



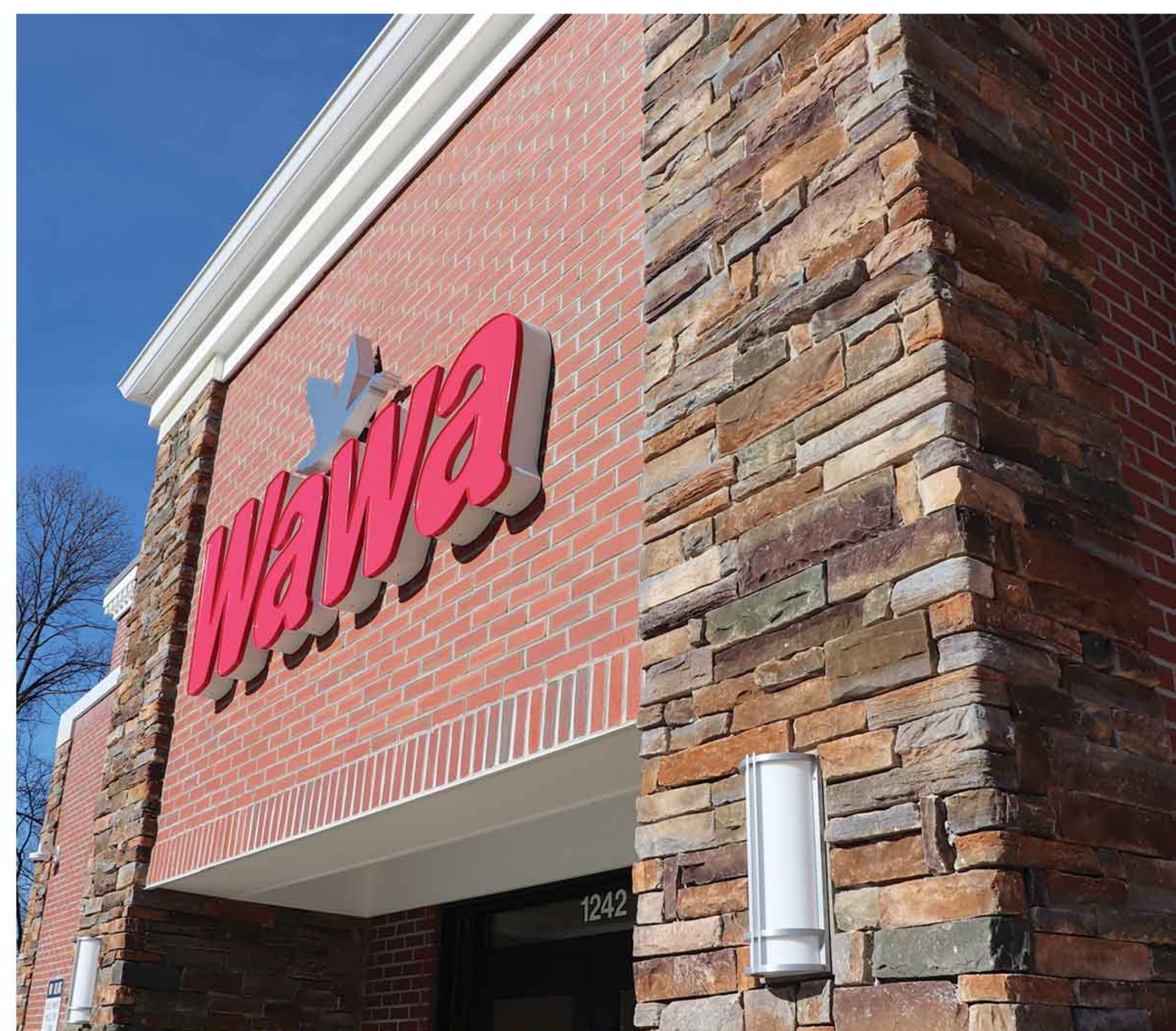
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QUALITY STONE VENEER, INC. STONE VENEER INSTALLATION GUIDE FOR WAWA® STORES

HOW TO INSTALL QUALITY STONE VENEER'S SPECIFIED MASONRY PRODUCTS ON WAWA® STORES, INCLUDING MANUFACTURER REQUIREMENTS & INSTALLATION BEST PRACTICES.

COVERED IN THIS GUIDE:

- INSTALLATION MATERIAL REQUIREMENTS
- WALL PREPARATION AND UNDERLAYMENT
- STONE VENEER INSTALLATION
- REPAIRING OR REPLACING LOOSE OR
FALLEN STONE



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VIDEO



Requirements & Best
Practices for Installation
of Quality Stone Veneer
Products on Wawa® Stores



GENERAL PRODUCT INFORMATION

SYSTEM REQUIREMENTS

GENERAL PRODUCT INFORMATION

STORAGE AND HANDLING

QSV products should be stored in unopened packaging until ready for installation to prevent damage from moisture, temperature, or outside forces. Cementitious materials should be stored on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

MAINTENANCE

Most applications require no maintenance. A high quality waterproofing sealer is not required, but at times can be recommended on Quality Stone Veneer surfaces exposed to severe freezing or thawing, excessive moisture, or conditions which could discolor or stain the stone. A sealed surface is much easier to clean than an unsealed surface. Sealer is at the discretion of Wawa®.

Power washing the face of the stone can be damaging to the stone and mortar and is therefore not recommended.

A high pressure blower, such as a leaf-blower, can be used as a final face cleaning to the stone in outdoor areas.

EFFLORESCENCE

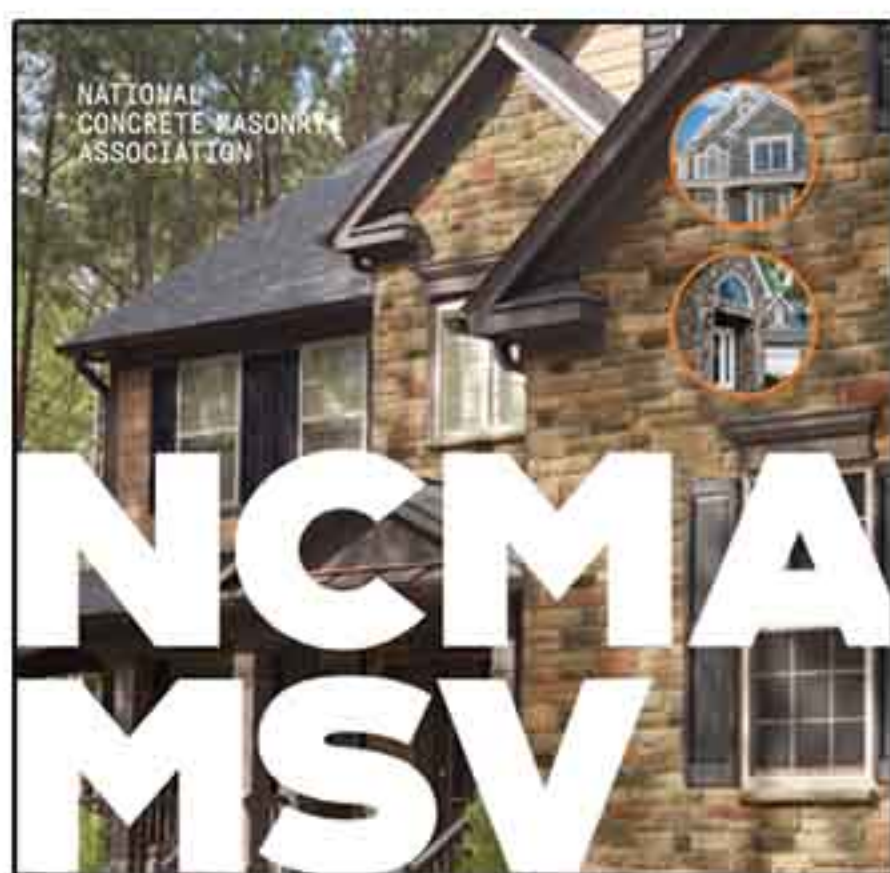
Efflorescence is normal and common in all masonry products and easily remedied. To remove, allow stone to dry. Scrub with stiff bristle brush and clean water. If efflorescence is still noticeable, scrub with a solution of 50% household white vinegar and 50% water and rinse thoroughly. Do not power wash stone. Do not use any salt and calcium chloride products on areas adjacent to stone veneer product.

SYSTEM REQUIREMENTS

WEATHERPROOFING & UNDERLAYMENT

All waterproofing and underlayment in stone areas including water resistive barrier, flashing and trim are to be coordinated with construction of studs, soffits, and other adjoining work to provide a secure and water-tight installation.

For an up to date look at national code requirements for all weatherproofing and underlayment for stone veneer installations, please visit NCMA.org to download the latest version of the National Concrete Masonry Association's stone veneer installation guideline.



GENERAL INSTALLATION REQUIREMENTS

Outside temperatures must exceed 40 Degrees F for all mortared applications to allow for proper mortar bond and curing.

MATERIAL STAGING

Stage and pull from multiple boxes throughout the entirety of the stone installation to create a consistent blend of color and texture on the wall.

GAPPING TO DISSIMILAR MATERIALS

Stone is required to terminate 3/8" minimum from dissimilar materials and openings to allow for expansion and contraction. Failure to do so can result in material cracking due to a building's thermal movement.

REPAIRING AND REPLACING LOOSE OR FALLEN STONE

Following the procedures in this guide, loose or fallen stone can be repaired and/or replaced easily. Outside temperatures must exceed 40 Degrees F during repair to allow for proper mortar bond and curing.

Polymer-Modified mortar is specified as requirement by Quality Stone Veneer to provide the very best bond between the stone product and the wall.

ONE MANUFACTURER. ONE INSTALLER. ONE SOURCE OF ACCOUNTABILITY.



PERSONAL PROTECTIVE EQUIPMENT

INSTALLING SAFELY

“WE CHOOSE SAFETY FIRST.”



REQUIRED PPE

Quality Stone Veneer has compiled a list of required personal protective equipment for use in the preparation and installation of any stone veneer system.

OSHA:
Refer to OSHA.gov for all up to date jobsite safety codes and requirements.



PPE	PHOTO	AREA OF USE
Hard Hat		Head Protection
Steel Toe Boots		Foot Protection
Hi-Vis Safety Vest		Or similar to make it easier for drivers to spot workers in construction zones.
Safety Glasses		Eye protection during cutting and installation.
Dust Mask/Respirator		Respiratory protection while cutting.
Protective Gloves		Hand Protection
Hearing Protection		Used when noise is over 85 decibels. Used while any cutting takes place.
Long Pants		Leg Protection
Fall Protection		Fall protection equipment when working above 6 feet.

PRE-INSTALLATION JOBSITE SAFETY INSPECTION

Safety is always first priority while working on any jobsite. Use a checklist such as the one here to inspect your work area before installation or work of any kind begins. What Pre-Installation steps do you need to take before beginning to ensure the safety of all workers throughout the entirety of the project?

For all information on jobsite safety requirements and best practices, please visit OSHA.gov.

JOBSITE SAFETY CHECKLIST	YES	NO	N/A
Work areas free from overhead work?			
Workspace protected from immediate jobsite hazards?			
All workers wearing proper personal protective equipment?			
Caution tape in place for pedestrian traffic?			
All workers trained and certified to use equipment on site?			
Fire extinguisher & first aid kit available on the jobsite?			
Electric cords free from defects?			
Unserviceable hand tools tagged for repair?			
All guards on cutting blades?			
Emergency contact information available on site?			
Updated SDS Binder on site?			



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REQUIRED TOOLS

CUTTING STATION SETUP

SURFACE PROTECTION AND CLEAN UP

- Painter's Tape
- Plastic, Tarps, Cardboard, or similar
- Brooms, Blowers and preferred clean up tools

CUTTING AND POWER TOOLS

- Angle/Hand Grinder with guard
- Compound Miter Saw or similar
- Masonry specific blades for saw/grinder
- Power Drill
- Fastener Gun
- Miter saw with a segmented diamond blade, circular saw with a masonry blade
- Dust suppression or collection system

MEASUREMENT AND ACCURACY TOOLS

- Tape Measure
- Square (Various)
- Level (Various)
- Chalk Line, String Line and Line Blocks, or similar

SURFACE PREPARATION TOOLS

- Tin Snips
- Wide-mouth nippers
- Razor Knife
- Staple Gun or Hammer Tacker
- Rubber Mallet
- Hammer
- Masonry Chisel
- 5-in-1 Tool
- Hatchet

MORTAR PREPARATION AND FINISHING TOOLS

- Mixing Bucket, Concrete Mixer, or similar
- Mixing Paddle
- Masonry Hoe
- Grout Bag
- Trowel (Various)
- Joint Slicking Tool
- Whisk Broom, Finishing Brush (Various)

CUTTING STATION SETUP

Stone cutting station should be set up in a well-ventilated, outdoor area where dust particles can be carried away from workers. An approved respirator should be used at all times while cutting, in addition to hearing and eye protection. Never cut stone indoors where dust particles can become airborne and trapped.

Cut stone and precast accents face down when possible to minimize the amount of dust that collects on the face of the product. This reduces clean up during final finishing stages of the install.

CLEAN UP

Clean up of dust and debris is best completed using a vacuum with a HEPA filter, especially in indoor and non-ventilated areas.



WARNING: AVOID BREATHING SILICA DUST

Quality Stone Veneer products contain respirable crystalline silica. Crystalline silica is a common mineral found in the earth's crust. Materials like sand, stone, concrete, and mortar contain crystalline silica, and are used to make products such as ceramics, brick, and artificial stone veneer. Activities related to the installation of stone veneer, such as cutting, grinding, or breaking, may result in the release of respirable silica found in the dust. Breathing excessive amounts of respirable silica dust can cause damage to lungs through prolonged or repeated inhalation exposure, and can also lead to a potentially fatal lung disease called silicosis. During cutting, handling, and installation: (1) work in well-ventilated areas; (2) use a circular saw with vacuum attachment and HEPA filter to reduce dust while cutting (3) warn others in the immediate area; (4) wear a properly fitted approved dust mask or respirator in accordance with applicable government regulations and current manufacturer instructions to further limit respirable silica exposure. In addition, do not eat, drink or smoke while handling product. Protective gloves, clothing, eye and face protection should be used at all times. Wash from skin with plenty of water. Never cut stone indoors. For further information, refer to current OSHA procedures and regulations by visiting www.OSHA.gov, or by calling 1-800-795-3229 to speak to a Quality Stone Veneer Safety representative.

ESTIMATING STONE QUANTITIES

CALCULATING STONE FLATS, CORNERS AND SILLS

GETTING STARTED:

Building codes vary. Check with local authorities for your area's requirements. Read all directions carefully before installing Quality Stone Veneer products. Observe safety precautions at all times.

STEP 1: ESTIMATE STONE QUANTITIES

AREA TO RECEIVE STONE

Length
x Height
- square footage of openings
= total project square footage

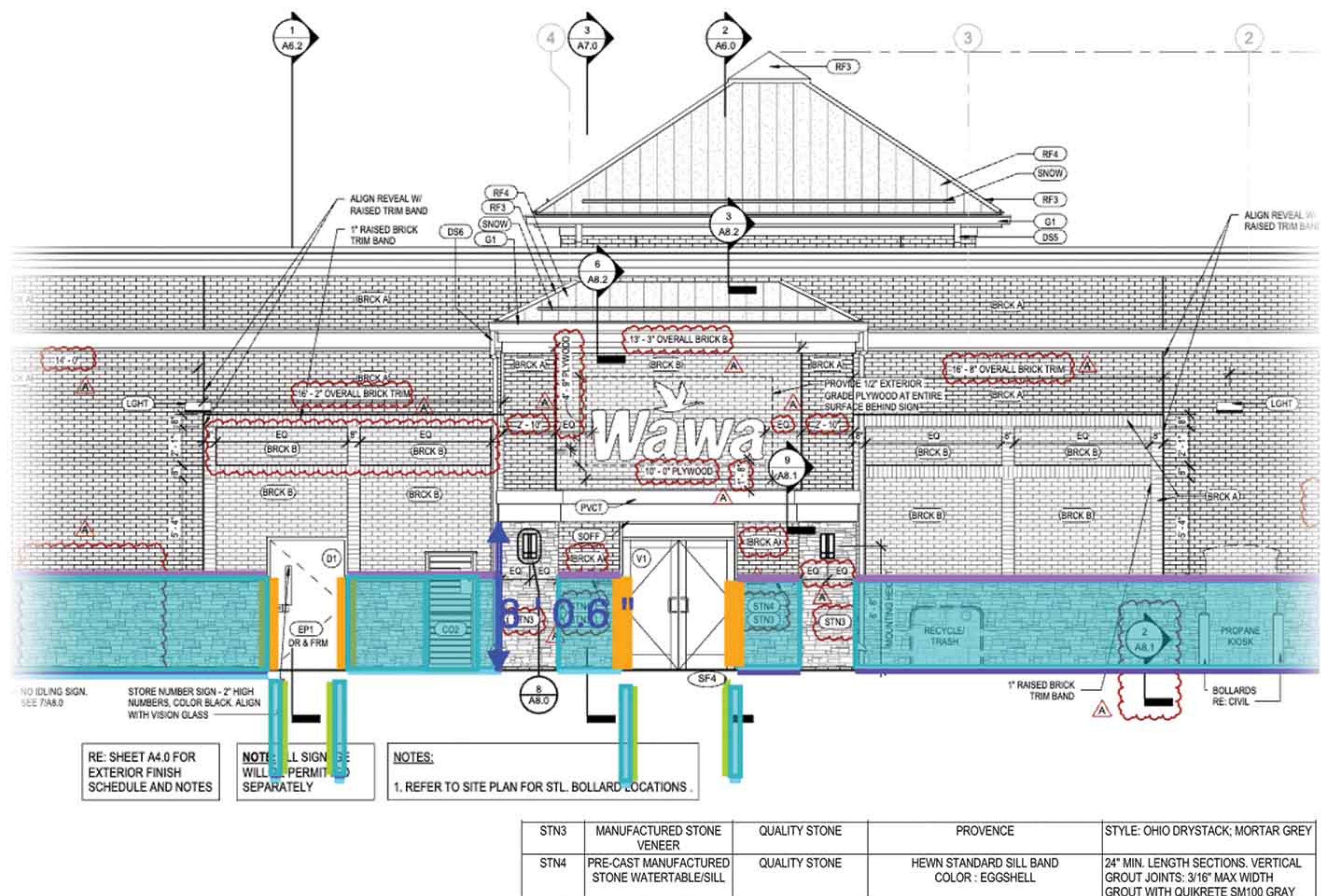
STONE CORNERS

Measure linear feet of all outside corners within stonework

***each linear foot of stone corner will cover approximately ½ square foot of surface area.**

STONE FLATS

Total project square footage
- stone corner square footage
= total stone flat square footage



*Verify all project specific QSV products in project specifications.

Most all Wawa® Stores will require stone corners, stone flats, and stone sills. To estimate the total amount of each needed for the project, measure in the following order:

Total Project:

After determining where the stone will be placed, multiply the area's length by its height to determine the square footage. If you are covering more than one area, add the total of each area to get the gross surface area. Remember to subtract the square footage of openings such as doors and windows.

Stone Corners:

Stone corners are applied to the outer corners of a surface and are measured in linear feet. To determine the number of corners required, measure the linear feet of all outside corners to be covered by stone. Add these measurements together.

(One lineal foot of stone corner equals ½ square foot of stone flat.)

Stone Flats:

As the name implies, stone flats are applied to flat surfaces and are measured in square footage. To determine how many stone flats the project requires, subtract the corner square footage from the total project square footage.

Stone Sills:

Stone sills are frequently used on Wawa® plans at the top of stone kneewalls and horizontally in areas where stone meets dissimilar exterior materials. Stone sills are sold by the piece and are sold in 24" and 36" lengths, depending on the specified sill. Verify which Quality Stone Veneer sill is required per plan and calculate the total length of sills required to figure the piece count accordingly.

It is recommended to add an additional 5% to the project's flat, corner, and sill totals to account for trimming, fitting, and waste.



Scan to watch the video corresponding to this guide.



STONE INSTALLATION

PART 1: WALL PREPARATION & UNDERLAYMENT

Disclaimer:

Project specifications and local building codes may vary per plan and store location. It is important to always cite project specific requirements for your individual store. This guide is intended for education and demonstration of Quality Stone Veneer's manufacturer best practices and product installation requirements.

Quality Stone Veneer follows all national guidelines set forth by the National Concrete Masonry Association's Adhered Manufactured Stone Veneer Installation Guide available for free download on their website at NC-MA.org.

In addition to stone veneer and precast, Quality Stone Veneer is a one-stop-shop for all installation parts and pieces shown in this guide.

We're available to help in the estimation and procurement of all specified materials.

Part 1: Wall Preparation & Underlayment

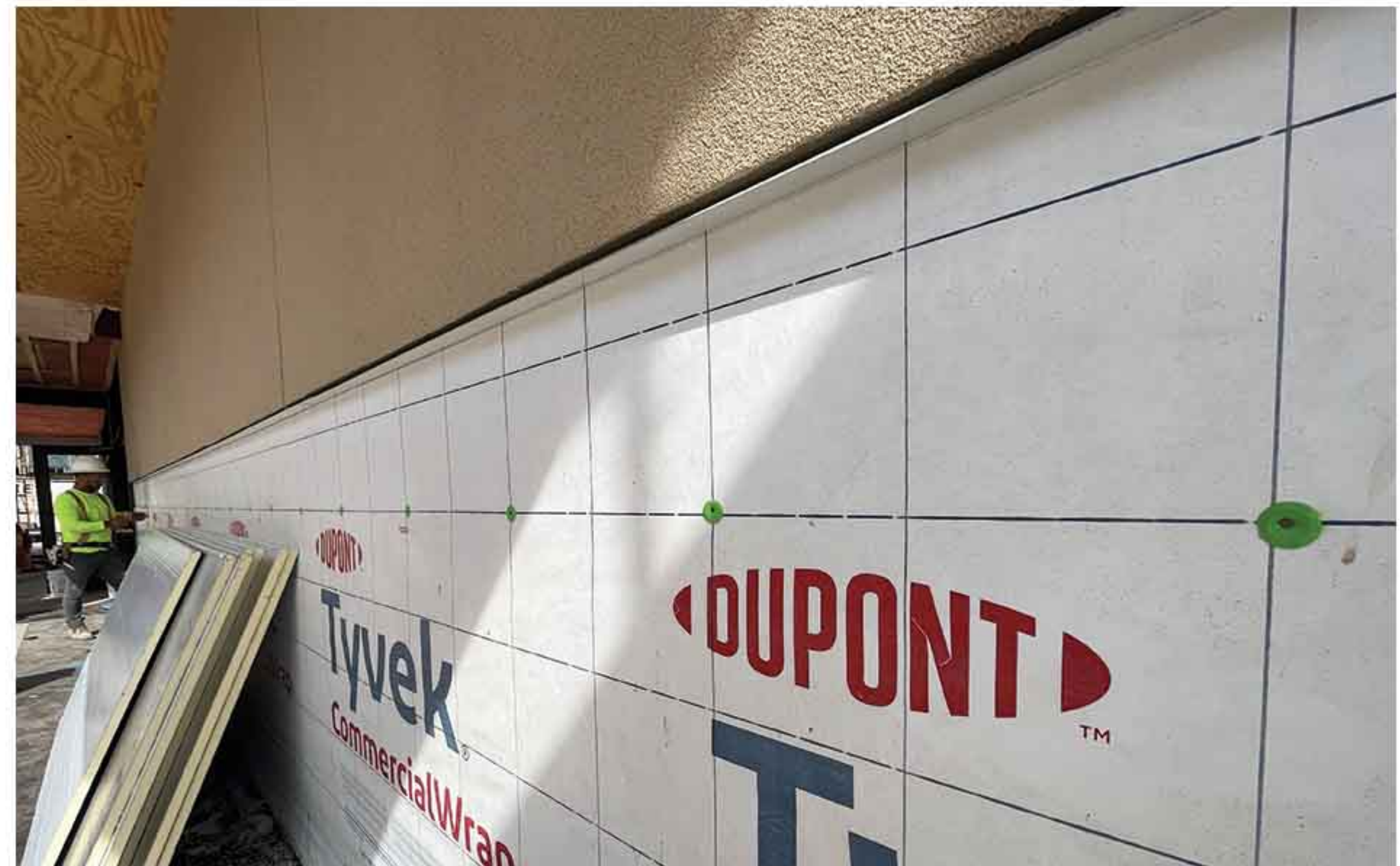
Before beginning, verify all install areas are clear of overhead work above. The work area should be thoroughly inspected beforehand for the safety of all workers.

In order to properly flash the stone area, concrete flatwork, window frames, door frames, MEP openings, drip cap flashings, and stone termination points alike should all be in place before wall preparation and underlayment for the stone can begin.



We'll first begin with the underlayment procedure for a standard framed wall section on the store. The wall will already have 1 existing layer of weather resistive barrier, otherwise known as house wrap, installed by others.

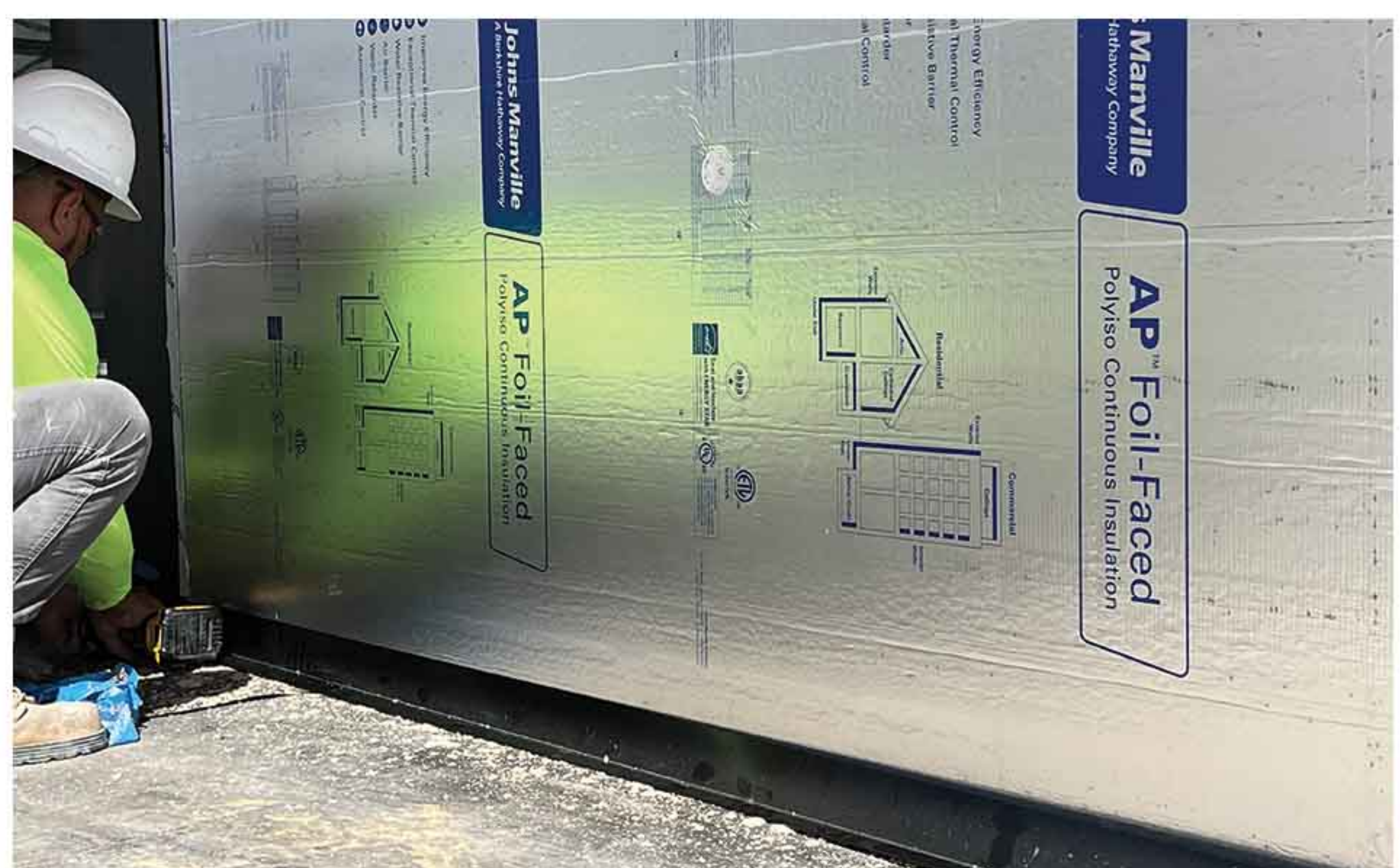
At the top of the wall where stone meets stucco, a drip cap flashing will already be in place for the stone to bump up to.



Overtop the existing weather resistive barrier, comes one layer of rigid foam insulation, and in most cases, is also installed by others before stone prep begins.



First is the metal black base flashing. Using the specified corrosion resistant fastener, the base flashing is screwed into the wall. The flashing sits flush with the concrete flatwork below. Screws should be used every 16" on center. All fasteners must be of sufficient length to penetrate a minimum of 3/4 inch into framing. Refer to ASTM C1861 for fastener requirements.



STONE INSTALLATION

PART 1: WALL PREPARATION & UNDERLAYMENT

With the base flashing installed, a traditional vinyl weepscreed is installed sitting 2" overtop. 2" Spacers, such as these styrofoam blocks are helpful for holding the weep screed in place. Attach the weep screed with the corrosion resistant fastener.



At the slim return into the door frame for instance, small sections of base flashing and weep screed should be cut at a 45 degree angle and attached around the corner.



Installed next is the secondary layer of WRB. A single layer of 60 minute Weather Resistive Barrier is installed, starting at the base of the wall covering the flange of the weep screed, and working upwards in a shingle like fashion.



The upper layer of the WRB should lap on top of the lower layer by a minimum of 2 inches, and the vertical joints should be lapped a minimum of 6 inches. Inside and outside corners must be overlapped a minimum of 16 inches past the corner in both directions.

WRB Overlap Requirements

Vertical Overlap: 6" Min.

Horizontal Overlap: 2" Min.

Inside/Outside Corners: 16" Min past the corner

Vertical terminations and all openings are then sealed with an approved 6" rubber flashing tape.



Last at these vertical transitions, a vinyl casing bead with a built in backer rod is attached. This piece acts as a clean termination point for the stone to bump up to, and provides the consistent 3/8" gapping between materials required for building expansion and contraction.



STONE INSTALLATION

PART 1: WALL PREPARATION & UNDERLAYMENT

Wire lath comes next, which is a 2.5 lb self-furring metal lath, and is attached with the corrosion resistant fastener with the dimples of the lath facing into the wall. Lath should overlap a minimum of 1 in. at the vertical seams and a minimum of 1/2 in. at the horizontal seams. In addition, the vertical seams should be staggered. Lath should be wrapped around inside and outside corners a minimum of 12 in and fastened every 7 in. vertically on each stud.



Wire Lath Overlap Requirements

Vertical Overlap: 1" Min.

Horizontal Overlap: 1/2" Min.

Inside/Outside Corners: 12" Min past the corner

Finally, with the lath installed, a 1/2" mortar scratch coat is applied. A traditional type S premix mortar is used. The scratch coat should be applied with enough material and pressure to embed the lath and provide sufficient thickness of material over the metal. As soon as the scratch coat becomes somewhat firm, the entire surface must be scored in a horizontal direction only.

The mortar scratch coat should cure for a minimum of 24 hours before stone installation begins.



All scratch coats receive level lines to follow across the wall during stone installation, most usually drawn with a with a chalk line or level. This is a crucial step to keep the stone in a consistent, level plane.



Shown here as a red chalk line, measure down from the drip cap flashing and mark the height of the stone sill area for proper planning of the stone termination. The stone sill will be installed in this area last. QSV Hewn Sills are approximately 3" in height.



Similarly, for a concrete block wall area, most commonly being the trash enclosure and site signs, lath is attached overtop the block with a pneumatic Nailer, followed by the mortar scratch coat.



STONE INSTALLATION

PART 2: STONE VENEER INSTALLATION

Part 2: STONE VENEER INSTALLATION

Getting Started: Boxes should be staged so that they're easy to access. Flats and corners must be consistently pulled from multiple boxes from multiple layers throughout the entirety of the installation to create an even and consistent blend of colors.



Mortar Mixing - Quality Stone specifies Polymer-modified mortar to be used as the setting bed mortar for the stone and precast accents. This practice provides additional bond strength in these high traffic stone areas, often subject to contact.

Evenly mix the polymer modified mortar to the required smooth paste-like consistency.



Stone installation must always begin at outside corners beginning at the bottom of the wall section.

A level should routinely be used to check corners for levelness. Alternate the long and short legs in opposite directions, then place stone flats to fit working in toward the center of the wall.



Wipe excess mortar from the top of each stone as its placed so the next can fit tightly overtop. This is a dry laid installation, meaning there are no joint lines in between pieces. Keep space between stones tight and uniform.



Stone can be trimmed or cut as needed using a hatchet, or mason's trowel. A hand grinder or power saw should be used for straight cuts.



STONE INSTALLATION

PART 2: STONE VENEER INSTALLATION

To further ensure a strong bond, dampen the scratch coat with water using a pump sprayer. This must routinely be done throughout the entirety of the installation and will be required more frequently in warmer temperatures and areas in full sun.



Requirements and Best Practices for Mudding the Stone

Important: To properly mud the stone, the entire back of the piece must first receive a thin layer of mortar from end to end, corner to corner. Firmly scrape this first layer down into the voids of the stone, never leaving a portion of the stone dry.

You should hear the trowel loudly scrape the stone on this layer, which puts moisture into the stone and creates a bonding surface for the remainder of the setting bed.



Then, add more mortar to the stone building the center thickness to about 1 and a half inches. The back of each stone should be entirely covered with mortar before placing. This practice is incredibly important so all stone bonds to the scratch coat entirely.



When pressing stones to the surface, use a gentle wiggling motion using enough pressure to fill textures and voids. The mortar should squeeze out around the perimeter of the stone. Wipe excess mortar, and continue to use a level and chalk lines as you work across the wall.



Stone pieces should always be selected and laid in a fashion that breaks up continuous horizontal and vertical joints. Long runs of continuous lines will not be accepted.

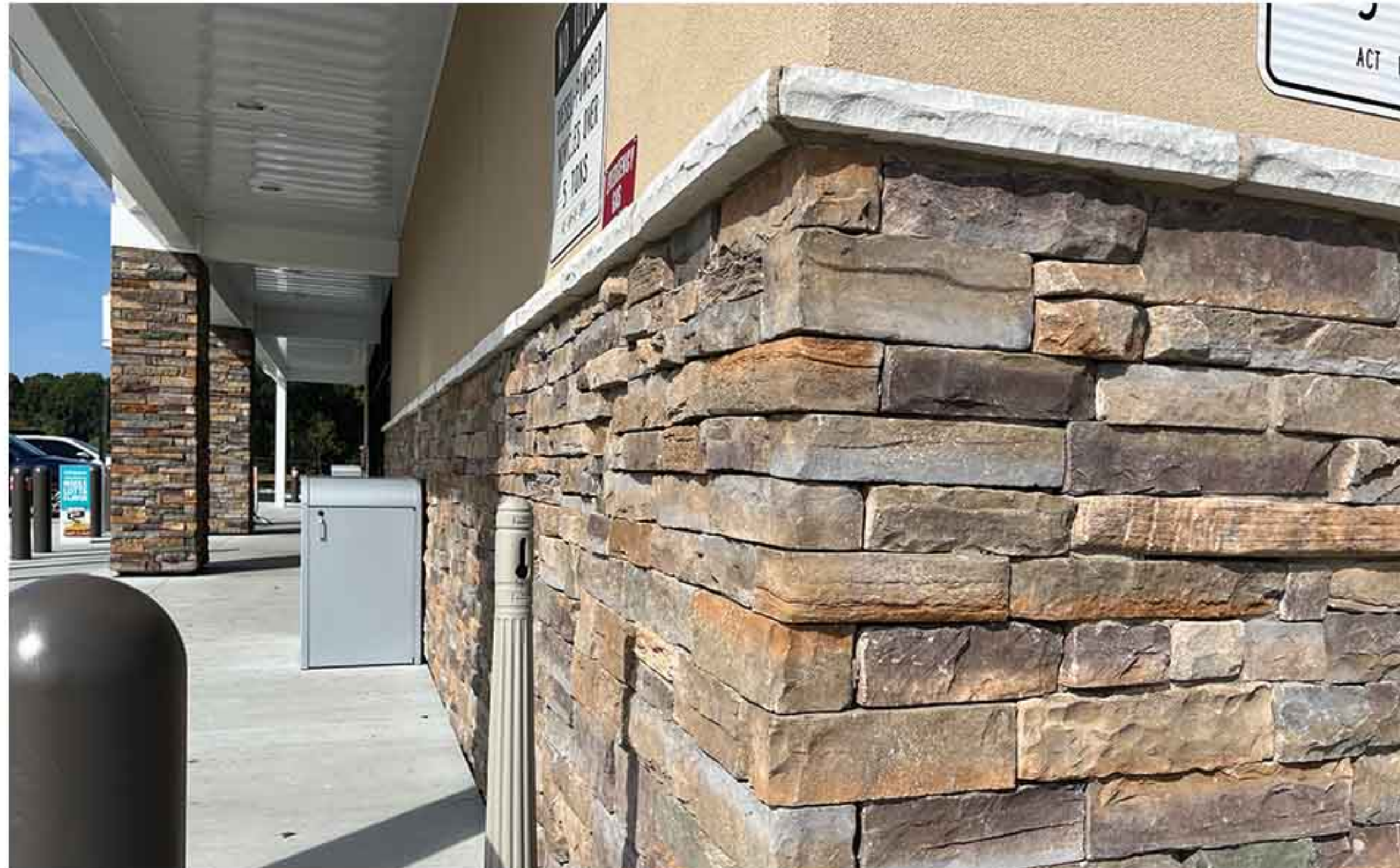


Continue installing stone across and up the wall, until reaching the level line marked for sills.

STONE INSTALLATION

PART 2: STONE VENEER INSTALLATION

Sills are installed using the same mudding and setting bed methodology.



Sills should be cleanly mitered with a saw at a 45 degree angle at outside corners.



Finishing Short Corner Return Areas

On short return areas like we looked at in the prep work, such as the returns into doors, the shorter leg of the stone corner will need to be cut back about 2 inches. Trim the corner back, and use varying lengths of corners to break up any continuous vertical joints.



Place and install the stone corners uniformly bumping up to the vinyl casing bead.



Precast Light Blocks

For light blocks on store entrances, Quality Stone Hewn Edge precast Caps are used. Cutting and fitting instructions for light blocks are to be followed and are found in the Exterior Details of the architectural plan set.



Stone Finishing and Clean Up

In finishing, be sure to remove all excess mortar from the face of the stone, and finish joints between sills using a joint slicking tool or similar. A nonmetal, soft bristle brush should be used to brush off the surface of the stone.

A high power blower, such as a leaf blower, can be used as a final cleaning to the dust of the stone in outdoor well-ventilated areas only.

Finally, the work space should then be cleaned up entirely, and free from debris and hazards.

REPAIRING AND REPLACING LOOSE OR FALLEN STONE FROM TECHNICAL BULLETIN 01 - JUNE 2023

SOLUTIONS FOR REPAIRING AND REPLACING LOOSE OR FALLEN STONE MORTAR AND WIRE LATH APPLICATION Technical Bulletin 01 – June 2023

Stone pieces can from time to time become loose or come off the wall entirely, especially in high traffic areas where stone is bumped into. This is common and normal and can be remedied easily by following the Quality Stone Veneer repair procedures below.

GENERAL REQUIREMENTS: BEST PRACTICES FOR STONE ADHERENCE

- a. Quality Stone Veneer, Inc. products are manufactured to include “rake” marks on the back of the stone providing rough textured grooves necessary for the setting mortar to sit into.
- b. Ensure pre-existing stone veneer waterproofing and underlayment is undisturbed. Any holes or disturbances in the underlying vapor barrier should be repaired appropriately to code before any stone replacement can begin.
- c. Polymer modified premix mortar is specified as requirement for all mortared repairs. Polymer modified mortar should be compliant with ANSI A118.4 or ANSI A118.15.
- d. Outside temperatures must exceed 40 Degrees Fahrenheit for all mortared applications to allow for proper mortar bond and curing.

REPAIRING AND REPLACING LOOSE OR FALLEN STONE:

- 1. Cover and protect the surrounding areas and ground from mortar spill, using cardboard, tarps, plastic, tape, or similar.
 - 2. It is first necessary that all substrates be completely clean and free from dust, dirt, oil, wax, and grease. Using a wire brush, gently sweep and clean the area to be repaired. Remove any excess dried mortar that may be loosely hanging from the existing scratch coat.
 - 3. Mix Polymer Modified mortar following the mix instructions for the product in use.
 - 4. In the event of exposed wire lath in the repair area, additional scratch coat should be applied to the wall.
 - 5. Select properly sized stone pieces to fill the entire area. Pieces should be cut and trimmed to exact size when necessary, using a grinder.
 - 6. Using a spray bottle or sponge, wet the back of the stone piece and the repair area on the wall itself. Adding this moisture before spreading the setting mortar further increases the bond strength between the mortar and stone, especially in summer months when moisture evaporates quickly.
 - 7. Generously add setting mortar to the back of the stone piece, fully coating the back of the stone from corner to corner.
 - 8. Firmly press the stone into the wall, sweeping away excess mortar as it exits from behind the piece.
 - 9. Using a jointer, tool away any mortar joints as needed to finish the repair cleanly.
-

REPAIRING AND REPLACING LOOSE OR FALLEN STONE FROM TECHNICAL BULLETIN 01 - JUNE 2023

1



MISSING STONE

2



WIRE BRUSH CLEANING TO SCRATCH COAT

3



POLYMER-MODIFIED MORTAR

4



REMOVE ANY EXISTING MORTAR FROM STONE

5



CUT NEW PIECES TO SIZE

6



SPRAY STONE WITH WATER

7



SPRAY WALL WITH WATER

8



FULL MORTAR COVERAGE ON BACK OF STONE

9



PLACE STONE

10



REMOVE EXCESS MORTAR