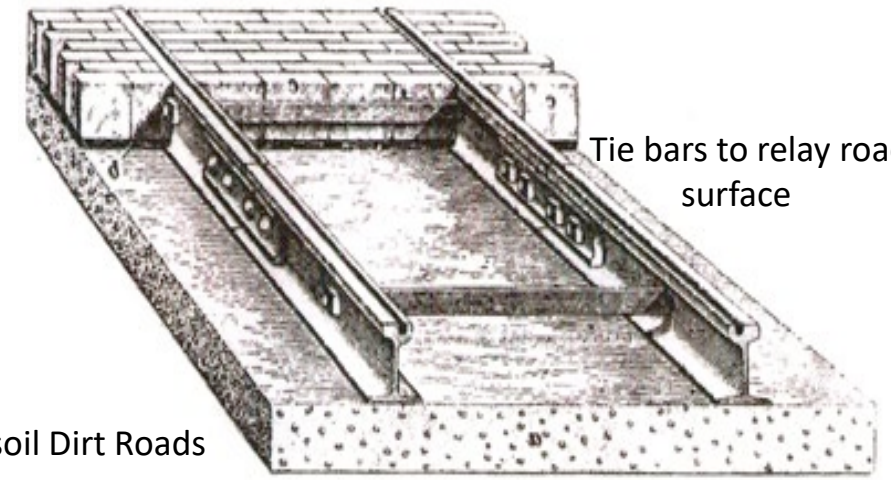
Low impact track:

>25 years: no maintenance needed !

Durable setts for rapid re-railing



Tie bars to relay road surface

Bare soil Dirt Roads

Concrete slab >150mm deep

The whole road closed

Labour intensive

The benefit of R & D

Prof. Lewis Lesley

Technical Director Tram Power Ltd.

What damages street tracks ?

- Heavy road vehicles

High impact loads

Rocking the rails

Breaking bonds

Letting in water

Tyres pumping water

- Weather and water penetration

Trams loosen foundations

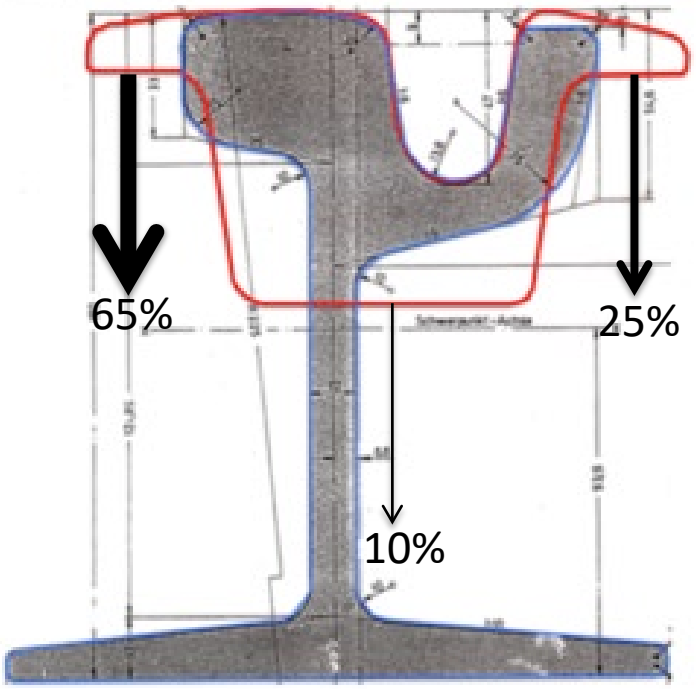
- Tramcars

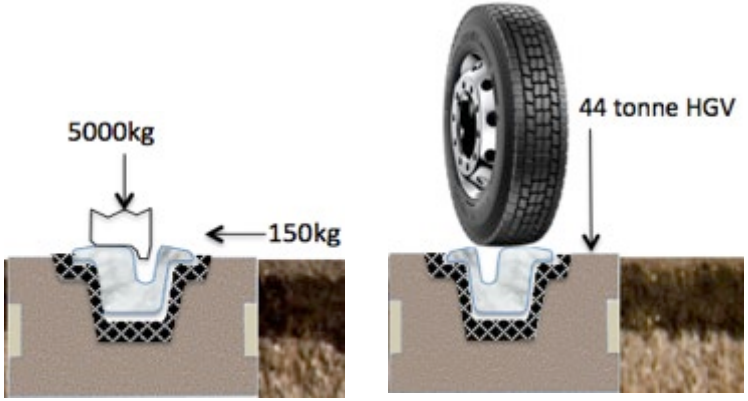
Foundations destroyed

Recent Tram track construction - Railway track in the road ?

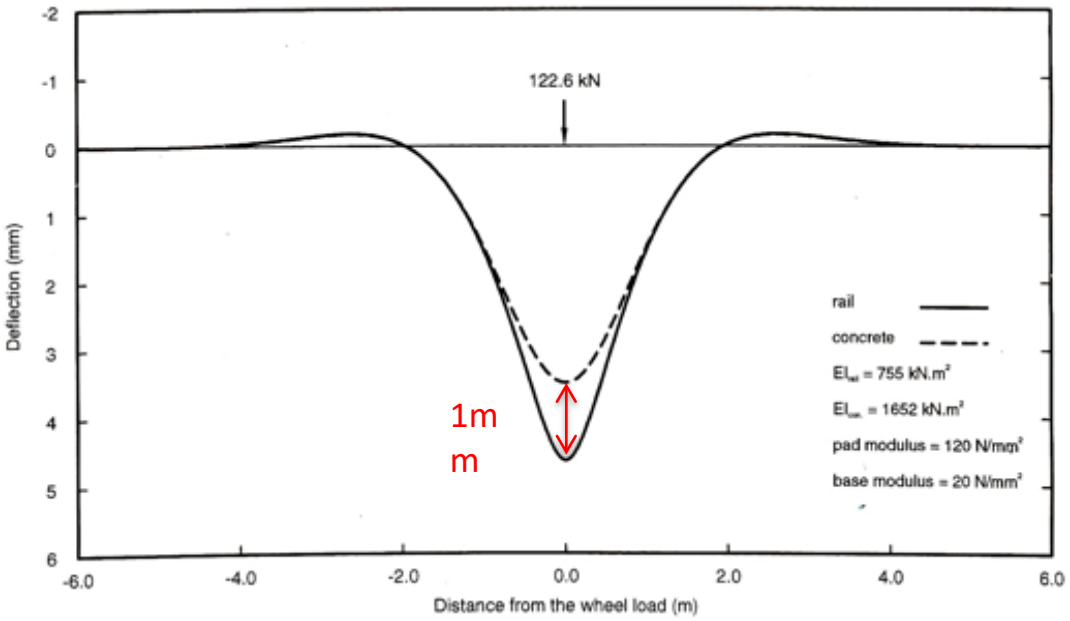
LR55 – the theory

Ri60 & LR55 compared

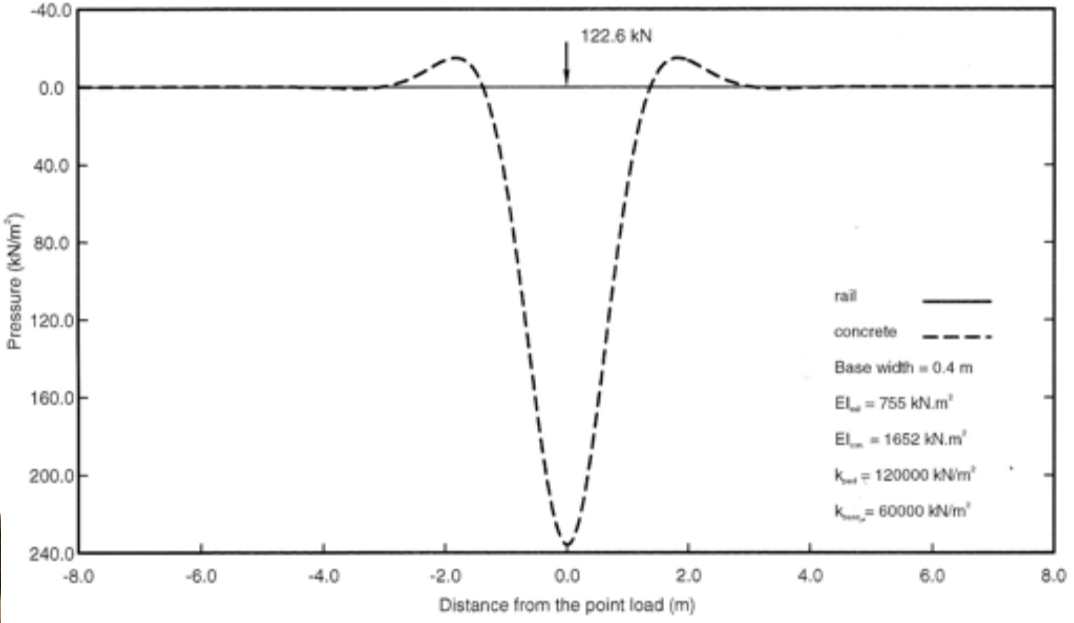




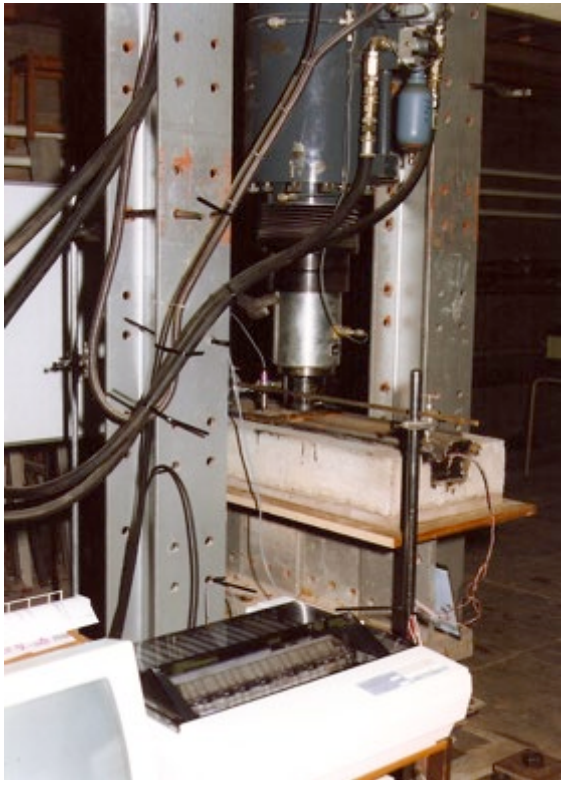
LR55 deflection under 25tonne axle load

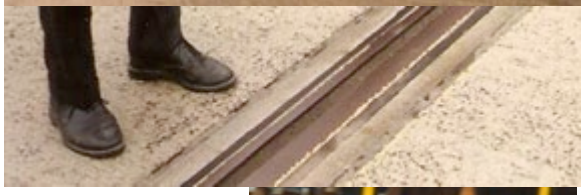


Ground pressure under LR55 beam with 25tonne axle load.



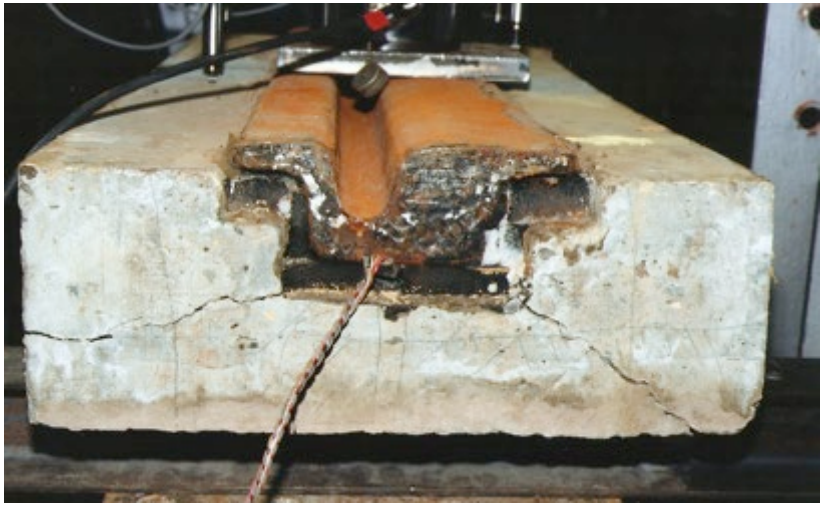
Testing to destruction





Lab. Tests
Under water
Over void
>200m cycles per sample
-10°C to +60°C
All at >25tonne axle load

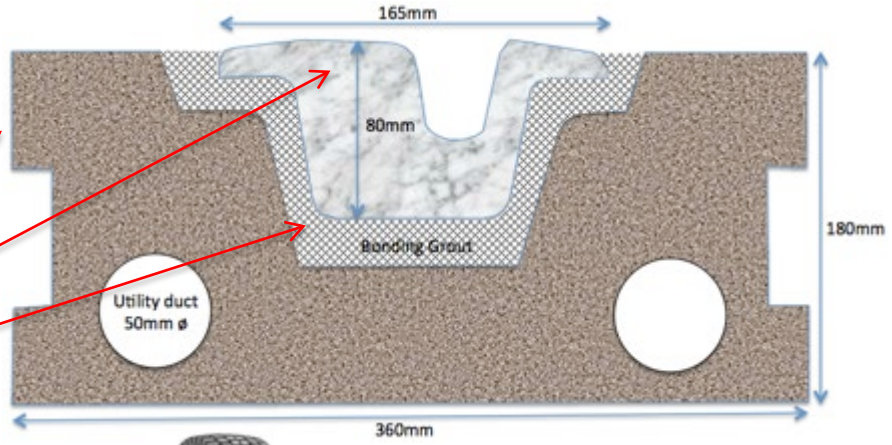
Field Tests
Bus Station
2500 buses/day
Rail strain gauged and logged
1m section excavated



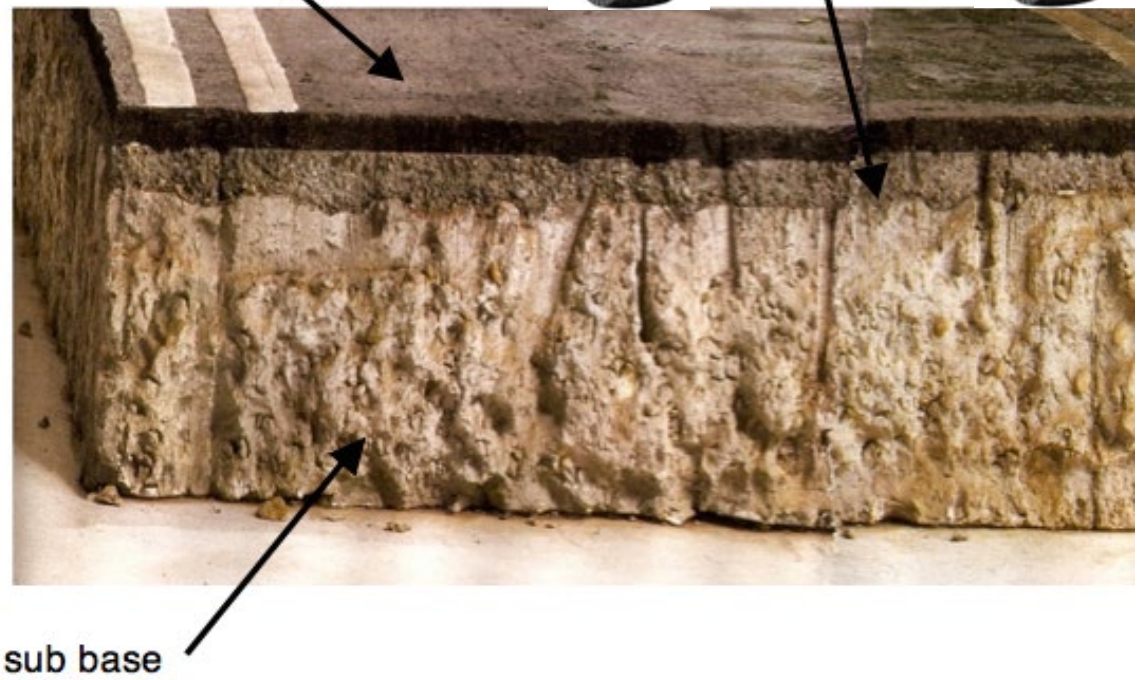
LR55 – the practice

Three components:

- Concrete foundation beam
- Steel rail h=80mm w=165mm
- Elastomeric bonding ground



Typical road profile



Modern Roads can carry:

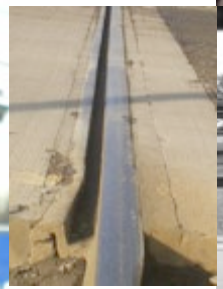
- >40tonne road vehicles
- >10tonne axles
- >1000m tonne lifetime
- >150m heavy axles

LR55 – the service on Sheffield Tramway

The LR55 installation,
after girder rails failed in 6months

Transition to girder rail

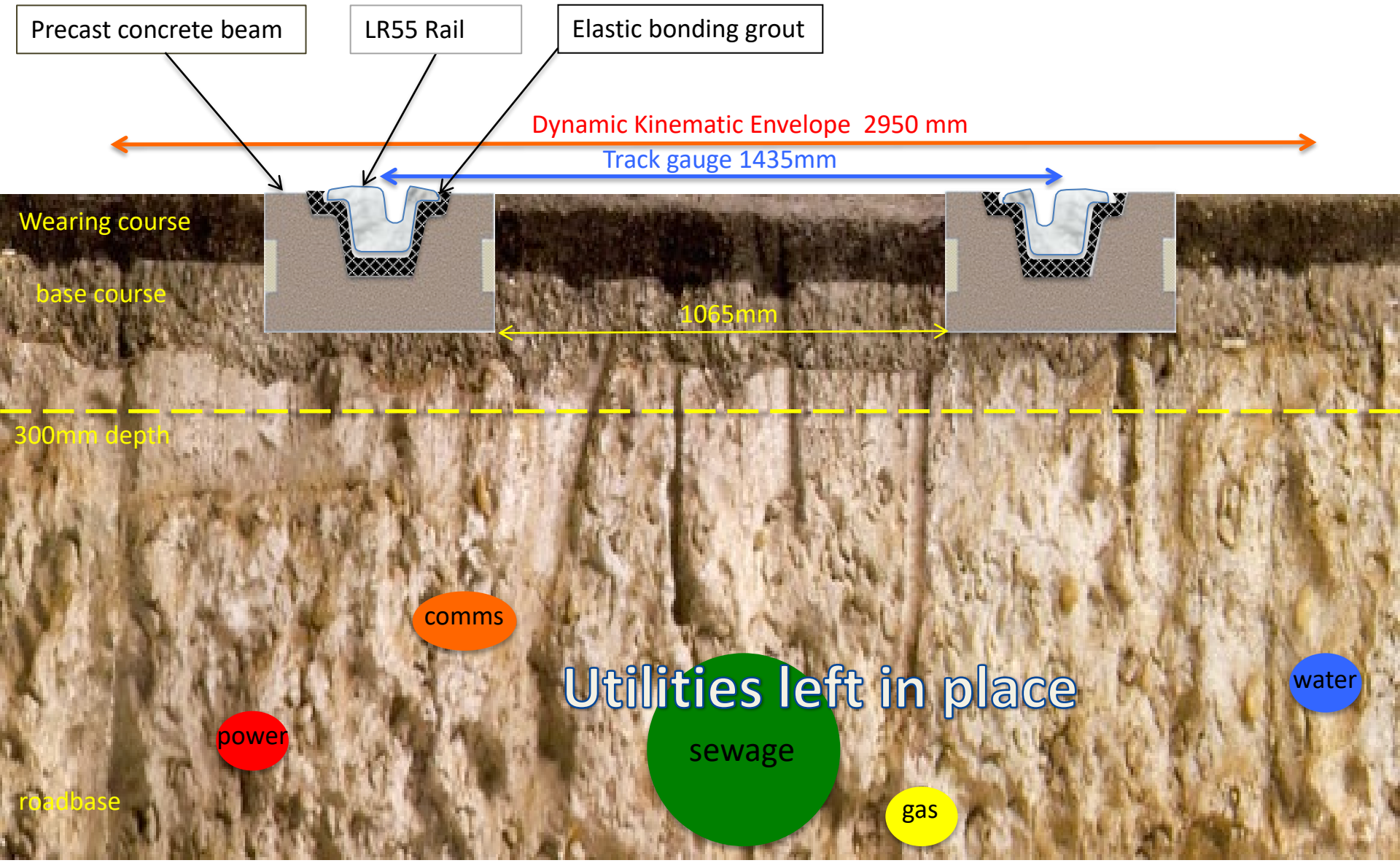
1st rail laid 0100 – 0530 Saturday
2nd rail 0100-0530 Sunday, Monday clean up
25yrs = 200m tram tonnes
No maintenance needed



Heavy industrial traffic

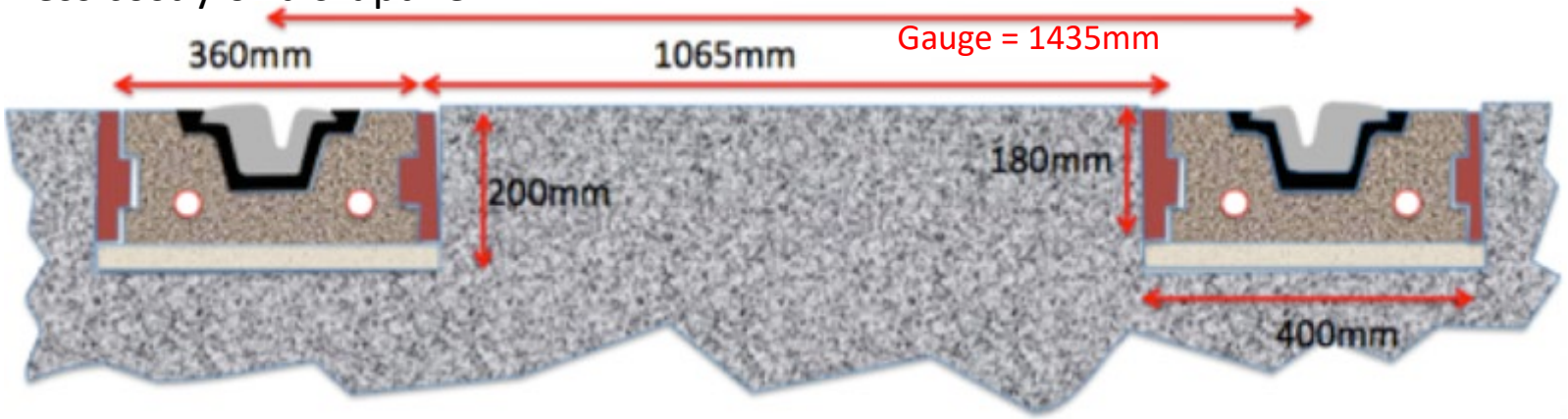
25yrs = 100m tonnes

LR55 – installing the track

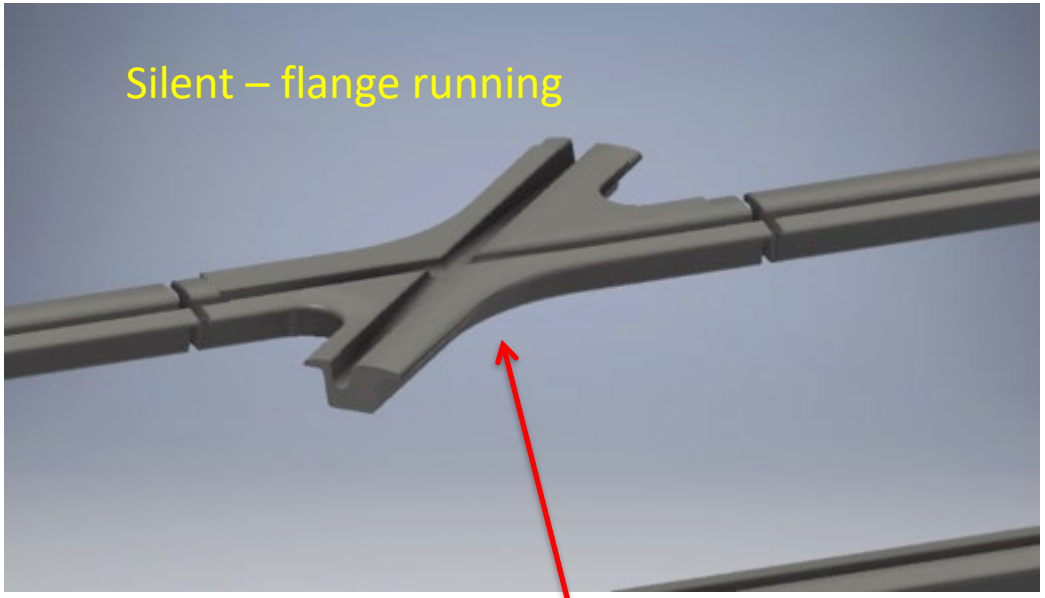


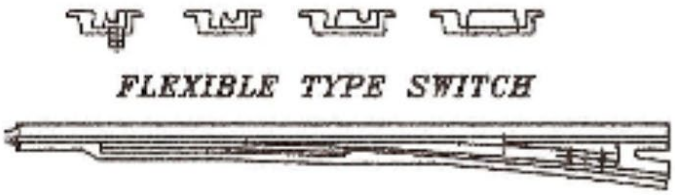
LR55 – what it offers

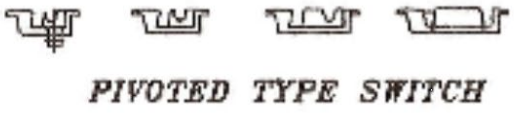
- <10% of normal excavation
- Utilities left in place (accessible between rails)
- Self supporting over 1m trench
- No stray current protection needed
  - Resistivity >1000Ωkm
- Noise reduction = 10dB(A)
- Vibration reduction = 30dB
- Only 3 components
  - Rails (British Steel)
  - Pre-cast foundation beams (local)
  - Elastomeric Grout (off the shelf)
- No need for gauge bars – stiff road and beams
- Fast construction - > 100m/week
- Roads stay open (temporary traffic management)
- Less costly or disruptive

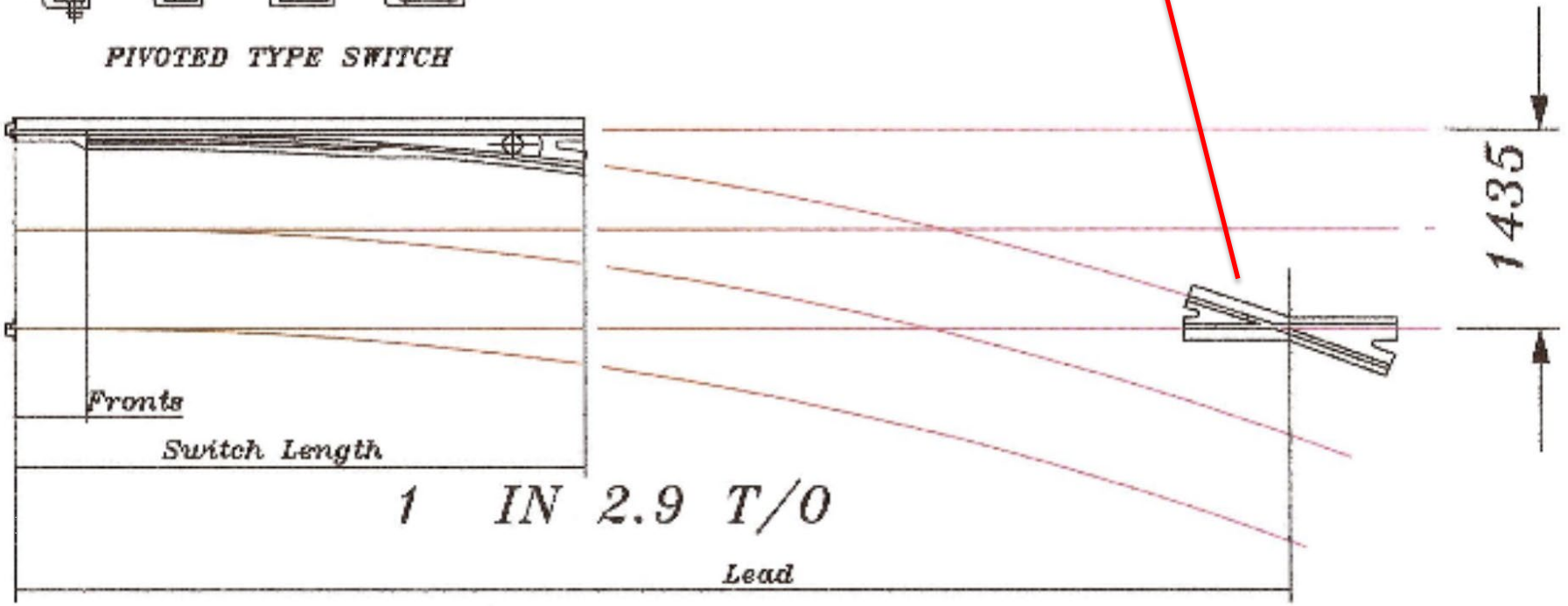


LR55 – the connections
Switches and crossings









LR55 – the film ! (see www.LR55.co.uk)

Action in Sheffield

Tram every 3 minutes – 300 heavy goods vehicles per day

QUESTIONS ?