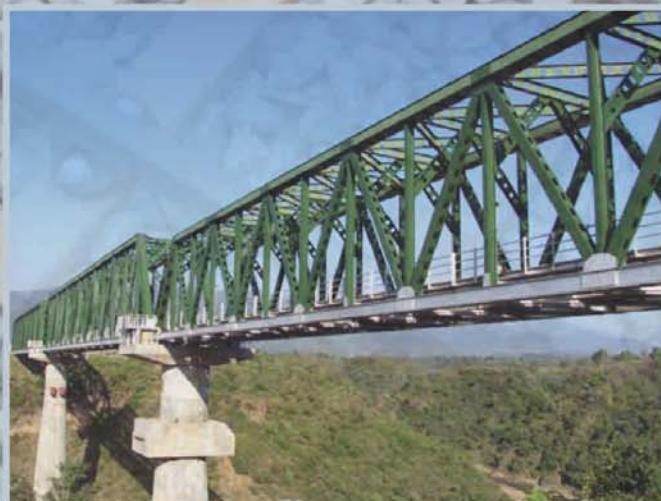


# TECHNICAL AID to INDIAN RAILWAYS SCHEDULE OF DIMENSIONS

## 1676mm Gauge (BG)



## **FOREWARD**

Indian Railway Schedule Of Dimensions (IRSOD), one of the oldest Standard Document of Railway containing dimensions concerning infrastructure and rolling stock. The provisions of IRSOD are required to be understood properly by officials at all levels. In order to facilitate the same, it was felt necessary to bring out an illustrated aid with sketches / diagram, where in the various provisions are brought out lucidly. This aid is a well made out effort in this direction. Needless to say that this document will require to be updated periodically duly incorporating changes made in IRSOD.

I hope that document shall be very useful to railway officials and industry partners to understand the dimension given in Indian Railway's Broad Gauge Schedule of Dimensions.



V. K. Gupta  
Member Engineering

## **PREFACE**

**Indian Railway Schedule Of Dimensions (IRSOD)** is the document providing the dimensional boundaries to rolling stock and infrastructure designers to play with design dimensions so as to optimize the carrying capacity of Indian Railways without compromising the safety. The dimensions stipulated thereon have been under continuous review and revision to address the issues arising out of infrastructure expansion and up gradation in rolling stock designs for achieving the corporate objective of Indian Railways of enhancing though put continuously. Accordingly, 17 ACS (revision slips) have already been issued so far to this valuable document published in 2004.

IRSOD contains many dimensions concerning infrastructure and rolling stock which are sometimes difficult to be appreciated by the field officials particularly for those who are new to the railway system. The dimensional boundaries are also required to be understood by all the agencies involved in Railway's Infrastructure works and component design.

As such, a need was felt to bring out a document explaining the various dimensions through sketches and diagrams for better appreciation of those who are not well conversant with the SOD. There is no doubt that the present document would be very convenient and user friendly to field staff.

In order to fulfill the requirement, the present document "**Technical-Aid to IRSOD (BG)**" has been prepared as per directions of Shri V. K. Gupta, Member Engineering/Railway Board under guidance of Shri S. S. Narayanan, Additional Member (Civil Engineering) / Railway Board by incorporating all the 17 Addendum and Corrigendum slips issued till date to the IRSOD(BG) published in 2004 and explaining the various dimensions with the help of appropriate sketches. In case of any ambiguity between this document and duly updated IRSOD-2004, the contents of IRSOD shall be final.

All Comments and Suggestions on this Aid may kindly be advised to EDCE(G)/ Railway Board.

A. K. Dubey  
EDCE(G), Railway Board

## **ACKNOWLEDGEMENT**

We are highly thankful to the following officers and staff of the Railway Board and RDSO in bringing out this valuable document.

1. *Shri Alok Kumar* - *CE HQ NR (Ex-EDCE (G)/RB)*
2. *Shri Vipul Kumar* - *ED Track -I/ RDSO*
3. *Shri Ajay Kumar* - *Director Track-II/RDSO*
4. *Shri Anil Kumar* - *Director CE (G)/ Railway Board*
5. *Shri M. P. Joshi* - *ADE/Track/ RDSO*
6. *Shri R. K. Vashisth* - *TA to EDCE (G)/Railway Board*
7. *Shri Sujeeet Kumar* - *SSE/Design/RDSO*
8. *Shri P. K. Kashyap* - *JE/Design/Northern Railway*

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## STANDARD DIMENSIONS

1676 mm GAUGE (BG)

## GENERAL

1. The **Minimum & Maximum Dimensions** given in the **SCHEDULE-I** are to be observed on all works of 1676 mm Gauge Railways in India, unless prior sanction has been obtained from the Railway Board through the Commissioner / Chief Commissioner of Railway Safety to execute works which will infringe these Dimensions in this Schedule.
2. Dimensions given in **Schedule-I** have been classified under two heads namely '**Existing works**' and '**New/Alteration to existing works**'. The dimensions under head 'existing works' are the dimensions adopted prior to 2004 and shall be allowed to continue. **Schedule-I** also contains some **Recommended Dimensions**, which are generally considered good practices, the adoption of which will lead to very desirable uniformity on Indian Railways. These recommended dimensions should be adopted in all 'new works' and 'alteration to existing works'.
3. '**New Works**' and '**Alteration to Existing Works**' would include altogether new constructions, addition of new lines & structures, gauge conversion, doubling and electrification works. However, works of addition/alteration of small nature, such as shifting of points & crossings, extension of existing line, siding, building etc. along with associated signaling & electrification works would not be classified as 'new works' or 'alteration to existing works'.
4. **SCHEDULE-II** is a **List of existing Infringements** to Schedule-I, which may be permitted to continue on existing Railways, subject to such restrictions of speed as considered necessary.

**SCHEDULE – I**  
**STANDARD DIMENSIONS**  
1676mm GAUGE (BG)

**CHAPTER 1 - GENERAL**

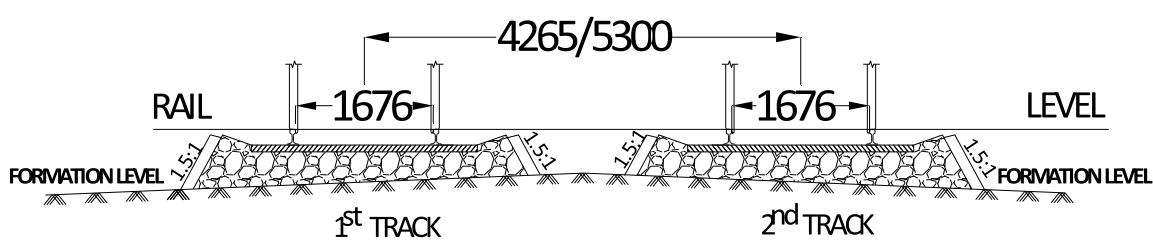
[Refer Diagram Nos. 1A, 1A (Modified), 1B, 1C and 1D]

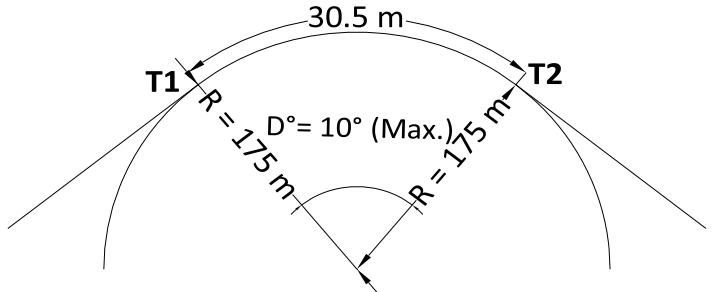
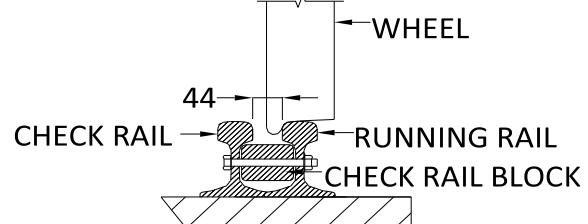
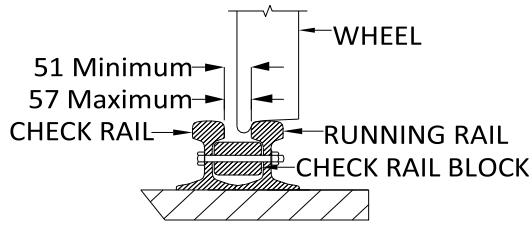
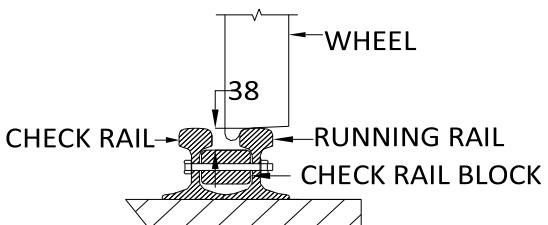
- (1) Items 1.6 and 1.8 are applicable only to structures outside station yards. All other Items are of general applicability.
- (2) For running EMU and other 3660mm wide rolling stocks on existing works, clearances prescribed under Items 1.11 "Tunnels, Through and Semi Through, Girder Bridges" shall also be required for all structures governed by items 1.1, 1.6 and 1.10.

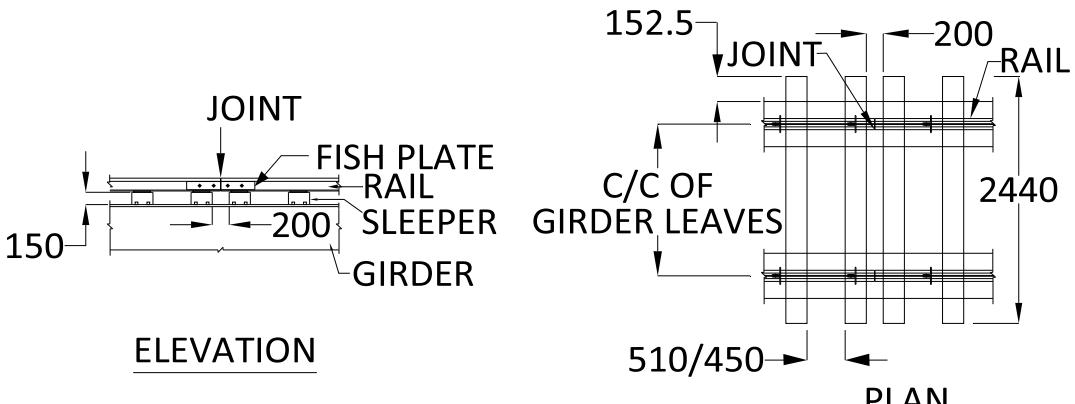
SL	Item Description	Existing Works	New or Alt to Existing Works	IRSOD-04	
				Ch	Item
1.1	<b>Spacing of Tracks</b> : Minimum distance of centre to centre <i>{Other than Station Yard}</i>	4265 mm	5300 mm	I	1

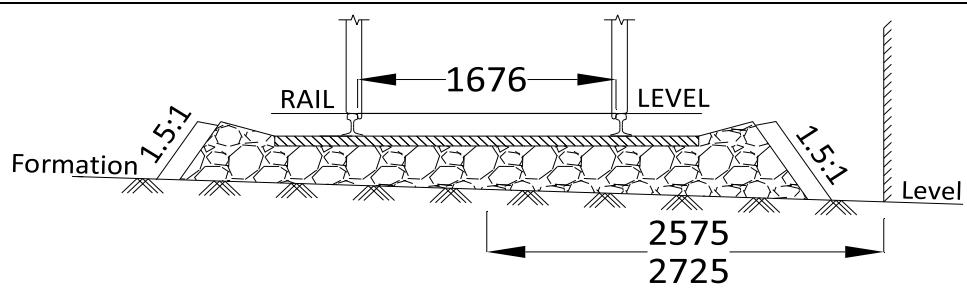
**Note :**

- (a) See Appendix 'A' for 'extra clearance required on curves'.
- (b) For spacing of tracks in tunnels, through and semi through girder bridges see Item 1.11.
- (c) OHE Mast and Signal Post shall not preferably be provided in between tracks. However, under unavoidable circumstances, the clearance mentioned in Para 1.1 above shall be increased by equal to the width of such provisions/structures/ foundation, as the case may be.

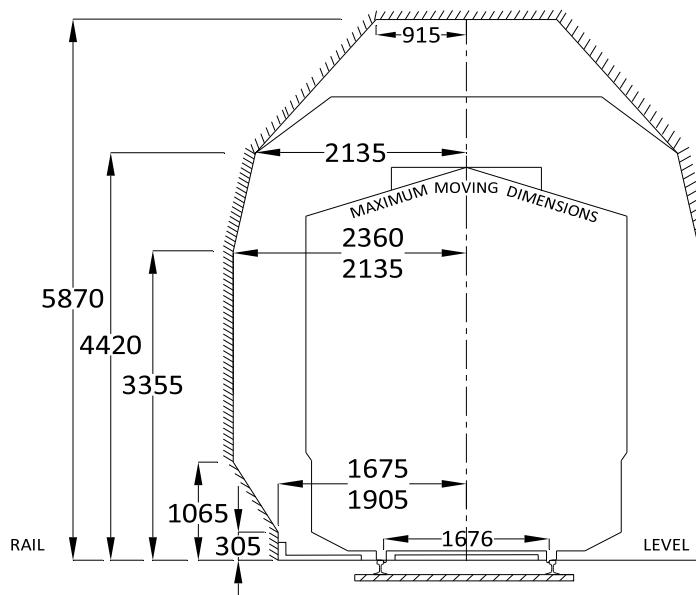


SL	Item Description	All Works	Ch	Item
1.2	<b>Curves</b> : Minimum radius of curve (sharpest curvature)	175 m (10 degree)	I	2
				
1.3	<b>Check Rails</b> : Check rail shall be provided on curves where radius is 218 metre or less (curvature of $8^0$ or more). They may be necessary also in case of flatter curves.		I	It. 4 Note 4 (b)
1.3.1	<b>Minimum Clearance of Check Rails on Curves :</b>	44 mm		4
	<b>Note :</b> 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.			
1.3.2	<b>Clearance of Check Rails on Level Crossing</b>	Minimum 51 mm	Maximum 57 mm	I 5 (i) & (ii)
	 Item 1.3.2	 Item 1.4		
1.4	<b>Vertical Clearance for wheel flange below rail level</b>	38 mm	I	6
1.5	<b>Bridge Sleepers</b> : <i>{Bridges must conform to the requirements of Chapter IV of the "Railways Opening for the Public Carriage of Passengers, Rule 2000"}</i>			3

SL	Item Description	Maximum	Ch	Item
1.5.1	Clear Distance between two consecutive sleepers :			
1.5.1.1	On existing bridges, where nothing solid is there between sleepers to prevent a derailed wheel dropping	510 mm	I	3
1.5.1.2	In case of new construction, re-girdering of existing bridge or through sleeper renewal	450 mm		
1.5.2	Between Joint Sleepers	200 mm		
1.5.3	<b>Dimensions of Bridge Sleepers</b> , resting directly on longitudinal girders :		I	3
1.5.3.1	Depth, exclusive of any notching, which may be required to allow for cover plates, camber etc.	150 mm		
1.5.3.2	Length outside of girder flanges subject to minimum total length of sleeper as 2440 mm	152.5 mm		
1.5.3.4	Length of steel trough sleeper subject to minimum length of outside to outside of girder flanges	2440 mm		
	 <p><b>ELEVATION</b></p> <p><b>PLAN</b></p>			
1.6	<b>Buildings and Structures</b> : Horizontal Distance from centre of track to any structure except a platform { <i>Other than Station Yard</i> } -		I	8
1.6.1	Below rail level and up to formation level of track			8(iii)
1.6.1.1	On straight and curves up to radius of 875m (less than and up to 2°)	2575 mm		8(iii) (a)
1.6.1.2	On curves with radius less than 875m (more than 2°)	2725 mm		8(iii) (b)

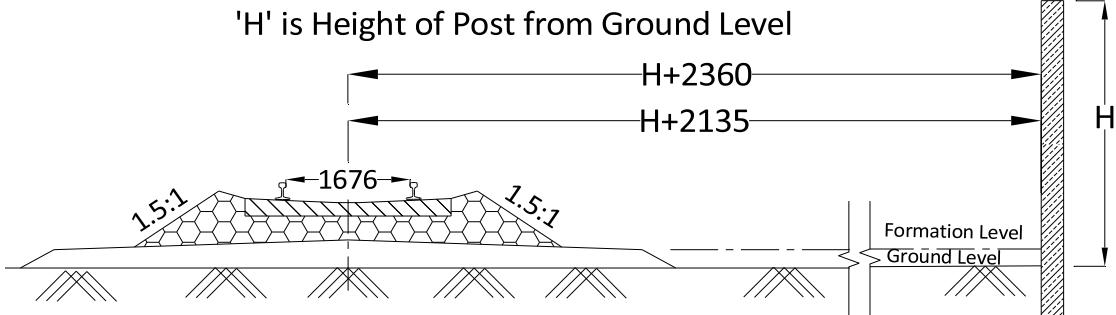


SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item
1.6.2	Minimum Horizontal Distance from center of track to any structure from Rail Level :			I	7
1.6.2.1	Upto 305mm	1675 mm	1905 mm		7(i) & (ii)
1.6.2.2	From 305mm to 1065mm	2135mm	1905 mm increasing to 2360mm		8
1.6.2.3	From 1065mm to 3355mm	2135mm	2360 mm		
1.6.2.4	From 3355mm to 4420mm	2135mm	2360 mm decreasing to 2135 mm		
1.6.2.5	From 4420mm to 5870mm	--	2135 mm decreasing to 915 mm		



**Note :**

- (a) 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 'A' for 'extra clearance required on curves'.
- (c) Light structures such as ladders, thin posts etc., erected alongside 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.
- (d) Various fixtures, which are attached to the track, like traction bonds etc. and are required to be fitted with the rail can be provided and the clearance as mentioned in Items 1.6.1.1 & 1.6.1.2 will not be applicable to these fixtures.
- (e) The required clearances as mentioned under item 1.6.1 above will be applicable in case of New Lines/ Doubling/ Electrification.

SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item
1.7	<p><b>Minimum Horizontal Distance of Telegraph Post :</b> Horizontal distance measured from the centre of and at right angles to the nearest track</p>	Height of Post plus 2135 mm	Height of Post plus 2360 mm	I	9
	<p>'H' is Height of Post from Ground Level</p>  <p><b>Note :</b> 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.</p>				
1.8	<b>Height of Road Over Bridges and Foot Over Bridges :</b>		Minimum	Ch	Item
1.8.1	Height above rail level for a distance of 915mm on either side of the centre of track for overhead structures	4875 mm		I	10
					10(a)

SL	Item Description	Minimum	Ch	Item
1.8.2	Height, where D.C. electric traction is in use or is likely to be used	5410 mm	I	10(b)
1.8.3	Where 25 kV A.C. traction is likely to be used, height above rail level for a distance of 1600mm on either side of centre of track shall be :			10(c) (i) & (ii)
1.8.3.1	For Light Overhead Structures, such as Foot Over Bridges	6250 mm		
1.8.3.2	For Heavy Overhead Structures, such as Road Over Bridges and Flyovers	5870 mm		
	<p><b>Note :</b></p> <p>In case of restricted height of existing structures, a special study shall be made, as indicated in Appendix-B before 25 kV AC traction is introduced. Accordingly, only in such cases, the minimum height above rail level shall not be lower than 5070mm in case of Heavy overhead Structure (such as Road Over &amp; Flyovers) and 5270mm in case of light Overhead Structures (such as Foot Over Bridges) for a minimum contact wire height of 4800mm from above rail level. OHE arrangement shall be as per RDSO Drawings.</p>			
1.8.4	Minimum height of such heavy overhead structure in cases of –	6250 mm*	I	10 (c) Note

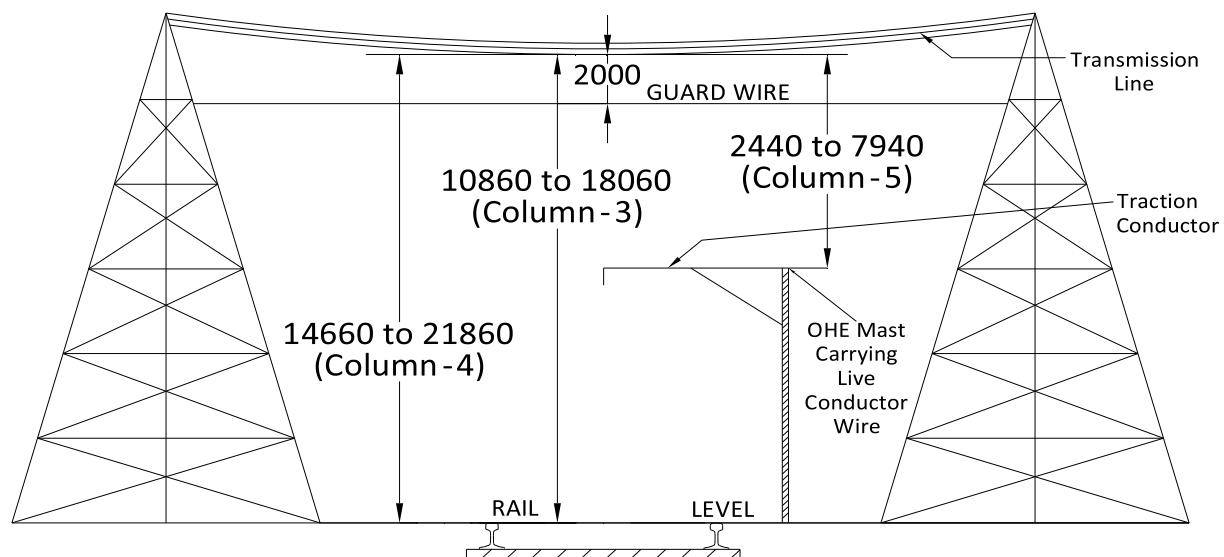
	(i) Turnout or crossover located under a heavy overhead structure or within 40 metre from its nearest face or (ii) Level crossing gate is within 520 metre from the nearest face of the overhead structure			(c)
	<p><b><u>Note :</u></b></p> <p><i>*{In case of restricted height of existing heavy overhead structure, minimum height above rail level shall not be lower than 5270mm for a minimum contact wire height of 4800 mm above rail level, adhering to the provisions of note (b) above, subject to the condition that minimum contact wire height of 5500 mm shall be ensured at level crossing. (Reference: item 2 (iii), Ch -V(A) of IRSOD)}</i></p>			

**Note :**

- (a) See Appendix 'A' for 'extra clearance required on curves'.
- (b) The height mentioned above shall be measured from the higher or super elevated rail.
- (c) Necessary provision shall be made in overhead structure and overhead equipment, if necessary, by using longer traction overhead equipment masts to permit an extra allowance of 275mm for raising of track in future to cater for modern track structure in the form of increased ballast cushion, larger sleeper thickness and deeper rail sections.

1.9	<b>Clearance for Power Line Crossings including Telephone Line Crossings of Railway Tracks -</b>				<i>Ch</i>	<i>Item</i>
	<b>Over Head Crossing Voltage</b>	<b>Minimum Clearances From Rail Level</b>		<b>Minimum Clearance Between Highest Traction Conductor And Lowest Transmission Line Crossing Conductor</b>	<i>I</i>	11
		<b>Existing Power Line Crossing For Non - Electrified Territory</b>	<b>New Power Line Crossing Or Crossing Planned For Alteration</b>			
(1)	(2)	(3)	(4)	(5)		
	Up to and including 11KV	Normally By Underground Cable				11(i)
	Above 11 kV & up to 33 kV	10860 mm	14660 mm	2440 mm		
3.	Above 33 kV & up to 66 kV	11160 mm	14960 mm	2440 mm		
4.	Above 66 kV & up to 132 kV	11760 mm	15560 mm	3050 mm		

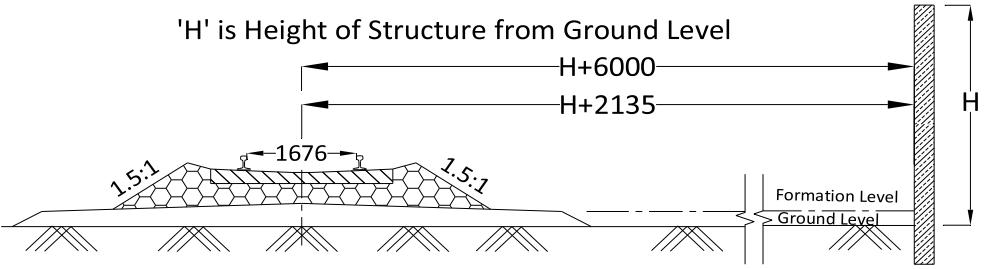
5.	Above 132 kV & up to 220 kV	12660 mm	16460 mm	4580 mm	
6.	Above 220 kV & up to 400 kV	14460 mm	18260 mm	5490 mm	
7.	Above 400 kV & up to 500 kV	15360 mm	19160 mm	7940 mm	
8.	Above 500 kV & up to 800 kV	18060 mm	21860 mm	7940 mm	



Note :

- (i) All height /clearances are under maximum sag conditions.
- (ii) If the crossing is provided with a guarding, a minimum clearance of 2000mm shall be maintained between bottom of the guard wire and highest traction conductor.
- (iii) Power line crossing in yards & stations area shall be avoided.
- (iv) For new electrification works, existing crossings can continue, if dimensions are as per Column (5) above.

1.9.2	<b>Minimum Clearance</b> between any conductor not adequately insulated and any railway structure under most adverse conditions			I	11 (ii)
SL	Voltage	Clearance			
(1)	(2)	(3)			
a.	Upton and including 650 volts	2500 mm			
b.	Above 650 volts and up to & including 33 kV	3700 mm			

	c.	Above 33 kV and up to & including 66 kV	4000 mm					
	d.	Above 66 kV and up to & including 132 kV	4600 mm					
	e.	Above 132 kV and up to & including 165 kV	4900 mm					
	f.	Above 165 kV and up to & including 220 kV	5500 mm					
	g.	Above 220 kV and up to & including 400 kV	7300 mm					
	h.	Above 400 kV and up to & including 500 kV	8200 mm					
	i.	Above 500 kV and up to & including 800 kV	10900mm					
SL	Item Description		Existing Works	New or Alt to Existing Works	Ch	Item		
1.9.3	<b>Minimum Horizontal Distance Of Structures</b> , carrying electrical conductors crossing a railway - measured at right angles from the centre of nearest track to any part of a structure (all structures shall be rigid and well founded)		(H+2.135) metre	(H+6) metre	I	11 (iv) (i) & (ii)		
<p>'H' is Height of Structure from Ground Level</p> 								
<p><b>Note :</b></p> <p>(i) Any post/structure which is so constructed or guyed as to remain in a vertical position, or failing this to continue to provide the minimum clearances of 2.135m, with one or all of the conductors broken or, with its conductors attached, when subjected to maximum wind pressures, shall be considered to be a "rigid and well founded post/structure".</p> <p>(ii) 'H' is height of structure in metres.</p>								
SL	Item Description			Minimum	Ch	Item		
1.9.4	<b>Height above rail level</b> for telegraph, telephone and other such low tension wires, crossing a railway			6100 mm	I	11 (iii)		

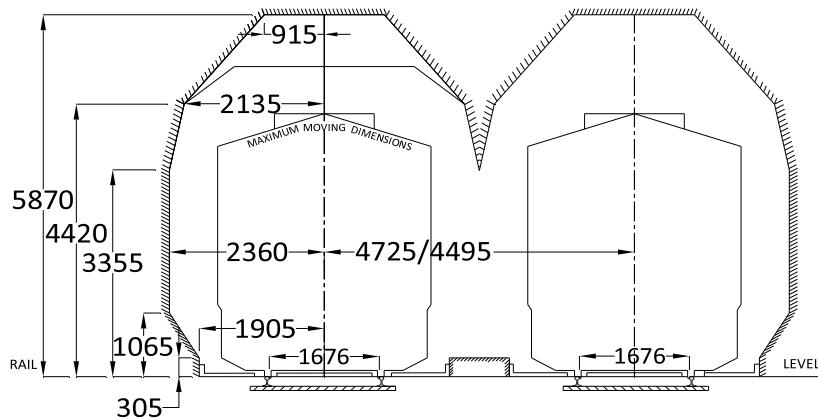
SL	Item Description	Maximum	Ch	Item
1.10	<b>Interlocking and Signal Gear</b> : Height above rail level of any part of interlocking or signal gear for a width of 1600mm or 1830mm in the case of tunnels, through and semi-through girder bridges on either side of centre of track subject to the restriction embodied in the note (a) below.	64 mm	/	12

**Note :**

- (a) For a distance of 229 mm 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 4.5.4.1 of Chapter IV] 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 gears projecting above rail level between the rails of a track to prevent hanging couplings from damaging the gear.

SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item		
1.11	<b>Tunnels, Through and Semi-through girder bridges:</b>						
1.11.1	Minimum distance - centre to center of track	4495 mm	4725 mm	/	13(i)		
SL	Item Description	Minimum		Ch	Item		
1.11.2	<b>Horizontal Distance Of any Structures from Center of Track :</b>			/			
1.11.2.1	From rail level to 305mm above rail level	1905 mm		13(ii)			
1.11.2.2	From 305mm above rail level to 1065mm above rail level	1905 mm increasing to 2360 mm					
1.11.2.3	From 1065mm above rail level to 3355mm above rail level	2360 mm					

SL	Item Description	Minimum	Ch	Item
1.11.2.4	From 3355mm above rail level to 4420mm above rail level	2360 mm decreasing to 2135 mm	I	13(ii) Note (iv)
1.11.2.5	From 4420mm above rail level to 5870mm above rail level	2135 mm decreasing to 915 mm		
1.11.2.6	Where DC Traction is in use : From 4420mm above rail level to 5410 mm above rail level	2135 mm decreasing to 915 mm		

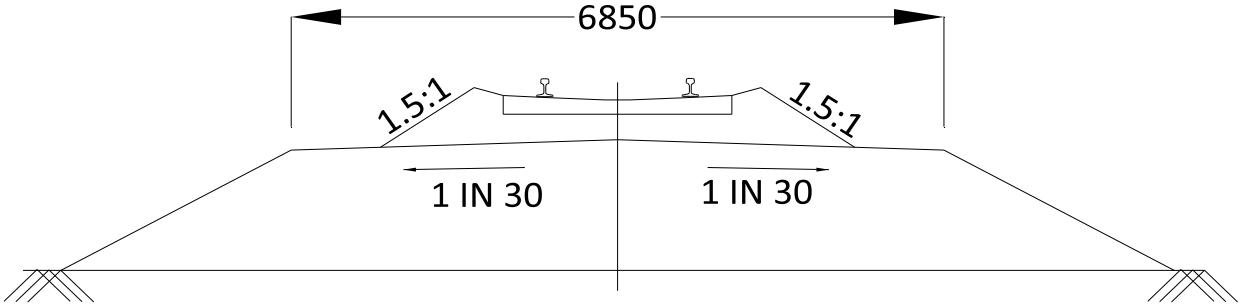
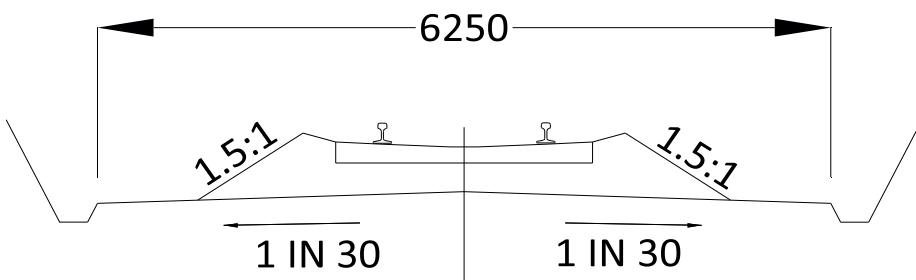
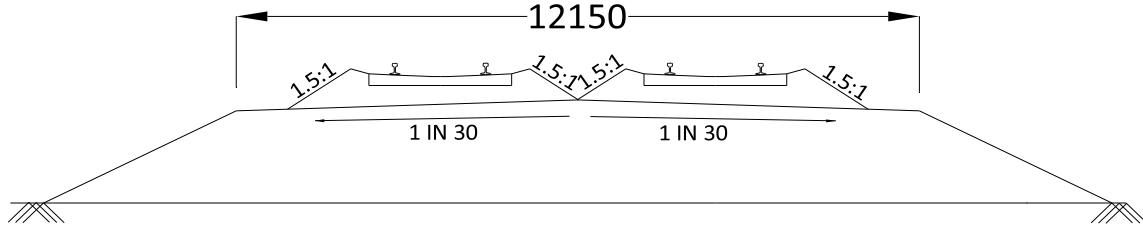


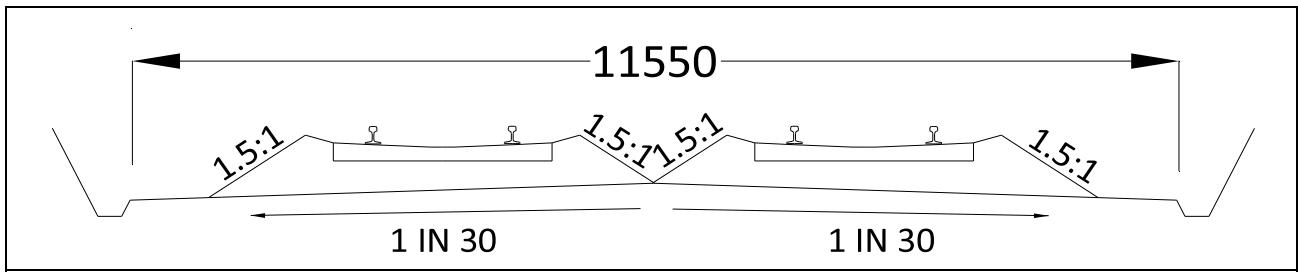
**Note :**

- (i) 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 the centre of track.
- (ii) In case of existing structures, a special clearance study shall be made which will be accepted by Electrical Inspector of the Railways, as indicated in Appendix 'B' before electric traction is introduced.
- (iii) See Appendix 'A' for 'extra clearances required on curves'.
- (iv) Tunnels, through girder and semi-through girder bridges, outside station yards should be treated as heavy overhead structures, such as ROB for electrification works and the same dimensions, as mentioned in item 1.8.3.2, above shall be applicable and OHE arrangement shall be as per RDSO Drawings.

SL	Item Description	Maximum	Ch	Item
1.12	<b>Safety Refuges :</b>		I	
1.12.1	Maximum distance apart of <b>Refuges</b> in <b>Tunnels</b>	100 m		14
1.12.2	Maximum distance apart of <b>Trolley Refuges</b> -			15

SL	Item Description	Maximum		Item
1.12.2.1	On bridges with main spans of less than 100m	100 m		15(i)
1.12.2.2	On bridges with main spans of 100m or more	A refuge over each pier		15(ii)
SL	Item Description	Minimum	Ch	Item
1.13	<b>Formation Width :</b>			I
1.13.1	For <b>Single Line</b> straight track -			16
1.13.1.1	In Embankment	6850 mm		16(a)
1.13.1.2	In Cutting (excluding side drains)	6250 mm	I	16(b)
1.13.2	For <b>Double Line</b> straight track -			17
1.13.2.1	In Embankment	12150 mm		17(a)
1.13.2.2	In Cutting (excluding side drains)	11550 mm	I	17(b)



**Note :** The minimum formation width is based on :

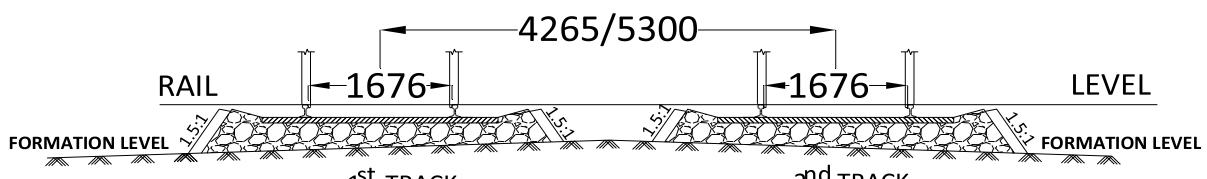
- (i) Ballast section, having 1.5:1 side slope
- (ii) Cross slope on top of formation of 1 in 30
- (iii) Track centre in case of double line section is 5300 mm

SL	Item Description	Minimum	Ch	Item
1.13.3	<b>Extra Formation Width on Curves :</b>		I	18
1.13.3.1	Increase <b>due to extra ballast</b> (500mm in place of 350mm) on outside of curves -			18(a)
	(a) Single Line	150 mm		
	(b) Double Line	300 mm		
1.13.3.2	Increase on double line due to <b>effect of super-elevation</b> -  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 super-elevation.  Increase in formation width will be decided after taking into account the increase mentioned in Item 1.13.3.1 & 1.13.3.2.			18(b)
1.14	<b>Gauge on straight and curves</b>	Minimum	Maximum	19
1.14.1	Straight including curve of radius 350 m or more	1671 mm	1679 mm	19(i)
1.14.2	Curve of Radius less than 350 meter	1676 mm	1686 mm	19(ii)

**SCHEDULE – I**  
**CHAPTER 2 – STATION YARDS**  
[Refer Diagram No. 2]

**Note :**

- (i) For running EMU and other 3660mm wide rolling stocks on existing works, clearances prescribed under Item 1.11 for "Tunnels, Through and Semi Through, Girder Bridges" shall be required for all structures governed by item 2.1 and 2.9.
- (ii) A platform shelter may infringe Item 1.11.2.5 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 4610mm above rail level.

SL	Item Description	Existing Works	New or Alt to Existing Works	IRSOD-04	
				Ch	Item
2.1	<b>Spacing Of Tracks :</b>			II	1
2.1.1	Minimum distance centre to centre on straight tracks	4265 mm	5300 mm		1(i) & (ii)
					

**Note :**

- (a) See Appendix 'A' for 'extra clearance required on curves.'
- (b) OHE Mast and Signal Post shall not preferably be provided in between tracks. However, under unavoidable circumstances, the spacing mentioned in New or Alt to Existing Works of Item 2.1 above, shall be increased by equal to the width of such provisions / structures / foundation, as the case may be.

SL	Item Description	Existing Works	New or Alt to Existing Works		IRSOD-04	
			Recommended	Maximum	Ch	Item
2.2	<b>Maximum (Steepest) Gradient in Station Yards :</b> unless special safety devices are adopted and/or special rules enforced to prevent accidents in accordance with approved special instructions	1 in 400 (0.25%)	1 in 1200 (0.083%)	1 in 400 (0.25%)	II	2 (i) & (ii)

**Note :**

- (a) In case, it is not possible to provide the recommended gradient of 1 in 1200 (0.083%) in yard even after making efforts to provide grades as flat as possible, reason for deviation from recommended gradient and upto the specified maximum (steepest) gradient of 1 in 400 (0.25%) shall be recorded by the Zonal railway.
- (b) No station yard shall be constructed nor shall any siding join a passenger line on a grade steeper than 1 in 260 (0.38%), except where it is unavoidable and then also only with the previous sanction of Railway Board, obtained through the Commissioner of Railway Safety, when a slip siding or other safety arrangement is made sufficient to prevent accident.
- (c) The powers of condonation for gradient steeper than the specified standard maximum gradient of 1 in 400 (0.25%) shall be as under :

(i)	Steeper than 1 in 400 (0.25%) and up to 1 in 260 (0.38%)	:	Commissioner of Railway Safety
(ii)	Steeper than 1 in 260 (0.38%)	:	Railway Board through Chief Commissioner of Railway Safety

- (d) For above purpose, a station yard Means

(1) Station yard will be taken to extend-

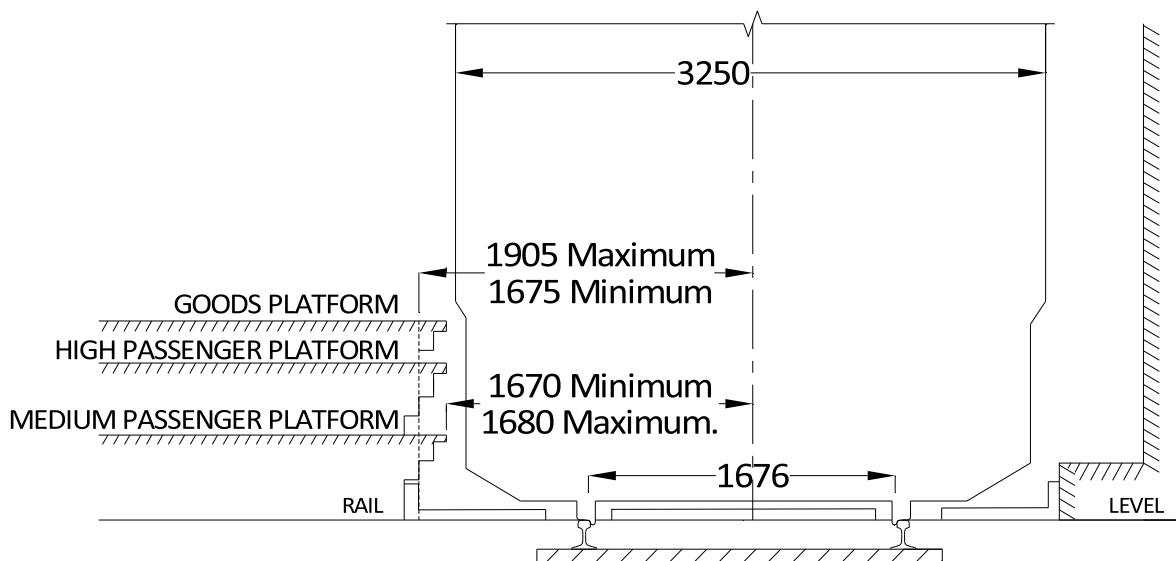
- (i) On single line to a distance of 50metres beyond Stock Rail joint of outer most points at either end of the station.
- (ii) On Double line where 2 aspect signaling is provided, from Home signals to a distance of 50 metres beyond stock rail joint of outermost points at trailing end or where there are no loops, to last stop signal of each line.
- (iii) On Double line where multiple aspect signaling is provided, to a distance of 50 metres beyond Stock Rail Joint (SRJ) of outermost points at either end of the station or where there are no loops, from Block Section Limit Board to the last stop Signal of each line.

(2) There must be no change of grades within 30 metres of any points or crossings.

(3) These provisions shall also apply to Flag station and Halt station in case of 'New Line' projects.

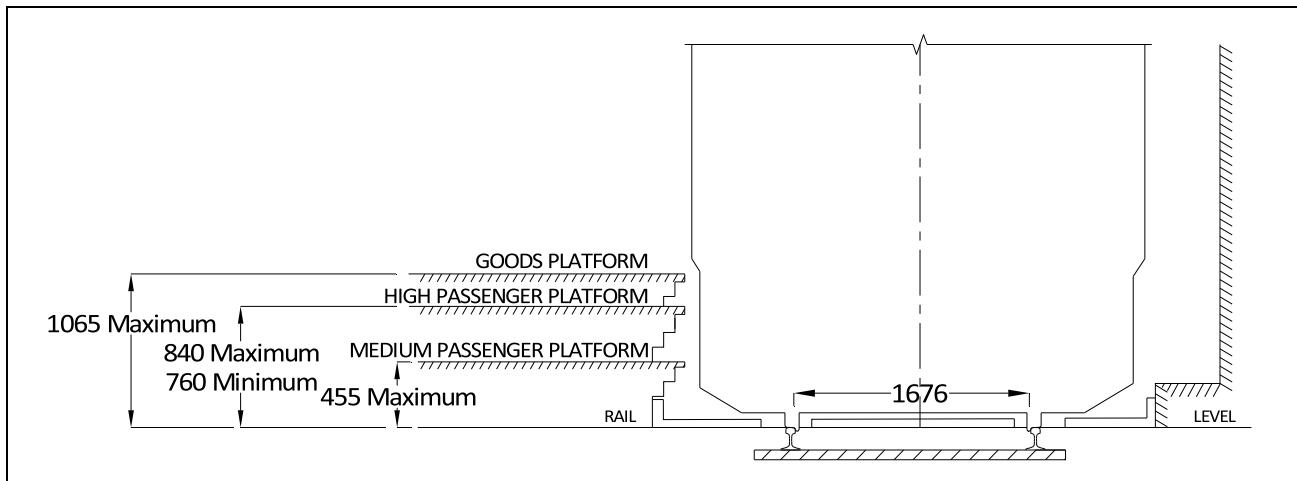
2.3	<b>Platform :</b> Horizontal distance from centre of track to the face (track side edge) of –				
SL	Item Description	Minimum	Maximum	Ch	Item
2.3.1	Passenger and Goods platform coping	1670 mm	1680 mm	II	3 (i) & (ii)

	<b>Note :</b> 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 1905 mm from centre of track (see Diagram no. 2).					
SL	Item Description	Minimum	Maximum	Ch	Item	
2.3.2	Any Platform wall	1675 mm	1905 mm	II	3 (iii)	

**Note :**

- 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 230 mm or by moving the platform wall 230 mm further from the track.
- See Appendix 'A' for 'extra clearance required on curves'.

2.4	Platform : Height above rail level for -			II	
2.4.1	High level passenger platforms	760 mm	840 mm	4	
2.4.2	Medium level passenger platforms	--	455 mm	5	
2.4.3	Goods platforms ( <b>except</b> horse and end loading platforms)	--	1065 mm	6	
2.4.4	Goods platforms (horse and end loading platforms)	--	1295 mm	<i>Note (d)</i>	

**Note :**

- (i) 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 from the face of platform wall, the rest can either be ramped to the same slope or fenced.
- (ii) The height of platforms, serving canted track should be measured vertically from the face to a plane passing through the top of both the rails.
- (iii) Signal wires or supports for signal wires may be allowed underneath the platform coping.
- (iv) Rail level platforms may also be provided, if so required.

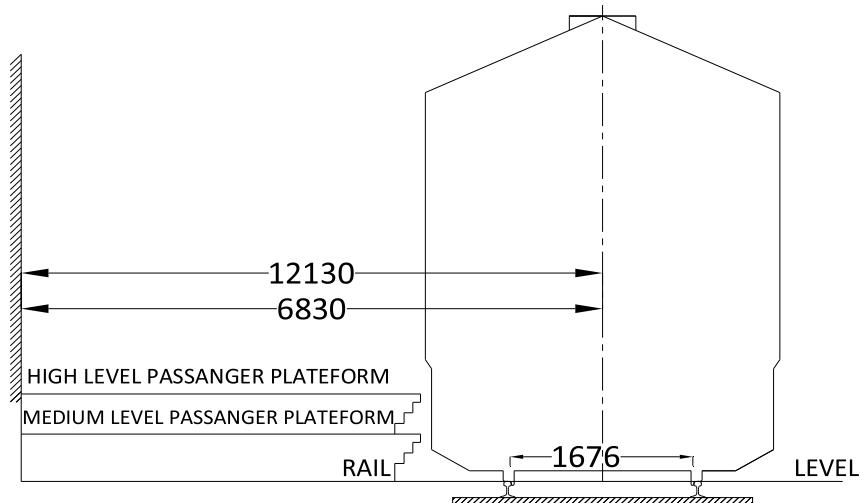
SL	Item Description	Minimum	Ch	Item
2.5	<b>Platform in Curves : Minimum Radius of Curve</b> in new line having passenger platform	875 metre (Max. 2 degree)	II	Note (g)

**Note :** 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 curve having 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.

2.6	<b>Platform Length :</b> <b>Length</b> of a passenger platform	Length of longest passenger train (excluding engine, booked to stop at the platform)	II	Note (f)
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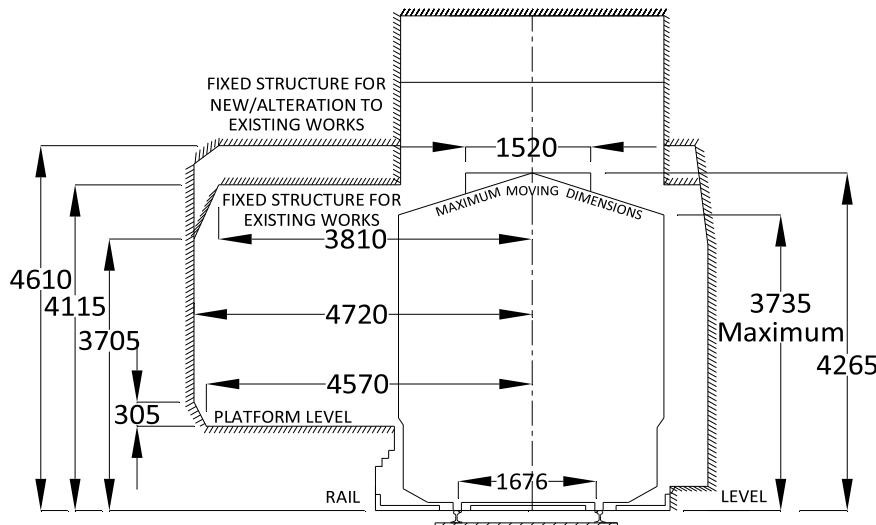
SL	Item Description	Minimum	Ch	Item
2.7	<b>Buildings and Structures :</b> <i>{Note : A pillar or column which covers more than 3716 sq. cm. in plan, must be classed as "building" and not as "isolated structure"}</i>		II	note of 8/8A
2.7.1	Horizontal distance of any building / structure on a passenger platform from centre line of track –			7(a)
2.7.1.1	From platform level to 305mm above platform level	5180 mm increasing uniformly to 5330 mm		7(a) (i)
2.7.1.2	From 305mm above platform level to 3430mm above rail level	5330 mm		7(a) (ii)
2.7.1.3	From 3430mm above rail level to 4115mm above rail level (for "existing works") And From 3430mm above rail level to 4610mm above rail level (for "new works" and "alteration to existing works")	5330 mm decreasing uniformly to 3810 mm		7(a) (iii) (1) & (2)
<b>Note :</b> <ul style="list-style-type: none"> <li>(i) For the return end of platform fencing, these dimensions may be reduced to 2740 mm.</li> <li>(ii) Isolated structures are covered in Item 2.7.4 below.</li> </ul>				

SL	Item Description	Minimum	Recommended	Ch	Item
2.7.2	Horizontal distance of any building or longitudinal boundary fence from centre line of track of passenger platform which is not on island platform for New or Alt to Existing Works	6830 mm	12130 mm	II	7(b) (i) & (ii)



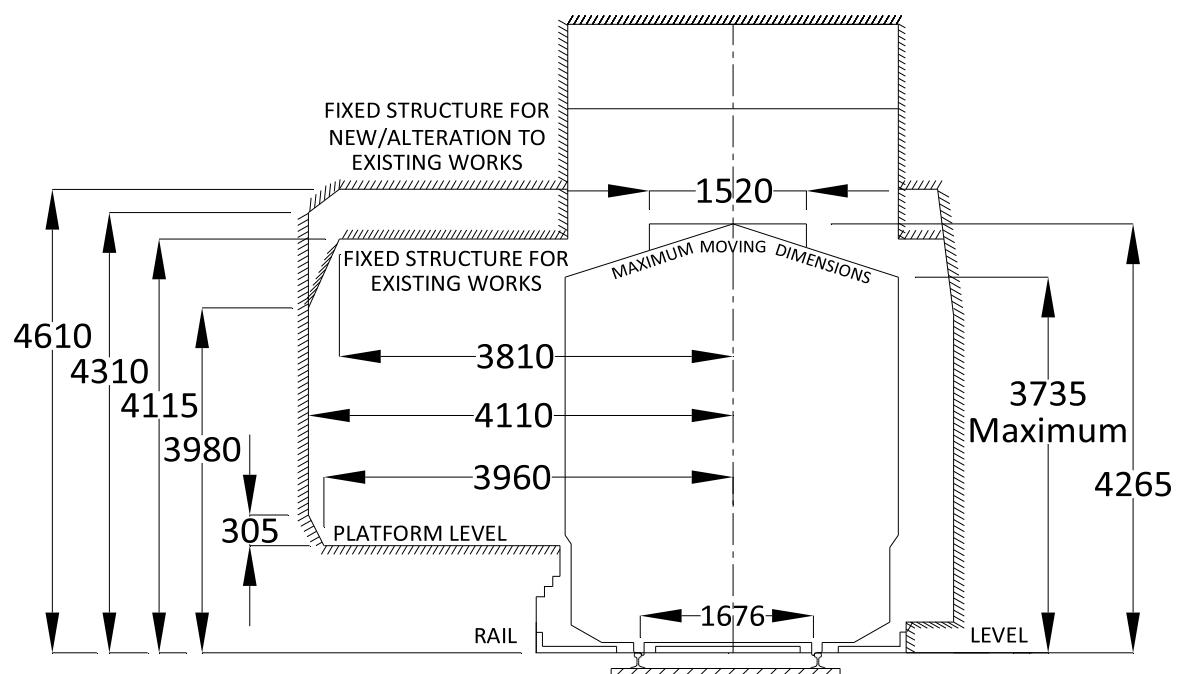
SL	Item Description	Minimum	Ch	Item
2.7.3	Horizontal distance of longitudinal boundary fence at 'D', 'E' and 'F' category stations (subject to stipulation that if any pucca construction of building/structure is done in future, provisions of Item 2.7.2 shall be followed)	5330 mm	II	7(b) note (c)
<b>Note :</b>				
(a) Recommended dimension allows for setting back the platform to make room for an additional track in future, without infringing minimum dimension.				
(b) Item 2.7.2 shall 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.				
2.7.4	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 –	II	8	

SL	Item Description	Minimum	Ch	Item
2.7.4.1	From platform level to 305mm above platform level	4570 mm increasing uniformly to 4720 mm	II	8(i)
2.7.4.2	From 305mm above platform level to 3705mm above rail level	4720 mm		8 (ii)
2.7.4.3	From 3705mm above rail level to 4115mm above rail level (for "existing works") And From 3705mm above rail level to 4610mm above rail level (for "new works" and "alteration to existing works")	4720 mm decreasing uniformly to 3810 mm		8 (iii) (a) & (b)



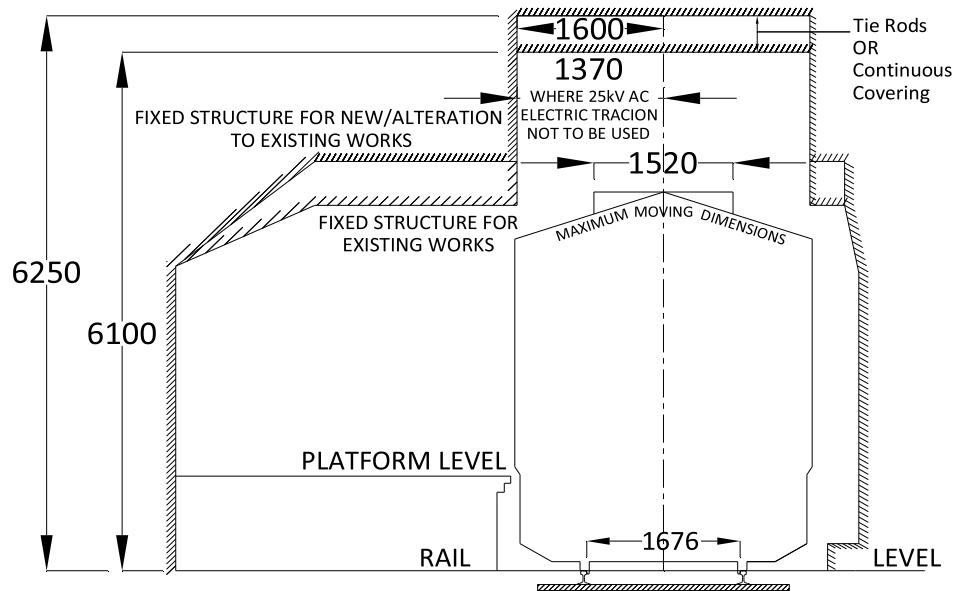
2.7.5	Minimum horizontal distance from centre line of track to a pillar, column, lamp or similar isolated structure on a goods platforms -	II	8A
2.7.5.1	From platform level to 305mm above platform level		8A (i)
2.7.5.2	From 305mm above platform level to 3980mm above rail level		4110 mm II 8A(ii) (a) & (ii)(b)

SL	Item Description	Minimum	Ch	Item
2.7.5.3	From 3980 mm above rail level to 4115mm above rail level in case of existing works	4110 mm decreasing uniformly to 3810 mm		8A (iii) (a)
2.7.5.4	From 3980 mm above rail level to 4310mm above rail level in case of “new works” or “alteration to existing works”	4110 mm		8A (ii) (b)
2.7.5.5	From 4310 mm above rail level to 4610 mm above rail level in case of “new works” or “alteration to existing works”	4110 mm decreasing uniformly to 3810 mm		8A (iii) (b)



2.8	Height of Over Head Structures above rail level in a passenger station	II	
2.8.1	Of tie rods or any continuous covering –		9
2.8.1.1	For a width of 1600mm on either side of the centre of track		6250 mm

SL	Item Description	Minimum	Ch	Item
2.8.1.2	For a width of 1370mm on either side of centre of track on lines other than main lines where 25 kV AC electric traction is not likely to be used or on the existing primary lines which are not likely to be electrified	6100 mm		9 Note (1) & (2)



**Note :**

- (1) It does not apply to overhead piping parallel to the track.
- (2) A low roof that infringes Item 2.8.1 is permissible in the case of goods or transhipment shed on a siding, provided it does not infringe the outline of the figures for the minimum fixed structure out of stations (see Diagram 1B).
- (3) Extra vertical clearance of 275mm under overhead structures and overhead equipment in electrified section or proposed to be electrified on 25 kV AC system shall be provided to allow for any raising of track to permit modern track structure, i.e. to cater for increased ballast cushion, larger sleeper thickness and deeper rail sections by using longer traction OHE Mast.

2.8.2	<b>Of Signal Gantry or Foot Over Bridge</b> for a width of 1600mm on either side of center of track		II	
2.8.2.1	Height above rail level	6250 mm		10
2.8.2.2	Height above rail level where D.C. traction is in use or likely to be used	5410 mm		10 Note (i)

SL	Item Description	Minimum	Ch	Item
2.8.2.3	Height above rail level on secondary lines where electric traction is not likely to be introduced. 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.	4875 mm	II	10 Note (ii)

NOTE : MIN. HEIGHT WHERE D.C TRACTION IS IN USE OR LIKELY TO BE USED.

NOTE : MIN. HEIGHT ON SECONDARY LINES WHERE ELECTRIC TRACTION IS NOT LIKELY TO BE INTRODUCED.

MAXIMUM MOVING DIMENSIONS

PLATFORM LEVEL

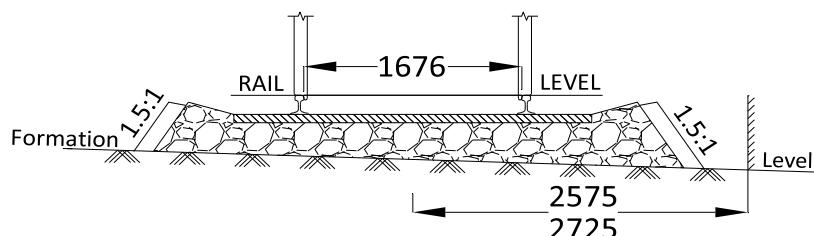
RAIL

LEVEL

**Note : In case of restricted height of existing overhead structures :**

- (i) However, for existing overhead structures, dimensions given in Para 1.8.4 of Chapter-I, Schedule-I : General shall be applicable.
- (ii) Tunnels, through girder and semi-through girder bridges in station yards shall be treated as heavy overhead structures, such as ROB for electrification works and the same dimensions, as mentioned in Item 1.8.4 shall be applicable.

SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item
2.9	<b>Minimum horizontal distance from centre of track to any structure :</b>	2575 mm	2575 mm	II	11
2.9.1	<b>Below rail level and up to formation level of track -</b>				
2.9.1.1	On straight and curves up to radius of 875m (Less than and up to 2°)			(A) (v), B (vii)	

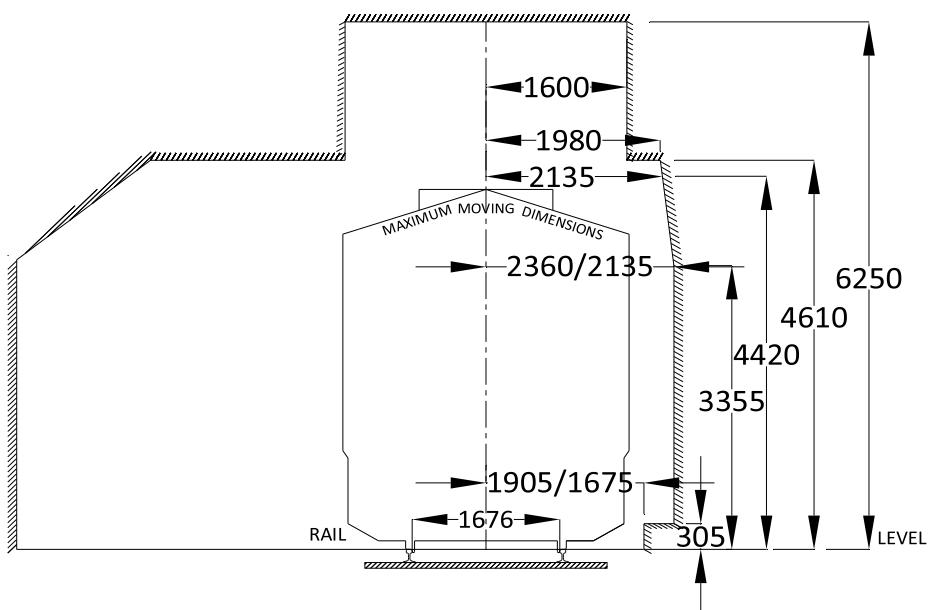
SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item
2.9.1.2	On curves with radius less than 875m (More than 2°)	2725 mm	2725 mm	II	(A) (vi), B (viii)
<b>Note :</b>					
<p>(i) It shall not be applicable in case of bridges, tunnels, ballast less track including washable aprons.</p> <p>(ii) In case of electrification works &amp; Alteration works in existing yards, no foundation/mast/signal post/any other structure shall be provided between two tracks. In case it is inescapable, the minimum distance of edge of foundation/mast/signal post/ any other structure from centre of track shall be 2360mm for straight track and up to curvature of 2° and 2510 mm in case of curvature more than 2°. The distance shall be proportionately increased, based on available track centre distance up to minimum distance of 2575mm/ 2725mm, as the case may be.</p> <p>(iii) Various fixtures, which are attached to the track; like lock bar, point machine, traction bonds, point &amp; signal rodding etc. and are required to be fitted with the rail can be provided and the clearances mentioned above shall not be applicable to these Items.</p>					
					
2.9.2	<b>For height above rail level of track –</b>			II	11
2.9.2.1	From rail level to 305mm above rail level	1675 mm	1905 mm		(A)(i) & B (i)
2.9.2.2	From 305mm above rail level to 1065mm above rail level	2135 mm	1905 mm increasing to 2360 mm		(A) (ii) & B (ii)
2.9.2.3	From 1065mm above rail level to 3355mm above rail level	2135 mm	2360mm		(A)(ii) & B(iii)
2.9.2.4	From 3355mm above rail level to 4115mm above rail level	2135 mm decreasing to 1980 mm	--		(A) (iii)

SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item
2.9.2.5	From 4115mm above rail level to 6250mm above rail level	1600mm	--	II	(A) (iv)
2.9.2.6	From 3355mm above rail level to 3735mm above rail level	--	2360 mm		B (iii)
2.9.2.7	From 3735mm above rail level to 4420mm above rail level		2360 mm decreasing to 2135 mm		B (iv)
2.9.2.8	From 4420 mm above rail level to 4610 mm above rail level	--	2135 mm decreasing to 1980 mm		B iv)
2.9.2.9	From 4610mm above rail level to 6250mm above rail level	--	1600 mm		B (vi)

**Note :**

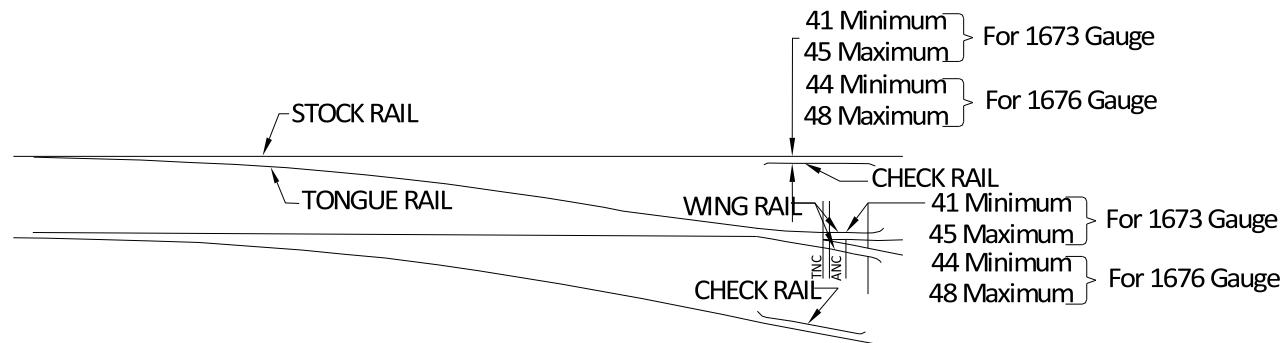
(a) See Appendix 'A' for extra clearances required on curves.

(b) On lines other than main lines or existing lines where electric traction is not likely to be introduced, the horizontal distance of 1370mm from height of 4115mm to 6100mm above rail level may be allowed.



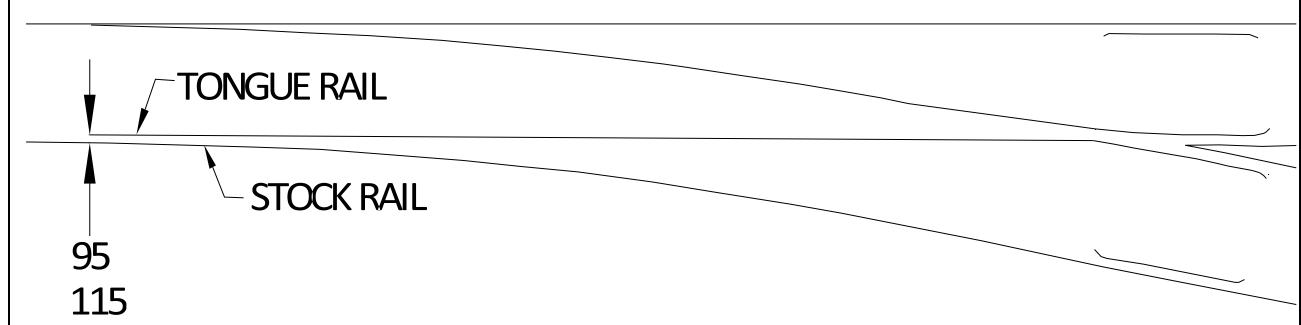
SL	Item Description	Minimum	Maximum	Ch	Item
2.10	<b>Points and Crossings –</b>			II	
2.10.1	Clearance of check rail opposite nose of crossing	44 mm	48 mm		12 & 13
2.10.2	Clearance of wing rail at nose of crossing	44 mm	48 mm		14 & 15

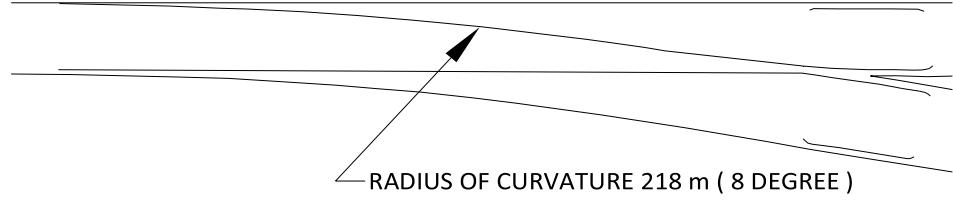
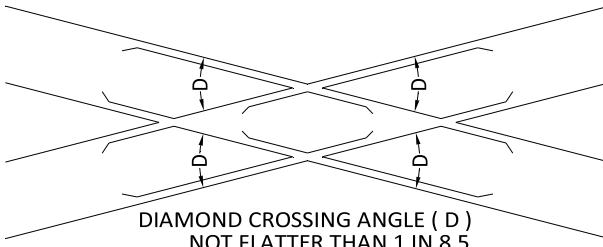
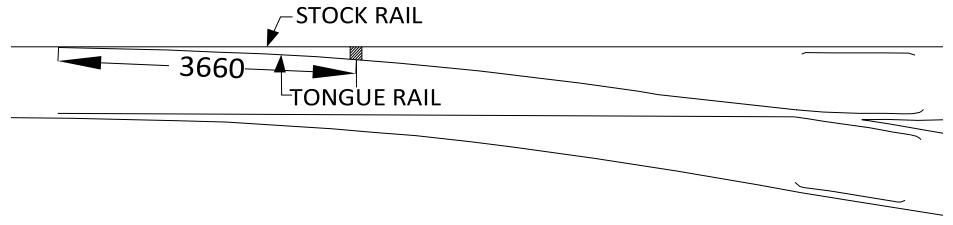
**Note :** In case of turnouts laid with 1673mm gauge, the minimum and maximum clearances shall be 41mm & 45mm respectively for Item 2.10.1 and 2.10.2.



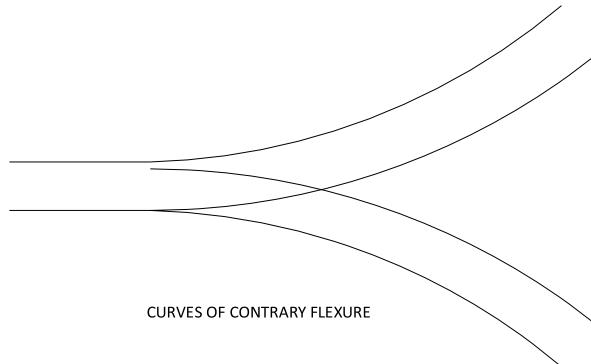
SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item
2.10.3	Minimum clearance between toe of open switch and stock rail	95 mm	115 mm	II	16

**Note :** Clearance can be increased up to 160mm in curved switches in order to obtain adequate clearance between gauge face of stock rail and back face of tongue rail.



SL	Item Description	Minimum	Ch	Item
2.10.4	Radius of curvature for slip points, turnouts or crossover roads	218 metre (8 degree)	II	17
				
<p><b>Note :</b> In special cases mentioned below, this may be reduced to not less than the minimum of -</p> <ul style="list-style-type: none"> <li>(i) 213m radius in case of 1 in 8.5 BG turnout with 6.4m overriding switch, and</li> <li>(ii) 175m radius in case of 1 in 8.5 scissors crossing to allow for sufficient straight over the diamond crossing between crossovers.</li> </ul>				
2.10.5	Angle of Crossing (Ordinary)	1 in 16	II	18
2.10.6	Diamond crossings not to be flatter than	1 in 8.5		19
<p><b>Note :</b> Crossing as flat as 1 in 20 and diamond crossing as flat as 1 in 10 will usually be sanctioned if recommended by CRS.</p> 				
2.10.7	Length of tongue rail	3660 mm	II	20
				
2.10.8	Length of train protection, point locking or fouling treadle bar	12800 mm	II	21
<p><b>Note :</b> There must be no change of cant (of outer rail over inner rail) between points 18m outside 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 2.11.</p>				

SL	Item Description	Maximum	Ch	Item
2.11	Cant and speed at stations on curves with turnouts of contrary and similar flexure :		II	
2.11.1	Main line : Reduction in equilibrium cant subject to the permissible run through speed, based on the standard of interlocking, calculated for the speed of the fastest train without reducing the speed on the mainline	75 mm		22
2.11.2	Turnout : Curves of contrary flexure : Permissible negative cant on the turnout (which is also the actual cant on main line) where $C = \frac{GV^2}{127R}$ <p>G = Gauge of Track + width of rail head in mm  V = Design speed of turnout in kmph  R = Radius in meter  C = Cant in mm</p>	(75 – C) mm		22(i)
2.11.3	Curves of similar flexure : Cant gradient (rate of running out of cant) in case of a reverse curve close behind the crossing of the turnouts  <i>Note : Reduction or otherwise of cant on mainline must necessarily be determined by the administration concerned.</i>	1 mm in 360 mm	II	22(ii)



CURVES OF SIMILAR FLEXURE

SL	Item Description	Minimum	Ch	Item
2.12	<b>Length of Sidings –</b>		II	23
2.12.1	Clear Available Length of one siding at any station where it is intended to cross trains	Length of longest train permitted in the section plus 35m		(i)
2.11.2	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 the crossing siding being lengthened on sections of the Railway where the ruling gradient is –			(ii)
2.11.2.1	1 in 100 or flatter	750 m		
2.11.2.2	Steeper than 1 in 100	Length of the longest train permitted in the section plus 35 m		
<b>Note :</b> Clear Available Length denotes : <ul style="list-style-type: none"> <li>(a) Distance between foot of the signal to Fouling Mark in the rear on the same line in case of main line and directional loop at station yard.</li> <li>(b) In case of common loop at the stations, Clear Available Length / Clear Standing Length shall be the distance between two starter signals of opposite direction on the same line.</li> </ul>				

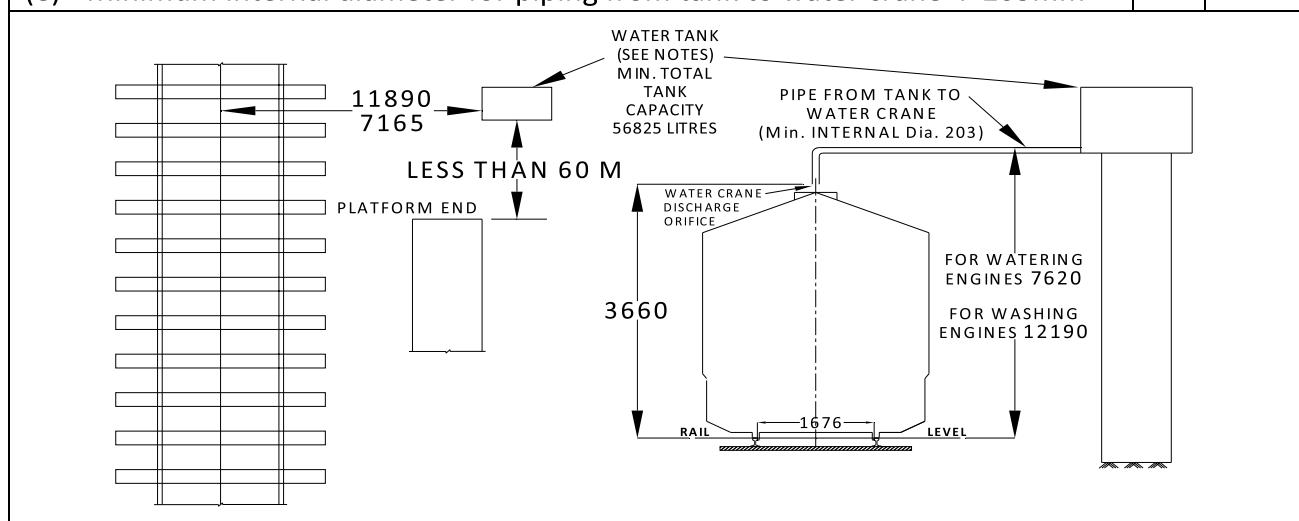
## SCHEDULE – I

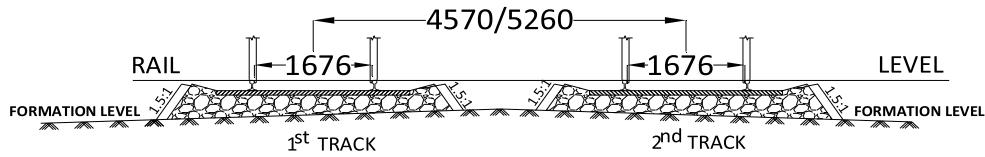
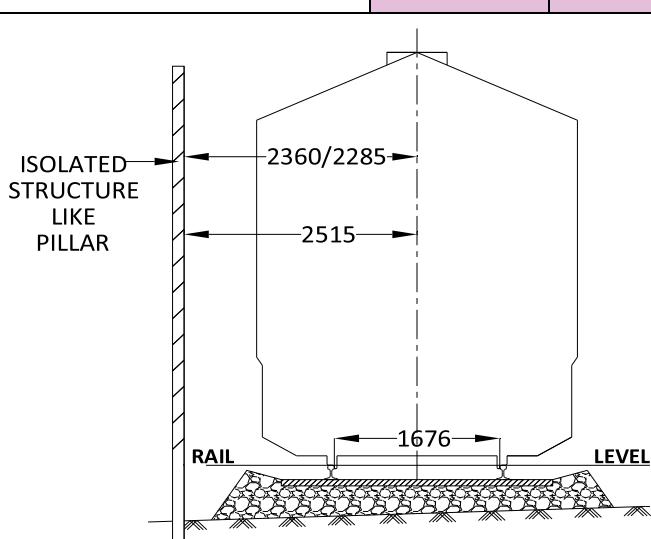
## CHAPTER 3 – WORKSHOPS AND STATION MACHINERY

SL	Item Description	Minimum	IRSOD-04	
			Ch	Item
3.1	Height of Discharge orifices of water crane above Rail level	3660 mm	III	1 (a)
SL	Item Description	Minimum	Recommended	Ch
3.2	Water Tanks : Distance from centre of track to face of tank house situated at less than 60 metres beyond the end of a passenger platform	7165 mm	11890 mm	III 1(b) (i) & (ii)

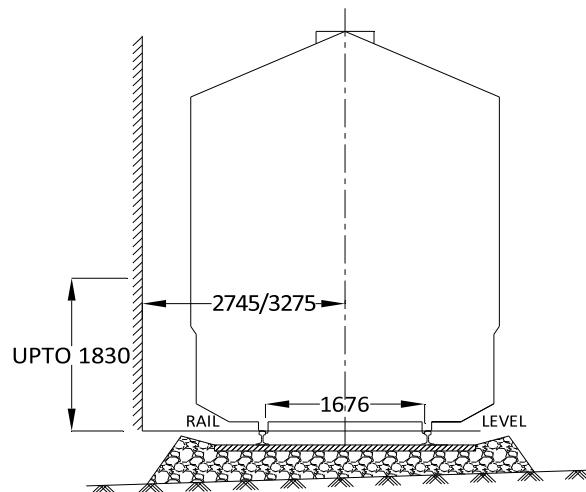
## Note :

- (a) Above dimensions need not be observed in case of small subsidiary or relay tanks, which can easily be removed, back to provide room for an extension of the yard.
- (b) Minimum dimension allows for extension of the platform and recommended dimension allows for 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 7620 mm
  - (ii) For washing engines 12190 mm
- (d) Minimum total tank capacity at any station 56.5 cu metres or 56825 litres
- (e) Minimum internal diameter for piping from tank to water crane : 203mm

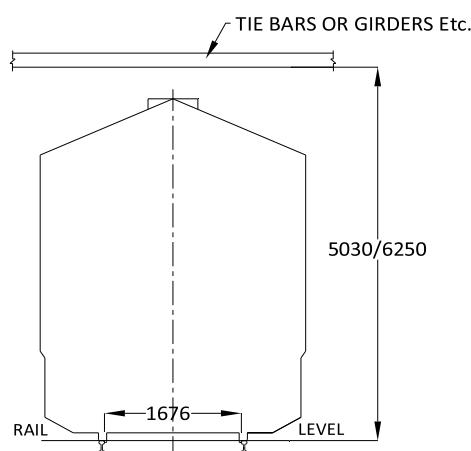


SL	Item Description	Existing Works	New or Alt to Existing Works	Ch	Item
3.3	<b>Workshops and Running Sheds :</b>			III	2
3.3.1	Minimum Distance between centre to centre of tracks in workshops	4570 mm	4570 mm		2 (i) & (ii)(a)
3.3.2	Minimum Distance between centre to centre of tracks in running sheds	4570 mm	5260 mm		2 (i) & (ii)(b)
<b>Note :</b> 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.					
					
3.3.3	Minimum Clear distance from centre of track to any isolated structure such as a pillar in Work shops	2285 mm	2360 mm	III	3 (i) (a) & (b)
3.3.4	Minimum Clear distance from centre of track to any isolated structure such as a pillar in running sheds	2515 mm	2515 mm		3 (ii)
					

SL	Item Description	Minimum	Ch	Item
3.3.5	Clear distance, for a height of 1830 mm above rail level, from centre of track to any continuous structure in –		III	4
3.3.5.1	Workshops	2745 mm		4 (i)
3.3.5.2	Running Sheds	3275 mm		4 (ii)
3.3.5.3	Running Sheds for Standard 'C' Railways	2745 mm		Note

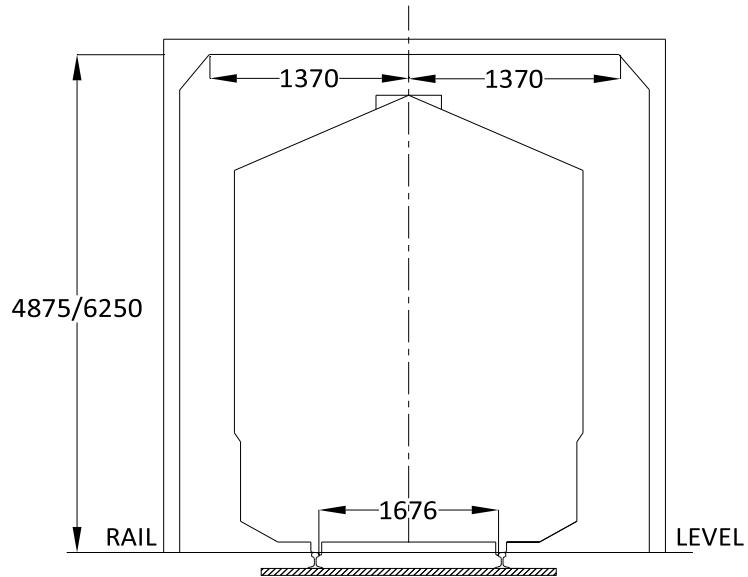


3.3.6	Height above rail level to overhead tie bars, girders etc. in workshops and running sheds -		III	5
3.3.6.1	Where electric traction is not likely to be used	5030 mm		5(i)
3.3.6.2	Where electric traction is likely to be used	6250 mm		5(ii)

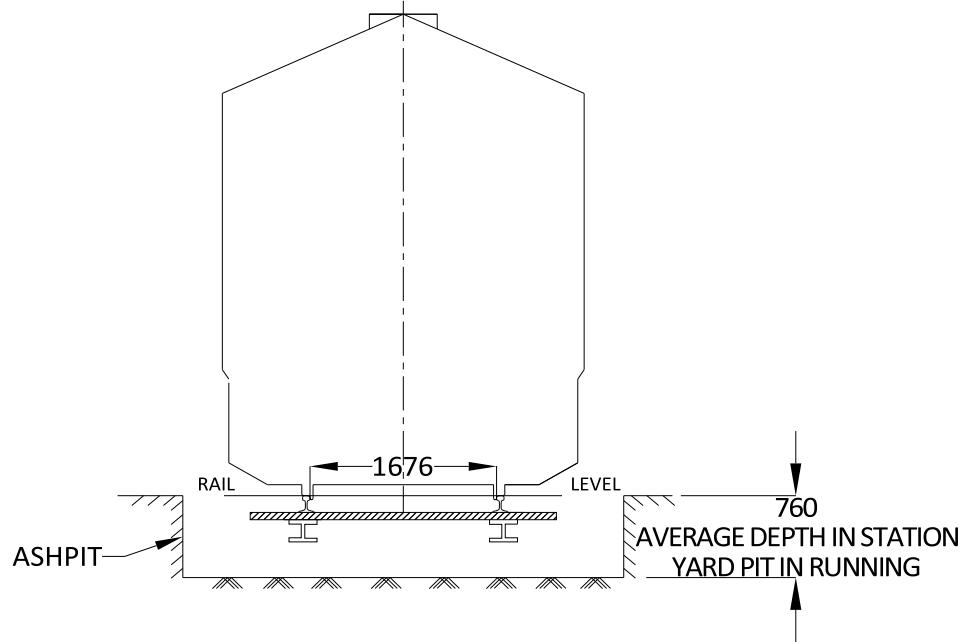


3.3.7	Height above rail level of doorways for a width of 1370mm on either side of centre of track in workshops and running sheds –		III	6

SL	Item Description	Minimum	Ch	Item
3.3.7.1	Where electric traction is not likely to be used	4875 mm	III	6 (i)
3.3.7.2	Where electric traction is likely to be used	6250 mm		6 (ii)

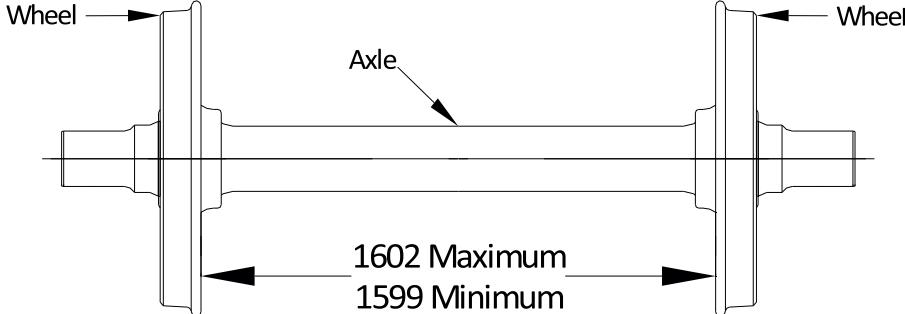
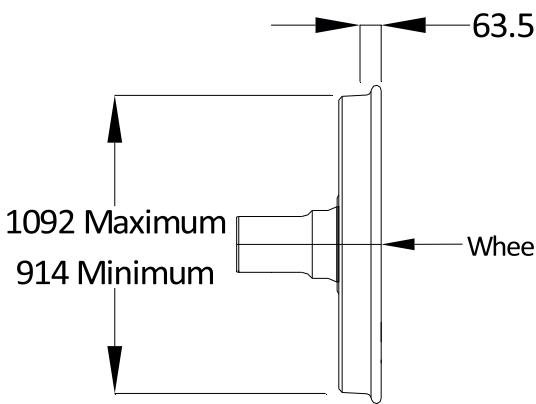


3.4	Ash Pits etc. - Average depth for Ash pits in station yards and pits in running sheds & for carriage examination	760 mm	III	7
<i>Note : Provision of Ash pits on run through lines, should, if possible, be avoided</i>				



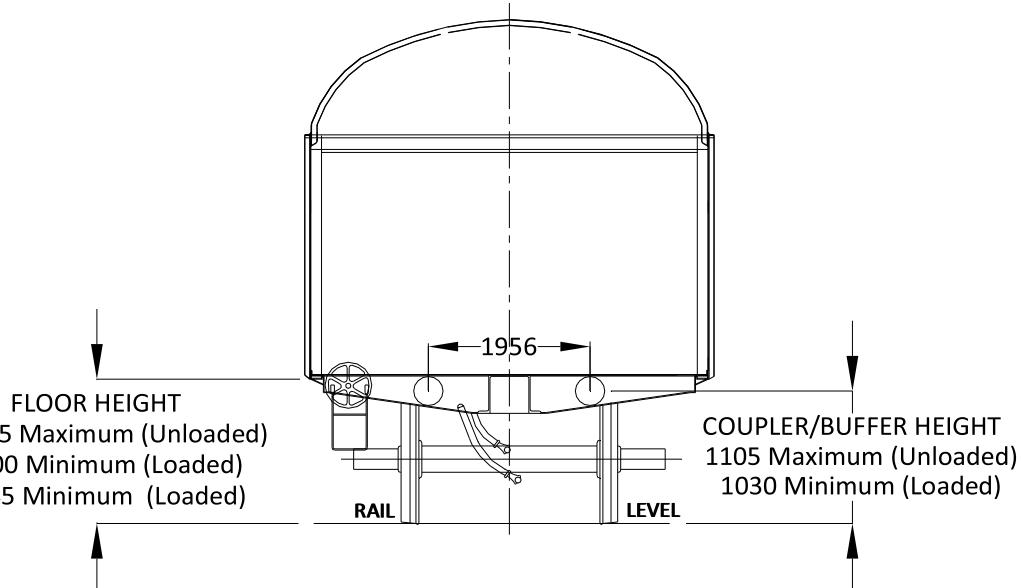
## SCHEDULE – I

CHAPTER 4– ROLLING STOCK  
(Carriage & Wagon)

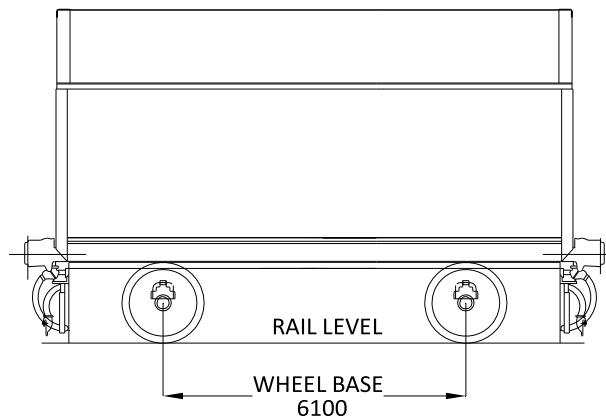
SL	Item Description	Minimum	Maximum	IRSOD-04			
				Ch	Item		
4.1	<b>Wheels and Axles :</b>		1599 mm 1602 mm	IV (A)			
4.1.1	Wheel gauge, or distance apart, for all wheel flanges	1599 mm			1		
4.1.2	Diameter on tread of new wheel, measured at 63.5 mm from wheel gauge face	914 mm			2 (i) & (ii)		
							
							
4.1.3	Projection for flange of <b>Tyre</b> , measured from tread at 63.5mm from wheel gauge face <i>{Minimum in case of new tyre and Maximum for worn tyre}</i>	28.5 mm	35 mm	IV (A)	3 & 4		

SL	Item Description	Minimum	Maximum	Ch	Item
4.1.4	Thickness of flange of tyre, measured from wheel gauge face at 13mm from outer edge of flange	16 mm	29.4 mm	IV (A)	5 & 6
4.1.5	Width of Tyre	127 mm	-	IV (A)	7
4.1.6	Incline of Tread	1 in 20		IV (A)	8
4.2	<b>Height of Floor above rail level :</b>			IV (A)	
4.2.1	Any unloaded vehicle	-	1345 mm		9
4.2.2	Fully loaded passenger vehicle	1200 mm	-		10
4.2.3	Fully loaded goods vehicle <i>{Note : This does not apply to crocodile wagons }</i>	1145 mm	-		11
4.3	<b>Buffers &amp; Couplings :</b>				
4.3.1	Distance apart for centres of buffers	1956 mm	1956 mm		12
4.3.2	Height above rail level for centres of buffers & CBC couplers for				
4.3.2.1	Unloaded vehicle	-	1105 mm		13

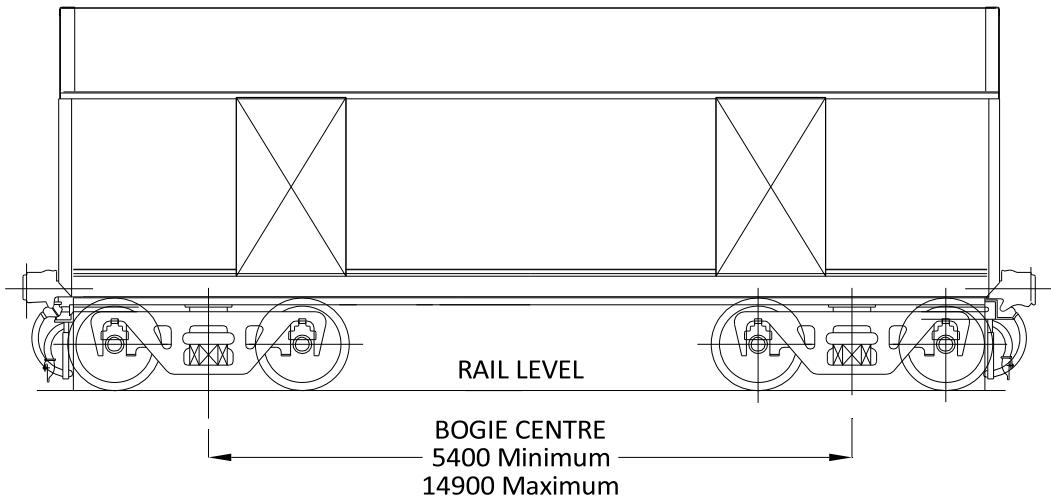
SL	Item Description	Minimum	Maximum		
4.3.2.2	Fully loaded vehicle	1030 mm	-	IV (A)	14



4.4	Wheel Base and Length of Vehicles :		IV (A)	
4.4.1	Rigid wheel base for –			
4.4.1.1	Four wheeled vehicles	-	6100 mm	15



4.4.1.2	Bogie truck of passenger vehicle	2440 mm	-	IV (A)	18(ii)
4.4.1.3	Bogie truck of all other vehicles	1830 mm	-		18(i)
4.4.2	Distance apart of bogie centres for bogie vehicles	5400 mm	14900 mm		16 & 17



SL	Item Description	Maximum	Ch	Item
4.4.3	Length of body or roof for –	8540 mm	IV (A)	19
4.4.3.1	Four wheeled vehicle			19(a)
4.4.3.2	Bogie vehicle			19(b)

**Note :**

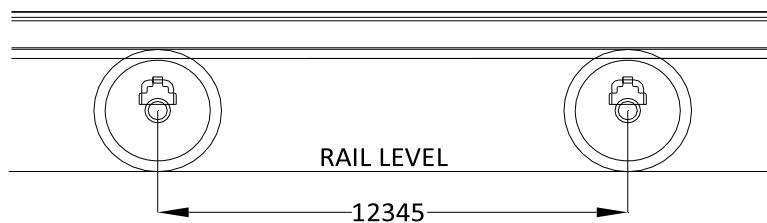
- (i) Maximum length of body or roof of bogie vehicles can be up to 23540 mm, subject to tapering of the ends in a manner that the end throw, when calculated as per Appendix 'A', is same as that for ICF coach of 21340 mm length and within this Schedule of Dimensions.
- (ii) A cornice may project beyond the maximum permissible length of the roof up to 51mm in the case of 4.4.3.1 above, beyond each end of the vehicle.
- (iii) Fittings on the end of a vehicle, such as step iron, vacuum brake piping, electrical connections, 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.

SL	Item Description	Maximum	Ch	Item
4.4.4	Length over centre buffer couplers or side buffers for –	9810 mm 22300 mm	IV (A)	20
4.4.4.1	Four wheeled vehicle			20(a)
4.4.4.2	Bogie vehicle			20 (b)

**Note :**

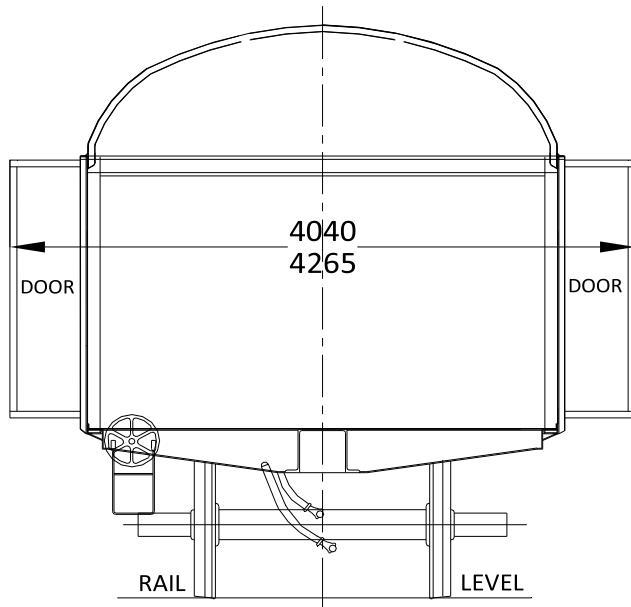
Maximum length over the centre buffer couplers or side buffers can be 24000mm for Bogie Vehicles, having maximum length of body or roof as 23540mm. However, the maximum length over the centre buffer couplers or side buffers for longer coaches as per Item 4.4.4.2 above shall be so arranged that difference between length over centre buffer couplers or side buffers and length of body or roof is not less than 460mm.

4.4.5	Distance apart between any two adjacent axles	12345 mm	IV (A)	21
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SL	Item Description	Maximum	Ch	Item
4.5	<b>Maximum Moving Dimensions</b> (see diagram 1D) –	2440 mm 3050 mm 3050 mm 3050 mm increasing gradually to 3250 mm	IV (A)	
4.5.1	Width over all projections :			
4.5.1.1	At 102mm above rail level, when fully loaded			22
4.5.1.2	At 305mm above rail level, when fully loaded			23
4.5.1.3	From 305mm above rail level to 1082 mm above rail level, when fully loaded			24
4.5.1.4	From 1082mm above rail level to 1170mm above rail level, when fully loaded			25

	<i>{Note : For freight bogie vehicles with maximum length of body or roof up to 14500mm and bogie centre distance up to 10000mm, maximum width over all projections from 305mm above rail level to 1082mm above rail level when fully loaded can be relaxed to 3135mm.}</i>			
<b>SL</b>	<b>Item Description</b>	<b>Maximum</b>	<b>Ch</b>	<b>Item</b>
4.5.1.5	From 1170mm above rail level when fully loaded to a height of 3735mm when empty	3250 mm	IV (A)	26
4.5.2	Width over open doors, including all projections for –		IV (A)	
4.5.2.1	Passenger vehicles	4040 mm	IV (A)	27
4.5.2.2	Goods vehicles <i>{Note : Doors of horse boxes, brake vans, luggage vans and rising &amp; falling flap doors of goods wagons are exempted from this rule}</i>	4265 mm	IV (A)	28

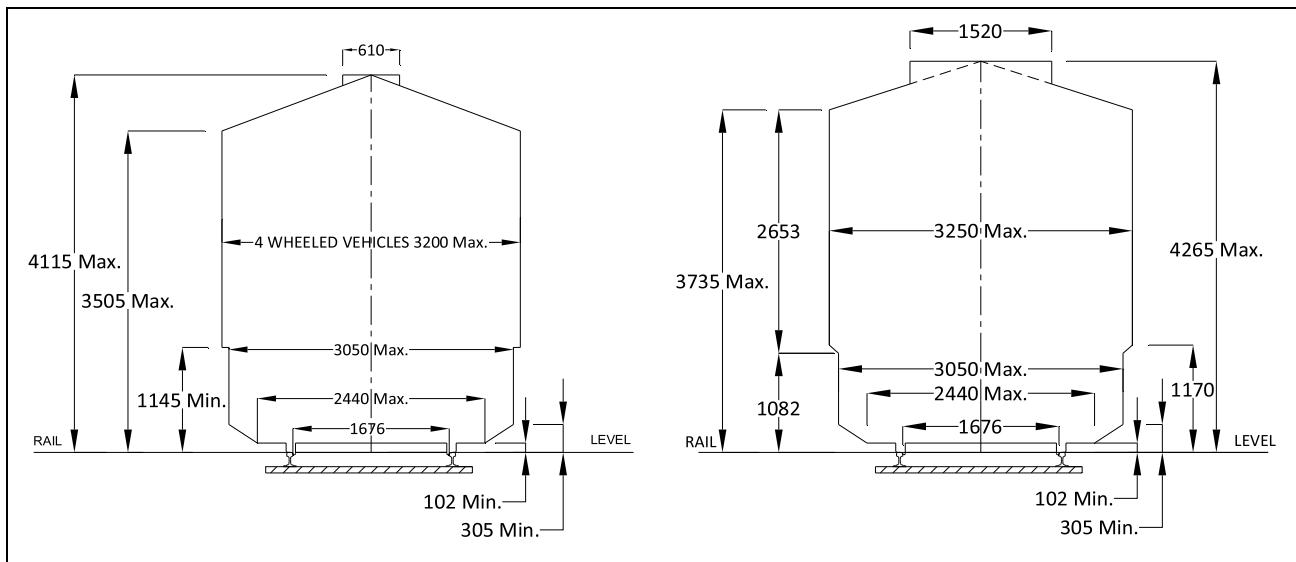


4.5.3	Height above rail level of unloaded vehicles –		IV (A)		
4.5.3.1	For a width of 760mm on either side of the centre			29	
4.5.3.2	At sides of vehicles			30	

**Note :**

- (i) Destination boards for passenger vehicles may project 76mm above the dimensions up to a maximum height above rail level at sides of vehicles when empty. (Applicable for Item 4.5.1.5, 4.5.2.1 and 4.5.3.2)
- (ii) In case of stocks exceeding the 1929 profile and within the maximum moving dimensions shown in Diagram 1D, clearance of the following Railways is required to be obtained for following locations before permitting the stock for general adoption :

SL	Railway	Section	Location
1	2	3	4
1.	ER	Andal - Sainthia Chord	Bridge No. 66
2.	NFR	Old Malda Singhabad	Tangon Bridge
3.	SER	Tata - Rourkela	Up Saranda Tunnel
4.	SECR	Bilaspur - Katni	Dn Bhortonk Tunnel

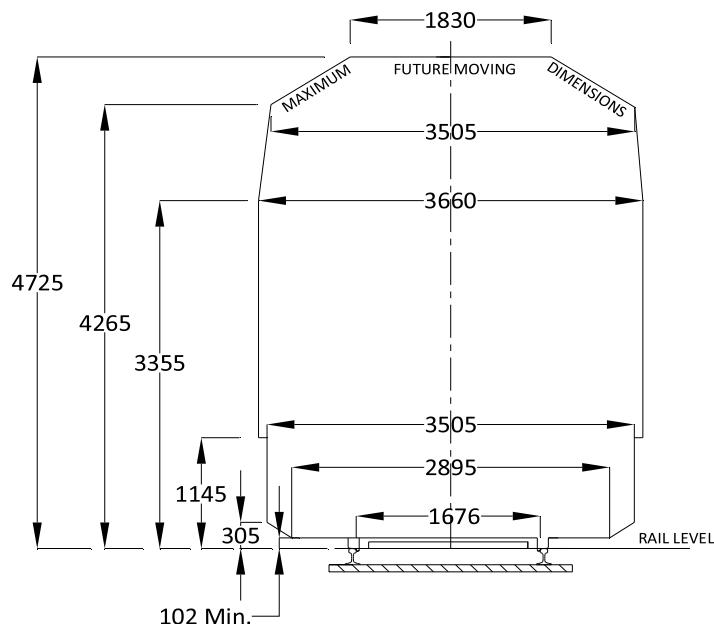


SL	Item Description	Minimum	Ch	Item
4.5.4	Height above rail level of fully loaded vehicle For a width of –	102 mm	IV (A)	
4.5.4.1	1220mm on either side of centre of track with the exception of wheels and attachments thereto {Note : A tyre or an attachment of a wheel may project below the minimum height of 102 mm from a distance of 51 mm inside to 216 mm outside of gauge face of the wheel}			31
4.5.4.2	1525 mm on either side of centre of track	305 mm		32
SL	Item Description	Maximum	Ch	Item
4.6	<b>Loading Gauge for Goods –</b>	3250 mm	IV (A)	
4.6.1	Maximum width			33
4.6.2	Maximum height above rail level at centre			34
SL	Item Description	Maximum	Ch	Item
4.6.3	Maximum height above rail level at sides	3735 mm	IV (A)	35
<b>Note :</b> The loading gauge is for testing loaded and empty vehicles; the maximum dimensions are given in Item 4.5.1.5, 4.5.2.1 and 4.5.3 above.				

**SCHEDULE – I**  
**CHAPTER 5 – ROLLING STOCK**  
**(3660 mm Wide Stocks)**

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

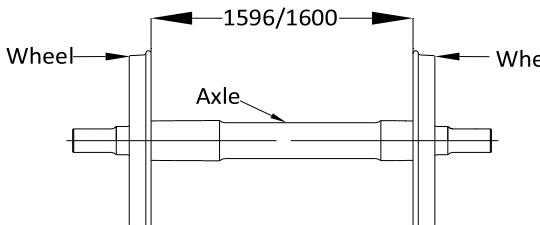
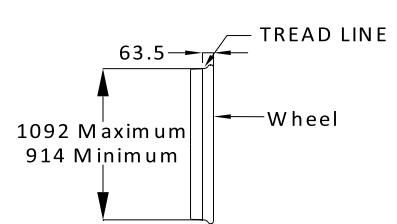
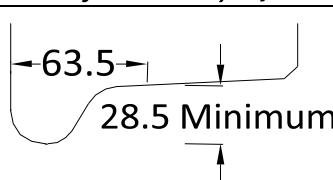
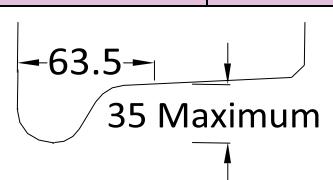
SL	Item Description	Maximum	IRSOD-04	
			Ch	Item
5.1	<b>Maximum future moving dimensions : (See Diagram No. 1-A)</b>		IV (B)	
5.1.1	Maximum width over all projections—			1
5.1.1.1	At 102mm above rail level, when fully loaded	2895 mm		1(i)
5.1.1.2	At 305mm above rail level, when fully loaded	3505 mm		1(ii)
5.1.1.3	From 305mm to 1145mm above rail level, when fully loaded	3505 mm		1(iii)
5.1.1.4	From 1145mm, when fully loaded to 3355mm above rail level, when empty	3660 mm		1(iv)
5.1.1.5	At 4265mm above rail level, when empty	3505 mm		1(v)



SL	Item Description	Maximum	Ch	Item
5.1.2	Width over open doors including all projections –	IV (B)		
5.1.2.1	For passenger vehicles	4495 mm	2	
5.1.2.2	For goods vehicles <i>{Note : Doors of horse boxes, brake vans, luggage vans and rising &amp; falling flap doors of goods wagons are exempted from this rule}</i>	4500 mm	3	
5.1.3	Height above rail level for unloaded vehicle –			
5.1.3.1	For a width of 915mm on either side of centre of vehicle	4725 mm	4	
5.1.3.2	At sides of vehicle	4265 mm	5	
SL	Item Description	Minimum	Ch	Item
5.1.4	Height above rail level for loaded vehicle –	IV (B)		
5.1.4.1	For a width of 1450mm on either side of centre of track, with the exception of wheels and attachments thereto <i>{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 wheel}</i>	102 mm	6	
5.1.4.2	At 1755 mm on either side of centre of Track	305 mm	7	

SL	Item Description	Maximum	Ch	Item
5.2	Loading Gauge for Goods –		IV (B)	
5.2.1	Width –			8
5.2.1.1	At a height of 3380mm above rail level	3710 mm		8 (i)
5.2.1.2	At a height of 4295mm above rail level	3555 mm		8 (ii)
5.2.2	Height –			
5.2.2.1	For a width of 915mm on either side of centre of track	4750 mm		9
5.2.2.2	Above rail level at sides	4295 mm		10
<b><i>Note : The loading gauge is for testing loaded and empty vehicles; the maximum dimensions are given in Items 5.1.1.4 and 5.1.3 above.</i></b>				

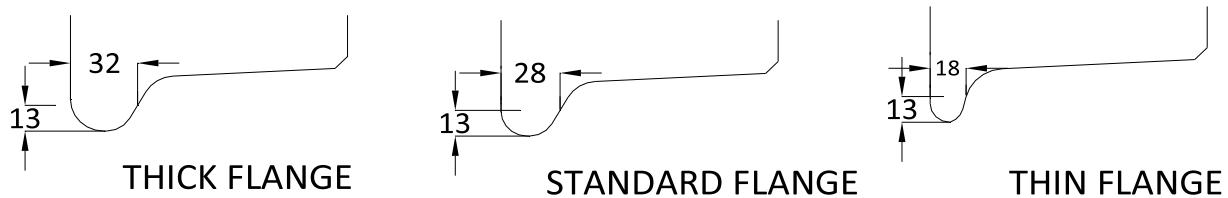
**SCHEDULE – I**  
**CHAPTER 6 – ROLLING STOCK**  
**(Locomotive)**

SL	Item Description	Minimum	Maximum	IRSOD-04		
				Ch	Item	
6.1	<b>Wheels and Axles :</b>			IV (C)		
6.1.1	Wheel gauge or distance apart for wheel flanges –				1	
6.1.1.1	Wheels with thick flanges/wear adopted wheel profile	1596 mm	1596 mm		1(a)	
6.1.1.2	Wheels with standard flanges or thin flanges or without flanges	1600 mm	1600 mm		1(b), (c) & (d)	
	<i>(See Item 6.1.5 for identification of thick/wear adopted, standard &amp; thin flanges)</i>					
						
6.1.2	Diameter on the tread of new locomotive wheels, measured at 63.5mm from wheel gauge face	914 mm	1092 mm	IV (C)	2(i) & (ii)	
6.1.3	Projection for flange of <b>tyre</b> , measured from tread at 63.5mm from wheel gauge face <i>{ Minimum in case of new tyre and Maximum for worn tyre }</i>	28.5mm	35 mm		3 & 4	
						

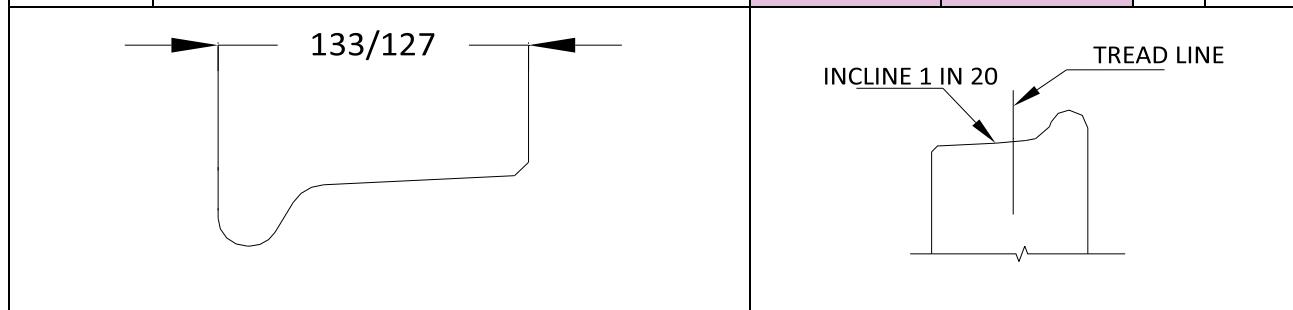
SL	Item Description	Minimum	Maximum	Ch	Item
6.1.4	Thicknesses of tyre flanges, measured at 13mm from outer edge of flange –			IV (C)	5
6.1.4.1	Thick flanges/wear adopted wheel profile	--	32 mm		5(a)
6.1.4.2	Standard flanges	--	28 mm		5(b)
6.1.4.3	Thin flanges	--	18 mm		5(c)

**Note :**

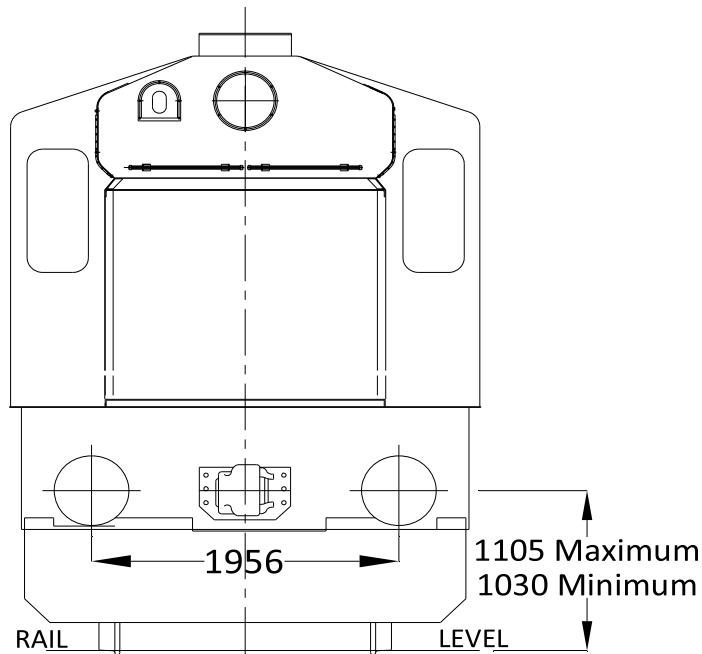
- (i) The above values of flange thickness are measured from the back face of tyre.
- (ii) Minimum size of flange of locomotive tyre shall be determined by condemning profile gauge, which specifies the minimum thickness and the limits of angularity of the flange on gauge face.



6.1.5	Width of tyres –			IV (C)	6
6.1.5.1	For Locomotive coupled wheels	133 mm	-		6(a)
6.1.5.2	For Locomotive wheels other than coupled	127 mm	-		6(b)



SL	Item Description	Minimum	Maximum	Ch	Item	
6.1.6	Incline of tread <i>{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}</i>	1 in 20		IV (C)	7	
6.2	<b>Buffers and Couplings :</b>					
6.2.1	Distance apart for centres of buffers	1956 mm			8	
6.2.2	Height above rail level for centres of Buffers & CBC –					
6.2.2.1	For <b>empty</b> locomotive	-	1105 mm		9	
6.2.2.2	When <b>fully loaded</b> (Fuel Tank Full)	1030 mm	-		10	

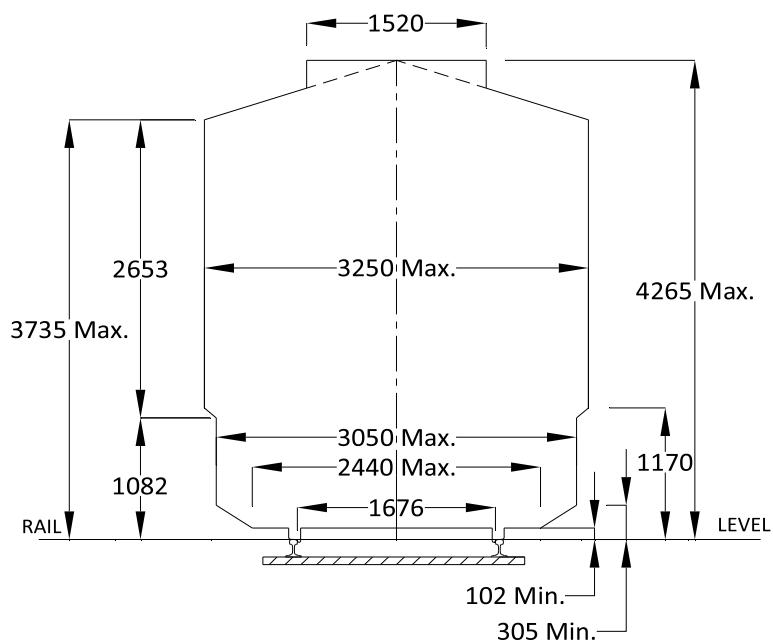


SL	Item Description	Maximum	Ch	Item
6.3	<b>Maximum Moving Dimensions :</b> (see Diagram 1D)			IV (C)
6.3.1	Width over all projections –			
6.3.1.1	At 102mm above rail level, when fuel tank fully filled	2440 mm		

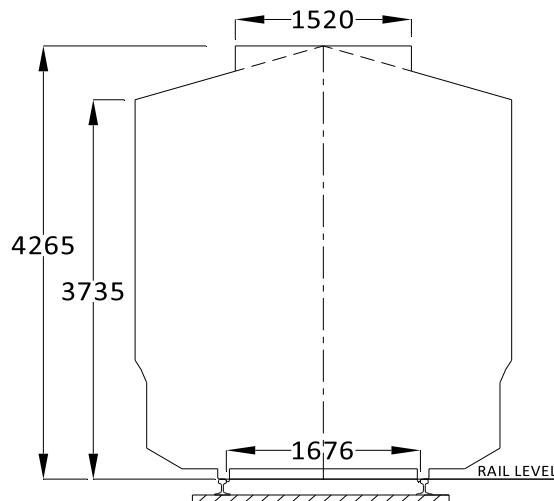
SL	Item Description	Maximum	Ch	Item
6.3.1.2	At 305mm above rail level, when fuel tank fully filled	3050 mm	IV (C)	11C (ii)
6.3.1.3	From 305mm above rail level to 1082mm above rail level, when fuel tank fully filled	3050 mm		11C (iii)
6.3.1.4	From 1082mm above rail level to 1170mm above rail level, when fuel tank fully filled	3050 mm increasing gradually to 3250 mm		11C (iv)
6.3.1.5	From 1170mm, when fuel tank fully filled to 3735mm above rail level, when empty	3250 mm		11C (v)

**Note :**

- (i) Maximum width over all projections from 925mm (minimum in all conditions) above rail level to 1082mm above rail level, when fully loaded can be 3075mm (in the bogie portion only).
- (ii) Maximum distance apart of bogie centres (i.e. pivot centres) for locomotives shall be 15810mm, subject to the condition that width of locomotive at the centre is such that mid-throw, when calculated as per Appendix 'A', is same as that for ICF coach of 21340mm length and within this Schedule of Dimensions



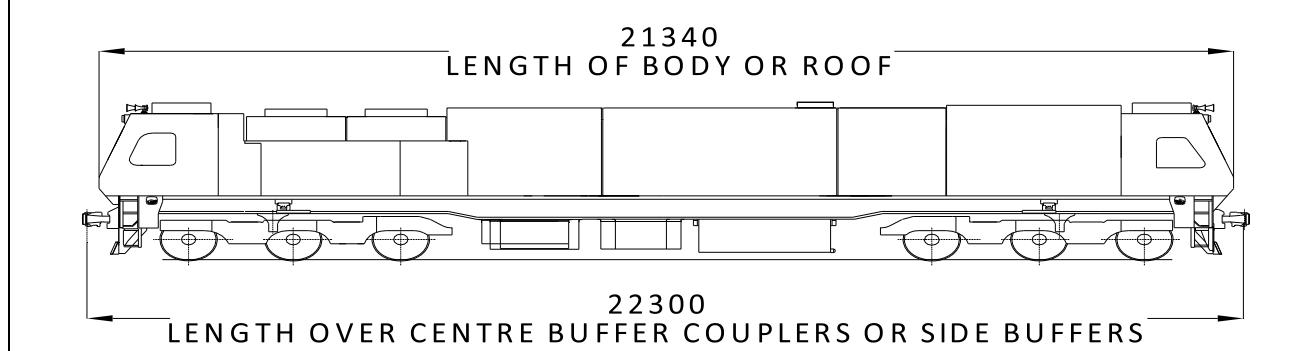
SL	Item Description	Maximum	Ch	Item
6.3.2	Height above rail level for empty locomotive –	4265 mm	IV (C)	
6.3.2.1	For a width of 760mm on either side of centre of locomotive –			12
6.3.2.2	At sides of locomotive			13



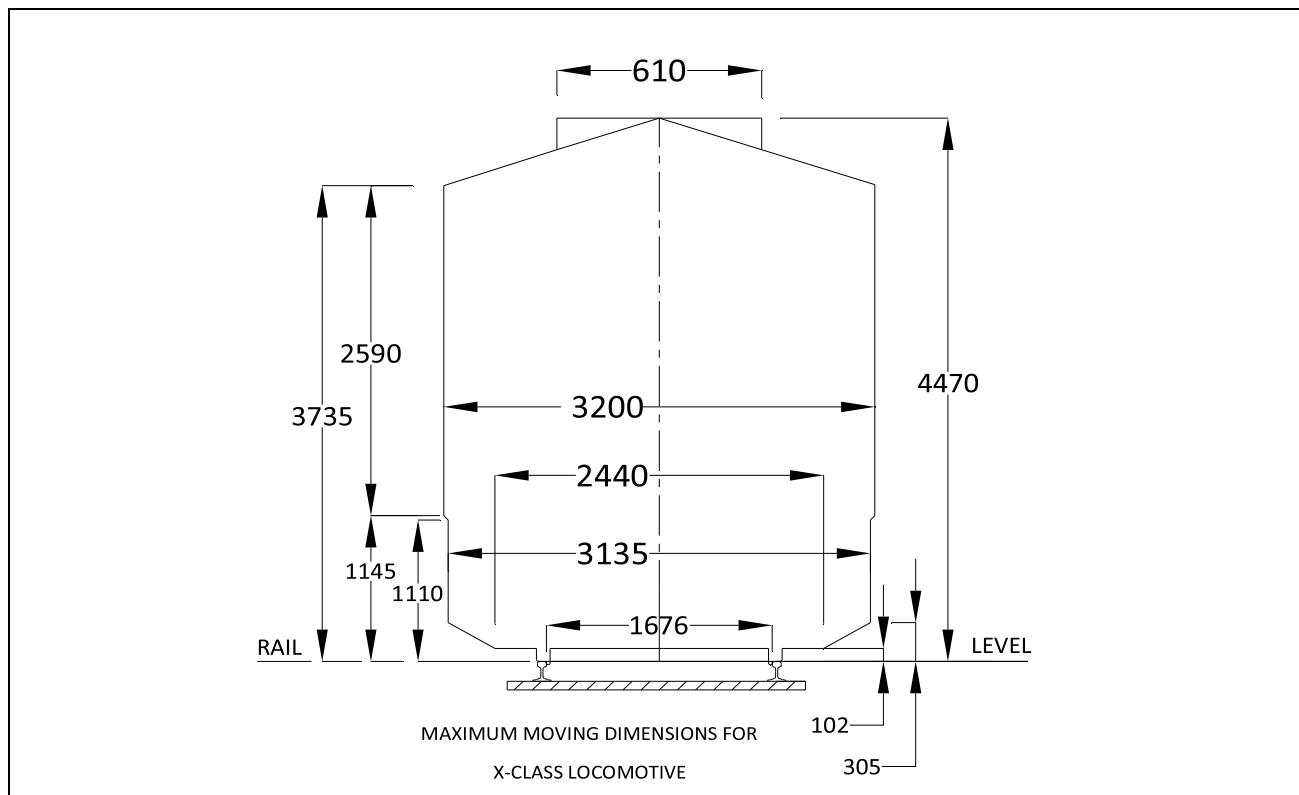
6.3.3	Length of body or roof	21340 mm	IV (C)	11A
6.3.4	Length over centre buffer couplers or side buffers	22300 mm		11B

**Note :**

- (i) Maximum length of body or roof can be upto 23540mm, subject to tapering of the ends in a manner that the end-throw, when calculated as per Appendix 'A', is same as that for ICF coach of 21340mm length and within this Schedule of Dimensions.
- (ii) Maximum length over the centre buffer couplers or side buffers for bogie vehicles can be 24000mm for locomotives, having maximum length of body or roof of 23540mm.



SL	Item Description	Maximum	Ch	Item
6.4	<b>Maximum Moving Dimensions for X-Class Locomotives :</b>		IV (C)	
6.4.1	Width over all projections –			14
6.4.1.1	At 102mm above rail level, when fuel tank fully filled	2440mm		14(i)
6.4.1.2	From 305mm above rail level to 1110mm above rail level, when fuel tank fully filled	3135mm		14(ii)
6.4.1.3	From 1110mm above rail level to 1145mm above rail level, when fuel tank fully filled	3135mm increasing gradually to 3200mm		14 (iii)
6.4.1.4	From 1145mm above rail level when fuel tank fully filled to 3735mm above rail level, when empty	3200 mm		14 (iv)
6.4.2	Height above rail level for empty locomotives –			
6.4.2.1	For width of 305 mm on either side of centre of locomotive <i>{Note : This dimension shall not be adopted without obtaining prior approval of Railway Board}</i>	4470 mm		15
6.4.2.2	At sides of locomotive	3735 mm		16
6.4.3	<b>Height above rail level for fully loaded vehicle –</b>			
SL	Item Description	Minimum	Ch	Item
6.4.3.1	For a width of 1220 mm on either side of centre of track with the exception of wheels and attachments thereto <i>{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 inside to 216 mm outside of the gauge face of the wheel.}</i>	102 mm	IV (C)	17
6.4.3.2	At 1525mm on either side of centre of track	305 mm		18

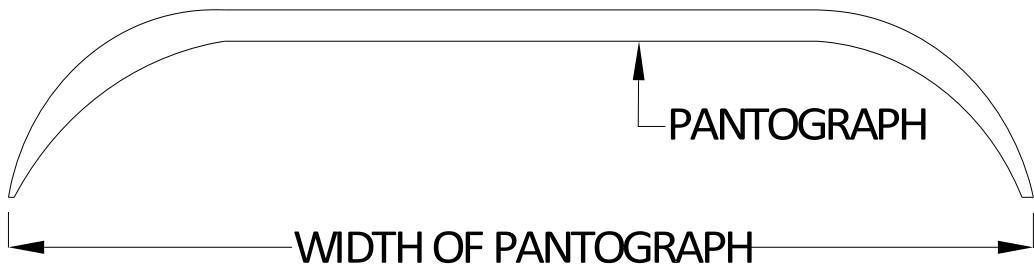


**SCHEDULE – I****CHAPTER 7 – ELECTRIC TRACTION  
(Direct Current)**

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

SL	Item Description	Minimum	IRSOD-04	
			Ch	Item
7.1	Distance between live conductor wire and any structure :	130 mm	V	4
7.2	<b>Minimum height</b> from rail level to the underside of contact wire –			1
7.2.1	Under Bridges and in Tunnels	5030 mm		1 (i)
7.2.2	In the Open	5335 mm		1 (ii)
7.2.3	At Level Crossings	5485 mm		1 (iii)
7.2.4	In Running and Carriage Sheds	5790 mm		1 (iv)
Note: The height prescribed in item 7.2.3 applies also to tramway trolley wires crossing the railway.				
SL	Item Description	Maximum	Ch	Item
7.3	Height from rail level to the underside of live contact wire except in Running and Carriage Sheds	5790 mm	V	2
<i>Note : In the case of the 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 permissible electrical clearances required inside the sheds.</i>				

SL	Item Description	Maximum	Ch	Item
7.4	Variation in alignment of the live Conductor Wire on either side of the centre line of track under static condition –	230 mm	V	3
7.4.1	On straight track			3 (i)
7.4.2	On curves			3 (ii)
7.5	Width of Pantograph collector			5



**SCHEDULE – I****CHAPTER 8 – ELECTRIC TRACTION  
(25 KV A.C. 50 Cycles)**

**Note :** Wherever electric traction (25 kV AC 50 Cycles) is in use, special precaution shall be taken in accordance with provisions made in Chapter XVII, General Rules for Open lines of Railways.

SL	Item Description	Minimum	IRSOD-04	
			Ch	Item
8.1	<p><b>Electrical Clearances :</b></p> <p>Vertical and lateral distance between 25 kV live parts and earthed parts of fixed structures or moving loads/rolling stocks shall be as large as possible. The minimum vertical and lateral electrical clearances to be maintained under worst condition of temperature, wind etc. between any live part of the overhead equipment or pantograph and parts of any fixed structures (earthed or otherwise) or moving loads/rolling stocks shall be:</p>	<p><b>V-A</b></p> <p>250 mm</p> <p>200 mm</p>	<p>1</p> <p>1 (i)</p> <p>1 (ii)</p>	
8.1.1	Long duration :			
8.1.2	Short Duration :			

**Note:**

- (a) *Long Duration means when the conductor is at rest and Short Duration means when the conductor is not at rest.*
- (b) *A minimum vertical distance of 270 mm shall normally be provided between rolling stock and contact wire to allow for a 20mm temporary raising of track during maintenance. Wherever the allowance required for track maintenance exceed 20mm, vertical distance between rolling stock and contact wire shall correspondingly be increased.*
- (c) *Where adoption of above clearances is either not feasible or involves abnormally high cost, Permanent Bench Mark shall be provided to indicate the level of track to be maintained.*

8.2	Height from rail level to the underside of contact wire –	<p><b>V-A</b></p> <p>4800 mm</p>	2
8.2.1	Under Bridges and in Tunnels		2(i)

SL	Item Description	Minimum	Ch	Item
8.2.2	In the Open	5500 mm	V-A	2(ii)
8.2.3	At Level Crossings	5500 mm		2(iii)
8.2.4	In Running and Carriage Sheds	5800 mm		2(iv)

**Note :**

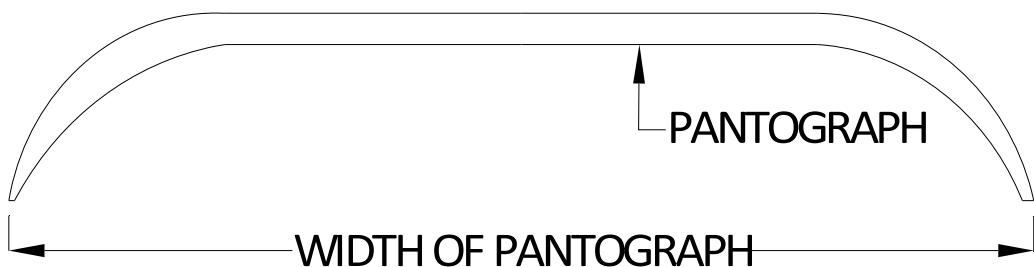
- (i) In cases, where it is proposed to allow Locomotives or Rolling stocks not higher than 4.42 m, the minimum height of Contact Wire, specified under item 8.2.1 above may be reduced to 4.69 metre.
- (ii) In cases, where it is proposed to allow only Locomotive or Rolling Stocks not higher than 4.27m the minimum height of contact wire, specified under Item 8.2.1 above may be reduced to 4.54m. A board showing this restriction and specifying "locomotives or Stocks not permitted to ply on such section", shall be exhibited at the entrance to the same.
- (iii) For movement of Over Dimensional consignments, the height specified under Item 8.2.1 above shall be increased by the difference between the height of the consignment contemplated and 4.42m. In case, such an over dimensional consignment is moved at speed not exceeding 15 km/h and is also specially escorted by authorized Railway Staff, the derived height of Contact Wire may be reduced by 50 mm.
- (iv) On curves, all vertical distances specified in Item 8.2 above shall be measured above the level of the inner rail, increased by half the super-elevation.
- (v) Suitable prescribed gradient on the height of contact wire shall be provided for connecting these wires installed at different heights.

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 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.

SL	Item Description	Maximum	Ch	Item
8.3	Variation in alignment of the live Conductor Wire on either side of the centre line of track under static condition –		V-A	3
8.3.1	On straight track	200 mm		3(i)
8.3.2	On curves	300 mm		3(ii)

Note : These limits would not apply to special locations, e.g. 'insulated overlaps' and 'out of run wires'.

SL	Item Description	Maximum	Ch	Item
8.4	Width of Pantograph collector	1800 mm	V-A	4
8.4.1	25 KV AC Traction			4(i)
8.4.2	When DC traction is converted to 25 KV AC traction, subject to it being within approved MMD			4(ii)
<b><u>Note</u></b> : A tolerance of (+) 10 mm on maximum width specified is permissible to accommodate variation in manufacture and mounting with respect to the centre line of vehicle.				



**SCHEDULE – II**  
**STANDARD DIMENSIONS**  
**1676mm GAUGE (BG)**

**These DIMENSIONS are existing infringements of Schedule-I, which may be permitted to continue on existing 1676 mm 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 6.

Dimensions marked (a) refer to the requirements for 3250 mm wide stock [Chapter 4 of Schedule-I]; and those marked (b) refer to the requirements for 3660 mm wide and 4725 mm high stock (Chapter-5 Schedule-I).

SL	Item	For 3250 mm Wide Stock (a)	For 3660 mm Wide Stock (b)	Item
1.	Minimum distance centre to center of tracks	3660 mm	4040 mm	1
2.	Minimum clear horizontal distance from centre of track to any fixed structure			
2 (i)	From rail level to 1065mm above rail level	1675 mm	1905 mm	2
2 (ii)	From 1065mm to 3505mm above rail level	1980 mm	-	3(a)
2 (iii)	From 1065mm to 3355mm above rail level	-	2135 mm	3(b)
2 (iv)	At 4265mm above rail level	2055 mm	-	4
3.	Minimum clear height above rail level –			
3 (i)	For a distance of 305mm on either side of centre of track	4420 mm	-	5(a)

SL	Item	For 3250 mm Wide Stock (a)	For 3660 mm Wide Stock (b)	
3 (ii)	For a distance of 915mm on either side of centre of track	-	5030 mm	5(b)

**Note :**

- (i) Items 2 (i), 2 (ii) & 2 (iv) for 3250 mm wide stocks and 2 (iii) for 3660 mm wide stock refer to structures outside station yards only.
- (ii) Where speed is restricted to 16 kmph, the minimum clear horizontal distance under 2 (iv) may be reduced to 1980 mm.
- (iii) Where, as on girder bridges, ash pits etc., the structure is not likely to be out of plumb and the super-elevation (or level of rails) does not vary and where the speed is restricted to 16 kmph, the above dimensions may be reduced to :  
3580mm for 1 (3250mm wide stock), 3960mm for 1 (3660mm wide stock), 1905mm for 2 (ii), 2055mm for 2 (iii), 1980mm for 2 (iv), 4265mm for 3 (i) and 4875 mm for 3 (ii).

To the horizontal distance given in 1 to 3, the extra allowance for curves (See Appendix 'A') must be added. Where existing structures do not permit of these allowances being given, they may be reduced by limiting the super-elevation 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 super-elevation.

SL	Item	In Tunnels	On Girder Bridges	Item
4	Minimum permissible clearances in existing tunnels and girder bridges (See Diagram No.3), Under any circumstances and subject to any restriction of speed which it may be considered necessary to impose :,			
4 (i)	At 'A'	229 mm	229 mm at top of sides of vehicles	6(i)
4 (ii)	At 'B'	305 mm	229 mm at sides of vehicles	
4 (iii)	At 'C'	380 mm	305 mm between moving trains	
4 (iv)	At 'D'	229 mm	152 mm above vehicles	
5	For unrestricted speeds :			
5 (i)	At 'A'	380 mm	229 mm at top of sides of vehicles	6(ii)
5 (ii)	At 'B'	535 mm	455 mm at sides of vehicles	
5 (iii)	At 'C'	610 mm	535 mm between moving trains	
5 (iv)	At 'D'	305 mm	229 mm above vehicles	

	For unrestricted speeds, where doors opening inwards or of the recessed or sliding type are provided :							
5(v)	At 'B'	380 mm	380 mm at sides of vehicles					
5 (vi)	At 'C'	455 mm	455 mm between moving trains					
	Note : Extra allowance for curves shall be added to the above clearances as detailed in Appendix 'A'.							
6	<p>Structures which have already been built in accordance with Items 1.8, 1.11, 2.8.1, 2.8.2, 2.9, 3.2.6 and 3.2.7, as contained in the 1958 reprint, reproduced in note below, <b>may infringe the dimensions</b> now shown against these Items as reproduced below :</p> <p><u>{Note :</u> Such infringements may continue and alterations for the removal of such infringements need be taken up only when 25 kV AC electric traction is undertaken, when a study shall be made of each structure to limit the extent of alterations, as indicated in Appendix 'B'.}</p>							
<b>Item 1.8, Chapter-1, Schedule-I</b> <table border="1"> <tr> <td>Minimum height above rail level for a distance of 915 mm on either side of centre of track for overhead structure</td> <td>4875 mm</td> </tr> <tr> <td>Where electric traction is in use or likely to be used, the dimension of Item 8.5.1.1 shall be -</td> <td>5410 mm</td> </tr> <tr> <td colspan="2"> <b>Note :</b> See Appendix 'A' for 'extra clearance required on curves'         </td></tr> </table>			Minimum height above rail level for a distance of 915 mm on either side of centre of track for overhead structure	4875 mm	Where electric traction is in use or likely to be used, the dimension of Item 8.5.1.1 shall be -	5410 mm	<b>Note :</b> See Appendix 'A' for 'extra clearance required on curves'	
Minimum height above rail level for a distance of 915 mm on either side of centre of track for overhead structure	4875 mm							
Where electric traction is in use or likely to be used, the dimension of Item 8.5.1.1 shall be -	5410 mm							
<b>Note :</b> See Appendix 'A' for 'extra clearance required on curves'								

7

**Item 1.11, Chapter-I, Schedule-I :**

Minimum distance for centre to centre of tracks	4725 mm
<b>Note :</b> When re-spacing the 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.	
Minimum horizontal distance from centre of track to any structure for height above rail level as under –	
From rail level to 305 mm above rail level	1905 mm
From 305 mm to 1065 mm above rail level	1905 mm increasing to 2360 mm
From 1065 mm to 3355 mm above rail level	2360 mm
From 3355 mm to 4420 mm above rail level	2360 mm decreasing to 2135 mm
From 4420 mm to 5410 mm above rail level	2135 mm decreasing to 915 mm

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

(a) See Appendix 'A' for extra clearance required on curves.

**Item 2.8.1, Chapter-II, Schedule-I**

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

**Note :** It does not apply to overhead piping, parallel to the track.

7

**Item 2.8.2.3, Chapter-II, Schedule-I :**

Minimum height above rail level for a width of 1370 mm on either side of the centre of track of a signal gantry or a foot over bridge in passenger station	4875 mm
--	---------

Note :

- (a) This also applies to overhead piping arrangements parallel to track wherever provided and 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 5410 mm.

7

**Item 2.9, Chapter-II, Schedule-I :**

Minimum horizontal distance from centre of track to any structure for height above rail level as under –

From rail level to 305 mm above rail level	1675 mm
From 305 mm to 3355 mm above rail level	2135 mm
From 3355 mm to 4115 mm above rail level	2135 mm decreasing to 1980 mm
From 4115 mm to 6100 mm above rail level	1370 mm

Note : See Appendix 'A' for extra clearance required on curves.

7

**Item 3.2.6, Chapter-III, Schedule-I :**

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

Where electric traction is not likely to be used	5030 mm
Where electric traction is likely to be used	6176 mm

7

**Item 3.2.7.1, Chapter-III, Schedule-I :**

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

Where electric traction is not likely to be used	4875 mm
--	---------

Where electric traction is likely to be used	6176 mm
--	---------

7	<b>A.C. Traction 25 KV 50 cycles</b>		<b>Item</b>
7 (i)	General : Out of station –  Minimum height above rail level for a distance of 1600 mm on either side of the centre of track for overhead structures	5410 mm	8
	Note :  (a) See Appendix 'A' for extra clearance required on curves.  (b) In case of existing structures, a special study shall be made as indicated in Appendix 'B' before 25 kV AC traction is introduced. In case of restricted height of existing overhead structure, the minimum height above rail level shall not be lower than 5070mm in case of Heavy Overhead Structure (such as Road Over & Flyovers) and 5270mm in case of Light Overhead structures (such as Foot Over Bridges) for a minimum contact wire height of 4800mm from above rail level. OHE arrangements shall be as per RDSO Drawings.		
8	General : For tunnels & through girder bridges –  Minimum horizontal distance from centre of track to any structure from 4420 mm to 5410 mm above rail level	2135mm decreasing to 915 mm	9
	Note : See Appendix 'A' for extra clearance required on curves.		
9	Station Yards –  Minimum height above rail level for a distance of 1600 mm on either side of the centre of track, of a signal gantry or a foot over bridge in a passenger station	5410 mm	10
	Note :		

	<p>(a) See Appendix 'A' for extra clearance required on curves.</p> <p>(b) In case of existing structures, a special study shall be made as indicated in Appendix 'B', before 25 kV AC traction is introduced. In case of restricted height of existing overhead structure, the minimum height above rail level shall not be lower than 5070mm in case of Heavy Overhead Structure (such as road over bridges &amp; flyovers) and 5270mm in case of Light Overhead structures (such as foot over bridges) for a minimum contact wire height of 4800mm from above rail level. OHE arrangements shall be as per RDSO Drawings.</p>	
10	Minimum horizontal distance from centre of track to any structure from 4115 mm to 6100 mm above rail level	1370 mm
Note : See Appendix 'A' for extra clearance required on curves.		

**APPENDIX****STANDARD DIMENSIONS : 1676mm GAUGE (BG)****APPENDIX 'A'****EXTRA CLEARANCE ON CURVES****Important Notes**

1. It has been contended that the extra clearance prescribed for curves both in the Schedule of Dimensions of 1913 and 1922 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 super-elevation 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 considered that to reduce the average distance between a curved platform and the foot boards, the minimum clearance between a platform on outside 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 Para 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 Para 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 super-elevation 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 super-elevation.

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

At the centre of vehicle

$$V = \frac{14.785 \times 14.785 \times 1000}{8R} = \frac{27330}{R} \text{ mm}$$

At the end of vehicle

$$V_o = \frac{21.340 \times 21.340 \times 1000}{8R} - \frac{27330}{R} = \frac{29600}{R} \text{ mm}$$

Where R is the radius of the curve in metres.

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

$$L = \frac{h}{g} \times s$$

where S is the super-elevation  
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 Schedules of 1913 and 1922 has been adopted, namely one-fourth of the lean due to super-elevation. No provision has been made for additional sway due to a curve in the outward direction for reasons already given in Para 3 above.

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

On the inside of a curve :

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

Where L is the lean in millimeters.

On the outside of a curve :

$$(ii) \quad V_o - 25 \text{ mm}$$

(see Para 2 above)

Column 5 of the Annexure I & II to Appendix 'A' 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 Columns 6 & 7, formula (i) of Para 7 above has been used.
9. Clearance from adjacent structures on the outside of a curve : For Column 8, formula (ii) of Para 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 super-elevation, it being assumed that both tracks will be inclined the same amount. Though there are cases where a different super-elevation 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 :

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

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

$$V + V_o + S$$

11. Railway Board vide letter no. 68/WDO/SC/1, dated 16.4.1968 have issued instructions for increase of speed over curves for contemplating 160/200 kmph speed on broad gauge. As stated therein, while locating any permanent structures by the side of the track in the case of trunk routes and 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 extra clearances necessary on curves between structures and the adjacent track and between tracks when there are no structures, are given in Appendix 'A' 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 I & II. These clearances are for a vehicle 21340mm long with bogie centre 14785 mm apart. For vehicles having different dimensions, clearances can be worked out in similar fashion.

12. Minimum height from rail level to the underside of contact wire :

(i) Under Bridges and in Tunnels	4.80 metre
(ii) In the Open	5.50 metre
(iii) At Level Crossings	5.50 metre
(iv) In Running and Carriage Sheds	5.80 metre

**Note :**

- (a) In cases where it is proposed to allow Locomotives or Rolling stocks not higher than 4.42 metre, the minimum height of Contact Wire, specified under Item 8.2.1 above may be reduced to 4.69 metre.
- (b) In cases, where it is proposed to allow only Locomotive or Rolling Stocks not higher 4.27 metre, the minimum height of contact wire, specified under Item 8.2.1 above may be reduced to 4.54 metre. A board showing this restriction and specifying, "Locomotives or Stocks not permitted to ply on such section" shall be exhibited at the entrance to the same.
- (c) For movement of Over Dimensional Consignments, the height specified under Item 8.2.1 above shall be increased by the difference between the height of the consignment contemplated and 4.42 metre. In case, such an over dimensional consignment is moved at speed not exceeding 15 kmph and is also specially escorted by authorized Railway Staff, the derived height of Contact Wire may be reduced by 50 mm.
- (d) On curves, all vertical distances specified in Item (8.2) above, shall be measured above the level of the inner rail, increased by half the super-elevation.
- (e) Suitable prescribed gradient on the height of contact wire shall be provided for connecting these wires installed at different heights.

**Annexure – I To Appendix ‘A’****EXTRA LATERAL CLEARANCES ON CURVES****For High Speed Routes (160 KMPH)**

Degree Of Curvature	Radius Of Curve	Maximum Permissible Speed	Super Elevation	Extra Lateral Clearance Between Structure And Adjacent Track {When There Is A Structure Between Tracks}			Extra Lateral Clearance Between Adjacent Track When There Is No Structure Between Tracks	
				Inside Of Curve				
				Up to 840 mm Above Rail Level	From 840 mm To 4420 mm Above Rail Level	At 5410 Above Rail Level		
Degree	Metre	Kmph	mm	mm	mm	mm	mm	
1	2	3	4	5	6	7	9	
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 to Appendix ‘A’****EXTRA LATERAL CLEARANCES ON CURVES****For Maximum Speed of 200 KMPH**

Degree Of Curvature	Radius Of Curve	Maximum Permissible Speed	Super Elevation	Extra Lateral Clearance Between Structure And Adjacent Track {When There Is A Structure Between Tracks}				Extra Lateral Clearance Between Adjacent Track When There Is No Structure Between Tracks	
				Inside Of Curve			Outside Of Curve {For Any Height}		
				Up to 840 mm Above Rail Level	From 840 mm To 4420 mm Above Rail Level	At 5410 mm Above Rail Level			
Degree	Metre	Kmph	mm	mm	mm	mm	mm	mm	
1	2	3	4	5	6	7	8	9	
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	

**Notes****{Notes to Tables at Annexure - I and II}**

- (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 12mm 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 up to 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 Columns 5, 6, 7 and 8; instead of Column 9.
- (e) In the Tables of Annexures-I & II, showing ‘extra clearance on curves’, the maximum permissible speed and corresponding super-elevation are indicated and the required clearances based on these super-elevations have been given.

## APPENDIX 'B'

### Clearances Required for 25 KV, Single Phase A.C. Electric Traction

1. It is desirable to provide the maximum possible clearances in case of lines equipped for 25 KV AC 50 Cycle single-phase electric traction.

#### **Minimum Clearances between live bare conductors / pantographs and structure –**

- (a) Short Term Clearances - Vertical and lateral distance : 200 mm between live conductors and earth (normally existing only for a brief period)
  - (b) Long Term Clearance - Vertical and lateral distance : 250mm between live conductors and earth (which may remain for a considerable period)
2. In order to ascertain whether the requisite clearance would be available under an existing structure, the permissible height of the contact wire shall be determined. 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) Super-elevation 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 columns and turnouts in the vicinity
    - (ix) The type of overhead equipment
  3. After determining permissible height of the contact wire based on 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
    - (b) Atmospheric 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 structure along tracks
  - (f) Type of structure, girder, masonry etc.
  - (g) Span of overhead equipment under the bridge
  - (h) Presence of traction feeder
  - (i) Likelihood of diesel locomotives halting under the structure
4. (a) The minimum height of contact wire for a stock height of 4.42 metre to be able to run on all sections electrified with 25 KV AC traction system with live traction overhead equipment :
- (i) Height of the locomotive : 4.42 metre
  - (ii) Minimum clearances to contact wire : 0.25 metre
  - (iii) Allowance for track maintenance : 0.02 metre
  - (iv) Minimum height of contact wire (Total) : 4.69 metre

**Note :** For OHE span length of 49.5m or below, the oscillations of contact wire get reduced to 0.05m and the minimum height of contact wire in Para 4(a)(iv) can be reduced to 4.69m.

- (b) After determining the minimum height of contact wire on the assumption that it would permit passage of standard locomotives and stock, the maximum height of over Dimensional Consignments (ODC) with the live over head equipment at speed over 15 kmph (when vertical oscillation of overhead equipment is pronounced) is derived as under :

**Minimum height of Contact Wire : 4.69 metre**

Less -

- (i) Minimum electrical clearance : 0.20 metre
  - (ii) Track allowance : 0.02 metre
  - (iii) Allowance for vertical oscillation of contact wire under influence of moving pantographs : 0.05 metre
- TOTAL : 0.27 metre**

**Permissible maximum height of Over Dimensional Consignment : 4.42 metre**

- (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 0.25 metre under rest condition is to be provided, vide Item 7.1 of Chapter VII. In this case, the derived height of contact wire may be reduced by 50 mm.
- 5. 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 4.80 metre.

## STANDARD DIMENSIONS FOR TUNNELS & THROUROUGHBRIDGES

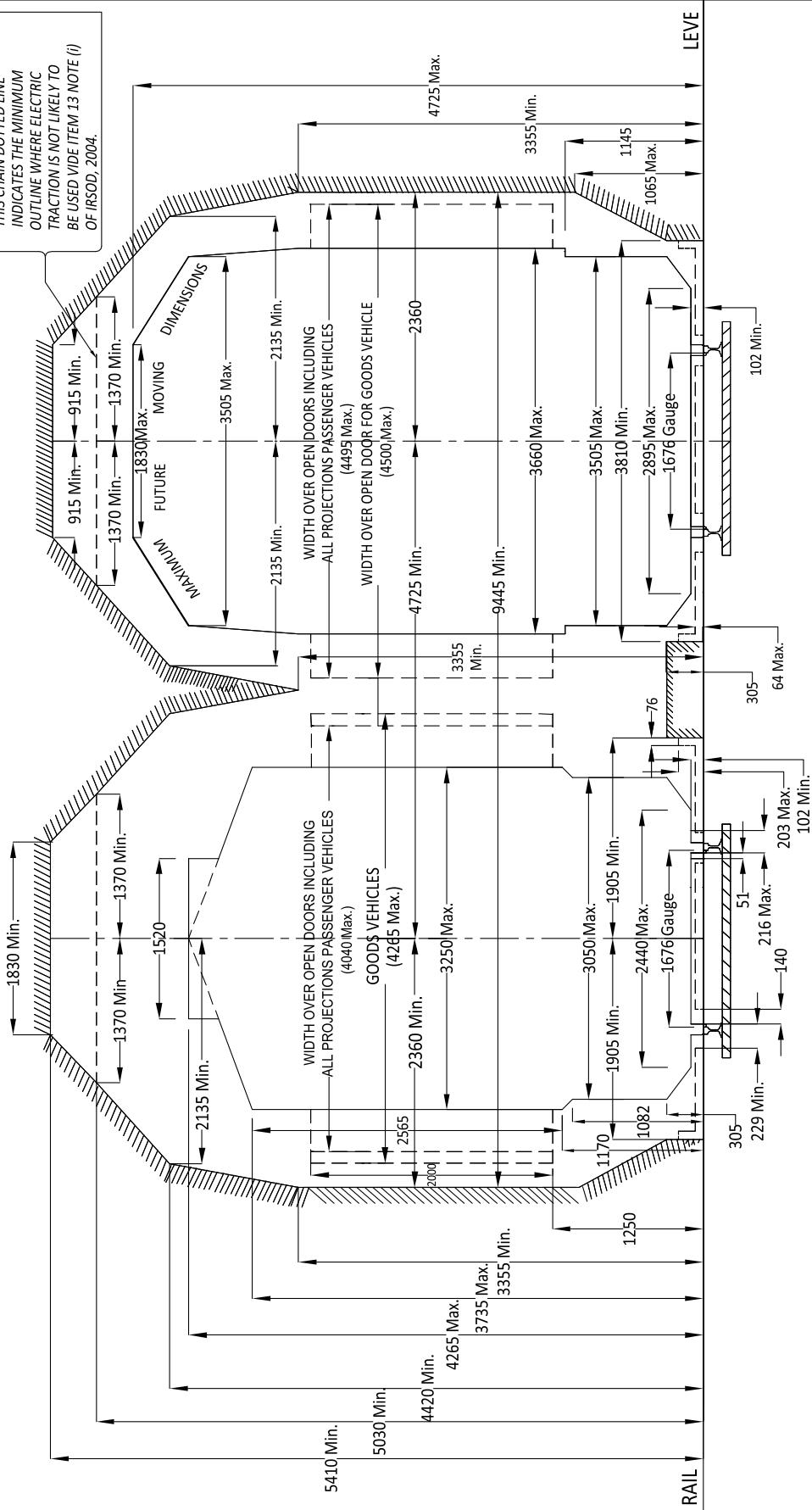
SCHEDULE I - CHAPTER I

**DIAGRAM No. 1A**  
**1676 mm Gauge**

**NOTE:-**

1. WHERE THE LINE IS ON A CURVE, THE HORIZONTAL DISTANCE OF ANY STRUCTURE FROM THE CENTRE OF ADJACENT 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 GIRDERS BRIDGES. THE 4725 DIMENSION IS TO BE ADOPTED FOR ALL NEW WORKS

**NOTE:-** THIS CHAIN DOTTED LINE INDICATES THE MINIMUM OUTLINE WHERE ELECTRIC TRACTION IS NOT LIKELY TO BE USED VIDE ITEM 13 NOTE (i) OF IRSOD, 2004.

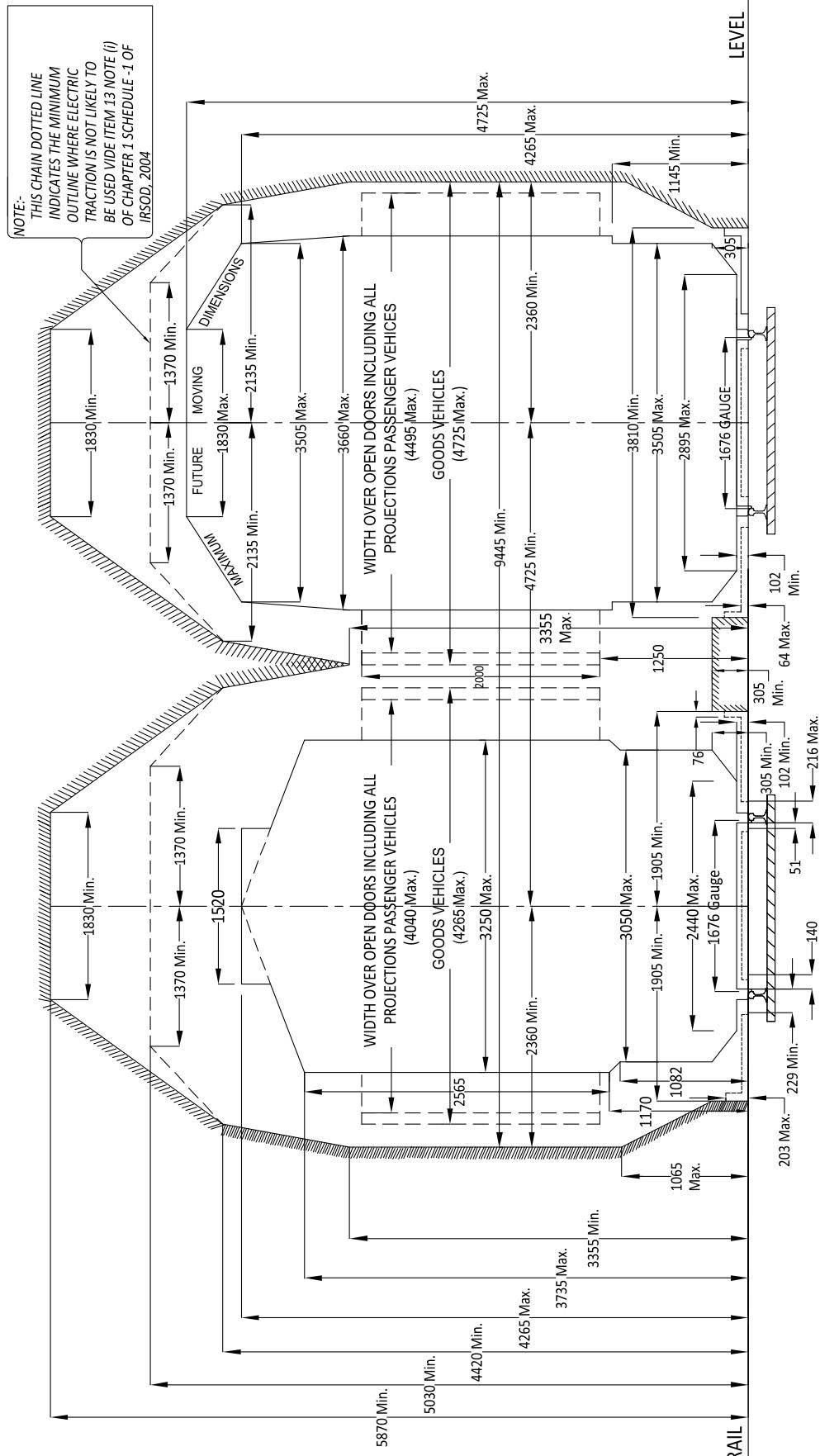


**NOTE:-** ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

**STANDARD DIMENSIONS FOR TUNNELS & THROUGH GIRDER BRIDGES  
TO SUIT 25kV A.C. TRACTION SCHEDULE I - CHAPTER I**

**DIAGRAM No. 1A  
(MODIFIED)  
1676 mm GAUGE**

**NOTE:-** THE DISTANCES 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, 'S' THE SUPER-ELEVATION AND 'G' THE GAUGE OF THE TRACK, ALL DIMENSIONS BEING IN METRES D=HxS/G



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**STANDARD DIMENSIONS OUT OF STATIONS**

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**SCHEDULE I - CHAPTER I**

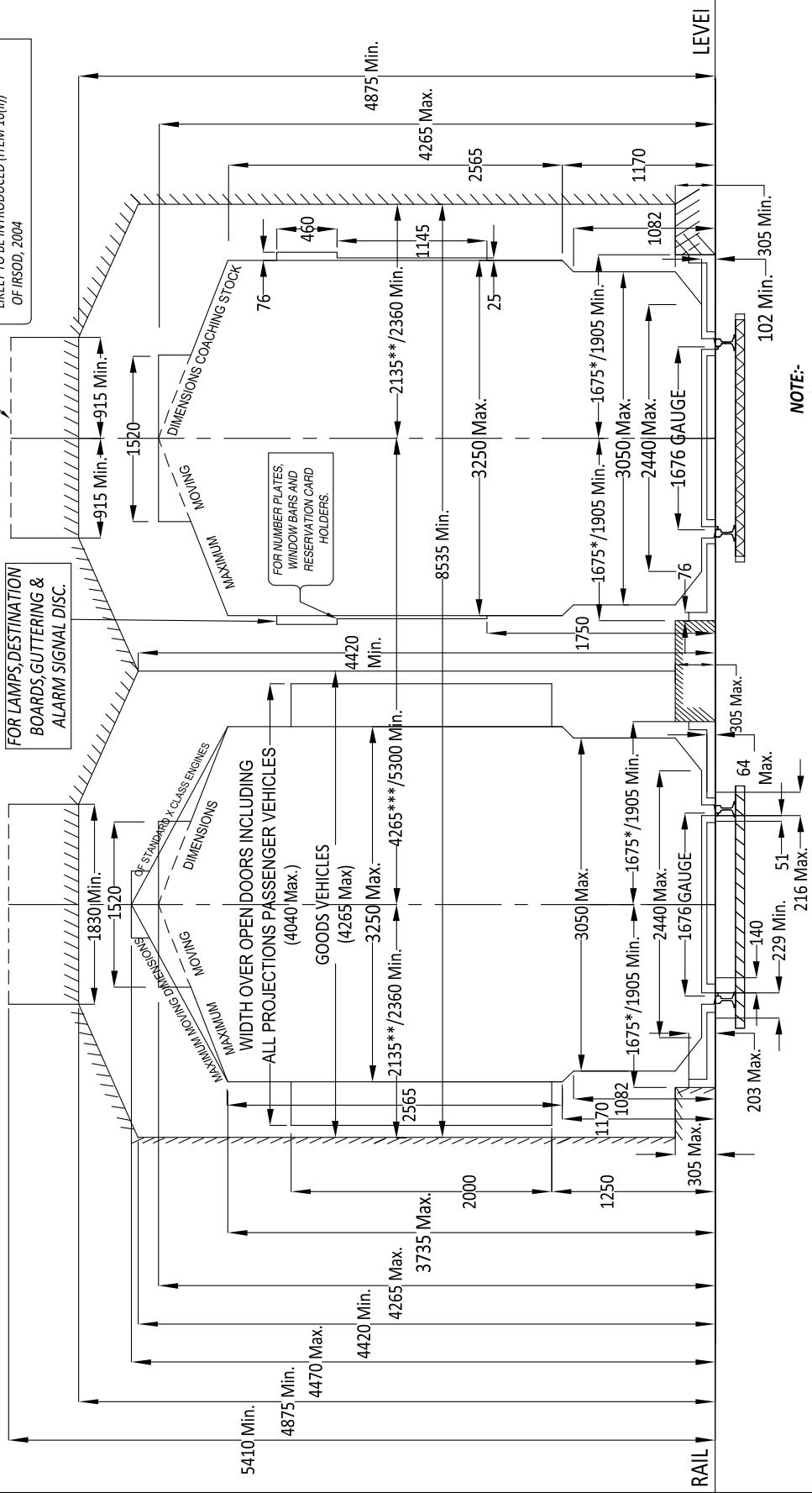
### **NOTE:-**

WHERE THE LINE IS ON A CURVE, THE HORIZONTAL DISTANCE OF ANY STRUCTURE FROM THE LINE IS TO BE INCREASED ACCORDING TO THE APPENDIX.

**DIAGRAM No. 1B**  
**1676 mm GAUGE**

NOTE.—WHERE THE LINE IS ON A CURVE, THE HORIZONTAL DISTANCE FROM THE CENTRE OF ADJACENT TRACKS AND THE DISTANCE BETWEEN CENTRES OF TRACKS ARE TO BE INCREASED ACCORDING TO THE APPENDIX.

**NOTE:-** MINIMUM HEIGHT WHERE D.C. ELECTRIC TRACTION IS IN USE OR LIKELY TO BE INTRODUCED (ITEM 10(iii))  
OF IRSOD, 2004



**NOTE:-** ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

NOTE

\* - 1675 For existing works

\*\* - 2135 For existing works

\*\*\* - 4265 For existing works

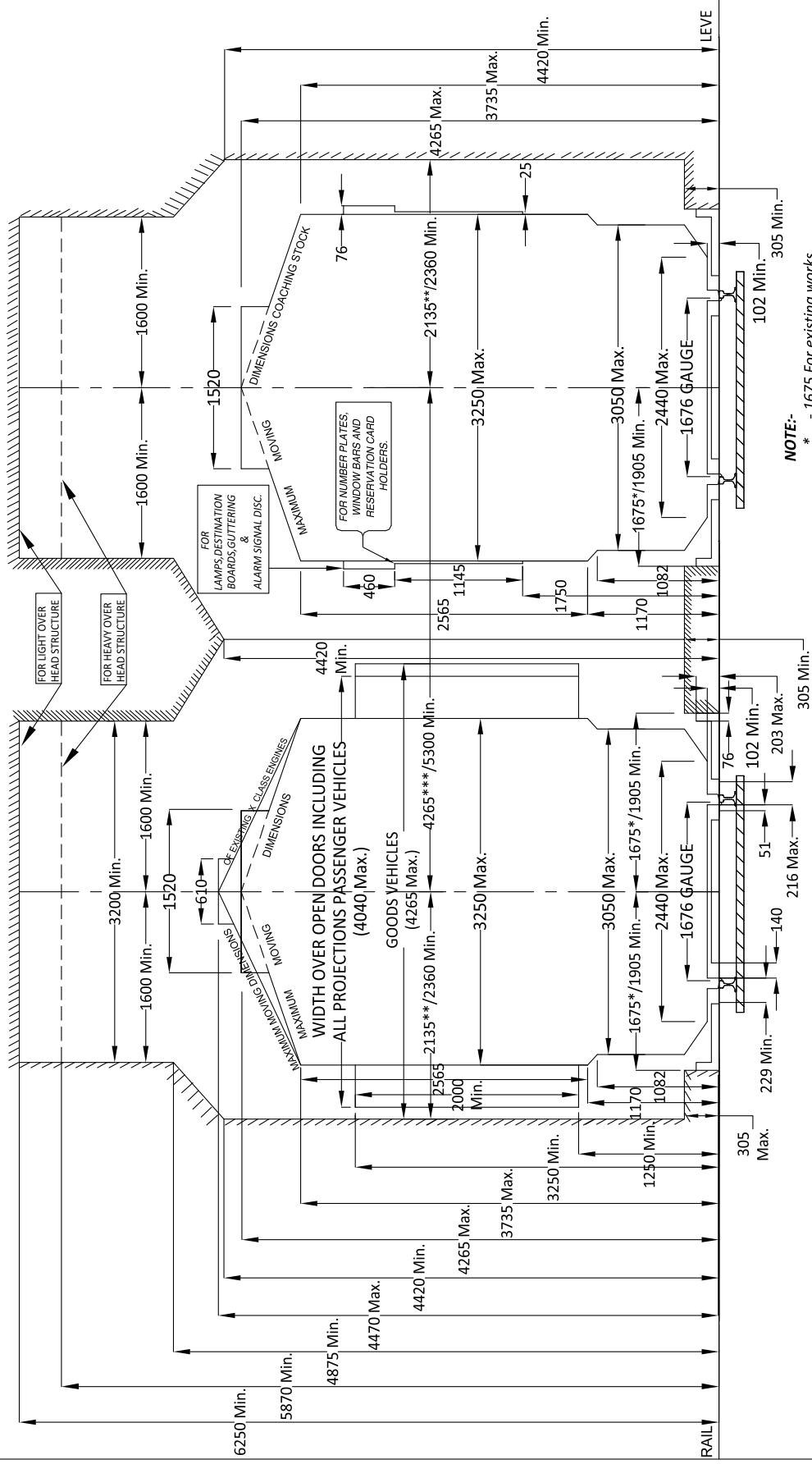
STANDARD DIMENSIONS OUT OF STATIONS  
TO SUIT 25 KV. A.C. TRACTION  
SCHEDULE I - CHAPTER I

**DIAGRAM No. 1C**  
**1676 mm GAUGE**

**NOTE:-**

THE DISTANCES 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, 'S' THE SUPER-ELEVATION AND 'G' THE GAUGE OF THE TRACK, ALL DIMENSIONS BEING IN METRES  $D = \frac{H \times S}{G}$

G



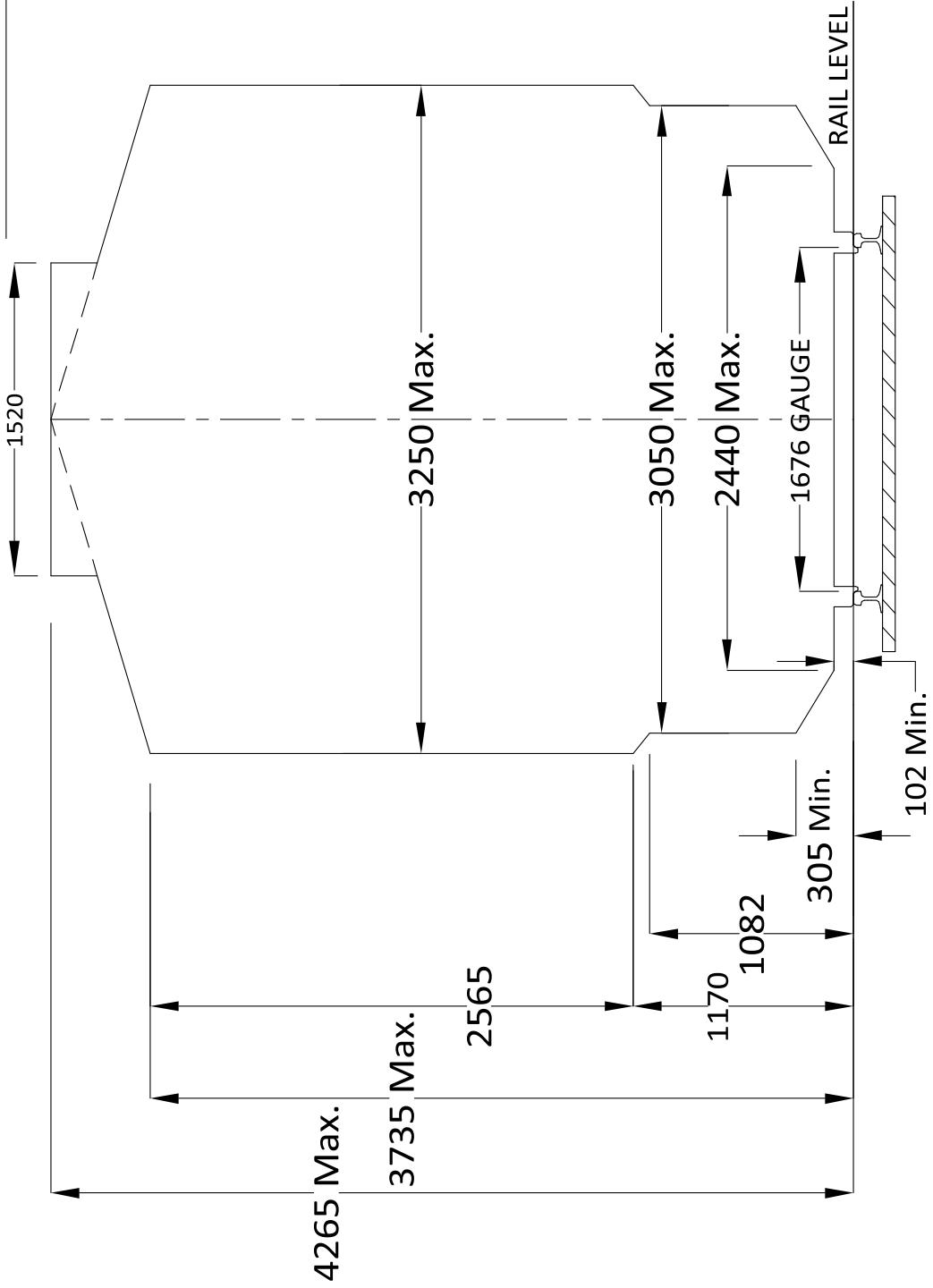
**NOTE:-** ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

**NOTE:-**

- \* - 1675 For existing works
- \*\* - 2135 For existing works
- \*\*\* - 4265 For existing works

# MAXIMUM MOVING DIMENSIONS

## DIAGRAM No. 1D (EDO/T-2202) 1676 mm GAUGE



NOTE:- ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

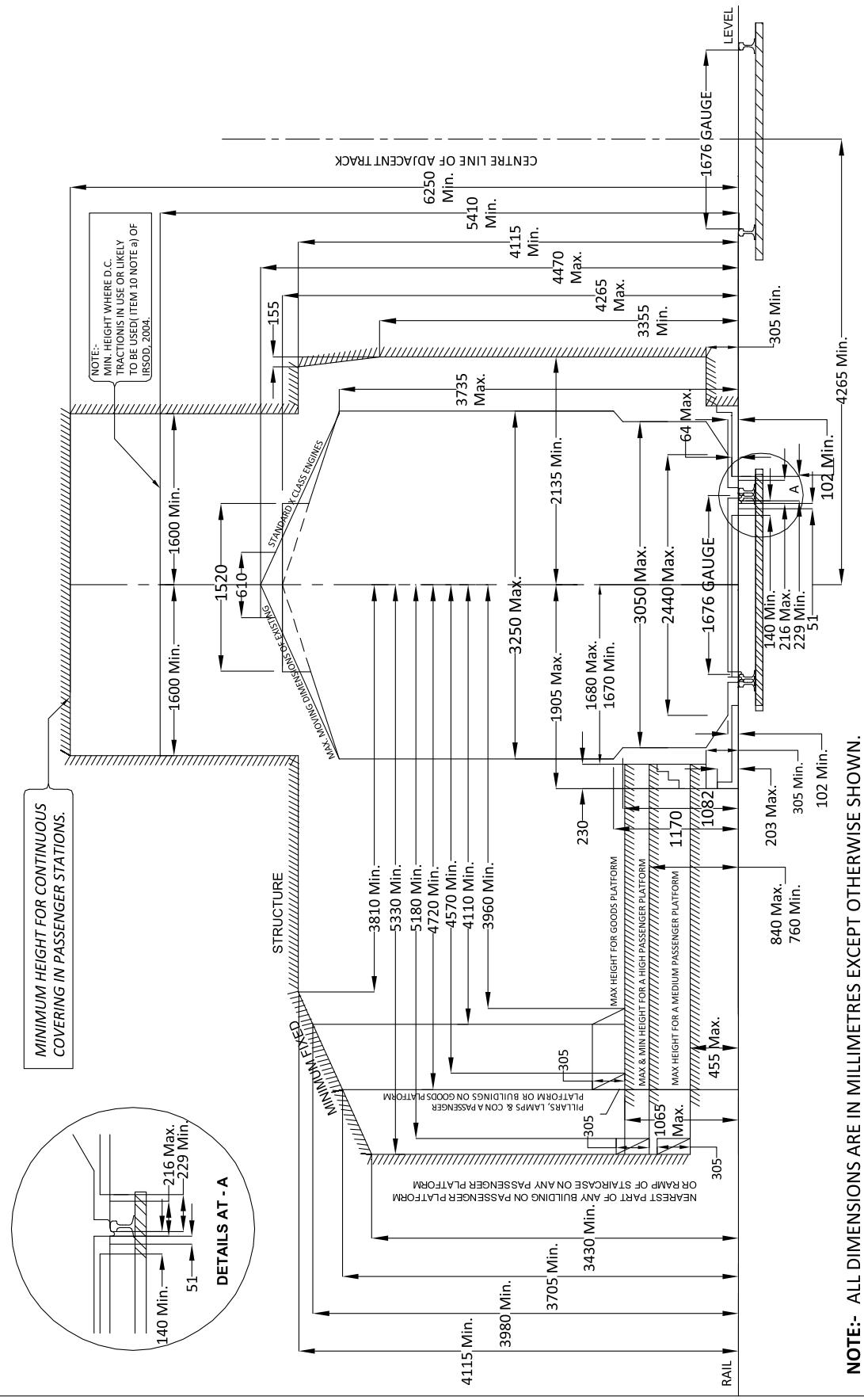
STANDARD DIMENSIONS IN STATIONS  
TO SUIT 25 KV.A.C. TRACTION SCHEDULE I-CHAPTER II

### **NOTE:-**

THE DISTANCES 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, 'S' THE SUPERELEVATION AND 'G' THE GAUZ OF THE TRACK, ALL DIMENSIONS BEING IN METRES D =  $H \times S$

## STANDARD DIMENSIONS IN STATIONS

DIAGRAM NO. 2  
1676 mm GAUGE



## **INFRINGEMENTS TO SCHEDULE - I**

FOR 3660mm GOODS STOCK & NEW STANDARD  
LOCOMOTIVES IN EXISTING BRIDGES ONLY

**PERMITTED UNDER SCHEDULE - II  
MINIMUM CLEARANCES ON EXISTING GIRDERS BRIDGES**

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**DIGRAM NO. 3 (FIG I)**

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**1676mm GAUGE**

## NOTES:-

FULL LINES SHOW MAXIMUM MOVING DIMENSIONS OF FUTURE 3660 WIDE STOCK & OF EXISTING 3200/3250 WIDE STOCK OUTLINE OF EXISTING 3660 WIDE ELECTRIFIED STOCK DOTTED LINES SHOW OUTLINE OF NEW STANDARD X.E. & W.H. 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 MINIMUM PERMISSIBLE CLEARANCES WILL BE  
UNDER ANY CIRCUMSTANCES & SUBJECT TO ANY  
RESTRICTION OF SPEED WHICH IT MAY BE CONSIDERED  
NECESSARY TO IMPOSE**

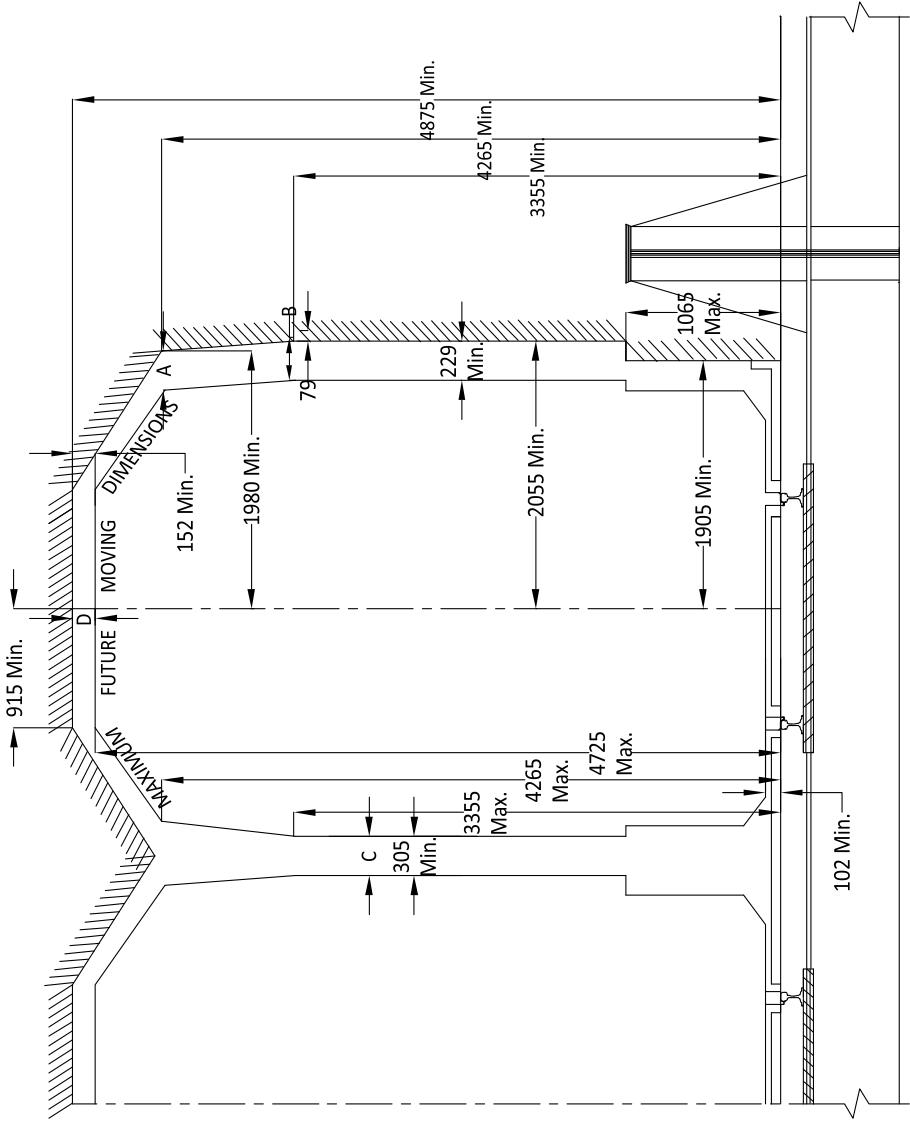
IN TUNNELS	ON GIRDER BRIDGES
AT A-----229mm	AT A---229mm (AT TOP OF SIDES OF VEHICLES)
AT B-----305mm	AT B---229mm (AT SIDES OF VEHICLES)
AT C-----380mm	AT C---305mm (BETWEEN MOVING TRAINS)
AT D-----229mm	AT D---152mm (ABOVE VEHICLES)

(3) *EOB / INBESTB/CTED SPEED:*

IN TUNNELS	ON GIRDER BRIDGES
AT A-----380mm	AT A----229mm (AT TOP OF SIDES OF VEHICLES)
AT B-----535mm	AT B----455mm (AT SIDES OF VEHICLES)
AT C-----610mm	AT C----535mm (BETWEEN MOVING TRAINS)
AT D-----305mm	AT D----229mm (ABOVE VEHICLES)

WHERE DOORS OPENING INWARDS OR OF THE RECESSED OR SLIDIN TYPE ARE PROVIDED, THE MINIMUM CLEARANCE IN TUNNELS & BRIDGES MAY BE REDUCED TO 380 AT B & 455 AT C

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



**NOTE:-** ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

## INFRINGEMENTS TO SCHEDULE - I

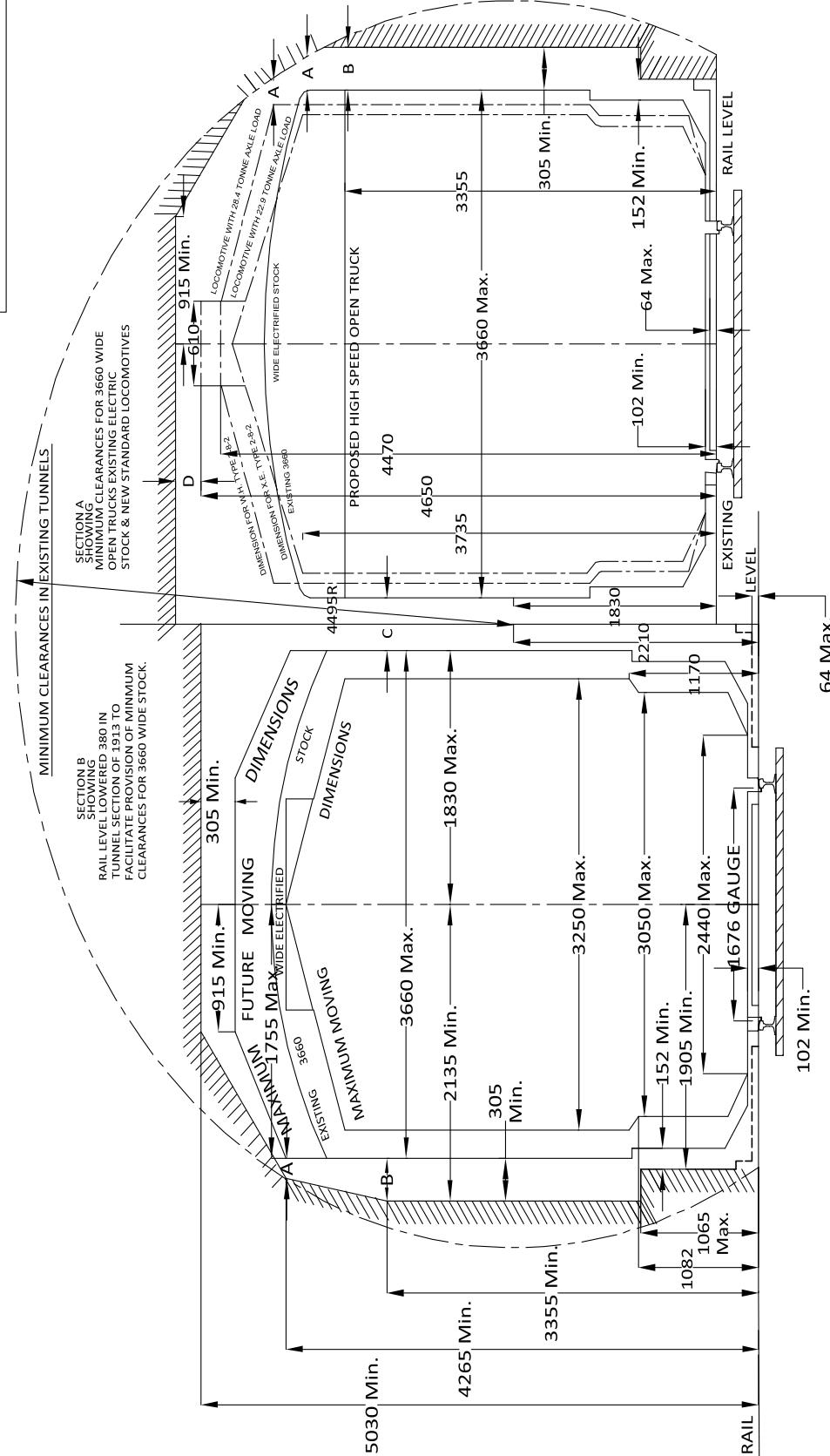
FOR 3660mm GOODS STOCK & NEW STANDARD  
LOCOMOTIVES IN EXISTING TUNNELS ONLY

**PERMITTED UNDER SCHEDULE II E - II**

TUNNEL SECTION OF 1913

DIGRAM NO. 3 (FIG II)  
1676mm GAUGE

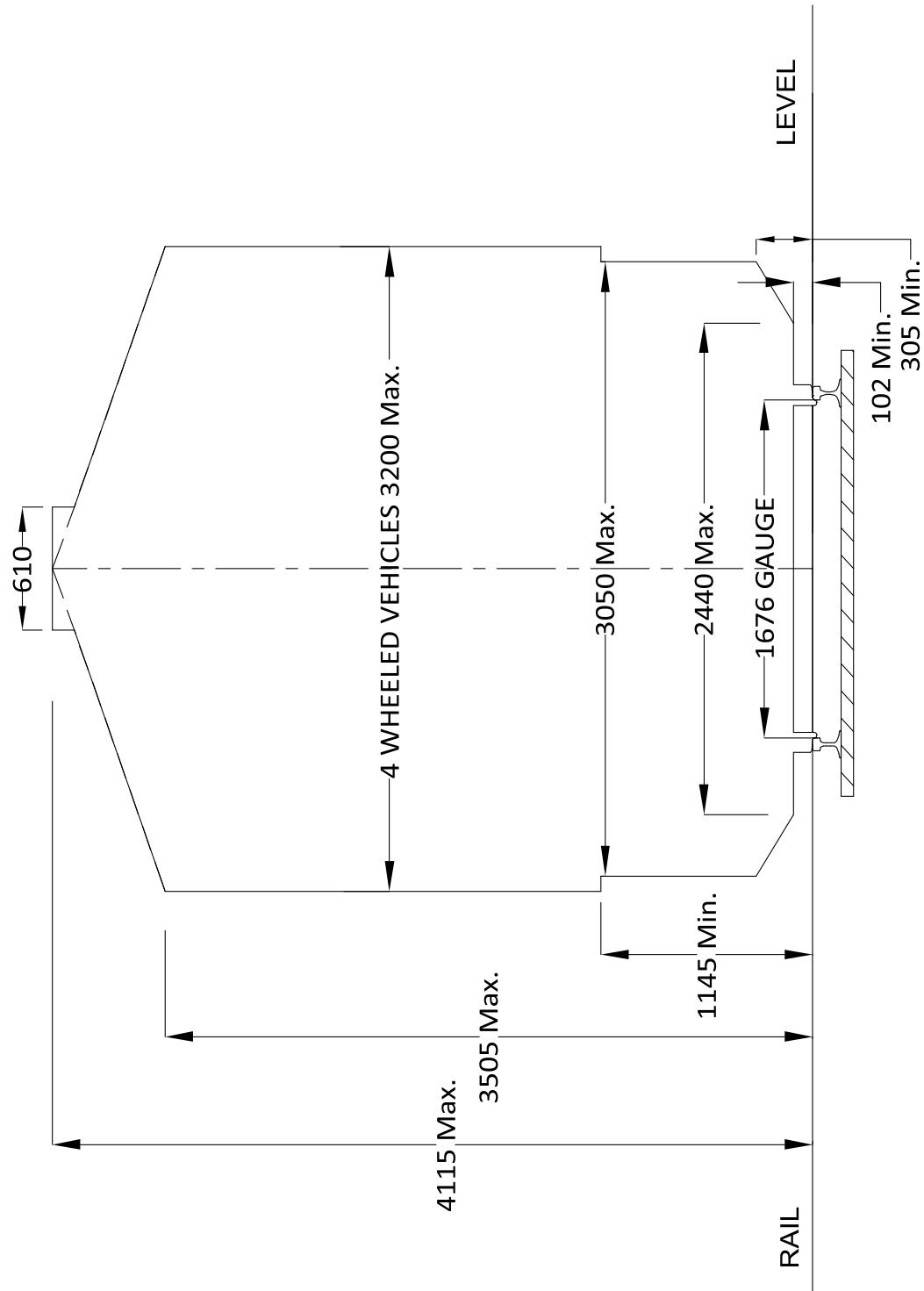
**NOTE:-** PLEASE REFER TO NOTES GIVEN IN DIAGRAM No. 3 (FIG 1)



**NOTE:-** ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

**MAXIMUM MOVING DIMENSIONS  
OF 1929 PROFILE**

**DIAGRAM No. 4  
1676 mm GAUGE**



**NOTE:- ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.**

