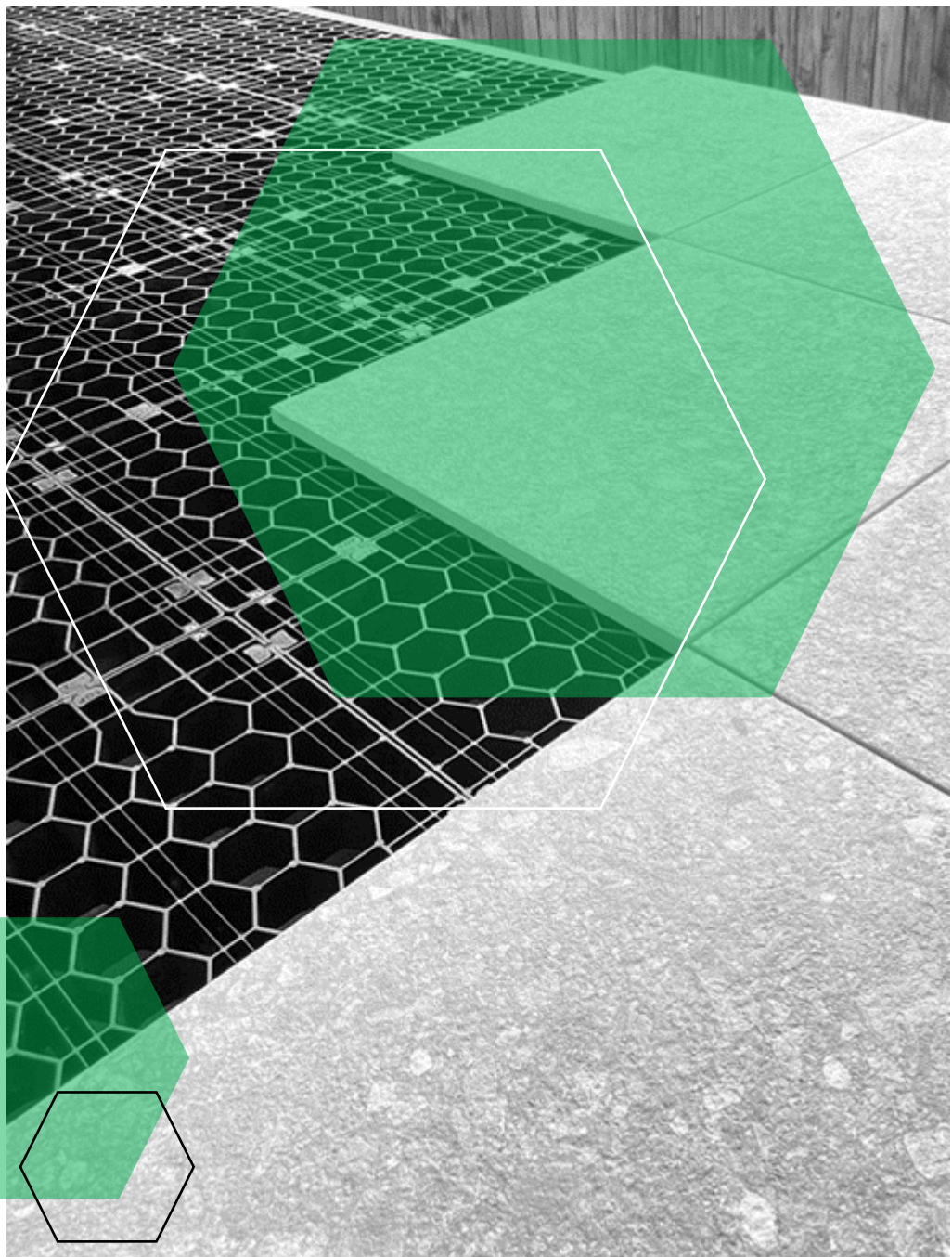


CONTENTS

PG. 2	Preliminary Installation Notes
PG. 3	Preparation
PG. 4	Deck Construction
PG. 5	Silca Grate Installation
PG. 6 - 7	Tile/Paver Installation
PG. 8	Additional Notes



INSTALL GUIDE

MANUFACTURERS RECOMMENDATIONS

This is a comprehensive installation guide for Silca System Grating over timber deck structures.

Silca System is screw fixed directly to the joists of a timber or aluminium deck construction or over membrane joist system.

It provides a flat, durable, free-draining surface on which to lay tiles or paving. It is suitable for use in all climate zones. Silca System can be used on structures within the scope of NZS 3604 and provides a permeable surface under E2/AS1.



BEFORE BEGINNING THE INSTALLATION PROCESS, GATHER ALL NECESSARY MATERIALS AND TOOLS.

MATERIALS:

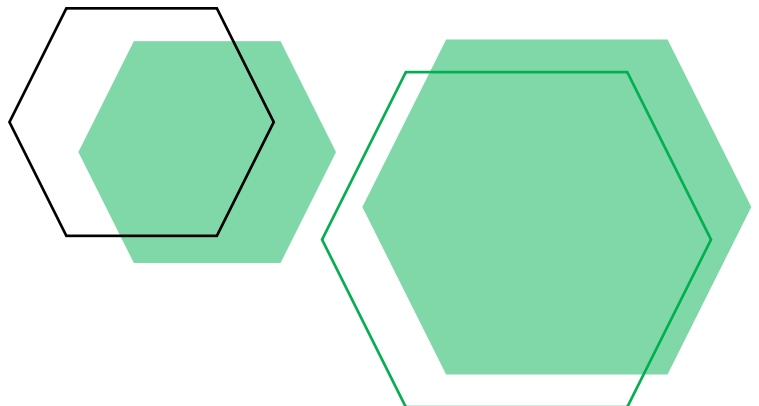
- Silca System Grates
- Silca System Connectors
- Screws (Ecko Trex17 10g x 75mm Stainless Steel countersunk head wood thread)
- Tile Adhesive (SabreBond SMP45)
- Pavers or tiles. Recommended 14-70mm. (Most popular is 20mm)
- Tile spacers (2-5mm)
- Geotextile blanket (*optional* - for when sanding or grouting only)
- Border/Facia Type – Timber facia – Tile/paver to match – Aluminium system – Fiber Cement board or similar.

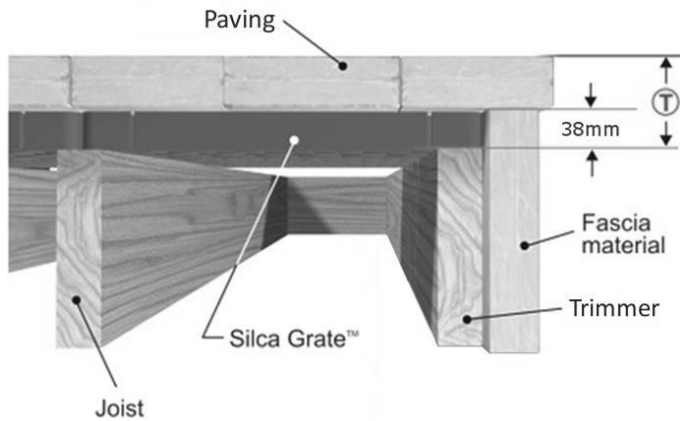
TOOLS:

- Drill or impact driver.
- Hammer - for nocking in Connectors.
- String line.
- Straightedge and Electric Plane (if needed to flatten joists)
- Circular saw and/or reciprocating saw for cutting Grates if needed.
- Adhesive sausage gun or caulking cartridge gun.

PRELIMINARY INSTALLATION NOTES

1. **Prioritize Safety:** Always prioritize safety by using appropriate PPE throughout the installation process.
2. **Thoroughly Read Installation Guide:** Familiarize yourself with the entire installation guide before beginning.
3. **Inspection of Deck Substructure:** Have a qualified professional inspect all footings, piles, bearers, and joists for compliance with relevant building codes, or have a qualified engineer design accordingly.
4. **Seek Professional Assistance if Necessary:** Don't hesitate to seek help if you encounter complexities. Contact Silca System NZ.
5. **Maintain a Clean Work area:** Keep the work area clean and organized. It makes the job safer, more efficient, and enjoyable.
6. **Adhere to the Manufacturer's Instructions:** Follow these recommended procedures and guidelines carefully to help ensure the successful and safe installation of the Silca System.





PREPARATION

HEIGHTS, MATERIALS, METHODOLOGY

Measure and determine the desired finished floor level (FFL)(top surface of tile). This will depend on factors such as paver or tile thickness, door thresholds, existing structures, and aesthetic preferences.

Ensure the paver or tile you select is suitable, of the same or similar thickness within the batch, and the underside is flat or consistent to prevent rocking. Currently the most popular choice is 20mm Porcelain or natural stone. (We recommend a minimum tile thickness of 14mm)

Silca System Grates are 38mm thick.

Subtract the thickness of the paving material then subtract 38mm for SilcaGrate thickness. This will determine the top of the joist level.

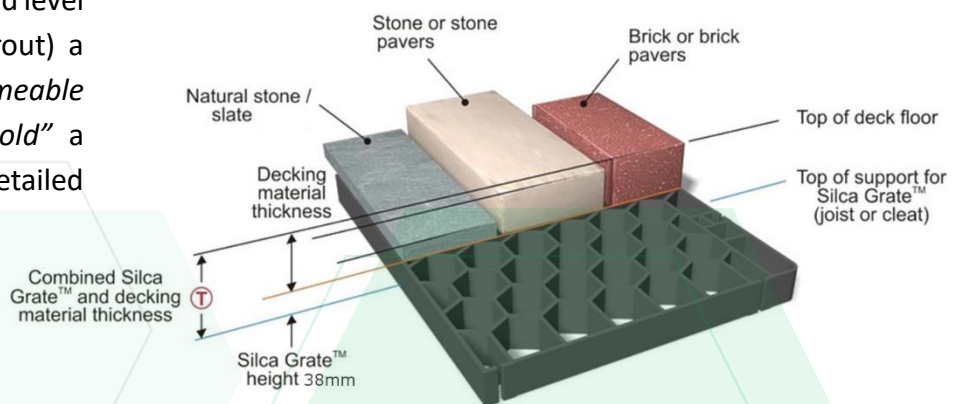
Calculation

$FFL - \text{tile thickness} - \text{grate thickness (38mm)} = T$ (top of joist)



Where a free draining permeable surface and level entry through threshold is desired (no grout) a level structure can be built. For “*permeable surface*” and “*level entry through threshold*” a 5mm gap around each tile is required as detailed in E2/AS1 for permeability and level entry.

If polymeric sand or grouting is to be used to achieve a sealed surface, then adequate fall or gradient will need to be designed for rainwater runoff. It is easiest to achieve fall with the joist. (This surface is classed as *non-permeable* and does not allow level entry through thresholds.)



DECK CONSTRUCTION

TIMBER SUBSTRUCTURE

We recommend KD (Kiln Dried) exterior use treated H3.2 timber. (Refer to joist span/paver thickness tables as a guide) Deck structure must comply with local building code and if required may need to be engineered and consented site specifically depending on height and ground conditions etc.

Build your deck substructure with joists spaced at 400mm centres.

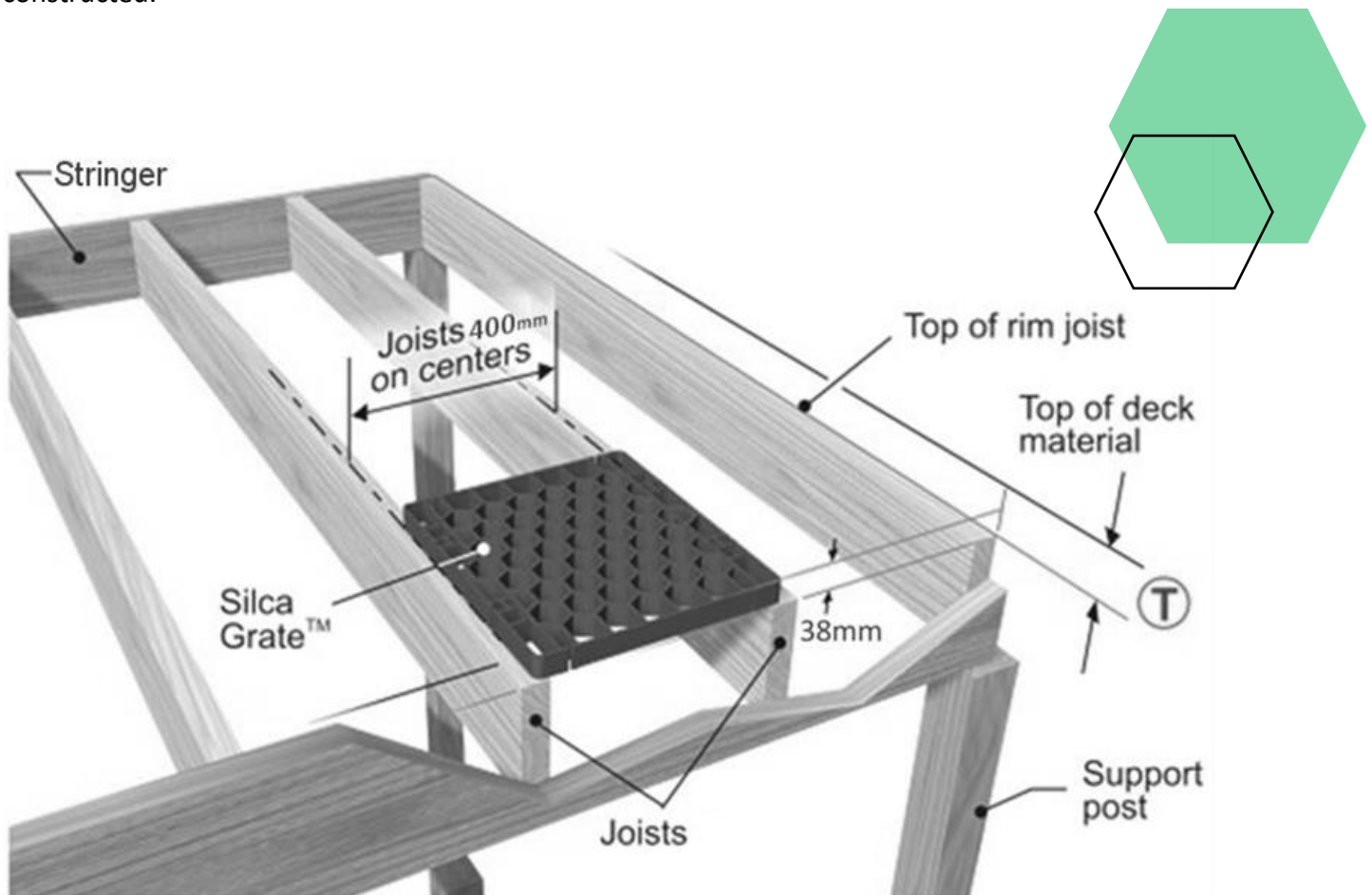
Silca Grates are designed to help with “creepage” on joist centers and the actual width is 398.5mm. So please keep this in mind when planning your joist layout and installation. An extra-long deck may require correction of centres every so often.

Make sure joists are finished dead flat and adjust with an electric plane and straightedge where required.

(Joist tape can now be installed if preferred *optional* this can help with sound deadening)

If polymeric sand or grouting is to be used to achieve a sealed surface, then adequate fall or gradient will need to be designed for water runoff.

Where a free-draining “permeable surface” and level entry is desired, (no grout) a level structure can be constructed.



SILCA GRATE INSTALLATION

INSTALLING THE SILCA GRATES AND CONNECTORS TO THE TIMBER SUBSTRUCTURE

Position the Silca Grates on top of the joists, butted up to each other so the edges sit centered on each joist. The Spanning Ribs span from joist to joist. Ensure the edges of each grate sit on the center of each joist.

If “Silca I-Lock Connectors” are being used (e.g. over a floating joist system) these lock the Grates very tight to one another, so please keep these tolerances in mind as long runs can actually calculate less. Silca Grates are designed to help with “creepage” on joist centers and actual width is 398.5mm. So please keep this in mind.

Insert connectors into the designated slots on each side of the grates, corresponding with the next grate.

Knock down connectors as you proceed approx. 2mm below flush. **Do not leave proud of the grate surface.**



Attach Silca Grates to joists using X6 countersunk wood thread screws per grate. 10g x 75mm screws.

Do not leave screw heads proud of the grate surface.

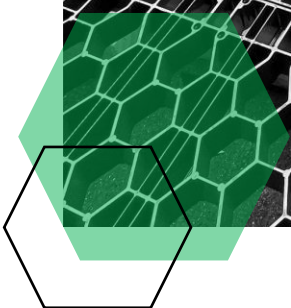
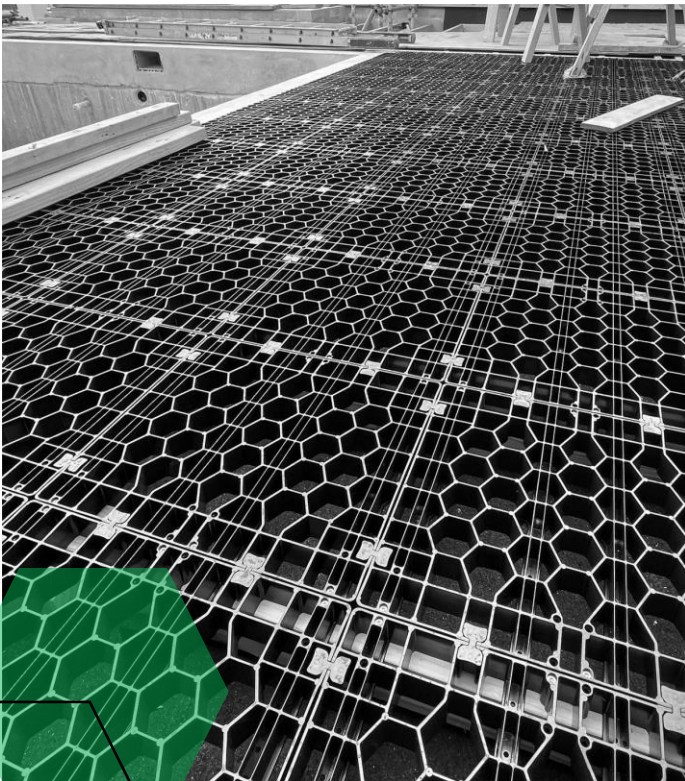
Depending on your chosen brand of screw the head sizes can fluctuate and some 10G are too large for the corresponding countersunk holes in the Grates.

The correct and recommended screws can be supplied as part of your order per request for both timber or aluminium joist applications.

Only tighten screws to a firm stage and do not over tighten. (this can damage the countersink and compromise the grate's structure)

COMPLETE SILCA GRATE INSTALLATION

Install Silca Grate over the entire desired deck area. Steps and stairs can also be installed. Trim grates where required using a suitable power saw. Extra screwing options using the strength bands.



TILE/PAVER INSTALLATION

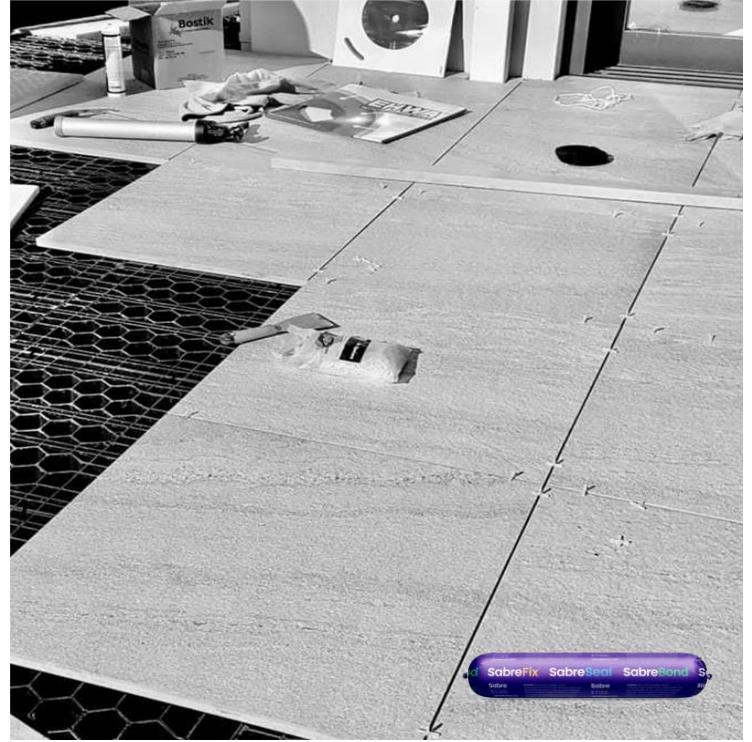
TEST AND PLAN

Now is the best time to **test install** your choice of paving to check for pattern and material fit and trim. Planning for the desired layout is vital as this will lead to a smooth efficient install with fewer cuts or redoes.

Running strings and measuring tolerances of other building elements such as railings, steps/stairs, and door thresholds to achieve optimal tile/paver layout.

TILE/PAVER INSTALL

Depending on your paver choice and application there are several laying solutions for you to choose from.



OPTION 1 (Permeable surface)

Glue-fix the tiles/pavers directly to the Silca grates with gaps for drainage, using the recommended SabreBond SMP45 adhesive. This can be supplied upon request.

Spot glue fix the adhesive on and around the connectors, screw head areas, and where the grates but up to the next, with large dobbs about the size of a Powerade bottle cap. These areas provide a good key for the adhesive as it squeezes in and around.

Place down tiles/pavers using spacers and strings to keep them straight and in line.

Tile spacers should be installed sitting in the top of the tile to tile gap, so they can be removed later. **Not** in the cross + junction of where four tiles meet.

A 3mm spacer is a nice fine gap yet still allows water to drain. To achieve a “permeable surface” regarded by councils a 5mm Gap around each tile/paver is required. See E2/AS1 for permeability and level entry.

Allow adhesive to fully cure before removing spacers or walking on finished surface.

TILE/PAVER INSTALL

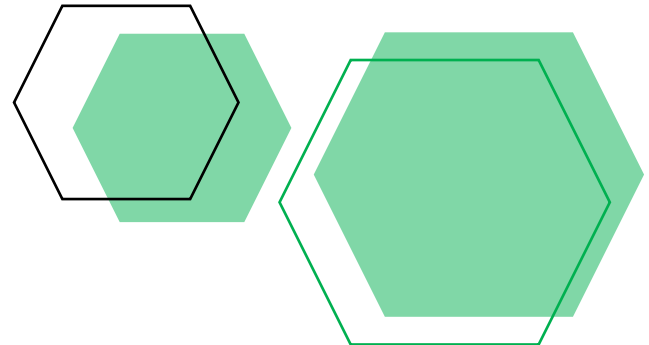
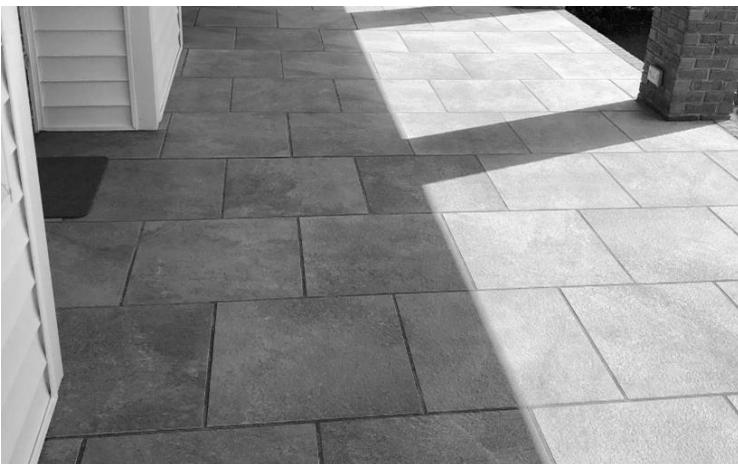
OPTION 2

Lay down a geotextile cloth on top of the grates before installing any pavers. A non-woven cloth is very effective but a basic weed mat can still suffice. It is just to stop the sand or grout from falling through during installation.

Lay your pavers accordingly and bind by sweeping in polymeric sand (cement-based sand) or grouting. There are more flexible grouts these days, so cracking has not been an issue. Even permeable grouts so water can drain through without the need for fall.

This is up to your design preferences.

Fall for rainwater runoff is required to already be accounted for and constructed in the deck substructure.



OPTION 3

If the pavers are heavy enough e.g. people have used 1.2m x 1.2m x 60mm concrete cast slabs, a simple dry lay can suffice and will stay put under their own weight. Again, design and paver preference comes into play, as a grout line or gap may still be required to hide deviation in paver gauge, squareness, etc.

For pavers this large, the deck substructure would need to be engineer-designed accordingly.

Note: for grouted finishes a combination of both [OPTIONS 1\) and 2\)](#) can be achieved by cutting areas in the geotextile blanket for adhesion during installation.

FINISH WITH PERIMETER TRIM

Install your chosen Border/Facia Type – Timber facia – Tile/paver to match – Aluminium system – Fiber Cement board or similar.

OVER MEMBRANE INSTALL

For installation over membrane or slab the above install guide still applies yet using a floating joist structure. See Outdure Qwickbuild aluminium frame or Deck Chair Systems for floating timber framing options.

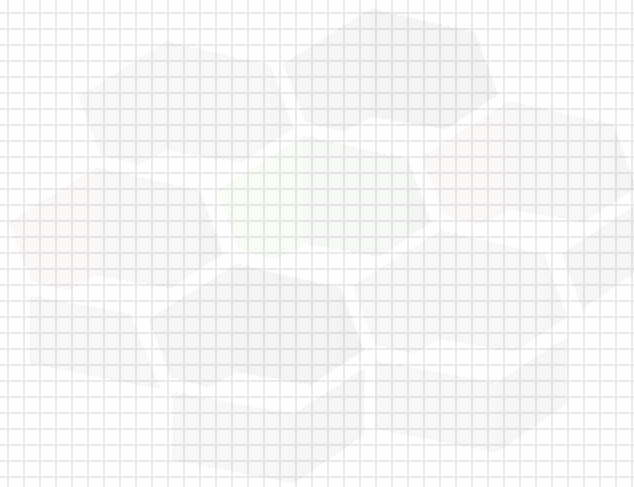
Please refer to our other guides or contact us for further assistance.

NOTE: FOR ALL FLOATING JOIST INSTALLS WE RECOMMEND USING OUR I-LOCK CONNECTORS TO HELP STABILISE THE DECKING ELEMENT.

ADDITIONAL NOTES – PLEASE READ

- Please use an appropriately qualified and licensed industry professional for all deck structure design and construction.
- Do not allow SilcaSystem units to be exposed to any undiluted acids or solvents.
- Only tighten screws to a firm stage and do not over tighten. (this can damage the countersink and compromise the grate's structure)
- Only use the recommended screws and adhesive, noted within this Install Guide.
- Do not leave any screw heads or Connectors or debris/packers proud of the Grate surface during tile installation. Tiles/pavers require a flat and consistent installation onto the grate surface and adhesive for adequate load bearing. Particularly with soft natural stone types.
- SilcaSystem shall be installed in accordance with these Manufacturer's Recommendations and guides. If any questions arise, please contact Silca System NZ or refer to our FAQs at <https://silcasystem.co.nz/faqs/>
- SilcaSystem or Merx Pacific Ltd. will not be held liable for any variation to these recommendations.





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