Longitudinal Wheeltimbers

Treatment Using ProBor® 50.1 Wood Preservative Paste

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ProBor® 50.1

SAFEGUARD®

BUILT TO PROTECT

Method Statement

5.1 Wheeltimber inspection:

- The wheeltimber shall be inspected to establish condition and to determine if it is still capable of serving its intended function safely. Particular attention should be given to the timber coincident with baseplates and where rebates have been cut in the underside of the timber. Additionally, the timber around fixings and within fissures should be inspected.
- Initial inspection shall be carried out using visual techniques and probing with sharp, hand-held tools. The condition of timber can also be confirmed when drilling holes prior to treatment.
- Internal condition shall be established using an IML-Resi PD 500 decay detection drill.
- Establish the overall dimensions of the wheeltimber; measure the distance between both edges of the wheeltimber and baseplate. This will determine the appropriate drill pattern.
- Establish the position of any straps associated with the holding down arrangement and any tension rods. Drilling should avoid close proximity to these features.
- Establish the position of the coachscrews holding down the baseplates. Drilling should be angled so that the drill holes do not come into close proximity to the coachscrews.
- Drilling shall be carried out in positions judged to be affected by decay and/or at high risk of decay, which are typically the end grains where wetting occurs, fissures in the top face which act as reservoirs for water, and impacted timber under the baseplates.

5.2 Drilling wheeltimbers:

- Drilling shall be carried out using a 16 mm diameter auger.
- Drilling patterns around baseplates shall be in accordance with Appendix B.
- Drill holes shall be clean and without jagged edges, to allow insertion of oak dowel caps.
- Around baseplates, drill holes shall be angled in a direction away from coachscrews.
- Generally, drill holes shall be angled away from other fixings.
- Drill holes at the end grain, transverse supports or along fissures shall be vertical.
- All other drill holes shall be at an angle of 45° to 60° to the vertical.
- Do not drill through the underside of the wheeltimbers.

5.2.1 Drilling around baseplates:

- For wheeltimbers with a depth of 200 mm or more, the minimum length of drill hole shall be 200 mm applied at 45° to 60° to the vertical.
- Where the depth of the wheeltimber is less than 200 mm, the drill holes shall be no greater than depth of the wheeltimber applied at 45° to 60° to the vertical.
- The minimum distance between a drill hole and coachscrew or any other fixing associated with holding the wheeltimber in position shall be 65 mm.
- The minimum distance from the edge of the baseplate shall be 25 mm.
- The minimum edge distance from the end grain or side grain shall be 50 mm.
- Drill holes may be displaced to consider baseplate position on the wheeltimber and/or the position of the rail restricting access to the timber.

5.2.2 Drilling baseplate ‘end stop’ positions:

- Drilling shall be carried out no less than75 mm from the short axis of the baseplate.
- Drill holes shall be positioned either side of the running rail.
- Drill holes shall be drilled across the grain and at an angle of 45° to 60° to the vertical.
- The length of the drill holes shall be no longer than 200 mm or the depth of the wheeltimber whichever is the shortest measurement.

5.2.3 Drilling end grain positions:

- Drilling shall be carried out no less than 50 mm from the end grain.
- The minimum distance between drillings across the grain shall be 65 mm.
- The maximum distance between drillings shall be 100 mm.
- Alternate rows of drilling may be carried out at end grains and these should be offset by a minimum of 25 mm.
- Drill holes may be displaced to take into account the position of the running rail.
- Drill holes shall be drilled in the vertical plane and shall be drilled to a depth 50 mm less than the depth of the wheeltimber to avoid breaking through the bottom of the timber.

5.2.4 Drilling between baseplates:

- Drilling shall be focussed along the grain adjacent to fissures running along the line of the coachscrews between baseplates.
- The minimum edge distance from the side grain shall be 50 mm.
- Between baseplates, the minimum distance between drillings along the grain shall be 65 mm. The maximum distance shall be 200 mm.

5.2.5 Drilling above transverse support positions:

- Drilling shall be carried out across the grain of the wheeltimber in positions approximately above the centreline of the underlying transverse support.
- The minimum edge distance from the side grain shall be 50 mm.
- Holes shall be drilled in the vertical plane to a depth 50 mm less than the depth of the wheeltimber to avoid breaking through the bottom of the timber and striking the support.
- The minimum distance between drillings across the grain shall be 75 mm.

5.3 Applying ProBor 50 gel:

- The preservative gel shall be applied using an applicator with gentle, gradual pressure applied to the trigger in order to support gravitational delivery.
- Avoid rapid application as this will trap large air pockets within the drill hole, which may affect the preservative loading.
- Where rapid diffusion occurs, drill holes may be topped up to deliver higher loadings.
- Fill drilled holes to refusal, then cap with oak dowels.
- Oak dowels should have a tapered nose to ease insertion and be cross grain, to enable easy trimming with hammer and chisel to ensure flush surface with the wheeltimber.

Choosing the Correct Drill Pattern

1. Identify Width Class

Width Class	Appearance
1	Wheeltimber width is less than 450 mm. 78.5% of structures inspected.
2	Wheeltimber width is between 450 and 650 mm. 21.5% of structures inspected.

2. Use Width Class and Baseplate Alignment to determining Drilling Pattern

Width Class	Description	Max. Wheeltimber Width	Proposed Drill Pattern
1	Distance between the edge of the baseplate and wheeltimber edge is less than 75 mm.	ea. 450 mm*	Pattern 1 (pages 3 & 4)
2	Distance between the edge of the baseplate and wheeltimber edge is less than 75 mm on one side (e.g. offset baseplate).	650 mm	Pattern 2 (pages 5 & 6)
	Distance between the edge of the baseplate and wheeltimber edge is greater than 75 mm on both sides (e.g. centrally positioned baseplate).	650 mm	Pattern 3 (pages 7 & 8)

3. Transverse Supports

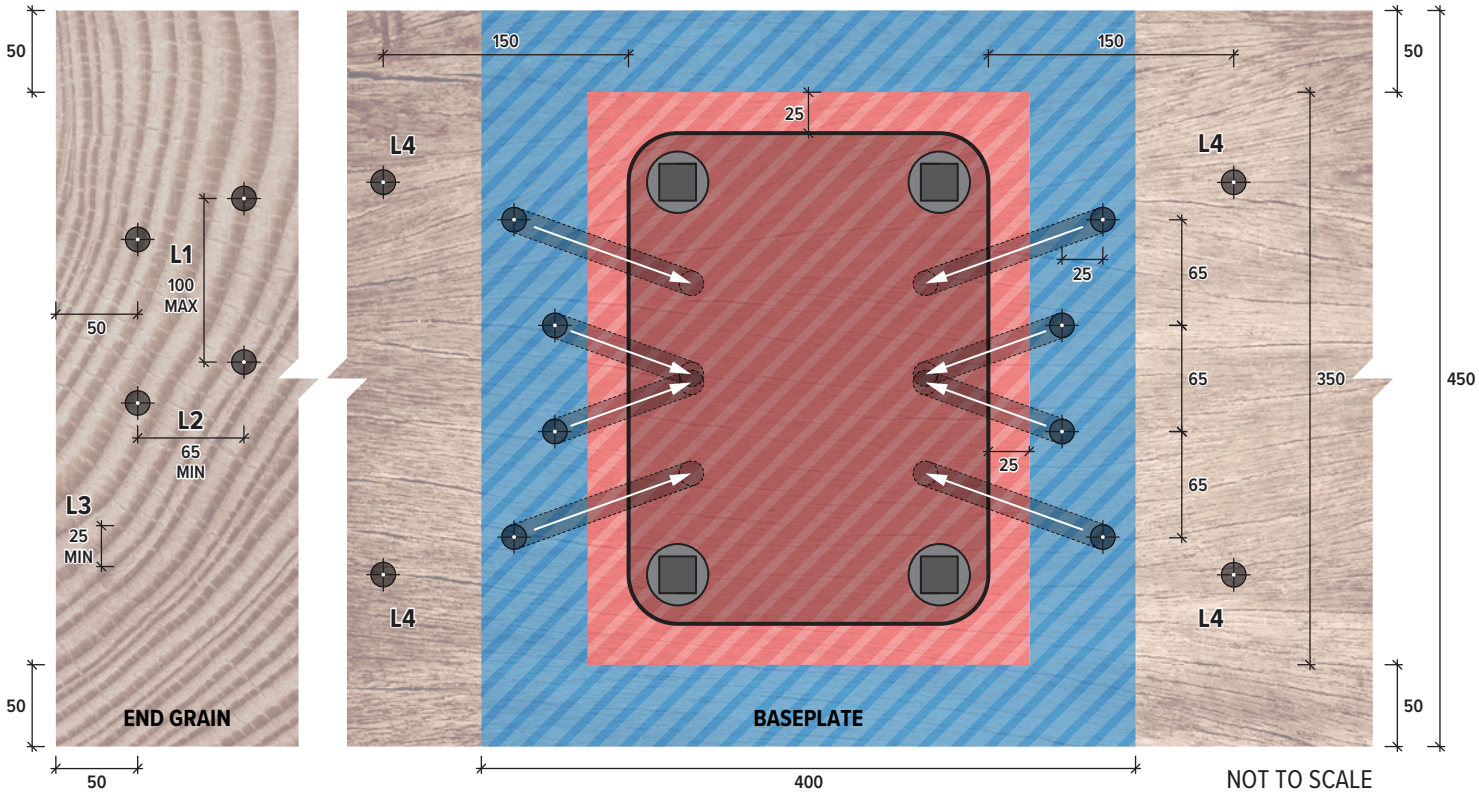
Drilling Pattern 4 (pages 9 & 10) has been developed to treat timber spanning over transverse supports

Drill Pattern 1

For treating wheeltimbers in Width Class 1

Key:
- Auger hole location
- Exclusion zone
- Treatment zone

PLAN VIEW OF BASEPLATE



NOT TO SCALE

Drill Pattern 1 :

- MAX wheel timber width of 450 mm and MIN depth of 200 mm.
- Auger width: 16 mm.
- Depth: drill 45 – 60° to a minimum depth of 200 mm in baseplate treatment zone.
- 1 × 440 ml cartridge per baseplate.

Rules 1 :

1. Minimum distance between drill hole and coach screw or other fixings is 65 mm.
2. Minimum edge distance is 50 mm.
3. Offset drill holes to take into account rail position.

Notes :

- Exclusion zone 25 mm around baseplate.
- Treatment zone 300 × 400 mm around baseplate.
- L1 – Spacing of drill holes across the grain 65 mm MIN – 100 mm MAX
- L2 – Spacing of drill holes along the grain 65 mm MIN – 100 mm MAX
- L3 – Stagger of drill holes 25 mm MIN
- L4 – End stop hole position in line with coach screws 75 mm MIN – 150 mm MAX
- Auger holes may need to be offset along short axis due to position of running rail

End Grain :

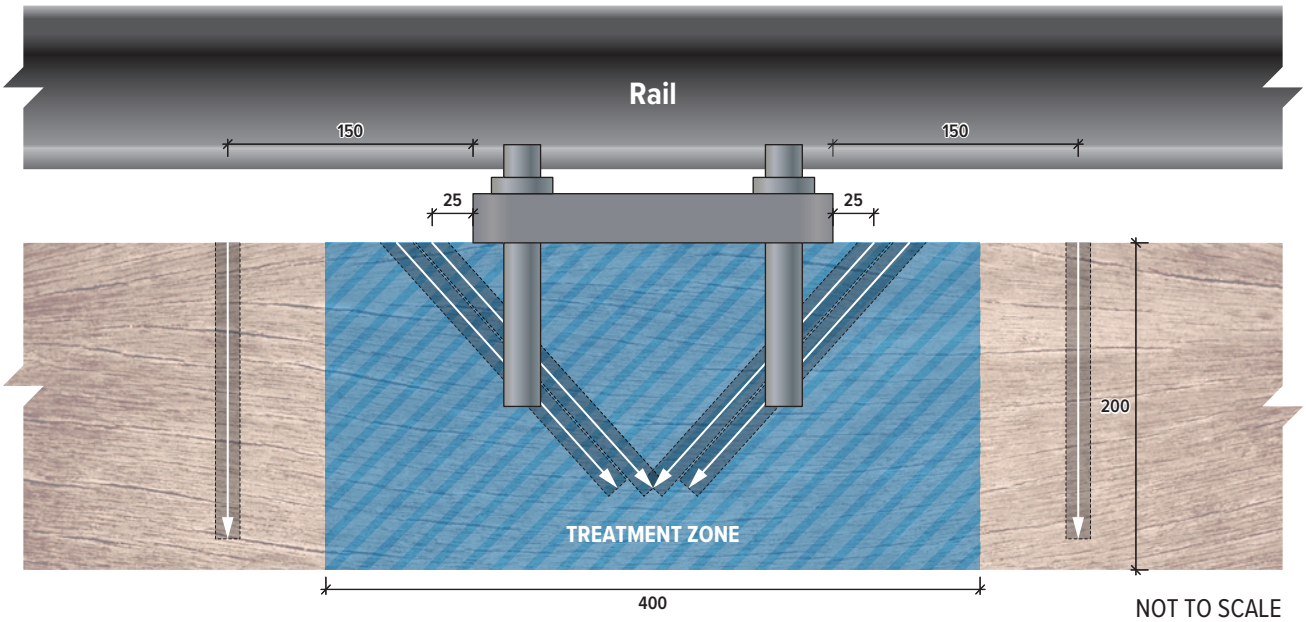
- **L1** – spacing of drill holes across the grain 65 mm MIN – 100 mm MAX.
- **L2** – Spacing of drill holes along the grain 65 mm MIN – 100 mm MAX.
- **L3** – Stagger of drill holes 25 mm MIN.
- **L4** – End stop hole position in line with coach screws
- Drill vertically and to a depth 50 mm less than the depth of the wheel timber.
- Where baseplate position prevents drilling of end grain pattern, follow the guidance for baseplate treatment.

Drill Pattern 1

For treating wheeltimbers in Width Class 1

Key:
- Auger hole location
- Exclusion zone
- Treatment zone

SECTION VIEW OF BASEPLATE



NOT TO SCALE

Drill Pattern 1 :

- MAX wheel timber width of 450 mm and MIN depth of 200 mm.
- Auger width: 16 mm
- Depth: drill 45 – 60° to a minimum depth of 200 mm in baseplate treatment zone.
- 1 × 440 ml cartridge per baseplate.
- End stop holes: drill 75 mm MIN – 150 mm MAX from short axis of baseplate. Drill across the grain at an angle of 45 – 60° to the vertical to a depth of 200 mm or depth of the wheel timber, whichever is the shortest measurement.

Drill Pattern Guidance :

- The treatment zone around a baseplate is width x 400 mm.
- All holes to be drilled in the treatment zone and directed towards the baseplate.
- All holes to be drilled at an angle of 45 – 60°. Avoid contact with coachscrews.
- All holes to be drilled to a minimum length of 200 mm or depth of the wheel timber if less than 200 mm.
- Minimum distance between drill hole and coachscrew or other fixings is 65 mm.
- Minimum distance of drill holes from baseplate is 25 mm.
- Minimum distance of drill holes from edge is 50 mm.
- Drill holes may be offset in the treatment zone to take into account rail position and access.
- Baseplate position may prevent adherence to guidance in which case operatives should use engineering judgment to position drill holes. In such circumstances the minimum requirement shall be to ensure the minimum distance between coachscrew and drill holes is 65 mm.

Fissures :

- **L1** – spacing of drill holes across the grain 65 mm MIN – 100 mm MAX.
- **L2** – Spacing of drill holes along the grain 65 mm MIN – 100 mm MAX.
- **L3** – Stagger of drill holes 25 mm MIN.
- **L4** – End stop hole position in line with coach screws
- Drill vertically and to a depth 50 mm less than the depth of the wheel timber.
- Where baseplate position prevents drilling of end grain pattern,
- follow the guidance for baseplate treatment.

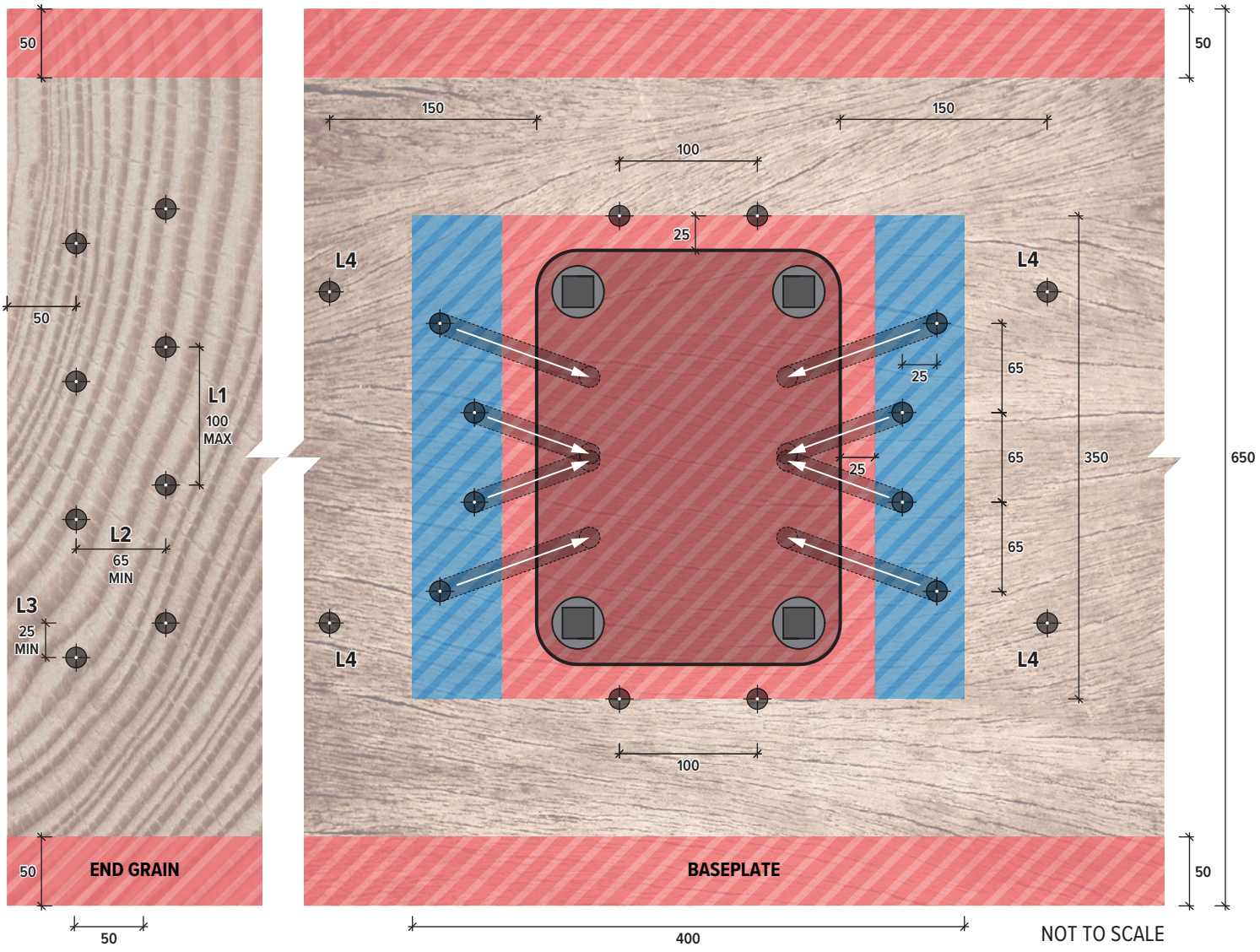
Preservative Application :

- Fill drill holes slowly with ProBor® 50.1 until refusal by applying gentle and gradual hand pressure to applicator gun.
- Cap with oak dowel.

Drill Pattern 2

When baseplate is positioned centrally on wheeltimber

PLAN VIEW OF BASEPLATE



Drill Pattern 1 :

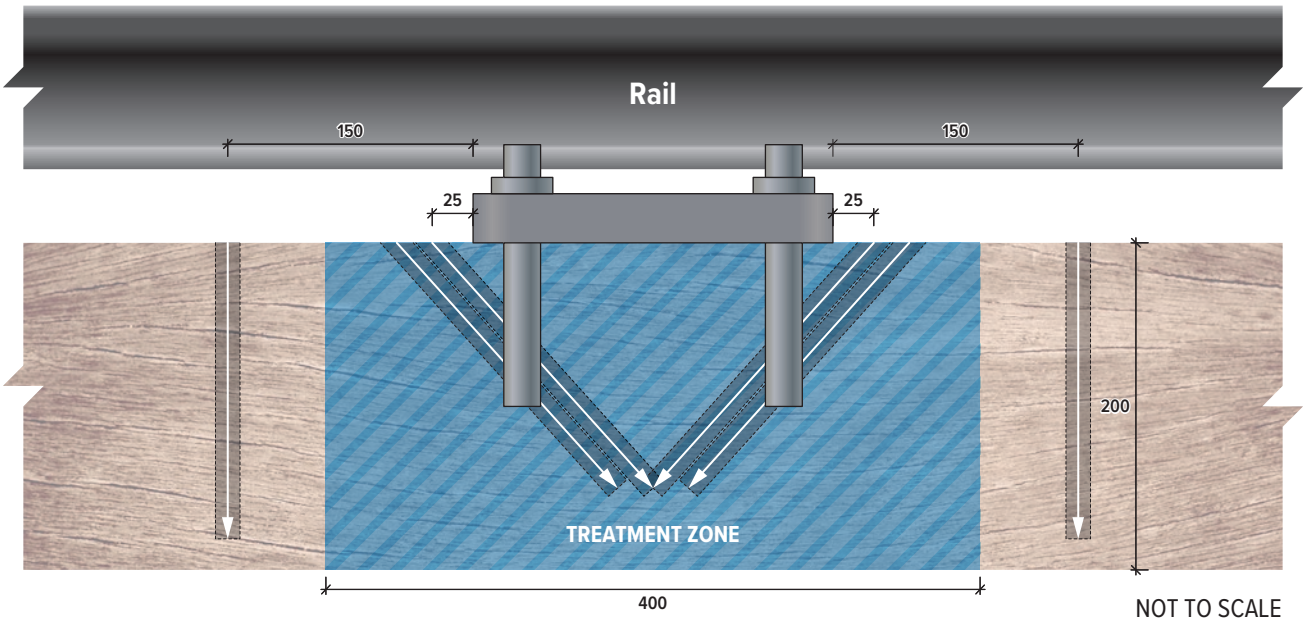
- MAX wheel timber width of 650 mm and MIN depth of 200 mm.
- Auger width: 16 mm.
- Depth: drill 45 – 60° to a minimum depth of 200 mm in baseplate treatment zone.
- 2 × 440 ml cartridges per baseplate.
- Same rules and notes as Drill Pattern 1 on page 3.

Drill Pattern 2

For treating wheeltimbers in Width Class 2

Key:
- Auger hole location
- Exclusion zone
- Treatment zone

SECTION VIEW OF BASEPLATE



NOT TO SCALE

Drill Pattern 1 :

- MAX wheel timber width of 650 mm and MIN depth of 200 mm.
- Auger width: 16 mm
- Depth: drill 45 – 60° to a minimum depth of 200 mm in baseplate treatment zone.
- 1 × 440 ml cartridge per baseplate.
- End stop holes: drill 75 mm MIN – 150 mm MAX from short axis of baseplate. Drill across the grain at an angle of 45 – 60° to the vertical to a depth of 200 mm or depth of the wheel timber, whichever is the shortest measurement.

Drill Pattern Guidance :

- The treatment zone around a baseplate is width x 400 mm.
- All holes to be drilled in the treatment zone and directed towards the baseplate.
- All holes to be drilled at an angle of 45 – 60°. Avoid contact with coachscrews.
- All holes to be drilled to a minimum length of 200 mm or depth of the wheel timber if less than 200 mm.
- Minimum distance between drill hole and coachscrew or other fixings is 65 mm.
- Minimum distance of drill holes from baseplate is 25 mm.
- Minimum distance of drill holes from edge is 50 mm.
- Drill holes may be offset in the treatment zone to take into account rail position and access.
- Baseplate position may prevent adherence to guidance in which case operatives should use engineering judgment to position drill holes. In such circumstances the minimum requirement shall be to ensure the minimum distance between coachscrew and drill holes is 65 mm.

Fissures :

- **L1** – spacing of drill holes across the grain 65 mm MIN – 100 mm MAX.
- **L2** – Spacing of drill holes along the grain 65 mm MIN – 100 mm MAX.
- **L3** – Stagger of drill holes 25 mm MIN.
- **L4** – End stop hole position in line with coach screws
- Drill vertically and to a depth 50 mm less than the depth of the wheel timber.
- Where baseplate position prevents drilling of end grain pattern,
- follow the guidance for baseplate treatment.

Preservative Application :

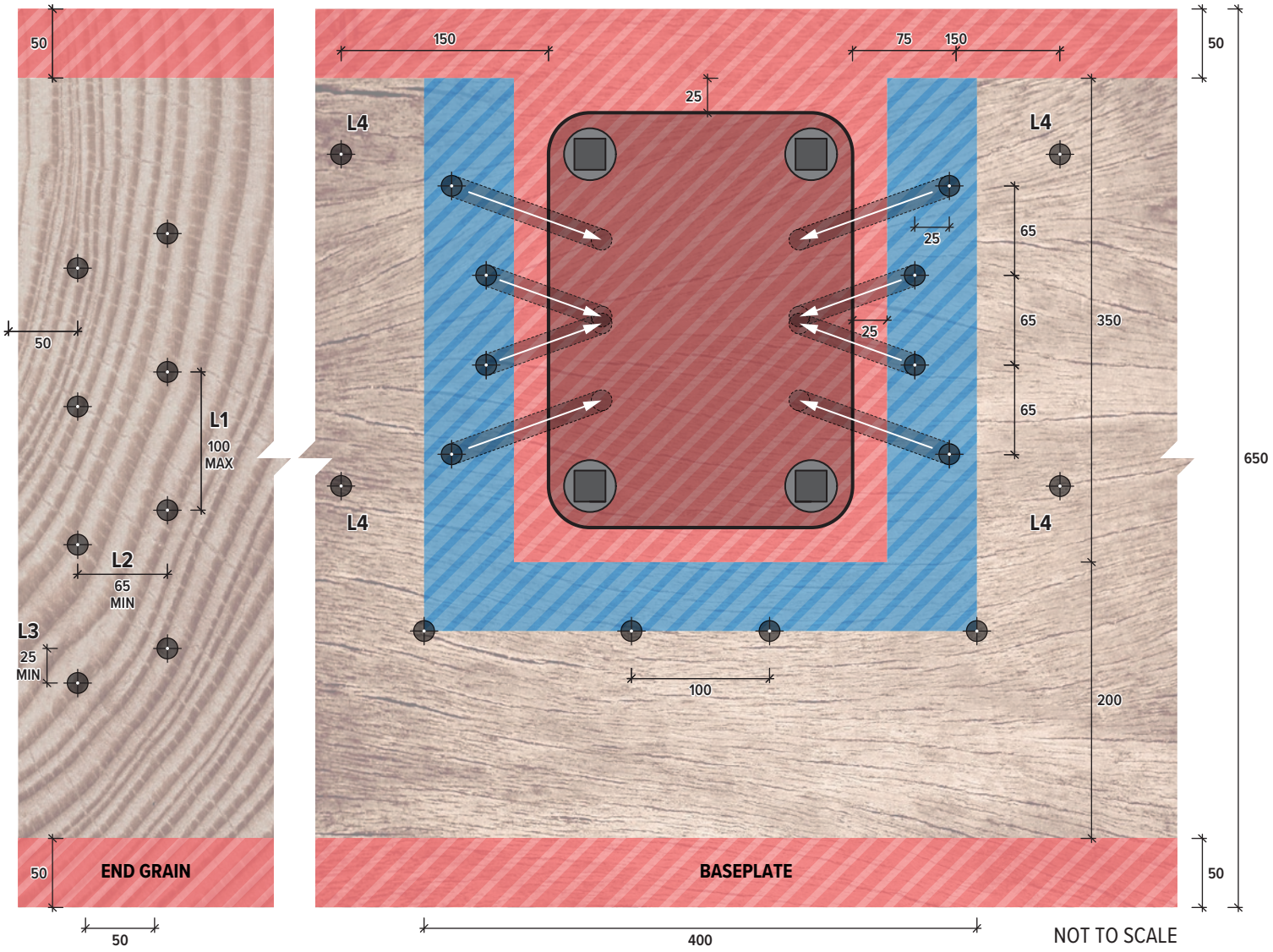
- Fill drill holes slowly with ProBor® 50.1 until refusal by applying gentle and gradual hand pressure to applicator gun.
- Cap with oak dowel.

Drill Pattern 3

When baseplate is offset on wheeltimber

Key:
- Auger hole location
- Exclusion zone
- Treatment zone

PLAN VIEW OF BASEPLATE



Drill Pattern 1 :

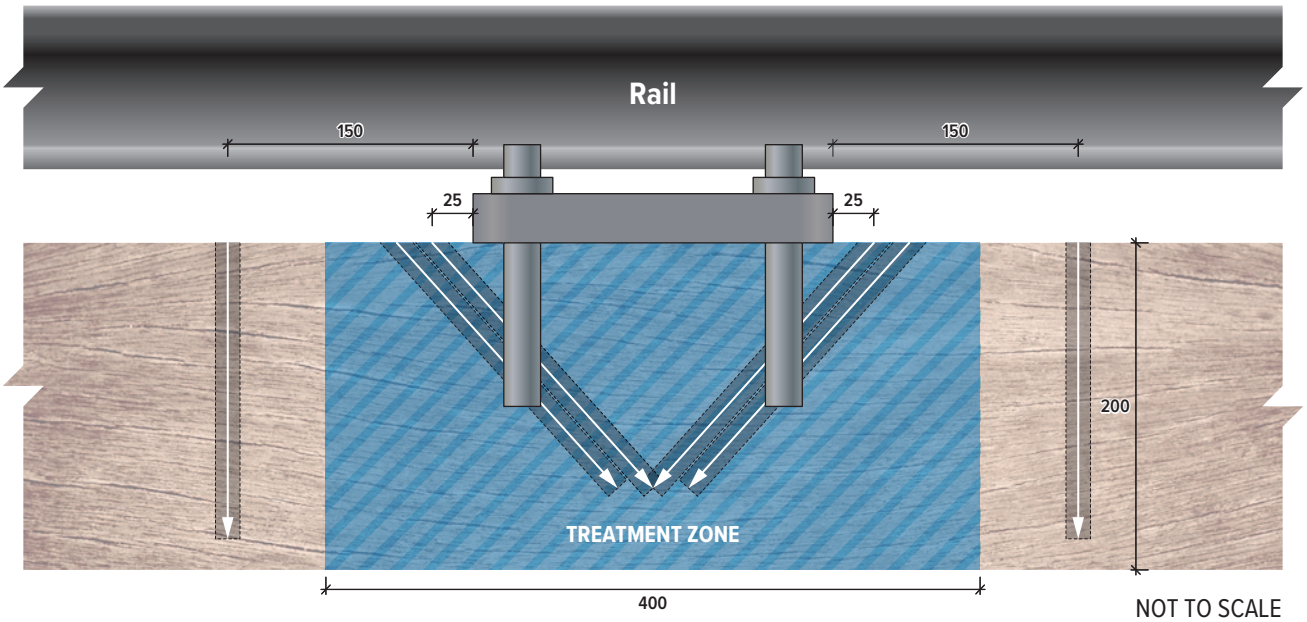
- MAX wheel timber width of 650 mm and MIN depth of 200 mm.
- Auger width: 16 mm.
- Depth: drill 45 – 60° to a minimum depth of 200 mm in baseplate treatment zone.
- 2 × 440 ml cartridges per baseplate.
- Same rules and notes as Drill Pattern 1 on page 3.

Drill Pattern 3

For treating wheeltimbers in Width Class 2

Key:
- Auger hole location
- Exclusion zone
- Treatment zone

SECTION VIEW OF BASEPLATE



NOT TO SCALE

Drill Pattern 1 :

- MAX wheel timber width of 650 mm and MIN depth of 200 mm.
- Auger width: 16 mm
- Depth: drill 45 – 60° to a minimum depth of 200 mm in baseplate treatment zone.
- 1 × 440 ml cartridge per baseplate.
- End stop holes: drill 75 mm MIN – 150 mm MAX from short axis of baseplate. Drill across the grain at an angle of 45 – 60° to the vertical to a depth of 200 mm or depth of the wheel timber, whichever is the shortest measurement.

Drill Pattern Guidance :

- The treatment zone around a baseplate is width x 400 mm.
- All holes to be drilled in the treatment zone and directed towards the baseplate.
- All holes to be drilled at an angle of 45 – 60°. Avoid contact with coachscrews.
- All holes to be drilled to a minimum length of 200 mm or depth of the wheel timber if less than 200 mm.
- Minimum distance between drill hole and coachscrew or other fixings is 65 mm.
- Minimum distance of drill holes from baseplate is 25 mm.
- Minimum distance of drill holes from edge is 50 mm.
- Drill holes may be offset in the treatment zone to take into account rail position and access.
- Baseplate position may prevent adherence to guidance in which case operatives should use engineering judgment to position drill holes. In such circumstances the minimum requirement shall be to ensure the minimum distance between coachscrew and drill holes is 65 mm.

Fissures :

- **L1** – spacing of drill holes across the grain 65 mm MIN – 100 mm MAX.
- **L2** – Spacing of drill holes along the grain 65 mm MIN – 100 mm MAX.
- **L3** – Stagger of drill holes 25 mm MIN.
- **L4** – End stop hole position in line with coach screws
- Drill vertically and to a depth 50 mm less than the depth of the wheel timber.
- Where baseplate position prevents drilling of end grain pattern,
- follow the guidance for baseplate treatment.

Preservative Application :

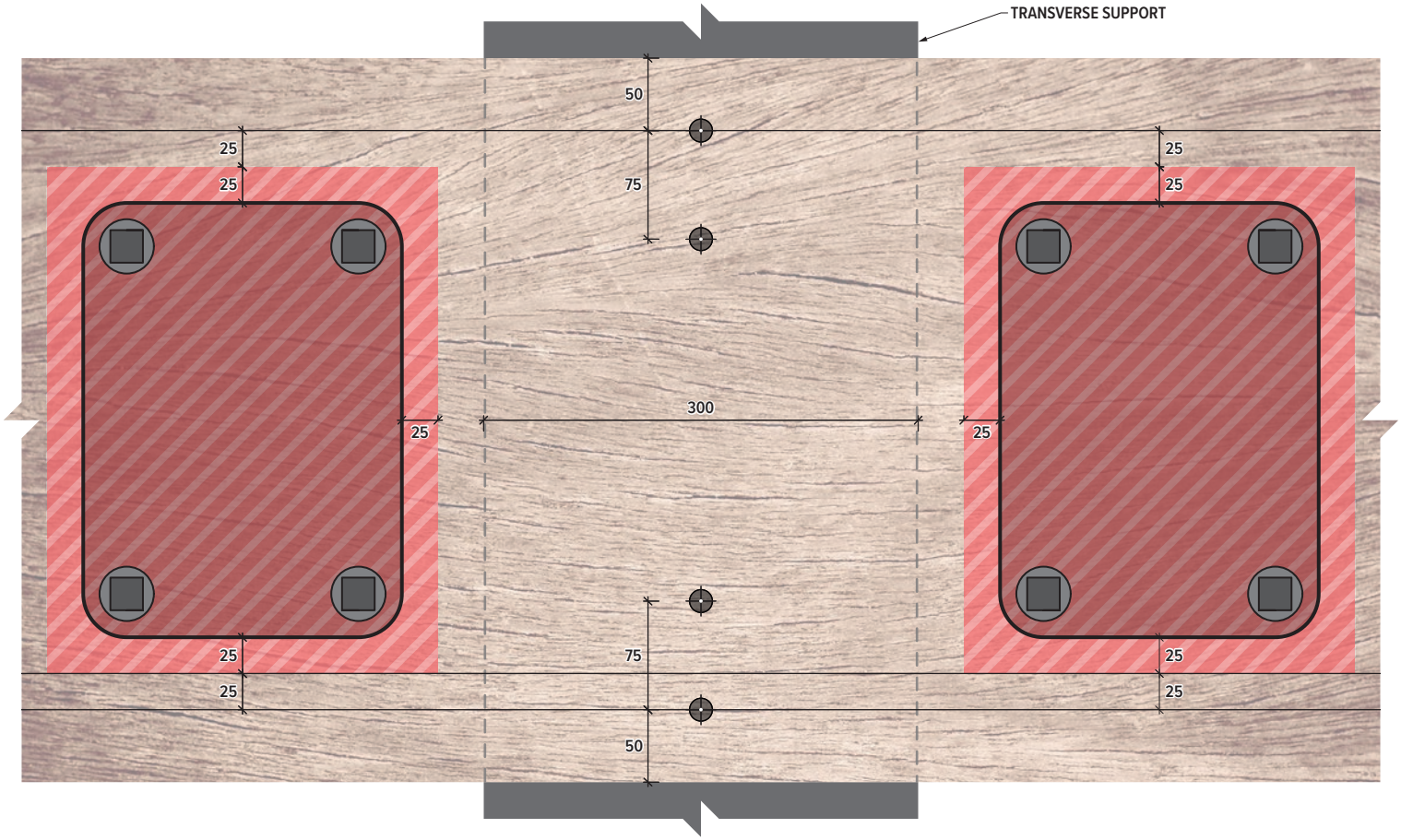
- Fill drill holes slowly with ProBor® 50.1 until refusal by applying gentle and gradual hand pressure to applicator gun.
- Cap with oak dowel.

Drill Pattern 4

Above Transverse Supports

Key:
- Auger hole location
- Exclusion zone
- Treatment zone

PLAN VIEW



Rules :

1. Drill holes to within 50 mm of underside of wheel timber.
2. Do not break through underside

Notes :

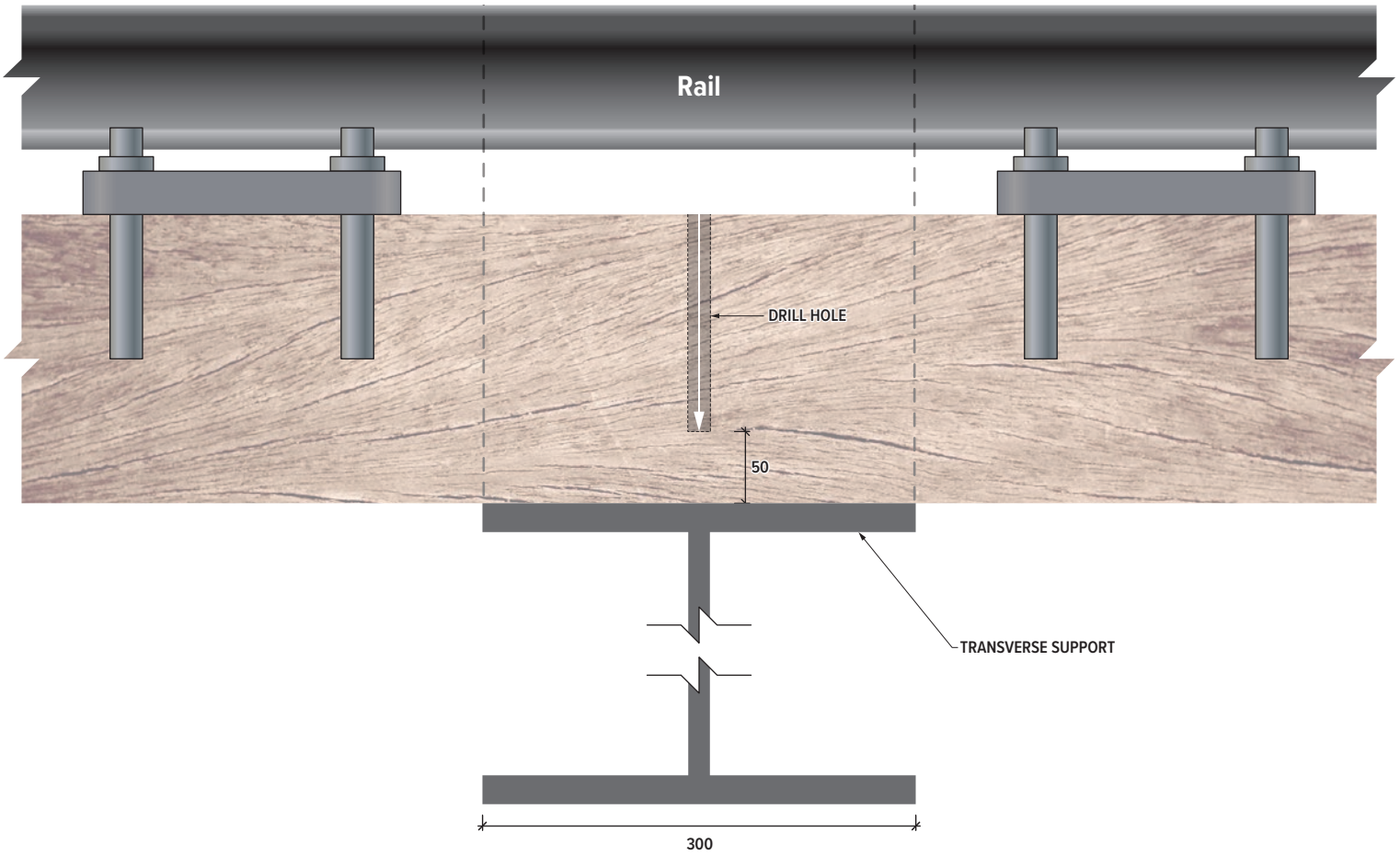
- Where running rail inhibits positioning of the auger holes, offset and drill across the grain towards the running rail at an angle of 45 – 60° to the vertical to a length equal to depth of wheel timber
- Minimum distance between drill holes shall be 75 mm

Drill Pattern 4

Above Transverse Supports

Key:
- Auger hole location
- Exclusion zone
- Treatment zone

SECTION VIEW



The Kits

Wheeltimber Repair Kit: tools plus materials to treat 4 × drill pattern 1 baseplates or 3 × drill patterns 2 and 3 baseplates

Contents:
9 × Probor 50.1 Cartridges
9 × long nozzles for 400 ml cartridge
50 × cross grain oak dowels
1 × mastic caulking gun
(400 ml compatible)
1 × “dowel whacker”
1 × 16 mm diameter 280 mm long auger
1 × instruction booklet
1 × Protector Sleeve

Wheeltimber Refill Pack: materials to treat 4 × drill pattern 1 baseplates or 3 × drill patterns 2 and 3 baseplates

Contents:
9 × Probor 50.1 Cartridges
9 × long nozzles for 400 ml cartridge
50 × cross grain oak dowels
1 × instruction booklet

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