Tensile strength in tons, per square inch 22

Elastic limit not less than 50 per cent. of ultimate strength from test.

Elongation in 8 inches, not less than, per cent. 24

Flats, squares, rounds, and strips cut from sections up to 1in. in thickness or diameter, to bend, when cold, through 180 degrees, and close flat without fracture.

Over 1in. and up to 3in. in thickness or diameter, to bend double, when cold, with a space at the inner curve or root equal to the thickness or diameter, without fracture.

Bars, nicked and broken to show good fibrous structure.

All wrought-iron must be of good welding quality, and shall be tested for general welding properties or the presence of "red" or "cold shortness," as may be required by the Testing Engineer. All wrought iron shall be further subjected to such chemical, hot and cold forge tests, impact and bending tests, as may be sufficient, in the opinion of the Testing Engineer, to prove the soundness, ductility, and regularity of the material, and fitness for the service required.

Wrought-iron within 10 per cent. of the specified minimum tensile stress will be accepted, provided the elastic limit and elongation are proportionately higher, and the reduction in area of test pieces exceeds 50 per cent. in sizes under 1½ in. in thickness or diameter, or 45 per cent. in sizes 1½in. and over in thickness or diameter.

The test for Cast Steel shall be as follows:—

Test specimens cut from the casting or lumps formed thereon in such position and of such size as to be truly representative of the metal to give following results:—

Tensile strength in tons per square inch 26

Elastic limit not less than 50 per cent. of ultimate strength from test.

Elongation in 2 inches, not less than, per cent. 15

One specimen required from each melt.

Costs of Tests, etc.—Any specimens for testing must be supplied by the Contractor without charge.

After the receipt of specimens from Contractor, the cost of making all tests and preparing all specimens for the testing machine will be borne by the Department, except in the case of material rolled in Great Britain, where arrangements as to testing will be made by the Agent General.

If the materials experimented upon do not fully come up to the standards above indicated, and show a uniformity in result, the plates, bars, castings, and every other description of iron or steel from which the specimens have been taken, and all iron or steel of similar manufacture, shall be absolutely rejected, and be at once removed from the works.

TABLE A.

North Coast Railway.

Summary of Steel Truss Bridges.

Section.	Waterway.	Truss Spans.	Approach Spans. Steel.	Approach Spans. Timber.	Approx. Weight.	Progress up to Oct., 1910.
		ft. in.	ft. in.		Tons.	
W. Maitland to Dungog.	Hunter R.	3 157 6	6 32 0	—	364	Completed
	Paterson R.	1 200 0	2 66 4 17 32 0	—	339	Completed
Dungog to Gloucester.	Williams R.	1 120 0	2 66 4	ft. 26 24	138	At site.
	Karuah R.	1 120 0	—	11 24 1 14	78	In shop.
Gloucester to Taree.	Avon R.	1 120 0	—	24 24	78	In shop.
	Manning R.	4 200 0	—	—	674	At site.
	Charity Cr.	1 120 0	6 32 0	—	119	At site.
	Rocky Falls Cr.	1 120 0	4 32 0	—	103	In shop.
	Dingo Cr.	1 120 0	4 32 0	—	103	At site.
Taree to Wauchope.	Dawson R.	1 120 0	6 32 0	—	110	Tenders Invited.
	Lansdowne R.	1 120 0	2 32 0	—	89	
	Stewart R.	1 120 0	—	32 24	78	
	Camden Haven R.	1 200 0	—	35 24 1 14	169	Borings in hand.
Wauchope to Kempsey.	Hastings R.	3 157 6	1 66 4	—	356	
	Wilson R.	2 157 6	—	22 24	217	
	Cooperabung Cr.	1 120 0	—	2 24	78	
	Piper's Cr.	1 120 0	—	5 24 1 14	78	
	Macleay R.	3 200 0	2 66 4 4 32 0	—	592	
Kempsey to Nambucca R.	Nambucca R	3 200 0	—	—	506	Trial Estimates
Nambucca R. to Coff's H'rbour	Bellinger R. S.	3 200 0	—	—	506	
	Bellinger R. N.	3 200 0	2 66 4	—	567	
Glenreagh to S. Grafton.	Sherwood Cr	1 120 0	—	—	78	Plans complete
				Total ...	5,420	
				Minor Steel Spans	680	
				Grand Total ...	6,100 tons.	

TABLE B.

Details of Standard Spans.

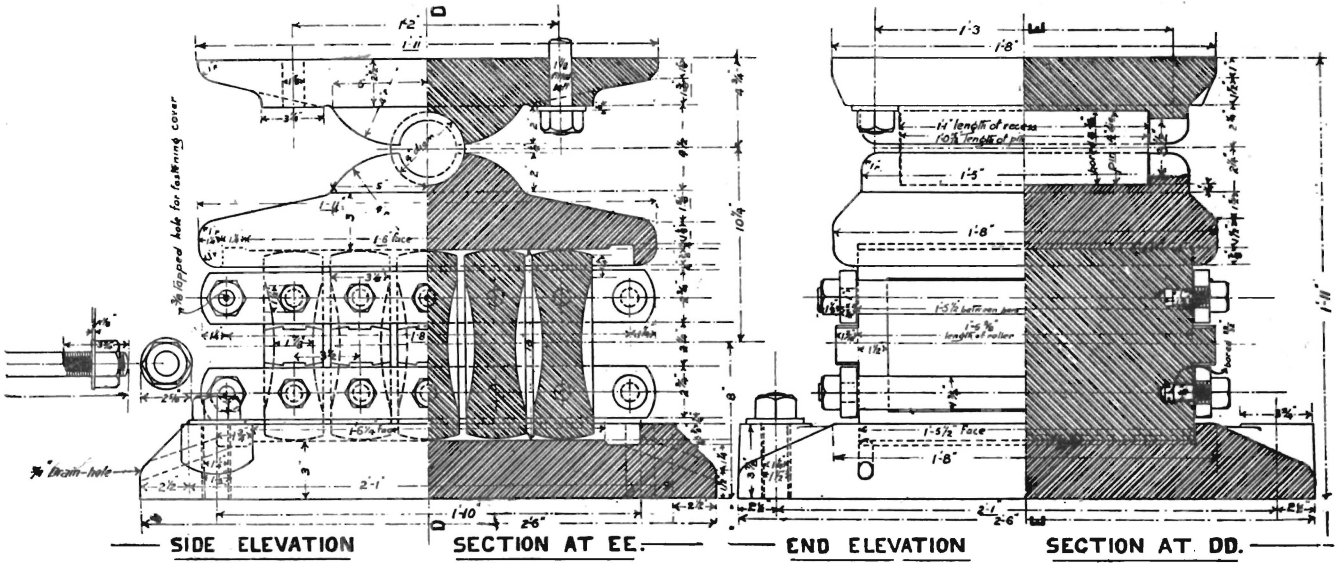
Structural Type	Plate Web Girders.				Pratt Trusses.		
Span.	ft. in. 20 0	ft. in. 32 0	ft. in. 66 0	ft. in. 66 4	ft. in. 120 0	it. fn. 157 6	ft. in. 200 0
Measured.	Over all.			C to C of Bearings.			
Type of Span.	Deck.			Through.			
Spacing of Stringers ...	...	...	...	ft. in. 6 6	ft. in. 6 6	ft. in. 6 6	ft. in. 6 6
Depth ,, ,, ...	...	...	...	1 2	2 6	3 0	3 0
Spacing of Cross Girders	...	...	...	8 3	20 0	22 6	25 0
Depth ,, ,,	...	...	...	2 6	3 6	4 0	4 0
Spacing of Main Girders	ft. in. 6 6	ft. in. 6 6	ft. in. 6 6	15 3	16 9	17 0	17 0
Depth ,, ,, ,,	2 0	4 0	7 0	7 0	24 0	27 0	30 0
Expansion Arrangements.	Gun-metal Plates.				10in. Dia. Rollers		
No. & Length of Rollers	...	...	...	...	in. in. $5 \times 17\frac{3}{8}$	in. in. $6 \times 18\frac{7}{8}$	in. in. $7 \times 20\frac{7}{8}$
Area of Base Plate (sq. ft.	...	2·67	3.36	3·36	6·25	7·11	9·0
Camber in inches ...	nil	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	15/16	1-9/16	2-1/16
Weight of Stringers ...	...	...	...	2·78	17·62	21·93	29·63
,, Cross Girders	...	..	...	7·50	7·56	8·47	10·54
,, Main Girders	2·29	4·67	19·08	19·62	42·27	65·47	113·86
,, Lateral System	·34	·59	1·51	·54	7·33	8·92	8·99
,, Bearings ...	·10	·19	·35	·37	3·14	3·73	5·39
Total Weight (Tons) ...	2·73	5·45	20·94	30·81	77·92	108·52	168·41

TABLE C.

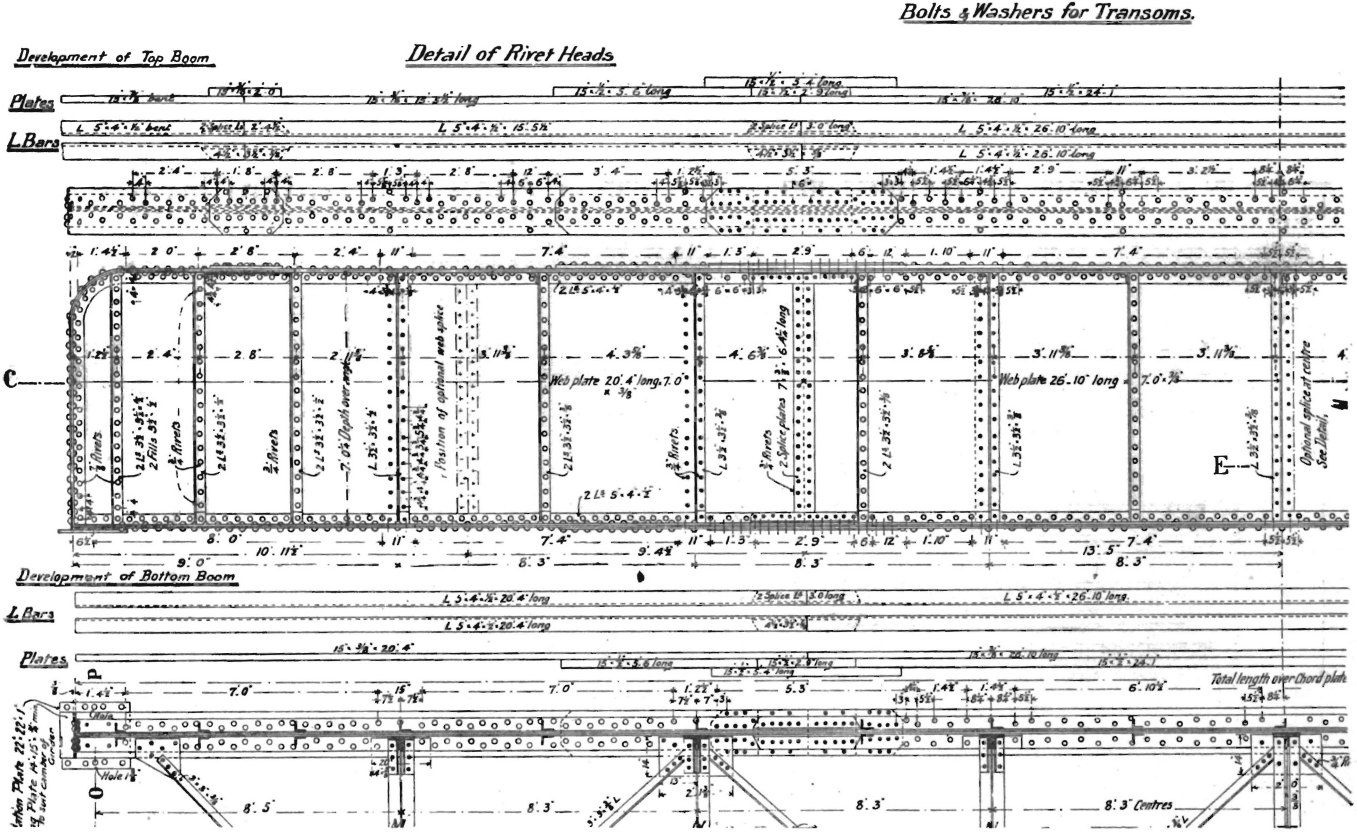
List of N.S.W. Railway Bridges over 100 Ft. Span Erected prior to 1909.

Watercourse.	Date of Erection Approx.	Spans.	Type.	Main Girders.		Cross Girders.		Expan. Rollers.		
				Depth.	Spacing.	Depth.	Spacing.	No.	Dia.	L.
		ft. in.		ft. in.	ft. in.	ft. in.	ft. in.		in.	in.
Nepean River (at Menangle)	1863	3 198 0	D'ble-webbed Plate Girder	11 6	28 6	1 6	3 0	7	4	33
Nepean River (at Penrith)	1866	do.	Bi-cellular Chords.	11 6	28 6	1 6	3 0	7	4	33
Hunter River (at Aberdeen)	1871	3 159 0	Multiple Lattice Girder.	11 0	16 9	1 2	3 0	8	4	33
Macquarie River (at Bathurst)	1874	do.	do.	11 0	16 9	1 2	3 0	7	4	33
Murrumbidgee R. (at Wagga)	1878	4 159 0	do.	14 8	16 9	2 2	7 4	7	4	30
Macquarie River (at Wellington)	1879	3 159 0	do.	11 0	16 9	1 2	3 0	8	4	33
Macquarie River (at Dubbo)	1883	3 159 0	do.	14 8	16 6	2 2	7 4	7	4	30
George's River (at Como)	1883	6 159 0	do.	14 8	16 6	2 2	7 4	6	4	30
Murray River (at Albury)	1883	2 159 0	do.	17 0	28 0	3 0	5 8	7	4	30
Parramatta River (at Ryde)	1884	6 159 0	do.	17 0	27 6	3 0	5 8	7	4	28
Murrumbidgee R. (at Narrandera)	1884	2 159 0	do.	14 8	16 6	2 2	7 4	6	4	28
Lachlan River (at Cowra)	1886	3 159 0	do.	14 8	16 6	2 2	7 4	6	4	28
Hawkesbury R. (at Brooklyn)	1889	7 410 0	Pin connected Polygonal Truss	58 0	28 0	5 0	31 6½	11	4	69
Leycester Creek (at Lismore)	1892	3 120 0	Pratt Truss	17 6	15 8	1 7	15 0	5	9	20
Wilson Creek (at Mayfield)	1892	1 120 0	do.	17 6	15 8	1 7	15 0	5	9	20
Dunbible Creek (at Dunbible)	1894	1 120 0	do.	17 6	15 8	1 7	15 0	5	9	20
Ironbark Creek* (near Newcastle)	1898	1 110 0	do.	15 0	27 6	2 6	10 0	10	9	27
Gwydir River (at Gravesend)	1901	2 180 0	do.	28 0	16 6	3 2	22 6	6	10	20
Wollondilly River (at Goulburn)	1902	2 120 0	Warren Braced with Verticals.	24 0	16 9	3 8	20 0	6	6	29
Richmond River (at Casino)	1903	1 180 0	Pratt Truss.	28 0	16 6	3 2	20 0	6	10	20
Murrumbidgee R. (at Gundagai)	1903	1 200 0	Pin connected Polygonal Truss	36 0	17 2	3 11	25 0	7	10	23
Namoi River (at Manilla)	1906	2 180 0	Pratt Truss.	28 0	16 6	3 2	22 6	6	10	20
Nepean River* (at Penrith)	1907	4 193 4 1 120 10	Pratt Truss.	30 0	28 0	5 0	24 2	11	9	40
Glennies Creek* (at Singleton)	1908	4 126 0	do.	25 0	28 0	5 0	18 0	7	3	28

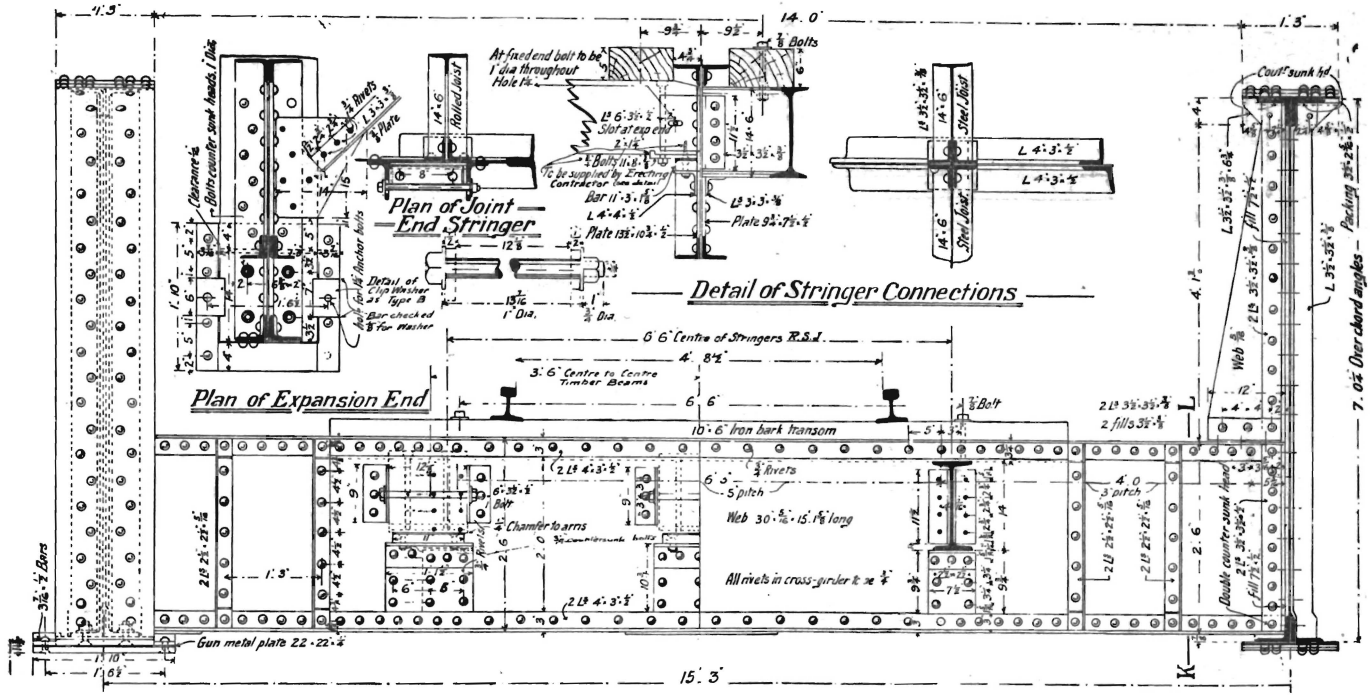
* Erected by the Railway Commissioners.



EXPANSION BEARINGS FOR 120 Ft. TRUSS SPAN.

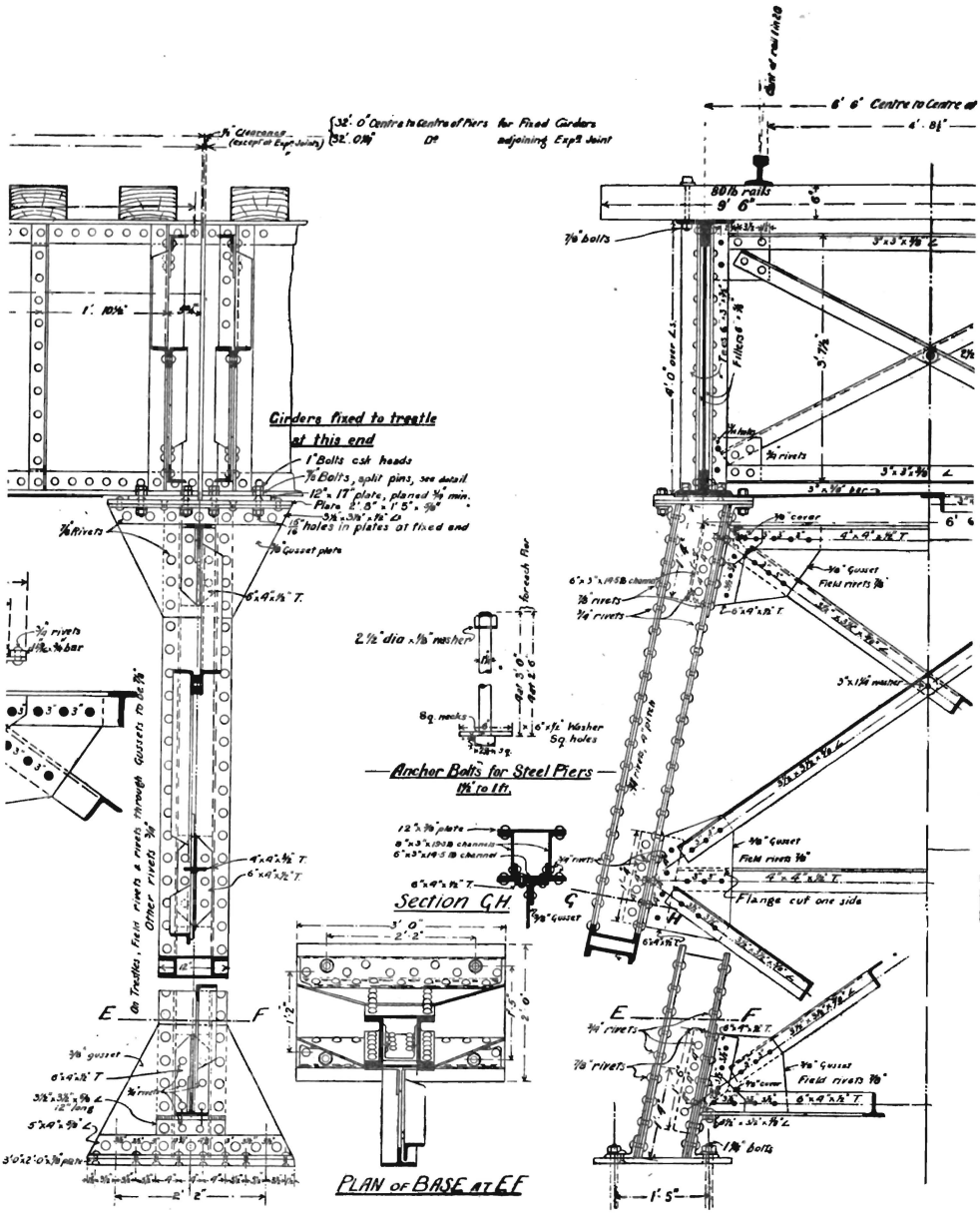


66'·4" THROUGH PLATE GIRDER.



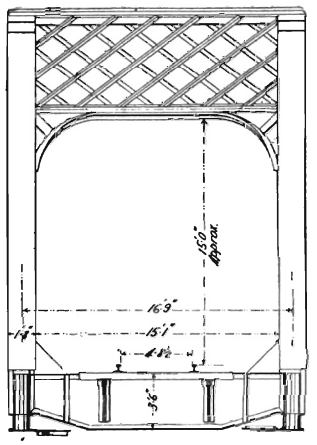
END ELEVATION. CROSS ELEVATION.

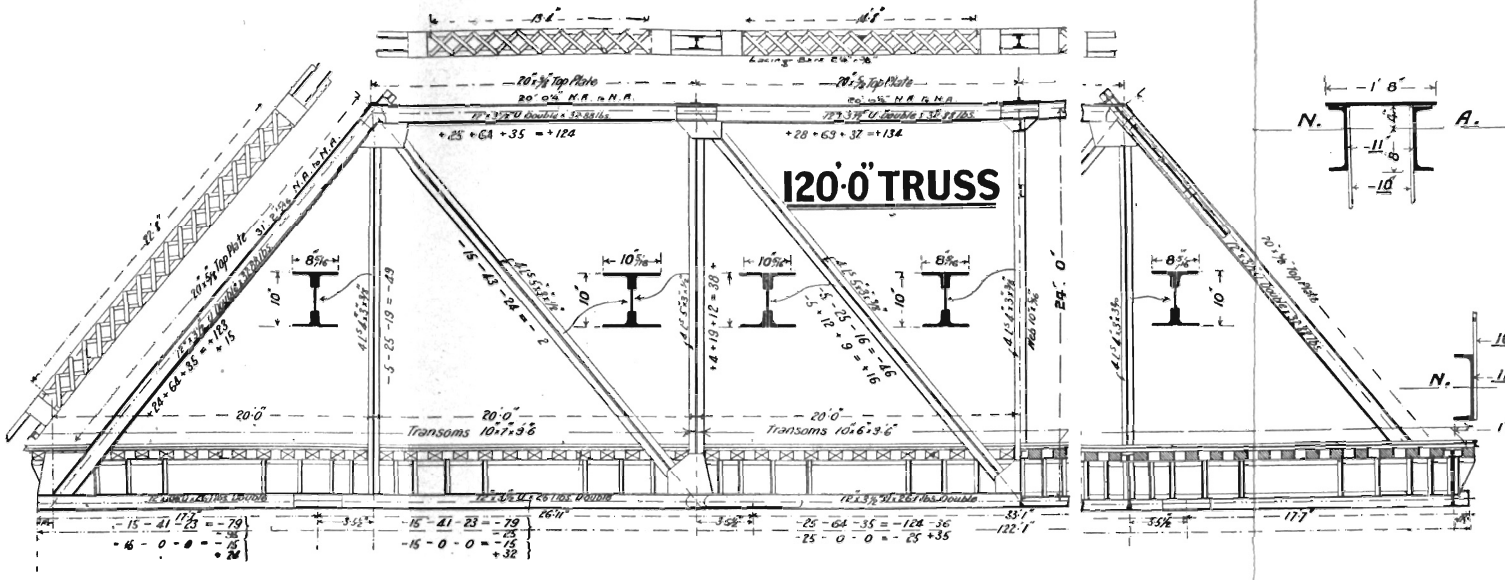
66'·4" THROUGH SPAN ADJOINING TIMBER OPENINGS.

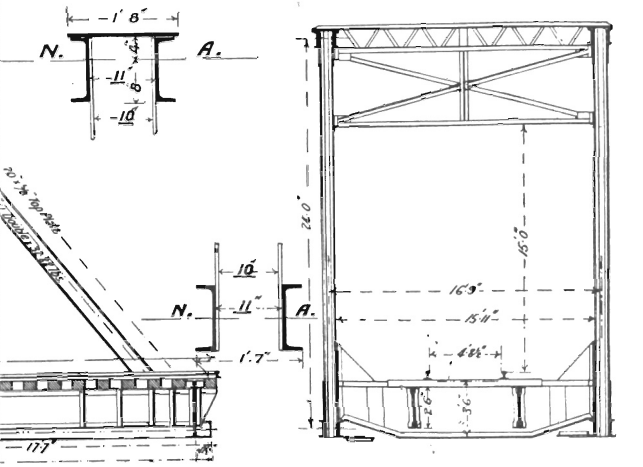


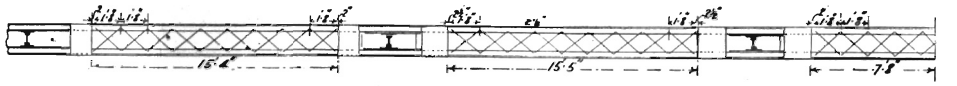
32′-0″ GIRDER ON DOUBLE PANEL TRESTLE.

120·0" TRUSS

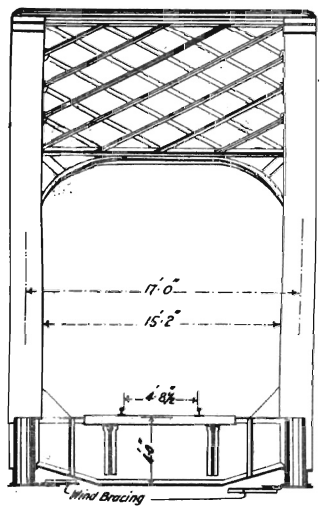


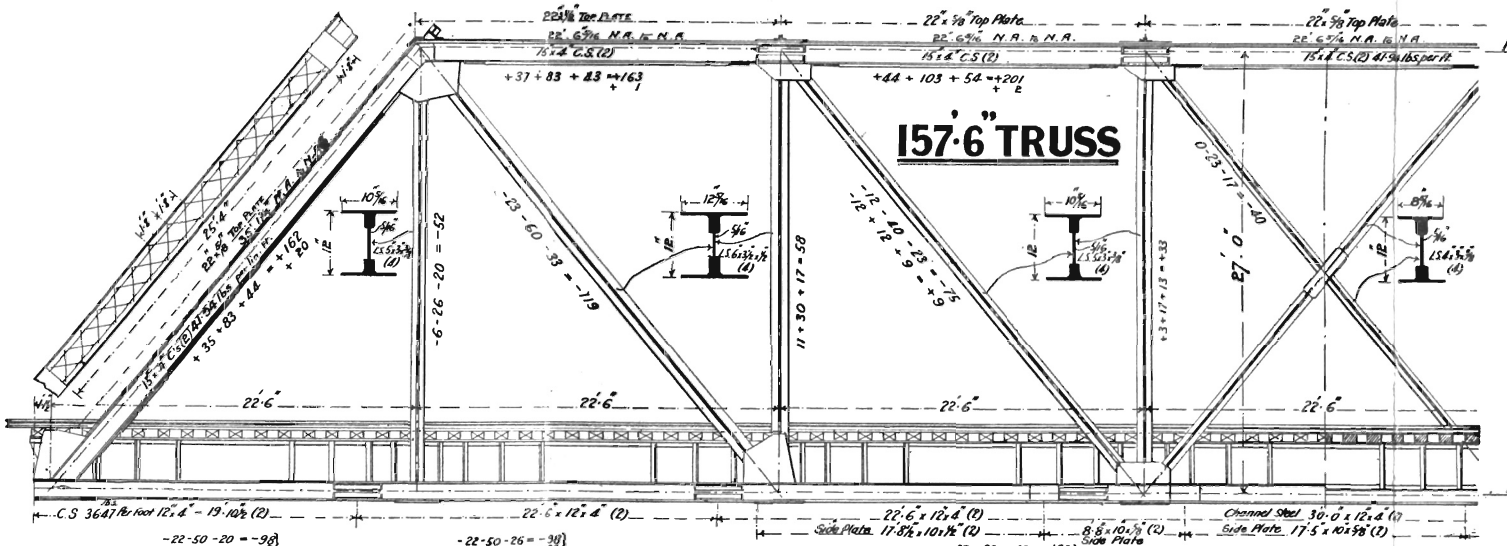


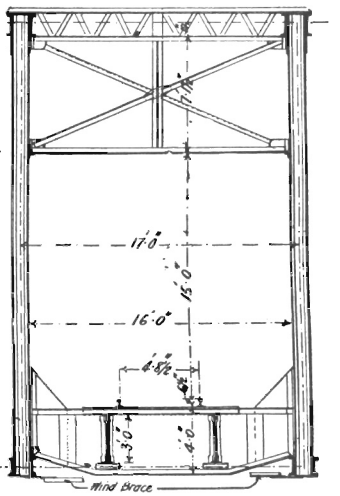




157·6" TRUSS







Stresses are arranged thus under members
Dead – Live – Impact — Total
Wind
– Tension + Compression

200·0" TRUSS