



SilcaGrate® Specifications

Part 1 General

1.1 SECTION INCLUDES

- A. Paver Underlayment Grate for raised Decks or framed structural platforms. The SilcaGrate™ product measures 16" wide by 18" long by 1.5" thick and is manufactured using recycled engineered polymers.

1.2 RELATED SECTIONS

- A. Section 07700 Roof Specialties and Accessories
- B. Section 07760 Roof Decking Pavers
- C. Section 09300 Tile
- D. Section 09630 Masonry Flooring
- E. Section 06500 Structural Plastics
- F. Section 07300 Shingles, Roof Tiles and Roof Coverings
- G. Section 04410 Stone Materials

1.3 REFERENCES

- A. Testing in accordance with the following ASTM D7032 provisions: Section 4.4 For Flexure Resistance. Section 4.5 for temperature effects. Section 4.7 for freeze thaw resistance. Section 5.4 for creep-recovery, And Section 5.5 for mechanical fastener resistance

1.4 QUALITY ASSURANCE

- A. Single Source Requirements. providing grates and accessories specified in this section from a single manufacturer

1.5 DELIVERY STORAGE AND HANDLING

- A. Inspect delivered materials upon arrival to ensure they are undamaged, in good condition and as specified

- B. Deliver, store and handle materials and products in compliance with manufacturer instructions and recommendations and industry standards

1.6 PROJECT CONDITIONS

- A. Joist system to receive the SilcaGrate™ grates are to be oriented 16' or 8" on center, joist must be level to the adjacent joist, the joist may be pitched front to back as needed
- B. Joist spans are to comply with local building code or job specific engineering

1.7 WARRANTY

- A. Limited 20 year residential and 10-year commercial warranty. StoneDeks Silca System products must be stored, installed, maintained, repaired, and used in accordance with acceptable good trade practice and our supplied instructions in order to prevent damage.
- B. Contractor Warranty. Contractor shall warrant that their work will remain free from defects of labor upon date of substantial completion

PART 2 PRODUCT

1.1 MANUFACTURER

- A. Silca System dba StoneDeks System

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Alliance, Ohio 44601

330-821-1585

sales@stonedeks.com

www.stonedeks.com

StoneDeks System

- B. Substitutions not permitted

1.2 PERFORMANCE REQUIREMENTS

- A. Deflection Rating. The Silca grates remained linear-elastic up to the load of 292 psf and corresponding deflection of .185 inch. Each grate is equivalent to 2 square feet.

Deflection	Specimen	Load Specimen	(lbs) vs Deflection Specimen	Specimen	(inches) Specimen	Average
0.125	407	441	389	384	375	399
0.250	731	826	746	774	741	764
0.500	1256	1317	1240	1281	1266	1272
0.750	1560	1646	1552	1609	1624	1598
1.000	1822	2249	1784	1874	1908	1927
1.250	2038	2390	1974	2029	2016	2089
1.500	2197 Max x 1098	N/A load per	2086 square foot	2113 (lbs/ft ²) ¹ 1056	2191 1095	2147 1097

- C. RECYCLED CONTENT Silca grate contains no less than 80% postindustrial recycled content and is 100% recyclable

1.3 COMPONENTS MATERIAL

- A. 16"x 18" x 1.5" thick engineered honeycomb grate 4lb in weight comprised of engineered polymer
- B. Component accessories
- 1) Silca grate 16" x 18' x 1.5"
 - 2) #9 deck screw 3" long (sourced by installer 4 per grate)
 - 3) 2mm **SilcaMat™** installed as needed comprised of 100% recycled rubber, permeable
 - 4) 3mil non-woven geotextile (sourced by installer)
 - 5) Recommended adhesive (sourced by installer)
 - 6) Polymeric sand or paver joint compound (sourced by installer)
 - 7) StoneDeks Decktape
 - 8) SilcaSpacers™ (Used for alternative installation methods)
 - 9) Standard interior spacer (small crossed spacers sourced by installer)

Part 3 EXECUTUON

1.1 Examination and Preparation

A. Level the deck – for residential and rooftop applications (deck should be pitched unless permeable) Deck must be flat with joist installed 16", or 8" on center depending on snow load issues or project specific engineering

1. Start with the finished height of the top of your finished deck floor, then work backwards: subtract the thickness of the paver, then the thickness of the SilcaGrate™, then the top edge of your joist to arrive at framing height. Consider door thresholds and steps, as well.

Check your dimensional lumber or metal joists to make sure they are level (some contractors use 2x12 for all installations even if it is not called for in the design tables). Install joist crown up at 16" on center span determined by manufacturer engineering tables or job specific engineering

Remember to check deck flatness - any rocking of straight edge or level on surface indicates a problem and any variation of the surface will transfer through to the paver when complete

- a. Use straight edge
 - b. Use 4' level
 - c. Use level line
2. Correcting the level (Flatness) if needed
 - a. Adjust pedestals
 - b. Apply shims
 - c. Plane down crowns on lumber (joists should be installed crowns up).
 3. Apply deck tape to all horizontal surfaces as well as between joist hangers and joist to reduce the likelihood of dry rot as well as reactions between galvanized metal and treated lumber.

***** For roof and patio overlay.** Provided pitch and level are correct on existing surface with limited mechanicals or no obstructions the SilcaGrate™ can be supported with plastic or vinyl sleepers attached with 2" screws. allowing ¾ of an inch for drainage beneath, install in the direction of the pitch, scuppers or drains and hold back ¼ of an inch from the edge of the side of the roof parapet when there is a parapet wall with scuppers. Install sleepers using vinyl or plastic lumber installed on a 16"OC pattern in the direction of the pitch of the patio allowing for ¾ of an inch for drainage underneath. This method can be used for patio overlays as well.

3. When there are large mechanical obstructions, conduit, or mechanical access points the need to use pedestals or a framing system or a combination of both will be called for.
 - a. When using pedestals and dimensional lumber you will use less pedestals, as they can be placed every 6' along the joist. Pitch can be adjusted as needed if the system chosen is not permeable. Check to verify deck flatness and pitch.

1.2 GRATE INSTALLATION

A. Installation on wood or metal joist. The SilcaGrate™ should be installed with the support straps to the top. Metal joist should be predrilled.

1. Every other row should start with half a grate cut in half lengthwise.
2. Fasten to wood joists using #9, 3" deck screw.
3. Fasten to metal joist using appropriate metal screw (screw head must recess into the countersink).
4. Trim SilcaGrate™ where necessary (use medium tooth saw blade/circular saw/reciprocating saw/ table saw/jig saw). Grates can be pre-cut or they can be run over the edge of the rim joist and cut off in place using a saw.
 - a. Any cut edges must be supported with blocking if not on a joist.
 - b. When screw holes have been cut off screws can be toenailed or applied through the support strap or the sidewall of the SilcaGrate™

B. Installation on pedestals

1. When installing on pedestals one pedestal should be placed on each corner of the SilcaGrate™ and fastened down with a 2" deck screw. An additional pedestal should be placed in the center of the grate when using smaller pavers (4"x8" or 12"x6") or as indicated by job specific engineering

C. Installation on Stairs

1. When installing the SilcaGrate™ on steps be sure to do the math to ensure correct tread and riser spacing. Stringers should be positioned 16" on center and the grates cut to the length of the tread. The grate should be supported on all 4 sides for stair application.

*** Remember the SilcaGrate™ will have some flex and is designed to do so. Stepping on the edge of a silca grate that is not blocked underneath or the 16" edge is not adjacent to another silca grate will flex more than normal. With the application of pavers the overall flex will be reduced to nominal or no flex depending on your paver dimensions.

1.3 SILCAMAT INSTALLATION

- A. **SilcaMat™** is rolled out on the deck surface of the **SilcaGrate™** and cut to fit, and then the seams are sealed with StoneDeks Decktape.

1.4 Paver installation

A. Porcelain Paver Installation

Use of **SilcaMat™** with Porcelain pavers is our preferred method

1. **SilcaMat™** is applied to the top of the **SilcaGrate™** prior to the installation of the paver. The advantage of using the **SilcaMat™** is the reduction of movement and reduction of sound as porcelain pavers have a hollow ringing sound when used over an open area such as with pedestals.
2. When installing the pavers on **SilcaMat™** we recommend the use of interior removable tile spacers to ensure proper spacing. (small crossed spacers sourced by installer)
Butting porcelain pavers together is not recommended as chipping will occur. Pavers may be glued (SB-190, RG+ Concrete Adhesive, or equivalent) to the mat if desired; only a dime-sized amount of adhesive in each corner is needed, spacers may be left in place if desired
3. Apply polymeric sand to joint lines and set as recommended by manufacturer. Sand may take a few days to fully set up. For installation of the polymeric sand on the outside edges, the edges of the joints can be taped to prevent the sand from running out until it sets.

B. Use of flexible **Silcaspacers™** with Porcelain pavers and no polymeric sand

4. Spacers should be applied with adhesive to the corners of the tile to prevent clinking and glued to the **SilcaGrate™** using SB-190, RG+ Concrete Adhesive, or equivalent. The flexible **Silcaspacer™** will reduce the sound of the porcelain paver but not as well as the **SilcaMat™**

****With polymeric sand the amount of drainage will be reduced to as little as 5%, remember to pitch the deck in these situations. There are joint compounds on the market that allow more drainage, or a combination of fine aggregate and joint stabilizer can be used that will allow for better drainage. The use of grout is not recommended however there have been good results using a vinyl-based grout. Use of a grout will reduce your permeability to zero. ****

C. Use of Geotextile and spacers with Porcelain pavers with polymeric sand

1. Geotextile 3 mil thick, (woven or non-woven - woven is a stronger material), is applied prior to the installation of the stone or paver
2. Spacers should be applied with adhesive to the corners of the tile to prevent clinking and then glued to the fabric using SB-190, RG+ Concrete Adhesive, or equivalent. The flexible silca spacer will reduce the sound of the porcelain paver but not as well as the silca mat
3. Once spacers and tiles are applied, a fine polymeric sand should be applied to the joints and wetted down. For installation of the polymeric sand on the outside edges, the edges of the joints can be taped to prevent the sand from running out until it sets.

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