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भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011

AN ISO 9001
CERTIFIED
ORGANISATION

No. SD.WDP4.11

Dated 29-12-2008

The General Manager (Engg.),

1. Central Railway, Chhatrapati Shivaji Terminus, Mumbai-400 001.
2. Eastern Railway, Fairlie Place, Kolkata-700 001.
3. Northern Railway, Baroda House, New Delhi-110 001.
4. North Eastern Railway, Gorakhpur-273 001.
5. Northeast Frontier Railway, Maligaon, Guwahati-781 011.
6. Southern Railway, Park Town, Chennai-600 003.
7. South Eastern Railway, Garden Reach, Kolkata-700 043.
8. South Central Railway, Rail Nilayam, Secunderabad-500 071.
9. Western Railway, Churchgate, Mumbai-400 020.
10. East Central Railway, Hajipur-844*101.
11. East Coast Railway, Bhubaneswar-751 023.
12. North Central Railway, Allahabad-211 001.
13. North Western Railway, Jaipur-302 006.
14. South Western Railway, Hubli-580 023.
15. South East Central Railway, Bilaspur-495 004.
16. West Central Railway, Jabalpur-482 001.

Sub: Amended final maximum permissible speed certificate for WDP4 class of locomotive upto a maximum speed of 160 km/h on track maintained to C&M 1 Vol 1 standards incorporating with amendments.

4000hp WDP4 class of locomotives, fitted with two nos three axle bogies each having A-A-1 axle arrangement, originally imported from M/s General Motors, USA and are now manufactured by DLW Varanasi. General arrangement of the locomotive is as per GM's drawing No. L.020792. The maximum axle load of the locomotive is 19.5t. The locomotive is designed for a speed of 180 kmph and is intended for hauling passenger trains at speed upto 160 km/h on Rajdhani standard track and at speed upto 105 km/h on main line standard track.

1.1 With a view to assess the speed potential of WDP4 locomotive on track maintained to Rajdhani standards, oscillation trials were conducted on Ghaziabad - Kanpur section of Northern Railway and Tughlakabad - Agra Cantt section of Central Railway upto a maximum speed of 180 km/h. The test results as contained in Mechanical Engineering report no. MT-326 of Jan' 2002 indicate satisfactory stability and riding upto a maximum test speed of 180 km/h subject to such lower speeds on curves as restricted by the cant deficiency considerations on track maintained to standards as specified in RDSO's report no. C&M-I (Vol-I).

1.2 This speed certificate is being issued with inclusion of amendments of even no. dtd 28-2/3-2003, 23-10-2006 and 15-5-2008.

2 Based on the results of oscillation trials, it is certified that operation of single/double headed WDP4 locomotives to GM's Drg no. L.020792, may be permitted upto a maximum speed of 160 km/h subject to the following conditions:

2.1 Track

2.1.1 For speed upto 130 km/h

The track to be a minimum standard of 52 kg (72 UTS) rails on PSC/ST sleepers to M+7 density and depth of ballast cushion below sleepers of 250 mm, which may consist of at least 100 mm clean and rest in caked up condition, on compacted and stable formation and maintained to the standard superior to what have been recommended in RDSO's report no. C&M-I Vol-I. Moreover, the instructions for maintenance of track on high speed route, circulated to the Railways under RDSO's D.O. letter No.CRA/509 dt 7-7-71 and approved by the Railway Board under their letter nos. 71/W6/HS/8 dt. 27-8-71 and 71/W6/HS/1 dt. 21-10-71 should also be followed.

2.1.2 For speed beyond 130 km/h and upto 160 km/h

2.1.2.1 Sections having annual GMT less than 20.

The track to be a minimum standard of 52 kg (90 UTS) rails on PSC/ST sleeper to M+7 density and depth of ballast cushion below sleepers of 250mm, which may consist of at least 100mm clean and rest in caked up condition, on compacted and stable formation and maintained to a standard superior to what have been recommended in RDSO's report no. C&M-I Vol-I. Moreover, the instructions for maintenance of track on high speed route, circulated to the Railways under RDSO's D.O. letter no. CRA/509 dt. 7-7-71 and approved by the Railway Board under their letter nos. 71/W6/HS/8 dt 27-8-71 and 71/W6/HS/1 dt. 21-10-71 should also be followed.

2.1.2.2 Sections having annual GMT-20 or more.

The track to be a minimum standard of 60 kg (90 UTS) rails on PSC/ST sleeper to 1660 nos/km density and depth of ballast cushion below sleepers of 300mm, which may consist of at least 150mm clean and rest in caked up condition, on compacted and stable formation and maintained to a standard superior to what have been recommended in RDSO's report no.C&M-I Vol-I. Moreover, the instructions for maintenance of track on high speed route, circulated to the Railways under RDSO's D.O. letter no. CRA/509 dt. 7-7-71 and approved by the Railway Board under their letter nos. 71/W6/HS/8 dt 27-8-71 and 71/W6/HS/1 dt. 21-10-71 should also be followed.

2.1.2.3 Replacement of existing switches with loose heel by fixed heel with curved switches to be laid on PSC crossing with adequate arrangement to ensure designed geometry of furnouts.

2.1.2.4 Improvement on track geometry parameters on the route of operation of the locomotive/train is to be carried out.

2.1.2.5 The curves will have to be suitable realigned and proper transition lengths are to be provided

2.1.2.6 Action should be taken for relocation /modification of Engineering signals in consultation with respective S&T and OHE departments of zonal railways.

2.1.2.7 Concerned railway will arrange for providing fencing particularly near habited urban areas, to prevent unauthorized pedestrian/ cattle crossings.

2.1.3 For track of lower standard than that mentioned above, the Chief Engineer shall decide the lower maximum permissible speed on basis of maintenance condition. In this connection, Railway Board's 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 suitable restrict the maximum permissible speed depending upon the local conditions.

2.1.4 The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual second reprint – 2004. Higher speeds may, however, be permitted subject to the maximum cant deficiency of 100mm and the rate of change of cant and cant deficiency not exceeding 55mm per second.

2.1.5 Route proving run/confirmatory oscillograph car run shall be conducted before starting operation above 110 km/h speed, as per provisions of revised para no.6 of Policy Circular no. 6.

2.2 Bridges

2.2.1 The clearance refers to bridges 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 78.8m (effective) designed for BGML standard loading as per RDSO's drawing no. BA-11154 should be strengthened by providing two additional anchor bolts.

2.2.2 Superstructures and bearings of non-standard spans including Arches and sub-structures of all bridges are to be examined under the directions of the Chief Bridge Engineer concern and certified safe by him in terms of current IRS Bridge Rules, Steel Bridge Code, Concrete Bridge Code, Arch Bridge Code, Bridge Sub-Structures and Foundations Code etc. read with upto-date correction slips.

2.2.3 Zonal Railways to certify the adequacy of existing bridges for permitting rolling stock based on physical condition of bridges by keeping them under observations considered necessary by the Chief Bridge Engineer of Railway.

2.2.4 Location of bridges on which speed restrictions are imposed shall be notified by the Railways and incorporated in the working timetable.

2.2.5 The clearance is subject to following parameters:

i)	Maximum axle load	19.50t
ii)	Maximum tractive effort	27.52t
iii)	Maximum braking effort	16.3t

2.3 Signalling

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

2.3.2 MACLS shall be provided with two distant signals or automatic signaling. If two distant signals are provided, then first distant signal shall be located at a distance of 1 km in rear of the home signal and the second distant signal at a distance of 2 km in rear of the home signal. This stipulation shall also be applicable to the IBS and interlocked gates located in the block sections.

2.3.3 All manned level crossing gates shall be provided with telephone communication with the nearest station.

2.4 Rolling Stock

Before starting the operation, CME of the railway will certify the track worthiness and safety of the rolling stocks. He will also ensure proper maintenance of the stocks.

2.5 General

2.5.1 All the permanent and temporary speed restrictions in force and those that may be imposed from time to time due to track, bridges, curves, signalling and interlocking etc. shall be observed.

2.5.2 Attention is also invited to the note on 'Preparation of electrical equipment of diesel and electric locomotives for high speed operation' circulated with this office letter No. EL/3.3.15/WAM2/GR.CON dated 24-12-70 and the locomotive should be attended accordingly as applicable to this class of locomotive.

2.5.3 The profile of WDP4 locomotive infringes clause 11 (ii), 12, 13 and 17 of chapter-IV(C) of BG Schedule of Dimensions, 1929 (Reprint-1973). Railway Board have condoned these infringements vide their letter No. 2001/CEDO/SR/18 dated 23-8-01.

3. This speed certificate supersedes to this office speed certificate of even no. dated 5/7-3-2002 and subsequent amendments dated 28-2/3-3-2003, 23-10-2006 and 15-5-2008.

Encl: Nil



(S. Mani)

Exe. Director Standards (Motive Power)

Copy to :

1. The Secretary (Mech./Engg.(G)), Railway Board, Rail Bhawan, New Delhi - 110 001.
2. The General Manager (Mech/Optg., S&T)
 - .1 Central Railway, Chhatrapati Shivaji Terminus, Mumbai-400 001.
 - .2 Eastern Railway, Fairlie Place, Kolkata-700 001.
 - .3 Northern Railway, Baroda House, New Delhi-110 001.
 - .4 North Eastern Railway, Gorakhpur-273 001.
 - .5 Northeast Frontier Railway, Maligaon, Guwahati-781 011.
 - .6 Southern Railway, Park Town, Chennai-600 003.
 - .7 South Eastern Railway, Garden Reach, Kolkata-700 043.

Contd...../-

- .8 South Central Railway, Rail Nilayam, Secunderabad-500 071.
 - .9 Western Railway, Churchgate, Mumbai-400 020.
 - .10 East Central Railway, Hajipur-844 101.
 - .11 East Coast Railway, Bhubaneshwar-751 023.
 - .12 North Central Railway, Allahabad-211 001.
 - .13 North Western Railway, Jaipur-302 006.
 - .14 South Western Railway, Hubli-580 023.
 - .15 South East Central Railway, Bilaspur-495 004.
 - .16 West Central Railway, Jabalpur-482 001.
3. The General Manager(Mech), Diesel Locomotive Works, Varanasi-221 004.
 4. Chairman, Konkan Railway Corporation Limited, Belapur, Navi Mumbai - 400614

Encl: Nil



(S. Mani)

Exe. Director Standards (Motive Power)