Public Works (1897) Department.

G.O., No. 126 R

DATED 25 February 97

[Despatch Abstract.]

Standard Dimensions: Ev'g Indian circular prescribing a revised schedule of ~~to be observed in all future~~ to be observed in Indian Govt & the Railways in India, cont'd to the Agents S.I.R. and N.Western Railway Co's, Mysore Railway &c.

=

12/3/97

[P.W. 25. 5,000—20-11-96.]

Indexed. 2/3/97

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
	1051 R	D	16-12-96				

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
	827 R	D	12-6-11				

Public Works (1897) Department.

CURRENT No. 1972

B/c

Order No. 126 R dated 25.2.97

Communicated to the Agent S&K and the Agent & Chief Engr. Nilgiri Railway for information & guidance

24/2/97

C

From The Govt of India P.W.D.

Cir No. 9 Rys: of 1896

Dated 25th November 1896

Received 22.2.97

Enclosures one

Spare copies

SUBJECT.

Revised Schedule of standard Dimensions to be observed on all metre-gauge Rys in India.

To

The Agent S.I.Ry.

" " Ch. Engr. Nilgiri Ry.

" " Manager M & S.W.Ry.

GR

S2

Copies supplied

Despatched on 23/2/97

14/23/2/97

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS.
METRE GAUGE.
1896.

Pub. E.I. 1972/97

STANDARD DIMENSIONS—METRE GAUGE.

1896.

In this edition, the Standard Dimensions have been arranged in 4 chapters instead of 8, by amalgamating Formation. Ballast, Permanent-way and Structures out of Stations in the first chapter, all Dimensions in Stations including Points and Crossings in the second, Station Machinery in the third, and Locomotives and Rolling Stock in the last.

It is considered that this form is more convenient for reference than the old one.

Schedule B has been modified to eliminate dimensions intended to make a metre-gauge line suitable to conversion to broad gauge. The clearance out of stations now required above rail level is 12 ft. 6 in. instead of 14 ft. 6 in., and from centre of track 6 ft. 6 in. instead of 7 ft. 0 in. The dimensions in stations are also modified.

The following alterations have also been made :—

Width of ballast at top is measured at level of foot of rail, the minimum depth required is increased in rock cuttings and decreased elsewhere.

Clear available length of *one* siding for crossing trains has been reduced to 1,200 feet.

Distance of building from edge of platform has been reduced from 30 feet to 24 feet, and distance of pillars from edge of platform increased to 10 feet.

Height of over-bridges in stations has been reduced to 14 ft. 6 in.

The clear top width over track in stations (diagram 1) has been reduced from 6 feet to 3 ft. 9 in. from centre of track to allow of overhanging roofs, water pipes, etc.

The Standard Dimensions for Running Sheds have been modified.

The maximum width over bodies of all vehicles includes the framing.

Slight modifications have been made in some places to make the meaning more clear.

Particular attention is invited to the difference between "Standard," "Maximum" and "Minimum;" the two latter represent the greatest and least dimensions which it is considered advisable to permit *in any case;* in many cases, more especially in the position of buildings, it is not desirable to work to these limits unless considerable extra expense would be incurred by giving a more liberal margin; for example, it is very seldom necessary to put pillars so near the edge of a platform as 10 feet, to erect any building so near the centre of track as 6 ft. 6 in. or to put a tank house, which is generally a serious obstruction both to the clear view in approaching a station, and to any future extension of the sidings, as near the track as 30 feet.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS

TO BE OBSERVED ON RAILWAYS IN INDIA.

METRE GAUGE.

NOTE.—Where it is proposed to execute any work or to procure Bridge Girders, Station Machinery, Rolling Stock or other Railway material which will infringe the dimensions or loads given in schedule B, the sanction of the Government of India should be obtained before such work is commenced or order given. The dimensions and loads given in schedule A may not be infringed under any circumstances.

I. GENERAL.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Formation, Single Line—			
(1)	Minimum width in embankment	14 ft. 0 in.	16 ft. 0 in.
(2)	„ „ in cutting (*excluding side drains*) .	12 ft. 0 in.	14 ft. 0 in.
Formation, Double Line—			
(3)	Minimum width in embankment	26 ft. 0 in.	28 ft. 0 in.
(4)	„ „ in cutting (*excluding side drains*) .	24 ft. 0 in.	26 ft. 0 in.
(5)	Minimum distance centre to centre of tracks (out of stations)	12 ft. 0 in.	12 ft. 0 in.
Curves—			
	Maximum angle of curvature on main line—		
(6)	In ordinary country	8° 0′ (rad. = 716 ft.)	5° 0′ (rad. = 1146 ft.)
(7)	In difficult country	16° 0′ (rad. = 358 ft.)	10° 0′ (rad. = 573 ft.)

(*a*) *N.B.*—The angle of curvature is taken as the angle at the centre subtended by an arc of one hundred feet in length. Thus the radius for a one degree curve is 5729·578 feet.

(*b*) The maximum angle of curvature should *only be worked to in special cases* where the adoption of an easier curve would be impracticable or involve considerable extra expense. Under very exceptional circumstances where it may appear necessary that this rule should be relaxed, the matter should be referred to the Government of India for orders.

(*c*) In flat open country where no obstacle exists, the radius should not be less than 5729½ feet.

Ballast—			
(8)	Minimum width of ballast at level of foot of rail .	7 ft. 0 in.	7 ft. 6 in.
	Minimum depth of ballast below sleepers,—		
(9)	In cuttings in rock or hard soil . . .	6 inches.	9 inches.
(10)	In cuttings in soft soil or on banks . .	3 inches.	6 inches.

(*a*) *N.B.*—These minimum dimensions may be relaxed in the case of a line being opened to traffic before the banks have settled, when suitable restrictions are placed on the speed of trains.

Sleepers—			
	Minimum dimensions for timber cross sleepers—		
(11)	Length	5 ft. 9 in.	6 ft. 0 in.
(12)	Breadth	6 inches.	7 inches.
(13)	Depth	4 inches.	4½ inches.
(14)	Minimum area in cross section	30 sq. in.	36 sq. in.
(15)	„ number of cross sleepers per mile . .	1936	1936

(*a*) *N.B.*—On bridges where the cross sleepers rest directly on longitudinal girders, the sleepers are to be spaced not more than 1 ft. 6 in. centre to centre, and are to be not less than 5 inches deep exclusive of any notching which may be required on the underside to allow for the cover plates, camber, etc.

I. General.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Rails—		
(16) Minimum clearance of guard rail for curves and level crossings	1¾ inch.	2 inches.
(17) Minimum depth of space for wheel flange, from rail level	1⅝ inch.	1⅝ inch.
Buildings, etc.—(*See diagram No. 2*)—		
(18) Minimum horizontal distance from centre of track to any structure, from 1 foot above rail level to a height of 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(19) Minimum horizontal distance from centre of track from rail level to 1 foot above rail level	4 ft. 5 in.	4 ft. 5 in.
(20) Minimum height above rail level at centre of track for over-bridges or over-head bracing out of stations	12 ft. 6 in.	12 ft. 6 in.
(21) Minimum height above rail level for telegraph wires crossing the line, or above surface of road where carried over roads at level crossings	20 ft. 0 in.	20 ft. 0 in.
Tunnels, Single Line—(*See diagram No. 3*)—		
(22) Minimum height above rail level at centre	19 ft. 0 in.	19 ft. 0 in.
(23) „ width at rail level	13 ft. 0 in.	13 ft. 0 in.
(24) „ „ at 7 ft. 3 in. above rail level	17 ft. 0 in.	17 ft. 0 in.
Tunnels, Double Line—		
(25) Minimum height above rail level at centre	20 ft. 9 in.	20 ft. 9 in.
(26) „ width at rail level	26 ft. 6 in.	26 ft. 6 in.
(27) „ „ at 6 ft. 0 in. above rail level	29 ft. 6 in.	29 ft. 6 in.
(28) Maximum distance apart of refuges	300 feet.	200 feet.

(a) N.B.—The *maximum* clearance for curves and level crossings will vary according to the radius of curve.

(a) N.B.—Under items 18 and 19 any material stacked by the side of the line is to be considered a structure in the sense in which the word is here used.

(b) Where the line is on a curve the horizontal distance of a fixed structure from the centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees (*716 ft. rad.*) allow 5½ in. extra.
„ „ 6 „ (*955 ft. rad.*) „ 4 in. „
„ „ 4 „ (*1432 ft. rad.*) „ 2⅔ in. „
„ „ 2 „ (*2865 ft. rad.*) „ 1⅓ in. „
and for others curves in proportion.

N.B.—The minimum horizontal distance, from the centre line of nearest track, at which a telegraph post may be erected, is the total height of the post plus 6 ft. 6 in. Also, where the line is in cutting, a telegraph post erected on the berm must be at a distance from the edge of the cutting of not less than the total height of the post.

II. Station Yards.

II. STATION YARDS.

See also Diagram No. 1.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Spacing of Tracks—		
(1) Minimum distance centre to centre of tracks	12 ft. 6 in.	14 ft. 6 in.
(2) Minimum clear available length of one siding for crossing trains	——	1,200 feet.
Platforms—		
(3) Standard horizontal distance from centre of track to face of platform coping	4 ft. 5 in.	4 ft. 5 in.
(4) Minimum length for passenger platform	——	600 feet.
(5) Maximum height above rail level for any passenger platform	1 ft. 4 in.	1 ft. 4 in.
(6) Standard height above rail level for new passenger platforms at important stations	1 ft. 0 in.	1 ft. 0 in.
(8) Minimum height for any passenger platform	Flush with rail level.	Flush with rail level.

(a) N.B.—The 'available length' of first siding (whether the line be curved or straight) terminates where the distance between the centre of the siding and the centre of main line begins to be less than 12 ft. 6 in. The available length of a second siding terminates where the distance between its centre and that of the first siding begins to be less than 12 ft. 6 in. and so on.

(b) On existing lines where the distance between centres of tracks is less than the present standard of 12 ft. 6 in., the 'available length' terminates at the point where the distance begins to diminish.

(c) It is desirable that the clearance point at which the 'available length' of each siding terminates should be marked on the ground in a conspicuous manner.

(d) On any section of a railway on which the length of trains is limited by special considerations, the length of platform and sidings may (with the sanction of the Government of India) be reduced to such an extent as may appear advisable. But for each such special case the sanction of Government is to be obtained to the proposal *before* work is commenced.

(a) N.B.—The upper edge of the nosing or coping to platform wall is to be finished to form an arris or a chamfer not exceeding 1½ inch wide.

(b) If the platform be on a curve, the horizontal distance from centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees (*716 ft. rad.*) allow 5½ in. extra.
„ „ 6 „ (*955 ft. rad.*) „ 4 in. „
„ „ 4 „ (*1432 ft. rad.*) „ 2⅔ in. „
„ „ 2 „ (*2865 ft. rad.*) „ 1⅓ in. „
and for other curves in proportion.

N.B.—See Note, item 2 (*d*).

(a) N.B.—Every halting place must have a platform, either raised or flush, which must be of standard platform length and ramped at ends. Flush platforms at unimportant halting places need not extend in width more than 15 feet from centre of track. Low platforms may have a curb instead of a platform wall, but a slope falling towards the rails, steeper than 1 in 20 must not be used.

II. Station Yards.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
(9) Maximum height above rail level for goods, carriage, and horse landing platforms . . .	2 ft. 3 in.	2 ft. 3 in.
(*a*) *N.B.*—If on a passenger siding the standard height for passenger platforms must not be exceeded.		
(*b*) The ends of *all* platforms must be ramped, the slope being not steeper than 1 in 6.		
(10) Minimum horizontal distance of any building from the edge of a *passenger* platform . . .	18 ft. 0 in.	24 ft. 0 in.
(*a*) *N.B.*—This applies to any continuous obstruction either parallel or perpendicular to platform, but not to verandah pillars, etc., see item (11).		
(*b*) For an island platform, where it would be undesirable to allow the full width here specified, a plan shewing the arrangements proposed is to be submitted to the Government of India for special sanction.		
(11) Minimum horizontal distance from edge of platform to pillars, columns, lamps or similar isolated structures within a height of 10 ft. 6 in. from rail level	6 ft. 0 in.	10 ft. 0. in.
(*a*) *N.B.*—This distance should be increased wherever possible.		
Buildings, etc.—		
(12) Minimum horizontal distance from centre of track to any structure in the vicinity of a *passenger* platform (but not *on* a platform), within a height of 10 ft. 6 in. from rail level. (*See diagram No. 1*) . .	9 ft. 0 in.	9 ft. 0 in.
(*a*) *N.B.*—This rule does not apply to water cranes, to point levers between tracks, or to loading gauges. (*See items Nos. 13 and 17 below and Chapter IV 5.*)		
(*b*) For extra allowance on sharp curves see item No. 3 (*b*).		
(13) Minimum horizontal distance from centre of track to any fixed part of water column between 1 foot and 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(14) Minimum horizontal distance from centre of track to any structure not in the vicinity of a *passenger* platform, from platform level, if any, or from 1 foot above rail level if there be no platform, to a height of 10 ft. 6 in. above rail level	6 ft. in.	6 ft. 6 in.
(*a*) *N.B.*—Under the last entry, coal or any material stacked by the side of any track is to be considered a structure in the sense in which the word is here used.		
(*b*) For extra allowance on sharp curves see item No. 3 (*b*).		
(15) Minimum height above rail level, for a width of 3 ft. 9 in. from centre of track, of tie-rods or underside of any continuous covering in *passenger* stations .	18 ft. 0 in.	20 ft. 0 in.
(*a*) *N.B.*—A projecting overhanging roof is permissible in the case of a goods shed *on a siding*, if it does not infringe the outline of the figure for minimum fixed structure out of stations. (*See diagram No. 2.*)		
(16) Minimum height above rail level at centre of track for foot-bridges crossing the line in stations . .	14 ft. 6 in.	14 ft. 6 in.

II. Station Yards.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Points and Crossings—		
(17) Minimum horizontal distance from centre of track to point handle, indicator or any part of point apparatus above rail level	6 ft. 3 in.	6 ft. 6 in.
(*a*) *N.B.*—A point handle may not, in any position, be within 6 ft. 3 in. of the centre line of nearest track; a clear distance of 6 ft. 3 in. is also to be preserved from centre of nearest track to any part of the point apparatus, fixed or movable, above rail level. An arrangement involving the placing of a point handle between tracks should be avoided as far as practicable; but where this arrangement is adopted, the point handle must work parallel with the rails, not at right angles thereto.		
(18) Maximum clearance of guard rail opposite nose of crossings	$1\frac{3}{4}$ inch.	$1\frac{3}{4}$ inch.
(19) Minimum clearance of switch rails and of guard rail for crossings	$1\frac{5}{8}$ inch.	$1\frac{5}{8}$ inch.
(20) Minimum space below rail level for wheel flange .	$1\frac{3}{8}$ inch.	$1\frac{3}{8}$ inch.
(21) Minimum radius of curve	330 feet.	476 feet.
(22) Standard crossings	—	1 in 6.
	—	1 in $8\frac{1}{2}$.
	—	1 in 12.
(*a*) *N.B.*—For the outside facing points a crossing of 1 in 12 is recommended.		
(23) Standard lengths for tongue rails . . .	—	9 ft. 0 in.
	—	12 ft. 0 in.

III. STATION MACHINERY.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Water Tanks—			
	Minimum height for bottom of tank above rail level *at water column*:—		
(1)	For watering engines	—	20 ft. 0 in.
(2)	For washing out engines	—	30 ft. 0 in.
(3)	Minimum distance from centre of track to face of tank house when adjacent to a passenger platform	18 ft. 0 in.	30 ft. 0 in.
(4)	Minimum capacity of tank at any station	—	800 c. ft.
Water Cranes—			
(5)	Minimum distance in the clear from centre of track to nearest part of water column from 1 foot above rail level	6 ft. 3 in.	6 ft. 6 in.
(6)	Standard height above rail level for discharge orifice of water crane jib	—	12 ft. 0 in.
(7)	Standard internal diameter for piping from tank to water crane	—	6 inches.
	(*a*) *N.B.*—This diameter should be increased where the same pipe serves two or more water columns likely to be used at the same time.		
Ash-Pits, etc.—			
(8)	Minimum clear length at bottom for ash-pits in station yards	—	50 ft. 0 in.
(9)	Standard average depth for ash-pits in station yards	—	3 ft. 6 in.
(9*a*)	Standard depth for examining pits for carriages and wagons	—	3 ft. 0 in.
Engine Running Sheds—			
(10)	Minimum distance centre to centre of tracks	12 ft. 6 in.	15 ft. 6 in.
(11)	Minimum clear distance from centre of track to any isolated structure such as a pillar	6 ft. 0 in.	6 ft. 6 in.
(12)	Minimum clear distance for a height of 6 feet above rail level to any continuous structure	8 ft. 0 in.	9 ft. 0 in.
	(*a*) *N.B.*—This distance should be increased to 13 ft. 6 in. on one side of sheds having not more than 3 lines of rails, and on both sides of sheds having more than 3 lines of rails, to allow room for benches, etc., inside the shed.		
(13)	Minimum height to tie bars, girders, etc., above rail level	12 ft. 6 in.	14 ft. 0 in.
(14)	Minimum height of doorways if flat at top	12 ft. 6 in.	12 ft. 6 in.
(15)	Standard average depth for pits in Running Sheds	—	3 ft. 0 in.
Turntables—			
(16)	Minimum diameter for engine turntables	—	36 ft. 0 in.
(17)	Minimum diameter for Carriage or Wagon turntables	—	14 ft. 0 in.
Traversers—			
(18)	Minimum length for Carriage or Wagon traversers	—	14 ft. 0 in.
Weigh-bridges—			
(19)	Minimum length for weigh-bridges for ordinary stock	—	14 ft. 0 in.
(20)	Minimum weighing power for weigh-bridges for ordinary stock	—	14 tons.

IV. LOCOMOTIVES AND ROLLING STOCK.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Maximum moving dimensions. (*See also diagram No 1*)—			
	Maximum width:—		
(1)	From rail level to a height of 2 ft. 9 in. above rail level	8 ft. 2 in.	8 ft. 2 in.
(2)	From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level	7 ft. 9 in.	7 ft. 9 in.
(3)	From a height of 6 ft. 9 in. above rail level to a height of 10 ft. 2 in. above rail level	8 ft. 6 in.	8 ft. 6 in.
	(*a*) *N.B.*—From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level, the width outside the framing of a coaching or goods vehicle must not exceed 7 ft. 9 in. Door handles, hand rails, lamps and other isolated fittings, and the projecting window in the case of a brake van may extend beyond the body of the vehicle up to a maximum width over all of 8 ft. 6 in., which must not be exceeded under any circumstances.		
	(*b*) Every carriage is to be provided with one continuous foot-board on each side, placed with its upper surface at a distance of 1 ft. 2 in. below floor level, the width over outsides of foot-boards being 8 ft. 2 in.		
	Maximum width over open doors, including all fastenings or projections—		
(1)	For passenger vehicles	12 ft. 6 in.	12 ft. 6 in.
(5)	For goods vehicles	12 ft. 6 in.	12 ft. 6 in.
	(*a*) *N.B.*—Horse boxes, brakevans and luggage vans are exempted from this rule.		
	Maximum height from rail level:—		
(6)	For unloaded vehicle at centre	11 ft. 0 in.	11 ft. 0 in.
(7)	For unloaded vehicle at sides	10 ft. 2 in.	10 ft. 2 in.
	(*a*) *N.B.*—All heights are to be taken with the vehicle unloaded and buffer centres at the maximum height of 1 ft. 11 in. from rail level. For further details see Diagram No. 1.		
	Loading gauge for goods:—		
(8)	Maximum width	8 ft. 8 in.	8 ft. 8 in.
(9)	Maximum height from rail level at centre	11 ft. 1 in.	11 ft. 1 in.
(10)	Maximum height from rail level at sides	10 ft. 3 in.	10 ft. 3 in.
Weight on a pair of wheels—			
(11)	Maximum per foot of diameter	3 tons.	3 tons.
(12)	Maximum for locomotives under any circumstances	8 tons.	8 tons.
(13)	Maximum for goods stock	7 tons.	7 tons.
(14)	Maximum for coaching stock	5 tons.	5 tons.
Weight per foot run of wheel base—			
(15)	Maximum for tank engines	2·67 tons.	2·67 tons.
(16)	Maximum for engine or tender separately, in the case of tender engines	2·00 tons.	2·00 tons.
Weight per foot run over buffers—			
(17)	Maximum for tank engines	1·333 tons.	1·333 tons.
(18)	Maximum for engine and tender together, in the case of tender engines	1·125 tons.	1·125 tons.
(19)	Maximum for goods stock	0·8 ton.	0·8 ton.

IV. Locomotives and Rolling Stock.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Total gross weight—			
(20)	Maximum for tank engines	—	32 tons.
(21)	Maximum for engine and tender together, in the case of tender engines	—	46 tons.

(*a*) *N.B.*—The weights given in items (11) to (21) are the maximum permissible under any circumstances with engine in working order and full load of fuel and water, and with the vehicles fully loaded. The weight on a pair of wheels includes the weight of the wheels, axles, axle-boxes and springs.

(*b*) The maximum weights given above are not to be worked to until a certificate has been accepted by an Inspector of railways to the effect that the bridges of the railway on which they are to be introduced are of sufficient strength to bear the proposed loads with safety.

(*c*) In exceptional cases, engines or vehicles of weights in excess of the specification given above may be used under the special sanction of the Government of India. Such special sanction must be obtained *before* the engines or vehicles are ordered, and the application for sanction must be accompanied by a diagram giving full particulars, and by a certificate countersigned by an Inspector of railways that the bridges on the section over which the engines or vehicles are intended to work, are of sufficient strength.

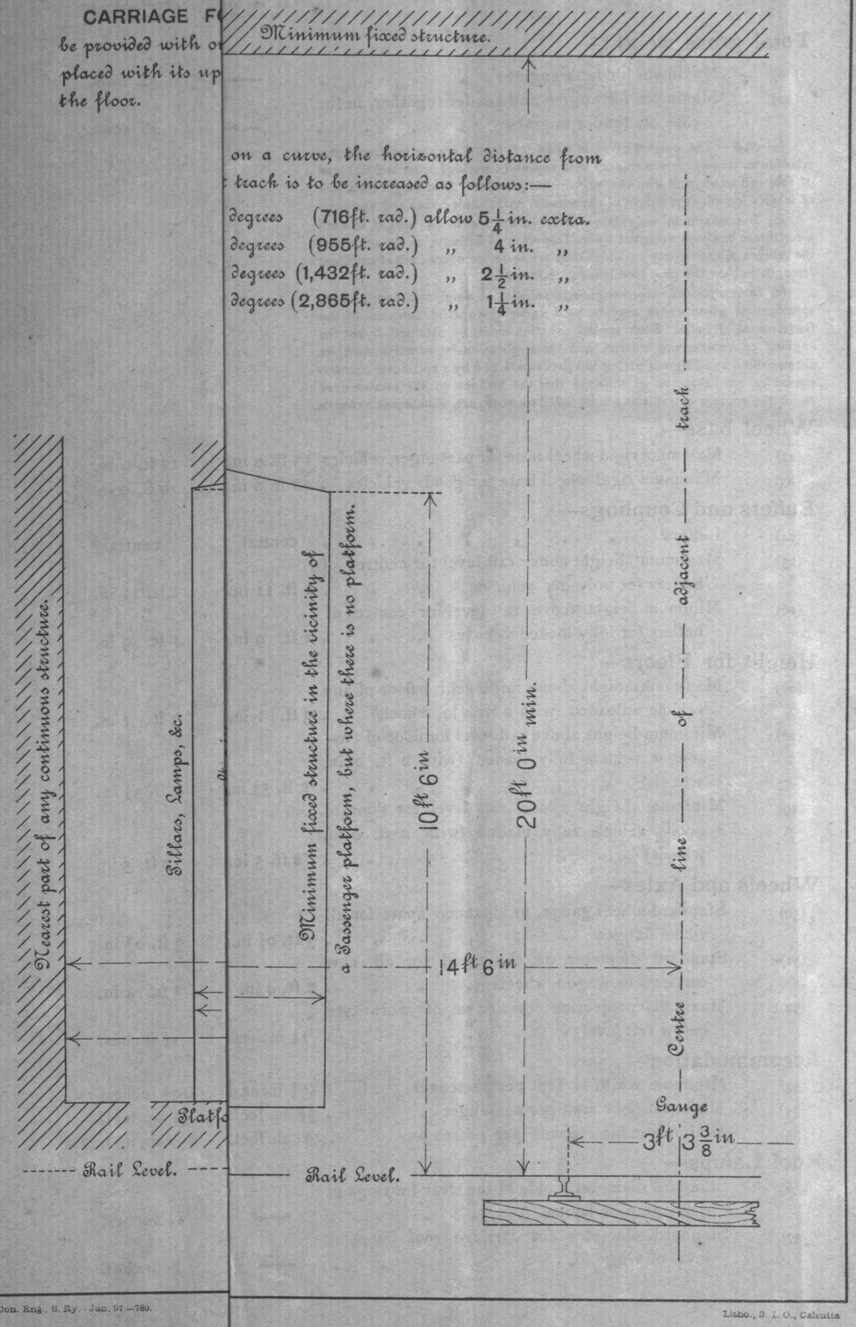
Wheel base—			
(22)	Maximum rigid wheel base for passenger vehicles	15 ft. 0 in.	12 ft. 0 in.
(23)	Maximum rigid wheel base for goods vehicles .	12 ft. 0 in.	10 ft. 0 in
Buffers and Couplings—			
(24)	Buffers	central	central
(25)	Maximum height above rail level for centres of buffers for unloaded vehicles . . .	1 ft. 11 in.	1 ft. 11 in.
(26)	Minimum height above rail level for centres of buffers for fully loaded vehicles . . .	1 ft. 9 in.	1 ft. 9 in.
Height for Floors—			
(27)	Maximum height above rail level for floor of any vehicle unloaded (with 2 ft. 4 in. wheels) .	3 ft. 1 in.	3 ft. 1 in.
(28)	Minimum height above rail level for floor of passenger vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. 5½ in.	2 ft. 5½ in.
(29)	Minimum height above rail level for floor of goods vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. 5 in.	2 ft. 5 in.
Wheels and Axles—			
(30)	Standard wheel gauge, or distance apart for all wheel flanges	3 ft. $0\frac{5}{8}$ in.	3 ft. $0\frac{5}{8}$ in.
(31)	Standard diameter on the tread for all new carriage or wagon wheels	2 ft. 4 in.	2 ft. 4 in.
(32)	Maximum projection for flange of worn tyre below rail level	1¼ inches.	1¼ inches.
Accommodation—			
(33)	Minimum width of seat per passenger . .	19½ inches.	19½ inches.
(34)	Minimum floor area per passenger . . .	3½ sq. feet.	3½ sq. feet.
(35)	Minimum cubic capacity per passenger . .	25 cub. feet.	25 cub. feet.
Roof Lamps—			
(36)	Standard diameter inside in the clear for rings of carriage roof lamps	—	8¼ inches.
(37)	Standard diameter for carriage roof lamps at level of ring	—	8 inches.

NS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.

CARRIAGE F
be provided with o
placed with its up
the floor.

on a curve, the horizontal distance from
track is to be increased as follows:—
degrees (716ft. rad.) allow 5¼ in. extra.
degrees (955ft. rad.) ,, 4 in. ,,
degrees (1,432ft. rad.) ,, 2½ in. ,,
degrees (2,865ft. rad.) ,, 1¼ in. ,,



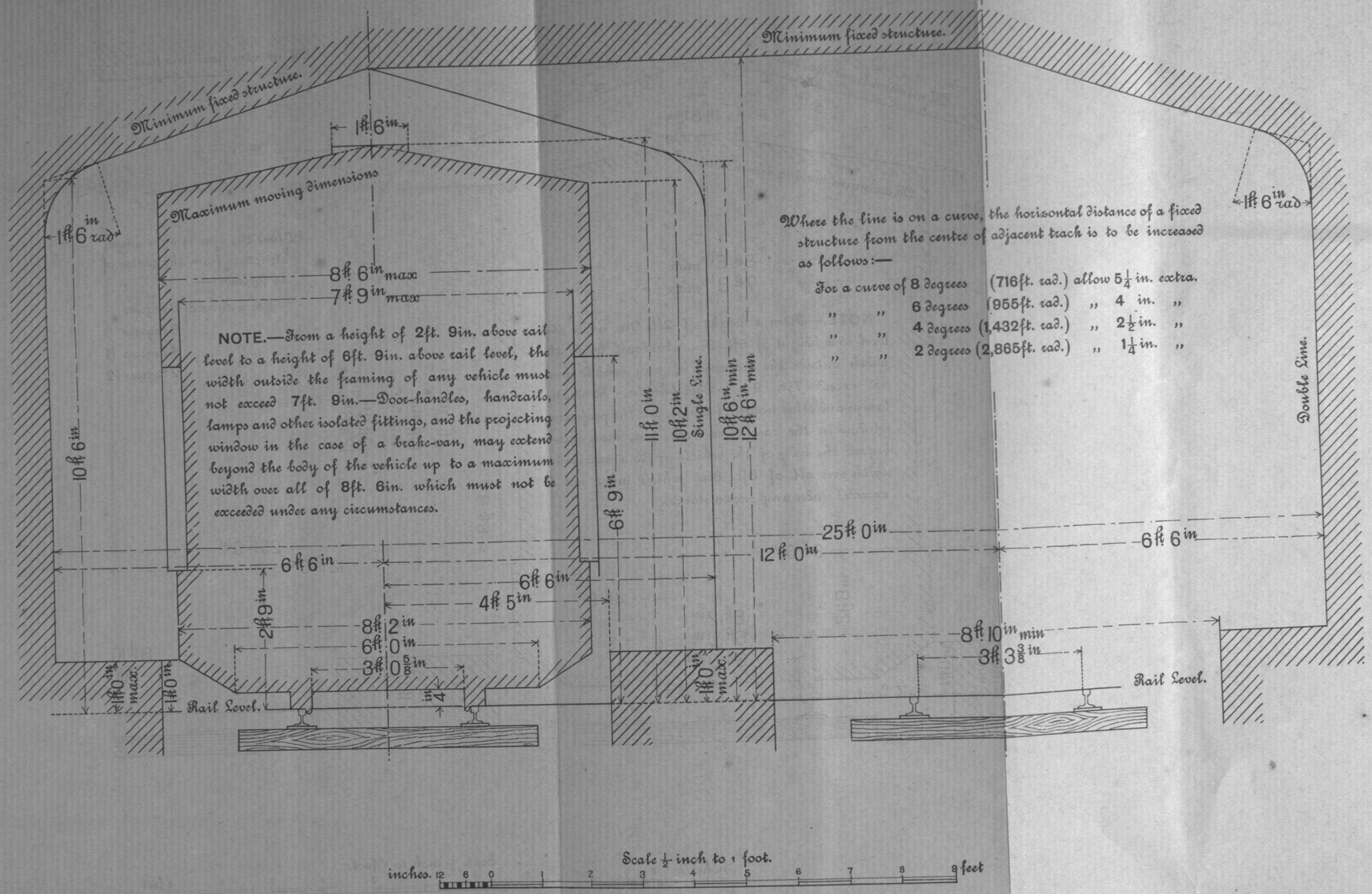
Reg. No. 626, Gen. Engg., S. Ry.—Jan. 97—750.

Litho., S. I. O., Calcutta

DIAGRAM NO. 2.

STANDARD DIMENSIONS OUT OF STATIONS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.



NOTE.—From a height of 2ft. 9in. above rail level to a height of 6ft. 9in. above rail level, the width outside the framing of any vehicle must not exceed 7ft. 9in.—Door-handles, handrails, lamps and other isolated fittings, and the projecting window in the case of a brake-van, may extend beyond the body of the vehicle up to a maximum width over all of 8ft. 6in. which must not be exceeded under any circumstances.

Where the line is on a curve, the horizontal distance of a fixed structure from the centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees	(716ft. rad.)	allow 5¼ in. extra.
,, ,, 6 degrees	(955ft. rad.)	,, 4 in. ,,
,, ,, 4 degrees	(1,432ft. rad.)	,, 2½ in. ,,
,, ,, 2 degrees	(2,865ft. rad.)	,, 1¼ in. ,,

Scale ½ inch to 1 foot.

inches. 12 6 0 1 2 3 4 5 6 7 8 9 feet

Litho., S. I. O., Calcutta

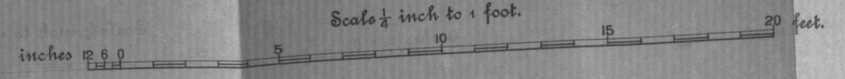
Reg. No. 626, Con. Eng., S. Ry.—Jan. 97.—780.

DIAGRAM NO. 3.

TUNNEL SECTIONS.

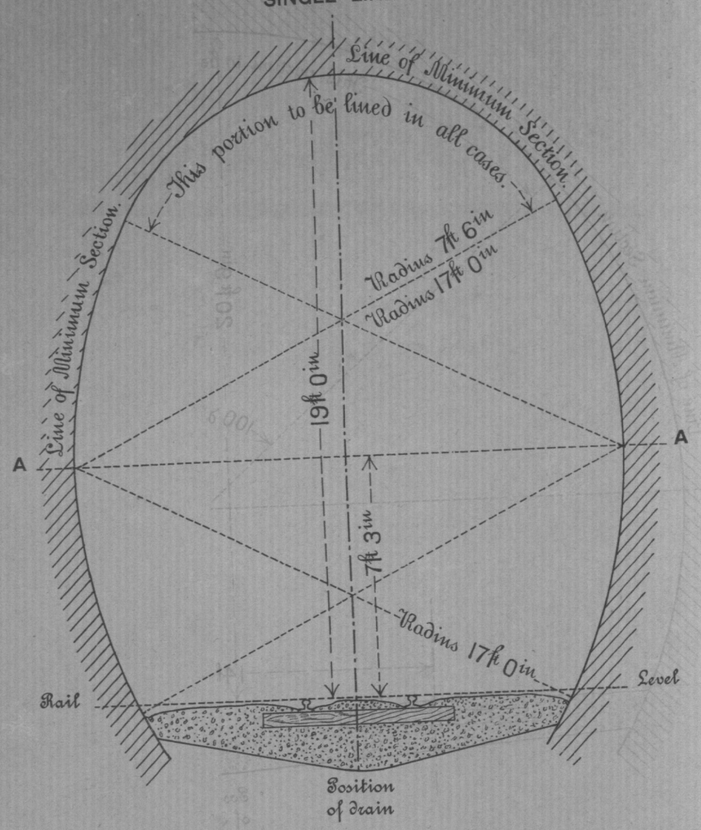
METRE GAUGE.
STANDARD DIMENSIONS.
1896.

Scale ½ inch to 1 foot.



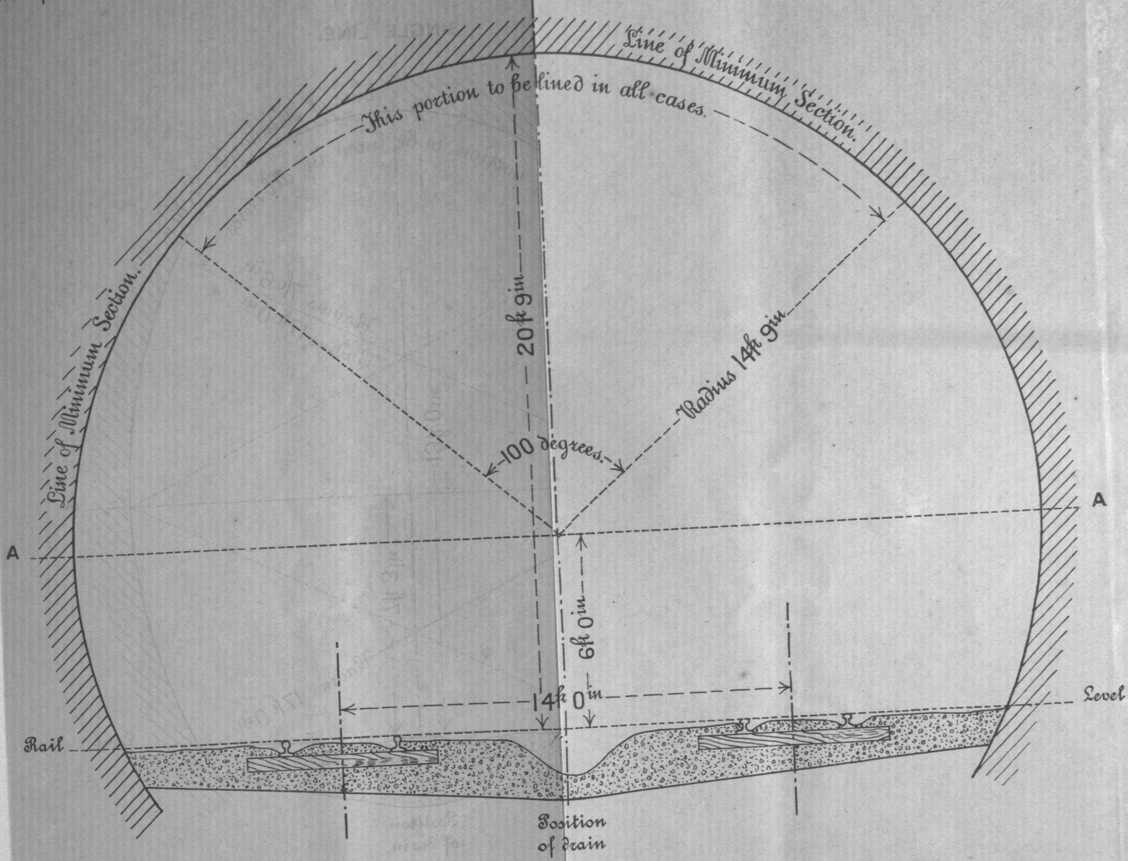
NOTE.—Refuges to allow men to stand aside clear of a passing train should be provided at intervals not exceeding two hundred feet in all tunnels of more than three hundred feet in length.

SINGLE LINE.



SINGLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required.

DOUBLE LINE.



DOUBLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required, and in special cases the section of the tunnel may be a complete circle.

EXTRA WIDTH TO BE ALLOWED ON CURVES.

CURVE.		EXTRA WIDTH FOR TUNNEL.		EXTRA DISTANCE CENTRES OF TRACKS FOR DOUBLE LINE.
Angle of curvature.	Radius in feet.	Single line.	Double line.	
2°-0′	2,865	0ft. 2½ in.	0ft. 5in.	2½ in.
3°-0′	1,910	0 „ 4 „	0 „ 8 „	4 „
4°-0′	1,432	0 „ 5 „	0 „ 10 „	5 „
5°-0′	1,146	0 „ 6½ „	1 „ 1 „	6½ „
6°-0′	955	0 „ 8 „	1 „ 4 „	8 „
7°-0′	819	0 „ 9 „	1 „ 6 „	9 „
8°-0′	716	0 „ 10½ „	1 „ 9 „	10½ „

Litho., S. I. O., Calcutta

Sec. No. 626, Con. Engr., S. Ry.—Jan. 07.—750.

[*For General Distribution.*]

Circular No. 9 Railway of 1896.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY CONSTRUCTION.

Calcutta, the 25th November 1896.

Revised Schedule of Standard Dimensions to be observed on all metre-gauge Railways in India.

Read—

Public Works Department Circular No. 7 Railway, dated 10th August 1892, and the revised list of maximum and minimum dimensions for metre-gauge railways therewith promulgated.

Read also—

Public Works Department Circular No. 7 Railway, dated 26th November 1886.
Act IX of 1890, section 19, sub-sections (*b*) and (*c*).

OBSERVATIONS.—It having been represented that the Standard Dimensions to be observed on metre-gauge railways in India, published under Circular No. 7 Railway, dated the 10th August 1892, are in some instances in excess of actual requirements, especially in the cases of branch or feeder lines, the Government of India have had under consideration the advisability of publishing revised schedules, arranged in two lists as follows, *viz.*:—

A.—Absolute maximum and minimum dimensions for all new works on any railway.

B.—Maximum and minimum dimensions which are recommended for all except unimportant branches, and should not be infringed without special sanction.

RESOLUTION.—In supersession of all previous orders on the subject the Governor General in Council desires that the Standard Dimensions specified in the enclosed schedule be observed in future, and that no infringement thereof be allowed, under any circumstances, without special sanction. Where it is proposed to execute any work, or to obtain any railway material, which will infringe these dimensions, the sanction of the Governor General in Council is to be obtained before such work is commenced or material procured.

2. These orders are not intended to have retrospective effect. The revised Standard Dimensions now prescribed are to be taken as applying only to new works, including as far as praticable, alterations and renewals.

3. In regard to the loads permissible, under the enclosed schedule, for Locomotives and Carriage and Wagon stock it must be clearly understood that loads in excess of those prescribed in Circular No. 7 Railway, dated 26th November 1886, are not to be worked to until a certificate has been accepted by an Inspector of Railways to the effect that the bridges of the railway on which they are to be introduced are of sufficient strength to bear the proposed loads with safety.

4. An Inspector of Railways is allowed discretion to pass variations in the sanctioned maximum loads for Locomotive axles which do not exceed the sanctioned loads by more than 5 per cent. on any individual axle, provided that the actual aggregate load does not exceed the aggregate sanctioned load by more than 1 per cent.

ORDER.—Ordered, that this Resolution be communicated for information and guidance to the Local Governments and Administrations and to the Officers marginally noted.

The Governments of Madras, Bombay, and Bengal.
The Chief Commissioners of the Central Provinces, Burma, and Assam.
The Residents at Hyderabad and in Mysore.
The Agents to the Governor General for Central India and Rajputana.
The Director General of Railways.
The Consulting Engineers to the Government of India for Railways, Calcutta, Lucknow, and Assam.

Also, that it be forwarded for information to the Governments of the North-Western Provinces and Oudh and the Punjab, the Agent to the Governor General in Baluchistan, the Director General of Telegraphs, and the Accountant General, Public Works Department.

J. M. Bisset

Colonel, R.E.,
Secretary.

Document accompanying.

Revised Schedule of Standard Dimensions to be observed on metre-gauge railways in India.

To The Joint Secy: to the Govt of Madras,
Public Works Department,
Railway Branch

50 S.C. Packets
by packet post

G. I. C. P. O.—No. 657 P. W. D.—27-11-96.—2,500—N. C. D.

mence

[*For General Distribution.*]

Circular No. 9 Railway of 1896.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY CONSTRUCTION.

Calcutta, the 25th November 1896.

Revised Schedule of Standard Dimensions to be observed on all metre-gauge Railways in India.

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Public Works Department Circular No. 7 Railway, dated 10th August 1892, and the revised list of maximum and minimum dimensions for metre-gauge railways therewith promulgated.

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ORDER.—Ordered, that this Resolution be communicated for information and guidance to the Local Governments and Administrations and to the Officers marginally noted.

The Governments of Madras, Bombay, and Bengal.
The Chief Commissioners of the Central Provinces, Burma, and Assam.
The Residents at Hyderabad and in Mysore.
The Agents to the Governor General for Central India and Rajputana.
The Director General of Railways.
The Consulting Engineers to the Government of India for Railways, Calcutta, Lucknow, and Assam.

Also, that it be forwarded for information to the Governments of the North-Western Provinces and Oudh and the Punjab, the Agent to the Governor General in Baluchistan, the Director General of Telegraphs, and the Accountant General, Public Works Department.

W. S. S. BISSET, *Colonel, R.E.*,
Secretary.

Document accompanying.

Revised Schedule of Standard Dimensions to be observed on metre-gauge railways in India.

G. I. C. P. O.—No. 657 P. W. D.—27-11-96.—2,500—N. C. D.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS.
METRE GAUGE.
1896.

STANDARD DIMENSIONS—METRE GAUGE.

1896.

In this edition, the Standard Dimensions have been arranged in 4 chapters instead of 8, by amalgamating Formation, Ballast, Permanent-way and Structures out of Stations in the first chapter, all Dimensions in Stations including Points and Crossings in the second, Station Machinery in the third, and Locomotives and Rolling Stock in the last.

It is considered that this form is more convenient for reference than the old one.

Schedule B has been modified to eliminate dimensions intended to make a metre-gauge line suitable to conversion to broad gauge. The clearance out of stations now required above rail level is 12 ft. 6 in. instead of 14 ft. 6 in., and from centre of track 6 ft. 6 in. instead of 7 ft. 0 in. The dimensions in stations are also modified.

The following alterations have also been made :—

Width of ballast at top is measured at level of foot of rail, the minimum depth required is increased in rock cuttings and decreased elsewhere.

Clear available length of *one* siding for crossing trains has been reduced to 1,200 feet.

Distance of building from edge of platform has been reduced from 30 feet to 24 feet, and distance of pillars from edge of platform increased to 10 feet.

Height of over-bridges in stations has been reduced to 14 ft. 6 in.

The clear top width over track in stations (diagram 1) has been reduced from 6 feet to 3 ft. 9 in. from centre of track to allow of overhanging roofs, water pipes, etc.

The Standard Dimensions for Running Sheds have been modified.

The maximum width over bodies of all vehicles includes the framing.

Slight modifications have been made in some places to make the meaning more clear.

Particular attention is invited to the difference between "Standard," "Maximum" and "Minimum;" the two latter represent the greatest and least dimensions which it is considered advisable to permit *in any case;* in many cases, more especially in the position of buildings, it is not desirable to work to these limits unless considerable extra expense would be incurred by giving a more liberal margin; for example, it is very seldom necessary to put pillars so near the edge of a platform as 10 feet, to erect any building so near the centre of track as 6 ft. 6 in. or to put a tank house, which is generally a serious obstruction both to the clear view in approaching a station, and to any future extension of the sidings, as near the track as 30 feet.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS

TO BE OBSERVED ON RAILWAYS IN INDIA.

METRE GAUGE.

NOTE.—Where it is proposed to execute any work or to procure Bridge Girders, Station Machinery, Rolling Stock or other Railway material which will infringe the dimensions or loads given in schedule B, the sanction of the Government of India should be obtained before such work is commenced or order given. The dimensions and loads given in schedule A may not be infringed under any circumstances.

I. GENERAL.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Formation, Single Line—			
(1)	Minimum width in embankment	14 ft. 0 in.	16 ft. 0 in.
(2)	„ „ in cutting (*excluding side drains*)	12 ft. 0 in.	14 ft. 0 in.
Formation, Double Line—			
(3)	Minimum width in embankment	26 ft. 0 in.	28 ft. 0 in.
(4)	„ „ in cutting (*excluding side drains*)	24 ft. 0 in.	26 ft. 0 in.
(5)	Minimum distance centre to centre of tracks (out of stations)	12 ft. 0 in.	12 ft. 0 in.
Curves—			
	Maximum angle of curvature on main line—		
(6)	In ordinary country	8° 0′ (rad. = 716 ft.)	5° 0′ (rad. = 1146 ft.)
(7)	In difficult country	16° 0′ (rad. = 358 ft.)	10° 0′ (rad. = 573 ft.)

(*a*) *N.B.*—The angle of curvature is taken as the angle at the centre subtended by an arc of one hundred feet in length. Thus the radius for a one degree curve is 5729·578 feet.

(*b*) The maximum angle of curvature should *only be worked to in special cases* where the adoption of an easier curve would be impracticable or involve considerable extra expense. Under very exceptional circumstances where it may appear necessary that this rule should be relaxed, the matter should be referred to the Government of India for orders.

(*c*) In flat open country where no obstacle exists, the radius should not be less than 5729½ feet.

Ballast—			
(8)	Minimum width of ballast at level of foot of rail	7 ft. 0 in.	7 ft. 6 in.
	Minimum depth of ballast below sleepers,—		
(9)	In cuttings in rock or hard soil	6 inches.	9 inches.
(10)	In cuttings in soft soil or on banks	3 inches.	6 inches.

(*a*) *N.B.*—These minimum dimensions may be relaxed in the case of a line being opened to traffic before the banks have settled, when suitable restrictions are placed on the speed of trains.

Sleepers—			
	Minimum dimensions for timber cross sleepers—		
(11)	Length	5 ft. 9 in.	6 ft. 0 in.
(12)	Breadth	6 inches.	7 inches.
(13)	Depth	4 inches.	4½ inches.
(14)	Minimum area in cross section	30 sq. in.	36 sq. in.
(15)	„ number of cross sleepers per mile	1936	1936

(*a*) *N.B.*—On bridges where the cross sleepers rest directly on longitudinal girders, the sleepers are to be spaced not more than 1 ft. 6 in. centre to centre, and are to be not less than 5 inches deep exclusive of any notching which may be required on the underside to allow for the cover plates, camber, etc.

I. General.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Rails—		
(16) Minimum clearance of guard rail for curves and level crossings	1⅜ inch.	2 inches.
(17) Minimum depth of space for wheel flange, from rail level	1⅝ inch.	1⅝ inch.
Buildings, etc.—(*See diagram No. 2*)—		
(18) Minimum horizontal distance from centre of track to any structure, from 1 foot above rail level to a height of 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(19) Minimum horizontal distance from centre of track from rail level to 1 foot above rail level	4 ft. 5 in.	4 ft. 5 in.

(*a*) *N.B.*—Under items 18 and 19 any material stacked by the side of the line is to be considered a structure in the sense in which the word is here used.

(*b*) Where the line is on a curve the horizontal distance of a fixed structure from the centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees (*716 ft. rad.*) allow 5¼ in. extra.
" " 6 " (*955 ft. rad.*) " 4 in. "
" " 4 " (*1432 ft. rad.*) " 2⅝ in. "
" " 2 " (*2865 ft. rad.*) " 1⅛ in. "
and for others curves in proportion.

(20) Minimum height above rail level at centre of track for over-bridges or over-head bracing out of stations	12 ft. 6 in.	12 ft. 6 in.
(21) Minimum height above rail level for telegraph wires crossing the line, or above surface of road where carried over roads at level crossings	20 ft. 0 in.	20 ft. 0 in.

N.B.—The minimum horizontal distance, from the centre line of nearest track, at which a telegraph post may be erected, is the total height of the post plus 6 ft. 6 in. Also, where the line is in cutting, a telegraph post erected on the berm must be at a distance from the edge of the cutting of not less than the total height of the post.

Tunnels, Single Line—(*See diagram No. 3*)—		
(22) Minimum height above rail level at centre	19 ft. 0 in.	19 ft. 0 in.
(23) " width at rail level	13 ft. 0 in.	13 ft. 0 in.
(24) " " at 7 ft. 3 in. above rail level	17 ft. 0 in.	17 ft. 0 in.
Tunnels, Double Line—		
(25) Minimum height above rail level at centre	20 ft. 9 in.	20 ft. 9 in.
(26) " width at rail level	26 ft. 6 in.	26 ft. 6 in.
(27) " " at 6 ft. 0 in. above rail level	29 ft. 6 in.	29 ft. 6 in.

N.B.—For extra allowance in curves see item 19 (*b*).

(28) Maximum distance apart of refuges	300 feet.	200 feet.

II. Station Yards.

II. STATION YARDS.

See also Diagram No. 1.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Spacing of Tracks—		
(1) Minimum distance centre to centre of tracks	12 ft. 6 in.	14 ft. 6 in.
(2) Minimum clear available length of one siding for crossing trains	——	1,200 feet.

(*a*) *N.B.*—The 'available length' of first siding (whether the line be curved or straight) terminates where the distance between the centre of the siding and the centre of main line begins to be less than 12 ft. 6 in. The available length of a second siding terminates where the distance between its centre and that of the first siding begins to be less than 12 ft. 6 in. and so on.

(*b*) On existing lines where the distance between centres of tracks is less than the present standard of 12 ft. 6 in., the 'available length' terminates at the point where the distance begins to diminish.

(*c*) It is desirable that the clearance point at which the 'available length' of each siding terminates should be marked on the ground in a conspicuous manner.

(*d*) On any section of a railway on which the length of trains is limited by special considerations, the length of platform and sidings may (with the sanction of the Government of India) be reduced to such an extent as may appear advisable. But for each such special case the sanction of Government is to be obtained to the proposal *before* work is commenced.

Platforms—		
(3) Standard horizontal distance from centre of track to face of platform coping	4 ft. 5 in.	4 ft. 5 in.

(*a*) *N.B.*—The upper edge of the nosing or coping to platform wall is to be finished to form an arris or a chamfer not exceeding 1½ inch wide.

(*b*) If the platform be on a curve, the horizontal distance from centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees (*716 ft. rad.*) allow 5¼ in. extra.
" " 6 " (*955 ft. rad.*) " 4 in. "
" " 4 " (*1432 ft. rad.*) " 2⅝ in. "
" " 2 " (*2865 ft. rad.*) " 1⅛ in. "
and for other curves in proportion.

(4) Minimum length for passenger platform	——	600 feet.

N.B.—See Note, item 2 (*d*).

(5) Maximum height above rail level for any passenger platform	1 ft. 4 in.	1 ft. 4 in.
(6) Standard height above rail level for new passenger platforms at important stations	1 ft. 0 in.	1 ft. 0 in.
(8) Minimum height for any passenger platform	Flush with rail level.	Flush with rail level.

(*a*) *N.B.*—Every halting place must have a platform, either raised or flush, which must be of standard platform length and ramped at ends. Flush platforms at unimportant halting places need not extend in width more than 15 feet from centre of track. Low platforms may have a curb instead of a platform wall, but a slope falling towards the rails, steeper than 1 in 20 must not be used.

II. Station Yards.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
(9) Maximum height above rail level for goods, carriage, and horse landing platforms . . .	2 ft. 3 in.	2 ft. 3 in.
(a) *N.B.*—If on a passenger siding the standard height for passenger platforms must not be exceeded.		
(b) The ends of *all* platforms must be ramped, the slope being not steeper than 1 in 6.		
(10) Minimum horizontal distance of any building from the edge of a *passenger* platform . . .	18 ft. 0 in.	24 ft. 0 in.
(a) *N.B.*—This applies to any continuous obstruction either parallel or perpendicular to platform, but not to verandah pillars, etc., see item (11).		
(b) For an island platform, where it would be undesirable to allow the full width here specified, a plan shewing the arrangements proposed is to be submitted to the Government of India for special sanction.		
(11) Minimum horizontal distance from edge of platform to pillars, columns, lamps or similar isolated structures within a height of 10 ft. 6 in. from rail level	6 ft. 0 in.	10 ft. 0. in.
(a) *N.B.*—This distance should be increased wherever possible.		
Buildings, etc.—		
(12) Minimum horizontal distance from centre of track to any structure in the vicinity of a *passenger* platform (but not *on* a platform), within a height of 10 ft. 6 in. from rail level. (*See diagram No. 1*) . .	9 ft. 0 in.	9 ft. 0 in.
(a) *N.B.*—This rule does not apply to water cranes, to point levers between tracks, or to loading gauges. (*See items Nos. 13 and 17 below and Chapter IV 5.*)		
(b) For extra allowance on sharp curves see item No. 3 (*b*).		
(13) Minimum horizontal distance from centre of track to any fixed part of water column between 1 foot and 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(14) Minimum horizontal distance from centre of track to any structure not in the vicinity of a *passenger* platform, from platform level, if any, or from 1 foot above rail level if there be no platform, to a height of 10 ft. 6 in. above rail level	6 ft. in.	6 ft. 6 in.
(a) *N.B.*—Under the last entry, coal or any material stacked by the side of any track is to be considered a structure in the sense in which the word is here used.		
(b) For extra allowance on sharp curves see item No. 3 (*b*).		
(15) Minimum height above rail level, for a width of 3 ft. 9 in. from centre of track, of tie-rods or underside of any continuous covering in *passenger* stations .	18 ft. 0 in.	20 ft. 0 in.
(a) *N.B.*—A projecting overhanging roof is permissible in the case of a goods shed *on a siding*, if it does not infringe the outline of the figure for minimum fixed structure out of stations. (*See diagram No. 2.*)		
(16) Minimum height above rail level at centre of track for foot-bridges crossing the line in stations . .	14 ft. 6 in.	14 ft. 6 in.

II. Station Yards.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Points and Crossings—		
(17) Minimum horizontal distance from centre of track to point handle, indicator or any part of point apparatus above rail level	6 ft. 3 in.	6 ft. 6 in.
(a) *N.B.*—A point handle may not, in any position, be within 6 ft. 3 in. of the centre line of nearest track; a clear distance of 6 ft. 3 in. is also to be preserved from centre of nearest track to any part of the point apparatus, fixed or movable, above rail level. An arrangement involving the placing of a point handle between tracks should be avoided as far as practicable; but where this arrangement is adopted, the point handle must work parallel with the rails, not at right angles thereto.		
(18) Maximum clearance of guard rail opposite nose of crossings	1⅜ inch.	1⅜ inch.
(19) Minimum clearance of switch rails and of guard rail for crossings	1⅝ inch.	1⅝ inch.
(20) Minimum space below rail level for wheel flange .	1⅜ inch.	1⅜ inch.
(21) Minimum radius of curve	330 feet.	476 feet.
(22) Standard crossings	—	1 in 6.
	—	1 in 8½.
	—	1 in 12.
(a) *N.B.*—For the outside facing points a crossing of 1 in 12 is recommended.		
(23) Standard lengths for tongue rails . . .	—	9 ft. 0 in.
	—	12 ft. 0 in.

III. STATION MACHINERY.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Water Tanks—			
	Minimum height for bottom of tank above rail level *at water column*:—		
(1)	For watering engines	—	20 ft. 0 in.
(2)	For washing out engines	—	30 ft. 0 in.
(3)	Minimum distance from centre of track to face of tank house when adjacent to a passenger platform	18 ft. 0 in.	30 ft. 0 in.
(4)	Minimum capacity of tank at any station	—	800 c. ft.
Water Cranes—			
(5)	Minimum distance in the clear from centre of track to nearest part of water column from 1 foot above rail level	6 ft. 3 in.	6 ft. 6 in.
(6)	Standard height above rail level for discharge orifice of water crane jib	—	12 ft. 0 in.
(7)	Standard internal diameter for piping from tank to water crane	—	6 inches.
	(*a*) *N.B.*—This diameter should be increased where the same pipe serves two or more water columns likely to be used at the same time.		
Ash-Pits, etc.—			
(8)	Minimum clear length at bottom for ash-pits in station yards	—	50 ft. 0 in.
(9)	Standard average depth for ash-pits in station yards	—	3 ft. 6 in.
(9*a*)	Standard depth for examining pits for carriages and wagons	—	3 ft. 0 in.
Engine Running Sheds—			
(10)	Minimum distance centre to centre of tracks	12 ft. 6 in.	15 ft. 6 in.
(11)	Minimum clear distance from centre of track to any isolated structure such as a pillar	6 ft. 0 in.	6 ft. 6 in.
(12)	Minimum clear distance for a height of 6 feet above rail level to any continuous structure	8 ft. 0 in.	9 ft. 0 in.
	(*a*) *N.B.*—This distance should be increased to 13 ft. 6 in. on one side of sheds having not more than 3 lines of rails, and on both sides of sheds having more than 3 lines of rails, to allow room for benches, etc., inside the shed.		
(13)	Minimum height to tie bars, girders, etc., above rail level	12 ft. 6 in.	14 ft. 0 in.
(14)	Minimum height of doorways if flat at top	12 ft. 6 in.	12 ft. 6 in.
(15)	Standard average depth for pits in Running Sheds	—	3 ft. 0 in.
Turntables—			
(16)	Minimum diameter for engine turntables	—	36 ft. 0 in.
(17)	Minimum diameter for Carriage or Wagon turntables	—	14 ft. 0 in.
Traversers—			
(18)	Minimum length for Carriage or Wagon traversers	—	14 ft. 0 in.
Weigh-bridges—			
(19)	Minimum length for weigh-bridges for ordinary stock	—	14 ft. 0 in.
(20)	Minimum weighing power for weigh-bridges for ordinary stock	—	14 tons.

IV. LOCOMOTIVES AND ROLLING STOCK.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Maximum moving dimensions. (*See also diagram No. 1*)—			
	Maximum width:—		
(1)	From rail level to a height of 2 ft. 9 in. above rail level	8 ft. 2 in.	8 ft. 2 in.
(2)	From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level	7 ft. 9 in.	7 ft. 9 in.
(3)	From a height of 6 ft. 9 in. above rail level to a height of 10 ft. 2 in. above rail level	8 ft. 6 in.	8 ft. 6 in.
	(*a*) *N.B.*—From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level, the width outside the framing of a coaching or goods vehicle must not exceed 7 ft. 9 in. Door handles, hand rails, lamps and other isolated fittings, and the projecting window in the case of a brake van may extend beyond the body of the vehicle up to a maximum width over all of 8 ft. 6 in., which must not be exceeded under any circumstances.		
	(*b*) Every carriage is to be provided with one continuous foot-board on each side, placed with its upper surface at a distance of 1 ft. 2 in. below floor level, the width over outsides of foot-boards being 8 ft. 2 in.		
	Maximum width over open doors, including all fastenings or projections—		
(4)	For passenger vehicles	12 ft. 6 in.	12 ft. 6 in.
(5)	For goods vehicles	12 ft. 6 in.	12 ft. 6 in.
	(*a*) *N.B.*—Horse boxes, brakevans and luggage vans are exempted from this rule.		
	Maximum height from rail level:—		
(6)	For unloaded vehicle at centre	11 ft. 0 in.	11 ft. 0 in.
(7)	For unloaded vehicle at sides	10 ft. 2 in.	10 ft. 2 in.
	(*a*) *N.B.*—All heights are to be taken with the vehicle unloaded and buffer centres at the maximum height of 1 ft. 11 in. from rail level. For further details see Diagram No. 1.		
	Loading gauge for goods:—		
(8)	Maximum width	8 ft. 8 in.	8 ft. 8 in.
(9)	Maximum height from rail level at centre	11 ft. 1 in.	11 ft. 1 in.
(10)	Maximum height from rail level at sides	10 ft. 3 in.	10 ft. 3 in.
Weight on a pair of wheels—			
(11)	Maximum per foot of diameter	3 tons.	3 tons.
(12)	Maximum for locomotives under any circumstances	8 tons.	8 tons.
(13)	Maximum for goods stock	7 tons.	7 tons.
(14)	Maximum for coaching stock	5 tons.	5 tons.
Weight per foot run of wheel base—			
(15)	Maximum for tank engines	2·67 tons.	2·67 tons.
(16)	Maximum for engine or tender separately, in the case of tender engines	2·00 tons.	2·00 tons.
Weight per foot run over buffers—			
(17)	Maximum for tank engines	1·333 tons.	1·333 tons.
(18)	Maximum for engine and tender together, in the case of tender engines	1·125 tons.	1·125 tons.
(19)	Maximum for goods stock	0·8 ton.	0·8 ton.

IV. Locomotives and Rolling Stock.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Total gross weight—			
(20)	Maximum for tank engines	—	32 tons.
(21)	Maximum for engine and tender together, in the case of tender engines	—	46 tons.

(*a*) *N.B.*—The weights given in items (11) to (21) are the maximum permissible under any circumstances with engine in working order and full load of fuel and water, and with the vehicles fully loaded. The weight on a pair of wheels includes the weight of the wheels, axles, axle-boxes and springs.

(*b*) The maximum weights given above are not to be worked to until a certificate has been accepted by an Inspector of railways to the effect that the bridges of the railway on which they are to be introduced are of sufficient strength to bear the proposed loads with safety.

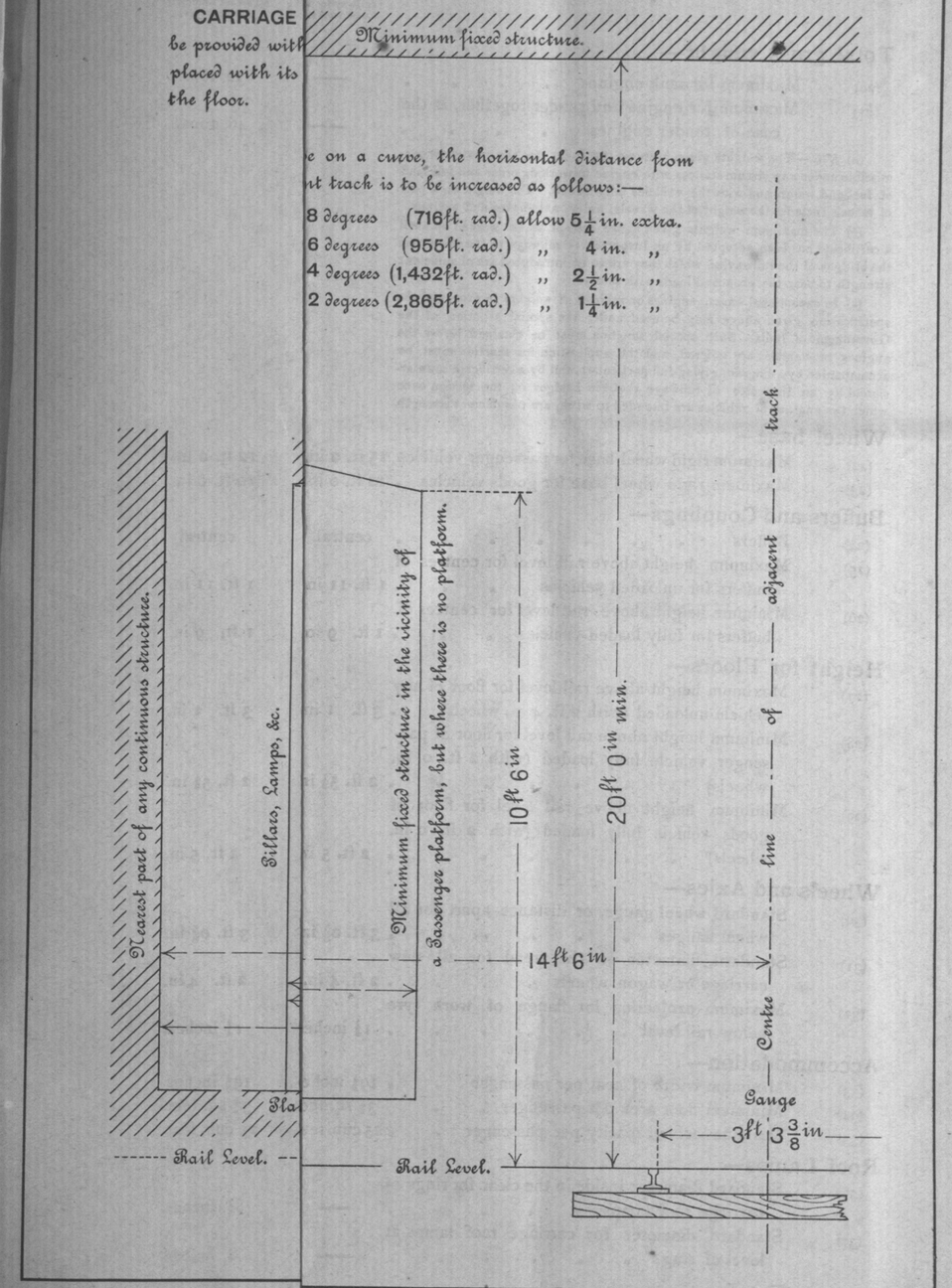
(*c*) In exceptional cases, engines or vehicles of weights in excess of the specification given above may be used under the special sanction of the Government of India. Such special sanction must be obtained *before* the engines or vehicles are ordered, and the application for sanction must be accompanied by a diagram giving full particulars, and by a certificate countersigned by an Inspector of railways that the bridges on the section over which the engines or vehicles are intended to work, are of sufficient strength.

Wheel base—			
(22)	Maximum rigid wheel base for passenger vehicles	15 ft. 0 in.	12 ft. 0 in.
(23)	Maximum rigid wheel base for goods vehicles .	12 ft. 0 in.	10 ft. 0 in
Buffers and Couplings—			
(24)	Buffers	central	central
(25)	Maximum height above rail level for centres of buffers for unloaded vehicles . . .	1 ft. 11 in.	1 ft. 11 in.
(26)	Minimum height above rail level for centres of buffers for fully loaded vehicles . . .	1 ft. 9 in.	1 ft. 9 in.
Height for Floors—			
(27)	Maximum height above rail level for floor of any vehicle unloaded (with 2 ft. 4 in. wheels) .	3 ft. 1 in.	3 ft. 1 in.
(28)	Minimum height above rail level for floor of passenger vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. $5\frac{1}{2}$ in.	2 ft. $5\frac{1}{2}$ in.
(29)	Minimum height above rail level for floor of goods vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. 5 in.	2 ft. 5 in.
Wheels and Axles—			
(30)	Standard wheel gauge, or distance apart for all wheel flanges	3 ft. $0\frac{5}{8}$ in.	3 ft. $0\frac{5}{8}$ in.
(31)	Standard diameter on the tread for all new carriage or wagon wheels	2 ft. 4 in.	2 ft. 4 in.
(32)	Maximum projection for flange of worn tyre below rail level	$1\frac{1}{4}$ inches.	$1\frac{1}{4}$ inches.
Accommodation—			
(33)	Minimum width of seat per passenger . .	$19\frac{1}{2}$ inches.	$19\frac{1}{2}$ inches.
(34)	Minimum floor area per passenger . .	$3\frac{1}{2}$ sq. feet.	$3\frac{1}{2}$ sq. feet.
(35)	Minimum cubic capacity per passenger . .	25 cub. feet.	25 cub. feet.
Roof Lamps—			
(36)	Standard diameter inside in the clear for rings of carriage roof lamps	—	$8\frac{1}{4}$ inches.
(37)	Standard diameter for carriage roof lamps at level of ring	—	8 inches.

NS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.

CARRIAGE
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Reg. No. 626, Con. Eng., S. Ry.—Jan. 97.—780.

Litho., S. I. O., Calcutta

Reg. No. 626, Con. Eng., S. Ry.—Jan. 97.—780.

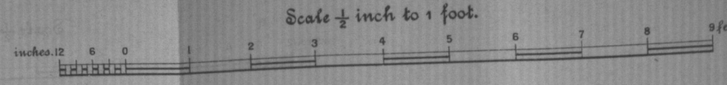
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DIAGRAM NO. I.

STANDARD DIMENSIONS IN STATIONS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.

Scale ½ inch to 1 foot.

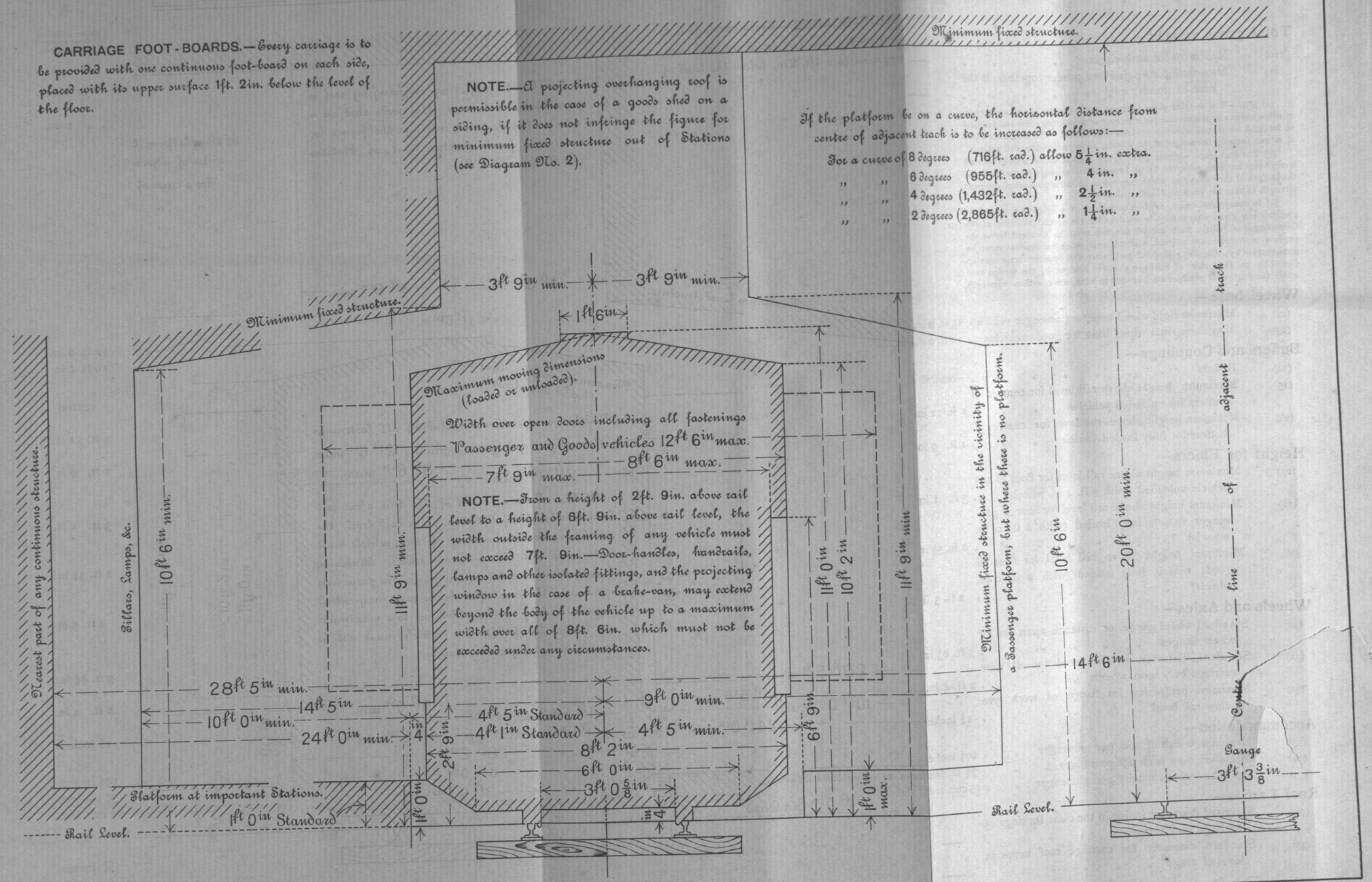


CARRIAGE FOOT-BOARDS.—*Every carriage is to be provided with one continuous foot-board on each side, placed with its upper surface 1ft. 2in. below the level of the floor.*

NOTE.—*A projecting overhanging roof is permissible in the case of a goods shed on a siding, if it does not infringe the figure for minimum fixed structure out of Stations (see Diagram No. 2).*

If the platform be on a curve, the horizontal distance from centre of adjacent track is to be increased as follows:—

For a curve of	8 degrees	(716ft. rad.) allow	5¼ in. extra.
,, ,,	6 degrees	(955ft. rad.) ,,	4 in. ,,
,, ,,	4 degrees	(1,432ft. rad.) ,,	2½ in. ,,
,, ,,	2 degrees	(2,865ft. rad.) ,,	1¼ in. ,,



Litho., S. I. O., Calcutta

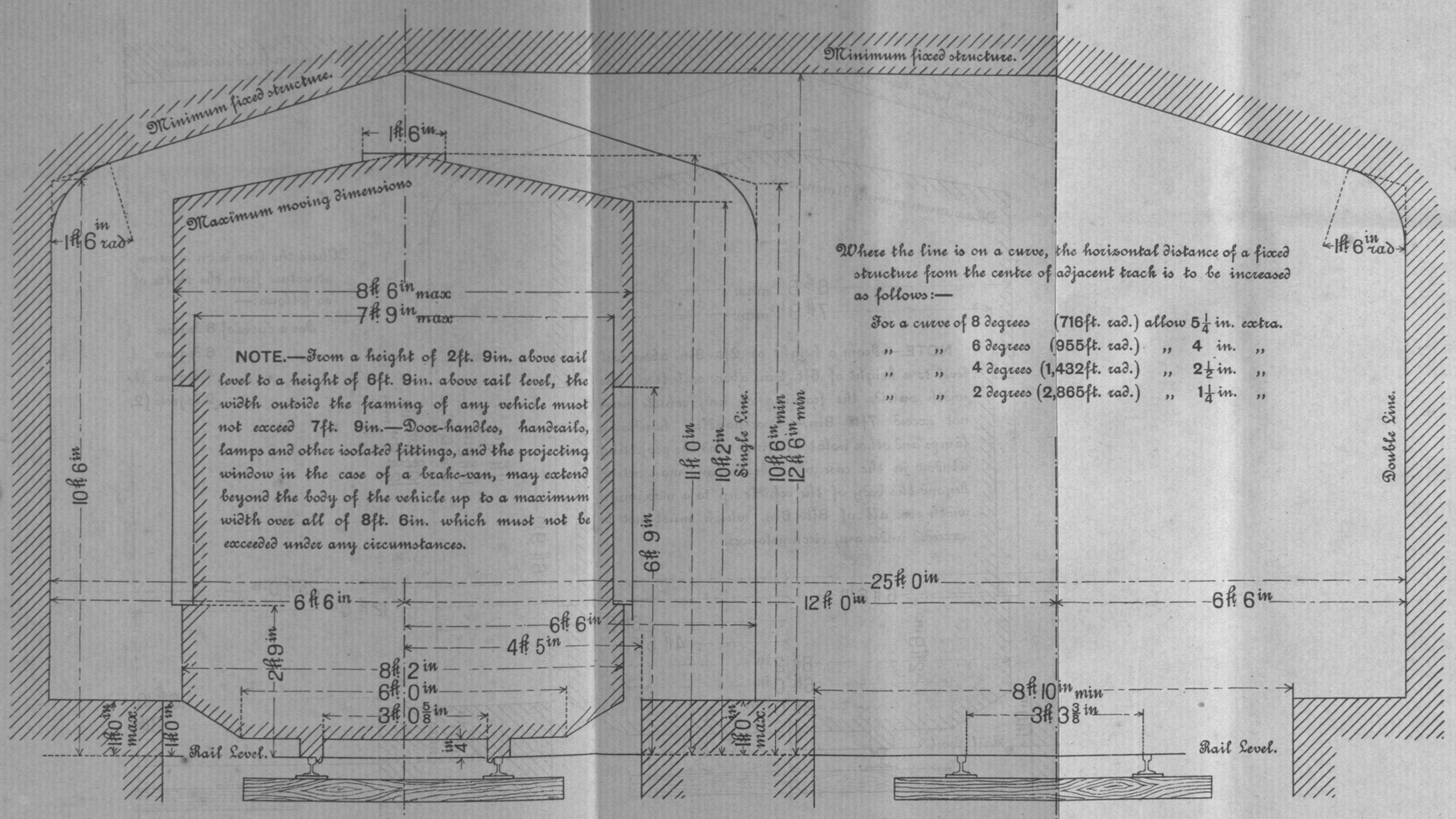
Reg. No. 626, Con. Engs., S. Ry.—Jan. 97.—780.

Litho., S. I. O., Calcutta

DIAGRAM NO. 2.

STANDARD DIMENSIONS OUT OF STATIONS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.



NOTE.—From a height of 2ft. 9in. above rail level to a height of 6ft. 9in. above rail level, the width outside the framing of any vehicle must not exceed 7ft. 9in.—Door-handles, handrails, lamps and other isolated fittings, and the projecting window in the case of a brake-van, may extend beyond the body of the vehicle up to a maximum width over all of 8ft. 6in. which must not be exceeded under any circumstances.

Where the line is on a curve, the horizontal distance of a fixed structure from the centre of adjacent track is to be increased as follows:—

For a curve of	8 degrees	(716ft. rad.) allow	5¼ in. extra.
,, ,,	6 degrees	(955ft. rad.) ,,	4 in. ,,
,, ,,	4 degrees	(1,432ft. rad.) ,,	2½ in. ,,
,, ,,	2 degrees	(2,865ft. rad.) ,,	1¼ in. ,,

Scale ½ inch to 1 foot.

inches. 12 6 0 1 2 3 4 5 6 7 8 9 feet

Reg. No. 626, Con. Eng., S. Ry.—Jan. 97.—780.

Litho., S. I. O., Calcutta

DIAGRAM NO. 3.

TUNNEL SECTIONS.

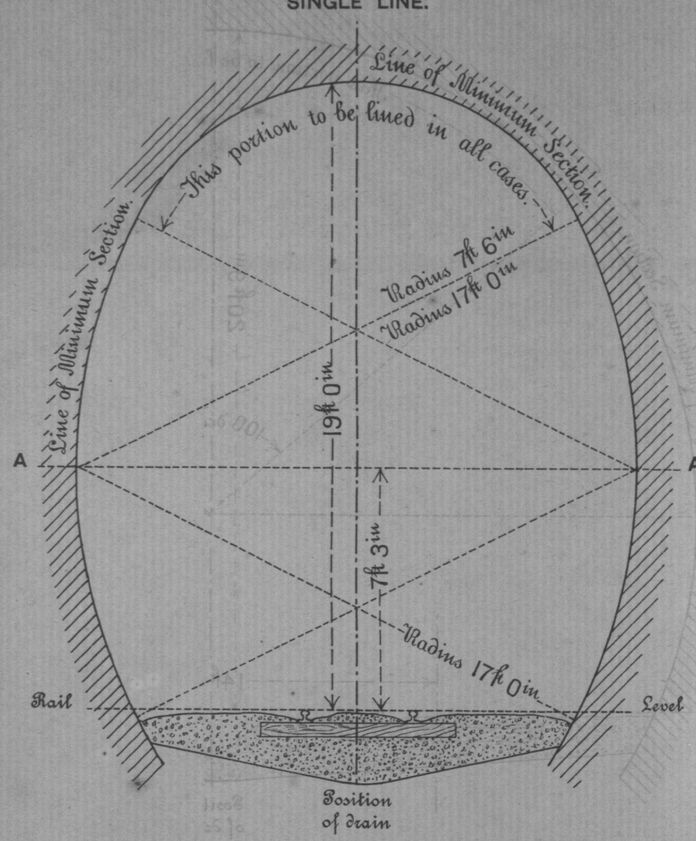
METRE GAUGE.
STANDARD DIMENSIONS.
1896.

Scale ½ inch to 1 foot.

inches 12 6 0 — 5 — 10 — 15 — 20 feet.

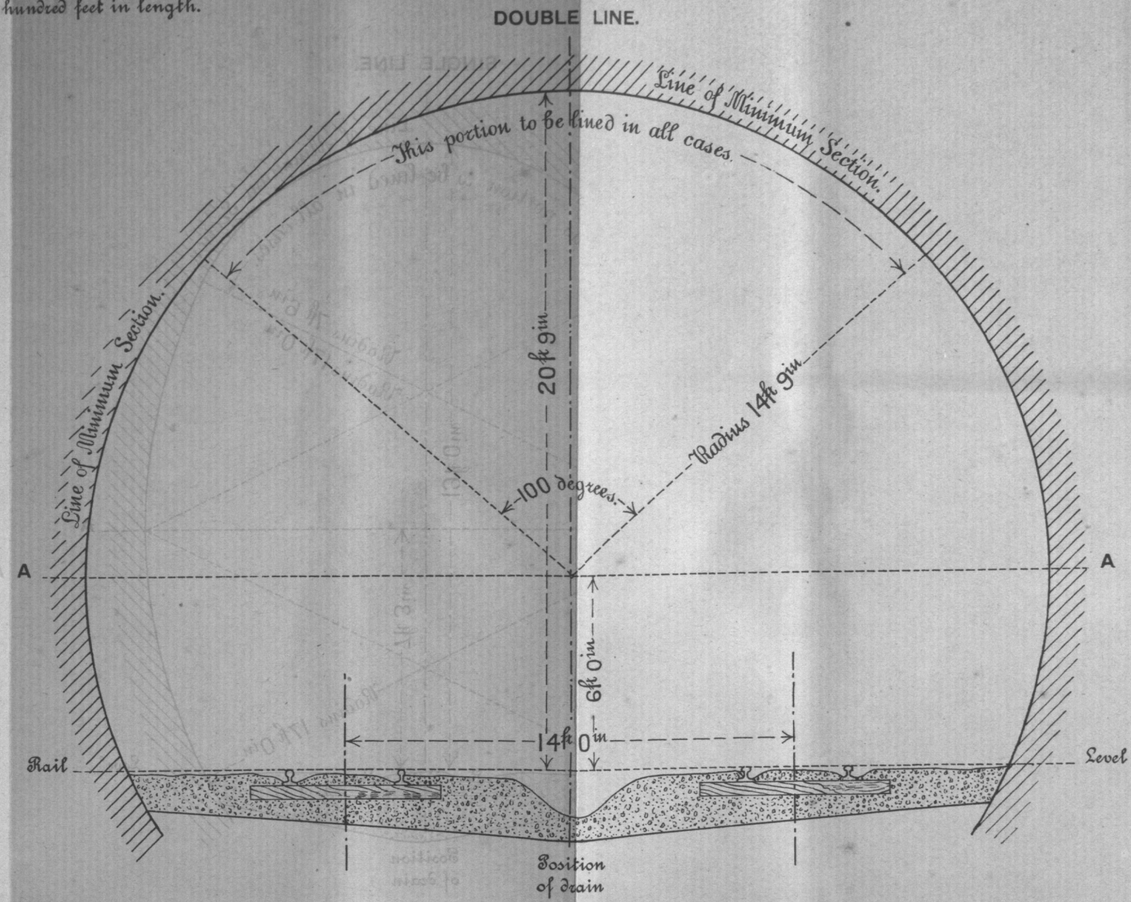
NOTE.—Refuges to allow men to stand aside clear of a passing train should be provided at intervals not exceeding two hundred feet in all tunnels of more than three hundred feet in length.

SINGLE LINE.



SINGLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required.

DOUBLE LINE.



DOUBLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required, and in special cases the section of the tunnel may be a complete circle.

EXTRA WIDTH TO BE ALLOWED ON CURVES.

CURVE.		EXTRA WIDTH FOR TUNNEL.		EXTRA DISTANCE CENTRES OF TRACKS FOR DOUBLE LINE.
Angle of curvature.	Radius in feet.	Single line.	Double line.	
2°-0′	2,865	0ft. 2½ in.	0ft. 5in.	2½ in.
3°-0′	1,910	0 „ 4 „	0 „ 8 „	4 „
4°-0′	1,432	0 „ 5 „	0 „ 10 „	5 „
5°-0′	1,146	0 „ 6½ „	1 „ 1 „	6½ „
6°-0′	955	0 „ 8 „	1 „ 4 „	8 „
7°-0′	819	0 „ 9 „	1 „ 6 „	9 „
8°-0′	716	0 „ 10½ „	1 „ 9 „	10½ „

Reg. No. 630 Con. Engg. S. Ry.—Jan. 97.—720.

Litho., S. I. O., Calcutta

[*For General Distribution.*]

Circular No. 9 Railway of 1896.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY CONSTRUCTION.

Calcutta, the 25th November 1896.

Revised Schedule of Standard Dimensions to be observed on all metre-gauge Railways in India.

Read—

Public Works Department Circular No. 7 Railway, dated 10th August 1892, and the revised list of maximum and minimum dimensions for metre-gauge railways therewith promulgated.

Read also—

Public Works Department Circular No. 7 Railway, dated 26th November 1886.
Act IX of 1890, section 19, sub-sections (*b*) and (*c*).

OBSERVATIONS.—It having been represented that the Standard Dimensions to be observed on metre-gauge railways in India, published under Circular No. 7 Railway, dated the 10th August 1892, are in some instances in excess of actual requirements, especially in the cases of branch or feeder lines, the Government of India have had under consideration the advisability of publishing revised schedules, arranged in two lists as follows, *viz.* :—

A.—Absolute maximum and minimum dimensions for all new works on any railway.

B.—Maximum and minimum dimensions which are recommended for all except unimportant branches, and should not be infringed without special sanction.

RESOLUTION.—In supersession of all previous orders on the subject the Governor General in Council desires that the Standard Dimensions specified in the enclosed schedule be observed in future, and that no infringement thereof be allowed, under any circumstances, without special sanction. Where it is proposed to execute any work, or to obtain any railway material, which will infringe these dimensions, the sanction of the Governor General in Council is to be obtained before such work is commenced or material procured.

2. These orders are not intended to have retrospective effect. The revised Standard Dimensions now prescribed are to be taken as applying only to new works, including as far as praticable, alterations and renewals.

3. In regard to the loads permissible, under the enclosed schedule, for Locomotives and Carriage and Wagon stock it must be clearly understood that loads in excess of those prescribed in Circular No. 7 Railway, dated 26th November 1886, are not to be worked to until a certificate has been accepted by an Inspector of Railways to the effect that the bridges of the railway on which they are to be introduced are of sufficient strength to bear the proposed loads with safety.

4. An Inspector of Railways is allowed discretion to pass variations in the sanctioned maximum loads for Locomotive axles which do not exceed the sanctioned loads by more than 5 per cent. on any individual axle, provided that the actual aggregate load does not exceed the aggregate sanctioned load by more than 1 per cent.

ORDER.—Ordered, that this Resolution be communicated for information and guidance to the Local Governments and Administrations and to the Officers marginally noted.

The Governments of Madras, Bombay, and Bengal.
The Chief Commissioners of the Central Provinces, Burma, and Assam.
The Residents at Hyderabad and in Mysore.
The Agents to the Governor General for Central India and Rajputana.
The Director General of Railways.
The Consulting Engineers to the Government of India for Railways, Calcutta, Lucknow, and Assam.

Also, that it be forwarded for information to the Governments of the North-Western Provinces and Oudh and the Punjab, the Agent to the Governor General in Baluchistan, the Director General of Telegraphs, and the Accountant General, Public Works Department.

W. S. S. BISSET, *Colonel, R.E.*,
Secretary.

Document accompanying.

Revised Schedule of Standard Dimensions to be observed on metre-gauge railways in India.

G. I. C. P. O.—No. 657 P. W. D.—27-11-96.—2,500—N. C. D.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS.
METRE GAUGE.
1896.

STANDARD DIMENSIONS—METRE GAUGE.

1896.

In this edition, the Standard Dimensions have been arranged in 4 chapters instead of 8, by amalgamating Formation, Ballast, Permanent-way and Structures out of Stations in the first chapter, all Dimensions in Stations including Points and Crossings in the second, Station Machinery in the third, and Locomotives and Rolling Stock in the last.

It is considered that this form is more convenient for reference than the old one.

Schedule B has been modified to eliminate dimensions intended to make a metre-gauge line suitable to conversion to broad gauge. The clearance out of stations now required above rail level is 12 ft. 6 in. instead of 14 ft. 6 in., and from centre of track 6 ft. 6 in. instead of 7 ft. 0 in. The dimensions in stations are also modified.

The following alterations have also been made :—

Width of ballast at top is measured at level of foot of rail, the minimum depth required is increased in rock cuttings and decreased elsewhere.

Clear available length of *one* siding for crossing trains has been reduced to 1,200 feet.

Distance of building from edge of platform has been reduced from 30 feet to 24 feet, and distance of pillars from edge of platform increased to 10 feet.

Height of over-bridges in stations has been reduced to 14 ft. 6 in.

The clear top width over track in stations (diagram 1) has been reduced from 6 feet to 3 ft. 9 in. from centre of track to allow of overhanging roofs, water pipes, etc.

The Standard Dimensions for Running Sheds have been modified.

The maximum width over bodies of all vehicles includes the framing.

Slight modifications have been made in some places to make the meaning more clear.

Particular attention is invited to the difference between "Standard," "Maximum" and "Minimum;" the two latter represent the greatest and least dimensions which it is considered advisable to permit *in any case;* in many cases, more especially in the position of buildings, it is not desirable to work to these limits unless considerable extra expense would be incurred by giving a more liberal margin; for example, it is very seldom necessary to put pillars so near the edge of a platform as 10 feet, to erect any building so near the centre of track as 6 ft. 6 in. or to put a tank house, which is generally a serious obstruction both to the clear view in approaching a station, and to any future extension of the sidings, as near the track as 30 feet.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS

TO BE OBSERVED ON RAILWAYS IN INDIA.

METRE GAUGE.

NOTE.—Where it is proposed to execute any work or to procure Bridge Girders, Station Machinery, Rolling Stock or other Railway material which will infringe the dimensions or loads given in schedule B, the sanction of the Government of India should be obtained before such work is commenced or order given. The dimensions and loads given in schedule A may not be infringed under any circumstances.

I. GENERAL.

	A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Formation, Single Line—		
(1) Minimum width in embankment	14 ft. 0 in.	16 ft. 0 in.
(2) „ „ in cutting (*excluding side drains*)	12 ft. 0 in.	14 ft. 0 in.
Formation, Double Line—		
(3) Minimum width in embankment	26 ft. 0 in.	28 ft. 0 in.
(4) „ „ in cutting (*excluding side drains*)	24 ft. 0 in.	26 ft. 0 in.
(5) Minimum distance centre to centre of tracks (out of stations)	12 ft. 0 in.	12 ft. 0 in.
Curves—		
Maximum angle of curvature on main line—		
(6) In ordinary country	8° 0′ (rad. = 716 ft.)	5° 0′ (rad. = 1146 ft.)
(7) In difficult country	16° 0′ (rad. = 358 ft.)	10° 0′ (rad. = 573 ft.)
Ballast—		
(8) Minimum width of ballast at level of foot of rail	7 ft. 0 in.	7 ft. 6 in.
Minimum depth of ballast below sleepers,—		
(9) In cuttings in rock or hard soil	6 inches.	9 inches.
(10) In cuttings in soft soil or on banks	3 inches.	6 inches.
Sleepers—		
Minimum dimensions for timber cross sleepers—		
(11) Length	5 ft. 9 in.	6 ft. 0 in.
(12) Breadth	6 inches.	7 inches.
(13) Depth	4 inches.	4½ inches.
(14) Minimum area in cross section	30 sq. in.	36 sq. in.
(15) „ number of cross sleepers per mile	1936	1936

(a) *N.B.*—The angle of curvature is taken as the angle at the centre subtended by an arc of one hundred feet in length. Thus the radius for a one degree curve is 5729·578 feet.

(b) The maximum angle of curvature should *only be worked to in special cases* where the adoption of an easier curve would be impracticable or involve considerable extra expense. Under very exceptional circumstances where it may appear necessary that this rule should be relaxed, the matter should be referred to the Government of India for orders.

(c) In flat open country where no obstacle exists, the radius should not be less than 5729½ feet.

(a) *N.B.*—These minimum dimensions may be relaxed in the case of a line being opened to traffic before the banks have settled, when suitable restrictions are placed on the speed of trains.

(a) *N.B.*—On bridges where the cross sleepers rest directly on longitudinal girders, the sleepers are to be spaced not more than 1 ft. 6 in. centre to centre, and are to be not less than 5 inches deep exclusive of any notching which may be required on the underside to allow for the cover plates, camber, etc.

I. General.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Rails—		
(16) Minimum clearance of guard rail for curves and level crossings	1⅜ inch.	2 inches.
(*a*) *N.B.*—The *maximum* clearance for curves and level crossings will vary according to the radius of curve.		
(17) Minimum depth of space for wheel flange, from rail level	1⅜ inch.	1⅝ inch.
Buildings, etc.—(*See diagram No. 2*)—		
(18) Minimum horizontal distance from centre of track to any structure, from 1 foot above rail level to a height of 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(19) Minimum horizontal distance from centre of track from rail level to 1 foot above rail level	4 ft. 5 in.	4 ft. 5 in.
(*a*) *N.B.*—Under items 18 and 19 any material stacked by the side of the line is to be considered a structure in the sense in which the word is here used.		
(*b*) Where the line is on a curve the horizontal distance of a fixed structure from the centre of adjacent track is to be increased as follows:— For a curve of 8 degrees (*716 ft. rad.*) allow 5½ in. extra. " " 6 " (*955 ft. rad.*) " 4 in. " " " 4 " (*1432 ft. rad.*) " 2⅝ in. " " " 2 " (*2865 ft. rad.*) " 1⅜ in. " and for others curves in proportion.		
(20) Minimum height above rail level at centre of track for over-bridges or over-head bracing out of stations	12 ft. 6 in.	12 ft. 6 in.
(21) Minimum height above rail level for telegraph wires crossing the line, or above surface of road where carried over roads at level crossings	20 ft. 0 in.	20 ft. 0 in.
N.B.—The minimum horizontal distance, from the centre line of nearest track, at which a telegraph post may be erected, is the total height of the post plus 6 ft. 6 in. Also, where the line is in cutting, a telegraph post erected on the berm must be at a distance from the edge of the cutting of not less than the total height of the post.		
Tunnels, Single Line—(*See diagram No. 3*)—		
(22) Minimum height above rail level at centre	19 ft. 0 in.	19 ft. 0 in.
(23) " width at rail level	13 ft. 0 in.	13 ft. 0 in.
(24) " " at 7 ft. 3 in. above rail level	17 ft. 0 in.	17 ft. 0 in.
Tunnels, Double Line—		
(25) Minimum height above rail level at centre	20 ft. 9 in.	20 ft. 9 in.
(26) " width at rail level	26 ft. 6 in.	26 ft. 6 in.
(27) " " at 6 ft. 0 in. above rail level	29 ft. 6 in.	29 ft. 6 in.
N.B.—For extra allowance in curves see item 19 (*b*).		
(28) Maximum distance apart of refuges	300 feet.	200 feet.

II. Station Yards.

II. STATION YARDS.

See also Diagram No. 1.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Spacing of Tracks—		
(1) Minimum distance centre to centre of tracks	12 ft. 6 in.	14 ft. 6 in.
(2) Minimum clear available length of one siding for crossing trains	——	1,200 feet.
(*a*) *N.B.*—The 'available length' of first siding (whether the line be curved or straight) terminates where the distance between the centre of the siding and the centre of main line begins to be less than 12 ft. 6 in. The available length of a second siding terminates where the distance between its centre and that of the first siding begins to be less than 12 ft. 6 in. and so on.		
(*b*) On existing lines where the distance between centres of tracks is less than the present standard of 12 ft. 6 in., the 'available length' terminates at the point where the distance begins to diminish.		
(*c*) It is desirable that the clearance point at which the 'available length' of each siding terminates should be marked on the ground in a conspicuous manner.		
(*d*) On any section of a railway on which the length of trains is limited by special considerations, the length of platform and sidings may (with the sanction of the Government of India) be reduced to such an extent as may appear advisable. But for each such special case the sanction of Government is to be obtained to the proposal *before* work is commenced.		
Platforms—		
(3) Standard horizontal distance from centre of track to face of platform coping	4 ft. 5 in.	4 ft. 5 in.
(*a*) *N.B.*—The upper edge of the nosing or coping to platform wall is to be finished to form an arris or a chamfer not exceeding 1½ inch wide.		
(*b*) If the platform be on a curve, the horizontal distance from centre of adjacent track is to be increased as follows:— For a curve of 8 degrees (*716 ft. rad.*) allow 5½ in. extra. " " 6 " (*955 ft. rad.*) " 4 in. " " " 4 " (*1432 ft. rad.*) " 2⅝ in. " " " 2 " (*2865 ft. rad.*) " 1⅜ in. " and for other curves in proportion.		
(4) Minimum length for passenger platform	——	600 feet.
N.B.—See Note, item 2 (*d*).		
(5) Maximum height above rail level for any passenger platform	1 ft. 4 in.	1 ft. 4 in.
(6) Standard height above rail level for new passenger platforms at important stations	1 ft. 0 in.	1 ft. 0 in.
(8) Minimum height for any passenger platform	Flush with rail level.	Flush with rail level.
(*a*) *N.B.*—Every halting place must have a platform, either raised or flush, which must be of standard platform length and ramped at ends. Flush platforms at unimportant halting places need not extend in width more than 15 feet from centre of track. Low platforms may have a curb instead of a platform wall, but a slope falling towards the rails, steeper than 1 in 20 must not be used.		

II. Station Yards.

	A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
(9) Maximum height above rail level for goods, carriage, and horse landing platforms . . .	2 ft. 3 in.	2 ft. 3 in.
(a) *N.B.*—If on a passenger siding the standard height for passenger platforms must not be exceeded.		
(b) The ends of *all* platforms must be ramped, the slope being not steeper than 1 in 6.		
(10) Minimum horizontal distance of any building from the edge of a *passenger* platform . . .	18 ft. 0 in.	24 ft. 0 in.
(a) *N.B.*—This applies to any continuous obstruction either parallel or perpendicular to platform, but not to verandah pillars, etc., see item (11).		
(b) For an island platform, where it would be undesirable to allow the full width here specified, a plan shewing the arrangements proposed is to be submitted to the Government of India for special sanction.		
(11) Minimum horizontal distance from edge of platform to pillars, columns, lamps or similar isolated structures within a height of 10 ft. 6 in. from rail level	6 ft 0 in.	10 ft. 0. in.
(a) *N.B.*—This distance should be increased wherever possible.		
Buildings, etc.—		
(12) Minimum horizontal distance from centre of track to any structure in the vicinity of a *passenger* platform (but not *on* a platform), within a height of 10 ft. 6 in. from rail level. (*See diagram No. 1*) . .	9 ft. 0 in.	9 ft. 0 in
(a) *N.B.*—This rule does not apply to water cranes, to point levers between tracks, or to loading gauges. (*See items Nos. 13 and 17 below and Chapter IV 5.*)		
(b) For extra allowance on sharp curves see item No. 3 (*b*).		
(13) Minimum horizontal distance from centre of track to any fixed part of water column between 1 foot and 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(14) Minimum horizontal distance from centre of track to any structure not in the vicinity of a *passenger* platform, from platform level, if any, or from 1 foot above rail level if there be no platform, to a height of 10 ft. 6 in. above rail level	6 ft. in.	6 ft. 6 in.
(a) *N.B.*—Under the last entry, coal or any material stacked by the side of any track is to be considered a structure in the sense in which the word is here used.		
(b) For extra allowance on sharp curves see item No. 3 (*b*).		
(15) Minimum height above rail level, for a width of 3 ft. 9 in. from centre of track, of tie-rods or underside of any continuous covering in *passenger* stations .	18 ft. 0 in.	20 ft. 0 in.
(a) *N.B.*—A projecting overhanging roof is permissible in the case of a goods shed *on a siding*, if it does not infringe the outline of the figure for minimum fixed structure out of stations. (*See diagram No. 2.*)		
(16) Minimum height above rail level at centre of track for foot-bridges crossing the line in stations . .	14 ft. 6 in.	14 ft. 6 in.

II. Station Yards.

	A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Points and Crossings—		
(17) Minimum horizontal distance from centre of track to point handle, indicator or any part of point apparatus above rail level	6 ft. 3 in.	6 ft. 6 in.
(a) *N.B.*—A point handle may not, in any position, be within 6 ft. 3 in. of the centre line of nearest track; a clear distance of 6 ft. 3 in. is also to be preserved from centre of nearest track to any part of the point apparatus, fixed or movable, above rail level. An arrangement involving the placing of a point handle between tracks should be avoided as far as practicable; but where this arrangement is adopted, the point handle must work parallel with the rails, not at right angles thereto.		
(18) Maximum clearance of guard rail opposite nose of crossings	$1\frac{3}{4}$ inch.	$1\frac{3}{4}$ inch.
(19) Minimum clearance of switch rails and of guard rail for crossings	$1\frac{5}{8}$ inch.	$1\frac{5}{8}$ inch.
(20) Minimum space below rail level for wheel flange .	$1\frac{3}{8}$ inch.	$1\frac{3}{8}$ inch.
(21) Minimum radius of curve	330 feet.	476 feet.
(22) Standard crossings	— — —	1 in 6. 1 in $8\frac{1}{2}$. 1 in 12.
(a) *N.B.*—For the outside facing points a crossing of 1 in 12 is recommended.		
(23) Standard lengths for tongue rails . . .	— —	9 ft. 0 in. 12 ft. 0 in.

III. STATION MACHINERY.

	A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Water Tanks—		
Minimum height for bottom of tank above rail level *at water column*:—		
(1) For watering engines	—	20 ft. 0 in.
(2) For washing out engines	—	30 ft. 0 in.
(3) Minimum distance from centre of track to face of tank house when adjacent to a passenger platform	18 ft. 0 in.	30 ft. 0 in.
(4) Minimum capacity of tank at any station	—	800 c. ft.
Water Cranes—		
(5) Minimum distance in the clear from centre of track to nearest part of water column from 1 foot above rail level	6 ft. 3 in.	6 ft. 6 in.
(6) Standard height above rail level for discharge orifice of water crane jib	—	12 ft. 0 in.
(7) Standard internal diameter for piping from tank to water crane	—	6 inches.
(*a*) *N.B.*—This diameter should be increased where the same pipe serves two or more water columns likely to be used at the same time.		
Ash-Pits, etc.—		
(8) Minimum clear length at bottom for ash-pits in station yards	—	50 ft. 0 in.
(9) Standard average depth for ash-pits in station yards	—	3 ft. 6 in.
(9*a*) Standard depth for examining pits for carriages and wagons	—	3 ft. 0 in.
Engine Running Sheds—		
(10) Minimum distance centre to centre of tracks	12 ft. 6 in.	15 ft. 6 in.
(11) Minimum clear distance from centre of track to any isolated structure such as a pillar	6 ft. 0 in.	6 ft. 6 in.
(12) Minimum clear distance for a height of 6 feet above rail level to any continuous structure	8 ft. 0 in.	9 ft. 0 in.
(*a*) *N.B.*—This distance should be increased to 13 ft. 6 in. on one side of sheds having not more than 3 lines of rails, and on both sides of sheds having more than 3 lines of rails, to allow room for benches, etc., inside the shed.		
(13) Minimum height to tie bars, girders, etc., above rail level	12 ft. 6 in.	14 ft. 0 in.
(14) Minimum height of doorways if flat at top	12 ft. 6 in.	12 ft. 6 in.
(15) Standard average depth for pits in Running Sheds	—	3 ft. 0 in.
Turntables—		
(16) Minimum diameter for engine turntables	—	36 ft. 0 in.
(17) Minimum diameter for Carriage or Wagon turntables	—	14 ft. 0 in.
Traversers—		
(18) Minimum length for Carriage or Wagon traversers	—	14 ft. 0 in.
Weigh-bridges—		
(19) Minimum length for weigh-bridges for ordinary stock	—	14 ft. 0 in.
(20) Minimum weighing power for weigh-bridges for ordinary stock	—	14 tons.

IV. LOCOMOTIVES AND ROLLING STOCK.

	A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Maximum moving dimensions. (*See also diagram No 1*)—		
Maximum width:—		
(1) From rail level to a height of 2 ft. 9 in. above rail level	8 ft. 2 in.	8 ft. 2 in.
(2) From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level	7 ft. 9 in.	7 ft. 9 in.
(3) From a height of 6 ft. 9 in. above rail level to a height of 10 ft. 2 in. above rail level	8 ft. 6 in.	8 ft. 6 in.
(*a*) *N.B.*—From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level, the width outside the framing of a coaching or goods vehicle must not exceed 7 ft. 9 in. Door handles, hand rails, lamps and other isolated fittings, and the projecting window in the case of a brake van may extend beyond the body of the vehicle up to a maximum width over all of 8 ft. 6 in., which must not be exceeded under any circumstances.		
(*b*) Every carriage is to be provided with one continuous foot-board on each side, placed with its upper surface at a distance of 1 ft. 2 in. below floor level, the width over outsides of foot-boards being 8 ft. 2 in.		
Maximum width over open doors, including all fastenings or projections—		
(4) For passenger vehicles	12 ft. 6 in.	12 ft. 6 in.
(5) For goods vehicles	12 ft. 6 in.	12 ft. 6 in.
(*a*) *N.B.*—Horse boxes, brakevans and luggage vans are exempted from this rule.		
Maximum height from rail level:—		
(6) For unloaded vehicle at centre	11 ft. 0 in.	11 ft. 0 in.
(7) For unloaded vehicle at sides	10 ft. 2 in.	10 ft. 2 in.
(*a*) *N.B.*—All heights are to be taken with the vehicle unloaded and buffer centres at the maximum height of 1 ft. 11 in. from rail level. For further details see Diagram No. 1.		
Loading gauge for goods:—		
(8) Maximum width	8 ft. 8 in.	8 ft. 8 in.
(9) Maximum height from rail level at centre	11 ft. 1 in.	11 ft. 1 in.
(10) Maximum height from rail level at sides	10 ft. 3 in.	10 ft. 3 in.
Weight on a pair of wheels—		
(11) Maximum per foot of diameter	3 tons.	3 tons.
(12) Maximum for locomotives under any circumstances	8 tons.	8 tons.
(13) Maximum for goods stock	7 tons.	7 tons.
(14) Maximum for coaching stock	5 tons.	5 tons.
Weight per foot run of wheel base—		
(15) Maximum for tank engines	2·67 tons.	2·67 tons.
(16) Maximum for engine or tender separately, in the case of tender engines	2·00 tons.	2·00 tons.
Weight per foot run over buffers—		
(17) Maximum for tank engines	1·333 tons.	1·333 tons.
(18) Maximum for engine and tender together, in the case of tender engines	1·125 tons.	1·125 tons.
(19) Maximum for goods stock	0·8 ton.	0·8 ton.

IV. Locomotives and Rolling Stock.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Total gross weight—			
(20)	Maximum for tank engines	——	32 tons.
(21)	Maximum for engine and tender together, in the case of tender engines	——	46 tons.

(*a*) *N.B.*—The weights given in items (11) to (21) are the maximum permissible under any circumstances with engine in working order and full load of fuel and water, and with the vehicles fully loaded. The weight on a pair of wheels includes the weight of the wheels, axles, axle-boxes and springs.

(*b*) The maximum weights given above are not to be worked to until a certificate has been accepted by an Inspector of railways to the effect that the bridges of the railway on which they are to be introduced are of sufficient strength to bear the proposed loads with safety.

(*c*) In exceptional cases, engines or vehicles of weights in excess of the specification given above may be used under the special sanction of the Government of India. Such special sanction must be obtained *before* the engines or vehicles are ordered, and the application for sanction must be accompanied by a diagram giving full particulars, and by a certificate countersigned by an Inspector of railways that the bridges on the section over which the engines or vehicles are intended to work, are of sufficient strength.

Wheel base—			
(22)	Maximum rigid wheel base for passenger vehicles	15 ft. 0 in.	12 ft. 0 in.
(23)	Maximum rigid wheel base for goods vehicles .	12 ft. 0 in.	10 ft. 0 in
Buffers and Couplings—			
(24)	Buffers	central	central
(25)	Maximum height abcve rail level for centres of buffers for unloaded vehicles . . .	1 ft. 11 in.	1 ft. 11 in.
(26)	Minimum height above rail level for centres of buffers for fully loaded vehicles . . .	1 ft. 9 in.	1 ft. 9 in.
Height for Floors—			
(27)	Maximum height above rail level for floor of any vehicle unloaded (with 2 ft. 4 in. wheels) .	3 ft. 1 in.	3 ft. 1 in.
(28)	Minimum height above rail level for floor of passenger vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. $5\frac{1}{2}$ in.	2 ft. $5\frac{1}{2}$ in.
(29)	Minimum height above rail level for floor of goods vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. 5 in.	2 ft. 5 in.
Wheels and Axles—			
(30)	Standard wheel gauge, or distance apart for all wheel flanges	3 ft. $0\frac{5}{8}$ in.	3 ft, $0\frac{5}{8}$ in.
(31)	Standard diameter on the tread for all new carriage or wagon wheels	2 ft. 4 in.	2 ft. 4 in.
(32)	Maximum projection for flange of worn tyre below rail level	$1\frac{1}{4}$ inches.	$1\frac{1}{4}$ inches.
Accommodation—			
(33)	Minimum width of seat per passenger . .	$19\frac{1}{2}$ inches.	$19\frac{1}{2}$ inches.
(34)	Minimum floor area per passenger . . .	$3\frac{1}{2}$ sq. feet.	$3\frac{1}{2}$ sq. feet.
(35)	Minimum cubic capacity per passenger . .	25 cub. feet.	25 cub. feet.
Roof Lamps—			
(36)	Standard diameter inside in the clear for rings of carriage roof lamps	——	$8\frac{1}{2}$ inches.
(37)	Standard diameter for carriage roof lamps at level of ring	——	8 inches.

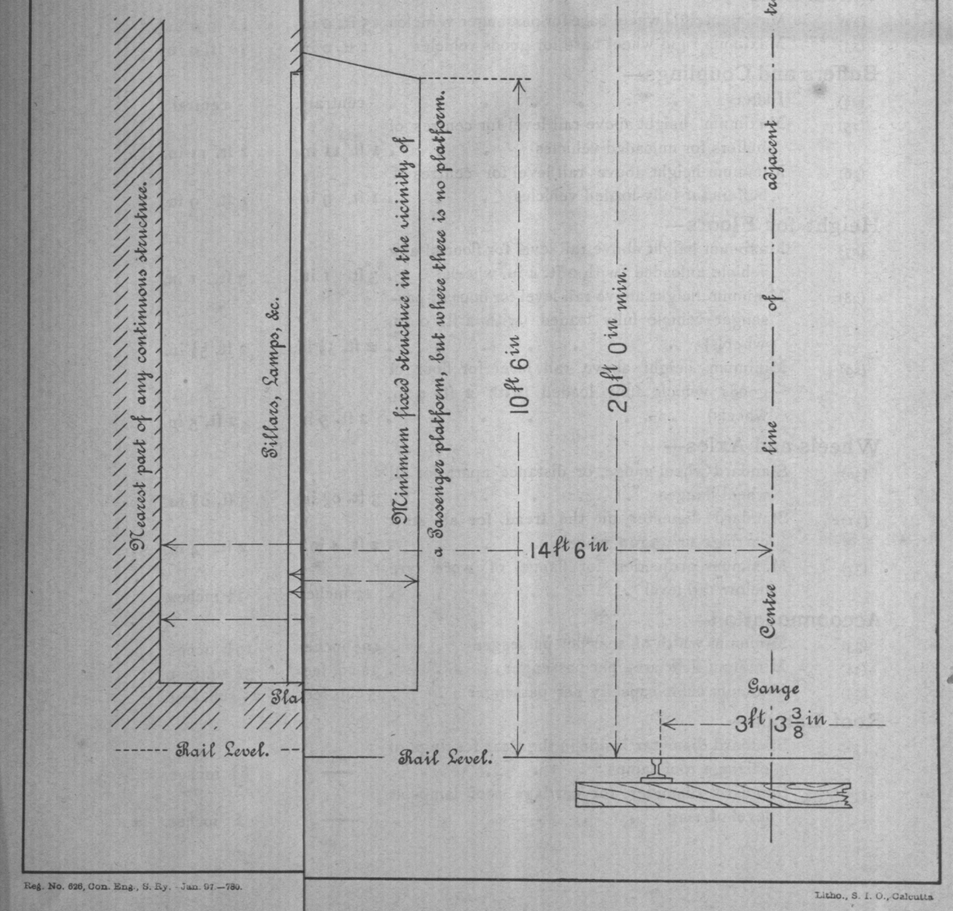
NS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.

CARRIAGE
be provided with
placed with its
the floor.

Minimum fixed structure.

e on a curve, the horizontal distance from
nt track is to be increased as follows:—
8 degrees (716ft. rad.) allow $5\frac{1}{4}$ in. extra.
6 degrees (955ft. rad.) ,, 4 in. ,,
4 degrees (1,432ft. rad.) ,, $2\frac{1}{2}$ in. ,,
2 degrees (2,865ft. rad.) ,, $1\frac{1}{4}$ in. ,,



Reg. No. 626, Con. Engs., S. Ry. - Jan. 97.—750.

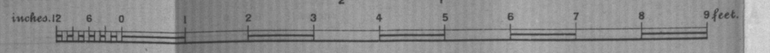
Litho., S. I. O., Calcutta

DIAGRAM NO. I.

STANDARD DIMENSIONS IN STATIONS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.

Scale ½ inch to 1 foot.

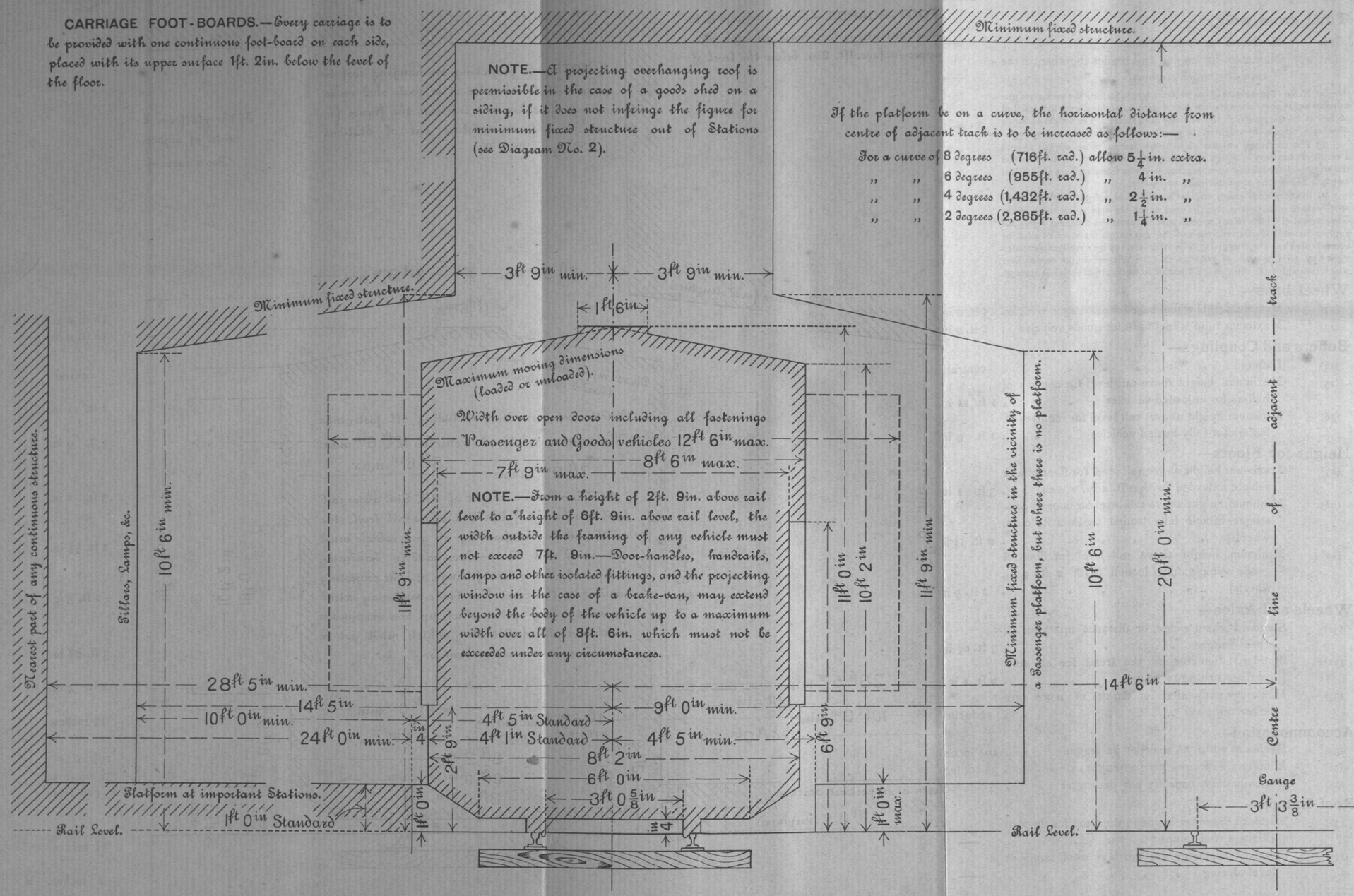


CARRIAGE FOOT-BOARDS.—*Every carriage is to be provided with one continuous foot-board on each side, placed with its upper surface 1ft. 2in. below the level of the floor.*

NOTE.—*A projecting overhanging roof is permissible in the case of a goods shed on a siding, if it does not infringe the figure for minimum fixed structure out of Stations (see Diagram No. 2).*

If the platform be on a curve, the horizontal distance from centre of adjacent track is to be increased as follows:—

For a curve of	8 degrees	(716ft. rad.)	allow 5¼ in. extra.
,, ,,	6 degrees	(955ft. rad.)	,, 4 in. ,,
,, ,,	4 degrees	(1,432ft. rad.)	,, 2½ in. ,,
,, ,,	2 degrees	(2,865ft. rad.)	,, 1¼ in. ,,



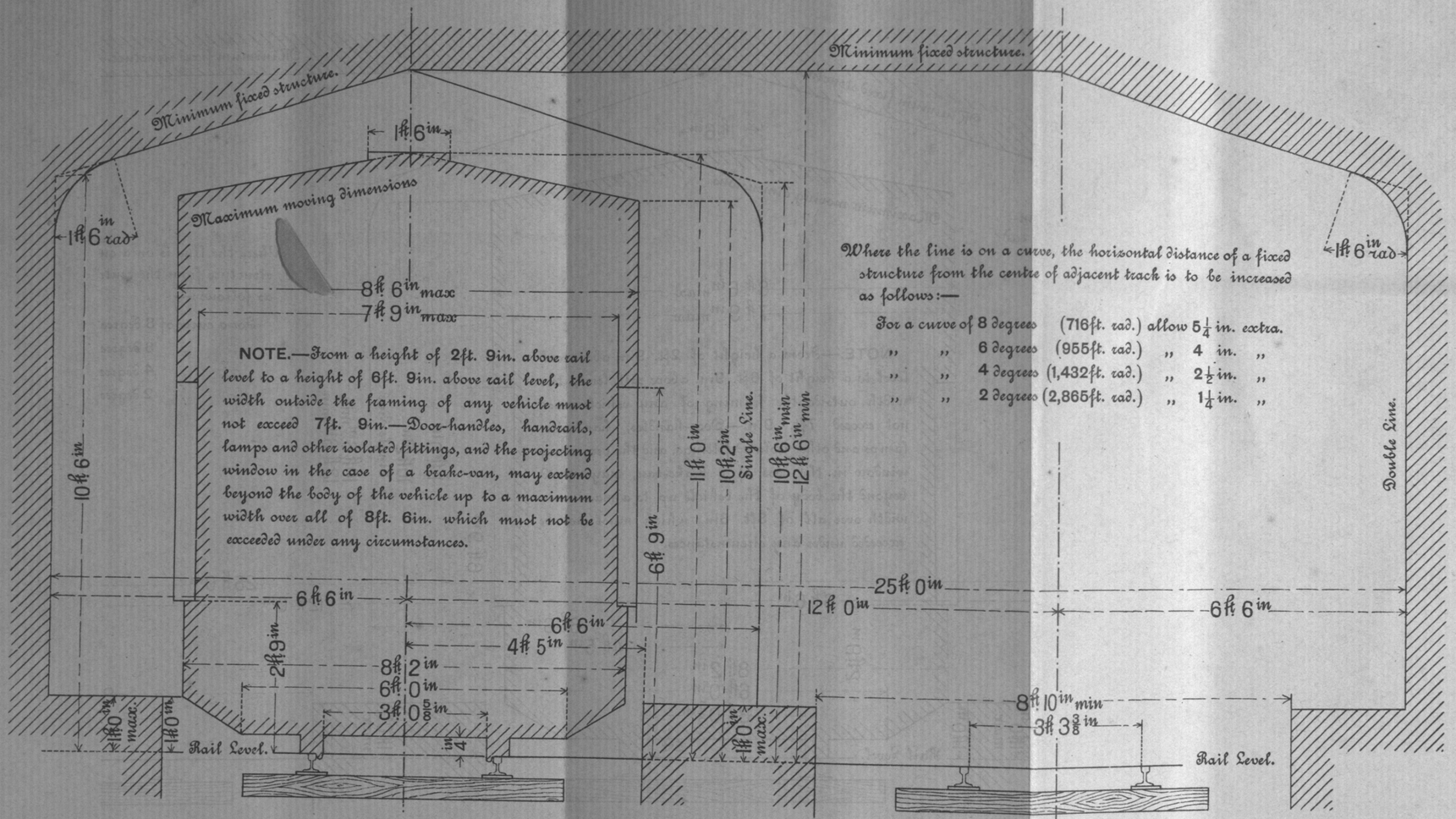
Reg. No. 626, Con. Engs., S. Ry. Jan. 97—750.

Litho., S. I. O., Calcutta

DIAGRAM NO. 2.

STANDARD DIMENSIONS OUT OF STATIONS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.



NOTE.—From a height of 2ft. 9in. above rail level to a height of 6ft. 9in. above rail level, the width outside the framing of any vehicle must not exceed 7ft. 9in.—Door-handles, handrails, lamps and other isolated fittings, and the projecting window in the case of a brake-van, may extend beyond the body of the vehicle up to a maximum width over all of 8ft. 6in. which must not be exceeded under any circumstances.

Where the line is on a curve, the horizontal distance of a fixed structure from the centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees	(716ft. rad.)	allow	5¼ in. extra.
,, ,, 6 degrees	(955ft. rad.)	,,	4 in. ,,
,, ,, 4 degrees	(1,432ft. rad.)	,,	2½ in. ,,
,, ,, 2 degrees	(2,865ft. rad.)	,,	1¼ in. ,,

Scale ½ inch to 1 foot.

Reg. No. 626, Con. Eng., S. Ry.—Jan. 97.—750.

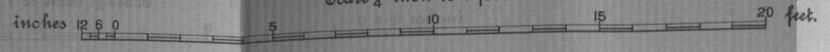
Litho., S. I. O., Calcutta

DIAGRAM NO. 3.

TUNNEL SECTIONS.

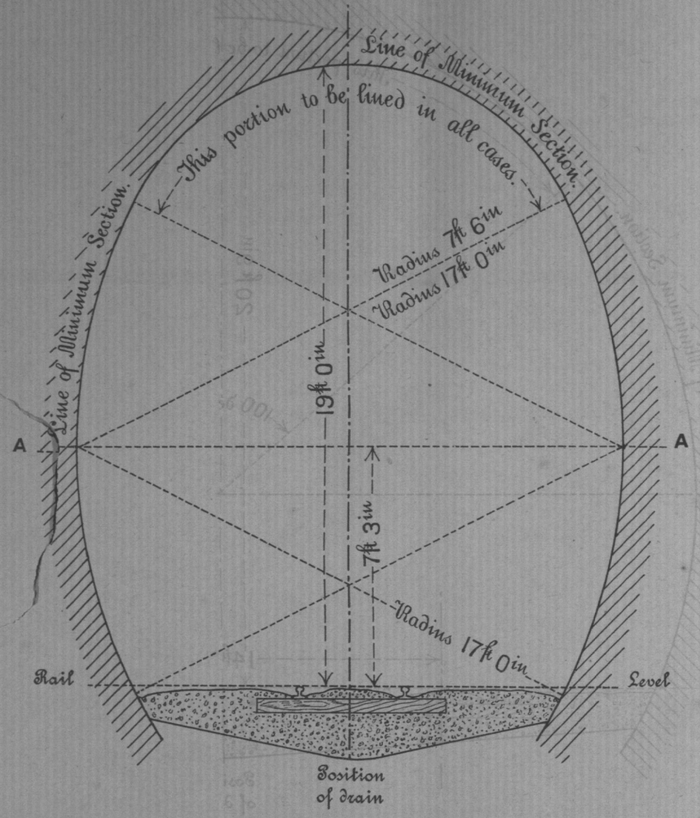
METRE GAUGE.
STANDARD DIMENSIONS.
1896.

Scale ¼ inch to 1 foot.

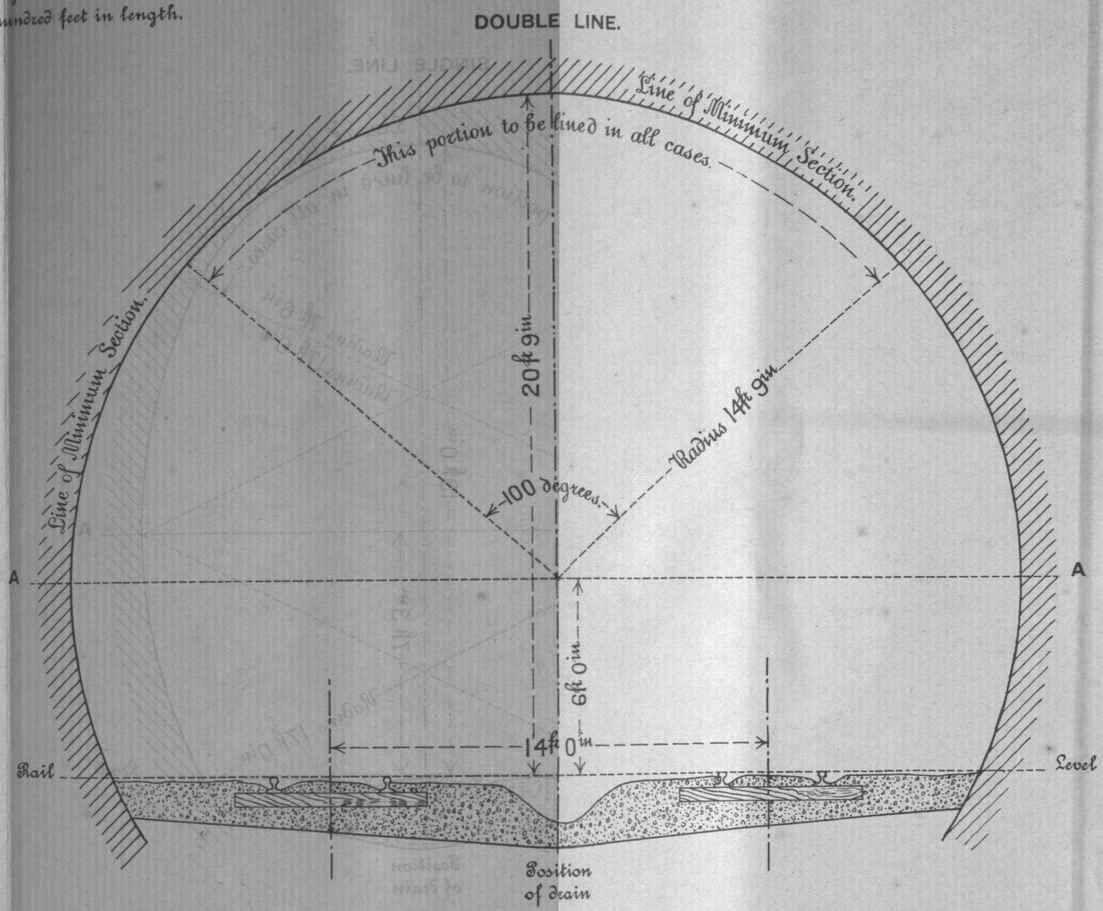


NOTE.—Refuges to allow men to stand aside clear of a passing train should be provided at intervals not exceeding two hundred feet in all tunnels of more than three hundred feet in length.

SINGLE LINE.



DOUBLE LINE.



SINGLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required.

EXTRA WIDTH TO BE ALLOWED ON CURVES.

CURVE.		EXTRA WIDTH FOR TUNNEL.		EXTRA DISTANCE CENTRES OF TRACKS FOR DOUBLE LINE.
Angle of curvature.	Radius in feet.	Single line.	Double line.	
2°-0′	2,865	0ft. 2½ in.	0ft. 5in.	2½ in.
3°-0′	1,910	0 „ 4 „	0 „ 8 „	4 „
4°-0′	1,432	0 „ 5 „	0 „ 10 „	5 „
5°-0′	1,146	0 „ 6½ „	1 „ 1 „	6½ „
6°-0′	955	0 „ 8 „	1 „ 4 „	8 „
7°-0′	819	0 „ 9 „	1 „ 6 „	9 „
8°-0′	716	0 „ 10½ „	1 „ 9 „	10½ „

DOUBLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required, and in special cases the section of the tunnel may be a complete circle.

Reg. No. 626, Con. Engs., S. Ry.—Jan. 97—750.

Litho., S. I. O., Calcutta

[*For General Distribution.*]

Circular No. 9 Railway of 1896.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

RAILWAY CONSTRUCTION.

Calcutta, the 25th November 1896.

Revised Schedule of Standard Dimensions to be observed on all metre-gauge Railways in India.

Read—

Public Works Department Circular No. 7 Railway, dated 10th August 1892, and the revised list of maximum and minimum dimensions for metre-gauge railways therewith promulgated.

Read also—

Public Works Department Circular No. 7 Railway, dated 26th November 1886.
Act IX of 1890, section 19, sub-sections (*b*) and (*c*).

OBSERVATIONS.—It having been represented that the Standard Dimensions to be observed on metre-gauge railways in India, published under Circular No. 7 Railway, dated the 10th August 1892, are in some instances in excess of actual requirements, especially in the cases of branch or feeder lines, the Government of India have had under consideration the advisability of publishing revised schedules, arranged in two lists as follows, *viz.*:—

A.—Absolute maximum and minimum dimensions for all new works on any railway.

B.—Maximum and minimum dimensions which are recommended for all except unimportant branches, and should not be infringed without special sanction.

RESOLUTION.—In supersession of all previous orders on the subject the Governor General in Council desires that the Standard Dimensions specified in the enclosed schedule be observed in future, and that no infringement thereof be allowed, under any circumstances, without special sanction. Where it is proposed to execute any work, or to obtain any railway material, which will infringe these dimensions, the sanction of the Governor General in Council is to be obtained before such work is commenced or material procured.

2. These orders are not intended to have retrospective effect. The revised Standard Dimensions now prescribed are to be taken as applying only to new works, including as far as praticable, alterations and renewals.

3. In regard to the loads permissible, under the enclosed schedule, for Locomotives and Carriage and Wagon stock it must be clearly understood that loads in excess of those prescribed in Circular No. 7 Railway, dated 26th November 1886, are not to be worked to until a certificate has been accepted by an Inspector of Railways to the effect that the bridges of the railway on which they are to be introduced are of sufficient strength to bear the proposed loads with safety.

4. An Inspector of Railways is allowed discretion to pass variations in the sanctioned maximum loads for Locomotive axles which do not exceed the sanctioned loads by more than 5 per cent. on any individual axle, provided that the actual aggregate load does not exceed the aggregate sanctioned load by more than 1 per cent.

ORDER.—Ordered, that this Resolution be communicated for information and guidance to the Local Governments and Administrations and to the Officers marginally noted.

The Governments of Madras, Bombay, and Bengal.
The Chief Commissioners of the Central Provinces, Burma, and Assam.
The Residents at Hyderabad and in Mysore.
The Agents to the Governor General for Central India and Rajputana.
The Director General of Railways.
The Consulting Engineers to the Government of India for Railways, Calcutta, Lucknow, and Assam.

Also, that it be forwarded for information to the Governments of the North-Western Provinces and Oudh and the Punjab, the Agent to the Governor General in Baluchistan, the Director General of Telegraphs, and the Accountant General, Public Works Department.

W. S. S. BISSET, *Colonel, R.E.,*
Secretary.

Document accompanying.

Revised Schedule of Standard Dimensions to be observed on metre-gauge railways in India.

G. I. C. P. O.—No. 657 P. W. D.—27-11-96.—2,500—N. C. D.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS.
METRE GAUGE.
1896.

STANDARD DIMENSIONS—METRE GAUGE.

1896.

In this edition, the Standard Dimensions have been arranged in 4 chapters instead of 8, by amalgamating Formation, Ballast, Permanent-way and Structures out of Stations in the first chapter, all Dimensions in Stations including Points and Crossings in the second, Station Machinery in the third, and Locomotives and Rolling Stock in the last.

It is considered that this form is more convenient for reference than the old one.

Schedule B has been modified to eliminate dimensions intended to make a metre-gauge line suitable to conversion to broad gauge. The clearance out of stations now required above rail level is 12 ft. 6 in. instead of 14 ft. 6 in., and from centre of track 6 ft. 6 in. instead of 7 ft. 0 in. The dimensions in stations are also modified.

The following alterations have also been made :—

Width of ballast at top is measured at level of foot of rail, the minimum depth required is increased in rock cuttings and decreased elsewhere.

Clear available length of *one* siding for crossing trains has been reduced to 1,200 feet.

Distance of building from edge of platform has been reduced from 30 feet to 24 feet, and distance of pillars from edge of platform increased to 10 feet.

Height of over-bridges in stations has been reduced to 14 ft. 6 in.

The clear top width over track in stations (diagram 1) has been reduced from 6 feet to 3 ft. 9 in. from centre of track to allow of overhanging roofs, water pipes, etc.

The Standard Dimensions for Running Sheds have been modified.

The maximum width over bodies of all vehicles includes the framing.

Slight modifications have been made in some places to make the meaning more clear.

Particular attention is invited to the difference between "Standard," "Maximum" and "Minimum;" the two latter represent the greatest and least dimensions which it is considered advisable to permit *in any case;* in many cases, more especially in the position of buildings, it is not desirable to work to these limits unless considerable extra expense would be incurred by giving a more liberal margin; for example, it is very seldom necessary to put pillars so near the edge of a platform as 10 feet, to erect any building so near the centre of track as 6 ft. 6 in. or to put a tank house, which is generally a serious obstruction both to the clear view in approaching a station, and to any future extension of the sidings, as near the track as 30 feet.

Enclosure to Government of India, Public Works Department, Circular No. 9 Ry., of 1896.

STANDARD DIMENSIONS

TO BE OBSERVED ON RAILWAYS IN INDIA.

METRE GAUGE.

NOTE.—Where it is proposed to execute any work or to procure Bridge Girders, Station Machinery, Rolling Stock or other Railway material which will infringe the dimensions or loads given in schedule B, the sanction of the Government of India should be obtained before such work is commenced or order given. The dimensions and loads given in schedule A may not be infringed under any circumstances.

I. GENERAL.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Formation, Single Line—			
(1)	Minimum width in embankment	14 ft. 0 in.	16 ft. 0 in.
(2)	„ „ in cutting (*excluding side drains*) .	12 ft. 0 in.	14 ft. 0 in.
Formation, Double Line—			
(3)	Minimum width in embankment	26 ft. 0 in.	28 ft. 0 in.
(4)	„ „ in cutting (*excluding side drains*) .	24 ft. 0 in.	26 ft. 0 in.
(5)	Minimum distance centre to centre of tracks (out of stations)	12 ft. 0 in.	12 ft. 0 in.
Curves—			
	Maximum angle of curvature on main line—		
(6)	In ordinary country	8° 0′ (rad. = 716 ft.)	5° 0′ (rad. = 1146 ft.)
(7)	In difficult country	16° 0′ (rad. = 358 ft.)	10° 0′ (rad. = 573 ft.)

(*a*) *N.B.*—The angle of curvature is taken as the angle at the centre subtended by an arc of one hundred feet in length. Thus the radius for a one degree curve is 5729·578 feet.

(*b*) The maximum angle of curvature should *only be worked to in special cases* where the adoption of an easier curve would be impracticable or involve considerable extra expense. Under very exceptional circumstances where it may appear necessary that this rule should be relaxed, the matter should be referred to the Government of India for orders.

(*c*) In flat open country where no obstacle exists, the radius should not be less than 5729½ feet.

Ballast—			
(8)	Minimum width of ballast at level of foot of rail .	7 ft. 0 in.	7 ft. 6 in.
	Minimum depth of ballast below sleepers,—		
(9)	In cuttings in rock or hard soil . . .	6 inches.	9 inches.
(10)	In cuttings in soft soil or on banks . .	3 inches.	6 inches.

(*a*) *N.B.*—These minimum dimensions may be relaxed in the case of a line being opened to traffic before the banks have settled, when suitable restrictions are placed on the speed of trains.

Sleepers—			
	Minimum dimensions for timber cross sleepers—		
(11)	Length	5 ft. 9 in.	6 ft. 0 in.
(12)	Breadth	6 inches.	7 inches.
(13)	Depth	4 inches.	4½ inches.
(14)	Minimum area in cross section	30 sq. in.	36 sq. in.
(15)	„ number of cross sleepers per mile .	1936	1936

(*a*) *N.B.*—On bridges where the cross sleepers rest directly on longitudinal girders, the sleepers are to be spaced not more than 1 ft. 6 in. centre to centre, and are to be not less than 5 inches deep exclusive of any notching which may be required on the underside to allow for the cover plates, camber, etc.

I. General.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Rails—		
(16) Minimum clearance of guard rail for curves and level crossings	1¾ inch.	2 inches.
(a) *N.B.*—The *maximum* clearance for curves and level crossings will vary according to the radius of curve.		
(17) Minimum depth of space for wheel flange, from rail level	1⅝ inch.	1⅝ inch.
Buildings, etc.—(*See diagram No. 2*)—		
(18) Minimum horizontal distance from centre of track to any structure, from 1 foot above rail level to a height of 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(19) Minimum horizontal distance from centre of track from rail level to 1 foot above rail level	4 ft. 5 in.	4 ft. 5 in.

(a) *N.B.*—Under items 18 and 19 any material stacked by the side of the line is to be considered a structure in the sense in which the word is here used.

(b) Where the line is on a curve the horizontal distance of a fixed structure from the centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees (*716 ft. rad.*) allow 5¼ in. extra.
" " 6 " (*955 ft. rad.*) " 4 in. "
" " 4 " (*1432 ft. rad.*) " 2⅝ in. "
" " 2 " (*2865 ft. rad.*) " 1⅛ in. "

and for others curves in proportion.

(20) Minimum height above rail level at centre of track for over-bridges or over-head bracing out of stations	12 ft. 6 in.	12 ft. 6 in.
(21) Minimum height above rail level for telegraph wires crossing the line, or above surface of road where carried over roads at level crossings	20 ft. 0 in.	20 ft. 0 in.

N.B.—The minimum horizontal distance, from the centre line of nearest track, at which a telegraph post may be erected, is the total height of the post plus 6 ft. 6 in. Also, where the line is in cutting, a telegraph post erected on the berm must be at a distance from the edge of the cutting of not less than the total height of the post.

Tunnels, Single Line—(*See diagram No. 3*)—		
(22) Minimum height above rail level at centre	19 ft. 0 in.	19 ft. 0 in.
(23) " width at rail level	13 ft. 0 in.	13 ft. 0 in.
(24) " " at 7 ft. 3 in. above rail level	17 ft. 0 in.	17 ft. 0 in.
Tunnels, Double Line—		
(25) Minimum height above rail level at centre	20 ft. 9 in.	20 ft. 9 in.
(26) " width at rail level	26 ft. 6 in.	26 ft. 6 in.
(27) " " at 6 ft. 0 in. above rail level	29 ft. 6 in.	29 ft. 6 in.
N.B.—For extra allowance in curves see item 19 (*b*).		
(28) Maximum distance apart of refuges	300 feet.	200 feet.

II. Station Yards.

II. STATION YARDS.

See also Diagram No. 1.

	A — Absolute for any railway for all new works.	B — Recommended for all except unimportant branches.
Spacing of Tracks—		
(1) Minimum distance centre to centre of tracks	12 ft. 6 in.	14 ft. 6 in.
(2) Minimum clear available length of one siding for crossing trains	——	1,200 feet.

(a) *N.B.*—The 'available length' of first siding (whether the line be curved or straight) terminates where the distance between the centre of the siding and the centre of main line begins to be less than 12 ft. 6 in. The available length of a second siding terminates where the distance between its centre and that of the first siding begins to be less than 12 ft. 6 in. and so on.

(b) On existing lines where the distance between centres of tracks is less than the present standard of 12 ft. 6 in., the 'available length' terminates at the point where the distance begins to diminish.

(c) It is desirable that the clearance point at which the 'available length' of each siding terminates should be marked on the ground in a conspicuous manner.

(d) On any section of a railway on which the length of trains is limited by special considerations, the length of platform and sidings may (with the sanction of the Government of India) be reduced to such an extent as may appear advisable. But for each such special case the sanction of Government is to be obtained to the proposal *before* work is commenced.

Platforms—		
(3) Standard horizontal distance from centre of track to face of platform coping	4 ft. 5 in.	4 ft. 5 in.

(a) *N.B.*—The upper edge of the nosing or coping to platform wall is to be finished to form an arris or a chamfer not exceeding 1½ inch wide.

(b) If the platform be on a curve, the horizontal distance from centre of adjacent track is to be increased as follows:—

For a curve of 8 degrees (*716 ft. rad.*) allow 5¼ in. extra.
" " 6 " (*955 ft. rad.*) " 4 in. "
" " 4 " (*1432 ft. rad.*) " 2⅝ in. "
" " 2 " (*2865 ft. rad.*) " 1⅛ in. "

and for other curves in proportion.

(4) Minimum length for passenger platform	——	600 feet.
N.B.—See Note, item 2 (*d*).		
(5) Maximum height above rail level for any passenger platform	1 ft. 4 in.	1 ft. 4 in.
(6) Standard height above rail level for new passenger platforms at important stations	1 ft. 0 in.	1 ft. 0 in.
(8) Minimum height for any passenger platform	Flush with rail level.	Flush with rail level.

(a) *N.B.*—Every halting place must have a platform, either raised or flush, which must be of standard platform length and ramped at ends. Flush platforms at unimportant halting places need not extend in width more than 15 feet from centre of track. Low platforms may have a curb instead of a platform wall, but a slope falling towards the rails, steeper than 1 in 20 must not be used.

II. Station Yards.

	A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
(9) Maximum height above rail level for goods, carriage, and horse landing platforms . . .	2 ft. 3 in.	2 ft. 3 in.
(*a*) *N.B.*—If on a passenger siding the standard height for passenger platforms must not be exceeded.		
(*b*) The ends of *all* platforms must be ramped, the slope being not steeper than 1 in 6.		
(10) Minimum horizontal distance of any building from the edge of a *passenger* platform . . .	18 ft. 0 in.	24 ft. 0 in.
(*a*) *N.B.*—This applies to any continuous obstruction either parallel or perpendicular to platform, but not to verandah pillars, etc., see item (11).		
(*b*) For an island platform, where it would be undesirable to allow the full width here specified, a plan shewing the arrangements proposed is to be submitted to the Government of India for special sanction.		
(11) Minimum horizontal distance from edge of platform to pillars, columns, lamps or similar isolated structures within a height of 10 ft. 6 in. from rail level	6 ft 0 in.	10 ft. 0. in.
(*a*) *N.B.*—This distance should be increased wherever possible.		
Buildings, etc.—		
(12) Minimum horizontal distance from centre of track to any structure in the vicinity of a *passenger* platform (but not *on* a platform), within a height of 10 ft. 6 in. from rail level. (*See diagram No. 1*) . .	9 ft. 0 in.	9 ft. 0 in.
(*a*) *N.B.*—This rule does not apply to water cranes, to point levers between tracks, or to loading gauges. (*See items Nos. 13 and 17 below and Chapter IV 5.*)		
(*b*) For extra allowance on sharp curves see item No. 3 (*b*).		
(13) Minimum horizontal distance from centre of track to any fixed part of water column between 1 foot and 10 ft. 6 in. above rail level	6 ft. 3 in.	6 ft. 6 in.
(14) Minimum horizontal distance from centre of track to any structure not in the vicinity of a *passenger* platform, from platform level, if any, or from 1 foot above rail level if there be no platform, to a height of 10 ft. 6 in. above rail level	6 ft. in.	6 ft. 6 in.
(*a*) *N.B.*—Under the last entry, coal or any material stacked by the side of any track is to be considered a structure in the sense in which the word is here used.		
(*b*) For extra allowance on sharp curves see item No. 3 (*b*).		
(15) Minimum height above rail level, for a width of 3 ft. 9 in. from centre of track, of tie-rods or underside of any continuous covering in *passenger* stations .	18 ft. 0 in.	20 ft. 0 in.
(*a*) *N.B.*—A projecting overhanging roof is permissible in the case of a goods shed *on a siding*, if it does not infringe the outline of the figure for minimum fixed structure out of stations. (*See diagram No. 2.*)		
(16) Minimum height above rail level at centre of track for foot-bridges crossing the line in stations . .	14 ft. 6 in.	14 ft. 6 in.

II. Station Yards.

	A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Points and Crossings—		
(17) Minimum horizontal distance from centre of track to point handle, indicator or any part of point apparatus above rail level	6 ft. 3 in.	6 ft. 6 in.
(*a*) *N.B.*—A point handle may not, in any position, be within 6 ft. 3 in. of the centre line of nearest track; a clear distance of 6 ft. 3 in. is also to be preserved from centre of nearest track to any part of the point apparatus, fixed or movable, above rail level. An arrangement involving the placing of a point handle between tracks should be avoided as far as practicable; but where this arrangement is adopted, the point handle must work parallel with the rails, not at right angles thereto.		
(18) Maximum clearance of guard rail opposite nose of crossings	$1\frac{3}{4}$ inch.	$1\frac{3}{4}$ inch.
(19) Minimum clearance of switch rails and of guard rail for crossings	$1\frac{5}{8}$ inch.	$1\frac{5}{8}$ inch.
(20) Minimum space below rail level for wheel flange .	$1\frac{3}{8}$ inch.	$1\frac{3}{8}$ inch.
(21) Minimum radius of curve	330 feet.	476 feet.
(22) Standard crossings	—	1 in 6.
	—	1 in $8\frac{1}{2}$.
	—	1 in 12.
(*a*) *N.B.*—For the outside facing points a crossing of 1 in 12 is recommended.		
(23) Standard lengths for tongue rails . . .	—	9 ft. 0 in.
	—	12 ft. 0 in.

III. Station Machinery.

III. STATION MACHINERY.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Water Tanks—			
	Minimum height for bottom of tank above rail level *at water column* :—		
(1)	For watering engines	—	20 ft. 0 in.
(2)	For washing out engines	—	30 ft. 0 in.
(3)	Minimum distance from centre of track to face of tank house when adjacent to a passenger platform	18 ft. 0 in.	30 ft. 0 in.
(4)	Minimum capacity of tank at any station	—	800 c. ft.
Water Cranes—			
(5)	Minimum distance in the clear from centre of track to nearest part of water column from 1 foot above rail level	6 ft. 3 in.	6 ft. 6 in.
(6)	Standard height above rail level for discharge orifice of water crane jib	—	12 ft. 0 in.
(7)	Standard internal diameter for piping from tank to water crane	—	6 inches.

(*a*) *N.B.*—This diameter should be increased where the same pipe serves two or more water columns likely to be used at the same time.

Ash-Pits, etc.—			
(8)	Minimum clear length at bottom for ash-pits in station yards	—	50 ft. 0 in.
(9)	Standard average depth for ash-pits in station yards	—	3 ft. 6 in.
(9*a*)	Standard depth for examining pits for carriages and wagons	—	3 ft. 0 in.
Engine Running Sheds—			
(10)	Minimum distance centre to centre of tracks	12 ft. 6 in.	15 ft. 6 in.
(11)	Minimum clear distance from centre of track to any isolated structure such as a pillar	6 ft. 0 in.	6 ft. 6 in.
(12)	Minimum clear distance for a height of 6 feet above rail level to any continuous structure	8 ft. 0 in.	9 ft. 0 in.

(*a*) *N.B.*—This distance should be increased to 13 ft. 6 in. on one side of sheds having not more than 3 lines of rails, and on both sides of sheds having more than 3 lines of rails, to allow room for benches, etc., inside the shed.

(13)	Minimum height to tie bars, girders, etc., above rail level	12 ft. 6 in.	14 ft. 0 in.
(14)	Minimum height of doorways if flat at top	12 ft. 6 in.	12 ft. 6 in.
(15)	Standard average depth for pits in Running Sheds	—	3 ft. 0 in.
Turntables—			
(16)	Minimum diameter for engine turntables	—	36 ft. 0 in.
(17)	Minimum diameter for Carriage or Wagon turntables	—	14 ft. 0 in.
Traversers—			
(18)	Minimum length for Carriage or Wagon traversers	—	14 ft. 0 in.
Weigh-bridges—			
(19)	Minimum length for weigh-bridges for ordinary stock	—	14 ft. 0 in.
(20)	Minimum weighing power for weigh-bridges for ordinary stock	—	14 tons.

IV. Locomotives and Rolling Stock.

IV. LOCOMOTIVES AND ROLLING STOCK.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Maximum moving dimensions. (*See also diagram No 1*)—			
	Maximum width :—		
(1)	From rail level to a height of 2 ft. 9 in. above rail level	8 ft. 2 in.	8 ft. 2 in.
(2)	From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level	7 ft. 9 in.	7 ft. 9 in.
(3)	From a height of 6 ft. 9 in. above rail level to a height of 10 ft. 2 in. above rail level	8 ft. 6 in.	8 ft. 6 in.

(*a*) *N.B.*—From a height of 2 ft. 9 in. above rail level to a height of 6 ft. 9 in. above rail level, the width outside the framing of a coaching or goods vehicle must not exceed 7 ft. 9 in. Door handles, hand rails, lamps and other isolated fittings, and the projecting window in the case of a brake van may extend beyond the body of the vehicle up to a maximum width over all of 8 ft. 6 in., which must not be exceeded under any circumstances.

(*b*) Every carriage is to be provided with one continuous foot-board on each side, placed with its upper surface at a distance of 1 ft. 2 in. below floor level, the width over outsides of foot-boards being 8 ft. 2 in.

	Maximum width over open doors, including all fastenings or projections—		
(4)	For passenger vehicles	12 ft. 6 in.	12 ft. 6 in.
(5)	For goods vehicles	12 ft. 6 in.	12 ft. 6 in.

(*a*) *N.B.*—Horse boxes, brakevans and luggage vans are exempted from this rule.

	Maximum height from rail level :—		
(6)	For unloaded vehicle at centre	11 ft. 0 in.	11 ft. 0 in.
(7)	For unloaded vehicle at sides	10 ft. 2 in.	10 ft. 2 in.

(*a*) *N.B.*—All heights are to be taken with the vehicle unloaded and buffer centres at the maximum height of 1 ft. 11 in. from rail level. For further details see Diagram No. 1.

	Loading gauge for goods :—		
(8)	Maximum width	8 ft. 8 in.	8 ft. 8 in.
(9)	Maximum height from rail level at centre	11 ft. 1 in.	11 ft. 1 in.
(10)	Maximum height from rail level at sides	10 ft. 3 in.	10 ft. 3 in.
Weight on a pair of wheels—			
(11)	Maximum per foot of diameter	3 tons.	3 tons.
(12)	Maximum for locomotives under any circumstances	8 tons.	8 tons.
(13)	Maximum for goods stock	7 tons.	7 tons.
(14)	Maximum for coaching stock	5 tons.	5 tons.
Weight per foot run of wheel base—			
(15)	Maximum for tank engines	2·67 tons.	2·67 tons.
(16)	Maximum for engine or tender separately, in the case of tender engines	2·00 tons.	2·00 tons.
Weight per foot run over buffers—			
(17)	Maximum for tank engines	1·333 tons.	1·333 tons.
(18)	Maximum for engine and tender together, in the case of tender engines	1·125 tons.	1·125 tons.
(19)	Maximum for goods stock	0·8 ton.	0·8 ton.

IV. Locomotives and Rolling Stock.

		A Absolute for any railway for all new works.	B Recommended for all except unimportant branches.
Total gross weight—			
(20)	Maximum for tank engines	—	32 tons.
(21)	Maximum for engine and tender together, in the case of tender engines	—	46 tons.

(*a*) *N.B.*—The weights given in items (11) to (21) are the maximum permissible under any circumstances with engine in working order and full load of fuel and water, and with the vehicles fully loaded. The weight on a pair of wheels includes the weight of the wheels, axles, axle-boxes and springs.

(*b*) The maximum weights given above are not to be worked to until a certificate has been accepted by an Inspector of railways to the effect that the bridges of the railway on which they are to be introduced are of sufficient strength to bear the proposed loads with safety.

(*c*) In exceptional cases, engines or vehicles of weights in excess of the specification given above may be used under the special sanction of the Government of India. Such special sanction must be obtained *before* the engines or vehicles are ordered, and the application for sanction must be accompanied by a diagram giving full particulars, and by a certificate countersigned by an Inspector of railways that the bridges on the section over which the engines or vehicles are intended to work, are of sufficient strength.

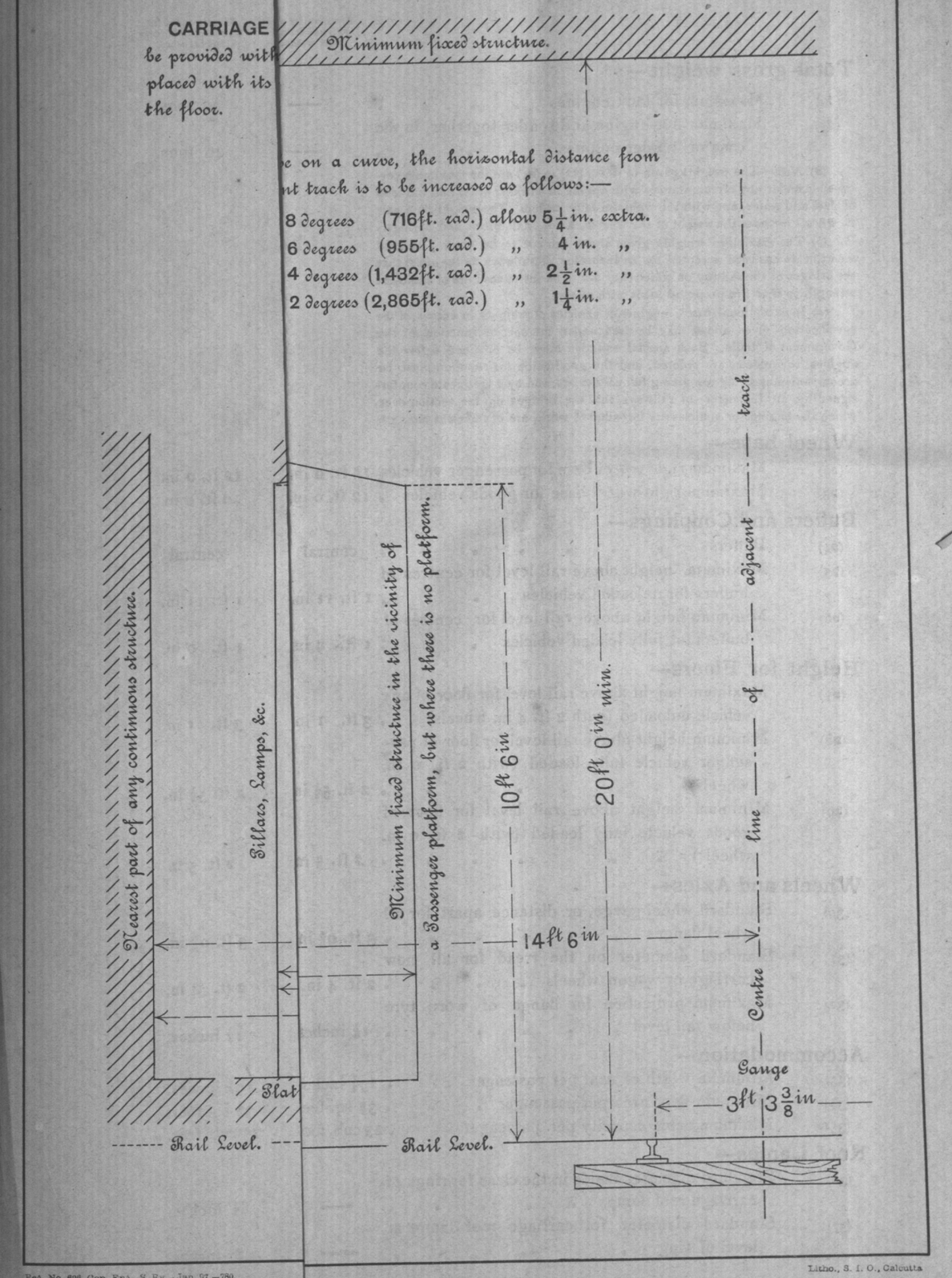
Wheel base—			
(22)	Maximum rigid wheel base for passenger vehicles	15 ft. 0 in.	12 ft. 0 in.
(23)	Maximum rigid wheel base for goods vehicles .	12 ft. 0 in.	10 ft. 0 in
Buffers and Couplings—			
(24)	Buffers	central	central
(25)	Maximum height abcve rail level for centres of buffers for unloaded vehicles . . .	1 ft. 11 in.	1 ft. 11 in.
(26)	Minimum height above rail level for centres of buffers for fully loaded vehicles . . .	1 ft. 9 in.	1 ft. 9 in.
Height for Floors—			
(27)	Maximum height above rail level for floor of any vehicle unloaded (with 2 ft. 4 in. wheels) .	3 ft. 1 in.	3 ft. 1 in.
(28)	Minimum height above rail level for floor of passenger vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. 5½ in.	2 ft. 5½ in.
(29)	Minimum height above rail level for floor of goods vehicle fully loaded (with 2 ft. 0 in. wheels)	2 ft. 5 in.	2 ft. 5 in.
Wheels and Axles—			
(30)	Standard wheel gauge, or distance apart for all wheel flanges	3 ft. 0⅝ in.	3 ft. 0⅝ in.
(31)	Standard diameter on the tread for all new carriage or wagon wheels	2 ft. 4 in.	2 ft. 4 in.
(32)	Maximum projection for flange of worn tyre below rail level	1¼ inches.	1¼ inches.
Accommodation—			
(33)	Minimum width of seat per passenger . .	19½ inches.	19½ inches.
(34)	Minimum floor area per passenger . . .	3½ sq. feet.	3½ sq. feet.
(35)	Minimum cubic capacity per passenger . .	25 cub. feet.	25 cub. feet.
Roof Lamps—			
(36)	Standard diameter inside in the clear for rings of carriage roof lamps	—	8¼ inches.
(37)	Standard diameter for carriage roof lamps at level of ring	—	8 inches.

Reg. No. 626, Con. Eng., S. Ry. Jan. 97—780.

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METRE GAUGE.
STANDARD DIMENSIONS.
1896.

CARRIAGE
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Litho., S. I. O., Calcutta

Reg. No. 626, Con. Eng., S. Ry. Jan. 97—780.

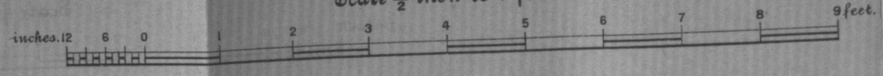
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DIAGRAM NO. I.

STANDARD DIMENSIONS IN STATIONS.

METRE GAUGE.
STANDARD DIMENSIONS.
1896.

Scale ½ inch to 1 foot.

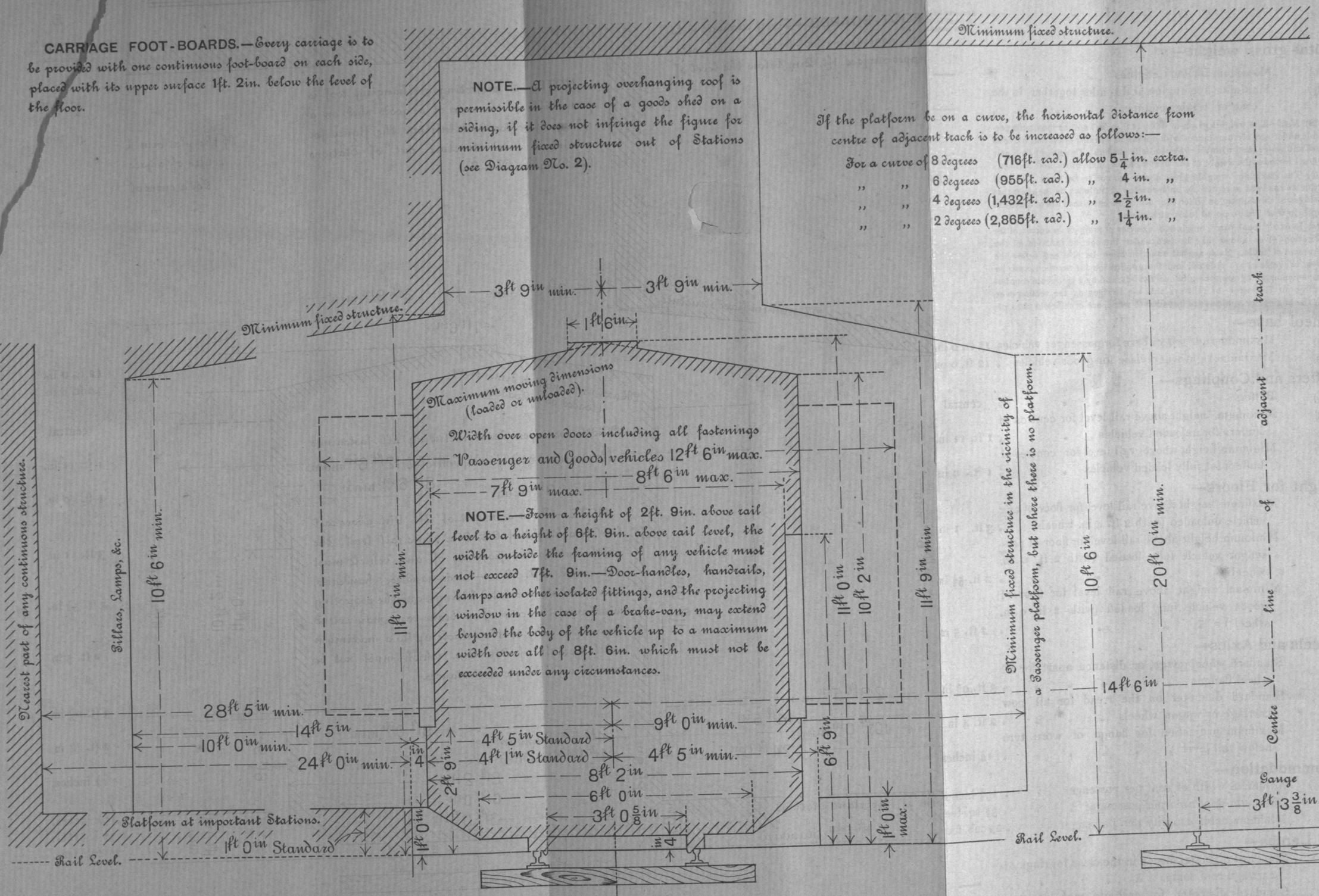


CARRIAGE FOOT-BOARDS.—Every carriage is to be provided with one continuous foot-board on each side, placed with its upper surface 1ft. 2in. below the level of the floor.

NOTE.—A projecting overhanging roof is permissible in the case of a goods shed on a siding, if it does not infringe the figure for minimum fixed structure out of Stations (see Diagram No. 2).

If the platform be on a curve, the horizontal distance from centre of adjacent track is to be increased as follows:—

For a curve of	8 degrees	(716ft. rad.) allow	5¼ in. extra.
,, ,,	6 degrees	(955ft. rad.) ,,	4 in. ,,
,, ,,	4 degrees	(1,432ft. rad.) ,,	2½ in. ,,
,, ,,	2 degrees	(2,865ft. rad.) ,,	1¼ in. ,,



Litho., S. I. O., Calcutta

Reg. No. 926, Con. Engs., S. Ry.—Jan. 97.—780.

GE.

	A	B
	any	Recommended for all except unimportant branches.
	32 tons.	
	6 tons.	

METRE GAUGE.
STANDARD DIMENSIONS.
1896.

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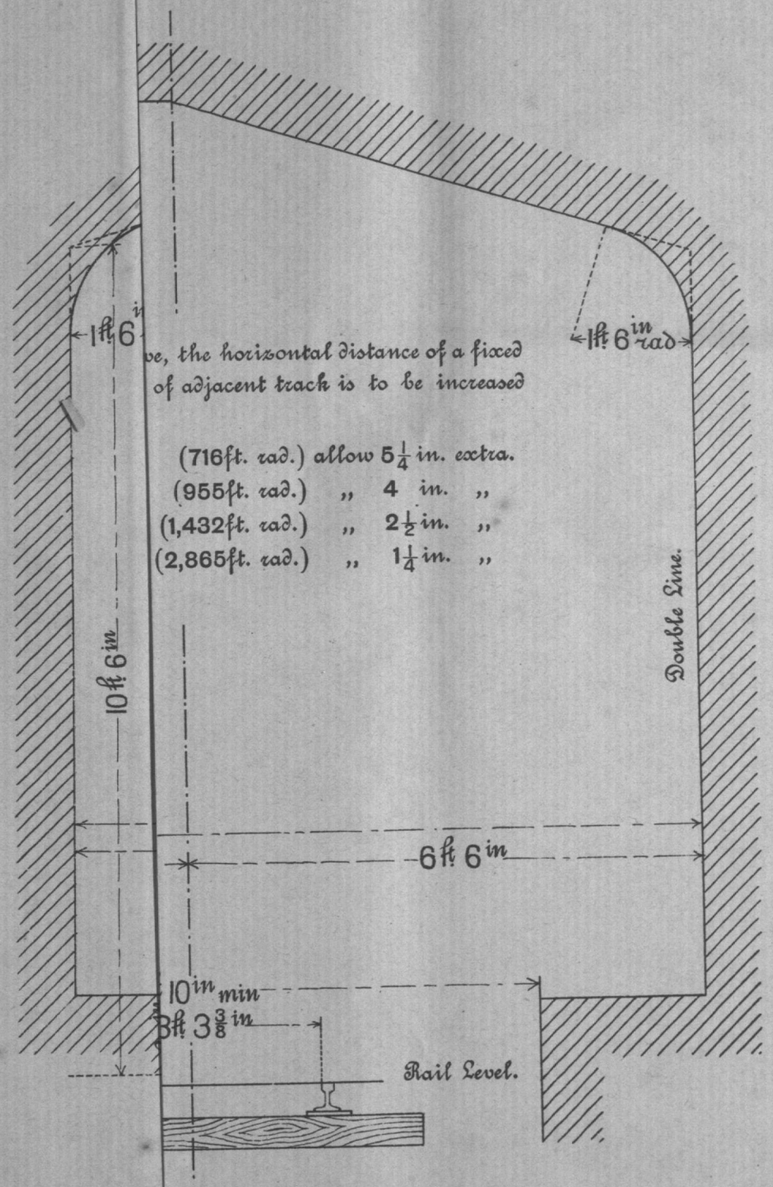
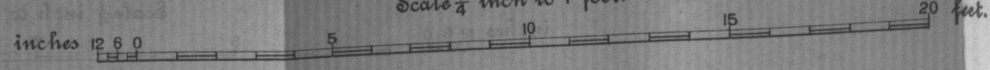


DIAGRAM NO. 3.

TUNNEL SECTIONS.

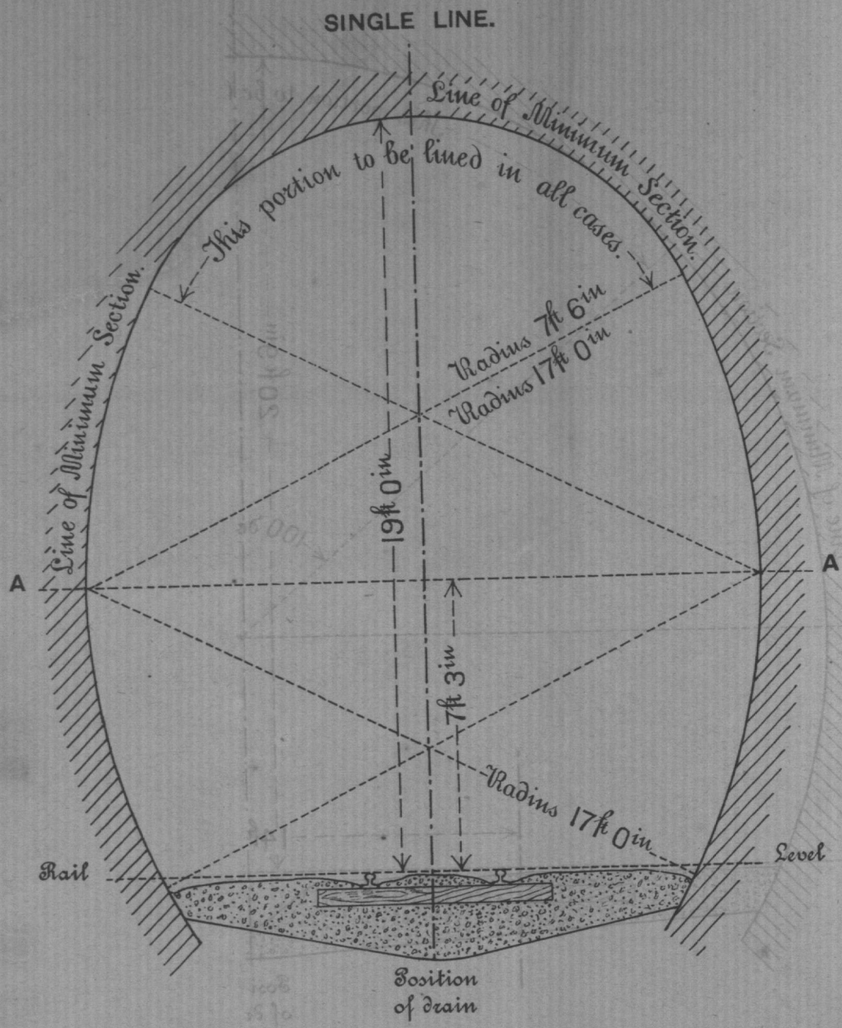
METRE GAUGE.
STANDARD DIMENSIONS.
1896.

Scale $\frac{1}{4}$ inch to 1 foot.



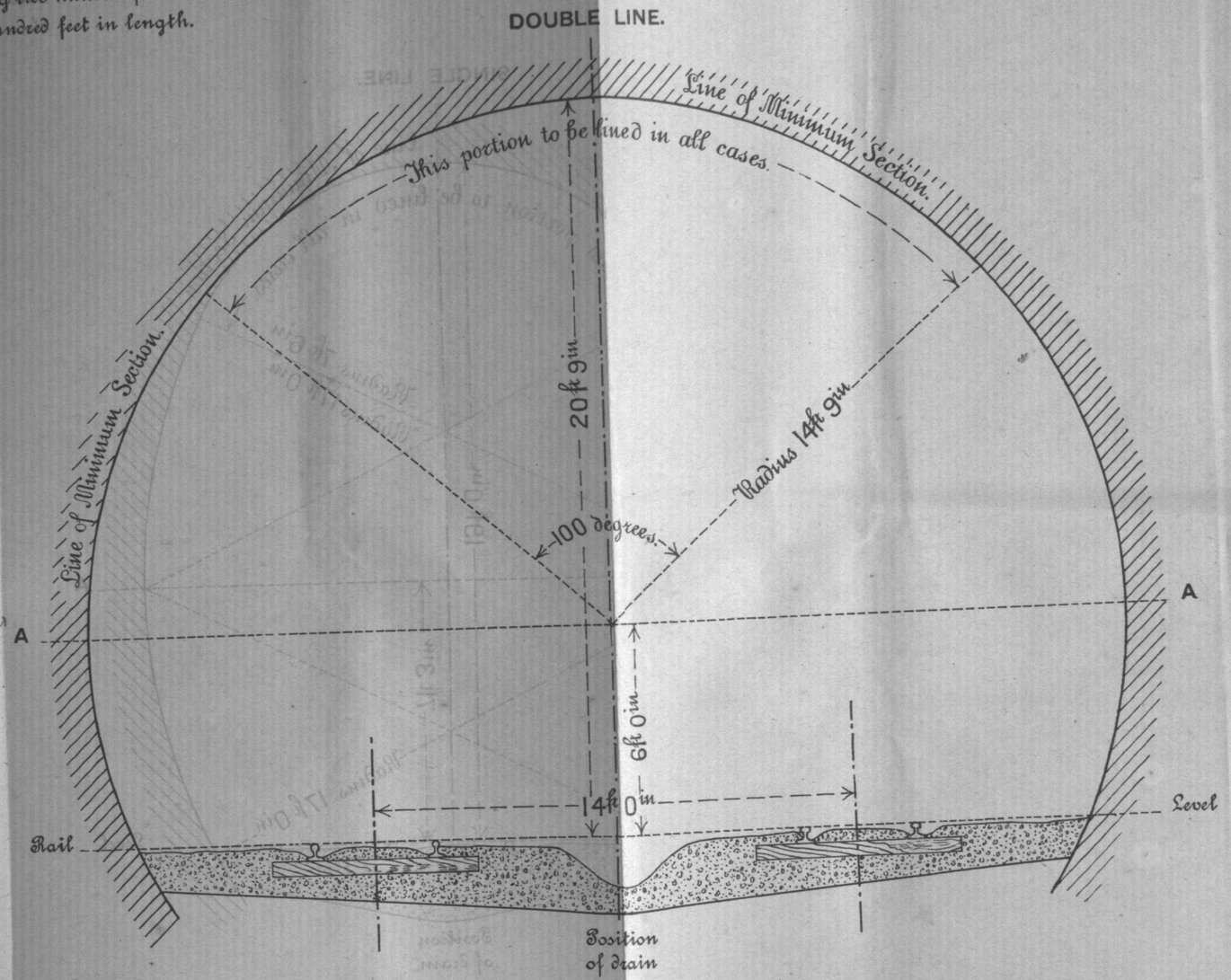
NOTE.—Refuges to allow men to stand aside clear of a passing train should be provided at intervals not exceeding two hundred feet in all tunnels of more than three hundred feet in length.

SINGLE LINE.



SINGLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required.

DOUBLE LINE.



DOUBLE LINE.—The hatched section shews the outline which should not be infringed. Below the line A-A, the sides may be vertical, or built with a straight batter. In bad soil an invert will be required, and in special cases the section of the tunnel may be a complete circle.

EXTRA WIDTH TO BE ALLOWED ON CURVES.

CURVE.		EXTRA WIDTH FOR TUNNEL.		EXTRA DISTANCE CENTRES OF TRACKS FOR DOUBLE LINE.
Angle of curvature.	Radius in feet.	Single line.	Double line.	
2°-0′	2,865	0ft. 2½ in.	0ft. 5in.	2½ in.
3°-0′	1,910	0 „ 4 „	0 „ 8 „	4 „
4°-0′	1,432	0 „ 5 „	0 „ 10 „	5 „
5°-0′	1,146	0 „ 6½ „	1 „ 1 „	6½ „
6°-0′	955	0 „ 8 „	1 „ 4 „	8 „
7°-0′	819	0 „ 9 „	1 „ 6 „	9 „
8°-0′	716	0 „ 10½ „	1 „ 9 „	10½ „

Litho., S. I. O., Calcutta

Reg. No. 620, Con. Engr., S. Ry.—Jan. 97—750.