

Track Work Instruction 2T013

How to lift and pack plain line

Introduction

This Track Work Instruction covers the approach to lifting and packing of plain line - the quantity of work being limited to improving isolated low spots.

See also separate instructions:

TWI 2T007 How to carry out measured shovel packing

TWI 2T010 How to carry out kango packing

TWI 2T001 How to permanently mark out a curve for tamping



Competence

You must be competent to carry out this work.
See TWI 2G086 - Competence requirements.

Risks

If this sort of work is not planned and carried out carefully, it is possible to make the track worse than when you started!

Lifting more than permitted, could cause a derailment or serious damage to rolling stock and structures. It may cause a de-wirement in an OLE area.

Tools and Equipment

Spare fastenings

Materials and Spares

Thermometer

Crosslevel

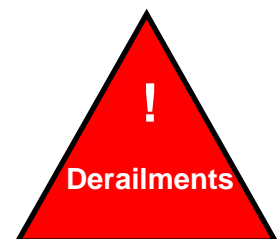
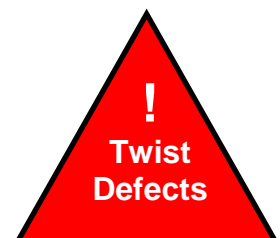
Chalk

Tape measure

Shovels

Jacks

Packing Tools



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Just in case

Make sure you know where to get spare ballast.

Method

Caution! You must not start work if the rail temperature is greater than either 32°C (or the Critical Rail Temperature CRT (W) if less than 32°C), or if the rail temperature is forecast to exceed 38°C within the next three days.

Work must be stopped if the rail temperature rises above either 32°C (or the CRT (W) if less than 32°C). The track must be fully ballasted and the temperatures checked for three days following.

Do not attempt to start work if the rail temperature is likely to drop below 0°C.

Before starting.

Identify the type of track being dealt with - see TWI 2P018 for help on how to identify track type, and TWI 2B008 for help on the type of ballast.

Is it concrete or wood sleepers?

Is it jointed or CWR?

Is the track under OLE?

Is the track straight, curved or in a transition? Are the cant marks present?

Check the CRT for the section of track you are going to work on.

Determine how to do the lifting and packing - from the options of shovel packing, kango packing, MSP or hand-held stone blowing.

What to look for that might restrict the work:

Are there any overhead height restrictions, for e.g. is the site near or under an over-bridge or are there height restrictions to OHLE wires?

Is the site in or near a platform?

Are there any instructions or lineside notices saying that lifting is not allowed?

Is the site close to a level crossing?

Is the site close to a section of track without ballast – this could be a length of slab track or a bridge on longitudinal timbers.



The track on the bridge cannot be lifted with jacks.

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Method continued

Are you in close proximity to any S&C?
Is the ballast glued?

What to look for that might help your work:

Are there markers or datum plates showing track level?
Are there any markers or datum plates giving alignment?

Working out what you can do:

Do you know the limits of the job – where to start and where to stop?

Can you do everything you think is needed with the resources you have available?

Can you do the work in one shift or will it have to be staged – bearing in mind that the site must be left safe between stages?

Beware! Remember that you may not be sent back to the same site tomorrow, even though that was what you had planned!

At the site:

After deciding on the start and finish point, walk through the site making a careful note of anything in or on the track that will prevent you from lifting. Take your time with this and ensure that you do not miss anything.

Look for items like: AWS magnets, hot axle box detectors, TPWS grids, foot crossings and treadles; you will need the attendance of competent staff when you work near this sort of equipment.

What is the rail current temperature and what is it likely to be?

Can the track be lifted at all?

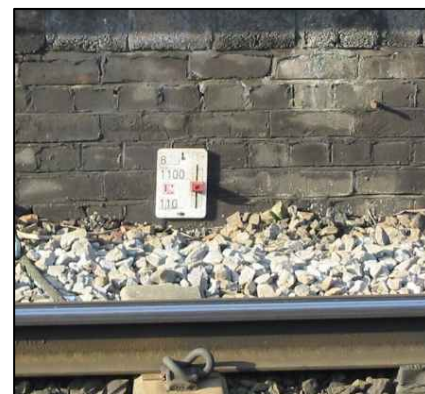
What is the condition of the sleepers and fastenings - will you be able to lift the rail and be sure that the sleepers will be lifted as well?

Do you need to do some fastening or sleeper maintenance before you start using the jacks?

If you need to lift a joint, check that it has the correct plates. Does it need lift plates first? Does it need to be shimmed? Are all the bolts tight?

Is there enough ballast to carry out the work and keep the track secure?

If there is not enough ballast and you cannot find any nearby, then report back before you lift the track out of the ballast.



Look for special datum plates that will give you track level.

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Method continued

Planning the lifts

Walk through and take crosslevels and mark the findings on the sleeper/s.

Measure the six foots every 10m (30 feet) - or if there is no nearby track, take dimensions to a suitable fixed point and mark this on the sleeper. This is important, especially on curved track, because of the need to make sure that there disturbance of the alignment during the lifting process. These measurements will give some references to go back to.

Determine which is going to be the datum rail.

TWI 2T018 – ‘How to prepare the track for stoneblowing’ advises how to determine the datum rail.

Sight through the site - use sighting boards.

If the repair is short you may be able to do the sighting by eye.

Have an assistant to help find the low spots by pointing on the rail.

If there are any very bad low spots, consider repairing them first to improve the site before you start the main job.

Work towards traffic.

Work on both rails at the same time.



If there is only one track, take measurements off a fixed object.

Before you leave the site

Finishing the job:

You need to ‘wrap up’ your work in a methodical way.

Double-check the crosslevels as you go, to make sure that you haven’t made things worse, for e.g. a twist fault.

Watch trains over the site and check the crosslevels again. If necessary, repack the sleepers.

Check line by eye and then by comparing the track with the measurements you took at the start.

Make sure the track is fully boxed in. If there is insufficient ballast then report back.

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Problem solving

What if the temperature starts to rise rapidly towards 32°C or the CRT?

Report back immediately.

Be prepared to have to apply an emergency speed restriction, especially if there is insufficient ballast.

Stop lifting and box in.

Make sure that the site is monitored for the next three days.

What if you are called away from site?

Run out all lifts and box in the track.

Do not assume that you will be coming straight back so leave the track completely secure. Do not rush this!

Report back with the progress made so far – this should ensure that the rest of the lifting is not forgotten.