

SECTION XIII

QUANTITY CHARTS

	Charts Numbers
Steel rolled beam spans.....	1 and 2
Steel deck plate girder spans .....	3 to 5
Steel truss spans .....	6
Reinforced concrete slab spans.....	7 and 8
Reinforced concrete deck girder spans.....	9 and 10
Reinforced concrete box girder spans .....	11
Reinforced concrete rigid frame spans.....	12
Reinforced concrete arch spans .....	13
Quantitative comparison curves - steel .....	14 and 15
Quantitative comparison curves - concrete.....	16

## Use of Charts

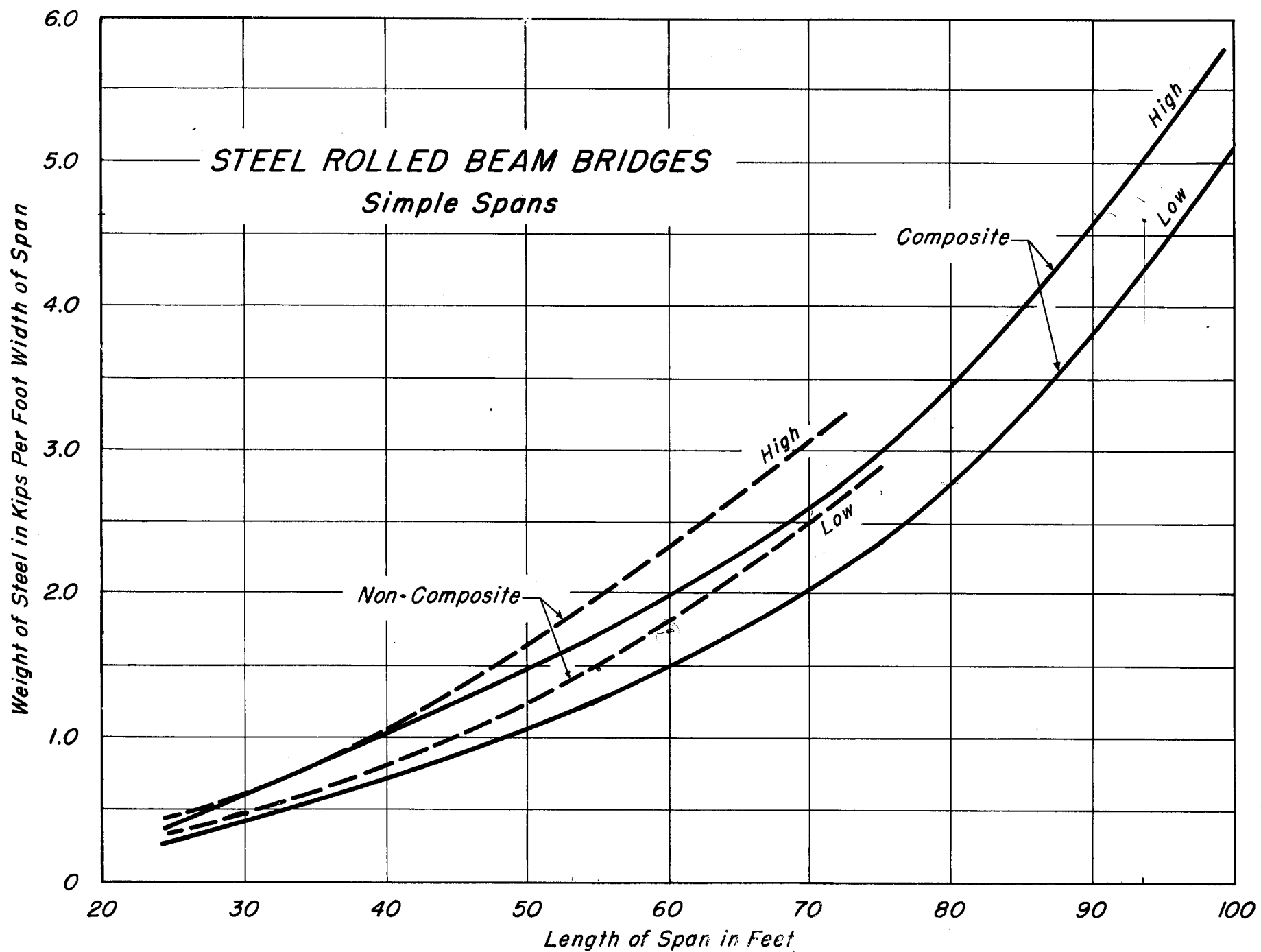
The charts in this section have been developed from data tabulated in the catalog. It can readily be seen that preparation of quantity curves for every roadway width is impracticable. However, very good results have been obtained by plotting quantities for a unit roadway width of one foot as ordinates against the span lengths as abscissas. Such quantities are determined by dividing the total quantity of steel (or concrete) for a span by the width of roadway inside face to inside face of railing, including any median, sidewalks, or safety walks. This basis permits utilization of quantities tabulated for all roadway widths. Quantities for designs of more than  $10^\circ$  skew were not considered. Charts for continuous spans were prepared on the basis of unit roadway width quantity for the average length of spans in the continuous unit and only those designs with economical ratio of end spans to intermediate spans were considered.

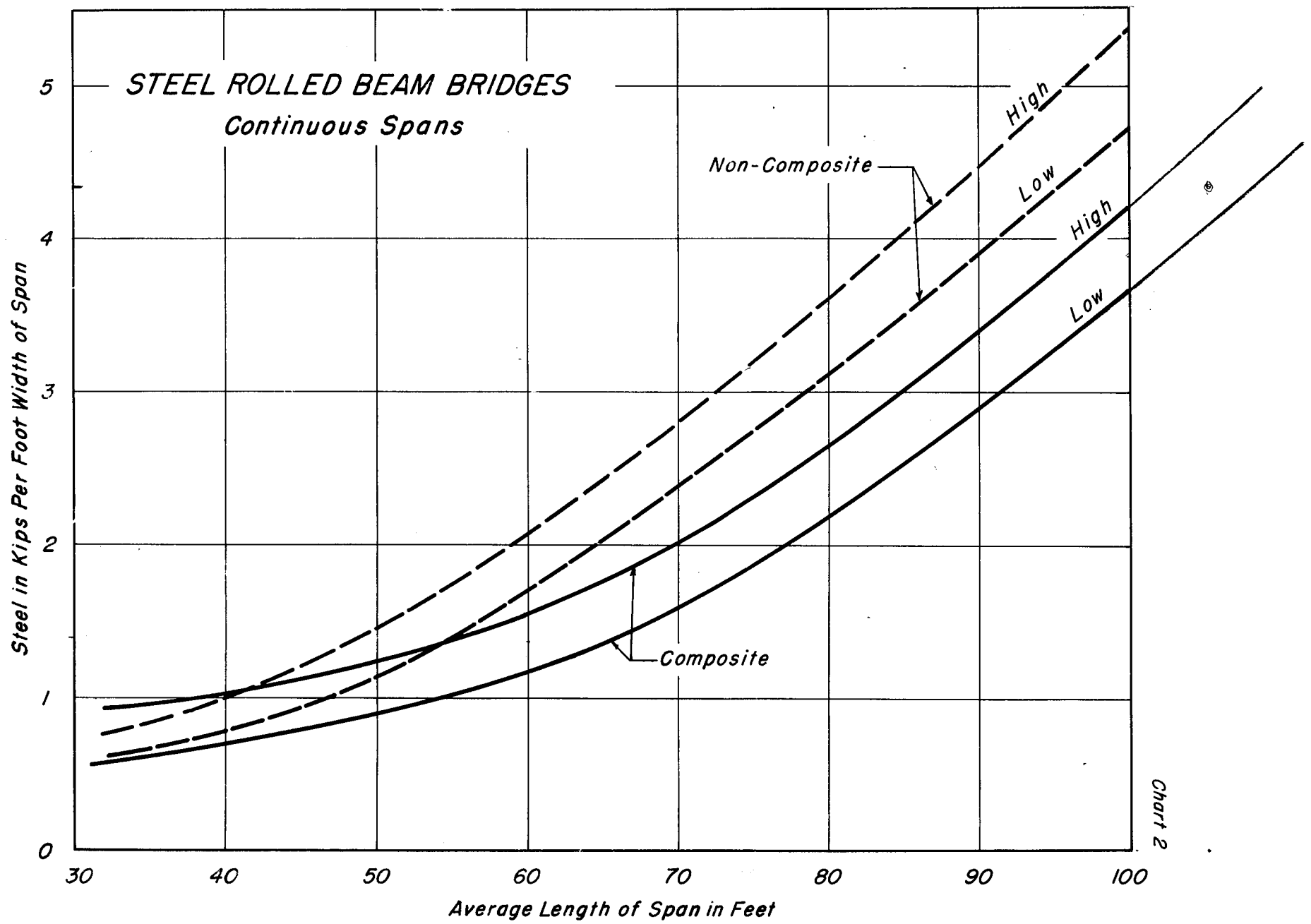
Charts have been prepared for simple and continuous spans of steel bridges and concrete bridges. In the steel rolled beam category, charts cover spans with and without composite action. Steel deck girder span charts include riveted type, welded type, and welded type with composite action. In the concrete bridge category, charts include slab spans, deck girder spans, box girder spans, rigid frame spans, and filled spandrel arch spans. On many of the charts a sufficient number of quantities (from 75 to 200) were plotted to permit drawing upper and lower envelope curves representing the heaviest and lightest designs, respectively. A single curve only was drawn for steel trusses, steel deck girders, concrete box girders, and concrete arch spans, because of the small number of designs for which quantities were tabulated.

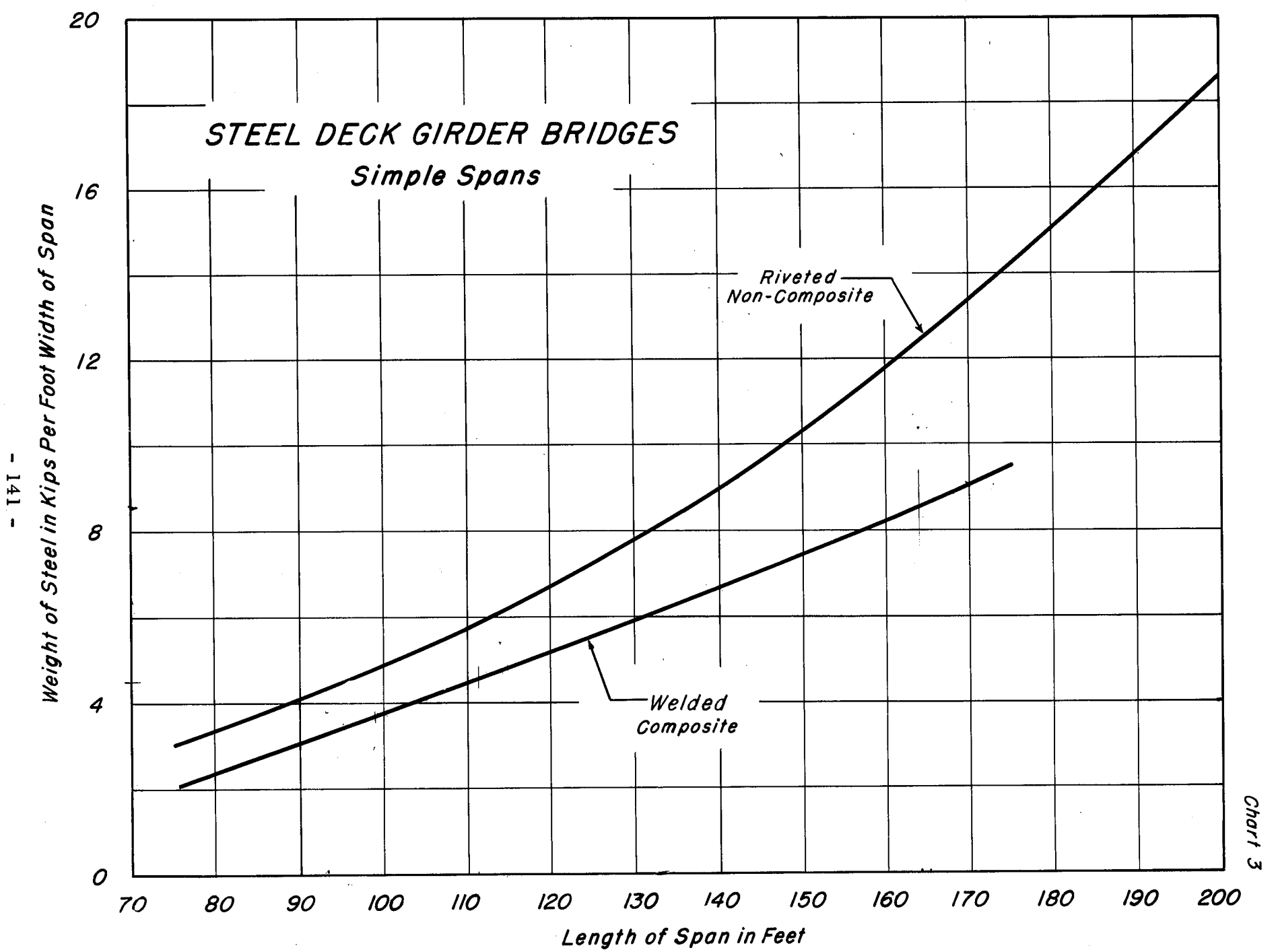
Use of simple span charts is explained as follows: Select the appropriate chart for the type of span, take off the unit quantity for the selected span length and multiply this quantity by the roadway width between rails (including median, sidewalks, or safety walks). This gives the total quantity of steel (or concrete) for the span in question. Where upper and lower envelope curves are shown on the chart, judgment must be exercised in determining which envelope curve, or intermediate point there between, to use. If the designer will check the curves with a few of his designs for which quantities have already been computed, he will be able to determine the relationship there between.

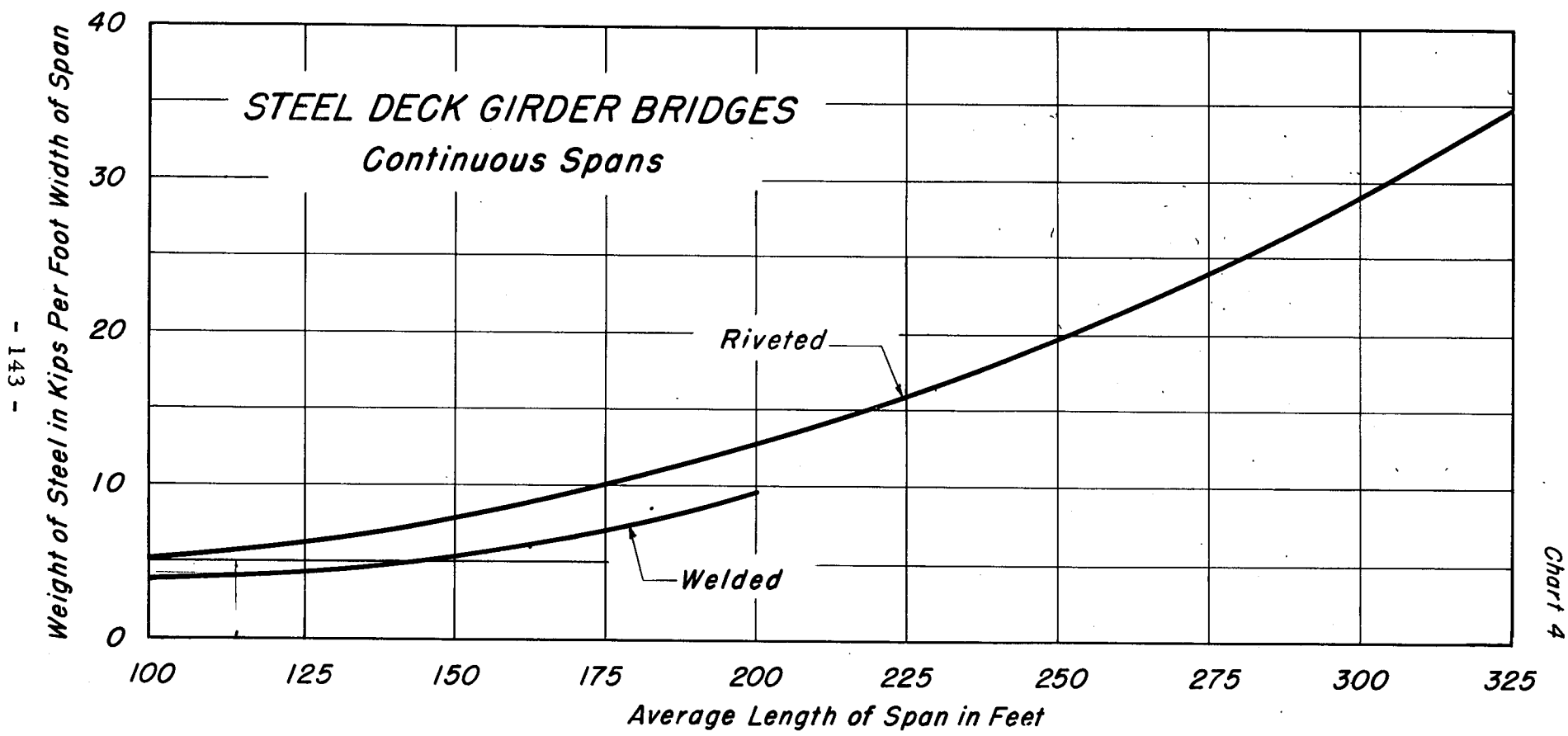
The use of continuous span charts follows the same procedure except as follows: the number of spans in and length of continuous unit being determined, the average length of span in the continuous unit is computed. The unit roadway quantity is then read from the curves for the average span length computed, and the total quantity for the continuous unit is computed by multiplying the unit roadway quantity by the roadway width between railing times the number of spans in the continuous unit. It must be kept in mind that the continuous span charts are intended for use in determining the quantity of steel or concrete for a continuous span unit and not for individual spans. For cantilever spans the same procedure should be followed as for continuous spans.

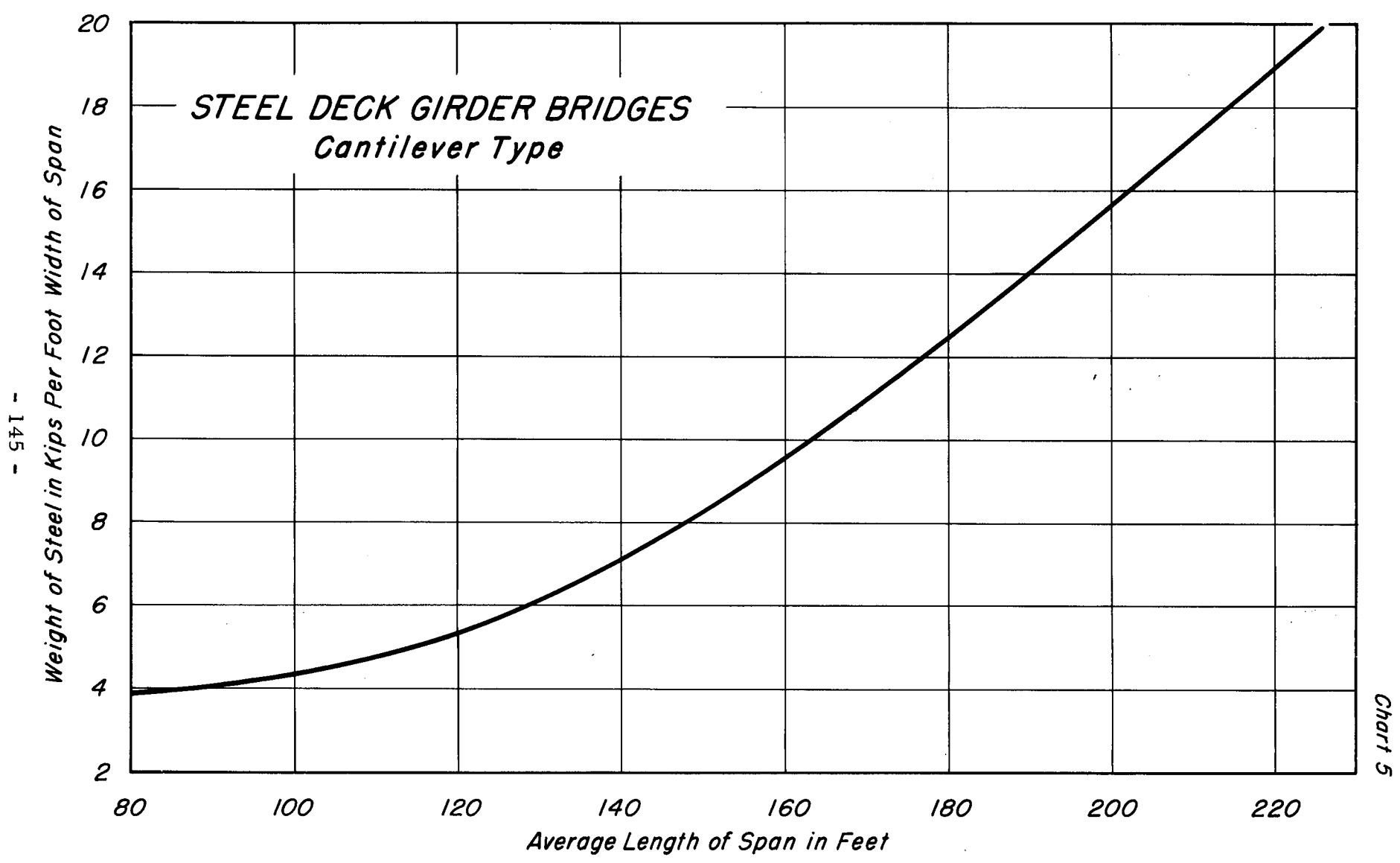
Charts Numbers 14, 15, and 16 show quantitative comparisons of the different types of spans and are based on the curves shown on charts Numbers 1 to 11, inclusive, and Number 13. It should be noted that each pair of high and low envelope curves shown on many of the charts has been replaced on Charts Numbers 14 and 16 by a single curve representing an average of the high and low values thereof.



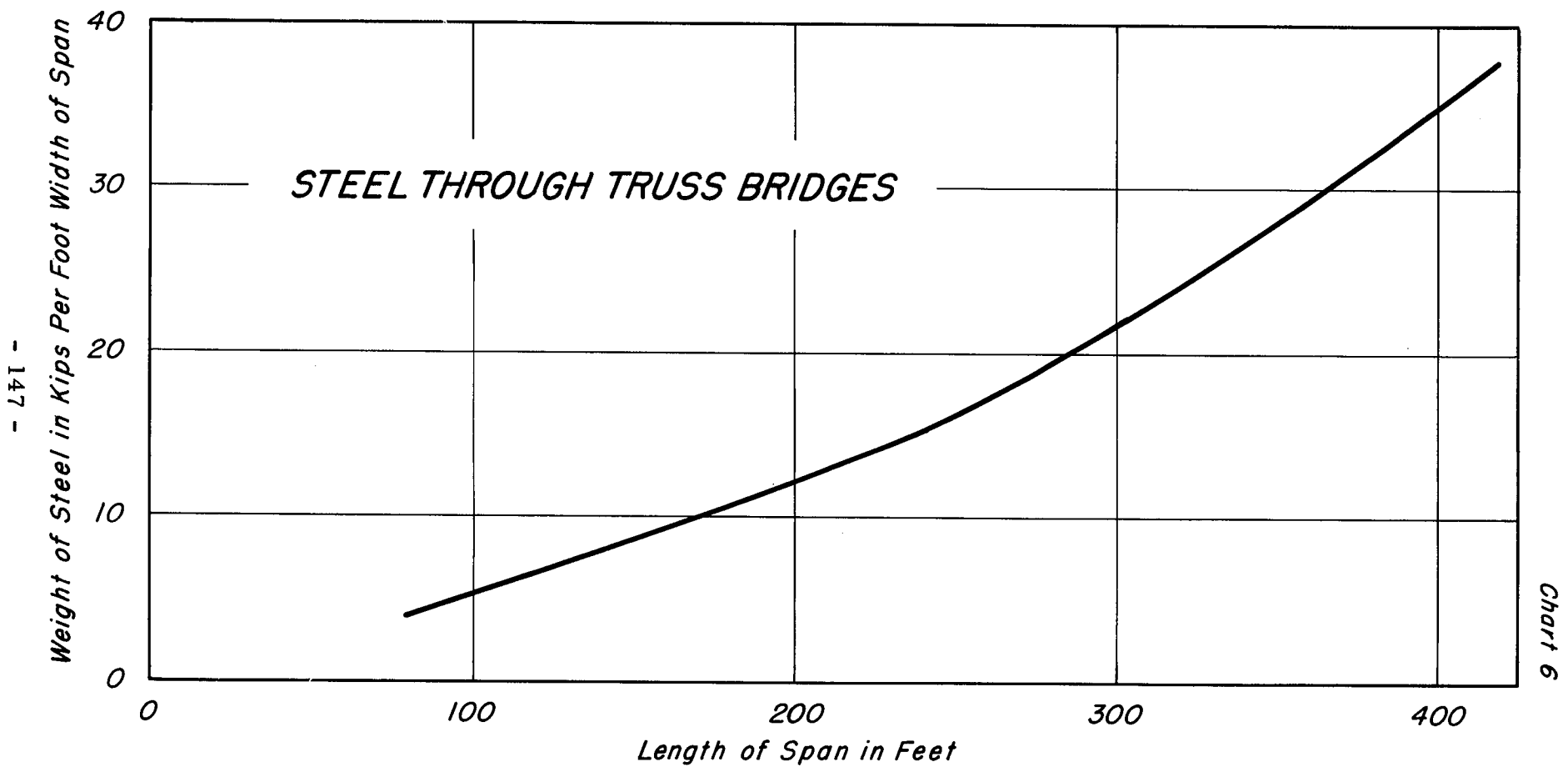


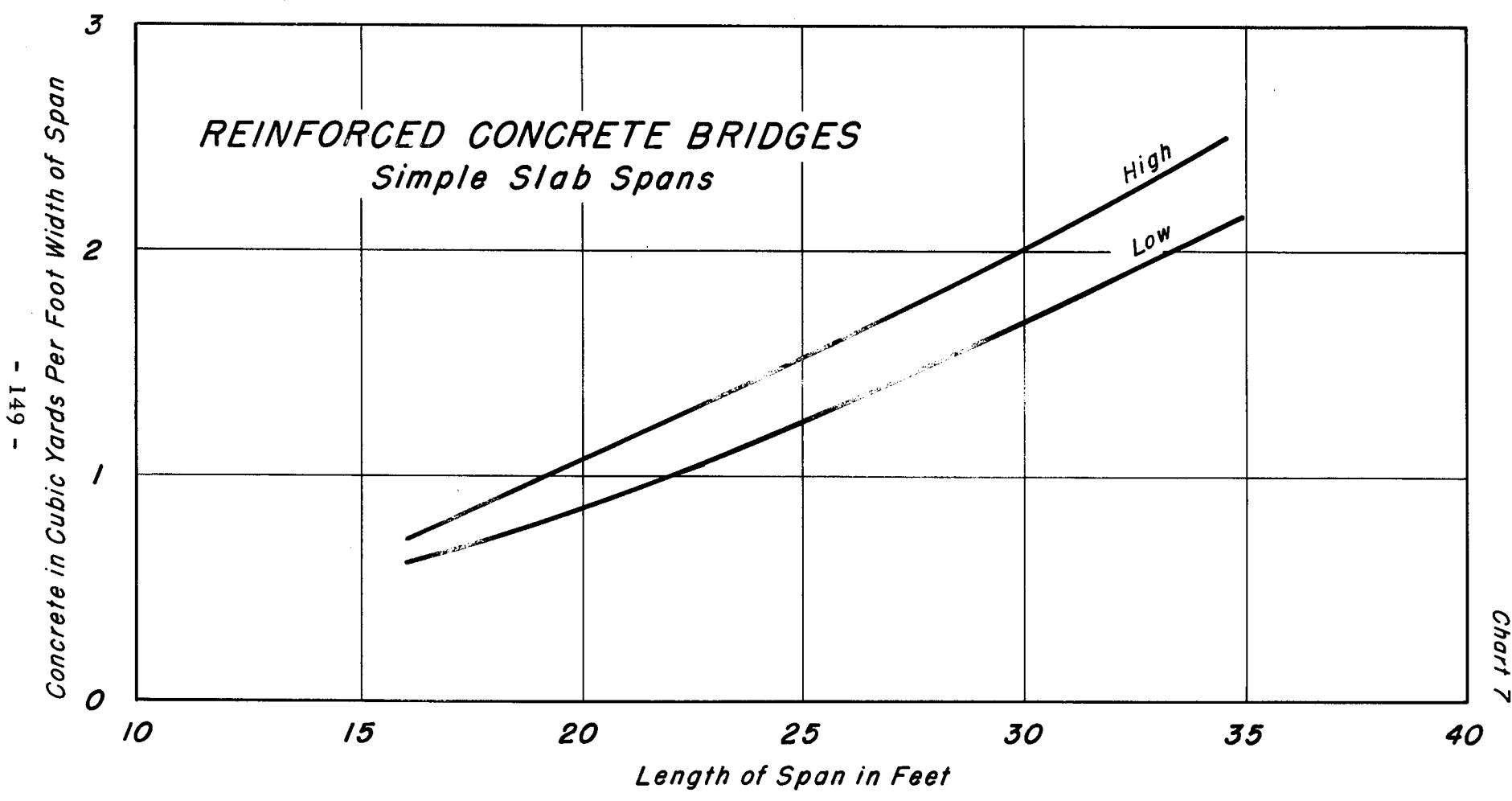


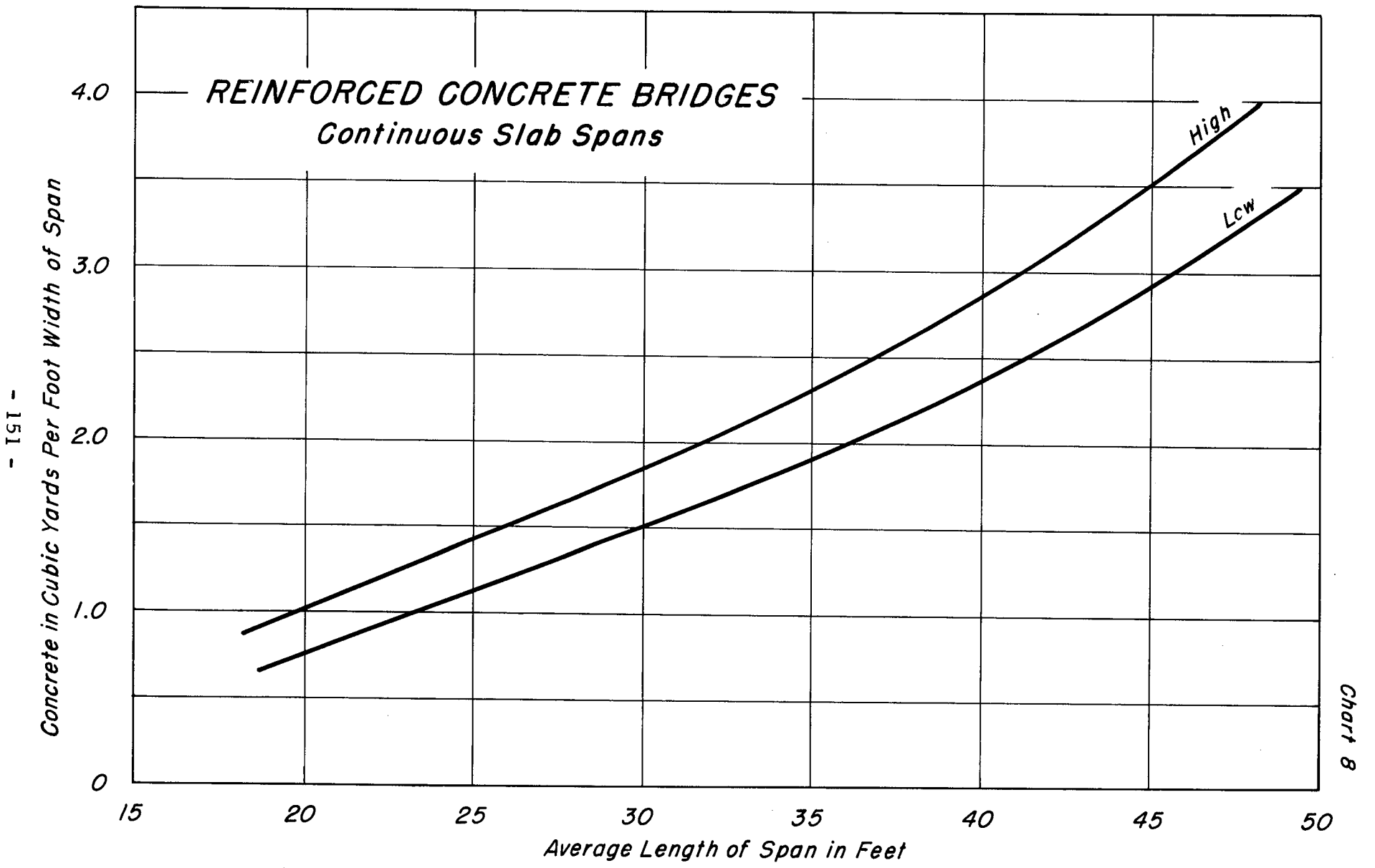


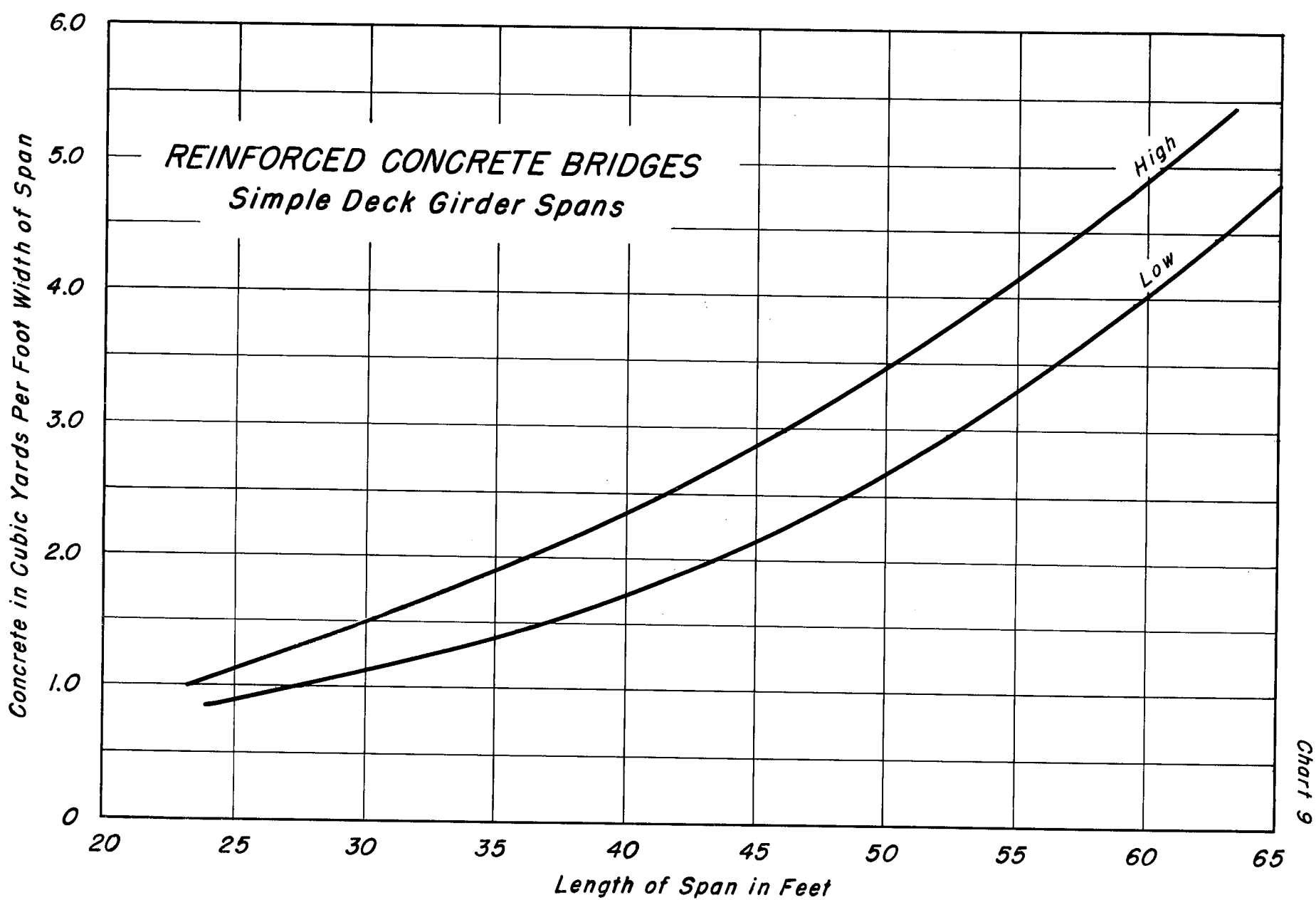


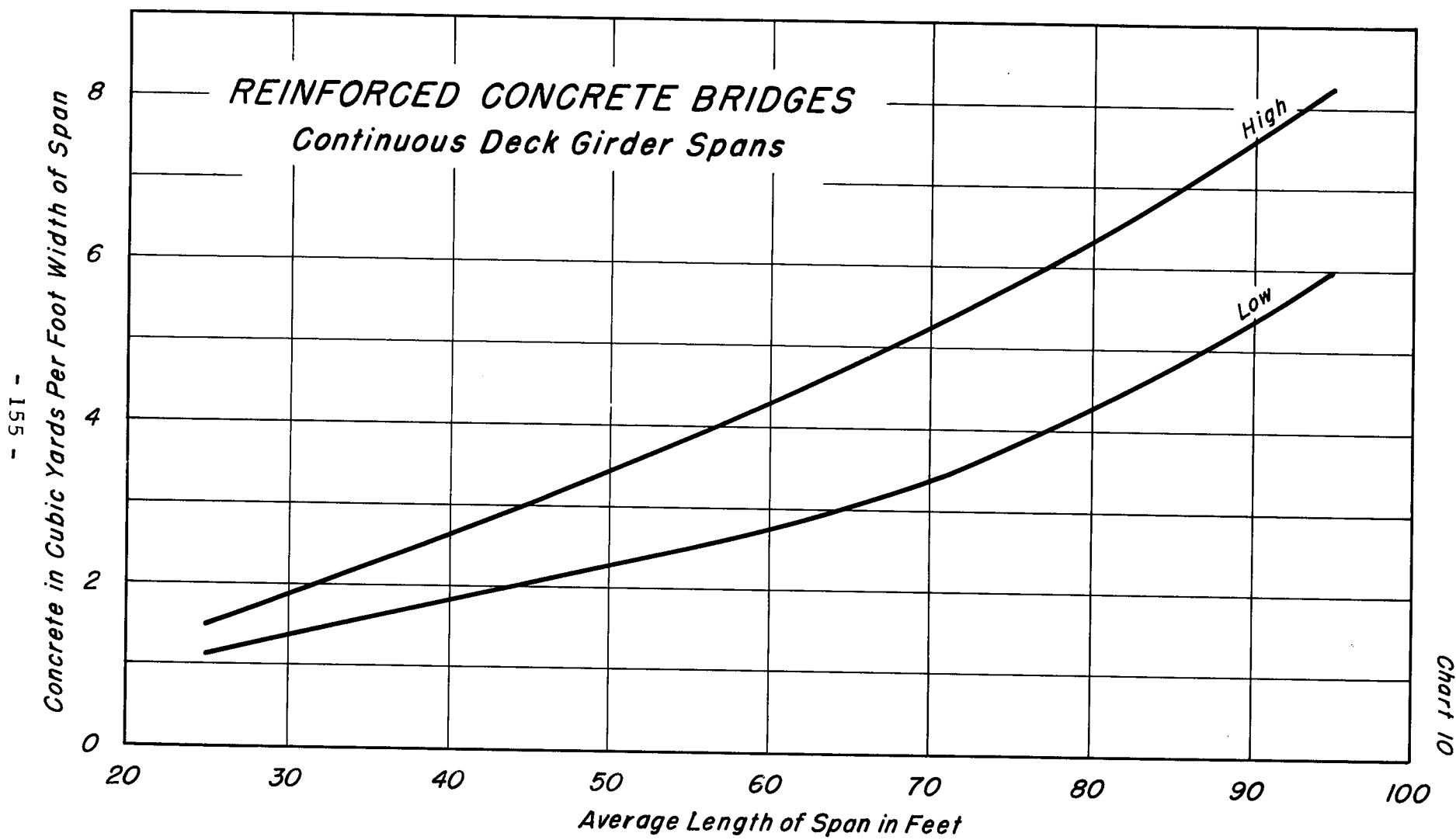


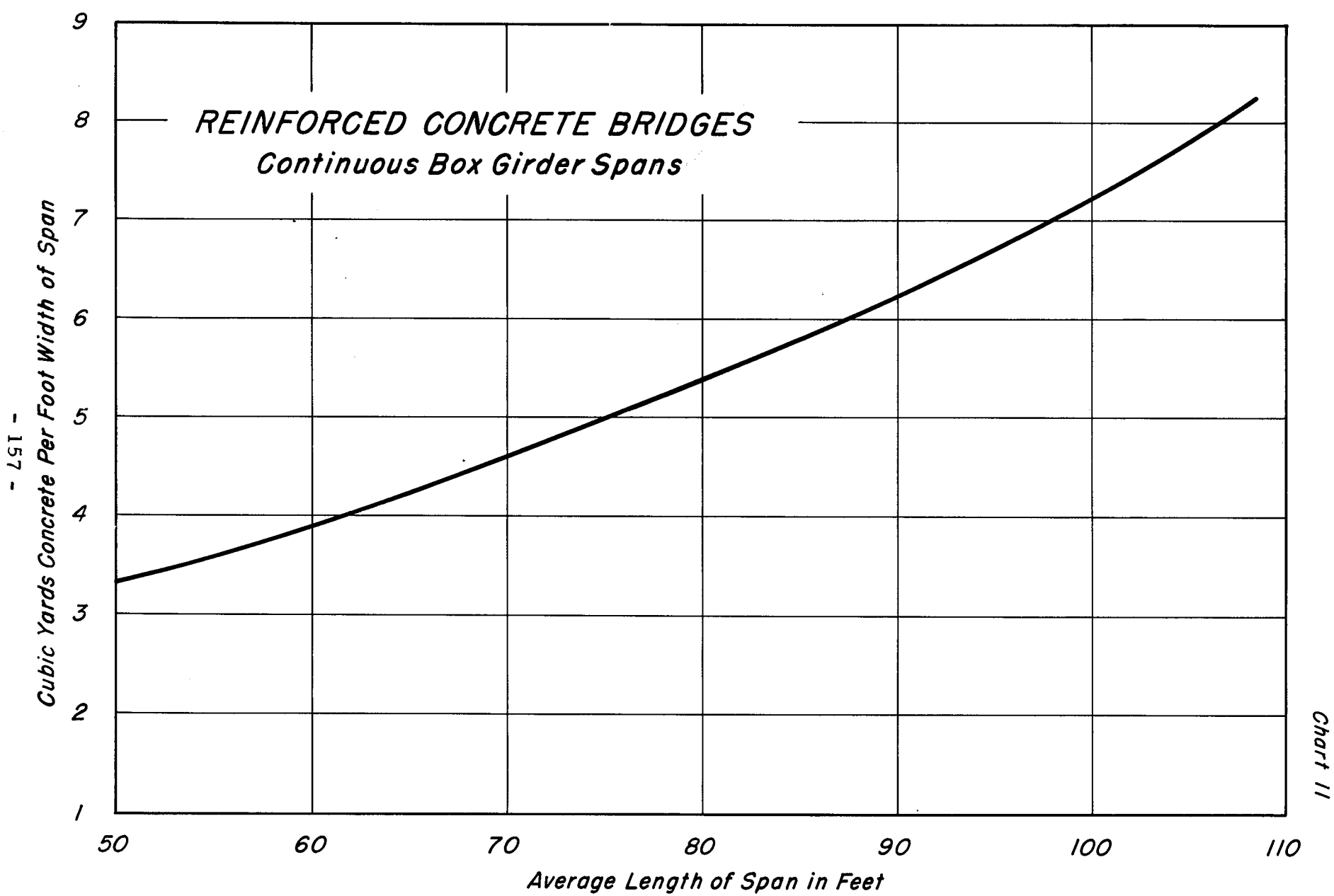


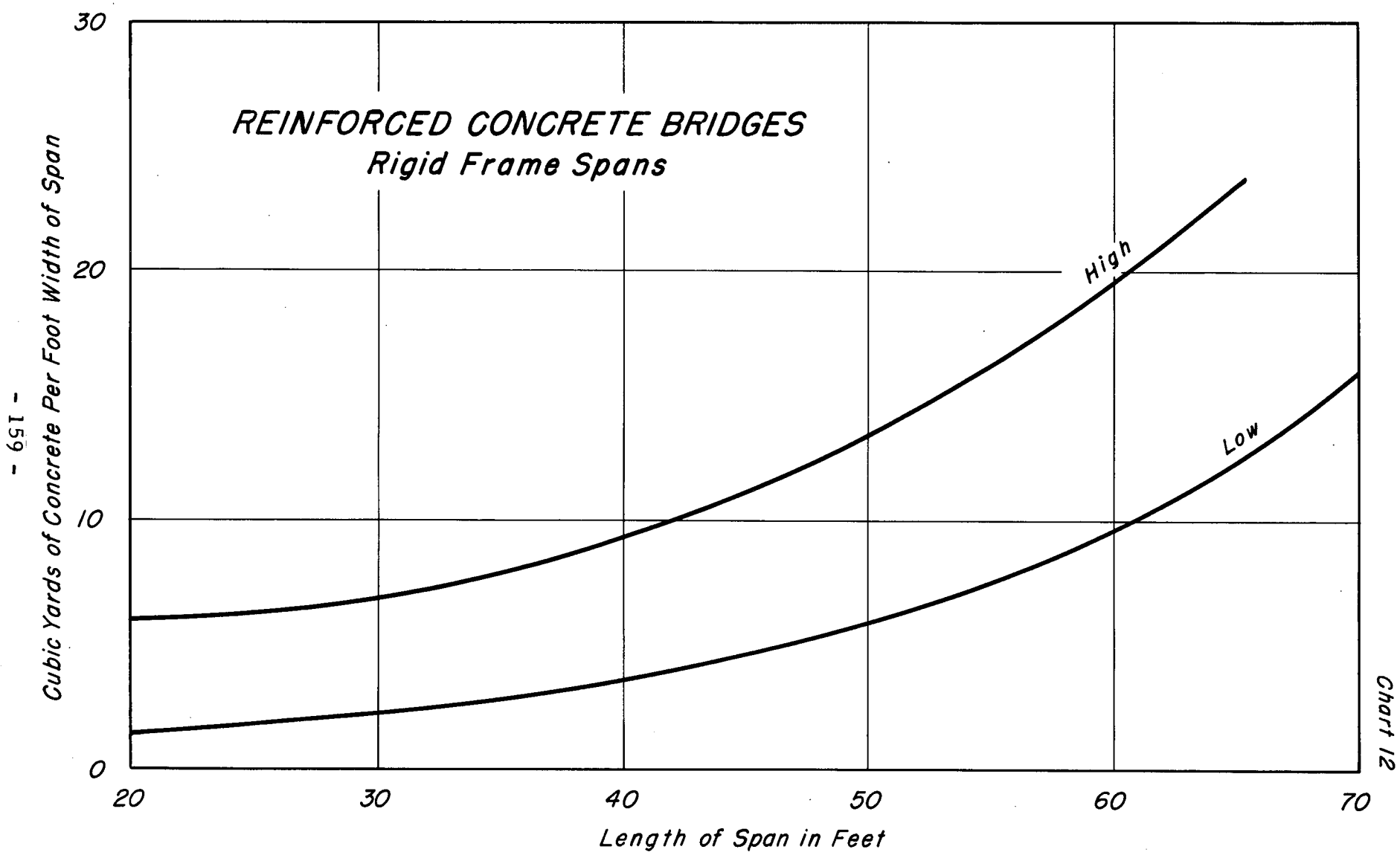


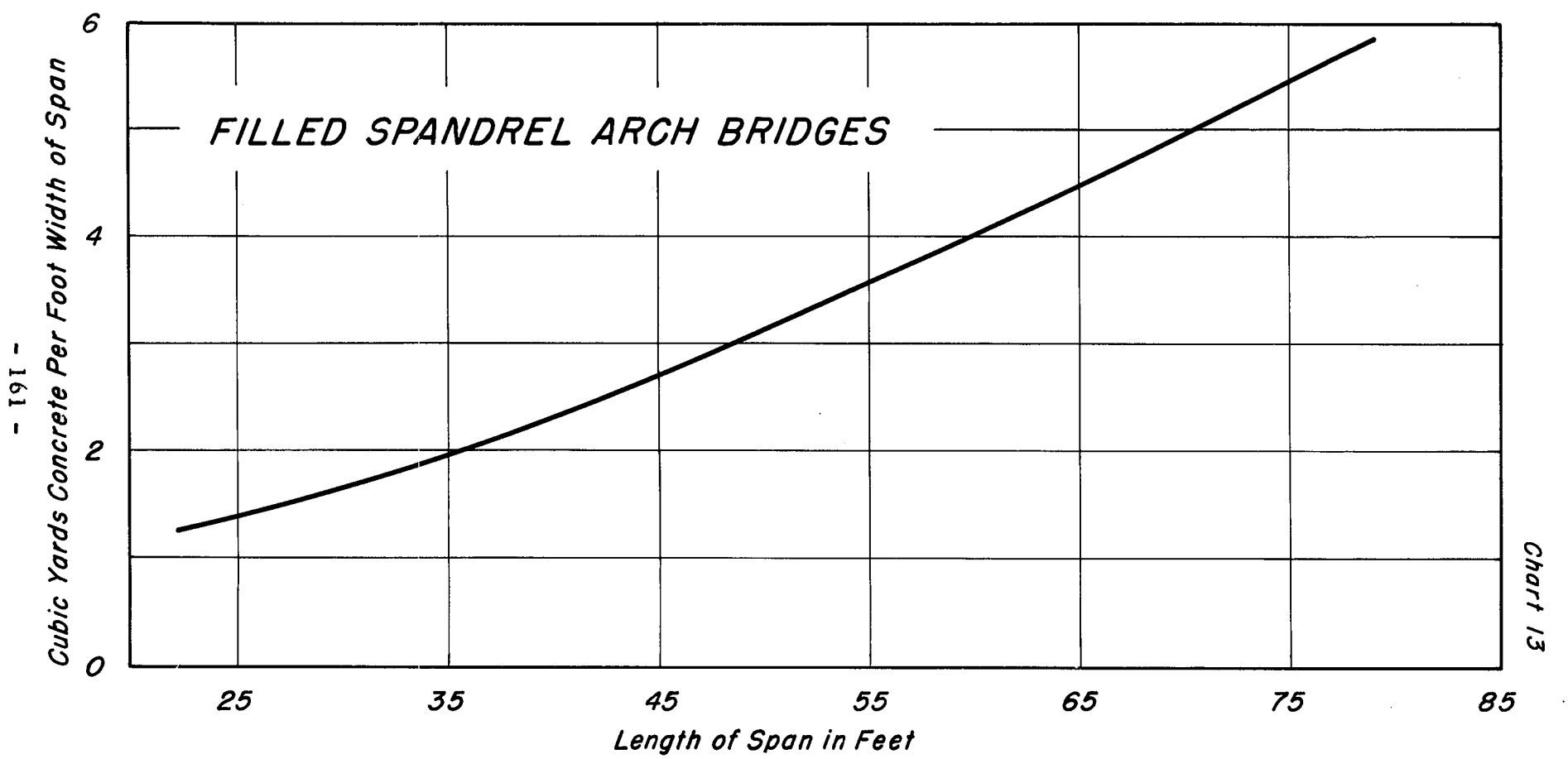




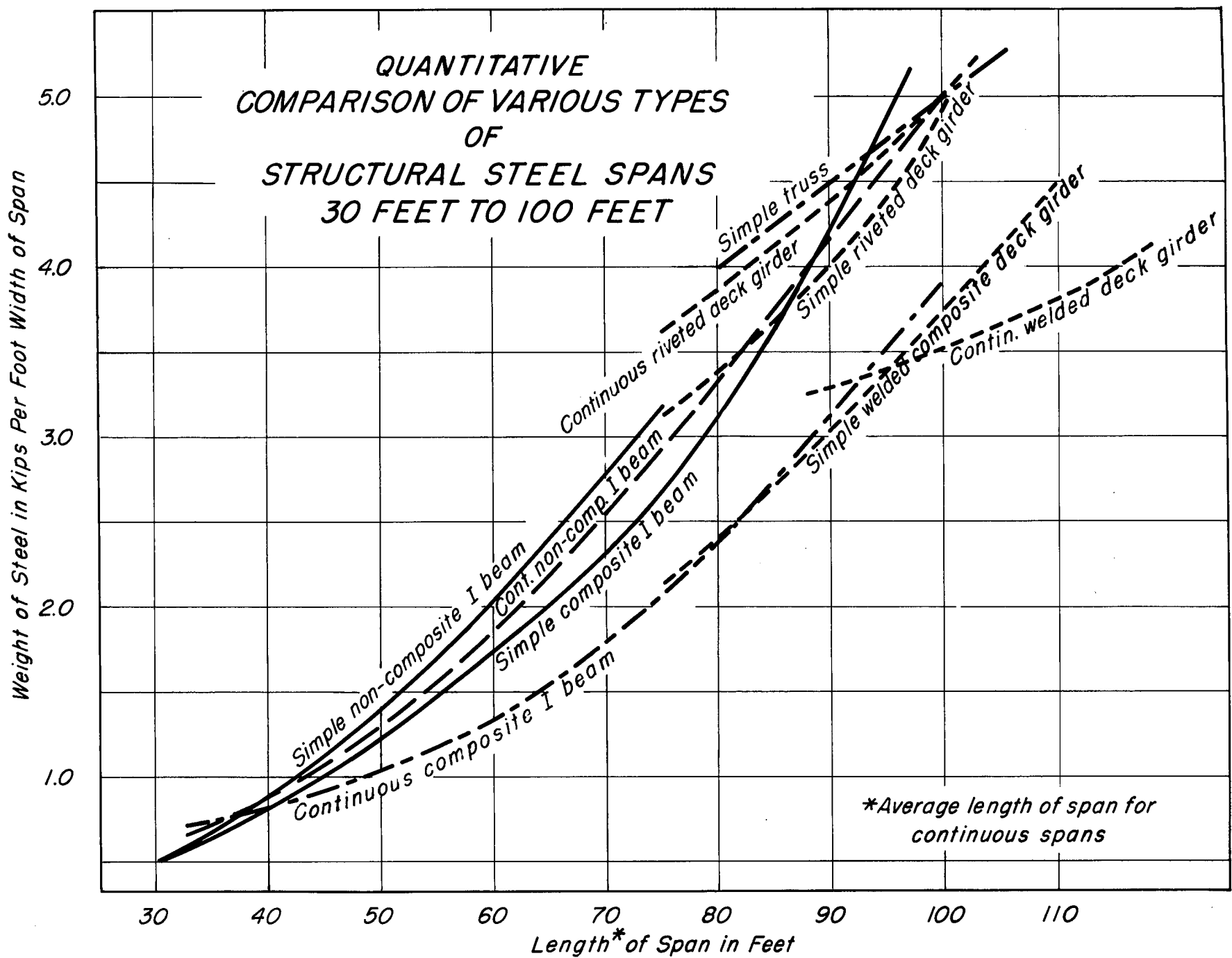


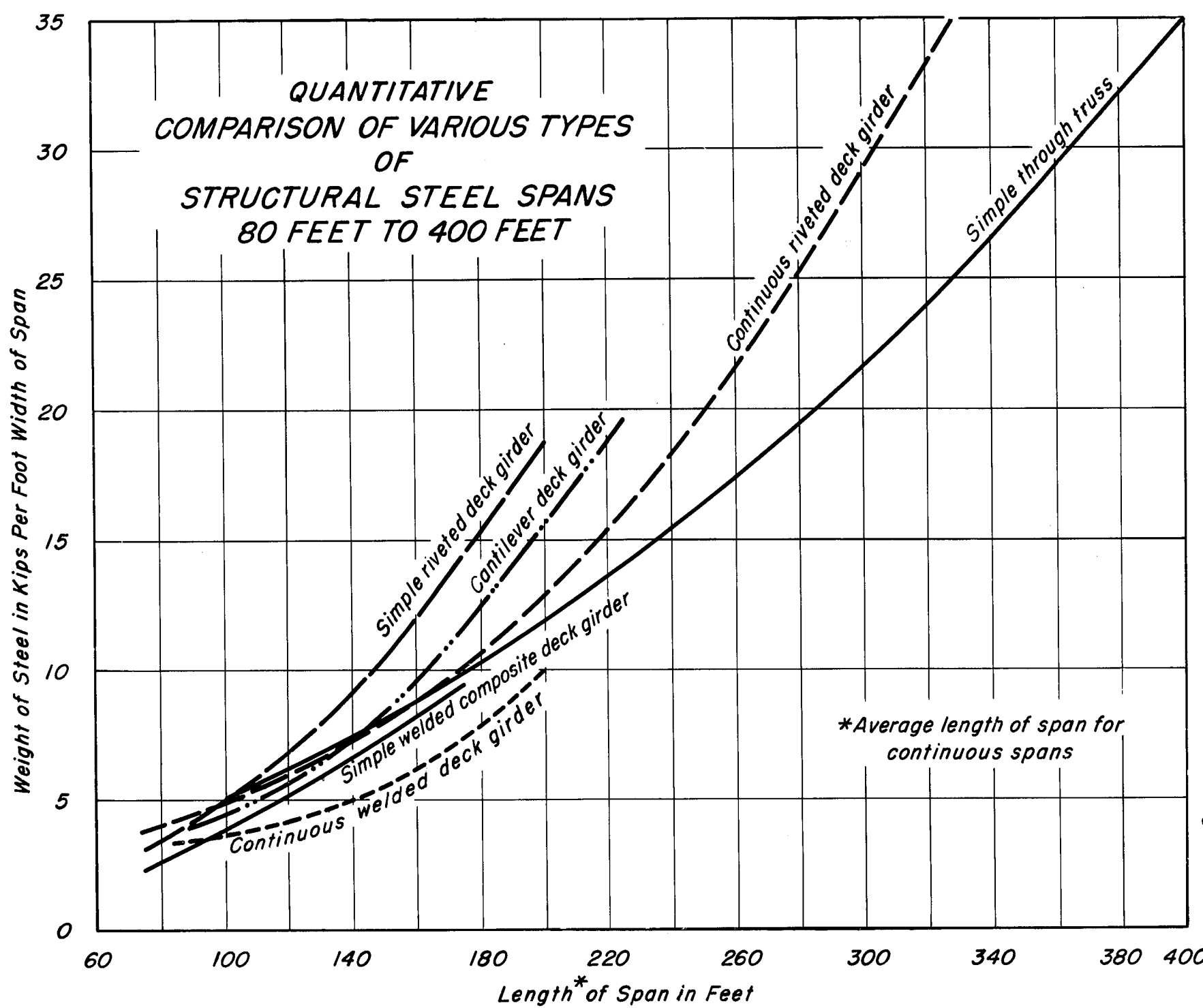












Cubic Yards Concrete Per Foot Width of Span

