File No.RDSO-MW0SPD(COVD)/2/2020-O/o PED/SW/RDSO

भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
EPBX (0522) 2451200
Fax (0522) 2458500

Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310

FIRST REVISED FINAL SPEED CERTIFICATE OF BCNHL WAGON FOR OPERATION OVER INDIAN RAILWAYS BG ROUTES

No.	MW/SPD/BG/BCNHL

Date	As signed

(I) महाप्रबंधक (इंजी),

1. मध्य रेलवे, छत्रपति शिवाजी महाराज टर्मिनस, मुम्बई– 400 001.
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता – 700 001.
3. उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली – 110 001.
4. दक्षिण रेलवे, पार्क टाउन, चेन्नई – 600 003.
5. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद – 500 071.
6. दक्षिण पूर्व रेलवे, गार्डेन रीच, कोलकाता – 700 043.
7. पूर्वोत्तर रेलवे, गोरखपुर – 273 012.
8. पूर्वोत्तर सीमान्त रेलवे, मालीगॉव, गुवाहाटी – 781 011.
9. पश्चिम रेलवे, चर्चगेट, मुम्बई – 400 020.
10. पूर्व मध्य रेलवे, हाजीपुर – 844 101.
11. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्पलेक्स, चन्द्रशेखरपुरा, भुवनेश्वर,–751 016.
12. उत्तर मध्य रेलवे, सुबेदार गंज, प्रयागराज– 211 001.
13. उत्तर पश्चिम रेलवे, जयपुर – 302 006.
14. दक्षिण पश्चिम रेलवे, हुबली – 580 023.
15. पश्चिम मध्य रेलवे, जबलपुर – 482 001.
16. दक्षिण पूर्व मध्य रेलवे, आर ई आफिस काम्पलेक्स, बिलासपुर – 495 004.

(II) प्रबन्ध निदेशक, डेडीकेटेड फ्रेट कोरीडोर कार्पोरेशन आफ इण्डिया लि0, पॉचवा तल, प्रगति मैदान मैट्रो स्टेशन बिल्डिंग काम्पलेक्स, नई दिल्ली–110 001

Sub :	First Revised Final Speed Certificate of Broad Gauge Bogie covered wagon type 'BCNHL' having maximum axle load of 22.9t for operation over Indian Railways BG routes up to maximum speed of 75 kmph in both empty and loaded conditions.
Ref:	i. Final speed certificate no. MW/SPD/BG/BCNHL/22.9t dated 04.10.2011 followed by amendment nos.1, 2, 3 & 4 dated 29.02.2012, 07.10.2016, 21.12.2017 and 11.09.2020 respectively. ii. Railway Board's sanction letter no. 2020/CEDO/SR/18E(2) dated 15.12.2020. iii. Testing Directorate note no. RM2/W/47 dated 09.09.2021 for corrigendum dated 07.09.21 to oscillation trial report no. MT-1007/F of BCNHL.

1.0	IMPORTANT PARAMETERS RELATED TO ROLLING STOCK

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

Stock Name	BCNHL	Max. Axle Load (Empty)	5.2 t	Max. Axle Load (Loaded)	22.9 t

Transportation Code	BCNHL	DIAGRAM Drg. No.	RDSO Drg. No. WD-06076-S-02, Alt-7 or latest (subject to not 'new' in accordance with conditions of para 28 of Railways (Opening for Public Carriage of Passengers) Rules)

Bogie Arrgt. Drg	RDSO's WD-04078-S/1		Suspension Arrgt. Drg	RDSO's WD-04078-S/1

Commodity	Coal / Ore / Steel / Bagged / Oil /etc.	Cement, fertilizer, food grains etc.	Gauge	BG

Type of Bogie	Casnub 22HS	Type of Coupler	AAR type E/F NT-Centre Buffer Coupler	Wheel Dia. (mm)	New	Condemning dia
					1000	906

Rake / Train consist for COCR / Oscillation Trial	One Locomotive+ 58 BCNHL Wagons+ One Brake Van

Max. Permissible Speed For IR	Empty	75 kmph	Loaded	75 kmph

2.0	INTRODUCTION

2.1	Broad Gauge Bogie covered wagon type BCNHL having maximum axle load 22.9t has been designed by RDSO for transportation of bagged commodities like cement, fertilizer, food grains etc. BCNHL wagon is fitted with Casnub 22HS bogies, high tensile (non transition type) center buffer coupler, high capacity draft gear, twin pipe graduated release air brake system and 1000 mm dia worn profile wheels. The leading particulars of BCNHL wagon are indicated in RDSO's Drg. no. WD-06076-S-02, Alt-7 or latest.
2.2	Oscillation trials of BCNHL wagon were conducted earlier upto maximum speed 110 kmph (RDSO's oscillation trial report number MT-1007/F) and Final Speed Certificate No. MW/SPD/BG/BCNHL/22.9t dated 04.10.2011 followed by Amendment nos.1, 2, 3 & 4 dated 29.02.2012, 07.10.2016, 21.12.2017 and 11.09.2020 respectively have been issued at a maximum speed 70 kmph in empty and 75 kmph in loaded condition. Railway Board vide their letter referred at (ii) above, communicated sanction for operation of BCNHL wagon upto speed of 70 kmph in empty and 75 kmph in loaded condition and instructed to enhance the speed of BCNHL wagon.
2.3	Vide note referred at (iii) above, Testing Directorate has issued corrigendum to report No. MT-1007/F dated 07.09.2021 of BCNHL wagon.
2.4	Hence considering above, issued final speed certificate and its amendments of

	BCNHL wagon at reference (i) above are being withdrawn and this first revised final speed certificate of BCNHL wagon for operation up to maximum speed of 75 kmph in both empty and loaded conditions over Indian Railways BG routes is being issued.
2.5	Operation of (CC+8+2)t/22.9t would be on identified routes. Further, General Manager of Zonal Railway shall identify the route for operation of (CC+8+2)t/(CC+6+2)t axle load wagon at 75 kmph in terms of Railway Board letter no. 2020/CE-II/TS/22.9 dated 20.08.2020.

3.0	In view of above and based on the design features & satisfactory test results of oscillation trial as contained in RDSO's trial report No. MT-1007/F Rev.0 Amendment-Nil dated 16.02.2010 followed by Corrigendum dated 07.09.2021, it is certified that BCNHL wagon to RDSO's Drg. no. WD-06076-S-02, Alt-7 or latest, may be permitted to run up to maximum speed of 75 kmph in both empty and loaded conditions over Indian Railways BG routes subject to the following conditions:

3.1	**TRACK STRUCTURE DETAILS AND SPEED FOR INDIAN RAILWAY ROUTES**			
3.1.1	The Track structure shall be minimum standard of:			
3.1.1.1	**(a) Speed in Empty condition:**			
	Track structure	**Sleeper Density**	**Ballast Cushion**	**Max. Speed in Empty Condition**
	52 Kg (72 UTS) rail	1540 Nos./Km PSC sleeper	250 mm (100 mm clean & rest in caked up condition on compacted and stable formation)	Speed upto 60 Kmph
	52 Kg (90 UTS) rail	1540 Nos./Km PSC sleeper	250 mm (100 mm clean & rest in caked up condition on compacted and stable formation)	Speed above 60 kmph and upto 75 kmph
3.1.1.2	**(b) Speed in Loaded condition:**			
3.1.1.2.1	**Speed upto 60 kmph**			
	Track structure	**Sleeper Density**	**Ballast Cushion**	**Max. Speed in Loaded Condition**
	52 Kg (90 UTS) rail	1540 Nos./Km PSC sleeper	300 mm (150 mm clean & rest in caked up condition on compacted and stable formation)	Speed upto 60 Kmph
	Operation of (CC+8+2)t on routes falling in temperature zone IV and zone III as per IRPWM June-2020 would be as per Railway Board letter no. 2019/CE-II/TSC/88/Puri dated 28.08.2020 with the following conditions for 52 kg (90 UTS) rail track: (i) Distressing temperature for LWR in temperature zone IV would be reduced by 5ºC (Tm to Tm+5). (ii) USFD testing of rail would be carried out at a higher frequency corresponding to 6 GMT of traffic (present situation corresponds to 8 GMT).			
3.1.1.2.2	**Speed above 60 kmph and upto 75 kmph**			
	Track structure	**Sleeper Density**	**Ballast Cushion**	**Max. Speed in Loaded Condition**
	60Kg (90UTS) rail	1540 Nos./Km PSC sleeper	300 mm (150mm clean & rest in caked up condition on compacted and stable formation)	Speed upto 75 kmph
	For temperature Zone IV as per IRPWM, de-stressing of LWR at reduced temperature (Tm to Tm+5) shall be completed before onset of winter season. If De-stressing in Zone IV is not done at lower temperature, loaded wagon will run at 60			

	kmph during the winter period of 1st November to 28th /29th of February.
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 75 mm.
3.1.5	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and Indian Railway Permanent Way Manual June-2020 and other policy instructions of Railway Board. The maintenance of rails and rail joints shall be ensured as per provision 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 may suitably restrict maximum speed of operation based on such examination.

3.2	**BRIDGE STIPULATIONS:**
3.2.1	This clearance is subject to the following parameters of 'BCNHL' wagon:

S.No.	Description	Designed	Operational
(i)	Maximum axle load (Empty)	5.2 t	5.2 t
(ii)	Maximum axle load (Loaded)	22.9 t	22.9 t
(iii)	Maximum braking force at rail level per axle	10% of axle load	
(iv)	Max. C.G. height from rail level in empty condition	1134 mm	
(v)	Max. C.G. height from rail level in loaded condition	2327 mm	

3.2.2	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-2008 standard loadings.
3.2.3	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 and Special Spans) are to be got examined by the Chief Bridge Engineer and certified safe with respect to current Indian Railways standard codes with up to-date correction slips.
3.2.4	(a) For regular operation in empty condition, All Standard RDSO spans of BGML, RBG, MBG and 25t:2008 loading are fit for proposed speed of 75 kmph. (b) For regular operation in loaded condition of BCNHL wagon with C.G. Height 2327mm, following restriction shall be applicable: (i) All Standard RDSO spans upto 47.25m (all effective) of BGML, RBG & MBG loading standard are fit for proposed speed of 75 kmph. (ii) Standard RDSO spans of 63.0m & 78.8m (both effective) of BGML & MBG loading standard are fit for proposed speed of 60 kmph.

	(iii) Standard RDSO spans of 63.0m (effective) of RBG loading standard are fit for proposed speed of 60 kmph. Standard RDSO spans of 78.8m (effective) of RBG loading standard are fit for proposed speed of 50 kmph. (iv) All Standard RDSO spans of 25t:2008 loading are fit for proposed speed of 75 kmph. (c) In loaded condition, Track on bridges and approaches of BGML spans 31.9m, 47.25m, 63.0m & 78.8m (all effective) shall be strengthened or modified in such a way so as to allow for dispersion of longitudinal force as per clause 2.8.3.2 of IRS Bridge Rules. In cases where dispersion cannot be allowed as per clause 2.8.3.2, such as due to provision of SEJ in bridges etc., the bridge superstructure including bearings and sub-structure shall be checked for longitudinal force without dispersion and certified safe by the Chief Bridge Engineer concerned.
3.2.5	During operation of BCNHL wagons 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 above clauses 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.
3.2.8	The directives of RDSO for operation of (CC+8+2)t, axle load 22.82t communicated vide RDSO letter no. CBS/Golden/Q/Strength dated 12/27-07-2009 & 25/09/2009 shall be followed.

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 rolling stocks/Train (having this wagon 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 (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	**TRACTION STIPULATIONS:**
3.4.1	In 25kV AC traction area, 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 2004” with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.
3.4.2	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 field conditions prevailing on the particular section.
3.4.3	Stipulations as per para 10436 and 10437 of manual of AC Traction Maintenance and operation, Volume-I, General with latest correction slip must be followed.

3.5	ROLLING STOCK STIPULATIONS:
3.5.1	Before initiating the operation over Indian Railways, Principal Chief Mechanical Engineer of concerned Zonal Railways shall arrange to certify the service worthiness (track worthiness) and safety of the Rolling stocks. He shall also ensure the proper maintenance of the Rolling stocks.
3.5.2	Brakes of the rake of the wagons shall be in good working order during the operation.

3.6	GENERAL STIPULATIONS:
3.6.1	The Bogie covered wagon type BCNHL to RDSO's Drg. no. WD-06076-S-02 Alt.-7 or latest infringes Clause No. 26 and 29 of Chapter IV(A) Schedule of Dimension BG, Revised 2004. These infringements have been condoned vide Railway Board's letter no. 2007/CEDO/SR/23 dated 23-04-2009.
3.6.2	Where the dimensions are permitted as per schedule - II of IRSOD Revised 2004, the wagon shall be run as per appropriate class of ODC over IR routes.
3.6.3	In case of curves, the lateral clearances shall be worked out taking into account extra clearance on the curves calculated as per appendix in the Schedule of Dimensions BG -2004. The extra vertical clearance in case of curves shall be worked out as under:- Extra vertical clearance in mm= 1.971x super elevation of curve in mm.
3.6.4	Wagon shall be operated at a maximum speed of 10 kmph on lines with Goods platform.
3.6.5	Suitable precautions for safety of passengers standing on the platform such as provision of strip marking beyond which passengers will not stand and the drivers blowing their horn while passing through platform lines to warn the passengers standing close to the platform have to be taken by the Railways.
3.6.6	Before operation of the wagon on any route, a campaign of education of the line staff will be carried out to warn them about additional width of these wagons.
3.6.7	All the permanent and temporary speed restrictions enforced and those that may be imposed from time to time due to track, bridges, curves, signalling and interlocking etc shall be observed.
3.6.8	For placement/movement of wagon on any private or assisted siding for loading or unloading the consignments and for the maximum permissible speed of empty and loaded wagon in the siding at the originating point and destination, Principal Chief Engineer of the Railways shall be referred to.
3.6.9	The wagon shall be painted with "Phirozi" colour (IS colour shade no. 176), to RDSO Spec. no. M&C/PCN/109/88 to make it stand out amongst other wagons.
3.6.10	Wagon are fitted with compressed air brakes. These wagons shall not be moved in a mixed train formation with wagons having other type of brake system.
3.6.11	When the wagon is being moved, it shall be ensured that all 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.
3.6.12	All doors of BCNHL wagons during running shall be in closed condition.

ENCLOSURES: / संलग्नक:

i)	RDSO Drg No. WD-06076-S-02. Alt-7 or latest
ii)	Annexure-I (Salient features of 'BCNHL' wagon)

Digitally Signed by Nitin Mehrotra
Date: 19-04-2022 18:15:23
Reason: Approved

(नितिन मेहरोत्रा)
कार्यकारी निदेशक मानक / चालन शक्ति

प्रतिलिपि: सूचनार्थ (copy for information)

(1) सचिव (यांत्रिक / इंजी), रेलवे बोर्ड, रेल भवन, नई दिल्ली – 110001
(2) मुख्य रेल संरक्षा आयुक्त, अशोक मार्ग, लखनऊ–226001
(3) महा प्रबंधक (मैकेनिकल / यातायात / संकेत एवं दूरसंचार),
(i) मध्य रेलवे, छत्रपति शिवाजी महाराज टर्मिनस, मुम्बई– 400 001.
(ii) पूर्व रेलवे, 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 – 500 071.
(vi) दक्षिण पूर्व रेलवे, गार्डेन रीच, कोलकाता – 700 043.
(vii) पूर्वोत्तर रेलवे, गोरखपुर – 273 012.
(viii) पूर्वोत्तर सीमान्त रेलवे, मालीगॉव, गुवाहाटी – 781 011.
(ix) पश्चिम रेलवे, चर्चगेट, मुम्बई – 400 020.
(x) पूर्व मध्य रेलवे, हाजीपुर – 844 101.
(xi) पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्पलेक्स, चन्द्रशेखरपुरा, भुवनेश्वर,–751 016.
(xii) उत्तर मध्य रेलवे, 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) दक्षिण पूर्व मध्य रेलवे, आर ई आफिस काम्पलेक्स, बिलासपुर – 495 004.
(4) जी. जी.एम. (मैकेनिकल / इंजी / यातायात / संकेत एवं दूरसंचार)डेडीकेटेड फ्रेट कोरीडोर कार्पोरेशन आफ इण्डिया लि0, नई दिल्ली–110 001
(5) अध्यक्ष एवं प्रबंध निदेशक, कोंकण रेलवे कार्पोरेशन लिमिटेड, पोस्ट बाक्स नं0 9, बेलापुर भवन, सेक्टर –11, सीबीडी बेलापुर,नवी मुम्बई – 400614

ENCLOSURES: / संलग्नक:

i)	RDSO Drg No. WD-06076-S-02. Alt-7 or latest
ii)	Annexure-I (Salient features of 'BCNHL' wagon)

-signed-

(नितिन मेहरोत्रा)
कार्यकारी निदेशक मानक / चालन शक्ति

Annexure-I

Salient features of BCNHL (Max.22.9t axle load)

S.No	Description	Details
01	Principle dimension of Rolling Stock	(Diagram no. WD-06076-S-02, Alt-7 or latest) a. Length over Couplers/Buffers= 10963 mm b. Bogie Centre distance = 7153 mm c. Wheel Base = 2000 mm d. Axle load (loaded) = 22.9 t e. Axle load (Empty) = 5.2 t
02	Details of Bogie and wheel	a. Casnub 22HS bogies b. 1000 mm diameter wheels having worn wheel profile.
03	Details of Brake system	Twin pipe graduated release air brake system
04	Detail of Brake Rigging, brake ratio and parking brake	(Diagram drawing no. WD-06076-S-10) a. Brake Percentage(Loaded) =20.7 % b. Brake Percentage (Empty) =42 %
05	Details of Coupler and buffer	a. AAR type E/F NT-Centre Buffer Coupler b. High Capacity Draft gears
06	Periodic maintenance schedules and standards (safety limits) to be followed in respect of safety items.	As per maintenance manuals
07	Instructions regarding operation of rolling stock in case of failure of any of the safety items.	a. For wheel & axle ref. para 2.8 of chapter-2 of IRCA Part-III edition-1973 b. Air Brake Maintenance Manual no. G-97. c. Coupler Maintenance Manual no. G-76 and G-80
08	Carrying capacity	70.8 T