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ALUMNI ROOFING
COMMERCIAL / INDUSTRIAL ROOFING

Replacements / Repairs / Restoration
Infrared Imaging
Custom GPS & Internet Surveys

Alumni Roofing Co., Inc.
Roof Assessment & Repair Proposal

Existing Roof

- The existing roof is a Carlisle EPDM (rubber) roof that is fully adhered to 3” of PolyIsocyanurate insulation over metal decking.

- Alumni Roofing conducted a thermal scan of the roof to locate the leaks and quantify the wet insulation

- The roof appears to be about 13-14 years old and is overall in good condition

- An exhaust fan hood has blown across the roof and caused several tears in the membrane. These holes have caused the insulation in several areas to become saturated (approximately 2,500 sf)

- The field seams are starting to become loose and while not currently leaking will become an issue in the near future

- It is typical for EPDM roofs to shrink over time and cause bridging around penetrations and walls. This roof shows no signs of bridging

- The expansion joint between roofs B & E is in poor condition with several loose seams. Two 10 foot sections are currently leaking

- The metal siding around the second story in the back is in excellent condition

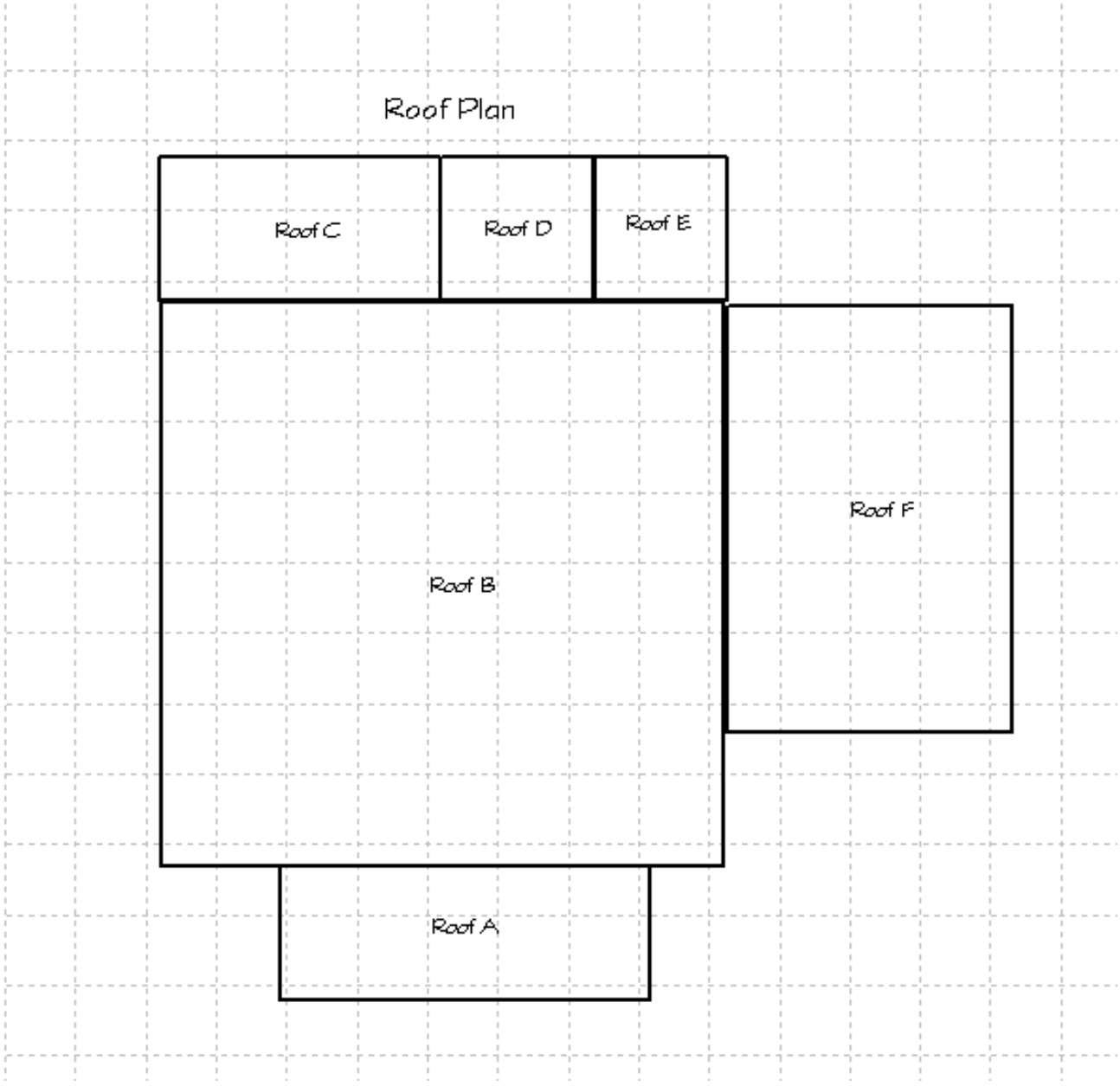
- With a few exceptions, the flashing around the penetrations is in good condition

- The roofs have adequate drainage with very little ponding water

- Downspouts and gutters are in good condition and will require only minor repair work

- With proper maintenance and annual inspections and repairs the roof system should last another 5-7 years

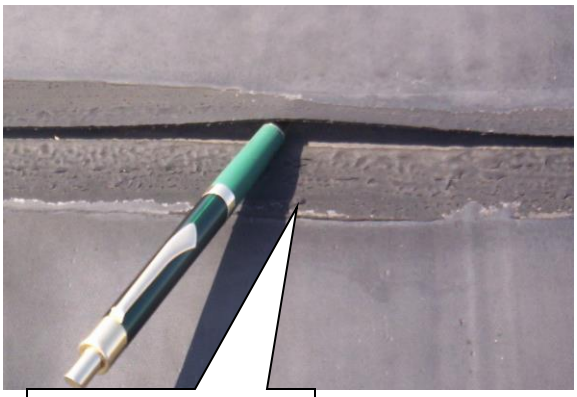
Existing Roof



Existing Roof
Roof A

Existing Roof
Roof B

Overall picture

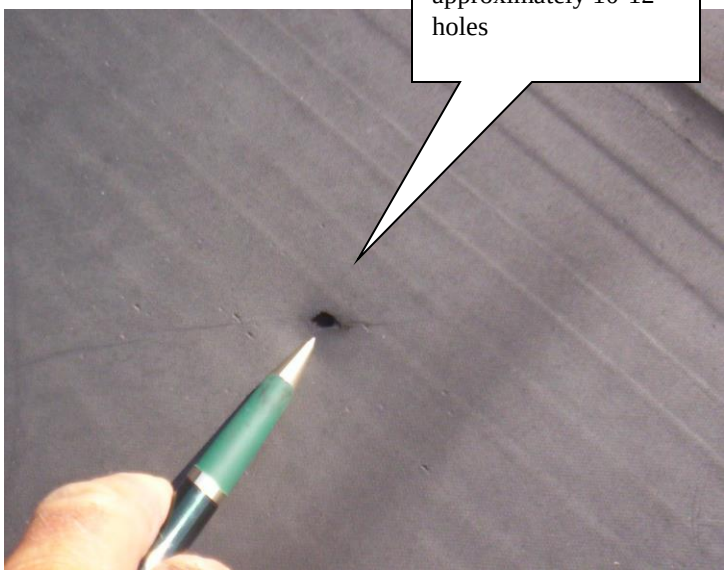


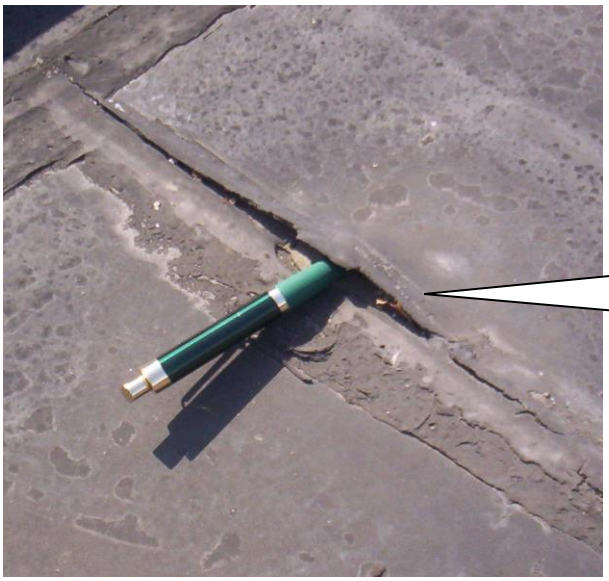
Typical field seam that is loose, but not leaking

Curled patch that should be repaired

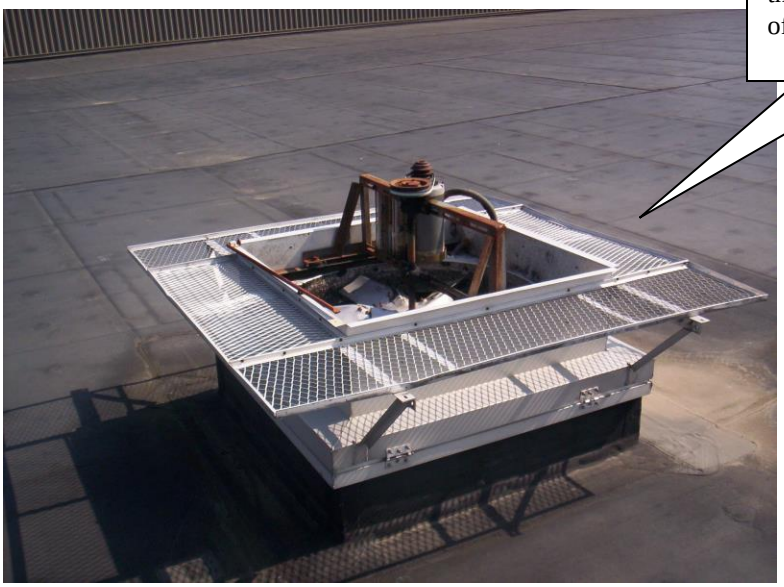
Curled patch

Existing Roof
Roof B





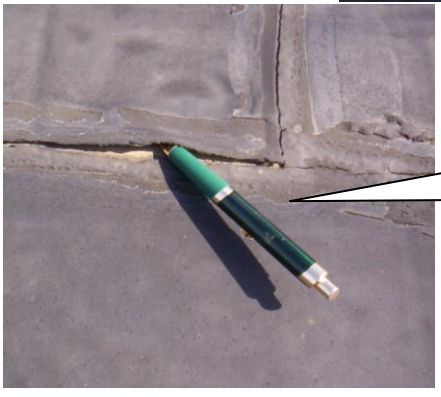
Existing Roof
Roof B



Vent hood blew across the roof and caused most of the holes

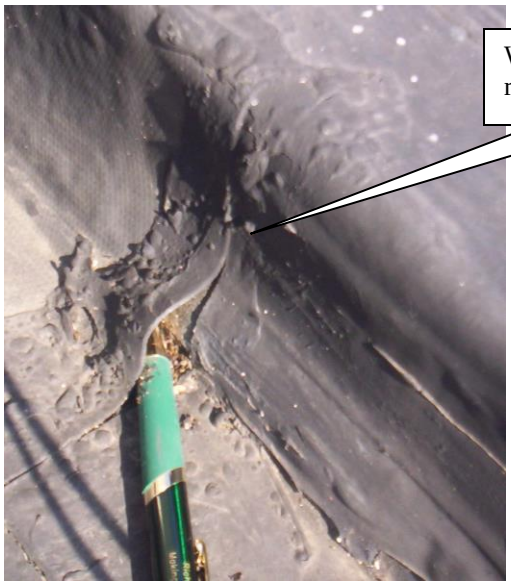
Existing Roof
Roof C

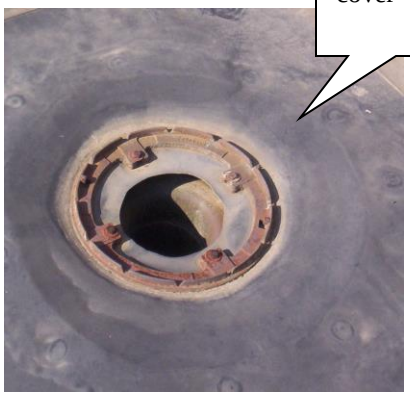
Overall picture

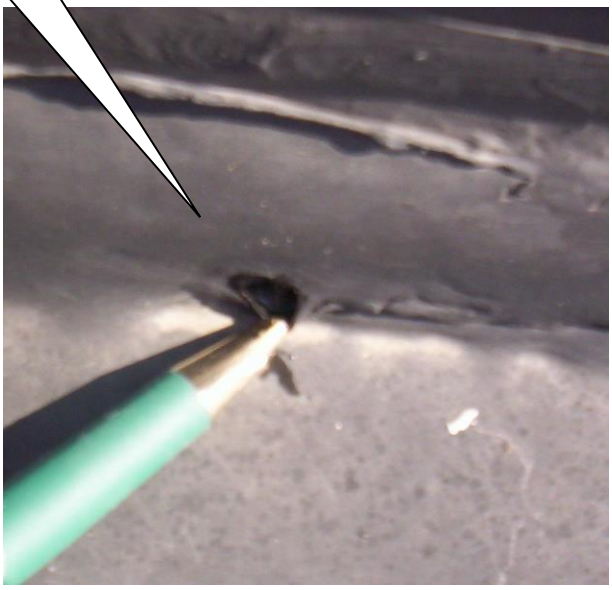


Typical loose, but not leaking field seam

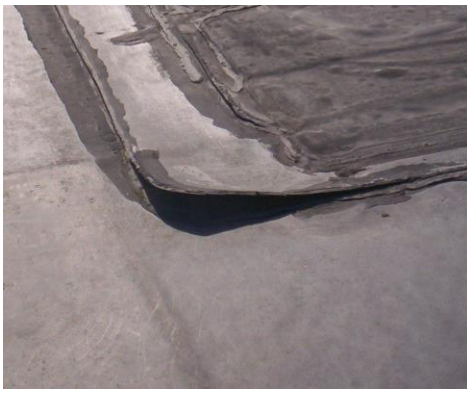
Existing Roof
Roof E

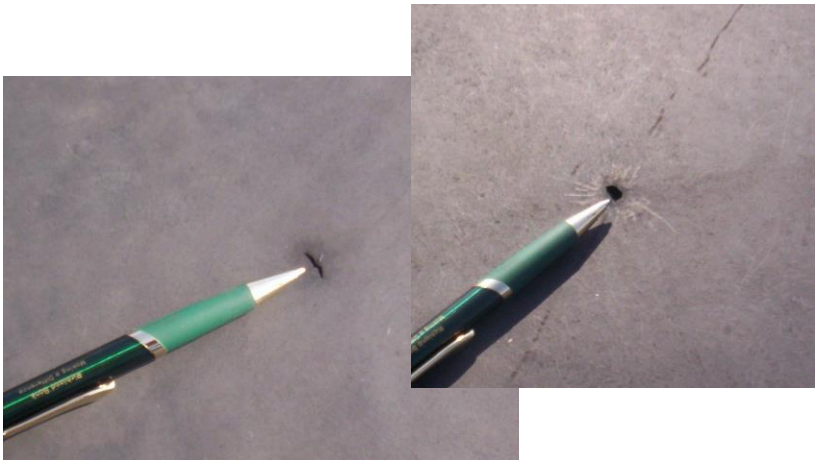


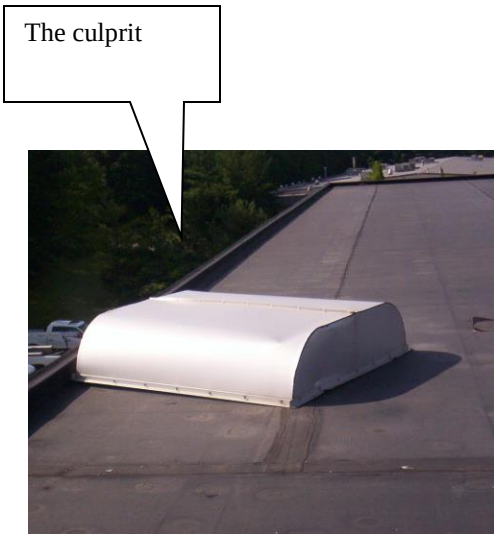




Existing Roof
Roof F







Thermal Roof Analysis

Alumni Roofing performed a thermal scan of the roof to determine the location and extent of moisture in the roof system.

Normally there is little or no water within a flat roof assembly. When a leak develops, water enters the roof system and, depending on the type of insulation system, is either absorbed by the insulation or runs to the cracks between the nonabsorbent insulation. When water enters the roof assembly it is present for a long time, sometimes the life of the roof.

Thermal capacitance is the physical property of a material's ability to store heat. The materials in roof assemblies have relatively low thermal capacitance, especially when compared to water. Water requires a lot of energy to raise its temperature and likewise must release a lot of energy to cool.

The physics used for thermal roof inspections is based on dry roof insulation heating up and cooling down faster than wet roof insulation. A thermal inspection goes beyond simply finding a leak by locating the extent of the moisture invasion of the insulation. To do this we require solar heating of a sunny day. Then at night, after the sun goes down and the roof surface begins to cool, the dry roof insulation cools faster than wet roof insulation. This temperature difference can be detected by the IR-InSight Thermal Imaging camera.

Thermal Scan Results

Alumni scanned the roof and found six areas where the insulation was wet. Most of the wet areas were caused by small holes in the rubber caused when a vent hood blew across the roof. The holes have been present for some time and around each hole the area of wet insulation is from 50 to over 300 square feet.

The expansion joint between Roofs B & F is leaking. All other leaks were caused by nickel / dime sized holes in the membrane. The field seams while showing their age are not leaking. No leaks were found around the drains or any other penetrations (vents / hatch, etc.)

All the wet locations were marked with paint on the roof.

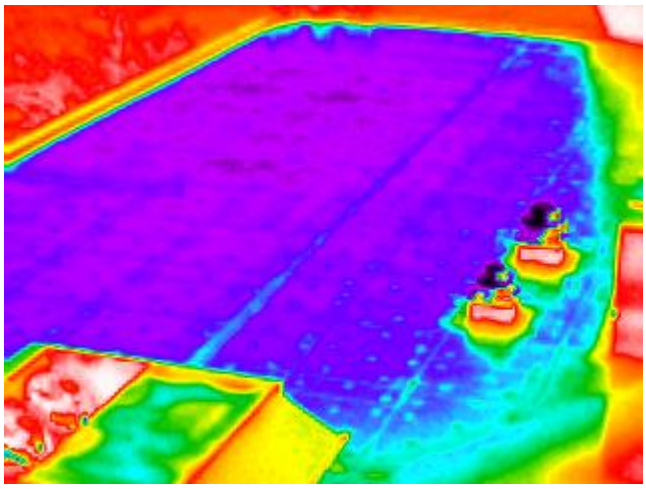
IR Insight XS

The pictures below show the wet areas. For the color pictures, blue indicates a cool section; the presence of heat is indicated in increasing order from green to red to white.

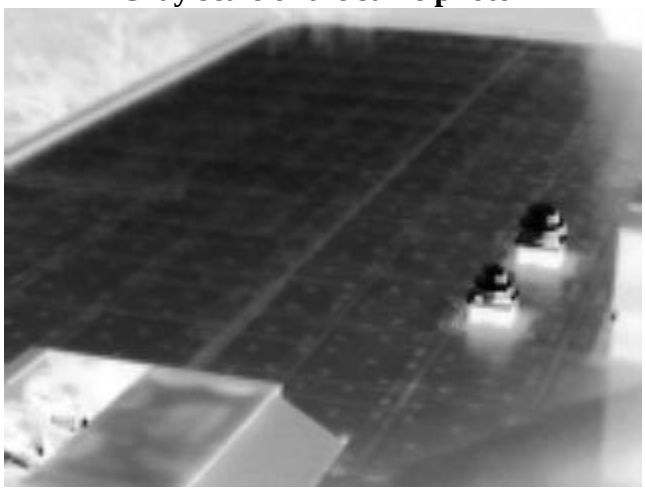
Roof A

No moisture was detected in Roof A

Color enhanced

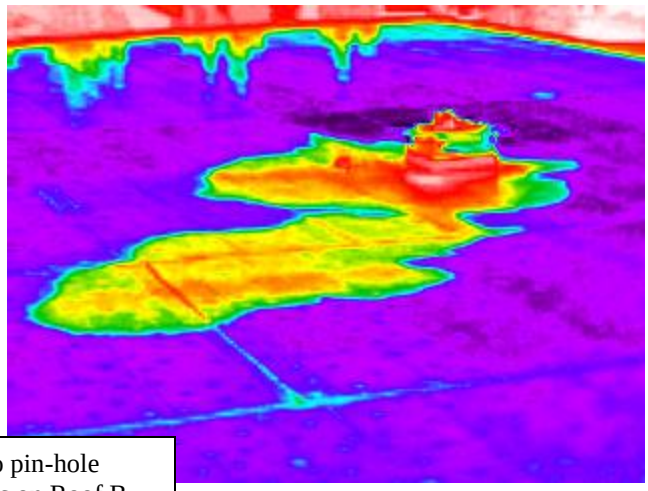


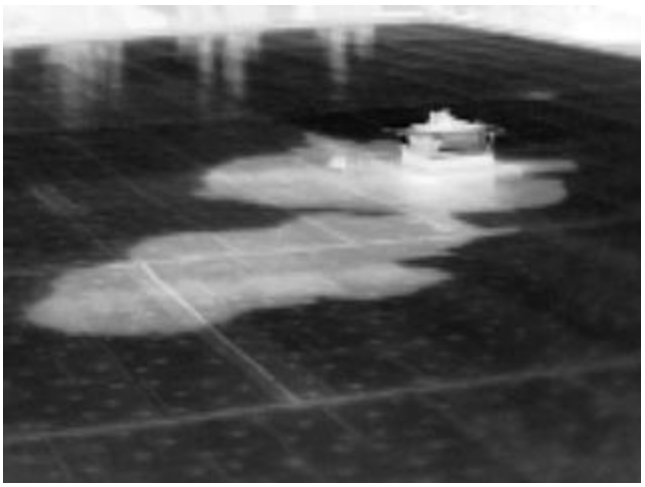
Gray scale of the same photo



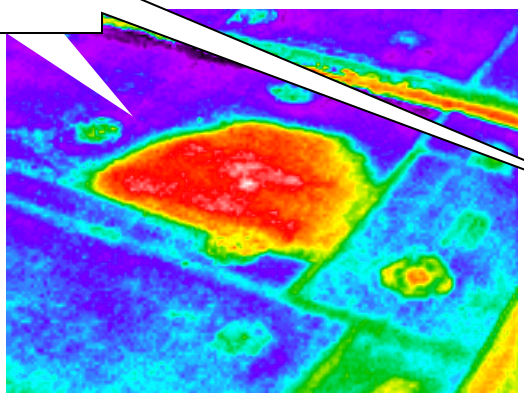
Roof B

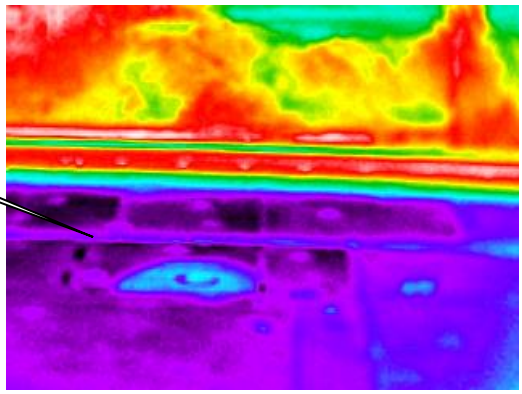
Significant moisture was found around one vent





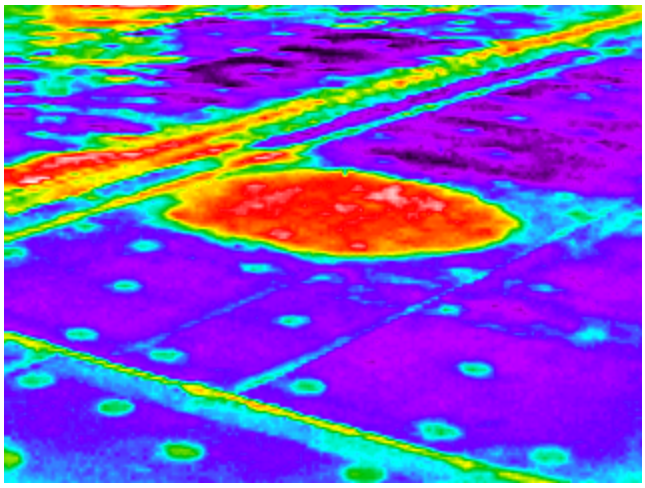
Two pin-hole leaks on Roof B

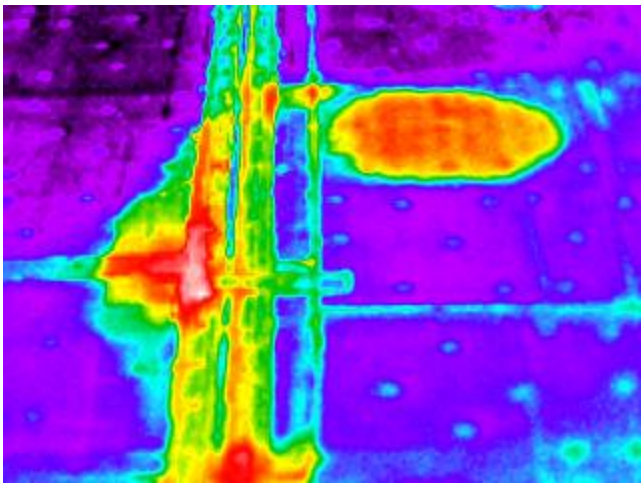




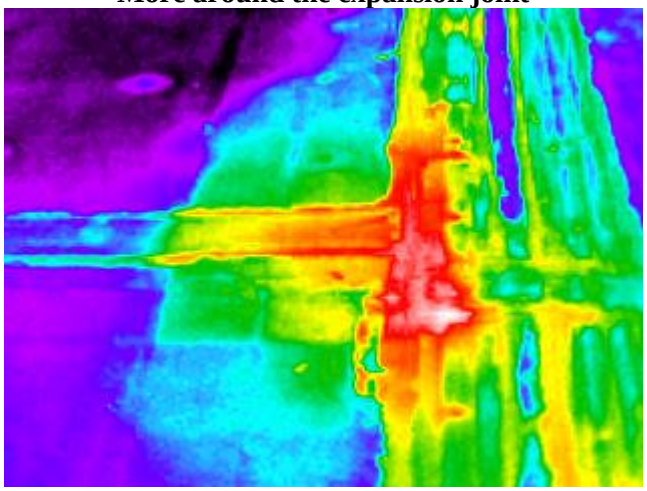
Roof B

Expansion Joint between Roofs B & F

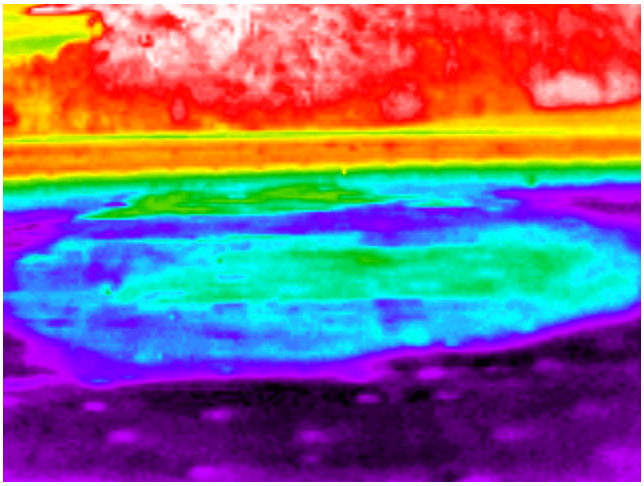


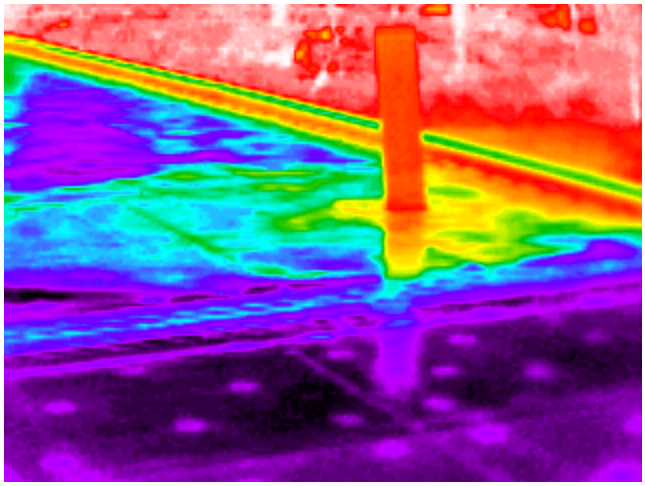


More around the expansion joint



Two Leaks on Roof F





Wet Areas
Roof B

Wet Areas
Roof F

Recommendations

It is our recommendation that the wet insulation be replaced prior to making any repairs. If the holes are patched without replacing the insulation, over time as the insulation dries it collapses and causes the insulation screws to poke through the rubber under snow loads. Also, the metal decking can begin to rust.

The field seams are starting to lift / curl, and should have cover tape installed. In the winter water and ice will continue to cause the seams to lift

We would recommend in 2-3 years that the owners consider the use of a restoration coating for this roof that will extend its life by 10 years at approximately half the cost of a replacement. We have successfully restored many EPDM roofs with the use of an elastomeric coating. For tax purposes, restorations can be deducted in one year versus a multi-year amortization that may be required for a new roof.

Based on today's prices a replacement of this roof (46,000 sf) would be approximaely $160,000. Our suggesttion would be to remove the rubber and install a new TPO roof over the existing insulation.

Proposed Scope Of Work

All Rubber Roofs

- Apply 6” cover tape over all field seams (approximately 6,000 linear feet)
- Apply cover tape over any curled patches
- Clean drains on Roof A
- Trim Branches on Roof A
- Remove rubber over any wet areas and replace with new insulation. Fully adhere new Carlisle rubber over the new insulation and seam to the existing membrane. This represents approximately 2,500 square feet
- Repair any holes in the wall flashing (especially Roof E)
- Repair a broken downspout along the back of the building
- Repair the entire expansion joint between Roofs B & F with new rubber
- Alumni will return this fall to perform a second thermal image of the roof system to insure no leaks or wet insulation
- Alumni will return up to 3 additional times over the next year to make any additional leak repairs at no additional cost.