



# Installation Guide

***Product***

**Series 6 Rail Embedment Resin**

***Issue 2***

**2025**





## Safe Handling & Disposal

### Encapsulant Base & Hardener

Wear required PPE – protective gloves, clothing & eye protection. Force required to open hardener containers. Use only in a well ventilated area. Collect spillage immediately. Remove contaminated clothing. If on skin, wash with soap and water. Dispose of unmixed contents and container to hazardous waste collection point; mixed material can be disposed of to general waste. Refer to Safety Data sheets for further guidance.

### Primer

Wear required PPE – protective gloves, clothing & eye protection. Use only in a well ventilated area. Collect spillage immediately. Remove contaminated clothing. If on skin, wash with soap and water. Keep away from sources of ignition. Keep out of direct sunlight. Dispose of unused contents and container to hazardous waste collection point. Refer to Safety Data sheets for further guidance.

## Series 6 Rail Embedment Resin

For over 30 years, Series Six two-component modified polyurea has been used to embed light rail lines and provide long-term resistance to the environment and weather, prevent damage to roads and insulate the rail.

Rigorous tests and a proven track record have shown that this material has:

- High flexibility
- High resistance to abrasion and tear
- High electrical resistance
- Excellent vibration damping
- High resistance to water, fuels, dilute acids and alkalis and salt solutions
- High tensile and tear strength

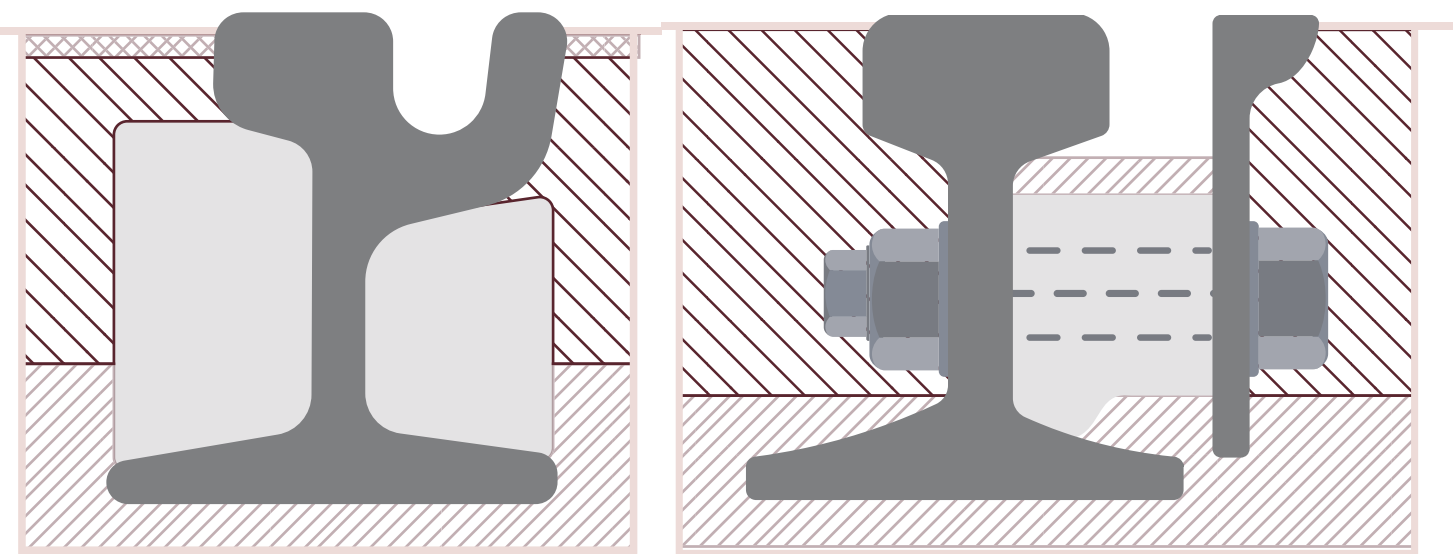
It can be used with or without the addition of cork fillers.

### Key Features:

- No disbondment between the encapsulant and substrate, e.g. concrete.
- No disbondment between the encapsulant and metal rail.
- No tearing or splitting of the encapsulant at or around small holes caused by air bubbles present on the surface.
- UV stable and hydrophobic which ensures longevity.

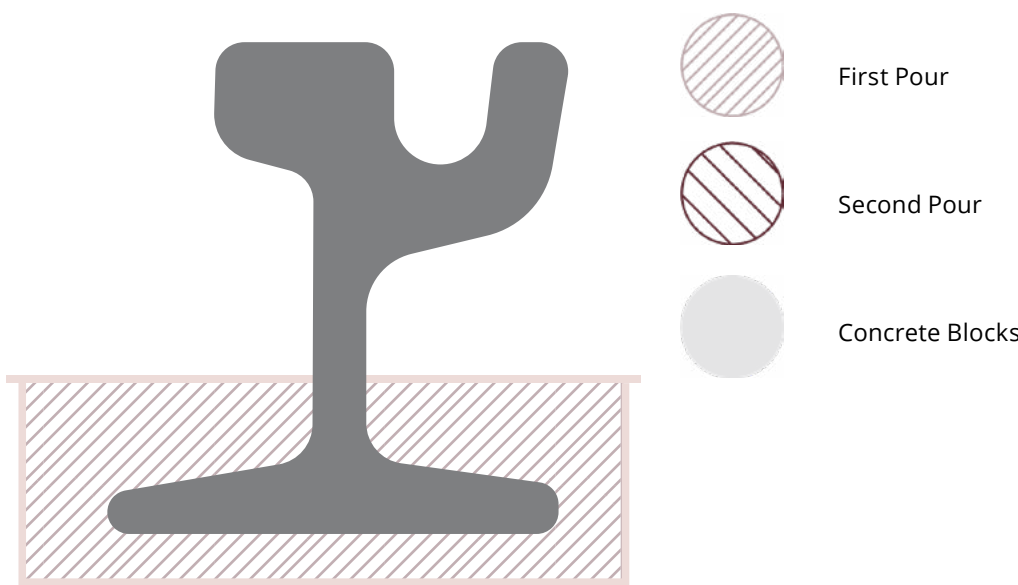


# TYPICAL RAIL EMBEDMENT CONFIGURATIONS

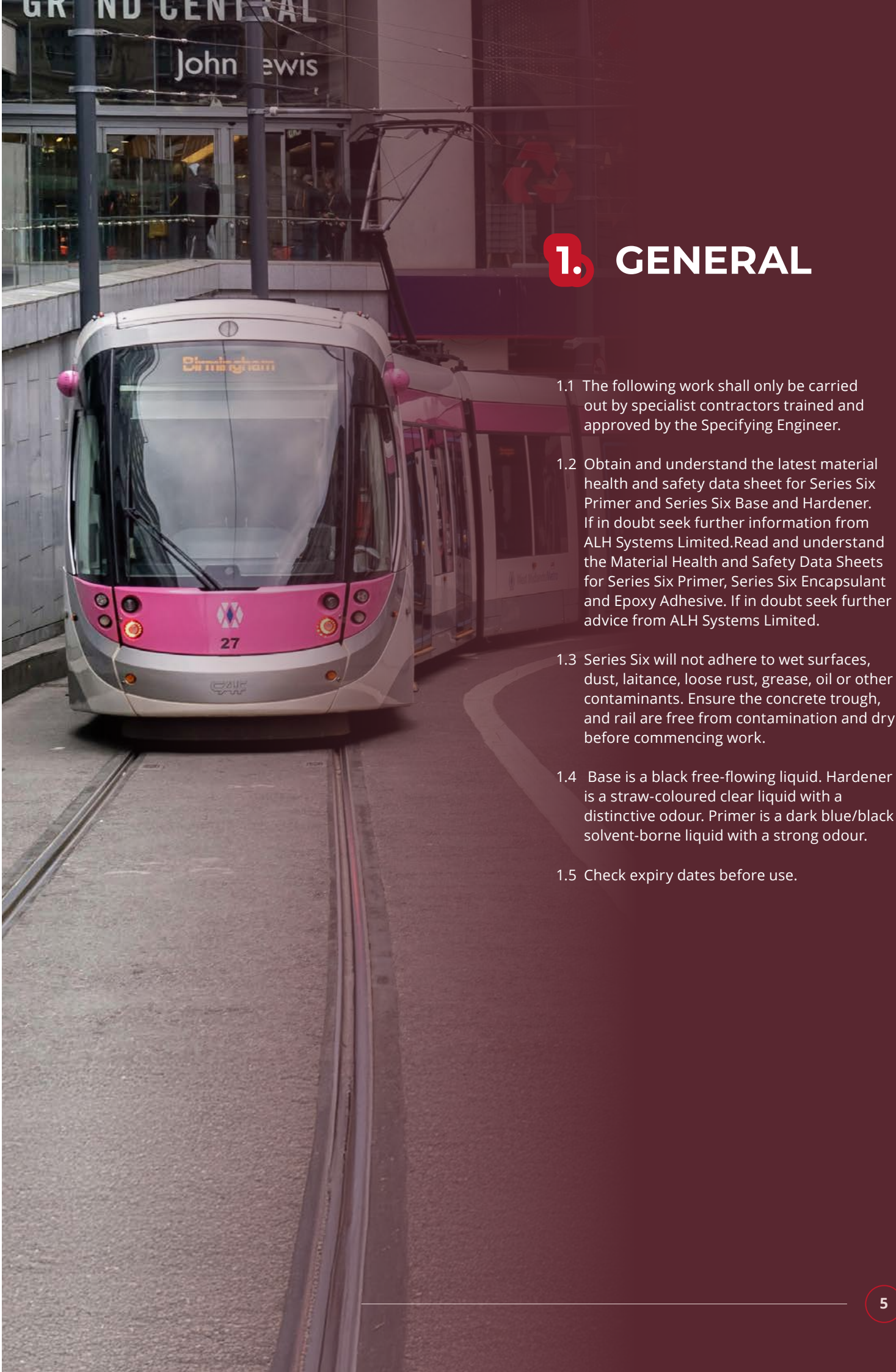


BS80A GUARDED RAIL

SEI 35G FULL EMBEDMENT



SEI 35G FOOT ONLY



## 1. GENERAL

- 1.1 The following work shall only be carried out by specialist contractors trained and approved by the Specifying Engineer.
- 1.2 Obtain and understand the latest material health and safety data sheet for Series Six Primer and Series Six Base and Hardener. If in doubt seek further information from ALH Systems Limited. Read and understand the Material Health and Safety Data Sheets for Series Six Primer, Series Six Encapsulant and Epoxy Adhesive. If in doubt seek further advice from ALH Systems Limited.
- 1.3 Series Six will not adhere to wet surfaces, dust, laitance, loose rust, grease, oil or other contaminants. Ensure the concrete trough, and rail are free from contamination and dry before commencing work.
- 1.4 Base is a black free-flowing liquid. Hardener is a straw-coloured clear liquid with a distinctive odour. Primer is a dark blue/black solvent-borne liquid with a strong odour.
- 1.5 Check expiry dates before use.



## 2. SURFACE PREPARATION

### Concrete Trough

The surface to which Series 6 is required to give a long term effective bond must be mechanically prepared to provide a sound, dry, laitance and contaminant free substrate.

- 2.1 Series 6 should not be applied to 'green concrete'. Concrete must be allowed to cure for 14 days prior to application.
- 2.2 If release oil has contaminated the concrete surface this will need removing with high pressure water or steam cleaning.
- 2.3 The concrete surface must be mechanically prepared to remove laitance. This can be achieved with wire brushing, scabbling or shot blasting.
- 2.4 Wet or damp concrete must be dried using hot air or a flame torch.
- 2.5 Protection must be provided where necessary to ensure the troughs remain clean and dry until after the Series 6 has been poured.



## 3. STEEL PREPARATION

The steel surface (rail) must be dry and contamination free to ensure a long term effective bond.

- 3.1 Oil, grease or other contaminants must be removed by either high pressure water/steam cleaning or by use of a suitable degreasing solvent.
- 3.2 Wet or damp rails must be dried using hot air or a flame torch.
- 3.3 The steel surface must be mechanically prepared removing all rust and paint. This can be achieved with mechanical wire brushing or shot blasting

## 4. PRIMING

Series Six primer is an active material which achieves its maximum strength as soon as it is dry, usually after 5 minutes, after 12 hours have elapsed a further coat must be applied.

- 4.1 Before priming check trough is clean and dry, vacuum or blow slot clean. .
- 4.2 Apply suitable masking tape to top surface of trough.
- 4.3 Shake or stir container well before using.
- 4.4 Apply Series Six primer using brush or roller to all surfaces (rail, concrete trough side and bottom) which will be in contact with the Series Six encapsulation..
- 4.5 In line with Safety Data sheet handling guidance. Wear all correct personal protective equipment (gloves, overalls, eye protection) and observe all safety precautions during priming and handling primer.

## 5. INSTALLATION OF RAIL

- 5.1 Survey concrete trough for level and line and check against the design requirements and any remedial work carried out prior to starting track installation.
- 5.2 Using the survey information install non-resilient packers as required to level rail.
- 5.3 The rail is then lowered into the trough onto the packers, check rail level against design parameters.
- 5.4 On satisfactory completion of 5.3 the rail will be aligned and held vertically using wedges fitted between the edge of the concrete trough and rail.







## 6. MIXING & POURING

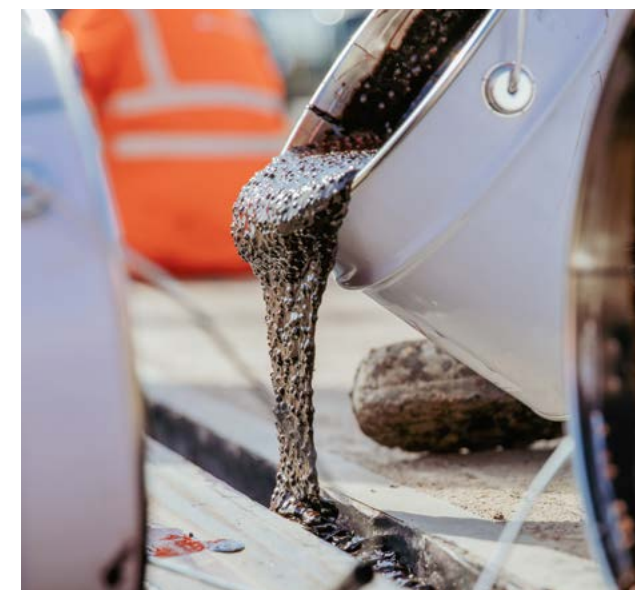
The pouring operation should take place within 12 hours of priming. If this cannot be achieved then the following procedure may be adopted. Remove all debris and water from the trough. Dry the top of the concrete trough and rail if necessary. Re-prime the top 50mm to 75mm of the concrete trough and rail, pour immediately.

- 6.1 Stir base component (small can) with a spatula until homogeneous and then pour into the hardener component (large can) allow to drain for 30 seconds.
- 6.2 If using granulated cork, add it now at a rate of 55 grams per 1 Kg of Base & Hardener combined
- 6.3 Mix using high powered electric or pneumatic drill and appropriately sized mixing paddle and shaft for 1 minute, time this operation. Material will thicken when mixed and become unusable after 2-4 minutes.
- 6.4 Pour mixed material immediately starting at the lowest end of the section to be filled. Pouring must be from one side only to ensure the cavity between the bottom of the rail and trough is completely filled. Continue to pour until resin completely covers the foot of the rail or approximately one third of the trough. This is the first pour.
- 6.5 After 30-60 minutes when the first pour material starts to cure and become firm to the touch, check level and alignment; higher temperatures will increase cure speed. Remove wedges (were applicable) and start second pour, one side at a time until the trough is full or at required height; if an anti-skid treatment is to be used this is 3-5mm from the top.
- 6.6 When a complete fill is required the surface can be smoothed off using a suitable spatula or trowel.
- 6.7 After the material has been allowed to cure for 15-30 minutes remove the masking tape from the concrete. Do not do this if an anti-skid surface is to be applied (see section 7).



## 7. ANTI-SKID SURFACE TREATMENT

- 7.1 For the anti-slip surface, mix 300 grams of 1-3mm bauxite aggregate per 1 Kg of Base & Hardener combined, mix until homogeneous and pour this on top of the second pouring.
- 7.2 When poured material is level sprinkle more bauxite on to partly cured material to provide pedestrian anti slip surface.
- 7.3 After 15-30 minutes remove the masking tape, do not leave on for more than 30 minutes.







## 8. STORAGE OF MATERIAL

### 8.1 Series 6 encapsulant

Supplied in either lever lid metal containers or plastic buckets.

Store in a cool dry area (5°C-25°C) away from direct sunlight and potential sources of ignition.

### 8.2 Series 6 Primer

Supplied in lever lid metal containers.

Store in a cool dry area (5°C-25°C) away from direct sunlight and potential sources of ignition.

## 9. USAGE

### 9.1 Series 6 Encapsulant

The volume of encapsulant should be calculated before the job is started. Calculate according to the formula:

$$V_E = \frac{L(T-R)}{1000}$$

Where:

$V_E$  = Volume of encapsulant, in litres

$L$  = Total length of trough, in cm

$T$  = Cross-sectional area of the trough (minus 3-5 mm for any anti-skid coating, if using), in cm<sup>2</sup>

$R$  = Cross-sectional area of the rail, in cm<sup>2</sup>

It is recommended to add an additional 2-5% to account for wastage.

### 9.2 Series 6 Primer

Series 6 primer should be applied at a rate of 60:1, encapsulant: primer, in litres.

Porous substrates, such as concrete, will require a greater usage and should be taken into account when calculating usage.

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