

D/GAUGE

The background image shows a train platform. A train with a white upper body and blue lower body is stopped at the platform. The platform has tactile paving with yellow stripes and the words 'Mind the Gap' written on it. The platform is made of light-colored tiles.

Transition Overthrows

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Overthrow Formulae

23.3.2 Calculation of centre throw and end throw

If a vehicle is standing on a circular curve of known radius, the centre throw is given by:

$$C = \frac{B^2}{r} \times 125 \text{ (millimetres)}$$

and the end throw by:

$$E = \frac{L^2 - B^2}{r} \times 125 \text{ (millimetres)}$$

where L is the overall length of the vehicle (metres)

B is the distance between axles or bogie centres (metres)

r is the curve radius (metres).

If throws are required at a point other than the end or centre of the vehicle, then if the distance of the point of interest from the bogie centre is "x", the throw is given by:

$$E_x = \frac{(B + 2x)^2 - B^2}{r} \times 125$$

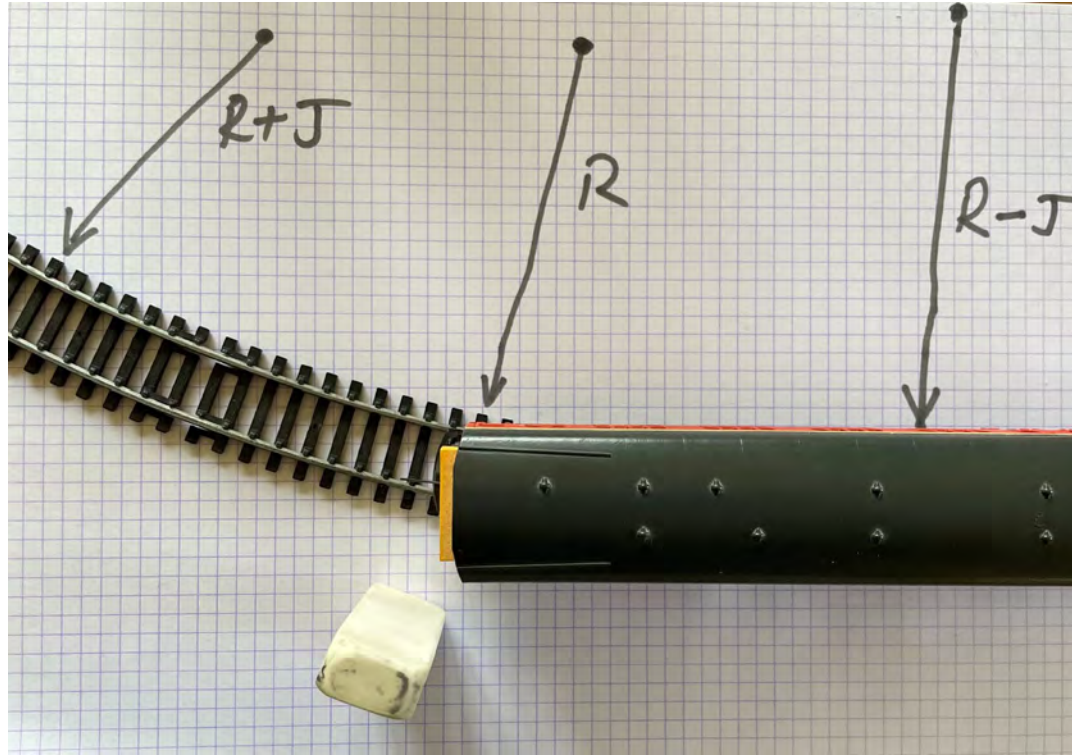
if the point of interest is outside the bogie centre, or:

$$C_x = \frac{B^2 - (B - 2x)^2}{r} \times 125$$

if the point of interest is between the bogies.

The throws derived from the above equations are only approximate because the throw due to the axle spacing on the bogie is ignored. In addition the application of circular geometry is marginally incorrect. These can be overlooked as the total error is very small and less significant than the error tolerated in any automated structure profile or track curvature measurement.

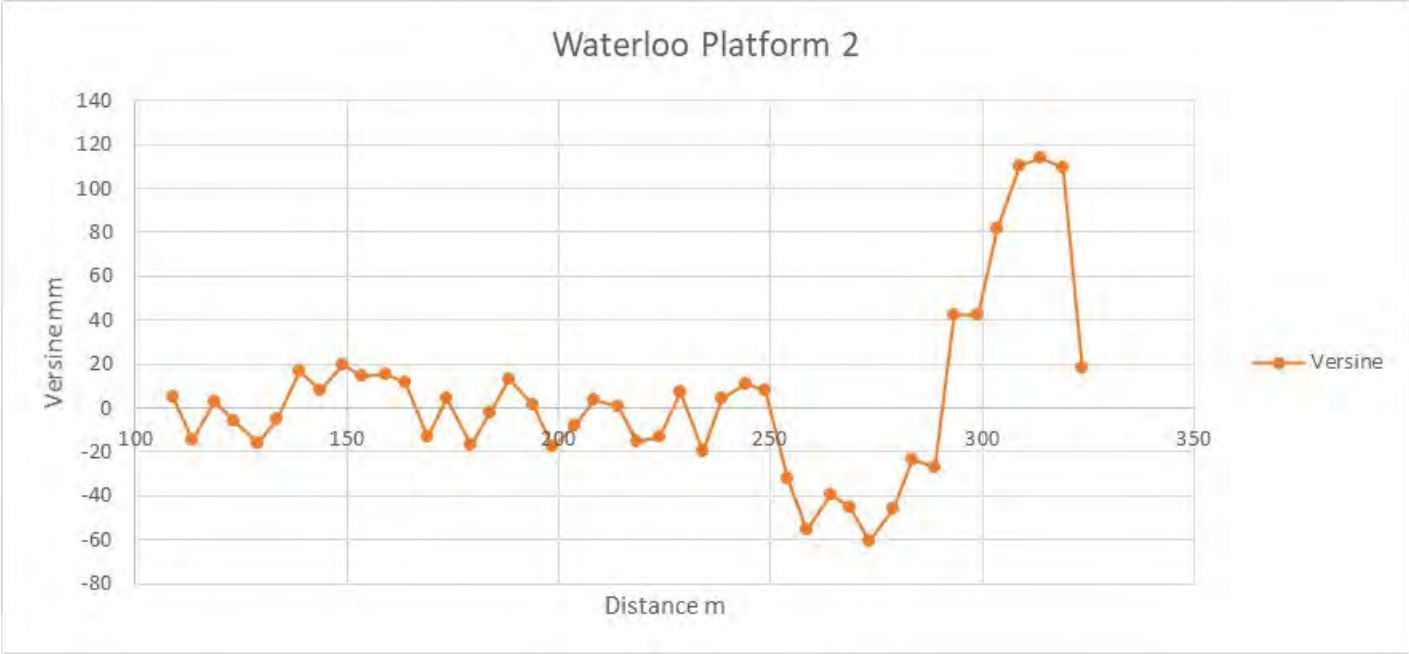
Southern Region Transition Method



$J = 10m$

End throw determined by tightest of $R+J$ or $R-J$

As Measured – Waterloo Platform 2



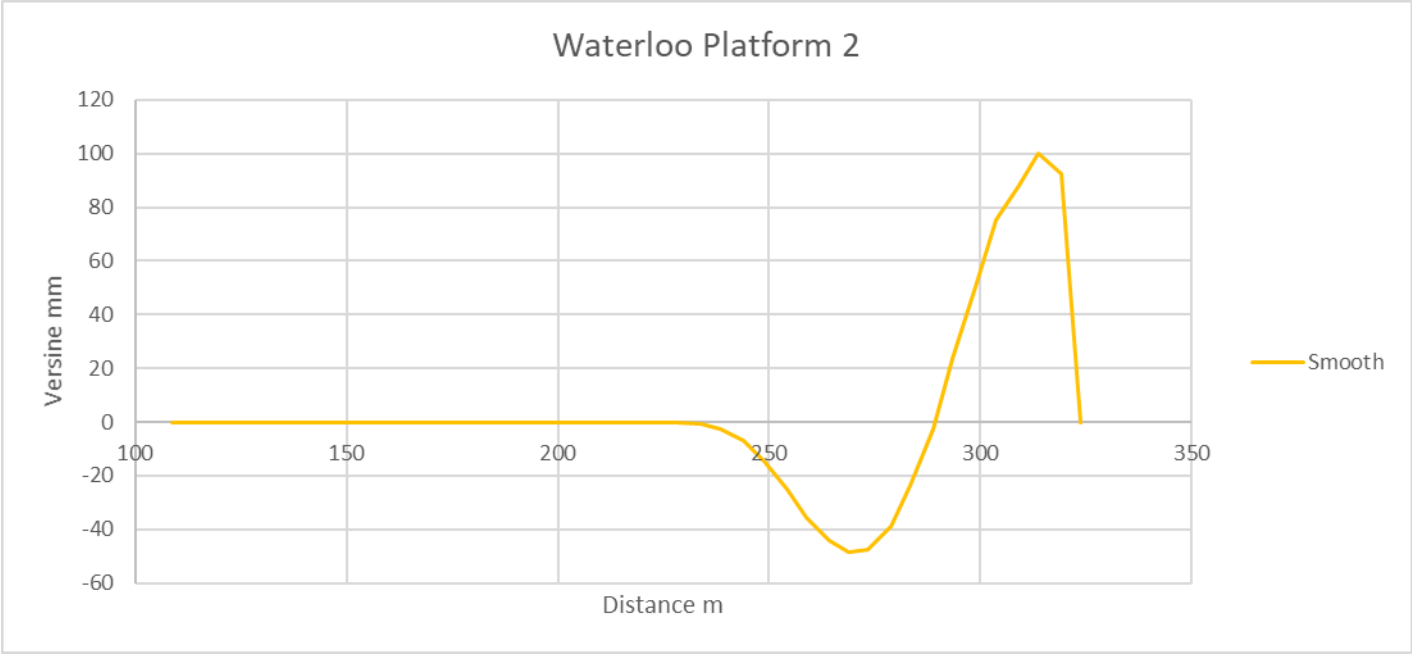
Points @ 5m spacing

Smoothed – Waterloo Platform 2



Points @ 5m spacing

Smoothed – Waterloo Platform 2



Points @ 5m spacing

Choice of Filter

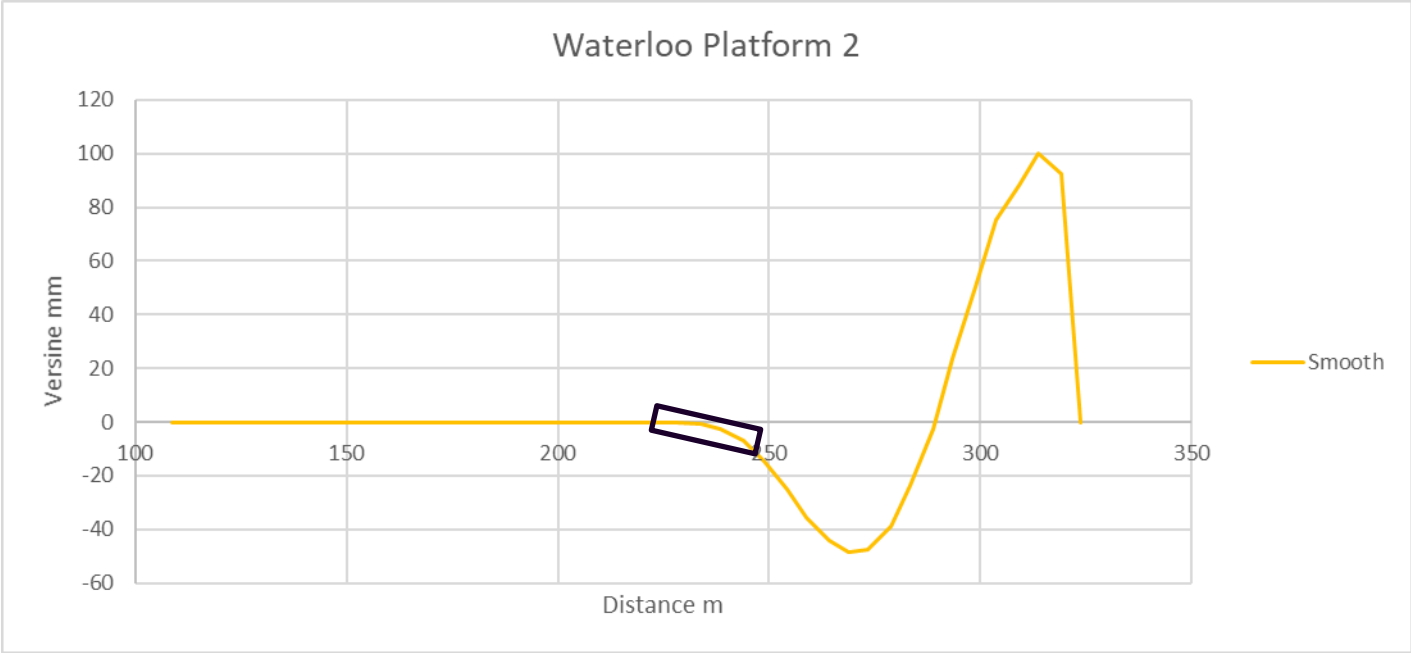
Requirements

- **Remove Roughness**
- **Preserve Transition**
- **Error Tolerance**

Options

- **Filter Baselength**
- **Filter Type**
- **Filter Symmetry**
- **Filter Phase Shift**

Smoothed – Waterloo Platform 2

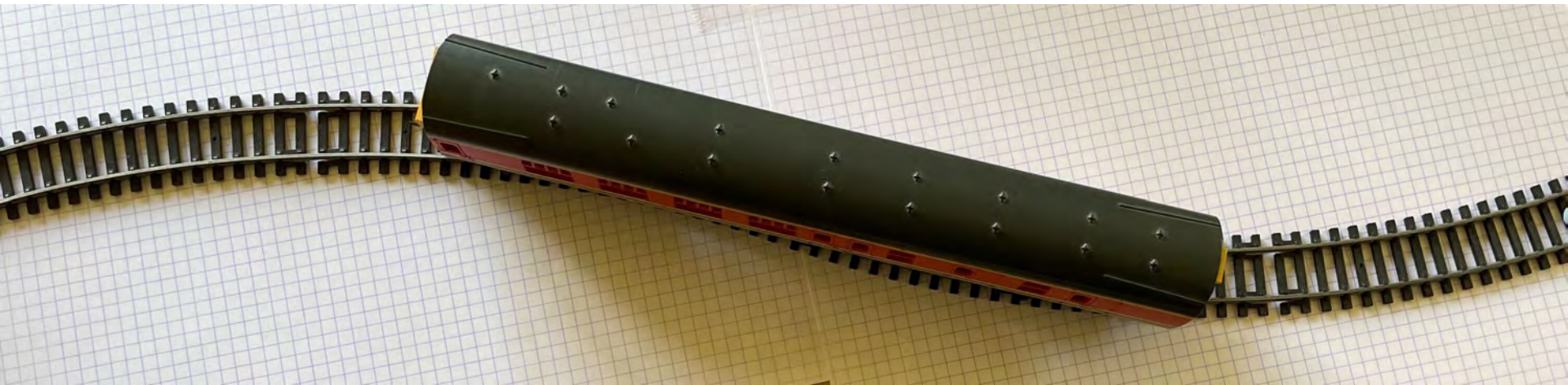


Points @ 5m spacing

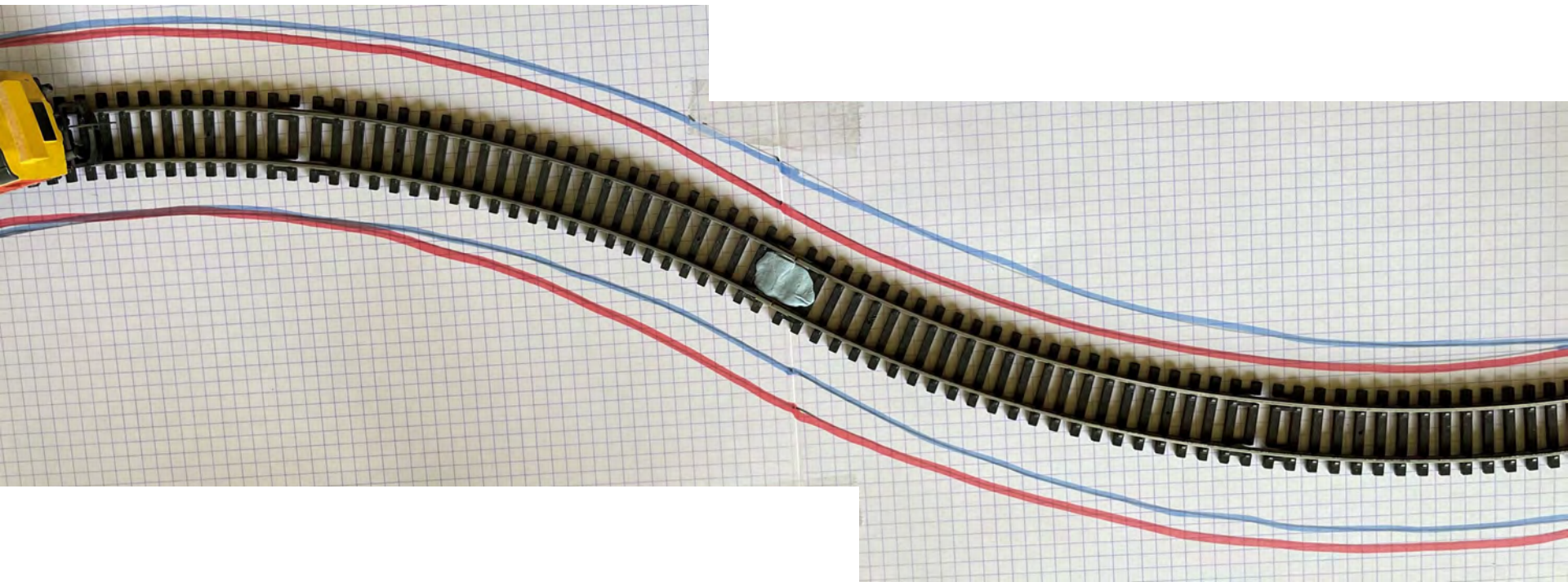
Advantages of Smooth Curvature

- **Reduced under / over estimate of overthrow**
- **Overestimate of intermediate cross sections avoided by use of correct curvature**

Reverse Curve



Reverse Curve



Widening, not translation

Advantages of Smooth Curvature

- **Reduced under / over estimate of overthrow**
- **Overestimate of intermediate cross sections avoided by use of correct curvature**
- **Correct application of end throws on reverse curves**

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