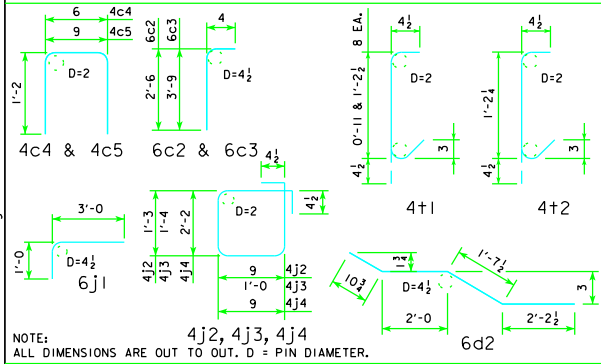


REINFORCING STEEL-TWO OPEN RAILS

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

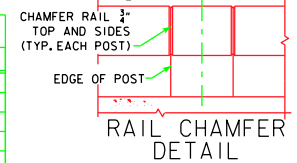
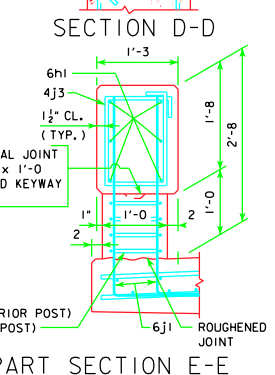
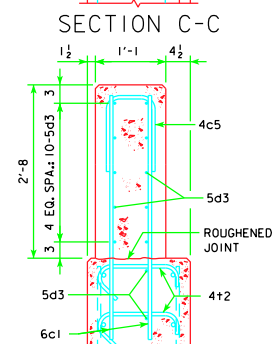
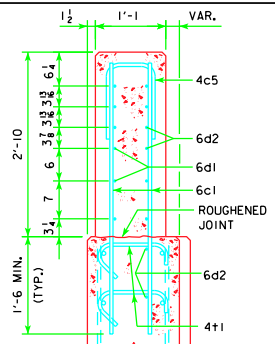
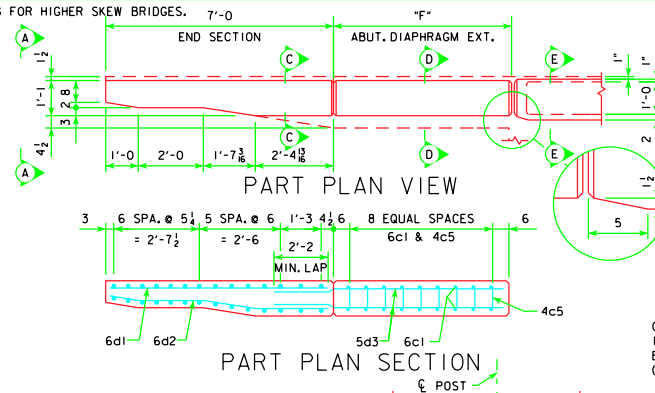
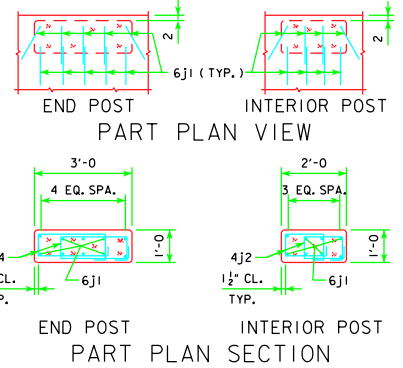
BRIDGE LENGTH			138'-10		151'-4		163'-10		176'-4		188'-10		201'-4		213'-10		226'-4		243'-0					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT				
6c1	VERTICAL, END SECTION & ABUT. DIAPH. EXT.		96	4'-11	709	96	4'-11	709	96	4'-11	709	96	4'-11	709	168	4'-11	1,241	168	4'-11	1,241	168	4'-11	1,241	
6c2	VERTICAL, END SECTION		16	2'-10	68	16	2'-10	68	16	2'-10	68	16	2'-10	68	16	2'-10	68	16	2'-10	68	16	2'-10	68	
6c3	VERTICAL, END SECTION		16	4'-1	98	16	4'-1	98	16	4'-1	98	16	4'-1	98	16	4'-1	98	16	4'-1	98	16	4'-1	98	
4c4	VERTICAL HOOPS, END SECTION		20	2'-10	38	20	2'-10	38	20	2'-10	38	20	2'-10	38	20	2'-10	38	20	2'-10	38	20	2'-10	38	
4c5	VERT. HOOPS, END SEC. & ABUT. DIAPH. EXT.		16	3'-1	33	16	3'-1	33	16	3'-1	33	16	3'-1	33	52	3'-1	107	52	3'-1	107	52	3'-1	107	
6d1	HORIZONTAL, END SECTION-BACK FACE		24	6'-8	240	24	6'-8	240	24	6'-8	240	24	6'-8	240	24	6'-8	240	24	6'-8	240	24	6'-8	240	
6d2	HORIZONTAL, END SECTION-TRAFFIC FACE		32	6'-9	324	32	6'-9	324	32	6'-9	324	32	6'-9	324	32	6'-9	324	32	6'-9	324	32	6'-9	324	
5d3*	HORIZONTAL, ABUT. DIAPH. EXT.-BOTH FACES		—	—	—	—	—	—	—	—	—	—	—	—	48	7'-2	359	48	7'-2	359	48	7'-2	359	
6h1	LONGITUDINAL, OPEN RAIL		24	40'-0	1,442	36	40'-0	2,163	36	40'-0	2,163	36	40'-0	2,884	48	40'-0	2,884	48	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	24'-5	880	
6j1	VERTICAL DOWELS, OPEN RAIL		312	4'-0	1,875	328	4'-0	1,971	360	4'-0	2,163	392	4'-0	2,355	408	4'-0	2,451	440	4'-0	2,644	456	4'-0	2,932	
4j2	HOOP, INTERIOR POST		272	4'-9	863	288	4'-9	914	320	4'-9	1,015	352	4'-9	1,117	368	4'-9	1,168	400	4'-9	1,269	416	4'-9	1,320	
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	
4j4	HOOP, END POST		32	6'-7	141	32	6'-7	141	32	6'-7	141	32	6'-7	141	32	6'-7	141	32	6'-7	141	32	6'-7	141	
4t1	WING FOOTING TIE BARS		16	VARIABLES	19	16	VARIABLES	19	16	VARIABLES	19	16	VARIABLES	19	16	VARIABLES	19	16	VARIABLES	19	16	VARIABLES	19	
4t2	WING FOOTING TIE BARS		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
TOTAL LBS. (INCLUDE WITH SUPERSTRUCTURE REINFORCING)			8,856		9,379		10,085		10,793		11,313		13,249		13,717		14,481		15,263					

BENT BAR DETAILS



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

* TRAFFIC FACE 5d3 BARS MAY REQUIRE FIELD CUTTING OR BENDING FOR HIGHER SKEW BRIDGES.



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 @ 0.077 CU. YDS. PER FT.	22.0	24.0	25.9	27.8	29.7	31.7	33.6	35.5
OPEN RAIL-END SECTION	4 @ 0.687 CU. YDS.	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
OPEN RAIL-ABUT. DIAPH. SECTION	4 @ 0.107 CU. YDS. PER FT.	—	—	—	—	1.9	1.9	1.9	1.9
OPEN RAIL-END POSTS	4 @ 0.11 CU. YDS.	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
OPEN RAIL-INTERIOR POSTS	2 x "E" @ 0.07 CU. YDS.	2.4	2.5	2.8	3.1	3.2	3.5	3.6	4.2
TOTAL (C.Y.)		27.5	29.6	31.8	34.0	36.0	40.2	42.2	47.3

CONCRETE QUANTITIES SHOWN ARE BASED ON 45° SKEW. FOR "E" SEE SHEET H24-39-06.

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 E	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

Iowa Department of Transportation
Highway Division

STANDARD DESIGN - 24' ROADWAY, THREE SPAN BRIDGE
PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES
DECEMBER, 2006

OPEN RAIL, TL-4 DETAILS
SHEET 2 OF 2

H24-40-06

REVISED 07-10 - PROVIDED A 3/4" GAP BETWEEN RAIL AND ABUT. DIAPH. EXT. CHANGED 6j1 BAR LENGTH.

LATEST REVISION DATE
07-10
APPROVED BY BRIDGE ENGINEER
Norman C. McQuinn