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FINAL SPEED CERTIFICATE FOR OPERATION

No.	SV.FIAT (SC)/LWACCNAA/160kmph	Date	08.01.2021

महाप्रबन्धक (इंजीनियरिग)

1. मध्य रेलवे, छत्रपति शिवाजी महाराज टर्मिनस, मुम्बई– 400001.
2. पूर्व रेलवे, फेयरलीप्लेस, कोलकाता– 700001.
3. उत्तर रेलवे, बड़ौदा हाउस, नईदिल्ली– 110001.
4. दक्षिण रेलवे, पार्क टाउन, चेन्नई– 600 003.
5. दक्षिण मध्य रेलवे, रेलनिलायम, सिकन्दराबाद– 500025.
6. दक्षिणपूर्व रेलवे, गार्डेनरीच, कोलकाता– 700043.
7. पूर्वोत्तर रेलवे, गोरखपुर– 273001.
8. पूर्वोत्तर सीमान्त रेलवे, मालीगॉव, गुवाहाटी– 781011.
9. पश्चिम रेलवे, चर्चगेट, मुम्बई– 400020.
10. पूर्व मध्य रेलवे, हाजीपुर– 844101.
11. पूर्वतटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्पलेक्स, भुवनेश्वर – 751 017.
12. उत्तर मध्य रेलवे, सूबेदारगंज, प्रयागराज– 211011.
13. उत्तर पश्चिम रेलवे, जयपुर– 302006.
14. दक्षिण पश्चिम रेलवे, हुबली– 580023.
15. पश्चिम मध्य रेलवे, जबलपुर– 482001.
16. दक्षिणपूर्व मध्य रेलवे, आर ई आफिस काम्पलेक्स, बिलासपुर– 495004.

Sub	**Final Speed Certificate for operation of LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 kN capacity) at the secondary stage on FIAT bogies up to a maximum speed of 160 kmph over Indian Railways on track maintained as per provisions of Indian Railways Permanent Way Manual, June-2020, containing track geometry standards under Para 522.**

1. IMPORTANT PARAMETERS RELATED TO ROLLING STOCK

Type	Final / Provisional / Oscillation Trial / COCR	Operation	Validity/ Period or Permanent	IR / Sectional	Permanent

Stock Name	LHB EOG AC-3 Tier coach	Designed Axle Load capacity	16.25t	Max. Axle Load capacity	16.25 t

Transportation Code	LWACCNAA	GA Drg. No.	RCF Layout Drg. no.LE 90009

Commodity	Passengers	**Gauge**	BG

Type of Bogie	FIAT	**Type of Coupler**	CBC	**Wheel Dia. (mm)**	New: 915 / Worn: 845

Max. Permissible Speed	**Empty**	160 kmph	Loaded	160 kmph

	INTRODUCTION

1.1.	RDSO has conducted oscillation trials of LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 kN capacity) at the secondary stage on Fiat bogies. The Coach is manufactured as per RCF Layout Drg. no. LE90009. The Salient features of this coach are as under:- (i) The coach is on LHB platform with FIAT Bogie. (ii) Coach has been built with state of the art technology and provided with Disc Brakes and CBC coupling. (iii) Length of the coach over body is 23540mm & that over couplers is 24000mm. (iv) Overall height of coach from rail level is 4250mm. (v) Wheel base is 2560 mm.
1.2.	(i) Detailed oscillation trials of LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 KN capacity) at secondary stage on FIAT bogies up to maximum test speed of 180 kmph over NAD-KOTA-SWM (Up & Down) BG section of West Central Railway on track maintained as per para 607 of IRPWM third reprint-2019. The test results as contained in RDSO's report no. RDSO/2020/TG/MT-1708-F/Rev.0/Amendment-Nil dated 14.08.2020 and corrigendum no. RM 2/C/49 Dated 28.09.2020 for LWACCNAA coach, indicate satisfactory riding and stability characteristics in empty and loaded condition on straight track, station yard and curved sections on track up to the test speed of 180 kmph. (ii) Detailed oscillation trials of LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 KN capacity) at secondary stage on FIAT bogies up to maximum test speed of 115 kmph over Jogighopa - Kamakhya (JPZ-KYQ) section of Northeast Frontier Railway on track maintained as per para 607 of IRPWM third reprint-2019. The test results as contained in RDSO's report no. RDSO/2018/TG/MT- 1538 /F Rev.-0 Dt. 30.05.2018 Amendment – NIL and corrigendum no. RM 2/C/49 Dated 02.11.2020 for LWACCNAA coach, indicate satisfactory riding and stability characteristics in empty and loaded condition on straight track, station yard and curved sections on track up to the test speed of 115 kmph.

2.0	Based on the above trial results, it is certified that of LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 kN capacity) at secondary stage on FIAT bogies is fit for operation up to a maximum speed of 160 kmph over Indian Railways on track maintained as provisions of Indian Railways Permanent Way Manual, June-2020, containing track geometry standards under Para 522 with the conditions laid down as follows:

2.1	**TRACK DETAILS & SPEED:**

2.1.1	**For speed up to 110kmph**
2.1.1.1	The track shall be to a minimum standard of 52kg (72UTS) rail laid on PSC sleeper with 1540 Nos./Km on 250mm ballast cushion below the sleepers which may consist of 100mm clean and rest in caked up condition, on compacted and stable formation.
2.1.1.2	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 dt 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.
2.1.1.3	The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual, June – 2020. Maximum cant deficiency permitted would be 100mm.
2.1.1.4	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and AT welding manual and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per provisions of the Indian Railways Permanent Way Manual, June – 2020. 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.
2.1.1.5	Zonal Railway may 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 the Indian Railways Permanent Way Manual, June – 2020 regarding permanent way renewals and may suitably restrict maximum speed of operation based on such examination.
2.1.2	**For speed more than 110kmph and up to 130kmph**
2.1.2.1	The track shall be to a minimum standard of 52kg (90UTS) rail laid on PSC sleeper with 1540 Nos./km on 250mm ballast cushion below the sleepers which may consist of 100mm clean and rest in caked up condition, on compacted and stable formation.

2.1.2.2	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 dt 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.
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2.1.2.5	Zonal Railway may 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 the Indian Railways Permanent Way Manual, June – 2020 regarding permanent way renewals and may suitably restrict maximum speed of operation based on such examination.
2.1.2.6	All turnouts shall be fixed heel curved switches laid on PSC sleeper layout with CMS crossings.
2.1.2.7	Sleeper on bridges (other than ballasted deck) would be steel channel/H-beam/Composite sleepers.
2.1.3	**For speed more than 130kmph and up to 160kmph**
2.1.3.1	The track shall be to a minimum standard of 60kg (90UTS) rail laid on PSC sleeper with 1660 Nos./Km on 300mm ballast cushion below the sleepers which may consist of 150mm clean and rest in caked up condition, on compacted and stable formation.
2.1.3.2	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 dt 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.
2.1.3.3	The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual, June –2020. Maximum cant deficiency permitted would be 100mm.

2.1.3.4	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and AT welding manual and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per provisions of the Indian Railways Permanent Way Manual, June – 2020. 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.
2.1.3.5	Zonal Railway may 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 the Indian Railways Permanent Way Manual, June – 2020 regarding permanent way renewals and may suitably restrict maximum speed of operation based on such examination.
2.1.3.6	All the turnouts in facing direction shall be laid with thick web switches with provision of clamp type lock. All the crossings shall be CMS crossing. All other turnout shall be of fixed heal curved switch type with CMS crossing.
2.1.3.7	All the SEJs shall be of improved type.
2.1.3.8	Sleeper on bridges (other than ballasted deck) would be steel channel/H-beam/Composite sleepers.
2.1.3.9	Track geometry shall be monitored once in two months by Track Recording Car, once a month by OMS and once in four month by Oscillograph Car.
2.1.3.10	Improvement on track geometry parameters on the route of operation of the train to be carried out as required.

2.2	**BRIDGE STIPULATIONS:**

2.2.1	The clearance refers to bridges "Standard Spans" with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by ROSO for BGML. RBG and MBG-1987 standard loadings. However, the bearings of span 76.2 m (clear) designed for BGML standard loading as per ROSO's drawing No. BA- 11154 should be strengthened by providing two additional anchor bolts.
2.2.2	Superstructures & bearings of "Special Spans" (designed and constructed by Zonal Railways based on site requirements) including Arches and sub-structures of all bridges (all Standard & Special Spans) are to be examined under the directions of Chief Bridge Engineer concerned and certified safe with respect to current Indian Railway standard codes with up to-date correction slips.
2.2.3	The clearance for LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 kN capacity) at the secondary stage on FIAT bogies is subject to the following parameters:- Maximum axle load capacity : 16.25 t Maximum braking force at rail level : 5.8 t Maximum CG height from rail level : Not exceeding 1830mm

2.2.4	Specific restrictions are applicable as mentioned in relevant Speed Certificates of hauling single/multiple locomotives attached issued by RDSO.
2.2.5	The above clauses have been arrived considering bridges are in physically sound condition. In case the bridges are not in satisfactory physical condition, necessary speed restriction to be impose by concerned Chief Bridge Engineer of Zonal Railway.
2.2.6	Location of bridges on which speed restrictions are imposed shall be notified by the Railways and incorporated in the working timetable

2.3	**SIGNALLING STIPULATIONS**

i)	Provisions of GR, SR, IRSOD, SEM & all extant instructions issued from time to time, as applicable, shall be complied with.
ii)	In case of train (having this coach 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 A&C no. 09 of SEM Pt-I shall be taken.

2.4	**TRACTION STIPULATIONS:**

2.4.1	In 25 KV AC traction area, the PCEE of the Railway shall have to ensure that the minimum height of Contact Wire and electrical clearance as stipulated in provisions of Chapter-V and V-A, Electric Traction 'Schedule of Dimensions of 1676 mm Gauge (BG) revised 2004' with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.
2.4.2	In addition to above, the Principal Chief Electrical Engineer of the Concerned Railway may impose any temporary speed restrictions on the basis of personal knowledge and experience of sectional OHE and the field conditions prevailing on the particular section.

2.5	**ROLLING STOCK STIPULATIONS**

2.5.1	Before starting the operation, the PCME of the concerned Railway shall arrange to certify the track worthiness and safety of the Rolling stocks.
2.5.2	In case of air spring gets deflated, the speed shall be limited to 60kmph. This has to be manually implemented by loco pilot.
2.5.3	The stock (LWACCNAA) is LHB type coach and maintenance instructions contained in "Maintenance Manual for LHB Coaches" issued by CAMTECH shall be followed.

2.6	**GENERAL STIPULATIONS**

2.6.1	All the permanent and temporary speed restrictions in force and those that may be imposed from time to time due to track, bridges, curves, signaling and interlocking etc. shall be observed.
2.6.2	The LHB EOG AC-3 Tier coach (LWACCNAA) Coach fitted with pneumatic suspension(160 kN capacity) at the secondary stage does not infringe any clause of chapter -IV (A) of IRSOD (BG) Revised-2004 with latest addendum and corrigendum slips.
2.6.3	The track structure has been specified to standards laid down by Railway

	Board through letter no. 2014/CE-II/TSC/1Pt.1 dated 8th Sep 2016 for speed above 110kmph and up to 160kmph. The same has been circulated to all Zonal Railways vide letter no. CT/Tech Mission/High Speed dated 19.09.2016. The conditions stipulated in the letter shall be followed by Zonal Railway. CT-20 may also be referred for operation of train at 160kmph.
2.6.4	Track maintained to C&M-1, Vol-I/other than C&M-1, Vol-I standard/Para 607 of Indian Railway Permanent Way Manual Third Reprint 2019 in this speed certificate shall be considered as track maintained as per provisions of Indian Railways Permanent Way Manual, June – 2020, containing track geometry standards under Para – 522.
2.6.5	Zonal Railway must ensure COCR/Route proving run with LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 kN capacity) at the secondary stage on FIAT bogies shall be conducted as per extant stipulation of Policy Circular No. 6(Revised-2018) before start of operation/introduction of LHB EOG AC-3 Tier coach (LWACCNAA) fitted with pneumatic suspension (160 kN capacity) at the secondary stage on FIAT bogies in passenger train.
2.6.6	**For speed more than 110kmph and upto 130kmph**
2.6.6.1	Concerned Zonal Railway shall ensure provision of fencing at vulnerable location on need basis.
2.6.6.2	All the level crossings shall be manned with telecommunication facilities and preferably interlocked.
2.6.7	**For speed more than 130kmph and upto 160kmph**
2.6.7.1	All the level crossing shall be manned with telecommunication facilities and interlocked. Removal of level crossings with grade separator shall be planned.
2.6.7.2	Concerned Zonal Railway shall ensure provision of sturdy fencing all along the track.
2.6.7.3	Action to be taken for relocation/modification of engineering signals in consultation with S&T and OHE department of Zonal Railways.
2.6.7.4	Stretches of existing weak formations (where permanent/temporary speed restriction is imposed), if any, shall be planned to be rehabilitated/strengthen first before permitting higher speed.
2.6.7.5	Zonal Railways should also plan subways at suitable location to avoid trespass and ensure effectiveness of fencing provided.
2.6.7.6	The visibility at level crossing should be as laid down in IRPWM/Railway Board's instructions. All requirements pertaining to level crossing as laid down in IRPWM/Railway Board's instructions should be fulfilled to ensure safety at level crossing. Drainage of the level crossing and adjoining track should be in good condition.

ENCLOSURES: / संलग्नकः

RCF Layout drawing no. LE 90009.

(Signed)
(वी.के.अग्रवाल)
कार्यकारी निदेशक मानक/चालन शक्ति

प्रतिलिपि.

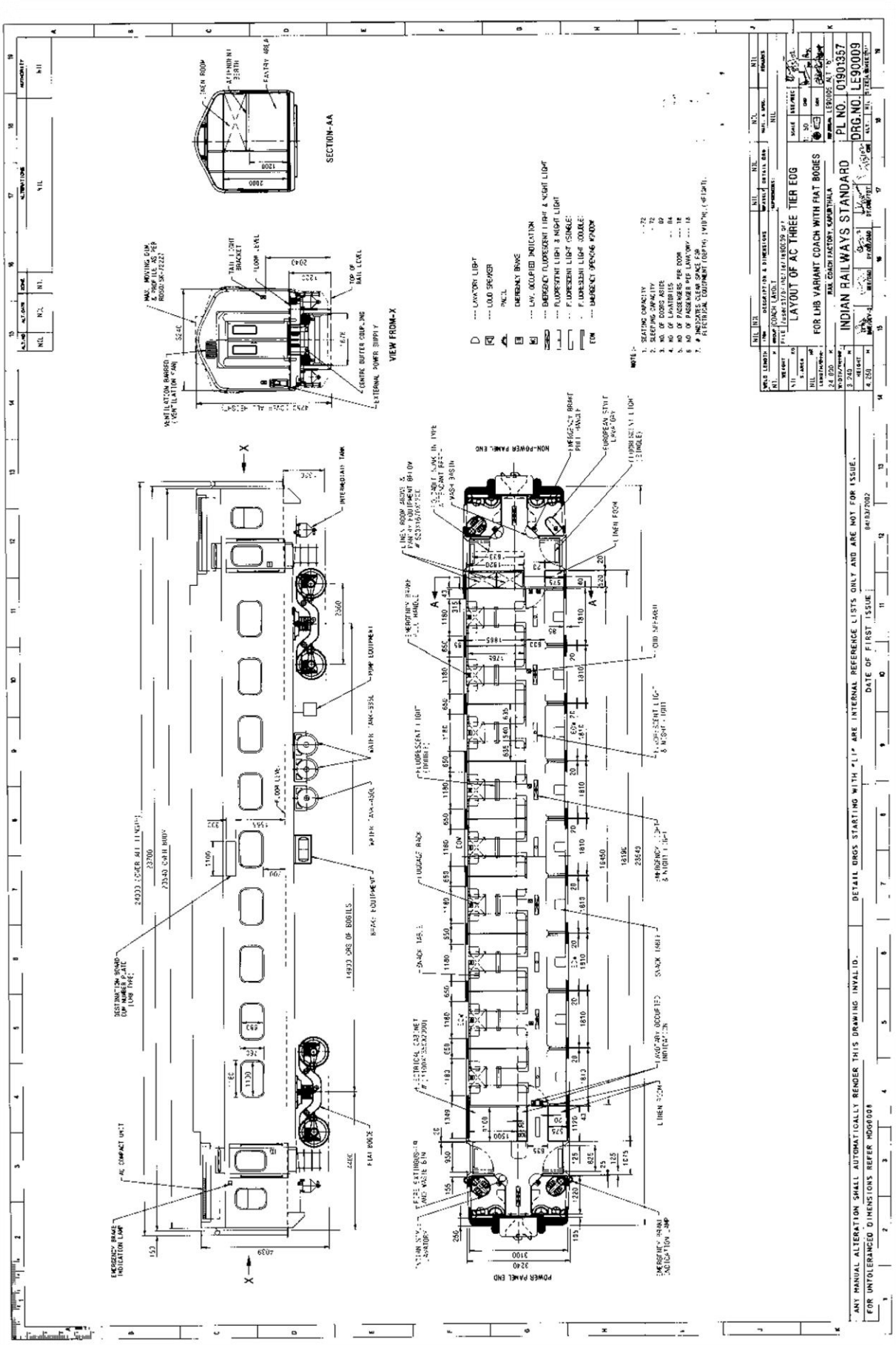
1. सचिव(यांत्रिक/इलेक्ट्रिकल/इंजीनियरिंग)–रेलवे वोर्ड, रेल भवन, नई दिल्ली.110 001.
2. मुख्य रेल संरक्षा आयुक्त, मण्डल रेल प्रबन्धक कार्यालय, पूर्वोत्तर रेलवे परिसर, अशोकमार्ग लखनऊ..
3. महाप्रबन्धक (यॉत्रिक/विद्युत/परिचालन/संकेत एवं दूरसंचार)
   - i) मध्य रेलवे, छत्रपति शिवाजी महाराज टर्मिनस, मुम्बई– 400 001.
   - ii) पूर्वरेलवे, फेयरली प्लेस, कोलकाता– 700 001.
   - iii) उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली– 110 001.
   - iv) दक्षिण रेलवे, पार्क टाउन, चेन्नई– 600 003.
   - v) दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद– 500 025.
   - vi) दक्षिण पूर्व रेलवे, गार्डेन रीच, कोलकाता– 700 043.
   - vii) पूर्वोत्तर रेलवे, गोरखपुर– 273 001.
   - viii) पूर्वोत्तर सीमान्त रेलवे, मालीगॉव, गुवाहाटी– 781 011.
   - ix) पश्चिम रेलवे, चर्चगेट, मुम्बई– 400 020.
   - x) पूर्व मध्य रेलवे, हाजीपुर– 844 101.
   - xi) पूर्वतटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्पलेक्स, भुवनेश्वर, 751017.
   - xii) उत्तर मध्य रेलवे, सूबेदारगंज, प्रयागराज– 211 011.
   - xiii) उत्तर पश्चिम रेलवे, जयपुर– 302 006.
   - xiv) दक्षिण पश्चिम रेलवे, हुबली– 580 023.
   - xv) पश्चिम मध्य रेलवे, जबलपुर– 482 001.
   - xvi) दक्षिणपूर्व मध्य रेलवे, आरई आफिस काम्पलेक्स, बिलासपुर– 495 004.
4. प्रबन्ध निदेशक, कोंकण रेलवे कार्पोरेशन, बेलापुर भवन नवीमुम्बइ –400 014 .

ENCLOSURES: / संलग्नकः

RCF Layout drawing no. LE 90009

Signed by Vinay Kumar Agarwal
Date: 08-01-2021 18:03:16
Reason: Approved

(वी.के.अग्रवाल)
कार्यकारी निदेशक मानक/चालन शक्ति


SECTION-AA
VIEW FROM-X
LAYOUT OF AC THREE TIER EOG
FOR LHB VARIANT COACH WITH FIAT BOGIES
INDIAN RAILWAYS STANDARD
PL NO. 01901357
DRG.NO. LE90009
ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.
DETAILS DRGS STARTING WITH "LF" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.
FOR UNTOLERANCED DIMENSIONS REFER MDG0001
DATE OF FIRST ISSUE
NON-POWER PANEL END
POWER PANEL END