Silca SYSTEM

Structural Grating
For the Support of Tiles and Pavers

Silca System interlocking, structural deck grates are specifically designed for the support of heavy finished surface materials over elevated deck structures.

Manufactured in New Zealand from 100% recycled materials, Silca Grates form a continuous, flat, permeable support surface. They connect and are mechanically fixed to timber or aluminium joists or installed on adjustable pedestals over membrane.

Suitable to support natural stone, porcelain tiles, heavy pavers and artificial turf, Silca System enables free drainage and air circulation beneath the finished surface, preventing moisture buildup in the substructure and ensuring the longevity of the decking element.

Engineered for standard above-ground decks or over membrane roof terrace and balconies. Compliance pathways addressing B1/VM1 and B2 AS/NZS 1170.1 and E2/AS1 permeable surface provisions, including level-entry thresholds. Suitable for both residential and commercial applications.

Elevated Or Raised Decks | Above Ground

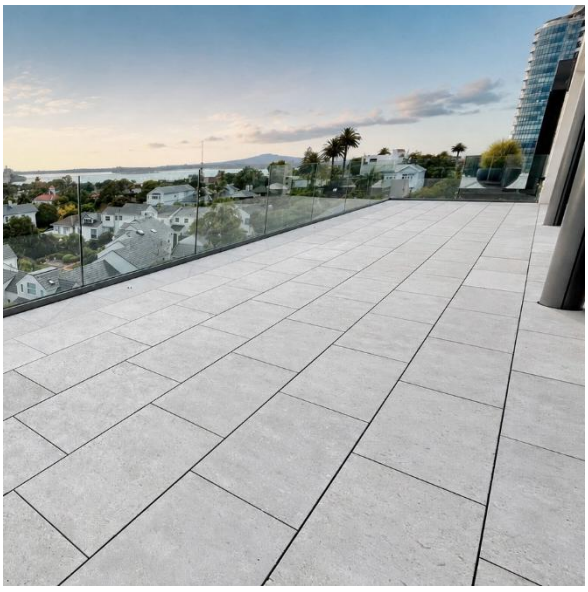
Transform sloping sites and upper-level living areas into functional outdoor spaces. Where ground-level slabs or conventional decking are impractical, Silca System supports tile, paver and natural stone finishes on elevated structures, providing a durable, free-draining alternative to conventional decking.

The open-cell grate design allows water to drain through the finished surface and replenish the earth below, while promoting airflow around the substructure. Mechanically fixed to timber joists with 10gx75mm Stainless Steel fixings, the system provides a stable support platform for architectural paving finishes across balconies, terraces and raised outdoor living areas.

Pool Decks | Free Draining + Non-Slip

Suitable for both in-ground and above-ground pools, the Silca System enables the construction of durable, free-draining pool surrounds designed to withstand regular moisture exposure and heavy foot traffic.

Create resort-style outdoor spaces finished in natural stone or porcelain tile, combining long-term durability, slip-resistant finishes and architectural appeal. The open-cell grate design allows water to drain through the paved surface, supporting effective drainage around the pool while providing a stable platform for the selected finish.



Balconies Or Terraces | Above Membrane

Transform apartment terraces, or membrane roof areas into functional and durable outdoor spaces.
Designed for both residential and commercial applications, Silca System provides a compliant, mechanically fixed structural base with proven structural and wind uplift performance, enabling level entry through threshold and a secure surface finish.
Silca System can be installed directly on adjustable pedestals or proprietary aluminium frame.
A superior patio system that enhances space function while maintaining drainage, ventilation, and long-term structural integrity compliant to AS/NZS1170.1 and E2/AS1 standards.

Three Installation Methods | One Structural Grate

All components available for supply

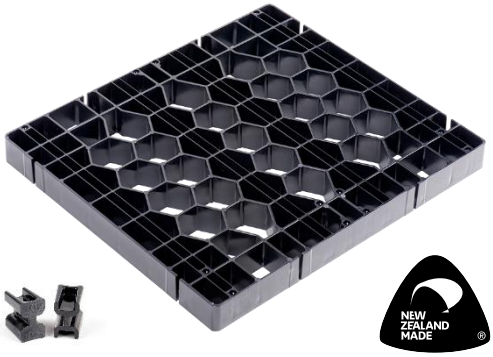
The Silca Grate + Connectors

The key component of the patented Silca System is the structural support Grate.

Each 400×450×38 mm Grate is Connected on all sides and provides the robust, flat surface for supporting tiles, natural stone and paving.

With an industry proven track record established since 2003, Silca Grate remains the original tile support system.

New Zealand Made from 100% Recycled Materials.



01 | On Timber Frame (Above Ground)

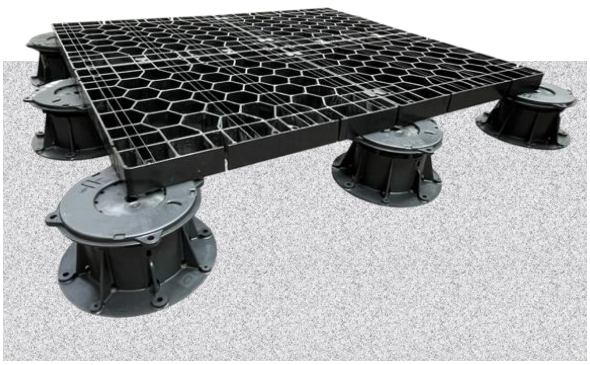
Silca Grates are mechanically fixed directly to the timber joists of a standard deck construction to create a load-distributing support layer for external paving finishes. The open-cell design allows drainage and airflow beneath the finished surface.

Permeable site coverage and level-entry through threshold can be achieved under E2/AS1.

02 | On Aluminium Frame (Above Membrane or Slab)

Silca Grates are secured to a proprietary aluminium frame supported on adjustable pedestals over a waterproofing membrane or concrete slab. The system creates a drained, accessible cavity beneath the paved surface, accommodating heavy use and high-traffic environments.

Access hatch solutions available. Level-entry through threshold can be achieved under E2/AS1.



03 | On Adjustable Pedestals (Above Membrane or Slab)

Silca grates are supported on adjustable pedestals to form an elevated, free-draining platform. This configuration provides an alternative for where low threshold tolerances and project design requirements permit a cost-engineered solution.

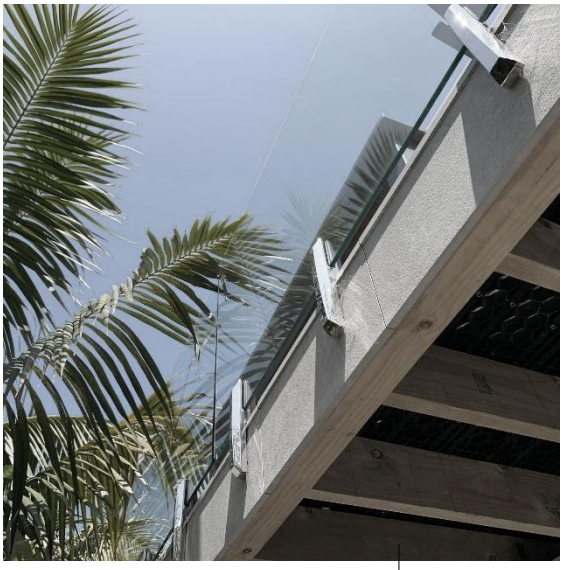
Access solutions available. Level-entry through threshold can be achieved under E2/AS1.

Above Ground

Above ground assemblies utilise a structural subframe to elevate the finished surface while allowing natural drainage and ventilation beneath. Methodology is determined by structural spans, build-up height, loading requirements and the selected surface finish. Support Grates form the structural interface between the frame and natural stone, porcelain or other architectural surfaces, distributing loads uniformly across the supporting structure. Depending on project requirements, the subframe is constructed from either timber joists or aluminium framing, with aluminium preferred where dimensional stability, moisture resistance or low-height thresholds are critical.

Permeable Construction

The structural assembly remains fully permeable, allowing water to drain freely through the finished surface while promoting ventilation and drying throughout the supporting structure. This methodology separates drainage from the finished surface and complies as a permeable surface under E2/AS1



Natural Stone
Support Grate
Timber Frame

Natural Stone
Support Grate
Timber Frame

Natural Stone
Support Grate
Aluminium Frame
Adjustable Pedestal

Above Membrane

Structural methodology is determined by loading requirements, build-up tolerances, waterproofing interfaces, E2/AS1 compliance and the selected surface finish. Support Grates form the primary structural platform for natural stone, porcelain and artificial turf, while adjustable pedestals provide load transfer, height adjustment and membrane protection. Where greater spanning capability or structural performance is required, aluminium frame supported on adjustable pedestals provides further options for threshold details, wind restraint, balustrades, stairs and edge detailing.

Hybrid Assemblies

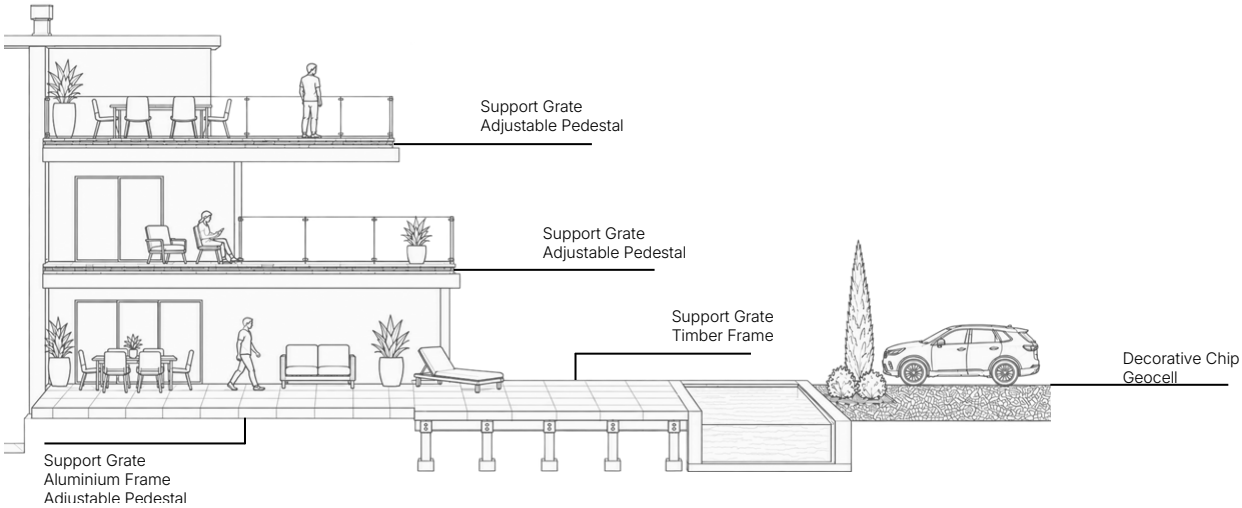
Project-specific combinations of Support Grates, adjustable pedestals and aluminium framing can be designed to suit complex structural requirements or multiple surface finishes.

Support Grate
Aluminium Frame
Adjustable Pedestal

Structural Support Components

The structural methodology determines the components required for each application. Component selection is influenced by loading, build-up depth, waterproofing interfaces, finished surface and project-specific requirements.

The following systems are supplied and supported by Merx Pacific across residential, commercial and public realm projects.



Silca Grate ®

Silca System® is an interlocking structural support grate used within elevated paving systems to support non-structural or high-load external finished surfaces. The grate distributes imposed loads across the supporting structure while maintaining a permeable construction that allows water to drain freely and promotes airflow beneath the finished assembly.

Manufactured in New Zealand from 100% recycled material, Silca Grates integrate with timber joists, aluminium joists, adjustable pedestals and hybrid structural assemblies.

Product Code	6255BL0162A
Finished Surfaces	Natural stone, porcelain tile, concrete pavers, artificial turf
Dimensions	400 × 450 × 38 mm
Material	UV-stabilised PCABS, 100% recycled material
Coverage	0.180 m² per grate (5.5 grates per m²)
Key Characteristics	Interlocking support grate · Engineered structural component · Made in NZ from 100% recycled materials · Timber, aluminium and pedestal assemblies
Technical Resources	Technical Data Sheets · Architectural Details · Design Statement & Span Tables · Compliance Pathway · Wind Uplift Summary · Environmental

Silca Connectors ®

Silca Lock Connectors interlock adjoining Silca Grates on all four sides, increasing rigidity and stability to form a continuous structural surface. Two connectors are used per side, averaging 3.3 connectors per grate. They also provide spot adhesion points for tile and paver installation.

Product Code	6461BL0000
Quantity	3.3 per grate
Function	Interlocks adjoining grates on all four sides
Key Characteristics	Locking connectors · Increased rigidity and stability · Additional spot adhesion points for tile installation
Packing	500 connectors per box

Screw Fixings – Timber Joist or Adjustable Pedestal

Stainless steel screws for mechanically fixing Silca Grates to timber joists or adjustable pedestals. The coarse wood thread and long shank provide secure fixing, with screw heads seating into the designated countersunk holes around the grate perimeter.

Product Code	DCS30410G75-1000 / DCS30410G75-500 / DCS30410G75-250
Material	Stainless steel
Size	10G × 75 mm
Quantity	6 screws per grate
Key Characteristics	Coarse wood thread · Long shank · Countersunk head · Mechanical fixing to timber joists or adjustable pedestals

Screw Fixings – Aluminium Joist

Stainless steel self-drilling WingTek screws for mechanically fixing Silca Grates to aluminium joists. Designed to seat into the designated countersunk holes in the grate, with no pre-drilling required.

Product Code	SSDCKG10060QW
Material	Stainless steel
Size	10G × 60 mm
Type	Self-drilling WingTek
Quantity	6 screws per grate
Key Characteristics	Countersunk head · No pre-drilling required · Mechanical fixing to aluminium joists

Tile Adhesive – SabreBond SMP45

SabreBond SMP45 is a high-grade multipurpose polymer adhesive for spot bonding tiles and pavers directly to Silca Grates. Its broad adhesion range includes most metals, timber and plastics, supporting use across a range of construction applications.

Product Code	1300161
Adhesive	SabreBond SMP45
Pack Size	600 ml sausage
Coverage	Approximately 2 m² per sausage
Application	Spot bonding tiles and pavers to Silca Grates

Additional Components Available

Buzon Adjustable Pedestals

Buzon DPH adjustable pedestals provide height-adjustable support, with a range of pedestal heights and accessories.

EconoSpan / SuperSpan Aluminium Framing

Proprietary aluminium framing profiles designed for structural joist applications. Available in EconoSpan, SuperSpan and SuperSpan Plus profiles, with varying span capabilities.

Components	Buzon DPH Adjustable Pedestals EconoSpan / SuperSpan Aluminium Framing
Applications	Above membrane and slab installations
Support System	Height-adjustable pedestal support or aluminium joist framework
Aluminium Profiles	EconoSpan · SuperSpan · SuperSpan Plus
System Integration	Silca Grates mechanically fixed to aluminium framing or secured to adjustable pedestals
Technical Resources	Buzon Pedestal Range · EconoSpan / SuperSpan Span Tables · Installation Details

Installation Steps

Typical Silca System Deck (Timber Frame)

Deck Construction

Refer to Silca System design guides and details. We recommend KD (Kiln Dried) exterior use H3.2 treated timber. 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. With a straightedge and electric plane, ensure deck joist a flat.

Install Silca System

Position Silca Grates centred on joists, butted tightly, and the spanning ribs running joist to joist. Insert the Silca I-Lock Connectors into the designated slots. Fix each grate with six 10g × 75 mm countersunk screws, ensuring heads sit below flush.

Install Silca Grates across the full deck area, including steps and stairs, trimming as needed. Extra screwing options are available using the strength bands.

Tile/Paver Installation

Depending on your paver choice and application there are several laying solutions for you to choose from. Almost any tile or layout can be achieved.

Option 1 – Glue Fix (permeable)

Option 2 – Sand or Grout

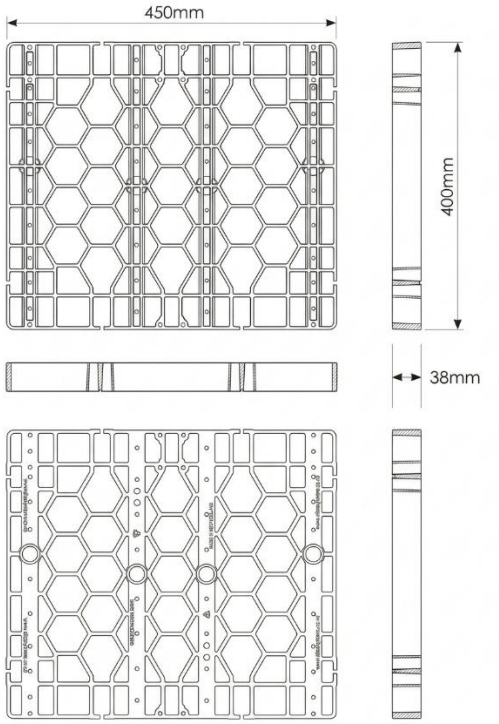
Option 3 – Dry Lay

Enjoy

Maintenance free tile patio at any height.

For a more detailed breakdown of the design and installation process, or for inspiration projects, check out our resources and website.

Technical Specifications



SILCA GRATE SPECIFICATIONS

Dimensions	400 × 450 × 38 mm
Joist Spacing	400 mm centres
Material	PCABS – Recycled Polycarbonate ABS alloy with UV stabiliser
Coverage	0.180 m² (5.5 grates per m²)
Weight	1.814 kg per grate

STRUCTURAL PERFORMANCE

Floor Loading (Timber Joists)	2 kPa (1.8 kN) / 4 kPa (4.5 kN) +
Load Deflection Test	50 kN + per unit (spanned)
Load Compression Test	667 kN (with a 400 mm² paver)

COMPLIANCE

B1/VM1	Structure – NZS AS 1720.1:2022
B2/AS1	Durability – Building element durability provisior
E2/AS1	External Moisture – Permeability

PACKING & SHIPPING

Grates per Pallet (SP1)	162
Pallet Dimensions	1m × 1.2m × 1.2m H
Coverage per Pallet	29.45 m²
Pallet Weight (Including Pallet)	312kg
Grates per 20' FCL	3,564
Pallets per 20' FCL	22
Coverage per 20' FCL	648 m²

TECHNICAL RESOURCES AVAILABLE

- Design Statement – B1/VM1 and B2
- Silca System Product Guide
- Silca System on Timber Frame TDS
- Silca System on Aluminium Frame TDS
- Silca System on Pedestal TDS
- Joist Span and Loading Tables
- Wind Uplift Summary
- Stone Load Test Statement
- E2/AS1 Permeability and Level Entry
- SabreBond SMP45 Technical Data Sheet
- Architectural Detail Drawings (S-01 to S-12)
- Installation Guides

Industry Proven

The Original Tile Support System, Established 2003.

SILCA SYSTEM

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