Enhanced Rail Grinding Capabilities on Embedded Track
(New Specifications for Corrugation, Surface Roughness, and Profile)

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Type 1 grinding

(conventional method for open track)

Uses bottom of stone
Type 1 grinding fouls embedded track
Obstacles restrict conventional grinding strategy being used in Embedded Track
Existing Grinding Strategy in Embedded Track
Rail Grinding Embedded Rails

In the past embedded track was very challenging to grind, and full profile grinding was not possible.

- tight clearances (flangeway, girder rail, pavement)
- grinding equipment not able to orient grinding stones in the “normal” position used in open track due to clearance restrictions – stones were too big
- problems navigating tight radius curvature
Introduction of Speno SRR16-M4
(July 2009)

16-stone machine
Existing Grinding Strategy in Embedded Track
New Grinding Strategy in Embedded Track

Special stones assure grinding of the gauge corner down to -70°
Introduction of Speno SRR16-M4
(July 2009)

16-stone machine

• capable of grinding embedded rail (uses small stones) in tangent and curves down to 25 m rad.
• very smooth surface finish (< 10 μm)
• equipped with automated, real-time measuring systems for monitoring and recording:
  ➢ corrugation
  ➢ cross section profile
Speno SRR16-M4

measuring trolley
Speno SRR16-M4 measuring trolley

corrugation

KLD profile
Speno SRR16-M4

Pre-grind rail condition with corrugation
Speno SRR16-M4

Grinding embedded roadway section
Speno SRR16-M4

Post-grind rail condition – corrugation removed

AFTER
Speno SRR16-M4

Pre-grind rail condition with corrugation

BEFORE
CORRUGATION BEFORE GRINDING
Speno SRR16-M4

Post-grind rail condition – corrugation removed

AFTER
Spec. is to reduce corrugation to 0.02 mm over 200 mm.
Speno SRR16-M4

Very smooth surface finish (5-10 µm)

Hommel tester
Speno SRR16-M4

Can specify tolerance of $< 5 \, \mu m$ – acoustic grinding
Speno SRR16-M4

Previous typical post-grind “rough” surface finish
(> 15 μm)
PROFILES BEFORE GRIND

pre-grind rail profile

grind template
PROFILES AFTER GRIND

post-grind rail profile

grind template
Speno SRR16-M4

Full profile grinding in embedded rail sections

Sample of CPF rail profile
Rail Grinding Embedded Rails

It is believed the work we completed in San Jose (VTA) and San Diego (Trolley) is the first implementation of full profile grinding on embedded track in North America.

In addition to full profile implementation, corrugation was essentially eliminated, and a very smooth surface finish was left on the rail.
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