



## STONE STRONG - PARAWEB INSTALLATION GUIDELINES

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THESE GUIDELINES ARE TYPICAL AND GENERAL BY NATURE FOR STONE STRONG PARAWEB MSE STRUCTURES AND ARE NOT INTENDED AS A FULL CONSTRUCTION METHODOLOGY WHICH IS TO THE CONTRACTORS CARE AND WHICH SHOULD FULLY COMPLY WITH THE DESIGN ENGINEERS INTENTIONS DETAILED ON THE CONSTRUCTION DRAWINGS, SPECIFICATIONS AND RELATED DOCUMENTATION.

### SYSTEM COMPONENTS

Paraweb reinforced MSE Stone Strong wall components include:

- **Concrete Levelling Pad** – Cast-in-situ concrete levelling pad, nominally 150 to 200mm thick by 1.2 metres wide, normally unreinforced. Placed to +0 / -15mm tolerances. Alternative design includes steel fibre and / or mesh reinforcement in levelling pad – refer project drawings for site specific requirements
- **Precast 24SF, 12SF and 6SF Stone Strong Blocks or other special or new blocks** - with 2, 4, 6 or 8 Paraweb block fittings as required by design.
- **Paraweb 2D50 / 2D100 geostrap reinforcement** - refer drawings for specific reinforcement grade, location and length.
- **Paraweb connector pins** – Pultron GFRP pins (typically 35mm or 38mm diameter x 230mm long).
- **Select MSE Granular Backfill** – usually GAP65 or GAP40, compacted to minimum of 92% MDD. Alternative aggregate backfill may be used with specific MSE design

### CONSTRUCTION PROCEDURES

1. Prepare the site, including excavation, Stone Strong block wall and MSE reinforced soil block foundation proof rolling, undercutting and replacement of soft ground where required and installation of groundwater drainage systems as per the engineering drawings and approval of the Engineer.
2. Form and pour unreinforced concrete levelling pad to close dimensional tolerances (+0mm, -10mm)
3. Set the initial row of Stone Strong blocks, taking care to install level in both directions and blocks placed hard adjacent to each other.
4. Allow to use plastic shims as required to lift and level base block course; shims to be placed a minimum of 500mm in from block face ends.

5. Install short widths of material, such as a suitable biaxial geogrid or plywood, across the internal open joint area on the rear face of each 24SF Stonestrong block join to contain internal block void hardfill from the select backfill.
6. Backfill internal block void with nominal 230mm GAP65 (up to underside of lowest row of Paraweb connectors), lightly compact/ tighten infill in place with wacker packer.
7. Install & compact first nominal 230mm lift of MSE select backfill behind block (up to underside of lowest row of Paraweb connectors).
8. Excavate a shallow trench near the far end of the Paraweb strips (notionally 1.5 to 2 metres in from the rear end of the MSE soil block, 500mm wide x100mm deep) to tension the Paraweb strips during the next lift select backfill placement and compaction.
9. Install the correct grade of Paraweb reinforcement to the design length and spacing shown on the drawings utilizing the Paraweb pins (a Pultron GFRP Composite 35mm or 38mm diameter pin) in the base row of blocks and layout in MSE fill as per Wall design.
10. Anchor the rear end of Paraweb to the select backfill with either Stone Strong E connectors or short lengths of steel reinforcing bar into the MSE backfill as required.
11. Begin backfill placement and compaction by placing select backfill over far end of the Paraweb reinforcing and tamp down with the excavator bucket to ensure the strips are locked in place.
12. Backfill the Paraweb and trench area before any fill is placed between the trench and the front facing Stone Strong block facing.
13. Continue spreading and compacting backfill towards the facing blocks, taking care to ensure no Paraweb strips become twisted during backfilling.
14. Spread and compact backfill in lifts of 230 mm or less to form a total of 460mm height to the underside of the second row of Paraweb block connectors.
15. Repeat steps 3 through 14 as required to complete MSE wall construction

**INSTALLATION EXAMPLE: CONSTRUCTION SEQUENCE PHOTOS- SH73 MINGHA BLUFF:**



Mingha Bluff Site – Photo taken February 2016



Undercut, proof roll and recompact retaining wall block footing, Install base concrete foundation – undercut and recompact foundation material to min CBR of 15%, place boxing/ formwork, pour and vibrate concrete, placement tolerances +0mm, -10mm.



Proof roll MSE reinforced block base (above)



Place initial block on concrete footing, backfill inside block nominal 230mm depth to underside of Paraweb pin connectors with lightly compacted GAP65.



Fill outside of base block to 230mm, compact to 92% - 95% MDD. Install Paraweb 2D50 at either 4, 6 or 8 connections per block -blocks come with 8 Paraweb connections as standard. Use 4\* centre void Paraweb connectors where Paraweb is connected to infill concrete piers or similar. Ensure pins are tight inside connectors and the paraweb is laid flat and reasonably tight. Vary rear pin position to ensure Paraweb is tight prior to hardfill placement – rear pins do not need to line up, more important to ensure installation tightness.



Install nominal 500mm wide, 100mm deep trench 1.5 to 2.0 metres in from rear of MSE block (above). Compact hardfill over rear of Paraweb prior to backfilling and compacting over trench (below).



GFRP Paraweb pin installation – form loop in Paraweb, thread through connector, install pin and pull back to lock into place. Ensure pin has a tight fit into connector – may need a hammer tap to seat properly.



Continue backfilling, compaction and paraweb installation options. Note larger construction plant may be used for fill transportation provided minimum 150mm aggregate thickness is placed over Paraweb prior to trafficking and kept a minimum of 2 metres distance from the block rear face.



12 – 20 tonne excavators and 3 – 5 tonne compaction equipment can operate within 300mm of the rear block face. A 500kg plate compactor should be used hard against the block and for the initial compaction on top of Paraweb exiting the rear block face.





Where required – install reinforcement cages for pier caps / short pier piles or UC columns in centre voids of blocks as needed. Allow for paraweb to extend through block void and to front of reinforcing cage where lateral loads are present – this ensures the lateral load forces are directly transferred into the MSE reinforcement from the structure.







Site Photos – October 2016