
PROFESSIONAL BUILDING INSPECTORS

1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM

June 24, 2008

Mr.
XX Mamaroneck Ave
Harrison, NY 10528

Via email:

WATER INTRUSION TEST AND INFRARED INSPECTION

Inspection address: New Rochelle, NY 10804

Date of Inspection: June 2008

Weather Conditions: Sunny

External Temperature: 75 degrees

Inspection start time: 9:15 AM

Inspectors: Mr. Scott Gressin
Mr. Paul Gressin

INTRODUCTION

Professional Building Inspectors performed a water intrusion test with thermal imaging at the above address on June XX 2008. This testing was performed in an effort to locate the source of water intrusion problems that have been ongoing and resulting in ceiling damage to unit XX. On the morning of the testing we met onsite with the building superintendant. Following a walkthrough of the building, and unit XX the specific area of concern was identified.

The thermal imaging camera used by PBI is a highly sensitive and calibrated device that enables our inspector to see the infrared spectrum. This wavelength of energy is indicative of the heat energy of a given object. In most applications it is not the temperature reading itself that is important but rather the pattern of temperature differentials. Using our knowledge and skill in building construction, electrical distribution systems and environmental consulting we interpret patterns in the images to determine if defects are present, as well as the cause and origin.

The inspector and Thermographer for this report is Mr. Scott Gressin. He is a licensed New York State Home Inspector and a Certified Building Science Thermographer. He also holds certification as an E.I.F.S. Inspector, NYS EPA asbestos investigator, lead inspector and is a Certified Indoor

PROFESSIONAL BUILDING INSPECTORS

1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM

Environmental Consultant (CIE-C) by the Indoor Air Quality Association.

Mr. Paul Gressin was also on site as an inspector with PBI. He is a licensed New York State Home Inspector, an accredited member of NAHI and has achieved their highest rating, that of Certified Real Estate Inspector (CRI). He is also a founding member of IAMM (International Association of Mold Management) and is a Certified Indoor Environmental Consultant (CIE-C) by the Indoor Air Quality Association. He is currently the NYS governor's appointee to the DOS Home Inspector Council.

VISUAL INSPECTION

The structure is low rise residential housing with 6 floors of residential living space. There are multiple apartments units per floor. Terraces exist on the upper floor units as the building sets back. The living room of unit XX lies directly below the terrace for the 6th floor apartment above.

At the onset of the inspection we documented visibly deteriorated plaster on the ceiling in the living room of unit XX. The impacted area appeared to measure approximately 1'x3' and is shown below.



The location of this ceiling damage was triangulated using fixed landmarks on the exterior walls.

BASELINE SURVEY

Prior to any water testing we performed a baseline survey of the interior building materials consisting of a Delmhorst BD210 moisture meter testing of the plaster ceiling and thermal imaging survey. The Delmhorst BD210 moisture meter was field calibrated and found to be within calibration standards.

Mildly elevated moisture was seen in the plaster ceiling in the areas that were visually impacted

PROFESSIONAL BUILDING INSPECTORS

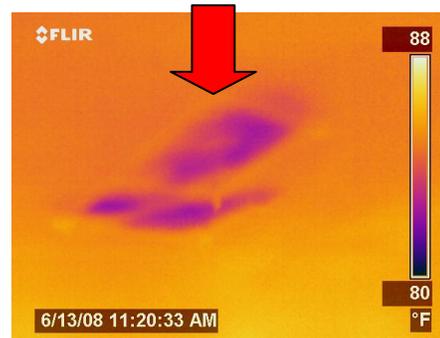
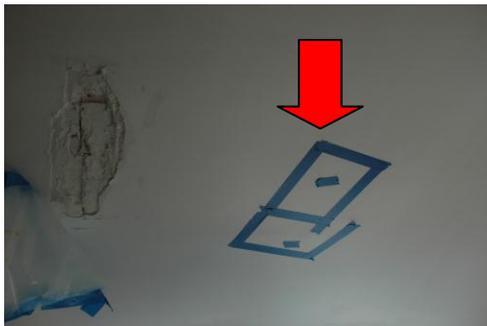
1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM

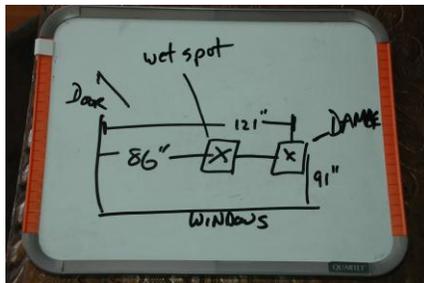
and the average moisture content was found at 0.3%. The moisture in other parts of the ceiling that were referenced as a field control (normal readings) showed 0.0% to 0.2%.

A baseline thermal imaging of the ceiling *revealed moisture not previously identified*. These areas were marked with 3M blue painters tape as detailed below with the thermal image.



Moisture reading taken at the center of these thermal anomalies revealed markedly moisture content of the plaster. The readings in this area of interest ranged from 9% to 14%. Normal reading would be less than 0.5% per ASTM standards.

Using the same fixed building landmarks as a reference the terrace on the ■ floor above was visually inspected. The furniture in this area was carefully removed.



Visible damage



Upon removal of the concrete patio flags in this area we identified an EPDM type roofing membrane. Above this there is foam insulation and Kraft paper. Care was taken in peeling back the Kraft paper and lifting the foam insulation so as to not cause any further damage.

At this point we noted ponding water atop the EPDM membrane measuring 3/8" in depth.

PROFESSIONAL BUILDING INSPECTORS

1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM



The roof drain was visually inspected and no water was seen actively draining at this point and this was prior to us applying water to the roof.

In addition to the standing water under the foam insulation we identified a roof patch. This patch is located directly above the thermal anomaly and ceiling moisture in unit [REDACTED]. The roof patch material appeared to be Asphalt based. It has been well documented that **EPDM membranes and Asphalt roofing are not compatible materials, and if used together the Asphalt will chemically eat through the EPDM membrane.**

The failed roof patch, shown in more detail below, is non-adherent to the EPDM at this point.



WATER TESTING

PBI referenced several industry standards and guidelines when performing this inspection. These standards were modified to accommodate for the construction of the roof and its associated structures, the availability of the water source provided, solar loading estimations and the fact that the investigation was geared to be non-destructive. On site we calibrated the water spray rack assembly to deluge 5 gallons per square foot per hour.

PROFESSIONAL BUILDING INSPECTORS

1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM

Water was initially discharged directly into the roof drain, pictured below. This was done for 15 minutes, at 5 gallons per minute, to confirm that the roof drain was functional and not backing up onto the roof.



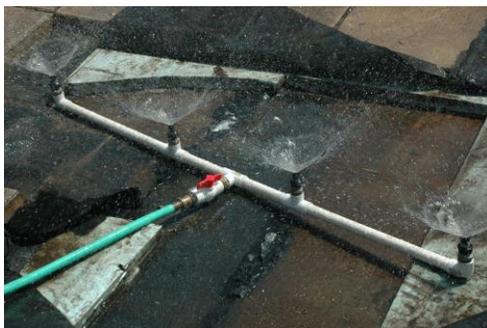
No changes from baseline are seen in this black and white Thermogram



At the conclusion of this first test the water was shut off and the ceiling in unit ■ was inspected using the Delmhorst BD210 moisture meter and FLIR B20HS camera. No changes were noted from the baseline testing.

The water rack was then field calibrated and positioned to discharge in the area of interest identified above. Water was discharged as pictured below for 15 minutes.

At the conclusion of this test we noted that the standing water on the roof had increase to 1.5" in depth with no water seen at the roof drain, indicating the is not sufficiently pitched towards the roof drain.



Thermal imaging and moisture testing in unit ■ found an increase in the size of the thermal anomaly and moisture content of the plaster ceiling consistent with the leak being actively

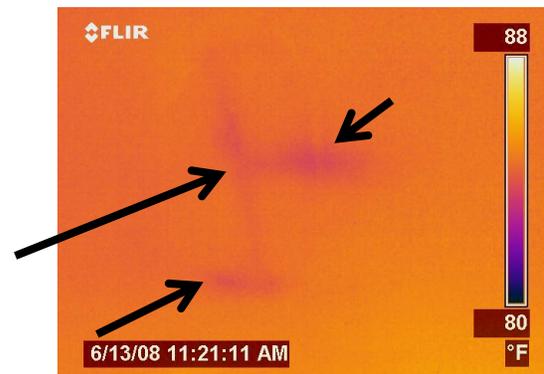
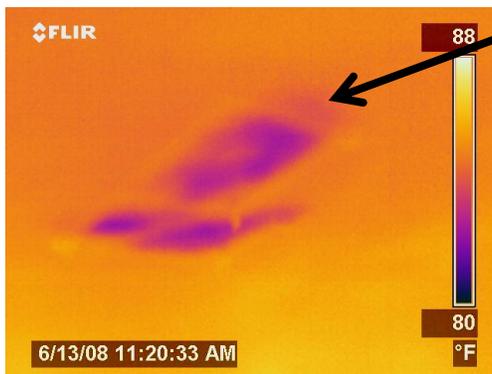
PROFESSIONAL BUILDING INSPECTORS

1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM

generated.



Reference image of the foam insulation detailing the *lack* of a tapered edge to facilitate drainage.

CONCLUSION AND RECCOMENDATIONS

In our professional opinion, based on the testing performed, there are two problems that need to be addressed. In the short term the roof leak identified can be readily repaired using compatible materials. This will not however address the underlying concerns we have regarding these roof systems.

Based on historical data from this construction era, information provided by building personnel who have visualized areas where the roof membrane and sheathing have been removed, and our observations we believe that only a complex restoration will provide long term longevity. Failure to proceed as outlined may result in a catastrophic roof failure.

1. The existing roof systems need to be removed to expose the roof rafters. This is the only way to guarantee the structural integrity of the roof rafters, timbers that carry a substantial

PROFESSIONAL BUILDING INSPECTORS

1057 MORA PLACE, WOODMERE, NY 11598 • 6 JULIA CIRCLE, EAST SETAUKET, NY 11733



PHONE: 516-295-2581 • FAX: 516-791-6832 • WEB: PROFESSIONALBUILDINGINSPECTOR.COM

- load since the roof is being used as an entertainment area. An additional benefit will be to reduce the load on the support timbers by removing any remaining terra cotta roof tiles
2. The exposed roof rafters need to be examined where they rest in the masonry walls, and any decayed (dryrot) damaged rafters need to be sister beamed to restore the structural integrity of the roof.
 3. Once the above is completed a new plywood or "Q" deck should be installed, over which rigid foam sheets tapered in the factory or at time of installation should be installed to create positive drainage pitch to the existing roof drains.
 4. Over the rigid foam sheets a new 30 year Firestone EPDM roof system and flashing should be installed.
 5. Once the EPDM roof has been installed EPDM roof pads designed to facilitate drainage shall be installed and then the existing roof tiles can be re-installed.

Thank you for using PBI and we look forward to working with you on projects in the future.

Sincerely yours,

Paul Gressin, President

Certified Real Estate Inspector #200110
Certified Indoor Environmentalist #01154
Certified Indoor Environmental Consultant # 0605050
NYS Home Inspector License #16000007488

Scott Gressin

Certified Indoor Environmental Consultant # 0705065
NYS Home Inspector License #16000028893
Certified EIFS Inspector #785806
Certified Infrared Thermographer #32227
NYS EPA Asbestos Inspector #07-07380
NYS EPA Lead Inspector #LII-7355