

( 28 )

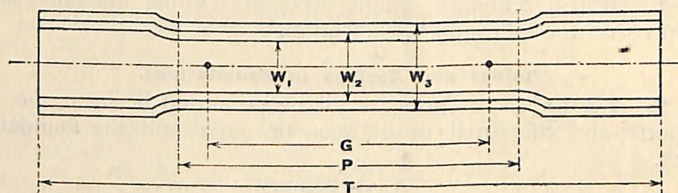
Note.—The following memorandum is appended for general information. The test pieces applicable to Report No. 2—1927 (British Standard Specification and Sections for Tramway Rails and Fishplates) are Test Pieces **C** and **D**.

## APPENDIX II.

## FORMS

## OF

## BRITISH STANDARD TENSILE TEST PIECES.

TEST PIECE **A**.

Gauge Length **G** = 8 inches (203.20 mm.)

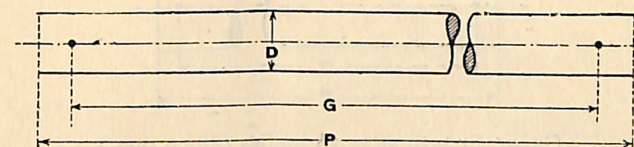
Parallel Length **P** to be not less than 9 inches (228.60 mm.) 10

Total Length **T** = About 18 inches (457.20 mm.)

Thickness of Test Piece.	Maximum Width Allowed.	
Over $\frac{7}{8}$ in. (22.23 mm.)	$W_1 = 1\frac{1}{2}$ ins. (38.10 mm.)	
$\frac{3}{8}$ in. to $\frac{7}{8}$ in. (9.53 to 22.23 mm.)	$W_2 = 2$ ins. (50.80 mm.)	
Under $\frac{3}{8}$ in. (9.53 mm.)	$W_3 = 2\frac{1}{2}$ ins. (63.50 mm.)	15

The widths of the test pieces for plates were selected to comply with the two following conditions. (1) As the great bulk of plates to be tested are from  $\frac{3}{8}$  inch to  $\frac{7}{8}$  inch (9.53 to 22.23 mm.) thick, it was desirable for the sake of convenience that the test pieces for such plates should be of uniform width, and, in accordance with very general practice, a width of 2 inches (50.80 mm.) was selected. (2) With a test piece of a given form, the percentage of elongation was found to be less for thick plates than for thin ones; with steel of the same quality in other respects it was desirable therefore to choose widths of test piece which would be slightly in favour of the thicker plates. This is secured with the widths selected for the Standard Test Piece of form **A**. 25

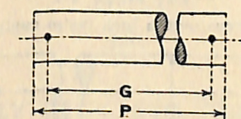
( 29 )

TEST PIECE **B**.

Gauge Length **G** to be not less than 8 times the diameter **D**.

With enlarged ends:—Parallel Length **P** to be not less than 9 times the reduced diameter **D**.

All test pieces of form **B** are strictly similar, and for the same material give the same percentage of elongation. They are nearly similar to a test piece of form **A**, 8 inches (203.20 mm.) in gauge length, 2 inches (50.80 mm.) wide and  $\frac{3}{8}$  inch (9.53 mm.) thick.

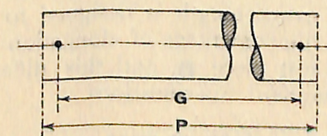
TEST PIECE **C**.

Gauge Length **G** = 2 inches (50.80 mm.)

Parallel Length **P** to be not less than  $2\frac{1}{4}$  inches (57.15 mm.)

Dia. = 0.564 inch (14.33 mm.)

Area =  $\frac{1}{4}$  sq. inch (161.29 mm.<sup>2</sup>)

TEST PIECE **D**.

Gauge Length **G** = 3 inches (76.20 mm.)

Parallel Length **P** to be not less than  $3\frac{3}{8}$  inches (85.72 mm.)

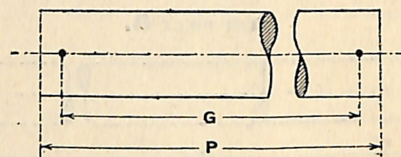
Dia. = 0.798 inch (20.27 mm.)

Area =  $\frac{1}{2}$  sq. inch (322.58 mm.<sup>2</sup>)



( 30 )

TEST PIECE E.

Gauge Length  $G = 3\frac{1}{2}$  inches (88.90 mm.)Parallel Length  $P$  to be not less than 4 inches (101.60 mm.)

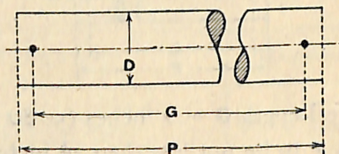
Dia. = 0.997 inch (24.82 mm.)

Area =  $\frac{3}{4}$  sq. inch (483.87 mm.<sup>2</sup>)

Test Pieces **C**, **D** and **E** were arranged to meet the very common practice of making test pieces for forgings, axles, tyres, etc., of either  $\frac{1}{4}$  square inch or  $\frac{1}{2}$  square inch (161.29 or 322.58 mm.<sup>2</sup>) in sectional area. With the gauge lengths decided upon, these three forms are very nearly similar, and, for a given material, give very approximately the same percentage of elongation. Though not exactly, they are approximately similar to the Standard Test Piece **F**, and for the same material give a nearly identical but slightly greater, percentage of elongation.

TEST PIECE F.

(For Test Pieces over 1 inch (25.40 mm.) diameter).



Gauge Length  $G$  to be not less than 4 times the diameter  $D$ .  
With enlarged ends:—Parallel Length  $P$  to be not less than  $4\frac{1}{2}$  times the reduced diameter  $D$ .

In some testing machines it was found inconvenient to use form **B** for bars of over 1 inch (25.40 mm.) in diameter, and form **F** of half the gauge length is designed to meet such cases. For a given material the percentage of elongation with test piece **F** is greater than with test piece **B**, and this difference is provided for in the British Standard Specifications.

## FORM OF ENDS.

In the case of the round test pieces **B**, **C**, **D**, **E** and **F**, the form of the ends is to be as required in order to suit the various methods employed for gripping the test piece. When enlarged ends are used, the length of the parallel portion of the test piece must in no case be less than that noted on the diagrams.

( 31 )

## APPENDIX III.

BRITISH

STANDARD SECTIONS AND DIMENSIONS

OF

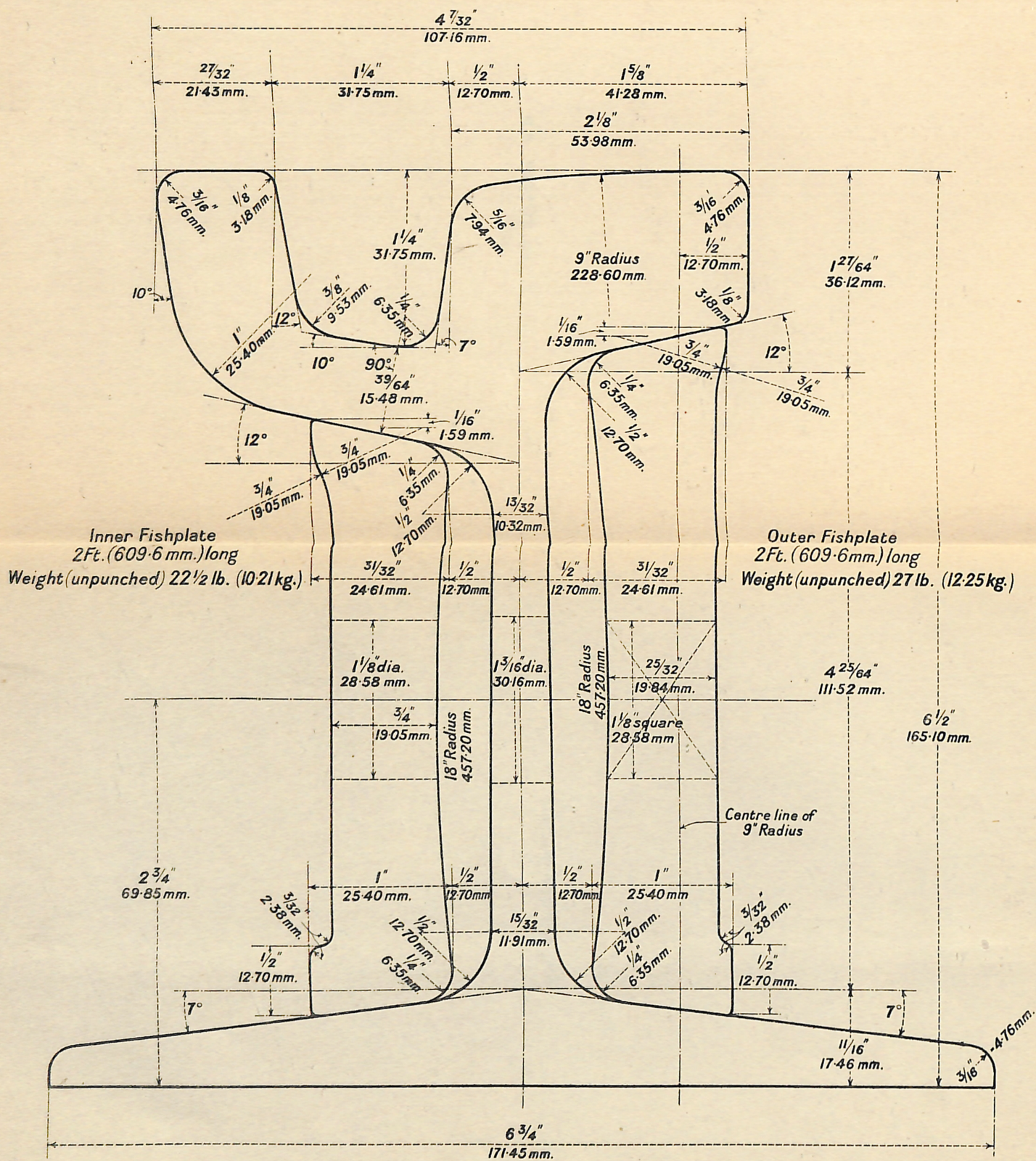
TRAMWAY RAILS AND FISHPLATES.







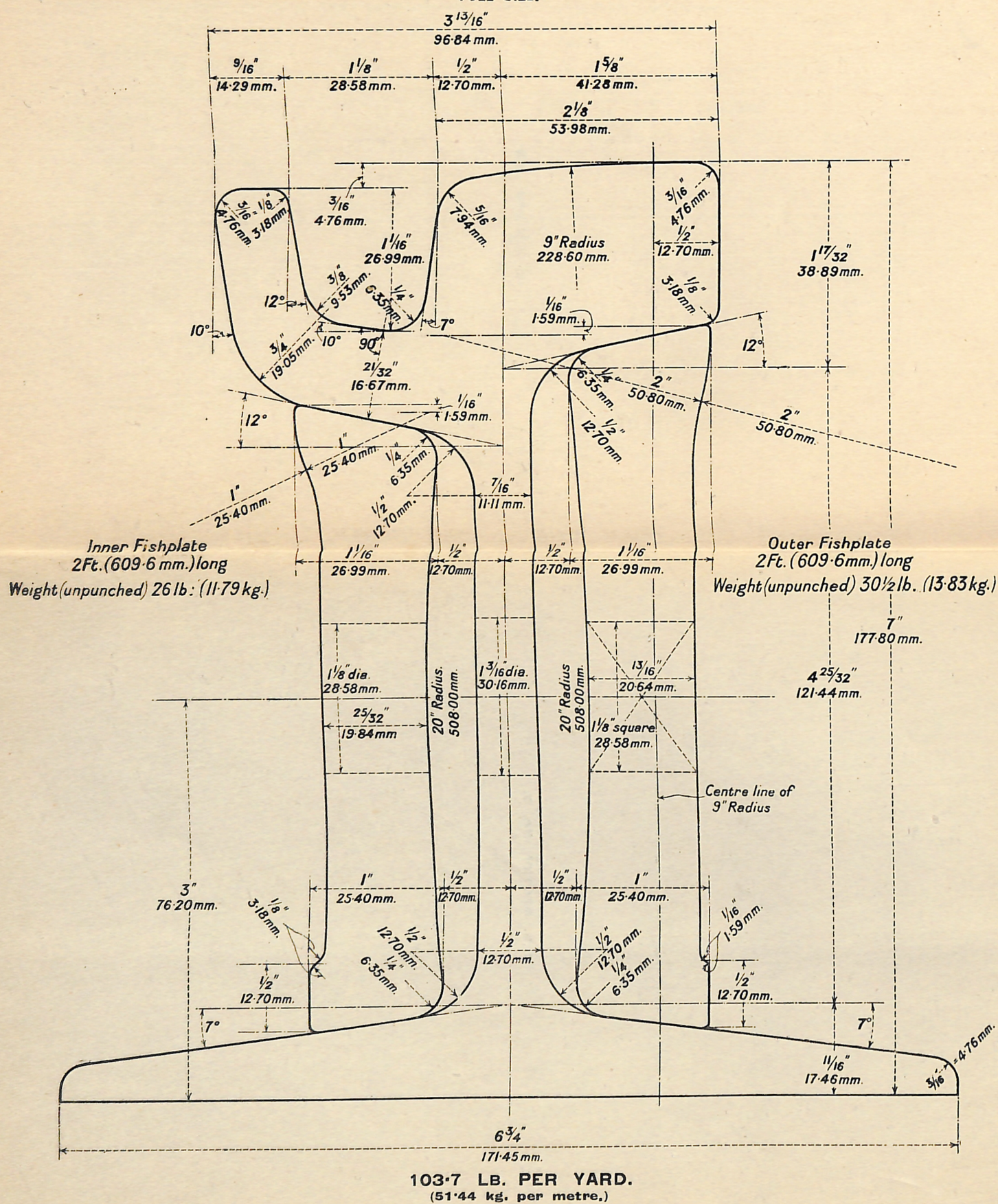
**BRITISH STANDARD TRAMWAY RAILS.**  
**B.S. SECTION No. 6C.**  
For use on Curves.  
(Superseding B.S. Section No. 2c.)  
**FULL SIZE.**



**103·2 LB. PER YARD.**  
(51·19 kg. per metre.)

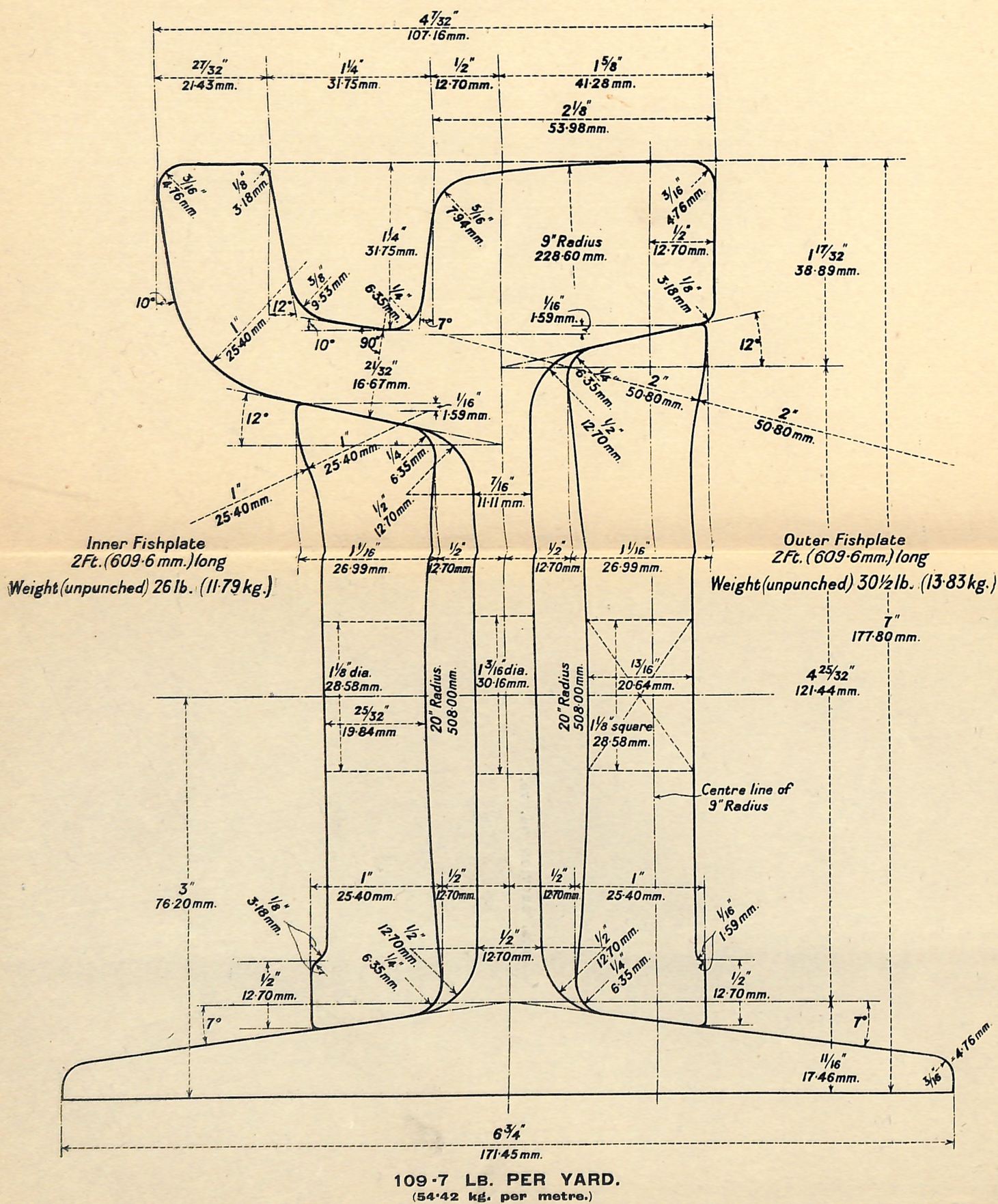


**FULL SIZE.**



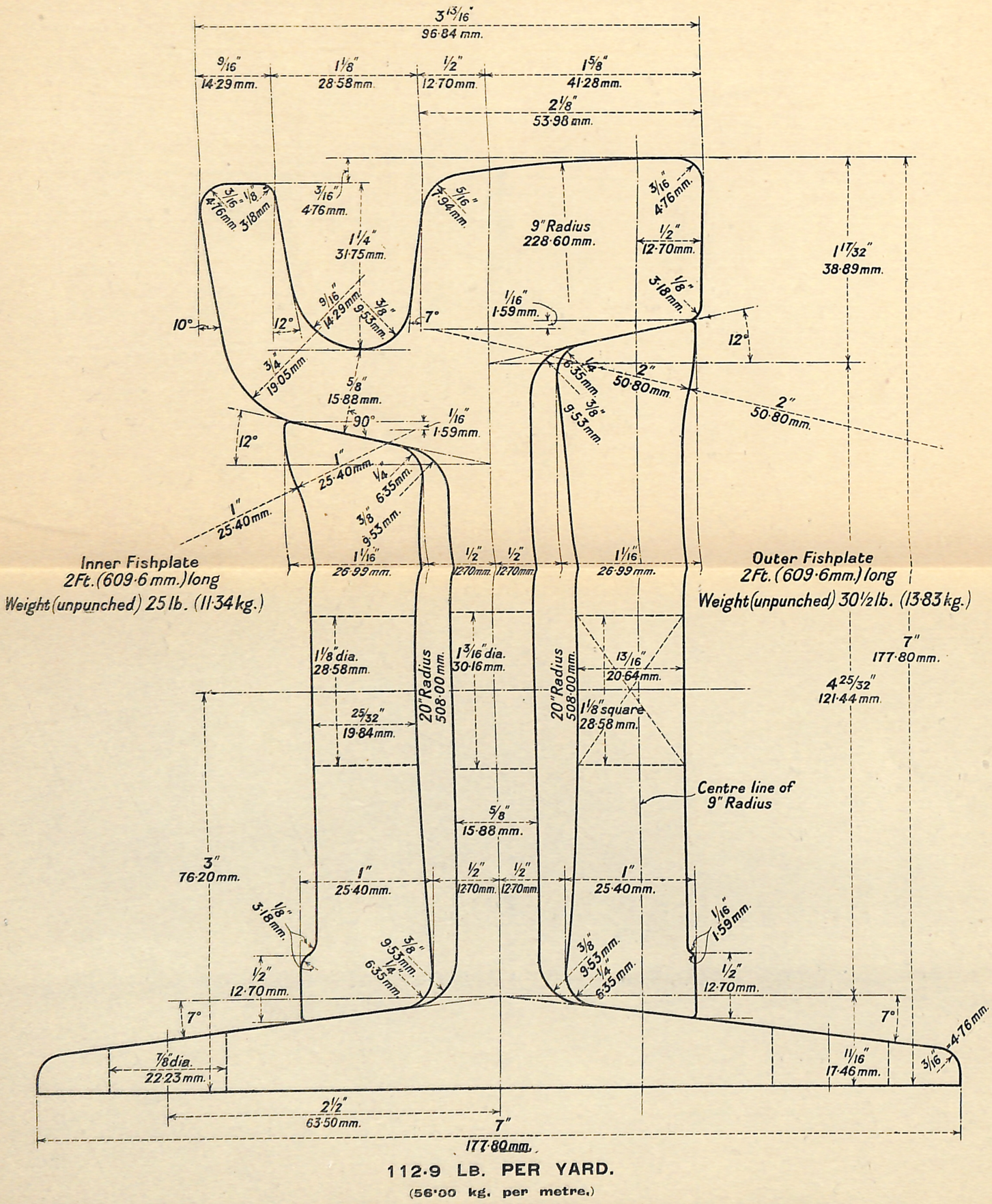


No. 2—1927.  
Plate 4.





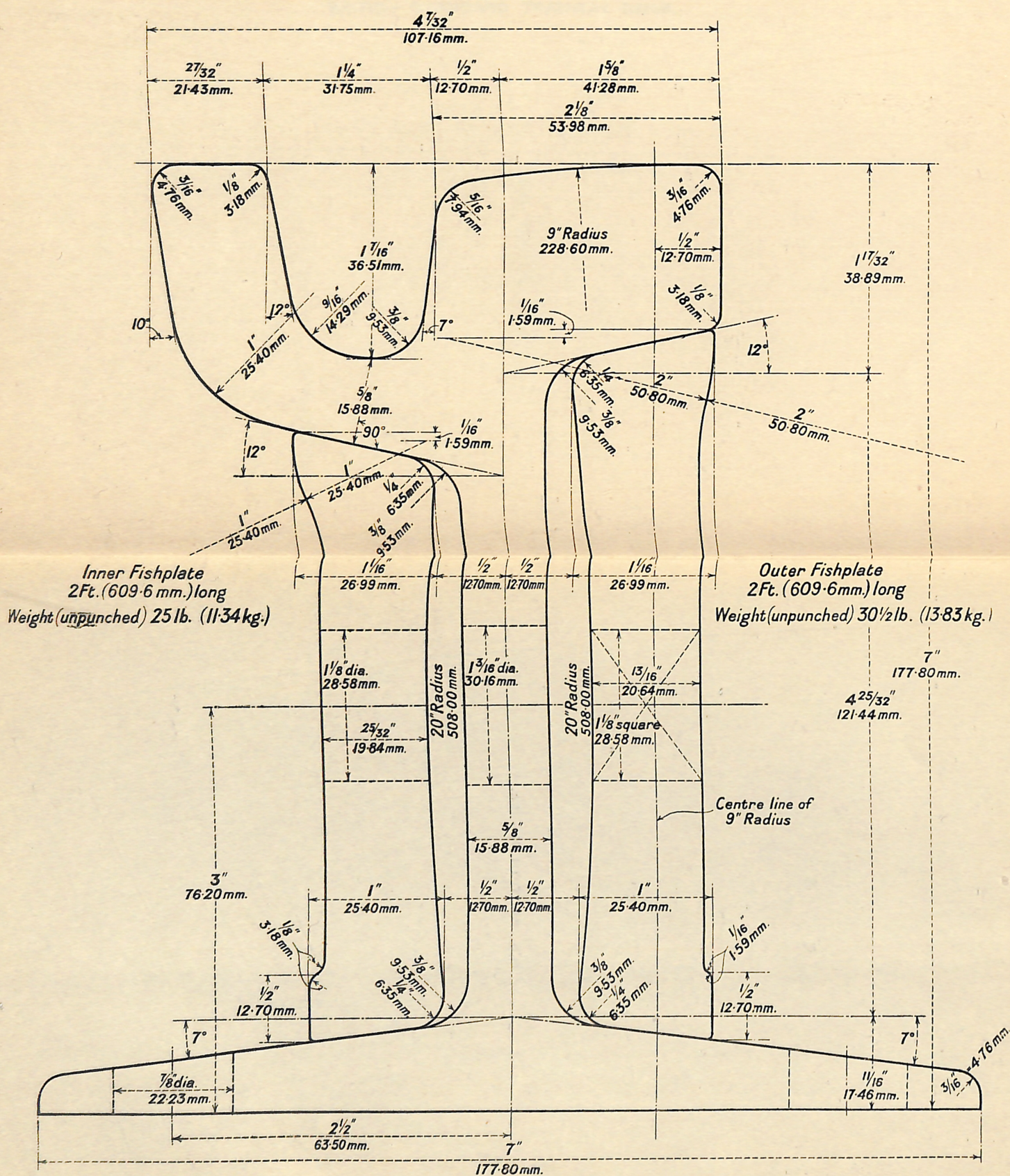
BRITISH STANDARD TRAMWAY RAILS.  
B.S. SECTION NO. 8.  
FULL SIZE.





**For use on Curves.**

**FULL SIZE**



**119.2 LB. PER YARD.**  
(59.13 kg. per metre.)

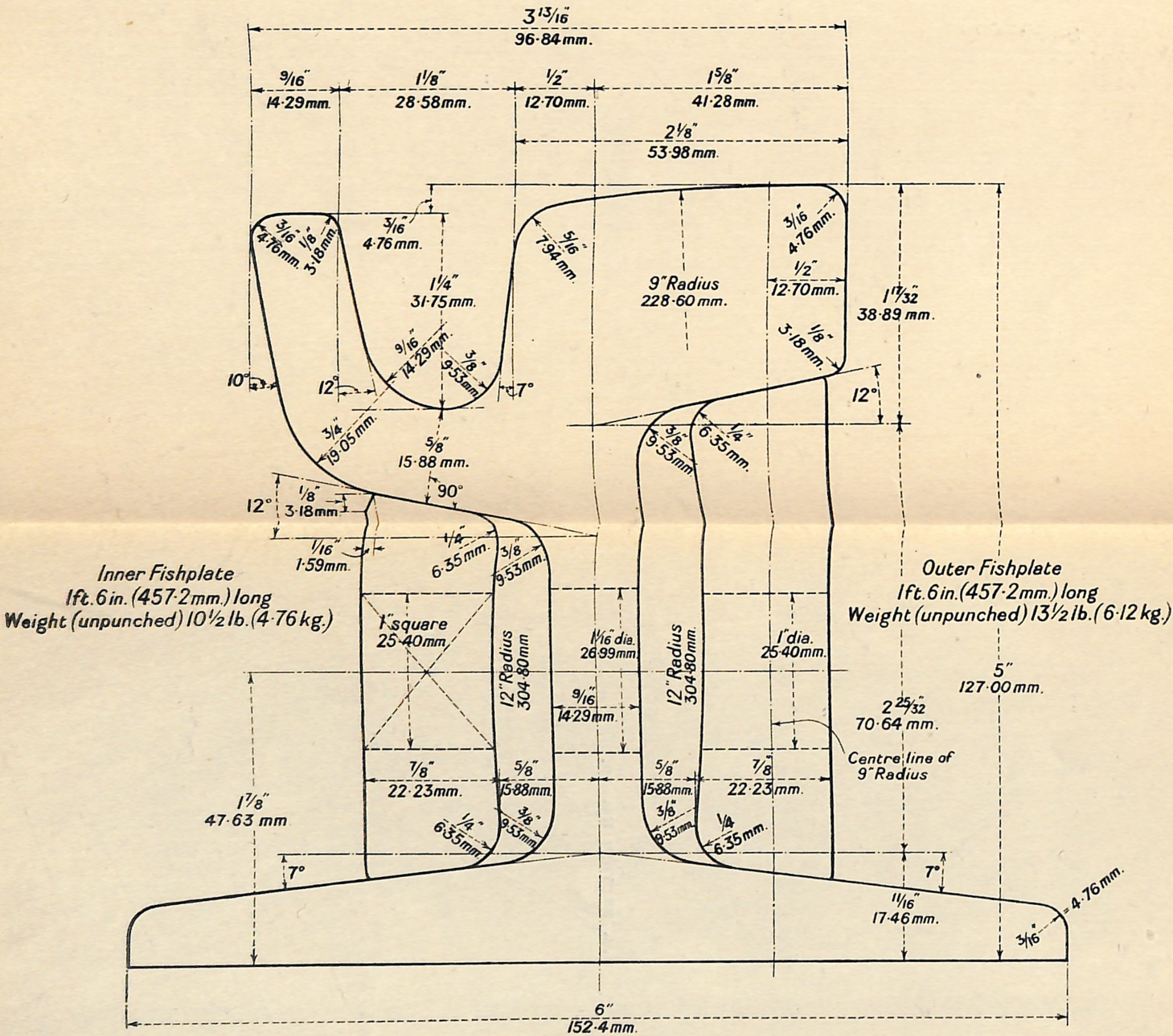


No. 2—1927.  
Plate 7.

BRITISH STANDARD TRAMWAY RAILS.

B.S. SECTION No. 10.

FULL SIZE.

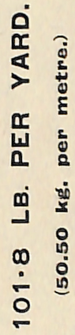


95.4 LB. PER YARD.

(47.32 kg. per metre.)



**For use on Curves.**





## BRITISH ENGINEERING STANDARDS ASSOCIATION.

---

The Association exists for the purpose of drawing up British Standard Specifications for materials, machinery or apparatus. It does not, however, embark on such work on its own initiative, but at the specific request of an authoritative body such as a representative trade organisation, a technical society, or a Government department, and to fill a recognised want.

The Association is not a profit-making concern. Its only expenses are staff salaries, office expenses and printing. In addition to the Grants received from the Government and the amount derived from the sale of its Publications, it has to look to Industry as a whole for the funds necessary to carry on the work.