES:	DR: B.T.	APPROVED: 10/7/10
CHK:	CHK: F.M.J.	

SHEET NO. 31 OF 35 SHEETS

BRIDGE NO. 69071



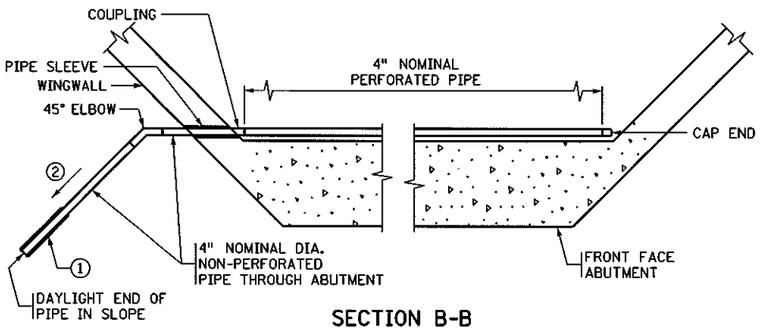
SECTION THROUGH INTEGRAL ABUTMENT

SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM

	4" DIA. PERFORATED PIPE	100	LIN. FT.
	4" DIA. NON-PERFORATED PIPE	20	LIN. FT.
	45° ELBOW	2	EACH
	4" DIA. END CAP	2	EACH
	4" DIA. COUPLING	2	EACH
	PIPE SLEEVE	2	EACH
①	PRECAST CONCRETE HEADWALL	2	EACH

THE SUMMARY OF QUANTITIES FOR DRAINAGE SYSTEM IS AS SHOWN ABOVE. ANY ADDITIONAL MINOR ITEMS OR SLIGHT CHANGES OF QUANTITIES REQUIRED SHALL BE FURNISHED BY THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.

PAYMENT WILL BE INCLUDED IN THE SINGLE LUMP SUM PRICE FOR ITEM 2502.502 "DRAINAGE SYSTEM TYPE (B910)".



SECTION B-B

NOTES:

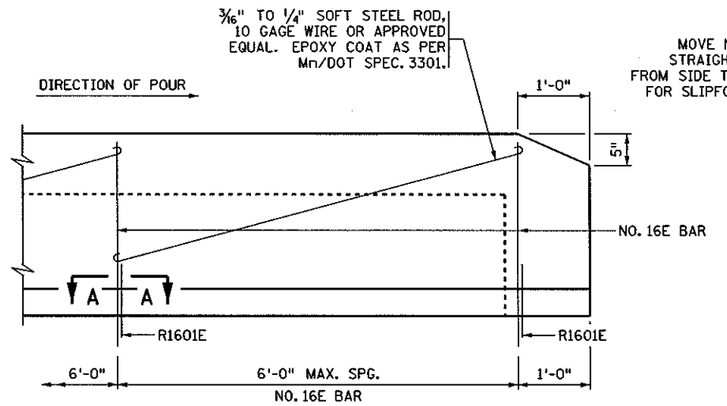
ALL PIPE SHALL COMPLY WITH Mn/DOT SPEC. 3245.

WRAP PERFORATED PIPE WITH GEOTEXTILE AS PER Mn/DOT SPEC. 3733, TYPE 1. ATTACH TO PIPE AS PER Mn/DOT SPEC. 2502.

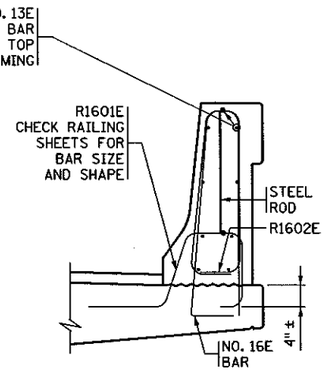
① PRECAST CONCRETE HEADWALL WITH RODENT SCREEN. SEE STANDARD PLATE 3131 FOR DETAILS.

② 1/8" PER FT. MINIMUM SLOPE.

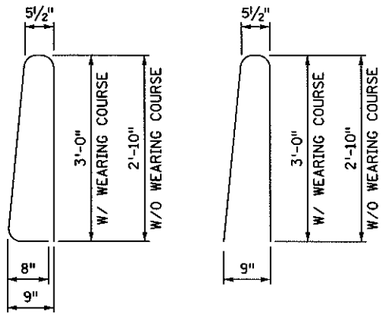
③ MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3149.2B SELECT GRANULAR BORROW, MODIFIED SO THAT NO MORE THAN 10% PASSES A NO. 200 SIEVE. (UNDER GRADING PORTION OF CONTRACT)



INSIDE ELEVATION OF RAILING

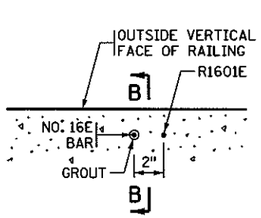


RAILING SECTION

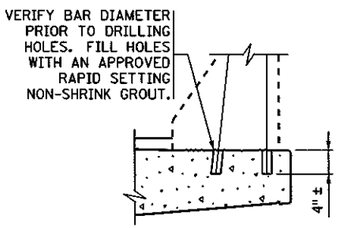


NO. 16E BAR

NO. 16E BAR
DRILLED IN ALTERNATE



SECTION A-A



SECTION B-B

INSTALLATION DETAILS FOR NO. 16E (DRILLED IN ALTERNATE)

NOTES:

CONTRACTOR WILL TOOL V-GROOVE AT DEFLECTION JOINTS AT TIME RAIL IS CAST AND SHALL EXTEND V-GROOVE AROUND ENTIRE PERIMETER OF RAIL.

FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET.

FORM RAIL FOR A MINIMUM OF 2' ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.

PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.

USE A SIMILAR METHOD FOR TALLER RAILINGS OR MODIFIED VERSIONS OF THIS RAILING.

APPROVED: MARCH 26, 2009	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISED 10-22-2009	DETAIL NO.
STATE BRIDGE ENGINEER	DRAINAGE SYSTEM		B910

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
STATE BRIDGE ENGINEER	CONCRETE RAILING (TYPE F) (SLIPFORM ALTERNATE)		B830

CERTIFIED BY _____ LICENSED PROFESSIONAL ENGINEER — DATE 10-7-10
NAME: FRANCIS M. JORDAN — LIC. NO. 15048

TITLE: DETAILS

DES:	DR: B.T.	APPROVED: 10/7/10
CHK:	CHK: F.M.J.	

SHEET NO. 32 OF 35 SHEETS

BRIDGE NO. 69071

br69071_sup.dgn
10/5/2010

CONCRETE WEARING COURSE

☐ LOW SLUMP

☐ OTHER _____
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED

GLAND MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SIZE OF GLAND _____

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED

ELASTOMERIC BEARING PADS

PAD MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SPECIAL SURFACE FINISH

SYSTEM: _____ COLOR: _____

FINISHING ROADWAY FACES OF BARRIER RAILING

TYPE: _____ COLOR: _____

ANTI-GRAFFITI COATING

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRODUCT NAME: _____ LOCATION: _____

PAINT SYSTEM

Mn/DOT SPECIFICATION NUMBER _____
2478 OR 2479 OR OTHER

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRIME COAT _____
Mn/DOT MATERIAL SPECIFICATION NUMBER

INTERMEDIATE COAT _____
Mn/DOT MATERIAL SPECIFICATION NUMBER

FINISH COAT _____ _____
Mn/DOT MATERIAL SPECIFICATION NUMBER COLOR

PLAN QUALITY

RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION. _____

BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS. _____

SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD. _____

(SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT. _____

COMMENTS: _____

NUMBER OF BRIDGE SUPPLEMENTAL AGREEMENTS: _____ COST: $ _____

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

BRIDGE REMOVAL / BRIDGE OPENING

NUMBER OF AND DATE OLD BRIDGE WAS REMOVED (IF APPLICABLE):

BRIDGE NUMBER _____ DATE REMOVED _____

DATE NEW BRIDGE WAS OPENED TO TRAFFIC _____

NOTIFY THE BRIDGE OFFICE BRIDGE MANAGEMENT UNIT WITH THIS INFORMATION AS SOON AS POSSIBLE. (651) 366-4557

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES: YES ☐ NO ☐

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

_____ _____
INSPECTOR(S) SIGNATURE DATE

CHECKED BY: _____ _____
PROJECT ENGINEER/SUPERVISOR SIGNATURE DATE

AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE - ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

REVISION: 10-28-2008

APPROVED: SEPTEMBER 26, 2003
David L. Hanson
STATE BRIDGE ENGINEER

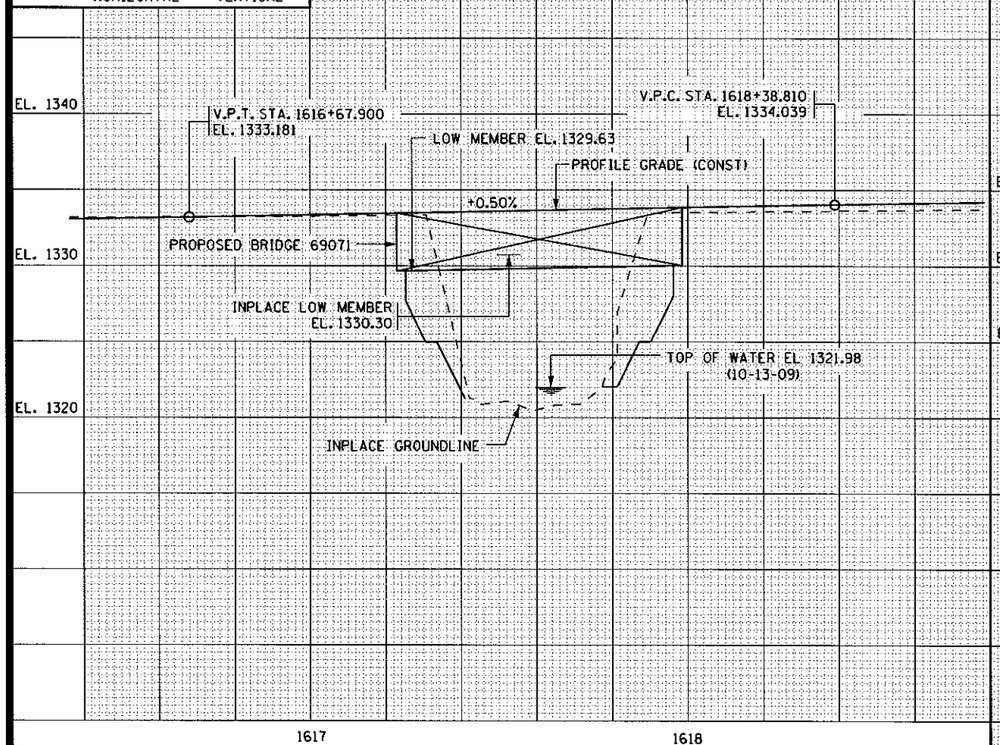
AS-BUILT DETAILS
(AS NEEDED)

FIG. 5-397.900

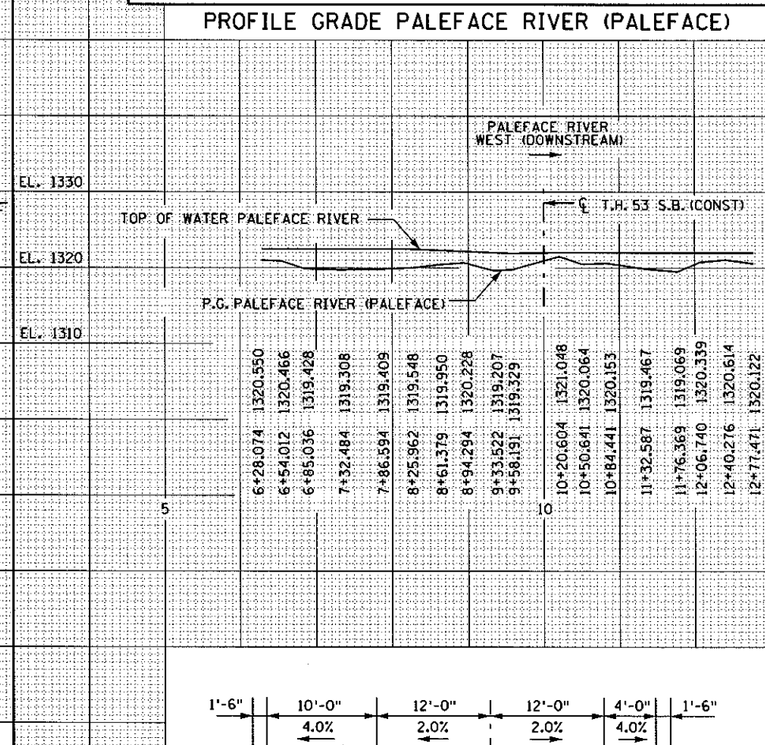
TITLE:	DES:	DR:	APPROVED:	BRIDGE NO.
AS-BUILT BRIDGE DATA	CHK:	CHK:	10/7/10	69071
	SHEET NO. 33 OF 35 SHEETS			

CONTRACTED PROFILE

SCALE : 0 20' HORIZONTAL, 0 5' VERTICAL

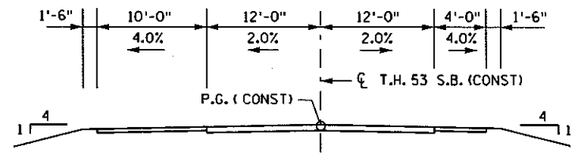


PROFILE GRADE T.H. 53 S.B. (CONST)



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



TYPICAL APPROACH SECTION

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

1. SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE, DEBRIS, SLIDING BANKS, RECREATIONAL BOATING.
2. 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.
   T.H. 53 N.B. BRIDGE #69019
3. APPARENT HIGHWATER ELEVATION OBTAINED FROM:
4. OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY.

HYDRAULIC ENGINEERS RECOMMENDATION

DATE: JANUARY 13, 2010

STREAM OR DITCH DESIGNATION: PALEFACE RIVER
DRAINAGE AREA: 55.2 SQ. MI.
FLOOD ON RECORD: N/A
MAXIMUM OBSERVED HIGHWATER ELEVATION: 1328.3 FT.
DESIGN FLOOD (50 YR. FREQ.): 1345 C.F.S.
- HEADWATER ELEVATION: 1327.5 FT.
- DESIGN MEAN VELOCITY THROUGH STRUCTURE: 4.5 F.P.S.
- TOTAL STAGE INCREASE: 0.3 FT.
- LOW MEMBER AT OR ABOVE ELEVATION: 1329.3 FT.

WATERWAY AREA REQUIRED BELOW ELEV. 1327.5 = 334 SQ. FT. AT RIGHT ANGLES TO CHANNEL
BASIC FLOOD (100 YR. FREQ.): 1565 C.F.S.
- HEADWATER ELEVATION: 1327.9 FT.
- TOTAL STAGE INCREASE: 0.3 FT.
- MEAN VELOCITY THROUGH STRUCTURE: 4.9 F.P.S.

FLOWLINE ELEVATION: 1319.1 FT. SKEW ANGLE: 0°

ESTIMATED PRELIMINARY TOTAL SCOUR AT ABUT. EL. 1319.1 (100 YR. FREQ.)

SCOUR CONFIRMATION RECOMMENDATION

DATE: 5-20-2010

TOTAL SCOUR AT ABUT. EL. 1391.1 (100 YR. FREQ.)
SCOUR CODE: L

BRIDGE SURVEY SHEETS MADE FROM :

10/13/09 FIELD SURVEY

BM 6917AH EL. 1333.498 (NAVD88 ADJ)

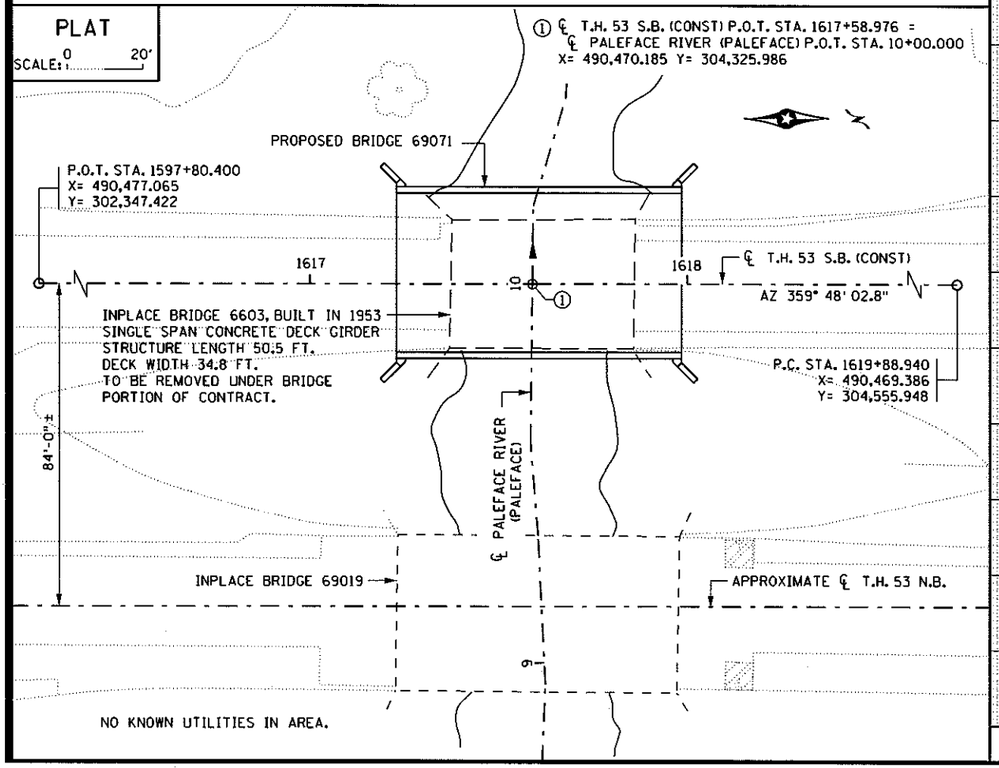
LOCATION: 3.0 MILES NORTH OF COTTON, AT MILEPOINT 41.9, IN S.E. CORNER OF T.H. 53 S.B. BRIDGE 6603

BM 6917AJ EL. 1332.701' (NAVD88 ADJ)

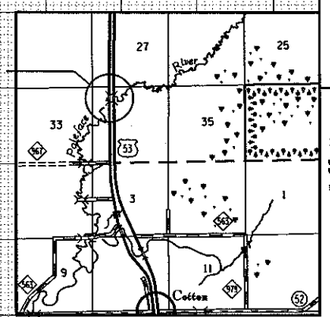
LOCATION: 3.0 MILES NORTH OF COTTON, AT MILEPOINT 41.9, IN S.E. CORNER OF T.H. 53 N.B. BRIDGE 69019

PLAT

SCALE: 0 20'



PROPOSED BRIDGE 69071



MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT MILE POINT 41+00.90 ON
T.H. 53 S.B. OVER
THE PALEFACE RIVER
14.3 MILES SOUTH OF THE
JUNCTION OF T.H. 37

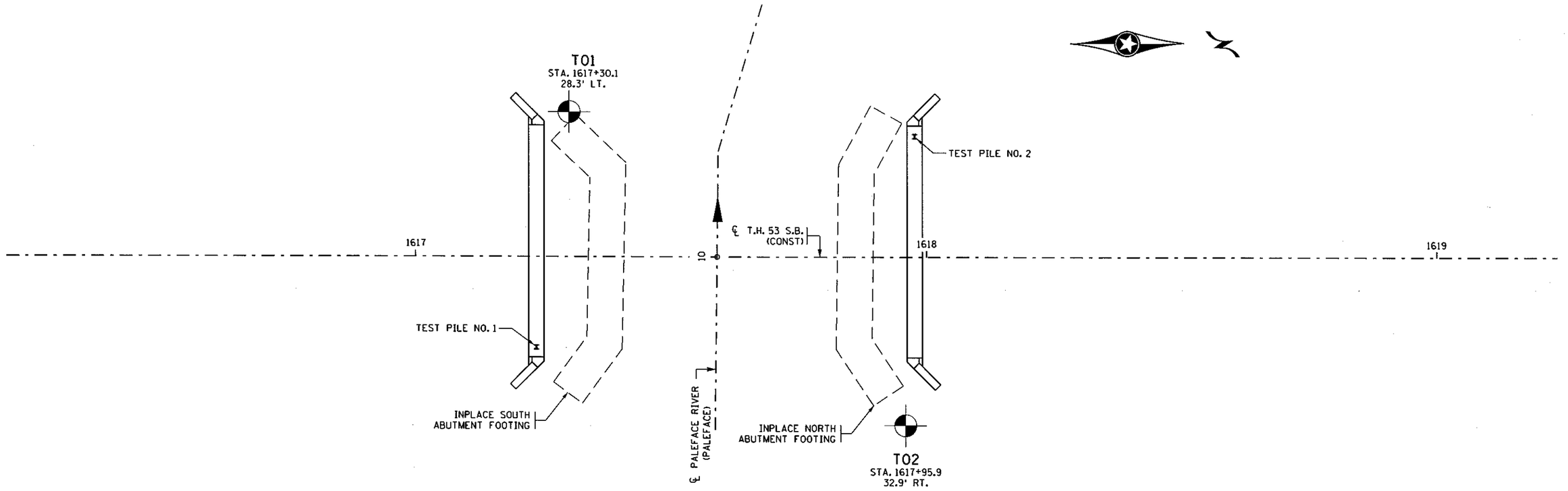
SEC. 34 TWP. 55 N. R. 17 W.

ELLSBURG TOWNSHIP ST. LOUIS COUNTY

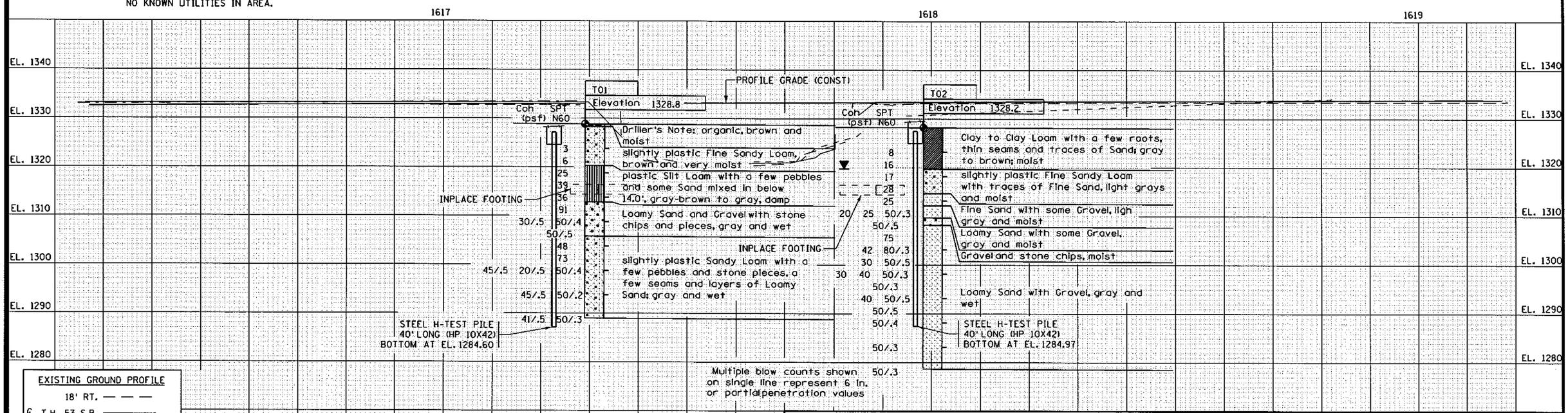
BRIDGE NO. **69071**

STATE PROJECT NO. 6917-133

10/7/10 SHEET NO. 34 OF 35 SHEETS



NO KNOWN UTILITIES IN AREA.



EXISTING GROUND PROFILE
18' RT. — — —
℄ T.H. 53 S.B. ————
24' LT. - - - - -

BORINGS

DR: BT | CHK: FMJ | BRIDGE NO. 69071

STATE PROJECT NO. 6917-69071 10/7/10 | SHEET NO. 35 OF 35 SHEETS