CITY OF FORT LAUDERDALE

City of Fort Lauderdale
Historic Preservation Design Guidelines
Masonry, Stucco & Concrete

Stucco is a versatile material that is used in a variety of architectural styles, such as this Arbreu designed house, now used as offices.

PURPOSE

These *Guidelines* were prepared to assist property owners with information when considering the repair, alteration or installation of masonry, stucco and concrete. It is not intended that these *Guidelines* should replace consultation with qualified architects, contractors, the Historic Preservation Board (HPB), City Staff and applicable ordinances.

These *Guidelines* were developed in conjunction with the City of Fort Lauderdale's Historic Preservation Board (HPB) and the Department of Sustainable Development (DSD). Please review this information during the early stages of planning your project. Familiarity with this material can assist in moving a project quickly through the approval process, saving applicants both time and money.

The DSD Staff is available to provide informal informational meetings with potential applicants who are considering improvements to their properties.

Additional *Guidelines* addressing other historic building topics are available at City Hall and on the City's website at www.fortlauderdale.gov. For more information, to clarify whether a proposed project requires HPB review, or to obtain permit applications, please call the DSD at (954) 828-3266.

EXTERIOR MASONRY, STUCCO & CONCRETE

For the purposes of these *Guidelines*, exterior masonry includes stone, brick and stucco, as well as concrete and concrete block. Historically, a building's exterior masonry surface serves both visual and functional purposes.

Visually, it is an important design feature that establishes the rhythm and scale of a building. Historic exterior masonry:

- Acts as an important design feature, helping to define a building's architectural style
- Establishes a building's scale, mass and proportion
- Adds pattern and casts shadows on wall surfaces

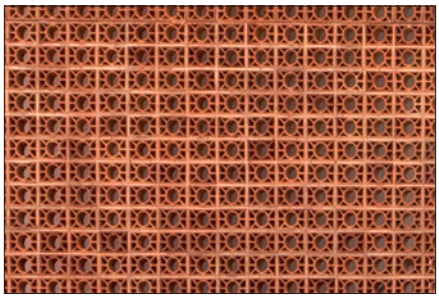
Functionally, historic exterior masonry and concrete typically acts as the principal load bearing system of the building, as well as its "skin", shedding water and deflecting sunlight and wind. Historic exterior masonry:

- Acts as a principal element in the structural system
- Establishes a weather-tight enclosure, providing protection from rain, wind and sun

Masonry and stucco cladding can be found at many of Fort Lauderdale's significant historic structures.

EXAMPLES OF MASONRY AND STUCCO IN FORT LAUDERDALE

20th Century Brick - A hard, dense, fired-clay, regularly shaped building component; sometimes with a glazed surface; used primarily in walls, piers, foundations and exterior pavers.



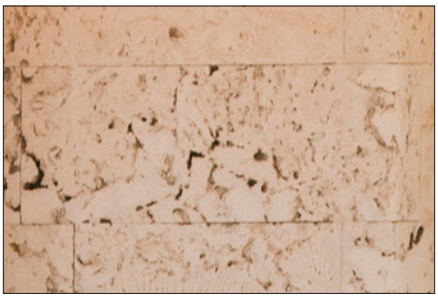
Terra Cotta - A fired-clay, non-structural building component, often with colored glaze, used for decorative, ornate details and wall finishes.

Concrete Block - A structural building material made by mixing water, cement, sand and aggregate, placing the mix in forms and hardening; commonly used for foundations, walls and piers.

Textured Concrete Block - A structural building material made by mixing water, cement, sand and aggregate, placing it in forms and hardening; commonly used for foundations, walls and piers, popular in the early to mid 20th century.

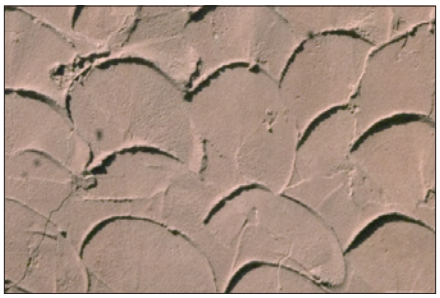
Textured Concrete Block - A structural building material made by mixing water, cement, sand and aggregate, placing it in forms and hardening; commonly used for foundations, walls and piers, popular in the early to mid 20th century.

Rusticated Concrete Block - A structural building material made by mixing water, cement, sand and aggregate, placing it in forms and hardening; commonly used for foundations, walls and piers, popular in the early to mid 20th century.

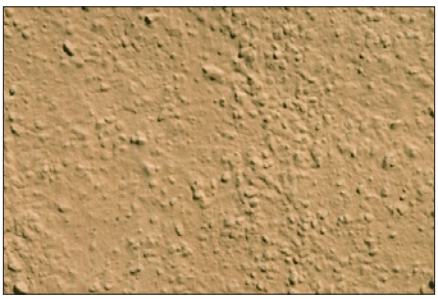


Limestone - A sedimentary rock; typically oolite or keystone in Fort Lauderdale, used for building walls, window sills and lintels, ornamental stone trim, sculpture and for producing lime.

Textured Stucco- A distinctive, raised stucco finish used in buildings designed by Abreu.



Trowel Finish Stucco - Highly stylized finish with pronounced ridges and shadows from trowel application.



Dash Finish Stucco - Textured finish with pronounced aggregate at the surface.

Scored Stucco - Smooth finish with scoring to simulate stone joints.

Spanish Stucco- Relatively flat textured finish with an aged appearance.

COMPONENTS OF MASONRY WALLS & PIERS

Masonry walls, foundations and piers were historically constructed of bricks, stones, concrete blocks, or hollow clay tiles stacked on top of each other. The individual units were bonded by mortar, which served to hold the masonry units together and fill the gaps between them. Historically the masonry was load bearing, meaning it carried its own weight to the ground as well as the load of other building elements such as walls, floors and roofs.

While uncommon, there are several brick buildings in Fort Lauderdale. The Shepard Building represents one of the oldest brick buildings in the City. It includes several decorative brick details including: horizontal banding between the first and second floors; pilasters and piers; corbelling below the main cornice; and projecting trim framing the top of the second floor windows with bracketed projecting sills.

BRICK

Brick is a relatively rare masonry material in Fort Lauderdale. Bricks are made by inserting clay into a mold and then firing or baking the brick at very high heat. The result is a standardized unit, generally 8" by 4" by 2-1/4" in size. The color of brick can vary, but red is by far the most common. Other colors include yellow, orange and brown. The color is determined by the chemical and mineral content of the clay, and the temperature and conditions of the kiln or oven. Similar to the color, the strength or hardness of brick is determined by the clay ingredients and the firing method, but it is also affected by the way the brick is manufactured.

TERRA COTTA

Similar to brick, terra cotta is made of fired clay, often used for decorative ornamental details and wall finishes. It can have the color of red or yellow brick, or be fired with a clear or colored glaze. Terra cotta became popular in Fort Lauderdale in the middle of the 20th century, and was often installed as a non load-bearing wall screen material at Mid-Century Modern buildings and site walls.

CONCRETE MASONRY UNITS

Concrete masonry units (CMUs), also known as concrete blocks, are similar to bricks in that they are formed structural elements. They are made by mixing water, cement, sand and aggregate, which is placed in forms to harden. The blocks are typically 8" by 8" by 16" in size and typically include voids. Similar to brick, they are typically stacked and bonded with mortar. They are most often laid in a running-bond pattern.

Concrete blocks can also be formed in decorative molds that create varied patterns when used in the construction of buildings and structural features such as walls or screens. In some cases these building and structural elements are structural, weight-bearing elements, and in others they are purely ornamental.

Stone veneer, such as this oolite example, consists of thin slabs of stone that are "hung" from an underlying structural system.

STONE

Stone buildings are relatively rare in Fort Lauderdale, with the most common type being stone veneer, which became popular in the mid 20th century. Stone veneers, which are thin slabs of masonry, (typically oolite or keystone, a local limestone) are "hung" on an underlying structural support system. Fort Lauderdale does have some examples of traditionally laid stone, typically as an accent element, such as the chimney associated with an Arts and Crafts house.

MORTAR

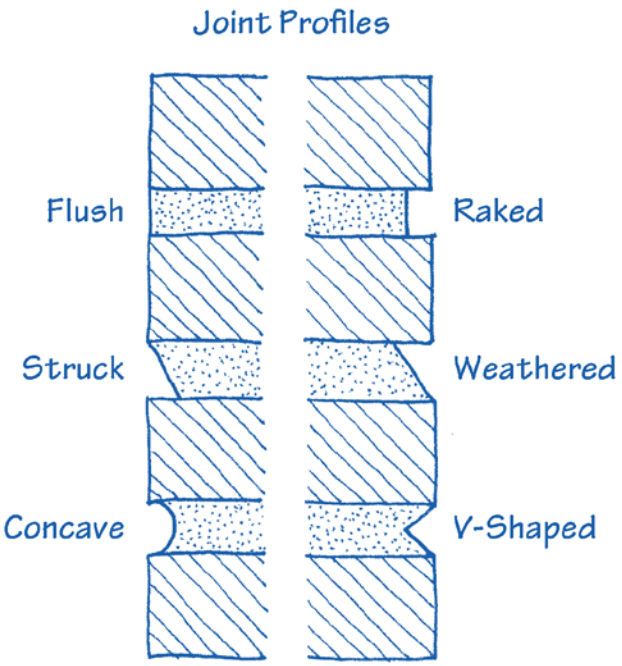
Historically, mortar was generally composed of a few ingredients: sand, lime and water, and possibly additives such as animal hair or oyster shells. Starting in the mid 19th century, a small amount of Portland cement was added into the mix to improve the workability and hasten the setting time. In the early 20th century, the amount of Portland cement in mortar was increased, resulting in harder mortar corresponding with the manufacturing of harder bricks and concrete block.

Sand is by far the largest component of mortar and defines its color, character and texture. Since masons would use products that were readily available, sand from historic mortars tended to have weathered, rounded edges and was available in a great variety of grain sizes and shades of white, grey and yellow. Most sand available today has sharper edges from being mechanically broken and is sieved into standard sizes. As a result, mixing sand colors and sizes might be needed to match historic mortar.

Lime and Portland Cement act as binders for the mortar. High lime mortar is soft, porous and varies little in volume with seasonal temperature fluctuations. Because lime is slightly water-soluble, high-lime mortars can be self-healing and reseal hairline cracks. By contrast, Portland cement can be extremely hard, is resistant to water movement, shrinks significantly upon setting and undergoes relatively large thermal movements. Portland cement is available in white or grey, and the two colors can be mixed to achieve a desired color. It is possible to add a small percentage of Portland cement to a high lime mixture to improve workability and plasticity. The proportion of Portland cement can generally be increased when repointing 20th century buildings or structures such as most of those found in Fort Lauderdale.

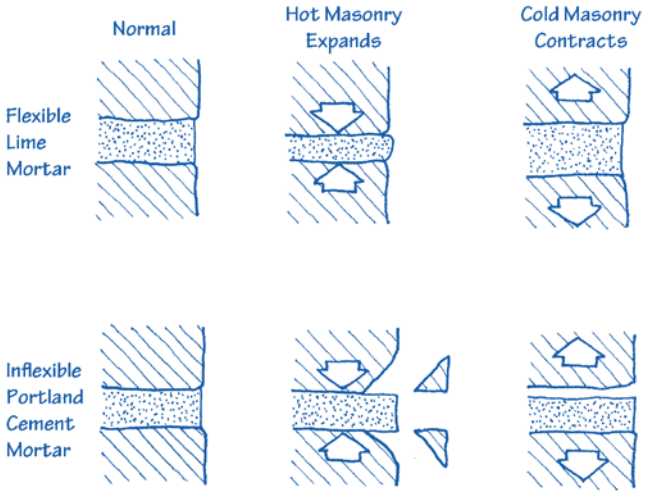
Water used in mortar needs to be clean and free of salts, harmful minerals and acid. If not, it can break down the mortar and adjacent masonry and discolor finished surfaces.

Additives historically included shells, animal hair and clay particles. To duplicate the character of historic mortar, it might be necessary to include additives to match the original. (Refer to *Page 8* for mortar analysis information.) It should be noted that there are several types of chemical additives available today including those that increase or reduce the setting time or expand the recommended temperature installation ranges. The use of newer chemical additives is strongly discouraged unless they have been specifically tested over an extended period of time with similar historic materials to the proposed installation conditions.



There are numerous joint profile types, with each producing different shadow lines and highlights. When repointing an area of masonry, it is important to tool mortar to match the existing joint profile for a consistent appearance.

MORTAR HARDNESS & MASONRY



Temperature changes cause masonry units to expand when heated and contract when cold. The expansion and contraction of the masonry units results in compression and flexing of the adjacent mortar joints.

Lime based mortar is pliable and is more likely to compress and flex through temperature cycles. If properly installed, it should also be softer than the adjacent masonry.

Portland cement based mortars are significantly harder than lime based mortars and far less elastic. In addition, cement mortars tend to be substantially harder than historic masonry. When masonry units expand in warm temperatures and when heated by the sun, they press against the harder cement mortar and tend to spall at the edges. During colder temperatures, masonry units tend to pull away from harder mortar, resulting in open cracks that can allow moisture penetration.

Garden walls are more likely to have problems since they are exposed to the weather on both sides and are not necessarily as well maintained as building walls. This example exhibits open joints, displaced concrete block, peeling paint and staining from moisture along the sidewalk.

TYPICAL CAUSES OF MASONRY PROBLEMS

The principal components of most unit masonry walls are stone, brick and, in Fort Lauderdale, concrete block and terra cotta. Mortar, which is located between the bricks, stones, blocks, or terra cotta, bonds the individual units together, transfers the load through the masonry and provides a weather-tight seal at the exterior surface. Many problems associated with historic masonry result from the failure to keep masonry mortar joints in good repair. Deteriorated mortar joints can allow water to penetrate the masonry and cause severe interior and exterior damage. There are five principal causes of mortar joint failures:

Weathering of mortar occurs when rain, wind and pollution eat away at softer historic mortar over time. (Historic mortar was purposely softer to allow the masonry wall to expand and contract with seasonal temperature changes.)

Uneven Settling of masonry walls, hurricanes and seismic events may result in cracks along masonry joints or within masonry units.

Poor Original Design and Materials can cause ongoing problems if the masonry and mortar are incompatible or inappropriate for their installation location, or if the masonry does not properly shed water.

Temperature Cycles can cause deterioration in Fort Lauderdale's climate, which is subject to extreme heat in the summer and cooler temperatures in the winter. Temperature cycles can cause masonry and mortar to expand and contract at different rates, breaking the masonry's bond with the mortar. This situation can be much worse if moisture enters an open joint, potentially popping out the surface of the mortar and the masonry, resulting in spalling.

Insufficient Exterior Maintenance refers to potential areas that might cause water to enter a masonry wall and contribute to its accelerated deterioration. Potential areas of concern are: poorly functioning gutters, downspouts and flashing; rising damp; standing water at foundations; water splashing back off paving and hard surfaces onto walls; or water-entrapping vegetation such as ivy or shrubs on or near masonry walls.

DEFINITIONS

Efflorescence: Water-soluble salts leached out of masonry or concrete by capillary action and deposited on a surface by evaporation, usually as a white, powdery surface

Spalling: Chipping or flaking of masonry

The dark staining and vine growth on this brick wall surface is likely due to moisture in the wall. Removal of the vines and shrubs immediately adjacent to the building will increase ventilation of the wall surface and allow it to dry-out. The wall can then be cleaned to remove the dark staining.

WHAT TO LOOK FOR

It is important to identify masonry problems as early as possible to minimize potential ongoing damage. This is particularly true of masonry that is exposed to a water source. Once water is permitted to penetrate a masonry wall, the deterioration will accelerate very quickly, becoming more severe and costly. Some of the signs of problems in masonry walls include:

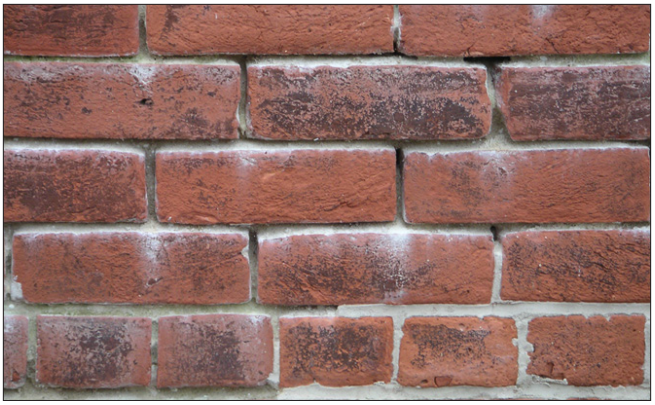
- Disintegration of mortar more than 1/4" deep from masonry surface
- Cracks in mortar, or mortar bonds broken or pulled away from masonry
- Open mortar joints
- Loose bricks, stones or masonry units
- Delaminating or surface erosion of bricks or stones
- Pitted surfaces from sandblasting and abrasive cleaning
- Damp walls, sometimes evident through the growth of moss or algae, and more commonly evident through efflorescence, which is typically visible as a white powdery substance on the wall surface
- Damaged interior plaster or finishes
- Rot of wood framing along masonry walls

Before attempting to repair masonry problems, it is strongly recommended that the cause of the problem be addressed. This would include repairing any outstanding exterior maintenance and drainage issues.

REPOINTING HISTORIC MASONRY

Repointing work can be time consuming and expensive; however, it can last more than 50 years when completed properly. Repointing requires a great deal of hand labor by skilled craftsmen to remove the existing mortar without damaging adjacent masonry, achieve the appropriate mortar mix and hardness, apply the mortar, and tool it to match the historic joint style and appearance. As a result, it is generally recommended that repointing projects be limited to areas of deterioration rather than an entire building.

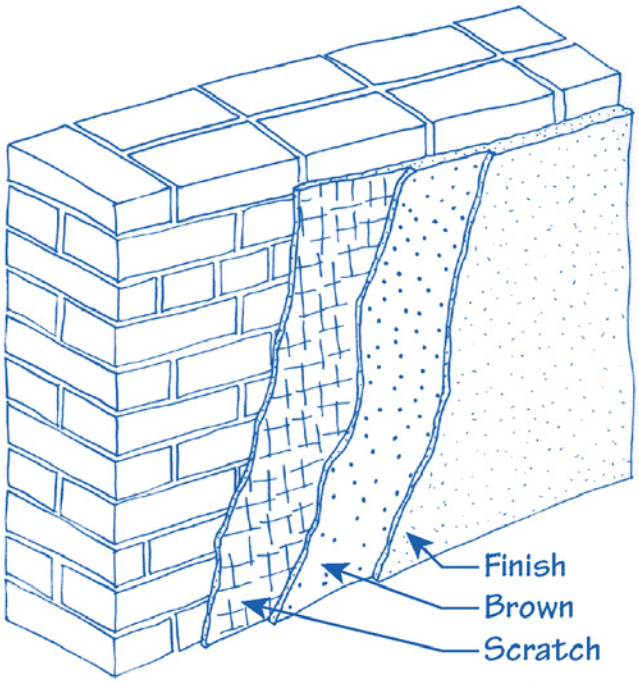
To achieve the best results, repointing work should be completed when the temperature ranges between 40˚F and 90˚F for at least two days after the installation of the mortar to help the mortar bond to the masonry. Mortar should be of a similar composition to the historic mortar, including hardness, color, and texture. It should be placed in joints in layers of no more than 3/8" thick and allowed to harden before additional layers are added. The final layer should be tooled to match the historic joint profile.



The mortar joints between bricks has deteriorated, particularly at the vertical joints, increasing the potential for mortar infiltration. The area at the lower right corner of the photograph has been recently repointed and mortar has been smeared over the surface of the brick rather than tooled. To maintain the historic appearance, it is recommended that the replacement mortar match the historic in appearance, color, texture, hardness and joint profile.

HIRING A CONTRACTOR

- The repair, maintenance, installation and cleaning of masonry, stucco and concrete can be potentially dangerous work and should be left to professionals
- All masons are not necessarily experienced in all materials; choose a contractor with demonstrated experience in working with historic masonry, stucco or concrete
- Verify warranty for materials and labor
- Check references to understand how well a mason's work has held up
- Hold final payment, such as 25%-30% of the project cost, until all work has been properly completed



Stucco was traditionally applied in three layers: the scratch coat; the brown coat; and the finish coat.

STUCCO

Stucco is a relatively inexpensive material that can provide a more finished appearance to brick, stone or wood framed buildings. In some cases, the surface is scored to look like stone. It acts as a weather repellent coating, protecting the building from rain, sunlight and wind, and can moderately increase its fire resistance. Stucco can also provide an insulating layer to a wall, reducing the passage of air and improving a building's fire resistance.

In Fort Lauderdale, stucco was traditionally applied at the time of construction over concrete and concrete block as a decorative protective coating. Beginning in the 20th century, it was also applied on wood-framed buildings in revival styles of architecture. It was also a common exterior finish in Art Deco and Modern structures. Given the prevalence of these styles in Fort Lauderdale's historic districts, stucco is one of the more significant exterior building materials in the City. Depending on the style of building, the texture of the stucco varies widely, from a smooth finish to textured, troweled, and Spanish-finish stuccoes.

Stucco was also applied on some buildings and structures, years after the original construction, as a remodeling material to vary the original appearance or to conceal deterioration.

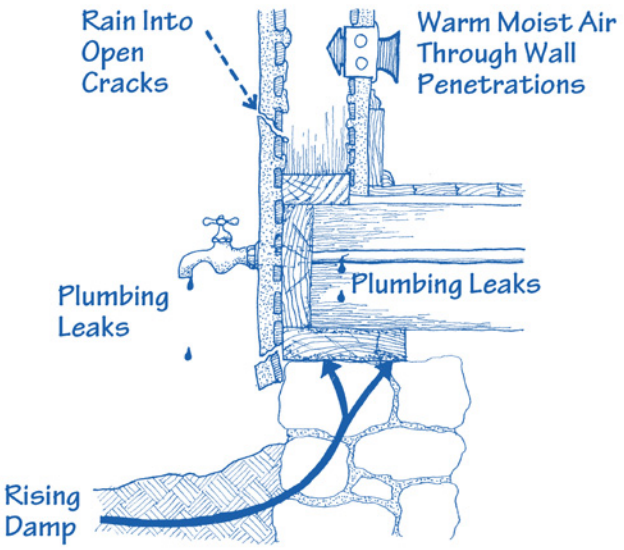
The components of stucco are similar to pointing mortar and include sand, lime, Portland cement, water, and possible binders. In some cases, pigments were added to the mix, to alter the finished color.

STUCCO APPLICATION

Stucco is essentially a layer of mortar held in position by the bond formed with the underlying material. Historically at masonry walls, one of the best ways to achieve a bond was to "rake-out" the mortar joints about 1/2" to form a groove that holds the stucco in place. (Refer to Raked Joint at *Joint Profiles*, *Page 4*.) When installed on masonry, stucco becomes an integral part of the wall when it sets. When stucco was installed historically on wood framed walls, the stucco was generally "hung" on strips of wood called lath that were nailed to wall studs. By the mid 20th century, metal lath replaced wood lath for stucco application on wood framed buildings. (Refer to illustration below.)

A stucco wall surface is generally about 1" thick and applied in the following 3 coats:

1. The **Scratch Coat** is approximately 3/8" thick and applied directly to the wall surface. It is forced into the raked joints or pushed into the lath to provide a strong bond. The surface of the scratch coat is deeply scored to allow bonding of the brown coat.
2. The **Brown Coat** is also approximately 3/8" thick and finished with a wood float for a smoother surface.
3. The **Finish Coat** is generally about 1/4" thick with the overall thickness being determined by the finish style



Rain and Precipitation *can enter the exterior envelope through damaged or cracked surfaces and crevices with adjacent materials including window and door frames.*

Rising Damp *is the migration of moisture from the soil into the building structure through capillary action. The soil adjacent to the foundation can become saturated through improper drainage from gutters and downspouts and vegetation planted adjacent to the foundation.*

Plumbing Leaks *include leaking bathroom fixtures, kitchen and laundry appliances, as well as both interior and underground piping.*

Condensation *occurs when warm moist air from kitchens, bathrooms and laundry facilities comes in contact with cold surfaces and changes to water droplets.*

PATCHING STUCCO

Similar to repointing mortar, stucco should be applied in moderate weather conditions, avoiding extreme heat, sun and freezing temperatures. The final appearance should duplicate the existing as closely as possible in strength, composition, color and texture. Successful patching of stucco surfaces generally requires a skilled craftsman. Similar to stucco application, stucco repairs are applied in three coats. (Refer to *Stucco Application, Page 7*.) Similar to pointing mortar, if stucco patches are too hard, they could cause additional damage to the adjacent historic stucco surfaces or lead to the formation of cracks that can allow water migration into the wall.

When repairing stucco, hairline cracks can generally be filled with a thin slurry coat of the finish coat ingredients, while larger cracks need to be cut-out and prepared for a more extensive repair. Similarly, bulging wall surfaces need to be cut-out to a sound substrate. For the best appearance, the area to be patched should be squared off and terminated at a building joint or change in materials such as a window or door frame.

When applying stucco directly to a masonry wall, it is important to rake out the masonry joints to a sufficient depth to allow the stucco mortar to be bonded to the masonry and keyed into the joints. When applied to a wood framed building, the lath should be securely attached to the substrate. The use of metal lath at masonry buildings is strongly discouraged since it can be prone to rust and eventually lead to the spalling of the stucco surface.

Repaired stucco will often need to be repainted for a uniform appearance. When selecting paint, it is important that the new paint is compatible with earlier coats of paint and the stucco material, and applied following the manufacturer's recommendations.

Algae growth is an indication of a moisture problem.

MATCHING HISTORIC MORTAR AND STUCCO

Most pre-mixed mortar available from hardware stores is generally inappropriate for historic masonry as it contains too much Portland cement and is too hard. The most exact method of matching historic mortar and stucco is to have it analyzed by a professional lab. The DSD Staff is also available to provide guidance based upon the type, location and condition of the masonry.

When painting stucco, it is recommended that a breathable masonry paint be used and that loose or flaking paint be removed prior to repainting.

SYNTHETIC STUCCO

The Exterior Insulation and Finish System, or EIFS, is a synthetic stucco system that was popularized in the United States in the late 20th century. It generally consists of 3 layers:

- An inner foam insulation board secured to the exterior wall surface, often with adhesive
- A middle polymer and cement base coat that is reinforced with glass fiber mesh
- An exterior textured finish coat

One of the significant problems with EIFS is that it does not "breathe" and can trap moisture within the wall thickness. This can lead to powdering or melting of softer masonry and rotting of wood sills and framing. If the problem persists, mold and mildew can develop in the building, providing a desirable home for termites.

Although the surface of EIFS can be finished to match many types of stucco, there are some differences. In larger areas of wall surface, EIFS is typically installed with control joints or grooves to allow the surface to expand and contract with temperature changes. These joints are typically not needed with lime based stucco and can result in odd wall patterns. Also, if properly installed, EIFS should not come in contact with roofing, wood trim or porch and gallery floors to reduce the possibility of moisture infiltration. Instead, these joints are often filled with sealant that can crack and eventually allow moisture to penetrate.

Because of the differences in the visual characteristics of EIFS from stucco and the potential to harm historic building fabric, the application of synthetic stucco or EIFS at any designated building or structure is not recommended.

CONCRETE

Concrete is prepared using a variety of materials, but is generally composed of sand and gravel or crushed stone to which a binder, lime and/or cement, is added. When water is added, a chemical reaction occurs allowing the mixture to harden. This mixture can be poured to form standard and decorative concrete block. To allow poured concrete to be used for structural elements such as floors, walls and columns, metal reinforcing is added to increase its tensile strength, making it less susceptible to cracking.

Concrete deterioration often occurs due to:

- **Corrosion of the metal reinforcing bars:** Reinforcing, when properly installed, is protected by a layer of concrete. When the steel is exposed to water or moisture (including high humidity) it corrodes and expands. Salts from maritime environments or sea water can accelerate the corrosion and subsequent concrete cracking and spalling.
- **Degrading of the concrete material:** Degrading of concrete can occur through weather and wear of a concrete surface, eroding the binder (lime and/or cement) material, exposing the aggregate and possibly the reinforcing bars
- **Improper construction techniques:** Some aggregates can degrade over time and salts and chemicals within the aggregate can react to the reinforcing or binder material. It is also possible, particularly in concrete from the beginning of the 20th century, that the reinforcing was improperly laid in the formwork without sufficient cover or air bubbles were trapped within the pouring of the concrete.
- **Structural problems:** Structural problems can include insufficient or improperly placed reinforcing bars within the concrete, structural settlement, and severe winds or seismic events.

Signs of concrete deterioration often include cracks, spalls (missing chunks of concrete) staining and deflection (bowing) of the concrete. Because of the complex nature of concrete, the variations in chemical properties, and potential for severe structural problems, it is highly recommended that the repair of larger spalls and the repair of deflected concrete be addressed by a preservation architect or engineer.

Concrete is a versatile material that can be used to create complex forms and shapes.

MASONRY, STUCCO & CONCRETE GUIDE

Strongly Encouraged:

- Replacement masonry, stucco and concrete that matches the historic in material type, color, texture, size, shape, bonding pattern and compressive strength
- Repoint mortar or stucco of the same hardness or softer than the original mortar or stucco and **always** softer than the original masonry - older buildings typically of high lime content with limited Portland cement
- Use mortar, stucco and concrete that matches the appearance, color, texture, pattern, joint size and tooling of the historic mortar, stucco and concrete
- Replacement masonry toothed into existing masonry and continuing the adjacent pattern

Encouraged:

- Carefully remove algae, moss, vines and other vegetation from masonry, stucco and concrete walls and remove shrubs from the building perimeter
- Complete masonry, stucco and concrete work in fair weather

Discouraged:

- × Use power tools to remove existing mortar from joints since they can damage historic masonry
- × Use modern chemical additives

Strongly Discouraged:

- × Install pointing mortar in a single layer greater than 3/8” deep
- × Widen or extend the existing mortar joints or overlapping the new mortar over the masonry surface
- × Remove or cover historic masonry surfaces or details
- × Remove of historic stucco from masonry surfaces exposing the soft, underlying brick to the elements
- × Install stucco over brick, stone or wood framed buildings that were not intended to be stuccoed unless covering previously damaged masonry
- × Install modern bricks for patching historic masonry, even if they are “antiqued”, since they are generally much harder and do not match the historic masonry
- × Use pre-mixed mortar or stucco that contains a high percentage of Portland cement
- × Use pre-mixed mortar that does not match the appearance of the historic mortar

The rough texture and uneven surface of this brick suggest that an aggressive cleaning method was used. Stucco patches replace bricks and efflorescence, a powdery white substance, can be seen on the surface.

MASONRY, STUCCO & CONCRETE CLEANING

Appropriate masonry, stucco and concrete cleaning can enhance the character and overall appearance of a building. However, improper cleaning of historic masonry can cause damage to the historic surfaces and cause more harm than good. There are three principal reasons for cleaning historic masonry:

- To improve the appearance by removing dirt, pollen, stains, graffiti or paint
- To slow deterioration by removing deposits, salts, efflorescence, acids, ivy, algae, moss, mildew and pollutants that can damage masonry surfaces
- To clean select areas to match historic masonry or mortar or to assess surface condition

Masonry cleaning methods fall within three general categories:

- Low pressure water, with the possible use of gentle detergent and brushing
- Mechanical cleaning including sand blasting, power washing, grinding, sanding and wire brushing
- Chemical cleaning

Because of the potential damage to historic surfaces, cleaning should be completed using the gentlest means possible. In many cases, soaking the masonry, stucco and concrete with low pressure water can remove much of the surface dirt and deposits. If the soaking method is not successful, it might be necessary to add a non-ionic detergent or brush the wall surface with a natural bristle brush.

The use of mechanical methods, including abrasive blasting, power washing, sanding or grinding, can potentially remove decorative details and the protective surface of the masonry, stucco or concrete, resulting in an eroded surface and permanent damage. Abrasively cleaned masonry, stucco and concrete usually has a rougher surface that can hold additional dirt and be more difficult to clean in the future. Chemical based cleaners can etch, stain, bleach or erode masonry, stucco and concrete surfaces. Both mechanical and chemical cleaning methods can also make the masonry, stucco and concrete surfaces more porous and deteriorate mortar joints, allowing for increased moisture penetration.

Encouraged:

- Clean masonry using the gentlest means possible
- Make sure mortar joints are sound and building is water-tight before water cleaning
- Use water without traces of iron or copper that can discolor masonry
- Conduct water cleaning a minimum of one month before freezing temperatures to minimize the potential for spalling
- Minimize water pressure, generally no more than 100 psi, to reduce potential etching of masonry surfaces
- Use clean water without excessive salts, acids or minerals that can deposit on masonry surfaces
- Use non-ionic detergent and natural bristle brushes when water soaking is not successful

Discouraged:

- × Use mechanical cleaning methods including sand blasting, power washing, grinding, sanding and wire brushing
- × Use chemical cleaning

In instances where a severe stain or graffiti is present, it might be necessary to use a chemical based cleaner in specific areas. Caution should be taken to test the effects of the proposed cleaner on a discrete area of the building before using it on a principal elevation. It is recommended that the most diluted possible concentration be used to minimize potential damage of the masonry surface. It should be noted that many chemical cleaners are hazardous and require special handling, collecting and appropriate disposal of the chemicals and rinse water.

Encouraged:

- Hire a contractor with specialized knowledge of masonry cleaning when gentler cleaning methods are unsuccessful

MASONRY, STUCCO & CONCRETE COATING

Water repellent and waterproof coatings are generally applied to prevent water from entering a masonry, stucco or concrete wall, but tend to be unnecessary on weather-tight historic buildings. Water infiltration through masonry and concrete buildings is generally caused by other moisture related problems including open mortar joints, surface cracks or spalls, and poor or deferred maintenance. In instances where the surface of the masonry has been severely compromised, such as for previously sandblasted bricks, the use of water repellent coatings might be appropriate.

Water Repellent Coatings, also referred to as "breathable" coatings, keep liquid from penetrating a surface but allow water vapor to escape. Many water repellent coatings are transparent or clear when applied, but may darken or discolor over time.

Waterproof Coatings seal surfaces and prevent liquid water and water vapor from permeating the surface. Generally, waterproof coatings are opaque or pigmented and include bituminous coatings and some elastomeric coatings and paint. Waterproof coatings can trap moisture inside of a wall and can intensify damage. Trapped moisture can freeze, expand and spall masonry and concrete surfaces.

Discouraged:

× Apply water repellent or waterproof coatings to weather-tight historic masonry or concrete, unless it is below the surface of the surrounding grade

MASONRY, STUCCO & CONCRETE PAINTING

If the exterior of the masonry, stucco or concrete surface has been compromised through previous sandblasting, moisture infiltration or the use of harsh chemicals, appropriate painting can provide a degree of protection. Proper application of a water repellent paint can prevent water from penetrating while allowing water vapor to escape. Waterproof or inappropriate paint can trap moisture within a wall. Proper preparation is critical to a successful masonry, stucco or concrete painting project. (Refer to photograph on *Page 8* for an example of improper preparation for painting of stucco surface.)

- Remove loose or flaking paint, mortar, masonry, stucco or concrete as well as ivy, algae, moss and mildew
- Complete items of deferred maintenance including repair of deteriorated gutters and downspouts
- Complete repointing,re-caulking and patching as needed
- Select a paint color appropriate for the building style; Apply undercoat and paint appropriate for masonry application type; Follow manufacturer's recommendations for application

REMOVING PAINT FROM MASONRY

When considering whether to remove paint from a masonry, stucco or concrete surface, it is important to assess whether removal is appropriate. In some instances:

- The building might have always been painted; less attractive, softer or more porous bricks, stones or concrete might have been painted to provide a water repellent protective layer
- Paint can mask later changes or additions

Reason to consider stripping paint:

- To reduce the long term maintenance requirements associated with repainting
- Paint might have been originally applied to mask other problems such as a dirty building
- If existing paint has failed, it might be necessary to strip it before repainting

Signs of failed paint include:

- Paint is badly chalking, flaking or peeling, possibly due to moisture penetration - it is important to find the cause of moisture and repair before repainting
- If masonry or concrete has been "sealed" by excessive layers of paint or by waterproof coatings, the underlying masonry might not be able to "breathe" and dispel the internal moisture and salts - eventually, pressure from moisture and salts can build up under paint layers and possibly cause the paint to peel and masonry to spall

If paint is stable, complete paint stripping might not be necessary. However, new paint should be compatible with previous paint layers for best adhesion.

Encouraged:

■ Consider whether paint removal is appropriate

■ Remove paint using the gentlest means possible

Discouraged:

× Apply water repellent or waterproof coatings including paint that can trap moisture and prevent the wall from "breathing"

× Apply waterproof coatings on masonry above the surface grade level

× Paint previously unpainted historic brick, stone, stucco, block and poured concrete because the paint can: damage the historic masonry; alter the visual characteristic of the building and obscure the craftsmanship of the masonry including colors, texture, masonry and joint patterns; and paint on masonry is not easily removed

PAINT REMOVAL SAFETY

Caution should be used when removing paint since some paints include lead, requiring proper collection and disposal techniques. Please review the G*uidelines for Exterior Maintenance* for additional information.

This concrete framed building has applied glazed-tile, stone veneer, and acrylic panels on a metal framework.

ORNAMENTAL ELEMENTS

To enliven their street presence, several of Fort Lauderdale's masonry and concrete buildings include surface or applied ornament. Some of the more common ornamental features include:

- Cut-outs and projections such as window surrounds
- Decorative detailing
- Exposed aggregate such as stones, pebbles, colored gravel and either untreated or smoothly polished terrazzo
- Glass mosaic in geometric or designed patterns that can form logos, signage or art work
- Ceramic wall tile
- Terra cotta "vents"

In many cases these ornamental elements were integral to the original design and style of the buildings, and as such, are important character-defining features.

Encouraged:

- ■ Retain and maintain decorative elements that are historically significant to a building's design
- ■ Periodically re-coat or reseal terrazzo

Discouraged:

- × Add decorative elements that were not historically part of the building or structure

DEFINITIONS

Beanpoles: Thin metal rods used as decoration and to modulate space.

Pilotis: Cylindrical support columns or posts.

This Mid-Century Modern motel includes metal railings, diagonal "beanpoles" and a metal post to the right supporting the corner of the roof overhang.

METAL ELEMENTS

Another feature typical of concrete and stuccoed buildings is the addition of exterior metal elements in the form of posts, beanpoles and pilotis, decorative railings typically along exterior stairs and balconies, as well as metal grilles and louvers that screen windows from direct sunlight.

Encouraged:

- ■ Regularly repaint and maintain exterior metals

Discouraged:

- × Add decorative metal elements that were not historically part of the building or structure

FUNDING

This project has been financed in part with Federal funds from the National Park Service, U.S. Department of the Interior, and administered by the Florida Division of Historical Resources. The contents and opinions do not necessarily reflect the views or policies of the U.S. Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the Department of the Interior.

This program receives Federal financial assistance for identification and protection of historic properties. Under Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, as amended, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, disability or age in federally assisted programs. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity; National Park Service; 1849 C Street, N.W.; (NC200) Washington, DC 20240.

PREPARATION

All components of the *Fort Lauderdale Historic Preservation Design Guidelines* including all text, graphic design, photography and illustrations unless noted otherwise were prepared by:

Preservation Design Partnership, LLC
Philadelphia, Pennsylvania; www.pdparchitects.com
Principal-in-Charge: Dominique M. Hawkins, AIA