CraftStone®
MANUFACTURER'S INSTALLATION PROCEDURES

CraftStone® veneer can be installed in ANY STRUCTUALLY SOUND AND PROPERLY PREPARED SURFACE. As building code requirements vary from country to country. Please check with local authorities for the building code requirements in your state. Please read all the installation procedures carefully and observe the safety precautions before installing of CraftStone® veneer.

CraftStone® are covered by a 25-Year Limited Warranty when installed in accordance to the Manufacturer's Installation Procedures. See warranty on Page 4.

Estimating the Quantities of CraftStone® Required

1. Measure the height of the wall and multiple by the length in feet to arrive at the square area of the FLAT stone needed.
2. Subtract the area of any window or door openings in the stone application area.
3. Measure the linear feet of the outside corners to determine the amount of CORNER pieces to use. One linear foot of corner pieces covers approximately ¾ of a square foot of flat area.
4. Subtract 75% of the linear feet of the corner pieces needed from the total square footage of the Flat stone needed. It is advisable to have approximately 10% extra stone to allow for cutting and trimming.

Tools Required

Hammer / Staple Gun - For applying weather resistant barrier / metal lath.

Wheelbarrow & Hoe - For mixing of Mortar

Plasterer's / Mason's Trowel - For applying of mortar

Margin Trowel - For applying of masonry adhesive

Safety Glasses - For use when cutting stones

Grinder with Diamond Blade - For cutting of stone

Wide mouth Nippers / Hatchet - For trimming of stone

Level - For leveling of stone when installing

Dust Mask - For filtering of dust when cutting the stone

Grout Bag - For holding of grout

Metal Jointing tool/Wood stick - For finishing joints

Whish broom - For cleaning of finished work

Sundry Material Requirements

1. MORTAR
Recommended adhesive mortar is Laticrete® 254 Platinum Multi-purpose Thin-Set Mortar, Mapei Keraflex Maxi or equivalent adhesive mortar that conform to the following standards: American ANSI A118. 4-1999, European EN 12004 as C2TE, European EN 12002 as S1, Canadian 71 GP 30 M type 2. When in doubt of the bonding strength or workability of any brands of adhesive mortar, CraftStone® recommends to do a pull-out test after 3 days of installing a few stone to see how strong is the bonding. The ability of mortar to provide a good bond is the responsibility of the mason.

2. WEATHER RESISTANT BARRIER
Barrier shall be equal to U.B.C. Standard No. 14-1 for Kraft water-proof building paper or asphalt saturated rag felt or ASTM D226 Type 1, No.15 felt. Note: Weather-resistant barrier must be used on all exterior and interior mortar applications except for those over masonry, concrete or stucco.

3. METAL LATH
a) Minimum 2.5 pound self-furring expanded metal lath (diamond mesh) galvanized. Black metal lath (rust inhibitive) may be used on interior applications.
b) Or over steel studs or open wood, 18 gauge galvanized woven wire mesh with waterproof membrane is required.
c) For metal buildings & open stud construction, minimum 3.4 pound 3/8" rib expanded galvanized metal lath.
d) Or other code accepted mesh or lath.

4. FASTENERS
a) Galvanized roofing nails, rust resistant staples, concrete nails.
b) 1-1/4" type S-12 Pancake Head Super tithe screws used for installation to metal surfaces.

5. MASONRY SEALER
A silane-based breathable type, non-film forming, non-yellowing sealer can be used when needed in areas of cascading water, leaky gutters, balconies without gutters, splashing water, high snow buildup and soot/smoke staining. Alternatively, a water-borne based sealer with water-borne treatment that achieves in-depth protection by in surface hydrophobic and subsurface pores filling crystallization actions can be considered.

Surface Preparation for Mortar Installation

Installation on Rigid Backwall (Figure 1) - Plywood, Foam Board, Sheetrock, Wallboard, Wall Sheathing, Concrete Board, Panelling Polystyrene Insulation Board installed over a rigid back wall.

a) Install one layer of weather-resistant barrier (waterproof paper) over the sheathing.
b) Screw the approved 2.5 pound 3/8" rib expanded galvanized metal lath with galvanized nails or staples 6" on center vertically, which penetrate studs a minimum of 1".
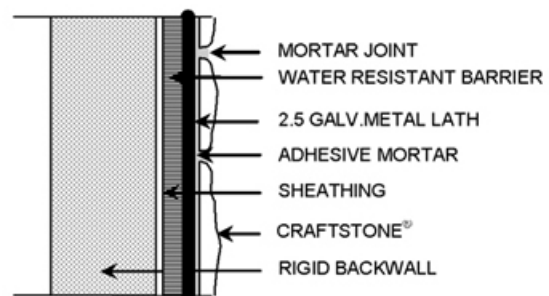c) Wrap weather-resistant barrier and metal lath a minimum of 16" around all outside and inside corners.

MORTAR JOINT
WATER RESISTANT BARRIER
2.5 GALV.METAL LATH
ADHESIVE MORTAR
SHEATHING
CRAFTSTONE®
RIGID BACKWALL

Figure 1

Installation on CMU Walls – Concrete Masonry Unit (Figure 2) - Concrete, Masonry, Clean Stucco, Tilt Up Wall.

No preparation required. Ensure that the newly poured concrete finished surface contains no release agent (form oil). If any form oil is found, etch the surface with muriatic acid and/ or rinse thoroughly with a wire brush or use high-pressure water or sandblasting to remove.
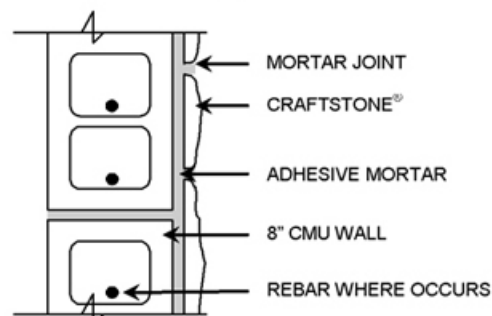

MORTAR JOINT
CRAFTSTONE®
ADHESIVE MORTAR
8" CMU WALL
REBAR WHERE OCCURS

Figure 2

Installation on Dirty, Painted or Treated Walls (Figure 3) - Stucco, Masonry, Concrete.

Remove paint, coatings, sealers, and dirt on the concrete wall surface by sandblasting or waterblast or attach the approved 2.5 pound 3/8" rib expanded galvanized metal lath securely so as to restore the walls to its original state.
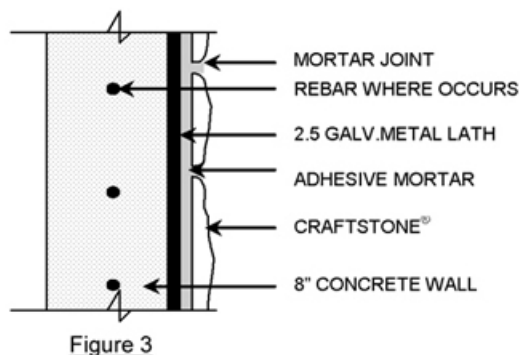

MORTAR JOINT
REBAR WHERE OCCURS
2.5 GALV.METAL LATH
ADHESIVE MORTAR
CRAFTSTONE®
8" CONCRETE WALL

Figure 3

Installation on Metal Buildings (Figure 4) - Metal Frame

a) Install one layer of weather-resistant barrier (waterproof paper) over the metal frame.
b) Use 1-1/4" type S-12 Pancake Head Super Tite screws to lap & install paperbacked 3.4 pound 3/8" rib expanded metal lath to metal cladding supports of 12ga.to 20ga. The screws must penetrate 3/8" beyond the inside face of the metal surface. Screws should be nailed on centers equal to 1 screw / sqft. and shall not exceed 6" on center in one direction so as to keep lath tight.
c) Apply ½ " to ¾ " scratch coat and allow to dry 48 hours. Ensure that the lath is completely covered and the surface is flat.
d) Wrap weather resistant barrier and metal lath a minimum 16" around all outside and inside corners.
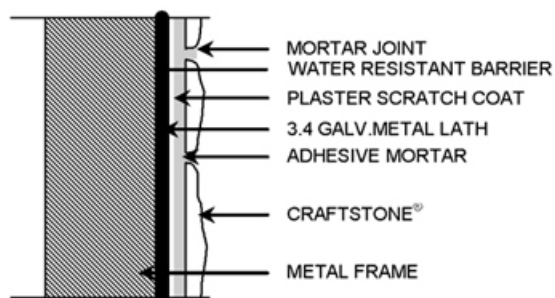

MORTAR JOINT
WATER RESISTANT BARRIER
PLASTER SCRATCH COAT
3.4 GALV.METAL LATH
ADHESIVE MORTAR
CRAFTSTONE®
METAL FRAME

Figure 4

Installing CraftStone® Products

Preparing Your Work Area
Laying out the stones:
Start by laying CraftStone® veneer out at the job site in order to be able to choose from a good variety of colours, shapes and sizes. Use small stones against large ones, heavy-textured pieces against the smooth, and thick stones against thinner ones in order to add some variety and contrast in the overall design. To achieve a balanced pattern of stones, mix the CraftStone® wall veneer from different boxes during installation.

Mortar:
If CraftStone® is being installed in hot and dry weather, it is necessary to keep the back of each piece of the stone moistened with a wet brush or fine spray of water to avoid any excessive absorption of moisture from the mortar. If it is being installed over masonry, concrete or scratch coat substrate, the substrate surface area should also be moistening before applying mortar.

In extreme/thaw environments, the mortar should cover the entire back of the stone with some mortar squeezing out and around the edges of the stone. Do not use antifreeze compounds to lower the freezing point of mortar.

Application of Mortar:
Apply mortar to the substrate with the flat side of the trowel, pressing firmly to work into surface. Comb on additional mortar with the notched side.

Use proper sized notched trowel to ensure full bedding of the stone. See Figure 5. Spread as much mortar on area which can be covered with stone in 15~20minutes. Apply mortar on the back of the larger stones >8" x8" (>200mm x 200mm) to provide full bedding and firm support. Place stone into wet, sticky mortar and beat in using a beating block and rubber mallet to imbed stone and adjust level. Check mortar for complete coverage by periodically removing a stone and inspecting bedding mortar transfer onto back of stone. If mortar is skinned over (not sticky), remove and replace with fresh mortar.

Notches:
Use square notch trowel.

1/4" x 1/4" (6 x 6mm)
CraftBricks™

1/2" x 3/8" (6 x 9mm)
Vintage, Country & Classical Ledgestone. European and Rustic Castle Stone. Sand Stone. River Rock. Quarry Stone.

1/2" x 1/2" (12 x 12mm)
Medieval Castle Stone. Grande Castle Stone. Mountain & Stacked Ledgestone. Weathered Ledgestone. LimeStone.

Installation Procedure

Step 1 (Apply mortar):
With a plasterer's trowel or mason's trowel, apply about ½ " to ¾ " thick of mortar to the prepared surface area. Do not spread more than a workable area (5 to 10 sq. ft.) so as to to avoid drying and resulting loss of adhesion before the stones are fitted. See Figure 6.

Figure 6

Step 2 (Starting point & setting of stones):
CraftStone® can be fitted from the top down method or from the bottom up method. Installing CraftStone® from the top down helps keep the stone clean from dripping mortar. Start by applying corner elements first. See Figure 7.
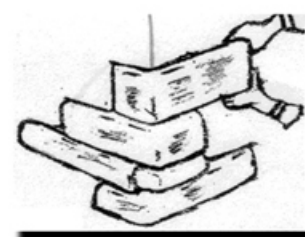

Figure 7

Note:
Corner elements have a long and a short length. Alternate them in opposite directions for a more natural look. Keep the joints as narrow as possible for a more natural look. The stones should be placed close together, and aligned level and plumb. Cover the back surface of the individual stone veneer adhesive mortar and press it into the mortar bed until mortars squeezes out around the stone's edges. Remove excess mortar using mason's trowel.

Bottom Up Method:
Vintage Ledgestone, Classical Ledgestone, Country Ledgestone, European Castle Stone, Sand Stone, Grande Castle, Medieval Castle, Rustic Castle.

Top Down Method:
Mountain Ledgestone, Weathered Ledgestone, Limestone, Stacked Ledgestone, River Rock, Quarry Stone

STEP 3 (Installing Corner & Flat Pieces):

Install flat stone elements from corner to center making sure that uniform joints of ½" in width or less are kept between the stones. See Figure 8. Avoid long, unbroken joint lines between the stone elements. As on the corner elements, apply a generous amount of mortar on the back side and press the flat stone into the mortar bed and remove excess mortar around the edges, cut and trim stones with a hatchet or wide mouth nipper to obtain custom sizes as needed.
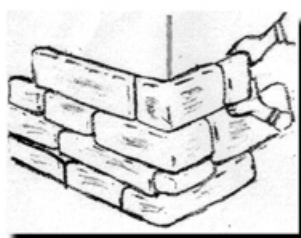
Figure 8

Note:
For Ledgestone and Castle Stone collections, vertical and horizontal cuts can be made using a bench saw, circular saw or small grinder equipped with a dry cutting diamond blade. For best-finished appearance cover cut edges with mortar.

Step 4 (Grouting and Finishing Joints):

After all stone elements have been fitted to the wall; fill the joints in between the stones with mortar using a grout bag. See Figure 9.
Avoid smearing any mortar on the surface of the stones. Accidentally smeared stone should be allowed to dry until crumbly and then brushed off with a dry whiskbroom.
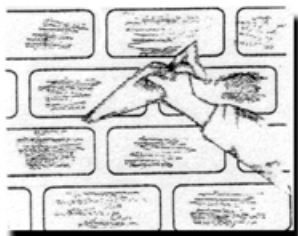
Figure 9

Note:
Never use a wet brush or wire brush. Do not let loose mortar dry overnight. Do not use acid or acid based products. After the mortar joints have become firm carefully rake out excess mortar, compact and seal the edges around the stones using a wooden stick, or metal jointing tool.

Step 5 (Cleaning of Finished Job):

When the mortar joints have become firm but not dry, rake out excess mortar and point up joint using a wooden stick or a metal pointing tool.
See Figure 10.
Clean joints and loose mortar on the surface of the stones with a whiskbroom. Do not let loose mortar dry overnight. Do not use acid or acid based products.
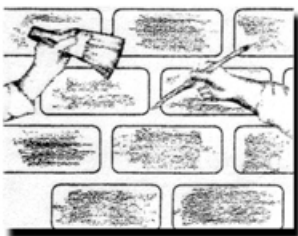
Figure 10

Step 6 (Applying of Masonry Sealer):

If required to seal the CraftStone® with CraftStone® Sealer, a waterborne sealer for maximum protection. See Figure 11.
If using other brand of sealer with silane-based breathable type, nonfilm forming, non-yellowing masonry sealer, be sure to test these products on loose stones before application (for color range) as certain sealer will darken or affect the stone color.
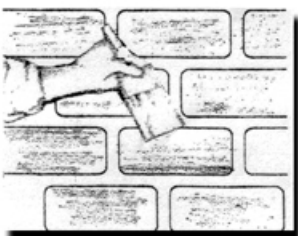
Figure 11

Note:
CraftStone® Sealer is a waterborne treatment that achieves in-depth protection by in-surface hydrophobic and subsurface pores filling crystallization actions. It is permeable to water vapour, allowing treated substrate to dry gradually without staining. Being non-film forming, it do not leave a glossy finish and will not change the substrate appearance appreciably. Mainly used for sealing and waterproofing of concrete and natural stone, it is UV resistance and environmental friendly.

General Tips

1. Lay out the CraftStone® at the job site to choose and mix a good variety of colours, shapes and sizes. Use small stones against large ones, heavy-textured pieces against the smooth, and thick stones against thinner ones in order to add some variety and contrast in the overall design. To achieve a balanced pattern of stones, mix the CraftStone® wall veneer from a few different boxes before installation. Transfer the dry-layout to the wall installation accordingly.

2. Always install corner pieces first should your application require corner pieces. As corner pieces come in long and short lengths, alternate them in opposite directions for a more natural look. Install the flat pieces after the corner pieces are in place, working toward the wall centre.

3. Install CraftStone® in staggered laying pattern to avoid long vertical and horizontal joints. Ensure that the stones are placed close together, aligned level and plumb.

4. Ensure that the backs of the stones are damp, but free from surface water, when installing with mortar. Avoid smearing the mortar onto stone surface. In an event of accidental smear, remove it with a whiskbroom after the mortar has become crumbly.

5. Always wear safety goggles when cutting or trimming stones. Trimming and cutting should be carried out outdoors. Always place the cut edges within the course and finished edges at exposed areas.

Helpful Tips

Vintage Ledgestone, Classical Ledgestone, Country Ledgestone, Sandstone, Rustic Castle, Grande Stone:
* Alternate the different lengths of stone, maintain the level and horizontal joint lines to keep the joints as small as possible to maintain a close-fit look.
* Avoid long vertical jont-line by alternating stones of different length.
* Constantly check for horizontal alignment of the stones to maintain a neat and straight laying pattern.

European Castle, Medieval Castle:
* Lay out the stone and ensure that there is a good mix of big and small stone together.
* Open only 2 to 3 boxes at anytime during laying to avoid selection of stones. All CraftStone® products are packed with a well mixed selection of sizes within a box.
* Aviod long vertical or horizontal joint-line by random laying or 'breaking' the joint-line by another piece of stone.
* Constantly check for horizontal and vertical alignment of the stones to maintain a neat and straight laying pattern.

Mountain Ledgestone, Stacked Ledgestone, Weathered Ledgestone, Limestone:
* Ensure that the stones are close together and use stones of different height across the course to avoid long horizontal joint-line.
* Avoid having too many similar length stones together as it will form obvious vertical joints that are within close proximity.
* Staggered between long and short stones, stones of different heights, to archive the ideal random and natural look.
* Constantly check for horizontal alignment of the stones to maintain a neat and straight laying pattern.
* Minimise cutting of stones at the centre to maintain the 'full stone' apperance.
* Wastages for these series (10~15%) are higher then other series.

CraftBricks™:
* Provide a minimum 8mm wide mortar joints between the brick veneers to maintain natural look.
* Filling the joints with light colored grouts (e.g. white or yellow) to archive a different appeal and finishing.
* Mix the colors to archive a more uniform and homogenous look.
* Constantly check for horizontal alignment of the bricks to maintain a neat and straight laying pattern.

River Rock, Quarry Stone:
* Dry laying of the stones on the floor will minimize unnecessary trimmings and cuttings to help preserve the natural look of the stones.
* Apply approximately 3/8" to 1/2" of mortar from top to bottom of the entire back of the stone. Slipping & sliding of stones may occur when too much mortar is used.
* Install the larger stones first so that smaller stone can fill the opening surrounded by larger stones. Avoid using more than one stone to fill a small area.
* The ideal joints should be a 'Y' formed by 3 pieces of stones.

General Information

Cleaning
To remove dirt, brush over the stones with a strong solution of granulated soap or detergent using a bristle brush. Rinse immediately with fresh water.

Notes
Do not use a wire brush as it will damage the stones. Do not clean using acidic or acid based products. Do not clean with high-pressure powered washer.

Salt and de-icing Chemicals
CraftStone® products are not warranted against damage incurred from salt or chemicals that are used to remove ice or snow. Do not use de-icing chemicals on areas around the CraftStone® application.

Swimming Pools
CraftStone® products should not be used below water level in swimming pools. Chlorine and other chemicals in the water of the swimming pools may cause discoloration to the CraftStone® products.

Technical Specification

Water Repellent
CraftStone® wall products feature the addition of silicone-based water repellent that greatly enhances the stone's performance in humid climate. Water Repellent is mixed with the composite material during manufacturing, thus providing a more lasting effect then spray, brush or paint method.

Noncombustible
CraftStone® products show zero flame spread and zero smoke development.

General Properties
Material Composition:	Portland Cement, Light-Weight Aggregates and Iron Oxide Pigments.
Unit Weight:	35 ~ 45kg/m2 (varies according to profile)
Thickness:	20 ~ 40mm (varies according to profile)

Physical Properties
Water Absorption:	<13%
Open Porosity*:	< 35%
Compressive Strength*:	> 12.0N/mm^2
Flexural Strength*:	> 5.0N/mm^2

Test Reference to NBN EN 1926 (1999), NBN EN 12372 (1999).

Physical Integrity
Frost Resistance[+]: 25 cycles of free-thaw, comprising 10 cycles at −15^{0}C and 15 cycles at −5^{0}C. At the end of each cycle, samples are thawed under water at +15^{0}C. No visual alteration and breakage on all samples.

[+] *Test Reference to NBN B27-009-1983.*

CraftStone® 25-Year Limited Warranty

CraftStone® products carry a 25-year limited warranty from date of purchase when used on structures that conform to local building codes and installed according to the manufacturer's instructions.

Warranty is limited to replacement of defective materials only. This warranty is limited to the original purchaser and is non-transferable.

This warranty does not cover damages resulting from:

* Building settlement, wall movement, force contact;
* Contact with chemicals or paint;
* Discolouration due to airborne contamination; and
* Staining or oxidation.

This warranty only covers manufacturing defects in CraftStone® manufactured stone products. CraftStone® International will not be responsible for any labour costs incurred in the removal and replacement of defective stones.

CRAFT STONE
V.I.N.T.A.G.E

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Authorized Dealer: