

## Roof Inspection Summary Report



**File Number:** 05-15-RF-004

**Inspector:** Craig Milliken, PE # 32779  
CPM Real Estate Inspections, Inc.

**Date of Inspection:** 11/25/2005

**Weather:** Clear, no recent rain

## Scope of Inspection

A visual inspection of the subject property was performed on Friday, November 25, 2005 at 8:30 AM. This Roof Inspection Report addresses the probable causes of water intrusion throughout the temple.

Reasonable effort was made to view all safely accessible areas of the Subject Property. Concealed items cannot normally be inspected without using invasive procedures or special testing equipment that is beyond the scope of this type of general inspection. This Roof Inspection Summary Report may not address every problem that may exist with this property at the time of this inspection. **CPM Real Estate Inspections, Inc. makes no warranty that there are no other defects with this property.**

The following attendees were present at the inspection:

Craig Milliken, PE	Inspector, CPM Real Estate Inspections, Inc.
Bill Leventer*	Representative of Property Owners
Danny Berger*	Representative of Property Owners
David Cifuentes*	Maintenance Supervisor

\*Collectively identified in this report as the "owners".

## History:

The building was constructed during 2003 and 2004. It was occupied in July 2005. The owners stated that water intrusion problems were noted immediately after taking possession of the building and reported to the General Contractor, A.V.I of Weston, FL. Several corrective actions were taken by vendors under the General Contractor and some were effective in eliminating water intrusion in certain areas; however, the measures taken to date have not eliminated all water intrusion problems and active leaks still persist.

Many of the areas viewed during this inspection indicated that the water intrusion problems have been chronic since the building was constructed and are still active. Water intrusion occurred in many areas after the last most recent rain and prior to Hurricane Wilma according to the owners. Water damaged materials include: drywall partitions and ceilings, suspended acoustical ceilings, furring strips, exterior wall insulation, wall base and carpeting.

## Observations and Recommendations

The water entering the building is likely due to the following conditions:

### 1. Leaks through metal coping caps on parapet walls

All three levels of the roof are surrounded by a parapet. The building's exterior walls and parapet walls are constructed of concrete blocks. A coping cap is installed in 10 foot sections over some of the parapet walls and anchored in place with screws.

## **Observations and Recommendations - continued**

The metal parapet cap is constructed of two sections. There is a metal drip edge under the coping cap that is screwed down into the top of the parapet walls and hangs over the outside edge of the parapet walls. Tapcon screws anchor the parapet cap over the drip edge to the roof side of the parapet walls. Screw holes for both sections are approximately 12 inches on center and may allow water to penetrate the block wall cavity and find passages to the building's interior walls below. See photos # 7 & 8.

The installation of the parapet cap was not done correctly to ensure that all screw holes were completely sealed and that the joints between sections were sealed. Water can easily penetrate under the coping cap at these joints and penetrate the screw holes holding down the drip edge or cracks in the stucco covering the top of the parapet walls. See photo # 9.

All screw holes and the joints between the sections should be sealed with a suitable caulking material. Only A Roofing Contractor or Water Proofing contractor that is familiar with this type of coping cap assembly should perform this work.

### **2. Lack of coping caps on sections of the parapet walls**

Parapet coping caps are not installed on many of the parapet walls. Prefabricated Styrofoam architectural reliefs surround much of the exterior side of the parapet walls. The addition of these reliefs made it difficult to install a standard metal cap. Caulking has been applied to cracks along the top of the parapet walls in many areas to stop leaks. Parapet walls without coping caps can more easily leak if stress cracks appear in the stucco covering the top of the parapet walls. Installing coping caps over these walls would reduce the required maintenance and lessen the occurrence of leaks.

The addition of the reliefs was a choice selected by the architect to give the building a better appearance. The architect should be made aware that parapet walls without coping caps have high incidences of leaks and this design has likely contributed to the difficulty in solving the water intrusion problems.

### **3. Possible water intrusion behind the architectural reliefs**

Typically architectural reliefs are bonded to the exterior walls with a waterproof adhesive. These reliefs may have also been attached with some mechanical fasteners drilled through the exterior side of the parapet walls. There are many gaps in the joints between the sections forming these reliefs. Water entering these gaps could penetrate the walls and flow down to areas that are being damaged below.

### **4. Curbed roof openings under the air conditioning units**

There are 19 A/C units (RTU's) on the roof. All are set on curbed openings through the roof. Some of these units are not installed to the minimum building code standards of the 2001 Florida Building Code Section 1511.7.

## **Observations and Recommendations - continued**

This code requires RTU's be "mounted on curbs raised a minimum of 8 inches above the roof surface". One unit is nearly flush with the roof surface and most are lower than the required 8 inches. Most of the RTU's are not level.

Rob Brown of Best Roofing, Pompano Beach, FL noted these concerns in a document dated 09/12/2005 and was interviewed by phone with this inspector on 11/28/2005. There has probably been finger pointing going on among the roofer, general contractor and mechanical contractor; however, the general contractor has the overall responsibility to ensure that the curbs are installed correctly. The inspector from the Building Department was also remiss in not citing these to be corrected. This could be very expensive to fix as each RTU would need to be lifted by a crane and new curbs or adaptors fabricated and installed.

Water stains were noted in ceilings below some of the RTU's. Inadequate elevation and leveling of the units and lack of proper skirting under the units can contribute to water penetration through the openings during heavy rains and winds. It is also possible that the water damage noted under these units is from condensate overflowing from collection pans inside the units due to blockages in the pans and drain piping or the units not being mounted level. Further study of this requires opening the units and observing where the water is originating and entering the building through the curbed openings. The services of a mechanical contractor will be required. South Florida Air Conditioning in Boca Raton (561-392-2662) is a recommended contractor that can assist in the investigation and handle any necessary corrective actions.

## **5. Miscellaneous roof penetrations**

At each RTU there is a penetration through the roof for electrical connections. The penetrations are formed with sheet metal shrouds. The design of the penetration should prevent rain from blowing into them and entering the building. These are poorly designed as they do not curve sufficiently enough to prevent water from blowing into the opening. An attempt was made to seal them with spray foam sealant. The foam sealant has shrunk and many of these openings have gaps that need to be filled with additional sealant.

## **Summary Findings**

- There is no indication of damage to the building or roof from recent hurricane force winds except for a damaged 10 foot long section of parapet cap along the south side of the building. See photo # 7. Stone ballast is not displaced and lap joints appear to be secure throughout the roof.
- There is no indication of neglect or improper maintenance by the owners.

- Some rework of lap joints has been performed in attempts to stop roof leaks. There are now no visible gaps in the roofing membranes. This inspection was nondestructive. No holes were cut to inspect for water penetration under the membranes. Moisture surveying equipment was not used during this limited roof inspection. Moisture could be trapped under the membranes. This can only be determined with additional testing.
- The water damage is widespread throughout the building and needs immediate attention to prevent the growth of mold in chronically dampened building materials.

It is recommended that this report be reviewed by the architect, general contractor, roofer and mechanical contractor and an action plan be adopted to address these problems. Damage is already significant and could affect the health of the occupants if neglected. When the next rainy season arrives, these problems will intensify.

During the inspection it was noted that there was a gap in the weather stripping around an exterior door at the NE corner of the building and a section of walkway outside the door where water is ponding due to insufficient pitch. These items are noted in photos # 17 & 18. Items such as these were not the focus of this inspection. A more comprehensive inspection may reveal other similar deficiencies.

Information gathered during this limited visual inspection and presented in this report may not address every problem that may exist with the property. **CPM Real Estate Inspections, Inc. makes no warranty that all problems have been addressed.**

If there are any questions concerning this report please contact Craig Milliken, at (561) 866 9956 in Boca Raton, Florida. Thank you for choosing CPM Real Estate Inspections.



Craig Milliken, PE # 32779  
CPM Real Estate Inspections, Inc.

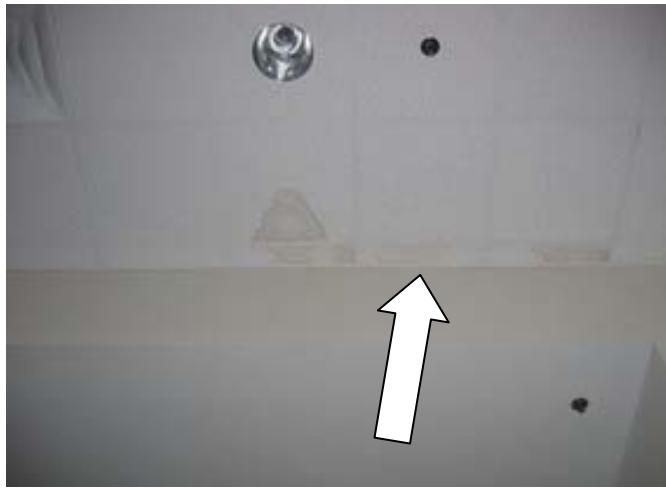


Photo # 1

There are numerous stains along the perimeter walls and ceilings near these walls.



Photo # 2

Water stains appear on the interior side of many interior concrete walls.



Photo # 3

All materials and workmanship appears to be good at the base of the parapet walls. It is doubtful that water is getting in at these points where the roof and parapet walls meet.



Photo # 4

Water could be entering through caulking around the windows but the leaks are likely not from problems with the caulking or windows.

The moisture appears to be coming from above. It is suspected that this moisture is entering the top of the parapet wall above.

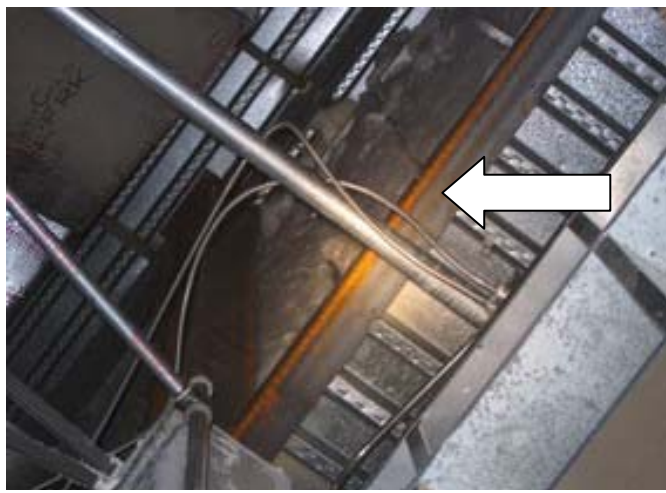


Photo # 5

Rust on steel under the roof indicates roof leaks.

Stains in ceilings not near exterior walls are probably due to incorrectly installed curbed openings and roof penetrations for the electrical connections to the RTU's.



Photo # 6

This stain in the office area is directly under a RTU. These are recent stains that occurred last week after a heavy rain.



Photo # 7

One section of parapet cap was damaged by hurricane Wilma. This is the only damage noted due to the hurricane.

This section of parapet cap needs immediate replacement.

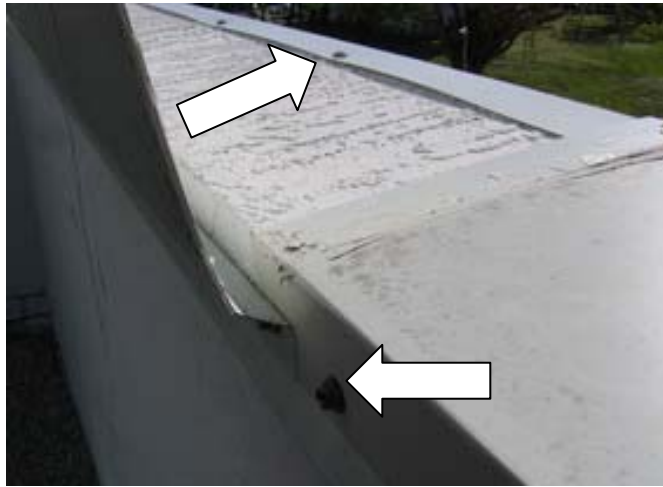


Photo # 8

The exterior drip edge (upper arrow) is held down under the parapet cap with screws. Drilling into a parapet is not a good practice unless the screw holes are thoroughly sealed. They are not.

Water can leak through the drill holes for the screws. All of the parapet caps need to be reworked.

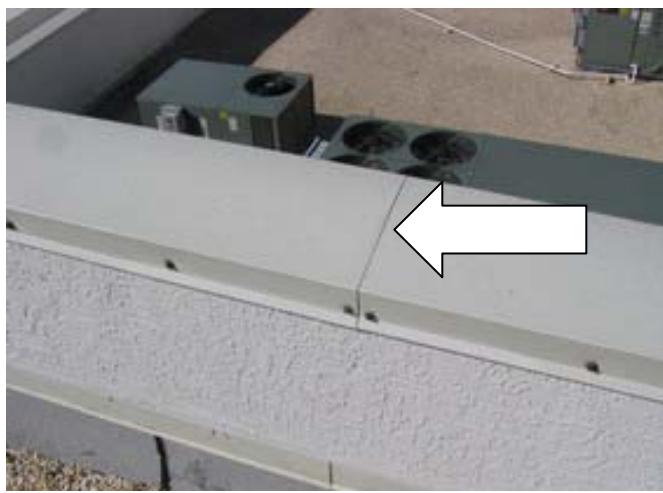


Photo # 9

Most of the joints between the cap sections are not caulked. Water entering at these joints can find its way inside the building through screw holes and cracks in the stucco under the cap.



Photo # 10

The parapet wall over the east end of the temple has no metal cap. The position of the architectural relief (left arrow) makes it difficult to fit a cap over both. Some kind of cap needs to be fabricated. Sealants applied over the top surface of a parapet typically shrink, crack or in other ways fail over a short time. Metal caps properly installed will last.

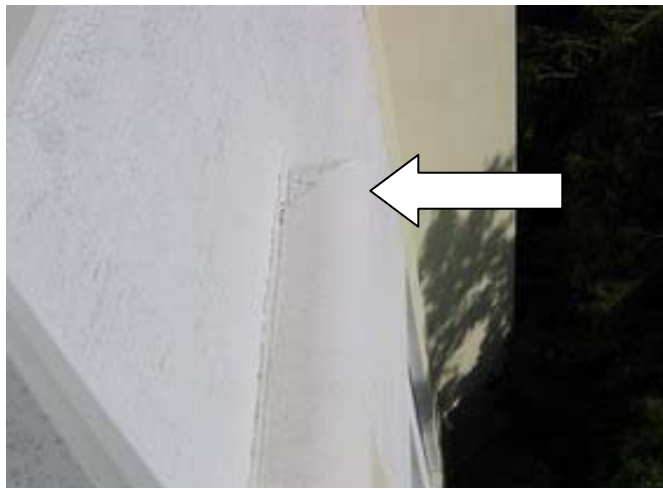


Photo # 11

There are gaps in the joints of the architectural reliefs over the windows. It is possible that water could penetrate any small opening in the wall behind the relief. If screws or mounting posts were drilled to support the reliefs they should have been sealed.



Photo # 12

RTU's are supposed to be installed on curbs a minimum of 8" above the surface of the roof. This one is sitting nearly flush with the roof surface.

If the roof floods around the base of these units during a rain the opening under the RTU can leak.



Photo # 13

Most of the units are not elevated correctly or level. This is unusual to find in a new building. Why it happened is uncertain.



Photo # 14

Shrouds for roof penetrations near the RTU's need to be filled with additional foam sealant to close gaps caused by shrinkage.

These are not well designed. The open face should point down toward the roof and not face horizontally.



Photo # 15

Condensate drain lines are properly routed to roof drains but they are not correctly secured to the roof as required by the 2001 building code.



Photo # 16

Water damage to the interior walls is extensive in some areas because these problems have not been quickly addressed. Test samples of these materials would likely find mold growing in these chronically damp areas.



Photo # 17

Roof run-off accumulates on this walkway (NE corner of building) that is not pitched properly to drain. In rainy weather slime grows in this "Bird Bath" and creates a slip and fall hazard.

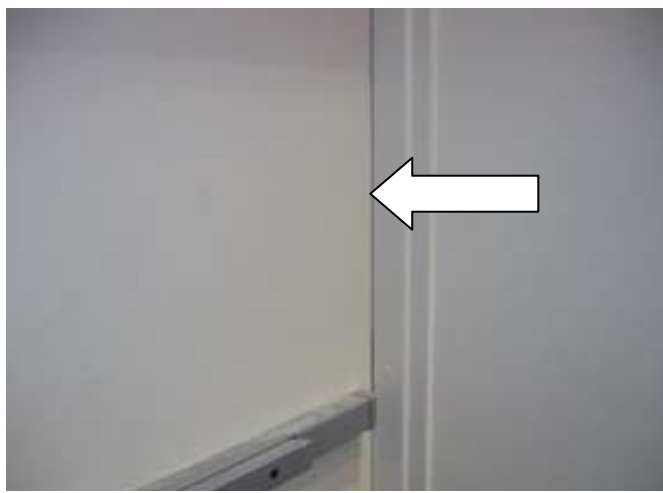


Photo # 18

The weather stripping in this emergency exit door (NE corner of building) does not seal properly.

Rainwater entered during the recent hurricane.