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No. MW/SPD/BG/BOXNHSM2 Dated: 11.10.2019

महा प्रबंधक (इंजी),

1. मध्य रेलवे, छत्रपति शिवाजी 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, हास्टिंग रोड ,इलाहाबाद – 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.

Sub: Final speed certificate of Broad Gauge Bogie Open wagon type 'BOXNHSM2' with maximum axle load of 22.82t for operation over Indian Railway B.G route.

1.0 Oscillation trial of Broad Gauge Bogie Open Wagon type BOXNHSM1 having maximum axle load 22.82t (CC+8+2t) to RDSO drawing No. WD-05084/S-01 Alt.-05 fitted with suspension consisting 14 outer, 12 inner & 04 snubber springs has been conducted and results found satisfactory at 110 kmph in empty and loaded condition. At present BOXNHSM1 wagon is fitted with Casnub 22HS bogies having suspension consisting 14 outer, 14 inner & 04 snubber springs. To differentiate BOXNHSM1 wagon having two different suspension, Railway Board vide letter No. 2010/M(N)/951/23 dated 13-09-2019 accorded approval of name code as BOXNHSM2 having suspension consisting 14 outer , 12 inner & 04 snubber springs. Alteration No.-06 to RDSO drawing No. WD-05084/S-01 showing suspension chart for BOXNHSM1 and BOXNHSM2 has been issued.

BOXNHSM2 wagons (BOXNHSM1 wagon with suspension of 14 outer, 12 inner & 04 snubber spring) are useful for transportation of coal, ore etc. BOXNHSM2 wagons are fitted with Casnub 22HS bogies, high tensile (non transition) centre buffer coupler, high capacity draft gear and graduated release air brake system. The design parameters and salient features of 22.82t axle load BOXNHSM2 wagon have been shown in RDSO Drg. No. WD-05084/S-01 Alt.-06 & Annexure-I.

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1.1 In order to assess the riding quality and stability behaviour of 'BOXNHSM2' wagon (BOXNHSM1 wagon having suspension of 14 outer, 12 inner & 04 snubber spring) **in** empty and loaded condition, detailed oscillation trials have been conducted over Mahoba (MBA) - Khajuraho (KURJ) section of North Central Railway. The results of the trial are given in RDSO Report no. RDSO/2019/TG/MT-1645/F Rev.-0 Amendment –Nil dated 01-10-2019. Oscillation trial results indicate that 'BOXNHSM2' wagon has exhibited satisfactory riding and stability behaviour up to a test speed of 110 kmph in empty and loaded condition on locations/stretches as per current revisions of "Third Report of Standing Criteria Committee" on track maintained as per standard specified mentioned in Para 607 of Indian Railway Permanent Way Manual reprint 2004, for speed up to 100 kmph.

2.0 Based on the design features, details given in Annexure-I, satisfactory test results as indicated in RDSO Report no. RDSO/2019/TG/MT-1645/F Rev.-0 Amendment –Nil dated 01-10-2019 and above, it is certified that 'BOXNHSM2' wagon having maximum axle load of 22.82t to RDSO Drg. No. WD-05084/S-01 Alt.-06 may be permitted to run up to **maximum permissible speed of 100 kmph in empty and 60 kmph in loaded condition,** subject to the following conditions:

2.1 Track

2.1.1(i) **For loaded condition-**

Maximum speed up to 60 kmph
The track shall be to a minimum standard of 52Kg (90 UTS) rail laid on PSC sleeper with 1540 Nos./Km on 300mm ballast cushion below the sleepers which may consist of 150mm clean and the rest in caked up condition.

(ii) **For Empty condition-**

Maximum speed up to 60 kmph
The track shall be to a minimum standard of 52Kg (72 UTS) rail laid on PSC sleeper with 1540 Nos./Km on 250mm ballast cushion below the sleepers which may consist of 100mm clean and the rest in caked up condition.

Maximum speed more than 60 kmph and up to 100 kmph
The track shall be to a minimum standard of 52Kg (90 UTS) rail laid on PSC sleeper with 1540 Nos./Km on 250mm ballast cushion below the sleepers which may consist of 100mm clean and the rest in caked up condition.

2.1.2 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, Railway Board's 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 shall suitably restrict the maximum permissible speed depending upon the local conditions.

2.1.3 The welds shall be protected by joggled fish plates as per provisions of Para 6.4 and Para 8.14 of USFD Manual and Para 6.3 of AT welding manual and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per Para 250 & 251 of IRPWM. 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.

2.1.4 Zonal Railway shall insure further detailed examination of track as deemed fit, based on the age cum condition, overdue renewal and condition of formation etc. as per provisions of Chapter-III of IRPWM-2004 regarding permanent way renewals.

2.1.5 The maximum permissible speed on curves shall be decided on the basis of the existing provision of Indian Railway Permanent Way Manual Reprint-2004.

2.2 Bridges

2.2.1 The clearance refers to Bridges "Standard Spans" with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for BGML, RBG and MBG-1987 Standard loadings. However, the bearings of span 76.2m (clear) designed for BGML standard loading as per RDSO's drawing No. BA-11154 shall be strengthened by providing two additional anchor bolts.

2.2.2 Superstructure & Bearings of "Special Spans" (designed and constructed by Zonal Railways based on site requirements) including all arches and substructure of all bridges (all Standard Spans & Special Spans) are to be examined under the directions of the Chief Bridge Engineer concerned and certified safe with respect to current Indian Railway Standard Codes with up to-date correction slips.

2.2.3 Other specific restrictions are applicable which are indicated in relevant Speed Certificates of hauling single/multiple locomotives issued by RDSO.

2.2.4 This clearance is subject to the following parameters of 'BOXNHSM2' wagon.

(i) Maximum axle load (empty) - 5.63 t
(ii) Maximum axle load (Loaded) - 22.82 t
(iii) Maximum braking force at Rail level per axle - 10 % of axle load
(iv) Maximum C.G height from Rail level (Empty) - 1016 mm
(v) Maximum C.G height from Rail level (Loaded) - 1668 mm (iron ore)
- 1917mm(High Density Coal)

2.2.4.1 (i) In empty condition, all standard spans of BGML/RBG/MBG loading standards are fit for 100 kmph.

(ii) In loading condition, all Standard spans of BGML/RBG/MBG loading standards up to 47.25m (all effective) are restricted to 75 kmph.

(iii) In loading condition, all Standard spans of BGML/RBG/MBG loading standards of 63.0m & 78.8m (both effective) are restricted to 60 kmph.

(iv) Track on bridges and approaches of BGML span 78.8m (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.

2.2.5 Location of bridges on which speed restrictions are imposed shall be notified by the Zonal Railways and incorporated in the working timetable so that all operating staff is aware of the instructions.

2.2.6 The above clause 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 imposed by concern Chief Bridge Engineer of the Zonal Railway.

2.2.7 The directives of RDSO for operation of CC+8+2t, axle load 22.82t communicated vide RDSO letter no. CBS/Golden/Q/Strength dated 21/27-07-2009 shall also be followed.

2.3 Signalling

2.3.1 Provisions of GR, SR, SEM & all extant instructions issued from time to time shall be complied with.

2.3.2 While running through a station, speed of the train shall be restricted to the maximum permissible speed as per standard of interlocking provided at the station.

2.3.3 On the sections where EBD of more than 1 km is to be catered for, second distant signal or automatic signalling shall be available failing which suitable speed restrictions is to be imposed.

2.3.4 In the normal single phase 25KV AC electrified section where electric locomotive is used, provision given in Para 22.6,22.7,22.8,22.9 & 22.10 of SEM Pt.II regarding maximum permissible length of track circuits, signal feed, maximum permissible length for operation of point motor, use of block instruments and use of track circuits such as DC Track circuit/AFTC shall be complied by the Railway.

2.3.5 All level crossing gates within station limit shall be manned and interlocked with station signals. All manned level crossing gates outside station limit shall be interlocked depending on the classification of the level crossing.

2.3.6 Suitable communication shall be provided in the locomotive and guards van for communication between loco pilot, guard and adjacent station master.

2.3.7 It is necessary to provide means/arrangements to put back the home signal and last stop signal to its "ON" position immediately after passage of the train.

2.3.8 The condonation regarding infringements in schedule of dimensions, if any, shall be obtained in accordance with local conditions, before initiating the operation.

2.3.9 **Precaution for Automatic signalling system working:**

For running through the train at a station, the last stop signal shall not be taken "OFF" at the station unless:

a) The sections up to the station in advance is clear, and

b) At the station in advance, the route of the train is clear, correctly set and locked for reception of train.

c) All manned level crossing gates in a stretch of block sections referred to above are closed to road traffic and locked.

2.3.10 **Precautions for Absolute block system working:**

For running through the train at a station, the signals shall not be taken 'OFF' at the station unless:

a) The section up to the station in advance is clear and the station in advance has confirmed that it has obtained permission to approach from the next station.

b) At the station in advance, the route for the run through of the train via main line is clear, correctly set and locked.

c) All manned level crossing gates in a stretch of two block sections referred to above are closed to road traffic and locked.

2.4 Rolling Stock

2.4.1 Before initiating the operation, PCME of the concerned Zonal Railway shall arrange to certify the track worthiness and safety of the rolling stocks. He shall also ensure the proper maintenance of the rolling stock.

2.4.2 Brakes of the rake of the wagons shall be in good working order during the operation

2.5 Traction Installation

2.5.1 In 25 kV AC traction area, the CEE of the 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.

2.5.2 In addition to above, the 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.

2.5.3 When the Wagon 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.

2.6 General

2.6.1 All the permanent and temporary speed restrictions inforce 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 For movement of wagon on any private or assisted siding for loading or unloading the consignments, the Chief Engineer of concerned Zonal Railway shall be referred to.

2.6.3 The profile of 'BOXNHSM2' wagon does not infringe to clauses of Chapter IV (A) of Indian Railway Schedule of Dimensions B.G. revised 2004.

2.6.4 The heap of loading shall not exceed the diagram No. 1D of Indian Railway Schedule of Dimensions BG Revised, 2004.

2.6.5 USFD testing shall be carried out at a frequency, one grade higher than the specified frequency in the USFD manual. On Section with GMT more than 60, the existing stipulated frequency of once in one and a half month as per USFD Manual may be continued.

संलग्नक: (i) Drg. No. WD-05084/S-01 Alt.-06
(ii) Annexure-I -Salient Features of 'BOXNHSM2'
(iii) Annexure-II (List of referred documents)-in a Compact Disc enclosed.

11/10/19

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

प्रतिलिपि:

(1) सचिव (मैकेनिकल /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 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, हास्टिंग रोड ,इलाहाबाद – 211 001.
(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) अध्यक्ष एवं प्रबंध निदेशक, कोंकण रेलवे कार्पोरेशन लिमिटेड, पोस्ट बाक्स नं0 9, बेलापुर भवन, सेक्टर –11, सीबीडी बेलापुर,नवी मुम्बई – 400614

संलग्नक: (i) Drg. No. WD-05084/S-01 Alt.-06
(ii) Annexure-I -Salient Features of 'BOXNHSM2'
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(वी.के.अग्रवाल)
कार्यकारी निदेशक मानक/चालन शक्ति

Annexure-I

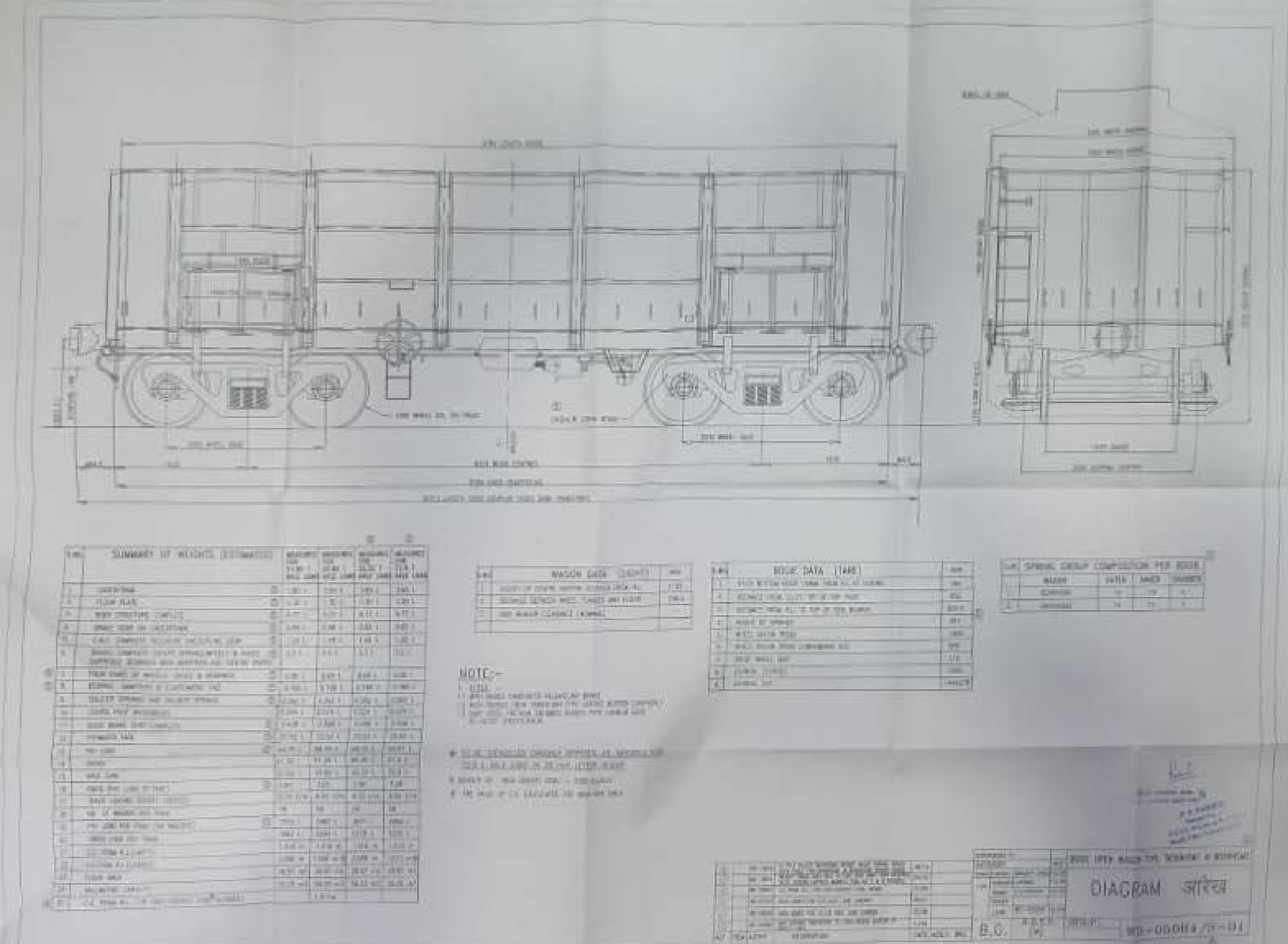
Salient features of BOXNHSM2

S.No	Description	Details
01	Principle dimension of Rolling Stock	(Diagram drawing no. WD-05084/S-01 Alt.-6) a. Length over Couplers/Buffers= 10713 mm b. Bogie centre distance = 6524 mm c. Wheel Base = 2000 mm d. Axle load (loaded) = 22.82 t e. Axle load (Empty) = 5.63 t
02	Details of Bogie and wheel	a. CASNUB 22HS(with additional springs) b. 1000 mm diameter of new wheels. c. 906 mm diameter of worn wheel
03	Details of Brake system	Air Brake System
04	Brake Percentage	(Diagram drawing no. WD-80007-S-09) a. Brake Percentage(loaded) =41.4 % b. Brake Percentage (Empty) =86.5 %
05	Details of Coupler and buffer	a. AAR type E/F NT-Coupler b. High Capacity Draft gears
06	Periodic maintenance schedules and standards (safety limits) to be followed in respect of safety items.	Standards of Bogie Maintenance shall be as per G-95
07	Instructions regarding operation of rolling stock in case of failure of any of the safety items.	a. For wheel &axle ref. para2.8 of chapter-2 of IRCA Part-III addition-1973 b. Air Brake Maintenance Manual no. G-97. c. Coupler Maintenance Manual no. G-76 (for Workshop staff) d. Coupler Maintenance Manual no. G-80(for Line staff)
08	Carrying capacity	68.75 T

Annexure-II

{List of documents referred in speed certificate of BOXNHSM2 wagon. The copy of these documents available in the CD enclosed with the speed certificate}

i) IR specification no. R-19/93 Part-I
ii) Specification no. 02-ABR-02
iii) G-97 of May 1996 with amendment no. 2 of July 2002.
iv) G-80 with Revision 1 of March 1997
v) G-95 with Revision 1 of March 1997
vi) IRPWM-2004
vii) Railway Board's letter no. 65-WDO-SR-26 dated 19/20-10-1966.
viii) Manual for ultrasonic testing of Rails and Welds (Revised 2012)
ix) Drawing no. BA-11154
x) Misc. Report MP-1461 of March 1993
xi) G-76 of September 1987
xii) IRCA Part-III
xiii) RDSO Drg. No. WD-05084/S-01 Alt.-6.
xiv) Oscillation trial report No. MT-1645/F
xv) Railway Board letter no. 2010/M/(N)/951/23 dated 13.09.2019


SUMMARY OF WEIGHTS (ESTIMATED)
WAGON DATA (LIGHT)
BOGIE DATA (TARE)
SPRING GROUP COMPOSITION PER BOGIE
NOTE:-
DIAGRAM आरेख
B.G.