

Revised 11-2025: In 6h3 Bent Bar Details Table, changed Dimension "B" lengths (previously Dim. "B" values were for 20'-0" B was 10'-9", 30'-0" B was 15'-9", 40'-0" B was 20'-9", 50'-0" B was 25'-9").

Epoxy Coated Reinforcing Steel - Two Open Rails											
Bridge Length			20'-0"			30'-0"			40'-0"		
Bar	Location	Shape	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight
4c1	Rail, Ties		46	6'-3	192	64	6'-3	267	92	6'-3	384
5c2	Posts, Vertical		48	4'-10	242	72	5'-1	382	96	5'-3	526
5c3	End Post, Tie		4	6'-2	26	4	6'-2	26	4	6'-2	26
5c4	End Post, Tie		20	6'-6	136	20	6'-6	136	20	6'-6	136
5c5	Vertical, End Section		112	5'-1	594	112	5'-1	594	112	5'-1	594
5d1	Wing, Longitudinal, Tie Bar		8	5'-8	47	8	5'-8	47	8	5'-8	47
6h1	Rail, Horizontal		8	31'-11	384	16	22'-10	549	16	27'-10	669
6h2	Rail, Horizontal, Ends		24	13'-7	490	24	14'-2	511	24	14'-6	523
6h3	Rail, Horizontal, Ends		16	17'-10	429	16	22'-10	549	16	27'-10	669
4j1	Interior Post, Tie		24	5'-1	81	36	5'-1	122	48	5'-1	163
4j2	End Post, Tie		36	6'-3	150	36	6'-3	150	36	6'-3	150
4t1	Wing Tie Bars		24	2'-0	32	24	2'-0	32	24	2'-0	32
(Include with Superstructure Reinforcing)			Total (Lbs.)			2802			3364		
									3918		
									4462		

Reinforcing quantities shown are based on 45° skew bld lengths.

Concrete Placement Quantities

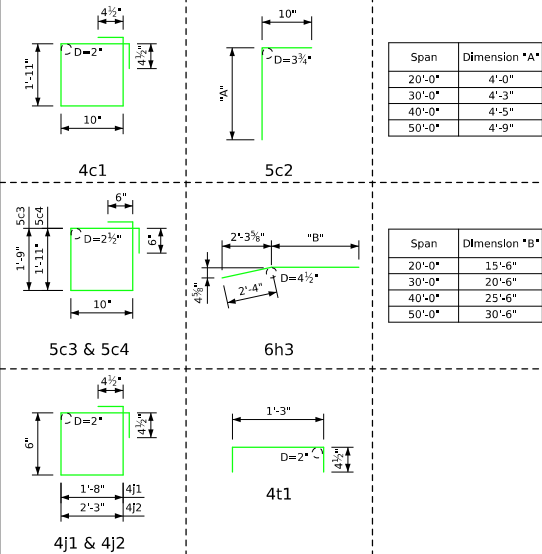
Bridge Length	20'-0"	30'-0"	40'-0"	50'-0"
**Standard Section (Cu. Yds.)	7.3	9.4	11.5	13.6

**Concrete quantities shown are based on 45° skew bld lengths. These values shall be used for all skews.

Concrete Open Rail Quantities

Bridge Length	Unit	20'-0"	30'-0"	40'-0"	50'-0"
Concrete Open Rail, TL-4	0° Skew	L.F.	62.0	82.0	102.0
Concrete Open Rail, TL-4	15° Skew	L.F.	62.2	82.2	102.2
Concrete Open Rail, TL-4	30° Skew	L.F.	63.0	83.0	103.0
Concrete Open Rail, TL-4	45° Skew	L.F.	64.4	84.4	104.4

Open Barrier Rail - Bent Bar Details



Note: All Dimensions Are Out To Out. D = Pin Diameter.

Open Rail Notes:

- Open rail system meets Test Level 4 (TL-4) according to the Manual for Assessing Safety Hardware (MASH) and includes provision for a 3" future wearing surface height.
- All reinforcing shall be Grade 60, Epoxy Coated.
- Stainless steel reinforcing may be substituted for 5c2 and 6c3 bars at the Designer's discretion. Lap and development lengths shown are based on epoxy coated reinforcing and need not be modified.
- Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.
- The concrete open rail is to be bld on a lineal foot basis measured from end to end of rail. The number of lineal feet of open rail installed will be paid for at the contract price per lineal foot. Price bid for "Concrete Open Railing, TL-4" shall be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to construct the rail in accordance with these plans and current specifications.
- All open rail concrete is to be Class C.
- Top of the open rail is to be parallel to theoretical G grade.