



**H30SI-12 PRETENSIONED
PRESTRESSED CONCRETE
BEAM BRIDGE STANDARDS**

REVISED 05-13 - THE GENERAL NOTES AND SPECIFICATIONS MOVED TO STANDARD SHEET H30-01A-06. SRL NOTATION ADDED.

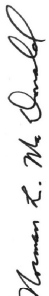
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STRUCTURAL RESISTANCE LEVEL-1 (SRL-1) REPLACES THE 50 TON STEEL PILE DESIGNATION.

STRUCTURAL RESISTANCE LEVEL-2 (SRL-2) REPLACES THE 75 TON STEEL PILE DESIGNATION.

FOR MORE INFORMATION ON STRUCTURAL RESISTANCE LEVELS (SRL-1 & SRL-2), SEE THE BRIDGE DESIGN MANUAL, LOCATED ON THE IOWA DEPARTMENT OF TRANSPORTATIONS, OFFICE OF BRIDGES AND STRUCTURES, WEBSITE.

05-13 LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER		
		STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES APRIL, 2012	
		INDEX SHEET	H30SI-01-12

REVISED 05-13 - THIS STANDARD RENAMED TO H30SI-01A-12. INDEX SHEET INFORMATION ON STANDARD H30SI-01-12.

EXAMPLES OF BRIDGE SEAT AND STEP CALCULATIONS:

THE DESIGNER SHALL SHOW ON THE PLANS THE 5 ELEVATIONS AND THE 4 STEP DIMENSIONS REQUIRED FOR THE ABUTMENT BRIDGE SEATS.

THE BOXED IN DETAILS IN THE FOLLOWING EXAMPLES SHOW HOW THE INFORMATION SHOULD BE INDICATED ON THE PLANS.

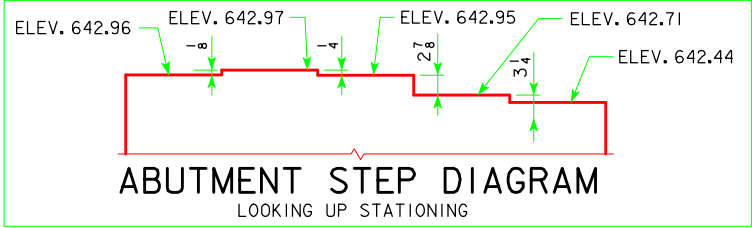
EXAMPLE NO. 1
A STRAIGHT GRADE OF -3.25% WITH THE P.I. STATION OF 103+75.00 AND ELEVATION OF 653.29. THE BRIDGE LENGTH IS 80'-0' ∇ TO ∇ OF ABUTMENT BEARINGS WITH 30° SKEW RIGHT AHEAD.

STATIONS			
∇ BRIDGE STA.	=	105+85.00	
∇ $\frac{1}{2}$ OF SPAN LENGTH	$\pm$	40.00	
∇ ABUT. BRGS.	=	<u>106+25.00</u>	105+45.00

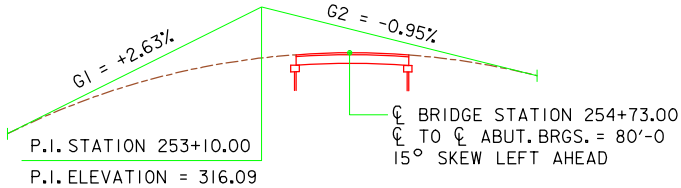
ELEVATIONS ALONG PROFILE GRADE LINE (P.G.L. ELEV.)	
∇ ABUT. BRG. = 653.29-[(105+45.00)-(103+75.00)](0.0325) = 647.77	
∇ ABUT. BRG. = 653.29-[(106+25.00)-(103+75.00)](0.0325) = 645.17	

ELEVATIONS TOP OF SLAB FACING ALONG THE STATIONING	
(BEAM SPACING X TAN. SK. Δ)(GRADE) = (7.0)TAN 30°(0.0325) = 0.13'	

ABUTMENT NO. 1					
BEAMS	EXTERIOR	INTERIOR	CENTER	INTERIOR	EXTERIOR
PGL ELEV.	647.77	647.77	647.77	647.77	647.77
SK. Δ CORRECT	+ 0.26	+ 0.13	0.00	- 0.13	- 0.26
SLAB CROWN	<u>- 0.25</u>	<u>- 0.11</u>	<u>0.00</u>	<u>- 0.11</u>	<u>- 0.25</u>
TOP SLAB ELEV.	647.78	647.79	647.77	647.53	647.26
- "U" (4'-9 $\frac{7}{8}$ ')	<u>- 4.82</u>	<u>- 4.82</u>	<u>- 4.82</u>	<u>- 4.82</u>	<u>- 4.82</u>
BR. SEAT ELEV.	642.96	642.97	642.95	642.71	642.44



EXAMPLE NO. 2

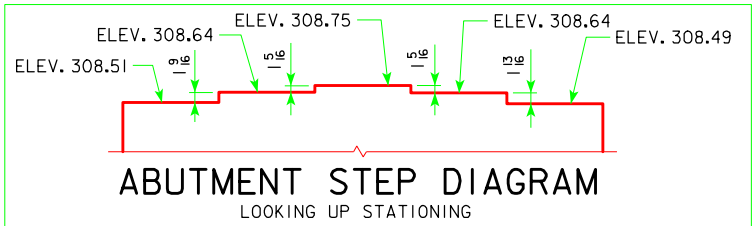


FROM SHEET H30SI-1-12	{	LENGTH OF VERTICAL CURVE = (20000)(0.0358) = 716 FEET
	{	M.O. = (0.0358)(716)($\frac{1}{8}$) = 3.204 FEET

STATIONS				
∇ BRIDGE STA.	=	254+73.00	P.I. STA.	253+10.00
∇ $\frac{1}{2}$ OF SPAN LENGTH	$\pm$	40.00	$\pm$ ($\frac{1}{2}$)(LENGTH V.C.)	<u>3+58.00</u>
∇ ABUT. BRGS.	=	<u>255+13.00</u>	254+33.00	P.C. STA. 249+52.00
				P.T. STA. 256+68.00

ELEVATIONS TOP OF SLAB FACING ALONG THE STATIONING	
(BEAM SPACING X TAN. SK. Δ) = (7.0)TAN 15° = 1.88'	

ABUTMENT NO. 1					
BEAMS	EXTERIOR	INTERIOR	CENTER	INTERIOR	EXTERIOR
STATION	254+36.75	254+34.88	254+33.00	254+31.12	254+29.25
PGL ELEV.	313.55	313.54	313.54	313.54	313.53
SLAB CROWN	<u>- 0.25</u>	<u>- 0.11</u>	<u>0.00</u>	<u>- 0.11</u>	<u>- 0.25</u>
TOP SLAB ELEV.	313.30	313.43	313.54	313.43	313.28
- "U" (4'-9 $\frac{7}{16}$ ')	<u>- 4.79</u>	<u>- 4.79</u>	<u>- 4.79</u>	<u>- 4.79</u>	<u>- 4.79</u>
BR. SEAT ELEV.	308.51	308.64	308.75	308.64	308.49



GENERAL NOTES:

THE H30SI-12 BRIDGE STANDARDS, IF PROPERLY USED, PROVIDE THE STRUCTURAL PLANS NECESSARY TO CONSTRUCT SINGLE SPAN 30' ROADWAY PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES WITH LENGTHS OF 46'-8, 55'-0, 67'-6, 80'-0, 90'-0, 100'-0, AND 110'-0.

THESE BRIDGES MAY BE BUILT ON A 0°, 15° OR 30° SKEW. THESE PLANS SHOW THE BRIDGES SKEWED IN ONE DIRECTION, BUT ALL DIMENSIONS AND DETAILS WOULD BE THE SAME FOR THE OPPOSITE SKEW.

NOTE THAT WHEN APPROACH PAVEMENT IS TO BE PLACED, THE TEMPORARY PAVING BLOCKS SHALL BE REMOVED AND A PROPER JOINT FOR EXPANSION SHALL BE PROVIDED BETWEEN THE BRIDGE AND THE APPROACH PAVING.

THE ABUTMENTS FOR THESE STANDARDS HAVE BEEN DESIGNED FOR FRICTION OR POINT BEARING PILES. IT IS NECESSARY THAT THE LENGTH OF THE ABUTMENT PILES BE DESIGNATED ON THE FRONT SHEET OF THE PLANS.

THE INTEGRAL ABUTMENTS FOR THESE H30SI STANDARDS HAVE BEEN DESIGNED FOR THE USE OF VARIOUS TYPES OF PILE FOOTINGS AS FOLLOWS.

- INTEGRAL ABUTMENTS: TIMBER PILES (LIMITED BY BRIDGE LENGTH) OR HP10x57 PILES AT BRIDGE DESIGN MANUAL (BDM) ARTICLE 6.2.6.1 STRUCTURAL RESISTANCE LEVEL-1 (SRL-1)

STRUCTURAL RESISTANCE LEVEL-1 (SRL-1) REPLACES THE 50 TON STEEL PILE DESIGNATION.

FOR MORE INFORMATION ON SRL-1 AND SRL-2, SEE THE BRIDGE DESIGN MANUAL, LOCATED ON THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES WEB SITE.

THESE STANDARDS GIVE MOST OF THE INFORMATION NECESSARY TO BUILD THESE BRIDGES ON EITHER A CREST VERTICAL CURVE OR A STRAIGHT GRADE. BECAUSE OF THE INFINITE NUMBER OF GRADE POSSIBILITIES IT WILL BE NECESSARY TO SHOW ON THE PLANS THE ABUTMENT STEP DIMENSIONS. TO HELP IN OBTAINING THIS STEP INFORMATION SEE "EXAMPLES OF BRIDGE SEAT AND STEP CALCULATIONS" ON THIS SHEET.

PROVIDE TOP OF SLAB ELEVATIONS AND WING ELEVATIONS A, B, AND C AS NOTED ON THE STANDARD SHEETS (LONGITUDINAL SECTION).

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS $\frac{5}{8}$ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

BECAUSE THESE BRIDGE STANDARDS HAVE BEEN REVISED FOR LRFD BASED ON 2012-COMPLETED IOWA STATE UNIVERSITY RESEARCH, FOR PILE FOUNDATIONS THE DESIGNER WILL NEED TO DETERMINE THE CONSTRUCTION CONTROL METHOD, CONTRACT LENGTH, AND DRIVING TARGET AND GIVE THAT INFORMATION ON THE FRONT SHEET OF THE PLANS. BRIDGE DESIGN MANUAL CADD NOTES E177, E718, E719, E818, AND E819 ARE APPROPRIATE FOR THAT PURPOSE. THE NOTES, AS WELL AS THE BRIDGE DESIGN MANUAL AND DESIGN EXAMPLES, ARE AVAILABLE ON THE OFFICE OF BRIDGES AND STRUCTURES WEB SITE: HTTP://WWW.IOWADOT.GOV/BRIDGE/INDEX.HTM.

THESE STANDARDS CAN BE USED FOR BRIDGES WITH OR WITHOUT EPOXY COATED REINFORCING. REINFORCING BAR LAP LENGTHS ARE BASED ON THE USE OF EPOXY COATED REINFORCING, BUT NEED NOT BE MODIFIED IF NON-COATED BARS ARE TO BE USED. THE DESIGNER SHALL SPECIFY THE APPROPRIATE BID ITEM NO. FOR THE EPOXY COATED OR NON-EPOXY COATED REINFORCING.

IT IS RECOMMENDED THAT THE EPOXY COATED REINFORCING OPTION BE USED IF IT IS ANTICIPATED THAT THE BRIDGE DECK AND/OR THE BRIDGE APPROACHES WILL BE CHEMICALLY TREATED FOR THE REMOVAL OF ICE OR SNOW.

IF EPOXY COATED BARS ARE USED IN THE DECK, THEN ALL BARS USED IN THE ABUTMENT (FOOTING AND BACKWALL) AND BARRIER RAILS SHALL BE EPOXY COATED.

CONCRETE INTERMEDIATE DIAPHRAGMS SHALL BE USED FOR OVERPASS BRIDGES. THE DESIGNER SHALL ADJUST THE CONCRETE AND REINFORCING QUANTITIES ACCORDINGLY.

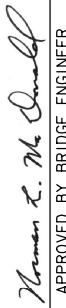
DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 5th Ed, SERIES OF 2010.
REINFORCING STEEL IN ACCORDANCE WITH LRFD AASHTO SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH LRFD AASHTO SECTION 5, f'c = 4.0 KSI.
FOR 30' STANDARD PRESTRESSED CONCRETE BEAMS, SEE SHEETS H30SI-21-12, H30SI-23-12, H30SI-25-12, AND H30SI-27-12.

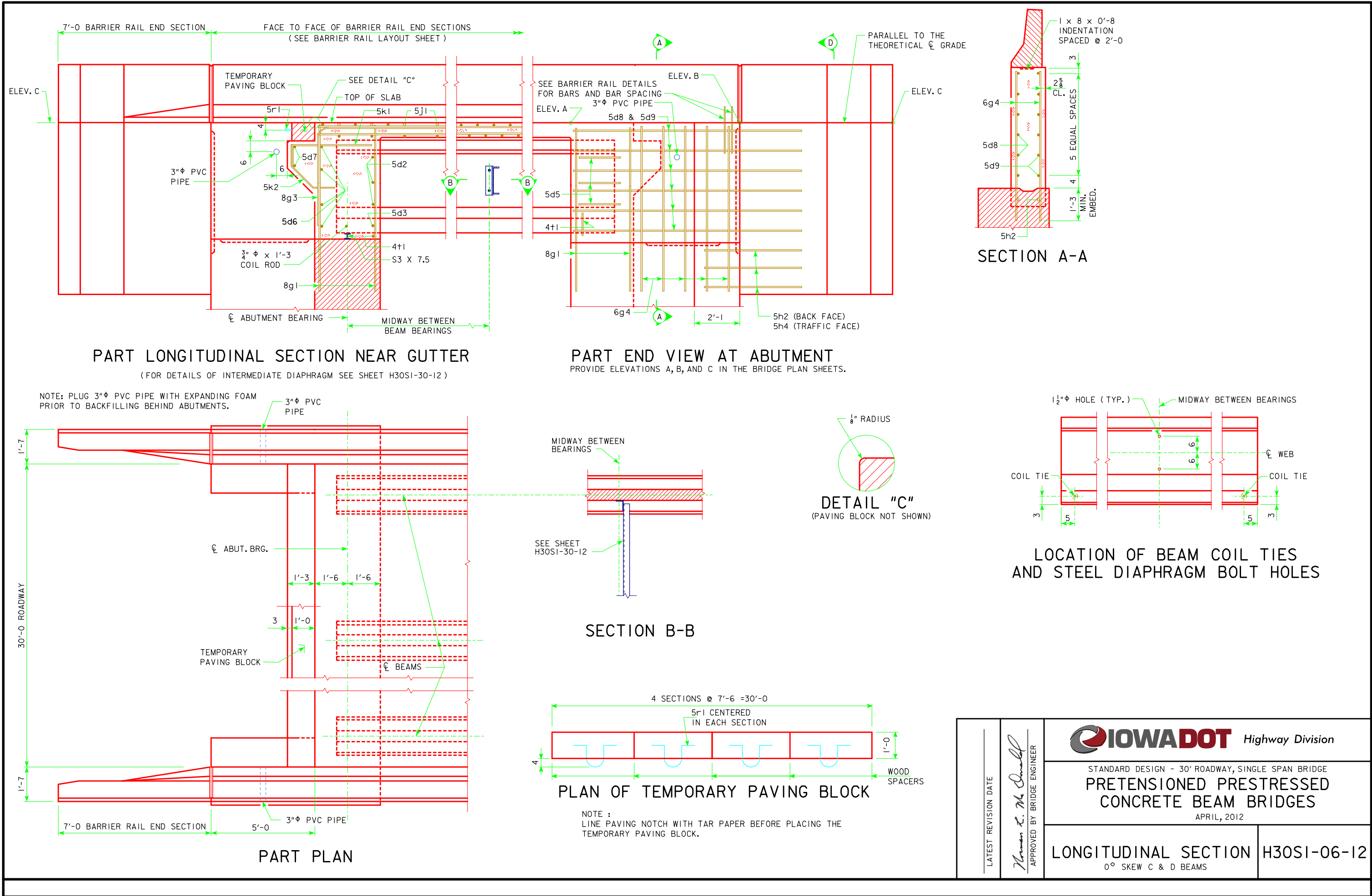
SPECIFICATIONS:

DESIGN:
AASHTO, SERIES OF 2010.

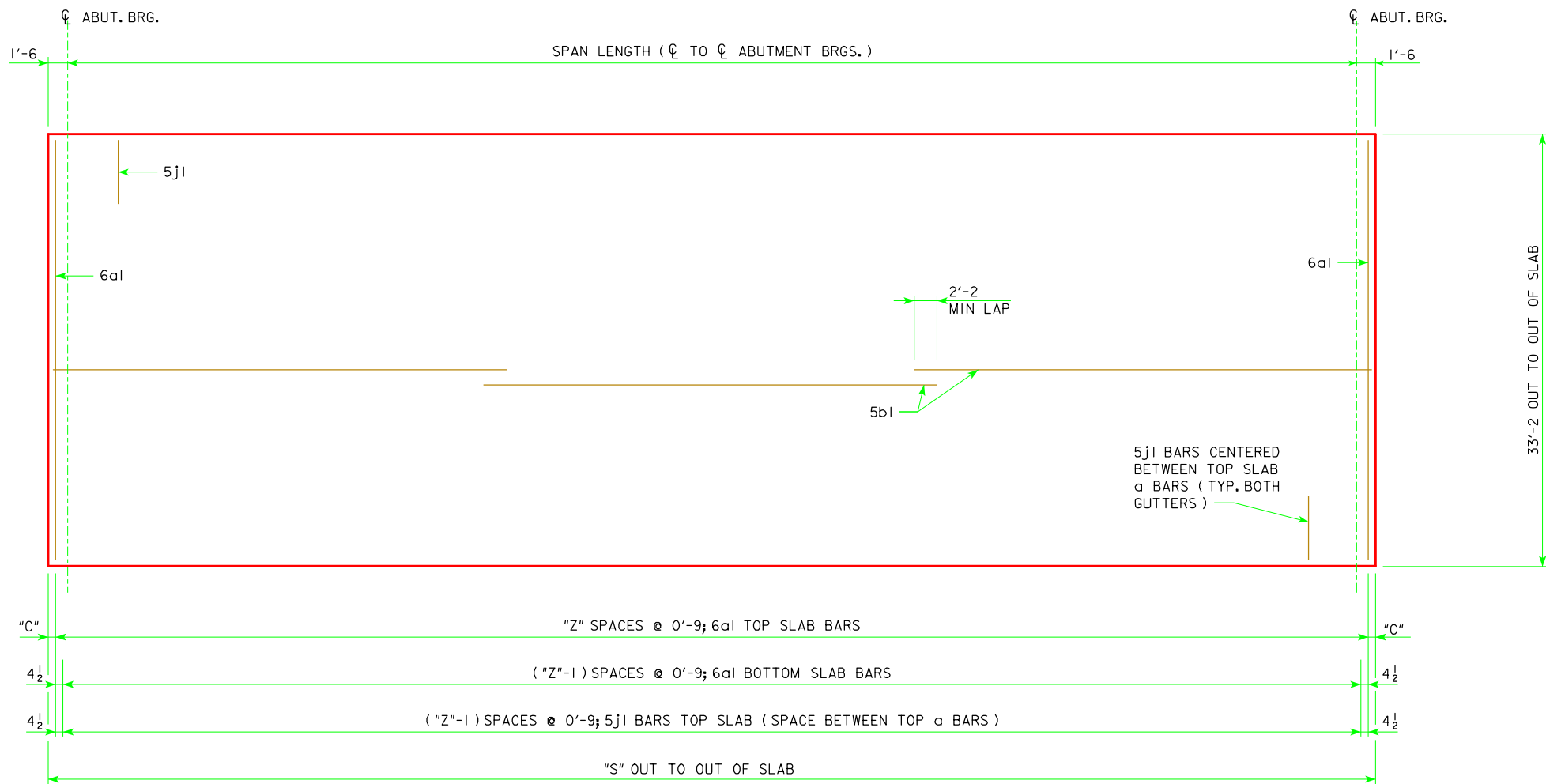
CONSTRUCTION:
IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2012, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

05-13 LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER		
		STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES APRIL, 2012	
		GENERAL NOTES & GENERAL INFORMATION	H30SI-01A-12





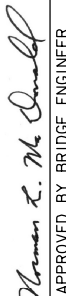
REVISED 05-13 - REVISION FOR LRFD PILE DESIGN.



SLAB REINFORCING LAYOUT

GENERAL DATA

SPAN LENGTH (CL - CL ABUTMENT BRGS.)		46'-8	55'-0	67'-6	80'-0	90'-0	100'-0	110'-0
LOCATION OF EXTREME 6a1 TOP BAR FROM END OF SLAB	"C"	5 1/2	6	4 1/2	3	4 1/2	6	3
NO. OF SPACES FOR 6a1 TOP BARS	"Z"	65	76	93	110	123	136	150
OUT TO OUT OF SLAB	"S"	49'-8	58'-0	70'-6	83'-0	93'-0	103'-0	113'-0
VERTICAL CURVE	TOP OF SLAB TO ABUTMENT TOP AT CL ABUTMENT BEARING	"U"	3'-8 1/8	3'-8 1/2	4'-3 7/8	4'-9 7/16	5'-6 3/16	5'-7 5/16
STRAIGHT GRADE	TOP OF SLAB TO ABUTMENT TOP AT CL ABUTMENT BEARING	"U"	3'-8 5/16	3'-8 3/4	4'-4 3/16	4'-9 15/16	5'-6 13/16	5'-7 7/16
SERVICE D.L. ABUTMENT REACTION (D.L. + F.W.S.) SERIVE LOADS	KIPS	297.9	325.0	388.8	502.5	575.0	616.0	657.2
SERVICE L.L. ABUTMENT REACTION (HL-93) NO IMPACT SERVICE LOADS	KIPS	152.8	162.4	175.0	186.0	194.4	202.2	209.8

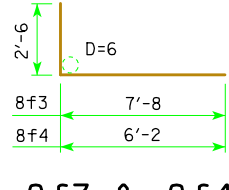
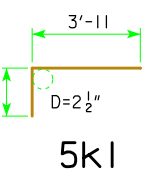
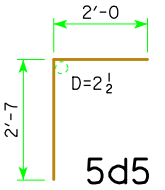
05-13 LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER		
		STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES APRIL, 2012	
		SUPERSTRUCTURE 0° SKEW	H30SI-07-12

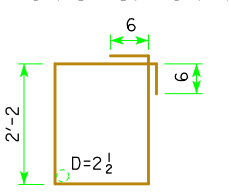
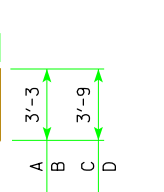
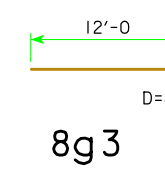
REVISED 09-14 - CORRECTED THE BARRIER RAIL REINFORCING STEEL QUANTITIES FOR ALL THE BRIDGE LENGTHS. (WAS 1.5 CU.YD.)
REVISED 05-15 - CORRECTED THE CONCRETE QUANTITIES OF THE PAVING BLOCKS FOR ALL THE BRIDGE LENGTHS.

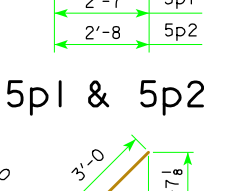
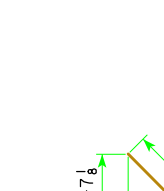
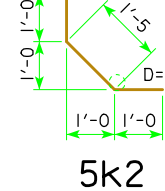
REINFORCING BAR LIST ONE SUPERSTRUCTURE AND TWO ABUTMENTS			BRIDGE LENGTH																				
			46'-8			55'-0			67'-6			80'-0			90'-0			100'-0			110'-0		
			A			A			B			C			D			D			D		
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT
6a1	SLAB TRANSVERSE, TOP & BOTTOM		131	32'-10	6461	153	32'-10	7546	187	32'-10	9223	221	32'-10	10,899	247	32'-10	12,181	273	32'-10	13,464	301	32'-10	14,845
5b1	SLAB LONGITUDINAL TOP & BOTTOM		168	25'-9	4513	168	29'-11	5242	168	36'-2	6337	252	29'-0	7622	252	32'-4	8498	252	35'-8	9374	252	39'-0	10,251
5d2	ABUTMENT DIAPHRAGM, LONGITUDINAL - F.F		24	6'-2	155	24	6'-2	155	24	5'-11	149	24	5'-11	149	24	6'-1	153	24	6'-1	153	24	6'-1	153
5d3	ABUTMENT DIAPHRAGM, LONGITUDINAL - F.F		8	5'-3	44	8	5'-3	44	8	5'-0	42	8	5'-0	42	8	4'-10	41	8	4'-10	41	8	4'-10	41
5d5	ABUTMENT DIAPHRAGM, LONGITUDINAL - END		12	4'-7	58	12	4'-7	58	12	4'-7	58	12	4'-7	58	12	4'-7	58	12	4'-7	58	12	4'-7	58
5d6	ABUTMENT DIAPHRAGM LONGITUDINAL - B.F.		8	32'-9	274	8	32'-9	274	8	32'-9	274	8	32'-9	274	8	32'-9	274	8	32'-9	274	8	32'-9	274
5d7	PAVING NOTCH, LONGITUDINAL		4	32'-8	137	4	32'-8	137	4	32'-8	137	4	32'-8	137	4	32'-8	137	4	32'-8	137	4	32'-8	137
5d8	ABUTMENT DIAPH. WING EXT. LONGIT.		-	-	-	-	-	-	-	-	-	24	10'-9	269	24	10'-9	269	24	10'-9	269	24	10'-9	269
5d9	ABUTMENT DIAPH. WING EXT. LONGIT.		-	-	-	-	-	-	-	-	-	24	10'-8	267	24	10'-8	267	24	10'-8	267	24	10'-8	267
8f1	ABUTMENT FOOTING LONGITUDINAL		18	32'-11	1582	18	32'-11	1582	18	32'-11	1582	18	32'-11	1582	18	32'-11	1582	18	32'-11	1582	18	32'-11	1582
8f3	ABUTMENT EXTENSION LONGITUDINAL		-	-	-	-	-	-	-	-	-	16	10'-2	435	16	10'-2	435	16	10'-2	435	16	10'-2	435
8f4	ABUTMENT EXTENSION LONGITUDINAL		-	-	-	-	-	-	-	-	-	16	8'-8	371	16	8'-8	371	16	8'-8	371	16	8'-8	371
8g1	ABUTMENT VERTICAL		114	6'-7	2004	114	6'-7	2004	114	7'-2	2181	110	7'-8	2252	110	8'-5	2472	110	8'-5	2472	110	8'-5	2472
8g3	ABUTMENT DIAPHRAGM VERTICAL - B.F.		50	15'-3	2036	50	15'-3	2036	50	15'-3	2036	50	15'-9	2103	50	15'-9	2103	50	15'-9	2103	50	15'-9	2103
6g4	ABUT. DIAPH. WING EXT. VERT.		-	-	-	-	-	-	-	-	-	40	5'-8	341	40	6'-5	386	40	6'-5	386	40	6'-5	386
5h1	ABUTMENT TO WING ANCHOR		28	6'-8	196	28	6'-8	196	28	6'-8	196	36	6'-8	252	36	6'-8	252	36	6'-8	252	36	6'-8	252
5h2	ABUTMENT TO WING ANCHOR		56	4'-11	288	56	4'-11	288	56	4'-11	288	12	4'-11	62	12	4'-11	62	12	4'-11	62	12	4'-11	62
5h3	ABUTMENT TO WING ANCHOR		28	6'-9	198	28	6'-9	198	28	6'-9	198	36	6'-9	256	36	6'-9	256	36	6'-9	256	36	6'-9	256
5h4	ABUTMENT TO WING ANCHOR		-	-	-	-	-	-	-	-	-	12	4'-11	62	12	4'-11	62	12	4'-11	62	12	4'-11	62
5j1	SLAB TRANSV. TOP AT RAIL		130	6'-3	848	152	6'-3	991	186	6'-3	1213	220	6'-3	1435	246	6'-3	1604	272	6'-3	1774	300	6'-3	1956
5k1	PAVING NOTCH, TRANSVERSE		54	4'-11	277	54	4'-11	277	54	4'-11	277	54	4'-11	277	54	4'-11	277	54	4'-11	277	54	4'-11	277
5k2	PAVING NOTCH, TRANSVERSE		54	3'-5	193	54	3'-5	193	54	3'-5	193	54	3'-5	193	54	3'-5	193	54	3'-5	193	54	3'-5	193
5p1	ABUTMENT HOOPS		120	10'-6	1314	120	10'-6	1314	108	10'-6	1183	104	10'-6	1139	120	10'-6	1315	104	10'-6	1139	104	10'-6	1139
5p2	ABUTMENT EXTENSIONS HOOPS		-	-	-	-	-	-	-	-	-	24	10'-8	268	24	10'-8	268	24	10'-8	268	24	10'-8	268
6p3	ABUT. BOT. AT PILES		-	-	-	-	-	-	-	-	-	28	6'-8	281	32	6'-8	321	36	6'-8	361	36	6'-8	361
5r1	PAVING BLOCK LIFTING HOOPS		8	2'-10	24	8	2'-10	24	8	2'-10	24	8	2'-10	24	8	2'-10	24	8	2'-10	24	8	2'-10	24
5s1	WING, VERTICAL		64	5'-10	390	64	5'-10	390	64	6'-2	412	64	6'-11	462	64	7'-8	512	64	7'-8	512	64	7'-8	512
4t1	UNDER BEAMS AT ABUTMENTS		10	4'-8	32	10	4'-8	32	10	4'-8	32	10	4'-8	32	10	4'-10	33	10	4'-10	33	10	4'-10	33
#2	PILE SPIRAL - NO. 2 BAR		10	38'-6	64	10	38'-6	64	12	38'-6	77	18	38'-6	115	20	38'-6	128	22	38'-6	141	22	38'-6	141
	SPIRAL SPACER L $\frac{7}{8}$ x $\frac{1}{8}$ x $\frac{1}{8}$ x 0.70		20	1'-10	27	20	1'-10	27	24	1'-10	32	36	1'-10	48	40	1'-10	53	44	1'-10	58	44	1'-10	58
	REINFORCING STEEL - (LBS.)				21115			23072			26144			31707			34587			36798			39238
	SEE BARRIER RAIL DETAILS (LBS.)				4054			4410			4968			6002			6438			6875			7353
	SEE OPEN RAIL DETAILS (LBS.)				4179			4572			5277			6816			7478			7900			8322

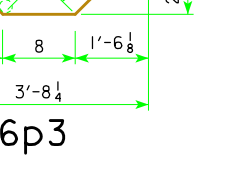
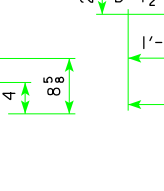
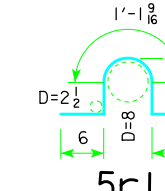
CONCRETE PLACEMENT QUANTITIES (SUPERSTRUCTURE PLUS INTEGRAL ABUTMENTS)										ESTIMATED QUANTITIES (SUPERSTRUCTURE PLUS INTEGRAL ABUTMENTS)										46'-8	55'-0	67'-6	80'-0	90'-0	100'-0	110'-0
SLAB, AND		WITH BARRIER RAIL	CU.YD.	69.1	76.3	91.0	111.1	126.9	136.1	145.2	NO. OF STEEL H-PILES FOR TWO ABUTMENTS (HP10X57)		NO.	10	10	12	18	20	22	22						
ABUT. DIAPHRAGM		WITH OPEN RAIL	CU.YD.	70.6	78.0	93.1	113.6	129.6	139.2	148.6	STRUCTURAL CONCRETE, (BRIDGE)		WITH BARRIER RAIL	CU.YD.	104.4	111.6	126.7	155.4	172	181.2	190.3					
PAVING BLOCKS			CU.YD.	2.3	2.3	2.3	2.3	2.3	2.3	2.3	WITH OPEN RAIL		CU.YD.	105.9	113.3	128.8	157.9	174.7	184.3	193.7						
ABUTMENT WINGS			CU.YD.	7.2	7.2	7.6	8.4	9.2	9.2	9.2	CONCRETE RAIL (BARRIER OR OPEN)		L.F.	127.3	144	169	214	234	254	274						
ABUTMENT FOOTINGS			CU.YD.	26.6	26.6	26.6	34.4	34.4	34.4	34.4	REINFORCING STEEL		WITH BARRIER RAIL	LBS.	24,969	27,282	30,912	37,500	40,816	43,464	46,382					
											WITH OPEN RAIL		LBS.	25,294	27,644	31,421	38,523	42,065	44,698	47,560						
											STRUCTURAL STEEL		WITH BARRIER RAIL	LBS.	1480	1471	1515	1555	1642	1642	1642					
											WITH OPEN RAIL		LBS.	1190	1180	1180	1180	1212	1212	1212	1212					

BENT BAR DETAILS







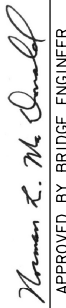


NOTE: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER

LATEST REVISION DATE

05-15

APPROVED BY BRIDGE ENGINEER



 Highway Division

STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE

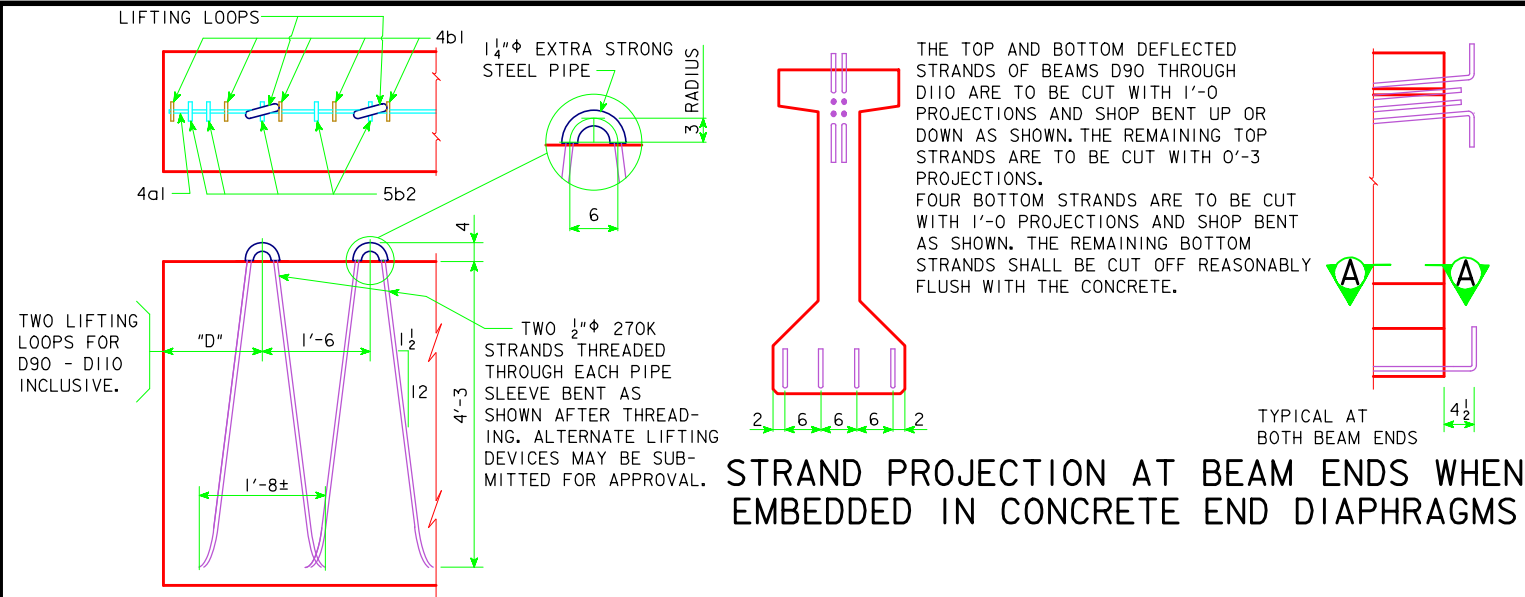
PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES

APRIL, 2012

DECK & ABUTMENT REINF.

H30SI-08-12

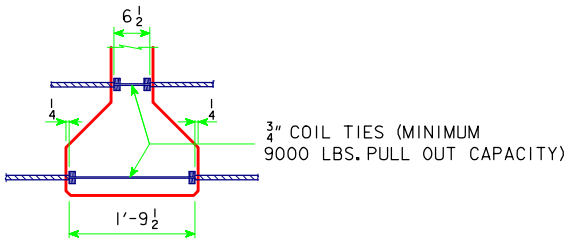
0° SKEW



LIFTING LOOP DETAIL

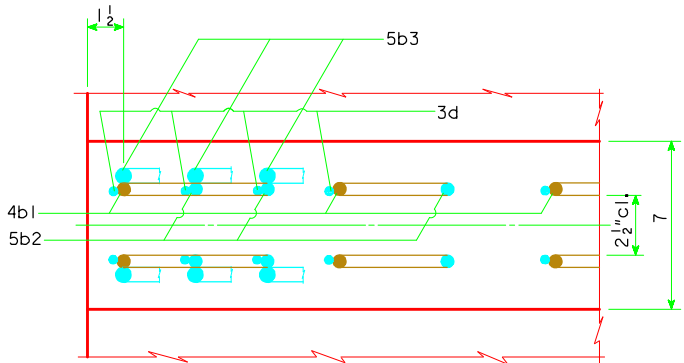
"D" = 1'-3 FOR D90
"D" = 3'-9 FOR D100
"D" = 8'-2 FOR D110

NUMBER AND EXACT LOCATION OF COIL TIES TO BE AS DETAILED ON SPECIFIC BRIDGE DESIGN.



COIL TIE DETAIL

STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

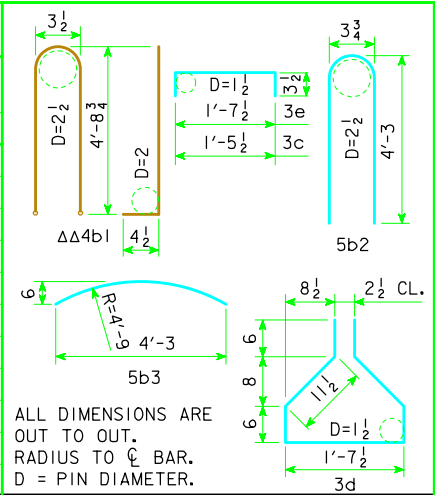


SECTION A-A SHOWING PLACEMENT OF STIRRUPS NEAR END OF BEAM

A SIZE
B NO.

ΔΔ 4b1 BARS TO BE EPOXY COATED

REINFORCING BAR LIST		D90		D100		D110	
BEAM	SPAN	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
4a1	2	18'-0	2	22'-0	2	26'-6	
a2	5/4	30'-10	6/4	35'-4	6/4	38'-4	
a3	7/2	34'-0	8/2	36'-0	8/2	40'-0	
ΔΔ 4b1	74	10'-4	81	10'-4	91	10'-4	
5b2	16	8'-8	16	8'-8	16	8'-8	
5b3	20	4'-4	20	4'-4	20	4'-4	
3c	74	2'-1	81	2'-1	91	2'-1	
3d	90	5'-7	97	5'-7	107	5'-7	
3e	30	2'-3	30	2'-3	30	2'-3	



D BEAM DATA

BEAM	SPAN LENGTH CL-CL BEARING	OVERALL BEAM LENGTH (L)	STRAND SIZE DIA. (inches)	NO. OF STRANDS		TOTAL INITIAL PRESTRESS KIPS ③	HOLD DOWN FORCE-KIPS	CAMBER (in.)			DEFLECTION (in.) Δ _D						WEIGHT (TONS)		CONCRETE (C.Y.)	REINFORCING STEEL - (lbs.)	
				STRAIGHT	DEFLECTED			AT RELEASE		AFTER LOSSES		IMMEDIATE ① (ELASTIC) Δ _i									TIME ② (PLASTIC) Δ _T
													STEEL DIAPH.		STEEL DIAPH.						
D90	90'-0	91'-0	0.60	16	6	936	25.8	1.40		2.46		0.93		0.23				30.4		15.0	1310
*D100	100'-0	101'-0	0.60	22	6	1192	22.3	2.08		3.67		1.41		0.35				33.6		16.6	1521
ΔD110	110'-0	111'-0	0.60	28	6	1446	21.2	2.83		4.83		1.69		0.42				36.9		18.2	1664

- ① DEFLECTIONS AT MID-SPAN DUE TO WEIGHT OF SLAB AND DIAPHRAGM.
- ② DEFLECTIONS DUE TO THE COMBINED EFFECT OF CREEP DUE TO WEIGHT OF SLAB AND SHRINKAGE OF SLAB.
- TOTAL BEAM DEFLECTIONS AT CL OF SPAN, Δ_D, DUE TO WEIGHT OF SLAB AND DIAPHRAGMS FOR DETAILING PURPOSE:
(A) Δ_D = Δ_i + Δ_T FOR SIMPLE SPAN.
- ③ TOTAL INITIAL PRESTRESS IS BASED ON 72.6% f'_s,
f'_s = 270 ksi AND A_s = 0.217 sq. in.

BEAM NOTES:

THESE BEAMS ARE DESIGNED FOR AASHTO HL-93 LIVE LOADS AS WITH AN ALLOWANCE OF 20 lb. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

ALL PPC BEAMS SHALL USE HIGH PERFORMANCE CONCRETE (HPC) IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. HOLD DOWN POINTS FOR DEFLECTED STRANDS MAY BE MOVED TOWARD ENDS OF BEAM A DISTANCE OF 0.05 L MAXIMUM AT PRODUCER'S OPTION.

ALL PRESTRESSING STRANDS SHALL CONFORM TO ASTM A416 GRADE 270 LOW RELAXATION STRANDS.

TOPS OF BEAMS ARE TO BE STRUCK OFF LEVEL AND FINISHED AS PER MATERIALS IM570.

BEARINGS SHALL BE AS DETAILED ON OTHER DESIGN SHEETS.

BEAMS SHALL BE AT LEAST 28 DAYS OLD BEFORE THE SLAB IS PLACED EXCEPT AS OTHERWISE APPROVED BY THE ENGINEER.

THE PORTIONS OF THE PRESTRESS BEAMS THAT ARE TO BE EMBEDDED IN THE ABUTMENT SHALL BE ROUGHENED FOR A DISTANCE OF 10" FROM THE BEAM END BY SANDBLASTING OR OTHER APPROVED METHODS TO PROVIDE SUITABLE BOND BETWEEN THE BEAM AND THE DIAPHRAGM IN ACCORDANCE WITH ARTICLE 2403.03, I, OF THE STANDARD SPECIFICATIONS.

ALL BEAMS ARE TO BE INCREASED IN LENGTH TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.

HOLES MUST BE CAST IN THE WEB TO ACCOMMODATE THE STEEL DIAPHRAGM ATTACHMENTS AS DETAILED ON THE STEEL DIAPHRAGM DETAIL SHEET.

0.6" DIAMETER STRANDS STRESSED TO NOT MORE THAN 5,000 LBS. EACH MAY BE USED IN LIEU OF THE Δ BARS WHICH RUN THE FULL LENGTH OF THE BEAM IN THE TOP FLANGE.

FOR TRANSPORTING, THE OVERHANG SHALL BE IN ACCORDANCE WITH ARTICLE 2407.03, K, OF THE STANDARD SPECIFICATIONS, EXCEPT THE OVERHANG MAY BE INCREASED TO A MAXIMUM OF 9 FEET FOR THE D90 BEAM, 12 FEET FOR THE D100 BEAM, AND 14 FEET FOR THE D110 BEAM.

THE CONTRACTOR SHALL ASSURE THE LATERAL STABILITY OF THE D100 AND D110 BEAMS DURING HANDLING, TRANSPORTING AND ERECTION BY PROVIDING TEMPORARY BRACING AS NEEDED.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH A.A.S.H.T.O. LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2007:
REINFORCING STEEL IN ACCORDANCE WITH SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 5, f'_c = 5000 psi (EXCEPT AS NOTED)

* MINIMUM CONCRETE f'_c (AT 28 DAYS) SHALL BE 7500 psi.
MINIMUM f'_c AT RELEASE SHALL BE 6000 psi.

Δ MINIMUM CONCRETE f'_c (AT 28 DAYS) SHALL BE 7500 psi.
MINIMUM f'_c AT RELEASE SHALL BE 6500 psi.

PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 5, f'_s = 270,000 psi.

SPECIFICATIONS:

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, CURRENT SERIES, WITH CURRENT APPLICABLE SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.
DESIGN: A.A.S.H.T.O. LRFD, SERIES OF 2007, WITH MINOR MODIFICATIONS.

LATEST REVISION DATE

Thomas L. McQuill
APPROVED BY BRIDGE ENGINEER

IOWA DOT Highway Division

STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE

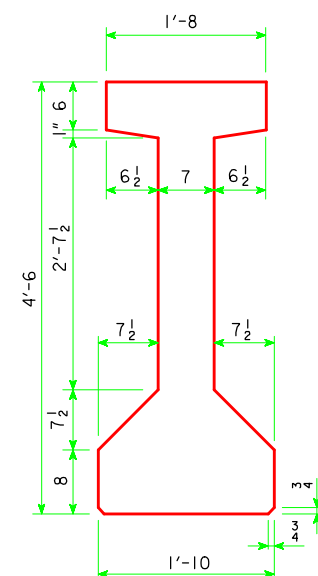
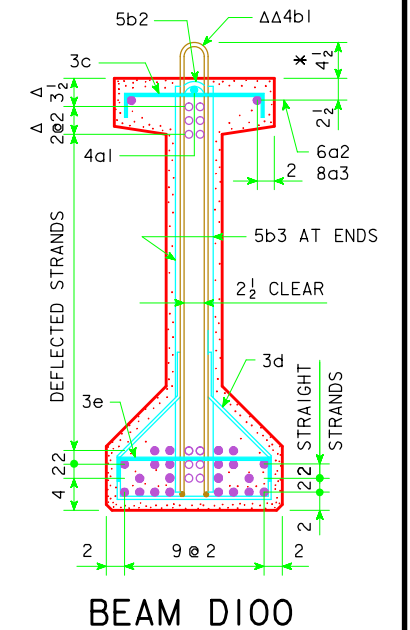
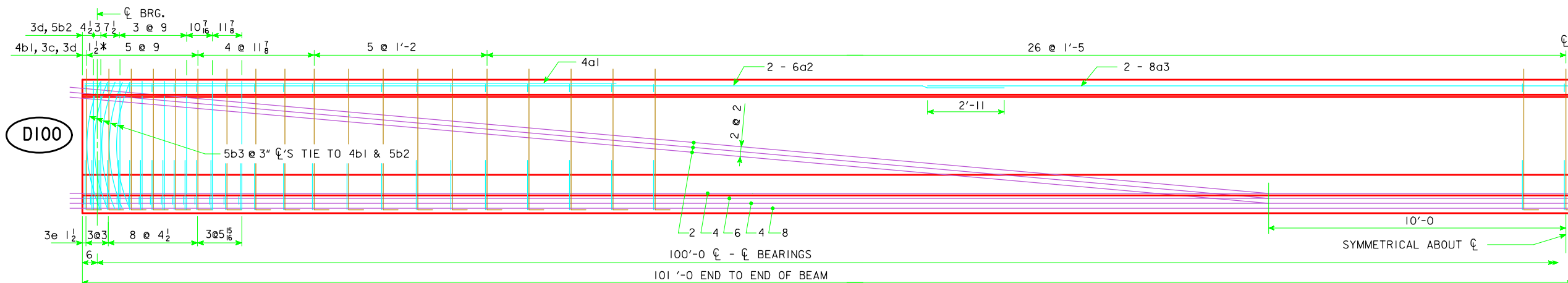
**PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES**

APRIL, 2012

D BEAM DETAILS

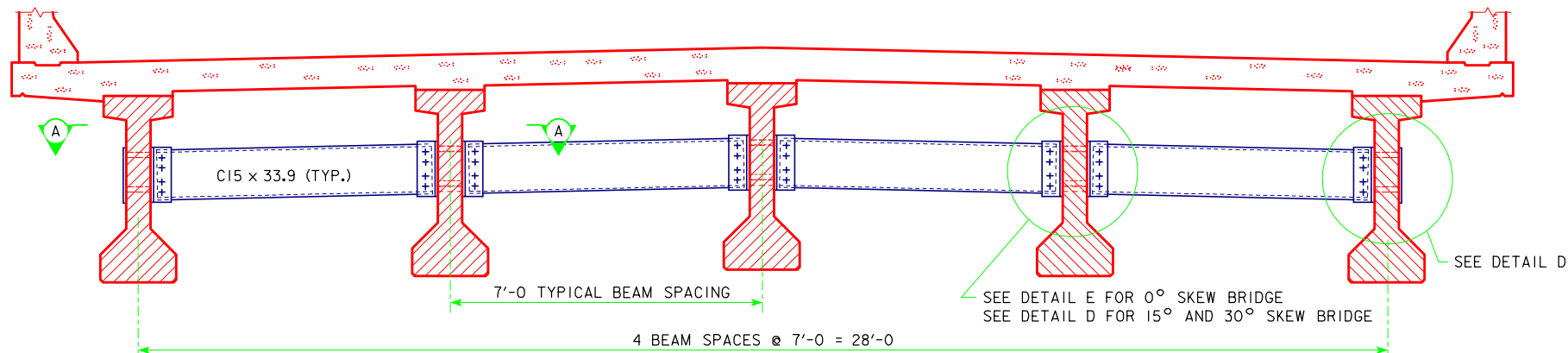
H30SI-27-12

Technical drawing of a beam cross-section showing reinforcement details. The drawing includes a central section with a width of 9'-0" and a total length of 91'-0". Reinforcement bars are labeled with numbers and quantities, such as 2 - 5a2, 2 - 7a3, 2 @ 2, 4 @ 2, 6 @ 2, and 6 @ 2. Dimensions are given in feet and inches, and the drawing is symmetrical about the centerline (CL).

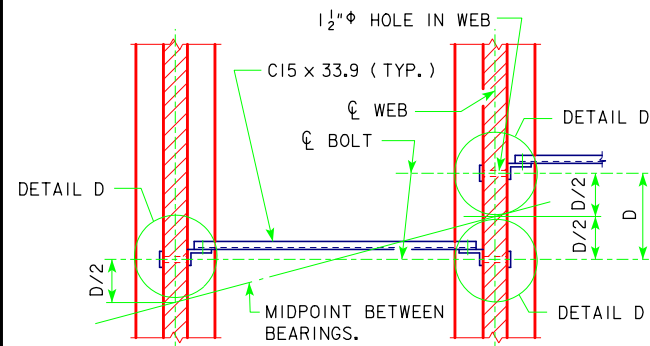

$$\begin{aligned} \text{AREA} &= 638.75 \text{ in}^2 \\ Y_b &= 24.37 \text{ in} \\ I &= 214,974 \text{ in}^4 \end{aligned}$$

- DEFLECTED STRANDS
- * KEEP
- △△ EPOXY COATED BARS
- △ DIMENSIONS AT END OF BEAM

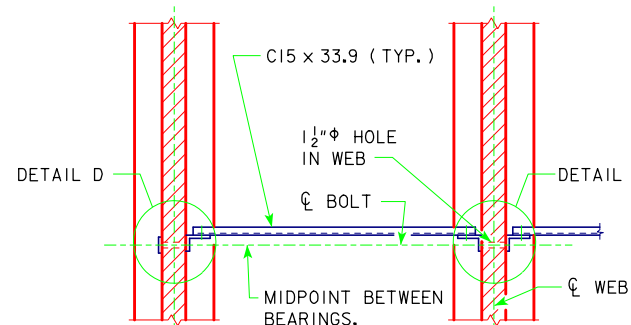
LATEST REVISION DATE		
APPROVED BY <i>Nathan L. McQuibban</i> BRIDGE ENGINEER	STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES APRIL, 2012	
	D90-D100 BEAM DETAILS	H30SI-28-12



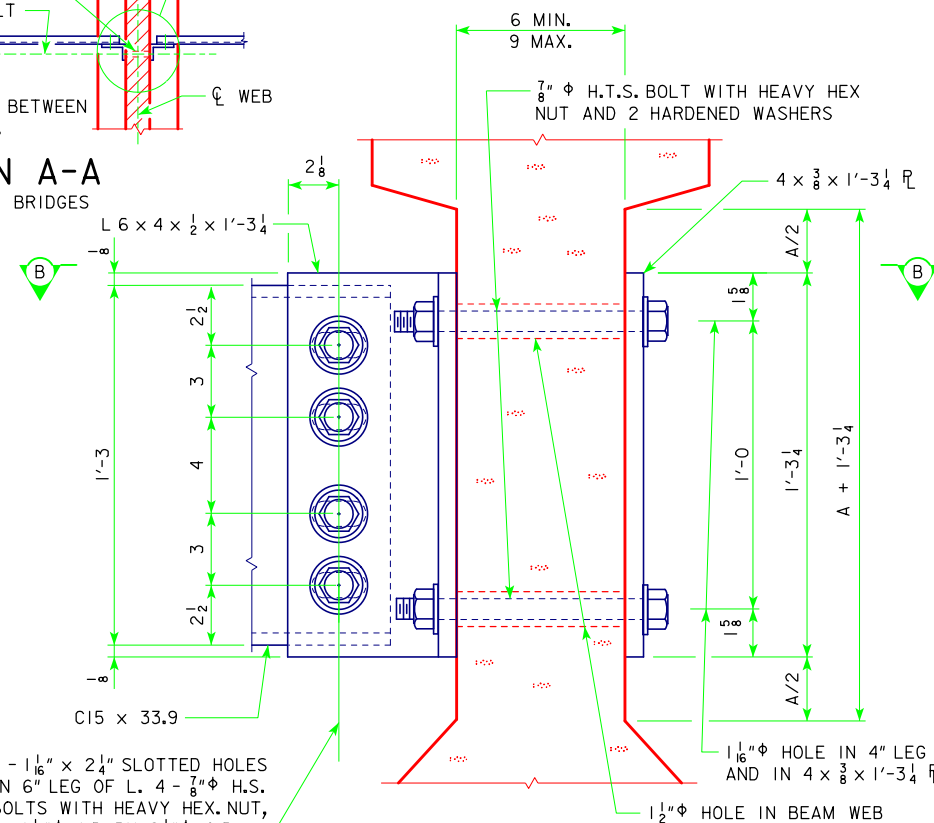
SECTION SHOWING INTERMEDIATE DIAPHRAGM



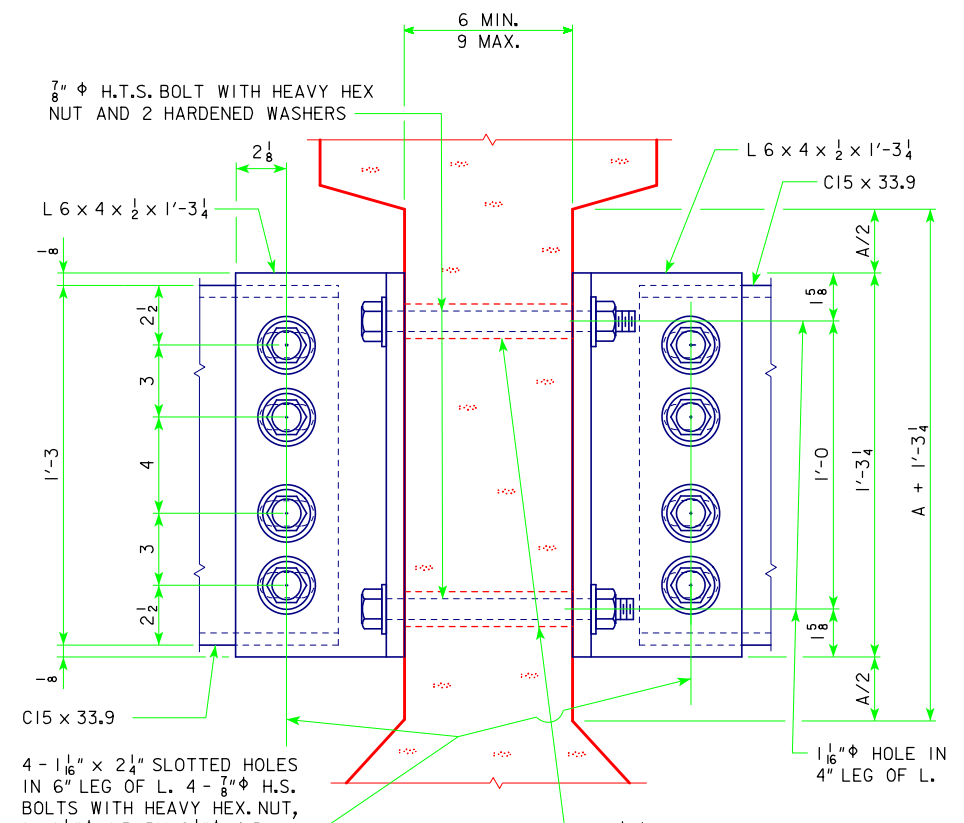
SECTION A-A
FOR 15° AND 30° SKEW BRIDGES



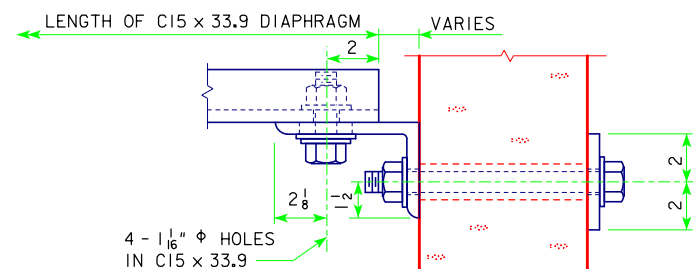
SECTION A-A
FOR 0° SKEW BRIDGES



DETAIL D



DETAIL E



SECTION B-B

BEAM SERIES	DIMENSIONS	
	A + 1'-3 1/4"	A/2
A	1'-4"	8 3/8"
B	1'-8"	2 3/8"
C	2'-1"	4 7/8"
D	2'-7 1/2"	8 1/8"

NOTES:

ALL DIAPHRAGM MATERIALS, INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED.

SHOP DRAWINGS OF THE STEEL DIAPHRAGMS SHOWING LAYOUT AND DETAILS OF THE DIAPHRAGMS SHALL BE SUBMITTED FOR APPROVAL.

ALL COSTS FOR FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGMS SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THE 1 1/2" ϕ HOLES FOR THE 7/8" ϕ H.S. BOLTS SHALL BE CAST INTO THE WEB. DRILLING IS NOT ALLOWED.

THE 7/8" ϕ H.S. BOLTS THROUGH THE WEB SHALL HAVE A THREAD LENGTH OF 3" MIN. AND 4" MAX. AND SHALL MEET THE REQUIREMENTS OF ASTM A449.

ALL BOLTS ARE TO BE TIGHTENED PRIOR TO PLACING BRIDGE FLOOR CONCRETE.

INTERMEDIATE DIAPHRAGM STRUCTURAL STEEL

ONE CONNECTION DETAIL "E"

2 - 7/8" ϕ x LENGTH H.S. BOLTS WITH NUTS AND WASHERS

WEB THICKNESS	LENGTH OF H.S. BOLTS	WEIGHT PER DETAIL "E"
6"	9"	4.30 LBS.
7"	10"	4.66 LBS.
9"	12"	5.34 LBS.

2 - L 6 x 4 x 1/2 x 1'-3 1/4 = 41.2 LBS.

ONE CONNECTION DETAIL "D"

2 - 7/8" ϕ x LENGTH H.T.S. BOLTS WITH NUTS AND WASHERS

WEB THICKNESS	LENGTH OF H.S. BOLTS	WEIGHT PER DETAIL "D"
6"	9"	4.30 LBS.
7"	10"	4.66 LBS.
9"	12"	5.34 LBS.

1 - BACKING PL 4 x 3/8 x 1'-3 1/4 = 6.5 LBS.

1 - L 6 x 4 x 1/2 x 1'-3 1/4 = 20.6 LBS.

ONE C15 x 33.9 DIAPHRAGM

WEB THICKNESS	7'-0"	
	* LENGTH	UNIT WEIGHT (LBS.)
6"	6'-2 5/8"	210.8
7"	6'-1 5/8"	208.0
9"	5'-11 5/8"	202.4

DIAPHRAGM CONNECTION BOLTS

8 - 7/8" ϕ x 0'-2 3/4 H.S. BOLTS WITH NUTS AND WASHERS, PER UNIT DIAPHRAGM

10.3 LBS.

* THE LENGTH OF THE C15 x 33.9 SHOWN IN THE TABLE IS BASED ON A VARIABLE CLEARANCE OF 1 1/16" TO 2 1/16" BETWEEN THE FACE OF BEAM WEB AND END OF C15 x 33.9.



STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE

PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES

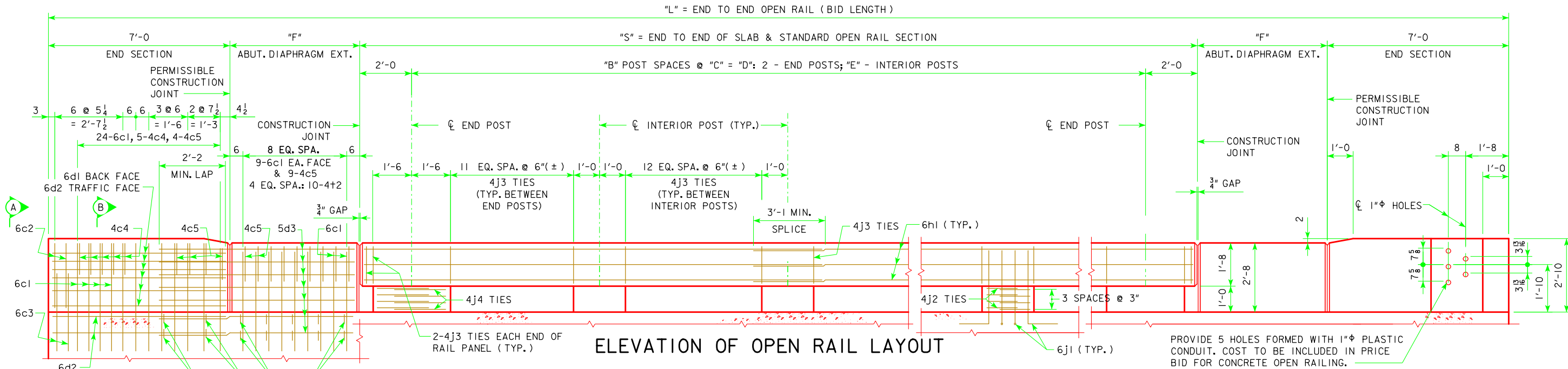
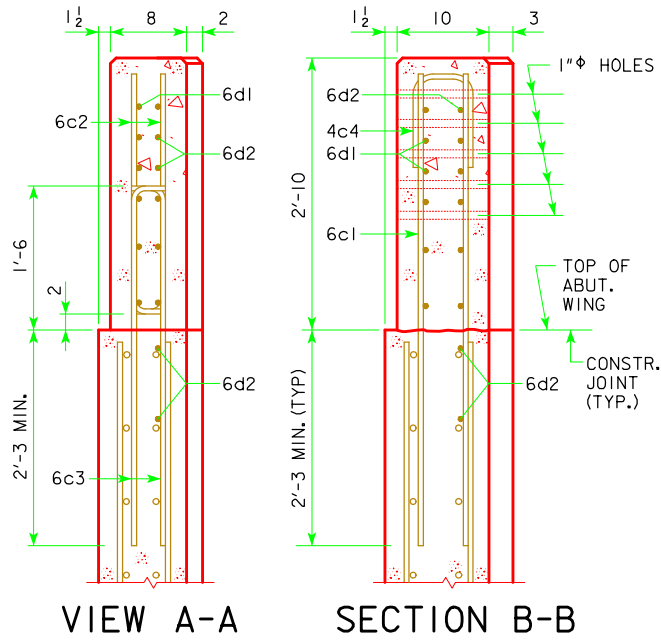
APRIL, 2012

INTERMEDIATE STEEL
DIAPHRAGMS

H30SI-30-12

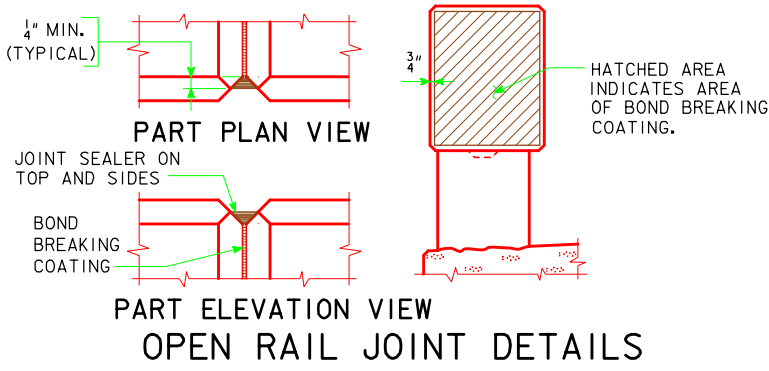
TABLE OF OPEN RAIL DIMENSIONS AND NUMBERS

CL-CL ABUT. BRG.		46'-8			55'-0			67'-6			80'-0			90'-0			100'-0			110'-0			CL-CL ABUT. BRG.	
SKEW		0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°	SKEW	
DIMENSION OR NUMBER	L (FT.-IN.)	63'-8	63'-9 1/4	64'-1 5/8	72'-0	72'-1 1/4	72'-5 5/8	84'-6	84'-7 1/4	84'-11 5/8	107'-0	107'-1 1/4	107'-5 5/8	117'-0	117'-1 1/4	117'-5 5/8	127'-0	127'-1 1/4	127'-5 5/8	137'-0	137'-1 1/4	137'-5 5/8	L (FT.-IN.)	DIMENSION OR NUMBER
	S (FT.-IN.)	49'-8	49'-9 1/4	50'-1 5/8	58'-0	58'-1 1/4	58'-5 5/8	70'-6	70'-7 1/4	70'-11 5/8	83'-0	83'-1 1/4	83'-5 5/8	93'-0	93'-1 1/4	93'-5 5/8	103'-0	103'-1 1/4	103'-5 5/8	113'-0	113'-1 1/4	113'-5 5/8	S (FT.-IN.)	
	B	6	6	6	7	7	7	9	9	9	10	10	10	12	12	12	13	13	13	14	14	14	B	
	C (FT.-IN.)	7'-7 3/8	7'-7 1/2	7'-8 1/4	7'-8 5/8	7'-8 3/4	7'-9 3/8	7'-4 5/8	7'-4 3/4	7'-5 1/4	7'-10 3/4	7'-10 7/8	7'-11 3/8	7'-5	7'-5 1/8	7'-5 1/2	7'-7 3/8	7'-7 1/2	7'-7 3/4	7'-9 3/8	7'-9 1/2	7'-9 7/8	C (FT.-IN.)	
	D (FT.-IN.)	45'-8	45'-9 1/4	46'-1 5/8	54'-0	54'-1 1/4	54'-5 5/8	66'-6	66'-7 1/4	66'-11 5/8	79'-0	79'-1 1/4	79'-5 5/8	89'-0	89'-1 1/4	89'-5 5/8	99'-0	99'-1 1/4	99'-5 5/8	109'-0	109'-1 1/4	109'-5 5/8	D (FT.-IN.)	
	E	5	5	5	6	6	6	8	8	8	9	9	9	11	11	11	12	12	12	13	13	13	E	
	F (FT.-IN.)	0	0	0	0	0	0	0	0	0	5'-0	5'-0	5'-0	5'-0	5'-0	5'-0	5'-0	5'-0	5'-0	5'-0	5'-0	5'-0	F (FT.-IN.)	



OPEN RAIL NOTES:

- CONSTRUCTION JOINT BETWEEN TOP OF WING AND RAIL IS ROUGHENED CONCRETE.
- MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
- COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
- ALL OPEN RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.
- THE CAST-IN-PLACE OPEN RAIL SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED.
- TOP OF THE OPEN RAIL IS TO BE PARALLEL TO THEORETICAL CL GRADE.



LATEST REVISION DATE

APPROVED BY BRIDGE ENGINEER

THOMAS L. Mc DONALD

IOWADOT Highway Division

STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE

PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

APRIL, 2012

OPEN RAIL, TL-4 DETAILS

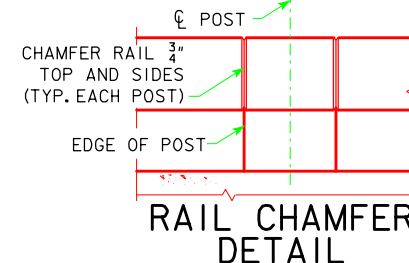
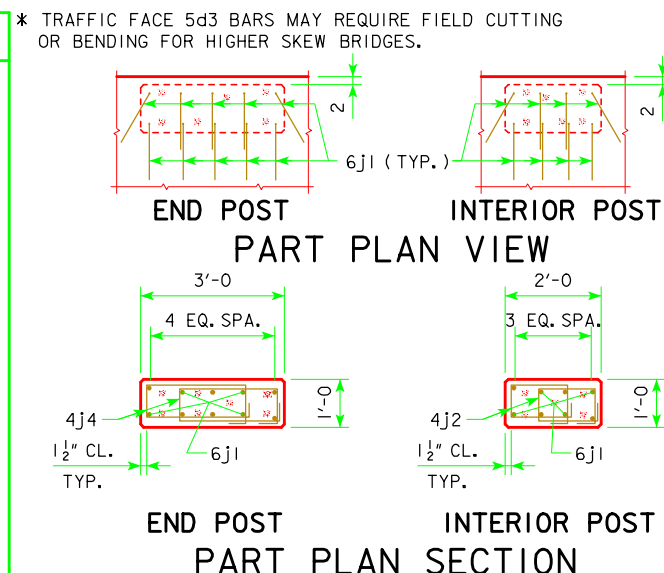
H30SI-34-12

SHEET 1 OF 2

(NOTE: THESE REINFORCING BARS TO BE USED ON ALL SKEWS)

NOTE: ALL BARRIER RAIL REINFORCEMENT TO BE EPOXY COATED IF EPOXY COATING OPTION IS USED.

BENT BAR DETAILS



CONCRETE PLACEMENT SUMMARY - C.Y.

OPEN CONCRETE RAIL, TL-4 QUANTITIES - L.F.

LATEST REVISION DATE

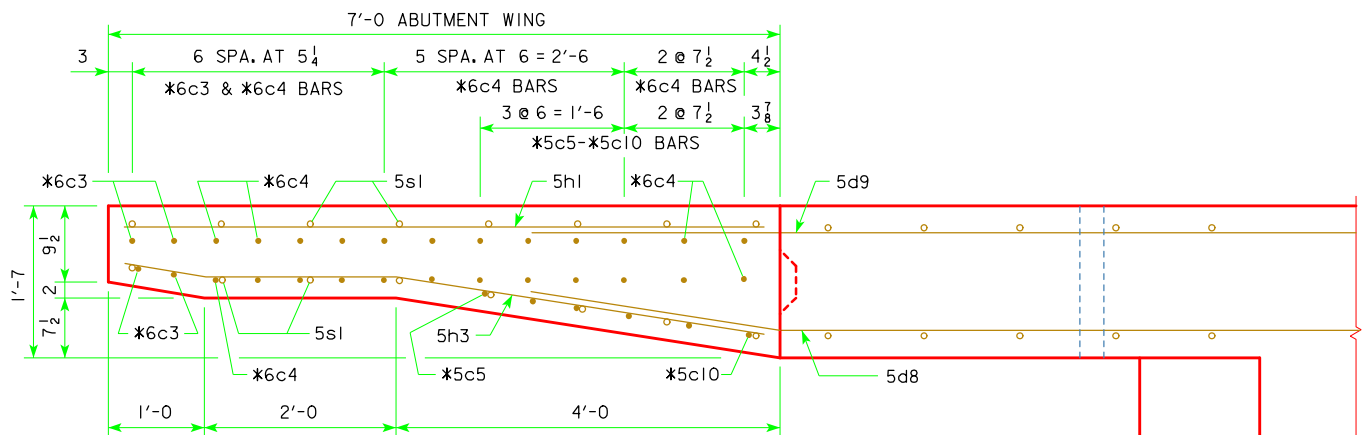
Mormen L. Mc Donald
APPROVED BY BRIDGE ENGINEER

APPROVED BY BRIDGE ENGINEER

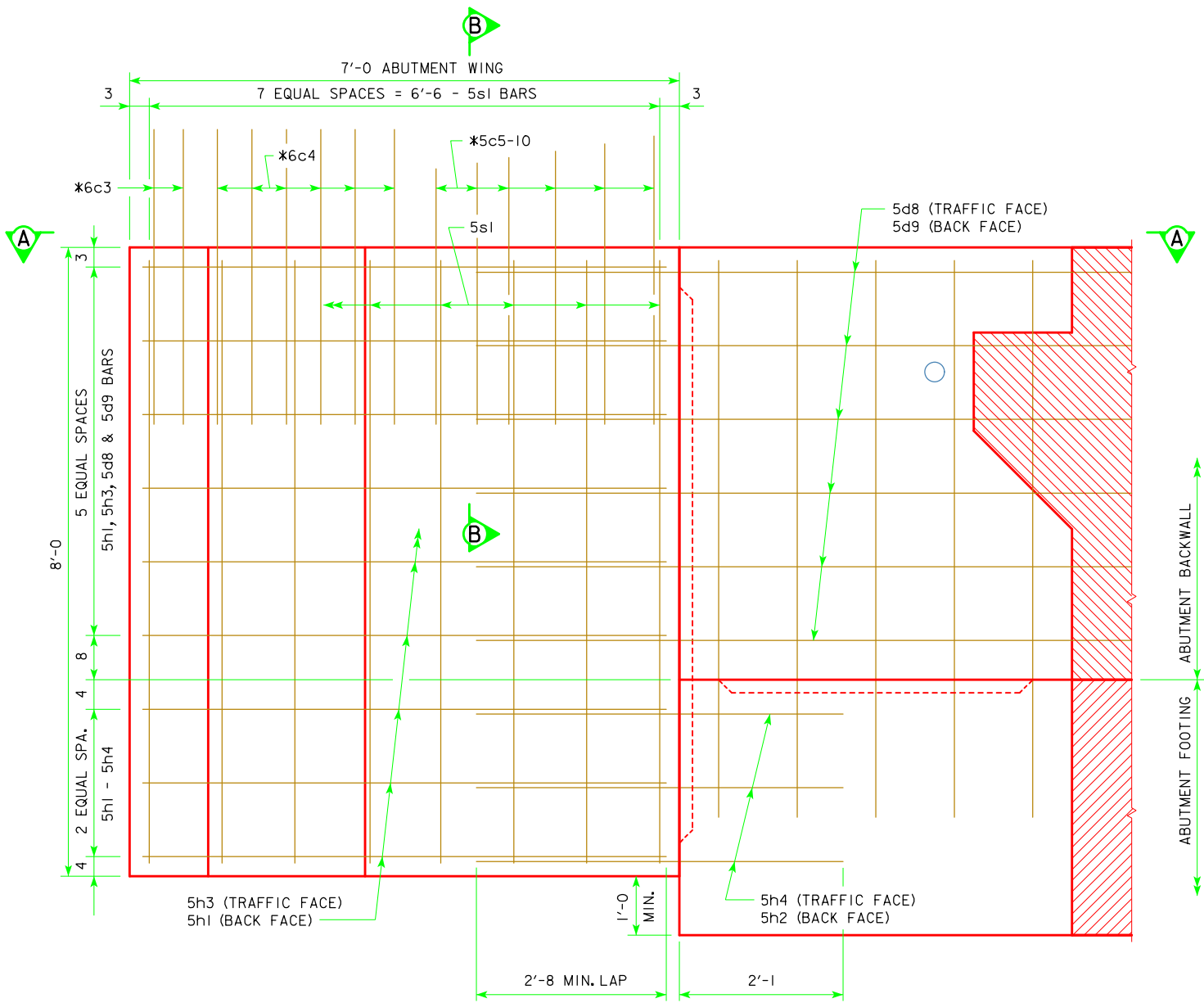


APRIL, 2012

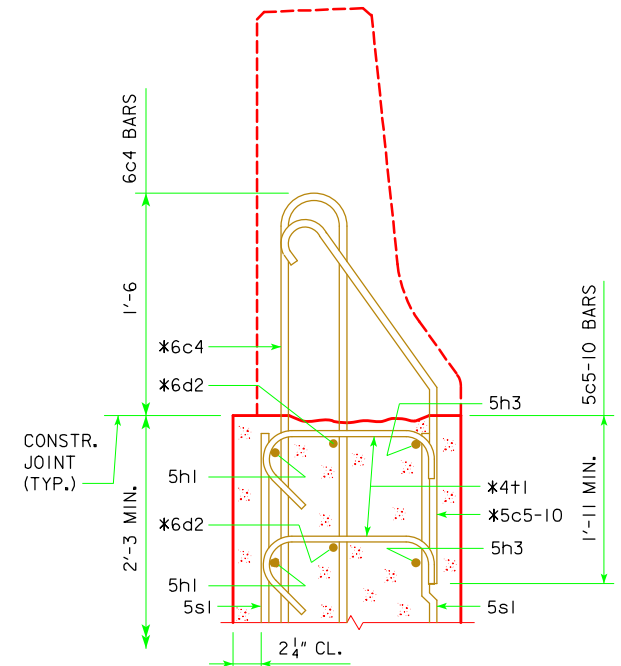
OPEN RAIL, TL-4 DETAILS	H30SI-35-12
SHEET 2 OF 2	



VIEW A-A



ABUTMENT WING - ELEVATION VIEW

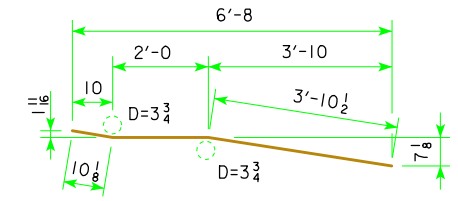


SECTION B-B

* BARRIER RAIL END SECTION BARS TO BE PLACED WITH ABUTMENT WING.
SEE END SECTION DETAILS IN THESE PLANS FOR DETAILS OF BARRIER RAIL END SECTION. REINFORCING BARS 6c3, 6c4, 5c5-10, 6d2 & 4+1 ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES.

REINFORCING BAR LIST - ONE ABUT. WING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5h1	HORIZONTAL BACK FACE		9	6'-8	63
5h3	HORIZONTAL TRAFFIC FACE		9	6'-9	63
5s1	VERTICAL BOTH FACES		16	7'-8	128
TOTAL (LBS.)					254



5h3

NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

BENT BAR DETAILS

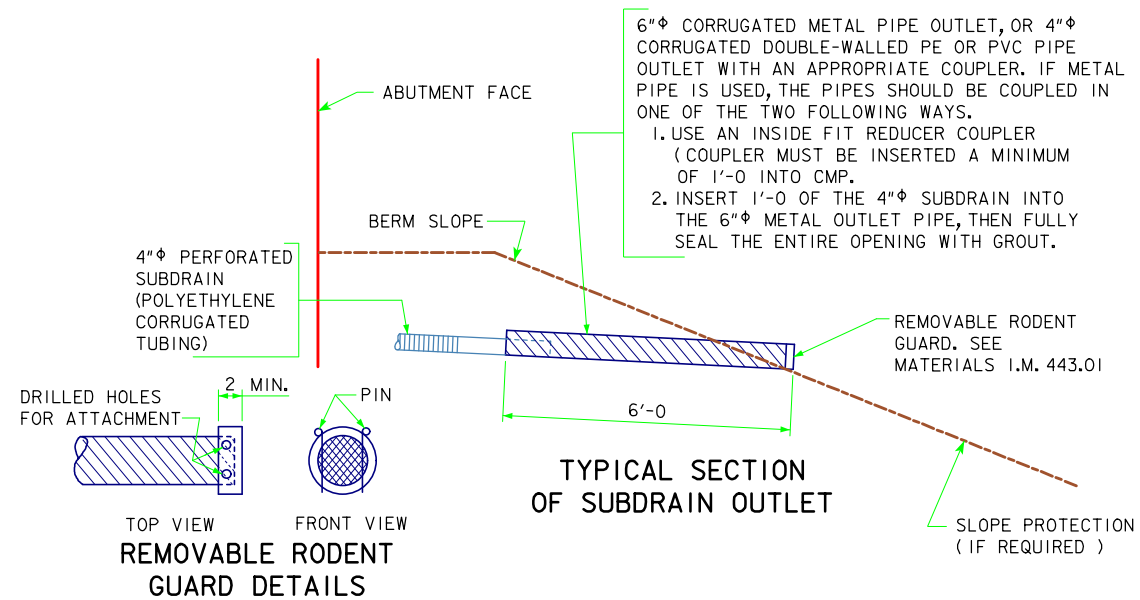
CONCRETE PLACEMENT SUMMARY

CONCRETE	TOTAL
ONE ABUTMENT WING	2.3
TOTAL (CU. YDS.)	2.3

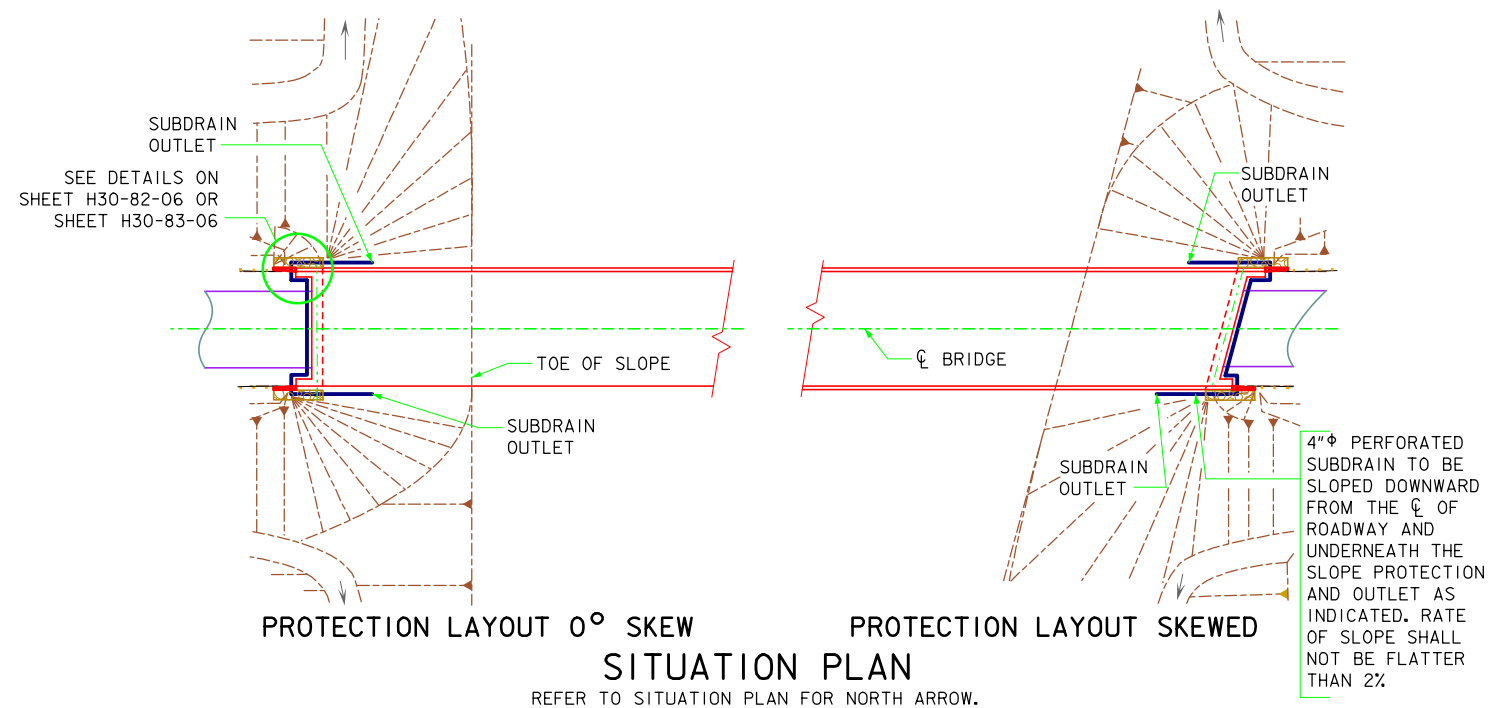
NOTE:

REINFORCING STEEL QUANTITY AND CONCRETE QUANTITY ARE TO BE ADDED TO THE SUPERSTRUCTURE QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER	 STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES APRIL, 2012	
		WING DETAILS	
		H30SI-39-12	



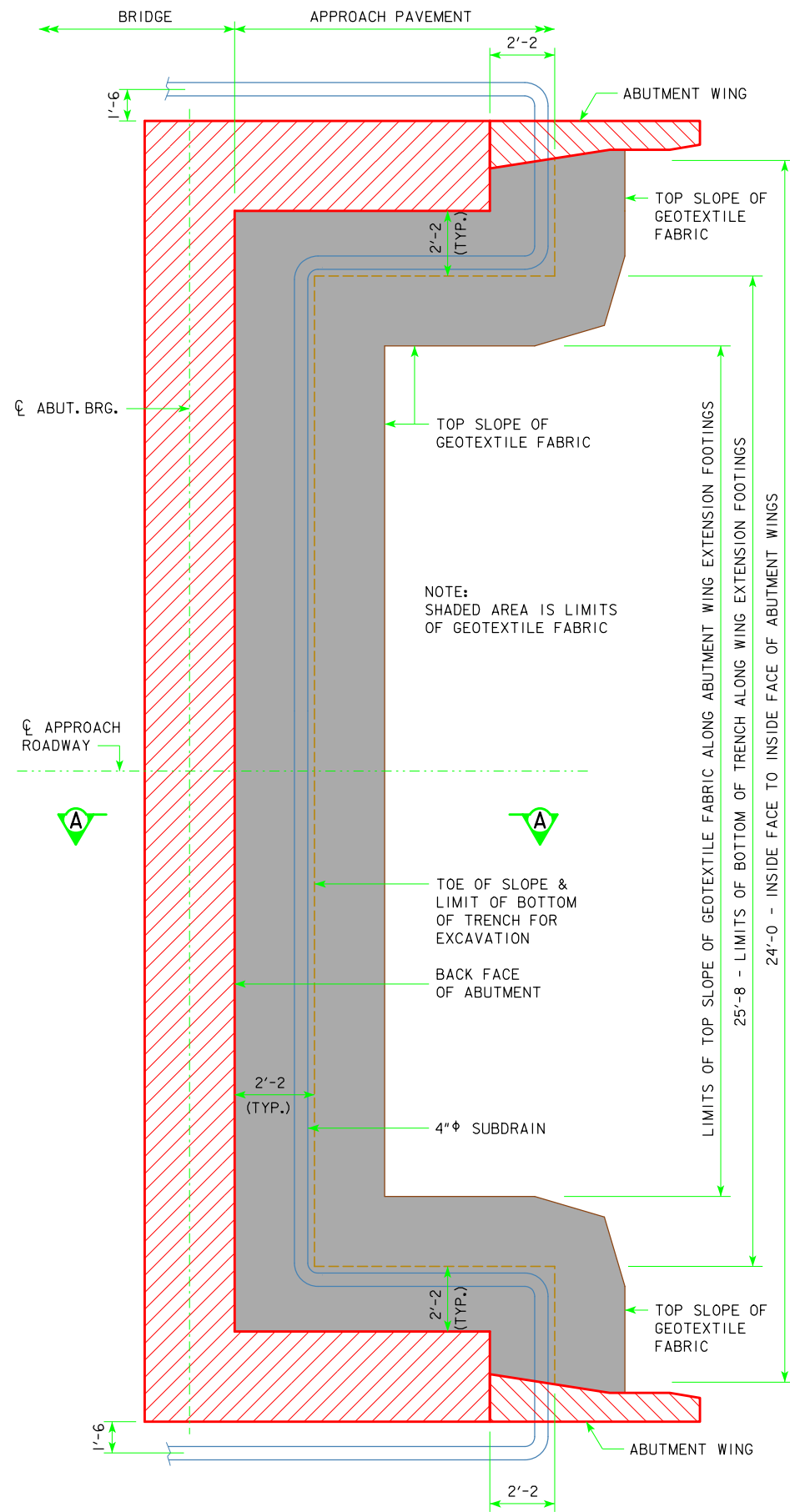
OUTLET DETAILS



NOTE:
SEE ABUTMENT BACKFILL DETAILS SHEET FOR DETAILS NOT SHOWN ON THIS SHEET WHICH ARE PERTINENT TO THIS STRUCTURE.

LATEST REVISION DATE	<i>Harmon L. McQuinn</i> APPROVED BY BRIDGE ENGINEER		
		STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES APRIL, 2012	
		SUBDRAIN DETAILS	H30SI-40-12

REVISED 09-14 - TECHNICAL DATA INFORMATION TABLE WAS REMOVED AND IS LOCATED IN THE STANDARD SPECIFICATIONS.



ABUTMENT PLAN WITH WING EXTENSIONS

ABUTMENT BACKFILL PROCESS:

THE BASE OF THE EXCAVATION SUBGRADE BEHIND THE ABUTMENT IS TO BE GRADED WITH A 4% SLOPE AWAY FROM THE ABUTMENT FOOTING AND A 2% CROSS SLOPE IN THE DIRECTION OF THE SUBDRAIN OUTLET. THIS EXCAVATION SHAPING IS TO BE DONE PRIOR TO BEGINNING INSTALLATION OF THE GEOTEXTILE AND BACKFILL MATERIAL.

AFTER THE SUBGRADE HAS BEEN SHAPED THE GEOTEXTILE FABRIC SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN. THE FABRIC IS INTENDED TO BE INSTALLED IN THE BASE OF THE EXCAVATION AND EXTENDED VERTICALLY UP THE ABUTMENT BACKWALL, ABUTMENT WING WALLS, AND EXCAVATION FACE TO A HEIGHT THAT WILL BE APPROXIMATELY 1 TO 2 FOOT HIGHER THAN THE HEIGHT OF THE POROUS BACKFILL PLACEMENT AS SHOWN IN THE "GRANULAR BACKFILL DETAILS" ON THIS SHEET. THE STRIPS OF THE FABRIC PLACED SHALL OVERLAP APPROXIMATELY 1 FOOT AND SHALL BE PINNED IN PLACE. THE FABRIC SHALL BE ATTACHED TO THE ABUTMENT BY USING LATH FOLDED IN THE FABRIC AND SECURED TO THE CONCRETE WITH SHALLOW CONCRETE NAILS. THE FABRIC PLACED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

WHEN THE FABRIC IS IN PLACE, THE SUBDRAIN SHALL BE INSTALLED DIRECTLY ON THE FABRIC AT THE TOE OF THE REAR EXCAVATION SLOPE. A SLOT WILL NEED TO BE CUT IN THE FABRIC AT THE POINT WHERE THE SUBDRAIN EXITS THE FABRIC NEAR THE END OF THE ABUTMENT WING WALL.

POROUS BACKFILL IS THEN PLACED AND LEVELED, NO COMPACTION IS REQUIRED.

THE REMAINING WORK INVOLVES BACKFILLING WITH GRANULAR BACKFILL, SURFACE FLOODING, AND VIBRATORY COMPACTION. THE GRANULAR BACKFILL MATERIAL SHALL HAVE 4% OR LESS PASSING THE #200 SIEVE (I.E. WASHED CONCRETE SAND). THE GRANULAR BACKFILL SHALL BE PLACED IN INDIVIDUAL LIFTS, SURFACE FLOODED, AND COMPACTED WITH VIBRATORY COMPACTION TO ENSURE FULL CONSOLIDATION. LIMIT THE LOOSE LIFTS TO NO MORE THAN 2 FEET OF THICKNESS.

START SURFACE FLOODING FOR EACH SAND LIFT AT THE HIGH POINT OF THE SUBDRAIN AND PROGRESS TO THE LOW POINT WHERE THE SUBDRAIN EXITS THE FABRIC. TO ENSURE UNIFORM SURFACE FLOODING, WATER RUNNING FULL IN A 2-INCH DIAMETER HOSE SHOULD BE SPRAYED IN SUCCESSIVE 6-FOOT TO 8-FOOT INCREMENTS FOR 5 MINUTES WITHIN EACH INCREMENT

LIFT PLACEMENT, FLOODING, AND COMPACTION SHALL PROGRESS UNTIL THE REQUIRED FULL THICKNESS OF THE ABUTMENT BACKFILL HAS BEEN COMPLETED.

WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, GRANULAR BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS WILL NOT BE MEASURED SEPARATELY FOR PAYMENT.

THE COST OF WATER REQUIRED FOR FLOODING, SUBDRAINS, POROUS BACKFILL, GRANULAR BACKFILL, AND GEOTEXTILE FABRIC FURNISHED AT THE BRIDGE ABUTMENTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR STRUCTURAL CONCRETE.

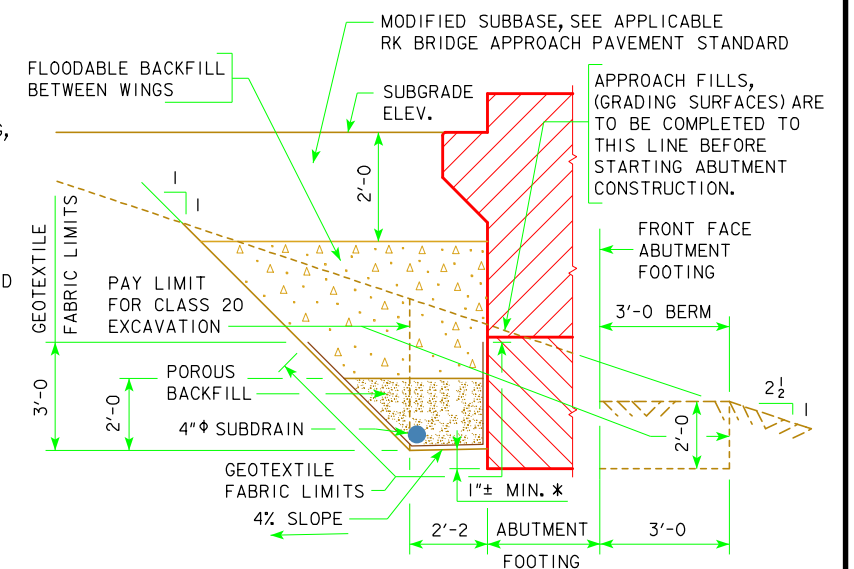
NOTE:
SEE SUBDRAIN DETAILS SHEET FOR DETAILS NOT SHOWN ON THIS SHEET WHICH ARE PERTINENT TO THIS STRUCTURE.

NOTE:

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM ϕ APPROACH ROADWAY WHEN OUTLETTING BOTH SIDES OF THE ABUTMENT.

SUBDRAIN SHALL SLOPE DOWNWARD 2% FROM HIGH END WHEN OUTLETTING AT ONE END OF THE ABUTMENT.

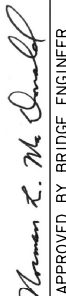
THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 6 OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.



SECTION A-A BACKFILL DETAILS

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED TO FACE OF ABUTMENT FOOTING AND WINGS.

* DIMENSION VARIES DUE TO 2% SUBDRAIN SLOPE.

09-14 LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER	 STANDARD DESIGN - 30' ROADWAY, SINGLE SPAN BRIDGE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES APRIL, 2012
		ABUTMENT BACKFILL DETAILS H30SI-45-12 AT BACKFACE OF ABUTMENTS