भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ – 2226011
EPBX (0522) 2451200
Fax (0522) 2458500

Government of India – Ministry of Railways
Research Designs & Standards Organisation
Lucknow – 226011
DID (0522) 2450115
DID (0522) 2465310

FINAL SPEED CERTIFICATE FOR OPERATION

No.	TM/HM/11/22/BRM	Date	As Signed

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

Sub:	Final Speed Certificate for operation of Ballast Regulating Machine, Model "PBR 400R" (**Transportation Code- CBRM400RP)** manufactured and supplied by M/s Plasser, India upto maximum speed of 45kmph when running on its own power as well as when running in train formation as a dead vehicle over Indian Railways BG routes.

Ref:	Railway Board's Contract No. 2005/Track-III/MC/6 dated 01.12.2006.

1.0 IMPORTANT PARAMETERS RELATED TO ROLLING STOCK

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

Stock Name	Ballast Regulating Machine Model "PBR 400R"	Max. Axle Load	10t

Transportation Code	CBRM400RP	GA Drg. No.	M/s Plasser Drg. No. CRW00.181A & CRW00.181A-I

Bogie Arrgt. Drg. No.	NA	Suspension Arrgt. Drg. No.	M/s Plasser Drg. No. CU61.1700-II

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

Type of Bogie	NA	Type of Coupler	Screw Coupler	Wheel Dia.(mm)	730

Max. Permissible Speed for IR	Own Power	45kmph	Train Formation	45kmph

2.0	INTRODUCTION

2.1	Ballast Regulating Machine, Model "PBR 400R" manufactured and supplied by M/s Plasser, India as per their GA Drg. No. CRW00.181A & CRW00.181A-I is a self- propelled machine and used for regulation of track ballast to obtain required ballast profile. The machine was permitted to run provisionally upto maximum speed of 50kmph when running on its own power as well as when running in train formation as a dead vehicle as per provisional speed certificate no. TM/HM/11/22/BRM dated 20.02.2020 against design speed of 75kmph when running on its own power and 80kmph when running in train formation as a dead vehicle. Subsequently the detailed oscillation trial was conducted and the machine has shown satisfactory running behaviour upto 50kmph on its own power and 55kmph when running in train formation as a dead vehicle as results contained in Oscillation trial report No. RDSO/2022/TG/MT-1836-F/Rev.-0/Amendment-Nil dated 27.01.2022. As per the trial report mentioned above, the test vehicle (Ballast Regulating Machine, Model "PBR 400R") shown riding & stability characteristics values within limits at test speed upto 50kmph on its own power and 55kmph in train formation as a dead vehicle.
2.2	Ballast Regulating Machine, Model "PBR 400R" with maximum axle load 10t and the design speed of the machine is 75kmph when running on its own power and 80kmph when running in train formation as a dead vehicle. The design details are given in Annexure-A.

3.0	Based on design features of the machine, supplied by M/s Plasser, India and satisfactory test results as indicated in oscillation trial Report no. RDSO/2022/TG/MT-1836-F/Rev.-0/Amendment-Nil dated 27.01.2022, it is certified that the Ballast Regulating Machine, Model "PBR 400R" to GA Drg. No. CRW00.181A & CRW00.181A-I and **Transportation Code 'CBRM400RP'** may be permitted to run on regular basis upto a maximum speed of 45kmph when running on its own power as well as when running in train formation as a dead vehicle, subject to the following conditions:

3.1	**TRACK**				
3.1.1	**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)	1540 Nos./km PSC Sleeper	250mm (100mm clean & rest in caked up condition, on compact and stable formation)	Upto 45kmph	Upto 45kmph
3.1.2	Track geometry standards shall be maintained to as per provisions of Indian Railways Permanent Way Manual, June-2020, containing track geometry standards under Para 522.				
3.1.3	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.				
3.1.4	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 75mm.				
3.1.5	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and Indian Railways Permanent Way Manual, June-2020 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, 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.				
3.1.6	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, June-2020, regarding permanent way renewals and shall suitably restrict maximum speed of operation based on such examination.				

3.2	BRIDGE STIPULATIONS
3.2.1	The clearance refers to “Standard RDSO Spans” bridges with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for BGML, RBG, MBG and 25t loading-2008 standard loadings.
3.2.2	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.
3.2.3	The clearance is subject to the following parameters of Ballast Regulating Machine, Model “PBR 400R” :

Rolling Stock	Maximum axle load (t)	Maximum tractive effort (t)	Maximum braking force at rail level per axle (t)	Maximum CG height from rail level (mm)
Ballast Regulating Machine	10	3.9	0.788	1200

3.2.4	All Standard RDSO spans of BGML, RBG, MBG and 25t loading-2008 loading are fit for proposed speed of 45kmph when running on its own power as well as when running in train formation as a dead vehicle.
3.2.5	During operation of Ballast Regulating Machine, Model “PBR 400R” 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.
3.2.6	Location of bridges on which speed restrictions are imposed should be notified by the Railways and incorporated in the working timetable.
3.2.7	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.
3.2.8	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.

3.3	SIGNALLING STIPULATIONS
3.3.1	Provisions of GR, SR, IRSOD, 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 Ballast Regulating Machine, Model “PBR 400R”, the Chief Engineer/Track Machine of the concerned Railway 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 Ballast Regulating Machine, Model “PBR 400R” manufactured and supplied by M/s Plasser, India shall be in perfect working condition during the operation.

3.5	TRACTION INSTALLATION
3.5.1	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.
3.5.2	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.
3.5.3	When the Ballast Regulating Machine, Model "PBR 400R" 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, June-2020.
3.6.2	The design of Ballast Regulating Machine, Model "PBR 400R", manufactured and supplied by M/s Plasser, India infringes clause 11, 18(a) and 19(a) of Chapter IV (D) of Indian Railways Schedule of Dimensions (BG) Revised, 2022. Railway Board has condoned these infringements vide their letter No. 2008/CEDO/SR/03 dated 07.05.2008.
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 3.1.4 of this speed certificate.
3.6.4	In case of emergency, the machine shall be attached with passenger/goods trains and operation speed of passenger/goods trains shall not be more than 45kmph.
3.6.5	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.
3.6.6	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.
3.6.7	This Final Speed Certificate is valid for Ballast Regulating Machine, Model "PBR 400R" coming under Railway Board's Contract No. 2005/Track-III/MC/6 dated 01.12.2006.

ENCLOSURES:/ संलग्नकः

i)	Annexure-A
ii)	M/s Plasser GA Drg. No. CRW00.181A & CRW00.181A-I.
iii)	Suspension Arrangement: M/s Plasser Drg. No. CU61.1700-II
iv)	Railway Board's letter No. 2008/CEDO/SR/03 dated 07.05.2008.
v)	Railway Board's letter No. 87/M(C)/202/10/ Vol.III (Pt.) dated 23.06.2015.
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: 04-09-2024 11:01:24
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–400 614.

ENCLOSURES:/ संलग्नक:

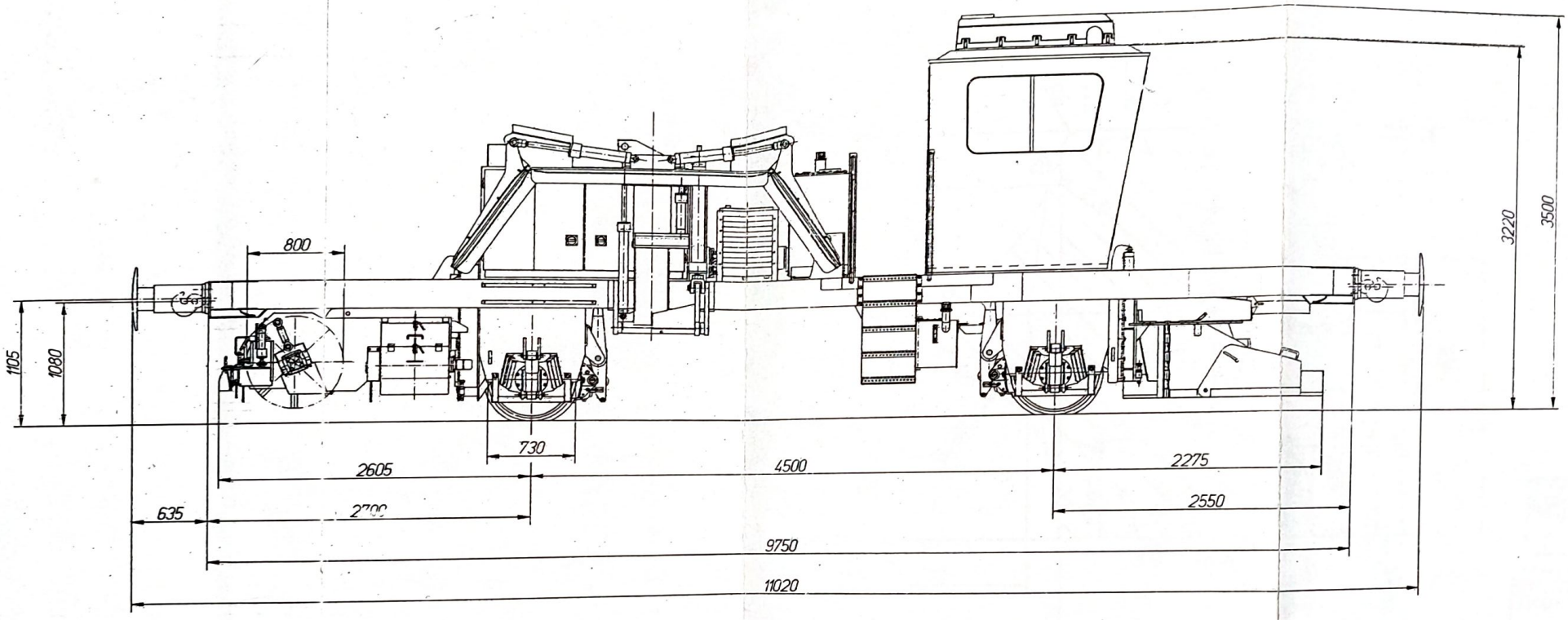
i)	Annexure-A
ii)	M/s Plasser GA Drg. No. CRW00.181A & CRW00.181A-I.
iii)	Suspension Arrangement: M/s Plasser Drg. No. CU61.1700-II
iv)	Railway Board's letter No. 2008/CEDO/SR/03 dated 07.05.2008.
v)	Railway Board's letter No. 87/M(C)/202/10/ Vol.III (Pt.) dated 23.06.2015.
vi)	Railway Board's letter 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 Ballast Regulating Machine, Model "PBR 400R", manufactured and supplied by M/s Plasser, India.

SN	Description	Details
1.	Principal dimensions of rolling stock	M/s. Plasser GA Drg. No. CRW00.181A & CRW00.181A-I a) Length over buffers : 11020mm b) Wheel base : 4500mm c) Max. axle load : 10t d) Wheel dia : 730mm e) Max. design speed i) Own power : 75kmph ii) Train formation : 80kmph f) Weight of Machine : 18t approx
2.	Suspension arrangement	Drg. No. CU61.1700-II
3.	Brake system details	Drg. No. PN-S.55249-01
4.	Details of Coupler and Buffer	Coupling Drg. No. 2000/8A(IR) Buffer Drg. No. WA/BD-199(IR)
5.	Engine	Air cooled Diesel engine
6.	Power transmission	Hydrostatic drive
7.	Safety Items	As per Para 704 of Indian Railways Track Machine Manual, September -2019.



10 t

8 t

For PLASSER INDIA PVT. LTD.

DIRECTOR

EINGESCANNT

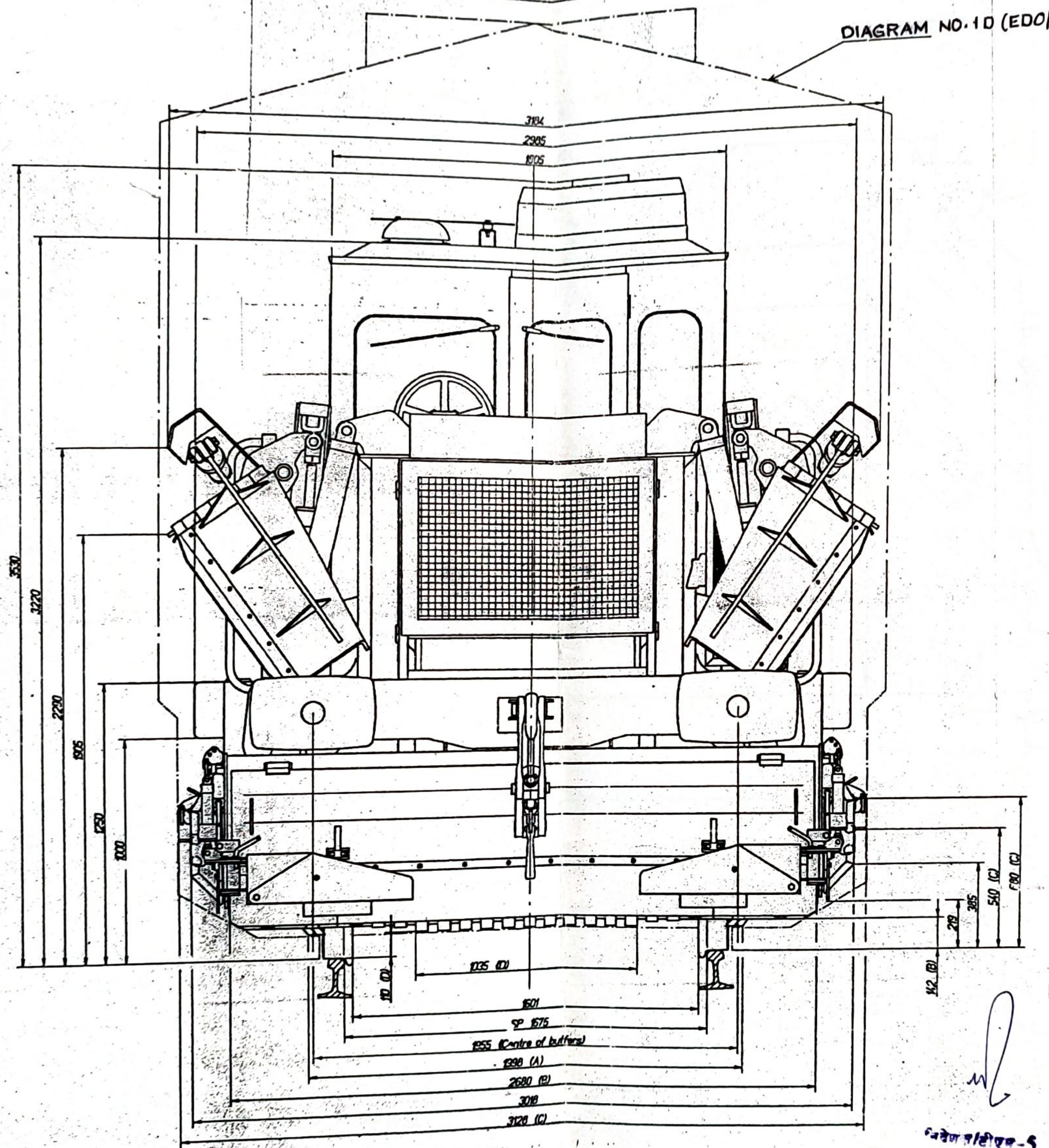
WA 55249 – Indien

v max = 75 km/h

68484

CAD	Datum	Name		FRANZ PLASSER
Ers.	04.04.2007	PRETTENTHALER		
Freigabe	04.04.2007	ME		
Maßstab 1:20		PBR 400 R		
		CRW00.131A		
		CRW00.131		

DIAGRAM NO. 1D (EDO/T-2202)



For PLASSER INDIA PVT. LTD.

DIRECTOR

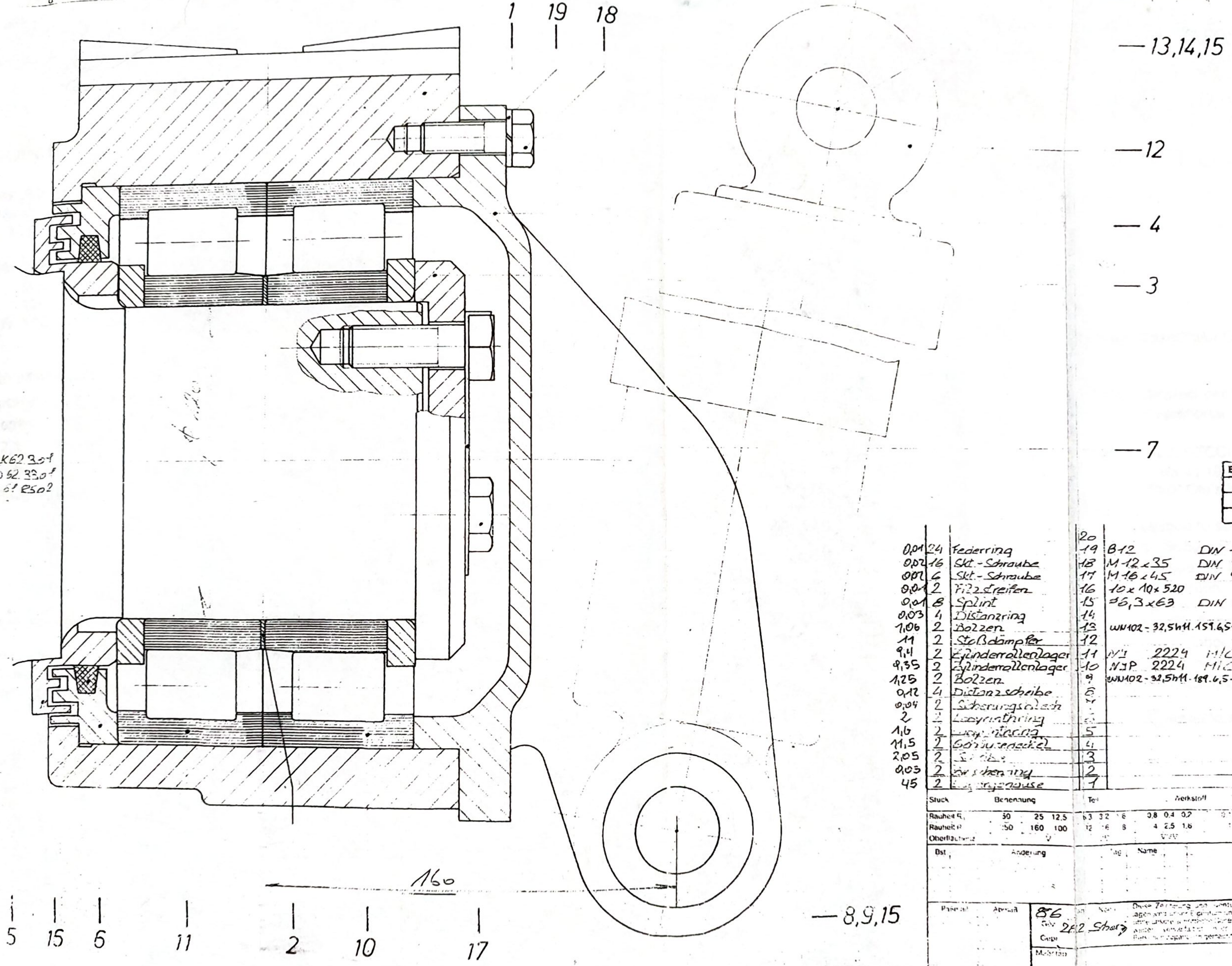
निदेशक/टीएम-5
अ० अ० मा० सं० रेल मंत्रालय
मानक नगर, लखनऊ-226011

CAD	Datum	Name
Bearb.	07.12.2007	SCHERZINGER
Freigabe	07.12.2007	MS
Maßstab 1:10		

FRANZ PLASSER
Bahnbaumaschinen
Industriegesellschaft m.b.H.
A-4020 LINZ / AUSTRIA

RUECKANSICHT

CRW00.181A-I



Gewicht	Stück	Benennung	Teil	Werkstoff	Norm	Zeichnung
			20			
0,01	24	Federring	19	B12	DIN 127 /VERZ	
0,02	16	Skt.-Schraube	18	M 12x35	DIN 933 - 8.8/VERZ	
0,02	6	Skt.-Schraube	17	M 16x45	DIN 931-8.8 /VERZ	
0,01	2	Filzstreifen	16	10x10x520		
0,01	8	Splint	15	Ø6,3x63	DIN 94/VERZ	
0,03	4	Distanzring	14			E 63.12[illegible]
1,06	2	Bolzen	13	WN102-32,5h11.159.6,5-1		E 63.119
11	2	Stoßdämpfer	12			E 63.115
9,4	2	Zylinderrollenlager	11	NJ 2224	M/C4	UD62.2618 P
9,35	2	Zylinderrollenlager	10	NJP 2224	M/C4	UD62.2610 P
1,25	2	Bolzen	9	WN102-32,5h11-189.6,5-1		UD62.216
0,12	4	Distanzscheibe	8			[illegible]
0,04	2	Sicherungsblech	7			[illegible]
2	2	Labyrinthring	6			[illegible]
1,6	2	Labyrinthring	5			[illegible]
11,5	2	Gehäusedeckel	4			[illegible]
2,05	2	Scheibe	3			[illegible]
0,03	2	Zwischenring	2			[illegible]
45	2	Lagergehäuse	1			LK62.302

Stück	Benennung	Teil	Werkstoff

Rauheit R_a	50	25	12,5	6,3	3,2	1,6	0,8	0,4	0,2	0,1	0,05
Rauheit R_t	250	160	100	12	16	8	4	2,5	1,6	1	0,56

Oberflächen

Bst.	Änderung	Tag	Name

Maßstab 1:1

Datum 86 · 2.82 Scherz

Diese Zeichnung und sämtliche Anlagen sind unser Eigentum und dürfen ohne unsere schriftliche Genehmigung weder vervielfältigt noch dritten Personen zugänglich gemacht werden.

FRANZ PLASSER

Achslagerung

ohne Abstützzylinder

CU61.1700-II

Vorb.: LK62.300

164381

68567

EINGESCANNT

SNo 24

भारत सरकार GOVERNMENT OF INDIA
रेल मंत्रालय MINISTRY OF RAILWAYS
(रेलवे बोर्ड RAILWAY BOARD)

No. 2008/CEDO/SR/03 **New Delhi, dated 07.05.2008**

The Director General/Track.,
RDSO, Manak Nagar,
Lucknow-226011.

Sub: Infringement to SOD by Ballast Regulating Machine, Model PBR 400 R, supplied by M/s Plasser,India ,design condonation thereof.

Ref: Your office letter No. CT/TMM/ GENL dt. 21.04.08 & 29.04.08

.....

With reference to your application referred above, sent through the CCRS, Lucknow, the sanction of Ministry of Railways, Railway Board is hereby communicated for condonation of the infringements to the clause 2(ii),5 ,12,19(a) & 20(a) of Chapter IV-A, of B.G. Schedule of Dimensions Revised,2004 as per details shown in Annexure I and drawings with your above mentioned letter.

(T.Gupta)
Execut ve Director Civil Engg.(G)
Railway Board.

No. 2008/CEDO/SR/03 **New Delhi, dated 07.05.2008**

Copy forwarded for information to the Chief Commissioner of Railway Safety ,compound of DRM/NER, Ashok Marg, Lucknow – 226001 w.r.t. his endorsement No. क्यू.17013/07/08- तकनि. dated 24.04.2008.

(T.Gupta)
for Secretary, Railway Board.

68433

To be faxed
to CE/Track Machines/SWR/Hubli

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)

DG
ADG
Sr. EDIED Carr.
DATE 22/6

No.87/M(C)/202/10/Vol.III (Pt.)

New Delhi, dated 23.06.2015

The Executive Director (Carriage),
R.D.S.O. /Lucknow.

Sub: Transportation code for Ballast Regulating machine model PBR 400R manufactured by M/s Plasser India.

Ref: RDSO's letter No.MC/TW dated 05.01.2015.

Reference above, following unique transportation code has been allotted to Ballast Regulating machine model PBR 400R manufactured by M/s Plasser India to layout drawing no. CRW00-181A and CRW00-181A-I.

Machine	Layout Drawing Number	Transportation code
Ballast Regulating machine model PBR 400R manufactured by M/s Plasser India	CRW00-181A, CRW00-181A-I	CBRM400RP

(Prashant Kumar)
Dir, Mech. Engg. (Chg.)
Railway Board

Copy to: EDTM

1. कार्यपालक निदेशक / मानक / सवारी डिब्बा
Exe. Dir. Std./Carriage
2. निदेशक / मानक (प्रभारी)
Director/STD. (I/c)
3. निदेशक / एस. एस.
Director/SS
4. निदेशक / सी.डी.
Director/CD
5. निदेशक / डी.ई.जी
Director/DEG
6. संयुक्त निदेशक / मानक
Jt. Director/STD
7. संयुक्त निदेशक / एस.एस.
Jt. Director/SS

01-07-15

Shri Satyendra

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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.

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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.

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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.

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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