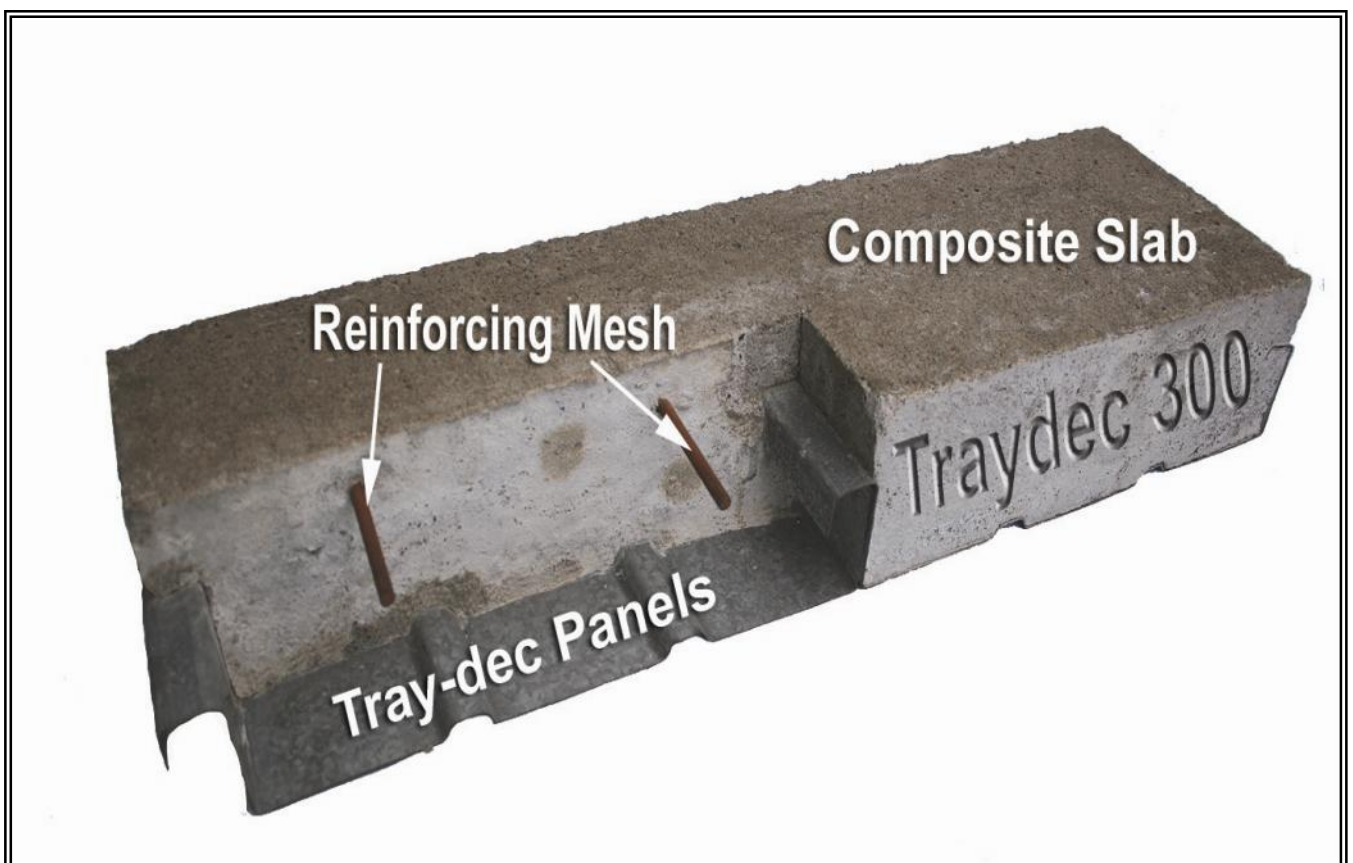


Traydec 300 Builders Guide



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Introduction

Tray-dec 300 is a "steel deck-concrete topping" floor system using galvanised steel trays which act both as permanent form work and tensile reinforcement. Each tray interlocks with its neighbour to form a continuous steel deck. The appropriate shrinkage mesh can then be placed and the concrete poured.

Laying Tray-dec is quick, easy and keeps labour time to a minimum. Tray-dec is easily handled on site, weighing only 3kg per linear metre. Tray-dec trays do not need to be screwed or crimped to each other, but simply rotate and clip together.

The flat underside of the profile prevents spillage of wet concrete at the tray ends, so there is no need for installing time consuming end caps.

The effective width of each Tray-dec tray is 304mm.

The Tray-dec 300 system complies with all relevant New Zealand Standards and has been designed to BS5950 Part 4:1982.

The base metal thickness is 0.75mm of high tensile 550MPa, galvanised with 275g of zinc per square metre.

Quotes and Orders:

The **Tray-dec 300** system provides an economic solution to virtually any situation in which a suspended concrete floor is required. This includes upper floors, as well as ground floors on sloping sections.

Upon request, we will submit a written quotation showing a rate per square metre for the manufacture and delivery of Tray-dec to your building site. When an order is placed, the exact lengths and number of trays are determined either from detailed drawings or from direct measurement taken on site. For sites within the greater Auckland area, we can send a representative to take the measurements required. A charge may apply for areas under 100m². If you intend to specify the exact lengths of **Tray-dec** required yourself, please keep in mind that the **Tray-dec** sheets need 50mm overlap onto the supporting block work and that the effective cover of individual sheets is 304mm. **Traydec** will arrive in bundles, free on truck. Where requested, a laying schedule can be made available, showing the position each sheet belongs in the layout and at which point to start laying the trays.

Our delivery times are very short; normally four to five working days. Please contact Tray-dec NZ Ltd to confirm lead times at placement of your order, as these can vary.

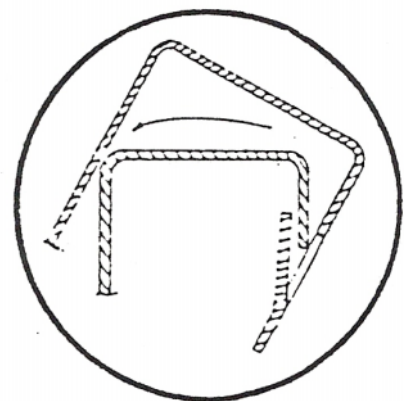
Installation:

The trays must be carefully laid in accordance with this guide and the design engineer's drawings.

If a tray appears to be the wrong length, it is likely to belong elsewhere in the layout.

Place the first full width tray on the starting point of the area to be covered ensuring that it overlaps onto the supporting structure by 50mm at each end and along one edge. The punched web side of the tray must be laid facing the side support (see next page).

Now hold the next tray by its plain (small) web so that it hangs vertically at right angles to the first tray. Engage the punched tabs with the plain web of the first tray, then rotate tray through 90 degrees away from the first tray until the two lie neatly side by side (there should be no gap between trays as viewed from below). Check all punched tabs are engaged with the plain lip of the first tray. Repeat the process for the third and subsequent trays.



After the Tray-dec trays have been placed over the supports, they should be secured immediately against wind uplift. The tray ends should have one fastener each (every 304mm). Where trays run continuously over an intermediate support, a fastener should be placed in every third tray (every 912mm). Where the sheets rest on block work, use 25mm thin-shank masonry nails or 4mm dia. power activated drive pins with a washer fitted. Sheets resting on steel beams can be secured with 4mm dia. power activated drive pins with a washer fitted.

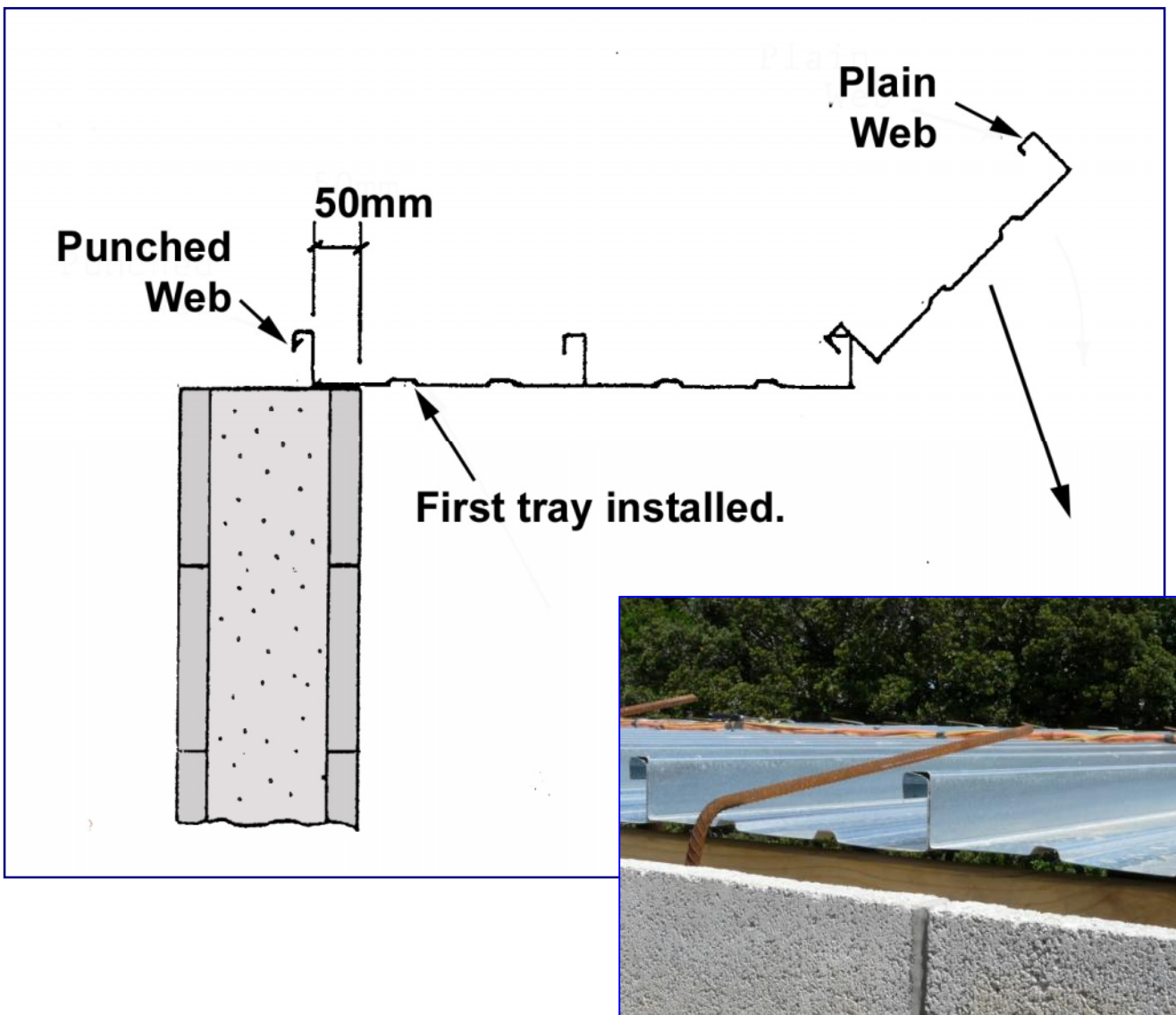
Where the trays are used as a work platform during construction, care must be taken not to overload them. Timber bearers should be used to distribute loads for walkways and work areas, especially

when placing wet concrete.

Prior to placing the concrete, the trays are to be clean, dry and free of contaminants such as oil or grease and any miscellaneous construction debris should also be removed.

Concrete is to be compacted using a pencil vibrator, used in a vertical manner (not dragged). Insert the vibrator for 5 to 15 seconds to remove entrapped air and consolidate the concrete. The vibrated region of concrete should be clearly seen as it takes on a glossy appearance and bubbles will cease to rise to the surface. Reinsert the vibrator at regular intervals (approx. every 200mm) until the whole slab has been vibrated.

To safeguard against excessive cracking in the slab during the initial setting process a maximum concrete slump (water content indication) of 100mm should be specified when ordering the concrete, and absolutely no water should be added to the mix after dispatch from the plant.



Traydec 300 – Temporary Propping Requirements

When concrete is poured onto Tray-dec 300 steel trays during construction, the trays will deflect under the applied weight. The resulting deflection is a function of the unsupported span and the slab thickness.

In situations where the deflection would exceed these limits it is necessary to install temporary propping lines to support the slab until the concrete has reached 70% of its design strength.

The table below relates floor thickness to maximum recommended spans for the construction and wet concrete stages.

If the underside of the Traydec 300 is to be left exposed as a ceiling finish, the resulting deflection may appear quite noticeable, it is advisable in these situations to decrease the unpropped spans by approximately 40% to achieve minimal deflection.

Temporary Propping Table

Slab Thickness	Maximum end or simple single span	Maximum internal span between beam centres
90	2600	2800
100	2600	2800
110	2600	2700
120	2500	2650
130	2400	2600
140	2300	2550
150	2200	2500
160	2200	2450
170	2150	2400
180	2000	2400
190	2000	2300
200	1950	2300

Above spans are calculated to give a maximum deflection of 10mm in ideal conditions, between propping lines, greater spans are possible with a corresponding greater deflection..

For slabs over 200mm thick please consult your Engineer or Traydec NZ Ltd to confirm propping requirements.

If heavy or excessive construction loads are expected the propping should be increased to compensate for the extra weight.

If it is found that the propping centres required do not divide evenly into your span it is better to reduce the outer or end spans as these usually incur the most deflection.

To achieve the internal spans in the above table, the Traydec 300 must span internal beams in continuous lengths.

Joining Traydec 300 sheets on prop lines is not recommended, your Engineer should be consulted before this is undertaken.

There are two typical propping systems;

1. Timber Propping

Two 100 x 50's nailed together and placed on their edge as a supporting bearer (running 90 degrees to the **Tray-dec** span direction) with single or double 100 x 50's at 800mm centres as vertical supports. If possible, use a bottom plate along the ground to spread the load of the vertical props and give some lateral stability to the structure.

It is also recommended that horizontal and diagonal bracing also be used if the height to the floor exceeds 2m, in order to prevent movement and buckling of the vertical supports.

Good quality, straight, knot free timber must be used for propping and care taken that all vertical supports will carry the load evenly.

Timber is not recommended for use in propping for floor slabs over 150mm thick or if the height of the floor exceeds 3m from the propping base.

2. Acrow Props or Shore Load towers

Provided that a steel bearer is used to support the **Tray-dec**, Acrow props can be spaced at 1200mm centres.

(Timber, preferably two 150 x50's, can be used as the bearer, but the spacing's may require to be closer than 1200mm)

Acrow Props will also require bracing to prevent any movement during laying and pouring, Although Acrow props need to be hired and hence are generally more expensive, they are quicker to erect and are more stable and stronger than timber props.

Whatever propping system is used it is important that due thought is given to the loads it must support, and that adequate footing is provided for the props to prevent sinking and movement.

The point to keep in mind is that good preparation of propping lines is essential in achieving a good underside finish.

At all times during the construction phase, care must be taken to avoid localised dumping or heaping of concrete on the **Tray-dec**. Failure to do so may result in excessive deflections in those areas or even collapse of the floor.

Temporary propping is usually required to remain in place until the concrete has reached at least 70% of its design strength, generally 10 to 28 days, your design engineer will be able to advise on your floors requirements.

Concrete Placement

Both BRANZ and HERA have published very good guides for concrete handling and placement.

The preceding information provides general guidelines only. For advice relating specifically to your project, please feel free to contact us here at **Tray-dec NZ Ltd.**