

Detailed Step by Step Guide:

How to Install Cantilever Vertical Prestressed Precast Concrete Wall

To be read in conjunction with the relevant ACP Concrete Installation Drawings

Overview - IF IN DOUBT THEN ASK

It is recommended that all persons involved in the off-loading and installation of any concrete panels should have training and hold current certificates in all relevant areas such as craning, forklift truck operation, use of access hoists and carry current CSCS cards.

All persons must be equipped with safety clothing including boots, gloves, high visibility clothing hard hats & safety glasses. Where concrete cutting or grinding is to be carried out, dust masks must be used.

THESE NOTES ARE ONLY ISSUED AS GUIDANCE. ALL SPECIFIC SAFETY INSTRUCTIONS REGARDING WORKS WITHIN THE SPECIFIC SITE MUST BE FOLLOWED AT TIMES.

Hazards

Main hazards include working with mobile plant & machinery, working with suspended precast units, working within a construction site and damage to structure and third parties. Working at heights and falls.

Risks

Main risks associated include death, crushing, dust inhalation & falls

Environmental

There are no specific risks to the environment other than dust and noise during cutting operations.

Manual Handling

There should not be any manual handling of items over 15kg required.

Any manual handling tasks must be executed in accordance of Manual Handling Regulations by persons trained in manual handling.

Plant Required

- Telehandler - Specification to suit unit weight.
- Crane - suitable to unit weight and radius
- Temporary props
- Simple 2 leg lifting chains
- Hand tools

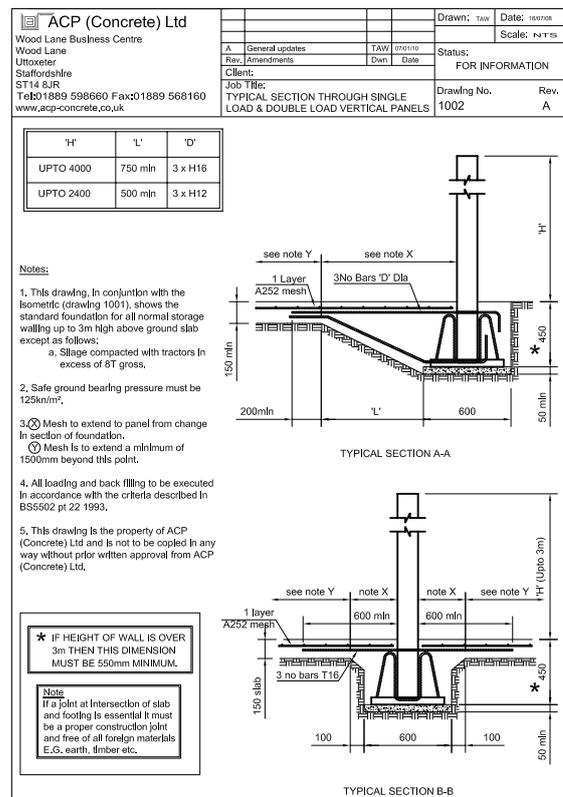
Vertical Ground Retaining Panels - Typical Installation Method

Step 1: Excavate Foundation Trenches As Drawings

Get the layout correct before starting and ensure that the thickness of the panels has been allowed for at the corners.

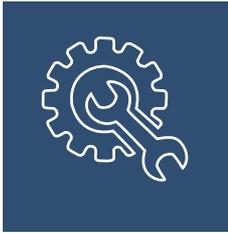
Suggest 600mm wide bucket to allow room to work in base, Peg out level for concrete strip using survey level.

Refer to: CAD Drawing - Foundation Section Single and Double Cantilever Prestressed Vertical Wall



Step 2 - Pour Foundation Strip of Concrete as Drawing

Tamp to level of pegs, ensure that strip is level both along foundation and across. Do not allow concrete to rise on edges of strip.



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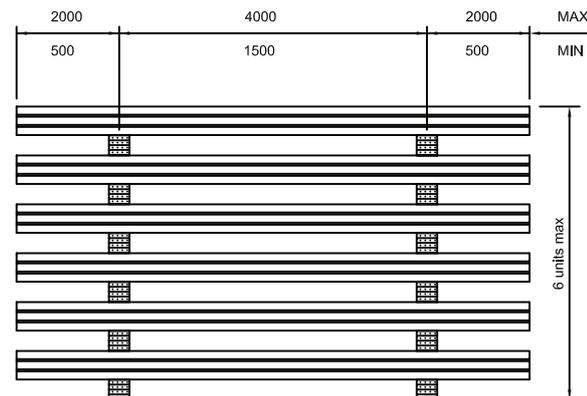
Step 3: Set Out String Lines

Set up approx. 10mm away from outside of wall to avoid being pushed out during installation. Set up approx. 600mm above base. Survey foundation strip with level and identify highest point.

Step 4: Unload Panels

Unload panels using suitable loader or crane and stack on firm level ground as shown in drawings (no more than 6 panels high)

Refer to: CAD Drawing - Panel stacking specification



Note
Panels only to be stacked on firm level ground.
Timbers must be aligned.

Step 5 - Check Type of Panels Used

Most vertical panels are designed to have the smoothest face inside the store. This is not always the case. Slotted panels should have the narrow slot inside. IF THERE IS ANY DOUBT. PLEASE CONTACT US.

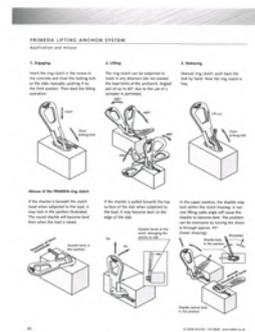
Step 6 - Set Out Cradles

Start at a corner nearest to the highest point on the foundation. Position cradles on joints between panels.

Step 7: Position First Panels

Lift panels using suitable loader or crane and approved lifting gear (available from ACP Concrete Ltd) located in lifting holes of loops cast in panels.

Refer to: Ancillaries - Lifting Clutch Use



Ensure first panel is in correct position and is vertical in all planes. Secure propping system. A suitable propping system may be RMD's raking "push / pull" props fixing to concrete panels using anchor bolts.



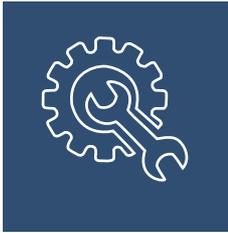
Expanding anchor bolts to fix to concrete panels

Additional support can be provided by placing a substantial dead weight (such as a stack of panels) and roping installed panels back to weight. This can be used when there is limited access to one side of walls.

Step 8 - Install Remaining Panels

Ensure all panels are true and level and pack under panels to achieve level top line. Set packers to ENSURE that at the highest point on the foundation strip no packers will be required. Square sections (40mm x 40mm) of asbestos free cement board are suitable packers.

Corners can be propped at corner point. Panels should be propped in accordance with the temporary works calculations (typically every panel at leading edge and then 3 to 6 metres).



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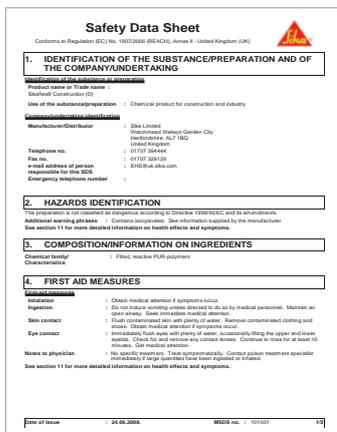
Step 9- Ensure All Panels Are Level

Check top height as work goes on. There may be a slight variation in the length of panels (+/- 6mm) so check top height in centre of each panel with survey level and by eye. It is essential that the leading edge of each panel is vertical, and this should be achieved even if joints are uneven. In some cases, expanding water stops are to be placed on the panel surface just above the reinforcing bars.

Step 10 - Pour Foundation Concrete

Before placing concrete seal inside vertical joints of panels with sealant. Please see the "Health and Safety Data Sheet" for joint sealants.

Refer to: CAD Drawing - Panel stacking specification



Step 12 - Seal Joints

Back out wide joints as stated above and gun in sealant. Work into joint and ensure that there are no air bubbles and good contact is made to joint sides. Cut out to form joint between floor and panels and seal as above. In some cases, joints should be primed before sealing.

Step 13 - Fill Holes

Fill lifting holes, and any areas damaged during installation with a bonding mortar using a suitable SBR (i.e. Unibond, Sika Latex etc). Apply surface protection where necessary.

Step 14 - Back Fill If Required

The backfilling of panels must be carried out strictly in accordance with ACP Concrete Ltd notes in our Solutions section on "Earth Retaining Walls". The backfilling must be closely supervised by competent persons to ensure the panels are not overloaded and we advise that a qualified engineer is consulted before the operation commences.

Where Backfilled - Earth Retaining Walls

The characteristics of backfill vary enormously. These can be compounded by moisture content, compaction, top profile and expected trafficking.

ACP Concrete earth retaining vertical panels have the following service load capacities:

- 145mm thick panels 33KNm
- 180mm thick panels 45KNm

If joints are "open" then fill out with joint backing strip or foam. Seal approx. 50mm above finished floor level.

Pour concrete into foundations and work to remove air and ensure filling beneath panels. Concrete should be placed as soon as one load can be used and panels should be left propped for the minimum amount of time. Do not pour too much concrete on one side at a time as the panels can be displaced. Fill trenches to just below top of cradle hoops. Before concrete cures, check panels have not been displaced.

Step 11 - Pour Floor Slab Concrete

Start at a corner nearest to the highest point on the foundation. Position cradles on joints between panels.

It is the responsibility of the contractor to ensure that these capacities are not exceeded specifically during backfilling.

We would advise that an engineer be consulted to ensure site conditions will not exceed these capacities. We also recommend that panel props be installed during the backfilling operation to guard against accidental surge loads. For more information on backfilling in Literature called *Guide to Backfilling Prestressed Vertical Cantilever Walls*.



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Safe Storage & Disposal of Materials

Sika Sealant

- No special consideration for storage other than avoidance of frost. Store in dry when not required
- No special requirement for disposal of packaging. Avoid litter and use skips on site. Remove unused packs from site for later use on other projects.
- Avoid watercourses with material and packaging.

Concrete Panels

- No special consideration for storage
- No special requirement for disposal

DISCLAIMER

Please note that any information provided is to be used as a guide only. Any lifting/handling operations should be carried out by trained and competent personnel only. ACP Concrete Limited will not be held responsible for any damage or injuries in connection with handling or installation not carried out by ACP (Concrete) Limited.