



re:news

DESIGN INSTALLATION SYSTEMS, INC.

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AT DESIGN
INSTALLATION
SYSTEMS,
OUR
REPUTATION
IS IN OUR
WORK.



INTRODUCTION

In past issues of this newsletter, masonry and stone issues have been discussed as they relate to restoration projects. We have discussed the support systems and the reasons they fail, methods of repair and replacement, and even why we think DIS is uniquely qualified to complete some of the most demanding projects in the city of Chicago.

In this issue of DIS, we will spotlight a couple of example projects that involve many aspects of restoration. Although these projects can be generally referred to as masonry rehabilitation, they involve brick, stone, steel, flashing and caulking. Projects of this type and scope demand hard work, coordination, dedication and skill, led by experience.

The drawing that accompanies this text is a simplified detail of a typical wall section. In an installation such as this the structure and face, stone may be sound and may not need repair. However, when the trained eye of a professional sees signs of movement during a routine inspection, the wall area is examined more closely. In this typical example, flashings may be missing and support steel corroded to the point where the stones are starting to shift.

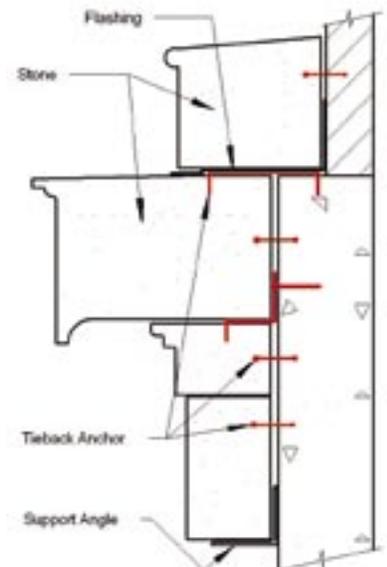
Once removed, the stones often can be reused; when replacement is needed there are options. Limestone, cast concrete and terra cotta are materials of choice. Normally

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the existing construction dictates the choice, but other factors such as look, feel and expense must be considered as well. Limestone replacements are common because of the economic benefits and the ability to coat limestone to match existing adjacent materials.

Unlike concrete and terra cotta, limestone can be easily cut, profiled and even hand-carved to meet project requirements. We at DIS have invested a great deal of time, training and energy into acquiring the needed skills to work comfortably with limestone. These skills accent well our aptitude to complete all types of masonry work on an expert level and give us the capacity to better serve our clients. Coupled with our flashing and steel fabrication shops, DIS is unique in the industry in our ability to provide a full scope of repairs without outside assistance.



PROJECT PROFILES

233 EAST WALTON

This northside building is a beautiful brick structure. *(See photo A)* When carved stone and precast concrete restoration was needed, Design Installation Systems was called. DIS previously had replaced the entire brick face on two sides of this building. Replacement and resetting of other remaining elements are a natural extension of that work. It is important to keep the surrounding masonry stable during the removal work. *(See photo B)* Prior to beginning the removal, holes are drilled through the brick into the structural backup. Stainless steel rods are then placed into the holes at regular intervals. These rods will support the brick above until they are removed at the end of the process.



A



B



C

Treated 4" x 4" wood posts are wedged into the opening at and adjacent to large decorative concrete elements. These compensate for the additional weight of the concrete and help reduce lateral forces that add to the destabilization of the wall. Concrete pieces containing defects are stored away from the construction site. *(See photo C)* The pieces are used to make templates that will be used in fabricating new limestone replacements. Only after the new pieces are placed into the new construction can the old pieces be discarded.

In selected areas, limestone panels had been chipped or displaced by expanding metal. Removal of the affected panels is followed by rehabilitation work. First the backup masonry is checked and tuckpointed as needed. Any existing steel supports are cleaned, primed and painted. Angles are replaced if they are not serviceable. When being rebuilt, new elements, such as flashing, are installed; then panels are reinstalled and tuckpointed and/or caulked into place. Although limestone replacements are sometimes used to replicate other materials, other materials are not normally used to replace limestone. Here old limestone panels will be replaced with new limestone panels. *(See photo D)*



D



E



F

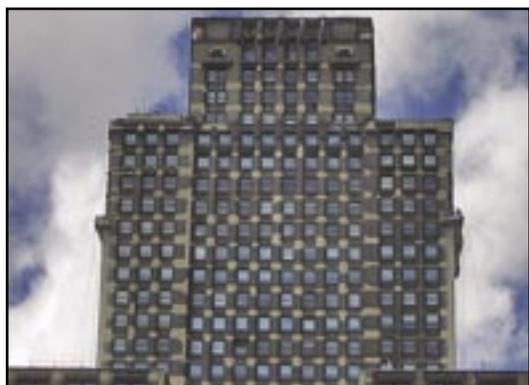
This open section of wall *(See photo E)* gives a clear view of the end sections of the existing concrete pieces. The plastic sheets in the picture are used to keep wind and rain out of the opening and prevent damage to the interior of the building. In projects such as this, the building remains occupied during the work. Although air conditioners are sometimes covered for short periods and windows may be temporarily covered, the building can be used continually during the work. During demolition, some noise is transmitted into the building but is limited in severity and duration.

Most of the time, problems within the wall system can be traced back to expanding, rusted steel supports. Like many buildings of this vintage, steel within the wall has suffered corrosion. (See photo F) The extent of the delamination varies from area to area, but when it is found, there are ways to deal with it. After repair or replacement, the steel is painted and flashed to provide long-term protection. Additional information dealing with water infiltration and its effects and repair methods can be found in previous issues of this newsletter. Please call our office at (847) 470-8100 for reprints.

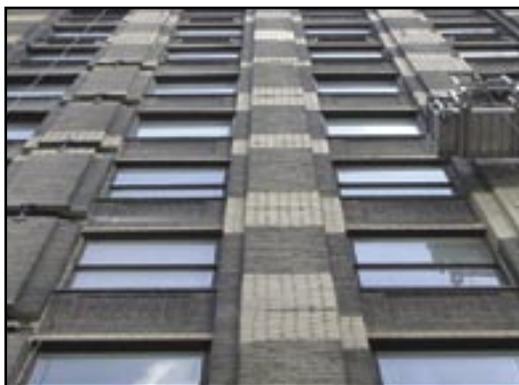
Once the steel support angles have been replaced or refurbished, the repair begins in earnest. (See photo G) In the event that water enters the wall system from above, the black flashing will redirect the water out of the wall system. This flashing not only prevents water from finding its way into the building, but it also helps to protect the angle from rusting. At the top of the flashing is a termination bar. The aluminum or stainless steel strip is fastened to the wall over the flashing and then caulked. Protecting the horizontal “water edge” on the vertical flashing is very important, ensuring that the flashing will remain in place. The last item of interest in this photograph is the stainless steel strap. This strap is embedded into the stone and then mechanically fastened to the concrete building structure. This stabilizes the stone and prevents it from moving, even if the mortar cracks and fails over time.



G



H



I

105 WEST ADAMS

This Loop high-rise stands as a masonry and terra cotta clad building with a concrete and steel structure. (See photo H) This 41-story building has stood at Adams and Clark streets since 1927. Over the years, the exterior masonry has acquired a dark appearance from atmospheric contaminants. Masonry maintenance and replacement over the years have been completed using a number of different colors of brick. Past masons have either not tried to match the repair materials to the clean original, or have tried to match whatever shade of dirty brick that was in the area of work. Design Installation Systems believes that when we leave a repaired building it should not look like a repaired building—it should have the look of a building restored to its original beauty. In an effort to make our preservation mix seamlessly with the original construction, DIS craftsmen are blending seven different bricks to come up with a match for the original brick color, texture and pattern.

The strategy being implemented by Design Installation Systems has been to clean a sample area of the building and match the new brick to the original color. By doing this, when cleaned, the building will look more like it did when it was first constructed. The same idea holds true for repair mortar and tuckpointed joints.

These photographs (See photos H and I) show the stark contrast between original masonry and rebuilt areas. However, in the not-so-distant future, the building will be cleaned. Once the building is cleaned, the contrast will be eliminated, and the facade will regain its original appeal.



J

This photograph (See photo J) shows many aspects of the restoration of masonry walls. We have discussed some of them in detail in past issues. Here we see supplemental steel supports being used during the repair to keep masonry adjacent to

the work stable. We also see new and existing steel supports that will be left in the wall, unseen but vital to the installation. The steel has been fabricated, primed, painted and installed by DIS without the need for subcontractors.



K

As with most buildings, the type of construction and means of rebuilding are the same, but the details change. All buildings are different, and specific details need to be drawn and followed during the restoration. In this application, windows are immediately adjacent to pilasters (columns set into the face of the building). (See photo K) This configuration causes some ins and outs that are visible on the facade, having been translated into the steel from the backup structure of the building.

After removal of the brick, and prior to any restoration work, (See photo L) one can see exactly how the brick is totally supported by steel. Brick masonry cannot simply be stacked upon itself, as it is not strong enough to support its own weight.



L



M

Masonry must be supported from floor to floor by “shelf angles.” In addition, there must be support over openings in the wall; these supports are called “lintels.” Typically in this type of construction, lintels and shelf angles are steel angles bolted to the backup structure. In the past, angles were very often not painted or flashed into the wall. This leads to problems because the steel begins to rust.

Finished window lintel work includes surrounding masonry. This close-up view (See photo M) highlights the contrast between the old and new masonry.

Although cleaning the building is not part of the current project, the building owner has anticipated that job for a future project. Forward thinking led the owner to choose a color for the new brick that best matches the building in a cleaned state. After cleaning, the brick colors will not be nearly this stark, and the facade restoration will be truly completed.

EMPLOYEE PROFILES

HARRIS BRUZGA AND JAY LESKAUSKAS

For more than ten years, Harris Bruzga (*See photo N*) and Jay Leskauskas (*See photo O*) have worked their way up through the trades. Harris and Jay have become experienced tuckpointers, bricklayers and stonemasons. Both men are noted for their ability to effortlessly outlift our hoists, but they are mostly appreciated for their soft-spoken professionalism. For their years of hard work, productive attitudes and attention to detail, we thank them. Design Installation Systems is a better company because Jay and Harris are part of it. We look forward to many years of continued excellence.



N



O

FOUNDATIONS

In past issues, we have discussed masonry and stone failures in facades, and elements that lead to them. The following is an excerpt from a previous article (*March 2004, Vol. 2, No. 1*) that applies to the two projects highlighted in this issue. *These photographs show examples of severe corrosion and are used only to illustrate our point. (They are not the buildings at West Adams and East Walton.)* To review the entire article or to read any past issue, visit the following website: <http://disrestoration.com/gallery/>.

In modern construction steel support angles are often used to support brick over openings and “shelf” brick from floor to floor in multistory applications. New coatings for steel have proven effective in eliminating steel corrosion. This is extremely important because rust degrades the strength of the support member and expands inside the wall, displacing the brick. Alternate materials such as stainless steel are sometimes incorporated into walls systems. DIS has most of these traditional and their newer alternatives in stock at our in house metal fabricating shop.

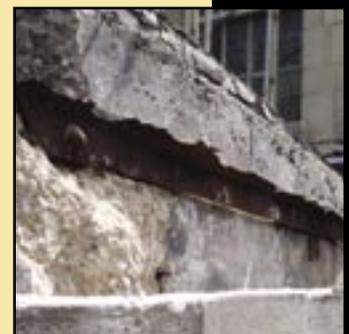
Flashing materials at supports and wall bases were seldom used in traditional brick work. Today there is a wide variety of flashings to choose from. They range in type from loose laid fabric to fully adhered membrane to sheet metal fastened to the backup material. These materials are all designed to allow water entering the wall to exit without adversely affecting the wall system. Flashing, working in conjunction with weep holes, prevents water from entering the building and allows the wall system to remain dry. This is important as freezing water will also displace and crack brick. At DIS, we understand the importance of these components and because of that, we know the value of properly integrating them into our work.

These photographs (*See photos P and Q*) show examples of deteriorated steel uncovered during the demolition stage of our work. Once steel supports have this much rust, there is no choice but to replace it.

The first step is to expose all steel. After a determination is made by the engineer, removal and replacement can begin. New steel will match the existing in strength and configuration or may be up-sized to provide additional support. All new steel will be primed with a rust inhibitive primer, painted and flashed. These steps are essential to protect against future rusting necessitating



P



Q

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Vol. 3, No. 3

Exceeding the Expectations of the Construction Industry Since 1982

October 2005



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