भारतीय रेल
आयाम अनुसूची
1676 मि.मी. आमान
(बी.जी.)

INDIAN RAILWAYS
SCHEDULE OF DIMENSIONS
1676mm Gauge
(BG)

संशोधित, 2004

REVISED, 2004

GOVERNMENT OF INDIA

MINISTRY OF RAILWAYS

(RAILWAY BOARD)

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II The General Manager/Construction N.F.Railway, Guwahati

III The Principal Chief Engineers, Eastern Railway/Kolkata, Central Railway/Mumbai, Northern Railway/New Delhi, North Central Railway/Allahabad, Southern Railway/Chennai, South Central Railway/Secunderabad, South Eastern Railway/Kolkata and Western Railway/Mumbai.

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V The Chief Adminsitrative Officer/Const.:

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VI The Director General, RDSO, Manak Nagar, Lucknow

VII The Chief Commissioner of Railway Safety, Ashok Marg, Lucknow

VIII The Commissioner of Railway Safety, All Circles

IX The Director, IRICEN, Pune

X The Director, IRIEEN, Nasik

XI The Director, IRISET, Secunderabad

XII The Director, IRIMEE, Jamalpur,

XIII The Director General, Railway Staff College, Vadodra.

XIV The Chief Project Officer, Delhi Metro Railway Corporation, NBCC Place, New Delhi

XV The Chief Vigilance Officers, All Indian Railways

A copy of the foregoing letter and enclosure is forwarded for information to:

1 The Chief Secretary to the Govt. of Tamilnadu Chennai

2 The Chief Secretary to the Govt. of Maharashtra, Mumbai

3 The Chief Secretary to the Govt. of Gujrat, Gandhi Nagar

4 The Chief Secretary to the Govt. of West Bengal, Kolkata

5 The Chief Secretary to the Govt. of Uttar Pradesh, Lucknow

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7 The Chief Secretary to the Govt. of Punjab, India, Chandigarh

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20 The Chief Secretary to the Govt. of Rajasthan, Jaipur
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   (iv) Cochin Port Trust, Villingdon Island, Cochin-682009
   (v) Mumbai Port Trust, Shoorji Vallabhdas Marg, Mumbai-400038
   (vi) Kandla Port Trust, Port Trust, Post Box No. 50, Gandhi Dham (Kutch)-370201
37 The General Secretary, Indian Railway Conference Association, New Delhi
38 The Director General of Commerce and Industry, New Delhi

SHEDULE OF DIMENSIONS-1676MM GAUGE

Schedule of Dimensions for Indian Railways, 1676mm Gauge

Dear Sir/Dear Sirs,

With their circular letter No. 735-W. of 1922, the Railway Board issued a Schedule of Maximum, Minimum and Recommended Dimensions to be observed on all 1676mm gauge Railways in India. In that Schedule, certain dimensions of the previous schedule of the year 1913 were modified with the object of permitting the use of enlarged rolling stock.

2. The Schedule of Dimensions of 1922 contained two distinct sections, namely, a schedule of "Maximum and Minimum Dimensions" which was considered to enable the proposed larger vehicles to run with about the same degree of safety as that which was previously obtained on the older Railways with existing stock, and a schedule of "Recommended Dimensions" intended to provide approximately the same clearances from fixed structures for the future larger vehicles as the 1913 schedule gave for existing vehicles.

3. In their circular letter No. 232-Tech.dated the 8th February, 1926, the Railway Board gave instructions that the Recommended Dimensions given in the 1922 Schedule were to be observed on important Railways in all new works and alterations to existing works. These orders were modified in letter No. 232-Tech. of the 26th April, 1926, which allowed a relaxation in the case of certain recommended dimensions, the adoption of which would involve heavy expenditure in remodelling works.

4. In 1929, it was found desirable further to amend the Schedule of 1922 in order to introduce certain improvements in the light of experience gained since it was issued, and to provide the clearances required by electric traction equipment on lines which were likely to be electrified in the future. A few special dimensions were also required for "Standard C" railways as defined in the "Rules for preparation of Railway Projects 1926 - Chapter III, Standards of Construction".

5. The Schedule I issued in 1929, therefore, embodied these amendments and additions and the opportunity was taken to omit from this schedule many dimensions occurring in the 1922 Schedule and its predecessors which were more of the nature of current practice than essential for safe working. These were therefore, relegated to Schedule II, Recommended Dimensions.

6. Among the more important changes introduced in the 1929 Schedule, were an increase in the minimum height above rail level for overhead structures to 5410mm and increase to 2360mm in the horizontal distance to a fixed structure up to 3355mm above rail level, a reduction in this distance to 2135mm at 4420mm above rail level, and a reduction also in the clearance to fixed structures from rail level to 1065mm above rail level on bridges and in tunnels. The last three changes were intended to allow for a reduction in tunnel sections and an improvement in the disposition of bracing of bridge girders without sacrificing safety.

7. In 1936, however, the financial stringency on Railways brought to the front the urgent necessity for restricting capital expenditure to a minimum. The falling off in Railway traffic generally and the increasing demand for light fast units to compete with motor bus transport also made the introduction of heavier engines and 3660mm wide stock on Railways improbable. In these circumstances it was found desirable to alter the dimensions prescribed in Schedule I of the 1929 Dimensions and to revert to the maximum and minimum dimensions in the 1922 Schedule in several important respects. Railway administrations were advised of these alterations through correction slip no. 14 of 1 st December, 1936 to the 1929 Schedule. These alterations were not, however, intended to prevent the introduction of 3660mm stock at some future date, should this prove necessary. It had, therefore, been expressly laid down that the modifications made in Chapter I of Schedule I, were not to apply to Tunnels, Through and Semi-through Girder Bridges in respect of which the Standard Dimensions of 1929 would continue to apply.

8. The Schedule of dimensions, with metric and F.P.S dimensions which was forwarded in the year 1973 was based on the 1958 reprint of 1939 schedule, with the difference that the Chapter IV and IV SS of schedule -1, were combined and rearranged under two headings *viz* chapter IV (A), for carriage and wagon and chapter IV(C) for locomotive and the dimensions pertaining to 3050mm wide bogie stock were omitted from this version of 1973 schedule. Chapter IV-S relating to 3660mm wide stock were designated as chapter IV(B) for carriage and wagon. In converting F.P.S dimensions into metric, the dimensions of "wheel profile" were rounded off to the nearest 0.50mm diameter of wheel and smaller dimensions less than 12 inches rounded off to the nearest mm, those of fixed structures and profile of rolling stock to the nearest 5mm and other larger dimensions to the nearest cm in metric unit depending on the accuracy required. Schedule II & III, showing Recommended Dimensions and Infringements of Schedule I respectively, which might be permitted on existing railways, were retained and the appendix dealing with extra clearances required on curves were revised to show the clearances required for 3250mm wide and 21340mm long rolling stock. Also in the revised table, the maximum permissible speed and corresponding super elevation were indicated and the required clearances based on this super elevation were given.

9. The dimensions prescribed in Schedule I which were essential for safe working, were applicable to all new railways and to new works on existing railways, including, so far as practicable, alternations and renewals, and sanction was required to a departure from them.

The clearances prescribed in item 13 of Chapter I 'Tunnel, through and semi-through girder bridges' was to be adopted for all structures, and not only for tunnels and through girder bridges at the time of new constructions or additions/ alterations to the existing structures. If, however in case where 3660mm stock was not expected to be introduced, and adoption of these dimensions would entail heavy expenditure, administrative reference to be made to the Board, individually in each case before execution of the work, for adopting less clearances.

10. The schedule of dimensions of 1973 version was based on the requirements of 25KV A.C. traction and all future construction were to be carried out to these dimensions except in cases where it was considered that there was no chance of the line being subsequently converted to 25KV A.C.traction. A new chapter V(A) was added in respect of dimensions required for electric traction with 25KV A.C. (50 cycles).

11. The present schedule of dimensions (Revised, 2004) is a revised version of the Schedule of Dimensions of 1939 reprinted in 1973. The subject of review of B.C. Schedule of Dimensions was discussed under item No. 821 of 64th Track Standards Committee meeting held in March 1990. Based upon the committee's recommendation on this item, Railway Board vide their letter no. 90/CE-II/TSC/1 dated 17.12.99 issued orders to Director General/RDSO to appoint a multidisciplinary committee for the revision of Schedule of Dimensions (1973 reprint). The multidisciplinary committee consisted of the following directorates of RDSO:

(i) Track Design Directorate (Co-ordinating Directorate)

(ii) Bridges & Structures Directorate

(iii) Carriage Directorate

(iv) Motive Power Directorate

(v) Wagon Directorate

(vi) PS&EMU Directorate

(vii) Signal Directorate

(viii) TI Directorate

The present schedule of dimensions (Revised, 2004) consists of only metric units. All dimensions in FPS units are deleted. The following modifications have been done over the structure of Schedule of Dimensions of 1973.

(a) Only two schedules - Schedule I & Schedule II, are provided in this revised Schedule of Dimensions. Schedule-I consists of those items which are mandatory and have to be observed on all 1676mm Gauge Railways in India. It is mandatory and contains the items of Schedule-I & certain selected items of Schedule-II of 1973 version of Schedule of Dimensions.

(b) Schedule-II consists of items included in Schedule-III of 1973 version of Schedule of Dimensions.

(c) For maximum moving dimensions, profile shown in diagram ID (EDO/T-2202) is being adopted which is based on the two profiles *viz* EDO/T-1043(for goods stock) and EDO/T-2227 (for double decker coach) approved by Railway Board vide their letter No. 72/WDO/SR/31 dated 21.2.1974 & 60/WDO/SR/19 dated 5.8.92 respectively.

(d) The diagrams of 1973 schedule are suitably modified by replacing 1929 profile with present profile (diagram ID).

(e) The appendix dealing with extra clearances required on curves has been modified to suit maximum speed of 160 kmph and maximum superelevation of 165mm as per high speed Rajdhani and Shatabdi Routes, with other parameters kept as earlier. Additional appendix for extra clearances required on curves for maximum speed upto 200 kmph is also enclosed.

(f) Various correction slips issued from time to'time to Schedule of Dimensions of 1973 as listed in Annexure-III have been incorporated in this Revised Schedule of Dimensions-2004.

Yours faithfully,

(BUDH PRAKASH)

Additional Member/Civil Engineering
Ministry of Railways, Railway Board
Rail Bhawan, New Delhi-110 001

SCHEDULE – I

STANDARD

IMENSIONS

1676mm GAUGE (BG)

CHAPTER I – GENERAL

The DIMENSIONS given in this Schedule-I have been classified under two heads namely for 'Existing works' and for 'New works'. Existing works means the works which were existing before issue of this Schedule of Dimensions (2004) and would help the field engineers to provide the information about previous dimensions followed at one place.

New works would include altogether new constructions, additions of new lines/structure, gauge conversion and doubling. However, it is not intended to include the works of alteration such as shifting of a points and crossings, extension of siding, building etc.

The dimensions, except for existing works, are to be observed on all 1676 mm gauge on Indian Railways unless prior sanction has been obtained from the Railway Board through the Commissioner/Chief Commissioner of Rail Safety to execute the new works which would infringe this Schedule of Dimensions

[See **Diagram Nos. 1A, 1A (Modified), IB, 1C and 1D |**

Note :

(1) Items 8 and 10 are applicable only to structures outside station yards. All other items are of general applicability.

(2) For running EMU and other 3660mm Stock on existing works, clearances prescribed in items 13 of Chapter I "Tunnels, Through and Semi Through, Girder Bridges" shall also be required for all structures governed by items 1, 7, 8 and 12 of this chapter and not only for tunnels, through and semi through girder bridges.

Spacing of tracks: –

1. Minimum distance centre to centre of tracks.

(i) For existing works	4265mm
(ii) For new works/additions to existing works	5300mm

Note: (a) See Appendix for extra clearance required on curves

(i) Extra clearance upto 5 degree has been accounted for the track spacing given in item (ii) above

(ii) For curves more than 5 degree, extra clearance is to be calculated and accounted for.

(b) For spacing of tracks in tunnels, through and semi through girder bridges, see item 13 (i).

(c) New/Additional works cover laying of new line and new running loops. Extension of existing line or replacement of points & crossings will not be treated as new work.

Curves :—

2. Minimum radius of curves — 75m (10 degrees)

Bridges:—

3. Bridges must conform to the requirements of chapter IV of the Railways opening for the Public carriage of Passengers, Rule 2000.

On existing bridges where there is nothing solid between sleepers to prevent a derailed wheel dropping, the clear distance between two consecutive sleepers shall not exceed 510mm. The clear distance between the joint sleepers shall not, however, exceed 200mm and that between the two consecutive sleepers 450mm in all new constructions and in existing bridges when regirdering or carrying out through sleeper renewal.

Bridge sleepers resting directly on longitudinal girders should not be less than 152mm deep exclusive of any notching which may be required to allow for cover plates, camber, *etc.* and not less than 305mm greater in length than the distance outside to outside of girder flanges subject to a minimum of 2440mm. The minimum length of steel trough sleepers should be the distance outside to outside of girder flanges subject to a minimum of 2440mm.

Rails-

4. Minimum clearance of check rails for a curve — 44 mm

Note :(a) This clearance must be increased by not less than half the amount of any difference between 1676mm and the gauge to which the curve is actually laid.

(b) Check rails to be provided in curves where the radius is 218 metres or less *i.e.* curvature is 8° or more. They may be necessary also in the case of flatter curves, if high speed is contemplated.

5. (i) Minimum clearance of check rail at a level crossing — 51mm

(ii) Maximum clearance of check rail at a level crossing — 57mm

6. Minimum depth of space for wheel flange from rail level — 38mm

Building and structures-

7. Minimum horizontal distance from centre of track to any structure from rail level to 305mm above rail level

(i) For existing works — 1675mm

(ii) For new works or alterations to existing works — 1905mm

8. Minimum horizontal distance from centre of track to any structure except a platform

(i) For existing works.

From 305mm above rail level to 4420mm above rail level — 2135mm

(ii) For new works or alterations to existing works

(a) From 305mm above rail level to 1065mm — 1905mm increasing to 2360mm

(b) From 1065 mm above rail level to 3355mm — 2360mm

(c) From 3355mm above rail level to 4420mm — 2360mm decreasing to 2135mm

(d) From 4420mm above rail level to 5870mm — 213 5rrim decreasing to 915mm

Note:

(a) Under item 7 and 8, any material stacked by the side of line is to be considered a structure in the sense in which the word is used here. These items also apply to projections of rock *etc.*, from the side of cutting.

(b) See appendix for extra clearance required on curves.

(c) Light structures such as ladders, thin posts *etc.* erected along side the track at a distance of less than 2360mm from centre of adjacent track should be blanked off to a height of 300mm between 2060mm and 2360mm above rail level.

(iii) (a) Below the rail level upto the formation level of the track on straight and curves upto radius of 875m. — 2575mm

(b) Below the rail level up to the formation level of the track on curves with radius less than 875m — 2725mm

Note:-

(a) The required clearances as mentioned under item 8(iii) (a) and (b) above will be applicable in case of new lives/doubling/electrification.

(b) The various fixture which are attached to the track like traction bonds etc. and are required to be filled with the rail can be provided and the clearance as mentioned in item 8(iii) (a) & (b) above will not be applicable to these fixtures.

9. Minimum horizontal distance of any telegraph post measured from the centre of and at right angles to the nearest track.

(i) For existing works	The height of the post plus 2135mm
(ii) For new works or alterations to existing works	The height of the post plus 2360mm

Note: When the line is in cutting a telegraph post erected outside the cutting, must be at a distance from the edge of the cutting not less than the total height of the post.

10. (i) Minimum height above rail level for a distance of 915mm on either side of the centre of track for overhead structures — 4875mm

(ii) Where D.C. electric traction is in use or is likely to be used this dimension shall be — 5410mm

(iii) Where 25 KV A.C. traction is likely to be used, the minimum height above rail level for a distance of 1600mm on either side of the centre of track shall be :

(a) Light overhead structure such as foot over bridges — 6250mm

(b) Heavy overhead structure such as road over or flyover bridges — 5870mm

Note :

(a) See appendix for extra clearance required on curves.

(b) In case of existing structures a special study shall be made as indicated in Appendix-A to Chapter V-A before 25 KV A.C traction is introduced.

(c) In areas where 25 KV A.C traction is used or likely to be used, if any turnout or crossover is located under a heavy overhead structure or within 40m from its nearest face irrespective of the position of level crossing gate, the minimum height of such overhead structure shall be 6250mm. Also, in case the turnout is beyond 40m but the level crossing gate is within 520m from the nearest face of bridge, the height of such overhead structure shall be 6250mm.

(d) The height mentioned against items 10(i), 10(ii) & 10(iii) shall be measured from the higher or superelevated rail.

(e) Extra vertical clearance under overhead structure and overhead equipment in electrified sections an allowance of 275mm to be made for raising of track to permit modern track structure to be introduced.

Note: On lines proposed to be electrified on 25KV A.C. system, necessary provision should be made in overhead structure and overhead equipment if necessary by using longer traction overhead equipment masts to permit possible raising of the track by 275mm in future to cater for increased ballast cushion, larger sleeper thickness and deeper rail sections.

11. (i) Minimum height above rail level of the lowest portion of any conductor crossing a railway, including guard wire, other telegraph, telephone and other such low tension wires or a traction trolley wire, under conditions of maximum sag shall be:

	Voltage	Clearance
(a)	Upto and including 11 KV	Normally by underground cable
(b)	Above 11 KV upto and including 66 KV	14.10m
(c)	Above 66 KV upto and including 132 KV	14.60m
(d)	Above 132 KV upto and including 220 KV	15.40m
(e)	Above 220 KV upto and including 400 KV	17.90m
(f)	Above 400 KV upto and including 500 KV	19.30m
(g)	Above 500 KV upto and including 800 KV	23.40m

(ii) Minimum clearance between any conductor not adequately insulated and any railway structure under most adverse conditions.

	Voltage	Clearance
(a)	Upto including 650 volts	2500mm
(b)	Above 650 volts upto and including 33 KV	3700mm
(c)	Above 33 KV upto and including 66 KV	4000mm
(d)	Above 66 KV upto and including 132 KV	4600mm
(e)	Above 132 KV upto and including 165 KV	4900mm
(f)	Above 165 KV upto and including 220 KV	5500mm
(g)	Above 220 KV upto and including 400 KV	7300mm
(h)	Above 400 KV upto and including 500 KV	8200mm
(i)	Above 500 KV upto and including 800 KV	10900mm

(iii)	Minimum height above rail level for telegraph, telephone and other such low tension wires crossing a railway	6100mm

(iv) The minimum horizontal distance measured at right angles from the centre of nearest track to structure carrying electrical conductors crossing a railway shall be equal to height of structure in metre above ground level plus 6m.

Interlocking and signal gear :—

12. Maximum height above rail level of any part of Interlocking or signal gear for a width of 1600 mm or 1830mm in the case of tunnels, through and semi-through girder bridges on either side of centre of track subject to the restriction embodied in the note (a) below. — 64mm

Note :—

(a) For a distance of 229mm outside and 140mm inside the gauge faces of the rail, no gear or track fittings must project above rail level except .such parts as are required to be actuated by the wheels or wing rails and point rails of special crossings leading to snag dead ends or elevated check rails of crossing or check rails/check flats of diamond crossings.

(b) Signal wires or supports for signal wires may be allowed at not less than 1600mm or 1830mm in the case of tunnels or through or semi-through girder bridges [see note at item 33 of Chapter IV (A)] on either side of the centre of track provided that they are not more than 203mm above rail level.

(c) Metal covers with ramps on both sides must be provided over all interlocking gear projecting above rail level betweeri the rails of a track to prevent hanging couplings from damaging the gear.

Tunnels, through and semi-through girder bridges :—

[(See diagram No. 1 A; 1 -A (Modified)]

13. (i) Minimum distance centre to centre of track

(a) For existing lines — 4495 mm

(b) For new works and alteration to existing works — 4725 mm

(ii) Minimum horizontal distance from centre of track to any structure shall be as follows :

	Height above rail level	Horizontal distance from centre of track
(a)	From 0.0mm to 305mm	1905mm
(b)	From 305mm to 1065mm	1905mm increasing to 2360mm
(c)	From 1065mm to 3355mm	2360mm
(d)	From 3355mm to 4420mm	2360mm increasing to 2135mm
(e)	From 4420mm to 5870mm	2135mm decreasing to 915mm

Note :

(i) Where electric traction is not likely to be used, over head bracing of bridges may be 5030mm above rail level for a distance of 1370mm on either side of the centre of track.

(ii) In case of existing structures, a special clearance study shall be made as indicated in Appendix -A to Chapter V-A before electric traction is introduced.

(iii) See Appendix for extra clearances required on curves.

(iv) Where D.C. traction is in use item 13(ii)(e) above may be allowed to remain as under:

From 4420mm to 541Omm — 2135mm decreasing to 915mm

Safety Refuges :—

14.	Maximum distance apart of refuges in tunnels	100m
15.	Maximum distance apart of trolley refuges :	
	(i) On bridges with main spans of less than 100m	100m
	(ii) On bridges with main spans of 100m or more	A refuge over each pier

Formation width :—

16.	Formation width for single line straight track	
	(a) Minimum width in embankment	6850mm
	(b) Minimum width in cutting (excluding side drains)	6250mm
17.	Formantion width for double line straight track	
	(a) Minimum width in embankment	12150mm
	(b) Minimum width in cutting (excluding side drains)	11550mm

Note :(a) The minimum formation width is based on :

(i) ballast section having 1:5:1 side slope

(ii) Cross slope on top of formation of 1 in 30

(iii) track centre in case of double line section is 5300mm

18. Formation width on curves :

(a) Increase due to extra ballast on outside of curves :

On curves, the actual width to be provided should take into account 150mm extra widening of ballast shoulder (500mm in place of 350mm) required on the outer side of curves. Thus, additions in the width on this account will be 150mm for single line and 300mm for double line.

(b) Increase on double line due to effect of super-elevation :

Due to requirement of extra clearances on double line on curves, increase in track centres with corresponding increase in formation width would be necessary to take into account the effect of superelevation.

Increase in formation width on curves will be decided after taking- into account the
increase mentioned in (a) & (b) above.

19. **Gauge on straight and curves** : The gauge shall be as follows :

(i)	Straight including curves of 400m, radius	up to 3mm tight i.e up to 1673mm
(ii)	Curves less than 400m radius	Upto 5mm slack i.e. upto 1681mm

CHAPTER II - STATION YARDS
(See Diagram No. 2)

Note :

(1) The expressions "in station" and "out of station" are to be interpreted in accordance with the definition of "station limits" given in Chapter I, Part I, of the General Rules for open lines, *viz* "station limits" means the portion of a railway which is under the control of a station master and is situated between the outermost signals of the station.

(2) For running EMU and other 3660mm Stock clearances prescribed in items 13 of Chapter I "Tunnels, through and semi-through, girder bridges" shall also be required for all structures governed by items 1 and 11 of this chapter and not only for tunnels and through and semi-through girder bridges. However a platform shelter may infringe item 13(ii) (e) of Chapter I and edge of the platform shelter may be kept at a minimum horizontal distance of 1600mm from centre line of track and at a minimum height of 461Omm above rail level.

Spacing of tracks:—

1. Minimum distance centre to centre of tracks.

(i)	For existing works	4265mm
(ii)	For new works or alterations to existing works	5300mm

Note :

(a) See Appendix for extra clearance required on curves. For spacing of 5300mm, extra clearance upto 5 degree has been accounted for. Extra clearance for curves more than 5 degree are to be calculated and accounted for.

(b) New/Additional works cover laying of a new line. Extension of existing line for replacement of points & crossings will not be treated as new work.

2 Maximum gradient in station yards unless special safety devices are adopted and/or special rules enforced to prevent accidents in accordance with approved special instructions.

(i)	For existing works	1 in 400
(ii)	For new works	1 in 1200

Note :

(a) It may not be possible to provide yard gradients of 1 in 1200 while executing works in connection with gauge conversion, doublings and new crossing station *etc.* Railways should, however, make effort to provide grades as flat as possible in the station yards but not steeper than 1 in 400. In case of gradient steeper than 1 in 400 are required to be provided in exceptional cases, condonation for the same should be obtained from Railway Board.

(b) For the purpose of the above rule, a station yard will be taken to extend :

(i) On single line to a distance of 50 metres beyond outermost points at either end of the station.

(ii) On double line where 2 aspect signalling is provided, from Home signal to a distance of 50 metres beyond outermost points at the trailing end, or where there are no loops, to last stop signal of each line.

(iii) On double line where multiple aspect signalling is provided to a distance of 50 metres beyond outermost points at either end of the station or where there are no loops, from Block Section Limit Board to last stop signal of each line.

(c) No siding should join a passenger line on a steeper grade than 1 in 260, except where it is unavoidable and then only with the previous sanction of the Railway Board obtained through the Commissioner of Railway Safety when a slip siding or other arrangement is made sufficient to prevent accidents.

(d) Except in Hump or Gravity yards or as provided for in item 22 of this Chapter, there must be no change of grades within 30 metres of any points or crossings.

(e) At stations with grades steeper than 1 in 400 beyond 50 metres of outermost points, trains should not be drawn up to the last stop signal and held up on the steep gradient in order to clear the reception line for giving permission to approach to the following train.

No shunting beyond outermost points on the steep gradient side should be allowed unless a locomotive is attached at the lower end of the load from the point of view of gradient.

(f) Item 2 does not apply to Flag or Halt stations.

Platforms:

3. (i) Horizontal distance from centre of track to face of passenger platform coping

Maximum	1680mm
Minimum	1670mm

Note : The coping of passenger platform must be so constructed that when necessary, to allow for introduction of wider stock, it can be easily and expeditiously set back to 1905mm. from centre of track (see diagram no. 2)

(ii) Horizontal distance from centre of track to face of goods platform coping

Maximum	1680mm
Minimum	1670mm

(iii) Horizontal distance from centre of track to face of any platform wall.

Maximum	1905mm
Minimum	1675mm

Note :

(a) New platform walls should be built to maximum dimensions and the coping corbelled out to 1675mm unless provision is made to allow for the introduction of wider rolling stock either by slewing the platform track out by 230mm or by moving the platform wall 230mm further from the track.

(b) See Appendix for extra clearance required on curves.

4.	Height above rail level for high passenger platforms	840mm maximum 760mm minimum
5.	Maximum height above rail level for low passenger platform	455mm
6.	Maximum height above rail level for goods platforms (except horse and end loading platforms)	1065mm

Note : For items 4,5 and 6

(a) Platforms may be flush with rail level.

(b) The ends of all platforms (except end loading platforms) must be ramped to a slope of 1 in 6 for a width of not less than 1 metre form the face of the platform wall, the rest can either be ramped to the same slope or fenced.

(c) The height of platforms serving superelevated track should be measured vertically from the face to a plane passing through the top of both the rails.

(d) End loading platforms and platforms on sidings used exclusively for horse loading may be raised to a height of 1295mm above rail level.

(e) Signal wires or supports for signal wires may be allowed underneath the platform coping.

(f) The length of a passenger platform should be not less than the length of the longest passenger train excluding the engine, booked to stop at the platform.

(g) No passenger platform in case of new line, would be constructed on a curve having radius less than 875 meters.

(h) In case of construction of a new platform on the existing line addition/alteration to existing platforms or in gauge conversion/doubling works, where either the new platform(s) are to be constructed or the old being dismantled and reconstructed, efforts should be made to ease out the existing curves havig radii less than 875 meters. However, for these works, having platform located/to be located on curves with radii less than 875 meters, no condonation of CRS/Board would be necessary.

Buildings and structures :

7. (a) Minimum horizontal distance of any building on a passenger platform from centre line of track :

(i)	From platform level to 305mm above platform level	5180mm Increasing uniformly to 5330mm
(ii)	From 305mm above platform level to 3430mm above rail level	5330mm
(iii)	From 3430mm above rail level to	
	(a) 4115mm above rail level in case of existing works	5330mm Decreasing uniformly to 3810mm
	(b) 4610mm above rail level in case if new works or alterations	5330mm to existing works decreasing uniformly to 3810mm

Note : For the return end of platform fencing this dimension may be reduced to 2740mm.

7.(b) Minimum horizontal distance of any building or longitudinal boundary fence from the face of the platform coping of passenger platform which is not on island platform (for new works or alterations to existing works)

(i) Minimum	5485mm
(ii) Recommended	10210mm

Note :

(a) Item 7(b)(ii) allows for setting back the platform to make room for an additional track in future, without infringing item 7(b)(i).

(b) Item 7(b) should also apply to buildings and isolated structures not readily removable, erected on ground over which it is anticipated that a platform may be extended in future.

8. Minimum horizontal distance from centre line of track to a pillar, column, lamp or similar isolated structure on a passenger platform or any building on a goods platform.

(i)	From platform level to 305mm above platform level	4570mm increasing unifomly to 4720mm
(ii)	From 305mm above platform level to 3705mm above rail level	4720mm
(iii)	From 3705mm above rail level to	
(a)	41 15mm above rail level in case of existing works	4720mm decreasing uniformly to 3810mm
(c)	4610mm above rail level in case of new works or alterations to existing works	4720mm decreasing uniformly 3810mm

8A. Minimum horizontal distance from centre line of track to a pillar, column, lamp or similar isolate structure on a goods platforms.

(i)	From platform level to 305mm above platform level	3960mm increasing uniformly to 4110mm
(ii)	From 305mm above platform level to 43 1 Omm above rail level	4110mm
(iii)	From 3980mm above rail level to	
(a)	41 15mm above rail level in case of existing works	4110mm decreasing uniformly to 3810mm
(b)	431Omm above rail level to 4610mm above rail level in case of new works or alterations to existing works	41 10mm decreasing uniformly to 3810

Note :

A pillar or column (vide items 8 & 8A) which covers more than 3716 sq. cm. in plan, must be classed as "building" and not as "isolated structure".

9. Minimum height above rail level for width of 1600mm on either side of the centre of track, of tie rods or any continuous covering in a passenger station — 6250mm

Note :

(1) On lines other than main lines where 25K.V A.C. electric traction is not likely to be used, the dimensions given above may be modified as under :

For a width of 1370mm on either side of centre of track — 6100mm

(2) On existing primary lines, not likely to be electrified, dimension as in Note 1 may be allowed to continue.

(3) Item 9 does not apply to overhead piping parallel to the track.

(4) A low roof that infringes-item 9 is permissible in the case of goods or transhipment shed on siding, provided it does not infringe the out line of the figures for the minimum fixed structure 01 of stations (See diagram IB).

(5) Extra vertical clearance of 275mm under overhead structures and overhead equipment in electrified section be provided to allow for any raising of track to permit modern track structure to b introduced.

Note : On lines proposed to be electrified on 25 KV A.C. system, necessary provision should be made in overline structures and overhead equipment if necessary by using longer traction overhead equipment masts to permit possible raising of the track by 275mm in future to cater for increased ballast cushion, larger sleeper thickness and deeper rail sections.

10. Minimum height above rail level for a width of 1 600mm on either side of centre of track, of a signal gantry or a foot over bridge in a passenger station — 6250mm

Note :

(a) Where D.C. traction is in use or likely to be used, this minimum height should be 5410mm.

(b) On secondary lines where electric traction is not likely to be introduced, this minimum height may be 4875mm. This also applies to overhead piping arrangements parallel to track wherever provided, which shall necessarily be changed over to the ground hydrants when the section is electrified.

11. Minimum, horizontal distance from centre of track to any structure :

(A) For existing works :

(i) From rail level to 305mm above rail level	1675mm
(ii) From 305mm above rail level to 3355mm above rail level	2135mm
(iii) From 3355mm above rail level to 4115mm above rail level	2135mm decreasing to 1980mm
(iv) From 4115mm to 6250mm above rail levelon main line	1600mm
(v) Below the rail level upto the formation level of the track on straight and curves upto radius of 875m.	2575mm
(vi) Below the rail level upto the formation level of the track on curves with radius less than 875 in.	2725mm

Note :

(a) See appendix for extra clearances required on curves

(b) On lines other than main lines or existing main lines where electric traction is not likely to be introduced, the horizontal distance of 1375mm from 4115mm to 6100mm above rail level may be allowed to continue.

(c) The clearance mentioned above in item (v) and (vi) will be applicable only in new yards/electrification works. The various fixtures which are attached to the track like lock bar, point machine, 'traction bonds, point and signal rodding *etc.* and are required to be fitted with the rail can be provided and the clearance as mentioned in item 11 (v) and 11 (vi) above will not be applicable to these items.

(B) In case of new works or alteration to existing works

(i) From rail level to 305mm above rail level	1905mm
(ii) From 305mm above rail level to 1065mm	1905mm increasing to 2360mm
(iii) From 1065mm above rail level to 3355mm	2360mm
(iv) From 3355mm above rail level to 4420mm	2360mm decreasing to 2135mm
(v) From 4420mm above rail level to 4610mm	2135mm decreasing to 1980mm
(vi) From 4610mm above rail level to 6250mm	1600mm

Note : See Appendix for extra clearances on curves

Points and crossings :

12. Maximum clearance of check rail opposite nose of crossing 48mm

Note :

(a) In case of turnouts laid with 1673mm gauge, the clearance shall be 45mm instead of 48mm

(b) In the obtuse crossing of diamond crossings, the clearances at the throat of the obtuse crossing shall be 41mm

13. Minimum clearance of check rail opposite nose of crossing 44mm

Note :

(a) In case of turnouts laid with 1673mm gauge, the clearance shall be 41mm instead of 44mm

(b) In the obtuse crossing of diamond crossings the clearance at the throat of the obtuse crossing shall be 41mm

14. Maximum clearance of wing rail at nose of crossing 48mm

Note : In case of turnouts laid with 1673mm gauge, the clearance shall be 41mm instead of 44mm.

15. Minimum clearance of wing rail at nose of crossing 44mm

Note : In case of turn outs laid with 1673mm gauge, the clearance shall be 41mm instead of 44mm.

16. Minimum clearance between toe of open switch and stock rail

(i) For existing works 95mm

(ii) For new works or alteration to existing works 115mm

Note :

The clearance can be increased upto 160mm in curved switches in order to obtain adequate clearance between gauge face of stock rail and back face of tongue rail.

17. Minimum radius of curvature for slip points, turnouts of crossover roads 218 metres (8 degree)

Note : In special cases mentioned below this may be reduced to not less than the minimum of

(i) 213m radius in case of 1 in 8.5 BG turnouts with 6.4m over riding switch, and

(ii) 175m radius in case of 1 in 8.5 scissors crossing to allow for sufficient straight over the diamond crossing between crossovers.

18. Minimum angles of crossing (ordinary) 1 in 16

Note :

Crossings as flat as 1 in 20 will usually be sanctioned if recommended by the Commissioner of Railway Safety.

19. Diamond crossings not to be flatter than 1 in 8.5

Note :

Diamond Crossings as flat as 1 in 10 will usually be sanctioned if recommended by the Commissioner of Railway Safety.

20. Minimum length of tongue rail 3660mm

21. Minimum length of train protection, point locking or fouling treadle bar 12800mm

Note :

There must be no change of superelevation (of outer over inner rail) between points 18m out side toe of switch rail and nose of crossing respectively, except in the case of special crossings leading to snag dead-ends or under circumstances as provided for in item-22.

22. Superelevation and speed in stations on curves with turnouts of contrary and similar flexure :

Main line : Subject to the permissible run through speed, based on the standard of. interlocking, the equilibirium superelevation, calculated for the speed of the fastest train, may be reduced by a maximum amount of 75mm without reducing the speed on the mainline.

Turnouts:

(i) Curves of contrary flexure :—

The equilibrium superelevation in millimeters should be calculated by the formula

$$C = \frac{11860}{R}$$

Where R = Radius of turnout in metres

The permissible negative superelevation on the turnout (which is also the actual superelevation of the main line) may then be made as (75-C)mm.

(ii) Curves of similar flexure :—

The question of reduction or otherwise of superelevation on the mainline must necessarily be determined by the administration concerned. In the case of a reverse curve close behind the crossing of the turnouts, the superelevation may be run out at the maximum of 1 mm in 360mm.

Length of sidings :

23. Minimum clear available length of one siding at any station where it is intended to cross trains :

(i) At a non-watering station-7 percent longer than the longest train permitted to run on the section

(ii) At a watering station such that when the train engine is standing (and taking water), at the water column the rear of the longest train permitted to run on the section shall be at least 15 metres clear of the fouling mark in rear and such that when a second assisting engine is standing (and taking water) at a water column the leading engine is clear of the fouling mark in front.

(iii) Although it may not be necessary till traffic develops to provide sidings for the largest possible train loads, land should be acquired for them and no building, level crossings or other obstructions should be permitted that will interfere with one crossing siding being lengthened to the following dimensions:

On sections of the railway where the ruling gradients is	Minimum clear available length of one siding
1 in 500 or flatter	770metres
Between 1 in 500 and 1 in 300	610metres
Between 1 in 300 and 1 in 100	550metres
Between 1 in 100 and 1 in 50	490metres
Steeper than 1 in 50	370metres

CHAPTER III - Workshops and Station Machinery

Water tanks and water cranes :

1. (a) Minimum height above rail level for discharge orifice of water crane — 3660mm

(b) Distance from centre of track to face of tank house less than 60 metres beyond the end of a passenger platform.

(i) Minimum — 7165mm

(ii) Recommended — 11890mm

Note :

(a) Item 1(b) need not be observed in the case of small subsidiary or relay tanks which can easily be removed back to provide room for an extension of the yard.

(b) Item 1(b)(i) allows for the extension of the platform and item 1(b)(ii) allows for the laying of an additional track and extending of the platform in future.

(c) Minimum height for bottom of tank above rail level at water column :

(i) For watering engines — 7620mm

(ii) For washing engines — 12190mm

(d) Minimum total tank capacity at any station — 56.5 cu metres or 56825 liters

(e) Minimum internal diameter for piping from tank to water crane — 203mm

Workshops and running sheds :

2. Minimum distance from centre to centre of tracks

(i) For existing works — 4570mm

(ii) For new works or alterations to existing works

(a) In workshops — 4570mm

(b) In running sheds — 5260mm

Note :

Where there is a structure between tracks, the distance of centre to centre of tracks is to be increased by the amount of the width of the structure like O.H.E. post *etc.*

3. Minimum clear distance from centre of track to any isolated structure such as a pillar in :

(i) Workshops

(a) For existing works — 2285mm

(b) For new works or alterations to existing works — 2360mm

(ii) Running sheds 2515mm

4. Minimum clear distance, for a height of 1830mm above rail level, from centre of track to any continuous structure in

(i) Workshops 2745mm

(ii) Running sheds 3275mm

Note : For standard 'C' Railways, minimum horizontal distance for a height of 1830mm above rail level on either side of centre of track to any continuous structure in running sheds shall be 2745mm.

5. Minimum height above rail level to overhead tie bars, girders etc. in workshops and running sheds:

(i) Where electric traction is not likely to be used 5030mm

(ii) Where electric traction is likely to be used 6250mm

6. Minimum height above rail level of doorways for a width of 1370mm on either side of centre of track in both workshops and running sheds :

(i) Where electric traction is not likely to be used 4875mm

(ii) Where electric traction is likely to be used 6250mm

Ashpits etc. :

7. Average depth for ashpits in station yards, pits in running sheds and carriage examination pits. 760mm

Note : Siting of Ashpits on run through lines should, if possible, be avoided

CHAPTER IV (A) - Rolling Stock (Carriage & Wagon)

Wheels & Axles

1.	Wheel gauge, or distance apart, for all wheel flanges	Maximum 1602mm Minimum 1599mm
2. (i)	Maximum diameter on the tread of new carriage or wagon wheel, measured at 63.5mm from wheel gauge face	1092mm
(ii)	Minimum diameter on the tread of new carriage of wagon wheel, measured at 63.5mm from wheel gauge face	914mm
3.	Minimum projection for flange of new tyre, measured from tread at 63.5mm from wheel gauge face	28.5mm
4.	Minimum projection for flange of worn tyre, measured from tread at 63.5mm from wheel gauge face	35.0mm
5.	Maximum thickness of flange of tyre, measured from wheel gauge face at 13mm from outer edge of flange	28.5mm
6.	Minimum thickness of flange of tyre, measured from wheel gauge face at 13mm from outer edge of flange	16mm
7.	Minimum width of tyre	127mm
8.	Incline of tread	1 in 20

Height of Floors

9.	Maximum height above rail level for floor of any unloaded vehicle	1345mm
10.	Minimum height above rail level for floor of fully loaded passenger vehicle	1200mm
11.	Minimum height above rail level for floor of fully loaded goods Vehicle	1145mm

Note : This does not apply to crocodile wagons.

Buffers & Couplings

12.	Distance apart for Centres of buffers	1955mm
13.	Maximum height above rail level for centres of buffers for unloaded vehicles 1105mm	1105mm
14.	Minimum height above rail level for centres of buffers for fully	1030mm

loaded vehicles

Wheel Base & Length of Vehicles

15. Maximum rigid wheel base for four wheeled vehicles 6100mm

16. Minimum distance apart of bogie centres for bogie vehicles 5400mm

17. Maximum distance apart of bogie centres for bogie vehicles 15241mm

18. (i) Minimum rigid wheel base for bogie truck of any vehicle 1830mm

(ii) Minimum rigid wheel base for bogie truck of passenger vehicle 2440mm

19. Maximum length of body or roof for:

(a) 4-wheeled vehicle 8540mm

(b) Bogie vehicles 21340mm

Note :

(i) A cornice may project beyond the maximum permissible length of the roof up to 51 mm in the case of (a) above, beyond each end of the vehicle.

(ii) Fittings on the end of a vehicle, such as step iron, vacuum brake piping, electrical connection vestibule *etc.*, need not be kept within the prescribed maximum permissible lengths for bodies of vehicles, but may project beyond the end of the body to a reasonable extent.

(iii) Maximum length of bogie wagons can be upto 23550mm subject to tapering of the ends in a manner that the end throw when calculated as per Appendix is same as that for a coach of 21340mm length and within this Schedule of Dimensions.

20. Maximum length over side buffers :

(a) 4-wheeled vehicle 9810mm

(b) Bogie vehicles 22300mm

Note: The maximum length over the side buffers for longer coaches as per item 20 above shall be so arranged that the difference between the length over side buffers and the length of body or roof is not less than 460mm.

21. Maximum distance apart between any two adjacent axles 12345mm

Maximum Moving Dimensions (See diagram ID)

22. Maximum width over all projections at 102mm above rail level, 2440mm

when fully loaded

23.	Maximum width over all projections, at 305mm above rail level, when fully loaded.	3135mm
24.	Maximum width over all projections from 305mm above rail level, to 1082mm above rail level, when fully loaded	3135mm
25.	Maximum width over all projection from 1082mm above rail level, to 1170mm above rail level, when fully loaded	3135mm increasing gradually to 3250mm
26.	Maximum width over all projections from 1082mm above rail level, when fully loaded to a height of 3380mm when empty	3250mm

(i) Guttering, side lamps and destination boards may project 76mm on each side beyond the dimensions given above from a height of 2895mm to 3355mm above rail level, upto a maximum over all width of 3402mm.

(ii) Coach number plates may project 25mm on each side beyond the dimension given above from a height of 2590mm to 2895mm above rail level, upto a maximum over all width of 3300mm.

(iii) Reservation card holders may project 25mm on each side beyond the dimensions given above from a height of 1750mm to 1980mm above rail level upto a maximum over all width of 3300mm.

(iv) The doors are to be either sliding or opening inwards. Handbolts, door locks, handles and window bars shall not, however, project beyond the dimensions given against item above.

27.	Maximum width over open doors, including all projections for passenger vehicles.	4040mm
28.	Maximum width over open doors, including all projections for goods vehicles.	4265mm

Note : Doors of horse boxes, brake vans, luggage vans and rising and falling flap doors of goods wagons are exempted from this rule.

29.	Maximum height above rail level for a width of 760mm on either side of the centre of unloaded vehicles.	4265mm
30.	Maximum height above rail level at side of unloaded vehicles.	3735mm

Note :

(i) Destination boards for passenger vehicles may project 76mm above the dimensions upto maximum height above rail level at sides of vehicles when empty.

(ii) (Applicable for clauses 26, 27 & 30)

In case of stocks exceeding the 1929 profile and within the maximum moving dimensions shown in diagram 1 D, clearance of the following Railway is required to be obtained for the following locations before permitting the stock for the general adoption :

S.No.	Railway	Section	Location
1	2	3	4
1.	E. Railway	(i) Andal-Sainthia Chord (ii) Sahibganj Loop	Br. No. 66 ROB No. 53
2.	N.F. Railway	Old Malda – Singhabad	Tangon Br.
3.	S.E. Railway	Tata – Rourkela	Up Saranda Tunnel
4.	S.E.C.R.	Bilaspur – Kami	Dn Bhortonk Tunnel

31. Minimum height above rail level when fully loaded for a width of 1220mm on either side of centre of track with the exception of wheels and attachments there to (vide note below)	102mm

Note : A tyre or an attachment of a wheel may project below the minimum height of 102mm from a distance of 51mm inside to 216mm outside of the gauge face of the wheel.

32.	Minimum height above rail level, when fully loaded at 1 567.5mm from centre of track	305mm

Loading Gauge for Goods

33.	Maximum width	3250mm
34.	Maximum height above rail level at centre	4265mm
35.	Maximum height above rail level at sides	3735mm

Note : The loading gauge is for testing loaded and empty vehicles; the maximum moving dimensions are given in items 26, 27, 29 and 30 above.

CHAPTER IV (B)

Rolling Stock, 3660mm wide stock

Note :

These dimensions shall not be adopted in designs for rolling stock without the special sanction of the Railway Board in each case.

Maximum Future Moving Dimensions :
(See diagram No. 1A)

1.	Maximum width over all projections:	
	(i) At 102mm above rail level, when fully loaded	2895mm
	(ii) At 305mm above rail level, when fully loaded	3505mm
	(iii) From 305mm above rail level to 1145mm above rail level when fully loaded	3505mm
	(iv) From 1145mm above rail level, when fully loaded to a height of 3355mm when empty	3660mm
	(v) At 4265mm above rail level, when empty	3505mm
2.	Maximum width over open doors, including all projections, for passenger vehicles	4495mm
3.	Maximum width over open doors, including all projections, for goods vehicles	4725mm

Note : Doors of horse boxes, brake vans, luggage vans and rising and falling flap doors of goods wagons are exempted from this rule.

4.	Maximum height above rail level for a width of 915mm on either side of the centre of unloaded vehicles.	4725mm
5.	Maximum height above rail level at sides of unloaded vehicles	4265mm
6.	Minimum height above rail level, when fully loaded for a width of 1450mm on either side of centre of track, with the exception of wheels and attachments thereto (vide note below)	102mm

Note : A tyre or an attachment to a wheel may project below the minimum height of 102mm from a distance of 51mm inside to 216mm outside of the gauge face of the wheel.

7.	Minimum height above rail level, when fully loaded at 1755mm from centre of track	305mm

Loading gauge for goods :

8.	(i) Maximum width at a height of 3380mm above rail level	3710mm
	(ii) Maximum width at a height of 4295mm above rail level	3555mm
9.	Maximum height above rail level for a width of 915mm on either side of the centre of track	4750mm
10.	Maximum height above rail level at sides	4295mm

Note: The loading gauge is for testing loaded and empty vehicles, the maximum moving dimensions are given in items 1 (iv), 4 and 5 above.

CHAPTER IV(C) Rolling Stock (Locomotive)

Wheels and axles :

1. Wheel gauge or distance apart for wheel flanges :

(a) Wheels with thick flanges/wear adopted wheel profile	1596mm
(b) Wheels with standard flanges	1600mm
(c) Wheels with thin flanges	1600mm
(d) Wheels without flanges	1600mm

(See item 5 for identification of thick/wear adopted, standard & thin flanges)

2. (i) Maximum diameter on the tread of new locomotive carrying wheels measured at 63.5mm from wheel gauge face. — 1092mm

   (ii) Minimum diameter on the tread of new locomotive carrying wheels measured at 63.5mm from wheel gauge face. — 914mm

3. Minimum projection for flange of new tyre measured from tread at 63.5mm from wheel gauge face. — 28.5mm

4. Maximum projection for flange of worn tyre measured from tread at 63.5mm from wheel gauge face. — 35mm

5. Maximum & minimum thicknesses of tyre flanges measured at 13mm from outer edge of flange :

	Max.	Min.
(a) Thick flanges/wear adopted wheel profile	32mm	–
(b) Standard flanges	28mm	–
(c) Thin flanges	18mm	–

Note :

(i) The above values of flange thicknesses are measured from the back face of the tyre.

(ii) Minimum size of flange of locomotive tyres shall be determined by condemning profile gauge which specifies the minimum thickness and the limits of angularity of the flange on the gauge face.

6. Minimum width of tyres:

(a) Locomotive coupled wheels	133mm
(b) Locomotive wheels other than coupled	127mm

7. Incline of tread — 1 in 20 for all profiles except wear adopted profile for which the tread inclination of 1 in 20 will merge with radii of the wear adopted profile

Buffers & Couplings :

8.	Distance apart for centres of buffers	1955mm
9.	Maximum height above rail level for centres of buffers for empty locomotive	1105mm
10.	Minimum height above rail level for centres of buffers when fully loaded	1030mm

Maximum Moving Dimensions :
(See diagrams 1 D-the new diagrams introduced by RDSO)

11.	Maximum width over all Projections:	
	(i) At 102mm (min) above rail level, when fully loaded	2440mm
	(ii) From 305mm (min.) above rail level to 1082mm above rail level, when fully loaded	3135mm
	(iii) From 1082mm above rail level to 1170mm above rail level, when fully loaded	3135mm creasing gradually to 3250mm
	(iv) From 1170mm above rail level, when fully loaded, to a height of 3735mm when empty	3250mm
12.	Maximum height above rail level for a width of 760mm on either side of centre of empty locomotives	4265mm
13.	Maximum height above rail level at sides of empty locomotives	3735mm

Maximum Moving Dimensions for X-CIass locomotives

14.	Maximum width over all projections:	
	(i) At 102mm above rail level, when fully loaded	2440mm
	(ii) From 305mm above rail level to 1110mm above rail level, when fully loaded	3135mm in creasing gradually to 3200mm
	(iv) From 1145mm above rail level when fully loaded to a height of 3735mm above rail level, when empty	3200mm
15.	Maximum height above rail level for a width of 305mm on either side of centre of empty locomotives	4470mm
16.	Maximum height above rail level at sides of empty locomotives	3735mm
17.	Minimum height above rail level when fully loaded for a width of 1220mm on either side of centre of track with the exception of wheels and attachments thereto (vide note below)	102mm

Note : A tyre or an attachment to a wheel or sand pipes in line with the wheel may project below the minimum height of 102mm from a distance of 51mm insides to 216mm outside of the gauge face of the wheel.

18.	Minimum height above rail level when fully loaded at 1525mm from centre of track	305mm

CHAPTER V - ELECTRIC TRACTION (Direct Current)

Note: Wherever electric traction, employing overhead conductor wires, is in use strict orders must be issued prohibiting any one from getting on the roofs of vehicles until the current in the overhead conductors has been switched off and the conductors themselves have been earthed.

1. Minimum height from rail level to the underside of live conductor wire:

(i) Under bridges and tunnels	5030mm
(ii) In the open	5335 mm
(iii) In running and carriage sheds	5790 mm
(iv) At level crossing	5485 mm

Note : The height prescribed in item 1 (iv) applies also to tramway trolley wires crossing the railway.

2. Maximum height from rail level to the underside of live contact wire except in running and carriage sheds — 5790mm

Note: In the case of running and carriage sheds, the maximum height of the contact wire will be determined in each case based on the operating range of the pantograph and the permissible electrical clearances required inside the sheds.

3. Maximum variation of live conductor wire on either side of the central line of track:

(i) On straight track	230mm
(ii) On curves (on the inside of the curve)	380mm

4. Minimum distance between live conductor wire and any structure — 130mm

5. Maximum width of pantograph collector — 2030mm

CHAPTER V-A Electric Traction

25 KV A.C. 50 Cycles

Note : Wherever electric traction is in use, special precaution shall be taken in accordance with provisions made in Chapter XIX, General Rules for all Open lines of Railways.

Electrical clearances :

1. Minimum vertical distance between any live bare conductor (overhead equipment or pantograph) and any earrthed structure or other bodies (rolling stock, over bridges, signal gantries *etc.).*

(i)	When the conductor is at rest	320mm
(ii)	When the conductor is not at rest	270mm

Note :

(i) A minimum vertical distance of 340mm shall normally be provided between rolling stock other than steam locomotives and contact wire to allow for a 20mm temporary raising of the tracks during maintenance. Wherever the allowance required for track maintenance exceed 20mm the vertical distance between rolling stock and contact wire shall correspondingly be increased. For steam locomotives, the figure of 340mm shall be increased to 380mm.

(ii) Where adoption of above clearances is either not feasible or involves abnormally high cost, reduced clearances as follows may be adopted with prior approval of the Chief Electrical Engineer of the Railway concerned and provision of permanent bench mark to indicate the level of the track to be maintained.

When the conductor is at rest	250mm
When the conductor is not at rest	200mm

If however, the overline structures are required to be rebuilt, normal clearances should be adopted.

2. Minimum lateral distance between any live bare conductor (overhead equipment or pantograph) am any earthed structure or other bodies (rolling stocks, over bridges, signal gantries *etc.)*

(i)	When the conductor is at rest	320mm
(ii)	When the conductor is not at rest	220mm

Note : When adoption of the above clearances is either not feasible or involves abnormally high cost, reduced clearances as follows may be adopted with prior approval of the Chief Electrical Engineer of the Railway concerned.

(i)	When the conductor is at rest	250mm
(ii)	When the conductor is not at rest	200mm

3. Height of contact wire :

Minimum height from rail level to the underside of live conductor:

(i) Under bridges and in tunnels 4.80m

Note : Para 4(a) Appendix A to Chapter V-A explains the basis of this dimension.

(ii) In the open 5.50m

(iii)At level crossings 5.50m

(iv) In running and carriage sheds 5.80m

Note :

(a) (i) In cases where it is proposed to allow only locomotives or stocks not higher than ,4.27m, the minimum height of contact wire specified under item 3(i) may be reduced to 4.65m. A board showing this restriction and specifying locomotives or stocks not permitted to ply normally on such sections should be exhibited at the entrance to the same.

(ii) In case reduced clearances as indicated in Note(ii) under item 1 are adopted, the minimum height of contact wire as provided in Note (a)(i) above upto 4.65m may be further reduced to 4.58m. The board as adopted in note (a)(i) should also indicate clearly the special reduced clearances having been adopted at the location.

(b) For movement of over dimensional consignments the height specified under 3(i) above, shall be increased by the difference between the height of the consignment contemplated and 4.41 m. In case such an over dimensional consignment is moved at speeds not exceeding 15 Km/h and is also specially escorted by authorized railway staff, the desired height of contact wire may be reduced by 50mm.

(c) On curves, all vertical distance specified in item 3 above, shall be measured above the level of the inner rail, increased by half the superelevation.

4. Maximum variation of the live conductor wire on either side of the centre line of track under static conditions.

(i) On straight track 200mm
(ii) On curves 300mm

Note: These limits would not apply to special locations like insulated overlaps and out of run wires.

5. Maximum width of pantograph collector 1800mm

Note : A tolerance of plus 10mm on maximum width specified is permissible to accommodate variation in manufacture and mounting with respect to the centre line of vehicle.

SCHEDULE – II

Existing infringements of Schedule I which may be permitted to continue on existing 1676mm gauge Railways :

The following infringements of the dimensions prescribed in Schedule I may, subject to such restrictions of speed as are considered necessary, be permitted on existing railways *(See* diagram No. 3) it being understood that when structures are altered they will be rebuilt to comply with Schedule I, except in case of structures falling under item 7.

Dimensions marked (a) refer to the requirements for 3250mm wide stick [Chapter IV(A) of Schedule I],
and those marked (b) refer to the requirements for 3660mm wide and 4725mm high stock (Chapter IV(B) of Schedule I)

1.	(a)	Maximum distance centre to centre of tracks	3660mm
	(b)	Minimum distance centre to centre of tracks	4040mm
2.	(a)	Minimum clear horizontal distance from centre of track to any fixed structure from rail level to 1 065mm above rail level.	1675mm
	(b)	Minimum clear horizontal distance from centre of track to any fixed structure from rail level to 1065mm above rail level	1905mm
3.	(a)	Minimum clear horizontal distance from centre of track to any fixed structure from 1065mm above rail level to 3505mm above rail level.	1980mm
	(b)	Minimum clear horizontal distance from centre of track to any fixed structure from 1 065mm above rail level to 3355mm above rail level.	21 35mm
4.	(a)	Minimum clear horizontal distance from centre of track at 4265mm above rail level.	2055mm
5.	(a)	Minimum clear height above rail level for a distance of 305mm on either side of centre of track.	4420mm
	(b)	Minimum clear height above rail level for a distance of 915mm on either side of centre of track.	5030mm

Note :

(i) Items 2(a), 3(a), 3(b) and 4(a) refer to structures outside station yards only.

(ii) Where speed is restricted to 16 km/h, the minimum clear horizontal distance under 4(a) may be reduced to 1980mm.

(iii) Where, as on girder bridges, ashpits, *etc.,* the structure is not likely to be out of plumb and the superelevation (or level of rails) does not vary and where the speed is restricted to 16km/h, the above dimensions may be reduced to :

3580mm for l(a), 3960mm for l(b),
1 905mm for 3(a), 2055mm for 3(b), 1980mm for 4(a),
4265mm for 5(a), 4875mm for 5(b)

(iv) To the horizontal distance given in 1 to 5 must be added the extra allowance for curves (See Appendix). Where existing structures do not permit of these allowances being given, they may be reduced by limiting the superelevation to be allowed for outer over inner rail. When this is done a notice board should be erected against the structure, stating the maximum permissible superelevation.

6. The minimum permissible clearances in existing tunnels and girder bridges shall be:

(i) Under any circumstances and subject to any restriction of speed which it may be considered necessary to impose:

		In tunnels (See Diagram No.3)	On grider bridges
At	'A'	229mm	229mm at top of sides of vehicles
	'B'	305mm	229mm at side of vehicles
	'C'	380mm	305mm between moving trains
	'D'	229mm	152mm above vehicles

(ii) For unrestricted speeds:

		In tunnels	On Girder Bridges
At	'A'	380mm	229mm at top of the sides of vehicles
	'B'	535mm	455mm at sides of vehicles
	'C'	610mm	535mm between moving trains
	'D'	305mm	229mm above vehicles

Where doors opening inwards or of the recessed or sliding type are provided the minimum clearances in tunnels and bridges may be reduced to 380mm, at 'B' and 455mm at 'C' for unrestricted speed. To the above must be added the extra allowance for curves (See Appendix).

7. Structures which have already been built in accordance with items 10 and 13 of Chapter I, tems 9, 10 and 11 of Chapter II and items 5 and 6 of Chapter III of Schedule I as contained in the 1958 reprint, reproduced in note below, may infringe the dimensions now shown against these items. Such infringements may continue and alterations for the removal of such infringements need be taken up only when 25 KV A.C. Electric Traction is undertaken when a study shall be made of each structure to limit the extent of alterations as indicated in Appendix A to Chapter V-A.

Note : The items referred to above are reproduced below :

Item 10 Chapter 1, Schedule I

(i)	Minimum height above rail level for a distance of 915mm on either side of the centre of track for overhead structure	4875mm
(ii)	Where electric traction is in use or likely to be used, this dimension shall be	5410mm

Note : See Appendix for extra clearance required on curves

Item 13, Chapter I Schedule I

(i) Minimum distance centre to centre of tracks 725mm

Note : When respacing existing lines, the minimum distance centre to centre of tracks may be reduced, from 4725mm to not less than 4495mm for the purpose of avoiding heavy alterations to tunnels or through or semi through girder bridges. The 4725mm dimension is to be adopted for all new works.

(iii) Minimum horizontal distance from centre of track to any structure shall be as follows:

	Hight above rail level	Horizontal distance from centre of track
	(a) From 0 to 305mm	1905mm
	(b) From 305mm to 1065mm	1905mm increasing to 2360mm
	(c) From 1065mm to 3355mm	2360mm
	(d) From 3355mm to 4420mm	2360mm decreasing to 2135mm
	(e) From 4420mm to 5410mm	213 5mm decreasing to,915mm

Note :

(a) Where electric traction is not likely to be used overhead bracing of bridges may be 5030mm above rail level for a distance of 1370mm on either side of centre of track.

(b) See Appendix for extra clearance required on curves.

Item 9, Chapter II, Schedule. I

Minimum height above rail level for a width of 1370mm on either side of the centre of track, of tie rods or any continuous covering in a passenger station. 6100mm

Note : Item 9 does not apply to overhead piping parallel to the track.

Item 10, Chapter II, Schedule I

Minimum height above rail level for width of 1370mm on either side of the centre of track of a signal gantry or a foot over bridge in passenger station. 6100mm

Note :

(a) This also applies to overhead piping arrangements parallel to track wherever provided which shall necessarily be changed over to the ground hydrants when the section is electrified.

(b) Where electric traction is likely to be introduced this minimum height should be 541Omm.

Item 11, Chapter II, Schedule I

Minimum horizontal distance from centre of track to any structure

(i) From rail level to 305mm above rail level 1675mm

(ii) From 305mm above rail level to 3355mm above rail level 2135mm

(iii) From 3355mm above rail level to 4115mm above rail level 2135mm decreasing to 1980mm

(iv) From 4115mm above rail level to 6100mm above rail level 1370mm

Note : See Appendix for clearance required on curves.

Item 5, Chapter III, Schedule I

Minimum height above rail level to overhead tie bars, girders *etc* in workshops and running sheds

(i) Where electric traction is not likely to be used 5030mm

(ii) Where electric traction is likely to be used 6176mm

Item 6, Chapter III, Schedule I

Minimum height above rail level of doorways for a width of 1370mm on either side of centre of track, in both workshops and running sheds.

(i) Where electric traction is not likely to be used 4875mm

(ii) Where electric traction is likely to be used 6176mm

A.C. Traction 25 **KV 50 cycles**

8. General: Out of station

Minimum height above rail level for a distance of 1600mm on either side of the centre of track for overhead structures 541 Omm

Note: See Appendix for extra clearance required on curves.

9. General : For tunnels & through girder bridges.

Minimum horizontal distance from centre of track to any structure from 4420mm to 541Omm above rail level 2135mm decreasing to 915mm

Note: See Appendix for extra clearance required on curves.

10. Station Yards:

Minimum height above rail level for a distance of 1600mm on either side of the centre of track, of a signal gantry or a foot over bridge in a passenger station 541Omm

Note: See Appendix for extra clearance required on curves.

11. Minimum horizontal distance from centre of track to any structure from 4115mm to 6100mm above rail level 1370mm

Note: See Appendix for extra clearance required on curves.

APPENDIX

Note :

(a) Column 5 applies to goods platforms 1065mm above rail level which are not on a running line. For such platforms on running lines 25mm should be added to the figures given in column 5.

(b) For intermediate heights between 4420mm and 5410mm add 1mm for every 12mrn of height to the figures given in column 6.

(c) Where electric traction is likely to be used, add 1mm for every 12mm of height above 5410mm to the figures given in the column 7 upto the height at which the conductor wires are likely to be fixed.

(d) Where there is a structure between tracks, the extra clearance to be provided must be according to column 5,6,7 and 8 instead of column 9.

(e) Appendix showing extra clearance on curves has been revised. In the revised table, the maximum permissible speed and corresponding superelevation are indicated and the required clearances based on these superelevations have been given.

Note on Extra Clearance on Curves :

1. It has been contended that the extra clearance prescribed for curves both in the 1913 and in the 1922 Schedule of Dimensions was too liberal in the case of platforms, and caused a gap between the platform and foot board at certain parts of a bogie carriage, which was dangerous to passengers. In the 1922 schedule, the allowance for lurching and sway of the carriage was treated as entirely additional to that already provided for such motion in the clearance given for straight platforms whereas only additional sway due to the curved track in excess of the maximum occurring on straight track need be provided for. The amount of superelevation allowed for was also excessive on the sharper curves.

2. The clearance provided between a vehicle *(i.e.* the foot boards) and the platform coping on the straight is 152mm. It is consider that to reduce the average distance between a curved platform and the foot boards the minimum clearance between a platform on the out side of a curve and the ends of a vehicle may safely be reduced to 127mm. The maximum movement due to lurching at the centre of a vehicle cannot be greater than seven tenth of that at the ends, so that the minimum clearance between the centre of a vehicle and a platform on the inside of a curve may be safely reduced to 102mm. Therefore, in calculating the extra allowance to be provided on curves as explained in paragraph 5,6,7 and 8, a reduction of these extra allowance has been made of 51mm on the inside and 25mm on the outside of curve as shown in paragraph 7.

3. Allowance to be made : The additional clearance to be given on the inside of a curve must include the effect of curvature, the lean due to superelevation, and an allowance for any additional sway of the vehicles over that already provided for in the clearance on straight tracks. The additional clearance to be given on the outside of a curve must allow for the effect of curvature. Additional sway or lurch due to curve can be considered as fully counteracted by the inward lean of the vehicle due to superelevation.

4. Allowance for curvature : The allowance for curvature for a vehicle 21340mm long, 14785mm between bogie centre shall be calculated as under:

At the centre of vehicle

$$V = \frac{14.785x14.785x1000}{8R} = \frac{27330}{mm} \text{ mm}$$

At the end of vehicle

$$Vo = \frac{21.340x21.340x1000}{8R} \quad --- \quad \frac{27330}{R} = \frac{29600}{R} \text{ mm}$$

Where R is the radius of the curve in metres.

5. Allowance for superelevation : The lean due to superelevation at any point at height 'h' above rail level is given by:

$L = \frac{h}{g} \times S$ where S is the superelevation g is the gauge of the track.

6. Allowance for additional sway on curves : The provision for additional lurch and sway on the inside of a curve as given in the 1913 and 1922 schedules has been adopted, namely one-fourth of the lean due to superelevation. No provision has been made for additional sway due to a curve in the outward direction for reasons already given in paragraph 3 above.

7. Platforms :—For platforms the total additional clearance to be provided is:

On the inside of a curve

(i) $V + \frac{5}{4} L - 51mm$

Where L is the lean in millimetres

On the outside of a curve

(ii) Vo — 25mm.

(See paragraph 2 above)

Column 5 of the Appendix has been calculated for a high passenger platform 840mm according to Formula(i).

8. Clearance from adjacent structure on the inside of a curve : For obtaining the figures given in column 6 & 7, Formula (i) of paragraph 7 above has been used.

9. Clearance from adjacent structures on the outside of a curve : For column 8, Formula (ii) of paragraph 7 above has been used.

10. Extra clearance between adjacent tracks : The worst case will be when the end of a bogie carriage on the inner track is opposite the centre of a similar carriage on the outer track. Nothing is allowed for superelevation, it being assumed that both tracks will be inclined the same amount. Though there are cases where a different superelevation is provided on each track, the distance allowed between centres of tracks gives a sufficient margin of safety to permit of this being omitted from consideration. The formula used for column 9 is

$$V + Vo + \frac{2L}{4}$$

and as the height adopted for the value of h in calculating L, is 3355mm, the above therefore reduces to

$$V + Vo + S$$

11. Railway Board vide letter No. 68/WDO/SC/1 dt. 16-4-1968 have issued instructions for increase of speed over curves for contemplating 160/200 kmph speed on Broad Gauge. As stated thereir while locating any permanent structures by the side of the track in the case of trunk routes an main lines which have the potential for the increase of speed in future, the need for additional clearances for realignment of curves for higher speed operation should be kept in view. The particulars of the extra clearances necessary on curves between structures and the adjacent track and between tracks when there are no structrues are given in additional appendix for extra clearances on curves for maximum speed of 200 kmph. The same should be followed when high speeds of the order of 160/200 kmph are contemplated.

Extra clearances for the speeds specified above are shown in Annexure-l & II.

ANNEXURE-I

ADDITIONAL APPENDIX – EXTRA CLEARANCES

EXTRA CLEARANCES ON CURVES FOR HIGH SPEED ROUTES (160 KMPH)

Degree of curvature	Radius of curve	Maximum permissible speed	Super-elevation	Extra Clearance between structure and adjacent track				Extra clearance between adjacent track when there is no structrure between track
				Inside of curve			Out side of curve any ht	
				Upto 840mm above rail level	From 840 mm to 4420mm above rail level	At 5410 mm above rail level		
Degree	Metre	Kmph	mm	mm	mm	mm	mm	mm
1	1750	158	95	25	280	350	–	130
1.5	1167	145	142	60	440	545	–	190
2	875	130	164	85	520	640	10	230
3	583	106	165	100	540	665	25	265
4	438	92	165	115	555	680	45	295
5	350	83	165	130	570	695	60	300
6	292	75	165	145	590	710	75	360
7	250	70	165	165	605	725	95	395
8	219	65	165	180	620	740	110	425
9	194	62	165	195	635	755	130	460
10	175	58	165	210	650	770	145	490

ANNEXURE-II

ADDITIONAL APPENDIX – EXTRA CLEARANCES

EXTRA LEARANCES ON CURVES FOR MAXIMUM SPEED OF 200 KMPH

Degree of curvature	Radius of curve	Maximum permissible speed	Super-elevation	Extra Clearance between structure and adjacent track				Extra clearance between adjacent track when there is no structrure between track
				Inside of curve				
				Upto 840mm above rail level	From 840 mm to 4420 mm above rail level	At 5410mm above rail level	Out side of curve any ht	
Degree	Metre	Kmph	mm	mm	mm	mm	mm	mm
1	1750	190	185	81	574	711	–	218
1.5	1167	155	185	88	582	719	–	234
2	875	134	185	96	590	727	9	250
3	583	110	185	112	606	742	26	283
4	438	95	185	127	621	758	43	315
5	350	85	185	143	637	774	60	348
6	292	77	185	159	653	789	76	380

APPENDIX A TO CHAPTER V-A

Clearances required for 25 KV single phase A.C. Electric Traction

It is desirable to provide the maximum possible clearance in the case of lines equipped for 25 KV A.C. 50 cycle single phase electric traction. The feeding system for the 25 KV phase A.C. electric traction can be any of (i) 25 KV simple feeding system *(i.e.* system where rails/earth only are used for the retrun of traction current), (ii) 25 KV booster transformers (BT) and return conductor (RC) feeding system and (iii) 2x25 KV auto transformers (AT) feeding system. In no case, shall these be less than the basic dimensions as recommended by the International Union of Railways on pages 6,7 and 8 of their leaflet No. 606 (2nd edition, 1st January 1963) of which an extract is given below :

A. Clearance between live bare conductors (catenaries or pantographs) and structure.

Note : The term "catenary" is used to represent traction overhead equipment

(a) Clearances normally existing only for a brief period (distance between structures and catenary raised momentarily or vehicle pantographs outside normal stopping points).

(a-2) Operation in which extensive steam haulage is used or installations close to the sea :

Vertical distance between live conductors and earth	270mm
Lateral distance between live conductors and earth	220mm

(b) Clearance which may remain for a considerable period (distance between structures and catenary at rest or immobile pantographs at normal stopping points).

(b-2) Operation in which extensive steam haulage is used or installations close to the sea :

Vertical or lateral distance between live conductors and earth	320mm

B. Clearance between the upper section of the rolling stock and the contact wire.

(a) Normal loads:

In the case of normal loads, the clearance between the upper part of the load and the lowest point of the contact wire in static position must not be less than D mm. D=340mm. This applies in the case of normal loads not receiving any special supervision and the contact wires subject to considerable vertical oscillation under pressure from the pantographs and due to wind.

D may be reduced to 290 mm in the case of specially supervised loads and on condition that the contact wire cannot sway to any considerable extent, due to pressure from the pantograph wind effect.

(b) Special loads:

It shall be the responsibility of each Administration to decide upon the deviation from the above clearances to be made in respect of the characteristics of special loads.

(c) Tracks raised from maintenance purposes

The above clearances for normal and special loads apply to tracks in normal condition. For the purpose of track maintenance, a reduction of 20mm may be made in the above clearances, on the assumption that the passing of the first train following the lifting takes place will cause conditions to revert to normal.

2. In order to ascertain whether the requisite clearance would be available under an existing structure, the permissible height of the contact wire shall first be determined by competent authority. For this purpose the following particulars should be known :

(i) Particulars of the structure including profile

(ii) Allowance for slewing of tracks

(iii) Allowance for low joints in tracks

(iv) Radius of curvature of track under the structure

(v) Superelevation of track under the structure

(vi) Maximum permissible speed under the structure

(vii) Maximum dimensions of over-dimensional consignments which are permissible and safety measures which would be taken for movement of over-dimensional consignments.

(viii) Location of the structure in relation to level crossings, water column and turnouts in the vicinity.

(ix) The type of overhead equipment.

3. After determining the permissible height of the contact wire based on the above particulars, the clearance required between the lowest portion of the bridge or structure and the top most position of the overhead wire shall be determined in each case after study of the following :—

(a) System of tensioning of the overhead equipment (regulated or otherwise)

(b) Atomspheric conditions.

(c) Maximum permissible number of electric locomotives per train (double or triple headed)

(d) Location of the structure in relation to points and crossings, overlap spans, *etc.*

(e) Length of the structure along the tracks.

(f) Type of structure, girder, masonry *etc.*

(g) The span of overhead equipment under the bridge,

(h) Presence of a traction feeder,

(i) Likelihood of steam/diesel locomotives halting under the structure.

4. (a) The minimum height of contact wire has been derived on the assumption that standard locomotives of height of 4.42m should be able to work on all sections electrified with 25 KV A.C. traction system with live traction overhead equipment.

Height of the locomotive	4.42 m
Minimum clearance to contact wire	0.32 m
Allowance for ionization over chimney	0.04 m
Allowance for track maintenance	0.02 m
Total	4.80 m

(b) After determining the minimum height of contact wire on the assumption that it would permit passage of standard locomotives, the maximum height of rolling stock over dimensional consignments with live overhead equipment at speed over 15km/h (when vertical oscillation of overhead equipment is pronounced) is derived as under:

Minimum height of contact wire	4080 m
Less	
(i) Minimum electrical clearance	0.27 m
(ii) Track allowance	0.02 m
(iii) Allowance for vertical oscillation of contact wire under influence of moving pantographs	0.10 m
Total	0.39 m

Permissible maximum height of over dimensional consignment 4.41 m

(c) If an over dimensional consignment is moved at slow speed not exceeding 15 kmph there will be no downward displacement (due to oscillation) of contact wire. However, to cater for the likelihood of an over dimensional consignment halting under a structure, a clearance of 0.32m under rest condition is to be provided, vide item 1 of Chapter V-A. In this case the derived height of contact wire may be reduced by 50mm.

5. In chapter 1, item 10, the height of structures above rail level has been separately specified for light and heavy structures. It should normally be feasible to erect traction overhead equipment under a structure irrespective of its location and the fact that a structure with a large height would permit of a better and more economic layout of tractions overhead equipment, while a structure with a low would lessen the cost of the structure itself. Therefore, in the case of light structures such as foot-over bridges it would be desirable to keep a standard height of contact wire of 5.50m. In case of heavy structures, such as flyover bridges or road over bridges, it is desirable to keep the height of contact wire as low as possible consistent with the requirements of movement of standard class 'C' over dimensional consignments of height 4.80m.

ANNEXURE – III

Statement showing the Correction Slips issued to BG Metric Schedule of Dimensions

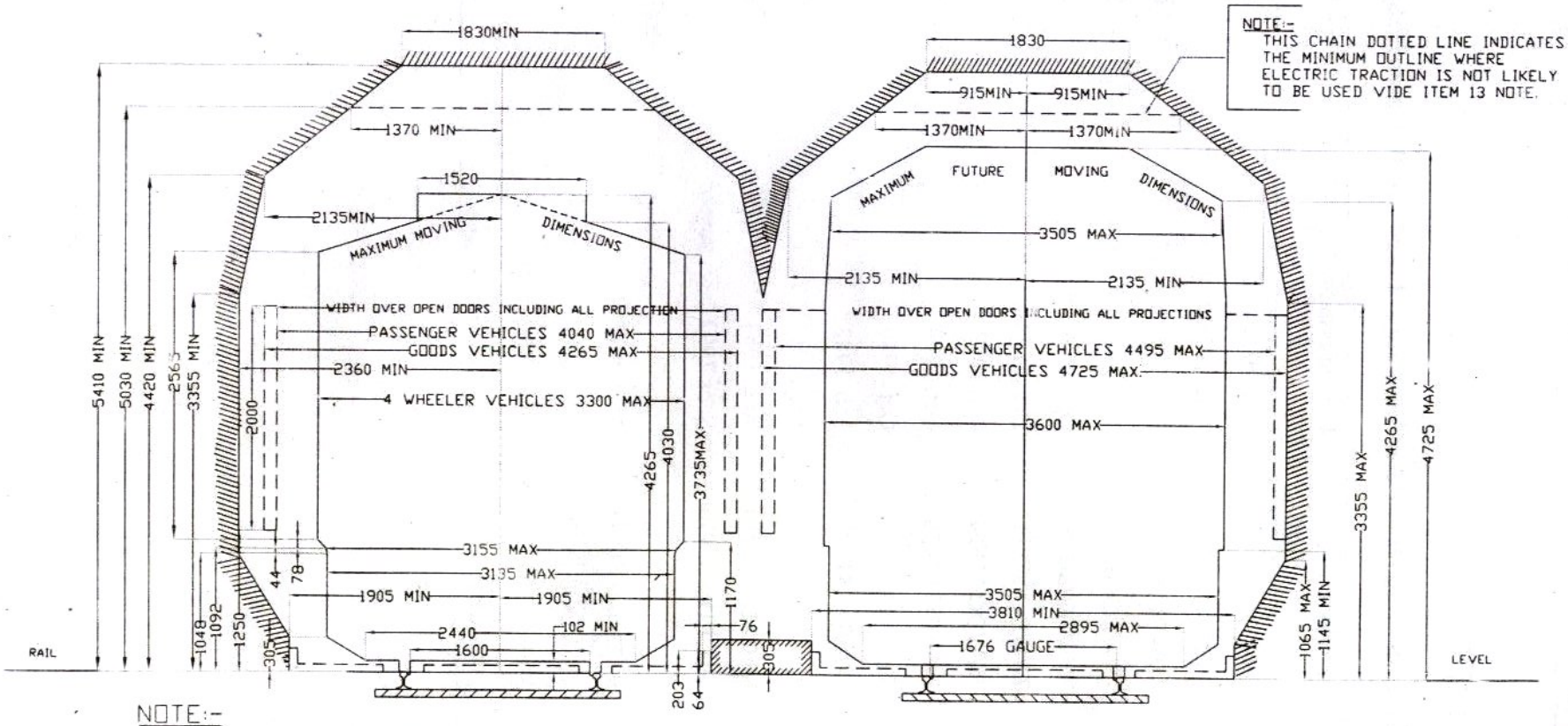
Correction Slip No.	File No.	Date of issue	Page Nos. of SOD-73
1.	74/WDO/SD/13	Nov. 1974	62
2.	71/WDO/AC/SD/1	June, 1975	76
3.	74/WDO/SD/13	Aug. 1975	60
4.	75/WDO/SD/11	Nov. 1975	24 (superseded) CS- 11
5.	76/WDO/SD/30	Dec. 1976	61
6.	77/WDO/SD/11	Dec. 1977	17
7.	78/WDO/SD/24	Jan. 1979	Dial 1 A (modified) 1C & 2
8.	79/WDO/SD/20	Oct. 1979	14
9.	80/WDO/SD/9	Oct. 1980	33
10.	79/WDO/SD/28	Feb. 1982	73
11.	82/WDO/SD/12	May J 982	8, 1 3, 24, 65 & 7
12.	80/CEDO/SD/10	Aug. 1984	61,62,63, 64, 10 & 104
13.	80/CEDO/SD/10	Sept. 1992	23
14.			
15.	94/CEDO/SD/43	March, 1999	65
16.	80/WDO/SD/10	Dec. 2000	73
17.	80/WDO/SD/10	June, 2003	19.34
18.	2004/CEDO/SD/1	April, 2004	28

STANDARD DIMENSIONS FOR TUNNELS & THROUGH GIRDER BRIDGES

SCHEDULE I-CHAPTER I

NOTE:-
1. WHERE THE LINE IS ON CURVE ,THE HORIZONTAL DISTANCE OF ANY STRUCTURE FROM THE CENTRE OF ADJECENT TRACK AND THE DISTANCE BETWEEN CENTRES OF TRACKS ARE TO BE INCREASED ACCORDING TO THE APPENDIX.
2. WHEN RE-SPACING EXISTING LINES,THE MINIMUM DISTANCE CENTRE TO CENTRE OF TRACKS MAY BE REDUCED FROM 4725 TO NOT LESS THAN 4495 FOR THE PURPOSE OF AVOIDING HEAVY ALTERATIONS TO TUNNELS OR THROUGH GIRDER BRIDGES. THE 4725 DIMENSION IS TO BE ADOPTED FOR ALL NEW WORKS.

DIAGRAM No. 1A
1676 mm GAUGE.
(B.G.)



NOTE:-

ALL DIMENSIONS ARE IN MILIMETRES EXCEPT WHERE OTHERWISE SHOWN.

STANDARD DIMENSIONS FOR TUNNELS & THROUGH GIRDER BRIDGES

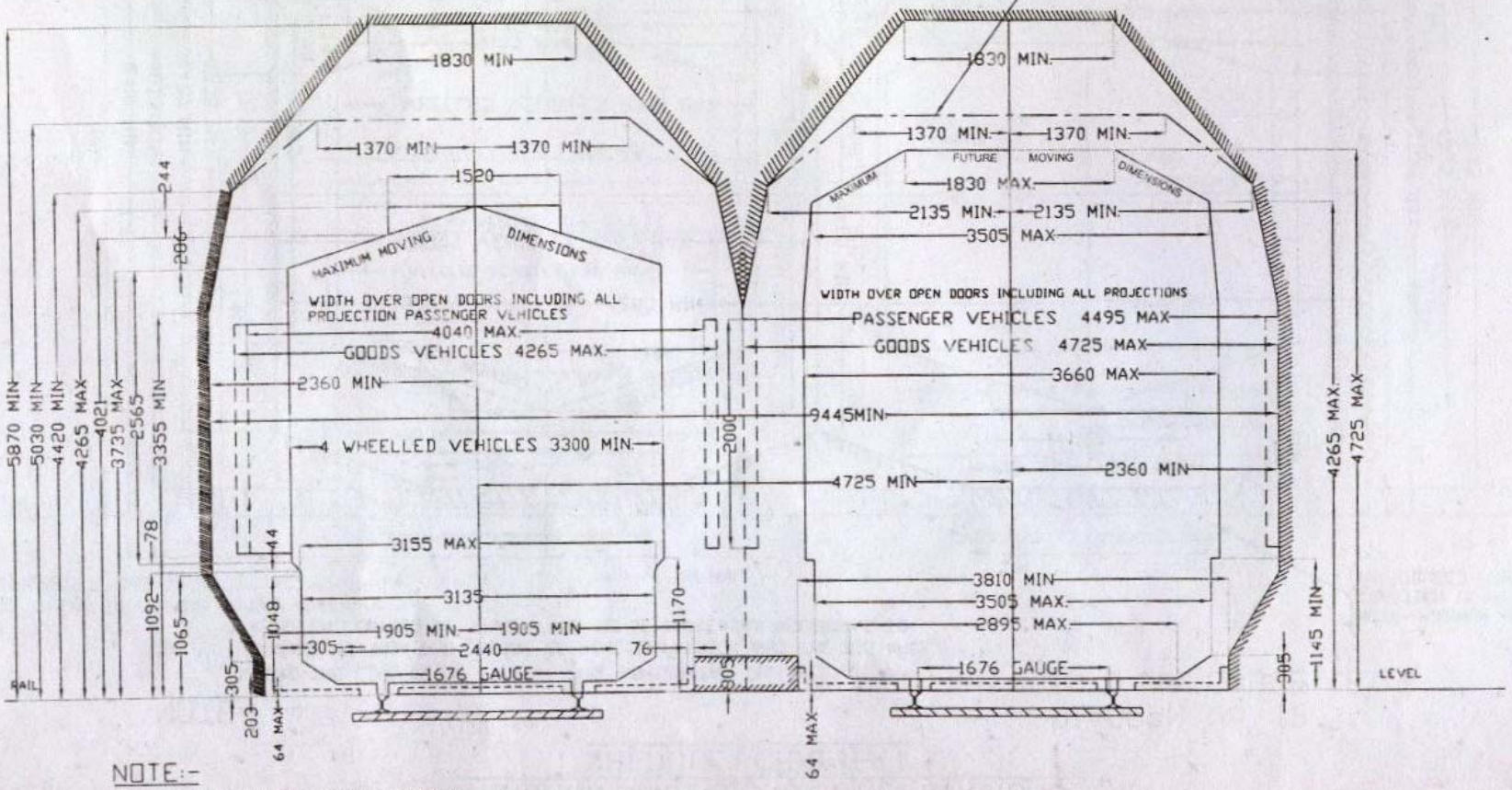
TO SUIT 25 k.V. A.C. TRACTION SCHEDULE I CHAPTER I

DIAGRAM No. 1A (MODIFIED)
1676 mm GAUGE (B.G.)

NOTE:-

THE DISTANCE SPECIFIED APPLY ONLY IN CASE OF STRAIGHT TRACKS ON CURVES. THE HORIZONTAL DISTANCE SHOULD BE INCREASED BY AN AMOUNT 'D' TO ALLOW FOR THE LEAN DUE TO SUPER-ELEVATION CALCULATED BY THE FOLLOWING FORMULA,WHERE 'H' IS THE HEIGHT OF THE CONTACT WIRE,AND 'S' THE SUPER-ELEVATION AND 'G' THE GAUGE OF THE TRACK, ALL DIMENSIONS BEING IN METRES
D=HxS/G

NOTE:- THIS CHAIN DOTTED LINE INDICATES THE MINIMUM OUT LINE WHERE ELECTRIC TRACTION IS NOT LIKELY TO BE USED VIDE ITEM 13 NOTE (a) OF CHAPTER I SCHEDULE I



NOTE:-

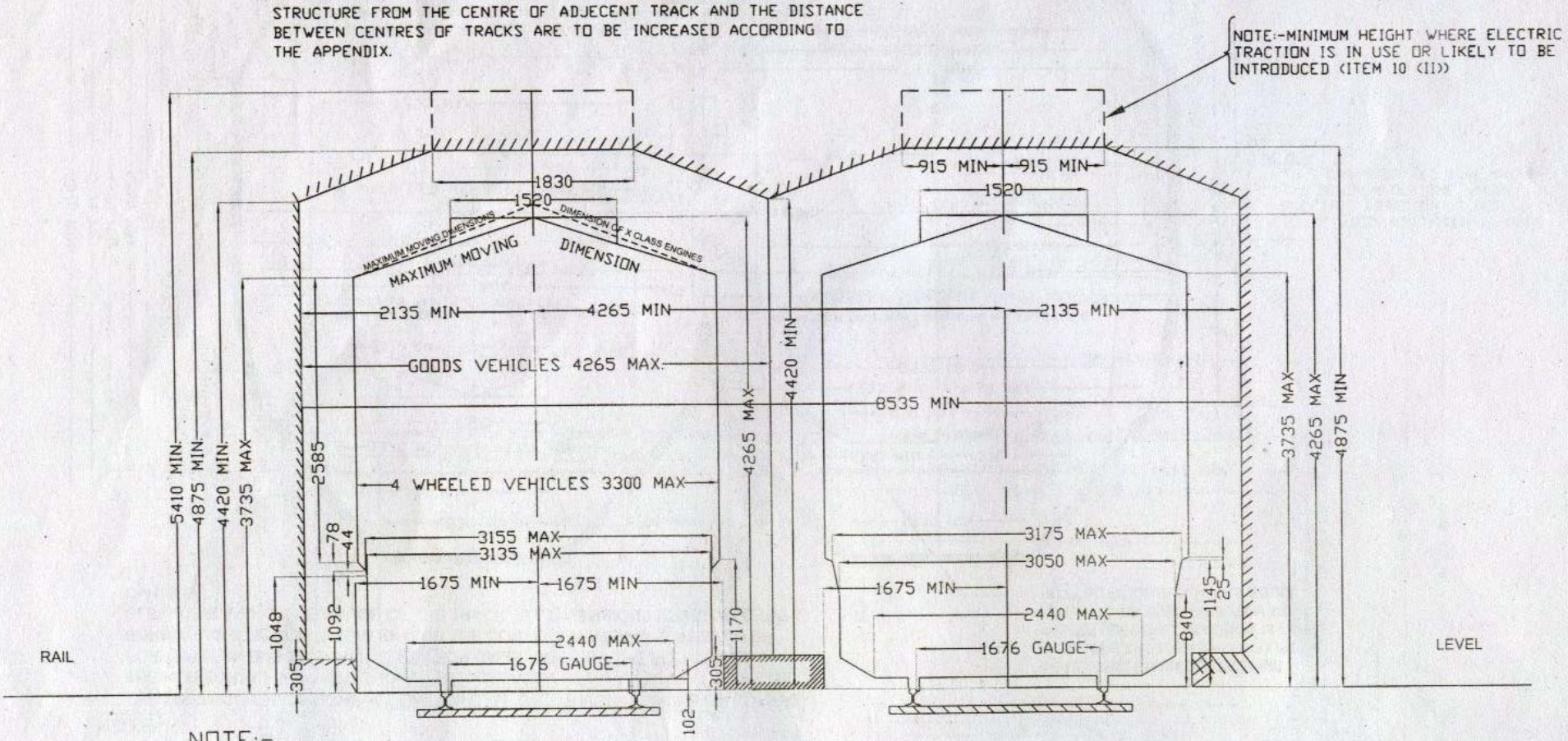
ALL DIMENSIONS ARE IN MILIMETRES EXCEPT WHERE OTHERWISE SHOWN.

STANDARD DIMENSIONS OUT OF STATIONS
SHEDULE I-CHAPTER I

NOTE:-

WHERE THE LINE IS ON A CURVE, THE HORIZONTAL DISTANCE OF ANY STRUCTURE FROM THE CENTRE OF ADJECENT TRACK AND THE DISTANCE BETWEEN CENTRES OF TRACKS ARE TO BE INCREASED ACCORDING TO THE APPENDIX.

DIAGRAM No. 1B
1676 mm GAUGE (B.G.)

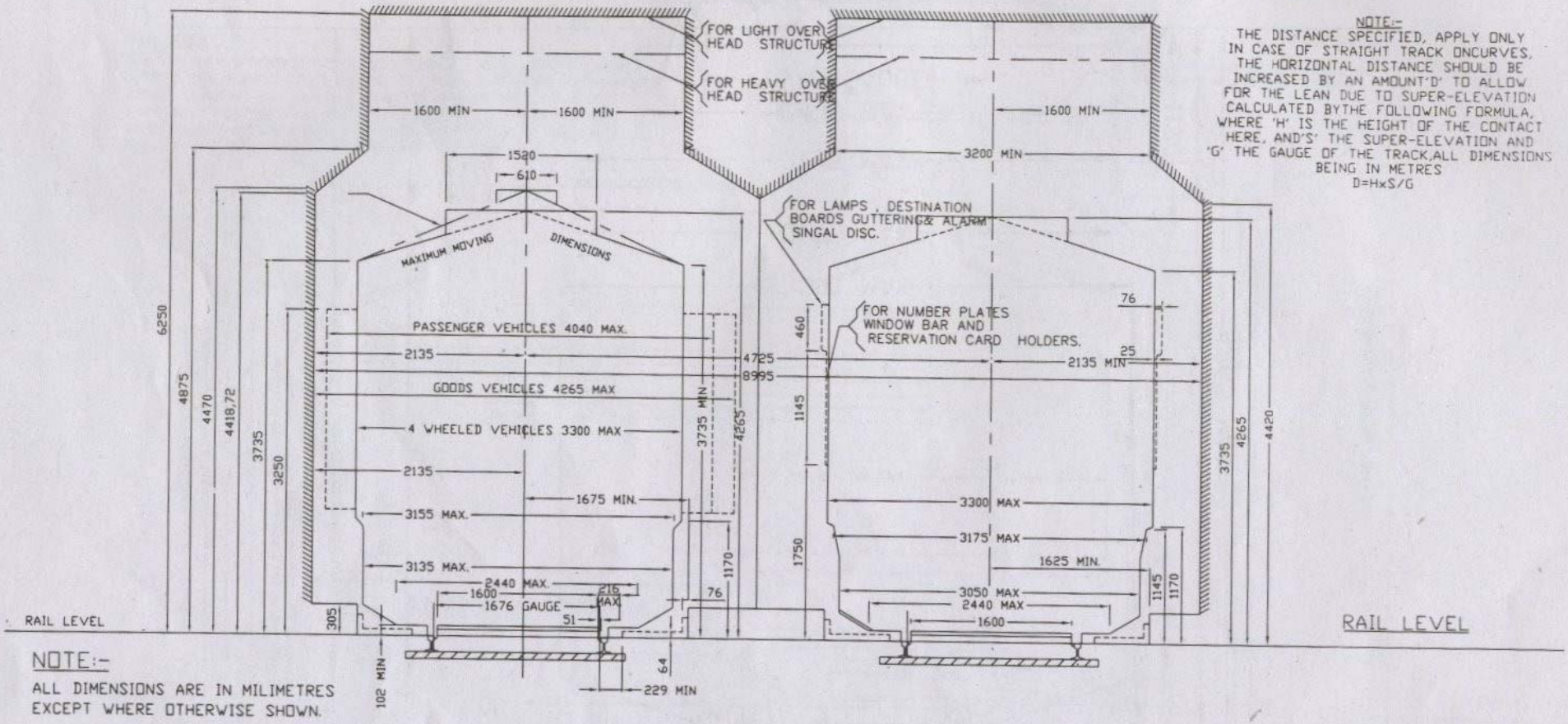


NOTE:-

ALL DIMENSIONS ARE IN MILIMETRES
EXCEPT WHERE OTHERWISE SHOWN.

STANDARD DIMENSIONS OUT OF STATIONS
TO SUIT 25 KV.A.C. TRACTION SCHEDULE-I-CHAPTER-I

DIAGRAM NO. 1C
1676 mm GAUGE



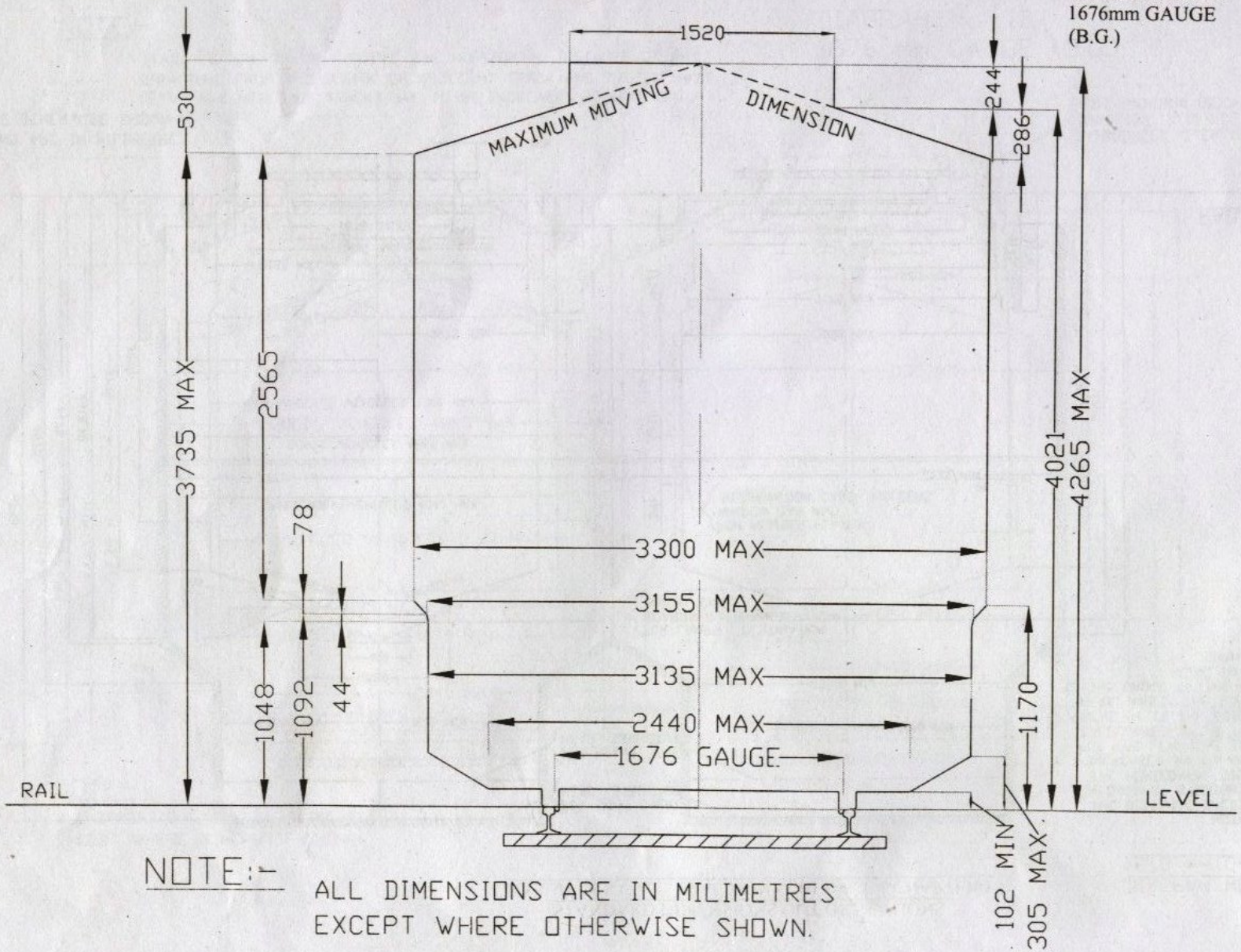
NOTE:-
THE DISTANCE SPECIFIED, APPLY ONLY IN CASE OF STRAIGHT TRACK ONCURVES, THE HORIZONTAL DISTANCE SHOULD BE INCREASED BY AN AMOUNT 'D' TO ALLOW FOR THE LEAN DUE TO SUPER-ELEVATION CALCULATED BYTHE FOLLOWING FORMULA, WHERE 'H' IS THE HEIGHT OF THE CONTACT HERE, AND 'S' THE SUPER-ELEVATION AND 'G' THE GAUGE OF THE TRACK, ALL DIMENSIONS BEING IN METRES

$$D = H \times S / G$$

NOTE:-
ALL DIMENSIONS ARE IN MILIMETRES EXCEPT WHERE OTHERWISE SHOWN.

MAXIMUM MOVING DIMENSIONS OF THE PROFILE PROPOSED FOR REVISED SCHEDULE OF DIMENSIONS.

DIAGRAM No.1D
1676mm GAUGE
(B.G.)



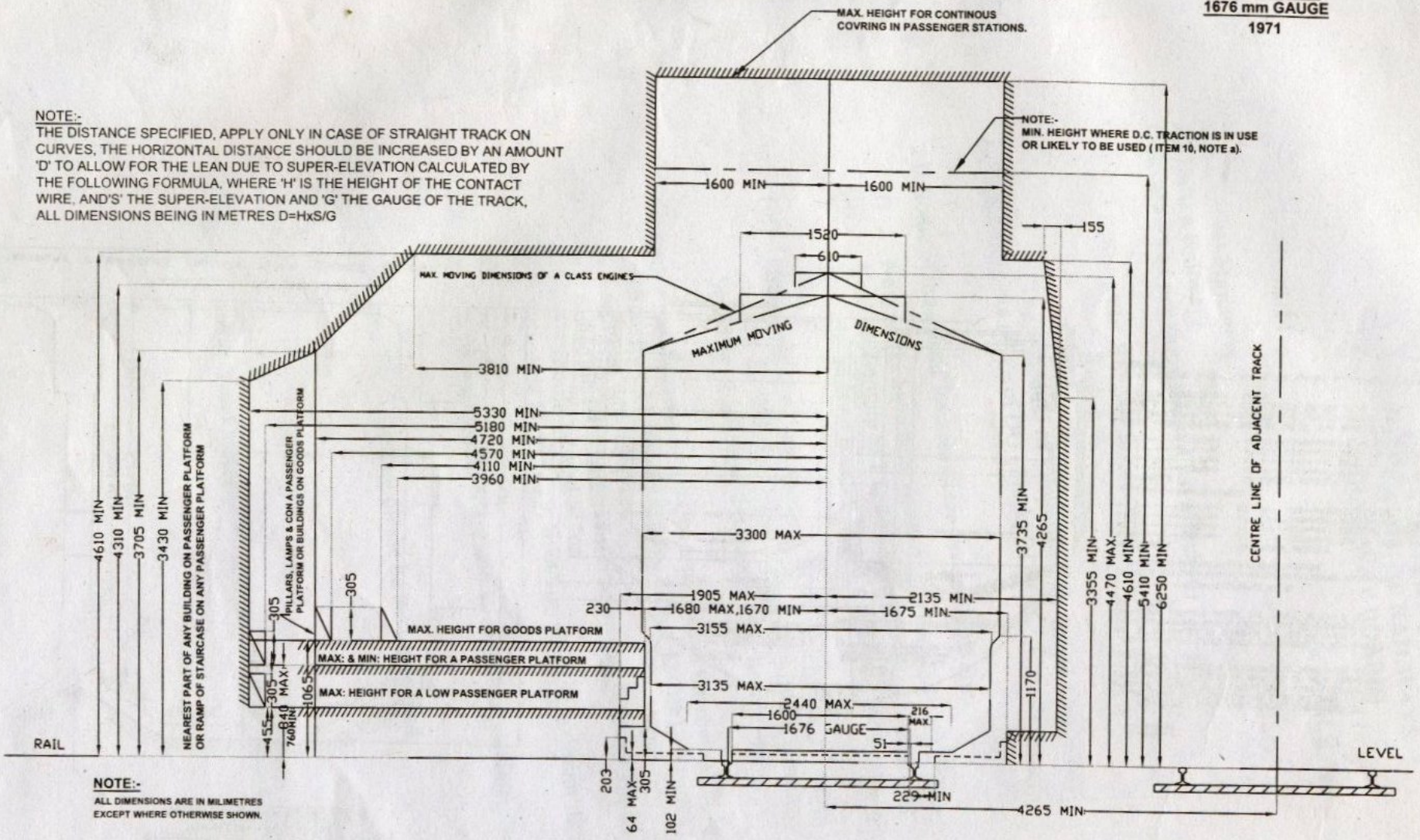
NOTE:-

ALL DIMENSIONS ARE IN MILIMETRES
EXCEPT WHERE OTHERWISE SHOWN.

STANDARD DIMENSIONS IN STATIONS
TO SUIT 25 KV.A.C. TRACTION SCHEDULE-I-CHAPTER-II

DIAGRAM NO. 2
1676 mm GAUGE
1971

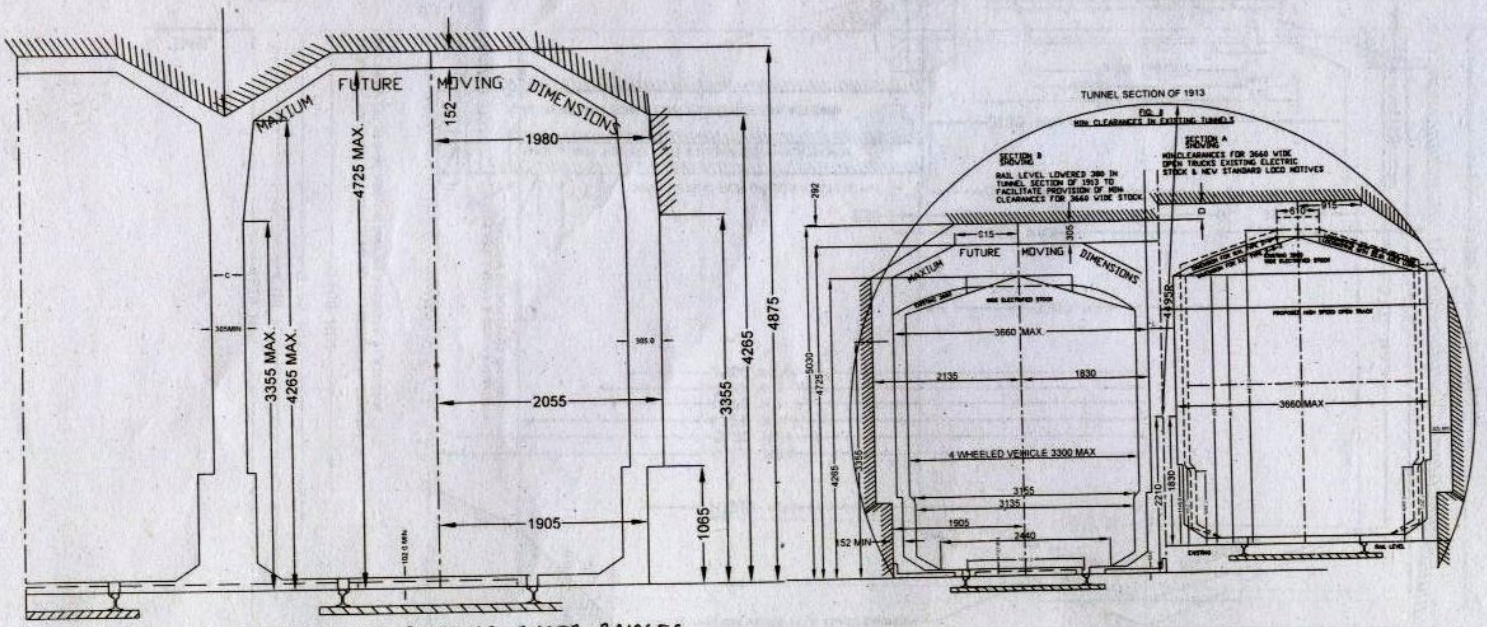
NOTE:-
THE DISTANCE SPECIFIED, APPLY ONLY IN CASE OF STRAIGHT TRACK ON CURVES, THE HORIZONTAL DISTANCE SHOULD BE INCREASED BY AN AMOUNT 'D' TO ALLOW FOR THE LEAN DUE TO SUPER-ELEVATION CALCULATED BY THE FOLLOWING FORMULA, WHERE 'H' IS THE HEIGHT OF THE CONTACT WIRE, AND 'S' THE SUPER-ELEVATION AND 'G' THE GAUGE OF THE TRACK, ALL DIMENSIONS BEING IN METRES D=HxS/G



NOTE:-
ALL DIMENSIONS ARE IN MILIMETRES EXCEPT WHERE OTHERWISE SHOWN.

INFRINGEMENTS OF SCHEDULE - I

FOR 3660MM GOODS STROCK & NEW STANDARAD LOCOMOTIVE IN EXISTING TUNNELS & BRIDGE ONLY PERMITTED UNDER SCHEDULE -II



MAXIMUM CLEARANCE ON EXISTING GIRDER BRIDGES

DIAGRAM No.3
1673 mm. GAUGE

N.B.

FULL LINES SHOW MAX. MOVING DIMENSIONS OF FUTURE 3660 WIDE STOCK & OF EXISTING 3200 WIDE STOCK & OUTLINE OF EXISTING 3660 WIDE ELECTRIFIED STOCK DOTTED LINES SHOW OUTLINE OF NEW STANDARD X.E. & W.H.E. ENGINES & OF PROPOSED 3660 WIDE HIGH SIDED OPEN TRUCK.

FULL HATCHED LINES SHOW DIMENSIONS WHICH SHOULD NOT BE INFRINGED IN TUNNELS DOTTED HATCHED LINES SHOW DIMENSIONS WHICH SHOULD NOT BE INFRINGED ON GIRDER BRIDGES WHERE THE TRACK IS FIXED TO THE GIRDERS.

THE MIN. PERMISSIBLE CLEARANCE WILL BE.

(1). UNDER ANY CIRCUMSTANCES & SUBJECT TO ANY RESTRICTION OF SPEED WHICH MAY BE CONSIDERED NECESSARY TO IMPOSE.

IN TONNELS	ON GIRDER BRIDGES
AT A---------229mm	AT A----229mm(AT TOP OF SIDES OF VEHICLES)
AT B---------305mm	AT B----229mm(AT SIDES OF VEHICLES)
AT C---------380mm	AT C----305mm(BETWEEN MOVING TRAINS)
AT D---------229mm	AT D----152mm(ABOVE VEHICLES)

(2). FOR UNRESTRICTED SPEED:

IN TONNELS	ON GIRDER BRIDGES
AT A---------380mm	AT A----229mm(AT TOP OF SIDES OF VEHICLES)
AT B---------535mm	AT B----445mm(AT SIDES OF VEHICLES)
AT C---------610mm	AT C----535mm(BETWEEN MOVING TRAINS)
AT D---------305mm	AT D----229mm(ABOVE VEHICLES)

WHERE DOORS OPENNING INWARDS OR OF THE RECESSED OR SLIDING TYPE ARE PROVIDED, THE MIN. CLEARANCE IN TUNNELS & BRIDGES MAY BE REDUCED TO 380 AT B & 445 AT C FOR UNRESTRICTED SPEED.

TO THE ABOVE MUST BE ADDED THE EXTRA ALLOWANCES FOR CURVES (SEE APPENDIX)