

## Transport, Storage, and Installation Information Prestressed Wall Panels

Moore Concrete Prestressed Wall Panels are designed by Chartered Engineers in accordance with Eurocodes and manufactured in accordance with BS EN 14992 2007+A1:2012; BS8110 part 1 and BS5502 Part 22. Care must be taken during transport, offloading and installation to guarantee the integrity of the units.

The full design strength of the Prestressed Wall Panels will only be achieved after **28 days**. The date of manufacture will be specified on the product label fixed to the unit; this label also shows the unit weight. If this label is missing, please contact Moore Concrete for advice.

### Choosing the panel suitable for your site

Panels of different thicknesses and steel strand arrangements are suitable for different loading conditions; therefore, it is important that the panel you purchase is of sufficient strength. The Declaration of Performance contains information on the mechanical strength of the panel and is available upon request.

It is important to be aware that there is an inherent camber on single load bearing panels as a result of their high strength which can resist design loads. Single load bearing panels are those where there is a greater number of prestressed strands on one side compared to the other. When transporting & storing prestressed wall panels the position of the timbers is critical to ensure for maximum protection of the panels and to minimise the effects of the camber. Refer to the Offloading & Storage section of this document for further details.

### Transport

- The panel units will be placed on timber skids positioned between each unit and aligned vertically at fifth ( $\frac{1}{5}$ ) points of the overall length as illustrated below (*Figure 1.*) to avoid unnecessary stressing or damage occurring to the units during transit.
- Units will be stacked no more than 6 Nr. high on the wagon and strapped down securely with ratchet straps.
- The driver collecting the units from Moore Concrete will be responsible for securing and the stability of the units before departing the yard.



Timber spacers placed  $\frac{1}{5}$  of overall length from product ends.

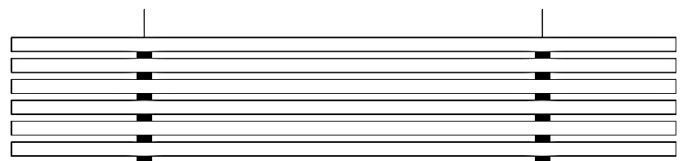
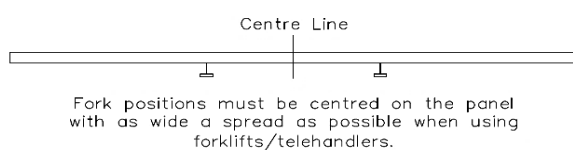


Figure 1. Stacking of Prestressed Wall Panels

## Offloading & Storage

Handling of the panel units should be completed by competent persons in line with a specific risk assessment and “Lifting Operations Lifting Equipment Regulations - 1998 or 1999 (NI)”. If a crane is required, the installation should be completed in line with a Lift Plan in accordance with BS 7121-1:2016 ‘Safe Use of Cranes’.

- All equipment should be checked before use, to ensure that it is in a good condition and capable of lifting the units.
- Appropriate lifting tackle & equipment should be used and also must be capable of the lifting load. Swivel Eyes can be supplied on request along with certification. Diameter will vary depending on product weight, this information can be provided upon request at the time of sale.
- To minimise marking the units during handling operations, it is advisable to cover the pallet forks with a suitable material.
- Offloading and storage must be done safely and carefully on to firm and level ground.
- Units must be offloaded individually and in a horizontal position using pallet forks. The forks must be centred on the unit with as wide a spread as possible, as illustrated below.
- Ensure when offloading that the wall panel units are lifted from the tongue side as there is a risk of damaging the panel if lifting from the groove side.
- Timber spacers must be positioned between each unit and aligned vertically on top of each other. If timber skids are not positioned vertically, it will put load on the panel and will lead to cracking.
- For panels which have the same number of strands on each face, timber skids should be positioned at fifth ( $\frac{1}{5}$ ) points of the overall length as illustrated below to avoid unnecessary stressing or damage. (see Figure 1 on Page 1).
- For single load bearing panels, i.e. those with a larger number of strands on one face, skids should be positioned at third ( $\frac{1}{3}$ ) points of the overall length. This helps counteract the inherent camber in the product and minimise this.
- The units should be stacked no more than 6 Nr. High

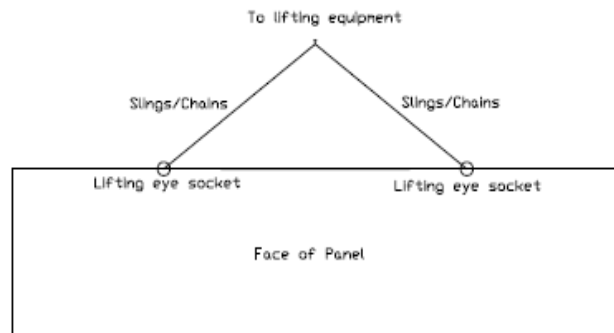
## Turning into Upright Position

During turning/installation of the units the operator must:

- Plan the lift ensuring the surrounding area is free from obstacles and that there are no overhead obstacles such as power lines.
- All equipment should be checked before use, to ensure that it is in a good condition and capable of lifting the units.
- Lift the units from the stack using pallet forks and driving in from the tongue side as there is a greater risk of damage if lifting from the groove side.
- Place an individual panel on 2 Nr. timber skids ready for turning into a vertical position. The panel should be placed on the skid leaving 200mm remaining on the groove side for the panel to turn on to (see image below)
- The units should be turned using the 2 Nr. threaded sockets cast into the tongue (top edge) of the unit.
- Appropriate lifting tackle & equipment should be used. Swivel Eyes can be supplied by on request along with certification. Swivel eyes need to be capable of lifting load.



Figure 3 Example of a Swivel Eye



- Screw lifters into sockets cast on the top edge of the panel and using a suitable machine, slowly lift the panel from the horizontal position into its vertical position.
- The panel can now be lifted into its correct position.



Swivel Eye screwed into Panel

200mm of skid remaining on groove side



Figure 2. Panel being lifted from Horizontal to vertical position

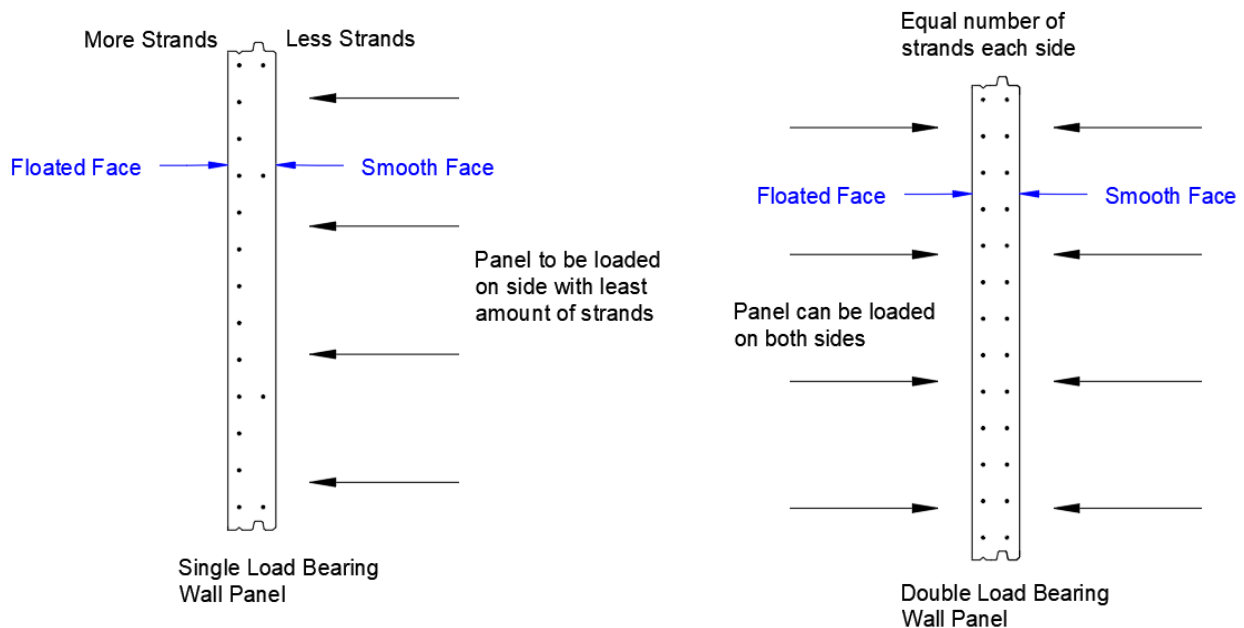
A short video of this process is available to view on our website:

<https://www.moore-concrete.com/agriculture/prestressed-wall-panels/>

## Installation

During installation of the units the customer must ensure that:

- Both the tongue and groove are free from debris when installing.
- Small manufacturing tolerances are allowed in the units.
- It is advisable to seal the gap in the tongue where the lifting points are positioned, this will help prevent rain from penetrating at this point.
- Fixing options illustrated below give a brief overview of the options available.
- Care should be taken to ensure that loading capacities are never exceeded, either during construction or during the lifespan of the product.
- Moore Concrete can supply the bracket/clip shown below. Any alternatives to this would need agreed in advance.
- Brackets/Clips are suitable for **wind loading only**. If the panels are being used to retain, the panel should be supported by the steelwork and not loaded on the same side as the brackets.
- The strength of the prestressed wall panel depends on the stressing pattern and therefore it is critical that panels are installed in the correct orientation. Refer to the below sketch for this information. Please note that for panels which are single load bearing (ie loaded on only one side), the usual configuration means that the smooth face is the one that will be loaded ie obscured by the retained material.



## FIXING OPTIONS

Panels can be fitted to the RSJ/Beam in 3 ways:

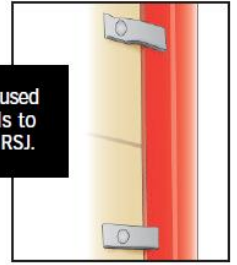


1. Bolted to the inside face.

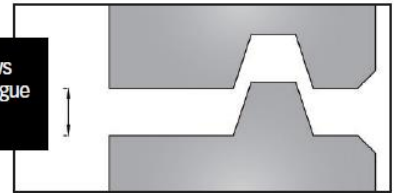


2. Slotted in between. 3. Bolted to outside face.

Brackets can be used to secure panels to the face of the RSJ.



This illustration shows the profile of the tongue and groove joint.



## Applicable Units:

| PANEL DEPTH | PANEL HEIGHT |               |             |             | APPLICATION INCLUDES:   |
|-------------|--------------|---------------|-------------|-------------|---|
|             | 600mm (2')   | 1000mm (3'3") | 1200mm (4') | 1500mm (5') |   |
| 100mm (4")  | ✓            | ✓             | ✓           | ✓           | <ul style="list-style-type: none"> <li>• Livestock Buildings</li> <li>• Commercial Buildings</li> </ul>                                 |
| 150mm (6")  | ✓            | ✓             | ✓           | ✓           | <ul style="list-style-type: none"> <li>• Silage</li> <li>• Feed Stuffs</li> <li>• Grain</li> <li>• Aggregate</li> <li>• Coal</li> </ul> |
| 200mm (8")  |              | ✓             |             | ✓           |   |
| 250mm (10") |              | ✓             |             | ✓           |   |



Manufactured to EN 14992:2007+A1 2012

The manufacturer assumes no liability for damage incurred by improper handling.

## Dimensional Tolerances

All MCP prestressed panels are produced within the below dimensional tolerances. This is in accordance with EN 14992:2007+A1 2012 and EN 13369:2018.

| Dimension                 | Acceptable Variation from Design Dimension |
|---------------------------|--|
| Length                    | +/- 10mm                                   |
| Width                     | +/- 10mm                                   |
| Thickness                 | +/- 5mm                                    |
| Squareness                | 12mm difference between diagonals          |
| Socket Position           | +/- 15mm                                   |
| Lifter Position           | +/- 15mm                                   |
| Camber at centre of panel | +/- 10mm                                   |

*Note: Tolerance on camber will be +/-25mm on single load bearing panels due to strands only being stressed on one side of the panel.*

## Surface Finishes

Due to the casting process used for prestressed panels, one face will be a floated/trowelled finish. The other face will be formed against a steel mould.

### Mould Finish

- Surface will be free from voids and honeycombing.
- A variation in colour on the panel face is to be expected.
- Timber marks from skids may be present following the stacking of panels.
- The intensity of colour variation and timber marks should decrease over time as the concrete weathers.

### Floated Finish

- Surface will be free from voids and honeycombing.
- The floated face will be coated with a chemical curing agent which will result in some colour variation.
- Trowel marks can be expected on the floated face of the panels.
- Timber marks from skids may be present following the stacking of panels.
- The intensity of colour variation and trowel/timber marks should decrease over time as the concrete weathers.
- Shrinkage cracks up to 0.3mm in width may appear on the floated face. These pose no structural risk to the unit.