SECTION 217 CONSTRUCTION STANDARDS FOR PERMANENT WAY

Construction standards for Permanent Way generally

1 Permanent Way shall be constructed in accordance with Railtrack Line Standards RT/CE/S102, and RT/CE/S011 for CWR with the additions or qualifications within this Section of the Specification.

(217.001)

Ballast

2 Minimum ballast depths shall be in accordance with the recommendations in Railtrack Line Standard RT/CE/S102. Additional ballast to form crossfalls shall be provided as necessary.

Ballast shoulder cross sections shall be in accordance with Railtrack Line Standard RT/CE/S102. Where there is sufficient space, two ballast shoulders shall be provided between adjacent tracks with the intervening space at cess level.

All cribs shall be completely filled with ballast and consolidated. The tops of sleepers, track slabs and direct fastening bridges shall be clear of ballast.

(217.002)

Sleepers generally

3 On straight track sleepers shall be nominally square to the rails. On curved track sleepers shall be normal to the tangent of the curve. The two sleepers on each side of a fishplated or welded rail joint shall be the same material and type.

The tolerance on the nominal spacing shall be ±20 mm for any individual sleeper (other than at new weld and IRJ positions), but the number of sleepers in any 18 metre length of track shall not be less than the number given by the nominal spacing.

At new weld and IRJ positions, sleepers shall be spaced at equal distances either side of the weld or IRJ, to a tolerance ±15 mm.

Where steel sleepers are used, the ballast shoulder shall be 600 mm wide, with 375 mm outside the sleeper and 225 mm over the sleeper end upto 125 mm high above the sleeper and clear of the rail fastenings.

Steel sleepers shall be spaced at 28 per 18.3 metres (60), with a minimum 4 timber sleepers between steel sleepers and any of the following or similar discontinuities:

(i) concrete sleepers,

(ii) longitudinal timbers,

(iii) level crossings,

(iv) S&C.

The spacing of sleepers at IRJ's and IB's shall suit the type of joints in use.

(217.003)

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/28/2016 01:49:06 MDT
Full document details: NR NR-L3-CIV-140-217C ISSUE 1997

Chairscrews 4

Chairscrews shall be installed normal to the plane of the sleeper into the pre-drilled holes, unless shown otherwise on the relevant Permanent Way Standard Drawing.

Chairscrews shall not be driven by a keying or sledge hammer.

Chairscrews shall be tightened so that the underside of the head makes contact with the upper surface of the ferrule.

(217.004)

Ferrules 5

Ferrules shall be inserted into the holes in chairs or baseplates such that the top of the ferrule is 6 mm above the upper surface of the chair or baseplate when the chairscrew is tight.

Ferrules shall not be driven fully home into the hole in the casting, except when the ferrules are the flanged type, in which case the flange shall be in contact with the top of the chair or baseplate.

(217.005)

Bullhead rail keys fastening 6

Bullhead rails shall be fully seated in the chairs, and held in place against the inner jaws of the chair by a key.

Tapered keys shall be driven in the direction of traffic, except at joints where the key on each side of the joint shall be driven towards the fishplate. On single or reversible lines, keys shall be driven either in the predominant direction of traffic or, if traffic is equal in both directions, in alternate directions on adjacent sleepers. Each key shall be tightly driven but not overdriven.

Notwithstanding the above requirement, where rail creep is found to be present, tapered keys shall be driven in the direction of the rail creep.

Wooden keys compliant with Railtrack Line Standard RT/CE/S026 which are unable to be driven tight but which are otherwise sound, may be used with wood or metal packing or liners between the web of the rail and the key.

Except in CWR, self retaining keys shall be used where key retention problems are being experienced, and shall be inserted and removed using the special tool appropriate to the key.

(217.006)

S&C bolts 7

Threads of horizontal bolts shall be completely oiled or greased before the bolts are installed and tightened. All horizontal bolts shall be fully tightened and the rails correctly seated in the chairs before final screwing or bolting down on the timbers or bearers is carried out. No more than two washers shall be used under any one nut.

(217.007)

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/28/2016 01:49:06 MDT
Full document details: NR NR-L3-CIV-140-217C ISSUE 1997

Flat bottom rail fastening 8

Flat bottom rails shall be seated evenly on baseplates, and where applicable seated correctly on rail pads, with all fastenings correctly tensioned before fixing to gauge, except at crossing noses, crossing V legs and wing rail fronts where the rails shall contact both baseplate gauge retaining faces.

Holes for elastic spikes shall be drilled 12 mm diameter completely through the sleeper.

Holes for Macbeth spikes shall be drilled 14 mm diameter completely through the sleeper.

(217.008)

Fishbolts 9

Where specified in the relevant Particular Specification, lock nuts or other locking devices shall be used with fishbolts. Fishbolts shall be tightened to the torque appropriate to the bolt diameter and grade, in accordance with Railtrack Line Standard RT/CE/S104.

The type and number of HTS bolts shall be as defined on Permanent Way Standard Drawings RE/PW/257 or RE/PW/615 applicable to rail section and use. HTS bolts shall be used with the R quality nuts supplied with the bolts. When a nut with a nylon self locking insert is completely removed from the bolt, a new nut shall be fitted.

(217.009)

Rail lengths in jointed track 10

In tunnels jointed rails up to 55 metres long may be used, except within 36.6 metres from each portal, where 18.3 metre rails shall be used.

Where on underbridges or in level crossings, rail joints are unavoidable, the joint shall be welded provided the length of rails between fishplated joints does not exceed 36.6 metres.

When new or replacement rails are laid into existing jointed track, the old rails, subject to minimum closure lengths, shall be cut back to take the full length of the new rails.

The minimum length of closure rails and number of sleeper supports under a closure rail, shall be in accordance with Railtrack Line Standard RT/CE/S102.

(217.010)

Rail alignment at joints 11

For jointed track, rail closures of a depth intermediate between existing and new or replacement rails shall be provided when the difference in rail head depth between abutting rails would otherwise be in excess of:

(i) 9 mm for rails of different section,

(ii) 6 mm for rails of the same section.

For the installation of a new rail or serviceable rail abutting a sideworn rail, the requirements of Railtrack Line Standard RT/CE/S104 shall apply.

Documents
Document Sharing Hub

Copyright Network Rail
Provided by IHS under license with Network Rail
No reproduction or networking permitted without license from IHS
Licensee=Weston Williamson/5989497001, User=sam, albett
Not for Resale, 03/28/2016 01:49:06 MDT
Full document details: NR NR-L3-CIV-140-217C ISSUE 1997