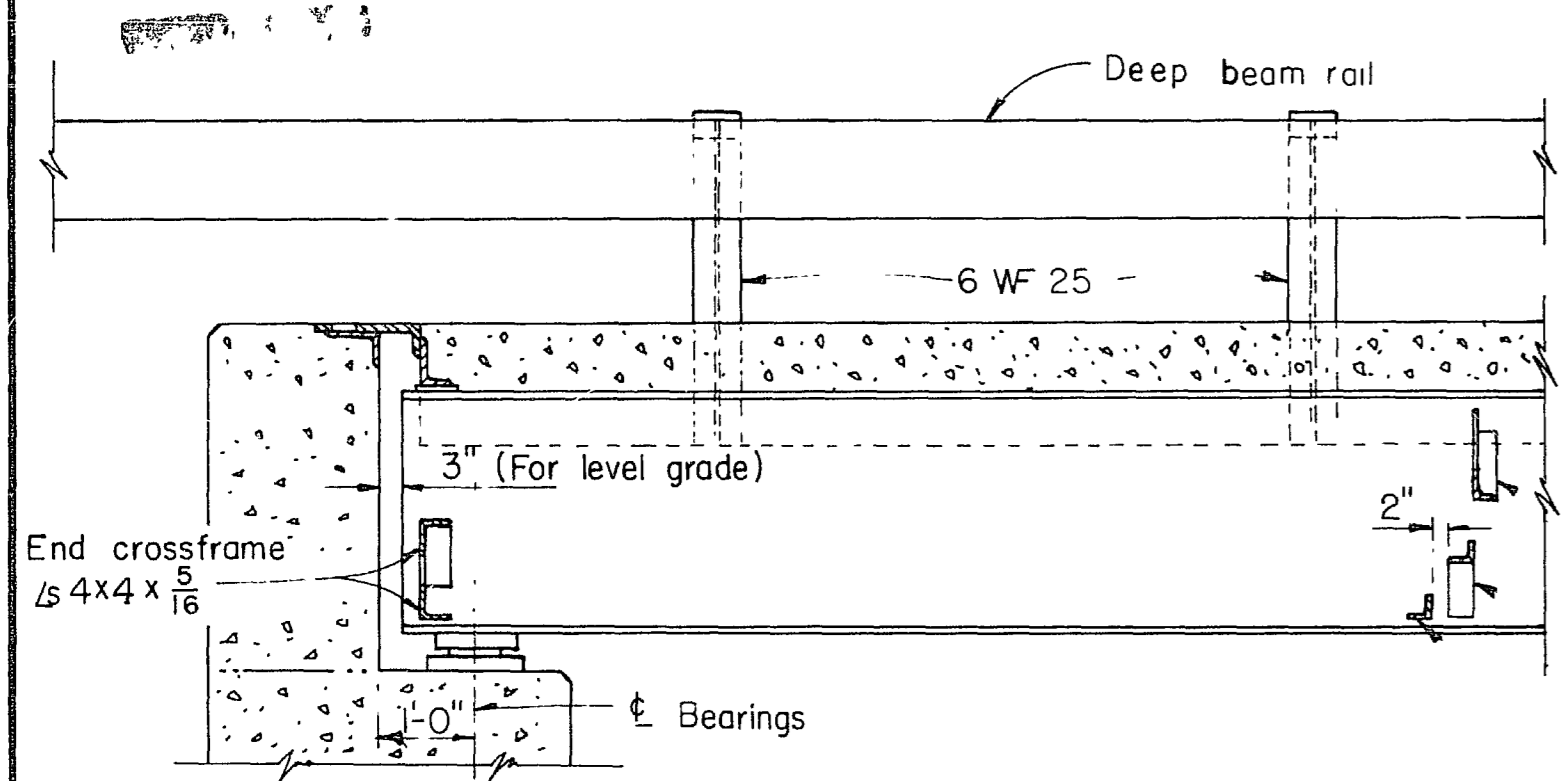


PART PLAN AT ABUTMENT



SECTION A-A

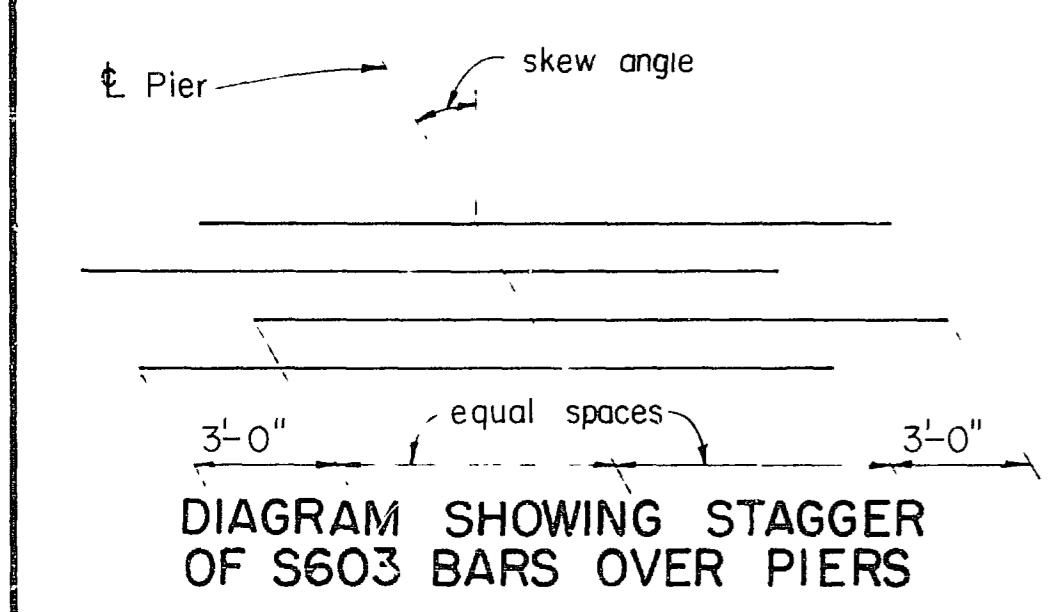
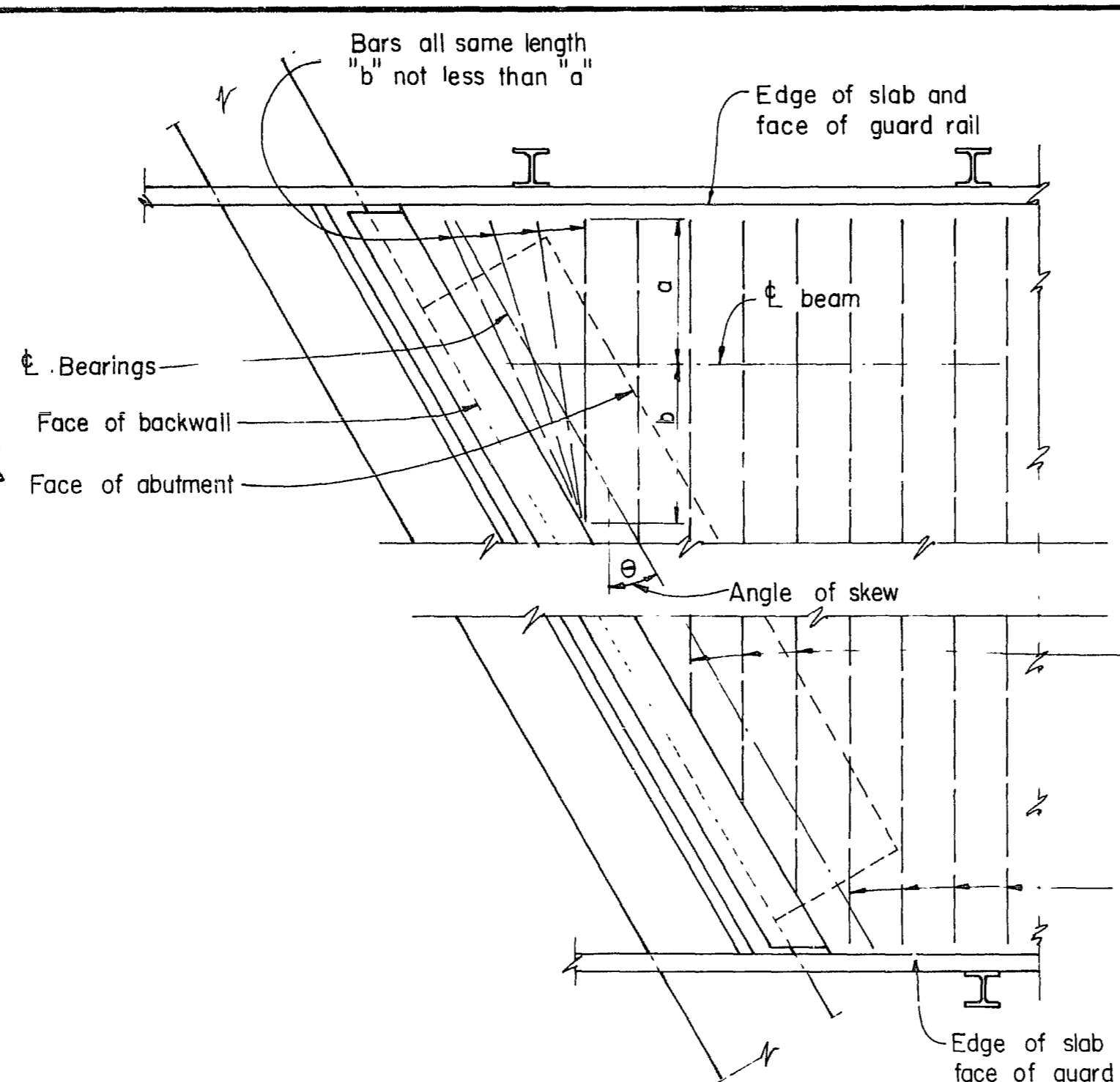
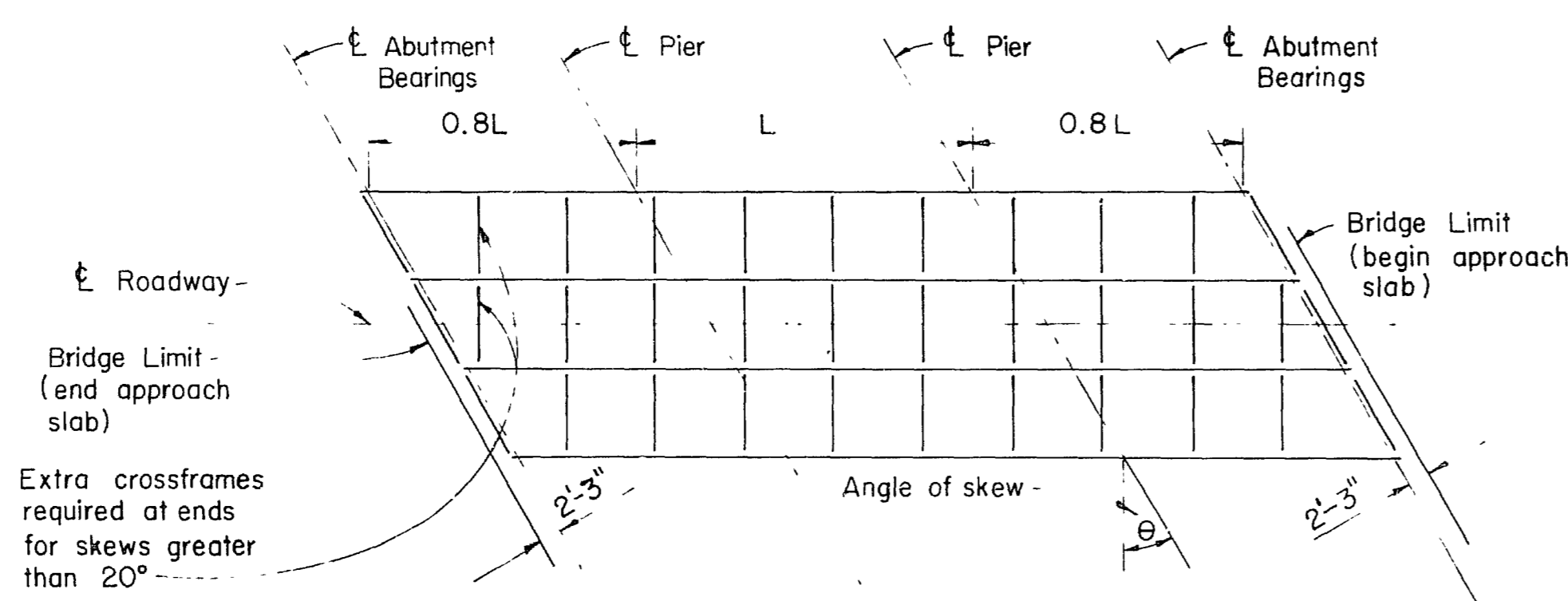


DIAGRAM SHOWING STAGGER OF S603 BARS OVER PIERS

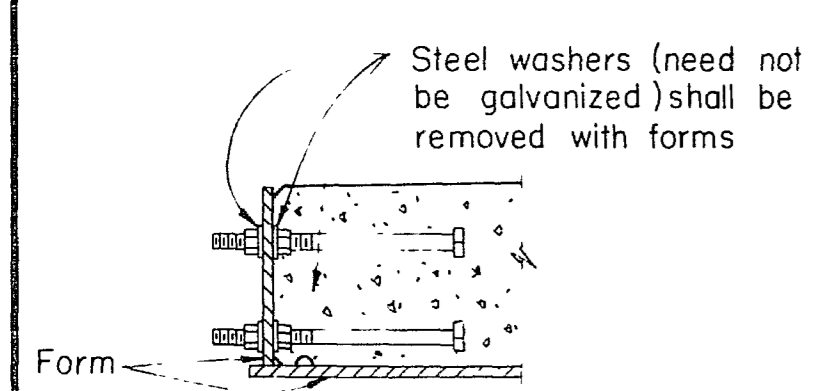


PART PLAN OF SKEWED BRIDGE

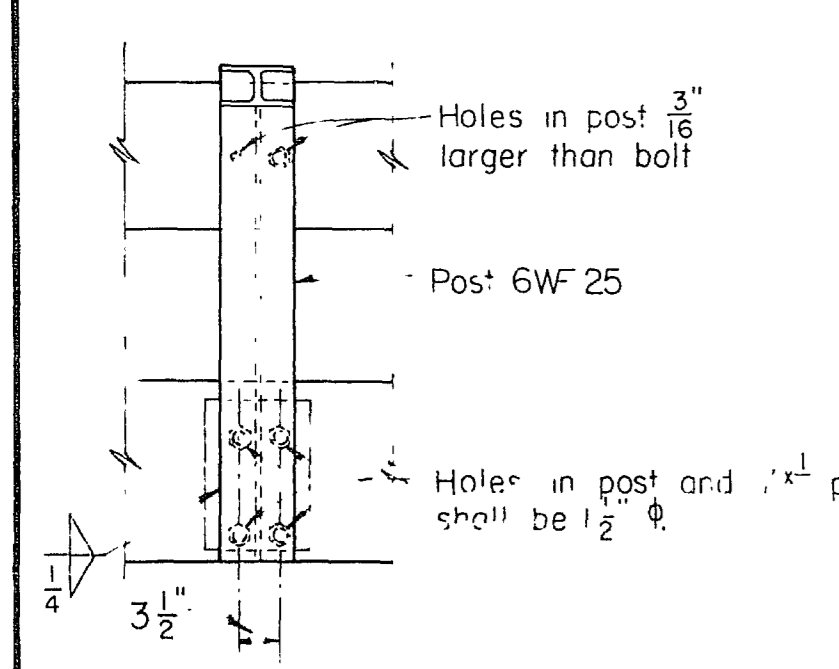
For skew greater than 15°, transverse bars shall be placed as shown. For skew of 15° or less, transverse bars shall be placed parallel to abutments and shall be made longer than tabulated length.



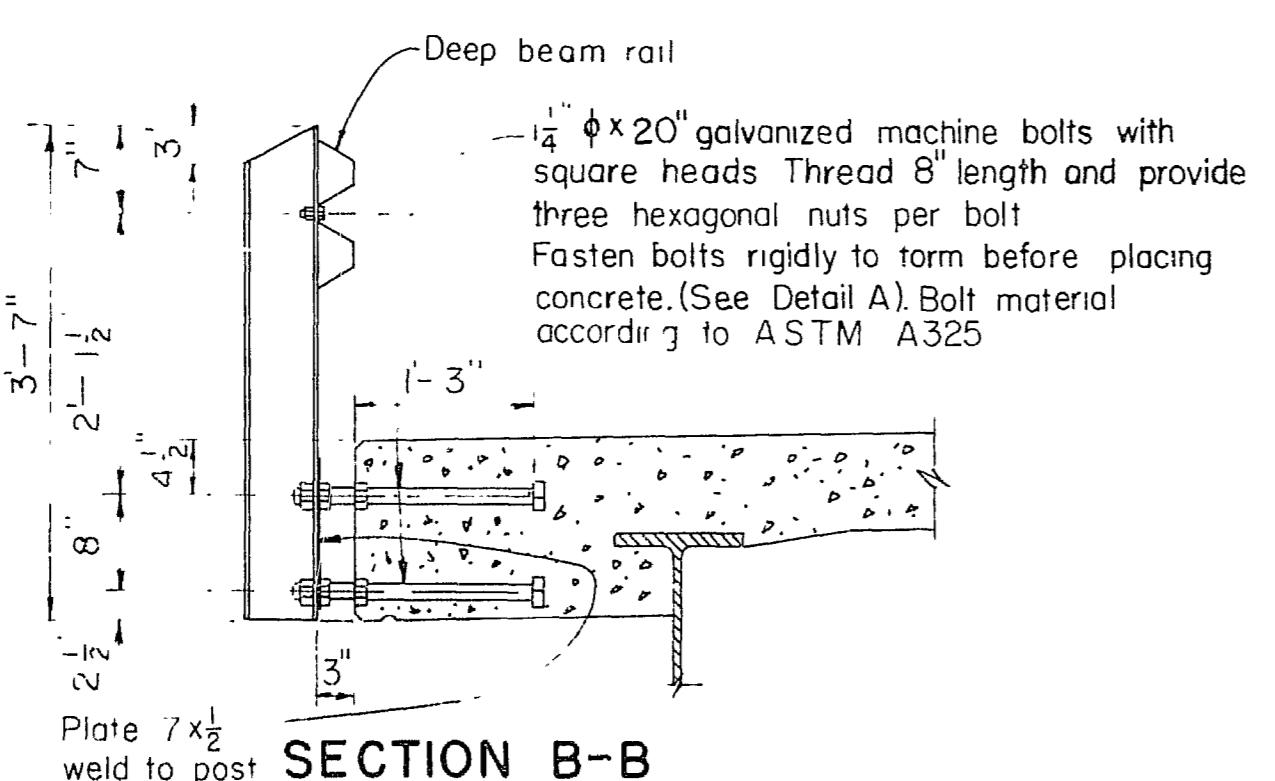
PLAN OF SKEWED STEEL FRAMING



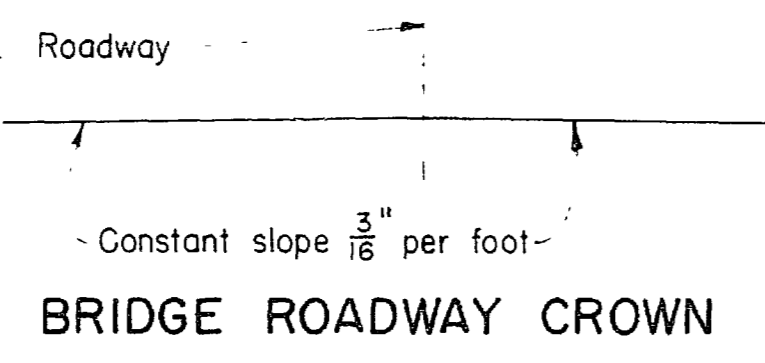
DETAIL A



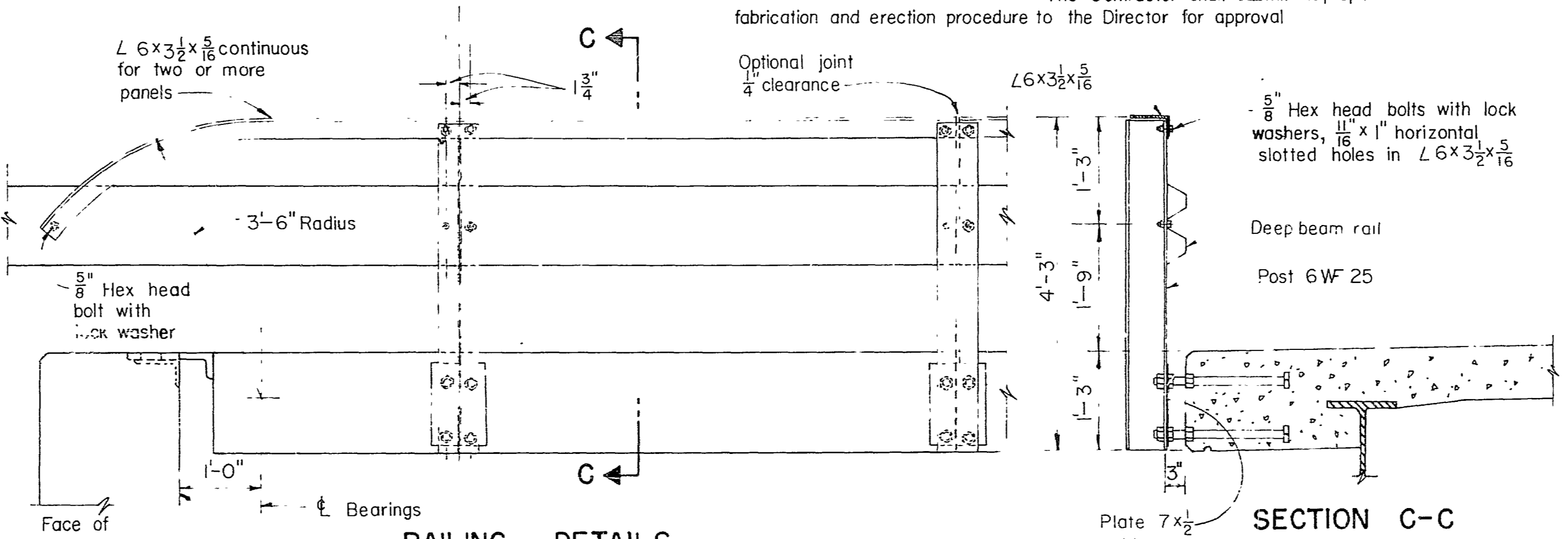
ELEVATION OF RAILING POST



SECTION B-B



BRIDGE ROADWAY CROWN



RAILING DETAILS
For railing with top handrail

GENERAL: This set of drawings (sheets No. 1 thru 5) provides design and construction details. The project plans for each structure shall indicate span lengths, roadway width, load frequency, skew, curve and superelevation (if any), elevations, wearing surface, substructure details, estimated quantities, reinforcing steel list, and other necessary information including special notes and details.

REFERENCE shall be made on the project plans to sheet 1 of this set of drawings and to that one of sheets 2 thru 5 which applies to the specified roadway width. Reference shall be made also to Standard Drawing SD-1-65 and to RB-1-5.

DESIGN SPECIFICATIONS: These standard drawings conform to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated September 1, 1957, together with revisions of February 21, 1958 and May 1, 1962, except that beam sections are designed for the 20,000 lb unit stress of ASTM A-36 steel.

ADDITIONAL INTERIOR SPANS, similar to the middle span, may be incorporated in the structure without change in size of beams. In case of added spans, the project plans shall show revised details and estimated quantities.

SKEW: These drawings may be used for skewed bridges with the following modifications:

- A special list of reinforcing bars shall be provided.
- Additional intermediate crossframes shall be provided if the skew exceeds 20°.
- Tabulated quantities shall be increased approximately as follows:
 - Structural Steel: Add 6700 lbs. x (sec θ-1) for 32' roadway
 - Add 7800 lbs. x (sec θ-1) for 36' roadway
 - Add 9800 lbs. x (sec θ-1) for 40' roadway
 - Add 10500 lbs. x (sec θ-1) for 44' roadway
- Railing: Add 2.25' x 4 x (sec θ-1) to total linear feet.
- Class "C" concrete: No adjustment required.

SUPERELEVATION: For a two-directional bridge on a curve the concrete slab shall be superelevated for the full width of the deck at the same rate as the approach pavement. For one-directional bridges on a curve the concrete slab shall be superelevated as shown on Sheet 4.

MONOLITHIC WEARING SURFACE shall be 1" for all load frequencies. Concrete quantities have been computed on this basis. Tabulated values of "I" include the monolithic wearing surface.

SPLICE ELIMINATION: At the Contractor's option, and where not precluded by camber requirements or shipping length limitations, beams may be fabricated and erected in longer lengths, eliminating some field splices for these beams.

The Contractor shall submit his proposed fabrication and erection procedure to the Director for approval.

DECK SLAB DEPTH: The distance shown from top of deck slab to top of steel beam is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

BEARING DEVICES: Fixed and expansion bearings shown on Standard Drawing RB-1-55, or some other acceptable type of bearing shall be used. For spans under 50 ft, use flat plate bearings.

Tabulated bearing capacities required are based on stresses modified according to Sec. 76 of the Design Specifications.

CAMBER: The dead load deflection, plus or minus any curvature caused by the road grade, shall be tabulated on the project plans for the center of span, quarter and three quarter points of span and for all field splice points. The totals of these values, added algebraically, shall be the required shop camber. The dead load deflection tabulated on this Standard Drawing is the total deflection at the mid-point of the center span. The deflection at the mid-point of the end span is 75% of this value. Of the total deflection 20% may be assumed to be due to the weight of the steel.

CONCRETE shall be Class "C". $f_c = 1333$ psi.

DECK PLACING PROCEDURE: In placing the deck concrete, construction joints will be permitted, parallel to the transverse reinforcing steel and near the middle of any span. Because of the flow of curing water from the surface of previously-placed concrete, the sequence of pours shall be upgraded, starting at the lowest point or points in the grade line.

RAILING: The transition between the guard rail height on the bridge and on the approaches shall be made in a distance of 100 feet from each end of the bridge.

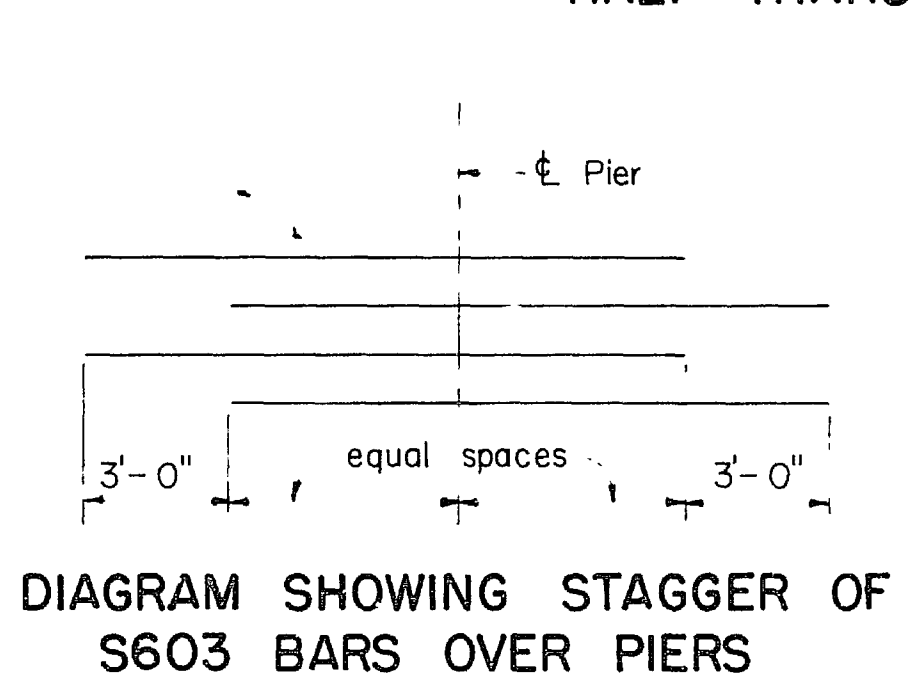
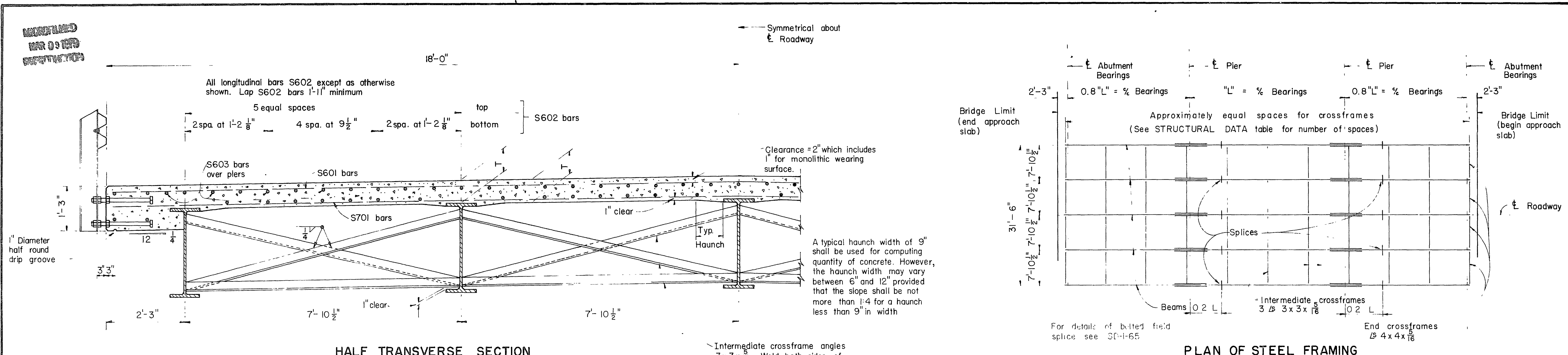
An upper handrail and longer posts shall be provided if called for on the project plans.

The tabulated railing quantity is for the length of railing between the bridge limits. This quantity includes deep beam rail, handrail (if called for), posts, anchors, connections, galvanizing. It also includes those curved portions of the handrail which project beyond the stated limits.

REINFORCING STEEL: ASTM A15, A16, A180 deformed, intermediate or hard grade. $f_s = 20,000$ psi. Bar size for reinforcing steel is indicated in the bar mark. The first digit indicates the bar size number. For example, 3601 is a No. 6 size bar.

CROSS FRAMES may be shifted, if necessary, to avoid beam web splices.

REVISIONS 12-8-65	STATE OF OHIO DEPARTMENT OF HIGHWAYS DIVISION OF DESIGN AND CONSTRUCTION BUREAU OF BRIDGES			
	STANDARD CONTINUOUS STEEL BEAM BRIDGE WITHOUT CURBS AND WITH HIGHWAY GUARD RAIL MIDDLE SPAN 35 FEET TO 80 FEET ROADWAY WIDTHS: 32', 36', 40', and 44'			
	DATE 12-16-62	DESIGNED BY M. J. ...	CHECKED BY ...	DRAWING NUMBER CSB-1-63
PREPARED BY WJW NAA FFE	DESIGNED BY CAM	CHECKED BY WJW	REVIEWED BY BFG CDS MPB WCK RHH	SHEET NO. OF SHEETS



HALF TRANSVERSE SECTION

PLAN OF STEEL FRAMING

DIAGRAM SHOWING STAGGER OF S603 BARS OVER PIERS

Load Frequency and Dim. T	Middle Span "L" Feet	End Span 0.8 "L" Feet	STRUCTURAL DATA							REINFORCING STEEL				ESTIMATED QUANTITIES (3 Spans)				DESIGN DATA								
			Beam	Moment Plates		No of spaces for crossframes (3 spans)	No. of full Guard Rail panels each side	D.L. Deflect. (inches)	Bearing Capacity Required (kips)		No of bars for 3 spans (all bars straight)				Reinforcing Steel (Lbs)	Structural Steel (Lbs)	Class "C" Concrete (Cu yd)	Railing both sides (Lin ft)	Total Unmodified Superstructure Reactions for Designing Substructure (kips)			Max. Unmodified Interior Bm. Reaction D.L.+L+Imp (kips)				
				Top Plate	Bottom Plate				Abutment Expansion	Pier Exp or Fixed	S701 No	S601 No	S602 No	S603 44 req'd Length					D.L.	L.L.	Imp. ②	Abut	Pier	Imp. ②	Abut	Pier
CF=130 T=7 3/4"	35 28	21WF68	6 3/4 x 3/8 x 7'-10"	9 3/4 x 3/8 x 7'-10"	10	14	1/8	47	82	111	111	171	32'-0"	14'-0"	23182	47500	90	191	57	64	19	192	89	24	40	78
	37.5 30	24WF76	No plates	required	10	15	1/8	49	86	119	119	171	34'-3"	15'-0"	24838	52600	96	204	62	67	20	207	91	24	42	81
	40 32	24WF84	No plates	required	10	16	1/8	52	87	127	127	171	36'-3"	16'-0"	26431	59300	102	217	66	71	19	223	90	23	44	84
	42.5 34	24WF94	No plates	required	12	17	1/8	53	91	135	135	171	38'-6"	17'-0"	28085	68800	109	230	71	72	19	239	93	23	45	88
	45 36	24WF94	7 1/2 x 3/8 x 7'-8"	10 1/2 x 3/8 x 7'-8"	12	18	1/8	54	95	142	142	228	31'-0"	18'-0"	29765	73600	115	243	75	73	19	253	97	23	47	92
	47.5 38	27WF94	8 1/2 x 3/8 x 8'-2"	11 1/2 x 3/8 x 8'-2"	12	19	1/8	55	99	150	150	228	32'-7"	19'-0"	31345	77200	121	256	79	74	18	267	100	24	48	96
	50 40	30WF99	9 x 3/8 x 8'-6"	12 x 3/8 x 8'-6"	12	20	1/8	56	103	158	158	228	34'-3"	20'-0"	33034	83800	127	269	84	75	18	282	103	24	49	100
	52.5 42	30WF108	9 x 3/8 x 10'-0"	12 x 3/8 x 10'-0"	14	21	1/8	57	107	166	166	228	35'-10"	21'-0"	34654	84600	134	282	89	76	18	299	106	24	50	104
55 44	30WF108	9 x 3/8 x 10'-6"	12 x 3/8 x 10'-6"	14	22	1/8	58	112	174	174	228	37'-6"	22'-0"	36300	98600	140	295	93	77	18	313	109	24	51	108	
60 48	33WF118	10 x 3/8 x 11'-2"	13 x 3/8 x 11'-2"	14	24	3/8	61	122	189	189	285	33'-0"	24'-0"	39616	114800	152	321	102	79	18	345	121	26	54	120	
65 52	33WF132	9 x 3/8 x 13'-4"	12 x 3/8 x 13'-4"	16	27	1/2	63	133	205	205	285	35'-6"	26'-0"	42841	136300	165	347	112	81	18	378	131	27	57	130	
70 56	36WF135	10 1/2 x 3/8 x 14'-0"	13 1/2 x 3/8 x 14'-0"	16	29	1/2	66	142	220	220	285	38'-3"	28'-0"	46049	148900	178	373	121	83	18	408	141	28	59	140	
75 60	33WF152	10 x 3/8 x 15'-0"	13 x 3/8 x 15'-0"	16	31	5/8	68	152	236	236	342	34'-3"	30'-0"	49425	175100	190	399	132	86	17	443	150	29	62	150	
80 64	36WF160	10 1/2 x 3/8 x 16'-0"	13 1/2 x 3/8 x 16'-0"	16	33	3/4	71	162	252	252	342	36'-6"	32'-0"	52735	194200	203	425	141	88	17	476	159	30	65	160	
CF=400 T=8 1/4"	35 28	24WF76	No plates	required	10	14	1/8	58	97	123	123	171	32'-0"	14'-0"	24700	50900	94	191	59	64	19	201	89	24	41	80
	37.5 30	24WF84	No plates	required	10	15	1/8	60	101	132	132	171	34'-3"	15'-0"	26482	57300	101	204	64	67	20	216	91	24	43	83
	40 32	24WF94	No plates	required	10	16	1/8	62	102	141	141	171	36'-3"	16'-0"	28201	65300	107	217	69	71	19	233	90	23	45	86
	42.5 34	27WF94	No plates	required	12	17	1/8	64	107	149	149	171	38'-6"	17'-0"	29856	69500	114	230	73	72	19	247	93	23	46	90
	45 36	30WF99	No plates	required	12	18	1/8	65	111	158	158	228	31'-0"	18'-0"	31789	75600	120	243	78	73	19	263	97	23	47	94
	47.5 38	30WF108	No plates	required	12	19	1/8	66	116	167	167	228	32'-7"	19'-0"	33535	84500	127	256	83	74	18	280	100	24	49	99
	50 40	30WF116	9 x 3/8 x 9'-2"	12 x 3/8 x 9'-2"	12	20	1/8	68	120	175	175	228	34'-3"	20'-0"	35184	96100	134	269	88	75	18	296	103	24	50	103
	52.5 42	30WF116	9 x 3/8 x 11'-0"	12 x 3/8 x 11'-0"	14	21	1/8	69	124	184	184	228	35'-10"	21'-0"	36930	101500	140	282	92	76	18	311	106	24	51	107
55 44	33WF118	10 x 3/8 x 11'-4"	13 x 3/8 x 11'-4"	14	22	1/8	70	130	193	193	228	37'-6"	22'-0"	38705	107900	147	295	97	77	18	327	109	24	52	112	
60 48	33WF130	10 x 3/8 x 13'-0"	13 x 3/8 x 13'-0"	14	24	1/4	73	142	210	210	285	33'-0"	24'-0"	42272	126200	160	321	107	79	18	360	121	26	55	123	
65 52	33WF152	10 x 3/8 x 13'-2"	13 x 3/8 x 13'-2"	16	27	3/8	76	155	227	227	285	35'-6"	26'-0"	45624	155400	174	347	118	81	18	397	131	27	58	135	
70 56	36WF160	10 1/2 x 3/8 x 14'-4"	13 1/2 x 3/8 x 14'-4"	16	29	3/8	78	166	245	245	285	38'-3"	28'-0"	49210	173500	186	373	128	83	18	431	141	28	61	145	
75 60	36WF170	10 1/2 x 3/8 x 16'-0"	13 1/2 x 3/8 x 16'-0"	16	31	1/2	81	177	262	262	342	34'-3"	30'-0"	52714	195000	200	399	138	86	17	465	150	29	63	155	
80 64	36WF194	10 1/2 x 3/8 x 16'-6"	13 1/2 x 3/8 x 16'-6"	16	33	5/8	85	189	279	279	342	36'-6"	32'-0"	56150	232100	213	425	150	88	17	506	159	30	67	167	

① Reference Sec. 70 and 76, Design Specifications for Highway Structures

② Impact should be used for only such substructure elements as pile caps, pier caps, columns, and the cantilever arms of T-type piers; NOT for pier and abutment walls, footings and piles

③ Tabulated Structural Steel weight does not include bearing stiffeners

REVISIONS
12-8-65

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

STANDARD
CONTINUOUS STEEL BEAM BRIDGE
WITHOUT CURBS AND WITH HIGHWAY GUARD RAIL
ROADWAY WIDTH 36 FEET
LOAD FREQUENCY: CF=130, CF=400

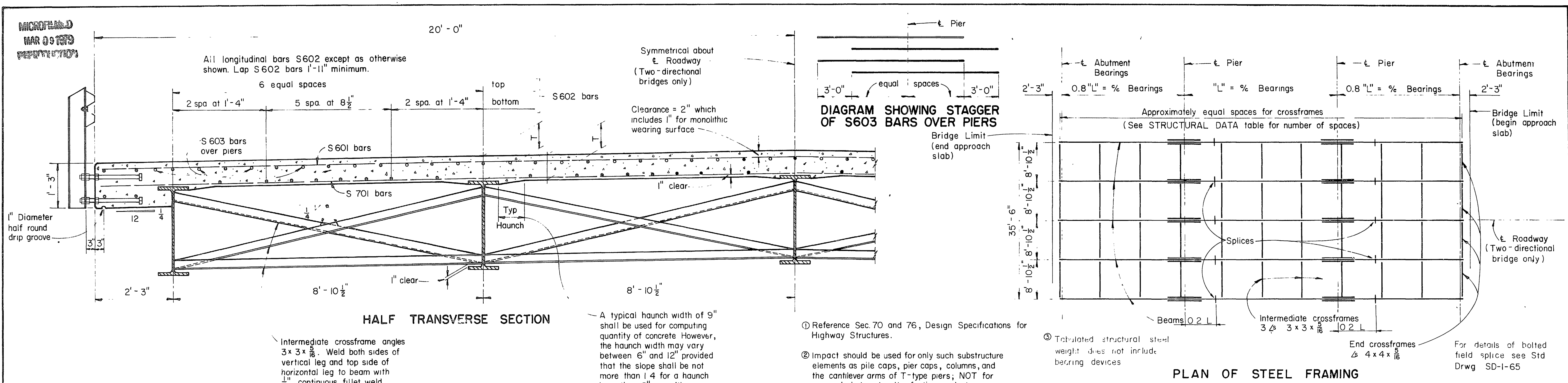
APPROVED
DATE 12-16-63
WJJ NAA FFE

DESIGNED BY
ENGINEER
WJJ

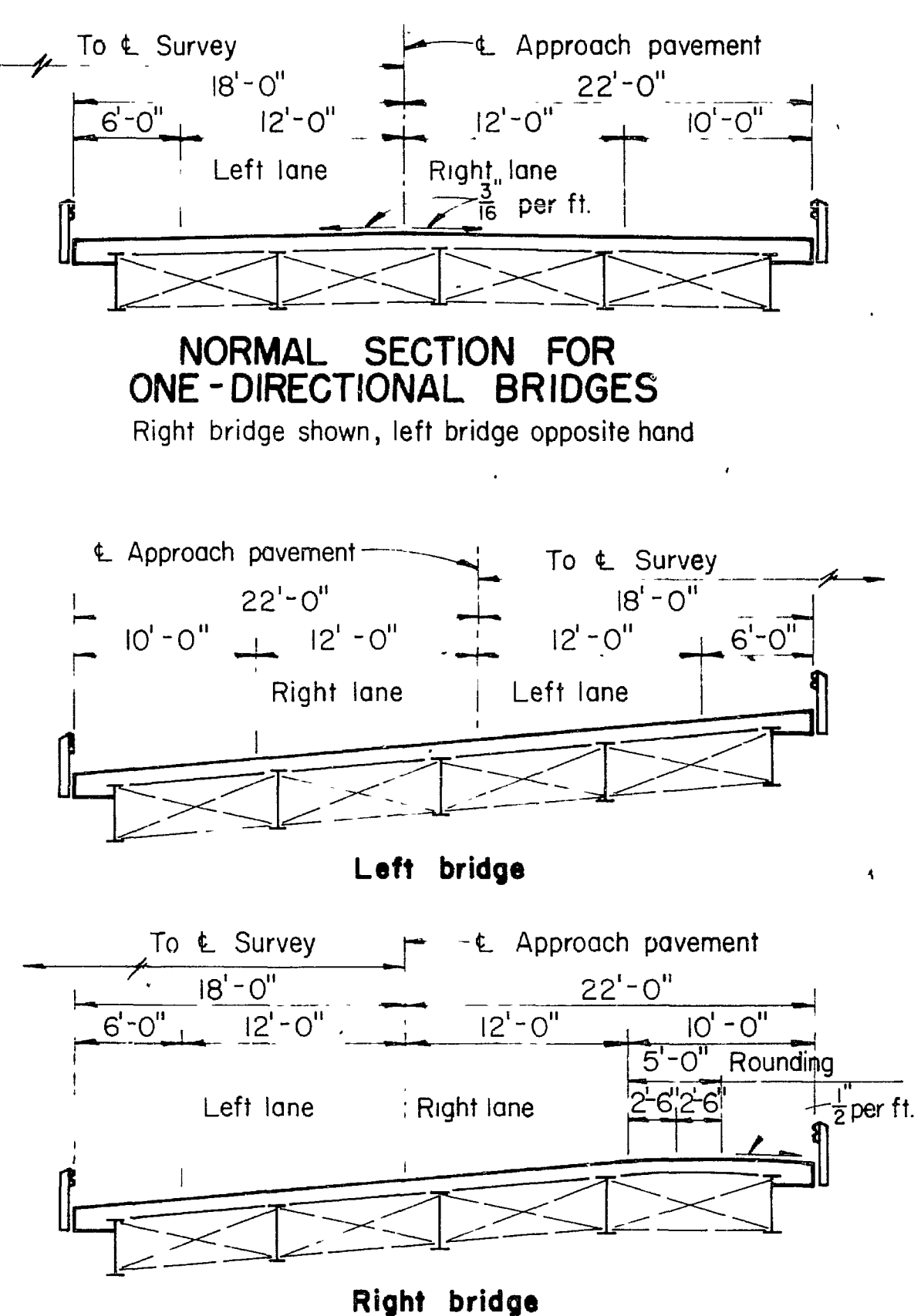
REVIEWED BY
WCK HHH

DRAWING NUMBER
CSB-1-63

SHEET NO. 1 OF 4 SHEETS



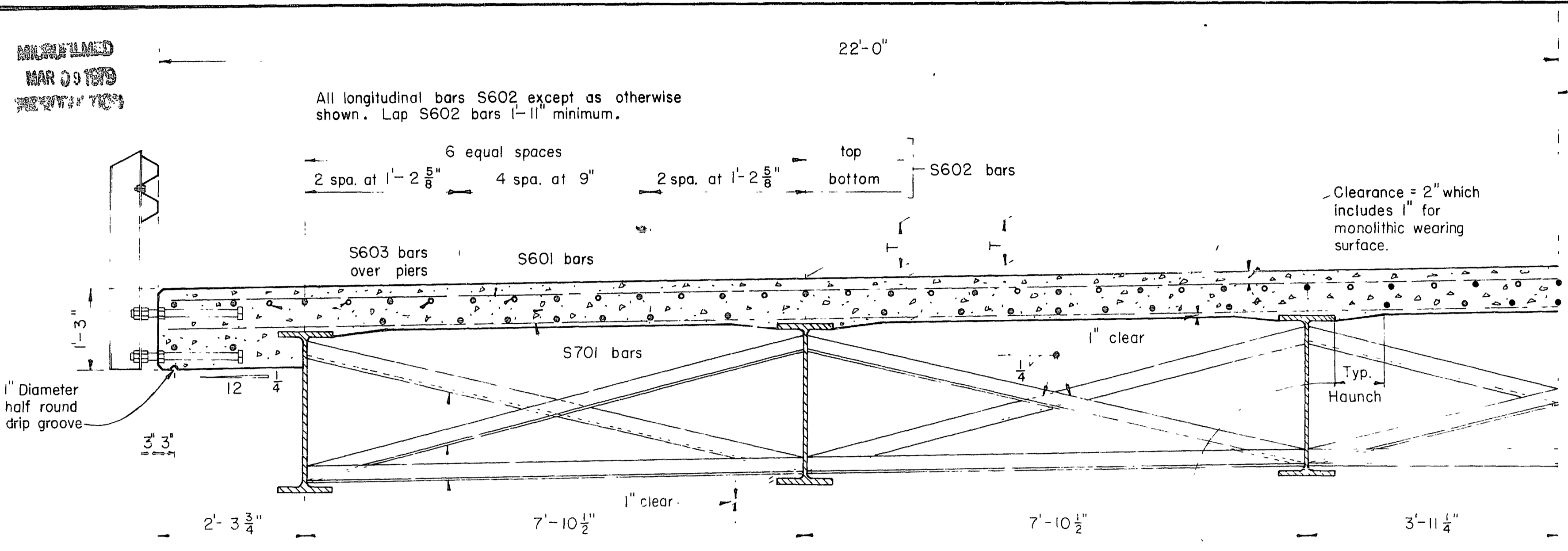
Load Frequency and Dim. T	Middle Span L Feet	End Span 0.8L Feet	STRUCTURAL DATA										REINFORCING STEEL				ESTIMATED QUANTITIES (3 Spans)				DESIGN DATA					
			Beam	Moment Plates		No. of spaces for crossframes (3 spans)	No. of full Guard Rail panels each side	D L Deflect. (inches)	Bearing Capacity Required (kips)		S 701	S 601	S 602	S 603 52 req'd Length	Reinforcing Steel (Lbs.)	Structural Steel (Lbs.)	Class "C" Concrete (Cu. yd.)	Railing both sides (Lin. ft.)	Total Unmodified ¹ Superstructure Reactions			Max Unmodified ¹ Interior Bm Reaction				
				Top Plate	Bottom Plate				Abutment Expansion	Pier Exp. or Fixed									D. L.	L. L.	Imp. ²	D. L.	L. L.	Imp. ²	Abut	Pier
CF = 130 T = 7 3/4"	35	28	24 WF 76	No plates required	10	14	1/8	53	93	117	195	32'-0"	14'-0"	26922	51500	98	191	63	64	19	211	89	24	45	87	
	37.5	30	24 WF 76	7 1/2 x 3/8 x 8'-6"	10	15	1/8	55	96	125	195	34'-3"	15'-0"	28785	55900	105	204	67	67	20	227	91	24	47	91	
	40	32	27 WF 84	No plates required	10	16	1/8	58	98	133	195	36'-3"	16'-0"	30574	60500	112	217	72	71	19	243	90	23	50	94	
	42.5	34	27 WF 94	No plates required	12	17	1/8	59	103	141	195	38'-6"	17'-0"	32437	70300	119	230	77	72	19	261	93	23	51	98	
	45	36	24 WF 100	10 1/2 x 7/8 x 7'-8"	12	18	1/4	61	107	150	260	31'-0"	18'-0"	34611	80600	126	243	82	73	19	277	97	23	52	103	
	47.5	38	30 WF 99	9 x 3/8 x 8'-4"	12	19	1/4	62	111	158	260	32'-7"	19'-0"	36432	82000	133	256	87	74	18	292	100	24	54	107	
	50	40	30 WF 108	9 x 3/8 x 8'-8"	12	20	1/4	63	116	166	260	34'-3"	20'-0"	38286	91300	140	269	92	75	18	310	103	24	55	112	
	52.5	42	30 WF 116	9 x 3/8 x 9'-2"	12	21	1/4	64	120	174	260	35'-10"	21'-0"	40109	101900	147	282	97	76	18	328	106	24	57	117	
	55	44	33 WF 118	10 x 1/2 x 9'-8"	13 x 1/2 x 9'-8"	14	22	1/4	66	126	182	260	37'-6"	22'-0"	41962	108200	154	295	102	77	18	344	109	24	58	123
	60	48	30 WF 132	9 x 3/8 x 12'-2"	12 x 1/2 x 12'-2"	14	24	3/8	68	138	199	325	33'-0"	24'-0"	45974	127800	168	321	113	79	18	379	121	26	61	135
CF = 400 T = 8 1/2"	65	52	36 WF 135	10 1/2 x 13'-0"	13 1/2 x 13'-0"	16	27	3/8	71	149	215	325	35'-6"	26'-0"	49602	141500	181	347	122	81	18	412	131	27	64	146
	70	56	33 WF 152	10 x 1/2 x 14'-2"	13 x 1/2 x 14'-2"	16	29	1/2	74	160	232	325	38'-3"	28'-0"	53491	166600	195	373	133	83	18	450	141	28	67	157
	75	60	36 WF 160	10 1/2 x 15'-4"	13 1/2 x 15'-4"	16	31	1/2	76	171	248	390	34'-3"	30'-0"	57290	185300	209	392	144	86	17	485	150	29	69	168
	80	64	36 WF 182	10 1/2 x 15'-8"	13 1/2 x 15'-8"	16	33	5/8	80	183	264	390	36'-6"	32'-0"	61014	219800	223	425	156	88	17	526	159	30	73	180
	35	28	24 WF 84	7 1/2 x 3/8 x 8'-2"	10 1/2 x 8'-2"	10	14	1/8	65	110	123	195	3'-0"	14'-0"	27766	57900	106	191	67	64	19	225	89	24	46	90
	37.5	30	24 WF 94	No plates required	10	15	1/8	67	114	132	195	34'-3"	15'-0"	29769	63700	113	204	72	67	20	242	91	24	48	95	
	40	32	30 WF 99	No plates required	10	16	1/8	71	116	141	195	36'-3"	16'-0"	31700	69400	121	217	77	71	19	260	90	23	51	98	
	42.5	34	24 WF 110	No plates required	12	17	1/8	72	121	149	195	38'-6"	17'-0"	33562	80700	128	230	83	72	19	278	93	23	52	103	
	45	36	30 WF 108	No plates required	12	18	1/8	73	126	158	260	31'-0"	18'-0"	35736	82500	136	243	87	73	19	294	97	23	54	107	
	47.5	38	30 WF 116	9 x 3/8 x 9'-0"	12 x 1/2 x 9'-0"	12	19	1/8	75	131	167	260	32'-7"	19'-0"	37698	93800	143	256	93	74	18	312	100	24	55	112
CF = 300 T = 9"	50	40	33 WF 118	10 x 1/2 x 9'-8"	13 x 1/2 x 9'-8"	14	20	1/4	76	136	175	260	34'-3"	20'-0"	39552	100000	151	269	98	75	18	329	103	24	57	117
	52.5	42	30 WF 132	9 x 3/8 x 10'-8"	12 x 1/2 x 10'-8"	14	21	1/4	78	141	184	260	35'-10"	21'-0"	41515	115300	158	282	104	76	18	349	106	24	58	122
	55	44	33 WF 130	10 x 1/2 x 11'-4"	13 x 1/2 x 11'-4"	14	22	1/4	79	147	193	260	37'-6"	22'-0"	43510	118800	165	295	108	77	18	366	109	24	59	128
	60	48	33 WF 152	10 x 1/2 x 12'-0"	13 x 1/2 x 12'-0"	14	24	1/4	83	162	210	325	33'-0"	24'-0"	47522	145600	181	321	120	79	18	405	121	26	63	141
	65	52	36 WF 160	10 1/2 x 13'-6"	13 1/2 x 13'-6"	16	27	3/8	85	175	227	325	35'-6"	26'-0"	51290	164600	195	347	131	81	18	442	131	27	66	153
	70	56	36 WF 170	10 1/2 x 15'-2"	13 1/2 x 15'-2"	16	29	3/8	89	188	245	325	38'-3"	28'-0"	55320	185400	210	373	142	83	18	479	141	28	69	164
	75	60	36 WF 194	10 1/2 x 15'-10"	13 1/2 x 15'-10"	16	31	1/2	92	201	262	390	34'-3"	30'-0"	59259	221100	226	399	155	86	17	522	150	29	72	177
	80	64	33 WF 220	14 x 3/8 x 16'-0"	17 1/2 x 16'-0"	16	33	5/8	96	215	279	390	36'-6"	32'-0"	6324	269200	240	425	178	88	17	568	159	30	76	190
	35	28	27 WF 84	8 1/2 x 3/8 x 8'-8"	11 1/2 x 8'-8"	10	14	1/8	71	119	138	195	32'-0"	14'-0"	29876	59000	111	191	69	64	19	232	89	24	47	92
	37.5	30	27 WF 94	No plates required	10	15	1/8	73	123	148	195	34'-3"	15'-0"	32021	64400	119	204	74	67	20	251	91	24	49	97	
40	32	24 WF 110	No plates required	10	16	1/8	77	125	158	195	36'-3"	16'-0"	34091	76600	127	217	80	71	19	271	90	23	52	100		
42.5	34	30 WF 108	No plates required	12	17	1/8	78	130	169	195	38'-6"	17'-0"	36234	79800	134	230	85	72	19	287	93	23	53	105		
45	36	30 WF 118	No plates required	12	18	1/8	79	134	177	260	31'-0"	18'-0"	38409	88200	142	243	91	73	19	306	97	23	54	110		
47.5	38	33 WF 116	No plates required	12	19	1/8	80	139	187	260	32'-7"	19'-0"	40511	93300	150	256	96	74	18	323	100	24	56	115		
50	40	30 WF 132	9 x 3/8 x 10'-0"	12 x 1/2 x 10'-0"	12	20	1/4	81	144	197	260	34'-3"	20'-0"	42647	103000	158	269	102	75	18	344	103	24	58	121	
52.5	42	33 WF 130	10 x 1/2 x 10'-0"	13 x 1/2 x 10'-0"	14	21	1/4	83	149	207	260	35'-10"	21'-0"	44750	115200	166	282	107	76	18	361	106	24	59	125	
55	44	36 WF 135	10 1/2 x 11'-2"	13 1/2 x 11'-2"	14	22	1/4	84	155	216	260	37'-6"	22'-0"	46745	123500	173	295	112	77	18	379	109	24	60	131	
60	48	33 WF 152	10 x 1/2 x 12'-0"	13 x 1/2 x 12'-0"	14	24	1/4	87	170	236	325	33'-0"	24'-0"	51179	146600	189	321	124	79	18	419	121	26	64	144	
65	52	36 WF 160	10 1/2 x 14'-4"	13 1/2 x 14'-4"	16	27	3/8	89	183	255	325	35'-6"	26'-0"	55228	165700	205	347	135	81	18	456	131	27	67	156	
70	56	36 WF 182	10 1/2 x 14'-10"	13 1/2 x 14'-10"	16	29	3/8	92	196	275	325	38'-3"	28'-0"	59540	197400	221	373	148	83	18	499	141	28	70	169	
75	60	36 WF 194	10 1/2 x 16'-6"	13 1/2 x 16'-6"	16	31	1/2	95	208	294	390	34'-3"	30'-0"	63759	222900	236	399	160	86	17	539	150	29	73	181	
80	64	33 WF 220	14 x 3/8 x 17'-4"	17 1/2 x 17'-4"	16	33	5/8	99	222	314	390	36'-6"	32'-0"	68047	270300	252	425	174	88	17	586	159	30	77	194	



REVISIONS		STATE OF OHIO		DRAWING NUMBER	
NO.	DATE	BY	DATE	CSB-I-63	CSB-I-63
12-8-65					
APPROVED:		ENGINEER OF BRIDGES		SHEET NO 4	
DATE 12-16-63		REVIEWED		OF 5 SHEETS	
PREPARED		CHECKED			
WJJ NAA FFE		WJJ			
JTK		WJJ			
		BFG			
		WCK			
		HHH			

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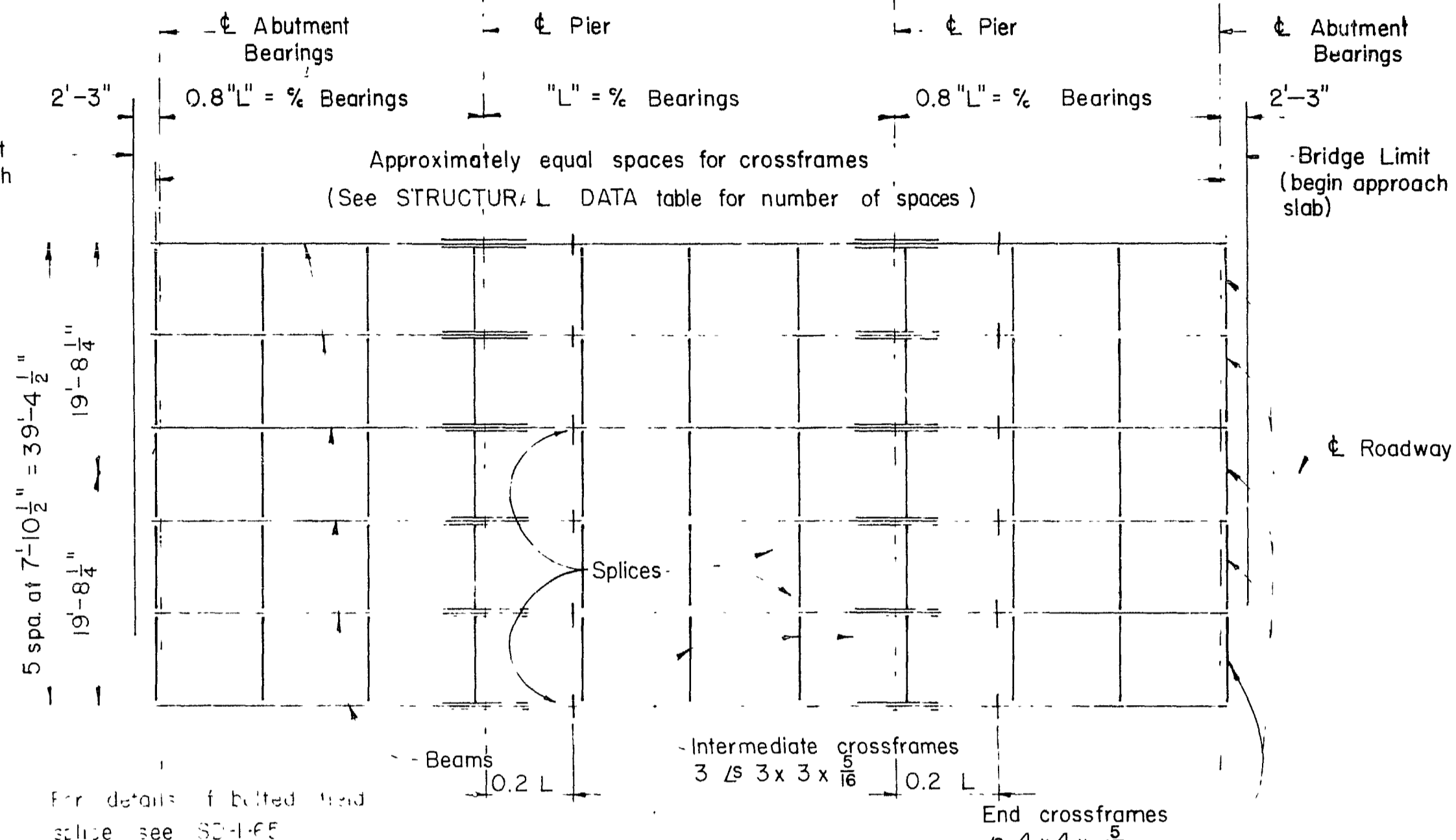
HALF TRANSVERSE SECTION

Intermediate crossframe angles $3 \times 3 \times \frac{5}{16}$.
Weld both sides of vertical leg and top side of horizontal leg to beam with $\frac{1}{4}$ " continuous fillet weld.

A typical haunch width of 9" shall be used for computing quantity of concrete. However, the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.

Symmetrical about
Roadway

Bridge Limit
(end approach
slab)



PLAN OF STEEL FRAMING

Load Frequency and Dim. T	Middle Span L Feet	End Span 0.8 L Feet	STRUCTURAL DATA							REINFORCING STEEL				ESTIMATED QUANTITIES (3 Spans)				DESIGN DATA										
			Beam	Moment Plates		No. of spaces for crossframes (3 spans)	No. of full Guard Rail panels each side	D. L. Deflect (inches)	Bearing Capacity Required (kips)		No. of bars for 3 spans (all bars straight)				Reinforcing Steel (lbs)	Structural Steel (lbs)	Class "C" Concrete (Cu yd)	Railing both sides (Lin ft.)	Total Unmodified Superstructure Reactions for Designing Substructure (kips)				Max Unmodified Interior Bm Reaction					
				Top Plate	Bottom Plate				Abutment	Pier	S701 No.	S601 No.	S602 No.	S603 Length					Abutment D.L.	Abutment L.L.	Pier D.L.	Pier L.L.	Imp. 2)	Abut	Pier			
CF=130 T=13'	35	28	24WF68	6 3/8 x 3/8 x 7'-10"	9 3/4 x 3/8 x 7'-10"	10	14	1/8	47	82	111	111	222	32'-0"	14'-0"	29203	57400	108	191	69	64	19	231	89	24	40	78	
	375	30	24WF76	No plates required	required	10	15	1/8	49	86	119	119	222	34'-3"	15'-0"	31288	63600	115	204	74	67	20	250	91	24	42	81	
	425	34	24WF84	No plates required	required	10	16	1/8	52	87	127	127	222	36'-3"	16'-0"	33290	71000	123	217	80	71	19	268	90	23	44	84	
	45	36	24WF94	No plates required	required	12	17	1/8	53	91	135	135	222	38'-6"	17'-0"	35375	83100	130	230	85	72	19	288	93	23	45	88	
	475	38	24WF94	7 1/2 x 3/8 x 7'-8"	10 1/2 x 3/8 x 7'-8"	12	18	1/4	54	95	142	142	222	31'-0"	18'-0"	37499	89900	138	243	90	73	19	305	97	23	47	92	
	50	40	30WF99	8 1/2 x 3/8 x 8'-2"	11 1/2 x 3/8 x 8'-2"	12	19	1/4	55	99	150	150	296	32'-0"	19'-0"	39538	93200	145	256	95	74	18	321	100	24	48	96	
	525	42	30WF99	9 x 3/8 x 8'-6"	12 x 3/8 x 8'-6"	12	20	1/4	56	103	158	158	296	34'-3"	20'-0"	41615	101100	153	269	101	75	18	340	103	24	49	100	
	55	44	30WF108	9 x 3/8 x 8'-10"	12 x 3/8 x 8'-10"	14	21	1/4	57	107	166	166	296	35'-10"	21'-0"	43654	114100	161	282	107	76	18	360	106	24	50	104	
CF=400 T=8'	60	48	30WF108	9 x 3/8 x 10'-6"	12 x 3/8 x 10'-6"	14	22	1/4	58	112	174	174	296	37'-0"	22'-0"	45729	118300	168	295	112	77	16	377	109	24	51	106	
	65	52	33WF118	10 x 3/8 x 11'-2"	13 x 3/8 x 11'-2"	14	24	3/8	61	122	189	189	370	33'-0"	24'-0"	49911	138300	183	321	123	79	18	415	121	26	54	120	
	65	52	30WF132	9 x 3/8 x 13'-4"	12 x 3/8 x 13'-4"	16	27	1/2	63	133	205	205	370	35'-6"	26'-0"	53970	164200	199	347	135	81	18	455	131	27	57	130	
	70	56	36WF135	10 1/2 x 3/8 x 14'-0"	13 1/2 x 3/8 x 14'-0"	16	29	1/2	66	142	220	220	370	38'-3"	28'-0"	58014	173400	213	373	146	83	18	491	141	28	59	140	
	75	60	33WF152	10 x 3/8 x 15'-0"	13 x 3/8 x 15'-0"	16	31	3/8	68	152	236	236	444	34'-3"	30'-0"	62266	210800	220	399	158	86	17	534	150	29	62	150	
	80	64	36WF160	10 1/2 x 3/8 x 16'-0"	13 1/2 x 3/8 x 16'-0"	16	33	3/8	71	162	252	252	444	36'-6"	32'-0"	66437	233700	244	425	170	88	17	573	159	30	65	160	
	CF=130 T=13'	35	28	24WF76	No plates required	required	10	14	1/8	58	97	123	123	222	32'-0"	14'-0"	31061	61500	113	191	72	64	19	242	89	24	41	80
		375	30	24WF84	No plates required	required	10	15	1/8	60	101	132	132	222	34'-3"	15'-0"	33302	69300	121	204	77	67	20	261	91	24	43	83
40		32	24WF94	No plates required	required	10	16	1/8	62	102	141	141	222	36'-3"	16'-0"	35458	78900	129	217	83	71	19	281	90	23	45	86	
42.5		34	27WF94	No plates required	required	12	17	1/8	64	107	149	149	222	38'-6"	17'-0"	37544	84000	137	230	88	72	19	298	93	23	46	90	
45		36	30WF99	No plates required	required	12	18	1/8	65	111	158	158	296	31'-0"	18'-0"	39977	91200	145	243	94	73	19	317	97	23	47	94	
475		38	30WF108	No plates required	required	12	19	1/8	66	116	167	167	296	32'-0"	19'-0"	42171	102000	153	256	100	74	18	337	100	24	49	99	
50		40	30WF116	9 x 3/8 x 9'-2"	12 x 3/8 x 9'-2"	12	20	1/4	68	120	175	175	296	34'-3"	20'-0"	44248	115900	161	269	106	75	18	357	103	24	50	103	
525		42	30WF116	9 x 3/8 x 11'-0"	12 x 3/8 x 11'-0"	14	21	1/4	69	124	184	184	296	35'-10"	21'-0"	46441	122000	169	282	111	76	18	375	106	24	51	107	
CF=400 T=8'	55	44	33WF118	10 x 3/8 x 11'-4"	13 x 3/8 x 11'-4"	14	22	1/4	70	130	193	193	296	37'-6"	22'-0"	48671	131000	177	295	117	77	18	394	109	24	52	112	
	60	48	33WF130	10 x 3/8 x 13'-0"	13 x 3/8 x 13'-0"	14	24	1/4	73	142	210	210	370	33'-0"	24'-0"	53162	151000	193	321	123	79	18	434	121	26	55	123	
	65	52	33WF152	10 x 3/8 x 13'-2"	13 x 3/8 x 13'-2"	16	27	3/8	76	155	227	227	370	35'-6"	26'-0"	57377	181000	209	347	142	81	18	479	131	27	58	135	
	70	56	36WF160	10 1/2 x 3/8 x 14'-4"	13 1/2 x 3/8 x 14'-4"	16	29	3/8	79	166	245	245	370	38'-3"	28'-0"	61885	218000	225	373	154	83	18	519	141	28	61	145	
	75	60	36WF170	10 1/2 x 3/8 x 16'-0"	13 1/2 x 3/8 x 16'-0"	16	31	1/2	81	177	262	262	444	34'-3"	30'-0"	66294	234000	241	399	166	86	17	560	150	29	63	155	
	80	64	36WF194	10 1/2 x 3/8 x 16'-6"	13 1/2 x 3/8 x 16'-6"	16	33	3/8	85	189	279	279	444	36'-6"	31'-0"	70618	279000	257	425	171	88	17	609	159	30	67	167	
	CF=2000 T=8'	35	28	24WF84	No plates required	required	10	14	1/8	63	105	138	138	222	31'-0"	14'-0"	33364	68000	119	191	75	64	19	252	89	24	41	81
		375	30	27WF84	No plates required	required	10	15	1/8	65	108	148	148	222	34'-3"	15'-0"	35719	69900	127	204	80	67	20	270	91	24	43	85
40		32	27WF94	No plates required	required	10	16	1/8	68	110	158	158	222	36'-3"	16'-0"	38090	79000	136	217	86	71	19	290	90	23	45	88	
42.5		34	30WF99	No plates required	required	12	17	1/8	69	115	168	168	222	38'-6"	17'-0"	42486	88000	144	230	92	72	19	310	93	23	47	92	
45		36	30WF108	No plates required	required	12	18	1/8	70	119	177	177	296	31'-0"	18'-0"	44910	98000	152	243	98	73	19	331	97	23	48	97	
475		38	30WF116	No plates required	required	12	19	1/8	71	123	187	187	296	32'-0"	19'-0"	47268	108000	161	256	104	74	18	351	100	24	49	101	
50		40	30WF116	9 x 3/8 x 10'-4"	12 x 3/8 x 10'-4"	12	20	1/4	72	127	197	197	296	34'-3"	20'-0"	49554	117000	169	269	110	75	18	370	103	24	51	106	
525		42	33WF118	10 x 3/8 x 10'-10"	13 x 3/8 x 10'-10"	14	21	1/4	73	131	207	207	296	35'-10"	21'-0"	50003	126000	177	282	115	76	18	399	106	24	52	110	
CF=2000 T=8'	55	44	30WF132	9 x 3/8 x 11'-6"	12 x 3/8 x 11'-6"	14	22	1/4	74	137	216	216	296	37'-6"	22'-0"	52233	143000	186	295	122	77	18	412	109	24	53	116	
	60	48	36WF135	10 1/2 x 3/8 x 12'-8"	13 1/2 x 3/8 x 12'-8"	14	24	1/4	77	149	236	236	370	33'-0"	24'-0"	57189	157900	202	321	134	79	18	450	121	26	56	127	
	65	52	33WF152	10 x 3/8 x 14'-0"	13 x 3/8 x 14'-0"	16	27	3/8	79	162	255	255	370	35'-6"	26'-0"	61713	188000	219	347	147	81	18	495	131	27	59	138	
	70	56	36WF160	10 1/2 x 3/8 x 15'-2"	13 1/2 x 3/8 x 15'-2"	16	29	3/8	81	173	275	275	370	38'-3"	28'-0"	66531	211000	236	373	159	83	18	536	141	28	62	143	
	75	60	36WF182	10 1/2 x 3/8 x 15'-6"	13 1/2 x 3/8 x 15'-6"	16	31	1/2	84	184	294	294	444	34'-3"	30'-0"	71249	242800	253	399	173	86	17	584	150	29	65	160	
	80	64	36WF194	10 1/2 x 3/8 x 17'-2"	13 1/2 x 3/8 x 17'-2"	16	33	3/8	87	195	314	314	444	36'-6"	32'-0"	76037	280900	270	425	187	88	17	629</					

