THE STUCCO INSTITUTE NEWS LETTER

Stucco Information by and for Stucco Applicators
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Concealed Barrier vs Face Barrier Water Management Systems for Stucco Cladding Applications

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Applicable for Code Climate Zones 1, 2 and 3

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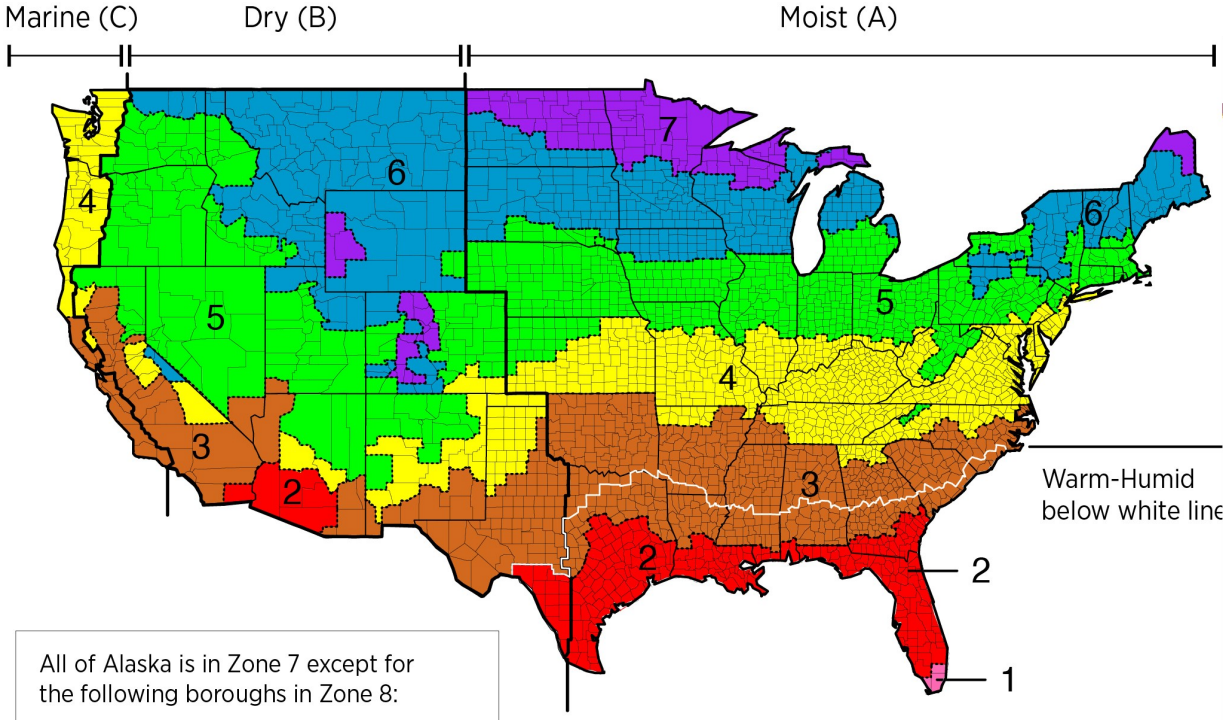


All of Alaska is in Zone 7 except for the following boroughs in Zone 8:

Bethel, Northwest Arctic, Dellingham, Southeast Fairbanks, Fairbanks N. Star, Wade Hampton, Nome, Yukon-Koyukuk, North Slope

Zone 1 includes Hawaii, Guam, Puerto Rico, and the Virgin Islands

DRAIN PLANE VS FACE BARRIER SYSTEMS

TABLE OF CONTENTS

PREFACE

Cement Plaster, simply referred to herein as "Stucco", by and of itself seems like a simple process; mix powdered Portland cement, sand, water and some lime or other plasticizing agent to make a smooth workable paste-like material. Trowel the wet paste on to a wall, and almost if magic, it hardens to become a finished wall or ceiling product. However stucco as a component of a functional building envelope involves many additional components, and many more complex procedures requiring a greater scope of knowledge. Attachment issues, bonding, flashings, curing, hydration, moisture vapor migration, water and vapor interfaces, appearances, color, ambient environment, maintenance and other construction components all must be considered and designed to work together. All must be installed competently and sequentially for a wall system to perform as a functional water resistant assemblage. This requires a lot of science, knowledge (of all processes involved), skilled tradesmen, and oftentimes competent prime contractor supervision of interrelating trades to accomplish.

Historically highly trained professionals taught apprentices the art and science of plastering / stucco through mentorship and on the job training. This training also included understanding (and looking out for) the other related construction trades' components and interfaces that ultimately would become part of wall's final water management system. It took many years to develop and understand the art of plastering as a whole.

Times change, means and methods change, and new products are developed. In today's high volume, fast-paced profession of construction, training and its acquired knowledge has greatly diminished as the labor pool quickly expands to meet the huge demand of the construction market.

Cement plaster when used as part of an effective building envelope system has always involved processes that were regionally evolved. However it is the diminution of this regional knowledge that has suffered the most - especially in the southern high wind, hot-humid regions. Although some national standards and processes were codified for regional applications - none were applicable specifically to these Climate Zones 1 and 2 regions. The local tradesmen were responsible for stucco's design and application. Over time, several publications were adopted into the International Code (basis for the Florida Building Codes) as code references. These reference standards were generally developed for Midwest and West United States - which are located within a far more arid region with considerably lower wind speeds. When originally developed (and still maintained), these standards acknowledged needed for regional modifications by inclusion of provisions such as; "unless otherwise specified" or "in accordance with the contract documents" to provide allowances for needed and necessary regional modifications necessary for a functional building envelope design.

We have advanced by code recognition of the various different climate zones and wind zones across the United States. These climate zones recognize the differences in humidities, temperatures, dew points and vapor drive by diffusion pressure inequalities. The quantity of conditioned air required for the different zones also involve the required dehumidification (sensible

heat ratio) for human comfort within the conditioned air areas. This all can affect the drying cycle, vapor migration and conditions of the building's envelope - of which stucco cladding remains a critical, integral component.

Advancement in wind research, and the calculations to determine the various pressures (positive and negative) imposed upon different areas of the building's external geometry have evolved. Positive and negative loads per square foot are obtained using wind speed, building classification, local surrounding terrain and other modifiers codified in the ASCE-7 standard. This has provided accurate determination of the needed quantity of fasteners based upon their selection and placement when securing lath, trims and accessories on exterior wall assemblies to resist their intended imposed loads.

For over half a century, South Florida had its own building code. The plastering and stucco provisions that were originally contained within it were evolved from a previous half century of prior experience, thereby providing installation methodology with 100 years of proven service. These stated methods served as a model for Florida stucco installers to follow - then, and still today. The adoption of the Florida Building Code on March, 01, 2002 renamed these provisions of the South Florida Building codes as "High Velocity Hurricane Zone" (HVHZ) provisions and relegated them mandatorily to Miami-Dade and Broward counties. They remained (then and now) able to be **electively** applied anywhere in Florida outside those counties.

The 2010 Edition of the Florida Building Code, in order to maximize harmony with the International Code, (which never contained the South Florida Building Code provisions) omitted the time-tested stucco and lath provisions. Reasoning indicated that since the stucco standards referenced in the Florida Building Code contained an "unless otherwise specified" provision - it thereby allowed the plastering trade to continue to use the South Florida provisions and remain code compliant.

In today's modern design and construction, one is hard pressed to find a resource for accurate, targeted, specific stucco installation requirements - especially within our region (Climate Zones 1 and 2). It is within this framework that the Stucco Institute decided to undertake the codification of these time tested and code compliant application processes, standards and knowledge sets that have long since evolved performing perfectly in these hot-humid, high wind environments.

We will attempt to explain, diagram and apply these historic principles that have proven effective over the many decades while discussing and integrating newly developed improvements.

Robert Koning
Director of the Stucco Institute

Concealed Barrier

vs

Face Barrier

INTRODUCTION

Stucco applied over substrates such as cement Masonry Units (a/k/a “Block Walls”), poured cement or similar cementitious or clay materials is accomplished by way of a “**direct bond**” . Simply stated, the cement plaster (a/k/a “Stucco”) bonds through suction and micro attachment of the cement paste to its similar substrate by force (usually pressing with a trowel) during the application processes. No other components, felts, housewraps or lath is needed unless a specific design consideration is being addressed.

Stucco however does not bond to wood or non-cementitious substrates. Wall studs (vertical framing members) may, or may not, be covered with non-structural wood sheathing such as; fiberboard, foamboard or structural panels. The studs or non-structural sheathing is then prepared to receive cement plaster by attachment of a metal or wire lath material to serve as a mechanical “key” - locking the cement plaster to the wall framing. This method of application is called an “**indirect bond**” or simply termed a “lath” application.

Some stud wall coverings (usually foam) can provide a continuous insulation barrier ***(See Figure 1A)*** but are not a commonly used in high wind regions or humid zones. In high wind or hot-humid regions, the exterior wall sheathing (usually a composite wood structural panel) must be covered with a material that will resist moisture intrusion by restricting moisture access to (and through) the sheathing. Since rot, rust and fungal contamination results from bulk water or high concentrations of vapor, the design goal is to prevent moisture (bulk water and vapor) from contaminating the sheathing or passing through the sheathing thereby gaining interstitial wall cavity access. Face Barrier Systems have been the historical method used to achieve these goals.

In high wind and high humidity regions, application of stucco cladding over wood sheathed construction (and resistance of bulk water and vapor transmission) has been done successfully since the inception of stucco itself. Historically, the application method, materials and processes were systematically taught to the plastering tradesmen—then methodically applied to countless numbers of buildings over many decades. All of which are still performing without any mentionable faults or failures. That success, however, was (and is) interdependent upon other tradesmen performing their work accurately and professionally—it is a systemic process.

There have been thousands of such stucco applications for over 50 years and countless more performed by others decades before the birth of the modern Florida Building Code. These stucco systems are still in service today, and are still being quietly applied by knowledgeable stucco tradesmen without any of the mentionable problems found on some “newer” applications such as; excessive cracking, blow outs, wall leakage, and isolated decay in localized areas.

CONCEALED BARRIER V. FACE BARRIER

So what is going on with these seemingly "newer" stucco applications that are reportedly failing?

Well, the current situation is a mix of half truths, legal abuse, incompetent/incomplete professional evaluations, untrained applicators, untrained superintendents, unmodified application processes, fenestration problems, deficient coatings and sealants, inability to understand code application meanings and exceptions, and lack of maintenance. As previously stated, it is a systemic process - failures are oftentimes systemic in sources. All of this can seem very complex—but really it's not once the basics are understood. Accordingly, let's stay with the basics for now.

First, let's review a little basic building code information. The building code requires that frame wall construction / sheathing be protected from water infiltration.

If the final covering is wood siding, wood shakes, wood "lap" siding, textured plywood (T-111), etc., this is accomplished by simply applying paint or waterproofing to all of the exposed wood or product and sealing (caulking) around any penetrations. If your painting or sealants are inadequate, fungal growth can develop and decay can begin. Decay usually will appear on the wood surface letting the owner know it is in need of immediate repair. Decay is not so evident with cement board cladding or stucco cladding since they themselves aren't subject to most fungal growth - the decay doesn't materialize on their surfaces.

DURABILITY BY DESIGN

Water intrusion (especially in vapor form) frequently remains hidden behind these latter assemblies showing no signs of decay on the surface. However, Infra-red cameras, or specialized meters can usually reveal these suspect areas.

If stucco cladding is the rigid wall covering system being employed in climate Zone 1 and 2 it becomes critical that we protect the wood wall and its sub-framing components from both bulk water and water vapor accumulation behind the stucco cladding. Stucco, by and of itself, is **NOT** considered to be a "waterproof" covering when used an exterior wall assembly. It is important when reading most code referenced stucco application standards or details, to understand that the stucco finish coat is **NOT** painted or coated. It is made into its own colored finish on the job or purchased in pre-blended color. No exterior coating or paint is intended.

Remember the cement used to make the stucco is available in both a gray or white color base, allowing powered dyes to be added, providing the ability to create a colored finish in virtually any hue desired.

This yields a fairly maintenance free (no painting required) finish - that is a desirable feature for most building owners. Globally, this is the most common installation methodology. ***(See Figures 1, 2 and 2A in Appendix)***

This method however is not used with frequency when the building is sited in a high wind region or

a hot-humid climate zone. High vapor transmission, effects of vapor on the finished color coat, problems with accessories, attachments and the universally understood principle that stucco is NOT to be considered "waterproof" as a system are a few of the reasons for its avoidance in these hot-humid, high rainfall, high wind areas.

So, back to protection of the wood wall and its sub-components when stucco cladding is applied.

There are 4 different methods of framed wall protection listed in the 2nd Edition of HUD's **"Durability by Design"** Manual. Overarching, these can be segregated into two categories; either they manage incidental water that gets behind the cladding by way of a water resistive barrier (hence the term "*Concealed Barrier System"*) or they prevent incidental water from getting behind the cladding by application of coatings and sealants that create a seal at the walls exterior face (hence the term "*Face Barrier System*").

These are termed by HUD as: "**Concealed-Barrier Method** and "**Face-Sealed Method**" respectively.

CONCEALED-BARRIER METHOD

a/k/a Water Management System or Drain Plane System

Refer to Figures 2 and 2A in Appendix "A"

Purpose: Protect the open framing or wall sheathing by applying a "Weather Resistant Barrier" (WRB), such as felt, housewrap, or other product over the face of the studs or sheathing prior to the application of the metal lath and stucco.

In addition to serving as a water management layer, this "drain plane" layer protects the frame wall from the elements until the stucco contractor can begin the stucco installation, and reduces moisture loss during the initial hydration process (curing of the wet stucco) especially when coupled with the required "densification" process (wet floating the curing cement base when hydration begins). *See sealed cladding system for densification details.*

After the stucco cures, the sole purpose of this protective barrier is to serve to "manage incidental water" that enters through the cracks in stucco, around penetrations, (remember these systems are not painted - they have an 1/8" thick colored finish coat of plaster) or for any vapor that might condense behind the stucco cladding. Any such minor incidental moisture is intended to migrate down the face of the water management paper and "weep" out at the bottom of the wall, by way of a pre-installed accessory called a "weep screed". ***(See Figure 2A in appendix)***

This method is a non-alterable requirement when using colored stucco as a finish since there is no paint or other waterproofing material applied to the face of the stucco to prevent water infiltration.

In other words, the drain plane must “manage” any minor incidental water entering the system at its bottom wall weep screed. But remember, this is a “weep” screed - not a “drain” screed. The quantity of water is intended to be extremely minor and infrequent.

This minor water management is easily accomplished in regions where average rainfall in August is <1” and relative humidity outside is less than inside humidities. Vapor drive is from the interior towards the exterior thereby aiding exterior wall drying after infrequent rainfall.

This colored “finish coat” methodology is the basis for the ASTM C 926 and C1063 Standards ***(see Appendix figures 2 and 2A).*** Globally, it is the most common application method since most residential framing is “open framing” or framing covered with “non-structural sheathing”. It is CRITICAL that the reader understand that sheathing referenced in the ASTM C926 and C1063 is NON-STRUCTURAL sheathing such as: styrofoam, asphalt impregnated fiberboard, homosote, therma-ply, etc... In other words, it simply means “*solid backing*” (as opposed to “open” wall cavities) to a stucco applicator.

So, to recap this important point, remember, in the ASTM C926 and C1063 standards, “sheathing” means any kind of rigid or semi-rigid backing over open studs. It does NOT mean structural panels like we use in high wind regions such as found in Climate Zones 1 and 2 .

True, structural panels will serve as solid backing - but solid backing will NOT serve as a structural panel because solid backings are non-structural. The gate does not swing both ways

Accordingly, the use of structural panels, entirely covering the exterior wall, oftentimes used to resist both shear and uplift, is a two edged sword - it provides new opportunities for stucco applications but poses additional challenges to our stucco methodologies. Hence, our historic and necessary modifications.

FACE SEALED (BARRIER) SYSTEM

a/k/a Face Sealed, Sealed Cladding, Face Barrier - ***(Refer to Appendix Figures 3 and 3A).***

Purpose: Protect the framing by preventing any water or excessive vapor from passing through the stucco cladding.

The system starts with the same Weather Resistant Barrier (WRB) used in the concealed barrier because the wall must still be protected from moisture until the stucco contractor arrives, and the barrier is still needed to aid in even hydration by reducing water loss during the curing and densification processes.

However it is at this point that the methodology changes purpose. Using the face barrier system, the wall surface of the wet cement plaster is prepared by “V” grooves at major stops and penetrations that provide sockets for sealants. The cured stucco, and all grooves, are then

"primed" (coated with the required primer) which is usually the same product selected for the final coat. All penetrations are properly sealed with a quality exterior grade sealant ("V" grooves and/or backer rod gaps and fillets are tooled in place with spatulas). Then, a top coating of high grade, low perm, exterior waterproofing coating (paint), i.e., DRYLOK Extreme, DOW, etc.., is applied to achieve the system's final mil (thickness) requirement which is usually 12 - 16 mils DFT (dry film thickness) as a system (both coats together).

When installed using an APPROVED waterproof coating (paint) system, the coating and sealant covering system will not only prevent the passage of bulk water, it will virtually bar the passage of water vapor, while its elastomeric properties will bridge anticipated minor cracking and movement of the stucco assemblage caused by normal substructure or hydration stresses.

This method is used almost exclusively in climatic regions with high annual rainfall or high annual humidity (such as climate zones 1 and 2). Its purpose is to prevent bulk water infiltration and inhibit the passage (and accumulation) of humidity behind the stucco assembly. When night sky radiant heat loss or other cooling factors create condensing temperatures behind the stucco façade, with a face sealed system, there will be little or no reservoirs of saturated vapor to condense behind the stucco cladding, behind the weather resistant barrier, on the lath laps, or on fenestration (window) sub-frames.

History of These Two Systems and Their Regional Application

As previously stated, the ASTM C926 and C1063 standards referenced by our code for stucco and lath respectively, were adopted from the international codes, originally developed for open framing application, designed to use no backing (or non-structural backing), with a colored finish coat, and applied in arid regions with a low wind velocities with lower rainfall and humidity. Since these regional properties represent the majority of global applications, it works for most regions. Accordingly, the standards do not factor regionally modified systems, or any other types of acceptable modified stucco installation methodologies such as the others listed in the Federal Standard; "**Durability by Design**".

Where conditions, systems, climatic adjustments or components are beyond the scoping of the referenced standard for stucco or lathing, such as fastener spacing, face barriers, wind speed, wall component loading, exposure protections, etc... - applicators, specifiers, and designers need to modify the standard's installation techniques using the "*unless otherwise specified*" provision built into the standards to accommodate necessary changes due to these regional, climatic or component differences.

Prior to the recognition (and eventual codification) of differing climate regimes and wind speed regions, historic methodology and protocols for

installing a stucco systems over solid wood structural panels used the face barrier method throughout the code development processes in Florida's history (beginning in the early 1970's). This Face Barrier Method was developed before any of these systems were assigned official code names or design monikers.

This face barrier method is considerably different in concept, purpose and installation methodology than the recently re-introduced (and often failing) concealed barrier (drain-plane) concept. Although both are fully code compliant, either through prescriptive text or through allowable changes to the prescriptive text using the "unless otherwise specified" provision, only the properly applied face barrier system has the proven track record of performance in Florida's climate.

"OLD SCHOOL" INSTALLATION METHODOLOGY FOR OUR SOUTHERN CLIMATE:

So, here are the Climate Zone 1 and 2 regional installation methodologies, materials, concepts, circumstances and sequences *taught to us by our regional plastering forefathers* that have worked.

Historically:

1. Metal lath was installed over solid planking or structural plywood panels. *(Note: OSB was in its infancy and although a structural panel, it has significant different moisture management properties, i.e., it resists the passage of vapor and does not substantially pass more moisture vapor as its moisture exposure increases. Simply put, it does not promote self-drying by allowing additional quantities of moisture vapor to pass through it as its mass absorbs more water volume. Additionally, its dimensions change as it absorbs water and most importantly, this change is largely in its thickness rather than breadth. This by-and-of-itself, is not a sole cause, but is a significant contributor to failure when using a drain plane system. See other articles regarding Moisture Effects Behind Stucco Walls.*

2. Metal lath was installed over a weather resistant barrier (just as today). However, the nailing pattern and installation concept was significantly different. The lath was nailed vertically and horizontally using an ≈ 8" on-center nailing pattern - each vertical row staggered 8" from the row in the sheet below it. This yeilds an average of ≈ 2-3 fasteners per f^2 , and provided adaquate "keying" of the lath

Note: It was taught that this was necessary for wind withdrawal, and to lock the assembly to the substrate for additional strength, i.e., to affix the lath/stucco assembly and the structural panel / framing so they become monolithic and acted in concert. The sheathing resisting contraction (shrinkage) during hydration and the stucco / metal lath resisting expansion after hydration cure. Testing later conformed the accuracy of this pattern.

3. It was taught to keep the system mudded "flat" to the wall to avoid any creation of pockets or voids which could allow moisture or vapor (either of which could contain salts) from collecting behind the lath / plaster assembly which could later collect or condense.

4. The wet cement was "pushed" (as we applied the wet stucco) through the wire lath using an "up-down-up" motion of our trowel. It was taught that this was one of the most important steps. We were taught to watch (and ensure) that the force of our hand trowel caused the wet stucco to fully key the lath. Correctly done, a slight "bulge" or "ripple" in the previously applied trowel area will appear at the toe (front) of your trowel. The goal was to eliminate any and all voids or spaces behind the lath. Those voids or spaces would be places for moisture or vapor to collect - which was to be avoided at all costs . If any voids were left or created, rusting of the lath and delamination of the stucco plane could be imminent within a few years *(remember we were using ungalvanized, un-furred, asphalt coated (expanded) metal lath at that time. And those installations are still there performing!).*

Note: Within the last 15 years or so, this application changed (for economy) from the hand "hawk -and-trowel" method to the use of "slickers", which are 36" long x ≈5" wide metal strips made to "level" plaster after hand application.

Using slickers, the stucco can be rapidly applied, but the required hand pressure is lost and the stucco application can become light and honeycombed. It will attain its requisite strength, but will not resist the passage of water or vapor as a hand-applied application would and laps are frequently inadequately embedded.

5. It was taught that we had to "densify" the second application coat. This is "wet" floating of the stucco when hydration is just beginning. The purpose was not to provide a "sand" or "rubbed" finish whatsoever - it was to replenish the body of cement plaster with water thereby allowing a slower, more uniform hydration "cure" and to densify the body even further (addition wetting of wall may be required).

Newer (and frequently failing) systems omit this step. Instead they "steel trowel" (after application with slickers) the surface flat, preparing it for the application of the finish texture. Using a hand trowel over plaster applied with a slicker can cause micro-fracturing within the now fragile (and hydrating) mass. It does nothing to aid densification, and does nothing to recharge or temper the hydrating process.

A "V" cutter was used to make a "sealant socket" and "brushed" the trough created in order to aide the sealant application at every major penetration (vents, windows, door jambs etc...). Today, its common to apply "beauty beads" of caulk for painting purposes. This, of course, is most often

insufficient for waterproofing serving as a face barrier system.

6. All unnecessary accessories like corner beads and control joints we eliminated. All corners, beads, returns, etc.. were manually rodded for corner strength and water direction slope. Control joints were eliminated since they do NOT control cracking in common residential construction, and they are a frequent source of water and humidity entry; not-to-mention their primary purpose was for panelizing colored (non-painted) stucco applications.

Note, Control Joints are needed in large wall areas as panel screeds to help minimize face irregularities - but residential walls are rarely large enough to warrant them.

7. The exterior walls were "Coated" and "Sealed" according to the manufacture's requirements for a "waterproof" application - we did NOT "Paint and Caulk". The exterior coating (quality exterior water resistant, low perm paint) was applied by using a heavy nap roller and the coating was applied to the correct DFT mil (thousandths of an inch) thickness - ≈ 14 mils. Brushes were used to trim and prime the "V" troughs and sealants were applied and "tooled" with a sealant spatula.

Voila! A system that doesn't crack (minor cracks may occur, but they are bridged by the elastomeric properties of the coating). The system is water and largely air tight. It resists the passage of bulk water and water vapor. Without behind the wall reservoirs of salt laden humid air, the condensing temperature attained by night sky radiant heat loss is more difficult to achieve, (since the stucco body and wall panel are not separated by an air barrier) and once attained, that temperature will not promulgate condensation since the volume of vapor is miniscule.

What Changed and Why

Newer consultants (circa 2000 forward), operating out of their field of expertise, began to blindly apply the ASTM C926 (stucco) and C1063 (lath) standards "as-written". Wrongly assuming that these provisions are fully applicable to Florida all applications in all regions and windspeeds.

They failed to factor the great importance of key provisions in those referenced documents: the provisions that say "unless otherwise specified". Those provisions have been in both the standards since their beginning.

These "unless otherwise specified" provisions allow (and allowed) the regional trained plasterers and knowledgeable specifiers / professionals the ability to modify the standards to fit their regional climate conditions and the unique conditions of each and every job itself. This was (and is) necessary to build systems that work globally.

The "un-informed" professionals further failed to understand that the western developed standards (and their provisions) were prepared for applications over "open" framing, or framing cov-

ered in non-structural sheathing such as foam board or fiberboard. Furthermore, they failed to factor that the standard was developed for the use of colored stucco.

Today, some self-professed stucco experts, many of whom have never been a plasterer or a plastering contractor, continue to claim “blind allegiance” to the standard, yet allow: application by “slicker”, fail to require densification of the stucco, deliberately create drainage spaces, add un-necessary accessories and most importantly, allow exterior coatings to be applied at thicknesses of 3 to 5 mils in lieu of the 12 - 14 mil requirement.

They fail to require “V” Groove sealant sockets to separate dissimilar materials, allow beauty beads in lieu of sealants (since there are no “V” Grooves to seal), allow cornerbeads that admit both bulk and vapor moisture behind the systems (unless carefully and specifically bedded), specify control joints doing the same, and require “weep-screeds” purposed to “weep” water out of the system - then require them to be covered over with paint making them worthless as a “weep”.

Special detailing and tooling is necessary to accommodate drain plane and face barrier interfaces, weeps and all other such termination points. Unless otherwise carefully detailed and performed, their use is relegated to use as a screed and/or a transition from frame to block interfaces due to plaster thickness changes.

Commodity window frames are a common source of water behind the stucco and the weather resistant barrier. Failure to remediate the corner frame seals will most likely allow water behind both components.

Recently a contractor tested new window corner seals from supplier delivered window assemblies. The “out-of-the-box” leakage rate was very significant at the lower corners. We cannot overlook this important step (further details online at the stucco institute).

For these reasons and more, the drain plane and painted stucco systems are failing. Even recently de-skinned (torn-off) systems replaced with new supposedly “compliant” ones are beginning to fail (other systems such as cement board lap siding is suffering the same fate for similar and other reasons).

Designing a Workable System

Either design it using all information and changes necessary for Florida’s unique environment **or** simply follow the details (including CAD downloads), protocols and procedures contained in the Sealed Stucco Cladding Manual, free at the Stucco Institute.

This is not “new” system information or methodology. It is the “old” tried and true stucco methodology that has been installed for a century or more, using the Miami-Dade High Velocity Hurricane Provisions as its base.

Yet, some building professionals are not familiar with it, and some building officials are unclear about the "unless otherwise specified" provisions of the referenced standards, (if specified otherwise, then the change **IS** code compliant by the text of the standard).

So to eliminate any confusion and eliminate any argument, we tested the age old, code accepted systems according to the new code specified testing methodology: the ASTM E330, ASTM E331 and ASTM E72 so they were fully code compliant and, although not needed, obtained Florida Building Code Product Approval. (posted at stucco institute.com)

With these certified approvals, this system can be installed the "Old-School" way, and if applied according to the required protocols, it will perform without fault or flaw.
(www.sealedcladdingsystem.com)

Conclusion

It never fails to amaze people when they see this "old" installation methodology and the final product; They ask; How can a 45 ft. long x 10 ft. high wall not crack without control joints? How can these corners be so perfect and solid without beads? How can this system work without open weep screeds? How can that gable function without horizontal joints? Why is this not cracking after 3 years and two hurricanes? How is this all possible on all of these buildings? ***(see 35 year old stucco performing perfectly with no control joints or weep screeds on line at stucco institute.com)***

I think old plasters would look at them with a confused stare and say: "How is it **not** possible? It will always perform this way if you install it correctly."

So it's true, the stucco profession is more of an art than a science.

Owners MUST be told of their responsibilities for exterior maintenance and informed of the consequences if they do NOT maintain the exterior. If initial application was a hybrid drain plane / painted (with airless to 4-5 mils) surface and penetrations sealed with beauty beads, this maintenance will require that the coatings / sealants be replenished around the 5 year mark, Including window corner remediation.

If specifically (and properly) designed as a true face barrier system, it should be checked at the 5 year mark but it is not uncommon for the initial replenishment to be extended to, or beyond, the 10 year mark, especially if the window corners are initially sealed.

So, drain plane or face barrier - it's your choice, both are code compliant - but one has proven to be best methodology for Florida's Climate Zone 1 and 2's environment.

Either way, this problem is **ours** to cure, building officials cannot inspect performance (nor is it in their wheelhouse to do so) so it is up to us to en-

sure proper performance.

Stucco and Waterproofing (painting) contractors must stop treating this business as a commodity and return to treating it as a trade. Builders must demand qualified plastering and waterproofing contractors, verifying the products are installed properly, and “uninformed” experts need to stop specifying systems they are not intimately and historically familiar with.

Maybe someday we will get a certification or license in place for these professions with meaningful prequalification and testing competencies.

---- End ---—

Respectfully,

Bob Koning

Director - Stucco Institute

APPENDIX A - GRAPHICS

Open Framing *a/k/a* (open stud construction). Fenestration (windows/doors) directly attached to the vertical wall framing members (studs). Vertical panels shown are for modern seismic resistance. This type construction is the predominant method in the USA and abroad. It is ready for lath & stucco "as-is".

The open studs may be covered with a "backing" material (non-structural sheathing). If they are fully covered (top to bottom) with foam boards, it is referred to as a continuous insulated wall (see Figure 1A below).

Figure 1

Continuous Insulated Wall Sheathing. This "backing" sheathing remains NON structural, so lath attachments must remain in the vertical framing members (studs) and the thickness of the non-structural sheathing needs to be added to the required fastener penetration length.

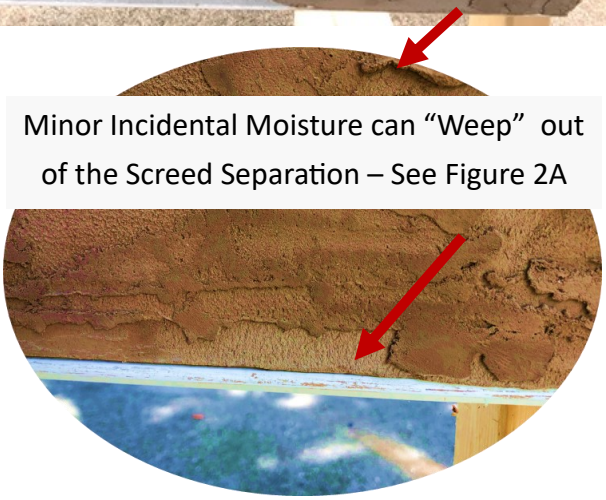
Figure 1A

APPENDIX A - GRAPHICS

FIGURE 2

Concealed-Barrier Method a/k/a Drain Plane or Water Managed System – Used with Colored Cement Finish – ASTM C926 Method. Note: You Cannot PAINT the INTERFACE! – It must be allowed to drain. 3/4" Accessory Weep (system thickness) = 7/8" System (after 1/8" Color Coat is applied over cured brown coat)

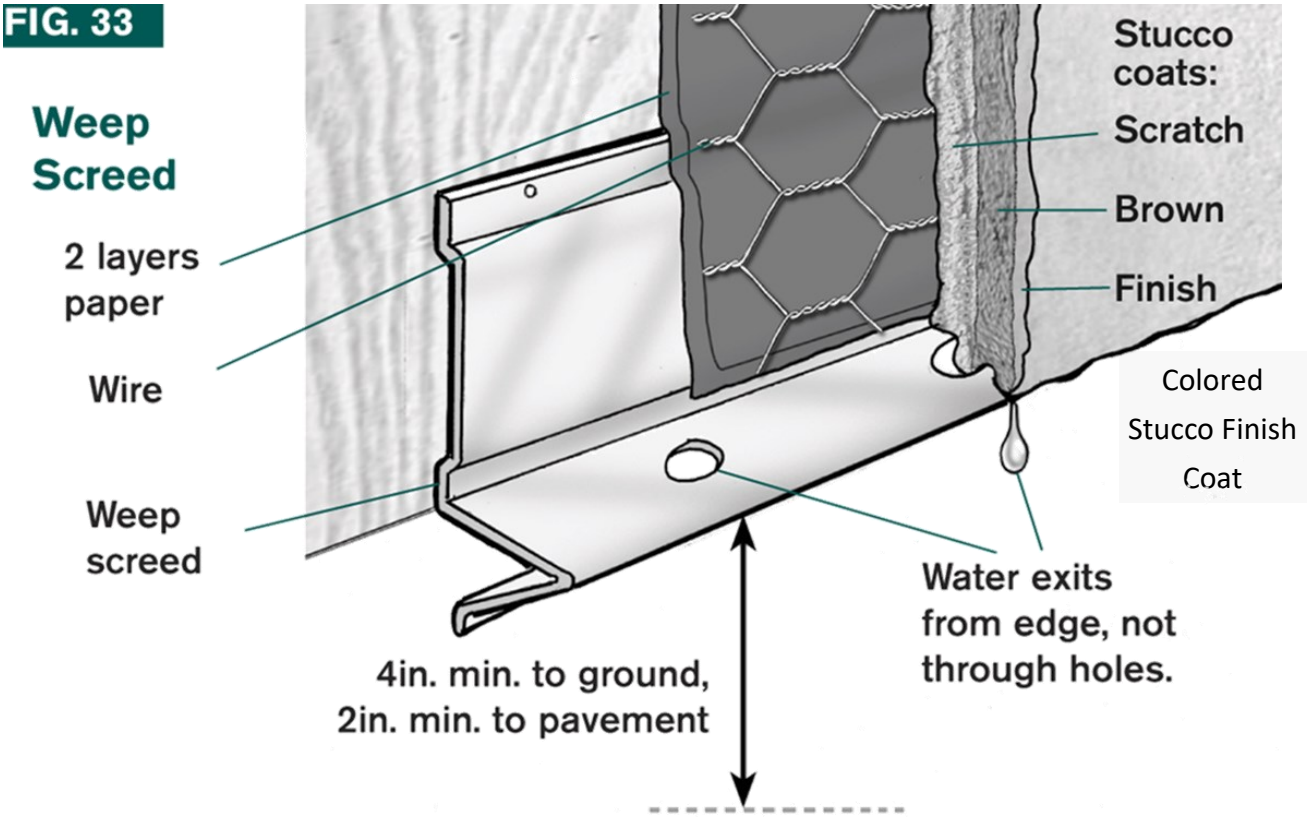
Typically used over Open Framing or Structural or Non-Structural Sheathing. White House Wrap folded to reveal sheathing for example. If one ply of house wrap is used, it goes over vertical weep flange – if two ply water management is used, the vertical is "sandwiched" between the two layers. If second layer is used as a bond breaker, the primary house wrap and bond breaker extend over the flange



APPENDIX A - GRAPHICS

FIGURE 2A

From the International Code Council
Weep Screed – Weeps at Separation – Not through "Keying" Holes



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DESIGNED FOR COLORED STUCCO FINISHES – NOT TO BE PAINTED!

HOUSE WRAP

APPENDIX A - GRAPHICS

Face Barrier System - Water Managed at Exterior Coating and Sealant Interfaces - No Weeps Needed - Virtually Vapor Impermeable

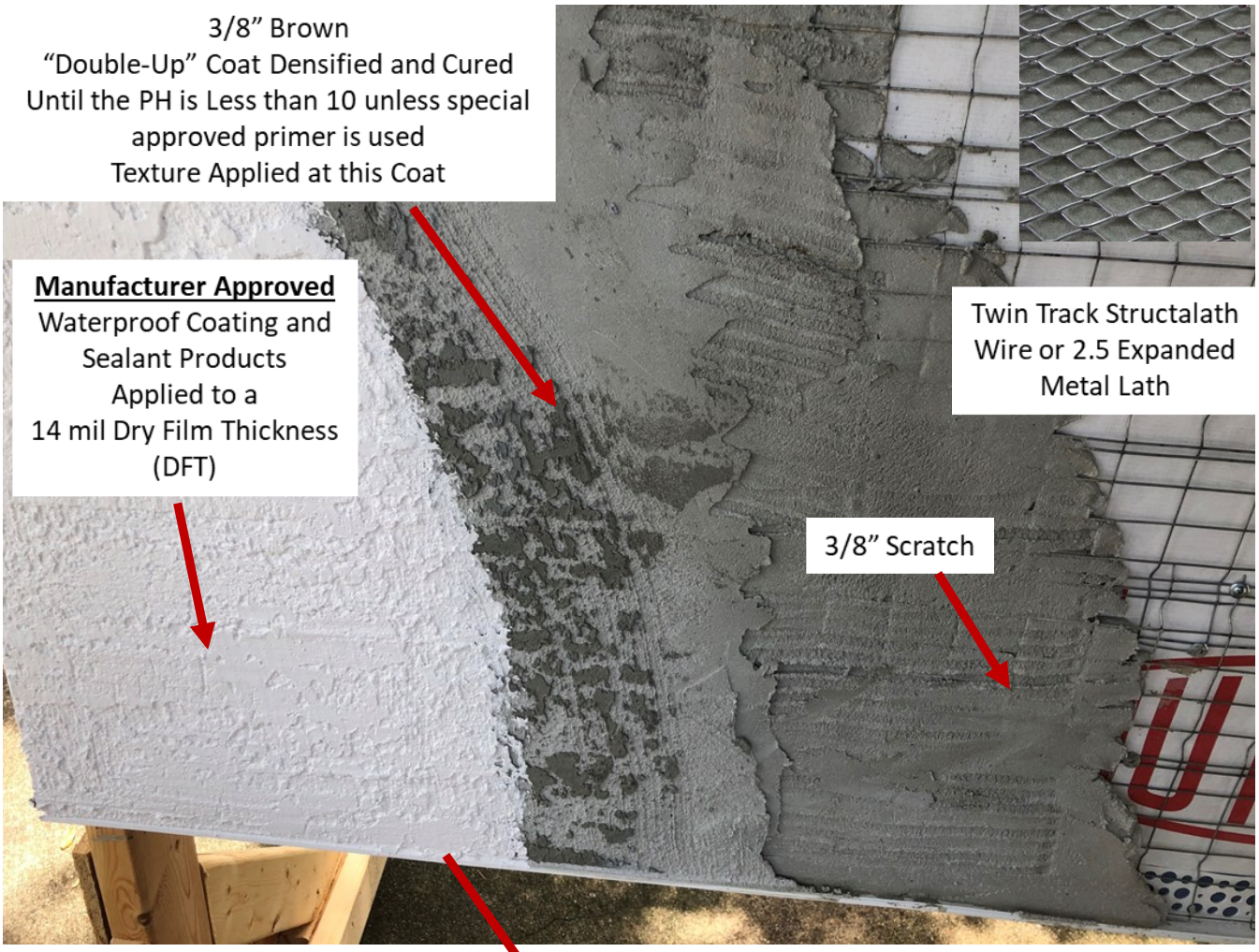

FIGURE 3

14 mil Coating must completely SEAL this interface. Accessory serves as a "screed" for stucco installation only. No weeping outlet needed for face barrier system.
A two-piece screed can be designed to allow minor weeping - but its interface must remain un-painted – See details in sealed cladding system

FIGURE 3A