

HLP

NORTHERN RAILWAY

Headquarters Office
Baroda House
New Delhi

No.835-W/Reconditioning of CMS Xing/TP

Date: 20.8.2013

Sr. DEN/C

Northern Railway

DLI,UMB, FZR, MB & LKO.

Sub: Precautions for reconditioning

Ref: This office letter No.836-W/435/TM dated 13.8.2012

In one of the division, accidents had occurred due to chipped off reconditioned tongue rail. It is noticed that the recondition of tongue rail has not been done by following the laid down procedure/ precautions. Reconditioning should be done strictly as per the **"Manual for reconditioning of medium manganese (MM) steel points & Crossings, Switch expansion joints (SEJ's) and cast manganese steel (CMS) Crossings -1996"**. In this regard, the precautions which are required to be observed during depot reconditioning are reiterated below:

1. The crossing shall be inspected and it shall be ensured the, it is repairable. P&C containing cracks on the worn out portion having depth more than 3 mm beyond the condemning size shall not be selected for further reconditioning and ultra sonic test should be carried out. P&C having internal defects could not be detected. In case crack is through and through across the complete section either through nose or through wing rails it should not be taken up for repairs. Bolt-holes, if elongated, shall be re-deposited by welding followed by drilling.
2. Worn-out area should be thoroughly cleaned to ensure freedom from dust, rust, grease or any foreign material.
3. DC generator/rectified with rating of 65-80 OCV (Open circuit voltage) should be used. It should preferably be with reversed polarity in case of CMS crossings.
4. The cables should be free from any damage. The cables should not be too long to avoid current loss.
5. The power source and job to be welded should be property earthed.
6. Arc length shall be short.
7. Job to be welded shall be in flat position.
8. Skip welding sequence should be adopted in the order LWR, NOSE & RWR or vice-versa.
9. Welding cycle shall not be more than 2 minutes.
10. Electrode angle should be maintained at 45' with the direction of welding
11. In case of single electrode system, it shall be ensured that after grinding, the depth of worn-out area shall not be less than 3 mm at any location.
12. Only those electrodes, which are approved by RDSO, shall be used base upon traffic carrying capacity viz. H3 class (15 GMT), H3A class (25GMT) & H3B class (35 GMT).
13. Electrodes should be connected to correct polarity using recommended current. Tong testers shall be used to determine actual current flow.

14. During welding, straight edge should be used continuously for correct build up. After completion of welding, built-up are should be carefully examined and any under-welded spot shall be deposited again while the crossing still remains hot.
15. MMS/90 UTS switches/crossings before welding preheated to a temperature of about 250°C TO 300 °c by to and fro movement of the oxyacetylene torch. The blowpipe shall not be held at one spot.
16. Preheating should not be done for CMS crossings.
17. Welding shall be commenced immediately after pre-heating.
18. Preheating of electrodes shall be done at 130 °c to 170 °c for at least one hour immediately before use. In case the packing of electrodes is absolutely intact and all the electrodes are consumed within six hours after opening of the packing, them preheating of electrodes is not required.
19. Complete removal of slag shall be ensured during welding with the help of hardened chipping hammer having flat and pointed ends and hardened wire brush having three rows of bristles on a width of 25 mm.
20. Electrodes with damaged and cracked coating shall not be used.
21. In case the crack in switch/crossing is deep, instead of grinding, suitable cutting or gouging electrodes shall be utilised to remove such cracks easily.
22. Temperature of the switches & crossings shall be checked during welding. It shall not exceed 300 °c for MMS/90 UTS switches & crossings and 150 °c for CMS crossings.
23. In case of CMS crossings, it shall be ensured that the crossing is submerged by in a water tank with only be head portion projecting out of water by 1 cm. Lower current of the recommended range shall be employed with stringer bead of shorter length, say 7 cms, deposited at a time. In case of CMS crossings, electrodes should be connected to positive polarity to reduce heat input.
24. Grinding for surface preparation/finalising to be done avoiding localised heating.
25. The competency of welder should be certified by Chemist and Metallurgist (CMT) of the Railway or by any other officer nominated by CE in case of departmental welders and by RDSO in case of private welders with a validity of 5 years from the date of issue. Same will be renewed again by CMT of Railway/RDSO/any other nominated officer.
26. It shall be ensured that all records regarding history of the switches & crossings like number of times reconditioned, worn-out area reclaimed electrode used, laying particulars, service life in terms of GMT etc. are recorded in a card for register. Preferably, card shall be maintained separately for each switch & crossing in the enclosed Annexure 1.

Apart from the departmental reconditioning, Railway Board vide letter no. Track/21/2007/0401/7/cms xing dt. 25.08.10. has already approved **Robotic Translamic Welding Technology** for in-situ reconditioning of CMS crossing. Divisions have already advised vide this office letter no. 836-W/435/TM dt. 13.08.12 to carry out in-situ reconditioning of CMS crossing on A, B, C, D and D special route by this technology vide this office letter under reference .Approval for in-situ reconditioning of CMS crossing on E route is to be sought from HQ office.

As condition of CMS crossing in N.R. need attention, It is advised to take urgent action for reconditioning/replacement of CMS crossings .


 20/2/13
 (Vishwesh Chaubey)
 Chief Track Engineer

C1 = CE/G, CE/TMC, CE/MRTS, CE/RC, CE/TSP
 C2 = PCG //