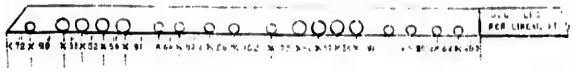
APPENDIX.

ONTARIO AND QUEBEC RAILWAY.

Extracts from General specification for the construction of the Bridges on the Ontario and Quebec Railway between Montreal and Smith's Falls.

5. Through spans, less than 100 feet in the clear, must have a clear width between the trusses of 16 feet. The 324 feet span must be 20 feet centre to centre of trusses. Deck spans less than 100 feet must be 10 feet centre to centre of trusses

Spans of 80 feet and under may be either plate or lattice girders. Those over 80 feet and under 100 feet in the clear are to be lattice girders, and spans over 100 feet in the clear may be pin connected.



10. All spans must be proportioned to carry, in addition to the dead load, two consolidation engines coupled as shewn in the above diagram, followed by a train load of 3,000 lbs. per lineal foot, and the maximum strains due to all positions of the live load must be taken in proportioning all the parts of the structure. Floor to be laid with 8" x 8" pine ties, spaced 12 inches centre to centre with two guard-rails on each side of track, one 6" x 8" and the other 10" x 10".

11. Variations in temperature to the extent of 180 degrees Fah. must be provided for.

12. All parts of the structure shall be so proportioned that maximum loads shall in no case produce a greater tensile strain upon the net section than the following:—

		Pounds per sq. inch.
On bottom chords and diagonals	iron	10,000
" " "	steel	12,000
On counter rods, long verticals, and end lower chords	iron	8,000
" " " " "	steel	10,000
On lateral bracing (with 10,000 lbs. initial strain)	iron	15,000
" " " " "	steel	18,000
On bottom flange of riveted floor beams	iron	8,000
" " " "	steel	10,000
On bottom flange of longitudinal plate girders (over 20 ft.)	iron	8,000
" " " " " "	steel	10,000
On bottom flange of longitudinal plate girders (under 20 ft.)	iron	7,000
" " " " "	steel	9,000
On suspension loops or other members liable to sudden loading	iron	6,000
" " " " " "	steel	7,000
On solid rolled beams	iron	8,000
" "	steel	10,000

13. Compression members shall be so proportioned that the maximum load shall, in no case, cause a greater strain than that determined by the following formula:—

$P = 8{,}000 \div 1 + \frac{L^2}{40{,}000\ R^2}$ for square end compression members.

$P = 8{,}000 \div 1 + \frac{L^2}{30{,}000\ R^2}$ for compression members with one pin end and one square end.

$P = 8{,}000 \div 1 + \frac{L^2}{20{,}000\ R^2}$ for compression members with pin ends.

P = Allowed compression per square inch of cross section.
L = Length of compression member in inches.
R = The least Radius of gyration of the section in inches.

For steel substitute 10,000 for 8,000 in formula.

No compression member shall have a length exceeding 45 times its least width.

14. In rolled beams and girders compression shall be limited as follows:

		Pounds per sq. inch.
In rolled beams used as floor beams or stringers	iron	8,000
" " " "	steel	10,000
In riveted plate girders used as floor beams, gross section	iron	7,000
" " " " "	steel	9,000
In riveted longitudinal plate girders (over 20 ft.) gross section	iron	7,000
" " " " "	steel	9,000
In riveted longitudinal plate girders (under 20 ft.) gross section	iron	6,000
" " " " "	steel	8,000
In riveted lattice girders gross section	iron	7,000
" " "	steel	9,000

15. Members subject to alternate strains of tension and compression shall be proportioned to resist each kind of strain. Both of the strains shall be assumed to be increased by an amount equal to 8-10 of the least of the two strains for determining the sectional areas, by the above allowed strains.