

TECHNICAL INFORMATION

FLASHING FOR STONE VENEER INSTALLATION

The following construction details are options for stone veneer termination. They will not necessarily apply to all circumstances you may encounter. To maintain the weather-resistance of the exterior wall on which the stone is installed, a corrosion-resistance flashing and a means of drainage should be installed at all wall penetrations and terminations of the stone veneer. Flashing type and locations shall be in accordance with the local building code.

Note: Water is heavy because gravity works! If you give water a way to pass down and out of your wall — it will! All waterproofing systems inherit the risk of failure. You can reduce and help eliminate this risk by proper flashing and weep hole placement. By flashing and placing weep screeds at the lowest points of a wall where water accumulates, they will help the water escape every time.

The following details are provided as ideas for solutions to architectural designs. They may require changes to meet your particular design requirements. Liability for the use of these or other construction details are the general contractor, installer and flashing contractor's responsibility.

FLASHING AND WATER INTRUSION INTO WALL CAVITY

Several building codes have been changed or modified in relation to moisture penetrating wall cavities. The following are several suggestions on how to help eliminate this condition.

MASON CONTRACTOR

The mason should examine the walls to which lath, base coat and the stone are to be applied, looking for proper framing and sheathing attachment. All flashings must be in place at windows, doors, roof lines, sill plates and all outlets where moisture could enter the wall cavity. The mason must be familiar with the local code requirements and the proper installation of lath accessories including but not limited to ASTM C1063. The lathing and flashing must meet codes.

A quality framing, sheathing, flashing and lathing job will not guarantee a trouble free beautiful stone job, but it will go a long way in improving the odds the job will be successful, durable and beautiful for generations to come.

If the lathing / mason contractor finds unacceptable wall conditions or flashing unacceptable he should notify the general contractor in writing that corrections are necessary prior to the start of lathing. He must notify the general contractor of the consequences that will likely occur due to these problems. It is very important to emphasize that all communications with the architect or general contractor must be in writing. Understand and realize that memories are often very short when it comes to job site communications. We all know from experience that a good job is possible if all those involved will familiarize themselves with the ASTM Specifications and local building codes and do their utmost to enforce them.

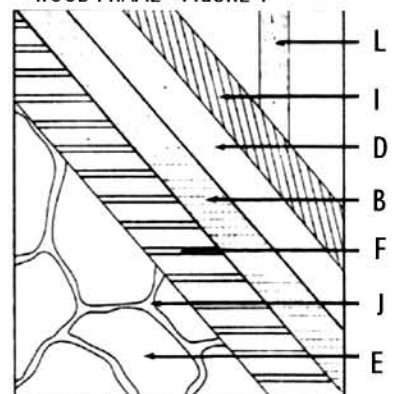
What is evident in the market today is a network of poorly trained and unskilled workers trying to train other employees. Since these employees lack many of the necessary skills and knowledge of the building codes, they pass on bad habits rather than proper application skills.

We have the best codes and specifications in the world; however, if they are not read, understood, and enforced, they are of little value. Once the construction is completed, it is too late to read the appropriate code and specification.

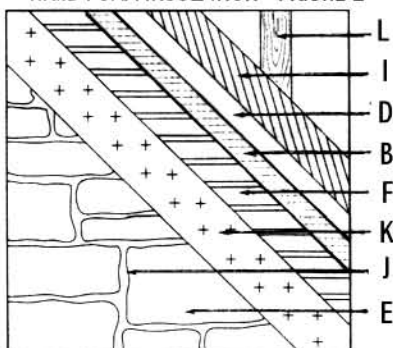
CODE FOR CONSTRUCTION DETAILS

CODE NO	DETAILED ITEM
A	RUBBERIZED SELF-ADHERED FLASHING
B	METAL LATH 3.4 LBS GALVANIZED OR 2.5 LBS
C	WEEP SCREED, CASING BEAD
D	WATER RESISTANT BARRIER
E	STONE VENEER
F	SCRATCH COAT
G	BACKER ROD & FLEXIBLE CAULKING
H	FLASHING (26 GAUGE GALVANIZED METAL)
I	SHEATHING/RIGID FOAM INSULATION/BLOCK
J	MORTAR JOINT
K	SETTING BED
L	2X STUD/METAL STUD

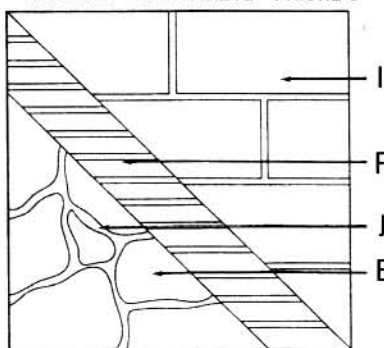
WOOD FRAME - FIGURE 1



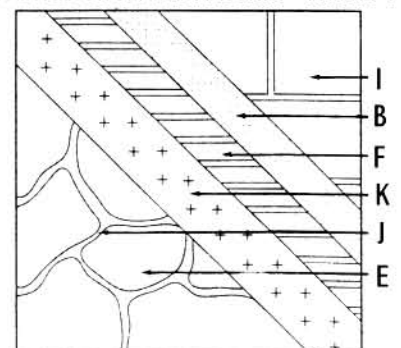
RIGID FOAM INSULATION - FIGURE 2



MASONRY OR CONCRETE - FIGURE 3



PAINTED OR SEALED MASONRY - FIGURE 4



FLASHING — HOW IT AFFECTS THE TOTAL JOB

Flashing must be done prior to the paper/lath installation. Though flashing is not the responsibility of the lathing contractor, it is very important that the contractor be aware that poor or nonexistent flashing will in time cause great deterioration to the stone job. Water intrusion through an unsealed opening will admit large amounts of moisture to enter the wall cavity. Who gets the blame? The stone contractor, of course, because it will be said that he should have forced enough stucco into the opening to seal it. Nothing could be further from the truth. Since the stucco material will always shrink it is impossible to seal an opening with stucco.

More than 95 percent of so-called leaky stone walls involve flashing that was improperly installed around the openings in the exterior walls and where lath and stucco interface with other products. Codes state that openings in exterior walls must be flashed to make them weather tight. Not only window and door openings, but any wall penetrations such as electrical, mechanical, or plumbing openings. Though flashing is not usually the responsibility of the lath/mason contractor, it is his responsibility to install his weather resistant membrane barrier properly shiplapped with flashing membrane to divert intruding water down and out of the envelope. If flashing is missing or is inadequate, the lath installer should notify the general contractor, in writing, of the likelihood of moisture intrusion. The lather should go over the entire job where the stone is to be installed, and after inspecting that all is correct and in place proceed to the next step of installing the accessory pieces.

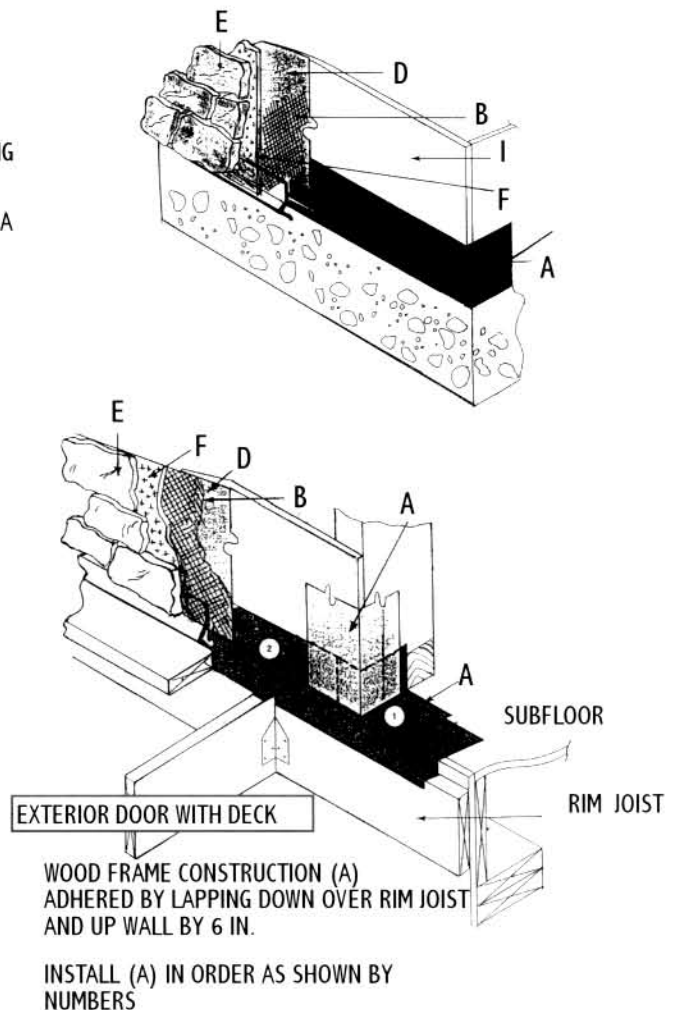
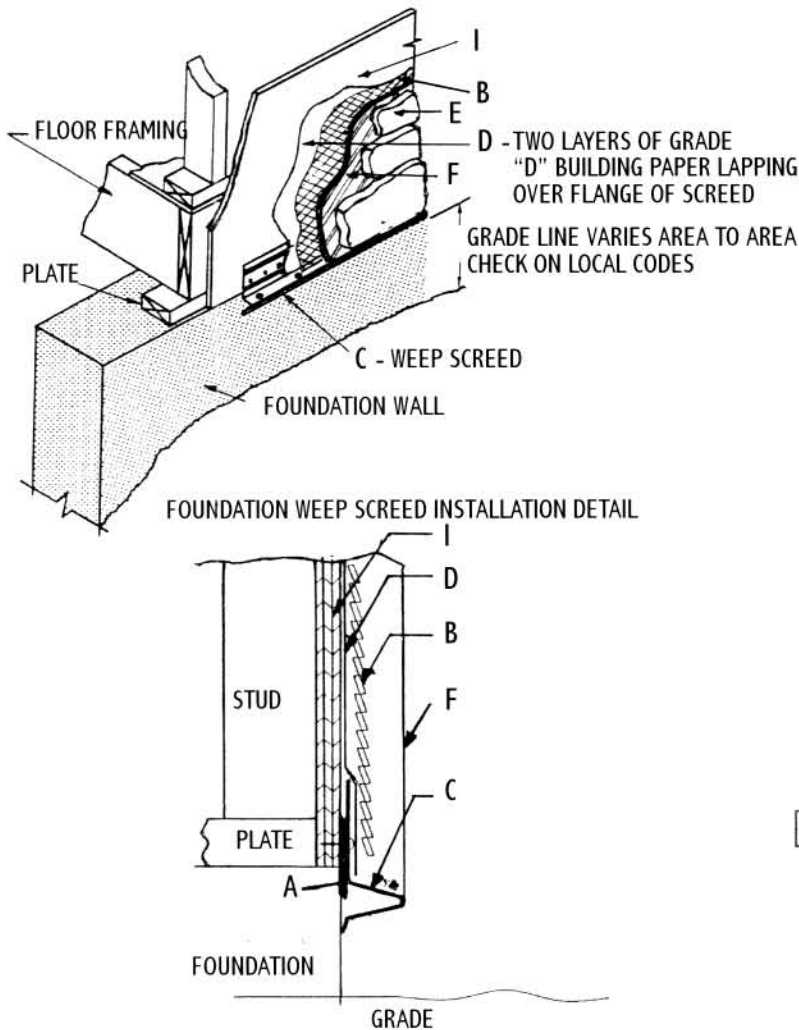
FLASHING PERSONNEL

Flashing should be installed by trained flashing personnel such as a flashing contractor. If flashing contractors are not available flashing should be installed by the crews installing the windows, roofs, siding, etc.

FOUNDATION WEEP SCREED

The application of a foundation weep screed should be considered part of the flashing and drainage system. The screed is installed after the sill flashing is in place. ASTM defines foundation weep screed as an accessory used to terminate Portland cement base stucco at the bottom of all framed exterior walls. Flashing should be in place at the floor line, where the wall is supported by a floor or foundation and the foundation weep screed is applied over flashing. (REFER TO ASTM C1063) Water that might make its way past the cementitious membrane hits the paper and flows to the bottom of the assembly to the weep screed. The screed facilitates the ability of this moisture to escape the system and drip away from the surface of the foundation. Some contractors apply the stucco over lath that has been installed at or below grade level. In very wet climates or areas with shallow water tables, moisture and moisture vapor could enter into wall cavity causing devastating damage to the wood or metal framing. A wood product will act as a wick in presence of moisture.

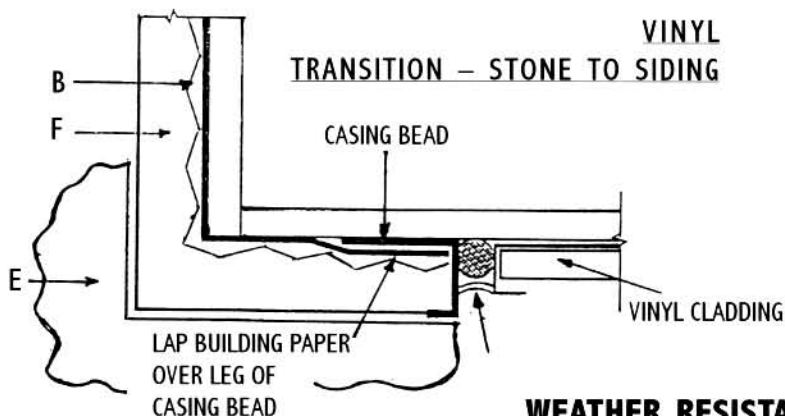
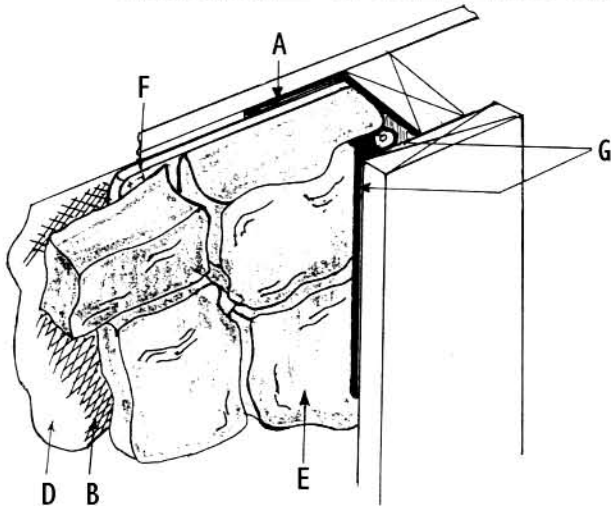
FOUNDATION & SHEATHING SILL SLASHBACK AREA



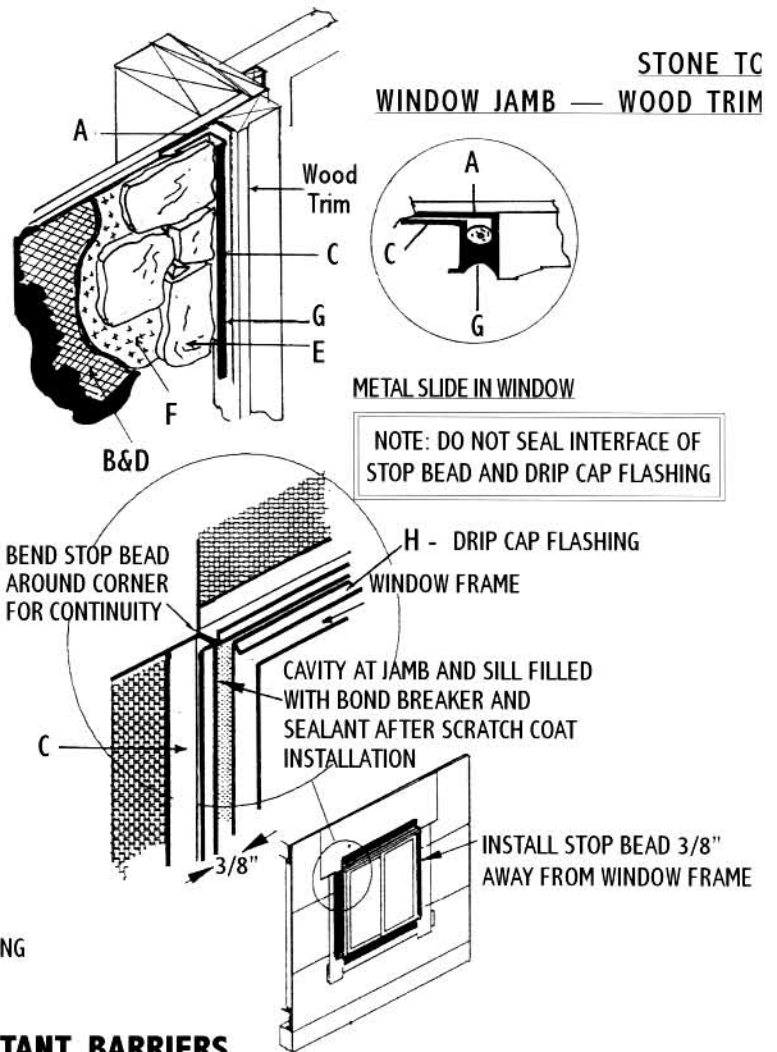
CASING BEAD INSTALLATIONS

The next step in the installation process would be the installation of all casing beads, also known as plaster stops. The Casing Bead is used at all termination points, except at the bottom of framed walls which receive a weep screed. ASTM C1063 requires casing bead be installed at all openings and termination points. If the casing bead is installed directly through the sheathing, the issue of continuous paper coverage must be considered. Complete coverage can be accomplished by applying paper strips to the sheathing where ever casing bead will be installed. These strips should also precede the installation of offset paper backed lath. Caution must be taken to see that no sheathing is left exposed to the wet stucco. After inspecting the casing bead installation you now proceed to the next step of (papering) installing the vapor permeable weather barriers. (GRADE "D" PAPER)

TRANSITION — STONE TO WOOD SIDING



VINYL TRANSITION — STONE TO SIDING



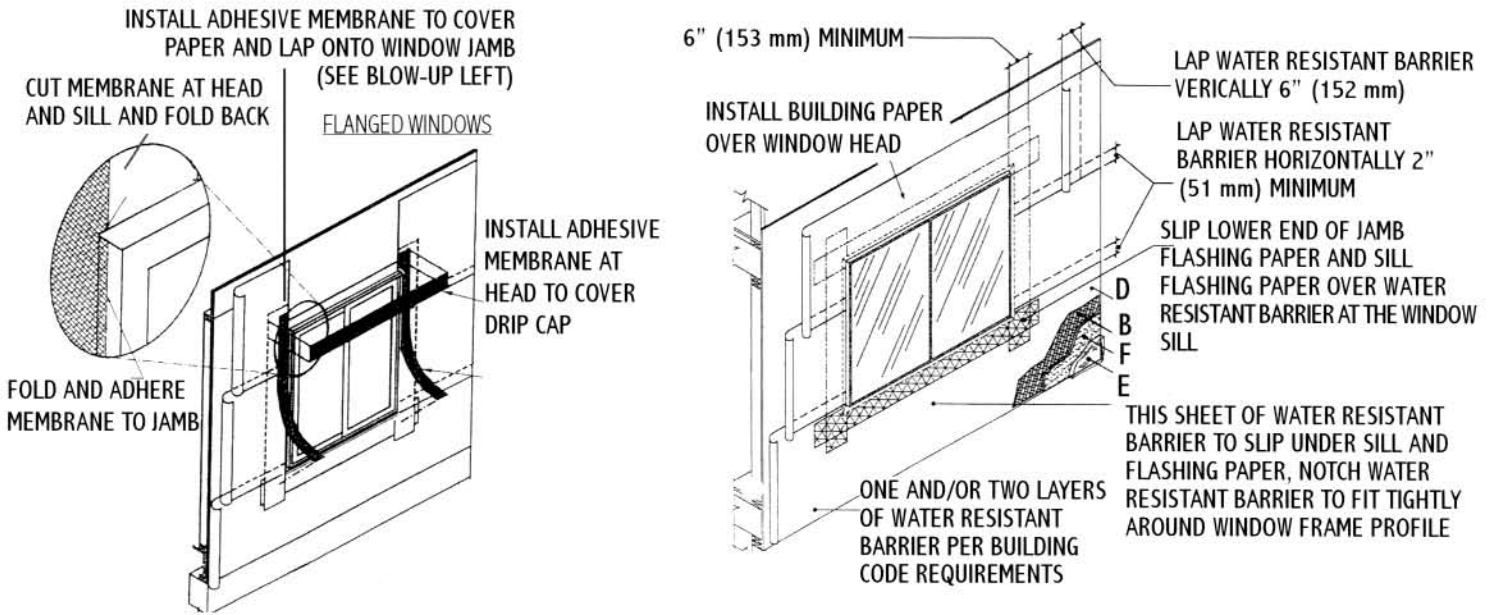
WEATHER RESISTANT BARRIERS

The water intrusion damages that are in the news lately concerning some exterior cladding systems have made it very clear that water intrusion can be disastrous to the entire wall system no matter what wall cladding system is utilized. Portland cement scratch coats are a breathable yet water resistant system. This remains true if none of the system components compromise or impedes the movement of moisture vapor through the wall cavity. There are several weather barriers available in the market today. The most popular is the Grade "D" Building Paper that is attached to the lath. When looking at these products one must choose from the following:

1. **FELT PAPER:** Felt is a rag material saturated with asphalt much like paper saturated with asphalt to produce building paper. Some designers specify the use of #15 or #30 felt paper (note the use of the # designated to label these papers, they rarely weigh 15 or 30 pounds as they once did) as a water resistant paper backing. These papers are highly water resistant, however, they have very low vapor permeability. In colder climates moisture that is trapped in the wall cavity can lead to deterioration of the insulation, framing and sheathing materials.
2. **CLASS "D" BUILDING PAPER:** The lath industry generally recommends the use of Grade "D" Building Paper that meets federal specification UU-B-790A, which is water resistant, yet retains a high degree of vapor permeability. This is the type of paper that is applied to metal lath at the factory throughout most of the United States and Canada, other grades of paper are available in limited areas. The perm rating on Grade "D" paper offers 35 perms in a 24 hour period. Some industry experts feel that a perm rating of 20 or more is desirable. Most contractors use metal lath with Grade "D" water resistant paper backing on plywood sheathing. In areas governed by the new international building code, two layers of Grade "D" paper or equivalent are required over wood based sheathing.

If felt paper is chosen as the vapor barrier the paper is attached in ship lapped style, lapping the horizontal joints 2" on the top and 6" on the end joints.

FLASHING AND WEATHER RESISTANT BARRIER (PAPER) APPLICATION SEQUENCE



If the offset paper backed lath is designed into the job the paper backing is offset 2" on top and left end of the lath. Proper installation of this lath starts by overlapping the top flange of the foundation weep screed with an 8 to 10 inch strip of building paper. Since the paper is recessed on the bottom right or left corner of the wall. (depending on the paper lap on the lath). The uniform building code requires a 6" end lap and 2" on top edges. Paper must not be placed between sheets of metal lath or between metal lath and flanges of accessories. This will prevent the lath sheets from bonding together.

While discussing building papers it is important to mention that all openings must be flashed with waterproof paper or specifically designed metal flashings. Another alternative to metal flashings is the rubberized asphalt self-adhered flashings, preferably one that is self-sealing when penetrated by fasteners. One such type is VYCOR by W.R. Grace & Co.

When paper or paper-backed lath is applied correctly and flashed properly any incidental moisture that flows along the paper surface will exit the assembly as it should.

NOTE: Check your local governing codes for the final word on installation requirements in your area.

After flashing, accessories and paper installations, you are now ready for lath installations.

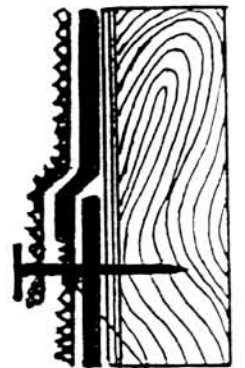
METAL LATH INSTALLTION & PRECAUTIONS

Expanded metal lath is formed from a sheet of solid steel that has been slit at regular intervals and pulled open or expanded to form a flat sheet, sized nominally, 27" tall and 96" long. These sheets are available in a number of styles, weights, and etc..

Attachment of metal lath depends on many factors, such as the type of construction, the substrate, type of metal lath and other factors. To accomplish the proper installation the installer should stagger all joints and avoid aligning joints that will create weaker joints. The lather should start the installation with a half sheet of lath on the first course of the lath and repeat this step on every second course of lath. Lather must not lap sheets to save cuts. **EXAMPLE:** To save a cut the sheet is attached with a 10" overlap and attached at the edge, the framing member may be missed causing a separation of the lath sheets. A possible crack in the stucco could occur: small pieces should also be avoided for the same cracking possibilities.

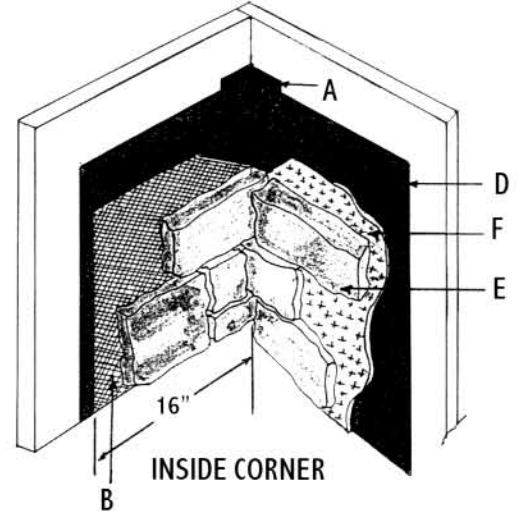
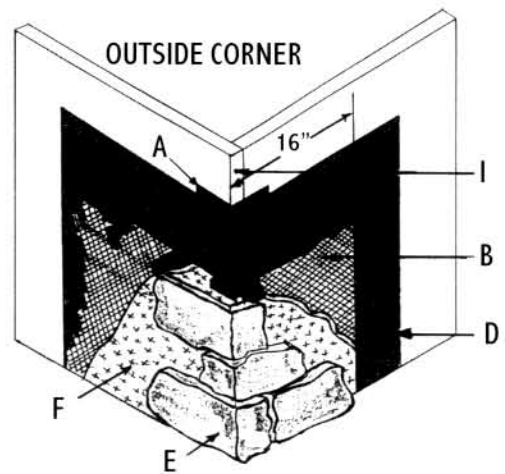
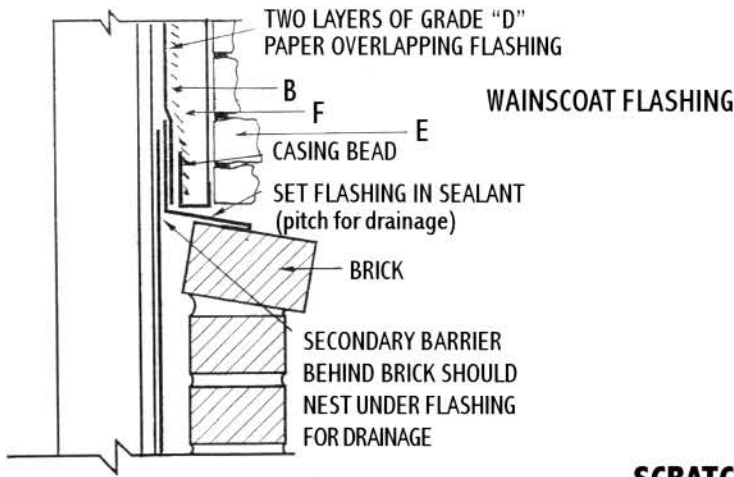
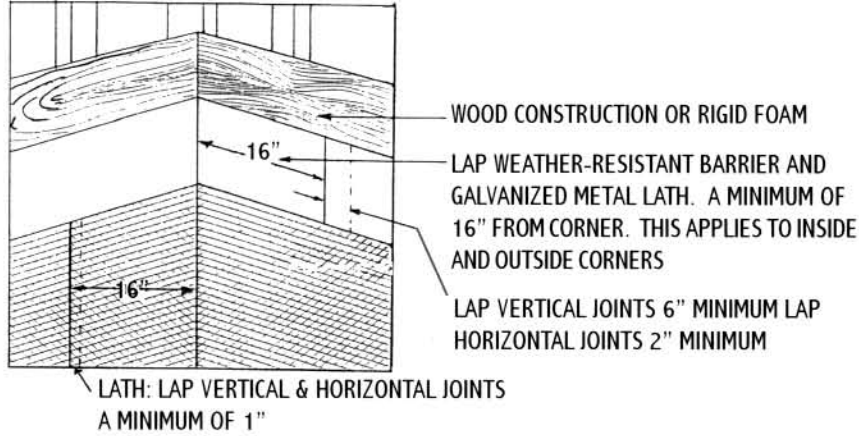
It is a good idea to make a thorough inspection of the total assembly to make sure all fasteners are in place, all laps are level and true, all accessories are properly installed. When you are finished inspecting, the job is now ready to be plastered.

SURFACE	PREPARATION	ATTACHING LATH	SCRATCH COAT
WOOD FRAME FIGURE 1	COVER SHEATHING WITH WEATHER-RESISTANT BARRIER INSTALL LATH LAPPING LATH AS NOTED	ATTACH WITH GALVANIZED NAILS ON 6" CENTERS PENETRATING STUDS A MINIMUM OF 1 INCH	SCRATCH COAT IS APPLIED TO WIRE AND SURFACE IS SCRATCHED TO ENSURE A GOOD BOND
RIGID FOAM/ OPEN STUDS FIGURE 2	COVER SURFACE AS ABOVE	USE GALVANIZED NAILS PENETRAING STUDS A MINIMUM OF 1" ON 4" CENTERS	APPLY SCRATCH COAT AND ALLOW TO SET BEFORE APPLYING VENEER
CLEAN MASONRY FIGURE 3	NO PREPARATION REQUIRED IF WALL IS CLEAN AND FREE OF FORM OILS OR RELEASING AGENTS	NOT REQUIRED	SETTING BED APPLIED DIRECTLY TO MASONRY WALL
PAINTED, SEALED OR DIRTY MASONRY FIGURE 4	SANDBLAST OR WATER BLAST TO ORIGINAL SURFACE REMOVE SANDBLAST DUST BY WASHING WALL. ATTACH WIRE LATH SECURELY TO MASONRY WALL	ATTACH WIRE WITH STUD DRIVER OR MASONRY NAILS WITH WASHERS TO FIRMLY HOLD WIRE IN PLACE	SCRATCH COAT IS APPLIED TO WIRE AND SURFACE IS SCRATCHED TO ENSURE A GOOD BOND



NAILS 1" PENETRATION INTO WOOD STUDS

METAL LATH INSTALLATION - FIGURE 5



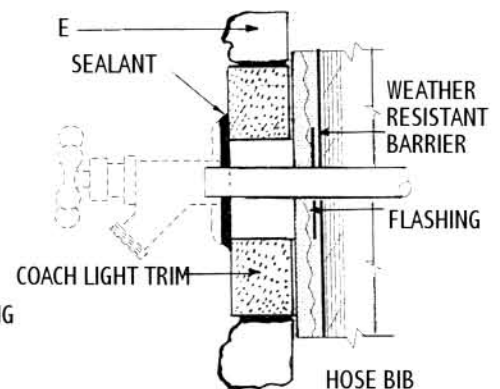
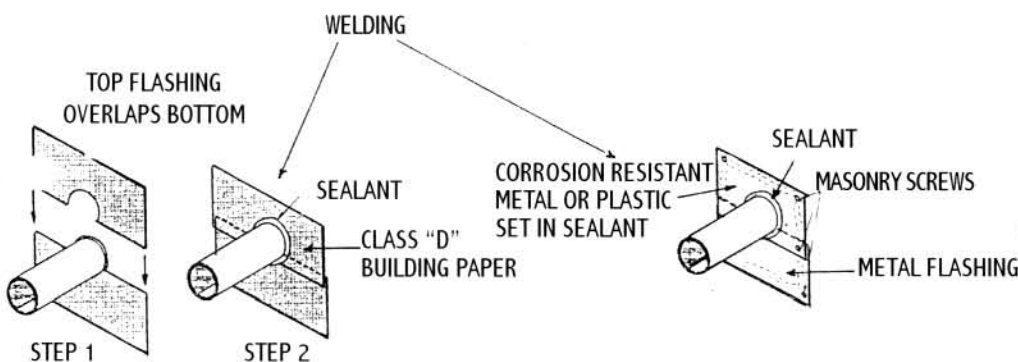
SCRATCH COAT

This important step is often confused with a stucco 3 coat system. The only comparison up to this point is the preparation of the wall. There are numerous mix designs being used throughout the country on the scratch coat and all may be good. The cement mixture is troweled on the lath using the hawk & trowel method to the desired thickness, making sure a full and level coat is applied around all lath accessory pieces. As material sets, the surface is scratched or scored. A scratching or scoring tool is used to groove the surface of stucco to provide a key for the bedding coat that the stone is set into. A proper thickness is required to have the thickness of material to accept the scoring. After the scratch coat sets the stone veneer can be applied according to the manufactures specifications.

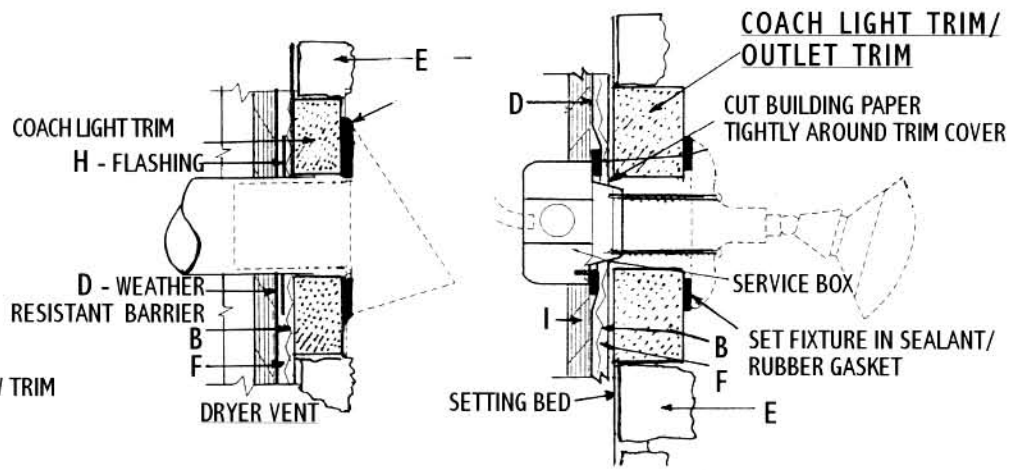
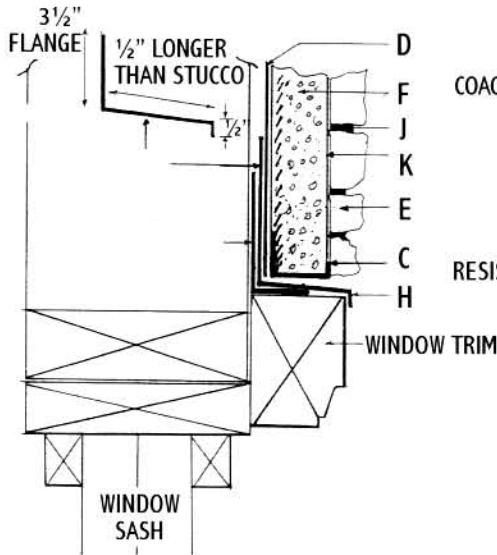
In some parts of the country, contractors use additives such as calcium chloride to accelerate the scratch/bedding coat mixtures. These accelerators allow for shorter durations between the scratch coat and bedding coats and are generally only used in colder climates. This saves time but causes havoc on the galvanized coatings on lath and accessory pieces by accelerating corrosion. Tempering of the mix should also be avoided since this weakens the scratch coat and setting bed. In very hot, dry, or windy conditions it is better to mix smaller batches which can be applied prior to the need for retempering. The additional water needed for tempering can greatly reduce the strength of the bonding coats.

A bonding admixture such as ACRYL 60, which is an acrylic polymer liquid, may be added to the scratch/bedding mixes. This additive greatly improves adhesion, cohesion, tensile, compressive and flexural strengths of cement based materials. These additives pay for themselves in improved workability of the mix and improved bonding qualities. After all backer rods, caulking and seals are in place with the above codes followed, the system should repel water. Moisture that may enter that wall cavity will weep out. The system should protect the walls for generations to come.

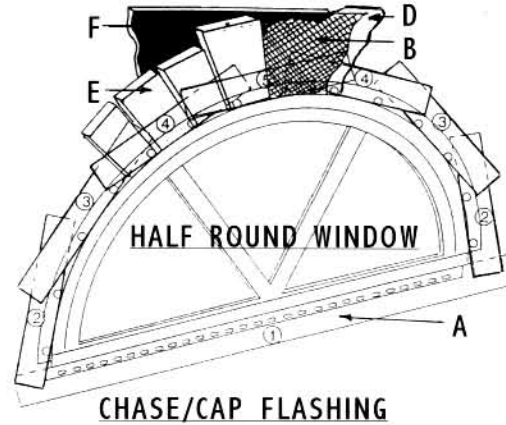
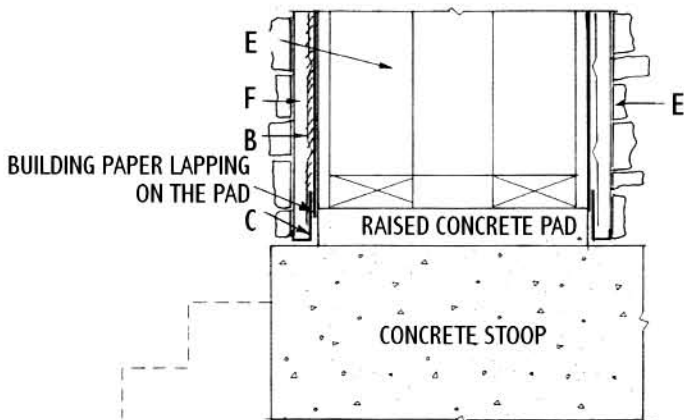
ADDITIONAL FLASHING DETAILS



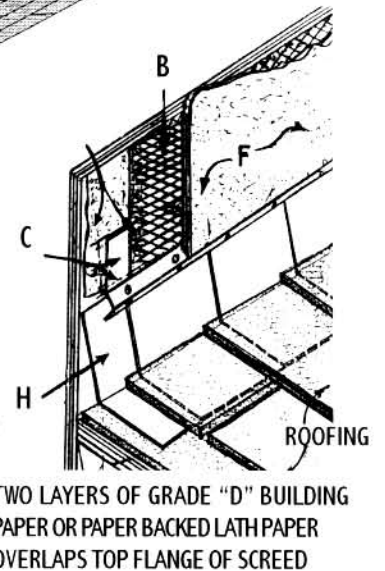
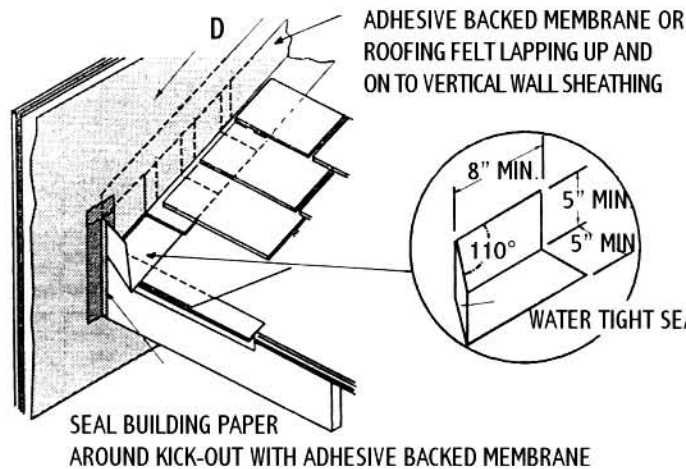
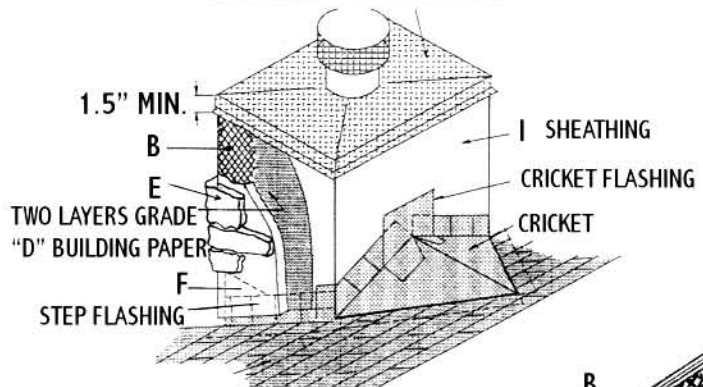
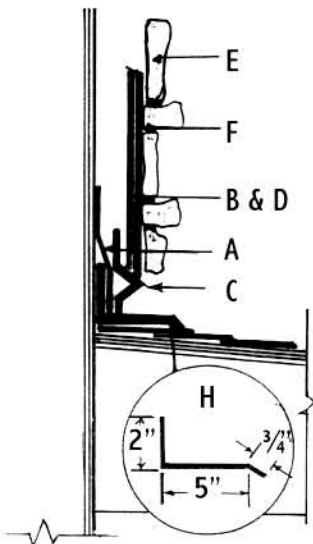
WINDOW HEAD FLASHING



COLUMN CONSTRUCTION



TRANSITION ROOF TO WALL



Authors of this installation guide, offer no warranties, implied, stated, or expressed regarding the information found in this guide, including techniques, construction methods, drawings or materials identified in this instruction guide. This is due to the fact that the authors cannot be present to inspect installation thus assuring exact adherence to this guide and to applicable building codes and ASTM C1063. To the best of their knowledge the information written is correct and up to date as of its publication date. 5/22/05