

## CARING FOR YOUR MASONRY

### DELIVERY, STORAGE AND HANDLING

Upon delivery, isolate masonry units from contact with the ground, vegetation and other material to prevent staining. Stack the masonry units on timbers or platforms at least 3" (75 mm) above ground.

Lift skids with proper slings or forks of sufficient length to prevent damage.

Place polyethylene or other plastic film between wood and other finished surfaces of unpackaged units when stored for an extended period of time.

Cover stored material with a tarp if it will be exposed to weather for an extended period of time.

Depending on weather conditions (lots of rain, humid weather), it may be advisable to remove the plastic stretch wrap from the skids to allow air to flow around the product. If this is done, the unwrapped skid will be less stable and subsequent handling of the skid of units must be done with great care.

Do not use salt to thaw ice formed on the surfaces of units.

### PROTECTION

Protect products at all times from damage.

During the installation, protect corners and edges of the masonry. Protect the installation by means of wood or other sufficiently strong materials, secured in a manner that will not damage or stain the finished surfaces. Carefully remove the protection only when the risk of damage is no longer present.

### SITE-CUTTING STONE

When cutting Arriscraft products with a wet saw, always pre-wet the masonry units with clean water. A continuous source of fresh water to the saw is required. Immediately after saw cutting, wash cut stone with a stiff, fibre brush and thoroughly rinse with clean water. Failure to follow this procedure may result in masonry units being stained by the cutting slurry.

### INSTALLATION

Careful adherence to proper masonry techniques is key to ensuring the performance of the completed masonry wall system.

Arriscraft products should be laid with consistent mortar joints for proper coursing. Set stones in a full bed of mortar with all vertical joints full. Avoid rocking the unit into place following initial contact with mortar, as this will detrimentally affect mortar-unit bond.

Under normal conditions, Arriscraft products do not require pre-wetting for successful wall construction. However, under hot, dry or windy weather conditions, it may be advantageous to use pre-dampened units. Damp units should be surface dry when they are being laid.

Careful laying of the masonry materials combined with on-site protective measures and the progressive removal of hardened mortar will minimize cleaning requirements. It is advisable to keep the masonry free from mortar smears and to remove mortar droppings from the masonry units as the work progresses. Some general precautions that can result in cleaner walls are:

- Protect the base of the wall from rain-splashed mud and mortar splatters. Use straw, sand, sawdust or other material spread out on the ground, extending approximately 3 feet away from the wall.
- At the end of each workday turn any scaffold boards near the wall on their edge to prevent possible precipitation from splashing mortar and dirt directly onto the completed masonry.
- Cover walls at the end of each workday with protective, waterproof coverings to prevent mortar joint wash out and entry of water into completed masonry.
- Store masonry products on skids, off the ground and under protective coverings.
- Prevent excessive mortar droppings by cutting off excess mortar with a trowel as the units are laid.
- Tool mortar joints when they are thumbprint hard. After tooling, any excess mortar and dust should be brushed from the masonry surface using a soft bristle brush. Avoid rubbing or pressing the mortar into the units.

### WATER REPELLENT SEALERS

#### *CALCIUM SILICATE MASONRY UNITS*

**Arriscraft does not recommend the application of water repellent coatings to calcium silicate masonry unit surfaces.** These coatings, even if described as 'breathable' or 'vapor-permeable', inhibit the natural evaporative properties of the masonry units, causing them to remain wetter longer, particularly if the source of moisture is from within the wall assembly. Such coatings have been known to contribute to wall deterioration, and could result in costly repairs.

It is our opinion that better constructed wall systems will provide better solutions to moisture control. Proper design of a wall's moisture drainage system, using clear draining cavities, through-wall flashing membranes and weep hole vents will protect the wall system from the effects of moisture-related problems much better and longer than by merely applying a water repellent sealer to the masonry units.

We caution you not to rely upon the application of a water repellent sealer to replace good masonry wall design and construction methods.

#### *ADAIR® LIMESTONE MASONRY UNITS*

With the material's high compressive strength and density, and low absorption, the concerns noted above with the application of sealers over manufactured masonry products do not necessarily apply to Adair® Limestone. Although we do not recommend the use of sealers on any masonry products because in our opinion properly constructed walls do not require a sealer to keep moisture out, there have been occasions where an owner has opted to apply a sealer to Adair Limestone to facilitate cleaning or to resist graffiti.

When sealing Adair® Masonry Units we recommend first cleaning the stone with Aqua Mix® Stone Deep Clean by Custom Building Products, a concentrated heavy-duty cleaner and degreaser formulated to clean stone surfaces that have been neglected or subjected to heavy use. Aqua Mix® Stone Deep Clean effectively removes dirt, grease and grime as well as waxes and floor finishes. The technical bulletin for this product can be found at <http://www.custombuildingproducts.com/TDS/TDS-165.pdf>.

We recommend using a 1:1 ratio (one part Stone Deep Clean to one part water). Multiple applications may be necessary depending on how deep the contaminants go.

Once clean, we recommend sealing the Adair® Limestone with Aqua Mix® Sealer's Choice® Gold by Custom Building Products. Aqua Mix® Sealer's Choice® Gold is a premium, no-sheen, natural look, water-based, penetrating sealer formulated to provide maximum stain protection especially in food preparation and serving areas. It allows moisture vapor transmission. Its Rapid Cure Formula protects in less than 4 hours. The technical bulletin for this product can be found at <http://www.custombuildingproducts.com/TDS/TDS-158.pdf>.

## ANTI-GRAFFITI COATINGS

For much the same reason as with water repellent sealers, Arriscraft does not recommend the use of anti-graffiti coatings on calcium silicate masonry unit surfaces. The major concern of all masonry unit manufacturers is that the breathability of their products not be affected by the application of any type of water repellent or graffiti-proofing product.

Often times the sealer companies' warranties do not cover damages to the masonry product if issues do arise. These issues can happen with many types of masonry and therefore are not recommended by many manufacturers. Additionally, testing that has been performed with these types of coatings on a variety of masonry types and textures demonstrates that they do not consistently provide 100% removal of spray paint graffiti. Alternative means of removal is often still necessary after completing the recommended washing / cleaning procedures.

In addition, graffiti and water repellent sealers will deteriorate when exposed to UV radiation, which means they will need to be reapplied every 5 to 7 years. This could add considerable cost to the project's maintenance plan.

### GRAFFITI REMOVAL

Spray paint removal from porous masonry products can prove difficult, but with a combination of removal methods, an acceptable result can be achieved. Generally, removal can be done either *mechanically* or *chemically*.

Mechanical means of removing graffiti include sanding or grinding and sandblasting. A texture change at the unit surface will result with the use of mechanical means of graffiti removal. Sanding can be performed on smooth face material with a rotary or belt sander, taking care not to gouge the unit surface. A 50-grit silicon-carbide sandpaper should be used for best results. Sandblasting will also mechanically remove graffiti but its use may necessitate repointing of mortar joints afterwards. For smooth face material, a 30-grit aluminum oxide or comparable silica sand grit at approximately 60 psi applied with a fan-shaped nozzle from a distance of 1 -1/2 to 2 feet away is recommended. There are proprietary gentle-blasting removal systems on the market that may also prove useful. A company that

offers a self-contained system that can use various blasting media is Tornado ACS (1-877-550-7188, [www.tornadoacs.com](http://www.tornadoacs.com)).

Chemical means of removing graffiti include the use of topical agents that will dissolve the graffiti and allow it to be washed off. One such product that we have had success with is called Elephant Snot® by Graffiti Solutions ([www.graffitisolutions.com](http://www.graffitisolutions.com)). This cleaning agent can be applied to graffiti on the masonry, and with the use of a high pressure sprayer (fan spray nozzle) and hot water, is effective at removing graffiti from calcium silicate masonry units. Information on Elephant Snot® can be found on the manufacturer's website at <https://www.graffitisolutions.com/products/elephant-snot-gold-max>.

Specialty graffiti cleaners that chemically dissolve paints are also available. Each situation may require a different solution depending on the type of material affected, the paint or graffiti material used, and the severity. Talk to these manufacturers for their recommendations as to the proper cleaners and methods. In our experience, these cleaners will remove much of the graffiti, but they may also change the color and texture of the Arriscraft material. **Test for the effect on the masonry substrate prior to widespread use.**

## DE-ICING COMPOUNDS

Calcium silicate masonry units are intended for above grade installations. Manufactured masonry units, regardless of their composition, are inherently absorptive. As such, units installed below grade will tend to absorb moisture from the soil that is in direct contact with the masonry units. This will create a condition known as "rising damp" in the masonry veneer. In colder climates, masonry materials installed at or below grade may also become exposed to de-icing compounds. It is generally understood within the construction industry that materials exposed to solutions of de-icing compound under freeze-thaw conditions may deteriorate.

For these reasons, Arriscraft does not recommend installing calcium silicate masonry units directly at or below grade in cold weather climates. If material is installed at grade, de-icing compounds absolutely should not be used. **The use of de-icing compounds in conjunction with the calcium silicate masonry units may void the lifetime warranty for the product.**

Salt-laden snow should not be piled up against the wall by a building's maintenance staff during snow clearing activities. Any such snow or ice that is in direct contact with the masonry units for extended periods of time may cause the porous masonry units to absorb the salt into the masonry unit where it can crystallize and expand, leading to spalling of the masonry unit face.

Arriscraft's recommendation of utilizing Adair® Limestone at grade will mitigate these concerns entirely. Adair® Limestone is a dense, dolomitic limestone, and with its greater density and lower absorption it is ideally suited to virtually eliminate rising damp and to resist the effects of soluble salts associated with at grade installations.



# MASONRY MAINTENANCE

Although masonry is largely considered to be maintenance-free relative to other building materials, proper post-construction maintenance care is crucial for creating long lasting and aesthetically pleasing masonry buildings. Some of the more common maintenance items are addressed below.

## MINOR SCUFFS

Small scuff marks on the face of the stone from handling can often be remedied with a quick touch-up rather than an expensive replacement. External contaminants can be easily removed by wetting the wall with cold water and then using the rubber balls provided by Arriscraft to scrub the faces of the affected units. This will remove most minor contaminants.

If scuffs are more persistent, a light sanding using 50-grit sandpaper can also serve to remove contaminants without largely affecting the texture of smooth faced units.

## CHIPPAGE

Smooth faced Arriscraft calcium silicate masonry units are manufactured to meet the requirements of ASTM C73, Standard Specification for Calcium Silicate Brick, Severe Weathering grade.

Arriscraft masonry units are shop inspected to be sound and free of cracks, chips or other defects that would either affect the serviceability or strength of the unit, or become exposed once installed and visible when viewed from a distance of not less than 20 feet under diffused light. Dry seams and vugs may be present in the finished faces of Adair® Limestone Masonry Units, and are considered acceptable.

Chippage considerations do not apply when unit textures and unit shape are intended to be uneven (i.e. units with a split face or rocked face texture).

Should chips or other defects be found in the finished faces, as a general rule of thumb the evaluation from a distance yields a size limit of approximately 3/8". For chips that exceed this size, Arriscraft provides complimentary patch kits that can be used to smooth over the chips.

### PATCHING CALCIUM SILICATE MASONRY UNITS

The provided patch kit includes the following components necessary to create a patching mortar compound:

- Pre-blended patch kit mixture of 4 parts sand to 1 part Portland cement with pigments added to match standard calcium silicate masonry unit colors. 2.5 lb (1.13 kg) bag.
- Durapro® Concrete Weld. 33.8 oz (1L) bottle.
- Rubber ball.

To create the patching compound, add Concrete Weld to the pre-blended patch kit mix at a 1:1 ratio. The compound should take on a paste-like consistency.

Mix a small quantity to test the patching compound for color before proceeding with repairs. Allow 24 hours for drying before assessing color.

When ready to patch the unit, apply the patching compound to the chip

using a small trowel or putty knife, ensuring it is firmly pressed in to achieve full contact with the chipped surface. Overfill the chip. If the patching compound is not pressed into the chip surface well enough, cracking is likely to occur which may subsequently cause the patch to fall off. After drying, the patched area may be sanded to a smooth finish with 50-grit sandpaper. Clean off any dust with the rubber ball provided.

### PATCHING ADAIR® LIMESTONE MASONRY UNITS

The provided patch kit includes the following components necessary to create a patching mortar compound:

- Resin (25% by weight).
- Marble dust (75% by weight).
- Hardener.
- Rubber ball.

To create the patching compound, the resin and marble dust should be mixed together in advance to a paste-like consistency. Take a small quantity of this mixture (approximately 1/2 a cup) and add a few drops of hardener. Mix thoroughly. Use as soon as possible as the hardening reaction starts immediately.

Mix a small quantity to test the patching compound for color before proceeding with repairs. Allow 24 hours for drying before assessing color.

To facilitate patching of edges, cover the face of the unit with tape to create a 'form'. Fill the chip, ensuring to overfill the chip. If the patching compound is not pressed into the chip surface well enough, cracking is likely to occur which may subsequently cause the patch to fall off. Allow patch to harden for at least 12 hours. Sand with 120-grit silicon carbide sandpaper on a belt sander. Clean off any dust with the rubber ball provided.

Patch kits are recommended for use on small chips only (less than one cubic inch). Patch kits are not recommended for 'gluing' two pieces together.

## MORTAR REPOINTING

Part of a building's maintenance schedule should include periodic inspection of mortar joints within the masonry walls. This includes re-pointing any cracked mortar joints as well as replacing deteriorated joint sealants.

When repointing cracked mortar joints, the following procedures are recommended to ensure long-term weather resistance:

- Use a mortar proportioned to be the same or slightly weaker in strength than the original mortar.
- The dry mortar materials should be pre-blended, slightly dampened and allowed to sit for 1 – 2 hours prior to use.
- The joints should be raked/cut back 1/2" to 3/4".
- Brush out dust and moisten the joint prior to applying new mortar.

When ready for pointing, the joints shall be dampened and carefully pointed to a slight concave profile unless otherwise specified by the Architect. No pointing shall be done in freezing weather nor in locations exposed to hot sun, unless properly protected.

Before pointing, the face of all manufactured stone shall be scrubbed with a fiber brush, using soap powder and water and shall then be thoroughly rinsed with clean running water. Any mortar on the face of the manufactured stone shall be removed. No acids or prepared cleaners shall be used without the approval of the manufactured stone manufacturer.



We recommend specifying a mortar that has been proven to complement the unit masonry, such that the resulting wall assembly will be reasonably durable and flexible. Whenever installing Arriscraft masonry products, we recommend using a Type N Portland Cement-Lime (PCL) mortar, meeting the Proportion specification method of ASTM C270 and mixed to the following proportions:

- 1 part Portland cement (ASTM C150, Type I)
- 1 part hydrated lime (ASTM C207, Type S - Special)
- 6 parts masonry sand (ASTM C144)

When properly combined with the appropriate quantity of clean potable water, this will produce a general-purpose mortar exhibiting good workability and board life in its plastic state, and good durability and flexibility in its hardened state.

## SEALANT JOINTS

Sealant joints are used in masonry expansion joints and many other parts of the masonry wall where movement is anticipated (i.e. around windows, doors, changes of materials, etc). Replacing any damaged sealant joints should be part of a building's routine maintenance. When it comes time to replace any failing sealant joints, the following procedures are recommended to ensure a sound re-application of the joint:

- Cut out existing sealant.
- Remove backer rod.
- Clean masonry surfaces and remove all remnants of sealant.
- Install a new good quality open cell backer rod to ensure the sealant remains in two-point adhesion.
- Install new silicone sealant (urethane sealants are not recommended as they become brittle when exposed to UV) and tool to a concave finish.

For more information on silicones, proper joint design, etc., refer to ARRISCRAFT.NOTE (Vol. 4, No. 4), titled [Important Criteria for Sealant and Backer Rod Selection](#).

## MASONRY CLEANING

### PREPARING FOR CLEANING OPERATIONS

Before any cleaning procedures can commence, the method and agent must be approved on the project's site panel or a small inconspicuous area of the wall. The site panel or area should be cleaned using the exact process and materials that will be used for the entirety of the cleaning operations. Do not begin any cleaning operations until the mock-up panel has been approved.

Temperature, humidity and the method of cleaning will impact the cleaning operations and the ultimate look of the wall. Inspection of the test panel or samples should occur after a 3 to 7 day drying time. This test should be available for the architect to inspect and approve, then remain as the standard for the project. Failure to follow these procedures can result in uneven or streaked colour.

### GENERAL CLEANING GUIDELINES

Cleaning after initial install should start no sooner than 7 days, but not later than 28 days after the masonry has been completed. It may be necessary over the project's lifetime to clean the masonry and these same

recommendations should be followed. Remove larger mortar droppings by hand with wooden paddles or non-metallic scrapers.

**Regardless of cleaning method and products considered, it is essential to pre-wet the calcium silicate masonry unit surface before applying any type of cleaning solution. Pre-wetting the masonry units will minimize their absorption of the cleaning agent. Unlike most masonry units, calcium silicate masonry units should be fully saturated prior to applying the cleaning agent. It is equally important to keep the units wet during cleaning operations and upon finishing to thoroughly rinse any cleaning solution from the wall surface. The key to successful cleaning is a continuous source of a sufficient volume of clean water throughout the cleaning operations. This will help to avoid burning the units as well as unsightly streaking resulting from uneven cleaning.**

Cleaning operations should commence at the top of the wall and work their way progressively down the wall surface. This will prevent dirt or stains from being washed onto areas that have already been cleaned.

Avoid applying the cleaning solution with pressurized spray systems, as this will tend to drive the cleaning solution into the pores of the masonry.

The use of medium-pressure (300 – 700 psi) water is appropriate for rinsing. High-pressure (> 700 psi) methods should be avoided for cleaning manufactured masonry products as it may result in a texture change. High-pressure methods may also damage the mortar joints. Only fan spray nozzles should be used.

When Arriscraft stone is used in conjunction with clay brick, care must be taken to ensure that the cleaning of the brick does not impact the stone. The Arriscraft stone should be covered with a protective plastic covering while the brick is cleaned to prevent rundown from the brick cleaning solution leading to staining of the stone.

### CLEANING WITH ACID-BASED OR PROPRIETARY CLEANERS

The color of the Arriscraft masonry units may change with the application of either acid-based solutions or most proprietary masonry detergents. **Calcium silicate units will tend to deepen in color while Adair® Limestone will whiten when it comes in contact with acid-based cleaners.** These color changes cannot be chemically reversed once they occur. Refer to the test-cleaned material to determine the effect of the selected cleaning method on the color of the masonry.

Cleaning tumbled/aged calcium silicate products with acid-based cleaners is not recommended.

If required, properly mask or otherwise protect metal, glass, wood and other surfaces from damage by exposure to the cleaning solution.

Dilute the cleaning agent with clean potable water in controlled proportions according to what was approved on the site panel test area. Apply the solution to the pre-soaked area of wall with a soft bristled washing brush or low pressure (max. 40 – 50 psi) acid-resistant sprayer.

Thoroughly rinse any cleaning solution and residue from the wall surface.

If the application of acidic or other proprietary cleaners causes deepening or whitening of the masonry units, it may be necessary to apply another application of cleaning agent to "even out" the color across the entirety of the masonry wall for blending purposes.





## CLEANING WITH CALCIUM SILICATE CLEANER

Though many proprietary post-construction cleaners are available and have been used successfully with Calcium Silicate materials when properly applied, Arriscraft's recommended cleaning product is Calcium Silicate Cleaner by EaCo Chem, Inc. Calcium Silicate Cleaner is a buffered, detergent-based solution specifically designed for removing excess mortar and jobsite debris from Arriscraft Calcium Silicate materials. When properly applied using the general cleaning guidelines included in this document, and in combination with EaCo Chem Inc.'s proprietary EC Jet™ coupling attachment, many potential post-construction cleaning issues can be avoided. EC Jet™ automatically cuts the Calcium Silicate Cleaner concentration to 4 parts water to 1 part cleaner, and also limits the nozzle pressure of the washer to 40—100 psi.

EC Jet™ should be used with an appropriately sized pressure washer ranging from 3 to 6 gallons per minute and no more than 3,000 psi. Use a 40° wide nozzle and stand a minimum distance of 2'-0" from the wall when rinsing or cleaning. Attach the EC Jet™ nozzle to the pressure washer wand, and insert the siphon tube into an undiluted 5 gallon bucket of Calcium Silicate Cleaner. EC Jet™ has a chemical valve on the hose. In the closed position, only water will pass through the hose to pre-wet the masonry surface. In the open position it will mix the water and cleaner in the proper 4:1 ratio noted above.

Calcium Silicate masonry surfaces should be pre-wet prior to cleaning. With the chemical valve in the closed position, pre-wet the masonry surface using the pressure washer wand. Take care to rinse any landscape that may be hit by the cleaning agent. Cover any adjacent metals or other materials that the cleaning agent may corrode.

Once the cleaning area has been wetted, open the chemical valve on the EC Jet™ hose to allow the diluted cleaning agent to pass through the hose. Apply the cleaning agent to the wall surface, starting at the top and using controlled overlapping passes for uniform appearance. Dwell time of Calcium Silicate Cleaner on the masonry surface is 5 to 7 minutes.

Do not allow Calcium Silicate Cleaner to dry on the masonry surface. After cleaning, turn the chemical valve to the closed position and rinse the wall. Make sure to thoroughly rinse all of the cleaning agent off of the wall to ensure that it does not dry within or on the surface of the masonry units. Use overlapping passes when rinsing for uniform appearance. Always rinse from the top of the wall down.

When properly applied as directed by the manufacturer, there should be no scrubbing necessary after applying Calcium Silicate Cleaner with EC Jet™. For persistent stains, repeated applications of the cleaner may be necessary. If absolutely necessary to brush off areas of extreme staining, do not use a metal brush and only use a nylon brush.

Following these guidelines will help ensure that the building will remain weather-resistant and aesthetically appealing for years and years to come.

