

Longitudinal Timber Detailed Inspection

Scope Includes: All longitudinal timbered track systems

Preparation

Tools, equipment and plant items required but not limited to:

- Static track gauge
- Cross level
- Dynamic track gauge
- Measuring tape
- P'way sleeper hammer (with sharp probing end)
- Auger
- Drill
- Plugs
- Permanent marker/crayon
- Camera

Work planning considerations:

- The TRV trace must be reviewed on every inspection.

Method

Inspect the tracks of all roads from the bridge section including the run on and run off area for the following:

1. Gauge - This shall be at various locations along the length of the bridge, including but not limited to:
 - Every joint in each timber
 - At rail joints
2. Chair Gall - Excessive indentation around the baseplates. Special note shall be made if the galling occurs at the outer edges of the baseplate or chair.
3. Standard Tie rods - Loose or pulling through the timbers; Emergency tie bars - loose and not holding gauge.
4. Transoms - Loose, split and/or decaying.
5. Contact Marks – Look for shiny wheel contact mark along the gauge face of the rail (whilst the railhead remains rusty can indicate rotation of the rails and thus gauge spread when under load).
6. Rail Rotation - May be indicated by a change from the normal 1 in 20 inclination. Indications of rail rotation will be found from observations made as in Items 2 and 5.
7. Chair Screws - Loose, broken or missing. Ferrules crushed or driven down into the chairs or baseplates.
8. Rotten Timber - Condition of timber joints, especially around transoms.

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Creosote only penetrates the outer layers and as with sleepers the timber can be rotten on the inside whilst looking good on the outside. Check for rotten sides of timbers especially where they are in ballasted track (skew ends). Ballast should be kept clear of the timbers by a ballast wall in order to prevent rot and enable inspection of the timber ends.

9. Side Bursting - Look for timber splitting or side penetration by the chair/baseplate screws because of baseplates being located too near to the edge of a longitudinal timber.
10. Track Circuits - Failures from metal to metal contact, i.e. fishplates/tiebars/chairscrews/crossgirders/etc.
11. Loose Packings - Too many packing pieces under the chair or packings split or missing. Thin hardwood packings should be replaced with metal shims.
 - Check the cross-level at each chair across the whole length of the longitudinal timber and amend the packing as necessary
12. Welds (alumino-thermic or flash) must conform to the undernoted.
 - welds within the length of the longitudinal timbers-not closer than 4.5m(15 ft) to the end of the bridge and not closer than 2m (6' 6") to the end of an individual timber within the bridge
 - welds within cross-sleepered track at the ends of longitudinal timbers-not closer than 4.5m(15 ft) to the end of the longitudinal timbers. Wherever possible, fishplate joints should be avoided but, where this is unavoidable, they must not be located at timber joints or over abutments or piers.
13. Voiding underneath timbers - Look for signs of pumping on edges of longitudinal timbers especially where located in troughs. Voiding caused by abrasion can occur beneath both Cross and Longitudinal timbers where laid direct onto the rail bearers.
14. Conductor Rail Supports – Look for loose or tearing away from the timber side.
15. Cross Level/Cant - Longitudinal timbers may be cant planed or the cant maybe achieved by raising one timber above the other in a vertical plane. This latter type of canting will cause asymmetric loading on the rails and can lead to rail rotation where a high cant is present.
16. Top and Twist – Inspect for a loss of top or a twist may develop particularly on the run off/run on ends of the longitudinal timbers.
17. Curved Alignment - Particular emphasis must be placed on bridges with curved track with special attention being made to Items 9 and 15.
18. Holding Down Assemblies - Holding down assemblies (on cross timber bridges) may be loose, broken or missing.
19. Cleats - Check for missing cleats and wedges.
20. Loading Under Traffic - Observe under load as gauge spread, rail rotation, chair movement, timber voiding, etc, can be best seen in action.