



## SOUTH CENTRAL RAILWAY

Headquarters Office,  
Works Branch,  
Rail Nilayam, 5<sup>th</sup> Floor  
Secunderabad-500025

No. W.506/ESOs

Dated:29-07-2020

### ENGINEERING STANDING ORDER No. 89

**Sub:** Protection and Safety measures at Bridge Work sites.

\*\*\*

- 1.0 Protection & Safety measures required to be adopted at Work sites in Open line have been specified under Chapter-8 of IRPWM; para 111 & 223 of IRBM and through instructions of Railway Board letter no. 98/CE-II/Inspn./5 dated 23-07-1998. As these instructions mention most of the P.way related works and few Bridge works, necessity is felt to issue detailed safety instructions which are supplementary to the Manual Provisions referred above to cover all types of Bridge works being executed in Open line.
- 2.0 Works being executed in Open line are placed under 3 categories as per Chapter-8 of IRPWM-2020 for deciding on the protection & safety measures. Various Bridge works which are executed at present shall be placed under these categories as given under:
- 3.0 **Category-1 works as defined under para 805(1) of IRPWM-2020:** Works of routine maintenance, requiring no SR, not necessitating exhibition of HS and involving no danger to trains or traffic but may affect safety of men working on the bridge. Such works have been mentioned under para 223 (1) of IRBM also.
- 3.1 Following Bridge works of routine maintenance are placed under **Category-1** which can be done **without block protection**:
  - 3.1.1 Painting of Steel Plate Girders (other than top flange) including Surface preparation works
  - 3.1.2 Tightening of track fittings on the bridge
  - 3.1.3 Testing of Rivets / Bolts
  - 3.1.4 Detailed Inspection of girders
  - 3.1.5 Measurement of camber
  - 3.1.6 Minor repairs to Steel pathway, Trolley / Man refuges
  - 3.1.7 Replacement of Side footpath sheets
  - 3.1.8 Cleaning of bearings and surrounding areas.
  - 3.1.9 Cleaning of Drainage arrangements on ballasted deck.
  - 3.1.10 Any other routine maintenance work involving working of staff over the bridge deck.

3.2 Following Protection & Safety measures shall be observed at work sites for the above Category-1 works:

Sno	Site Conditions	Safety measures at Site
3.2.1	<ul style="list-style-type: none"> <li>Adequate visibility (&gt; 1.2km) in the direction of approaching trains from bridge location AND</li> <li>Side footpath available on the bridge OR Refuge available within 10m of working spot</li> </ul>	<ul style="list-style-type: none"> <li>Lookout man with HS flags to be posted to warn the workmen (on both ends of the bridge in case of single line) AND</li> <li>Caution order of 'Whistle Freely'(WF) to be issued to the Drivers for 1.2km stretch before the bridge (on both sides in case of single line)</li> </ul>
3.2.2	<ul style="list-style-type: none"> <li>Conditions mentioned above are not satisfied</li> </ul>	<ul style="list-style-type: none"> <li>2 or more Lookout men with HS flags at adequate distances to be posted to warn the workmen (on both ends of the bridge in case of single line) AND</li> <li>Caution order of 'Whistle Freely'(WF) to be issued to the Drivers for 1.2km stretch before the bridge (on both sides in case of single line) AND</li> <li>Hooters / Portable Train Detection system to be used at site to warn staff about approaching train. In case such systems are not available, Walkie Talkie sets shall be used to ascertain train movements from SM by posting men at adjacent station(s).</li> </ul>

3.3 For the Category-1 works mentioned above, SR may also be imposed, if considered essential as per site conditions.

4.0 Category-2 works as defined under para 805(2) of IRPWM-2020: Works of short duration which are completed by the sunset of the day without any SR thereafter

4.1 When the Train is required to stop at the site of the work

Following Bridge works shall be considered under this sub-category which are required to be done under Line Blocks with full protection of work site as per standard track protection measures specified under para 806 (1) of IRPWM-2020:

- 4.1.1 Oiling and Greasing of Bearings
- 4.1.2 Casual renewal of Bridge sleepers, Bearing plates, Packing plates, Elastomeric pads
- 4.1.3 Alignment rectification of girders
- 4.1.4 Replacement of guard rails on Major / Important bridges
- 4.1.5 Any short duration work which infringes the minimum clearances for trains given under IRSOD

#### 4.2 When the Train can pass the worksite with Speed Restriction

Following Bridge works shall be considered under this sub-category which can be done without taking line Block but with full protection of work site as per standard protection measures specified under para 806 (2) of IRPWM-2020 duly imposing suitable SR:

- 4.2.1 Minor repairs to Bearings & Bed blocks
- 4.2.2 Replacement of loose Rivets & Bolts
- 4.2.3 Painting of top flange of Steel Plate Girders & Open Web girders
- 4.2.4 Metalizing of all Steel Girders
- 4.2.5 Replacement of track fittings on Bridge (other than bearing/packing plates, elastomeric pads under the rail/sleeper)
- 4.2.6 Replacement of Central Foot path sheets.
- 4.2.7 Major Repairs to Trolley / Man refuges
- 4.2.8 Arrangements for OHE mast fixing on the existing piers of the bridge.
- 4.2.9 Replacement of guard rail on Minor girder bridges
- 4.2.10 In-situ welding and other minor works on the Top deck of the bridge

#### 5.0 Category-3 works as defined under para 805(3) & 807 of IRPWM-2020: Works of Long duration extending for few days/weeks requiring SR and fixing of Temporary Engineering Indicators

5.1 Following Bridge works which are required to be done under line blocks duly following the procedure and protection arrangements specified under para 807 of IRPWM-2020 shall be considered under this sub-category:

- 5.1.1 Through Sleeper / Fittings Renewal on Bridges.
- 5.1.2 Replacement of Load bearing members, gussets etc. of open web girder bridges
- 5.1.3 Re-girding works of bridges
- 5.1.4 Replacement of Girders with PSC slabs
- 5.1.5 Replacement of bearings
- 5.1.6 Replacement of Bed blocks
- 5.1.7 Strengthening of floor system (stringers, cross girders etc.) of girder bridges
- 5.1.8 ROB works: Girder launching, fixing bracings etc.
- 5.1.9 RUB / Canal Crossing works: Segment launching, BOX pushing etc.
- 5.1.10 Bridge Dismantling / Rebuilding / Rehabilitation works with or without insertion of RH girders

5.2 Following Bridge works connected with sub-structure & foundations of the existing / new bridges may however be carried out without line blocks under Temporary Speed

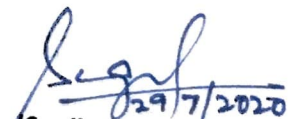


Restriction as specified under **Modus Operandi** of construction given in the approved GAD of the work:

- 5.2.1 Extension of existing bridges under GC / Doubling / Tripling
- 5.2.2 Strengthening of existing sub-structure & foundations by way of jacketing. (SRs as prescribed under para 513 & 515 of IRBM shall be imposed during jacketing)
- 5.2.3 Deep excavations for foundations of new Bridges, ROB's adjacent to existing track / bridge
- 5.2.4 Exposure of foundations of existing bridges for doing flooring, wing / return walls etc.
- 5.2.5 Major Repairs to Sub-structure / foundations & Bridge approach protective works.
- 5.2.6 Pipe line crossing works with micro tunnelling / augur / jacking method
- 5.2.7 Any other work adjacent to the existing bridge or bridge approach which is likely to affect the bridge like excavation of cess / slope of bank / toe of bank etc.

**6.0 Additional safety measures required in all the above Bridge works:**

- 6.1 In Electrified sections, where work is required to be done nearer to the current carrying conductors, power blocks shall also be taken along with line blocks.
- 6.2 Where the bridge work affects the existing Track / S&T / Electrical arrangements, such work shall be carried out in co-ordination and with supervision of concerned P.way / S&T / Electrical officials.
- 6.3 For carrying out works on bridges located within station limits or in automatic block sections, the procedure & protection measures prescribed under para 806 (4) & (5) of IRPWM-2020 shall be followed.
- 6.4 All vertical cuts of excavation in the vicinity of the bridge should be supported with arrangements like sheet piling, secant piling etc., of adequate depth.
- 6.5 Wherever road vehicles and/or machinery are required to work in the close vicinity of the bridge, precautions as prescribed under Para 819 of IRPWM-2020 shall be followed duly deploying lookout men to warn the Vehicle/machine operators about the approaching trains and imposing a WF caution order for the approaching trains along with SR if necessary.
- 6.6 Prior CRS sanction shall be obtained for all the works where sanction is required under para 1202 of IRPWM-2020.

  
(Sanjiv Agarwal)

Principal Chief Engineer

Copy: CAO/C, CPM/RVNL/SC & MAS, GM/RITES/SC & SBC for information.

CTE, CBE, CGE, CE/Wks, CPD/SD, CE/P&D, CE/TP, CE/TM, CE/RSW, CE/BRH, CE/SD

Sr.DEN/Co-ord/SC, BZA, GTL, HYB, GNT, NED

Principal/ZCETI/KCG