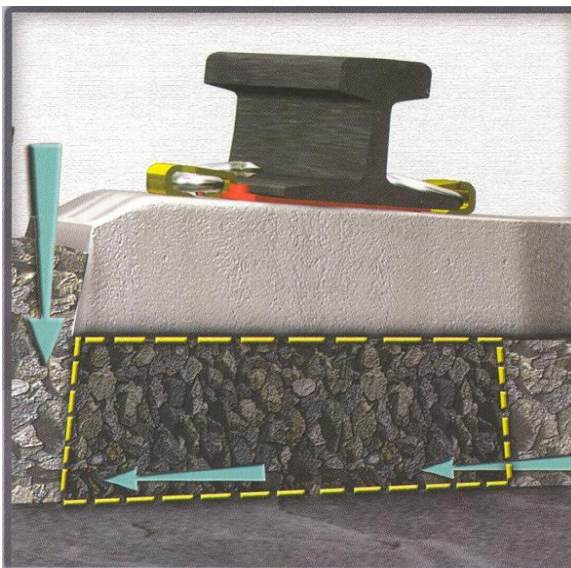


1. Collect all tools and material to install the Concrete Sleepers.
2. Examine the hanging and footwall at the place of installation. (This will avoid injury during installation)

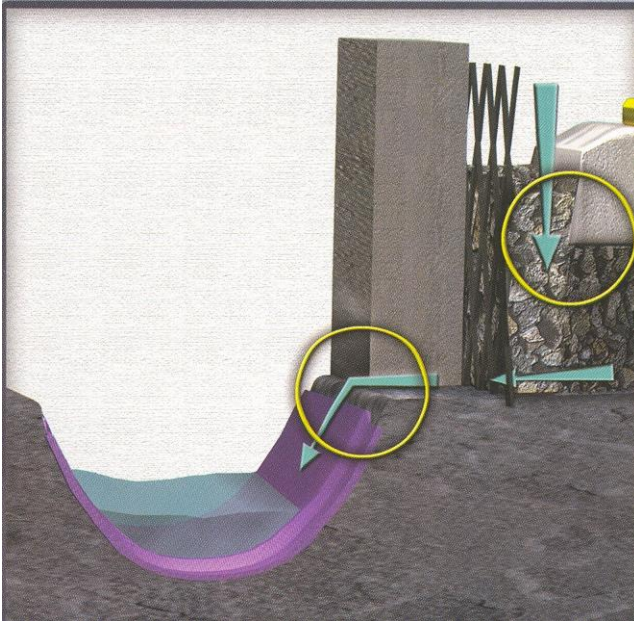


3. Track panel:
 - 3.1. Compact footwall sloping 1:20 towards the drain.
4. The strong foundation:
 - 4.1. Use graded, washed ballast 37.5 mm to 53.0 mm in size



5. Ballast
 - 5.1. The resilient support:
 - 5.1.1. Only tamp directly beneath the middle of the sleeper.
 - 5.1.2. Ballast around heads of sleepers

5.1.3. Ballast up to 30.0 mm below the flange of the rail.

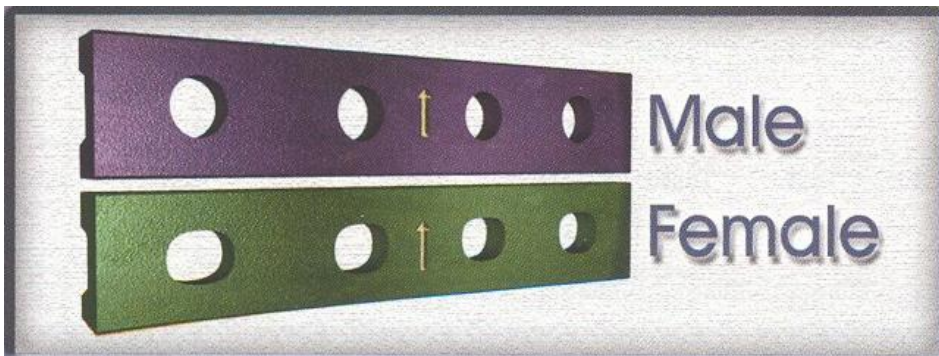


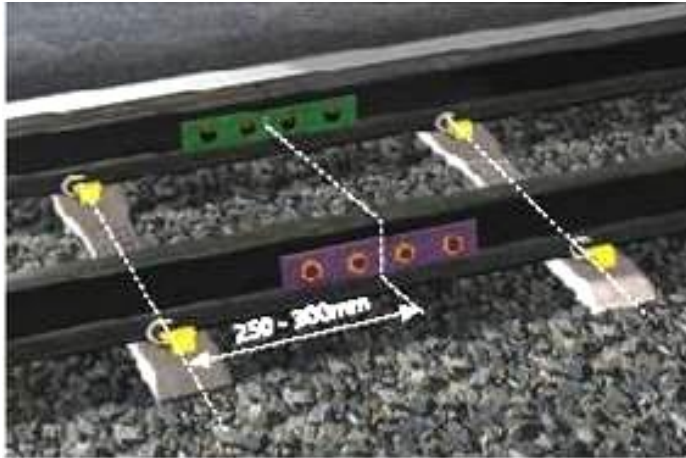
6. Water

6.1. Public enemy number 1

6.1.1. Use Flolok drains to keep water away from the track panel.

6.1.2. Top of drain section must be below the elevation of the sleeper base.





Recommended end joint spacing 250 - 300mm to centre of sleeper.

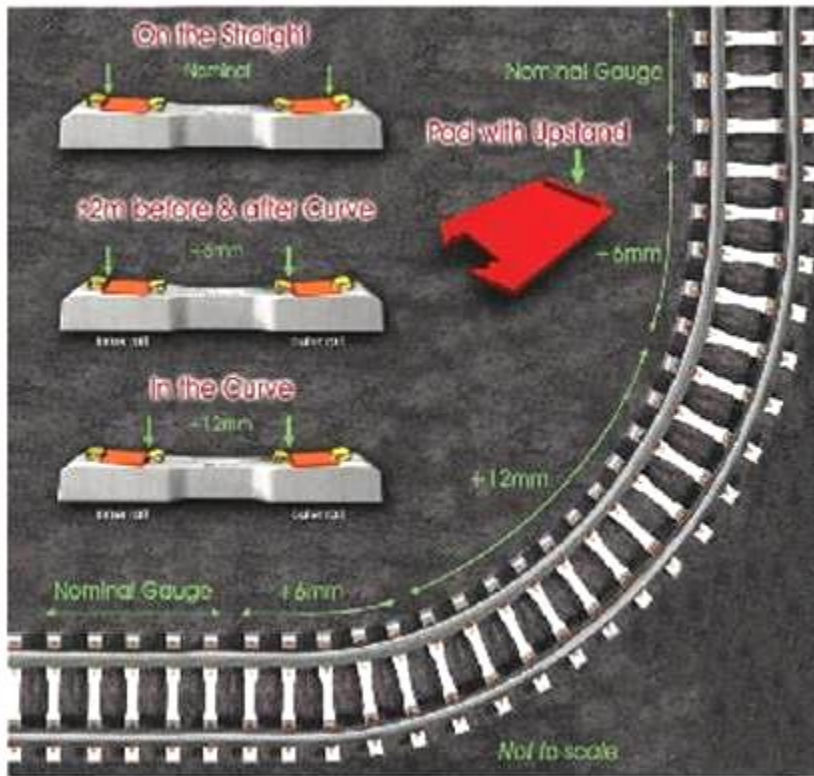
7. Fishplates

7.1. Transfer dynamic forces:

7.1.1. Use male and female fishplates

7.1.2. Install fishplates with arrows pointing upwards

7.1.3. Install female fishplates on the inside of the rail.



8. Gauge widening for 10 tonne sleepers



RECOMMENDED INSTALLATION PROCEDURE

No.: RIPCS

DATE: July 2016

ISSUE: 2

CONTROL COPY No.:

INITIATOR: HF du Plessis

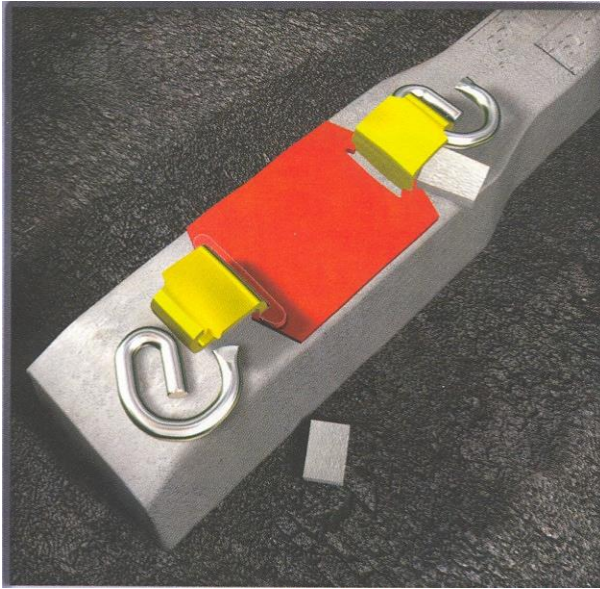
APPROVED: Sales
Manager:

PAGE 4 of 7

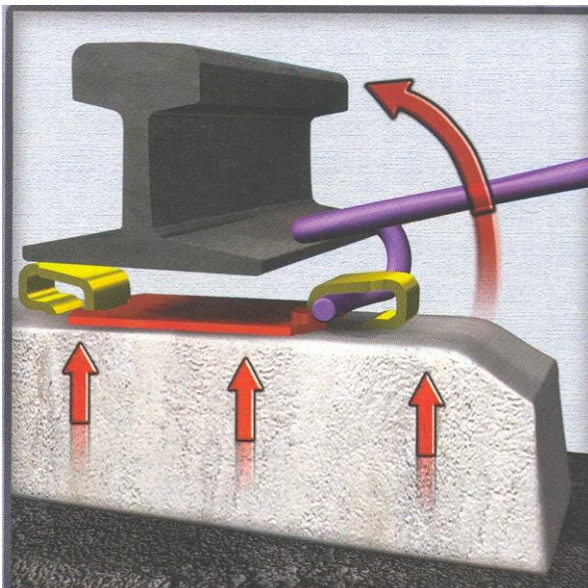
AREA: Company wide

TITLE: CONCRETE SLEEPER

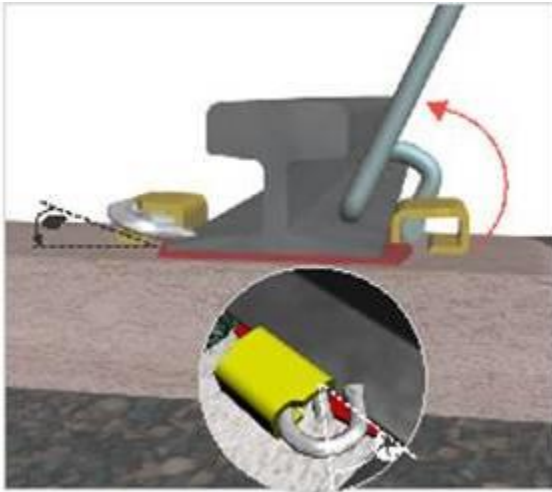
- 8.1. Always install sleeper with upstand in the correct position.
- 8.2. A 25.0 mm Super Elevation on curves will alleviate wear and tear on rolling stock wheels and rails.



9. Always use a carry handle when moving sleepers
10. Use Pandrol tools for safe and easy installation of concrete sleepers.
 - 10.1. Ensure that the pad is correctly placed on the railseat to protect the sleeper against abrasion.
 - 10.2. Remove the polystyrene insert and Mineclips.



- 10.3.** Insert the Panlifter into the shoulder
10.4. Lift the handle to clamp the sleeper to the rail.



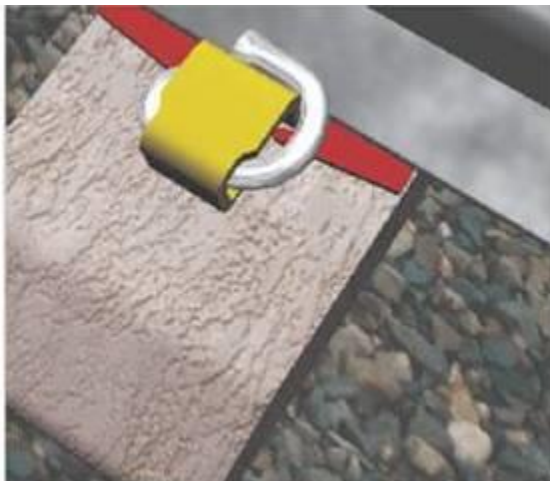
- 10.5.** Push the rail down onto the railseat with the Panlifter, while installing a Mineclip on the opposite shoulder.
10.6. Insert the heel of the Mineclip into the shoulder at a 45° angle.



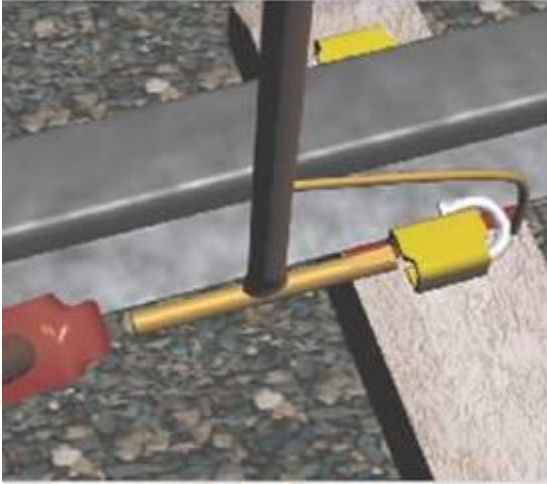
- 10.7.** Position the installation tool around the outer arch of the Mineclip,
10.8. The Mineclip should remain at 45° angle.
10.9. Initially position the installation tool around the outer arch of the Mineclip while ensuring that the Mineclip remains 45° angle to the rail.



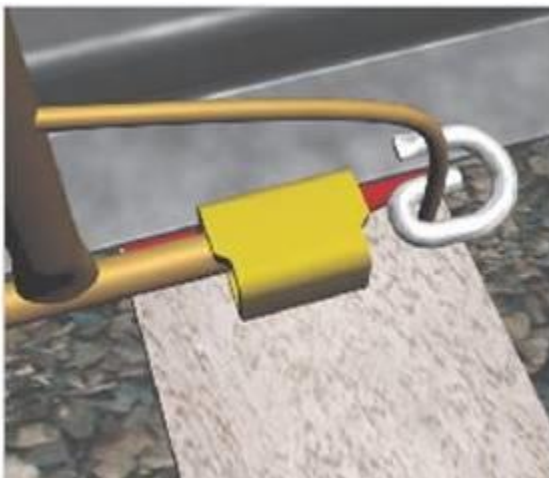
- 10.10.** Insert the Mineclip per supplier's specifications.
10.11. Using a hammer, tap the Mineclip into position. A final blow to ensure.



- 10.12.** The Mineclip is correctly installed when the front of the clip protrudes just past the shoulder.
10.13. The Pandrol installation tool facilitates safe and proper installation of the Mineclip.



- 10.14.** Place the tapered side of the extraction tool against the Mineclip inside the shoulder. Ensure that the clip catcher is in position on the opposite side.
- 10.15.** Dislodge the Mineclip by tapping the extraction tool at the opposite end.



- 10.16.** The clip catcher will prevent the clip from flying out and eliminate the risk of injury.