भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ – 2226011
EPBX (0522) 2451200
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Government of India – Ministry of Railways
Research Designs & Standards Organisation
Lucknow – 226011
DID (0522) 2450115
DID (0522) 2465310

PROVISIONAL SPEED CERTIFICATE FOR OPERATION

No.	TM/HM/S082/TRC/DFCCIL	Date	As Signed

(A) महाप्रबन्धक (इंजीनियरिंग),

1. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई– 400001
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता– 700001
3. उत्तर रेलवे, बडौदा हाऊस, नईदिल्ली– 110001
4. पूर्वोत्तर रेलवे, गोरखपुर– 273001
5. पूर्वोत्तर फ्रन्टियर रेलवे, मालीगॉव, गुवाहाटी– 781011
6. दक्षिण रेलवे, एनेक्सी, पार्कटाऊन, चेन्नई– 600003
7. दक्षिण मध्य रेलवे, रेलनिलायम, सिकन्दराबाद– 500071
8. दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकाता– 700043
9. पश्चिम रेलवे, चर्चगेट, मुम्बई– 400020
10. उत्तर मध्य रेलवे, प्रयागराज– 211001
11. उत्तर पश्चिम रेलवे, जयपुर– 302006
12. पूर्व मध्य रेलवे, हाजीपुर– 844101
13. पूर्व तट रेलवे, रेलवे कॉम्पलेक्स, भुवनेश्वर– 751023
14. दक्षिण पश्चिम रेलवे, हुबली– 580023
15. पश्चिम मध्य रेलवे, जबलपुर– 482001
16. दक्षिण पूर्व मध्य रेलवे, बिलासपुर– 495004

(B) प्रबन्ध निदेशक,

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि0 पाँचवा तल, प्रगति मैदान मेट्रो स्टेशन बिल्डिंग कॉम्पलेक्स नई दिल्ली–110001

Sub:	Provisional Speed Certificate for operation of Track Recording Car, Model "MM TRC" (**Transportation Code TRC D**) supplied by M/s Mermec, Italy upto maximum speed of 60kmph when running on its own power as well as when running in train formation over Indian Railways and over routes of Eastern & Western dedicated freight corridors of DFCCIL.

Ref:	DFCCIL Contract Agreement No. (HQ/EN/PWC/PHASE I/PKG-PE-P6/D&B/11/Mitsui) dated 16.11.2020.

1.0 IMPORTANT PARAMETERS RELATED TO ROLLING STOCK

Type	**Final / Provisional / Oscillation Trial / COCR Movement**	Provisional	**Validity / Period or Permanent**	**IR / Sectional / DFCCIL**	5years / IR & Eastern & Western DFCCIL routes.

Stock Name	Track Recording Car, Model "MM TRC"	**Max. Axle Load (Empty)**	16.254t	**Max. Axle Load (Loaded)**	17.415t

Transportation Code	**TRC D**	**GA Drg. No.**	M/s. SAN Drg. No. SNSK4840 Rev-04

Bogie Arrgt. Drg. No.	M/s. SAN Drg. No. SNSK4909 Rev-01	**Suspension Arrgt. Drg. No.**	ICF Drg. No. DMU-DPC-0-5-001 (Alt. U)

Commodity	Coal / Ore / Steel /Bagged / Oil /etc.	NA	**Gauge**	BG

Type of Bogie	Fabricated	**Type of Coupler**	Transition Center Buffer Coupler	**Wheel Dia. (mm)**	**New** 952 / **Worn** 877

Max. Permissible Speed for IR & for routes of Eastern & Western DFCCIL	**Own Power**	60kmph	**Train Formation**	60kmph

2.0	**INTRODUCTION**

2.1	Track Recording Car, Model "MM TRC" supplied by M/s Mermec, Italy as per their GA Drg. No. SNSK4840 Rev-04 is a self-propelled vehicle and is used for measurement of track and OHE parameters.
2.2	Track Recording Car, Model "MM TRC" supplied by M/s Mermec, Italy is having maximum axle load, rigid wheel base and wheel diameter of 17.415t, 2896mm and 952mm respectively. The suspension arrangement is as per ICF Drg. No. DMU-DPC-0-5-001 (Alt. U). The design speed of machine is 100kmph when running on its own power as well as when running in train formation as a dead vehicle and as a last vehicle. The design details are given in Annexure- A.

3.0	Based on design features, details given in Annexure-A and Dynamic simulation results of Track Recording Car, Model "MM TRC" supplied by M/s Mermec, it is certified that the machine as per their GA Drg. No. SNSK4840 Rev-04 may be permitted provisionally to run up to maximum permissible speed of 60kmph when running on its own power as well as when running in train formation as a dead vehicle and as a last vehicle for operation over Indian Railways and over routes of Eastern & Western Dedicated Freight Corridors of DFCCIL, subject to the following conditions:-

3.1	**TRACK**				
3.1.1	**FOR INDIAN RAILWAYS**				
3.1.1.1	**The track shall be to a minimum standard of-**				
	Rail Section	**Sleeper Density**	**Ballast Cushion**	**Max. Speed (Own Power)**	**Max. Speed (Train Formation)**
	52 kg (72UTS)	PSC Sleeper with 1540 Nos./ km	250mm (100mm clean & rest in caked up condition on compacted and stable formation)	60kmph	60kmph
3.1.1.2	Track geometry standards shall be maintained to as per provisions of Indian Railways Permanent Way Manual- 2024, containing track geometry standards under Para 522.				
3.1.1.3	For track maintained to lower standard than that mentioned above, the Chief Engineer shall decide the lower maximum permissible speed on the basis of maintenance condition. In this connection, instructions issued by Railway Board letter no. 65/WDO/SR/26 dated 19/20.10.1966 may be seen. When the Chief Engineer considers that the road bed is not compacted or there is improper drainage, he may suitably restrict the maximum permissible speed depending upon the local conditions.				
3.1.1.4	The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual- 2024. Maximum cant deficiency permitted would be 75mm.				
3.1.1.5	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and Indian Railways Permanent Way Manual- 2024 and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per provisions of Indian Railways Permanent Way Manual- 2024. In addition, wherever condition warrants on account of corrosion on rail/weld collar, wear on rail, cupping of welds etc., necessary precautions shall be taken for fish plating/joggled fish plating.				
3.1.1.6	Zonal Railways shall ensure further detailed examination of track as deemed fit based on age cum condition basis, overdue renewal and condition of formation etc. as per provisions of Indian Railways Permanent Way Manual- 2024, regarding permanent way renewals and shall suitably restrict maximum speed of operation based on such examination.				

3.1.2	**FOR EASTERN & WESTERN DEDICATED FREIGHT CORRIDORS OF DFCCIL**
3.1.2.1	**The track structure shall be of minimum standard-**

	Rail Section	Sleeper Density	Ballast Cushion	Max. Speed (Own Power)	Max. Speed (Train Formation)
	60 kg (90 UTS)	1660 Nos./km PSC sleeper	300mm (200mm clean & rest in caked up condition on compacted and stable formation)	60kmph	60kmph
3.1.2.2	The minimum standard of track geometry maintenance shall be as per provisions of Indian Railways Permanent Way Manual- 2024, containing track geometry standards under Para 522.				
3.1.2.3	For track maintained to lower standard than that mentioned above, the Chief Engineer/GGM (Engg.) concerned shall decide the lower maximum permissible speed on the basis of maintenance condition. In this connection, instructions issued by Railway Board's letter no. 65/WDO/SR/26 dated 19/20.10.1966 may be seen. When the Chief Engineer/GGM (Engg.) considers that the road bed is not compacted or there is improper drainage, he shall suitably restrict the maximum permissible speed depending upon the local conditions.				
3.1.2.4	The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual- 2024. Maximum cant deficiency permitted would be 75mm.				
3.1.2.5	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and Indian Railways Permanent Way Manual- 2024 and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per provisions of Indian Railways Permanent Way Manual- 2024. In addition, wherever condition warrants on account of corrosion on rail/weld collar, wear on rail, cupping of welds etc., necessary precautions shall be taken for fish plating/joggled fish plating.				
3.1.2.6	DFCCIL shall ensure further detailed examination of track as deemed fit based on age cum condition basis, overdue renewal and condition of formation etc. as per the provisions of Indian Railways Permanent Way Manual- 2024 regarding permanent way renewals and may suitably restrict maximum speed of operation based on such examination.				

3.2	**BRIDGE STIPULATIONS**				
3.2.1	**FOR INDIAN RAILWAYS**				
3.2.1.1	The clearance refers to "Standard RDSO Spans" bridges with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for BGML, RBG, MBG and 25t loading-2008 standard loadings.				
3.2.1.2	Superstructures & Bearings of "Special Spans" (designed and constructed by Zonal Railways based on site requirements), Arches and sub-structures (including foundation) of all bridges (Standard RDSO spans & Special Spans) are to be got examined by the Chief Bridge Engineer and certified safe with respect to current Indian Railway Standard Codes with up to-date correction slips.				
3.2.1.3	The clearance is subject to the following parameters of Track Recording Car, Model "MM TRC" supplied by M/s Mermec, Italy:-				
	Rolling Stock	**Maximum axle load (t)**	**Maximum tractive effort per axle (t)**	**Maximum braking force at rail level per axle (t)**	**Maximum CG height from rail level (mm)**
	Track Recording Car, Model "MM TRC"	17.415	1.074	6.44	1529
3.2.1.4	All Standard RDSO spans of BGML, RBG, MBG and 25t loading-2008 loading are fit for proposed speed of 60kmph when running on its own power as well as when running in train formation.				
3.2.1.5	During operation of Track Recording Car, Model "MM TRC" with single/multiple locomotives and other rolling stocks, the speed certificate issued by RDSO of the single/multiple locomotives/rolling stocks in empty/loaded condition shall be strictly complied with. Therefore, speed certificate of each single/multiple locomotive and rolling stocks in train formation should be examined carefully & speed restriction/strengthening/prohibition/any other restriction should be imposed according to most restrictive rolling stock/locomotive/multiple locomotives in train formation.				
3.2.1.6	Location of bridges on which speed restrictions are imposed should be notified by the Railways and incorporated in the working timetable.				
3.2.1.7	The final speed on bridges shall also be governed by the track structure on the bridges. Therefore, the lower of the two speeds i.e. speed on particular bridges and speed for track structure over those particular bridges shall prevail as the running speed.				

3.2.1.8	The above para have been arrived at considering bridges are in physically sound condition. In case the bridges are not in satisfactory physical condition, necessary speed restriction to be imposed by Chief Bridge Engineer of Zonal Railway on condition basis.

3.2.2	**FOR EASTERN & WESTERN DEDICATED FREIGHT CORRIDORS OF DFCCIL**
3.2.2.1	The clearance refers to “Standard RDSO Spans” bridges with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for “DFC loading (32.5t axle load)”.
3.2.2.2	Superstructures & Bearings of “Special Spans” (designed and constructed by DFCCIL based on site requirements), Arches and sub-structures (including foundation) of all bridges (Standard RDSO spans & Special Spans) are to be examined by DFCCIL and certified safe with respect to current Indian Railway Standard Codes with up to-date correction slips.
3.2.2.3	The clearance is subject to the following parameters of Track Recording Car, Model “MM TRC” supplied by M/s Mermec, Italy:-

Rolling Stock	**Maximum axle load (t)**	**Maximum tractive effort per axle (t)**	**Maximum braking force at rail level per axle(t)**	**Maximum CG height from rail level (mm)**
Track Recording Car, Model “MM TRC”	17.415	1.074	6.44	1529

3.2.2.4	All Standard RDSO spans of DFC loading are fit for proposed speed of 60kmph when running on its own power as well as when running in train formation.
3.2.2.5	During operation of Track Recording Car, Model “MM TRC” with single/multiple locomotives and other rolling stocks the speed certificate issued by RDSO of the single/multiple locomotives/rolling stocks in empty/loaded condition shall be strictly complied with. Therefore, speed certificate of each single/multiple locomotive and rolling stocks in train formation should be examined carefully & speed restriction/strengthening/prohibition/any other restriction should be imposed according to most restrictive rolling stock/locomotive/multiple locomotives in train formation.
3.2.2.6	Location of bridges on which speed restrictions are imposed should be notified by DFCCIL and incorporated in the working timetable.
3.2.2.7	The final speed on bridges shall also be governed by the track structure on the bridges. Therefore, the lower of the two speeds i.e. speed on particular bridges and speed for track structure over those particular bridges shall prevail as the running speed.
3.2.2.8	The above para have been arrived at considering bridges are in physically sound condition. In case the bridges are not in satisfactory physical condition, necessary speed restriction to be imposed by DFCCIL on condition basis.

3.3	**SIGNALLING STIPULATIONS**
3.3.1	Provisions of GR, SR, IRSOD, DFC-SSOD, SEM & all extant instructions issued from time to time as applicable shall be complied with.
3.3.2	In case of locomotive/rolling stocks /train (having this machine in its composition) having EBD of more than 1 km and non-provision of second distant signal/4 Aspect Automatic signalling in the section, action as per para 7.8.9 of IRSEM (issue July 2021) shall be taken.
3.3.3	While running through a station yard, speed of the Rolling stock shall be restricted to the maximum permissible speed as per standard of interlocking provided at the station or any other speed restriction whichever is severe.

3.4	**ROLLING STOCK STIPULATIONS**
3.4.1	Before initiating the operation of the Track Recording Car, Model “MM TRC” supplied by M/s Mermec, Italy the Chief Engineer/Track Machine of the concerned Railway/CGM (Civil Engg.) of the DFCCIL shall ensure the safety of the rolling stock and certify the track worthiness. He shall ensure the proper maintenance of the rolling stock.
3.4.2	Brake of the Track Recording Car, Model “MM TRC” supplied by M/s Mermec, Italy shall be in perfect working condition during the operation.

3.5	**TRACTION INSTALLATION**
3.5.1	**FOR INDIAN RAILWAYS**
3.5.1.1	In 25KV AC traction area, the Principal Chief Electrical Engineer of the concerned Railway shall have to ensure that the minimum height of contact wire and electrical clearances as stipulated in provisions of Chapter-V and V-A, Electric Traction ‘Schedule of Dimensions of

	1676mm Gauge (BG) revised 2022' with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.
3.5.1.2	In addition to above, the Principal Chief Electrical Engineer of the concerned Railway may impose any temporary speed restriction on the basis of personal knowledge, experience of the sectional OHE and the field conditions prevailing on the particular section.
3.5.1.3	When the Track Recording Car, Model "MM TRC" is being moved, it shall be ensured that all the protruding parts are withdrawn and suitably locked, so that during the run there is no possibility of any infringement occurring to the standard moving dimensions.

3.5.2	**FOR EASTERN & WESTERN DEDICATED FREIGHT CORRIDORS OF DFCCIL**
3.5.2.1	In 25 KV AC traction area, the GGM (Electrical) of the DFCCIL shall have to ensure that the minimum height of contact wire and electrical clearances as stipulated in provisions of Chapter VII of Eastern Corridor & Chapter XIV of Western Corridor, Electric Traction 'Standard Schedule of Dimensions' for dedicated freight corridors with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.
3.5.2.2	In addition to above, the GGM (Electrical) of DFCCIL may impose any temporary speed restriction on the basis of personal knowledge, experience of the sectional OHE and the field conditions prevailing on the particular section.
3.5.2.3	When the Track Recording Car, Model "MM TRC" is being moved, it shall be ensured that all the protruding parts are withdrawn and suitably locked, so that during the run there is no possibility of any infringement occurring to the standard moving dimensions.

3.6	**GENERAL STIPULATIONS**
3.6.1	The working of Maintenance Machine shall be as per provision of Indian Railways Permanent Way Manual- 2024.
3.6.2	The profile of Track Recording Car, Model "MM TRC" supplied by M/s Mermec, Italy as per their GA Drg. No. SNSK4840 Rev-04 does not infringe to any clause of Chapter IV (D) of Indian Railways Schedule of Dimensions (BG) Revised, 2022 and chapter IV of Eastern Dedicated Freight Corridor & chapter XI of Western Dedicated Freight Corridor for BG 'Standard Schedule of Dimension of Indian Railways, January-2013'.
3.6.3	All the permanent and temporary speed restrictions in force and those that shall be imposed from time to time due to track, bridges, curves, signalling and interlocking etc. shall also be observed. In this connection, the speed on curve shall be in accordance with para 3.1.1.4 for Indian Railway Track and para 3.1.2.4 for DFCCIL track of this speed certificate.
3.6.4	For the movement of the machine, in case of failure of the machine in block sections, the instructions of the para 708(4) of Indian Railways Track Machine Manual, September -2019 shall be followed.
3.6.5	Competent track machine staff who can apply the machine brakes in case of train parting shall escort the machine while running in train formation as a dead vehicle.
3.6.6	This speed certificate is provisional and shall be valid up to 5 years from date of issue or before date of issuance of relevant final speed certificate, whichever is earlier. This Speed Certificate is valid only for Track Recording Car, Model "MM TRC" supplied by M/s Mermec, Italy coming under DFCCIL Contract Agreement No. (HQ/EN/PWC/PHASE I/PKG-PE-P6/D&B/11/Mitsui) dated 16.11.2020.

ENCLOSURES:/ संलग्नक:

i)	Annexure-A
ii)	M/s. SAN GA Drg. No. SNSK4840 Rev-04.
iii)	Bogie arrangement: M/s. SAN Drg. No. SNSK4909 Rev-01.
iv)	Suspension arrangement: ICF Drg. No. DMU-DPC-0-5-001 (Alt. U).
v)	DFCCIL letter No. HQ/ENWC/PWC(PnE)/1/2020(6106) dated 13.02.2024.
vi)	Railway Board's letter No. 65/WDO/SR/26 dated 19/20.10.1966.
vii)	Para 708(4) of Indian Railways Track Machine Manual, September -2019.
viii)	Para 704 of Indian Railways Track Machine Manual, September -2019.

Digitally Signed by Nitin Mehrotra
Date: 12-12-2024 15:33:22
Reason: Approved

(नितिन मेहरोत्रा)
कार्यकारी निदेशक मानक/चालन शक्ति

प्रतिलिपिः

1. **सचिव, {यांत्रिक/विद्युत/इंजीनियरिंग(जी)}, रेलवे बोर्ड, रेल भवन, नई दिल्ली– 110001**
2. **मुख्य रेल संरक्षा आयुक्त, अशोक मार्ग, लखनऊ–226001**
3. **महाप्रबन्धक(यांत्रिक/विद्युत/संचालन/संकेत एवं दूर संचार)**
   - i) मध्य रेलवे, छत्रपति शिवाजी टर्मिनस मुम्बई– 400 001
   - ii) पूर्व रेलवे, फेयरली प्लेस, कोलकाता– 700 001
   - iii) उत्तर रेलवे, बडौदा हाऊस, नई दिल्ली– 110001
   - iv) पूर्वोत्तर रेलवे, गोरखपुर– 273001
   - v) पूर्वोत्तर फ्रन्टियर रेलवे, मालीगॉव ,गुवाहाटी– 781 011
   - vi) दक्षिण रेलवे, एनेक्सी, पार्क टाऊन, चेन्नई– 600 003
   - vii) दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद– 500 071
   - viii) दक्षिण पूर्व रेलवे, गार्डन रीच, कोलकाता– 700 043
   - ix) पश्चिम रेलवे, चर्चगेट, मुम्बई– 400020
   - x) उत्तर मध्य रेलवे, प्रयागराज– 211 001
   - xi) उत्तर पश्चिम रेलवे, जयपुर– 302 006
   - xii) पूर्व मध्य रेलवे, हाजीपुर– 844 101
   - xiii) पूर्व तट रेलवे, रेलवे कॉम्पलेक्स, भुवनेश्वर– 751 023
   - xiv) दक्षिण पश्चिम रेलवे, हुबली– 580 023
   - xv) पश्चिम मध्य रेलवे, जबलपुर– 482 001
   - xvi) दक्षिण पूर्व मध्य रेलवे, बिलासपुर– 495 004
4. **अध्यक्ष एवं प्रबन्ध निदेशक, कोंकण रेलवे कारपोरेशन लिमिटेड, बेलापुर भवन, सेक्टर–11, सी.बी.डी.बेलापुर नवी मुम्बई–400614.**
5. **जी.जी.एम (मेकैनिकल/इंजी/यातायात/संकेत एवं दूर संचार) डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि0 नई दिल्ली–110001.**

ENCLOSURES:/ संलग्नकः

i)	Annexure-A
ii)	M/s. SAN GA Drg. No. SNSK4840 Rev-04.
iii)	Bogie arrangement: M/s. SAN Drg. No. SNSK4909 Rev-01.
iv)	Suspension arrangement: ICF Drg. No. DMU-DPC-0-5-001 (Alt. U).
v)	DFCCIL letter No. HQ/ENWC/PWC(PnE)/1/2020(6106) dated 13.02.2024.
vi)	Railway Board's letter No. 65/WDO/SR/26 dated 19/20.10.1966.
vii)	Para 708(4) of Indian Railways Track Machine Manual, September -2019.
viii)	Para 704 of Indian Railways Track Machine Manual, September -2019.

(Signed)
(नितिन मेहरोत्रा)
कार्यकारी निदेशक मानक/चालन शक्ति

Annexure-A

Salient features of Track Recording Car, Model "MM TRC" supplied by M/s Mermec, Italy.

SN	Description	Details
1.	Principal dimensions of rolling stock	M/s. SAN GA Drg. No. SNSK4840 Rev-04. a. Length over buffers : 22210mm b. Bogie centre distance : 14783mm c. Wheel base : 2896mm d. Max. axle load : 17.415t e. Max. design speed- i) Own power : 100kmph ii) Train formation : 100kmph f. Weight i) Tare : 64.6t ii) Gross : 69.6t
2.	Bogie and wheel details	M/s. SAN Drg. No. SNSK4909 Rev-01 Wheel dia : - New : 952mm Worn : 877mm
3.	Suspension arrangement details	ICF Drg. No. DMU-DPC-0-5-001 (Alt. U).
4.	Brake system details	Air Brake System as per M/s. SAN Drg. No. SNSK4938-Rev.0
5.	Coupler and Buffer details	Coupler : Transition Center Buffer Coupler Buffer : RDSO SKETCH- 98145
6.	Engine details	Engine Make: Cummins Model: QSN 14 R Power: 400HP @2100 rpm
7.	Safety Items	As per Para 704 of Indian Railways Track Machine Manual, September -2019.

1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2) CODE OF PRACTICE ABBREVIATION ETC , TO IS : 696
3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.
4) DO NOT SCALE. IF IN DOUBT PLEASE ASK.
5) * INDICATES NO SEPARATE DRAWINGS.

WEIGHT TABLE	
TARE	64600 kg
PAY LOAD	5000 kg
GROSS	69600 kg

LOADING CONDITION	AXLE LOADS [kg]			
	END 'M'		END 'N'	
	AXLE-A	AXLE-B	AXLE-C	AXLE-D
TARE	16254	16254	16046	16046
GROSS	17415	17415	17385	17385

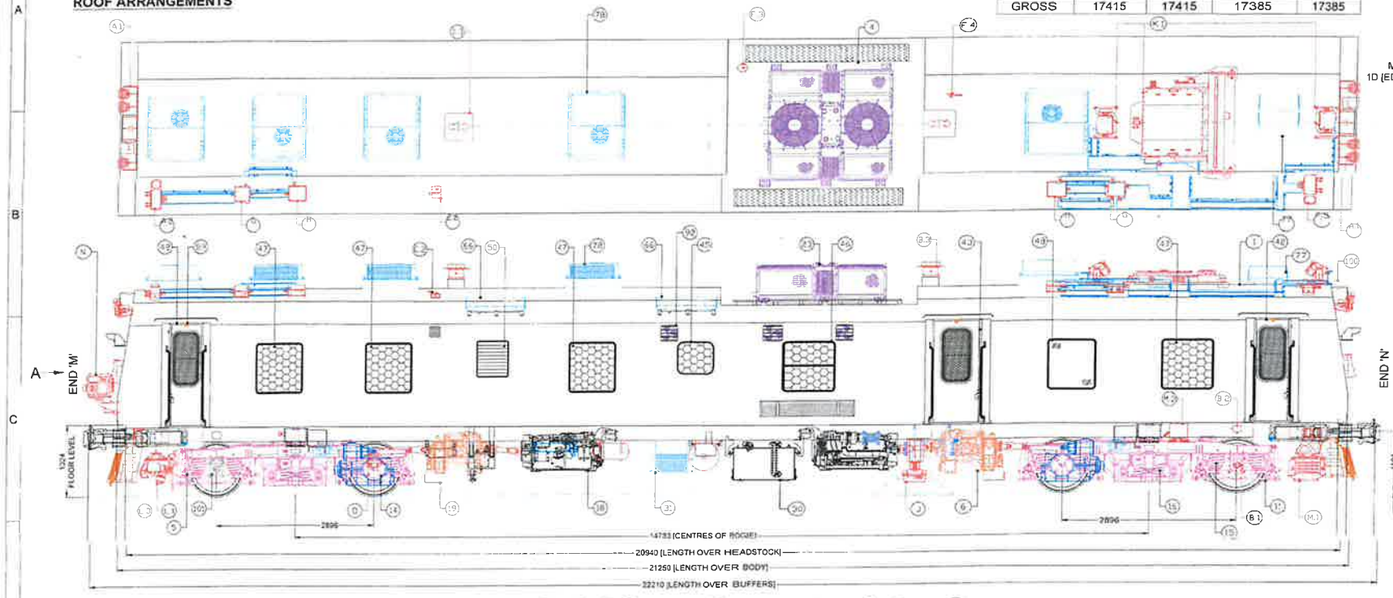
MAX. MOVING DIMENSIONS WESTERN CORRIDOR DIAGRAM No.-4 1676mm GAUGE

MAX. MOVING DIMENSIONS EASTERN CORRIDOR DIAGRAM No.-4 1676mm GAUGE

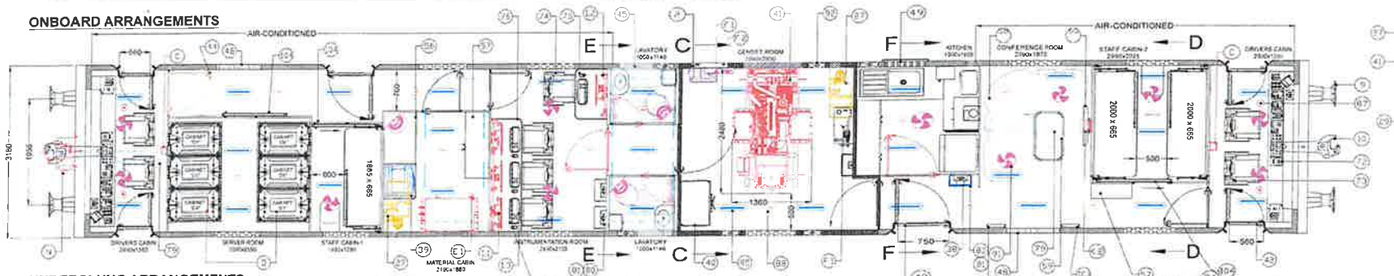
MAX. MOVING DIMENSIONS 1D [EDO/T-2202] 1676mm GAUGE ACS No.27

DRG. NO. SNSK4840

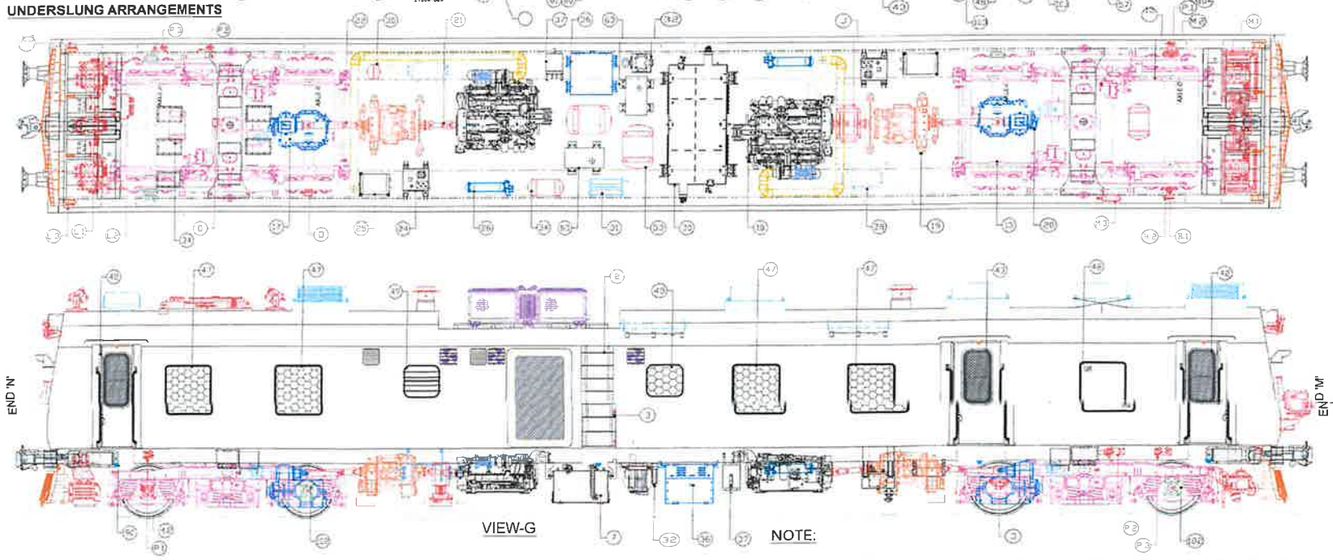
ROOF ARRANGEMENTS



ONBOARD ARRANGEMENTS



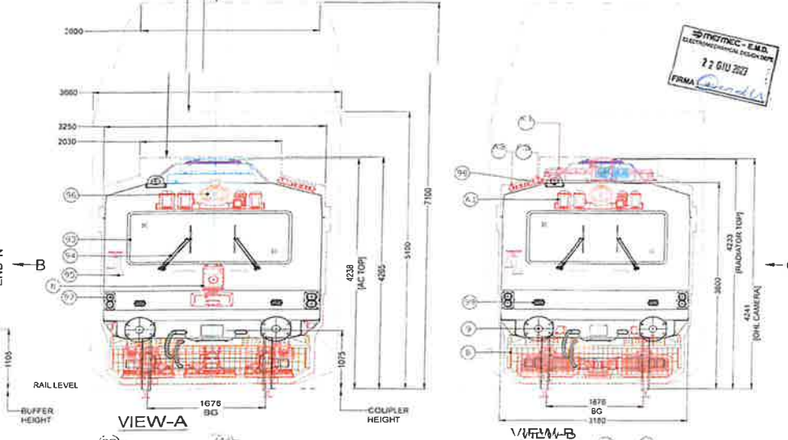
UNDERSLUNG ARRANGEMENTS

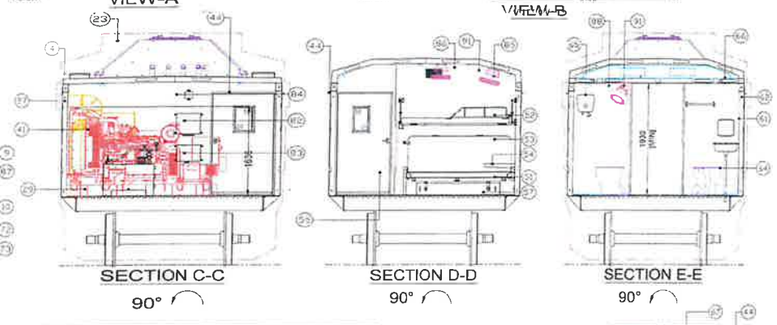


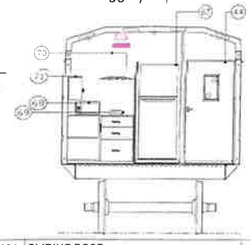
VIEW-G

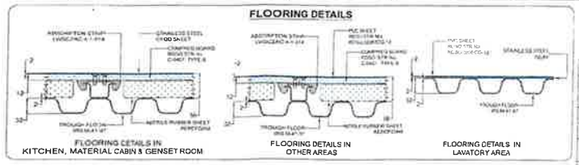
NOTE:

[1] [#] - THE CRITICAL LOWEST EQUIPMENT IS FINAL DRIVE WITH MINIMUM RAIL CLEARANCE OF 176mm (WITH NEW WHEEL ø952mm) & 138.5mm (WITH FULLY WORN WHEEL ø877mm) IN LOADED CONDITION.
[2] DIMENSIONS OF COACH INTERIORS ARE TENTATIVE WHICH WILL HAVE A TOLERANCE DURING ACTUAL DESIGN & MANUFACTURING.
[3] REVISION 4 EDITED BY MERMEC AFTER MEETING WITH NKC, MITSUI AND MERMEC









MEASURING EQUIPMENTS [MERMEC SCOPE]			
ITEM No.		DESCRIPTION	QTY / VEHICLE
A	1	TVSS [TRACK VIDEO SURVEILLANCE SYSTEM]	2
	2	TVSS JUNCTION BOX	2
B	1	TLS [TRAIN LOCALIZATION SYSTEM] ENCODER	1
	2	TLS ENCODER JUNCTION BOX	1
	3	TLS ANTENNA	2
C		ACCESS POINT ANETNNA	2
D		SERVER CABINETS	6
E	1	CHILLER	1
	2	COOLING SYSTEM INTERCONNECT ASSEMBLY	1
F	1	WATER TANK + PUMP FOR WASHING UNIT	1
	2	CONTROL UNIT FOR WASHING UNIT	1
	3	WASHING SYSTEM INTERCONNECT ASSEMBLY	1
	4	FLOW MANIFOLD	1
	5	ELECTROVALVE	2
G		ROOF JUNCTION BOX	2
H		FIBRE OPTIC BOX	2
I	1	MONITOR FRAME STRUCTURE [6 MODULE]	1
	2	MONITOR FRAME STRUCTURE [2 MODULE]	1
	3	DESKTOP COMPUTERS / WORK STATIONS	4
J		DETCS [DIAGNOSTIC ETCS ANTENNA]	1
K	1	OHL [OVERHEAD LINE MEASURING SYSTEM]	1
	2	PC FOR OHL	1
L	1	V.CUBE [SYSTEM FOR TRACK VISION]	1
	2	V.CUBE JUNCTION BOX	1
	3	V.CUBE LASER LAMPS	2
M	1	TGMS & SGMS [TRACK & SWITCH GEOMETRY MEASUREMENT SYSTEM]	1
	2	PULSE GENERATOR	1
	3	TGMS & SGMS JUNCTION BOX	1
N		T.SIGHT [SYSTEM FOR IDENTIFICATION OF INFRINGEMENTS]	1
O		AMS [ACCELERATION MEASUREMENT SYSTEM] SET OF 4 BOXES	1
P	1	AIR TREATMENT UNIT [TGMS & SGMS]	1
	2	AIR TREATMENT UNIT [V.CUBE]	1
	3	AIR TREATMENT UNIT [T.SIGHT]	1

DETAILS OF TRACTION POWER PACK EQUIPMENTS					
SL NO	DESCRIPTION	MAKE	RATING	MODEL	QTY / VEHICLE
1	ENGINE	CUMMINS	400HP @ 2100 RPM	QSN 14 R	2
2	TRANSMISSION	AVTEC	TC-560	CRT-5633	2

ECN NO	REV.	DESCRIPTION	DATE	INTL
	04		21.06.2023	MERMEC
11341	03	REVISED & REDRAWN AS PER CUSTOMER REQUIREMENTS	13.06.2023	KVA
11190	02	REVISED & REDRAWN AS PER INTEGRATION OF INSTRUMENTATION ITEMS	15.12.2022	KVA
10880	01	REVISED & REDRAWN.	20.09.2021	KVA

ECN NO	REV	DESCRIPTION	DATE	INTL

ITEM No.	DESCRIPTION	QTY / VEHICLE
83	FIRE DETECTION POWER JUNCTION BOX	1
82	FIRE DETECTION JUNCTION BOX	1
81	AIR CONDITIONER SWITCHING UNIT	5
80	AIR CONDITIONER CONTROL UNIT	5
79	AIR CONDITIONER DUCTING	2
78	AIR CONDITIONER [MAKE: SIDWAL]	5
77	AIR CONDITIONER [MAKE: COLEMAN]	1
76	COMPUTER DESK [5 MODULE] [STAINLESS STEEL WITH CORIAN TOP]	1
75	COMPUTER DESK [2 MODULE] [STAINLESS STEEL WITH CORIAN TOP]	1
74	INSTRUMENTATION SEATS WITHOUT ROTATION [MAKE: SURIN AUTOMOTIVE PVT. LTD - SG10]	4
73	DRIVERS SEATS WITH ROTATION [MAKE: SURIN AUTOMOTIVE PVT. LTD - SG10]	4
72	DRIVERS' DESK	2
71	RO WATER PURIFIER	1
70	CHIMNEY	1
69	ELECTRIC HOB	1
68	MICROWAVE OVEN	1
67	FRIDGE	1
66	ROOF WATER TANK [600 LITRES]	2
65	HOT WATER GEYSER [8 LITRES]	2
64	WATER CLOSET, WASH BASIN, HAND SHOWER WITH ACESSORIES	2 SETS
63	BIO-TOILET	2
62	CABIN INSULATION, 50mm THK [GLASS WOOL INSULATION BLANKET]	1 SET
61	GFRP PANELLING, 3mm THK	1 SET
60	19" LED TELEVISION	1
59	CENTER TABLE [STAINLESS STEEL WITH CORIAN TOP]	1
58	CUSHIONED SOFA	1 SET
57	STORAGE CABINET [STAINLESS STEEL]	6
56	STORAGE PLATFORM	1
55	FIXED LADDER	3
54	SNACK TABLE WITH BOTTLE HOLDER	2
53	FOLDABLE BACKREST	3
52	FOLDABLE UPPER BERTH	3
51	LOWER BERTH	3
50	SEALED LOUVRE	1
49	KITCHEN WINDOW WITH WINDOW BAR	1
48	EMERGENCY BREAKABLE WINDOW	2
47	GLASS SEALED WINDOW WITH GRILL	8
46	GLASS SHUTTER WINDOW WITH GRILL	1
45	LAVATORY WINDOW WITH GRILL	2
44	INTERIOR DOORS	10
43	BODY SIDE SWING DOOR	2
42	DRIVER CABIN DOORS	4
41	125 kVA GENSET WITH ROOM ACOUSTIC PANELLING	1
40	CONTROL CUBICLE	1
39	3 kVA TRANSFORMER	1
38	BATTERY CHARGER	1
37	ISOLATION SWITCH	1
36	24 V BATTERY BOX	1
35	9 Litre AIR RESERVOIR	1
34	40 Litre AIR RESERVOIR	3
33	150 Litre AIR RESERVOIR	2
32	AIR DRYER	1
31	AFTER COOLER	1
30	FUEL TANK [1000 LITRES]	1
29	WRA TANK	1
28	ENGINE EXHAUST	2
27	ENGINE AIR CLEANER	2
26	T.C OIL COOLER	2
25	HYDRAULIC OIL COOLER	2
24	HYDRAULIC OIL TANK	2
23	TRACTION ENGINE RADIATOR	1
22	CARDAN SHAFT [1065mm LENGTH]	2
21	CARDAN SHAFT [540mm LENGTH]	2
20	FINAL DRIVE ASSEMBLY	2
19	TRANSMISSION	2
18	ENGINE	2
17	TORQUE ARM ARRANGEMENT	2
16	SECONDARY SUSPENSION SPRINGS	16
15	PRIMARY SUSPENSION HELICAL SPRINGS	16
14	AXLE BOX ASSEMBLY	8
13	WHEEL AXLE ASSEMBLY [POWERED]	2
12	WHEEL AXLE ASSEMBLY [NON-POWERED]	2
11	BOGIE [POWERED]	2
10	COUPLER [RDSO/S6-SD-07]	2
9	SIDE BUFFER [RDSO/SK-98145]	4
8	CATTLE GUARD [WITH ADJUSTABLE RAIL GUARD]	2
7	FOOT STEP FOR LADDER	1
6	FOOT STEP FOR SWING DOOR	2
5	FOOT STEP FOR CABIN DOORS	4
4	ROOF WALKWAY	1 SET
3	LADDER SAFETY GATE	1
2	BODY SIDE LADDER	1
1	BODY SHELL	1

ITEM No.	DESCRIPTION	QTY / VEHICLE
104	SLIDING DOOR	3
103	FOLDABLE SEAT	2
102	AXLE EARTHING	2
101	SPEED SENSOR	1
100	OHE SENSOR	2
99	FLOOD LIGHT	4
98	FLASHER LIGHT [ELRS/SPEC/LFL/0017, REV-1, SEPT-04]	2
97	MARKER LIGHT	4
96	HEAD LIGHT (RDSO/2017/EL/SPEC-0134 REV-1)	2
95	PNEUMATIC 2-STAGE HORN	2
94	WIND SCREEN PNEUMATIC WIPER	2
93	STONE PROOF LOOKOUT GLASS [IICF/MD/SPEC-159]	2
92	EXHAUST FAN	6
91	FAN	14
90	FOOT STEP LIGHT	7
89	DOOR FLASHER LIGHT	6
88	EMERGENCY LIGHT	14
87	SPOT LIGHT	4
86	NIGHT LIGHT	3
85	COACH LIGHT (LED TYPE)	28
84	FIRE DETECTION AIR FILTER BOX	1

MERMEC - E.M.D. ELECTROMECHANICAL DESIGN DEPT. 22 GIU 2023 FIRMA

अनिल कुमार शर्मा / Anil Kumar Sharma
संयुक्त महाप्रबंधक / संपत्ति प्रबंधक / पश्चिमी कोरिडोर
Jt. General Manager / Asset Management / WDFC
डेडिकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि.
Dedicated Freight Corridor Corporation of India Ltd.
भारत सरकार (रेल मंत्रालय) का उपक्रम
A Govt. of India (Ministry of Railways)

NONO FOR TECHNICAL DESIGN PE-P6
Date:
Signature:

DRN	RAM	GENERAL ARRANGEMENT OF TRACK RECORDING CAR	SCALE 1:50
ENG			SAN ENGG. AND LOCOMOTIVE COMPANY LTD. BANGALORE - 560 048
CHKD	VB		DATE 07.04.2021
APPD	KVK		DRG. NO. SNSK4840 REV 04

DRG. NO. SNSK4840

1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 696.
3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.
4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.
5) * INDICATES NO SEPARATE DRAWINGS.

WEIGHT TABLE	
TARE	64600 kg
PAY LOAD	5000 kg
GROSS	69600 kg

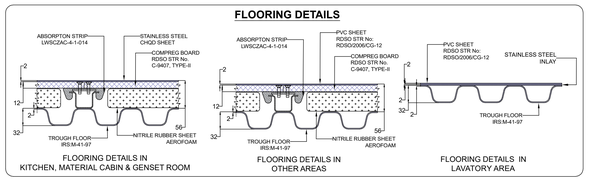
LOADING CONDITION	AXLE LOADS [kg]			
	END 'M'		END 'N'	
	AXLE-A	AXLE-B	AXLE-C	AXLE-D
TARE	16254	16254	16046	16046
GROSS	17415	17415	17385	17385

MAX. MOVING DIMENSIONS WESTERN CORRIDOR DIAGRAM No.-4 1676mm GAUGE

MAX. MOVING DIMENSIONS EASTERN CORRIDOR DIAGRAM No.-4 1676mm GAUGE

MAX. MOVING DIMENSIONS 1D [EDO/T-2202] 1676mm GAUGE ACS No.27

FLOORING DETAILS

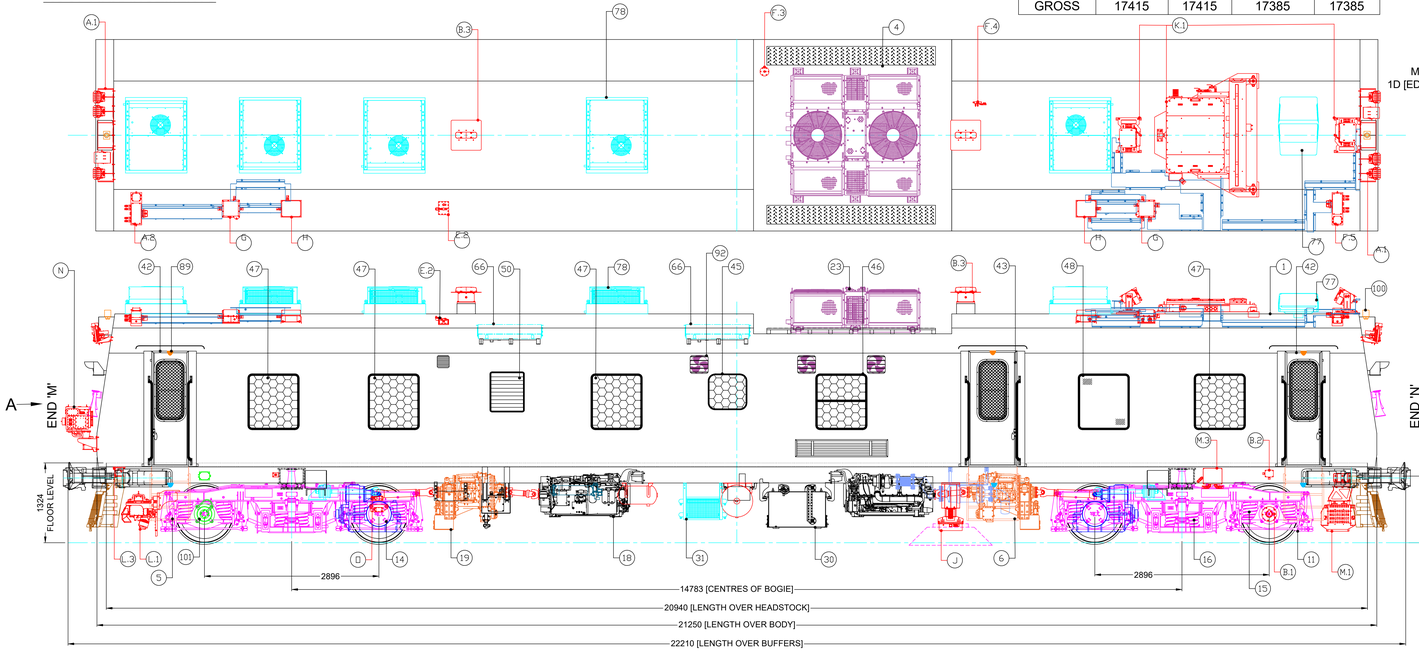


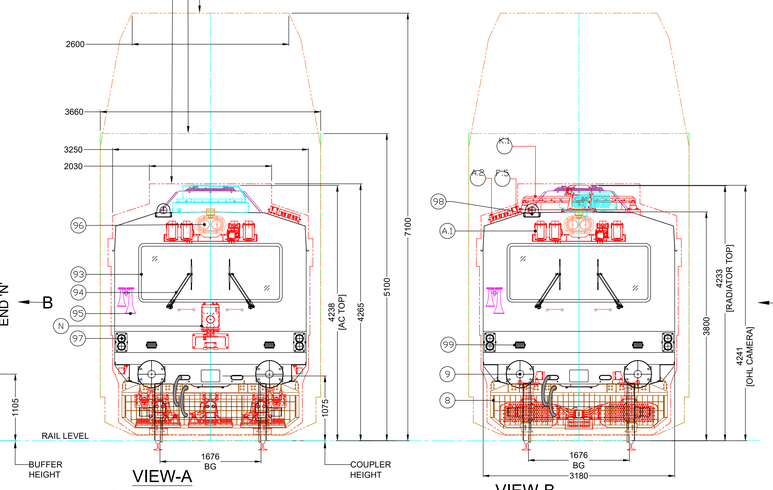
FLOORING DETAILS IN KITCHEN, MATERIAL CABIN & GENSET ROOM

FLOORING DETAILS IN OTHER AREAS

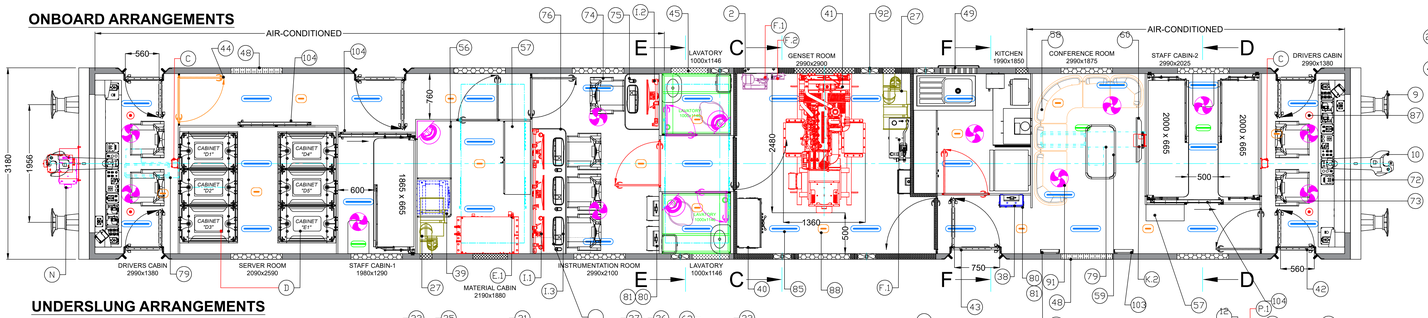
FLOORING DETAILS IN LAVATORY AREA

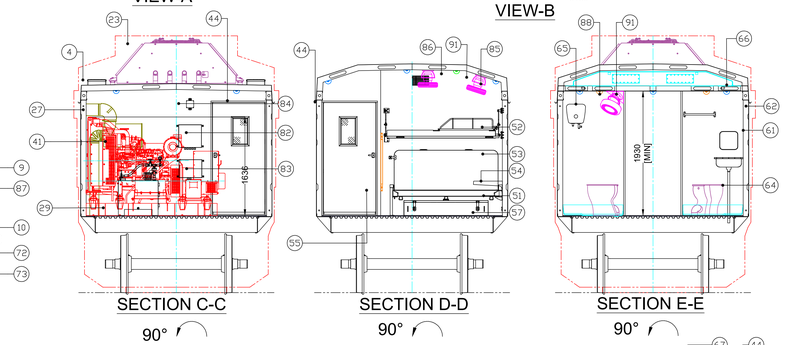
ROOF ARRANGEMENTS



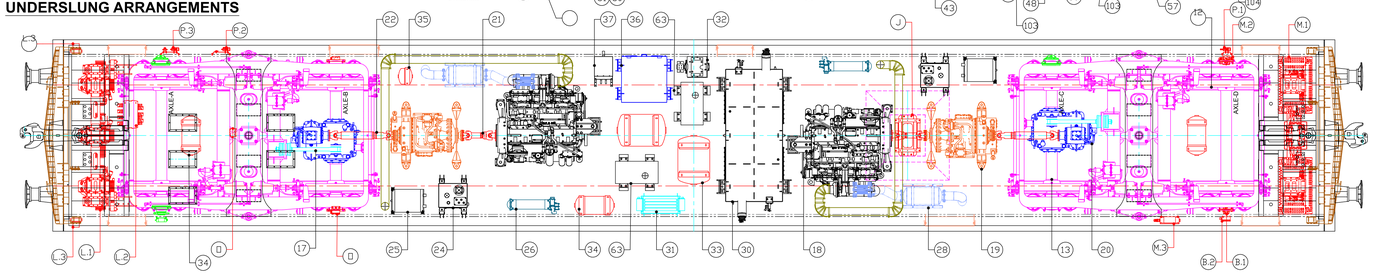


ONBOARD ARRANGEMENTS

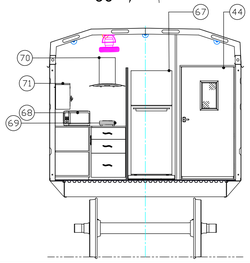


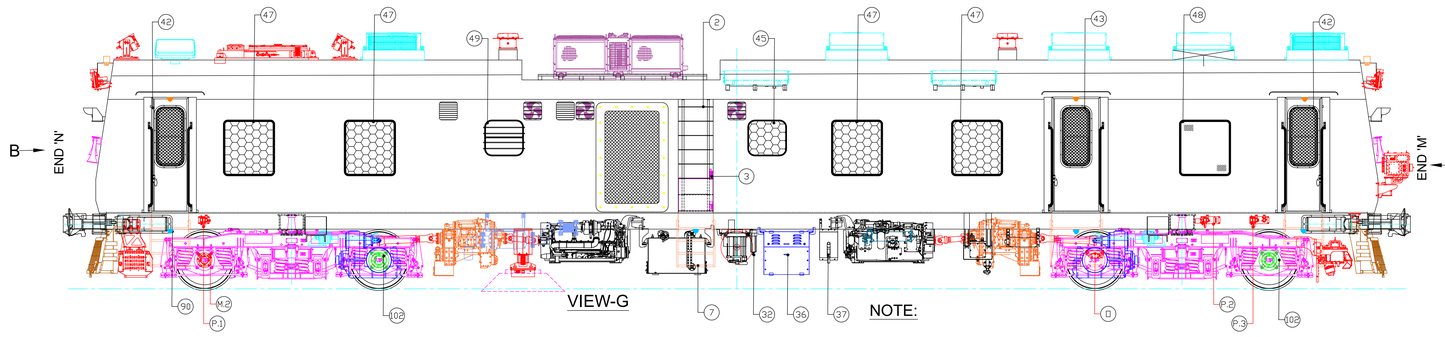


UNDERSLUNG ARRANGEMENTS



SECTION F-F
90°





NOTE:

[1]. [#] - THE CRITICAL LOWEST EQUIPMENT IS FINAL DRIVE WITH MINIMUM RAIL CLEARANCE OF 176mm (WITH NEW WHEEL ø952mm) & 138.5mm (WITH FULLY WORN WHEEL ø877mm) IN LOADED CONDITION.
[2] DIMENSIONS OF COACH INTERIORS ARE TENTATIVE WHICH WILL HAVE A TOLERANCE DURING ACTUAL DESIGN & MANUFACTURING.
[3] REVISION 4 EDITED BY MERMEC AFTER MEETING WITH NKC, MITSUI AND MERMEC HELD ON 21/06/2023

ECN. NO.	REV.	DESCRIPTION	DATE	INTL.
	04	ADDED ITEMS 103&104, ITEM 98 MOVED, NUMBER OF STORAGE CHANGED. ADDED STORAGE CLOSE TO CONFERENCE ROOM AND ON THE TOP OF THE INSTRUMENTATION ROOM. STORAGE IN THE MATERIAL CABIN CHANGED IN DIMENSION. HINGED DOOR IN THE GENSET ROOM INVERTED	21.06.2023	MERMEC
11341	03	REVISED & REDRAWN AS PER CUSTOMER REQUIREMENTS	13.06.2023	KVA
11190	02	REVISED & REDRAWN AS PER INTEGRATION OF INSTRUMENTATION ITEMS.	15.12.2022	KVA
10880	01	REVISED & REDRAWN.	20.09.2021	KVA

DETAILS OF TRACTION POWER PACK EQUIPMENTS

SL. NO.	DESCRIPTION	MAKE	RATING	MODEL	QTY / VEHICLE
1	ENGINE	CUMMINS	400HP @ 2100 RPM	QSN 14 R	2
2	TRANSMISSION	AVTEC	TC-580	CRT-5633	2

MEASURING EQUIPMENTS [MERMEC SCOPE]

ITEM No.		DESCRIPTION	QTY / VEHICLE
A	1	TVSS [TRACK VIDEO SURVEILLANCE SYSTEM]	2
	2	TVSS JUNCTION BOX	2
B	1	TLS [TRAIN LOCALIZATION SYSTEM] ENCODER	1
	2	TLS ENCODER JUNCTION BOX	1
	3	TLS ANTENNA	2
C		ACCESS POINT ANETNNA	2
D		SERVER CABINETS	6
E	1	CHILLER	1
	2	COOLING SYSTEM INTERCONNECT ASSEMBLY	1
F	1	WATER TANK + PUMP FOR WASHING UNIT	1
	2	CONTROL UNIT FOR WASHING UNIT	1
	3	WASHING SYSTEM INTERCONNECT ASSEMBLY	1
	4	FLOW MANIFOLD	1
	5	ELECTROVALVE	2
G		ROOF JUNCTION BOX	2
H		FIBRE OPTIC BOX	2
I	1	MONITOR FRAME STRUCTURE [6 MODULE]	1
	2	MONITOR FRAME STRUCTURE [2 MODULE]	1
	3	DESKTOP COMPUTERS / WORK STATIONS	4
J		DETCS [DIAGNOSTIC ETCS ANTENNA]	1
K	1	OHL [OVERHEAD LINE MEASURING SYSTEM]	1
	2	PC FOR OHL	1
L	1	V.CUBE [SYSTEM FOR TRACK VISION]	1
	2	V.CUBE JUNCTION BOX	1
	3	V.CUBE LASER LAMPS	2
M	1	TGMS & SGMS [TRACK & SWITCH GEOMETRY MEASUREMENT SYSTEM]	1
	2	PULSE GENERATOR	1
	3	TGMS & SGMS JUNCTION BOX	1
N		T.SIGHT [SYSTEM FOR IDENTIFICATION OF INFRINGEMENTS]	1
O		AMS [ACCELERATION MEASUREMENT SYSTEM] SET OF 4 BOXES	1
P	1	AIR TREATMENT UNIT [TGMS & SGMS]	1
	2	AIR TREATMENT UNIT [V.CUBE]	1
	3	AIR TREATMENT UNIT [T.SIGHT]	1

83	FIRE DETECTION POWER JUNCTION BOX	1
82	FIRE DETECTION JUNCTION BOX	1
81	AIR CONDITIONER SWITCHING UNIT	5
80	AIR CONDITIONER CONTROL UNIT	5
79	AIR CONDITIONER DUCTING	2
78	AIR CONDITIONER [MAKE: SIDWAL]	5
77	AIR CONDITIONER [MAKE: COLEMAN]	1
76	COMPUTER DESK [6 MODULE] [STAINLESS STEEL WITH CORIAN TOP]	1
75	COMPUTER DESK [2 MODULE] [STAINLESS STEEL WITH CORIAN TOP]	1
74	INSTRUMENTATION SEATS WITHOUT ROTATION [MAKE: SURIN AUTOMOTIVE PVT. LTD - SG10]	4
73	DRIVERS SEATS WITH ROTATION [MAKE: SURIN AUTOMOTIVE PVT. LTD - SG10]	4
72	DRIVERS' DESK	2
71	RO WATER PURIFIER	1
70	CHIMNEY	1
69	ELECTRIC HOB	1
68	MICROWAVE OVEN	1
67	FRIDGE	1
66	ROOF WATER TANK [600 LITRES]	2
65	HOT WATER GEYSER [6 LITRES]	2
64	WATER CLOSET, WASH BASIN, HAND SHOWER WITH ACESSORIES	2 SETS
63	BIO-TOILET	2
62	CABIN INSULATION, 60mm THK [GLASS WOOL INSULATION BLANKET]	1 SET
61	GFRP PANELLING, 3mm THK	1 SET
60	19" LED TELEVISION	1
59	CENTER TABLE [STAINLESS STEEL WITH CORIAN TOP]	1
58	CUSHIONED SOFA	1 SET
57	STORAGE CABINET [STAINLESS STEEL]	6
56	STORAGE PLATFORM	1
55	FIXED LADDER	3
54	SNACK TABLE WITH BOTTLE HOLDER	2
53	FOLDABLE BACKREST	3
52	FOLDABLE UPPER BERTH	3
51	LOWER BERTH	3
50	SEALED LOUVRE	1
49	KITCHEN WINDOW WITH WINDOW BAR	1
48	EMERGENCY BREAKABLE WINDOW	2
47	GLASS SEALED WINDOW WITH GRILL	8
46	GLASS SHUTTER WINDOW WITH GRILL	1
45	LAVATORY WINDOW WITH GRILL	2
44	INTERIOR DOORS	10
43	BODY SIDE SWING DOOR	2
42	DRIVER CABIN DOORS	4
41	125 kVA GENSET WITH ROOM ACOUSTIC PANELLING	1
40	CONTROL CUBICLE	1
39	3 kVA TRANSFORMER	1
38	BATTERY CHARGER	1
37	ISOLATION SWITCH	1
36	24 V BATTERY BOX	1
35	9 Litre AIR RESERVOIR	1
34	40 Litre AIR RESERVOIR	3
33	150 Litre AIR RESERVOIR	2
32	AIR DRYER	1
31	AFTER COOLER	1
30	FUEL TANK [1000 LITRES]	1
29	WRA TANK	1
28	ENGINE EXHAUST	2
27	ENGINE AIR CLEANER	2
26	T.C OIL COOLER	2
25	HYDRAULIC OIL COOLER	2
24	HYDRAULIC OIL TANK	2
23	TRACTION ENGINE RADIATOR	1
22	CARDAN SHAFT [1065mm LENGTH]	2
21	CARDAN SHAFT [540mm LENGTH]	2
20	FINAL DRIVE ASSEMBLY	2
19	TRANSMISSION	2
18	ENGINE	2
17	TORQUE ARM ARRANGEMENT	2
16	SECONDARY SUSPENSION SPRINGS	16
15	PRIMARY SUSPENSION HELICAL SPRINGS	16
14	AXLE BOX ASSEMBLY	8
13	WHEEL AXLE ASSEMBLY [POWERED]	2
12	WHEEL AXLE ASSEMBLY [NON-POWERED]	2
11	BOGIE [POWERED]	2
10	COUPLER [RDSO/56-BD-07]	2
9	SIDE BUFFER [RDSO/SK-98145]	4
8	CATTLE GUARD [WITH ADJUSTABLE RAIL GUARD]	2
7	FOOT STEP FOR LADDER	1
6	FOOT STEP FOR SWING DOOR	2
5	FOOT STEP FOR CABIN DOORS	4
4	ROOF WALKWAY	1 SET
3	LADDER SAFETY GATE	1
2	BODY SIDE LADDER	1
1	BODY SHELL	1

104	SLIDING DOOR	3
103	FOLDABLE SEAT	2
102	AXLE EARTHING	2
101	SPEED SENSOR	1
100	OHE SENSOR	2
99	FLOOD LIGHT	4
98	FLASHER LIGHT [ELRS/SPEC/LFL/0017, REV-1. SEPT-04]	2
97	MARKER LIGHT	4
96	HEAD LIGHT [RDSO/2017/EL/SPEC-0134,REV-1]	2
95	PNEUMATIC 2-STAGE HORN	2
94	WIND SCREEN PNEUMATIC WIPER	2
93	STONE PROOF LOOKOUT GLASS [ICF/MD/SPEC-159]	2
92	EXHAUST FAN	6
91	FAN	14
90	FOOT STEP LIGHT	7
89	DOOR FLASHER LIGHT	6
88	EMERGENCY LIGHT	14
87	SPOT LIGHT	4
86	NIGHT LIGHT	3
85	COACH LIGHT [LED TYPE]	28
84	FIRE DETECTION AIR FILTER BOX	1

ITEM No.	DESCRIPTION	QTY / VEHICLE

DRN.	RAM
TRCD.	
CHKD.	VB
APPD.	KVA

GENERAL ARRANGEMENT OF TRACK RECORDING CAR

SCALE 1:50

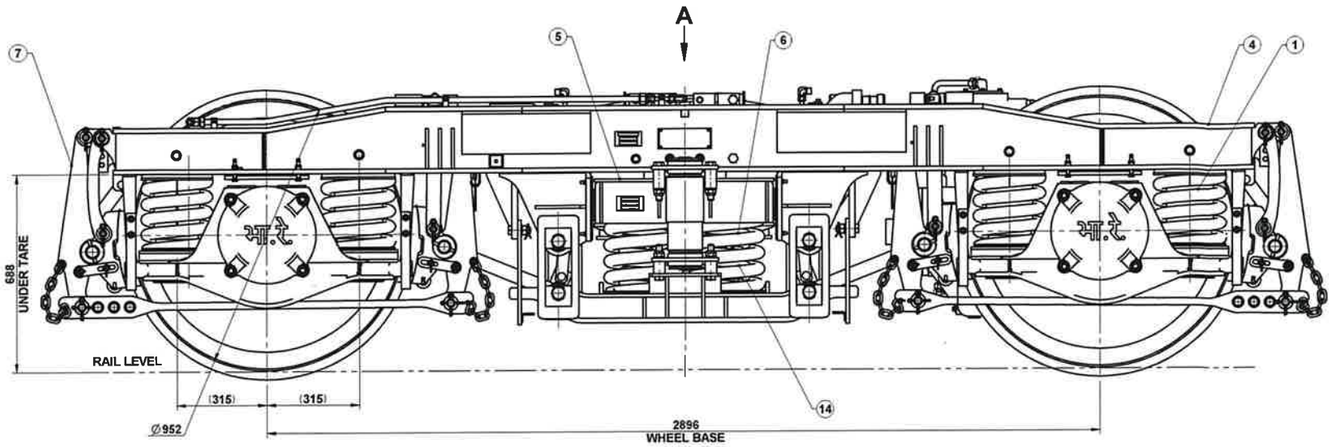
DATE 07.04.2021

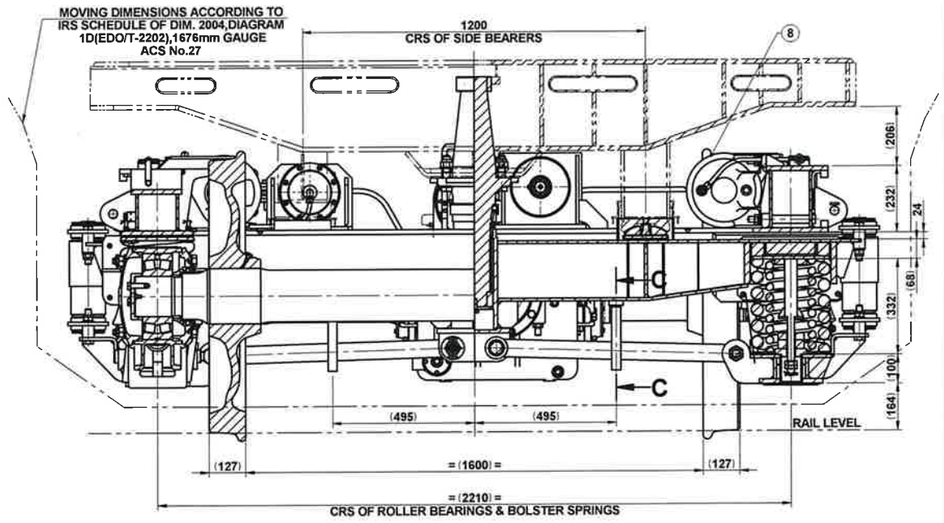
SAN ENGG. AND LOCOMOTIVE COMPANY LTD. BANGALORE - 560 048

DRG. NO. SNSK4840 REV 04

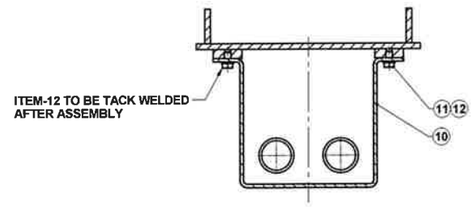
1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 696.
3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.
4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.
5) * INDICATES NO SEPARATE DRAWINGS.

DRG. NO. SNSK4909

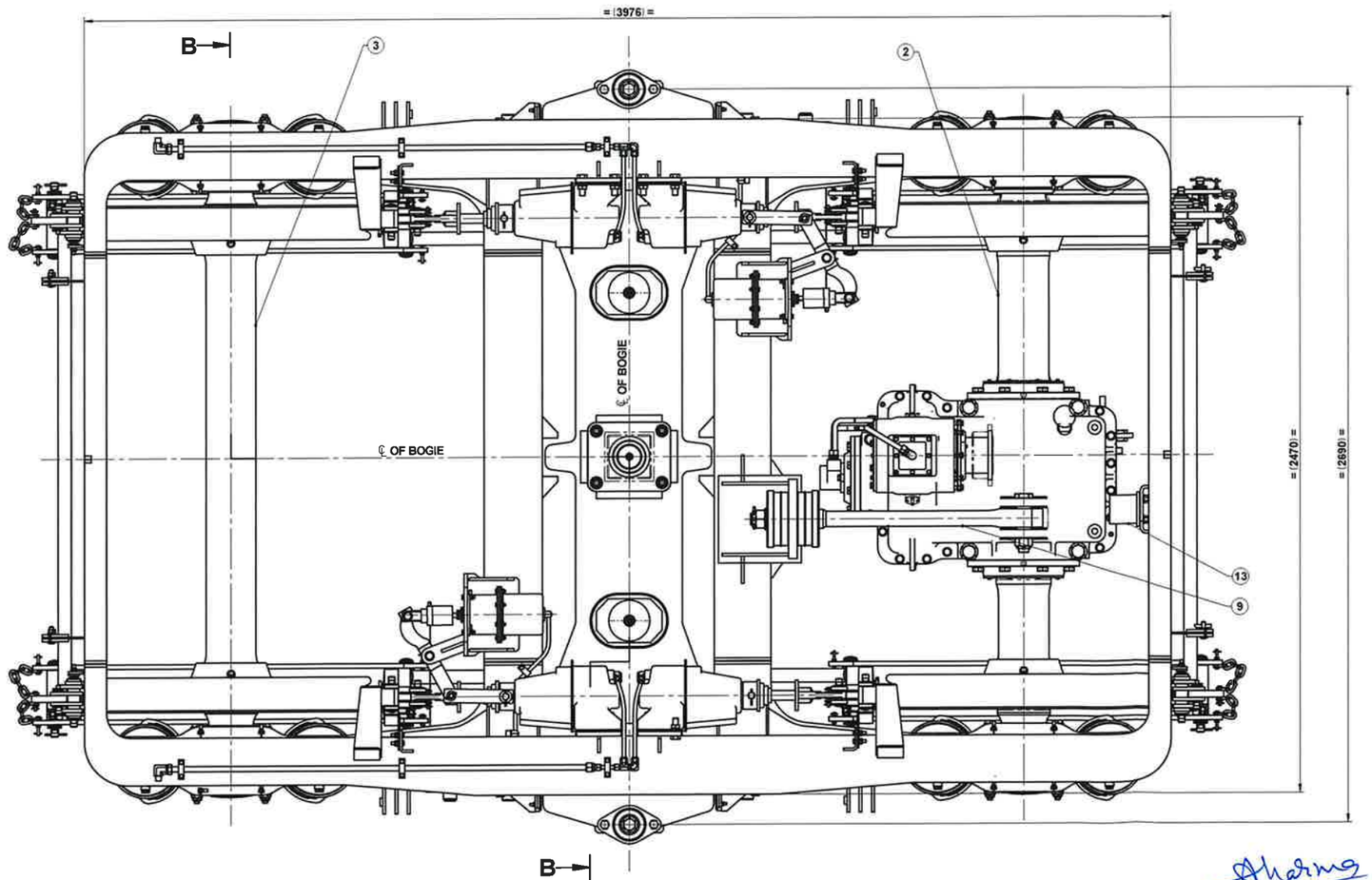




SECTION B-B
90°



SECTION C-C
(1:5)



VIEW A

NOTE:

1. FOR SUSPENSION DIAGRAM REFER DRAWING No. SNSK4874.
2. FOR OPEN TOLERANCES & SURFACE FINISH VALUES REFER DRG No. ICF/STD-9-0-001.
3. GALVANISING TO IS:1573 TO SERVICE GRADE No-2 OF TABLE-2.
4. BOLSTER HELICAL SPRINGS TO DRG. NO: SNSK4908.
5. DAMPERS [DOUBLE ACTING HYDRAULIC SHOCK ABSORBERS] TO DRG. NO: ICF/SK-0-5-015, ITEM-2.

ITEM No.	DWG No.	SIZE	DESCRIPTION	No. OFF	MATL & SPECN
14	SNSK4874	A2	SUSPENSION DIAGRAM FOR 8W RBMV	1	
13	SV/DPC3 0-0-002	A1	FIXING ARRGT OF STOPPER FOR FINAL DRIVE	1	
12	98903050	*	SPRING WASHER B12	4	IS:3063-1994
11	-	*	HEXAGONAL HEAD SCREW - IS:1363 (PART-2)/ISO: 4018-M12x20L-4.6	4	IS:1363 (PART-2)
10	DC/EMU/M 0-5-011	A3	SAFETY STRAP	2	
9	SNSK4185	A1	TORQUE ARM FIXING ARRGT.	1	
8	DMU/DPC7- 3-2-702	A1	BOGIE BRAKE PIPING & PARKING BRAKE ARRGT	1	
7	EMU/M 3-2-064	A1	BOGIE BRAKE ARRGEMENT	1	
6	DMU/DPC -0-5-001	A1	BOGIE BOLSTER SUSPENSION ARRGT.	1	
5	DMU/DPC 0-4-001	A1	BOGIE BOLSTER ARRANGEMENT	1	
4	SV/DPC3 0-3-001	A1	BOGIE FRAME ARRANGEMENT	1	
3	SV/DPC 0-2-003	A1	ROLLER BEARING ARRGT (NON-POWERED AXLE)	1	
2	SV/DPC 0-2-001	A1	ROLLER BEARING ARRANGEMENT (POWERED AXLE)	1	
1	DHMU/DPC 0-1-001	A1	AXLE BOX GUIDE ARRANGEMENT	1	

DRN.	RAM	BOGIE GENERAL ARRANGEMENT FOR TRACK RECORDING CAR	SCALE	1:10	SAN ENGG. AND LOCOMOTIVE COMPANY LTD. BANGALORE - 560 048
TRCD.					
CHKD.	GAS		DATE	23.01.2021	DRG. NO. SNSK4909 REV 01
APPD.	KVA				

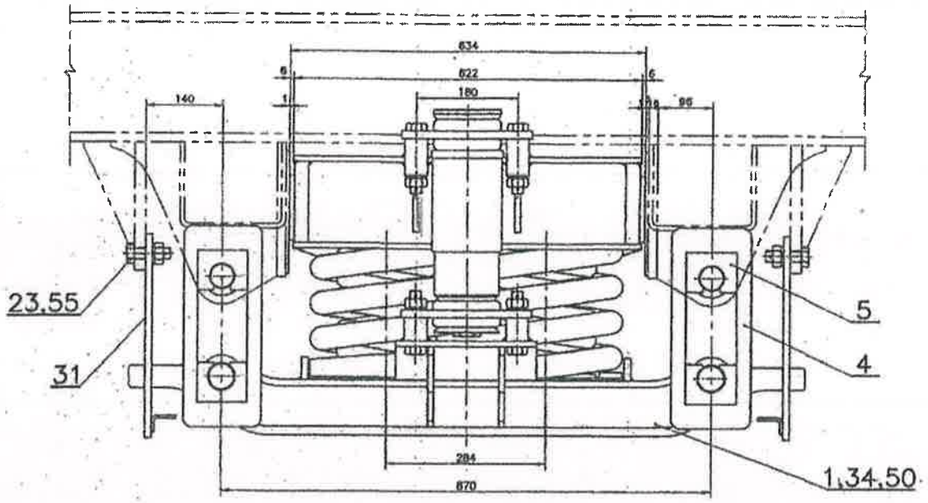
ECN. NO.	REV.	DESCRIPTION	DATE	INTL.
10705	01	NOTES UPDATED	06.04.2021	KVA

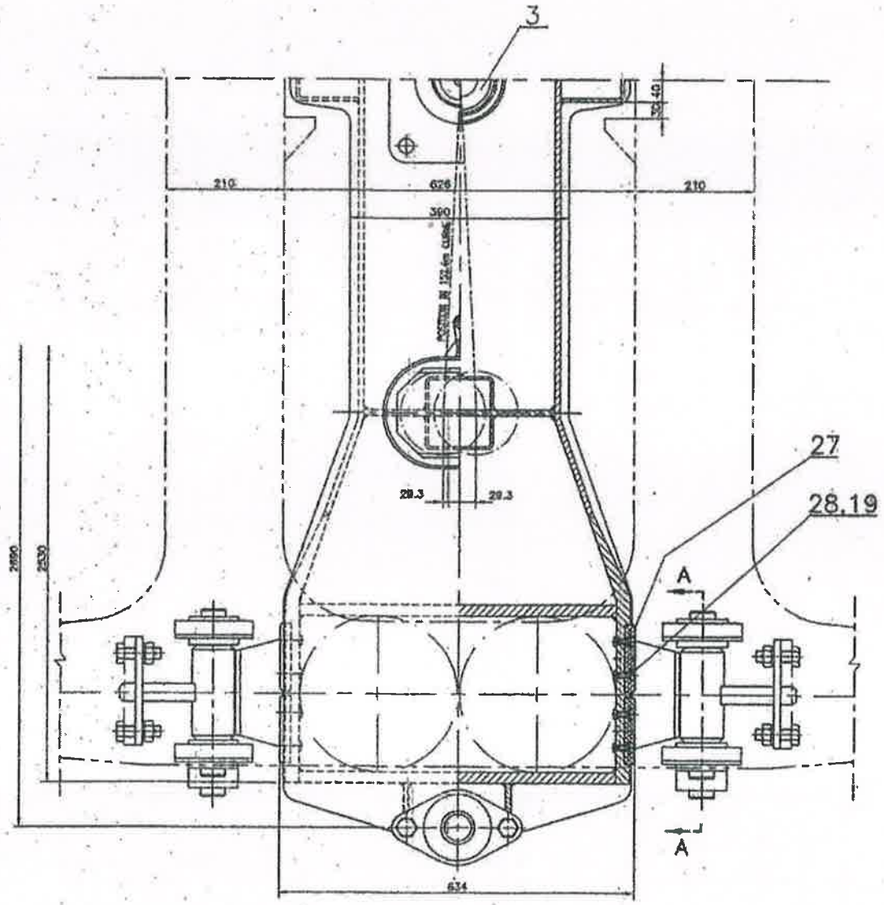
अनिल कुमार शर्मा / Anil Kumar Sharma
संयुक्त महाप्रबंधक / संपत्ति प्रबंधक / पश्चिमी कॉरिडोर
Jt. General Manager / Asset Management / WDFC
डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि.
Dedicated Freight Corridor Corporation of India Ltd.
भारत सरकार (रेल मंत्रालय) का उपक्रम
A Govt. of India (Ministry of Railways) Enterprise

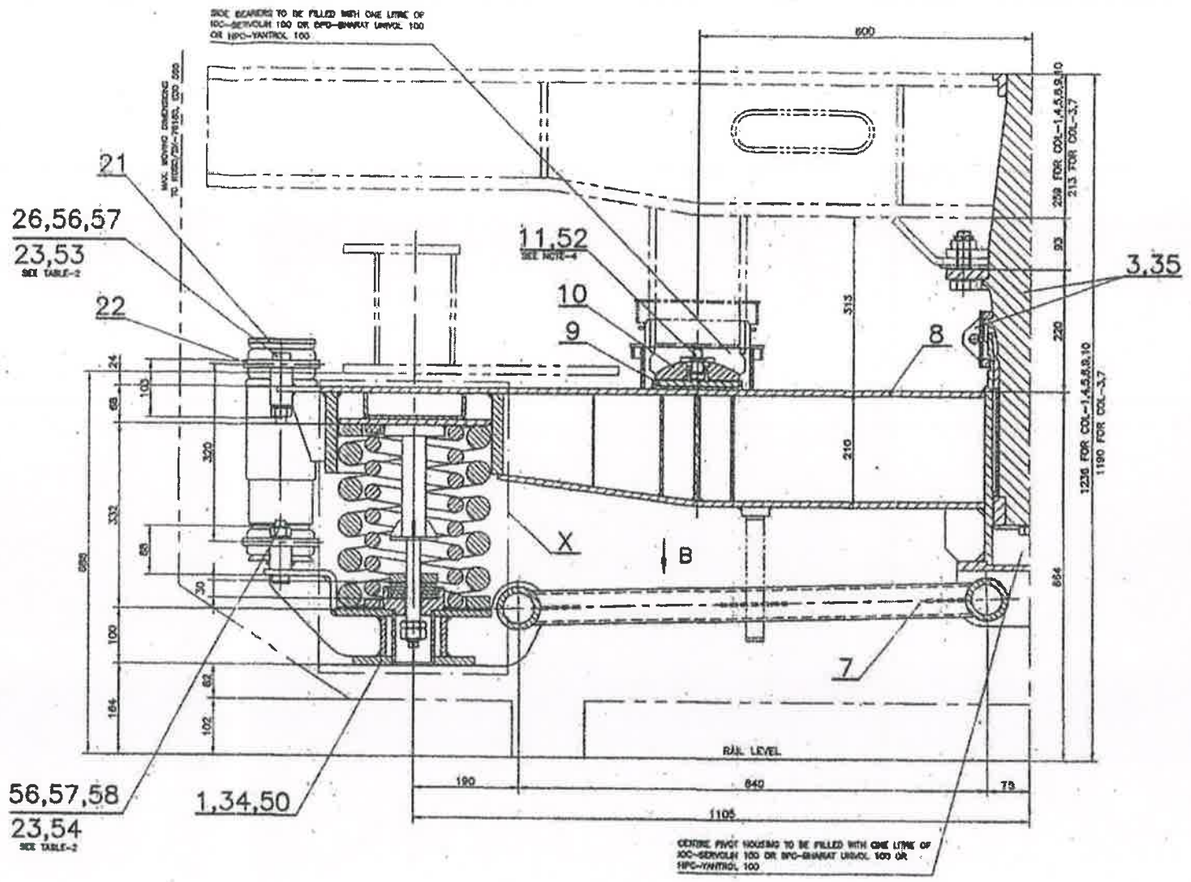
NK CONSORTIUM PH-1

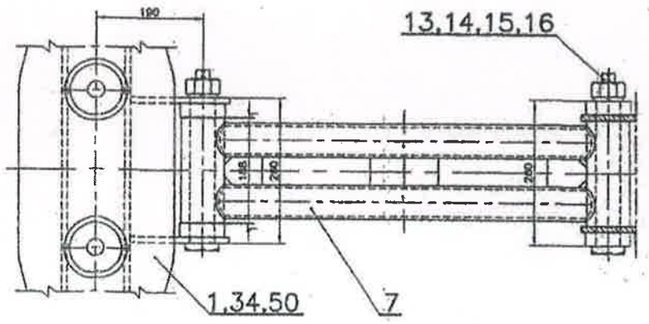
15/164

DMU/DPC-0-5-001









VIEW FROM -B

QTY	DESCRIPTION & DIMENSION	ITEM	REFERENCE	MAT.SPEC	WEIGHT/UNIT	REMARKS
	GROUP: 0-5				SUPERSEDED BY:	
					SUPERSEDES DMU/DPC-0-5-001 ALT-0	
	BOGIE BOLSTER SUSPENSION ARRGT.				SCALE 1:5	SSE/TD CHD ALTD R. Muralidior DRN G.Rajeswaran & J.Ramesh
					Alpha Alt.- 0	INTEGRAL COACH FACTORY CHENNAI-38
					DATA CODE NO. 156	INDIAN RAILWAY STANDARDS
					SHEET 1 OF 2	DMU/DPC-0-5-001

5 Nos. Alt.	DATE OF LATEST ALT	DATE OF FIRST ISSUE	ASSEMBLY DRAWINGS AMIE/SME
	13-08-2014	26-09-2001	

FORM:-IRA1-840X600

70/16:1

डेडीकेटेड फ्रेट कोरीडोर कार्पोरेशन ऑफ़ इंडिया लि.
Dedicated Freight Corridor Corporation of India Limited
(भारत सरकार का उपक्रम) (A Govt. of India Enterprises)
5th Floor, Supreme Court Metro Station Building Complex, New Delhi -110001

No.: HQ/ENWC/PWC(PnE)/1/2020(6106) Dated: 13.02.2024

ED/Track Machine
RDSO
Manak Nagar
Lucknow- 226011

Sub: Allotment of Transportation Code to Track Machines supplied by MERMEC.

Ref: Director/Track Machine-VI/RDSO letter no. TM/HM/S082/DFCCIL Dated 01.02.2024

In reference to the referred letter, the submission of corrected documents was sought by your office. In this regard, in continuation to this office letter of even no. dated 30.01.2024, the following additional details/clarifications are being submitted.

S.No.	Name of the Machine	Serial No.	GA Drawing No.
1.	Inspection Vehicle 1	MM800DFCCIL 822/2024	SNSK4933 Rev-5
2.	Inspection Vehicle 2	MM800DFCCIL 823/2024	
3.	Track Recording Car	MM800DFCCIL 820/2024	SNSK4840 Rev-4
4.	OHE Recording Car	MM800DFCCIL 821/2024	SNSK 4932 Rev-4

The earlier proposed Transportation Code and Model No. of the vehicles shall remain unchanged. The Layout Drawing Nos. submitted vide this office letter of even no. dated 30.01.2024 may not be considered please. Only GA Drawings No. may be considered

The details of OHE Recording Car will be sent to TI Directorate/RDSO separately.

Praveen Kumar

(Praveen Kumar)
ED/Asset Mgmt./WDFC

NK CONSORTIUM

Project Management Consultancy Services for Construction of Double Line Electrified Railway Track with Signalling& Telecommunication system and related infrastructure for Rewari– Vadodara section of Phase 1 of the Western Dedicated Freight Corridor

Address: 4th Floor, PragatiMaidan, Metro Station Building, New Delhi – 110001, INDIATel: 91-11-23379711/12 Fax: 91-11-23379710

Nippon Koei Co., Ltd. – Oriental Consultants Co., Ltd. – Japan Transportation Consultants Inc. –
Nippon Koei India Pvt. Ltd. – Oriental Consultants India Pvt. Ltd. – Rites Ltd.

Our Ref. L-NKC-DFCC-PMC-2402-64 ***Date 2024/02/13***

Mr. Praveen Kumar, ED/Asset Mgmt. /WDFC, DFCCIL, New Delhi

Sub: Design, Manufacturing, Supply, Testing, Commissioning & Training of Plant and Equipment for Railway Track and Electric Over Head Equipment (OHE) on Dadri – Rewari - JNPT network of Western Dedicated Freight Corridor (ICB No. PE P-6):– **Regarding Allotment of Transportation Code, serial number and GAD number to Track machines supplied by M/s Mermec.**

Ref: (i) Mitsui letter no. PEP6-MIT-NKC-2024-02-012 dated 09.02.2024
(ii) NKC letter no. L-NKc-MITSUI-PMC-2402-05 dated 02.02.2024
(iii) DFCCIL email dated 01.02.2024 forwarding RDSO letter no. TM/HM/S082/DFCCIL dated 01.02.2024
(iv) DFCCIL letter no. HQ/ENWC/PWC (PnE)/1/2020 (6106) dated 30.01.2024
(v) Mitsui email dated 11.01.2024

Dear Sir,

With reference to the communication from the Employer vide ref. (iii) above, to submit the Engineers response, on the issues raised in RDSO Letter dated 01.02.2024, to send suitable response regarding the Allotment of Transportation Code to Track machine being supplied by M/s Mermec from DFCCIL to RDSO. The details for the M/e Mermec vehicles are shown as under:

S.no.	Name of the Machine	Transportation code	Serial no.	GAD drawing number
1	Track Recording Car	TRC D	MM800DFCCIL 820/2024	SNSK4840 Rev-4
2	OHE Recording Car	ORC D	MM800DFCCIL 821/2024	SNSK4932 Rev-4
3	Inspection Vehicle 1	RIV D	MM800DFCCIL 822/2024	SNSK4933 Rev-5
4	Inspection Vehicle 2		MM800DFCCIL 823/2024	

As per the layout drawing no. mentioned by RDSO, please consider this as the interior layout drawing and not the General arrangement drawing (GAD). As per record GAD remains the same for TRC as SNSK4840 Rev-4, ORC as SNSK4932 Rev-4 and Inspection vehicle as SNSK4933 Rev-5

Thanking You,
Yours faithfully,

Tetsuto Nakano
Project Director
The Engineer for Employer

CC: Mr. Anurag Sharma, CGM/DFCCIL, Jaipur

SKS/HOM

No.65/WDO/SR/26 (Railway Board) New Delhi, October 19/20, 1966

To

The General Managers,
All Indian Railways.

The G.M. & Chief Engineer,
Railway Electrification project, Calcutta.

The Chief Administrative Officer,
B.B.K. Railway Projects, Waltair.

Sub: Use of new type of Rolling Stock.

.....

Use of new type of rolling stock on existing Railway systems is governed by the Rules laid down in Chapter VI of the Rules for opening of a Railway. In terms of para 5 of this Chapter, applications for use of new type of rolling stock are required to be accompanied by a certificate to be signed by the Chief Engineer and Chief Mechanical Engineer of a Railway in a form specified therein.

2. The Board wish to point out that this certificate by the Chief Engineer and the Chief Mechanical Engineer (and Chief Electrical Engineer in case of electrical stock) is a positive act of certification in regard to track and locomotive maintenance standards for the speed indicated and a statutory obligation. The Officers signing the certificate are required to decide, on the basis of their personal knowledge and experience of the maintenance conditions of the track, locomotives or rolling stock, with due regard to relevant information available and the maintenance requirements of the new type of rolling stock, as to whether the operation of the particular type of locomotive or rolling stock on the relevant section of the Railway is safe and practicable with the facilities available on the Railway system. The RDSO merely recommend the maximum speed at which locomotives and rolling stock could be permitted to run on standard track under average maintenance conditions and this recommendation is made only on the basis of design features of the particular type of locomotive, rolling stock and assessment of their suitability from oscillation and other tests conducted by the RDSO. These certificates for speed issued by RDSO are meant merely to assist the CEs and CMEs/CEEs in deciding on the speed at which these engines/rolling stock may be permitted to run on their Railway system for the maintenance conditions obtaining on their Rlys.

3. A note on the subject prepared by the DG/RDSO is enclosed herewith in quadruplicate for guidance of your officers.

4. Receipt of this letter may please be acknowledged.

Sd/-
(B.S.D. Baliga)
Director, Civil Engineering,
Railway Board
New Delhi, October 19/20, 1966.

DA: As above.

No.65/WDO/SR/26

Copy to D.G. RDSO, Alambagh, Lucknow with reference to his letter No.MRA/573 of 16.8.1966.

Sd/-
(B.S.D. Baliga)
Director, Civil Engineering.
Railway Board.

Enclosure to Board's letter No.65/WDO/SR/26 dated 19-10-66.

....

Use of new types of Rolling Stock.

The rules for use of new types of rolling stock on existing railways are laid down in Chapter VI of the Rules for Opening of a Railway. According to para 5 of this Chapter, applications for use of new type of rolling stock arerequired to be accompanied by a certificate to be signed by the Chief Engineer and the Chief Mechanical Engineer of the Railway in the form specified in para 5(a)(ii). It should be clearly understood that this certificate by the Chief Engineer and the Chief Mechanical Engineer(Chief Electrical Engineer in the case of Electrical Stock) is a positive act of certification and a statutory obligation.

2. The Chief Engineers and Chief Mechanical Engineers (Chief Electrical Engineers in the case of electric stock) are required to decide on the basis of their personal knowledge and experience of track, locomotives or rolling stock with due regard to relevant information available of track and rolling stock and their maintenance requirements, as to whether the operation of particular locomotive or rolling stock is safe and practicable with the facilities provided on the railway system. It may be emphasized that respective Heads of Departments are required to certify annually regarding the sound condition of the track and rolling stock in operation in terms of para 1522 of Indian Railway Code for Accounts department.

3. Prior to the setting up of testing facilties on the Indian Railways, the safety certificate for operation of locomotives and rolling stock was issued by the Chief Engineer and Chief Mechanical Engineers on the basis of their personal knowledge and experience and on the basis of the recommendation for speed limit by the consulting engineers, who available. With the build up of increased design and testing facilities in RDSO, due recommendation is made by RDSO on the basis of design features of particular stock and assessment of their stability from oscillation tests conducted on main line track in normal state of maintenance and not subjected to speed restriction.

4. R.D.S.O. advises the Railway of the speed at which different types of locomotive and rolling stock can be permitted to run on different track structures. This is done in two stages:

(a) preliminary speed; and

(b) final maximum speed.

The preliminary speed is based on a study of the design characteristics of the vehicle and experience of performance of similar designs in India and/or abroad. Such speed would be generally lower than the sectional maximum speed and it would not be difficult for CEs and CMEs to arrive at a decision in issuing the Safety Certificate. Further, it is up to the CEs to decide whether any particular sections or routes require the imposition of a restriction on a generally sanctioned speed. Such a decision has to be based purely on the personal knowledge and experience of the engineers of the zonal railways.

5. It is, however, necessary to keep a watch on the performance of vehicles permitted on such preliminary speed limit to gather experience for guidance in determination of the final maximum speed both by RDSO and Railways the former taking this aspect into account along with the review of the oscillation test, and the latter while issuing the certificate for the final maximum speed. The final maximum speed is determined by the RDSO on review of the oscillation tests generally conducted for new designs and on confirmation of the suitability of the stock from the point of view of strength of track and bridges, although such investigation is made even at the initial stage of design. The oscillation trials are conducted with a view to obtaining data relating, inter-alia to the riding characteristics of the vehicle at the specified speeds. Such tests include aspects, such as, vertical wheel/axle load and lateral force ratio and vertical and lateral acceleration of the vehicle. The studies are aimed at assessing the possibilities of track distortion, wheel mounting, riding comforts etc. For conducting these tests, a section of main line track is selected over which there are no temporary restrictions and which is considered by the railway as being in a generally run down condition for main line standards but without speed restriction. The vehicle is tested generally for new and worn clearance conditions and also where relevant for operation in the forward or back-ward direction. The vehicle selected is one of those in average condition of normal maintenance. The tests are conducted on speeds usually 10% higher than that to which it is proposed to be certified.

On the basis of the theoretical studies and investigations of the tests as indicated and the analysis of the test results, the RDSO recommends the maximum speeds up to which a vehicle may be permitted in normal traffic operation. The certificate of the RDSO though issued by the Director Standards(Mech.) is the final result of studies conducted by the various concerned

Directorates such as Civil Engineering, Carriage and Wagon Motive Power etc. This recommendation of the RDSO is meant to be used as guidance by the CEs and CMEs of the zonal railways in formulating their own certificates to be furnished to the ACRS. It is upto Chief Engineer, Chief Mechanical Engineers and Chief Electrical Engineers to consider on the basis of their personal knowledge and experience of track locomotive and rolling stock and their maintenance requirements whether the conditions prevailing are such as to require a reduction in the speed of the vehicles in normal traffic operation.

6. In the case of certification of speeds by the CEs and CMEs up to 105 Km/hr., it is neither feasible nor it is considered necessary that any more guidance than that at present being given by RDSO should be available to them in normal cases in arriving at their conclusions in the matter of formulation of their certificates to the ACRS. In the case of operation at higher speeds, it is proposed that in addition to the data at present being furnished, copies of track recording charts of the track over which the tests were conducted would also be incorporated in the test reports and made available for reference to the CEs and CMEs. It has already been accepted by the Board that in the case of high speed track (speed above 105 km/hr) track recording would be done at intervals of about 6 months. A comparison of the track recording for the test track with the track recording of the routes over which the high speeds are to be run would be an additional guidance to the CEs and CMEs in the formulation of their certificates.

In conclusion, it may be pointed out that the statutory obligation of certification of speeds is that of the CEs and CMEs/ and CEEs of the zonal railways. In discharging these functions, the CEs and CMEs/CEEs are assisted by the RDSO. The extent of such assistance would normally depend on the speeds involved and the facilities available with the RDSO [illegible]. The procedures, at present, followed are considered satisfactory for speeds upto 105 km/hr. For higher speeds, recording of characteristics of the test track would also be made available to the zonal railways for purpose of comparison with the actual track conditions prevailing from time to time.

....

involve large number of labour working with the machine. Hence, extra care is necessary as detailed below, to ensure safety of workers.

(b) Hooters should be provided on the track machines. These hooters should be used to warn the staff working on/around the track machine about approaching train on adjoining track. Remote controlled hooters shall also be deployed as an added precaution by SSE/JE/P.Way so that lookout man standing around 150 m away from the track machine can also operate the hooter to warn the staff suitably. SSE/JE/TM shall also put on the flasher light on as an added precaution till the train on adjacent line has passed the site of work.

(c) Caution order of 30 to 50 kmph with instructions to whistle freely should be imposed on the adjacent line, during the duration of block, for the safety of workmen, depending upon the site conditions and visibility.

(8) **Checking Infringement After Work** - The vertical and lateral clearance for OHE, signal post and any other structure should be checked and adjusted before clearing the block. It shall be ensured by SSE/JE (P.Way) working with track machine that there should be no infringement to signal post, OHE and any other structure as per schedule of dimensions.

708 Failure and Accidents of Track Machines

(1) **Protection in case of Breakdown** - In the event of breakdown, the track machines shall be protected as per GR 6.03 and SR there to by the machine staff, as directed by machine in-charge.

(2) **Failures in Block Section** - Failures in block sections of the track machines will be treated as accident under class 'J – Equipment failure'.

(3) **Accidents involving Track Machine** - Accidents involving track machines shall be treated as train accidents under the appropriate class and action shall be taken as per the rules in force.

(4) **Action in case of Failure in Block** - In case of failure of track machine in block section, immediate information with details should be conveyed to the ADEN/DEN/Sr.DEN of the section and the AXEN/XEN/Dy.CE/Line/TM. SE/JE/TM should decide in consultation with SSE/JE (P. Way), the action to be taken to clear the section. They may decide to push the disabled unit to the nearest station provided the brake power is in good condition. Otherwise, intimation shall be sent to the nearest Station Master asking for a light engine to tow the unit.

(5) **Request for ART/Breakdown** - In case, SSE/JE (P. Way) and/or SSE/JE/TM feels clearance of section is going to take long time, the assistance of Road Breakdown or Accident Relief Train shall be asked for immediately. Meanwhile SSE/JE/TM in-charge on the machine shall take necessary action to rectify the defect(s). SSE/JE (P. Way) shall provide all necessary assistance.

certificate. Machine competency certificate is to be issued to SSE/JE/TM by Dy.CE/TM Line or an officer authorized by him. This certificate will be issued as per proforma given in **Annexure 7.3** after ascertaining the successful completion of technical training, G & SR training and his medical fitness. The validity of this certificate will be up to the earliest expiry date of the three i.e. (i) Technical training (ii) G & SR training and (iii) PME.

For automatic block section, separate competency is required to be issued as per the practice in the Zonal Railway.

704 Safety Equipment

(1) **General** - SSE/JE/TM in-charge shall be responsible to ensure that the following equipment in working condition are available on the track machine:

(a) Two red and one green hand signal flags.

(b) Two tri-colour hand signal lamps /LED torch.

(c) Two chains with padlocks.

(d) One fire extinguisher in each cabin.

(e) Two hooters (manually controlled).

(f) Two jacks10 t.

(g) Four wooden blocks.

(h) Four crow bars.

(i) One hydraulic hand pump.

(j) Emergency pneumatic/hydraulic hose off sizes suiting to different machines (Complete with end fitting).

(k) Wire rope with close loops at both ends 2 m and 9 m long for BCM: One of each length.

(l) Machine specific equipment, if any, listed in Chapter 2, 3, 4 and 5.

(m) Ten fog signals (detonators) in a tin case.

(n) A copy of the working timetable of the section where the machine is working.

(o) G & SR book with up to date amendment slips.

(p) One 4 cell flasher light LED lamp cum flasher light (rechargeable).

(q) Two banner flags.

(r) One first aid box.

(s) Two skids.

(t) Safety helmets for all machine staff.

(u) Protective clothing, safety shoes and safety gloves.

(v) Walkie talkie with frequency of SM, Guard and Loco Pilots.

(w) Internal communication system like walkie-talkie and/or head mounted system.

(x) Track Machine Manual with up to date correction slips.

(y) Accident Manual.

(z) Tail lamp.

(2) **Head and Tail Lights –** Each track machine must be equipped with prescribed head and tail lights, marker lights and flasher lights as per GR 4.14, 4.15 & 4.16 and SRs thereof. Each machine shall display LV board/tail lamp when moving alone. While moving in conveyor coupled, the LV board/tail lamp shall be fixed on the last vehicle; in the direction of movement.

705 Rules for Operation – General

(1) **Stabling of Track Machines -** When the track machine(s) is/are stabled at a station, SSE/JE/TM in-charge shall ensure that it is clear of fouling marks and traps and necessary precautions against rolling down such as pinning down hand brakes, chaining and provision of skids; is taken in accordance with G&SR.

(2) **Shunting of Track Machines -** No track machine shall be moved between a running line and the siding/stabling line without the written permission of the Station Master on duty in the form of shunting order/shunt signals.

(3) **Machine Ready Memo -** SSE/JE/TM shall issue a written machine ready memo (as per Annexure 7.4) after necessary maintenance/repairs/schedules and Brake Power testing and other stipulated checks, if any, to on duty SM, indicating time and date, under advice to SSE/JE/P.Way deputed to work with the machine.

(4) **Movement of Track Machines -** When the track machine is required to move from one station to another station, SSE/JE/TM shall run the machine only with proper authority to proceed and all necessary permits, notices and cautions as specified in G&SR. When track machine is to move on wrong road (against the direction of traffic), the speed of track machine shall not exceed more than 25 kmph and flasher light shall be kept "ON".

(5) ***Working in Group***

(a) When more than one machine is required to work within the same block section, these machines may be allowed to move into the block section in a group under one authority as detailed in this chapter. In such situation all the track machines must leave and enter the section simultaneously one after another keeping adequate distance among them and with proper authority as detailed further in the following paras.

(b) Total number of the machines shall be clearly mentioned in the line clear/block authority message with exchange of private numbers. For