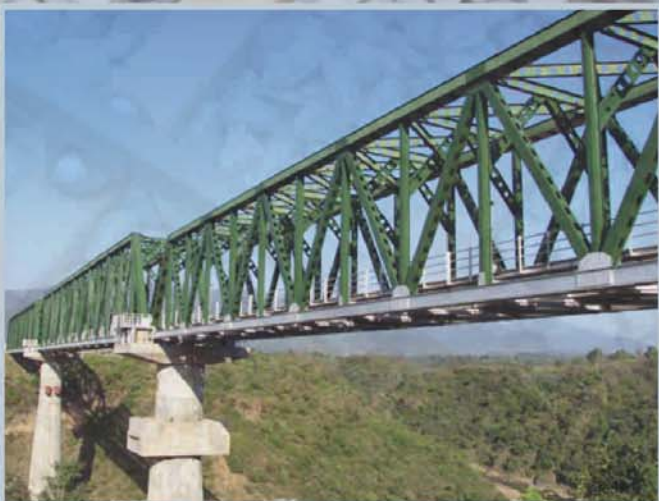


TECHNICAL AID
to
INDIAN RAILWAYS
SCHEDULE OF DIMENSIONS
1676mm Gauge (BG)



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
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ACKNOWLEDGEMENT

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

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4. ***Shri Anil Kumar*** - ***Director CE (G)/ Railway Board***
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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

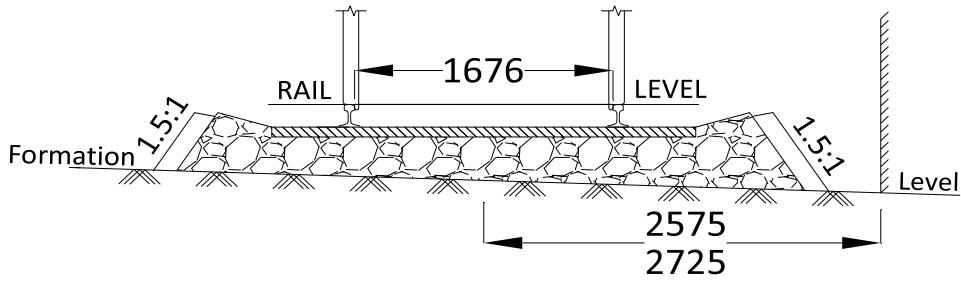
[Refer Diagram Nos. 1A, 1A (Modified), 1B, 1C and 1D]

- (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.

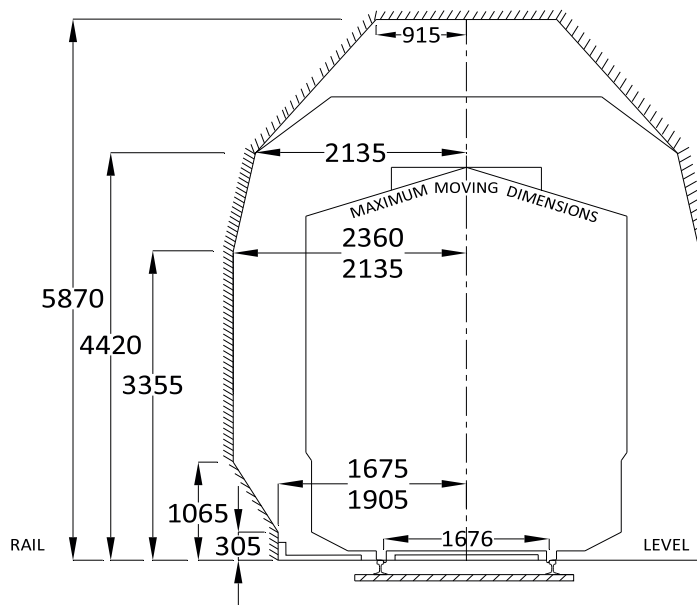
| SL | Item Description | Existing Works | New or Alt to Existing Works | IRSOD-04 | |
|---|---|----------------|------------------------------|----------|------|
| | | | | Ch | Item |
| 1.1 | Spacing of Tracks : Minimum distance of centre to centre <i>{Other than Station Yard}</i> | 4265 mm | 5300 mm | 1 | 1 |
| <p>Note :</p> <p>(a) See Appendix 'A' for 'extra clearance required on curves'.</p> <p>(b) For spacing of tracks in tunnels, through and semi through girder bridges see Item 1.11.</p> <p>(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.</p> | | | | | |
| <p>The diagram illustrates the cross-section of two parallel railway tracks, labeled '1st TRACK' and '2nd TRACK'. Each track consists of a 'RAIL' on top of a 'FORMATION LEVEL'. The distance between the centers of the two rails is indicated as '4265/5300'. The distance from the center of each rail to the center of the track bed is marked as '1676'. The track bed is shown with a cross-section of ballast and sleepers, with a slope of '1.5:1' on both sides. A horizontal line labeled 'LEVEL' is drawn above the tracks, representing the ground level.</p> | | | | | |

| SL | Item Description | All Works | Ch | Item |
|--|--|-------------------------|-------------------------|------------------------|
| 1.2 | Curves : Minimum radius of curve (sharpest curvature) | 175 m (10 degree) | I | 2 |
| | | | | |
| 1.3 | Check Rails : Check rail shall be provided on curves where radius is 218 metre or less (curvature of 8° or more). They may be necessary also in case of flatter curves. | | I | It. 4 Note 4 (b) |
| 1.3.1 | Minimum Clearance of Check Rails on Curves : | 44 mm | | 4 |
| <p>Note : 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.</p> | | | | |
| 1.3.2 | Clearance of Check Rails on Level Crossing | Minimum 51 mm | Maximum 57 mm | I 5 (i) & (ii) |
| <p>Item 1.3.2</p> | | <p>Item 1.4</p> | | |
| 1.4 | Vertical Clearance for wheel flange below rail level | 38 mm | I | 6 |
| 1.5 | Bridge Sleepers : <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 | Dimensions of Bridge Sleepers , 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 | | |
| | | | | |
| 1.6 | Buildings and Structures : 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 | Upton 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 :

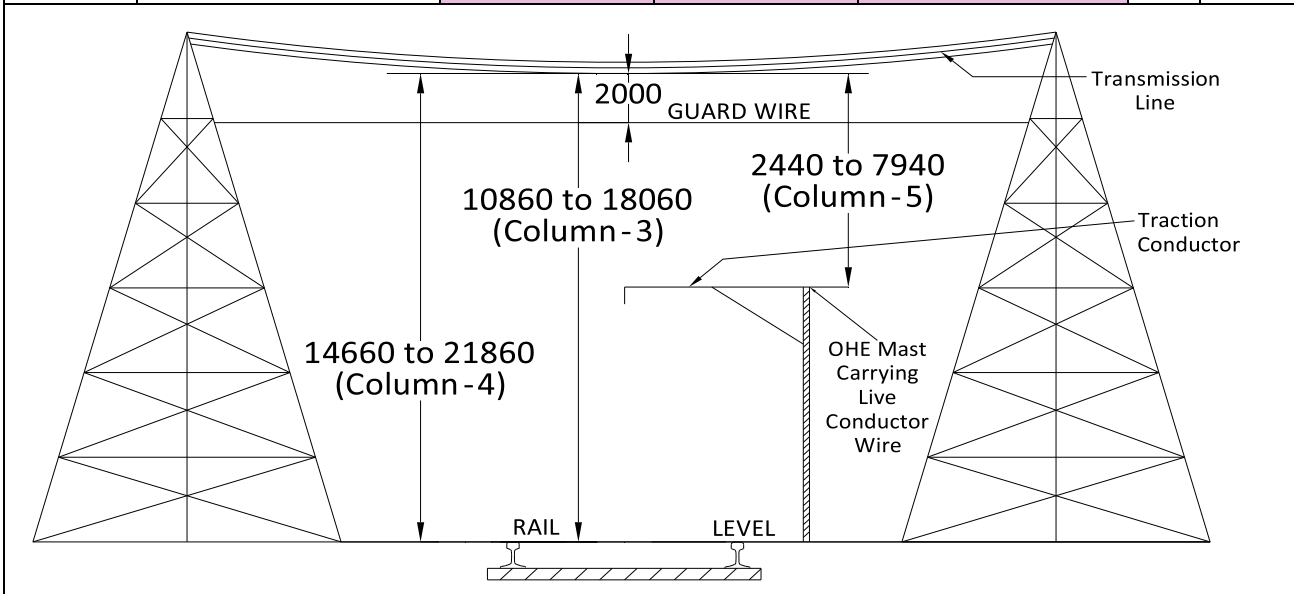
- (a) Any material stacked by the side of line is to be considered a structure in the sense in which the word is used here. These Items also apply to projections of rock etc. from the side of cutting.
- (b) See Appendix 'A' for 'extra clearance required on curves'.
- (c) Light structures such as ladders, 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 | Minimum Horizontal Distance of Telegraph Post : Horizontal distance measured from the centre of and at right angles to the nearest track | Height of Post plus 2135 mm | Height of Post plus 2360 mm | I | 9 |
| <p style="text-align: center;">'H' is Height of Post from Ground Level</p> <p style="text-align: center;">H+2360</p> <p style="text-align: center;">H+2135</p> <p style="text-align: center;">1676</p> <p style="text-align: center;">1.5:1</p> <p style="text-align: center;">1.5:1</p> <p style="text-align: center;">Formation Level</p> <p style="text-align: center;">Ground Level</p> <p style="text-align: center;">H</p> | | | | | |
| Note : When the line is in cutting, a telegraph post erected outside the cutting, must be at a distance from the edge of the cutting not less than the total height of the post. | | | | | |
| SL | Item Description | Minimum | | Ch | Item |
| 1.8 | Height of Road Over Bridges and Foot Over Bridges : | | | I | 10 |
| 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 | | | 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>Note :</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 & 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>Note : <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> | | | | | |
| <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.</p> | | | | | |
| 1.9 | Clearance for Power Line Crossings including Telephone Line Crossings of Railway Tracks - | | | Ch | Item |
| | Over Head Crossing Voltage | Minimum Clearances From Rail Level | | Minimum Clearance Between Highest Traction Conductor And Lowest Transmission Line Crossing Conductor | 11 |
| | | Existing Power Line Crossing For Non - Electrified Territory | New Power Line Crossing Or Crossing Planned For Alteration | | |
| (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 :

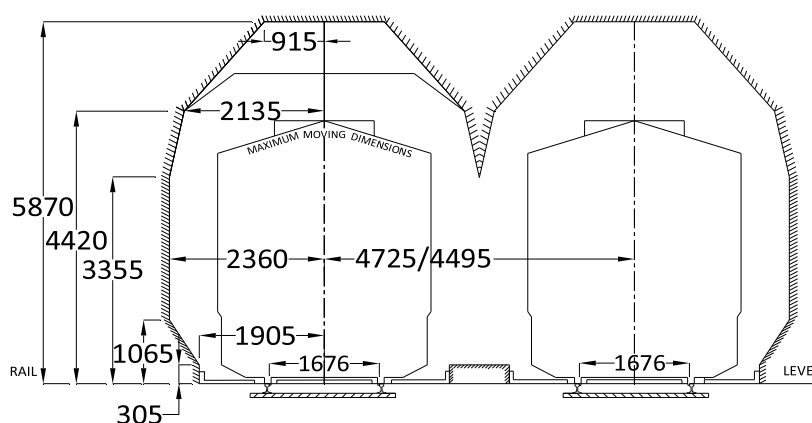
- (i) All height /clearances are under maximum sag conditions.
- (ii) If the crossing is provided with a guarding, a minimum clearance of 2000mm shall be maintained between bottom of the guard wire and highest traction conductor.
- (iii) Power line crossing in yards & stations area shall be avoided.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

| | | | | |
|-------|---|---|-----------|-----------|
| 1.9.2 | Minimum Clearance between any conductor not adequately insulated and any railway structure under most adverse conditions | | / 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 | Minimum Horizontal Distance Of Structures , 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>H+6000</p> <p>H+2135</p> <p>1676</p> <p>1.5:1</p> <p>1.5:1</p> <p>Formation Level</p> <p>Ground Level</p> | | | | | | |
| Note : | | | | | | |
| (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”. | | | | | | |
| (ii) ‘H’ is height of structure in metres. | | | | | | |
| SL | Item Description | | Minimum | Ch | Item | |
| 1.9.4 | Height above rail level 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 | Interlocking and Signal Gear : 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 | I | 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 | Tunnels, Through and Semi-through girder bridges: | | | | |
| 1.11.1 | Minimum distance - centre to center of track | 4495 mm | 4725 mm | I | 13(i) |
| SL | Item Description | Minimum | | Ch | Item |
| 1.11.2 | Horizontal Distance Of any Structures from Center of Track : | | | I | |
| 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 | | | |

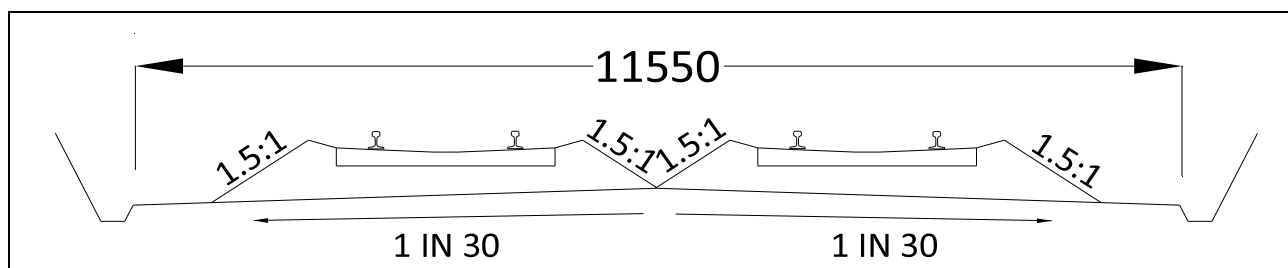
| SL | Item Description | Minimum | Ch | Item |
|----------|--|-------------------------------|----|------------------------|
| 1.11.2.4 | From 3355mm above rail level to 4420mm above rail level | 2360 mm decreasing to 2135 mm | I | 13(ii) Note (iv) |
| 1.11.2.5 | From 4420mm above rail level to 5870mm 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 | Safety Refuges : | | I | |
| 1.12.1 | Maximum distance apart of Refuges in Tunnels | 100 m | | 14 |
| 1.12.2 | Maximum distance apart of Trolley Refuges - | | | 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 | Formation Width : | | I | |
| 1.13.1 | For Single Line 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 Double Line straight track - | | I | 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

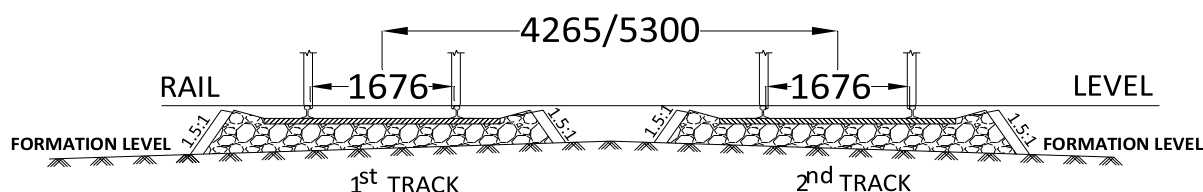
| SL | Item Description | Minimum | | Ch | Item |
|----------|--|----------------|----------------|----|--------|
| 1.13.3 | Extra Formation Width on Curves : | | | I | 18 |
| 1.13.3.1 | Increase due to extra ballast (500mm in place of 350mm) on outside of curves - | | | | 18(a) |
| | (a) Single Line | 150 mm | | | |
| | (b) Double Line | 300 mm | | | |
| 1.13.3.2 | Increase on double line due to effect of super-elevation - Due to requirement of extra clearances on double line on curves, increase in track centres with corresponding increase in formation width would be necessary to take into account the effect of 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 | Gauge on straight and curves | 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 | Spacing Of Tracks : | | | 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 | Maximum (Steepest) Gradient in Station Yards : 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-

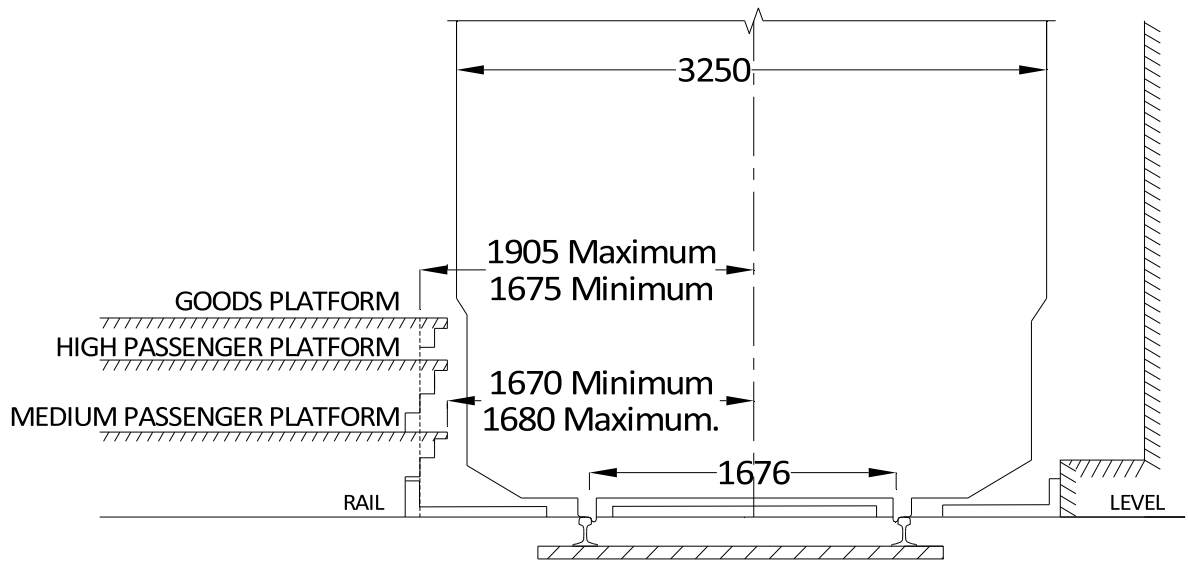
- (i) On single line to a distance of 50metres beyond Stock Rail joint of outer most points at either end of the station.
- (ii) On Double line where 2 aspect signaling is provided, from Home signals to a distance of 50 metres beyond stock rail joint of outermost points at trailing end or where there 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.

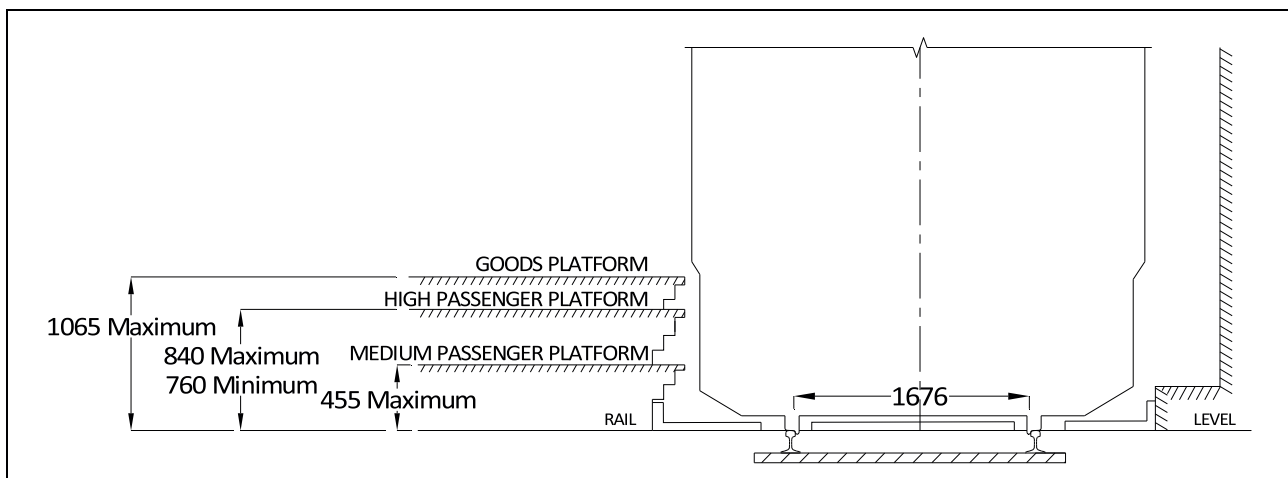
| | | | | | |
|-----------|---|----------------|----------------|-----------|--------------|
| 2.3 | Platform : Horizontal distance from centre of track to the face (track side edge) of – | | | | |
| SL | Item Description | Minimum | Maximum | Ch | Item |
| 2.3.1 | Passenger and Goods platform coping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

| | Note : The coping of passenger platform must be so constructed that when necessary, to allow for introduction of wider stock, it can be easily and expeditiously set back to 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 : | | | | |
| a) New platform walls should be built to maximum dimensions and the coping corbelled out to 1675mm unless provision is made to allow for the introduction of wider rolling stock either by slewing the platform track out by 230 mm or by moving the platform wall 230 mm further from the track. | | | | |
| b) See Appendix 'A' for 'extra clearance required on curves'. | | | | |

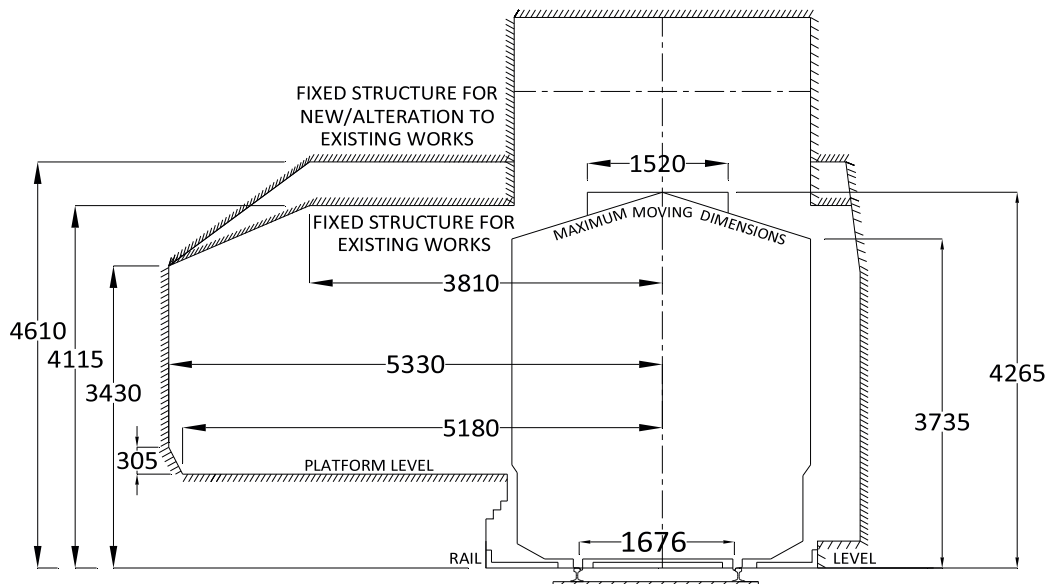
| | | | | | |
|-------|--|--------|---------|----|----------|
| 2.4 | Platform : Height above rail level for - | | | II | |
| 2.4.1 | High level passenger platforms | 760 mm | 840 mm | | 4 |
| 2.4.2 | Medium level passenger platforms | -- | 455 mm | | 5 |
| 2.4.3 | Goods platforms (except horse and end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


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 | Platform in Curves : Minimum Radius of Curve in new line having passenger platform | 875 metre (Max. 2 degree) | // | Note (g) |
| <p>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.</p> | | | | |
| 2.6 | Platform Length : Length of a passenger platform | Length of longest passenger train (excluding engine, booked to stop at the platform) | // | Note (f) |

| SL | Item Description | Minimum | Ch | Item |
|---------|---|---|----|----------------------|
| 2.7 | Buildings and Structures : <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) |



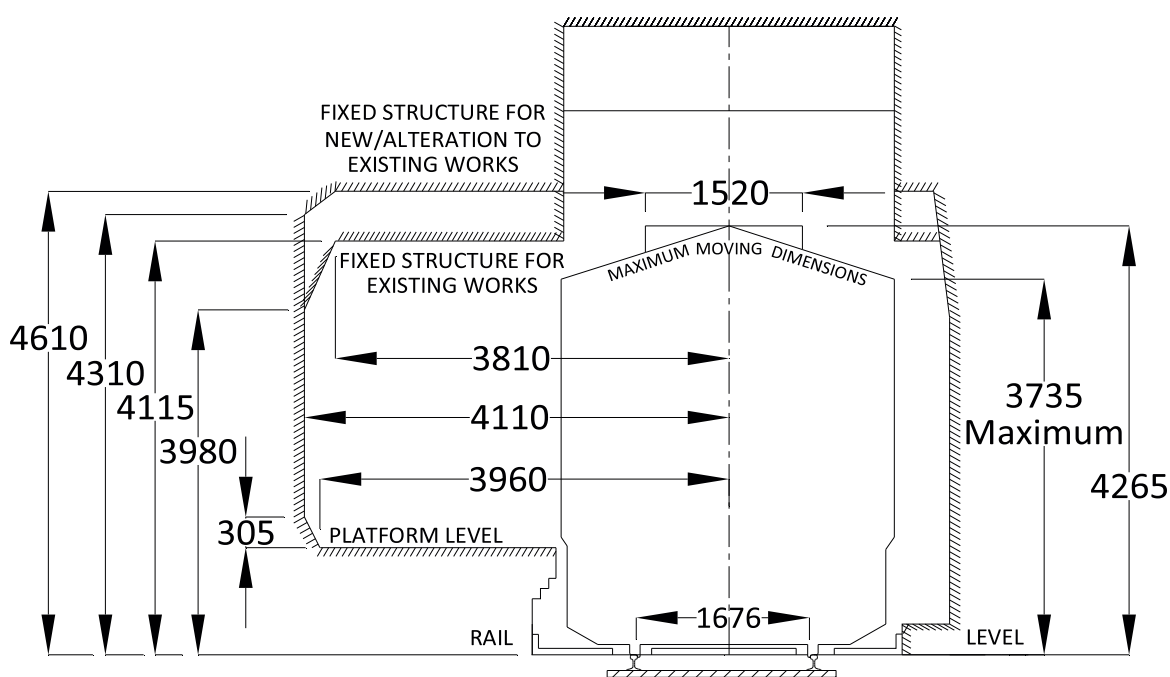
Note :

- (i) For the return end of platform fencing, these dimensions may be reduced to 2740 mm.
- (ii) Isolated structures are covered in Item 2.7.4 below.

| 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 (<i>subject to stipulation that if any pucca construction of building/structure is done in future, provisions of Item 2.7.2 shall be followed</i>) | 5330 mm | II | 7(b) note (c) | |
| Note : (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 | |

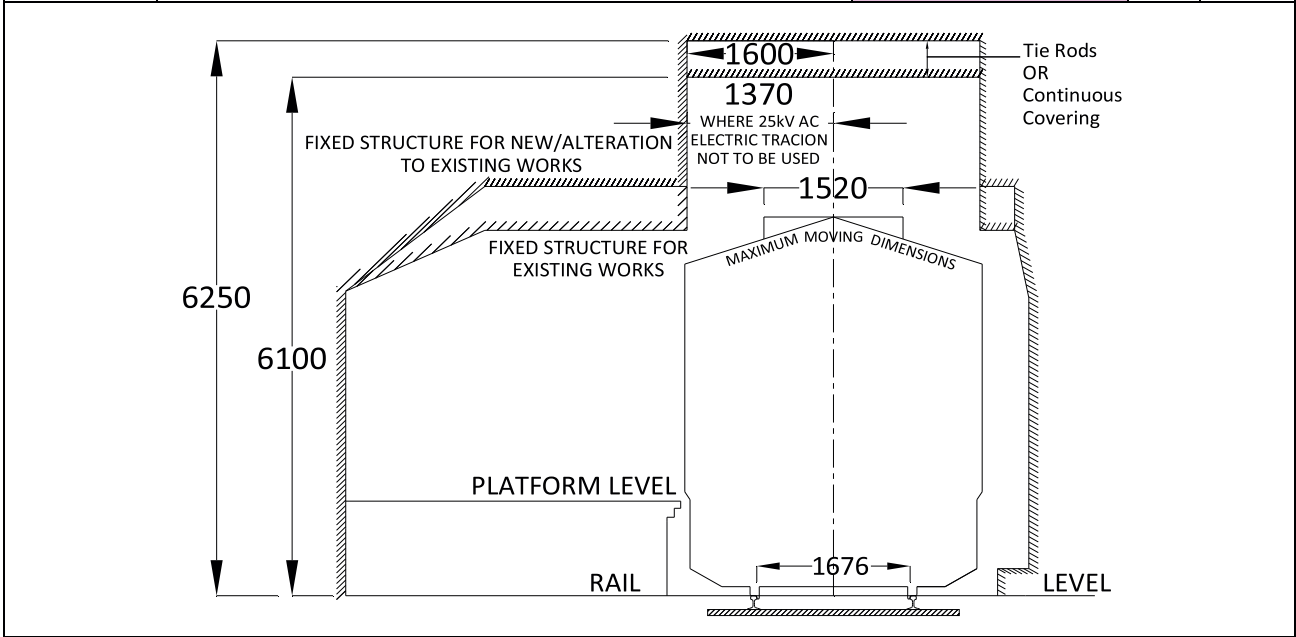
| SL | Item Description | Minimum | Ch | Item |
|---------|---|---|----|----------------------|
| 2.7.4.1 | From platform level to 305mm above platform level | 4570 mm increasing uniformly to 4720 mm | II | 8(i) |
| 2.7.4.2 | From 305mm above platform level to 3705mm above rail level | 4720 mm | | 8 (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 | 3960 mm increasing uniformly to 4110 mm | | 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 | | // | |
| 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) |

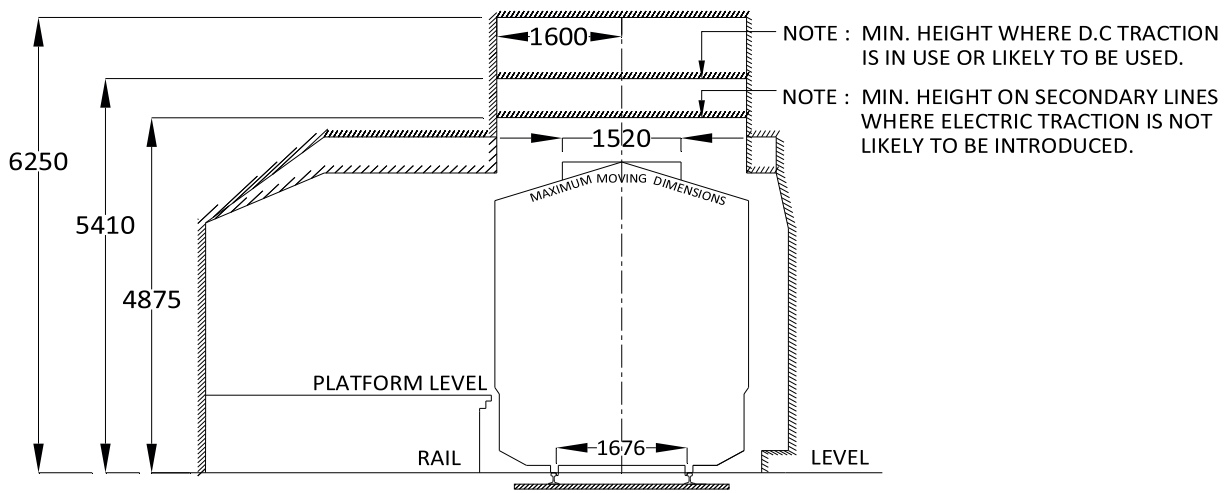


Note :

- (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 transshipment 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 | Of Signal Gantry or Foot Over Bridge for a width of 1600mm on either side of center of track | | // | |
| 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 : 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.

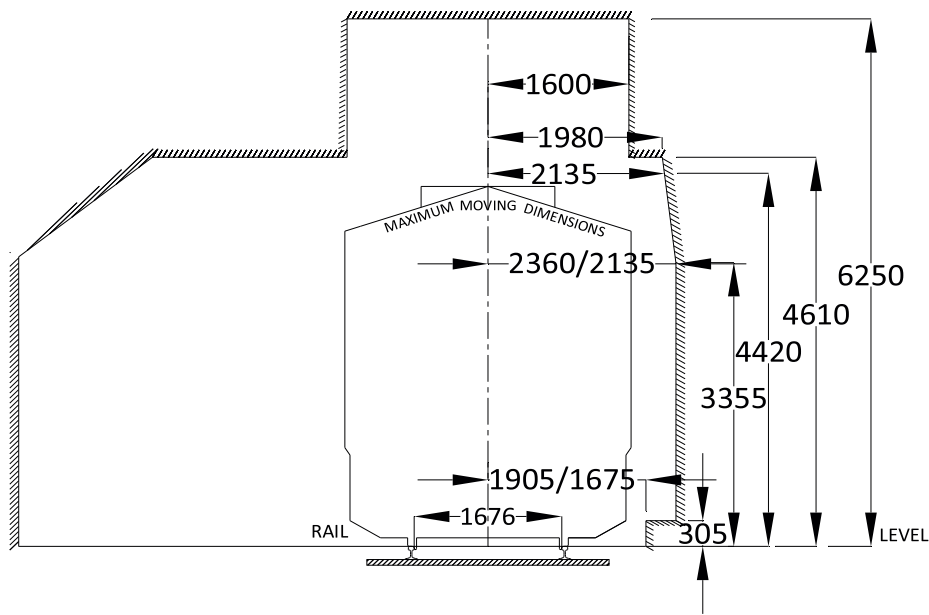
| SL | Item Description | Existing Works | New or Alt to Existing Works | Ch | Item |
|---------|--|----------------|------------------------------|----|------------------------|
| 2.9 | Minimum horizontal distance from centre of track to any structure : | | | II | 11 |
| 2.9.1 | Below rail level and up to formation level of track - | | | | |
| 2.9.1.1 | On straight and curves up to radius of 875m (Less than and up to 2°) | 2575 mm | 2575 mm | | (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) |
| <p>Note :</p> <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 & 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 & 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 | For height above rail level of track – | | | 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) |

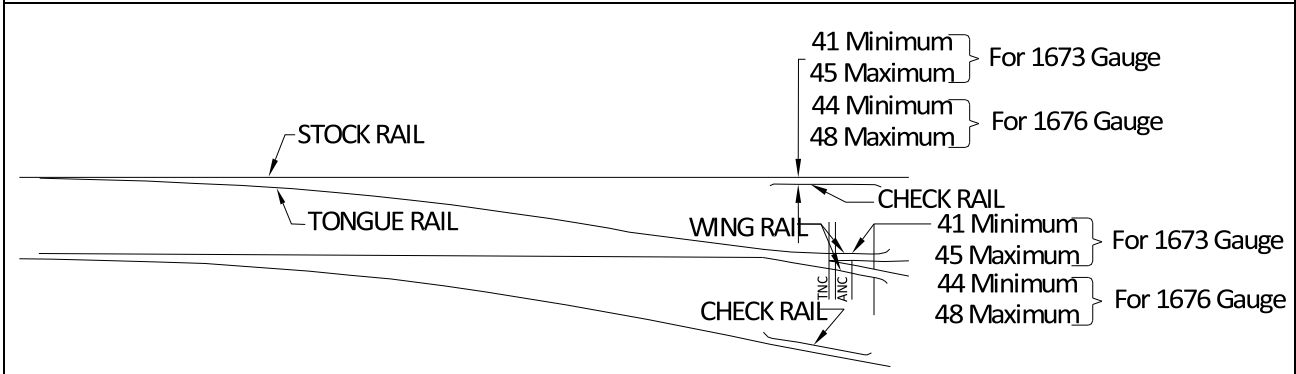
Note :

- (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.



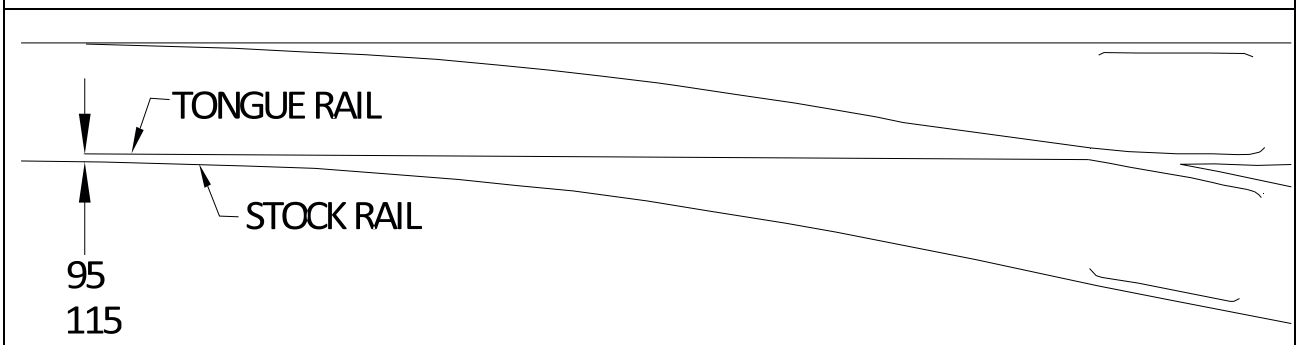
| SL | Item Description | Minimum | Maximum | Ch | Item |
|--------|---|---------|---------|----|---------|
| 2.10 | Points and Crossings – | | | II | |
| 2.10.1 | Clearance of check rail opposite nose of crossing | 44 mm | 48 mm | | 12 & 13 |
| 2.10.2 | Clearance of wing rail at nose of crossing | 44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

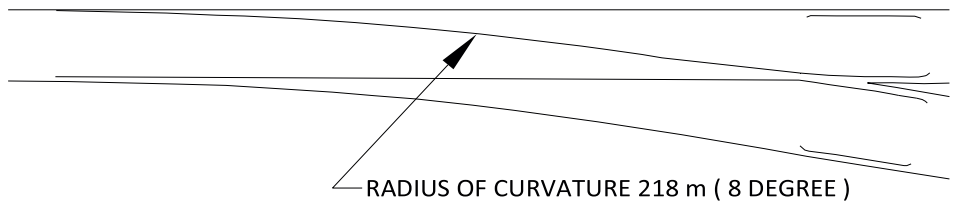
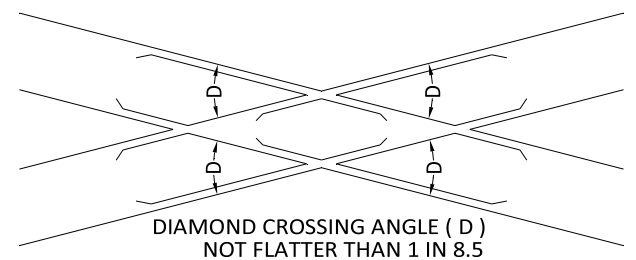
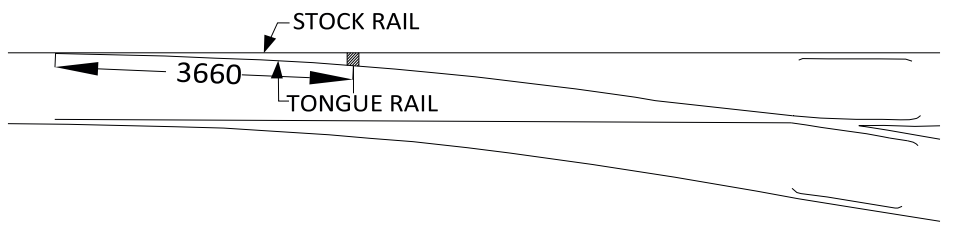
Note : In case of turnouts laid with 1673mm gauge, the minimum and maximum clearances shall be 41mm & 45mm respectively for Item 2.10.1 and 2.10.2.

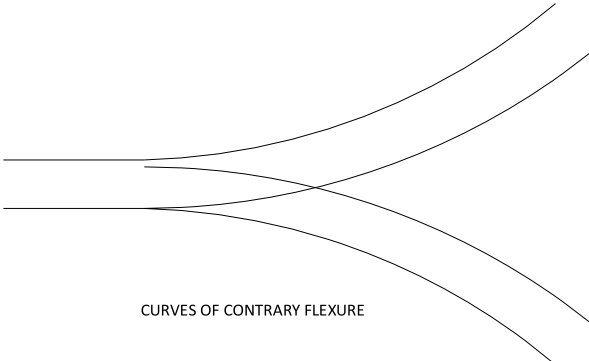


| SL | Item Description | Existing Works | New or Alt to Existing Works | Ch | Item |
|--------|---|----------------|------------------------------|----|------|
| 2.10.3 | Minimum clearance between toe of open switch and stock rail | 95 mm | 115 mm | II | 16 |

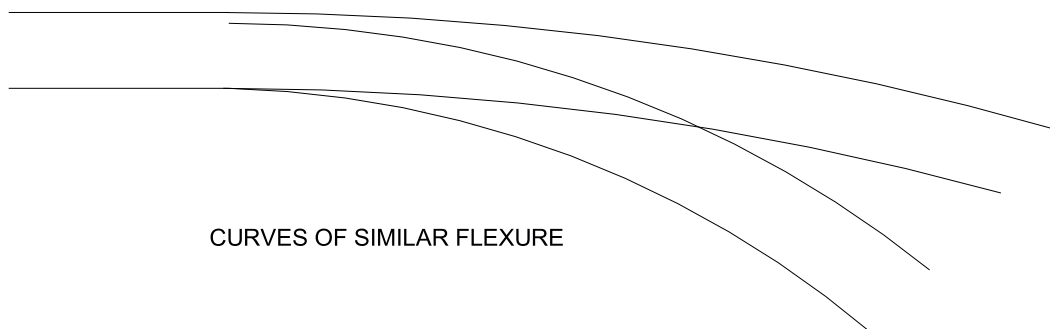
Note : Clearance can be increased up to 160mm in curved switches in order to obtain adequate clearance between gauge face of stock rail and back face of tongue rail.



| SL | Item Description | Minimum | Ch | Item |
|--|--|-------------------------|----|------|
| 2.10.4 | Radius of curvature for slip points, turnouts or crossover roads | 218 metre (8 degree) | " | 17 |
|  <p style="text-align: center;">RADIUS OF CURVATURE 218 m (8 DEGREE)</p> | | | | |
| <p>Note : In special cases mentioned below, this may be reduced to not less than the minimum of -</p> <p>(i) 213m radius in case of 1 in 8.5 BG turnout with 6.4m overriding switch, and</p> <p>(ii) 175m radius in case of 1 in 8.5 scissors crossing to allow for sufficient straight over the diamond crossing between crossovers.</p> | | | | |
| 2.10.5 | Angle of Crossing (Ordinary) | 1 in 16 | " | 18 |
| 2.10.6 | Diamond crossings not to be flatter than | 1 in 8.5 | | 19 |
| <p>Note : 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> | | | | |
|  <p style="text-align: center;">DIAMOND CROSSING ANGLE (D) NOT FLATTER THAN 1 IN 8.5</p> | | | | |
| 2.10.7 | Length of tongue rail | 3660 mm | " | 20 |
|  <p style="text-align: center;">STOCK RAIL 3660 TONGUE RAIL</p> | | | | |
| 2.10.8 | Length of train protection, point locking or fouling treadle bar | 12800 mm | " | 21 |
| <p>Note : 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 $C = \frac{GV^2}{127R}$ 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 | (75 – C) mm | | 22(i) |
|  <p>CURVES OF CONTRARY FLEXURE</p> | | | | |
| 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) |

| SL | Item Description | Minimum | Ch | Item |
|---|---|--|----|------|
| 2.12 | Length of Sidings – | | 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 | | |
| Note : Clear Available Length denotes : (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. (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. | | | | |



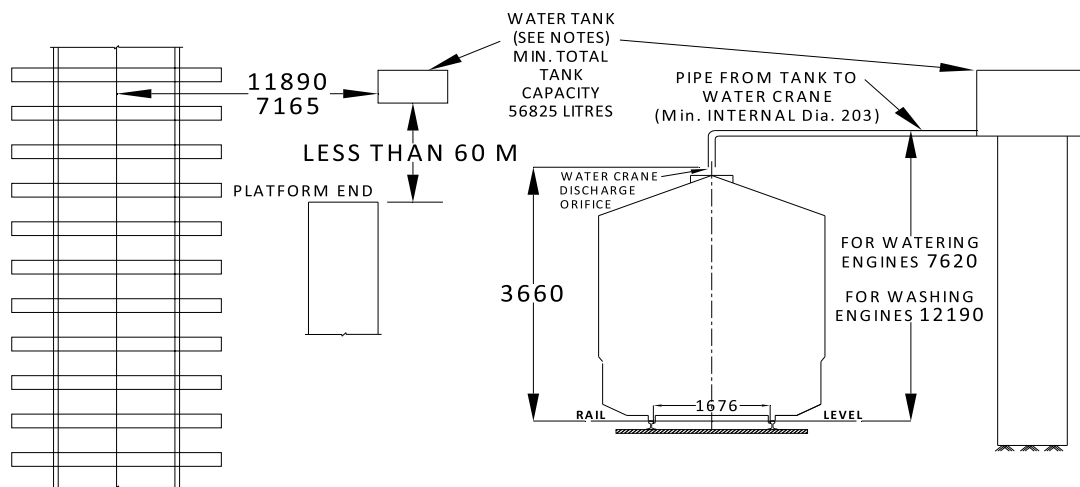
SCHEDULE – I

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 | Item |
| 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) |

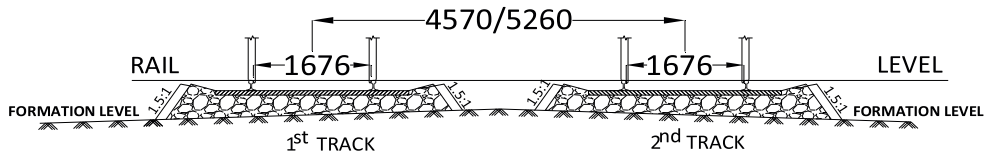
Note :

- (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

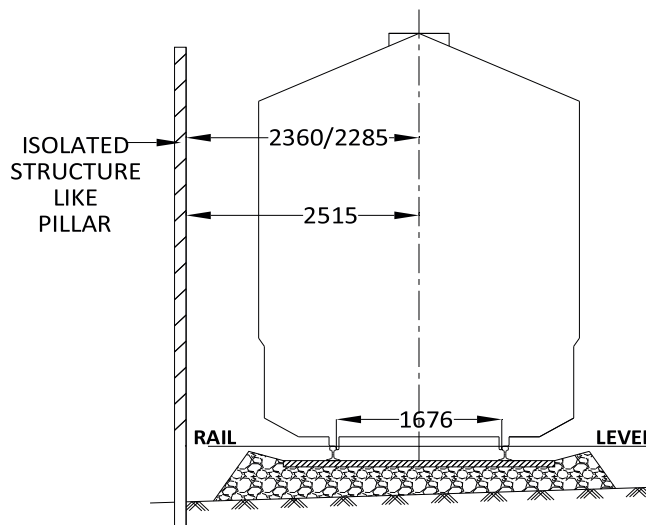


| SL | Item Description | Existing Works | New or Alt to Existing Works | Ch | Item |
|-------|--|----------------|------------------------------|-----|-----------------|
| 3.3 | Workshops and Running Sheds : | | | III | 2 |
| 3.3.1 | Minimum Distance between centre to centre of tracks in workshops | 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) |

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

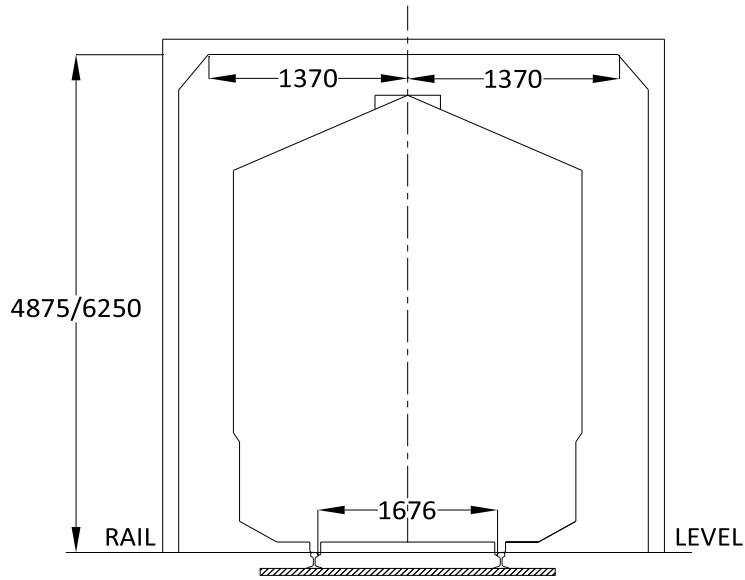


| | | | | | |
|-------|---|---------|---------|-----|-----------------|
| 3.3.3 | Minimum Clear distance from centre of track to any isolated structure such as a pillar in Work shops | 2285 mm | 2360 mm | III | 3 (i) (a) & (b) |
| 3.3.4 | Minimum Clear distance from centre of track to any isolated structure such as a pillar in running sheds | 2515 mm | 2515 mm | | 3 (ii) |



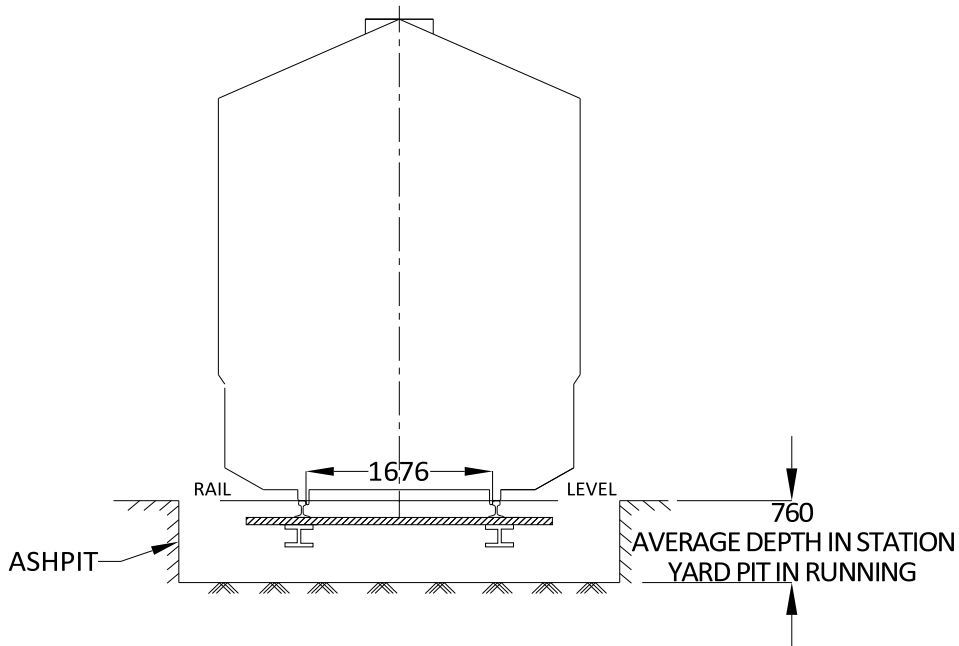
| SL | Item Description | Minimum | Ch | Item |
|---------|--|---------|-----|--------|
| 3.3.5 | Clear distance, for a height of 1830 mm above rail level, from centre of track to any continuous structure in – | | III | 4 |
| 3.3.5.1 | Workshops | 2745 mm | | 4 (i) |
| 3.3.5.2 | Running Sheds | 3275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



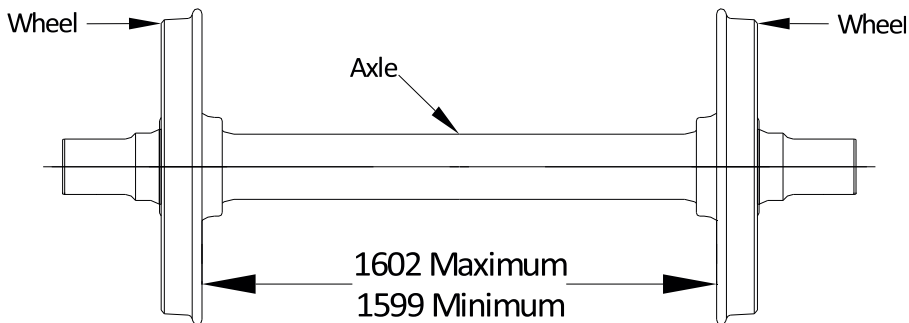
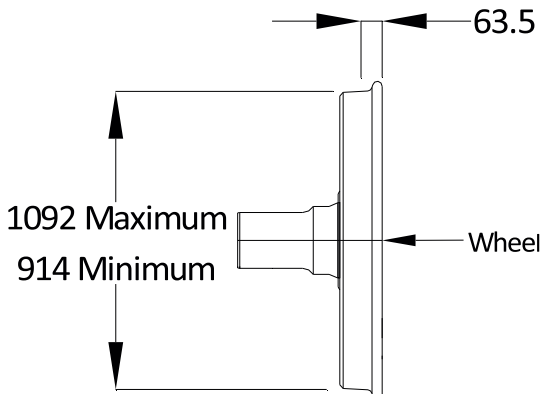
| | | | | |
|-----|--|--------|-----|---|
| 3.4 | Ash Pits etc. - Average depth for Ash pits in station yards and pits in running sheds & for carriage examination | 760 mm | III | 7 |
|-----|--|--------|-----|---|

Note : Provision of Ash pits on run through lines, should, if possible, be avoided



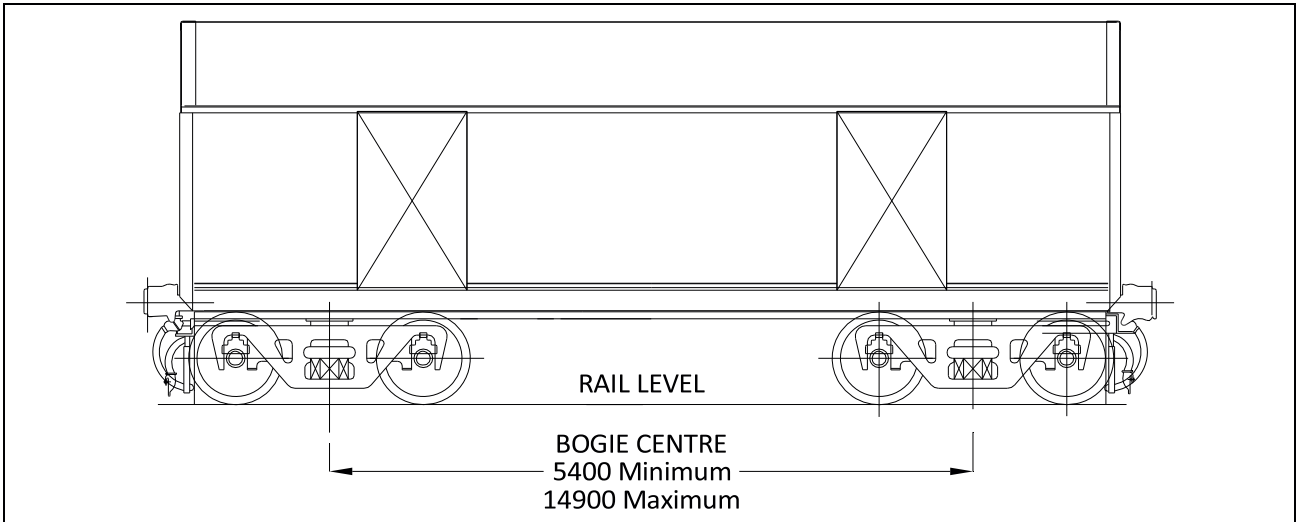
SCHEDULE – I

CHAPTER 4– ROLLING STOCK (Carriage & Wagon)

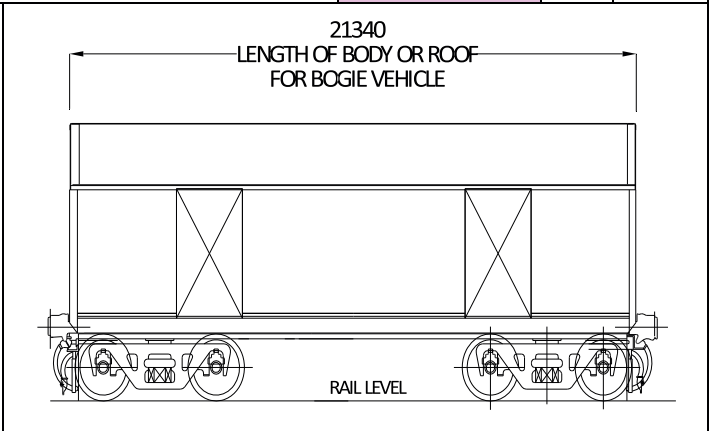
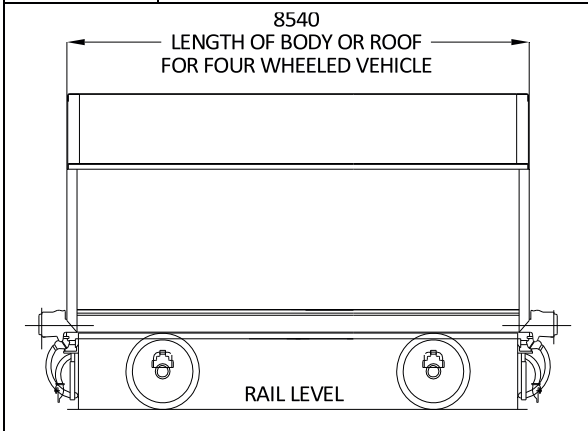
| SL | Item Description | Minimum | Maximum | IRSOD-04 | |
|--|--|---------|---------|-----------|--------------|
| | | | | Ch | Item |
| 4.1 | Wheels and Axles : | | | IV (A) | |
| 4.1.1 | Wheel gauge, or distance apart, for all wheel flanges | 1599 mm | 1602 mm | | 1 |
| 4.1.2 | Diameter on tread of new wheel, measured at 63.5 mm from wheel gauge face | 914 mm | 1092 mm | | 2 (i) & (ii) |
|  <p>The diagram shows a side view of an axle with two wheels. A horizontal double-headed arrow indicates the distance between the inner faces of the wheel flanges. This distance is labeled as '1602 Maximum' and '1599 Minimum'. Labels 'Wheel' and 'Axle' point to the respective parts.</p> | | | | | |
|  <p>The diagram shows a cross-section of a wheel tread. A vertical double-headed arrow indicates the diameter measured at a distance of 63.5 mm from the wheel gauge face. This diameter is labeled as '1092 Maximum' and '914 Minimum'. A label 'Wheel' points to the tread surface.</p> | | | | | |
| 4.1.3 | Projection for flange of Tyre , 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 | | | 8 |
| | | | | | |
| 4.2 | Height of Floor above rail level : | | | 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 {Note : This does not apply to crocodile wagons } | 1145 mm | - | | 11 |
| 4.3 | Buffers & Couplings : | | | | |
| 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 |
| <p style="text-align: center;"> FLOOR HEIGHT 1345 Maximum (Unloaded) 1200 Minimum (Loaded) 1145 Minimum (Loaded) </p> <p style="text-align: center;"> COUPLER/BUFFER HEIGHT 1105 Maximum (Unloaded) 1030 Minimum (Loaded) </p> <p style="text-align: center;"> RAIL LEVEL </p> <p style="text-align: center;"> 1956 </p> | | | | | |
| 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 |
| <p style="text-align: center;"> RAIL LEVEL </p> <p style="text-align: center;"> WHEEL BASE 6100 </p> | | | | | |
| 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 – | | IV (A) | 19 |
| 4.4.3.1 | Four wheeled vehicle | 8540 mm | | 19(a) |
| 4.4.3.2 | Bogie vehicle | 21340 mm | | 19(b) |

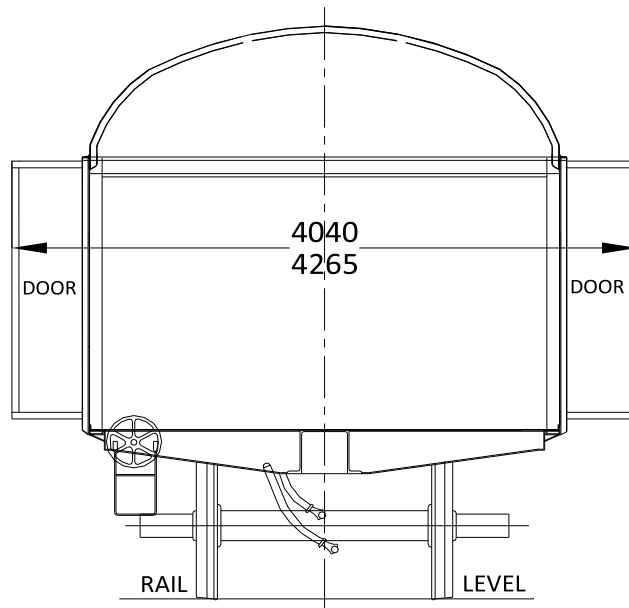


Note :

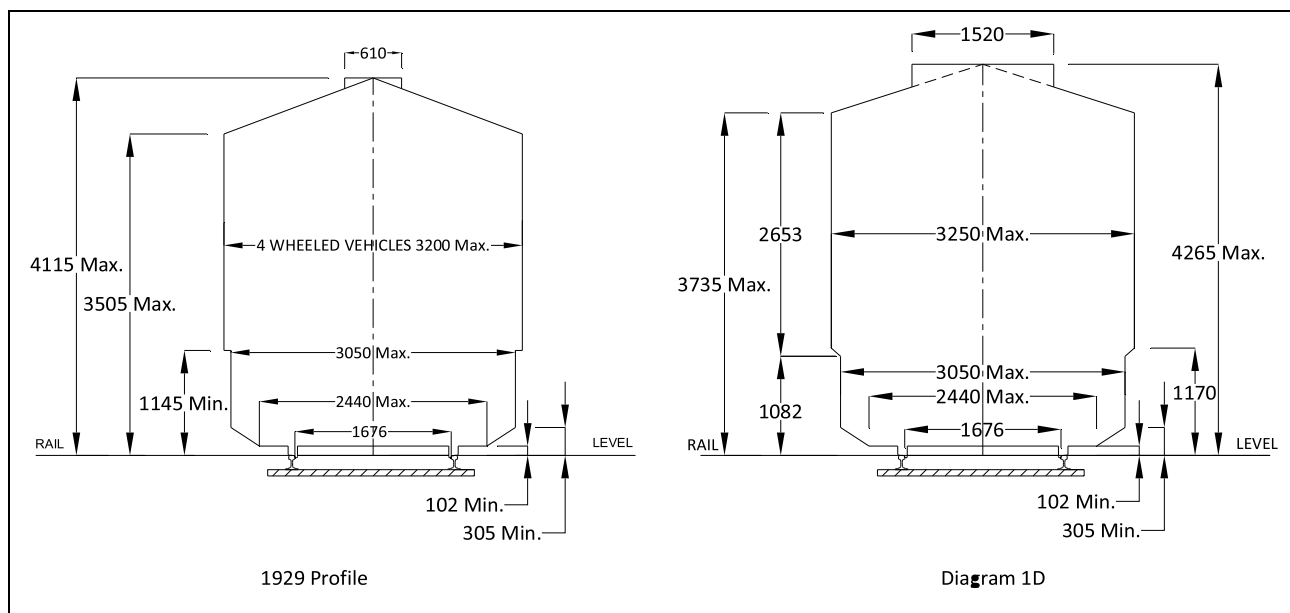
- (i) Maximum length of body or roof of bogie vehicles can be up to 23540 mm, subject to tapering of the ends in a manner that the end throw, when calculated as per Appendix 'A', is same as that for ICF coach of 21340 mm length and within this Schedule of Dimensions.
- (ii) A cornice may project beyond 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 – | | IV (A) | 20 |
| 4.4.4.1 | Four wheeled vehicle | 9810 mm | | 20(a) |
| 4.4.4.2 | Bogie vehicle | 22300 mm | | 20 (b) |
| <p>Note :</p> <p>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.</p> | | | | |
| 4.4.5 | Distance apart between any two adjacent axles | 12345 mm | IV (A) | 21 |
| | | | | |
| SL | Item Description | Maximum | Ch | Item |
| 4.5 | Maximum Moving Dimensions (see diagram 1D) – | | IV (A) | |
| 4.5.1 | Width over all projections : | | | |
| 4.5.1.1 | At 102mm above rail level, when fully loaded | 2440 mm | | 22 |
| 4.5.1.2 | At 305mm above rail level, when fully loaded | 3050 mm | | 23 |
| 4.5.1.3 | From 305mm above rail level to 1082 mm above rail level, when fully loaded | 3050 mm | | 24 |
| 4.5.1.4 | From 1082mm above rail level to 1170mm above rail level, when fully loaded | 3050 mm increasing gradually to 3250 mm | 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> | | | |
|---------|---|---------|--------|------|
| SL | Item Description | Maximum | Ch | Item |
| 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 | | 27 |
| 4.5.2.2 | Goods vehicles <i>{Note : Doors of horse boxes, brake vans, luggage vans and rising & falling flap doors of goods wagons are exempted from this rule}</i> | 4265 mm | | 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 | 4265 mm | | 29 |
| 4.5.3.2 | At sides of vehicles | 3735 mm | | 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 | |

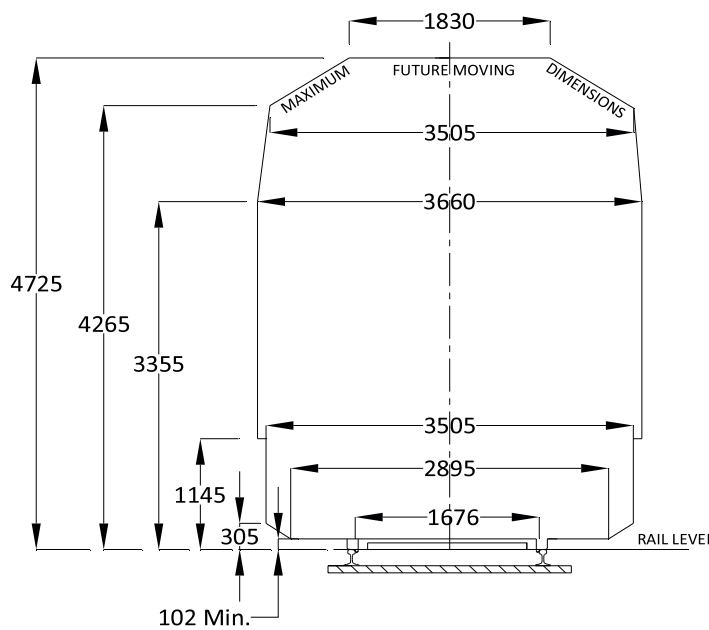


| SL | Item Description | Minimum | Ch | Item |
|--|---|---------|-----------|------|
| 4.5.4 | Height above rail level of fully loaded vehicle For a width of – | | IV (A) | |
| 4.5.4.1 | 1220mm on either side of centre of track with the exception of wheels and attachments thereto {Note : A tyre or an 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} | 102 mm | | 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 | Loading Gauge for Goods – | | IV (A) | |
| 4.6.1 | Maximum width | 3250 mm | | 33 |
| 4.6.2 | Maximum height above rail level at centre | 4265 mm | | 34 |
| SL | Item Description | Maximum | Ch | Item |
| 4.6.3 | Maximum height above rail level at sides | 3735 mm | IV (A) | 35 |
| Note : 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. | | | | |

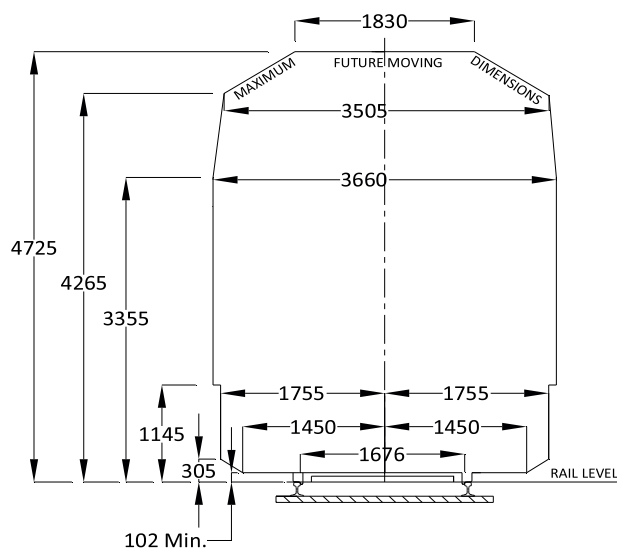
SCHEDULE – I
CHAPTER 5 – ROLLING STOCK
(3660 mm Wide Stocks)

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 | Maximum future moving dimensions : (See Diagram No. 1-A) | | 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) | |

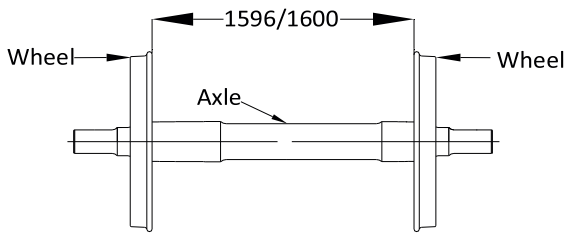
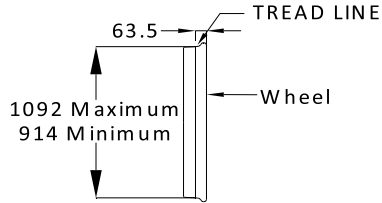
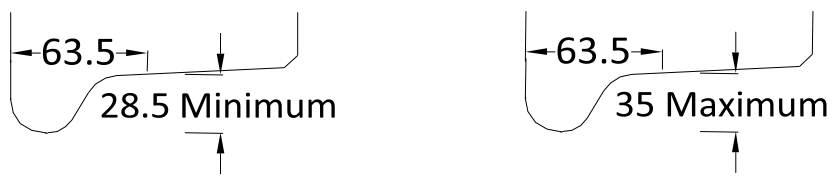


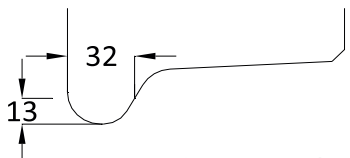
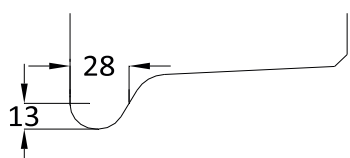
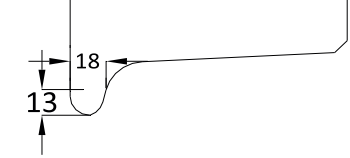
| SL | Item Description | Maximum | Ch | Item |
|---------|--|---------|-----------|------|
| 5.1.2 | Width over open doors including all projections – | | IV (B) | |
| 5.1.2.1 | For passenger vehicles | 4495 mm | | 2 |
| 5.1.2.2 | For goods vehicles <i>{Note : Doors of horse boxes, brake vans, luggage vans and rising & 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 | |
| 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. | | | | | |

SCHEDULE – I
CHAPTER 6 – ROLLING STOCK
(Locomotive)

| SL | Item Description | Minimum | Maximum | IRSOD-04 | |
|--|---|--|---------|-----------|-----------------------|
| | | | | Ch | Item |
| 6.1 | Wheels and Axles : | | | 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 & 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 tyre , measured from tread at 63.5mm from wheel gauge face { Minimum in case of new tyre and Maximum for worn tyre } | 28.5mm | 35 mm | | 3 & 4 |
|  | | | | | |

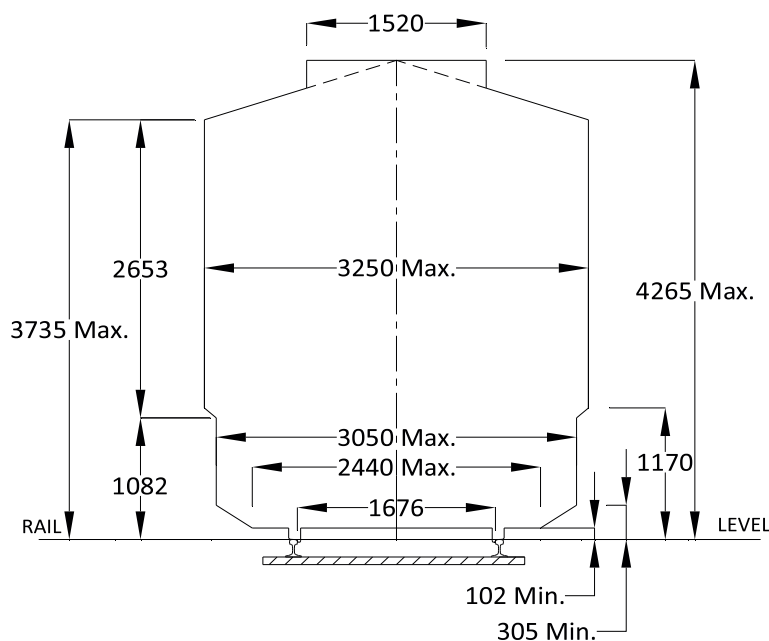
| SL | Item Description | Minimum | Maximum | Ch | Item |
|---|---|---------|---------|-----------|------|
| 6.1.4 | Thicknesses of tyre flanges, measured at 13mm from outer edge of flange – | | | IV (C) | 5 |
| 6.1.4.1 | Thick flanges/wear adopted wheel profile | -- | 32 mm | | 5(a) |
| 6.1.4.2 | Standard flanges | -- | 28 mm | | 5(b) |
| 6.1.4.3 | Thin flanges | -- | 18 mm | | 5(c) |
| <p>Note :</p> <p>(i) The above values of flange thickness are measured from the back face of tyre.</p> <p>(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.</p> | | | | | |
| <div style="display: flex; justify-content: space-around; text-align: center;"> <div>  <p>THICK FLANGE</p> </div> <div>  <p>STANDARD FLANGE</p> </div> <div>  <p>THIN FLANGE</p> </div> </div> | | | | | |
| 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 | Buffers and Couplings : | | | | | |
| 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 empty locomotive | - | 1105 mm | | 9 | |
| 6.2.2.2 | When fully loaded (Fuel Tank Full) | 1030 mm | - | 10 | | |
| <p>Diagram 1D: Front view of a locomotive showing the buffer and coupling arrangement. The diagram indicates a distance of 1956 mm between the centers of the buffers. The height of the buffer centers above the rail level is shown as 1105 mm Maximum and 1030 mm Minimum. The rail level is marked at the bottom.</p> | | | | | | |
| SL | Item Description | Maximum | | Ch | Item | |
| 6.3 | Maximum Moving Dimensions : (see Diagram 1D) | | | | IV (C) | |
| 6.3.1 | Width over all projections– | | | | | 11C |
| 6.3.1.1 | At 102mm above rail level, when fuel tank fully filled | 2440 mm | | 11C (i) | | |

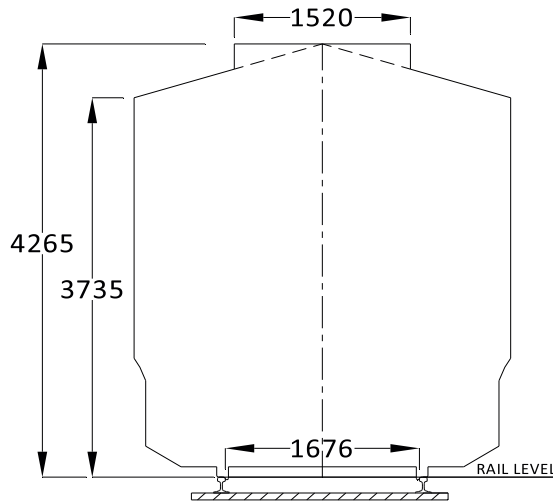
| SL | Item Description | Maximum | Ch | Item |
|---------|--|---|-----------|--------------|
| 6.3.1.2 | At 305mm above rail level, when fuel tank fully filled | 3050 mm | IV (C) | 11C (ii) |
| 6.3.1.3 | From 305mm above rail level to 1082mm above rail level, when fuel tank fully filled | 3050 mm | | 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



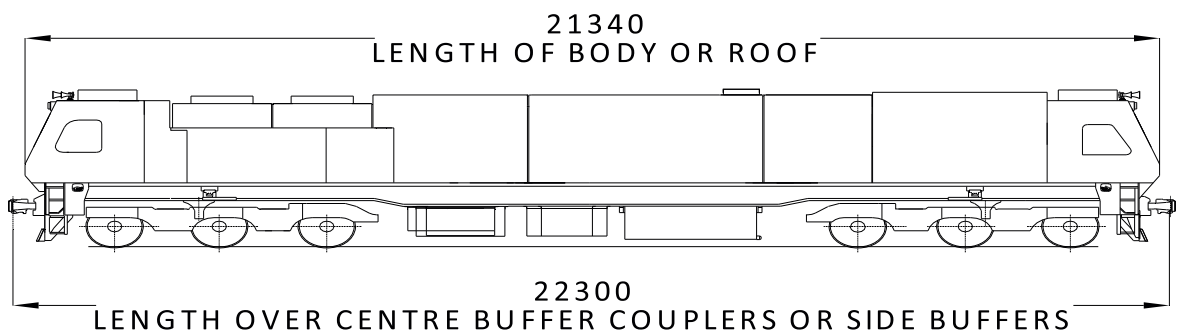
| SL | Item Description | Maximum | Ch | Item |
|---------|---|---------|-----------|------|
| 6.3.2 | Height above rail level for empty locomotive – | | IV (C) | |
| 6.3.2.1 | For a width of 760mm on either side of centre of locomotive - | 4265 mm | | 12 |
| 6.3.2.2 | At sides of locomotive | 3735 mm | | 13 |



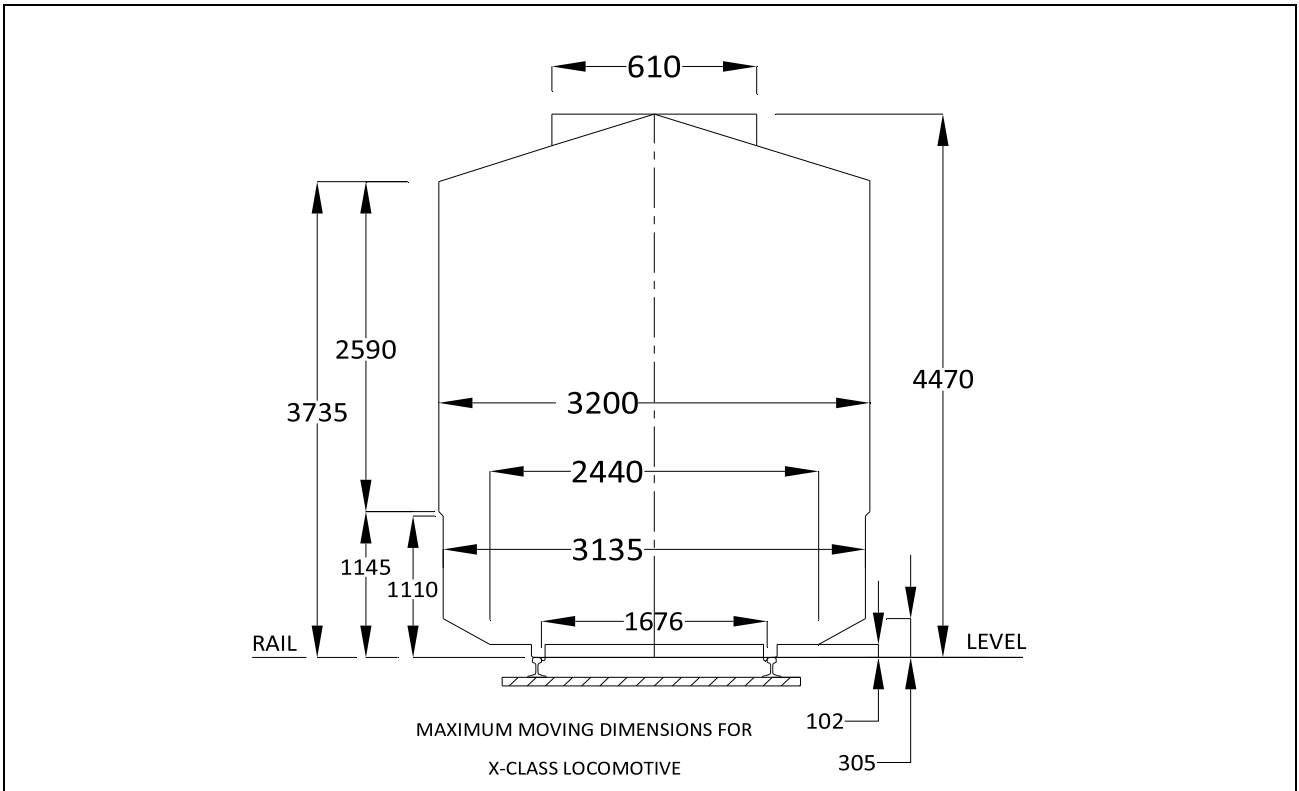
| | | | | |
|-------|--|----------|-----------|-----|
| 6.3.3 | Length of body or roof | 21340 mm | IV (C) | 11A |
| 6.3.4 | Length over centre buffer couplers or side buffers | 22300 mm | | 11B |

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 | Maximum Moving Dimensions for X-Class Locomotives : | | 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 {Note : This dimension shall not be adopted without obtaining prior approval of Railway Board} | 4470 mm | | 15 |
| 6.4.2.2 | At sides of locomotive | 3735 mm | | 16 |
| 6.4.3 | Height above rail level for fully loaded vehicle – | | | |
| 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 |



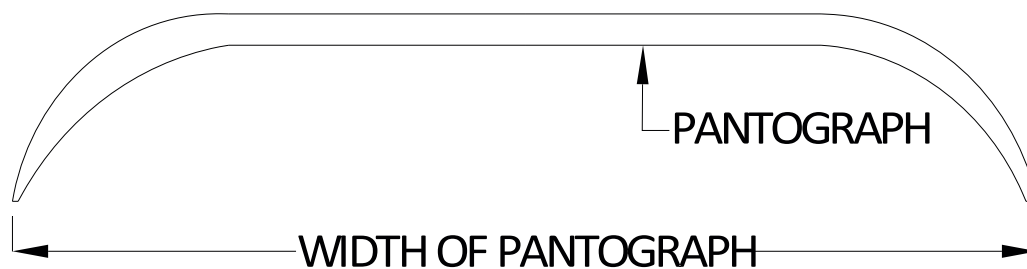
SCHEDULE – I

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 | Minimum height 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 |
| 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. | | | | |

| 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 – | | V | 3 |
| 7.4.1 | On straight track | 230 mm | | 3 (i) |
| 7.4.2 | On curves | 380 mm | | 3 (ii) |
| 7.5 | Width of Pantograph collector | 2030 mm | | 5 |



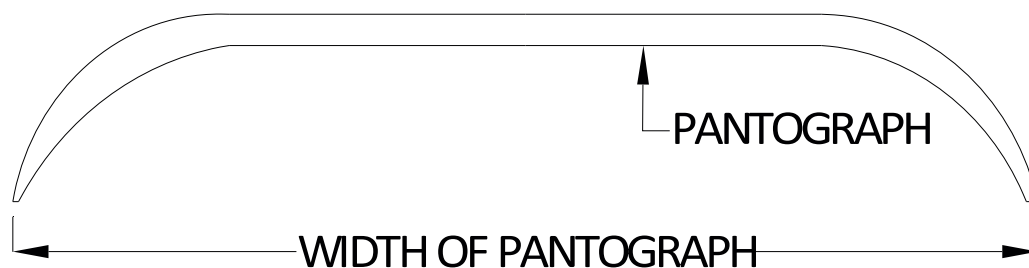
SCHEDULE – I**CHAPTER 8 – ELECTRIC TRACTION
(25 KV A.C. 50 Cycles)**

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 | Electrical Clearances : 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: | | V-A | 1 |
| 8.1.1 | Long duration : | 250 mm | | 1 (i) |
| 8.1.2 | Short Duration : | 200 mm | | 1 (ii) |
| <p>Note:</p> <p>(a) Long Duration means when the conductor is at rest and Short Duration means when the conductor is not at rest.</p> <p>(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.</p> <p>(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.</p> | | | | |
| 8.2 | Height from rail level to the underside of contact wire – | | V-A | 2 |
| 8.2.1 | Under Bridges and in Tunnels | 4800 mm | | 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) |
| <p>Note :</p> <p>(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.</p> <p>(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.</p> <p>(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.</p> <p>(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.</p> <p>(v) Suitable prescribed gradient on the height of contact wire shall be provided for connecting these wires installed at different heights.</p> <p>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.</p> | | | | 5 of Appendix -A |
| 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) |
| <p>Note : These limits would not apply to special locations, e.g. 'insulated overlaps' and 'out of run wires'.</p> | | | | |

| SL | Item Description | Maximum | Ch | Item |
|--|---|---------|-----|-------|
| 8.4 | Width of Pantograph collector | | V-A | 4 |
| 8.4.1 | 25 KV AC Traction | 1800 mm | | 4(i) |
| 8.4.2 | When DC traction is converted to 25 kV AC traction, subject to it being within approved MMD | 2030 mm | | 4(ii) |
| <p>Note : 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.</p> | | | | |



SCHEDULE – II
STANDARD DIMENSIONS
1676mm GAUGE (BG)

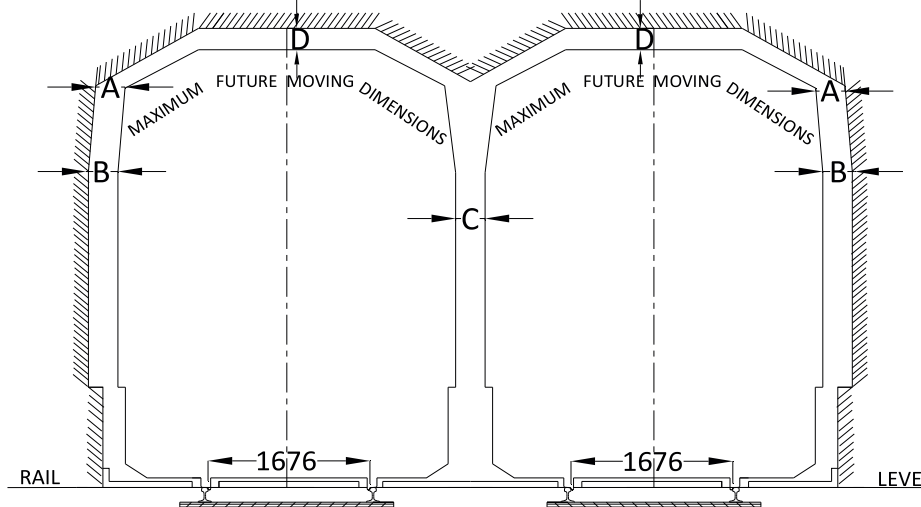
These DIMENSIONS are existing infringements of Schedule-I, which may be permitted to continue on existing 1676 mm gauge Railways.

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) |
| <p>Note :</p> <p>(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.</p> <p>(ii) Where speed is restricted to 16 kmph, the minimum clear horizontal distance under 2 (iv) may be reduced to 1980 mm.</p> <p>(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 :</p> <p>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).</p> <p>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.</p> | | | | |
| 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 | |

| | | | |
|--|--|---------|------------------------------|
| |  | | |
| | <p>For unrestricted speeds, where doors opening inwards or of the recessed or sliding type are provided :</p> | | |
| 5(v) | At 'B' | 380 mm | 380 mm at sides of vehicles |
| 5 (vi) | At 'C' | 455 mm | 455 mm between moving trains |
| | <p>Note : Extra allowance for curves shall be added to the above clearances as detailed in Appendix 'A'.</p> | | |
| 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, may infringe the dimensions now shown against these Items as reproduced below :</p> <p>{Note : 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> | | 7 |
| <p>Item 1.8, Chapter-1, Schedule-I</p> | | | 7 |
| <p>Minimum height above rail level for a distance of 915 mm on either side of centre of track for overhead structure</p> | | 4875 mm | |
| <p>Where electric traction is in use or likely to be used, the dimension of Item 8.5.1.1 shall be -</p> | | 5410 mm | |
| <p>Note : See Appendix 'A' for 'extra clearance required on curves'</p> | | | |

| | | |
|--|-------------------------------|---|
| Item 1.11, Chapter-I, Schedule-I : | | 7 |
| Minimum distance for centre to centre of tracks | 4725 mm | |
| <p>Note : 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.</p> | | |
| 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 | |
| <p>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.</p> <p>(a) See Appendix 'A' for extra clearance required on curves.</p> | | |
| Item 2.8.1, Chapter-II, Schedule-I | | 7 |
| 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 | |
| <p>Note : It does not apply to overhead piping, parallel to the track.</p> | | |

| | | | | | | | | | | | | | |
|---|--|---------|--|---------|--|---------|--|-------------------------------|--|---------|---|--|---|
| <p>Item 2.8.2.3, Chapter-II, Schedule-I :</p> <table border="1" data-bbox="204 376 1321 548"> <tr> <td data-bbox="204 376 1125 548">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</td> <td data-bbox="1125 376 1321 548" style="background-color: #e6b89c;">4875 mm</td> </tr> </table> <p>Note :</p> <p>(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.</p> <p>(b) Where electric traction is likely to be introduced, this minimum height should be 5410 mm.</p> | 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 | 7 | | | | | | | | | | |
| 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 | | | | | | | | | | | | |
| <p>Item 2.9, Chapter-II, Schedule-I :</p> <table border="1" data-bbox="204 981 1321 1541"> <tr> <td colspan="2" data-bbox="204 981 1321 1108">Minimum horizontal distance from centre of track to any structure for height above rail level as under –</td> </tr> <tr> <td data-bbox="204 1108 965 1193">From rail level to 305 mm above rail level</td> <td data-bbox="965 1108 1321 1193" style="background-color: #e6b89c;">1675 mm</td> </tr> <tr> <td data-bbox="204 1193 965 1279">From 305 mm to 3355 mm above rail level</td> <td data-bbox="965 1193 1321 1279" style="background-color: #e6b89c;">2135 mm</td> </tr> <tr> <td data-bbox="204 1279 965 1375">From 3355 mm to 4115 mm above rail level</td> <td data-bbox="965 1279 1321 1375" style="background-color: #e6b89c;">2135 mm decreasing to 1980 mm</td> </tr> <tr> <td data-bbox="204 1375 965 1460">From 4115 mm to 6100 mm above rail level</td> <td data-bbox="965 1375 1321 1460" style="background-color: #e6b89c;">1370 mm</td> </tr> <tr> <td colspan="2" data-bbox="204 1460 1321 1541">Note : See Appendix 'A' for extra clearance required on curves.</td> </tr> </table> | 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 |
| 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. | | | | | | | | | | | | | |
| <p>Item 3.2.6, Chapter-III, Schedule-I :</p> <table border="1" data-bbox="204 1659 1321 1957"> <tr> <td colspan="2" data-bbox="204 1659 1321 1787">Minimum height above rail level to overhead tie bars, girders etc. in workshops and running sheds –</td> </tr> <tr> <td data-bbox="204 1787 1117 1872">Where electric traction is not likely to be used</td> <td data-bbox="1117 1787 1321 1872" style="background-color: #e6b89c;">5030 mm</td> </tr> <tr> <td data-bbox="204 1872 1117 1957">Where electric traction is likely to be used</td> <td data-bbox="1117 1872 1321 1957" style="background-color: #e6b89c;">6176 mm</td> </tr> </table> | 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 | | | | | | |
| 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 | | | | | | | | | | | | |

| | | | |
|--|---|-----------------------------|-------------|
| Item 3.2.7.1, Chapter-III, Schedule-I : | | | 7 |
| 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 | A.C. Traction 25 KV 50 cycles | | Item |
| 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 & 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 | 11 |
| | 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 | | | Outside Of Curve {For Any Height} | |
| | | | | 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 | mm |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 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 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.

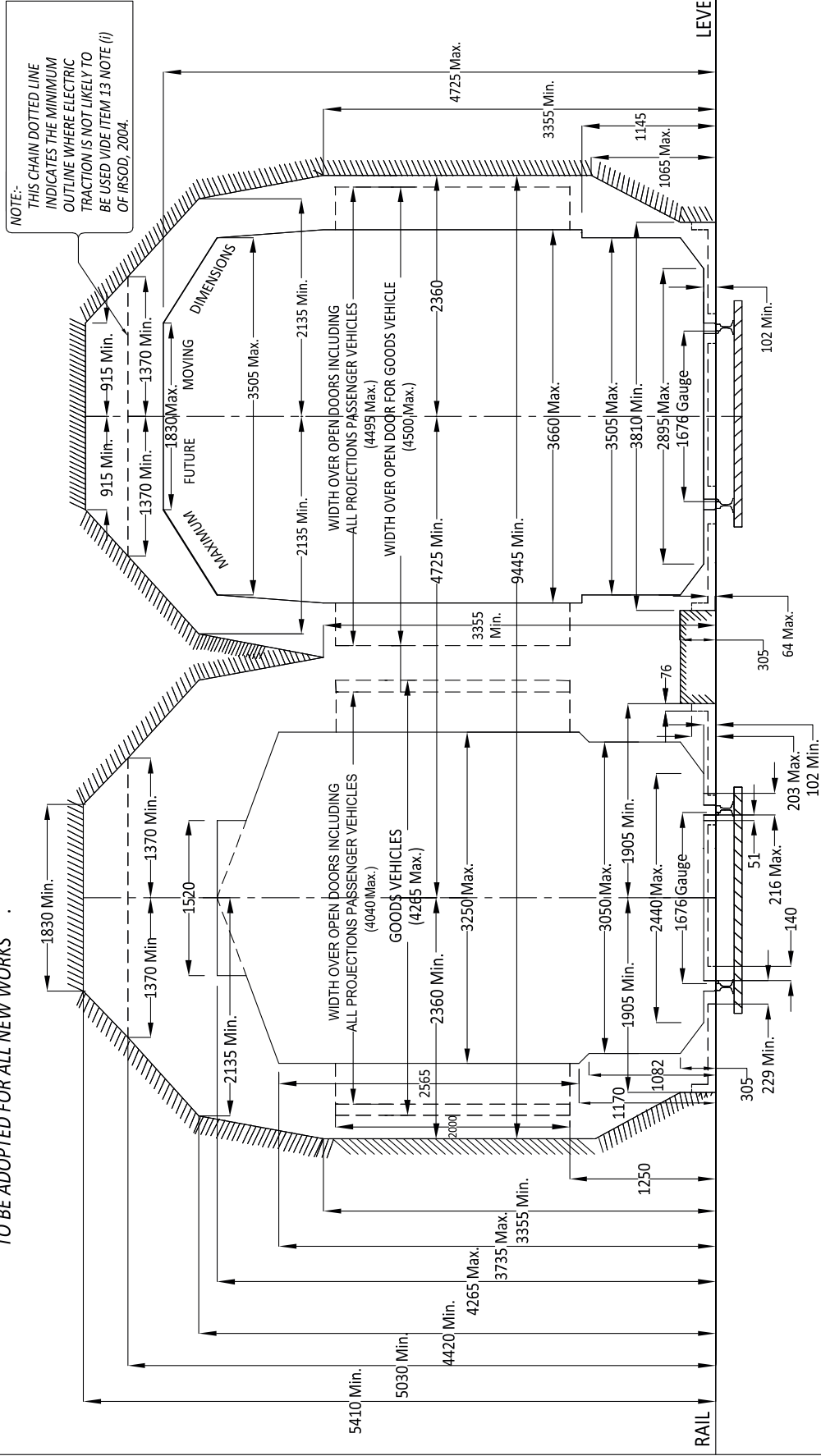
STANDARD DIMENSIONS FOR TUNNELS & THROUGH GIRDER BRIDGES

SCHEDULE I - CHAPTER I

DIAGRAM No. 1A

1676 mm Gauge

- NOTE:-**
- 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.
 - WHEN RE-SPACING EXISTING LINES, THE MINIMUM DISTANCE CENTRE TO CENTRE OF TRACKS MAY BE REDUCED FROM 4725 TO NOT LESS THAN 4495 FOR THE PURPOSE OF AVOIDING HEAVY ALTERATIONS TO TUNNELS OR THROUGH GIRDER BRIDGES. THE 4725 DIMENSION IS TO BE ADOPTED FOR ALL NEW WORKS

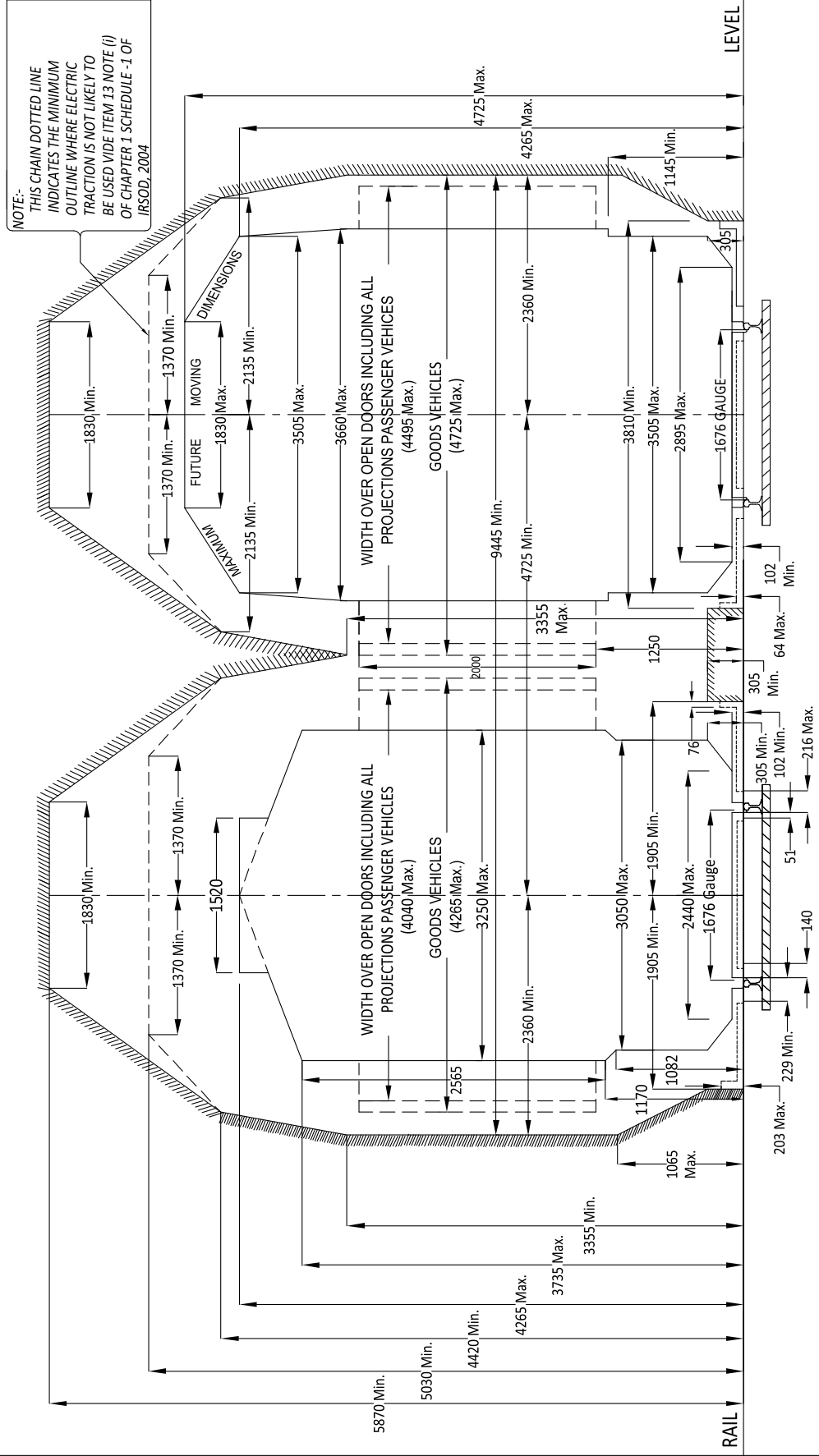


NOTE:- ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

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 $D = H \times S / G$



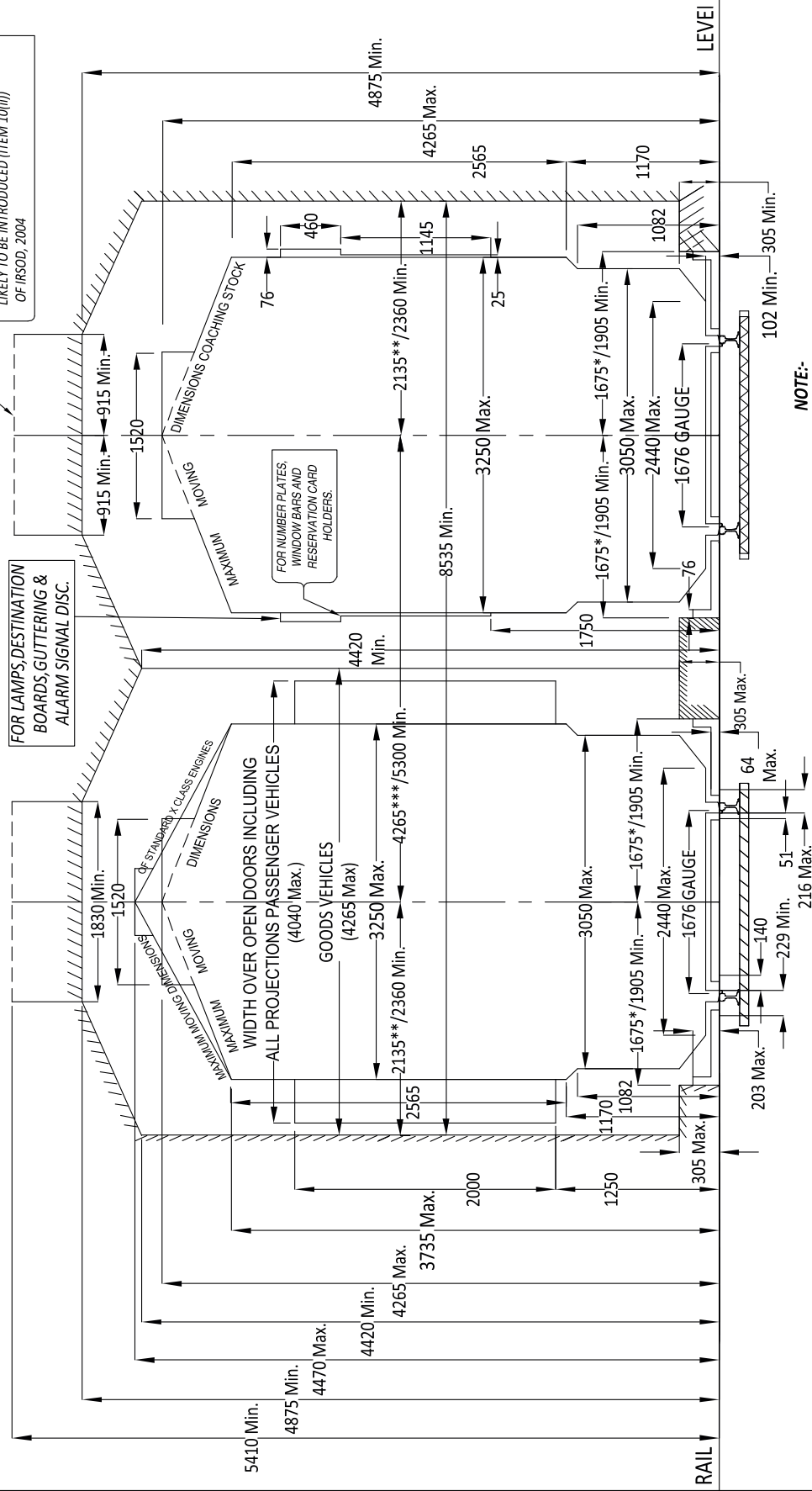
NOTE:- ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

STANDARD DIMENSIONS OUT OF STATIONS SCHEDULE I - CHAPTER I

DIAGRAM No. 1B 1676 mm GAUGE

NOTE:- 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.

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



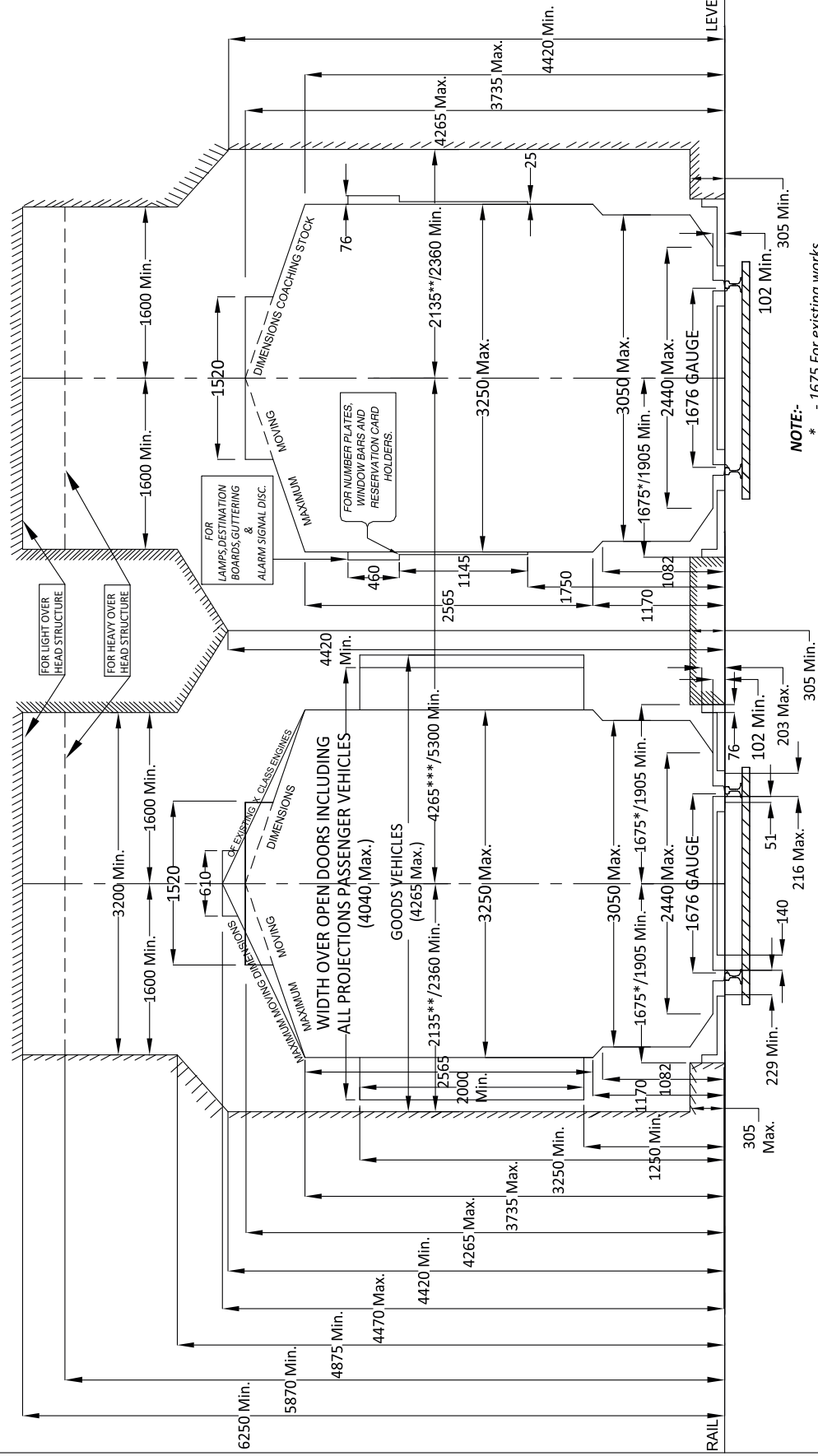
NOTE:-
* - 1675 For existing works
** - 2135 For existing works
*** - 4265 For existing works

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

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

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

NOTE:- THE 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 GAUGE OF THE TRACK, ALL DIMENSIONS BEING IN METRES $D = \frac{H \times S}{G}$

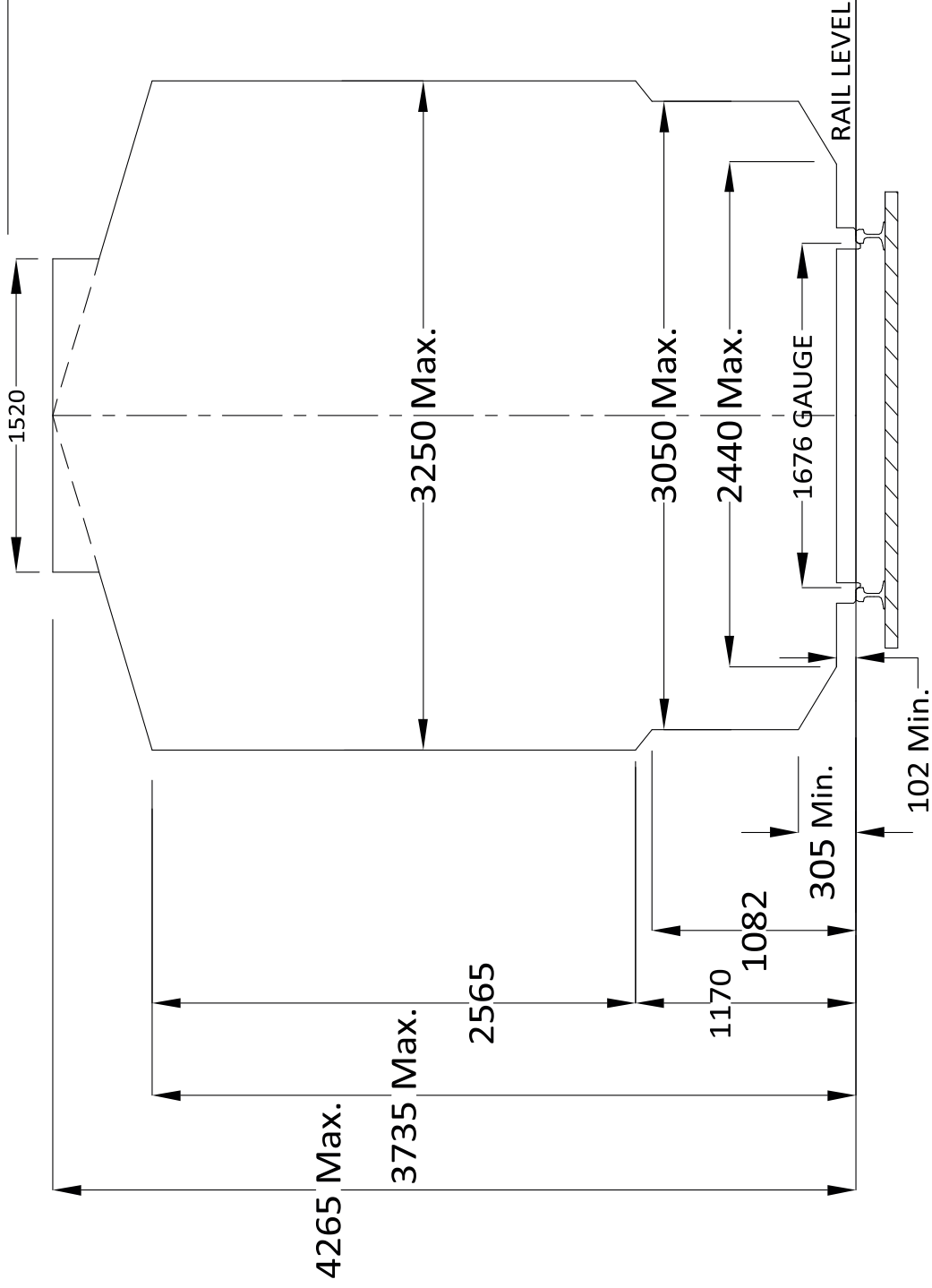


NOTE:- ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

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

MAXIMUM MOVING DIMENSIONS

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

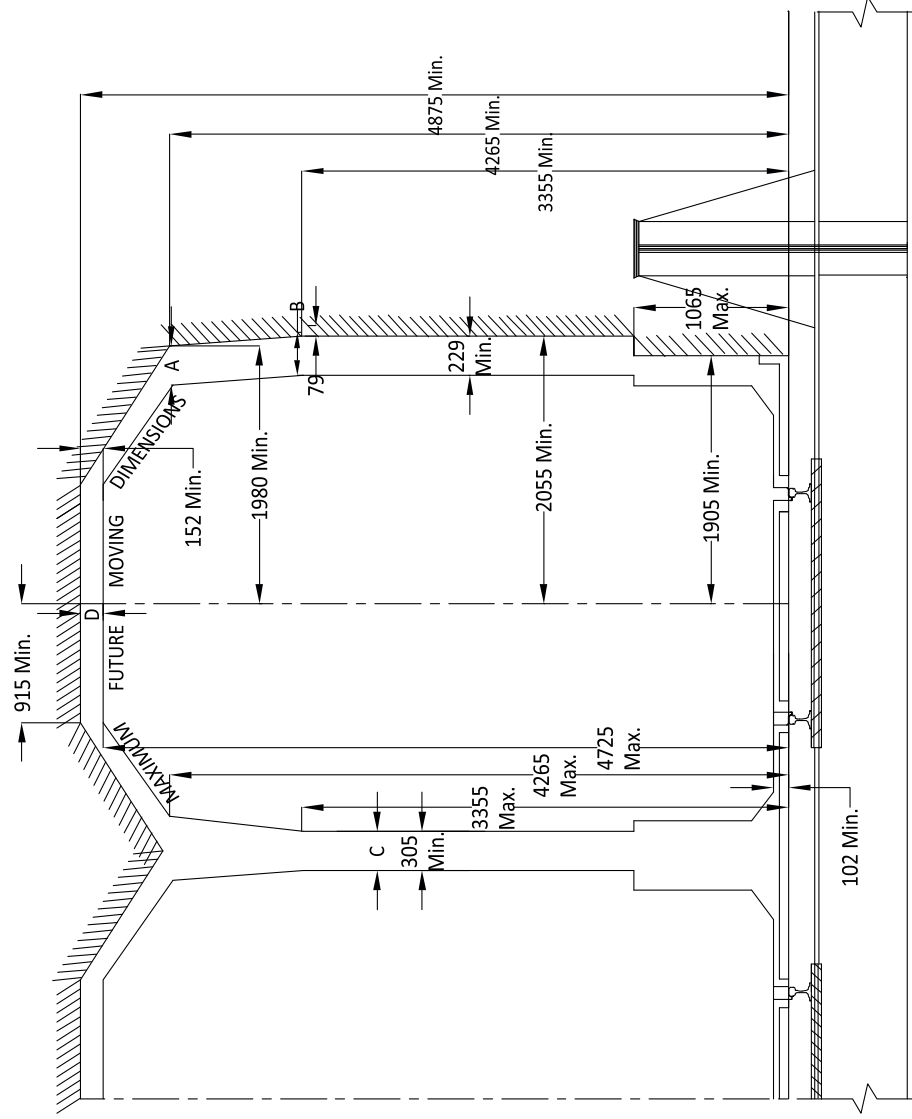


NOTE:- ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT OTHERWISE SHOWN.

INFRINGEMENTS TO SCHEDULE - I

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

PERMITTED UNDER SCHEDULE - II MINIMUM CLEARANCES ON EXISTING GIRDER BRIDGES



DIGRAM NO. 3 (FIG I) 1676mm GAUGE

NOTES:-

FULL LINES SHOW MAXIMUM MOVING DIMENSIONS OF FUTURE 3660 WIDE STOCK & OF EXISTING 3200/3250 WIDESTOCK 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.

(1) 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)

(2) FOR UNRESTRICTED 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 AT D-----229mm (ABOVE VEHICLES)

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

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

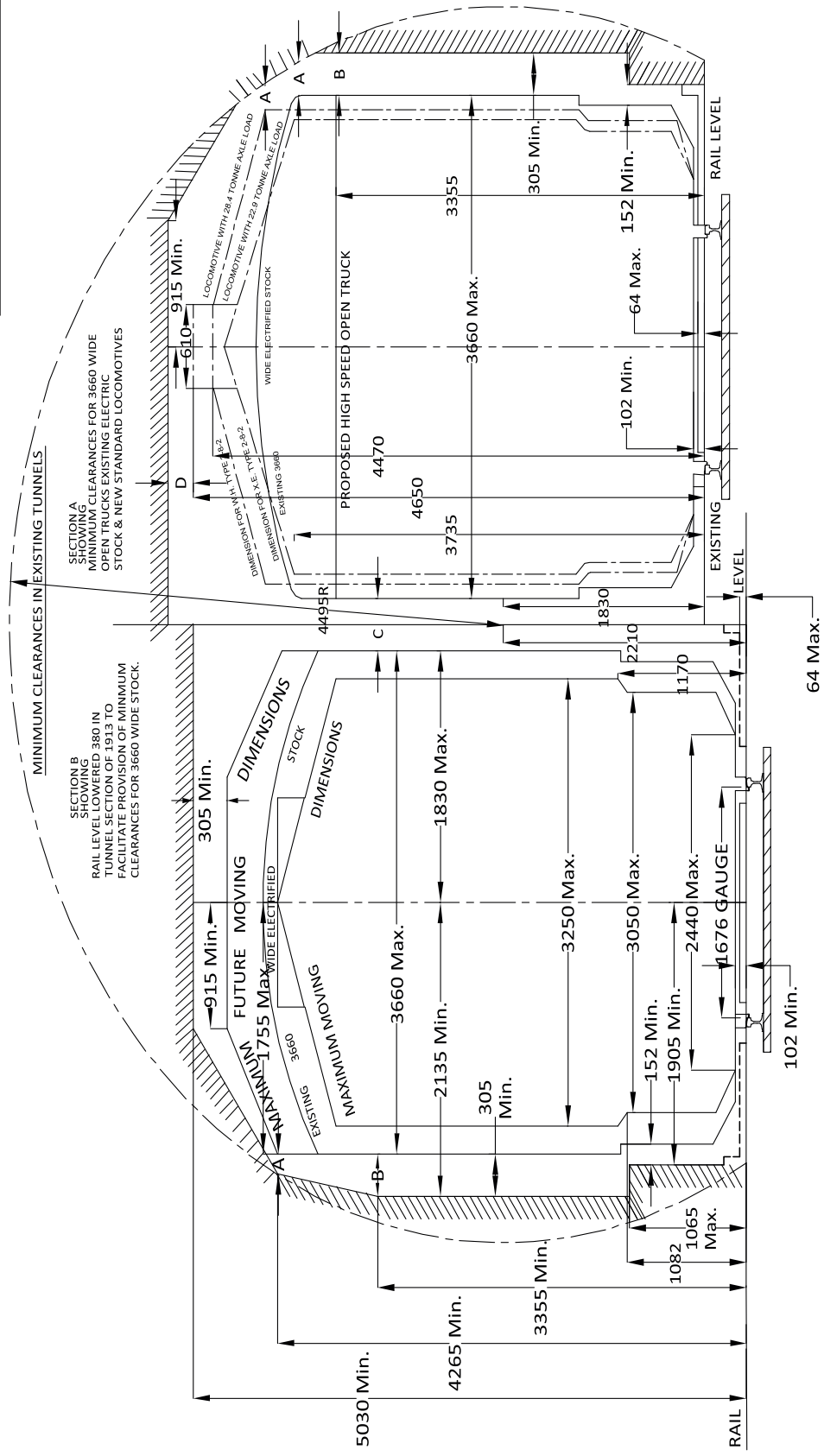
DIGRAM NO. 3 (FIG II) 1676mm GAUGE

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

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

PERMITTED UNDER SCHEDULE - II

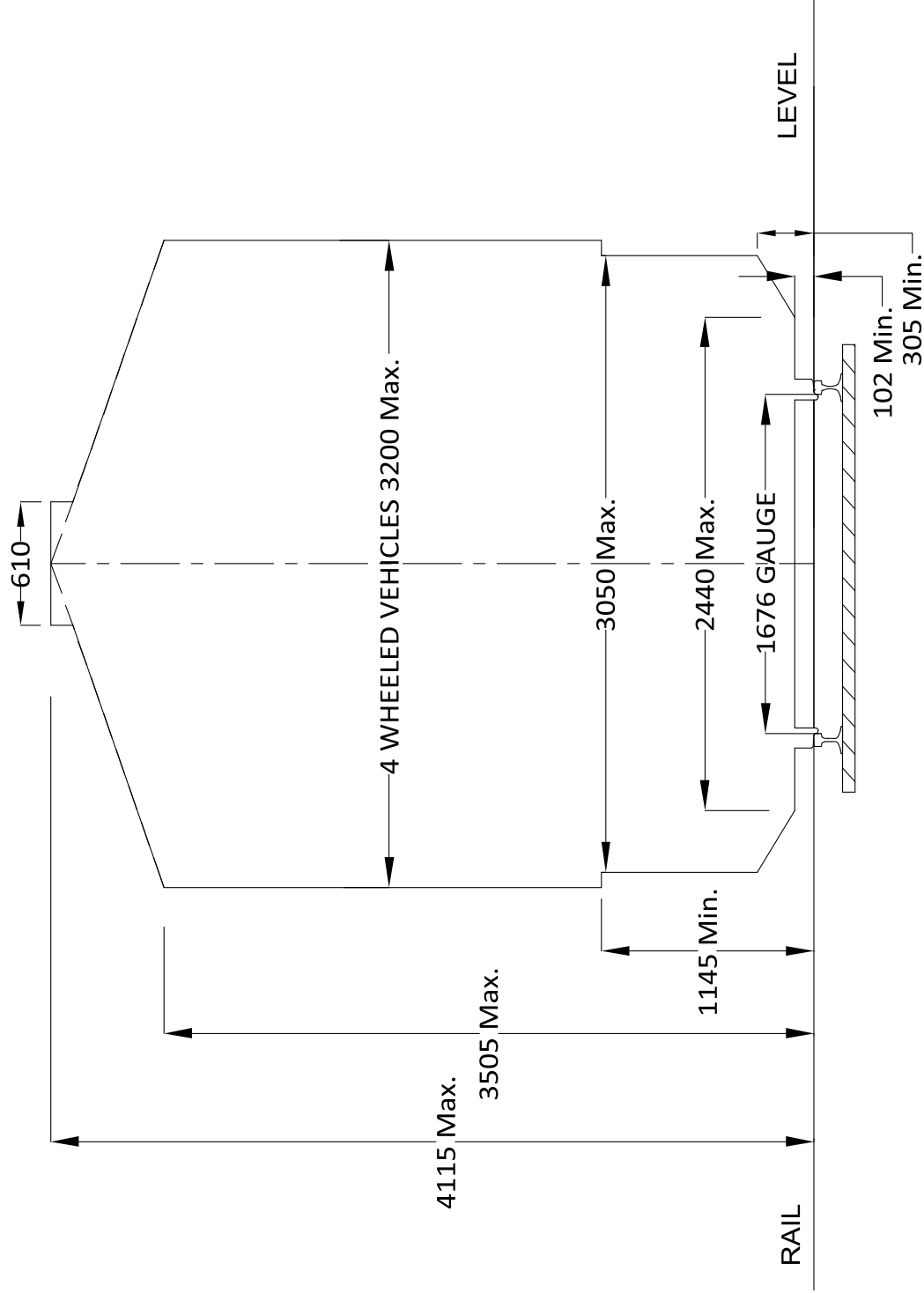
TUNNEL SECTION OF 1913



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.

