

3.5.4 FLATDECK INSTALLATION

Propping

- Temporary propping must be placed in position prior to placement of the Flatdeck sheet to provide a safe and solid working platform during the construction phase. Section 3.4.4.1 Flatdeck Formwork Tables gives the maximum spans for different slab thicknesses and span conditions. As a practical maximum, propping lines should be placed not more than 2.0m apart (for up to 180mm overall slab thickness).
- Bearers and props must consist of either Machine Stress Graded MSG8 timber for load-bearing situations or structural steel sections sized for the construction loads (refer Section 3.4.4.2 Propping) by the design engineer.
- A continuous 100mm x 50mm strap fixed to the studs at mid-height attached at one end to a permanent wall is required to avoid buckling of the studs during the concrete pour.
- Propping lines must have a solid foundation and be cross braced or held in position by nailing through the Flatdeck sheet into the bearer.
- Bearers used must be a minimum dimension of 100mm x 100mm (2 - 100mm x 50mm on edge nailed together), fully supporting all Flatdeck sheets.
- Vertical propping varies depending on the slab thickness and maximum height of the propping system.

Slab thicknesses up to 180mm

- Up to 2.4m maximum height use 100mm x 50mm vertical props at 600mm centres.
- From 2.4m to 2.7m maximum height use 100mm x 50mm vertical props at 450mm centres.
- From 2.7m to 3.0m maximum height use 100mm x 100mm (2 - 100mm x 50mm nailed together) at 600mm centres.

Slab thicknesses from 180mm to 300mm

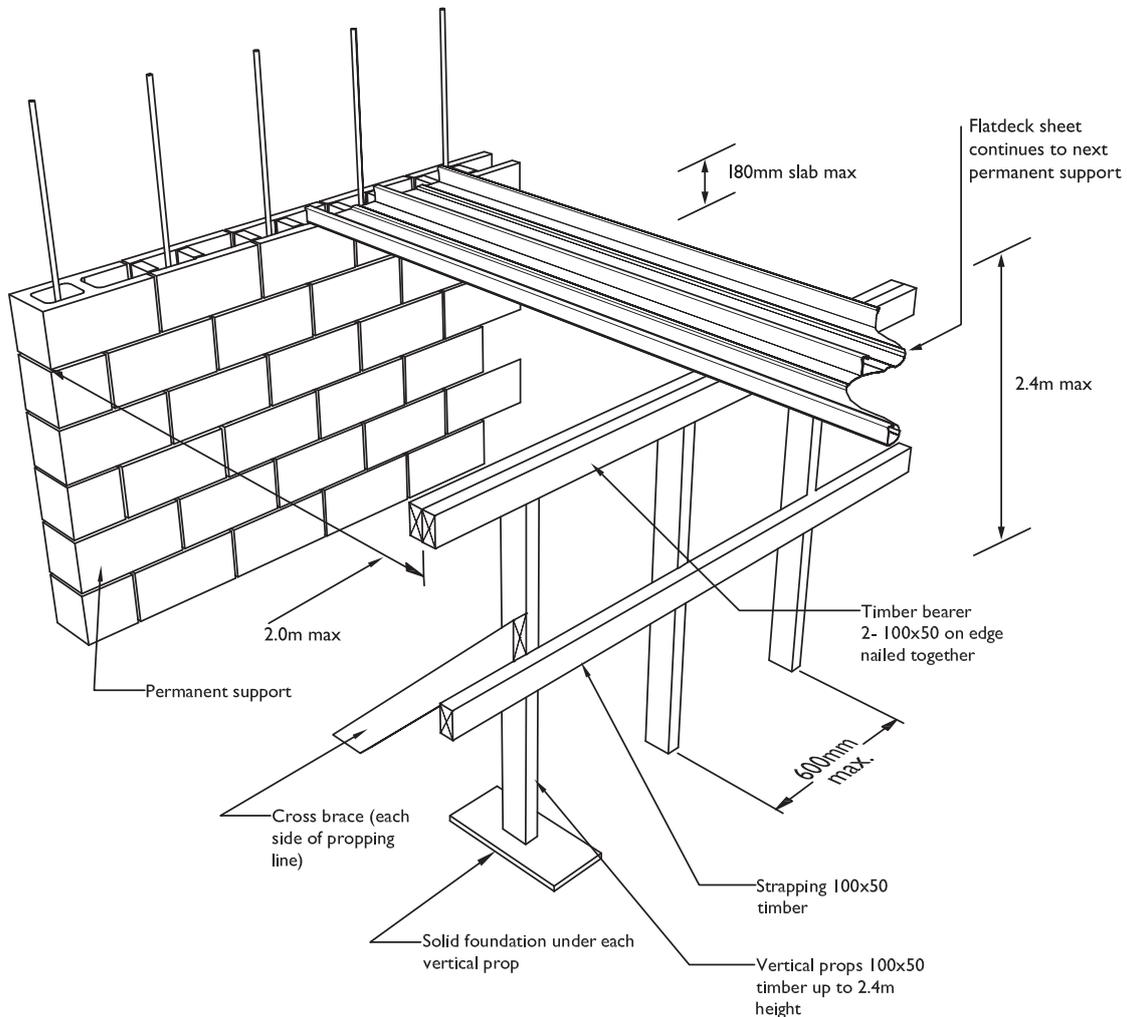
- Up to 2.7m maximum height use 100mm x 50mm vertical props at 450mm centres.
- From 2.7m to 3.0m maximum height use 100mm x 100mm (2 - 100mm x 50mm nailed together) at 600mm centres.

All other slab thicknesses and propping systems require specific design by the design engineer.

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- If cutting of the Flatdeck sheet is required when forming penetrations, temporary propping is required around the opening to maintain the integrity of the sheet during the concrete pour. The area of Flatdeck removed for penetrations must be replaced by an equivalent strength of reinforcing to the design engineer's specification.
- Penetrations greater than 250mm x 250mm require specific design by the design engineer.



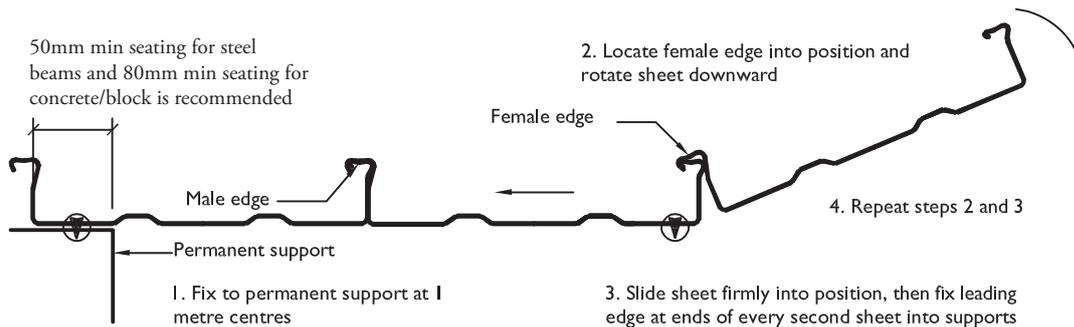
Note: The diagram above is representative of a propping system with propping lines placed not more than 2.0m apart for a Flatdeck slab up to 180mm overall thickness with a maximum propping height of 2.4m.

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Laying

- Flatdeck sheets must be laid in one continuous length between permanent supports. Short sheets of Flatdeck must never be spliced together to achieve the span between temporary or permanent supports.
- The minimum Flatdeck sheet bearing (or seating) onto permanent structure is 30mm. However for steel supports 50mm minimum bearing is recommended, and for concrete/block 80mm minimum bearing is recommended.
- Align the first Flatdeck sheet with the female edge of the side lap sitting on the permanent support. Apply hold down fixings and lay Flatdeck sheets in the sequence shown.



Note: Where the Flatdeck sheet is continuous over multiple steel beams, additional fixing may be required to avoid issues due to wind uplift.

Care should be taken with location of fixings to ensure these do not clash with shear stud locations.

Use of self-drilling screws is recommended to control deflections and maintain the integrity of the side lap. As a practical guide, use 10g – 16 x 16mm self-drilling screws midspan between permanent supports and temporary propping lines.

- Where supports are steel beams, shear connectors are welded through the Flatdeck sheets onto the steel beam beneath. Where this is required the top flange of the beam must be unpainted or have the paint stripped clean. Where shear connectors are pre-welded to beams, these must be located in line with the bottom pan of the Flatdeck sheet (300mm centre to centre) in order to gain the required shear capacity.
- Where fixing into solid filled concrete block (especially when using powder actuated drive pins), edge breakout of the block can be avoided by increasing the Flatdeck sheet bearing (or seating) and fixing into the grout.
- Where tilt slab construction is being used, the Flatdeck sheets are fixed to a steel angle bolted onto the tilt slab (minimum 50mm seating leg).
- When laying over timber supports, the Flatdeck sheet must be separated from the timber using Malthoid (DPC) or similar. Galvanised nails must be used to hold down Flatdeck sheets during installation. Permanent shear connectors require specific design by the engineer.
- Periodic checks should be made on large runs to ensure the sheets are parallel and true to the first sheet. Stretching of the Flatdeck sheet to increase coverage must be avoided.
- Where on-site cutting of the Flatdeck sheet is necessary, use a metal-cutting power saw or angle grinder. After cutting, all swarf or metal filings must be cleaned off the sheet surface (recommended at the end of each day's work) to avoid corrosion.

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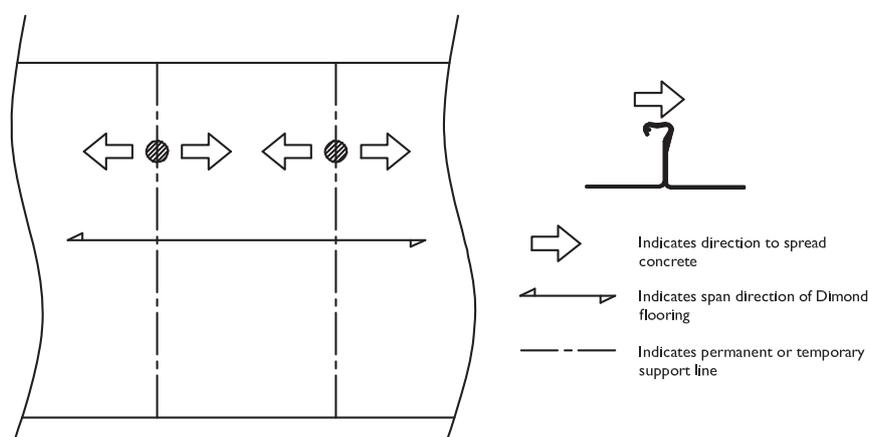
3.5.4 FLATDECK INSTALLATION *continued*

Other Considerations

- Where required, Edge Form is used to contain concrete during the pour. Refer to Section 3.4.13 Flatdeck Components for details.
- Mesh and/or additional reinforcing must be placed in accordance with the design engineer's specifications to ensure minimum top cover. Refer to Section 3.4.2 Design Considerations: Additional Reinforcement. The reinforcing mesh shall be orientated so the top bar runs in the same direction as the steel sheet.
- Consideration should be given to laying planks as walkways to minimise localised loading of the Flatdeck sheet by foot traffic or equipment.
- For indicative Flatdeck CAD details refer to Section 3.4.14.

Concrete Placement

- Avoid dumping of wet concrete in a heap and when using a concrete pump, ensure the height of the discharge nozzle is not more than 300mm above the top of the Flatdeck sheet. This will avoid overloading of the Flatdeck sheet causing buckling and/or opening of the side laps.
- Begin the pour over a beam or propping line (shown as  in the diagram below) to minimise deflections. Spread the wet concrete away from the beams and into the span. Work wet concrete across the Flatdeck sheet towards the underlapping sheet to keep the side laps tightly closed, as illustrated.
- It is recommended that concrete placers do not crowd together during the pouring sequence, but maintain a one square metre "zone" to avoid overloading the Flatdeck sheet.



- The use of a concrete vibrator will help eliminate air voids and ensure full contact between the Flatdeck sheet and the concrete.
- Where the Flatdeck sheet underside is visible, concrete leakage on the underside must be washed off once concrete placement is complete and before the concrete slurry dries off.
- Temporary propping and formwork should not be removed until the concrete strength has reached 20 MPa, or if this can not be established, 28 days full cure.