

Date: June 18, 2012

To: Michael Molchan, AIA
Architect
Makovich & Pusti Architects, Inc.

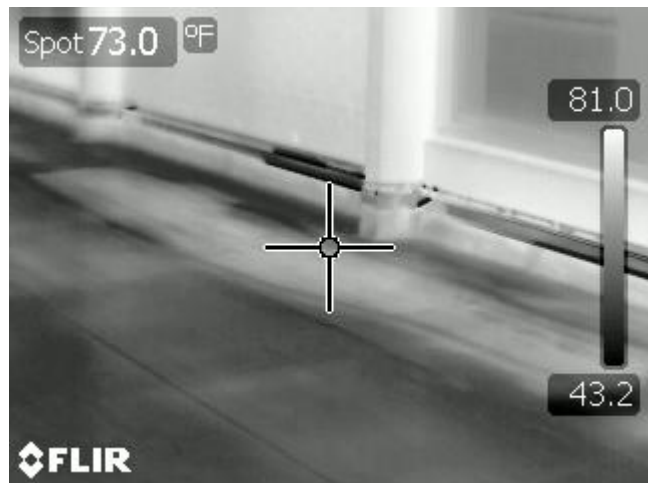
From: Bud Griffith
President
Construction Resources, Inc.

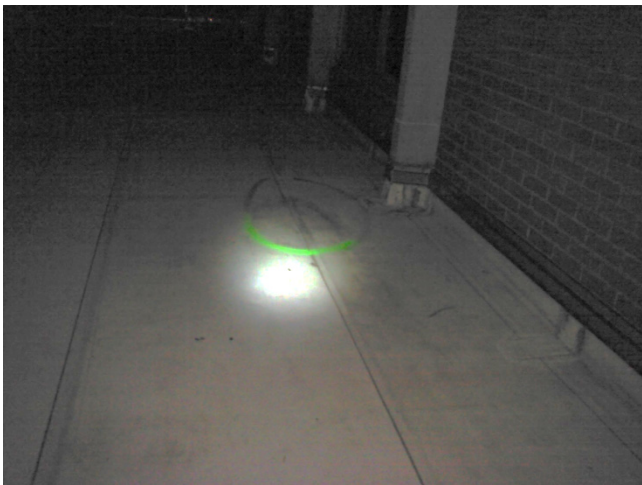
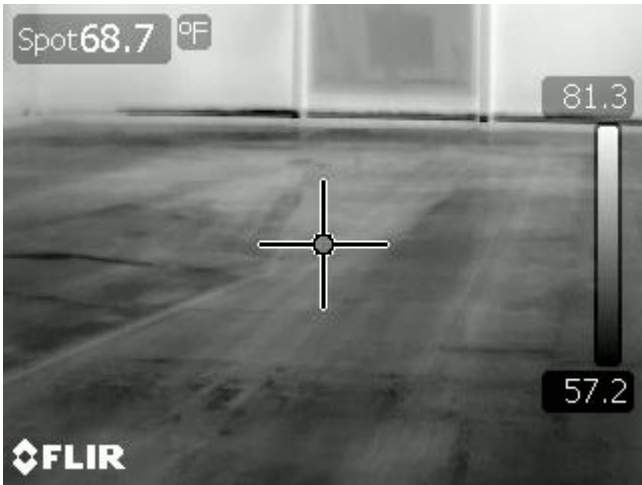
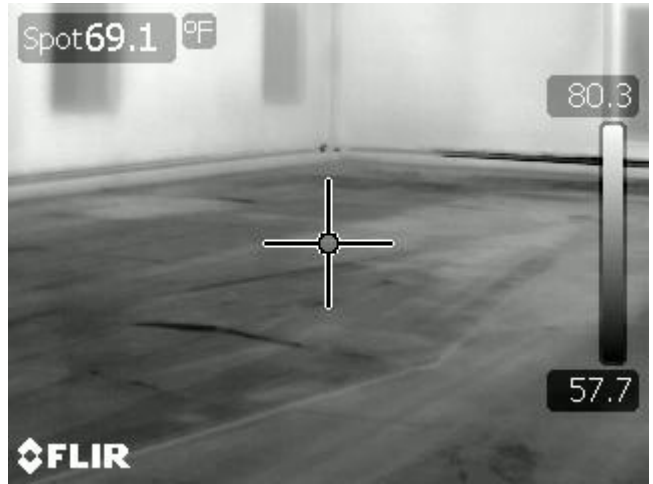
Re: Louis Stokes Cleveland VA Medical Center
Roof Infrared Study for Possible Green Roof Design

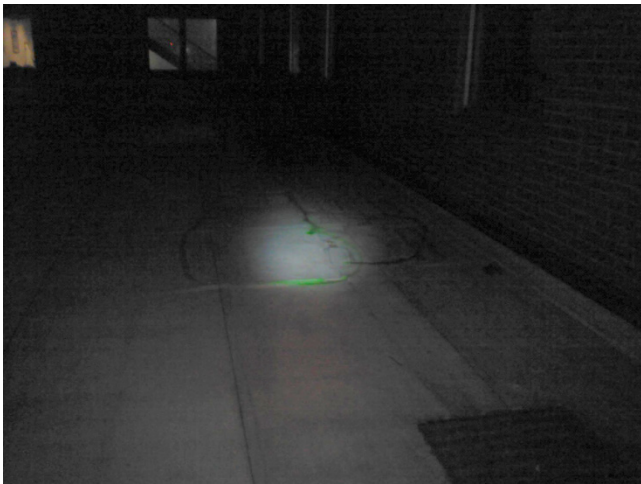
The Louis Stokes Cleveland VA Medical Center is located at 10701 East Boulevard, Cleveland, OH 44016. Two roof areas were included as part of this investigation, Areas 1 and 2. This study was performed to attempt to locate moisture within the roof assemblies as part of an investigation to determine if it is possible to install a green roof system on the subject roof areas. On Thursday June 7, 2012, starting at 9:00 p.m., this investigation began and completed around 11:00 p.m. The infrared study started on Area 2 and then continued to Area 1. As part of this investigation two pieces of equipment were utilized. A FLIR infrared camera was utilized to locate areas of thermal differential within the subject areas. Areas within the roof that retain heat from thermal loading after the sun sets and the roof is releasing the thermal load is often areas that contain moisture in the insulation layers within the roof system. A second piece of equipment, a Tramex Leak Seeker and Moisture Detector, was also used. This unit is an electronic capacitance meter that sends an electronic signal through the roof covering. When this signal contacts a conductive layer of moisture just below the membrane surface, the circuit is completed and an audible and visual signal is transmitted. Based on the findings using these pieces of equipment, areas were marked on the roof surface with paint to locate the areas of suspected moisture. A subsequent study using destructive testing will be performed to further investigate the findings of this study further.

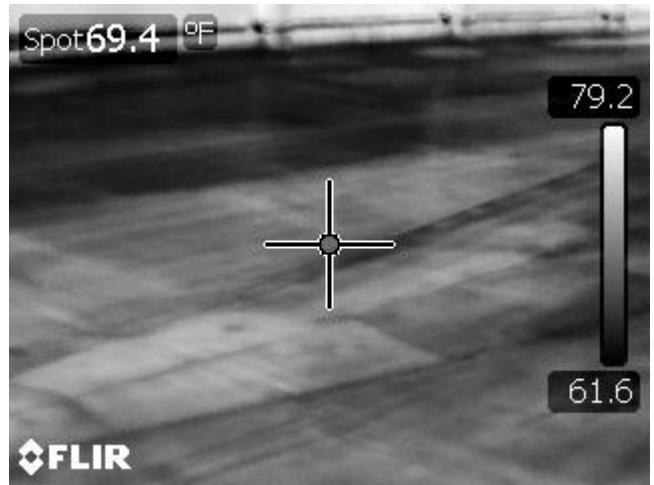
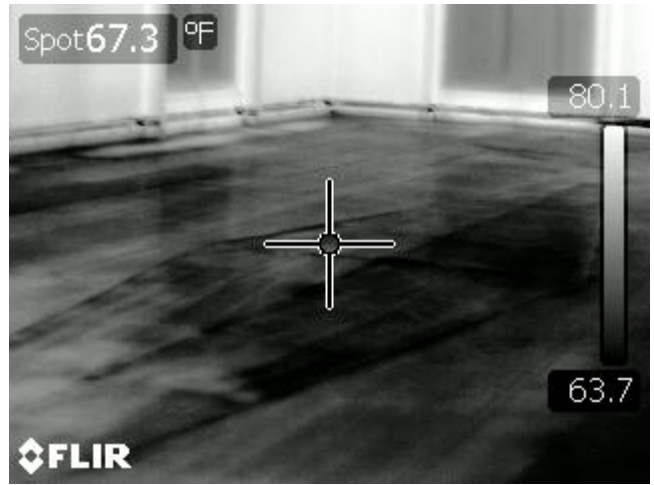
Area 1

The infrared camera was utilized on this roof area. Numerous areas were located and marked on the roof with green spray paint. The following photographs denoted the areas of suspected moisture. Note that the Tramex meter supplied readings that moisture was prevalent throughout the roof. It was assumed that this was anomaly. Note that the second study confirmed this condition.





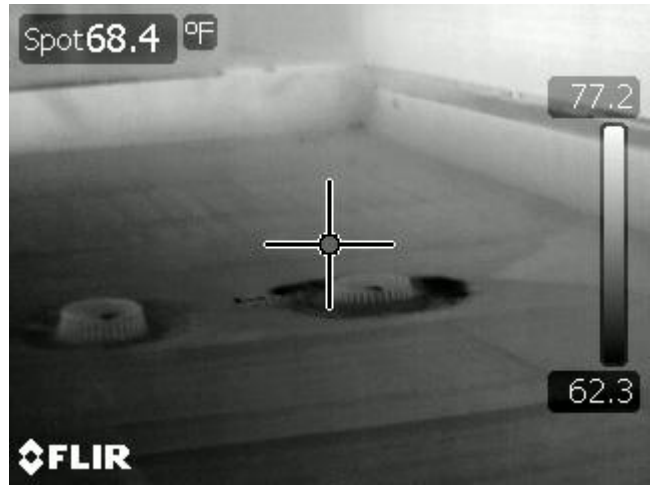




Area 2



The infrared camera showed no signs of moisture within the roof system during the site visit. The Tramex did register a small area of moisture to the southwest of the western drain.



Based on the findings of the infrared study performed on June 7, 2012 it was assumed that areas of moisture were present throughout the field of Area 1 and a potential minor area of moisture may exist near the drains on Area 2. Note that the results of this investigation must be confirmed with destructive testing as large scale moisture within roof components or other sources of heat from within the building can cause false conclusions to be reached.