

OUTDOOR
INSTALLATION



OUTDOOR INSTALLATION

PLANNING THE LAYOUT OF YOUR OUTDOOR SPACE

- A) Design requirements
- B) Overall functionality
- C) Integration with architecture and landscape

WHAT NEEDS TO BE TAKEN INTO CONSIDERATION ?

1. Intended use.
 - The more frequency, the higher durability is needed.
2. Type of structure on which the worktop shall be installed.
 - Reinforced concrete (most preferred for its solid and durable structure).
 - Steel framing with cement board.
3. Environmental conditions of the location.
 - Weather conditions in the target area.
 - Completely open-air , semi-outdoor or under shade.
 - Potential agents from surrounding that may create stains on the surface like leaves, fruits or bird droppings.
4. Care and maintenance.
 - Well protected or uncovered.
 - Well maintained on regular basis or left unattended.

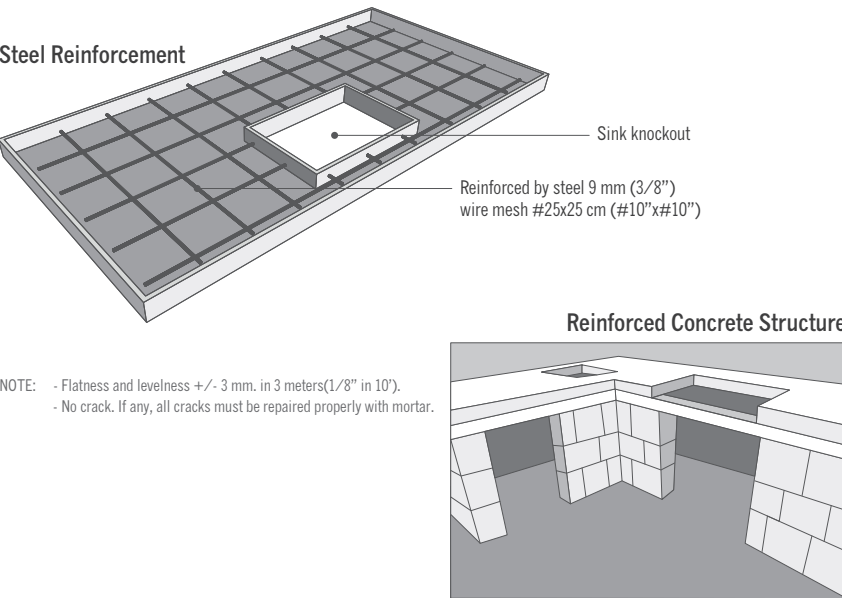
MATERIAL SELECTION FOR YOUR WORKTOP

- Location : This determines the required performance.
- Condition of use : This decides the required properties of the material.
- Surface : This should get along with the intended use.
- Color : Dark color may hide some unpleasant issues.

OUTDOOR RECOMMENDED STRUCTURES

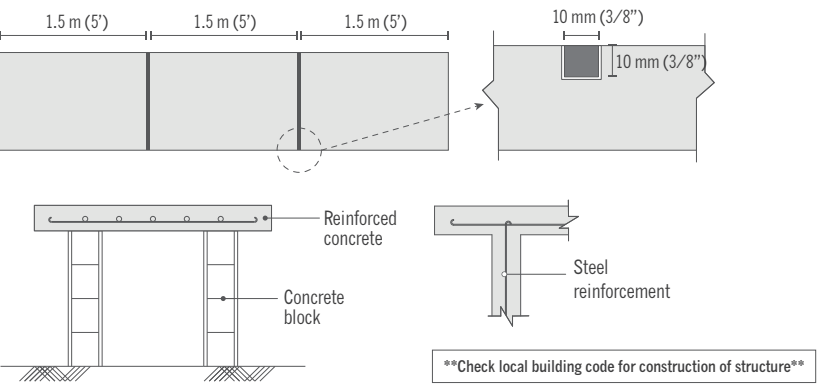
■ REINFORCED CONCRETE STRUCTURE

This type of structure is durable to temperature fluctuations , moisture , hot and cold weather with low rate of expansion/contraction. Make sure that it is strong, flat and leveled with no subsiding issue.

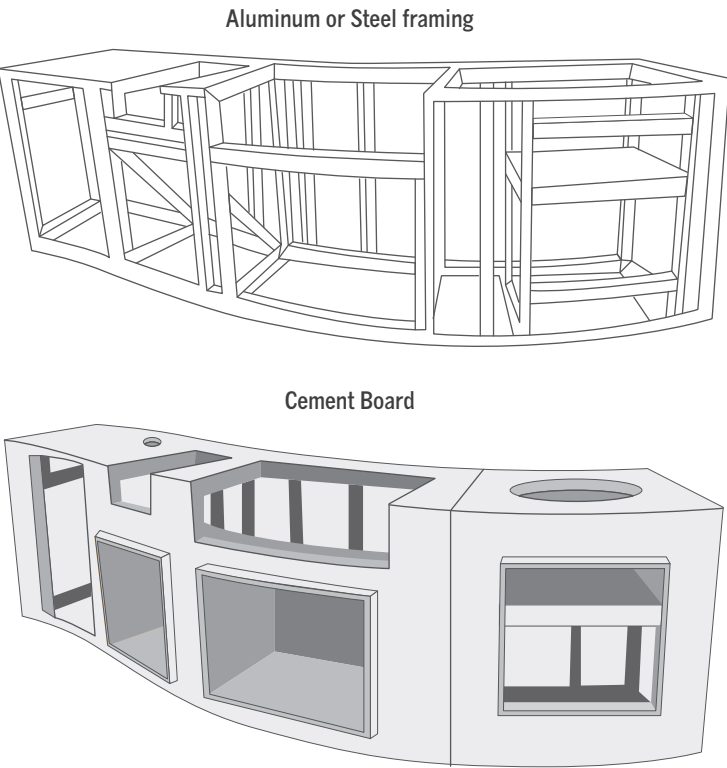


RECOMMENDATIONS FOR THE PREPARATION OF STRUCTURE

- Thickness of steel reinforced concrete at least 10 cm (4").
- Structure must be able to support at least 200 kg/m², (4,746 lb/ft2) using Portland cement for pouring the structure.
- Concrete must be reinforced by steel 9 mm (3/8") wire mesh #25x25cm. (#10"x10")
- If the counter is more than 3 meter-long (10'), expansion joint is required every 150 cm (5')



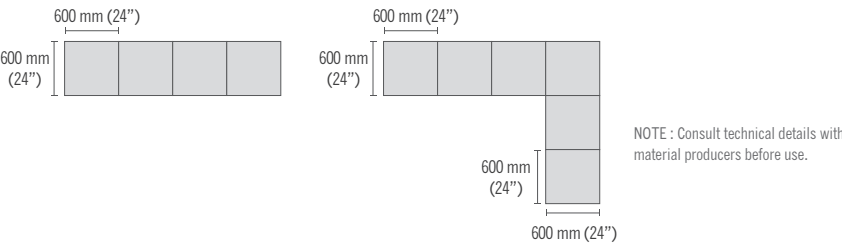
■ STEEL FRAMING WITH CEMENT BOARD



RECOMMENDATIONS FOR THE PREPARATION OF STRUCTURE

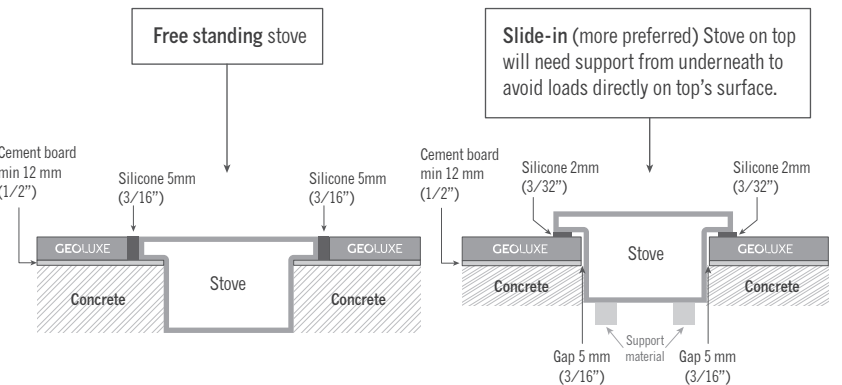
- Use water-resistant cement board, thickness at least 12 mm (1/2") sealed with flexible water-resistant sealant.
- Use durable stainless steel or Aluminum structure without vibration when in use and able to support ≥ 150 kg/m2 (3,560 lb/ft2).

- The structure must be well-supported (front to back) every 600 mm (24").



- Cement boards must be firmly secured by rust-resistant screws.
- In case of large openings for large sinks, stove, BBQ, we recommend to be supported by the structure or from underneath. DO NOT put loads directly on GEOLUXE®'s slab.

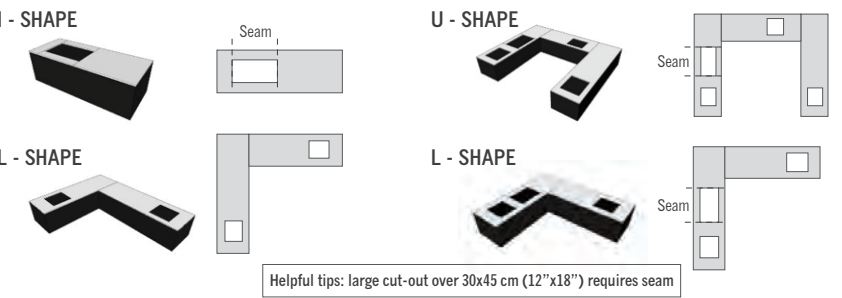
KITCHEN APPLIANCE INSTALLATION



1. Maximum 2 cut-outs are allowed in a single slab (30x30cm, 45x45cm, 30x45cm, 50x50cm) (12x12", 18x18", 12x18", 20x20").
2. When having more than 2 openings OR dimension of cut-out over 55cm (22"), put seams.
3. Appliances for kitchen can be placed directly if ≤ 50 kg (110 lb) each.
4. In case of heavy items e.g. stove or BBQ Grill over 50 kg (110 lb), they should be placed on the structure or have the supports underneath. DO NOT place directly on GEOLUXE®'s slab.
5. High heat appliances should have the appropriate insulation.

HOW TO POSITON A SEAM

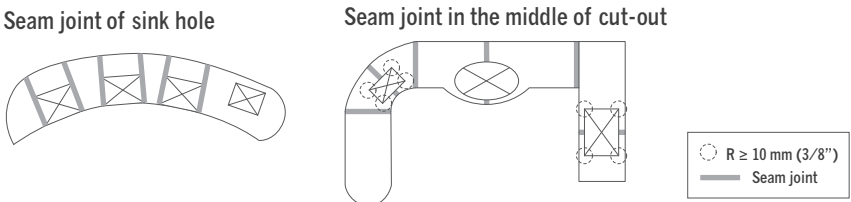
1. To crop a slab, consider the overall uniformity of design, tone and veining.
2. Allow at least 1 mm (1/32") for any seam and make sure it is cut straight and in parallel to avoid damage due to converging.
3. The edge at the back should have at least 10 cm (4") wide. Less than that it's best to cut through completely.



- NOTE: - Follow the template for precise dimensions and avoiding mistakes.
- Before installation, try first with the template to recheck the proper position for installation.

FABRICATION TECHNIQUES

FREE FORM SHAPE



DEFINITION OF THE CUT-OUT DIMENSION

- A cut-out hole smaller than 30x45 cm (12"x18") is small dimension.
- A cut-out hole equal to or larger than 30x45 cm (12"x18") is considered a large cut-out.

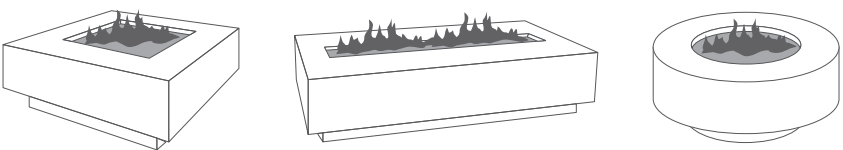
WHEN A SEAM JOINT IS REQUIRED ?

- When any side of the cut-out edge is less than 10 cm (4''); despite the dimension of the hole no matter how large or small, cut through completely to create a seam joint.
- A large sink hole requires seam joint(s).
- Small cut-out with edge more than 10 cm (4'') does not require a seam joint.

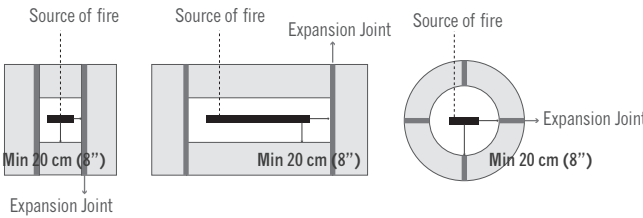
POSITIONING A SEAM JOINT

- It's best to put a seam joint at the corner of the cut-out hole.
- If the seam joint is in the middle, the radius of corners larger than 10 mm (3/8'') is recommended.

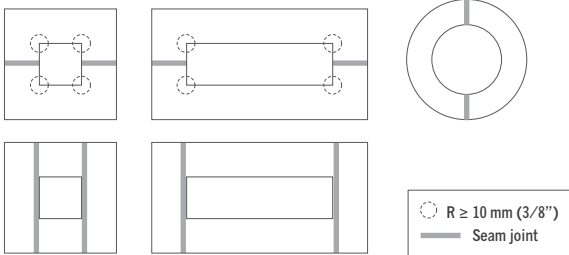
FIRE PIT



Ex 1.1 Positioning the expansion joint on steel reinforced concrete structure

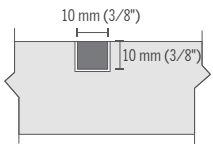


Ex 1.2 Positioning seam joint on GEOLUXE® slab.



THE STRUCTURE AND ITS EXPANSION JOINTS

- We recommend to use the steel reinforced concrete structure.
- Expansion joints must be prepared on structure before installing the top.
- Please refer to the details of expansion joint as shown in Ex 1.1
- Dimension of expansion joint as illustrated in Section#1.



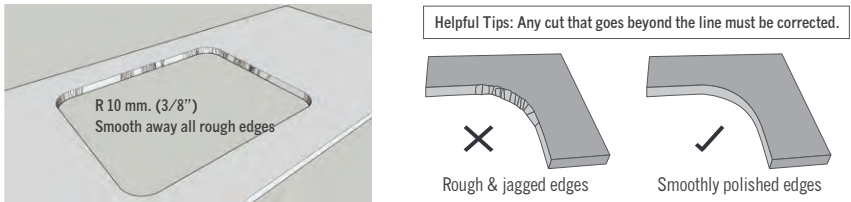
REQUIREMENTS TO PUT SEAM JOINT(S).

- It's best to put a seam joint at the corner of the cut-out.
- When seaming in the middle of the cut-out , it is recommended to have the radius at corners wider than 10 mm (3/8'').
- When any side of edge is less than 10 cm (4''); despite the dimension of the cut-out no matter how small or large, cut off completely to create a seam joint.
- We recommend to put seam joint(s) on slab whose width is $\geq 70 \text{ cm (28'')}$.

DISTANCE BETWEEN THE FIRE SOURCE AND GEOLUXE® SLAB

- DO NOT allow burner to come in direct contact with GEOLUXE® slab.
- Preserve a minimum distance of 20 cm (8'') between the fire source and the edge of GEOLUXE® slab.

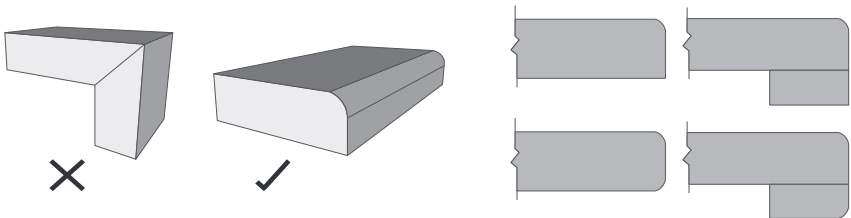
CUT OUT TECHNIQUES



- The roughness of edge, seam, drilled hole and any cut might have caused the breakage. **Whether it is in a hidden position or visible area, we strongly recommend to do fine finishing and smooth away the roughness** so as to avoid possible running of micro-cracks due to temperature change and expansion/contraction of structure.

EDGE PROFILING

Avoid mitered edges to minimize the risk of edge chipping and adhesive bonding failure.



NOTE: The durability of a laminated edge for outdoor applications depends on the proper selection of adhesives.

GENERAL GUIDELINES FOR THE TYPES OF ADHESIVE FOR FABRICATION

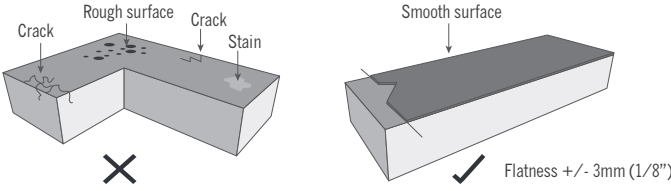
Polymer base	Setting time	Strength	Flexibility	UV Resistance (outdoor use)	Resistance to moisture	Price	Recommended usage.
Epoxy	Slow	Very high	Very low	High but color will turn yellow	High	High	Slow drying (recommended for both indoor and outdoor)
Methacrylate/ Poly (Methyl Methacrylate)/ Acrylic	Very fast	High	Very low	High	High	High	Recommended for both indoor and outdoor
Epoxy Modified Polyacrylate	Fast	Very high	Very low	High	High	Very high	Recommended for both indoor and outdoor

NOTE: Always follow the specific adhesive manufacturer's instructions.

INSTALLATION TIPS

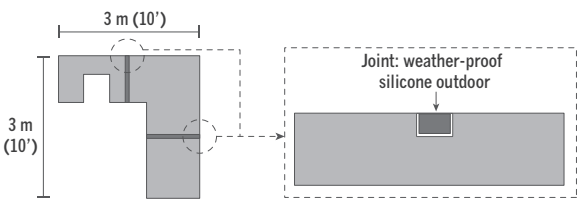
PREPARATION OF STRUCTURE

- The reinforced concrete structure must be aged at least 7 days before installation.
- Check the surface flatness and levelness. Structure surface must be clean and dry.



NOTE: In case of uneven surface, adjust by patching material to get the flatness $\pm 3 \text{ mm}$ in 3 meters (1/8" in 10').

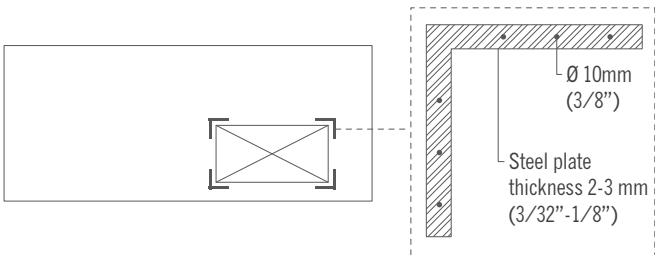
- If counter is longer than 3 meters (10') , expansion joint (concrete structure) is required every 1.5 meter (5') in length.



NOTE: expansion joint can be added later if it has not yet been prepared.

REINFORCEMENT OF GEOLUXE® SLAB

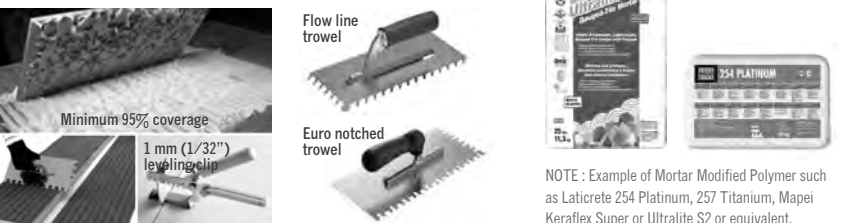
- Use stainless steel 304 , thickness 2-3 mm (3/32"-1/8''). Drilled holes on flat bar serve for the better bonding with epoxy.
- Bond with high strength 2-ton epoxy (e.g. JB Weld KwikWeld 3127 psi applied with full coverage of the reinforcement bars).



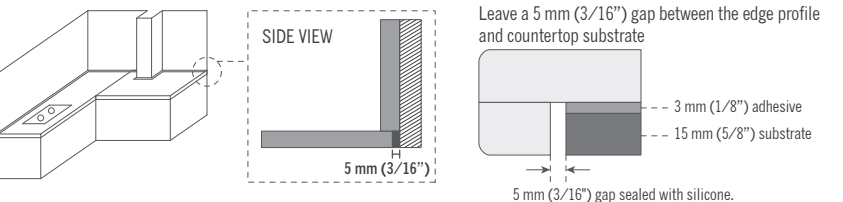
NOTE: The reinforcement is highly recommended for outdoor application to prevent cracking.

BONDING ADHESIVES & LAYING

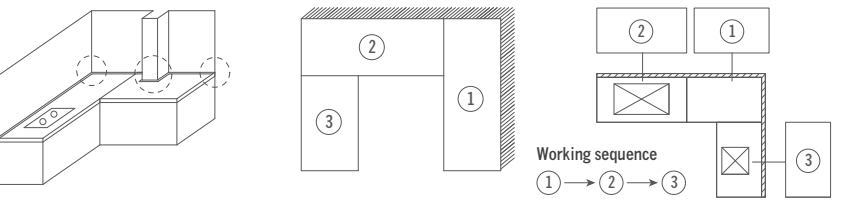
- For bonding GEOLUXE® with concrete / cement board, it is recommended to use adhesives with high flexibility (Mortar Modified Polymer) suitable for Porcelain-like materials and outdoor application.
- Lay from inside to outside piece to check the dimension of joint and seam.
- Apply the outdoor adhesive using "back buttering" technique with full coverage.
- Notched trowel no.12-18 mm (1/2"-3/4'').
- Adjust with a 1 mm (1/32'') leveling clip.



- When installing GEOLUXE® top on a long counter, kindly leave a gap of minimum 5 mm (3/16'') for cut-outs like columns, corners of room etc. to avoid chipping.



- The template must be measured precisely to avoid error. It's a good idea to use it for double checking the dimensions and to plan the spacing before proceeding with installation.
- To avoid any possible damage, approach the countertop to the wall with great care. Lay the top horizontally on the structure and protect all corners. Double check that the dimensional details are correct, then gently push the top toward the wall.
- The diagram below right shows an example of work sequence for installing a countertop. Protect well the corners and carefully push the work piece towards the wall to avoid any possible damage.



CARE AND MAINTENANCE FOR OUTDOOR

