GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
RAILWAY BOARD
New Delhi

No. 2001/Elect(G)/170/1

Dt: 22.12.2016

General Managers,
All Indian Railway

General Managers
All Production Units

Director/IRIEEN/Nasik

GM/CORE/ALD

DG/RDSO/Lucknow.

Sub: Inputs required for OHE and Power Supply system for 160 kmph train operation on existing routes.

Ref: (i) Railway Board's letter No. 2001/Elect(G)/170/1 dated 14.08.2014 & 17.09.2014.
(ii) Railway Board's letter No. 2001/Elect(G)/170/1 Dt: 19.10.2016.

*****

Railway Board has issued instructions for inputs required for running trains at 160 kmph with the approval of Board vide Railway Board letter No.2001/Elect(G)/170/1 dated 14.08.2014 & 17.09.2014 (ref. (i)). This included following –

(i) The drop bracket assembly as per Drawing No.ETI/OHE/P/2360 along with steady arm as per drawing No.ETI/OHE/P/2390 be used to give 110 mm push up, if not already provided.
(ii) Cross type OHE to be modified to overlap type, if not already provided.
(iii) Increase in tension is not necessary.
(iv) The OHE shall be swiveling type of cantilever having tension in the conductors regulated automatically, with a pre-sage of 50/100 mm, if not already provided.
(v) Retro-reflective number plates should be provided as per Board's guidelines dated 21.02.12.
(vi) For new OHE & on existing OHE during replacement of contact wire, the contact wire gradient should be reduced from 3 mm per meter to 2 mm per meter and difference in contact wire gradient between two adjoining spans be reduced from 1.5 mm per meter to 1.0 mm per meter.
(vii) For running more than 2 trains at 160 kmph, following inputs may be planned to improve current carrying capacity as per the requirement:
  (a) Augmentation of TSS capacity or provision of new TSS or 3rd bay in existing TSS as required for meeting current requirement.
  (b) Augmentation of current carrying capacity of OHE by provision of feeder wire, if required.
  (c) PTFE type short neutral section should be provided in front of new TSS.

2. During running of 'Gatimaan Exp' (160 kmph train) it was noticed that there were issues in OHE system even if a single train is to be run. A report was submitted by RDSO vide no. TI/OHE/HS/10/04 dt. 08.06.16 in this reference.

3. RDSO has issued two reports for raising speed to 160 kmph vide their letters No. TI/OHE/HS/10, dt.16.08.14 & thereafter on 11.08.16 and recommended inputs for Power Supply & OHE system. Based on these recommendations of RDSO, instructions were issued for inputs required for OHE and Power Supply system vide Board's letter at **reference- (ii).**

4. In the light of above inputs from RDSO, the matter has been reviewed and, it has now been decided that there is a need to give sufficient inputs in OHE even for running 1-2 trains up to 160 kmph as per following:

a. For OHE system, these guidelines should be followed:

I. Fully regulated OHE with swiveling type Cantilever Assembly.
II. Use of 'Bent Steady Arm Assembly of modified design'.
III. Stagger- on tangent track Contact wire shall normally be 150 mm (at support) on either side of track centre and maximum 250 mm on curved track.
IV. Reducing the **maximum permissible span** for wind pressure zone of 73 kg/m^2 **from 72 m to 67.5 mtrs.** Similarly, for higher wind pressures, the spans shall be further reduced. To cater to feasibility of running trains even under adverse wind conditions without controlling of trains, the revised calculations have been done and the employment schedule is given in Annexure-V of RDSO report on Design requirement for overhead e1quipment with conductor size65/107 sq.mm for running trains up to speed of 160 kmph of 11th August 2016.
The structures and foundations will accordingly be replaced wherever the revised employment schedule differs from the existing site conditions. **(This requirement can be dropped if trains are stopped in case of high speed winds).**
V. Increasing **tension to 1.1 Tonne** in catenary and contact wire.
VI. Reducing the **pre-sag to 50 mm from present 100 mm** in conjunction with AM-92 pantograph.
VII. Reducing the **contact wire gradient and relative gradient to 2 mm/m and 1 mm/m** respectively.
VIII. Porcelain Section Insulators shall not be provided on main lines. These shall be replaced by 'Light Weight PTFE type Section Insulator'.
IX. 'PTFE' type Short Neutral Section Assembly shall be provided at the 'Feeding Overlap' and at the 'Neutral Section'.
X. Crossed type OHE and Rigid Dropper shall not be provided on main lines. This shall be converted to overlap type or else suitable speed restriction shall be imposed.
XI. Retro-reflective Structure Number Plate, at each OHE Structure, shall be provided.

b. For running only 1-2 trains up to 160 kmph, railways may augment existing TSS along with connected switchgears by providing higher capacity transformers wherever 12.5 MVA transformers are provided.

25617

5. For running more than 2 trains at 160 kmph, instructions issued vide Board's letter no. 2001/Elect(G)/170/1 dt. 19.10.2016 shall be followed for all sections on Indian Railway.

6. This is issued with the approval of Board (MTR).

This letter supersedes previous instructions on the subject issued vide Board's letter at **ref. (i).**

23/12/16

(Punit Agrawal)
Director Elect. Engg.(PS)
Railway Board

Copy to:

1. Chief Electrical Engineers of all Zonal Railways & Sr. ED/TI/RDSO..
2. CAO (Electrical), CORE/Allahabad.
3. CEE/Konkan Railway
4. Adv./RE/Railway Board.