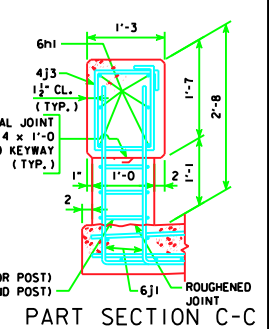
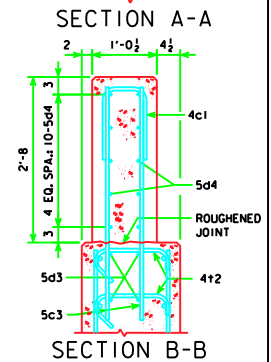
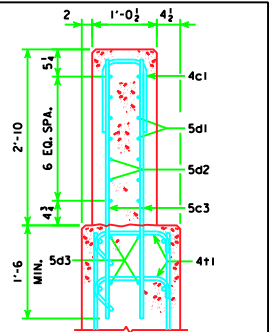
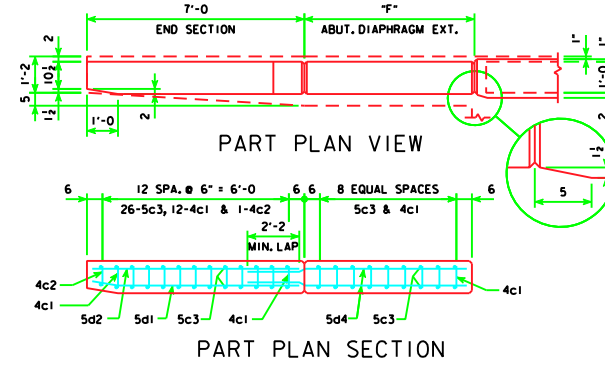
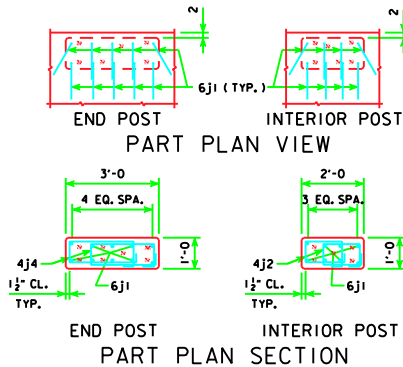
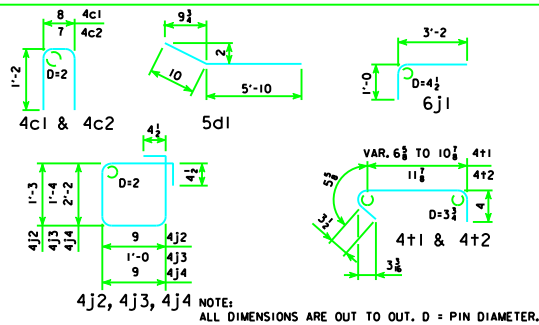


REINFORCING STEEL-TWO OPEN RAILS

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

BRIDGE LENGTH			138'-10			151'-4			163'-10			176'-4			188'-10			201'-4			213'-10			226'-4			243'-0		
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT
4c1	VERTICAL HOOP, END SECTION & ABUT. DIAPHR.		48	3'-0	96	48	3'-0	96	48	3'-0	96	48	3'-0	96	48	3'-0	96	84	3'-0	168	84	3'-0	168	84	3'-0	168	84	3'-0	168
4c2	VERTICAL HOOP AT END OF END SECTION		4	2'-11	8	4	2'-11	8	4	2'-11	8	4	2'-11	8	4	2'-11	8	4	2'-11	8	4	2'-11	8	4	2'-11	8	4	2'-11	8
5c3	VERTICAL END SECTION & ABUT. DIAPHRAGM		104	4'-2	452	104	4'-2	452	104	4'-2	452	104	4'-2	452	104	4'-2	452	176	4'-2	765	176	4'-2	765	176	4'-2	765	176	4'-2	765
5d1	LONGITUDINAL, END SECTION-FRONT FACE		28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195
5d2	LONGITUDINAL, END SECTION-BACK FACE		28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195	28	6'-8	195
5d3	LONGITUDINAL, WING FOOTING-BOTH FACES		16	6'-8	111	16	6'-8	111	16	6'-8	111	16	6'-8	111	16	6'-8	111	16	11'-2	186	16	11'-2	186	16	11'-2	186	16	11'-2	186
5d4	LONGITUDINAL, ABUT. DIAPHRAGM-BOTH FACES		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40	7'-2	299	40	7'-2	299	40	7'-2	299	40	7'-2	299
6h1	LONGITUDINAL, OPEN RAIL		24	40'-0	1,442	36	40'-0	2,163	36	40'-0	2,163	36	40'-0	2,163	48	40'-0	2,884	48	40'-0	2,884	48	40'-0	2,884	60	40'-0	3,605	60	40'-0	3,605
6h2	LONGITUDINAL, OPEN RAIL, ENDS		24	36'-0	1,298	24	23'-10	859	24	30'-1	1,084	24	36'-4	1,310	24	24'-1	868	24	30'-4	1,093	24	36'-7	1,319	24	24'-5	880	24	32'-9	1,181
6j1	VERTICAL DOWELS, OPEN RAIL		312	4'-2	1,953	328	4'-2	2,053	360	4'-2	2,253	392	4'-2	2,453	408	4'-2	2,553	440	4'-2	2,754	456	4'-2	2,854	488	4'-2	3,054	520	4'-2	3,254
4j2	HOOP, INTERIOR POST		204	4'-9	647	216	4'-9	685	240	4'-9	762	264	4'-9	838	276	4'-9	876	300	4'-9	952	312	4'-9	990	336	4'-9	1,066	360	4'-9	1,142
4j3	HOOP, OPEN RAIL		472	5'-5	1,708	498	5'-5	1,802	550	5'-5	1,990	602	5'-5	2,178	628	5'-5	2,272	680	5'-5	2,460	706	5'-5	2,555	758	5'-5	2,743	810	5'-5	2,931
4j4	HOOP, END POST		24	6'-7	106	24	6'-7	106	24	6'-7	106	24	6'-7	106	24	6'-7	106	24	6'-7	106	24	6'-7	106	24	6'-7	106	24	6'-7	106
4t1	WING FOOTING TIE BARS		40	VARIES	49	40	VARIES	49	40	VARIES	49	40	VARIES	49	40	VARIES	49	40	VARIES	49	40	VARIES	49	40	VARIES	49	40	VARIES	49
4t2	WING FOOTING TIE BARS		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40	2'-1	56	40	2'-1	56	40	2'-1	56	40	2'-1	56
TOTAL LBS. (INCLUDE WITH SUPERSTRUCTURE REINFORCING)			8,260			8,774			9,464			10,154			10,665			12,170			12,629			13,375			14,140		

BENT BAR DETAILS



CONCRETE PLACEMENT SUMMARY - C.Y.

BRIDGE LENGTH	138'-10	151'-4	163'-10	176'-4	188'-10	201'-4	213'-10	226'-4	243'-0
OPEN RAIL SECTION	2 @ 0.073 CU. YDS. PER FT.	20.9	22.7	24.5	26.4	28.2	30.0	31.8	36.1
OPEN RAIL-END SECTION	4 @ 0.755 CU. YDS.	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
OPEN RAIL-ABUT. DIAPHR. SECTION	4 @ 0.103 CU. YDS. PER FT.	—	—	—	—	1.8	1.8	1.8	1.8
OPEN RAIL-END POSTS	4 @ 0.12 CU. YDS.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
OPEN RAIL-INTERIOR POSTS	2 x "E" @ 0.08 CU. YDS.	2.7	2.9	3.2	3.5	3.7	4.0	4.2	4.8
TOTAL (C.Y.)	27.1	29.1	31.2	33.4	35.4	39.3	41.3	43.5	46.2

CONCRETE QUANTITIES SHOWN ARE BASED ON 45° SKEW. FOR "E" SEE SHEET H30-39-06.

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

BRIDGE LENGTH	138'-10	151'-4	163'-10	176'-4	188'-10	201'-4	213'-10	226'-4	243'-0
OPEN CONCRETE RAILING, TL-4 0° SKEW	311.7	336.7	361.7	386.7	411.7	456.7	481.7	506.7	540.0
OPEN CONCRETE RAILING, TL-4 15° SKEW	311.9	336.9	361.9	386.9	411.9	456.7	481.7	506.7	540.0
OPEN CONCRETE RAILING, TL-4 30° SKEW	312.6	337.6	362.6	387.6	412.6	456.7	481.7	506.7	540.0
OPEN CONCRETE RAILING, TL-4 45° SKEW	314.2	339.2	364.2	389.2	414.2	456.7	481.7	506.7	540.0

LATEST REVISION DATE

APPROVED BY BRIDGE ENGINEER

Iowa Department of Transportation
Highway Division

STANDARD DESIGN - 24' ROADWAY, THREE SPAN BRIDGE
PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

HL93 SUPERSTRUCTURE DECEMBER, 2006 HS25 SUBSTRUCTURE

OPEN RAIL, TL-4 DETAILS
SHEET 2 OF 2

H24-40-06