

TECHNICAL PUBLICATION

WATER INTRUSION INTO ROOFING SYSTEMS, FACADES AND PLAZA DECKS

Water intrusion into buildings is an annoying occurrence that can be avoided. Buildings and furnishings are damaged and sometimes destroyed because of water intrusion. This phenomenon is a wide spread issue and is prevalent in commercial buildings, condominium buildings and the homes we occupy.

Typical areas of water intrusion are from roofing systems, facades (outside exterior walls) and balconies or plaza decks. This article will address all three locations.

Roofing Systems

The roofing system on our homes, condominiums and/or commercial buildings is a very key element and important part of the structure. The roofing system should function as designed and be aesthetically pleasing. There are numerous types of products available for a roofing system and a specification is used for the product selections and installation methods. Professional design and detailing addresses all component interfacing resulting in a complete roofing system. Installers follow the direction of the professional to comply with the specifications and drawings and complete the installation. Properly installed and maintained roofing systems should be expected to perform to their specified guarantee parameter. On the contrary, direction lacks with incomplete specifications and design and installation methods in the market place, resulting in active water intrusion and damage. Details...Details...Details must be scrutinized for obtaining the best results of the installation. Improper installation methods are a common occurrence and result in active water intrusion.

Facades

The façade (exterior wall) protects the inside of the building from the elements. Maintenance of the façade is continuing process and must be implemented to avoid external damage to include structural deterioration. Most facades in the southeastern part of the nation consist of masonry or wood construction and are finished with stucco, wood or other products. Professional design and detailing addresses all component interfacing resulting in a complete façade system. Installers follow the direction of the professional to comply with the specifications and drawings and complete the installation.

Windows, door and other protrusions such as vents, signage, and piping, etc., must be properly addressed at the initial installation and certainly during routine waterproofing maintenance. Cracks and spalling of cementitious products are a common occurrence with a stucco wall when improperly maintained, to include deterioration to sealants and paint. Wood products must also be routinely maintained to eliminate water penetrations resulting in rot and advertently severe structural deterioration. A thorough façade waterproofing application is expected to endure five (5) to seven (7) years of life.

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Plaza Decks/Balconies

Plaza decks are exposed decks over occupied space and balconies are typically constructed with no occupied space below. Both deck types should be treated accordingly to avoid water intrusion, damage and deterioration. Complete design, specifications and professional installation must be implemented on these structures to properly waterproof the substrate and all interfacing components. Membrane sheet goods are preferred products and provide good interfacing with all components when properly designed and specified. These systems are permanent and are covered with cementitious products and floor tile resulting in an esthetically pleasing surface for entertaining and use. Structural capacity determines all methods.

Interfacing at vertical walls, metal railings, balustrades and exposed perimeter details must be addressed to avoid water intrusion at all locations. Water intrusion typically begins at these penetrations and interfacing areas. Once water has breached the waterproofing system structural integrity can be compromised resulting in severe structural deterioration. This deterioration can go unrecognized for several years before noticed and many times the deterioration is not known until other related components are removed to view. Termites can also infest wood structures and deterioration is inevitable.

Routine Maintenance

Routine maintenance is required by all guarantee holders and the guarantee is predicated on the owner performing regular scheduled maintenance. Maintenance includes regular visual inspections, noting deficiencies and performing regular maintenance work.

A lack of maintenance can result in water intrusion, damage, deterioration and non performance of a roofing system, façade and or plaza deck or balcony. For example, sealants that are not maintained will allow water penetration. Sealants are installed at architectural sheet metal flashings that interface with roofing systems, facades at various locations and waterproofing systems on plaza decks or balconies. Once water migrates into building components the result can be devastating. Deteriorated structural components can easily go undetected for a long period of time prior to compromising the structure resulting in collapse.

Routine maintenance is intended to maintain the guaranteed component with the intent to eliminate water intrusion and deterioration.

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Structural Failure

Structural failure can be the result of water intrusion that has gone unidentified because of a lack of maintained roofing systems, facades and plaza decks or balconies. Incorrect installation of building components is often the source of water intrusion. Many times than not the quality of a project is sacrificed in the spirit of saving money either by inferior installation methods or product substitutions. Details...Details...Details always pay off even through the cost may be more. Repairing or replacing structural products is a very expensive venture and most of the time the deterioration is unknown until adjacent building components are uncovered or removed to adequately inspect the structural members.

Summary

Water intrusion can be avoided by implementing routine maintenance with the intent to preserve the existing components and locate any problem areas that may exist. Roofing maintenance may include removing debris from all drainage areas to include roof drains, through wall scuppers, conductor heads, gutters, downspouts, etc. Façade maintenance may include restoring sealants a specific penetrations, protrusion, windows, doors, etc. Plaza deck or balcony maintenance may include a review of the installed products at vertical surfaces, penetrations and exposed drainage details and addressing deficiencies as required. A thorough review of all areas will suffice for regular routine maintenance followed by a specific plan for action.

When regular routine maintenance is omitted, water intrusion problems surface. Once water intrusion is noted and the source of entry identified, repair or replacement procedures should be implemented. Specifications are drafted to include design and detailing for the installer to follow. On site visual inspections confirm contractor compliance and result in a properly specified, designed and inspected project.

Water intrusion and damage to building components can be avoided by implementing the following:

- Preparation of Specifications and installation methods
- Proper installation methods of all components during construction
- Proper installation methods of all components during restoration
- Regular on site inspections while work is in progress
- Regular routine maintenance

Our firm has been involved in several projects that have experienced structural deterioration causing repair and/or replacement and includes roof replacement, façade restoration and plaza deck and balcony waterproofing systems. Project involvement includes prestigious hotels, fine shopping centers, multi-million dollar homes and condominiums.

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